

**AmeriMation**

## TOWER/STACK SIGNAL LIGHTS

### 25mm LENS

1 PLD Series

### 45mm LENS

2 MT4B Series

3 PL4 Series

5 PL4-M12 Series

7 PME Series

### 56mm LENS

9 MT5C Series

11 PTE Series

13 PTM/PTD Series M

2 MT5B Series

### 70mm LENS

15 PY7 Series

### 85mm LENS

2 MT8B Series

9 MT8C Series

### 90mm SEMICIRCULAR LENS

17 PWE Series

18 MWE Series M

19 MWET Series M

### 140mm LENS

20 MSGS Series

21 MSGT Series

23 MH115 Series

### ANDON LIGHTS

25 ATEP/ATES Series

26 ATEPR/ATESR Series

## 27 SIGNAL LIGHT MOUNTING OPTIONS 30 REPLACEMENT BULB

### BEACON SIGNAL LIGHTS

#### 56mm LENS

31 MS56L Series

32 MS56M Series M

#### 66mm LENS

33 MS66 Series

34 ML Series S

#### 70mm LENS

35 MS70LT Series

36 MS70S Series S

37 MS70M Series M

#### 86mm LENS

38 ASG Series

39 MS86L Series

40 MS86S Series S

41 MS86W Series

43 MS86T Series

44 MS86M Series M

45 MW86T/M Series M

#### 95mm CUBE LENS

47 MQVM Series M

48 MQVL Series

48 MQVX Series S

#### 115mm LENS

49 AVG Series

50 MS115L Series

51 MS115S Series S

52 MS115T Series

53 MS115M Series M

55 MP115 Series

56 ML115 Series

57 MF115 Series

#### 135mm LENS

59 MS135T Series

60 MS135B Series

### LED INDICATORS/PILOT LAMPS

61 K08/10/12 Series

62 LED Indicators

64 A20 Pilot Lamps

65 B30 Series

65 KPL Series

66 Mi4D Series

67 Mi4F Series

### BUZZERS/ALARMS

68 B2NB Series

68 KPL Series

69 HRB-PS Series

69 KSP Series

70 KMB Series

70 HRE Series

71 MW86N

72 MSP Series

74 MQV S/H Series

### PUSH BUTTONS/SWITCHES

76 Ø16mm K16 Series

78 K16 Accessories

80 Ø22mm A20 Series

81 A20 Operators

83 A20 Accessories

85 CP2 Series

88 Ø30mm B30 series

90 T Series - Ø16, 19, 22, 25, 30mm metal chassis

93 MLD Series - Rotary Switch Disconnecter

94 KMCB Series - Miniature Circuit Breaker

### LIMIT SWITCHES

95 V Series

96 Z15 Series

98 ZXN/KXM Series

100 ZXL/KXL Series

102 KL Series

	<b>FOOT SWITCHES</b>		
104	HRF-M Series	153	E-Series - Screw Bolt Type
106	HRF-HD Series	154	B-Series - Screw Bolt Type
107	HRF-HD8 Series	155	Knock-out Box
108	KAF-HD3 Series	156	P-Series - Hinge & Latch Type
		158	H-Series- Hinge & Latch Type
		162	R-Series- Hinge & Latch Type
		164	Q Type - Hinge & Latch all Plastic Type
	<b>SOLID STATE RELAYS</b>		
110	KMSR Series - Single Phase	165	AGD Series - Dual Door Type
112	KMSR Series - Three Phase	166	ATF Series Swing Panel Type
114	KSR Series - Single Phase	167	QRF series Swing Panel Dual Door Type
116	KSC Series - Three Phase	168	Terminal Block Boxes
	<b>RELAYS &amp; SOCKETS</b>	170	Aluminum Terminal Block Boxes
119	TA/TR Series	172	Terminal Block Boxes with Built-in Cable Gland
120	HR705 Series	173	Aluminum Enclosures
121	HR710 Series	174	SMPS Cases
122	K7SR Series	174	Customization Services
124	K706 Series		
126	HR707N Series	175	<b>ENCLOSURE ACCESSORIES</b>
127	HR723 Series		
128	730 Series		
129	K750 Series		
	<b>RELAY TERMINAL BLOCKS</b>		
130	RXT Series - Relay Terminal Blocks		
	<b>DIN RAIL TERMINAL BLOCKS</b>		
132	Screw Clamp Type		
133	Screw Clamp Miniature Type		
133	Screw Clamp Ground Terminal		
133	Fuse Holder		
134	Screw Clamp Double Level Type		
135	Screw Clamp Diode Terminal		
135	Screw Clamp Disconnect Type		
136	Spring Clamp Type		
137	Spring Clamp Ground Terminal		
138	<b>DIN RAIL TERMINAL ACCESSORIES</b>		
	<b>BARRIER TERMINAL BLOCKS</b>		
140	KTB1 Series		
141	KTB2/KTB3 Series		
	<b>FUSE</b>		
142	KF Series - Fuse Holders		
143	Ceramic Fuse		
	<b>SWITCH BOXES</b>		
144	Plastic Switch Boxes		
145	Color Switch Boxes		
146	MB Series - Aluminum Switch Boxes		
	<b>PLASTIC ENCLOSURES</b>		
148	S-Series - Small Screw bolt Type	153	E-Series - Screw Bolt Type
150	S-Series - Medium Screw bolt Type	154	B-Series - Screw Bolt Type
151	M-Series - Screw bolt Type	155	Knock-out Box
		156	P-Series - Hinge & Latch Type
		158	H-Series- Hinge & Latch Type
		162	R-Series- Hinge & Latch Type
		164	Q Type - Hinge & Latch all Plastic Type
		165	AGD Series - Dual Door Type
		166	ATF Series Swing Panel Type
		167	QRF series Swing Panel Dual Door Type
		168	Terminal Block Boxes
		170	Aluminum Terminal Block Boxes
		172	Terminal Block Boxes with Built-in Cable Gland
		173	Aluminum Enclosures
		174	SMPS Cases
		174	Customization Services
		175	<b>ENCLOSURE ACCESSORIES</b>
			<b>PANEL LIGHTING</b>
		178	MPL Series
			<b>CABLE CHAINS</b>
		180	<b>MINI TYPE – CPS SERIES</b>
			<b>LONGER SELF-SUPPORTING TYPE</b>
		181	Normal Type – ST_N Series
		182	Enclosed Type – ST_E Series
			<b>LONG TRAVEL TYPE</b>
		183	Skid Type – ST_S Series
		184	Enclosed Skid Type – ST_ES Series
		185	Roller Skid Type – ST_RS Series
		186	Enclosed Roller Skid Type – ST_ERS Series
			<b>FAST &amp; SILENT TYPE</b>
		187	Clean Room Type – nsb_CR Series
		188	Normal Type – nsb_N Series
		189	Enclosed Type – nsb_E Series
		190	Sliding Type – nsb_S Series
		191	<b>REVOLVING TYPE – RV SERIES</b>
		191	<b>TWIST/SCREW TYPE – HX SERIES</b>
		192	<b>STEEL CABLE CHAIN – SK SERIES</b>
		196	<b>CABLE CHAIN ACCESSORIES</b>
			<b>ROBOT CABLE PROTECTION SYSTEM</b>
		198	Dress Pack & ROBOWAY
		199	Robo-Kit
		201	UR Band
		202	<b>FLEX CORRUGATED TUBE</b>
		204	<b>TUBE CONNECTORS</b>

# PLD Series

Ø25mm LED Tower Light



## Ordering Information

PLD **S** **F** - **5** **01** - **RYGBC**  
 ① ② ③ ④ ⑤

① Pole Length	<b>S</b>	65mm pole
	<b>L</b>	200mm pole
② Light Style	<b>no mark</b>	Steady
	<b>F</b>	Steady & Flashing
③ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
④ Power Supply	<b>01</b>	12VDC
	<b>02</b>	24VDC
⑤ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

- Strong aluminum body
- Well suited for small device applications
- Long LED life and reliable operation
- Prism-cut lenses for even light distribution
- Direct mounting pole installed
- Lead wire connection

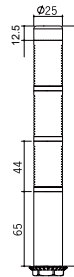
## Specifications

Operation/Function	Steady/ Flashing		
Maximum tier	5		
Body Style	Aluminum, Silver body		
Lens Diameter	25 mm (1 inch)		
Flash Rate	Approx. 80 ± 5 flashes/min.		
Certificate/Compliance	CE, RoHS		
Vibration	0.75mm at 10~55Hz		
Ambient Temperature	-15°C~40°C		
Storage Temperature	-20°C ~ 70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP52		
Recommended Wire Size	1007 UL / 22 AWG		
Power supply	12VDC	24VDC	
Current Consumption (RMS ±10%)	1stack	0.07A	0.03A
	2stack	0.14A	0.07A
	3stack	0.21A	0.10A
	4stack	0.28A	0.13A
	5stack	0.35A	0.16A

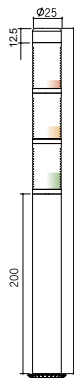


## Dimensions (unit:mm)

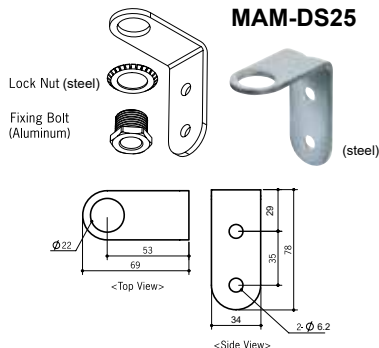
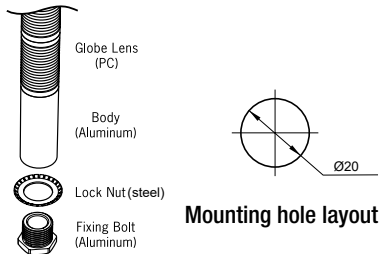
PLDS-000-00000  
 PLDSF-000-00000



PLDL-000-00000  
 PLDLF-000-00000

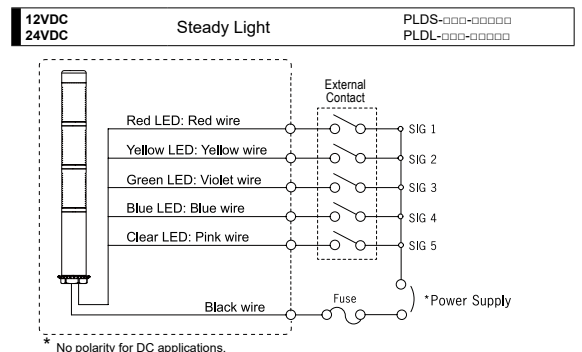
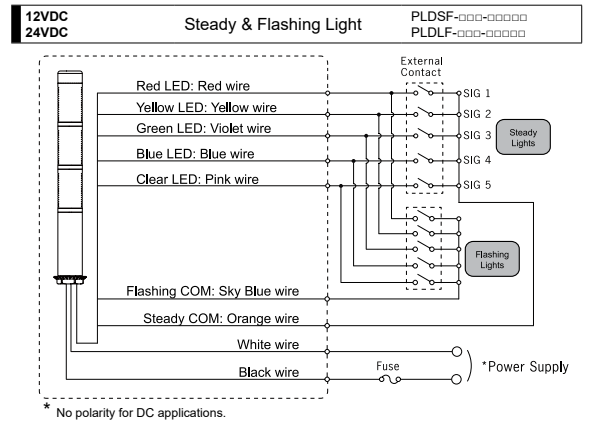


## Built-in mounting method



## Optional L-angle mounting bracket use

## Wiring Diagram



# MT4B/5B/8B Series

Ø45mm/Ø56mm/Ø85mm Bulb Type Tower Light

- Optional LED bulbs available
- Prism-cut lenses for even light distribution
- Direct, Pole or Wall Mount
- Wire leads connection



## Specifications

Operation		Steady							
Maximum tier		5 stacks							
Power Supply		12V AC/DC		24V AC/DC		110V AC		220V AC	
		4B	5B/8B	4B	5B/8B	4B	5B/8B	4B	5B/8B
Current Consumption (RMS ±10%)	1 Stack	0.4A	0.8A	0.2A	0.4A	0.04A	0.8A	0.02A	0.04A
	2 Stack	0.8A	1.7A	0.4A	0.8A	0.09A	0.16A	0.04A	0.08A
	3 Stack	1.2A	2.5A	0.6A	1.2A	0.13A	0.24A	0.06A	0.12A
	4 Stack	1.6A	3.3A	0.8A	1.6A	0.16A	0.32A	0.08A	0.16A
	5 Stack	2.0A	4.2A	1.0A	2.0A	0.20A	0.40A	0.10A	0.20
Lens Material		PC Plastic							
Rating		IP 54							
Vibration		3mm at 10~55Hz							
Ambient Temp.		-15°C~40°C							
Ambient Humidity		45~85% RH							
Wire Size		1007 UL / 22 AWG							
Certificate		UL, CE, RoHS							



## Ordering Information

MT ① ② ③ ④ ⑤ - RYGB ⑥

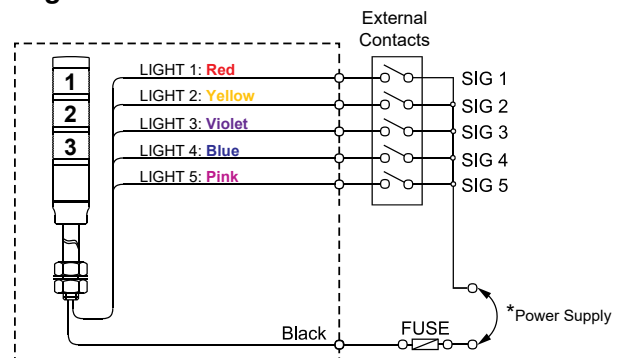
① Lens Diameter	4	Ø45mm
	5	Ø56mm
	8	Ø85mm
② Light Style	B	Steady
③ Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
	4	4 Lights
	5	5 Lights
④ Power Supply	D	12V AC/DC
	A	24V AC/DC
	B	110V AC
	C	220V AC
⑤ Connection	L	Lead Wires
⑥ Lens Colors (top to bottom)	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Replacement Parts

		Part Number	Power Supply/Specification	
MT4B	LED	MAL-T09-S-12-①	12V DC	
		MAL-T09-S-24-①	24V DC	
	BULB	MAB-T09-S-012-05	12V, 5W AC/DC	
		MAB-T09-S-024-05	24V AC/DC, 5W	
		MAB-T09-S-130-05	110~120V AC, 5W	
MAB-T09-S-240-05		220~240V AC, 5W		
Lens	—	MT4-(①)	Ø45mm	
MT5B MT8B	LED	MAL-T15-D-12-①	12V DC	
		MAL-T15-D-24-①	24V DC	
		MAL-T15-D-120-①	110~120V AC	
		MAL-T15-D-220-①	210~240V AC	
	BULB	MAB-T15-D-012-10	12V AC/DC, 10W	
		MAB-T15-D-024-10	24V AC/DC, 10W	
		MAB-T15-D-120-10	110~120V AC, 10W	
		MAB-T15-D-240-10	220~240V AC, 10W	
	Lens	—	MT5-(①)	Ø56mm
		—	MT8-(①)	Ø85mm

(①): Color of LED or Lens; R, Y, G, B or C

## Wiring Diagram



\* No polarity for DC applications.

Please See Our "Mounting and Accessories" Section for Mounting Options



# PL4 Series

Ø45mm LED Steady & Flashing



- Pre-assembled 1 to 5 stack lights
- High visibility from every angle
- through prism-cut lens
- Built-in buzzer available (75±5dB)
- Various mounting options
- Cost effective type

## Specifications

Current Draw	Power Supply	12~24VAC/DC		110~220VAC	
	Model	Standard type	with Buzzer type	Standard type	with Buzzer type
1 Stack		0.22A	0.25A	0.03A	0.03A
2 Stack		0.30A	0.32A	0.05A	0.06A
3 Stack		0.38A	0.38A	0.07A	0.07A
4 Stack		0.46A	0.46A	0.19A	0.09A
5 Stack		0.52A	0.52A	0.11A	0.11A
LED Function		Steady + Flashing			
Operation Voltages		12~24VAC/DC, 110~220VAC (AC 50/60Hz)			
Light Source		LED			
LED Colors		5 Colors – Red, Yellow, Green, Blue, White			
Dimensions / Tiers		D45mm / up to 5 Tiers			
Flashing rates		12VDC - 75±5times/minute			
		12VAC, 24VAC/DC - 80±5times/minute			
		90~240VAC - 80±5times/minute			
Alarm sound level		75±5dB- at 1M			
Lens Color		5 Colors – Red, Yellow, Green, Blue, Clear			
Mounting		Upward only			
Wiring Method		Lead wires			
Ambient Temperature		-20 ~ 40°C			
Storage Temperature		-20 ~ 70°C			
Ambient Humidity		45~85% RH			
Dielectric Strength		1000VAC 50/60Hz for 1min			
Insulation Resistance		100MΩ min. at 500VDC			
Vibration		0.75mm at 10~55Hz			
Recommended Wire Size		UL1007 / 22AWG			
Certificate/compliance		UL(excl. 220 VAC), CE(DC only), RoHS			
Degree of Protection		IP65 (Buzzer type : IP52)			

## Ordering Information

PL4 - C B - 3 00 - RYG - W  
 ① ② ③ ④ ⑤ ⑥

① Mounting Type	no mark	Pole/Surface Mounting
	<b>C</b>	Direct Mounting
② Light Function	no mark	Steady
	<b>B</b>	Steady + Buzzer
	<b>F</b>	Steady + Flashing
	<b>Z</b>	Steady + Flashing + Buzzer
③ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
④ Power Supply	<b>00</b>	12~24VAC/DC
	<b>FF</b>	110~220VAC
⑤ LED Color*	<b>R</b>	Red
	<b>RY</b>	Red +Yellow
	<b>RYG</b>	Red +Yellow + Green
	<b>RYGB</b>	Red +Yellow + Green + Blue
	<b>RYGBC</b>	Red +Yellow + Green + Blue + Clear
⑥ Lens Color	no mark	Color Lens
	<b>W</b>	All White Lens

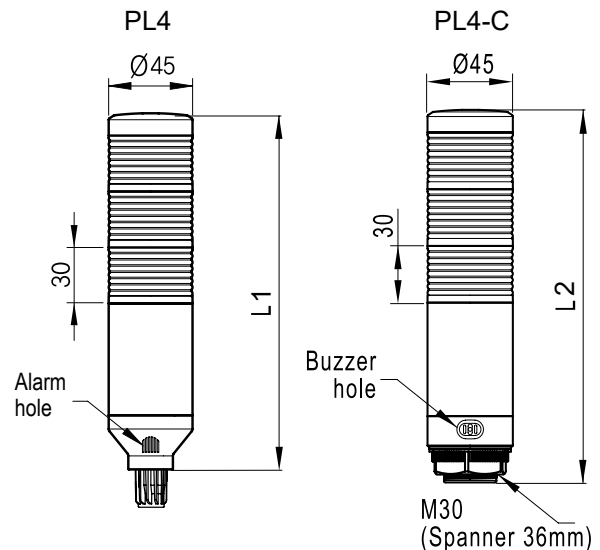
\* Other color configurations are available with special order

unit: mm

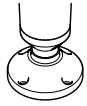
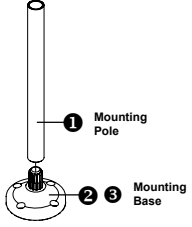
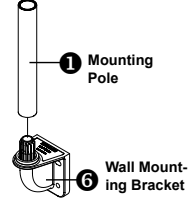
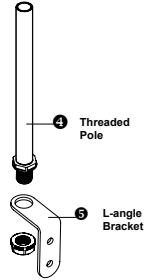
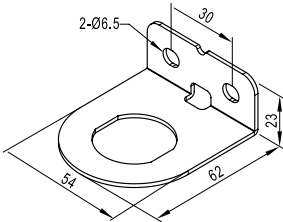
Stacks	L1	L2
1	132	137
2	162	167
3	192	27
4	222	227
5	252	257

## Dimensions

unit: mm

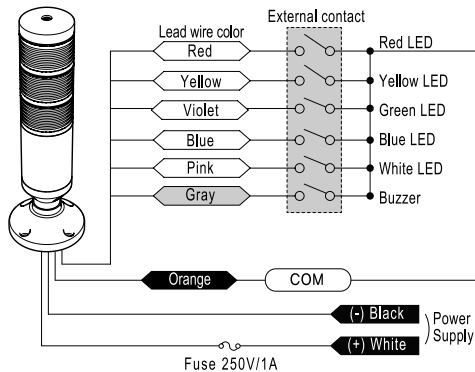


# Mounting Options

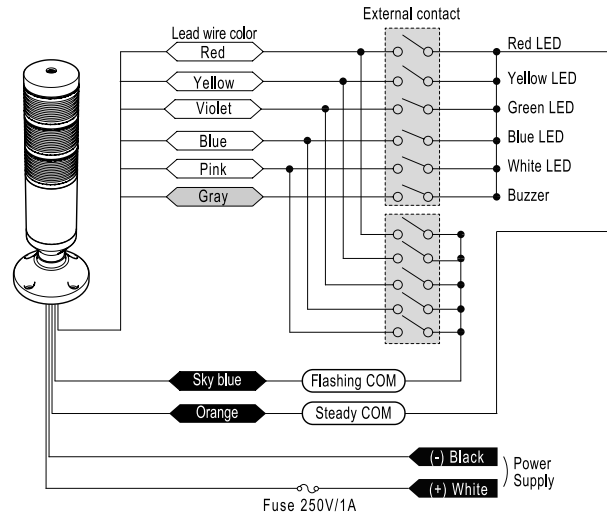
Light Series	Mounting Type	Mounting Parts		Mounting Example
PL4	Surface Mounting	Mounting Base		
		MAM-B070F		
	Pole Mounting	Mounting Pole	Mounting Base	
		MAP-0060 (L: 60mm) MAP-0240 (L: 240mm) MAP-0750 (L: 750mm) MAP-1000 (L: 1,000mm)	MAM-B090C (Plastic) MAM-DS32A (Aluminum) MAM-B070R (Plastic, Folding) MAM-470R-20 (Plastic, Folding) MAM-DS42R-20C (Aluminum, Folding)	
	"Pole Mounting + Wall Mounting"	Mounting Pole	Wall Mounting Bracket	
		MAP-0060 (L: 60mm) MAP-0240 (L: 240mm) MAP-0750 (L: 750mm) MAP-1000 (L: 1,000mm)	MAP-DS40 (Plastic)	
"Pole Mounting + Wall Mounting"	Mounting Pole	Wall Mounting Bracket		
	MAP-M043 (L: 43mm, M20 Nut) MAP-M240 (L: 240mm, M20 Nut) MAP-M750 (L: 750mm, M20 Nut) MAP-M1000 (L: 1,000mm, M20 Nut)	MAM-DS25 (L-angle, Metal)		
PL4-C	Wall Mounting	Wall Mounting Bracket		
		MAM-DS43		

# Wiring Diagram

Steady , Steady + Buzzer



Steady + Flashing , Steady + Flashing + Buzzer





# PL4-M12 Series

Ø45mm LED Steady with M12 Connector



- Pre-assembled 1 to 5 stack lights
- Easy connection with M12 Connector
- High visibility from every angle
- through prism-cut lens
- Built-in buzzer available (75±5dB)
- Various mounting options

## Specifications

Current Draw	Power Supply	12VAC/DC		24VAC/DC	
	Model	Standard type	with Buzzer type	Standard type	with Buzzer type
1 Stack		0.05A	0.07A	0.03A	0.08A
2 Stack		0.10A	0.12A	0.06A	0.10A
3 Stack		0.15A	0.15A	0.09A	0.13A
4 Stack		0.20A	0.20A	0.12A	0.16A
5 Stack		0.25A	0.25A	0.15A	0.20A
Operation Voltages		12VAC/DC, 24VAC/DC			
Light Source		LED			
LED Colors		5 Colors – Red, Yellow, Green, Blue, White			
Dimensions / Tiers		D45mm / up to 5 Tiers			
Flashing rates		12VDC - 75±5times/minute 12VAC, 24VAC/DC - 80±5times/minute			
Alarm sound level		75±5dB- at 1M			
Lens Color		5 Colors – Red, Yellow, Green, Blue, Clear			
Mounting		Upward only			
Wiring Method		M12 Connector			
Ambient Temperature		-20 ~ 40°C			
Storage Temperature		-20 ~ 70°C			
Ambient Humidity		45~85% RH			
Dielectric Strength		1000VAC 50/60Hz for 1min			
Insulation Resistance		100 MΩ min. at 500VDC			
Vibration		0.75mm at 10~55Hz			
Recommended Wire Size		UL1007 / 22AWG			
Certificate/compliance		UL, CE(DC only), RoHS			
Degree of Protection		IP65 (Buzzer type : IP52)			

## Ordering Information

PL4 - C B - 3 02 - RYG - M12C  
 ① ② ③ ④ ⑤ ⑥

① Mounting Type	no mark	Pole/Surface Mounting
	<b>C</b>	Direct Mounting
② Light Function	no mark	Steady
	<b>B</b>	Steady + Buzzer
③ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
④ Power Supply	<b>01</b>	12VAC/DC
	<b>02</b>	24VAC/DC
⑤ LED Color**	<b>R</b>	Red
	<b>RY</b>	Red +Yellow
	<b>RYG</b>	Red +Yellow + Green
	<b>RYGB</b>	Red +Yellow + Green + Blue
	<b>RYGBC</b>	Red +Yellow + Green + Blue + Clear
⑥ Connection Type	<b>M12C</b>	M12 Connector Pigtail type
	<b>M12F *</b>	M12 Connector type

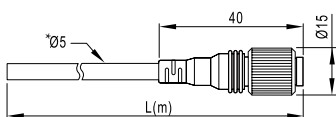
\* Only available with Direct Mounting type

\*\* Other color configurations are available with special order

## Accessory

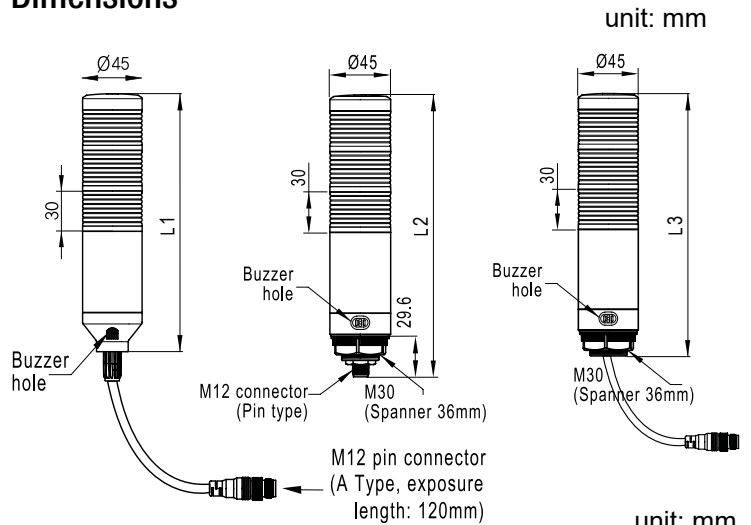
Straight M12 cable (A-code, socket type)	5-pin type Cable		8-pin type Cable	
	Model	Length	Model	Length
	CID5-2	2m	CID8-2	2m
	CID5-3	3m	CID8-3	3m
	CID5-5	5m	CID8-5	5m

\* Product shipment standard cable length: 2M



\* 5 Pin cable diameter is Ø5.  
8 Pin cable diameter is Ø6.

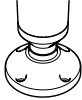
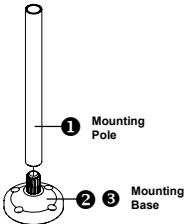
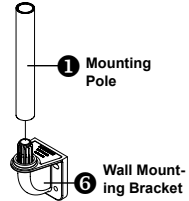
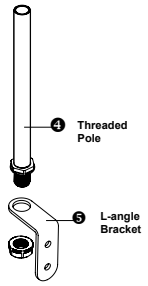
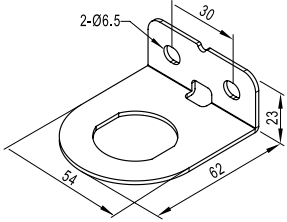
## Dimensions



Stacks	L1	L2	L3
1	132	137	149
2	162	167	179
3	192	197	209
4	222	227	239
5	252	257	269

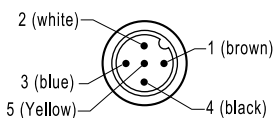
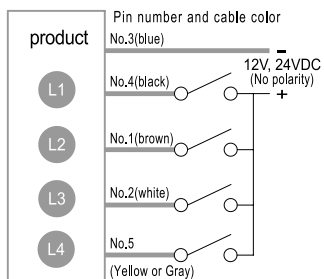


# Mounting Options

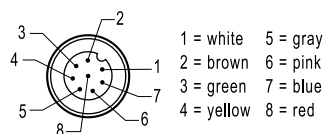
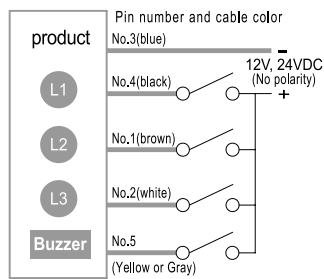
Light Series	Mounting Type	Mounting Parts		Mounting Example
PL4	Surface Mounting	Mounting Base		
		MAM-B070F		
	Pole Mounting	Mounting Pole	Mounting Base	
		MAP-0060 (L: 60mm) MAP-0240 (L: 240mm) MAP-0750 (L: 750mm) MAP-1000 (L: 1,000mm)	MAM-B090C (Plastic) MAM-DS32A (Aluminum) MAM-B070R (Plastic, Folding) MAM-470R-20 (Plastic, Folding) MAM-DS42R-20C (Aluminum, Folding)	
	"Pole Mounting + Wall Mounting"	Mounting Pole	Wall Mounting Bracket	
		MAP-0060 (L: 60mm) MAP-0240 (L: 240mm) MAP-0750 (L: 750mm) MAP-1000 (L: 1,000mm)	MAP-DS40 (Plastic)	
"Pole Mounting + Wall Mounting"	Mounting Pole	Wall Mounting Bracket		
	MAP-M043 (L: 43mm, M20 Nut) MAP-M240 (L: 240mm, M20 Nut) MAP-M750 (L: 750mm, M20 Nut) MAP-M1000 (L: 1,000mm, M20 Nut)	MAM-DS25 (L-angle, Metal)		
PL4-C	Wall Mounting	Wall Mounting Bracket		
		MAM-DS43		

## Wiring Diagram (PNP input)

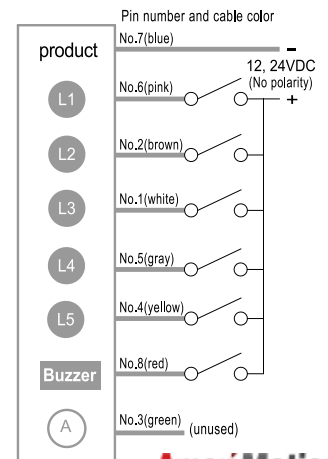
5 pin connector and 2 to 4 stage product wiring diagram (No Buzzer)



5 pin connector and 2 to 3 stage product wiring diagram (No Buzzer)



8 pin connector and 5 stage product wiring diagram



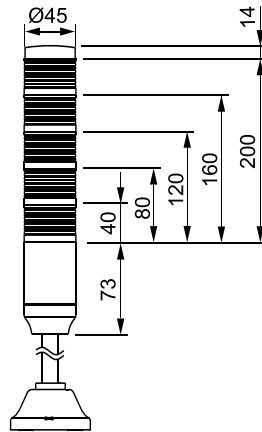


# PME Series

Ø45mm LED Modular Tower Light Steady & Flashing



## Dimensions (unit: mm)



- LED Modular type
- Pre wire type
- Surface, Pole or Wall Mount (Order poles & bases separately)
- Alarm sound type available for 12 ~ 24VAC/DC type

## Ordering Information

PME F - 5 01 - RYGBC  
 ① ② ③ ④

① Light Style		Steady
	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady + Buzzer*
	<b>Z</b>	Steady, Flashing + Buzzer*
② Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
③ Power Supply	<b>01</b>	12V AC/DC
	<b>02</b>	24V AC/DC
	<b>FF</b>	90~240V AC
④ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

\* 12 & 24V only

## Replacement parts

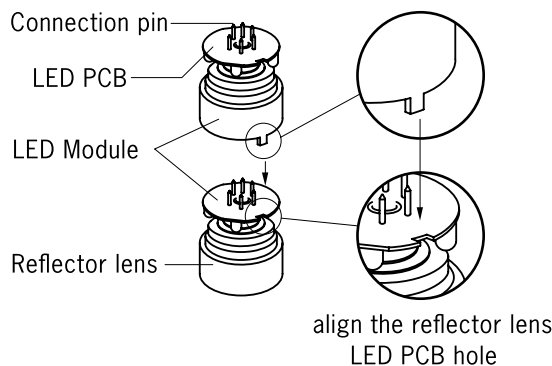
LED	PME-02-□	24V, 90~240V AC/DC
	PME-01-□	12V AC/DC
Lens	PME-□	—

(□): indicates color of LED or Lens; R, Y, G, B or C

## Specifications

Power Supply		12V AC/DC		24V AC/DC		90-240V AC
Current consumption (RMS value ±10%)		LED	w/Alarm	LED	w/Alarm	LED
	1stack	0.06A	0.07A	0.03A	0.06A	0.02A
	2stack	0.10A	0.11A	0.07A	0.09A	0.05A
	3stack	0.17A	0.18A	0.11A	0.14A	0.07A
	4stack	0.20A	0.21A	0.15A	0.17A	0.10A
	5stack	0.24A	0.25A	0.18A	0.20A	0.12A
Alarm Sound Level		80±5dB at 1m				
Flashing rate		Approx. 80 ± 5 flashes/min.				
Rating		IP55(IP50 with Buzzer)				
Vibration		3mm at 10~55Hz				
Ambient Temp.		-15°C~40°C				
Ambient Humidity		45~85% RH				
Recommended Wire Size		1007 UL / 22 AWG				

## How to assemble LED Module

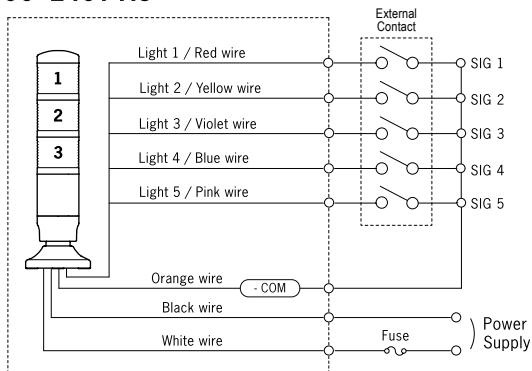


Please See Our "Mounting and Accessories" Section for Mounting Options

# Wiring Diagram

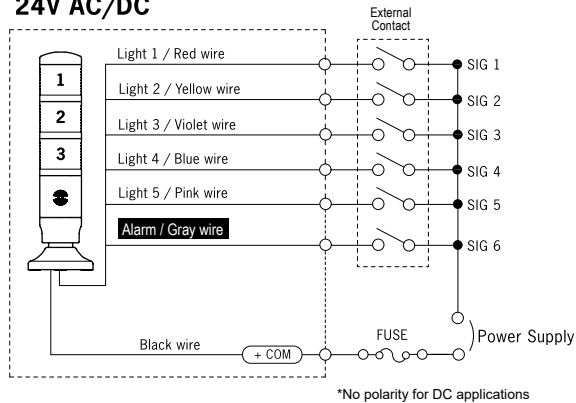
## Steady

### 90~240V AC



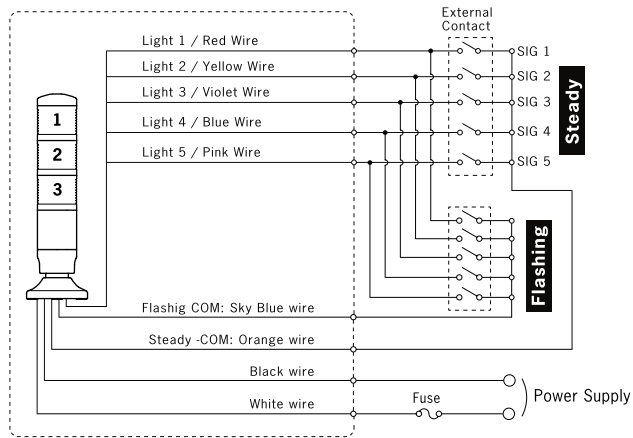
## Steady + Buzzer

### 12V AC/DC 24V AC/DC

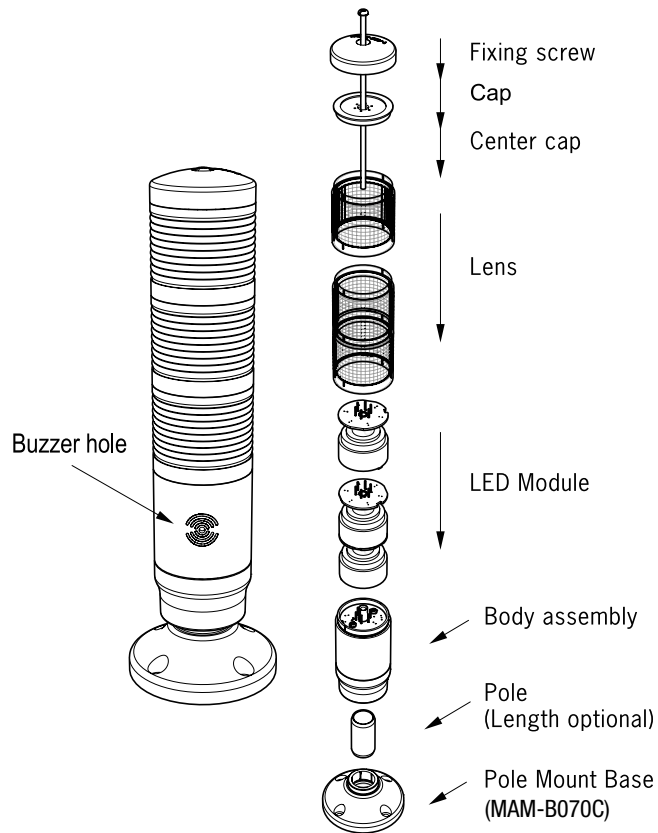


## Steady + Flashing

### 90~240V AC

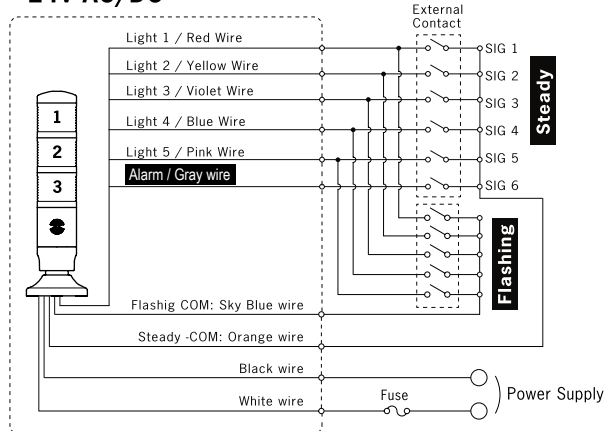


## How to Assemble



## Steady + Flashing + Buzzer

### 12V AC/DC 24V AC/DC



\* No polarity for DC applications.

# MT5C/8C Series

Ø56mm/Ø85mm Bulb Type Tower Light



- Optional LED bulbs available
- Selectable Steady or Flashing Modes
- Prism-cut lenses for even light distribution
- Various mounting options
- Optial buzzer (80 dB) kit available



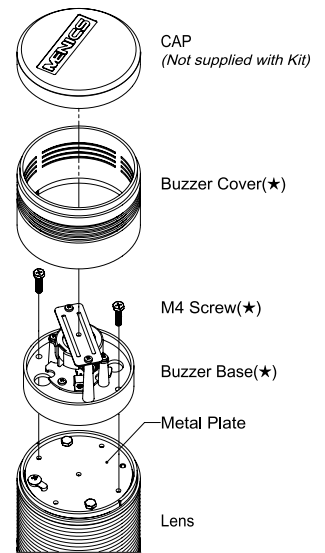
## Ordering Information

MT	5	C	5	A	L	-	RYGBC
	①	②	③	④	⑤		⑥
Lens Diameter	5	Ø56mm					
	8	Ø85mm					
Light Style	C		Steady & Flashing				
Number of Stacks	1	1 Light					
	2	2 Lights					
	3	3 Lights					
	4	4 Lights					
	5	5 Lights					
Power Supply	A	24V AC/DC					
	B	110~120V AC					
	C	220~240V AC					
⑤ Connection	L		Lead Wires				
⑥ Lens Colors (top to bottom)	R	Red					
	Y	Yellow					
	G	Green					
	B	Blue					
	C	Clear					

## Specifications

Power Supply		24VAC/DC (w/Buzzer)	110VAC (w/Buzzer)	220VAC (w/Buzzer)	
Current Consumption (RMS ±10%)	Bulb	1 Stack	0.4 A (0.43A)	0.09 A (0.12A)	0.04 A (0.07A)
		2 Stack	0.8 A (0.83A)	0.18 A (0.21A)	0.08 A (0.11A)
		3 Stack	1.3 A (1.33A)	0.27 A (0.30A)	0.12 A (0.15A)
		4 Stack	1.7 A (7.73A)	0.36 A (0.39A)	0.16 A (0.19A)
		5 Stack	2.0 A (2.03A)	0.45 A (0.48A)	0.20 A (0.23A)
LED Life-Span		10,000 hours (minimum)			
Degree of Protection		IP54 (IP50 with buzzer)			
Alarm Sound Level		80 ± 5dB at 1 meter			
Flashing rate		80 ± 10 times/minute			
Certificate/compliance		UL, CE, RoHS			
Vibration		3mm at 10~55Hz			
Ambient Temp.		-15°C~40°C			
Ambient Humidity		45~85% RH			
Recommended Wire Size		1007 UL / 22 AWG			
Operation		Steady/Flashing/Buzzer			

## Optional Buzzer Kit



MPZ - 56 A  
① ②

① Buzzer Size (Diameter)	
56	Ø56mm (for MT5C Series)
85	Ø85mm (for MT8C Series)

② Power Supply	
A	24V AC/DC, 80dB (30mA)
B	110~120V AC, 80dB (30mA)
C	220~240V AC, 80dB (30mA)

## Replacement Parts

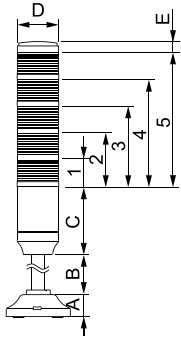
\*Note: Max. number of tier including Buzzer is 5.

LED		MAL-T15-D-24-①	24V DC
		MAL-T15-D-120-①	110~120V AC
		MAL-T15-D-220-①	210~240V AC
BULB		MAB-T15-D-024-10	24V AC/DC, 10W
		MAB-T15-D-120-10	110~120V AC, 10W
		MAB-T15-D-240-10	220~240V AC, 10W
Lens	-	MT5-(①)	Ø56mm
		MT8-(①)	Ø85mm

(①): Color of LED or Lens; R, Y, G, B or C

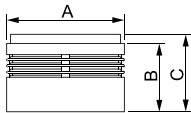
## Dimensions

unit: mm



Symbol	Model		
	MT4B	MT5C MT5B	MT8C MT8B
A	29	29	29
B	185	185	185
C	73	95	95
D	45	56	85
E	10.5	15	15
1	46	68	68
2	92	136	136
3	138	204	204
4	184	272	272
5	230	340	340

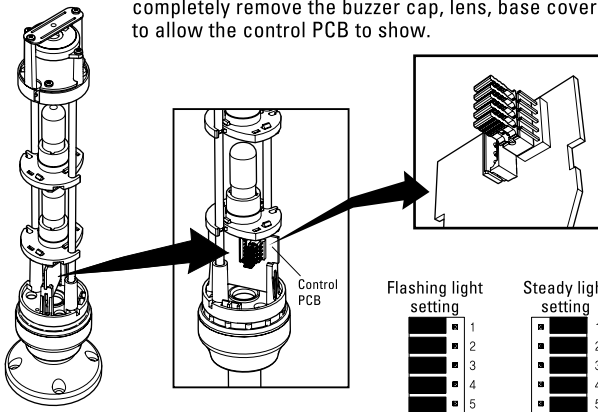
### Optional Buzzer Kit MPZ-56 MPZ-85



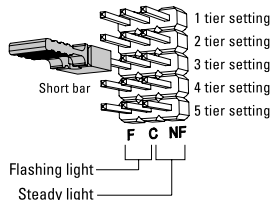
Symbol	MPZ-56	MPZ-85
A	56	86
B	48	50
C	54	56

## Lighting feature setting

- Remove the bulb by turning the upper fixed cap, and completely remove the buzzer cap, lens, base cover to allow the control PCB to show.



- The shortcircuit bar setting position of control PCB for all the shipped products is set at flashing function. In case of changing a signal of desired tier steady light function, take out the shortcircuit bar of the desired tier of the control PCB, move and insert it sideways by one space.



Please See Our "Mounting and Accessories" Section for Mounting Options

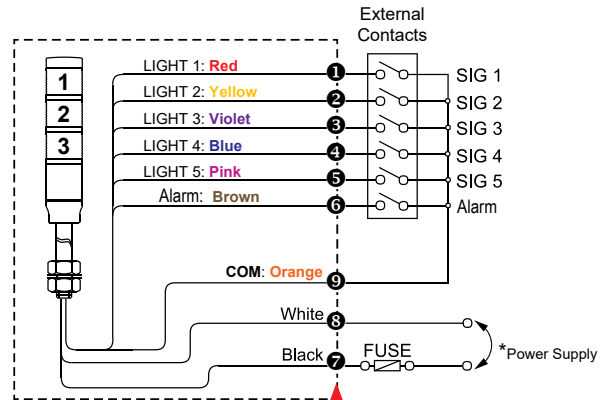
## Wiring Diagram

### MT5C/8C

#### 24V AC/DC

MT5C□AL-□□□□ MT8C□AL-□□□□

#### Steady & Flashing (w/Alarm)



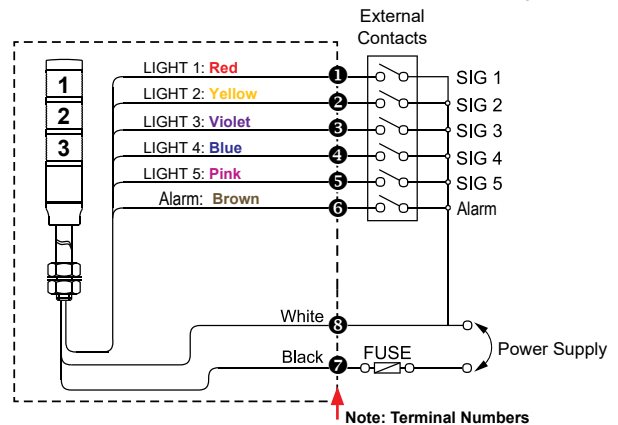
\* No polarity for DC applications.

#### 110~120V AC, 220~240V AC

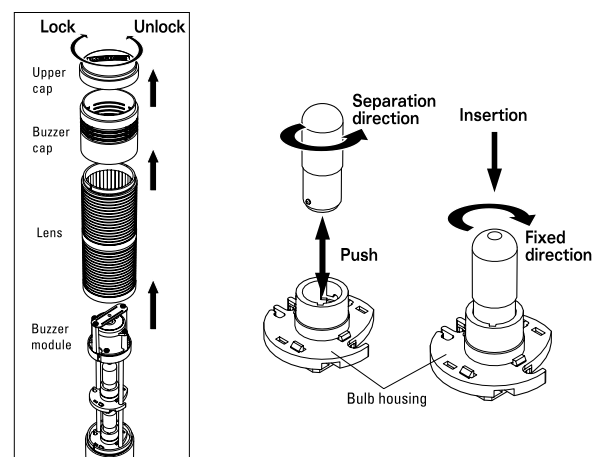
MT5C□BL-□□□□  
MT8C□BL-□□□□

#### Steady & Flashing Lights (w/Alarm)

MT5C□CL-□□□□  
MT8C□CL-□□□□



## How to change bulbs



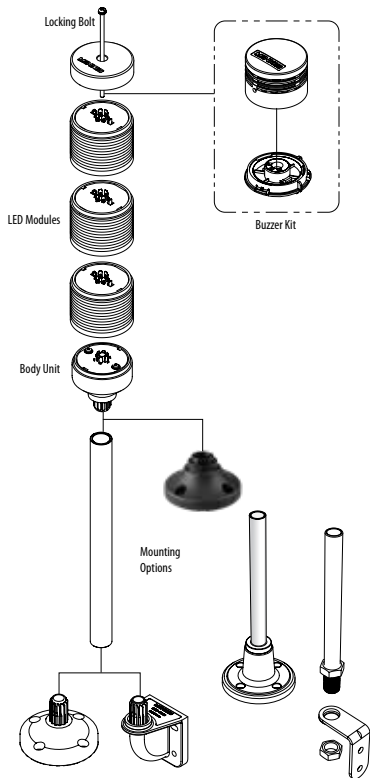


# PTE Series

Ø56mm LED Modular Stack Light  
Steady & Flashing lights with buzzer



- LED modular components
- Optional buzzer at 80 or 100dB (fixed or adjustable volume)
- Lead wire or terminal connection
- Pole mounting or direct mounting



## Ordering Information

**PTE - A F - 3 02 - RYG - B**  
①                    ②                    ③                    ④                    ⑤                    ⑥

① Top Head Style	<b>PTE</b>	Standard
	<b>PTD</b>	Dome Head
② Body Unit Mounting / Connection	<b>A</b>	Pole Mounting/ Lead Wires
	<b>SC</b>	Direct Mounting / Lead Wires
	<b>T</b>	Pole Mounting/ Terminal Connection
	<b>TC</b>	Direct Mounting/ Terminal Connection
③ Light Style		Steady Light
	<b>F</b>	Steady & Flashing Light
④ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
⑤ Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90~240V AC
⑥ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Optional Parts

### Body Units

Body Type		Voltage	Part Number	
			Steady	Steady & Flashing
Lead Wire Connection	Pole Mounting	90~240V AC	PTE-A-FF-B	PTE-AF-FF-B
		24V AC/DC	PTE-A-02-B	PTE-AF-02-B
	Direct Mounting	90~240V AC	PTE-SC-FF-B	PTE-SCF-FF-B
		24V AC/DC	PTE-SC-02-B	PTE-SCF-02-B
Terminal Connection	Pole Mounting	90~240V AC	PTE-T-FF-B	PTE-TF-FF-B
		24V AC/DC	PTE-T-02-B	PTE-TF-02-B
	Direct Mounting	90~240V AC	PTE-TC-FF-B	PTE-TCF-FF-B
		24V AC/DC	PTE-TC-02-B	PTE-TCF-02-B

### LED Modules

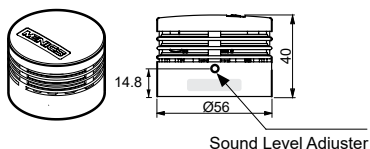
LED Color	Part Number	
	Standard Module	Dome Head Module
<b>Red</b>	PTE-02-R	PTD-02-R
<b>Yellow</b>	PTE-02-Y	PTD-02-Y
<b>Green</b>	PTE-02-G	PTD-02-G
<b>Blue</b>	PTE-02-B	PTD-02-B
<b>*Clear</b>	PTE-02-C	PTD-02-C

\*Clear Module cannot be used with Buzzer.

### Locking Bolts

	# Lights	Part Number	Size
PTE	1 Stack	B-PTE-1	M4, 65mm
	2 Stacks	B-PTE-2	M4, 105mm
	3 Stacks	B-PTE-3	M4, 145mm
	4 Stacks	B-PTE-4	M4, 185mm
	5 Stacks	B-PTE-5	M4, 225mm
PTD	1 Stack	B-PTD-1	M4, 83mm

\*Note: Do NOT count Buzzer as a stack.



### Buzzer Kits (Optional)

Alarm Style	Part Number
<b>Fixed Sound Level</b>	MPZ-56F-B
<b>Adjustable up to 80±5dB</b>	MPZ-56G-B
<b>Adjustable up to 100±5 dB</b>	MPZ-56H-B

\*Note: Max. number of tier including Buzzer is 5.

Please See Our "Mounting and Accessories" Section for Mounting Options

# Specifications

## Body Units

Operation/Function	Steady/ Flashing
Power Supply	24V AC/DC, 90~240V AC 50/60 Hz
Alarm Sound Level	Fixed: 80±5dB Adjustable: 10~80±5dB, 10~100±5dB
Lens Color	Red, Yellow, Green, Blue & Clear
Lens Diameter	56 mm (2.2 inch)
Maximum Tier	5
Flash Rate	80±5 times/ minute
Vibration	0.75mm at 10~55Hz
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Degree of Protection	IP65 / IP50 (with Buzzer)
Approvals	CE , UL, RoHS
Recommended Wire Size	1007 UL / 22 AWG

## LED Modules

Color		Red	Yellow	Green	Blue	Clear
Current Consumption	24V	33mA	27mA	42mA	42mA	42mA
	90-240V	17mA	17mA	22mA	22mA	22mA
Weight		Approx. 43g				

## Buzzer Kits

Model	MPZ-56F-B	MPZ-56G-B	MPZ-56H-B
Style	Fixed Sound	Adjustable Sound	Adjustable Sound
Sound Level	80±5dB	10~80±5dB	10 ~ 100±5dB
Current Consumption / Power	30mA / 0.72W	30mA / 0.72W	150mA / 3.6W
Weight	32.2g	33g	33g

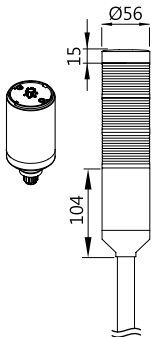
# Dimensions

unit: mm

## Lead Wire Connection

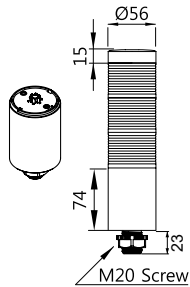
### Pole Mounting

PTE-A-□□  
PTE-AF-□□



### Surface Mounting

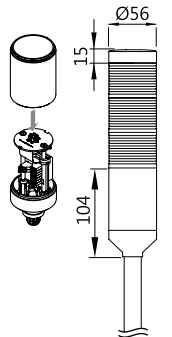
PTE-SC-□□  
PTE-SCF-□□



## Terminal Connection

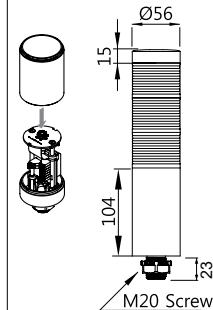
### Pole Mounting

PTE-T-□□  
PTE-TF-□□



### Surface Mounting

PTE-TC-□□  
PTE-TCF-□□



## Standard Modules



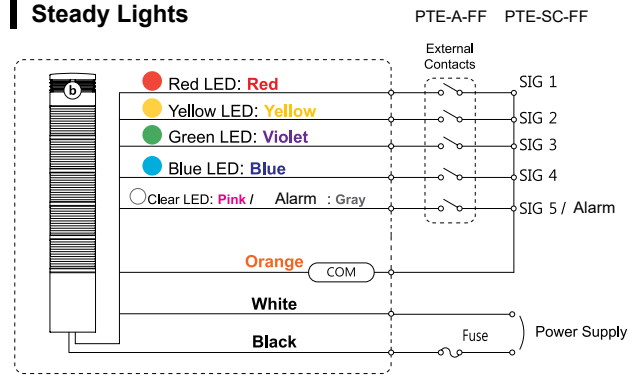
## Dome Head Modules



# Wiring Diagram

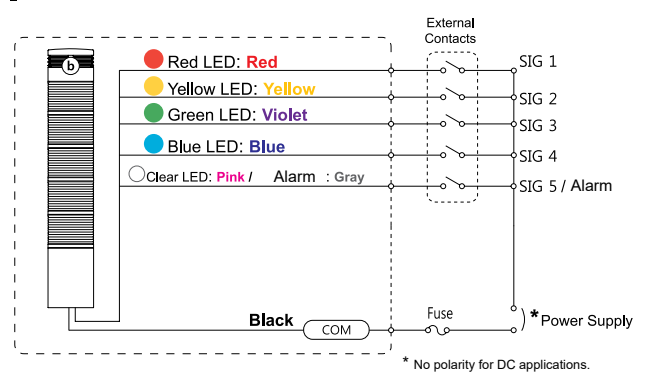
## 90-240V AC

### Steady Lights



## 24V DC/AC

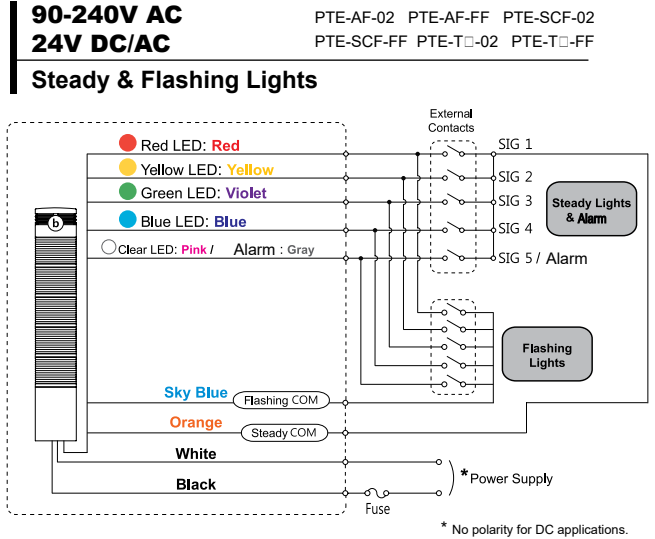
### Steady Lights



## 90-240V AC

### 24V DC/AC

### Steady & Flashing Lights



## Terminal Connections

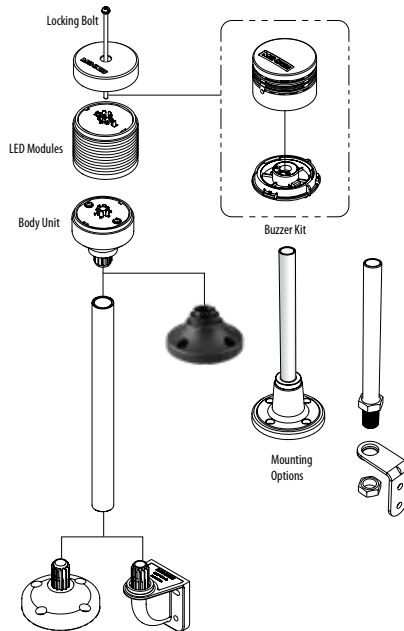
PIN	Description
R	Red LED
Y	Yellow LED
G	Green LED
B	Blue LED
Z	Clear LED or Buzzer
COM	Steady COM
F	Flashing COM
A	Power Supply
B	No Polarity for DC Applications.

# PTM/PTD Series

Ø56mm Multicolored LED Modular Light  
Steady & Flashing lights with buzzer



- Multicolored LED modular components
- Lead wire or terminal connection
- Pole mounting or direct mounting
- Optional Buzzer at 80 or 100dB (fixed or adjustable volume)



## Ordering Information

PTM - A F - 1 02 - RYG - B  
① ② ③ ④ ⑤ ⑥

① Head Style	PTM	Standard
	PTD	Dome Head
② Body Unit Mounting / Connection	A	Pole Mounting/ Lead Wires
	SC	Direct Mounting / Lead Wires
	T	Pole Mounting/ Terminal Connection
	TC	Direct Mounting/ Terminal Connection
③ Light Style		Steady Light
	F	Steady & Flashing Light
④ Number of Stacks	1	1 stack
⑤ Power Supply	02	24V AC/DC
	FF	90~240V AC
⑥ Lens Colors (3 colors in 1 module)	RYG	Red, Yellow, Green
	RBG	Red, Blue, Green

## Optional parts

### Body Units

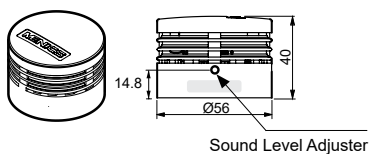
Body Type		Voltage	Part Number	
			Steady	Steady & Flashing
Lead Wire Connection	Pole Mounting	90~240V AC	PTE-A-FF-B	PTE-AF-FF-B
		24V AC/DC	PTE-A-02-B	PTE-AF-02-B
	Direct Mounting	90~240V AC	PTE-SC-FF-B	PTE-SCF-FF-B
		24V AC/DC	PTE-SC-02-B	PTE-SCF-02-B
Terminal Connection	Pole Mounting	90~240V AC	PTE-T-FF-B	PTE-TF-FF-B
		24V AC/DC	PTE-T-02-B	PTE-TF-02-B
	Direct Mounting	90~240V AC	PTE-TC-FF-B	PTE-TCF-FF-B
		24V AC/DC	PTE-TC-02-B	PTE-TCF-02-B

### LED Modules

LED Color		Part Number	
		Standard Module	Dome Head Module
3 colors in 1	R/Y/G	PTM-02-RYG	PTD-02-RYG
	R/B/G	PTM-02-RBG	PTD-02-RBG

### Locking Bolts

Part Number		Size
PTM	B-PTE-1	M4, 65mm
PTD	B-PTD-1	M4, 83mm



### Buzzer Kits (Optional)

Alarm Style	Part Number
Fixed Sound Level	MPZ-56F-B
Adjustable up to 80±5 dB	MPZ-56G-B
Adjustable up to 100±5 dB	MPZ-56H-B

Please See Our "Mounting and Accessories" Section for Mounting Options



# Specifications

## Body Units

Operation/Function	Steady/ Flashing
Power Supply	24V AC/DC, 90~240V AC 50/60 Hz
Alarm Sound Level	Fixed: 80±5dB Adjustable: 10~80±5dB, 10~100±5dB
Lens Color	3 colors in 1 module: Red/Yellow/Green, Red/Blue/Green
Lens Diameter	56 mm (2.2 inch)
Maximum Tier	1
Flash Rate	80 ± 5 times/min
Vibration	0.75mm @10~55Hz: xyz/60min
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Degree of Protection	IP65 / IP40 (with Buzzer)
Approvals	CE , UL, RoHS
Recommended Wire Size	1007 UL / 22 AWG

## LED Modules

LED Color		Current consumption	
		24V	90~240V
3 colors in 1	RYG	35mA	16mA
	RGB		
Weight		Approx. 43g	

## Buzzer Kits

Model	MPZ-56F-B	MPZ-56G-B	MPZ-56H-B
Style	Fixed Sound	Adjustable Sound	Adjustable Sound
Sound Level	85 dB	10~85 dB at 1M	10~100 dB at 1M
Current Consumption / Power	30mA / 0.72W	30mA / 0.72W	150mA / 3.6W
Weight	33g	33g	33g

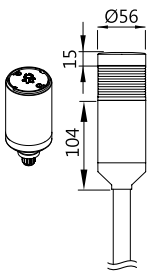
# Dimensions

unit: mm

## Lead Wire Connection

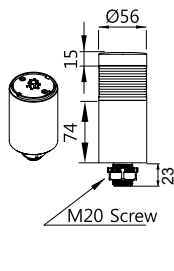
### Pole Mounting

PTE-A-□□  
PTE-AF-□□



### Surface Mounting

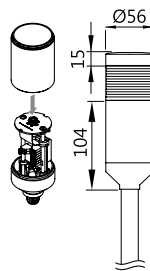
PTE-SC-□□  
PTE-SCF-□□



## Terminal Connection

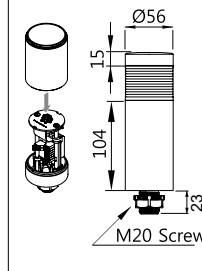
### Pole Mounting

PTE-T-□□  
PTE-TF-□□

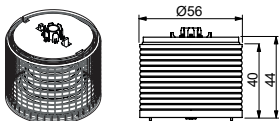


### Surface Mounting

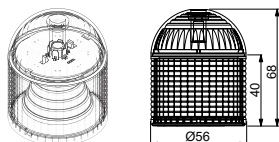
PTE-TC-□□  
PTE-TCF-□□



## Standard Modules



## Dome Head Modules

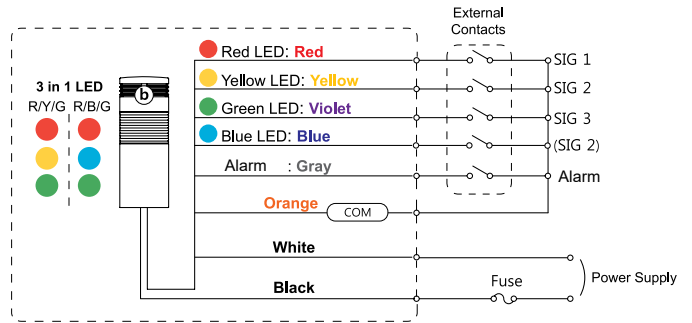


# Wiring Diagram

## 90-240V AC

### Steady Lights

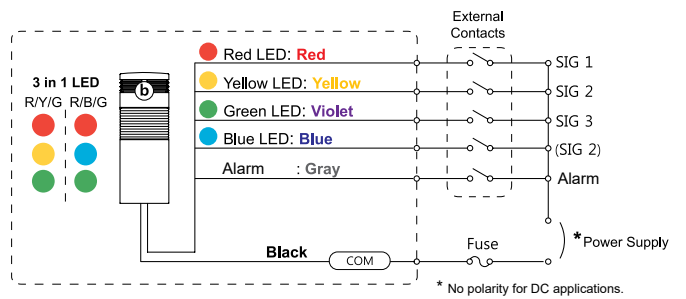
PTE-A-FF PTE-SC-FF



## 24V DC/AC

### Steady Lights

PTE-A-02 PTE-SC-02

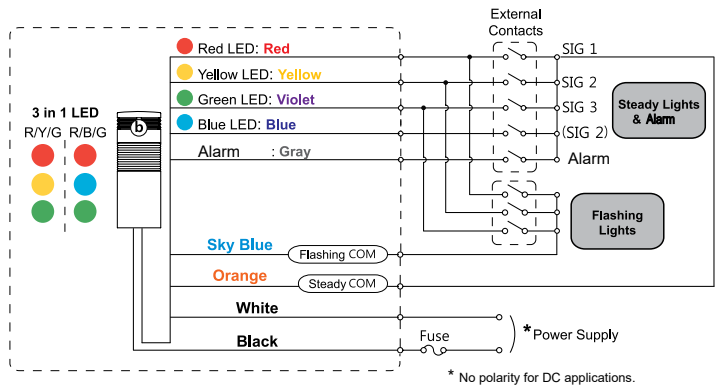


## 90-240V AC

### 24V DC/AC

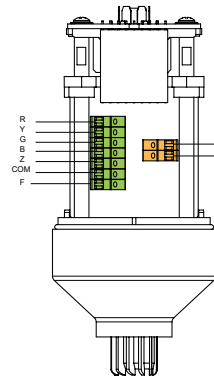
### Steady & Flashing Lights

PTE-AF-02 PTE-AF-FF PTE-SCF-02  
PTE-SCF-FF PTE-T-02 PTE-T-FF



## Terminal Connections

PIN #	Description
R	Red LED
Y	Yellow LED
G	Green LED
B	Blue LED
Z	Alarm
COM	Steady COM
F	Flashing COM
A	Power Supply
B	No Polarity for DC Applications.



# PY7 Series

Ø70mm LED Signal Tower Light

- Smooth surface of the lens minimize adhesion of dust & water
- Suitable for sanitary environment like food, pharmaceutical industries
- Low maintenance with replaceable durable polycarbonate outer lens
- Excellent visibility of LED light emitted from inner lens
- Variety of light styles and combinations



## Ordering Information

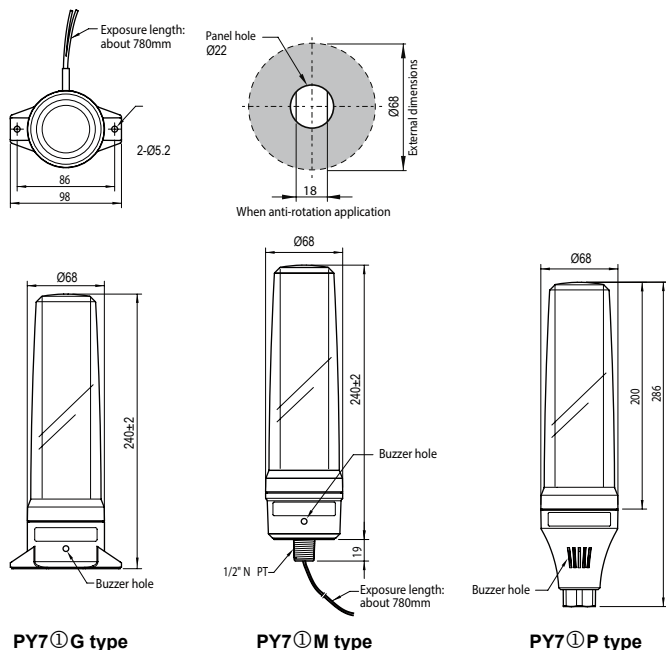
PY7 T P - Z 3 02 - RYG - B  
 ① ② ③ ④ ⑤ ⑥ ⑦

① Model Type	<b>L</b>	Standard	
	<b>T</b>	Multi-Color, 2-Channel	
② Mounting Type	<b>G</b>	Surface Mounting	
	<b>M</b>	Direct Mounting	
	<b>P</b>	Pole Mounting	
③ Light Style	No mark	Steady	
	<b>B</b>	Steady + Buzzer	
	<b>F</b>	Steady + Flashing	
	<b>Z</b>	Steady + Flashing + Buzzer	
④ Number of Stack (L Type only)	<b>3</b>	3 LED Lights	
	<b>4</b>	4 LED Lights	
	<b>5</b>	5 Led Lights	
⑤ Power Supply	<b>02</b>	24VDC	
	<b>FF</b>	110~220VAC	
⑥ LED Color	L Type	<b>RYG</b>	Red + Yellow + Green
		<b>RGB</b>	Red + Blue + Green
		<b>RYGB</b>	Red + Yellow + Green + Blue
		<b>RYGBW</b>	Red + Yellow + Green + Blue + White
	T Type	<b>RBG</b>	Red / Blue / Green
		<b>RYG</b>	Red / Yellow / Green
⑦ Body Color	<b>I</b>	Ivory	
	<b>B</b>	Black	
	<b>C</b>	Silver Matte Coating	

## Current consumption

	Stack	LED Color	24VDC		110~220VAC	
			General	Buzzer	General	Buzzer
L Type	3 Lights	R+Y+G	0.14A	0.16A	0.08A	0.09A
	3 Lights	R+B+G	0.20A	0.22A	0.10A	0.11A
	4 Lights	R+Y+G+B	0.23A	0.25A	0.11A	0.11A
	5 Lights	R+Y+G+B+W	0.25A	0.27A	0.11A	0.11A
T Type	Multi-color	R/B/G	0.22A	0.23A	0.05~0.10A	0.06~0.10A
		R/Y/G	0.22A	0.23A	0.05~0.10A	0.06~0.10A

## Dimensions



PY7 ①G type

PY7 ①M type

PY7 ①P type

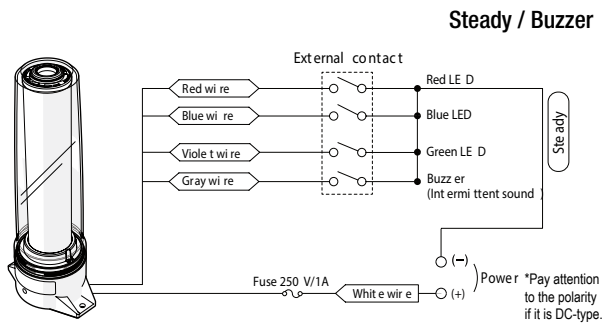
## Specifications

Model Type	L	T
Function	Steady, Flashing, Buzzer	
Power Supply	24VDC, 110~220VAC (50~60Hz)	
Allowable Voltage Range	24VDC: 21.6~26.4VDC / 110~220VAC: 100~240VAC	
Flashing Rate	70±5/min	
Buzzer Volume*	Continuous sound: 80±5dB (at 1M) Intermittent sound: 80±5dB (at 1M)	Intermittent sound: 75±5dB (at 1M)
Lens Color	Transparent (inner and outer) - PC Resin	
Mounting Options	Pole/Surface/Direct/Wall Mounting	
Ambient Temperature	-20°C ~ 50°C	
Storage Temperature	-20°C ~ 70°C	
Ambient Humidity	45~85% RH	
Withstand Voltage	500VAC 50/60Hz for 1 minute	
Insulation Resistance	100MΩ or more (500VDC Megger basis)	
Vibration	10 ~ 55Hz (1 min.cycle) Double amplitude 0.75mm X, Y, Z	
Connection	UL1007/22AWG	
Protection Structure	IP65 (with Buzzer type: IP62)	
Approval	UL/CE(24V Only),RoHS	UL(24V Only), RoHS
Weight (DC, Buzzer Type)	PY7 ①P type: app. 350g PY7 ①G type: app. 320g PY7 ①M type: app. 310g	

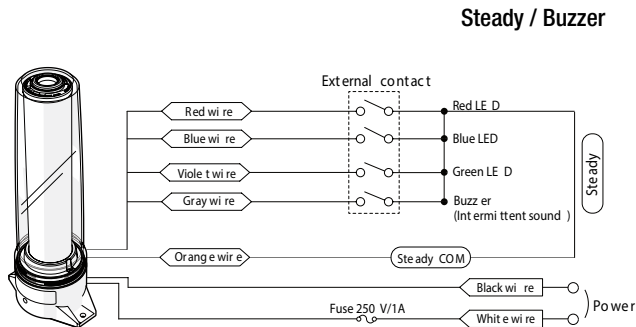
\*You can select only one of two buzzer sounds to use.

# T Type Connection diagram

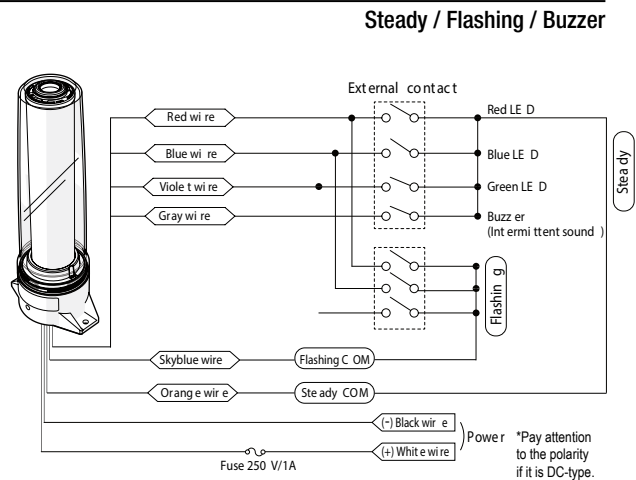
24VDC



110~220VAC

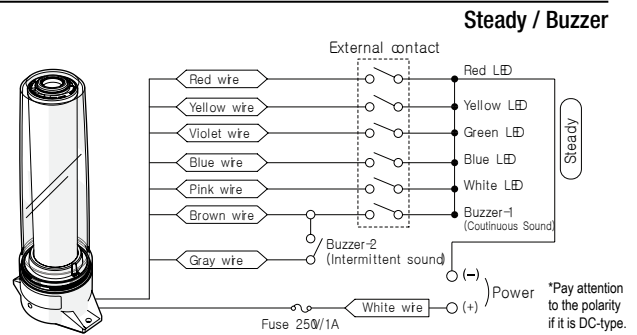


24VDC, 110~220VAC

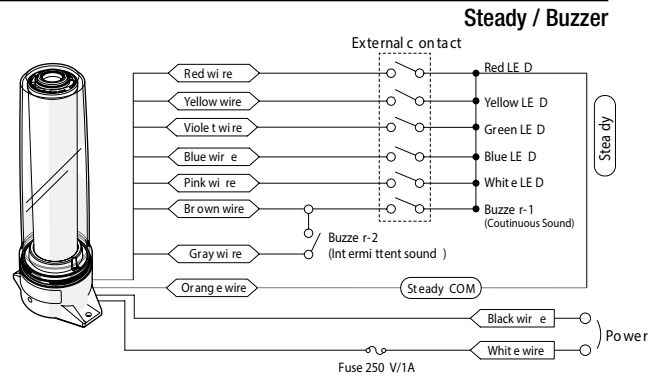


# L Type Connection diagram

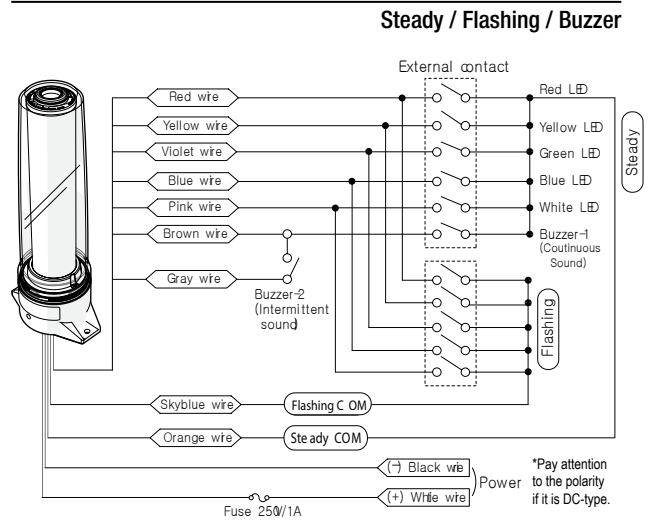
24VDC



110~220VAC



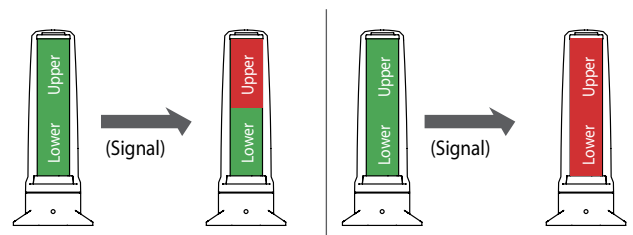
24VDC, 110~220VAC



# T Type Operating Condition

Conditions	Input condition			LED Output color	
	Red LED (Red wire)	Blue LED (Blue wire)	Green LED (Violet wire)	Upper Display	Lower Display
Condition-1	0	1	1	Red	
Condition-2	1	0	1	Blue	
Condition-3	1	1	0	Green	
Condition-4	0	1	0	Red	Green
Condition-5	0	0	1	Blue	Red
Condition-6	1	0	0	Sky blue	
Condition-7	0	0	0	Blue	Sky blue
Condition-8	1	1	1	Off	
Remark	0: Orange wire (-) COM ----> Connection Status 1: Open condition				

# T type's multi-color & multi-channel function



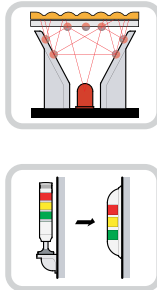
Please See Our "Mounting and Accessories" Section for Mounting Options



# PWE Series

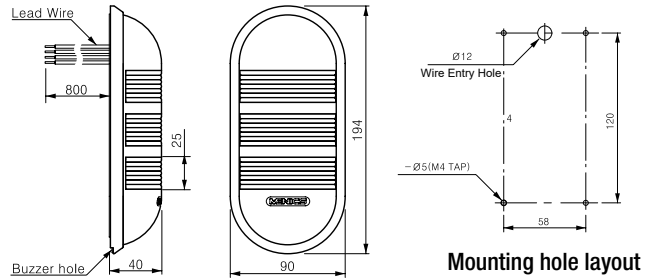
90mm Wall Mounting Semicircular LED Signal Light

- 1~3 colors
- Slim Profile Wall Mount
- Easy Mounted vertically and horizontally
- Steady and flashing lights
- Vibration and moisture resistant



## Dimensions

unit: mm



## Ordering Information

PWE C F - 3 02 - RYG  
 ① ② ③ ④ ⑤

① Housing Color	no mark	Cream
	C	Chrome
② Light Style		Steady
	F	Steady & Flashing
	B	Steady with Audible Alarm
	Z	Steady & Flashing with Alarm
③ Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
④ Power Supply	01	12V AC/DC
	02	24V AC/DC
	FF	90~240V AC
⑤ Lens Colors (top to bottom)	R	Red
	Y	Yellow
	G	Green

## Specifications

Alarm Sound Level	80 ± 5dB at 1m
Flashing rate	Approx. 80 ± 5 flashes/min.
Rating	IP65 (IP52 with buzzer)
Vibration	0.75mm at 10~55Hz
Ambient Temp.	-20°C~40°C
Ambient Humidity	45~85% RH
Recommended Wire Size	1007 UL / 22 AWG

## Current Consumption

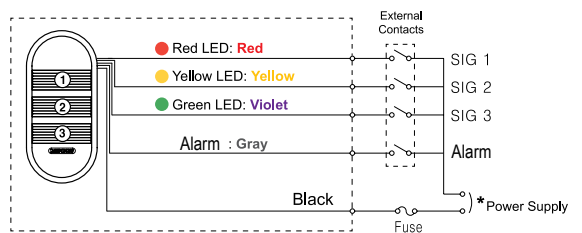
PowerSupply	12VAC/DC		24VAC/DC		90~240VAC	
	General	Buzzer	General	Buzzer	General	Buzzer
1stack-Red	0.06A	0.25A	0.07A	0.16A	0.02A	0.05A
2stacks-Red+Green	0.12A	0.30A	0.12A	0.20A	0.03A	0.13A
3stacks-R+Y+G	0.17A	0.37A	0.15A	0.27A	0.04A	0.18A

## Wiring Diagram

### 12V & 24V AC/DC

PWE-□01-□□□ PWEB-□01-□□□  
 PWE-□02-□□□ PWEB-□02-□□□

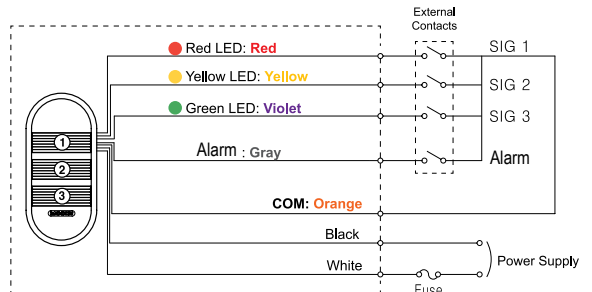
#### Steady Lights (with Audible Alarm)



### 90-240V AC

PWE-□FF-□□□ PWEB-□FF-□□□

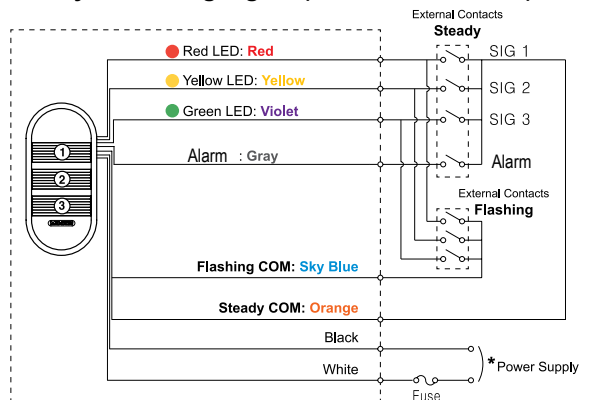
#### Steady Lights (with Audible Alarm)



### 90-240V AC, 24V AC/DC

PWEF-□01-□□□ PWEZ-□01-□□□  
 PWEF-□02-□□□ PWEZ-□02-□□□  
 PWEF-□FF-□□□ PWEZ-□FF-□□□

#### Steady & Flashing Lights (with Audible Alarm)



\* No polarity for DC applications.



# MWE Series

90mm Wall mounting Semicircular Multicolored LED Signal Light

- 3 or 4 Colors (Red, Yellow, Green, Blue)
- Large LED Light-emitting Lens (93mm)
- Optional built-in Alarm
- IP65 (With Alarm: IP52)



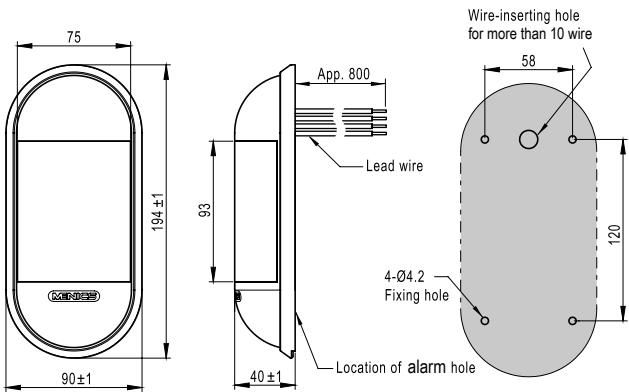
## Ordering Information

MWE C F - 3 00 - RGB M  
 ① ② ③ ④ ⑤ ⑥

① <b>Housing Color</b>	<b>no mark</b> <b>C</b>	Cream Nickel-plated
② <b>Light Style</b>	<b>F</b> <b>B</b>	Steady/Flashing Steady/Flashing/Alarm
③ <b>LED Signals</b>	<b>3</b> <b>4</b>	3 Colors 4 Colors
④ <b>Power Supply</b>	<b>00</b> <b>FF</b>	12~24VDC 110~220VAC
⑤ <b>LED Colors</b>	<b>RGB</b> <b>RYG</b> <b>RYGB</b>	Red, Green, Blue Red, Yellow, Green Red, Yellow, Green, Blue
⑥ <b>Lens Color (Optional)</b>	<b>No Mark</b> <b>M</b>	Clear Lens Milky Lens

## Dimensions

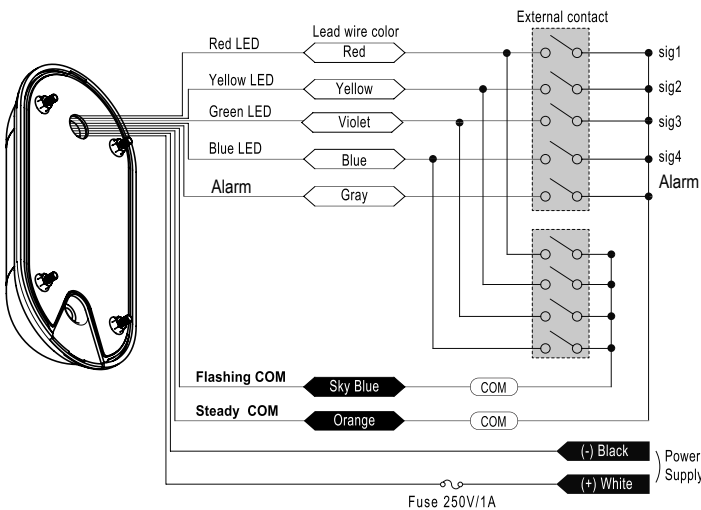
unit: mm



※ If you want to get IP52 grade, be sure to place the alarm side down. (For alarm type product)

Mounting hole layout

## Wiring Diagram

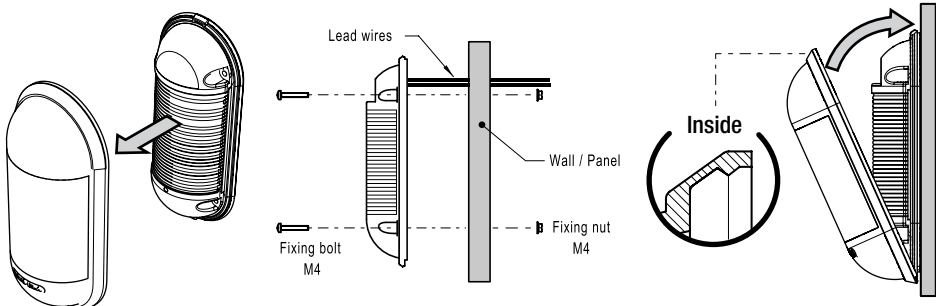


※ Pay attention to the polarity if it is DC-type.

## Specifications

Power Supply	12~24VDC	110~220VAC
Current Consumption	0.50A/ 0.60A(w/Alarm)	0.07A/0.07A (w/Alarm)
Flash Rate	12VDC	80±5 times per minute
	24AC/DC	85±5 times per minute
	110~220VAC	85±5 times per minute
Color of Front Lens	Standard Color—Clear, Option – Milky white	
Alarm Sound Level	75±5dB (at 1M, Sound Level is maximum)	
Wiring Method	Lead wire connection	
Vibration Resistance	0.75mm at 10~55Hz	
Dielectric strength	1000VAC 50/60Hz for 1min	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Recommended Wire Size	UL1007/22AWG	
Weight	AC type – About 300g, DC type – About 293g	
Degree of Protection	IP65 (IP52-Buzzer type)	

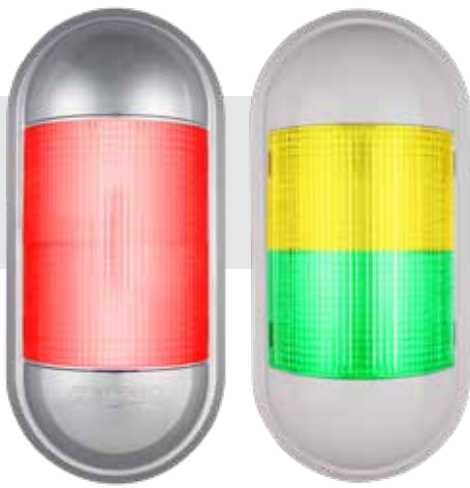
## How to install



## RGB LED Color Chart

Condition	Wiring	LED Color
1	Red wire	Red
2	Violet wire	Green
3	Blue wire	Blue
4	Red + Violet wire	Yellow
5	Red + Blue wire	Pink
6	Violet + Blue wire	Cyan
7	Red + Violet + Blue wire	White

\* 12~24VDC only



# MWET Series

90mm Wall mounting Semicircular Multi-channel LED Signal Light



- 3 Colors Signal Light
- Split lens can show different colors
- Large LED Light-emitting Lens (93mm)
- Optional built-in Alarm
- IP65 (With Alarm: IP52)

## Ordering Information

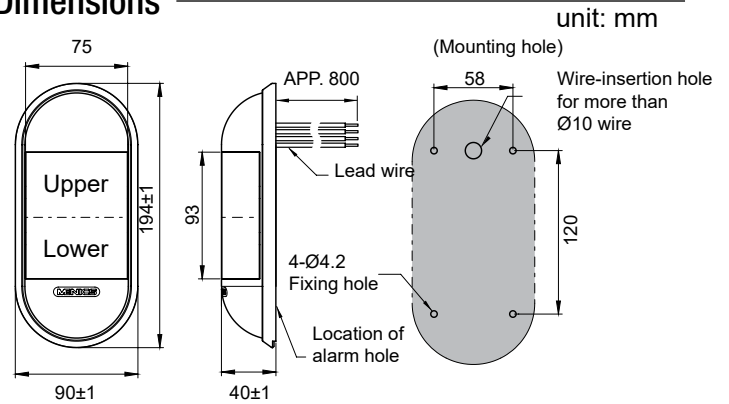
MWET C F - 3 00 - RYG M  
 ① ② ③ ④ ⑤ ⑥

① Housing Color (Optional)	no mark	Cream
	C	Nickel-plated
② Light Style	F	Steady/Flashing
	B	Steady/Flashing/Alarm
③ LED Signals	3	3 Colors
④ Power Supply	00	12~24VDC
	FF	110~220VAC
⑤ LED Colors	RGB	Red, Green, Blue
	RYG	Red, Yellow, Green
⑥ Lens Color (Optional)	No Mark	Clear Lens
	M	Milky Lens

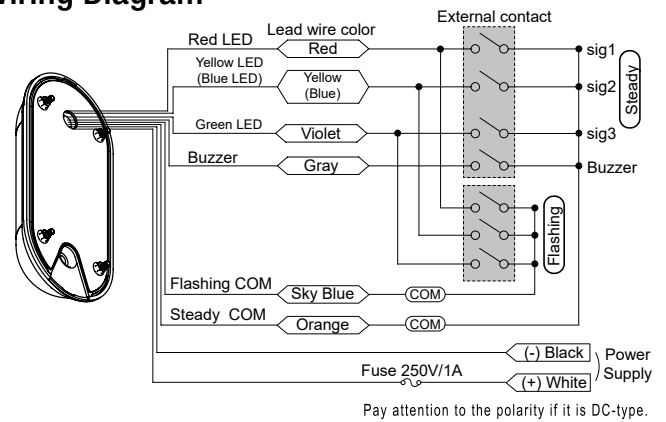
## Specifications

Power Supply	12~24 DC	110~220 AC
Current Consumption	Max 0.22A ±10%	Max 0.08A ±10%
Flash Rate	12VDC	80±5 times per minute
	24VDC	85±5 times per minute
	110~220VAC	85±5 times per minute
Alarm Sound Level	75±5dB (at 1M, Sound Level is maximum)	
Wiring Method	Lead wire connection	
Vibration Resistance	0.75mm at 10~55Hz	
Dielectric strength	1000VAC 50/60Hz for 1min	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65 (IP52-Buzzer type)	
Recommended Wire Size	UL 1007/22AWG	
Weight	AC type – About 300g, DC type – About 293g	
Approvals	RoHs, UL, CE	

## Dimensions



## Wiring Diagram

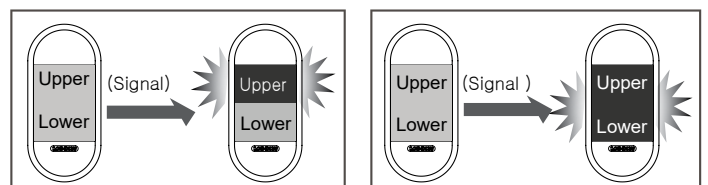


## Product Operating Conditions

Combination chart of color display

Signal wire condition			Red/yellow/Green		Red/Blue/Green	
Red LED (Red wire)	Yellow/Blue LED (Yellow/blue wire)	Green LED (Violet wire)	Upper Display	Lower Display	Upper Display	Lower Display
0	1	1	Red		Red	
1	0	1	Yellow		Blue	
1	1	0	Green		Green	
0	1	0	Red	Green	Red	Green
0	0	1	Red	Yellow	Blue	Red
1	0	0	Yellow	Green	Blue	Green
0	0	0	Red	OFF	Blue	OFF
1	1	1	OFF		OFF	

0: Orange wire (-) COM ----> Connection status  
 1: Open condition



Upper & lower lens can show different colors on a signal light.

# MSGS Series

140mm Square Tower Warning Signal Light



- Incandescent type
- Outstanding visibility by magnified lens
- Large rotating reflector
- Selectable 5 signal sounds (100dB)
- Stud or Wall mount with optional bracket (see page B2)



## Specifications

Lighting Type	Incandescent, Rotating	
Power Supply	12VDC, 24VDC, 110VAC, 220VAC	
Current Draw & Wattage	12VDC	2.4A, 25W
	24VDC	1.3A, 25W
	110VAC	0.4A, 25W
	220VAC	0.2A, 25W
Rotation Rate	150±10 rpm	
Alarm Sound Level	100±5dB @1m	
Bulb Type	BA 15D	
Vibration	0.75mm at 10~55Hz	
Ambient Temperature	-15~40°C	
Storage Temperature	-25~70°C	
Ambient Humidity	45 ~ 85% RH	
Degree of Protection	IP20	
Recommended Wire Size	VSF / 0.75mm <sup>2</sup> (Power supply wire only)	
Certificate/Compliance	RoHS	

## Ordering Information

MSGS - 5 01 - RYGBC

①      ②                      ③

① Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
	4	4 Lights
	5	5 Lights
② Power Supply	01	12VDC
	02	24VDC
	10	110VAC
	20	220VAC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

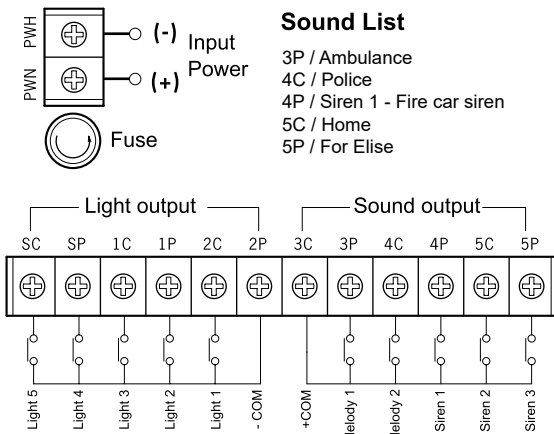
## Replacement Parts

Power Supply	12V DC	110V AC	220V AC	24V DC
Bulb	MAB-T15-D-012-25 (12V DC, 25 Watt)		MAB-T15-D-024-25 (24V DC, 25 Watt)	
LED Bulb	MAL-T15-D-②-①			
Lens	LENS-MSGS-①			

①: Color of LED or Lens; R, Y, G, B or C

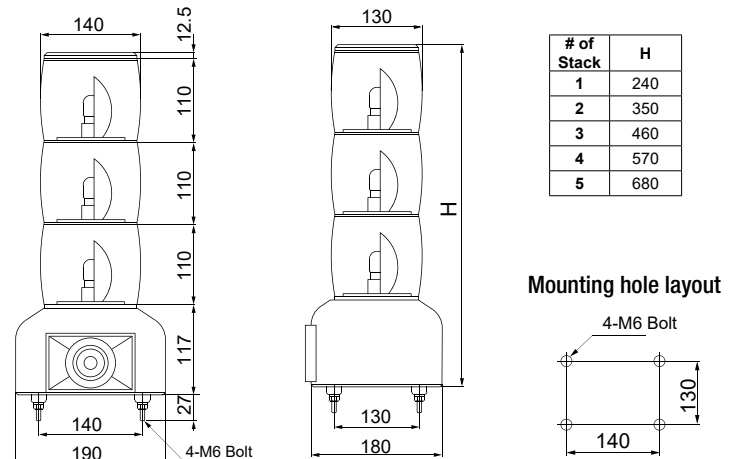
②: Voltage: 12 (12VAC/DC) 24(24VAC/DC) 120(120VAC) 220(220VAC)

## Wiring Diagram

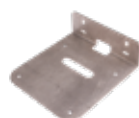


## Dimensions

unit: mm



## Wall Mounting Option



MAM-DS33



# MSGT Series

D140mm Square Tower Warning Signal Light

- Large 140mm lens, flashing & rotating LED light
- Outstanding visibility with dual reflection system
- 5 signal sounds up to 100dB
- Built-in LED mode change switch
- Stud or Wall mounting with optional bracket



## Specifications

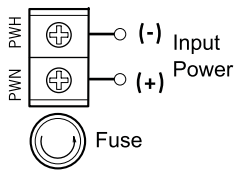
Lighting Type	Steady, Flashing, Rotation
Power Supply	12VDC $\pm 5\%$ , 24VDC $\pm 5\%$ 110VAC $\pm 10\%$ , 220VAC $\pm 10\%$ (AC: 50/60Hz)
Maximum stacked quantity	Fixed frame, 1~3 stack versions available (4 stack : option)
Flashing rate	Continuous flashing (emergency signal) 240 $\pm 10$ times per minute
Rotating rate	250 $\pm 10$ rpm (Clockwise Rotation)
Sound volume	Speaker 15W / App. 100 $\pm 5$ dB at 1 meter
Ambient humidity	45 ~ 85% RH
Ambient temperature	-15 ~ 40°C
Storage ambient temperature	-20 ~ 70°C
Vibration	0.75mm at 10 ~ 55Hz
Withstand voltage	500VAC 50/60 Hz for 1 minute
Insulation resistance	More than 100M $\Omega$ (500VDC)
Protection structure	IP23 (Upright)
Weight	App. [1S: 2.7Kg] [2S: 3.3Kg] [3S: 4.0Kg]

## Ordering Information

MSGT - ① ② - ③ RYGB

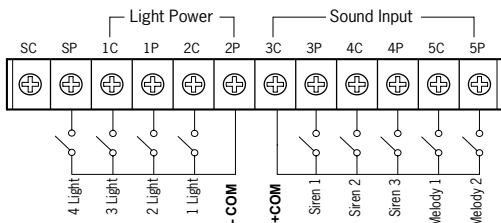
① Number of Stacks	1	1 Light
	2	2 Lights
	3	3 Lights
	4	4 Lights
② Power Supply	01	12VDC
	02	24VDC
	10	110VAC
	20	220VAC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue

## Wiring Diagram

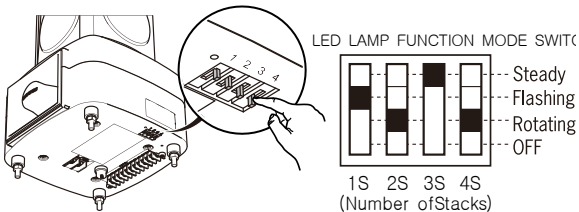


### Sound List

- 3P / Siren 1 - An ambulance siren
- 4C / Siren 2 - Police car siren
- 4P / Siren 3 - Fire car siren
- 5C / Melody 1 - Home Sweet Home
- 5P / Melody 2 - For Elise



\* Be careful of wiring Light COM and Sound Com. It may cause product damage.

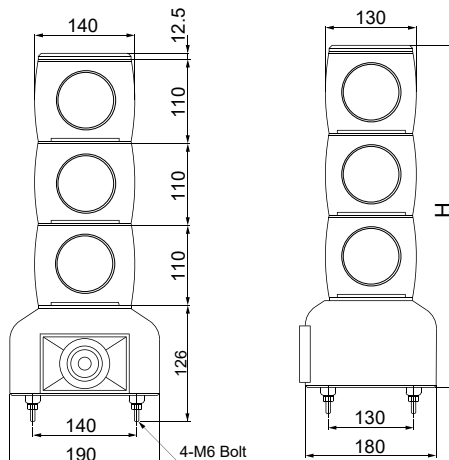


## Current Consumption

# of Stacks	LED Color	12VDC		24VDC		110VAC		220VAC	
		Standard	Speaker	Standard	Speaker	Standard	Speaker	Standard	Speaker
1 Stack	Red	0.25A	0.47A	0.14A	0.36A	0.11A	0.15A	0.05A	0.07A
	Yellow	0.37A	0.49A	0.15A	0.37A	0.12A	0.15A	0.07A	0.09A
	Green	0.33A	0.53A	0.19A	0.4A	0.12A	0.16A	0.06A	0.08A
2 Stack	RG	0.52A	0.69A	0.3A	0.51A	0.15A	0.19A	0.07A	0.1A
	RY	0.47A	0.66A	0.26A	0.48A	0.14A	0.18A	0.07A	0.09A
3 Stack	RYG	0.68A	0.84A	0.42A	0.64A	0.19A	0.23A	0.09A	0.11A
	RBG	0.68A	0.84A	0.42A	0.64A	0.19A	0.23A	0.09A	0.11A
4 Stacks	RYGB	1.50A	1.50A	0.57A	1.50A	0.31A	0.38A	0.16A	0.2A

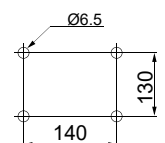
## Dimensions

unit: mm



# of Stack	H (mm)
1	374
2	384
3	494
4	604

### Mounting hole layout





# Note

A series of horizontal dotted lines for writing notes.

# MH115 Series

115mm LED Stack Lights  
with Audiable Alarm

- Excellent visibility from all directions
- High-bright LED and internal reflectors
- Smooth outer lens for easy maintenance
- Built-in buzzer or horn speaker with 9 types of sounds
- Built-in volume control



## Ordering Information

MH115 S - F 3 02 - RYG  
 ① ② ③ ④ ⑤

① Sound/Buzzer Type	<b>B</b>	Built-in Buzzer (External wiring contact)
	<b>S</b>	Built-in Horn Speaker (Internal switch contact)*
	<b>K</b>	Built-in Horn Speaker (External wiring contact)**
② Light Style	<b>L</b>	Steady Light
	<b>F</b>	Steady & Flashing Light
③ Number of Stacks	<b>1</b>	1 Light
	<b>2</b>	2 Lights
	<b>3</b>	3 Lights
	<b>4</b>	4 Lights
	<b>5</b>	5 Lights
④ Power Supply	<b>02</b>	24VDC
	<b>FF</b>	100~240VAC
⑤ Lens Colors (top to bottom)	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>W</b>	White

\* Only 1 sound can be selected

\*\* Different sounds can be selected for each LED color

## Specifications

Operation/Function	Steady/ Flashing
Power Supply	24VDC, 100~240VAC 50/60 Hz
Allowable Voltage Range	21.6 ~ 26.4VDC, 100 ~ 240VAC
Withstand Voltage	24VDC - 500VAC 50/60Hz 1 Minute 100VAC - 1000VAC 50/60Hz 1 Minute 220VAC - 1500VAC 50/60Hz 1 Minute
Classification	MH115S/K : 15W Horn Speaker / MH115B : Buzzer
Volume(Built-in controller)	Horn Speaker: Max. 110±10dB / Buzzer: Max. 95±5dB
Built-in Sound	Speacker: 9 Tones (3 melodies, 6 beeps) Buzzer: Intermittent sound
Lens Color	Red, Yellow, Green, Blue & Clear(White LED)
Lens Diameter	115 mm (4.53 inch)
Material	Lens:PC, Body: ABS, Reflector:Heat-resistant ABS (Nickel Chrome Plating)
Flash Rate	75±5 times/ minute
Vibration	30Hz(1minute cycle) 1 Hours double amplitude 0.5mm in X,Y,Z respective direction
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Degree of Protection	IP35
Mounting Method	Vertical direction only (Indoor and outdoor)
Approvals	RoHS, CE
Recommended Wire Size	UL1007, 22AWG, Exposure length - about 700±100mm

## Product Weight

Stacks	MH115S		MH115K		MH115B	
	24VDC	AC	24VDC	AC	24VDC	AC
1	855g	897g	878g	920g	617g	648g
2	997g	1.0kg	1.0kg	1.0kg	762g	794g
3	1.2kg	1.2kg	1.2kg	1.2kg	913g	945g
4	1.3kg	1.4kg	1.3kg	1.4kg	1.1kg	1.1kg
5	1.5kg	1.5kg	1.5kg	1.5kg	1.2kg	1.3kg

## Current Consumption

Stacks	LED Color	MH115S/K*		MH115B**	
		24VDC	AC	24VDC	AC
1	R/Y/G/B/W	0.50A	0.17A	0.08A	0.05A
2	RG/RB	0.54A	0.18A	0.13A	0.07A
3	RYG/RBG	0.60A	0.20A	0.19A	0.10A
4	RYGB	0.65A	0.22A	0.25A	0.11A
5	RYGBW	0.70A	0.25A	0.29A	0.12A

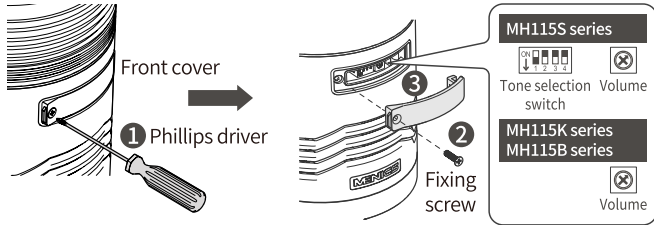
\*When LED+Speaker is in operation

\*\*When LED+Buzzer is in operation

Please See Our "Mounting and Accessories" Section for Mounting Options

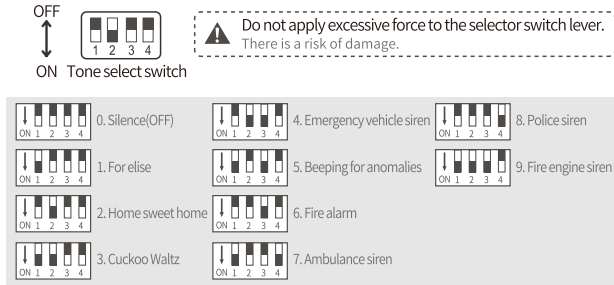
## Tone Selection And Volume Control

✓ When selecting a tone and adjusting the volume, use a Phillips driver to open and close the front cover.



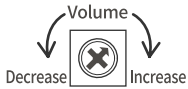
## Tone Selection Switch (MH115S)

✓ When selecting a tone, use a small flat screwdriver (tweezers) to operate the selection switch.  
✓ Sound works only when the selector switch lever is pushed down.



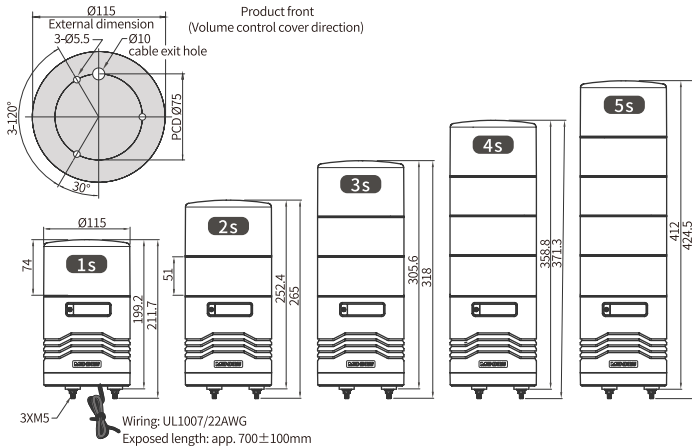
## Sound Volume Control

✓ When adjusting the volume, turn the volume lightly using a small flat screwdriver.



## Dimensions

unit: mm



## MH115K Sound Setting

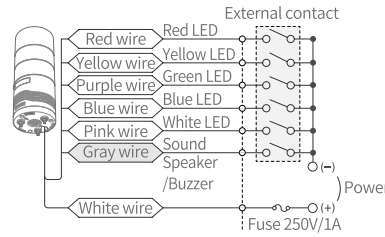
Connect with COM wire (Black wire)

1. Black+White wire	For Elise
2. Black+Red wire	Home sweet home
3. Black+Blue wire	Fire alarm
4. Black+Green wire	Police siren
5. Black+White+Red wire	Cuckoo waltz
6. Black+Red+Blue wire	Emergency vehicle siren
7. Black+White+Blue wire	Beeping for anomalies
8. Black+White+Green wire	Ambulance siren
9. Black+White+Red+Blue wire	Fire engine siren

## Wiring Diagram for MH115S, MH115B

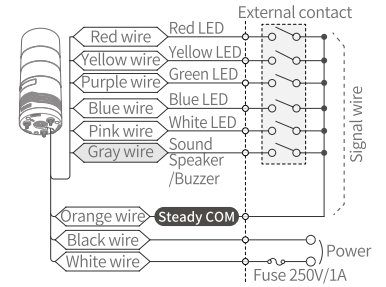
24VDC

Steady Lights



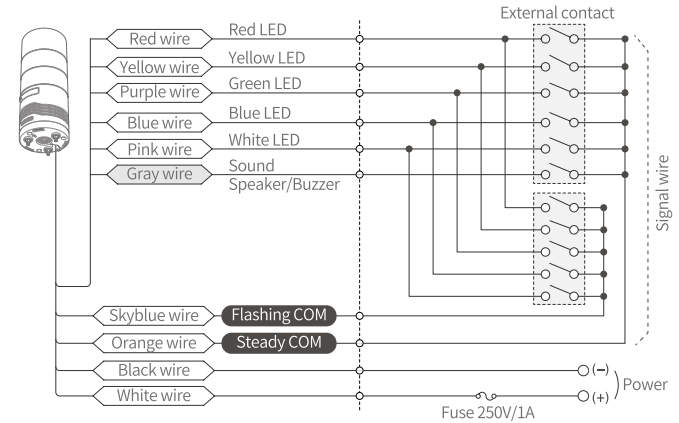
100~240VAC

Steady Lights



24VDC/ 100~240VAC

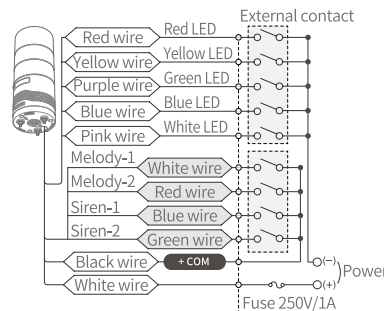
Steady/Flashing Lights



## Wiring Diagram for MH115K

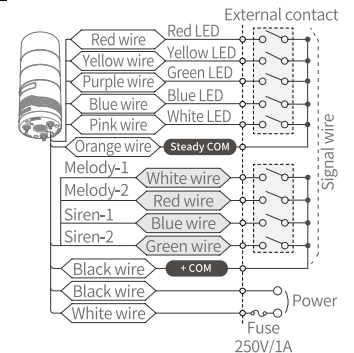
24VDC

Steady Lights



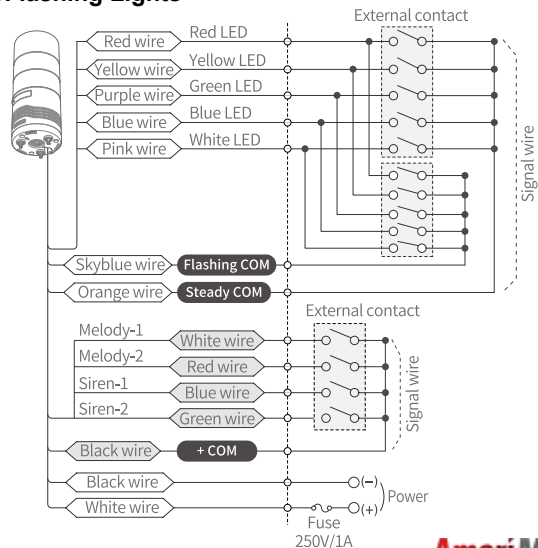
100~240VAC

Steady Lights



24VDC / 100~240VAC

Steady/Flashing Lights





# ATEP/ATES Series

Ready to Use Andon Lights  
With Pole Mounted Control Box

- 56mm diameter LED Andon lights
- Pre-wired suitable for multiple applications
- 1-5 stacks, or 1-4 stacks with buzzer
- 80dB buzzer or adjustable 10-100dB buzzer
- Wall mountable with L bracket
- 9.45" pole & 6ft power cord



## Ordering Information

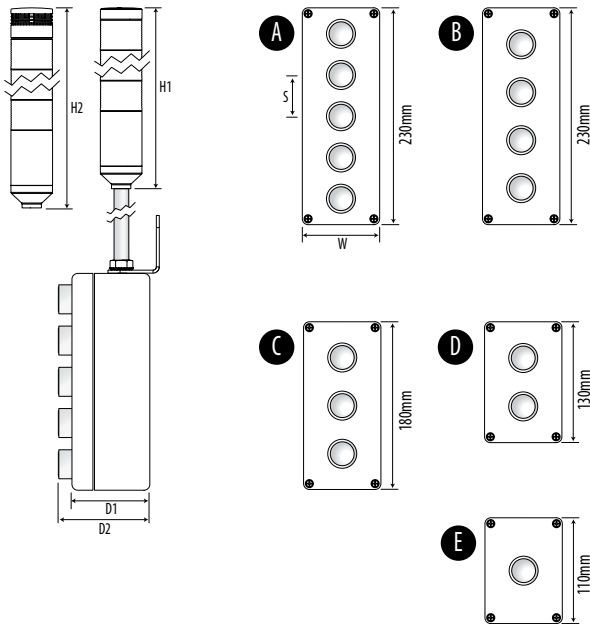
ATE P - R - B  
① ② ③

① Switch Type	<b>P</b>	Pushbutton
	<b>S</b>	Selector Switch (2 Position)
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>RY</b>	Red, Yellow
	<b>RG</b>	Red, Green
	<b>RYG</b>	Red, Yellow, Green
	<b>RYGB</b>	Red, Yellow, Green, Blue
③ Buzzer Type (optional)	<b>no mark</b>	No Buzzer
	<b>B</b>	80dB Buzzer
	<b>Z</b>	10-100dB Buzzer

"\*" marked type is not available for buzzer option

## Dimensions

unit: mm



	W	D1	D2	D3	S	H1	H2
<b>A</b>	80	72	83	96	42	319	N/A
<b>B</b>	80	72	83	96	50	279	304
<b>C</b>	80	72	83	96	50	239	264
<b>D</b>	80	72	83	96	50	199	224
<b>E</b>	80	72	83	96	N/A	159	184

D2 is for pushbutton type  
D3 is for selector switch type

## Specifications

Operation/Function	Red Flashing, Other Lights Steady *
Power Supply	90~240V AC 50/60 Hz (±10%)
Lens Color	Red, Yellow, Green, Blue & Clear
Lens Diameter	56 mm (2.2 inch)
Switching Options	Pushbutton or Selector Switch
Flash Rate	80 times/ minute
Vibration	0.75mm at 10~55Hz
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Pole length	9.45"(optional: 29.53", 39.37")
Power Cord	3 prong 6ft installed

\* Steady or Flashing function for any light stack can be changed by custom order

### LED Modules

Color	Red	Yellow	Green	Blue	Clear
Current Consumption	17mA	17mA	22mA	22mA	22mA

### Buzzer Modules

Type	B	Z
Style	Fixed Sound	Adjustable
Sound Level	80±5dB	10 ~ 100±5dB
Current Consumption	30mA	150mA

# ATEPR/ATESR Series

Ready to Use Andon Lights  
With Remote Control Box

- 56mm diameter LED Andon lights
- Pre-wired suitable for multiple applications
- 1-5 stacks, or 1-4 stacks with buzzer
- 80dB buzzer or adjustable 10-100dB buzzer
- Wall mountable with L bracket
- 9.45" pole & 6ft power cord



## Ordering Information

ATE PR - 10 - R - B  
① ② ③ ④

① Switch Type	<b>PR</b>	Pushbutton
	<b>SR</b>	Selector Switch (2 Position)
② Remote Cable Length	<b>10</b>	10 feet
	<b>15</b>	15 feet
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>RY</b>	Red, Yellow
	<b>RG</b>	Red, Green
	<b>RYG</b>	Red, Yellow, Green
	<b>RYGB</b>	Red, Yellow, Green, Blue
④ Buzzer Type (optional)	<b>no mark</b>	No Buzzer
	<b>B</b>	80dB Buzzer
	<b>Z</b>	10-100dB Buzzer

" \* " marked type is not available for buzzer option

## Specifications

Operation/Function	Red Flashing, Other Lights Steady *
Power Supply	90~240V AC 50/60 Hz (±10%)
Lens Color	Red, Yellow, Green, Blue & Clear
Lens Diameter	56 mm (2.2 inch)
Switching Options	Pushbutton or Selector Switch
Flash Rate	80 times/ minute
Vibration	0.75mm at 10~55Hz
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Pole length	9.45"(optional: 29.53", 39.37")
Power Cord	3 prong 6ft, installed

\* Steady or Flashing function for any light stack can be changed by custom order

### LED Modules

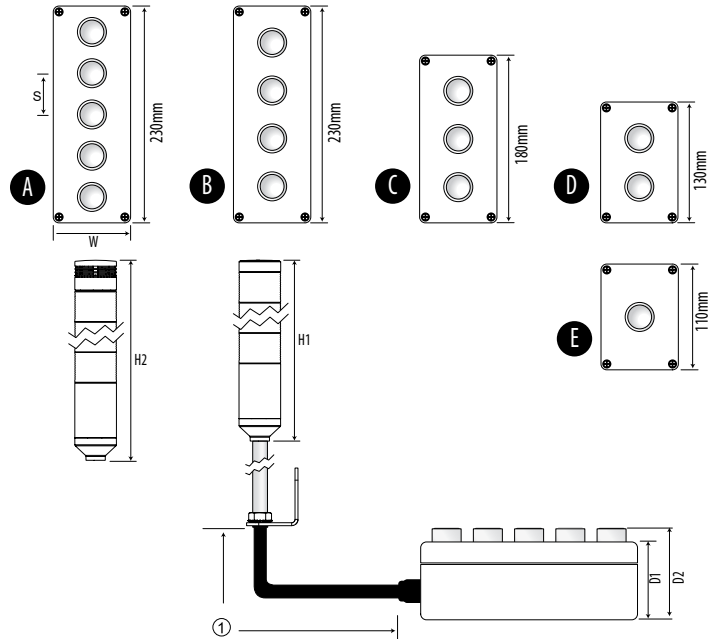
Color	Red	Yellow	Green	Blue	Clear
Current Consumption	17mA	17mA	22mA	22mA	22mA

### Buzzer Modules

Type	B	Z
Style	Fixed Sound	Adjustable Sound
Sound Level	80±5dB	10 ~ 100±5dB
Current Consumption	30mA	150mA

## Dimensions

unit: mm

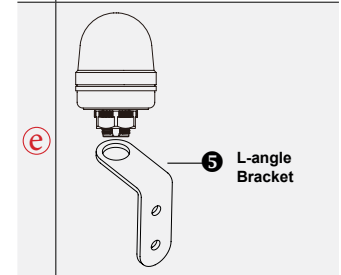
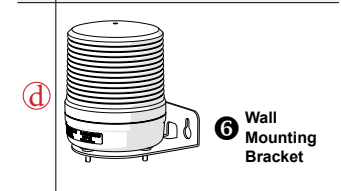
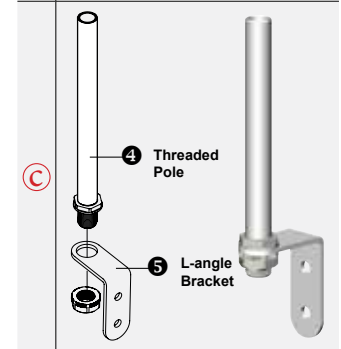
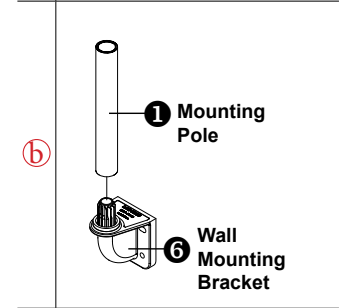
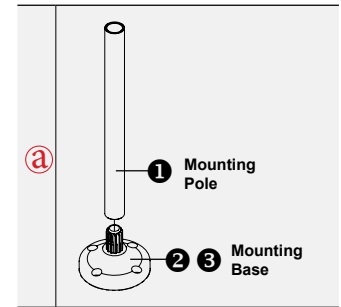


	W	D1	D2	D3	S	H1	H2
<b>A</b>	80	72	83	96	42	319	N/A
<b>B</b>	80	72	83	96	50	279	304
<b>C</b>	80	72	83	96	50	239	264
<b>D</b>	80	72	83	96	50	199	224
<b>E</b>	80	72	83	96	N/A	159	184

D2 is for pushbutton type  
D3 is for selector switch type

# Mounting Options

Series		Pole with Base Mounting <sup>a</sup>		Pole + Wall Mounting		Direct Wall Mounting (without Pole)
		Pole	Mounting Base	Pole	Wall Mount Bracket	
Stack Lights	PTE/PTM *	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAM-B070C MAM-B070D MAM-DS32A MAM-470R-20 MAM-DS42R-20C	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAP-DS40	Direct Mounting Type: MAM-DS25 <sup>e</sup>
	PME					
	MT4B/5B/5C					
	MT8B/8C **					
	PY7	MAP-225-22 (ø22mm)	MAM-DS32C MAM-470R-22 MAM-DS42R-22C	MAP-M240-22D (ø22mm)	MAM-DS25	M Type: MAM-DS25 <sup>e</sup> G Type: MAM-DS38 <sup>d</sup>
	PLD	N/A				MAM-DS25 <sup>e</sup>
	MSG5	Stud Mounting Type				MAM-DS33 <sup>d</sup>
Beacon Lights	MS66	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAM-B070C MAM-B070D MAM-DS32A MAM-470R-20 MAM-DS42R-20C	MAP-0022 MAP-0060 MAP-0240 MAP-0750 MAP-1000	MAP-DS40	M Type: MAM-DS25 <sup>e</sup> G Type: MAP-DS30 <sup>d</sup> MAM-DS28
	ASG ***					
	MS86 ***					
	MS70	MAP-225-22 (ø22mm)	MAM-DS32C MAM-470R-22 MAM-DS42R-22C	MAP-M240-22D (ø22mm)	MAM-DS25	M Type: MAM-DS25 <sup>e</sup> G Type: MAM-DS38 <sup>d</sup>
	MS115	SAM-T115 (ø25mm Pole)		SAM-T115	MAM-DS38	MAM-DS29 <sup>d</sup>
	MS135	SAM-T135 (ø25mm Pole)		SAM-T135		MAM-DS37 <sup>d</sup>
	ML	Stud Mounting Type				MAP-DS30 <sup>d</sup> MAM-DS26
	MS56					MAM-DS25 <sup>e</sup>
	AVG					MAM-DS27 <sup>d</sup>



\* MAP-0022 cannot be used with PTE/PTM series.

\*\* Mounting base MAM-B090C is used for MT8B/8C.

\*\*\* ASG & MS86 needs pole adapter MAM-DS31 for pole mounting.

