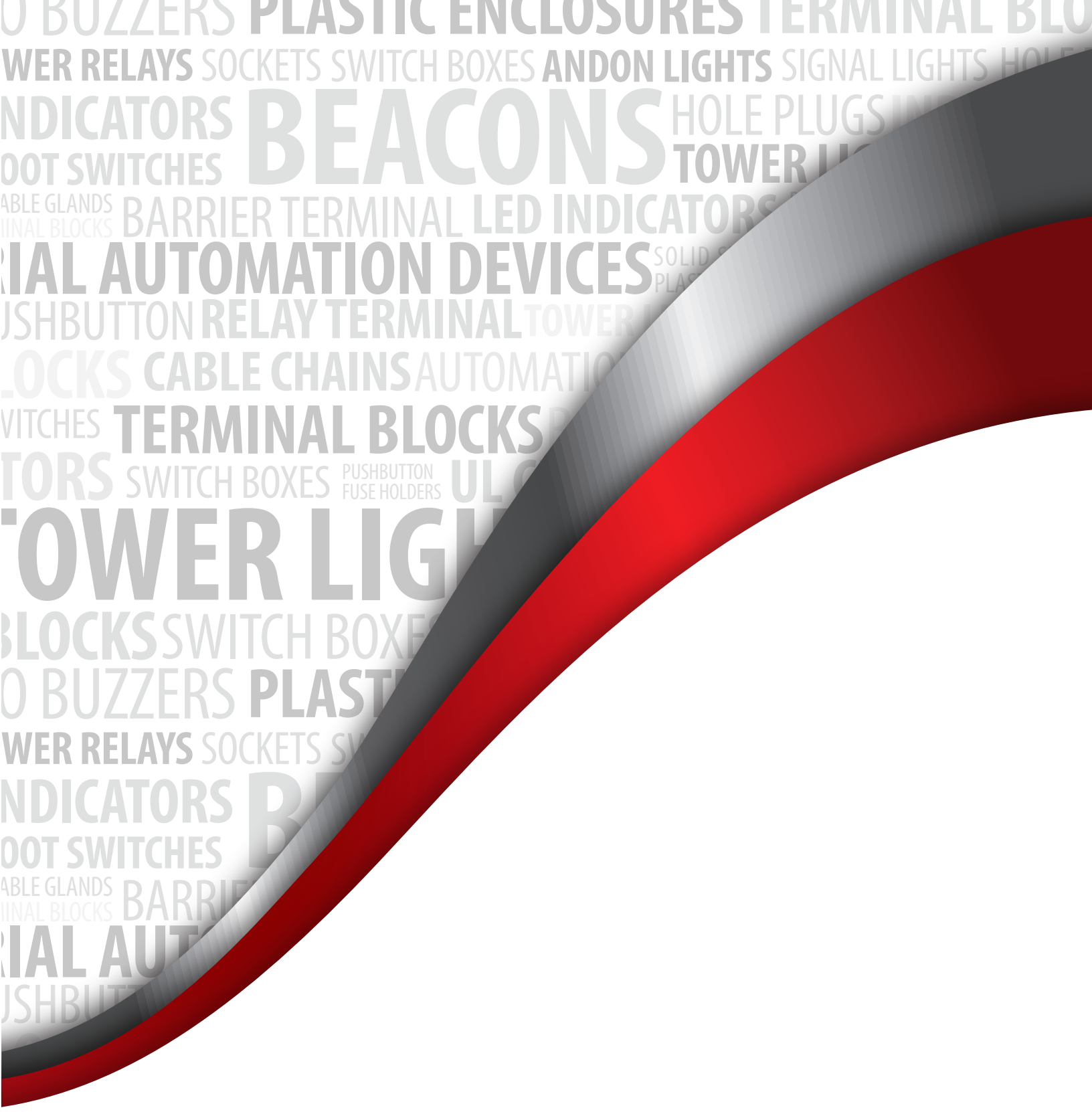


AmeriMation

CONNECTIVITY

K7SR Series

Safety Relay

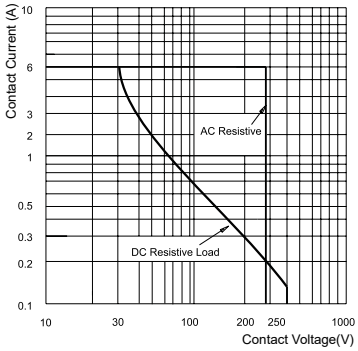
- Various contact configurations
- Forcibly guided contact type (IEC 61810-3)
- 6A switching capacity, Low power consumption
- Terminal layout for easy wiring of PWB patterns
- High insulation capacity (UL Insulation Class F)

Ordering Information

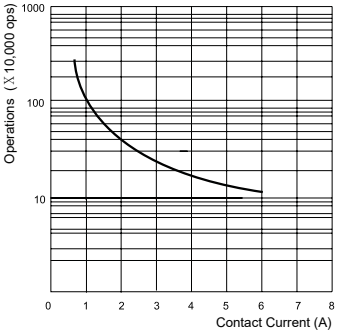
Safety Relay Part Number	Contact Form	Socket Part Number	Number of Terminals
K7SR-3A1B-24VDC	3NO + 1NC	K7SC-10FL-24VDC	10FL : 10 Terminal (4P Relay)
K7SR-2A2B-24VDC	2NO + 2NC		
K7SR-5A1B-24VDC	5NO + 1NC	K7SC-14FL-24VDC	14FL : 14 Terminal (6P Relay)
K7SR-4A2B-24VDC	4NO + 2NC		
K7SR-3A3B-24VDC	3NO + 3NC		

Reference Data

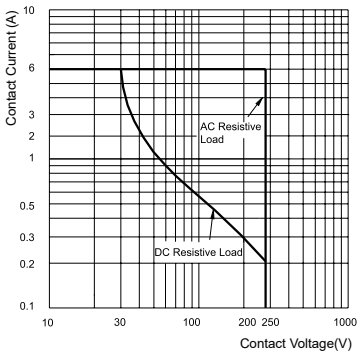
Maximum Switching Power for 4P



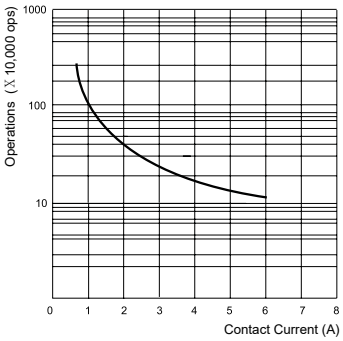
Endurance Curve for 4P



Maximum Switching Power for 6P



Endurance Curve for 6P



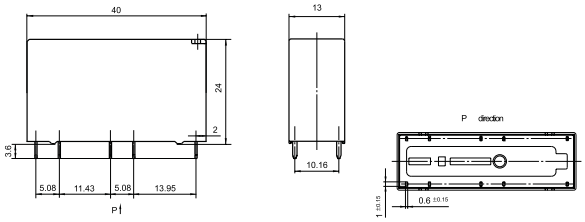
Specifications

Contact Ratings	Contact Form	4P	6P
		2NO + 2NC, 3NO + 1NC	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	AgSnO2	
	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)	
Coil Ratings	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%)
Safety Relay General Ratings	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/s² NC : 55Hz to 200Hz, 49m/s²	
	Shock Resistant	Malfunction : 980m/s²	Destruction : 100m/s²
	Ambient temperature****	-40° C to 85° C	
	Ambient Humidity	5% to 85% RH	
	Wiring	PCB board / Dedicated socket	
	Weight	Approx. 20g	Approx. 23g
Socket General Ratings	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	7mm²	
	Remarks	With LED	

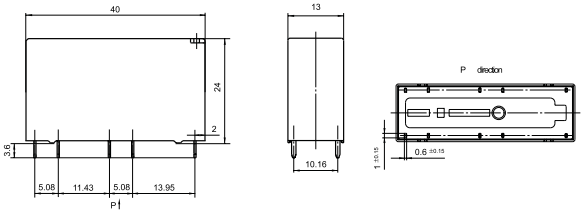
Caution: The above figures are the initial values.
Specifications and materials are subject to change without prior notice for quality improvement.
*The Life is for an ambient temperature of 15 to 35°C and an ambient humidity of 25% to 75%.
**This is the maximum voltage of the relay coil that can be 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

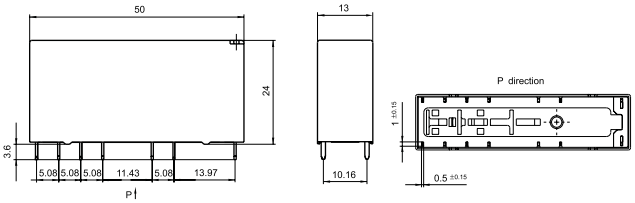
3A1B (unit: mm)



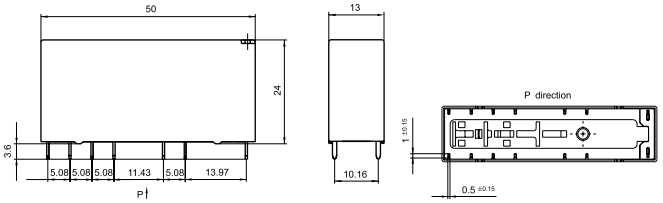
2A2B (unit: mm)



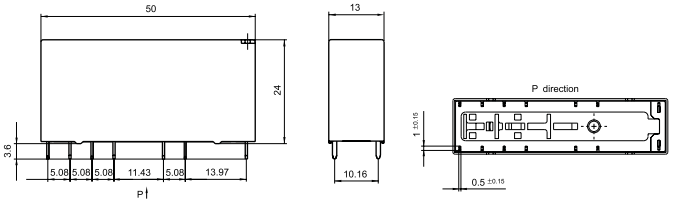
5A1B (unit: mm)



4A2B (unit: mm)

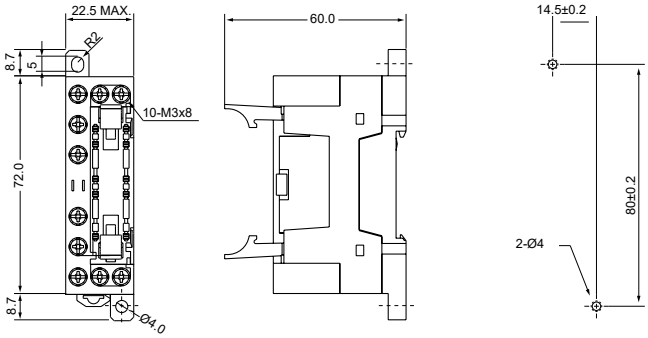


3A3B (unit: mm)

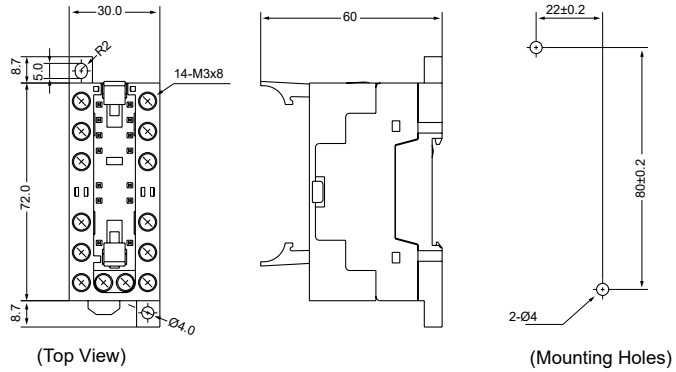


Socket Dimensions

Socket 4P (unit: mm)



Socket 6P (unit: mm)

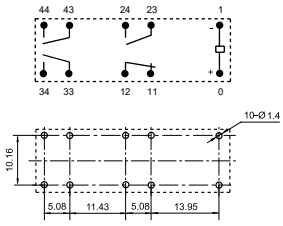


(Top View)

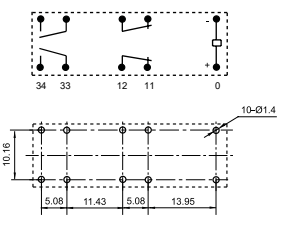
(Mounting Holes)

Relay Wiring Diagram

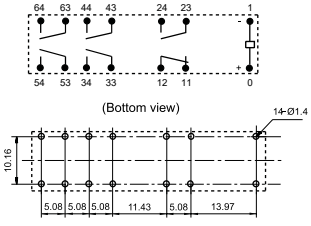
3A1B (unit: mm)



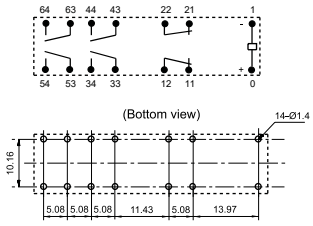
2A2B (unit: mm)



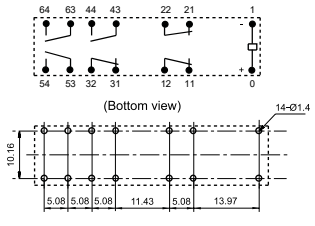
5A1B (unit: mm)



4A2B (unit: mm)

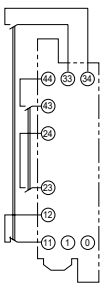


3A3B (unit: mm)

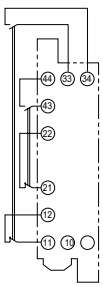


Socket Terminal Layout & Internal Connection Diagram

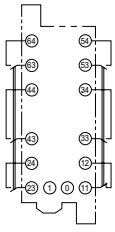
3A1B



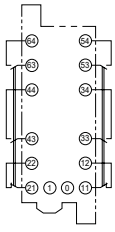
2A2B



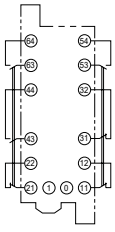
5A1B



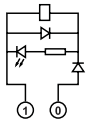
4A2B



3A3B



With LED



HR705 Series

Cube Type Relays

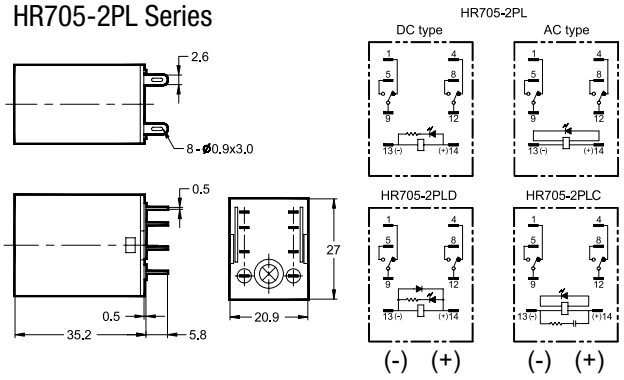
- 705 Series are designed with compact housing & ICE cube style, silver alloy contact, LED indicator, high reliability and long life
- Available Serge protection type to protect malfunction of PLC, electronic devices from back EMF

Specifications

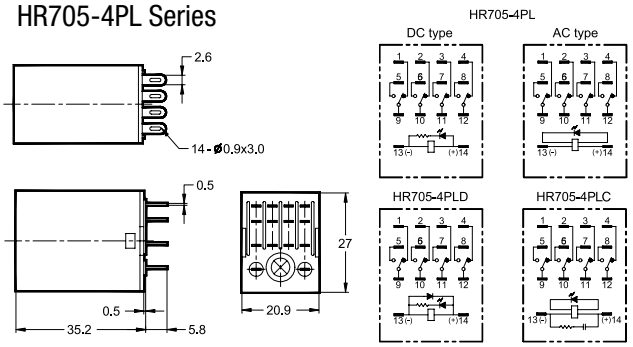
Part Numbers	Standard type	HR705-2PL-220VAC HR705-2PL-110VAC HR705-2PL-24VAC HR705-2PL-110VDC HR705-2PL-24VDC HR705-2PL-12VDC	HR705-4PL-220VAC HR705-4PL-110VAC HR705-4PL-24VAC HR705-4PL-110VDC HR705-4PL-24VDC HR705-4PL-12VDC
	Surge protection type	HR705-2PLD-12VDC HR705-2PLD-24VDC HR705-2PLC-110VAC HR705-2PLC-220VAC	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	
General Info.	Operating Time	20ms	
	Dropout time	20ms	
	Insulation resistance	100MΩ at 500V DC	
	Dielectric Strength	Between Contact: 1,000 Vrms 1Min.	
		Between Contact & Coil: 1,500Vrms 1Min.	
	Mechnical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of1.5mm	
	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)
	Termial Tightened Torque	0.5N • m (5.10kgf • cm)	

Dimensions (unit: mm)

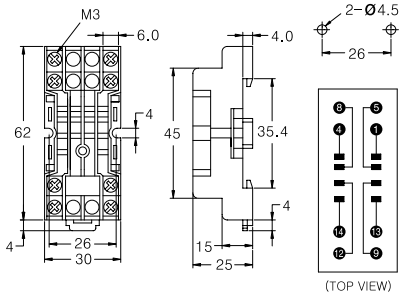
HR705-2PL Series



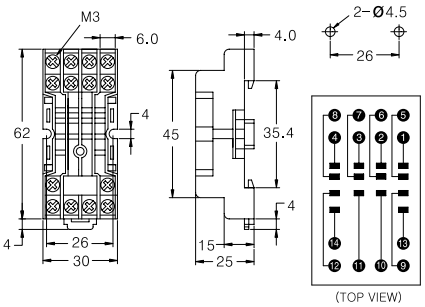
HR705-4PL Series



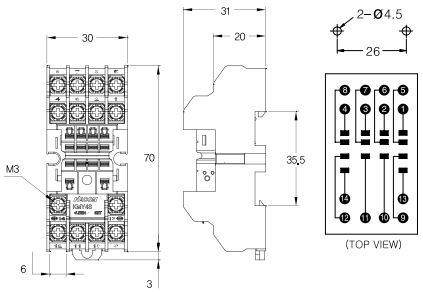
KMY2 Socket



KMY4 Socket



KMY4S Socket



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

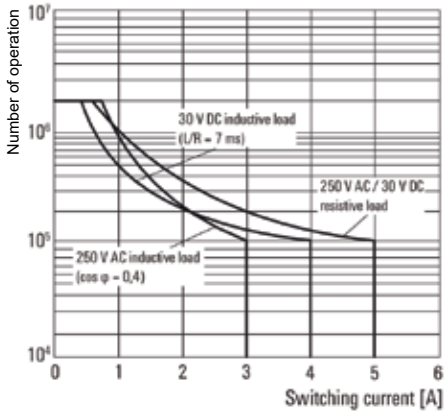
K706 - 1PL D T 12VDC

① ② ③ ④

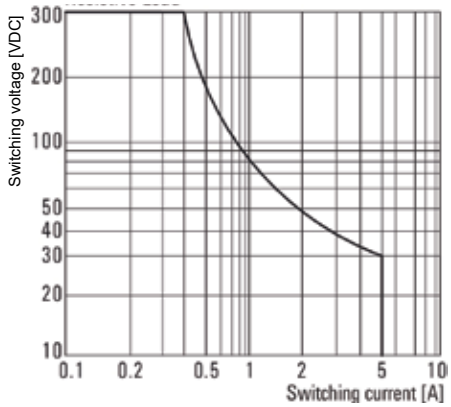
① Contact Ratings	**1PL**	1C
	2PL	2C
② Option	**no mark**	None
	D	Diode (Only DC)
③ Function	**no mark**	None
	T	Test Button Type (AC : Red, DC : Blue)
④ Coil Voltage	**12VDC**	12VDC
	24VDC	24VDC
	24VAC	24VAC
	110VAC	110VAC
	230VAC	230VAC

Reference Data

Life cycle curve



DC load breaking capacity



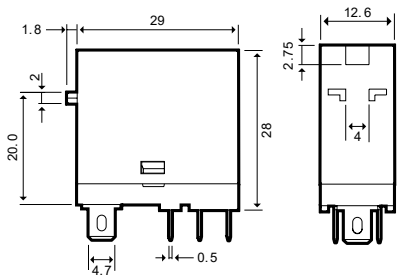
Specifications

Contact	Contact Arrangement	1C	2C
	Contact Material	Ag alloy (24K Gold Plt.)	
	Max. Rated Current (Resistance Load)	10A / 250VAC (1P 1C)	5A / 250VAC (2P 2C)
	Max. Switching Current	10A (1P 1C)	5A (2P 2C)
	Max. Switching Capacity	3,000VA (1P 1C)	2,000VA (2P 2C)
	Min.Switching Current*	100mA 5VDC	
	Initial Contact Resistance	100mΩ (1A 6VDC)	
Coil Spec.	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	
General Info.	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	
Socket	Socket part number	KPX12/ KPX12-P	KPX22/KPX22-P
	Termial Tightened Torque	0.5N • m (5.10kgf • cm)	

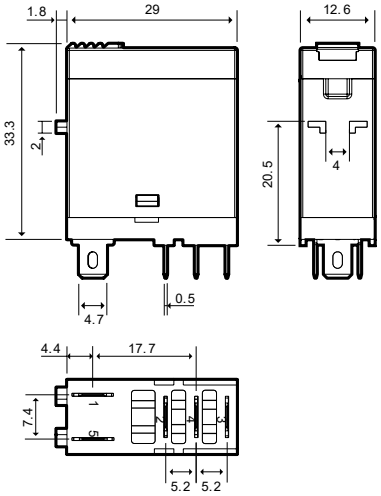
*The minimum switching current is indicated as a standard value. The actual minimum switching rate is variable factor according to the make and break frequency, environmental condition and anticipated credibility level. Therefore, it is recommended that tests be done to test actual load value before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

K706-1PL

Relays Dimensions (unit: mm)

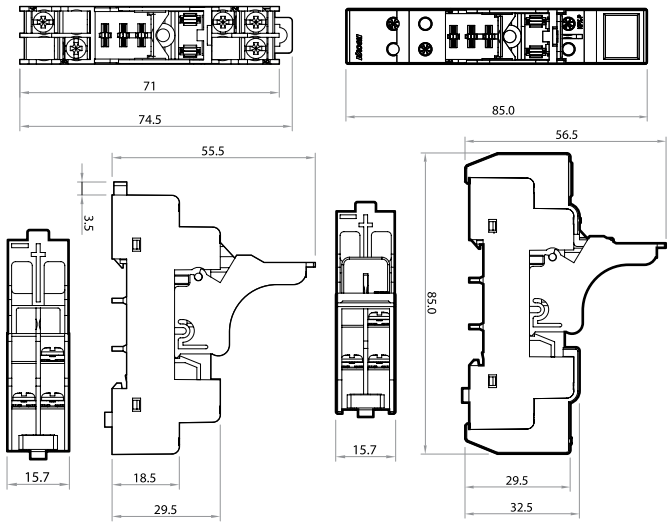


Without Test Button



Test Button

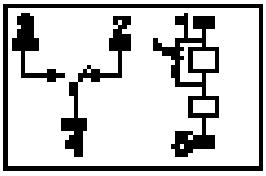
Socket Dimensions (unit: mm)



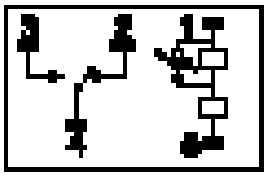
KPX 12

KPX 12-P
(with safety cover)

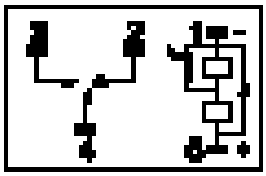
Wiring diagram



LED (AC)



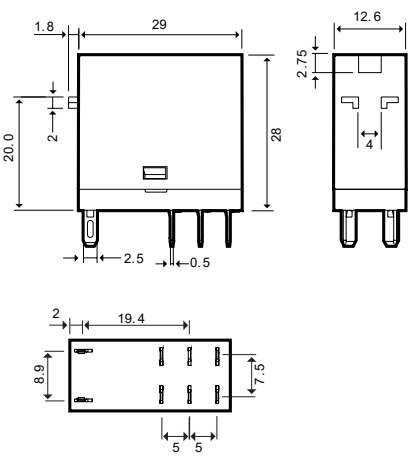
LED (DC)



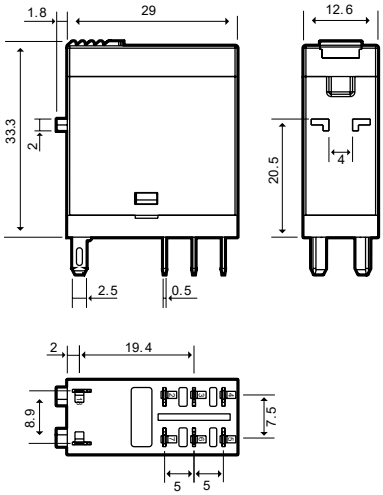
LED + Diode (DC)

K706-2PL

Relays Dimensions (unit: mm)

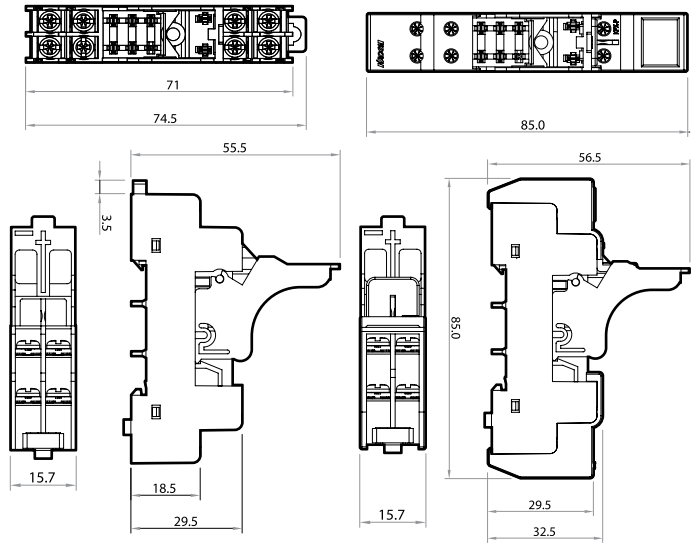


Without Test Button



Test Button

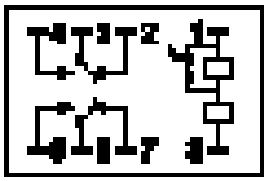
Socket Dimensions (unit: mm)



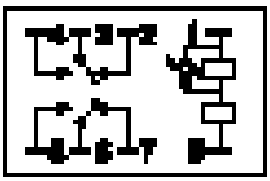
KPX 22

KPX 22-P
(with safety cover)

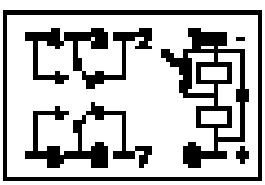
Wiring diagram



LED (AC)



LED (DC)



LED + Diode (DC)

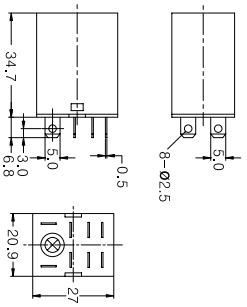
HR710 Series

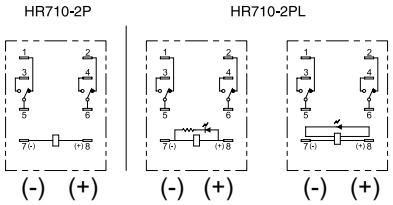
Cube Type Relays

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

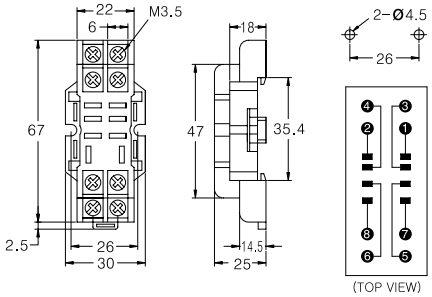
Dimensions (unit: mm)

HR710-2P Series





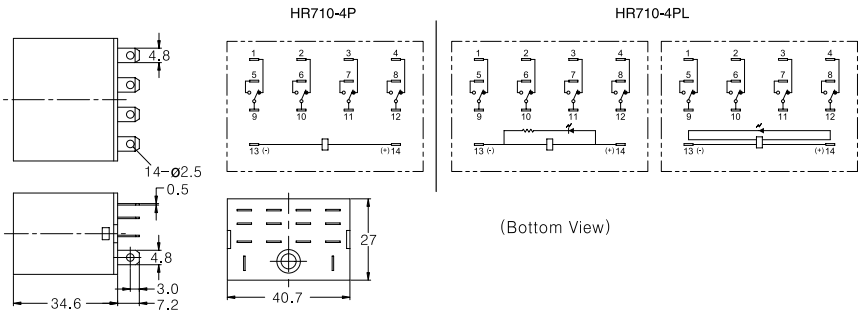
KLY2 Socket



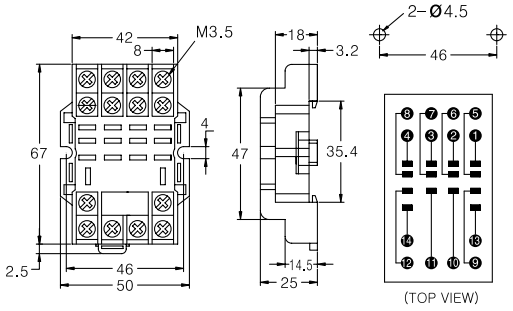
Specifications

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	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	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 & Colil: 1,500Vrms 1Min.	
	Mechnical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of1.5mm	
	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)
	Termial Tightened Torque	0.5N • m (5.10kgf • cm)	

HR710-4P Series



KLY4 Socket



HR707N Series

Octal Base Relays

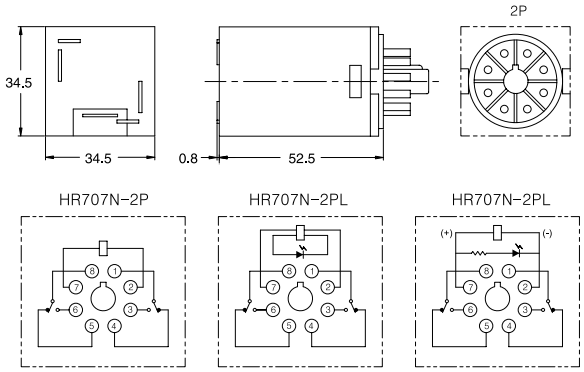
- 707 Series are designed with octal base, silver alloy contact, LED indicator, high reliability and long life
- Available Serge protection type to protect malfunction of PLC, electronic devices from back EMF

Specifications

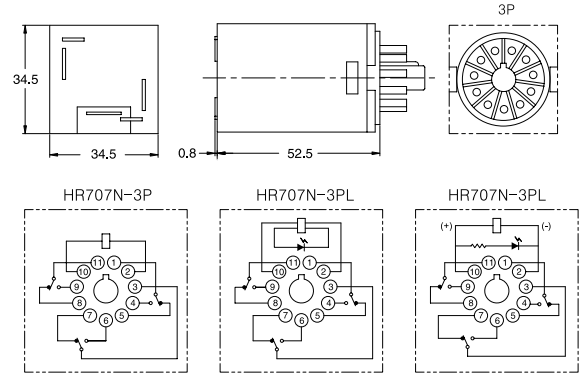
Part Numbers	Standard type	HR707-2PL-220VAC HR707-2PL-110VAC HR707-2PL-24VAC HR707-2PL-110VDC HR707-2PL-24VDC HR707-2PL-12VDC	HR707-3PL-220VAC HR707-3PL-110VAC HR707-3PL-24VAC HR707-3PL-110VDC HR707-3PL-24VDC HR707-3PL-12VDC
	Surge protection type	HR707-2PLD-12VDC HR707-2PLD-24VDC HR707-2PLC-110VAC HR707-2PLC-220VAC	HR707-3PLD-12VDC HR707-3PLD-24VDC HR707-3PLC-110VAC HR707-3PLC-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	
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	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.	
	Mechnical life	1,000,000 operations	
	Electrical life	100,000 operations	
	Vibration resistant	10~55Hz at double amplitude of1.5mm	
	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)
	Termial Tightened Torque	0.5N • m (5.10kgf • cm)	

Dimensions (unit: mm)

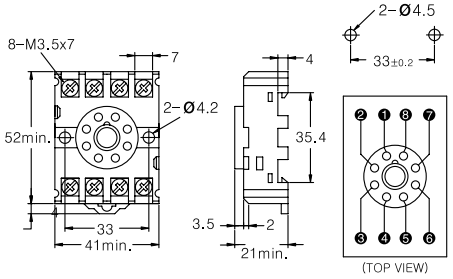
HR707N-2P Series



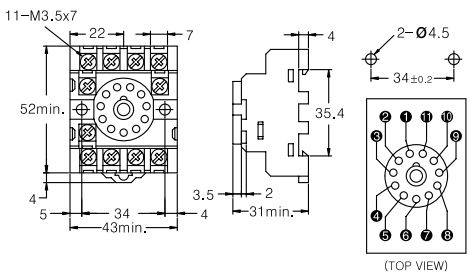
HR707N-3P Series



KF083A Socket



KF113A Socket



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

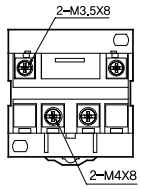
Specifications

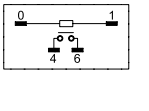
Part Numbers	Screw Terminal & DIN Rail Mount Type	730-1TR - 220VAC 730-1TR - 110VAC 730-1TR - 24VDC 730-1TR - 12VDC	730-2TR - 220VAC 730-2TR - 110VAC 730-2TR - 24VDC 730-2TR - 12VDC
	Quick Connector (#250) & DIN Rail Mount Type	730-1QR - 220VAC 730-1QR - 110VAC 730-1QR - 24VDC 730-1QR - 12VDC	730-2QR - 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
Contact	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
	Min. Switching requirement	100mA 5VDC	
Coil Spec.	CoilVoltage	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 Norminal	
	Dropout voltage	DC Coil: 10% of Norminal	
		AC Coil: 30% of Norminal	
General Info.	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.	
	Mechnical life	Min. 1,000,000 operations	
	Electrical life	Min. 100,000 operations	
	Vibration resistant	10~55Hz (width of vibration 105mm)	
	Ambient temperature	-10 ~ +60°C(-14°F~140°F) (with no icing)	
	Ambient humiditidy	35% ~ 80% RH (with no icing)	
	Weight	TB Type: 210g (7.40oz), QB Type: 160g (5.6oz)	

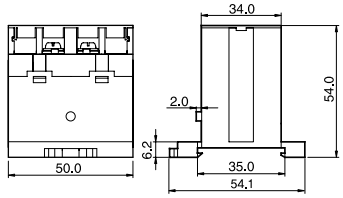
* Min. Switching requirement: If load require low current, you may consider a troubleshooting for operation. For a proper operation, a dummy resistance should be added in parallel on the load to provide current more than min. Switching requirement (100mA 5VDC)

Dimensions (unit: mm)

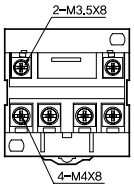
730-1TR

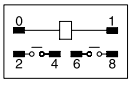


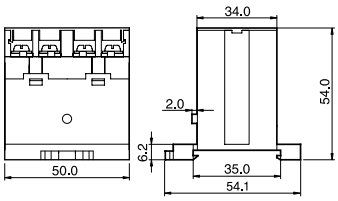




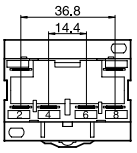
730-2TR

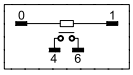


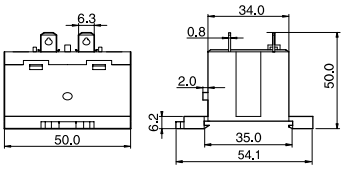




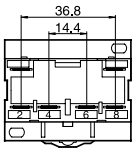
730-1QR

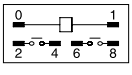


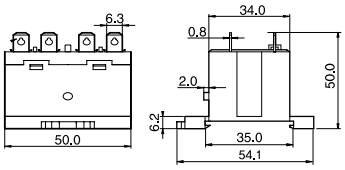




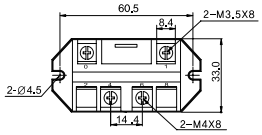
730-2QR

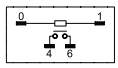


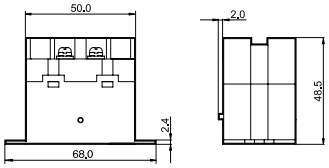




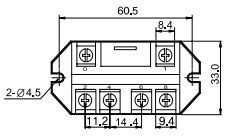
730-1TB

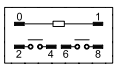


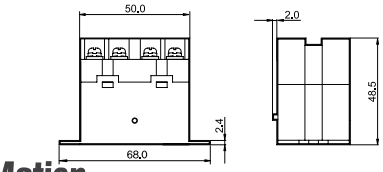




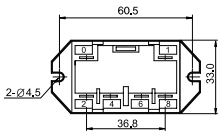
730-2TB

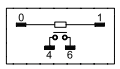


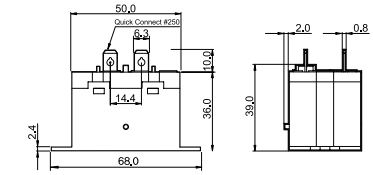




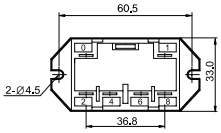
730-1QB

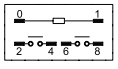


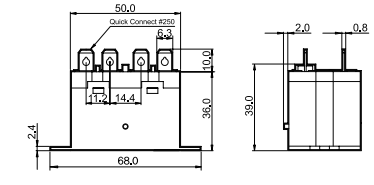




730-2QB





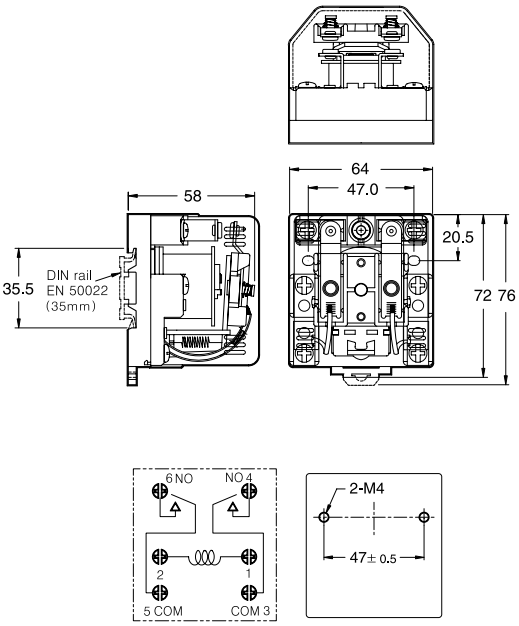


HR723 Series

Heavy Duty Relays

Dimensions (unit: mm)

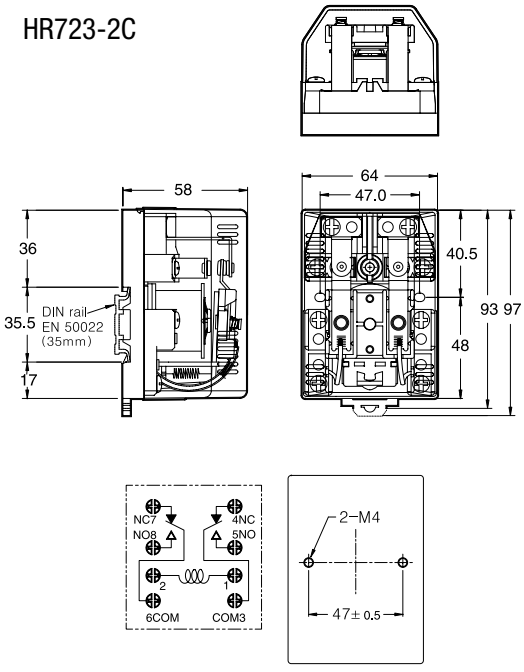
HR723-2A



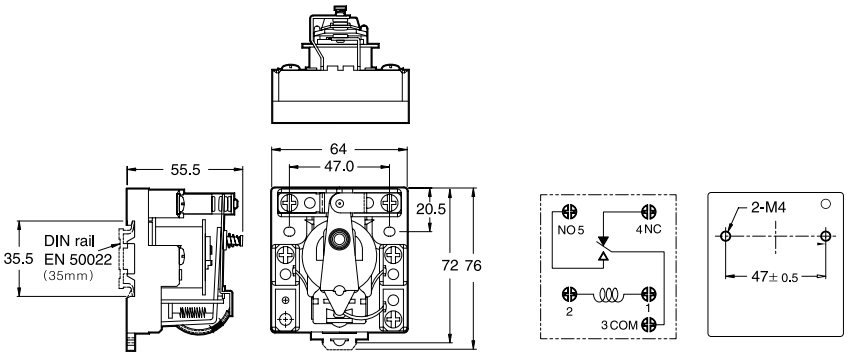
Specifications

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
Contact	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		
Coil Spec.	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		
General Info.	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.		
	Mechnical life	5,000,000 operations		
	Electrical life	100,000 operations		
	Vibration resistant	10~55Hz at double amplitude of1.5mm		
	Ambient temperature	-55 ~ +80°C(-67°F~176°F) at non freezing		
	Ambient humiditidy	5% ~ 80% RH		
	Relay Weight	250g (8.8oz)	200g (7oz)	300g (10.6oz)

HR723-2C



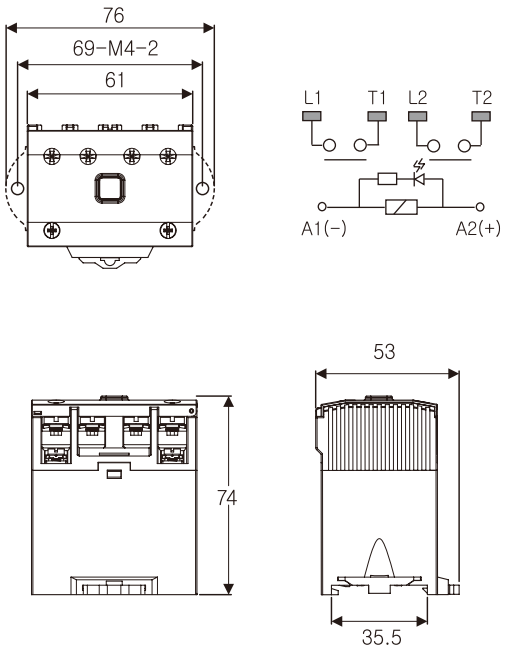
HR723-1C

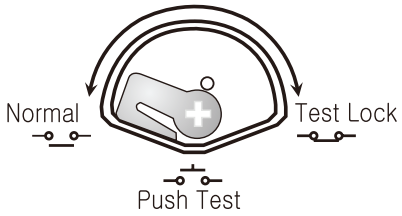


K750 Series

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.	
	Mechnical 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 humiditidy	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

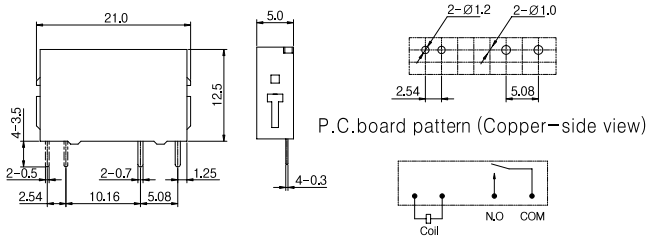
TA/TR Series

Miniature sized class F Relays

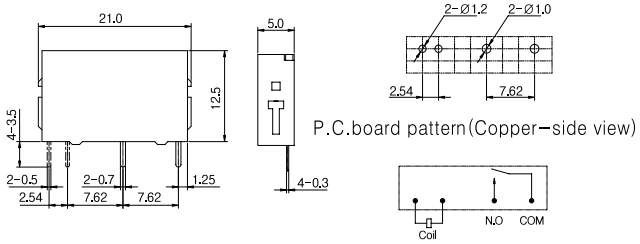
- Miniature size (width 5mm, height 12.5mm) high density and easy to install
- Extended switching capability (1mA 5VDC to 5A 250VAC, 30VDC)
- Twin Cross Bar Contact Mechanism for enhanced contact reliability
- High sensitive operation: 120mW ~ 180mW (5 to 24VDC)
- Gold Clad Silver Alloy Contact to secure 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℃

Dimensions (unit: mm)

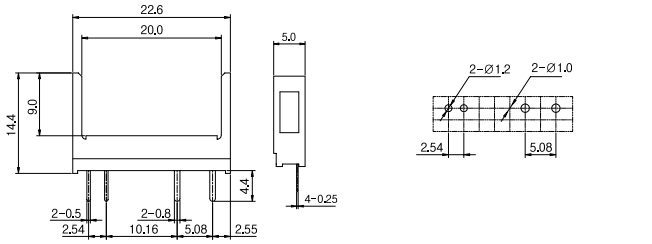
TA Series



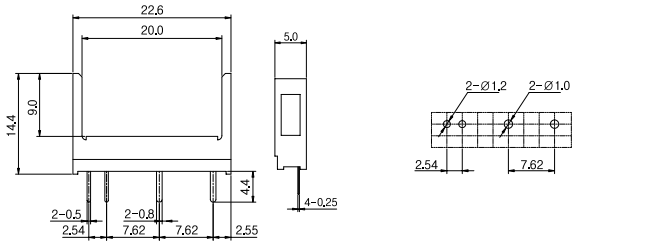
TR Series



TAS (Socket for TA)



TRS (Socket for TR)



Ordering Information

T A - 1a 5

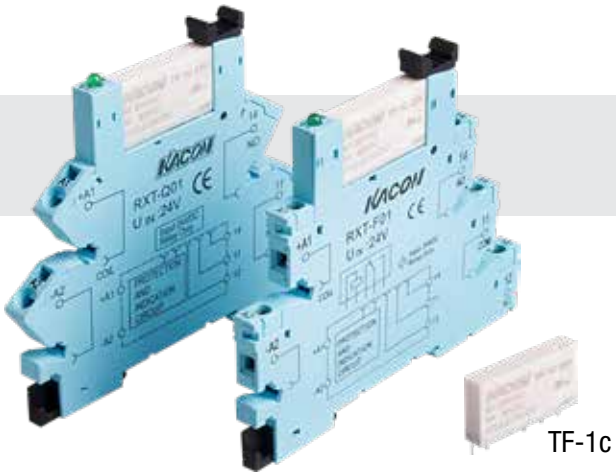
① ②

① Distance btwn Terminals	**A**	5.08mm
	R	7.62mm
② Voltage	**5**	5V DC
	12	12V DC
	24	24V DC

Specifications

Contact Specifications	**Contact point composition**		SPST (1NO)
	Contact point material		Gold-clad Silver alloy
	Initial contact resistance		30mΩ max
	Rated current(resistance load)		5A 30V DC 5A 250V AC
	Maximum Switching Current rating		5A
	Maximum Contact capacity	**DC**	150W
		AC	1,250VA
	Maximum Rated Voltage		110V DC 250V AC
	Minimum switching rating*		1mA 5V DC
Coil Spec.	**Coil Voltage**		5VDC ~ 24VDC
	Power consumption		120mW, 180mW
	Minimum operating		70% of rated voltage
	Maximum cut-off voltage		5% of rated voltage
	Insulation		Class F 155℃
Time of operation			maximum rated voltage at 6ms
Time of interruption			maximum tated voltage at 3ms
Insulation resistance			1,000MΩ min. (500VDC)
Dielectric Strength	between contact points		1,000VACrms per minute
	Between contact points and coil		2,000VACms per minute
Surge voltage	Between contact points and coil		4,000V
Life span	Mechanical		Over 10,000,000 times
	Electrical		Over 100,000 times under rated load
Vibration resistand	Functional		Min. 147m/s²(15G), 10~55Hz (width of vibration:2.5mm)Min.
	Destructive		Min. 205.8m/s²(21G), 10~55Hz (width of vibration: 3.5mm)
Counter Shock	Functional and destructive		15G min. (147m/s²) 100G min. (980m/s²)
Ambient temperature			-40℃ ~ +70℃ (non-freezing)
Ambient humidity			5% ~ 85% RH
Weight			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.



TF-1c

RXT Series

Relay Terminal Blocks

Ordering Information

RXT - ①

① Description	F01
	Q01

Relay Specifacations (TF-1c)

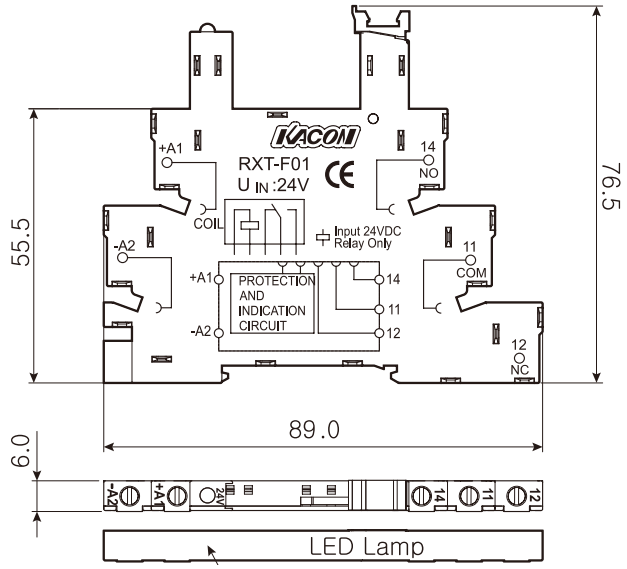
Contact Ratings	Contact Form		1N/O + 1N/C
	Contact Material		Silver Alloy
	Maximum Contact Resistance		30mΩ
	Rated Current (Resistance Load)		6A 250VAC , 6A 30VDC
	Maximum Contact Capacity	DC	180W
		AC	1500VA
	Maximum Rated Voltage		6A 250VAC
	Minimum Switching Current		1mA 5VDC
Coil Ratings	Coil Voltage		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
	Dielectirc 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

RXT-QS (Jumper)

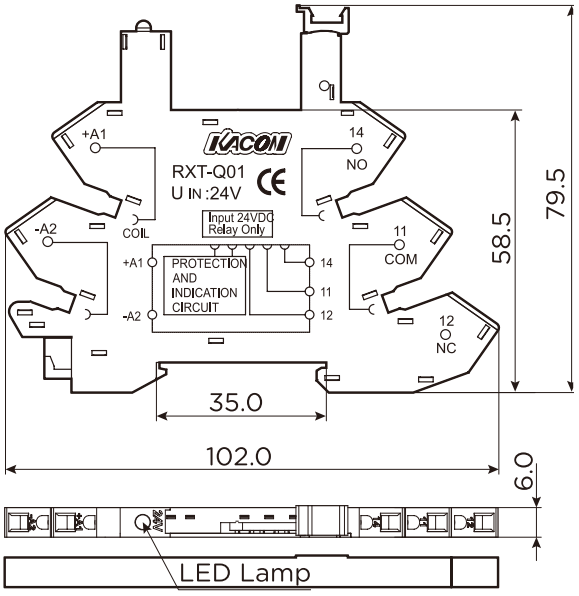
Dimensions

unit: mm

RXT – F01 screw type



RXT – Q01 pin type



Relay Terminal Block (screwless type)

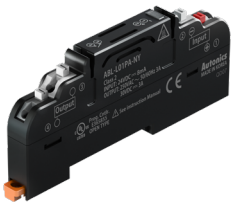
▣ Features

[Common Feature]
- Selectable between independent and load common output with jumper bar
- High tensile force and easy wiring with one-touch screwless type crimp terminal
- Convenient operating status check with operation indicator (blue LED)

[1-point]
- Rated load voltage: 3A
- Selectable between independent and power ommon input with jumper bar
- DIN Rail mounting
- Relay: [Fujitsu] NYP24W-K / [Panasonic] APAN3124

[4-point]
- Rated load voltage: 5A
- Selectable between NPN (+ COM) and PNP (- COM) input with jumper bar
- Relay protection with the cover
- Easy relay replacement with relay ejector or removal lever
- DIN Rail or screw mounting
- Relay: [Fujitsu] NYP24W-K / [Panasonic] APAN3124, PQ1a-24V / [Omron] G6B-1174P-FD-US

[16-point]
- Rated load voltage: 3A
- Relay protection with the cover
- Easy relay replacement with relay ejector
- DIN Rail or screw mounting
- Relay: [Omron] G6B-1174P-FD-US



⚠ **Please read "Safety considerations" in instruction manual before using.**

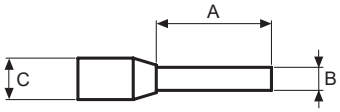
CE c UL US LISTED

▣ Ordering Information

AB **L** – **L** **04** **PQ** – **U** **N**

Varistor installation	**N**	Not installed
	Y	Installed
Input logic	**U**	Universal
	N	NPN
	P	PNP
Relay type	**TN**	**T**AKAMISAWA(Fujitsu) **N**YP
	PA	MATSUSHITA(**P**anasonic) P**A**
	PQ	MATSUSHITA (**P**anasonic) P**Q**
	R6	OM**R**ON G**6**B
No. of relay points	**01**	1
	04	4
	16	16
Controller	**L**	Screwless
	H	Hirose connector
Terminal block	**L**	Screwless
Item	**AB**	Relay terminal block

▣ Crimp Terminal Specifications



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2) (60℃ only)

▣ Specifications

◎ Rated load current 5A

Model		ABL-L04PQ-UN	ABL-L04PQ-UY※1	ABL-L04R6-UN	ABL-L04R6-UY※1
Power supply		24VDC⎓ ±10%			
Rated load voltage&current※2		250VAC~ 50/60Hz 5A, 30VDC⎓ 5A			
Current consumption※3		≤ 20mA			
Output type		1a contact relay output			
Applied relay		PQ1a-24V [MATSUSHITA (Panasonic)]		G6B-1174P-FD-US [OMRON]	
No. of relay points		4-point			
Terminal type		Screwless			
Terminal pitch		10.2mm			
Indicator		Operation indicator: blue LED			
Applied cable	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)			
	Stranded wire※4	AWG22-16 (0.3 to 1.25mm^2) (60℃ only)			
Stripped wire length		8 to 10mm			
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)			
Insulation resistance	between coil-contacts	4,000VAC 50/60Hz for 1 minute		3,000VAC 50/60Hz for 1 minute	
	Between same contacts※5	1,000VAC 50/60Hz for 1 minute		1,000VAC 50/60Hz for 1 minute	
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes			
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times			
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times			
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: modified polyphenylene oxide			
Accessory		Jumper bar: 1			
Protection structure		IP20 (IEC standard)			
Approval		CE cULus			
Weight※6		Approx. 148g (approx. 92g)	Approx. 150g (approx. 94g)	Approx. 143g (approx. 87g)	Approx. 144g (approx. 88g)

◎ Rated load current 3A

Model		ABL-L01PA-NN ABL-L01PA-NY※1 ABL-L01PA-PN ABL-L01PA-PY※1	ABL-L01TN-NN ABL-L01TN-NY※1 ABL-L01TN-PN ABL-L01TN-PY※1	ABL-L04PA-UN ABL-L04PA-UY	ABL-L04TN-UN ABL-L04TN-UY	ABL-H16R6-NN ABL-H16R6-PN
Power supply		24VDC⎓ ±10%				
Rated load voltage&current※2		250VAC~ 50/60Hz 3A, 30VDC⎓ 3A				
Current consumption※3		≤8mA				≤20mA
Output type		1a contact relay output				
Applied relay		APAN3124 [MATSUSHITA(Panasonic)]	NYP24W-K [TAKAMISAWA(Fujitsu)]	APAN3124 [MATSUSHITA(Panasonic)]	NYP24W-K [TAKAMISAWA(Fujitsu)]	G6B-1174P-FD-US [OMRON]
No. of relay points		1-point		4-point		16-point
Terminal type		Screwless				
Terminal pitch		9.0mm (arranging over 2 units)		5.0mm		≥7.8mm
Indicator		Operation indicator: blue LED		Operation indicator: blue LED		Power indicator: red LED, operation indicator: blue LED
Applied cable	Solid wire	Ø0.6~Ø1.25mm (60℃ only)				
	Stranded wire※4	AWG22-16 (0.3~1.25mm^2) (60℃ only)				
Stripped wire length		8 to 10mm				
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)				
Dielectric strength	Between coil-contact	3,000VAC 50/60Hz for 1 minute				
	Between same contacts	1,000VAC 50/60Hz for 1 minute	750VAC 50/60Hz for 1 minute	1,000VAC 50/60Hz for 1 minute	750VAC 50/60Hz for 1 minute	1,000VAC 50/60Hz for 1 minute
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours				
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes				
Shock	Mechanical	1000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times				
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times				
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃				
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide		Terminal block, cover: polycarbonate / CASE&BASE: modified polyphenylene oxide
Accessory		—		Jumper bar: 1		Jumper bar: 2
Protection structure		IP20 (IEC standard)				
Approval		CE cULus				
Weight※6		Approx. 138g (approx. 21g)	Approx. 135g (approx. 21g)	Approx. 125g (approx. 72g)	Approx. 128g (approx. 75g)	Approx. 446g (approx. 348g)

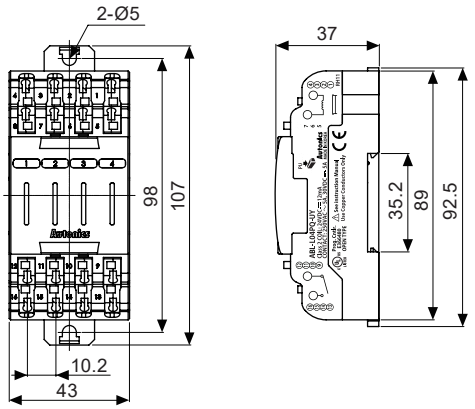
※1: This is for load protection and it is recommend to use at the inductive load.
※2: Relay load capacity for resistive load.
Please connect to a load using the same power supply. Connecting to a load from a different power supply may cause safety issues.
※3: The current consumption including LED current by one relay.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: In case of ABL-L04 □ - □Y (varistor installed type), this is 300VAC.
※6: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

(unit: mm)

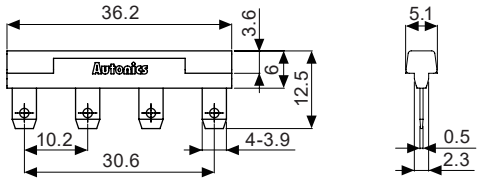
◎ Rated load current 5A

● ABL-L04PQ/R6-□



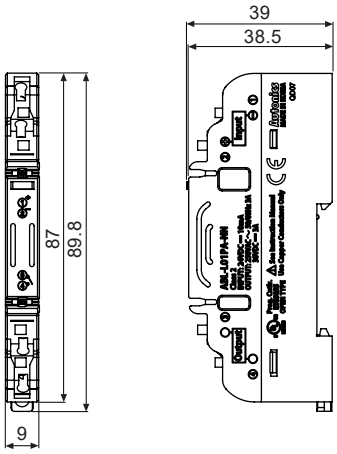
● **Jumper bar (model: JB-10.2-04L)**

※For the desired application (power/load common), jumper bar is sold separately.



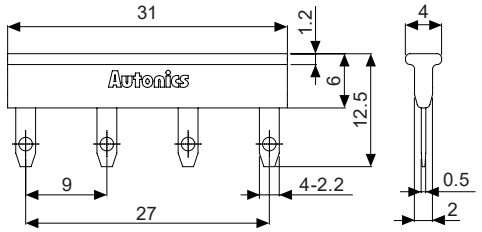
◎ Rated load current 3A

● ABL-L01TN/PA-□

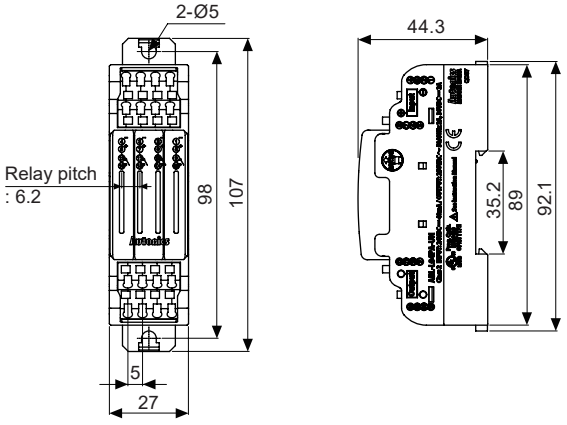


● **Jumper bar (model: JB-9.0-04L)**

※For the desired application (power/load common), jumper bar is sold separately.

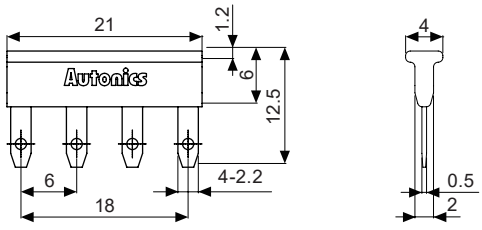


● ABL-L04TN/PA-□

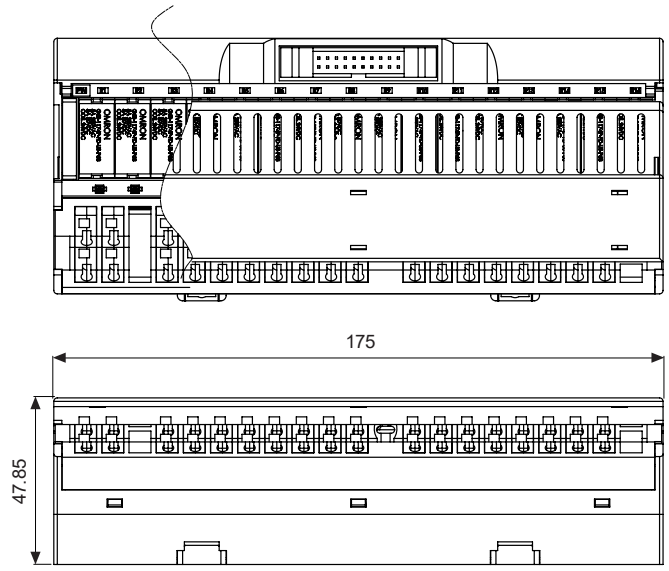


● **Jumper bar (model: JB-6.0-04L)**

※For the desired application (power/load common), jumper bar is sold separately.

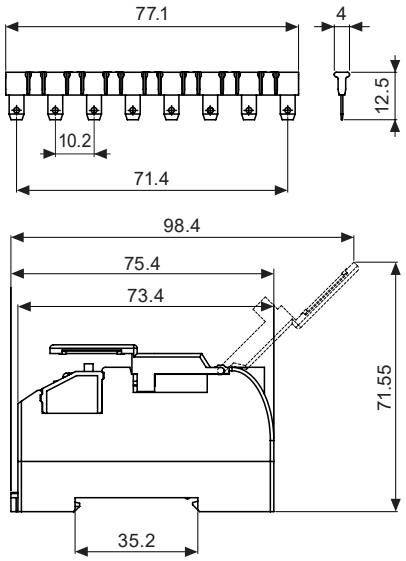


● **ABL-H16R6-NN/PN**



● **Jumper bar (model: JB-10.2-08L)**

※For the desired application (load common), jumper bar is sold separately.

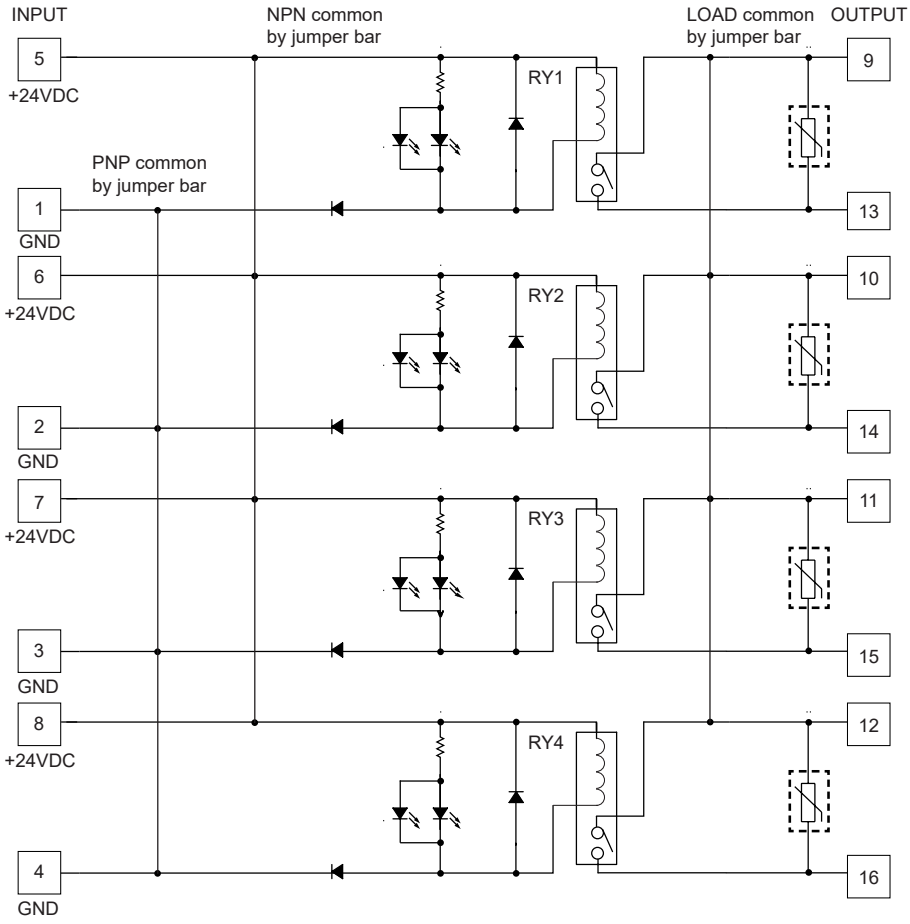


▣ Connections

◎ Rated load current 5A

● **ABL-L04PQ(R6)-UN(UY)**

※NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar.
Please refer to the '2. Using jumper bars' of '▣ Replacing Relay and Using Jumper Bar'.

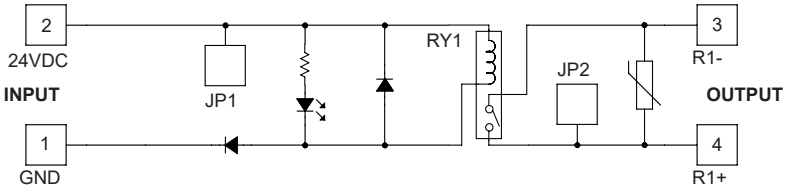


※ parts are only for ABL-L04 □-UY (varistor installed type).

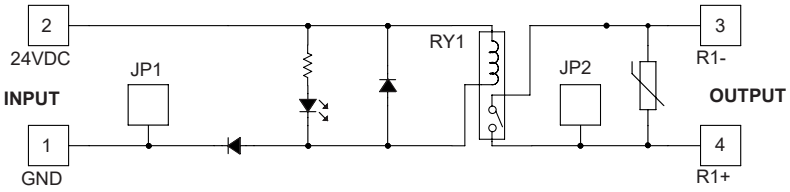
▣ Connections

◎ Rated load current 3A

● ABL-L01PA(TN)-NN(NY)

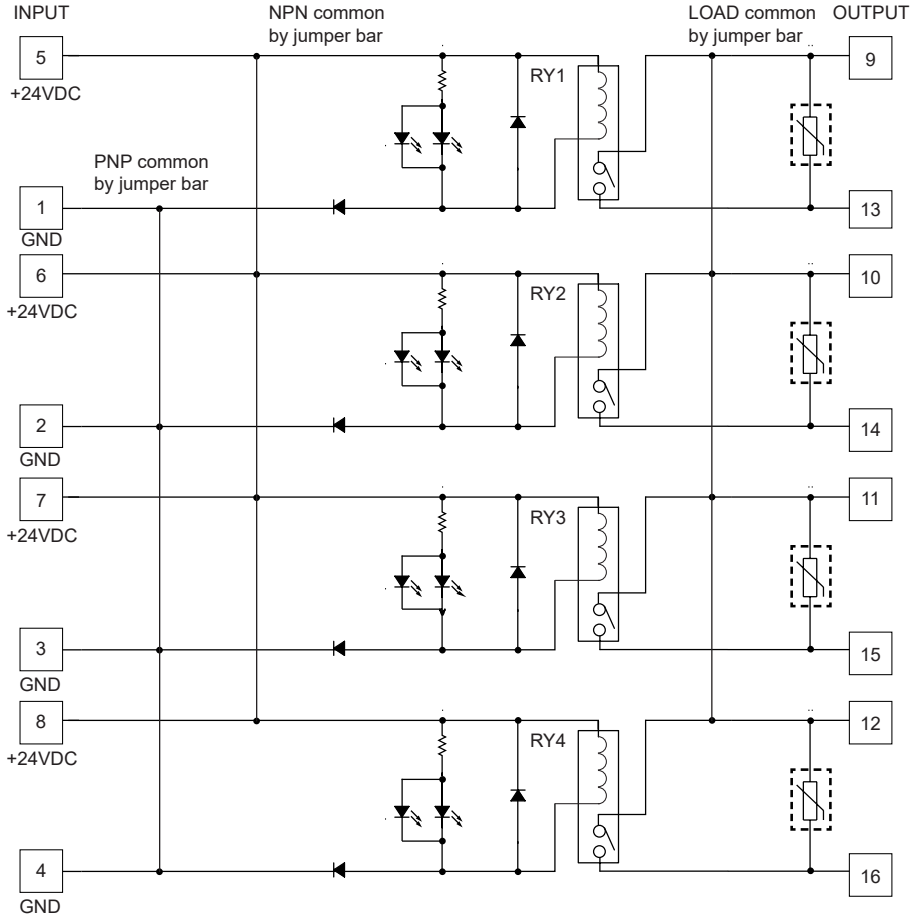


● ABL-L01PA(TN)-PN(PY)



● ABL-L04PA(TN)-UN(UY)

※NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar. Please refer to the '2. Using jumper bars' of '▣ Replacing Relay and Using Jumper Bar'.

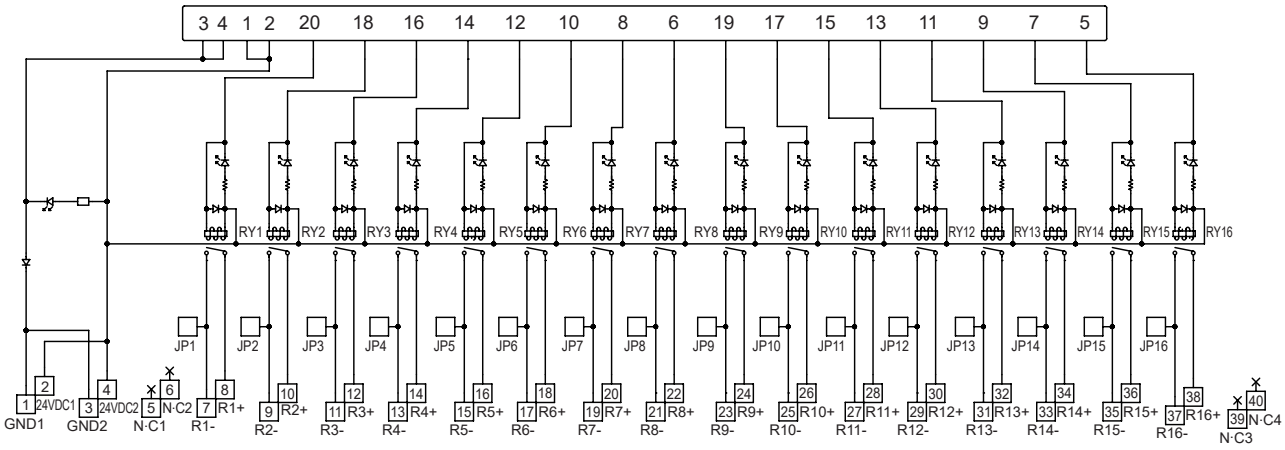


※ parts are only for ABL-L04 □-UY (varistor installed type).

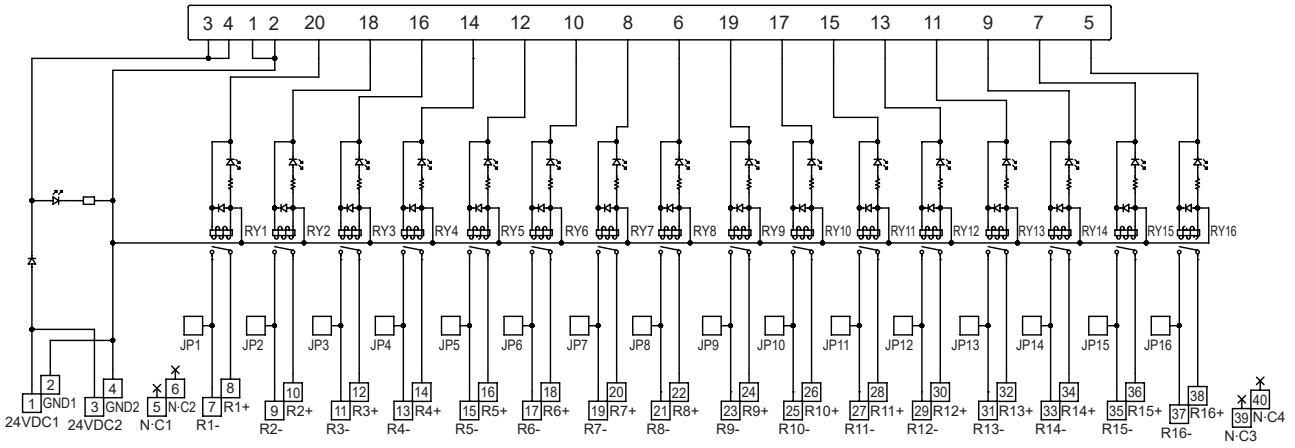
▣ Connections

◎ Rated load current 3A

● ABL-H16R6-NN



● ABL-H16R6-PN



▣ Connecting Crimp Terminals

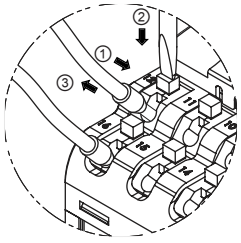
1. Connecting and removing end sleeve (ferrule terminal) crimp terminal at screwless type terminal block

● Connecting

1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

● Removing

1) Press and hold the catch above the terminal in direction ② with a flat head screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.



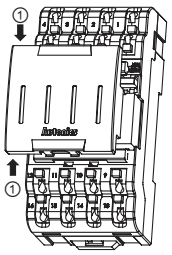
▣ Replacing Relay and Using Jumper Bar

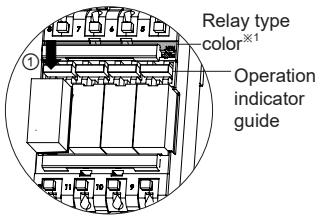
◎ Rated load current 5A

● ABL-L04PQ/R6-□

1. Replacing relays

1) Remove the protection cover.
2) Push the operation indicator guide in direction to remove the relay.
3) Insert a new relay to the case.
※1: The color of the jumper bar insertion holes indicate the relay types of the model.
(green: MATSUSHITA (Panasonic) PQ, navy blue: OMRON G6B)
※Only insert designated relays for each model.
※Execute above directions only for replacing relays. If not, it may cause relay damage.





2. Using jumper bars

Remove the protection cover and use the jumper bars accordingly.

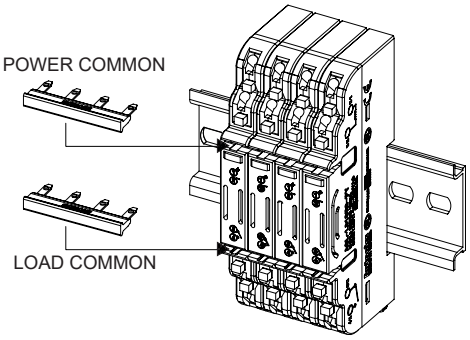
NPN (+ COM)	PNP (- COM)	LOAD COMMON
Insert the jumper bar to see NPN mark below terminals 8, 7, 6, 5.	Insert the jumper bar to see PNP mark below terminals 8, 7, 6, 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

◎ Rated load current 3A

● ABL-L01TN/PA-□

1. Using jumper bar

The right figure example is for 4 ABL-L01□ - □□ units with jumper bar.
For power common, insert a jumper bar to top. For load common, insert it to bottom.
※ABL-L01□ - □□ model is integrated relay. The unit cannot replace only relay.

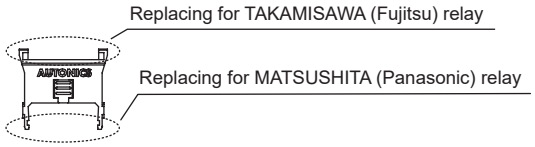


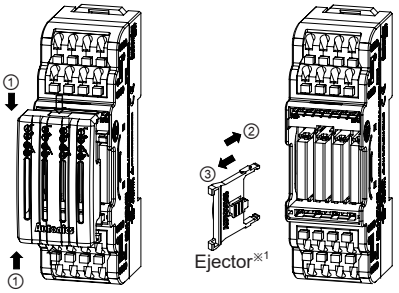
● ABL-L04PA/TN-□

1. Replacing relays

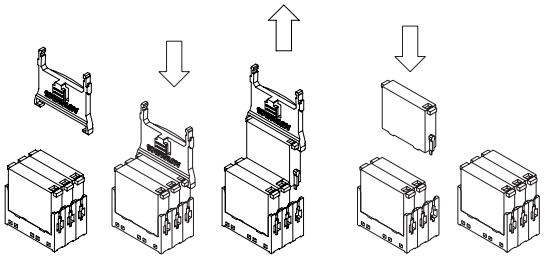
1) Pull the protection cover towards direction ①.
2) Insert the ejector as proper side to ② direction and pull it to ③ direction to remove.
3) Insert a new relay to the case.

※1: Two way ejector position for relay replacement



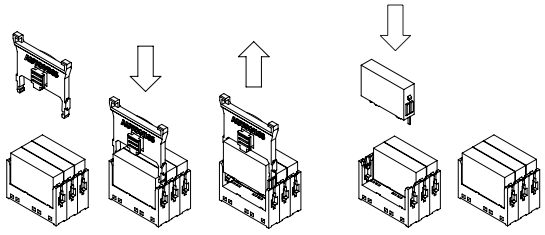


• Removal and insert TAKAMISAWA (Fujitsu) relay



< Removal > < Insert >

• Removal and insert MATSUSHITA (Panasonic) relay



< Removal > < Insert >

2. Using jumper bars

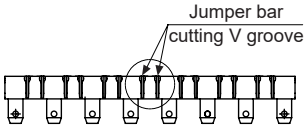
Remove the protection cover and use the jumper bars accordingly.

NPN (+ COM)	PNP (- COM)	LOAD COMMON
Insert the jumper bar to see NPN mark below terminals 8, 7, 6, 5.	Insert the jumper bar to see PNP mark below terminals 8, 7, 6, 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

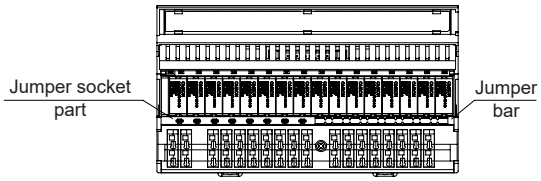
● ABL-H16R6-NN/PN

1. Using jumper bars

1) Cut the jumper bar to the user's desired length by cutting at the V dent (two) using a nipper.