## Mounting Pole ①



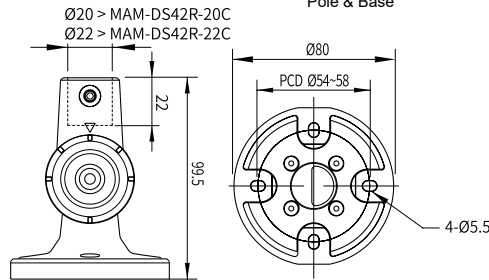
Part	Part #	Description
	<b>MAP-0022*</b>	Ø20mm, 0.87 in (22 mm) pole
	<b>MAP-0060</b>	Ø20mm, 2.36 in (60 mm) pole
	<b>MAP-0240</b>	Ø20mm, 9.45 in (240 mm) pole
	<b>MAP-0750</b>	Ø20mm, 29.53 in (750 mm) pole
	<b>MAP-1000</b>	Ø20mm, 39.37 in (1,000 mm) pole
	<b>MAP-225-22</b>	Ø22mm, 8.86 in (225 mm) pole 1/2 NPT Thread top

①

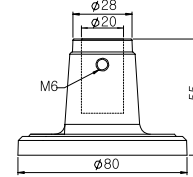
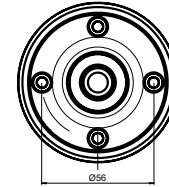
\* MAP-0022 CANNOT be used with PTE & PTM Series.

## ③ Aluminum Mounting Bases

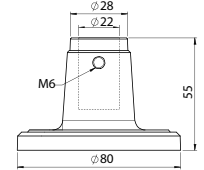
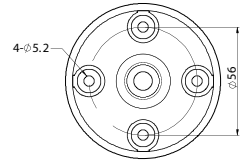
**MAM-DS42R-20C**  
**MAM-DS42R-22C**



**MAM-DS32A**

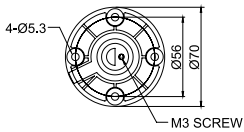
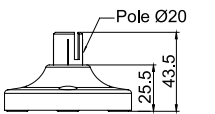


**MAM-DS32C**

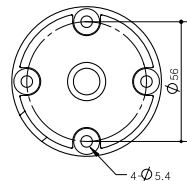
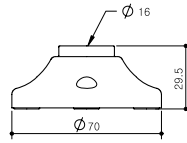


## Plastic Mounting Bases ②

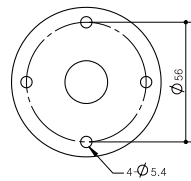
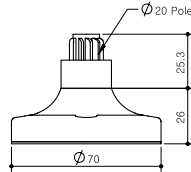
**MAM-B070C**



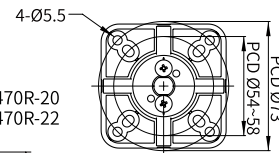
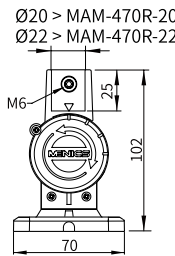
**MAM-B070F**



**MAM-B070D**

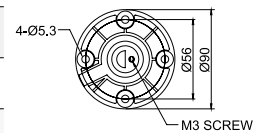
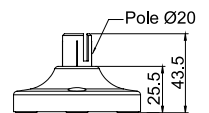


**MAM-470R-20**  
**MAM-470R-22**



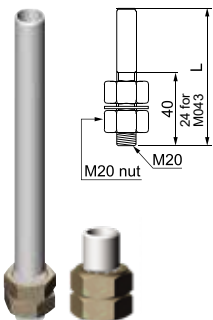
90° Angle Mounting  
with Pole & Base

**MAM-B090C**



Part	Part #	Description
	<b>MAM-B070C</b>	Ø70mm Plastic Base
	<b>MAM-B070D</b>	Ø70mm Plastic Base with Water-Proof Rubber Gasket
②	<b>MAM-470R-20</b>	Ø70mm Plastic Folding Base 90° angle, for 20mm pole
	<b>MAM-470R-22</b>	Ø70mm Plastic Folding Base 90° angle, for 22mm pole
	<b>MAM-B090C</b>	Ø90mm Plastic Base

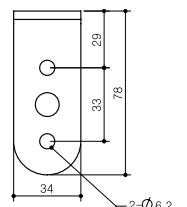
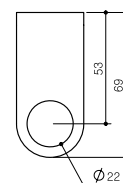
## Threaded Poles ④



④	<b>MAP-M043</b>	Ø20mm, 1.69 in (43 mm) threaded pole with 2 nuts
	<b>MAP-M240</b>	Ø20mm, 9.45 in (240 mm) threaded pole with 2 nuts
	<b>MAP-M750</b>	Ø20mm, 29.53 in (750 mm) threaded pole with 2 nuts
	<b>MAP-M1000</b>	Ø20mm, 39.37 in (1,000 mm) threaded pole with 2 nuts
	<b>MAP-M240-22D</b>	Ø22mm, 9.45 in (240 mm), 1/2 NPT thread top & 2 x M20 Nuts bottom

## ⑤ L-angle Bracket

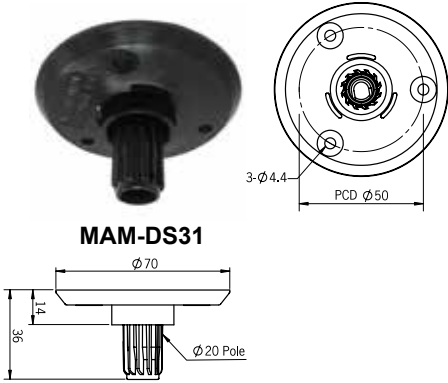
**MAM-DS25**



## Pole Adaptor

## Conduit Direct Mount Option

### Pole Mounting Adaptor



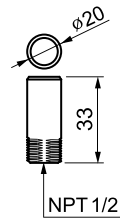
### Pole Extension Adaptor



1/2" NPT  
Mounting Adaptor



**MAP-N033**



## Semi-assembled Pole Mounting Base

**SAM-T115**

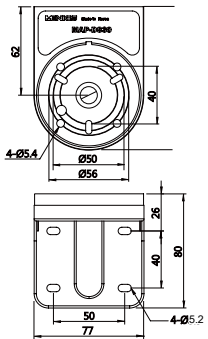


**SAM-T135**

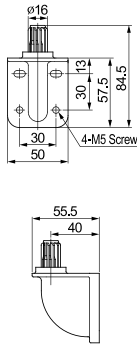


## Wall Mounting Brackets ⑥

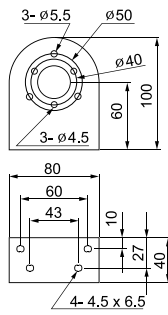
**MAP-DS30**



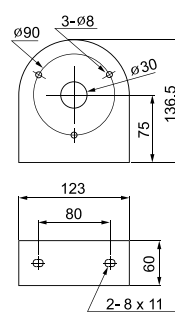
**MAP-DS40**



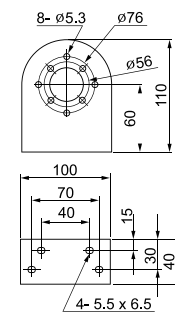
**MAM-DS26**



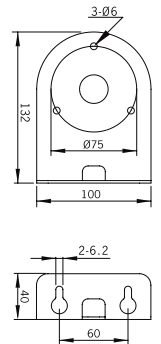
**MAM-DS27**



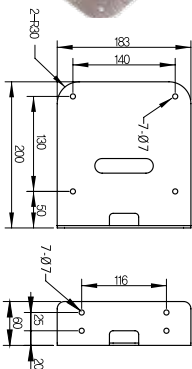
**MAM-DS28**



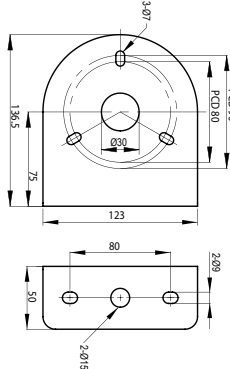
**MAM-DS29**



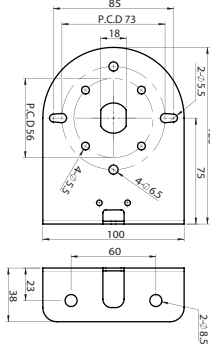
**MAM-DS33**



**MAM-DS37**



**MAM-DS38**





Part	Part #	Description
⑥	<b>MAP-DS30-BLK</b>	Plastic Wall Mounting Bracket, Black
	<b>MAP-DS30-BGE</b>	Plastic Wall Mounting Bracket, Beige
	<b>MAP-DS40-BLK</b>	Plastic Wall Mounting Bracket, Black (Pole required)
	<b>MAP-DS40-BGE</b>	Plastic Wall Mounting Bracket, Beige (Pole required)
	<b>MAM-DS26</b>	Metal Wall Mounting Bracket
	<b>MAM-DS27</b>	Metal Wall Mounting Bracket
<b>MAM-DS28</b>	Metal Wall Mounting Bracket	
<b>MAM-DS29</b>	Metal Wall Mounting Bracket	
<b>MAM-DS33</b>	Metal Wall Mounting Bracket	
<b>MAM-DS37</b>	Metal Wall Mounting Bracket	
<b>MAM-DS38</b>	Metal Wall Mounting Bracket	

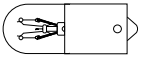
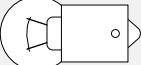
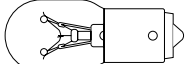
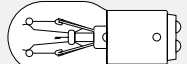
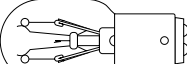
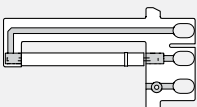
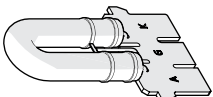


# Replacement bulb

## LED Bulb

LED Bulb	Ordering Information		Applicable Products																		
 <p>Base 9mm Single contact</p>	<b>MAL - T09 - S - <u>12</u> - R</b> ①                      ②	<b>Current consumption</b> 12V: 30~50mA 24V: 20mA	<b>Allowable voltage range</b> 12V: 11~13V 24V: 22~26V	MT4B series																	
	<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>12</b></td> <td>12VAC/DC</td> </tr> <tr> <td><b>24</b></td> <td>24VAC/DC</td> </tr> </table>	① Voltage	<b>12</b>		12VAC/DC	<b>24</b>	24VAC/DC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear		
① Voltage	<b>12</b>		12VAC/DC																		
	<b>24</b>	24VAC/DC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			
 <p>Base 15mm Double contact</p>	<b>MAL - T15 - D - <u>24</u> - R</b> ①                      ②	<b>Current consumption</b> 12V: 30~50mA 24V: 20~30mA	<b>Allowable voltage range</b> 12V: 11~13V 24V: 22~26V	MT5 series MT8 series AVG series MSGS series MS135B Series																	
	<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>12</b></td> <td>12VAC/DC</td> </tr> <tr> <td><b>24</b></td> <td>24VAC/DC</td> </tr> </table>	① Voltage	<b>12</b>		12VAC/DC	<b>24</b>	24VAC/DC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear		
① Voltage	<b>12</b>		12VAC/DC																		
	<b>24</b>	24VAC/DC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			
	<b>MAL - T15 - D - <u>220</u> - R</b> ①                      ②	<b>Current consumption</b> 120V: 15mA 220V: 20mA	<b>Allowable voltage range</b> 120V: 100~120V 220V: 210~240V																		
	<table border="1"> <tr> <td rowspan="2">① Voltage</td> <td><b>120</b></td> <td>120VAC</td> </tr> <tr> <td><b>220</b></td> <td>220VAC</td> </tr> </table>	① Voltage	<b>120</b>	120VAC	<b>220</b>	220VAC	<table border="1"> <tr> <td rowspan="3">② Color</td> <td><b>R</b></td> <td>Red</td> <td><b>G</b></td> <td>Green</td> </tr> <tr> <td><b>Y</b></td> <td>Yellow</td> <td><b>B</b></td> <td>Blue</td> </tr> <tr> <td><b>C</b></td> <td>Clear</td> <td></td> <td></td> </tr> </table>	② Color	<b>R</b>	Red	<b>G</b>	Green	<b>Y</b>	Yellow	<b>B</b>	Blue	<b>C</b>	Clear			
① Voltage	<b>120</b>		120VAC																		
	<b>220</b>	220VAC																			
② Color	<b>R</b>	Red	<b>G</b>	Green																	
	<b>Y</b>	Yellow	<b>B</b>	Blue																	
	<b>C</b>	Clear																			

## Bulb

Bulb Type	Voltage & Power Consumption	Ordering information	Applicable Products
 <p>T10/BA9S</p>	12V 5W	MAB-T09-S-012-05	MT4B series
	24V 5W	MAB-T09-S-024-05	
	130V 5W	MAB-T09-S-130-05	
	240V 5W	MAB-T09-S-240-05	
 <p>G19/BA15S</p>	12V 5W	MAB-T15-S-012-05	ASG Series
 <p>T16/BA15S</p>	12V 8W	MAB-T15-S-012-08	ASG Series
	24V 8W	MAB-T15-S-024-08	
	130V 8W	MAB-T15-S-130-08	
	240V 8W	MAB-T15-S-240-08	
 <p>T16/BA15D</p>	12V 10W	MAB-T15-D-012-10	MT5B/5C series MT8B/8C series
	24V 10W	MAB-T15-D-024-10	
	120V 10W	MAB-T15-D-120-10	
	240V 10W	MAB-T15-D-240-10	
 <p>T22/BA15D</p>	12V 25W	MAB-T15-D-012-25	AVG series MSGS series MS135B series
	24V 25W	MAB-T15-D-024-25	
	130V 25W	MAB-T15-D-130-25	AVG series MS135B series
	240V 25W	MAB-T15-D-240-25	
	Xenon Lamp 3W AC/DC 12 ~ 24V I-Type	MS86S-LAMP-02	MS86S series MS115S series
		MS70S-LAMP-AL	MS70S series
	Xenon Lamp 6W AC 110V, 220V U-Type	MS86S-LAMP-10	MS86S series MS115S series



# MS56L Series

Ø56mm LED Signal Lights



- Compact LED warning light
- Direct mount
- Lead wire connection
- Rotating speed is adjustable

## Specifications

Functions	Steady, Steady+Flashing, Rotating				
Power Supply		12VAC/DC	24VAC/DC	110VAC	220VAC
Current Consumption	Steady	0.1A	0.12A	0.03A	
	Rotating	0.8A	0.07A	0.03A	0.04A
Flash Rate (±10 times/minute)		110/60	80/80	80	
Vibration	0.75mm at 10~55Hz				
Insulation Resistance	100 MΩ minimum (500VDC mega)				
Ambient Temperature	-15~40°C				
Storage Temperature	-25~70°C				
Ambient Humidity	45 ~ 85% RH				
Certificate/Compliance	CE, RoSH				
Recommended Wire Size	UL1007/22AWG				
Degree of protection	IP65				
Weight	Approx. 66g				

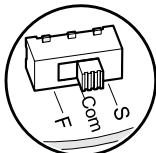
## Ordering Information

MS56L - F 02 - R  
 ① ② ③

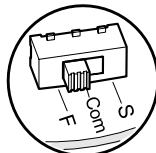
① Light Style	No mark	Steady
	F	Steady + Flashing
	R	Rotating
② Power Supply	01	12V AC/DC
	02	24V AC/DC
	10	110V AC
	20	220V AC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Function controls

### MS56L Series

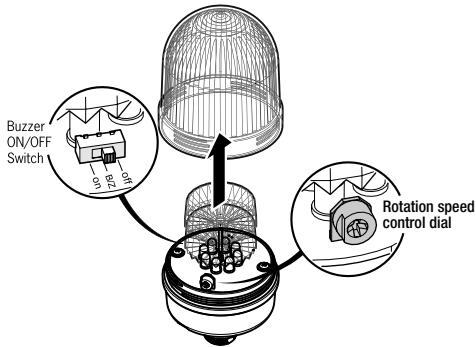


Steady

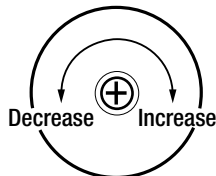


Flashing

### MS66 Series



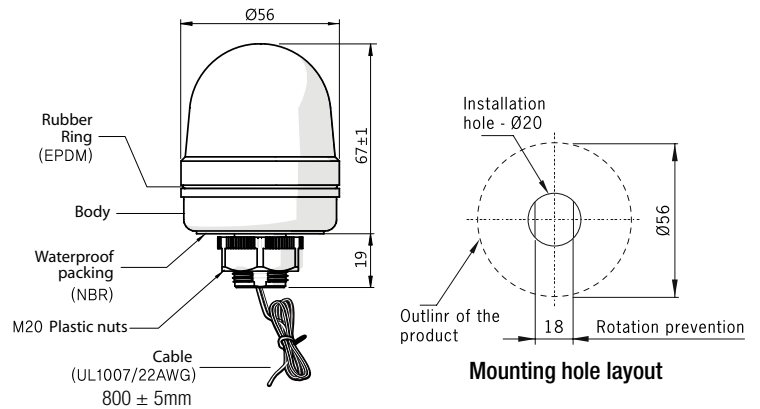
### Rotation speed control



min40 to max300 RPM (±10%)  
(Clockwise rotation)

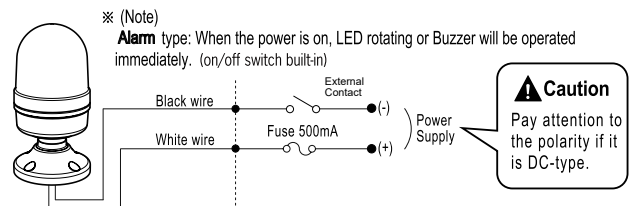
## Dimensions

(unit: mm)



## Wiring Diagram (MS56L & MS66)

12~24VAC/DC, 110~220VAC Rotating (Alarm)



### Wall Mounting Option (MS56L & MS66)

MAM-DS25



Please See Our "Mounting and Accessories" Section for Mounting Options



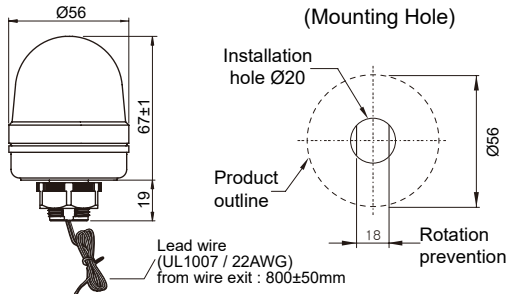
# MS56M Series

Ø56mm Multi color LED Signal Light



- Steady, Flashing type
- Wire draw-out type and internal switch type
- Various power supply
- Plastic M20 nut panel mounting type

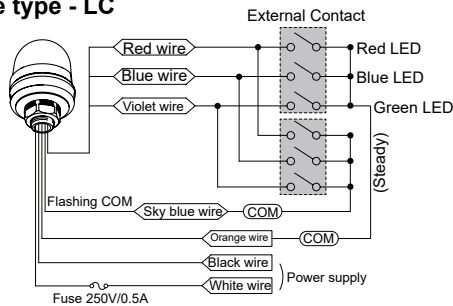
## Dimensions



## Wiring Diagram

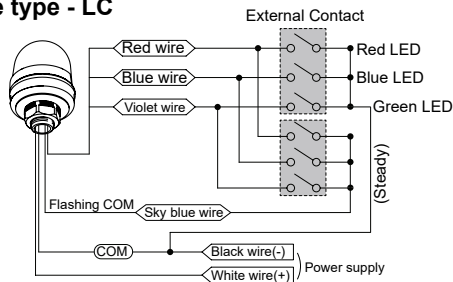
### 100~240VAC

#### Lead wire type - LC



### 12/24VDC

#### Lead wire type - LC



## LED color wiring chart

Condition	Wiring Line color	Lens color
1	Red	Red
2	Violet	Green
3	Blue	Blue
4	Red+Violet	Yellow
5	Red+Blue	Pink
6	Violet+Blue	Cyan
7	Red+Violet+Blue	White

## Ordering Information

MS56M - 02 - LC

①                      ②



① Power Supply	01	12VDC
	02	24VDC
	FF	100~240VAC
② Output Method	LC	External contact type Lead Wire type
	SW	Internal dip switch type -

## Specifications

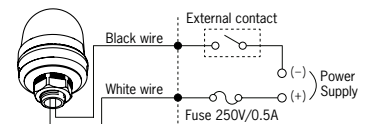
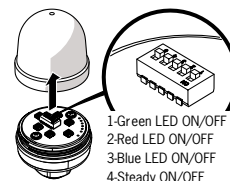
Function	Steady, Flashing
Power Supply	12VDC, 24VDC 100~240VAC (AC. 50/60Hz)
Dimension	56mm
LED color	Red, Yellow, Green, Cyan, Blue, Pink, White
Lens color	Milky white
Flashing rate	80±5times/minute
Connection	UL1007 / 22AWG
Material	Lens - PC resin, Body - ABS resin
Vibration	0.75mm at 10~55Hz
Ambient temperature	-15 ~ 40°C
Storage ambient temperature	-25 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65 (front)

## Current Consumption

(RMS ±10%)

	12VDC	24VDC	100~240VAC
Steady Light	0.13A	0.08A	0.08A

## Internal Switch Type



LED Colors	Steady	Flashing
No.1 Green	ON 1 2 3 4 5	ON 1 2 3 4 5
No.2 Red	ON 1 2 3 4 5	ON 1 2 3 4 5
No.3 Blue	ON 1 2 3 4 5	ON 1 2 3 4 5

LED Colors	Steady	Flashing
No.4 Yellow	ON 1 2 3 4 5	ON 1 2 3 4 5
No.5 Cyan	ON 1 2 3 4 5	ON 1 2 3 4 5
No.6 Pink	ON 1 2 3 4 5	ON 1 2 3 4 5
No.7 White	ON 1 2 3 4 5	ON 1 2 3 4 5

## Optional Parts

Please See Our "Mounting and Accessories" Section for Mounting Options



Wall mounting bracket  
**MAM-DS25**  
Steel



# MS66 Series

Ø66mm LED Multi Function Signal Lights

- Steady/Flashing type, Rotating type
- Rotating speed is adjustable
- Direct or Pole Mounting



## Specifications

Functions		Steady + Flashing + Buzzer, Rotating + Buzzer	
Power Supply		12~24VAC	110~220VAC
Current Consumption	Steady & Flashing	General	0.30A
		w/buzzer	0.32A
	Rotating	General	0.20A
		w/buzzer	0.22A
Flashing Rate	General type	80 ±5 times/min	
	Optional (V) type	240 ±5 times/min	
Rotating Speed		60~300 RPM (Clockwise rotation)	
Alarm sound level		80±5dB (Alternating Buzzer: pi- pi- pi)	
Wiring method		Lead wire connection	
Ambient Temperature		-20~40°C	
Storage Temperature		-20~70°C	
Ambient Humidity		45~85% RH	
Insulation resistance		100MΩ min. at 500VDC	
Certificate/Compliance		CE, RoSH	
Vibration resistance		0.75mm at 10~55Hz	
Recommended Wire Size		UL1007 / 22AWG	
Degree of protection		IP65 (Audible alarm type: IP52)	
Weight (AC + Buzzer type)		MS66M - 168g, MS66G - 180g, MS66P - 168g	

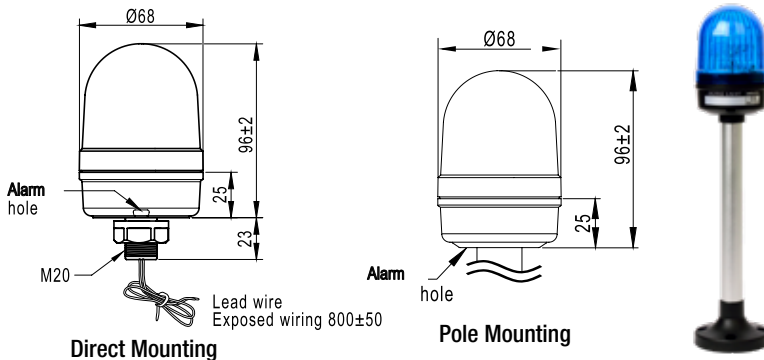
## Ordering Information

MS66 - M - B 00 - R (V)  
 ① ② ③ ④ ⑤

① Mounting Option	M	Body direct mount - Plastic M20 Screw
	P	Pole Mounting
	G	Plastic mount base
② Light Style	F	LED Steady + Flashing
	B	LED Steady + Flashing + Audible Alarm
	R	LED Rotating
③ Power Supply	00	12 ~ 24VAC/DC
	FF	110 ~ 220VAC(50/60Hz)
④ Lens Color	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear
⑤ Optional	(V)	Flashing Emergency Signal (*Flashing rate: 240±5 times/min)

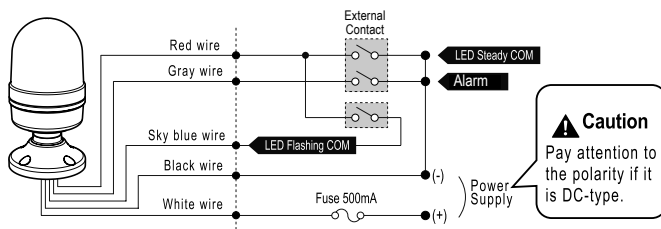
## Dimensions

unit: mm

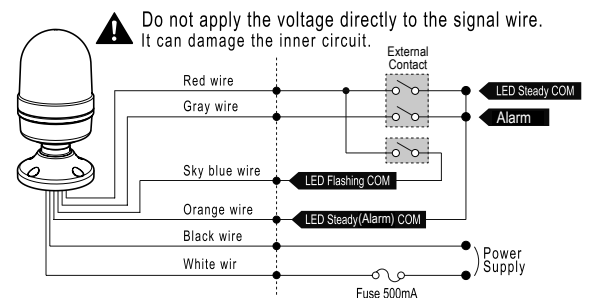


Please See Our "Mounting and Accessories" Section for Mounting Options

### 12~24VAC/DC Steady + Flashing (Alarm)



### 110~220VAC Steady + Flashing (Alarm)





# ML Series

Ø66mm Warning Signal Lights

- Incandescent or Xenon type
- Smooth lens or Prism lens
- Stud mounted or Pole mounted
- Wide range of power supply



## Specifications

Model	MLG	MLGF	MLGS
Bulb Type	Incandescent		Xenon
Power Supply	12V AC/DC, 24V AC/DC 110V AC, 220V AC		110VAC, 220VAC
Current Consumption & Wattage	12VDC	0.6A, 8W	—
	24VDC	0.3A, 8W	—
	110VAC	0.07A, 8W	0.22A, 6W
	220VAC	0.03A, 8W	0.11A, 6W
Rotation Rate	130 ±10 times/minute	—	
Flashing rate	—	80 ±10 times/minute	

## Ordering Information

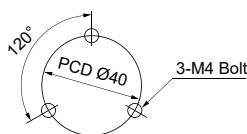
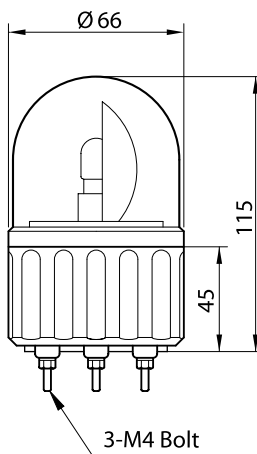
ML G F - 01 - R  
 ① ② ③ ④

① Mounting	<b>G</b>	Stud mounting	
② Light Style	No mark	Rotating	
	<b>F</b>	Steady & Flashing	
	<b>S</b>	Strobe with Xenon Bulb	
③ Power Supply	Rotating/ Steady & Flashing Lights	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>10</b>	110V AC
		<b>20</b>	220V AC
	Strobe Lights	<b>10</b>	110V AC
		<b>20</b>	220V AC
④ Lens Colors	<b>R</b>	Red	
	<b>Y</b>	Yellow	
	<b>G</b>	Green	
	<b>B</b>	Blue	

## Replacement Parts

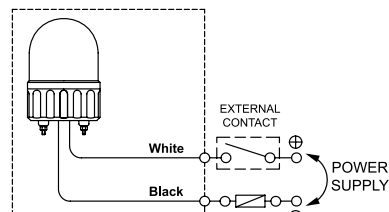
Lens	LENS-MLG-(□)	Smooth Lens for Rotating Lights
	LENS-MLGF/S-(□)	Prism Lens for Flashing/Strobe Lights
(□): indicates color of Lens; R, Y, G or B		
Bulb	<b>MAB-T15-S-012-08</b>	12V DC, 8 Watt
	<b>MAB-T15-S-024-08</b>	24V DC, 8 Watt
	<b>MAB-T15-S-130-08</b>	110V AC, 8 Watt
	<b>MAB-T15-S-240-08</b>	220V AC, 8 Watt
Xenon Bulb	<b>MAB-STROBE-110-06</b>	110/220V AC, 6 Watt

## Dimensions (unit: mm)



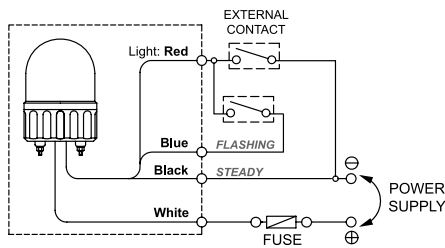
Mounting hole layout

## Wiring Diagram



Rotating & Strobe Lights

MLG-□□□-□ MLGS-□□□-□



Flashing Lights

MLGF-□□□-□

## Wall Mount Brackets



MAP-DS30-BLK (Black)  
MAP-DS30-BGE (Beige)



MAM-DS26

Please See Our "Mounting and Accessories" Section for Mounting Options



# MS70LT Series

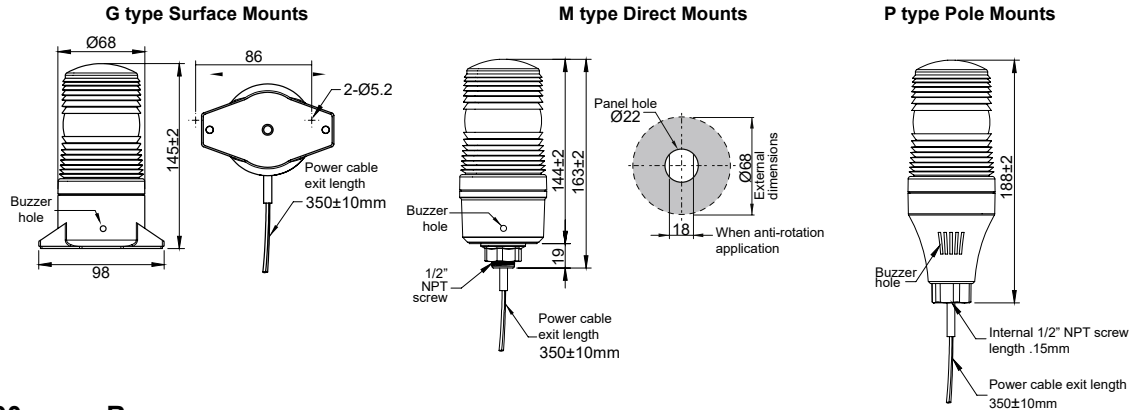
Ø70mm LED Signal Light

- High intensity LED flashing light
- Three mounting options
- Two flashing patterns (built-in slide switch)
- IP 65 (buzzer type- IP50)



## Dimensions

unit: mm



## Ordering Information

MS70LT - G B 00 - R  
 ① ② ③ ④

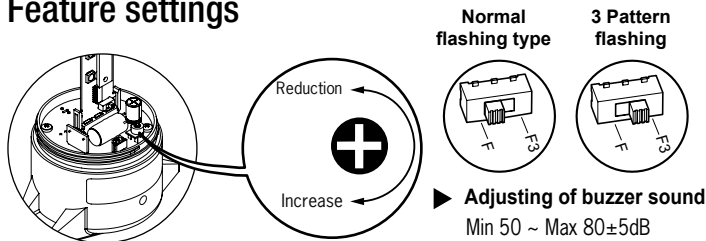
① Mounting Type	<b>G</b>	Surface Mounting
	<b>M</b>	Direct mounting
	<b>P</b>	Pole mounting
② Light Style	<b>F</b>	Flashing
	<b>B</b>	Flashing & Buzzer
③ Power Supply	<b>00</b>	12~24VDC
	<b>FF</b>	110~220VAC
④ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Specifications

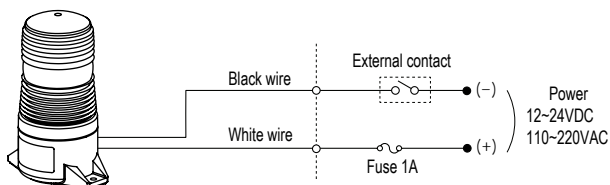
Function	Flashing, Buzzer	
Power Supply	12 ~ 24VDC, 110 ~ 220VAC(AC 50/60Hz)	
Buzzer Volume	min 50 ~ max 80±5dB	
Dimension	68mm	
Lens Color	Red, Yellow, Green, Blue, Clear	
Flashing rate (2 patterns)	- Normal flashing : 75±5 time/minute - 3 pattern flashing (Emergency signal) : 130±5 time/minute	
Current consumption	Flashing type 12~24VDC: 0.12~0.16A 110~220VAC:0.04~0.05A	Flashing + Buzzer type 12~24VDC:0.16~0.21A 110~220VAC: 0.05~0.06A
Connection	UL2464 / 18AWG, AWM, 2C, 300V	
Material	Body - ABS resin Lens - PC resin	
Ambient temperature	-20 to 50°C	
Storage ambient temperature	-20 to 70°C	
Ambient Humidity	45~85% RH	
Insulation resistance	500VAC 50 / 60Hz for 1 minute	
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction	
Approval	CE(DC products only), RoHS	
Protection structure	IP65 (IP50-Buzzer type)	
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g	

\* Life of the LED varies according to operating conditions and environment.

## Feature settings



## Wiring Diagram



\* buzzer type : When power is applied, LED flashing and buzzer operate simultaneously

Please See Our "Mounting and Accessories" Section for Mounting Options



# MS70S Series

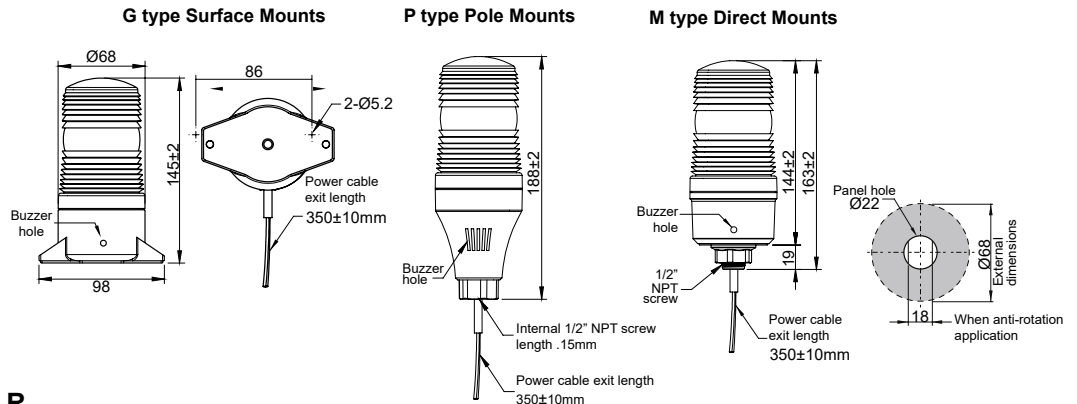
Ø70mm Xenon Lamp Strobe Light

- low intensity strobe ideal for industrial applications
- Field replaceable snap-fit flashing lamp
- Three mounting options
- IP65



## Dimensions

unit: mm



## Ordering Information

MS70S - G 00 - R  
 ① ② ③

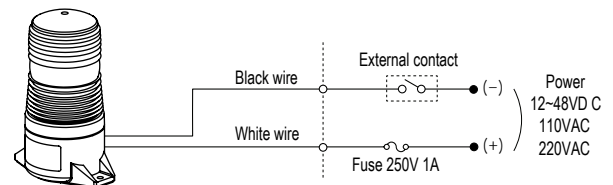
① Mounting Type	<b>G</b>	Surface Mounting
	<b>M</b>	Direct mounting
	<b>P</b>	Pole mounting
② Power Supply	<b>00</b>	12~48VDC
	<b>10</b>	110VAC
	<b>20</b>	220VAC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Specifications

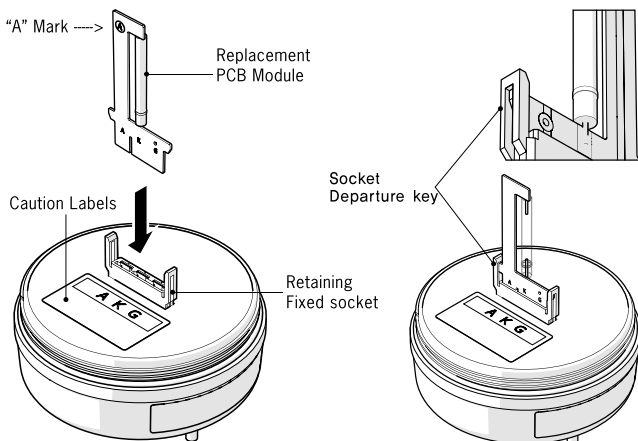
Function	Flashing
Power Supply	12 ~ 48VDC, 110VAC, 220VAC(AC 50/60Hz)
Dimension	68 mm
Lens Color	Red, Yellow, Green, Blue
Flashing rate	12~48VDC : 80±5 times per minute 110VAC : 77±5 times per minute 220VAC : 60±5times per minute
Current consumption	12~48VDC : 0.08~0.2A 110VAC : 0.07A 220VAC : 0.04A
Connection	UL2464/18AWG, AWM, 2C, 300V
Material	Body - ABS resin Lens - PC resin
Ambient temperature	-20 to 50°C
Storage ambient temperature	-20 to 70°C
Ambient Humidity	45~85% RH
Insulation resistance	500VAC 50 / 60Hz for 1 minute
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction
Approval	RoHS
Protection structure	IP65
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g

\*Lifetime of the lamp varies according to operating conditions and environment.

## Wiring Diagram



## How to install Xenon bulb




The new lamp should be inserted firmly to match the same signal A K G (or A G K) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- Insert the lamp circuit board correctly. not to inclined.

Please See Our "Mounting and Accessories" Section for Mounting Options

MS70S -LAMP-AL



Xenon lamp  
Type: 3W  
Lamp life:  
App 2,000 hours



# MS70M Series

Ø70mm Multicolored LED Signal Light

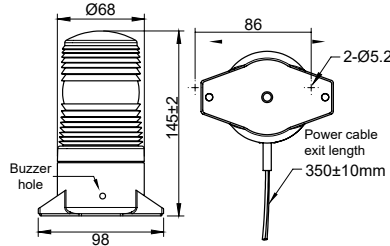
- Up to 7 color combinations available
- Three Mounting Options
- Two lens options for clear or softer view
- IP65 (buzzer type -IP50)



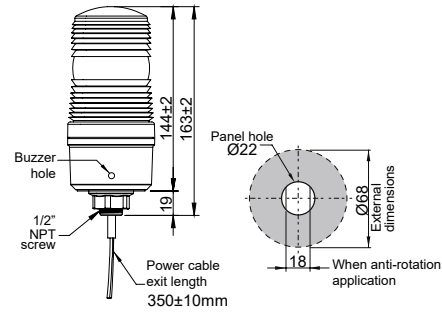
## Dimensions

unit: mm

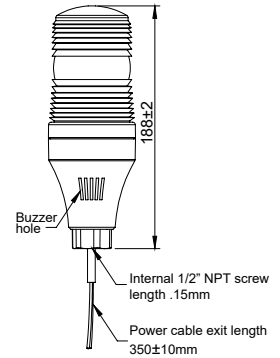
### G type Surface Mounts



### M type Direct Mounts



### P type Pole Mounts



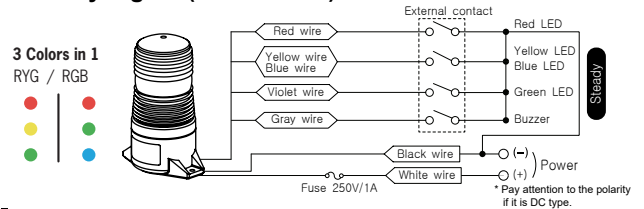
## Specifications

Function	Steady, Flashing, Buzzer	
Power Supply	12 ~ 24VDC, 110 ~ 220VAC(AC 50/60Hz)	
Alarm Sound Level	min 50 ~ max 75±5dB	
Dimension	68mm	
Lens Color	Clear / Milky white	
Flashing rate	12VDC : 65±5 times per minute 24VDC : 60±5 times per minute 110~220VAC : 70±5times per minute	
Current consumption	LED Steady 12~24VDC: 0.22A 110~220VAC: 0.04~0.06A	LED Steady +Buzzer 12~24VDC: 0.26A 110~220VAC: 0.05~0.06A
Connection	UL1007/22AWG	
Material	Body - ABS resin Lens - PC resin	
Ambient temperature	-20 to 50°C	
Storage ambient temperature	-20 to 70°C	
Ambient Humidity	45~85% RH	
Insulation resistance	500VAC 50 / 60Hz for 1 minute	
Vibration	10 to 55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1 hour in each direction	
Approval	RoHS	
Protection structure	IP65 (IP50-Buzzer type)	
Weight (DC type)	G type: app.196g M type: app.195g P type: app.198g	

## Wiring Diagram

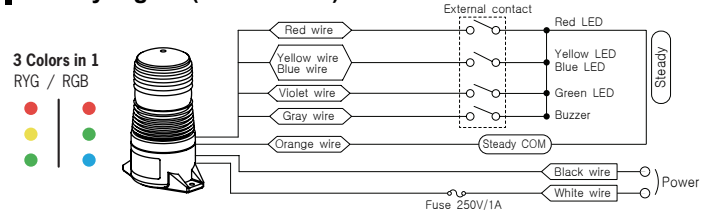
### 12~24VDC

#### Steady Lights (with Buzzer)



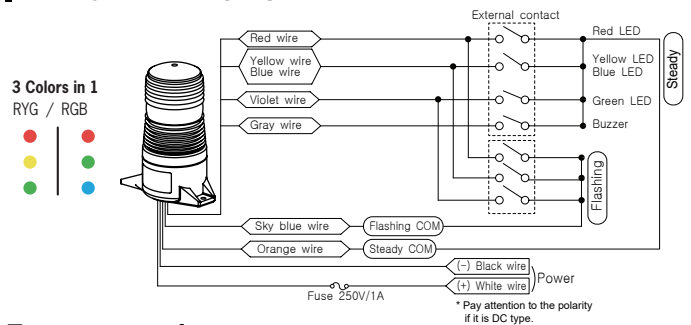
### 110~220VAC

#### Steady Lights (with Buzzer)



### 12~24VDC , 110~220VAC

#### Steady & Flashing Lights (with Buzzer)



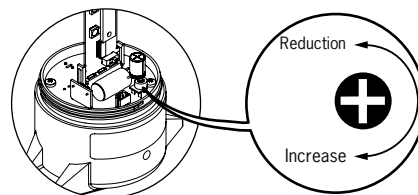
## Ordering Information

MS70M - ① G ② Z ③ 00 - ④ RGB M ⑤

① Mounting Type	G	Surface Mounting
	M	Direct mounting
	P	Pole mounting
② Light Style	F	Steady & Flashing
	B	Steady & Buzzer
	Z	Steady & Flashing & Buzzer
③ Power Supply	00	12~24VDC
	FF	110~220VAC
④ LED Colors	RBG	Red & Blue & Green
	RYG	Red & Yellow & Green
⑤ Lens Colors	No Mark	Clear lens
	M	Milky lens

\* Life of the LED varies according to operating conditions and environment.

## Feature settings



► Adjusting of buzzer sound  
Min 50 ~ Max 75±5dB

Please See Our  
"Mounting and  
Accessories" Section  
for Mounting Options





# ASG Series

Ø86mm Warning Signal Lights

- Incandescent or Xenon type
- Smooth Lens for Rotating Lights and Prism Lens for Flashing/Strobe Lights
- Stud mount
- Optional Wall Mounting Brackets available



## Ordering Information

ASG B - 01 - R  
 ①      ②      ③

① Light Style	no mark	Rotating
	<b>B</b>	Rotating w/Alarm
	<b>F</b>	Steady & Flashing
	<b>S</b>	Strobe w/Xenon bulb

② Power Supply	Rotating	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>FF</b>	110/220V AC
	Steady & Flashing	<b>01</b>	12V AC/DC
		<b>02</b>	24V AC/DC
		<b>10</b>	110V AC
		<b>20</b>	220V AC
	Strobe	<b>10</b>	110V AC
		<b>20</b>	220V AC

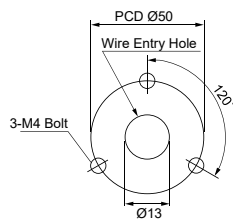
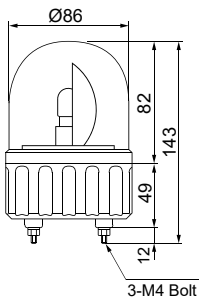
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Specifications

Model	ASG/ASGB	ASGF	ASGS
Lighting type	Incandescent		Xenon
Power Supply	12V AC/DC 24V AC/DC 110/220VAC	12V AC/DC 24V AC/DC 110VAC, 220VAC	110VAC 220VAC
Current Draw & Wattage	12VDC	0.67A, 8W	
	24VDC	0.33A, 8W	
	110/220VAC	0.4A, 5W	N/A
	110VAC	N/A	0.07A, 8W
	220VAC	N/A	0.03A, 8W
Alarm Sound Level	80±5 dB	N/A	
Rotation Rate	130±10 RPM	N/A	
Flashing rate	N/A	80 ±10 flashes/min	
Ambient Temperature	-15~40°C		
Storage Temperature	-25~70°C		
Ambient Humidity	45 ~ 85% RH		
Degree of Protection	IP42		
Recommended Wire Size	AC 110/220V : VSF / 0.75mm <sup>2</sup> (Power supply wire only)		
	AC/DC 12/24V : UL1007 22AWG	N/A	
Certificate/Compliance	RoHS, CE		

## Dimensions

unit: mm



Mounting hole layout

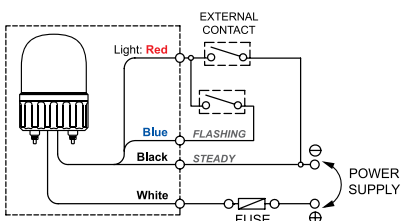
## Replacement Parts

Lens	<b>LENS-ASG-(□)</b>	Smooth Lens for Rotating Lights
	<b>LENS-ASGF-(□)</b>	Prism Lens for Flashing/Strobe Lights

(□): indicates color of Lens; R, Y, G or B

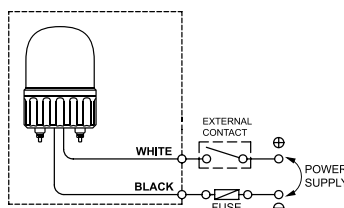
Bulb	Rotating only	Flashing only	Input voltage
	<b>MAB-T15-S-012-08</b>	<b>MAB-T15-S-012-08</b>	12V DC
	<b>MAB-T15-S-024-08</b>	<b>MAB-T15-S-024-08</b>	24V DC
	<b>MAB-T15-S-012-05</b>	<b>MAB-T15-S-130-08</b>	110V AC
	<b>MAB-T15-S-012-05</b>	<b>MAB-T15-S-240-08</b>	220V AC
<b>MAB-T15-S-012-05</b>	-	110/220V AC (free voltage)	

## Wiring Diagram



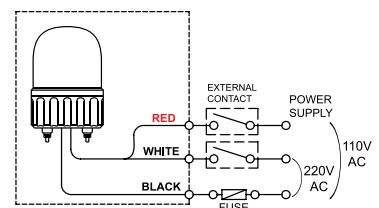
DC & AC Steady & Flashing Lights

ASGF-01-□ ASGF-10-□  
 ASGF-02-□ ASGF-20-□



DC Rotating Lights

ASG-01-□ ASGB-01-□  
 ASG-02-□ ASGB-02-□



AC Rotating & Strobe Lights

ASG-FF-□ ASGS-10-□  
 ASGB-FF-□ ASGS-20-□



# MS86L Series

Ø86mm LED Signal Lights

- Wide light distribution with prism-cut lens
- Selectable Steady/Flashing modes by jumper

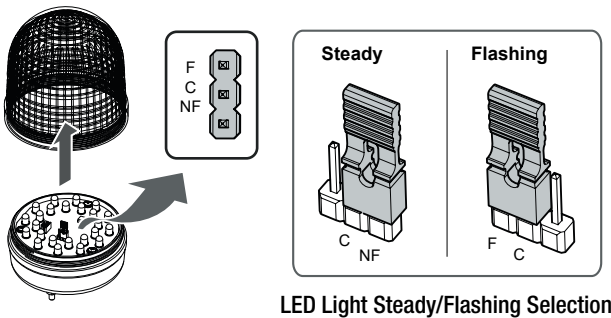


## Ordering Information

MS86L - F 02 - R  
 ①      ②      ③

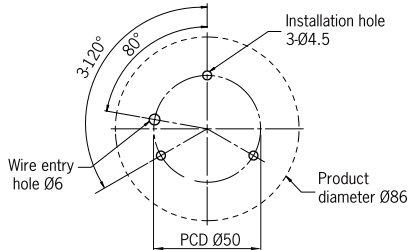
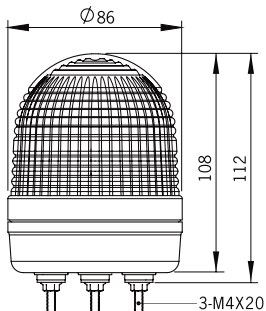
① Light Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Audible Alarm
② Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90-240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Jumper setting



## Dimensions

unit: mm

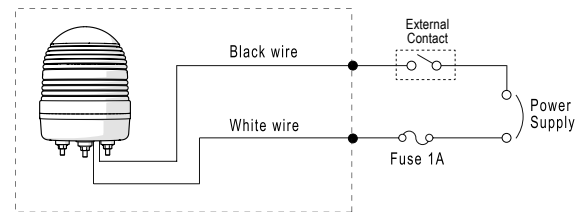


Mounting hole layout

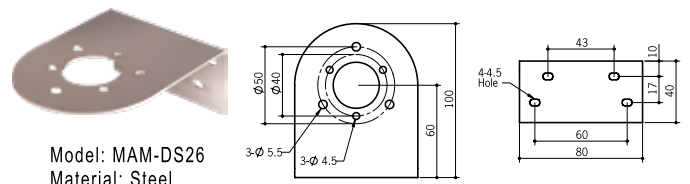
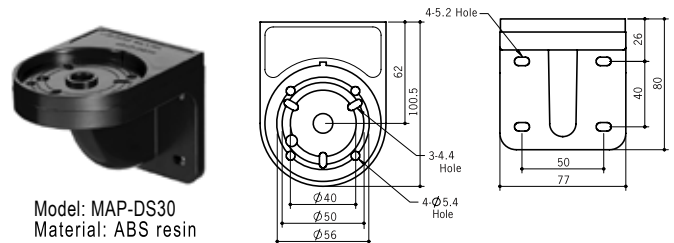
## Specifications

Functions		Steady/Flashing/Alarm	
Power Supply		24V AC/DC	90~240VAC
Current Consumption	R	0.33A(W/Alarm : 0.36A)	0.05A (W/Alarm : 0.08A)
	Y		
	G		
	B	0.49A (W/Alarm : 0.49A)	
	C		
Flash Rate		80 ±10 time/min	
Alarm Sound Level		80 ±5 dB	
Vibration		0.75mm at 10~55 Hz	
Insulation Resistance		100 MΩ minimum (500VDC mega)	
Ambient Temperature		-20~40°C	
Storage Temperature		-20~70°C	
Ambient Humidity		45~85% RH	
Degree of Protection		IP65	
Recommended Wire Size		UL 2464,22AWGx2C	
Weight		150g	
Certificate/Compliance		RoHS, UL	

## Wiring Diagram



## Wall mounting options (for all MS86 Series)



Please See Our "Mounting and Accessories" Section for Mounting Options



# MS86S Series

Ø86mm Xenon Strobe Lights

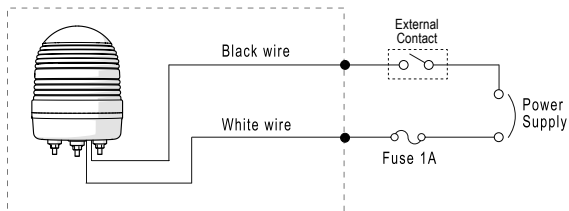


- Outstanding visibility from distance
- PCB module style Xenon lamp
- Fast and easy replacement of lamp

## Specifications

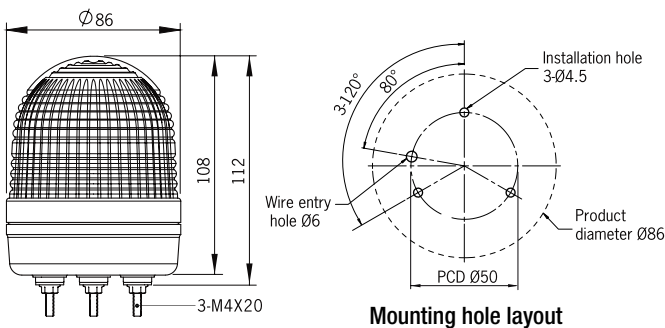
Lighting type	Xenon strobe		
Models	S00	N10	N20
Power Supply	12~24VAC/DC	110VAC	220VAC
Current Consumption	0.08~0.15A	0.07A	0.03A
Flash Rate	80 ± 10 times/minute		
Vibration	0.75mm at 10~55 Hz		
Insulation Resistance	100 MΩ minimum (500VDC mega)		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL 2464, 22 AWG X 2C		
Weight	300g	200g	
Certificate/Compliance	RoHS, UL		

## Wiring Diagram



## Dimensions

unit: mm



Mounting hole layout

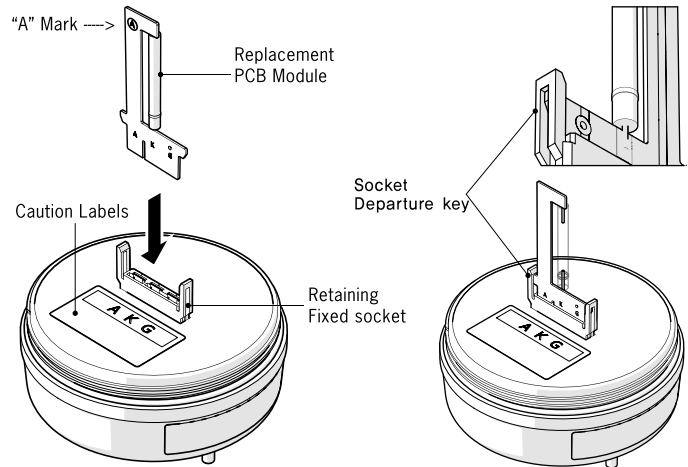
Please See Our "Mounting and Accessories" Section for Mounting Options

## Ordering Information

MS86S - S00 - R  
① ②

① Power Supply	<b>S00</b>	12-24V AC/DC
	<b>N10</b>	110V AC
	<b>N20</b>	220V AC
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Ground
	<b>B</b>	Blue
	<b>C</b>	Clear

## How to install Xenon bulb



The new lamp should be inserted firmly to match the same signal **A K G** (or **A G K**) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- ⚠ - Insert the lamp circuit board correctly. not to inclined.

Supplier No.	MS86S-LAMP-02	MS86S-LAMP-10
	Description. Xenon Lamp I - Type, 3W 12~24V Lamp life: 1,000,000 Frequency. (2,000 hours)	
		Description. Xenon Lamp U - Type, 6W AC110V / 220V Lamp life: 1,000,000 Frequency. (2,000 hours)



# MS86W Series

Ø86mm LED Low-head  
Multi-Function indicator light

- 2 flashing patterns(Selectable by DIP switch)
- Energy efficient: Low power consumption
- Main body: heat resistant ABS resin
- Good for both indoor or outdoor



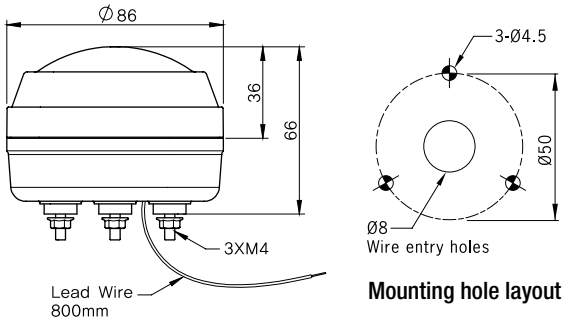
## Ordering Information

MS86W - R 00 - R  
① ② ③

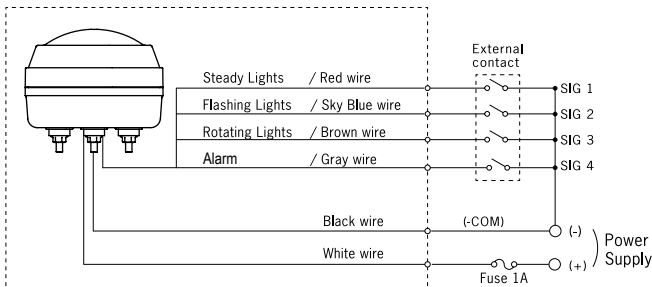
① Style	<b>R</b>	Steady + Flashing + Rotating
	<b>B</b>	Steady + Flashing + Rotating + Alarm (24V AC/DC only)
② Power	<b>00</b>	12-24V AC/DC (R-type only)
	<b>02</b>	24V AC/DC (B-type only)
	<b>FF</b>	100-220V AC (R-type only)
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

unit: mm



## Wiring Diagram



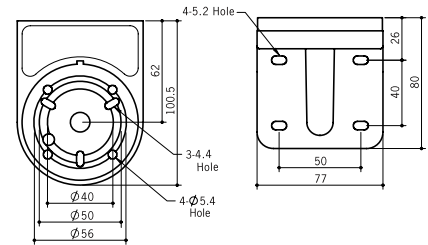
## Specifications

Functions	Steady, Flashing, Rotating w/Audible Alarm		
Input Voltate Options	12~24V AC/DC		
Current Consumption (RMS value ±10%)		LED	w/Alarm
	R	0.50A	0.53A
	Y	0.50A	0.53A
	G	0.30A	0.34A
	B	0.35A	0.38A
	C	0.38A	0.40A
Flashing Rate	F1: 80 ±10 flashes/minute		
	F3: 240 ±10 flashes/minute(Emergency Signal)		
Rotating Rate	Approx. 130 ±20 rpm (clockwise rotation)		
Alarm Sound Level	80 ±5dB at 1m		
Vibration	Operating extremes:10~55 Hz, amplitude 0.75mm		
Insulation Resistance	100 MΩ minimum (500VDC mega)		
Ambient Temperature	-15~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL1007/22AWG		
Weight	170g		
Certificate/Compliance	RoHS, UL		

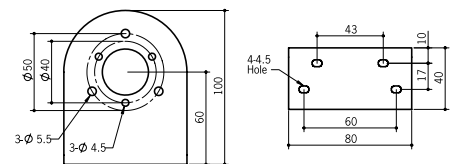
## Wall mounting options (for all MS86 Series)



Model: MAM-DS30  
Material: ABS resin



Model: MAM-DS26  
Material: Steel



Please See Our "Mounting and Accessories" Section for Mounting Options

• **Note** •

A large rectangular area with a dotted border, containing 25 horizontal dotted lines for writing notes.



# MS86T Series

Ø86mm High Intensity LED  
Multi Function Signal Lights



- Extremely high light output using unique LED technology
- Outstanding visibility at distance
- Flashing Cycles : 2 patterns (Selectable by a switch)
- Adjustable flashing or rotating cycles
- Built-in audible alarm with adjustable volume

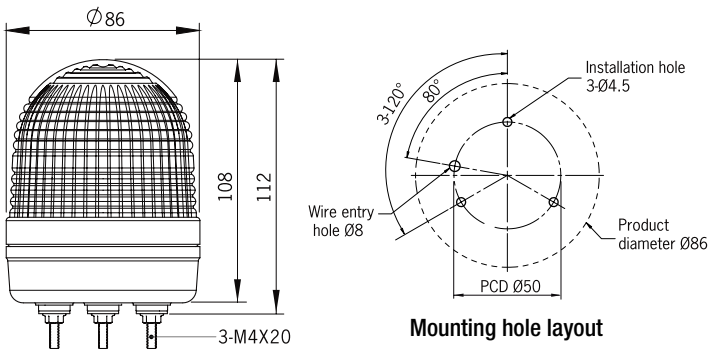
## Ordering Information

MS86T - ① ② - ③

① Light Style	<b>R</b>	Steady, Flashing & Rotating
	<b>B</b>	Steady, Flashing & Rotating w/Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90-240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

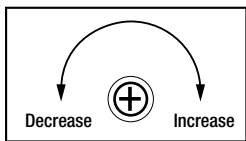
## Dimensions

unit: mm

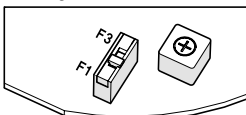


## Feature settings

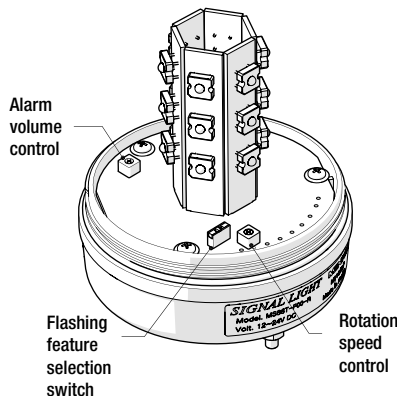
- Alarm volume control
- Rotation speed control



- Flashing feature selection



F1: 80±10 times per minute  
F3: 240±10 times per minute  
( emergency signal display light )

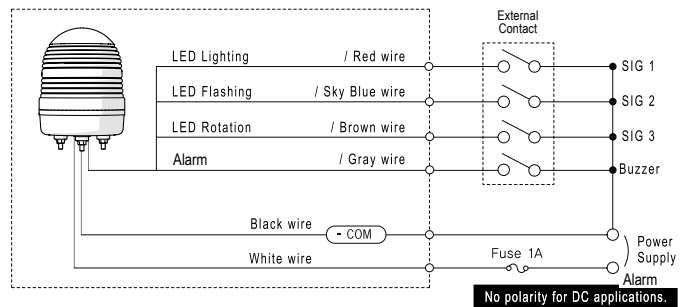


## Specifications

Lighting type	Steady/Flashing/Rotating/Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	3 Sound type	Max. 0.52A±10%
	4 Sound type	Max. 0.65A±10%
	Alarm	150mA
Flash Rate	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute(emergency)	
Rotation Rate	Min 60 ~ Max 300rpm (clockwise)	
Alarm Sound Level	10-100 ±5dB at 1m	
Vibration	0.75mm at 10~55 Hz	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	Approx. 230g	
Certificate/Compliance	RoHS, UL	

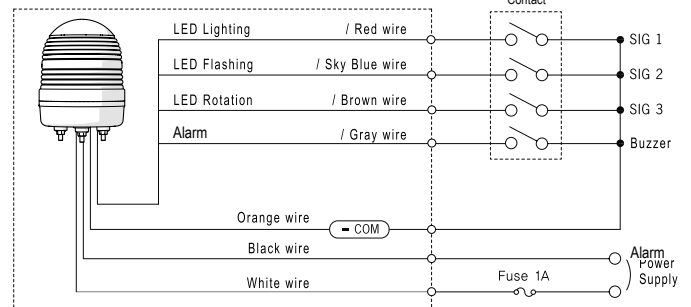
## Wiring Diagram

### 12-24V AC/DC



No polarity for DC applications.

### 90-240V AC



Please See Our "Mounting and Accessories" Section for Mounting Options



# MS86M Series

Ø86mm Multi Colors & 1 High Intensity LED Signal Lights

- Multi colors ledlight
- High brightness led light
- Adjustable sound level 10 ~ 100db
- Flashing cycles : 2 patterns (selectable by a switch)



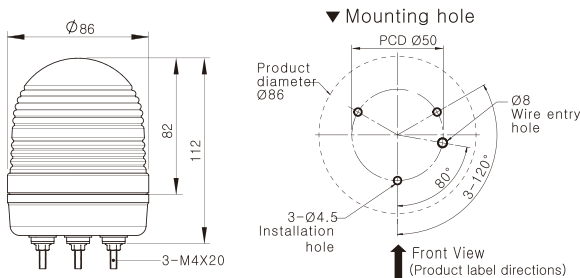
## Ordering Information

MS86M F 00 - RYG  
 ① ② ③

① Light Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Falshing w/Audible Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90 ~240V AC
③ Colors	<b>RYG</b>	Red, Yellow and Green
	<b>RGB</b>	Red, Green and Blue

## Dimensions

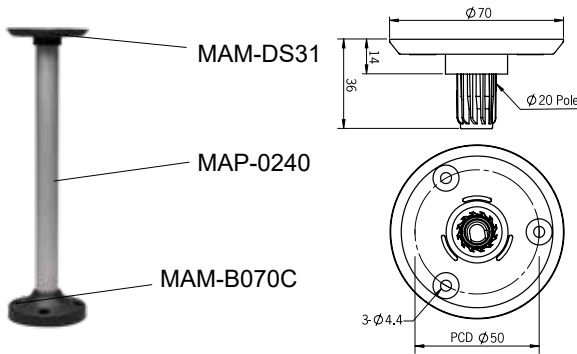
unit: mm



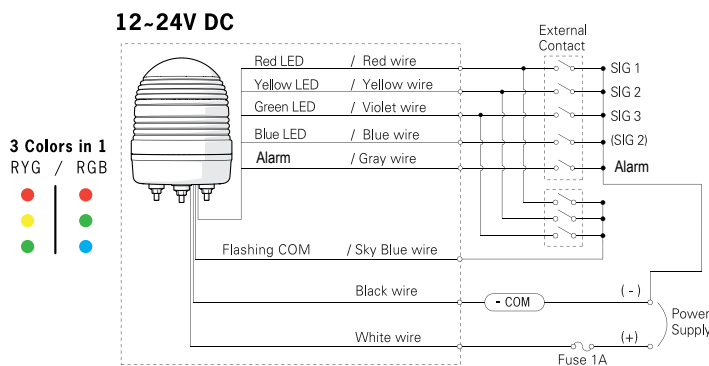
## Specifications

Lighting type	Steady+Flashing w/Audible Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	LED	0.6A
	w/Alarm	0.23A
Flash Rate	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute	
Alarm Sound Level	10-100 ±5dB at 1m: Volume adjustable	
Vibration	0.75mm at 10~55Hz	
Insulation Resistance	100 MΩ minimum (500VDC mega)	
Ambient Temperature	-20~40°C	
Storage Temperature	-40~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	270g	

## MS86 Pole Mounting Option MAM-DS31 Dimensions

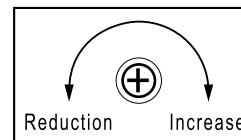


## Wiring Diagram

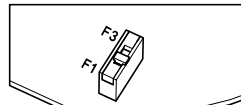


## Feature settings

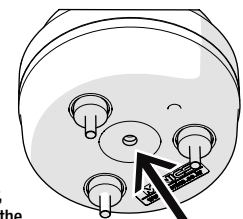
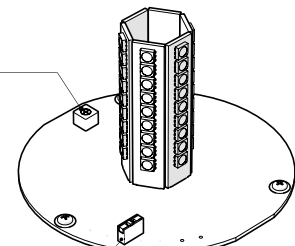
- Alarm volume control



-Flash settings



F1: 80 ±10 flashing per minute  
F3: 240 ±10 flashing per minute



Alarm hole

\*When installing a light with built in buzzer, please allow minimum of 5mm space from the surface to the base of unit.

Please See Our "Mounting and Accessories" Section for Mounting Options

# MW86T/M Series

Ø86mm LED/Multi Function Signal Lights

- High intensity LED
- 2 flashing mode: Standard and Emergency Signaling
- Adjustable Sound volume and Rotating speed
- 3 Melody & 3 siren modes
- Removable horn included



Horn Type



Standard Type



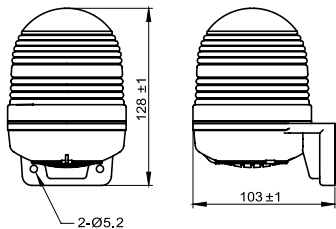
## Ordering Information

MW86 - T - R - 00 - Y - M3 (B)  
 ① ② ③ ④ ⑤

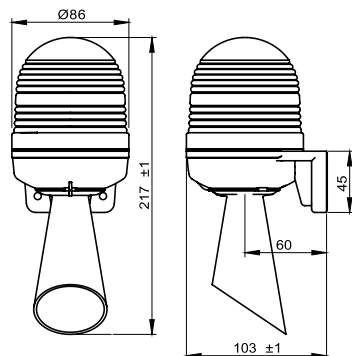
① Model	<b>T - R</b>	Steady/Flashing/Rotating	
	<b>M - F</b>	3 color in 1 Steady/Flashing	
② Power	<b>00</b>	12 ~ 24VDC	
	<b>FF</b>	90 ~ 240VAC	
③ Lens Colors	<b>MW86T</b>	<b>R</b>	Red
		<b>Y</b>	Yellow
		<b>G</b>	Green
		<b>B</b>	Blue
		<b>C</b>	Clear
	<b>MW86M</b>	<b>RYG</b>	Red, Yellow, Green
<b>RGB</b>		Red, Green, Blue	
④ Sound Type	<b>M3</b> (melody)		Fur Elise
			Home, Sweet home
			The Cuckoo Waltz
	<b>S3</b> (Siren)		Fire truck
			Police car
		Ambulance	
⑤ Body color	<b>no mark</b>	Ivory	
	<b>B</b>	Black	

## Dimensions (Unit: mm)

Standard Type



Horn Type

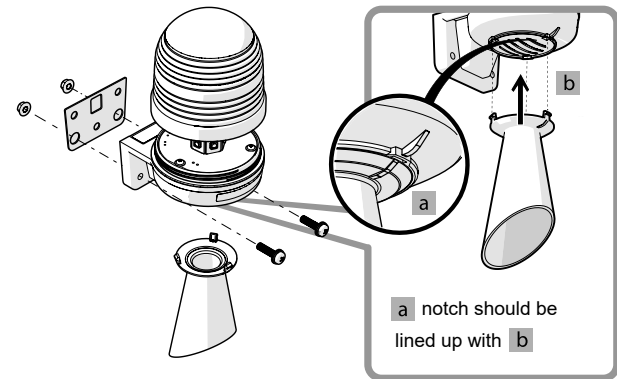
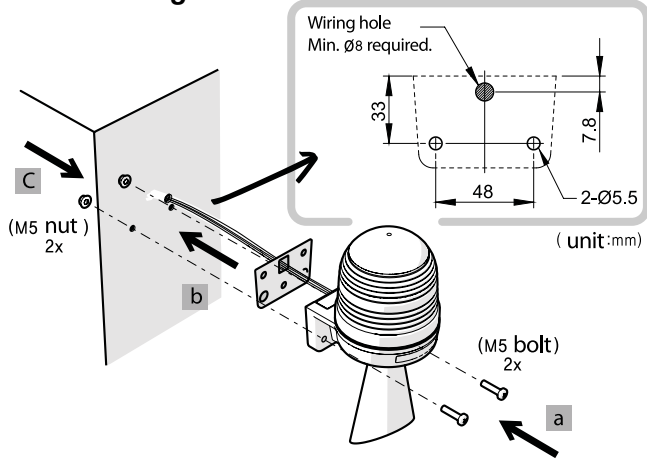


## Specifications

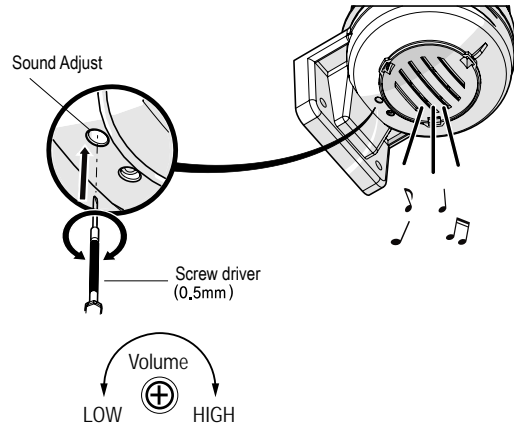
Model	MW86T		MW86M	
Lighting type	Steady / Flashing / Rotating		Steady / Flashing	
Power Supply	12 ~ 24VDC	90 ~ 240VAC(50~60Hz)	12 ~ 24VDC	90 ~ 240VAC(50~60Hz)
Current Consumption	Light	Max 0.32A ±10%	Max 0.10A ±10%	Max 0.40A ±10%
	w/Sound	Max. 0.52A±10%	Max 0.16A ±10%	Max 0.20A ±10%
Flash Rate	80 times/min ± 5 (F1), 240 times /min ± 10 (F3)			
Rotation Rate	60 ~ 300 ± 10 RPM(clock wise)		N/A	
Alarm Sound Level	Standard Type	55 ~ 85±5dB	Standard Type	55 ~ 85±5dB
	Horn Type	55 ~ 90±5dB	Horn Type	55 ~ 90±5dB
Material	Body: ABS, Lens: PC			
Insulation Resistance	100 MΩ minimum (500VDC mega)			
Ambient Temperature	-20~40°C			
Storage Temperature	-20~70°C			
Ambient Humidity	45~85% RH			
Degree of Protection	Standard Type	IP43	Standard Type	IP43
	Horn Type	IP54	Horn Type	IP54
Recommended Wire Size	UL1007/22AWG			
Weight	Standard Type	Approx. 279g	Standard Type	Approx. 286g
	Horn Type	Approx. 306g	Horn Type	Approx. 313g
Certificate/Compliance	UL, RoHS			



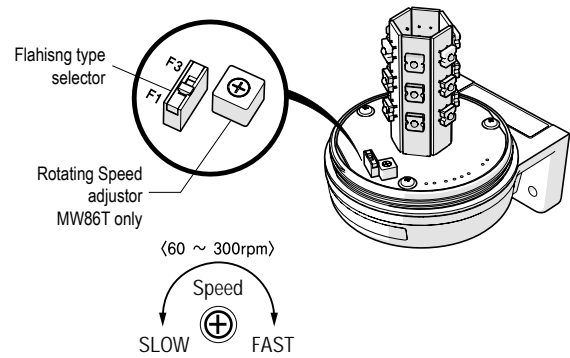
## Installation guide



## Volume Control



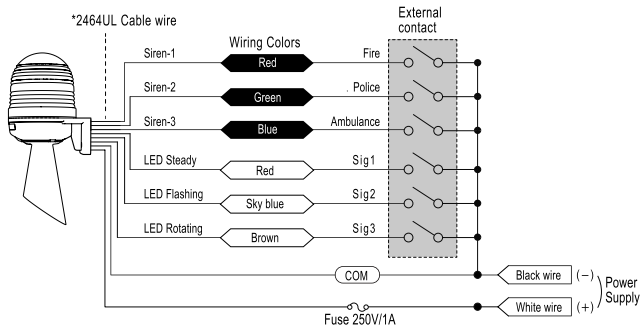
## Flashing/Rotating setting



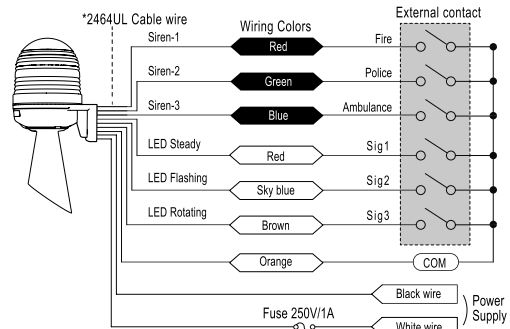
## Wiring Diagram

### MW86T

12 ~ 24V

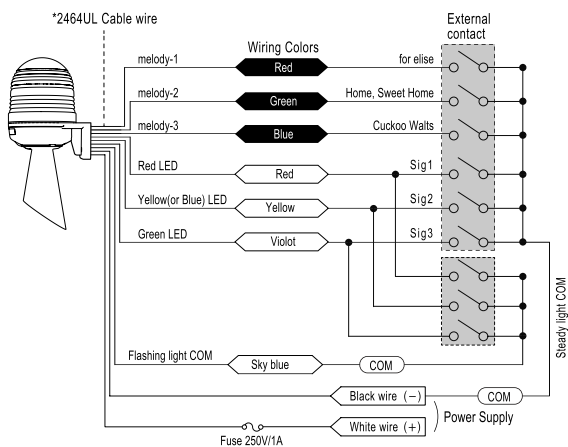


### 90 ~ 240V

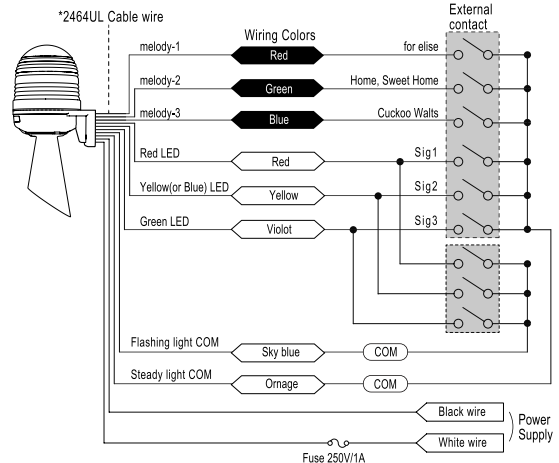


### MW86M

12 ~ 24V



### 90 ~ 240V





# MQV Series

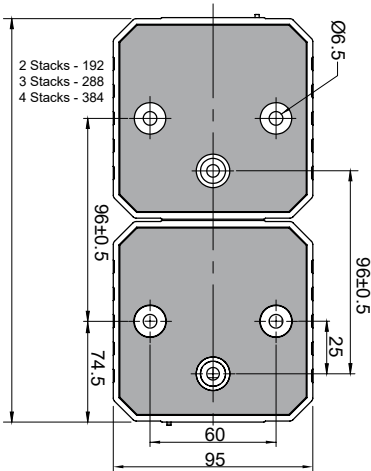
95mm Cube Signal Lights and Alarms

MQVL series  
MQVM series  
MQVX series

MQVH series  
MQVS series

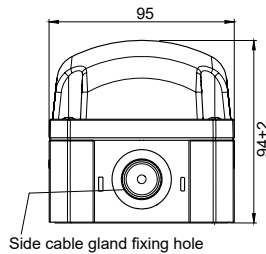
## Combination of MQV Series

unit: mm



## Combination with signal lights

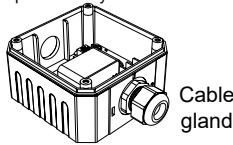
Speaker products and signal lights can be used in the form of traffic lights by connecting two or more products.



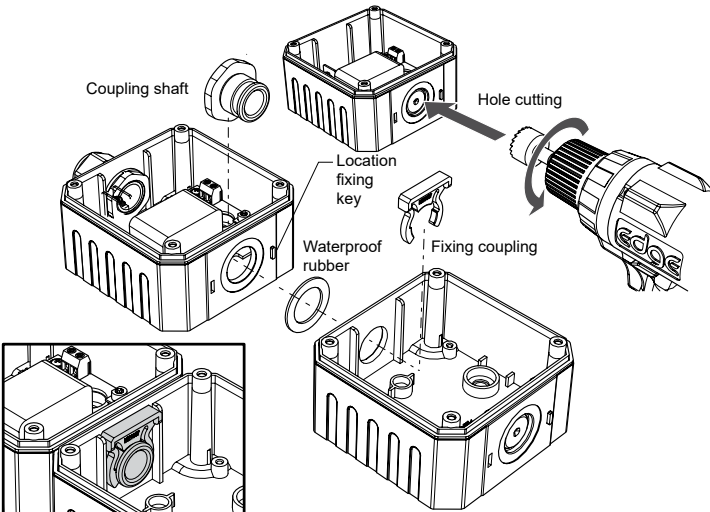
## Mounting hole dimension by cable gland standard

Cable gland	Mounting hole	Cable Outer dia
M16X1.5	Ø16	Ø4.5~10
M20X1.5	Ø20	Ø7~12.5
PG9	Ø16	Ø3~8
PG13.5	Ø20	Ø5~12

Before inserting the cable gland accessory, cutting work is required using drill and hole cutter on the side of product body.



## Body connection coupling assembly



# MQVM Series

D95mm Cube Multi-color LED Signal Light



## Ordering Information

MQVM - ① - ② - ③ (V) LED ROHS IP65

① Power Supply	00	12~24VDC
	FF	110~220VAC
② LED Color	RGB	Red & Green & Blue
	RYG	Red & Yellow & Green
③ Option	V	240 ±10 times/minute (Emergency signal)

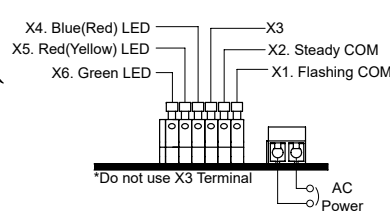
## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC
Current consumption (±10%)	12~24VDC : 0.28A 110~220VAC : 0.07A
Function	Steady, Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	Standard - 80±5 per minute Option (V) type - 240±10 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/AWG22
Color	Milky white
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 300g (AC type standard)

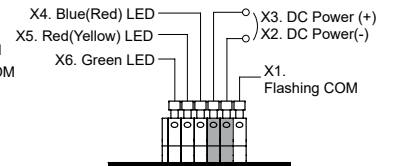
\* Life of the LED varies according to operating conditions and environment

## Connection Diagram

### AC type (110~220VAC)

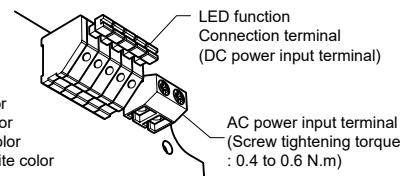


### DC type (12~24VDC)



## RGB Product Color Combination

- X2 + X4: Blue color
- X2 + X5: Red color
- X2 + X6: Green color
- X2 + X4 + X5: Pink color
- X2 + X4 + X6: Cyan color
- X2 + X5 + X6: Yellow color
- X2 + X4 + X5 + X6: White color





# MQVL Series

95mm Cube LED Signal Light

## Ordering Information



MQVL - FF - R (V)  
 ① ② ③

① Power Supply	00	12~24VDC		
	FF	110~220VAC		
② Lens Color	R	Red	G	Green
	Y	Yellow	B	Blue
	C	Clear		
③ Option	V	240 ±10 times/minute (Emergency signal)		

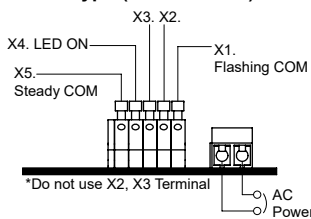
## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC
Function	Steady, Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	Standard - 80±5 per minute Option (V) type - 240±10 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/AWG22
Color	Red, Yellow, Green, Blue, Clear
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 300g (AC type standard)

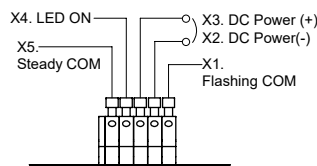
\* Life of the LED varies according to operating conditions and environment

## Connection Diagram

### AC type (110~220VAC)



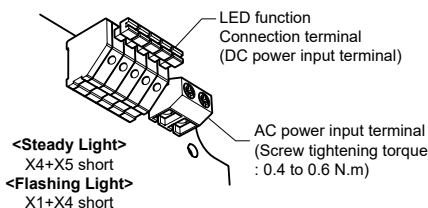
### DC type (12~24VDC)



### Current consumption

LED color	MQVL Series	
	12~24VDC	110~220VAC
Red	0.21A	0.06A
Yellow	0.21A	0.06A
Green	0.21A	0.06A
Blue	0.28A	0.19A
White	0.21A	0.06A

(RMS value current consumption when LED is on ± 10%)



# MQVX Series

95mm Cube Strobe Light

## Ordering Information



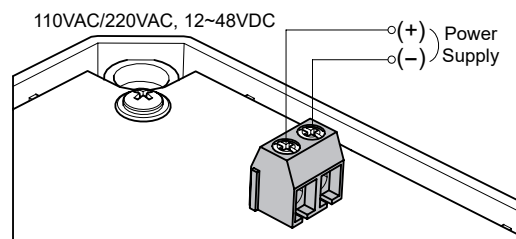
MQVX - 00 - R  
 ① ②

① Power Supply	00	12~48VDC		
	10	110VAC		
	20	220VAC		
② Lens Color	R	Red	G	Green
	Y	Yellow	B	Blue
	C	Clear		

## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)
Allowable voltage range	10.8V ~ 50VDC, 100~120VAC, 210~230VAC
Current consumption	12~28VDC : 0.2A 110VAC : 0.07A 220VAC : 0.04A
Function	Flashing
Dimension	95 x 95 x 94 (mm)
Flashing rate	12~18VDC : 80±5 times per min ute 110VAC : 77±5 times per minute 220VAC : 60±5 times per minute
Mounting method	Body bottom mount base - Screw type (M6, 2EA)
Power cable insertion	Internal bottom of main body - Maximum cable diameter : Ø7mm External locations - Cable gland
Connection	UL1007/18AWG
Color	Red, Yellow, Green, Blue, Clear
Material	Body - PA6 Lens - PC
Insulation resistance	Over 100MΩ (500VDC mega between terminals and case )
Withstand voltage	500VAC 50/60Hz 1 min (between terminals and case before )
Vibration	0.75mm at 10~55Hz (cycle: 1minute)
Temperature	Ambient temperature : -20 ~ 50°C Storage ambient temperature: -20 ~ 70°C
Ambient humidity	45 ~ 85% RH
Protection structure	IP65
Weight	App. 283g (DC type)

## Connection Diagram





# AVG Series

Ø135mm Rotating  
Warning Signal Light

- Incandescent type
- Smooth lens
- Large rotating reflector
- Stud mount
- Audible Alarm (80dB) model available

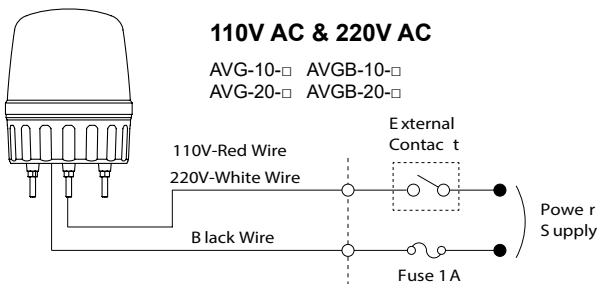
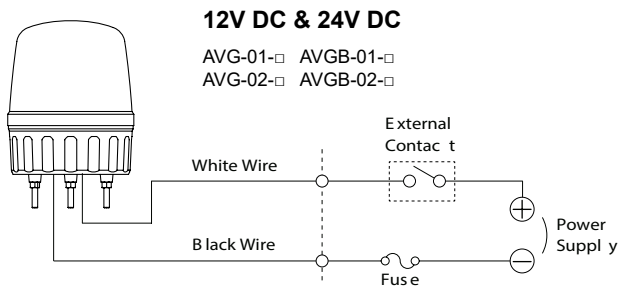


## Ordering Information

AVG **B** - **01** - **R**  
 ①      ②      ③

① Style	no mark	Rotating
	<b>B</b>	Rotating w/Buzzer
② Power Supply	<b>01</b>	12VDC
	<b>02</b>	24VDC
	<b>10</b>	110VAC
	<b>20</b>	220VAC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue

## Wiring Diagram



## Mounting option

Wall Mount  
Brackets



MAM-DS27

## Specifications

Model	AVG	AVGB
Lighting type	Incandescent	
Power Supply	12VDC, 24VDC, 110VAC, 220VAC	
Current consumption Wattage	12VDC	2.08A, 25W
	24VDC	1.04A, 25W
	110VAC	0.22A, 25W
	220VAC	0.11A, 25W
Sound Level	N/A	80 ±5dB @1m
Rotation Rate	150±10 times/minute	
Ambient Temperature	-15~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45 ~ 85% RH	
Degree of Protection	IP42	
Recommended Wire Size	AC 110/220V : UL1007, 18AWG	
	AC/DC 12/24V : UL1007 22AWG	
Certificate/Compliance	RoHS, UL, CE	

## Replacement Parts

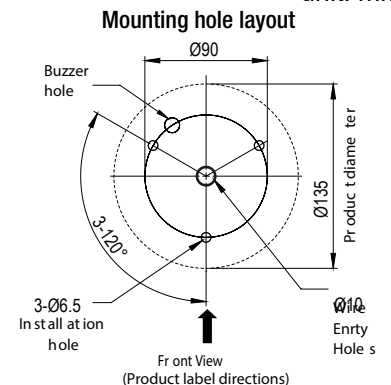
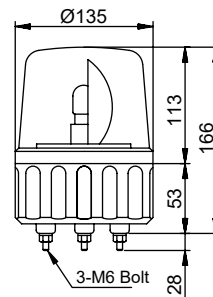
	Part Number	Power Supply
Bulb	MAB-T15-D-012-25	12V DC, 25 Watt
	MAB-T15-D-024-25	24V DC, 25 Watt
	MAB-T15-D-130-25	110V AC, 25 Watt
	MAB-T15-D-240-25	220V AC, 25 Watt
LED Bulb	MAL-T15-D-②-①	-
Lens	LENS-AVG-①	Smooth Lens for Rotating Lights

①: Color of LED or Lens; R, Y, G, B or C

②: Voltage of LED or Lens; 12 (12VAC/DC) 24(24VAC/DC) 120(120VAC) 220(220VAC)

## Dimensions

unit: mm



Please See Our "Mounting and Accessories" Section for Mounting Options



# MS115L Series

Ø115mm LED Signal Lights



- Triple-reflection system for enhanced visibility
- Enhanced Illumination : long-life, super bright LED
- Energy efficient : Low power consumption

## Specifications

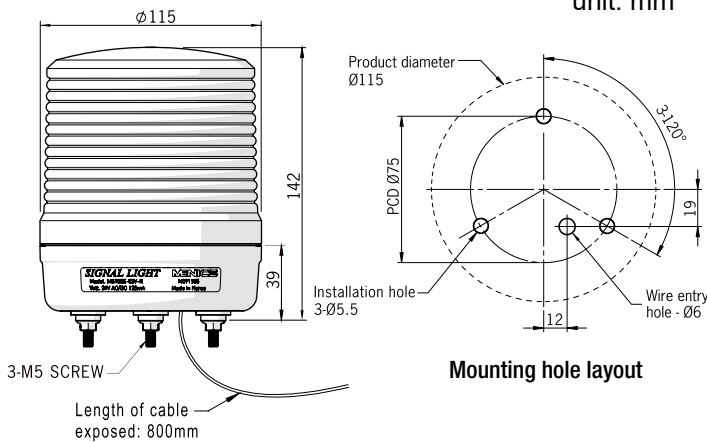
Style	LED Steady, Flashing + Buzzer				
Power Supply	24VAC/DC		90~240VAC		
Current Consumption (RMS value ±10%)		LED	w/Buzzer	LED	w/Buzzer
	R	0.13A	0.16A	0.07A	0.10A
	Y	0.11A	0.14A		
	G	0.25A	0.28A		
	B	0.25A	0.28A		
C	0.29A	0.32A			
Flash rate	80 ±10 flashes/min				
Alarm Sound Level	80 ±5 dB at 1m				
Vibration	0.75mm at 10~55Hz				
Ambient Temp.	-20~40°C				
Storage Temp.	-20~70°C				
Ambient Humidity	45~85% RH				
Degree of Protection	IP65				
Weight	Approx. 325g				
Connection	2464UL/22AWG				
Certificate/Compliance	RoHS, UL				

## Ordering Information

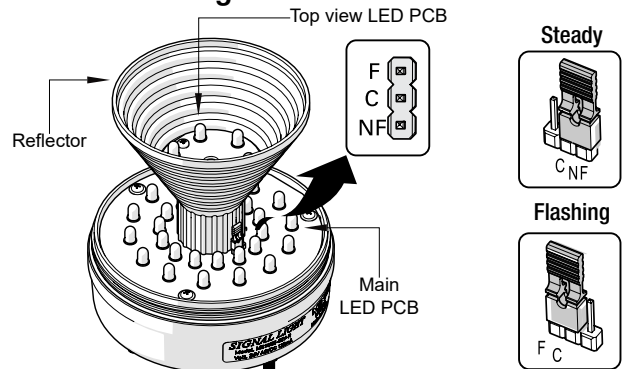
MS115L - F 02 - R  
 ① ② ③

① Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Alarm
② Power Supply	<b>02</b>	24V AC/DC
	<b>FF</b>	90-240V AC
③ Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

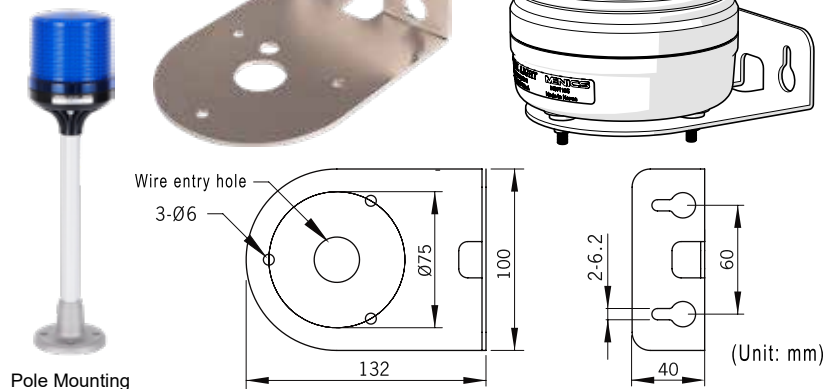


## Feature settings

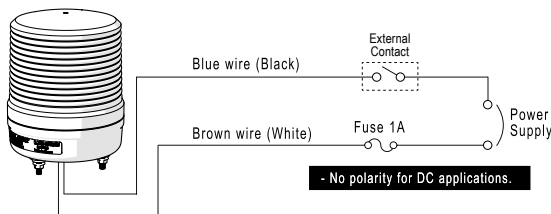


## Wall mounting options (for all MS115 Series)

Model: MAM-DS29  
Material: Steel



## Wiring Diagram





# MS115S Series

Ø115mm Xenon Lamp Signal Lights

- Xenon lights
- Outstanding visibility at distance
- PCB module style Xenon lamp
- IP65 rated

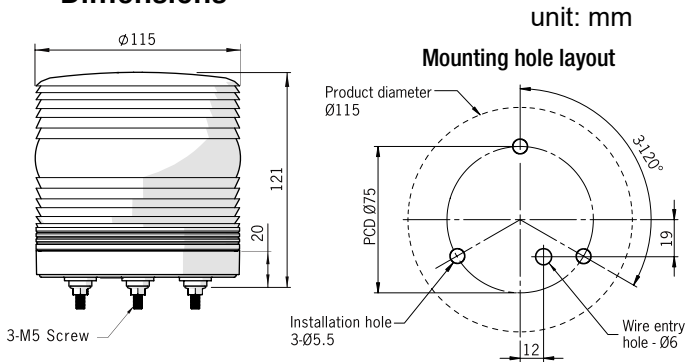


## Ordering Information

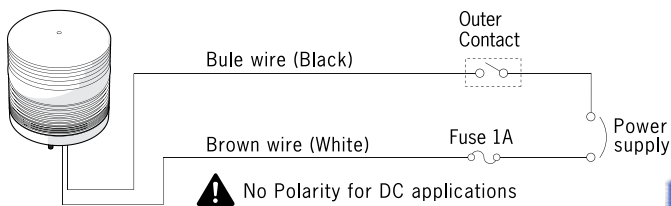
MS115S - S 20 - R     
                   ①                  ②

① Power Supply	<b>00</b>	12-24V AC/DC
	<b>10</b>	110V AC
	<b>20</b>	220V AC
② Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions



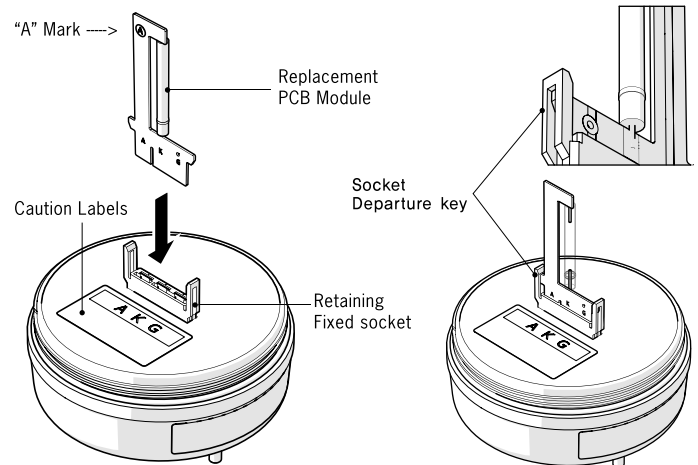
## Wiring Diagram



## Specifications

Lighting type	Xenon Strobe		
Power Supply	12~24V AC/DC	110V AC	220V AC
Current Consumption	0.08~0.15A	0.07A	0.03A
Flashing Rate	60±10 times/min		
Vibration	0.75mm at 10~55 Hz		
Lens Material	PC Plastic		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL 2464, 22 AWG X 2C, 300mm		
Weight	315g		
Certificate/Compliance	RoHS, UL		

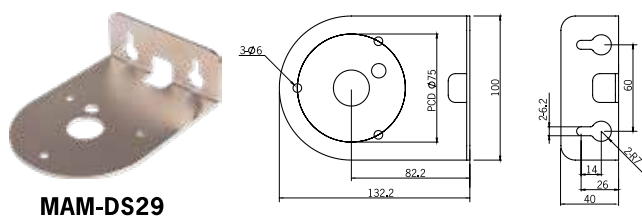
## How to install Xenon bulb



The new lamp should be inserted firmly to match the same signal A K G (or A G K) mark. Printed "A" in circuit and label.

- ⚠ - If you insert reverse direction, the lamp can not operate.
- ⚠ - Insert the lamp circuit board correctly. not to inclined.

## Wall mounting options (for all MS115 Series)



Supplier No.	MS86S-LAMP-02	MS86S-LAMP-10
Description.	Xenon Lamp I - Type, 3W 12~24V Lamp life: 1,000,000 Frequency. (2,000 hours)	Xenon Lamp U - Type, 6W AC110V / 220V Lamp life: 1,000,000 Frequency. (2,000 hours)



# MS115T Series

Ø115mm Multi Function LED Signal Light

- Low body type (20mm)
- Wide light distribution with prism-cut lens
- Outstanding visibility at distance
- 2 flashing patterns (selectable by DIP Switch)
- IP65 rated



## Specifications

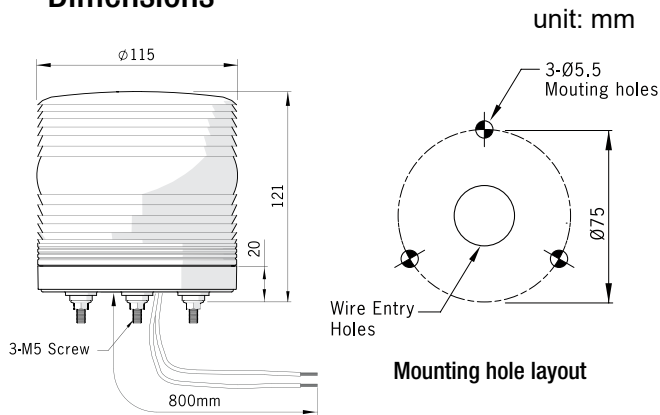
Lighting type	Steady/Flashing/Rotating w/Buzzer		
Power Supply	12-24V AC/DC	90-240V AC	
Current Consumption	Red	0.54A/ 0.69A(w/Buzzer)	0.08A/ 0.23A (w/Buzzer)
	Yellow	0.53A/ 0.69A (w/Buzzer)	0.07A/ 0.23A (w/Buzzer)
	Green	0.25A/ 0.39A (w/Buzzer)	0.04A/ 0.19A (w/Buzzer)
	Blue	0.54A/ 0.69A (w/Buzzer)	0.08A/ 0.23A (w/Buzzer)
	Clear	0.24A/ 0.39A (w/Buzzer)	0.04A/ 0.19A (w/Buzzer)
Flash Rate(adjustable)	F1: 80 ±10 flashes/minute F3: 240 ±10 flashes/minute(Emergency signal)		
Rotation Rate	60 ~ 300±10 rpm (Clockwise)		
Alarm Sound Level(Adjustable)	10 - 100dB±5 at 1m		
Vibration	0.75mm at 10~55 Hz		
Ambient Temperature	-20~40°C		
Storage Temperature	-20~70°C		
Ambient Humidity	45~85% RH		
Degree of Protection	IP65		
Recommended Wire Size	UL1007/22AWG		
Weight	360g		
Certificate/Compliance	RoHS, UL		

## Ordering Information

MS115T - R 00 - R  
 ① ② ③

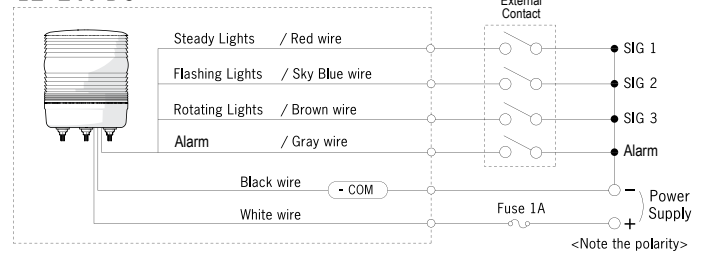
① Light Style	<b>F</b>	Steady/Flashing
	<b>R</b>	Steady/Flashing/Rotating
	<b>B</b>	Steady/Flashing/Rotating+Alarm
② Power	<b>00</b>	12 - 24V AC/DC
	<b>FF</b>	90 - 240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Dimensions

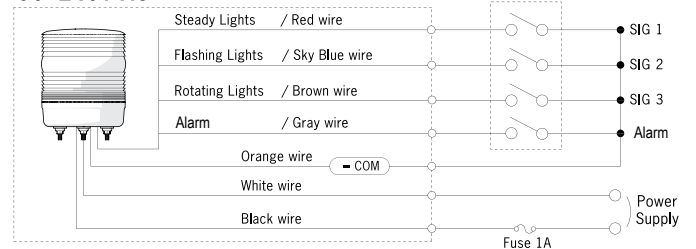


## Wiring Diagram

### 12-24V DC

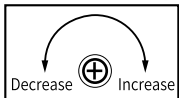


### 90-240V AC

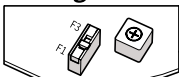


## Function Setting

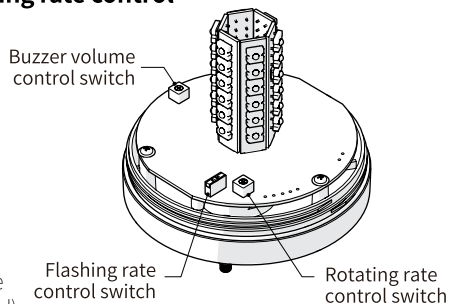
### Buzzer volume / Rotating rate control



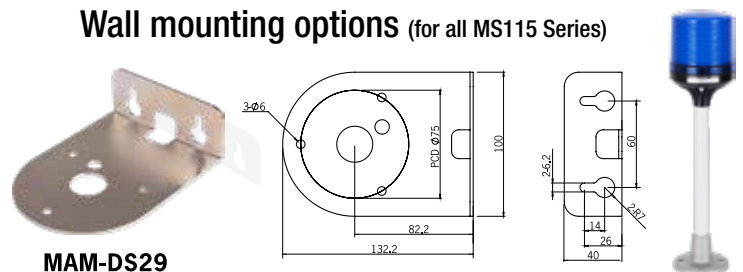
### Flashing rate control



F1: 80 ±10 times per minute  
 F3: 240 ±10 times per minute  
 (when using emergency signal)



## Wall mounting options (for all MS115 Series)

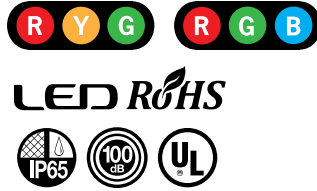




# MS115M Series

Ø115mm 3 colors in 1 LED Signal Lights

- 3 Colors in 1 LED modular components
- Bright & even light distribution with prism-cut lenses
- Multi-functional LED signal light
- Flashing Cycles : 2 patterns (Selectable by a switch)
- Optional Audible Alarm upto 100dB (adjustable volume)



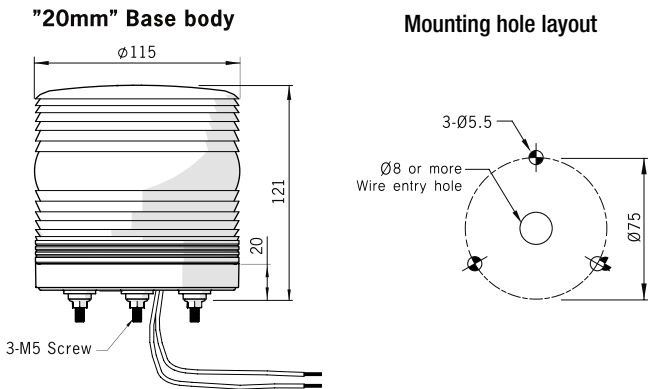
## Ordering Information

MS115M - F 00 - RYG  
 ① ② ③

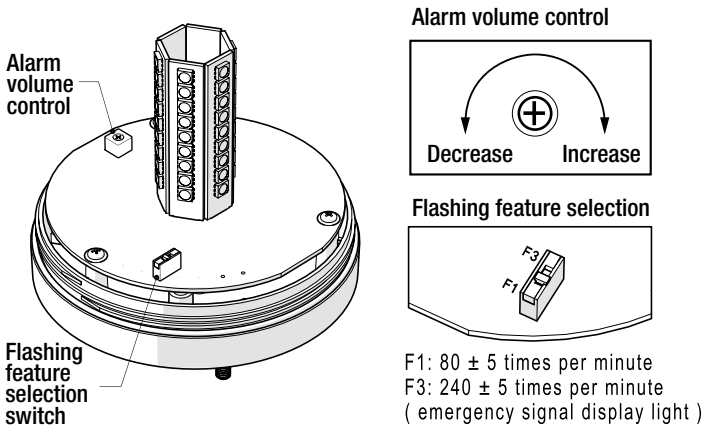
① Style	<b>F</b>	Steady & Flashing
	<b>B</b>	Steady & Flashing w/Alarm
② Power Supply	<b>00</b>	12-24V AC/DC
	<b>FF</b>	90-240V AC
③ Colors	<b>RYG</b>	Red, Yellow and Green
	<b>RGB</b>	Red, Green and Blue

## Dimensions

unit: mm



## Feature settings

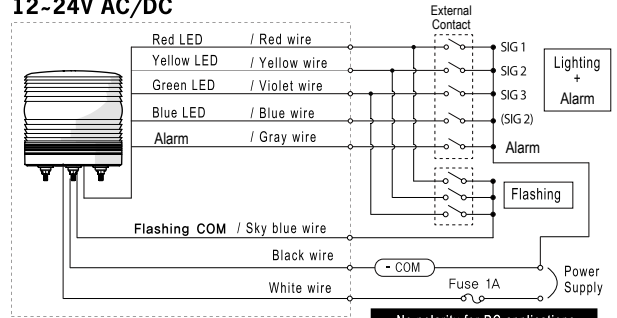


## Specifications

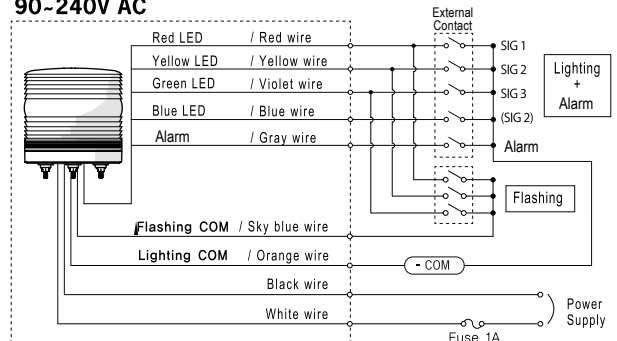
Functions	Steady, Flashing + Alarm	
Power Supply	12~24VAC/DC	90~240VAC
Current Consumption	F Style	0.6A
	B Style	0.76A
Flash rate(Adjustable)	F1: 80 ± 10 flashes/min., F3: 240 ± 10 times/minute(emergency signal)	
Alarm Sound Level	10~100 ± 5 dB at 1m: Volume adjustable	
Vibration	0.75mm at 10~55Hz	
Ambient Temp.	-20~40°C	
Storage Temp.	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	IP65	
Recommended Wire Size	UL1007/22AWG	
Weight	Approx. 360g	
Certificate/Compliance	RoHS, UL	

## Wiring Diagram

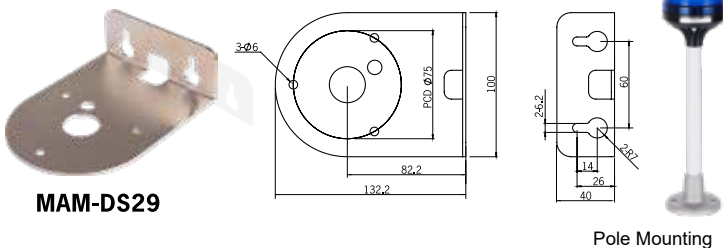
### 12~24V AC/DC



### 90~240V AC



## Wall mounting options (for all MS115 Series)





# Note

A series of horizontal dotted lines for writing notes.



# MP115 Series

115mm Battery-powered LED Warning Lights



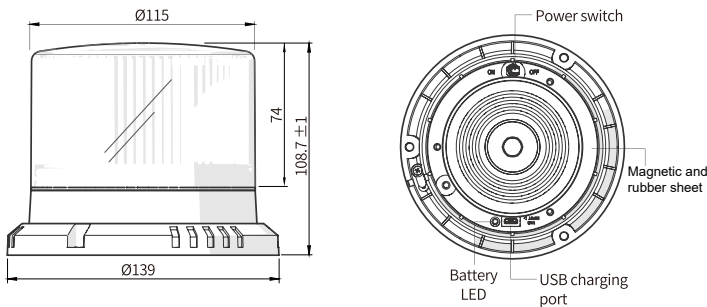
- Mountable on metal surface with strong magnetic base
- Excellent indoor and outdoor visibility
- Easy to recharge 18650 Li-ion battery with USB port
- Two flashing patterns or adjustable rotating light
- Can be used as a portable warning light in various situation

## Ordering Information

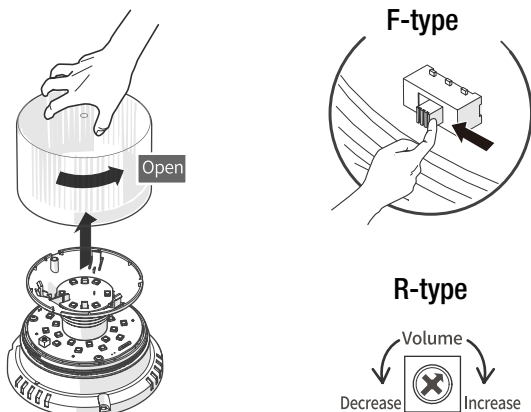
MP115 - M F 05 - R  
 ① ② ③

① Mount Type	<b>M</b>	Magnet Mount
② LED Function	<b>F</b>	LED Flashing (normal+emergency flashing)
	<b>R</b>	LED Rotation
③ Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green

## Dimensions



## LED Rotation Speed Change



## Specifications

Material	ABS, PC, Ferrite magnet, Rubber	
Output / Input	5W / DC 5V 2000mA(max)	
Full Charge Time	app. 4hr(based on 5V, 2A charger)	
Operation Time	Max. 12hr (Emergency flashing)	
Dimension	$\varnothing 139 \times 108.7$ mm	
Components	Product, Instruction Manual	
Magnetic force	app. 50kg(110 lbs)	
Lens Color	Red, Yellow, Green	
Battery	Lithium Ion Battery	
Battery Spec	18650, 3.7V, 2000mAh	
Charging Port	Micro B-type USB port	
Battery Status Display	Red LED ON status : Available state (battery 4.2V~2.8V) Red LED OFF status : Unstable use (battery 2.8V or less)	
Battery life	Can be used more than 300 times at normal temperature	
Operating Voltage	LED in normal operation: DC 4.2V ~ 3.5V or more	
LED Function	F type	R type
	Normal flashing+emergency flashing (selected by internal switch)	Rotation (built-in rotation speed control volume)
Flashing/Rotation Speed	Normal flashing: $80 \pm 5$ times per min, Emergency: $240 \pm 5$ times per min	Rotation mode: 60~300±rpm
Battery Usage Time*	app. 9 hours using flashing mode	app. 12 hours
Current Consumption	Standard flashing: 1170mA Emergency flashing: 620mA	Rotation mode: 200mA
Product mount	Directly fixing the magnetic mount base	
Ambient Temperature	-15°C~40°C	
Storage Temperature	-20°C ~ 70°C	
Ambient Humidity	45~85% RH	
Vibration	30Hz(1minute cycle) 1 Hours double amplitude 0.75mm in X,Y,Z respective direction	
Certification	CE, RoHS	
Degree of Protection	IP55	
Product Weight	app. 712g	

\*When 2x2000mAh batteries inserted and full charged as 4.2V

## LED Brightness

(±10 lm)		
Red LED	Yellow LED	Green LED
50 lm	55 lm	40 lm



# ML115 Series

115mm Ultra-bright LED Warning Lights



- Car cigar jack type or lead wire type
- Strong magnet mounting or bolt mounting
- Excellent visibility with high-intensity LED and reflectors
- Emergency flashing and adjustable rotating light
- Can be used as vehicle emergency warning light

## Ordering Information

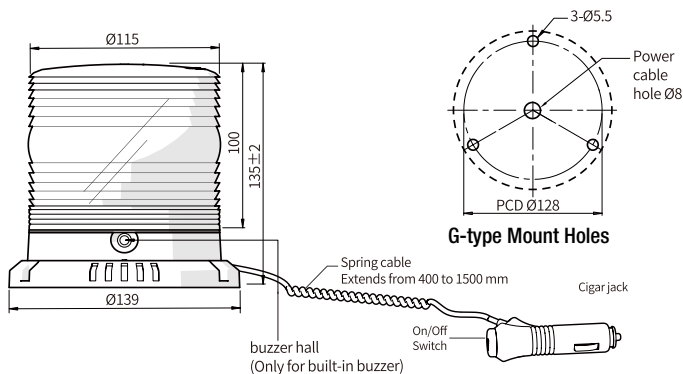
ML115 J - M B 02 - R  
 ① ② ③ ④ ⑤

① Power Supply	<b>J</b>	Cigar Jack Type for Vehicle
	<b>C</b>	Power Line Exposed Type
② Body Fixing Option	<b>M</b>	Magnet Mount
	<b>G</b>	Body Mount with Bolts
③ Buzzer Option	<b>No mark</b>	Standard
	<b>B</b>	Built-in Buzzer
④ Voltage	<b>01</b>	12VDC
	<b>02</b>	24VDC
⑤ Lens Color	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

## Specifications

LED Function	Flashing(emergency signal), Rotation
Power Supply	12VDC±5%, 24VDC±5%
Light Source	LED (Lifespan: 100,000h)
Dimension	Diameter 139mm (Base size)
Flashing Speed	220±5 times per minute
Rotation Speed	60~200rpm (Built-in control switch)
Buzzer Volume	90±5dB (at 1M)
Product Mounting	ML115□-M type: Detachable Magnetic Mount ML115□-G type: Body direct mount (M5 bolt)
Wiring Method	ML115J type: Cigar jack charging type ML115C type: Exposed wiring connection type
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45 ~ 85% RH
Voltage Withstand Capability	1 minute at 1000VAC 50/60Hz
Insulation Resistance	More than 100MΩ (500VDC Mega standard)
Vibration	10~55Hz(1minute cycle) 1 Hours double amplitude 0.75mm in X,Y,Z respective direction
Wiring Standard	ML115J type: UL2464/22AWG, Ø3.5, spring type cable 400~1500mm ML115C type: UL2464/22AWG, Ø4 exposure length 500±100mm
Degree of Protection	Standard IP65 / Buzzer type IP52 (Front direction)
Product Weight	ML115J-M : app. 683g / ML115J-G : app. 380g ML115C-M : app. 680g / ML115C-G : app. 375g
Certification	CE, RoHS

## Dimensions



## LED Brightness

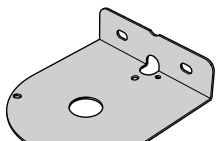
(±20 lm)

Red		Yellow		Green		Blue		White	
12V	24V	12V	24V	12V	24V	12V	24V	12V	24V
125	113	118	106	82	86	24	22	300	200

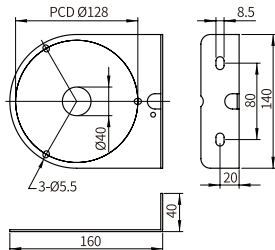
## Current Consumption

LED Color	Red		Yellow		Green		Blue		White	
	12V	24V	12V	24V	12V	24V	12V	24V	12V	24V
Basic type	0.70A	0.30A	0.73A	0.33A	0.70A	0.25A	0.76A	0.25A	0.70A	0.20A
Buzzer type	0.72A	0.34A	0.75A	0.35A	0.72A	0.27A	0.78A	0.27A	0.72A	0.23A

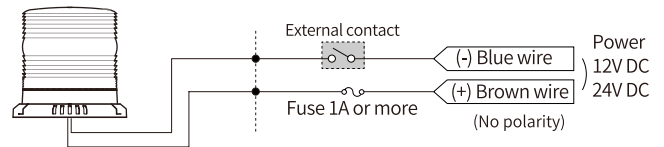
## Wall Mount Bracket



Model : MAM-DS41  
Material : Steel



## Connection Diagram



In case of ML115C type, LED light and buzzer operate at the same time when power is supplied.



# MF115 Series

115mm High-bright LED Warning Lights



- Excellent visibility with flashing or rotating light
- Buzzer (intermittent sound) or horn speaker (9 tones)
- Omnidirectional sound output up to 100 dB
- Built-in volume control
- Easy to adjust rotating speed

## Ordering Information

MF115 B - 02 - R  
 ①            ②            ③

① Style	<b>B</b>	Built-in Buzzer (External wiring contact)
	<b>S</b>	Built-in Horn Speaker (Internal switch contact)
	<b>K</b>	Built-in Horn Speaker (External wiring contact)
② Power Supply	<b>01</b>	12VDC
	<b>02</b>	24VDC
③ Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>W</b>	White

## Built-in Sound

Model	MF115S	MF115K	MF115B
Classification	15W Horn Speaker		Buzzer
Volume	70 ~ 110±10dB		70~90±5dB
Built-in Sound	9 tones (3 melodies, 6 beeps)		Intermittent sound (beep beep -) Connection with external contact
	Tone selection with internal switch	Tone selection with external cable	

## Current Consumption

Model	Red LED	Yellow LED	Green LED	Blue LED	White LED
MF115B	12V	0.70A	0.70A	0.70A	0.50A
	24V	0.33A	0.35A	0.30A	0.30A
MF115S	12V	0.90A	1.18A	0.90A	1.18A
MF115K	24V	0.75A	0.75A	0.70A	0.65A

## Specifications

Operation/Function	LED Flashing, Rotation
Power Supply	12VDC, 24VDC
Light Source	LED (Lifespan: about 30,000~50,000h)
Flash Rate	220±5 times/ minute
Rotational Speed	60~200 rpm (built-in adjustable switch)
Lens Color	Red, Yellow, Green, Blue & Clear
Material	Lens:PC, Body: ABS
Mounting Method	Body Direct Fixing Type (M5 bolt), Vertical direction only (Indoor and outdoor)
Ambient Temperature	-15°C~40°C
Storage Temperature	-20°C ~ 70°C
Ambient Humidity	45~85% RH
Insulation Resistance	More than 1MΩ(500VDC Mega standard)
Vibration	30Hz(1minute cycle) 1 Hours double amplitude 0.5mm in X,Y,Z respective direction
Withstand Voltage	1 Minute at 500VAC 50/60Hz
Recommended Wire Size	UL1007, 22AWG, Exposure length - about 700±100mm
Wiring Method	Exposed wiring connection
Degree of Protection	IP35
Certification	RoHS
Product Weight	MF115B:App. 645g ,MF115S:App. 864g, MF115K:App. 885g,

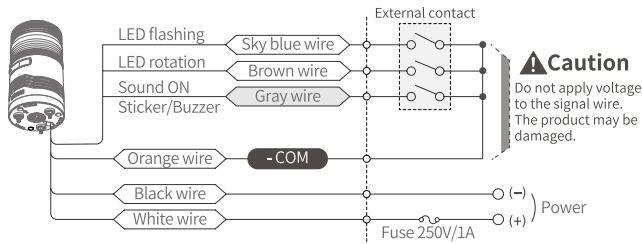
## LED Brightness

Red LED	Yellow LED	Green LED	Blue LED	White LED
113 lm	106 lm	86 lm	22 lm	200 lm

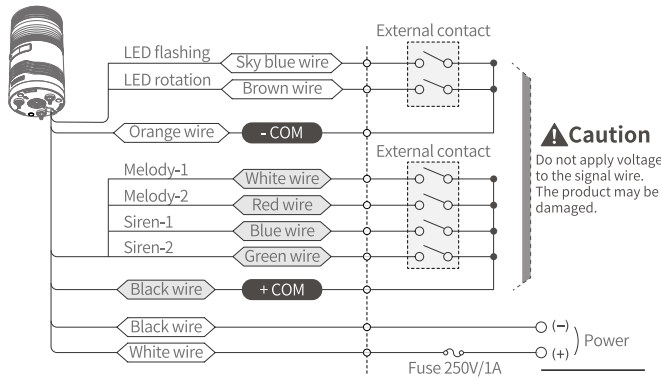
(±20 lm)

## Connection Diagram

### MF115B / MF115S



### MF115K



\* Sound cable specification: UL2464, 22AWG, PVC, 5C  
 \* Be careful not to short circuit the black signal wire(+COM) and the LED orange signal wire (-COM) during the wiring process.

## MF115S Series Tone Select Switch



ON 1 2 3 4	0. Silence(OFF)	ON 1 2 3 4	4. Emergency vehicle siren	ON 1 2 3 4	8. Police siren
ON 1 2 3 4	1. For elise	ON 1 2 3 4	5. Beeping for anomalies	ON 1 2 3 4	9. Fire engine siren
ON 1 2 3 4	2. Home sweet home	ON 1 2 3 4	6. Fire alarm		
ON 1 2 3 4	3. Cuckoo Waltz	ON 1 2 3 4	7. Ambulance siren		

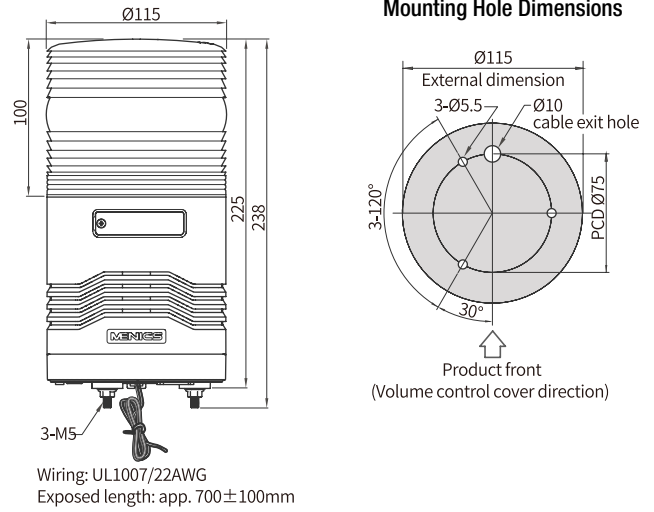
\* When selecting a tone, use a small flat screwdriver (tweezers) to operate the selection switch.  
 \* Sound works only when the selector switch lever is pushed down.  
 \* Due to the nature of LED, brightness and color vary depending on each LED and product type.  
 \* LED lifespan varies depending on operating conditions and environment.

## MF115K Type Tone Setting

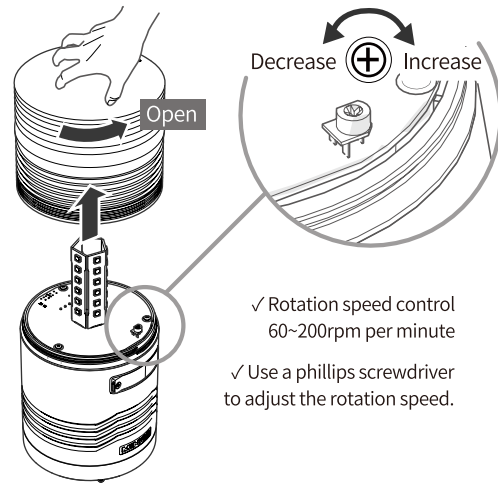
Sound List	White Wire	Red Wire	Blue Wire	Green Wire	Note
0 Silence(OFF)	1	1	1	1	-
1 For Elise	0	1	1	1	Black+White wire
2 Home sweet home	1	0	1	1	Black+Red wire
3 Fire alarm	1	1	0	1	Black+Blue wire
4 Police siren	1	1	1	0	Black+Green wire
5 Cuckoo waltz	0	0	1	1	Black+White+Red wire
6 Emergency vehicle siren	1	0	0	1	Black+Red+Blue wire
7 Beeping for anomalies	0	1	0	1	Black+White+Blue wire
8 Ambulance siren	0	1	1	0	Black+White+Green wire
9 Fire engine siren	0	0	0	1	Black+White+Red+Blue wire

\* When connected to COM wire (Black wire): means 0 status.