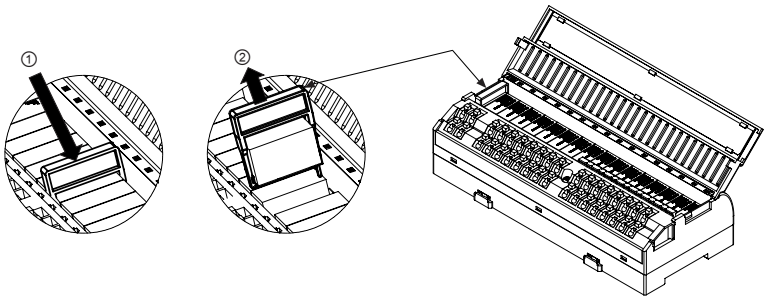


2) Insert the cut jumper bar to the desired jumper bar socket position.



2. Replacing relays

1) Insert the relay ejector at both ends of the installed relay to direction ①.
2) Pull the relay ejector to direction ② for removing the relay.



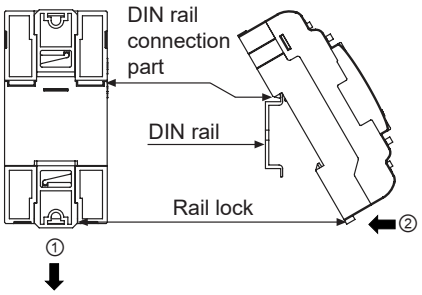
▣ Installation

※Each model appearance is different by no. of relay points.

1. Mounting and removal at DIN rail

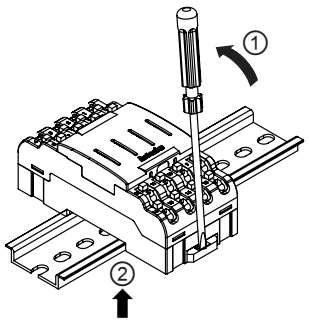
● Mounting

1) Pull the rail lock towards direction ①.
2) Attach the DIN rail connection part onto the DIN rail.
3) Push the unit towards direction ②, then push the rail lock in to lock toward the unit.



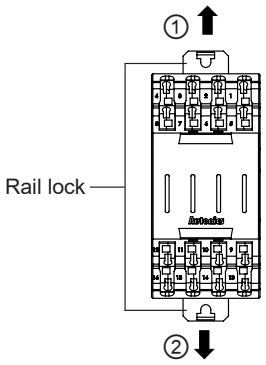
● Removal

1) Insert a screwdriver into the rail lock hole and push it towards direction ①.
2) Remove the unit by pulling the unit towards direction ②.



2. Mounting with screws (only for ABL-L04□-□□)

1) The unit can be mounted on panels using the rear rail locks.
2) Pull the rail locks towards directions ① and ②.
3) M4×10mm spring washer screws are recommended for installation. When using flat washers, use Ø9mm diameter washers. The tightening torque should be between 1.0 and 1.5N·m.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category III

Relay Terminal Block (screw type)

▣ Features

- For driving various loads using PLC output signals
- Easily check operation status and high luminance LED turns on with input signals
- Choose various relays depending on each load voltage or current
  - Easily replace relays using the relay removal lever (1-point relay terminal block)
- 2 mounting methods (DIN rail, screw mount)
- Tight installation and expansion possible with interlocking design (1-point relay terminal block)

※Please refer to 'I/O cable' in the I/O terminal block catalogue.

⚠ Please read "Safety Considerations" in instruction manual before using.

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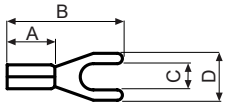
▣ Ordering Information

AB S – H 16 PA 5 – N N

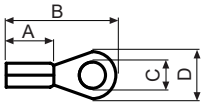
Varistor installation	N	Not installed
Input logic	C	COM None※1
	N	NPN (COM+)
	P	PNP (COM-)
Voltage of relay coil	No-mark	24VDC
	5	200/220VAC or 220VAC
	6	100/110VAC
Relay type	TN	**T**AKAMISAWA (Fujitsu) **N**YP
	PA	MATSUSHITA (Panasonic) **PA**
	PQ	MATSUSHITA (Panasonic) **PQ**
	R6	OM**R**ON G**6**B
	PH	MATSUSHITA (**P**anasonic) A**H**N
	R2	OM**R**ON G**2**R
Number of relay points	01	1
	04	4
	16	16
	32	32
Controller	S	Screw
	H	Hirose connector
Terminal block	S	Screw
Item	AB	Relay terminal block

※1: It is only for 1-point and 4-point models.
※This ordering information is only for reference. When selecting the model, refer to the specifications of each model.

▣ Terminal Specifications



< Spade terminal >



< Ring terminal >

◎ Rated load current 2/3A

(unit: mm)

	A	B	C	D	Applicable wire
Spade crimp terminal	≥4.1	≤16.0	≥3.0	≤5.9	AWG 22-16 (0.30 to 1.25mm²)
Ring crimp terminal	≥4.1	≤16.0	≥3.0	≤5.9	

◎ Rated load current 5A, 10A

	A	B	C	D	Applicable wire	
					Rated load current 5A	Rated load current 10A
Spade crimp terminal	≥4.1	≤16.0	≥3.0	≤7.0	AWG 19-14 (0.65 to 2.0mm²)	AWG 17-14 (1.0 to 2.0mm²)
Ring crimp terminal	≥4.1	≤16.0	≥3.0	≤7.0		

※Please use UL certified crimp terminals.

■ Specifications

◎ Rated load current 2A, 3A

Model		ABS-S01PA-CN ABS-S01TN-CN	ABS-S04PA-CN ABS-S04TN-CN	ABS-H16PA-NN(PN) ABS-H16TN-NN(PN)	ABS-H32PA-NN(PN) ABS-H32TN-NN(PN)
Power supply		24VDC⎓ ±10%			
Rated load voltage & current※1		250VAC~ 3A, 30VDC⎓ 3A			250VAC~ 2A, 30VDC⎓ 2A (2A/1-point, 8A/1COM)
Current consumption	PA type	≤8mA※2		≤8mA※2/≤13mA※3	
	TN type	≤8.5mA※2		≤8.5mA※2/≤13.5mA※3	
Output type		1a contact relay output			
Applicable relay		PA: APAN3124 [MATSUSHITA (Panasonic)], TN: NYP24W-K [TAKAMISAWA (Fujitsu)]			
No. of relay points		1-point	4-point	16-point	32-point (8-point/1COM)
No. of connector pins		—		20-pin	40-pin
Indicator		Operation indicator: Blue LED		Power indicator: Red LED, Operation and disconnection indicator: Blue LED	
Applicable wire		AWG22-16 (0.30 to 1.25mm^2)			
Insulation resistance		≥1,000MΩ (at 500VDC megger)			
Dielectric strength	Between coil-contact	3,000VAC 50/60Hz for 1 minute			
	Between same contacts	1,000VAC 50/60Hz for 1 minute※4			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours			
	Malfunction	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minute			
Shock	Mechanical	500m/s^2 (approx. 50G) in each X, Y, Z direction for 3 times			
	Malfunction	147m/s^2 (approx. 15G) in each X, Y, Z direction for 3 times			
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃			
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH			
Material		CASE & BASE: Polyamide 6, TERMINAL PIN: Brass	CASE & BASE: Modified Polyphenylene Oxide, TERMINAL PIN: Brass	CASE: MPPO, BASE: Polyamide 66 (G25%) TERMINAL PIN: Brass	
Tightening torque		0.5 to 0.6 N·m			
Accessories※5		—	Jumper bar: 2 (Model: JB-7.62-04)	Jumper bar: 2 (Model: JB-7.62-08)	—
Approval		CE cULus※6	CE cULus	CE cULus※6	
Weight※7	PA type	Approx. 314.5g (approx. 21.5g)※8	Approx. 104g (approx. 68g)	Approx. 307g (approx. 224g)	Approx. 438g (approx. 345g)
	TN type	Approx. 324.5g (approx. 22.2g)※8	Approx. 107g (approx. 71g)	Approx. 318g (approx. 235g)	Approx. 463g (approx. 370g)

◎ Rated load current 5A, 10A

Model		ABS-S01PQ-CN ABS-S01R6-CN	ABS-S01PH-CN	ABS-S01PH6-CN	ABS-S01PH5-CN	ABS-S01R2-CN	ABS-S01R26-CN	ABS-S01R25-CN
Power supply		24VDC⎓ ±10%	24VDC⎓	100/110VAC~	220VAC~	24VDC⎓	100/110VAC~	200/220VAC~
Rated load voltage & current※1		250VAC~ 5A, 30VDC⎓ 5A	250VAC~ 10A, 30VDC⎓ 10A※1					
Current consumption※2	PQ/R6 type	≤20mA	—					
	PH/R2 type	—	≤25mA	≤15mA	≤9mA	≤25mA	≤15mA	≤10mA
Output type		1a contact relay output	1c contact relay output					
Applicable relay		PQ: PQ1a-24V [MATSUSHITA (Panasonic)] R6: G6B-1174P-FD-US [OMRON]	AHN12024 [MATSUSHITA (Panasonic)]	AHN110X0 [MATSUSHITA (Panasonic)]	AHN110Y2 [MATSUSHITA (Panasonic)]	G2R-1-S24VDC [OMRON]	G2R-1-S100/ (110) VAC [OMRON]	G2R-1-S200/ (220) VAC [OMRON]
No. of relay points		1-point						
Applicable wire		AWG 19 to 14 (0.65 to 2.0mm^2)	AWG 17 to 14 (1.0 to 2.0mm^2)					
Insulation resistance		≥1,000MΩ (at 500VDC megger)						
Dielectric strength	Between coil-contact	4,000 VAC 50/60Hz for 1 minute※4	5,000VAC 50/60Hz for 1 minute					
	Between same contacts	1,000VAC 50/60Hz for 1 minute※4	1,000VAC 50/60Hz for 1 minute					
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 2 hours	1.5mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours					
	Malfunction	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 10 minute	1.5mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minute					
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times						
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times						
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃						
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH						
Material		CASE & BASE: PA6, TERMINAL PIN: Brass	CASE, BASE: PBT, TERMINAL PIN: Brass, Phosphor bronze					
Tightening torque		0.7 to 0.8N·m						
Approval		CE cULus※6						
Weight※8		PQ: Approx. 430g (approx. 31g), R6: Approx. 416g (approx. 30g)	Approx. 720g (approx. 53g)	Approx. 711g (approx. 52g)	Approx. 715g (approx. 52g)	Approx. 719g (approx. 53g)	Approx. 711g (approx. 52g)	Approx. 712g (approx. 52g)

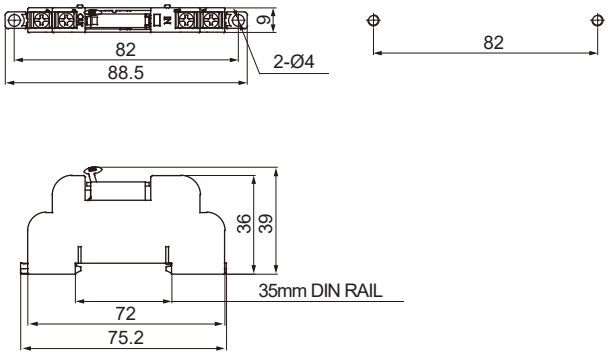
※1: Relay contact capacity for resistive load.
※2: The current consumption including LED current by one relay.
※3:'The current consumption including power LED at '※1'.
※4: R6 type (OMRON relay) is 3,000VAC.
TN type (Fujitsu relay) is 750VAC.
※5: ABS-H32□□-NN(PN) does not supply jumper bars.
※6: Except 30VDC of rated load voltage for cULus.
※7: The weight includes packaging. The weight in parenthesis is for unit only.
※8: The weight of 1-point relays is per 10 units with packing and the weight of parenthesis is per 1.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

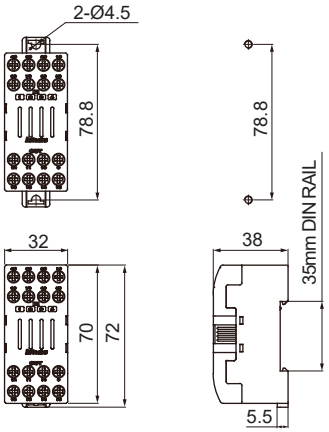
(unit: mm)

◎ Rated load current 2/3A

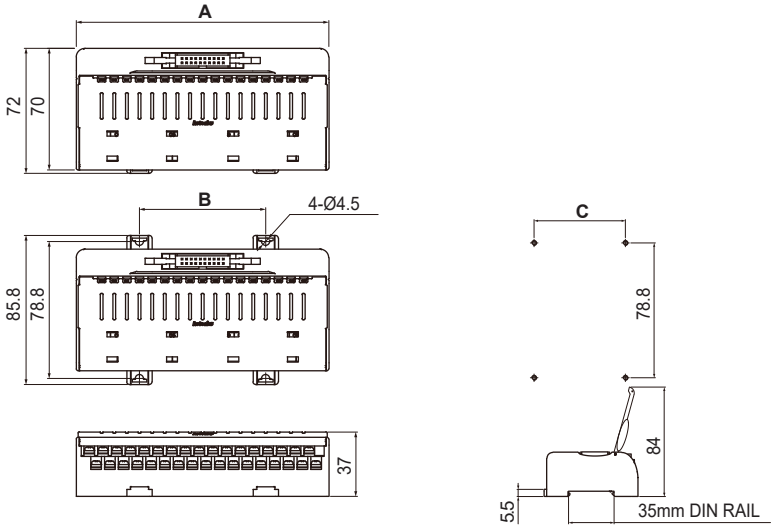
• ABS-S01PA-CN / ABS-S01TN-CN



●ABS-S04PA-CN / ABS-S04TN-CN

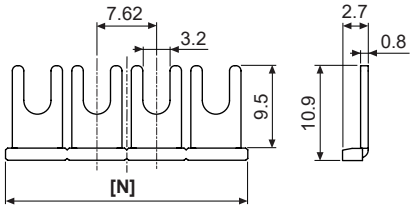


• ABS-H16PA-□N / ABS-H16TN-□N ●ABS-H32PA-□N / ABS-H32TN-□N



	ABS-H16	ABS-H32
A	140	173
B	70	100
C	70	100

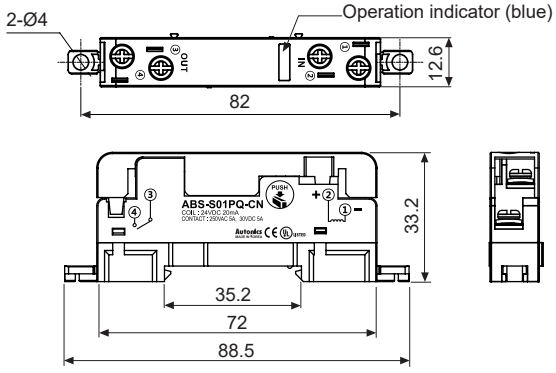
• Jumper bar (sold separately)



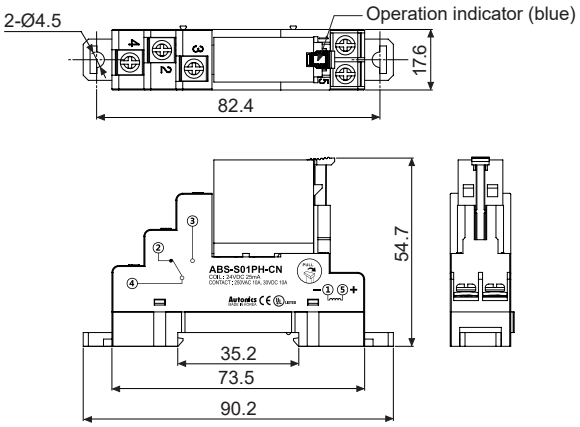
Model	JB-7.62-04	JB-7.62-08
No. of jumper bar pins	4	8
[**N**] size	29.5	60.0

◎ Rated load current 5A, 10A

• ABS-S01PQ-CN / ABS-S01R6-CN



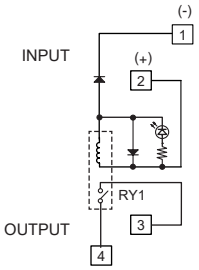
• ABS-S01PH□-CN / ABS-S01R2□-CN



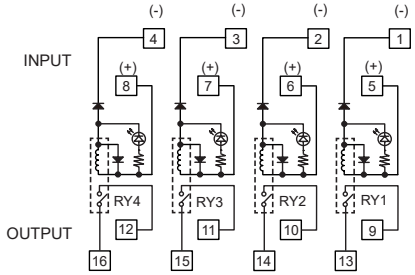
▣ Connections

◎ Rated load current 2/3A

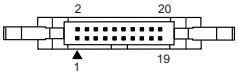
- **ABS-S01PA-CN / ABS-S01TN-CN**



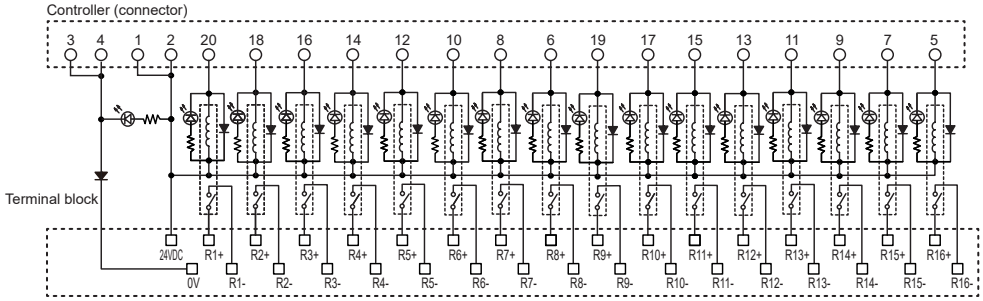
- **ABS-S04PA-CN / ABS-S04TN-CN**



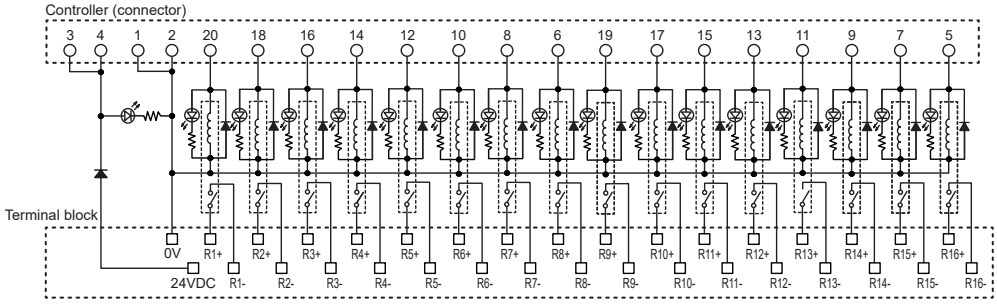
- **ABS-H16□-NN**



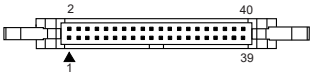
※Hirose connector socket : HIF3BA-20PA-2.54DSA



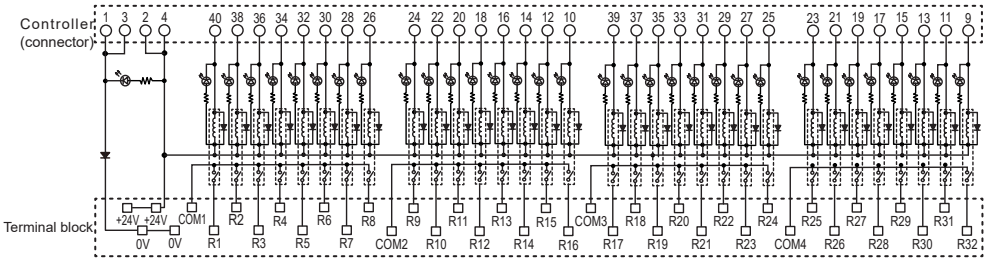
- **ABS-H16□-PN**



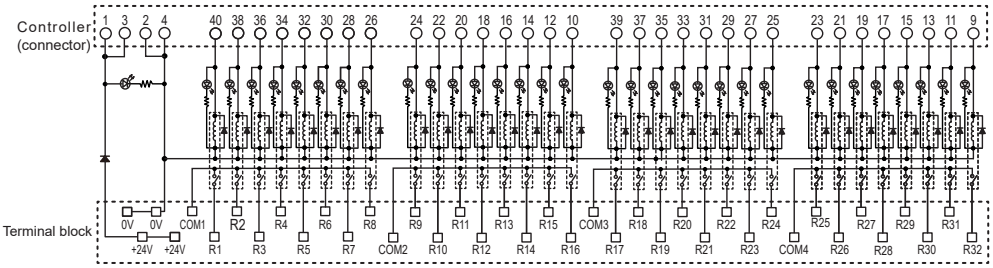
- **ABS-H32□-NN**



※Hirose connector socket : HIF3BA-40PA-2.54DSA



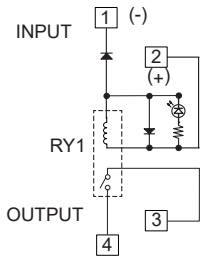
- **ABS-H32□-PN**



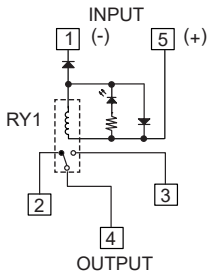
▣ Connections

◎ Rated load current 5A, 10A

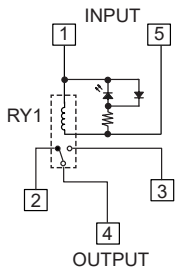
- **ABS-S01PQ-CN**
  ABS-S01R6-CN



- **ABS-S01PH-CN**
  ABS-S01R2-CN



- **ABS-S01PH6-CN**
  ABS-S01PH5-CN
  ABS-S01R26-CN
  ABS-S01R25-CN



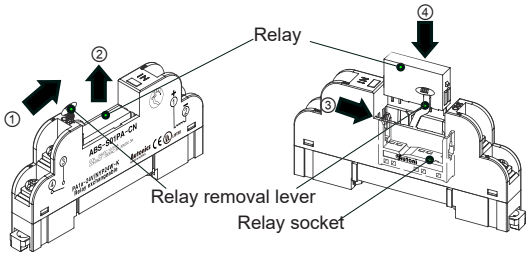
▣ Replacing Relays

◎ Rated load current 2/3A

- **ABS-S01PA-CN / ABS-S01TN-CN**

1) Pull the relay removal lever towards direction ① and the relay will pop up in direction ②.
2) Remove the relay and return the relay removal lever to its original position.
3) Check the socket position and insert the relay into the socket.

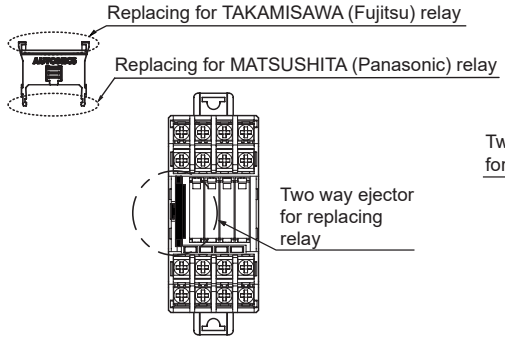
※If pulling the relay removal lever to left or right, the lever may be broken.



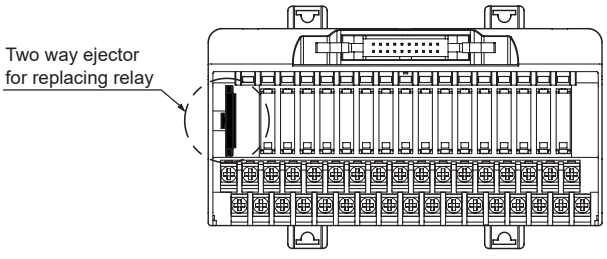
- **ABS-S04PA-CN / ABS-S04TN-CN**
- **ABS-H16PA-☐N / ABS-H16TN-☐N**
- **ABS-H32PA-☐N / ABS-H32TN-☐N**

• Two way ejector position for relay replacement

< Two way ejector >

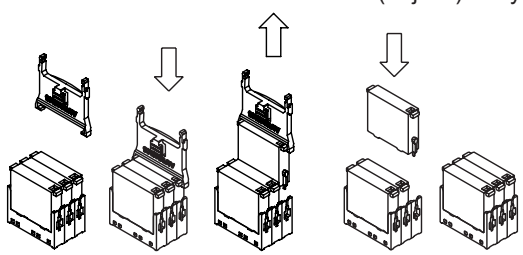


< ABS-S04 >



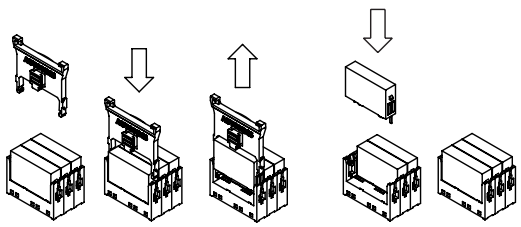
< ABS-H16 / ABS-H32 >

• Removal and insert TAKAMISAWA (Fujitsu) relay



< Removal > < Insert >

• Removal and insert MATSUSHITA (Panasonic) relay



< Removal > < Insert >

※Relay sockets are compatible with both TAKAMISAWA (Fujitsu) relay, NYP24W-K, and MATSUSHITA (Panasonic) relay, APAN3124.

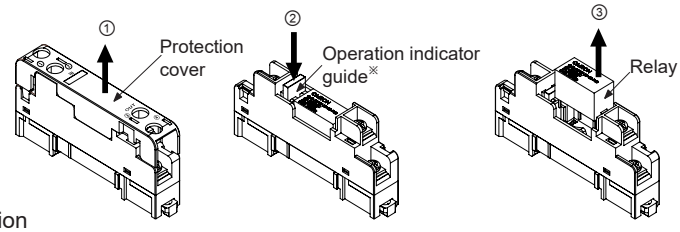
▣ Replacing Relays

◎ Rated load current 5A

- **ABS-S01PQ-CN / ABS-S01R6-CN**

1) Pull the protection cover towards direction ①.
2)Press the operation indicator guide in direction ② and remove the relay towards direction ③.
3) Insert a new relay into position.

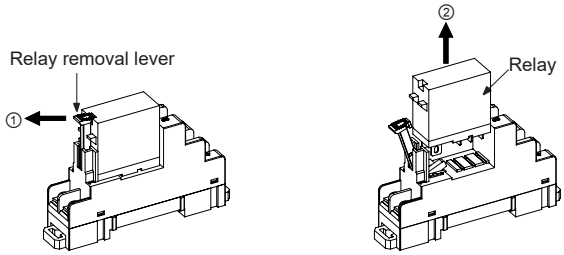
※Operation indicator guide is used for displaying operation status and removing relays



◎ Rated load current 10A

- **ABS-S01PH□-CN / ABS-S01R2□-CN**

1) Pull the relay removal lever towards direction ①. Remove the relay towards direction ②.
2) Insert a new relay into position.



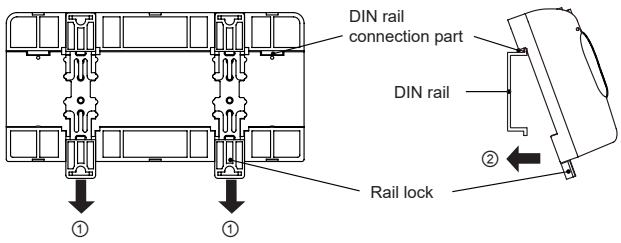
▣ Installation

※Each model appearance is different by no. of relay points.

◎ Mounting and Removal at DIN rail

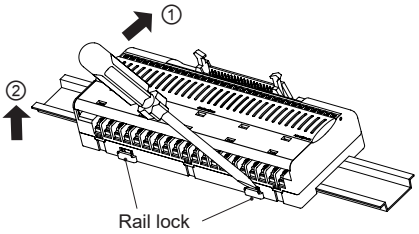
- Mounting

1)Pull the rail lock towards direction ①.
2)Attach the DIN rail connection hook onto the DIN rail.
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



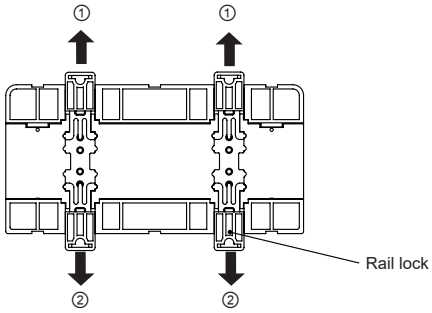
- Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ①.
2)Remove the unit by pulling the unit towards direction ②.



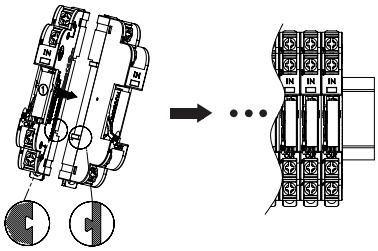
◎ Mounting with screws

1)The unit can be mounted on panels using the rear rail locks.
2)Pull the rail locks towards directions ① and ②.
3)M4 x 15mm spring washer screws are recommended for installation. When using flat washers, use Ø6mm diameter washers. The tightening torque should be between 7.14 and 10.2kgf·cm (0.7 to 1.0N·m).

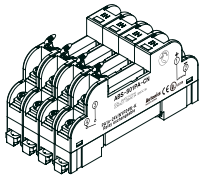


◎ Connecting multiple units (1-point relay terminal block)

Connect multiple units by locking the socket (凹) and peg (凸) together in direction ①.

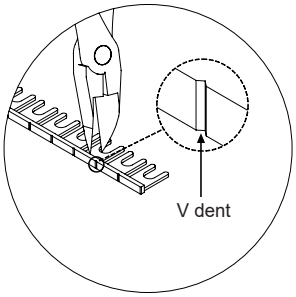


※E.g.

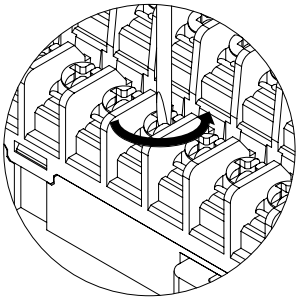


▣ Installing Jumper Bars (4, 16, 32-point relay terminal block)

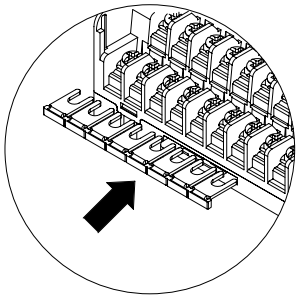
1)Cut the jumper bar to the user's desired length by cutting at the V dent using a nipper.



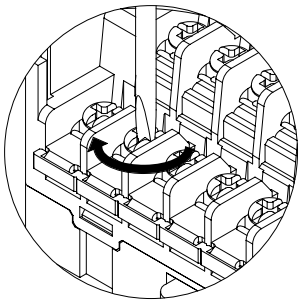
2)Unfasten all the screws of the terminals you wish to commonize.



3)Insert the jumper bar below the unfastened screws.



4)Tighten all the screws above the jumper bar.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category II

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

Specifacations

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^2,s,y,z each axis 3times
Storage Temperature	-30℃~ +90℃
Ambient Temperature	-25℃~ +70℃
Ambient Humidity	45 - 85% R.H
Weight	approx. 100g

Ordering Information

KMSR - ① ② ③ ④

① Input Voltage	**D**	4 - 32 VDC
	A	90 - 265 VAC
② Output Voltage	**S**	Single Phase
	D	DC

③ Load Current			
005	5A*	**040**	40A
010	10A	**050**	50A
020	20A	**060**	60A
025	25A	**100**	100A
030	30A		

④ Load Voltage			
	AC	2	90 - 240V
		4	90 - 480V
	DC	5	50V

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

Characteristics

DC Input / AC Output (90 - 240VAC)

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							

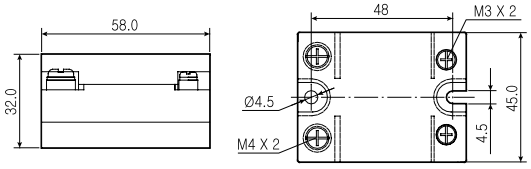
DC Input / AC Output (90 - 480VAC)

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							

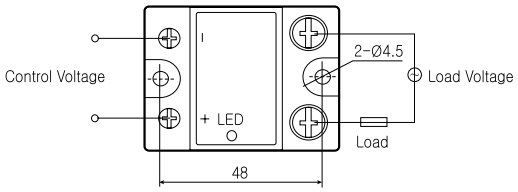
AC Input / AC Output (90 - 240VAC)									
Model#	KMSR-	AS0102	AS0202	AS0252	AS0302	AS0402	AS0502	AS0602	AS1002
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load Voltage	90 - 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

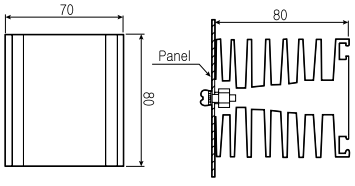


Connection Diagram

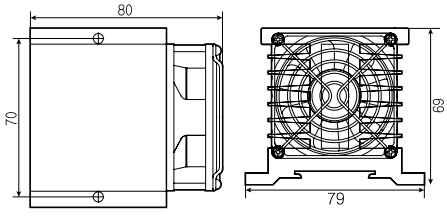


Optional Heatsink

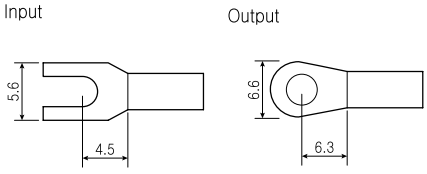
KSH-A040(25A-40A)



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	**D**	4 - 32 VDC
	A	90 - 265 VAC
② Output Voltage	**T**	Three Phase

③ Load Current			
010	10A	**040**	40A
020	20A	**050**	50A
025	25A	**060**	60A
030	30A	**100**	100A

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

Specifacations

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^2,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							

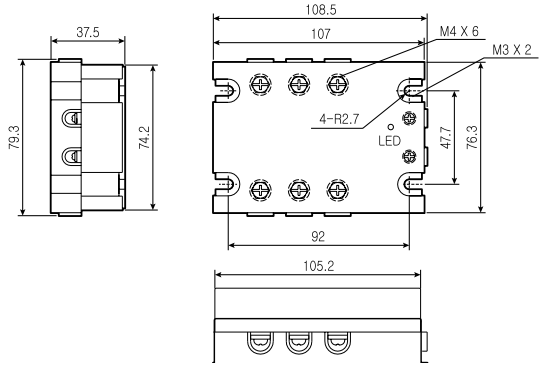
DC Input / AC Output (90 - 480VAC)

		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							

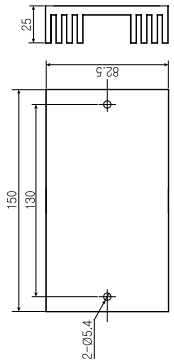
AC Input / AC Output (90 - 480VAC)									
		AT0104	**AT0204**	**AT0254**	**AT0304**	**AT0404**	**AT0504**	**AT0604**	**AT1004**
Input	Rated Control Voltage	90-265VAC							
	Pick-up Voltage	72VAC Minimum							
	Drop-out Voltage	60VAC Maximum							
	Input Current	15mA Maximum							
Output	Rated Load 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

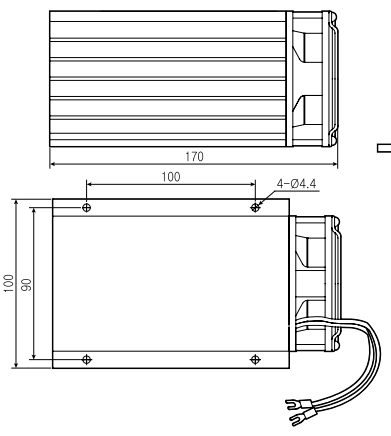


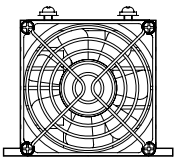
Optional Heatsink

KSH-B040(25A-40A)

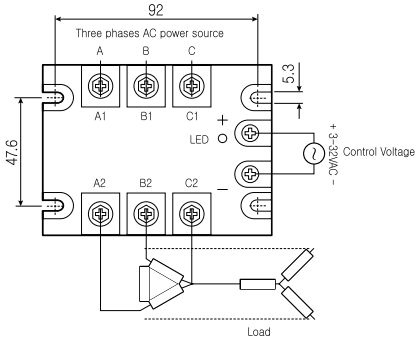


KSH-B100(40A-100A)



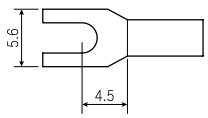


Connection Diagram

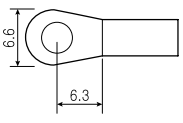


Terminals

Input



Output



KSR Series

Single Phase Solid State Relays

- Slim type single phase SSR
- LED indicator of the control input status
- Over heat alarm output of SSR with connector cable
- Heatsink integrated SSR available

Specifications

	Low Voltage	High Voltage
Release Time	Cycle of ½ 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^2	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temerature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

Ordering Information

KSR ① ② ③ ④ ⑤

① Load Voltage	**2**	90 - 240 VAC
	5	90 - 480 VAC

② Load Current			
005	5A	**050**	50A
015	15A	**060**	60A
030	30A	**080**	80A
040	40A		

③ Operate mode	**Z**	Zero Cross

④ Input voltage	**D**	24VDC(4-32V)
	A	220VAC(90-240V 50/60Hz)

⑤ Heatsink	**no mark**	Mount Type
	H	Heatsink Type
	HF	Heatsink + Fan Type

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
UL Certification		Only on 24VDC Input voltage, with and without heatsink

Characteristics

Input Ratings (Ambient Temp of 25°C)

		Control Voltage Levels		
Rated Control Voltage	Control Voltage Range	Pick-up Voltage	Drop-out Voltage	Input Current
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

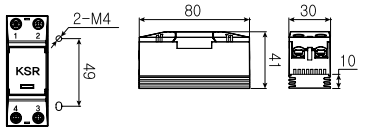
	2005	2015	2030	2040	2050	2060	2080
Rated Load Voltage	AC 220V (50/60Hz)						
Load Voltage Range	AC 90-240V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	600V						
Single Cycle Surge Current Resistance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

High Voltage Load

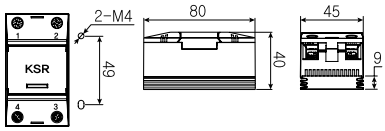
	5005	5015	5030	5040	5050	5060	5080
Rated Load Voltage	AC 440V (50/60Hz)						
Load Voltage Range	AC 90-480V (50/60Hz)						
Rated Load Current	5A	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C						
Peak Voltage	1,200V						
Single Cycle Surge Current Resistance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

Dimensions

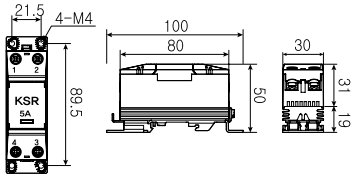
Mount Type 5 / 15 / 30A



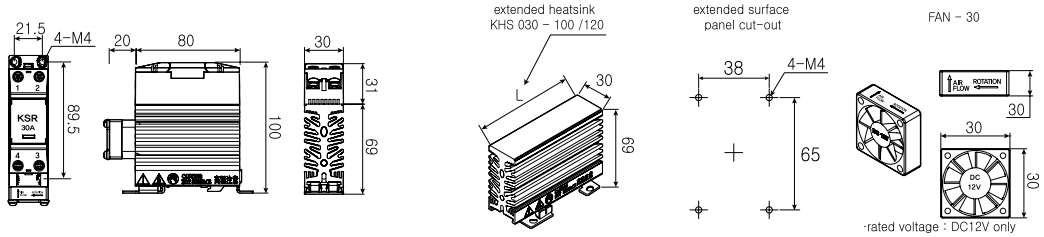
Mount Type 40 / 50 / 60 / 80A



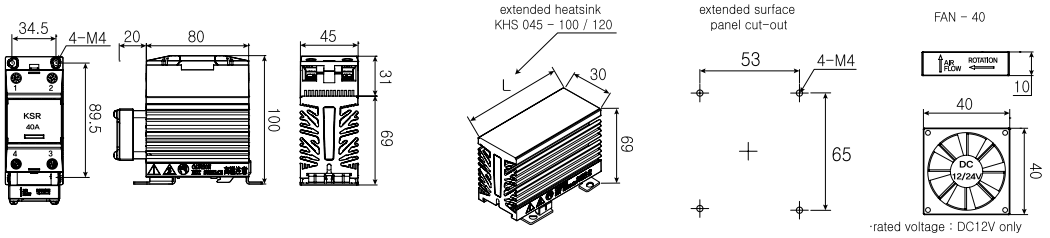
Heatsink Type 5A



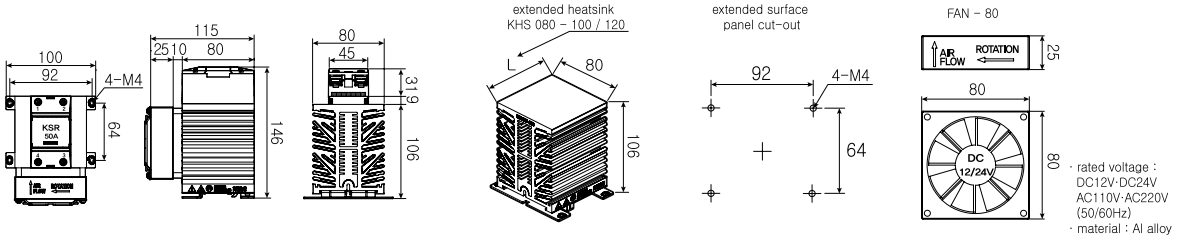
Heatsink + Fan Type 30A



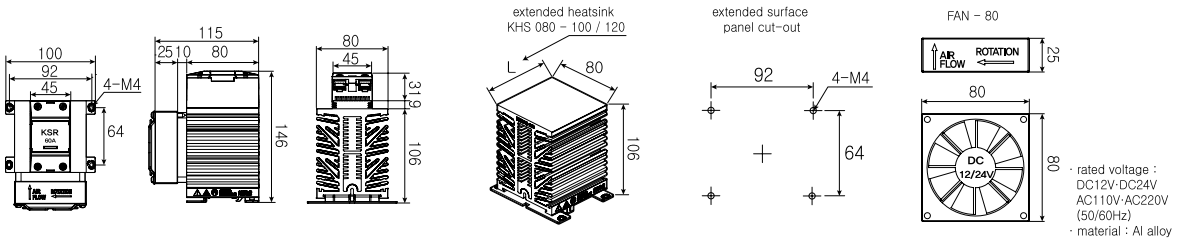
Heatsink + Fan Type 40A



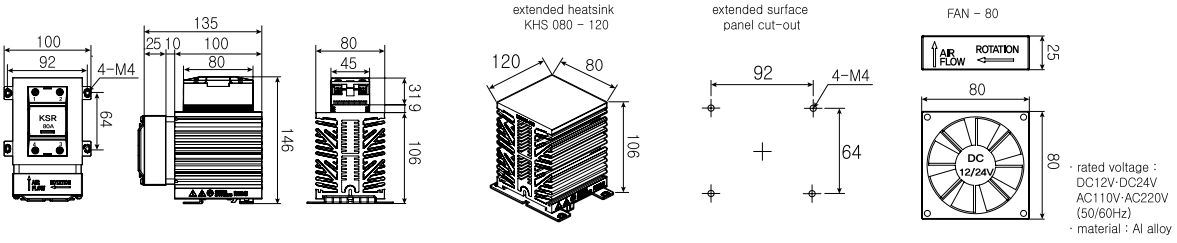
Heatsink + Fan Type 50A



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
- Over heat alarm output of SSR with connector cable
- Heatsink integrated SSR available
- Clip cover of IP20 touch protection

Specifications

	Low Voltage	High Voltage
Release Time	Cycle of ½ 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/s²	
Storage Temperature	-30 - +100°C (non-condensing)	
Ambient Temerature	-30 - +80°C (non-condensing)	
Ambient Humidity	45 - 85%RH	

Ordering Information

KSC- ① ② ③ ④ ⑤

① Load Voltage		
	2	90 - 240 VAC
	5	90 - 480 VAC

② Load Current			
015	15A	**050**	50A
030	30A	**060**	60A
040	40A	**080**	80A

③ Operate mode		
	Z	Zero Cross

④ Input voltage		
	D	24VDC(4-32V)
	A	220VAC(90-240V 50/60Hz)

⑤ Heatsink		
	no mark	Mount Type
	H	Heatsink Type
	HF	Heatsink + Fan Type

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)

		Operational Voltage Range		
Rated Control Voltage	Control Voltage Range	Pick-up Voltage	Drop-out Voltage	Input Current
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

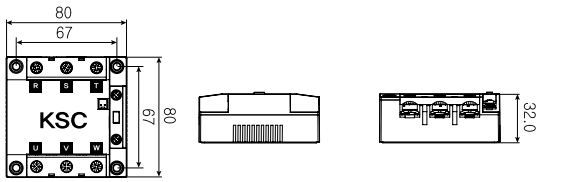
	2015	2030	2040	2050	2060	2080
Rated Load Voltage	220VAC (50/60Hz)					
Load Voltage Range	90-240VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	600V					
Single Cycle Surge Current Resistance	260	420		520	580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

High Voltage Load

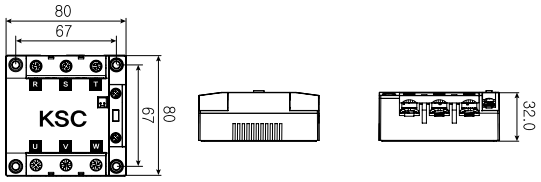
	5015	5030	5040	5050	5060	5080
Rated Load Voltage	440VAC (50/60Hz)					
Load Voltage Range	90-480VAC (50/60Hz)					
Rated Load Current	15A	30A	40A	50A	60A	80A
Load Current Ragne	0.5A - Rated Current @ Ambient Temp of 25°C					
Peak Voltage	1,200V					
Single Cycle Surge Current Resistance	250	370		500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

Dimensions

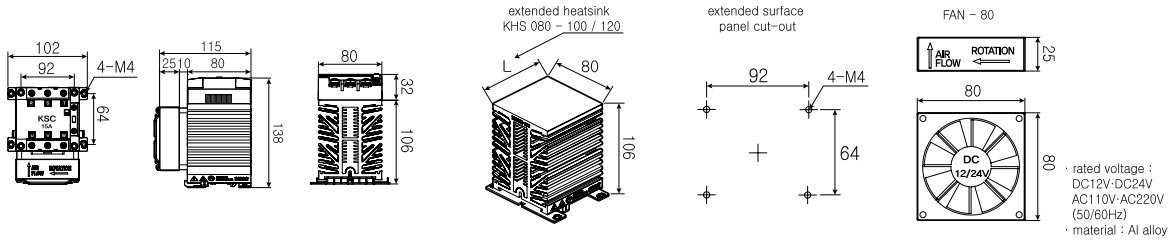
Mount Type 15 / 30A



Mount Type 40 / 50 / 60 / 80A

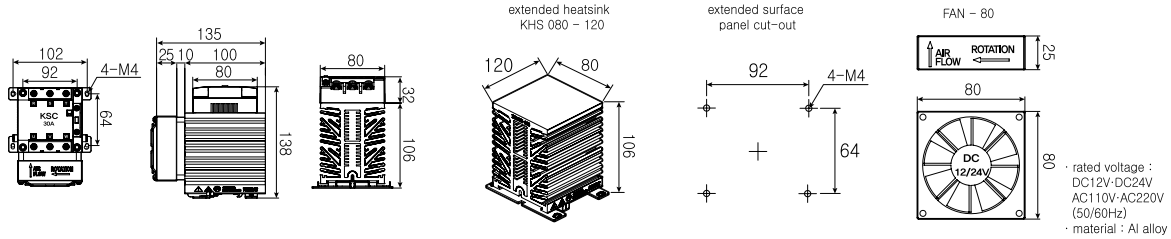


Heatsink Type 15A



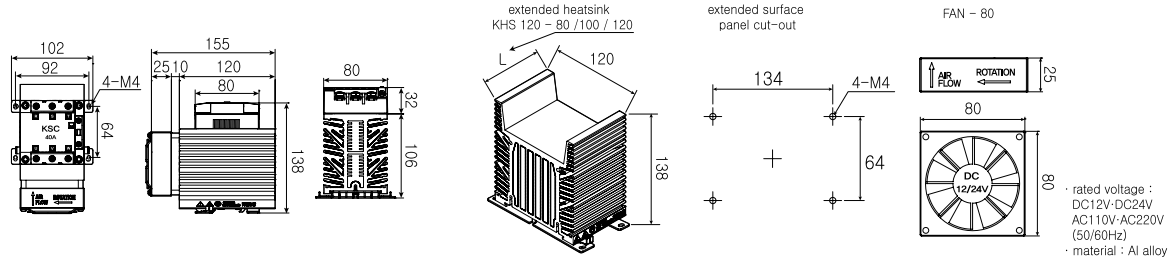
· rated voltage : DC12V·DC24V AC110V·AC220V (50/60Hz)
· material : Al alloy

Heatsink Type 30A



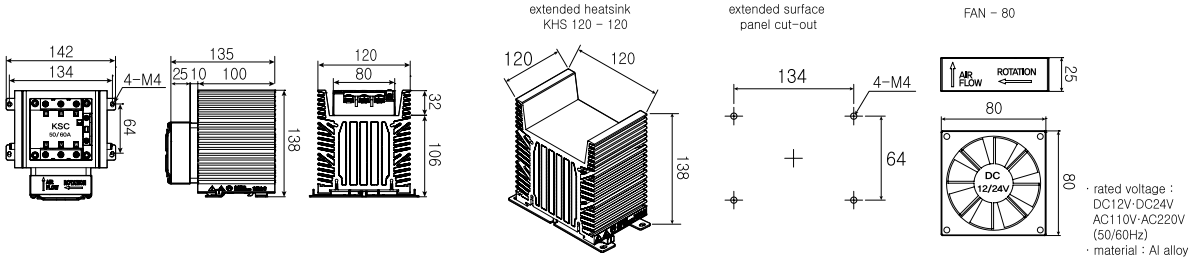
· rated voltage : DC12V·DC24V AC110V·AC220V (50/60Hz)
· material : Al alloy

Heatsink Type 40A



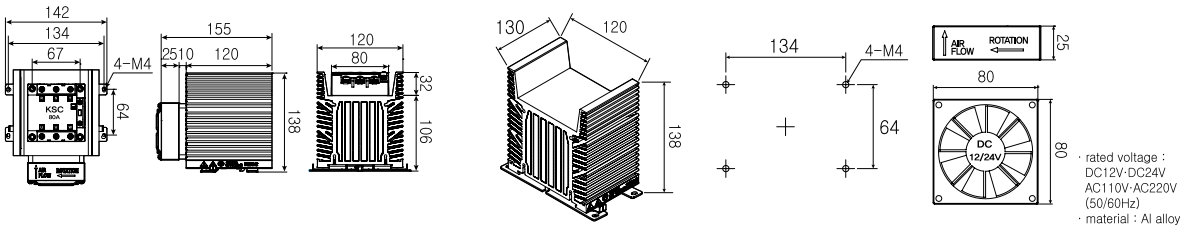
· rated voltage : DC12V·DC24V AC110V·AC220V (50/60Hz)
· material : Al alloy

Heatsink Type 50 / 60A



· rated voltage : DC12V·DC24V AC110V·AC220V (50/60Hz)
· material : Al alloy

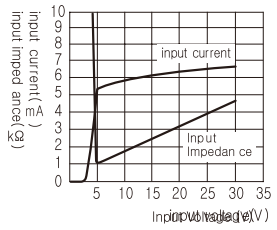
Heatsink Type 80A



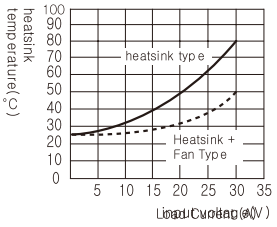
· rated voltage : DC12V·DC24V AC110V·AC220V (50/60Hz)
· material : Al alloy

KSR & KSC Series

Input current and Impedance



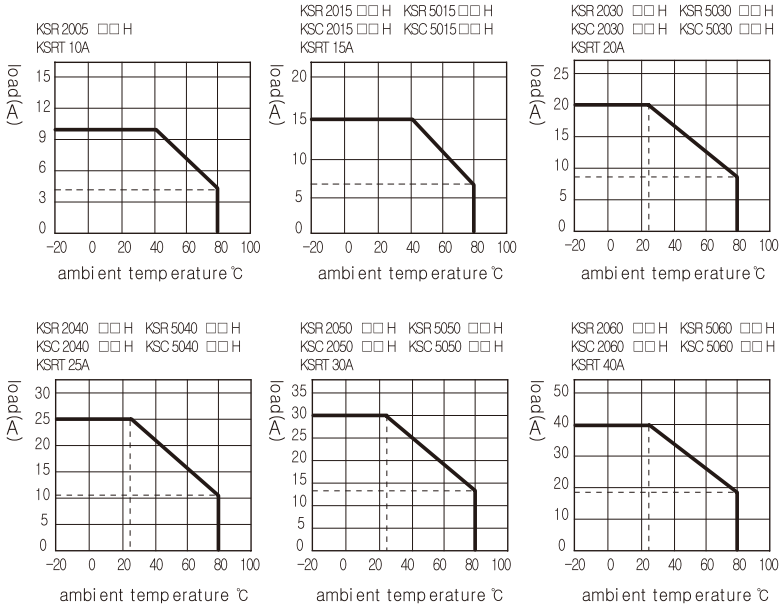
Heatsink type & Heatsink + Fan type



※(ambient temperature 25°C) ertical mounting

☞(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

Single phase, Heatsink separated type SSR

NEW

▣ Features

- Increase user convenience with general and small design
- Superior dielectric strength : 4,000VAC
- Improved reliability by maximizing heat protection efficiency with ceramic board
- Supports Zero cross turn-on/Random turn-on type
- Checks input status by Input LED(green)

⚠ **Please read "Caution for your safety" in operation manual before using.**

▣ Ordering information

SR	1	-	1	4	20	R

Function	No Mark	Zero cross turn-on
	R	Random turn-on
Rated load current (resistive load)	15	15A
	25	25A
	40	40A
	50	50A
	75	75A
Load voltage(rated)	2	24-240VAC
	4	48-480VAC
Input voltage(rated)	1	4-30VDC
	4	90-240VAC
Control phase	1	Single phase
Item	SRC	Solid State Relay(detachable heatsink type)

Model	Input voltage	Rated load current	Load voltage	Zero cross/Random turn-on
SR1-1215	4-30VDC	15A	24-240VAC	Zero cross turn-on
SR1-4215	90-240VAC			
SR1-1225	4-30VDC	25A		
SR1-4225	90-240VAC			
SR1-1240	4-30VDC	40A		
SR1-4240	90-240VAC			
SR1-1250	4-30VDC	50A		
SR1-4250	90-240VAC			
SR1-1275	4-30VDC	75A		
SR1-4275	90-240VAC			
SR1-1415	4-30VDC	15A	48-480VAC	Zero cross turn-on
SR1-1415R				Random turn-on
SR1-4415	90-240VAC			Zero cross turn-on
SR1-1425	4-30VDC	25A		Zero cross turn-on
SR1-1425R				Random turn-on
SR1-4425	90-240VAC			Zero cross turn-on
SR1-1440	4-30VDC	40A		Zero cross turn-on
SR1-1440R				Random turn-on
SR1-4440	90-240VAC			Zero cross turn-on
SR1-1450	4-30VDC	50A		Zero cross turn-on
SR1-1450R				Random turn-on
SR1-4450	90-240VAC			Zero cross turn-on
SR1-1475	4-30VDC	75A		Zero cross turn-on
SR1-1475R				Random turn-on
SR1-4475	90-240VAC			Zero cross turn-on

▣ Specifications

◎ Input

		4-30VDC input voltage	90-240VAC input voltage
Input voltage range		4-32VDC	85-264VACrms(50/60Hz)
Max. input current		9mA(Zero cross turn-on), 13mA(Random turn-on)	7mArms(240VACrms)
Pick-up voltage		4VDC	85VACrms
Drop-out voltage		1VDC	10VACrms
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms	
Turn-off time		Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms

◎ Output

		24-240VAC load voltage					48-480VAC load voltage				
Load voltage range(50/60Hz)		24-264VACrms(50/60Hz)					48-528VACrms(50/60Hz)				
Rated load current Ta=25℃	Resistive load (AC-51)	15Arms	25Arms	40Arms	50Arms	75Arms	15Arms	25Arms	40Arms	50Arms	75Arms
	Motor load (AC-53a)	—					5Arms	8Arms		15Arms	
Min. load current		0.15Arms	0.2Arms		0.5Arms		0.5Arms				
Max. 1cycle surge current (60Hz)		190A	270A	330A	1000A		300A	500A		1000A	
Max. non-repetitive surgecurrent(I^2t, t=8.3ms)		150A^2S	300A^2S	500A^2S	4000A^2S		350A^2S	1000A^2S		4000A^2S	
Peak voltage(non-repetitive)		600V					1200V(zero cross turn-on), 1000V(random turn-on)				
Leakage current(Ta=25℃)		Max. 10mArms									
Output on voltage drop[Vpk] (Max. load current)		Max. 1.6V									
Static off-state dv/dt		500V/μs									

※ For controlling motor load, use the product which load voltage range is within 48-480VACrms.

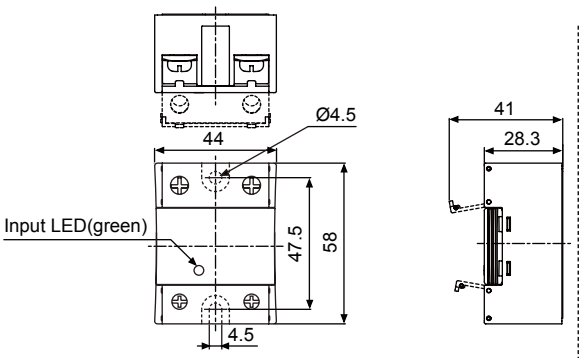
◎ General Specifications

Certification		UL508, CSA22.2 No.14 and IEC/EN 60947-4-3
Dielectric strength(Vrms)		4000VAC 50/60Hz 1min.(input-output, input/output-case)
Insulation resistance		Min. 100MΩ(at 500VDC megger)
Input LED		Green
Environ -ment	Ambient temperature	-30 to 80℃, storage: -30 to 100℃(Rated load current capacity is different based on the surrounding temperature. Refer to '▣ SSR Derating curve'.)
	Ambient humidity	45 to 85%RH, storage: 45 to 85%RH
Input terminal connection		Min. 1×0.5mm^2(1×AWG20) Max. 1×1.5mm^2(1×AWG16) or 2×1.5mm^2(2×AWG16)
Output terminal connection		Min. 1×1.5mm^2(1×AWG16) Max. 1×16mm^2(1×AWG6) or 2×6mm^2(2×AWG10)
Input terminal fixed torque		0.75 to 0.95N·m
Output terminal fixed torque		1.6 to 2.2N·m
Unit weight		Approx. 73g

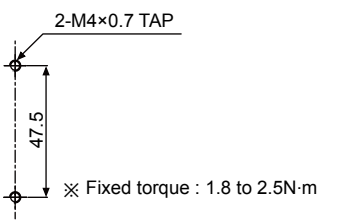
※ For wiring the terminal, an O-ring terminal must be used.
※ Environment resistance is rated at no freezing or condensation.

▣ Dimensions

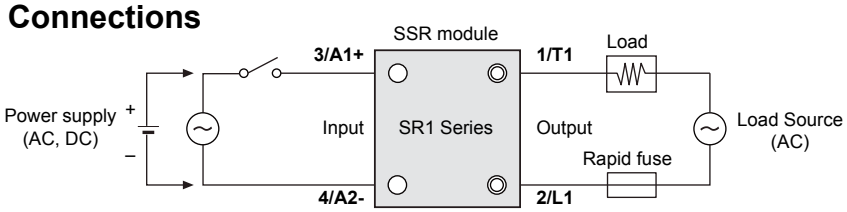
(unit: mm)



◎ Hole cut-out for panel front mounting

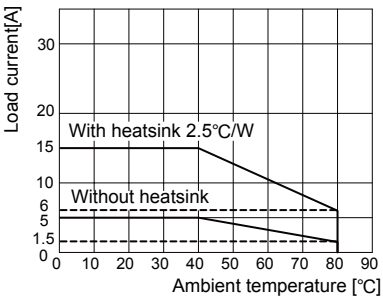


▣ Connections

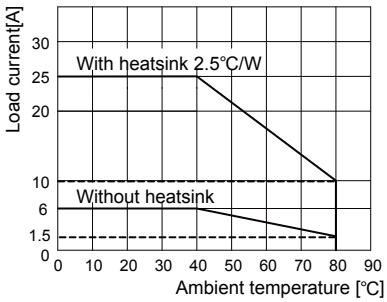


▣ SSR Characteristic curve

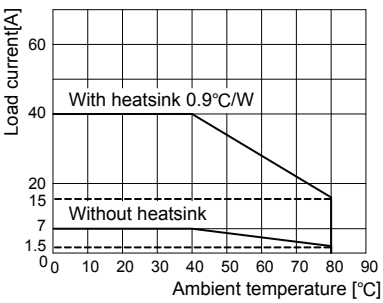
◎ SR1-1215/4215



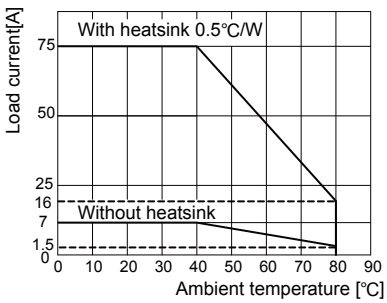
◎ SR1-1225/4225



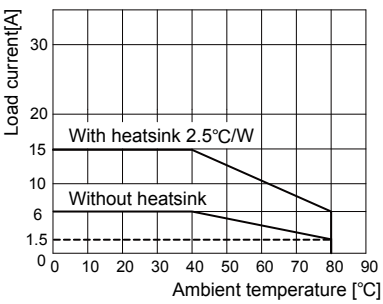
◎ SR1-1240/4240



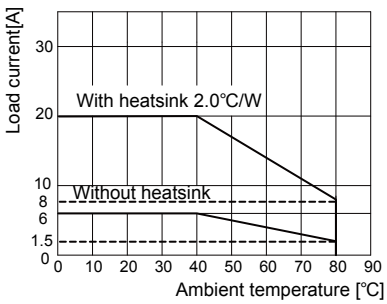
◎ SR1-1275/1475/1475R/4275/4475



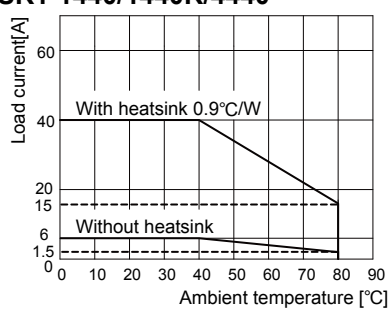
◎ SR1-1415/1415R/4415



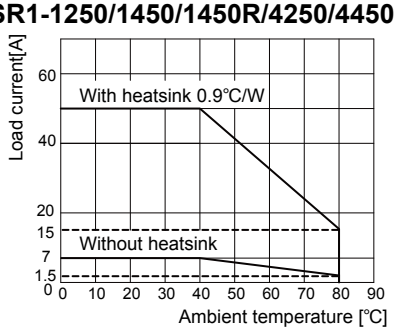
◎ SR1-1425/1425R/4425



◎ SR1-1440/1440R/4440



◎ SR1-1250/1450/1450R/4250/4450



▣ Proper usage

High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

Caution for using

1. Attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
3. Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
4. Connect the proper cable for the rated load current with output terminal.
5. Use rapid fuse of which I^2t is under 1/2 of SSR I^2t in order to protect the unit from load's short- circuit current.
6. In case of a short-circuit please replace the fuse with a 1/2 of SSR I^2t value specified semiconductor protective type.
7. In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
8. When selecting phase control with random turn-on model, install the noise filter between load and load's source.
9. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. The signal input of the 4-30VDC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
12. To attach the heatsink, use Thermal Grease as below or that of equal specification.
    ※ Thermal Grease: GE TOSHIBA(YG6111), KANTO-KASEI(FLOIL G-600), SHINETSU(G746)
13. Proper application environment (Avoid following environments to install)

① Where temperature/humidity is beyond the specification
② Where dew condensation occurs due to temperature change
③ Where inflammable or corrosive gas exists
④ Where direct rays of light exist
⑤ Where severe shock, vibration or dust exists
⑥ Where near facilities generating strong magnetic forces or electric noise

14. Installation environment

① It shall be used indoor
② Altitude Max. 2,000m
③ Pollution Degree 2
④ Installation Category III

3-Phase, Detachable/Integrated Heatsink Type SSR

▣ Features

- Two mounting hole types and sizes
- Alarm output (overheating): Alarm output indicator (red LED), disconnect standard output, alarm output
- Dielectric strength: 4000 VAC (also 2,500VAC model)
- High heat dissipation efficiency with ceramic PCB andintegrated heatsink
- Zero cross turn-on, random turn-on models available
- Input indicator (green LED)
- Varous mounting methods (DIN rail, panel) - SRH2/SRH3 series
  *DIN rail mount not available for 50 A, 75 A load current models

Please read "Safety Considerations" in operation manual before using.

▣ Ordering Information

SR **H** **3** **–** **1** **4** **15** **R**

Function	**No mark**	Zero cross turn-on
	R	Random turn-on
Rate load current (Resistive load)	**15**	15A
	30	30A
	40	40A
	50	50A
	75	75A
Rated load voltage	**2**	24-240VAC
	4	48-480VAC
Rated input voltage	**1**	4-30VDC
	2	24VAC
	4	90-240VAC
Control phase	**2**	3-phase (2-pole)
	3	3-phase (3-pole)
Type	**No mark**	Detachable heatsink type
	H	Integrated heat sink type
Item	**SR**	Solid State Relay

Model	Rated input voltage	Rated load current	Rated load voltage	Function
SR(H)2-1215	4-30VDC	15A	24-240VAC	Zero cross turn-on
SR(H)3-1215				
SR(H)2-4215	90-240VAC			
SR(H)3-4215				
SR(H)2-1230	4-30VDC	30A		
SR(H)3-1230				
SR(H)2-4230	90-240VAC			
SR(H)3-4230				
SR(H)2-1250	4-30VDC	50A		
SR(H)3-1250				
SR(H)2-4250	90-240VAC			
SR(H)3-4250				
SR(H)2-1275	4-30VDC	75A		
SR(H)3-1275				
SR(H)2-4275	90-240VAC			
SR(H)3-4275				

3-Phase, Detachable/Integrated Heatsink Type SSR

Model	Rated input voltage	Rated load current	Rated load voltage	Function
SR(H)2-1415	4-30VDC	15A	48-480VAC	Zero cross turn-on
SR(H)3-1415				
SR(H)2-1415R				Random turn-on
SR(H)3-1415R				
SR(H)2-2415	24VAC			Zero cross turn-on
SR(H)3-2415				
SR(H)2-4415	90-240VAC			Zero cross turn-on
SR(H)3-4415				
SR(H)2-1430	4-30VDC	30A		Zero cross turn-on
SR(H)3-1430				
SR(H)2-1430R				Random turn-on
SR(H)3-1430R				
SR(H)2-2430	24VAC			Zero cross turn-on
SR(H)3-2430				
SR(H)2-4430	90-240VAC			Zero cross turn-on
SR(H)3-4430				
SR(H)2-1440	4-30VDC	40A		Zero cross turn-on
SR(H)3-1440				
SR(H)2-1440R				Random turn-on
SR(H)3-1440R				
SR(H)2-2440	24VAC			Zero cross turn-on
SR(H)3-2440				
SR(H)2-4440	90-240VAC			Zero cross turn-on
SR(H)3-4440				
SR(H)2-1450	4-30VDC	50A		Zero cross turn-on
SR(H)3-1450				
SR(H)2-1450R				Random turn-on
SR(H)3-1450R				
SR(H)2-2450	24VAC			Zero cross turn-on
SR(H)3-2450				
SR(H)2-4450	90-240VAC			Zero cross turn-on
SR(H)3-4450				
SR(H)2-1475	4-30VDC	75A		Zero cross turn-on
SR(H)3-1475				
SR(H)2-1475R				Random turn-on
SR(H)3-1475R				
SR(H)2-2475	24VAC			Zero cross turn-on
SR(H)3-2475				
SR(H)2-4475	90-240VAC			Zero cross turn-on
SR(H)3-4475				

▣ Specifications

◎ Input

Rated input voltage range		**4-30VDC⎓**	**24VACrms～ (50/60Hz)**	**90-240VACrms～ (50/60Hz)**
Input voltage range		4-32VDC⎓	19-26.4VACrms～ (50/60Hz)	85-264VACrms～ (50/60Hz)
Max. input current		25mA	15mA	25mA
Pick-up voltage		Min. 4VDC⎓	Min. 19VACrms～	Min. 85VACrms～
Drop-out voltage		Max. 1VDC⎓	Max. 4VACrms～	Max. 10VACrms～
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms	—	—
Turn-off time		Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms

▣ Specifications

◎ Output

Rated load voltage range		**24-240VACrms～ (50/60Hz)**				**48-480VACrms～ (50/60Hz)**				
Load voltage range		24-264VACrms～ (50/60Hz)				48-528VACrms～ (50/60Hz)				
Rated load current	Resistive load (AC-51)※1	15Arms	30Arms	50Arms	75Arms	15Arms	30Arms	40Arms	50Arms	75Arms
Min. load current		0.15Arms	0.2Arms	0.5Arms		0.5Arms				
Max. 1 cycle surge current (60Hz)		250A	400A	1000A		300A	500A		1000A	
Max. non-repetitive surge current (I^2t, t=8.3ms)		$340A^2S$	$1000A^2S$	$4000A^2S$		$350A^2S$	$1000A^2S$		$4000A^2S$	
Peak voltage (non-repetitive)		600V				1200V (Zero cross turn-on), 1000V (Random turn-on)				
Leakage current (Ta=25℃)		Max. 10mArms (240VAC～/60Hz)				Max. 10mArms (480VAC～/60Hz)				
Output on voltage drop [Vpk] (Max. load current)		Max. 1.6V								
Static off-state dv/dt		500V/μs								

※1: AC-51 is utilization category at IEC 60947-4-3.

◎ Alarm output (Temperature overheat)

Rated input voltage range	**4-30VDC⎓**	**24VACrms～ (50/60Hz)**	**90-240VACrms～ (50/60Hz)**
Load input voltage	Max. 30VDC⎓	Max. 30VDC⎓	Max. 30VDC⎓
Load input current	Max. 100mA	Max. 50mA	Max. 50mA
Turn-off time	Max. 20ms	Max. 40ms	Max. 40ms

◎ General specifications

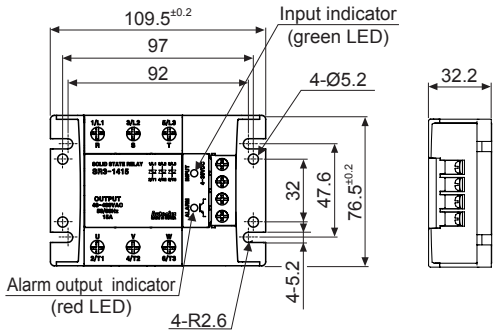
Dielectric strength (Vrms)		● 24-240VAC～ rated load current 15A/30A : 2500VAC 50/60Hz 1 min (Input-Output, Input/Output-Case)
		● 24-240VAC～ rated load current 50A/75A ● 48-480VAC～ rated load current 15A/30A/40A/50A/75A : 4000VAC 50/60Hz 1 min (Input-Output, Input/Output-Case)
Insulation resistance		Over 100MΩ (at 500VDC megger) (Input-Output, Input/Output-Case)
Indicator		Input indicator: Green LED / Alarm output indicator: Red LED
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 1 hour
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 min
Shock	Mechanical	300m/s² (approx. 30G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s² (approx. 30G) in each X, Y, Z direction for 3 times
Environment	Ambient temperature	-30 to 80℃ (in case of the rated input voltage 90-240VAC～: -30 to 70℃), Storage: -30 to 100℃ (The rated load current capacity is different depending on ambient temperature. Refer to '▣ SSR Derating Curve'.)
	Ambient humidity	45 to 85%RH, Storage: 45 to 85%RH
Input terminal connection		Min. 1×0.5mm² (1×AWG 20) Max. 1×1.5mm² (1×AWG 16) or 2×1.5mm² (2×AWG 16)
Output terminal connection		Min. 1×1.5mm² (1×AWG 16) Max. 1×16mm² (1×AWG 6) or 2×6mm² (2×AWG 10)
Input terminal fixed torque		0.75 to 0.95N·m
Output terminal fixed torque		1.6 to 2.2N·m
Approval		CE cULus
Weight※1		● Detachable heatsink type : approx. 365g (approx. 275g) ● Integrated heat sink type - Rated load current 15A/30A/40A: approx. 896g (approx. 686g) Rated load current 50A: approx. 1508g (approx. 1268g) Rated load current 75A: approx. 2354g (approx. 2064g)

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※For wiring the terminal, an O-ring terminal must be used.

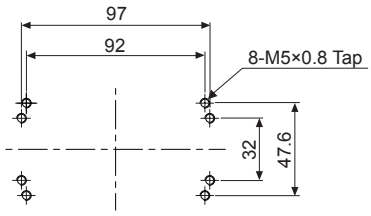
▣ Dimensions

(unit: mm)

◎ Detachable heatsink type

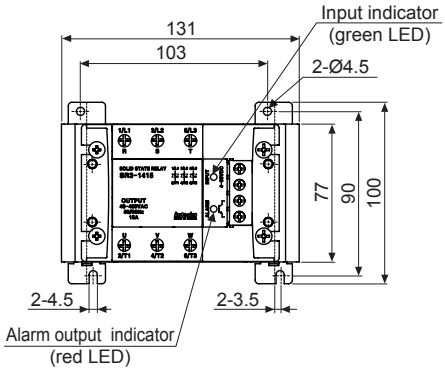


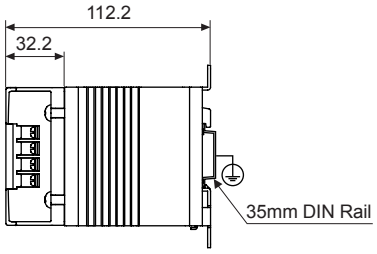
• Panel cut-out



※Detachable heatsink type screw tightening torque for mounting: 2.5N·m to 3N·m

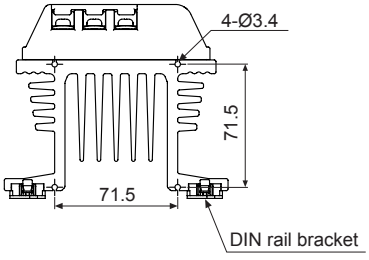
◎ Integrated heat sink (rated load current 15A/30A/40A)





※DIN rail must be grounded.

• Cooling fan mounting hole (rated load current 30A/40A)



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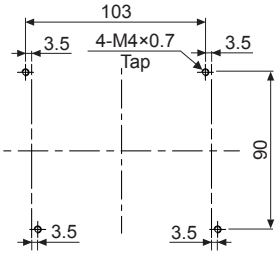
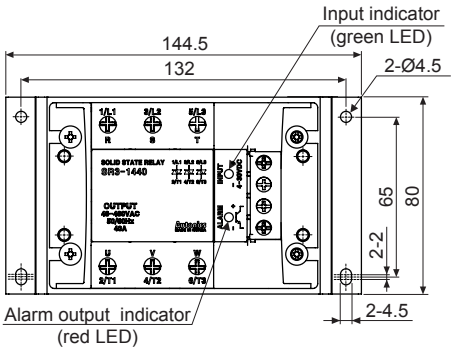
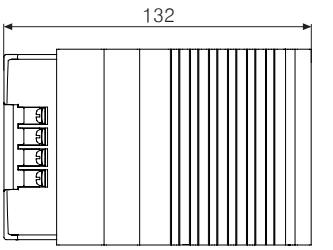


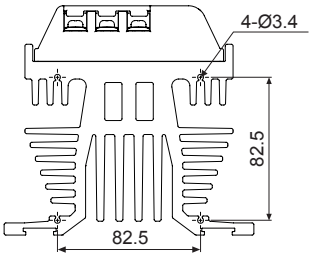
※Detachable heatsink type screw tightening torque for mounting: 1.35N·m
※For horizontal installation(when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

◎ Integrated heat sink (rated load current 50A)

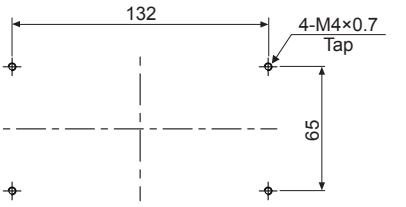


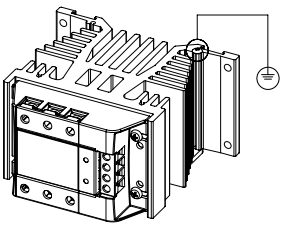


• Cooling fan mounting hole



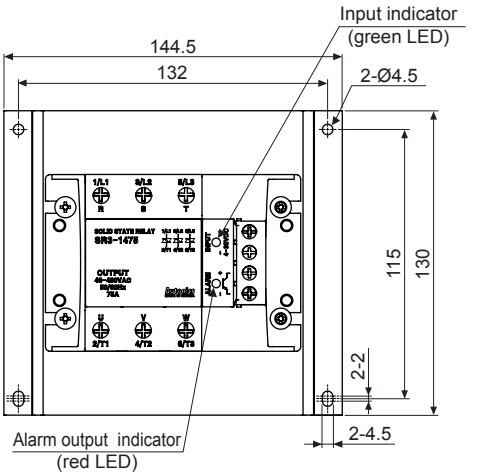
• Panel cut-out

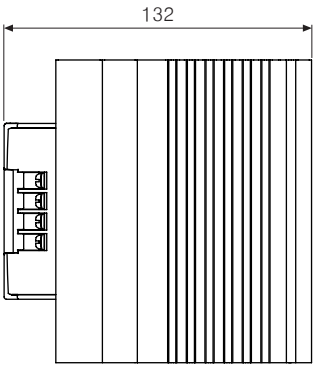




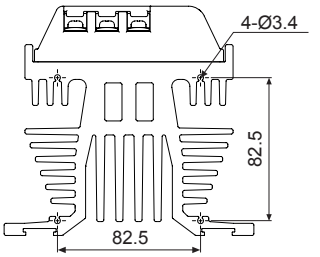
※Bolts for grounding must be grounded.

◎ Integrated heat sink (rated load current 75A)





• Cooling fan mounting hole



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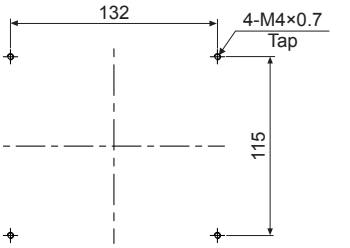
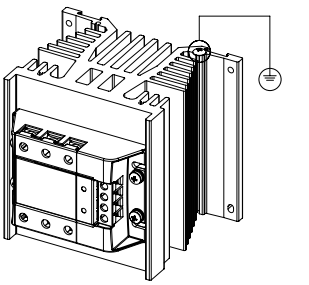


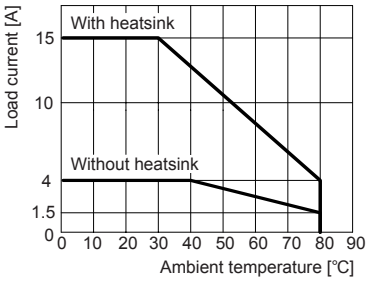


※Bolts for grounding must be grounded.

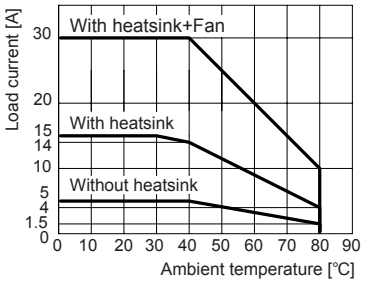
※Detachable heatsink type screw tightening torque for mounting:1.35N·m
※For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

▣ SSR Derating Curve

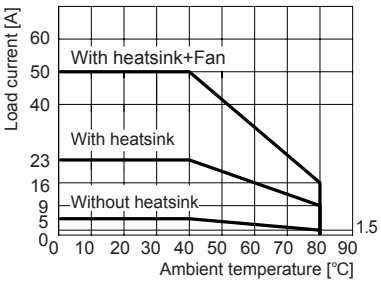
◎ SR(H)2/SR(H)3-1215



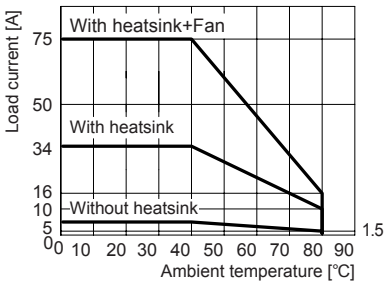
◎ SR(H)2/SR(H)3-1230



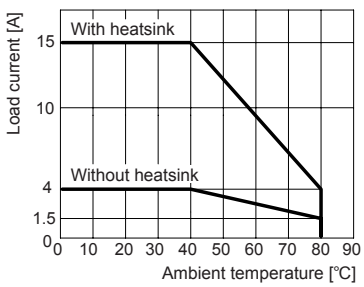
◎ SR(H)2/SR(H)3-1250/1450/1450R/2450



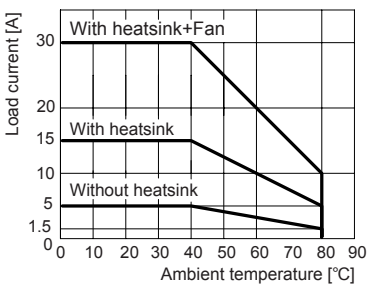
◎ SR(H)2/SR(H)3-1275/1475/1475R/2475



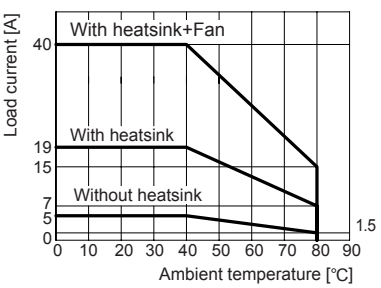
◎ SR(H)2/SR(H)3-1415/1415R/2415



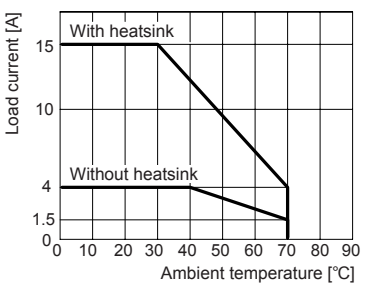
◎ SR(H)2/SR(H)3-1430/1430R/2430



◎ SR(H)2/SR(H)3-1440/1440R/2440

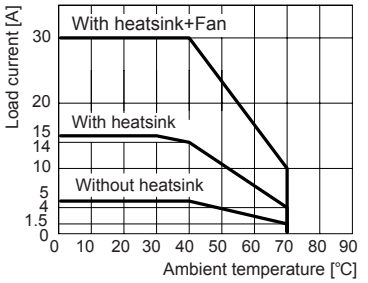


◎ SR(H)2/SR(H)3-4215

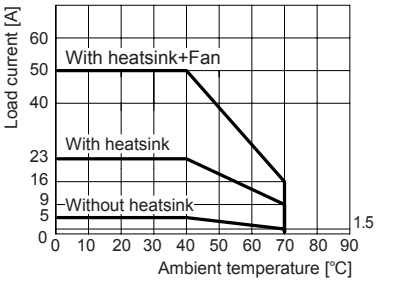


▣ SSR Derating Curve

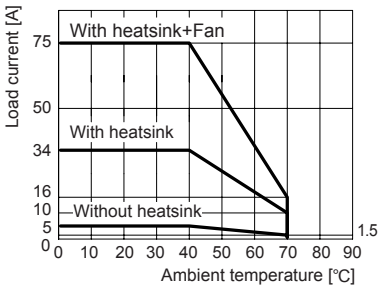
◎ SR(H)2/SR(H)3-4230



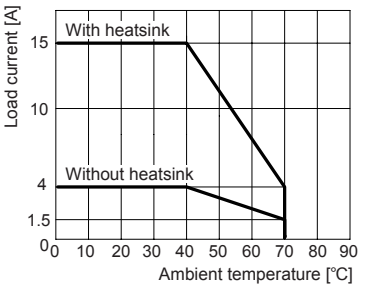
◎ SR(H)2/SR(H)3-4250/4450



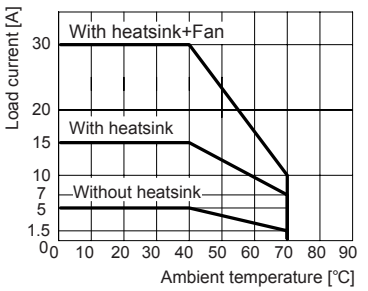
◎ SR(H)2/SR(H)3-4275/4475



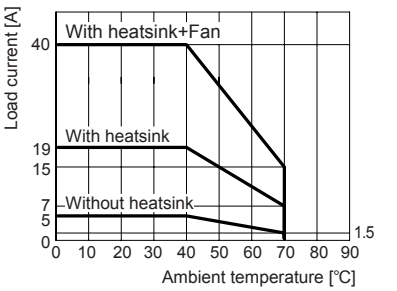
◎ SR(H)2/SR(H)3-4415



◎ SR(H)2/SR(H)3-4430



◎ SR(H)2/SR(H)3-4440



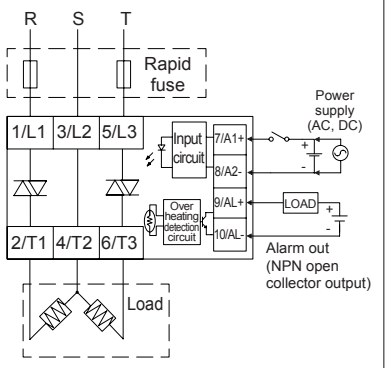
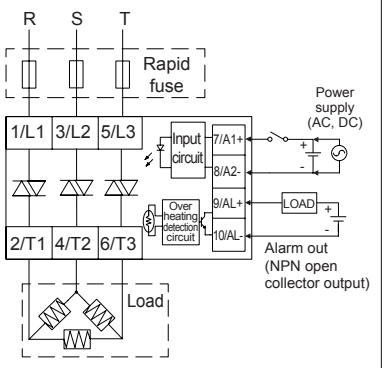
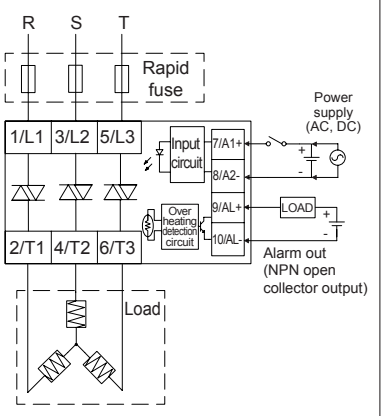
※The heatsink of the curves is dedicated for the SRH2/SRH3.
※Install SR2/SR3 Series on the metal plate (min. 130mm×120mm).
⚠Please supply less than 50% of the rated load current when installing several SSRs closely due to decreasing effectiveness of protection against heat.

◎ Specification of Fan

Load capacity	Fan type	Size (mm)	Rated air flow※1	
			m^3/min	CFM
30A/40A	AC Fan	80×80	0.68	24.0
	DC Fan		1.25	44.0
50A/75A	AC Fan	92×92	1.13	40.0
	DC Fan		1.80	63.5

※1: The fan should be over the rated air flow value.
※Autonics does not provide or sell a fan. (Please buy a fan separately.)

▣ Connections

3-phase (2-pole)	3-phase (3-pole) delta connection (△-connection)	3-phase (3-pole) star connection (Y-connection)
		

※For DC signal input models, 8 and 10 terminals are connected inside.

※For AC signal input models, 8 and 10 terminals are insulated inside.

▣ Proper Usage

High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

Cautions during use

1. Attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. Must ground heatsink or mounted DIN rail. Failure to follow this instruction may cause electric shock.
3. For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
4. Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
5. Connect the proper cable for the rated load current with output terminal.
6. Use rapid fuse of which I^2t is under 1/2 of SSR I^2t in order to protect the unit from load's short-circuit current. In case of a short-circuit please replace the fuse which has same specification.
7. In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
8. When selecting phase control with random turn-on model, install the noise filter between load and load's source.
9. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. In case of 4-30VDC, 24VAC model, the signal input should be insulated and limited voltage/currentor Class 2, SELV power supply device.
12. To attach the heatsink, use Thermal Grease as below or that of equal specification.
    ※Thermal Grease: GE TOSHIBA (YG6111), KANTO-KASEI (FLOIL G-600), SHINETSU (G746)
13. Avoid following environments to install this unit.
    ① Where temperature/humidity is over the rated specifications
    ② Where dew condensation occurs due to temperature change
    ③ Where inflammable or corrosive gas exists
    ④ Where direct rays of light exist
    ⑤ Where severe shock, vibration or dust exists
    ⑥ Where near facilities generating strong magnetic forces or electric noise
14. This product may be used in the following environments.
    ① Indoors
    ② Max. altitude: Under 2,000m
    ③ Pollution degree 2
    ④ Installation category III

Single phase, Slim heatsink separated type SSR

NEW

▣ Features

- Compact size(width 22.5mm)
- Superior dielectric strength : 4,000VAC
- Improved reliability by maximizing heat protection efficiency with ceramic board
- Supports Zero cross turn-on/Random turn-on type
- Checks input status by Input LED(green)

⚠ **Please read "Caution for your safety" in operation manual before using.**

▣ Ordering information

SRC	1	–	1	4	20	R

Function	No Mark	Zero cross turn-on
	R	Random turn-on
Rated load current (resistive load)	15	15A
	20	20A
	30	30A
Load voltage(rated)	2	24-240VAC
	4	48-480VAC
Input voltage(rated)	1	4-30VDC
	4	90-240VAC
Control phase	1	Single phase
Item	SRC	Solid State Relay(compact size)

Model	Input voltage	Rated load current	Load voltage	Zero cross turn-on/Random turn-on
SRC1-1215	4-30VDC	15A	24-240VAC	Zero cross turn-on
SRC1-4215	90-240VAC			
SRC1-1220	4-30VDC	20A		
SRC1-4220	90-240VAC			
SRC1-1230	4-30VDC	30A		
SRC1-4230	90-240VAC			
SRC1-1420	4-30VDC	20A	48-480VAC	
SRC1-4420	90-240VAC			
SRC1-1420R	4-30VDC			Random turn-on

▣ Specifications

◎ Input

		4-30VDC input voltage	90-240VAC input voltage
Input voltage range		4-32VDC	85-264VACrms(50/60Hz)
Max. input current		9mA(Zero cross turn-on), 13mA(Random turn-on)	7mArms(240VACrms)
Pick-up voltage		4VDC	85VACrms
Drop-out voltage		1VDC	10VACrms
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms	—
Turn-off time		Max. 0.5 cycle of load source + 1ms	Max. 1.5 cycle of load source + 1ms

▣ Specifications

◎ Output

		24-240VAC load voltage			48-480VAC load voltage
Load voltage range(50/60Hz)		24-264VACrms			48-528VACrms
Rated load current Ta=25℃	Resistive load (AC-51)	15Arms	20Arms	30Arms	20Arms
	Motor load (AC-53a)	—			5Arms
Min. load current		0.15Arms	0.2Arms	0.2Arms	0.5Arms
Max. 1cycle surge current (60Hz)		190A	270A	330A	300A
Max. non-repetitive surge current(I^2t, t=8.3ms)		150A^2S	300A^2S	500A^2S	350A^2S
Peak voltage(Non-repetitive)		600V			1200V(zero cross turn-on),1000V(random turn-on)
Leakage current (240VAC/60Hz, Ta=25℃)		Max. 10mArms			
Output on voltage drop[Vpk] (Max. load current)		Max. 1.6V			
Static off-state dv/dt		500V/μs			

◎ General Specifications

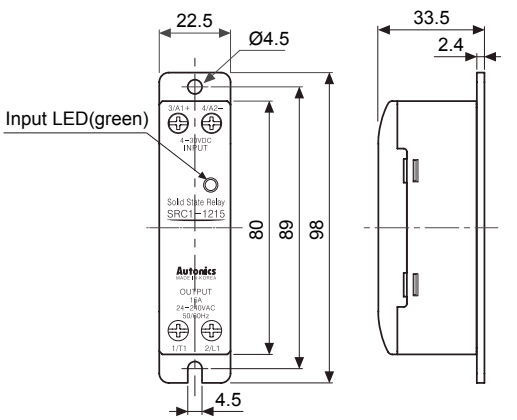
Certification		UL508, CSA22.2 No.14, IEC/EN 60947-4-3
Dielectric strength(Vrms)		4000VAC 50/60Hz 1min.(Input-Output, Input/Output-Case)
Insulation resistance		Min. 100MΩ(at 500VDC Megger)
Vibration		10 to 55Hz double amplitude 0.75mm in each of X, Y, Z directions for 1 hour
Input LED		Green
Environ -ment	Ambient temperature	-30 to 80℃, storage: -30 to 100℃(Rated load current capacity is different based on the surrounding temperature. Refer to '▣SSR Derating curve'.)
	Ambient humidity	45 to 85%RH
Input terminal connection		Min. 1×0.5mm^2(1×AWG20), Max. 1×1.5mm^2(1×AWG16) or 2×1.5mm^2(2×AWG16)
Output terminal connection		Min. 1×0.75mm^2(1×AWG18), Max. 1×4mm^2(1×AWG12) or 2×2.5mm^2(2×AWG14)
Input terminal fixed torque		0.75 to 0.95N·m
Output terminal fixed torque		1 to 1.35N·m
Unit weight		Approx. 85g

※For wiring the terminal, an O-ring terminal must be used.
※Environment resistance is rated at no freezing or condensation.

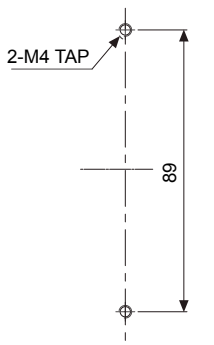
▣ Dimensions & Mounting

(unit: mm)

◎ Dimensions

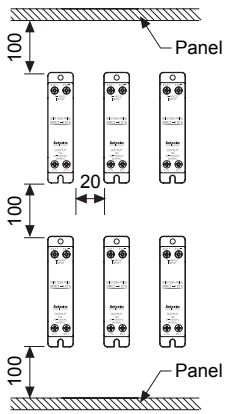


◎ Hole cut-out for panel front mounting



Screw tightening torque for mounting: 1.8 to 2.5N·m

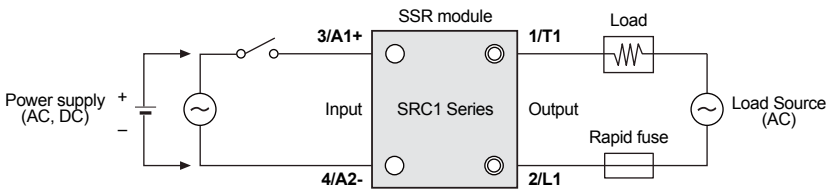
◎ Installation interval



⚠ High temperature caution
Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

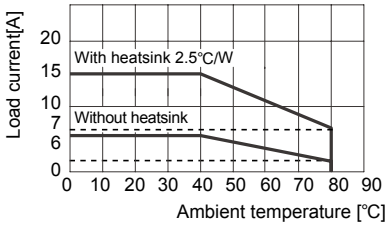
※For mounting multiple SSR, please keep certain installation intervals for heat prevention.
For horizontal installation(when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

▣ Connections

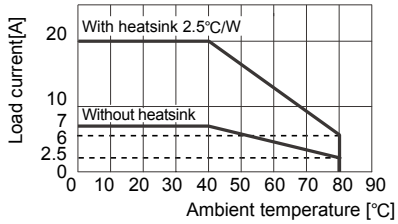


▣ SSR Characteristic curve

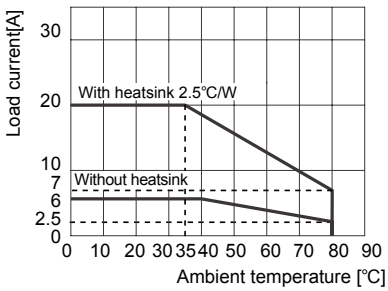
◎ SRC1-1215/4215



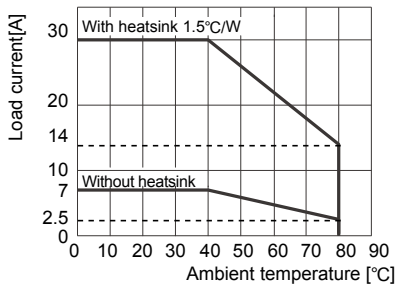
◎ SRC1-1220/4220



◎ SRC1-1420/4420/1420R



◎ SRC1-1230/4230



⚠Please supply less than 50% of the rated load current when installing several SSRs closely due to decreasing effectiveness of protection against heat.

▣ Proper usage

High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

⚠ Caution for using

1. Attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation(when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
3. Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
4. Connect the proper cable for the rated load current with output terminal.
5. Use rapid fuse of which I^2t is under 1/2 of SSR I^2t in order to protect the unit from load's short- circuit current.
6. In case of a short-circuit please replace the fuse with a 1/2 of SSR I^2t value specified semiconductor protective type.
7. In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
8. When selecting phase control with random turn-on model, install the noise filter between load and load's source
9. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. The signal input of the 4-30VDC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
12. To attach the heatsink, use Thermal Grease as below or that of equal specification.
    ※Thermal Grease: GE TOSHIBA(YG6111), KANTO-KASEI(FLOIL G-600), SHINETSU(G746)

▣ Proper usage

13. Proper application environment (Avoid following environments to install)
① Where temperature/humidity is beyond the specification
② Where dew condensation occurs due to temperature change
③ Where inflammable or corrosive gas exists
④ Where direct rays of light exist
⑤ Where severe shock, vibration or dust exists
⑥ Where near facilities generating strong magnetic forces or electric noise
14. Installation environment
① It shall be used indoor
② Altitude Max. 2,000m
③ Pollution Degree 2
④ Installation CategoryIII

Single phase, Intergrated heatsink type SSR

▣ Features

- Superior dielectric strength : 4,000VAC
- Improved reliability by maximizing heat protection efficiency with heatsink integrated design and ceramic board
- Various mounting methods(DIN rail, screw fixing)
- Supports Zero cross turn-on/ Random turn-on type
- Checks input status by Input LED(green)

⚠ **Please read "Caution for your safety" in operation manual before using.**

CE cULus

▣ Ordering information

SRH 1 – 1 4 60 R

Function	No Mark	Zero cross turn-on
	R	Random turn-on
Rated load current (resistive load)	15	15A
	20	20A
	30	30A
	40	40A
	60	60A
Load voltage(rated)	2	24-240VAC
	4	48-480VAC
Input voltage(rated)	1	4-30VDC
	2	24VAC
	4	90-240VAC
Control phase	1	Single phase
Item	SRH	Solid State Relay(Integrated heat sink type)

Model	Input voltage	Rated load current	Load voltage	Zero cross turn-on/Random turn-on
SRH1-1215	4-30VDC	15A	24-240VAC	Zero cross turn-on
SRH1-2215	24VAC			
SRH1-4215	90-240VAC			
SRH1-1220	4-30VDC	20A		
SRH1-2220	24VAC			
SRH1-4220	90-240VAC			
SRH1-1230	4-30VDC	30A		
SRH1-2230	24VAC			
SRH1-4230	90-240VAC			
SRH1-1240	4-30VDC	40A		
SRH1-2240	24VAC			
SRH1-4240	90-240VAC			
SRH1-1260	4-30VDC	60A		
SRH1-2260	24VAC			
SRH1-4260	90-240VAC			
SRH1-1420	4-30VDC	20A	48-480VAC	Zero cross turn-on
SRH1-1420R				Random turn-on
SRH1-2420	24VAC			Zero cross turn-on
SRH1-1430	4-30VDC	30A		Zero cross turn-on
SRH1-1430R				Random turn-on
SRH1-2430	24VAC			Zero cross turn-on
SRH1-1460	4-30VDC	60A		Zero cross turn-on
SRH1-1460R				Random turn-on
SRH1-2460	24VAC			Zero cross turn-on

▣ Specifications

◎ Input

4-30VDC input voltage		
Input voltage range		4-32VDC
Max. input current		9mA(Zero cross turn-on), 12mA(Random turn-on)
Pick-up voltage		4VDC
Drop-out voltage		1VDC
Turn-on time	Zero cross turn-on	Max. 0.5 cycle of load source + 1ms
	Random turn-on	Max. 1ms
Turn-off time		Max. 0.5 cycle of load source + 1ms
24VAC input voltage		
Input voltage range (50/60Hz)		19-30VACrms
Max. input current		12mArms(24VACrms)
Pick-up voltage		19VACrms
Drop-out voltage		4VACrms
Turn-on time		Max. 1.5 cycle of load source + 1ms
Turn-off time		Max. 1.5 cycle of load source + 1ms
90-240VAC input voltage		
Input voltage range (50/60Hz)		85-264VACrms
Max. input current		7mArms(240VACrms)
Pick-up voltage		85VACrms
Drop-out voltage		10VACrms
Turn-on time		Max. 1.5 cycle of load source + 1ms
Turn-off time		Max. 1.5 cycle of load source + 1ms

◎ Output

24-240VAC load voltage						
Load voltage range (50/60Hz)		24-264VACrms				
Rated load current Ta=25℃	Resistive load (AC-51)	15Arms	20Arms	30Arms	40Arms	60Arms
Min. load current		0.15Arms	0.2Arms	0.2Arms	0.5Arms	0.5Arms
Max. 1 cycle surge current(60Hz)		190A	270A	330A	500A	1000A
Max. non-repetitivesurge current(I^2t, t=8.3ms)		150A^2S	300A^2S	500A^2S	1000A^2S	4000A^2S
Peak voltage(Non-repetitive)		600V				
Leakage current (240VAC/60Hz, Ta=25℃)		Max. 10mArms				
Output ON voltage drop[Vpk] (Max. load current)		Max. 1.6V				
Static off state dv/dt		500V/μs				
48-480VAC load voltage						
Load voltage range (50/60Hz)		48-528VACrms				
Rated load current Ta=25℃	Resistive load (AC-51)	20Arms	30Arms	60Arms		
	Motor load (AC-53a)	5Arms	8Arms	15Arms		
Min. load current		0.5Arms	0.5Arms	0.5Arms		
Max. 1 cycle surge current(60Hz)		300A	500A	1000A		
Max. non-repetitive surge current(I^2t, t=8.3ms)		350A^2S	1000A^2S	4000A^2S		
Peak voltage(Non-repetitive)		1200V(Zero cross turn-on), 1000V(Random turn-on)				
Leakage current (480VAC/60Hz, Ta=25℃)		Max. 10mArms				
Output ON voltage drop[Vpk] (Max. load current)		Max. 1.6V				
Static off state dv/dt		500V/μs				

▣ Specifications

◎ General Specifications

Certification		UL508, CSA22.2 NO. 14 and IEC/EN 60947-4-3
Dielectric strength(Vrms)		400VAC 50/60Hz for 1 min.(Input-Output, I/O-Case)
Insulation resistance		Min. 100MΩ(500VDC megger)
Vibration		10 to 55Hz double amplitude 0.75mm in each X, Y, Z direction for 1 hour
Input LED		Green
Environ -ment	Ambient temperature	-30 to 80℃, storage: -30 to 100℃(Rated load current capacity is different based on the surrounding temperature. Refer to '▣ SSR Derating curve'.)
	Ambient humidity	45 to 85%RH, storage: 45 to 85%RH
Input terminal connection		Min. 1×0.5mm^2(1XAWG 20) Max. 1×1.5mm^2(1XAWG 16) or 2×1.5mm^2(2XAWG 16)
Output terminal connection		• Case width 22.5mm(M4 terminal bolt): Min. 1×0.75mm^2(1×AWG18) Max. 1×4mm^2(1×AWG12) or 2×2.5mm^2(2×AWG14) • Case width 45mm(M5 terminal bolt): Min. 1×1.5mm^2(1×AWG16) Max. 1×16mm^2(1×AWG6) or 2×6mm^2(2×AWG10) ※Use wires compliant with load current capacity to connect to the terminal.
Input terminal fixed torque		0.75 to 0.95N·m
Output terminal fixed torque		• Case width 22.5mm(M4 terminal bolt): 15A/20A: 1 to 1.35N·m • Case width 45mm(M5 terminal bolt): 30A/40A/60A: 1.6 to 2.2N·m
Unit weight		• Rated load current(Resistive load) 15A/20A : Approx. 225g • Rated load current(Resistive load) 30A/40A : Approx. 410g • Rated load current(Resistive load) 60A : Approx. 680g

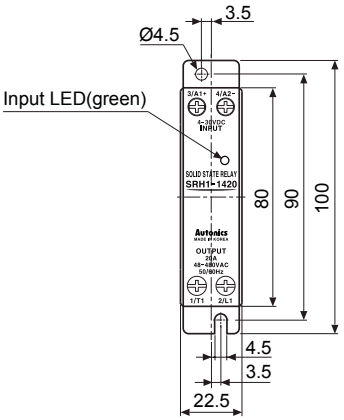
※For wiring the terminal, an O-ring terminal must be used.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions & Mounting

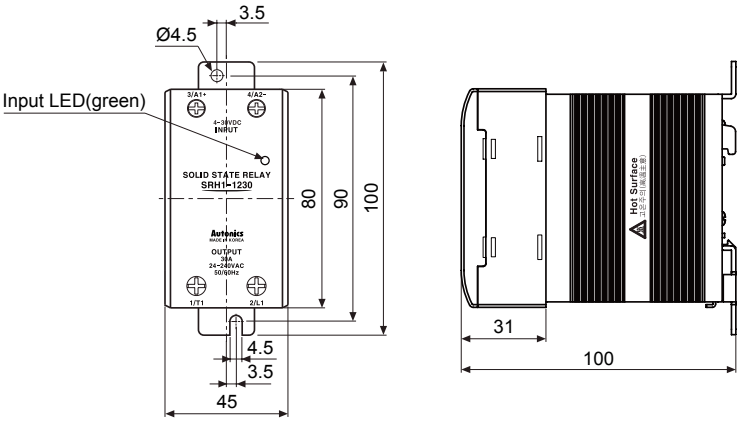
◎ Dimensions

(unit: mm)

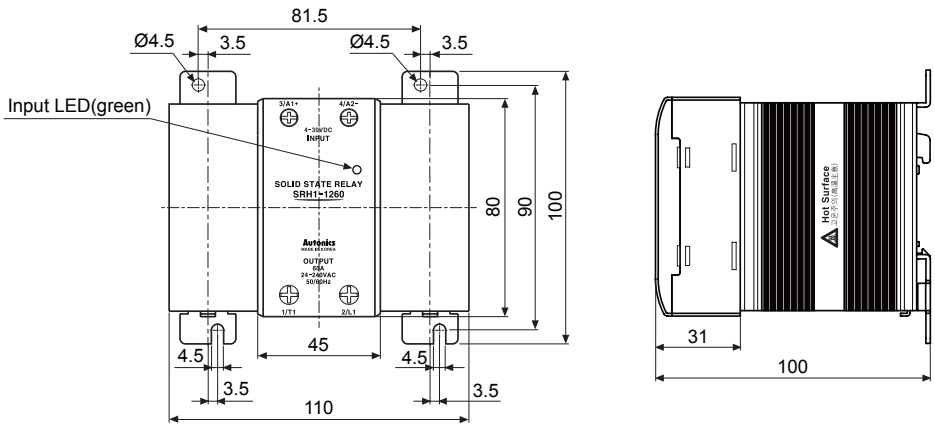
● 15A/20A rated load current



● 30A/40A rated load current

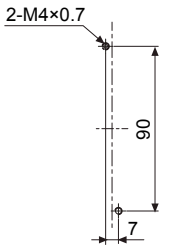


● 60A rated load current

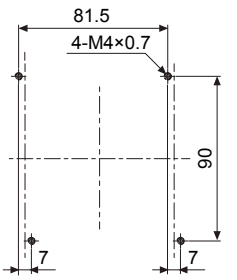


◎ Hole cut-out for panel front mounting

● **15A/20A/30A/40A rated load current**



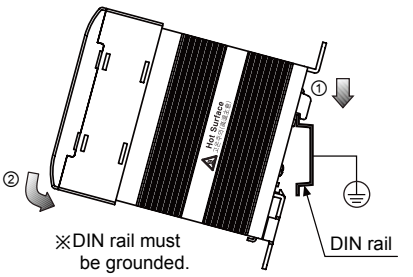
● **60A rated load current**



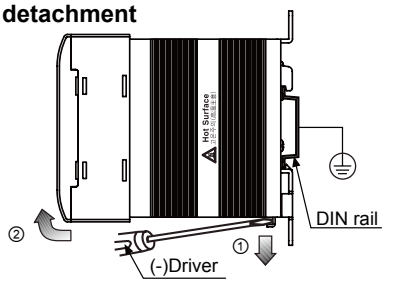
※Tightening torque for mounting: 1.8 to 2.5N·m

◎ DIN rail mounting

● **DIN rail attachment**

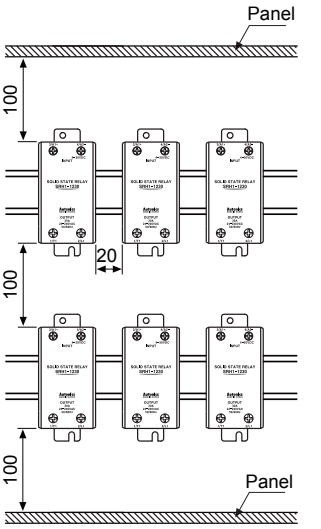


● **DIN rail detachment**



◎ Installation interval

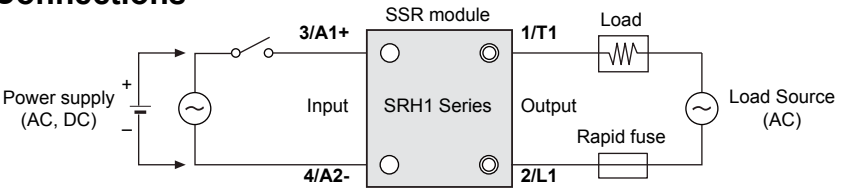
(unit: mm)



※For mounting multiple SSR, please keep certain installation intervals for heat prevention.
For horizontal installation(when the heights of input part and output part are equal), it is recommended to apply 50% of rated load current.

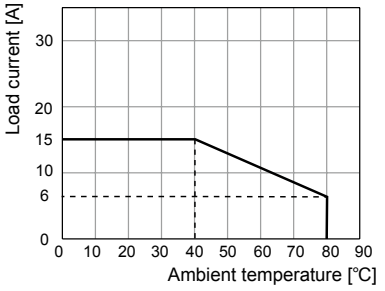
⚠ High temperature caution
Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

▣ Connections

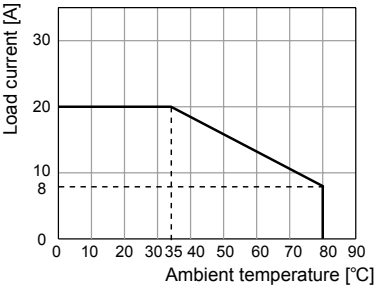


▣ SSR Characteristic curve

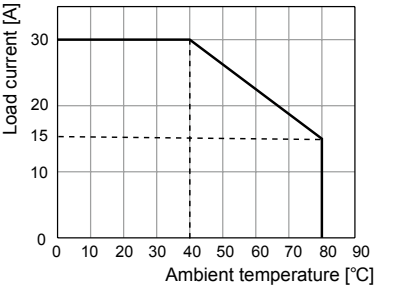
◎ SRH1-1215/2215/4215



◎ SRH1-1220/2220/4220 SRH1-1420/1420R/2420

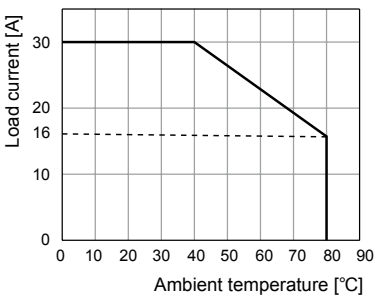


◎ SRH1-1230/2230/4230

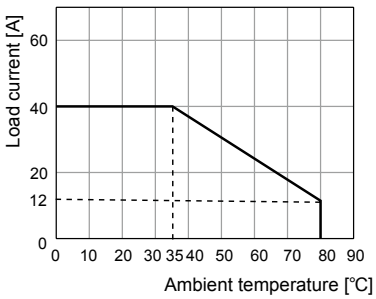


▣ SSR Characteristic curve

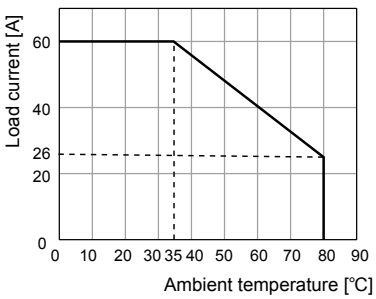
◎ SRH1-1430/1430R/2430



◎ SRH1-1240/2240/4240



◎ SRH1-1260/1460/1460R
SRH1-2460/2260/4260



▣ Proper usage

High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

Caution for using

1. Attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation (when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
3. Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
4. Connect the proper cable for the rated load current with output terminal.
5. Use rapid fuse of which I^2t is under 1/2 of SSR I^2t in order to protect the unit from load's short- circuit current.
6. In case of a short-circuit please replace the fuse with a 1/2 of SSR I^2t value specified semiconductor protective type.
7. In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
8. When selecting phase control with random turn-on model, install the noise filter between load and load's source.
9. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. The signal input of the 4-30VDC model should be supplied by the insulated and limited voltage/current or by Class 2 power supply.
12. Proper application environment (Avoid following environments to install)

① Where temperature/humidity is beyond the specification
② Where dew condensation occurs due to temperature change
③ Where inflammable or corrosive gas exists
④ Where direct rays of light exist
⑤ Where severe shock, vibration or dust exists
⑥ Where near facilities generating strong magnetic forces or electric noise

13. Installation environment

① It shall be used indoor
② Altitude Max. 2,000m
③ Pollution Degree 2
④ Installation Category III

Single phase, Socket heatsink separated type SSR

NEW

▣ Features

- Dielectric strength 2,500 VAC
- SRS1-A: AC, DC, AC/DC control
  SRS1-B: AC control
- Socket type(Autonics SRS1-A: socket SK-G05, SRS1-B: general purpose LY2) saves working time and improves ease of maintenance
- Supports Zero cross turn-on/Random turn-on type
- Checks input status by Input LED(red)

Please read "Caution for your safety" in operation manual before using.

SRS1-A

(available on August, 2013)

SRS1-B

▣ Ordering information

SRS 1 - B 1 2 02 R - 1

Number of output circuit		1	1
		2	2
Function		No mark	Zero cross turn-on
		R	Random turn-on
Rated load current (resistive load)		01	1A
		02	2A
		03	3A
		05	5A
Load voltage(rated)	SRS-A	2	24-240VAC
		D1	5-100VDC
		D2	5-200VDC
		X2	5-240VAC/5-200VDC(universal)
	SRS-B	2	90-240VAC
Input voltage(rated)	SRS-A	1	4-24VDC
	SRS-B	1	4-30VDC
Socket		B	General purpose LY2 socket
		A※1	Autonics socket(Model: SK-G05)
Control phase		1	Single phase
Item		SRC	Solid State Relay(socket type)

※1: SRS1-A and SRS1-B1205(R)-1 will be available on August, 2013.

Model		Input voltage	Rated load current	Load voltage	Zero cross turn-on/Random turn-on
SRS1-A	SRS1-A1202	4-24VDC	2A	24-240VAC	Zero cross turn-on
	SRS1-A1202R				Random turn-on
	SRS1-A1203		3A		Zero cross turn-on
	SRS1-A1203R				Random turn-on
	SRS1-A1205		5A		Zero cross turn-on
	SRS1-A1205R				—
	SRS1-A1D101		1A	5-100VDC	—
	SRS1-A1D102		2A		—
	SRS1-A1D201		1A	5-200VDC	—
	SRS1-A1X201			5-240VAC/5-200VDC	—
SRS1-B	SRS1-B1202-2	4-30VDC	2A (consists of 2 circuits)	90-240VAC	Zero cross turn-on
	SRS1-B1202R-2				Random turn-on
	SRS1-B1203-1		3A		Zero cross turn-on
	SRS1-B1203R-1				Random turn-on
	SRS1-B1205-1		5A		Zero cross turn-on
	SRS1-B1205R-1				Random turn-on

▣ Specifications

◎ Input

	SRS1-A	SRS1-B
Input voltage range	4-26.4VDC	4-32VDC
Max. input current	15mA	13mA
Pick-up voltage	Min. 4VDC	
Drop-out voltage	Max. 1VDC	

◎ Output(AC)

Model		SRS1-A1202(R)	SRS1-A1203(R)	SRS1-A1205(R)	SRS1-B1202(R)-2	SRS1-B1203(R)-2	SRS1-B1205(R)-1
Load voltage range		24-264VACrms(50/60Hz)			90-240VACrms(50/60Hz)		
Rated load current resistive load		2Arms	3Arms	5Arms	2Arms	3Arms	5Arms
Min. load current		0.15Arms	0.2Arms		0.15Arms		
Max. 1cycle surge current (60Hz)		126A	250A		126A		250A
Max. non-repetitive surge current(I^2t, t=8.3ms)		$65A^2S$	$400A^2S$		$65A^2S$		$220A^2S$
Peak voltage(Non-repetitive)		600V					
Leakage current(Ta=25℃)		Max. 2mArms					
Output on voltage drop[Vpk] (Max. load current)		Max. 1.6V					
Static off-state dv/dt		500V/μs					
Turn-on time	Zero cross turn-on	0.5 cycle of load source + 1ms					
	Random turn-on	Max. 1ms					
Turn-off time		0.5 cycle of load source + 1ms					

◎ Output(DC, AC/DC)

Model	SRS1-A1D101	SRS1-A1D102	SRS1-A1D201	SRS1-A1X201
Load voltage range	3-120VDC		3-220VDC	3-264VAC 50/60Hz 3-220VDC
Rated load current resistive load	1Adc	2Adc	1Adc	1Arms/1Adc
Min. load current	10mA			
Max. surge current (t=10ms)	5A	10A	4A	
Leakage current	Max. 100uA			Max. 2mArms
Output on voltage drop[Vpk] (Max. load current)	Max. 1.1V			Max. 2.2V
Static off-state dv/dt	500V/μs			
Turn-on time	1ms	2ms	1ms	2ms
Turn-off time	1ms			

◎ General Specifications

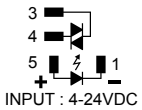
		SRS1-A	SRS1-B
Dielectric strength(Vrms)		2,500VAC 50/60Hz 1min.(Input-Output, Input/Output-Case)	
Insulation resistance		Min. 100MΩ(at 500VDC Megger)	
Input LED		Red	
Protection		According to protection of socket (SK-G05: IP10)	
Environ -ment	Ambient temperature	-20 to 70℃, storage: -30 to 100℃	-20 to 80℃, storage: -30 to 100℃
		(The rated load current capacity is different depending on ambient temperature. Refer to '▣ SSR Derating curve'.)	
	Ambient humidity	45 to 85%RH, storage: 45 to 85%RH	
Unit weight		3A and below: Approx. 17g(approx. 270g), 5A: Approx. 28g (approx. 380g)	Approx. 30g (approx. 710g)

※1: The weight is per 1 unit and the weight in parentheses is with packaging .
(packaging unit- SRS1-A: 10EA, SRS1-B: 20EA)

※Environment resistance is rated at no freezing or condensation.

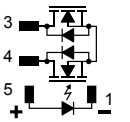
▣ Connections

◎ SRS1-A1202(R)/A1203(R)/A1205(R)



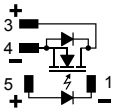
※SRS1-A1202(R): 250VAC 2A Resistive Load
SRS1-A1202(R): 250VAC 3A Resistive Load
SRS1-A1205(R): 250VAC 5A Resistive Load

◎ SRS1-A1X201



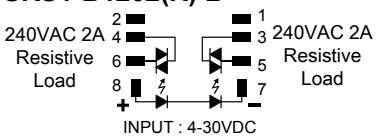
※SRS1-A1X201:
240VAC 1A Resistive Load
200VDC 1A Resistive Load

◎ SRS1-A1D101/A1D102/A1D201

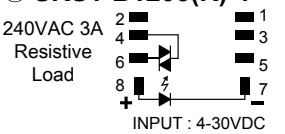


※SRS1-A1D101: 100VDC 1A Resistive Load
SRS1-A1D102: 100VDC 2A Resistive Load
SRS1-A1D201: 100VDC 1A Resistive Load

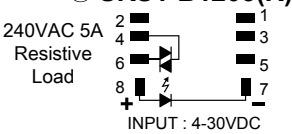
◎ SRS1-B1202(R)-2



◎ SRS1-B1203(R)-1



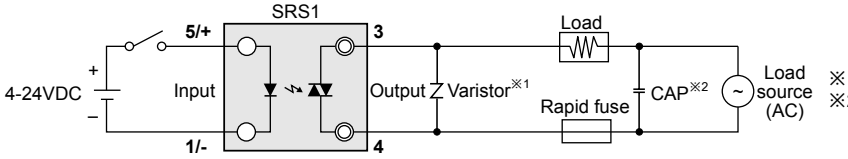
◎ SRS1-B1205(R)-1



▣ Example of connection

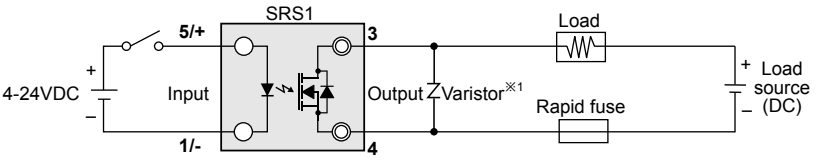
◎ SRS1-A

●AC Load



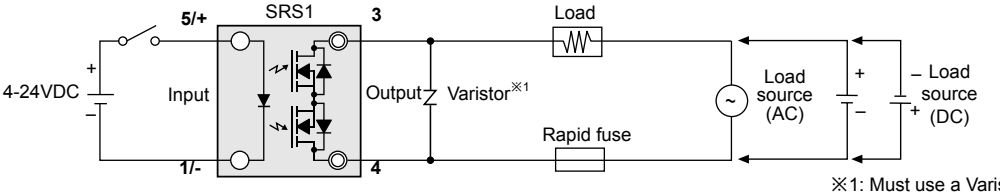
※1: Must use a Varistor(470V, 0.6W)
※2: When connecting capacitor as above, it is appropriate for EMC. CAP: 1uF/250VAC

●DC Load(SRS1-A1D101/A1D102/A1D201)



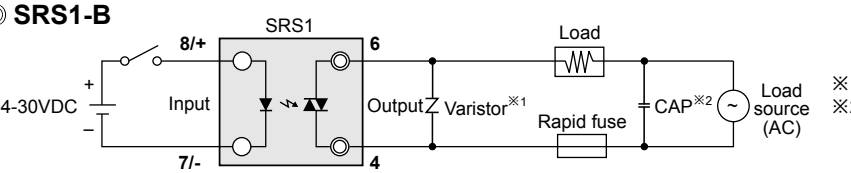
※1: Must use a Varistor(270V, 0.6W)

●AC/DC Load(SRS1-A1X201)



※1: Must use a Varistor(470V, 0.6W)

◎ SRS1-B

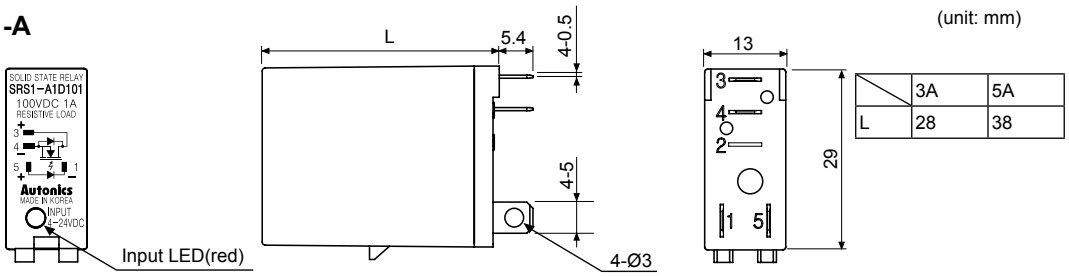


※1: Must use a Varistor (470V, 0.6W)
※2: When connecting capacitor as above, it is appropriate for EMC. CAP: 1uF/250VAC

▣ Dimensions

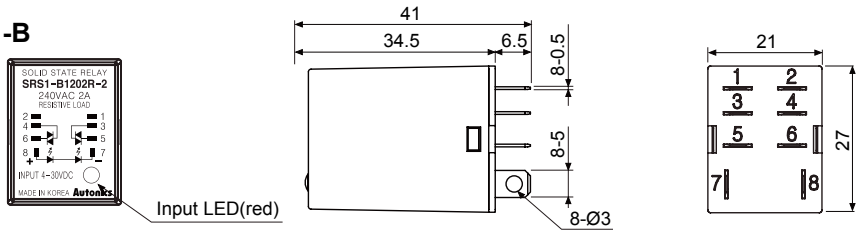
◎ SRS1-A

(unit: mm)



	3A	5A
L	28	38

◎ SRS1-B



▣ Proper usage

High temperature caution

Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

Caution for using

1. Please attach a heatsink and ventilate for smooth convection current. If not, congested heat transfer may cause product failure or malfunction.
2. For mounting multiple SSR, please keep certain installation intervals for heat prevention. For horizontal installation(when the heights of input part and output part are equal), it is recommended to apply less than 50% of the rated load current.
3. Make sure do not touch the heatsink or the unit body while power is supplied or right after load power is turned OFF. If not, it may cause a burn.
4. Connect the proper cable for the rated load current with output terminal.
5. Use rapid fuse of which I^2t is under 1/2 of SSR I^2t in order to protect the unit from load's short-circuit current.
6. In case that load's current is lower than SSR min. load current, connect dummy resistance to the load in parallel so as to make load's current higher than SSR min. load current.
7. When selecting phase control with random turn-on model, install the noise filter between load and load's source.
8. Make sure that the screw on output terminal is tightly fastened. Using the unit with loose bolt may cause product failure or malfunction.
9. Before or during installation this unit, turn OFF the power of this unit.
10. Do not touch the load's terminal even if output is OFF. It may cause electric shock.
11. Proper application environment (Avoid following environments to install)

① Where temperature/humidity is beyond the specification
② Where dew condensation occurs due to temperature change
③ Where inflammable or corrosive gas exists
④ Where direct rays of light exist
⑤ Where severe shock, vibration or dust exists
⑥ Where near facilities generating strong magnetic forces or electric noise

12. Installation environment

① It shall be used indoor
② Altitude Max. 2,000m
③ Pollution Degree 2
④ Installation Category III

SSR Terminal Block (screwless type)

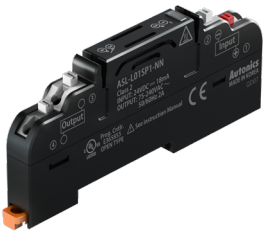
▣ Features

[Common Feature]
- ●Selectable between independent and load common output with jumper bar
- ●High tensile force and easy wiring with one-touch screwless type crimp terminal
- ●Convenient operating status check with operation indicator (blue LED)

[1-point]
- ●Selectable between independent and power ommon input with jumper bar
- ●DIN Rail mounting
- ●SSR: [Fujitsu] SN-24A01C
  [Omron] 3GMC-202P
  [Panasonic] AQG22124, AQG12124, AQZ202D

[4-point]
- ●Selectable between NPN common and PNP common common input with jumper bar insulting location
- ●SSR protection with the cover
- ●Easy SSR replacement with SSR ejector (except ASL-L04ST0-□ □)
- ●DIN Rail or screw mounting
- ●SSR: [Fujitsu] SN-24A01C
  [Omron] 3GMC-202P
  [Panasonic] AQG22124, AQG12124, AQZ202D

[16-point]
- ●SSR protection with the cover
- ●Easy SSR replacement with SSR ejector
- ●DIN Rail mounting
- ●SSR: [Panasonic] AQZ202D



⚠ **Please read "Safety Considerations" in instruction manual before using.**

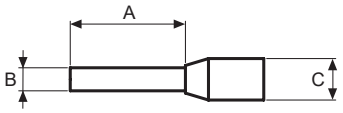
CE cULus LISTED (except ASL-L1ST0-□□, ASL-L4ST0-□□series)

▣ Ordering Information

AS **L** – **L** **04** **SP0** – **U** **N**

Varistor installation	**N**	Not installed
	Y	Installed
Input logic	**U**	Universal
	N	NPN
	P	PNP
SSR type	**MP0**	AQZ202D (panasonic)
	SP0	AQG12124 (panasonic)
	SP1	AQG22124 (panasonic)
	SR0	G3MC-202P (omron)
	ST0	SN-24A01C (fujitsu)
No. of SSR points	**01**	1-point
	04	4-point
	16	16-point
Connector type	**H**	Hirose
	L	Screwless
Terminal type	**L**	Screwless
Model	**AS**	SSR Terminal Block

▣ Crimp Terminal Specification



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2)

※Use cable of copper conductor with temperature class of 60℃.

▣ Specifications

◎ 1-point, 4-point

Model						
	1-point	**ASL-L01MP0-□N**	**ASL-L01SP0-□N**	**ASL-L01SP1-□N**	**ASL-L01SR0-□N**	**ASL-L01ST0-□N**
		ASL-L01MP0-□Y	**ASL-L01SP0-□Y**	**ASL-L01SP1-□Y**	**ASL-L01SR0-□Y**	**ASL-L01ST0-□Y**
	4-point	**ASL-L04MP0-UN**	**ASL-L04SP0-UN**	—	—	**ASL-L04ST0-UN**
		ASL-L04MP0-UY※1	**ASL-L04SP0-UY**※1	—	—	**ASL-L04ST0-UY**※1
Power supply		24VDC⎓±10%				
Rated load voltage & current※2		60VAC～/DC⎓ 50/60Hz 2.7A	75-240VAC～ 50/60Hz 1A	75-240VAC～ 50/60Hz 2A	24-240VAC～ 50/60Hz 2A	24-240VAC～ 50/60Hz 1A
Current consumption※3		≤ 3mA	≤ 18mA			≤ 10mA
Output type		1a contact SSR output				
Applied SSR		AQZ202D [Panasonic]	AQG12124 [Panasonic]	AQG22124 [Panasonic]	G3MC-202P [Omron]	SN-24A01C [Fujitsu]
Terminal type		Screwless				
Terminal pitch		1-point: 9.0mm (arranging over 2 units)/4-point: 5.0mm				
Operation Indicator		Blue LED				
Applied cable	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)				
	Stranded wire※4	AWG22-16 (0.30 to 1.25mm^2) (60℃ only)				
Stripped wire length		8 to 10mm				
Insulation resistance		1-point: ≥ 1,000MΩ (at 500VDC megger)/4-point: ≥ 1,000MΩ (at 500VDC megger)				
Insulation resistance	Between coil-contact	2,500VAC 50/60Hz for 1 minute				
	Between same contacts※5	1,000VAC 50/60Hz for 1 minute				
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours				
	Malfunction	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes				
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times				
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times				
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃				
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide				
Accessory		Jumper bar: 1, Ejector: 1※6				Jumper bar: 1
Protection structure		IP20 (IEC standard)				
Approval		cULus LISTED				CE
Weight※7	1-point※8	Approx. 130g (approx. 19g)	Approx. 134g (approx. 20g)	Approx. 140g (approx. 22g)	Approx. 148g (approx. 24g)	Approx. 136g (approx. 21g)
	4-point	Approx. 118g (approx. 65g)	Approx. 122g (approx. 69g)	Approx. 128g (approx. 75g)	Approx. 128g (approx. 75g)	Approx. 126g (approx. 72g)

※1: This is for load protection and it is recommend to use at the inductive load.
※2: This is SSR load capacity when it is resistive load and temperature characteristic curve is satisfied.
※3: The current consumption including LED current by one SSR.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: ASL-L01□-□Y/ASL-L04□-□Y (varistor installed type), this is 300VAC.
※6: Ejector is supplied only for ASL-L04□-□□ (4-point).
※7: The weight includes packaging. The weight in parenthesis is for unit only.
※8: The weight of 1-point unit is per 4 units with packaging and the weight of parenthesis is per 1.
※Environment resistance is rated at no freezing or condensation.

◎ **16-point**

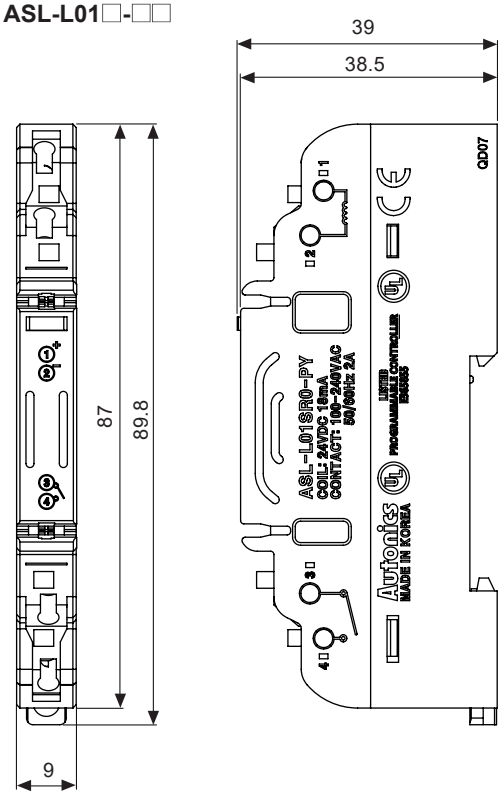
Model		ASL-H16MP0-□N
Input rating voltage		24VDC⎓
Output rating voltage and current of SSR (ambient temp.)※1※2		60VAC~ 50/60Hz or 60VDC⎓ 2.4A (25°C) or 1.7A (55°C)
Current consumption※3		≤4mA
Output type		1a contact SSR output
Applied SSR		AQZ202D [Panasonic]
No. of SSR points		16
Terminal type		Screwless
Terminal pitch		≥ 7.8mm
SSR pitch		10mm
Indicator		Power indicator: red LED, operation indicator: blue LED
Applied cable	Solid wire	Ø0.6 to Ø1.25mm
	Stranded wire※4	AWG22-16 (0.3 to 1.25mm^2)
Stripped wire length		8 to 10mm
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)
Dielectric strength	Between coil-contact	2,500VAC~ 50/60Hz for 1 minute
	Between same contacts	1,000VAC~ 50/60Hz for 1 minute
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes
Shock	Mechanical	1000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times
Environment	Ambient temp.	-15 to 55°C, storage: -25 to 65°C
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Material		Terminal block, cover: polycarbonate, case/base: modified polyphenylene oxide
Accessory		Jumper bar: 2, ejector: 1
Protection structure		IP20 (IEC standard)
Approval		CE cULus
Weight※5		Approx. 377g (approx. 278g)

※1: When connecting loads to output part, please connect loads of same power type.
Connecting loads of different power type may cause safety issues.
※2: This value is rated when using the resistive load. Use proper current for the ambient temperature.
(Refer to the 'Temperature Characteristic Graph'.)
※3: The current consumption including LED current per one SSR.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

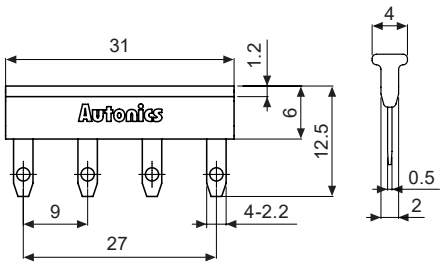
(unit: mm)

◎ **ASL-L01□-□□**

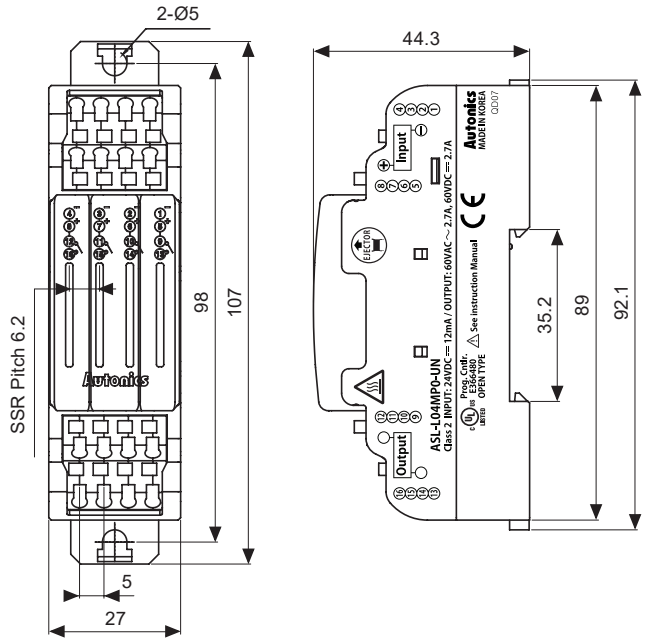


● **Jumper bar (model: JB-9.0-04L)**

※For the desired application (Power/Load common), the jumper bar is sold separately.

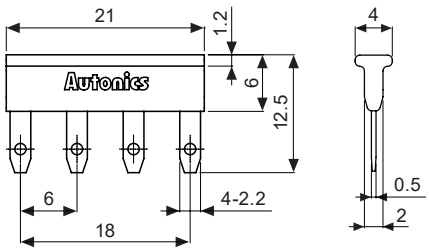


◎ **ASL-L04□-□□**



● **Jumper bar (model: JB-6.0-04L)**

※For the desired application (NPN/PNP/Load common), the jumper bar is sold separately.

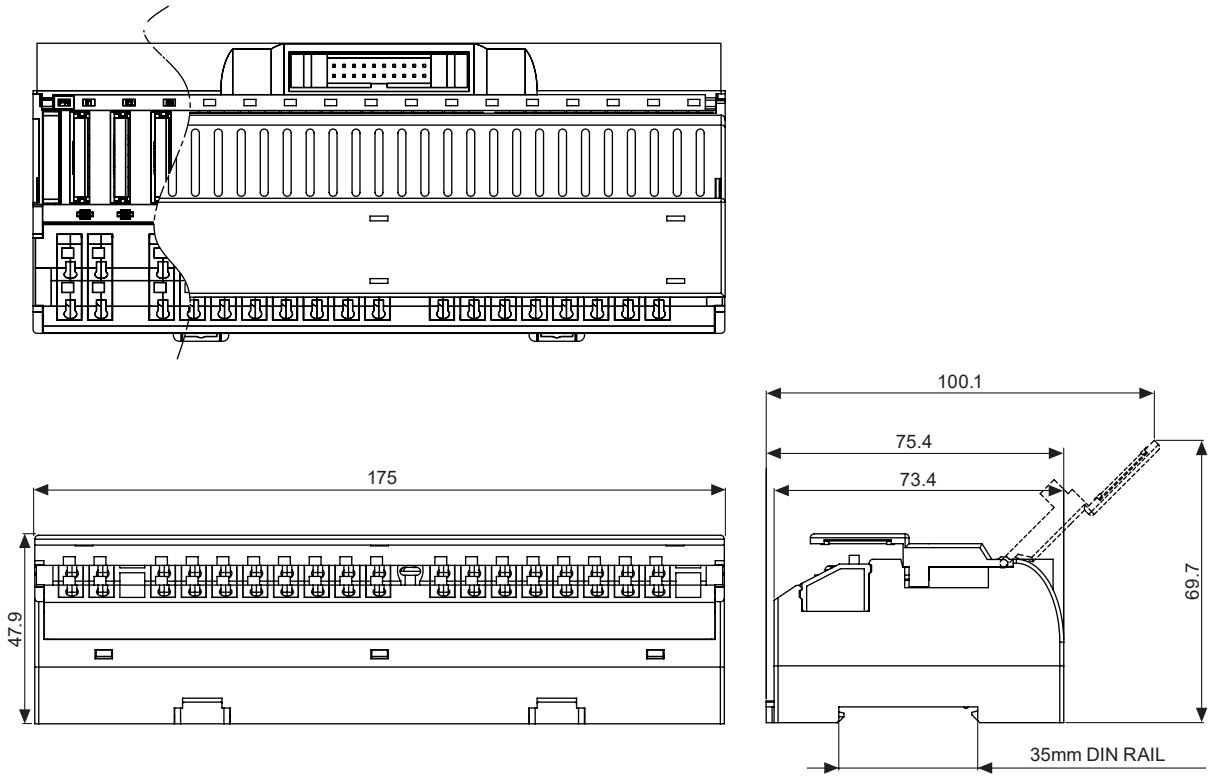


High Temperature Caution

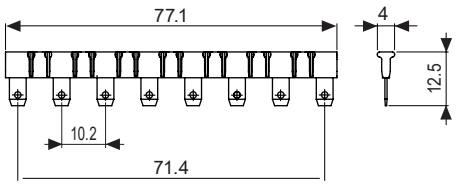
Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

(unit: mm)

◎ **ASL-H16MP0-□N**



● **Jumper bar (model: JB-10.2-08L)**

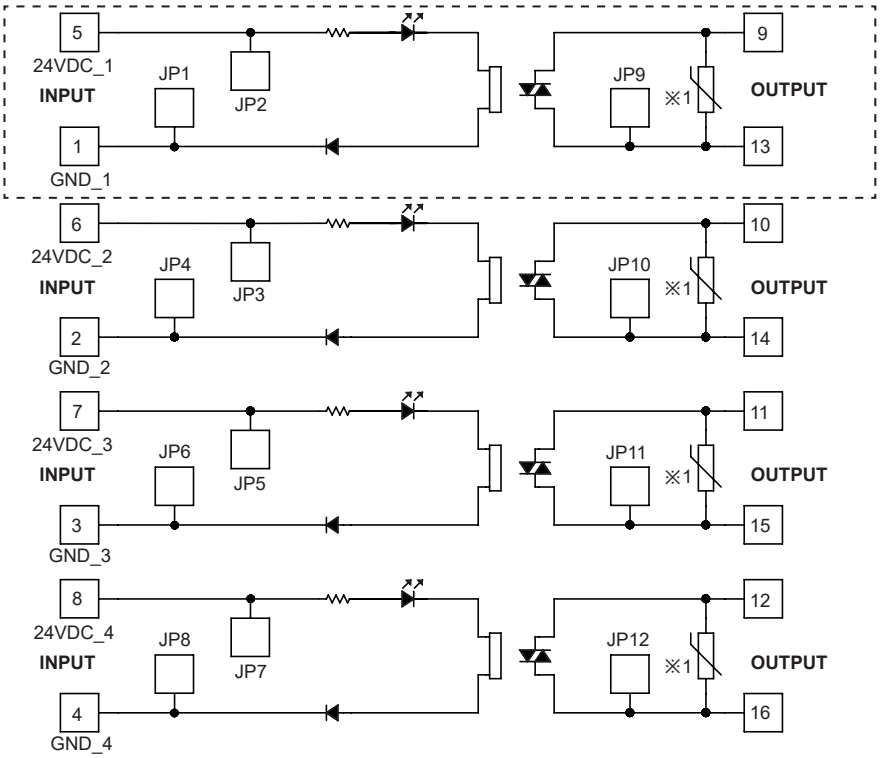


※For the desired application (Load common), the jumper bar is sold separately.

▣ Wire Connections

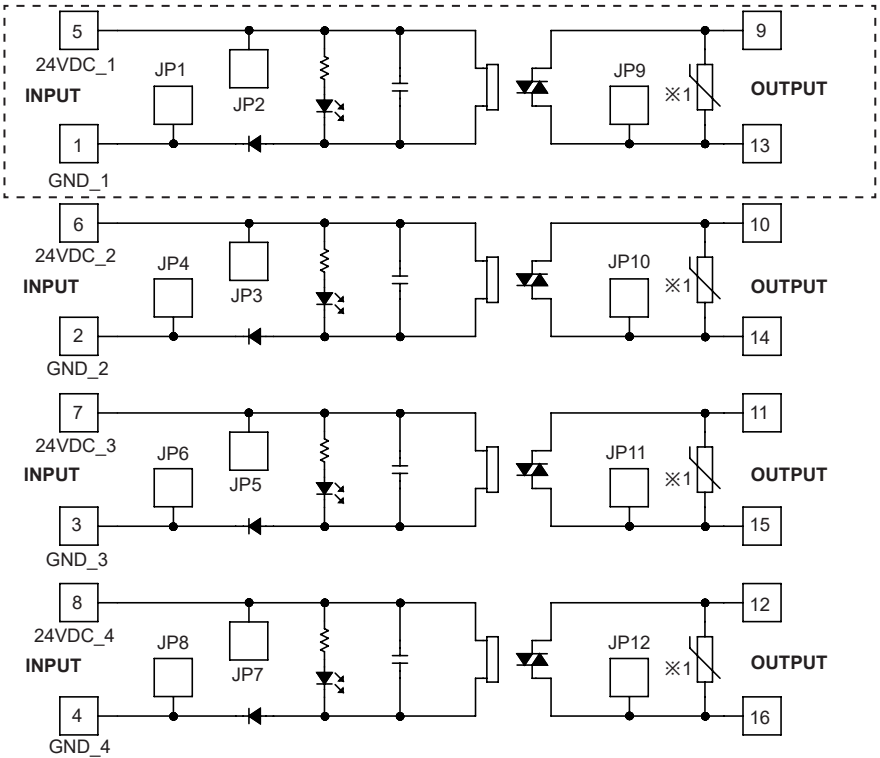
※ NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar.
Please refer to '● Using jumper bars' of '▣ Replacing SSR and Using Jumper Bar'.

◎ **ASL-L01MP0-□□/ASL-L04MP0-□□**



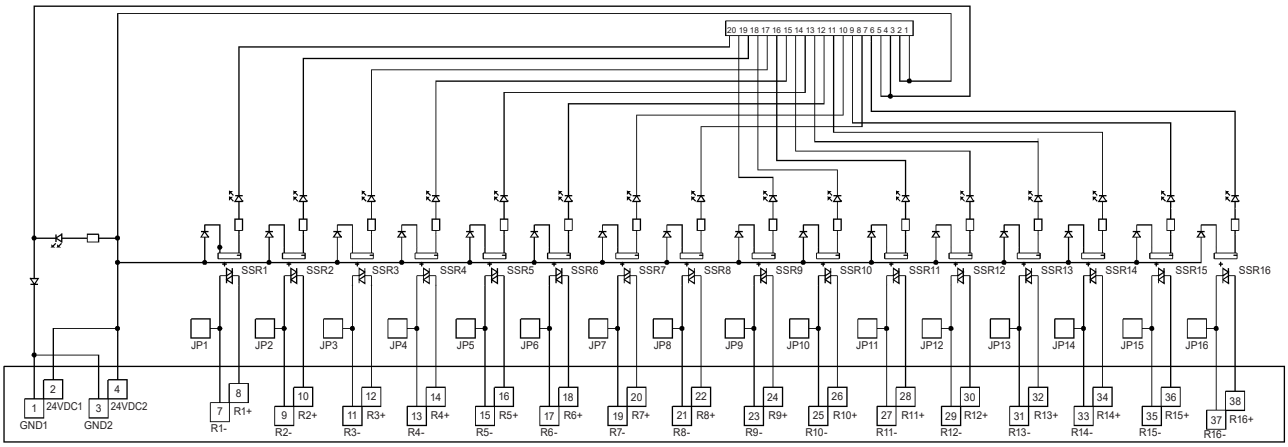
※⬚ part is only for 1-point model.
In 1-point model, NPN or PNP is designated, so that it is not available to select NPN or PNP with the jumper bar.
※1: Only for ASL-L01(04) □ -UY(varistor installed type).

◎ **ASL-L01SP0(SP1/SR0/ST0)-□□/ASL-L04SP0(SP1/SR0/ST0)-□□**

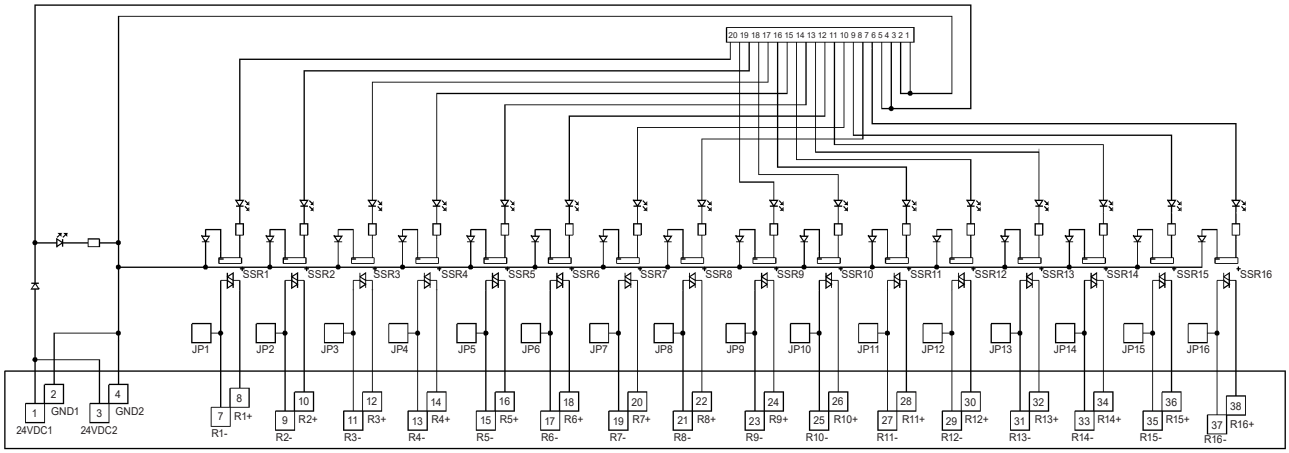


※⬚ part is only for 1-point model.
In 1-point model, NPN or PNP is designated, so that it is not available to select NPN or PNP with the jumper bar.
※There is no condenser for ASL-L□ SR0-□□ model.
※1: Only for ASL-L01(04)□ -UY (varistor installed type).

◎ **ASL-H16MP0-NN**



◎ **ASL-H16MP0-PN**



▣ Connecting Crimp Terminals

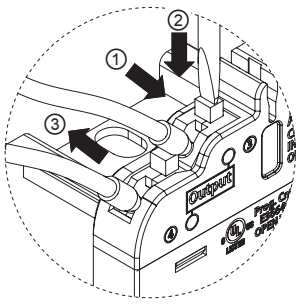
◎ **Connecting and removing end sleeve (ferrule terminal) crimp terminal at screwless type terminal block**

● **Connecting**

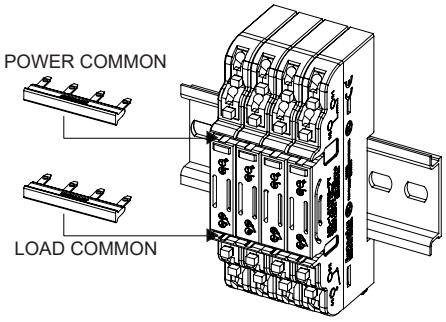
1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

● **Removing**

1) Press and hold the catch above the terminal in direction ② with a flathead screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.



▣ Replacing SSR and Using Jumper Bar



◎ ASL-L01□-□□

※ASL-L01□ – □□ model is integrated SSR type. The unit cannot replace only SSR.

● Using jumper bar

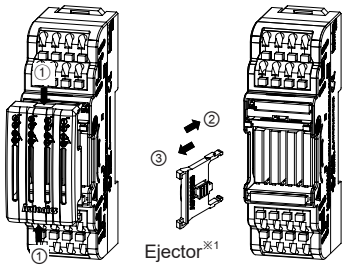
The right figure example is for 4 ASL-L01□-□□ units with jumper bar.
For power common, insert a jumper bar to top (below 1, 2 terminals).
For load common, insert a jumper bar to bottom (above 3, 4 terminals).

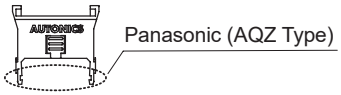
◎ ASL-L04□-□□

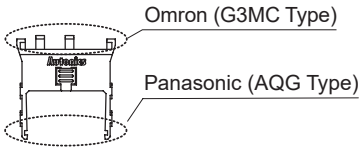
● Replacing SSR

1) Pull the protection cover towards direction ①.
2) Insert the ejector as proper side to ② direction and pull it to ③ direction to remove.
3) Insert a new SSR to the case.

※1: Two way ejector position for SSR replacement
(there is no ejector for SSR SN-24A01C model)

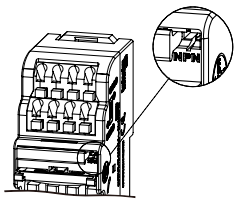
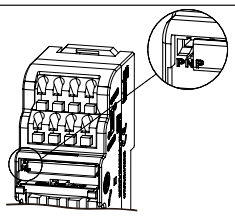
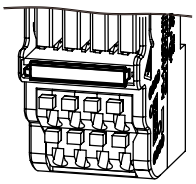






● Using jumper bars

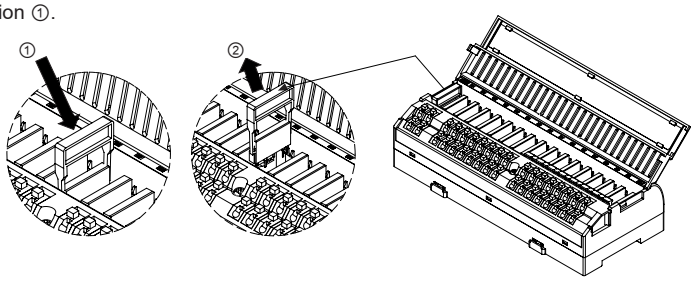
Remove the protection cover and use the jumper bars accordingly.

NPN COMMON	PNP COMMON	LOAD COMMON
		
Insert the jumper bar to the far left towards terminals 4 and 8.	Insert the jumper bar to the far right towards terminals 1 and 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

◎ ASL-H16MP0-□N

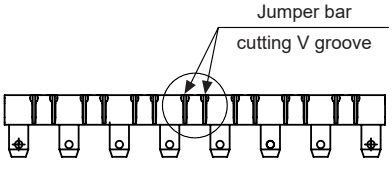
● Replacing SSR

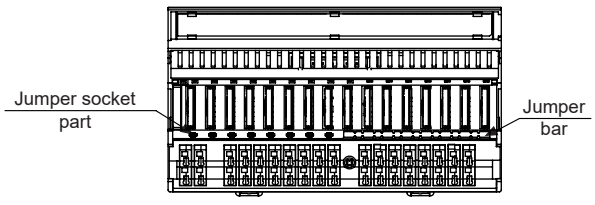
1) Insert the SSR ejector at both ends of the installed SSR to direction ①.
2) Pull the SSR ejector to direction ② for removing the SSR.



● Using jumper bars

1) Cut the jumper bar to the user's desired length by cutting at the V dent (two) using a nipper.
2) Insert the cut jumper bar to the desired jumper bar socket position.





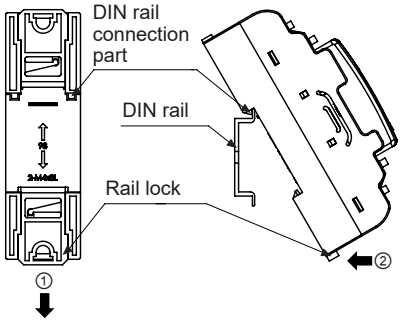
▣ Installation

※When installing the unit, keep the interval between the units.
(refer to the '▣ Example Of Installation'.)

1. Mounting and removal at DIN rail

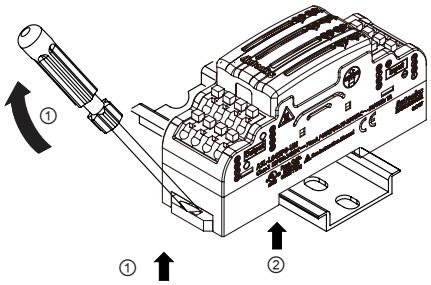
● Mounting

1) Pull the rail lock towards direction ①.
2) Attach the DIN rail connection part onto the DIN rail.
3) Push the unit towards direction ②, then push the rail lock in to lock toward the unit.



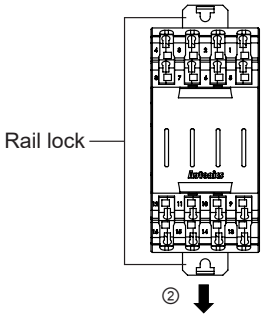
● Removal

1) Insert a screwdriver into the rail lock hole and push it towards direction ①.
2) Remove the unit by pulling the unit towards direction ②.



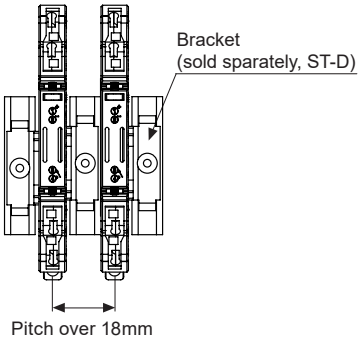
2. Mounting with screws (only for ASL-L04□-□□)

1) The unit can be mounted on panels using the rear rail locks.
2) Pull the rail locks towards ①/② directions.
3) M4×10mm spring washer screws are recommended for installation.
When using flat washers, use Ø9mm diameter washers. The tightening torque should be between 1.0 and 1.5N·m.

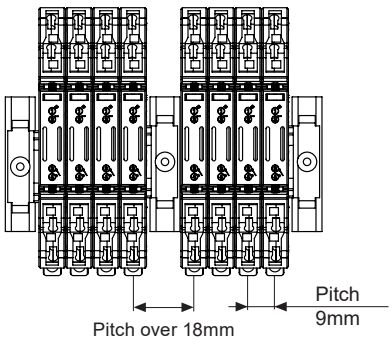


▣ Example of Installation

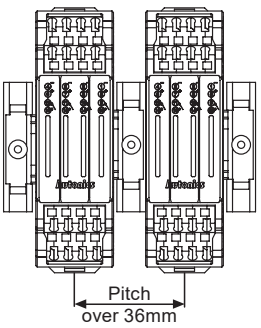
● ASL-L01□-□□
1 unit individual installation
(pitch between each SSR: over 18mm)



● ASL-L01□-□□
4 units arranging installation
(pitch between each SSR: 9mm)



● ASL-L04□-□□
individual installation
(pitch between each SSR: 6.2mm)

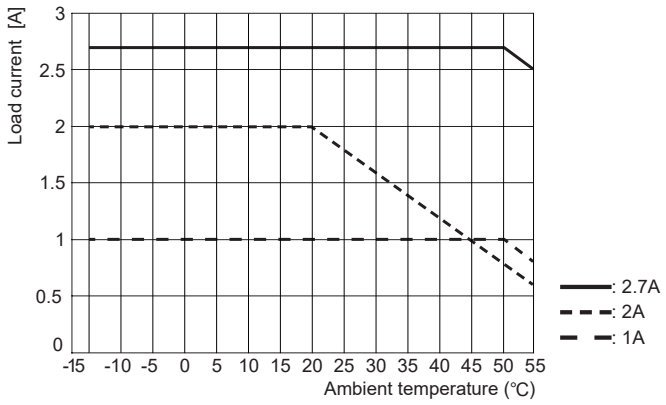


※Pitch is interval between SSRs.