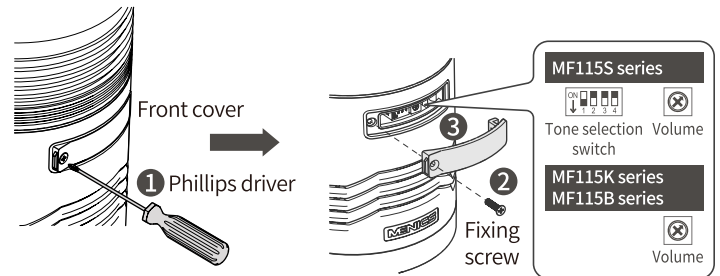
## Dimensions



## LED Rotation Speed Change



## Open the Front Cover for Tone Selection and Volume Control



## Sound Volume Control





# MS135T Series

Ø135mm LED Warning Light

- Excellent visibility outdoor and long distance
- Multi-function with various sound options
- Adjustable rotating speed & sound volume
- IP65 rated



## Specifications

Lighting type	Flashing(emergency signal flash pattern), rotating, Buzzer						
Power Supply	12-24V DC			100-240V AC			
Current Consumption	Color	Standard	Buzzer	Melody / Siren	Standard	Buzzer	Melody / Siren
	Red	0.75A	0.78A	0.90A	0.10A	0.13A	0.14A
	Yellow	0.75A	0.78A	0.90A	0.10A	0.13A	0.14A
	Green	0.72A	0.75A	0.90A	0.08A	0.10A	0.14A
	Blue	0.72A	0.75A	0.90A	0.08A	0.10A	0.14A
Clear	0.75A	0.78A	0.90A	0.10A	0.12A	0.14A	
Flash Rate	240±5 time/min						
Rotation Rate	60 ~ 300±10 rpm (Clockwise)						
volume	Buzzer volume (Built-in volume control)			Sound volume (built-in volume)			
	intermittent sound (Beep-Beep-Beep) : 75~100±5dB (1M)			55~80±5dB (1M) (Melody: for Elise, Home sweet home Cuckoo waltz) (Siren: Fire, Police, Ambulance)			
Vibration	10 ~ 55Hz (1 min.cycle) Double amplitude 0.75mm X, Y, Z						
Ambient Temperature	-15 ~ 50°C						
Storage Temperature	-20 ~ 70°C						
Ambient Humidity	45~85% RH						
Degree of Protection	IP65						
Mounting Option	Stud/Pole/Wall mounting						
Connection method	Exposed wiring connections						
Recommended Wire Size	UL2464/22AWG						
Weight	app.555g						
Certificate/Compliance	RoHS						

## Ordering Information

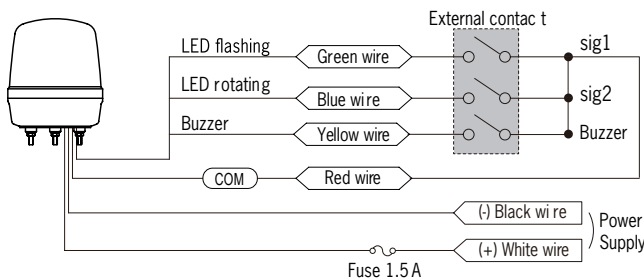
MS135T - B 00 - R  
 ① ② ③

① Light Style	<b>R</b>	Flashing + Rotating
	<b>B</b>	Flashing + Rotating + Buzzer
	<b>M*</b>	Flashing + Rotating + Melody
	<b>S*</b>	Flashing + Rotating + Siren
② Power	<b>00</b>	12 - 24V DC
	<b>FF</b>	100 - 240V AC
③ Lens Colors	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>C</b>	Clear

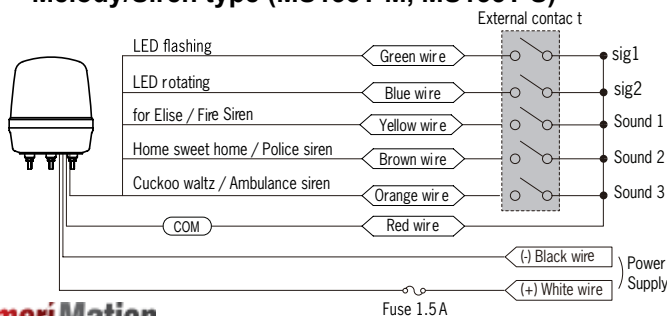
\* Pole mounting option is not applicable for M or S type

## Wiring Diagram

### Standard buzzer type (MS135T-R, MS135T-B)

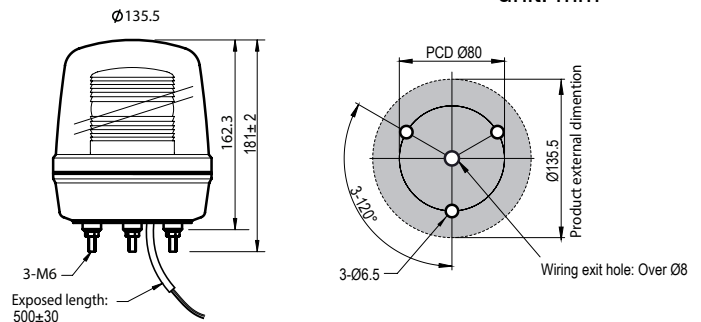


### Melody/Siren type (MS135T-M, MS135T-S)

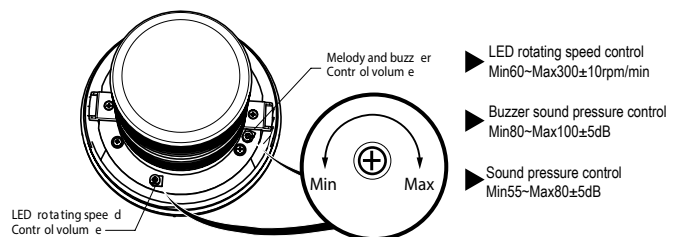


## Dimensions

unit: mm



## Feature Setting





# MS135B Series

Ø135mm Rotating  
Warning Light

- Strong flash using reflector with 25W bulb
- Weather resistant lens and body
- LED bulb replacement available
- IP65 rated



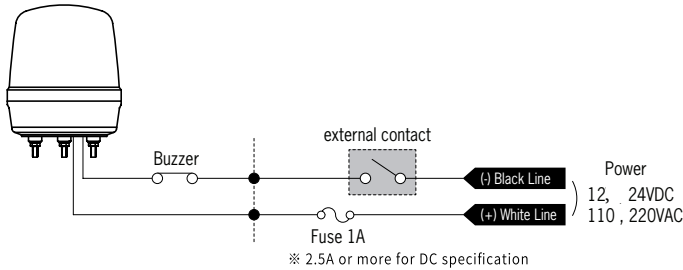
## Ordering Information

MS135B -                -          

①                      ②                      ③

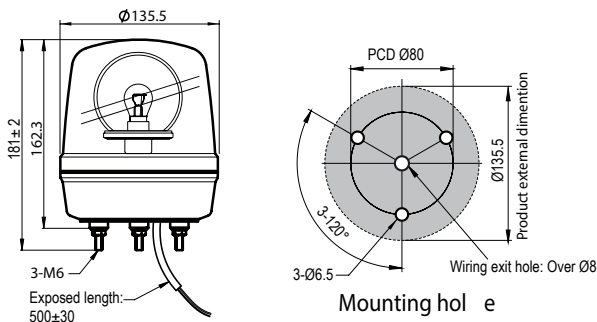
① Function	No mark	Reflector rotation
	B	Reflector rotation + Buzzer
② Power	01	12VDC
	02	24VDC
	10	110VAC
	20	220VAC
③ Lens Colors	R	Red
	Y	Yellow
	G	Green
	B	Blue
	C	Clear

## Wiring Diagram



## Dimensions

unit: mm



## Replacement Parts

LED Bulb		MAL-T15-D-12-①	12V
		MAL-T15-D-24-①	24V
		MAL-T15-D-120-①	110V
		MAL-T15-D-240-①	220V
Incandescent BULB		MAM-T15-D-012-25	12V 25W
		MAB-T15-D-024-25	24V 25W
		MAB-T15-D-130-25	110V 25W
		MAB-T15-D-240-25	220V 25W

(①):Color of LED or Lens; R, Y, G, B or C

## Specifications

Light source	Incandescent bulb			
Power Supply	12VDC	24VDC	110VAC	220VAC
Current Consumption	2.08A, 25W	1.04A, 25W	0.22A, 25W	0.11A, 25W
Rotation Rate	150 ±10% rpm/min			
Buzzer volume	90 ±5dB (1M) beep-beep-beep : The volume can not be adjusted			
Lens color	Red, Yellow, Green, Blue, Clear			
Mounting options	Stud/Pole/Wall mounting			
Connection method	Exposed wiring connections			
Ambient temperature	-15 ~ 50°C			
Storage ambient temperature	-20 ~ 70°C			
Ambient humidity	45 ~ 85% RH			
Dielectric strength	1 Min. at 1000VAC 50/60Hz			
Insulation Resistance	100MΩ or more (500VDC Megger basis)			
Vibration resistance	10 ~ 55Hz (1 min cycle) Double amplitude 0.75mm X, Y, Z			
Protection structure	IP65			
Connection	UL2464/22AWG			
Bulb life	1,000 hrs			
Approval	RoHS			
Weight	app.555g			



# K08/10/12 Series

Small Control Switches / Pilot Lamps



## Ordering Information

**K** ① - ② ③ ④ - ⑤ - ⑥ **VDC**

① Size	<b>08</b>	Ø8mm
	<b>10</b>	Ø10mm
	<b>12</b>	Ø12mm
② Operation Type	<b>1</b>	Pilot Lamp
	<b>2</b>	Momentary
	<b>3</b>	Maintained *
③ Illumination & Shape	<b>1</b>	Non-Illuminated Round
	<b>2</b>	Non-Illuminated Square
	<b>3</b>	Non-Illuminated Rectangular
	<b>7</b>	Illuminated Round
	<b>8</b>	Illuminated Square
④ Contact Form	<b>0</b>	No Contact **
	<b>1</b>	SPDT (1NO + 1NC)
	<b>2</b>	DPDT (2NO + 2NC) ***
⑤ Color	<b>R</b>	Red
	<b>Y</b>	Yellow
	<b>G</b>	Green
	<b>B</b>	Blue
	<b>W</b>	White
⑥* Rated Voltage	<b>6</b>	6VDC
	<b>12</b>	12VDC
	<b>24</b>	24VDC

\* For Illuminated type only

\*\* For Pilot Lamp only

\*\*\* For Ø12mm Illuminated type only

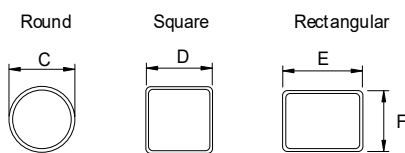
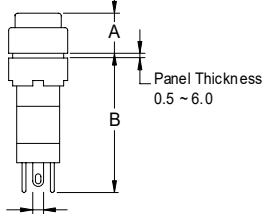
## Specifications

<b>Contact Ratings</b>	Contact Material	Ag alloy (Au Plate)
	Rated Current (Resistive Load)	1A 24VDC
		1A 120VAC
		0.5A 240VAC
Maximum Switching Current	3A	
Maximum Rated Voltage	250VAC, 110VDC	
<b>LED Module Ratings</b>	Rated Current	15mA
	Life Cycle	50,000 hrs
	Rated Voltage	6, 12, 24VDC
<b>General Ratings</b>	Dielectric Strength	2,000VAC (1 minute)
	Life Cycle	Mechanical Momentary : Min. 200,000
		Mechanical Maintained : Min. 100,000
		Electrical : Min 100,000
	Degree of Protection	IP40
Terminal Soldering Temperature	20W 5 sec / 260°C 3 sec	
Ambient Temperature	-25°C to +55°C (with no icing or condensation)	

\* LED working 50% less than the original brightness after 50000 hours.

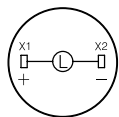
## Dimensions

Unit: mm

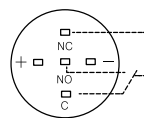


	A	B	C	D	E	F
K08	9	29	Ø9	9	12	9
K10	9	29	Ø12	12	16	12
K12	9	29	Ø14	14	18	14

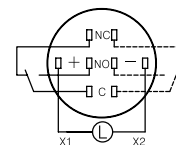
## Wiring Diagram



Pilot Light



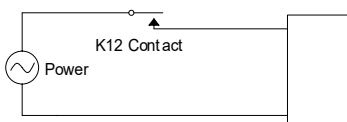
1C



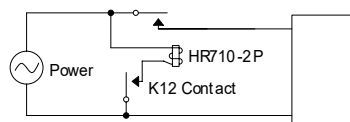
2C

1. Illuminated Push Button Pilot Light

## Caution



Bad example



Good example

- When using Ø8, Ø10 and Ø12 small Control Switches as the main power switch for the control unit, follow the instructions below for ensure long life and safety of the device.
- When rectifying the AC current for the DC power for lighting, the DC power must be a constant voltage source with a ripple range of 10 % or less.
- Do not apply excessive impact or force to prevent damage to the product.
- Excessively high soldering temperature and prolonged soldering time may lead to the damage to the product. Comply with the specifications.
- The product has a built-in current limiting resistor, and no additional resistor is required.



# LED Indicators

Ø6-16 LED Indicators



## Flat Head



6 mm



8, 10, 12, & 16 mm

## Round Head



6 mm



8, 10, 12, & 16 mm

## Protrusive Head



6 mm



8, 10, 12, & 16 mm

## Accessories



LTC-0500 / LTC-1000

Wire length: 500mm Wire length: 1M

\* Wire : UL 1007, 22AWG

\* Terminal : 110 series connector, Brass 0.3t

## Key Features

Operating Temperature Range: -25 ~ +60 °C

Chrome plated brass, Plastic housing

Dielectric strength: 500 VAC 50/60Hz for 1 minute (DC Type)

Dielectric strength: 1000 VAC 50/60Hz for 1 minute (AC Type)

Insulation resistance: Max. 100MΩ (at 500VDC mega)

## Specifications

Voltage	Operating Voltage	Operating Current
3V DC	2.7 to 3.3 VDC	20 mA
12V DC	10.8 to 13.2 VDC	20 mA
24V DC	21.6 to 26.4 VDC	20 mA
110V AC*	100 to 120 VAC	4 mA
220V AC*	200 to 240 VAC	2 mA

\* not valid on Ø6 mm

## Ordering Information

M 06 R - 03 R  
① ② ③ ④ ⑤

① Type	M	IP60	Standard
	H		High Bright (F head only)
E	IP67	Standard	
		S	High Bright(F head only)
② Diameter	06	6 mm (Not applied to E,S type)	
	08	8 mm	
	10	10 mm	
	12	12 mm	
	16	16 mm	
③ Head Shape	F	Flat (High bright type only)	
	R	Round	
	P	Protrusive	
④ Power	03	3V DC	
	12	12V DC	
	24	24V DC	
	10	110V AC*	
	20	220V AC*	
⑤ Color	R	RED	
	Y	YELLOW	
	G	GREEN	
	B	BLUE**	
	W	WHITE**	

\* Not applied for 6 mm series.

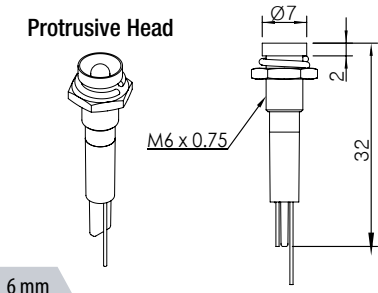
\*\* Blue & White Colors are available only for High Bright types.

## Luminous Intensity

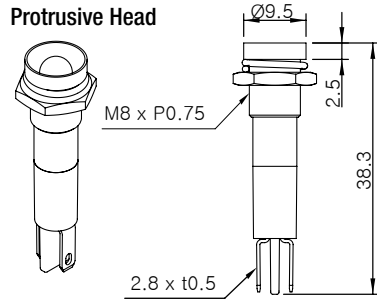
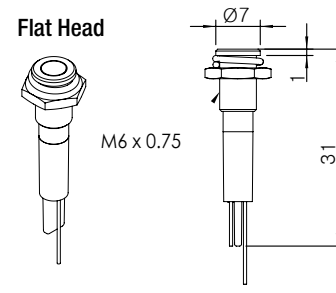
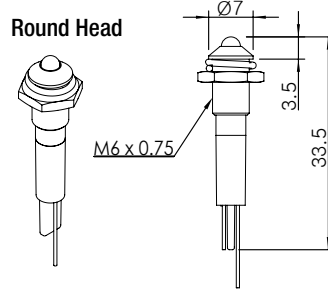
	LED Color	Standard type P & R Head (mcd)	High Bright Type F Head (mcd)
6 mm	RED	50 to 80	100 to 200
	YELLOW	50 to 70	100 to 200
	GREEN	50 to 80	150 to 250
	BLUE	N/A	100 to 220
	WHITE	N/A	120 to 200
8 mm	RED	60 to 90	150 to 250
	YELLOW	50 to 80	130 to 260
	GREEN	70 to 100	200 to 300
	BLUE	N/A	140 to 240
	WHITE	N/A	150 to 240
10 mm	RED	60 to 90	140 to 220
	YELLOW	50 to 80	120 to 240
	GREEN	70 to 100	180 to 270
	BLUE	N/A	130 to 230
	WHITE	N/A	140 to 230
12 mm	RED	50 to 80	110 to 180
	YELLOW	40 to 70	100 to 190
	GREEN	60 to 80	130 to 220
	BLUE	N/A	100 to 200
	WHITE	N/A	100 to 210
16 mm	RED	50 to 80	80 to 150
	YELLOW	40 to 60	80 to 160
	GREEN	50 to 70	100 to 210
	BLUE	N/A	80 to 190
	WHITE	N/A	90 to 180

# Dimensions

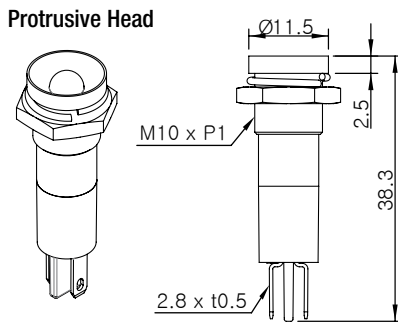
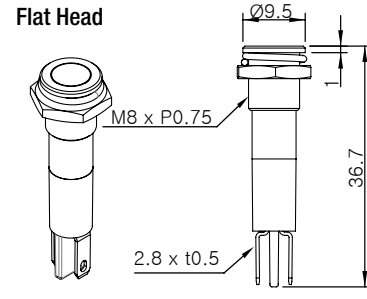
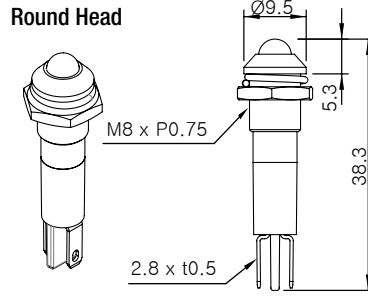
unit: mm



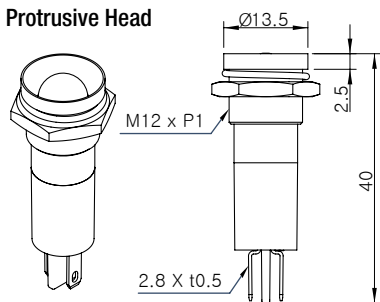
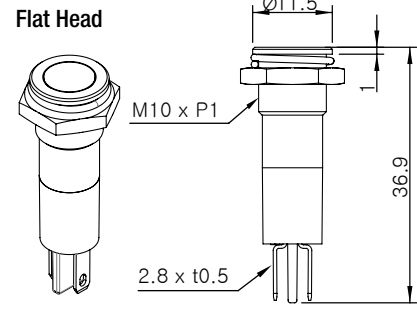
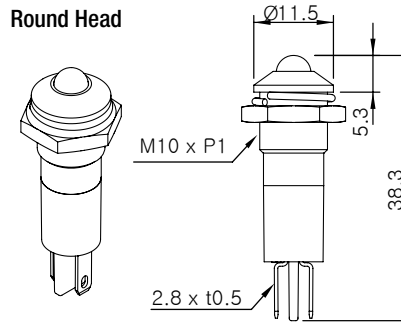
6 mm



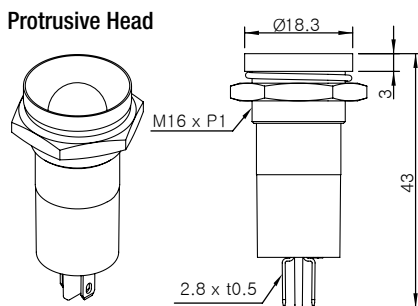
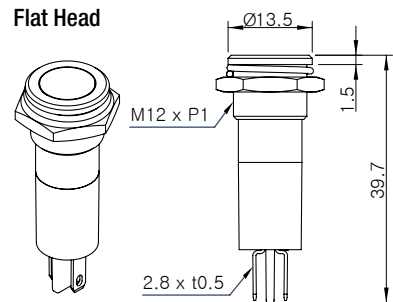
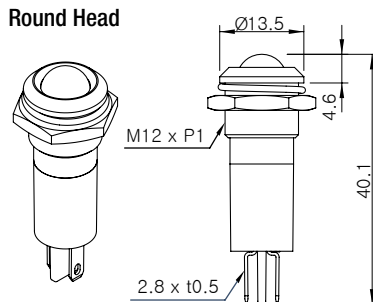
8 mm



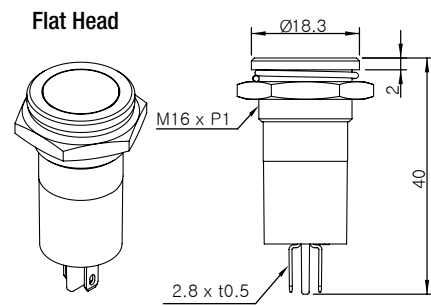
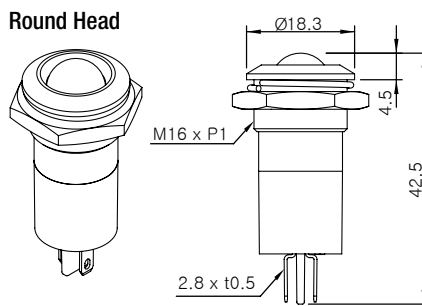
10 mm



12 mm



16 mm





# A20 Series

Ø22 Pilot Lamp



## General Specifications

Insulation Resistance	100MΩ minimum at 500V DC megger
Dielectric Strength	Contact block: 2,500VAC for 1 Min.
	Illuminated unit: 2,000VAC for 1 Min.
Vibration Resistance	Operation Extremes: 5-55Hz, Amplitude: 0.5mm
	Damage Extremes: 30Hz, Amplitude: 1.5mm
Shock Resistance	Operation Extremes: 100m/s <sup>2</sup>
	Damage Extremes: 1,000m/s <sup>2</sup>
Ambient Temperature	Operation: -25°C~ +55°C, Storage: -45°C~+85°C
Ambient Humidity	45~85%RH
Degree of Protection	IP65

LED Rating	Type No	Rated Voltage	Rated Current	Color code	LED life
	LAED-6	6V AC/DC	10mA (R, Y) 7mA (G, W, S)	G: Green W: White R: Red S: Blue Y: Yellow	50,000 Hrs
	LAED-1	12V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-2	24V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-H	110V AC/DC	5.5mA		50,000 Hrs
	LAED-M3	230/240V AC/DC	2.7mA		50,000 Hrs

A	B	C	A	B	Dimensions
Pilot lamp operators	LED Lamps	Lamp Socket	Pilot lamp operators Part Numbers	LED LAMP Part Numbers	
			<b>1</b> <b>Flush type</b> A20P-1EG A20P-1ER A20P-1ES A20P-1EW A20P-1EY A20P-1EC	LAED-6G (6VAC/DC) LAED-6R (6VAC/DC) LAED-6S (6VAC/DC) LAED-6W (6VAC/DC) LAED-6Y (6VAC/DC) LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC)	
			<b>2</b> <b>Marking Plate Type</b> A20P-1BEG A20P-1BER A20P-1BES A20P-1BEW A20P-1BEY A20P-1BEC	LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC)	
			<b>3</b> <b>Dome Type</b> A20P-2EG A20P-2ER A20P-2ES A20P-2EW A20P-2EY A20P-2EC	LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC)	
			<b>4</b> <b>Extended Type</b> A20P-2TEG A20P-2TER A20P-2TES A20P-2TEW A20P-2TEY A20P-2TEC	LAED-HG (110VAC/DC) LAED-HR (110VAC/DC) LAED-HS (110VAC/DC) LAED-HW (110VAC/DC) LAED-HY (110VAC/DC) LAED-M3G (230/240VAC/DC) LAED-M3R (230/240VAC/DC) LAED-M3S (230/240VAC/DC) LAED-M3W (230/240VAC/DC) LAED-M3Y (230/240VAC/DC)	

\* Head color = G: Green, R: Red, S: Blue, W: White, Y: Yellow, C: Clear



# B30 Series

Ø30 Pilot Lamp



## Ordering Information

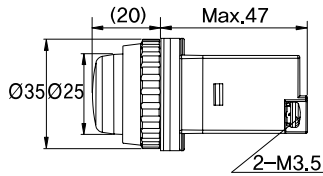
B30 - 17 R - 110VAC

	①	②
① Model	<b>R</b>	RED
	<b>G</b>	GREEN
	<b>Y</b>	YELLOW
	<b>B</b>	BLUE
	<b>W</b>	WHITE
② Voltage	<b>24VDC</b>	
	<b>110VAC</b>	

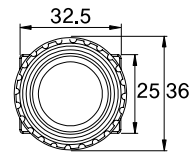
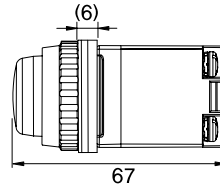
## Specifications

Degree of Protection		IP65	
Ambient Temperature	Operation	-25°C~+70°C	
	Storage	-30°C~+80°C	
Ambient Humidity		35~80% RH	
Recommended wire		Copper wire 14-16 AWG	
LED	Normal Current	AC	Approx. 15mA
		DC	Approx. 15mA
	Voltage		24VAC
	Expected Life		Min. 50,000 hrs

## Dimensions (Unit: mm)



Packing RubberX3



Great resistance to UV rays ·  
Integrated LED microchip system: high brightness ·

# KPL Series

Ø22 Pilot Lamp

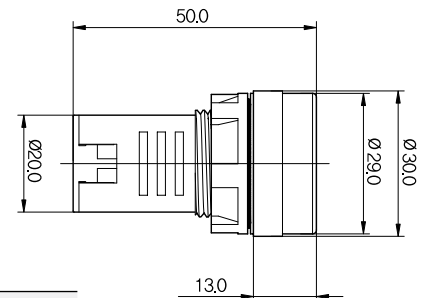


## Ordering Information

KPL - R - 12VAC

	①	②
① Model	<b>R</b>	RED
	<b>G</b>	GREEN
	<b>Y</b>	YELLOW
	<b>B</b>	BLUE
	<b>W</b>	WHITE
② Voltage	<b>AC</b>	12V
	<b>DC</b>	24V
	<b>AC</b>	110V
		220V

## Dimensions (Unit: mm)



\* Terminals: No Polarity

## Specifications

Nominal Current	Approx. 20mA
Insulation Resistance	100MΩ at 500V DC
Weight	Approx. 24g
Ambient Temperature	-25°C~+55°C with no icing
Expected Life	50,000hrs
Torque	0.8N·m (8.16kg·cm)
Degree of protection	IP65
Recommended wire	Copper wire 14-16 AWG



# Mi4D Series

40mm Surface Mount Dome-type LED Indicator

- Compact, stylish design with excellent visibility
- Space saving surface mounted type
- Single-color or Multi-color models available
- Lead wire or M12 connector cable type

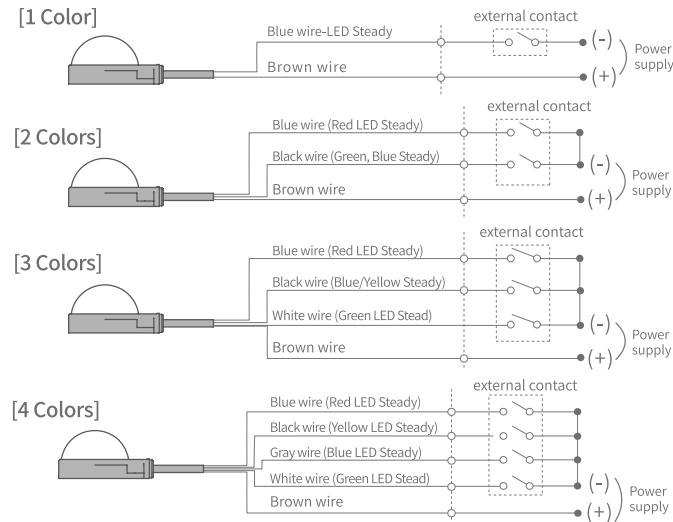


## Ordering Information

Mi4D - 02 R - L3  
 ① ② ③

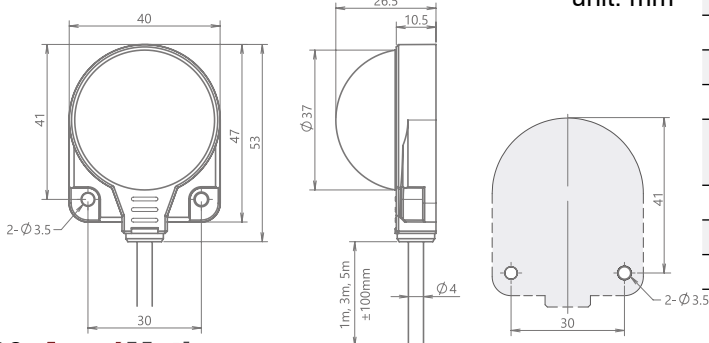
① Voltage		02	02 - 24VDC
① LED Colors	1 color	R	Red
		Y	Yellow
		G	Green
		B	Blue
		W	White
	Multi color	RG	Red/Green
		RB	Red/Blue
		RYG	Red/Yellow/Green
② Length of Power Cable		L1	1M
Lead wire type		L3	3M
		L5	5M
M12 Connector cable type		CM	150mm

## Wiring Diagram



## Dimensions

unit: mm



## Specifications

Power Supply	24vdc ±10%
Function	LED Steady
Material	Body - PA6 Resin, Lenses - PC Resin, Cable Bush - Aluminum
Fixing Method	Fix The Body to the Surface Using M3 Bolts (2 Pcs)
Degree of Protection	IP65
Ambient Temperature	-20 ~ +50°C (No Freezing)
Storage Temperature	-30 ~ +70°C (No Freezing)
Ambient Humidity	45~85% RH (No Condensation)
Vibration-Resistant	30Hz (1 Minute Cycle) 1 Hours Double Amplitude 0.5mm in X, Y, Zrespective Direction
Certification	RoHS

	1 Color	2 Colors	3 Colors	4 Colors
Current ±5mA	Red LED - 26mA Yellow LED - 24mA Green LED - 18mA Blue LED - 20mA White LED - 21mA	RG LED - 48mA RB LED - 48mA	RYG LED - 65mA RBG LED - 60mA	RYGB LED 110mA
Weight (1M power cable)	app. 39g	app. 42g	app. 42g	app. 45g
LED Color	R - Red Y - Yellow G - Green B - Blue W - White	RG - Red / Green RB - Red / Blue	RYG - Red / Yellow / Green RBG - Red / Blue / Green	RYGB - Red / Yellow / Green / Blue
Lens Color	R - Red Lens Y - Yellow Lens G - Green Lens B - Blue Lens W - Clear Lens	Milky White Lens	Milky White Lens	Milky White Lens
Cable Spec	UL2095 23AWG, PVC, External Dimensions: Ø4mm Allowable Cable Bending Radius: 30mm			UL2095 24AWGx5C, PVC External Dimensions: Ø5mm Allowable Cable Bending Radius: 60mm
Product luminance (cd/m²)	Red: 850 Yellow: 680 Green: 2250 Blue: 970 White: 4140	Red: 580 Green: 1850 Blue: 640	Red: 320 Yellow: 160 Green: 940 Blue: 350	Red: 240 Yellow: 130 Green: 890 Blue: 320

- Due to characteristics of the LED, color temperature, brightness and hue will differ for every LED and every product.

## Wiring Combination

3 Color				4 Color		
No.	Wiring work	RBG LED	RYG LED	No.	Wiring work	RYGB LED
1	Blue Wire	Red	Red	1	Blue Wire	Red
2	Black Wire	Blue	Orange	2	Black Wire	Orange
3	White Wire	Green	Green	3	White Wire	Green
4	Blue+White Wire	Light Green	Light Green	4	Blue+White Wire	Chartreuse
5	Blue+Black wire	Pink	Red	5	Blue+Black wire	Coral
6	White+Black wire	Cyan	Green	6	White+Black wire	Bright Green
7	Blue+White+ Black	White	Yellow	7	Blue+White+ Black Wire	Light Green
				8	Gray Wire	Blue
				9	Gray+Blue Wire	Lilac
				10	Gray+White Wire	Cyan
				11	Gray+Black Wire	Periwinkle
				12	Gray+ Blue+White Wire	Light Sky Blue
				13	Gray+ White+ Black Wire	Light Blue



# Mi4F Series

40mm Surface Mount Flat-type LED Indicator



- Compact, stylish design with excellent visibility
- Space saving surface mounted type
- Slim Profile for installing in narrow area
- Single-color or Multi-color models available
- Lead wire or M12 connector cable type

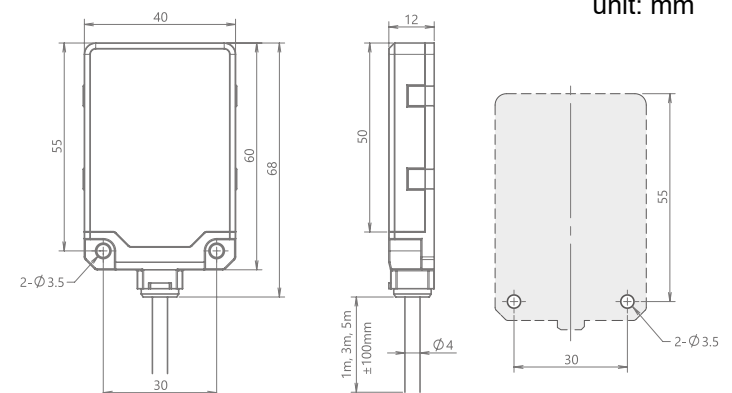
## Specifications

Power Supply	24VDC ±10%
Function	LED Steady
Material	Body - PA6 Resin, Lenses - PC Resin, Cable Bush - Aluminum
Fixing Method	Fix the Body to the Surface Using M3 Bolts (2 pcs)
Degree of Protection	IP65
Ambient Temperature	-20 ~ +50°C (No Freezing)
Storage Temperature	-30 ~ +70°C (No Freezing)
Ambient Humidity	45~85% RH (No Condensation)
Vibration-Resistant	30Hz (1 minute cycle) 1 Hours Double Amplitude 0.5mm in X, Y, Zrespective Direction
Certification	RoHS

	1 Color	2 Colors	3 Colors
Current ±5mA	Red LED - 26mA Yellow LED - 24mA Green LED - 18mA Blue LED - 20mA White LED - 21mA	RG LED - 48mA RB LED - 48mA	RYG LED - 48mA RBG LED - 48mA
Weight (1M Power Cable)	app. 44g	app. 52g	app. 55g
LED Color	R - Red Y - Yellow G - Green B - Blue W - White	RG - Red / Green RB - Red / Blue	RYG - Red / Yellow / Green RBG - Red / Blue / Green
Lens Color	R - Red lens Y - Yellow lens G - Green lens B - Blue lens W - Clear lens	Clear lens	Clear lens
Cable Spec	UL2095 23AWG, PVC, External Dimensions: Ø4mm Allowable Cable Bending Radius: 30mm		
Product luminance (cd/m²)	Red:1200 Yellow:850 Green:3700 Blue:1700 White:5050	Red: 1050 Green: 3260 Blue: 1300	Red: 1050 Yellow: 600 Green: 3260 Blue: 1300

- Due to characteristics of the LED, color temperature, brightness and hue will differ for every LED and every product.

## Dimensions



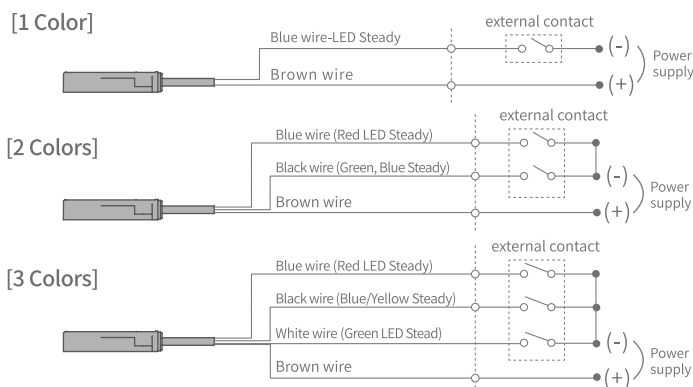
## Ordering Information

Mi4F - 02 - R - L3

①      ②      ③

① Voltage		02	02 - 24VDC
② LED Colors	1 color	R	Red
		Y	Yellow
		G	Green
		B	Blue
		W	White
	Multi color	RG	Red/Green
		RB	Red/Blue
		RYG	Red/Yellow/Green
③ Length of Power Cable	Lead wire type	L1	1M
		L3	3M
		L5	5M
	M12 Connector Cable Type	CM	150mm

## Wiring Diagram



# B2NB Series

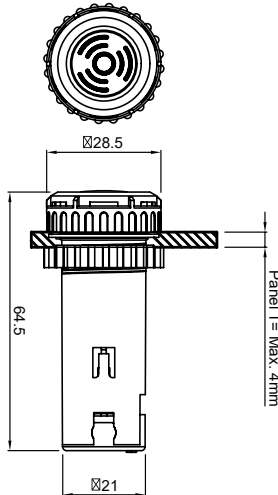
Ø22/25mm LED Illuminated Buzzer



## Dimensions



B2NB-B1D



- Improved visibility with high luminance LED
- Magnetic buzzer with clear & loude bass sound

## Ordering Information

B2NB- 1D- R  
①

① LED Color	no mark	Green
	R	Red

## Specifacations

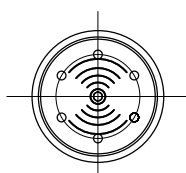
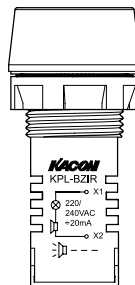
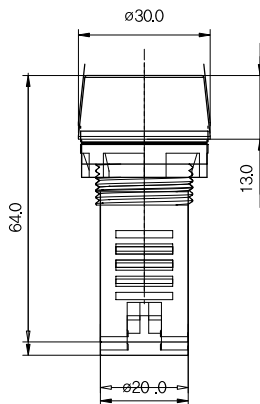
Rated voltage/current	12-14VDC / 60mA	
Protection	IP30	
Sound level	0.1m	85dB
	1.0m	75dB
Sound mode	Intermittent / Continuous	
Operation Frequency	Max 30 times/min	
Vibration	10-55Hz, 3mm	
Operation temperature	-10°C~ +55°C	
Operating Humidity	35~85%RH	
Storage Temperature	-20°C~ +65°	
Recommended wire	Copper wire 14-16 AWG	
Weight	Approx. 18g	

# KPL Series

Ø22/25mm LED Illuminated Buzzer



## Dimensions



## Ordering Information

KPL- BZ I R 12V  
① ② ③

① Sound	I	Interrupted
	C	Continuous
② Color	R	Red
	G	Green
③ Volatge	AC/DC	12V
		24V
		110V
	AC	220V

## Specifacations

Power Consumption	20mA
Insulation Resistance	100MΩ at 500VDC
Lamp Life	50,000 hrs
Type of Sounds	Interrupted/Continued
Sound Level	80dB
Weight	Approx. 24g
Ambient Temp.	-25°C~ +55°C (No Freezing)
Terminal bolt driving torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG

# HRB-PS Series

Ø30mm Alarm/Buzzer



# KSP Series

Ø66mm Alarm/Buzzer



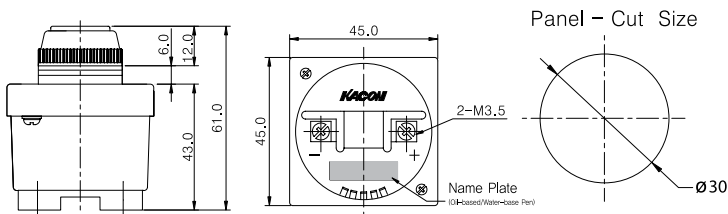
## Ordering Information HRB- PS50 I R 12V

① Sound	I	Interrupted
	C	Continuous
② Voltage	AC/DC	12V
		24V
		110V
	AC	220V

## Specifications

Light	Life: 50,000hrs Color: Red
Inlet Diameter	Ø30mm
Voltage	12, 24, 110VAC/DC 220VAC
Current Consumption	Electrical DC : 25mA, Mechanical AC : 4VA
Max. Output	1W (PEAK)
Sound Level	80dB
Protection rate	IP40
Sound Type	Interrupted, Continuous
Dielectric strength	Charged and non charged parts : 1,000VAC 1Min.
Ambient Temp.	-10°C~ +55°C (No Freezing)
Ambient Humidity	35 ~ 85% RH
Driving Torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG

## Dimensions



## Precautions

• DC electric buzzer has a contact in series with the inductive load coil. Therefore, its life is limited, and it may cause disturbance to other devices due to its noise. Installing a noise filter at the power can prevent the noise. If the EMI level of other devices is low, using an electronic buzzer is desirable.

• The external impact may change the tone.

## Ordering Information KSP- 41 S

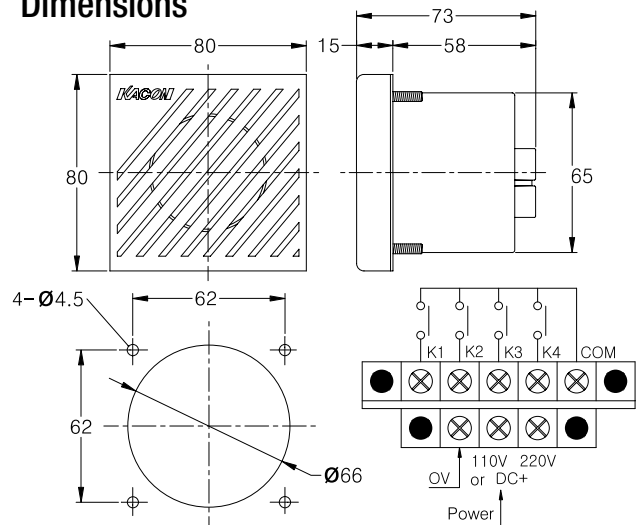
① Voltage	41	110/220VAC
	42	12/24VDC
	43	100-125VDC
② Sound Mode	S	Ambulance, Patrol, Telephone, Song
	T	Fast, Slow, High, Low

## Specifications

Inlet Diameter	Ø66mm		
Current Consumption	Approx. 5W Max.		
Max. Output	1W (PEAK)		
Sound Level	85 dB		
Protection rating	IP65		
Sound type	Type	KSP-4 S	KSP-4 T
	K1	Ambulance	Fast
	K2	Patrol	Slow
	K3	Telephone	High
	K4	Song*	Low
Driving torque	0.8N·m (8.16kgf·cm)		
Recommended wire	Copper wire 14-16 AWG		

\* London bridge is falling down

## Dimensions



\* Do not connect the SIG COM of the signal input with the COM of the power supply because their circuits are different. Otherwise, it may damage the device.



# KMB Series

Ø65mm Alarm/Buzzer



## Models

KMB-P80A1(110VAC)  
KMB-P80A2(220VAC)  
KMB-P80D1(110 VDC)  
KMB-P80D2(12-24VDC)

KMB-N80A1(110VAC)  
KMB-N80A2(220VAC)  
KMB-N80D2(12-24VDC)

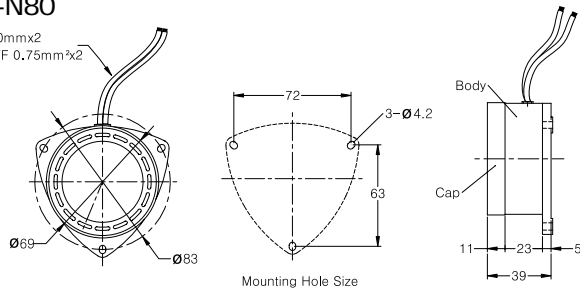
## Specifications

Voltage	110, 220VAC
	12, 24, 110VDC
Current Consumption	Approx. 5W Max.
Max. Output	1W (PEAK)
Sound Level	80 dB
Protection rating	IP40
Alert type	AC: Continuous Buzzer
	DC: Electronic - Flashing LED
Driving torque	0.8N·m (8.16kgf·cm)
Recommended wire	Copper wire 14-16 AWG

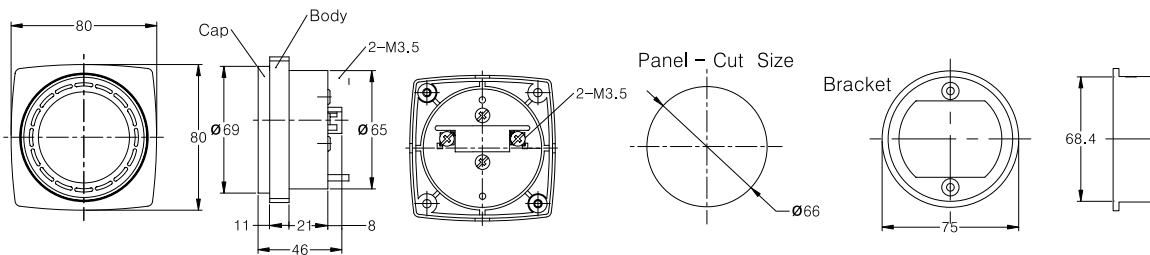
## Dimensions

### KMB-N80

Wire Length : 200mm×2  
Lead Wire : VCTF 0.75mm×2



### KMB-P80



## Precautions

- DC electric buzzer has a contact in series with the inductive load coil. Therefore, its life is limited, and it may cause disturbance to other devices due to its noise. Installing a noise filter at the power can prevent the noise. If the EMI level of other devices is low, using an electronic buzzer is desirable.
- The external impact may change the tone.

# HRE Series

Ø150mm Bell



## Models

HRE-S90A1 (110VAC)  
HRE-S90D4 (24VDC)

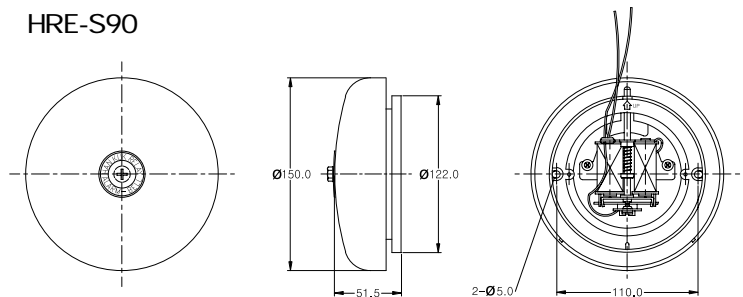
HRE-S90A2 (220VAC)  
HRE-S90D2 (12VDC)

## Specifications

Voltage	110, 220VAC
	12, 24VDC
Current Consumption	Approx. 5W Max.
Max. Output	1W (PEAK)
Alarm Sound Level	90 dB
Protection rating	IP40
Sound type	Striking Vibration
Recommended wire	Copper wire 14-16 AWG

## Dimensions

### HRE-S90



# Ordering Information

Adjustable volume •  
3 Melody & 3 Siren Modes •

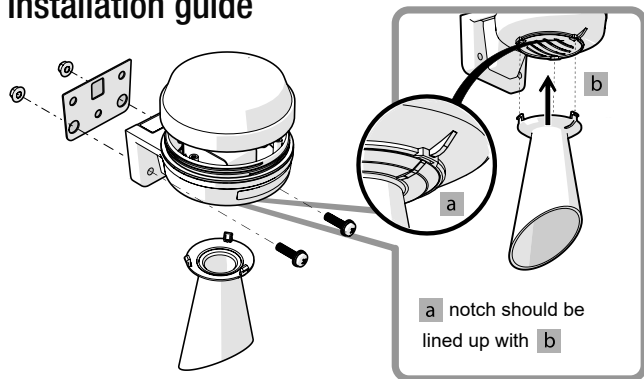
MW86N - 00 - M3 B  
①      ②      ③

① Power	<b>00</b>	12 ~ 24VAC/DC
	<b>FF</b>	90 ~ 240VAC
② Sound Type	<b>M3</b> (melody)	For Elise
		Home, Sweet Home
		The Cuckoo Waltz
	<b>S3</b> (Siren)	Fire Truck
		Police Car
		Ambulance
③ Body color	<b>no mark</b>	Ivory
	<b>B</b>	Black
	<b>R</b>	Red

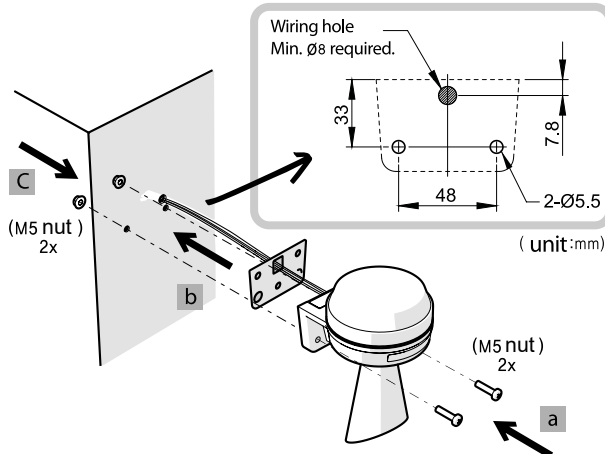
# Specifications

Model	MW86N	
Power Supply	12 ~ 24VAC/DC	90 ~ 240VAC(50~60Hz)
Current Consumption	Max 0.20A ±10%	Max 0.06A ±10%
Alarm Sound Level	Standard Type	55 ~ 85±5dB
	Horn Type	55 ~ 90±5dB
Material	ABS	
Ambient Temperature	-20~40°C	
Storage Temperature	-20~70°C	
Ambient Humidity	45~85% RH	
Degree of Protection	Standard Type	IP43
	Horn Type	IP54
Recommended Wire Size	464UL/22AWG	
Weight	Standard Type	Approx. 189g
	Horn Type	Approx. 244g
Certificate/Compliance	UL,RoHS	

# Installation guide



Installation panel drawing



# MW86N Series

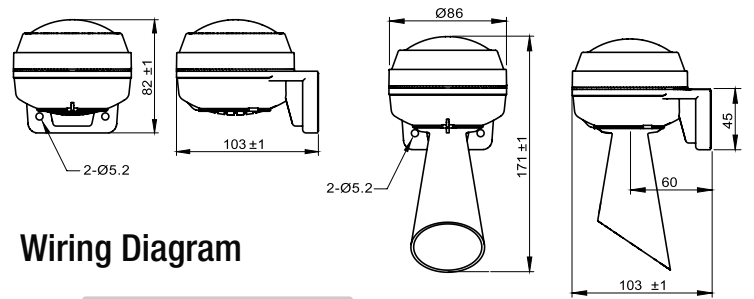
Ø86mm Wall Mounting Signal Horn



Standard Type

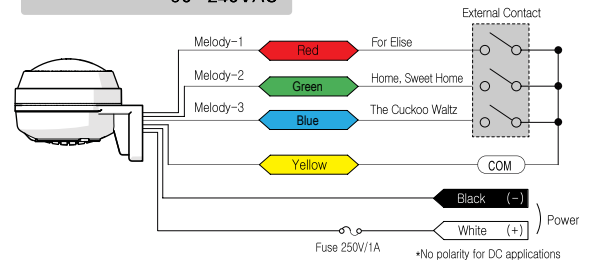
Horn Type

# Dimensions

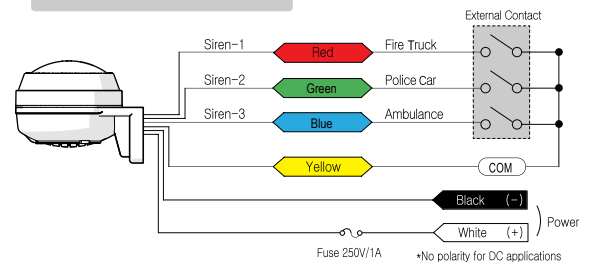


# Wiring Diagram

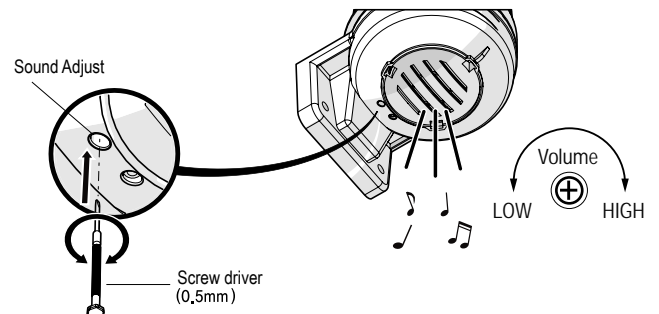
Melody Type / 12~24VAC/DC  
90~240VAC



Siren Type / 12~24VAC/DC  
90~240VAC



# Volume Control



# MSP Series

Panel/Wall Mount Buzzer



## Ordering Information

MSP - T P M - 02 (B)  
 ① ② ③ ④ ⑤

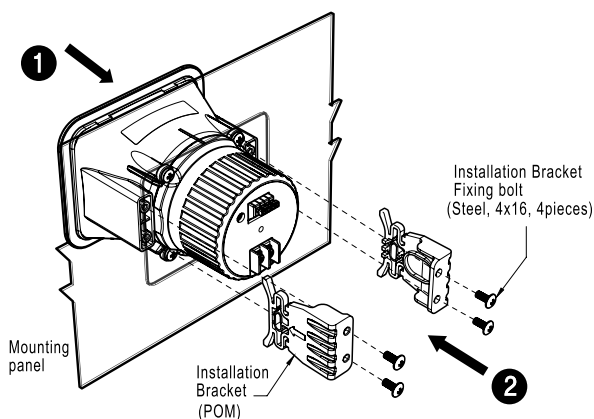
① Connection	<b>T</b>	Terminal Type
	<b>L</b>	Lead Wire Type
② Mounting	<b>P</b>	Panel Mounting
	<b>B</b>	External Fixation Type
③ Sound Type	<b>M</b>	Melody 3 channel
	<b>S</b>	Siren 3 channel
④ Rated Voltage	<b>01</b>	12VDC
	<b>02</b>	24VDC
	<b>FF</b>	100 ~ 240VAC
⑤ Body Colors	<b>no mark</b>	Ivory
	<b>(B)</b>	Black
	<b>(R)</b>	Red

## Specifications

Model	MSP-T	MSP-L
Power Supply	12 VDC, 24VDC, 100~240 VAC	
Current Consumption	12VDC Melody type: 0.22A Siren type: 0.8A 24VDC Melody type: 0.12A Siren type: 0.4A 100~240VAC Melody type: 0.13A Siren type: 0.13A	
Maximum Volume	Melody type: 100±5dB(1M), Siren type: 110±5dB(1M)	
Number of Channels	Sound types: 3 channels	
Sound Type	Melody type: For Elise, Sweet Home, Cuckoo Waltz Siren type: Fire Truck, Police Car, Ambulance	
Volume Control	Built-in volume control	None
Color	Body - Ivory/Black/Red, Horn speaker - Black	
Material	Body - ABS, Horn - NBR	
Insulation resistance	Over 100MΩ (500VDC mega btwn terminal and case)	
Withstand voltage	500VAC 50/60Hz 1 min.	
Temperature	Working temp.: - 20 ~ 50°C Storage temp.: - 20 ~ 65°C	
Operating humidity	45 ~ 85% RH	
Degree of protection	IP65 (Front panel)	
Wire Size	-	2464UL/22AWG, 6P, 450mm
Certificate	RoHS	
Weight	436g (MSP-TP type)	588g (MSP-LB type)

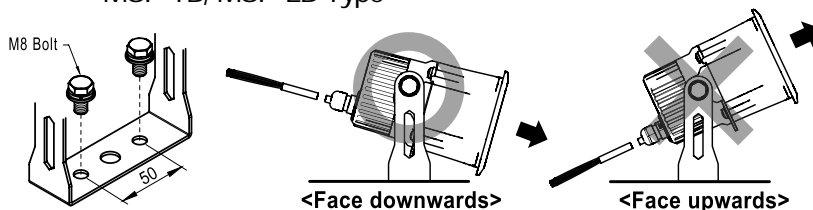
## How to install

MSP-TP, MSP-LP Type



1. Remove the installation bracket and bolts with a screwdriver from the product.
2. Insert the speaker in the direction of ① on the panel.
3. Mount the installation bracket to the direction of ② and fix with fixing bolt to prevent from shaking.

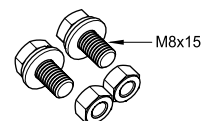
MSP-TB, MSP-LB Type



1. Fixed using M8 bolts in the hole of the angle adjusting holder. Do not fail to apply vibration absorbing rubber when installing in the place with strong vibration.
2. Please install downwards when installing outdoors to prevent rainwater from entering in the device.
3. Set the speaker angle and then fasten the angle adjustment bolt tight. (Tightening torque: 5 ~ 6N.m)

### Accessories

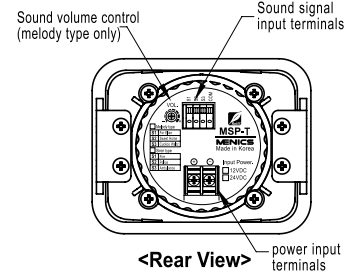
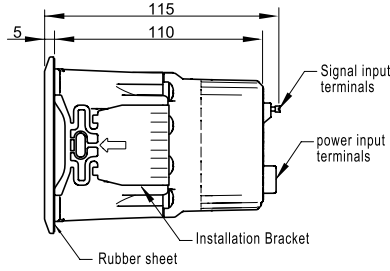
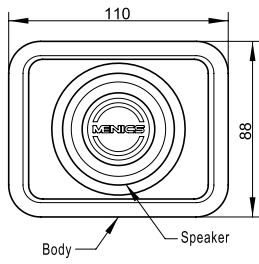
- Each two bolts and nuts to fix M8 are packaged.



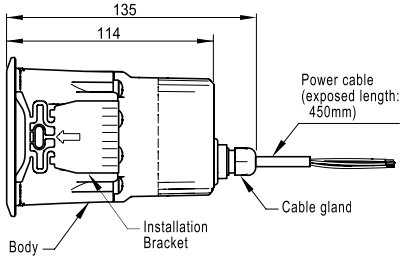
# Dimensions

(Unit: mm)

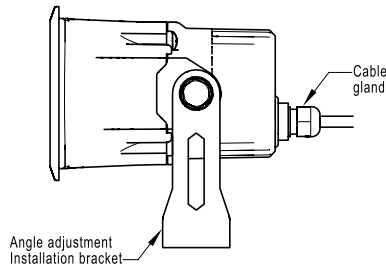
## MSP-TP Type



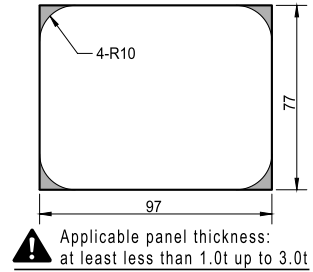
## MSP-LP Type



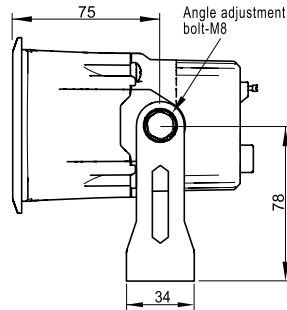
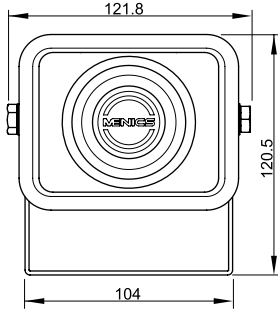
## MSP-LB Type



## Panel cutout dimensions



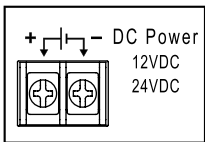
## MSP-TB Type



# Wiring Diagram

## ● MSP-T series Connection diagram

### • Power input terminals



※ It is recommended to lead wire short to reduce noise and use shield wire.

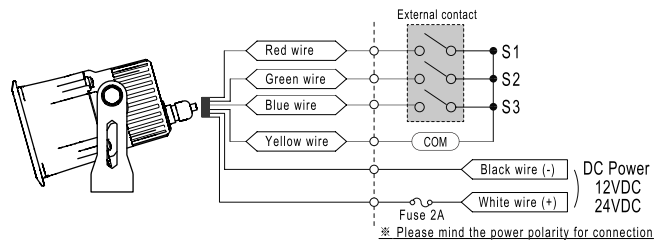
### • Specification of crimp terminal

				Nominated wire
A	B	C	D	
4.0 over	16.0 below	3.0 over	6 below	22~16 AWG

## ● MSP-L series Wiring Diagram



- Connect the power same as indicated in the product. Otherwise, over current may cause a failure of the product.
- Do not apply power to the sound color signal line and COM line. Short circuit and over current may cause a failure of the product.



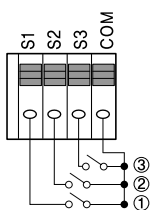
### ▲ Caution

- ※ Connect external fuse between the product and the power supply to protect internal circuitry. Siren type: 2A Melody type: 0.5A
- ※ Please isolate the signal line that is not in use. There is a risk of electric shock.

No	Wire color	Melody type	Siren type
S1	Red	for Elise	Fire truck
S2	Green	Sweet home	Police car
S3	Blue	Cuckoo Waltz	Ambulance

※ External dimension and the performance is subject to change without prior notice to improve the product.

### • Sound signal input terminals

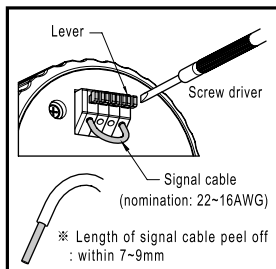
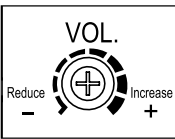


※ Connect signal wire to COM terminal of sound color input terminal and to the terminal of the selected sound type.

No	Terminals	Melody type	Siren type
①	COM - S1	for Elise	Fire truck
②	COM - S2	Sweet home	Police car
③	COM - S3	Cuckoo Waltz	Ambulance

※ Do not put power to the sound color signal input terminal. There is a risk of damage to the circuit if powered.

### • Volume control



## ▼ How to connect signal cable

1. Press the lever of the terminal with a small screw driver.
2. Insert peeled off signal cable into terminal hole.
3. Release pressing lever.

### ▲ Caution

- ※ Keep the length of peeled off signal cable. If the length of peeled off signal cable is too short, there is a risk of malfunction due to connection error and if too long, it may cause electric shock or short circuit.
- ※ Do not pull out signal cable to remove. There is a risk of damage to the terminal. Do not fail to remove by handling the lever of the terminal.



# MQV S/H Series

95mm Cube Multi-Tone Sounder

- Built-in 5W or 15W speaker
- Volume adjustable up to 85dB or 105dB
- 9 to 15 tones for a diverse range of applications
- IP 55 to 65



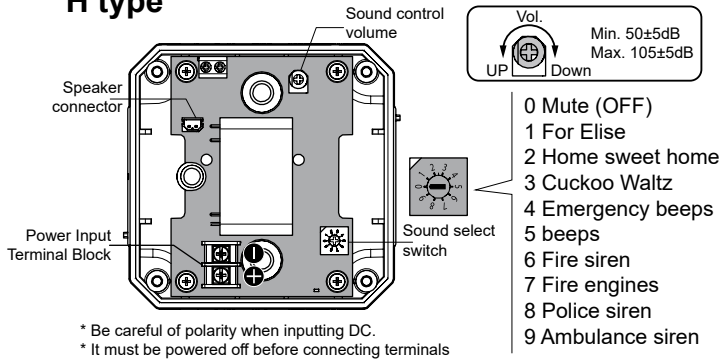
## Ordering Information

MQV H-9 FF - R  
 ① ② ③

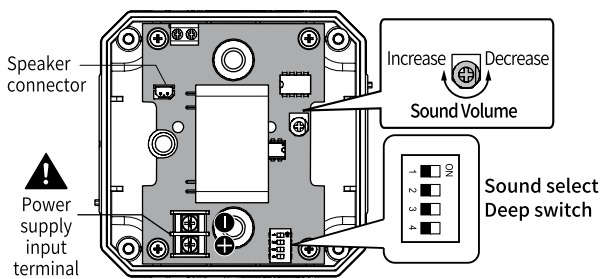
① Type	<b>S-15</b>	Speaker 15ch Sound type
	<b>H-9</b>	Horn speaker 9ch Sound type
② Power Supply	<b>00</b>	12 ~ 24VDC
	<b>FF</b>	110~220VAC
③ Cover Color	<b>R</b>	Red
	<b>B</b>	Black

## Connection Diagram

### H type



### S type



## Sound Selection Guide for S Type

No.	Deep switch	Volume	1 = ON 0 = OFF				No.	Deep switch	Volume	1 = ON 0 = OFF			
			Ch1	Ch2	Ch3	Ch4				Ch1	Ch2	Ch3	Ch4
0						8		Homesweet home	1	1	1	0	
1		Ringtone tinkle-tinkle	0	0	0	9		Symphony-Chorus	1	0	0	1	
2		Ringtone toot-toot	1	0	0	10		Rabbit	1	0	0	1	
3		Sonic Sound	0	1	0	11		Beautiful scenery	0	1	0	1	
4		Spinning wheel	1	1	0	12		Turkey in the straw	0	0	1	1	
5		Haydn serenade	0	0	1	13		Clementine	1	0	1	1	
6		Orpheus in hell	1	0	1	14		The bear went over the mountain	0	1	1	1	
7		Melody	0	1	1	15		Spring song	1	1	1	1	

## Specifications

Power supply	12 ~ 24VDC, 110 ~ 220VAC (50/60Hz)	
Allowable voltage range	10.8V ~ 26.4VDC, 100 ~ 240VAC	
Current consumption (±10%)	S type	H type
	12~24VDC : 0.08.A 110~220VAC : 0.03A	12V~24VDC: 0.45A 110~220VAC: 0.20A
Volume control	Internal volume control	Internal volume control
Sound volume (max)	85±5dB (1M)	105±5dB (1M)
Sound type	Phone Bell: 3ch Melody: 12ch	Melody : 3ch Signal : 3ch Siren : 3ch
Weight	App. 380g (AC type)	App. 535g (AC type)
Protection structure	IP55	IP65
Power cable insertion	Bottom of main body - Maximum cable diameter: Ø7mm Two external locations - Cable gland(PG9-PG13.5)	
Connection	AC : 18 AWG DC : 22 AWG	
Color	Body - Black	Speaker cover - Black or Red
Material	Body - PA6	Speaker Cover - ABS
Insulation resistance	Over 100MQ (500VDC mega between terminals and case)	
Withstand voltage	500VAC 50/60Hz 1 min(between terminls and case before)	
Vibration	0.75mm at 10~55Hz (cycle: 1minute)	
Temperature	Working temperature : -20 ~ 50°C Storage temperature: -20 ~ 70°C	
Operating humidity	45 ~ 85% RH	
Dimensions	95 x 95 x 94 mm	95 x 95 x 111.2 mm

# Note

A series of horizontal dotted lines for writing notes.

# K16 Series

Ø16mm Switches/Buttons




















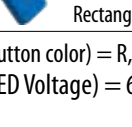
- 16mm (5/8") Mounting Holes
- IP 65 degree of protection (Water & dust proof)
- Snap action contacts
- Illuminated Mushroom & Round, square, rectangular heads (Selector switches are optional)
- Useful quick connector (tap #110) or available solder socket or PCB pin sockets
- Flush mountable switches available - see page F4

## Specifications

<b>Contacts</b>	Contact Form	SPDT (1NO + 1NC), DPDT (2NO + 2NC)
	Contact Material	Ag Alloy (24K Gold plated)
	Max. Switching Current	3A MAX
	Max. Rated Voltage	250VAC, 110VDC
	Rated Current	1A at 24VDC/ 120VAC, 0.5A at 250VAC
	Min. Switching Current	1mA 5VDC
<b>LED</b>	Rated Voltage	24VDC, 12VDC, 6VDC
	Rated Current	15mA
	Expected Life	50,000hrs
<b>Buzzer</b>	Sound	80dB continuous alert sound at 0.1m
	Voltage/Current	24VDC/15mA

<b>General Spec</b>	Contact Resistance	Max. 50mΩ	
	Insulation Resistance	100MΩ at 500V DC	
	Dielectric Strength	2,000VAC for 1 Min.	
	Vibration Resistance	5~55Hz Dual amplitude : 0.75mm	
	Shock Resistance	Endurance: 500m/s <sup>2</sup> , Operatin 200m/s <sup>2</sup>	
	Expected Life	Mechanical	Push Button (release): Min. 1,000,000
			Selector, Key Selector: 250,000
	Expected Life	Electrical	Others: Min. 100,000
			Maintained: Min. 50,000 (frequency 1,200 times/hrs)
	Expected Life	Electrical	Others: Min. 100,000
Ambient Temperature			Operation: -25°C~ +55°C, Storage: -30°C~+80°C
Ambient Humidity	45~85%RH		
Degree of Protection	IP65		
Terminal Soldering Temp.	20W 5sec / 260°C 3sec		

	Style	Operation	Contact	Part Numbers	
				Non Illuminated	Illuminated
Push Button		Momentary	SPDT DPDT	K16-211-① K16-212-①	K16-271-①-② K16-272-①-②
		Maintained	SPDT DPDT	K16-311-① K16-312-①	K16-371-①-② K16-372-①-②
		Momentary	SPDT DPDT	K16-221-① K16-222-①	K16-281-①-② K16-282-①-②
		Maintained	SPDT DPDT	K16-321-① K16-322-①	K16-381-①-② K16-382-①-②
		Momentary	SPDT DPDT	K16-231-① K16-232-①	K16-291-①-② K16-292-①-②
		Maintained	SPDT DPDT	K16-331-① K16-332-①	K16-391-①-② K16-392-①-②
Mushroom Switches		Momentary	SPDT DPDT	K16-911-① K16-912-①	K16-971-①-② K16-972-①-②
		Maintained	SPDT DPDT	K16-911H-① K16-912H-①	K16-971H-①-② K16-972H-①-②
		Momentary	SPDT DPDT	K16-921-① K16-922-①	K16-981-①-② K16-982-①-②
		Maintained	SPDT DPDT	K16-921H-① K16-922H-①	K16-981H-①-② K16-982H-①-②
		Momentary	SPDT DPDT	K16-931-① K16-932-①	K16-991-①-② K16-992-①-②
		Maintained	SPDT DPDT	K16-931H-① K16-932H-①	K16-991H-①-② K16-992H-①-②
E-Stop Switches		Turn to Release	SPDT DPDT	K16-811R K16-812R	K16-871-24VDC K16-872-24VDC
Buzzers		80dB	N/A	K16-CZ	K16-CZL
		80dB	N/A	K16-BZ	K16-BZL

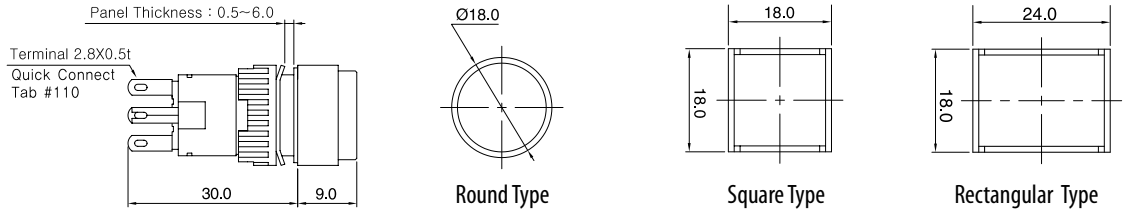
	Style	Operation	Contact	Part Numbers
Pilot Lamp		Pilot Lamp	N/A	K16-170-①-②V
		Pilot Lamp	N/A	K16-180-①-②V
		Pilot Lamp	N/A	K16-190-①-②V
Selector Switches		2 Step	SPDT DPDT	K16-411 K16-412
		3 Step	DPDT	K16-512
		2 Step	SPDT DPDT	K16-421 K16-422
		3 Step	DPDT	K16-522
		2 Step	SPDT DPDT	K16-431 K16-432
		3 Step	DPDT	K16-532
Key Selector Switches		2 Step	SPDT DPDT	⊗ K16-611 ⊙ K16-612
		3 Step	DPDT	⊕ K16-712
		2 Step	SPDT DPDT	⊗ K16-621 ⊙ K16-622
		3 Step	DPDT	⊕ K16-722
		2 Step	SPDT DPDT	⊗ K16-631 ⊙ K16-632
		3 Step	DPDT	⊕ K16-732

\* ① (Button color) = R, G, Y, B, and W (Red, Green, Yellow, Blue, and White)

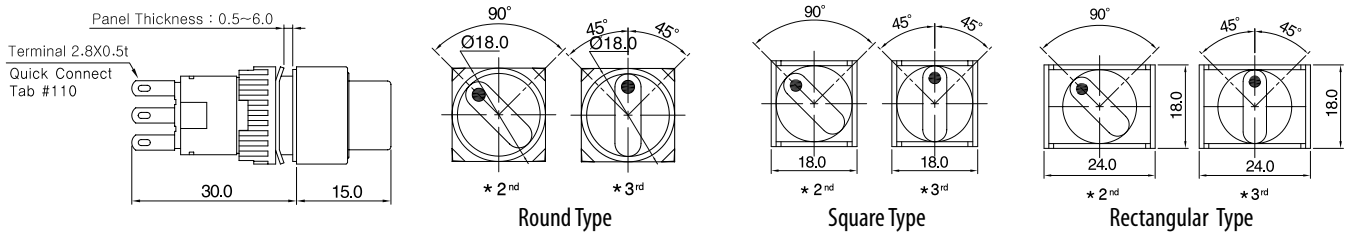
\* ② (LED Voltage) = 6VDC, 12VDC, 24VDC

# Dimensions

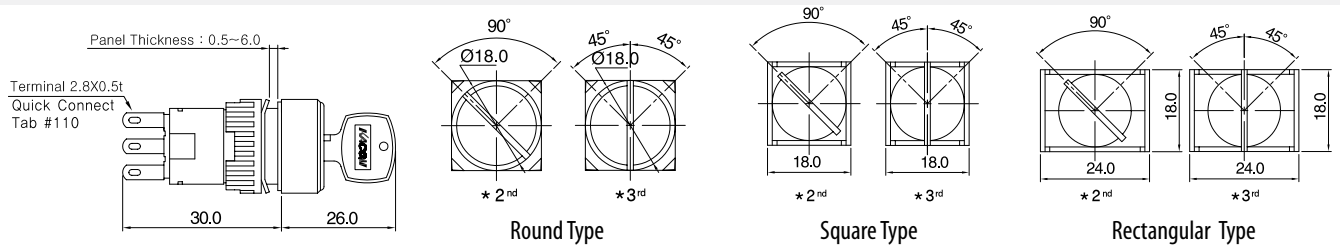
## Pilot Lamps & Push Buttons



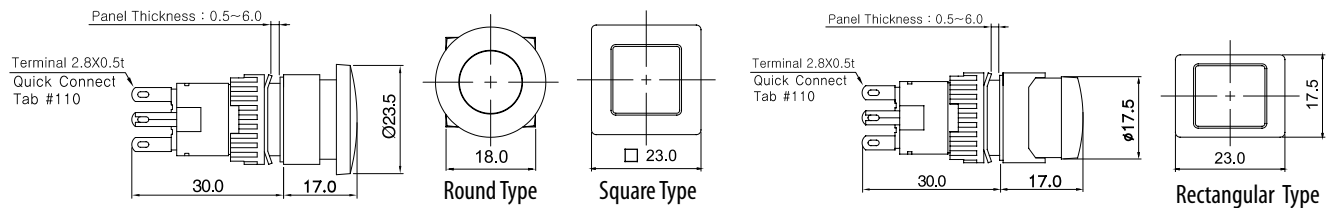
## Selector Switches



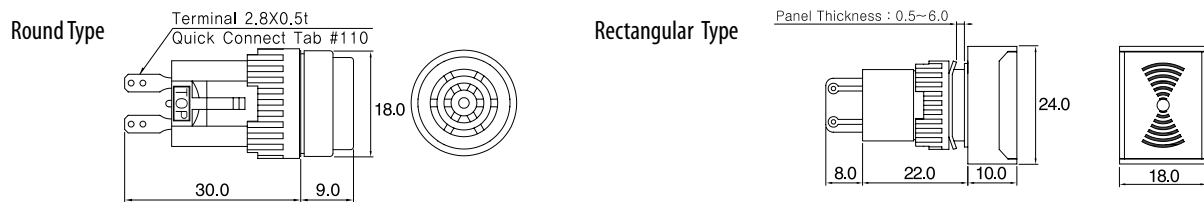
## Key Switches



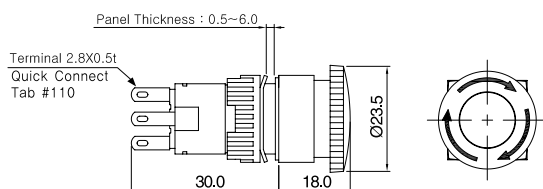
## Mushroom Type Push Buttons



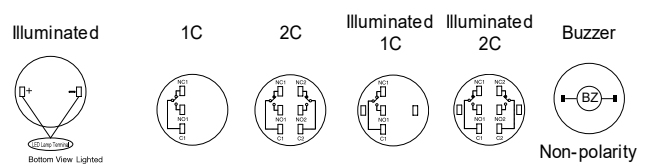
## Buzzers



## Emergency Resets



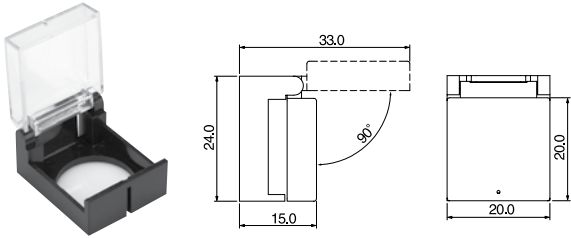
## Wiring Diagram





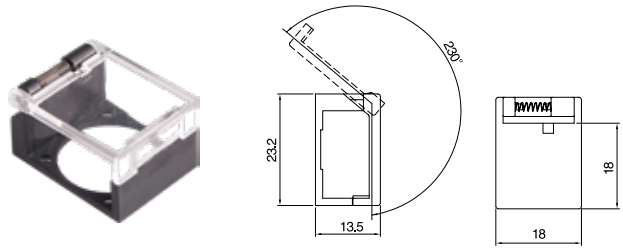
# K16 Accessories

## Protection Covers - Round & Square Type



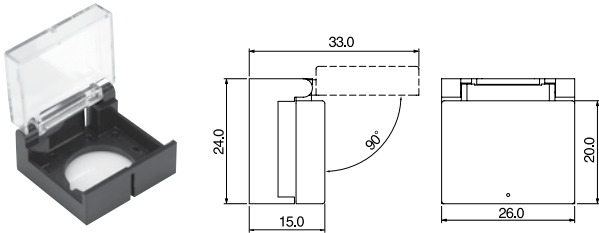
K16-S111 ① : Opens 90 degree

①- Blank: Black, R: Red, G: Green, Y: Yellow



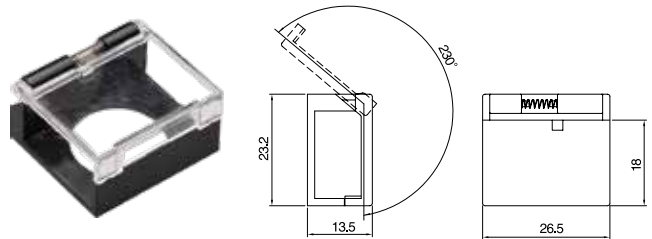
K16-S221 : Opens 230 degree

## Protection Covers - Rectangular Type



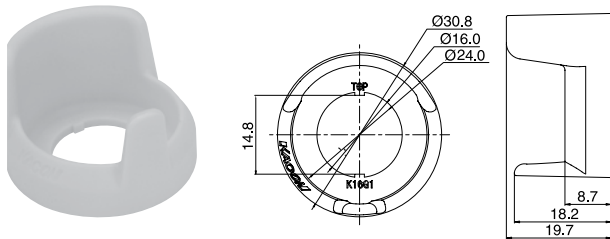
K16-S112 ① : Opens 90 degree

①- Blank: Black, R: Red, G: Green, Y: Yellow

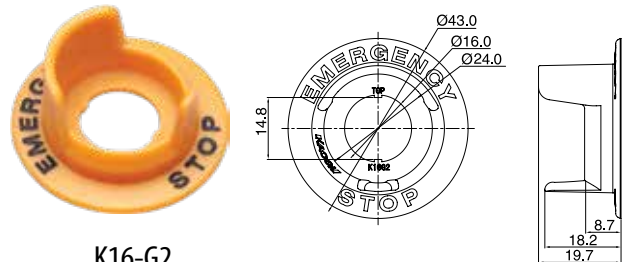


K16-S222 : Opens 230 degree

## Safety Guard



K16-G1



K16-G2

## LED

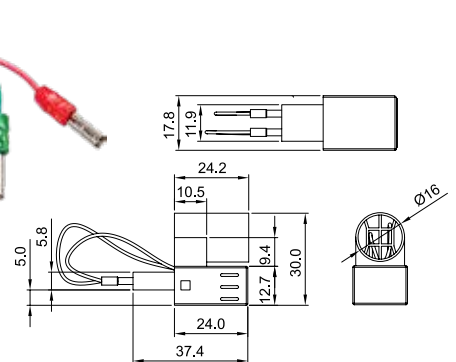
K16-S115 ①

① - R, Y, G, B, C & 6, 12, 24VDC

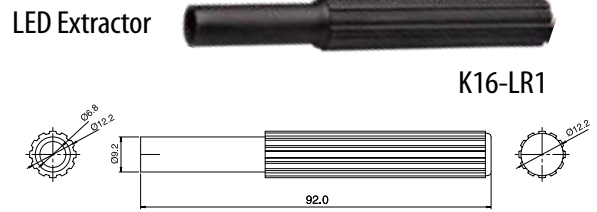
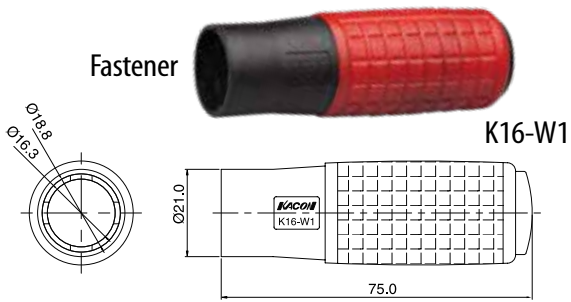


## Transformer

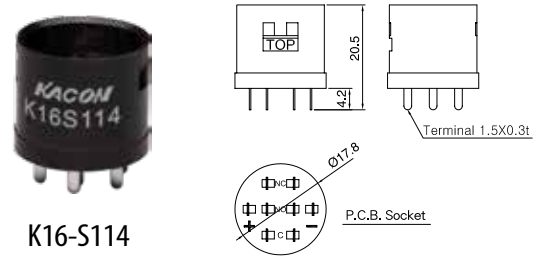
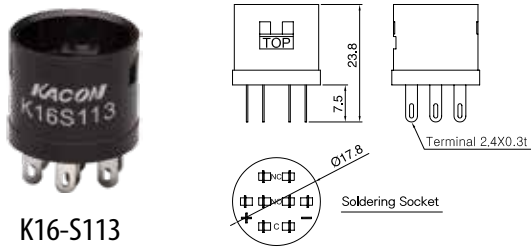
K16-T1 : 220V to 24V  
K16-T2 : 110V to 24V



## Hand Tools



## Sockets



## Terminal Protection



K16-S116

## Protection Cover



K16-S223

## R Type Lens



K16-S224

## Flush Mounting Guard



Switches shown with  
flush mounting guard



# A20 Series

Ø22 Switches/Buttons



- Compact & light weight
- IP20 finger safe screw terminal (IEC60529)
- Matted surface on buttons, lenses, and bezels to reduce reflection of ambient light
- Detachable contact block for easy installation & removal
- Wide light distribution to increase the visibility range
- Comply with EN standard

## General Specifications

Insulation Resistance		100MΩ minimum at 500V DC megger
Dielectric Strength		Contact block: 2,500VAC for 1 Min. Illuminated unit: 2,000VAC for 1 Min.
Vibration Resistance	E-stop switches	Operation Extremes: 10-500Hz, Amplitude: 0.35mm 50m/s <sup>2</sup> Damage Extremes: 10-500Hz, Amplitude: 0.35mm 50m/s <sup>2</sup>
	Indicator, Pushbutton, Selector switches	Operation Extremes: 5-55Hz, Amplitude: 0.5mm Damage Extremes: 30Hz, Amplitude: 1.5mm
Shock Resistance	E-stop switches	Operation Extremes: 150m/s <sup>2</sup> Damage Extremes: 1,000m/s <sup>2</sup>
	Indicator, Pushbutton, Selector switches	Operation Extremes: 100m/s <sup>2</sup> Damage Extremes: 1,000m/s <sup>2</sup>
Mechanical Durability	E-Stop switches	250,000
	Pushbuttons	Momentary: 5,000,000 (Single contact), 1,000,000 (double contact) Maintained: 250,000 (Single contact), 100,000 (double contacts)
	Selector switches	250,000 (Single contact), 100,000 (double contacts)
Electrical Life	E-stop switches	100,000
	Pushbuttons	250,000 (Single contact), 100,000 (double contacts)
	Selector switches	250,000 (Single contact), 100,000 (double contacts)
Ambient Temperature		Operation: -25°C~ +55°C, Storage: -45°C~+85°C
Ambient Humidity		45~85%RH
Degree of Protection		IP65
Terminal Soldering Temperature		20W 5sec / 260°C 3sec

Contacts Rating	Rated Insulation Voltage	250V				
	Rated Terminal Current	10A				
	Operation Voltage (AC/DC)	24V	120V	240V	380V	
	AC 50/60Hz	Resistive Load	10A	10A	6A	2A
		Inductive Load	10A	6A	3A	1.9A
	DC	Resistive Load	8A	2.2A	1.1A	-
Inductive Load		4A	1.1A	0.55A	-	
Minimum Applicable Load		3V AC/DC x 3mA				




LED Rating	Type No	Rated voltage	Rated Current	Color code	LED life
LED Rating	LAED-6	6V AC/DC	10mA (R, Y) 7mA (G, W, S)	G: Green W: White R: Red S: Blue Y: Yellow	50,000 Hrs
	LAED-1	12V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-2	24V AC/DC	14mA (R, Y) 13mA (G, W, S)		50,000 Hrs
	LAED-H	110V AC/DC	5.5mA		50,000 Hrs
	LAED-M3	230/240V AC/DC	2.7mA		50,000 Hrs




## Switch Construction Instructions

Assembly	A	B	C	B LED Lamps Part Number	C Contact Block Assembly Part Number
	Pushbutton Operators	LED Lamps	Contact Block Assembly		
Illuminated				LAED-6G (6VAC/DC) LAED-6R (6VAC/DC) LAED-6S (6VAC/DC) LAED-6W (6VAC/DC) LAED-6Y (6VAC/DC) LAED-1G (12VAC/DC) LAED-1R (12VAC/DC) LAED-1S (12VAC/DC) LAED-1W (12VAC/DC) LAED-1Y (12VAC/DC) LAED-2G (24VAC/DC) LAED-2R (24VAC/DC) LAED-2S (24VAC/DC) LAED-2W (24VAC/DC) LAED-2Y (24VAC/DC) LAED-HG (110VAC/DC) LAED-HR (110VAC/DC) LAED-HS (110VAC/DC) LAED-HW (110VAC/DC) LAED-HY (110VAC/DC) LAED-M3G (230/240VAC/DC) LAED-M3R (230/240VAC/DC) LAED-M3S (230/240VAC/DC) LAED-M3W (230/240VAC/DC) LAED-M3Y (230/240VAC/DC)	A20L-E10P (1NO) A20L-E01P (1NC) A20L-E20P (2NO) A20L-E02P (2NC) A20L-E11P (1NO-1NC)
Non-illuminated				LAED-HG (110VAC/DC) LAED-HR (110VAC/DC) LAED-HS (110VAC/DC) LAED-HW (110VAC/DC) LAED-HY (110VAC/DC) LAED-M3G (230/240VAC/DC) LAED-M3R (230/240VAC/DC) LAED-M3S (230/240VAC/DC) LAED-M3W (230/240VAC/DC) LAED-M3Y (230/240VAC/DC)	A20B-E10P (1NO) A20B-E01P (1NC) A20B-E20P (2NO) A20B-E02P (2NC) A20B-E11P (1NO-1NC) A20B-E30P (3NO) A20B-E03P (3NC) A20B-E21P (2NO-1NC) A20B-E12P (1NO-2NC)

(Lens color) = G: Green, R: Red, S: Blue,  
W: White, Y: Yellow











# A20 Series Operators












	Style	Operation	Part Numbers
Non-illuminated Pushbutton Plastic bezel		Momentary	A20B-M1E①
		Maintained	A20B-A1E①
		Momentary	A20B-M2E①
		Maintained	A20B-A2E①
		Momentary	A20B-M4E①
		Maintained	A20B-A4E①
Non-illuminated Pushbutton metal bezel		Momentary	A204B-M1E①
		Maintained	A204B-A1E①
		Momentary	A204B-M2E①
		Maintained	A204B-A2E①
		Momentary	A204B-M4E①
		Maintained	A204B-A4E①
Non-illuminated Pushbutton flush mountable metal bezel		Momentary	A204B-M1E①-U
		Maintained	A204B-A1E①-U
		Momentary	A204B-M2E①-U
		Maintained	A204B-A2E①-U
		Momentary	A204B-M4E①-U
		Maintained	A204B-A4E①-U

	Style	Operation	Part Numbers
Illuminated Pushbutton plastic bezel		Momentary	A20L-MF2E②
		Maintained	A20L-AF2E②
		Momentary	A20L-M2E②
		Maintained	A20L-A2E②
		Momentary	A20L-M4E②
		Maintained	A20L-A4E②
Illuminated Pushbutton metal bezel		Momentary	A204L-M1E②
		Maintained	A204L-A1E②
		Momentary	A204L-M2E②
		Maintained	A204L-A2E②
		Momentary	A204L-M1E②-BU
		Maintained	A204L-A1E②-BU
Illuminated Pushbutton flush mountable metal bezel		Momentary	A204L-M2E②-U
		Maintained	A204L-A2E②-U
		Momentary	A204L-M4E②
		Maintained	A204L-A4E②
		Momentary	A204L-M4E②-U
		Maintained	A204L-A4E②-U

\* ① (Head color) = B: Black, G: Green, R: Red, S: Blue, W: White, Y: Yellow


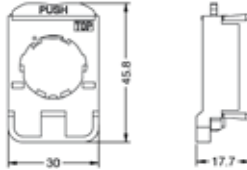

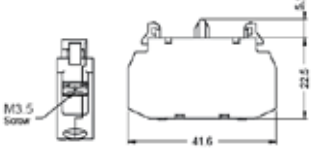

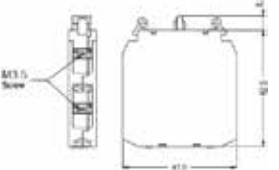



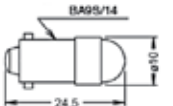
\* ② (Lens color) = G: Green, R: Red, S: Blue, W: White, Y: Yellow

	Style	Operation	Part Numbers
Non-illuminated selector switches		Maintained	A20S-2E①
		Spring return from right	A20S-21E①
		Maintained	A20S-3E①
		Spring return from right	A20S-31E①
		Spring return from two-way	A20S-33E①
	Illuminated selector switches		Maintained
Spring return from right			A20F-21E②
		Maintained	A20F-3E②
		Spring return from right	A20F-31E②
		Spring return from two-way	A20F-33E②
Non-illuminated selector switches with metal bezel			Maintained
	Spring return from right		A204S-21E①
		Maintained	A204S-3E①
		Spring return from right	A204S-31E①
		Spring return from two-way	A204S-33E①
	Illuminated selector switches with metal bezel		Maintained
Spring return from right			A204F-21E②
		Maintained	A204F-3E②
		Spring return from right	A204F-31E②
		Spring return from two-way	A204F-33E②
Non-illuminated selector switches with flush mountable metal bezel			Maintained
	Spring return from right		A204S-21E①-U
		Maintained	A204S-3E②-U
		Spring return from right	A204S-31E②-U
		Spring return from two-way	A204S-33E②-U

	Style	Operation	Part Numbers
Illuminated selector switches with flush mountable metal bezel		Maintained	A204F-2E②-U
		Spring return from right	A204F-21E②-U
		Maintained	A204F-3E②-U
		Spring return from right	A204F-31E②-U
		Spring return from two-way	A204F-33E②-U
	Key selector switches		Maintained
Spring return from right			A20K-21BE-2
		Maintained	A20K-3AE-2
		Spring return from right	A20K-31BE-2
		Spring return from two-way	A20K-33DE-2
Key selector switches with metal bezels			Maintained
	Spring return from right		A204K-21BE-2
		Maintained	A204K-3AE-2
		Spring return from right	A204K-31BE-2
		Spring return from two-way	A204K-33DE-2
	Key selector switches with flush mountable metal bezels		Maintained
Spring return from right			A204K-21BE-2U
		Maintained	A204K-3AE-2U
		Spring return from right	A204K-31BE-2U
		Spring return from two-way	A204K-33DE-2U
Non-illuminated E-Stop switches			Push lock Twist reset
Illuminated E-Stop switches		Push lock Twist reset	A20L-V4ER
Key-Reset E-Stop switches		Push lock Key reset	A20E-K4


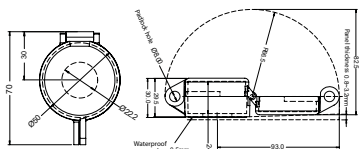

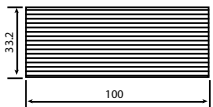

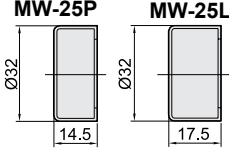

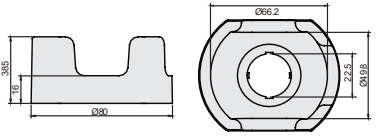
\* ① (Head color) = **B**: Black, **G**: Green, **R**: Red, **S**: Blue, **W**: White, **Y**: Yellow  
 \* ② (Lens color) = **G**: Green, **R**: Red, **S**: Blue, **W**: White, **Y**: Yellow

# A20 Components

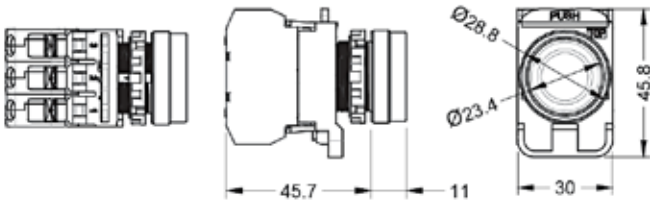
Name	Part No.	Description	Dimensions
	A20B-E00P	Contact block mounting adapter	
	A20-E01P	1NC contact block	
	A20-E10P	1NO contact block	
	A20-E20P	2NO contact block	
	A20-E11P	1NO-1NC contact block	
	A20-E02P	2NC contact block	
	A20-E00P	Lamp socket - full voltage adapter	
	LAED-①②*	LED lamp	

\* ① (Operation Voltage) = 6: 6VAC/DC, 1: 12VAC/DC, 2: 24VAC/DC, H: 110VAC/DC, M3: 230/240VAC/DC  
 \* ② (Lens color) = G: Green, R: Red, S: Blue, W: White, Y: Yellow

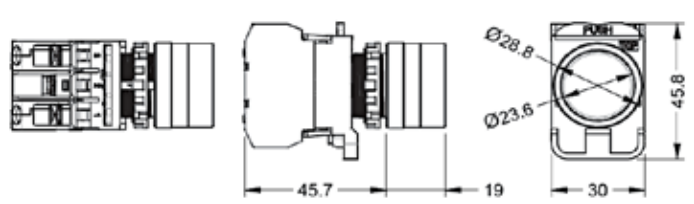
## A20 Series Accessories

Name	Part No.	Description	Dimensions
	A29Z-KL1	Padlock cover	
	MC2-P100	Locking ring wrench	
	MW-25P	Water proof cap	
	MW-25L (for Illuminated Button)		
	KEG12Y	Shroud for E-Stop switch	

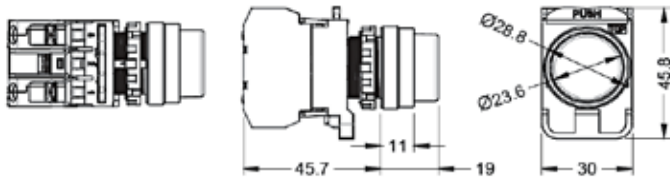
Flush type pushbutton



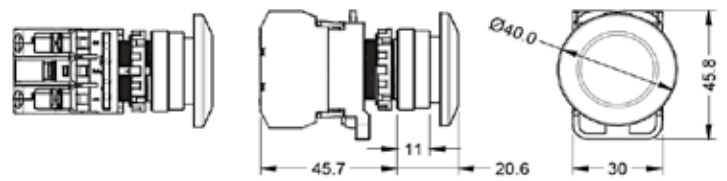
Illuminated flush type pushbutton



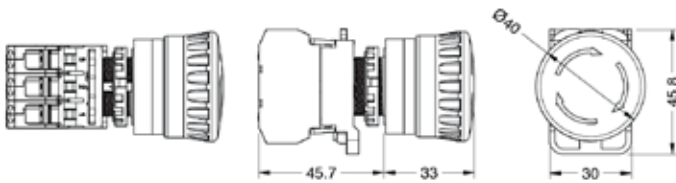
Extended type pushbutton



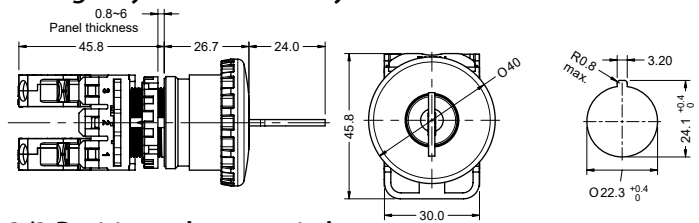
Mushroom type pushbutton



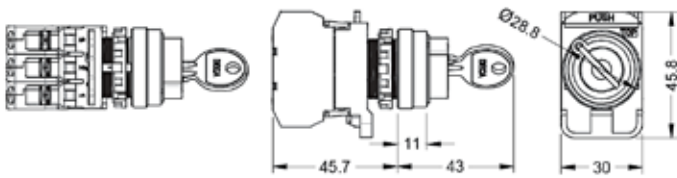
E-Stop switches



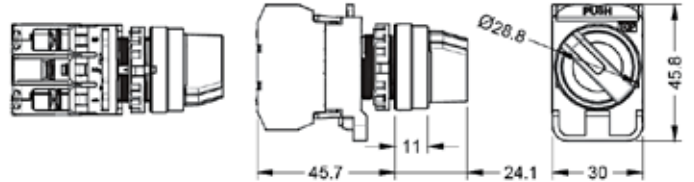
Emergency Switch with Key Reset



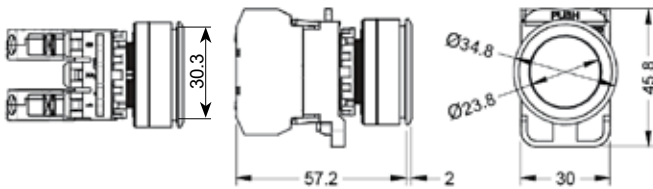
2/3 Position key selector switch



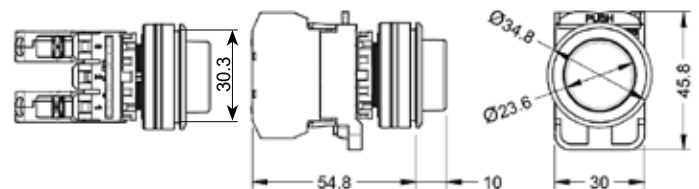
2/3 Position selector switch



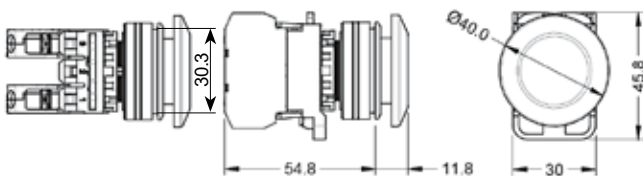
Flush type w/flush mountable metal bezels



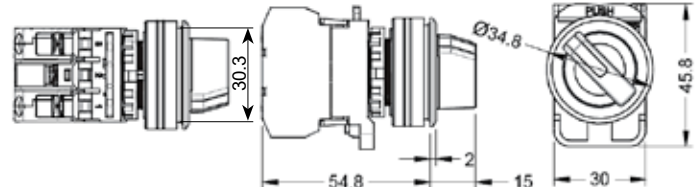
Extended type w/flush mountable metal bezels



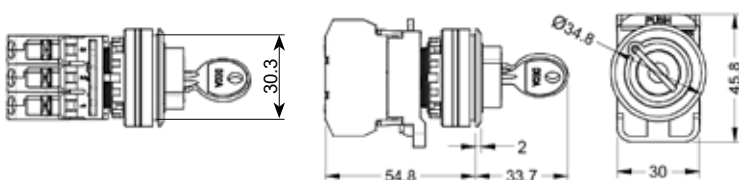
Mushroom type w/flush mountable metal bezels



2/3 Position selector w/flush mountable metal bezels

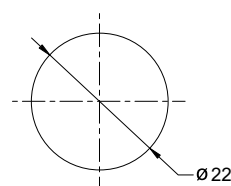


2/3 Position key selector switch w/flush mountable metal bezels

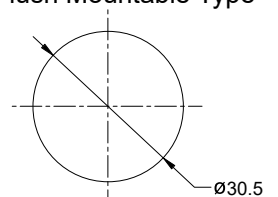


Panel Hole Guide

Standard Type



Metal bezel Flush Mountable Type





# CP2 Series

Ø22mm WIRE-PUSH-IN Unibody Switches



- Save time with quick WIRE-PUSH-IN system
- Spring clamps for strong wire holding force
- Compact unibody housing to reduce installation space
- Double wiring holes for common wiring
- IP66 waterproof (front operator)
- Accessories for contact blocks available (IP66/IP68)

## General Specifications

Insulation Resistance		100 MΩ above ( 500V DC High resistance meter )
Vibration Resistance	E-stop switches	Operation Extremes: 10-500Hz, Amplitude: 0.35mm, 50m/s <sup>2</sup>
		Damage Limits: 10-500Hz, Amplitude: 0.35mm, 50m/s <sup>2</sup>
	Pilot light Pushbutton, Illuminated pushbutton and Selector switch	Operation Extremes: 5-55Hz, Amplitude: 0.5mm
		Damage Limits: 30Hz, Amplitude: 1.5mm
Shock Resistance	E-stop switches	Operation Extremes: 150m/s <sup>2</sup>
		Damage Limits: 1,000m/s <sup>2</sup>
	Pilot light Pushbutton, Illuminated pushbutton and Selector switch	Operation Extremes: 100m/s <sup>2</sup>
		Damage Limits: 1,000m/s <sup>2</sup>
Dielectric Strength	Switch parts	Between charge and non-charged metal parts: 2,000V AC . 1minute
		Between abnormal terminals: 2,000V AC . 1minute
		Between Same polarity Terminals: 2,000V AC . 1minute
		Between Contact terminals and lamp terminals: 2,000V AC . 1minute
	Illuminated parts	Between charging and grounding: 2,000V AC . 1minute
Ambient Temperature		Operation: -25 ~ +55°C( no freezing ), Storage: -45°C~+85°C
Ambient Humidity		45~85%RH
Degree of Protection		From panel front: IP66 / Terminal: IP20 (IP66 with silicon sleeve)
Certificate/Compliance		UL(E333442), CE

Contacts Rating	Rated Insulation Voltage		400 V				
	Rated Terminal Current		8A				
	Rated Operating Voltage		12V	24V	120V	240V	380V
	AC 50/60Hz	Resistive Load	8V	8A	8A	6A	3.8A
		Inductive Load	8V	8A	6A	3A	1.9A
	Rated Operating Voltage		12V	24V	125V	250V	400V
DC	Resistive Load	2.5V	2.5A	1.1A	0.55A	0.3A	
	Inductive Load	2.5V	2.5A	0.55A	0.27A	0.15A	

Type No	Rated voltage	Rated Current	Color code ①
LAED-1 ①	12V AC/DC	2.2 mA (G) 10.0 mA (R . Y) 12.0 mA (S)	G:Green S:Blue R:Red W:White Y:Yellow
LAED-2 ①			
LAED-H ①	110V AC/DC	1.2 mA (G) 1.3 mA (Y) 1.4 mA (R . S)	
LAED-M3 ①	230/240V AC/DC	1.1 mA (G) 1.2 mA (R . S . Y)	
LAED-11 ①	110VAC	2.8 mA (G)   10.5 mA (S)	
		10.6 mA (R)   10.5 mA (Y)	
LAED-22 ①	220V AC/DC	1.9 mA (G)   9.1 mA (S)	
		8.8 mA (R)   9.0 mA (Y)	



## Contact Block

- Two wiring holes per spring contact for common wiring or alternative use
- WIRE-PUSH-IN system to greatly reduce wiring time
- Spring clamps to increase wire holding force and stability
- Central partition structure between contact blocks to enhance electrical insulation
- Solid wire, strand wire or European terminal wiring can be used
- Contact blocks and lampholders are clearly recognizable with their colors



## Operator and Housing

- Compact unibody housing to reduce installation space
- Anti-rotation latch design on operators
- Mounting panel thickness: 0.8~12.0mm (standard type)

## Accessories

- Waterproof Silicon Sleeve: provides IP66 protection to contacts under the mounting panel
- Waterproof Cover: provides IP68 protection to contact blocks



# Ordering Information

## Pushbuttons Switches

CP2 ① ② - ③ ④ ⑤ E ⑥ ⑦ ⑧ - ⑨

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Style	B	Non-Illuminated Pushbutton Switch			
	L	Illuminated Pushbutton Switch			
③ Operator	A	Maintained			
	M	Momentary			
④ Shape	1	Flush	2	Extended	
	F2	Extended with Full Shroud	4	Φ40 Mushroom	
⑤ Marking Type	Blank	Unmarking Type			
	B	Marking Type			
⑥ Contact Arrangement	10	1NO	01	1NC	
	20*	2NO	02*	2NC	
	11*	1NO+1NC			
⑦ Operator Voltage	Blank	Non-Illumination Type	Q3**	LED 12V AC/DC	
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC	
	Q22**	LED 220V AC			
⑧ Color	B*	Black	G	Green	
	R	Red	S	Blue	
	W	White	Y	Yellow	
⑨ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

\*Non-Illuminated only  
\*\*Illuminated only

## Key Selector Switches

CP2 ① K - ② ③ E ④ - ⑤

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Action	2	2 Positions -45°~+45° Maintained	22	2 Positions 0°~+90° Maintained	
	23	2 Positions 0°~+45° Maintained	24	2 Positions 0°~+45° Spring Return from Right	
	3	3 Positions -45°~0°~+45° Maintained	31	3 Positions -45°~0°~+45° Spring Return from Right	
	32	3 Positions -45°~0°~+45° Spring Return from Left	33	3 Positions -45°~0°~+45° Spring Return Two-Way	
③ Function (2 position / 3 position)	A	Key removable in L+R / L+C+R	B	Key removable in L / L+C	
	C	Key removable in R / C+R	D*	Key removable in C	
	E*	Key removable in L+R	G*	Key removable in L	
	H*	Key removable in R			
④ Contact Arrangement (No.1 / No.2)	10	NO / X	01	NC / X	
	20	NO / NO	02	NC / NC	
	11	NO / NC	11N	NC / NO	
⑤ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

\*3 Position only

## Emergency Stop Switches

CP2 ① E - ② E ③ ④ R - ⑤

① Bezel Material	Blank	Plastic Bezel				
	4	Metal Bezel				
② Type	Bezel Hole ø34.6mm					
	BV*	Pull/Turn To Release ø40 Mushroom	LV**	Pull/Turn To Release ø40 Mushroom		
	BP*	Pull To Release ø40 Mushroom	LP**	Pull To Release ø40 Mushroom		
	BT*	Turn To Release ø40 Mushroom	LT**	Turn To Release ø40 Mushroom		
	Bezel Hole ø29.0mm					
	P3*	Pull to Release Φ30 Mushroom	P4*	Pull to Release Φ40 Mushroom		
	P6*	Pull to Release Φ60 Mushroom	T3*	Turn to Release Φ30 Mushroom		
	T4*	Turn to Release Φ40 Mushroom	T6*	Turn to Release Φ60 Mushroom		
	K3*	Key Release Φ30 Mushroom	K4*	Key Release Φ40 Mushroom		
	K6*	Key Release Φ60 Mushroom				
	③ Contact Arrangement	10	1NO	01	1NC	
		20*	2NO	02*	2NC	
11*		1NO+1NC				
④ Operator Voltage	Blank	Non-Illumination Type	Q3**	LED 12V AC/DC		
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC		
	Q22**	LED 220V AC				
⑤ Head	Blank	Standard				
	T	Extended Large frame				

\*Non-Illuminated only  
\*\*Illuminated only

## Selector Switches

CP2 ① ② - ③ ④ E ⑤ ⑥ ⑦ - ⑧

① Bezel Material	Blank	Plastic Bezel			
	4	Metal Bezel			
② Style	S	Non-Illuminated Selector Switch			
	F	Illuminated Selector Switch			
③ Action	2	2 Positions -45°~+45° Maintained	22	2 Positions 0°~+90° Maintained	
	23	2 Positions 0°~+45° Maintained	24	2 Positions 0°~+45° Spring Return from Right	
	3*	3 Positions -45°~0°~+45° Maintained	31*	3 Positions -45°~0°~+45° Spring Return from Right	
	32*	3 Positions -45°~0°~+45° Spring Return from Left	33*	3 Positions -45°~0°~+45° Spring Return Two-Way	
④ Lever	Blank	Standard Lever			
	L	Long Lever			
⑤ ***Contact Arrangement	10	1NO	01	1NC	
	20*	NO / NO	02*	NC / NC	
	11*	NO / NC	11N*	NC / NO	
⑥ Operator Voltage	Q2**	LED 6V AC/DC	Q3**	LED 12V AC/DC	
	Q4**	LED 24V AC/DC	Q11**	LED 110V AC	
	Q22**	LED 220V AC			
⑦ Color	B*	Black	G	Green	
	R	Red	S	Blue	
	W	White	Y	Yellow	
⑧ Head	Blank	Standard			
	U	Silhouette			
	T	Extended Large frame			

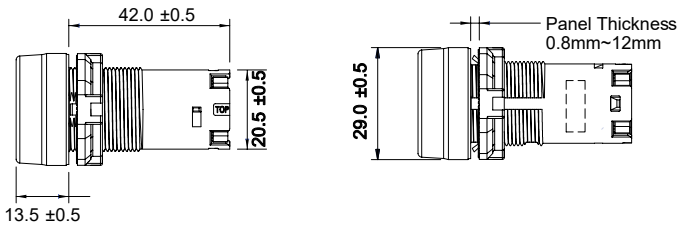
\*Non-Illuminated only  
\*\*Illuminated only

\*\*\*Contact arrangement : 2 position (10, 01, 20, 02, 11), 3 position (20, 02, 11, 11N)

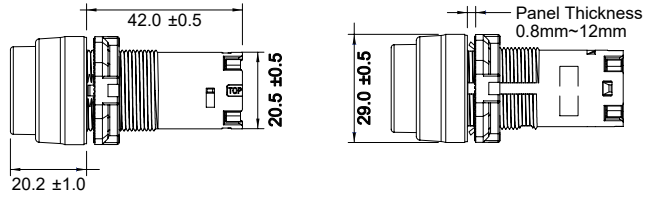
# Dimensions

Unit: mm

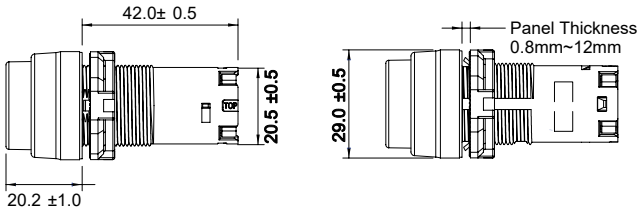
CP2B-A1E, CP2L-M1E, CP2B-M1E



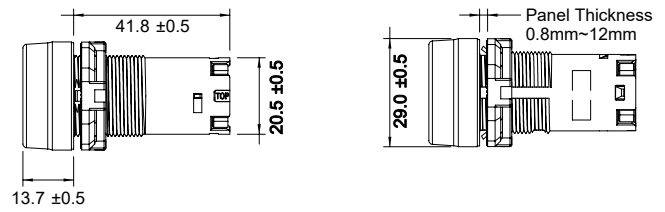
CP2L-A2E



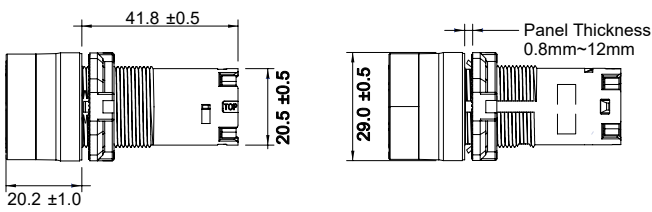
CP2L-M2E, CP2B-M2E



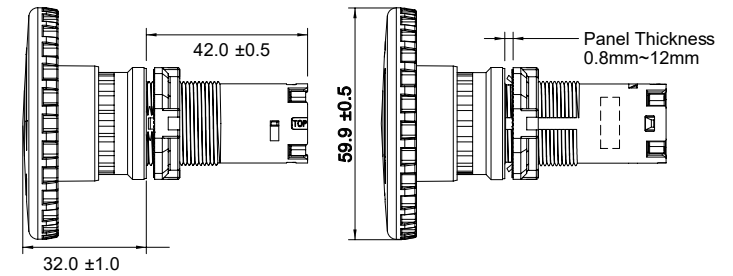
CP2L-A1E



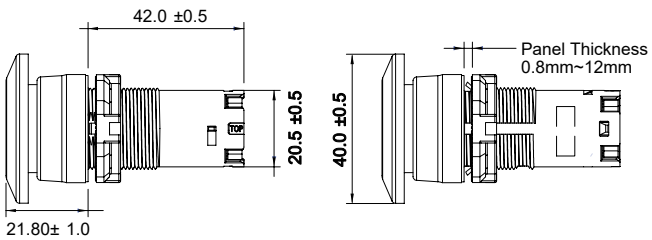
CP2L-AF2E, CP2B-MF2E



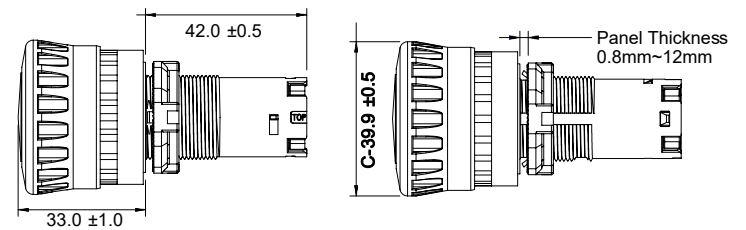
CP2E-T6E



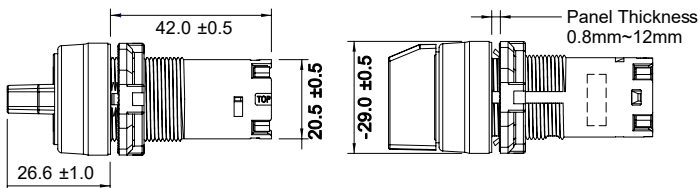
CP2L-A4E, CP2B-M4E



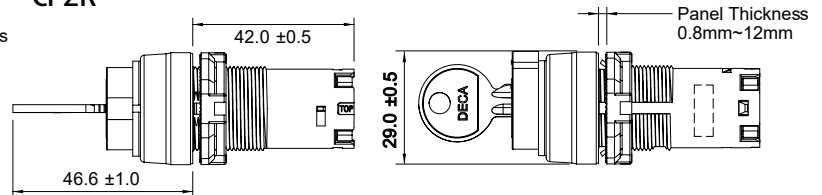
CP2E-BV, CP2E-LPE, CP2E-LTE, CP2E-LVE, CP2E-BPE



CP2S



CP2K



# B30 Series

Ø30mm Switches/Buttons



## General Specifications

Nominal Rating		10A 250VAC
Contact Resistance		Max. 50mΩ
Insulation Resistance		100MΩ at 500V DC
Frequency of Alteration	Mechanical	30 operation/min
	Electrical	30 operation/min
Dielectric Strength	btwn Charging sectors	1,800VAC/Min. (50~60Hz)
	btwn charger & earth	2,500VAC/Min. (50~60Hz)
Expected Life	Mechanical	500,000 times
	Electrical	100,000 times
Degree of Protection		IP63 (Optional IP65)
Ambient Temperature	Operation	-25°C~ +70°C
	Storage	-30°C~+80°C
Ambient Humidity		35~80% RH

	Style	Operation	Part Number
Push button		Momentary	B30-21①
		Momentary Illuminated	B30-27①②
Half guarded Push button		Momentary	B30-21①-EG
Maintained Selector switch		2 Step Knob	B30-41S
		2 Step long lever	B30-41L
		3 Step Knob	B30-51S
		3 Step long lever	B30-51L
Maintained Key Selector		2 Step	B30-61K
		3 Step	B30-71K
Mushroom 45mm head		Momentary	B30-21①-N40
Halfmoon guard 65mm Head		Momentary	B30-21①-C65

\* ① (Head color) = R: Red, Y: Yellow, G: Green, B: Blue, W: White, K: Black

\* ② (Operation Voltage) = 24VDC, 110VAC, 220VAC

LED	Normal Current	AC	LED	Approx. 15mA
		DC	LED	Approx. 15mA
	Voltage			24VAC
	Expected Life			Min. 50,000 hrs

## Current Ratings

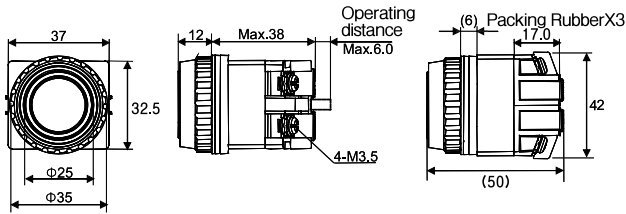
Contact Form		1NO+ 1NC		
Contact Material		Ag Alloy		
Rated Current	Voltage	AC1	AC3	DC1
	24V	20A	10A	6A
	110V	16A	8A	1.2A
	250V	10A	5A	0.5A
	440V	5A	2.5A	0.25A

	Style	Operation	Part Number
Extended 65mm Head		Momentary	B30-21①-H65
Full guard 65mm Head		Momentary	B30-21①-F65
Mushroom 65mm Head		Momentary	B30-21①-N65
EN418 Safety Lock E-stop switch		Turn to release	B30-81L
Water proof E-stop switch		Turn to release	B30-81A
E-stop switch		Turn to release	B30-81R
Connect Block		BCB(NC) BCA(NO)	

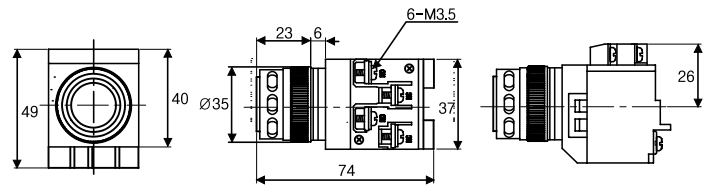
# Dimensions

Unit: mm

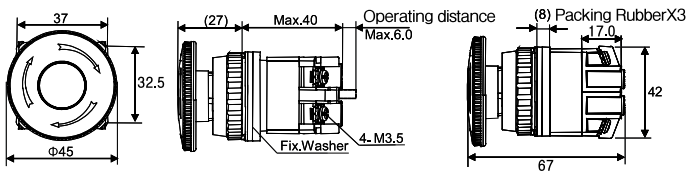
## Push Buttons



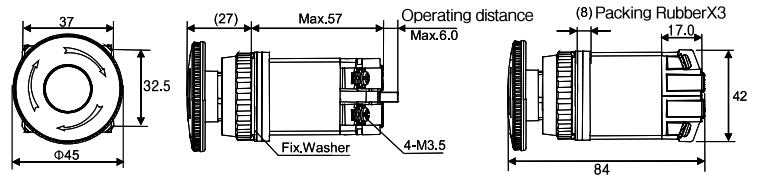
## Illuminated Push Buttons



## E-Stop Switches

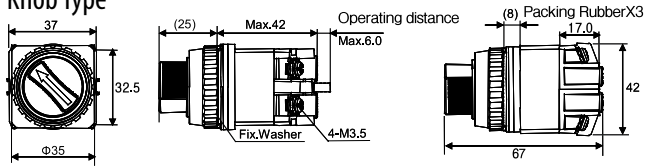


## E-Stop Switches (water proof)/ Latch Type E-Stop Switches

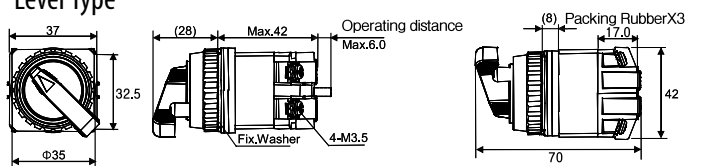


## Selector Switches

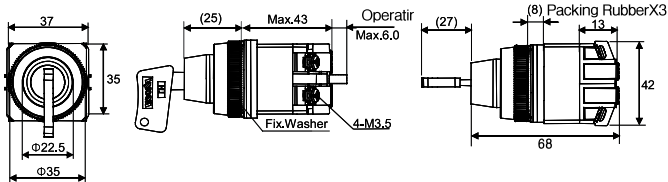
### Knob Type



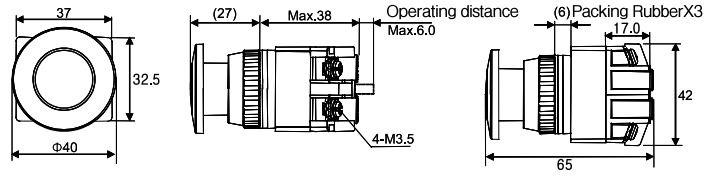
### Lever Type



## Key Switches

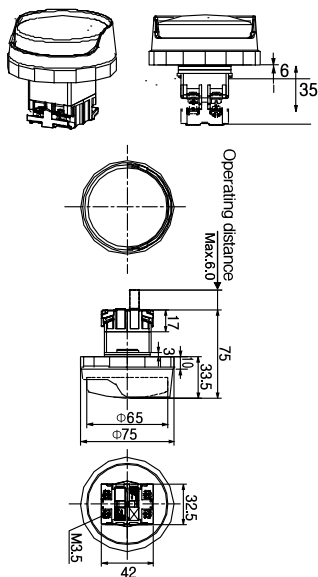


## Mushroom Push Buttons

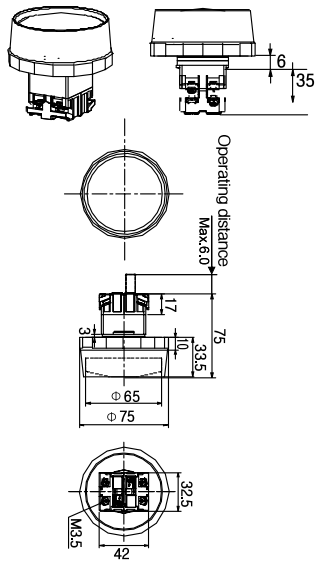


## 65mm Metal Guarded Head Push Buttons

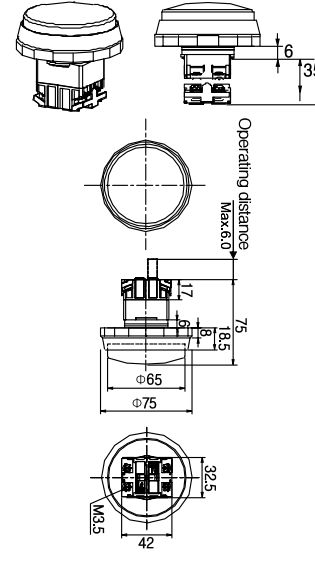
### Halfmoon Guard



### Full Guard



### Extended head





# T Series

Metal Chassis Pushbuttons



## Ordering Information

T ① - ② ③ ④ ⑤ ⑥ ⑦

① Size	16	Ø16mm		
	19	Ø19mm		
	22	Ø22mm		
	25	Ø25mm		
	30	Ø30mm		
② Operation Type	1	Pilot Lamp	2	Momentary Push
	3	Maintained Push	4*	2 Position Selector
	5*	3 Position Selector	6*	2 Position Key Selector
	7*	3 Position Key Selector	8*	Emergency Stop
	CZ*	Buzzer		
	③ Illumination & Shape	1	Non-Illuminated Round	
7		Illuminated LED Round		
C		Continuous		
④ Contact Form	0	No Contact		
	1	1N/O + 1N/C		
	2	2N/O + 2N/C		
⑤ Color	R	Red		
	Y	Yellow		
	G	Green		
	B	Blue		
	W	White		
⑥ Button Type		Flush Head		
	H	Extended Head**		
⑦ Voltage	D4	24VDC		
	A2	110/220VAC		