▣ Temperature Derating Graph

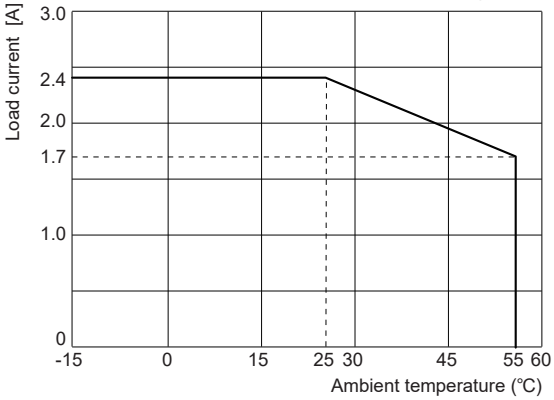
◎ Load current by ambient temperature for each rated current

● ASL-L01□-□□, ASL-L04□-□□

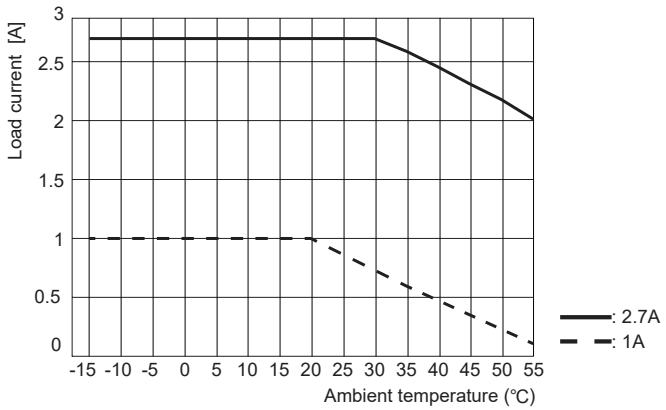


● ASL-H16MP0-□N

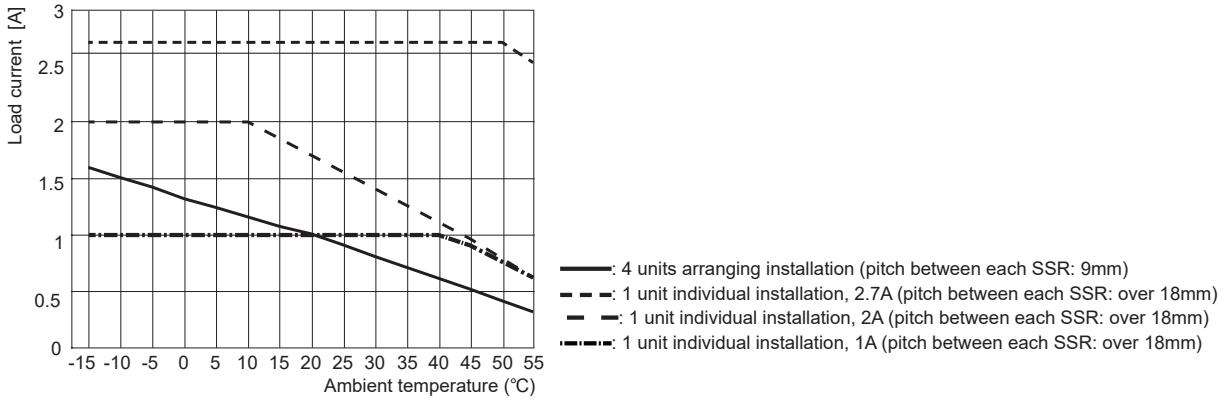
V_{IN}: 24VDC⎓
※V_{IN} is input voltage.



◎ When installing ASL-L04□-□□ individually, load current by ambient temperature for SSRs interval



◎ When installing ASL-L01□-□□, load current by ambient temperature for SSRs interval

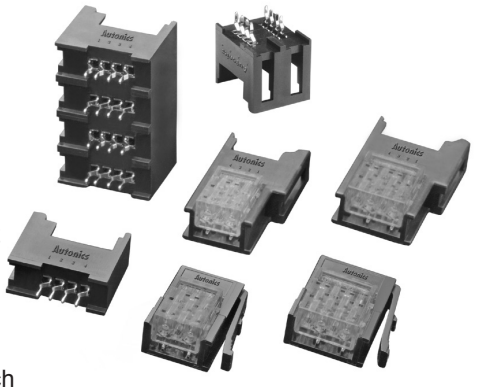


▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category II

Sensor Connector

▣ Features



■ **Wire mount plug/socket**
- Compact and highly reliable of pressure welding connector
- Enables to connect wires as wire mount plug/socket
- Different 9 colors of cover by wire diameter
- Visible wiring status with translucent cover

■ **Board mount socket**
- Enables to insert 4, 2, or 1 wire mount plugs
- Contact placed in mold against electric shock and short-circuit
- Mountable on board closely

■ **Commons**
- Significantly reduces connection time and effort
- Wide products range for various wires
- Compact and high density installation with 2mm of contact pitch
- Max. 3A of current capacity by a pin

CE

▣ Ordering Information

CNE — P 03 — WT

- Cover color (wire specifications)
  - ※'▣ **Cover color and wire specifications'** (Refer to page G-3)
- Pins
  - 03: 3-pin
  - 04: 4-pin
- Connector type
  - P: Wire mount plug
  - S: Wire mount socket
- Item
  - CNE: Sensor connector

CNE — B 2 03

- Pins
  - 03: 3-pin
  - 04: 4-pin
- Lines
  - No-mark: 1-line
  - 2: 2-line
  - 4: 4-line
- Connector type
  - B: Board mount socket
- Item
  - CNE: Sensor connector

▣ Specifications

Type		Wire mount plug	Wire mount socket	Board mount socket
Model		**CNE-P**□-□	**CNE-S**□-□	**CNE-B**□□
Application	Connector	Board mount socket/Wire mount socket	Wire mount plug	Wire mount plug
	Cable	AWG30-20 (Ø0.6mm to Ø2.0mm)		—
	PCB	—		Fender plated-through hole, Hole dia.: 1.0mm, PCB thickness: 1.0 to 2.2mm
Rated voltage		Max. 250VAC~/DC⎓		
Rated current		Max. 3.0A		
Environment	Ambient temp.	-20 to 85℃ (applying 1A), -20 to 75℃ (applying 2A), -20 to 60℃ (applying 3A)		
	Ambient humi.	40 to 80%RH		
Terminal retention		Min. 1.4kgf		
Pressure strength		• AWG30: Min. 0.5kgf • AWG24: Min. 0.8kgf • AWG20: Min. 1.0kgf		
Extraction		Min. 0.49N (50gf)/pin		
Insertion		Max. 1.96N (200gf)/pin		
Dielectric strength		1,000VAC for 1min (between terminals)		
Insulated resistance		Over 1,000MΩ (between terminals)		
Contact resistance		Max. 0.05Ω (short-current: 1mA, max. open voltage: 20mV)		
Material		Body: PC/ABS (UL94V-0), Terminal: C5210 (gold 0.2μm), Case: PC (UL94-V0)		Body: PC/ABS (UL94-V0), Terminal: C5210 (gold 0.2μm)

▣ Cover Color and Wire Specifications

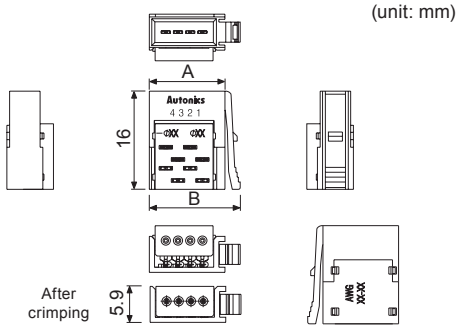
Cover color	3-pin	4-pin	Applied wire specifications	
			Nominal cross section area (mm²)	Cover diameter (mm)
Transparent (WT)	CNE-□03-WT	CNE-□04-WT	0.05 to 0.08 (AWG30 to 28)	Ø0.6 to 0.8
Yellow-Green (YG)	CNE-□03-YG	CNE-□04-YG		Ø0.8 to 1.0
Violet (VT)	CNE-□03-VT	CNE-□04-VT		Ø1.0 to 1.2
Red (RE)	CNE-□03-RE	CNE-□04-RE	0.13 to 0.21 (AWG26 to 24)	Ø0.8 to 1.0
Yellow (YW)	CNE-□03-YW	CNE-□04-YW		Ø1.0 to 1.2
Orange (OG)	CNE-□03-OG	CNE-□04-OG		Ø1.2 to 1.6
Green (GN)	CNE-□03-GN	CNE-□04-GN	0.32 to 0.5 (AWG22 to 20)	Ø1.0 to 1.2
Blue (BL)	CNE-□03-BL	CNE-□04-BL		Ø1.2 to 1.6
Gray (GY)	CNE-□03-GY	CNE-□04-GY		Ø1.6 to 2.0

※□: P (wire mount plug), S (wire mount socket)

▣ Dimensions

◎ Wire mount plug

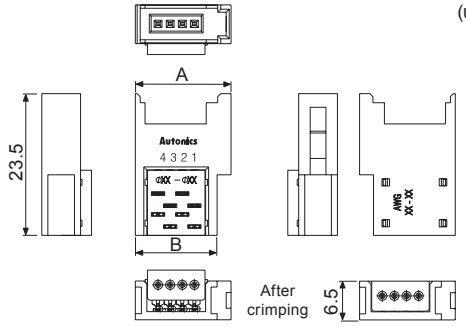
(unit: mm)



Pins	Model	A	B
3	CNE-P03-□	10.5	14.5
4	CNE-P04-□	12.5	16.5

◎ Wire mount socket

(unit: mm)

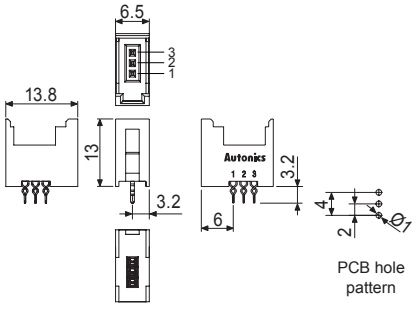


Pins	Model	A	B
3	CNE-S03-□	13.8	11.5
4	CNE-S04-□	15.8	13.5

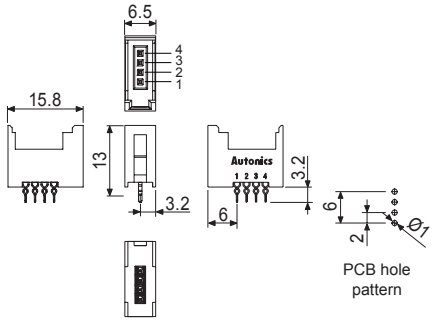
◎ Board mount socket

(unit: mm)

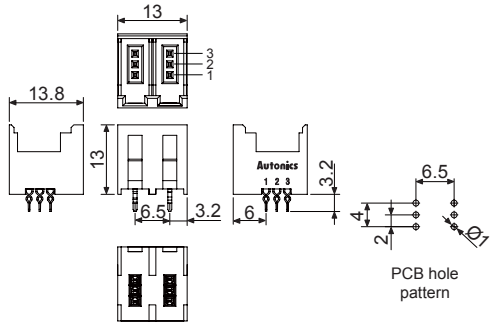
● **CNE-B03 (1-line×3-pin)**



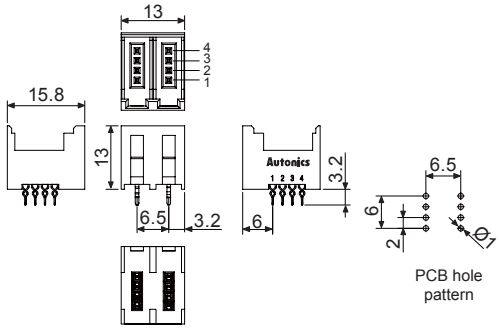
● **CNE-B04 (1-line×4-pin)**



● **CNE-B203 (2-line×3-pin)**



● **CNE-B204 (2-line×4-pin)**

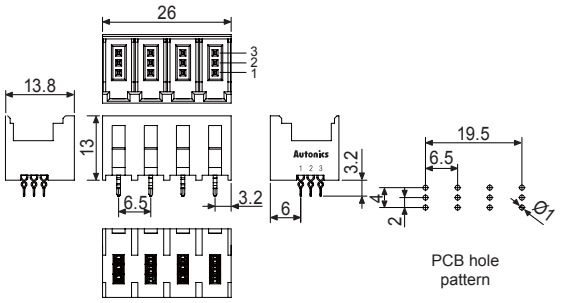


▣ Dimensions

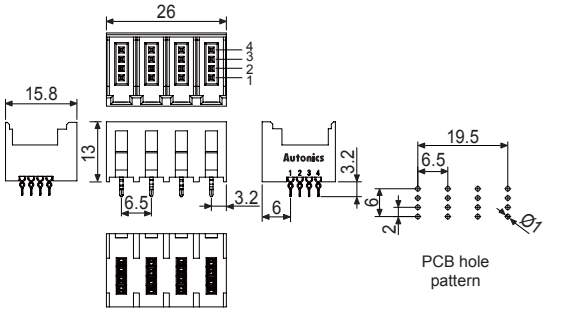
◎ Board mount socket

(unit: mm)

● CNE-B403 (4-line×3-pin)



● CNE-B404 (4-line×4-pin)



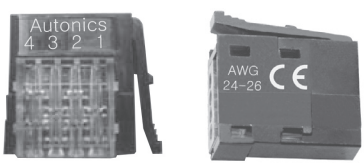
▣ Wiring Sensor Connector

1) Select connector

- Check the wire specifications (conductor section, cover diameter).
- Select the proper color of sensor connector (model) by referring to the below table.

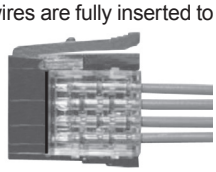
Cover color	Wire mount plug	Wire mount socket	Applied wire specifications	
			Nominal cross section area (mm²)	Cover diameter (mm)
Transparent (WT)	CNE-P□-WT	CNE-S□-WT	0.05 to 0.08 (AWG30 to 28)	Ø0.6 to 0.8
Yellow-Green (YG)	CNE-P□-YG	CNE-S□-YG		Ø0.8 to 1.0
Violet (VT)	CNE-P□-VT	CNE-S□-VT		Ø1.0 to 1.2
Red (RE)	CNE-P□-RE	CNE-S□-RE	0.13 to 0.21 (AWG26 to 24)	Ø0.8 to 1.0
Yellow (YW)	CNE-P□-YW	CNE-S□-YW		Ø1.0 to 1.2
Orange (OG)	CNE-P□-OG	CNE-S□-OG		Ø1.2 to 1.6
Green (GN)	CNE-P□-GN	CNE-S□-GN	0.32 to 0.5 (AWG22 to 20)	Ø1.0 to 1.2
Blue (BL)	CNE-P□-BL	CNE-S□-BL		Ø1.2 to 1.6
Gray (GY)	CNE-P□-GY	CNE-S□-GY		Ø1.6 to 2.0

※□: Number of pins (03: 3-pin, 04: 4-pin)
※The proper sensor connector may be different by conductor of wire.
※Cover diameter of applied wire at connector (at translucent part) and AWG number of body backside are marked.



2) Insert the wires

- Check the pin numbers and insert the wires into the according holes.
- Check that the wires are fully inserted to the end of the cover.



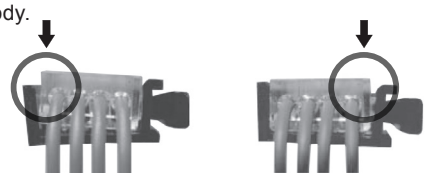
3) Crimping

- Insert the cover into the body with a jig (press fitting tool, etc).

※Apply pressure with the jig from the side, as shown in the figure below

4) Check the cover

- Check to make sure that the cover is level with the body and that there is no space between the cover and the body.



Wrong (1)
Not enough cover insertion.

Wrong (2)
Not enough cover insertion.

※Press the part of arrows again.

Photoelectric/Proximity Sensor Connector Cable / Connector Connection Cable

▣ Ordering Information

◎ Connector cable

C | I | D | | 2 | | – 2 | | – | |

Standard	No-mark	Standard type
	I※1	IEC standard
Connection	No-mark	Socket type
	P	Plug type
Cable length	1	1m
	2	2m
	3	3m
	5	5m
	7	7m
Connector dimension	No-mark	M12
	08	M8
Cable wire	2	2-wire type
	3	3-wire type
	4	4-wire type
Cable material	No-mark	General type
	H	Oil resistant PVC
Power supply	D	DC type
	A	AC type
Shape	I	Standard type
	L	L type
Item	C	Connector

※1: This is IEC standard and it can be customized.

◎ Connector connection cable

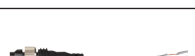
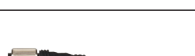
C | 1 | D | | 4 | – 2 | |

Connection type	No-mark	Socket-Plug type
	P	Plug-Plug type
Cable length	1	1m
	2	2m
	3	3m
	5	5m
	7	7m
Number of connector pins	4	4-pin
Cable material	No-mark	General type
	H	Oil resistant PVC
Power supply	D	DC type
	A	AC type
Shape	1	Standard type
	2	L type-L type
	3	Standard type-L type
	4	L type-Standard type
Item	C	Connector

Photoelectric/Proximity Sensor Connector Cable

▣ Connector Cable

◎ M12 Connector

Appearance			Model	Length	Cable material
DC 2-wire type	Socket type		CID2-2	2m	PVC
			CID2-2-I ※1		
			CID2-5	5m	
			CID2-5-I ※1		
			CLD2-2	2m	
			CLD2-2-I※1		
			CLD2-5	5m	
			CLD2-5-I※1		
	Plug type		CID2-2P	2m	
			CID2-5P	5m	
			CLD2-2P	2m	
			CLD2-5P	5m	
DC 3-wire type	Socket type		CID3-2	2m	
			CID3-5	5m	
			CLD3-2	2m	
			CLD3-5	5m	
	Plug type		CID3-2P	2m	
			CLD3-2P	2m	
DC 4-wire type	Socket type		CIDH4-2	2m	
			CIDH4-3	3m	
			CIDH4-5	5m	
			CIDH4-7	7m	
			CLDH4-2	2m	
			CLDH4-3	3m	
			CLDH4-5	5m	
			CLDH4-7	7m	
	Plug type		CIDH4-2P	2m	
			CIDH4-3P	3m	
			CIDH4-5P	5m	
			CIDH4-7P	7m	
			CLDH4-2P	2m	
			CLDH4-3P	3m	
			CLDH4-5P	5m	
			CLDH4-7P	7m	
AC 2-wire type	Socket type		CIA2-2	2m	
			CIA2-5	5m	
			CIAH2-2	2m	
			CIAH2-5	5m	
			CLA2-2	2m	
			CLA2-5	5m	
			CLAH2-2	2m	
			CLAH2-5	5m	
	Plug type		CIA2-2P	2m	
			CIA2-5P	5m	
			CIAH2-2P	2m	
			CIAH2-5P	5m	
			CLA2-2P	2m	
			CLA2-5P	5m	
			CLAH2-2P	2m	
			CLAH2-5P	5m	

※1: This is IEC standard and it can be customized.

※Be careful of connection, because color is different when DC 4-wire connector cable is used for DC 2-wire sensor.

▣ Connector Connection Cable

◎ M12 Connector

Appearance			Model	Length	Cable material
Socket - Plug type	DC type		C1D4-2	2m	PVC
			C1D4-5	5m	
			C1DH4-1	1m	
			C1DH4-3	3m	
			C1DH4-5	5m	
			C1DH4-7	7m	
	AC type		C1A4-2	2m	
			C1A4-5	5m	
	DC type		C2D4-2	2m	
			C2D4-5	5m	
			C2DH4-1	1m	
			C2DH4-3	3m	
			C2DH4-5	5m	
			C2DH4-7	7m	
	AC type		C2A4-2	2m	
			C2A4-5	5m	
	DC type		C3D4-2	2m	
			C3D4-5	5m	
			C3DH4-1	1m	
			C3DH4-3	3m	
			C3DH4-5	5m	
			C3DH4-7	7m	
	AC type		C3A4-2	2m	
			C3A4-5	5m	
	DC type		C4D4-2	2m	
			C4D4-5	5m	
			C4DH4-1	1m	
			C4DH4-3	3m	
			C4DH4-5	5m	
			C4DH4-7	7m	
	AC type		C4A4-2	2m	
			C4A4-5	5m	
Plug - Plug type	DC type		C1D4-2P	2m	
			C1D4-5P	5m	
	AC type		C1A4-2P	2m	
			C1A4-5P	5m	

◎ M8 Connector (connector connection cable)

Appearance			Model	Length	Cable material
DC 4-wire type	Socket type		CID408-2	2m	PVC
			CID408-5	5m	
			CLD408-2	2m	
			CLD408-5	5m	

▣ Specifications Of Connector Cable

Ø5, 2/3/4-wire, 2m/3m/5m/7m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.3mm)

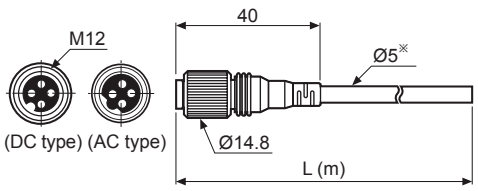
For, CIDH4/CLDH4, Ø6, 4-wire, 3m/5m (AWG22, core diameter: 0.08mm, number of cores: 60, insulator out diameter: Ø1.65mm)

▣ Dimensions

◎ Connector cable (Socket type)

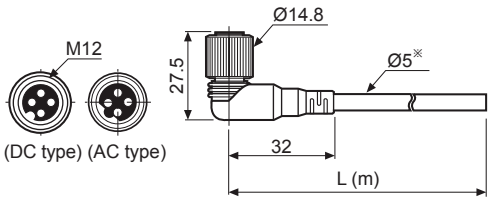
(unit: mm)

● **CID2-□, CID2-□-I ● CID3-□ ● CIDH4-□**
● **CIA2-□, CIAH2-□**



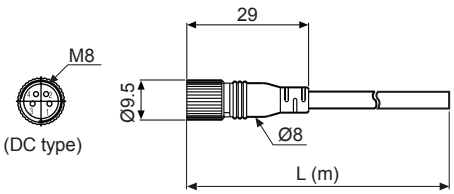
※Cable diameter of CIDH4-□, CIAH2-□ is Ø6.

● **CLD2-□, CLD2-□-I ● CLD3-□ ● CLDH4-□**
● **CLA2-□, CLAH2-□**

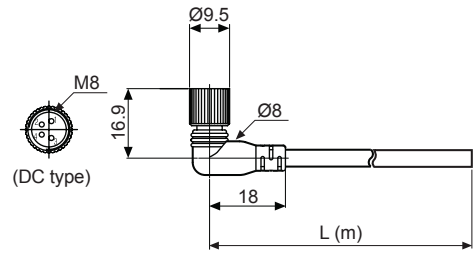


※Cable diameter of CLDH4-□, CLAH2-□ is Ø6.

● **CID408-2, CID408-5**



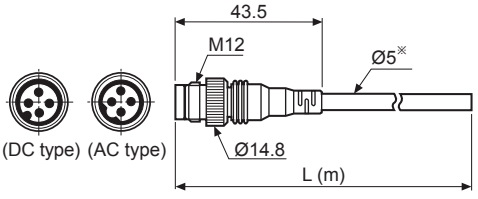
● **CLD408-2, CLD408-5**



◎ Connector cable (Plug type)

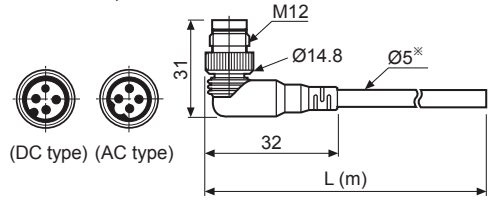
(unit: mm)

● **CID2-□P ● CID3-2P ● CIDH4-□P**
● **CIA2-□P, CIAH2-□P**



※Cable diameter of CIDH4-□P, CIAH2-□P is Ø6.

● **CLD2-□P ● CLD3-2P ● CLDH4-□P**
● **CLA2-□P, CLAH2-□P**

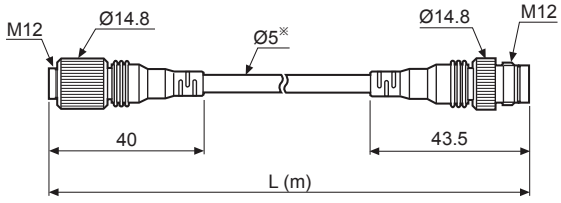


※Cable diameter of CLDH4-□P, CLAH2-□P is Ø6.

◎ Connector connection cable (Socket-Plug type)

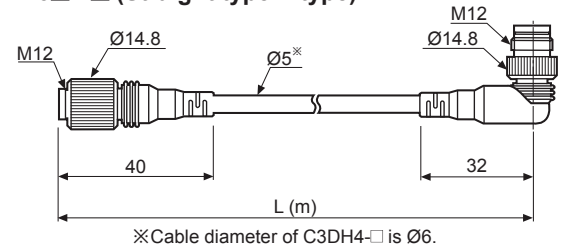
(unit: mm)

●**C1□4-□ (Standard type)**



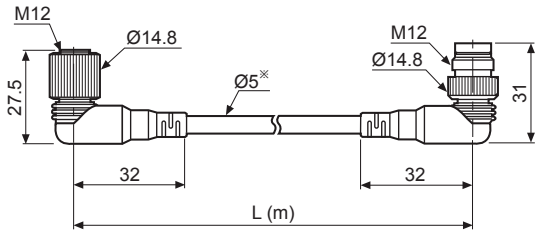
※Cable diameter of C1DH4-□ is Ø6.

●**C3□4-□ (Straight type-L type)**



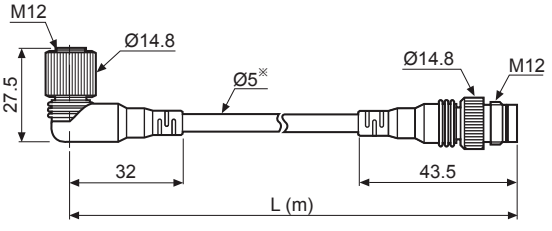
※Cable diameter of C3DH4-□ is Ø6.

●**C2□4-□ (L type-L type)**



※Cable diameter of C2DH4-□ is Ø6.

●**C4□4-□ (L type-Straight type)**

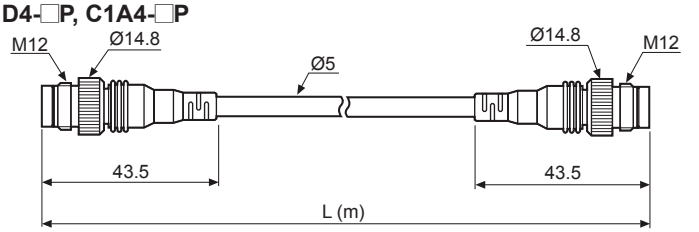


※Cable diameter of C4DH4-□ is Ø6.

◎ Connector connection cable (Plug-Plug type)

(unit:mm)

● **C1D4-□P, C1A4-□P**

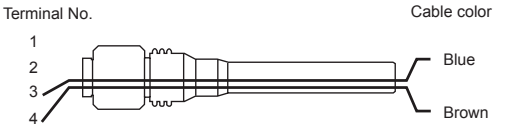


▣ Connections

◎ Connector cable

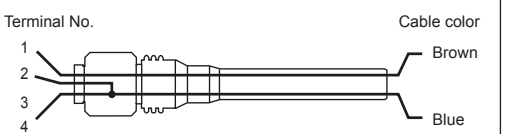
DC 2-wire type

● **CID2-□** ● **CLD2-□** ● **CID2-□P** ● **CLD2-□P**



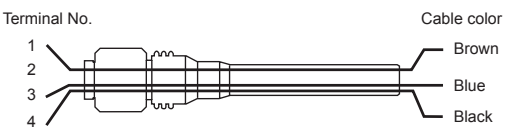
DC 2-wire type (IEC standard type)

● **CID2-□-I** ● **CLD2-□-I**



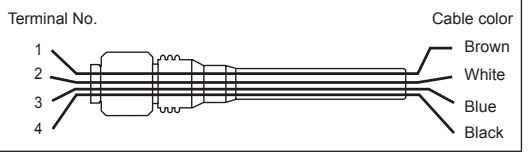
DC 3-wire type

● **CID3-□** ● **CLD3-□** ● **CID3-□P** ● **CLD3-□P**



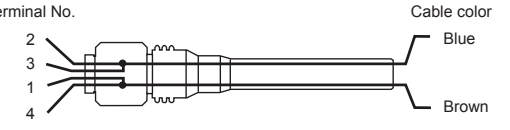
DC 4-wire type (oil resistant PVC)

● **CIDH4-□** ● **CLDH4-□** ● **CIDH4-□P** ● **CLDH4-□P**



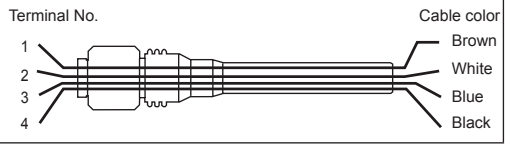
AC 2-wire type

● **CIA2-□** ● **CLA2-□** ● **CIA2-□P** ● **CLA2-□P**
● **CIAH2-□** ● **CLAH2-□** ● **CIAH2-□P** ● **CLAH2-□P**



DC 4-wire type

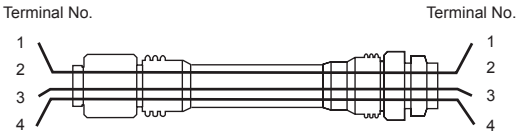
● **CID408-□** ● **CLD408-□**



◎ Connector connection cable

DC type

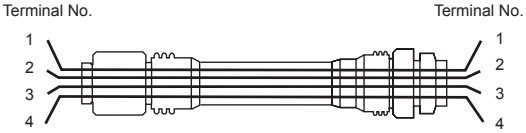
● **C1D4-□ / C2D4-□ / C3D4-□ / C4D4-□**



※Pin 2 is N·C (Not Connected).

DC type

● **C1DH4-□/C2DH4-□/C3DH4-□/C4DH4-□/C1D4-□P**



AC type

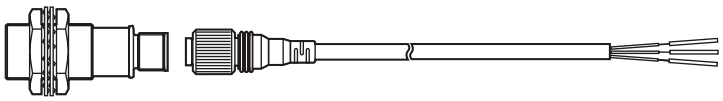
● **C1A4-□/C2A4-□/C3A4-□/C4A4-□** ● **C1A4-□P**

※Pin 2 / 3, 1 / 4 are connected inside.

▣ Connector Cable Connections

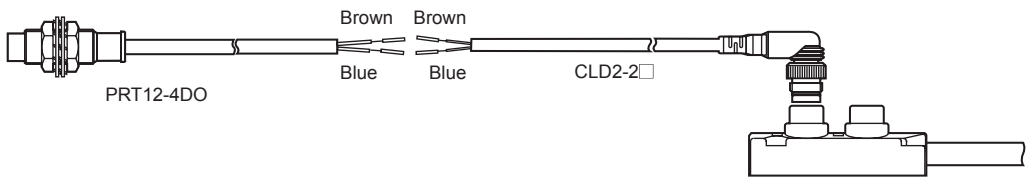
● Connector cable (Socket type)

PRWT12-4DO CID2-□

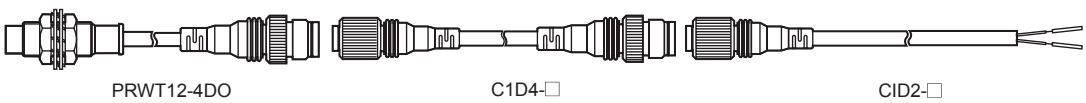


PRCM18-5DN CID3-□

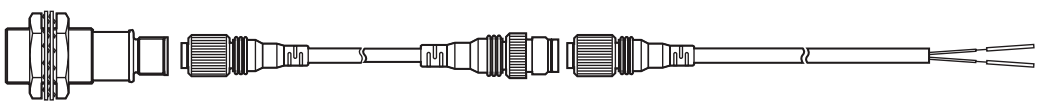
● Connector cable (Plug type)



● Connector connection cable (Socket-Plug type)



PRWT12-4DO C1D4-□ CID2-□



PRCMT18-5DO C1D4-□ CID2-□

Encoder Connector Cable / Connector Connection Cable

▣ Ordering Information

◎ Connector cable (Socket type)

C I D 6 S – 2

Cable length※	2	2m
	5	5m
	10	10m
	15	15m
Connection	S	Socket type
Number of connector pins	6	6-pin
	9	9-pin
	13	13-pin
Power supply	D	DC type
Shape	I	Standard type
Item	C	Connector

※Cable length is customizable.
15m is only for CID6S-□

◎ Connector connection cable (Socket-Plug type)

C I D 13 P – 2 – S I

Shape	I	Standard type
Connection	S	Socket type
Cable length※	2	2m
	5	5m
	10	10m
Cable shape	P	Plug type
Number of connector pins	13	13-pin
Power supply	D	DC type
Shape	1	Standard type
Item	C	Connector

※Cable length is customizable.

▣ Connection

Model		CID6S	CID9S	CID13S
Pin	1	Black	Black	Brown
	2	White	Red	Red
	3	Orange	Brown	Orange
	4	Brown	Blue	Yellow
	5	Blue	White	Blue
	6	Shield	Grey	Purple
	7		Orange	Grey
	8		Yellow	White/Brown
	9		Shield	White/Red
	10			White/Orange
	11			Shield
	12			White
	13			Black

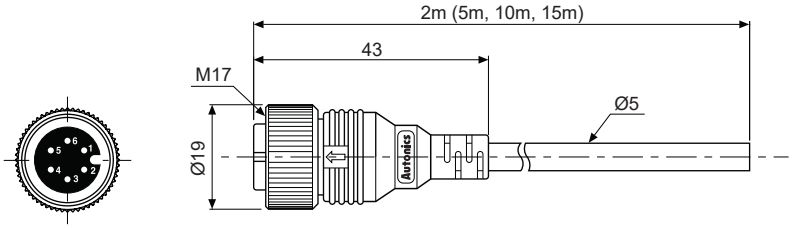
Encoder Connector Cable

▣ Dimensions

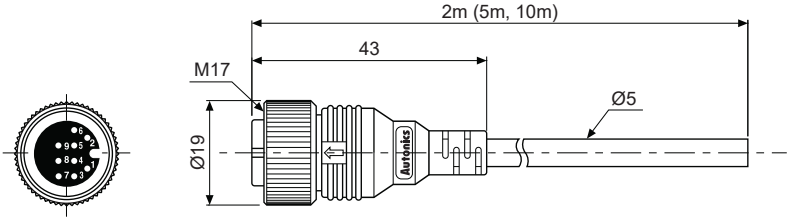
◎ Connector cable (Socket type)

(unit: mm)

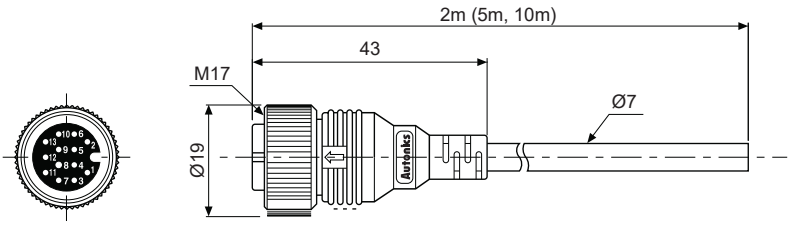
● **CID6S-2, CID6S-5, CID6S-10, CID6S-15**
(totem pole output / NPN open collector output / voltage output)



● **CID9S-2, CID9S-5, CID9S-10 (line driver output)**

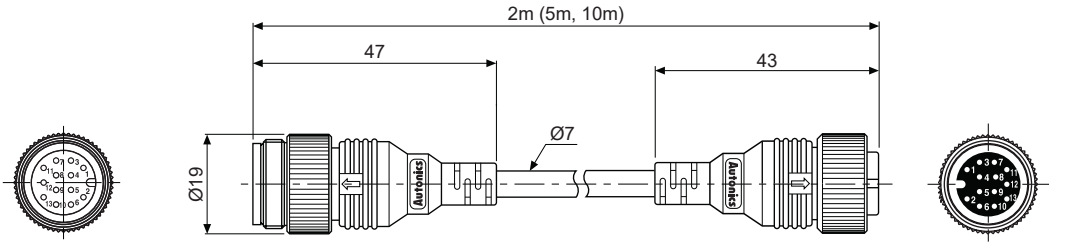


● **CID13S-2, CID13S-5, CID13S-10**



◎ Connector connection cable (Socket-Plug type)

● **CID13P-2-SI, CID13P-5-SI, CID13P-10-SI**



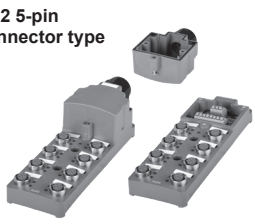
Sensor Distribution Box (M12 4-Pin/5-Pin Connector Type)

▣ Features

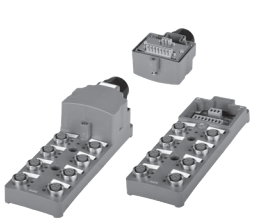
- Easy check operation by operation indicator (red/green)
- Single power operates several sensors
- Convenient wiring and power line
- IP67 protection structure with water-proof cover (IP52 protection structure with protection cover)
- Supports 1-signal, 2-signal (DC 4-wire)

Cable type

Cable type



Spring terminal type



Pluggable screw terminal type

⚠ **Please read "Safety Considerations" in the instruction manual before using.**

▣ Ordering Information

PT	4	–		3D	N	5	–	5

Item

Number of ports

Connection method for external signal

Output type

Input logic※1

No. of M12 connector pins and case color

Cable type - Cable length

Pluggable screw terminal type - Hood cover

M12 4-pin connector	No mark	5m	No mark	Including hood cover
M12 5-pin connector	5	5m	B	No hood cover
	10	10m		

PT	Sensor distribution box

4	4-port
6	6-port
8	8-port

No mark	Cable type
S	Spring terminal type
P	Pluggable screw terminal type

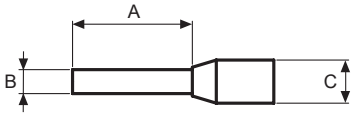
2D	DC 2-wire (1-signal)
3D	DC 3-wire (1-signal)
4D	DC 4-wire (2-signal)※2

N	NPN type
P	PNP type

No mark	4-pin (yellow)
5	5-pin (blue)
5K	5-pin (black)※3

※1: It is not applied for DC 2-wire (1-signal) type of output.
※2: Only for cable type of M12 5-pin connector type.
※3: Only for spring terminal type, pluggable screw terminal type of M12 5-pin connector type.

▣ Terminal Specifications for Spring/Pluggable Screw Terminal Type



(unit: mm)

		A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	Spring terminal type	8	1.3 tot 1.7	3.4 to 3.8	Signal line: AWG22 (0.30mm^2) Power line: AWG17 (1mm^2)
	Pluggable screw terminal type	8 to 10			

▣ Specifications

◎ M12 4-pin connector type

Model	NPN type	PT4-2D	PT4-3DN	PT6-2D	PT6-3DN	PT8-2D	PT8-3DN
	PNP type	—	PT4-3DP	—	PT6-3DP	—	PT8-3DP
Port		4-port		6-port		8-port	
Output type※1		2-wire (1-signal),	3-wire (1-signal)	2-wire (1-signal),	3-wire (1-signal)	2-wire (1-signal),	3-wire (1-signal)
Power supply		12-24VDC⎓ (10-30VDC⎓)					
Rated current		2A (per signal), 4A (per port), 10A (total)					
Leakage current		Max. 0.5mA					
Connection life cycle		Min. 200 operations					
Insulation resistance		Over 50MΩ (at 500VDC megger)					
Dielectric strength		1,500VAC 50/60Hz for 1 min					
Vibration		1mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times					
Indicator		Power indicator: green LED, operation indicator: red LED					
Environment	Ambient temp.	-25 to 75, storage: -30 to 80					
	Ambient humi.	35 to 95%RH, storage: 35 to 95%RH					
Protection structure※2		IP67 (IEC standard/when mounting connector, waterproof cover) or IP52 (IEC standard/when mounting protection cover)					
Material		Case: polybutylene terephthalate (G15%), general cable (gray): polyvinyl chloride (PVC)					
Approval		CE					
Weight※3, ※4		Approx. 700g (approx. 660g)		Approx. 720g (approx. 680g)		Approx. 820g (approx. 780g)	

※1: Connect the sensor to the proper output type.
※2: This is not applicable when connectors and protection/waterproof covers are not mounted.
※3: The weight includes packaging. The weight in parenthesis is for unit only.
※4: The weights are for 5m cable.
※Environment resistance is rated at no freezing or condensation.

◎ M12 5-pin connector type

Type		Cable type						Spring terminal type※1			Pluggable screw terminal type※1		
Model	NPN type	PT4-3DN5-□	PT4-4DN5-□	PT6-3DN5-□	PT6-4DN5-□	PT8-3DN5-□	PT8-4DN5-□	PT4-S3DN□	PT6-S3DN□	PT8-S3DN□	PT4-P3DN□-□	PT6-P3DN□-□	PT8-P3DN□-□
	PNP type	PT4-3DP5-□	PT4-4DP5-□	PT6-3DP5-□	PT6-4DP5-□	PT8-3DP5-□	PT8-4DP5-□	PT4-S3DP□	PT6-S3DP□	PT8-S3DP□	PT4-P3DP□-□	PT6-P3DP□-□	PT8-P3DP□-□
Port		4-port		6-port		8-port		4-port	6-port	8-port	4-port	6-port	8-port
Output type※2		3-wire (1-signal)	4-wire (2-signal)	3-wire (1-signal)	4-wire (2-signal)	3-wire (1-signal)	4-wire (2-signal)	3-wire (1-signal)					
Power supply		12-24VDC⎓											
Rated current		2A (per signal), 4A (per port), 10A (total)						2A (per signal), 2A (per port), 7A (total)					
Leakage current		Max. 0.5mA						—					
Current consumption		Max. 5mA											
Connection life cycle		Min. 200 operations											
Insulation resistance		Over 100MΩ (at 500VDC megger)											
Dielectric strength		500VAC 50/60Hz for 1 min											
Vibration		3mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours											
Shock		500m/s² (approx. 50G) in each X, Y, Z direction for 3 times											
Indicator		Power indicator: red LED, operation indicator: green LED											
Environment	Ambient temp.	-25 to 75, storage: -30 to 80											
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH											
Protection structure※3		IP67 (IEC standard/when mounting connector, waterproof cover) or IP52 (IEC standard/when mounting protection cover)											
Material		Case: polybutylene terephthalate (G15%), name plate: polycarbonate, general cable (black): polyvinyl chloride (PVC)						Case: polybutylene terephthalate (g15%), name plate: polycarbonate, cover: polybutylene terephthalate (g15%), cover nut: polyamide 6 (g15%)					
Approval		CE											
Weight※4, ※5		Approx. 1100g (approx. 900g)	Approx. 1400g (approx. 1200g)	Approx. 1130g (approx. 930g)	Approx. 1430g (approx. 1230g)	Approx. 1160g (approx. 960g)	Approx. 1460g (approx. 1260g)	Approx. 270g (approx. 140g)	Approx. 292g (approx. 165g)	Approx. 314g (approx. 190g)	Approx. 280g (approx. 150g)	Approx. 302g (approx. 175g)	Approx. 334g (approx. 210g)

※1: Applicable cable out diameter is 10.5mm±0.3 for Spring/Pluggable screw terminal type.
※2: Connect the sensor to the proper output type.
※3: This is not applicable when connectors and protection/waterproof covers are not mounted.
※4: The weight includes packaging. The weight in parenthesis is for unit only.
※5: Cable type weights are based on 5m cable.
※Environment resistance is rated at no freezing or condensation.

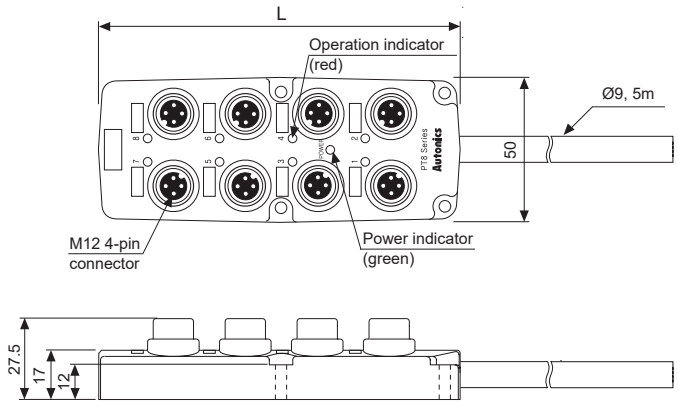
▣ Dimensions

※The below dimensions are based on 8-port.

(unit: mm)

◎ **Cable type**

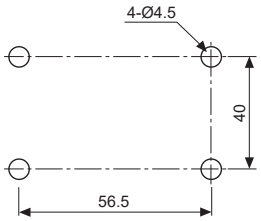
● **M12 4-pin connector type**



Model	L
PT4-□□	73
PT6-□□	98
PT8-□□	123

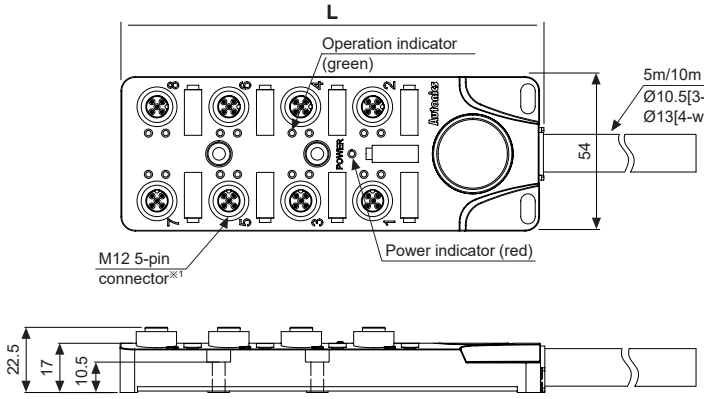
※Cable specification: Ø9, 10-wire (conductor cross section: 0.3mm^2, insulator diameter: Ø1.67)

● **Panel cut-out**



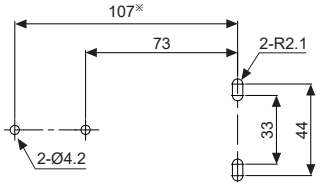
※Mounting holes are same as 4, 6, 8-port.

● **M12 5-pin connector type**



Model	L
PT4-□□□-□	95
PT6-□□□-□	120
PT8-□□□-□	145

● **Panel cut-out**



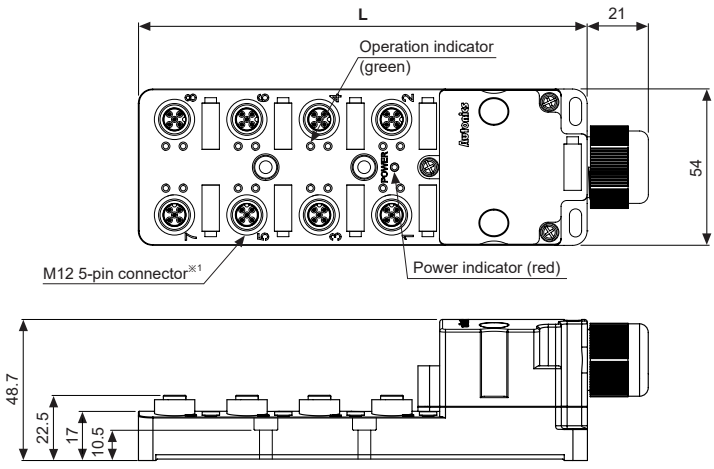
※Except 4-port model.

※1: When connecting L type connectors, connection direction may be different by the manufacturers of the connector.

◎ **Spring terminal type/Pluggable screw terminal type**

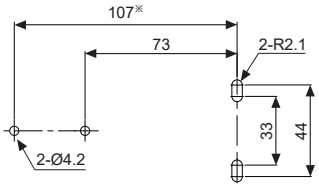
※The below dimensions are based on 8-port.

(unit: mm)



Model	L
PT4-S□□□ PT4-P□□□-□	105
PT6-S□□□ PT6-P□□□-□	130
PT8-S□□□ PT8-P□□□-□	155

● **Panel cut-out**



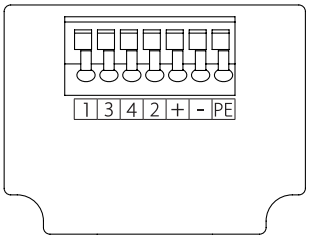
※Except 4-port model.

※1: When connecting L type connectors, connection direction may be different by the manufacturers of the connector.

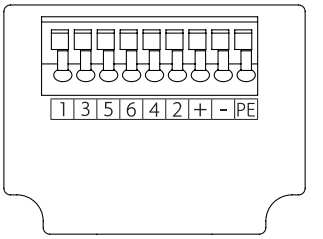
▣ Inner Connections for Spring/Pluggable Screw Terminal Type

◎ **Spring terminal type**

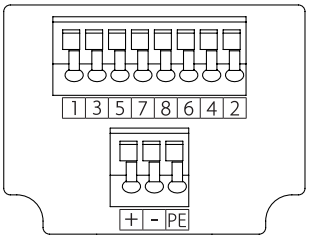
● **PT4-S3D□□**



● **PT6-S3D□□**

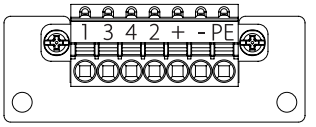


● **PT8-S3D□□**

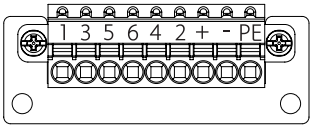


◎ **Pluggable screw terminal type**

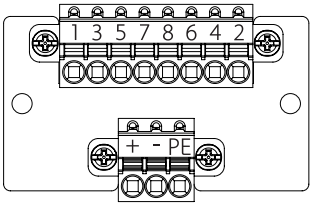
● **PT4-P3D□□-□**



● **PT6-P3D□□-□**



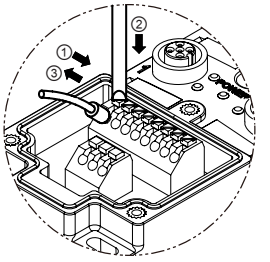
● **PT8-P3D□□-□**



▣ Connecting Crimp Terminals for Spring/Pluggable Screw Terminal Type

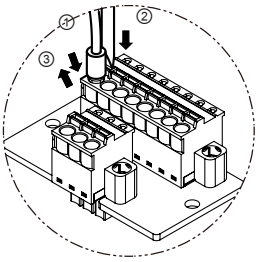
◎ **Spring terminal type**

Remove bolts on the terminal cover using a tool such as a screwdriver and open the cover.
• Connection
1) Push the end sleeve (ferrule) crimp terminal towards direction ① to complete the connection.
• Removal
1) Press and hold the catch above the terminal in direction ② with a flat-head screwdriver.
2) Pull and remove the end sleeve (ferrule) crimp terminal towards direction ③.



◎ **Pluggable screw terminal type**

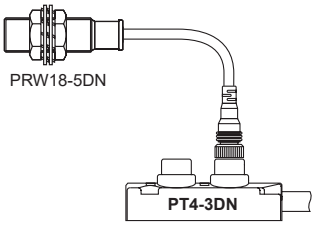
Remove bolts on the terminal cover using a tool such as a screwdriver and open the cover.
Remove the terminal also as above order.
• Connection
1) Push the end sleeve (ferrule) crimp terminal towards direction ① to complete the connection.
• Removal
1) Press and hold the catch above the terminal in direction ② with a flat-head screwdriver.
2) Pull and remove the end sleeve (ferrule) crimp terminal towards direction ③.



▣ Example of Connections

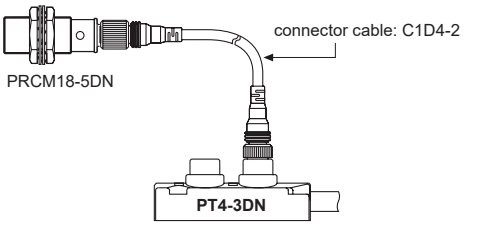
◎ **Connection with cable type sensor**

It is available to connect a cable type sensor proximity sensor (PRW Series) with a sensor distribution box directly.
When installation distance is longer, use a connector cable.



◎ **Connection with connector type sensor**

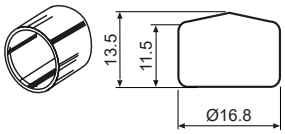
When connecting a connector type proximity sensor (PRCM Series) with a sensor distribution box, use only connector cable.



▣ Sold Separately

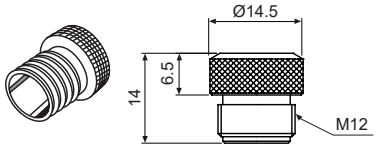
(unit: mm)

◎ **Protection cover (CAP-PT)**



※This protection cover is used for protecting connection holes from dust or particle, etc.
Please push it into hole.
※If using protection covers, protection structure of the sensor distribution box is IP52.

◎ **Waterproof cover (P96-M12-1)**



※This waterproof cover is used for protecting unused connection hole from water or oil, etc.
Please tighten it when applying to the ports.
※If using waterproof covers, protection structure of the sensor distribution box is IP67.

▣ Connectable Autonics Proximity Sensors, Photoelectirc Sensors, Door/Area Sensors

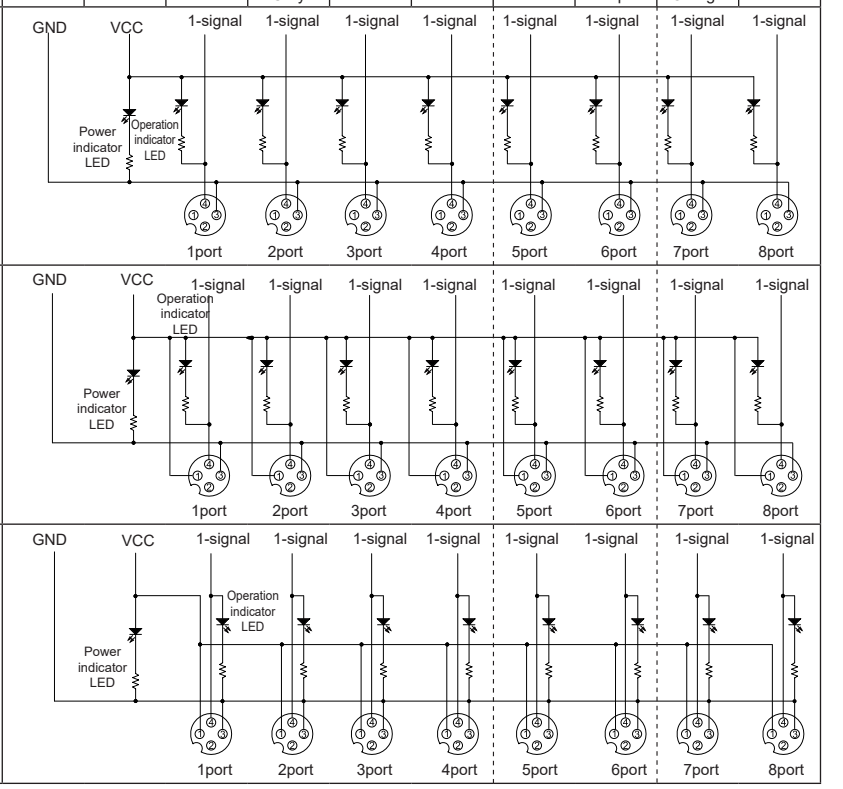
Sensor distribution box	Input logic	Proximity sensor		Photoelectric sensor	Door/Area sensor	Connection method
PT□-2D	DC 2-wire	PRCMT12-2/4DO, DC PRCMT18-5/8DO, DC PRCMT30-10/15DO, DC	PRDCMT12-4/8DO, DC PRDCMT18-7/14DO, DC PRDCMT30-15/25DO, DC	—		Use connector cable
		PRWT12-2/4DO, DC PRWT18-5/8DO, DC PRWT30-10/15DO, DC	PRDWT12-4/8DO, DC PRDWT18-7/14DO, DC PRDWT30-15/25DO, DC			Connect directly, Use connector cable
PT□-3DN PT□-3DN5-□, PT□-□3DN5	DC 3-wire NPN output type	PRCM12-2/4DN, DN2 PRCM18-5/8DN, DN2 PRCM30-10/15DN, DN2 PRCML18-5/8DN, DN2 PRCML30-10/15DN, DN2	PRDCM12-4/8DN, DN2 PRDCM18-7/14DN, DN2 PRDCM30-15/25DN, DN2 PRDCML12-4/8DN, DN2 PRDCML18-7/14DN, DN2 PRDCML30-15/25DN, DN2	BRP3M-MDT-C BR3M-MDT-C	—	Use connector cable
		PRW12-2/4DN, DN2 PRW18-5/8DN, DN2 PRW30-10/15DN, DN2 PRWL18-5/8DN, DN2 PRWL30-10/15DN, DN2	PRDW12-4/8DN, DN2 PRDW18-7/14DN, DN2 PRDW30-15/25DN, DN2 PRDWL12-4/8DN, DN2 PRDWL18-7/14DN, DN2 PRDWL30-15/25DN, DN2	—		Connect directly, Use connector cable
PT□-3DP PT□-3DP5-□, PT□-□3DP5	DC 3-wire PNP output type	PRCM12-2/4DP, DP2 PRCM18-5/8DP, DP2 PRCM30-10/15DP, DP2 PRCML18-5/8DP, DP2 PRCML30-10/15DP, DP2	PRDCM12-4/8DP, DP2 PRDCM18-7/14DP, DP2 PRDCM30-15/25DP, DP2 PRDCML12-4/8DP, DP2 PRDCML18-7/14DP, DP2 PRDCML30-15/25DP, DP2	BRP3M-MDT-C-P BR3M-MDT-C-P	—	Use connector cable
		PRW12-2/4DP, DP2 PRW18-5/8DP, DP2 PRW30-10/15DP, DP2 PRWL18-5/8DP, DP2 PRWL30-10/15DP, DP2	PRDW12-4/8DP, DP2 PRDW18-7/14DP, DP2 PRDW30-15/25DP, DP2 PRDWL12-4/8DP, DP2 PRDWL18-7/14DP, DP2 PRDWL30-15/25DP, DP2	—		Connect directly, Use connector cable
PT□-4DN5-□, PT□-□4DN5	DC 4-wire NPN output type	—		BRP100-DDT-C, BR100DDT-C, BRP400DDT-C, BR400DDT-C, BRP200DDTN-C, BR200DDTN-C	BWC40-□H, HD BWC80-□H, HD BW20-□, BW40-□	Connect directly, Use connector cable
PT□-4DP5-□, PT□-□4DP5	DC 4-wire PNP output type			BRP100-DDT-C-P, BR100-DDT-C-P, BRP400DDT-C-P, BR400DDT-C-P, BRP200DDTN-C-P, BR200DDTN-C-P	BW20-□P, BW40-□P	Connect directly, Use connector cable

※Standard cable type sensors can also connect a sensor distribution box by using plug type connector cable.

▣ Connections

◎ M12 4-pin connector type

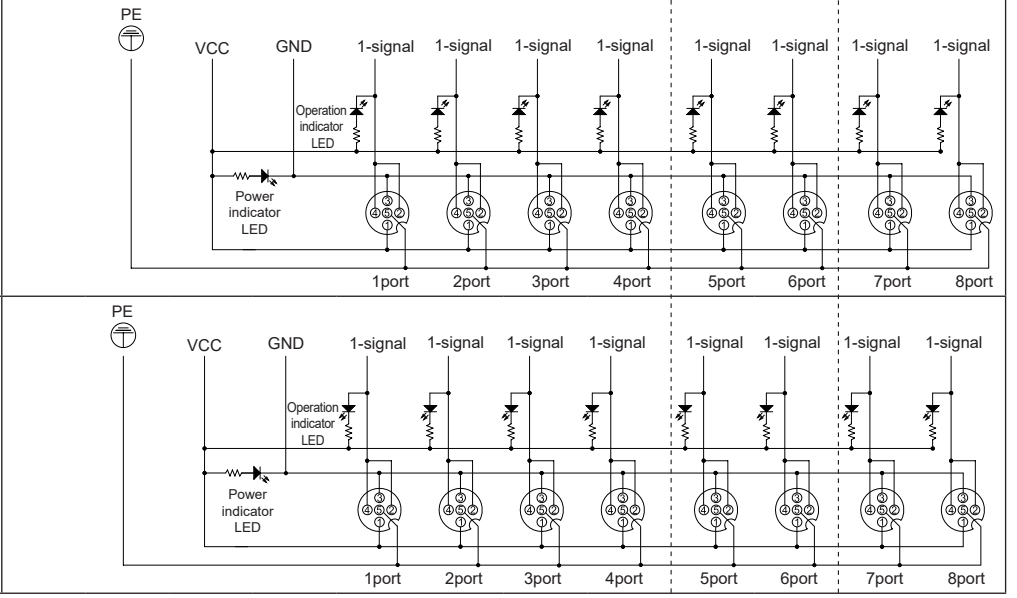
Cable color	Blue	Brown	White	Gray	Pink	Red	Black	Purple	Orange	Yellow
DC 2-wire	GND	VCC	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal
DC 3-wire NPN	GND	VCC	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal
DC 3-wire PNP	GND	VCC	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal



◎ M12 5-pin connector type

● **3-wire (1-signal)**

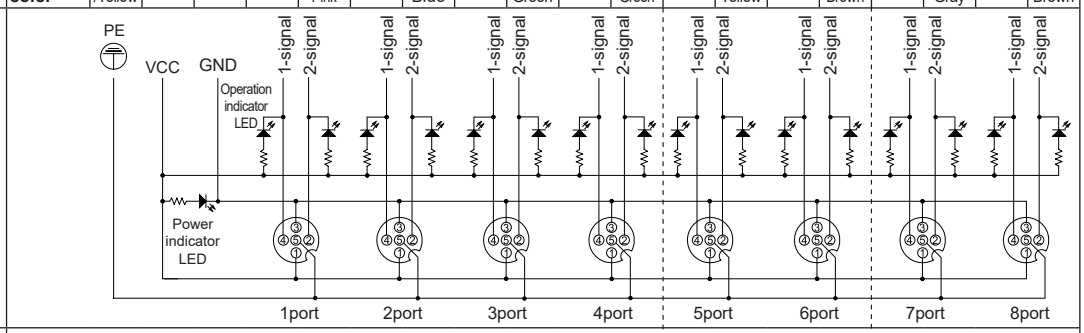
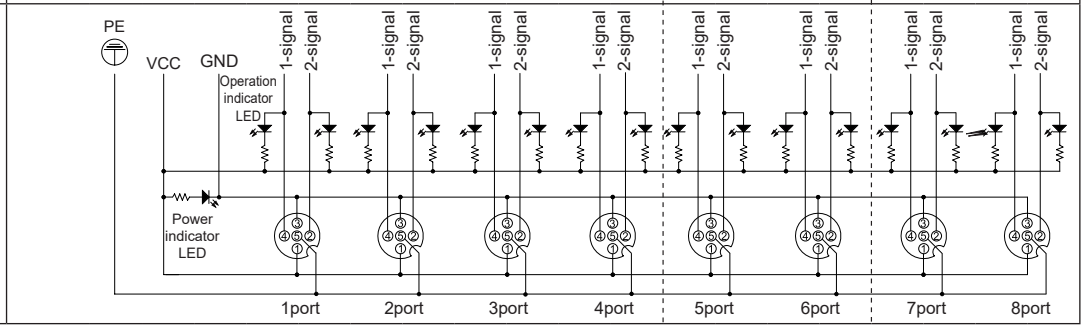
Cable type	Cable color	Green/ Yellow	Brown	Blue	White	Green	Yellow	Gray	Pink	Red	Black	Purple
Spring terminal type, Pluggable screw terminal type	pin no.	PE	+	-	1	2	3	4	5	6	7	8
DC 3-wire NPN		PE	VCC	GND	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal
DC 3-wire PNP		PE	VCC	GND	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal	1-signal



▣ Connections

◎ **M12 5-pin connector type**

● **4-wire (2-signal)**

Cable type	Cable color	Green /Yellow	Brown	Blue	White	Gray/ Pink	Green	Red/ Blue	Yellow	White/ Green	Gray	Brown/ Green	Pink	White/ Yellow	Red	Yellow/ Brown	Black	White/ Gray	Purple	Gray/ Brown
DC 4-wire NPN																				
DC 4-wire PNP																				

▣ Cautions during Use

1. This connection box is only for DC. Do not use this unit for AC.
2. Use DC 2-wire, DC 3-wire, DC 4-wire separately. DC 3-wire, DC 4-wire are separated by NPN type and PNP type.
3. Do not use the same conduit with cord of this unit and electric power line and power line. Also avoid the same connection.
4. Be sure that wire power cable (brown: +, blue: -) properly.
5. Check the voltage variation range of power not to over the rated specifications for power input.
6. In case of M12 4-pin connector type, the power indicator (green LED) does not operate when polarity is not correctly connected.
7. In case of M12 5-pin connector type, Tighten the screws and connector with the proper tightening strength.
   (M4 mounting screw: max. 1.2N·m / M12 Connector: 0.6 to 0.7N·m)
   When tightening is bad, protection is not effective and it may loose by vibration.
8. If transceiver is close to wire connections, it may cause malfunction.
9. When take out the connector from the box, cut off the power.
10. It might cause malfunction, if particle of metal etc. inflow in to engaging.
11. Do not use this unit when external force loaded on contact block and connection of cover. It may cause loss of efficiency of protection.
12. Follow the connections when wiring the signals. After connecting loads, operate proximity sensors.
13. Check the operation indicator when operating the sensors.
14. Do not use in place there are water or oil etc.
15. Main body is made by plastic, therefore do not put heavy load on this product.
16. Please avoid below environment for long-term storage.
    ① Lots of dust or high humidity
    ② Ammonia or sulfide gas

Common Terminal Block (rising clamp type)

▣ Features

- Rising clamp type connection for simple and easy connection
- No jumper bars required due to built-in common PCB
- For use as power supply expansion terminals
- Slim and compact design with 5mm terminal pitch
- 2 mounting methods (DIN rail, screw mount)

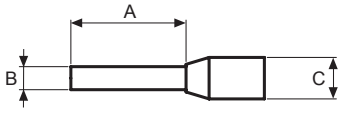
⚠ Please read "Safety Considerations" in instruction manual before using.

CE c UL us LISTED

▣ Ordering Information

Model	Item	Terminal type	The number of terminal	Common type
ACR-20L	Common terminal block	Rising clamp	20	Left-Right common
ACR-20T				Up-Down common
ACR-40L			40	Left-Right common
ACR-40T				Up-Down common
ACR-50L			50	Left-Right common
ACR-50T				Up-Down common

▣ Crimp Terminal Specifications



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2)

※Use the UL certified crimp terminal.

▣ Specifications

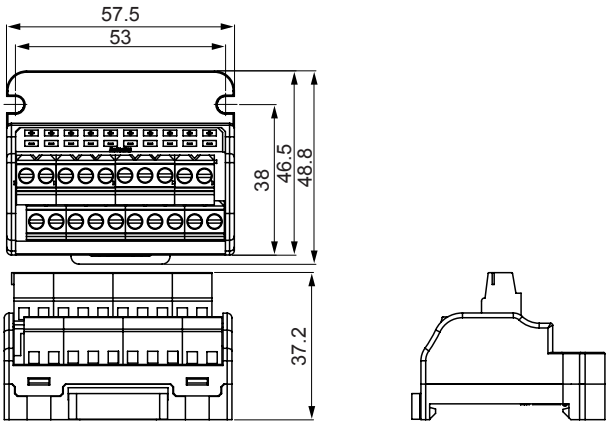
Model		ACR-20L	ACR-40L	ACR-50L	ACR-20T	ACR-40T	ACR-50T
Rated voltage※1		250VDC⎓, 250VAC~ 50/60Hz					
Rated current		≤10A					
Common type		Left +COM / Right -COM			Top +COM / Bottom -COM		
Terminal type		Rising clamp					
The number of terminal		20	40	50	20	40	50
Terminal pitch		5.0mm					
Tightening torque		0.4 to 0.6N·m					
Applicable wires	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)					
	Stranded wire	UL: AWG22-16 (0.30 to 1.25mm^2) (60℃ only)					
Stripped wire length		8 to 10mm					
Insulation resistance		≥1,000MΩ (at 500VDC megger)					
Dielectric strength		3,000VAC 50/60Hz for 1 minute (between open terminals)					
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
	Malfunction	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes					
Shock	Mechanical	1,000m/s^2(approx. 100G) in each X, Y, Z direction for 3 times					
	Malfunction	100m/s^2(approx. 10G) in each X, Y, Z direction for 3 times					
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃					
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH					
Material		Terminal: polyamide 66, conductive plate: copper, tin plated, case: polycarbonate, base: polycarbonate					
Protection structure		IP20 (IEC standard)					
Approval		CE c UL us LISTED					
Weight※2		Approx. 84g (approx. 55g)	Approx. 172g (approx. 105g)	Approx. 197g (approx. 130g)	Approx. 84g (approx. 55g)	Approx. 172g (approx. 105g)	Approx. 197g (approx. 130g)

※1: UL approved rated voltage of ACR- L Series is 30VDC, 30VAC other than at fi eld wiring.
※2: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

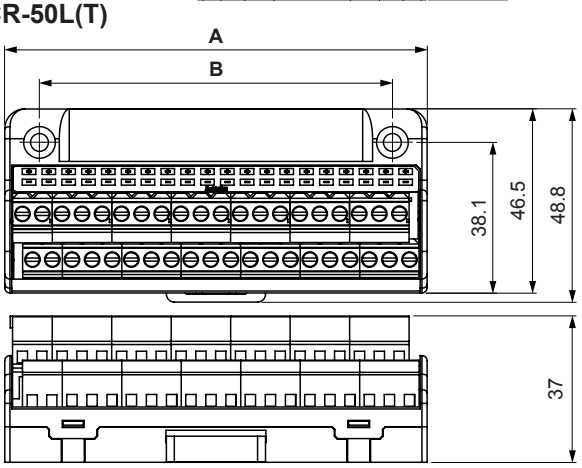
▣ Dimensions

(unit: mm)

◎ ACR-20L(T)



◎ ACR-40L(T) / ACR-50L(T)

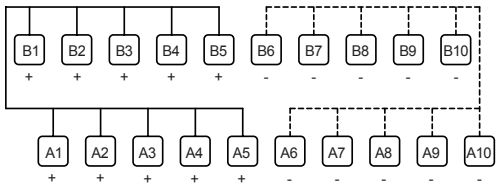


(unit: mm)

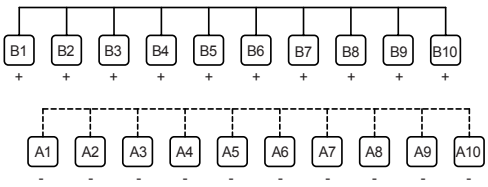
model	A	B
ACR-40L(T)	106.5	89
ACR-50L(T)	131.5	102

▣ Connections

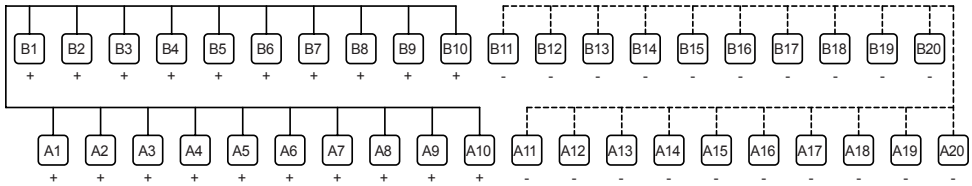
◎ ACR-20L



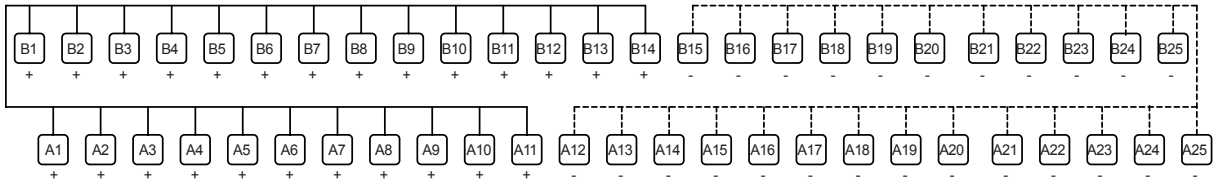
◎ ACR-20T



◎ ACR-40L

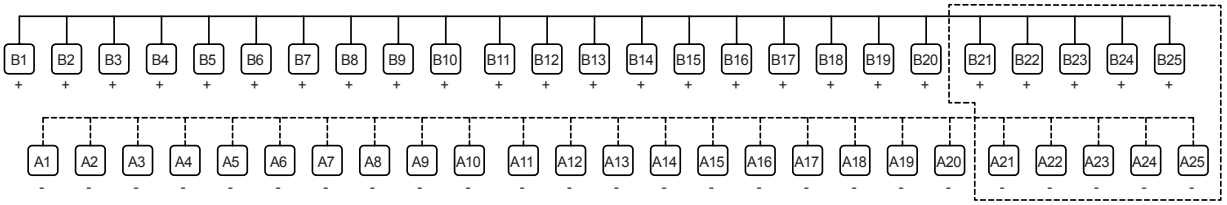


◎ ACR-50L



※Dot line part is only for ACR-50T model.

◎ ACR-40T / ACR-50T

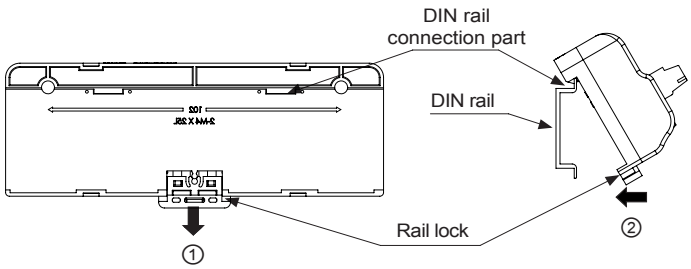


▣ Installation

◎ Mounting and Removing from DIN rail

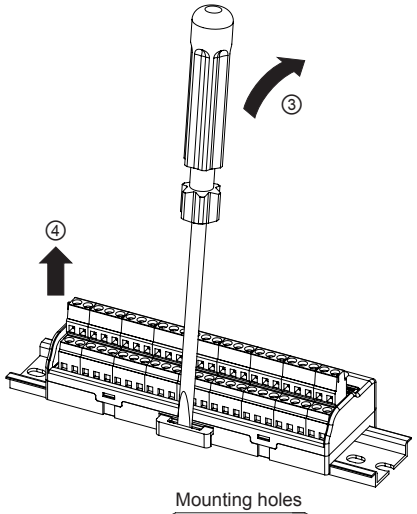
● Mounting

1)Pull the rail lock towards direction ①.
2)Attach the DIN rail connection part onto the DIN rail.
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



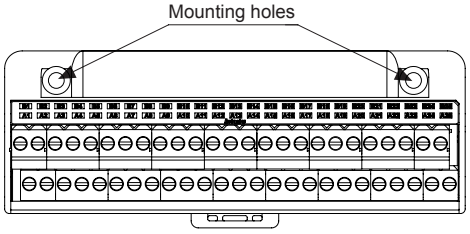
● Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ③.
2)Remove the unit by pulling the unit towards direction ④.



◎ Mounting with screws

1)The unit can be mounted on panels using the mounting holes next to the hirose connector.
2)M4×25mm spring washer screws are recommended for installation. When using flat washers, use Ø8mm diameter washers. The tightening torque should be from 0.7 to 1.0N·m



▣ Connecting Crimp Terminals

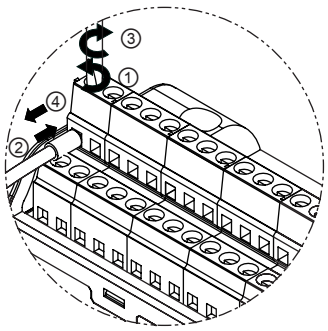
◎ Connecting and removing end sleeve (ferrule terminal) crimp terminal at rising clamp type terminal block

● Connecting

1) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ① (CCW).
2) Push the end sleeve (ferrule) crimp terminal towards direction ②.
3) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ③ (CW). The tightening torque should be between 0.4 to 0.6N·m.

● Removing

1) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ① (CCW).
2) Remove the end sleeve (ferrule crimp terminal) towards direction ④.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Keep away from high voltage lines or power lines to prevent inductive noise.
   In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
3. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

Common Terminal Block (screwless type)

▣ Features

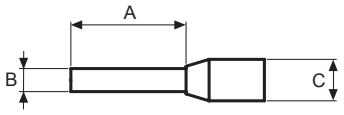
- Screwless push-in type for simple and easy connection
- No jumper bars required due to built-in common PCB
- For use as power supply expansion terminals
- Slim and compact design with 5mm terminal pitch
- 2 mounting methods (DIN rail, screw mount)

⚠ Please read "Safety Considerations" in instruction manual before using.

▣ Ordering Information

Model	Item	Terminal type	The number of terminal	Common type
ACL-20L	Common terminal block	Screwless	20	Left-Right common
ACL-20T				Up-Down common
ACL-40L			40	Left-Right common
ACL-40T				Up-Down common
ACL-50L			50	Left-Right common
ACL-50T				Up-Down common

▣ Crimp Terminal Specifications



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2)

※Use the UL certified crimp terminal.

▣ Specifications

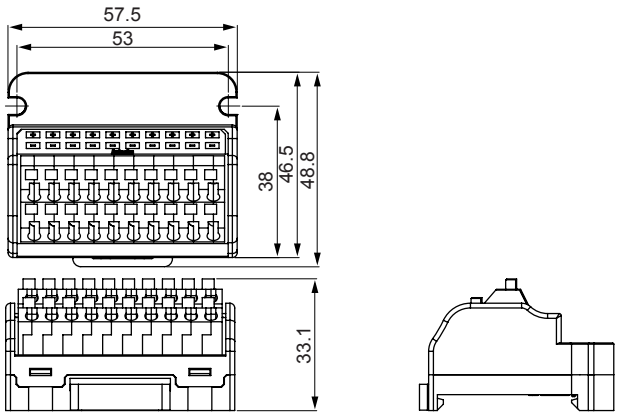
Model		ACL-20L	ACL-40L	ACL-50L	ACL-20T	ACL-40T	ACL-50T
Rated voltage		250VDC⎓, 250VAC~ 50/60Hz					
Rated current		≤10A					
Common type		Left +COM / Right -COM			Top +COM / Bottom -COM		
Terminal type		Screwless					
The number of terminal		20	40	50	20	40	50
Terminal pitch		5.0mm					
Applicable wires	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)					
	Stranded wire	UL: AWG22-16 (0.30 to 1.25mm^2) (60℃ only)					
Stripped wire length		8 to 10mm					
Insulation resistance		≥1,000MΩ (at 500VDC megger)					
Dielectric strength		3,000VAC 50/60Hz for 1 minute (between open terminals)					
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours					
	Malfunction	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes					
Shock	Mechanical	1,000m/s^2(approx. 100G) in each X, Y, Z direction for 3 times					
	Malfunction	100m/s^2(approx. 10G) in each X, Y, Z direction for 3 times					
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃					
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH					
Material		Terminal: polyamide 66, conductive plate: copper, tin plated, case: polycarbonate, base: polycarbonate					
Protection structure		IP20 (IEC standard)					
Approval		CE cULus					
Weight※1		Approx. 71g (approx. 42g)	Approx. 146g (approx. 79g)	Approx. 164g (approx. 97g)	Approx. 71g (approx. 42g)	Approx. 146g (approx. 79g)	Approx. 164g (approx. 97g)

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

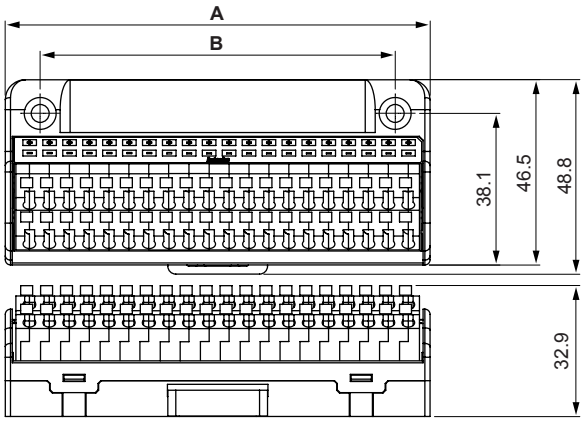
▣ Dimensions

(unit: mm)

◎ ACL-20L(T)



◎ ACL-40L(T) / ACL-50L(T)

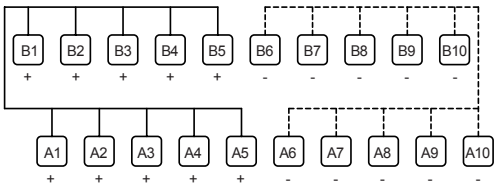


(unit: mm)

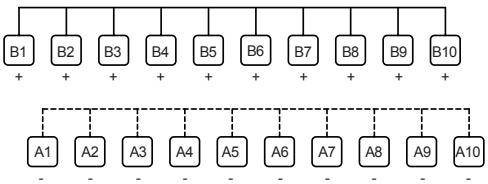
Model	A	B
ACL-40L(T)	106.5	89
ACL-50L(T)	131.5	102

▣ Connections

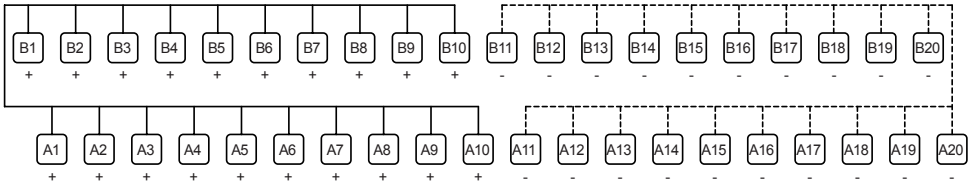
◎ ACL-20L



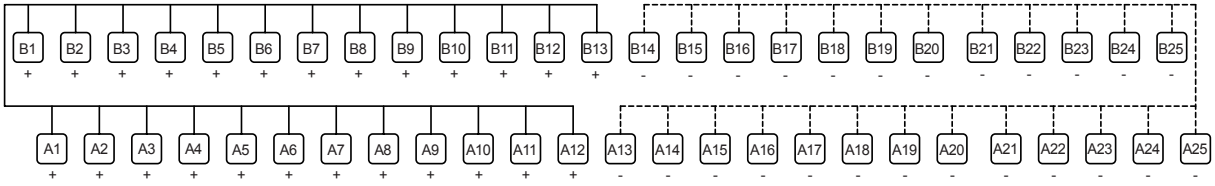
◎ ACL-20T



◎ ACL-40L

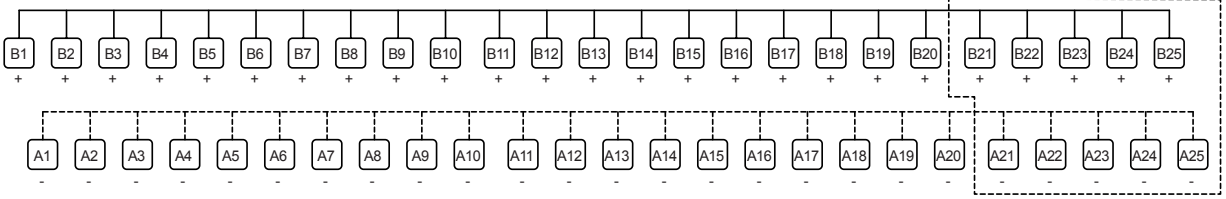


◎ ACL-50L



※Dot line part is only for ACL-50T model.

◎ ACL-40T / ACL-50T

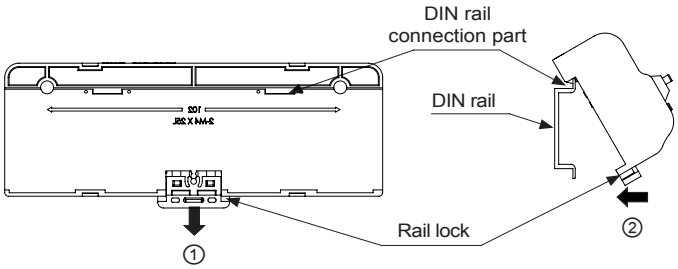


▣ Installation

◎ Mounting and Removing from DIN rail

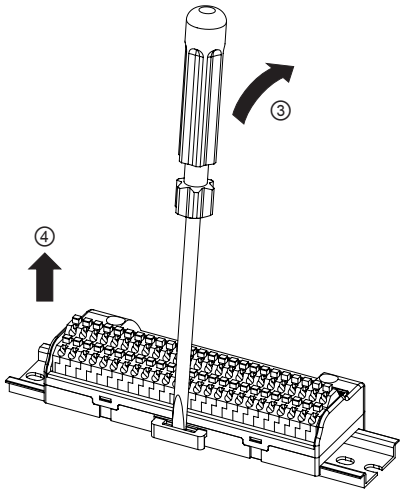
● Mounting

1)Pull the rail lock towards direction ①.
2)Attach the DIN rail connection part onto the DIN rail.
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



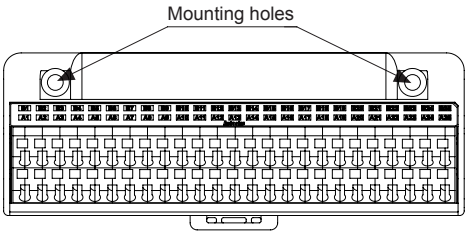
● Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ③.
2)Remove the unit by pulling the unit towards direction ④.



◎ Mounting with screws

1)The unit can be mounted on panels using the mounting holes next to the hirose connector.
2)M4×25mm spring washer screws are recommended for installation. When using flat washers, use Ø8mm diameter washers. The tightening torque should be from 0.7 to 1.0N·m



▣ Connecting Crimp Terminals

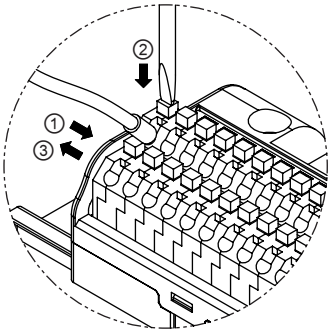
◎ Connecting and removing end sleeve (ferrule terminal) crimp terminal at screwless type terminal block

● Connection

1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

● Removal

1) Press and hold the catch above the terminal in direction ② with a flat-head screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Keep away from high voltage lines or power lines to prevent inductive noise.
   In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
3. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

Common Terminal Block

▣ Features

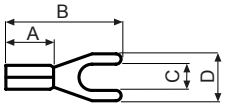
- Compact common terminal blocks with 7mm terminal pitch
- No jumper bars required due to built-in common PCB
- For use as power supply expansion terminals
- Compact, space-saving design
- 2 mounting methods (DIN rail, screw mount)

⚠ Please read "Caution for your safety" in operation manual before using.

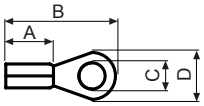
▣ Model

Model	Item	Terminal type	No. of terminals	Common type
ACS-20L	Common terminal block	Screw	20 EA	Left-Right common
ACS-20T				Up-Down common
ACS-40L			40 EA	Left-Right common
ACS-40T				Up-Down common
ACS-50L			50 EA	Left-Right common
ACS-50T				Up-Down common

▣ Terminal Specifications



< Spade terminal >



< Ring terminal >

(unit: mm)

	A	B	C	D	Applicable wire
Spade terminal	Min. 4.1	Min. 16.0	Min. 3.0	Max. 5.9	AWG 22-16 (0.30 to 1.25mm^2)
Ring terminal	Min. 4.1	Min. 16.0	Min. 3.0	Max. 5.9	

※ Please use UL certified terminals.

▣ Specifications

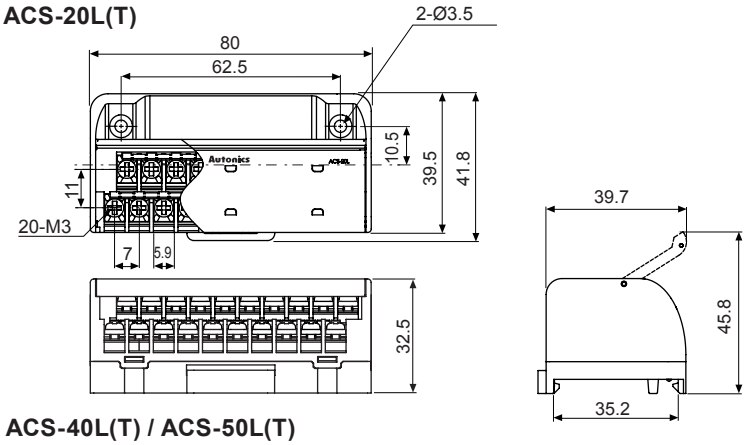
Model		ACS-20L	ACS-20T	ACS-40L	ACS-40T	ACS-50L	ACS-50T
Power supply		Max. 125VDC, 125VAC 50/60Hz					
Rated current		Max. 10A					
Common type		Left +COM, Right -COM	Up +COM, Down -COM	Left +COM, Right -COM	Up +COM, Down -COM	Left +COM, Right -COM	Up +COM, Down -COM
No. of terminals		20 EA		40 EA		50 EA	
Terminal pitch		7.0mm					
Applicable wire		AWG22-16 (0.30 to 1.25mm²)					
Insulation resistance		Min. 1,000MΩ (at 500VDC megger)					
Dielectric strength		600VAC 50/60Hz for 1 min.					
Vibration		0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 2 hours					
Shock		150m/s^2 (15G) in each X, Y, Z direction for 3 times					
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃					
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH					
Material		CASE: MPPO, TERMINAL PIN: Brass					
Tightening torque		5.1 to 6.1 kgf·cm (0.5 to 0.6 N·m)					
Approval		CE UL LISTED					
Weight※1		Approx. 92g (approx. 61g)		Approx. 157g (approx. 115g)		Approx. 189g (approx. 141g)	

※1: The weight includes packaging. The weight in parentheses is for unit only.
※Environment resistance is rated at no freezing or condensation.

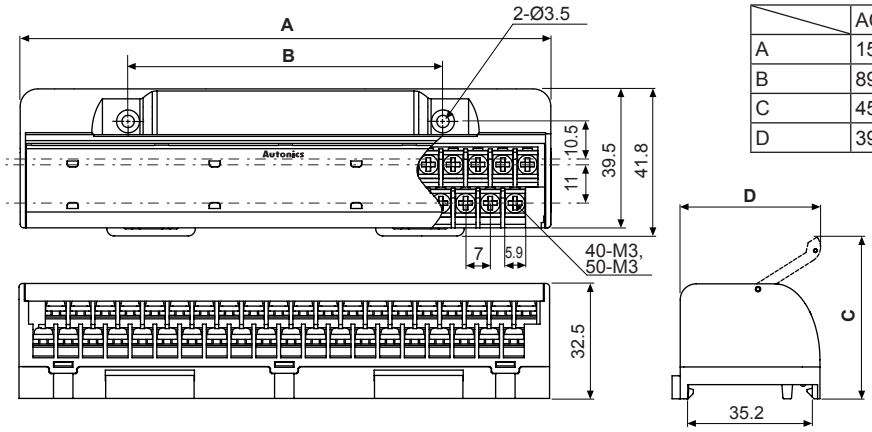
▣ Dimensions

(unit: mm)

• **ACS-20L(T)**



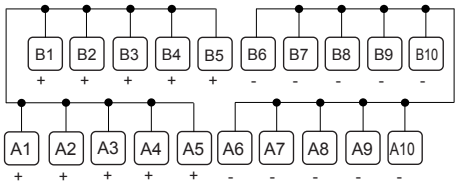
• **ACS-40L(T) / ACS-50L(T)**



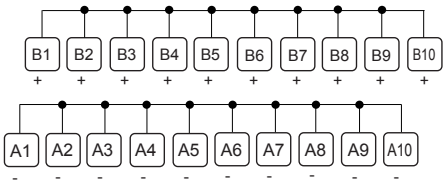
	ACS-40L (T)	ACS-50L (T)
A	150	184
B	89	104
C	45.8	48.9
D	39.7	34.8

▣ Connections

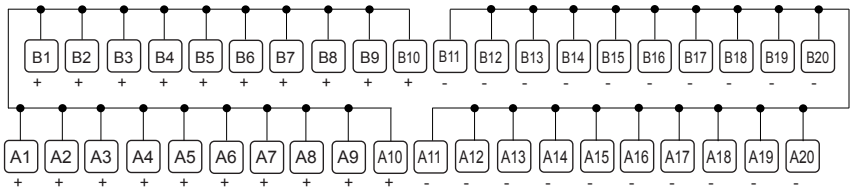
• **ACS-20L**



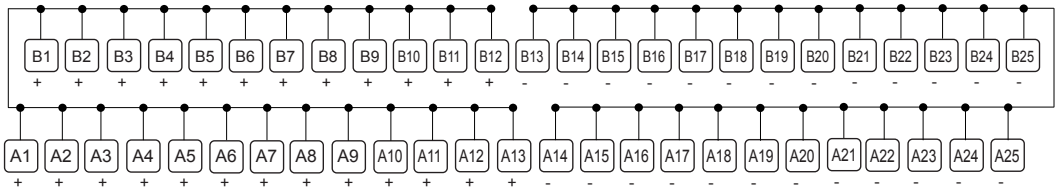
• **ACS-20T**



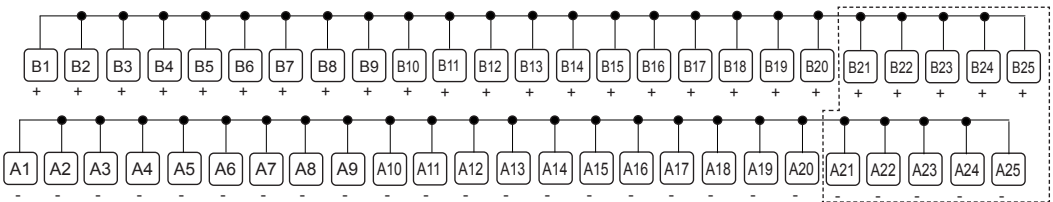
• **ACS-40L**



• **ACS-50L**



• **ACS-40T / ACS-50T**



※Dot line part is only for ACS-50T model.

▣ Installation

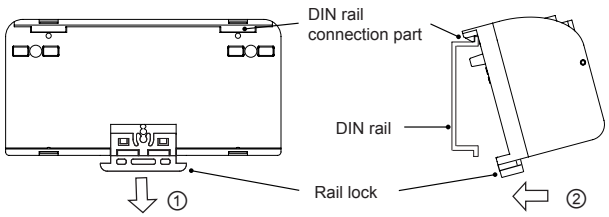
◎ Mounting and Removal at DIN rail

● Mounting

1)Pull the rail lock towards direction ①.

2)Attach the DIN rail connection hook onto the DIN rail.

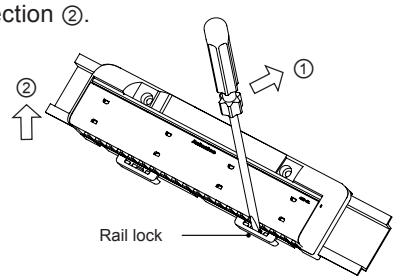
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



● Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ①.

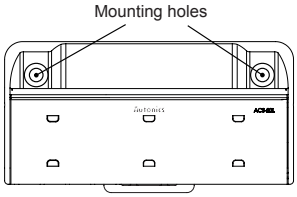
2)Remove the unit by pulling the unit towards direction ②.



◎ Mounting with screws

1)The unit can be mounted on panels using the mounting holes on the side of the unit.

2)M3×30mm spring washer screws are recommended for installation. When using flat washers, use Ø6mm diameter washers. The tightening torque should be between 5.1 and 7.14kgf·cm (0.5 to 0.7 N·m).



▣ Caution During Use

1. Do not use the product outside of rated temperature and humidity.
2. Check to make sure that voltage fluctuation in the power supply is within the rated range.
3. When connecting PLC or other controllers, check the power polarity before wiring.
4. Use AWG 16 (1.25mm^2) wire for power and use appropriate crimp connectors for the terminals.
5. Do not connect or disconnect the connector or perform any wiring work while supplied with power.
6. Do not use the unit in the following environments.
   ① Environments with high vibration or shock.
   ② Environments where strong alkalis or acids are used.
   ③ Environments with exposure to direct sunlight.
   ④ Near machinery which produce strong magnetic force or electric noise
7. This unit may be used in the following environments.
   ① It shall be used indoor.
   ② Altitude up to 2,000m
   ③ Pollution degree 2
   ④ Installation category II

Relay Terminal Block (screwless type)

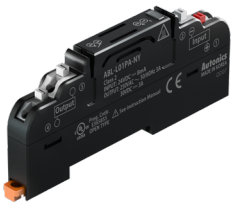
▣ Features

[Common Feature]
- Selectable between independent and load common output with jumper bar
- High tensile force and easy wiring with one-touch screwless type crimp terminal
- Convenient operating status check with operation indicator (blue LED)

[1-point]
- Rated load voltage: 3A
- Selectable between independent and power ommon input with jumper bar
- DIN Rail mounting
- Relay: [Fujitsu] NYP24W-K / [Panasonic] APAN3124

[4-point]
- Rated load voltage: 5A
- Selectable between NPN (+ COM) and PNP (- COM) input with jumper bar
- Relay protection with the cover
- Easy relay replacement with relay ejector or removal lever
- DIN Rail or screw mounting
- Relay: [Fujitsu] NYP24W-K / [Panasonic] APAN3124, PQ1a-24V / [Omron] G6B-1174P-FD-US

[16-point]
- Rated load voltage: 3A
- Relay protection with the cover
- Easy relay replacement with relay ejector
- DIN Rail or screw mounting
- Relay: [Omron] G6B-1174P-FD-US



⚠ **Please read "Safety considerations" in instruction manual before using.**

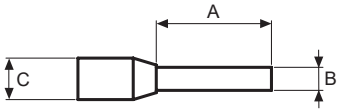
CE c UL US LISTED

▣ Ordering Information

AB **L** – **L** **04** **PQ** – **U** **N**

Varistor installation	**N**	Not installed
	Y	Installed
Input logic	**U**	Universal
	N	NPN
	P	PNP
Relay type	**TN**	**T**AKAMISAWA(Fujitsu) **N**YP
	PA	MATSUSHITA(**P**anasonic) P**A**
	PQ	MATSUSHITA (**P**anasonic) P**Q**
	R6	OM**R**ON G**6**B
No. of relay points	**01**	1
	04	4
	16	16
Controller	**L**	Screwless
	H	Hirose connector
Terminal block	**L**	Screwless
Item	**AB**	Relay terminal block

▣ Crimp Terminal Specifications



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2) (60℃ only)

▣ Specifications

◎ Rated load current 5A

Model		ABL-L04PQ-UN	ABL-L04PQ-UY※1	ABL-L04R6-UN	ABL-L04R6-UY※1
Power supply		24VDC⎓ ±10%			
Rated load voltage&current※2		250VAC~ 50/60Hz 5A, 30VDC⎓ 5A			
Current consumption※3		≤ 20mA			
Output type		1a contact relay output			
Applied relay		PQ1a-24V [MATSUSHITA (Panasonic)]		G6B-1174P-FD-US [OMRON]	
No. of relay points		4-point			
Terminal type		Screwless			
Terminal pitch		10.2mm			
Indicator		Operation indicator: blue LED			
Applied cable	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)			
	Stranded wire※4	AWG22-16 (0.3 to 1.25mm^2) (60℃ only)			
Stripped wire length		8 to 10mm			
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)			
Insulation resistance	between coil-contacts	4,000VAC 50/60Hz for 1 minute		3,000VAC 50/60Hz for 1 minute	
	Between same contacts※5	1,000VAC 50/60Hz for 1 minute		1,000VAC 50/60Hz for 1 minute	
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes			
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times			
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times			
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: modified polyphenylene oxide			
Accessory		Jumper bar: 1			
Protection structure		IP20 (IEC standard)			
Approval		CE cULus			
Weight※6		Approx. 148g (approx. 92g)	Approx. 150g (approx. 94g)	Approx. 143g (approx. 87g)	Approx. 144g (approx. 88g)

◎ Rated load current 3A

Model		ABL-L01PA-NN ABL-L01PA-NY※1 ABL-L01PA-PN ABL-L01PA-PY※1	ABL-L01TN-NN ABL-L01TN-NY※1 ABL-L01TN-PN ABL-L01TN-PY※1	ABL-L04PA-UN ABL-L04PA-UY	ABL-L04TN-UN ABL-L04TN-UY	ABL-H16R6-NN ABL-H16R6-PN
Power supply		24VDC⎓ ±10%				
Rated load voltage&current※2		250VAC~ 50/60Hz 3A, 30VDC⎓ 3A				
Current consumption※3		≤8mA				≤20mA
Output type		1a contact relay output				
Applied relay		APAN3124 [MATSUSHITA(Panasonic)]	NYP24W-K [TAKAMISAWA(Fujitsu)]	APAN3124 [MATSUSHITA(Panasonic)]	NYP24W-K [TAKAMISAWA(Fujitsu)]	G6B-1174P-FD-US [OMRON]
No. of relay points		1-point		4-point		16-point
Terminal type		Screwless				
Terminal pitch		9.0mm (arranging over 2 units)		5.0mm		≥7.8mm
Indicator		Operation indicator: blue LED		Operation indicator: blue LED		Power indicator: red LED, operation indicator: blue LED
Applied cable	Solid wire	Ø0.6~Ø1.25mm (60℃ only)				
	Stranded wire※4	AWG22-16 (0.3~1.25mm^2) (60℃ only)				
Stripped wire length		8 to 10mm				
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)				
Dielectric strength	Between coil-contact	3,000VAC 50/60Hz for 1 minute				
	Between same contacts	1,000VAC 50/60Hz for 1 minute	750VAC 50/60Hz for 1 minute	1,000VAC 50/60Hz for 1 minute	750VAC 50/60Hz for 1 minute	1,000VAC 50/60Hz for 1 minute
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours				
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes				
Shock	Mechanical	1000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times				
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times				
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃				
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide		Terminal block, cover: polycarbonate / CASE&BASE: modified polyphenylene oxide
Accessory		—		Jumper bar: 1		Jumper bar: 2
Protection structure		IP20 (IEC standard)				
Approval		CE cULus				
Weight※6		Approx. 138g (approx. 21g)	Approx. 135g (approx. 21g)	Approx. 125g (approx. 72g)	Approx. 128g (approx. 75g)	Approx. 446g (approx. 348g)

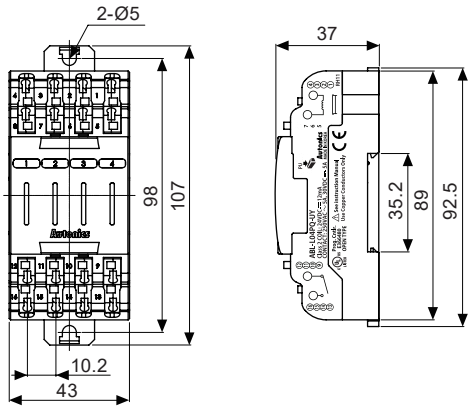
※1: This is for load protection and it is recommend to use at the inductive load.
※2: Relay load capacity for resistive load.
Please connect to a load using the same power supply. Connecting to a load from a different power supply may cause safety issues.
※3: The current consumption including LED current by one relay.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: In case of ABL-L04 □ - □Y (varistor installed type), this is 300VAC.
※6: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

(unit: mm)

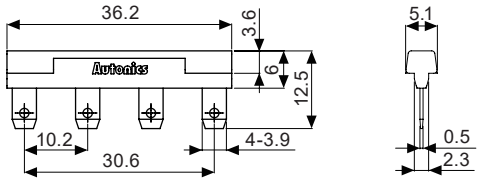
◎ Rated load current 5A

● ABL-L04PQ/R6-□



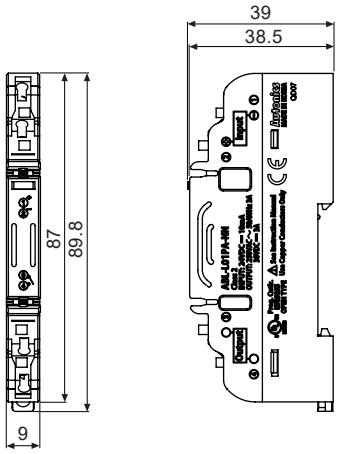
● Jumper bar (model: JB-10.2-04L)

※For the desired application (power/load common), jumper bar is sold separately.



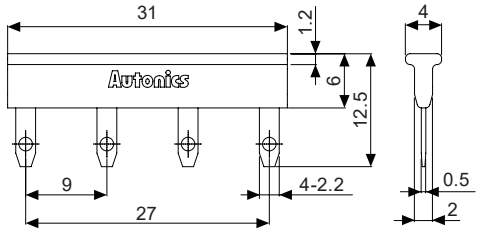
◎ Rated load current 3A

● ABL-L01TN/PA-□

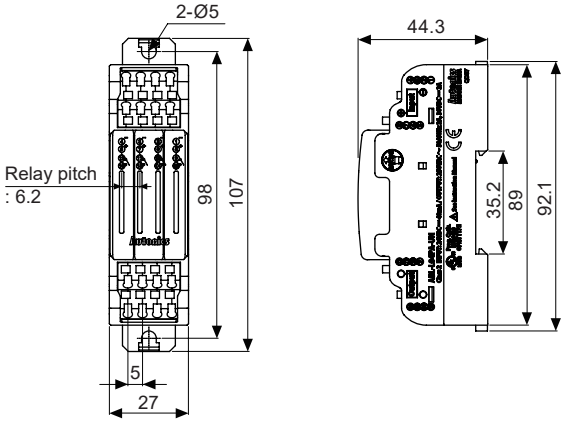


● Jumper bar (model: JB-9.0-04L)

※For the desired application (power/load common), jumper bar is sold separately.

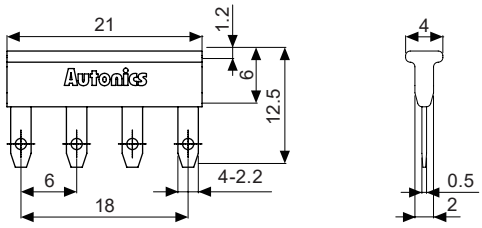


● ABL-L04TN/PA-□

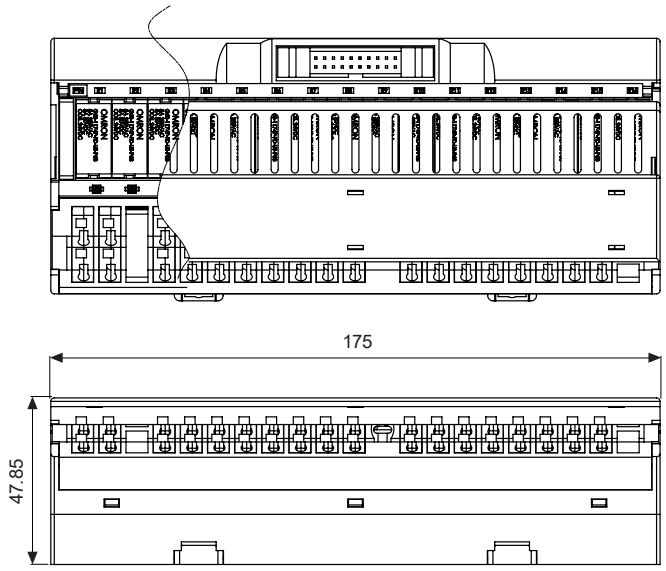


● Jumper bar (model: JB-6.0-04L)

※For the desired application (power/load common), jumper bar is sold separately.

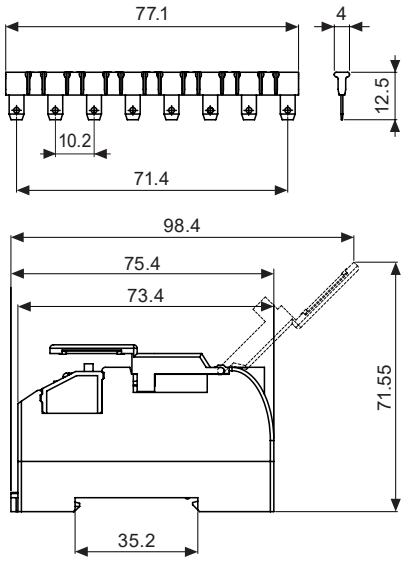


● **ABL-H16R6-NN/PN**



● **Jumper bar (model: JB-10.2-08L)**

※For the desired application (load common), jumper bar is sold separately.

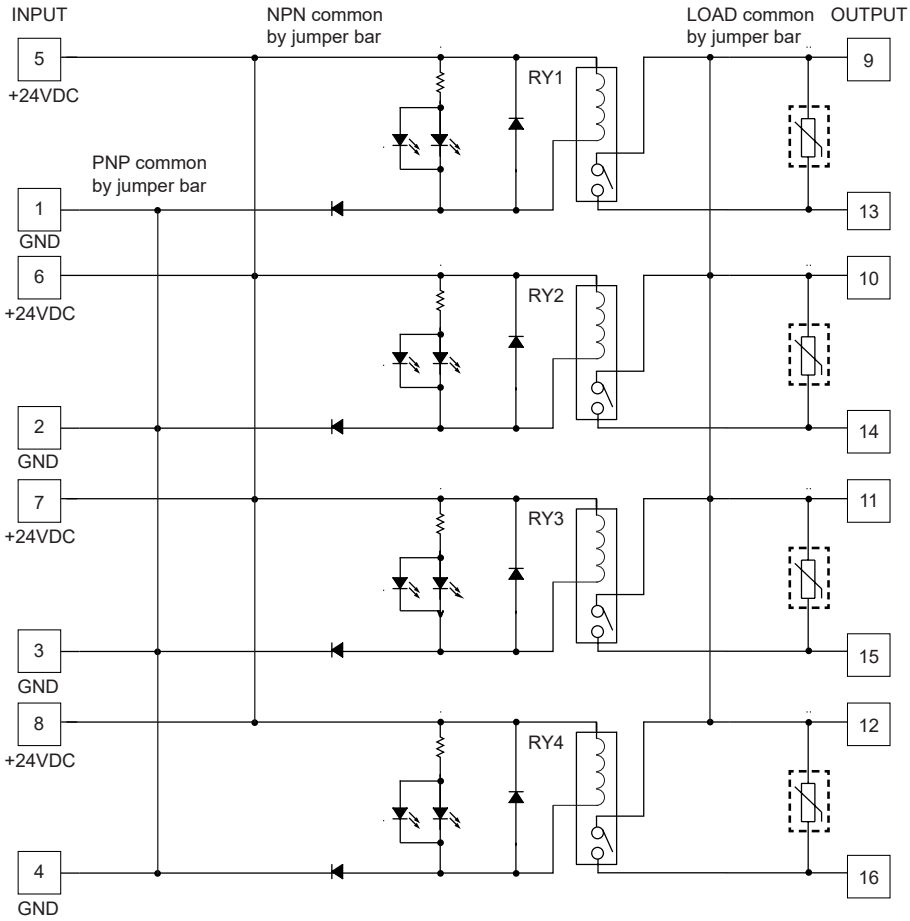


▣ Connections

◎ Rated load current 5A

● **ABL-L04PQ(R6)-UN(UY)**

※NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar.
Please refer to the '2. Using jumper bars' of '▣ Replacing Relay and Using Jumper Bar'.

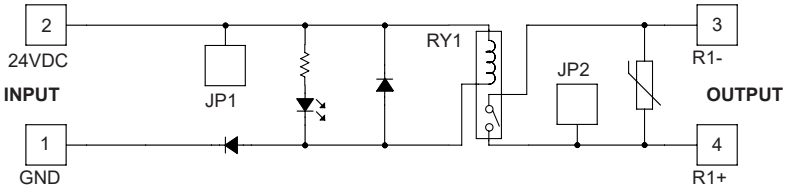


※ parts are only for ABL-L04 □-UY (varistor installed type).

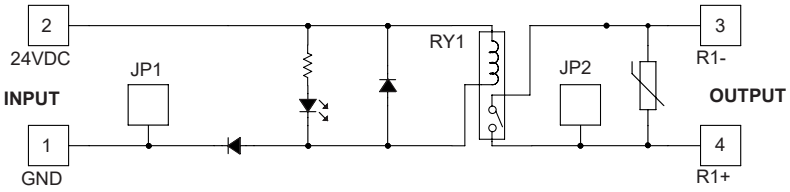
▣ Connections

◎ Rated load current 3A

● ABL-L01PA(TN)-NN(NY)

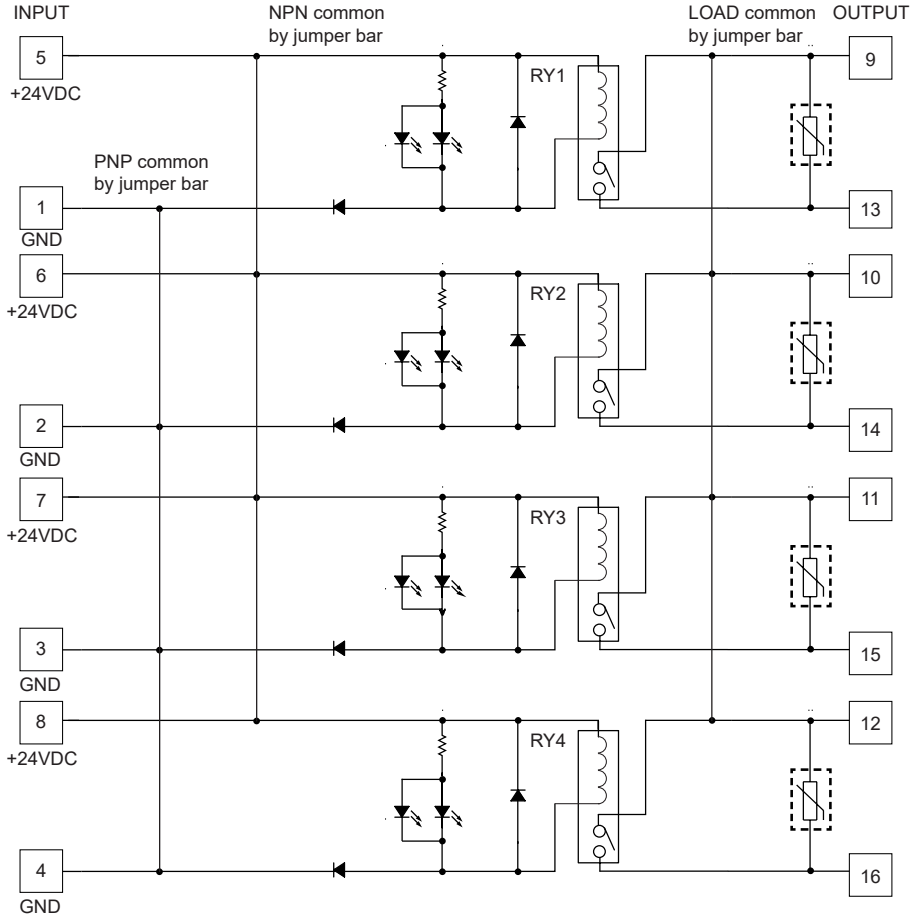


● ABL-L01PA(TN)-PN(PY)



● ABL-L04PA(TN)-UN(UY)

※NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar. Please refer to the '2. Using jumper bars' of '▣ Replacing Relay and Using Jumper Bar'.

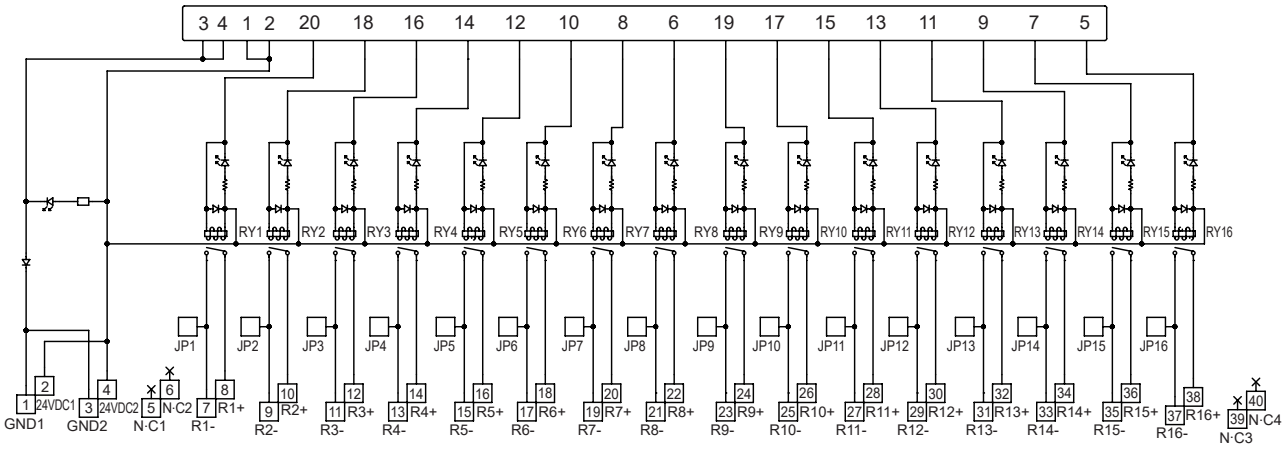


※ parts are only for ABL-L04 □-UY (varistor installed type).

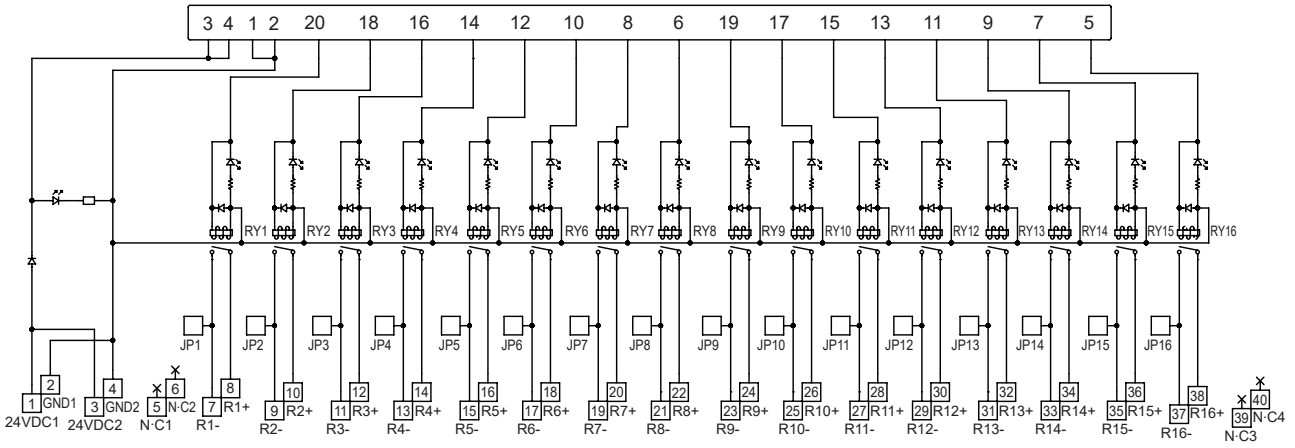
▣ Connections

◎ Rated load current 3A

● ABL-H16R6-NN



● ABL-H16R6-PN



▣ Connecting Crimp Terminals

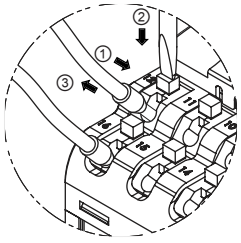
1. Connecting and removing end sleeve (ferrule terminal) crimp terminal at screwless type terminal block

● Connecting

1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

● Removing

1) Press and hold the catch above the terminal in direction ② with a flat head screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.



▣ Replacing Relay and Using Jumper Bar

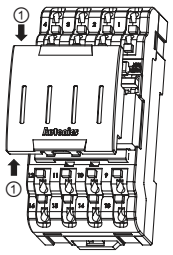
◎ Rated load current 5A

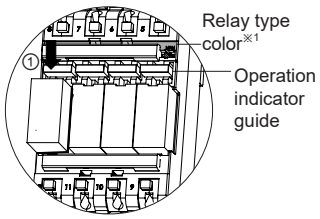
● ABL-L04PQ/R6-□

1. Replacing relays

1) Remove the protection cover.
2) Push the operation indicator guide in direction to remove the relay.
3) Insert a new relay to the case.

※1: The color of the jumper bar insertion holes indicate the relay types of the model.
(green: MATSUSHITA (Panasonic) PQ, navy blue: OMRON G6B)
※Only insert designated relays for each model.
※Execute above directions only for replacing relays. If not, it may cause relay damage.





2. Using jumper bars

Remove the protection cover and use the jumper bars accordingly.

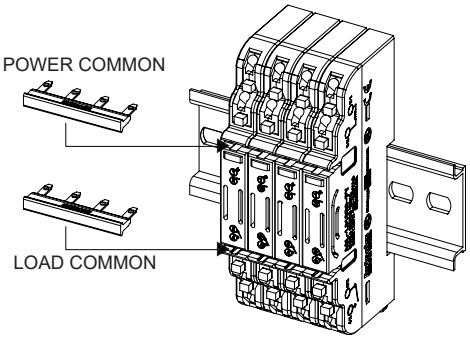
NPN (+ COM)	PNP (- COM)	LOAD COMMON
Insert the jumper bar to see NPN mark below terminals 8, 7, 6, 5.	Insert the jumper bar to see PNP mark below terminals 8, 7, 6, 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

◎ Rated load current 3A

● ABL-L01TN/PA-□

1. Using jumper bar

The right figure example is for 4 ABL-L01□ - □□ units with jumper bar.
For power common, insert a jumper bar to top. For load common, insert it to bottom.
※ABL-L01□ - □□ model is integrated relay. The unit cannot replace only relay.

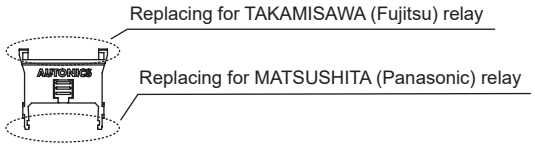


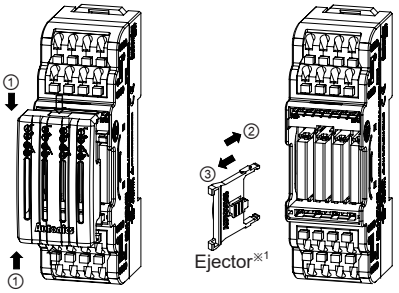
● ABL-L04PA/TN-□

1. Replacing relays

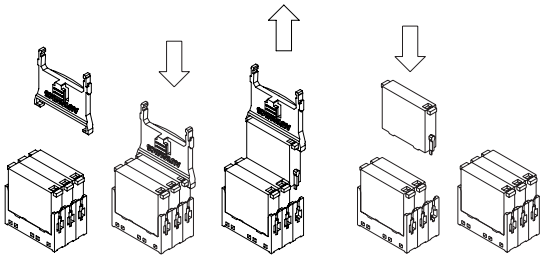
1) Pull the protection cover towards direction ①.
2) Insert the ejector as proper side to ② direction and pull it to ③ direction to remove.
3) Insert a new relay to the case.

※1: Two way ejector position for relay replacement



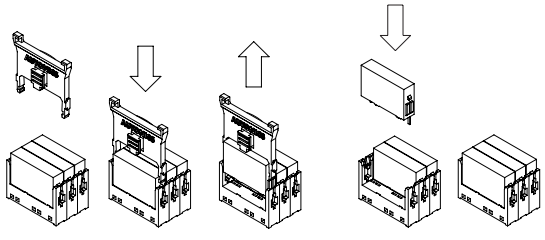


• Removal and insert TAKAMISAWA (Fujitsu) relay



< Removal > < Insert >

• Removal and insert MATSUSHITA (Panasonic) relay



< Removal > < Insert >

2. Using jumper bars

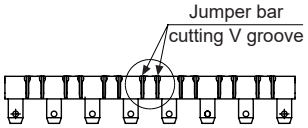
Remove the protection cover and use the jumper bars accordingly.

NPN (+ COM)	PNP (- COM)	LOAD COMMON
Insert the jumper bar to see NPN mark below terminals 8, 7, 6, 5.	Insert the jumper bar to see PNP mark below terminals 8, 7, 6, 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

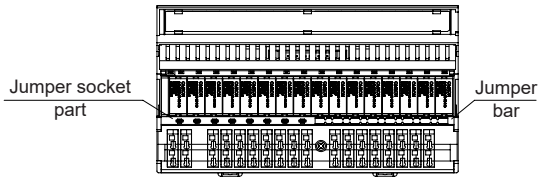
● ABL-H16R6-NN/PN

1. Using jumper bars

1) Cut the jumper bar to the user's desired length by cutting at the V dent (two) using a nipper.

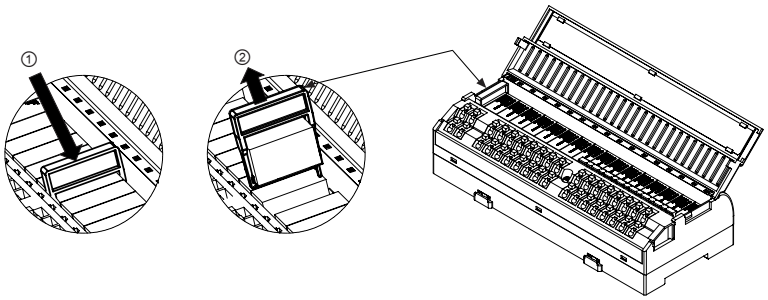


2) Insert the cut jumper bar to the desired jumper bar socket position.



2. Replacing relays

1) Insert the relay ejector at both ends of the installed relay to direction ①.
2) Pull the relay ejector to direction ② for removing the relay.



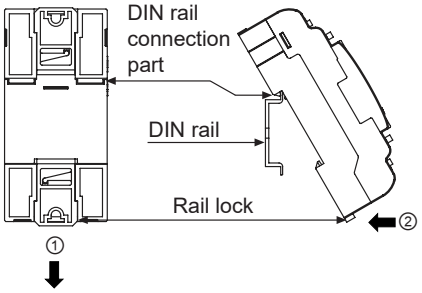
▣ Installation

※Each model appearance is different by no. of relay points.

1. Mounting and removal at DIN rail

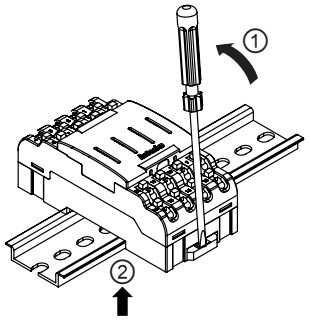
● Mounting

1) Pull the rail lock towards direction ①.
2) Attach the DIN rail connection part onto the DIN rail.
3) Push the unit towards direction ②, then push the rail lock in to lock toward the unit.



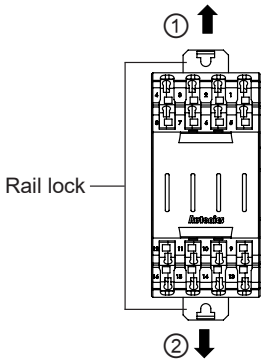
● Removal

1) Insert a screwdriver into the rail lock hole and push it towards direction ①.
2) Remove the unit by pulling the unit towards direction ②.



2. Mounting with screws (only for ABL-L04□-□□)

1) The unit can be mounted on panels using the rear rail locks.
2) Pull the rail locks towards directions ① and ②.
3) M4×10mm spring washer screws are recommended for installation. When using flat washers, use Ø9mm diameter washers. The tightening torque should be between 1.0 and 1.5N·m.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category III

Relay Terminal Block (screw type)

▣ Features

- For driving various loads using PLC output signals
- Easily check operation status and high luminance LED turns on with input signals
- Choose various relays depending on each load voltage or current
  - Easily replace relays using the relay removal lever (1-point relay terminal block)
- 2 mounting methods (DIN rail, screw mount)
- Tight installation and expansion possible with interlocking design (1-point relay terminal block)

※Please refer to 'I/O cable' in the I/O terminal block catalogue.

⚠ Please read "Safety Considerations" in instruction manual before using.

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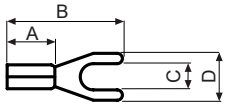
▣ Ordering Information

AB S – H 16 PA 5 – N N

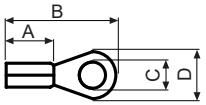
Varistor installation	N	Not installed
Input logic	C	COM None※1
	N	NPN (COM+)
	P	PNP (COM-)
Voltage of relay coil	No-mark	24VDC
	5	200/220VAC or 220VAC
	6	100/110VAC
Relay type	TN	**T**AKAMISAWA (Fujitsu) **N**YP
	PA	MATSUSHITA (Panasonic) **PA**
	PQ	MATSUSHITA (Panasonic) **PQ**
	R6	OM**R**ON G**6**B
	PH	MATSUSHITA (**P**anasonic) A**H**N
	R2	OM**R**ON G**2**R
Number of relay points	01	1
	04	4
	16	16
	32	32
Controller	S	Screw
	H	Hirose connector
Terminal block	S	Screw
Item	AB	Relay terminal block

※1: It is only for 1-point and 4-point models.
※This ordering information is only for reference. When selecting the model, refer to the specifications of each model.

▣ Terminal Specifications



< Spade terminal >



< Ring terminal >

◎ Rated load current 2/3A

(unit: mm)

	A	B	C	D	Applicable wire
Spade crimp terminal	≥4.1	≤16.0	≥3.0	≤5.9	AWG 22-16 (0.30 to 1.25mm²)
Ring crimp terminal	≥4.1	≤16.0	≥3.0	≤5.9	

◎ Rated load current 5A, 10A

	A	B	C	D	Applicable wire	
					Rated load current 5A	Rated load current 10A
Spade crimp terminal	≥4.1	≤16.0	≥3.0	≤7.0	AWG 19-14 (0.65 to 2.0mm²)	AWG 17-14 (1.0 to 2.0mm²)
Ring crimp terminal	≥4.1	≤16.0	≥3.0	≤7.0		

※Please use UL certified crimp terminals.

■ Specifications

◎ Rated load current 2A, 3A

Model		ABS-S01PA-CN ABS-S01TN-CN	ABS-S04PA-CN ABS-S04TN-CN	ABS-H16PA-NN(PN) ABS-H16TN-NN(PN)	ABS-H32PA-NN(PN) ABS-H32TN-NN(PN)
Power supply		24VDC⎓ ±10%			
Rated load voltage & current※1		250VAC~ 3A, 30VDC⎓ 3A			250VAC~ 2A, 30VDC⎓ 2A (2A/1-point, 8A/1COM)
Current consumption	PA type	≤8mA※2		≤8mA※2/≤13mA※3	
	TN type	≤8.5mA※2		≤8.5mA※2/≤13.5mA※3	
Output type		1a contact relay output			
Applicable relay		PA: APAN3124 [MATSUSHITA (Panasonic)], TN: NYP24W-K [TAKAMISAWA (Fujitsu)]			
No. of relay points		1-point	4-point	16-point	32-point (8-point/1COM)
No. of connector pins		—		20-pin	40-pin
Indicator		Operation indicator: Blue LED		Power indicator: Red LED, Operation and disconnection indicator: Blue LED	
Applicable wire		AWG22-16 (0.30 to 1.25mm^2)			
Insulation resistance		≥1,000MΩ (at 500VDC megger)			
Dielectric strength	Between coil-contact	3,000VAC 50/60Hz for 1 minute			
	Between same contacts	1,000VAC 50/60Hz for 1 minute※4			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours			
	Malfunction	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minute			
Shock	Mechanical	500m/s^2 (approx. 50G) in each X, Y, Z direction for 3 times			
	Malfunction	147m/s^2 (approx. 15G) in each X, Y, Z direction for 3 times			
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃			
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH			
Material		CASE & BASE: Polyamide 6, TERMINAL PIN: Brass	CASE & BASE: Modified Polyphenylene Oxide, TERMINAL PIN: Brass	CASE: MPPO, BASE: Polyamide 66 (G25%) TERMINAL PIN: Brass	
Tightening torque		0.5 to 0.6 N·m			
Accessories※5		—	Jumper bar: 2 (Model: JB-7.62-04)	Jumper bar: 2 (Model: JB-7.62-08)	—
Approval		CE cULus※6	CE cULus	CE cULus※6	
Weight※7	PA type	Approx. 314.5g (approx. 21.5g)※8	Approx. 104g (approx. 68g)	Approx. 307g (approx. 224g)	Approx. 438g (approx. 345g)
	TN type	Approx. 324.5g (approx. 22.2g)※8	Approx. 107g (approx. 71g)	Approx. 318g (approx. 235g)	Approx. 463g (approx. 370g)

◎ Rated load current 5A, 10A

Model		ABS-S01PQ-CN ABS-S01R6-CN	ABS-S01PH-CN	ABS-S01PH6-CN	ABS-S01PH5-CN	ABS-S01R2-CN	ABS-S01R26-CN	ABS-S01R25-CN
Power supply		24VDC⎓ ±10%	24VDC⎓	100/110VAC~	220VAC~	24VDC⎓	100/110VAC~	200/220VAC~
Rated load voltage & current※1		250VAC~ 5A, 30VDC⎓ 5A	250VAC~ 10A, 30VDC⎓ 10A※1					
Current consumption※2	PQ/R6 type	≤20mA	—					
	PH/R2 type	—	≤25mA	≤15mA	≤9mA	≤25mA	≤15mA	≤10mA
Output type		1a contact relay output	1c contact relay output					
Applicable relay		PQ: PQ1a-24V [MATSUSHITA (Panasonic)] R6: G6B-1174P-FD-US [OMRON]	AHN12024 [MATSUSHITA (Panasonic)]	AHN110X0 [MATSUSHITA (Panasonic)]	AHN110Y2 [MATSUSHITA (Panasonic)]	G2R-1-S24VDC [OMRON]	G2R-1-S100/ (110) VAC [OMRON]	G2R-1-S200/ (220) VAC [OMRON]
No. of relay points		1-point						
Applicable wire		AWG 19 to 14 (0.65 to 2.0mm^2)	AWG 17 to 14 (1.0 to 2.0mm^2)					
Insulation resistance		≥1,000MΩ (at 500VDC megger)						
Dielectric strength	Between coil-contact	4,000 VAC 50/60Hz for 1 minute※4	5,000VAC 50/60Hz for 1 minute					
	Between same contacts	1,000VAC 50/60Hz for 1 minute※4	1,000VAC 50/60Hz for 1 minute					
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 2 hours	1.5mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours					
	Malfunction	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 10 minute	1.5mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minute					
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times						
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times						
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃						
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH						
Material		CASE & BASE: PA6, TERMINAL PIN: Brass	CASE, BASE: PBT, TERMINAL PIN: Brass, Phosphor bronze					
Tightening torque		0.7 to 0.8N·m						
Approval		CE cULus※6						
Weight※8		PQ: Approx. 430g (approx. 31g), R6: Approx. 416g (approx. 30g)	Approx. 720g (approx. 53g)	Approx. 711g (approx. 52g)	Approx. 715g (approx. 52g)	Approx. 719g (approx. 53g)	Approx. 711g (approx. 52g)	Approx. 712g (approx. 52g)

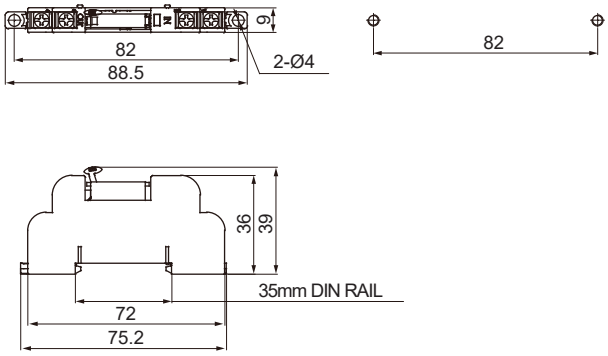
※1: Relay contact capacity for resistive load.
※2: The current consumption including LED current by one relay.
※3:'The current consumption including power LED at '※1'.
※4: R6 type (OMRON relay) is 3,000VAC.
TN type (Fujitsu relay) is 750VAC.
※5: ABS-H32□□-NN(PN) does not supply jumper bars.
※6: Except 30VDC of rated load voltage for cULus.
※7: The weight includes packaging. The weight in parenthesis is for unit only.
※8: The weight of 1-point relays is per 10 units with packing and the weight of parenthesis is per 1.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

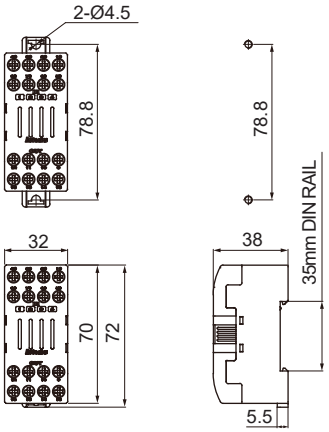
(unit: mm)

◎ Rated load current 2/3A

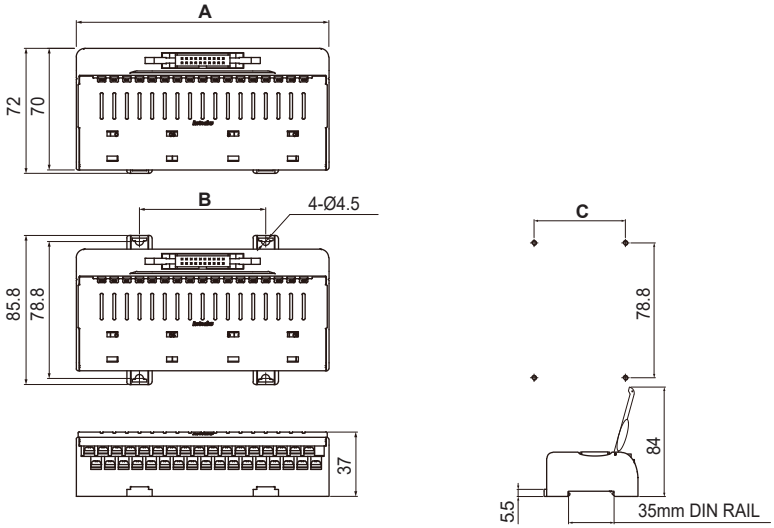
• ABS-S01PA-CN / ABS-S01TN-CN



●ABS-S04PA-CN / ABS-S04TN-CN

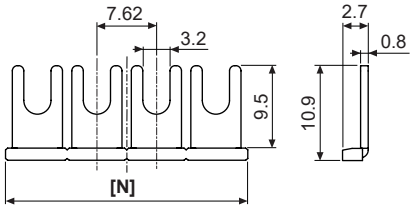


• ABS-H16PA-□N / ABS-H16TN-□N ●ABS-H32PA-□N / ABS-H32TN-□N



	ABS-H16	ABS-H32
A	140	173
B	70	100
C	70	100

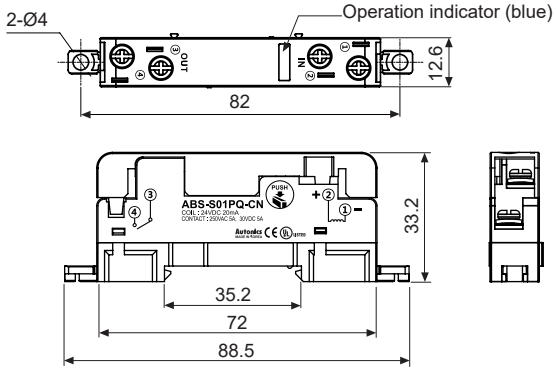
• Jumper bar (sold separately)



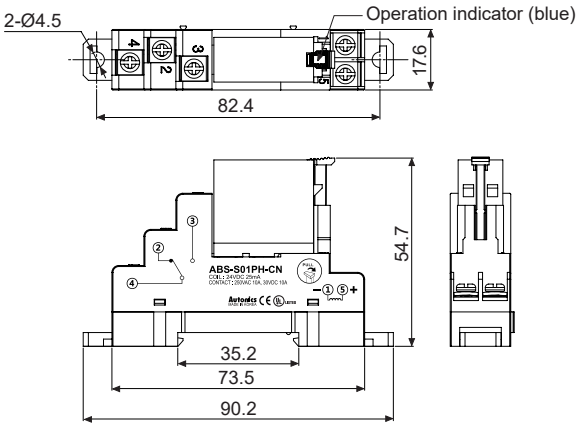
Model	JB-7.62-04	JB-7.62-08
No. of jumper bar pins	4	8
[**N**] size	29.5	60.0

◎ Rated load current 5A, 10A

• ABS-S01PQ-CN / ABS-S01R6-CN



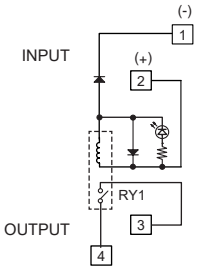
• ABS-S01PH□-CN / ABS-S01R2□-CN



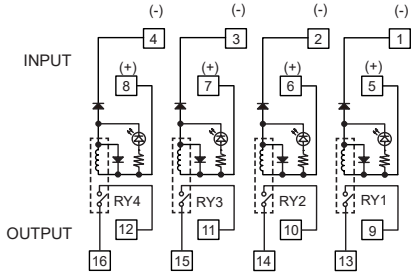
▣ Connections

◎ Rated load current 2/3A

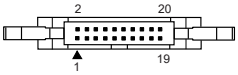
- **ABS-S01PA-CN / ABS-S01TN-CN**



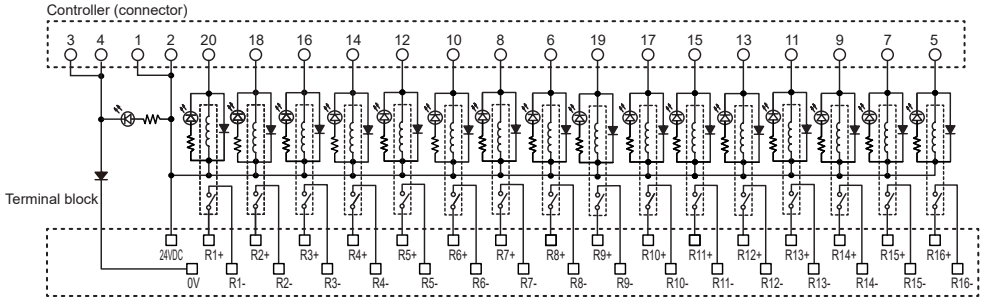
- **ABS-S04PA-CN / ABS-S04TN-CN**



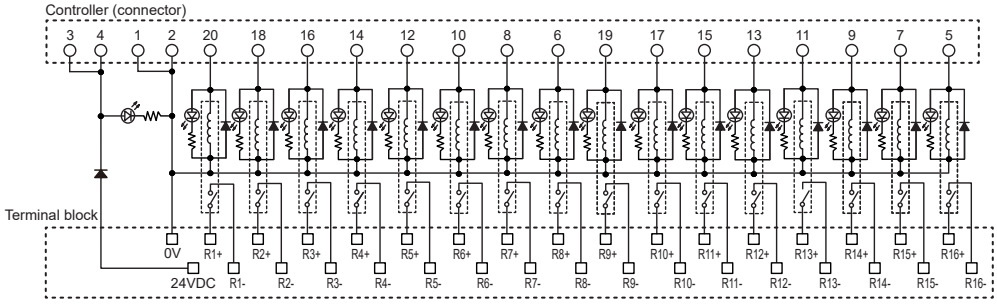
- **ABS-H16□-NN**



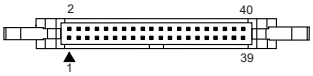
※Hirose connector socket : HIF3BA-20PA-2.54DSA



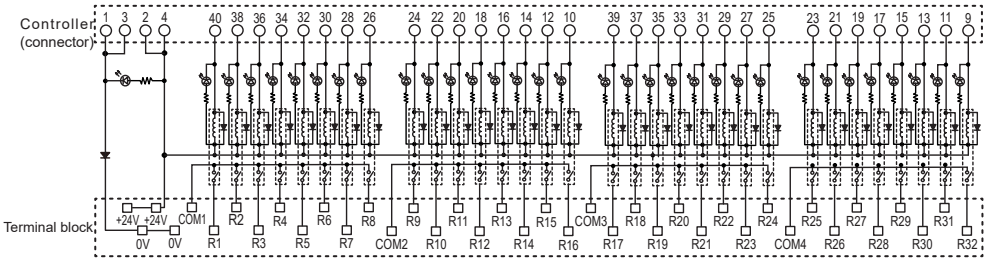
- **ABS-H16□-PN**



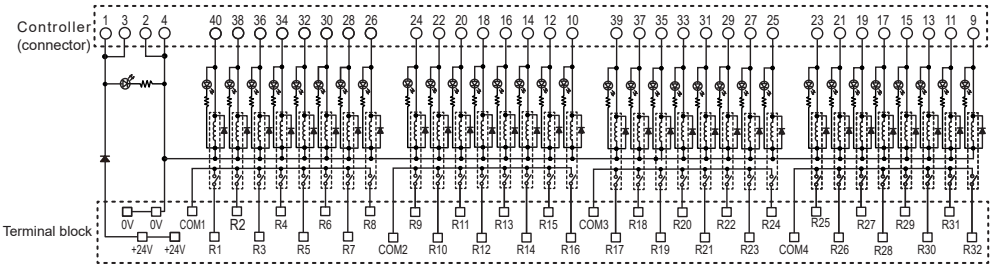
- **ABS-H32□-NN**



※Hirose connector socket : HIF3BA-40PA-2.54DSA



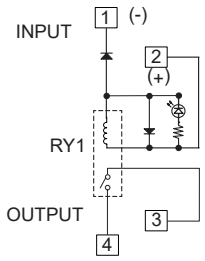
- **ABS-H32□-PN**



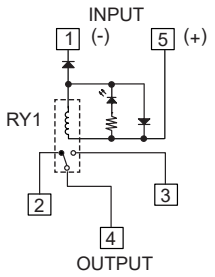
▣ Connections

◎ Rated load current 5A, 10A

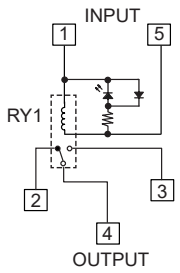
- **ABS-S01PQ-CN**
  ABS-S01R6-CN



- **ABS-S01PH-CN**
  ABS-S01R2-CN



- **ABS-S01PH6-CN**
  ABS-S01PH5-CN
  ABS-S01R26-CN
  ABS-S01R25-CN



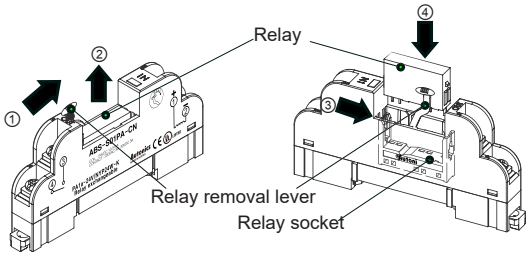
▣ Replacing Relays

◎ Rated load current 2/3A

- **ABS-S01PA-CN / ABS-S01TN-CN**

1) Pull the relay removal lever towards direction ① and the relay will pop up in direction ②.
2) Remove the relay and return the relay removal lever to its original position.
3) Check the socket position and insert the relay into the socket.

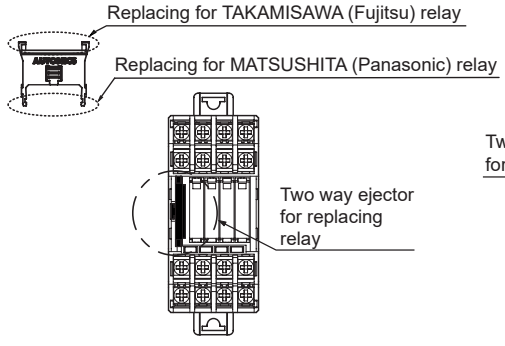
※If pulling the relay removal lever to left or right, the lever may be broken.



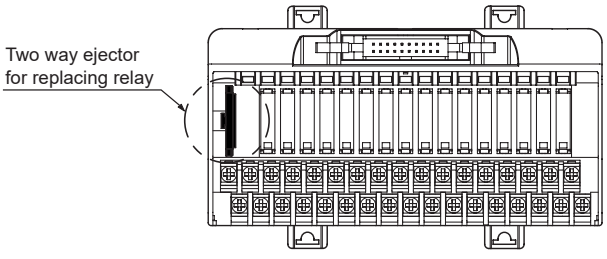
- **ABS-S04PA-CN / ABS-S04TN-CN**
- **ABS-H16PA-☐N / ABS-H16TN-☐N**
- **ABS-H32PA-☐N / ABS-H32TN-☐N**

• Two way ejector position for relay replacement

< Two way ejector >

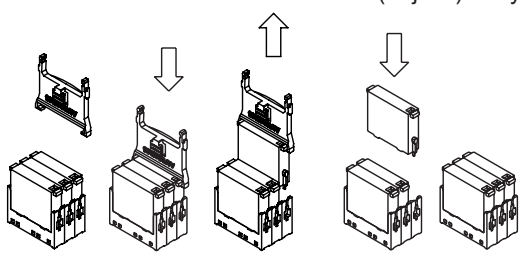


< ABS-S04 >



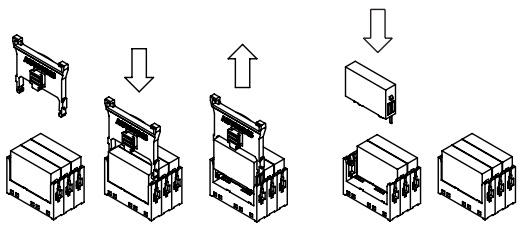
< ABS-H16 / ABS-H32 >

• Removal and insert TAKAMISAWA (Fujitsu) relay



< Removal > < Insert >

• Removal and insert MATSUSHITA (Panasonic) relay



< Removal > < Insert >

※Relay sockets are compatible with both TAKAMISAWA (Fujitsu) relay, NYP24W-K, and MATSUSHITA (Panasonic) relay, APAN3124.

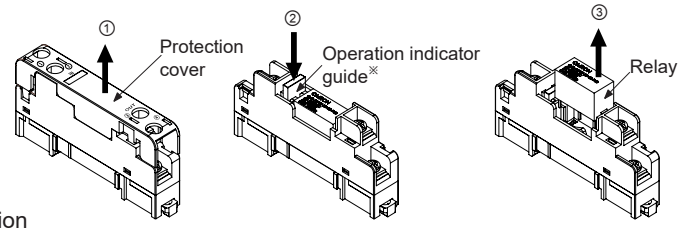
▣ Replacing Relays

◎ Rated load current 5A

- **ABS-S01PQ-CN / ABS-S01R6-CN**

1) Pull the protection cover towards direction ①.
2)Press the operation indicator guide in direction ② and remove the relay towards direction ③.
3) Insert a new relay into position.

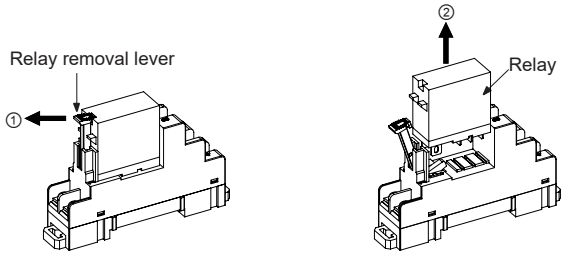
※Operation indicator guide is used for displaying operation status and removing relays



◎ Rated load current 10A

- **ABS-S01PH□-CN / ABS-S01R2□-CN**

1) Pull the relay removal lever towards direction ①. Remove the relay towards direction ②.
2) Insert a new relay into position.



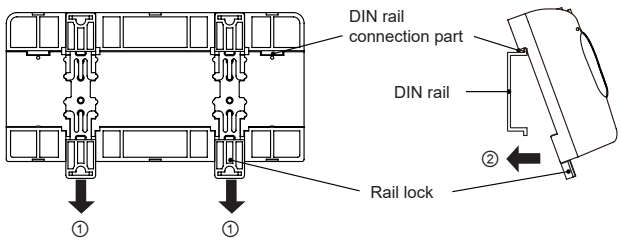
▣ Installation

※Each model appearance is different by no. of relay points.

◎ Mounting and Removal at DIN rail

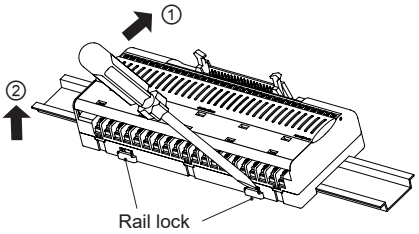
- Mounting

1)Pull the rail lock towards direction ①.
2)Attach the DIN rail connection hook onto the DIN rail.
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



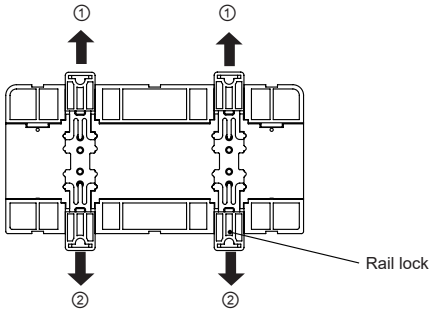
- Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ①.
2)Remove the unit by pulling the unit towards direction ②.



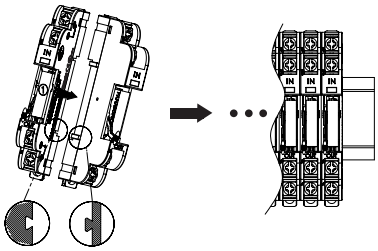
◎ Mounting with screws

1)The unit can be mounted on panels using the rear rail locks.
2)Pull the rail locks towards directions ① and ②.
3)M4 x 15mm spring washer screws are recommended for installation. When using flat washers, use Ø6mm diameter washers. The tightening torque should be between 7.14 and 10.2kgf·cm (0.7 to 1.0N·m).

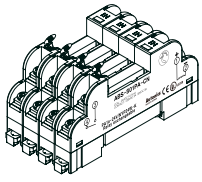


◎ Connecting multiple units (1-point relay terminal block)

Connect multiple units by locking the socket (凹) and peg (凸) together in direction ①.

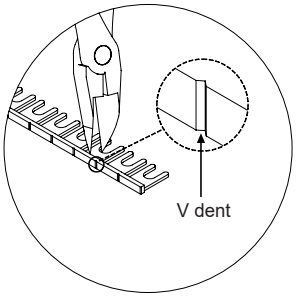


※E.g.

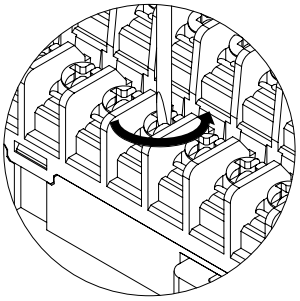


▣ Installing Jumper Bars (4, 16, 32-point relay terminal block)

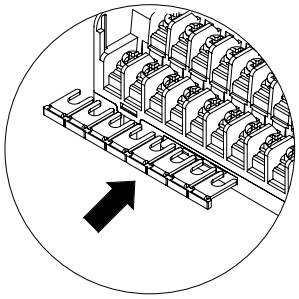
1)Cut the jumper bar to the user's desired length by cutting at the V dent using a nipper.



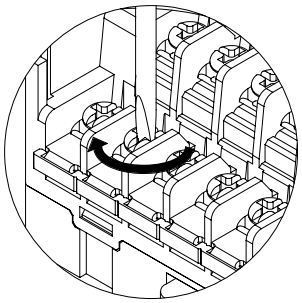
2)Unfasten all the screws of the terminals you wish to commonize.



3)Insert the jumper bar below the unfastened screws.



4)Tighten all the screws above the jumper bar.



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category II

SSR Terminal Block (screwless type)

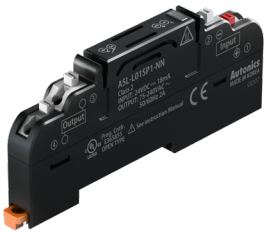
▣ Features

[Common Feature]
- ●Selectable between independent and load common output with jumper bar
- ●High tensile force and easy wiring with one-touch screwless type crimp terminal
- ●Convenient operating status check with operation indicator (blue LED)

[1-point]
- ●Selectable between independent and power ommon input with jumper bar
- ●DIN Rail mounting
- ●SSR: [Fujitsu] SN-24A01C
  [Omron] 3GMC-202P
  [Panasonic] AQG22124, AQG12124, AQZ202D

[4-point]
- ●Selectable between NPN common and PNP common common input with jumper bar insulting location
- ●SSR protection with the cover
- ●Easy SSR replacement with SSR ejector (except ASL-L04ST0-□ □)
- ●DIN Rail or screw mounting
- ●SSR: [Fujitsu] SN-24A01C
  [Omron] 3GMC-202P
  [Panasonic] AQG22124, AQG12124, AQZ202D

[16-point]
- ●SSR protection with the cover
- ●Easy SSR replacement with SSR ejector
- ●DIN Rail mounting
- ●SSR: [Panasonic] AQZ202D



⚠ **Please read "Safety Considerations" in instruction manual before using.**

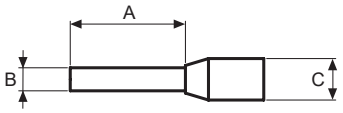
CE cULus LISTED (except ASL-L1ST0-□□, ASL-L4ST0-□□series)

▣ Ordering Information

AS **L** – **L** **04** **SP0** – **U** **N**

Varistor installation	**N**	Not installed
	Y	Installed
Input logic	**U**	Universal
	N	NPN
	P	PNP
SSR type	**MP0**	AQZ202D (panasonic)
	SP0	AQG12124 (panasonic)
	SP1	AQG22124 (panasonic)
	SR0	G3MC-202P (omron)
	ST0	SN-24A01C (fujitsu)
No. of SSR points	**01**	1-point
	04	4-point
	16	16-point
Connector type	**H**	Hirose
	L	Screwless
Terminal type	**L**	Screwless
Model	**AS**	SSR Terminal Block

▣ Crimp Terminal Specification



(unit: mm)

	A	B	C	Applicable wire
End Sleeve (ferrule terminal) crimp terminal	10 to 12.0	≤ 2.0	≤ 4.1	AWG22-16 (0.30 to 1.25mm^2)

※Use cable of copper conductor with temperature class of 60℃.