\*T19 Series Only  
\*\*T16 & T19 only, Non-Illuminated only

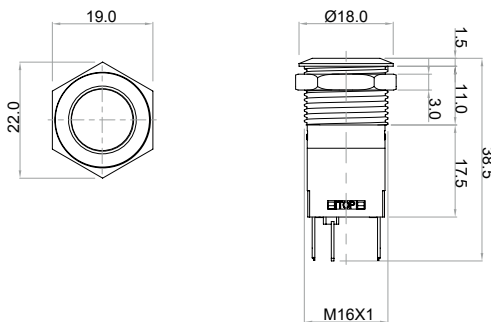
## Specifications

		T16, 19	T22, 25, 30	
General Specs.	Contact Resistance	Max. 50mΩ		
	Insulation Resistance	Min. 100MΩ at 500V DC		
	Dielectric Strength	2,000VAC for 1 Min.		
	Vibration Resistance	5~55Hz dual amplitude : 0.75mm		
	Shock resistance	Operation: 200m/s <sup>2</sup> , Endurance: 500m/s <sup>2</sup>		
	Life Cycles	Mechanical	Momentary: Min. 1,000,000 Maintained: Min. 250,000	
		Electrical	Momentary: Min. 100,000 Maintained: Min. 50,000	
	Frequency of On/Off	1,200 times/hr		
	Ambient Temperature	Operation: -25°C~ +55°C, Storage: -30°C~+80°C		
	Ambient Humidity	45~85%RH (at -5~+40°C)		
Degree of Protection	IP65			
Terminal soldering temperature	20W 5Sec / 260°C 3Sec			
Material	Body:SUS304, Operator:SUS316			
Contacts	Contact Arrangement	1N/O + 1N/C, 2N/O + 2N/C		
	Contact Material	Ag Alloy (24K Gold plate)		
	Rated Insulation Voltage	250VAC		
	Max. Switching Current	3A Max.	5A Max.	
	Max. Switching Voltage	250VAC, 110VDC		
LED Lamp	Rated Current	1A 24VDC / 120VAC 0.5A 250VAC	3A 24VDC/120VAC 1.5A 250VAC	
	Min. Switching Current	1mA 5VDC		
	Color	Red, Green, Yellow, Blue, White		
	Operator Type	Round		
Buzzer	Rated Voltage	24VDC, 110VAC, 220VAC		
	Rated Current	15mA Approx.		
	Expected Life	50,000hrs		
	Sound Type	Continuous		
Buzzer	Volume	80dB		
	Rated Voltage	24VDC		
	Rated Current	Approx. 15mA		
	Life Cycles	1,000hours		

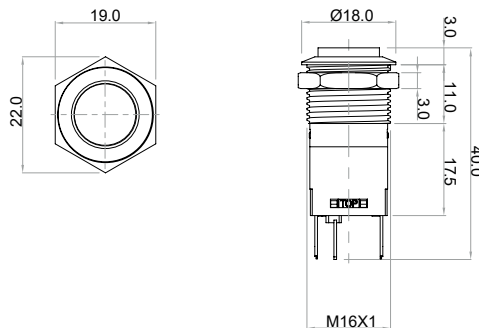
## Dimensions

Unit: mm

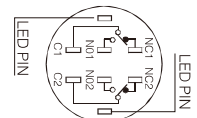
T16 Flush head pushbuttons



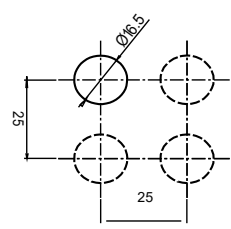
T16 Extended head pushbuttons



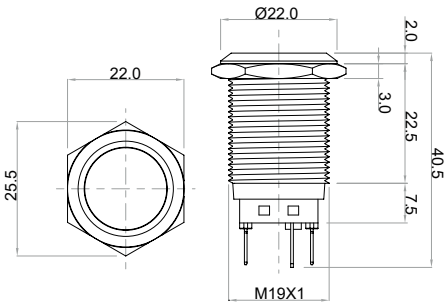
T16 Wiring Diagram



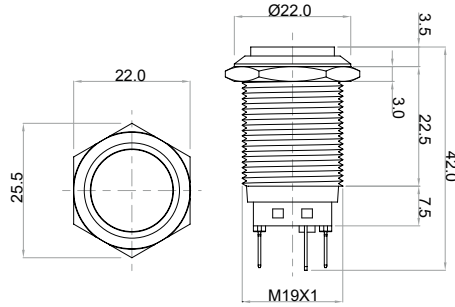
T16 Panel Cut-out



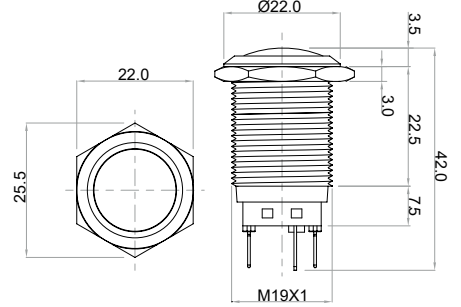
T19 Flush head pushbuttons



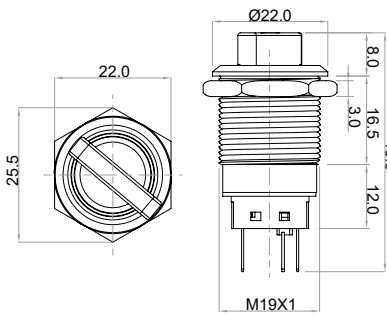
T19 Extended head pushbuttons



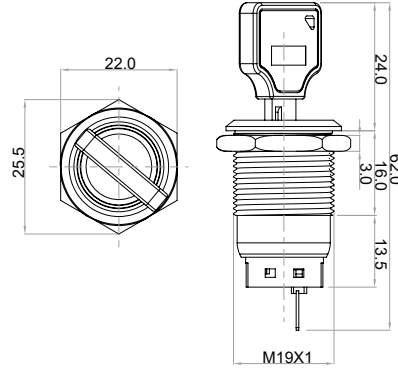
T19 Dome head pushbuttons



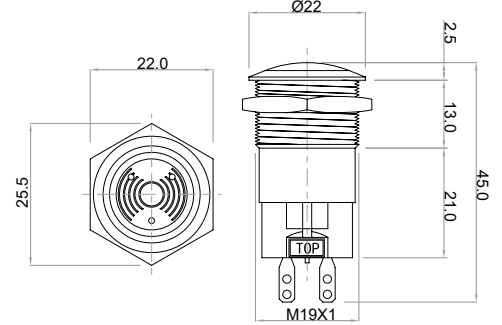
T19 Selector Switches



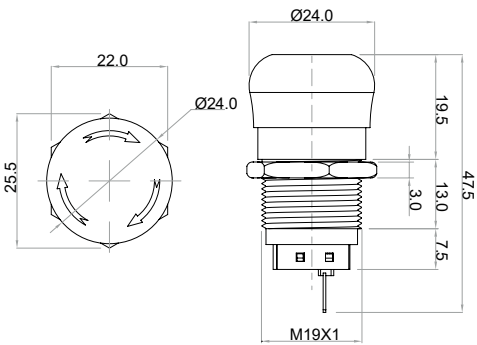
T19 Key Selector Switches



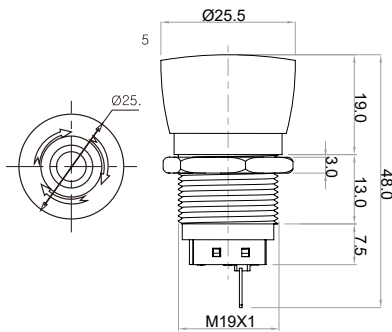
T19 LED Illuminated Buzzer



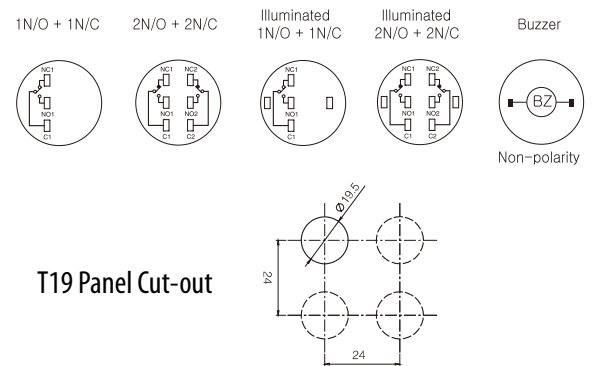
T19 Emergency Switches (T19-8 Type)



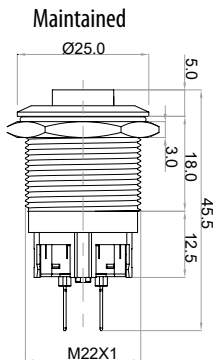
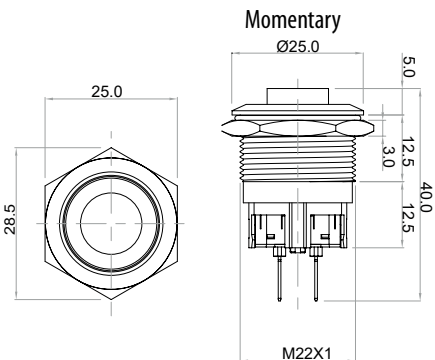
T19 Emergency Switches (T19-A Type)



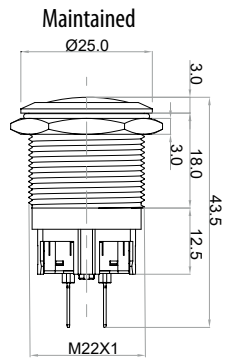
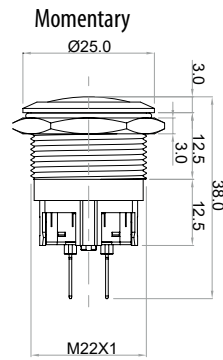
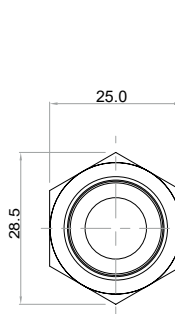
T19 Wiring Diagram



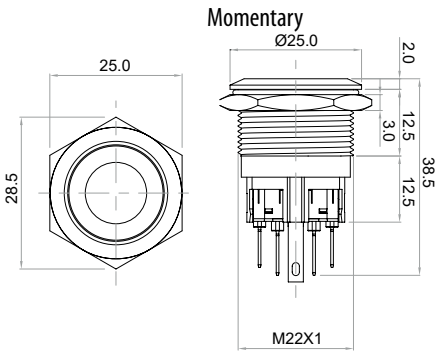
T22 Non-Illuminated Flush head pushbuttons



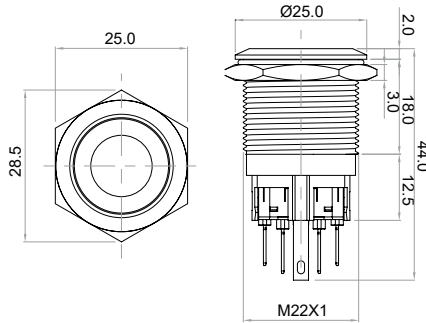
T22 Non-Illuminated Extended head pushbuttons



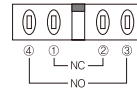
T22 Illuminated Momentary Flush head pushbuttons



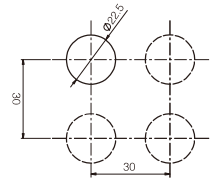
T22 Illuminated Maintained Flush head pushbuttons



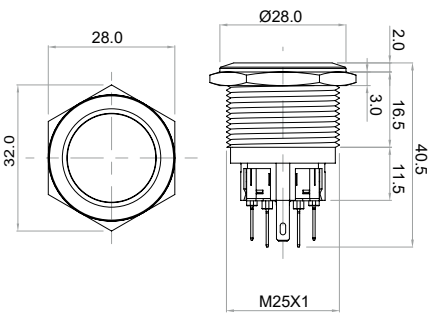
T22 Wiring Diagram



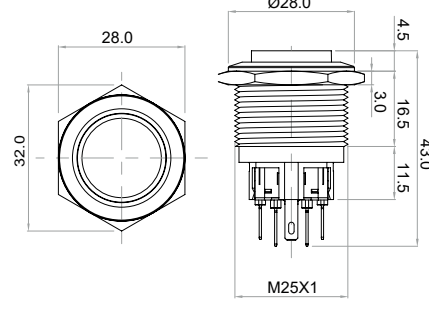
T22 Panel Cut-out



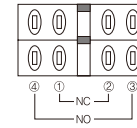
T25 Flush head pushbuttons



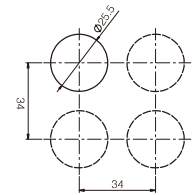
T25 Extended head pushbuttons



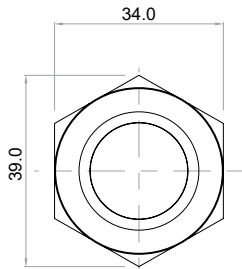
T25 Wiring Diagram



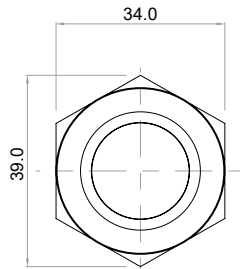
T25 Panel Cut-out



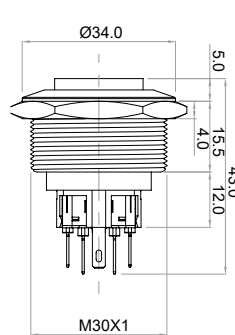
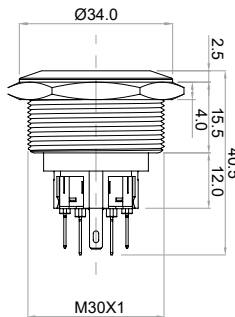
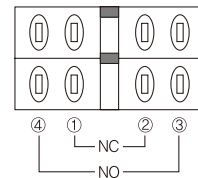
T30 Flush head pushbuttons



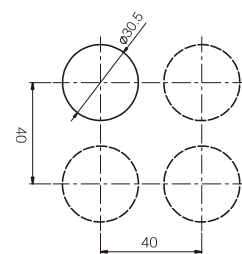
T30 Extended head pushbuttons



T30 Wiring Diagram



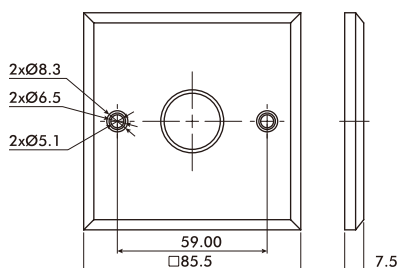
T30 Panel Cut-out



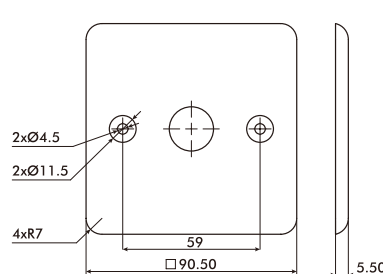
Accessory: Fix Plate

Unit: mm

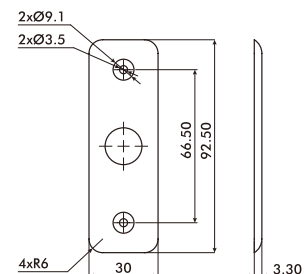
T-P1 (T19, 22, 25, 30)



T-P2 (T19)



T-P3 (T16)





# MLD Series

Rotary Switch Disconnecter



## Ordering Information

MLD - ① ②

① Rated Current			
<b>020</b>	20A	<b>032</b>	32A
<b>040</b>	40A	<b>063</b>	63A
<b>080</b>	80A	<b>100</b>	100A

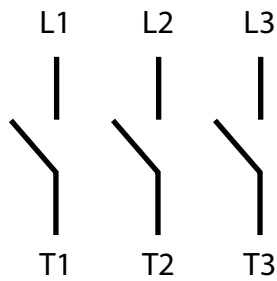
② Mounting Type	PE	Panel Type
	ESE	Extension Shaft

## Specifications

Division		MLD-020	MLD-032	MLD-040	MLD-063	MLD-080	MLD-100
Rated Isolation Voltage (Ui)	V	690					
Maximum Switching Current (I th)	A	20	32	40	63	80	100
Rated Current (Ie)							
AC-23A	A	15	22	30	43	57	70
AC-3	A	11	15	22	36	43	57
Rated Voltage (Ue)	V	240 440	240 440	240 440	240 440	240 440	240 440
Contact Capacity							
AC-23A	kW	3.7 5.5	5.5 11	7.5 15	9 22	15 30	22 37
AC-3	kW	2.7 3.7	4 7.5	5.5 11	8 18.5	9 22	15 30
Motor Load							
	V	240 440	240 440	240 440	240 440	240 440	240 440
	HP	2 3	5 10	7.5 15	10 20	20 40	25 50
Icw/s	A	180	264	360	516	684	840
Wire	mm <sup>2</sup>	1.25 - 5.5	2 - 14	2 - 14	2 - 38	2 - 38	2 - 60
Tightening Torque	N-m	0.8(8.16kgf-cm)		1.2(12.24kgf-cm)		2.5(25.49kgf-cm)	

\* Workable temperature : -25 ~ 70°C (With no icing)

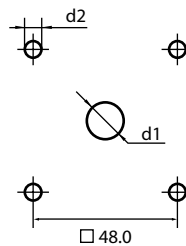
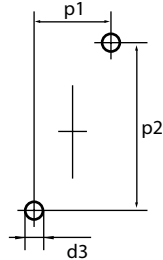
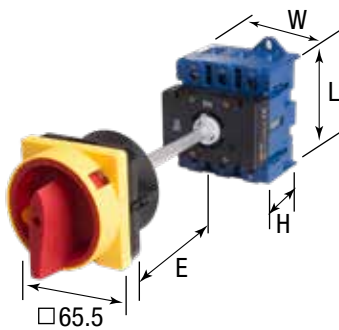
## Contact Diagram



## Dimensions

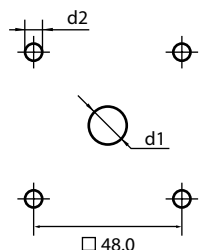
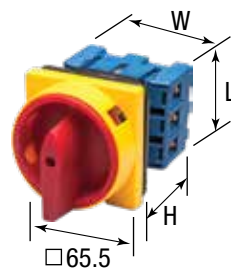
unit: mm

### MLD-ESE Series



Model	Switch				Panel				
	H	L	W	E	d1	d2	d3	p1	p2
MLD-020	51	55	43	150	20	4.2	4.2	22	60
MLD-032	51	55	43	150	20	4.2	4.2	22	60
MLD-040	61	64	50	150	20	4.2	4.2	22	70
MLD-063	61	64	50	150	20	4.2	4.2	22	70
MLD-080	68	81	71	150	20	4.2	4.2	25	90
MLD-100	68	81	71	150	20	5.2	5.2	25	90

### MLD-PE Series



Model	Switch			Panel	
	H	L	W	d1	d2
MLD-020	55	55	43	20	4.2
MLD-032	55	55	43	20	4.2
MLD-040	60	65	50	20	4.2
MLD-063	60	65	50	20	4.2
MLD-080	70	80	70	20	4.2
MLD-100	70	80	70	20	5.2





# KMCB Series

Miniature Circuit Breaker

- Two types of terminal blocks
- Terminal covers
- DIN Rail mounting
- On/Off Indicator



## Ordering Information

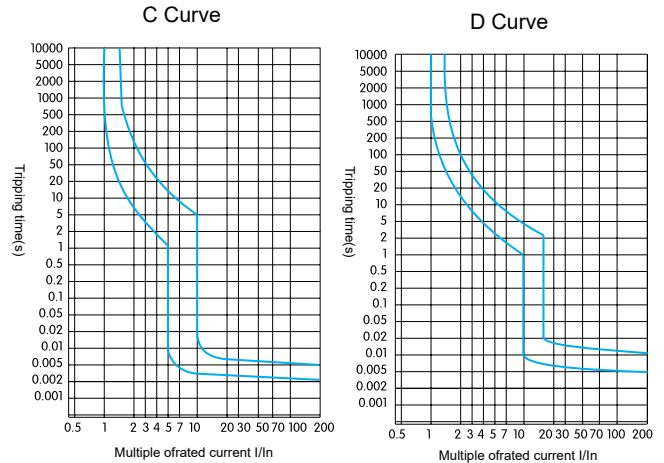
KMCB - ① ② ③

① Tripping Characteristic		C	D	C type	D type
② Rated Current					
2	2A*	3	3A*		
4	4A*	6	6A*		
10	10A	16	16A		
20	20A	25	25A		
32	32A	40	40A		
50	50A				

\*Custom orders only

③ Poles	1P	2P	3P	4P

## Characteristics



## Specifications

Poles	1P	2P	3P	4P
Standard	IEC60989, GB10963			
Rated Voltage	220VAC (Max. 400VAC)	220VAC/380VAC(Max. 400VAC)		
Rated Current	(2, 3, 4, 6), 10, 16, 20, 25, 32, 40, 50A			
Insulation Voltage	400VAC			
Withstanding Voltage	4,000VAC			
Rated Frequency	50/60Hz			
Rated Capacity	6KA at 380VAC			
Electrical Life	4,000 times			
Mechanical Life	20,000 times			
Operation Frequency/hr	Mechanical	240 times/hr 2A - 50A		
	Electrical	240 times/hr 2A - 32A		
		120 times/hr 40A - 63A		
Protection	IP20			
Ambient Temperature	-5 ~ 40°C			
Installation Altitude	Less than 2,000 meter			
Recommended wire	2A-6A:1mm <sup>2</sup>	10A:1.5mm <sup>2</sup>	16, 20A:2.5mm <sup>2</sup>	25A: 4mm <sup>2</sup>
	32A: 6mm <sup>2</sup>	40, 50A: 10mm <sup>2</sup>		

## Features

KMCB can be installed on any 35mm DIN rail with easy clip on bracket



Two terminal block options give easier access per installation environment



On-Off Indicator

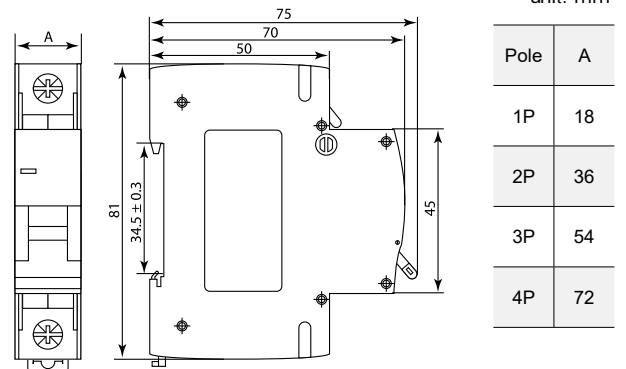


Terminal cover can be opened for easier access



Enhanced resistance of vibration shock with SEMS Screw

## Dimensions



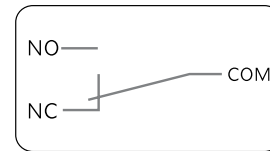
## Specifications

<b>Contact Arrangement</b>	SPDT(1NO + 1NC)	
<b>Material</b>	Ag Alloy	
<b>Distance btw contacts</b>	0.5mm	
<b>Insulation Resistance</b>	100MΩ at 500V DC	
<b>Contact Resistance</b>	50mΩ	
<b>Vibration</b>	10~55Hz (Durable Amplitude 1.5mm)	
<b>Schock</b>	30G	
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C	
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)	
<b>Operation Speed</b>		0.1mm/sec ~ 0.5m/sec
<b>Operation Frequency</b>	Electrical	Max. 20/min
	Mechanical	Max 60/min
<b>Dielectric Strength</b>	1,500VAC 1min	
<b>Expected Life</b>	Electrical	Min. 100,000
	Mechanical	Min. 1,000,000

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	15A	15A	1.5A	3A	10A	10A	2A	4A
250VAC	10A	15A	1A	2A	6A	10A	1A	3A
8VDC	10A	15A	1.5A	4A	8A	10A	2.5A	6A
14VDC	5A	15A	1.5A	4A	4A	10A	2.5A	6A
30VDC	2A	10A	1A	4A	1.5A	6A	1.5A	4A
125VDC	0.5A	0.6A	0.1A	0.1A	0.05A	0.6A	0.05A	0.1A
250VDC	0.25A	0.3A	0.05A	0.05A	0.03A	0.3A	0.04A	0.05A

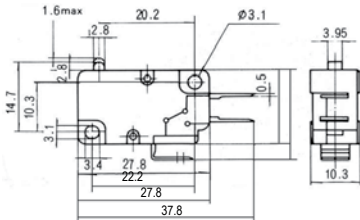
## Contact Diagram



## Dimensions

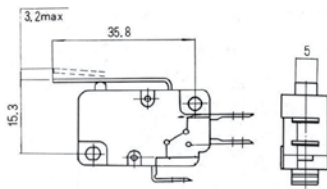
(unit: mm)

### V15F-01C



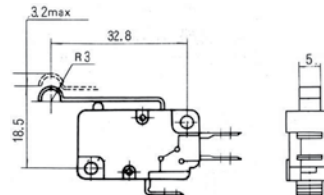
<b>PT</b>	Max. 1.7mm
<b>MD</b>	Max. 0.4mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	14.7 ± 0.6mm

### V15F-06C



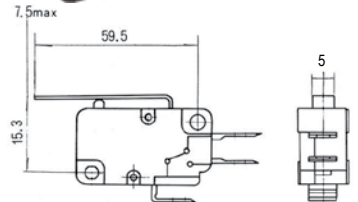
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	15.3 ± 1.2mm

### V15F-070C



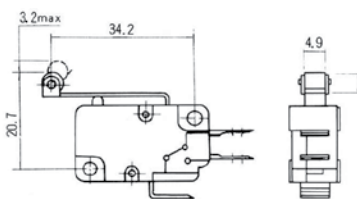
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	15.5 ± 1.2mm

### V15F-060C



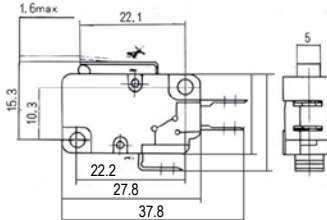
<b>PT</b>	Max. 7.5mm
<b>MD</b>	Max. 2.2mm
<b>OT</b>	Min. 2.2mm
<b>OP</b>	15.3 ± 2.6mm

### V15F-07C



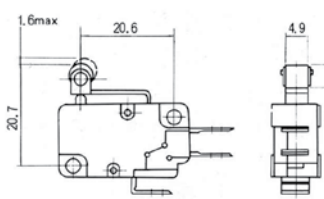
<b>PT</b>	Max. 3.2mm
<b>MD</b>	Max. 1.2mm
<b>OT</b>	Min. 1.2mm
<b>OP</b>	20.7 ± 1.2mm

### V15F-08C



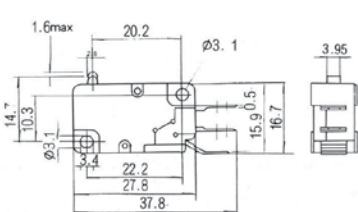
<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.5mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	15.3 ± 0.8mm

### V15F-09C



<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.5mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	20.7 ± 0.8mm

### VV15F-01C



<b>PT</b>	Max. 1.6mm
<b>MD</b>	Max. 0.4mm
<b>OT</b>	Min. 0.8mm
<b>OP</b>	14.7 ± 0.6mm

# Z15 Series

Micro Switches

- Available with a variety of actuators, compact size fits where you need it
- A variety of standard features, such as current capacity, operating force, travel characteristics and actuators



## Specifications

<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)	
<b>Distance btw contacts</b>	Z15G:0.5mm Z15H:0.25mm	
<b>Insulation Resistance</b>	100MΩ @ 500 VDC	
<b>Contact Resistance</b>	15m Ohms maximum, initial	
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C	
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)	
<b>Operation Speed</b>	0.01mm/sec to 0.5m/sec	
<b>Operation Frequency</b>	Electrical	Max. 20/min
	Mechanical	Max 240/min
<b>Dielectric Strength</b>	2,000VAC 1min	
<b>Expected Life</b>	Electrical	Min. 500,000
	Mechanical	Min. 2,000,000

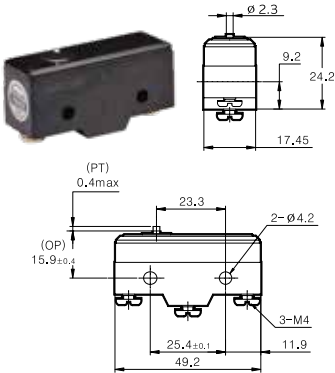
## Contact Rating

Rated Voltage	Non-Inductive Load			Inductive Load		
	Resistive Load	Lamp Load		Inductive Load	Motor Load	
		NO	NC		NO	NC
125VAC	15A(10)	1.5A	3A	15A(10)	2.5A	5A
250VAC	15A(10)	1.25A	2.5A	15A(10)	1.5A	3A
500VAC	10A	0.75A	1.5A	6A	0.75A	1.5A
8VDC	15A	1.5A	3A	15A	2.5A	5A
14VDC	15A	1.5A	3A	10A	2.5A	5A
30VDC	6(2)A	1.5A	3A	5(1)A	2.5(1)A	5(1)A
125VDC	0.5A	0.5A	0.5A	0.05A	0.05A	0.05A
250VDC	0.25A	0.25A	0.25A	0.03A	0.03A	0.03A

## Dimensions

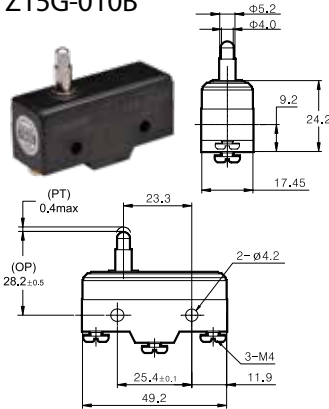
unit: mm

### Z15G-01B



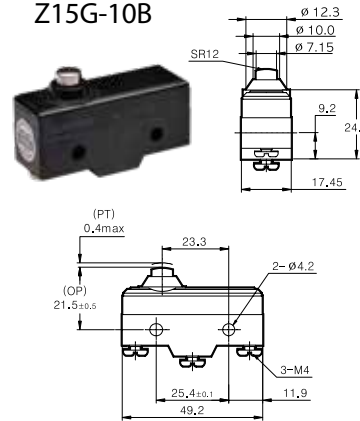
<b>OF</b>	250~350gf(2.45~3.43N)
<b>RF</b>	114gf(1.12N)
<b>PT</b>	0.4mm
<b>OT</b>	0.13mm
<b>MD</b>	0.05mm
<b>OP</b>	15.9 ± 0.4mm

### Z15G-010B



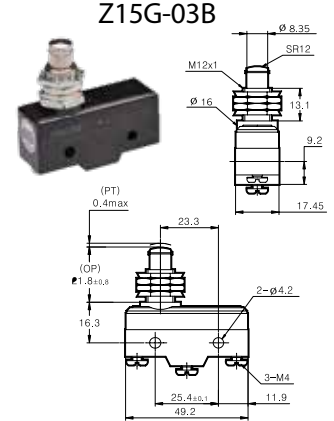
<b>OF</b>	250~350gf(2.45~3.43N)
<b>RF</b>	114gf(1.12N)
<b>PT</b>	0.4mm
<b>OT</b>	1.6mm
<b>MD</b>	0.05mm
<b>OP</b>	28.2 ± 0.5mm

### Z15G-10B



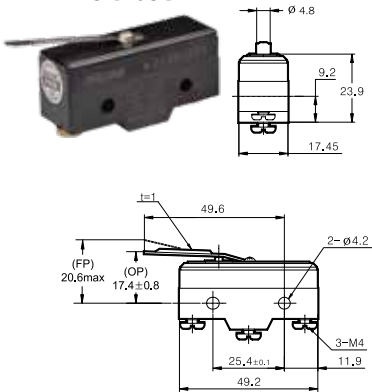
<b>OF</b>	250~350gf(2.45~3.43N)
<b>RF</b>	114gf(1.12N)
<b>PT</b>	0.4mm
<b>OT</b>	1.6mm
<b>MD</b>	0.05mm
<b>OP</b>	21.5 ± 0.5mm

### Z15G-03B



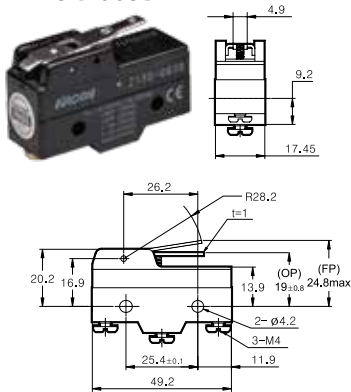
<b>OF</b>	250~350gf(2.45~3.43N)
<b>RF</b>	114gf(1.12N)
<b>PT</b>	0.4mm
<b>OT</b>	5.5mm
<b>MD</b>	0.05mm
<b>OP</b>	21.8 ± 0.8mm

### Z15G-05B



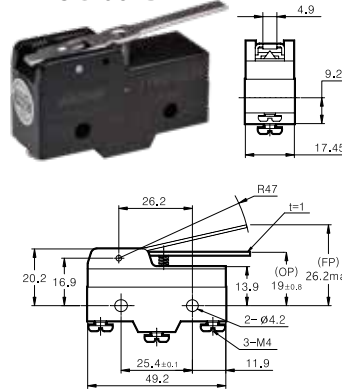
<b>OF</b>	141gf(1.38N)
<b>RF</b>	14gf(0.14N)
<b>OT</b>	1.6mm
<b>MD</b>	1.3mm
<b>FP</b>	20.6mm
<b>OP</b>	17.4 ± 0.8mm

### Z15G-063B



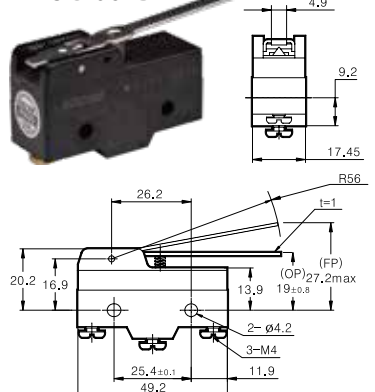
<b>OF</b>	160gf(1.38N)
<b>RF</b>	28gf(0.14N)
<b>OT</b>	2.0mm
<b>MD</b>	1.0mm
<b>FP</b>	24.8mm
<b>OP</b>	19.0 ± 0.8mm

### Z15G-062B



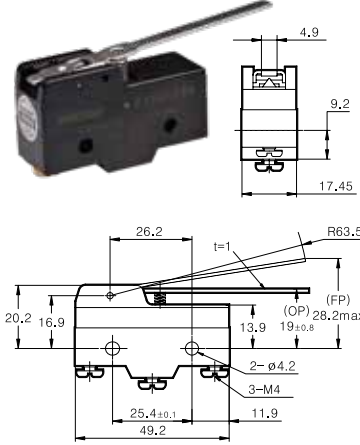
<b>OF</b>	95gf(0.95N)
<b>RF</b>	18gf(0.18N)
<b>OT</b>	4.2mm
<b>MD</b>	0.95mm
<b>FP</b>	26.2mm
<b>OP</b>	19.0 ± 0.8mm

### Z15G-061B



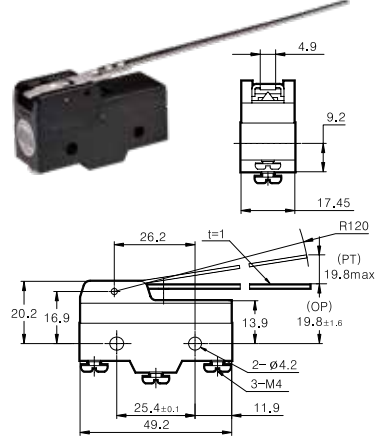
<b>OF</b>	80gf(0.78N)
<b>RF</b>	15.5gf(0.15N)
<b>OT</b>	4.8mm
<b>MD</b>	1.12mm
<b>FP</b>	27.2mm
<b>OP</b>	19.0 ± 0.8mm

Z15G-06B



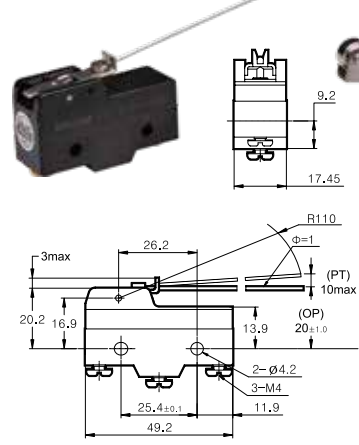
OF	70gf(0.69N)
RF	14gf(0.14N)
OT	5.6mm
MD	1.27mm
FP	28.2mm
OP	19.0 ± 0.8mm

Z15H-060B



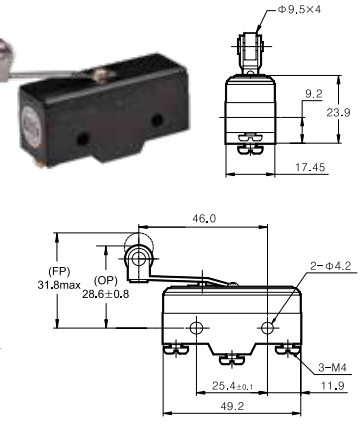
OF	6gf(58.8mN)
RF	0.5gf(4.90mN)
PT	19.8mm
OT	10.0mm
MD	2.0mm
OP	19.8 ± 1.6mm

Z15H-08B



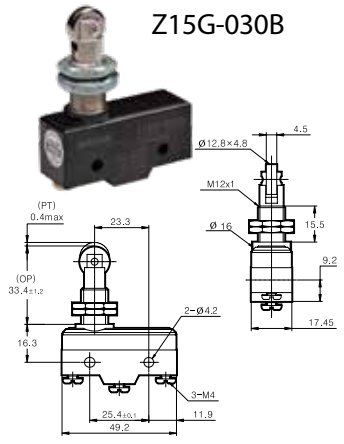
OF	4gf(39.2mN)
RF	0.3gf(2.94mN)
PT	10.0mm
OT	6.0mm
MD	3.0mm
OP	20.0 ± 1.0mm

Z15G-052B



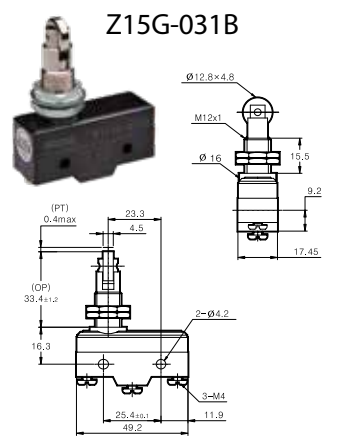
OF	141gf(1.38N)
RF	14gf(0.14N)
OT	1.6mm
MD	1.3mm
FP	31.8mm
OP	28.6 ± 0.8mm

Z15G-030B



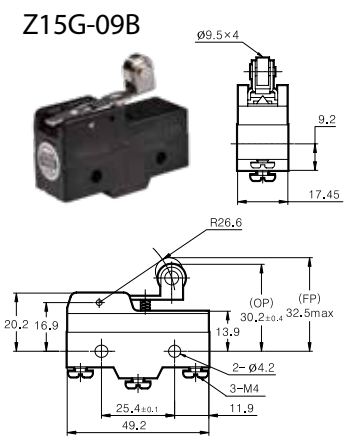
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	3.58mm
MD	0.05mm
OP	33.4 ± 1.2mm

Z15G-031B



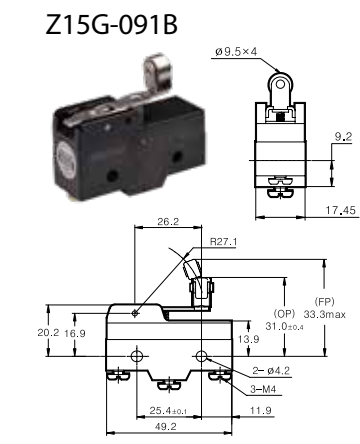
OF	250~350gf(2.45~3.43N)
RF	114gf(1.12N)
PT	0.4mm
OT	3.58mm
MD	0.05mm
OP	33.4 ± 1.2mm

Z15G-09B



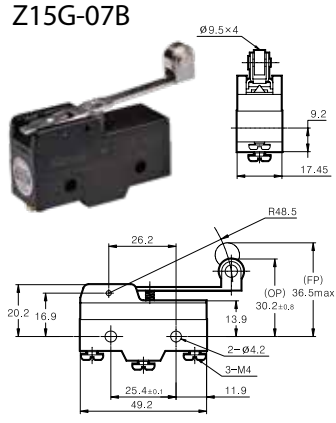
OF	160gf(1.57N)
RF	42gf(0.41N)
PT	2.4mm
OT	0.5mm
MD	32.5mm
OP	30.2 ± 0.4mm

Z15G-091B



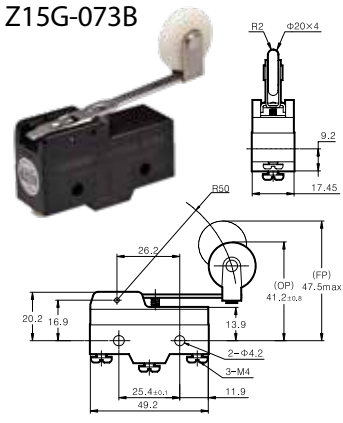
OF	170gf(1.67N)
RF	42gf(0.41N)
PT	2.4mm
OT	0.51mm
MD	33.3mm
OP	31.0 ± 0.4mm

Z15G-07B



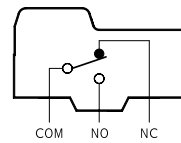
OF	100gf(0.98N)
RF	22gf(0.22N)
PT	4.0mm
OT	1.02mm
MD	36.5mm
OP	30.2 ± 0.8mm

Z15G-073B



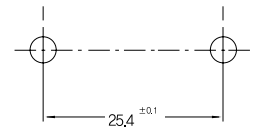
OF	100gf(0.98N)
RF	21gf(0.21N)
PT	4.0mm
OT	1.6mm
MD	47.5mm
OP	41.2 ± 0.8mm

Contact Diagram



COM: Common Terminal  
NO: Normally open  
NC: Normally Close

Panel Cut out



# ZXM/KXM Series

Light Duty Limit Switches



## Specifications

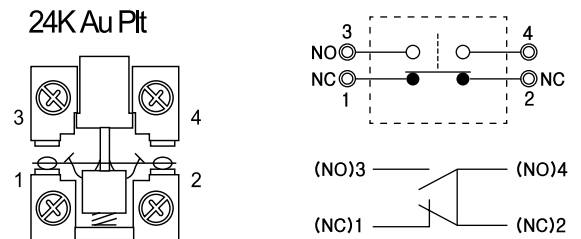
<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)
<b>Insulation Resistance</b>	100MΩ at 500V DC
<b>Contact Resistance</b>	Max. 25mΩ
<b>Ambient Temperature</b>	Operation: -20°C~ +60°C, Storage: -30°C~+80°C
<b>Ambient Humidity</b>	90%RH Max
<b>Degree of Protection</b>	IP65

<b>Operation Frequency</b>	Electrical	Max. 30/min
	Mechanical	Max 120/min
<b>Dielectric Strength</b>	1,500VAC 50/60Hz 1min	
<b>Expected Life</b>	Electrical	Min. 300,000
	Mechanical	Min. 10,000,000

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	6A	6A	0.7A	1.5A	3A	3A	1A	2A
250VAC	6A	6A	0.5A	1A	3A	3A	0.8A	1.5A
500VAC	2A	2A	0.35A	0.75A	0.75A	0.75A	0.4A	0.75A
30VDC	5A	5A	3A	3A	4A	4A	3A	3A
125VDC	0.2A	0.4A	-	-	-	-	-	-
250VDC	0.2A	0.4A	-	-	-	-	-	-

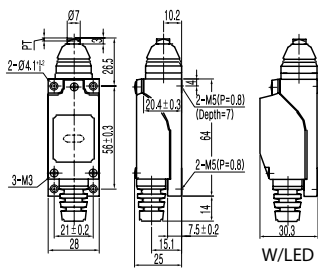
## Contact Diagram



## Dimensions

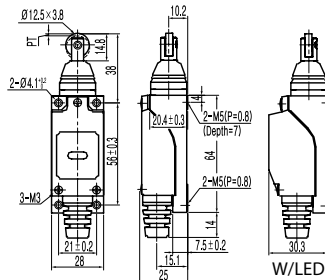
unit: mm

ZXM/KXM-301



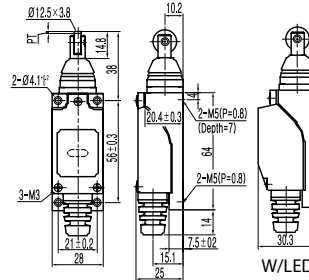
OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

ZXM/KXM-302



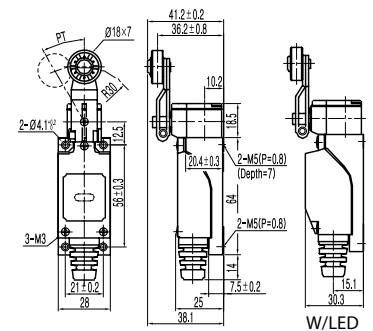
OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

ZXM/KXM-312



OF	900gf(8.83N)
RF	150gf (1.47N)
PT	1.5mm
MD	0.7mm
OT	4mm
TT	5.5mm

ZXM/KXM-702



OF	600gf(5.88N)
RF	50gf (0.49N)
PT	20°
MD	10°
OT	75°
TT	95°



**ZXM/KXM-703**



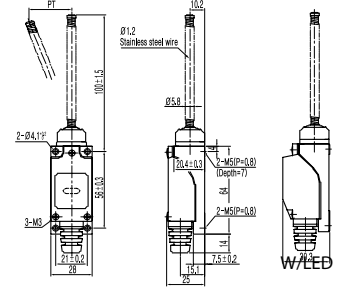
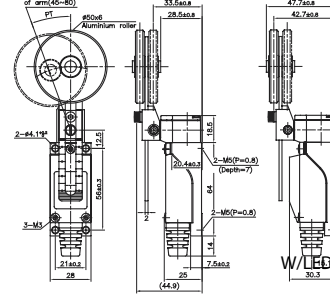
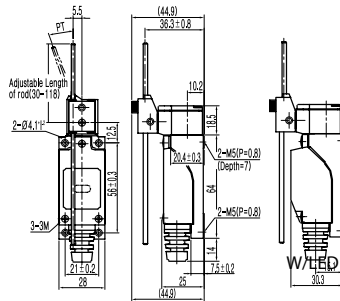
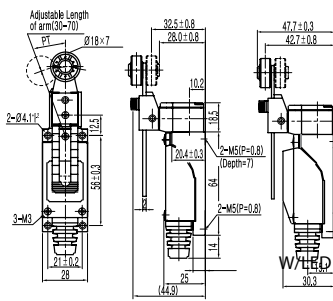
**ZXM/KXM-704**



**ZXM/KXM-726**



**ZXM/KXM-901**



OF	800gf(7.84N)~342gf(3.35N)
RF	50gf(0.49N)~21gf(0.21N)
PT	20°
MD	10°
OT	75°
TT	95°

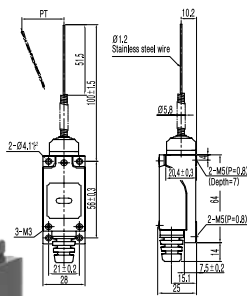
OF	800gf(7.84N)~203gf(1.99N)
RF	50gf(0.49N)~12gf(0.12N)
PT	20°
MD	10°
OT	75°
TT	95°

OF	800gf(7.84N)~342gf(3.35N)
RF	50gf(0.49N)~21gf(0.21N)
PT	20°
MD	10°
OT	75°
TT	95°

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°



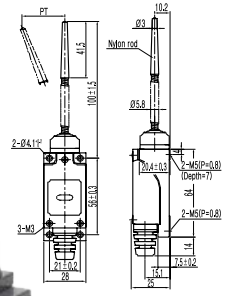
**ZXM/KXM-902**



W/LED



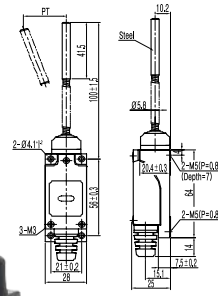
**ZXM/KXM-903**



W/LED



**ZXM/KXM-923**



W/LED

**Option Parts**

24K Gold Plated Contact Block  
**ZXM-101**



**Indicator Lamp**

**ZXM-102**  
LED 12 ~ 24V AC/DC  
**ZXM-103**  
Neon 80/240V AC



\*Changable ON status at NC or NO

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

OF	90gf(0.88N)
RF	-
PT	30°
MD	-
OT	20°
TT	50°

# ZXL/KXL Series

Heavy Duty Limit Switches



- High reliability by 24K Gold plated contact of SPDT(1a+1b)
- Low maintenance by die-cast body & stainless steel of moving parts
- IP67 rated with built-in gasket in body cover & O-ring in moving part
- Detachable head can be positioned in any direction
- Available optional LED indicator cover (ZXL-102/103)

## Option Parts

24K Gold Plated Contact Block  
**ZXL-101**



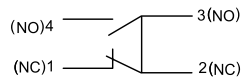
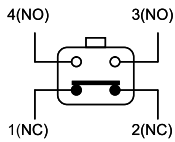
Indicator Lamp

**ZXL-102**  
LED 12 ~ 24V AC/DC  
**ZXL-103**  
Neon 110/240V AC



\*Changeable ON status at NC or NO

## Contact Diagram



## Specifications

<b>Contac</b>	SPDT(1NO+1NC), 24K Ag Alloy	
<b>Protection</b>	IP67	
<b>Rated Current</b>	12 at 250VAC	
<b>Insulation Resistance</b>	100MΩ at 500V DC	
<b>Contact Resistance</b>	Max. 50mΩ	
<b>Operation Speed</b>	1mm/sec ~ 1m/sec	
<b>Vibration</b>	10~55Hz dual wave length 1.5mm	
<b>Ambient Temperature</b>	Operation: -25°C~+80°C, Storage: -30°C~+80°C	
<b>Ambient Humidity</b>	35~85%RH (at -5~+40°C)	
<b>Impact Resistance</b>	<b>Durability</b>	Max. 100G
	<b>Error</b>	Plunger max. 30G Lever Max. 20G
<b>Dielectric Strength</b>	2,200	
<b>Expected Life</b>	<b>Electrical</b>	Min. 500,000
	<b>Mechanical</b>	Min. 10,000,000

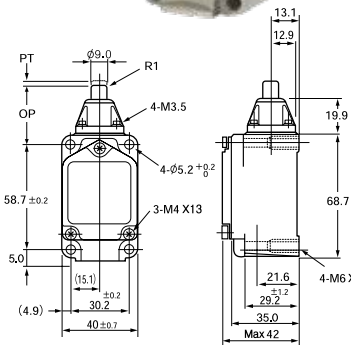
## Contact Rating

Rated Voltage	Non-Inductive Load		Inductive Load	
	Resistive Load	Lamp Load	Inductive Load	Motor Load
125VAC	16A	5A	16A	8A
250VAC	12A	3A	12A	5A
500VAC	10A	2.5A	10A	2.5A
30VDC	8A	6A	8A	6A
125VDC	1A	0.3A	1A	0.3A
250VDC	0.5A	0.2A	0.5A	0.2A

## Dimensions

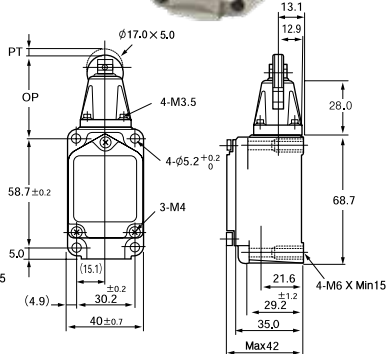
unit: mm

**ZXL/KXL-301**



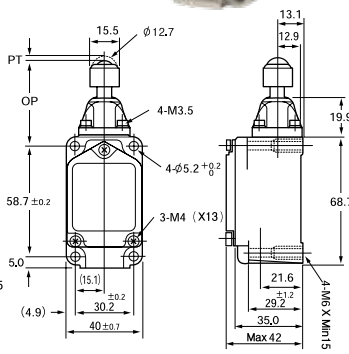
OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	6.4mm
MD	1mm
TT	-
OP	34 ± 0.8mm
TTP	29.5mm

**ZXL/KXL-302**



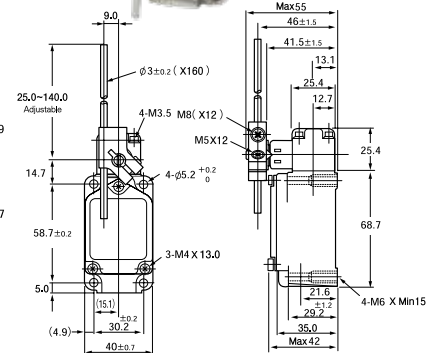
OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	5.6mm
MD	1mm
TT	-
OP	44 ± 0.8mm
TTP	39.5mm

**ZXL/KXL-303**



OF	2,720gf(26.67N)
RF	910gf(8.92N)
PT	1.7mm
OT	4mm
MD	1mm
TT	-
OP	44.5 ± 0.8mm
TTP	41mm

**ZXL/KXL-704**

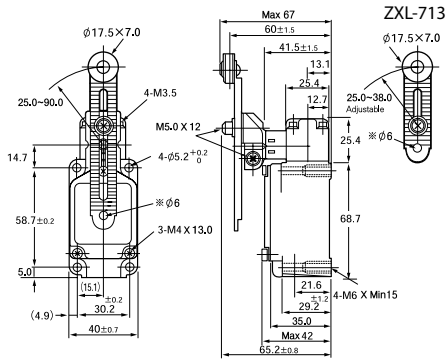


OF	142gf(1.4N)
RF	28gf(0.27N)
PT	15 ± 5°
OT	80°
MD	12°
TT	100°
OP	
TTP	

**ZXL/KXL-703**

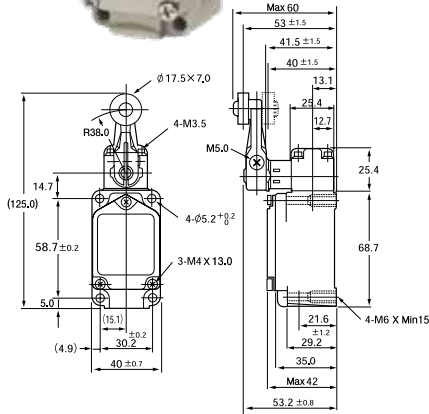


**ZXL/KXL-713**



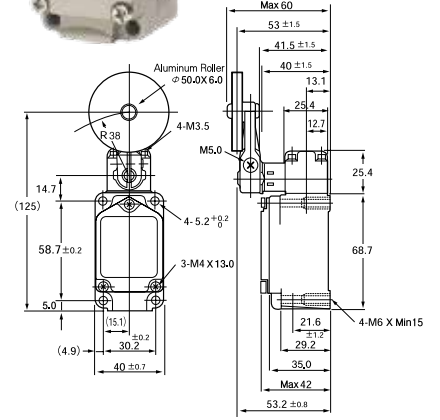
OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	15 ± 5°    80 ± 5°(703M)
OT	80°
MD	12°
TT	100°

**ZXL/KXL-702**



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	15 ± 5°
OT	80°
MD	12°
TT	100°

**ZXL/KXL-705**



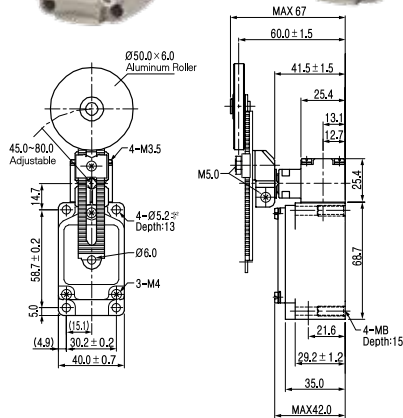
OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	15 ± 5°
OT	80°
MD	12°
TT	100°



**ZXL/  
KXL-706**



**ZXL/  
KXL-726**



OF	1,360gf(13.34N)
RF	227gf(2.23N)
PT	15 ± 5°
OT	80°
MD	12°
TT	100°



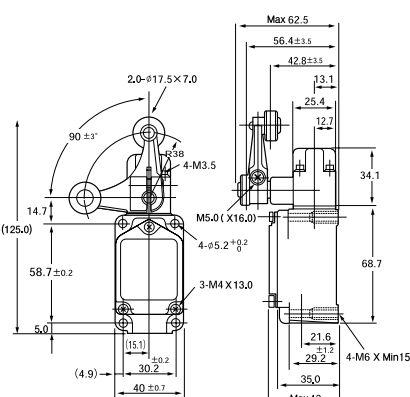
**ZXL/KXL-717**



**ZXL/KXL-737**



**ZXL/KXL-747**



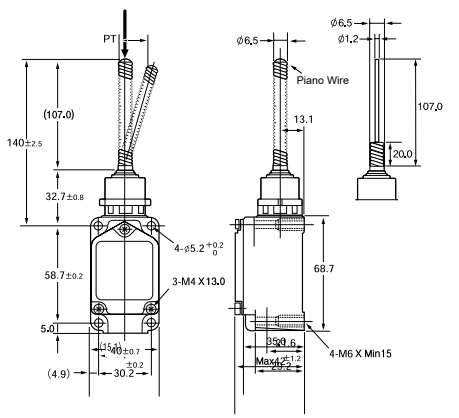
OF	1,200gf(11.8N)
RF	50 ± 5°
PT	15 ± 5°
OT	35°
MD	-
TT	-



**ZXL/KXL-  
901**



**ZXL/KXL-902**



OF	150gf(1.47N)
RF	-
PT	20 ± 10mm
OT	-
MD	-
TT	-



# KL Series

Medium Duty Limit Switches



- High reliability by silver plated contact of SPDT(1a+1b)
- Low maintenance by die-cast aluminum body & stainless steel of moving parts
- IP65 rated with built-in NBR gasket in body cover & O-ring in moving part
- Single & multi conduits (PG13.5) for saving wiring time
- 3 different sizes for diverse mounting application

Reliable operation with physical lift-off system preventing any malfunction of contact (NC only)

## Specifications

<b>Contact Arrangement</b>	Ag Alloy, SPDT(1NO+1NC)
<b>Operation Speed</b>	0.01mm/sec to 0.5m/sec
<b>Insulation Resistance</b>	100MΩ at 500V DC
<b>Contact Resistance</b>	Max. 50mΩ
<b>Ambient Temperature</b>	Operation: -25°C~ +80°C, Storage: -30°C~+80°C
<b>Ambient Humidity</b>	35~80%RH (at -5~+40°C)

## Contact Rating

Rated Voltage	Non-Inductive Load				Inductive Load			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NO	NC	NO	NC	NO	NC	NO	NC
125VAC	10A	10A	1.5A	3A	6A	6A	2.5A	5A
250VAC	10A	10A	1A	2A	4A	4A	1.5A	3A
600VAC	1A	3A	0.5A	1A	1.5A	1.5A	0.5A	1A
8VDC	10A	10A	3A	6A	10A	10A	6A	6A
30VDC	6A	6A	3A	4A	6A	6A	4A	4A
125VDC	0.8A	0.8A	0.2A	0.2A	0.8A	0.8A	0.2A	0.2A

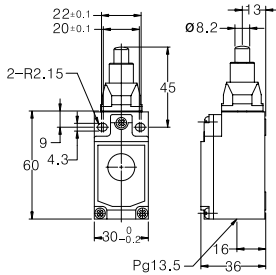
<b>Operation Frequency</b>	Electrical	Max. 30/min
	Mechanical	Max 120/min
<b>Dielectric Strength</b>	2,000VAC 1min	
<b>Expected Life</b>	Electrical	Min. 500,000
	Mechanical	Min. 10,000,000

## Dimensions

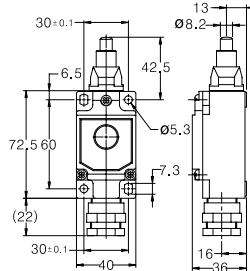
unit: mm

**KLSAP1**

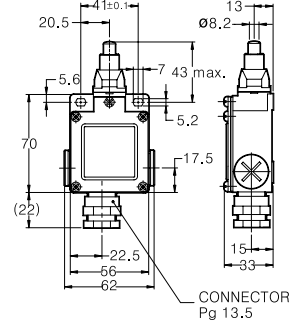
Push Plunger



**KLLAP1**

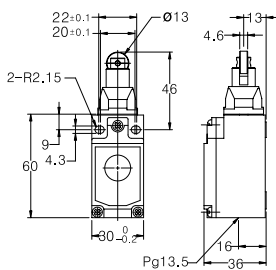


**KLMAP1**

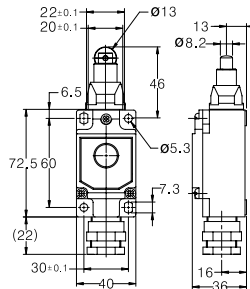


**KLSAP2**

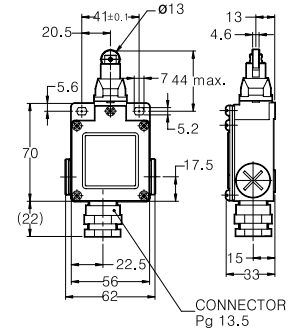
Roller Plunger



**KLLAP2**

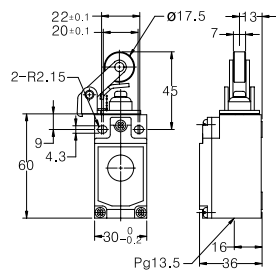


**KLMAP2**

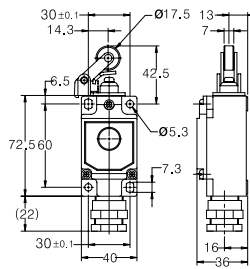


**KLSAL1**

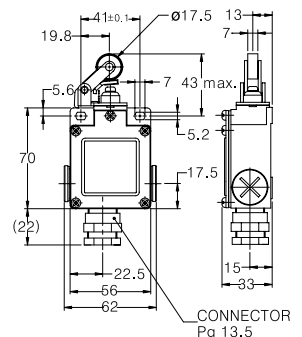
Roller Lever Plunger

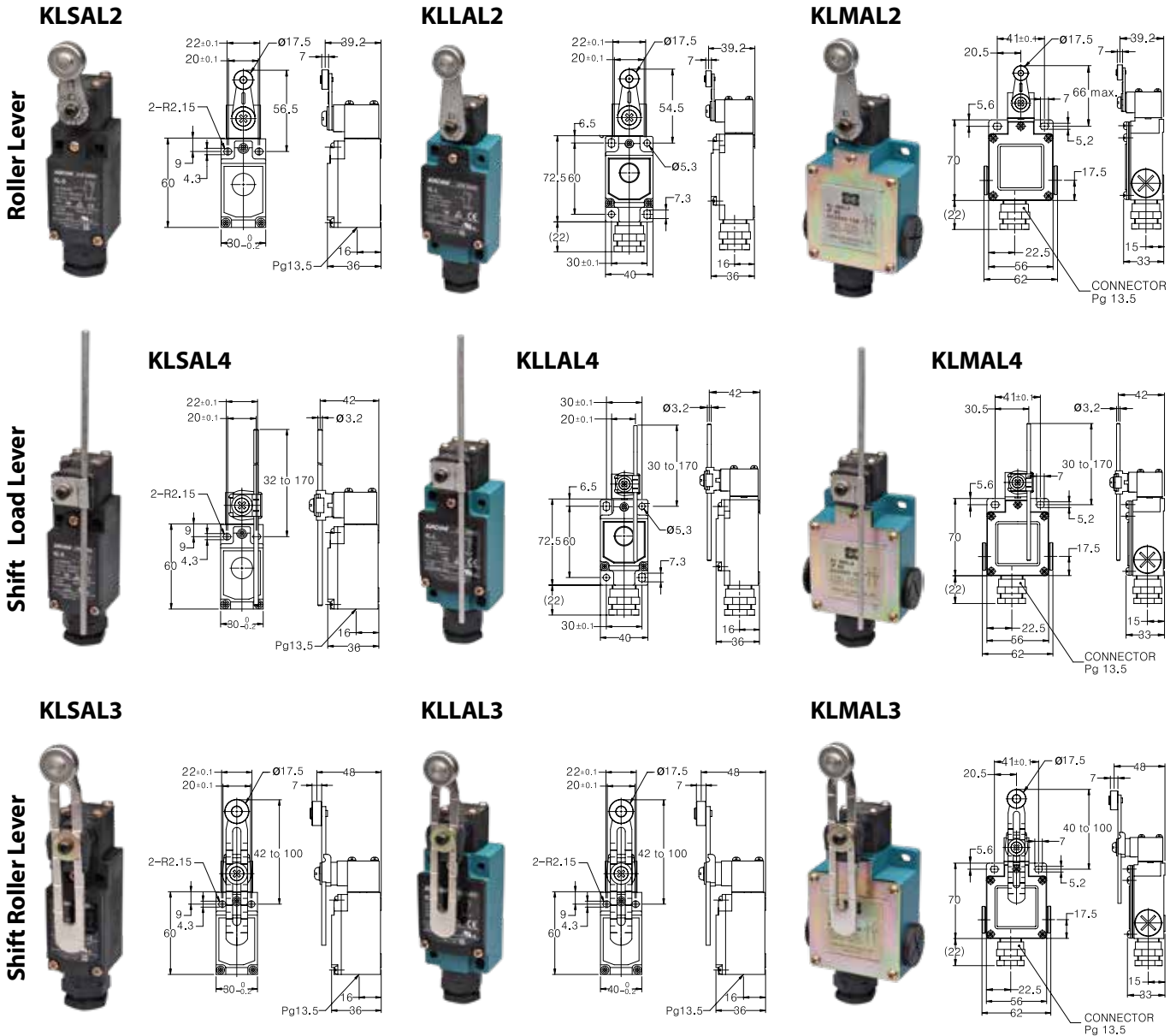


**KLLAL1**



**KLMAL1**

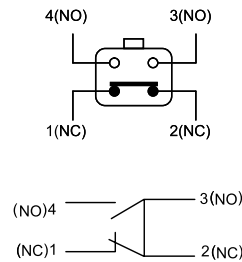




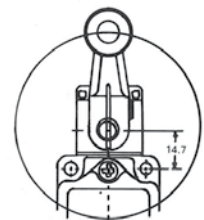
### Operation Characteristics

	AP1	AP2	AL1	AL2	AL3	AL4
OF	2,720g	2,720g	700g	1,360g	1,360g	142g
RF	910g	910g	170g	227g	227g	28g
PT	1.7mm	1.7mm	4.5mm	20°±5	20°±5	20°±5
OT	6.4mm	5.6mm	6.4mm	40°	40°	40°
MD	1.0mm	1.0mm	1.0mm	12°	12°	12°
TF	-	-	-	2,720g	200g	200g

### Contact Diagram



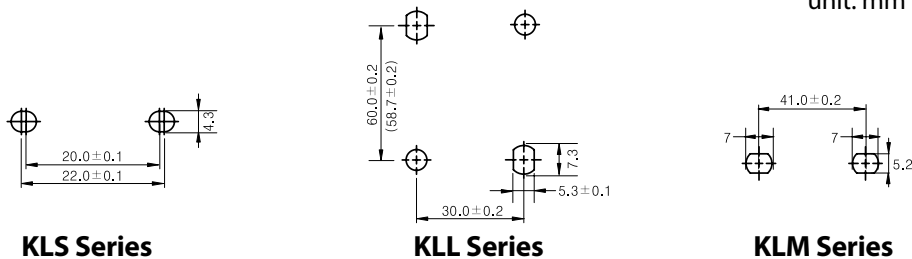
### Roller Lever Operating Position Adjustment



Loosen the bolt on the side of the roller lever to adjust angle.

### Assembly Guide

unit: mm



# HRF-M Series

Medium Duty Foot Switches

- Suitable for general applications (medical, beauty etc.)
- 24K gold plated built-in switch
- Various designs & functions available

## Specifications



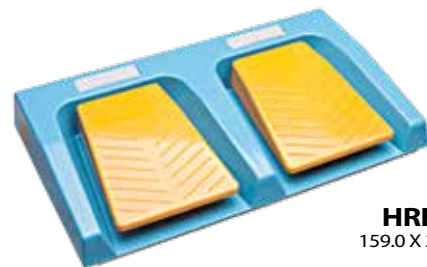
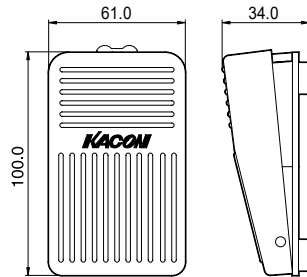
	M1	M2	MX1	MD2	MD23	MD2S	MD3	MD4	M5	M8	M52	M6	
Contact	1NO	SPDT (1NO + 1NC)							1NO	1NO x 2ea			
Rated Current	16A 250VAC									5A 250VAC	16A 250VAC		
Built-in Switch	V type micro switch (UL, CUL, VDE, CE Certified) + 24K gold plated									KMS-F Molding type	V type Micro Switch (UL, cUL, CE Certified) + 24K gold plated		
Body Material	Plastic	Steel	Aluminum Die cast						Plastic				
Function	Momentary				Maintained			Momentary					
Degree of Protection	IP54								IP68		IP65		
Cable	0.75 mm <sup>2</sup> x 3 line cables x 2 m		0.5mm <sup>2</sup> x 3 lines x 2m						0.5mm <sup>2</sup> x 2 lines x 2m		0.5mm <sup>2</sup> x 4 lines x 2m		

## Plastic Housing (Unit: mm)



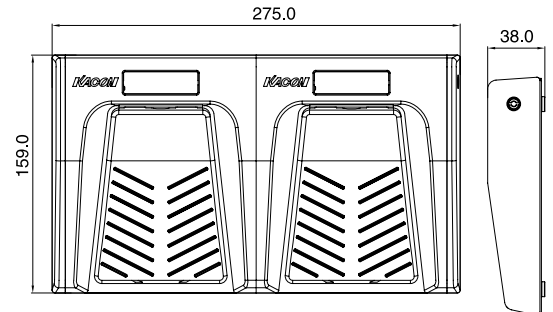
**HRF-M1**

100.0 X 61.0 X 34.0



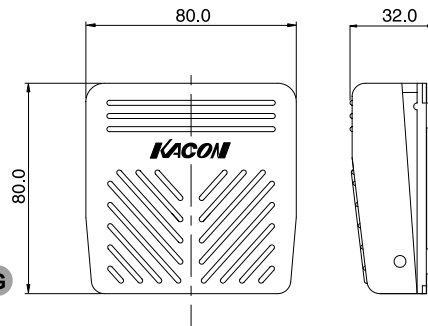
**HRF-M52**

159.0 X 275.0 X 38.0



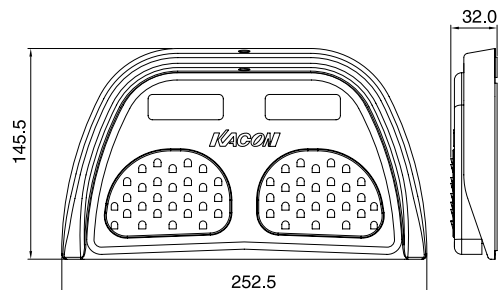
**HRF-M2**

85.0 X 80.0 X 32.0



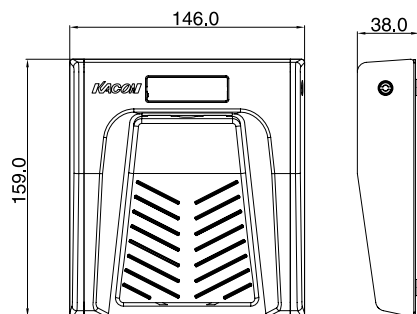
**HRF-M6**

145.0 X 252.5 X 32.0



**HRF-M5**

159.0 X 146.0 X 38.0

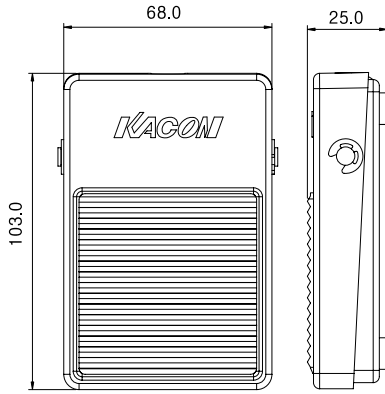


# Metal Housing

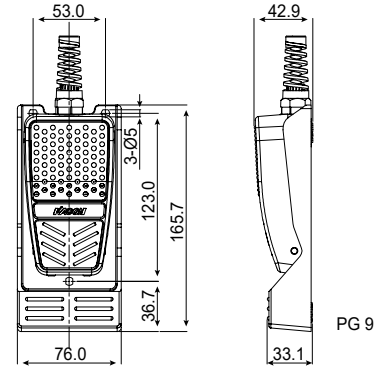
(Unit: mm)



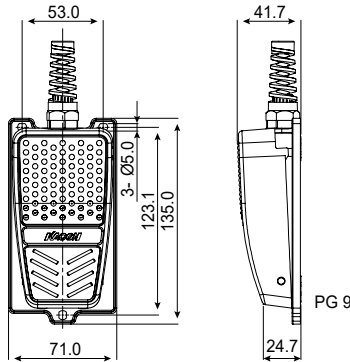
**HRF-MX1**  
103.0 X 68.0 X 25.0



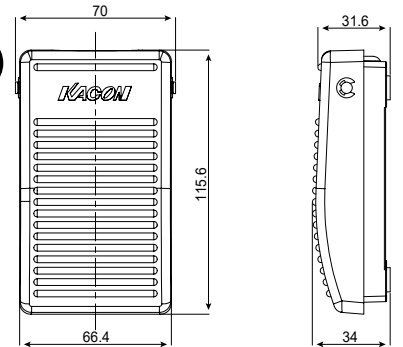
**HRF-MD2S**  
165.7 X 76.0 X 42.9



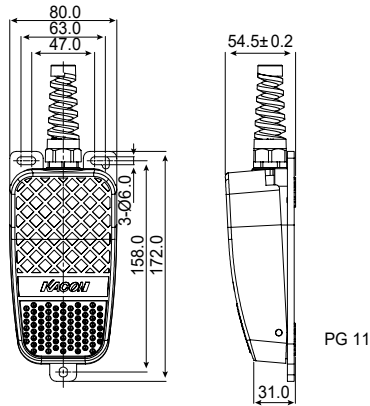
**HRF-MD2**  
**HRF-MD23 (Maintained)**  
135.0 X 71.0 X 41.7



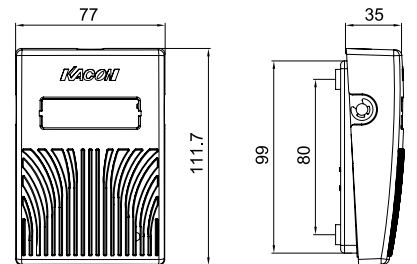
**HRF-MD4**  
115.6 X 70.0 X 34.0



**HRF-MD3**  
172.0 X 80.0 X 54.5

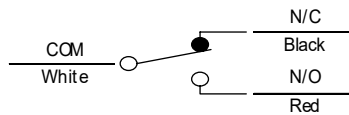


**HRF-M8**  
111.7 X 77.0 X 35.0

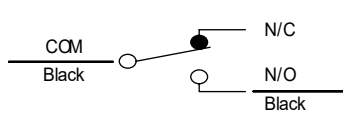


# Contact Diagram

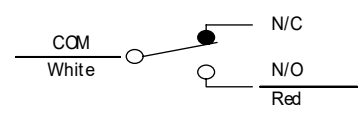
1C (1NO + 1NC)



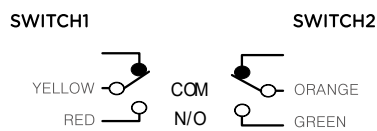
1NO(M1)



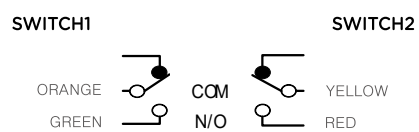
1NO(M5,M8)



1NO x 2ea (M52)



1NO x 2ea (M6)



# HRF-HD Series

Heavy Duty Foot Switches

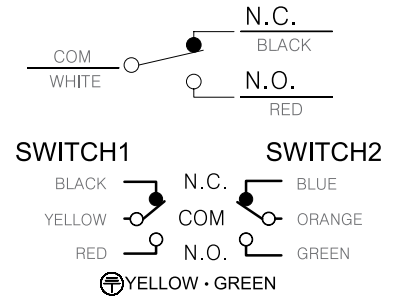
- Suitable for industrial machinery, medical etc.
- Aluminum die-casting body
- Various safety features



## Specifications

	HD3	HD3N	HD3NX	HD3LX	HD3NS	HD5NX	HD5NS	HD202P
Contact	1NO 1NC				1NO 1NC x 2ea			
Regular Current	15A 125/250VAC							
Built-in Switch	Z type Micro Switch (UL, cUL, CE certified)							
Body Material	Aluminum Die-casting							
Function	Momentary							
Degree of Protection	IP65				IP54			
Cable	1/2 In. Tap, the flexible cable can be attached (Zinc connector 10 - 16)							

## Contact Diagram

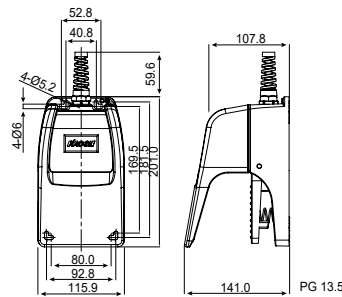


## Dimensions

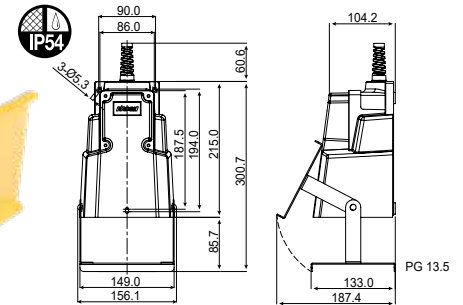
(Unit: mm)



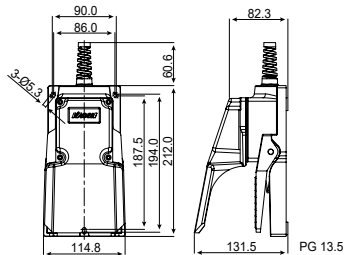
**HRF-HD3**  
201.0 X 115.9 X 141.0



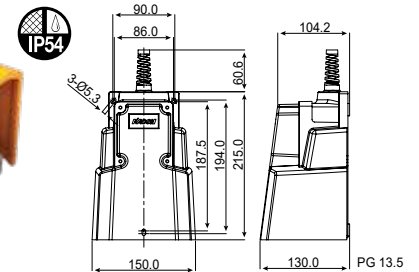
**HRF-HD3NS**  
300.7 X 156.1 X 187.4  
(W/Front Cover)



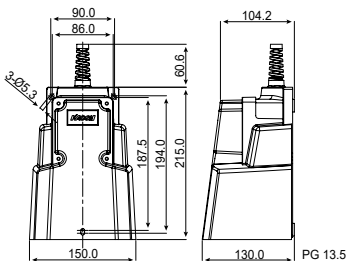
**HRF-HD3N**  
212.0 X 114.8 X 131.5



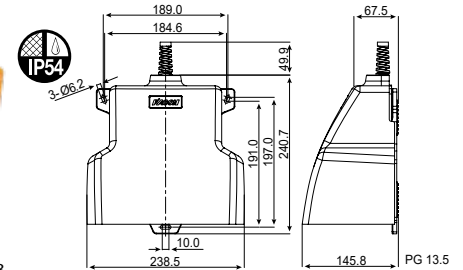
**HRF-HD3LX**  
215.0 X 150.0 X 130.0  
Safety Lock Type



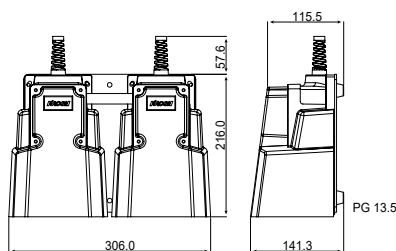
**HRF-HD3NX**  
215.0 X 150.0 X 130.0



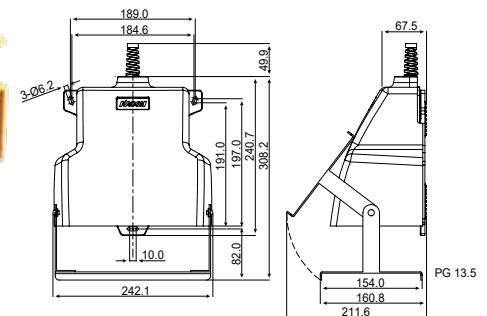
**HRF-HD5NX**  
240.7 X 238.5 X 145.8



**HRF-HD202P**  
216.0 X 306.0 X 141.3  
(CE Only)



**HRF-HD5NS**  
308.2 X 242.1 X 160.8  
(W/Front Cover)





# HRF-HD8 Series

Heavy Duty Foot Switches



- Impact resistant aluminum die-casting foot guard
- Adjustable pedal height from 20 to 45mm
- IP67 rated with silicon gasket
- 24K gold plated contacts
- Fluorescent label for safety in the dark

## Replacement Contact Block

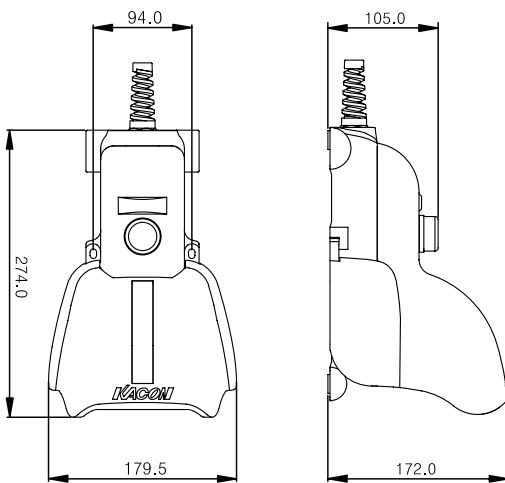
Part number	Contact Block
HD8S111	KSB1
HD8S211	KSB1-1, KSB1-2
HD8S212	
HD8S311	KSB1-A
HD8S811	SKSB1-S
HD8L811	

## Specifications

	HD8S111	HD8S211	HD8S212	HD8S311	HD8S811	HD8L811
Contact Form	1NO + 1NC		2NO	1NO + 1NC		
Operation Type	Standard	Two-Stage Type		Self-Holding Type	Safety-Reset Button	Safety-Reset Button, Anti-Misoperation Lever
Function	Momentary			Momentary/Maintained		
Body Material	Aluminum Die-casting					
Contact Ratings	Contact Material	Ag Alloy (24K Au Plated)				
	Rated Current	20A 250VAC				
	Rated Voltage	Max. 440VAC				
	Contact Resistance	Max. 50mΩ				
General Ratings	Dielectronic Strench		2,000VAC for 1 minute			
	Life Cycle	Electrical	200,000			
		Mechanical	1,000,000			
	Degree of Protection		IP67			
	Insulation Resistance		100MΩ			

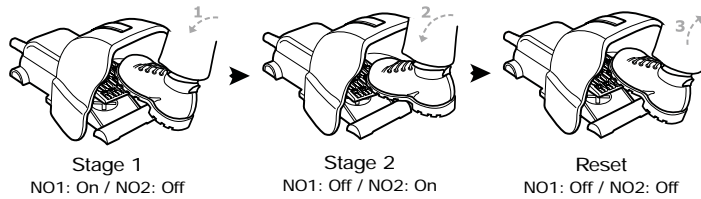
## Dimensions

(Unit: mm)

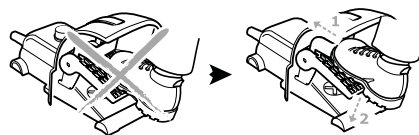


## Operation Types

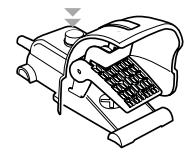
### Two-Stage Type



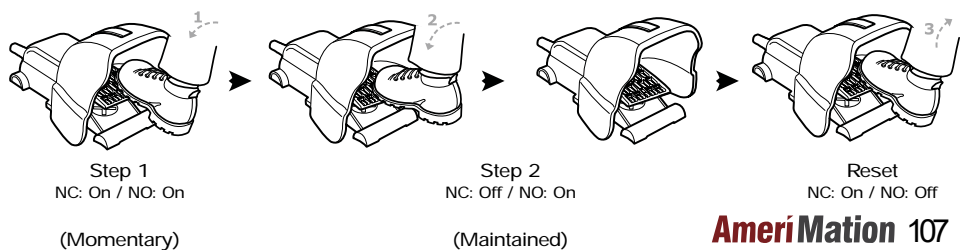
### Anti-Misoperation Lever Type



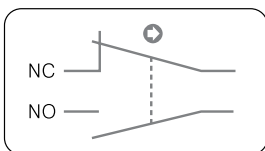
### Safety-Reset Button Type (for emergency stop)



### • Self-Holding Type (Momentary/Maintained)



## Diagram



# KAF-HD3 Series

Heavy Duty Foot Switches

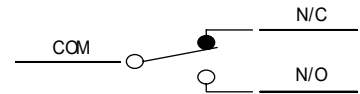
- Cost-effective industrial heavy duty
- Aluminum die-casting cover
- Power coated outer surface



## Specifications

Part number	KAF-HD3T	KAF-HD3T2	KAF-HD3T3
Contact Form	1NO+1NC	2NO+2NC	3NO+3NC
Pedal	1 Pedal	2 Pedal	3 Pedal
Rated Current	15A 250VAC		
Built-in Switch	Z type Micro Switch (CE, UL, cUL certified)		
Body Material	Aluminum Die-casting		
Wire Inlet and Outlet Holes	1/2 Inch Tap, the flexible cable can be attached (zinc connector 10 ~ 16)		
Degree of Protection	IP65		
Certification	CE, UL, CCC, KC (Built-in Switch)		
Shock Test	IK10 cUL		

## Contact Diagram

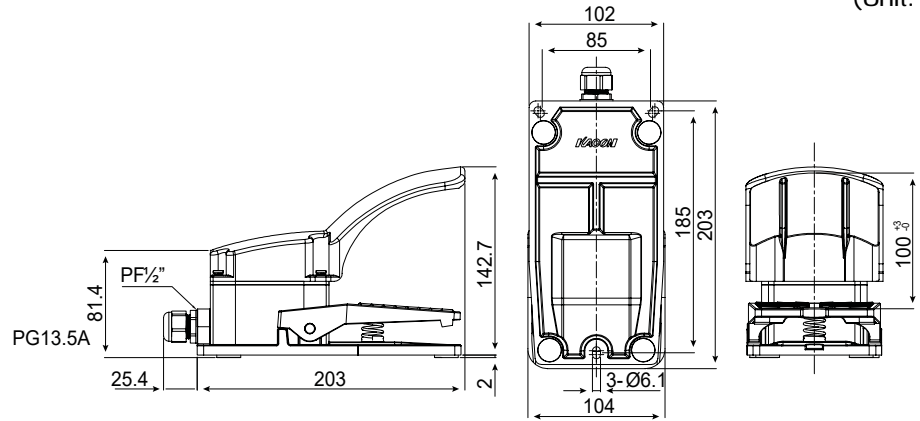


## Dimensions

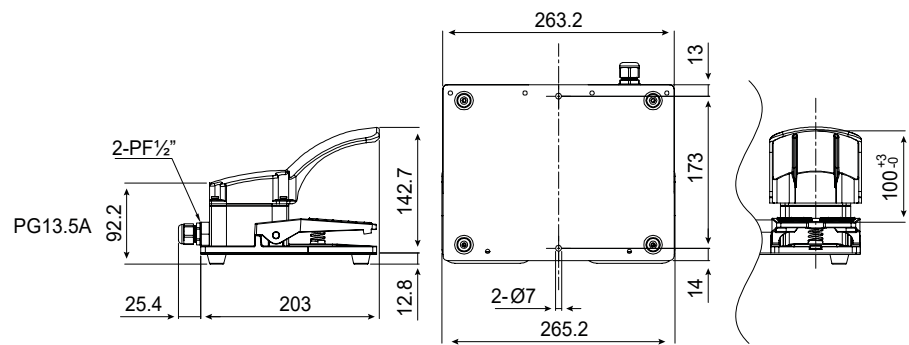
(Unit: mm)



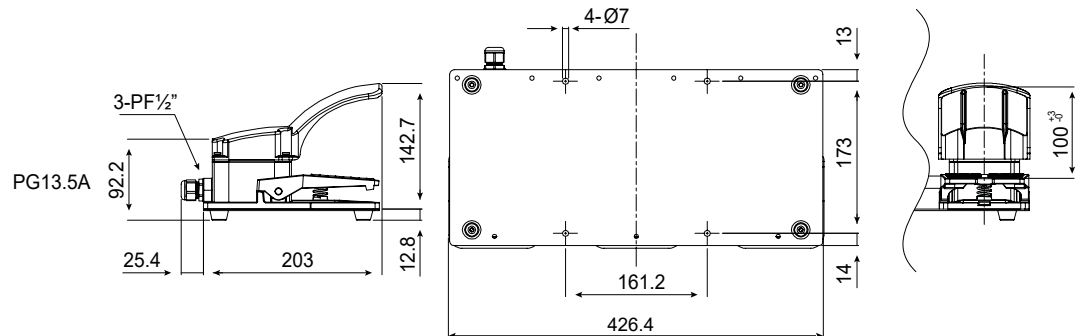
**KAF-HD3T**  
203 X 104 X 142.7



**KAF-HD3T2**  
203 X 265.2 X 142.7



**KAF-HD3T3**  
203 X 426.4 X 142.7



• **Note** •

A series of horizontal dotted lines for writing notes, spanning the width of the page.





# KMSR Series

Single Phase Solid State Relays



- Hockey puck style single phase SSR
- LED indicator of the control input status
- Clip cover of IP20 touch protection
- Available 4 ~ 32VDC or 90 ~ 265VAC input

## Specifications

Insulation Resistance	100MΩ/500VDC (btwn Terminal & Case)
Dielectric Strength	2500VAC(50/60Hz 1minute)
Vibration Resistance	10-55Hz, amplitude: 1.5mm,x,y,z each axis 2 hours
Shock Resistance	1000m/s <sup>2</sup> ,s,y,z each axis 3times
Storage Temperature	-30°C~ +90°C
Ambient Temperature	-25°C~ +70°C
Ambient Humidity	45 - 85% R.H
Weight	approx. 100g

## Ordering Information

**KMSR -** ① ② ③ ④

① Input Voltage	<b>D</b>	4 - 32 VDC	
	<b>A</b>	90 - 265 VAC	
② Output Voltage	<b>S</b>	Single Phase	
	<b>D</b>	DC	
③ Load Current			
<b>005</b>	5A*	<b>040</b> 40A	
<b>010</b>	10A	<b>050</b> 50A	
<b>020</b>	20A	<b>060</b> 60A	
<b>025</b>	25A	<b>100</b> 100A	
<b>030</b>	30A		
④ Load Voltage	<b>AC</b>	2	90 - 240V
		4	90 - 480V
	<b>DC</b>	5	50V

\*DC output type only  
- DC Output DC Input models are not available

## Characteristics

### DC Input / AC Output (90 - 240VAC) .9A

Model#	KMSR-	DS0102	DS0202	DS0252	DS0302	DS0402	DS0502	DS0602	DS1002
Input	Rated Control Voltage	4 - 32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	3-35mA							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V						800V	
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	315A			580A		
	Output Leakage Current (Maximum)	10mA	15mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

### DC Input / AC Output (90 - 480VAC) .9A

Model#	KMSR-	DS0104	DS0204	DS0254	DS0304	DS0404	DS0504	DS0604	DS1004
Input	Rated Control Voltage	4 - 32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	3 - 35mA							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	350A	370A	580A			
	Output Leakage Current (Maximum)	20mA							
	Output on Voltage Drop	1.3V MAX	1.6V MAX	1.8V Maximum					
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

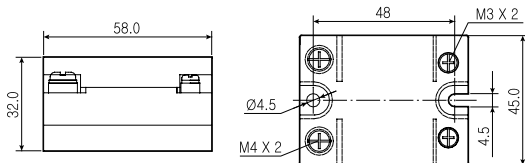
### AC Input / AC Output (90 - 240VAC)

Model#	KMSR-	AS0102	AS0202	AS0252	AS0302	AS0402	AS0502	AS0602	AS1002
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V				800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	315A			580A		
	Output Leakage Current (Maximum)	10mA	15mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

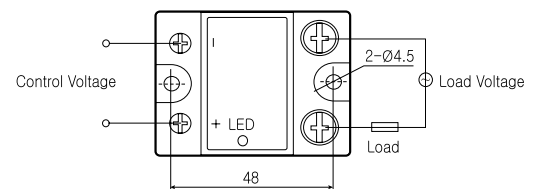
### AC Input / AC Output (90 - 480VAC)

Model#	KMSR-	AS0104	AS0204	AS0254	AS0304	AS0404	AS0504	AS0604	AS1004
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A	350A	370A	580A			
	Output Leakage Current (Maximum)	20mA							
	Output on Voltage Drop	1.3V MAX	1.6V MAX	1.8V Maximum					
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

### Dimension

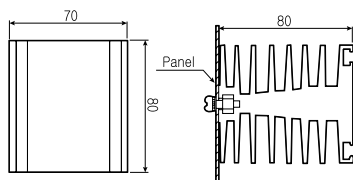


### Connection Diagram

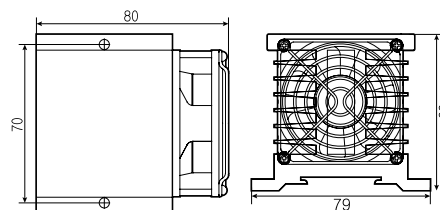


### Optional Heatsink

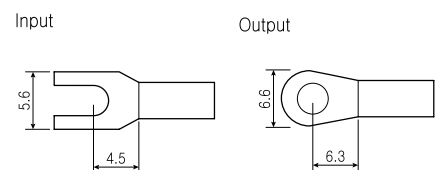
#### KSH-A040(25A-40A)



#### KSH-A100(40A-100A)



### Terminals





# KMSR Series

Three Phase Solid State Relays



- Economic type three phase SSR
- LED indicator of the control input status
- Available heatsinks & fans

## Ordering Information

KMSR - ① ② ③ ④

① Input voltage	<b>D</b>	4 - 32 VDC
	<b>A</b>	90 - 265 VAC

② Output Voltage	<b>T</b>	Three Phase
---------------------	----------	-------------

③ Load Current			
<b>010</b>	10A	<b>040</b>	40A
<b>020</b>	20A	<b>050</b>	50A
<b>025</b>	25A	<b>060</b>	60A
<b>030</b>	30A	<b>100</b>	100A

④ Load Voltage	2	90 - 240VAC
	4	90 - 480VAC

## Specifications

Insulation Resistance	100MΩ/500VDC (btwn Terminal & Case)
Dielectric Strength	2500VAC(50/60Hz 1minute)
Vibration Resistance	10-55Hz, amplitude: 1.5mm,x,y,z each axis 2 hours
Shock Resistnace	1000m/s <sup>2</sup> ,s,y,z each axis 3times
Storage Temperature	-30°C~ +90°C
Ambient Temperatur	-25°C~ +70°C
Ambient Humidity	45 - 85% R.H
Weight	approx. 530g

## Characteristics

### DC Input / AC Output (90 - 240VAC)

		DT0102	DT0202	DT0252	DT0302	DT0402	DT0502	DT0602	DT1002
Input	Rated Control Voltage	4 -32VDC							
	Pick-up Voltage	3VDC Minimum							
	Drop-out Voltage	1.5VDC Maximum							
	Input Current	25mA Maximum							
Output	Rated Load Voltage	90 - 240VAC							
	Peak Voltage	600V				800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	125A	260A	315A			580A		
	Output Leakage Current (Maximum)	10mA	10mA						
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

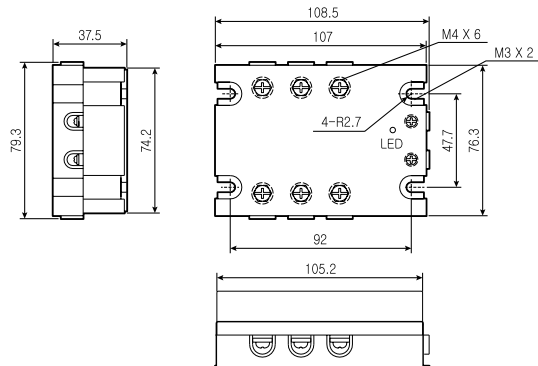
### DC Input / AC Output (90 - 480VAC)

		DT0104	DT0204	DT0254	DT0304	DT0404	DT0504	DT0604	DT1004	
Input	Rated Control Voltage	4 -32VDC								
	Pick-up Voltage	3VDC Minimum								
	Drop-out Voltage	1.5VDC Maximum								
	Input Current	3 - 35mA								
Output	Rated Load Voltage	90 - 480VAC								
	Peak Voltage	800V	1200V							
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A	
	Frequency	47 - 63Hz								
	Single Cycle Surge Current Resistance	170A	250A		350A		580A			
	Output Leakage Current (Maximum)	10mA								
	Output on Voltage Drop	1.5V Maximum								
	Minimum Switching Current	1A								
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum								

AC Input / AC Output (90 - 240VAC)										
		AT0102	AT0202	AT0252	AT0302	AT0402	AT0502	AT0602	AT1002	
Input	Rated Control Voltage	90-265VAC								
	Pick-up Voltage	72VAC Minimum								
	Drop-out Voltage	60VAC Maximum								
	Input Current	15mA Maximum								
Output	Rated Load Voltage	90 - 240VAC								
	Peak Voltage	600V					800V			
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A	
	Frequency	47 - 63Hz								
	Single Cycle Surge Current Resistance	125A	260A	315A			580A			
	Output Leakage Current (Maximum)	10mA								
	Output on Voltage Drop	1.5V Maximum								
	Minimum Switching Current	1A								
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum								

AC Input / AC Output (90 - 480VAC)									
		AT0104	AT0204	AT0254	AT0304	AT0404	AT0504	AT0604	AT1004
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 480VAC							
	Peak Voltage	800V	1200V						
	Rated Load Current	10A	20A	25A	30A	40A	50A	60A	100A
	Frequency	47 - 63Hz							
	Single Cycle Surge Current Resistance	170A	250A		350A		580A		
	Output Leakage Current (Maximum)	10mA							
	Output on Voltage Drop	1.5V Maximum							
	Minimum Switching Current	1A							
	Pick-up/Drop-out Time	1/2 cycle+1ms Maximum							

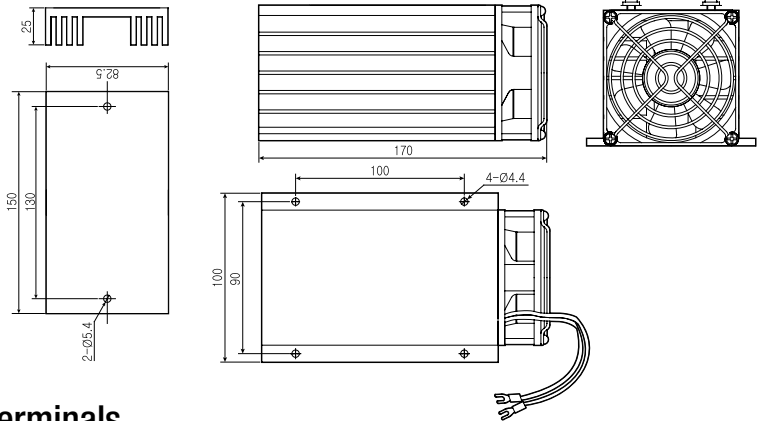
### Dimension



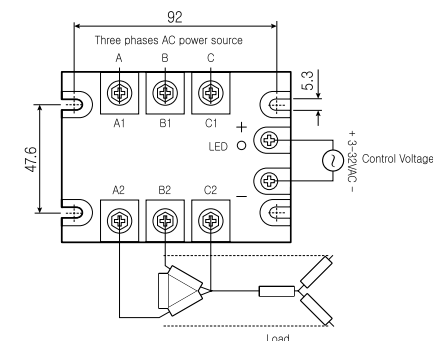
### Optional Heatsink

KSH-B040(25A-40A)

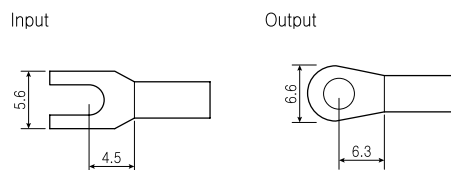
KSH-B100(40A-100A)



### Connection Diagram



### Terminals





# KSR Series

Single Phase Solid State Relays

- Slim type single phase SSR
- LED indicator of the control input status
- Heatsink integrated SSR available



## Ordering Information

KSR ① ② ③ ④ ⑤

Load Voltage	<b>2</b>	90 - 240 VAC $\mathcal{V}_{AC}$
	<b>5</b>	90 - 480 VAC

Load Current			
<b>005</b> $\mathcal{V}_{AC}$	5A	<b>050</b> $\mathcal{V}_{AC}$	50A
<b>015</b> $\mathcal{V}_{AC}$	15A	<b>060</b> $\mathcal{V}_{AC}$	60A
<b>030</b> $\mathcal{V}_{AC}$	30A	<b>080</b> $\mathcal{V}_{AC}$	80A
<b>040</b> $\mathcal{V}_{AC}$	40A		

③ Operate mode	<b>Z</b>	Zero Cross
----------------	----------	------------

④ Input voltage	<b>D</b>	24VDC(4-32V) $\mathcal{V}_{DC}$
	<b>A</b>	220VAC(90-240V 50/60Hz)

⑤ Heatsink	<b>no mark</b>	Mount Type
	<b>H</b>	Heatsink Type $\mathcal{V}_{AC}$
	<b>HF</b>	Heatsink + Fan Type

## Specifications

	Low Voltage	High Voltage
Release Time	Cycle of 1/2 Load + Less than 1 ms	
Output on Voltage Drop	Less than 1.6V (RMS)	Less than 1.8V (RMS)
Leakage Current	Less than 10mA (AC200V)	Less than 20mA (AC480V)
Insulation Resistance	more than 100MΩ (DC500V)	
Withstand Voltage	AC 5,000V 50/60Hz 1min	
Vibration Resistance	10-55-10Hz Peak Amplitude 0.35mm (Dual Amplitude 0.7mm)	
Shock Resistance	294m/s <sup>2</sup>	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temperature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

## Over temperature alarm specification

Output	NPN Open Collector	
Maximum Switching Current Rating	Opens at 95 ± 5°C of SSR Body temperature	
Alarm Voltage Drop	Typical	50mADC
	Maximum	2.8VDC
Visual Indication	Normal : Green LED, Overheat alarm : Red LED	
UL Certification	4VDC	
	Only on 24VDC Input voltage, with and without heatsink	

## Characteristics

### Input Ratings (Ambient Temp of 25°C)

Rated Control Voltage	Control Voltage Range	Control Voltage Levels			Input Current
		Pick-up Voltage	Drop-out Voltage		
24VDC	4-32VDC	Less than 4VDC	More than 1.4VDC	10±3mA	
220VAC	90-240VAC	Less than 90VAC	More than 50VAC	10±5mA	

### Low Voltage Load

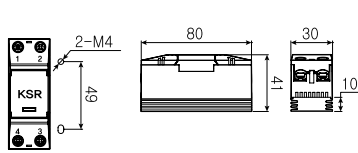
	2005	2015	2030	2040	2050	2060	2080
Rated Load Voltage	AC 220V (50/60Hz)						
Load Voltage Range	AC 90-240V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	600V						
Single Cycle	84	260	420	520	580		
Surge Current Resistance	60Hz, 1 Cycle						

### High Voltage Load

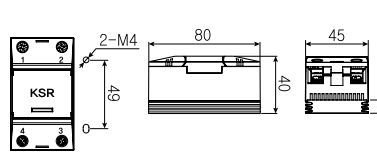
	5005	5015	5030	5040	5050	5060	5080
Rated Load Voltage	AC 440V (50/60Hz)						
Load Voltage Range	AC 90-480V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	1,200V						
Single Cycle	80	250	370	500	580		
Surge Current Resistance	60Hz, 1/2 Cycle						

# Dimensions

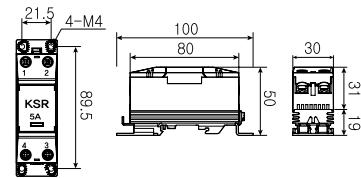
Mount Type 5 / 15 / 30A



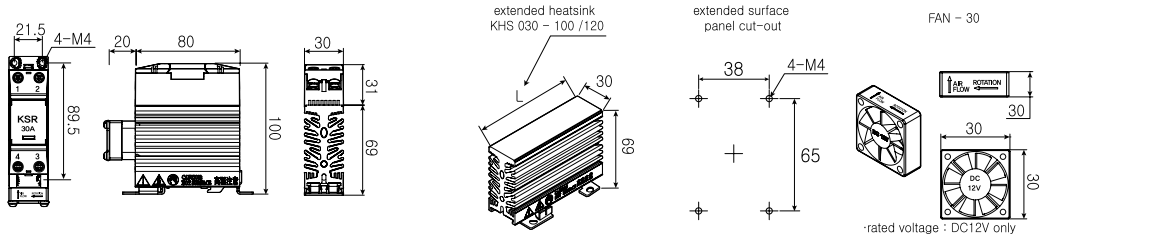
Mount Type 40 / 50 / 60 / 80A



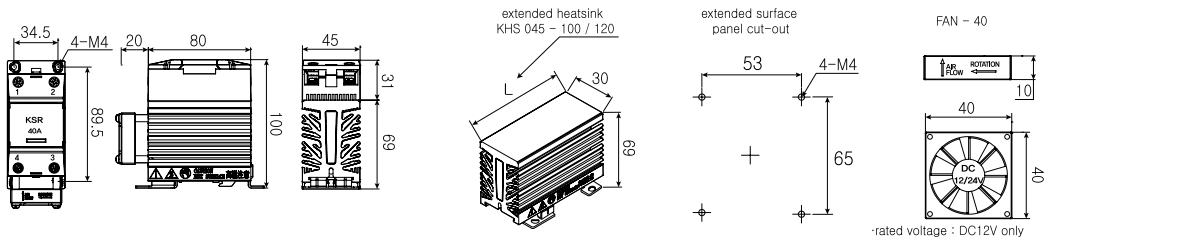
Heatsink Type 5A



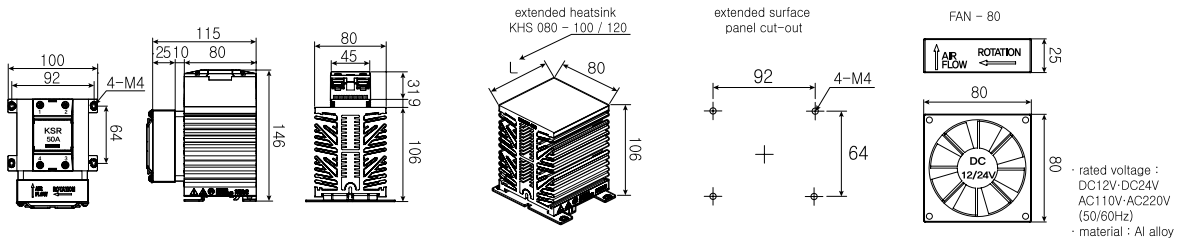
Heatsink + Fan Type 30A



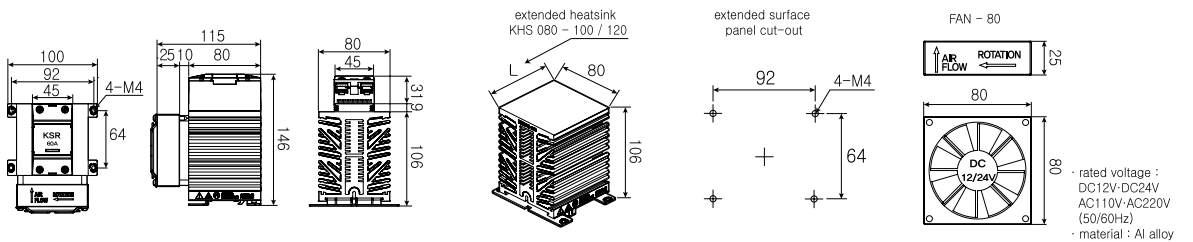
Heatsink + Fan Type 40A



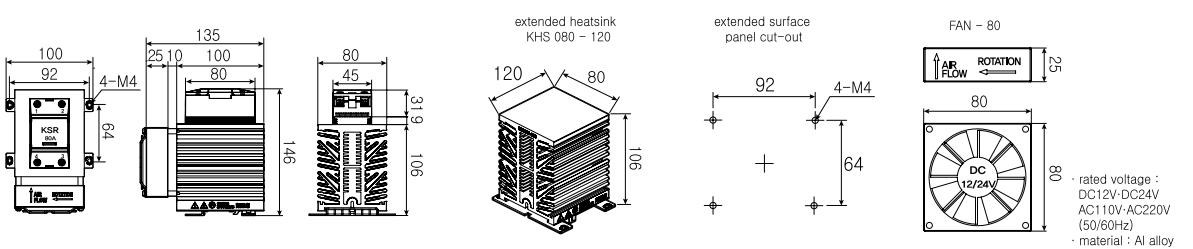
Heatsink + Fan Type 50A



Heatsink + Fan Type 60A



Heatsink + Fan Type 80A





# KSC Series

Three Phase Solid State Relays



- 80 x 80mm three phase SSR
- LED indicator of the control input status
- Heatsink integrated SSR available
- Clip cover of IP20 touch protection

## Ordering Information

KSC- ① ② ③ ④ ⑤

① Load Voltage	2	90 - 240 VAC $\frac{VAC}{VAC}$
	5	90 - 480 VAC
② Load Current		
015 $\frac{VAC}{VAC}$	15A	050 $\frac{VAC}{VAC}$ 50A
030 $\frac{VAC}{VAC}$	30A	060 $\frac{VAC}{VAC}$ 60A
040 $\frac{VAC}{VAC}$	40A	080 $\frac{VAC}{VAC}$ 80A
③ Operate mode	Z	Zero Cross
④ Input voltage	D	24VDC(4-32V) $\frac{VAC}{VAC}$
	A	220VAC(90-240V 50/60Hz)
⑤ Heatsink	no mark	Mount Type
	H	Heatsink Type $\frac{VAC}{VAC}$
	HF	Heatsink + Fan Type

## Specifications

	Low Voltage	High Voltage
Release Time	Cycle of 1/2 Load + Less than 1 ms	
Output on Voltage Drop	Less than 1.6V (RMS)	Less than 1.8V (RMS)
Leakage Current	Less than 10mA (AC200V)	Less than 20mA (AC480V)
Insulation Resistance	more than 100MΩ (DC500V)	
Withstand Voltage	AC 5,000V 50/60Hz 1min	
Vibration Resistance	10-55-10Hz Peak Amplitude 0.35mm (Dual Amplitude 0.7mm)	
Shock Resistance	294m/s <sup>2</sup>	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temperature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

## Over temperature alarm specification

Output	NPN Open Collector	
	Opens at 95 ± 5°C of SSR Body temperature	
Maximum Switching Current Rating	50mADC	
Alarm Voltage Drop	Typical	2.8VDC
	Maximum	4VDC
Visual Indication	Normal : Green LED, Overheat alarm : Red LED	

## Characteristics

### Input Ratings (Ambient Temp of 25°C)

Rated Control Voltage	Control Voltage Range	Operational Voltage Range			Input Current
		Pick-up Voltage	Drop-out Voltage		
24VDC	4-32VDC	Less than 4VDC	More than 1.4VDC		30±3mA
220VAC	90-240VAC	Less than 90VAC	More than 50VAC		30±5mA

### Low Voltage Load

	2015	2030	2040	2050	2060	2080
Rated Load Voltage	220VAC (50/60Hz)					
Load Voltage Range	90-240VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Range	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	600V					
Single Cycle Surge Current Resistance	260	420	520	520	580	580
	60Hz, 1Cycle					
UL Certification	Only on 24VDC Input voltage, with and without heatsink					No UL

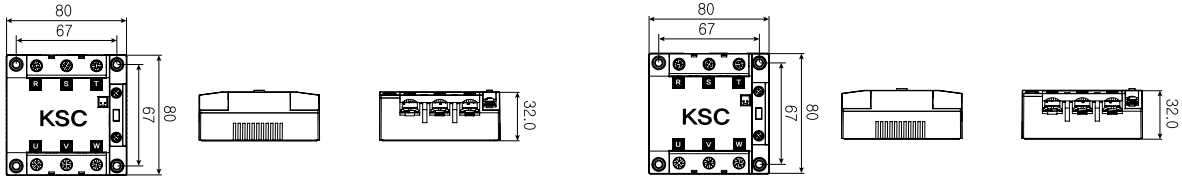
### High Voltage Load

	5015	5030	5040	5050	5060	5080
Rated Load Voltage	440VAC (50/60Hz)					
Load Voltage Range	90-480VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Range	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	1,200V					
Single Cycle Surge Current Resistance	250	370	500	500	580	580
	60Hz, 1/2Cycle					

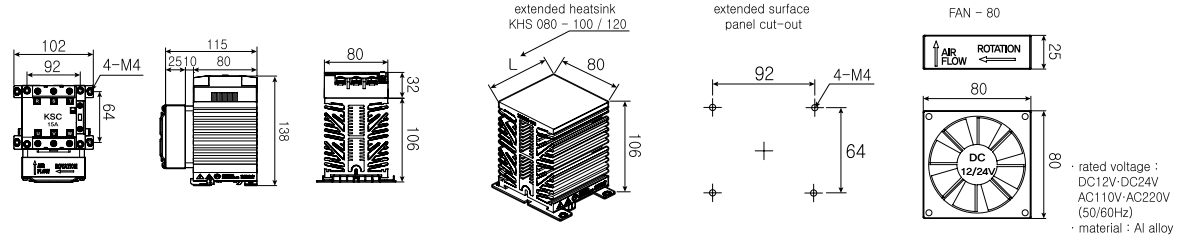
# Dimensions

Mount Type 15 / 30A

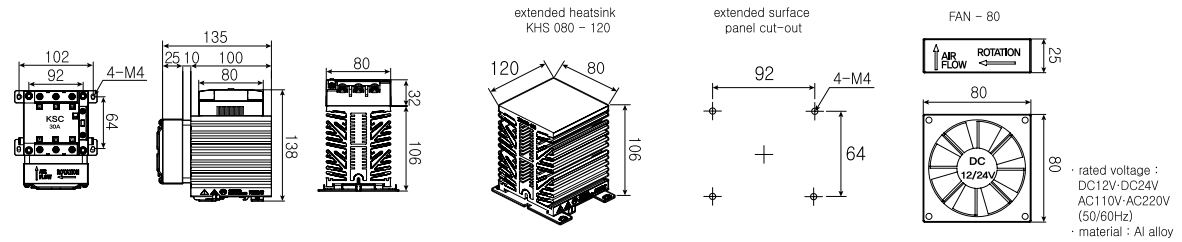
Mount Type 40 / 50 / 60 / 80A



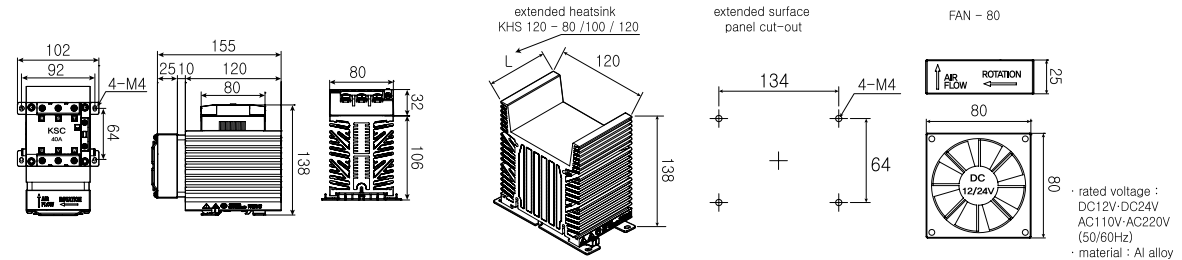
Heatsink Type 15A



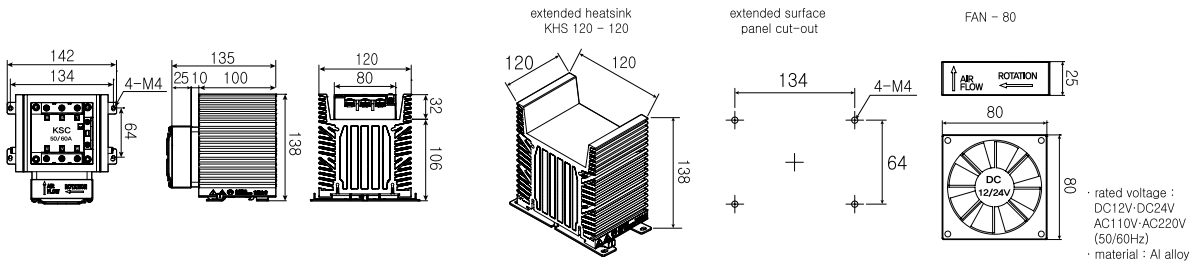
Heatsink Type 30A



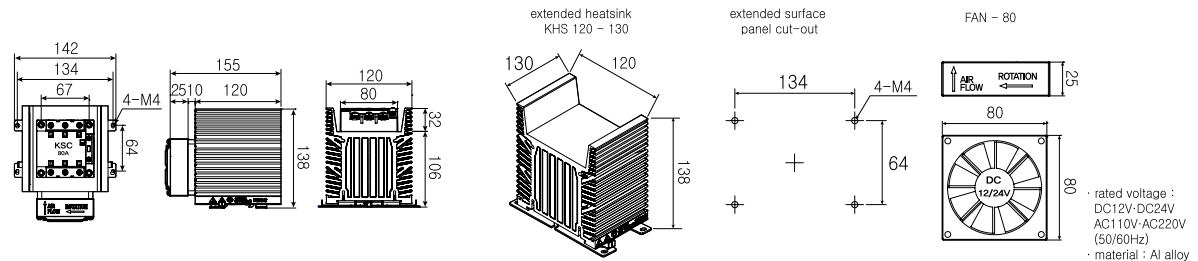
Heatsink Type 40A



Heatsink Type 50 / 60A



Heatsink Type 80A

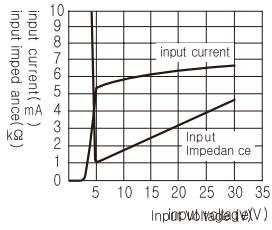




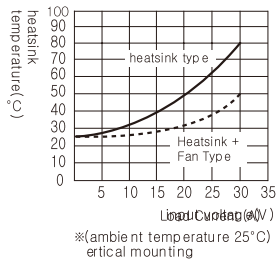
# Technical Data

## KSR & KSC Series

### Input current and Impedance

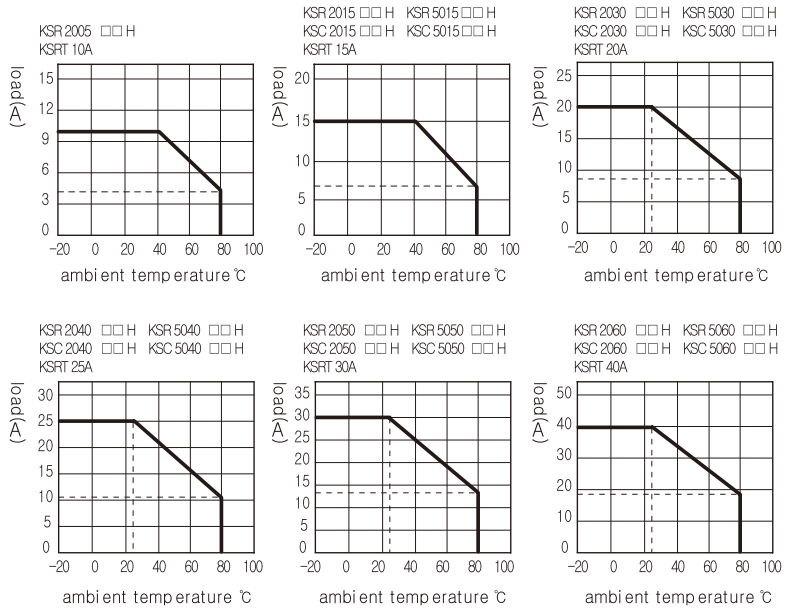


### Heatsink type & Heatsink + Fan type



※(ambient temperature 25°C)  
vertical mounting

### Ambient Temperature-load current



#### ► Caution

- The radiator fan reduces the radiator temperature by up to 35 ~ 40 % (ambient temperature of 25°C / vertical mounting)
- In the design process, note that the load current characteristic worsens with the increase in the ambient temperature.
- With the high-voltage type, design the system at 80 % of the rating or less.
- The device life is prolonged when the temperature decreases.

## Note



# TA/TR Series

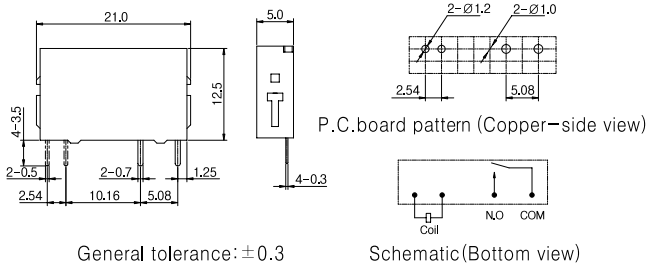
Miniature sized class F Relays



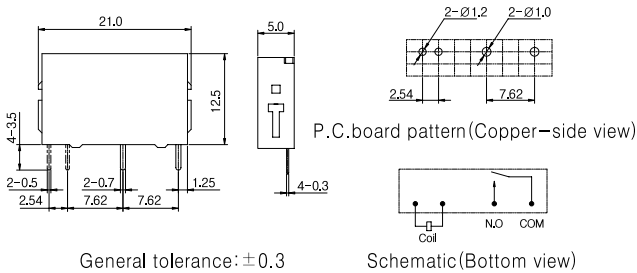
- Miniature size (width 5mm, height 12.5mm) high density and easy to install
- Extended switching capability (1mA 5VDC to 5A 250VAC, 30VDC)
- Twin Cross Bar Contact Mechanism for enhanced contact reliability
- High sensitive operation: 120mW ~ 180mW (5 to 24VDC)
- Gold Clad Silver Alloy Contact to secure micro current conductivity
- SIL terminal layout
- Wider terminal structure (TA : 5.08mm/TR : 7.62mm)
- Gold plated Socket terminal (24k gold plated)
- Class F 155°C

## Dimensions (unit: mm)

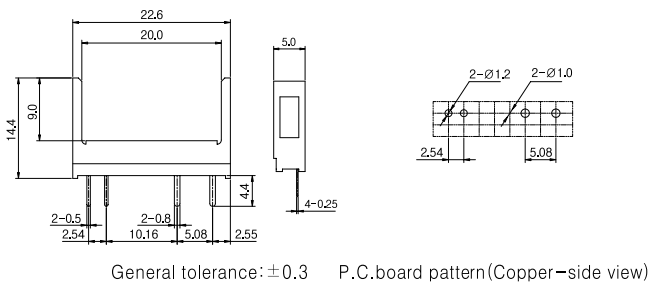
### TA Series



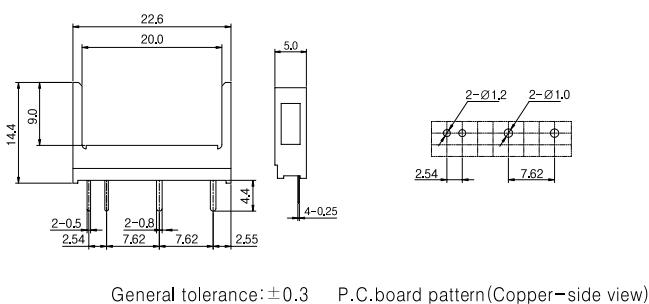
### TR Series



### TAS (Socket for TA)



### TRS (Socket for TR)



## Ordering Information

T A - 1a 5

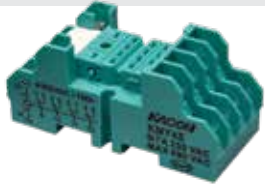
①                      ②

① Distance btwn Terminals	<b>A</b>	5.08mm
	<b>R</b>	7.62mm
② Voltage	<b>5</b>	5V DC
	<b>12</b>	12V DC
	<b>24</b>	24V DC

## Specifications

Contact Specifications	<b>Contact point composition</b>		SPST (1NO)
	<b>Contact point material</b>		Gold-clad Silver alloy
	<b>Initial contact resistance</b>		30mΩ max
	<b>Rated current(resistance load)</b>		5A 30V DC 5A 250V AC
	<b>Maximum Switching Current rating</b>		5A
	<b>Maximum Contact capacity</b>	<b>DC</b>	150W
		<b>AC</b>	1,250VA
	<b>Maximum Rated Voltage</b>		110V DC 250V AC
<b>Minimum switching rating*</b>		1mA 5V DC	
Coil Spec.	<b>Coil Voltage</b>		5VDC ~ 24VDC
	<b>Power consumption</b>		120mW, 180mW
	<b>Minimum operating</b>		70% of rated voltage
	<b>Maximum cut-off voltage</b>		5% of rated voltage
	<b>Insulation</b>		Class F 155°C
<b>Time of operation</b>		maximum rated voltage at 6ms	
<b>Time of interruption</b>		maximum tated voltage at 3ms	
<b>Insulation resistance</b>		1,000MΩ min. (500VDC)	
<b>Dielectric Strength</b>	between contact points	1,000VACrms per minute	
	Between contact points and coil	2,000VACrms per minute	
<b>Surge voltage</b>	Between contact points and coil	4,000V	
<b>Life span</b>	Mechanical	Over 10,000,000 times	
	Electrical	Over 100,000 times under rated load	
<b>Vibration resistand</b>	Functional	Min. 147m/s <sup>2</sup> (15G), 10~55Hz (width of vibration:2.5mm)Min.	
	Destructive	Min. 205.8m/s <sup>2</sup> (21G), 10~55Hz (width of vibration: 3.5mm)	
<b>Counter Shock</b>	Functional and destructive	15G min. (147m/s <sup>2</sup> ) 100G min. (980m/s <sup>2</sup> )	
	<b>Ambient temperature</b>		-40°C ~ +70°C (non-freezing)
<b>Ambient humidity</b>		5% ~ 85% RH	
<b>Weight</b>		Approx. 3g	

\* The above mentioned minimum switching rating is only referential. The referenced value varies according to the make and break frequency, environmental condition and anticipated credibility level. Therefore, it is recommended that tests be done with actual load value before the production process.



# HR705 Series

Cube Type Relays



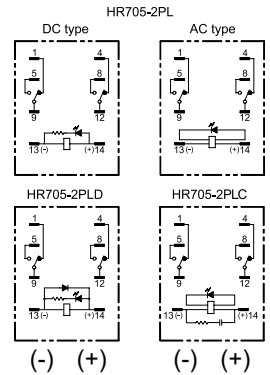
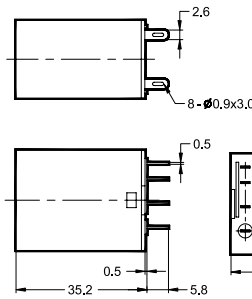
- 705 Series are designed with compact housing & ICE cube style, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

## Specifications

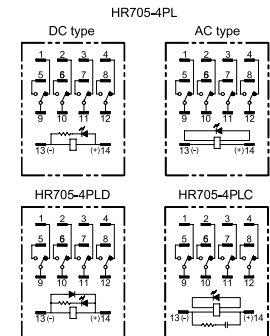
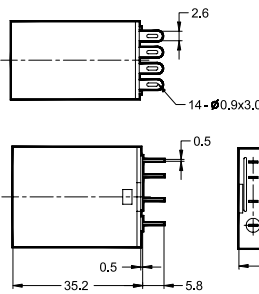
Part Numbers	Standard type	HR705-2PL-220VAC HR705-2PL-110VAC HR705-2PL-24VAC HR705-2PL-110VDC HR705-2PL-24VDC HR705-2PL-12VDC	HR705-4PL-220VAC HR705-4PL-110VAC HR705-4PL-24VAC HR705-4PL-110VDC HR705-4PL-24VDC HR705-4PL-12VDC
	Surge protection type	HR705-2PLD-12VDC HR705-2PLD-24VDC HR705-2PLC-110VAC HR705-2PLC-220VAC	HR705-4PLD-12VDC HR705-4PLD-24VDC HR705-4PLC-110VAC HR705-4PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	4PDT (4NO + 4NC)
	Material	Silver alloy (24K gold plate)	
	Max. Switching current	5A	3A
	Rated Max. Resistive Load	5A at 24VDC/240VAC 3A at 24VDC/240 VAC	
	Max. Switching Voltage	125VDC/ 250VAC	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	Voltage range	12VDC to 110VDC, 12VAC to 240VAC	
	Power consumption	AC: 0.9VA Approx. , DC: 0.9W Approx.	
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
	Operating Time	20ms	
General Info.	Dropout time	20ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-35 ~ +55°C (-13°F ~ 131°F) at non freezing	
	Ambient humidity	35% ~ 80% RH	
	Weight	33g (1.2oz)	
Socket	Socket part number	KMY2(Rail), KY08-02(PCB)	KMY4(Rail), KY14-02(PCB)
	Terminal Tightened Torque	0.5N • m (5.10kgf • cm)	

## Dimensions (unit: mm)

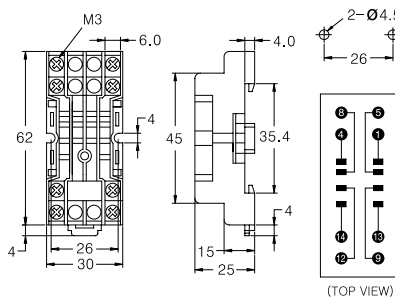
### HR705-2PL Series



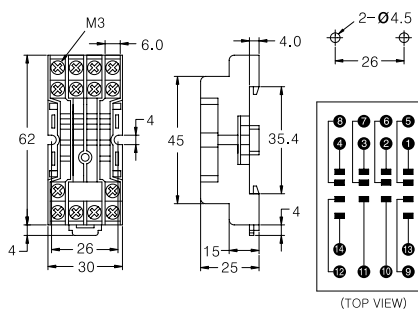
### HR705-4PL Series



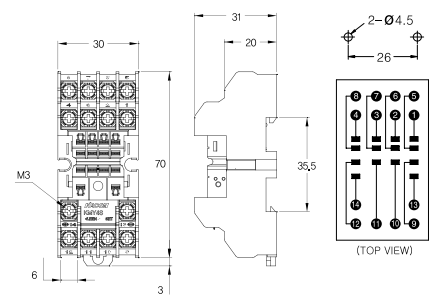
### KMY2 Socket



### KMY4 Socket



### KMY4S Socket





# HR710 Series

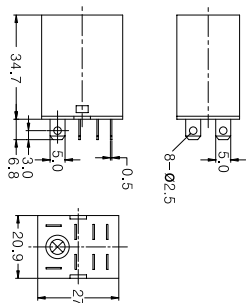
Cube Type Relays



- 710 Series are designed with compact housing & ICE cube style, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

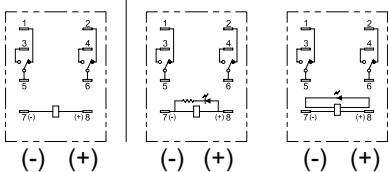
## Dimensions (unit: mm)

### HR710-2P Series

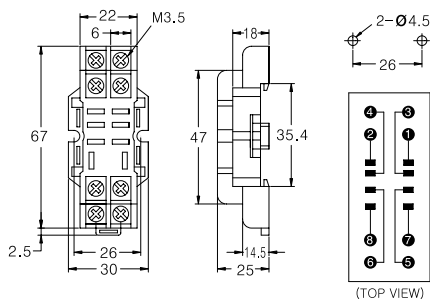


HR710-2P

HR710-2PL

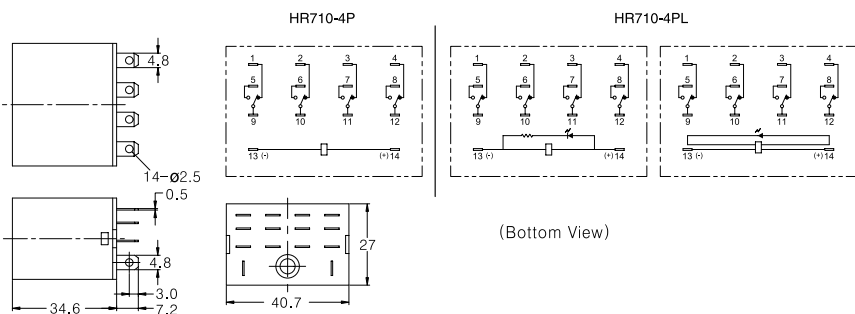


### KLY2 Socket



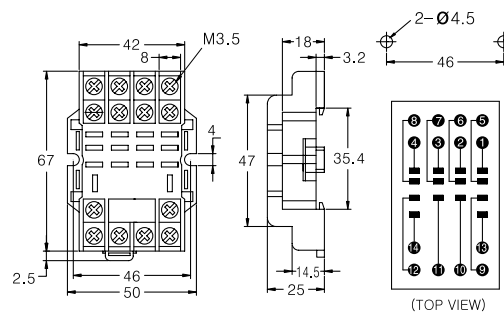
(TOP VIEW)

### HR710-4P Series



(Bottom View)

### KLY4 Socket



(TOP VIEW)

## Specifications

Part Numbers	Standard type	HR710-2PL-220VAC HR710-2PL-110VAC HR710-2PL-24VAC HR710-2PL-110VDC HR710-2PL-24VDC HR710-2PL-12VDC	HR710-4PL-220VAC HR710-4PL-110VAC HR710-4PL-24VAC HR710-4PL-110VDC HR710-4PL-24VDC HR710-4PL-12VDC
	Surge protection type	HR710-2PLD-12VDC HR710-2PLD-24VDC HR710-2PLC-110VAC HR710-2PLC-220VAC	HR710-4PLD-12VDC HR710-4PLD-24VDC HR710-4PLC-110VAC HR710-4PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	4PDT (4NO + 4NC)
	Material	Ag alloy (24K gold plate)	
	Max. Switching current	10A	
	Rated Max. Resistive Load	10A at 24VDC/220VAC	
	Max. Switching Voltage	125VDC/ 250VAC 50/60Hz	
Coil Spec.	Min. Switching requirement	100mA 5VDC	
	Voltage range	12VDC to 24VDC, 12VAC to 220VAC	
	Power consumption	AC: approx. 1.2VA DC: approx. 0.9W	AC: approx. 2.5VA DC: approx. 1.5W
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
General Info.	Operating Time	25ms	
	Dropout time	25ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-25 ~ +55°C (-13°F ~ 131°F) at non freezing	
	Ambient Humidity	35% ~ 80% RH	
Weight	33g(1.2oz)	65g(2.4oz)	
Socket	Socket part number	KLY2(DIN Rail), KT08-0(PCB)	KLY4(Din Rail)
	Terminal Tightened Torque	0.5N · m (5.10kgf · cm)	



# K7SR Series

## Safety Relay

- Various contact configurations
- Forcibly guided contact type (IEC 61810-3)
- 6A switching capacity, Low power consumption
- Terminal layout for easy wiring of PWB patterns
- High insulation capacity (UL Insulation Class F)

### Specifications

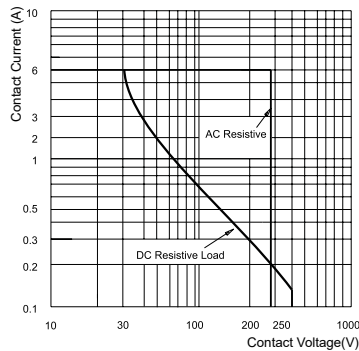
<b>Contact Ratings</b>	Contact Form	4P 2NO + 2NC, 3NO + 1NC	6P 5NO + 1NC, 4NO + 2NC, 3NO + 3NC
	Forcibly Guided Contact Type (Based on IEC 61810-3)	Type A	
	Contact resistance	100mΩ max. (at 1A 6VDC)	
	Material	AgSnO <sub>2</sub>	
	Rating	6A 250VAC / 30VDC (1circuit)	
	Max Switching voltage	400VAC / 30VDC	
	Max Switching current	6A	
	Max Switching power	1500VA / 180W	
	Mechanical Life*	10,000,000	
	Electrical Life*	100,000 (1NO : 6A 30VDC, resistance load, 1sec ON 1sec OFF) 100,000 (1NO : 6A 250VAC, resistance load, 1sec ON 1sec OFF)	
<b>Coil Ratings</b>	Coil Consumption	Approx. 360mW	Approx. 500mW
	General voltage	24VDC	
	Min Operating voltage	18.0VDC	
	Maximum Drop-out Voltage	2.4VDC	
	Minimum Pick Up Voltage**	31.2VDC	26.4VDC
	Coil resistance (Ω)	1600 x (1±10%)	1152 x (1±10%)
<b>Safety Relay General Ratings</b>	Insulation Resistance	1000MΩ at 500VDC (It was measured at the same locations as the dielectric strength was measured.)	
	Grade of insulation	Class F	
	Withstand voltage***	Between Coil & Contacts : 4000VAC 1 min	
		Between Open Contacts : 1500VAC 1 min	
		Between Contact sets : 2500VAC 1 min (34-33/44-43) 4000VAC 1 min (Other)	Between Contact sets : 2500VAC 1 min (54-53/64-63) 4000VAC 1 min (Other)
	Surge voltage	Between Coil & Contacts : 10kV (1.2 / 50μs)	
		Between Contact sets : 5kV (1.2 / 50μs)	
	Operating time (at rated voltage)	20ms max. (The ambient temperature was 23 °C. Contact bounce time is not included.)	
	Breaking time (at rated voltage)	20ms max. (The ambient temperature was 23 °C. Contact bounce time is not included.)	
	Vibration resistance	NO/NC : 10Hz to 55Hz 1.5mm DA NO : 55Hz to 200Hz, 98m/s <sup>2</sup> NC : 55Hz to 200Hz, 49m/s <sup>2</sup>	
	Shock Resistant	Malfunction : 980m/s <sup>2</sup>	Destruction : 100m/s <sup>2</sup>
	Ambient temperature****	-40° C to 85° C	
	Ambient Humidity	5% to 85% RH	
Wiring	PCB board / Dedicated socket		
Weight	Approx. 20g	Approx. 23g	
<b>Socket General Ratings</b>	Rated voltage	250VAC	
	Rated Current	6A	
	Applicable relay coil voltage	6 ~ 24 VDC	
	Ambient temperature	-25° C to 55° C	
	Specification Torque	1.0N . m	
	Wire thickness	1.5mm 16AWG	
Stripping Length	7mm <sup>2</sup>		
Remarks	With LED		

### Ordering Information

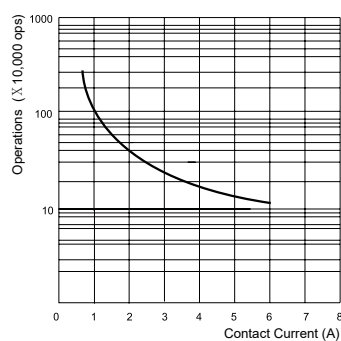
Safety Relay Part Number	Contact Form	Socket Part Number	Number of Terminals
K7SR-3A1B-24VDC	3NO + 1NC	K7SC-10FL-24VDC	10FL : 10 Terminal (4P Relay)
K7SR-2A2B-24VDC	2NO + 2NC		
K7SR-5A1B-24VDC	5NO + 1NC		
K7SR-4A2B-24VDC	4NO + 2NC	K7SC-14FL-24VDC	14FL : 14 Terminal (6P Relay)
K7SR-3A3B-24VDC	3NO + 3NC		

### Reference Data

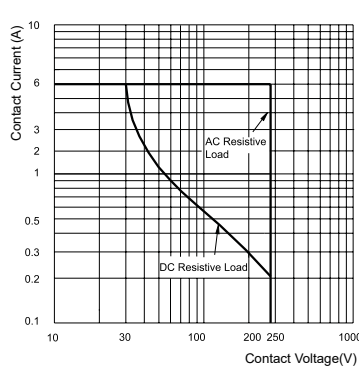
Maximum Switching Power for 4P



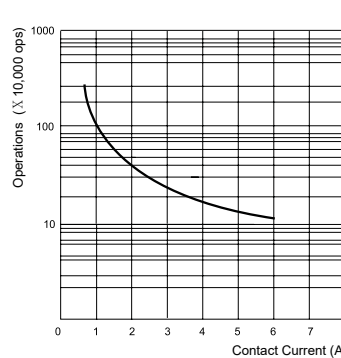
Endurance Curve for 4P



Maximum Switching Power for 6P



Endurance Curve for 6P



Caution: The above figures are the initial values.

Specifications and materials are subject to change without prior notice for quality improvement.

\*The Life is for an ambient temperature of 15 to 35°C and an ambient humidity of 25% to 75%.

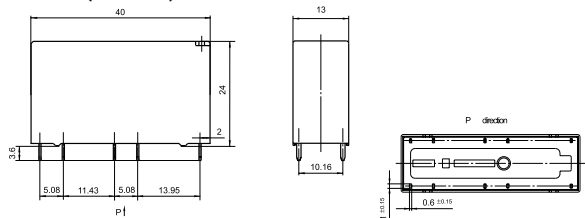
\*\*This is the maximum voltage of the relay coil that can be stably operated.

\*\*\*When using Socket, the dielectric strength between coil contacts/different poles is 2,500VAC, for 1 min.

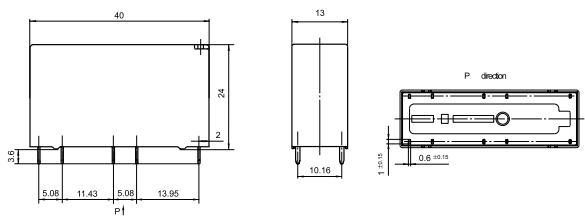
\*\*\*\*When operating at a temperature between 50 and 70°C, reduce the rated carry current by 0.3A/°C.

## Relay Dimensions

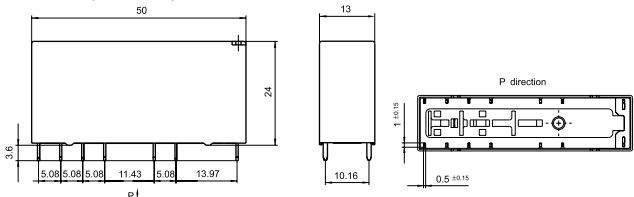
3A1B (unit: mm)



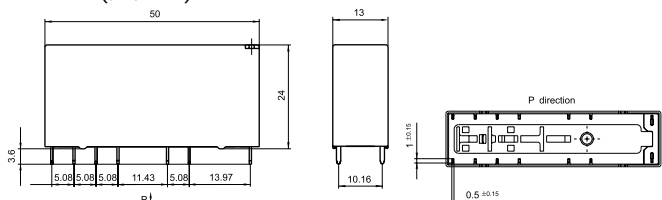
2A2B (unit: mm)



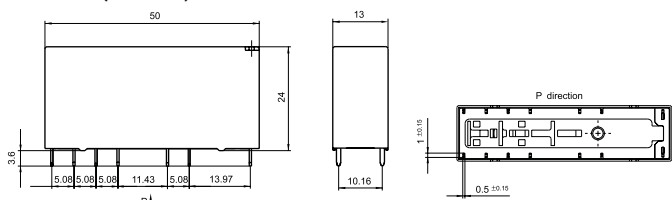
5A1B (unit: mm)



4A2B (unit: mm)

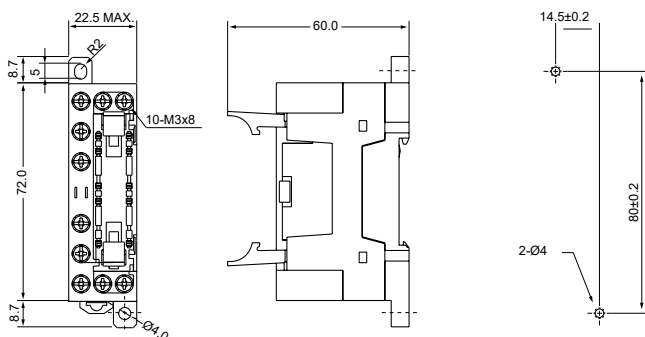


3A3B (unit: mm)

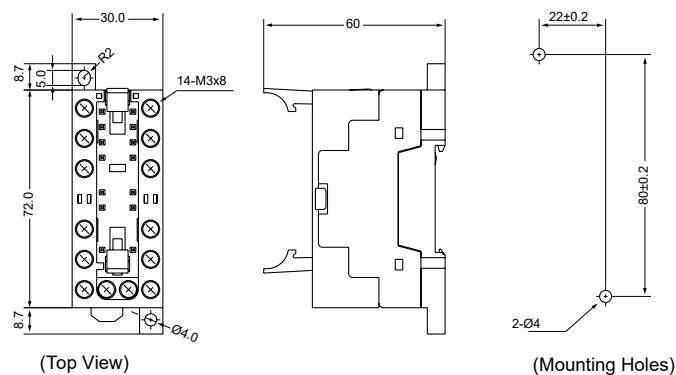


## Socket Dimensions

Socket 4P (unit: mm)

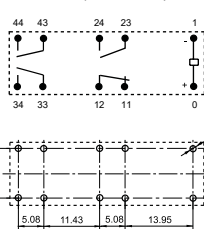


Socket 6P (unit: mm)

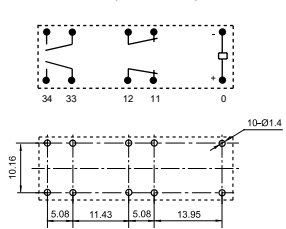


## Relay Wiring Diagram

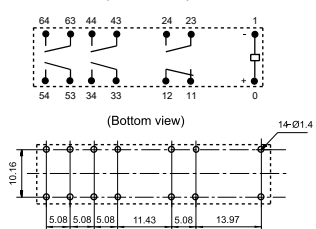
3A1B (unit: mm)



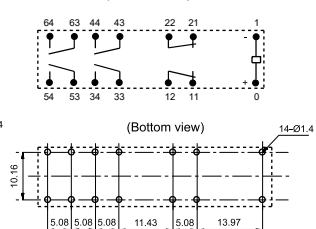
2A2B (unit: mm)



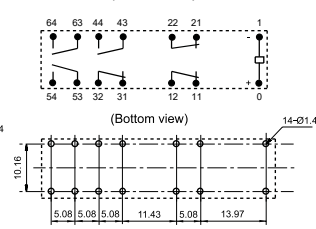
5A1B (unit: mm)



4A2B (unit: mm)

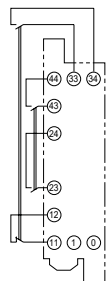


3A3B (unit: mm)

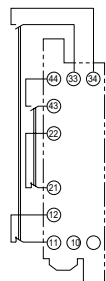


## Socket Terminal Layout & Internal Connection Diagram

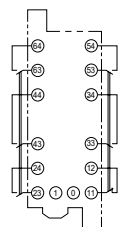
3A1B



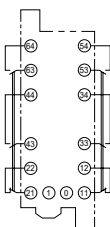
2A2B



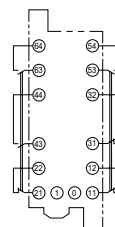
5A1B



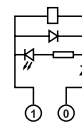
4A2B



3A3B



With LED





# K706 Series

Slim & Compact Relays

- Different colored test button for AC or DC
- Switch type On/Off structure for easy test
- LED indicator to show operation
- Socket with safety cover available



## Ordering Information

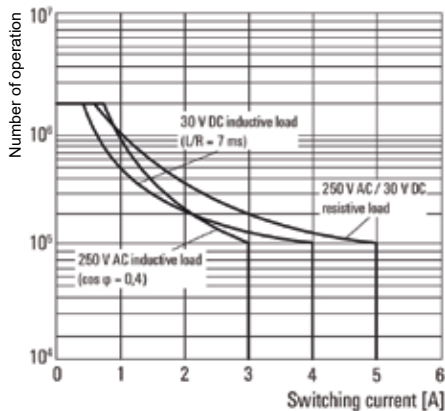
**K706 - 1PL D T - 12VDC**

①      ②      ③      ④

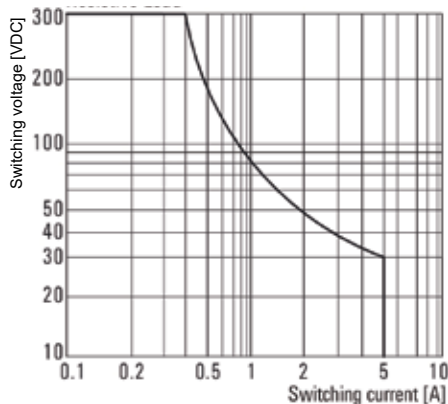
① Contact Ratings	<b>1PL</b>	1NO / 1NC (1C)
	<b>2PL</b>	2NO / 2NC (2C)
② Option	no mark	None
	<b>D</b>	Diode (Only DC)
③ Function	no mark	None
	<b>T</b>	Test Button Type (AC : Red, DC : Blue)
④ Coil Voltage	<b>12VDC</b>	12VDC
	<b>24VDC</b>	24VDC
	<b>24VAC</b>	24VAC
	<b>110VAC</b>	110VAC
	<b>230VAC</b>	230VAC

## Reference Data

Life cycle curve



DC load breaking capacity



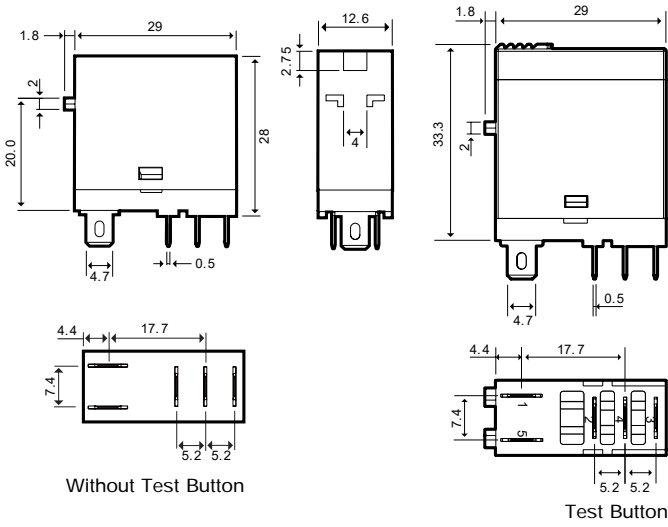
## Specifications

<b>Contact</b>	Contact Arrangement	1NO / 1NC (1C)	2NO / 2NC (2C)	
	Contact Material	Ag alloy (24K Gold Plt.)		
	Max. Rated Current (Resistance Load)	10A / 250VAC	5A / 250VAC	
	Max. Switching Current	10A	5A	
	Max. Switching Capacity	3,000VA	2,000VA	
	Min.Switching Current*	100mA 5VDC		
	Initial Contact Resistance	100mΩ (1A 6VDC)		
<b>Coil Spec.</b>	Coil Voltage	12VDC, 24VDC, 24VAC, 100/110VAC, 220/240VAC		
	Coil Consumption	DC(W) : 0.53 / AC(VA) : 1.0		
	Min. Pick-up Voltage	DC : 75% of Nominal Voltage		
		AC : 80% of Nominal Voltage		
	Max. Dropout Voltage	DC : 10% of Nominal Voltage DC		
AC : 30% of Nominal Voltage AC				
<b>General Info.</b>	Operating Time	20ms		
	Release Time	10ms / Standard, 20ms / Diode		
	Insulation Resistance	1,000MΩ at 500VDC		
	Dielectric Strength	Between Contact Points	1,000Vrms 1min.	
		Between poles	3,000Vrms 1min.	
		Between Contact Points and Coil	5,000Vrms 1min	
	Life Cycle	Mechanical	Min. 10,000,000	
		Electrical	Min. 100,000	
	Vibration Resistant	Malfunction	10 ~ 55Hz (Durable Amplitude 1.5mm)	
		Destruction	10 ~ 55Hz (Durable Amplitude 1.5mm)	
Shock Resistant	Malfunction	98 m/s		
	Destruction	980 m/s		
Ambient Temperature	-40 ~ +55°C (with no Condensing)			
Ambient Humidity	35% ~ 85% RH			
<b>Socket</b>	Socket part number	KPX12/ KPX12-P	KPX22/KPX22-P	
	Terminal Tightened Torque	0.5N • m (5.10kgf • cm)		

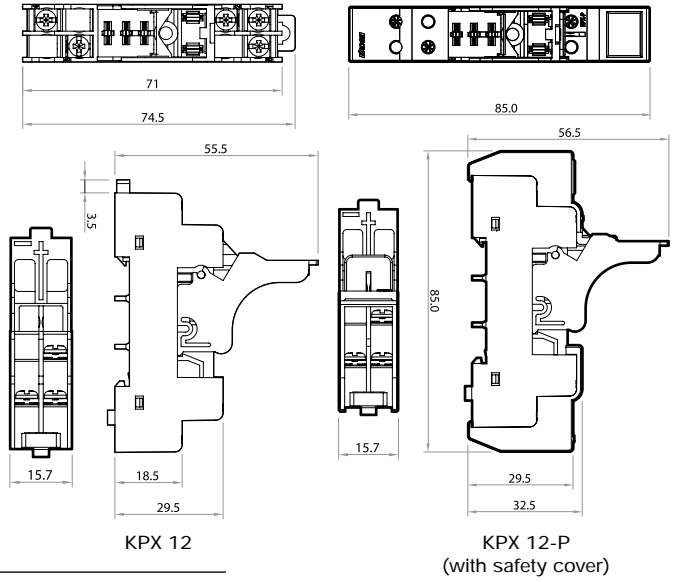
\*The minimum switching current is indicated as a standard value. The actual minimum switching rate is variable factor according to the make and break frequency, environmental condition and anticipated credibility level. Therefore, it is recommended that tests be done to test actual load value before the production process.

# K706-1PL

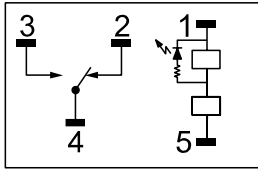
## Relays Dimensions (unit: mm)



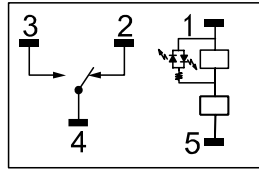
## Socket Dimensions (unit: mm)



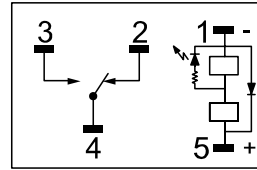
## Wiring diagram



LED(AC)



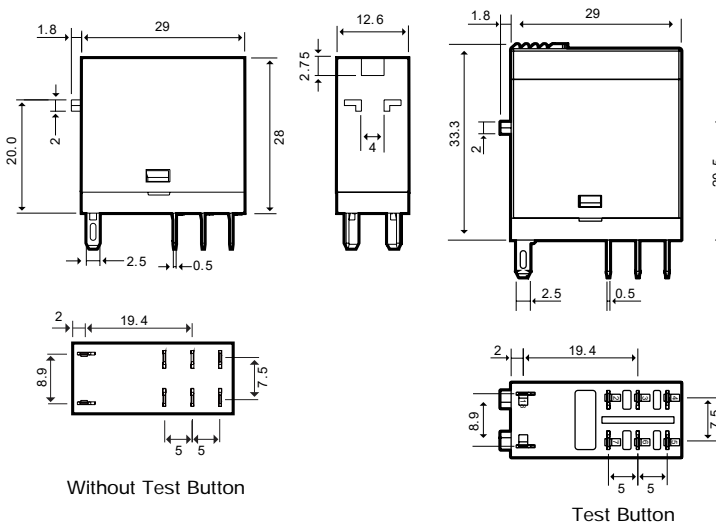
LED(DC)



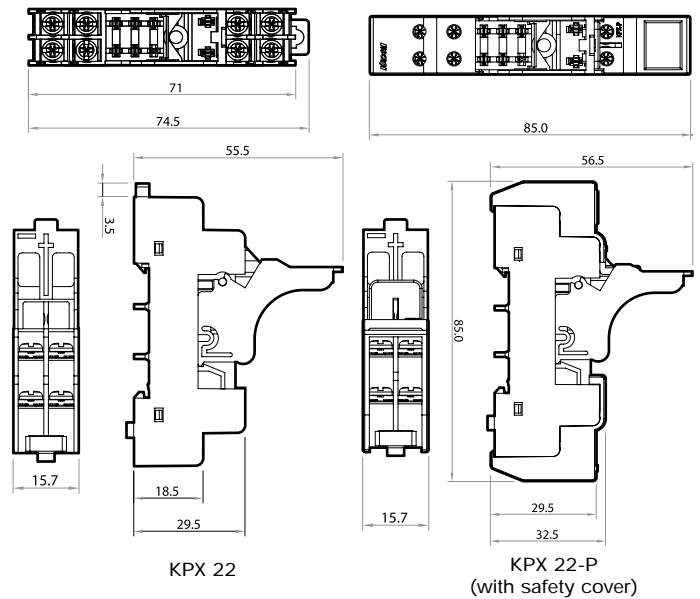
LED + Diode (DC)

# K706-2PL

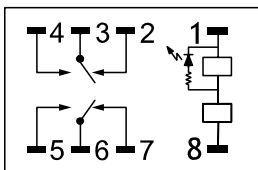
## Relays Dimensions (unit: mm)



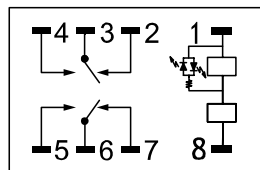
## Socket Dimensions (unit: mm)



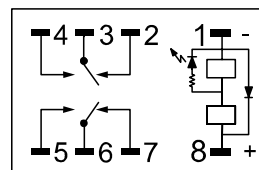
## Wiring diagram



LED(AC)



LED(DC)



LED + Diode (DC)





# HR707N Series

Octal Base Relays



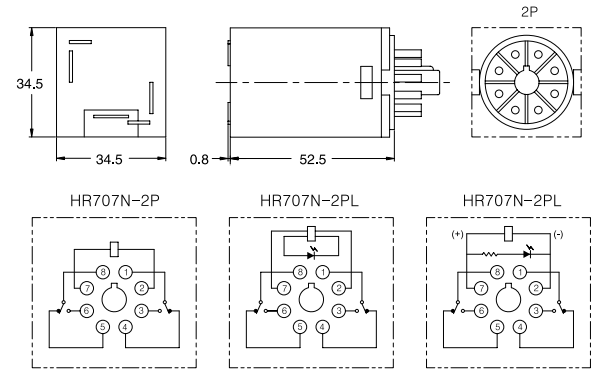
- 707 Series are designed with octal base, silver alloy contact, LED indicator, high reliability and long life
- Available Surge protection type to protect malfunction of PLC, electronic devices from back EMF

## Specifications

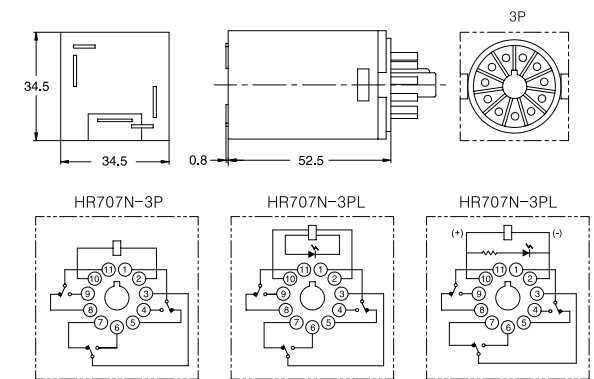
Part Numbers	Standard type	HR707N-2PL-220VAC HR707N-2PL-110VAC HR707N-2PL-24VAC HR707N-2PL-110VDC HR707N-2PL-24VDC HR707N-2PL-12VDC	HR707N-3PL-220VAC HR707N-3PL-110VAC HR707N-3PL-24VAC HR707N-3PL-110VDC HR707N-3PL-24VDC HR707N-3PL-12VDC
	Surge protection type	HR707N-2PLD-12VDC HR707N-2PLD-24VDC HR707N-2PLC-110VAC HR707N-2PLC-220VAC	HR707N-3PLD-12VDC HR707N-3PLD-24VDC HR707N-3PLC-110VAC HR707N-3PLC-220VAC
Contact	Configuration	DPDT (2NO + 2NC)	3PDT (3NO + 3NC)
	Material	Silver alloy (24K gold plate)	
	Max. Switching current	10A	
	Rated Max. Resistive Load	10A at 250VAC	
	Max. Switching Voltage	250VDC/ 250VAC	
Coil Spec.	Min. Switching requirement	100mA 5VDC	
	Voltage range	12VDC to 110VDC, 12VAC to 240VAC	
	Power consumption	AC: Approx. 2.4VA, DC: Approx. 1.6W	
	Minimum operating voltage	80% of the rated coil voltage	
	Max. Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
General Info.	Operating Time	30ms	
	Dropout time	20ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of 1.5mm	
	Ambient temperature	-10 ~ +40°C (-14°F ~ 104°F) at non freezing	
	Ambient humidity	35% ~ 80% RH	
Weight	75g (2.6oz)		
Socket	Socket part number	KF083A (DIN Rail)	KF113A (DIN Rail)
	Terminal Tightened Torque	0.5N • m (5.10kgf • cm)	

## Dimensions (unit: mm)

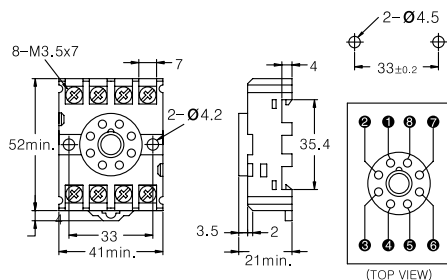
### HR707N-2P Series



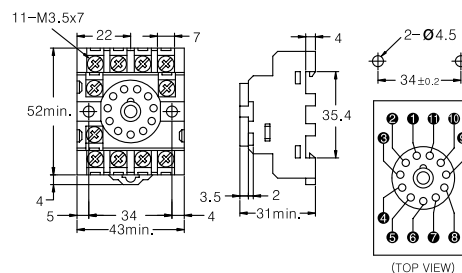
### HR707N-3P Series



### KF083A Socket



### KF113A Socket



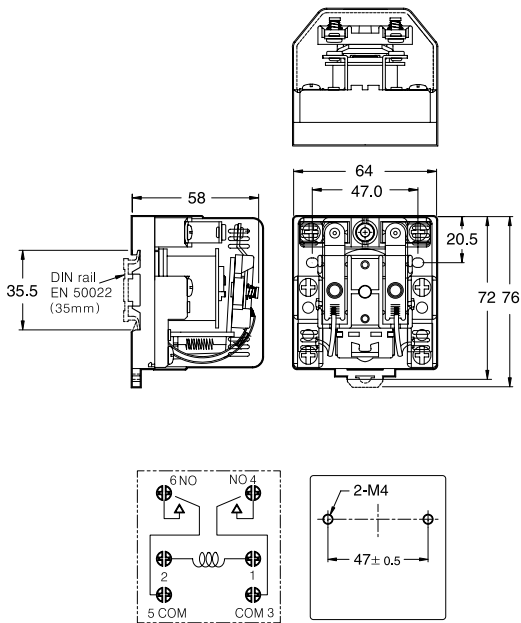


# HR723 Series

Heavy Duty Relays

## Dimensions (unit: mm)

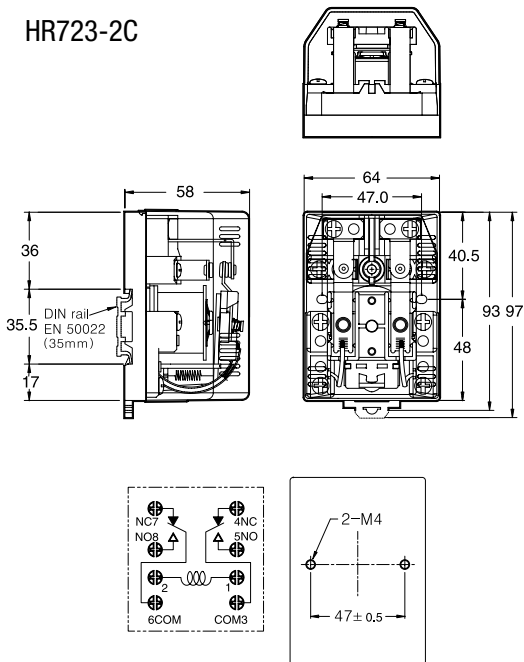
### HR723-2A



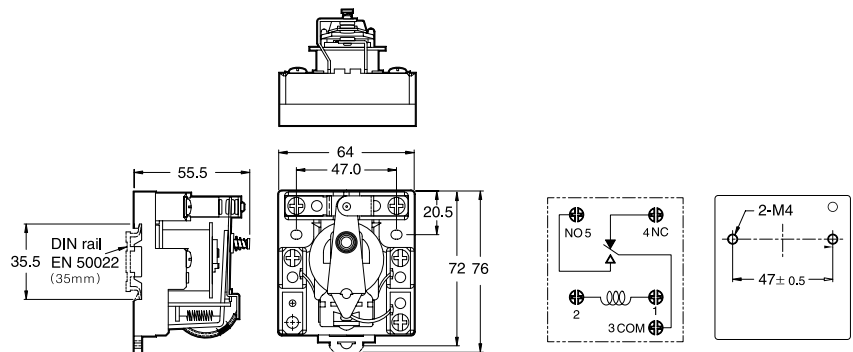
## Specifications

Part Numbers		HR723-2A-220VAC HR723-2A-110VAC HR723-2A-24VDC	HR723-1C-220VAC HR723-1C-110VAC HR723-1C-24VDC	HR723-2C-220VAC HR723-2C-110VAC HR723-2C-24VDC
<b>Contact</b>	Configuration	DPST(2NO)	SPDT(1NO+1NC)	DPDT(2NO+2NC)
	Material	Silver alloy		
	Max. Switching current	30A		
	Rated Max. Resistive Load	30A at 24VDC/220VAC		
	Max. Switching Voltage	110VDC/250VAC		
Min. Switching requirement	100mA 5VDC			
<b>Coil Spec.</b>	Voltage range	12VDC to 24VDC, 110VAC to 220VAC		
	Power consumption	AC: approx. 9.6VA, DC: approx. 2.8W		
	Minimum operating voltage	80% of the rated coil voltage		
Max. Dropout voltage	DC Coil:	10% of rated voltage		
	AC Coil:	30% of rated voltage		
<b>General Info.</b>	Operating Time	30ms		
	Dropout time	30ms		
	Insulation resistance	100MΩ at 500V DC		
	Dielectric Strength	Between Contact(2a):	2,000 Vrms 1Min.	
		Between Contact & Coil:	2,500Vrms 1Min.	
	Mechanical life	5,000,000 operations		
	Electrical life	100,000 operations		
	Vibration resistant	10~55Hz at double amplitude of 1.5mm		
	Ambient temperature	-55 ~ +80°C (-67°F ~ 176°F) at non freezing		
	Ambient humidity	5% ~ 80% RH		
Relay Weight	250g (8.8oz)	200g (7oz)	300g (10.6oz)	

### HR723-2C



### HR723-1C





# 730 Series

Heavy Duty Relays

730 Series are designed with DIN rail mount & Panel direct mount, and Quick connector (#250) & terminal screw type, reliability and long life, and pushbutton allows manual operation of the relay



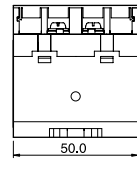
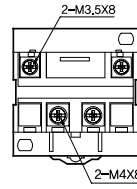
## Specifications

<b>Part Numbers</b>	Screw Terminal & DIN Rail Mount Type	730-1TR - 220VAC 730-1TR - 110VAC 730-1TR - 24VDC 730-1TR - 12VDC	730-2TR - 220VAC 730-2TR - 110VAC 730-2TR - 24VDC 730-2TR - 12VDC
	Quick Connector (#250) & DIN Rail Mount Type	730-1QR - 220VAC 730-1QR - 110VAC 730-1QR - 24VDC 730-1QR - 12VDC	730-2QR - 220VAC 730-2QR - 110VAC 730-2QR - 24VDC 730-2QR - 12VDC
	Screw Terminal & Panel Mount Type	730-1TB - 220VAC 730-1TB - 110VAC 730-1TB - 24VDC 730-1TB - 12VDC	730-2TB - 220VAC 730-2TB - 110VAC 730-2TB - 24VDC 730-2TB - 12VDC
	Quick Connector (#250) & Panel Mount Type	730-1QB - 220VAC 730-1QB - 110VAC 730-1QB - 24VDC 730-1QB - 12VDC	730-2QB - 220VAC 730-2QB - 110VAC 730-2QB - 24VDC 730-2QB - 12VDC
<b>Contact</b>	Configuration	SPST (1NO)	DPST (2NO)
	Material	Silver alloy	
	Max. Switching current	30A	25A
	Rated Max. Resistive Load	30A at 30VDC/277VAC	25A at 30VDC/277VAC
<b>Coil Spec.</b>	Min. Switching requirement	100mA 5VDC	
	Coil Voltage	12VDC, 24VDC, 100/120 VAC 50/60Hz, 220.240 VAC	
	Power consumption	DC: approx. 1.9W 6-48VAC: 1.7-1.9VA 100/120VAC: 1.9-2.7VA 200/240VAC: 1.8-2.6VA	
	Minimum operating voltage	80% of Nominal	
	Dropout voltage	DC Coil: 10% of Nominal AC Coil: 30% of Nominal	
	Operating Time	30ms	
	Dropout time	30ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact(2a): 2,000 Vrms 1Min. Between Contact & Coil: 4,000Vrms 1Min.	
	General Info.	<td>Mechanical life</td> <td>Min. 1,000,000 operations</td>	Mechanical life

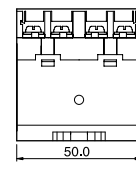
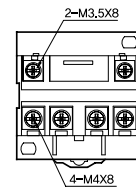
\* Min. Switching requirement: If load require low current, you may consider a troubleshooting for operation. For a proper operation, a dummy resistance should be added in parallel on the load to provide current more than min. Switching requirement (100mA 5VDC)

## Dimensions (unit: mm)

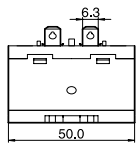
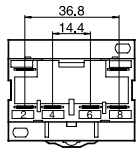
730-1TR



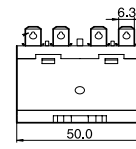
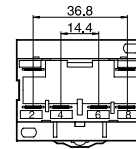
730-2TR



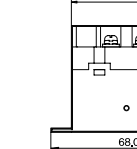
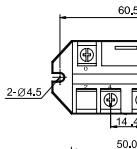
730-1QR



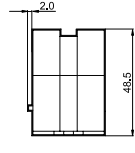
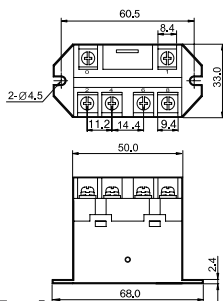
730-2QR



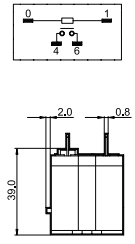
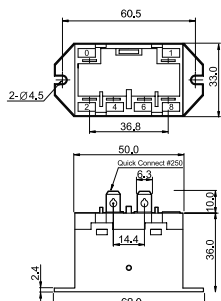
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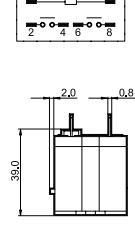
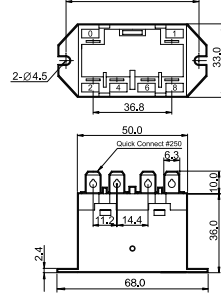
730-2TB



730-1QB



730-2QB

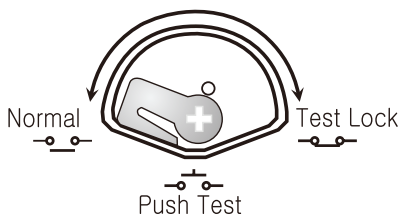
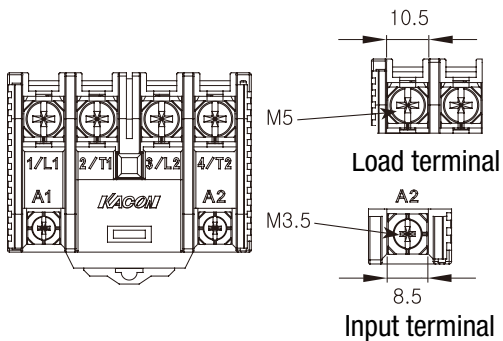
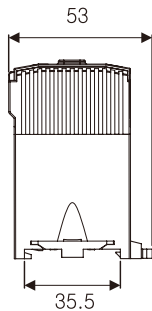
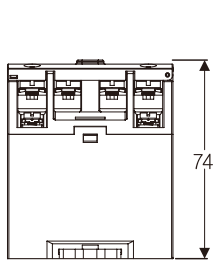
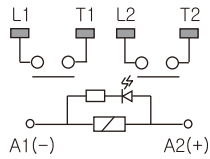
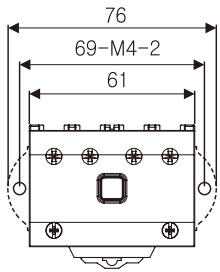


# K750 Series

Heavy Duty Relays



## Dimensions (unit: mm)



## Specifications

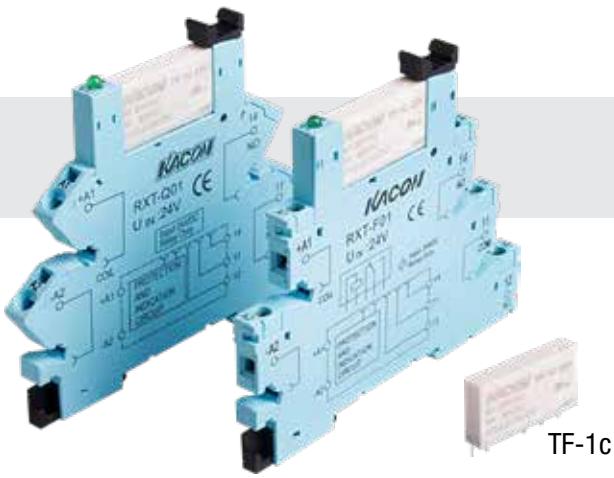
Part Numbers	DC	K750-2A-12VDC	K750-2A-24VDC
	AC	K750-2A-110VAC	K750-2A-220VAC
Contact	Configuration	2N/C or 2N/O	
	Material	Tri-Composite Silver Alloy	
	Maximum Contact	100mΩ	
	Rated Current	30A at 30VDC	40A at 250VAC
	Max. Switching Current	40A	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	Coil Voltage	12VDC, 24VDC 100/110VAC 50/60Hz, 220/240VAC 50/60Hz	
	Coil consumption	DC: approx. 1.9W AC: 1.8-27VA	
	Minimum Pick-up voltage	80% of nominal voltage	
	Maximum Dropout voltage	DC Coil: 10% of rated voltage AC Coil: 30% of rated voltage	
General Info.	Operating Time	30ms	
	Dropout time	30ms	
	Insulation resistance	100MΩ	
	Dielectric Strength	Between Contact(2a): 2,000 Vrms 1Min.	
		Between Contact & Coil: 4,000Vrms 1Min.	
	Mechanical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	Malfunction 10-55Hz dual amp:1.0mm Destruction 10-55Hz dual amp:1.5mm	
	Ambient temperature	-40 ~ 60°C at non freezing	
Ambient humidity	10% ~ 80% RH		

## Terminal Specifications

	LOAD 2a	INPUT
Terminal	8.0 - 5.0	2.0 - 3.5
Screw	M5.0	M3.5
Torque (MAX/N.m)	2.00	0.8

## Test Button

Push test	Momentary
Test lock	Contact ON
Normal	Contact OFF



# RXT Series

Relay Terminal Blocks



## Ordering Information

RXT - ①	① Type	F01	Screw Type (Bolt Terminal)
		Q01	Pin Type (Quick Terminal)

TF-1C- ①	① Power Supply	12V	12VDC
		24V	24VDC

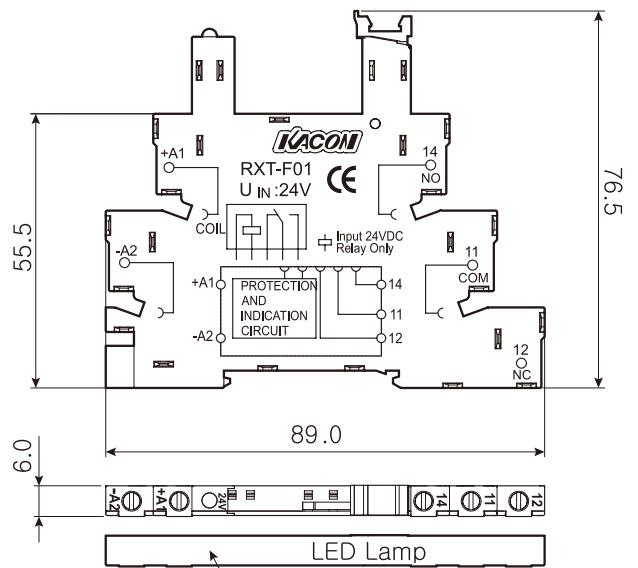
## Relay Specifications (TF-1c)

Contact Ratings	Contact Form		1N/O + 1N/C
	Contact Material		Silver Alloy
	Maximum Contact Resistance		30mΩ
	Rated Current ( Resistance Load )		6A 250VAC , 6A 30VDC
	Maximum Contact Capacity	DC	180W
		AC	1500VA
	Maximum Rated Voltage		6A 250VAC
Minimum Switching Current		1mA 5VDC	
Coil Ratings	Coil Voltage		5V 12V 24V
	Coil Consumption		170mW 24VDC
	Minimum Pick Up Voltage		70% of Nominal Voltage
Maximum Drop-Out Voltage		5% of Nominal Voltage	
General Ratings	Operating Time	Pick-up	8ms
		Drop-out	4ms
	Insulation Resistance		100MΩ
	Dielectric Strength	Btwn Contacts and Coil	4000VAC 1 minute
		Btwn Contacts	1000VAC 1 minute
	Life Cycles	Mechanical	Min. 10,000,000
		Electrical	Min. 100,000
	Vibration Resistance		10Hz to 55HZ 1mm DA
	Ambient Temperature		-40°C to 85°C
	Ambient Humidity		5% to 85% RH
Weight		Approx. 3g	
Approval		CE , VDE , UL	

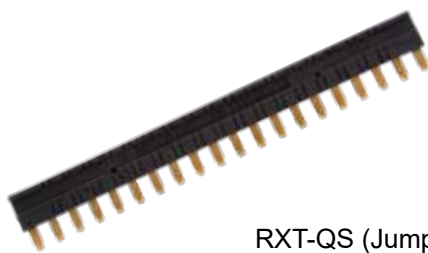
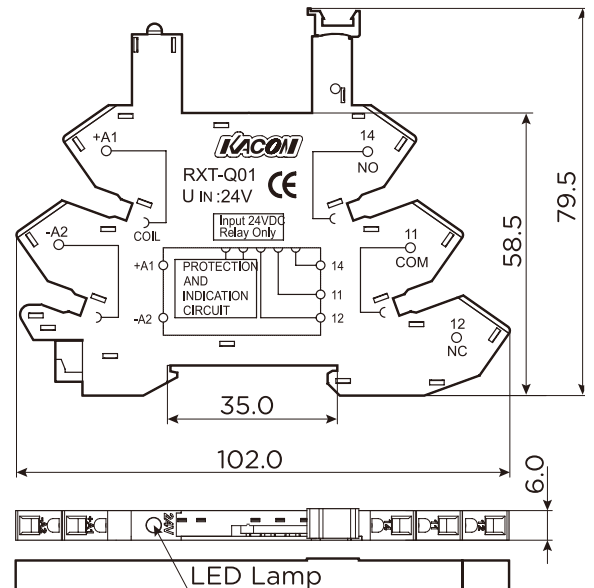
## Dimensions

unit: mm

RXT - F01 screw type



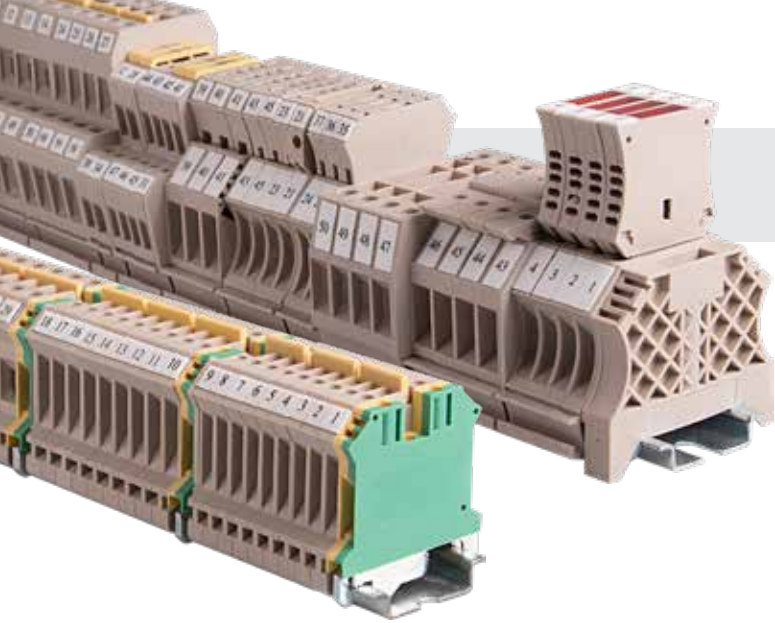
RXT - Q01 pin type



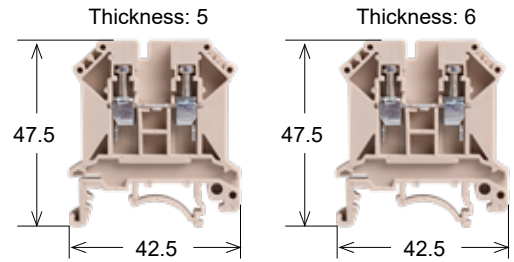
RXT-QS (Jumper)

• **Note** •

A series of horizontal dotted lines for writing notes, contained within a larger dotted-line border.



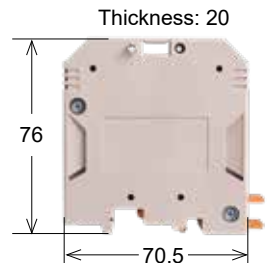
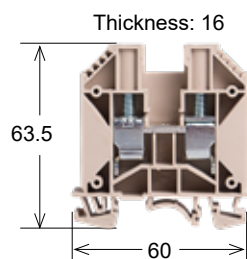
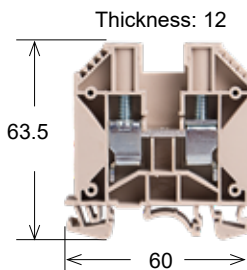
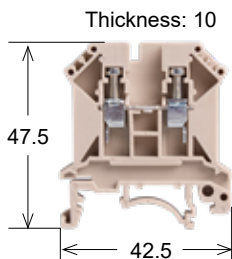
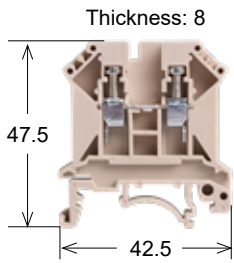
# Screw Clamp Terminal Blocks



## Key Features

- Housing made of high quality Polyamide 6.6
- Molded from UL94-V0 material with flame and shock resistance
- Mount on any standard 35mm DIN Rails
- Vibration proof to avoid loosening
- Strong contact force, low voltage drop and excellent connection.
- Low contact resistance
- Suitable for a broad range of cross-section and types of wires
- Easy handling and wiring
- Green-yellow color coded ground terminal blocks.
- Corrosion proof contact points.

Model	CDU 2.5N			CDU 4N		
	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	20A	AWG12-28	600V	30A	AWG10-22
	800V	24A	0.5-2.5mm <sup>2</sup>	800V	32A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	8-10mm			8-10mm		
Available colors	Beige, Grey, Blue			Beige, Grey, Blue		
Accessories						
End Bracket	SEW35			SEW35		
	CEW35/2			CEW35/2		
End Cover	CEP6			CEP6		
Cross Jumper	CQV 2.5/2		CQV 2.5/3	CQV 4/2		CQV 4/3
	CQV 2.5/4		CQV 2.5/10	CQV 4/4		CQV 4/10
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		CQB 4/2, CQB 4/3, CQB 4/10		CQB 4/2, CQB 4/3, CQB 4/10	
Warning Cover	WSS 2.5			WSS4		
Marking Tags	W5 W5Z W5K			W6 W6Z W6K		



Model	CDU 6N		
	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	50A	AWG8-26
	800V	57A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	10-12mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
	CEW35/2		
End Cover	CEP6		
Cross Jumper	CQV 6/2		CQV 6/3
	CQV 6/4		CQV 6/10
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Warning Cover	WSS6		
Marking Tags	W6 W6Z W6K		

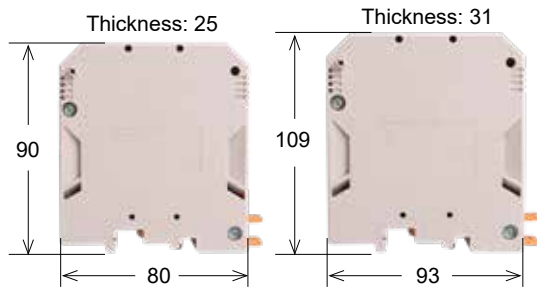
Model	CDU 10N		
	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	65A	AWG6-24
	800V	76A	0.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	10-12mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
	CEW35/2		
End Cover	CEP6		
Cross Jumper	CQV 10/2		CQV 10/3
	CQV 10/4		CQV 10/10
Comb Link	CQB 10/2, CQB 10/3, CQB 10/10		
Warning Cover	WSS10		
Marking Tags	W6 W6Z W6K		

Model	CDU 16		
	Rated Voltage	Rated Current	Wire Size
Technical Data	600V	78A	AWG4-14
	1000V	76A	2.5-16mm <sup>2</sup>
Torque (lb-in)	31		
Clamping Screw	M5		
Stripping length	15-17mm		
Available colors	Beige		
Accessories			
End Bracket	SEW35		
	CEW35/1		
End Cover	CEP2		
Cross Jumper	CQV 16/2		CQV 16/3
	CQV 16/4		
Comb Link	CQB 16/2, CQB 16/3, CQB 6/10		
Warning Cover	WS-16		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

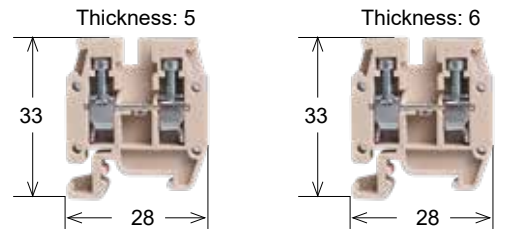
Model	CDU 35		
	Rated Voltage	Rated Current	Wire Size
Technical Data	1000V	114A	AWG2-10
	1000V	125A	4-35mm <sup>2</sup>
Torque (lb-in)	51		
Clamping Screw	M6		
Stripping length	16-18mm		
Available colors	Beige		
Accessories			
End Bracket	SEW35		
	CEW35/1		
End Cover	CEP2		
Cross Jumper	CQV 35/2		CQV 35/3
	CQV 35/4		
Comb Link	CQB 35/2, QB 35/3, CQB 35/10		
Warning Cover	WS-35		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CDU 50		
	Rated Voltage	Rated Current	Wire Size
Technical Data	1000V	150A	AWG1/0-6
	1000V	150A	16-50mm <sup>2</sup>
Torque (lb-in)	53		
Clamping Screw	M6		
Stripping length	25-30mm		
Available colors	Beige		
Accessories			
End Bracket	SEW35		
	CEW35/1		
End Cover	CEP2		
Cross Jumper	CQV 50/2		
	CQV 50/3		
Comb Link	CQB 50/2, CQB 50/3		
Warning Cover	WS-35		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

# Screw Clamp Miniature Terminal Blocks

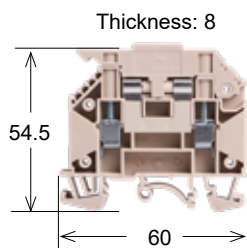


Model	CDU 95			CDU 150		
Technical Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	1000V	230A	AWG4/0-2	600V	275A	AWG2-300
IEC	1000V	232A	35-95mm <sup>2</sup>	1000V	309A	35-150mm <sup>2</sup>
Torque (lb-in)	150			165		
Clamping Screw	M8			M10		
Stripping length	30-35mm			30-40mm		
Available colors	Beige			Beige		
Accessories						
End Bracket	SEW35			CEW35/1		
	CEW35/1					
Comb Link	CQB 95/2, CQB 95/3			CQB 105/2		
Marking Tags	W6 W6Z W6K			W6 W6Z W6K		
	W8 W8Z W8K			W8 W8Z W8K		



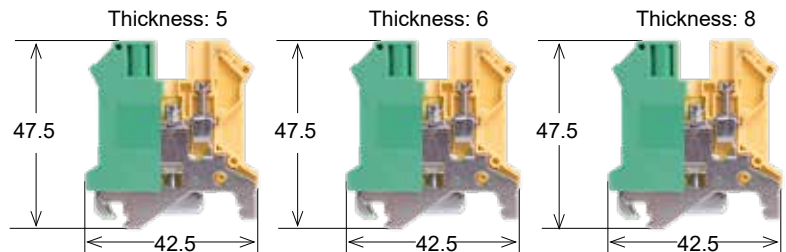
Model	CDU 2.5M			CDU 4M		
Technical Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	300V	20A	AWG12-22	300V	30A	AWG10-22
IEC	400V	24A	0.2-2.5mm <sup>2</sup>	500V	30A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	6mm			6mm		
Available colors	Beige			Beige		
Accessories						
End Bracket	CEW15			CEW15		
End Cover	CEP7			CEP7		
Cross Jumper	CQVM 2.5/2			CQVM 4/2		
	CQVM 2.5/3			CQVM 4/3		
	CQVM 2.5/10			CQVM 4/10		
Comb Link	CQB 2.5/2, CQB 2.5/3			CQB 4/2, CQB 4/3		
Marking Tags	W5 W5Z W5K			W6 W6Z W6K		

## Fuse Holder



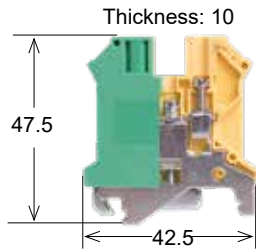
Model	CTR4SI-EN		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	7.5A	AWG10-22
IEC	800V	10A	0.5-4mm <sup>2</sup>
Torque (lb-in)	7.7		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2		
	SEW35		
End Cover	CEP5		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	-		
Marking Tags	W6 W6Z W6K		
	W8 W8Z W8K		

## Screw Clamp Ground Terminal Blocks

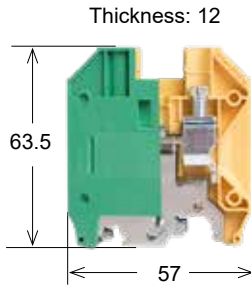


Model	CPE 2.5N	CPE 4N	CPE 6N
UL/CSA	AWG 12-26	AWG 10-26	AWG 8-26
IEC	0.2-2.5mm <sup>2</sup>	0.2-4mm <sup>2</sup>	0.2-6mm <sup>2</sup>
Torque (lb-in)	7	8.5	16
Clamping Screw	M3	M3	M4
Stripping length	10-14mm	10-14mm	12-16mm
Available colors	Green+Yellow	Green+Yellow	Green+Yellow
Accessories			
End Bracket	SEW35	SEW35	SEW35
	CEW35/2	CEW35/2	CEW35/2
Protection Cover	DP1	DP1	DP1
Retaining Plate	AD1	AD1	AD1
Comb Link	CQB 2.5/2, QB 2.5/3, CQB 2.5/10	CQB 4/2, CQB 4/3, CQB 4/10	CQB 6/2, CQB 6/3, CQB 6/10
Marking Tags	W5 W5Z W5K	W6 W6Z W6K	W6 W6Z W6K
	W7 W7Z W7K	W8 W8Z W8K	W8 W8Z W8K

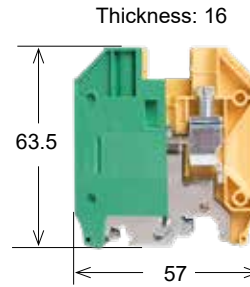




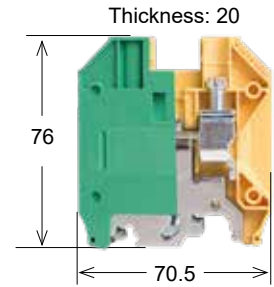
Model	CPE 10N
UL/CSA Wire Size	AWG 6-16
IEC Wire Size	0.5-10mm <sup>2</sup>
Torque (lb-in)	18
Clamping Screw	M4
Stripping length	12-16mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/2
Protection Cover	DP1
Retaining Plate	AD1
Comb Link	CQB 10/2, CQB 10/3, CQB 10/4
Marking Tags	W6 W6Z W6K W8 W8Z W8K



Model	CPE 16
UL/CSA Wire Size	AWG 6-14
IEC Wire Size	2.5-16mm <sup>2</sup>
Torque (lb-in)	35
Clamping Screw	M5
Stripping length	14-18mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	DP1
Retaining Plate	AD2
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

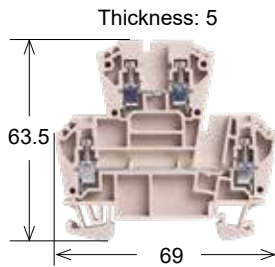


Model	CPE 35
UL/CSA Wire Size	AWG 2-10
IEC Wire Size	4-35mm <sup>2</sup>
Torque (lb-in)	51
Clamping Screw	M6
Stripping length	14-18mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	DP1
Retaining Plate	AD2
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

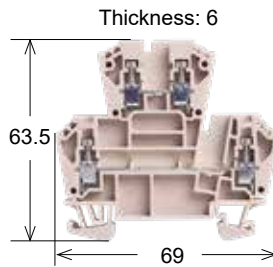


Model	CPE 50
UL/CSA Wire Size	AWG 1/0-6
IEC Wire Size	16-50mm <sup>2</sup>
Torque (lb-in)	70
Clamping Screw	M6
Stripping length	20-25mm
Available colors	Green+Yellow
Accessories	
End Bracket	SEW35 CEW35/1
Protection Cover	-
Retaining Plate	-
Comb Link	-
Marking Tags	W6 W6Z W6K W8 W8Z W8K

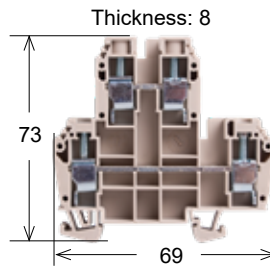
## Screw Clamp Double Level Terminal Blocks



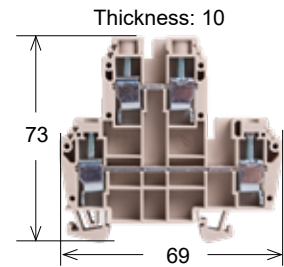
Model	CDK 2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-22
IEC	800V	24A	0.5-2.5mm <sup>2</sup>
Torque (lb-in)	5		
Clamping Screw	M2.6		
Stripping length	6mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP3		
Cross Jumper	CQV 2.5/2 CQV 2.5/3 CQV 2.5/4 CQV 2.5/10		
Comb Link	CQB2.5/2, CQB2.5/3, CQB2.5/10		
Warning Cover	WSS-2.5		
Marking Tags	W5Z W5K		



Model	CDK 4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG10-22
IEC	500V	32A	0.5-4mm <sup>2</sup>
Torque (lb-in)	8		
Clamping Screw	M3		
Stripping length	6mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP3		
Cross Jumper	CQV 4/2 CQV 4/3 CQV 4/4 CQV 4/10		
Comb Link	CQB4/2, CQB4/3, CQB4/10		
Warning Cover	WSS-4		
Marking Tags	W6Z W6K		



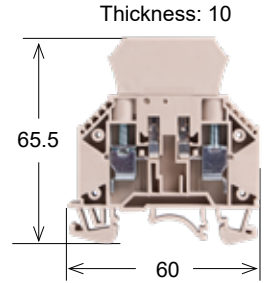
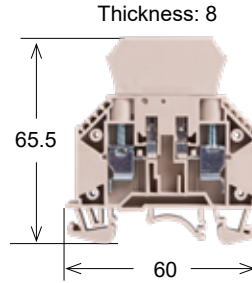
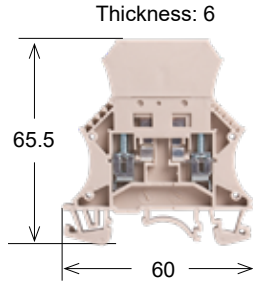
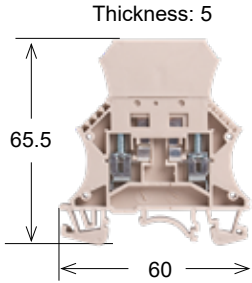
Model	CDK 6		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	41A	AWG 8-20
IEC	500V	50A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP4		
Cross Jumper	CQV 6/2 CQV 6/3 CQV 6/4 CQV 6/10		
Comb Link	CQB6/2, CQB6/3, CQB6/10		
Warning Cover	WSS-6		
Marking Tags	W6Z W6K		



Model	CDK 10		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG 6-16
IEC	500V	76A	1.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP4		
Cross Jumper	CQV 10/2 CQV 10/3 CQV 10/4 CQV 10/10		
Comb Link	CQB10/2, CQB10/3, CQB10/10		
Warning Cover	WSS-10		
Marking Tags	W6Z W6K		



# Diode Terminal Blocks



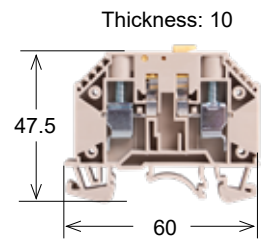
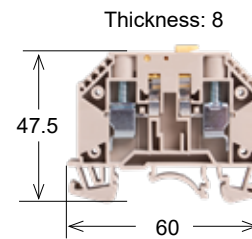
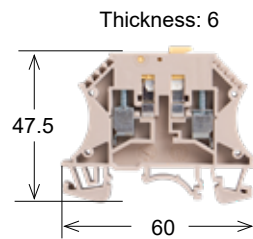
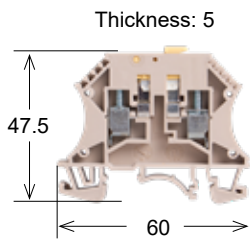
Model	CTR 2.5D		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	2A	AWG12-22
IEC	400V	2A	0.5-2.5mm <sup>2</sup>
Torque (lb-in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Partition	CEP2		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K W7 W7Z W7K		

Model	CTR 4D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	2A	AWG10-22
	800V	2A	0.5-4mm <sup>2</sup>
Torque (lb-in)	6		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Partition	CEP2		
Comb Link	CQB 4/2, CQB 4/3, CQB 4/10		
Diode Plug	CSD4		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 6D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	3A	AWG12-22
	500V	3A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Partition	CEP2		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	CSD6		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 10D		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	3A	AWG12-22
	500V	3A	1.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Partition	CEP2		
Comb Link	CQB 10/2, CQB 10/3, CQB 10/10		
Diode Plug	CSD10		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

# Screw Clamp Disconnect Terminal Blocks



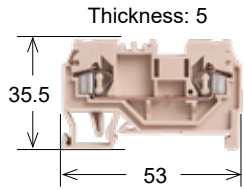
Model	CTR 2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	12A	AWG12-22
IEC	500V	15A	0.5-2.5mm <sup>2</sup>
Torque (lb-in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K W7 W7Z W7K		

Model	CTR 4		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	22A	AWG10-22
	800V	22A	0.5-4mm <sup>2</sup>
Torque (lb-in)	6		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP1		
Comb Link	CQB 4/2, CQB 4/3, CQB 4/10		
Diode Plug	CSD4		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

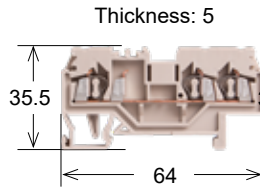
Model	CTR 6		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	24A	AWG8-22
	630V	24A	0.5-6mm <sup>2</sup>
Torque (lb-in)	14		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	CSD6		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Model	CTR 10		
Technical Data	Rated Voltage	Rated Current	Wire Size
	600V	40A	AWG6-22
	630V	40A	1.5-10mm <sup>2</sup>
Torque (lb-in)	19		
Clamping Screw	M4		
Stripping length	12-14mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2 SEW35		
End Cover	CEP5		
Comb Link	CQB 10/2, CQB 10/3, CQB 10/10		
Diode Plug	CSD10		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

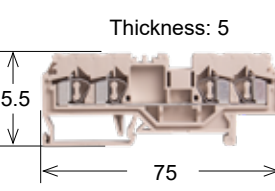
# Spring Clamp Terminal Blocks



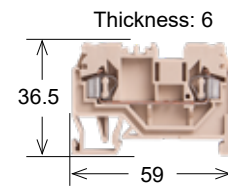
Model	SDU2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP1		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



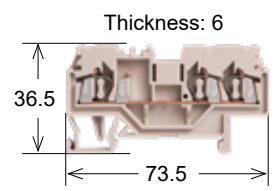
Model	SDU2.5/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP2		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



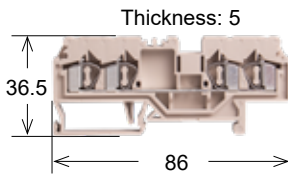
Model	SDU2.5/4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP3		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



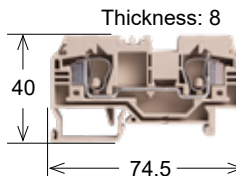
Model	SDU4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP4		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



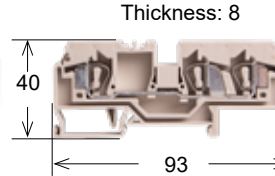
Model	SDU4/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP5		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



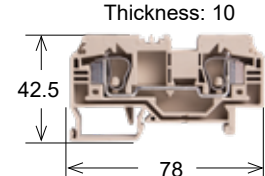
Model	SDU4/4		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm <sup>2</sup>
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP6		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



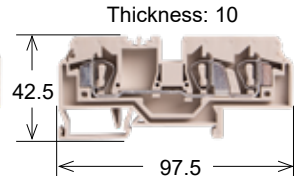
Model	SDU6		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG10-24
IEC	800V	41A	0.2-6mm <sup>2</sup>
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP7		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



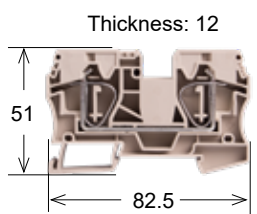
Model	SDU6/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG 10-24
IEC	800V	41A	0.2-6mm <sup>2</sup>
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP8		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



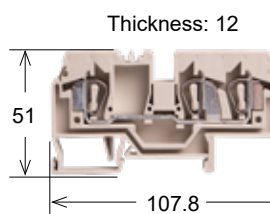
Model	SDU10		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm <sup>2</sup>
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP9		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



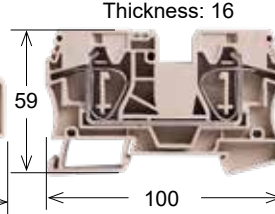
Model	SDU10/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm <sup>2</sup>
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP10		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



Model	SDU16		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	85A	1.5-16mm <sup>2</sup>
Stripping length	16-17mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP12		
Comb Link	SQV16/2		
Marking Tags	W6 W6Z W6K		

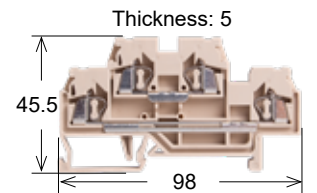


Model	SDU16/3		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	76A	1.5-16mm <sup>2</sup>
Stripping length	16-17mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP13		
Comb Link	SQV16/2		
Marking Tags	W6 W6Z W6K		



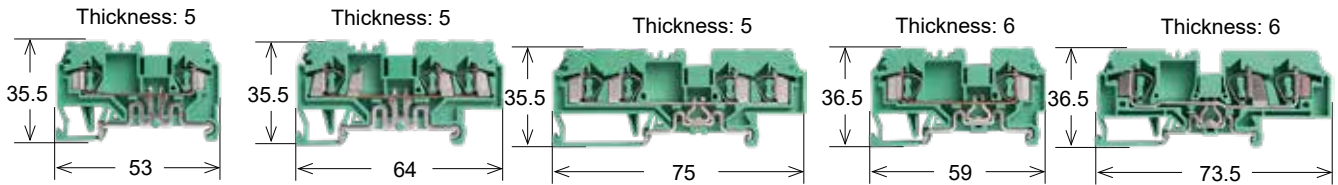
Model	SDU35		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	120A	AWG 2-12
IEC	800V	125A	2.5-35mm <sup>2</sup>
Stripping length	25mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP14		
Comb Link	SQV35/2		
Marking Tags	W6 W6Z W6K		

## Spring Clamp Double Level Terminal Blocks

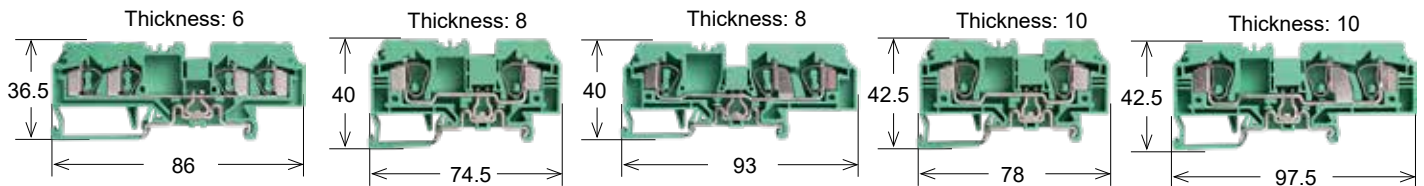


Model	SDK2.5		
Technical Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG 12-28
IEC	800V	24A	0.2-2.5mm <sup>2</sup>
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP11		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		

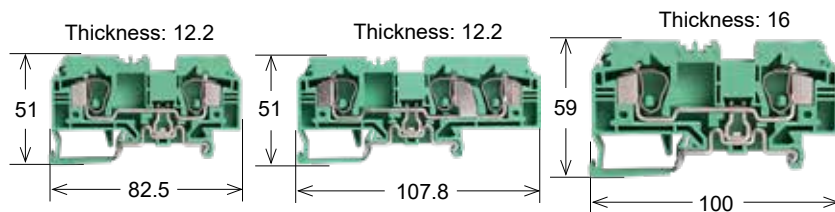
# Spring Clamp Ground Terminal Blocks



Model	SPE2.5	SPE2.5/3	SPE2.5/4	SPE4	SPE4/3
UL/CSA Wire Size	AWG 12-28	AWG 12-28	AWG 12-28	AWG 12-28	AWG 12-28
IEC Wire Size	0.2-2.5mm <sup>2</sup>	0.2-2.5mm <sup>2</sup>	0.2-2.5mm <sup>2</sup>	0.2-4mm <sup>2</sup>	0.2-4mm <sup>2</sup>
Stripping length	8-9mm	8-9mm	8-9mm	9-10mm	8-9mm
Available colors	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow
Accessories					
End Bracket	SEW35	SEW35	SEW35	SEW35	SEW35
End Cover	SEP1	SEP2	SEP3	SEP4	SEP5
Comb Link	SQV2.5/2, SQV2.5/3	SQV2.5/2, SQV2.5/3	SQV2.5/2, SQV2.5/3	SQV4/2, SQV4/3	SQV4/2, SQV4/3
Marking Tags	W5 W5Z W5K	W5 W5Z W5K	W5 W5Z W5K	W6 W6Z W6K	W6 W6Z W6K



Model	SPE4/4	SPE6	SPE6/3	SPE10	SPE10/3
UL/CSA Wire Size	AWG 12-28	AWG 10-24	AWG 10-24	AWG 8-24	AWG 8-24
IEC Wire Size	0.2-4mm <sup>2</sup>	0.2-6mm <sup>2</sup>	0.2-6mm <sup>2</sup>	0.2-10mm <sup>2</sup>	0.2-10mm <sup>2</sup>
Stripping length	9-10mm	12-13mm	12-13mm	15-16mm	15-16mm
Available colors	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow
Accessories					
End Bracket	SEW35	SEW35	SEW35	SEW35	SEW35
End Cover	SEP6	SEP7	SEP8	SEP9	SEP10
Comb Link	SQV4/2, SQV4/3	SQV6/2, SQV6/3	SQV6/2, SQV6/3	SQV10/2, SQV10/3	SQV10/2, SQV10/3
Marking Tags	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K



Model	SPE16	SPE16/3	SPE35
UL/CSA Wire Size	AWG 4-16	AWG 4-16	AWG 2-12
IEC Wire Size	1.5-16mm <sup>2</sup>	1.5-16mm <sup>2</sup>	2.5-35mm <sup>2</sup>
Stripping length	16-17mm	16-17mm	25mm
Available colors	Green	Green	Green
Accessories			
End Bracket	SEW35	SEW35	SEW35
End Cover	SEP12	SEP12	SEP14
Comb Link	SQV16/2	SQV16/2	SQV35/2
Marking Tags	W6	W6	W6

# Accessories

## Terminal Rails



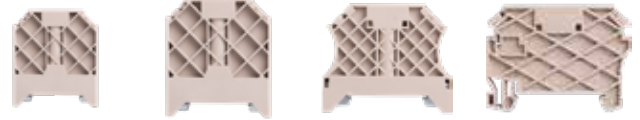
TS-37	TS-31	KTB2-CHB	TS-15
35 x 7.5mm	35 x 15mm	35 x 7.5mm	15 x 5.5 mm
Steel	Steel	Aluminum	Steel

## Protection Cover



DP1
CDU2.5 CDU4 CDU6 CDU10 CDU16 CDU35
CDK2.5 CDK4
CDE2.5 CDE4 CDE6 CDE10 CDE16 CDE35
CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D

## End Brackets (D X W X H)



CEW15	CEW35/1	CEW35/2	SEW35
8 X 28 X 30.7	12 X 56 X 63	8 X 56 X 47	6 X 56 X 42
CDU2.5M CDU4M	CDU16 CDU35 CDU50 CDU95	CDU2.5N CDU4N CDU6N CDU10N	CDK2.5 CDK4 CDK6 CDK10
	CPE16 CPE35 CPE50	CDK2.5 CDK4 CDK6 CDK10	CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D CTR4SI/EN
		CTR2.5 CTR2.5D CTR4 CTR4D CTR6 CTR6D CTR10 CTR10D CTR4SI/EN	SPE2.5 SPE2.5/3 SPE2.5/4 SPE4 SPE4/3 SPE4/4 SPE6 SPE6/3 SPE10 SPE10/3
			SDU2.5 SDU2.5/3 SDU2.5/4 SDU4 SDU4/3 SDU4/4 SDU6 SDU6/3 SDU10 SDU10/3

## End Covers/Partitions (W X H)



CEP1	CEP2	CEP3	CEP4	CEP5	CEP6	CEP7
55.5 X 35.5	55.5 X 51	69 X 51.5	78 X 61	56.5 X 35.5	40 X 36	27.5 X 26
CTR2.5 CTR2.5D CTR4 CTR4D	CDU16 CDU35 CTR2.5 CTR2.5D CTR4 CTR4D	CDK2.5 CDK4	CDK6 CDK10	CTR2.5 CTR4 CTR6 CTR6D CTR10 CTR10D	CDU2.5N CDU4N CDU6N CDU10N	CDU2.5M CDU4M

## End Plates



SEP1	SEP2	SEP3	SEP4	SEP5	SEP6	SEP7	SEP8	SEP9	SEP10	SEP11	SEP12
SDU2.5 SPE2.5	SDU2.5/3 SPE2.5/3	SDU2.5/4 SPE2.5/4	SDU4 SPE4	SDU4/3 SPE4/3	SDU4/4 SPE4/4	SDU6 SPE6	SDU6/3 SPE6/3	SDU10 SPE10	SDU10/3 SPE10/3	SDK2.5	SDU16

## Warning Covers



WS-16	WS-35	WSS-2.5
CDU16	CDU35	CDK2.5
WSS-4	WSS-6	WSS-10
CDK4	CDK6	CDK10



## Diode Plugs

Type	CSD2.5	CSD4	CSD6	CSD10
Electric Rating	2A600V	2A600V	3A600V	3A600V
Terminal Type	CTR2.5 CTR2.5D	CTR4 CTR4D	CTR6 CTR6D	CTR10 CTR10D

## Retaining Plate



AD 1	AD 2
3 X 56.5 X 58	3.5 X 56.5 X 74
CDU2.5 CDU4 CDU6 CDU10	CDU16 CDU35
CPE16 CPE35	CPE16 CPE35
CPE2.5 CPE4 CPE6 CPE10	CTR2.5D CTR4D CTR6D STR10D
CTR2.5 CTR4 CTR6 CTR10	CTK2.5 CTK4

## Cross Jumpers



Type	CQV-2.5	CQV-4	CQV-6	CQV-10	CQV-16	CQV-35	CQV-50	CQV-95
Pole	2, 3, 10	2, 3, 4, 10	2, 3, 10	2, 3, 10	2, 3, 4	2, 3, 4	2, 3	-
Terminal Type	CDU 2.5 CDK 2.5	CDU 4 CDK 4	CDU 6 CDK 6	CDU 10 CDK 10	CDU16	CDU35	CDU50	CDU95



## Comb Links

Type	CQB-2.5	CQB-4	CQB-6	CQB-10	CQB-16	CQB-35	CQB-50	CQB-95	
Poles	2, 3, 10	2, 3, 4, 10	2, 3, 10	2, 3, 10	2, 3, 10	2, 3, 10	2, 3	2, 3	
Terminal Type	CDU 2.5 CPE 2.5 CDK 2.5 CTR 2.5	CDU 4 CPE 4 CDK 4 CTR 4 CTR 4D	CDU 6 CPE 6 CDK 6 CTR 6 CTR 6D	CDU 10 CPE 10 CDK 10 CTR 10 CTR 10D		CDU16 CPE16	CDU35 CPE35	CDU50 CPE50	CDU95 CPE95



Type	SQV-2.5	SQV-4	SQV-6	SQV-10
Poles	2, 3	2, 3	2, 3	2, 3
Terminal Type	SDU2.5 SDU2.5/3 SDU2.5/4 SDK2.5	SPE2.5 SPE2.5/3 SPE2.5/4	SDU4 SDU4/3 SDU4/4	SPE4 SPE4/3 SPE4/4
			SDU6/6 SEU6/3	SPE6/3 SPE6/3
			SDU10 SDU10/3	SPE10 SPE6/3



W-6

## Blank Marking Tags

Model	Size (mm)	PCS/Sheet	Number of sheets/pkg	Compatible Blocks
W-4	4.5 X 10	40p/s	10	SDU/SPE 2.5 ~ 10
W-5	5 X 6	50p/s	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR/CSD 2.5
W-6	6 X 6	50p/s	10	CDU/CDK/CPE/CTR/CSD 4 ~ 10
W-7	5 X 12	40p/s	10	CDU/CPE/CTR 2.5
W-8	6 X 12	40p/s	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5



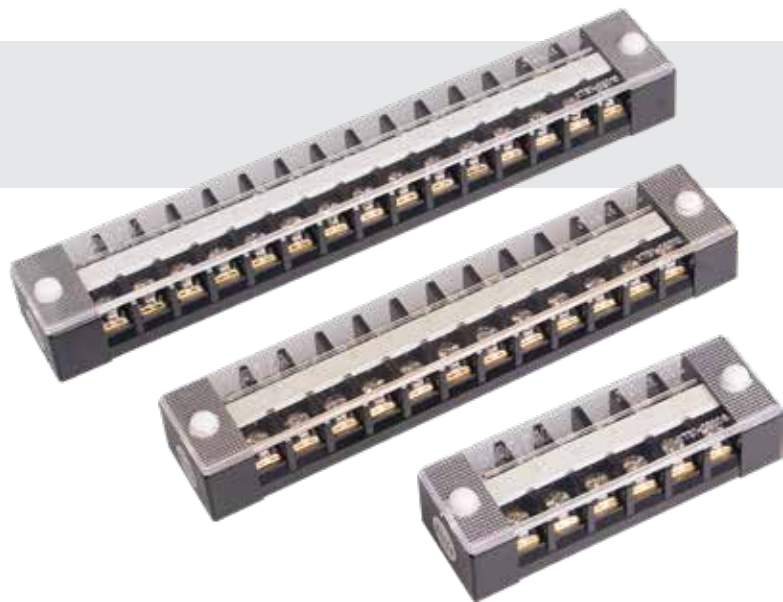
W5K-1/50

## Legend Marking Tags

Model	Size (mm)	Legend	Number of sheets/pkg	Compatible Blocks
W4K-1/40	4.5 X 10	1 to 40	10	SDU/SPE 2.5 ~ 10
W4K-41/80	4.5 X 10	41 to 80	10	SDU/SPE 2.5 ~ 10
W4K-A/Z	4.5 X 10	A to Z	10	SDU/SPE 2.5 ~ 10
W5K-1/50	5 X 6	1 to 50	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W5K-51/100	5 X 6	51 to 100	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W5K-A/Z	5 X 6	A to Z	10	SDU/SPE/SDK 2.5 CDU/CDK/CPE/CTR 2.5
W6K-1/50	6 X 6	1 to 50	10	CDU/CDK/CPE/CTR 4 ~ 10
W6K-51/100	6 X 6	51 to 100	10	CDU/CDK/CPE/CTR 4 ~ 10
W6K-A/Z	6 X 6	A to Z	10	CDU/CDK/CPE/CTR 4 ~ 10
W7K-1/40	5 X 12	1 to 40	10	CDU/CPE/CTR 2.5
W7K-41/80	5 X 12	41 to 80	10	CDU/CPE/CTR 2.5
W7K-A/Z	5 X 12	A to Z	10	CDU/CPE/CTR 2.5
W8K-1/40	6 X 12	1 to 40	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5
W8K-41/80	6 X 12	41 to 80	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5
W8K-A/Z	6 X 12	A to Z	10	CDU/CPE/CTR 4 ~ 10 SDU/SPE 2.5



W7K-A/Z



# KTB1 Series

Barrier Terminal Blocks



## Ordering Information

KTB1 - ① ②

### 10 & 30A

① Rated Current	<b>010</b>	10A	<b>030</b>	30A
② Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles
	<b>06</b>	6 poles	<b>10</b>	10 poles

### 20A

Rated Current	<b>020</b>		20A	
Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles
	<b>06</b>	6 poles	<b>10</b>	10 poles
	<b>12</b>	12 poles	<b>15</b>	15 poles
	<b>20</b>	20 poles		

### 60 - 600A

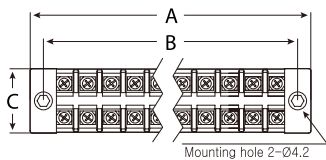
① Rated Current	<b>060</b>	60A	<b>100</b>	100A
	<b>150</b>	150A	<b>200</b>	200A
	<b>300</b>	300A	<b>400</b>	400A
	<b>500</b>	500A	<b>600</b>	600A
② Number of Poles	<b>03</b>	3 poles	<b>04</b>	4 poles

## General Specification

Rated Voltage	Max. 600VAC	
Insulation Resistance	Min. 100MΩ	
Dielectric Strength	2,500VAC/Min.	
Material	Body	Flame retardant PC
	Cover	PC (clear)
	Terminal	1st grade brass
	Name Plate	PVC (Pearl white)

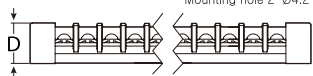
## Dimensions

unit:mm

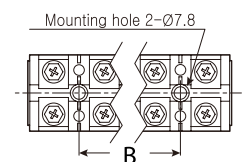


KTB1-010 ~ KTB1-030

Model	A				B				C				D			
	03	04	06	10	03	04	06	10	03	04	06	10	03	04	06	10
KTB1-010	48	57.5	76.5	115	37	46.5	65.5	104	24	24	24	24	17	17	17	17
KTB1-030	67.5	81	108	162	52.5	66	93	147	35	35	35	35	26	26	26	26



Model	A				B				C				D			
	03	04	06	10	03	04	06	10	03	04	06	10	03	04	06	10
KTB1-020	56	68	91	139	44.5	56	79	125	30	30	30	30	19.5	19.5	19.5	19.5
	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-	<b>12</b>	<b>15</b>	<b>20</b>	-
	163	198	254.5	-	147	185.5	242	-	30	30	30	-	19.5	19.5	19.5	-

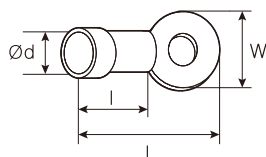


KTB1-060 ~ KTB1-600

Model	A		B		C		D	
	03	04	03	04	03	04	03	04
KTB1-060	85.8	114.5	28.5	57	43	43	31.5	31.5
KTB1-100	102.5	136	34	68	54.5	54.5	36	36
KTB1-150	115	153.5	38	76	66	66	39	39
KTB1-200	132.5	176	43.5	87	72	72	44	44
KTB1-300	165	220	55	110	90	90	51.5	51.5
KTB1-400	165	220	55	110	90	90	51.5	51.5
KTB1-500	206	275	68.5	137	100	100	70	70
KTB1-600	206	275	68.5	137	100	100	70	70

## Connection Terminal Specification

unit:mm



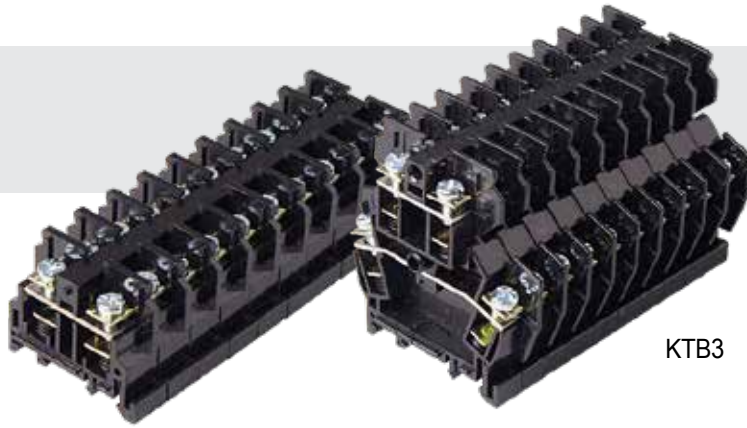
Model	KTB1-010	KTB1-020	KTB1-030	KTB1-060	KTB1-100	KTB1-150	KTB1-200	KTB1-300	KTB1-400	KTB1-500	KTB1-600
Terminal Bolt	M3.0	M4.0		M6.0	M7.0	M8.0		M10.0		M12.0	
W	6.5	8.0	10.2	14.5	19.5	21.5	24.5	35		44.5	
L	20.6	21.5	26.5	35.5	45.6	50.5		55		65.5	
l	10.0		14.5		20.0		26		65.5		
d	Ø3.1	Ø4.1		Ø6.1	Ø8.1	Ø10.1					

# KTB2/3 Series

Modular Barrier Terminal Blocks



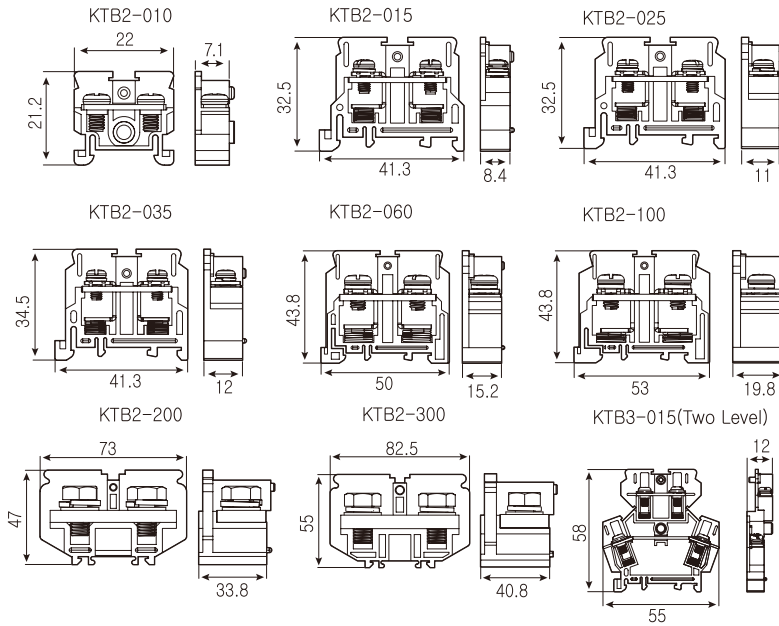
KTB2



KTB3

## Dimensions

unit:mm



## Ordering Information

KTB ① - ②

① Description	2	Single level		
	3*	Double level		
② Rated Current	<b>010</b>	10A	<b>015*</b>	15A
	<b>025</b>	25A	<b>035</b>	35A
	<b>060</b>	60A	<b>100</b>	100A
	<b>200</b>	200A	<b>300</b>	300A

\* KTB3 double level terminal block has only 15A model.

## General Specification

Rated Voltage	Max. 600VAC
Insulation Resistance	Min. 100MΩ
Dielectric Strength	2,500VAC/Min.

## Accessories

### Jumper



KTB2-S2506

<b>KTB2-015</b>	KTB2-S1512K
<b>KTB2-025</b>	KTB2-S2506K
<b>KTB2-035</b>	KTB2-S3508K

### Stoppers



KTB2-STA

<b>15mm</b>	STA
<b>35mm</b>	STB
<b>35mm (plastic)</b>	STC



KTB2-STB



KTB2-STC

### Separators

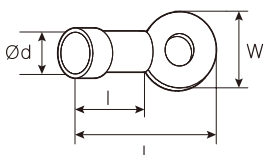


KTB2-A10      KTB2-A35      KTB3-A15

<b>KTB2-010</b>	KTB2-A10	<b>KTB2-015</b>	KTB2-A15
<b>KTB2-025</b>	KTB2-A25	<b>KTB2-035</b>	KTB2-A35
<b>KTB2-060</b>	KTB2-A60	<b>KTB2-100</b>	KTB2-A100
<b>KTB2-200</b>	KTB2-A200	<b>KTB2-300</b>	KTB2-A300
<b>KTB3-015</b>	KTB3-A15		

## Connection Terminal Specification

unit:mm



Model	KTB2-010	KTB2-015	KTB2-025	KTB2-035	KTB2-060	KTB2-100	KTB2-200	KTB2-300	KTB3-015
Terminal Bolt	M3.0	M3.5	M4.0		M6.0		M10.0	M12.0	M3.5
W	6.6	6.8	8.7	9.6	12.4	16.5	24.5	29	6.8
L	20.0		27.0		30.0	45.5		55.5	20.0
l	8.0		14.0		14.5	20.5		25.5	8.0
d	Ø3.1	Ø3.6	Ø4.1		Ø6.1		Ø10.1	Ø12.1	Ø3.6





# KF Series

Fuse Holders

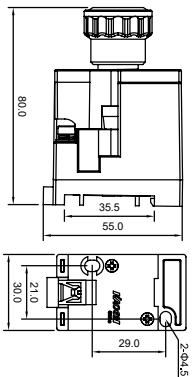


## Ceramic Fuse Holders

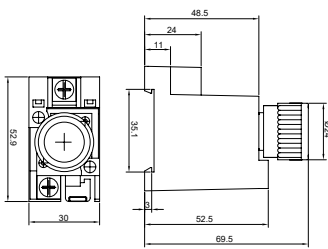
Part Number	KF-30L	KF-30B	KF301	KF-30C	KF-30CL	KF-30CL-B	KF-32L	KF-32K	KF-63K
Operating Mechanism	-Fuse short indicator lamp -Fiber-reinforced nylon resin	Fiber-reinforced nylon resin	Fire retardant(VO) ABS	High density	- Fuse short indicator lamp - Fiber-reinforced nylon resin - Clip type structure for easy installation - Name plate	Din-Rail Bracket	-Fuse short indicator lamp -Fiber-reinforced nylon resin	-Fuse short indicator lamp -Fiber-reinforced nylon resin	-Fuse short indicator lamp -Fiber-reinforced nylon resin
Rated Current	Max. 30A	Max. 30A	Max. 7A	Max. 30A	Max. 30A	Max. 30A	Max. 32A	Max. 32A	Max. 63A
Material	Nylon	Nylon	Nylon	Ceramic	Ceramic Nylon	Nylon	Nylon	Nylon	Nylon
Fuse size	Ø12.5×50mm					-	Ø10×38mm		Ø14×51mm
Applied fuse	KFS-A					-	KFS-B		KFS-C
Rated Voltage	600V					-	690V		
Certification	CE						CE,UL	CE	
Ambient Temperature	-25°C + 60°C (with no icing)								
Ambient Humidity	35% ~ 85% RH (non - condensing)								

## Dimensions

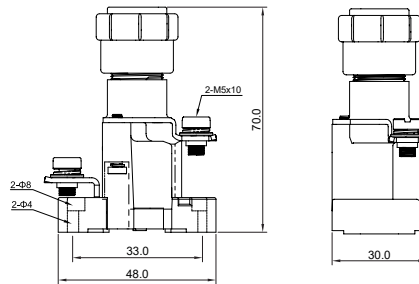
KF-30L KF-30B



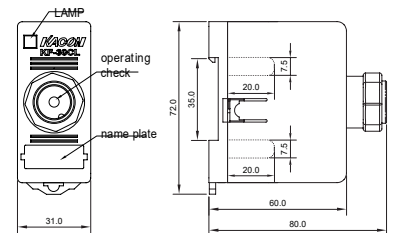
KF301



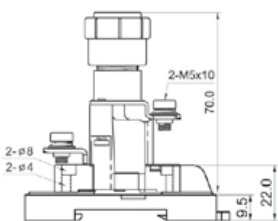
KF-30C



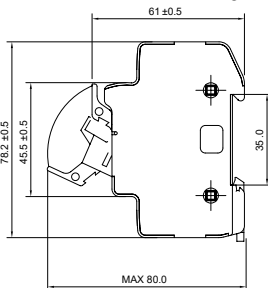
KF-30CL



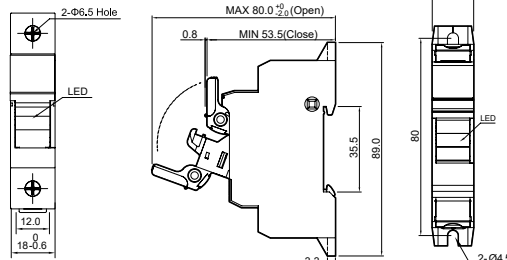
KF-30C-B



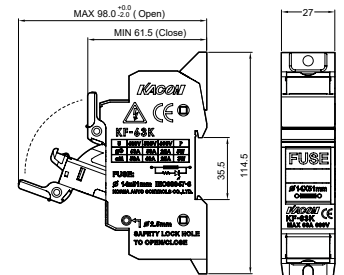
KF-32L



KF-32K



KF-63K



# Glass Tube Fuse Holders

## Ordering Information



KF - ① ②

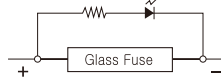
① Description	<b>15A</b>	15A(AC)	<b>30A</b>	30A (AC)*
	<b>10D</b>	10A(DC)	<b>20D</b>	20A (DC)*
② Number of Poles	<b>1</b>	1 Pole		
	<b>2</b>	2 Poles		
	<b>3</b>	3 Poles		

\* 1 Pole only

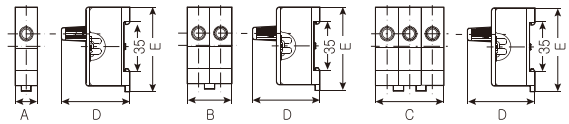
## General Specification

Model	Fuse	Material	Tightening Torque
KF-15A	Ø6X30mm	Cover : PC Body : PBT	0.8N-m (8.16kgf-cm)
KF-30A	Ø10X38mm		
KF-10D	Ø6X30mm		
KF-20D	Ø10X38mm		

## Diagram



## Dimensions (unit:mm)



1 Pole	2 Poles	3 Poles
15A AC 30A AC 10A DC 20A DC	15A AC 10A DC	15A AC 10A DC

Current	10/15A	20/30A
A	16	21
B	32	-
C	48	-
D	48	60
E	60	75

# Ceramic Fuse CE

## Ordering Information

KFS - ① ②

① Size	A	Ø12.5×50mm	B	Ø10×38mm								
	C	Ø14×51mm										
② Rated Current	<b>01</b>	1A	<b>02</b>	2A	<b>03</b>	3A*	<b>04</b>	4A	<b>05</b>	5A*	<b>06</b>	6A
	<b>07</b>	7A*	<b>08</b>	8A	<b>10</b>	10A	<b>12</b>	12A	<b>15</b>	15A*	<b>16</b>	16A
	<b>25</b>	25A	<b>30</b>	30A*	<b>32</b>	32A	*Japanese standard					

## General Specification

Rated Voltage	500VAC/DC		
Rated short-circuit strength	A : 50KA	B : 80KA	C : 80KA

\* It is recommended to use 1.6 times or more of the rated operating current.

## Product selection Guide

Size	Rated Current	Part Number	Rated Current	Part Number	Rated Current	Part Number	Rated Current	Part Number
Ø12.5×50mm	2A	KFS-A02	5A	KFS-A05	10A	KFS-A10	20A	KFS-A20
	3A	KFS-A03	6A	KFS-A06	15A	KFS-A15	25A	KFS-A25
	4A	KFS-A04	7A	KFS-A07	16A	KFS-A16	30A	KFS-A30
	1A	KFS-B01	5A	KFS-B05	10A	KFS-B10	20A	KFS-B20
Ø10×38mm	2A	KFS-B02	6A	KFS-B06	12A	KFS-B12	25A	KFS-B25
	3A	KFS-B03	7A	KFS-B07	15A	KFS-B15	30A	KFS-B30
	4A	KFS-B04	8A	KFS-B08	16A	KFS-B16	32A	KFS-B32
	2A	KFS-C02	10A	KFS-C10	25A	KFS-C25	-	-
Ø14×51mm	4A	KFS-C04	12A	KFS-C12	32A	KFS-C32	-	-
	6A	KFS-C06	16A	KFS-C16	-	-	-	-
	8A	KFS-C08	20A	KFS-C20	-	-	-	-

## Dimensions

(unit:mm)

Part Number	A
KFS-A02 ~ A07	Ø6 ± 0.5
KFS-A10	Ø8 ± 0.5
KFS-A15 ~ A30	Ø10 ± 1.0

# Switch Boxes

Plastic, Screw Type, Knock-out Base



## Specifications

Protection Level	Water proof: IP66/67, Impact Test: IK07/08
Technical	Smooth sidewalls
	Standard or Quick turn screws
	Integrated cover retainer
Certification	UL508A (Polycarbonate models)
Color	Light gray
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Dimensions

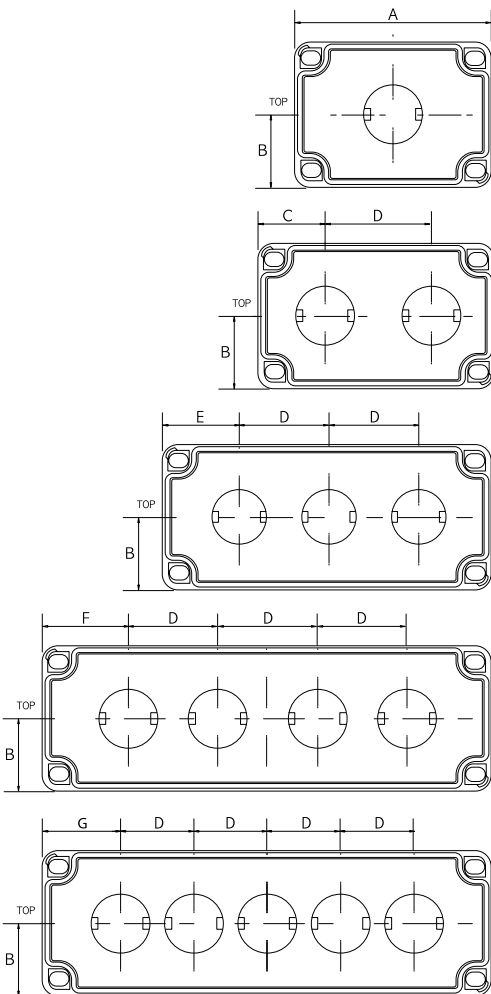
(unit : mm)

Cat. No.	Hole	A	B	C	D	E	F	G
BC-①GS-2201	1	110	40	-	-	-	-	-
BC-①GS-2202	2	130	40	40	50	-	-	-
BC-①GS-2203	3	180	40	-	50	40	-	-
BC-①GS-2204	4	250	40	-	50	-	50	-
BC-①GS-2205	5	250	40	-	42	-	-	42
BC-①GS-3001	1	110	40	-	-	-	-	-
BC-①GS-3002	2	130	40	40	50	-	-	-
BC-①GS-3003	3	180	40	-	50	40	-	-
BC-①GS-3004	4	250	40	-	50	-	50	-

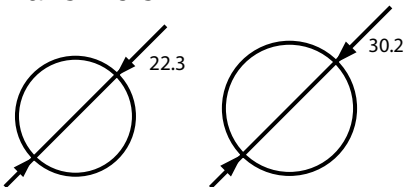
① A : ABS / C : Polycarbonate

## Part Numbers and Sizes

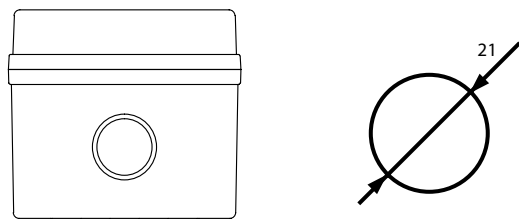
MODEL		SIZE (including cover)		Panel Hole $\phi$	# of Hole
ABS	Polycarbonate	W * L * H (unit : mm)	W * L * H (unit : inch)		
BC-AGS-2201	BC-CGS-2201	80x110x70	3.15x4.33x2.76	22.3	1
BC-AGS-2202	BC-CGS-2202	80x130x70	3.15x5.12x2.76	22.3	2
BC-AGS-2203	BC-CGS-2203	80x180x70	3.15x7.09x2.76	22.3	3
BC-AGS-2204	BC-CGS-2204	80x250x70	3.15x9.84x2.76	22.3	4
BC-AGS-2205	BC-CGS-2205	80x250x70	3.15x9.84x2.76	22.3	5
BC-AGS-3001	BC-CGS-3001	80x110x70	3.15x4.33x2.76	30.2	1
BC-AGS-3002	BC-CGS-3002	80x130x70	3.15x5.12x2.76	30.2	2
BC-AGS-3003	BC-CGS-3003	80x180x70	3.15x7.09x2.76	30.2	3
BC-AGS-3004	BC-CGS-3004	80x250x70	3.15x9.84x2.76	30.2	4



### Panel hole



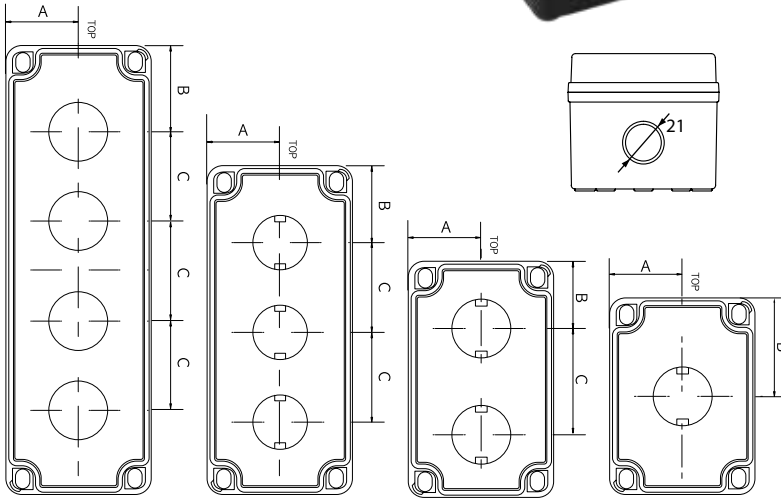
### Knock-out hole





# Color Switch Boxes

Plastic, Screw Type, Knock-out Base



## Specifications

Protection Level	Water proof: IP66/67, Impact Test: IK07/08
Technical	Smooth sidewalls
	Standard or Quick turn screws
	Integrated cover retainer
Color	Gray or yellow cover with black base
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
Flammability Rating	ABS: UL94-HB

## Size and Part Numbers

(unit : mm)

SIZE		MODELS		Dimensions							
W1xL1xH1		Grey Cover Black Base	Yellow Cover Black Base	Inner Height	Panel Hole Ø	No of Holes	A	B	C		
mm	inch										
80x110x70	3.15x4.33x2.76	BC-AGB-081107-2201	BC-AYB-081107-2201	57	22.3	1	40	55	-		
80x110x85	3.15x4.33x3.35	BC-AGB-081108-2201	BC-AYB-081108-2201	72							
80x130x70	3.15x5.12x2.76	BC-AGB-081307-2202	BC-AYB-081307-2202	57				2	40	40	50
80x130x85	3.15x5.12x3.35	BC-AGB-081308-2202	BC-AYB-081308-2202	72							
80x180x70	3.15x7.09x2.76	BC-AGB-081807-2203	BC-AYB-081807-2203	57		3	40	50	50		
80x180x85	3.15x7.09x3.35	BC-AGB-081808-2203	BC-AYB-081808-2203	72							
80x250x70	3.15x9.84x2.76	BC-AGB-082507-2204	BC-AYB-082507-2204	57		4	40	50	50		
80x250x85	3.15x9.84x3.35	BC-AGB-082508-2204	BC-AYB-082508-2204	72							
80x110x70	3.15x4.33x2.76	BC-AGB-081107-2501	BC-AYB-081107-2501	57	25.2	1	40	55	-		
80x110x85	3.15x4.33x3.35	BC-AGB-081108-2501	BC-AYB-081108-2501	72							
80x130x70	3.15x5.12x2.76	BC-AGB-081307-2502	BC-AYB-081307-2502	57				2	40	40	50
80x130x85	3.15x5.12x3.35	BC-AGB-081308-2502	BC-AYB-081308-2502	72							
80x180x70	3.15x7.09x2.76	BC-AGB-081807-2503	BC-AYB-081807-2503	57		3	40	50	50		
80x180x85	3.15x7.09x3.35	BC-AGB-081808-2503	BC-AYB-081808-2503	72							
80x250x70	3.15x9.84x2.76	BC-AGB-082507-2504	BC-AYB-082507-2504	57		4	40	50	50		
80x250x85	3.15x9.84x3.35	BC-AGB-082508-2504	BC-AYB-082508-2504	72							
80x110x70	3.15x4.33x2.76	BC-AGB-081107-3001	BC-AYB-081107-3001	57	30	1	40	55	-		
80x110x85	3.15x4.33x3.35	BC-AGB-081108-3001	BC-AYB-081108-3001	72							
80x130x70	3.15x5.12x2.76	BC-AGB-081307-3002	BC-AYB-081307-3002	57				2	40	40	50
80x130x85	3.15x5.12x3.35	BC-AGB-081308-3002	BC-AYB-081308-3002	72							
80x180x70	3.15x7.09x2.76	BC-AGB-081807-3003	BC-AYB-081807-3003	57		3	40	50	50		
80x180x85	3.15x7.09x3.35	BC-AGB-081808-3003	BC-AYB-081808-3003	72							
80x250x70	3.15x9.84x2.76	BC-AGB-082507-3004	BC-AYB-082507-3004	57		4	40	55	50		
80x250x85	3.15x9.84x3.35	BC-AGB-082508-3004	BC-AYB-082508-3004	72							



# MB Series

Aluminum Switch Boxes

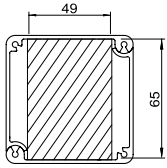
## Ordering Information

MB 57 - S - 01 - AA  
 ① ② ③ ④

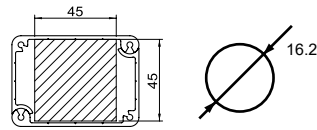
① Box Size	<b>57</b>	50mm X 70mm (Ø16mm hole)
	<b>70</b>	70mm X 70mm (Ø22mm hole)
① Box Style	<b>S</b>	Square Side
	<b>T</b>	Triangular Side (MB70 only)
③ Number of Holes	<b>01</b>	1 Hole
	<b>02</b>	2 Holes
	<b>03</b>	3 Holes
	<b>04</b>	4 Holes
	<b>05</b>	5 Holes
④ Box Cap	<b>AA</b>	Standard

## Mounting Effective Dimension

MB70 - S



MB57

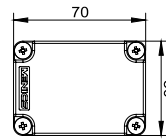


## Dimensions

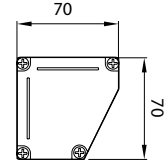
(unit: mm)

	MB57 AA		MB70 AA	
	L	P	L	P
1 Hole	86	-	86	-
2 Holes	101	25	136	50
3 Holes	126	50	186	100
4 Holes	151	75	236	150
5 Holes	176	100	286	200

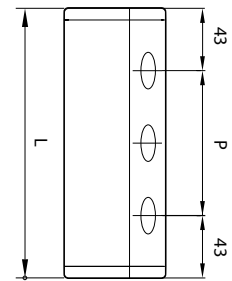
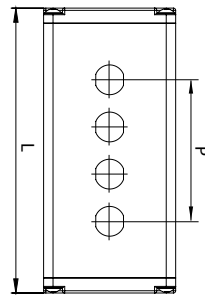
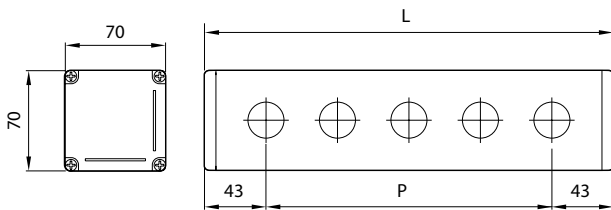
MB57 - S - AA



MB70 - T - AA



MB70 - S - AA

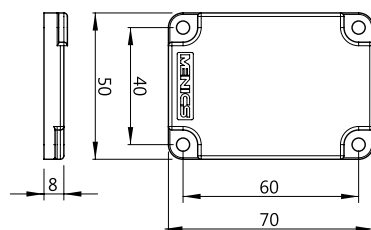


## Box Cap Options

(unit: mm)

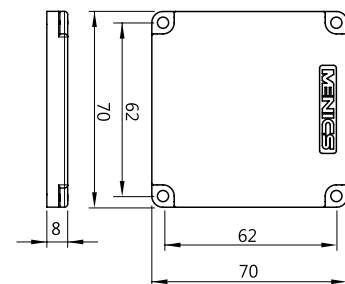
MB57 Series

CL57-A



MB70 Series

CL70-A



• **Note** •

A series of horizontal dotted lines for writing notes, contained within a rounded rectangular border.