▣ Specifications

◎ 1-point, 4-point

Model						
	1-point	**ASL-L01MP0-□N**	**ASL-L01SP0-□N**	**ASL-L01SP1-□N**	**ASL-L01SR0-□N**	**ASL-L01ST0-□N**
		ASL-L01MP0-□Y	**ASL-L01SP0-□Y**	**ASL-L01SP1-□Y**	**ASL-L01SR0-□Y**	**ASL-L01ST0-□Y**
	4-point	**ASL-L04MP0-UN**	**ASL-L04SP0-UN**	—	—	**ASL-L04ST0-UN**
		ASL-L04MP0-UY※1	**ASL-L04SP0-UY**※1	—	—	**ASL-L04ST0-UY**※1
Power supply		24VDC⎓±10%				
Rated load voltage & current※2		60VAC～/DC⎓ 50/60Hz 2.7A	75-240VAC～ 50/60Hz 1A	75-240VAC～ 50/60Hz 2A	24-240VAC～ 50/60Hz 2A	24-240VAC～ 50/60Hz 1A
Current consumption※3		≤ 3mA	≤ 18mA			≤ 10mA
Output type		1a contact SSR output				
Applied SSR		AQZ202D [Panasonic]	AQG12124 [Panasonic]	AQG22124 [Panasonic]	G3MC-202P [Omron]	SN-24A01C [Fujitsu]
Terminal type		Screwless				
Terminal pitch		1-point: 9.0mm (arranging over 2 units)/4-point: 5.0mm				
Operation Indicator		Blue LED				
Applied cable	Solid wire	Ø0.6 to Ø1.25mm (60℃ only)				
	Stranded wire※4	AWG22-16 (0.30 to 1.25mm^2) (60℃ only)				
Stripped wire length		8 to 10mm				
Insulation resistance		1-point: ≥ 1,000MΩ (at 500VDC megger)/4-point: ≥ 1,000MΩ (at 500VDC megger)				
Insulation resistance	Between coil-contact	2,500VAC 50/60Hz for 1 minute				
	Between same contacts※5	1,000VAC 50/60Hz for 1 minute				
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours				
	Malfunction	0.75mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes				
Shock	Mechanical	1,000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times				
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times				
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃				
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH				
Material		Terminal block: polyamide 66, conducting plate: brass, case&base: poly phenylene sulfide				
Accessory		Jumper bar: 1, Ejector: 1※6				Jumper bar: 1
Protection structure		IP20 (IEC standard)				
Approval		cULus LISTED				CE
Weight※7	1-point※8	Approx. 130g (approx. 19g)	Approx. 134g (approx. 20g)	Approx. 140g (approx. 22g)	Approx. 148g (approx. 24g)	Approx. 136g (approx. 21g)
	4-point	Approx. 118g (approx. 65g)	Approx. 122g (approx. 69g)	Approx. 128g (approx. 75g)	Approx. 128g (approx. 75g)	Approx. 126g (approx. 72g)

※1: This is for load protection and it is recommend to use at the inductive load.
※2: This is SSR load capacity when it is resistive load and temperature characteristic curve is satisfied.
※3: The current consumption including LED current by one SSR.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: ASL-L01□-□Y/ASL-L04□-□Y (varistor installed type), this is 300VAC.
※6: Ejector is supplied only for ASL-L04□-□□ (4-point).
※7: The weight includes packaging. The weight in parenthesis is for unit only.
※8: The weight of 1-point unit is per 4 units with packaging and the weight of parenthesis is per 1.
※Environment resistance is rated at no freezing or condensation.

◎ **16-point**

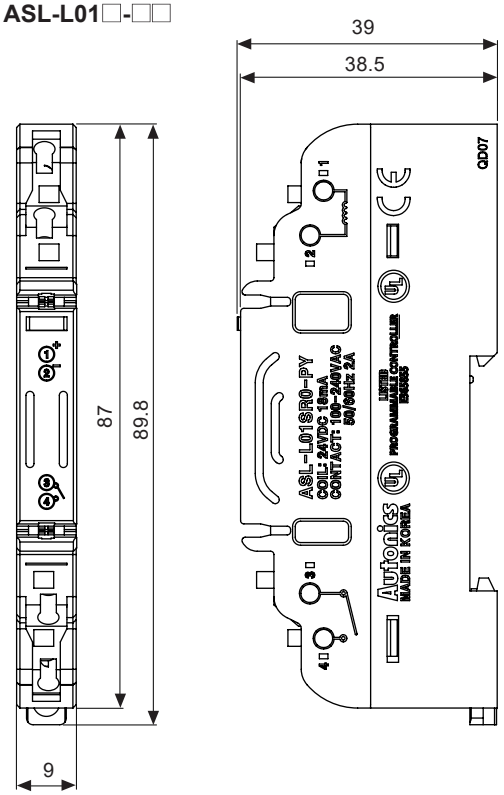
Model		ASL-H16MP0-□N
Input rating voltage		24VDC⎓
Output rating voltage and current of SSR (ambient temp.)※1※2		60VAC~ 50/60Hz or 60VDC⎓ 2.4A (25℃) or 1.7A (55℃)
Current consumption※3		≤4mA
Output type		1a contact SSR output
Applied SSR		AQZ202D [Panasonic]
No. of SSR points		16
Terminal type		Screwless
Terminal pitch		≥ 7.8mm
SSR pitch		10mm
Indicator		Power indicator: red LED, operation indicator: blue LED
Applied cable	Solid wire	Ø0.6 to Ø1.25mm
	Stranded wire※4	AWG22-16 (0.3 to 1.25mm^2)
Stripped wire length		8 to 10mm
Insulation resistance		≥ 1,000MΩ (at 500VDC megger)
Dielectric strength	Between coil-contact	2,500VAC~ 50/60Hz for 1 minute
	Between same contacts	1,000VAC~ 50/60Hz for 1 minute
Vibration	Mechanical	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours
	Malfunction	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 10 minutes
Shock	Mechanical	1000m/s^2 (approx. 100G) in each X, Y, Z direction for 3 times
	Malfunction	100m/s^2 (approx. 10G) in each X, Y, Z direction for 3 times
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Material		Terminal block, cover: polycarbonate, case/base: modified polyphenylene oxide
Accessory		Jumper bar: 2, ejector: 1
Protection structure		IP20 (IEC standard)
Approval		CE cULus
Weight※5		Approx. 377g (approx. 278g)

※1: When connecting loads to output part, please connect loads of same power type.
Connecting loads of different power type may cause safety issues.
※2: This value is rated when using the resistive load. Use proper current for the ambient temperature.
(Refer to the 'Temperature Characteristic Graph'.)
※3: The current consumption including LED current per one SSR.
※4: When using stranded wire, use End Sleeve (ferrule terminal) crimp terminals.
※5: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

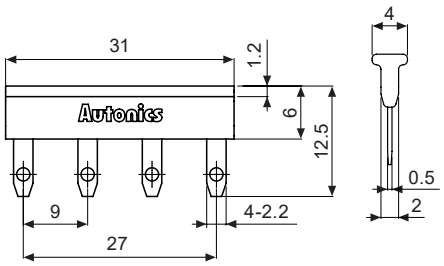
(unit: mm)

◎ **ASL-L01□-□□**

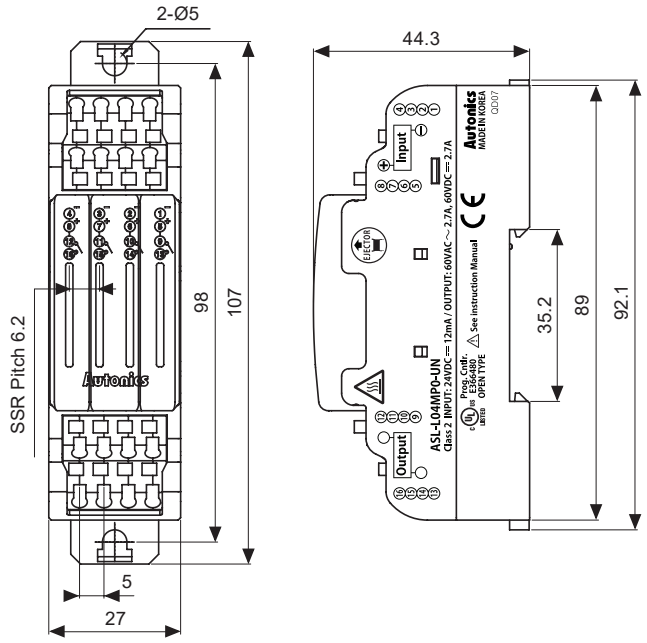


● **Jumper bar (model: JB-9.0-04L)**

※For the desired application (Power/Load common), the jumper bar is sold separately.

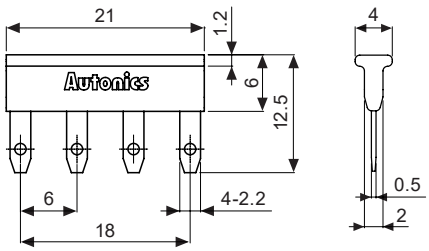


◎ **ASL-L04□-□□**



● **Jumper bar (model: JB-6.0-04L)**

※For the desired application (NPN/PNP/Load common), the jumper bar is sold separately.

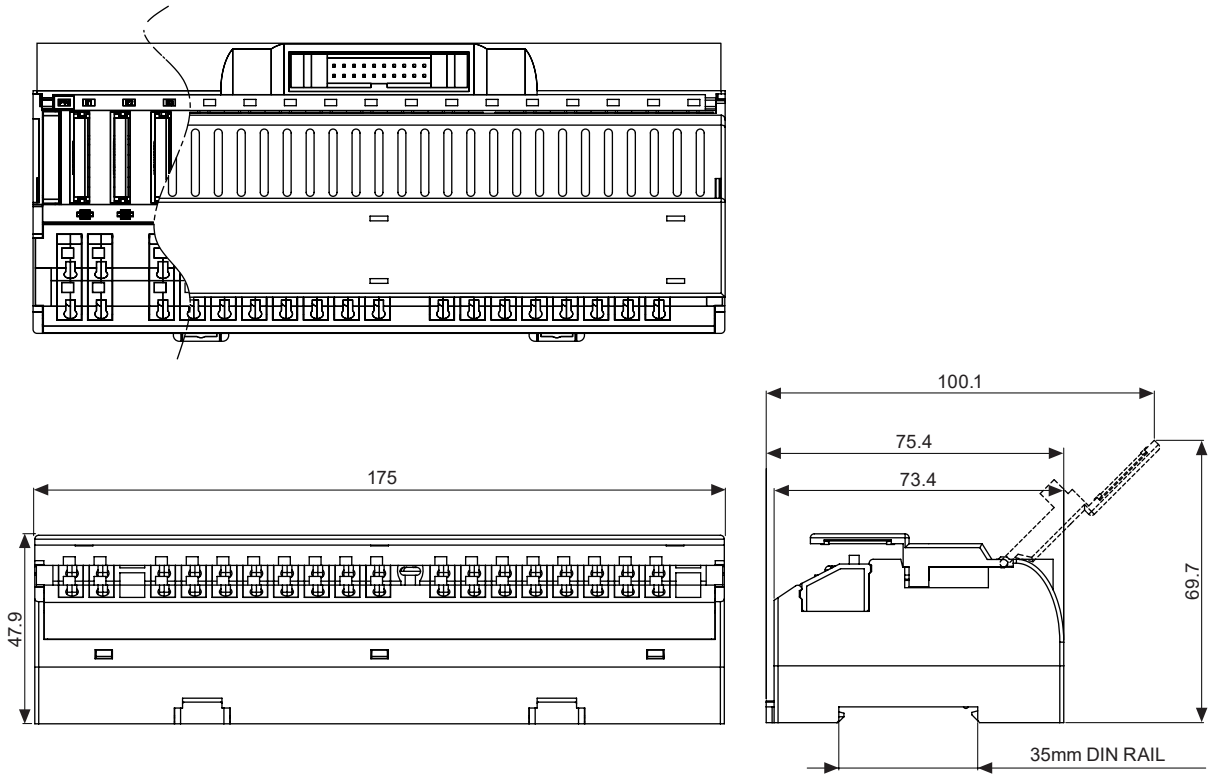


High Temperature Caution

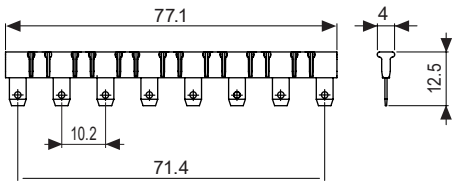
Make sure do not touch the heat sink or the unit body while power is supplied or right after load power is turned off. If not, it may cause a burn.

(unit: mm)

◎ **ASL-H16MP0-□N**



● **Jumper bar (model: JB-10.2-08L)**

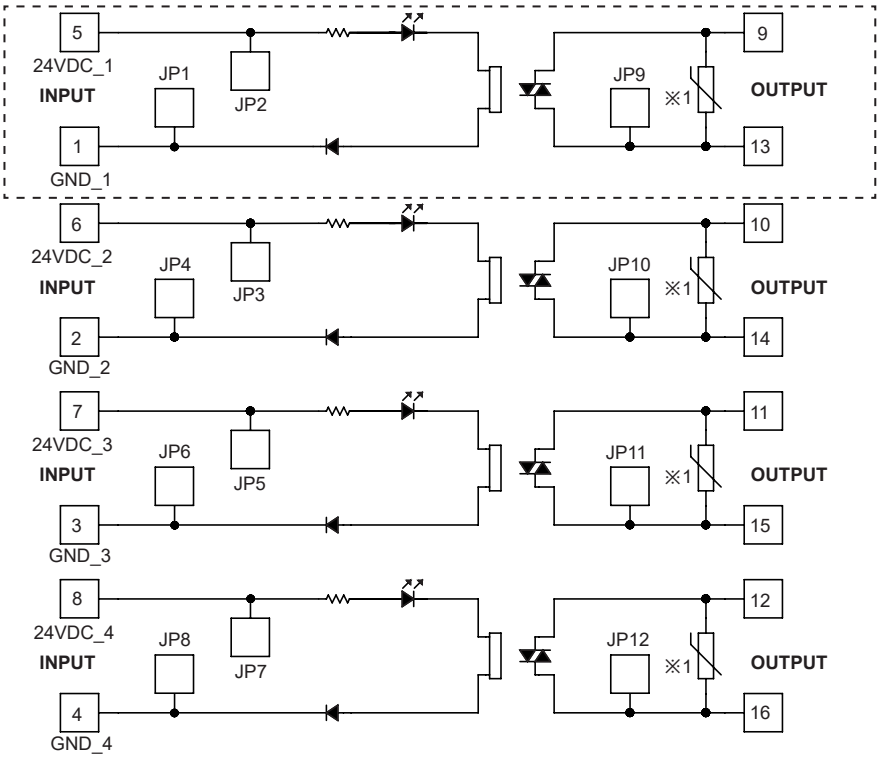


※For the desired application (Load common), the jumper bar is sold separately.

▣ Wire Connections

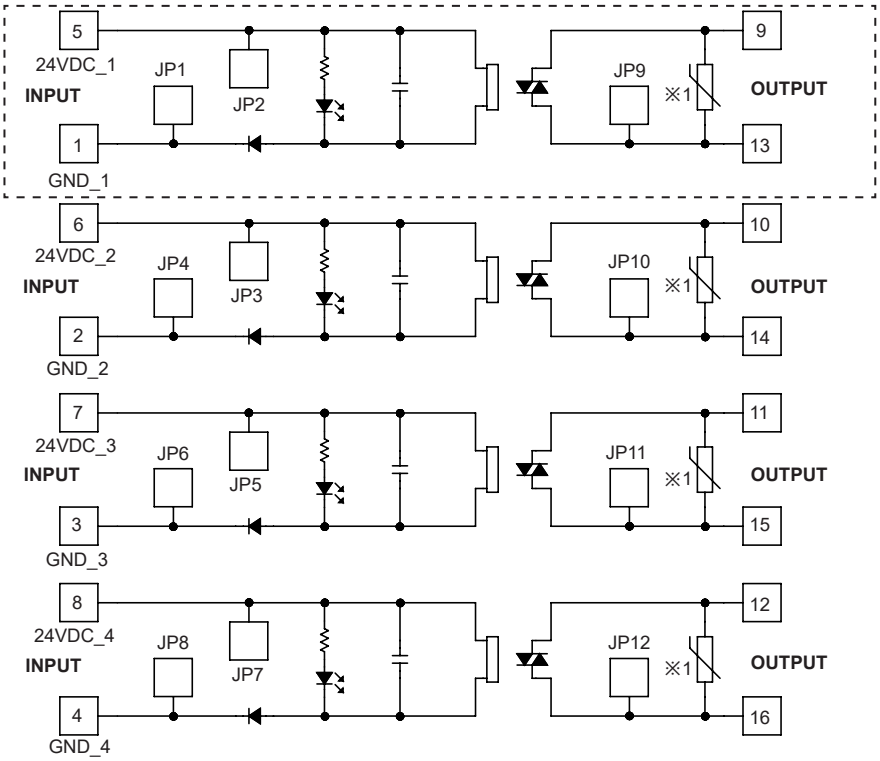
※ NPN, PNP, LOAD common are operated by the inserting position of the Jumper bar.
Please refer to '● Using jumper bars' of '▣ Replacing SSR and Using Jumper Bar'.

◎ **ASL-L01MP0-□□/ASL-L04MP0-□□**



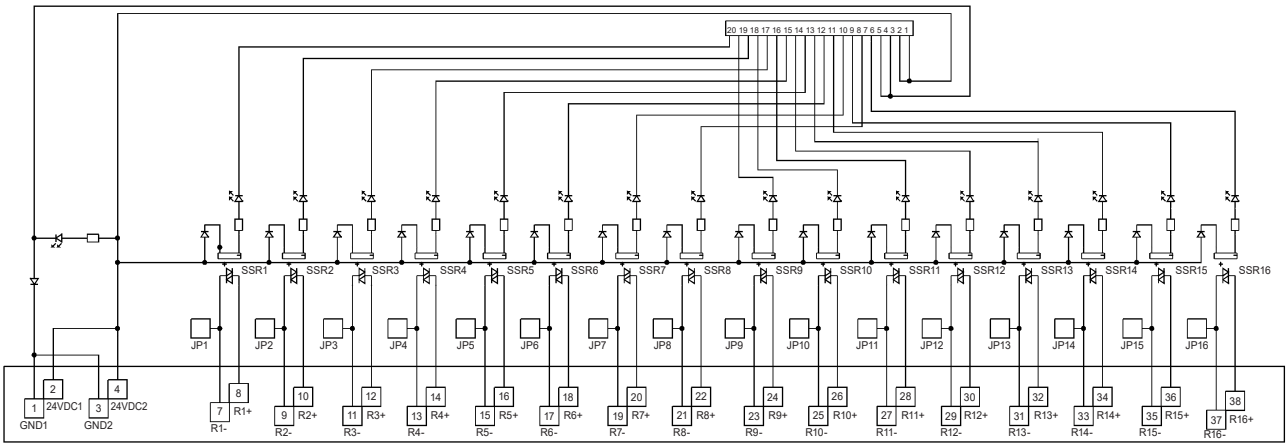
※⬚ part is only for 1-point model.
In 1-point model, NPN or PNP is designated, so that it is not available to select NPN or PNP with the jumper bar.
※1: Only for ASL-L01(04) □ -UY(varistor installed type).

◎ **ASL-L01SP0(SP1/SR0/ST0)-□□/ASL-L04SP0(SP1/SR0/ST0)-□□**

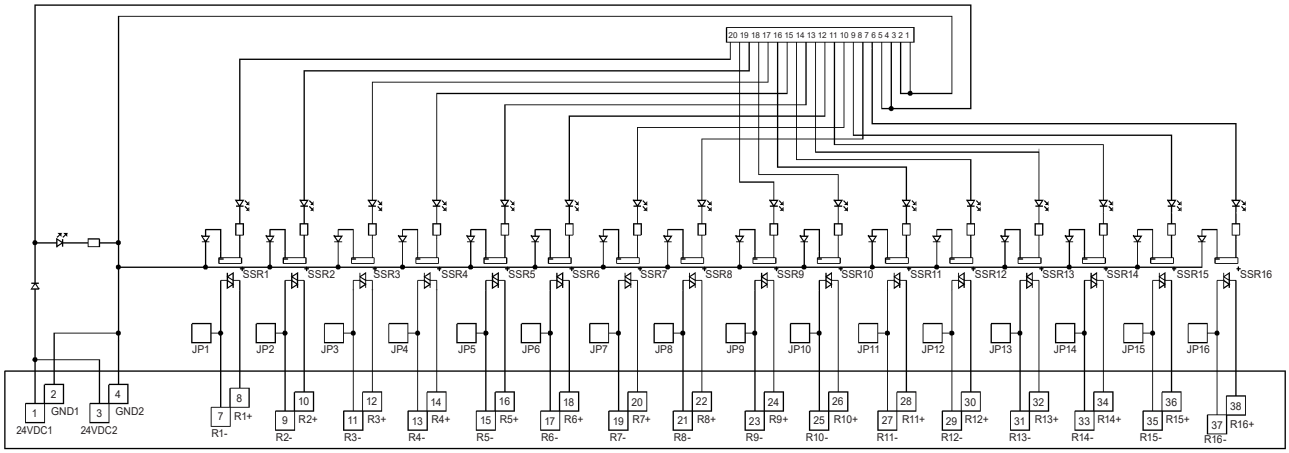


※⬚ part is only for 1-point model.
In 1-point model, NPN or PNP is designated, so that it is not available to select NPN or PNP with the jumper bar.
※There is no condenser for ASL-L□ SR0-□□ model.
※1: Only for ASL-L01(04)□ -UY (varistor installed type).

◎ **ASL-H16MP0-NN**



◎ **ASL-H16MP0-PN**



▣ Connecting Crimp Terminals

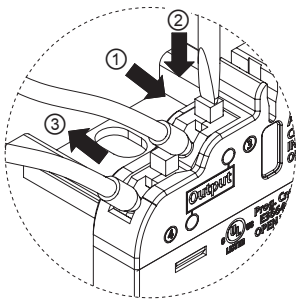
◎ **Connecting and removing end sleeve (ferrule terminal) crimp terminal at screwless type terminal block**

● **Connecting**

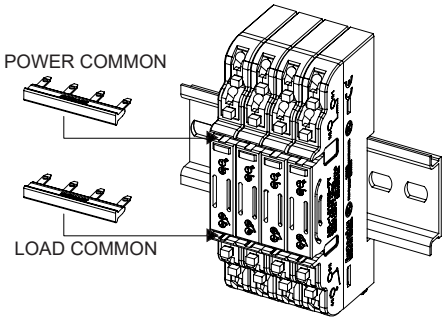
1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

● **Removing**

1) Press and hold the catch above the terminal in direction ② with a flathead screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.



▣ Replacing SSR and Using Jumper Bar



◎ ASL-L01□-□□

※ASL-L01□ – □□ model is integrated SSR type. The unit cannot replace only SSR.

● Using jumper bar

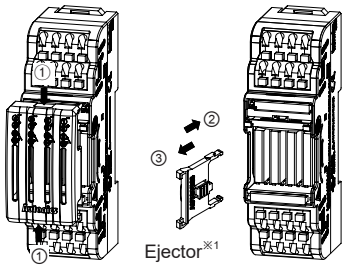
The right figure example is for 4 ASL-L01□-□□ units with jumper bar.
For power common, insert a jumper bar to top (below 1, 2 terminals).
For load common, insert a jumper bar to bottom (above 3, 4 terminals).

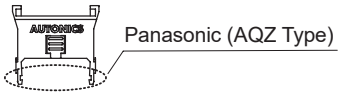
◎ ASL-L04□-□□

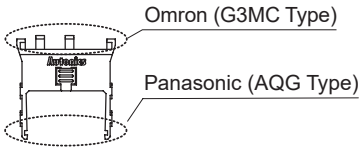
● Replacing SSR

1) Pull the protection cover towards direction ①.
2) Insert the ejector as proper side to ② direction and pull it to ③ direction to remove.
3) Insert a new SSR to the case.

※1: Two way ejector position for SSR replacement
(there is no ejector for SSR SN-24A01C model)

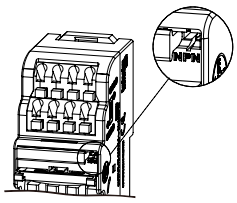
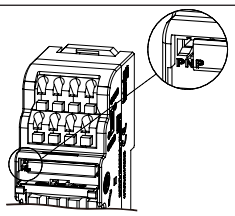
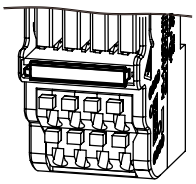






● Using jumper bars

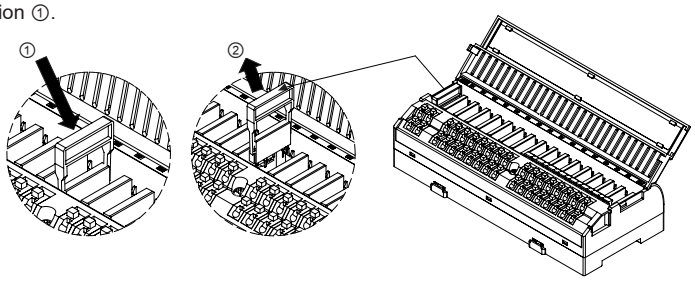
Remove the protection cover and use the jumper bars accordingly.

NPN COMMON	PNP COMMON	LOAD COMMON
		
Insert the jumper bar to the far left towards terminals 4 and 8.	Insert the jumper bar to the far right towards terminals 1 and 5.	Insert the jumper bar above terminals 12, 11, 10, 9.

◎ ASL-H16MP0-□N

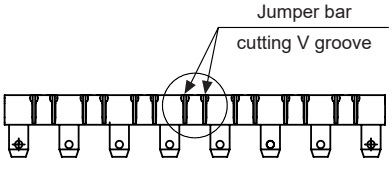
● Replacing SSR

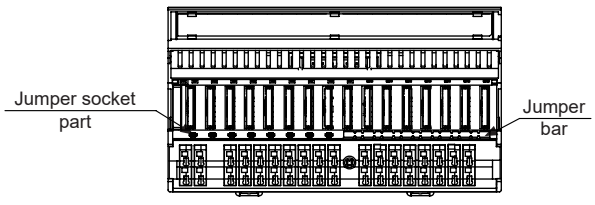
1) Insert the SSR ejector at both ends of the installed SSR to direction ①.
2) Pull the SSR ejector to direction ② for removing the SSR.



● Using jumper bars

1) Cut the jumper bar to the user's desired length by cutting at the V dent (two) using a nipper.
2) Insert the cut jumper bar to the desired jumper bar socket position.





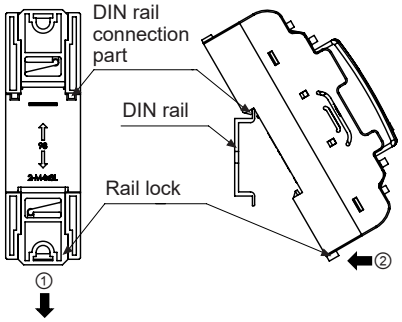
▣ Installation

※When installing the unit, keep the interval between the units.
(refer to the '▣ Example Of Installation'.)

1. Mounting and removal at DIN rail

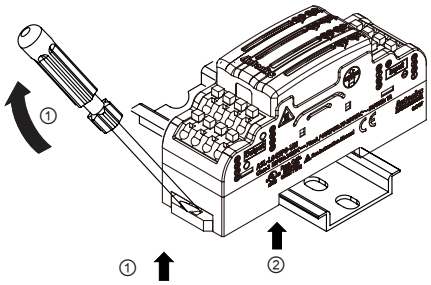
● Mounting

1) Pull the rail lock towards direction ①.
2) Attach the DIN rail connection part onto the DIN rail.
3) Push the unit towards direction ②, then push the rail lock in to lock toward the unit.



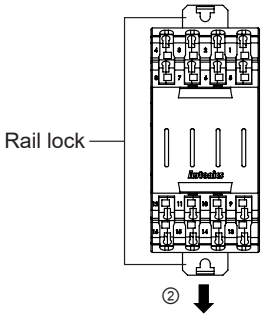
● Removal

1) Insert a screwdriver into the rail lock hole and push it towards direction ①.
2) Remove the unit by pulling the unit towards direction ②.



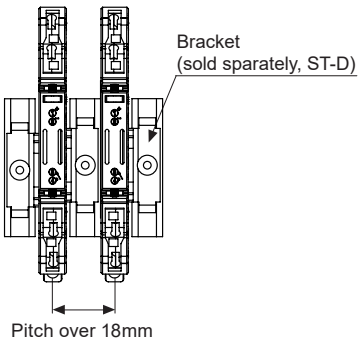
2. Mounting with screws (only for ASL-L04□-□□)

1) The unit can be mounted on panels using the rear rail locks.
2) Pull the rail locks towards ①/② directions.
3) M4×10mm spring washer screws are recommended for installation.
When using flat washers, use Ø9mm diameter washers. The tightening torque should be between 1.0 and 1.5N·m.

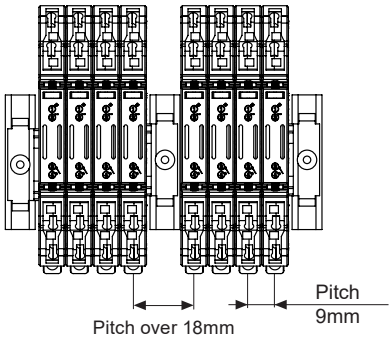


▣ Example of Installation

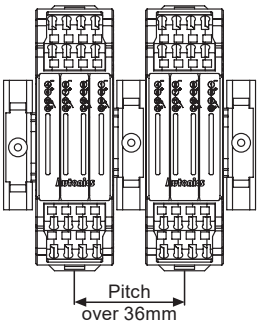
● ASL-L01□-□□
1 unit individual installation
(pitch between each SSR: over 18mm)



● ASL-L01□-□□
4 units arranging installation
(pitch between each SSR: 9mm)



● ASL-L04□-□□
individual installation
(pitch between each SSR: 6.2mm)

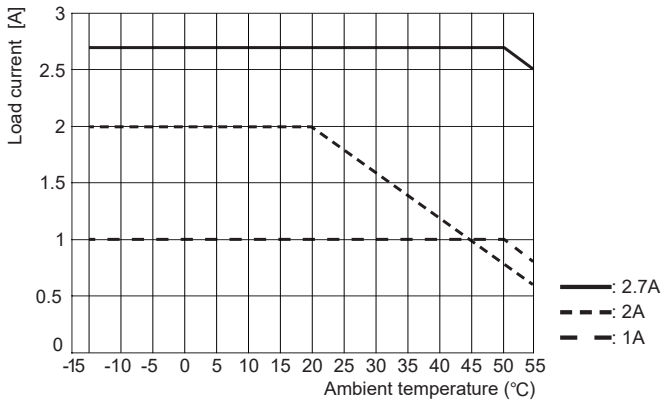


※Pitch is interval between SSRs.

▣ Temperature Derating Graph

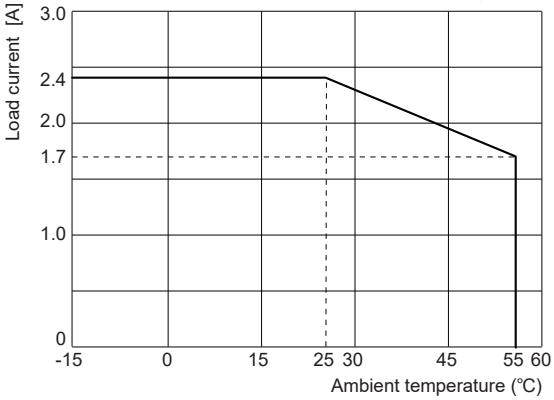
◎ Load current by ambient temperature for each rated current

● ASL-L01□-□□, ASL-L04□-□□

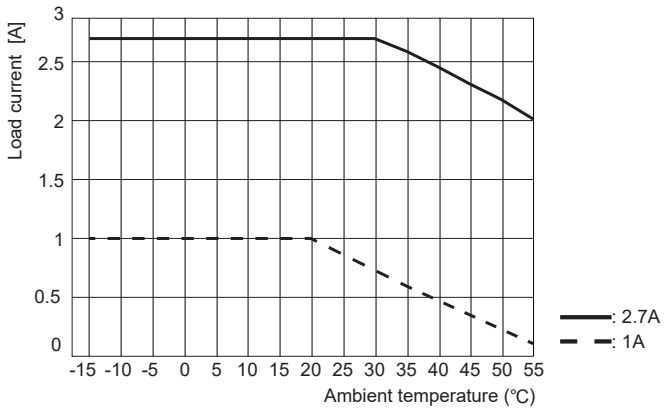


● ASL-H16MP0-□N

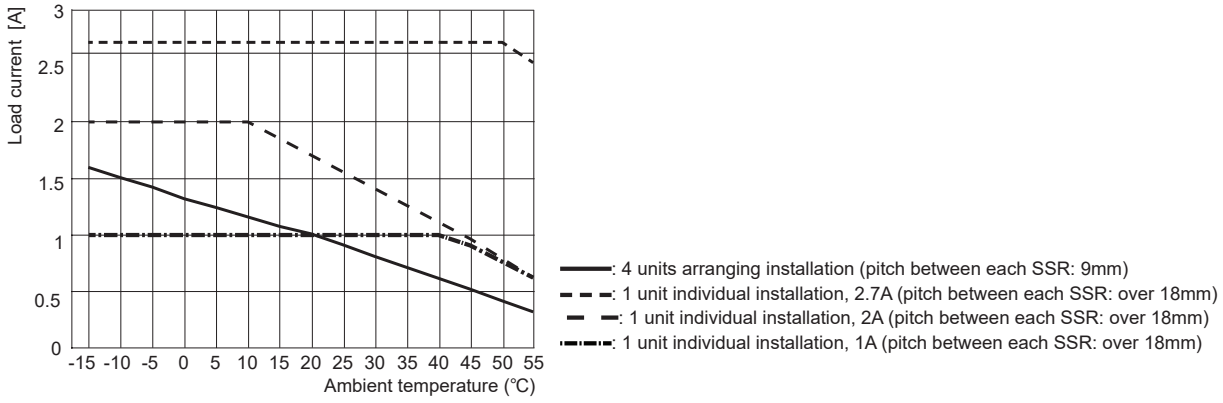
V_{IN}: 24VDC⎓
※V_{IN} is input voltage.



◎ When installing ASL-L04□-□□ individually, load current by ambient temperature for SSRs interval



◎ When installing ASL-L01□-□□, load current by ambient temperature for SSRs interval



▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. Check the polarity of power or COMMON before connecting PLC or other controllers.
3. Do not touch the unit immediately after the load power is supplied or cut.
   It may cause burn by high temperature.
4. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
5. Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise.
   Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.).
   In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
6. This unit may be used in the following environments.
   ① Indoors(in the environment condition rated in 'Specifications')
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category II

Sensor Connector Terminal Block

▣ Features

- Quicker and easier wiring with sensor connectors [wire mount plug (CNE-P□-□, sold separately)]
- Wire stripping and other tools not required
- Compact, space-saving design
- Easily check operation status and cable connection with LED light
- 2 mounting methods (DIN rail, screw mount)
- Choose NPN or PNP input with NPN/PNP selection switch

※Autonics sensor connector wire plug (CNE Series) is recommended. Please refer to page D-2 to 5.

※Autonics I/O cable CJ Series is recommended. Please refer to page B-2.

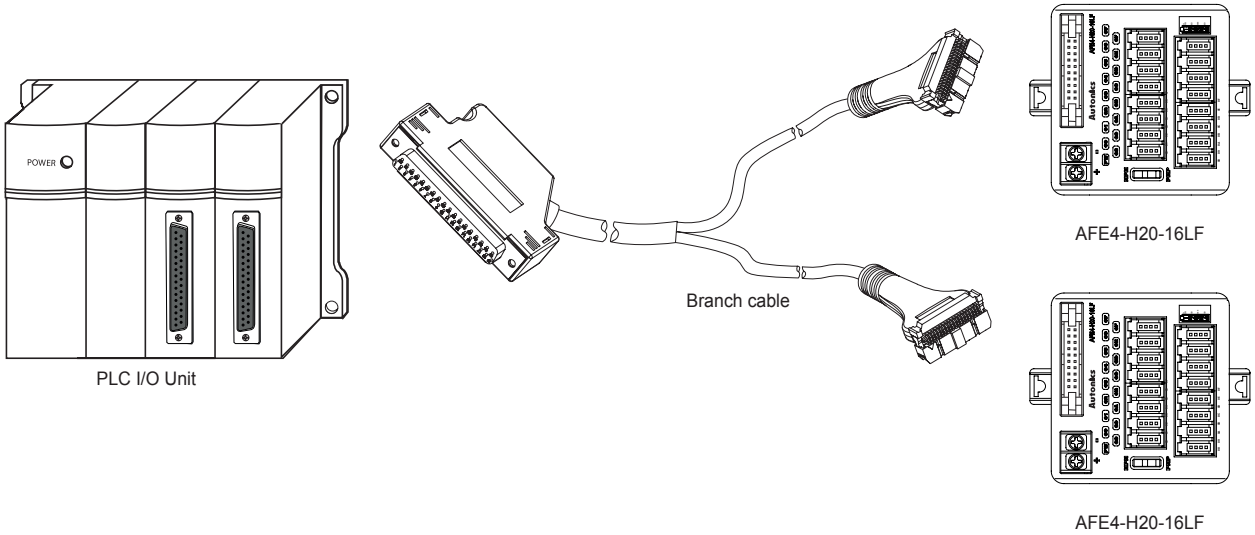
⚠ Please read "Caution for your safety" in operation manual before using.

▣ Model

Model	Item	Connector type for primary	For secondary		No. of sensor connectors	LED	Case
			Connector type	No. of connector pins			
AFE4-H20-16LF	Interface terminal block	Sensor connector 4-pin socket	Hirose connector	20-pin	16 EA	Yes	Full case type
AFE4-H40-32LF				40-pin	32 EA		

▣ Example Of Sensor Connector Terminal Block Connection

◎ Connection AFE4-H20-16LF and 40-point I/O module PLC using branch cable



▣ Specifications

Model		AFE4-H20-16LF	AFE4-H40-32LF
Power supply		12-24VDC	
Allowable voltage range		90 to 110% of rated voltage	
Rated current		Max. 1A ※1	
No. of connector pins		20-pin	40-pin
No. of sensor connectors		16 EA	32 EA
Insulation resistance		Min. 1,000MΩ (at 500VDC megger)	
Dielectric strength		600VAC 50/60Hz for 1 min.	
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 1 hour	
	Malfunction	0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min.) in each X, Y, Z direction for 10 min.	
Shock	Mechanical	150m/s^2 (15G) in each X, Y, Z direction for 3 times	
	Malfunction	100m/s^2 (10G) in each X, Y, Z direction for 3 times	
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃	
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH	
Material		CASE, BASE: PC	
Tightening torque		7.14 to 8.16 kgf·cm (0.7 to 0.8 N·m)	
Approval		CE cULus	
Weight※2		Approx. 121g (approx. 69g)	Approx. 203g (approx. 119g)

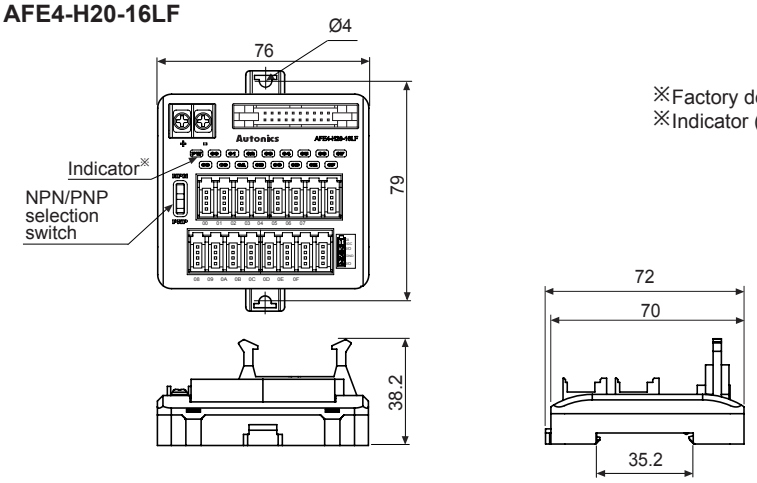
※1: The rated current includes LED current of terminal block.
※2: The weight includes packaging. The weight in parentheses is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

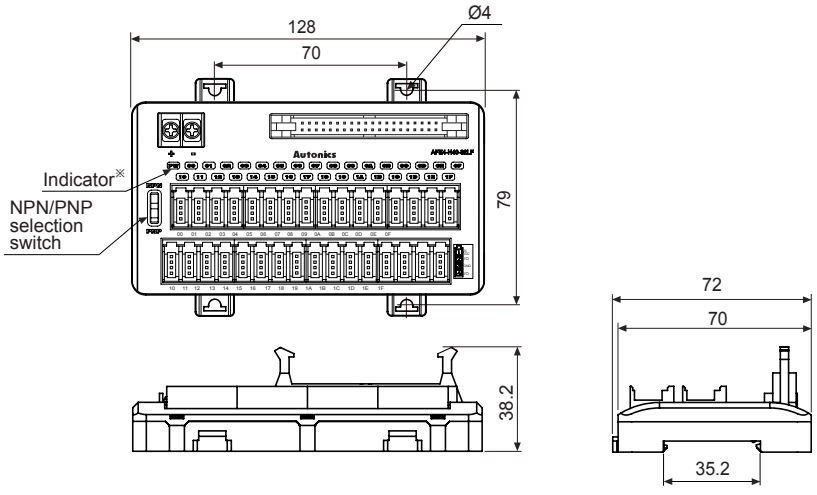
(unit: mm)

※Factory default of NPN/PNP selection switch is NPN.
※Indicator (PW: red LED, operation and disconnection: blue LED)

- **AFE4-H20-16LF**

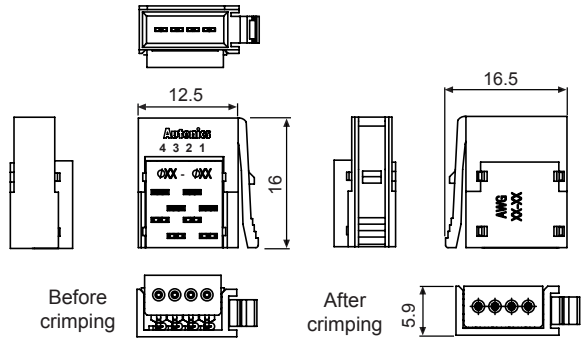


- **AFE4-H40-32LF**



▣ Sensor Connector Wire Mount Plug Specifications

(unit: mm)



※Sensor connector wire mount plug is sold separately.
Please refer to page D-2 to 5.

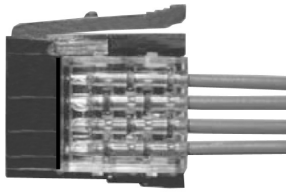
- **Cover color and wire specifications for sensor connector wire mount plug**

Model	Cover color	Applicable wire	
		Norminal cross section area (mm²)	Cover diameter (mm)
CNE-P04-WT	Transparent (WT)	0.05 to 0.08 (AWG30 to 28)	0.6 to 0.8
CNE-P04-YG	Yellow-Green (YG)		0.8 to 1.0
CNE-P04-VT	Violet (VT)		1.0 to 1.2
CNE-P04-RE	Red (RE)	0.13 to 0.21 (AWG26 to 24)	0.8 to 1.0
CNE-P04-YW	Yellow (YW)		1.0 to 1.2
CNE-P04-OG	Orange (OG)		1.2 to 1.6
CNE-P04-GN	Green (GN)	0.32 to 0.5 (AWG22 to 20)	1.0 to 1.2
CNE-P04-BL	Blue (BL)		1.2 to 1.6
CNE-P04-GY	Gray (GY)		1.6 to 2.0

▣ How To Crimp Sensor Connector Wire Plug

1) Inserting the wires

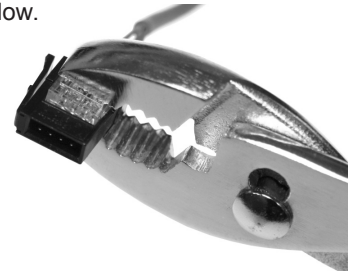
- Check the pin numbers and insert the wires into the according holes.
- Check that the wires are fully inserted to the end of the cover.



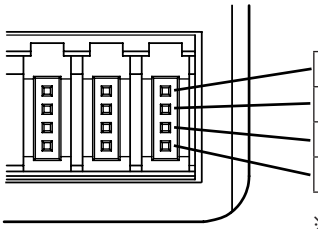
2) Crimping

- Insert the cover into the body with a jig (press fitting plier, etc).

※Apply pressure with the jig from the side, as shown in the figure below.



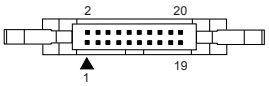
▣ Terminal Arrangement Of Sensor Connector Socket



1	12-24VDC
2	I/O
3	GND
4	I/O

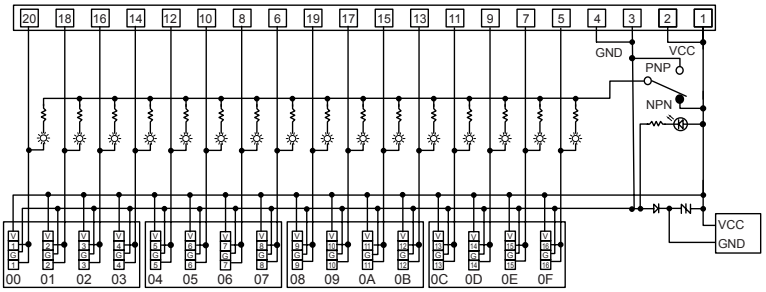
※Terminal 2 and 4 are connected inside.

▣ Connections

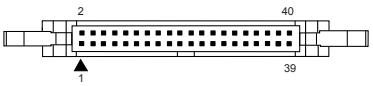


※Hirose connector Model
: HIF3BA-20PA-2.54DSA

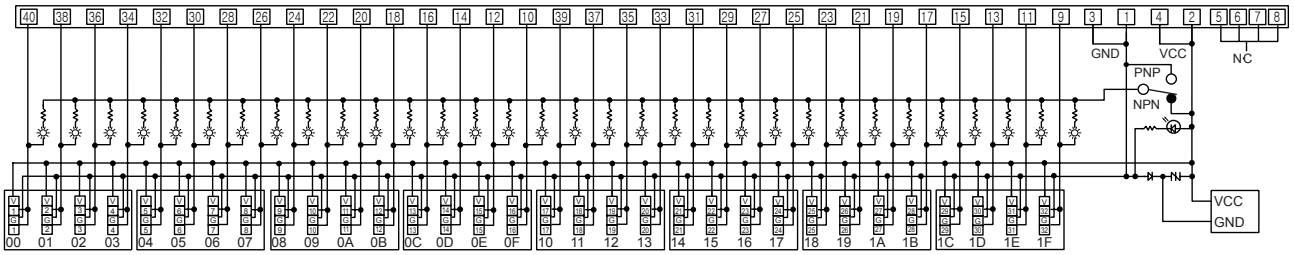
• **AFE4-H20-16LF**



※Hirose connector Model
: HIF3BA-40PA-2.54DSA



• **AFE4-H40-32LF**



▣ Installation

◎ Mounting and removal at DIN rail

• Mounting

1)Pull the rail lock towards direction ①.

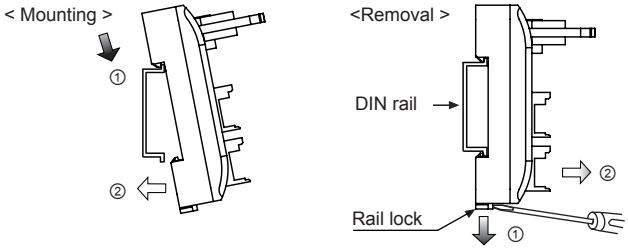
2)Attach the DIN rail connection hook onto the DIN rail.

3)Push the unit towards direction ②, then push the rail lock in to lock into position.

• Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ①.

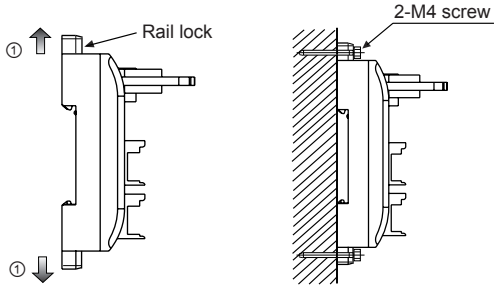
2)Remove the unit by pulling the unit towards direction ②.



◎ Mounting with screws

1)The unit can be mounted on panels using the mounting holes on the rear rail locks.

2)M4×15mm spring washer screws are recommended for installation. When using flat washers, use Ø6mm diameter washers. The tightening torque should be between 7.14 and 10.2 kgf·cm (0.7 to 1.0N·m).



▣ Caution During Use

1. Do not use the product outside of rated temperature and humidity.
2. Check to make sure that voltage fluctuation in the power supply is within the rated range.
3. When connecting PLC or other controllers, check the power polarity before wiring.
4. Use AWG 16 (1.25mm^2) wire for power.
5. Do not use NPN output sensor and PNP output sensor simultaneously.
6. Do not use the unit in the following environments.
   ① Environments with high vibration or shock.
   ② Environments where strong alkalis or acids are used.
   ③ Environments with exposure to direct sunlight.
   ④ Near machinery which produce strong magnetic force or electric noise
7. In case of 24VDC signal input, isolated and limited voltage/current or Class2 source should be provided for power supply.
8. This unit may be used in the following environments.
   ① It shall be used indoor. ②Altitude up to 2,000m
   ③Pollution degree 2 ④Installation category II

Interface Terminal Block (screw type)

▣ Features

- Compact interface terminal blocks with 7mm terminal pitch
- Optimized for connector type PLCs and input/output of dedicated controllers
- Compact, space-saving design
- 2 mounting methods (DIN rail, screw mount)

※Autonics I/O cable CJ Series is recommended.
Please refer to 'I/O cable' in the I/O terminal block catalogue.

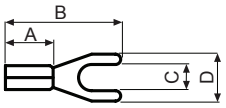
⚠ Please read "Safety Considerations" in instruction manual before using.

CE c UL US LISTED

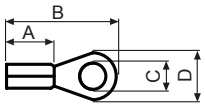
▣ Ordering Information

Model	Item	Terminal type	Connector type	The number of connector pin
AFS-H20	Interface terminal block	Screw	Hirose connector	20-pin
AFS-H40				40-pin
AFS-H50				50-pin

▣ Terminal Specifications



<Spade terminal>



<Ring terminal>

(unit: mm)

	A	B	C	D	Applicable wire
Spade terminal	≥4.1	≥16.0	≥3.0	≤5.9	AWG 22-16 (0.30 to 1.25mm^2)
Ring terminal	≥4.1	≥16.0	≥3.0	≤5.9	

※ Please use UL certified terminals.

▣ Specifications

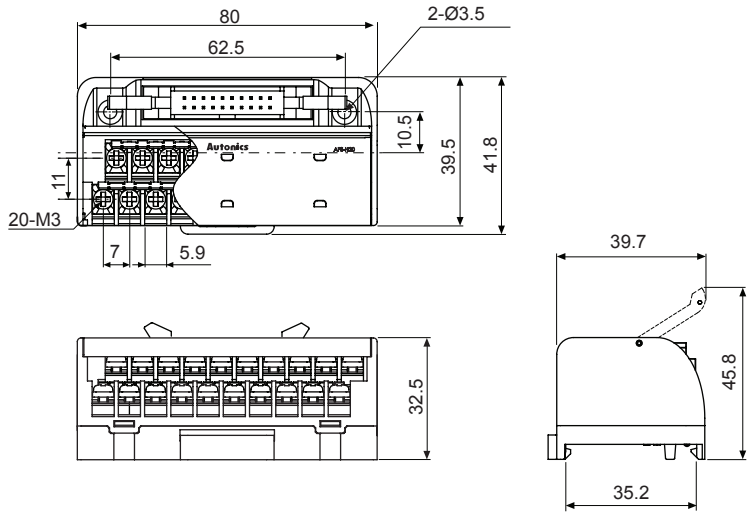
Model		AFS-H20	AFS-H40	AFS-H50
Power supply		≤125VDC⎓, 125VAC~ 50/60Hz		
Rated current		≤1A		
The number of connector pin		20-pin	40-pin	50-pin
The number of terminal		20	40	50
Terminal pitch		7.0mm		
Applicable wire		AWG22-16 (0.30 to 1.25mm²)		
Insulation resistance		≥1,000MΩ (at 500VDC megger)		
Dielectric strength		600VAC 50/60Hz for 1 min		
Vibration		0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours		
Shock		150m/s^2 (approx. 15G)in each X, Y, Z direction for 3 times		
Environment	Ambient temperature	-15 to 55℃, storage: -25 to 65℃		
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH		
Material		Case: MPPO, terminal pin: Brass		
Tightening torque		0.5 to 0.6 N·m		
Approval		CE c UL US LISTED		
Weight※1		Approx. 103g (approx. 71g)	Approx. 175g (approx. 133g)	Approx. 211g (approx. 163g)

※1: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

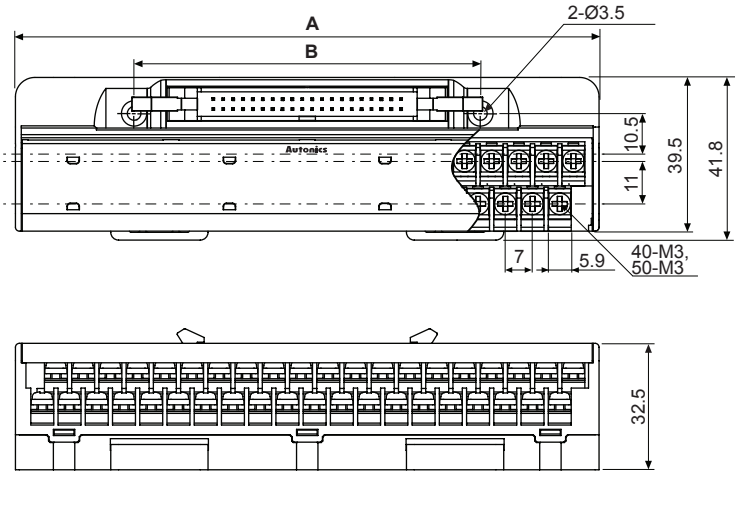
▣ Dimensions

(unit: mm)

• **AFS-H20**

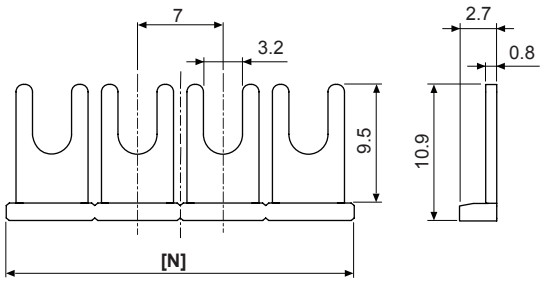


• **AFS-H40 / AFS-H50**



	AFS-H40	AFS-H50
A	150	184
B	89	104
C	45.8	48.9
D	39.7	34.8

• **Jumper bar (sold separately)**

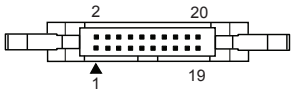


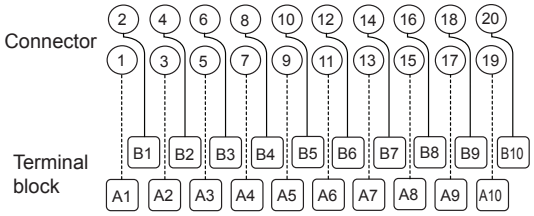
Model	JB-7-04	JB-7-10
The number of Jumper bar pin	4	10
[**N**] size	27.5	69.5

▣ Wire Connections

- **AFS-H20**

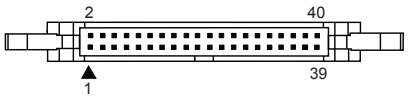
※Hirose connector
: HIF3BA-20PA-2.54DSA



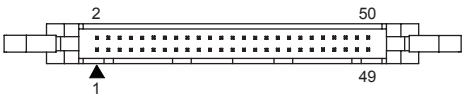


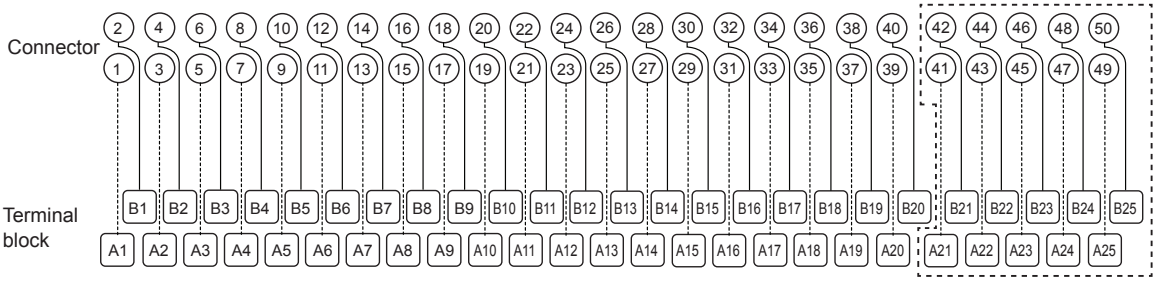
- **AFS-H40 / AFS-H50**

※Hirose connector
: HIF3BA-40PA-2.54DSA



※Hirose connector model
: HIF3BA-50PA-2.54DSA





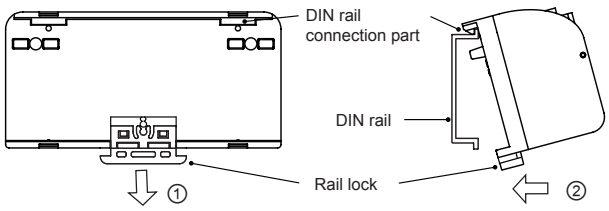
※Dot line part is only for AFS-H50 model.

▣ Installation

◎ Mounting and removal at DIN rail

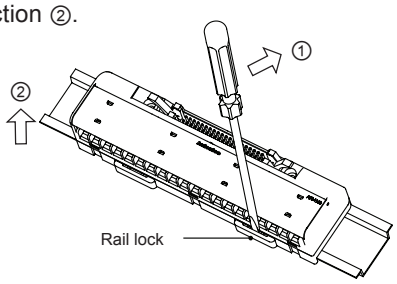
- Mounting

1)Pull the rail lock towards direction ①.
2)Attach the DIN rail connection hook onto the DIN rail.
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



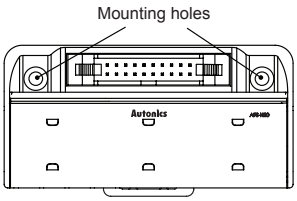
- Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ①.
2)Remove the unit by pulling the unit towards direction ②.



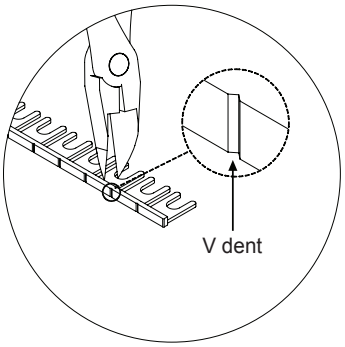
◎ Mounting with screws

1)The unit can be mounted on panels using the mounting holes next to the hirose connector.
2)M3 × 30mm spring washer screws are recommended for installation. When using flat washers, use Ø6mm diameter washers. The tightening torque should be from 0.5 to 0.7 N·m.

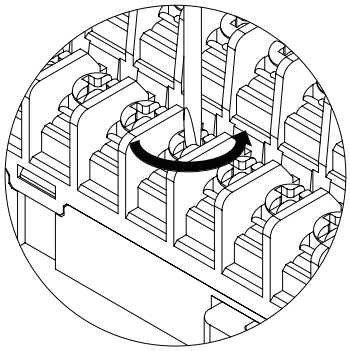


▣ Installing Jumper Bars

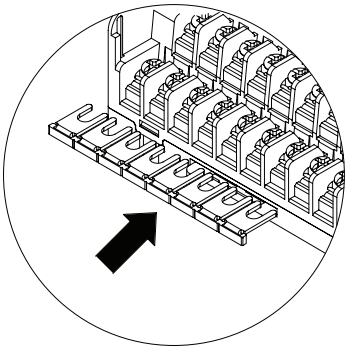
1)Cut the jumper bar to the user's desired length by cutting at the V dent using a nipper.



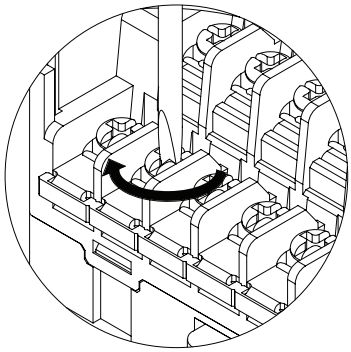
2)Unfasten all the screws of the terminals you wish to commonize.



3)Insert the jumper bar below the unfastened screws.



4)Tighten all the screws above the jumper bar.



▣ Cautions during Use

1. Do not use the product outside of rated temperature and humidity.
2. Check to make sure that voltage fluctuation in the power supply is within the rated range.
3. When connecting PLC or other controllers, check the power polarity before wiring.
4. Use AWG 16 (1.25mm^2) wire and use appropriate connectors for the terminals.
5. Do not connect or disconnect the connector or perform any wiring work while supplied with power.
6. Do not use the unit in the following environments.
   ① Environments with high vibration or shock
   ② Environments where strong alkalis or acids are used
   ③ Environments with exposure to direct sunlight
   ④ Near machinery which produce strong magnetic force or electric noise
7. This unit may be used in the following environments.
   ① Indoors
   ② Altitude max. 2,000m
   ③ Pollution degree 2
   ④ Installation category II

Screwless Interface Terminal Block

Line-up

▣ Features

- New 20-pin models are available on the AFL series (AFL-H20-□)
- Screwless push-in type connection for simple and easy connection
- Slim and compact design with 5mm terminal pitch
- Ideal for connector type PLCs and dedicated controller I/O
- DIN rail mount and screw mount methods

※Autonics I/O cable CJ Series is recommended.
Refer to I/O cable of I/O terminal block catalogue.

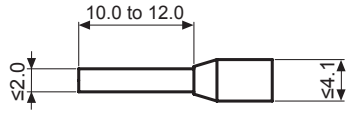
⚠ Please read "Safety considerations" in operation manual before using.

▣ Model

Model	Item	Terminal type	Connector type	No. of connector pins	Connector	Indicator (LED)	Input logic
AFL-H20	Interface terminal Block	Screwless	Hirose connector	20	XG4A-2031	None	None
AFL-H20-LN						LED indicator	NPN
AFL-H20-LP							PNP
AFL-H40				40	HIF3BA	None	None
AFL-H40-LN						LED indicator	NPN
AFL-H40-LP							PNP
AFL-H50				50	HIF3BB	None	None
AFL-H50B							

▣ Crimp Terminal Specifications

● End Sleeve (ferrule terminal) crimp terminals



(unit: mm)

※Applicable wire: AWG22-16 (0.30 to 1.25mm²)

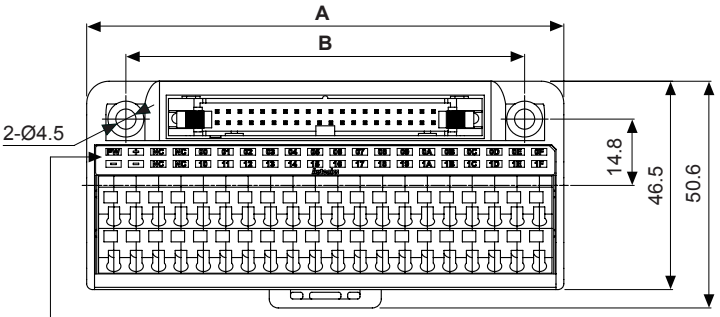
▣ Specifications

Model		AFL-H20	AFL-H40	AFL-H50	AFL-H50B	AFL-H20-LN AFL-H20-LP	AFL-H40-LN AFL-H40-LP
Power supply		≤125VDC⎓, 125VAC~ 50/60Hz※1				24VDC⎓±10%	
Rated current		≤1A					
Terminal type		Screwless					
No. of terminals		20	40	50		16※2	32※3
Terminal pitch		5.0mm					
Connector type		XG4A-2031	HIF3BA		HIF3BB	XG4A-2031	HIF3BA
Indicator		—				Power indicator: Red LED Operation indicator: Blue LED	
Applicable wire	Solid wire	Ø0.3 to Ø1.2mm					
	Stranded wire※4	AWG22-16 (0.30 to 1.25mm²)					
Stripped wire length		8 to 10mm					
Insulation resistance		≥1,000MΩ (at 500VDC megger)					
Dielectric strength		600VAC 50/60Hz for 1 minute					
Vibration		0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		150m/s² (approx. 15G) in each X, Y, Z direction for 3 times					
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃					
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH					
Material		CASE: Polycarbonate, BASE: Polycarbonate					
Tightening torque		—					
Protection structure		IP20(IEC standard)					
Approval							
Weight※5		Approx. 86.2g (approx. 48.5g)	Approx. 156g (approx. 89g)	Approx. 177g (approx. 110g)		Approx. 86.3g (approx. 48.6g)	Approx. 158g (approx. 91g)

※1: Please connect to a load using the same power supply. Connecting to a load from a different power supply may cause safety issues.
※2: Among 20 terminals, 16 terminals are available for I/O and 4 terminals are LED power.
※3: Among 40 terminals, 32 terminals are available for I/O and 8 terminals are LED power and N·C (Not Connect) terminals.
※4: When using stranded wire, use end sleeve (ferrule terminal) crimp terminals.
※5: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

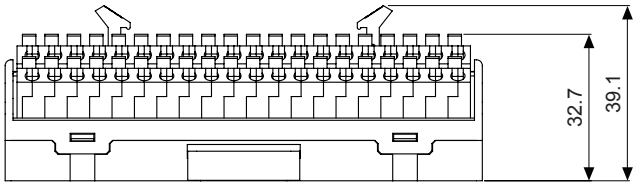
(unit: mm)

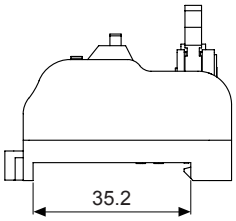


※Dimensions are for AFL-H40-□.

Model	A	B
AFL-H20-□	57.5	53
AFL-H40-□	106.5	89
AFL-H50□	131.5	102

Power indicator (red) / Operation indicator (blue)
(applied model: AFL-H20-LN(P), AFL-H40-LN(P))





▣ Installation

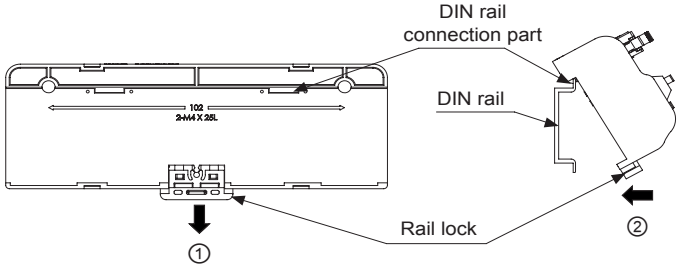
1. Mounting and Removing from DIN rail

● Mounting

1)Pull the rail lock towards direction ①.

2)Attach the DIN rail connection part onto the DIN rail.

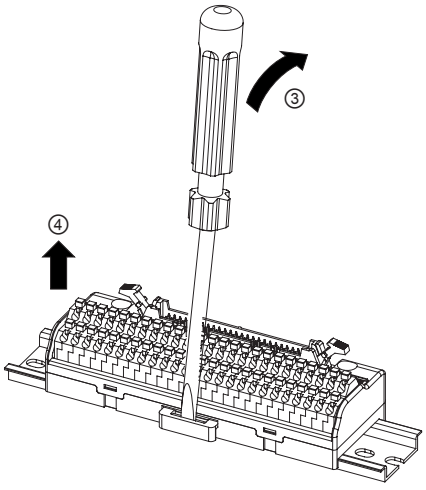
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



● Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ③.

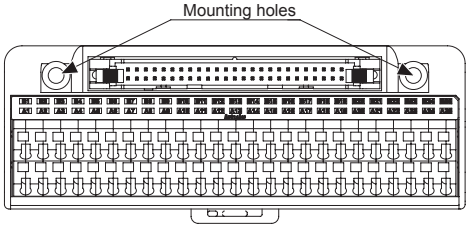
2)Remove the unit by pulling the unit towards direction ④.



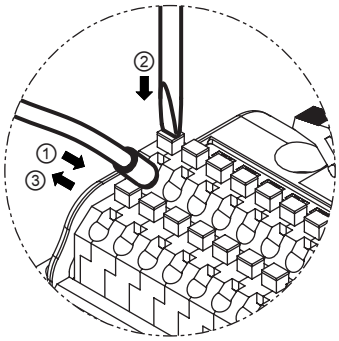
2. Mounting with screws

1)The unit can be mounted on panels using the mounting holes next to the hirose connector.

2)M4×25mm spring washer screws are recommended for installation. When using flat washers, use Ø8mm diameter washers. The tightening torque should be between 0.7 to 1.0N·m



▣ Connecting Crimp Terminals



● Connection

1) Push the end sleeve (ferrule terminal) crimp terminal towards direction ① to complete the connection.

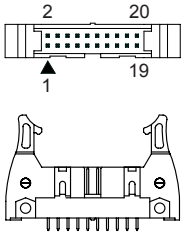
● Removal

1) Press and hold the catch above the terminal in direction ② with a flat-head screwdriver.
2) Pull and remove the end sleeve (ferrule terminal) crimp terminal towards direction ③.

▣ Connections

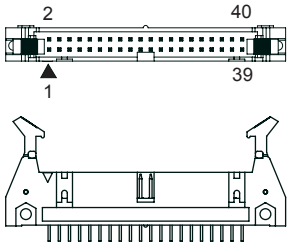
● AFL-H20-□

※Omron connector Model
: XG4A-2031



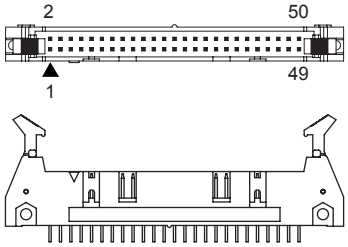
● AFL-H40-□

※Hirose connector Model
: HIF3BA-40PA-2.54DSA



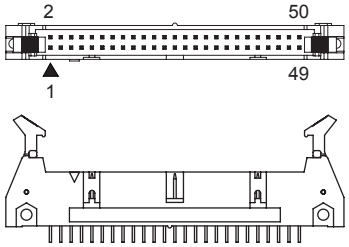
● AFL-H50

※Hirose connector Model
: HIF3BA-50PA-2.54DSA



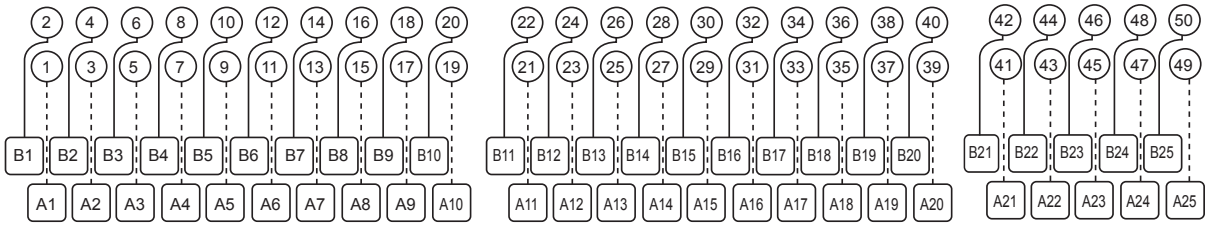
● AFL-H50B

※Hirose connector Model
: HIF3BB-50PA-2.54DSA

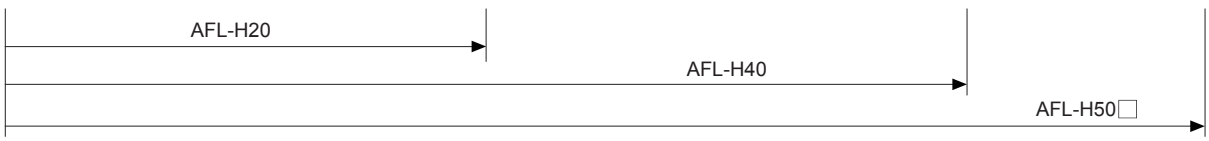


● AFL-H20 / AFL-H40 / AFL-H50□

Connector

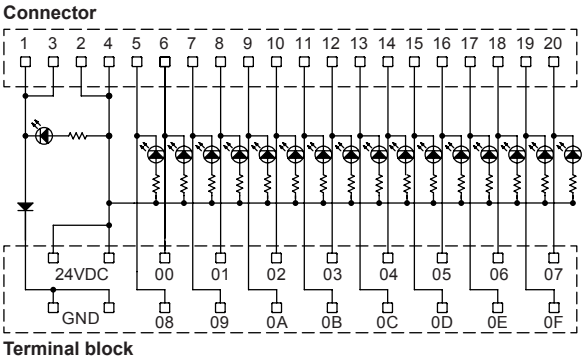


Terminal block

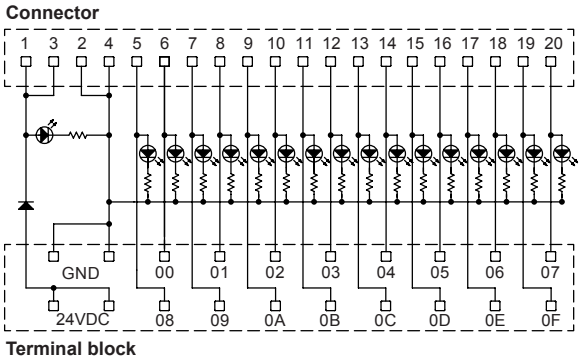


▣ Connections

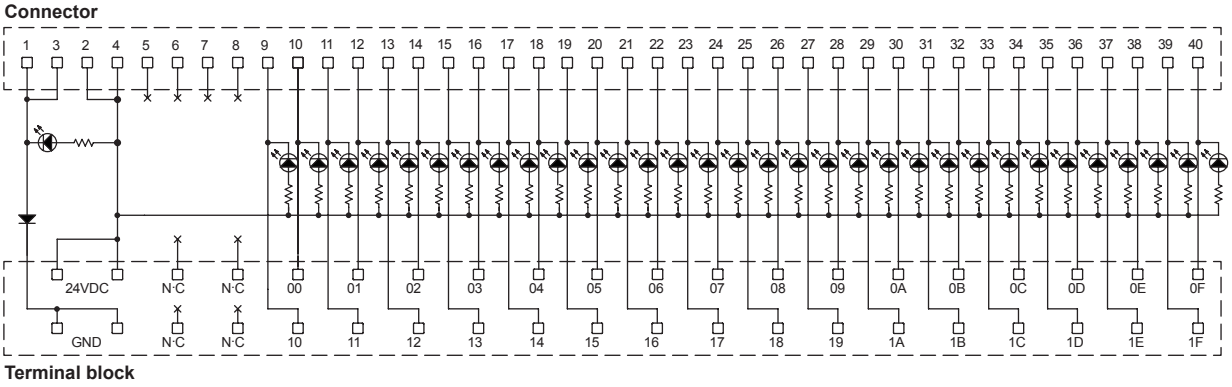
● **AFL-H20-LN**



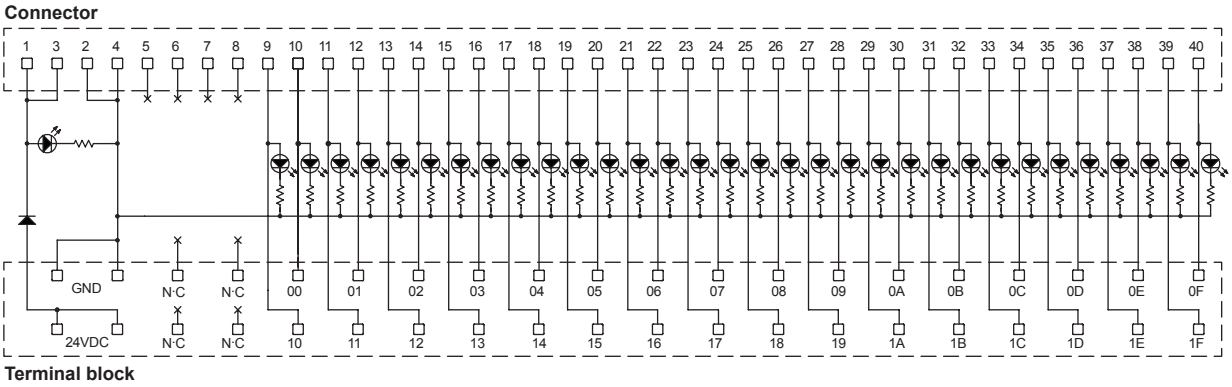
● **AFL-H20-LP**



● **AFL-H40-LN**



● **AFL-H40-LP**



▣ Cautions During Use

1. Use the unit within the rated environment of specification.
2. Supply power within the rated allowable voltage range.
3. Check the polarity of power before connecting PLC or other controllers.
4. When connecting the power input, use Solid wire: Ø0.3 to Ø1.2mm, Stranded wire: AWG22-16 (0.30 to 1.25mm^2).
   For using crimp terminals, refer to '▣ Crimp Terminal Specifications'.
5. Do not connect wire or remove connector while connected to a power source.
6. Do not use the unit at below places.
   ① Environments with high vibration or shock.
   ② Environments where strong alkalis or acids are used.
   ③ Environments with exposure to direct sunlight.
   ④ Near machinery which produce strong magnetic force or electric noise.
7. This unit may be used in the following environments.
   ① Indoor ② Altitude max. 2,000m
   ③ Pollution degree 2 ④ Installation category II

Rising Clamp Interface Terminal Block

Line-up

▣ Features

- New 20-pin models are available on the AFR series (AFR-H20-□)
- Rising clamp type connection method offers simple, easy and durable connection
- Slim and compact design with 5mm terminal pitch
- Ideal for connector type PLCs and dedicated controller I/O
- DIN rail mount and screw mount methods

※Autonics I/O cable CJ Series is recommended.
Refer to I/O cable of I/O terminal block catalogue.

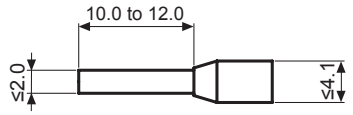
⚠ Please read "Safety considerations" in operation manual before using.