# S-Series (Small)

Screw Bolt Type Small Size Plastic Enclosures



- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339 (polycarbonate models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)

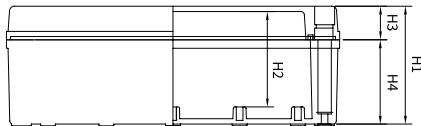
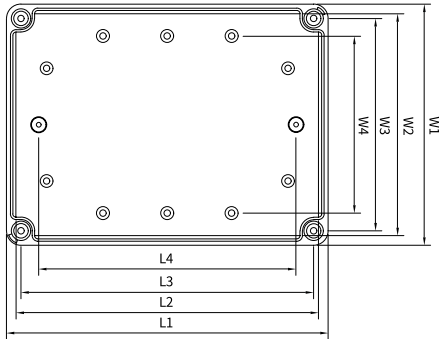


## Specifications

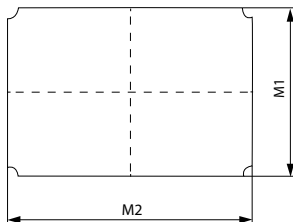
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions



BACK PANEL



## Accessories

CBG28- (for ABS)  
CBB28- (for PC)



Enclosure Sizes							Back* Panel (M1xM2)
Outside Dimensions				Inside Dimensions		mm	
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)			
mm	inch	mm	mm	mm	inch		
50x65x45	1.97x2.56x1.77	15	30	42x57x33	1.65x2.24x1.30	(40x55)	
50x65x55	1.97x2.56x2.17	15	40	42x57x43	1.65x2.24x1.69	(40x55)	
65x95x55	2.56x3.74x2.17	15	40	55x85x41	2.17x3.35x1.61	(54x84)	
75x105x55	2.95x4.13x2.17	15	40	65x95x42	2.56x3.74x1.65	(65x93)	
80x80x60	3.15x3.15x2.36	15	45	70x70x47	2.76x2.76x1.85	(68x68)	
80x110x45	3.15x4.33x1.77	20	25	70x100x32	2.76x3.94x1.26	65x95	
80x110x70	3.15x4.33x2.76	20	50	70x103x57	2.76x4.06x2.24	65x95	
80x110x85	3.15x4.33x3.35	20	65	70x103x72	2.76x4.06x2.83	65x95	
80x110x100	3.15x4.33x3.94	35	65	70x103x87	2.76x4.06x3.43	65x95	
80x130x70	3.15x5.12x2.76	20	50	70x123x57	2.76x4.84x2.24	65x115	
80x130x85	3.15x5.12x3.35	35	50	70x123x72	2.76x4.84x2.83	65x115	
82x162x55	3.23x6.38x2.17	15	40	75x155x42	2.95x6.10x1.65	68x148	
82x162x85	3.23x6.38x3.35	15	70	75x155x72	2.95x6.10x2.83	68x148	
80x180x70	3.15x7.09x2.76	20	50	69x169x57	2.72x6.65x2.24	65x165	
80x180x85	3.15x7.09x3.35	35	50	69x169x72	2.72x6.65x2.83	65x165	
<b>NEW</b> 80x200x70	3.15x7.87x2.76	20	50	67x189x56	2.64x7.44x2.20	185x65	
80x250x70	3.15x9.84x2.76	20	50	67x235x56	2.64x9.25x2.20	65x235	
80x250x85	3.15x9.84x3.35	35	50	67x235x72	2.64x9.25x2.83	65x235	
100x100x75	3.94x3.94x2.95	20	55	88x88x62	3.46x3.46x2.44	82x82	
100x100x100	3.94x3.94x3.94	20	80	88x88x87	3.46x3.46x3.43	82x82	
100x185x70	3.94x7.28x2.76	15	54	92x177x56	3.62x6.97x2.20	(80x164)	
100x200x70	3.94x7.87x2.76	15	54	89x189x56	3.50x7.44x2.20	77x176	
100x230x70	3.94x9.06x2.76	15	54	89x219x56	3.50x8.62x2.20	(80x210)	
<b>NEW</b> <b>NEW</b> 100x270x80	3.94x10.63x3.15	20	60	88x258x73	3.46x10.63x2.87	.	
110x310x80	4.33x12.21x3.15	20	60	98x298x73	3.86x11.73x2.87	.	
125x125x75	4.92x4.92x2.95	20	55	114x114x61	4.49x4.49x2.40	107x107	
125x125x100	4.92x4.92x3.94	20	80	113x113x86	4.45x4.45x3.39	107x107	
125x175x75	4.92x6.89x2.95	25	49	118x165x61	4.65x6.50x2.40	110x160	
125x175x100	4.92x6.89x3.94	50	49	118x165x86	4.65x6.50x3.39	110x160	
140x170x95	5.51x6.69x3.74	20	75	135x165x82	5.31x6.50x3.23	126x156	
140x230x95	5.51x9.06x3.74	20	75	132x222x82	5.20x8.74x3.23	123x212	
150x150x75	5.91x5.91x2.95	20	55	144x144x62	5.67x5.67x2.44	123x123	
150x150x100	5.91x5.91x3.94	20	80	144x144x87	5.67x5.67x3.43	123x123	
150x200x45	5.91x7.87x1.77	20	25	140x190x32	5.51x7.48x1.26	129x179	
150x200x75	5.91x7.87x2.95	20	55	138x188x62	5.43x7.40x2.44	129x179	
150x200x100	5.91x7.87x3.94	20	79	138x188x86	5.43x7.40x3.39	129x179	
150x200x130	5.91x7.87x5.12	20	109	138x188x116	5.43x7.40x4.57	129x179	
150x200x160	5.91x7.87x6.30	50	110	138x188x146	5.43x7.40x5.75	129x179	
150x250x100	5.91x9.84x3.94	20	80	138x238x87	5.43x9.37x3.43	129x229	
150x250x130	5.91x9.84x5.12	50	80	140x240x117	5.51x9.45x4.61	129x229	
160x160x70	6.30x6.30x2.76	15	54	151x151x56	5.94x5.94x2.20	144x144	
200x200x100	7.87x7.87x3.94	20	80	188x188x87	7.40x7.40x3.43	179x179	
200x200x130	7.87x7.87x5.12	20	110	188x188x117	7.40x7.40x4.61	179x179	
200x200x160	7.87x7.87x6.30	20	140	187x187x147	7.36x7.36x5.79	179x179	
200x200x190	7.87x7.87x7.48	50	140	186x186x177	7.32x7.32x6.97	179x179	
210x230x100	8.27x9.06x3.94	20	80	197x217x87	7.76x8.54x3.43	(196x216)	

\* The sizes are based on plastic back panels. The bracketed sizes are for steel back panels.

# Size and Part Numbers

SIZE		MODELS				Back Panels		Mounting Bracket
W1 * L1 * H1		ABS		Polycarbonate (UL 508A)		Steel 1.6mm +	Plastic 3mm +	
mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
50x65x45	1.97x2.56x1.77	BC-AGS-050604	BC-ATS-050604	BC-CGS-050604	BC-CTS-050604	BC-0506ST	X	None
50x65x55	1.97x2.56x2.17	BC-AGS-050605	BC-ATS-050605	BC-CGS-050605	BC-CTS-050605	BC-0506ST	X	
65x95x55	2.56x3.74x2.17	BC-AGS-060905	BC-ATS-060905	BC-CGS-060905	BC-CTS-060905	BC-0609ST	X	BC- B40
75x105x55	2.95x4.13x2.17	BC-AGS-071005	BC-ATS-071005	BC-CGS-071005	BC-CTS-071005	BC-0710ST	X	
80x80x60	3.15x3.15x2.36	BC-AGS-080806	BC-ATS-080806	BC-CGS-080806	BC-CTS-080806	BC-0808ST	X	
80x110x45	3.15x4.33x1.77	BC-AGS-081104	BC-ATS-081104	BC-CGS-081104	BC-CTS-081104	BC-0811ST	BC-0811P	
80x110x70	3.15x4.33x2.76	BC-AGS-081107	BC-ATS-081107	BC-CGS-081107	BC-CTS-081107	BC-0811ST	BC-0811P	
80x110x85	3.15x4.33x3.35	BC-AGS-081108	BC-ATS-081108	BC-CGS-081108	BC-CTS-081108	BC-0811ST	BC-0811P	
80x110x100	3.15x4.33x3.94	BC-AGS-081110	BC-ATS-081110	BC-CGS-081110	BC-CTS-081110	BC-0811ST	BC-0811P	
80x130x70	3.15x5.12x2.76	BC-AGS-081307	BC-ATS-081307	BC-CGS-081307	BC-CTS-081307	BC-0813ST	BC-0813P	
80x130x85	3.15x5.12x3.35	BC-AGS-081308	BC-ATS-081308	BC-CGS-081308	BC-CTS-081308	BC-0813ST	BC-0813P	
82x162x55	3.23x6.38x2.17	BC-AGS-081605	BC-ATS-081605	BC-CGS-081605	BC-CTS-081605	BC-0816ST	BC-0816P	
82x162x85	3.23x6.38x3.35	BC-AGS-081608	BC-ATS-081608	BC-CGS-081608	BC-CTS-081608	BC-0816ST	BC-0816P	
80x180x70	3.15x7.09x2.76	BC-AGS-081807	BC-ATS-081807	BC-CGS-081807	BC-CTS-081807	BC-0818ST	BC-0818P	
80x180x85	3.15x7.09x3.35	BC-AGS-081808	BC-ATS-081808	BC-CGS-081808	BC-CTS-081808	BC-0818ST	BC-0818P	
<b>NEW</b> 80x200x70	3.15x7.87x2.76	BC-AGS-082007	BC-ATS-082007	BC-CGS-082007	BC-CTS-082007	BC-0820ST	X	
80x250x70	3.15x9.84x2.76	BC-AGS-082507	BC-ATS-082507	BC-CGS-082507	BC-CTS-082507	BC-0825ST	BC-0825P	
80x250x85	3.15x9.84x3.35	BC-AGS-082508	BC-ATS-082508	BC-CGS-082508	BC-CTS-082508	BC-0825ST	BC-0825P	
100x100x75	3.94x3.94x2.95	BC-AGS-101007	BC-ATS-101007	BC-CGS-101007	BC-CTS-101007	BC-1010ST	BC-1010P	
100x100x100	3.94x3.94x3.94	BC-AGS-101010	BC-ATS-101010	BC-CGS-101010	BC-CTS-101010	BC-1010ST	BC-1010P	
100x185x70	3.94x7.28x2.76	BC-AGS-101807	BC-ATS-101807	BC-CGS-101807	BC-CTS-101807	BC-1018ST	X	
100x200x70	3.94x7.87x2.76	BC-AGS-102007	BC-ATS-102007	BC-CGS-102007	BC-CTS-102007	BC-1020ST	BC-1020P	
100x230x70	3.94x9.06x2.76	BC-AGS-102307	BC-ATS-102307	BC-CGS-102307	BC-CTS-102307	BC-1023ST	X	
<b>NEW</b> 100x270x80	3.94x10.63x3.15	BC-AGU-102708	BC-ATU-102708	BC-CGU-102708	BC-CTU-102708	X	X	
<b>NEW</b> 110x310x80	4.33x12.21x3.15	BC-AGU-113108	BC-ATU-113108	BC-CGU-113108	BC-CTU-113108	X	X	
125x125x75	4.92x4.92x2.95	BC-AGS-121207	BC-ATS-121207	BC-CGS-121207	BC-CTS-121207	BC-1212ST	BC-1212P	
125x125x100	4.92x4.92x3.94	BC-AGS-121210	BC-ATS-121210	BC-CGS-121210	BC-CTS-121210	BC-1212ST	BC-1212P	
125x175x75	4.92x6.89x2.95	BC-AGS-121707	BC-ATS-121707	BC-CGS-121707	BC-CTS-121707	BC-1217ST	BC-1217P	
125x175x100	4.92x6.89x3.94	BC-AGS-121710	BC-ATS-121710	BC-CGS-121710	BC-CTS-121710	BC-1217ST	BC-1217P	
140x170x95	5.51x6.69x3.74	BC-AGS-141709	BC-ATS-141709	BC-CGS-141709	BC-CTS-141709	BC-1417ST	BC-1417P	
140x230x95	5.51x9.06x3.74	BC-AGS-142309	BC-ATS-142309	BC-CGS-142309	BC-CTS-142309	BC-1423ST	BC-1423P	
150x150x75	5.91x5.91x2.95	BC-AGS-151507	BC-ATS-151507	BC-CGS-151507	BC-CTS-151507	BC-1515ST	BC-1515P	
150x150x100	5.91x5.91x3.94	BC-AGS-151510	BC-ATS-151510	BC-CGS-151510	BC-CTS-151510	BC-1515ST	BC-1515P	
150x200x45	5.91x7.87x1.77	BC-AGS-152004	BC-ATS-152004	BC-CGS-152004	BC-CTS-152004	BC-1520ST	BC-1520P	
150x200x75	5.91x7.87x2.95	BC-AGS-152007	BC-ATS-152007	BC-CGS-152007	BC-CTS-152007	BC-1520ST	BC-1520P	
150x200x100	5.91x7.87x3.94	BC-AGS-152010	BC-ATS-152010	BC-CGS-152010	BC-CTS-152010	BC-1520ST	BC-1520P	
150x200x130	5.91x7.87x5.12	BC-AGS-152013	BC-ATS-152013	BC-CGS-152013	BC-CTS-152013	BC-1520ST	BC-1520P	
150x200x160	5.91x7.87x6.30	BC-AGS-152016	BC-ATS-152016	BC-CGS-152016	BC-CTS-152016	BC-1520ST	BC-1520P	
150x250x100	5.91x9.84x3.94	BC-AGS-152510	BC-ATS-152510	BC-CGS-152510	BC-CTS-152510	BC-1525ST	BC-1525P	
150x250x130	5.91x9.84x5.12	BC-AGS-152513	BC-ATS-152513	BC-CGS-152513	BC-CTS-152513	BC-1525ST	BC-1525P	
160x160x70	6.30x6.30x2.76	BC-AGS-161607	BC-ATS-161607	BC-CGS-161607	BC-CTS-161607	BC-1616ST	BC-1616P	
200x200x100	7.87x7.87x3.94	BC-AGS-202010	BC-ATS-202010	BC-CGS-202010	BC-CTS-202010	BC-2020ST	BC-2020P	BC- B40
200x200x130	7.87x7.87x5.12	BC-AGS-202013	BC-ATS-202013	BC-CGS-202013	BC-CTS-202013	BC-2020ST	BC-2020P	
200x200x160	7.87x7.87x6.30	BC-AGS-202016	BC-ATS-202016	BC-CGS-202016	BC-CTS-202016	BC-2020ST	BC-2020P	BC- B50
200x200x190	7.87x7.87x7.48	BC-AGS-202019	BC-ATS-202019	BC-CGS-202019	BC-CTS-202019	BC-2020ST	BC-2020P	
210x230x100	8.27x9.06x3.94	BC-AGS-212310	BC-ATS-212310	BC-CGS-212310	BC-CTS-212310	BC-2123ST	X	

\* U Type: Screw type enclosure. No inserts





# S-Series (Medium)

Screw Bolt Type Medium Size Plastic Enclosures

- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339 (polycarbonate models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)

## Specifications



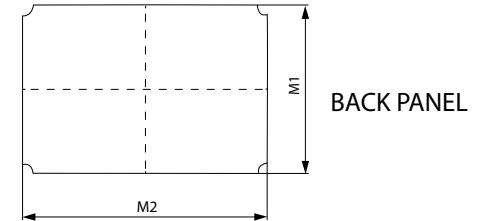
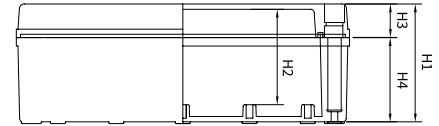
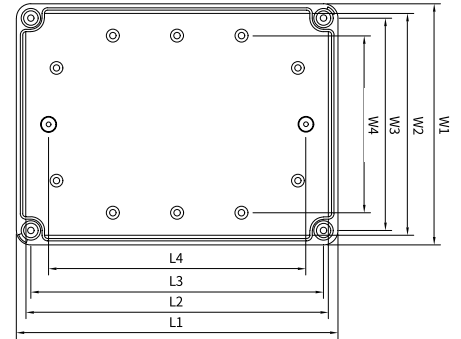
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions

Enclosure Sizes						Back* Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
mm	inch	mm	mm	mm	inch	mm
190x190x130	7.48x7.48x5.12	30	98	165x165x114	6.50x6.50x4.49	159x159
190x280x100	7.48x11.02x3.94	30	68	165x255x84	6.50x10.04x3.31	159x249
190x280x130	7.48x11.02x5.12	30	98	165x256x112	6.50x10.08x4.41	159x249
190x280x180	7.48x11.02x7.09	30	148	168x258x162	6.61x10.16x6.38	159x249
190x380x130	7.48x14.96x5.12	30	98	165x355x114	6.50x13.98x4.49	158x347
190x380x180	7.48x14.96x7.09	30	148	165x355x164	6.50x13.98x6.46	158x347
250x350x100	9.84x13.78x3.94	30	70	227x327x83	8.94x12.87x3.27	210x310
280x280x130	11.02x11.02x5.12	30	100	255x255x114	10.04x10.04x4.49	248x248
280x340x130	11.02x13.39x5.12	30	98	256x314x112	10.08x12.36x4.41	249x308
280x380x130	11.02x14.96x5.12	30	98	254x354x111	10.00x13.94x4.37	249x348
280x380x180	11.02x14.96x7.09	30	148	255x355x162	10.04x13.98x6.38	249x348
280x560x130	11.02x22.05x5.12	30	98	255x535x112	10.04x21.06x4.41	(251x531)
330x430x180	12.99x16.93x7.09	30	148	305x405x160	12.01x15.94x6.30	294x394
380x560x180	14.96x22.05x7.09	30	148	349x535x160	13.74x21.06x6.30	(345x531)

\* The sizes are based on plastic back panels. The bracketed sizes are for steel back panels.



## Size and Part Numbers

SIZE		MODELS				Back Panels		Mounting Bracket
W1xL1xH1		ABS		Polycarbonate (UL 508A)		Steel 1.6mm +	Plastic 3mm +	
mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
190x190x130	7.48x7.48x5.12	BC-AGS-191913	BC-ATS-191913	BC-CGS-191913	BC-CTS-191913	BC-1919ST	BC-1919P	BC- B50
190x280x100	7.48x11.02x3.94	BC-AGS-192810	BC-ATS-192810	BC-CGS-192810	BC-CTS-192810	BC-1928ST	BC-1928P	
190x280x130	7.48x11.02x5.12	BC-AGS-192813	BC-ATS-192813	BC-CGS-192813	BC-CTS-192813	BC-1928ST	BC-1928P	
190x280x180	7.48x11.02x7.09	BC-AGS-192818	BC-ATS-192818	BC-CGS-192818	BC-CTS-192818	BC-1928ST	BC-1928P	
190x380x130	7.48x14.96x5.12	BC-AGS-193813	BC-ATS-193813	BC-CGS-193813	BC-CTS-193813	BC-1938ST	BC-1938P	
190x380x180	7.48x14.96x7.09	BC-AGS-193818	BC-ATS-193818	BC-CGS-193818	BC-CTS-193818	BC-1938ST	BC-1938P	
250x350x100	9.84x13.78x3.94	BC-AGU-253510*	BC-ATU-253510*	BC-CGU-253510*	BC-CTU-253510*	BC-2535SQ	BC-2535G/C	
280x280x130	11.02x11.02x5.12	BC-AGS-282813	BC-ATS-282813	BC-CGS-282813	BC-CTS-282813	BC-2828ST	BC-2828P	
280x340x130	11.02x13.39x5.12	BC-AGS-283413	BC-ATS-283413	BC-CGS-283413	BC-CTS-283413	BC-2834ST	BC-2834P	
280x380x130	11.02x14.96x5.12	BC-AGS-283813	BC-ATS-283813	BC-CGS-283813	BC-CTS-283813	BC-2838ST	BC-2838P	
280x380x180	11.02x14.96x7.09	BC-AGS-283818	BC-ATS-283818	BC-CGS-283818	BC-CTS-283818	BC-2838ST	BC-2838P	
280x560x130	11.02x22.05x5.12	BC-AGS-285613	BC-ATS-285613	BC-CGS-285613	BC-CTS-285613	BC-2856ST	X	
330x430x180	12.99x16.93x7.09	BC-AGS-334318	BC-ATS-334318	BC-CGS-334318	BC-CTS-334318	BC-3343ST	BC-3343P	
380x560x180	14.96x22.05x7.09	BC-AGS-385618	BC-ATS-385618	BC-CGS-385618	BC-CTS-385618	BC-3856ST	X	

\* U Type: Screw type enclosure. No inserts



# M-Series

Screw Bolt Type Plastic Enclosures

- Lift off screw cover & smooth side walls
- 0.6mm lower center space for membrane keypad
- UL Listed (UL508A): Ref.# E343339 (polycarbonate models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



## Specifications

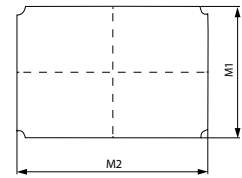
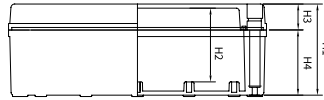
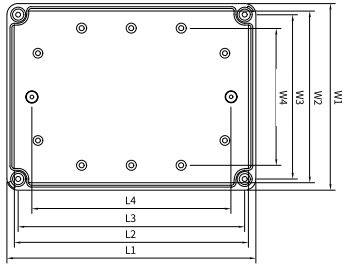
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

## Part Numbers and Size

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

	Outside Size		MODELS				Back panels	
	W1xL1xH1		ABS		Polycarbonate (UL508A)		Steel 1.6mm +	Plastic 3mm +
	mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover		
	80x130x35	3.15x5.12x1.38	BC-AGM-081303	BC-ATM-081303	BC-CGM-081303	BC-CTM-081303	BC-0813M	BC-0813P
NEW	80x130x40	3.15x5.12x1.58	BC-AGM-081304	BC-ATM-081304	BC-CGM-081304	BC-CTM-081304	BC-0813M	BC-0813P
NEW	80x130x50	3.15x5.12x1.97	BC-AGM-081305	BC-ATM-081305	BC-CGM-081305	BC-CTM-081305	BC-0813M	BC-0813P
	80x130x60	3.15x5.12x2.36	BC-AGM-081306	BC-ATM-081306	BC-CGM-081306	BC-CTM-081306	BC-0813M	BC-0813P
	80x130x75	3.15x5.12x2.95	BC-AGM-081307	BC-ATM-081307	BC-CGM-081307	BC-CTM-081307	BC-0813M	BC-0813P
	80x130x85	3.15x5.12x3.35	BC-AGM-081308	BC-ATM-081308	BC-CGM-081308	BC-CTM-081308	BC-0813M	BC-0813P
	80x130x100	3.15x5.12x3.94	BC-AGM-081310	BC-ATM-081310	BC-CGM-081310	BC-CTM-081310	BC-0813M	BC-0813P
NEW	80x130x110	3.15x5.12x4.33	BC-AGM-081311	BC-ATM-081311	BC-CGM-081311	BC-CTM-081311	BC-0813M	BC-0813P
	80x130x125	3.15x5.12x4.92	BC-AGM-081312	BC-ATM-081312	BC-CGM-081312	BC-CTM-081312	BC-0813M	BC-0813P
NEW	100x100x35	3.94x3.94x1.38	BC-AGM-101003	BC-ATM-101003	BC-CGM-101003	BC-CTM-101003	-	-
NEW	100x100x50	3.94x3.94x1.97	BC-AGM-101005	BC-ATM-101005	BC-CGM-101005	BC-CTM-101005	-	-
NEW	100x100x60	3.94x3.94x2.36	BC-AGM-101006	BC-ATM-101006	BC-CGM-101006	BC-CTM-101006	-	-
NEW	100x100x75	3.94x3.94x2.95	BC-AGM-101007	BC-ATM-101007	BC-CGM-101007	BC-CTM-101007	-	-
	130x130x35	5.12x5.12x1.38	BC-AGM-131303	BC-ATM-131303	BC-CGM-131303	BC-CTM-131303	BC-1313M	-
NEW	130x130x50	5.12x5.12x1.97	BC-AGM-131305	BC-ATM-131305	BC-CGM-131305	BC-CTM-131305	BC-1313M	-
	130x130x60	5.12x5.12x2.36	BC-AGM-131306	BC-ATM-131306	BC-CGM-131306	BC-CTM-131306	BC-1313M	-
	130x130x75	5.12x5.12x2.95	BC-AGM-131307	BC-ATM-131307	BC-CGM-131307	BC-CTM-131307	BC-1313M	-
NEW	130x130x85	5.12x5.12x3.35	BC-AGM-131308	BC-ATM-131308	BC-CGM-131308	BC-CTM-131308	BC-1318M	BC-1217P
	130x130x100	5.12x5.12x3.94	BC-AGM-131310	BC-ATM-131310	BC-CGM-131310	BC-CTM-131310	BC-1318M	BC-1217P
NEW	130x130x110	5.12x5.12x4.33	BC-AGM-131311	BC-ATM-131311	BC-CGM-131311	BC-CTM-131311	BC-1318M	BC-1217P
NEW	130x130x125	5.12x5.12x4.92	BC-AGM-131312	BC-ATM-131312	BC-CGM-131312	BC-CTM-131312	BC-1318M	BC-1217P
	130x180x35	5.12x7.09x1.38	BC-AGM-131803	BC-ATM-131803	BC-CGM-131803	BC-CTM-131803	BC-1318M	BC-1217P
NEW	130x180x50	5.12x7.09x1.97	BC-AGM-131805	BC-ATM-131805	BC-CGM-131805	BC-CTM-131805	BC-1318M	BC-1217P
	130x180x60	5.12x7.09x2.36	BC-AGM-131806	BC-ATM-131806	BC-CGM-131806	BC-CTM-131806	BC-1318M	BC-1217P
NEW	130x180x75	5.12x7.09x2.95	BC-AGM-131807	BC-ATM-131807	BC-CGM-131807	BC-CTM-131807	BC-1318M	BC-1217P
NEW	130x180x85	5.12x7.09x3.35	BC-AGM-131808	BC-ATM-131808	BC-CGM-131808	BC-CTM-131808	BC-1318M	BC-1217P
	130x180x100	5.12x7.09x3.94	BC-AGM-131810	BC-ATM-131810	BC-CGM-131810	BC-CTM-131810	BC-1318M	BC-1217P
NEW	130x180x110	5.12x7.09x4.33	BC-AGM-131811	BC-ATM-131811	BC-CGM-131811	BC-CTM-131811	BC-1318M	BC-1217P
NEW	130x180x125	5.12x7.09x4.92	BC-AGM-131812	BC-ATM-131812	BC-CGM-131812	BC-CTM-131812	BC-1318M	BC-1217P
NEW	130x180x135	5.12x7.09x5.32	BC-AGM-131813	BC-ATM-131813	BC-CGM-131813	BC-CTM-131813	BC-1318M	BC-1217P
NEW	130x180x150	5.12x7.09x5.91	BC-AGM-131815	BC-ATM-131815	BC-CGM-131815	BC-CTM-131815	BC-1318M	BC-1217P
	150x180x60	5.91x7.09x2.36	BC-AGM-151806	BC-ATM-151806	BC-CGM-151806	BC-CTM-151806	BC-1518M	-
NEW	150x180x75	5.91x7.09x2.95	BC-AGM-151807	BC-ATM-151807	BC-CGM-151807	BC-CTM-151807	BC-1518M	-
NEW	180x180x40	7.09x7.09x1.58	BC-AGM-181804	BC-ATM-181804	BC-CGM-181804	BC-CTM-181804	BC-1818M	-
NEW	180x180x55	7.09x7.09x2.17	BC-AGM-181805	BC-ATM-181805	BC-CGM-181805	BC-CTM-181805	BC-1818M	-
	180x180x60	7.09x7.09x2.36	BC-AGM-181806	BC-ATM-181806	BC-CGM-181806	BC-CTM-181806	BC-1818M	-
	180x180x75	7.09x7.09x2.95	BC-AGM-181807	BC-ATM-181807	BC-CGM-181807	BC-CTM-181807	BC-1818M	-
NEW	180x180x85	7.09x7.09x3.35	BC-AGM-181808	BC-ATM-181808	BC-CGM-181808	BC-CTM-181808	BC-1818M	-
	180x180x100	7.09x7.09x3.94	BC-AGM-181810	BC-ATM-181810	BC-CGM-181810	BC-CTM-181810	BC-1818M	-
NEW	180x180x110	7.09x7.09x4.33	BC-AGM-181811	BC-ATM-181811	BC-CGM-181811	BC-CTM-181811	BC-1818M	-
	180x180x125	7.09x7.09x4.92	BC-AGM-181812	BC-ATM-181812	BC-CGM-181812	BC-CTM-181812	BC-1818M	-
NEW	180x180x135	7.09x7.09x5.32	BC-AGM-181813	BC-ATM-181813	BC-CGM-181813	BC-CTM-181813	BC-1818M	-
NEW	180x180x150	7.09x7.09x5.91	BC-AGM-181815	BC-ATM-181815	BC-CGM-181815	BC-CTM-181815	BC-1818M	-
NEW	180x180x160	7.09x7.09x6.30	BC-AGM-181816	BC-ATM-181816	BC-CGM-181816	BC-CTM-181816	BC-1818M	-
NEW	180x180x175	7.09x7.09x6.89	BC-AGM-181817	BC-ATM-181817	BC-CGM-181817	BC-CTM-181817	BC-1818M	-
	180x255x75	7.09x10.04x2.95	BC-AGM-182507	BC-ATM-182507	BC-CGM-182507	BC-CTM-182507	BC-1825M	-
NEW	180x255x50	7.09x10.04x1.97	BC-AGM-182505	BC-ATM-182505	BC-CGM-182505	BC-CTM-182505	BC-1825M	-
NEW	180x255x65	7.09x10.04x2.56	BC-AGM-182506	BC-ATM-182506	BC-CGM-182506	BC-CTM-182506	BC-1825M	-
NEW	180x255x90	7.09x10.04x3.54	BC-AGM-182509	BC-ATM-182509	BC-CGM-182509	BC-CTM-182509	BC-1825M	-
	180x255x100	7.09x10.04x3.94	BC-AGM-182510	BC-ATM-182510	BC-CGM-182510	BC-CTM-182510	BC-1825M	-
NEW	180x255x115	7.09x10.04x4.53	BC-AGM-182511	BC-ATM-182511	BC-CGM-182511	BC-CTM-182511	BC-1825M	-
	180x255x125	7.09x10.04x4.92	BC-AGM-182512	BC-ATM-182512	BC-CGM-182512	BC-CTM-182512	BC-1825M	-
NEW	180x255x140	7.09x10.04x5.51	BC-AGM-182514	BC-ATM-182514	BC-CGM-182514	BC-CTM-182514	BC-1825M	-
NEW	180x255x150	7.09x10.04x5.91	BC-AGM-182515	BC-ATM-182515	BC-CGM-182515	BC-CTM-182515	BC-1825M	-

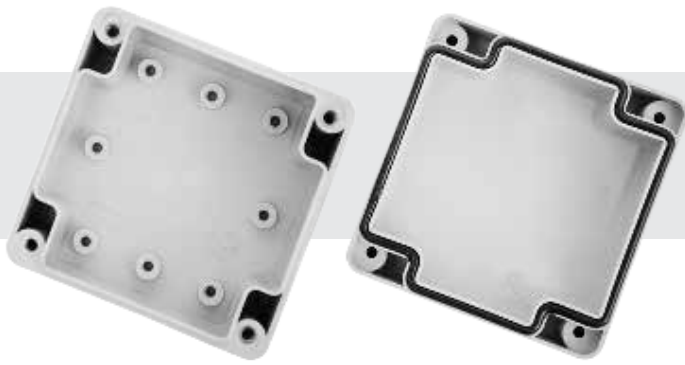
# Dimensions



BACK PANEL

Enclosure Sizes							Back* Panel (M1xM2)
Outside Dimensions				Inside Dimensions		mm	
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)			
mm	inch	mm	mm	mm	inch	mm	
	80x130x35	3.15x5.12x1.38	25	50	68x118x24	2.68x4.65x0.94	(48x98)
NEW	80x130x40	3.15x5.12x1.58	10	30	68x118x29	2.68x4.65x1.14	(48x98)
NEW	80x130x50	3.15x5.12x1.97	25	25	68x118x39	2.68x4.65x1.54	(48x98)
	80x130x60	3.15x5.12x2.36	10	50	68x118x47	2.68x4.65x1.85	(48x98)
	80x130x75	3.15x5.12x2.95	10	65	68x118x62	2.68x4.65x2.44	(48x98)
	80x130x85	3.15x5.12x3.35	10	75	68x118x72	2.68x4.65x2.83	(48x98)
	80x130x100	3.15x5.12x3.94	25	75	68x118x87	2.68x4.65x3.43	(48x98)
NEW	80x130x110	3.15x5.12x4.33	35	75	68x118x96	2.68x4.65x3.78	(48x98)
	80x130x125	3.15x5.12x4.92	35	90	68x118x112	2.68x4.65x4.41	(48x98)
NEW	100x100x35	3.94x3.94x1.38	10	25	92x92x24	3.94x3.94x0.94	-
NEW	100x100x50	3.94x3.94x1.97	25	25	92x92x39	3.94x3.94x1.54	-
NEW	100x100x60	3.94x3.94x2.36	10	50	92x92x47	3.94x3.94x1.85	-
NEW	100x100x75	3.94x3.94x2.95	25	50	92x92x62	3.94x3.94x2.44	-
	130x130x35	5.12x5.12x1.38	10	25	119x119x24	4.69x4.69x0.94	(98x98)
NEW	130x130x50	5.12x5.12x1.97	25	25	119x119x39	4.69x4.69x1.54	(98x98)
	130x130x60	5.12x5.12x2.36	10	50	119x119x47	4.69x4.69x1.85	(98x98)
NEW	130x130x75	5.12x5.12x2.95	25	50	119x119x62	4.69x4.69x2.44	(98x98)
NEW	130x130x85	5.12x5.12x3.35	10	75	119x119x72	4.69x4.69x2.83	(98x98)
NEW	130x130x100	5.12x5.12x3.94	25	75	119x119x87	4.69x4.69x3.43	(98x98)
NEW	130x130x110	5.12x5.12x4.33	10	100	119x119x96	4.69x4.69x3.78	(98x98)
	130x130x125	5.12x5.12x4.92	25	100	119x119x112	4.69x4.69x4.41	(98x98)
	130x180x35	5.12x7.09x1.38	10	25	119x169x24	4.69x6.65x0.94	110x160
NEW	130x180x50	5.12x7.09x1.97	25	25	119x169x37	4.69x6.65x1.46	110x160
	130x180x60	5.12x7.09x2.36	10	50	119x169x47	4.69x6.65x1.85	110x160
NEW	130x180x75	5.12x7.09x2.95	25	50	119x169x62	4.69x6.65x2.44	110x160
NEW	130x180x85	5.12x7.09x3.35	10	75	119x169x72	4.69x6.65x2.83	110x160
NEW	130x180x100	5.12x7.09x3.94	25	75	119x169x87	4.69x6.65x3.43	110x160
NEW	130x180x110	5.12x7.09x4.33	10	100	119x169x97	4.69x6.65x3.82	110x160
NEW	130x180x125	5.12x7.09x4.92	25	100	119x169x112	4.69x6.65x4.41	110x160
NEW	130x180x135	5.12x7.09x5.31	10	125	119x169x122	4.69x6.65x4.80	110x160
NEW	130x180x150	5.12x7.09x5.91	25	125	119x169x137	4.69x6.65x5.39	110x160
	150x180x60	5.91x7.09x2.36	10	25	139x169x47	5.47x6.65x1.85	(120x148)
NEW	150x180x75	5.91x7.09x2.95	25	25	139x169x60	5.47x6.65x2.36	(120x148)
NEW	180x180x40	7.09x7.09x1.57	10	30	169x169x27	5.47x6.65x1.06	(148x148)
NEW	180x180x55	7.09x7.09x2.17	25	30	169x169x41	5.47x6.65x1.61	(148x148)
	180x180x60	7.09x7.09x2.36	10	50	169x169x47	6.65x6.65x1.85	(148x148)
	180x180x75	7.09x7.09x2.95	25	50	169x169x62	6.65x6.65x2.44	(148x148)
NEW	180x180x85	7.09x7.09x3.35	10	75	169x169x72	6.65x6.65x2.83	(148x148)
NEW	180x180x100	7.09x7.09x3.94	25	75	169x169x87	6.65x6.65x3.43	(148x148)
	180x180x110	7.09x7.09x4.33	10	100	169x169x97	6.65x6.65x3.82	(148x148)
	180x180x125	7.09x7.09x4.92	25	100	169x169x112	6.65x6.65x4.41	(148x148)
NEW	180x180x135	7.09x7.09x5.31	10	125	169x169x122	6.65x6.65x4.80	(148x148)
NEW	180x180x150	7.09x7.09x5.91	25	125	169x169x137	6.65x6.65x5.39	(148x148)
NEW	180x180x160	7.09x7.09x6.30	10	150	169x169x147	6.65x6.65x5.79	(148x148)
NEW	180x180x175	7.09x7.09x6.89	25	150	169x169x162	6.65x6.65x6.38	(148x148)
NEW	180x255x50	7.09x10.04x1.97	15	35	169x244x37	6.65x9.61x1.46	(148x223)
NEW	180x255x65	7.09x10.04x2.56	15	50	169x244x52	6.65x9.61x2.05	(148x223)
	180x255x75	7.09x10.04x2.95	25	50	169x244x62	6.65x9.61x2.44	(148x223)
NEW	180x255x90	7.09x10.04x3.54	15	75	169x244x77	6.65x9.61x3.03	(148x223)
	180x255x100	7.09x10.04x3.94	25	75	169x244x87	6.65x9.61x3.43	(148x223)
NEW	180x255x115	7.09x10.04x4.53	15	100	169x244x102	6.65x9.61x4.02	(148x223)
	180x255x125	7.09x10.04x4.92	25	100	169x244x112	6.65x9.61x4.41	(148x223)
NEW	180x255x140	7.09x10.04x5.51	15	125	169x244x127	6.65x9.61x5.00	(148x223)
NEW	180x255x150	7.09x10.04x5.91	25	125	169x244x137	6.65x9.61x5.39	(148x223)

\* The sizes are based on plastic back panels. The bracketed sizes are for steel back panels.



# E-Series

Screw Bolt Type  
Plastic Enclosures

- Lift off screw cover
- Stainless steel cover screw
- Meets IP66/67, NEMA 4X/6 specifications



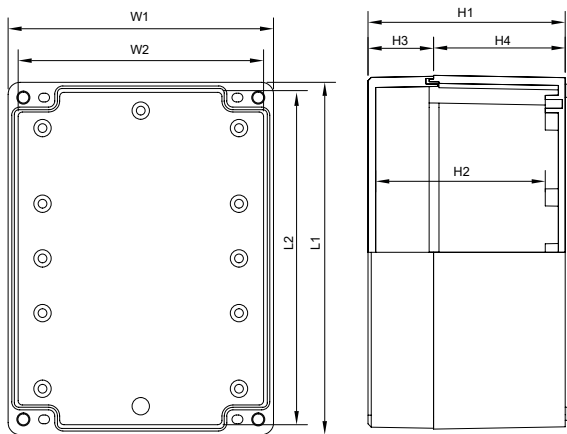
## Specifications

Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	CE, TUV, RoHS
Temperature range	-40°C to 70°C (-40°F to 158°F)
Flammability Rating	UL94-HB

## Part Numbers and Size

Outside size Size (W1xL1xH1)		Models ABS		Back Panels
mm	inch	Gray cover	Transparent cover	
80x230x55	3.15x9.06x2.17	BC-AGE-082306	BC-ATE-082306	-
120x160x90	4.80x6.38x3.54	BC-AGE-121609	BC-ATE-121609	
125x190x65	4.92x7.48x2.56	BC-AGE-121907	BC-ATE-121907	
160x260x90	6.30x10.24x3.54	BC-AGE-162609	BC-ATE-162609	

## Dimensions



Enclosure Sizes						Back Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		mm
mm	inch	mm	mm	mm	inch	
80x230x55	3.15x9.06x2.17	10	45	73x223x49	2.87x8.78x1.93	-
120x160x90	4.80x6.38x3.54	30	60	113x153x78	4.45x6.02x3.07	
125x190x65	4.92x7.48x2.56	10	55	118x183x59	4.65x7.20x2.32	
160x260x90	6.30x10.24x3.54	20	70	151x251x83	5.94x9.88x3.35	





# B-Series

Screw Bolt Type  
Plastic Enclosures

- Lift off screw cover
- Corner mounting flanges for easy installation
- Meets IP66/67, NEMA 4X/6 specifications



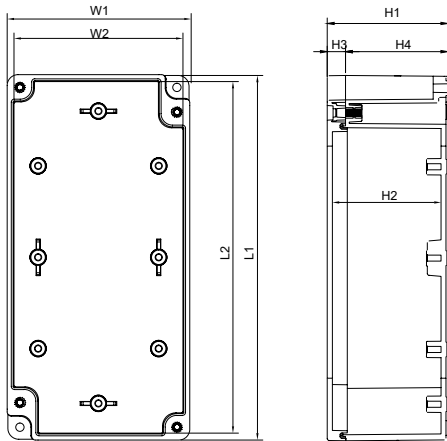
## Specifications

Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	CE, TUV, RoHS
Temperature range	-40°C to 70°C (-40°F to 158°F)
Flammability Rating	UL94-HB

## Part Numbers and Size

Outside size		Models		Back Panels
Size (W1xL1xH1)		ABS		
mm	inch	Gray cover	Transparent cover	-
52x90x45	1.97x3.54x1.77	BC-AGB-050904	BC-ATB-050904	
65x90x45	2.56x3.54x1.77	BC-AGB-060904	BC-ATB-060904	
90x100x45	3.54x3.94x1.77	BC-AGB-091004	BC-ATB-091004	
100x200x65	3.94x7.87x2.56	BC-AGB-102006	BC-ATB-102006	
150x160x65	5.91x6.30x2.56	BC-AGB-151606	BC-ATB-151606	

## Dimensions



Enclosure Sizes						Back Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		mm
mm	inch	mm	mm	mm	inch	
52x90x45	1.97x3.54x1.77	8	37	45x80x40	1.77x3.15x1.57	-
65x90x45	2.56x3.54x1.77	8	37	58x80x40	2.83x3.15x1.57	
90x100x45	3.54x3.94x1.77	8	37	83x93x40	3.27x3.66x1.57	
100x200x65	3.94x7.87x2.56	10	55	92x192x60	3.62x7.56x2.36	
150x160x65	5.91x6.30x2.56	10	55	142x152x60	5.59x5.98x2.36	





# Knock-out Box

Knock-out base  
Plastic Enclosures

- Knockouts on both sides for easy onsite installation
- Suitable for applications like control box, junction box etc.
- Lift off screw cover & smooth side walls
- UL Listed (UL508A): Ref.# E343339 (polycarbonate models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base



## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

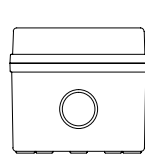
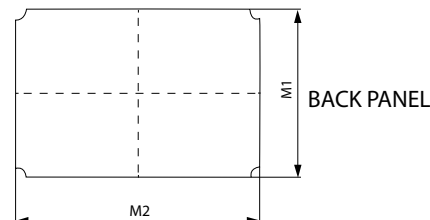
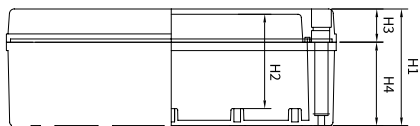
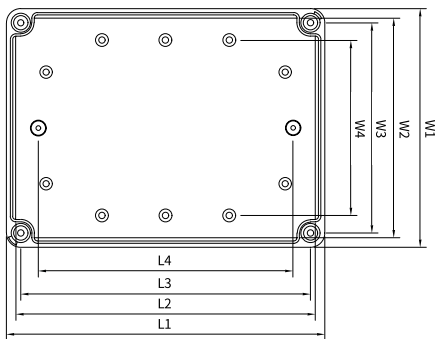
## Part Numbers and Size

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

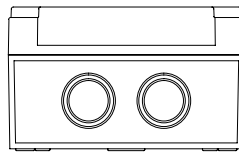
Outside Size		MODELS				Back panels		#of Knock-out/side	
W1xL1xH1		ABS		Polycarbonate (UL508A)		Steel 1.6mm +	Plastic 3mm +	L Sides	W Sides
mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover				
<b>NEW</b> 52x90x45	1.97x3.54x1.77	BC-AGB-050904	BC-ATB-050904	-	-	BC-0811ST	BC-0811P		1-Ø21
<b>NEW</b> 65x90x45	2.56x3.54x1.77	BC-AGB-060904	BC-ATB-060904	-	-				BC-0813ST
80x110x70	3.15x4.33x2.76	BC-AGS-081107-K	BC-ATS-081107-K	BC-CGS-081107-K	BC-CTS-081107-K				
80x110x85	3.15x4.33x3.35	BC-AGS-081108-K	BC-ATS-081108-K	BC-CGS-081108-K	BC-CTS-081108-K				
80x130x70	3.15x5.12x2.76	BC-AGS-081307-K	BC-ATS-081307-K	BC-CGS-081307-K	BC-CTS-081307-K				
80x130x85	3.15x5.12x3.35	BC-AGS-081308-K	BC-ATS-081308-K	BC-CGS-081308-K	BC-CTS-081308-K				
80x180x70	3.15x7.09x2.76	BC-AGS-081807-K	BC-ATS-081807-K	BC-CGS-081807-K	BC-CTS-081807-K				
80x180x85	3.15x7.09x3.35	BC-AGS-081808-K	BC-ATS-081808-K	BC-CGS-081808-K	BC-CTS-081808-K				
80x250x70	3.15x9.84x2.76	BC-AGS-082507-K	BC-ATS-082507-K	BC-CGS-082507-K	BC-CTS-082507-K				
80x250x85	3.15x9.84x3.35	BC-AGS-082508-K	BC-ATS-082508-K	BC-CGS-082508-K	BC-CTS-082508-K				
<b>NEW</b> 90x100x45	3.54x3.94x1.77	BC-AGB-091004	BC-ATB-091004	-	-	-	-	2-Ø21	-
<b>NEW</b> 100x100x80*	3.94x3.94x3.15	BC-AGQ-101008-K	BC-ATQ-101008-K	BC-CGQ-101008-K	BC-CTQ-101008-K	-	-	-	1-Ø25
125x175x75	4.92x6.89x2.95	BC-AGS-121707-K	BC-ATS-121707-K	BC-CGS-121707-K	BC-CTS-121707-K	BC-1217ST	BC-1217P	3-Ø21	2-Ø29
125x175x100	4.92x6.89x3.94	BC-AGS-121710-K	BC-ATS-121710-K	BC-CGS-121710-K	BC-CTS-121710-K				

\* Q-Series. All plastic

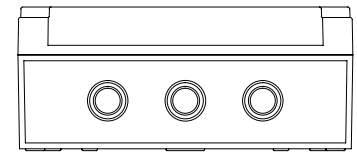
## Dimensions



W side



W side



L side

Enclosure Sizes						Back Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
mm	inch	mm	mm	mm	inch	mm
<b>NEW</b> 52x90x45	1.97x3.54x1.77	8	37	45x80x40	1.77x3.15x1.57	-
<b>NEW</b> 65x90x45	2.56x3.54x1.77	8	37	58x80x40	2.83x3.15x1.57	-
80x110x70	3.15x4.33x2.76	20	50	72x102x56	2.83x4.02x2.20	65x95
80x110x85	3.15x4.33x3.35	35	50	72x102x71	2.83x4.02x2.80	-
80x130x70	3.15x5.12x2.76	20	50	72x122x56	2.83x4.80x2.20	65x115
80x130x85	3.15x5.12x3.35	35	50	72x122x71	2.83x4.80x2.80	-
80x180x70	3.15x7.09x2.76	20	50	72x172x57	2.83x6.77x2.24	65x165
80x180x85	3.15x7.09x3.35	35	50	72x172x72	2.83x6.77x2.83	-
80x250x70	3.15x9.84x2.76	20	50	72x242x57	2.83x9.53x2.24	65x235
80x250x85	3.15x9.84x3.35	35	50	72x242x72	2.83x9.53x2.83	-
<b>NEW</b> 90x100x45	3.54x3.94x1.77	8	37	83x93x40	3.27x3.66x1.57	-
<b>NEW</b> 100x100x80*	3.94x3.94x3.15	20	60	81x81x75	3.19x3.19x2.95	-
125x175x75	4.92x6.89x2.95	25	50	119x167x61	4.69x6.57x2.40	110x160
125x175x100	4.92x6.89x3.94	50	50	119x167x86	4.69x6.57x3.39	-

\* Q-Series. All plastic



# P-Series

Hinge & Latch Type  
Plastic Enclosures

- Molded hinges & Stainless steel latches
- UL Listed (UL508A): Ref.# E343339 (polycarbonate models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)

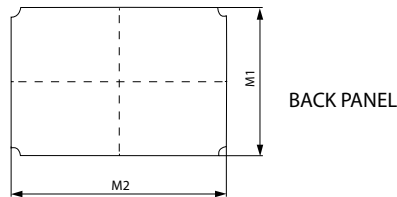
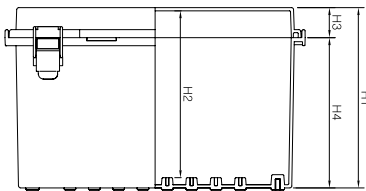
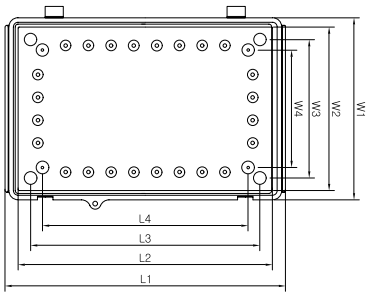


## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F) PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB PC: UL94-V-0, 5VA, 94-HB

\*The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions



## Accessories



Lock: BC-SK



Lock: BC-PK  
waterproof



Lock:  
BC-PSK/PPK



Wall mounting bracket:  
BC-B40/B50/B60

Enclosure Sizes						Back* Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
mm	inch	mm	mm	mm	inch	mm
90x120x70	3.54x4.72x2.76	20	50	66x97x57	2.60x3.82x2.24	65x95
90x120x85	3.54x4.72x3.35	20	65	66x97x72	2.60x3.82x2.83	65x95
100x150x70	3.94x5.91x2.76	20	50	77x127x57	3.03x5.00x2.24	65x115
100x150x85	3.94x5.91x3.35	20	65	76x126x72	2.99x4.96x2.83	65x115
110x210x75	4.33x8.27x2.95	20	55	86x186x62	3.39x7.32x2.44	77x176
110x210x100	4.33x8.27x3.94	20	80	86x186x87	3.39x7.32x3.43	77x176
110x260x75	4.33x10.24x2.95	20	55	86x236x62	3.39x9.29x2.44	76x225
110x260x100	4.33x10.24x3.94	20	80	86x236x87	3.39x9.29x3.43	76x225
135x155x85	5.31x6.10x3.35	20	65	110x131x72	4.33x5.16x2.83	102x122
135x185x85	5.31x7.28x3.35	20	65	111x161x72	4.37x6.34x2.83	110x159
135x185x100	5.31x7.28x3.94	20	80	111x161x87	4.37x6.34x3.43	110x159
150x150x90	5.91x5.91x3.54	20	70	126x126x76	4.96x4.96x2.99	123x123
150x150x120	5.91x5.91x4.72	20	100	126x126x106	4.96x4.96x4.17	123x123
160x210x100	6.30x8.27x3.94	25	75	136x186x87	5.35x7.32x3.43	129x179
160x210x130	6.30x8.27x5.12	25	105	135x185x117	5.31x7.28x4.61	129x179
160x260x100	6.30x10.24x3.94	25	75	136x236x87	5.35x9.29x3.43	129x229
160x260x130	6.30x10.24x5.12	25	105	135x235x117	5.31x9.25x4.61	129x229
170x220x105	6.69x8.66x4.13	30	80	146x196x91	5.75x7.72x3.58	129x179
170x270x110	6.69x10.63x4.33	30	80	146x246x96	5.75x9.69x3.78	129x229
190x280x100	7.48x11.02x3.94	30	70	165x255x84	6.50x10.04x3.31	159x249
190x280x140	7.48x11.02x5.51	30	110	165x255x124	6.50x10.04x4.88	159x249
200x300x130	7.87x11.81x5.12	30	100	175x275x114	6.89x10.83x4.49	167x267
200x300x150	7.87x11.81x5.91	30	120	174x274x134	6.85x10.79x5.28	167x267
200x300x180	7.87x11.81x7.09	30	150	173x273x164	6.81x10.75x6.46	167x267
210x210x100	8.27x8.27x3.94	25	75	185x185x87	7.28x7.28x3.43	179x179
210x210x130	8.27x8.27x5.12	25	105	185x185x117	7.28x7.28x4.61	179x179
250x350x150	9.84x13.78x5.91	30	120	224x324x134	8.82x12.76x5.28	216x316
250x350x180	9.84x13.78x7.09	30	150	223x323x164	8.78x12.72x6.46	216x316
280x280x130	11.02x11.02x5.12	30	100	255x255x114	10.04x10.04x4.49	248x248
280x380x130	11.02x14.96x5.12	30	100	255x355x114	10.04x13.98x4.49	249x348
300x300x150	11.81x11.81x5.91	30	120	274x274x134	10.79x10.79x5.28	262x262
300x300x180	11.81x11.81x7.09	30	150	273x273x164	10.75x10.75x6.46	262x262
300x400x120	11.81x15.75x4.72	30	90	275x375x104	10.83x14.76x4.09	264x364
300x400x150	11.81x15.75x5.91	30	120	274x374x134	10.79x14.72x5.28	264x364
300x400x180	11.81x15.75x7.09	30	150	273x373x164	10.75x14.69x6.46	264x364
350x350x150	13.78x13.78x5.91	30	120	324x324x134	12.76x12.76x5.28	314x314
350x350x180	13.78x13.78x7.09	30	150	323x323x164	12.72x12.72x6.46	314x314
350x450x120	13.78x17.72x4.72	30	90	318x418x103	12.52x16.46x4.06	305x405
350x450x160	13.78x17.72x6.30	30	130	317x417x143	12.48x16.42x5.63	305x405
350x450x200	13.78x17.72x7.87	30	170	316x416x183	12.44x16.38x7.20	305x405
400x500x160	15.75x19.69x6.30	30	130	363x469x144	14.29x18.46x5.67	358x457
400x500x200	15.75x19.69x7.87	30	170	361x468x184	14.21x18.43x7.24	358x457
400x600x180	15.75x23.62x7.09	30	150	360x567x163	14.17x22.32x6.42	357x556
400x600x230	15.75x23.62x9.06	30	200	360x568x213	14.17x22.36x8.39	357x556
530x630x185	20.87x24.80x7.28	35	150	478x585x166	18.82x23.03x6.54	460x560
530x630x255	20.87x24.80x10.04	35	220	476x576x236	18.74x22.68x9.29	460x560
530x730x185	20.87x28.74x7.28	35	150	478x680x166	18.82x26.77x6.54	460x660
530x730x255	20.87x28.74x10.04	35	220	476x676x236	18.74x26.61x9.29	460x660
630x830x185	24.80x32.68x7.28	35	150	578x778x166	22.76x30.63x6.54	(560x752)
630x830x285	24.80x32.68x11.22	35	250	574x774x266	22.60x30.47x10.47	(560x752)

\*The sizes are based on plastic back panels. The bracketed sizes are for steel back panels.

# Size and Part Numbers

Outside size		MODELS				Back Panels		Mounting Bracket
Size (W1xL1xH1)		ABS		Polycarbonate (UL508A)		Steel 1.6mm+	Plastic 3mm+	
mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
90x120x70	3.54x4.72x2.76	BC-AGP-091207	BC-ATP-091207	BC-CGP-091207	BC-CTP-091207	BC-0912ST	BC-0811P	BC- B40
90x120x85	3.54x4.72x3.35	BC-AGP-091208	BC-ATP-091208	BC-CGP-091208	BC-CTP-091208	BC-0912ST	BC-0811P	
100x150x70	3.94x5.91x2.76	BC-AGP-101507	BC-ATP-101507	BC-CGP-101507	BC-CTP-101507	BC-0813ST	BC-0813P	
100x150x85	3.94x5.91x3.35	BC-AGP-101508	BC-ATP-101508	BC-CGP-101508	BC-CTP-101508	BC-0813ST	BC-0813P	
110x210x75	4.33x8.27x2.95	BC-AGP-112107	BC-ATP-112107	BC-CGP-112107	BC-CTP-112107	BC-1020ST	BC-1121P	
110x210x100	4.33x8.27x3.94	BC-AGP-112110	BC-ATP-112110	BC-CGP-112110	BC-CTP-112110	BC-1020ST	BC-1121P	
110x260x75	4.33x10.24x2.95	BC-AGP-112607	BC-ATP-112607	BC-CGP-112607	BC-CTP-112607	BC-1126ST	BC-1126P	
110x260x100	4.33x10.24x3.94	BC-AGP-112610	BC-ATP-112610	BC-CGP-112610	BC-CTP-112610	BC-1126ST	BC-1126P	
135x155x85	5.31x6.10x3.35	BC-AGP-131508	BC-ATP-131508	BC-CGP-131508	BC-CTP-131508	BC-1315ST	BC-1315P	
135x185x85	5.31x7.28x3.35	BC-AGP-131808	BC-ATP-131808	BC-CGP-131808	BC-CTP-131808	BC-1217ST	BC-1217P	
135X185X100	5.31x7.28x3.94	BC-AGP-131810	BC-ATP-131810	BC-CGP-131810	BC-CTP-131810	BC-1217ST	BC-1217P	
150x150x90	5.91x5.91x3.54	BC-AGP-151509	BC-ATP-151509	BC-CGP-151509	BC-CTP-151509	BC-1515ST	BC-1515P	
150x150x120	5.91x5.91x4.72	BC-AGP-151512	BC-ATP-151512	BC-CGP-151512	BC-CTP-151512	BC-1515ST	BC-1515P	
160x210x100	6.30x8.27x3.94	BC-AGP-162110	BC-ATP-162110	BC-CGP-162110	BC-CTP-162110	BC-1520ST	BC-1520P	
160x210x130	6.30x8.27x5.12	BC-AGP-162113	BC-ATP-162113	BC-CGP-162113	BC-CTP-162113	BC-1520ST	BC-1520P	
160x260x100	6.30x10.24x3.94	BC-AGP-162610	BC-ATP-162610	BC-CGP-162610	BC-CTP-162610	BC-1525ST	BC-1525P	
160x260x130	6.30x10.24x5.12	BC-AGP-162613	BC-ATP-162613	BC-CGP-162613	BC-CTP-162613	BC-1525ST	BC-1525P	
170x220x105	6.69x8.66x4.13	BC-AGP-172210	BC-ATP-172210	BC-CGP-172210	BC-CTP-172210	BC-1520ST	BC-1520P	
170x270x110	6.69x10.63x4.33	BC-AGP-172711	BC-ATP-172711	BC-CGP-172711	BC-CTP-172711	BC-1525ST	BC-1525P	
190x280x100	7.48x11.02x3.94	BC-AGP-192810	BC-ATP-192810	BC-CGP-192810	BC-CTP-192810	BC-1928ST	BC-1928P	
190x280x140	7.48x11.02x5.51	BC-AGP-192814	BC-ATP-192814	BC-CGP-192814	BC-CTP-192814	BC-1928ST	BC-1928P	
200X300X130	7.87x11.81x5.12	BC-AGP-203013	BC-ATP-203013	BC-CGP-203013	BC-CTP-203013	BC-2030ST	BC-2030P	
200x300x150	7.87x11.81x5.91	BC-AGP-203015	BC-ATP-203015	BC-CGP-203015	BC-CTP-203015	BC-2030ST	BC-2030P	
200x300x180	7.87x11.81x7.09	BC-AGP-203018	BC-ATP-203018	BC-CGP-203018	BC-CTP-203018	BC-2030ST	BC-2030P	
210x210x100	8.27x8.27x3.94	BC-AGP-212110	BC-ATP-212110	BC-CGP-212110	BC-CTP-212110	BC-2020ST	BC-2020P	
210x210x130	8.27x8.27x5.12	BC-AGP-212113	BC-ATP-212113	BC-CGP-212113	BC-CTP-212113	BC-2020ST	BC-2020P	
250x350x150	9.84x13.78x5.91	BC-AGP-253515	BC-ATP-253515	BC-CGP-253515	BC-CTP-253515	BC-2535ST	BC-2535P	
250x350x180	9.84x13.78x7.09	BC-AGP-253518	BC-ATP-253518	BC-CGP-253518	BC-CTP-253518	BC-2535ST	BC-2535P	
280x280x130	11.02x11.02x5.12	BC-AGP-282813	BC-ATP-282813	BC-CGP-282813	BC-CTP-282813	BC-2828ST	BC-2828P	
280x380x130	11.02x14.96x5.12	BC-AGP-283813	BC-ATP-283813	BC-CGP-283813	BC-CTP-283813	BC-2838ST	BC-2838P	
300x300x150	11.81x11.81x5.91	BC-AGP-303015	BC-ATP-303015	BC-CGP-303015	BC-CTP-303015	BC-3030ST	BC-3030P	
300x300x180	11.81x11.81x7.09	BC-AGP-303018	BC-ATP-303018	BC-CGP-303018	BC-CTP-303018	BC-3030ST	BC-3030P	
300x400x120	11.81x15.75x4.72	BC-AGP-304012	BC-ATP-304012	BC-CGP-304012	BC-CTP-304012	BC-3040ST	BC-3040P	
300x400x150	11.81x15.75x5.91	BC-AGP-304015	BC-ATP-304015	BC-CGP-304015	BC-CTP-304015	BC-3040ST	BC-3040P	
300x400x180	11.81x15.75x7.09	BC-AGP-304018	BC-ATP-304018	BC-CGP-304018	BC-CTP-304018	BC-3040ST	BC-3040P	
350x350x150	13.78x13.78x5.91	BC-AGP-353515	BC-ATP-353515	BC-CGP-353515	BC-CTP-353515	BC-3535ST	BC-3535P	
350x350x180	13.78x13.78x7.09	BC-AGP-353518	BC-ATP-353518	BC-CGP-353518	BC-CTP-353518	BC-3535ST	BC-3535P	
350x450x120	13.78x17.72x4.72	BC-AGP-354512	BC-ATP-354512	BC-CGP-354512	BC-CTP-354512	BC-3545ST	BC-3545P	
350x450x160	13.78x17.72x6.30	BC-AGP-354516	BC-ATP-354516	BC-CGP-354516	BC-CTP-354516	BC-3545ST	BC-3545P	
350x450x200	13.78x17.72x7.87	BC-AGP-354520	BC-ATP-354520	BC-CGP-354520	BC-CTP-354520	BC-3545ST	BC-3545P	
400x500x160	15.75x19.69x6.30	BC-AGP-405016	BC-ATP-405016	BC-CGP-405016	BC-CTP-405016	BC-4050ST	BC-4050P	
400x500x200	15.75x19.69x7.87	BC-AGP-405020	BC-ATP-405020	BC-CGP-405020	BC-CTP-405020	BC-4050ST	BC-4050P	
400x600x180	15.75x23.62x7.09	BC-AGP-406018	BC-ATP-406018	BC-CGP-406018	BC-CTP-406018	BC-4060ST	BC-4060P	
400x600x230	15.75x23.62x9.06	BC-AGP-406023	BC-ATP-406023	BC-CGP-406023	BC-CTP-406023	BC-4060ST	BC-4060P	
530x630x185	20.87x24.80x7.28	BC-AGP-506018	BC-ATP-506018	BC-CGP-506018	BC-CTP-506018	BC-5060ST	BC-5060P	
530x630x255	20.87x24.80x10.04	BC-AGP-506025	BC-ATP-506025	BC-CGP-506025	BC-CTP-506025	BC-5060ST	BC-5060P	
530x730x185	20.87x28.74x7.28	BC-AGP-507018	BC-ATP-507018	BC-CGP-507018	BC-CTP-507018	BC-5070ST	BC-5070P	
530x730x255	20.87x28.74x10.04	BC-AGP-507025	BC-ATP-507025	BC-CGP-507025	BC-CTP-507025	BC-5070ST	BC-5070P	
630x830x185	24.80x32.68x7.28	BC-AGP-608018	BC-ATP-608018	BC-CGP-608018	BC-CTP-608018	BC-6080ST	X	
630x830x285	24.80x32.68x11.22	BC-AGP-608028	BC-ATP-608028	BC-CGP-608028	BC-CTP-608028	BC-6080ST	X	





# H-Series

Plastic Enclosures with SUS Hinge/Latch



- Stainless steel hinge & latch
- Cover opens on shorter sides
- Latch with safety catch to prevent accidental opening
- Meets IP66/67, NEMA 4X/6 specifications
- Excellent UV resistance (polycarbonate models)

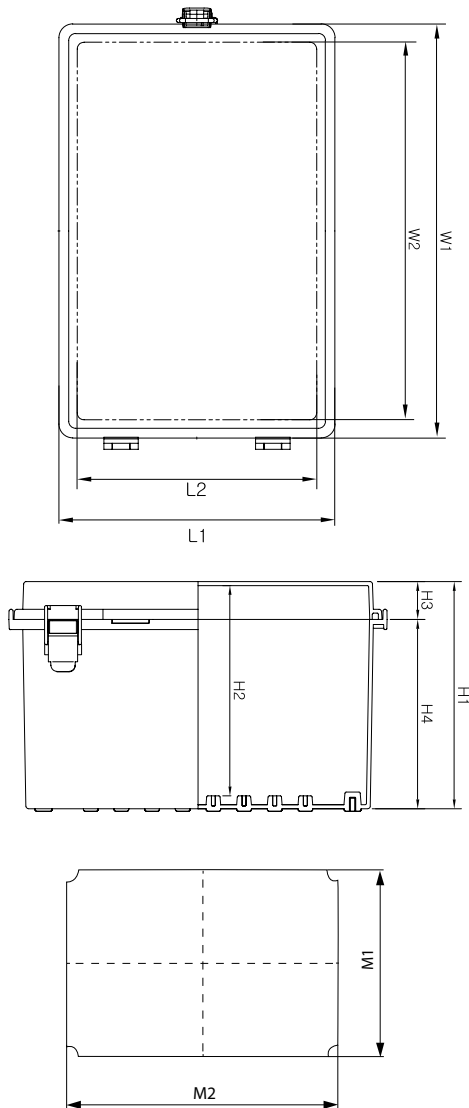
## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6 Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F) PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB PC: UL94-V-0, 5VA, 94-HB

## Dimensions

### Short Edge Open

## Dimensions

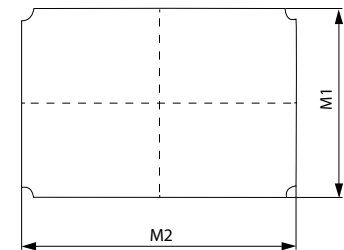
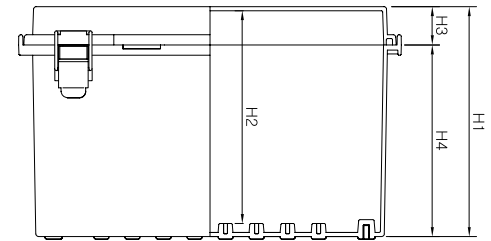
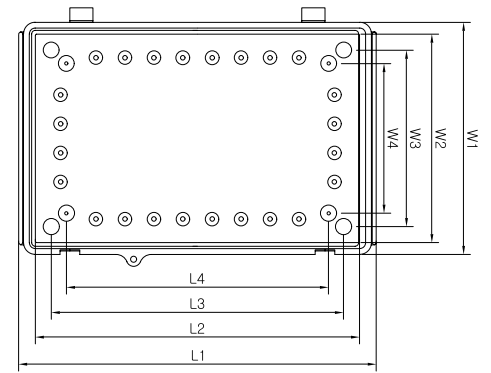


BACK PANEL

Design	Enclosure Sizes						Back* Panel (M1xM2)
	Outside Dimensions				Inside Dimensions		
	Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
	mm	inch	mm	mm	mm	inch	
L	275x225x120	10.83x8.86x4.72	30	90	252x201x104	9.92x7.91x4.09	276x252
	300x200x150	11.81x7.87x5.91	30	122	274x174x136	10.79x6.85x5.35	300x274
	300x200x180	11.81x7.87x7.09	30	150	275x175x164	10.83x6.89x6.46	300x275
	350x250x150	13.78x9.84x5.91	30	120	223x324x134	8.78x12.76x5.28	350x324
	400x300x150	15.75x11.81x5.91	30	120	374x274x136	14.72x10.79x5.35	400x374
	400x300x180	15.75x11.81x7.09	30	150	375x274x164	14.76x10.79x6.46	400x374
	450x350x160	17.72x13.78x6.30	30	130	417x311x143	16.42x12.24x5.63	450x417
	450x350x200	17.72x13.78x7.87	30	170	420x320x178	16.54x12.6x7.01	450x417
	500x400x200	19.69x15.75x7.87	30	170	469x363x186	18.46x14.29x7.32	500x469
600x400x230	23.62x15.75x9.06	30	200	575x375x216	22.64x14.76x8.50	600x575	
M	280x190x100	11.02x7.48x3.94	30	68	255x165x84	10.04x6.50x3.31	280x255
	280x190x130	11.02x7.48x5.12	30	98	256x165x114	10.08x6.50x4.49	280x255
	280x190x180	11.02x7.48x7.09	30	148	254x163x164	10.00x6.42x6.46	280x255
	340x280x130	13.39x11.02x5.12	30	98	314x256x112	12.36x10.08x4.41	340x314
	380x190x130	14.96x7.48x5.12	30	98	355x165x114	13.98x6.50x4.49	380x355
	380x190x180	14.96x7.48x7.09	30	148	355x165x164	13.98x6.50x6.46	380x355
	380x280x130	14.96x11.02x5.12	30	98	355x255x112	13.98x10.04x4.41	380x355
	380x280x180	14.96x11.02x7.09	30	148	355x255x162	13.98x10.04x6.38	380x355
	430x330x180	16.93x12.99x7.09	30	148	405x305x164	15.94x12.01x6.46	430x405
	560x280x130	22.05x11.02x5.12	30	98	535x255x112	21.06x10.04x4.41	560x535
	560x380x180	22.05x14.96x7.09	30	148	535x355x160	21.06x13.98x6.30	560x535
	S	110x80x70	4.33x3.15x2.76	20	50	100x70x57	3.94x2.76x2.24
110x80x85		4.33x3.15x3.35	20	65	100x70x72	3.94x2.76x2.83	110x100
110x80x100		4.33x3.15x3.94	35	65	100x70x87	3.94x2.76x3.43	110x100
130x80x70		5.12x3.15x2.76	20	50	120x70x57	4.72x2.76x2.24	130x120
130x80x85		5.12x3.15x3.35	35	50	120x70x72	4.72x2.76x2.83	130x120
170x140x95		6.69x5.51x3.74	20	75	159x130x82	6.26x5.12x3.23	170x159
175x125x75		6.89x4.92x2.95	25	49	165x117x61	6.50x4.61x2.40	175x165
175x125x100		6.89x4.92x3.94	50	49	165x117x86	6.50x4.61x3.39	175x165
180x80x70		7.09x3.15x2.76	20	50	170x70x57	6.69x2.76x2.24	180x170
180x80x85		7.09x3.15x3.35	35	50	170x70x72	6.69x2.76x2.83	180x170
200x150x75		7.87x5.91x2.95	20	55	188x138x62	7.40x5.43x2.44	200x188
200x150x100		7.87x5.91x3.94	20	79	188x138x87	7.40x5.43x3.43	200x188
200x150x130		7.87x5.91x5.12	20	110	188x138x117	7.40x5.43x4.61	200x188
200x150x160		7.87x5.91x6.30	50	110	188x138x146	7.40x5.43x5.75	200x188
230x140x95		9.06x5.51x3.74	20	75	219x130x82	8.62x5.12x3.23	230x219
230x210x100		9.06x8.27x3.94	20	80	217x197x87	8.54x7.76x3.43	230x217
250x80x70		9.84x3.15x2.76	20	50	235x67x57	9.25x2.64x2.24	250x235
250x80x85		9.84x3.15x3.35	35	50	235x67x72	9.25x2.64x2.83	250x235
250x150x100		9.84x5.91x3.94	20	80	240x140x87	9.45x5.51x3.43	250x240
250x150x130		9.84x5.91x5.12	50	80	240x140x117	9.45x5.51x4.61	250x240

# Long Edge Open

Design	Enclosure Sizes						Back* Panel (M1xM2)
	Outside Dimensions				Inside Dimensions		
	Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
	mm	inch	mm	mm	mm	inch	
L	200x300x150	7.87x11.81x5.91	30	122	174x274x136	6.85x10.79x5.35	300x274
	200x300x180	7.87x11.81x7.09	30	150	175x275x164	6.89x10.83x6.46	300x275
	225x275x120	8.86x10.83x4.72	30	90	201x252x104	7.94x9.92x4.09	276x252
	250x350x150	9.84x13.78x5.91	30	120	324x223x134	12.76x8.78x5.28	350x324
	300x400x150	11.81x15.75x5.91	30	120	274x374x136	10.79x14.72x5.35	400x374
	300x400x180	11.81x15.75x7.09	30	150	274x375x164	10.79x14.76x6.46	400x374
	350x450x160	13.78x17.72x6.30	30	130	311x417x143	12.24x16.42x5.63	450x417
	350x450x200	13.78x17.72x7.87	30	170	320x420x178	12.6x16.54x7.01	450x417
	400x500x200	15.75x19.69x7.87	30	170	363x469x186	14.29x18.46x7.32	500x469
400x600x230	15.75x23.62x9.06	30	200	375x575x216	14.76x22.64x8.50	600x575	
M	190x190x130	7.48x7.48x5.12	30	98	165x165x114	6.50x6.50x4.49	159x159
	190x280x100	7.48x11.02x3.94	30	68	165x255x84	6.50x10.04x3.31	280x255
	190x280x130	7.48x11.02x5.12	30	98	165x256x114	6.50x10.08x4.49	280x255
	190x280x180	7.48x11.02x7.09	30	148	163x254x164	6.42x10.00x6.46	280x255
	190x380x130	7.48x14.96x5.12	30	98	165x355x114	6.50x13.98x4.49	380x355
	190x380x180	7.48x14.96x7.09	30	148	165x355x164	6.50x13.98x6.46	380x355
	280x280x130	11.02x11.02x5.12	30	100	255x255x114	10.04x10.04x4.49	248x248
	280x340x130	11.02x13.39x5.12	30	98	256x314x112	10.08x12.36x4.41	340x314
	280x380x130	11.02x14.96x5.12	30	98	255x355x112	10.04x13.98x4.41	380x355
	280x380x180	11.02x14.96x7.09	30	148	255x355x162	10.04x13.98x6.38	380x355
	280x560x130	11.02x22.05x5.12	30	98	255x535x112	10.04x21.06x4.41	560x535
	330x430x180	12.99x16.93x7.09	30	148	305x405x164	12.01x15.94x6.46	430x405
	380x560x180	14.96x22.05x7.09	30	148	355x535x160	13.98x21.06x6.30	560x535
S	80x110x70	3.15x4.33x2.76	20	50	70x100x57	2.76x3.94x2.24	110x100
	80x110x85	3.15x4.33x3.35	20	65	70x100x72	2.76x3.94x2.83	110x100
	80x110x100	3.15x4.33x3.94	35	65	70x100x87	2.76x3.94x3.43	110x100
	80x130x70	3.15x5.12x2.76	20	50	70x120x57	2.76x4.72x2.24	130x120
	80x130x85	3.15x5.12x3.35	35	50	70x120x72	2.76x4.72x2.83	130x120
	80x180x70	3.15x7.09x2.76	20	50	70x170x57	2.76x6.69x2.24	180x170
	80x180x85	3.15x7.09x3.35	35	50	70x170x72	2.76x6.69x2.83	180x170
	80x200x70	3.15x7.87x2.76	20	50	67x189x56	2.64x7.44x2.20	185x65
	80x250x70	3.15x9.84x2.76	20	50	67x235x57	2.64x9.25x2.24	250x235
	80x250x85	3.15x9.84x3.35	35	50	67x235x72	2.64x9.25x2.83	250x235
	100x100x75	3.94x3.94x2.95	20	55	88x88x62	3.46x3.46x2.44	88x89
	100x100x100	3.94x3.94x3.94	20	80	88x88x87	3.46x3.46x3.43	88x89
	125x125x75	4.92x4.92x2.95	20	55	113x113x61	4.45x4.45x2.40	101x102
	125x125x100	4.92x4.92x3.94	20	80	113x113x86	4.45x4.45x3.39	101x102
	125x175x75	4.92x6.89x2.95	25	49	117x165x61	4.61x6.50x2.40	175x165
	125x175x100	4.92x6.89x3.94	50	49	117x165x86	4.61x6.50x3.39	175x165
	140x170x95	5.51x6.69x3.74	20	75	130x159x82	5.12x6.26x3.23	170x159
	140x230x95	5.51x9.06x3.74	20	75	130x219x82	5.12x8.62x3.23	230x219
	150x150x75	5.91x5.91x2.95	20	55	138x138x62	5.43x5.43x2.44	134x134
	150x150x100	5.91x5.91x3.94	20	80	138x138x87	5.43x5.43x3.43	134x134
	150x200x100	5.91x7.87x3.94	20	79	138x188x87	5.43x7.40x3.43	200x188
	150x200x130	5.91x7.87x5.12	20	110	188x138x117	5.43x7.40x4.61	200x188
	150x200x75	5.91x7.87x2.95	20	55	138x188x62	5.43x7.40x2.44	200x188
	150x200x160	5.91x7.87x6.30	50	110	138x188x146	5.43x7.40x5.75	200x188
	150x250x100	5.91x9.84x3.94	20	80	140x240x87	5.51x9.45x3.43	250x240
	150x250x130	5.91x9.84x5.12	50	80	140x240x117	5.51x9.45x4.61	250x240
	200x200x100	7.87x7.87x3.94	20	80	188x188x87	7.40x7.40x3.43	179x179
	200x200x130	7.87x7.87x5.12	20	110	188x188x117	7.40x7.40x4.61	179x179
	200x200x160	7.87x7.87x6.30	20	140	188x188x147	7.40x7.40x5.79	179x179
	200x200x190	7.87x7.87x7.48	50	140	188x188x171	7.40x7.40x6.73	179x179
210x230x100	8.27x9.06x3.94	20	80	197x217x87	7.76x8.54x3.43	230x217	



BACK PANEL

# Size and Part Numbers

## Long Edge Open

Design	Outside size		MODELS				Back Panel		Mounting Bracket
	Size (W1xL1xH1)		ABS		Polycarbonate (UL508A)		Steel 1.6mm+	Plastic 3mm+	
	mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
L	200x300x150	7.87x11.81x5.91	BC-AGH-203015	BC-ATH-203015	BC-CGH-203015	BC-CTH-203015	BC-2030ST	BC-2030P	BC-B50
	200x300x180	7.87x11.81x7.09	BC-AGH-203018	BC-ATH-203018	BC-CGH-203018	BC-CTH-203018	BC-2030ST	BC-2030P	
	225x275x120	8.86x10.83x4.72	BC-AGH-222712	BC-ATH-222712	BC-CGH-222712	BC-CTH-222712	BC-2227ST	BC-2227P	
	250x350x150	9.84x13.78x5.91	BC-AGH-253515	BC-ATH-253515	BC-CGH-253515	BC-CTH-253515	BC-2535ST	BC-2535P	
	300x400x150	11.81x15.75x5.91	BC-AGH-304015	BC-ATH-304015	BC-CGH-304015	BC-CTH-304015	BC-3040ST	BC-3040P	
	300x400x180	11.81x15.75x7.09	BC-AGH-304018	BC-ATH-304018	BC-CGH-304018	BC-CTH-304018	BC-3040ST	BC-3040P	
	350x450x160	13.78x17.72x6.30	BC-AGH-354516	BC-ATH-354516	BC-CGH-354516	BC-CTH-354516	BC-3545ST	BC-3545P	
	350x450x200	13.78x17.72x7.87	BC-AGH-354520	BC-ATH-354520	BC-CGH-354520	BC-CTH-354520	BC-3545ST	BC-3545P	
	400x500x200	15.75x19.69x7.87	BC-AGH-405020	BC-ATH-405020	BC-CGH-405020	BC-CTH-405020	BC-4050ST	BC-4050P	
400x600x230	15.75x23.62x9.06	BC-AGH-406023	BC-ATH-406023	BC-CGH-406023	BC-CTH-406023	BC-4060ST	BC-4060P	BC-B60	
M	190x190x130	7.48x7.48x5.12	BC-AGH-191913	BC-ATH-191913	BC-CGH-191913	BC-CTH-191913	BC-1919ST	BC-1919P	BC-B50
	190x280x100	7.48x11.02x3.94	BC-AGH-192810	BC-ATH-192810	BC-CGH-192810	BC-CTH-192810	BC-1928ST	BC-1928P	
	190x280x130	7.48x11.02x5.12	BC-AGH-192813	BC-ATH-192813	BC-CGH-192813	BC-CTH-192813	BC-1928ST	BC-1928P	
	190x280x180	7.48x11.02x7.09	BC-AGH-192818	BC-ATH-192818	BC-CGH-192818	BC-CTH-192818	BC-1928ST	BC-1928P	
	190x380x130	7.48x14.96x5.12	BC-AGH-193813	BC-ATH-193813	BC-CGH-193813	BC-CTH-193813	BC-1938ST	BC-1938P	
	190x380x180	7.48x14.96x7.09	BC-AGH-193818	BC-ATH-193818	BC-CGH-193818	BC-CTH-193818	BC-1938ST	BC-1938P	
	280x280x130	11.02x11.02x5.12	BC-AGH-282813	BC-ATH-282813	BC-CGH-282813	BC-CTH-282813	BC-2828ST	BC-2828P	
	280x340x130	11.02x13.39x5.12	BC-AGH-283413	BC-ATH-283413	BC-CGH-283413	BC-CTH-283413	BC-2834ST	BC-2834P	
	280x380x130	11.02x14.96x5.12	BC-AGH-283813	BC-ATH-283813	BC-CGH-283813	BC-CTH-283813	BC-2838ST	BC-2838P	
	280x380x180	11.02x14.96x7.09	BC-AGH-283818	BC-ATH-283818	BC-CGH-283818	BC-CTH-283818	BC-2838ST	BC-2838P	
	280x560x130	11.02x22.05x5.12	BC-AGH-285613	BC-ATH-285613	BC-CGH-285613	BC-CTH-285613	BC-2856ST	X	
	330x430x180	12.99x16.93x7.09	BC-AGH-334318	BC-ATH-334318	BC-CGH-334318	BC-CTH-334318	BC-3343ST	BC-3343P	
380x560x180	14.96x22.05x7.09	BC-AGH-385618	BC-ATH-385618	BC-CGH-385618	BC-CTH-385618	BC-3856ST	X		
S	80x110x100	3.15x4.33x3.94	BC-AGH-081110	BC-ATH-081110	BC-CGH-081110	BC-CTH-081110	BC-0811ST	BC-0811P	BC-B40
	80x110x70	3.15x4.33x2.76	BC-AGH-081107	BC-ATH-081107	BC-CGH-081107	BC-CTH-081107	BC-0811ST	BC-0811P	
	80x110x85	3.15x4.33x3.35	BC-AGH-081108	BC-ATH-081108	BC-CGH-081108	BC-CTH-081108	BC-0811ST	BC-0811P	
	80x130x70	3.15x5.12x2.76	BC-AGH-081307	BC-ATH-081307	BC-CGH-081307	BC-CTH-081307	BC-0813ST	BC-0813P	
	80x130x85	3.15x5.12x3.35	BC-AGH-081308	BC-ATH-081308	BC-CGH-081308	BC-CTH-081308	BC-0813ST	BC-0813P	
	80x180x70	3.15x7.09x2.76	BC-AGH-081807	BC-ATH-081807	BC-CGH-081807	BC-CTH-081807	BC-0818ST	BC-0818P	
	80x180x85	3.15x7.09x3.35	BC-AGH-081808	BC-ATH-081808	BC-CGH-081808	BC-CTH-081808	BC-0818ST	BC-0818P	
	80x200x70	3.15x7.87x2.76	BC-AGH-082007	BC-ATH-082007	BC-CGH-082007	BC-CTH-082007	BC-0820ST	X	
	80x250x70	3.15x9.84x2.76	BC-AGH-082507	BC-ATH-082507	BC-CGH-082507	BC-CTH-082507	BC-0825ST	BC-0825P	
	80x250x85	3.15x9.84x3.35	BC-AGH-082508	BC-ATH-082508	BC-CGH-082508	BC-CTH-082508	BC-0825ST	BC-0825P	
	100x100x100	3.94x3.94x3.94	BC-AGH-101010	BC-ATH-101010	BC-CGH-101010	BC-CTH-101010	BC-1010ST	BC-1010P	
	100x100x75	3.94x3.94x2.95	BC-AGH-101007	BC-ATH-101007	BC-CGH-101007	BC-CTH-101007	BC-1010ST	BC-1010P	
	125x125x100	4.92x4.92x3.94	BC-AGH-121210	BC-ATH-121210	BC-CGH-121210	BC-CTH-121210	BC-1212ST	BC-1212P	
	125x125x75	4.92x4.92x2.95	BC-AGH-121207	BC-ATH-121207	BC-CGH-121207	BC-CTH-121207	BC-1212ST	BC-1212P	
	125x175x100	4.92x6.89x3.94	BC-AGH-121710	BC-ATH-121710	BC-CGH-121710	BC-CTH-121710	BC-1217ST	BC-1217P	
	125x175x75	4.92x6.89x2.95	BC-AGH-121707	BC-ATH-121707	BC-CGH-121707	BC-CTH-121707	BC-1217ST	BC-1217P	
	140x170x95	5.51x6.69x3.74	BC-AGH-141709	BC-ATH-141709	BC-CGH-141709	BC-CTH-141709	BC-1417ST	BC-1417P	
	140x230x95	5.51x9.06x3.74	BC-AGH-142309	BC-ATH-142309	BC-CGH-142309	BC-CTH-142309	BC-1423ST	BC-1423P	
	150x150x100	5.91x5.91x3.94	BC-AGH-151510	BC-ATH-151510	BC-CGH-151510	BC-CTH-151510	BC-1515ST	BC-1515P	
	150x150x75	5.91x5.91x2.95	BC-AGH-151507	BC-ATH-151507	BC-CGH-151507	BC-CTH-151507	BC-1515ST	BC-1515P	
	150x200x100	5.91x7.87x3.94	BC-AGH-152010	BC-ATH-152010	BC-CGH-152010	BC-CTH-152010	BC-1520ST	BC-1520P	
	150x200x130	5.91x7.87x5.12	BC-AGH-152013	BC-ATH-152013	BC-CGH-152013	BC-CTH-152013	BC-1520ST	BC-1520P	
	150x200x160	5.91x7.87x6.30	BC-AGH-152016	BC-ATH-152016	BC-CGH-152016	BC-CTH-152016	BC-1520ST	BC-1520P	
	150x200x75	5.91x7.87x2.95	BC-AGH-152007	BC-ATH-152007	BC-CGH-152007	BC-CTH-152007	BC-1520ST	BC-1520P	
	150x250x100	5.91x9.84x3.94	BC-AGH-152510	BC-ATH-152510	BC-CGH-152510	BC-CTH-152510	BC-1525ST	BC-1525P	
	150x250x130	5.91x9.84x5.12	BC-AGH-152513	BC-ATH-152513	BC-CGH-152513	BC-CTH-152513	BC-1525ST	BC-1525P	
	200x200x100	7.87x7.87x3.94	BC-AGH-202010	BC-ATH-202010	BC-CGH-202010	BC-CTH-202010	BC-2020ST	BC-2020P	
	200x200x130	7.87x7.87x5.12	BC-AGH-202013	BC-ATH-202013	BC-CGH-202013	BC-CTH-202013	BC-2020ST	BC-2020P	
	200x200x160	7.87x7.87x6.30	BC-AGH-202016	BC-ATH-202016	BC-CGH-202016	BC-CTH-202016	BC-2020ST	BC-2020P	
	200x200x190	7.87x7.87x7.48	BC-AGH-202019	BC-ATH-202019	BC-CGH-202019	BC-CTH-202019	BC-2020ST	BC-2020P	
	210x230x100	8.27x9.06x3.94	BC-AGH-212310	BC-ATH-212310	BC-CGH-212310	BC-CTH-212310	BC-2123ST	BC-2123P	

# Short Edge Open

Desgin	Outside size		MODELS				Back Panel		Mounting Bracket
	Size (W1xL1xH1)		ABS		Polycarbonate (UL508A)		Steel 1.6mm+	Plastic 3mm+	
	mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
L	275x225x120	10.83x8.86x4.72	BC-AGH-272212	BC-ATH-272212	BC-CGH-272212	BC-CTH-272212	BC-2227ST	BC-2227P	BC-B50
	300x200x150	11.81x7.87x5.91	BC-AGH-302015	BC-ATH-302015	BC-CGH-302015	BC-CTH-302015	BC-2030ST	BC-2030P	
	300x200x180	11.81x7.87x7.09	BC-AGH-302018	BC-ATH-302018	BC-CGH-302018	BC-CTH-302018	BC-2030ST	BC-2030P	
	350x250x150	13.78x9.84x5.91	BC-AGH-352515	BC-ATH-352515	BC-CGH-352515	BC-CTH-352515	BC-2535ST	BC-2535P	
	400x300x150	15.75x11.81x5.91	BC-AGH-403015	BC-ATH-403015	BC-CGH-403015	BC-CTH-403015	BC-3040ST	BC-3040P	
	400x300x180	15.75x11.81x7.09	BC-AGH-403018	BC-ATH-403018	BC-CGH-403018	BC-CTH-403018	BC-3040ST	BC-3040P	
	450x350x160	17.72x13.78x6.30	BC-AGH-453516	BC-ATH-453516	BC-CGH-453516	BC-CTH-453516	BC-3545ST	BC-3545P	
	450x350x200	17.72x13.78x7.87	BC-AGH-453520	BC-ATH-453520	BC-CGH-453520	BC-CTH-453520	BC-3545ST	BC-3545P	
500x400x200	19.69x15.75x7.87	BC-AGH-504020	BC-ATH-504020	BC-CGH-504020	BC-CTH-504020	BC-4050ST	BC-4050P	BC-B60	
600x400x230	23.62x15.75x9.06	BC-AGH-604023	BC-ATH-604023	BC-CGH-604023	BC-CTH-604023	BC-4060ST	BC-4060P		
M	280x190x100	11.02x7.48x3.94	BC-AGH-281910	BC-ATH-281910	BC-CGH-281910	BC-CTH-281910	BC-1928ST	BC-1928P	BC-B50
	280x190x130	11.02x7.48x5.12	BC-AGH-281913	BC-ATH-281913	BC-CGH-281913	BC-CTH-281913	BC-1928ST	BC-1928P	
	280x190x180	11.02x7.48x7.09	BC-AGH-281918	BC-ATH-281918	BC-CGH-281918	BC-CTH-281918	BC-1928ST	BC-1928P	
	340x280x130	13.39x11.02x5.12	BC-AGH-342813	BC-ATH-342813	BC-CGH-342813	BC-CTH-342813	BC-2834ST	BC-2834P	
	380x190x130	14.96x7.48x5.12	BC-AGH-381913	BC-ATH-381913	BC-CGH-381913	BC-CTH-381913	BC-1938ST	BC-1938P	
	380x190x180	14.96x7.48x7.09	BC-AGH-381918	BC-ATH-381918	BC-CGH-381918	BC-CTH-381918	BC-1938ST	BC-1938P	
	380x280x130	14.96x11.02x5.12	BC-AGH-382813	BC-ATH-382813	BC-CGH-382813	BC-CTH-382813	BC-2838ST	BC-2838P	
	380x280x180	14.96x11.02x7.09	BC-AGH-382818	BC-ATH-382818	BC-CGH-382818	BC-CTH-382818	BC-2838ST	BC-2838P	
	430x330x180	16.93x12.99x7.09	BC-AGH-433318	BC-ATH-433318	BC-CGH-433318	BC-CTH-433318	BC-3343ST	BC-3343P	
	560x280x130	22.05x11.02x5.12	BC-AGH-562813	BC-ATH-562813	BC-CGH-562813	BC-CTH-562813	BC-2856ST	X	
560x380x180	22.05x14.96x7.09	BC-AGH-563818	BC-ATH-563818	BC-CGH-563818	BC-CTH-563818	BC-3856ST	X		
S	110x80x70	4.33x3.15x2.76	BC-AGH-110807	BC-ATH-110807	BC-CGH-110807	BC-CTH-110807	BC-0811ST	BC-0811P	BC-B40
	110x80x85	4.33x3.15x3.35	BC-AGH-110808	BC-ATH-110808	BC-CGH-110808	BC-CTH-110808	BC-0811ST	BC-0811P	
	110x80x100	4.33x3.15x3.94	BC-AGH-110810	BC-ATH-110810	BC-CGH-110810	BC-CTH-110810	BC-0811ST	BC-0811P	
	130x80x70	5.12x3.15x2.76	BC-AGH-130807	BC-ATH-130807	BC-CGH-130807	BC-CTH-130807	BC-0813ST	BC-0813P	
	130x80x85	5.12x3.15x3.35	BC-AGH-130808	BC-ATH-130808	BC-CGH-130808	BC-CTH-130808	BC-0813ST	BC-0813P	
	170x140x95	6.69x5.51x3.74	BC-AGH-171409	BC-ATH-171409	BC-CGH-171409	BC-CTH-171409	BC-1417ST	BC-1417P	
	175x125x75	6.89x4.92x2.95	BC-AGH-171207	BC-ATH-171207	BC-CGH-171207	BC-CTH-171207	BC-1217ST	BC-1217P	
	175x125x100	6.89x4.92x3.94	BC-AGH-171210	BC-ATH-171210	BC-CGH-171210	BC-CTH-171210	BC-1217ST	BC-1217P	
	180x80x70	7.09x3.15x2.76	BC-AGH-180807	BC-ATH-180807	BC-CGH-180807	BC-CTH-180807	BC-0818ST	BC-0818P	
	180x80x85	7.09x3.15x3.35	BC-AGH-180808	BC-ATH-180808	BC-CGH-180808	BC-CTH-180808	BC-0818ST	BC-0818P	
	200x150x75	7.87x5.91x2.95	BC-AGH-201507	BC-ATH-201507	BC-CGH-201507	BC-CTH-201507	BC-1520ST	BC-1520P	
	200x150x100	7.87x5.91x3.94	BC-AGH-201510	BC-ATH-201510	BC-CGH-201510	BC-CTH-201510	BC-1520ST	BC-1520P	
	200x150x130	7.87x5.91x5.12	BC-AGH-201513	BC-ATH-201513	BC-CGH-201513	BC-CTH-201513	BC-1520ST	BC-1520P	
	200x150x160	7.87x5.91x6.30	BC-AGH-201516	BC-ATH-201516	BC-CGH-201516	BC-CTH-201516	BC-1520ST	BC-1520P	
	230x140x95	9.06x5.51x3.74	BC-AGH-231409	BC-ATH-231409	BC-CGH-231409	BC-CTH-231409	BC-1423ST	BC-1423P	
	230x210x100	9.06x8.27x3.94	BC-AGH-232110	BC-ATH-232110	BC-CGH-232110	BC-CTH-232110	BC-2123ST	X	
	250x80x70	9.84x3.15x2.76	BC-AGH-250807	BC-ATH-250807	BC-CGH-250807	BC-CTH-250807	BC-0825ST	BC-0825P	
	250x80x85	9.84x3.15x3.35	BC-AGH-250808	BC-ATH-250808	BC-CGH-250808	BC-CTH-250808	BC-0825ST	BC-0825P	
250x150x100	9.84x5.91x3.94	BC-AGH-251510	BC-ATH-251510	BC-CGH-251510	BC-CTH-251510	BC-1525ST	BC-1525P		
250x150x130	9.84x5.91x5.12	BC-AGH-251513	BC-ATH-251513	BC-CGH-251513	BC-CTH-251513	BC-1525ST	BC-1525P		



L Design



M Design



S Design



# R-Series

Hinge & Latch Type  
Plastic Enclosures

- Molded hinges & Stainless steel latches
- Meets IP66/67, NEMA 4X/6 specifications
- Cost-effective type



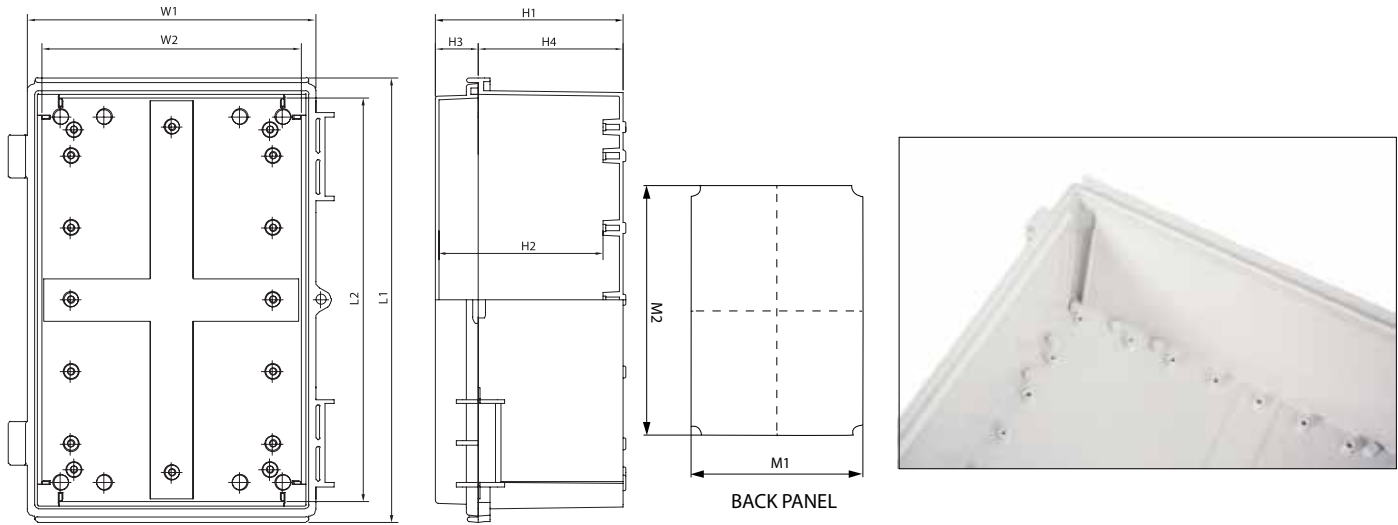
## Specifications

Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	CE, TUV, RoHS
Temperature range	-40°C to 70°C (-40°F to 158°F)
Flammability Rating	UL94-HB

## Part Numbers and Size

Outside size Size (W1xL1xH1)		Models ABS		Back Panels		
mm	inch	Gray cover	Transparent cover	Steel 1.6mm +	Plastic G-type	Plastic C-type
100x150x75	3.94x5.91x2.95	BC-AGR-101508	BC-ATR-101508	BC-1015SQ	BC-1015G	-
100x150x95	3.94x5.91x3.74	BC-AGR-101510	BC-ATR-101510	BC-1015SQ	BC-1015G	-
150x150x95	5.91x5.91x3.74	BC-AGR-151510	BC-ATR-151510	BC-1515SQ	BC-1515G	-
160x210x105	6.30x8.27x4.13	BC-AGR-162111	BC-ATR-162111	BC-1520SQ	BC-1520G	-
160x210x135	6.30x8.27x5.32	BC-AGR-162114	BC-ATR-162114	BC-1520SQ	BC-1520G	-
160x260x105	6.30x10.24x4.13	BC-AGR-162611	BC-ATR-162611	BC-1525SQ	BC-1525G	-
160x260x135	6.30x10.24x5.32	BC-AGR-162614	BC-ATR-162614	BC-1525SQ	BC-1525G	-
210x210x135	8.27x8.27x5.32	BC-AGR-212114	BC-ATR-212114	BC-2020SQ	BC-2020G	-
190x280x100	7.48x11.02x3.94	BC-AGR-192810	BC-ATR-192810	BC-1928SQ	BC-1928G	-
200x250x160	7.87x9.84x6.30	BC-AGR-202516	BC-ATR-202516	BC-2025SQ	BC-2025G	-
200x300x130	7.87x11.81x5.12	BC-AGR-203013	BC-ATR-203013	BC-2030SQ	BC-2030G	BC-2030C
200x300x160	7.87x11.81x6.30	BC-AGR-203016	BC-ATR-203016	BC-2030SQ	BC-2030G	BC-2030C
200x300x180	7.87x11.81x7.09	BC-AGR-203018	BC-ATR-203018	BC-2030SQ	BC-2030G	BC-2030C
200x300x210	7.87x11.81x8.27	BC-AGR-203021	BC-ATR-203021	BC-2030SQ	BC-2030G	BC-2030C
250x300x160	9.84x11.81x6.30	BC-AGR-253016	BC-ATR-253016	BC-2530SQ	BC-2530G	-
250x350x160	9.84x13.78x6.30	BC-AGR-253516	BC-ATR-253516	BC-2535SQ	BC-2535G	BC-2535C
250x350x180	9.84x13.78x7.09	BC-AGR-253518	BC-ATR-253518	BC-2535SQ	BC-2535G	BC-2535C
300x300x160	11.81x11.81x6.30	BC-AGR-303016	BC-ATR-303016	BC-3030SQ	BC-3030G	BC-3030C
300x300x180	11.81x11.81x7.09	BC-AGR-303018	BC-ATR-303018	BC-3030SQ	BC-3030G	BC-3030C
300x400x160	11.81x15.75x6.30	BC-AGR-304016	BC-ATR-304016	BC-3040SQ	BC-3040G	BC-3040C
300x400x180	11.81x15.75x7.09	BC-AGR-304018	BC-ATR-304018	BC-3040SQ	BC-3040G	BC-3040C
300x400x230	11.81x15.75x9.06	BC-AGR-304023	BC-ATR-304023	BC-3040SQ	BC-3040G	BC-3040C
350x450x170	13.78x17.72x6.69	BC-AGR-354517	BC-ATR-354517	BC-3545SQ	BC-3545G	-
350x450x210	13.78x17.72x8.27	BC-AGR-354521	BC-ATR-354521	BC-3545SQ	BC-3545G	-
400x500x170	15.75x19.69x6.69	BC-AGR-405017	BC-ATR-405017	BC-4050SQ	BC-4050G	-
400x500x210	15.75x19.69x8.27	BC-AGR-405021	BC-ATR-405021	BC-4050SQ	BC-4050G	-
510x610x160	20.08x24.02x6.30	BC-AGR-516116	BC-ATR-516116	BC-5161SQ	-	BC-5161C
510x610x200	20.08x24.02x7.87	BC-AGR-516120	BC-ATR-516120	BC-5161SQ	-	BC-5161C
510x710x200	20.08x27.95x7.87	BC-AGR-517120	BC-ATR-517120	BC-5171SQ	-	BC-5171C
610x710x200	24.02x27.95x7.87	BC-AGR-617120	BC-ATR-617120	BC-6171SQ	-	BC-6171C
610x810x260	24.02x31.89x10.24	BC-AGR-618126	BC-ATR-618126	BC-6181SQ	-	BC-6181C

# Dimensions



Enclosure Sizes						Back Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
mm	inch	mm	mm	mm	Inch	mm
100x150x75	3.94x5.91x2.95	25	50	78x128x61	3.07x5.04x2.40	74x124
100x150x95	3.94x5.91x3.74	25	70	78x128x81	3.07x5.04x3.19	74x124
150x150x 95	5.91x5.91x3.74	25	70	131x131x82	5.16x5.16x3.23	124x124
160x10x105	6.30x8.27x4.13	25	80	138x188x92	5.43x7.40x3.62	130x180
160x210x135	6.30x8.27x5.32	25	110	138x188x122	5.43x7.40x4.80	130x180
160x260x105	6.30x10.24x4.13	25	80	134x235x92	5.28x9.25x3.62	128x228
160x260x135	6.30x10.24x5.32	25	110	134x235x122	5.28x9.25x4.80	128x228
210x210x135	8.27x8.27x5.32	25	110	185x185x120	7.28x7.28x4.72	180x180
190x280x100	7.48x11.02x3.94	30	70	164x253x85	6.46x9.96x3.35	155x245
200x250x160	7.87x9.84x6.30	30	130	173x223x143	6.81x8.78x5.63	165x215
200x300x130	7.87x11.81x5.12	30	100	174x273x115	6.85x10.75x4.53	160x260
200x300x160	7.87x11.81x6.30	30	130	174x273x145	6.85x10.75x5.71	160x260
200x300x180	7.87x11.81x7.09	30	150	174x273x165	6.85x10.75x6.50	160x260
200x300x210	7.87x11.81x8.27	30	180	174x273x195	6.85x10.75x7.68	160x260
250x300x160	9.84x11.81x6.30	30	130	223x273x143	8.78x10.75x5.63	215x265
250x350x160	9.84x13.78x6.30	30	130	229x329x145	9.02x12.95x5.71	210x310
250x350x180	9.84x13.78x7.09	30	150	229x329x165	9.02x12.95x6.50	210x310
300x300x160	11.81x11.81x6.30	30	130	273x273x150	10.75x10.75x5.91	260x260
300x300x180	11.81x11.81x7.09	30	150	273x273x170	10.75x10.75x6.69	260x260
300x400x160	11.81x15.75x6.30	30	130	280x380x145	11.02x14.96x5.71	260x360
300x400x180	11.81x15.75x7.09	30	150	280x380x165	11.02x14.96x6.50	260x360
300x 400x230	11.81x15.75x9.06	30	200	280x380x213	11.02x14.96x8.39	260x360
350x450x170	13.78x17.72x6.69	40	130	415x315x160	16.34x12.40x6.30	300x400
350x450x210	13.78x17.72x8.27	40	170	415x315x200	16.34x12.40x7.87	300x400
400x500x170	15.75x19.69x6.69	40	130	464x364x160	18.27x14.33x6.30	350x450
400x500x210	15.75x19.69x8.27	40	170	464x364x200	18.27x14.33x7.87	350x450
510x610x160	20.08x24.02x6.30	35	125	470x570x145	18.50x22.44x5.71	444x544
510x610x200	20.08x24.02x7.87	35	165	470x570x182	18.50x22.44x7.17	444x544
510x710x200	20.08x27.95x7.87	35	165	470x670x182	18.50x26.38x7.17	444x644
610x710x200	24.02x27.95x7.87	35	165	570x670x182	22.44x26.38x7.17	544x644
610x810x260	24.02x31.89x10.24	35	225	570x770x242	22.44x30.32x9.53	544x744



# Q-Series

Hinge & Latch Type  
All Plastic Enclosures

- Plastic hinges & Plastic latches
- UL Listed (UL508A): Ref.# E343339 (PC Models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base
- Excellent UV resistance (polycarbonate models)



## Part Numbers and Size

Outside size		Models				Back Panels		
Size (W1xL1xH1)		ABS		Polycarbonate (UL508A)		Steel 1.6mm +	Plastic G-type	Plastic C-type
mm	inch	Gray cover	Transparent cover	Gray cover	Transparent cover			
100x100x80x25*	3.94x3.94x3.15x0.98	BC-AGQ-101008-K	BC-ATQ-101008-K	BC-CGQ-101008-K	BC-CTQ-101008-K	-	-	-
100x150x90	3.94x5.91x3.54	BC-AGQ-101509	BC-ATQ-101509	BC-CGQ-101509	BC-CTQ-101509	BC-1015SQ	BC-1015G	-
150x150x90	5.91x5.91x3.54	BC-AGQ-151509	BC-ATQ-151509	BC-CGQ-151509	BC-CTQ-151509	BC-1515SQ	BC-1515G	-
150x150x120	5.91x5.91x4.72	BC-AGQ-151512	BC-ATQ-151512	BC-CGQ-151512	BC-CTQ-151512			
160x210x100	6.30x8.27x3.94	BC-AGQ-162110	BC-ATQ-162110	BC-CGQ-162110	BC-CTQ-162110	BC-1621SQ	BC-1621G	-
160x210x130	6.30x8.27x5.12	BC-AGQ-162113	BC-ATQ-162113	BC-CGQ-162113	BC-CTQ-162113			
210x210x130	8.27x8.27x5.12	BC-AGQ-212113	BC-ATQ-212113	BC-CGQ-212113	BC-CTQ-212113	BC-2121SQ	BC-2121G	-
200x300x130	7.87x11.81x5.12	BC-AGQ-203013	BC-ATQ-203013	BC-CGQ-203013	BC-CTQ-203013	BC-2030SQ	BC-2030G	BC-2030C
200x300x140	7.87x11.81x5.51	BC-AGQ-203014	BC-ATQ-203014	BC-CGQ-203014	BC-CTQ-203014			
200x300x150	7.87x11.81x5.91	BC-AGQ-203015	BC-ATQ-203015	BC-CGQ-203015	BC-CTQ-203015			
200x300x180	7.87x11.81x7.09	BC-AGQ-203018	BC-ATQ-203018	BC-CGQ-203018	BC-CTQ-203018			
250x350x160	9.84x13.78x6.30	BC-AGQ-253516	BC-ATQ-253516	BC-CGQ-253516	BC-CTQ-253516			
300x300x160	11.81x11.81x6.30	BC-AGQ-303016	BC-ATQ-303016	BC-CGQ-303016	BC-CTQ-303016	BC-3030SQ	BC-3030G	BC-3030C
300x400x150	11.81x15.75x5.91	BC-AGQ-304015	BC-ATQ-304015	BC-CGQ-304015	BC-CTQ-304015	BC-3040SQ	BC-3040G	BC-3040C
300x400x160	11.81x15.75x6.30	BC-AGQ-304016	BC-ATQ-304016	BC-CGQ-304016	BC-CTQ-304016			
300x400x180	11.81x15.75x7.09	BC-AGQ-304018	BC-ATQ-304018	BC-CGQ-304018	BC-CTQ-304018	BC-3040SQ	BC-3040G	BC-3040C
350x450x200	13.78x17.72x7.87	BC-AGQ-354520	BC-ATQ-354520	BC-CGQ-354520	BC-CTQ-354520	BC-3545SQ	BC-3545G	-
400x500x160	15.75x19.69x6.30	BC-AGQ-405016	BC-ATQ-405016	BC-CGQ-405016	BC-CTQ-405016	BC-4050SQ	BC-4050G	-
400x500x200	15.75x19.69x7.87	BC-AGQ-405020	BC-ATQ-405020	BC-CGQ-405020	BC-CTQ-405020			

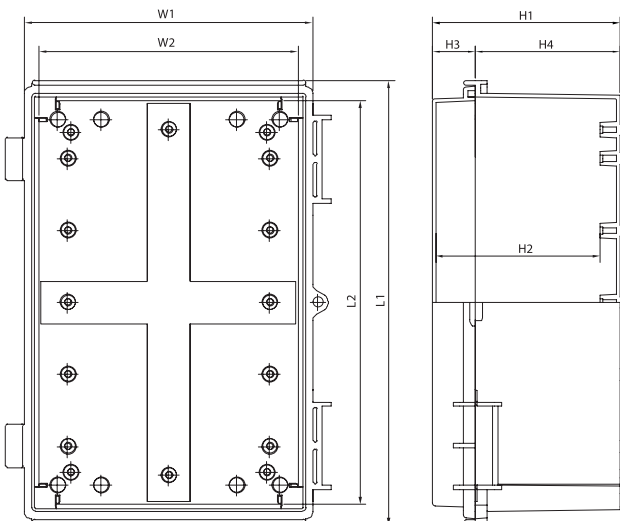
\* Knock out box

## Specifications

Protection Level	Dust/Water proof: IP67
	Impact test: IK07/08
Certification	UL508A(CGQ), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Dimensions



Enclosure Sizes						Back Panel (M1xM2)
Outside Dimensions			Inside Dimensions			
Size (W1xL1xH1)		Cover (H3)	Base (H4)	Size (W2xL2xH2)		
mm	inch	mm	mm	mm	inch	mm
100x100x80x25*	3.94x3.94x3.15x0.98	20	60	81x81x75	3.19x3.19x2.95	-
100x150x90	3.94x5.91x3.54	20	70	76x126x78	2.99x4.96x3.07	74x124
150x150x90	5.91x5.91x3.54	20	70	129x129x78	5.08x5.08x3.07	124x124
150x150x120	5.91x5.91x4.72	20	100	129x129x108	5.08x5.08x4.25	
160x210x100	6.30x8.27x3.94	20	80	136x186x88	5.35x7.32x3.46	130x180
160x210x130	6.30x8.27x5.12	20	110	136x186x118	5.35x7.32x4.65	
210x210x130	8.27x8.27x5.12	20	110	183x183x118	7.20x7.20x4.65	180x180
200x300x130	7.87x11.81x5.12	30	100	175x275x114	6.89x10.83x4.49	160x260
200x300x140	7.87x11.81x5.51	30	110	175x275x104	6.89x10.83x4.09	
200x300x150	7.87x11.81x5.91	30	120	175x275x134	6.89x10.83x5.28	
200x300x180	7.87x11.81x7.09	30	150	175x275x164	6.89x10.83x6.46	
250x350x160	9.84x13.78x6.30	30	130	225x325x144	8.86x12.80x5.67	
300x300x160	11.81x11.81x6.30	30	130	270x270x144	10.63x10.63x5.67	260x260
300x400x150	11.81x15.75x5.91	30	120	275x375x141	10.83x14.76x5.55	260x360
300x400x160	11.81x15.75x6.30	30	130	275x375x144	10.83x14.76x5.67	
300x400x180	11.81x15.75x7.09	30	150	275x375x164	10.83x14.76x6.46	300x400
350x450x200	13.78x17.72x7.87	30	170	317x417x183	12.48x16.42x7.20	
400x500x160	15.75x19.69x6.30	30	130	369x469x143	14.53x18.46x5.63	350x450
400x500x200	15.75x19.69x7.87	30	170	369x469x183	14.53x18.46x7.20	

\* Knock out box



# AGD Series

Dual Door Type Enclosures

- Pre-assembled cover and transparent window
- Built-in hinge and stainless steel latch
- Detachable cover for easy access
- Fiberglass reinforced polycarbonate base



## Specifications

Protection Level	IP66(ARD) IP64(AGD)
Certification	CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\*The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Part Numbers and Size

Models		Size		Back Panels		IP Rating
ABS	PC	mm	inches	Steel 1.6mm +	Plastic 3mm +	
BC-ARD-253517	BC-CRD-253517	250 x 350 x 170	9.84 x 13.78 x 6.69	BC-2535ST	BC-2535P	IP 66
BC-ARD-253519	BC-CRD-253519	250 x 350 x 190	9.84 x 13.78 x 7.48	BC-2535ST	BC-2535P	
BC-AGD-354513	BC-CGD-354513	350 x 450 x 130	13.78 x 17.72 x 5.12	BC-3545ST	BC-3545P	IP 64
BC-AGD-354517	BC-CGD-354517	350 x 450 x 170	13.78 x 17.72 x 6.69	BC-3545ST	BC-3545P	
BC-AGD-354521	BC-CGD-354521	350 x 450 x 210	13.78 x 17.72 x 8.27	BC-3545ST	BC-3545P	







# ATF series

Swing Panel Dual Door Enclosures

- Pre-assembled cover and transparent window
- Built-in hinge and stainless steel latch
- Detachable cover for easy access
- UL Listed (UL508A): Ref.# E343339 (PC Models)
- Meets IP66/67, NEMA 4X/6 specifications
- Fiberglass reinforced polycarbonate base



## Specifications

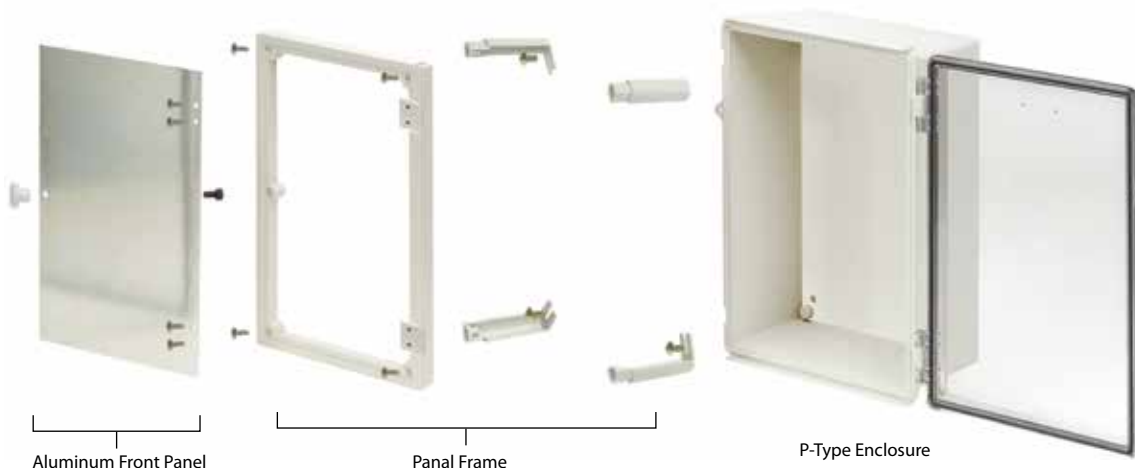
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Part Numbers and Size

Models		Size		Back Panels	
ABS	PC (UL508A)	mm	inches	Steel 1.6mm+	Plastic 3mm+
BC-ATF-203013	BC-CTF-203013	200 x 300 x 130	7.87 x 11.81 x 5.12	BC-2030ST	BC-2030P
BC-ATF-203015	BC-CTF-203015	200 x 300 x 150	7.87 x 11.81 x 5.91	BC-2030ST	BC-2030P
BC-ATF-203018	BC-CTF-203018	200 x 300 x 180	7.87 x 11.81 x 7.09	BC-2030ST	BC-2030P
BC-ATF-253515	BC-CTF-253515	250 x 350 x 150	9.84 x 13.78 x 5.91	BC-2535ST	BC-2535P
BC-ATF-253518	BC-CTF-253518	250 x 350 x 180	9.84 x 13.78 x 7.09	BC-2535ST	BC-2535P
BC-ATF-282813	BC-CTF-282813	280 x 280 x 130	11.02 x 11.02 x 5.12	BC-2828ST	BC-2828P
BC-ATF-283813	BC-CTF-283813	280 x 380 x 130	11.02 x 14.96 x 5.12	BC-2838ST	BC-2838P
BC-ATF-303015	BC-CTF-303015	300 x 300 x 150	11.81 x 11.81 x 5.91	BC-3030ST	BC-3030P
BC-ATF-303018	BC-CTF-303018	300 x 300 x 180	11.81 x 11.81 x 7.09	BC-3030ST	BC-3030P
BC-ATF-304015	BC-CTF-304015	300 x 400 x 150	11.81 x 15.75 x 5.91	BC-3040ST	BC-3040P
BC-ATF-304018	BC-CTF-304018	300 x 400 x 180	11.81 x 15.75 x 7.09	BC-3040ST	BC-3040P
BC-ATF-354516	BC-CTF-354516	350 x 450 x 160	13.78 x 17.72 x 6.30	BC-3545ST	BC-3545P
BC-ATF-354520	BC-CTF-354520	350 x 450 x 200	13.78 x 17.72 x 7.87	BC-3545ST	BC-3545P
BC-ATF-405016	BC-CTF-405016	400 x 500 x 160	15.75 x 19.69 x 6.30	BC-4050ST	BC-4050P
BC-ATF-405020	BC-CTF-405020	400 x 500 x 200	15.75 x 19.69 x 7.87	BC-4050ST	BC-4050P
BC-ATF-406018	BC-CTF-406018	400 x 600 x 180	15.75 x 23.62 x 7.09	BC-4060ST	BC-4060P
BC-ATF-406023	BC-CTF-406023	400 x 600 x 230	15.75 x 23.62 x 9.06	BC-4060ST	BC-4060P
BC-ATF-506018	BC-CTF-506018	530 x 630 x 185	20.87 x 24.80 x 7.28	BC-5060ST	BC-5060P
BC-ATF-506025	BC-CTF-506025	530 x 630 x 255	20.87 x 24.80 x 10.04	BC-5060ST	BC-5060P

## Assembly of Dual Door Kits





# QRF series

Swing Panel Dual Door Enclosures

- Pre-assembled cover and transparent window
- Stainless steel hinges/latches (R types)
- Plastic hinges/latches (Q types)
- Meets IP66/67, NEMA 4X/6 specifications



## Specifications

Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK07/08
Certification	UL508A(PC), CE, TUV, RoHS
Temperature range	ABS: -40°C to 70°C (-40°F to 158°F)
	PC: -40°C to 110°C (-40°F to 230°F)
Flammability Rating	ABS: UL94-HB
	PC: UL94-V-0, 5VA, 94-HB

\* The base of Polycarbonate model contains 10% glass fiber for reinforcement

## Part Numbers and Size

ABS	Size		Back Panels		
	mm	inches	Steel	Plastic G type	Plastic C type
BC-ATQF-253516	250 x 350 x 160	9.84 x 13.78 x 6.30	BC-2535SQ	BC-2535G	BC-2535C
BC-ATQF-304015	300 x 400 x 150	11.81 x 15.75 x 5.91	BC-3040SQ	BC-3040G	BC-3040C
BC-ATQF-304016	300 x 400 x 160	11.81 x 15.75 x 6.30	BC-3040SQ	BC-3040G	BC-3040C
BC-ATQF-304018	300 x 400 x 180	11.81 x 15.75 x 7.09	BC-3040SQ	BC-3040G	BC-3040C
BC-ATQF-354520	350 x 450 x 200	13.78 x 17.72 x 7.87	BC-3545SQ	BC-3545G	-
BC-ATQF-405016	400 x 500 x 160	15.75 x 19.69 x 6.30	BC-4050SQ	BC-4050G	-
BC-ATQF-405020	400 x 500 x 200	15.75 x 19.69 x 7.87	BC-4050SQ	BC-4050G	-
BC-ATRF-253516	250 x 350 x 160	9.84 x 13.78 x 6.30	BC-2535SQ	BC-2535G	BC-2535C
BC-ATRF-253518	250 x 350 x 180	9.84 x 13.78 x 7.09	BC-2535SQ	BC-2535G	BC-2535C
BC-ATRF-304016	300 x 400 x 160	11.81 x 15.75 x 6.30	BC-3040SQ	BC-3040G	BC-3040C
BC-ATRF-304018	300 x 400 x 180	11.81 x 15.75 x 7.09	BC-3040SQ	BC-3040G	BC-3040C
BC-ATRF-354517	350 x 450 x 170	13.78 x 17.72 x 6.69	BC-3545SQ	BC-3545G	-
BC-ATRF-354521	350 x 450 x 210	13.78 x 17.72 x 8.27	BC-3545SQ	BC-3545G	-
BC-ATRF-405017	400 x 500 x 170	15.75 x 19.69 x 6.69	BC-4050SQ	BC-4050G	-
BC-ATRF-405021	400 x 500 x 210	15.75 x 19.69 x 8.27	BC-4050SQ	BC-4050G	-



ATQF



ATRF



# Terminal Block Box



## Ordering Information

Part Number	Outside size (including cover)			No. of Poles	Terminal Layout
	Unit:mm	Unit : inch	Knock-Out		
BC-A①②-4P	55 x 91 x 43	2.17 x 3.58 x 1.69	Ø21	4	Flat
BC-A①②-4PH	50 x 82 x 43	1.92 x 3.23 x 1.69	Ø21	4	Stair
BC-A①②-4PT	65 x 74 x 43	2.56 x 2.91 x 1.69	Ø21	4	Stair
BC-A①②-6PH	55 x 91 x 43	2.17 x 3.58 x 1.69	Ø21	6	Stair
BC-A①②-6PT	75 x 91 x 43	2.95 x 3.58 x 1.69	Ø21	6	Stair
BC-A①②-6P	75 x 91 x 43	2.95 x 3.58 x 1.69	Ø21	6	Flat
BC-A①②-10P	91 x 110 x 43	3.58 x 4.33 x 1.69	Ø21	10	Flat
BC-A①②-10PT	75 x 125 x 43	2.95 x 4.92 x 1.69	Ø21	10	Stair
BC-A①②-15PT	100 x 185 x 70	3.94 x 7.28 x 2.76		15	Stair
BC-A①②-15P	100 x 185 x 70	3.94 x 7.28 x 2.76		15	Flat
BC-A①②-20P	100 x 230 x 70	3.94 x 9.06 x 2.76		20	Flat
BC-A①②-20PT	100 x 230 x 70	3.94 x 9.06 x 2.76		20	Stair
BC-A①②-20PA	160 x 160 x 70	6.30 x 6.30 x 2.76		20	2 Line Stair
BC-A①②-20P2	160 x 160 x 70	6.30 x 6.30 x 2.76		20	2 Line Flat

①G: Gray cover / B: Grayish Blue Cover / T: Transparent cover

②B: Grayish Blue / G: Gray

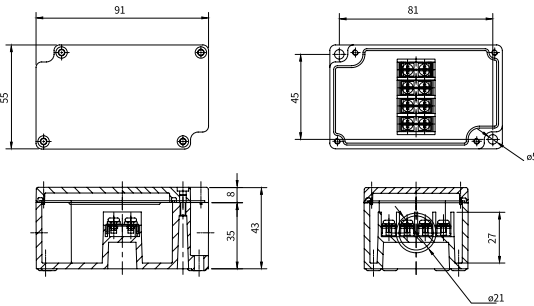
\* Ø21=PG13.5 Gland

## Specifications

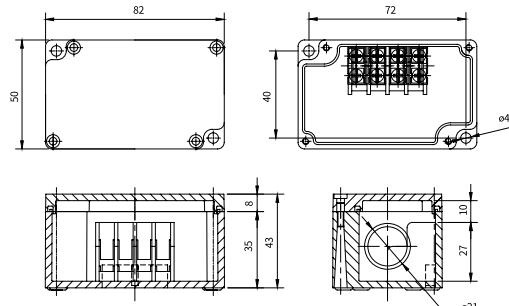
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK08
Certification	CE, TUV, RoHS
Temperature Range	ABS: -40°C to 70°C (-40°F to 158°F)
Flammability Rating	ABS: 94-V-0, HB, PC: 94-HB, PBT: 94-V-0
Rated Insulation Voltage	400V
Material	ABS

## Dimensions

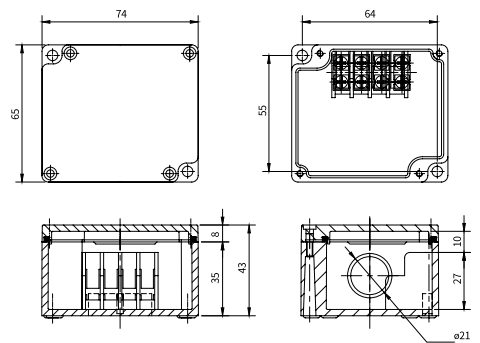
4P



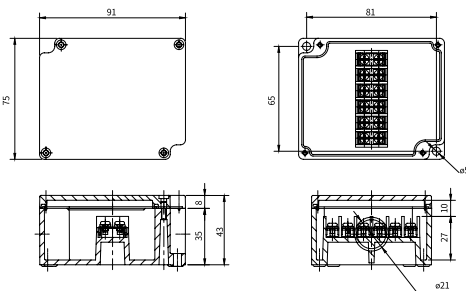
4PH



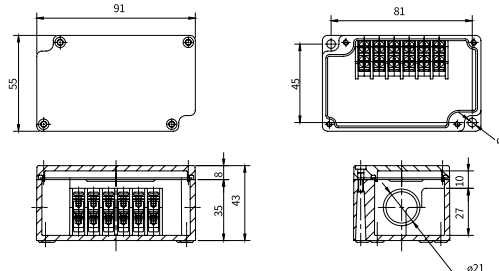
4PT



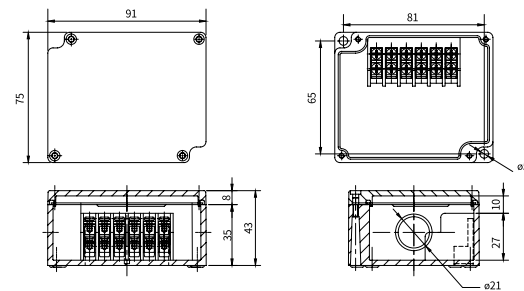
6P



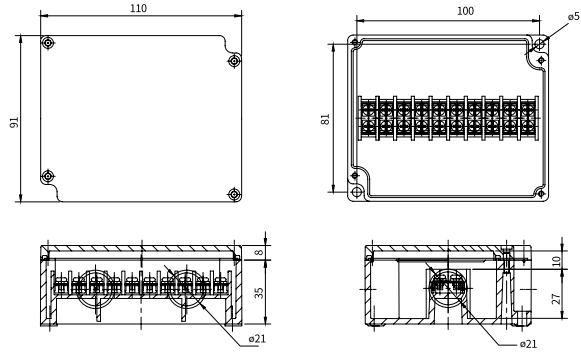
6PH



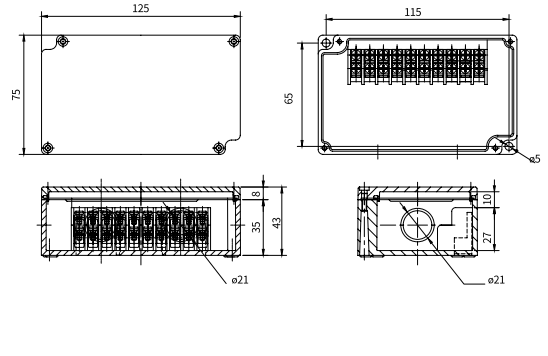
6PT



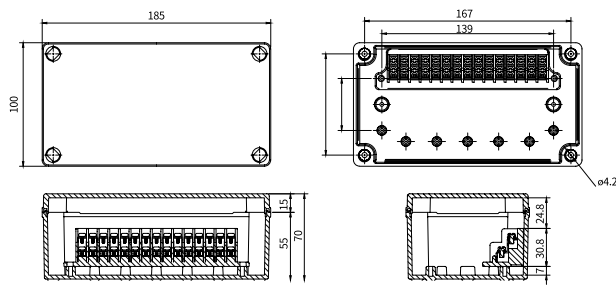
**10P**



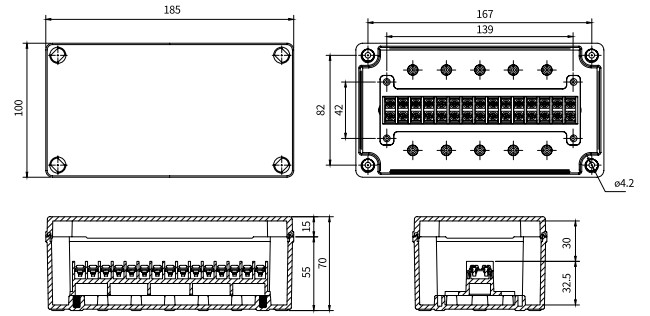
**10PT**



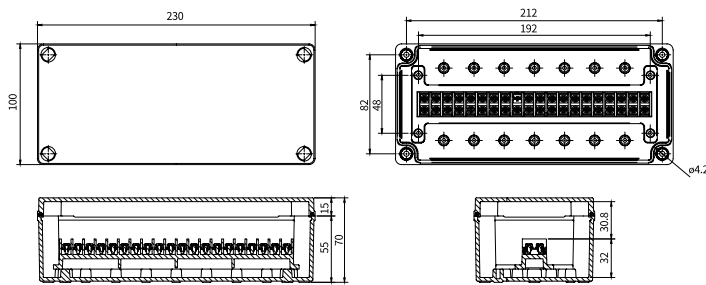
**15PT**



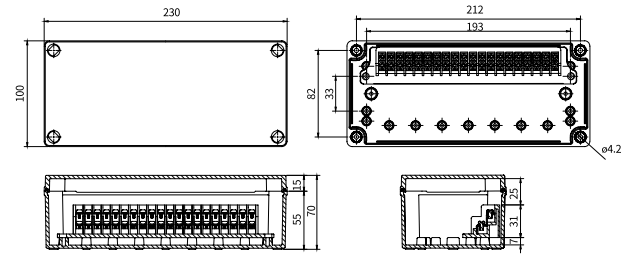
**15P**



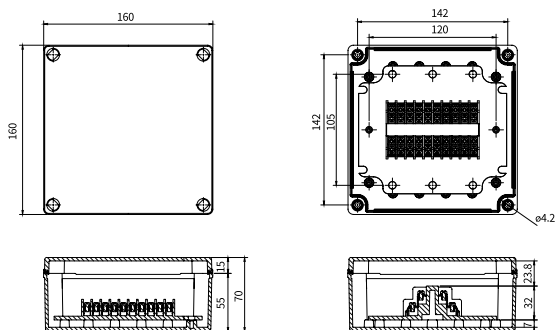
**20P**



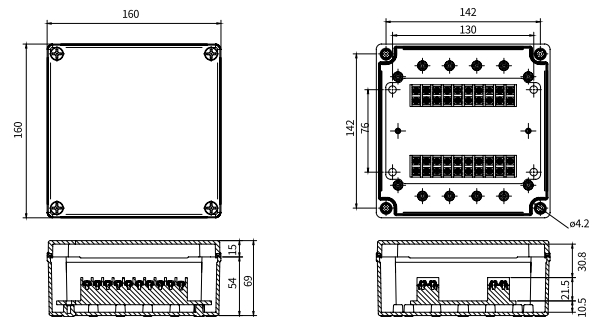
**20PT**



**20PA**



**20P2**





# Aluminum Terminal Block Box



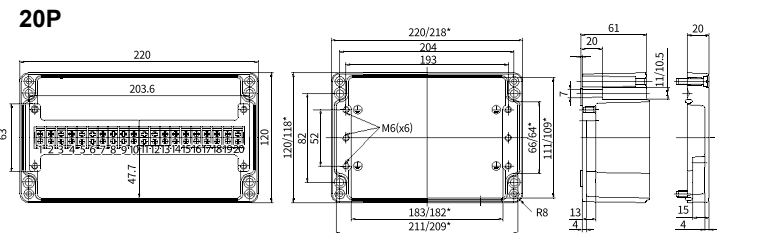
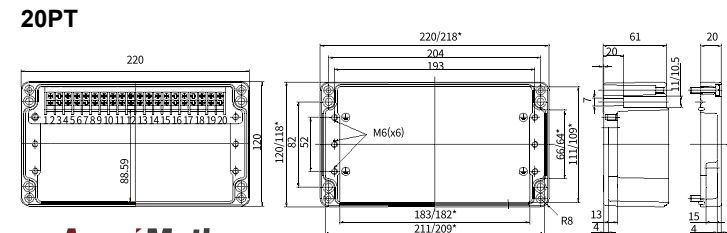
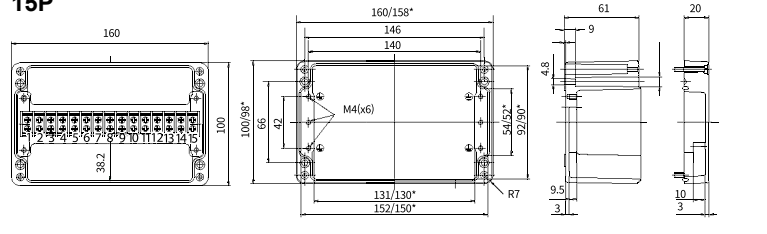
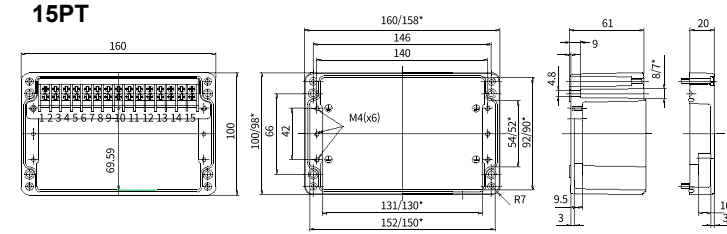
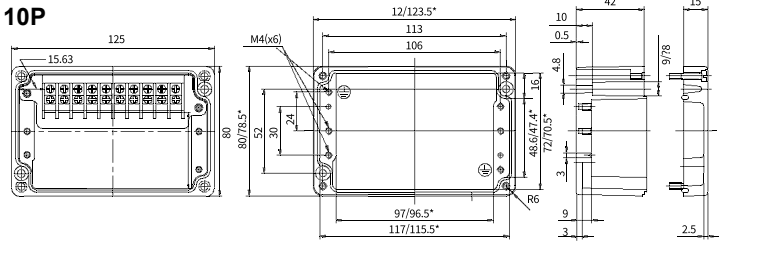
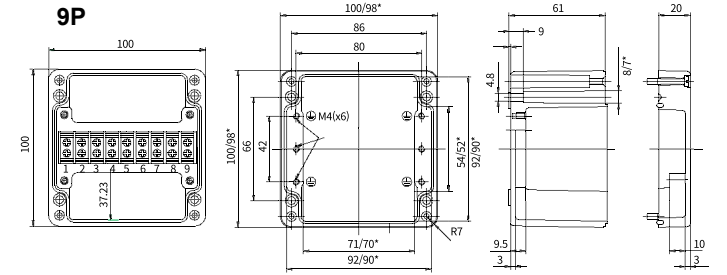
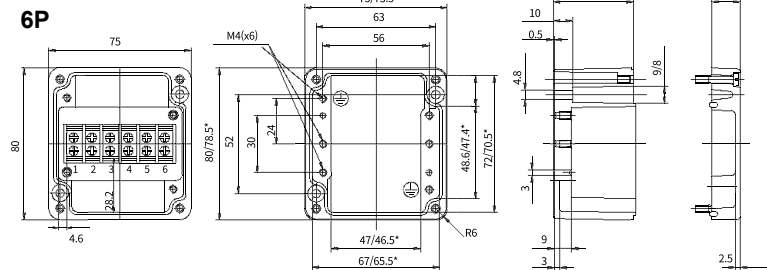
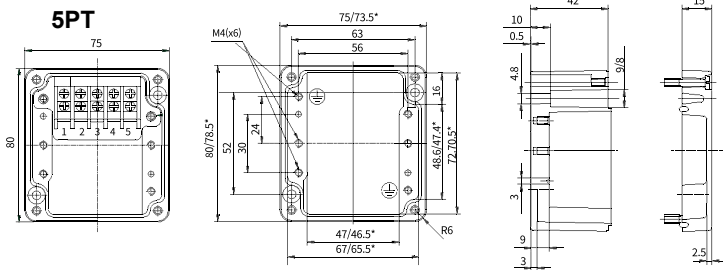
## Aluminum Terminal Block Box

### Specifications

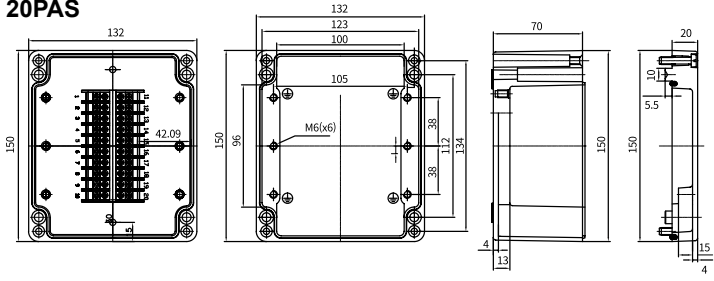
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK 08
Certification	CE, TUV, RoHS

Model No.	Outside size (including cover)		Number of poles	Terminal Layout
	W x L x H (Unit :mm)	W x L x H (Unit : inch)		
BC-AL-5PT	80 x 75 x 57	3.15 x 2.95 x 2.24	5	Stair
BC-AL-6P	80 x 75 x 57	3.15 x 2.95 x 2.24	6	Flat
BC-AL-9P	100 x 100 x 80	3.94 x 3.94 x 3.15	9	Flat
BC-AL-10PT	80 x 125 x 57	3.15 x 4.92 x 2.24	10	Stair
BC-AL-15PT	100 x 160 x 80	3.94 x 6.30 x 3.15	15	Stair
BC-AL-15P	100 x 160 x 80	3.94 x 6.30 x 3.15	15	Flat
BC-AL-20PT	120 x 220 x 80	4.72 x 8.66 x 3.15	20	Stair
BC-AL-20P	120 x 220 x 80	4.72 x 8.66 x 3.15	20	Flat
BC-AL-20PAS	150 x 132 x 90	5.90 x 5.19 x 3.54	20	2 Line Stair
BC-AL-20PA	160 x 160 x 90	6.30 x 6.30 x 3.54	20	2 Line Stair
BC-AL-20P2	160 x 160 x 90	6.30 x 6.30 x 3.54	20	2 Line Flat
BC-AL-25PT	160 x 260 x 90	6.30 x 10.24 x 3.54	25	Stair
BC-AL-30PA	180 x 180 x 100	7.09 x 7.09 x 3.94	30	2 Line Stair
BC-AL-30PAS	120 x 220 x 80	4.72 x 8.66 x 3.15	30	2 Line Stair
BC-AL-30P2	230 x 200 x 110	9.06 x 7.87 x 4.33	30	2 Line Flat
BC-AL-40PA	160 x 260 x 90	6.30 x 10.24 x 3.54	40	2 line Stair
BC-AL-40P2	160 x 260 x 90	6.30 x 10.24 x 3.54	40	2 Line Flat
BC-AL-45P3	230 x 200 x 110	9.06 x 7.87 x 4.33	45	3 Line Flat
BC-AL-50PA	160 x 260 x 90	6.30 x 10.24 x 3.54	50	2 Line Stair

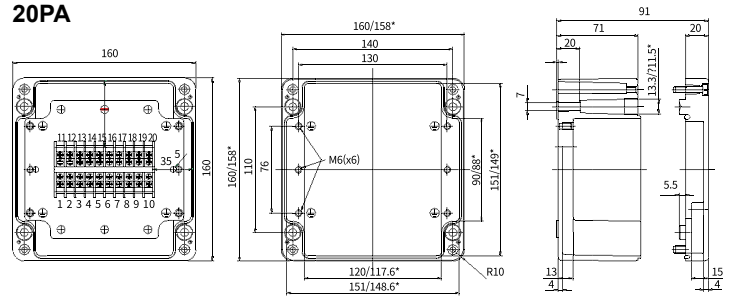
### Dimensions



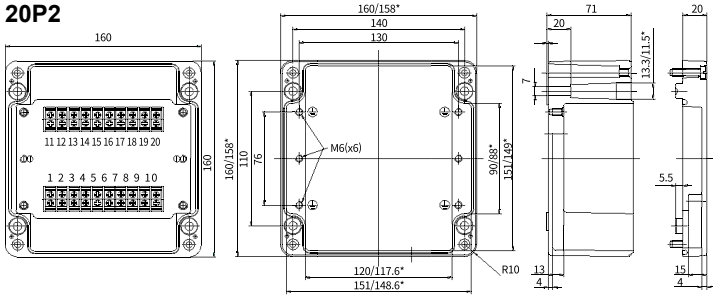
**20PAS**



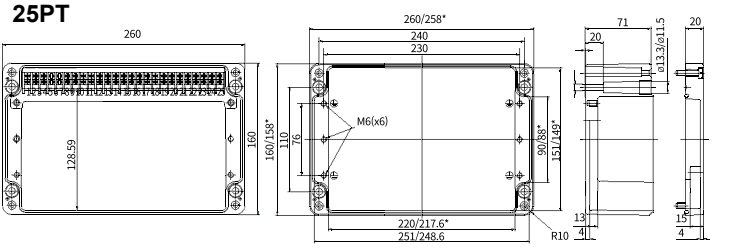
**20PA**



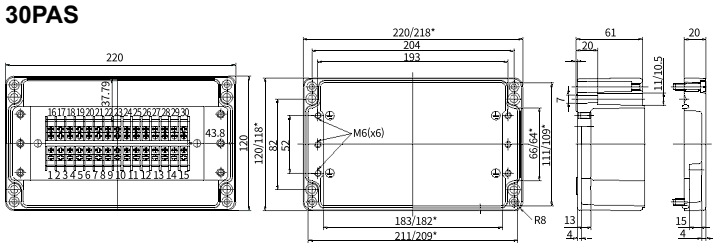
**20P2**



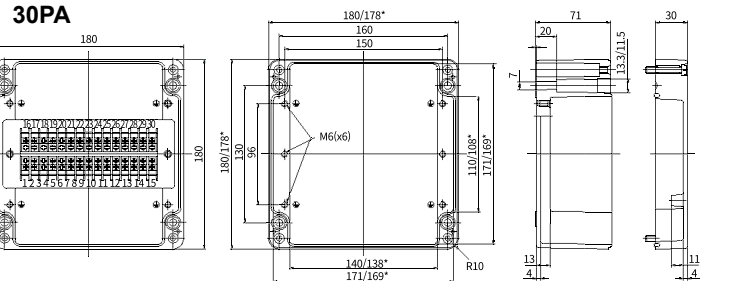
**25PT**



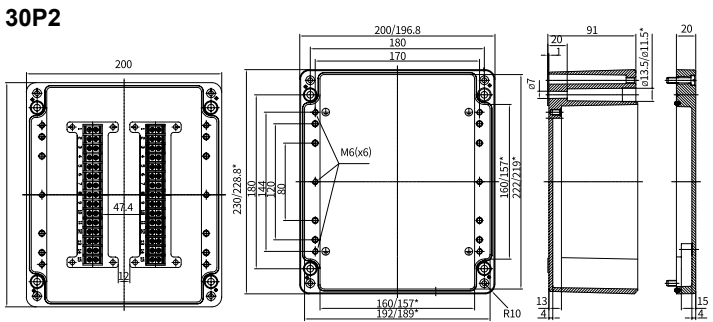
**30PAS**



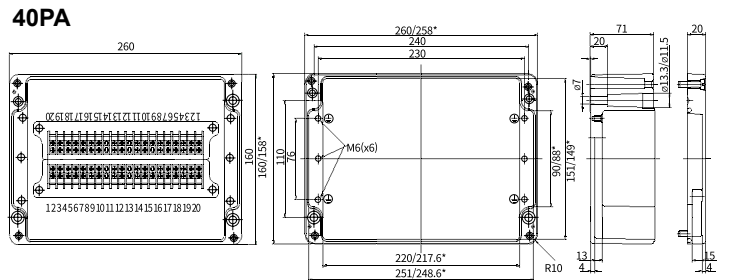
**30PA**



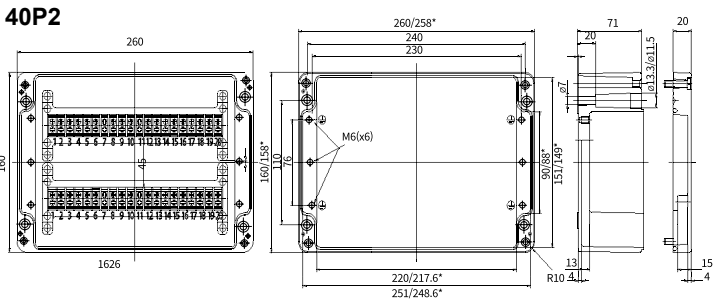
**30P2**



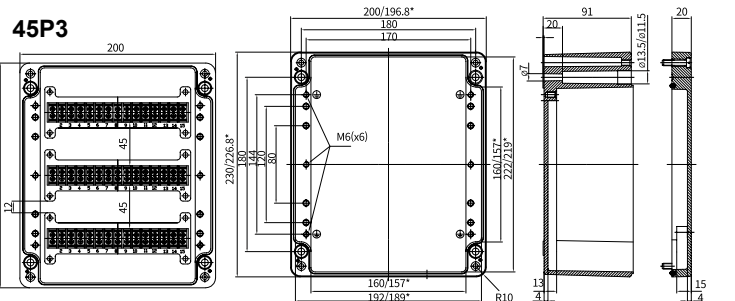
**40PA**



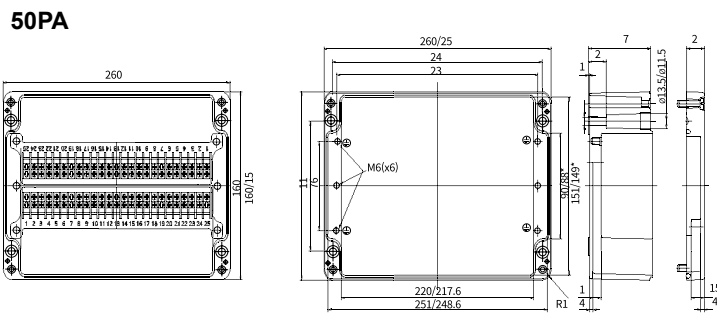
**40P2**



**45P3**



**50PA**



# Terminal Block Box with Built-in Cable Gland



## Specifications

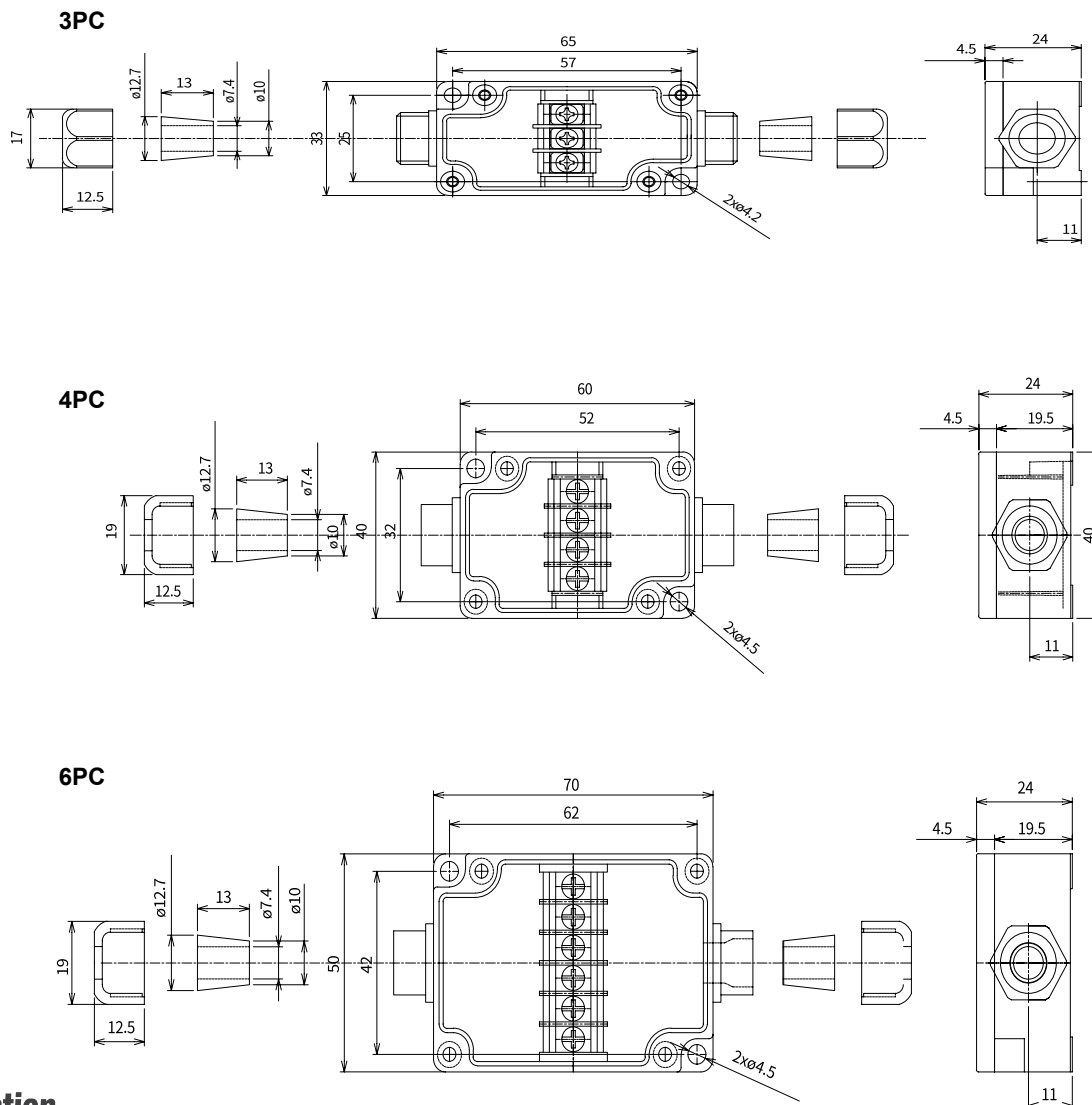
Protection Level	Dust/Water proof: IP66/67, NEMA 4X/6
	Impact test: IK08
Certification	CE, TUV, RoHS
Temperature range	PBT: -40°C to 100°C (-40°F to 212°F)
Flammability Rating	PBT: 94-V-0
Material	PBT

## Ordering Information

Part Number	Outside size (including cover)		Assembled Cable Gland	No. of Poles	Terminal Layout
	Unit: mm	Unit: Inch			
BC-T①G-3PC	33 x 65 x 24	1.29 x 2.55 x 0.94	2 x PG9	3	Flat
BC-T①G-4PC	40 x 60 x 24	1.57 x 2.36 x 0.94	2 x PG9	4	Flat
BC-T①G-6PC	50 x 70 x 24	1.96 x 2.75 x 0.94	2 x PG9	6	Flat

①G: Gray cover / T: Transparent cover

## Dimensions



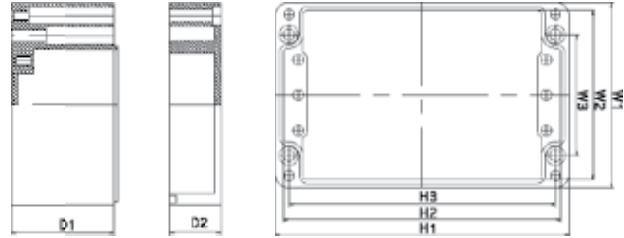
# Aluminum Enclosures



BASE

COVER

BASE



## Specifications

Protection level	IP Rating	IP66/67
	Impact testing	IK 09/10

## Dimensions

(unit: mm)

Model	W1	W2	W3	H1	H2	H3	D1	D2
BC-AL-050503	45	40	35	50	45	40	24	6
BC-AL-060603	64	57	36	58	51	46	25	9
BC-AL-060605	64	57	36	58	51	46	37	9
BC-AL-061003	68	57.8	36	98	91.8	86	25	9
BC-AL-061005	64	57	36	98	91	86	37	9
BC-AL-061503	64	57	36	150	143	138	25	9
BC-AL-061505	64	57	36	150	143	138	37	9
BC-AL-080806	75	67	63	80	72	52	42	15
BC-AL-080807	80	72	52	75	67	63	55.5	15
BC-AL-081306	80	72	52	125	117	113	42	15
BC-AL-081307	80	72	52	125	117	113	53.5	15
BC-AL-081806	80	72	52	175	167	16	42	15
BC-AL-081807	80	72	52	175	167	163	55	15
BC-AL-082506	80	72	52	250	242	238	40	12
BC-AL-082507	80	72	52	250	242	238	55	15
BC-AL-101008	100	92	66	100	92	86	61	20
BC-AL-101608	100	92	66	160	152	146	61	20
BC-AL-121208	120	111	82	122	113	106	61	20
BC-AL-122208	120	111	82	122	113	106	61	20
BC-AL-122209	120	111	82	220	211	204	61	30
BC-AL-123608	120	111	82	360	351	344	61	20
BC-AL-151309	132	121	92	150	144	138	70	20
BC-AL-161609	160	151	110	160	151	140	71	20
BC-AL-162110	160	151	110	210	201	190	81	20
BC-AL-162609	160	151	110	260	251	240	71	20
BC-AL-163609	160	151	110	360	351	340	71	20
BC-AL-181810	180	171	130	180	171	160	71	30
BC-AL-232011	230	230	140	200	193	150	91	20
BC-AL-232018	232	222	180	202	192	180	160	20
BC-AL-232811	230	221	180	280	271	160	91	20
BC-AL-233311	230	220	180	330	320	310	91	20
BC-AL-314011	313	303	262	404	394	382	91	20
BC-AL-314018	313	303	262	404	394	382	161	20

## Part Numbers and Size

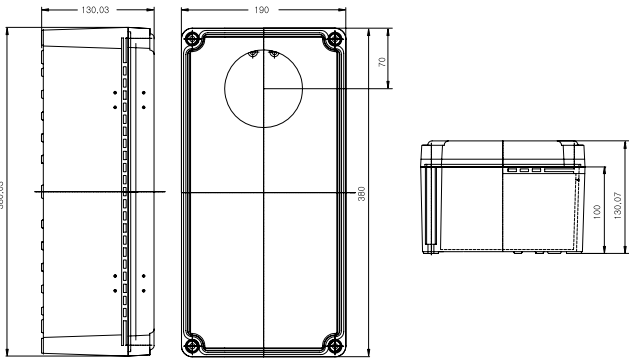
MODEL	SIZE (including cover)		Back panel
	unit :mm	unit : inch	
BC-AL-050503	45 x 50 x 32	1.77 x 1.95 x 1.25	-
BC-AL-060603	64 x 58 x 34	2.51 x 2.28 x 1.33	-
BC-AL-060605	64 x 58 x 46	2.51 x 2.28 x 1.81	-
BC-AL-061003	64 x 98 x 34	2.52 x 3.86 x 1.34	BC-0610A
BC-AL-061005	64 x 98 x 46	2.51 x 3.85 x 1.81	-
BC-AL-061503	64 x 150 x 34	2.51 x 5.90 x 1.33	-
BC-AL-061505	64 x 150 x 46	2.51 x 5.90 x 1.81	-
BC-AL-080806	80 x 75 x 57	3.15 x 2.95 x 2.24	BC-0808A
BC-AL-080807	80 x 75 x 70	3.14 x 2.95 x 2.75	BC-0808A
BC-AL-081306	80 x 125 x 57	3.15 x 5.00 x 2.24	BC-0813A
BC-AL-081307	80 x 125 x 70	3.15 x 5.00 x 2.75	BC-0813A
BC-AL-081806	80 x 175 x 57	3.15 x 6.89 x 2.05	BC-0818A
BC-AL-081807	80 x 175 x 70	3.15 x 6.89 x 2.75	BC-0818A
BC-AL-082506	80 x 250 x 57	3.15 x 9.84 x 2.05	BC-0825A
BC-AL-082507	80 x 250 x 70	3.15 x 9.84 x 2.75	BC-0825A
BC-AL-101008	100 x 100 x 81	3.94 x 3.94 x 3.15	BC-1010A
BC-AL-101608	100 x 160 x 81	3.94 x 7.87 x 3.15	BC-1016A
BC-AL-121208	120 x 122 x 81	4.72 x 4.80 x 3.15	BC-1212A
BC-AL-122208	120 x 220 x 81	4.72 x 8.66 x 3.15	BC-1222A
BC-AL-122209	120 x 220 x 91	4.72 x 8.66 x 3.54	BC-1222A
BC-AL-123608	120 x 220 x 81	4.72 x 8.66 x 3.18	BC-1236A
BC-AL-151309	150 x 132 x 90	5.90 x 5.19 x 3.54	BC-1315A
BC-AL-161609	160 x 160 x 90	6.30 x 6.30 x 3.54	BC-1616A
BC-AL-162110	160 x 210 x 100	6.29 x 8.26 x 3.94	BC-1621A
BC-AL-162609	160 x 260 x 90	6.30 x 10.24 x 3.54	BC-1626A
BC-AL-163609	160 x 360 x 91	6.29 x 14.17 x 3.58	BC-1636A
BC-AL-181810	180 x 180 x 100	7.09 x 7.09 x 3.94	BC-1818A
BC-AL-232011	230 x 200 x 111	9.06 x 7.87 x 4.33	BC-2320A
BC-AL-232018	230 x 200 x 180	9.05 x 7.87 x 7.08	BC-2320A
BC-AL-232811	230 x 280 x 111	9.05 x 11.02 x 4.37	BC-2328A
BC-AL-233311	230 x 330 x 111	9.05 x 12.99 x 4.37	BC-2333A
BC-AL-314011	313 x 404 x 111	12.3 x 15.90 x 4.27	BC-3140A
BC-AL-314018	313 x 404 x 181	12.3 x 15.90 x 7.12	BC-3140A



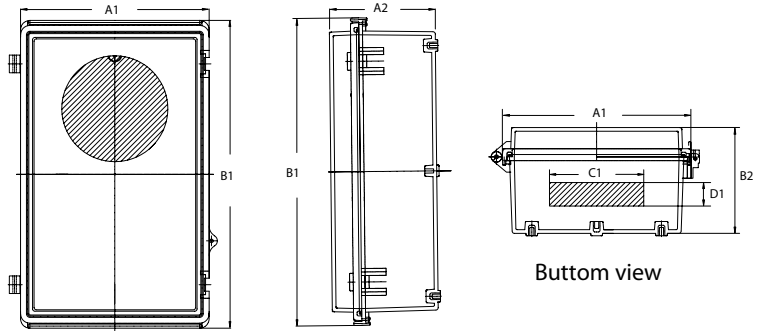


## SMPS Cases

- Front ventilator pre-installed
- Rectangle cut-out for easy access



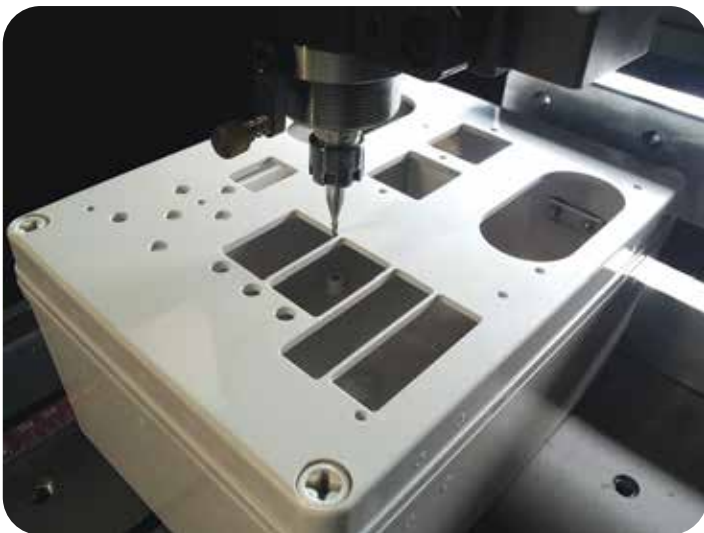
BC-SMPS-193813



Model	A1	A2	B1	B2	C1	D1
BC-SMPS-162609	160	90	268.40	90	80	20
BC-SMPS-192810	190	100	288.40	100	95	20

## Customization Services

10 pcs minimum order is required



### Hole Processing Services

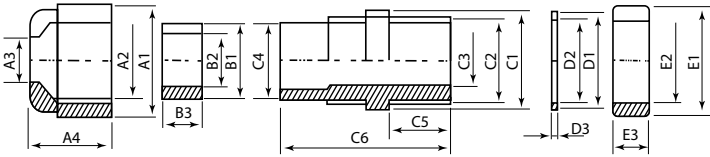
Per various customers' request, Amerimation provides sophisticated hole processing services on demand even on the side of the enclosures.

### Printing Services

A vivid silk screen printing and lettering is also available.



# Cable Glands



## NPT Series Specifications

Material	PL (Nylon), UL94
Working Temperature	-40°C to 100°C (-40°F to 212°F) in static state instantaneous heat resistance up to 120°C -20°C to 80°C (-4°F to 176°F) in dynamic state - Instantaneous heat resistance up to 100°C
Hermetic Seal	NBR

## Part Numbers and Size

SIZE CABLE Ømm	MODEL	
	Beige	Black
3.5 ~ 6	BC-PG-7 -G	BC-PG-7 -B
4 ~ 8	BC-PG-9 -G	BC-PG-9 -B
5 ~ 10	BC-PG-11 -G	BC-PG-11 -B
6 ~ 12	BC-PG-13.5 -G	BC-PG-13.5 -B
10 ~ 14	BC-PG-16 -G	BC-PG-16 -B
12 ~ 15	BC-PG-19 -G	BC-PG-19 -B
13 ~ 18	BC-PG-21 -G	BC-PG-21 -B
15 ~ 19	BC-PG-25 -G	BC-PG-25 -B
18 ~ 25	BC-PG-29 -G	BC-PG-29 -B
22 ~ 32	BC-PG-36 -G	BC-PG-36 -B
30 ~ 38	BC-PG-42 -G	BC-PG-42 -B
34 ~ 44	BC-PG-48 -G	BC-PG-48 -B
42 ~ 50	BC-PG-63 -G	BC-PG-63 -B

## Dimensions

Unit: mm

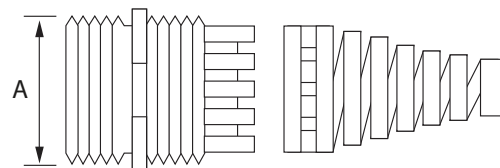
Part Number	Ømm (cable)	A1	A2	A3	A4	B1	B2	B3	C1	C2	C3	C4	C5	C6	D1	D2	D3	E1	E2	E3
BC-PG-7	3.5~6	17	12.5	7	15.5	8	6	7.5	17.5	12	8	8.5	8	29	17	11	1.5	19.5	12	5
BC-PG-9	4~8	20.5	15.5	8.5	15	10.5	8	8.5	21	16	11	10.5	8	31.5	21	15.5	1.5	24	15.5	5
BC-PG-11	5~10	24	18.5	10.5	16.5	13.5	9.5	8.5	24	18	14	14	8	33	24	18	1.5	26	18	5
BC-PG-13.5	6~12	26.5	20.5	12.5	18.5	15.5	11.5	7.5	26	20	16	16	9	33.5	26	20	1.5	29	21.5	5.5
BC-PG-16	10~14	29.5	22.5	14	18	17	13	9	29.5	22	17.5	18	10	36	29.5	21.5	1.5	32.5	22.5	6
BC-PG-19	12~15	30	24.5	16	20	18	15	8.5	30	23.5	18.5	18.5	10	37	30	23	1.5	33	24.5	6
BC-PG-21	13~18	36	29.5	18	23	21	17	10.5	36	28	22	22.5	10	41	36	27.5	1.5	39	27.5	6.5
BC-PG-25	15~19	39	31	20.5	21	23	19	11	39	29.5	24	24	11	41	39	28.5	1.5	40	30	7
BC-PG-29	18~25	45.5	37	25	25.5	29.5	24.5	14	45	36.5	30.5	30.5	12	46.5	45	36	1.5	49.5	37	7.2
BC-PG-36	22~32	59	48.5	32	29.5	39	32.5	16	57.5	46.5	39.5	39.5	13.5	55	57.5	45	1.5	64.5	47	7.5
BC-PG-42	30~38	67.5	56	38	30	46.5	39	16.5	66	53.5	47.5	45.5	14.5	56.5	66	52.5	2	69	54	7.9
BC-PG-48	34~44	72	60.5	43.5	29.5	50	44	16.5	70.5	58.5	52	51	14	56.5	69.5	57.5	2	76	59	7.9
BC-PG-63	42~50	76	67.2	49.7	39.8	60	53.3	18.8	76.5	70	61	58	27	77	70	65	3	81	68	9.2

# Bend Proof Cable Glands

## Part Numbers and Size

Unit: mm

Part number	Cable Range	Screw width(A)	Mounting Hole
BC-BP-PG 7	3 ~ 5.5	12.5	12.5 ~ 12.8
BC-BP-PG 9	8 ~ 4.5	15.2	15.2 ~ 15.5
BC-BP-PG 11	6 ~ 10	18.6	18.6 ~ 18.9
BC-BP-PG 13.5	7 ~ 12.5	20.4	20.4 ~ 20.7
BC-BP-PG 16	8.5 ~ 14	22.5	22.5 ~ 22.8
BC-BP-PG 21	12.5 ~ 18	28.3	28.3 ~ 28.7



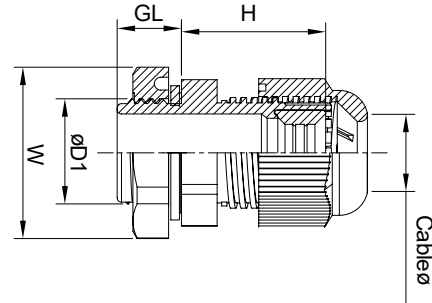
# Multi Hole Cable Glands



## NPT Series Specifications

Material	PA (Polyamide)
O-ring	NBR
Hermetic Seal	NBR
Color	Black

## Dimensions



## Part Numbers and Size

Unit: mm

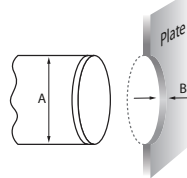
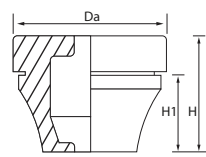
Part Number	#of Hole	Thread	Cable ø	H	GL	W (Wrench)	D1
BC- 1H- M12- B	1	M12 x 1.5	4.5~8	25	9	19	12
BC- 1H- M16- B	1	M16 x 1.5	6~10	27	15	22	16
BC- 1H- M20- B	2	M20 x 1.5	9~14	33	15	27	20
BC- 1H- M25- B	1	M25 x 1.5	13~18	34	15	33	25
BC- 1H- M32- B	1	M32 x 1.5	18~25	41	15	42	32
BC- 1H- M40- B	1	M40 x 1.5	24~32	45	20	52	40
BC- 1H- M50- B	1	M50 x 1.5	31~41	51	22	62	50
BC- 1H- M63- B	1	M63 x 1.5	44~51	53	25	75	63
BC- 1H- M75- B	1	M75 x 1.5	56~66	56	25	92	75
BC- 1H- M90- B	1	M90 x 1.5	66~77	57	25	110	90
BC- 2H- M12- B	2	M12 x 1.5	1.5~3	25	9	19	12
BC- 2H- M16- B	2	M16 x 1.5	2~4	27	15	22	16
BC- 2H- M20- B	2	M20 x 1.5	3~6	33	15	27	20
BC- 2H- M25- B	2	M25 x 1.5	5~8	34	15	33	25
BC- 2H- M32- B	2	M32 x 1.5	7~11	41	15	42	32
BC- 2H- M40- B	2	M40 x 1.5	10~13	45	20	52	40
BC- 3H- M12- B	3	M12 x 1.5	1.5~2.5	25	9	19	12
BC- 3H- M16- B	3	M16 x 1.5	2~4	27	15	22	16
BC- 3H- M20- B	3	M20 x 1.5	3~5	33	15	27	20
BC- 3H- M25- B	3	M25 x 1.5	4.5~7	34	15	33	25
BC- 3H- M32- B	3	M32 x 1.5	7~10	41	15	42	32
BC- 3H- M40- B	3	M40 x 1.5	9~12	45	20	52	40
BC- 4H- M12- B	4	M12 x 1.5	1.5~2.5	25	9	19	12
BC- 4H- M16- B	4	M16 x 1.5	1.5~3	27	15	22	16
BC- 4H- M20- B	4	M20 x 1.5	2.5~4.5	33	15	27	20
BC- 4H- M25- B	4	M25 x 1.5	4~6	34	15	33	25
BC- 4H- M32- B	4	M32 x 1.5	8~9	41	15	42	32
BC- 4H- M40- B	4	M40 x 1.5	8~11	45	20	52	40
BC- 5H- M16- B	5	M16 x 1.5	1~2.5	27	15	22	16
BC- 5H- M20- B	5	M20 x 1.5	2~4	33	15	27	20
BC- 5H- M25- B	5	M25 x 1.5	3.5~5.5	34	15	33	25
BC- 5H- M32- B	5	M32 x 1.5	5.5~8	41	15	42	32
BC- 5H- M40- B	5	M40 x 1.5	7~9.5	50	20	52	40
BC- 6H- M16- B	6	M16 x 1.5	1~2	27	15	22	16
BC- 6H- M20- B	6	M20 x 1.5	1.5~3	33	15	27	20
BC- 6H- M25- B	6	M25 x 1.5	2.5~4.5	34	15	33	25
BC- 6H- M32- B	6	M32 x 1.5	5~7	41	15	42	32
BC- 6H- M40- B	6	M40 x 1.5	6~8	45	20	52	40

## Part Numbers and Size

Unit: mm

Part number	Thread	Cable	A	B	Da	H	H1
BC-RG-PG7	12.5	3~5	13	0.5~2	20	12.6	5.4
BC-RG-PG9	15.2	5~7	16	1~4	21	17.8	10.3
BC-RG-PG11	18.6	7~10	19	1~4	24	19.8	12.7
BC-RG-PG16	22.5	10~14	23	1~4	28	21.6	14.7
BC-RG-PG21	28.3	14~20	29	1~4	35	24.6	17.6
BC-RG-PG29	37	20~26	38	1~4	46	28.5	20
BC-RG-PG36	47	26~35	48	1~4	58	34.9	23.9

## Rubber Grommet

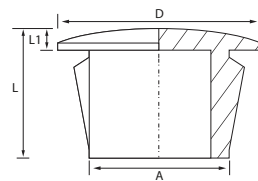


## Part Numbers and Size

Unit: mm

Part number	A	D	L1	L
BC-HP-PG8	7.8	11.9	1.6	8
BC-HP-PG10	9.5	13	1.6	10.5
BC-HP-PG13	12.7	16.9	1.6	10.5
BC-HP-PG16	15.9	19.8	1.6	10.5
BC-HP-PG19	19	22.9	1.6	10.5
BC-HP-PG22	22.2	24.9	1.6	11.5
BC-HP-PG26	25.5	28.3	1.6	11.5
BC-HP-PG30	30	34.2	1.6	11.5

## Hole Plug



## Specifications

Material	PC(BC-CG), ABS(BC-AG)
Temperature range	ABS: -40°C to 86°C (-40°F to 185°F)
	UL94-HB Non-Flammable
	Polycarbonate: -40°C to 120°C (-40°F to 248°F)
	UL94-V-0~5VA(Grey) Non-flammable
Rated Current	17A 240VAC

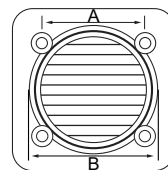
## Ventilators



## Part Numbers and Size

Unit: mm

Part number	A	Cut Out (B)	Fan Size
BC-AG-V60 BC-CG-V60	50 ±0.3mm	63 ~ 65Φ	60Φ
BC-AG-V80 BC-CG-V80	71.5 ±0.3mm	88 ~ 90Φ	80Φ

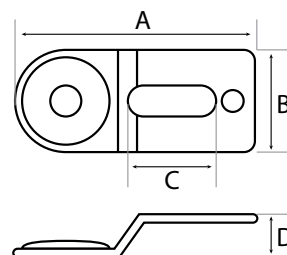


## Wall Mounting Bracket

## Part Numbers and Size

Unit: mm

Part number	A	B	C	D
B40	43	18	14	6
B50	49	22	14	7
B60	58	25	16	9



B40



B50



B60



# MPL Series

Bar Type LED Panel Lamp

- Wide angle high illumination light
- Easy installation with screw or magnet
- Slide rail bracket for easy adjustment
- Excellent vibration & impact resistance



## Ordering Information

MPL	<u>N</u>	-	<u>C</u>	<u>20</u>	-	<u>2L</u>	-	<u>M</u>
	①		②	③		④		⑤
① Light Color	<b>N</b>	Natural White						
	<b>Y</b>	Warm white						
② Type	<b>C</b>	External power cable type (*IP65)						
	<b>T</b>	Terminal block type						
	<b>Z</b>	Terminal block + Built-in ON/OFF switch type						
③ Power Supply	<b>01</b>	12VDC						
	<b>02</b>	24VDC						
	<b>10</b>	110VAC						
	<b>20</b>	220VAC						
④ Product Length	<b>2L</b>	200mm						
	<b>3L</b>	300mm						
	<b>4L</b>	400mm						
	<b>5L</b>	500mm						
⑤ Fixing bracket	<b>No mark</b>	Screw fixing type						
	<b>M</b>	Magnet fixed type						

## Specifications

Application	Working light, Enclosure box, Semiconductor machinery
Type	Bar type lamp
Power supply	12/24VDC±5V , 110/220VAC±10V (AC50/60Hz)
Light color	N type-Natural white (app.6200K) Y type-Warm white (app.3850K)
Connection	60227 KS IEC 53, 2CX0.7-Exposure length: 400mm
Material	Housing-PC resin (milky white), Cover-ABS resin(ivory), Bracket - PC resin (transparent)
Ambient temperature	-20 ~ 50°C
Storage ambient temperature	-20 ~ 70°C
Ambient humidity	45~85% RH
Withstand voltage	AC: 1500VAC 60Hz for 1 minute DC: 500VAC 60Hz for 1 minute
Insulation resistance	100MΩ or more (500VDC Mega between all terminals and case)
Vibration	10~55Hz (cycle 1 minute) Amplitude 0.75mm X, Y, Z 1hour

MPLN type	Current / Power (±10%)	2L series	3L series	4L series	5L series	
		12V	0.60A / 7.6W	0.56A / 7.3W	0.80A / 9.6W	0.85A / 10.2W
	24V	0.34A / 8.0W	0.26A / 6.4W	0.50A / 12.0W	0.46A / 11.0W	
	110V	0.08A / 3.3W	0.07A / 3.7W	0.13A / 11W	0.12A / 10.5W	
	220V	0.10A / 5.2W	0.10A / 6.4W	0.14A / 10W	0.15A / 14W	
Illuminance (1M)	12V	180 lux	160 lux	295 lux	300 lux	
	24V	180 lux	170 lux	370 lux	355 lux	
	110V	100 lux	110 lux	243 lux	240 lux	
	220V	140 lux	210 lux	270 lux	360 lux	
Luminous flux	12V	565 lm	495 lm	926 lm	942 lm	
	24V	565 lm	535 lm	1160 lm	1115 lm	
	110V	305 lm	395 lm	763 lm	715 lm	
	220V	440 lm	660 lm	848 lm	1130 lm	
MPLY type	Current / Power (±10%)	12V	0.60A / 7.6W	0.52A / 6.5W	0.70A / 8.4W	0.70A / 8.4W
		24V	0.28A / 7.0W	0.22A / 5.3W	0.37A / 9.0W	0.33A / 8.0W
		110V	0.08A / 3.3W	0.07A / 3.8W	0.10A / 9.0W	0.10A / 8.3W
		220V	0.11A / 5.4W	0.10A / 6.4W	0.13A / 10.0W	0.15A / 14W
	Illuminance (1M)	12V	180 lux	150 lux	240 lux	260 lux
	24V	180 lux	150 lux	300 lux	275 lux	
	110V	90 lux	110 lux	225 lux	214 lux	
	220V	144 lux	160 lux	243 lux	342 lux	
Luminous flux	12V	623 lm	520 lm	754 lm	900 lm	
	24V	560 lm	520 lm	942 lm	952 lm	
	110V	310 lm	380 lm	706 lm	672 lm	
	220V	452 lm	554 lm	763 lm	1074 lm	

Weight (220VAC standard)	2L series	Screw fixed	Magnet fixed	3L series	Screw fixed	Magnet fixed
	MPL①-C	app. 113g	app. 142g	MPL①-C	app. 141g	app. 162g
MPL①-T	app. 110g	app. 133g	MPL①-T	app. 140g	app. 161g	
MPL①-Z	app. 112g	app. 133g	MPL①-Z	app. 140g	app. 161g	
4L series	Screw fixed	Magnet fixed	5L series	Screw fixed	Magnet fixed	
	MPL①-C	app. 183g	app. 215g	MPL①-C	app. 211g	app. 243g
MPL①-T	app. 175g	app. 207g	MPL①-T	app. 203g	app. 235g	
MPL①-Z	app. 178g	app. 210g	MPL①-Z	app. 206g	app. 238g	

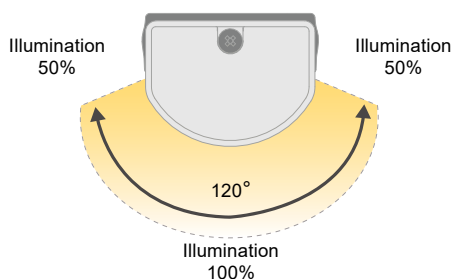


Screw fixing type

Magnet fixed type

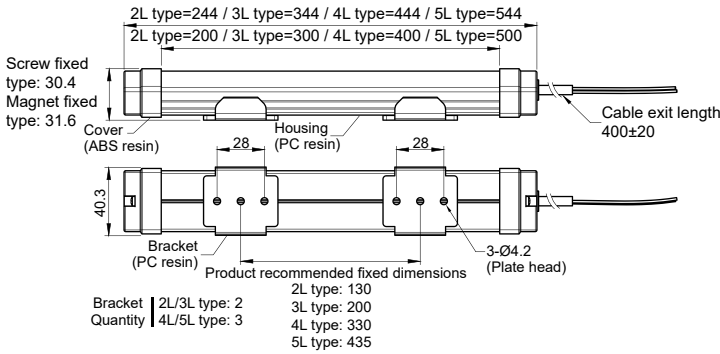
Number of brackets required\*  
product length 200/300mm (2L, 3L) - 2ea  
product length 400/500mm (4L, 5L) - 3ea

## Illumination range drawing

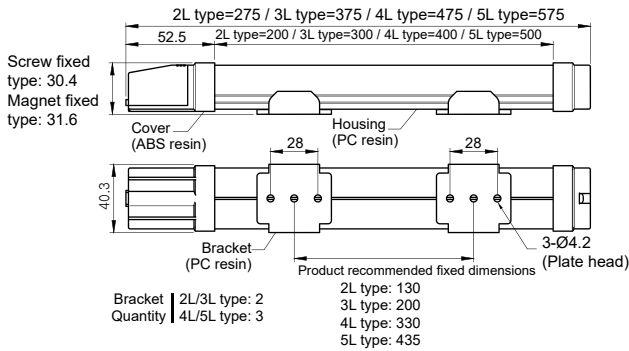


## Dimensions unit: mm

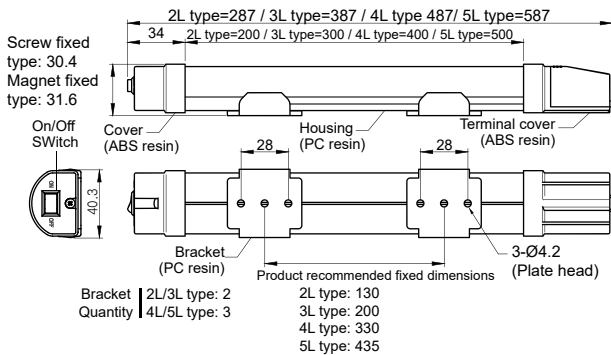
### MPL①-C type



### MPL①-T type



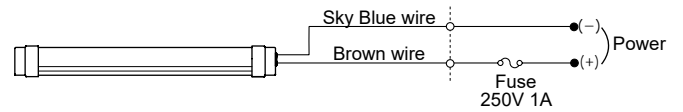
### MPL①-Z type



## Wiring Diagram

### MPL①-C model

#### Power cable type

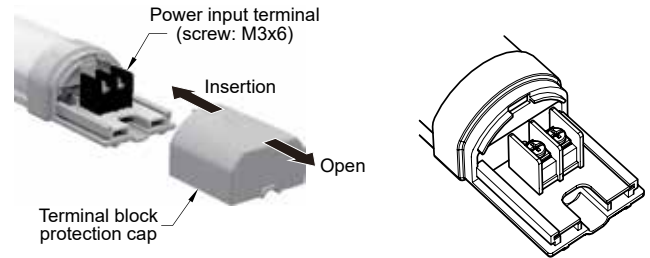


\* AC, DC power : Please connect the power line regardless of color.  
 (No polarity for DC power)

### MPL①-T, MPL①-Z model

#### Terminal block type

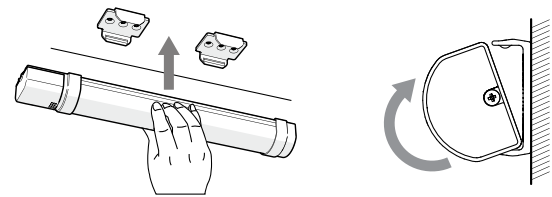
Recommended screw torque : 0.5 N.m



\* AC/DC power : Please connect the power line regardless of color.  
 (No polarity for DC power)

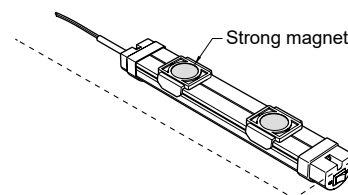
## Installation Guide

### Screw fixing type



After fixing the brackets with the screws, the lamp can be easily attached just by snapping in. The position of the lamp can be adjusted along the slide rail of the bracket.

### Back side magnet fixing type



With strong magnets, The lamp can be easily installed onto metal surfaces like steel.



# Cable chains

## **Mini Type**

CPS Series

## **Fast & Silent Type**

Clean Room Type : nsb - CR Series

Normal Type : nsb - N Series

Enclosed Type : nsb - E Series

Sliding Type : nsb - S Series

## **Longer Self-Supporting Type**

Normal Type : ST-N Series

Enclosed Type : ST-E Series

## **Long Travel Type**

Skid Type : ST-S Series

Enclosed Skid Type : ST-ES Series

Roller Skid Type : ST-RS Series

Enclosed Roller Skid Type : ST-ERS Series

## **Revolving Type : RV Series**

## **Twist/Screw Type : HX Series**

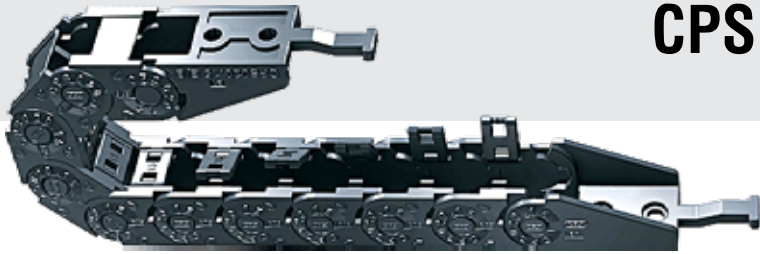
## **Dress Packs**

Roboway

UR Band / Robo-kit

## **Corrugated Tubes**

## **Tube Connectors**



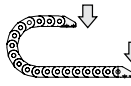
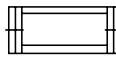
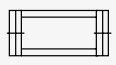
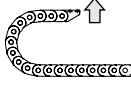
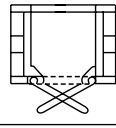
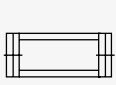
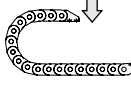
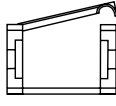
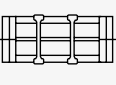


# CPS Series

Mini Cable Chain

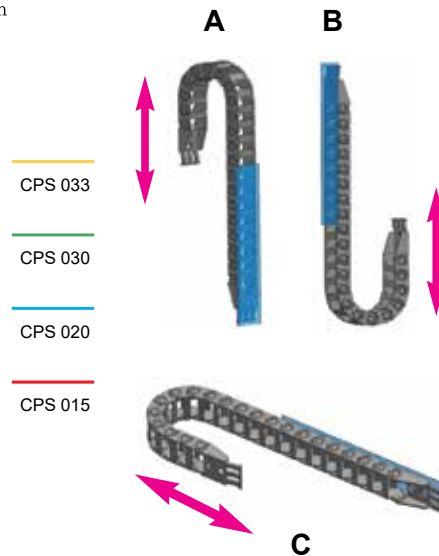
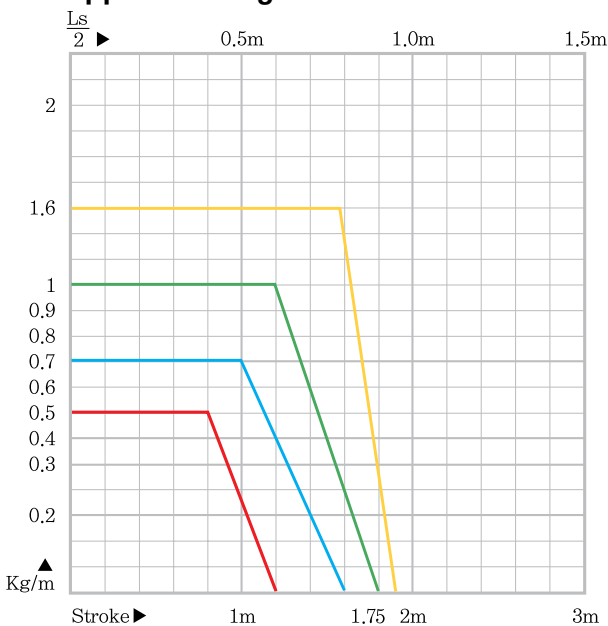


## Ordering Information

CPS 015 . 10 . R28 / B2 - (XXX mm)  
 ①      ②      ③      ④      Length

① CPS Ca- blechain	② Inner Width	③ Bending Radius	④ Bracket Type	Size (Unit : mm)				Frame type	Section - composition	Weight (kg/m)
				A	B	C	D			
015	06	18	 B1	12.6	13	6	10			0.100
	10	16.6		10		0.106				
	15	21.6		15		0.111				
	20	26.6		20		0.115				
020	15	28	 B2	24	20	15	14.5			0.245
	20	29		20		0.260				
	30	39		30		0.285				
	40	49		40		0.310				
030	15	38	 B3	29	26	15	19			0.380
	25	39		25		0.400				
	35	49		35		0.420				
	50	64		50		0.440				
033	27	35	E (S-EEB033)	45	31	27	23			0.550
	37	45		37		0.590				
	47	65		47		0.610				
	67	85		67		0.680				
	77	95		77		0.700				

## Unsupported Length



## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHs

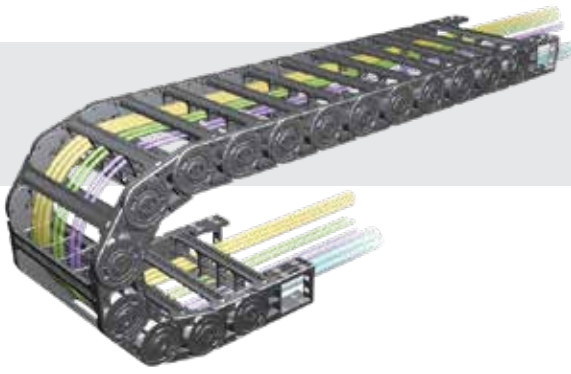
## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
CPS 015	0.8m	3.0m	0.2m
CPS 020	1.0m	5.0m	0.5m
CPS 030	1.5m	10.0m	0.6m
CPS 033	1.5m	10.0m	0.6m



# ST-N Series

Shift Cable Chain - Normal type



## Ordering Information

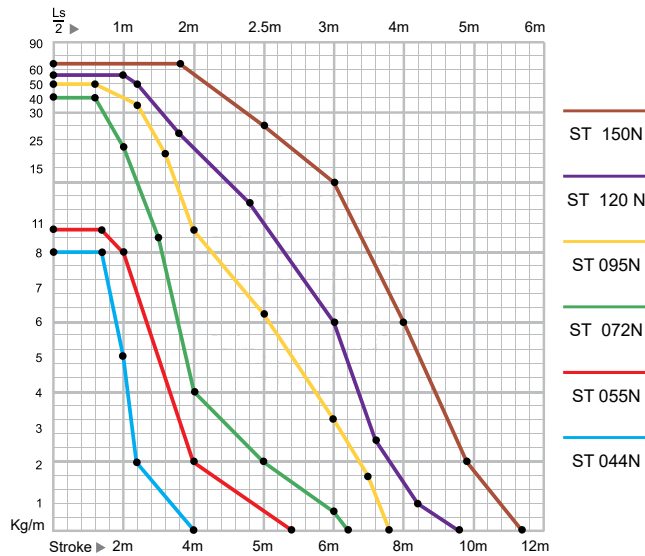
ST 044 N . 100 . R120

①                      ②                      ③

## Specifications

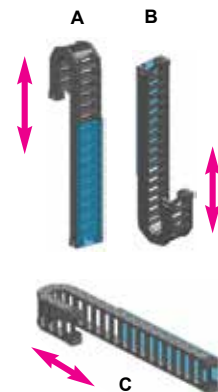
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
ST 044N	2.0m	40m	1.0m
ST 055N	3.0m	50m	1.0m
ST 072N	6.0m	100m	2.5m
ST 095N	6.0m	100m	3.0m
ST 120N	6.0m	120m	3.0m
ST 150N	7.0m	150m	4.0m

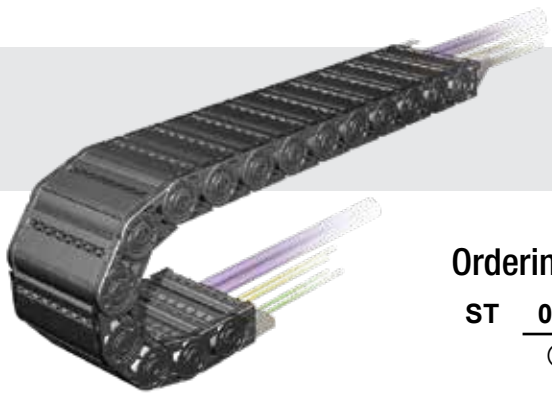


## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	50	56	38	35	26		0.93
	50		71		50			0.97
	55		76		55			1.00
	75		96		75			1.06
	100		121		100			1.17
	125		146		125			1.30
	150		171		150			1.43
	175		196		175			1.78
	200		221		200			1.94
	055		35		65			56
50		71	50	1.15				
55		76	55	1.18				
75		96	75	1.23				
100		121	100	1.31				
125		146	125	1.41				
150		171	150	1.51				
175		196	175	1.78				
200		221	200	1.92				
072		50	72	82		66	50	45
	75	107		75	2.20			
	100	132		100	2.30			
	125	157		125	2.43			
	140	172		140	2.51			
	150	182		150	2.56			
	175	197		175	2.62			
	200	207		200	2.66			
	250	222		250	2.93			
	300	232		300	3.11			
095	75	135	113	82	75	56		3.11
	100		138		100			3.17
	125		163		125			3.37
	150		188		150			3.49
	175		213		175			3.60
	190		228		190			3.71
	200		238		200			3.79
	250		278		250			4.00
	300		288		300			4.05
	350		338		350			4.31
400	388	400	4.69					
120	75	180	117	108	75	78		4.41
	100		142		100			4.53
	125		157		125			4.61
	150		167		150			4.67
	175		192		175			4.78
	200		217		200			4.93
	250		242		250			5.17
	300		282		300			5.41
	350		292		350			5.47
	400		342		400			5.80
150	75	205	121	140	75	110		5.85
	100		146		100			5.96
	125		171		125			6.08
	150		196		150			6.18
	175		221		175			6.30
	200		246		200			6.51
	250		296		250			6.78
	300		346		300			7.14
	350		396		350			7.51
	400		446		400			7.88
150	450	605	496	140	450	110		8.18
	500		546		500			8.37
	550		596		550			9.11
	600		646		600			9.26

See page 144 - 145 for accessories



# ST-E Series

Shift Cable Chain - Enclosed type



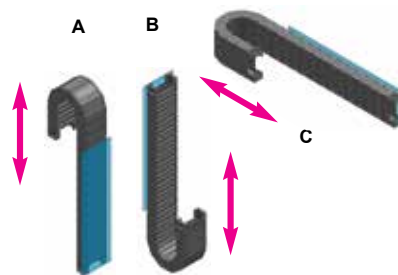
## Ordering Information

ST 044 E . 100 . R120  
 ①                      ②                      ③

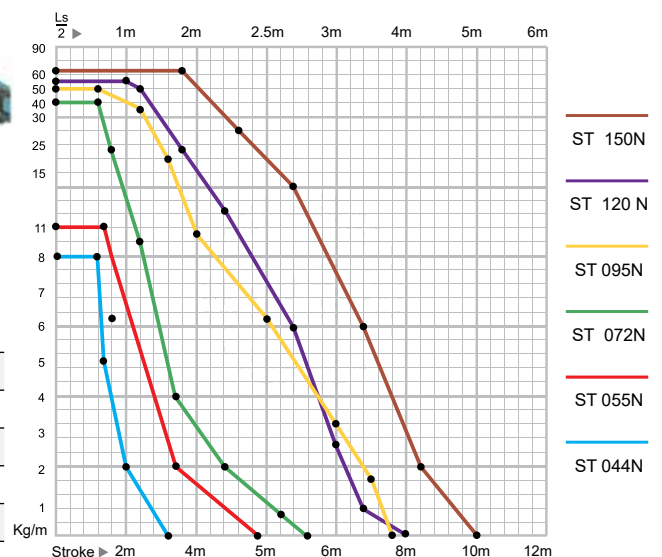
① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	56	38	35	24.5		1.03
	55	90	76		1.21			
	75	120	96		1.37			
	100	150	121		1.58			
055	50	100	71	52	50	38.5		1.36
	75	125	96		1.56			
	100	150	121		1.76			
	125	200	146		1.97			
	150	250	171		2.21			
072	50	120	82	66	50	44		2.37
	75	145	107		2.61			
	100	200	132		2.85			
	125	250	157		3.09			
	150	300	182		3.33			
095	100	150	138	82	100	55		3.55
	125	200	163		3.79			
	150	230	188		4.04			
	175	280	213		4.29			
	200	400	238		4.53			
120	150	200	192	108	150	76		5.79
	200	250	242		6.43			
	250	300	292		7.07			
	290	400	342		7.71			
	300	500						
150	200	305	246	140	200	110		8.16
	250	405	296		8.76			
	300	505	346		10.50			
	350	605	396		12.33			
	400		446		14.16			

## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
ST 044N	2.0m	40m	1.0m
ST 055N	3.0m	50m	1.0m
ST 072N	6.0m	100m	2.5m
ST 095N	6.0m	100m	3.0m
ST 120N	6.0m	120m	3.0m
ST 150N	7.0m	150m	4.0m



## Unsupported Length



## Specifications

Material	CPS-Amid(PA6+GF)
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV
Certificate	CE, ATEX(Ex), RoHS

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# ST-S Series

Shift Cable Chain - Long Travel Type



## Ordering Information

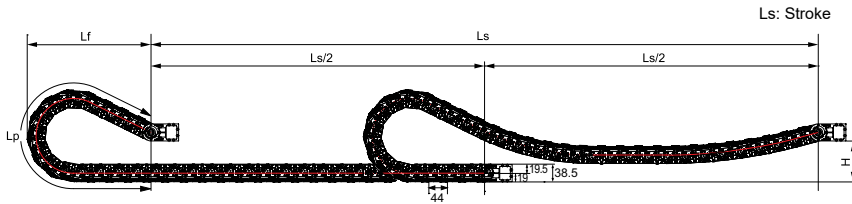
ST 044 S . 100 . R120  
 ①                      ②                      ③

① Normal type (N)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	74	38.5	35	26		1.03
	50		89		50			1.08
	55		94		55			1.10
	75		90		75			1.17
	100		120		100			1.26
	125	150	139		125			1.40
	150		189		150			1.52
	175		214		175			1.81
	200		239		200			1.98

## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3 m/s
Acceleration	10 m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

## Calculation of the chain length



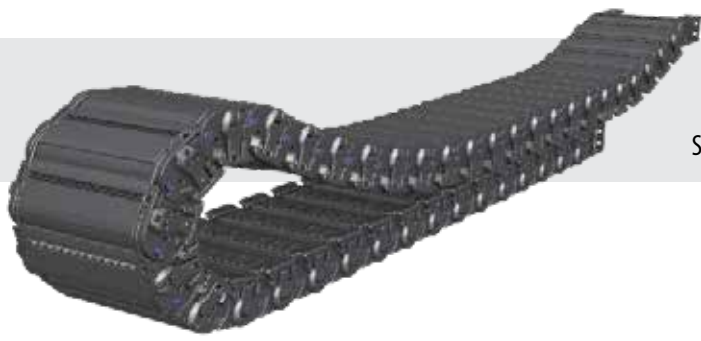
$$[ L = \frac{L_s}{2} + L_p ] \quad (\text{Unit : mm})$$

Bending Radius (R)	L p Loop Length	L f Loop Projection	H Moving Height
70	544	249	110
90	662	289	
120	926	393	
150	1,190	497	

## Accessories

See page 144 - 145 for accessories

Free end bracket						System tie wrap			Tie wrap			
Ordering No.	A Width (Outer)	B Height (Outer)	C Frame	D Height (Inner)	E M.EB Bolt hole width	Ordering No.	C Frame	Hole Type	Ordering No.	A	B	C
ST-FEB120E sb-FEB/WH075	74	38.5	35	26	0.4	S-TW.EB028.35	35	M6 Bolt Holes	S- TW036/025CR.35	46	35.4	-
	89		50		15.4	S-TW.EB028.50	50		69	48.9	15	
	94		55		20.4	S-TW.EB028.55	55		70	48.9	20	
	114		75		40.4	S-TW.EB028.75	75		94	48.9	40	
	139		100		65.4	S-TW.EB028.100	100		118	48.9	65	
	164		125		90.4	S-TW.EB028.125	125		142	48.9	90	
	189		150		115.4	S-TW.EB028.150	150					
	214		175		140.4	S-TW.EB028.175	175					
	239		200		165.4	S-TW.EB028.200	200					



# ST-ES Series

Shift Cable Chain - Enclosed Skid/Sliding Type



## Ordering Information

ST 044 ES . 100 . R120

①                      ②                      ③

See page 144 - 145 for accessories

① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	74	38.5	35	26		1.18
	55	90	94		55			1.37
	75	120	114		75			1.53
	100	150	139		100			1.74
072	50	120	105	71.8	50	44		2.77
	75	145	130		75			3.01
	100	200	155		100			3.25
	125	250	180		125			3.49
	150	300	205		150			3.73
095	100	150	162	89	100	55		4.16
	125	200	187		125			4.41
	150	230	212		150			4.65
	175	280	237		175			4.90
	200	400	262		200			5.15
120	150	200	218	115	150	76		6.28
	200	250	268		200			6.92
	250	300	318		250			7.56
	290	350	368		290			8.20
	300	400			300			

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS



# ST-RS Series

Shift Cable Chain - Roller Skid/Sliding Type



## Ordering Information

ST 044 RS . 100 . R120

①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	73	40.5	35	26		1.09
	50		88		50			1.15
	55		93		55			1.17
	75		113		75			1.24
	100		138		100			1.33
	125		163		125			1.47
	150		188		150			1.59
	175		213		175			1.88
	200		238		200			2.05
	072		50		100			104
75		129	75	2.67				
100		154	100	2.77				
125		179	125	2.91				
140		194	140	3.02				
150		204	150	3.05				
175		229	175	3.17				
200		254	200	3.59				
250		304	250	3.99				
300		354	300	4.34				
095	75	135	143	90	75	56		3.48
	100		168		100			3.55
	125		193		125			3.73
	150		218		150			3.84
	175		243		175			3.96
	190		258		190			4.07
	200		268		200			4.14
	240		308		240			4.36
	250		318		250			4.41
	300		368		300			4.67
350	418	350	5.03					
400	468	400	5.43					
120	75	180	143	117	75	78		4.75
	100		168		100			4.87
	125		193		125			5.02
	150		218		150			5.10
	175		243		175			5.28
	200		268		200			5.52
	250		318		250			5.82
	300		368		300			6.25
	350		418		350			6.67
	400		468		400			6.96
150	75	305	162	145	75	110		7.87
	100		187		100			7.98
	115		202		115			8.06
	125		212		125			8.11
	150		237		150			8.18
	175		262		175			8.34
	200		287		200			8.55
	240		327		240			8.76
	250		337		250			8.81
	290		377		290			9.11
300	387	300	9.18					
350	437	350	9.55					
400	487	400	9.98					
150	450	505	518	145	450	110		10.21
	500		568		500			10.41
	550		618		550			11.14
	600		668		600			11.29
	500		587		500			10.41
	600		687		600			11.29

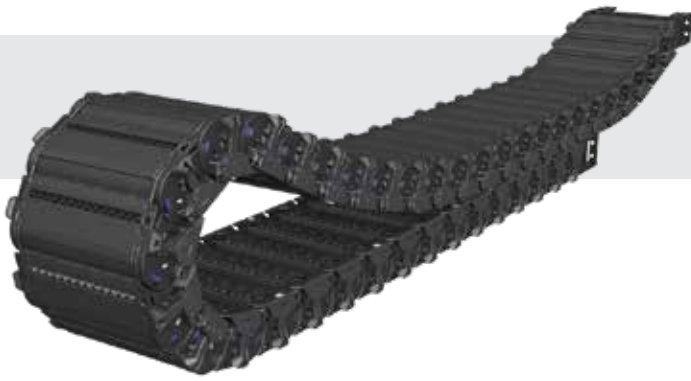
## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	Polyamide with reinforced glass fiber : UL94-HB
Noise Range	40dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

See page 144 - 145 for accessories



# ST-ERS Series

Long travel type with Built In Roller Wheels



## Ordering Information

ST 044 ERS . 100 . R120  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	 Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
044	35	70	73	40.5	35	24.5		1.07
	55	90	93		55			1.16
	75	120	113		75			1.23
	100	150	138		100			1.33
072	50	120	104	69	50	44		2.53
	75	145	129		75			2.65
	100	200	154		100			2.77
	125	250	179		125			2.89
	150	300	204		150			3.01
095	100	150	168	85	100	55		4.20
	125	200	193		125			4.45
	150	230	218		150			4.70
	175	280	243		175			4.95
120	200	400	268	112	200	76		5.19
	150	200	218		150			5.17
	200	300	268		200			5.48
	250	350	318		250			5.78
	290	400	368		290			6.09
300	500		300					

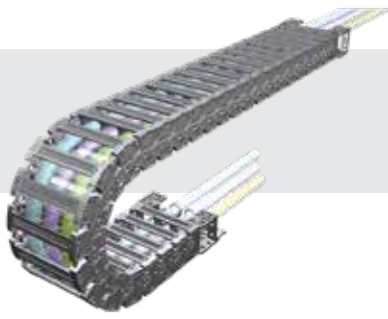
See page 144 - 145 for accessories

## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

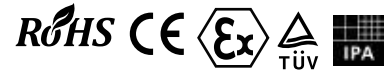
## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS



# nsb-CR Series

Clean room type



## Ordering Information

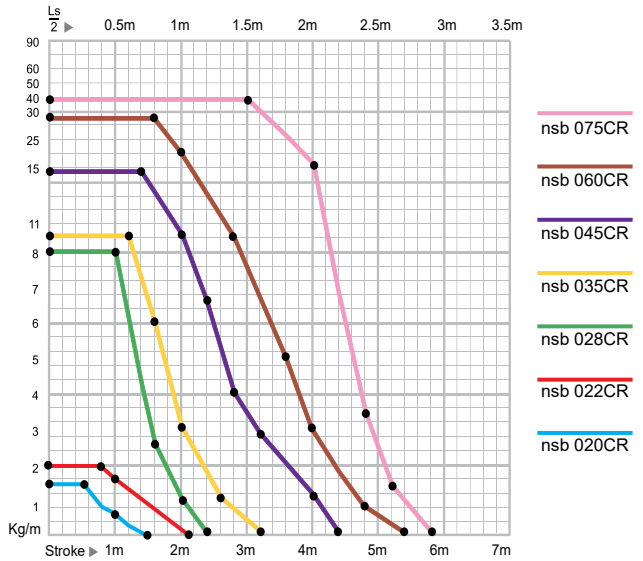
nsb 020 CR . 20 . R48  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)			
			A	B	C	D					
020	20	28	34	22	20	15	0.32 0.35				
	40	38 48	54		40						
022	16	35	30	29	16	22	0.43				
	27	45	41		27		0.47				
	37	75	51		37		0.51				
	47	100	61		47		0.55				
	67	120	81		67		0.67				
028	35	50	55	38	35	26	0.90				
	50		70		50		0.98				
	55		75		55		1.02				
	75		95		75		1.12				
	100		120		100		1.27				
	125		145		125		1.41				
	150		170		150		1.59				
	175		195		175		1.74				
	200		220		200		1.84				
	035		35		75		55	52	35	40	1.00
50		70	50	1.06							
55		75	55	1.09							
75		95	75	1.17							
100		125	100	1.29							
125		145	125	1.39							
150		170	150	1.53							
175		195	175	1.65							
200		220	200	1.73							
045		50	75	80		70	50		49		2.59
	75	105		75	2.74						
	100	130		100	2.90						
	125	155		125	3.11						
	150	180		150	3.31						
	175	205		175	3.48						
	200	230		200	4.18						
	250	280		250	4.76						
	300	330		300	5.32						
	060	75		125	115		82	75		56	3.56
100		140	100		3.66						
125		165	125		3.97						
150		190	150		4.16						
175		215	175		4.33						
190		230	190		4.52						
200		240	200		4.64						
250		290	250		5.06						
300		340	300		5.48						
350		390	350		6.09						
400		440	400		6.66						
075		75	180		115	108		75	78		5.37
		100			140			100			5.57
	125	165		125	5.82						
	150	190		150	6.01						
	200	240		200	6.26						
	250	290		250	6.68						
	300	340		300	7.22						
	350	390		350	7.94						
	400	440		400	8.67						
	450	490		450	9.43						
	500	540		500	10.01						
	550	590		550	10.41						
	600	640		600	11.88						
											12.17

## Specifications

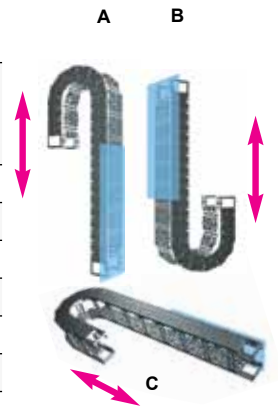
Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	5m/s
Noise level	30dB
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, IPA, ATEX(Ex), TUV, RoHS

## Unsupported Length



## Other Length Restrictions

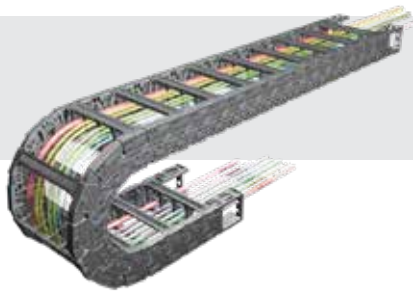
Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 020CR	1.0m	5m	0.5m
nsb 022CR	1.0m	5m	0.5m
nsb 028CR	2.0m	40m	1.0m
nsb 035CR	3.0m	50m	1.0m
nsb 045CR	6.0m	100m	2.5m
nsb 060CR	6.0m	100m	3.0m
nsb 075CR	6.0m	100m	3.0m



## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# nsb-N Series

Low Noise, Normal type



## Ordering Information

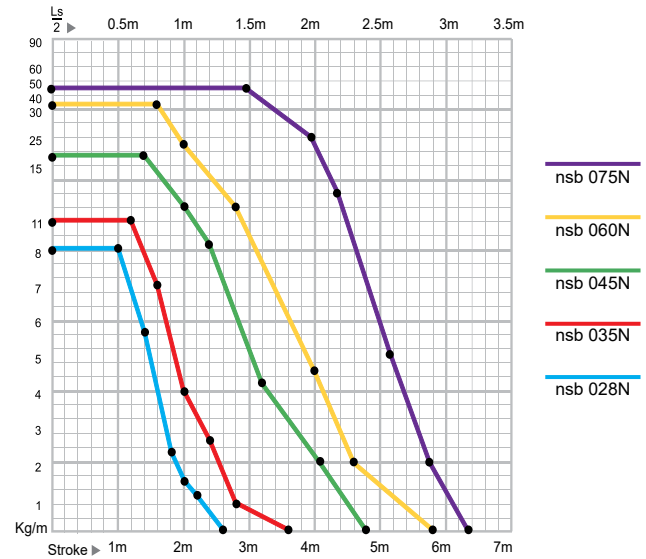
nsb 028 N . 50 . R66  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
028	35	46	55	38	35	26		0.79
	50		70		50			0.82
	55		75		55			0.85
	75		95		75			0.90
	100		120		100			0.98
	125		145		125			1.08
	150		170		150			1.18
	175		195		175			1.45
	200		220		200			1.59
	035		35		55			55
50		70	50	1.13				
55		75	55	1.15				
75		95	75	1.18				
100		120	100	1.25				
125		145	125	1.32				
150		170	150	1.41				
175		195	175	1.62				
200		220	200	1.72				
045		50	90	80		66	50	45
	75	105		75	2.14			
	100	130		100	2.22			
	125	155		125	2.32			
	140	170		140	2.38			
	150	180		150	2.42			
	175	205		175	2.51			
	200	230		200	2.86			
	250	285		250	3.15			
	300	330		300	3.43			
060	75	125	115	82	75	56		3.30
	100		140		100			3.35
	125		165		125			3.51
	150		190		150			3.60
	175		215		175			3.69
	200		240		200			3.84
	250		290		250			4.05
	300		340		300			4.26
	350		390		350			4.57
	400		440		400			4.85
075	75	160	115	108	75	78		4.80
	100		140		100			4.90
	125		165		125			5.02
	150		190		150			5.12
	175		215		175			5.25
	200		240		200			5.46
	250		290		250			5.72
	300		340		300			6.09
	330		390		330			6.45
	350		440		350			6.83
	400		480		400			7.12
	450		540		450			7.32
	500		590		500			8.06
	550		640		550			8.20
	600		640		600			8.20

## Specifications

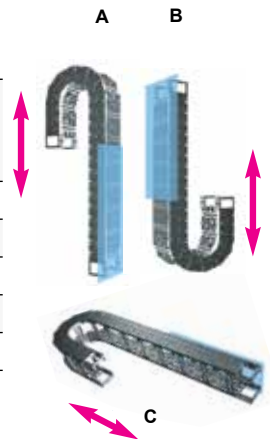
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	30dB
Speed	5m/s
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 028N	2.0m	40m	1.0m
nsb 035N	2.0m	40m	1.0m
nsb 045N	6.0m	100m	2.5m
nsb 060N	6.0m	100m	3.0m
nsb 075N	6.0m	100m	3.0m

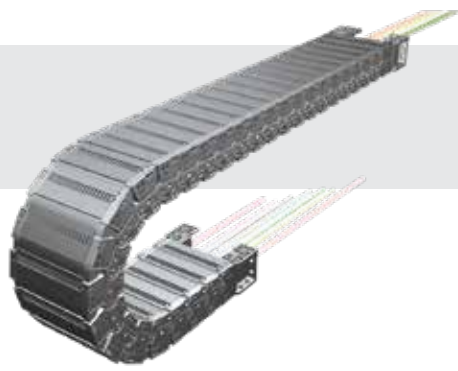


## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories





# nsb-E Series

Low Noise Enclosed type



## Ordering Information

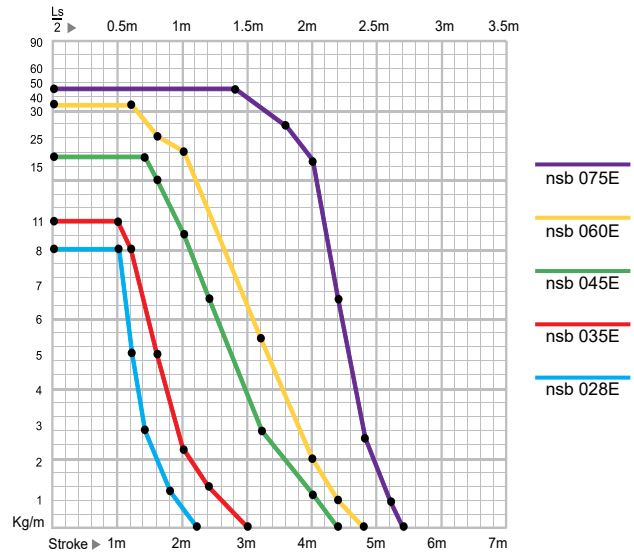
nsb 028 E . 50 . R66  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)
			A	B	C	D		
028	35 55 75 100	66 86 116 146	55 75 95 120	38	35 55 75 100	26		1.00
								1.13
								1.30
								1.50
035	50 75 100 125 150	90 115 140 190	70 95 120 145 170	52	50 75 100 125 150	40		1.45
								1.64
								1.83
								2.06
								2.28
045	75 100 125 150	90 110 135 165 185 235 285	105 130 155 180	66	75 100 125 150	45		2.78
								3.07
								3.35
								3.58
								060
4.86								
5.41								
075	150 200 300	160 180 230 280 330 380 480	190 240 340	108	150 200 300	78		
								7.97
								9.48

## Specifications

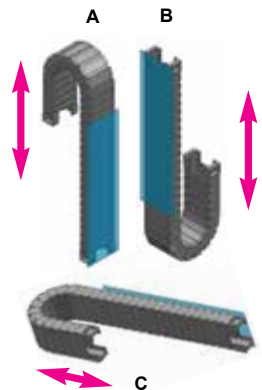
Material	Polyamide with reinforced glass fiber: UL94-HB
Noise Range	30dB
Speed	5m/s
Acceleration	15m/s <sup>2</sup>
Temperature	-30°C~+130°C
Special Production	ESD, UV, Customized color
Certificate	CE, ATEX(Ex), RoHS

## Unsupported Length



## Other Length Restrictions

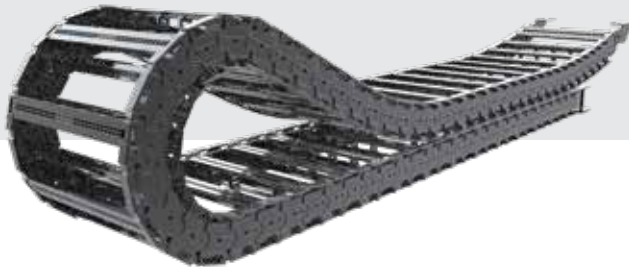
Type	Vertical standing (Max) A	Vertical Hanging (Max) B	Side Mounted Unsupported (Max) C
nsb 028E	2.0m	40m	1.0m
nsb 035E	3.0m	50m	1.0m
nsb 045E	6.0m	100m	2.5m
nsb 060E	6.0m	100m	3.0m
nsb 075E	6.0m	120m	3.0m



## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

See page 144 - 145 for accessories



# nsb-S Series

Low Noise, Long Travel Type

- Silent running-30dB
- Fit for high speed applications
- Low dust



## Ordering Information

nsb 044 S . 100 . R185  
 ①                      ②                      ③

① Pitch (mm)	② Inner Width	③ Bending Radius	Size (Unit : mm)				Frame type	Weight (kg/m)					
			A	B	C	D							
050	50	110	104	71.5	50	45	45	2.38					
	75		129		75			2.44					
	100		154		100			2.51					
	125		179		125			2.61					
	150		204		150			2.71					
	175		229		175			2.80					
	200		254		200			3.09					
	250		285		250			3.38					
	300		354		300			3.63					
	065		75		140			137	89	75	56	56	3.29
			100					162		100			3.34
125		187	125	3.49									
150		212	150	3.58									
175		237	175	3.68									
190		252	190	3.76									
200		262	200	3.82									
240		302	240	3.99									
250		312	250	4.03									
300		362	300	4.24									
350		412	350	4.53									
400		462	400	4.85									
080		75	180	143		115	75	76		76			4.27
		100		168			100						4.36
	125	193		125	4.47								
	150	218		150	4.57								
	175	243		175	4.67								
	200	268		200	4.85								
	250	318		250	5.07								
	300	368		300	5.40								
	350	418		350	5.71								
	400	468		400	6.09								
	450	518		450	6.28								
	500	568		500	6.45								
	550	618		550	7.08								
	600	668		600	7.20								

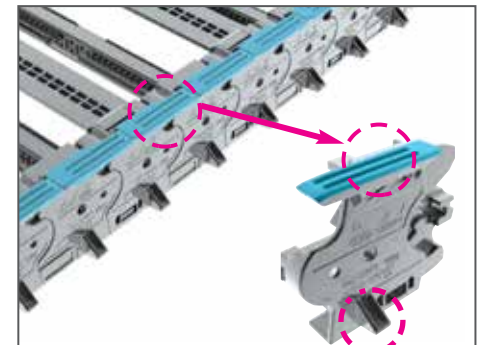
## How to Choose Bending Radius

Bending Radius	The biggest Cable inserted	Multiply 8~10 by the OD of the biggest cable
	The biggest Hydraulic Hose inserted	Multiply 15~20 by the OD of the biggest hose

## Specifications

Material	CPS-Amid(PA6+GF)
Noise Range	30dB
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

nsb chain is designed to minimize dust as forming the groove on skid surface and by installing sliding bar (Nylon) which is same material with nsb cable chain on guide channel



The side supports allow it to maintain a stable operation, making it suitable for high speed applications.

See page 144 - 145 for accessories

# RV Series

Revolving Chain



## Specifications

Material	CPS-Amid(PA6+GF)
Speed	3m/s
Acceleration	10m/s <sup>2</sup>
Temperature	-30°C~+130°C
Certificate	CE, ATEX(Ex), RoHS

## Ordering Information

RV 048 CR . 200 . A  
 ①                      ②                      ③

(Unit : mm)

① Pitch (mm)	② Inner Height	③ Application Type of Ball Caster	Size (Unit : mm)				Application for Ball Caster			
			A (A1)	B	C	D(D1)	Type A		Type B	
							Minimum distance (L)	Minimum reverse bending (R)	Minimum distance (L')	Minimum reverse bending (R')
020	16	Type A or B	30	28	16	22	130	40	150	30
	27		41		27					
	37		51		37					
	47		61		47					
	67		81		67					
77	91		77							
028	35		59(65)	38	35	28(25)	170	70	200	50
	55		79(85)		55					
	75		99(105)		75					
	100		124(130)		100					
	125	149(155)	125							
040	50	78 (86)	52	50	40(37)	230	120	340	70	
	75	103 (111)		75						
	100	128 (136)		100						
	110	138 (146)		110						
	125	153 (161)		125						
	150	178 (186)		150						
	175	203 (211)		175						
	200	228 (236)		200						
048	50	78(86)	65	50	53(50)	300	160	450	90	
	75	103(111)		75						
	100	128(136)		100						
	125	153(161)		125						
	150	178(186)		150						
	175	203(211)		175						
	200	228(236)		200						
060	50	90(97)	82	50		400	165	485	120	
	75	115(122)		75						
	100	140(147)		100						
	125	165(172)		125						
	150	190(197)		150						
	175	215(222)		175						
	200	240(247)		200						
	250	290(297)		250						
	300	340(347)		300						

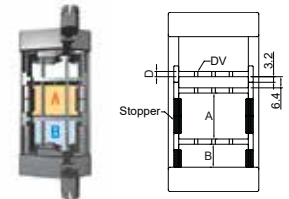
## Stopper System

Stopper decides the location of divider which is settled in side of cable chain and control the position of divider according to the inserted cable's size and quantity.  
 The items are classified as ST-M1, ST-M2, ST-S1, ST-S2 and please refer following drawings.



A	5, 10, 15, 20			
	16	24	27.8	35.4
B	1.5		1.8	

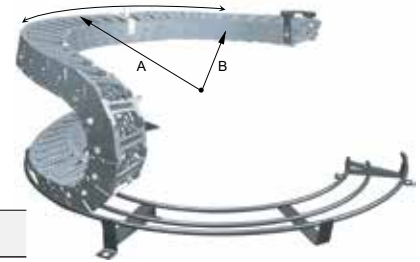
## Application method stopper



A	6.4+10XStopper Q'ty
B	3.2+10XStopper Q'ty
D	RV028CR : 3.3mm RV040CR : 3.2mm RV048CR : 3.5mm

# HX Series

Helix Chain



## Ordering Information

HX 3553 . 075 . R 90  
 ①                      ②                      ③

(Unit : mm)

① Helix Chain	② Inner Width	③ Bending Radius	Pitch	A	B
3553	75	90 140	53	418	315
6075	100	110 135 185 235	75	608	468

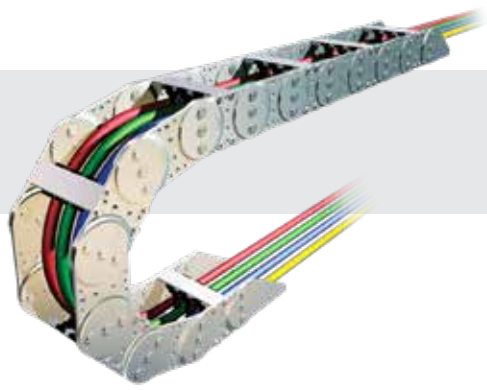
## Specifications

Material	Polyamide with reinforced glass fiber: UL94-HB
Speed	When the rotation speed up to 4m/sec.
Temperature	-30°C~+130°C
Certificate	CE, RoHS

## Calculation of required Number of Links

$$N = \left( \frac{\pi \times X \text{ Or } X \times B}{360^\circ \times X \times P} \right) + \frac{Lp}{P}$$

N : Number of Links Or : Outer Radius B : Rotation angle P : Chain pitch Lp : π R+6p



# SK Series

Steel Cable Chain

- Highly durable cable chains made of steel and aluminum
- Smaller Link Plate design provide more stability
- Customized holes and frames can give stronger supporting power
- For various industrial applications like conveying machinery etc.

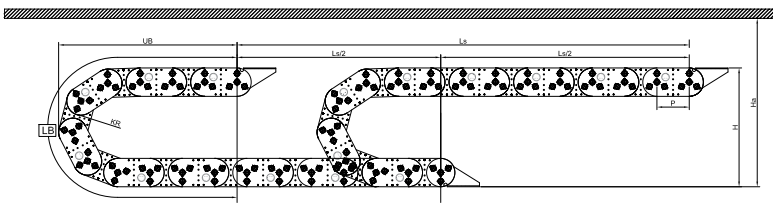
## Ordering Information

SKS 70 . BST 84 . KR 125 / F - XXXL  
 ①                      ②                      ③                      Length(mm)

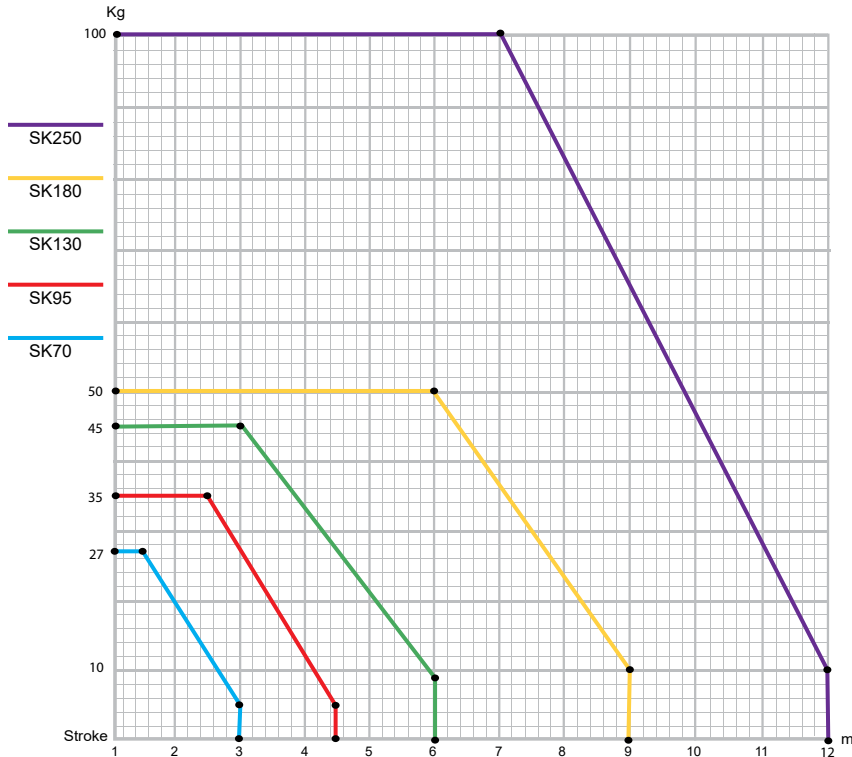
## Calculation of the chain length

$$[ L = \frac{Ls}{2} + LB ]$$

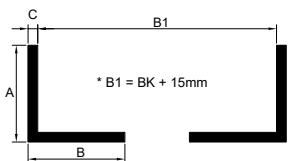
Ls: Stroke UB: Loop Projection



## Unsupported Length



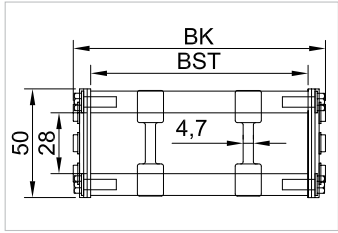
## Guide Channel



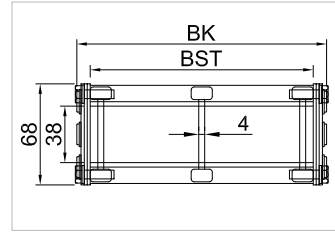
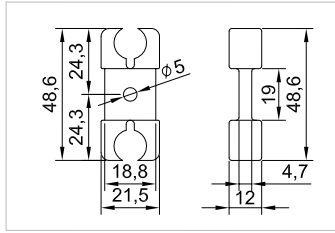
	SK70	SK95	SK130	SK180	SK250
A	30	50	65	90	100
B	30	50	65	90	100
C	3	4	5	6	7

① Pitch (mm)	② Inner Width (Frame width) (BST)	③ Bending Radius (KR)	Loop Length (LB)	Safe Space (Ha)	Moving Height (H)	Q'ty of Divider	Outside width (BK)
70	84	75	515	210	200	2	100
	109						
	134						
	159						
	184						
	234						
	284						
334							
95	82	125	770	330	318	1	100
	107						
	132						
	157						
	182						
	232						
	282						
	332						
	382						
	432						
	482						
	532						
582							
130	176	150	990	410	394	3	200
	226						
	276						
	326						
	376						
	426						
	476						
	526						
	576						
	626						
	676						
	726						
776							
180	171	250	1,500	650	640	2	200
	221						
	271						
	321						
	371						
	421						
	471						
	521						
	571						
	621						
	671						
	721						
	771						
	821						
871							
250	264	350	2100	950	950	UP	300
	364						
	464						
	564						
	664						
	764						
	864						
	964						
	1064						
	1164						
	1264						
	1364						
250	264	350	2100	950	950	Down	400
	364						
	464						
	564						
	664						
	764						
	864						
	964						
	1064						
	1164						
	1264						
	1364						

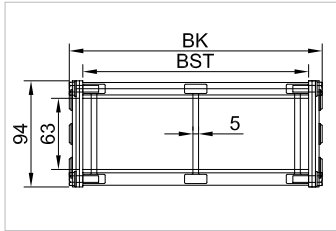
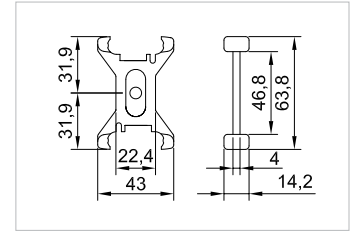
## Solid Bar Type



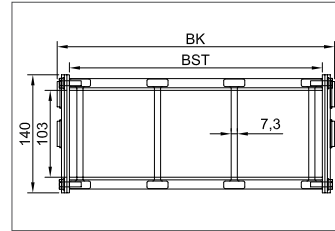
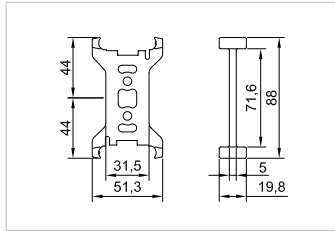
KS70



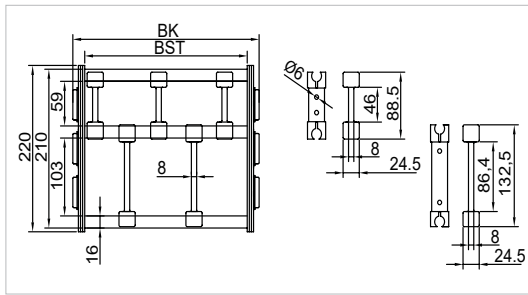
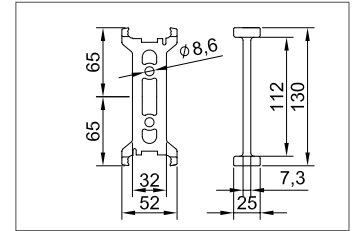
KS95



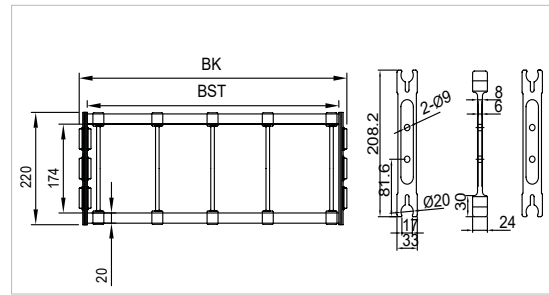
KS130



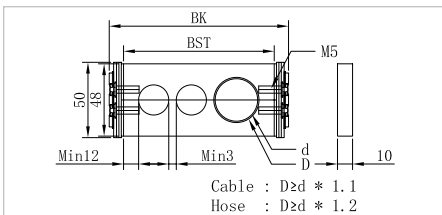
KS180



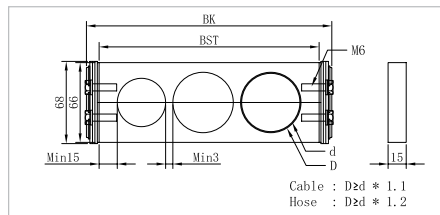
KS250



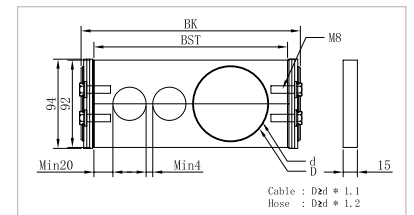
## Hole Bar Type



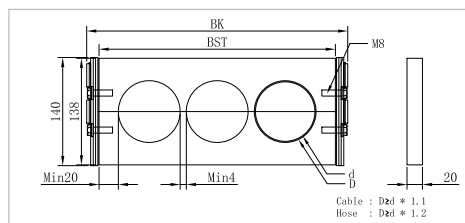
KS70



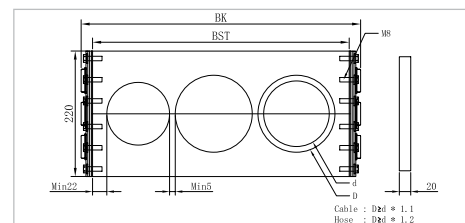
KS95



KS130



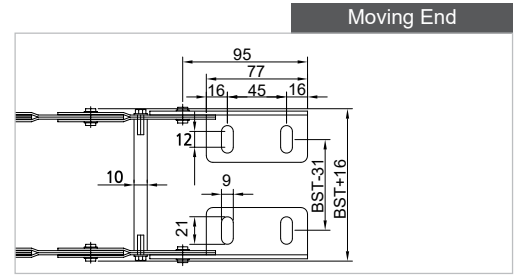
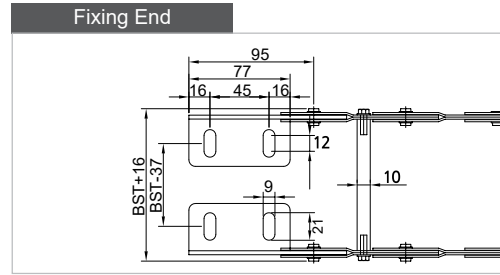
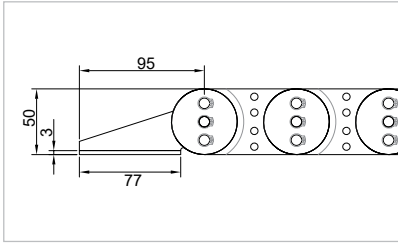
KS180



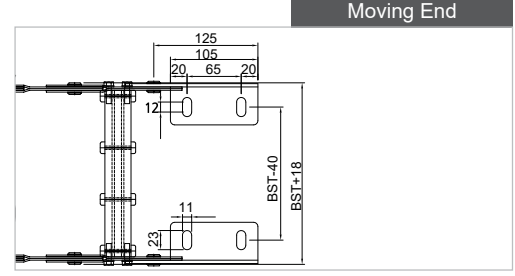
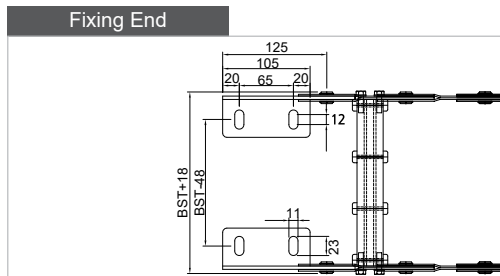
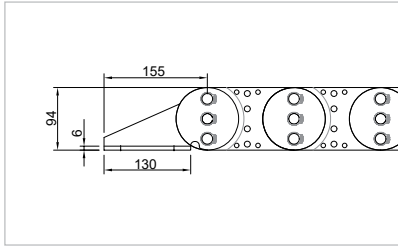
KS250

# Bracket

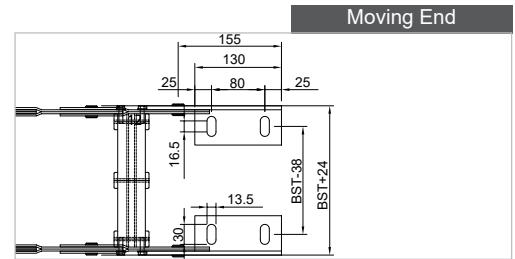
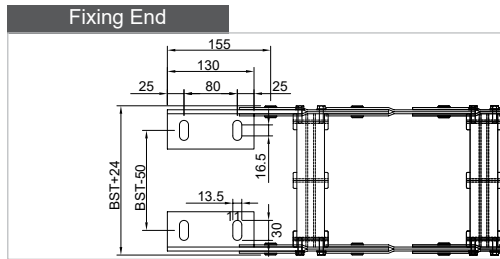
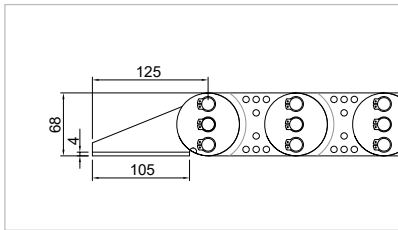
## KS70



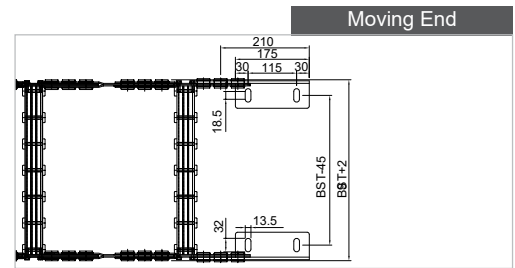
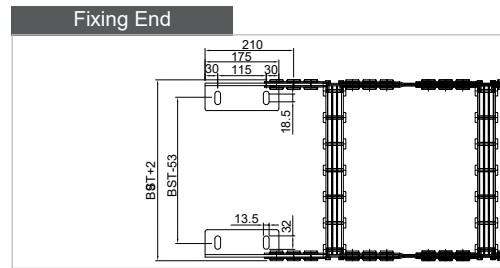
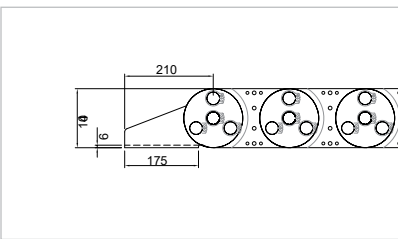
## KS95



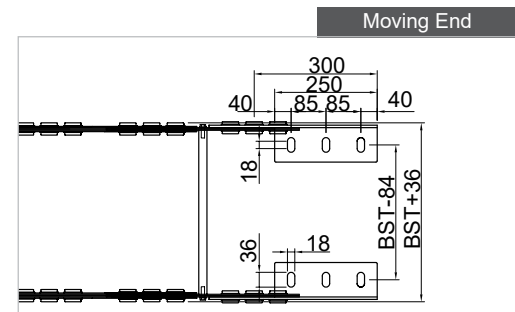
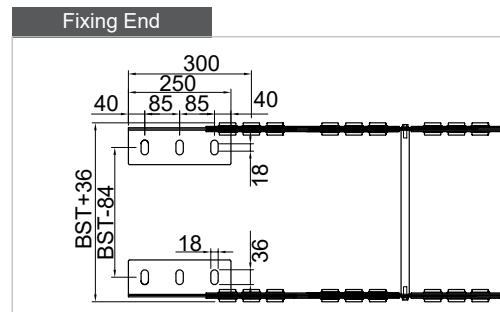
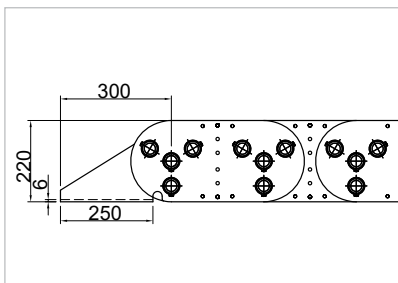
## KS130



## KS180



## KS250



• **Note** •

A series of horizontal dotted lines for writing notes, contained within a rounded rectangular border.

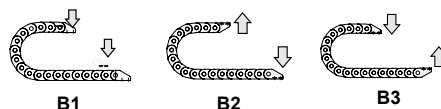
# Accessories

Type	Series Part#	① Inner Width (Inner frame size)	Free End Bracket	System Tie Wrap	Divider	Separator	Tie Wrap
CPS Mini	CPS015	06 / 10 / 15 / 20	S-TEB015. ①	-	-	-	-
	CPS020	15 / 20 / 30 / 40	S-TEB020.①	-	-	-	-
	CPS030	15 / 25 / 35 / 50	S-TEB030.①	-	S-DV030	-	-
	CPS033	27 / 37 / 47 / 67 / 77	S-EEB033	-	S-DV033	-	S-TW033/020CR.①
ST-N Series	ST044N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB044N/S	S-TW.EB028.①	sb-DV028/② (②: S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
	ST055N		ST-FEB055N	S-TW.EB035. ①	sb-DV035/② (②: S / M1 / M2 / T / W)		S-TW050/035N. ① (*50~200 only)
	ST 072N	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 250 / 300	ST-FEB072N/S	S-TW.EB045. ①	sb-DV045/② (②: S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50~150 only)
	ST 095N	75 / 100 / 125 / 150 / 175 / 200 / 230 / 240 / 250 / 300 / 350 / 400	ST-FEB095N/S	S-TW.EB060. ①	sb-DV060/② (②: S / M / R / T / W)		S-TW ① (50 / 75 / 100 / 125 / 150 only)
	ST 120N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-FEB120N/S	S-TW.EB075. ①	sb-DV075/② (②: S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (50 / 75 / 100 / 125 / 150 only)
	ST 150N		ST-SEB150N ④ (④: B1 / B2 / B3)	-	sb-DV/S100/② (②: S / M / T)		
ST-E Series	ST 044E	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/② (②:S / M1 / M2 / T / W)	S-SP/M. ③ (③:35 / 50 / 75 / 100)	S-TW036/025CR. ①
	ST 055E	50 / 75 / 100 / 125 / 150	ST-FEB055E	S-TW.EB035. ①	sb-DV035/② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW050/035N. ①
	ST 072E	50 / 75 / 100 / 125 / 150	ST-FEB072E	S-TW.EB045. ①	sb-DV045/② (②: S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 095E	100 / 125 / 150 / 175 / 200	ST-FEB095E	S-TW.EB060. ①	sb-DV060/② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 120E	150 / 200 / 250 / 300	ST-FEB120E	S-TW.EB075. ①	sb-DV075/② (S / M / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 150E	200 / 250 / 300 / 350 / 400	ST-SEB150E/④ (④: B1 / B2 / B3)(Steel)	-	sb-DV/S100/S sb-DV100/M		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
ST-S Series	ST 044S	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB120E	S-TW.EB028. ①	sb-DV028/② (②: S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
ST-ES Series	ST 044ES	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW036/025CR. ①
	ST 072ES	50 / 75 / 100 / 125 / 150	ST-FEB072	S-TW.EB045. ①	sb-DV045/② (②: S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ①
	ST 095ES	100 / 125 / 150 / 175 / 200	ST-FEB095	S-TW.EB060. ①	sb-DV060/② (②: S / M / W)		S-TW ①
	ST 120ES	150 / 200 / 250 / 300	ST-FEB120E	S-TW.EB075. ①	sb-DV075/② (②: S / M / W)		S-TW ①
ST-RS Series	ST 044RS	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	ST-FEB044N/S	S-TW.EB028. ①	sb-DV028/ ② (②: S / M1 / M2 / T / W)		S-SP/M. ①
	ST 072RS	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 240 / 250 / 300	ST-FEB072N/S	S-TW.EB045. ①	sb-DV045/ ② (②: S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S-TW ① (*50~150 only)
	ST 095RS	75 / 100 / 125 / 150 / 175 / 190 / 200 / 230 / 250 / 300 / 350 / 400	ST-FEB095N/S	S-TW.EB060. ①	sb-DV060/ ② (②: S / M / R / T / W)		S-TW ① (*50~150 only)
	ST 120RS	75 / 100 / 125 / 150 / 175 / 200 / 240 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-FEB120N/S	S-TW.EB075. ①	sb-DV075/ ② (②: S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 150RS	75 / 100 / 115 / 125 / 150 / 175 / 200 / 240 / 250 / 290 / 300 / 350 / 400 / 450 / 500 / 550 / 600	ST-SEB150N ④ (④: B1 / B2 / B3)	-	sb-DV100/ ② (②: S / M / T)	sb-SP/600.600 Cut to length (600 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
ST-ERS Series	ST 044ERS	35 / 55 / 75 / 100	ST-FEB044E	S-TW.EB028. ①	sb-DV028/ ② (②: S / M1 / M2 / W)	S-SP/M. ①	S-TW036/025CR. ①
	ST 072ERS	50 / 75 / 100 / 125 / 150	ST-FEB072	S-TW.EB045. ①	sb-DV045/ ② (②: S / M / W)	sb-SP/400.400 Cut to length(400 mm)	S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 095ERS	100 / 125 / 150 / 175 / 200	ST-FEB095	S-TW.EB060. ①	sb-DV060/ ② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)
	ST 120ERS	150 / 200 / 250 / 300	ST-FEB120RE	S-TW.EB075. ①	sb-DV060/ ② (②: S / M / W)		S-TW ① (*50 / 75 / 100 / 125 / 150 only)

## ② Divider

- S : divider is used to fix a separator that is the same length as the frame
- M : divider is used to separate individual cables
- M1 : divider is used to separate individual cables
- M2 : divider is used to fasten a separator that is shorter than the frame length
- T : divider can be used at center position to support frame longer than 125mm and up
- R : Side position roller divider to protect abrasion of moving cable at inner side of chain
- W : (Tie wrap) dividers are used to hold the cables in place at both ends of the cable chain size

## ④ End Bracket





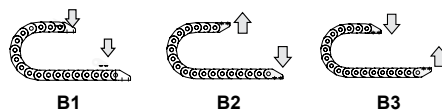
# Accessories

Type	Series Part#	① Inner Width (Inner frame size)	Free End Bracket	System Tie Wrap	Divider	Separator	Tie Wrap
nsb - CR Series	nsb 020CR	20 / 40	nsb-FEB020CR	-	sb-DV018CR	-	sb-TW018CR. ①
	nsb 022CR	16 / 27 / 37 / 47 / 67 / 77	nsb-FEB022CR	-	sb-DV020CR	-	sb-TW020CR. ①
	nsb 028CR	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB028CR	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ① (*35~125 only)
	nsb 035CR	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB035CR	S-TW.EB035. ①	sb-DV035/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW050/035N. ① (*50~200 only)
	nsb 045CR	50 / 75 / 100 / 125 / 150 / 175 / 200 / 240 / 250 / 300	nsb-FEB045CR	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50~150 only)
	nsb 060CR	75 / 100 / 125 / 150 / 175 / 190 / 200 / 250 / 300 / 350 / 400	nsb-FEB060CR	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075CR	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	nsb-FEB075CR	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - N Series	nsb 028N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB028N	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW036/025CR. ①
	nsb 035N	35 / 50 / 55 / 75 / 100 / 125 / 150 / 175 / 200	nsb-FEB035N	S-TW.EB028. ①	sb-DV035/ ② (S / M1 / M2 / T / W)	S-SP/M. ①	S-TW050/035N. ①
	nsb 045N	50 / 75 / 100 / 125 / 140 / 150 / 175 / 200 / 250 / 300	nsb-FEB045N	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50~150 only)
	nsb 060N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400	nsb-FEB060N	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075N	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	nsb-FEB075N	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - E Series	nsb 028E	35 / 55 / 75 / 100	nsb-FEB028E	S-TW.EB028. ①	sb-DV028/ ② (S / M1 / M2 / W)	S-SP/M. ①	S- TW036/025CR. ①
	nsb 035E	50 / 75 / 100 / 125 / 150	nsb-FEB035E	S-TW.EB035. ①	sb-DV035/ ② (S / M1 / M2 / W)	S-SP/M. ①	S-TW050/035N. ①
	nsb 045E	75 / 100 / 125 / 150	nsb-FEB045E	S- TW.EB045. ①	sb-DV045/ ② (S / M / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ①
	nsb 060E	100 / 150 / 200	nsb-FEB060E	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 075E	150 / 200 / 300	nsb-FEB075E	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
nsb - S Series	nsb 050S	50 / 75 / 100 / 125 / 150 / 175 / 190 / 200 / 250 / 300	nsb-FEB050S / F nsb-FEB050S/ M(SEB)(Steel)	S-TW.EB045. ①	sb-DV045/ ② (S / M / T / W)	sb-SP/400.400 Cut to length (400 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 065S	75 / 100 / 125 / 150 / 175 / 190 / 200 / 230 / 240 / 250 / 300 / 350 / 400	nsb-FEB065S / F nsb-FEB065S/ M(SEB)(Steel)	S-TW.EB060. ①	sb-DV060/ ② (S / M / R / T / W)		S- TW ① (*50 / 75 / 100 / 125 / 150 only)
	nsb 080S	75 / 100 / 125 / 150 / 175 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 550 / 600	NSB-FEB080S / F NSB-FEB080S/ M(SEB)(Steel)	S-TW.EB075. ①	sb-DV075/ ② (S / M / R / T / W)	sb-SP/600.600 Cut to length (600 mm)	S- TW ① (*50 / 75 / 100 / 125 / 150 only)

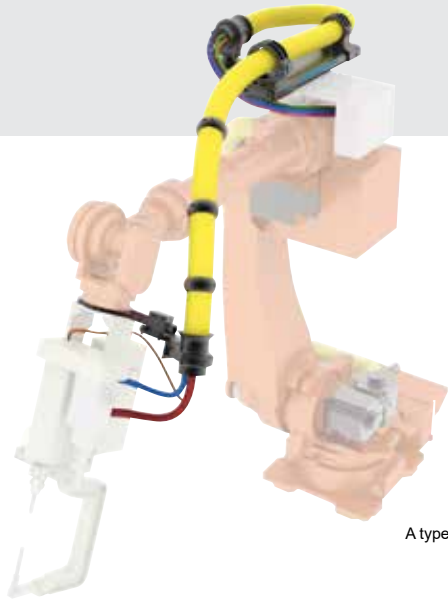
## ② Divider

- S** : divider is used to fix a separator that is the same length as the frame
- M** : divider is used to separate individual cables
- M1** : divider is used to separate individual cables
- M2** : divider is used to fasten a separator that is shorter than the frame length
- T** : divider can be used at center position to support frame longer than 125mm and up
- R** : Side position roller divider to protect abrasion of moving cable at inner side of chain
- W** : (Tie wrap) dividers are used to hold the cables in place at both ends of the cable chaine size

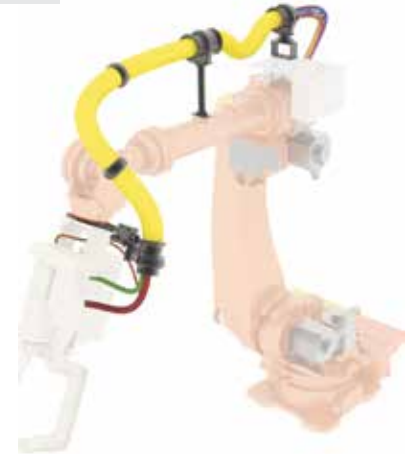
## ③ End Bracket



# Dress Pack



A type



B type

## Dress Pack (A Type)

## Dress Pack (B Type)

### Ordering Information

ROBOWAY - 70 - B - A

①

① Size	36, 48, 56, 70, 95
Components*	RW(1set), PAM(CPS FLEX 5m), RKTP(4pcs), RKS(2pcs), RKC(2pcs), RKSC(2pcs), RKR(1pcs), VCG(2pcs), RCS(1pcs) (+ RKTD, RKDC)

\* The components may vary depending on customer's requirements.