▣ Model

Model	Item	Terminal type	Connector type	No. of connector pins	Connector	Indicator (LED)	Input logic
AFR-H20	Interface terminal block	Rising clamp	Hirose connector	20	XG4A-2031	None	None
AFR-H20-LN						LED indicator	NPN
AFR-H20-LP							PNP
AFR-H40				40	HIF3BA	None	None
AFR-H40-LN						LED indicator	NPN
AFR-H40-LP							PNP
AFR-H50				50	HIF3BB	None	None
AFR-H50B							

▣ Crimp Terminal Specifications

● **End Sleeve (ferrule terminal) crimp terminals**



(unit: mm)

※Applicable wire: AWG22-16 (0.30 to 1.25mm²)

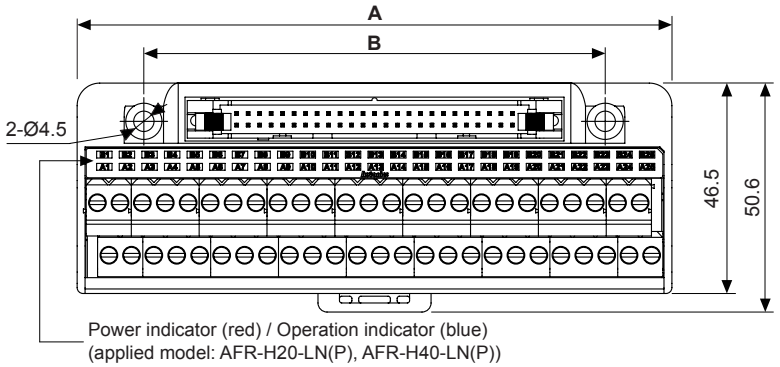
▣ Specifications

Model		AFR-H20	AFR-H40	AFR-H50	AFR-H50B	AFR-H20-LN AFR-H20-LP	AFR-H40-LN AFR-H40-LP
Power supply		≤125VDC⎓, 125VAC~ 50/60Hz				24VDC⎓±10%	
Rated current		≤1A					
Terminal type		Rising Clamp					
No. of terminals		20	40	50		16※2	32※3
Terminal pitch		5.0mm					
Connector type		XG4A-2031	HIF3BA		HIF3BB	XG4A-2031	HIF3BA
Indicator		—				Power indicator: Red LED Operation indicator: Blue LED	
Applicable wire	Solid wire	Ø0.3 to Ø1.2mm					
	Stranded wire※4	AWG22-16 (0.30 to 1.25mm²)					
Stripped wire length		6 to 8mm					
Insulation resistance		≥1,000MΩ (at 500VDC megger)					
Dielectric strength		600VAC 50/60Hz for 1 minute					
Vibration		0.75mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours					
Shock		150m/s² (approx. 15G) in each X, Y, Z direction for 3 times					
Environment	Ambient temp.	-15 to 55℃, storage: -25 to 65℃					
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH					
Material		CASE: Polycarbonate, BASE: Polycarbonate					
Tightening torque		0.4 to 0.6N·m					
Protection structure		IP20(IEC standard)					
Approval							
Weight※5		Approx. 98.7g (approx. 61g)	Approx. 183g (approx. 116g)	Approx. 210g (approx. 143g)		Approx. 98.8g (approx. 61.1g)	Approx. 188g (approx. 118g)

※1: Please connect to a load using the same power supply. Connecting to a load from a different power supply may cause safety issues.
※2: Among 20 terminals, 16 terminals are available for I/O and 4 terminals are LED power.
※3: Among 40 terminals, 32 terminals are available for I/O and 8 terminals are LED power and N·C (Not Connect) terminals.
※4: When using stranded wire, use end sleeve (ferrule terminal) crimp terminals.
※5: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

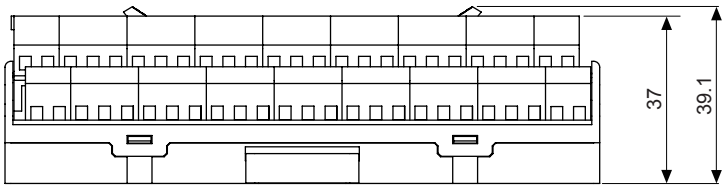
▣ Dimensions

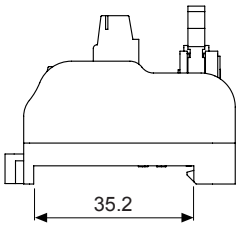
(unit: mm)



※Dimensions are for AFR-H50□.

Model	A	B
AFR-H20-□	57.5	53
AFR-H40-□	106.5	89
AFR-H50□	131.5	102





▣ Installation

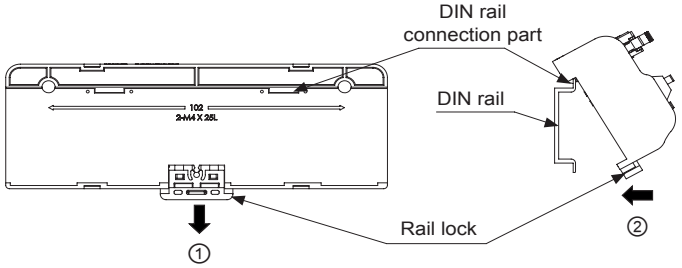
1. Mounting and Removing from DIN rail

● Mounting

1)Pull the rail lock towards direction ①.

2)Attach the DIN rail connection part onto the DIN rail.

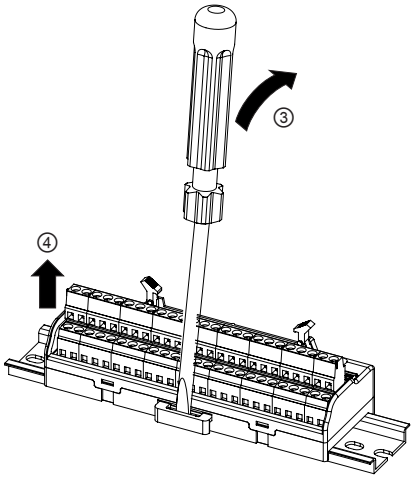
3)Push the unit towards direction ②, then push the rail lock in to lock into position.



● Removal

1)Insert a screwdriver into the rail lock hole and pull it towards direction ③.

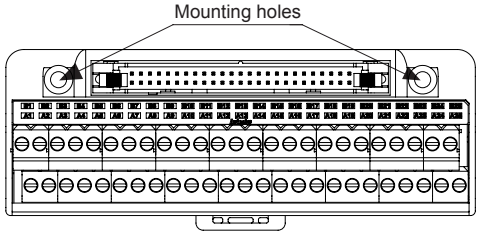
2)Remove the unit by pulling the unit towards direction ④.



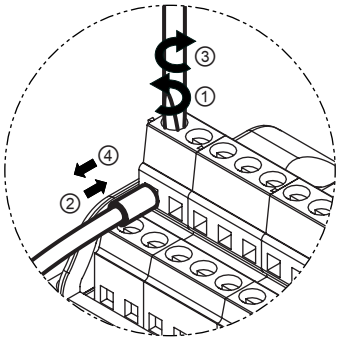
2. Mounting with screws

1)The unit can be mounted on panels using the mounting holes next to the hirose connector.

2)M4×25mm spring washer screws are recommended for installation. When using flat washers, use Ø8mm diameter washers. The tightening torque should be between 0.7 to 1.0N·m



▣ Connecting Crimp Terminals



● Connection

1) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ① (CCW).
2) Push the end sleeve (ferrule terminal) crimp terminal towards direction ②.
3) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ③ (CW).
   The tightening torque should be between 0.4 to 0.6 N·m

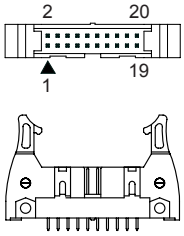
● Removal

1) Insert a flat-head screw driver into the hole above the terminal. Rotate the screw in direction ① (CCW).
2)Remove the end sleeve (ferrule terminal) towards direction ④.

▣ Connections

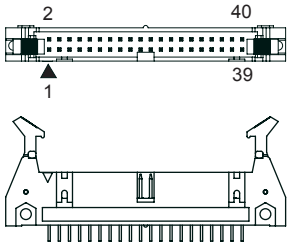
● AFR-H20-□

※Omron connector Model
: XG4A-2031



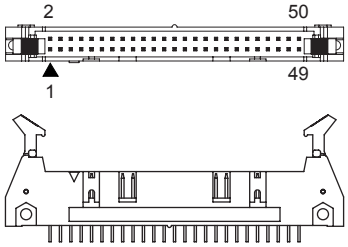
● AFR-H40-□

※Hirose connector Model
: HIF3BA-40PA-2.54DSA



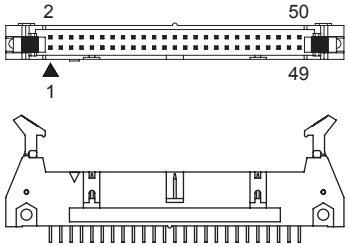
● AFR-H50

※Hirose connector Model
: HIF3BA-50PA-2.54DSA



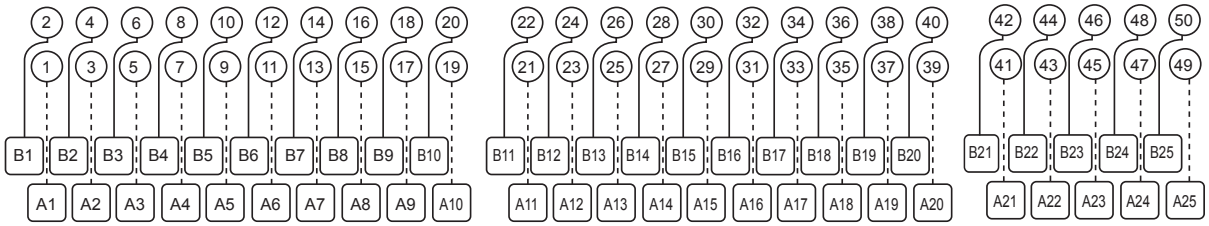
● AFR-H50B

※Hirose connector Model
: HIF3BB-50PA-2.54DSA

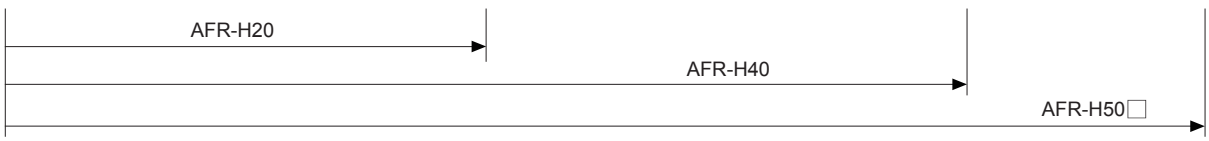


● AFR-H20 / AFR-H40 / AFR-H50□

Connector

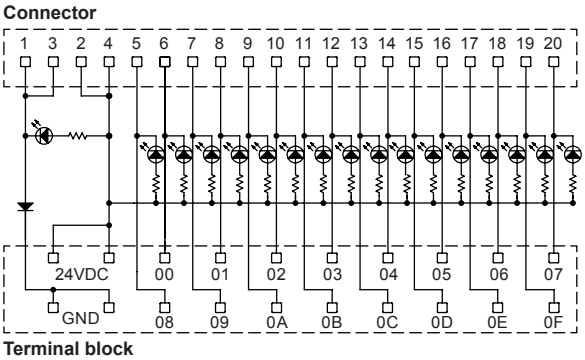


Terminal block

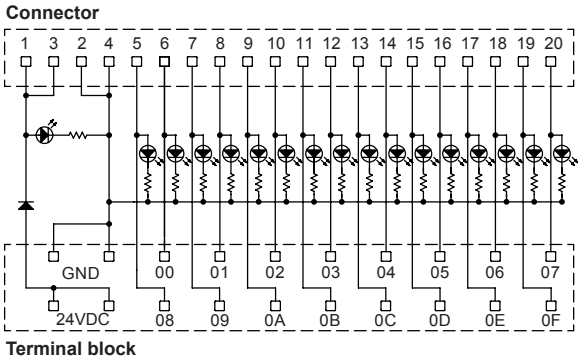


▣ Connections

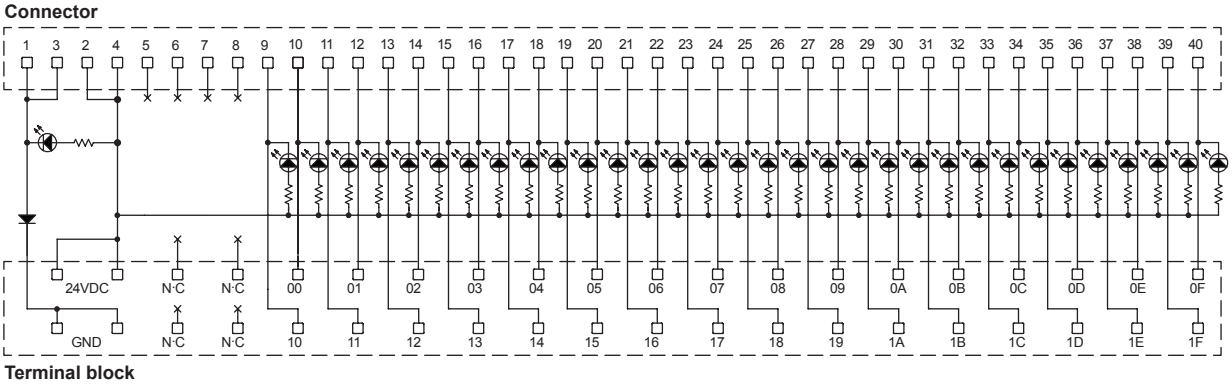
● **AFR-H20-LN**



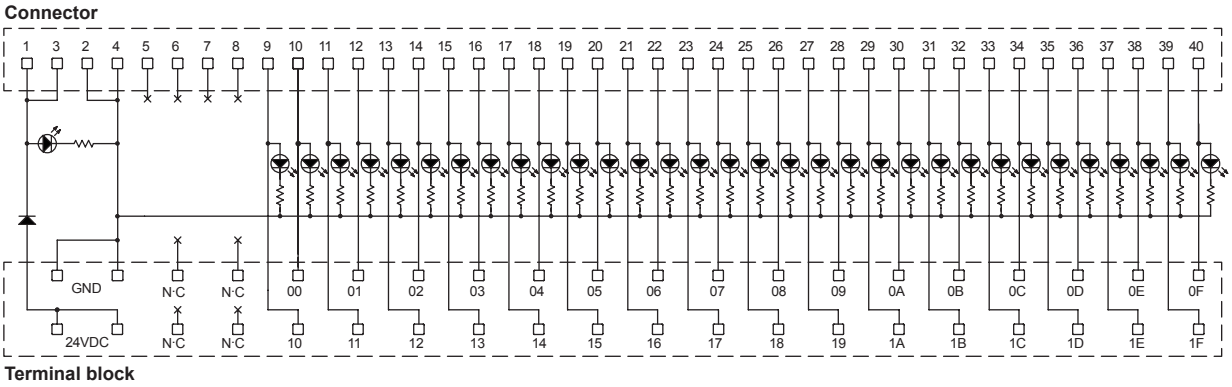
● **AFR-H20-LP**



● **AFR-H40-LN**

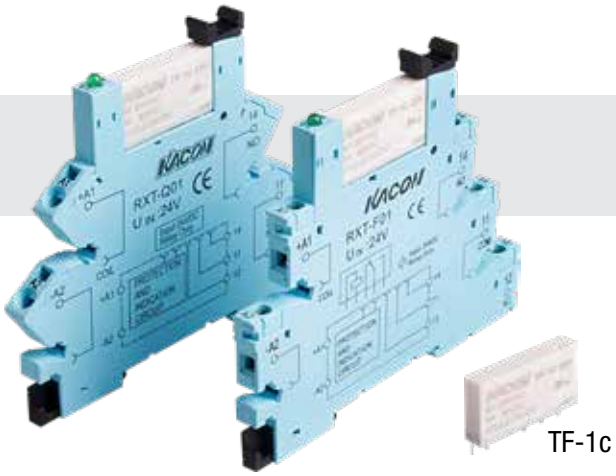


● **AFR-H40-LP**



▣ Cautions During Use

1. Use the unit within the rated environment of specification.
2. Supply power within the rated allowable voltage range.
3. Check the polarity of power before connecting PLC or other controllers.
4. When connecting the power input, use Solid wire: Ø0.3 to Ø1.2mm, Stranded wire: AWG22-16 (0.30 to 1.25mm^2).
   For using crimp terminals, refer to '▣ Crimp Terminal Specifications'.
5. Do not connect wire or remove connector while connected to a power source.
6. Do not use the unit at below places.
   ① Environments with high vibration or shock.
   ② Environments where strong alkalis or acids are used.
   ③ Environments with exposure to direct sunlight.
   ④ Near machinery which produce strong magnetic force or electric noise.
7. This unit may be used in the following environments.
   ① Indoor ② Altitude max. 2,000m
   ③ Pollution degree 2 ④ Installation category II



TF-1c

RXT Series

Relay Terminal Blocks

Ordering Information

RXT - ①

① Description	F01
	Q01

Relay Specifacations (TF-1c)

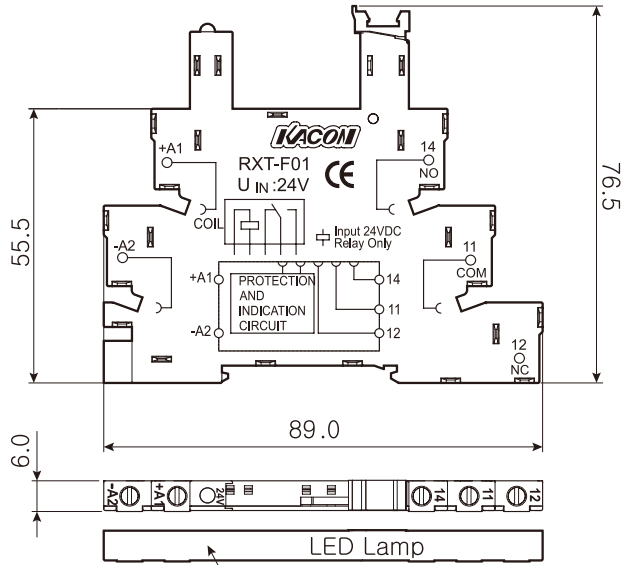
Contact Ratings	Contact Form		1N/O + 1N/C
	Contact Material		Silver Alloy
	Maximum Contact Resistance		30mΩ
	Rated Current (Resistance Load)		6A 250VAC , 6A 30VDC
	Maximum Contact Capacity	DC	180W
		AC	1500VA
	Maximum Rated Voltage		6A 250VAC
	Minimum Switching Current		1mA 5VDC
Coil Ratings	Coil Voltage		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
	Dielectirc 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

RXT-QS (Jumper)

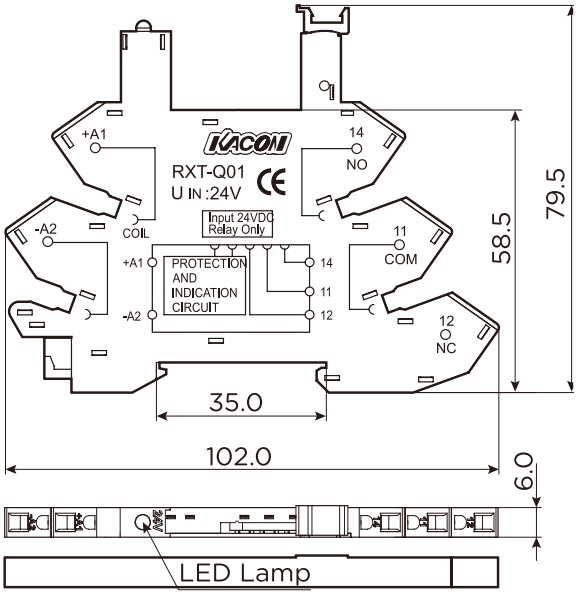
Dimensions

unit: mm

RXT – F01 screw type



RXT – Q01 pin type



Slim Remote I/O

▣ Features

- I/O supported based on industrial Ethernet / Fieldbus serial communication for Smart Factory
- Sequential multiple I/O distribution control via PLC, Industrial PC, etc.
- Coupler: Supports a total of 8 different communications
  EtherCAT, CC-Link, ProfiNet, ProfiBus, Ethernet/IP, DeviceNet, Modbus TCP compatible, Modbus RTU compatible
- Modules: Various Input / Output Modules, Power Modules
  - Remote ABUS/ I/O power, Digital input/output (4/8CH), Analog input/output (2/4CH), Temperature input (4CH)
  - Up to 64 modules can be extended (depending on communication)
- Hot-swap function
  : Maintenance and setting can be restored automatically by replacing terminal and body during operation
- Push-in connection method: Easy wire connection without tools helps reducing workload
- Expanded user convenience with DAQMaster, a device integration management program
  - Module setting, real time control and monitoring / diagnosis of input / output signal (except ARIO-C-PN/PB)
  - Product selection and placement through virtual mode, offering recommended sorting

Please read "Safety Considerations" in the instruction manual before using.

▣ Models

● Coupler

Model	ARIO-C-EC	ARIO-C-CL	ARIO-C-PN	ARIO-C-PB	ARIO-C-EI	ARIO-C-DN	ARIO-C-MT	ARIO-C-MR
Coupler type	EtherCAT	CC-Link	ProfiNet	ProfiBus	Ethernet/IP	DeviceNet	ModbusTCP compatible	ModbusRTU compatible

● Digital Input/Output Module

Type		Digital input module		Digital output module	
Model	4CH	ARIO-S-DI04N	ARIO-S-DI04P	ARIO-S-DO04N	ARIO-S-DO04P
	8CH	ARIO-S-DI08N	ARIO-S-DI08P	ARIO-S-DO08N	ARIO-S-DO08P
I/O common		NPN	PNP	NPN	PNP

● Analog Input/Output Module

Type		Analog input module		Analog output module	
Model	2 CH	ARIO-S-AI02V1/2	ARIO-S-AI02C1/2	ARIO-S-AO02V1/2	ARIO-S-AO02C1/2
	4 CH	ARIO-S-AI04V1/2	ARIO-S-AI04C1/2	ARIO-S-AO04V1/2	ARIO-S-AO04C1/2
I/O method		Voltage input	Current input	Voltage output	Current output

● Power Module

Model		ARIO-P-B	ARIO-P-F1	ARIO-P-F2	ARIO-P-T1	ARIO-P-T2
Power module		Slim Remote ABUS power	Slim Remote I/O power			
No. I/O supply power	24V	—	6	2	8	4
	0V	—	2	6	4	8

● Temperature Input Module

Type		TC input module	RTD input module
Model	4CH	ARIO-S-AI04TC	ARIO-S-AI04RTD
Input method		Voltage input	Resistance input

※Coupler: You can order each the terminal and base.
Module: You can order each the terminal, body, and base.

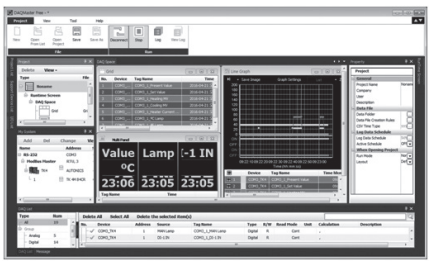
▣ Comprehensive Device Management Program (DAQMaster)

- DAQMaster is comprehensive device management program. It is available for parameter setting, monitoring.
- Visit our website (www.autonics.com) to download user manual and comprehensive device management program.

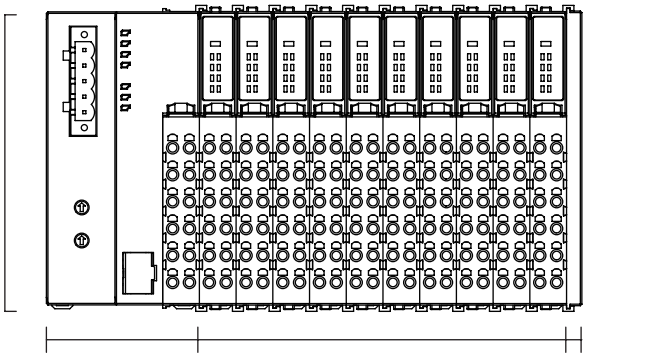
< Computer specification for using software >

Item	Minimum requirements
System	IBM PC compatible computer with Intel Pentium III or above
Operating system	Microsoft Windows 98/NT/XP/Vista/7/8/10
Memory	256MB or more
Hard disk	More than 1GB of free hard disk space
VGA	1024×768 or higher resolution display
Others	RS-232 serial port (9-pin), USB port

< DAQMaster screen >



▣ Manuals



1. Instruction manual
It describes an overview of Remote I/O, definitions of terms, installation environment, mouting/ removing method, wiring and troubleshooting.

2. Coupler manual
It describes the overview, specification, demensions, memory map and troubleshooting of each communication.

3. Module manual
It describes the specification, demensions, and connections of each module.

Coupler

▣ Specifications

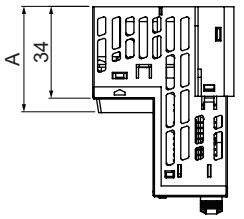
Model		ARIO-C-EC	ARIO-C-CL	ARIO-C-PN	ARIO-C-PB	ARIO-C-EI	ARIO-C-DN	ARIO-C-MT	ARIO-C-MR
Coupler type		EtherCAT	CC-Link	ProfiNet	ProfiBus	Ethernet/IP	DeviceNet	ModbusTCP compatible	ModbusRTU compatible
Power supply ※1	ABUS (external consump.)	24VDC⎓, max. 400mA (max. 9.6W, coupler+module, max. 200mA/CH, 2CH/COM)							
	ABUS (internal supply)	5VDC⎓, max. 960mA (max. 4.8W, module)							
	I/O	24VDC⎓, max. 4,000mA (max. 96W, max. 2,000mA/CH, 2CH/COM)							
Power consumption	Coupler	24VDC⎓ standby/run: 200mA, max. load: 400mA (coupler max. load)							
Comm. speed		100Mbps	10Mbps	100Mbps	12Mbps	10/100Mbps	500kbps	10/100Mbps	115.2kbps
Memory ※2	Input	512 byte	256 byte	512 byte	244 byte	504 byte	255 byte	512 byte	256 byte
	Output	512 byte	256 byte	512 byte	244 byte	504 byte	255 byte	512 byte	256 byte
Max. connections for modules ※2		64 units	32 units	64 units	32 units	64 units	32 units	64 units	32 units
Comm. connector		RJ45 connectors: 2	5-pin PCB connector	RJ45 connectors: 2	9-pin D SUB connector	RJ45 connectors: 2	5-pin PCB connector	RJ45 connectors: 2	5-pin PCB connector
Installation method		DIN rail mounting							
Setting and monitoring		PC connection with USB 2.0 Micro type connector (comprehensive device management program, DAQMaster)							
Insulation resistance		Over 100MΩ (at 500VDC⎓ megger)							
Environment	Ambient temp.	-10 to 55℃, storage: -25 to 70℃							
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH							
Protection structure		IP20 (IEC standards)							
Material		Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene							
Approval		CE cULus LISTED KC							
Weight ※3		Approx. 265g (approx. 165g)							

※1. It is for including power/special modules and excluding coupler/end modules. In case of one coupler module connecting, the ARIO digital module is available to connect up to 8 units and the ARIO analog module is available to connect up to 4 units. For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO coupler.
※2. If it is over the limit size or connected units, system may be error.
※3.The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

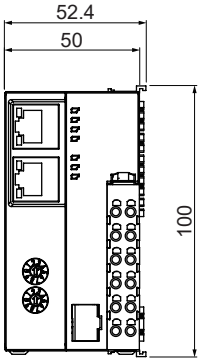
▣ Dimensions

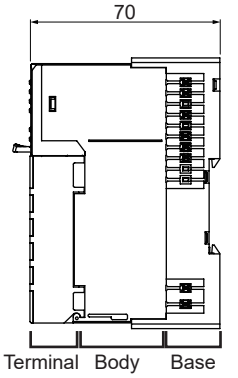
(Unit: mm)

● **Coupler**

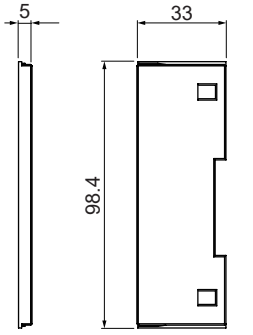


Model	A size
ARIO-C-EC/EI/PN/MT	39
ARIO-C-DN/CL/MR	36.2
ARIO-C-PB	38.2



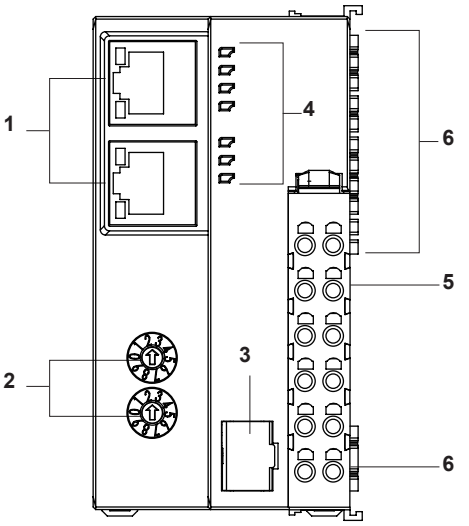


● **End module**



▣ Unit Description

※ It may be different depending on the coupler model.



1. Communication connector

ARIO-C-EC/PN/EI/MT	ARIO-C-PB	ARIO-C-CL/DN/MR
RJ-45: 2	DSUB-9Pin	5-Pin PCB connector

2. Communication setting switch

ARIO-C-EC	ARIO-C-CL/DN	The others
None	Decimal rotary switches: 3 (Comm. speed, address (×10, ×1))	Hexagonal rotary switches: 2 (address (×10, ×1))

3. Setting connector (USB 2.0 type Micro B)
4. Indicators for power and comm. status
5. Power terminal block
6. ABUS comm. connector

Digital Input/Output Module

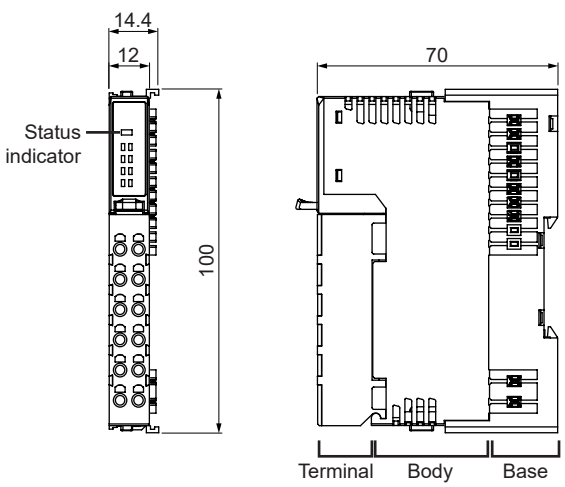
▣ Specifications

Type		Digital input module		Digital output module	
Model	4CH	**ARIO-S-DI04N**	**ARIO-S-DI04P**	**ARIO-S-DO04N**	**ARIO-S-DO04P**
	8CH	**ARIO-S-DI08N**	**ARIO-S-DI08P**	**ARIO-S-DO08N**	**ARIO-S-DO08P**
I/O common		NPN	PNP	NPN	PNP
Input voltage		Turn ON: min. 7VDC⎓ Turn OFF: max. 0.4VDC⎓		—	
Output leakage voltage		—		Max. 1.2VDC⎓	
I/O signal level※1		24VDC⎓±10%			
I/O current consumption	4CH	Max. 6mA/CH, 4CH/COM		—	
	8CH	Max. 6mA/CH, 8CH/COM			
Rated output current	4CH	—		Max. 500mA/CH, 4CH/COM	
	8CH			Max. 500mA/CH, 8CH/COM	
On delay time		Max. 0.5ms			
Off delay time		Max. 1.5ms			
Power consump. (ABUS)		5VDC⎓, max. 100mA (max. 0.5W)			
Installation method		DIN rail mounting			
Insulation resistance		100MΩ (at 500VDC⎓ megger) I/O to inner circuit: photocoupler insulated, between CHs: non-insulated			
Environment	Ambient temp.	10 to 55℃, storage: -25 to 70℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Protection structure		IP20 (IEC standard)			
Material		Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene			
Approval		CE cULus LISTED KC			
Weight※2		Approx. 108g (approx. 75g)			

※1. Power supply is from I/O power of coupler or ARIO-P-F Series. Normal operation is available when I/O power voltage is supplied.
※2. The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※In case of one coupler module connecting, the ARIO digital module is available to connect up to 8 units. For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO coupler.

▣ Dimensions

(Unit: mm)



Analog Input/Output Module

▣ Specifications

Type		Analog input module			
Model	2CH	**ARIO-S-AI02V1**	**ARIO-S-AI02V2**	**ARIO-S-AI02C1**	**ARIO-S-AI02C2**
	4CH	**ARIO-S-AI04V1**	**ARIO-S-AI04V2**	**ARIO-S-AI04C1**	**ARIO-S-AI04C2**
Input method		Voltage input		Current output	
Input range		-10 to 10VDC⎓	0 to 10VDC⎓	0 to 20mA	4 to 20mA
Accuracy		Room temp.: ±0.3% F.S. / Out of room temp.: ±0.6% F.S.			
Input impedance		Min. 1MΩ / Max. 250Ω			
Status indicator ON conditions		Below -1V or over 1V	Over 1V	Over 1mA	Over 4mA
Resolution		12bit			
Power consumption		ABUS: 5VDC⎓, max. 180mA (max. 0.9W), I/O: 24VDC⎓, max. 15mA (max. 0.36W)			

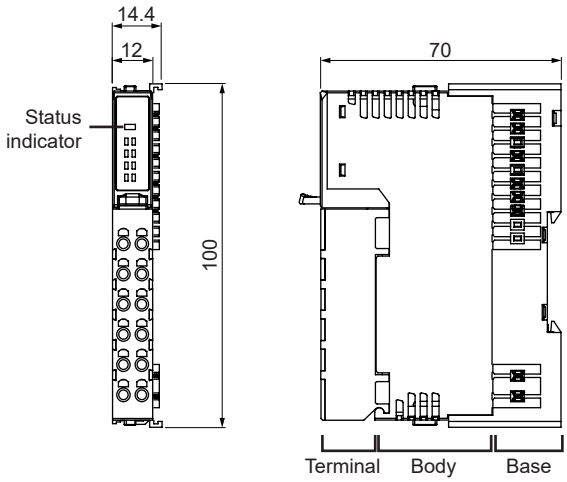
Type		Analog output module			
Model	2CH	**ARIO-S-AO02V1**	**ARIO-S-AO02V2**	**ARIO-S-AO02C1**	**ARIO-S-AO02C2**
	4CH	**ARIO-S-AO04V1**	**ARIO-S-AO04V2**	**ARIO-S-AO04C1**	**ARIO-S-AO04C2**
Output method		Voltage output		Current output	
Output range		-10 to 10VDC⎓	0 to 10VDC⎓	0 to 20mA	4 to 20mA
Accuracy		Room temp.: ±0.3% F.S. / Out of room temp.: ±0.6% F.S.			
Load resistance		Min. 5kΩ / Max. 350Ω			
Status indicator ON conditions		Below -1V or over 1V	Over 1V	Over 1mA	Always ON
Resolution		12bit			
Power consumption		ABUS: 5VDC⎓, max. 180mA (max. 0.9W), I/O: 24VDC⎓, max. 15mA (max. 0.36W)		ABUS: 5VDC⎓, max. 100mA (max. 0.5W), I/O: 24VDC⎓, max. 60mA (max. 1.44W)	

Installation method		DIN rail mounting
Insulation resistance		100MΩ (at 500VDC⎓ megger) I/O to inner circuit: photocoupler insulated, between channels: non-insulated
Environment	Ambient temp.	-10 to 55℃, storage: -25 to 70℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Protection structure		IP20 (IEC standard)
Material		Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene
Approval		CE cULus LISTED KC
Weight※1		Approx. 108g (approx. 75g)

※1.The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※Power supply is from I/O power of coupler or ARIO-P-F Series. Normal operation is available when I/O power voltage is supplied. In case of one coupler module connecting, the ARIO analog module is available to connect up to 4 units. For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO coupler.

▣ Dimensions

(Unit: mm)



Temperature Input Module

▣ Specifications

Type		Temperature input module	
Model	4CH	**ARIO-S-AI04TC**	**ARIO-S-AI04RTD**
Input method		Voltage input	Resistance input
Display accuracy※1		±0.2% F.S.(or ±2℃, select higher one) ±1 digit	±0.2% F.S.±1 digit
Status indicator ON conditions		Temperature input within the rated range ※ No operation when the thermometer is not attached.	
Resolution / Display		16bit / 0.1℃	
Power consumption		ABUS: 5VDC⎓, max. 180mA w(max. 0.9W), I/O: 24VDC⎓, max. 15mA (max. 0.36W)	
Installation method		DIN rail mounting	
Insulation resistance		100MΩ (at 500VDC⎓ megger) I/O to inner circuit: photocoupler insulated, between channels: non-insulated	
Environment	Ambient temp.	-10 to 55℃, storage: -25 to 70℃	
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH	
Protection structure		IP20 (IEC standard)	
Material		Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene	
Approval		CE cULus LISTED KC	
Weight※2		Approx. 108g (approx. 75g)	

※1. ◎ At room temperature (23℃ ± 5℃)
- Below -100℃ of TC K, J, T, N, E and TC L, U, PLII: ±4℃ ±1 digit
- Below ±200℃ of TC R, S: ±4℃ ±1 digit
- Below 400℃ of TC B: No display accuracy
- RTD Cu 50 Ω / 100 Ω, Ni 100 Ω / 120 Ω / 1000 Ω: ±2℃ ±1digit

◎ Out of room temperature range
- TC: (±0.5% F.S or ±7℃, select the higher one) ± 1digit
- RTD: (±0.5% F.S or ±3℃, select the higher one) ±1digit

※2.The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※Power supply is from I/O power of coupler or ARIO-P-F Series. Normal operation is available when I/O power voltage is supplied. In case of one coupler module connecting, the ARIO analog module is available to connect up to 4 units. For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO coupler.

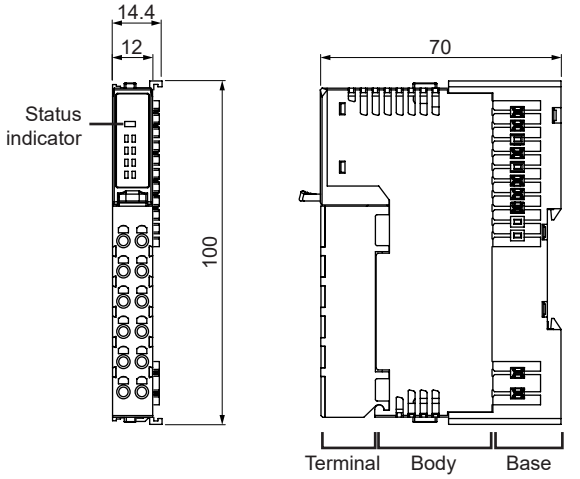
▣ Input type and range

Input type		Rated input range (℃)	Data display (dec)
Thermocouple (TC)	K(CA)	-200.0 to1350.0	-2000 to13500
	J(IC)	-200.0 to 800.0	-2000 to 8000
	E(CR)		
	T(CC)	-200.0 to 400.0	-2000 to 4000
	B(PR)	0.0 to 1800.0	0 to 18000
	R(PR)	0.0 to 1750.0	0 to 17500
	S(PR)		
	N(NN)	-200.0 to 1300.0	-2000 to 13000
	C(TT)※1	0.0 to 2300.0	0 to 23000
	G(TT)※2		
	L(IC)	-200.0 to 900.0	-2000 to 9000
	U(CC)	-200.0 to 400.0	-2000 to 4000
	Platinel II	0.0 to 1390.0	0 to 13900
RTD	Cu 50Ω	-200.0 to 200.0	-2000 to 2000
	Cu 100Ω		
	DPt 50Ω	-200.0 to 650.0	-2000 to 6500
	DPt 100Ω		
	DPt 1000Ω	-200.0 to 500.0	-2000 to 5000
	JPt 50Ω	-200.0 to 650.0	-2000 to 6500
	JPt 100Ω		
	JPt 1000Ω	-200.0 to 500.0	-2000 to 5000
	Nickel 100Ω	-50.0 to 200.0	-500 to 2000
	Nickel 120Ω		
	Nickel 1000Ω		

※1. Same as existing W5(TT).
※2. Same as existing W(TT).

▣ Dimensions

(Unit: mm)



Power Module

▣ Specifications

● Slim Remote ABUS Power Module

Model		ARIO-P-B
Power supply	ABUS (external consumption)	24VDC⎓, max. 320mA (max. 7.5W, max. 160mA/CH, 2CH/COM)
	ABUS (internal supply)	5VDC⎓, max. 1,500mA (max. 7.5W)
Installation method		DIN rail mounting
Insulation resistance		100MΩ(at 500VDC⎓ megger)
Environment	Ambient temp.	-10 to 55℃, storage: -25 to 70℃
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH
Protection structure		IP20 (IEC standard)
Material		Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene
Approval		CE cULus LISTED
Weight※1		Approx. 108g (approx. 75g)

※The ARIO digital module is available to connect up to 8 units and the ARIO analog module is available to connect up to 4 units.

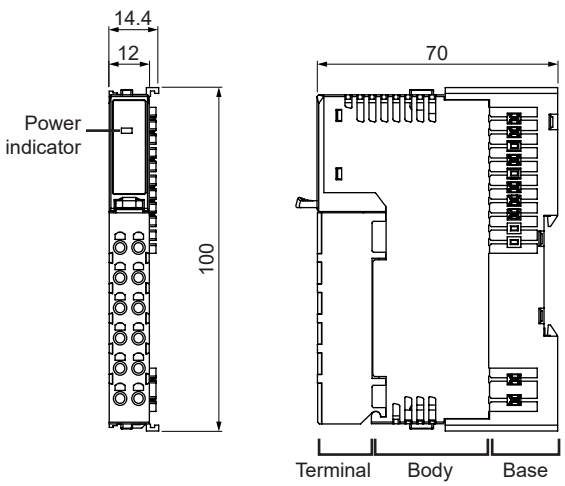
● Slim Remote I/O Power Module

Model			ARIO-P-F1	ARIO-P-F2	ARIO-P-T1	ARIO-P-T2
Input	Voltage		24VDC⎓±10% (max. 48W)		—	
	Max. current		Max. 2,000mA/CH, 2CH/COM		—	
Output	Voltage		24VDC⎓±10% (max. 48W)		24VDC⎓±10% (max. 48W)	
	Max. current		Max. 2,000mA/CH, 6CH/COM		Max. 2,000mA/CH,8CH/COM	
No. of I/O supply power		24V	6	2	8	4
		0V	2	6	4	8
Installation method			DIN rail mounting			
Insulation resistance			100MΩ(at 500VDC⎓ megger)			
Environment	Ambient temp.		-10 to 55℃, storage: -25 to 70℃			
	Ambient humi.		35 to 85%RH, storage: 35 to 85%RH			
Protection structure			IP20 (IEC standard)			
Material			Terminal: polyamide6, Body: modified polyphenylene oxide, Base: polyamide6, polyoxymethylene			
Approval			CE cULus LISTED			
Weight※1			Approx. 108g (approx. 75g)			

※1. The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.
※For connecting the modules, consider power consumption of the sensors and drivers connected the ARIO power module.

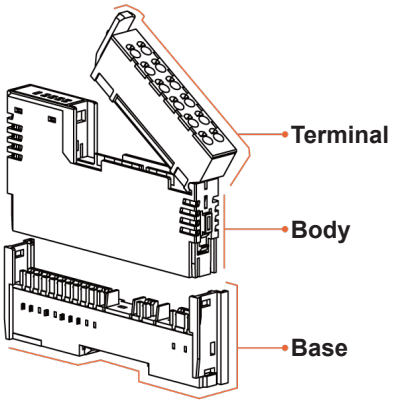
▣ Dimensions

(Unit: mm)



General Information

▣ Hot-swap

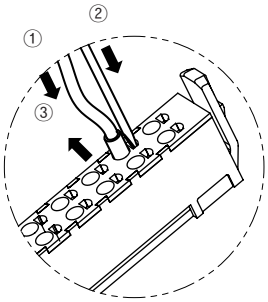


- **Terminal**
  : Part of the input and output signal comes out of the product
- **Body**
  : Part of the input and output signal controled of the product
- **Base**
  : Part of the communication (ABUS) and power connection between coupler and modules

During the operation of the system, the hardware part (terminal and body) can be replaced and maintenance and setting can be restored automatically. (All modules except coupler and end module support Hot-swap.)

1) Terminal / body can be replaced during operation without disassembling the terminal signal line
   : Even if the terminal / body of the abnormal I/O module is disconnected from the connected system (Coupler, I/O Module configuration), the other I/O operates normally.
2) Diagnostic function: Check removal or connection for terminal or body of abnormal module
3) Normal operation of the rearranged module even after removing the body of the module
4) Automatic restoration of existing settings when replacing body through backup function of internal ABUS communication

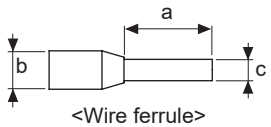
▣ Connecting & Removing Wires



• Connecting
Push the wire ferrule towards direction ① to complete the connection.

• Removing
1) Press and hold the groove on the terminal in direction ②
with a non-conductive flat head screwdriver (tip width max. 3mm).
2) Pull and remove the wire towards direction ③.

※Use the UL approved wire ferrule.
Use the copper-conductor wire with the temperature class 60℃.



<Wire ferrule>

	a	b	c	Certified spec.
Range	8 to 12mm	Max. 3mm	0.6 to 1.3mm	AWG22-16
Recommended	10mm		1mm	AWG18

▣ Caution during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, It may cause unexpected accidents.
2. ABUS power and I/O power should be insulated by the individually insulated power device.
3. Power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
4. Use the rated standard cables and connectors. Do not apply excessive power when connecting or disconnecting the connectors of the product.
5. Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   For stable operation, use shield wire and ferrite core, when wiring communication wire, power wire, or signal wire.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
6. Do not touch the module communication connector part of the base.
7. Do not connect, or remove the base while connected to a power source. For removing the terminal, body or base, do not operate units for a long time without it
8. This unit may be used in the following environments.
   ①Indoors ②Altitude max. 2,000m
   ③Pollution degree 2 ④Installation category II)

DeviceNet Digital Remote I/O

▣ Features

- Automatic communication speed recognition
  : Enables to recognize communication speed automatically when connecting with master
- Network Voltage monitoring
  : If PV is lower than SV, enables to receive error flag for network power monitoring as Explicit message.
- Additional expansion units
  - Standard terminal block type: Connectable up to 3 expansion units
  - Sensor connector type: Connectable up to 7 expansion units
  - Expandable I/O points up to max. 64 points for Standard terminal type, sensor connector type
- Reading the number of expansion units
  : Reads the number of connected expansion units
- Reading model name: Reads the connected model name of connected units (sensor connector type)
- Reading the unit specifications: Reads the specifications of connected units

Standard terminal block type

Sensor connector type

Please read "Safety Considerations" in the instruction manual before using.

▣ Ordering Information

AR D – D I 08 A E – 4S

Terminal block※2	No-mark	Standard terminal block type		
	4S	Sensor connector type (4-pin socket)		
Structure	No-mark	Basic unit		
	E※4	Expansion unit		
I/O specification※1	A	AC voltage	R	Relay
	N	NPN open collector	S	SSR
	P	PNP open collector		
I/O point	08	8 points type		
	16	16 points type		
I/O type	I	Input type		
	O	Output type		
	X	I/O mixed type		
Digital/Analog	D	Digital type		
	A※5	Analog type		
Network	D	Basic unit (DeviceNet)		
	X※3	Expansion unit (DeviceNet/Modbus)		
Item	AR	Autonics Remote I/O		

※1: Sensor connector type (ARD-□-4S) model is only for NPN, PNP I/O specifications.
※2: Sensor connector (CNE-P04-□) is sold separately.
※3: It is only for an expansion unit of sensor connector type.
※4: It is only for an expansion unit of standard terminal block type.
※5: For analog type, refer to '**ARD-A Series**'.

▣ Models

Models			Specification
Terminal type	Basic unit	Expansion unit	
Standard terminal block type	ARD-DI08A	ARD-DI08AE	75-250VAC input 8-point (13mA/point)
	ARD-DI16N	ARD-DI16NE	10-28VDC NPN input 16-point (10mA/point)
	ARD-DI16P	ARD-DI16PE	10-28VDC PNP input 16-point (10mA/point)
	ARD-DO08R	ARD-DO08RE	Relay output 8-point (2A/point), Life cycle of contact: 100,000 times
	ARD-DO08S	ARD-DO08SE	SSR output 8-point (1A/point)
	ARD-DO16N	ARD-DO16NE	10-28VDC NPN output 16-point (0.5A/point)
	ARD-DO16P	ARD-DO16PE	10-28VDC PNP output 16-point (0.5A/point)
	ARD-DX16N	ARD-DX16NE	10-28VDC NPN input 8-point (10mA/point), NPN output 8-point (0.5A/point)
	ARD-DX16P	ARD-DX16PE	10-28VDC PNP input 8-point (10mA/point), PNP output 8-point (0.5A/point)
Sensor connector type	ARD-DI08N-4S	ARX-DI08N-4S	10-28VDC NPN input 8-point (10mA/point)
	ARD-DI08P-4S	ARX-DI08P-4S	10-28VDC PNP input 8-point (10mA/point)
	ARD-DO08N-4S	ARX-DO08N-4S	10-28VDC NPN output 8-point (0.3A/point)
	ARD-DO08P-4S	ARX-DO08P-4S	10-28VDC PNP output 8-point (0.3A/point)

▣ Specifications

◎ Standard terminal block type

Model	Basic unit	**ARD-DI08A**	**ARD-DI16N**	**ARD-DI16P**	**ARD-DO08R**	**ARD-DO08S**	**ARD-DO16N**	**ARD-DO16P**	**ARD-DX16N**	**ARD-DX16P**
	Expansion unit	**ARD-DI08AE**	**ARD-DI16NE**	**ARD-DI16PE**	**ARD-DO08RE**	**ARD-DO08SE**	**ARD-DO16NE**	**ARD-DO16PE**	**ARD-DX16NE**	**ARD-DX16PE**
Power supply		Rated voltage: 24VDC⎓, Voltage range: 12-28VDC⎓								
Power consumption		Max. 3W								
I/O points		AC input 8-point	NPN input 16-point	PNP input 16-point	Relay output 8-point	SSR output 8-point	NPN output 16-point	PNP output 16-point	NPN input 8-point + output 8-point	PNP input 8-point + output 8-point
Control I/O	Voltage	75-250VAC～	10-28VDC⎓		Normally open (N.O.) 250VAC～ 2A 1a	30-250VAC～	10-28VDC⎓ (voltage drop: max. 0.5VDC⎓)			
	Current	13mA/point	10mA/point			1A/point	0.5A/point (leakage current: max. 0.5 mA)		Input: 10mA, Output: 0.5A/point (leakage current: max. 0.5mA)	
	COMMON method	8-point, common			1-point, COM	8-point, common				
Insulation resistance		Over 200MΩ (at 500VDC megger)								
Noise immunity		±240V the square wave noise (pulse width: 1μs) by the noise simulator								
Dielectric strength		1,000VAC 50/60 Hz for 1 min								
Vibration		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours								
Shock		500m/s^2 (approx. 50G) in each X, Y, Z direction for 3 times								
Environment	Ambient temp.	-10 to 50℃, storage: -25 to 75 ℃								
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH								
Protection structure		IP20 (IEC standard)								
Protection circuit		Surge protection circuit, reverse polarity protection circuit (common) ●Transistor output type - Overcurrent protection circuit (NPN type: operated at min. 1.9A → re-supply power in overcurrent status, PNP type: operated at min. 0.7A), Overheat protection circuit (over 165℃), Short-circuit protection circuit								
Indicator		Network status (NS) LED (green, red), unit status (MS) LED (green, red), I/O status LED (input: green, output: red)								
Material		Front case, body case: Polycarbonate, Rubber cap: acrylonitrile-butadiene rubber								
Mounting		DIN rail or bolt mounting type								
Approval		DeviceNet	CE DeviceNet		DeviceNet		CE DeviceNet			
Unit weight		Approx. 150g	Approx. 140g		Approx. 160g	Approx. 170g	Approx. 140g			

※Environment resistance is rated at no freezing or condensation.

▣ Specifications

◎ Sensor connector type

Model	Basic unit	**ARD-DI08N-4S**	**ARD-DI08P-4S**	**ARD-DO08N-4S**	**ARD-DO08P-4S**
	Expansion unit	**ARX-DI08N-4S**	**ARX-DI08P-4S**	**ARX-DO08N-4S**	**ARX-DO08P-4S**
Power supply		Rated voltage: 24VDC⎓, Voltage range: 12-28VDC⎓			
Power consumption		Max. 3W			
I/O points		NPN input 8-point	PNP input 8-point	NPN output 8-point	PNP output 8-point
Control I/O	Voltage	10-28VDC⎓ input		10-28VDC⎓ output (voltage drop: max. 0.5VDC⎓)	
	Current	10mA/point (sensor current: 150mA/point)		0.3A/point (leakage current: max. 0.5mA)	
	COMMON method	8-point, common			
Insulation resistance		Over 200MΩ (at 500VDC megger)			
Noise immunity		±240V the square wave noise (pulse width: 1μs) by the noise simulator			
Dielectric strength		1,000VAC 50/60Hz for 1 min (between external terminals and case)			
Vibration		1.5mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Shock		500m/s^2 (approx. 50 G) in each X, Y, Z direction for 3 times			
Environment	Ambient temp.	-10 to 50℃, storage: -25 to 75℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Protection structure		IP20 (IEC standard)			
Protection circuit		Surge, short-circuit, overheat and ESD protection, reverse polarity protection circuit			
		Overcurrent protection circuit (operated at min. 0.17A)		Overcurrent protection circuit (operated at min. 0.7A)	
Indicator		Network status (NS) LED (green, red), unit status (MS) LED (green, red), I/O status LED (input: green, output: red)			
Material		Front case, body case: Polycarbonate			
Mounting		DIN rail or bolt mounting type			
Approval		CE DeviceNet			
Unit weight	Basic unit	Approx. 64g	Approx. 64g	Approx. 65g	Approx. 67g
	Expansion unit	Approx. 56g	Approx. 57g	Approx. 58g	Approx. 59g

※Environment resistance is rated at no freezing or condensation.

▣ DeviceNet Communication

Item	Specifications
Communication	I/O Slave messaging (Group 2 Only slave) ·Poll command: Yes ·Bit_strobe command: Yes ·Cyclic command: Yes ·COS command: Yes
Communication distance	Max. 500m (125kbps), Max. 250m (250kbps), Max. 100m (500kbps)
NODE ADDRESS setting	Max. 64 nodes (set by the front rotary switch)
Communication speed※1	125, 250, 500kbps (automatically set when connecting with Master)
Insulation	I/O and inner circuit: Photocoupler isolated, DeviceNet and inner circuit: non-isolated, DeviceNet power: non-isolated
DeviceNet power	· Rated voltage: 24VDC⎓ · Voltage range: 12-28VDC⎓ · Power consumption: max. 3W
Approval	ODVA Conformance tested

※1. The communication speed is automatically set to the communication speed of the Master (PC, PLC, etc.) When changing the communication speed during operation, the network status (NS) LED flashes in red and communication is not possible.

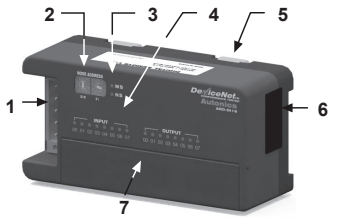
▣ Communication Distance

Baud rate	Max. network length	Max. branch line length	Max. extended branch line length
125kbps	500m	6m	156m
250kbps	250m	6m	78m
500kbps	100m	6m	39m

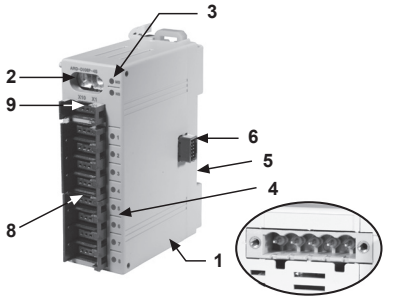
▣ Unit Description

◎ Basic unit

● Standard terminal block type



● Sensor connector type



1. DeviceNet connector

No.	Color	For	Organization
5	Red	24VDC (+)	V+
4	White	CAN_H	CAN_H
3	None	Shield	SHIELD
2	Blue	CAN_L	CAN_L
1	Black	24VDC (-)	V-

2. Rotary switch for node address
: Rotary switch for setting node address.
×10 represents tens digit and ×1 represents ones digit.

3. Status LED: It displays the status of unit (MS) and network (NS).

4. I/O status LED: It displays each I/O status.

5. Rail lock: It is used for mounting DIN rail or with bolt.

6. Connector output part: It connects an expansion unit.

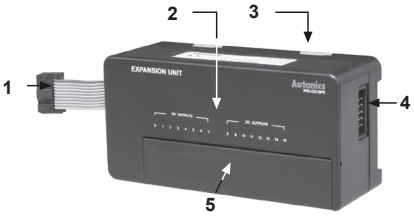
7. I/O terminal block: It is used for connecting external device I/O.

8. Sensor connector: It is used for connecting external device I/O.

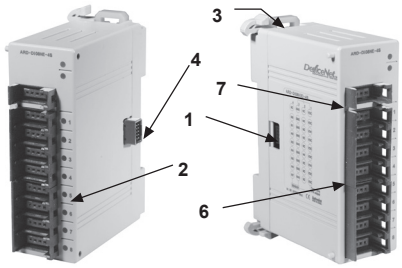
9. External power connector: It is used for supplying external power.

◎ Expansion unit

● Standard terminal block type



● Sensor connector type



1. Connector input part
: It connects expansion unit and is joined into expansion connector output.

2. I/O status LED: It displays each I/O status.

3. Rail lock: It is used for mounting DIN rail or with bolt.

4. Connector output part: It connects an expansion unit.

5. I/O terminal block: It is used for connecting external device I/O.

6. Sensor connector: It is used for connecting external device I/O.

7. External power connector: It is used for supplying external power

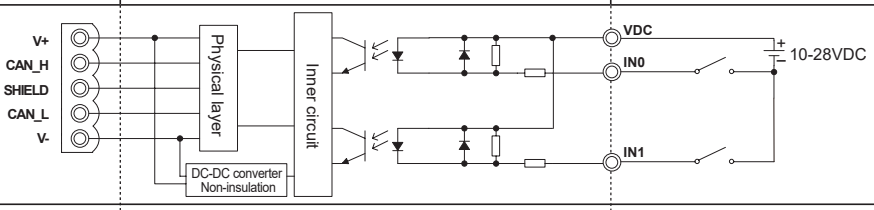
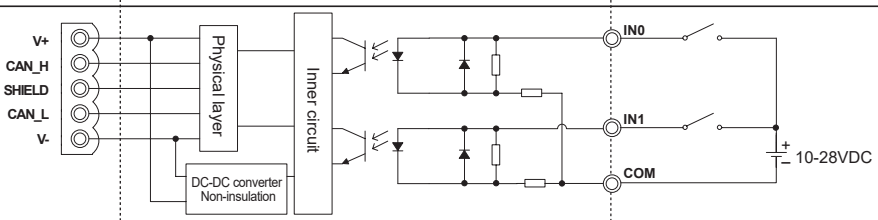
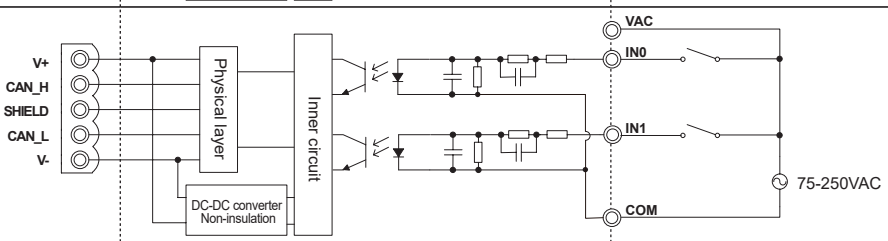
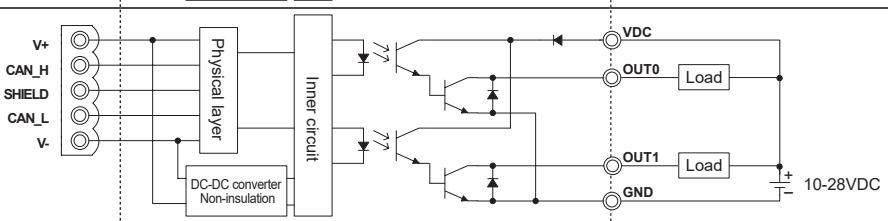
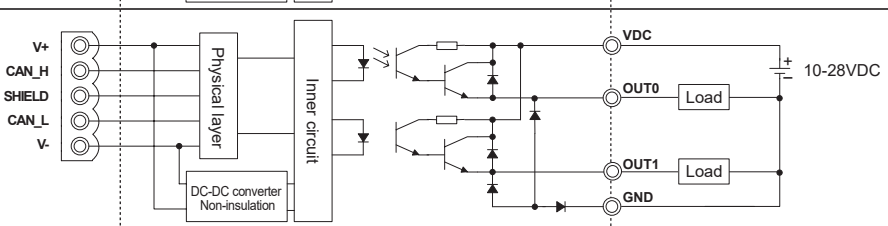
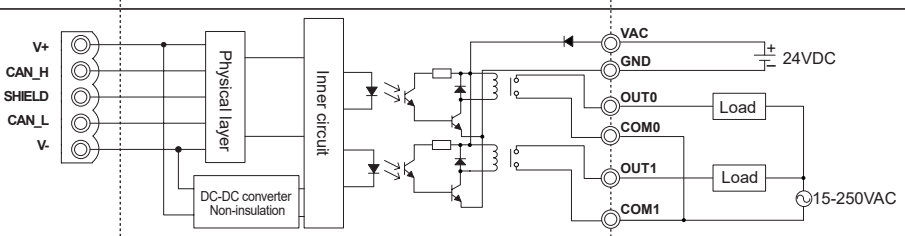
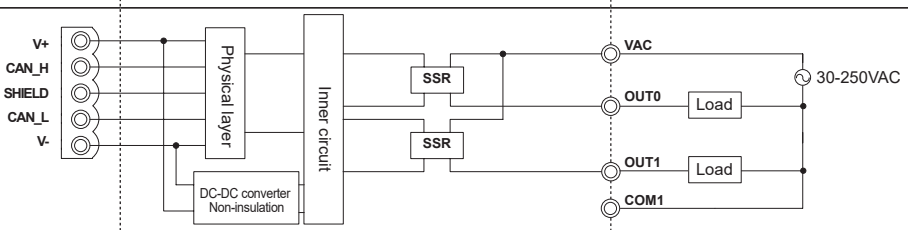
▣ Status LED

(☼: ON, ◑: Flash, ●: OFF)

Item	LED status		Description
	Red	Green	
Unit status (MS) LED	☼	●	Unrecoverable error
	◑	●	Recoverable error & communication error of expansion unit
	●	☼	Normal operation
	●	●	Power is not supplied
Network status (NS) LED	●	◑	Normal standby
	●	☼	Network On-Line
	☼	●	Duplicate, MAC ID / Bus-Off
	◑	●	Time Out
	●	●	Network Off-Line

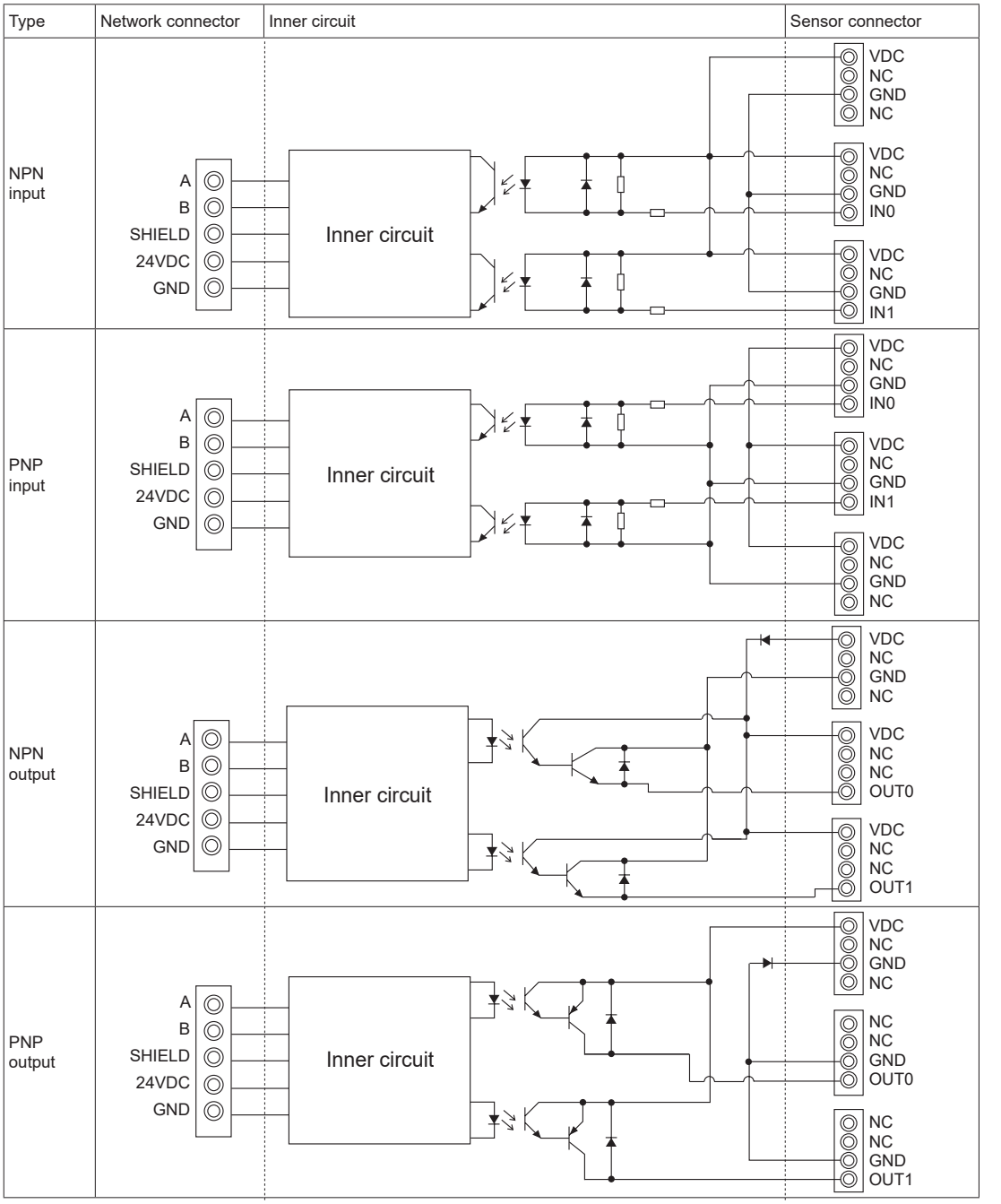
▣ I/O Circuit Diagram

◎ Standard terminal block type

Type	DeviceNet connector	Inner circuit	External connections
NPN input			
PNP input			
AC input			
NPN output			
PNP output			
Relay output			
SSR output			

▣ I/O Circuit Diagram

◎ Sensor connector type

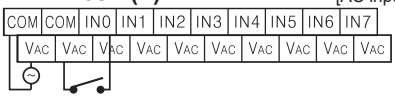


▣ Connections

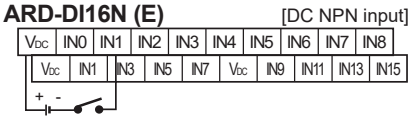
◎ Standard terminal block type

※ When wiring the communication connector, use cable and tap which meet the DeviceNet standard and tighten the connector screw with a tightening torque of 0.5N·m.
※ When wiring the input/output terminal, tighten the connector screw with a tightening torque of 0.5N·m.

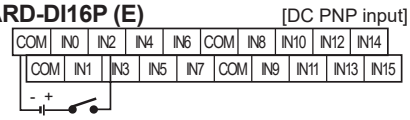
● ARD-DI08A (E) [AC input]



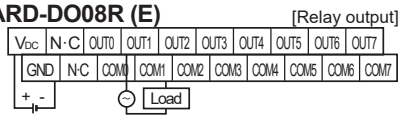
● ARD-DI16N (E) [DC NPN input]



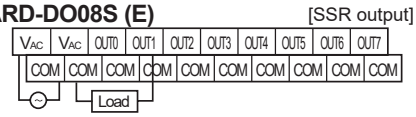
● ARD-DI16P (E) [DC PNP input]



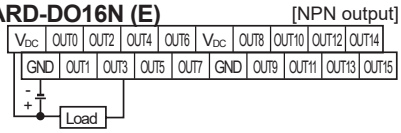
● ARD-DO08R (E) [Relay output]



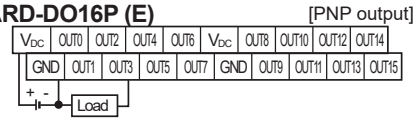
● ARD-DO08S (E) [SSR output]



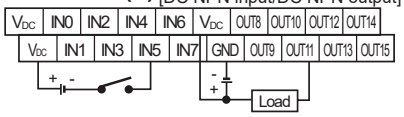
● ARD-DO16N (E) [NPN output]



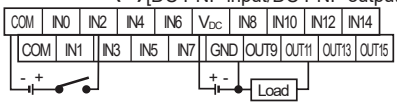
● ARD-DO16P (E) [PNP output]



● ARD-DX16N (E) [DC NPN input/DC NPN output]



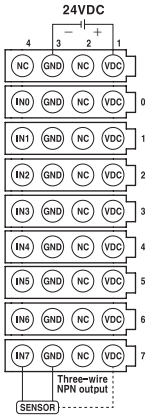
● ARD-DX16P (E) [DC PNP input/DC PNP output]



◎ Sensor connector type

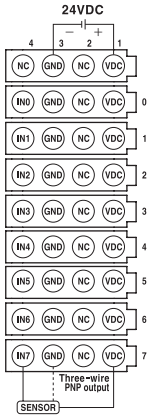
※When wiring the communication connector, use cable and tap which meet the DeviceNet standard and tighten the connector screw with a tightening torque of 0.5N·m.

● AR□-DI08N-4S



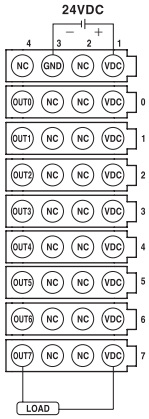
IN (NPN): 8P, 24VDC 10mA

● AR□-DI08P-4S



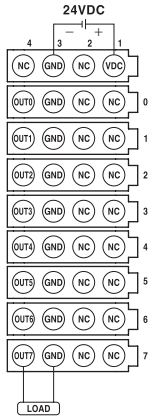
IN (PNP): 8P, 24VDC 10mA

● AR□-DO08N-4S



OUT (NPN): 8P, 24VDC 0.3A/Point

● AR□-DO08P-4S



OUT (PNP): 8P, 24VDC 0.3A/Point

▣ Terminating Resistance

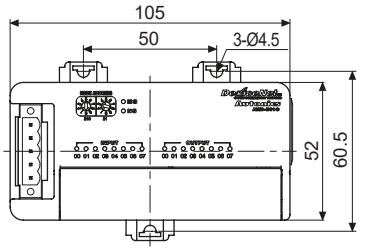
● 120Ω ● 1% of metallic film ● 1/2W
※Do not install terminating resistance on the unit, or it may cause network terminating problem (impedance can be too high or low) and trouble.
※Connect terminating resistance on the both ends of the trunk line.

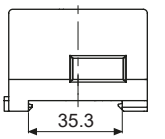
▣ Dimensions

※Same dimensions are applied to both basic and expansion unit.
※Tightening torque for mounting bolts: 1.8 to 2.5N·m

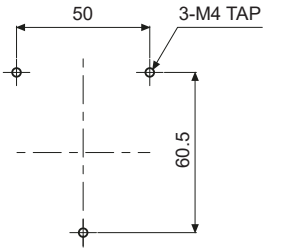
(unit: mm)

◎ Standard terminal block type

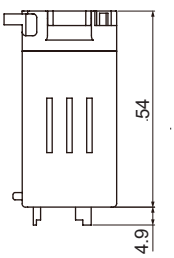




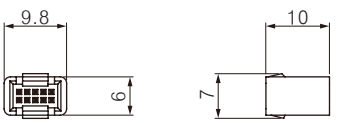
● **Panel cut-out**



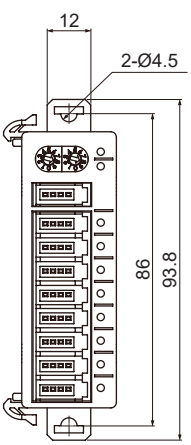
◎ Sensor connector type



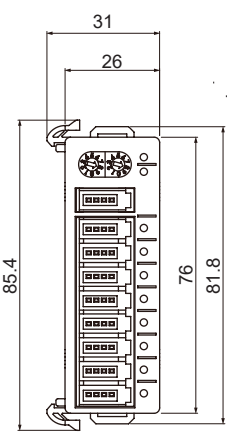
● **Expansion connector**
(supplied only for expansion unit)

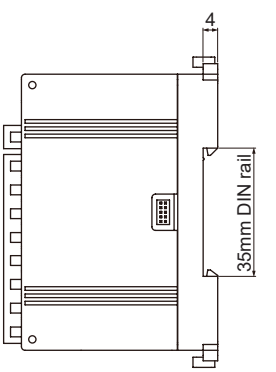


● **Rail lock position: mounting with bolt**



● **Rail lock position: mounting on DIN rail**





● **Panel cut-out**

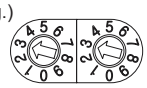
▣ Setup and Installation

◎ Setting Node address

① Two rotary switches are used for setting node address. The ×10 switch represents tens digit and the ×1 switch represents ones digit. The node address can be set 00 to 63.
② After setting the desired node address, re-supply the unit power for applying the changed node address.

※The NODE ADDRESS of the connected unit must not be duplicated.
When changing the NODE ADDRESS during operation, the unit status (MS) LED flashes in red and the unit communicates to the NODE ADDRESS before the change.

(E.g.)

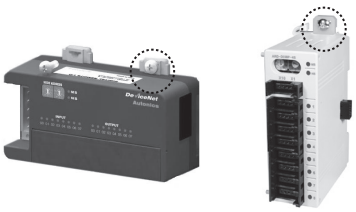


The X10 and X1 switches point both at "3", so the address is "33".

◎ Unit Installation

• Mounting on panel

① Pull rail locks (standard terminal block type: 3, sensor connector type: 2) on the rear part of a unit, there are fixing bolt hole.
② Place the unit on a panel to be mounted.
③ Make holes on fixing bolt positions.
④ Fasten the bolt to fix the unit tightly.
Tightening torque should be below 0.5N·m.



• Mounting on DIN rail

① Pull rail locks (standard terminal block type: 3, sensor connector type: 2) on the rear part of unit.
② Place the unit on DIN rail to be mounted.
③ Press rail locks to fix the unit tightly.

• Connection of basic and expansion units (standard terminal block type)

① Turn OFF the power of a Basic unit.
② Place an expansion unit to be installed next to the basic unit.
③ Connect the cable of expansion unit to the connector of a basic unit.
④ Install a connected expansion units as the right figures.
⑤ Supply the power to the basic unit.
※Re-supply the power of a basic unit and it recognizes expansion units.

• Connection of basic and expansion units (sensor connector type)

① Turn OFF the power of the basic unit.
② Remove a cover of connector for extension with nippers, etc.
③ Connect connector input part of an expansion unit and connector output part of a basic unit with a connector which is enclosed with an expansion unit box.
④ Install a connected expansion units as the right figure.
⑤ Supply the power to the basic unit.
※Re-supply the power of a basic unit and it recognizes expansion units.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Keep away from high voltage lines or power lines to prevent inductive noise.
   In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
4. Do not connect or disconnect the expansion unit when power is being supplied.
5. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

DeviceNet Analog Remote I/O

▣ Features

- Adopts DeviceNet, standard open Network
  : Communicates other DeviceNet devices without additional installations
  : Configurable power and communication system only with communication cables
  : Connectable max. 63 units per 1 master unit
- Strong against noise and high accuracy (0.3%) measurement with differential input method (measuring difference between +, - input signal)
- Various I/O range: 0-5VDC, 1-5VDC, 0-10VDC, -5-5VDC, -10-10VDC, DC4-20mA, DC0-20mA
- Scale function: Settable high/low limit scale value for analog I/O range (Setting range: -28,000 to 28,000)
- Various functions
  : Automatic communication speed recognition, Network voltage monitoring, Input digital filter, Peak/Bottom Hold, hysteresis, reading model name and number of units, I/O and status flag monitoring
- Built-in surge, ESD protection, Reverse polarity protection circuit
- Mounting DIN rail method and bolt mounting method

Please read "Safety Considerations" in the instruction manual before using.

(only for ARD-AI04, other models are compatible)

▣ Ordering Information

AR D – A I 04

I/O points	04	4-point type
I/O type	I	Input type
	O	Output type
Digital/Analog	A	Analog type
	D※1	Digital type
Network	D	DeviceNet type
Item	AR	Autonics Remote I/O

※1. For digital type, refer to '**ARD-D Series**'.

▣ Manual

For the detail information please refer to the user manual and be sure to follow cautions written in the technical descriptions (catalog, website).
Visit our website (www.autonics.com) to download manuals.

▣ Analog I/O Specifications

No.	I/O range	Max. allowable I/O range
0	0-5VDC	-0.25-5.25VDC
1	1-5VDC	0.8-5.2VDC
2	0-10VDC	-0.5-10.5VDC
3	-5-5VDC	-5.5-5.5VDC
4	-10-10VDC	-11-11VDC
5	DC4-20mA	DC3.2-20.8mA
6	DC0-20mA	DC0-21mA

▣ Specifications

Model		ARD-AI04	ARD-AO04
Power supply		Rated voltage: 24VDC⎓, Voltage range: 12-28VDC⎓	
Power consumption		Max. 3W	
I/O points		Input 4-point (switchable voltage/current)	Output 4-point (voltage 2CH, current 2CH)
Control I/O	Voltage	0-10VDC⎓, -10-10VDC⎓, 0-5VDC⎓, 1-5VDC⎓, -5-5VDC⎓ (input impedance: max. 1MΩ)	0-10VDC⎓, -10-10VDC⎓, 0-5VDC⎓, 1-5VDC⎓, -5-5VDC⎓ (load resistance: max. 1kΩ)
	Current	DC4-20mA, DC0-20mA (input impedance: 250Ω)	DC4-20mA, DC0-20mA (load resistance: max. 600Ω)
	Max. allowable range	±5% F.S of rated input range	±5% F.S of rated output range
	Resolution	14bit, 1/16,000	
	Accuracy	● At room temperature (25±5℃) range: ±0.3% F.S. ● Out of room temperature range: ±0.6% F.S.	
Insulation resistance		Over 200MΩ (at 500VDC megger)	
Noise immunity		±240V the square wave noise (pulse width: 1μs) by the noise simulator	
Dielectric strength		500VAC 50/60Hz for 1 min (between external terminals and case, between I/O and power terminals)	
Vibration		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours	
Shock		500m/s^2 (approx. 50 G) in each X, Y, Z direction for 3 times	
Environment	Ambient temperature	-10 to 50℃, storage: -25 to 75℃	
	Ambient humidity	35 to 85%RH, storage: 35 to 85%RH	
Protection structure		IP20 (IEC standard)	
Protection circuit		Surge, ESD protection, reverse polarity protection circuit	
Indicator		Network status (NS) LED (green, red), unit status (MS) LED (green, red)	
Material		Front case, body case: Polycarbonate	
Mounting		DIN rail or bolt mounting type	
Isolation type		I/O and inner circuit: non-insulated, DeviceNet and inner circuit: insulated, power and DeviceNet: insulated	
Approval		CE DeviceNet	CE, DeviceNet compatible
Weight※1		Approx. 210g (approx. 145g)	

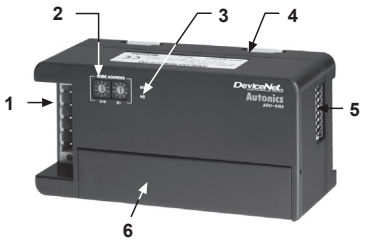
※Environment resistance is rated at no freezing or condensation.
※1. The weight includes packaging. The weight in parentheses is for unit only.