### Ordering Information

ROBOWAY - 48 - B - B

①

① Size	48,56,70, 95
Components*	PAM(CPS FLEX 5m), RKTP(4pcs), RKS(3pcs), RKC(3pcs), RKSC(2pcs), RKR(1pcs), VCG(2pcs), RCS(1pcs), RPS(1pcs), RBP(1pcs) (+ RKTD, RKDC)

\* The components may vary depending on customer's requirements.

### Retractor

### Parts for B Type

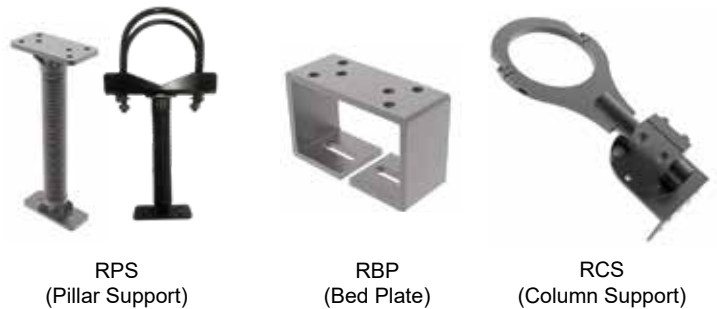
### Ordering Information

RW - 48 . 400 L

①

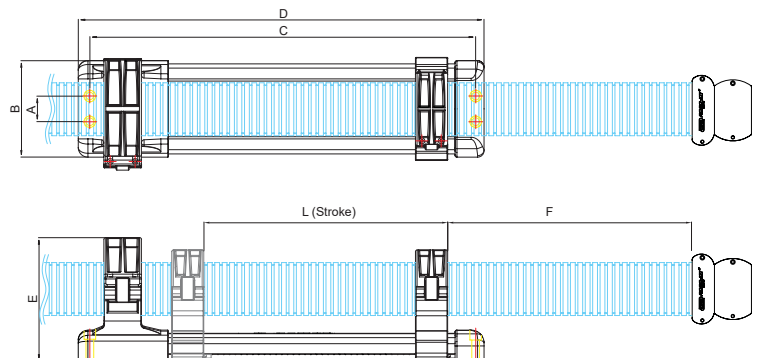
②

① Size	② L Stroke
36 48	300/400/500/600
56 70 95	350/450/550/650



### Size Information

Type	A Bolt hole width	B Width	C Bolt hole width	D Length	E Height	F Length
RW-36 RW-48	30 30	96 96	L+202 L+202	L+222 L+222	137 137	650~700
RW-56 RW-70 RW-95	40 40 40	150 150 150	L+249 L+249 L+249	L+280 L+280 L+280	192 192 192	700~750








# Robo - Kit

Robot Cable Protection System

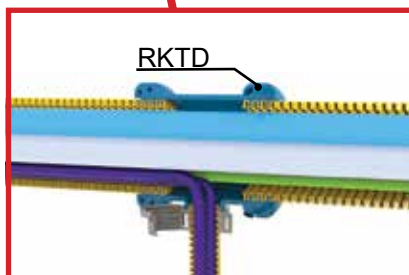
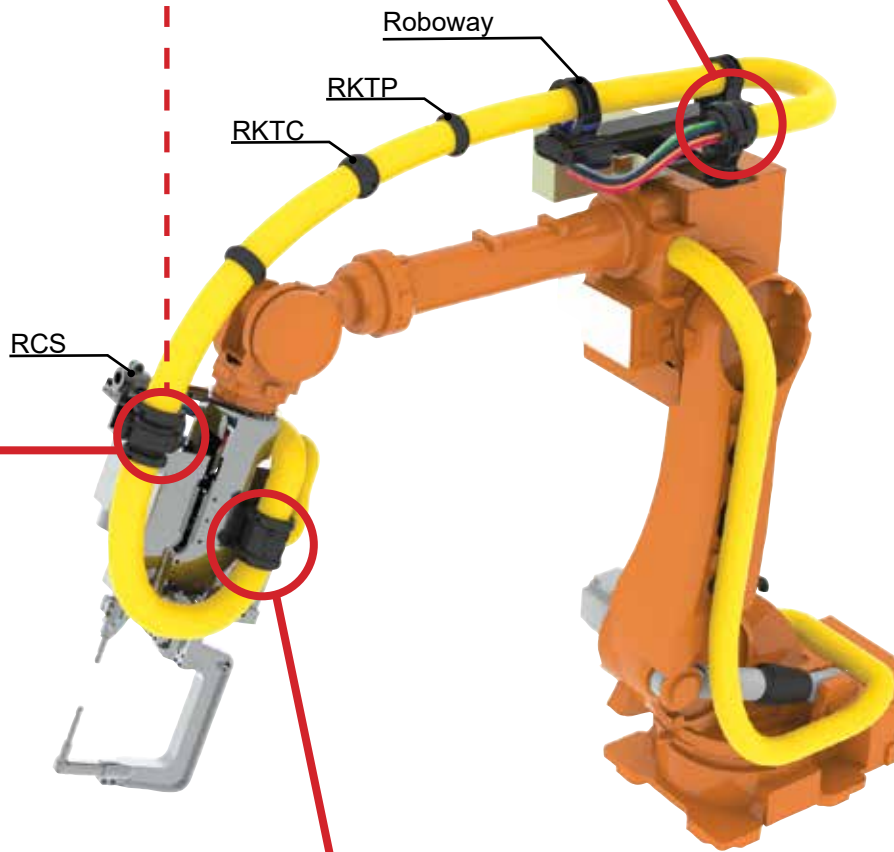
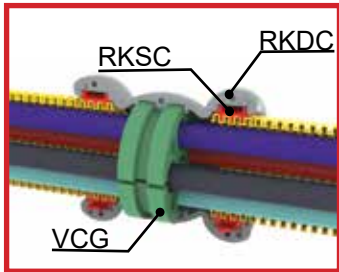
## Ordering Information

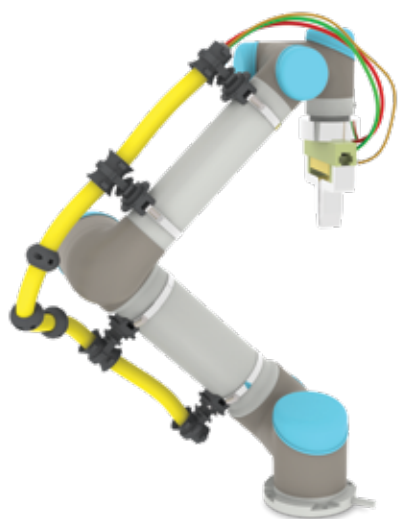
### RKC - 70

① ②

	① Part Type	② Conduit Size	Dimension				Description
			Width	Height	Length	Outer Diameter	
	RKTTP (Abrasion Protector)	22	28.0	46.4	-	46.4	Made of reinforced polyamide 6. Protect abrasion and damage of tube when tube bumps on robot arm.
		28	30.0	53.0		53.0	
		36	30.0	62.0		62.0	
		48	30.0	80.0		80.0	
		56	40.0	93.2		93.2	
		70	40.0	108.0		108.0	
95	45.0	131.5	131.5				
	RKTC (Abrasion Protector)	48	50.0	78.0	-	78.0	If robot tube got damaged such as cut or stretched condition, you don't need to replace total tube by using RKTC as it can cover damaged area.
		56	60.0	90.2		90.2	
		70	60.0	105.0		105.0	
		95	65.0	128.5		128.5	
	RKC (Tube Clamp)	22	30.0	50.0	49.0	45.0	Tube clamp in combination with RKS+RKRC or RKD+RKRC to holds tube's movement while robot operates.
		28	30.0	59.5	58.8	53.5	
		36	45.0	88.3	90.2	76.0	
		48	49.5	105.0	128.2	98.0	
		56	40.0	138.1	150.1	116.2	
		70	40.0	145.5	164.9	131.0	
95	50.0	169.3	190.9	154.5			
	RKS (Tube Ball Joint)	22	50.0	23.0	23.0	23.0	Tube ball joint to strengthen tube's flexibility and release tube's tension loaded by robot operation.
		28	60.0	27.0	27.0	27.0	
		36	100.3	80.5	80.5	80.5	
		48	89.0	92.3	92.3	92.3	
		56	102.0	105.3	105.3	105.3	
		70	102.0	120.1	120.1	120.1	
95	120.0	144.2	144.2	144.2			
	RKD (Ball Joint Sleeve)	22	50.0	23.0	23.0	23.0	Tube ball joint, however, its shape is a little bit different as ball joint direction is bidirectional unlike RKS.
		28	60.0	27.0	27.0	27.0	
		36	120.0	83.0	83.0	83.0	
	RKSC (Strain Relief Insert)	22	10.5	29.5	-	29.5	22~36 of RKSC : It clamp for VCG. 48~70 of RKSC : It clamp for Tube and RKS.
		28	13.0	34.5		34.5	
		36	20.6	44.6		44.6	
		48	22.0	67.5		67.5	
		56	26.0	81.2		81.2	
		70	26.0	96.0		96.0	
95	35.0	119.5	119.5				
	RKR (Swivel Plate)	22	56.0	25.7	-	56.0	RKR in combination with RKC is to release tube's tension and fatigue as it can rotate with robot-arm movement.
		28	56.0	25.7		56.0	
		36	98.0	42.0		98.0	
		48	98.0	42.0		98.0	
		56	98.0	42.0		98.0	
		70	98.0	42.0		98.0	
95	120.0	37.0	120.0				
	VCG (Cable End Finishing)	22	10.5	25.5	-	25.5	Clamp for robot cables/hoses at end position of tube.
		28	13.0	30.5		30.5	
		36	20.6	40.6		40.6	
		48	24.0	62.5		62.5	
		56	34.0	75.8		75.8	
		70	34.0	90.0		90.0	
95	43.0	113.5	113.5				
	RKDC (Distributor)	70	120	140	-	140	Distributor protects cables and hoses that connect to very end part, Robot gun where welding flame fled up
		70	110	129	-	129	

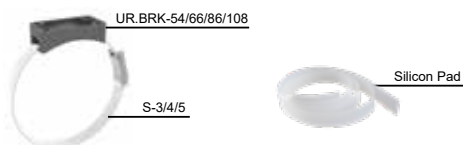
# Robo-Kit & Roboway Component Parts



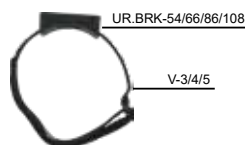


## Dress Packs for Universal Robot

### UR. Band



### UR. Velcro



Part name	Robot type	Arm Size	Components
UR3.BAND 054	UR3	Lower (Ø50~Ø70)	S-3(Steel Band), UR.BRK-54(Bracket), Silicon Pad
UR3.BAND 066		Upper (Ø50~Ø70)	S-3(Steel Band), UR.BRK-66(Bracket), Silicon Pad
UR5.BAND 075	UR5	Lower (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR5.BAND 085		Upper (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR10.BAND 086	UR10	Lower (Ø70~90)	S-4(Steel Band), UR.BRK-86(Bracket), Silicon Pad
UR10.BAND 108		Upper (Ø90~110)	S-5(Steel Band), UR.BRK-108(Bracket), Silicon Pad

Part name	Robot type	Arm Size	Components
UR3.VELCRO	UR3	Upper arm (A Ø55~Ø66)	V-3(Velcro Band), UR.BRK-54(Bracket)
		Lower arm (A Ø55~Ø66)	V-3(Velcro Band), UR.BRK-66(Bracket)
UR5.VELCRO	UR5	Upper arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
		Lower arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
UR10.VELCRO	UR10	Upper arm (B Ø66~90)	V-4(Velcro Band), UR.BRK-86(Bracket)
		Lower arm (C Ø108~145)	V-5(Velcro Band), UR.BRK-108(Bracket)

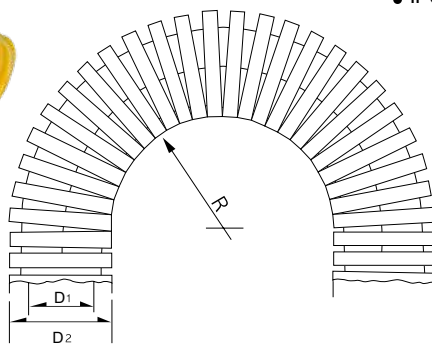
Part name	Robot Descriptions to be applied	Kit components
DP-UR3	UR3 robot type, Ø54 & Ø66 size of robot arm, Max. 3kg carried	UR3.BAND-054(2set.) UR3 BAND-066(2set.) RKC-22/28(4ea.) RKR-22/28(4ea.) RKD-22/28(2ea.) RKS-22/28(2ea.) RKSC-22/28(2ea.) RKTP-22/28(2ea.) VCG-22/28(2ea.) PAR/PAM(1M) M4 X 10(40ea.) M4(24ea.)
DP-UR5	UR5 robot type, Ø75 & Ø86 size of robot arm, Max. 5kg carried	UR5.BAND-075(2set.) UR3 BAND-085(2set.) RKC-22/28(4ea.) RKR-22/28(4ea.) RKD-22/28(2ea.) RKS-22/28(2ea.) RKSC-22/28 2ea, RKTP-22/28 2ea. VCG-22/28 2ea, PAR/PAM 1M, M4 X 10 40ea. M4 24ea.
DP-UR10	UR10 robot type, Ø86 & Ø108 size of robot arm, Max. 10kg carried	UR10.BAND-086 1set. UR3 BAND-108 1set. RKC-22/28 4ea. RKR-22/28 4ea. RKD-22/28 2ea. RKS-22/28 2ea. RKSC-22/28 2ea, RKTP-22/28 2ea. VCG-22/28 2ea, PAR/PAM 1M, M4 X 10 40ea. M4 24ea.



# CPSFLEX

Corrugated Tube

- Polyamide with reinforced glass fiber: UL94-HB
- Perfect for fast moving environment
- Good to use for machinery center, assembly loader, wood work machine and more
- IP 68 acc. EN 60529 protection except split type.



(Unit : mm)

## Ordering Information

PAH - 10 B  
 ①      ②      ③

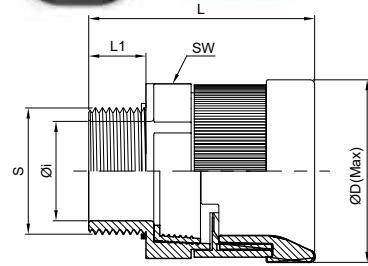
① Type	② Size	③ Color	Inner Diameter (D1)	Outer Diameter (D2)	Bending Radius(R) mm ± 10%	Packing meter / roll	Material	Version	Temperature range	Self-extinguishing UL-94	Resistance	Application					
CPS	07	B = Black G = Gray U = UV-Resistant (Only Black)	6.4	10.0	15	50/100	High Quality Polyamide 6 Level	standard version medium-wall, very flexible	-40°C to +105°C short term +130°C	UL94-HB Halogen-Free		Machine tool, Industrial & Automatic Machinery etc.					
	10		9.6	13.0	20	50											
RAH	12	B = Black G = Gray U = UV-Resistant (Only Black)	11.8	15.8	30	50	High Quality Polyamide 6 Level	standard version medium-wall, very flexible		UL94-Vo Halogen-Free UL File No.E191879 VDE License No.135369	alcohol, benzol, greases, mineral oil, diesel fuel, sea water, petrol etc.	Rolling Stock, Machine tool, industrial & Automatic Machinery etc.					
	16		15.9	21.2	40	50											
	22		21.7	28.5	45	50											
	28		27.8	34.5	55	50											
PAH	36	B = Black G = Gray U = UV-Resistant (Only Black)	36.0	42.5	60	30	High Quality Polyamide 6 Level		-40°C to +105°C short term +150°C			Machine tool, industrial & Automatic Machinery, Rolling Stock Rail Road, etc.					
	48		46.5	54.5	70	30											
	56		56.3	67.2	110	30											
POH	70	B = Black G = Gray U = UV-Resistant (Only Black)	70.0	82.5	160	10	High Quality Polyamide 6 Level	reinforced version thick-wall, flexible		UL94-HB Halogen-Free		Machine tool, Shipbuilding Industrial Machinery, Heavy Industry etc.					
	95		91.5	106.0	210	10											
	07		6.0	10.0	20	50/100							High Quality Polyamide 6 Level				
	10		9.0	13.0	25	50											
	12		11.5	15.8	35	50											
	16		15.5	21.2	45	50											
	22		21.3	28.5	50	50											
	28		26.8	34.5	60	50											
	36		35.2	42.5	70	30											
	48		46.0	54.5	80	30											
56	55.3	67.2	110	30													
70	69.0	82.5	160	10													
95	91.5	106.0	210	10													
PES	07	B = Black G = Gray	6.0	10.0	15	50/100	Soft Polyethylene (PE)	simple version light-weight, flexible	-15°C to +60°C short term +80°C	-	acid, sea water, ammonia etc	Chemical Machinery, Acid areas, Industrial Machinery etc.					
	10		9.0	13.0	20	50											
	12		11.5	15.8	30	50											
	16		15.5	21.2	40	50											
PPS	22	B = Black G = Gray U = UV-Resistant (Only Black)	21.3	28.5	45	50	Polypropylene (PP)										
	28		26.8	34.5	55	50											
	36		35.2	42.5	60	30											
	48		46.0	54.5	70	30											
	56		55.3	67.2	110	30											
70	69.0	82.5	160	10													
95	91.5	106.0	210	10													
CPSS	07	B = Black G = Gray	6.4	10.0	15	50/100	High Quality Polyamide 6 Level	Split type standard version medium-wall, very flexible	-40°C to +105°C short term +130°C	UL94-HB Halogen-Free	alcohol, benzol, greases, mineral oil, diesel fuel, sea water, petrol etc.	Machine tool, Industrial & Automatic Machinery etc.					
	10		9.6	13.0	20	50											
	12		11.8	15.8	30	50											
	16		15.9	21.2	40	50											
	22		21.7	28.5	45	50											
	28		27.8	34.5	55	50											
PESS	36	B = Black G = Gray	36.0	42.5	60	30	Soft Polyethylene (PE)	Split type simple version light-weight, flexible	-15°C to +60°C short term +80°C	-	acid, sea water, ammonia etc	Chemical Machinery, Acid areas, Industrial Machinery etc.					
	48		46.5	54.5	70	30											
	56		56.3	67.2	110	30											
	70		70.0	82.5	160	10											
	95		91.5	106.0	210	10											
PAM	07	B = Black Y = Yellow U = UV-Resistant (Only Black)	6.4	10.0	15	50/100	High Quality Polyamide 11/12	medium -wall very flexible to highly flexible	-50°C to +95°C short term +150°C	UL94-V2 Halogen-Free	alcohol, benzol, mineral oil, diesel fuel, etc	Robots (Welding robot)					
	10		9.6	13.0	20	50											
	12		11.8	15.8	30	50											
	16		15.9	21.2	40	50											
PAR	22	B = Black Y = Yellow U = UV-Resistant (Only Black)	21.7	28.5	45	50	High Quality Polyamide 12			UL94-V2 Halogen-Free		Robots (Heandling robot, Rotating machinery)					
	28		27.8	34.5	55	50											
	36		36.0	42.5	60	30											
	48		46.5	54.5	70	30											
	56		56.3	67.2	110	30											
70	70.0	82.5	160	10													
95	91.5	106.0	210	10													

# Note

A series of horizontal dotted lines for writing notes.

# PNC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	PNC-G07B	PNC-G07G	G1/4"	07	12.9	11.0	34.0	8.5	25.0	14.0
	PNC-G10B	PNC-G10G	G1/2"	10	20.5	13.0	43.5	12.0	25.0	19.7
	PNC-G12B	PNC-G12G	G1/2"	12	20.5	13.0	43.1	15.0	27.6	22.8
	PNC-G16B	PNC-G16G	G1/2"	16	20.5	13.0	45.0	15.2	33.0	28.0
	PNC-G22B	PNC-G22G	G3/4"	22	26.4	15.0	54.7	22.0	43.0	37.5
	PNC-G28B	PNC-G28G	G1"	28	32.6	15.0	62.4	27.0	48.8	43.0
	PNC-G36B	PNC-G36G	G1 1/4"	36	41.7	19.0	76.0	34.1	60.6	52.2
	PNC-G42B	PNC-G42G	G1 1/2"	48	47.4	21.0	81.4	42.0	71.8	64.0
	PNC-G48B	PNC-G48G	G2"	48	59.0	20.7	80.5	50.0	71.8	64.0
	Metric Thread (EN 60423)	PNC-M107B	PNC-M107G	M12 X 1.5	07	11.8	11.0	34.0	8.5	25.0
PNC-M127B		PNC-M127G	M16 X 1.5	07	15.8	11.0	34.0	8.5	25.0	14.0
PNC-M167B		PNC-M167G	M20 X 1.5	07	19.8	11.0	34.0	8.5	25.0	14.0
PNC-M10B		PNC-M10G	M12 X 1.5	10	11.8	13.0	43.5	7.5	25.0	19.7
PNC-M120B		PNC-M120G	M16 X 1.5	10	15.8	13.0	43.5	10.0	25.0	19.7
PNC-M20B		PNC-M20G	M20 X 1.5	10	19.8	13.0	43.5	12.0	25.0	19.7
PNC-M102B		PNC-M102G	M12 X 1.5	12	11.8	13.0	43.1	8.0	27.6	22.8
PNC-M12B		PNC-M12G	M16 X 1.5	12	15.8	13.0	43.1	12.0	27.6	22.8
PNC-M202B		PNC-M202G	M20 X 1.5	12	19.8	13.0	43.1	15.2	27.6	22.8
PNC-M126B		PNC-M126G	M16 X 1.5	16	15.8	13.0	45.0	12.0	33.0	28.0
PNC-M16B		PNC-M16G	M20 X 1.5	16	19.8	13.0	45.0	15.2	33.0	28.0
PNC-M226B		PNC-M226G	M25 X 1.5	16	24.7	13.0	45.0	17.5	33.0	28.0
PNC-M22B		PNC-M22G	M25 X 1.5	22	24.7	15.0	54.7	20.5	43.0	37.5
PNC-M3222B		PNC-M3222G	M32 X 1.5	22	31.7	15.0	54.7	22.0	43.0	37.5
PNC-M28B		PNC-M28G	M32 X 1.5	28	31.7	15.0	62.4	27.0	48.8	43.0
PNC-M4028B		PNC-M4028G	M40 X 1.5	28	39.6	15.0	62.4	30.5	48.8	43.0
PNC-M36B		PNC-M36G	M40 X 1.5	36	39.6	19.0	76.0	33.0	60.6	52.2
PNC-M5036B		PNC-M5036G	M50 X 1.5	36	49.6	19.0	76.6	41.3	60.6	52.2
PNC-M48B		PNC-M48G	M50 X 1.5	48	49.6	21.0	81.4	42.0	71.8	64.0
PNC-M6348B		PNC-M6348G	M63 X 1.5	48	62.6	21.0	81.4	50.0	71.8	64.0
Pg Thread (DIN 40430)	PNC-P077B	PNC-P077G	Pg 07	07	12.2	11.0	34.0	8.5	16.8	14.0
	PNC-P097B	PNC-P097G	Pg 09	07	14.9	11.0	34.0	8.5	25.0	14.0
	PNC-P117B	PNC-P117G	Pg 11	07	18.4	11.0	34.0	8.5	25.0	14.0
	PNC-P137B	PNC-P137G	Pg 13.5	07	20.2	11.0	34.0	8.5	25.0	14.0
	PNC-P070B	PNC-P070G	Pg 07	10	12.2	13.0	43.5	7.5	25.0	19.7
	PNC-P09B	PNC-P09G	Pg 09	10	14.9	13.0	43.5	10.0	25.0	19.7
	PNC-P110B	PNC-P110G	Pg 11	10	18.4	13.0	43.5	12.0	25.0	19.7
	PNC-P130B	PNC-P130G	Pg 13.5	10	20.2	13.0	43.5	12.0	25.0	19.7
	PNC-P160B	PNC-P160G	Pg 16	10	22.3	13.0	43.5	12.0	25.0	19.7
	PNC-P0912B	PNC-P0912G	Pg 09	12	14.9	13.0	43.1	12.0	27.6	22.8
	PNC-P11B	PNC-P11G	Pg 11	12	18.4	13.0	43.1	14.0	27.6	22.8
	PNC-P132B	PNC-P132G	Pg 13.5	12	20.2	13.0	43.1	15.0	27.6	22.8
	PNC-P162B	PNC-P162G	Pg 16	12	22.3	13.0	43.1	15.0	27.6	22.8
	PNC-P136B	PNC-P136G	Pg 13.5	16	20.2	13.0	45.0	15.2	33.0	28.0
	PNC-P16B	PNC-P16G	Pg 16	16	22.3	13.0	45.0	15.2	33.0	28.0
	PNC-P216B	PNC-P216G	Pg 21	16	28.0	13.0	45.0	17.5	33.0	28.0
	PNC-P163B	PNC-P163G	Pg 16	22	22.3	15.0	54.7	18.0	43.0	37.5
	PNC-P21B	PNC-P21G	Pg 21	22	28.0	15.0	54.7	22.0	43.0	37.5
	PNC-P29B	PNC-P29G	Pg 29	28	36.8	15.0	62.4	30.5	48.8	43.0
	PNC-P36B	PNC-P36G	Pg 36	36	46.7	19.0	75.0	40.9	60.6	52.2
PNC-P48B	PNC-P48G	Pg 48	48	59.0	21.0	81.4	50.0	71.8	64.0	
NPT Thread (ANSI/ASME B1.20.1)	PNC-N10B	PNC-N10G	NPT 1/2"	10	20.5	13	43.5	12.0	25.0	19.7
	PNC-N12B	PNC-N12G	NPT 1/2"	12	20.5	13	43.1	15.0	27.6	22.8
	PNC-N16B	PNC-N16G	NPT 1/2"	16	20.5	13	45.0	15.2	33.0	28.0
	PNC-N22B	PNC-N22G	NPT 3/4"	22	26.0	15	54.7	22.0	43.0	37.5
	PNC-N28B	PNC-N28G	NPT 1"	28	32.7	15	62.4	27.0	48.8	43.0



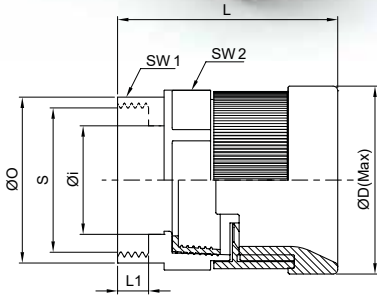


# PIC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

(Unit : mm)

	Ordering No.		Thread	Tube Size	Shell Size	L 1	L	Øi	ØO	ØD	SW
	Black	Gray									
UNEF Thread (ASME B1.1)	PIC-U1010B	PIC-U1010G	1/2-28UNEF	10	8S, 10S	12.1	44.8	10.0	18.6	25.0	19.7
	PIC-U1210B	PIC-U1210G	5/8-24UNEF	10	10SL, 12S	12.1	44.9	13.0	20.6	25.0	19.7
	PIC-U1410B	PIC-U1410G	3/4-20UNEF	10	14, 14S	12.1	44.9	13.0	23.3	25.0	19.7
	PIC-U1212B	PIC-U1212G	5/8-24UNEF	12	10SL, 12S	10.0	43.3	13.0	20.6	27.6	22.8
	PIC-U1412B	PIC-U1412G	3/4-20UNEF	12	14, 14S	10.0	43.6	13.0	24.0	27.6	22.8
	PIC-U1812B	PIC-U1812G	1-20UNEF	12	18	10.0	43.8	13.0	31.0	27.6	22.8
	PIC-U2012B	PIC-U2012G	1 3/16-18UNEF	12	20, 22	10.0	43.3	13.0	35.5	27.6	22.8
	PIC-U1616B	PIC-U1616G	7/8-20UNEF	16	16, 16S	10.0	46.4	17.5	28.0	33.0	28.0
	PIC-U1816B	PIC-U1816G	1-20UNEF	16	18	10.0	46.4	17.5	31.0	33.0	28.0
	PIC-U2016B	PIC-U2016G	1 3/16-18UNEF	16	20,22	10.0	46.0	17.5	35.5	33.0	28.0
	PIC-U2316B	PIC-U2316G	1 3/8-8UNEF	16	20,22	10.0	44.7	17.5	40.0	33.0	28.0
	PIC-U2816B	PIC-U2816G	1 7/16-18UNEF	16	24, 28	10.0	45.9	17.5	42.0	33.0	28.0
	PIC-U2222B	PIC-U2222G	1 3/16-18UNEF	22	20, 22	9.5	55.2	20.0	35.2	43.0	37.5
	PIC-U2822B	PIC-U2822G	1 7/16-18UNEF	22	24,28	9.5	55.2	20.0	41.7	43.0	37.5
	PIC-U3622B	PIC-U3622G	2-18UNS	22	36	9.5	54.7	19.7	56.2	43.0	37.5
	PIC-U2828B	PIC-U2828G	1 7/16-18UNEF	28	24,28	9.2	62.8	28.0	42.0	48.8	43.0
	PIC-U3228B	PIC-U3228G	1 3/4-18UNS	28	32	9.4	62.5	28.0	50.3	48.8	43.0
	PIC-U3628B	PIC-U3628G	2-18UNS	28	36	10.0	62.5	28.0	56.5	48.8	43.0
	PIC-U3636B	PIC-U3636G	2-18UNS	36	36	19.3	76.2	35.0	54.5	60.6	52.2

	Ordering No.		Thread	Tube Size	L 1	L	Øi	ØO	ØD	SW
	Black	Gray								
Metric Thread (EN 60423)	PIC-M12B	PIC-M12G	M16 X 1.5	12	10	43.8	13.0	20.6	27.6	22.8
	PIC-M226B	PIC-M226G	M25 X 1.5	16	10.2	44.9	17.5	35.5	33.0	28.0
Pg Thread (DIN 40430)	PIC-P11B	PIC-P11G	Pg11	12	10	43.0	13.0	20.6	27.6	22.8
	PIC-P132B	PIC-P132G	Pg13.5	12	10	43.0	13.0	30.8	27.6	22.8
	PIC-P16B	PIC-P16G	Pg16	16	10	44.7	17.5	28.0	33.0	28.0
	PIC-P21B	PIC-P21G	Pg21	22	9.5	53.1	20.0	35.5	43.0	37.5

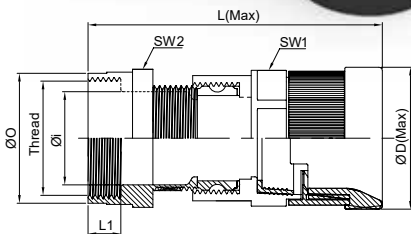


# PIPC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L	Øi	ØO	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PIPC-G16B	PIPC-G16G	G1/2"	16	18.6	10.0	44.7	17.5	28.0	33.0	28.0
	PIPC-G22B	PIPC-G22G	G3/4"	22	24.1	10.0	53.1	20.0	35.0	43.0	37.5
	PIPC-G28B	PIPC-G28G	G1"	28	30.2	10.0	61.4	28.0	41.5	48.8	43.0
	PIPC-G36B	PIPC-G36G	G1 1/4"	36	38.9	19.5	74.5	31.3	53.0	60.6	52.2
	PIPC-G42B	PIPC-G42G	G1 1/2"	48	44.8	27.6	87.8	36.0	53.0	71.8	64.0
	PIPC-G48B	PIPC-G48G	G2"	48	56.6	27.6	87.8	45.0	66.0	71.8	64.0

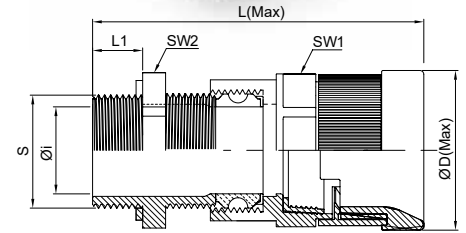
# PNCC

Straight Fittings



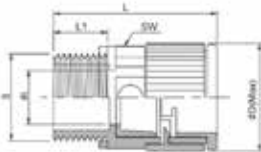
## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2	
	Black	Gray											
PF Thread (JIS B0202)	PNCC-G10B	PNCC-G10G	G1/2"	10	3.5	6.5	20.9	15.0	72.3	25.0	19.7	22.6	
	PNCC-G12B	PNCC-G12G	G1/2"	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-G16B	PNCC-G16G	G1/2"	16	7.0	12.3	20.9	15.0	75.1	33.0	28.0	25.4	
	PNCC-G1622B	PNCC-G1622G	G1/2"	22	12.0	15.2	20.9	15.0	87.4	43.0	37.5	34.0	
	PNCC-G22B	PNCC-G22G	G3/4"	22	12.0	18.0	26.4	15.0	87.4	43.0	37.5	34.0	
	PNCC-G228B	PNCC-G228G	G3/4"	28	18.0	20.3	26.4	15.0	87.4	43.0	43.0	43.4	
	PNCC-G28B	PNCC-G28G	G1"	28	18.0	26.0	33.2	15.0	95.2	48.8	43.0	43.4	
	PNCC-G36B	PNCC-G36G	G1 1/4"	36	22.0	33.0	41.9	19.0	120.2	60.6	52.2	51.6	
	PNCC-G48B	PNCC-G48G	G2"	48	36.0	42.0	60.0	19.0	130.0	71.8	64.0	67.0	
	Metric Thread (EN 60423)	PNCC-M10B	PNCC-M10G	M12 X 1.5	10	3.5	6.5	12.0	15.0	72.3	25.0	19.7	22.6
		PNCC-M120B	PNCC-M120G	M16 X 1.5	10	3.5	6.5	16.0	15.0	72.3	25.0	19.7	22.6
		PNCC-M102B	PNCC-M102G	M12 X 1.5	12	4.0	7.1	12.0	15.0	72.4	27.6	22.8	25.5
PNCC-M12B		PNCC-M12G	M16 X 1.5	12	4.0	8.0	16.0	15.0	72.4	27.6	22.8	25.5	
PNCC-M162B		PNCC-M162G	M20 X 1.5	12	4.0	8.0	20.0	15.0	72.4	27.6	22.8	25.5	
PNCC-M126B		PNCC-M126G	M16 X 1.5	16	7.0	10.9	16.0	15.0	75.1	33.0	28.0	25.4	
PNCC-M16B		PNCC-M16G	M20 X 1.5	16	7.0	12.3	20.0	15.0	75.1	33.0	28.0	25.4	
PNCC-M1622B		PNCC-M1622G	M20 X 1.5	22	12.0	14.5	20.0	15.0	87.4	43.0	37.5	34.0	
PNCC-M22B		PNCC-M22G	M25 X 1.5	22	12.0	18.0	25.0	15.0	87.5	43.0	37.5	34.0	
PNCC-M228B		PNCC-M228G	M25 X 1.5	28	18.0	19.5	25.0	15.0	95.3	48.8	43.0	43.4	
PNCC-M28B		PNCC-M28G	M32 X 1.5	28	18.0	26.0	32.0	15.0	95.3	48.8	43.0	43.4	
PNCC-M36B		PNCC-M36G	M40 X 1.5	36	22.0	33.0	40.0	19.0	120.2	60.6	52.2	51.6	
PNCC-M48B	PNCC-M48G	M50 X 1.5	48	36.0	42.0	50.0	19.0	122.8	71.8	64.0	67.0		
Pg Thread (DIN 40430)	PNCC-P07B	PNCC-P07G	Pg07	10	3.5	6.5	12.5	15.0	72.3	25.0	19.7	22.6	
	PNCC-P09B	PNCC-P09G	Pg09	10	3.5	6.5	15.2	15.0	72.3	25.0	19.7	22.6	
	PNCC-P072B	PNCC-P072G	Pg07	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-P092B	PNCC-P092G	Pg09	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-P11B	PNCC-P11G	Pg11	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-P132B	PNCC-P132G	Pg13.5	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-P162B	PNCC-P162G	Pg16	12	4.0	8.0	20.9	15.0	72.4	27.6	22.8	25.5	
	PNCC-P096B	PNCC-P096G	Pg09	16	7.0	10.6	15.2	15.0	75.1	33.0	28.0	25.4	
	PNCC-P116B	PNCC-P116G	Pg11	16	7.0	12.3	18.6	15.0	75.1	33.0	28.0	25.4	
	PNCC-P13B	PNCC-P13G	Pg13.5	16	7.0	12.3	20.4	15.0	75.1	33.0	28.0	25.4	
	PNCC-P16B	PNCC-P16G	Pg16	16	7.0	12.3	22.5	15.0	75.1	33.0	28.0	25.4	
	PNCC-P122B	PNCC-P122G	Pg11	22	12.0	13.9	18.6	15.0	87.5	43.0	37.5	34.0	
	PNCC-P1322B	PNCC-P1322G	Pg13.5	22	12.0	14.8	20.4	15.0	87.5	43.0	37.5	34.0	
	PNCC-P1622B	PNCC-P1622G	Pg16	22	12.0	17.3	22.5	15.0	87.5	43.0	37.5	34.0	
	PNCC-P21B	PNCC-P21G	Pg21	22	12.0	18.0	28.3	15.0	87.5	43.0	37.5	34.0	
	PNCC-P218B	PNCC-P218G	Pg21	28	18.0	22.5	28.3	15.0	95.3	48.8	43.0	43.4	
	PNCC-P29B	PNCC-P29G	Pg29	28	18.0	26.0	37.0	15.0	95.3	48.8	43.0	43.4	
	PNCC-P36B	PNCC-P36G	Pg36	36	22.0	33.0	47.0	19.0	120.2	60.6	52.2	51.6	
	PNCC-P48B	PNCC-P48G	Pg48	48	36.0	42.0	59.3	19.0	122.8	71.8	64.0	67.0	



# TNC

Straight Fittings

## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector.		

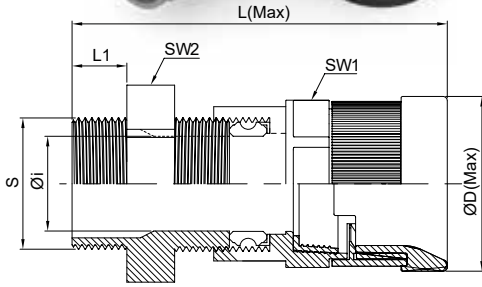
(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0204)	TNC-G56B	TNC-G56G	G2"	56	59.6	24.0	64.3	49.6	93.0	78.0
	TNC-G70B	TNC-G70G	G2 1/2"	70	75.1	30.0	75.2	67.0	121.0	94.5
	TNC-G95B	TNC-G95G	G4"	95	113.0	40.0	92.2	98.0	151.0	118.5



# PNCCL

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		

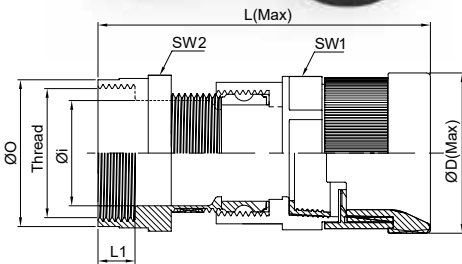
(Unit : mm)

	Ordering No.		Thread	Tube Size	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray										
PF Thread (JIS B0202)	PNCCL-G10B	PNCCL-G10G	G1/2"	10	3.5	6.5	20.9	9.0	64.7	25.0	19.7	22.6
	PNCCL-G12B	PNCCL-G12G	G1/2"	12	4.0	8	20.9	9.0	66.4	27.6	22.8	25.5
	PNCCL-G16B	PNCCL-G16G	G1/2"	16	7.0	12.3	20.9	9.0	69.1	33.0	28.0	25.4
Metric Thread (EN 60423)	PNCCL-M10B	PNCCL-M10G	M12 X 1.5	10	3.5	6.5	12.0	9.0	64.7	25.0	19.7	22.6
	PNCCL-M120B	PNCCL-M120G	M16 X 1.5	10	3.5	6.5	16.0	9.0	64.7	25.0	19.7	22.6
	PNCCL-M102B	PNCCL-M102G	M12 X 1.5	12	4.0	7.1	12.0	9.0	66.4	27.6	22.8	25.5
	PNCCL-M12B	PNCCL-M12G	M16 X 1.5	12	4.0	8.0	16.0	9.0	66.4	27.6	22.8	25.5
	PNCCL-M162B	PNCCL-M162G	M20 X 1.5	12	4.0	8.0	20.0	9.0	66.4	27.6	22.8	25.5
	PNCCL-M126B	PNCCL-M126G	M16 X 1.5	16	7.0	10.9	16.0	9.0	69.1	33.0	28.0	25.4
	PNCCL-M16B	PNCCL-M16G	M20 X 1.5	16	7.0	12.3	20.0	9.0	69.1	33.0	28.0	25.4
	PNCCL-M216B	PNCCL-M216G	M25 X 1.5	16	7.0	12.3	25.0	9.0	69.1	33.0	28.0	25.4
	Pg Thread (DIN 40430)	PNCCL-P09B	PNCCL-P09G	Pg09	10	3.5	6.5	15.2	9.0	64.7	25.0	19.7
PNCCL-P092B		PNCCL-P092G	Pg09	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P11B		PNCCL-P11G	Pg11	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P132B		PNCCL-P132G	Pg13.5	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P162B		PNCCL-P162G	Pg16	12	4.0	8.0	20.9	9.0	66.4	27.6	22.8	25.5
PNCCL-P116B		PNCCL-P116G	Pg11	16	7.0	12.3	18.6	9.0	69.1	33.0	28.0	25.4
PNCCL-P13B		PNCCL-P13G	Pg13.5	16	7.0	12.3	20.4	9.0	69.1	33.0	28.0	25.4
PNCCL-P16B		PNCCL-P16G	Pg16	16	7.0	12.3	22.5	9.0	69.1	33.0	28.0	25.4



# PICC

Straight Fittings



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector to avoid the cutoff of the cable in the machine.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	Shell Size	Øi (Min)	Øi (Max)	L1	L	ØO	ØD	SW1	SW2
	Black	Gray											
UNEF Thread (ASME B1.1)	PICC-U1010B	PICC-U1010G	1/2-28UNEF	10	8S, 10S	3.5	6.5	10.0	70.7	17.4	25.0	19.7	22.6
	PICC-U1210B	PICC-U1210G	5/8-24UNEF	10	10SL, 12S	3.5	6.5	10.0	70.7	19.6	25.0	19.7	22.6
	PICC-U1410B	PICC-U1410G	3/4-20UNEF	10	14, 14S	3.5	6.5	10.0	70.7	23.0	25.0	19.7	22.6
	PICC-U1212B	PICC-U1212G	5/8-24UNEF	12	10SL, 12S	4.0	8.0	10.0	72.4	19.6	27.6	22.8	25.5
	PICC-U1412B	PICC-U1412G	3/4-20UNEF	12	14, 14S	4.0	8.0	10.0	72.4	23.0	27.6	22.8	25.5
	PICC-U1812B	PICC-U1812G	1-20UNEF	12	18	4.0	8.0	10.0	72.4	30.0	27.6	22.8	25.5
	PICC-U1616B	PICC-U1616G	7/8-20UNEF	16	16, 16S	7.0	12.3	10.0	75.1	27.0	33.0	28.0	25.4
	PICC-U1816B	PICC-U1816G	1-20UNEF	16	18	7.0	12.3	10.0	75.1	30.0	33.0	28.0	25.4
	PICC-U2016B	PICC-U2016G	1 3/16-18UNEF	16	20, 22	7.0	12.3	10.0	75.1	34.5	33.0	28.0	25.4
	PICC-U2816B	PICC-U2816G	1 7/16-18UNEF	16	24, 28	7.0	12.3	10.0	75.1	41.0	33.0	28.0	25.4
	PICC-U2222B	PICC-U2222G	1 3/16-18UNEF	22	20, 22	12.0	18.0	10.0	87.5	34.5	43.0	37.5	34.0
	PICC-U2822B	PICC-U2822G	1 7/16-18UNEF	22	24, 28	12.0	18.0	10.0	87.5	41.0	43.0	37.5	34.0
	PICC-U2828B	PICC-U2828G	1 7/16-18UNEF	28	24, 28	18.0	26.0	10.0	94.8	41.0	48.8	43.0	43.4
	PICC-U3228B	PICC-U3228G	13/4-18UNS	28	32	18.0	26.0	10.0	94.8	49.0	48.8	43.0	43.4
	PICC-U3628B	PICC-U3628G	2-18UNS	28	36	18.0	26.0	10.0	94.8	55.5	48.8	43.0	43.4
	PICC-U3636B	PICC-U3636G	2-18UNS	36	36	22.0	33.0	14.0	120.1	55.5	60.6	52.2	53.0

# FCG

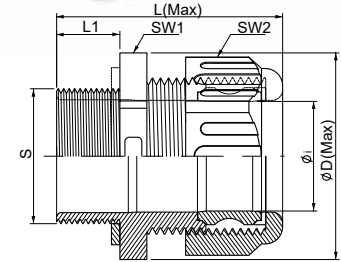
## Cable Glands



### Specifications

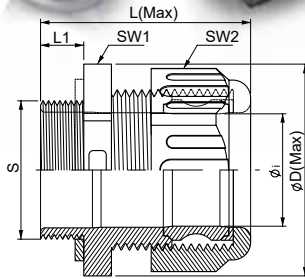


Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		



(Unit : mm)

	Ordering No.		Thread	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray									
PF Thread (JIS B0202)	FCG-G10B	FCG-G10G	G1/2"	3.5	6.5	20.9	15.0	43.9	24.4	22.6	18.0
	FCG-G12B	FCG-G12G	G1/2"	4.0	8.0	20.9	15.0	46.2	28.8	25.5	21.3
	FCG-G16B	FCG-G16G	G1/2"	7.0	12.3	20.9	15.0	47.2	28.6	25.4	25.4
	FCG-G1622B	FCG-G1622G	G1/2"	12.0	15.2	20.9	15.0	53.4	38.2	34.0	34.0
	FCG-G22B	FCG-G22G	G3/4"	12.0	18.0	26.4	15.0	53.4	38.2	34.0	34.0
	FCG-G228B	FCG-G228G	G3/4"	18.0	20.3	26.4	15.0	53.4	49.0	43.4	43.4
	FCG-G28B	FCG-G28G	G1"	18.0	26.0	33.2	15.0	53.4	49.0	43.4	43.4
	FCG-G36B	FCG-G36G	G1 1/4"	22.0	33.0	41.9	19.0	67.7	59.0	53.0	51.6
	FCG-G48B	FCG-G48G	G2"	36.0	42.0	59.6	19.0	69.7	74.0	66.5	67.0
	Metric Thread (EN 60423)	FCG-M10B	FCG-M10G	M12 X 1.5	3.5	6.5	12.0	15.0	43.9	25.4	22.6
FCG-M120B		FCG-M120G	M16 X 1.5	3.5	6.5	16.0	15.0	43.9	25.4	22.6	18.0
FCG-M102B		FCG-M102G	M12 X 1.5	4.0	7.1	12.0	15.0	46.2	28.8	25.5	21.3
FCG-M12B		FCG-M12G	M16 X 1.5	4.0	8.0	16.0	15.0	46.2	28.8	25.5	21.3
FCG-M162B		FCG-M162G	M20 X 1.5	4.0	8.0	20.0	15.0	46.2	28.8	25.5	21.3
FCG-M126B		FCG-M126G	M16 X 1.5	7.0	10.9	16.0	15.0	47.2	28.6	25.4	25.4
FCG-M16B		FCG-M16G	M20 X 1.5	7.0	12.3	20.0	15.0	47.2	28.6	25.4	25.4
FCGM1622B		FCGM1622G	M20 X 1.5	12.0	14.5	20.0	15.0	53.4	38.2	34.0	34.0
FCG-M22B		FCG-M22G	M25 X 1.5	12.0	18.0	25.0	15.0	53.4	38.2	34.0	34.0
FCG-M228B		FCG-M228G	M25 X 1.5	18.0	19.5	25.0	15.0	53.4	49.0	43.4	43.4
FCG-M28B		FCG-M28G	M32 X 1.5	18.0	26.0	32.0	15.0	53.4	49.0	43.4	43.4
FCG-M36B		FCG-M36G	M40 X 1.5	22.0	33.0	40.0	19.0	67.7	59.0	53.0	51.6
FCG-M48B		FCG-M48G	M50 X 1.5	36.0	42.0	50.0	19.0	69.7	74.0	66.5	67.0
Pg Thread (DIN 40430)		FCG-P07B	FCG-P07G	Pg07	3.5	6.5	12.5	15.0	43.9	25.4	22.6
	FCG-P09B	FCG-P09G	Pg09	3.5	6.5	15.2	15.0	43.9	25.4	22.6	18.0
	FCG-P072B	FCG-P072G	Pg07	4.0	8.0	12.5	15.0	46.2	28.8	25.5	21.3
	FCG-P092B	FCG-P092G	Pg09	4.0	8.0	15.2	15.0	46.2	28.8	25.5	21.3
	FCG-P11B	FCG-P11G	Pg11	4.0	8.0	18.6	15.0	46.2	28.8	25.5	21.3
	FCG-P132B	FCG-P132G	Pg13.5	4.0	8.0	20.4	15.0	46.2	28.8	25.5	21.3
	FCG-P162B	FCG-P162G	Pg16	4.0	8.0	22.5	15.0	46.2	28.8	25.5	21.3
	FCG-P096B	FCG-P096G	Pg09	7.0	10.6	15.2	15.0	47.2	28.6	25.4	25.4
	FCG-P116B	FCG-P116G	Pg11	7.0	12.3	18.6	15.0	47.2	28.6	25.4	25.4
	FCG-P13B	FCG-P13G	Pg13.5	7.0	12.3	20.4	15.0	47.2	28.6	25.4	25.4
	FCG-P16B	FCG-P16G	Pg16	7.0	12.3	22.5	15.0	47.2	28.6	25.4	25.4
	FCG-P122B	FCG-P122G	Pg11	12.0	13.9	18.6	15.0	53.4	38.2	34.0	34.0
	FCG-P1322B	FCG-P1322G	Pg13.5	12.0	14.8	20.4	15.0	53.4	38.2	34.0	34.0
	FCG-P1622B	FCG-P1622G	Pg16	12.0	17.3	22.5	15.0	53.4	38.2	34.0	34.0
	FCG-P21B	FCG-P21G	Pg21	12.0	18.0	28.3	15.0	53.4	38.2	34.0	34.0
	FCG-P218B	FCG-P218G	Pg21	18.0	22.5	28.3	15.0	53.4	49.0	43.4	43.4
	FCG-P29B	FCG-P29G	Pg29	18.0	26.0	37.0	15.0	53.4	49.0	43.4	43.4
	FCG-P36B	FCG-P36G	Pg36	22.0	33.0	47.0	19.0	67.7	59.0	53.0	51.6
	FCG-P48B	FCG-P48G	Pg48	36.0	42.0	59.3	19.0	69.7	74.0	66.5	67.0



# FCGL

Cable Glands

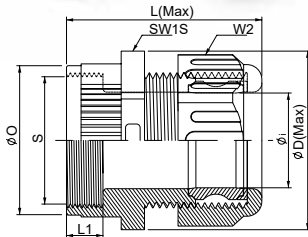
## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		

(Unit : mm)

	Ordering No.		Thread	Øi (Min)	Øi (Max)	S	L1	L	ØD	SW1	SW2
	Black	Gray									
PF Thread (JIS B0202)	FCGL-G10B	FCGL-G10G	G1/2"	3.5	6.5	20.9	9.0	37.9	25.4	22.6	18.0
	FCGL-G12B	FCGL-G12G	G1/2"	4.0	8.0	20.9	9.0	40.2	28.8	25.5	21.3
	FCGL-G16B	FCGL-G16G	G1/2"	7.0	12.3	20.9	9.0	41.2	28.6	25.4	25.4
Metric Thread (EN 60423)	FCGL-M10B	FCGL-M10G	M12 X 1.5	3.5	6.5	12.0	9.0	37.9	25.4	22.6	18.0
	FCGL-M120B	FCGL-M120G	M16 X 1.5	3.5	6.5	16.0	9.0	37.9	25.4	22.6	18.0
	FCGL-M102B	FCGL-M102G	M12 X 1.5	4.0	7.1	12.0	9.0	40.2	28.8	25.5	21.3
	FCGL-M12B	FCGL-M12G	M16 X 1.5	4.0	8.0	16.0	9.0	40.2	28.8	25.5	21.3
	FCGL-M162B	FCGL-M162G	M20 X 1.5	4.0	8.0	20.0	9.0	40.2	28.8	25.5	21.3
	FCGL-M126B	FCGL-M126G	M16 X 1.5	7.0	10.9	16.0	9.0	41.2	28.6	25.4	25.4
	FCGL-M16B	FCGL-M16G	M20 X 1.5	7.0	12.3	20.0	9.0	41.2	28.6	25.4	25.4
	FCGL-M216B	FCGL-M216G	M25 X 1.5	7.0	12.3	25.0	9.0	41.2	28.6	25.4	25.4
	Pg Thread (DIN 40430)	FCGL-P09B	FCGL-P09G	Pg09	3.5	6.5	15.2	9.0	37.9	25.4	22.6
FCGL-P092B		FCGL-P092G	Pg09	4.0	8.0	15.2	9.0	40.2	28.8	25.5	21.3
FCGL-P11B		FCGL-P11G	Pg11	4.0	8.0	18.6	9.0	40.2	28.8	25.5	21.3
FCGL-P132B		FCGL-P132G	Pg13.5	4.0	8.0	20.4	9.0	40.2	28.8	25.5	21.3
FCGL-P162B		FCGL-P162G	Pg16	4.0	8.0	22.5	9.0	40.2	28.8	25.5	21.3
FCGL-P116B		FCGL-P116G	Pg11	7.0	12.3	18.6	9.0	41.2	28.6	25.4	25.4
FCGL-P13B		FCGL-P13G	Pg13.5	7.0	12.3	20.4	9.0	41.2	28.6	25.4	25.4
FCGL-P16B		FCGL-P16G	Pg16	7.0	12.3	22.5	9.0	41.2	28.6	25.4	25.4



# TICG

Cable Glands

## Specifications



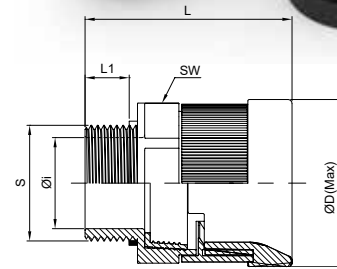
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Connector for control box radio box or cables from electric machine. Water & Dust, Oil proof halogen free.		

(Unit : mm)

	Ordering No.		Thread	Shell Size	Øi (Min)	Øi (Max)	L1	L	ØO	ØD	SW1	SW2
	Black	Gray										
UNEF Thread (ASME B1.1)	TICG-U1010B	TICG-U1010G	1/2-28UNEF	8S, 10S	3.5	6.5	10.0	43.9	18.4	25.4	22.6	18.0
	TICG-U1210B	TICG-U1210G	5/8-24UNEF	10SL, 12S	3.5	6.5	10.0	43.9	20.6	25.4	22.6	18.0
	TICG-U1410B	TICG-U1410G	3/4-20UNEF	14, 14S	3.5	6.5	10.0	43.9	24.0	25.4	22.6	18.0
	TICG-U1610B	TICG-U1610G	7/8-20UNEF	16, 16S	3.5	6.5	10.0	43.9	28.0	25.4	22.6	18.0
	TICG-U1810B	TICG-U1810G	1-20UNEF	18	3.5	6.5	10.0	43.9	31.0	25.4	22.6	18.0
	TICG-U2010B	TICG-U2010G	1 3/16-18UNEF	20, 22	3.5	6.5	10.0	43.9	35.5	25.4	22.6	18.0
	TICG-U2810B	TICG-U2810G	1 7/16-18UNEF	24, 28	3.5	6.5	10.0	43.9	42.0	25.4	22.6	18.0
	TICG-U1212B	TICG-U1212G	5/8-24UNEF	10SL, 12S	4.0	8.0	10.0	46.2	20.6	28.8	25.5	21.3
	TICG-U1412B	TICG-U1412G	3/4-20UNEF	14, 14S	4.0	8.0	10.0	46.2	24.0	28.8	25.5	21.3
	TICG-U1612B	TICG-U1612G	7/8-20UNEF	16, 16S	4.0	8.0	10.0	46.2	28.0	28.8	25.5	21.3
	TICG-U1812B	TICG-U1812G	1-20UNEF	18	4.0	8.0	10.0	46.2	31.0	28.8	25.5	21.3
	TICG-U2012B	TICG-U2012G	1 3/16-18UNEF	20, 22	4.0	8.0	10.0	46.2	35.5	28.8	25.5	21.3
	TICG-U2812B	TICG-U2812G	1 7/16-18UNEF	24, 28	4.0	8.0	10.0	46.2	42.0	28.8	25.5	21.3
	TICG-U1616B	TICG-U1616G	7/8-20UNEF	16, 16S	7.0	12.3	10.0	47.2	28.0	28.6	25.4	25.4
	TICG-U1816B	TICG-U1816G	1-20UNEF	18	7.0	12.3	10.0	47.2	31.0	28.6	25.4	25.4
	TICG-U2016B	TICG-U2016G	1 3/16-18UNEF	20, 22	7.0	12.3	10.0	47.2	35.5	28.6	25.4	25.4
	TICG-U2816B	TICG-U2816G	1 7/16-18UNEF	24, 28	7.0	12.3	10.0	47.2	42.0	28.6	25.4	25.4
	TICG-U2222B	TICG-U2222G	1 3/16-18UNEF	20, 22	12.0	18.0	10.0	53.4	35.5	38.2	34.0	34.0
	TICG-U2822B	TICG-U2822G	1 7/16-18UNEF	24, 28	12.0	18.0	10.0	53.4	42.0	38.2	34.0	34.0
	TICG-U3222B	TICG-U3222G	1 3/4-18UNS	32	12.0	18.0	10.0	53.4	50.0	38.2	34.0	34.0
	TICG-U3622B	TICG-U3622G	2-18UNS	36	12.0	18.0	10.0	53.4	56.5	38.2	34.0	34.0
	TICG-U3228B	TICG-U3228G	1 3/4-18UNS	32	18.0	26.0	10.0	53.4	50.0	49.0	43.4	43.4
	TICG-U3628B	TICG-U3628G	2-18UNS	36	18.0	26.0	10.0	67.7	56.5	59.0	53.0	51.6
	TICG-U3636B	TICG-U3636G	2-18UNS	36	22.0	33.0	10.0	69.7	56.5	74.0	66.5	67.0

# PNCL

## Straight Fittings



(Unit : mm)

### Specifications

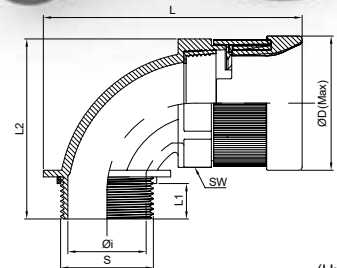


Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	PNCL-G10B	PNCL-G10G	G1/2"	10	20.5	8.0	43.5	12.0	25.0	19.7
	PNCL-G12B	PNCL-G12G	G1/2"	12	20.5	8.0	43.1	15.0	27.6	22.8
	PNCL-G16B	PNCL-G16G	G1/2"	16	20.5	8.0	45.0	15.2	33.0	28.0
Metric Thread / Straight (EN 60423)	PNCL-M10B	PNCL-M10G	M12 X 1.5	10	11.8	8.0	43.5	7.5	25.0	19.7
	PNCL-M120B	PNCL-M120G	M16 X 1.5	10	15.8	8.0	43.5	10.0	25.0	19.7
	PNCL-M20B	PNCL-M20G	M20 X 1.5	10	19.8	8.0	43.5	12.0	25.0	19.7
	PNCL-M102B	PNCL-M102G	M12 X 1.5	12	11.8	8.0	43.1	8.0	27.6	22.8
	PNCL-M12B	PNCL-M12G	M16 X 1.5	12	15.8	8.0	43.1	12.0	27.6	22.8
	PNCL-M202B	PNCL-M202G	M20 X 1.5	12	19.8	8.0	43.1	15.2	27.6	22.8
	PNCL-M126B	PNCL-M126G	M16 X 1.5	16	15.8	8.0	45.0	12.0	33.0	28.0
	PNCL-M16B	PNCL-M16G	M20 X 1.5	16	19.8	8.0	45.0	15.2	33.0	28.0
	PNCL-M226B	PNCL-M226G	M25 X 1.5	16	24.7	8.0	45.0	17.5	33.0	28.0
Pg Thread / Straight (DIN 40430)	PNCL-P09B	PNCL-P09G	Pg09	10	14.9	8.0	43.5	10.0	25.0	19.7
	PNCL-P160B	PNCL-P160G	Pg16	10	22.3	8.0	43.5	12.0	25.0	19.7
	PNCL-P0912B	PNCL-P0912G	Pg09	12	14.9	8.0	43.1	12.0	27.6	22.8
	PNCL-P11B	PNCL-P11G	Pg11	12	18.4	8.0	43.1	14.0	27.6	22.8
	PNCL-P136B	PNCL-P136G	Pg13.5	16	20.2	8.0	45.0	15.2	33.0	28.0
	PNCL-P16B	PNCL-P16G	Pg16	16	22.3	8.0	45.0	15.2	33.0	28.0

# PWCL

## Elbow 90° Connector



(Unit : mm)

### Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

	Ordering No.		Thread	Tube Size	S	L 1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PWCL-G10B	PWCL-G10G	G1/2"	10	20.5	8.0	50.3	66.2	15.0	25.0	19.7
	PWCL-G12B	PWCL-G12G	G1/2"	12	20.5	8.0	50.5	64.9	15.0	27.6	22.8
	PWCL-G16B	PWCL-G16G	G1/2"	16	20.5	8.0	55.3	71.6	15.3	33.0	28.0
Metric Thread / 90° Elbow (EN 60423)	PWCL-M10B	PWCL-M10G	M12 X 1.5	10	11.8	8.0	50.2	66.4	8.0	24.9	19.7
	PWCL-M12B	PWCL-M12G	M16 X 1.5	12	15.8	8.0	50.2	64.9	12.0	27.6	22.8
	PWCL-M202B	PWCL-M202G	M20 X 1.5	12	19.8	8.0	50.2	64.7	12.0	27.6	22.8
	PWCL-M16B	PWCL-M16G	M20 X 1.5	16	19.8	8.0	55.5	71.6	15.2	33.0	28.0
Pg Thread / 90° Elbow (DIN 40430)	PWCL-P09B	PWCL-P09G	Pg09	10	14.9	8.0	50.5	66.4	11.0	24.9	19.7
	PWCL-P110B	PWCL-P110G	Pg11	10	18.4	8.0	50.0	66.4	13.0	24.9	19.7
	PWCL-P130B	PWCL-P130G	Pg13.5	10	20.2	8.0	50.2	66.4	15.0	24.9	19.7
	PWCL-P11B	PWCL-P11G	Pg11	12	18.4	8.0	50.4	64.7	13.0	27.6	22.8
	PWCL-P132B	PWCL-P132G	Pg13.5	12	20.2	8.0	50.6	64.9	15.0	27.6	22.8
	PWCL-P162B	PWCL-P162G	Pg16	12	22.3	8.0	50.9	64.8	15.0	27.6	22.8
	PWCL-P136B	PWCL-P136G	Pg13.5	16	20.2	8.0	55.7	70.3	15.2	33.0	28.0
	PWCL-P16B	PWCL-P16G	Pg16	16	22.3	8.0	55.7	70.6	17.5	33.0	28.0



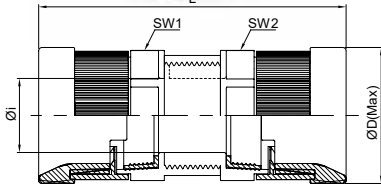
# PNSC

Connector for tube to tube \*Under development

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	The connector which can connect tube and tube each other.		



(Unit : mm)

Ordering No.		Tube Size	L	Øi	ØD	SW1	SW2
Black	Gray						
PNSC-10B	PNSC-10G	10 + 10	78.4	8.0	25.0	19.7	19.7
PNSC-12B	PNSC-12G	12 + 12	78.9	11.0	27.6	22.8	22.8
PNSC-16B	PNSC-16G	16 + 16	82.7	12.5	33.0	28.0	28.0
PNSC-22B	PNSC-22G	22 + 22	109.2	19.0	43.0	37.5	37.5
PNSC-28B	PNSC-28G	28 + 28	117.2	22.0	48.8	43.0	43.0
PNSC-36B	PNSC-36G	36 + 36	140.6	30.0	60.6	52.2	52.2
PNSC-48B	PNSC-48G	48 + 48	149.8	42.0	71.8	64.0	64.0



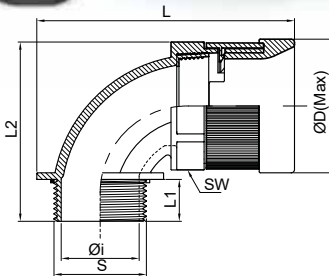
# PWC

Elbow 90° Connector

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		



(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L 1	L 2	L	Øi	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PWC-G10B	PWC-G10G	G1/2"	10	20.5	13.0	50.3	66.2	15.0	25.0	19.7
	PWC-G12B	PWC-G12G	G1/2"	12	20.5	13.0	50.5	64.9	15.0	27.6	22.8
	PWC-G16B	PWC-G16G	G1/2"	16	20.5	13.0	55.3	71.6	15.3	33.0	28.0
	PWC-G22B	PWC-G22G	G3/4"	22	26.2	15.0	66.1	88.4	20.6	43.0	37.5
	PWC-G28B	PWC-G28G	G1"	28	32.6	15.0	76.0	104.8	27.1	48.8	43.0
	PWC-G368B	PWC-G368G	G1 1/4"	28	41.3	15.0	76.0	104.8	30.4	48.8	43.0
	PWC-G36B	PWC-G36G	G1 1/4"	36	41.5	19.0	96.6	131.4	33.8	60.6	52.2
	PWC-G42B	PWC-G42G	G1 1/2"	48	47.4	19.0	109.1	147.6	41.2	71.8	64.0
	PWC-G48B	PWC-G48G	G2"	48	59.0	19.0	108.4	147.1	50.2	71.8	64.0
	Metric Thread (EN 60423)	PWC-M107B	PWC-M107G	M12 X 1.5	07	11.8	11.0	36.6	47.0	7.5	18.0
PWC-M10B		PWC-M10G	M12 X 1.5	10	11.8	13.0	50.2	66.4	8.0	24.9	19.7
PWC-M12B		PWC-M12G	M16 X 1.5	12	15.8	13.0	50.2	64.9	12.0	27.6	22.8
PWC-M202B		PWC-M202G	M20 X 1.5	12	19.8	13.0	50.2	64.7	12.0	27.6	22.8
PWC-M16B		PWC-M16G	M20 X 1.5	16	19.8	13.0	55.5	71.6	15.2	33.0	28.0
PWC-M22B		PWC-M22G	M25 X 1.5	22	24.7	15.0	66.4	88.2	18.0	43.0	37.5
PWC-M28B		PWC-M28G	M32 X 1.5	28	31.7	15.0	76.0	105.1	27.0	48.8	43.0
PWC-M36B		PWC-M36G	M40 X 1.5	36	39.6	19.0	96.5	130.4	33.8	60.6	52.2
PWC-M48B		PWC-M48G	M50 X 1.5	48	49.6	19.0	109.1	145.7	42.0	71.8	64.0
Pg Thread (DIN 40430)		PWC-P077B	PWC-P077G	Pg07	07	12.2	11.0	36.8	47.0	7.5	18.0
	PWC-P097B	PWC-P097G	Pg09	07	14.9	11.0	36.8	47.0	8.5	18.0	14.0
	PWC-P09B	PWC-P09G	Pg09	10	14.9	13.0	50.5	66.4	11.0	24.9	19.7
	PWC-P110B	PWC-P110G	Pg11	10	18.4	13.0	50.0	66.4	13.0	24.9	19.7
	PWC-P130B	PWC-P130G	Pg13.5	10	20.2	13.0	50.2	66.4	15.0	25.0	19.7
	PWC-P11B	PWC-P11G	Pg11	12	18.4	13.0	50.4	64.7	13.0	27.6	22.8
	PWC-P132B	PWC-P132G	Pg13.5	12	20.2	13.0	50.6	64.9	15.0	27.6	22.8
	PWC-P162B	PWC-P162G	Pg16	12	22.3	13.0	50.9	64.8	15.0	27.6	22.8
	PWC-P136B	PWC-P136G	Pg13.5	16	20.2	13.0	55.7	70.3	15.2	33.0	28.0
	PWC-P16B	PWC-P16G	Pg16	16	22.3	13.0	55.7	70.6	17.5	33.0	28.0
	PWC-P163B	PWC-P163G	Pg16	22	22.3	15.0	66.4	88.4	18.0	43.0	37.5
	PWC-P21B	PWC-P21G	Pg21	22	28.0	15.0	66.4	87.5	22.3	43.0	37.5
	PWC-P29B	PWC-P29G	Pg29	28	36.8	15.0	76.0	105.0	30.5	48.8	43.0
	PWC-P36B	PWC-P36G	Pg36	36	46.7	19.0	96.8	130.5	34.6	60.6	52.2
	PWC-P48B	PWC-P48G	Pg48	48	59.0	19.0	109.0	147.5	50.3	71.8	64.0

# SPWC

\*Under development

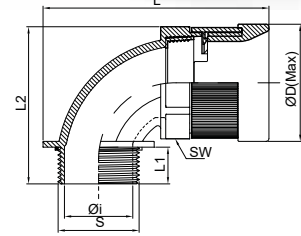
Elbow 90° Connector



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
Pg Thread (DIN 40430)	SPWC-P077B	SPWC-P077G	Pg07	07	12.5	12.0	37.8	47.0	6.0	18.0	14.0
	SPWC-P09B	SPWC-P09G	Pg09	10	15.2	14.0	51.5	66.4	10.0	24.9	19.7
	SPWC-P11B	SPWC-P11G	Pg11	12	18.6	14.0	51.4	64.7	14.0	27.6	22.8
	SPWC-P136B	SPWC-P136G	Pg13.5	16	20.4	14.0	56.7	70.3	15.0	33.0	28.0
	SPWC-P16B	SPWC-P16G	Pg16	16	22.5	14.0	56.7	70.6	15.2	33.0	28.0
	SPWC-P21B	SPWC-P21G	Pg21	22	28.3	16.0	67.4	87.5	22.0	43.0	37.5
	SPWC-P29B	SPWC-P29G	Pg29	28	37.0	16.0	77.0	105.0	30.5	48.8	43.0
	SPWC-P36B	SPWC-P36G	Pg36	36	47.0	20.0	97.8	130.5	36.0	60.6	52.2
	SPWC-P48B	SPWC-P48G	Pg48	48	59.3	20.0	110.0	147.5	52.4	71.8	64.0
	Metric Thread (EN 60423)	SPWC-M107B	SPWC-M107G	M12 X 1.5	07	12.0	12.0	37.6	47.0	7.5	18.0
SPWC-M10B		SPWC-M10G	M12 X 1.5	10	12.0	14.0	51.2	66.4	7.5	24.9	19.7
SPWC-M12B		SPWC-M12G	M16 X 1.5	12	16.0	14.0	51.2	64.9	12.0	27.6	22.8
SPWC-M16B		SPWC-M16G	M20 X 1.5	16	20.0	14.0	56.5	71.6	15.2	33.0	28.0
SPWC-M22B		SPWC-M22G	M25 X 1.5	22	25.0	16.0	67.4	88.2	20.6	43.0	37.5
SPWC-M28B		SPWC-M28G	M32 X 1.5	28	32.0	16.0	77.0	105.1	27.0	48.8	43.0
SPWC-M36B		SPWC-M36 G	M40 X 1.5	36	40.0	20.0	97.5	130.4	33.0	60.6	52.2
SPWC-M48B		SPWC-M48G	M50 X 1.5	48	50.0	20.0	110.1	145.7	42.0	71.8	64.0

# SPAC

\*Under development

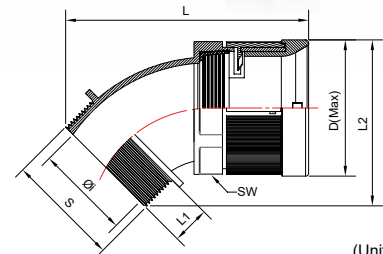
Elbow 45° Connector



## Specifications



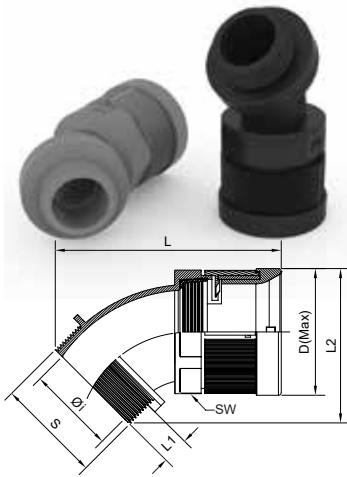
Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		



(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW	
	Black	Gray										
Pg Thread (DIN 40430)	SPAC-P09B	SPAC-P09G	Pg09	10	15.2	14.0	32.3	60.6	10.0	24.9	19.7	
	SPAC-P11B	SPAC-P11G	Pg11	12	18.6	14.0	37.2	63.0	14.0	27.6	22.8	
	SPAC-P136B	SPAC-P136G	Pg13.5	16	20.4	14.0	42.1	67.0	15.0	33.0	28.0	
	SPAC-P16B	SPAC-P16G	Pg16	16	22.5	14.0	42.8	68.3	15.2	33.0	28.0	
	SPAC-P21B	SPAC-P21G	Pg21	22	28.3	16.0	52.7	82.7	22.0	43.0	37.5	
	SPAC-P29B	SPAC-P29G	Pg29	28	37.0	16.0	58.8	95.1	30.5	48.8	43.0	
	SPAC-P36B	SPAC-P36G	Pg36	36	47.0	20.0	74.3	115.0	36.0	60.6	52.2	
	SPAC-P48B	SPAC-P48G	Pg48	48	59.3	20.0	85.6	126.9	52.4	71.8	64.0	
	Metric Thread (EN 60423)	SPAC-M10B	SPAC-M10G	M12 X 1.5	10	12.0	14.0	32.5	59.4	7.5	24.9	19.7
		SPAC-M12B	SPAC-M12G	M16 X 1.5	12	16.0	14.0	36.6	62.0	12.0	27.6	22.8
SPAC-M16B		SPAC-M16G	M20 X 1.5	16	20.0	14.0	40.7	67.2	15.2	33.0	28.0	
SPAC-M22B		SPAC-M22G	M25 X 1.5	22	25.0	16.0	51.0	81.0	20.6	43.0	37.5	
SPAC-M28B		SPAC-M28G	M32 X 1.5	28	32.0	16.0	57.3	93.5	27.0	48.8	43.0	
SPAC-M36B		SPAC-M36G	M40 X 1.5	36	40.0	20.0	71.5	112.5	33.0	60.6	52.2	
SPAC-M48B		SPAC-M48G	M50 X 1.5	48	50.0	20.0	82.3	123.5	42.0	71.8	64.0	





# PAEL

Elbow 45° Connector

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector, Connector for jointing into Limit-Switch.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread / 45°Elbow (JIS B0202)	PACL-G10B	PACL-G10G	G1/2"	10	20.5	8.0	35.0	61.6	15.0	25.0	19.7
	PACL-G12B	PACL-G12G	G1/2"	12	20.5	8.0	36.9	62.7	15.0	27.6	22.8
	PACL-G16B	PACL-G16G	G1/2"	16	20.5	8.0	40.4	66.3	15.2	33.0	28.0
Metric Thread / 45°Elbow (EN 60423)	PACL-M10B	PACL-M10G	M12 X 1.5	10	11.8	8.0	31.5	58.4	8.0	24.9	19.7
	PACL-M12B	PACL-M12G	M16 X 1.5	12	15.8	8.0	35.6	61.0	12.0	27.6	22.8
	PACL-M16B	PACL-M16G	M20 X 1.5	16	19.8	8.0	39.7	66.2	15.3	33.0	22.8
Pg Thread / 45°Elbow (DIN 40430)	PACL-P09B	PACL-P09G	Pg09	10	14.9	8.0	31.3	59.6	11.1	24.9	19.7
	PACL-P110B	PACL-P110G	Pg11	10	18.4	8.0	33.5	60.6	15.0	24.9	19.7
	PACL-P130B	PACL-P130G	Pg13.5	10	20.2	8.0	35.4	61.5	15.1	25.0	19.7
	PACL-P11B	PACL-P11G	Pg11	12	18.4	8.0	36.2	62.0	14.1	27.6	22.8
	PACL-P136B	PACL-P136G	Pg13.5	16	20.2	8.0	41.1	66.0	15.3	33.0	28.0
	PACL-P16B	PACL-P16G	Pg16	16	22.3	8.0	41.8	67.3	17.6	33.0	28.0



# PAC

Elbow 45° Connector

## Specifications



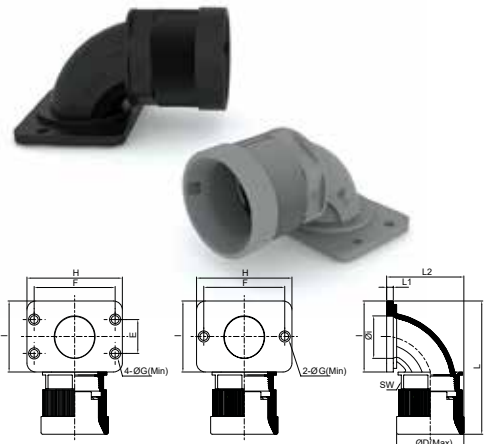
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray (Light Gray Available in PF Thread Type)
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Joint box with connector		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
PF Thread (JIS B0202)	PAC-G10B	PAC-G10G	G1/2"	10	20.5	13.0	35.0	61.6	15.0	25.0	19.7
	PAC-G12B	PAC-G12G	G1/2"	12	20.5	13.0	36.9	62.7	15.0	27.6	22.8
	PAC-G16B	PAC-G16G	G1/2"	16	20.5	13.0	40.4	66.3	15.2	33.0	28.0
	PAC-G22B	PAC-G22G	G3/4"	22	26.2	15.0	50.1	80.9	22.0	43.0	37.5
	PAC-G28B	PAC-G28G	G1"	28	33.0	15.0	54.4	93.5	27.1	48.8	43.0
	PAC-G36B	PAC-G36G	G1 1/4"	36	41.6	19.0	71.3	111.5	34.1	60.6	52.2
	PAC-G42B	PAC-G42G	G1 1/2"	48	47.4	19.0	80.1	121.9	41.1	71.8	64.0
	PAC-G48B	PAC-G48G	G2"	48	59.0	19.0	84.1	125.9	50.0	71.8	64.0
Metric Thread (EN 60423)	PAC-M10B	PAC-M10G	M12 X 1.5	10	11.8	13.0	31.5	58.4	8.0	24.9	19.7
	PAC-M12B	PAC-M12G	M16 X 1.5	12	15.8	13.0	35.6	61.0	12.0	27.6	22.8
	PAC-M202B	PAC-M202G	M20 X 1.5	12	19.8	13.0	37.2	62.7	15.1	27.6	22.8
	PAC-M16B	PAC-M16G	M20 X 1.5	16	19.8	13.0	39.7	66.2	15.3	33.0	28.0
	PAC-M22B	PAC-M22G	M25 X 1.5	22	24.7	15.0	50.0	80.0	20.4	43.0	37.5
	PAC-M28B	PAC-M28G	M32 X 1.5	28	31.7	15.0	56.3	92.5	27.2	48.8	43.0
	PAC-M36B	PAC-M36G	M40 X 1.5	36	39.6	19.0	70.5	111.5	34.0	60.6	52.2
	PAC-M48B	PAC-M48G	M50 X 1.5	48	49.6	19.0	81.3	122.5	42.0	71.8	64.0
Pg Thread (DIN 40430)	PAC-P09B	PAC-P09G	Pg09	10	14.9	13.0	31.3	59.6	11.1	24.9	19.7
	PAC-P110B	PAC-P110G	Pg11	10	18.4	13.0	33.5	60.6	15.0	24.9	19.7
	PAC-P130B	PAC-P130G	Pg13.5	10	20.2	13.0	35.4	61.5	15.1	25.0	19.7
	PAC-P11B	PAC-P11G	Pg11	12	18.4	13.0	36.2	62.0	14.1	27.6	22.8
	PAC-P136B	PAC-P136G	Pg13.5	16	20.2	13.0	41.1	66.0	15.3	33.0	28.0
	PAC-P16B	PAC-P16G	Pg16	16	22.3	13.0	41.8	67.3	17.6	33.0	28.0
	PAC-P21B	PAC-P21G	Pg21	22	28.0	15.0	51.7	81.7	22.2	43.0	37.5
	PAC-P29B	PAC-P29G	Pg29	28	36.8	15.0	57.8	94.1	31.0	48.8	43.0
	PAC-P36B	PAC-P36G	Pg36	36	46.7	19.0	73.3	114.0	40.3	60.6	52.2
	PAC-P48B	PAC-P48G	Pg48	48	58.8	19.0	84.6	125.9	50.1	71.8	64.0

# PWOC

Flange Type 90° Connector



(Unit : mm)

## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Control box with connector.		

Ordering No.		Tube Size	E	F	G	H	I	L1	L2	L	Øi	ØD	SW
Black	Gray												
PWOC-12B	PWOC-12G	12	-	36.5	5.5	45.0	32.0	5.2	42.5	68.1	15.0	27.6	22.8
PWOC-16B	PWOC-16G	16	-	36.5	5.5	44.0	32.0	5.2	47.2	72.1	17.5	33.0	28.0
PWOC-22B	PWOC-22G	22	30.5	53.5	5.5	65.0	45.0	5.2	55.8	90.0	22.0	43.0	37.5
PWOC-28B	PWOC-28G	28	31.0	55.0	6.0	65.0	45.0	6.0	66.2	104.5	30.5	48.8	43.0
PWOC-36B	PWOC-36G	36	30.5	72.6	7.0	86.0	64.0	6.0	84.5	134.4	34.0	60.6	52.2
PWOC-48B	PWOC-48G	48	30.5	73.0	7.0	86.0	78.0	6.0	95.6	150.8	50.0	71.8	64.0

# TIS

Straight Fittings



(Unit : mm)

## Specifications

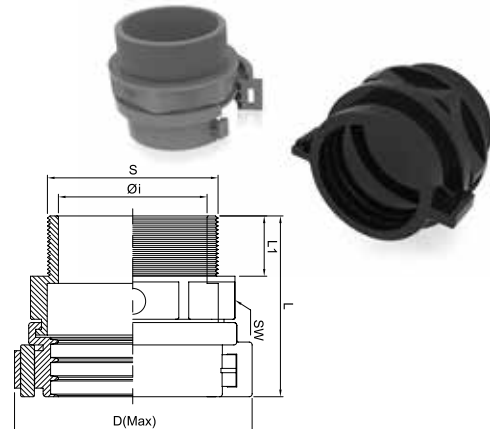


Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Transparency
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Sencer with connector.		

	Ordering No.		Tube Size	S	L 1	L	Øi	ØO	ØD	SW1	SW2
	Black	Gray									
Metric Thread (EN 60423)	TIS-M08T	M8 X 1.0	10	7.7	12.8	61.5	5.0	17.5	23.0	20.0	16.0
	TIS-M12T	M12 X 1.0	10	11.6	12.8	61.5	9.0	20.0	23.0	20.0	18.3
	TIS-M18T	M18 X 1.0	10	17.7	12.8	61.5	9.0	24.0	23.0	20.0	22.0
	TIS-M30T	M30 X 1.5	10	28.5	12.8	61.5	9.0	38.0	23.0	20.0	34.0

# TNRC

Straight Fittings



(Unit : mm)

## Specifications

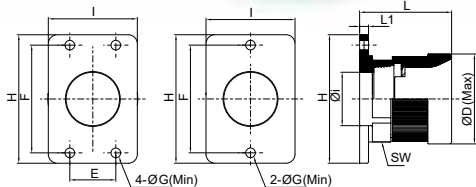
Material	High Quality Polyamide 6	Degrees of Protection	IP 66 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Applied in control box or moving point.		

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	TNRC-G22B	TNRC-G22G	G3/4"	22	26.4	15.0	50.8	19.4	50.6	37.5
	TNRC-G28B	TNRC-G28G	G1"	28	33.2	15.0	47.4	26.2	57.7	43.0
	TNRC-G36B	TNRC-G36G	G1 1/4"	36	41.6	19.0	60.0	35.0	70.0	52.2
	TNRC-G48B	TNRC-G48G	G2"	48	58.7	21.0	63.3	51.0	85.0	64.1



# PNOC

Straight Fittings of flange type



## Specifications



Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Machine tool, Shipbuilding, Tramway, Industrial / Automatic Machinery, Printing Machine etc. Pipe with connector.		

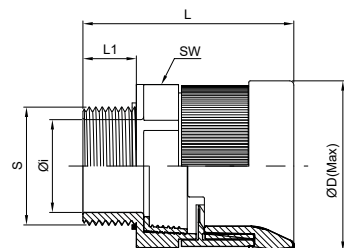
(Unit : mm)

Ordering No.		Tube Size	E	F	G	H	I	L1	L	Øi	ØD	SW
Black	Gray											
PNOC-12B	PNOC-12G	12	-	36.5	5.5	46.0	32.0	5.0	35.1	15.0	27.6	22.8
PNOC-16B	PNOC-16G	16	-	36.5	5.5	46.0	32.0	5.0	37.0	17.5	33.0	28.0
PNOC-22B	PNOC-22G	22	30.5	53.5	5.5	65.0	45.0	5.0	44.7	22.0	43.0	37.5
PNOC-28B	PNOC-28G	28	31.0	54.8	6.5	64.8	45.0	6.0	53.4	27.0	48.8	43.0
PNOC-36B	PNOC-36G	36	31.0	73.2	6.5	86.6	60.0	6.0	63.1	40.1	60.6	52.2
PNOC-48B	PNOC-48G	48	30.5	73.2	6.5	86.6	73.0	6.0	66.4	50.0	71.8	64.0



# SPNC

Straight Fittings



## Specifications



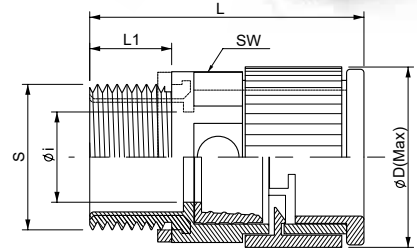
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc		

(Unit : mm)

	Ordering No.		Thread	Tube Size	S	L 1	L	Øi	ØD	SW
	Black	Gray								
Pg Thread (DIN 40430)	SPNC-P09B	SPNC-P09G	Pg09	10	15.2	14.0	43.0	10.0	25.0	19.7
	SPNC-P11B	SPNC-P11G	Pg11	12	18.6	14.0	43.0	14.0	27.6	22.8
	SPNC-P132B	SPNC-P132G	Pg13.5	12	20.4	14.0	43.0	15.0	27.6	22.8
	SPNC-P136B	SPNC-P136G	Pg13.5	16	20.4	14.0	44.0	15.2	33.0	28.0
	SPNC-P16B	SPNC-P16G	Pg16	16	22.5	16.0	44.0	15.2	33.0	28.0
	SPNC-P21B	SPNC-P21G	Pg21	22	28.3	16.0	52.0	22.0	43.0	37.5
	SPNC-P29B	SPNC-P29G	Pg29	28	37.0	16.0	56.0	30.5	48.8	43.0
	SPNC-P36B	SPNC-P36G	Pg36	36	47.0	20.0	68.0	36.0	60.6	52.2
	SPNC-P48B	SPNC-P48G	Pg48	48	59.3	22.0	75.0	52.4	71.8	64.0
	Metric Thread (EN 60423)	SPNC-M10B	SPNC-M10G	M12 X 1.5	10	12.0	14.0	43.0	7.5	25.0
SPNC-M12B		SPNC-M12G	M16 X 1.5	12	16.0	14.0	43.0	12.0	27.6	22.8
SPNC-M16B		SPNC-M16G	M20 X 1.5	16	20.0	14.0	44.0	15.2	33.0	28.0
SPNC-M22B		SPNC-M22G	M25 X 1.5	22	25.0	16.0	52.0	20.6	43.0	37.5
SPNC-M28B		SPNC-M28G	M32 X 1.5	28	32.0	16.0	56.0	27.0	48.8	43.0
SPNC-M36B		SPNC-M36G	M40 X 1.5	36	40.0	20.0	77.0	33.0	60.6	52.2
SPNC-M48B		SPNC-M48G	M50 X 1.5	48	50.0	22.0	75.0	42.0	71.8	64.0

# SNC

## Straight Fittings



(Unit : mm)

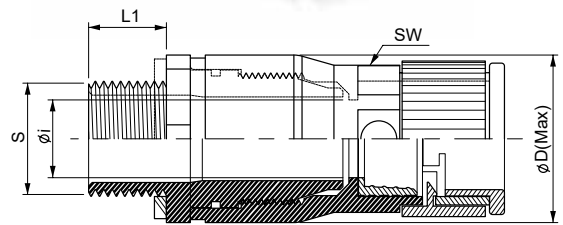
### Specifications

Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		

	Ordering No.		Thread	Tube Size	S	L1	L	Øi	ØD	SW
	Black	Gray								
PF Thread (JIS B0202)	SNC-P09B	SNC-P09G	Pg09	10	15.2	13	42	10	25	19.8
	SNC-P11B	SNC-P11G	Pg11	12	18.6	13	42	12	25	22.7
	SNC-P132B	SNC-P132G	Pg13.5	12	20.4	13	42	12	25	22.7
	SNC-P136B	SNC-P136G	Pg13.5	16	20.4	13	43	14	30	28.0
	SNC-P16B	SNC-P16G	Pg16	16	22.5	15	43	15	30	28.0
	SNC-P21B	SNC-P21G	Pg21	22	28.3	15	51	19	41	37.5
	SNC-P29B	SNC-P29G	Pg29	28	37.0	15	55	26	47	43.0
	SNC-P36B	SNC-P36G	Pg36	36	47.0	19	67	33	56	52.2
	SNC-P48B	SNC-P48G	Pg48	48	59.3	21	74	48	68	64.1
	Metric Thread (EN 60423)	SNC-M10B	SNC-M10G	M12 X 1.5	10	12	13	42	7	25
SNC-M12B		SNC-M12G	M16 X 1.5	12	16	13	42	10	25	22.7
SNC-M16B		SNC-M16G	M20 X 1.5	16	20	13	43	14	30	28.0
SNC-M22B		SNC-M22G	M25 X 1.5	22	25	15	51	16	41	37.5
SNC-M28B		SNC-M28G	M32 X 1.5	28	32	15	55	23	47	43.0
SNC-M36B		SNC-M36G	M40 X 1.5	36	40	19	67	31	56	52.2
SNC-M48B		SNC-M48G	M50 X 1.5	48	50	21	74	40	68	64.1

# SNIC

## Straight Fittings

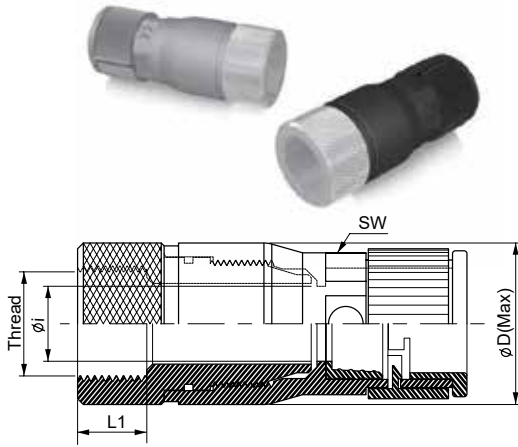


(Unit : mm)

### Specifications

Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction. Protection from electrical signals and electromagnetic waves.		

	Ordering No.		Thread	Tube Size	S	L1	Øi	ØD	SW	
	Black	Gray								
Pg Thread (DIN 40430)	SNIC-P09B	SNIC-P09G	Pg09	10	15.2	13	10	25	19.8	
	SNIC-P11B	SNIC-P11G	Pg11	12	18.6	13	12	25	22.7	
	SNIC-P136B	SNIC-P136G	Pg13.5	16	20.4	13	14	30	28.0	
	SNIC-P16B	SNIC-P16G	Pg16	16	22.5	13	15	30	28.0	
	SNIC-P21B	SNIC-P21G	Pg21	22	28.3	15	19	41	37.5	
	SNIC-P29B	SNIC-P29G	Pg29	28	37.0	15	26	47	43.0	
	SNIC-P36B	SNIC-P36G	Pg36	36	47.0	17	33	56	52.2	
	SNIC-P48B	SNIC-P48G	Pg48	48	59.3	17	48	68	64.1	
	Metric Thread (EN 60423)	SNIC-M10B	SNIC-M10G	M12 X 1.5	10	12	13	7	25	19.8
		SNIC-M12B	SNIC-M12G	M16 X 1.5	12	16	13	10	25	22.7
SNIC-M16B		SNIC-M16G	M20 X 1.5	16	20	13	14	30	28.0	
SNIC-M22B		SNIC-M22G	M25 X 1.5	22	25	15	16	41	37.5	
SNIC-M28B		SNIC-M28G	M32 X 1.5	28	32	15	23	47	43.0	
SNIC-M36B		SNIC-M36G	M40 X 1.5	36	40	17	31	56	52.2	
SNIC-M48B		SNIC-M48G	M50 X 1.5	48	50	17	40	68	64.1	



# SICC

Straight Fittings

## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction. Protection from electrical signals and electromagnetic waves.		

(Unit : mm)

	Ordering No.		Thread	Tube Size	Shell Size	L1	Øi	ØD	SW
	Black	Gray							
UNEF Thread (ASME B1.1)	SICC-U1010B	SICC-U1010G	1/2-28UNEF	10	8S, 10S	10	9	25	19.8
	SICC-U1210B	SICC-U1210G	5/8-24UNEF	10	10SL, 12S	10	9	25	19.8
	SICC-U1410B	SICC-U1410G	3/4-20UNEF	10	14, 14S	10	9	25	19.8
	SICC-U1212B	SICC-U1212G	5/8-24UNEF	12	10SL, 12S	10	11	25	22.7
	SICC-U1412B	SICC-U1412G	3/4-20UNEF	12	14, 14S	10	11	25	22.7
	SICC-U1612B	SICC-U1612G	7/8-20UNEF	12	16, 16S	10	11	25	22.7
	SICC-U1812B	SICC-U1812G	1-20UNEF	12	18	10	11	25	22.7
	SICC-U1616B	SICC-U1616G	7/8-20UNEF	16	16, 16S	10	13	30	28.0
	SICC-U1816B	SICC-U1816G	1-20UNEF	16	18	10	13	30	28.0
	SICC-U2016B	SICC-U2016G	1 3/16-18UNEF	16	20, 22	10	13	30	28.0
	SICC-U2316B	SICC-U2316G	1 3/8-18UNEF	16	20, 22	10	13	30	28.0
	SICC-U2816B	SICC-U2816G	1 7/16-18UNEF	16	24, 28	10	13	30	28.0
	SICC-U2222B	SICC-U2222G	1 3/16-18UNEF	22	20, 22	10	18	41	37.5
	SICC-U2822B	SICC-U2822G	1 7/16-18UNEF	22	24, 28	10	18	41	37.5
	SICC-U2828B	SICC-U2828G	1 7/16-18UNEF	28	24, 28	10	25	47	43.0
	SICC-U3622B	SICC-U3622G	2-18UNS	22	36	10	18	41	37.5
	SICC-U3228B	SICC-U3228G	13/4-18UNS	28	32	10	25	47	43.0
	SICC-U3628B	SICC-U3628G	2-18UNS	28	36	10	25	47	43.0
	SICC-U3636B	SICC-U3636G	2-18UNS	36	36	10	32	56	52.2



# TNSC

Straight Fittings

## Specifications

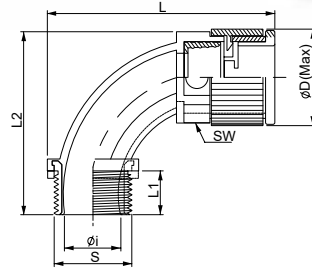
Material	High Quality Polyamide 6	Degrees of Protection	IP 68 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	The connector which can connect tube and tube each other.		

(Unit : mm)

Ordering No.		Tube Size	L	Øi	ØD	SW1	SW2
Black	Gray						
TNSC-10B	TNSC-10G	10 + 10	70	8.0	25	19.8	19.8
TNSC-12B	TNSC-12G	12 + 12	71	11.0	25	22.7	22.7
TNSC-16B	TNSC-16G	16 + 16	72	12.5	30	28.0	28.0
TNSC-22B	TNSC-22G	22 + 22	90	19.0	41	37.5	37.5
TNSC-28B	TNSC-28G	28 + 28	100	22.0	47	43.0	43.0
TNSC-36B	TNSC-36G	36 + 36	122	30.0	56	52.2	52.2
TNSC-48B	TNSC-48G	48 + 48	133	42.0	68	64.1	64.1

# SWC

Elbow 90° Connector



(Unit : mm)

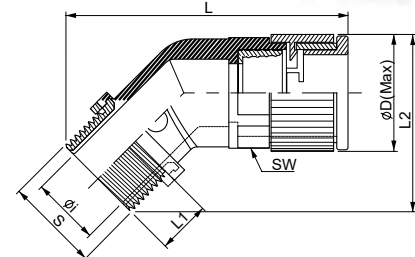
## Specifications

Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW
	Black	Gray									
Pg Thread (DIN 40430)	SWC-P077B	SWC-P077G	Pg07	07	12.5	11	33	41	6	17	14.2
	SWC-P09B	SWC-P09G	Pg09	10	15.2	13	53	62	8	25	19.8
	SWC-P11B	SWC-P11G	Pg11	12	18.6	13	53	60	9	25	22.7
	SWC-P136B	SWC-P136G	Pg13.5	16	20.4	13	62	66	12	30	28.0
	SWC-P16B	SWC-P16G	Pg16	16	22.5	13	62	66	12	30	28.0
	SWC-P21B	SWC-P21G	Pg21	22	28.3	15	71	81	18	41	37.5
	SWC-P29B	SWC-P29G	Pg29	28	37.0	15	77	96	25	47	43.0
	SWC-P36B	SWC-P36G	Pg36	36	47.0	19	97	119	31	56	52.2
	SWC-P48B	SWC-P48G	Pg48	48	59.3	19	112	141	42	68	64.1
	Metric Thread (EN 60423)	SWC-M107B	SWC-M107G	M12 X 1.5	07	12	11	33	41	6	17
SWC-M10B		SWC-M10G	M12 X 1.5	10	12	13	53	62	6	25	19.8
SWC-M12B		SWC-M12G	M16 X 1.5	12	16	13	53	60	9	25	22.7
SWC-M16B		SWC-M16G	M20 X 1.5	16	20	13	62	66	12	30	28.0
SWC-M22B		SWC-M22G	M25 X 1.5	22	25	15	71	81	16	41	37.5
SWC-M28B		SWC-M28G	M32 X 1.5	28	32	15	77	96	23	47	43.0
SWC-M36B		SWC-M36 G	M40 X 1.5	36	40	19	97	119	31	56	52.2
SWC-M48B		SWC-M48G	M50 X 1.5	48	50	19	112	141	41	68	64.1

# SAC

Elbow 45° Connector



(Unit : mm)

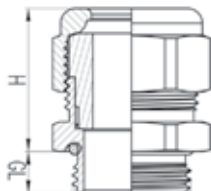
## Specifications

Material	High Quality Polyamide 6 + Brass Nickel plated	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Tramway Vehicle Construction etc.		

	Ordering No.		Thread	Tube Size	S	L1	L2	L	Øi	ØD	SW	
	Black	Gray										
Pg Thread (DIN 40430)	SAC-P09B	SAC-P09G	Pg09	10	15.2	13	34	62	8	25	19.8	
	SAC-P11B	SAC-P11G	Pg11	12	18.6	13	39	68	9	25	22.7	
	SAC-P136B	SAC-P136G	Pg13.5	16	20.4	13	45	68	12	30	28.0	
	SAC-P16B	SAC-P16G	Pg16	16	22.5	13	46	68	12	30	28.0	
	SAC-P21B	SAC-P21G	Pg21	22	28.3	15	58	82	18	41	37.5	
	SAC-P29B	SAC-P29G	Pg29	28	37.0	15	63	92	25	47	43.0	
	SAC-P36B	SAC-P36G	Pg36	36	47.0	20	77	104	31	56	52.2	
	SAC-P48B	SAC-P48G	Pg48	48	59.3	20	92	125	47	68	64.1	
	Metric Thread (EN 60423)	SAC-M10B	SAC-M10G	M12 X 1.5	10	12	13	33	58	6	25	19.8
		SAC-M12B	SAC-M12G	M16 X 1.5	12	16	13	38	62	9	25	22.7
SAC-M16B		SAC-M16G	M20 X 1.5	16	20	13	45	67	12	30	28.0	
SAC-M22B		SAC-M22G	M25 X 1.5	22	25	15	56	80	16	41	37.5	
SAC-M28B		SAC-M28G	M32 X 1.5	28	32	15	61	92	23	47	43.0	
SAC-M36B		SAC-M36G	M40 X 1.5	36	40	20	74	104	31	56	52.2	
SAC-M48B		SAC-M48G	M50 X 1.5	48	50	20	89	125	40	68	64.1	

# MCG

## Cable Glands



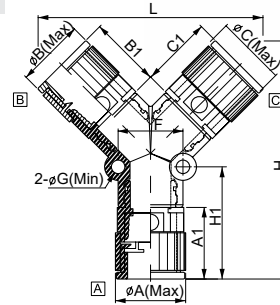
### Specifications

Material	Nickel Brass Plating (O-Ring Material, Seal Material: Silicone)	Degrees of Protection	IP 68 (EN 60529)
Temperature Range	-40 °C to +105°C	Short Term	up to +200° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Railroad cars, Machine Tools, Industrial machines, Automated machines, Shipyard industry, etc.		

	Ordering No.	Thread	Øi (Min)	Øi (Max)	H	GL	SW
Pg Thread (DIN 40430)	MCG-P0705LW	Pg 07	3.0	5.0	21.0	10	17
	MCG-P0707LW	Pg 07	4.0	6.5	21.0	10	17
	MCG-P0906LW	Pg 09	4.0	6.0	24.0	10	20
	MCG-P0907LW	Pg 09	4.5	7.0	24.0	10	20
	MCG-P0908LW	Pg 09	5.0	8.0	24.0	10	20
	MCG-P0909LW	Pg 09	6.0	9.0	24.0	10	20
	MCG-P0910LW	Pg 09	7.0	10.0	24.0	10	20
	MCG-P1107LW	Pg 11	4.5	7.00	25.5	10	20/22
	MCG-P1108LW	Pg 11	5.0	8.0	25.5	10	20/22
	MCG-P1109LW	Pg 11	6.0	9.0	25.5	10	20/22
	MCG-P1110LW	Pg 11	7.0	10.0	25.5	10	20/22
	MCG-P13512LW	Pg 13.5	8.0	12.0	28.5	10	24
	MCG-P13513LW	Pg 13.5	9.0	13.0	28.5	10	24
	MCG-P2112LW	Pg 21	8.0	12.0	28.5	12	32
	MCG-P2113LW	Pg 21	9.0	13.0	28.5	12	32
	MCG-P2115LW	Pg 21	11.0	15.0	30.0	12	32
	MCG-P2117LW	Pg 21	13.0	17.0	30.0	12	32
	MCG-P2118LW	Pg 21	14.0	18.0	30.0	12	32
	MCG-P2915LW	Pg 29	11.0	15.0	31.0	12	40
	MCG-P2917LW	Pg 29	13.0	17.0	31.0	12	40
	MCG-P2918LW	Pg 29	14.0	18.0	31.0	12	40
	MCG-P2921LW	Pg 29	17.0	21.0	32.0	12	40
	MCG-P2922LW	Pg 29	18.0	22.0	32.0	12	40
	MCG-P3621LW	Pg 36	17.0	21.0	32.5	15	50
	MCG-P3622LW	Pg 36	18.0	22.0	32.5	15	50
	MCG-P3626LW	Pg 36	21.0	26.0	37.5	15	50
	MCG-P3628LW	Pg 36	24.0	28.0	37.5	15	50
	MCG-P3628WCR	Pg 36	22.0	28.0	49.0	15	50
	MCG-P3630LW	Pg 36	25.0	30.0	37.5	15	50
	Pg Thread (DIN 40430)	MCG-P4232LW	Pg 42	26.0	31.0	39.5	15
MCG-P4236LW		Pg 42	31.0	35.5	39.5	15	60
MCG-P4240LW		Pg 42	36.0	40.0	39.5	15	60
MCG-P4845LW		Pg 48	39.0	45.0	40.0	15	68
Metric Thread (DIN 40430)	MCG-M1205LW	M12X15	3.0	5.0	21.0	10	17
	MCG-M1207LW	M12X15	4.0	5.0	21.0	10	17
	MCG-M1606LW	M16X15	4.0	6.0	24.0	10	20
	MCG-M1607LW	M16X15	4.5	7.0	24.0	10	20
	MCG-M1608LW	M16X15	5.0	8.0	24.0	10	20
	MCG-M1609LW	M16X15	6.0	9.0	24.0	10	20
	MCG-M1610LW	M16X15	7.0	10.0	24.0	10	20
	MCG-M2007LW	M20X15	4.5	7.0	25.5	10	20/22
	MCG-M2008LW	M20X15	5.0	8.0	25.5	10	20/22
	MCG-M2009LW	M20X15	6.0	9.0	25.5	10	20/22
	MCG-M2010LW	M20X15	7.0	10.0	25.5	10	20/22
	MCG-M2012LW	M20X15	8.0	12.0	28.5	10	24
	MCG-M2013LW	M20X15	9.0	13.0	28.5	10	24
	MCG-M2512LW	M25X15	8.0	12.0	28.5	12	24/30
	MCG-M2513LW	M25X15	9.0	13.0	28.5	12	24/30
	MCG-M2515LW	M25X15	11.0	15.0	30.0	12	30
	MCG-M2517LW	M25X15	13.0	17.0	30.0	12	30
	MCG-M2518LW	M25X15	14.0	18.0	30.0	12	30
	MCG-M3215LW	M32X15	11.0	15.0	31.0	12	30/36
	MCG-M3217LW	M32X15	13.0	17.0	31.0	12	30/36
	MCG-M3218LW	M32X15	14.0	18.0	31.0	12	30/36
	MCG-M3221LW	M32X15	17.0	21.0	32.0	12	36
	MCG-M3222LW	M32X15	18.0	22.0	32.0	12	36
	MCG-M4021LW	M40X15	17.0	21.0	32.5	15	36/45
	MCG-M4022LW	M40X15	18.0	22.0	32.5	15	36/45
	MCG-M4026LW	M40X15	21.0	26.0	37.5	15	50
	MCG-M4028LW	M40X15	24.0	28.0	37.5	15	50
	MCG-M4030LW	M40X15	25.0	30.0	37.5	15	50
	MCG-M5032LW	M50X15	26.0	31.0	39.5	15	57
	MCG-M5036LW	M50X15	31.0	35.5	39.5	15	57
	MCG-M5040LW	M50X15	36.0	40.0	39.5	15	57
	MCG-M6345LW	M63X15	39.0	45.0	40.0	15	68

# TVC

## Y Type Connector



### Specifications

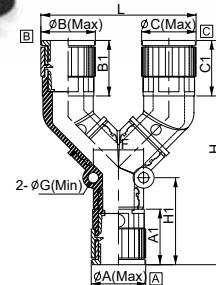
Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		

(Unit : mm)

Ordering No.		A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
Black	Gray														
TVC-101010B	TVC-101010G	10	10	10	23	26.6	23	26.6	23	26.6	5.0	24	41.6	86	80.0
TVC-121010B	TVC-121010G	12	10	10	25	26.5	23	26.6	23	26.6	5.0	24	41.5	86	80.0
TVC-121210B	TVC-121210G	12	12	10	25	26.5	25	26.5	23	26.6	5.0	24	41.5	88	83.0
TVC-121212B	TVC-121212G	12	12	12	25	26.5	25	26.5	25	26.5	5.0	24	41.5	88	83.0
TVC-161010B	TVC-161010G	16	10	10	30	28.5	23	26.6	23	26.6	5.0	24	43.5	88	83.0
TVC-161210B	TVC-161210G	16	12	10	30	28.5	25	26.5	23	26.6	5.0	24	43.5	90	81.0
TVC-161212B	TVC-161212G	16	12	12	30	28.5	25	26.5	25	26.5	5.0	24	43.5	90	83.0
TVC-161616B	TVC-161616G	16	16	16	30	28.5	30	28.5	30	28.5	5.0	24	43.5	93	89.8
TVC-222222B	TVC-222222G	22	22	22	41	33.3	41	33.3	41	33.3	5.6	39	48.2	112	112.0
TVC-282222B	TVC-282222G	28	22	22	47	39.0	41	33.3	41	33.3	5.6	39	53.9	118	112.0
TVC-282822B	TVC-282822G	28	28	22	47	39.0	47	39.0	41	33.3	5.6	39	53.9	124	118.0
TVC-282828B	TVC-282828G	28	28	28	47	39.0	47	39.0	47	39.0	5.6	39	53.9	124	124.0

# TYC

## Y Type Connector



### Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Transparency
Feature	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		

(Unit : mm)

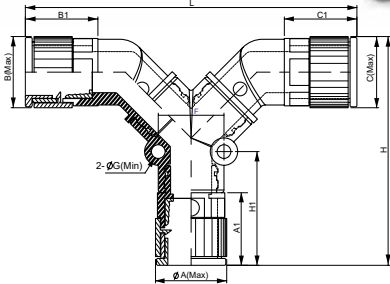
Ordering No.		A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
Black	Gray														
TYC-101010B	TYC-101010G	10.0	10.0	10.0	23.0	26.6	23.0	24.0	23.0	24.0	5.0	24.0	41.6	104.0	67.0
TYC-121010B	TYC-121010G	12.0	10.0	10.0	25.0	26.5	23.0	24.0	23.0	24.0	5.0	24.0	41.5	104.0	67.0
TYC-121210B	TYC-121210G	12.0	12.0	10.0	25.0	26.5	25.0	24.4	23.0	24.0	5.0	24.0	41.5	107.0	69.7
TYC-121212B	TYC-121212G	12.0	12.0	12.0	25.0	26.5	25.0	24.4	25.0	24.4	5.0	24.0	41.5	107.0	73.5
TYC-161010B	TYC-161010G	16.0	10.0	10.0	30.0	28.5	23.0	24.0	23.0	24.0	5.0	24.0	43.5	105.7	67.0
TYC-161210B	TYC-161210G	16.0	12.0	10.0	30.0	28.5	25.0	24.4	23.0	24.0	5.0	24.0	43.5	108.7	69.7
TYC-161212B	TYC-161212G	16.0	12.0	12.0	30.0	28.5	25.0	24.4	25.0	24.4	5.0	24.0	43.5	108.7	73.0
TYC-161616B	TYC-161616G	16.0	16.0	16.0	30.0	28.5	30.0	26.0	30.0	26.0	5.0	24.0	43.5	110.8	83.0
TYC-222222B	TYC-222222G	22.0	22.0	22.0	41.0	33.3	41.0	33.5	41.0	33.5	5.6	39.0	48.2	134.5	108.0
TYC-282222B	TYC-282222G	28.0	22.0	22.0	47.0	39.0	41.0	33.5	41.0	33.5	5.6	39.0	53.9	142.0	108.0
TYC-282822B	TYC-282822G	28.0	28.0	22.0	47.0	39.0	47.0	39.5	41.0	33.5	5.6	39.0	53.9	150.0	111.0
TYC-282828B	TYC-282828G	28.0	28.0	28.0	47.0	39.0	47.0	39.5	47.0	39.5	5.6	39.0	53.9	150.0	114.0





# TTC

T Type Connector



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 67 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	CPS distributors guarantee elegant layout and save on cost instead of using distribution boxes. Nominal width from 28, reduceable to 10.		

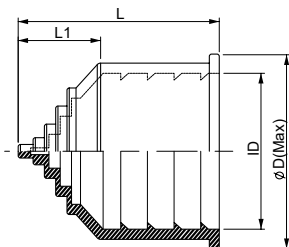
(Unit : mm)

Ordering No.		A	B	C	ØA	A1	ØB	B1	ØC	C1	ØG	F	H1	H	L
Black	Gray														
TTC-101010B	TTC-101010G	10.0	10.0	10.0	23.0	26.6	23.0	24.0	23.0	24.0	5.0	24.0	41.6	81.0	114.0
TTC-121010B	TTC-121010G	12.0	10.0	10.0	25.0	26.5	23.0	24.0	23.0	24.0	5.0	24.0	41.5	81.0	114.0
TTC-121210B	TTC-121210G	12.0	12.0	10.0	25.0	26.5	25.0	24.4	23.0	24.0	5.0	24.0	41.5	83.0	118.0
TTC-121212B	TTC-121212G	12.0	12.0	12.0	25.0	26.5	25.0	24.4	25.0	24.4	5.0	24.0	41.5	83.0	120.0
TTC-161010B	TTC-161010G	16.0	10.0	10.0	30.0	28.5	23.0	24.0	23.0	24.0	5.0	24.0	43.5	82.0	114.0
TTC-161210B	TTC-161210G	16.0	12.0	10.0	30.0	28.5	25.0	24.4	23.0	24.0	5.0	24.0	43.5	85.0	118.0
TTC-161212B	TTC-161212G	16.0	12.0	12.0	30.0	28.5	25.0	24.4	25.0	24.4	5.0	24.0	43.5	85.0	120.0
TTC-161616B	TTC-161616G	16.0	16.0	16.0	30.0	28.5	30.0	26.0	30.0	26.0	5.0	24.0	43.5	90.0	124.0
TTC-222222B	TTC-222222G	22.0	22.0	22.0	41.0	33.3	41.0	33.5	41.0	33.5	5.6	39.0	48.2	110.0	156.0
TTC-282222B	TTC-282222G	28.0	22.0	22.0	47.0	39.0	41.0	33.5	41.0	33.5	5.6	39.0	53.9	116.0	156.0
TTC-282822B	TTC-282822G	28.0	28.0	22.0	47.0	39.0	47.0	39.5	41.0	33.5	5.6	39.0	53.9	120.0	165.0
TTC-282828B	TTC-282828G	28.0	28.0	28.0	47.0	39.0	47.0	39.5	47.0	39.5	5.6	39.0	53.9	120.0	174.0



# FEC

CPSFIX Series



## Specifications

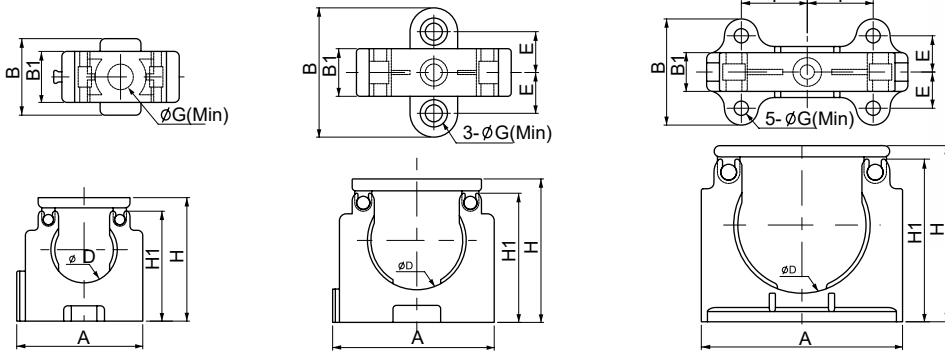
Material	N.B.R (Nitrile-Gutadiene Rubber)	Degrees of Protection	IP 66 (EN 60529)
Properties	Tube terminal, assembled by just putting on	Color	Black & Gray
For tube type	Corrugated tubes, type of CPSFLEX		

(Unit : mm)

Ordering No.		Tube Size	Min	Max	L1	L	ID	ØD
Black	Gray							
FEC-07B	FEC-07G	07	2.0	7.0	8.0	24.0	10.0	16.0
FEC-10B	FEC-10G	10	3.0	10.0	11.0	33.0	12.5	17.0
FEC-12B	FEC-12G	12	4.2	12.0	11.0	33.0	16.0	23.5
FEC-16B	FEC-16G	16	6.0	16.0	12.5	34.5	21.2	29.0
FEC-22B	FEC-22G	22	6.0	22.0	16.0	43.0	28.5	37.0
FEC-28B	FEC-28G	28	6.0	28.0	16.0	43.0	34.5	43.0
FEC-36B	FEC-36G	36	6.0	36.0	24.0	58.5	42.5	52.0
FEC-48B	FEC-48G	48	6.0	48.0	24.0	58.5	54.5	64.0
FEC-56B	FEC-56G	56	9.0	56.0	29.0	71.0	67.2	76.7
FEC-70B	FEC-70G	70	10.0	70.0	36.0	86.0	82.5	92.0
FEC-95B	FEC-95G	95	13.0	95.0	45.0	110.0	106.0	115.5

# NFH

Tube clip



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	-
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray
Application	Fixing tubes By making more screw holes, the clip is more stable and the hinge cover is easy to use. This new clip was developed to facilitate straight arrangement and be installable at any size.		

(Unit : mm)

Ordering No.		Tube Size	ØD	A	H	H1	B	B1	E	F	ØG	Bolt
Black	Gray											
NFH-07B	NFH-07G	07	10.0	16.6	20.5	17.9	14.5	10.0	-	-	5.0	1-M4
NFH-10B	NFH-10G	10	13.0	23.0	24.2	21.6	15.0	10.0	-	-	5.0	1-M4
NFH-12B	NFH-12G	12	16.0	27.5	25.7	22.5	33.0	14.0	11.30	-	5.4	3-M5
NFH-16B	NFH-16G	16	21.5	34.2	33.0	29.5	36.0	14.0	12.00	-	5.4	3-M5
NFH-22B	NFH-22G	22	29.0	45.5	42.2	38.0	38.0	14.0	12.00	-	6.4	3-M6
NFH-28B	NFH-28G	28	35.0	55.0	49.8	45.3	37.0	14.0	12.50	17.00	6.4	5-M6
NFH-36B	NFH-36G	36	42.0	66.0	59.5	54.3	41.5	14.0	13.50	18.75	6.4	5-M6
NFH-48B	NFH-48G	48	54.0	84.9	73.2	66.9	41.5	14.0	13.50	28.00	6.4	5-M6
NFH-56B	NFH-56G	56	66.8	98.6	86.3	79.7	52.0	19.0	17.75	32.30	6.4	5-M6
NFH-70B	NFH-70G	70	82.0	121.0	105.8	97.6	63.0	23.0	21.50	39.50	8.4	5-M8
NFH-95B	NFH-95G	95	105.6	155.4	136.3	125.8	82.0	30.0	28.00	51.70	8.4	5-M8

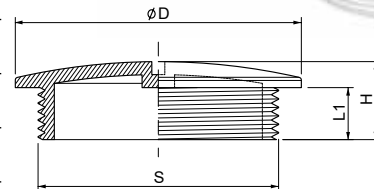
# BBS

Fitting Screw



## Specifications

Material	High Quality Polyamide 6	Degrees of Protection	IP 66 (EN 60529)
The max. Instantaneous Temperature	-40 °C to +105°C	Short Term	up to +150° C
Self-Extinguishing	UL94-HB / Free of Halogen Phosphorous and cadmium	Color	Black & Gray



(Unit : mm)

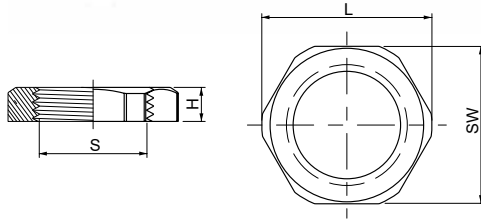
	Ordering No.		Thread	S	L 1	H	ØD
	Black	Gray					
Pg Thread (DIN 40430)	BBS-P07W	BBS-P07G	Pg07	12.5	6.0	8.0	15.0
	BBS-P09W	BBS-P09G	Pg09	15.2	6.0	9.0	19.0
	BBS-P11W	BBS-P11G	Pg11	18.6	6.0	10.0	22.0
	BBS-P13W	BBS-P13G	Pg13.5	20.4	6.0	10.0	25.0
	BBS-P16W	BBS-P16G	Pg16	22.5	6.0	10.0	27.0
	BBS-P21W	BBS-P21G	Pg21	28.3	8.0	12.0	33.0
	BBS-P29W	BBS-P29G	Pg29	37.0	8.0	12.0	44.0
	BBS-P36W	BBS-P36G	Pg36	47.0	10.0	15.0	55.0



# FLN

Hexagon nut

## Specifications



Material	Polyamide	Degrees of Protection	-
Properties	Tube terminal, assembled by just putting on	Color	Black & Gray
For tube type	Corrugated tubes, type of CPSFLEX		

(Unit : mm)

	Ordering No.		Thread	S	H	L	SW
	Black	Gray					
PF Thread (JIS B0202)	FLN-G07B	FLN-G07G	G1/4"	13.0	6.0	20.7	19.0
	FLN-G10B	FLN-G10G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G12B	FLN-G12G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G16B	FLN-G16G	G1/2"	20.9	6.0	29.5	27.3
	FLN-G22B	FLN-G22G	G3/4"	26.4	6.8	38.4	36.0
	FLN-G28B	FLN-G28G	G1"	33.2	6.8	47.8	44.0
	FLN-G36B	FLN-G36G	G1 1/4"	41.9	8.0	52.3	49.0
	FLN-G42B	FLN-G42G	G1 1/2"	47.8	8.0	72.3	65.0
	FLN-G48B	FLN-G48G	G2"	59.6	8.0	76.5	70.0
	Metric Thread (EN 60423)	FLN-M10B	FLN-M10G	M12 X 1.5	12.0	6.0	18.6
FLN-M12B		FLN-M12G	M16 X 1.5	16.0	6.0	24.0	22
FLN-M16B		FLN-M16G	M20 X 1.5	20.0	6.0	28.0	26
FLN-M22B		FLN-M22G	M25 X 1.5	25.0	6.8	35.6	33
FLN-M28B		FLN-M28G	M32 X 1.5	32.0	6.8	43.6	40
FLN-M36B		FLN-M36G	M40 X 1.5	40.0	8.0	54.0	50
FLN-M48B		FLN-M48G	M50 X 1.5	50.0	8.0	65.4	60
Pg Thread (DIN 40430)		FLN-P07B	FLN-P07G	Pg07	12.5	4.0	21.1
	FLN-P09B	FLN-P09G	Pg09	15.2	4.0	23.9	22.0
	FLN-P11B	FLN-P11G	Pg11	18.6	6.0	25.8	24.0
	FLN-P13B	FLN-P13G	Pg13.5	20.4	6.0	28.7	27.0
	FLN-P16B	FLN-P16G	Pg16	22.5	6.0	32.1	30.3
	FLN-P21B	FLN-P21G	Pg21	28.3	6.8	38.5	36.0
	FLN-P29B	FLN-P29G	Pg29	37.0	6.8	49.7	46.0
	FLN-P36B	FLN-P36G	Pg36	47.0	8.0	66.5	60.0
	FLN-P48B	FLN-P48G	Pg48	59.3	8.0	78.1	70.2



# SLN

Fitting Steel Nut

(Unit : mm)

PF Thread (JIS B0202)	Metric Thread (EN 60423)	Pg Thread (DIN 40430)
SLN-G07	SLN-M10	SLN-P07
SLN-G10	SLN-M12	SLN-P09
SLN-G12	SLN-M16	SLN-P11
SLN-G16	SLN-M22	SLN-P13
SLN-G22	SLN-M28	SLN-P16
SLN-G28	SLN-M36	SLN-P21
SLN-G36	SLN-M48	SLN-P29
SLN-G42		SLN-P36
SLN-G48		SLN-P48



# FWH

Fitting Washer

(Unit : mm)

PF(G) Thread	Metric Thread	Pg Thread
-	-	FWH-P07
FWH-G10	FWH-M10	FWH-P09
FWH-G12	FWH-M12	FWH-P11
FWH-G16	FWH-M16	FWH-P13
FWH-G22	FWH-M22	FWH-P16
FWH-G28	FWH-M28	FWH-P21
FWH-G36	FWH-M36	FWH-P29
FWH-G42	-	FWH-P36
FWH-G48	FWH-M48	FWH-P48



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