▣ DeviceNet Communication

Item	Specifications
Communication	I/O Slave messaging (Group 2 Only slave) ● Poll command: Yes ● Bit_strobe command: Yes ● Cyclic command: Yes ● COS command: Yes
Communication distance	Max. 500m (125kbps), Max. 250m (250kbps), Max. 100m (500kbps)
NODE ADDRESS setting	Max. 64 nodes
Communication speed※1	125, 250, 500kbps (automatically set when connecting with Master)
Insulation	I/O and inner circuit: Non-insulation, DeviceNetand inner circuit: Insulation, DeviceNet power: Insulation
Approval	ODVA Conformance conformance: ARD-AI04 ODVA Conformance compatible : ARD-AO04

※1. The communication speed is automatically set to the communication speed of the Master (PC, PLC, etc.) When changing the communication speed during operation, the network status (NS) LED flashes in red and communication is not possible.

▣ Unit Descriptions



1. DeviceNet connector

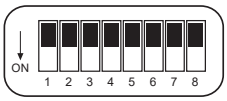
No.	Color	For	Organization
5	Red	24VDC (+)	V+
4	White	CAN_H	CAN_H
3	None	SHIELD	SHIELD
2	Blue	CAN_L	CAN_L
1	Black	24VDC (-)	V-

2. Rotary switch for node address : Two rotary switches are used for setting node address.
X10 switch represents the 10's multiplier and X10 switch represents the 1's multiplier.

3. Status LED: It is LED for displaying Unit status (MS) and Network status (NS).

4. Rail Lock: It is used for mounting DIN rail or with bolt.

5. DIP switch: It is used for set I/O range. (factory default: all switches are OFF)
(●: ON, -: OFF)



	ARD-AI04 (Input model)						ARD-AO04 (output model)							
	CH0, CH1			CH2, CH3			CH0, CH1			CH2, CH3				
I/O range	SW1	SW2	SW3	SW4	SW5	SW6	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8※1
0-5VDC	—	—	—	—	—	—	—	—	—	Not supported			Not supported (Off Setting)	**ON** Using DIP switch **OFF** Not using DIP switch
1-5VDC	●	—	—	●	—	—	●	—	—					
0-10VDC	—	●	—	—	●	—	—	●	—					
-5-5VDC	●	●	—	●	●	—	●	●	—					
-10-10VDC	—	—	●	—	—	●	—	—	●					
DC4-20mA	●	—	●	●	—	●	Not supported			—	—	—		
DC0-20mA	—	●	●	—	●	●				●	—	—		

※1: By turning ON SW8, I/O range is set by DIP switches (SW1 to SW6). By turning OFF SW8, I/O range is set by communication.
When setting I/O range by DIP switches, CH0 and CH1 (CH2 and CH3) cannot be set individually.
When setting it by communication, each channel is set individually.

6. I/O Terminal block: It is terminal block for connecting external device I/O.

■ Status LED

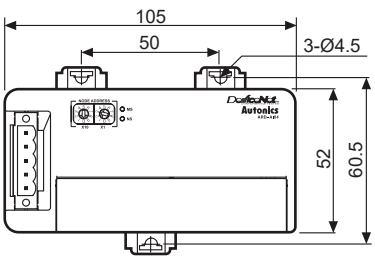
※Status of MS LED, NS LED

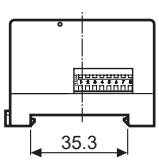
(☼: ON, ◑: Flash, ●: OFF)

No.	Type	LED status	Color	Descriptions	Troubleshooting
1	MS	☼	Green	**Normal operation** I/O communication or message communication is working.	—
	NS	☼	Green		
2	MS	☼	Green	**Standby of duplicated address** The status of standby for receiving message of duplicated address check from master unit.	—
	NS	●	—		
3	MS	☼	Green	**Standby of normal operation** The status of standby for establish connection from master unit.	—
	NS	◑	Green		
4	MS	☼	Red	**Watchdog timer error** The status that DIP switch or another switch setting is invalid.	Change the switch with valid value and re-supply the power.
	NS	●	—		
5	MS	◑	Red	**Switch setting error** The status that DIP switch or another switch setting is invalid.	Change the switch setting to valid value and re-supply the power.
	NS	●	—		
6	MS	◑	Red	**Changed address during normal operation** The status that address is changed during normal operation.	Change the initial address at the power applied at first.
	NS	☼	Green		
7	MS	☼	Green	**Invalid address** The status of setting invalid address	Change the valid address and re-supply the power.
	NS	☼	Red		
8	MS	☼	Red	**Duplicated address** There is duplicated address in the network. **Occuring Bus-Off error** Communication is stopped with Bus-Off.	Change node address not duplicated. Power on the slave unit again. Check master unit, communication, cable, terminating resistance and noise of network.
	NS	☼	Red		
9	MS	☼	Green	**I/O Connection time out**	Check the master setting and the user program.
	NS	◑	Red		

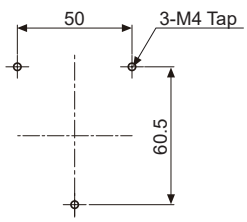
■ Dimensions

(unit: mm)

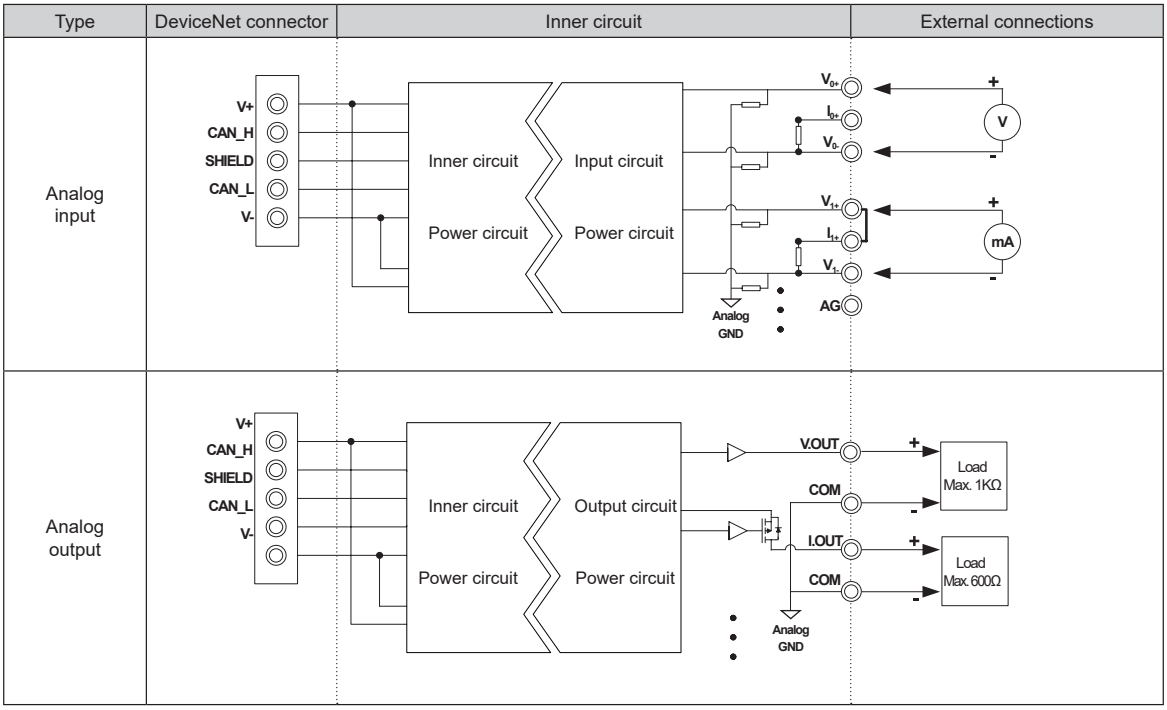




●Panel cut-out



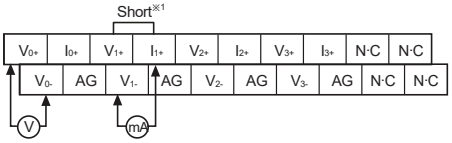
▣ I/O Circuit Diagram



▣ Connections

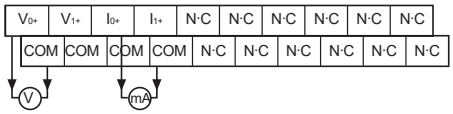
※When wiring the communication connector, use cable and tap which meet the DeviceNet standard and tighten the connector screw with a tightening torque of 0.5N·m.
※When wiring the input/output terminal, tighten the connector screw with a tightening torque of 0.5N·m.

●ARD-AI04



※1: For current input, short between $V_{□+}$ and $I_{□+}$.

●ARD-AO04



Voltage	0-5VDC
	1 to 5VDC
	-5-5VDC
	0-10VDC
	-10-10VDC
Current	DC0-20mA
	DC4-20mA

▣ Terminating Resistance

● 120Ω ● 1% of metallic film ● 1/4W
※Do not install terminating resistance on ARD unit or it may cause network problem (impedance can be too high or low) or malfunction.
※Connect terminating resistance on the both ends of the trunk line.

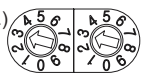
▣ Communication Distance

Baud Rate	Max. network length	Max. length of branch line	Allowable expansion length of branch line
125kbps	500m	6m	156m
250kbps	250m	6m	78m
500kbps	100m	6m	39m

▣ Setup and Installation

◎ Node address setup

E.g.)



The X10 and X1 switches point "3", the address is "33".

① Two rotary switches are used for setting node address.
X10 switch represents the 10's multiplier and X10 switch represents the 1's multiplier.
Node address is settable from 0 to 63.
② Node address is changed when re-supplying the power to the unit.
After changing node address, must re-supply the power.

※The address of the connected unit must not be duplicated.
When changing the address during operation, the unit status (MS) LED flashes in red and the unit communicates to the address before the change.

◎ Installation

• Mounting on panel

① Pull Rail Locks (3) on the rear part of a unit, there are fixing bolt hole.
② Place the unit on a panel to be mounted.
③ Make a hole on a fixing bolt position.
④ Fasten the bolt to fix the unit tightly.
Tightening torque should be below 0.5N·m.

• Mounting on DIN rail

① Pull two Rail Locks on the rear part of unit.
② Place the unit on DIN rail to be mounted.
③ Press Rail Locks to fix the unit tightly.

◎ I/O cable connection

Refer to '▣ **I/O circuit diagram and connections**'.
Connect a sensor or the signal cable of external I/O device to the terminal block. (tightening torque: 0.5N·m)

◎ DeviceNet cable connection

① For stable system, it is recommended to use the DeviceNet dedicated cable.
② Connect the DeviceNet cable to the DeviceNet connector and tighten the fixed bolt of the connector by a driver. (tightening torque: 0.5N·m)
③ Connect the DeviceNet connector to ARD unit and supply the power to Network.

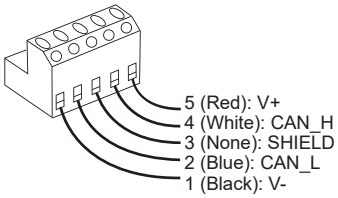
Master unit

PIN No.	Signal
5	V+
4	CAN_H
3	SHIELD
2	CAN_L
1	V-

Red	
White	
None	
Blue	
Black	

ARD unit

PIN No.	Signal
5	V+
4	CAN_H
3	SHIELD
2	CAN_L
1	V-



◎ Setting of master unit

① Check the LED status of ARD unit when power is supplied. Normal operation is below.

Type	Status LED	Status descriptions
Unit status (MS) LED	Green LED is ON	When master unit status is communication standby: NS LED flashes When master unit setting is completed: NS LED is ON.
Network status (NS) LED	Green LED is ON/flashes	

② Install the software provided by master unit manufacturing company.
③ Set communication speed and address in the software.
● Baud rate: 125/250/500kbps
● Address of master unit: Usually it is set 00 address.
④ Register connected unit on Network to the master unit.
● There are two ways to register units; automatically register in on-line or manually register in off-line. (Refer to the manual of master unit.)
● I/O assignment of ARD Series: Usually it is automatically assigned by the setting software.
● Setting of operation mode: Select among Poll, COS, Cyclic, Bit Strobe. (Usually set Poll mode.)

◎ Check operating stauts

When installation and setting are complete, unit status (MS) LED and Network status (NS) LED turn ON green.
(Refer to '▣ **Status LED**'.)

▣ Functions

Model		ARD-AI04 (input model)	ARD-AO04 (output model)
Basic	Com. speed auto-recognition	●	
	Network power voltage monitoring	●	
	Unit power on total time monitoring	●	
	Unit comment	●	
	Last maintenance data stored	●	
Analog	Scaling	●	
	I/O comment	●	
	Adjustment gradient	●	
	Adjustment offset	●	
	Input conversion points setting	●	–
	Input digital filter	●	–
	Peak/Bottom hold	●	–
	Disconnected cable detection	●	–
	Input comparison	●	–
	Hysteresis	●	–
	Output setting for error	–	●

◎ Communication speed auto-recognition

It recognizes communication speed when connecting master. Communication speed is able to change only from master unit.
After changing communication speed, re-supply the network power to apply the changed communication speed.

◎ Network power voltage monitoring

- If network power voltage is lower than the set value, the network power voltage drop flag bit of Status bit is ON. It can be read by Configurator or Explicit message.
- Set monitoring voltage by Explicit message at Network Power voltage (Set Value) of Application Object.
- Setting range: 0 to 255 (factory default: 12V, Allowable range: ±1V)

※ Min. supplied power is 12V for ARD unit.
If network voltage is lower than 12V, the contents of Explicit message reading is not guaranteed.

◎ Unit power on total time monitoring

- When total time for supplying power to the unit becomes the SV, Threshold Run Hours Flag bit of Status Bit turns ON. It can be read by Configurator or Explicit message.
- Set the time by Explicit message at Threshold Run Hour of Application Object.
- Setting range: 0 to 429,496,729 hours (factory default: 876,000 hours), Measured unit: 0.1 hours (6 minutes)

◎ Unit comment

- You can set the comments for the unit (product description) on network. It can be read by Configurator or Explicit message.
- Set comment by Explicit message at Unit Comment of Application Object.
- Setting range: max. 32 characters

◎ Last maintenance date

- It saves the last date of maintenance. It can be read/written by Configurator or Explicit message.
- Set maintenance date by Explicit message at I/O Last Maintenance Data Setting of Analog Input Point Object.
  E.g.)Data: 0x07DB020E→07DB (2011), 02 (Februray), 0E (14th)

◎ Input conversion points setting

- Conversion cycle is changed by the number of points (point, channel).
  (conversion cycle: 1ms/point, when using 4 points, it is 4ms). It can be read/written by Configurator or Explicit message. After changing the number of conversion points, re-supply the network power.
- Set the number of conversion points by Explicit message at Number of AD Conversion Points Setting of Analog Input Point Object.
- Setting range: 1 to 4-point (factory default: 4-point), conversion cycle: 1ms/1-point

◎ Display scale

- Set high/low-limit scale value of analog input or output. It can be read by Configurator or Explicit message.

Default Scaling	Function Choice : Scaling Flag bit ON Scaling Type : Default Scaling (factory default)	It is set as 1,000 per 1V (mA). In case of 1-5V, 4-20mA, it is applied from over min. allowable range 0.8V (800), 3.2 (3,200). The below input value is break detection. It outputs as min. allowable range.
None Scaling	Function Choice : Scaling Flag bit OFF Scaling Type : Default Scaling	It is set as default value 0 to 16000 (-8000 to 8000). (0-5V, 1-5V, 0-10V, 4-20mA, 0-20mA: 0 to 16000, -5-5V, -10-10V: -8,000 to 8,000)
User Scaling	Function Choice : Scaling Flag bit ON Scaling Type : User Scaling	Set high/low-limit value to apply at 'Scaling Point 0%' and 'Scaling Point 100%'. Setting range: -28,000 to 28,000

◎ I/O comment

- You can set the comment for I/O. It is able to read/write by Configurator or Explicit message.
- Set I/O comment by Explicit message at I/O Comment of Analog Input Point Object, Analog Output Point Object.
- Setting range: max. 32 characters

◎ Gradient adjustment

- It adjusts the gradient of input/output value or scale value. It is able to read/write by Configurator or Explicit message.
- It is applied when Adjust Gradient Flag bit is set as ON at Function Choice of Analog Input Point Object. Set the range at Adjustment Gradient value.
- Adjustment range: -5 to 5%,
  Setting range: -500 to 500 (factory default: 0)
  E.g.)When input value is 1000, Adjustment Gradient is 500 (+5%) X'=aX, a=1+Adjustment Gradient (0.05), X=1000, X'=1.05×1000=1050

◎ Offset adjustment

- This function is to adjust the error occurring from external analog sensor, etc, not from the unit itself. It is also applied to analog output. It is able to read/write by Configurator or Explicit message.
- It is applied when Adjustment Offset Flag bit is set as ON at Function Choice of Analog Input Point Object. Set the value at Adjustment Offset Value.
- Adjustment range: -5 to 5%,
  Setting range: -500 to 500 (factory default: 0)
  E.g.)When input range is 0 to 10V, Full Scale 0 to 16000, input value is 1600 (1V) and Adjustment Gradient 500 (+5%), X'=X+b, X=1600, b=16000×0.05
  (added input value and percentage of Full Scale)
  X'=1600+800=2400 (1.5V)

◎ Input digital filter

- This function is used when input value vibrates or repeatedly shake by included noise at input signal. Accurate control is available by stable input with this function. It adopts moving average filter method not to affect sampling cycle. It is able to read/write by Configurator or Explicit message.
- It is applied when Moving Average is set as ON at Function Choice of Analog Input Point. Set the number of digital filters at Moving Average Filter of Number.
- Setting range: 0 to 8
  (factory default: 3[Moving Average No_8])

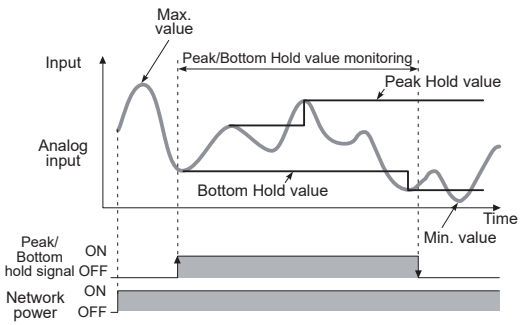
◎ Input min./max. value save

● Min./Max. save when power is ON

It saves min./max. input value from power ON the network. (When network power is OFF, the saved min./max. input value are cleared.)
It is able to read by Configurator or Explicit message.
When Clear Max, Clear Min Flag bit of is ON at Function Choice of Analog Output Point Object, the saved values are cleared and it saves current min./max. value of current input.

● Min./Max. save when Peak/Bottom Hold signal is ON

It memorizes the max./min. value while Peak/Bottom signal is ON. When Peak/Bottom signal is OFF, they are saved.
It is able to read by Configurator or Explicit message.
It is applied when Peak/Bottom is set as ON at Function Choice of Analog Input Point Object. You can check the value of Peak/Bottom at Peak Value and Bottom Value.

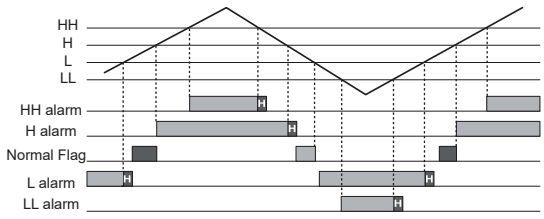


◎ Disconnection detection

- When operating analog input cable (voltage/current input) is disconnected, Broken Wire Flag Bit turns ON at Analog Status Flag Read of Analog Input Point Object. (It operates only for 1-5V, 4-20mA input range.) It is able to read by Configurator or Explicit message.
- If this value is below -5%, it recognizes disconnection and displays '32767' as data value.

◎ Input comparison

- It compares analog input value or the operation value and alarm set value (HH, H, L, LL) and Analog Status Bit flag turns ON at Function Choice of Analog Input Point Object. It is able to read by Configurator or Explicit message.
- If the value is within the setting range between 'H' and 'L', it is available to apply by turning ON Pass Signal Flag bit at Analog Status Flag Read of Analog Input Point Object and turning ON/OFF Comparator Flag bit at Function Choice.



◎ Hysteresis

- In case of comparison output, this function is to increase stability of comparison output against vibration of input signal or chattering.
  It is able to read by Configurator or Explicit message.
- It is applied when Compare Bit flag turns ON at Function Choice of Analog Input Point Object.
  Set the value at Hysteresis Value.
- Setting range: 0 to 16,383 (factory default: 0)

◎ Output value setting for com. error

- When communication error occurs, this function is to set output value of output unit by each channel. It is able to read by Configurator or Explicit message.
- Set Fault state at Fault Action of Analog Output Point.
- Setting range: 0 to 3 (factory default: 1)
  0: Hold Last State-maintains the last status
  2: High Limit-outputs max. value
  1: Low Limit-outputs min. value
  3: Zero Count-outputs 0%

◎ Status flag monitoring

- When the network power voltage is lower than the set value or unit operation time is over the set value, monitoring is available by Status Bit of Application Object.
  It is able to read by Configurator or Explicit message.

※ Flag Bit
Bit 0: Reserved
Bit 1: Network Power Voltage Drops (below the set level)
Bit 2: Life State (Unit)
Bit 3: Reserved
Bit 4: Reserved
Bit 5: Reserved
Bit 6: Reserved
Bit 7: Reserved

◎ Analog data allotment

- This function is to allot analog data. Select the desired data to transmit it to the master unit. It is able to read by Configurator or Explicit message.
- Set the allotment at Analog Data 1/2 Allocation selection of Analog Output Point.
- Setting range: 0 to 2 (factory default: 0)
  0: Analog Input Value
  1: Peak Value
  2: Bottom Value

▣ Assembly Instance ID Assignment

◎ Produced I/O assignment (Input)

It is available to assign I/O data by the selected data at master. When changing Produced I/O data assignment, re-supply the network power of ARD unit to apply the changed assignment.

1) Analog Data1 (Default I/O Data)

Analog Data 1 is assigned as Produced I/O data by Configurator or Explicit message. By property setting, assignment is available as Analog Input Value, Peak Value, Bottom Value.

- Assembly Instance ID: 103,
- Default: 0
- Setting range: 0 to 2 (Analog Input Value: 0, Peak Value: 1, Bottom Value: 2)
- Data type: Word, Data size: 4Word

15	0
Assigned value to Analog Data 1 of Input point 0	
Assigned value to Analog Data 1 of Input point 1	

15	0
Assigned value to Analog Data 1 of Input point 2	
Assigned value to Analog Data 1 of Input point 3	

2) Analog Data2

Analog Data 2 is assigned as Produced I/O data by Configurator or Explicit message. By property setting, assignment is available as Analog Input Value, Peak Value, Bottom Value.

- Assembly Instance ID: 104
- Default: 0
- Setting range: 0 to 2 (Analog Input Value: 0, Peak Value: 1, Bottom Value: 2)
- Data type: Word, Data size: 4Word

15	0
Assigned value to Analog Data 2 of Input point 0	
Assigned value to Analog Data 2 of Input point 1	

15	0
Assigned value to Analog Data 2 of Input point 2	
Assigned value to Analog Data 2 of Input point 3	

3) Generic Status

Generic Status is assigned as Produced I/O data by Configurator or Explicit message.

- Assembly Instance ID: 100
- Data type: Byte, Data size: 1Byte
- Generic Status

Bit 0: Reserved.
Bit 1: Network Power Voltage Drops.
Bit 2: Life State (Unit)
Bit 3: Reserved.
Bit 4: Reserved.
Bit 5: Reserved.
Bit 6: Reserved.
Bit 7: Reserved.

15	0
—	Generic Status

4) Analog Status

Analog Status is assigned as Produced I/O data by Configurator or Explicit message.

- Assembly Instance ID: 105
- Data type: Byte, Data size: 4Byte
- Analog Status

Bit 0: Low Alarm (LL)	Bit 3: High Warning (H)	Bit 6: Under Range
Bit 1: Low Warning (L)	Bit 4: High Alarm (HH)	Bit 7: Over Range
Bit 2: Pass Signal (Nomal)	Bit 5: Broken Wire	

15 0

Analog Status of Input point 1	Analog Status of Input point 0
Analog Status of Input point 3	Analog Status of Input point 2

5) Analog Data1+Analog Data2

Analog Data 1 + Analog Data 2 is assigned as Produced I/O data by Configurator or Explicit message. By property setting, assignment is available as Analog Input Value, Peak Value, Bottom Value.

- Assembly Instance ID: 106
- Default: 0
- Setting range: 0 to 2 (Analog Input Value: 0, Peak Value: 1, Bottom Value: 2)
- Data type: Word, Data size: 8Word

15 0

Assigned value to Analog Data 1 of Input point 0
Assigned value to Analog Data 2 of Input point 0
Assigned value to Analog Data 1 of Input point 1
Assigned value to Analog Data 2 of Input point 1

15 0

Assigned value to Analog Data 1 of Input point 2
Assigned value to Analog Data 2 of Input point 2
Assigned value to Analog Data 1 of Input point 3
Assigned value to Analog Data 2 of Input point 3

6) Analog Status+Generic Status

Analog Status + Generic Status is assigned as Produced I/O data by Configurator or Explicit message.

- Assembly Instance ID: 107
- Data type: Byte, Data size: 5Byte

15 0

Analog Status of Input point 1	Analog Status of Input point 0
Analog Status of Input point 3	Analog Status of Input point 2
—	Generic Status

7) Analog Data+Analog Status

Analog Data 1 + Analog Status is assigned as Produced I/O data by Configurator or Explicit message. By property setting, assignment is available as Analog Input Value, Peak Value, Bottom Value.

- Assembly Instance ID: 108
- Default: 0
- Setting range: 0 to 2 (Analog Input Value: 0, Peak Value: 1, Bottom Value: 2)
- Data type: Byte, Data size: 12Byte

15 0

Assigned value to Analog Data 1 of Input point 0	
Assigned Low Byte at Analog Data 1 of Input point 1	Analog Status of Input point 0
Analog Status of Input point 1	Assigned High Byte at Analog Data 1 of Input point 1
Assigned value to Analog Data 1 of Input point 2	
Assigned Low Byte at Analog Data 1 of Input point 3	Analog Status of Input point 2
Analog Status of Input point 3	Assigned High Byte at Analog Data 1 of Input point 3

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Keep away from high voltage lines or power lines to prevent inductive noise.
   In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
   Do not use near the equipment which generates strong magnetic force or high frequency noise.
4. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

Modbus Sensor Connector Type Digital Remote I/O

▣ Features

- Modbus RTU standard protocol
- Saving work time for wiring with sensor connector
  (CNE series, sold separately)
- Compact size
  : Small size with W26×L76×H54mm to install at narrow space
  : Available DIN Rail mounting and bolt mounting method
- Low-speed (16-bit/30CPS) counter function
- Real-time monitoring by various functions
  : Communication speed auto-recognition
  : Reading number of expansion units and specifications,
  Reading model name of basic and expansion units
  : Monitoring Single byte input/output, Multi byte input/output and status Flag
- Easy expansion
  : Available to connect up to 63 basic units per 1 master unit
  : Available to connect up to 7 expansion units per 1 basic units
  (controllable input/output for max. 64 points)
  : Combines the desired specifications of input/output by various input/output units
  : Organizes power and communication system by only communication cable lines
- High reliability
  : Built-in surge, short, overheat, reverse power polarity and static prevention circuits

Please read "Safety Considerations" in the instruction manual before using.

▣ Ordering Information

AR M — D I 08 N — 4S

Terminal block	4S	Sensor connector type (4-pin socket)
I/O specifications	N	NPN open collector
	P	PNP open collector
I/O points	08	8 points type
I/O type	I	Input type
	O	Output type
Digital/Analog	D	Digital type
Network	M	Basic unit (Modbus RTU)
	X	Expansion unit (DeviceNet/Modbus)
Item	AR	Autonics Remote I/O

▣ Models

Models		Specification
Basic unit	Expansion unit	
ARM-DI08N-4S	ARX-DI08N-4S	10-28VDC NPN input 8-point, low-speed counter (10mA/point)
ARM-DI08P-4S	ARX-DI08P-4S	10-28VDC PNP input 8-point, low-speed counter (10mA/point)
ARM-DO08N-4S※	ARX-DO08N-4S※	10-28VDC NPN output 8-point, low-speed counter (0.3mA/point)
ARM-DO08P-4S※	ARX-DO08P-4S※	10-28VDC PNP output 8-point, low-speed counter (0.3mA/point)

※Low speed counter of digital output type is available only when using with digital input type.

▣ Manual

For the detail information and instructions of communication setting and Modbus mapping table, please refer to user manual for communication, and be sure to follow cautions written in the technical descriptions (catalog, website).
Visit our website (www.autonics.com) to download manuals.

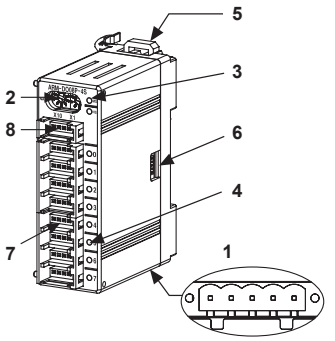
■ Specifications

Model	Basic unit	ARM-DI08N-4S	**ARM-DI08P-4S**	**ARM-DO08N-4S**	**ARM-DO08P-4S**
	Expansion unit	**ARX-DI08N-4S**	**ARX-DI08P-4S**	**ARX-DO08N-4S**	**ARX-DO08P-4S**
Power supply		Rated voltage: 24VDC⎓, Voltage range: 12-28VDC⎓			
Power consumption		Max. 3W			
I/O points		NPN input 8-point	PNP input 8-point	NPN output 8-point	PNP output 8-point
Control I/O	Voltage	10-28VDC⎓ input		10-28VDC⎓ output (voltage drop: max. 0.5VDC⎓)	
	Current	10mA/point (sensor current: 150mA/points)		0.3A/point (leakage current: max. 0.5mA)	
	Common	8 points, Common			
Special function (input)		Counter for 16-bit (30CPS※1) (only when using digital input unit of ARM, ARX)			
Communication speed※2		2400, 4800, 9600, 19200, 38400, 57600, 115200bps (default: 9600bps)			
Communication method		2-wire half duplex			
Communication distance		Max. 800m			
Multi-drop		Max. 32 multi-drop			
Medium access		POLL			
Application standard		Compliance with EIA RS485			
Protocol		Modbus RTU			
Data bit		8-bit			
Stop bit		1-bit or 2-bit (default: 2-bit)			
Parity bit		None/Odd/Even (default: none)			
Isolation method		I/O and inner circuit: photocoupler insulation Modbus to internal bus and inner circuit: insulation Unit power: non-insulation			
Insulation resistance		Over 200MΩ (at 500VDC megger)			
Noise immunity		±240V the square wave noise (pulse width: 1μs) by the noise simulator			
Dielectric strength		1,000VAC 50/60Hz for 1 min			
Vibration		1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Shock		500m/s^2 (approx. 50G) in each X, Y, Z direction for 3 times			
Environment	Ambient temp.	-10 to 55℃, storage: -25 to 75℃			
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH			
Protection structure		IP20 (IEC standards)			
Protection circuit		Surge, short-circuit, overheat (over 165℃) and ESD protection, reversed polarity protection circuit			
		Overcurrent protection circuit (operated at min. 0.17A)		Overcurrent protection circuit (operated at min. 0.7A)	
Indicator		Network status (NS) LED (green, red), unit status (MS) LED (green, red) I/O status LED (input: green, output: red)			
Material		Front case, body case: Polycarbonate			
Mounting		DIN rail or bolt mounting type			
Approval		CE			
Weight※3	Basic	Approx. 123.3g (approx. 61.8g)	Approx. 123.3g (approx. 61.8g)	Approx. 123.3g (approx. 61.8g)	Approx. 123.3g (approx. 61.8g)
	Expansion	Approx. 117.5g (approx. 56g)	Approx. 118.5g (approx. 57g)	Approx. 119.5g (approx. 58g)	Approx. 120.5g (approx. 59g)

※1: CPS (counter per second): Specification of accepting external signals per second
※2: The communication speed is automatically set to the communication speed of the Master (PC, PLC, etc.).
When changing the communication speed during operation, the network status (NS) LED flashes in red and communication is not possible.
※3: The weight includes packaging. The weight in parenthesis is for unit only.
※Environment resistance is rated at no freezing or condensation.

▣ Unit Descriptions

◎ Basic unit

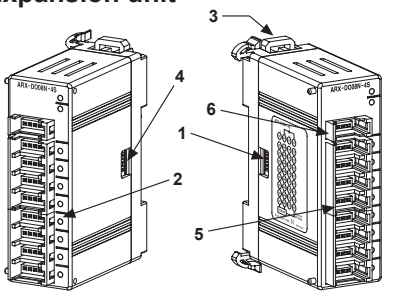


1. Network connector

No.	For	Organization
5	24VDC (+)	5: 24VDC 4: GND 3: N·C 2: B 1: A
4	GND	
3	N·C	
2	B	
1	A	

2. Rotary switch for address: Rotary switch for setting the address ×10 represents tens digit and ×1 represents ones digit.
3. Status LED: It displays the status of unit (MS) and network (NS).
4. I/O status LED: It displays each I/O status.
5. Rail lock: It is used for mounting DIN rail or with bolts.
6. Connector output part: It connects an expansion unit.
7. Sensor connector: It is used for connecting external device I/O.
8. External power connector: It is used for supplying external power.

◎ Expansion unit



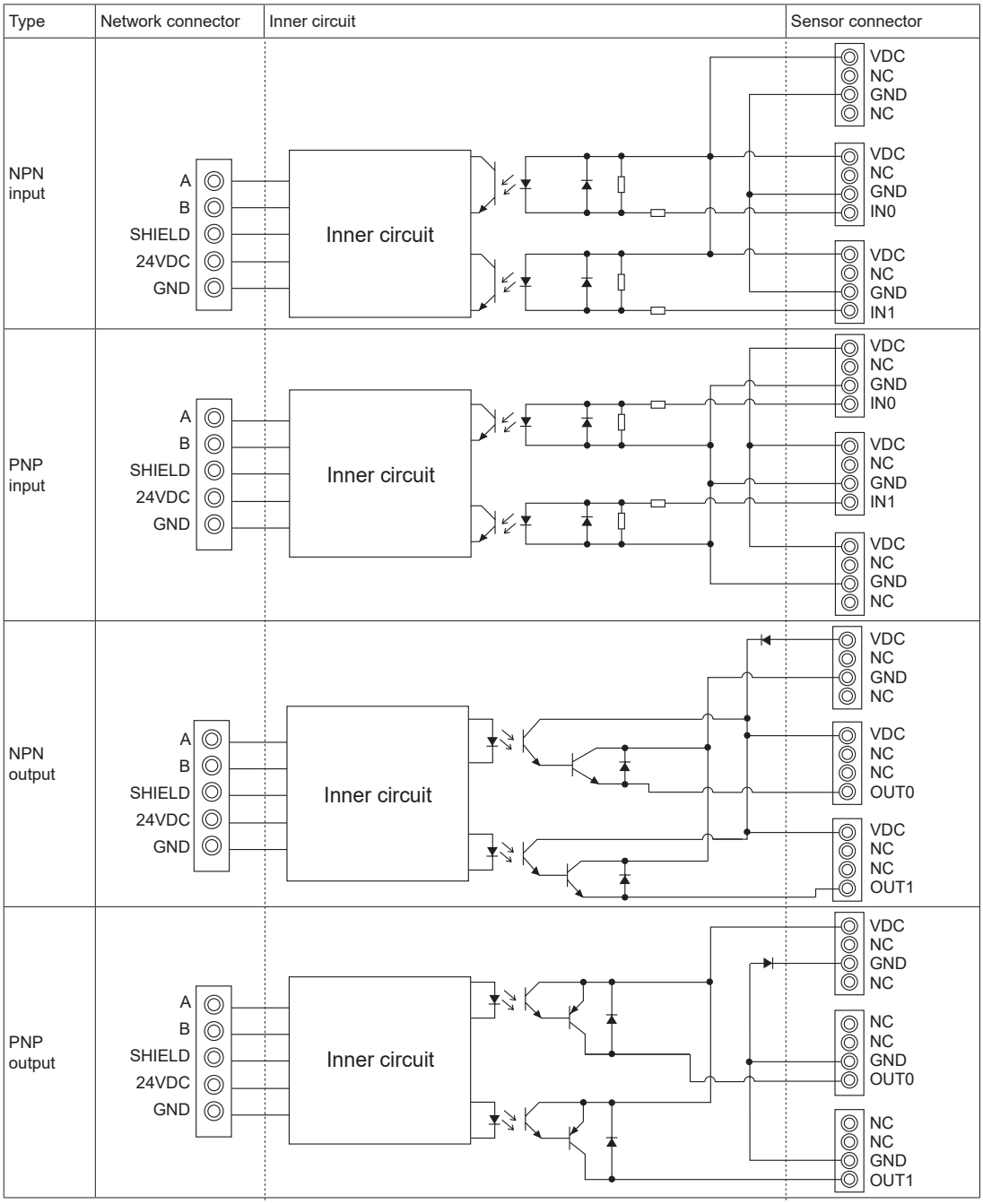
1. Connector input part: It connects expansion unit and is joined into the expansion connector output.
2. I/O status LED: It displays each I/O status.
3. Rail lock: It is used for mounting DIN rail or with bolts.
4. Connector output part: It connects an expansion unit.
5. Sensor connector: It is used for connecting external device I/O.
6. External power connector: It is used for supplying external power.

▣ Status LED

(☼: ON, ◑: Flash, ●: OFF)

Item	LED status		Description
	Red	Green	
Unit status (MS) LED	☼	●	Error of expansion units
	◑	●	Error of MAC ID
	●	☼	Normal operation
	●	●	Power is not supplied
Network status (NS) LED	☼	●	Not supported communication speed (at auto baud rate)
	◑	●	Error of packet
	●	☼	Normal communication
	●	◑	Communication standby

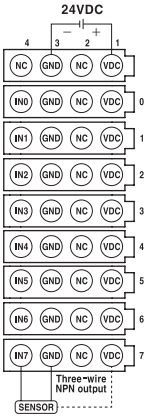
▣ I/O Circuit Diagram



▣ Connections

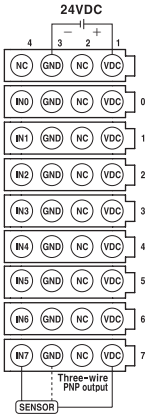
※When wiring the communication connector, use AWG20 cable and tighten the connector screw with a tightening torque of 0.5N·m.

●ARM-DI08N-4S
●ARX-DI08N-4S



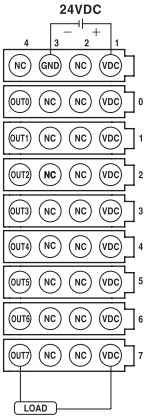
IN(NPN): 8P, 24VDC 10mA

●ARM-DI08P-4S
●ARX-DI08P-4S



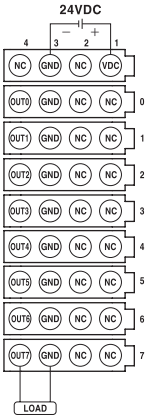
IN(PNP): 8P, 24VDC 10mA

●ARM-DO08N-4S
●ARX-DO08N-4S



OUT(NPN): 8P, 24VDC 0.3A/Point

●ARM-DO08P-4S
●ARX-DO08P-4S



OUT(PNP): 8P, 24VDC 0.3A/Point

▣ Terminating Resistance

● 120Ω ● 1% of metallic film ● 1/4W

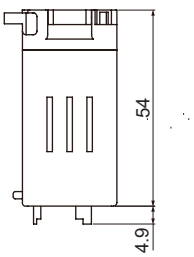
※Connect terminating resistances on the both ends of the network cables. If not connecting terminating resistances, impedance can be too high or low. It may cause network problems.

▣ Dimensions

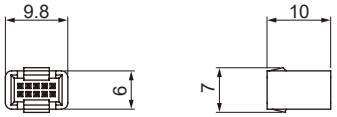
※Same dimensions are applied to both basic and expansion unit.

※Tightening torque for mounting bolts: 1.8 to 2.5N·m

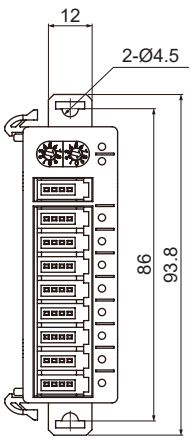
(unit: mm)



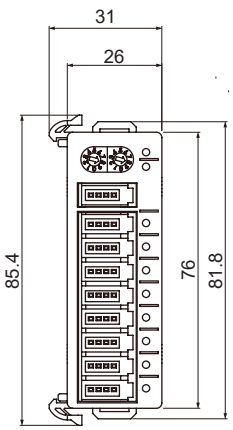
● Expansion connector
(supplied only for expansion unit)

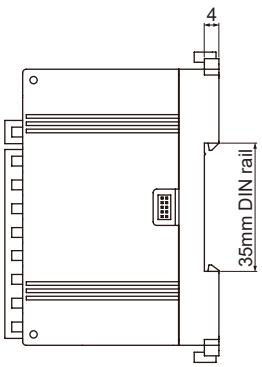


● Rail lock position: mounting with bolt

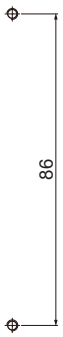


● Rail lock position: mounting on DIN rail





• Panel cut-out



▣ Setup and Installation

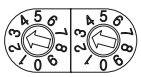
◎ Setting node address

-Setting address is able to be done by rotary switch for address, or by in the EEPROM.
-If the rotary switch for address' number is "00", the address is available to set by in the EEPROM.
The others, the desired number of rotary switch is that address.
- The address of the connected unit must not be duplicated.
When changing the address during operation, the unit status (MS) LED flashes in red and the unit communicates to the address before the change.

● By rotary switch for address

① Two rotary switches are used for setting address. The X10 switch represents tens digit and the X1 switch represents ones digit. The address can be set 01 to 99.
②After setting the desired address, re-supply the unit power for applying the changed address.

(E.g.)



X10 X1

The X10 and X1 switches point both at "3", the address is "33".

● By in the EEPROM for address

①During communicate status with master system (PLC or PL), set the desired address on the 41029 EEPROM MAC ID parameter.
②The set address is changed after unit power is supplied. Re-supply the unit power for applying the changed address.

◎ Unit Installation

● Mounting on panel

① Pull two Rail locks on the rear part of a unit, there is a fixing bolt hole.
② Place unit on a panel to be mounted.
③ Make a hole on a fixing bolt hole position.
④ Fasten the bolt to fix the unit tightly. Please set the tightening torque under 0.5N·m.

● Mounting on DIN rail

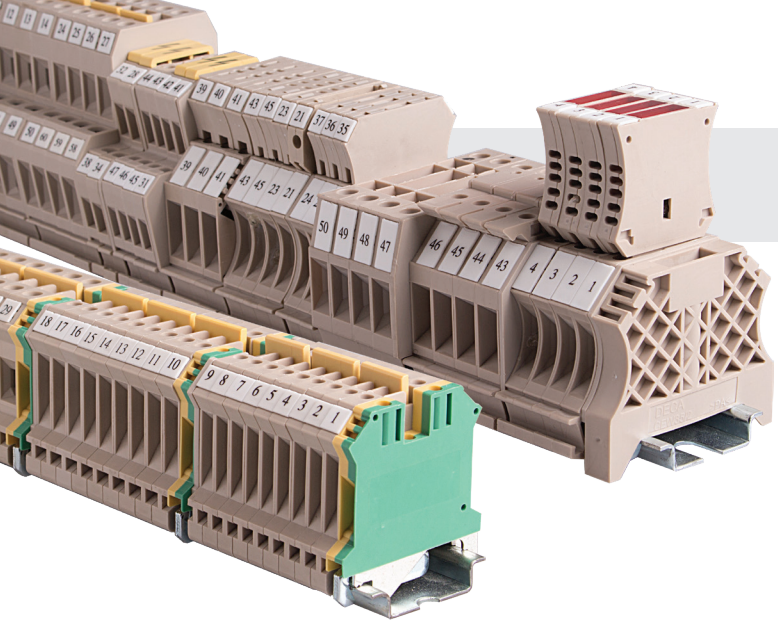
①Pull two Rail locks on the rear part of a unit.
②Place the unit on DIN rail to be mounted.
③Press Rail locks to fix the unit tightly.

● Connection of basic and expansion units

① Turn OFF the power of a basic unit.
② Remove the cover of connector for extension with nippers.
③ Connect connector input part of an expansion unit and connector output part of a basic unit with the connector which is enclosed with an expansion unit box.
④ Connected expansion units are installed as the right figure.
⑤ Supply power to the basic unit.
※Re-supply power to the basic unit, and it recognizes expansion units.

▣ Cautions during Use

1. Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
2. 24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
3. Use only designated connector and do not apply excessive power when connecting or disconnecting the connectors.
4. Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line. Do not use near the equipment which generates strong magnetic force or high frequency noise.
5. Do not connect or disconnect the expansion unit when power is being supplied.
6. This unit may be used in the following environments.
   ①Indoors (in the environment condition rated in 'Specifications')
   ②Altitude max. 2,000m
   ③Pollution degree 2
   ④Installation category II

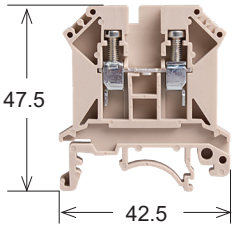


Screw Clamp Terminal Blocks

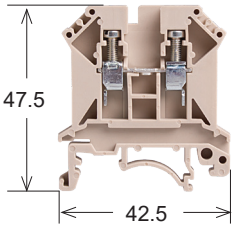
Key Features

- 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.

Thickness: 5

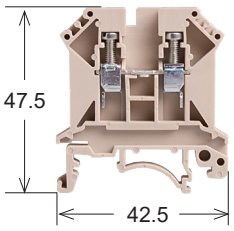


Thickness: 6

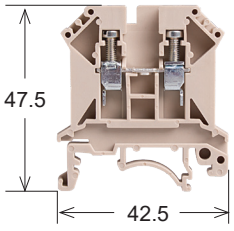


Model	CDU 2.5N			CDU 4N		
Techincal Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28	600V	30A	AWG10-22
IEC	800V	24A	0.5-2.5mm²	800V	32A	0.5-4mm²
Torque (lb·in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	8-10mm			8-10mm		
Available colors	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		
Warning Cover	WSS 2.5			WSS4		
Marking Tags	W5 W5Z W5K			W6 W6Z W6K		

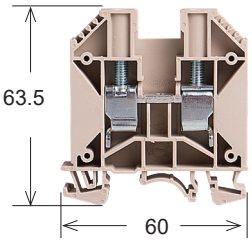
Thickness: 8



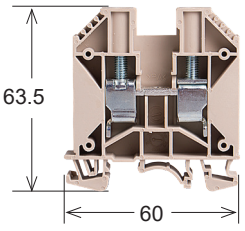
Thickness: 10



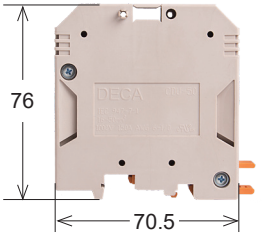
Thickness: 12



Thickness: 16

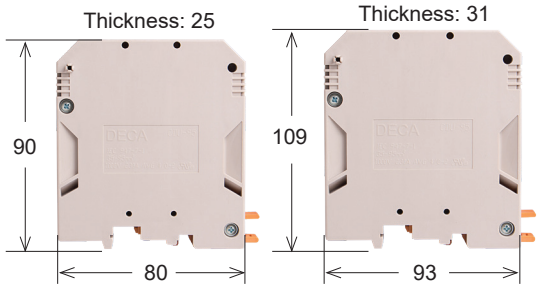


Thickness: 20

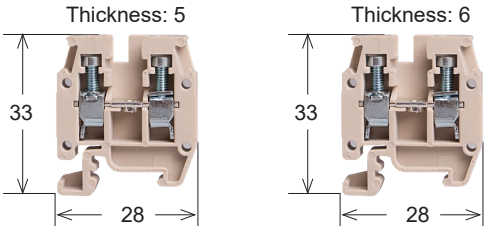


Model	CDU 6N			CDU 10N			CDU 16			CDU 35			CDU 50		
Techincal Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	50A	AWG8-26	600V	65A	AWG6-24	600V	78A	AWG4-14	1000V	114A	AWG2-10	1000V	150A	AWG1/0-6
IEC	800V	57A	0.5-6mm²	800V	76A	0.5-10mm²	1000V	76A	2.5-16mm²	1000V	125A	4-35mm²	1000V	150A	16-50mm²
Torque (lb·in)	14			19			31			51			53		
Clamping Screw	M4			M4			M5			M6			M6		
Stripping length	10-12mm			10-12mm			15-17mm			16-18mm			25-30mm		
Available colors	Beige, Grey, Blue			Beige, Grey, Blue			Beige			Beige			Beige		
Accessories															
End Bracket	SEW35			SEW35			SEW35			SEW35			SEW35		
	CEW35/2			CEW35/2			CEW35/1			CEW35/1			CEW35/1		
End Cover	CEP6			CEP6			CEP2			CEP2					
Cross Jumper	CQV 6/2 CQV 6/3			CQV 10/2 CQV 10/3			CQV 16/2 CQV 16/3			CQV 35/2 CQV 35/3			CQV 50/2		
	CQV 6/4 CQV 6/10			CQV 10/4 CQV 10/10			CQV 16/4			CQV 35/4			CQV 50/3		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10			CQB 10/2, CQB 10/3, CQB 10/10			CQB 16/2, CQB 16/3, CQB 6/10			CQB 35/2, QB 35/3, CQB 35/10			CQB 50/2, CQB 50/3		
Warning Cover	WSS6			WSS10			WS-16			WS-35					
Marking Tags	W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K			W6 W6Z W6K		
							W8 W8Z W8K			W8 W8Z W8K			W8 W8Z W8K		

Screw Clamp Miniature Terminal Blocks

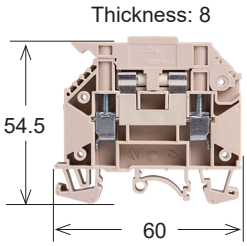


Model	CDU 95			CDU 150		
Techincal Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	1000V	230A	AWG4/0-2	600V	275A	AWG2-300
IEC	1000V	232A	35-95mm²	1000V	309A	35-150mm²
Torque (lb·in)	150			165		
Clamping Screw	M8			M10		
Stripping length	30-35mm			30-40mm		
Available 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 W8 W8Z W8K			W6 W6Z W6K W8 W8Z W8K		



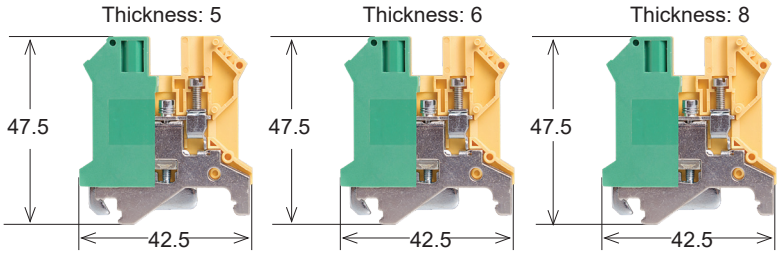
Model	CDU 2.5M			CDU 4M		
Techincal Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	300V	20A	AWG12-22	300V	30A	AWG10-22
IEC	400V	24A	0.2-2.5mm²	500V	30A	0.5-4mm²
Torque (lb·in)	7			7.7		
Clamping Screw	M2.6			M3		
Stripping length	6mm			6mm		
Available colors	Beige			Beige		
Accessories						
End Bracket	CEW15			CEW15		
End Cover	CEP7			CEP7		
Cross Jumper	CQVM 2.5/2 CQVM 2.5/3 CQVM 2.5/10			CQVM 4/2 CQVM 4/3 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



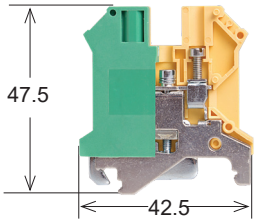
Model	CTR4SI-EN		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	7.5A	AWG10-22
IEC	800V	10A	0.5-4mm²
Torque (lb·in)	7.7		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2		
	SEW35		
End Cover	CEP5		
Comb Link	CQB 6/2, CQB 6/3, CQB 6/10		
Diode Plug	-		
Marking Tags	W6 W6Z W6K W8 W8Z W8K		

Screw Clamp Ground Terminal Blocks

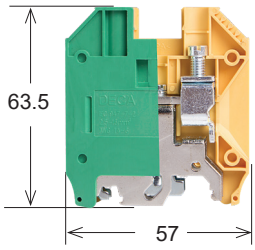


Model	CPE 2.5N	CPE 4N	CPE 6N
UL/CSA	AWG 12-26	AWG 10-26	AWG 8-26
IEC	0.2-2.5mm²	0.2-4mm²	0.2-6mm²
Torque (lb·in)	7	8.5	16
Clamping Screw	M3	M3	M4
Stripping length	10-14mm	10-14mm	12-16mm
Available colors	Green+Yellow	Green+Yellow	Green+Yellow
Accessories			
End Bracket	SEW35	SEW35	SEW35
	CEW35/2	CEW35/2	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 W7 W7Z W7K	W6 W6Z W6K W8 W8Z W8K	W6 W6Z W6K W8 W8Z W8K

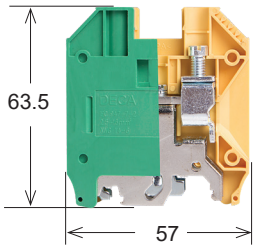
Thickness: 10



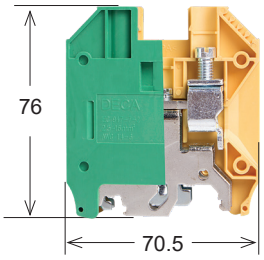
Thickness: 12



Thickness: 16



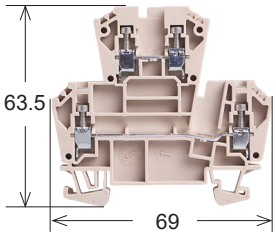
Thickness: 20



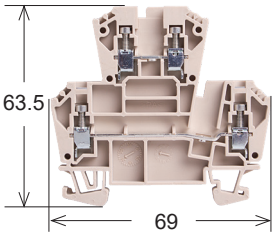
Model	CPE 10N	CPE 16	CPE 35	CPE 50
UL/CSA Wire Size	AWG 6-16	AWG 6-14	AWG 2-10	AWG 1/0-6
IEC Wire Size	0.5-10mm²	2.5-16mm²	4-35mm²	16-50mm²
Torque (lb·in)	18	35	51	70
Clamping Screw	M4	M5	M6	M6
Stripping length	12-16mm	14-18mm	14-18mm	20-25mm
Available colors	Green+Yellow	Green+Yellow	Green+Yellow	Green+Yellow
Accessories				
End Bracket	SEW35	SEW35	SEW35	SEW35
	CEW35/2	CEW35/1	CEW35/1	CEW35/1
Protection Cover	DP1	DP1	DP1	-
Retaining Plate	AD1	AD2	AD2	-
Comb Link	CQB 10/2, CQB 10/3, CQB 10/4	-	-	-
Marking Tags	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K	W6 W6Z W6K
	W8 W8Z W8K	W8 W8Z W8K	W8 W8Z W8K	W8 W8Z W8K

Screw Clamp Double Level Terminal Blocks

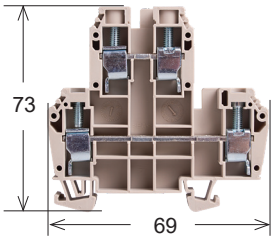
Thickness: 5



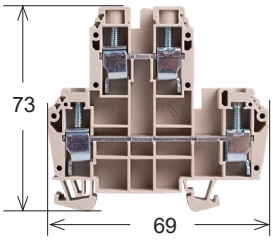
Thickness: 6



Thickness: 8



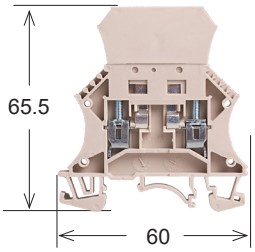
Thickness: 10



Model	CDK 2.5			CDK 4			CDK 6			CDK 10		
Techincal Data	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-22	600V	30A	AWG10-22	600V	41A	AWG 8-20	600V	65A	AWG 6-16
IEC	800V	24A	0.5-2.5mm²	500V	32A	0.5-4mm²	500V	50A	0.5-6mm²	500V	76A	1.5-10mm²
Torque (lb·in)	5			8			14			19		
Clamping Screw	M2.6			M3			M4			M4		
Stripping length	6mm			6mm			10-12mm			10-12mm		
Available colors	Beige			Beige			Beige			Beige		
Accessories												
End Bracket	CEW35/2			CEW35/2			CEW35/2			CEW35/2		
	SEW35			SEW35			SEW35			SEW35		
End Cover	CEP3			CEP3			CEP4			CEP4		
Cross Jumper	CQV 2.5/2 CQV 2.5/3			CQV 4/2 CQV 4/3			CQV 6/2 CQV 6/3			CQV 10/2 CQV 10/3		
	CQV 2.5/4 CQV 2.5/10			CQV 4/4 CQV 4/10			CQV 6/4 CQV 6/10			CQV 10/4 CQV 10/10		
Comb Link	CQB2.5/2, CQB2.5/3, CQB2.5/10			CQB4/2, CQB4/3, CQB4/10			CQB6/2, CQB6/3, CQB6/10			CQB10/2, CQB10/3, CQB10/10		
Warning Cover	WSS-2.5			WSS-4			WSS-6			WSS-10		
Marking Tags	W5Z W5K			W6Z W6K			W6Z W6K			W6Z W6K		

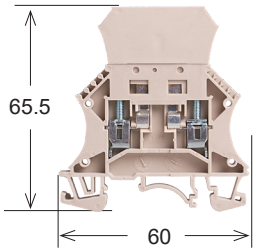
Diode Terminal Blocks

Thickness: 5



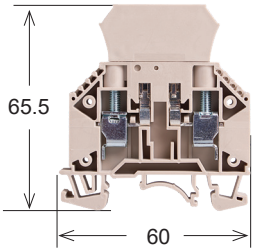
Model	CTR 2.5D		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	2A	AWG12-22
IEC	400V	2A	0.5-2.5mm²
Torque (lb·in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2		
	SEW35		
End Cover	CEP1		
Partition	CEP2		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K		
	W7 W7Z W7K		

Thickness: 6



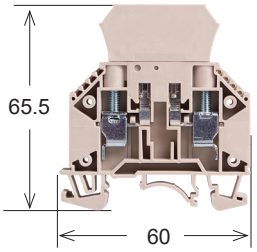
CTR 4D			
Rated Voltage	Rated Current	Wire Size	
600V	2A	AWG10-22	
800V	2A	0.5-4mm²	
6			
M3			
10-12mm			
Beige			
CEW35/2			
SEW35			
CEP1			
CEP2			
CQB 4/2, CQB 4/3, CQB 4/10			
CSD4			
W6 W6Z W6K			
W8 W8Z W8K			

Thickness: 8



CTR 6D		
Rated Voltage	Rated Current	Wire Size
600V	3A	AWG12-22
500V	3A	0.5-6mm²
14		
M4		
12-14mm		
Beige		
CEW35/2		
SEW35		
CEP5		
CEP2		
CQB 6/2, CQB 6/3, CQB 6/10		
CSD6		
W6 W6Z W6K		
W8 W8Z W8K		

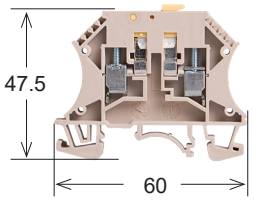
Thickness: 10



CTR 10D		
Rated Voltage	Rated Current	Wire Size
600V	3A	AWG12-22
500V	3A	1.5-10mm²
19		
M4		
12-14mm		
Beige		
CEW35/2		
SEW35		
CEP5		
CEP2		
CQB 10/2, CQB 10/3, CQB 10/10		
CSD10		
W6 W6Z W6K		
W8 W8Z W8K		

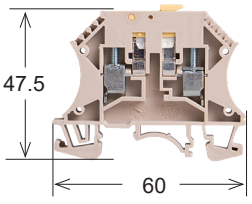
Screw Clamp Disconnect Terminal Blocks

Thickness: 5



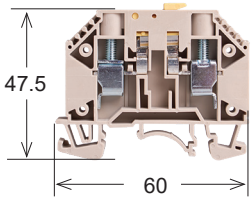
Model	CTR 2.5		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	12A	AWG12-22
IEC	500V	15A	0.5-2.5mm²
Torque (lb·in)	4.5		
Clamping Screw	M3		
Stripping length	10-12mm		
Available colors	Beige		
Accessories			
End Bracket	CEW35/2		
	SEW35		
End Cover	CEP1		
Comb Link	CQB 2.5/2, CQB 2.5/3, CQB 2.5/10		
Diode Plug	CSD2.5		
Marking Tags	W5 W5Z W5K		
	W7 W7Z W7K		

Thickness: 6



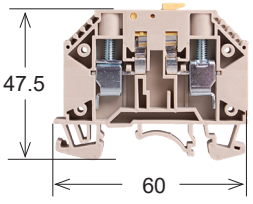
CTR 4		
Rated Voltage	Rated Current	Wire Size
600V	22A	AWG10-22
800V	22A	0.5-4mm²
6		
M3		
10-12mm		
Beige		
CEW35/2		
SEW35		
CEP1		
CQB 4/2, CQB 4/3, CQB 4/10		
CSD4		
W6 W6Z W6K		
W8 W8Z W8K		

Thickness: 8



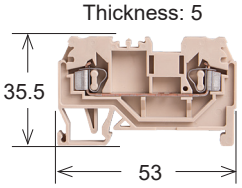
CTR 6		
Rated Voltage	Rated Current	Wire Size
600V	24A	AWG8-22
630V	24A	0.5-6mm²
14		
M4		
12-14mm		
Beige		
CEW35/2		
SEW35		
CEP5		
CQB 6/2, CQB 6/3, CQB 6/10		
CSD6		
W6 W6Z W6K		
W8 W8Z W8K		

Thickness: 10

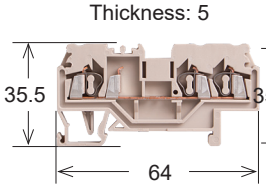


CTR 10		
Rated Voltage	Rated Current	Wire Size
600V	40A	AWG6-22
630V	40A	1.5-10mm²
19		
M4		
12-14mm		
Beige		
CEW35/2		
SEW35		
CEP5		
CQB 10/2, CQB 10/3, CQB 10/10		
CSD10		
W6 W6Z W6K		
W8 W8Z W8K		

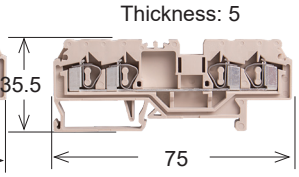
Spring Clamp Terminal Blocks



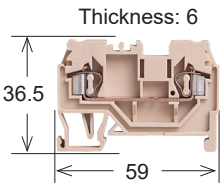
Model	SDU2.5		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm²
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP1		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



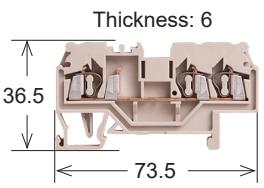
Model	SDU2.5/3		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm²
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP2		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



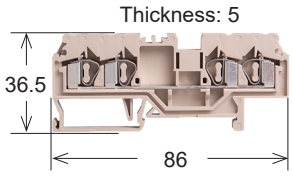
Model	SDU2.5/4		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	18A	AWG12-28
IEC	800V	24A	0.2-2.5mm²
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP3		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		



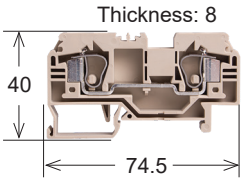
Model	SDU4		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm²
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP4		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



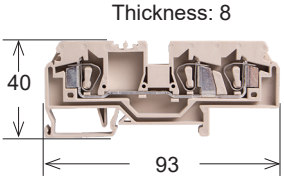
Model	SDU4/3		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm²
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP5		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



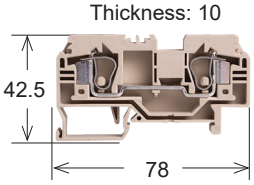
Model	SDU4/4		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG12-28
IEC	800V	32A	0.2-4mm²
Stripping length	9-10mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP6		
Comb Link	SQV4/2, SQV4/3		
Marking Tags	W6 W6Z W6K		



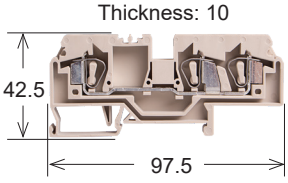
Model	SDU6		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG10-24
IEC	800V	41A	0.2-6mm²
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP7		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



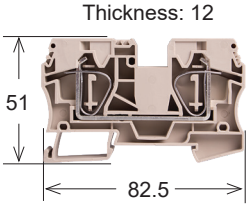
Model	SDU6/3		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	30A	AWG 10-24
IEC	800V	41A	0.2-6mm²
Stripping length	12-13mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP8		
Comb Link	SQV6/2, SQV6/3		
Marking Tags	W6 W6Z W6K		



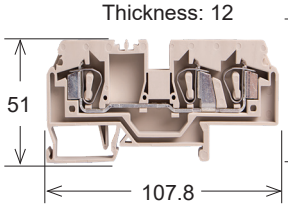
Model	SDU10		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm²
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP9		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



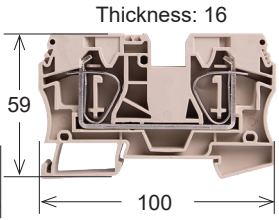
Model	SDU10/3		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	38A	AWG 8-24
IEC	800V	57A	0.2-10mm²
Stripping length	15-16mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP10		
Comb Link	SQV10/2, SQV10/3		
Marking Tags	W6 W6Z W6K		



Model	SDU16		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	85A	1.5-16mm²
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		

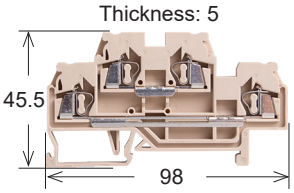


Model	SDU16/3		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	65A	AWG4-16
IEC	1000V	76A	1.5-16mm²
Stripping length	16-17mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP13		
Comb Link	SQV16/2		
Marking Tags	W6 W6Z W6K		



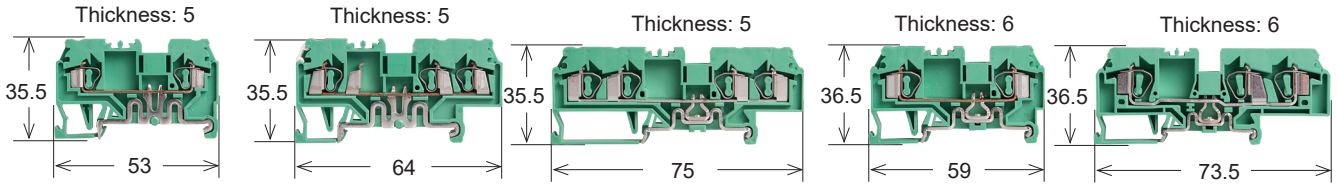
Model	SDU35		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	120A	AWG 2-12
IEC	800V	125A	2.5-35mm²
Stripping length	25mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP14		
Comb Link	SQV35/2		
Marking Tags	W6 W6Z W6K		

Spring Clamp Double Level Terminal Blocks

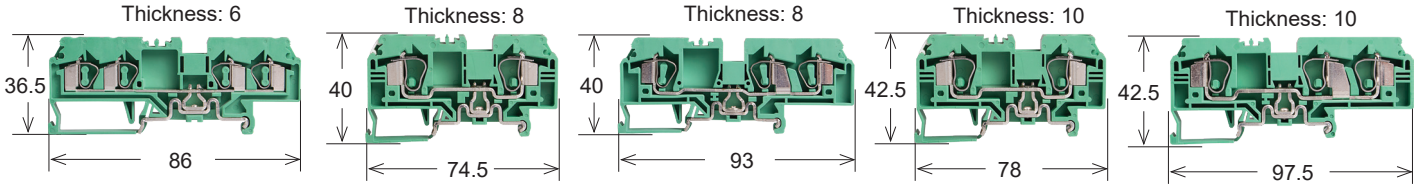


Model	SDK2.5		
Techincal Data	Rated Voltage	Rated Current	Wire Size
UL/CSA	600V	20A	AWG 12-28
IEC	800V	24A	0.2-2.5mm²
Stripping length	8-9mm		
Available colors	Beige, Grey, Blue		
Accessories			
End Bracket	SEW35		
End Cover	SEP11		
Comb Link	SQV2.5/2, SQV2.5/3		
Marking Tags	W5 W5Z W5K		

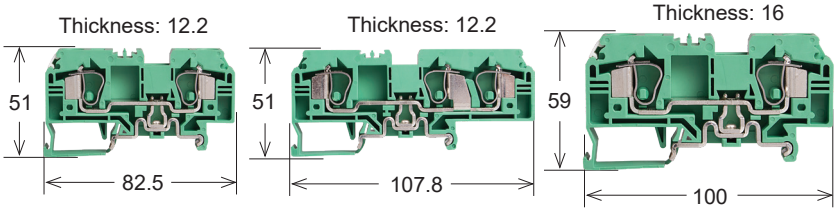
Spring Clamp Ground Terminal Blocks



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	0.2-2.5mm²	0.2-2.5mm²	0.2-2.5mm²	0.2-4mm²	0.2-4mm²
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



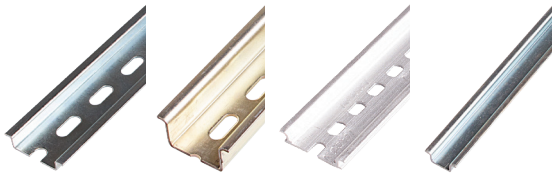
Model	SPE4/4	SPE6	SPE6/3	SPE10	SPE10/3
UL/CSA Wire Size	AWG 12-28	AWG 10-24	AWG 10-24	AWG 8-24	AWG 8-24
IEC Wire Size	0.2-4mm²	0.2-6mm²	0.2-6mm²	0.2-10mm²	0.2-10mm²
Stripping length	9-10mm	12-13mm	12-13mm	15-16mm	15-16mm
Available colors	Green + Yellow	Green + Yellow	Green + Yellow	Green + Yellow	Green + 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	1.5-16mm²	1.5-16mm²	2.5-35mm²
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

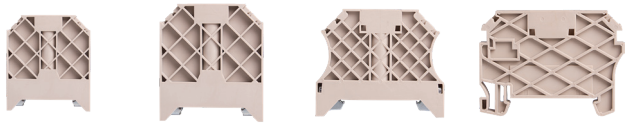


TS-37	TS-31	KTB2-CHB	TS-15
35 x 7.5mm	35 x 15mm	35 x 7.5mm	15 x 5.5 mm
Steel	Steel	Aluminum	Steel

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

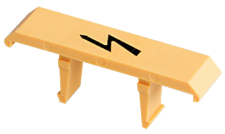
End Covers/Partitions (W X H)

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
3 X 56.5 X 58
CDU2.5 CDU4 CDU6 CDU10
CPE2.5 CPE4 CPE6 CPE10
CTR2.5 CTR4 CTR6 CTR10

AD 2
3.5 X 56.5 X 74
CDU16 CDU35
CPE16 CPE35
CTR2.5D CTR4D CTR6D STR10D
CTK2.5 CTK4

Cross Jumpers

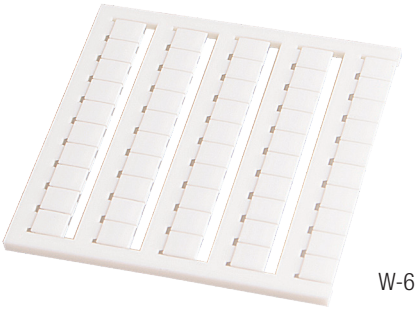
Type	CQV-2.5	CQV-4	CQV-6	CQV-10	CQV-16	CQV-35	CQV-50	CQV-95
Pole	2, 3, 10	2, 3, 4, 10	2, 3, 10	2, 3, 10	2, 3, 4	2, 3, 4	2, 3	-
Terminal Type	CDU 2.5 CDK 2.5	CDU 4 CDK 4	CDU 6 CDK 6	CDU 10 CDK 10	CDU16	CDU35	CDU50	CDU95

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

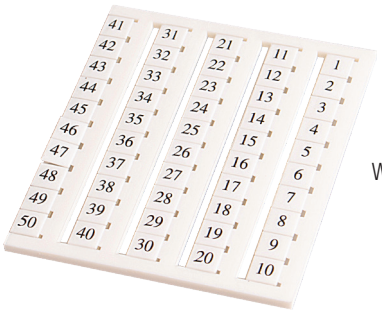
Blank Marking Tags



W-6

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/CDKCPE/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

Legend Marking Tags



W5K-1/50

W7K-A/Z

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/CDKCPE/CTR 4 ~ 10
W6K-51/100	6 X 6	51 to 100	10	CDU/CDKCPE/CTR 4 ~ 10
W6K-A/Z	6 X 6	A to Z	10	CDU/CDKCPE/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

KTB1 Series

Barrier Terminal Blocks

Ordering Information

KTB1 - ① ②

10 & 30A

① **Rated Current**	**010**	10A	**030**	30A
② **Number of Poles**	**03**	3 poles	**04**	4 poles
	06	6 poles	**10**	10 poles

20A

① **Rated Current**	**020**	20A		
② **Number of Poles**	**03**	3 poles	**04**	4 poles
	06	6 poles	**10**	10 poles
	12	12 poles	**15**	15 poles
	20	20 poles		

60 - 600A

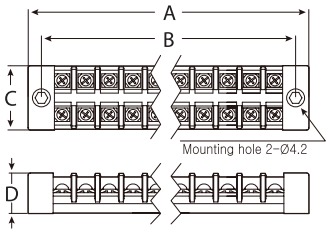
① **Rated Current**	**060**	60A	**100**	100A
	150	150A	**200**	200A
	300	300A	**400**	400A
	500	500A	**600**	600A
② **Number of Poles**	**03**	3 poles	**04**	4 poles

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

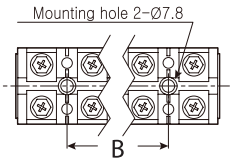
unit:mm



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
	12	**15**	**20**	**-**	**12**	**15**	**20**	**-**	**12**	**15**	**20**	**-**	**12**	**15**	**20**	**-**
	163	198	254.5	-	147	185.5	242	-	30	30	30	-	19.5	19.5	19.5	-

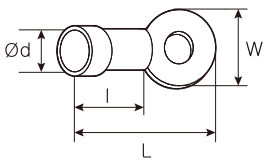


KTB1-060 ~ KTB1-600

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

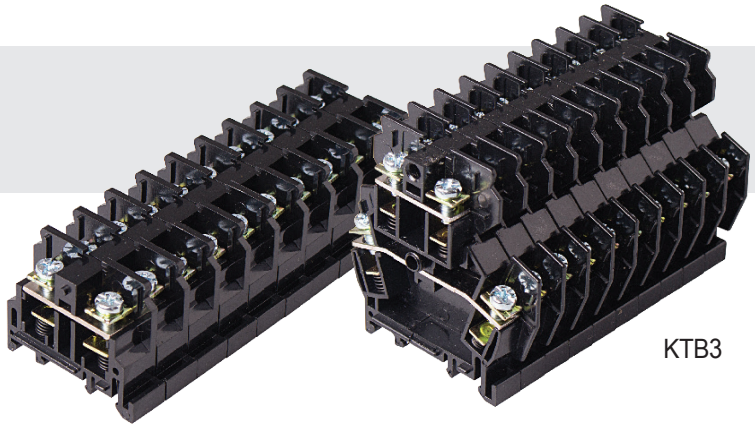
unit:mm



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

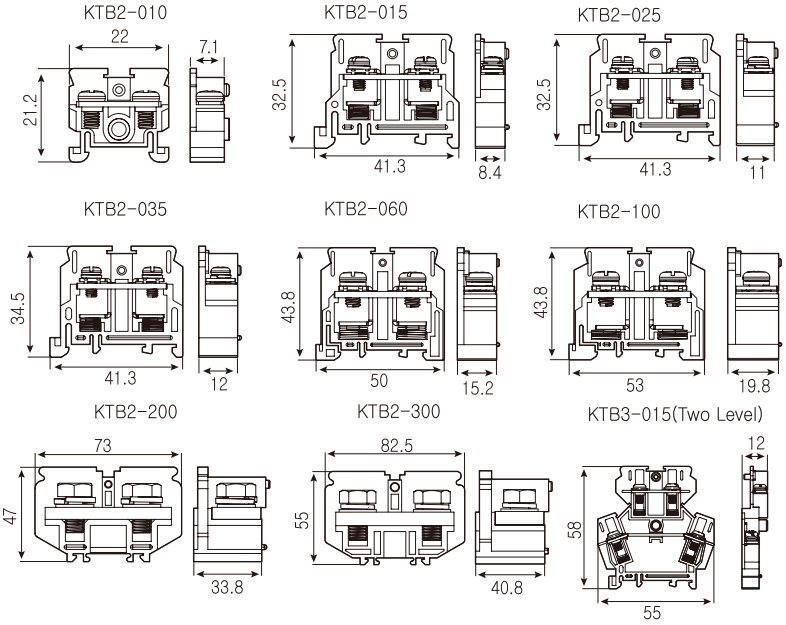
Modular Barrier Terminal Blocks



KTB2 KTB3

Dimensions

unit:mm



Ordering Information

KTB ① - ②

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

KTB2-015	KTB2-S1512K
KTB2-025	KTB2-S2506K
KTB2-035	KTB2-S3508K

Stoppers

KTB2-STA

15mm	STA
35mm	STB
35mm (plastic)	STC

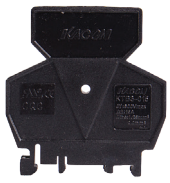
KTB2-STB

KTB2-STC

Separators

KTB2-A10

KTB2-A35

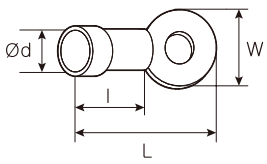


KTB3-A15

KTB2-010	KTB2-A10	**KTB2-015**	KTB2-A15
KTB2-025	KTB2-A25	**KTB2-035**	KTB2-A35
KTB2-060	KTB2-A60	**KTB2-100**	KTB2-A100
KTB2-200	KTB2-A200	**KTB2-300**	KTB2-A300
KTB3-015	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

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