B-1799(3)

INSTRUCTION SHEET

Slim Relay & Socket Operating Instructions

RV8H Series

Part No. RV8H-1L1-☐, RV8H-2L-☐, RV8H-1S1-☐, RV8H-2S-☐

Read this instruction sheet to make sure of correct operation before starting installation,wiring, operation, maintenance, and inspection of this product. Also make sure that this instruction sheet is kept.

⚠ Safety Precautions

- Turn off power to the sockets before starting installation, removal, wiring, maintenance, and inspection. Failure to turn power off may cause electrical shocks or fire hazard.
- Use proper wires gauges to meet the voltage and current requirements.
- Make sure that relay and output equipment are connected. Incomplete connection may cause overheating, resulting in a fire hazard.
- To ensure safety, make sure that all directions in the operation instructions are followed.
- Prevent metal fragments and pieces of wire from dropping inside the sockets, since fragments and chips may cause fire, failure, or malfunction.

1 Models

		Input Rating	RV8H P/N	Subcomponents of RV8H	
				Socket P/N	Relay P/N
Screw Terminal Type	1-Pole	DC6V	RV8H-1L1-D6	SV2H-07L-4	RV2H-1HG1-D5
		DC9V	RV8H-1L1-D9	SV2H-07L-4	RV2H-1HG1-D9
		DC12V	RV8H-1L1-D12	SV2H-07L-4	RV2H-1HG1-D12
		DC18V	RV8H-1L1-D18	SV2H-07L-4	RV2H-1HG1-D18
		DC24V	RV8H-1L1-D24	SV2H-07L-4	RV2H-1HG1-D24
		AC/DC12V	RV8H-1L1-AD12	SV2H-07L-1	RV2H-1HG1-D12
		AC/DC18V	RV8H-1L1-AD18	SV2H-07L-1	RV2H-1HG1-D18
		AC/DC24V	RV8H-1L1-AD24	SV2H-07L-1	RV2H-1HG1-D24
		AC/DC48V	RV8H-1L1-AD48	SV2H-07L-2	RV2H-1HG1-D48
		AC/DC60V	RV8H-1L1-AD60	SV2H-07L-2	RV2H-1HG1-D60
		AC/DC110-125V	RV8H-1L1-AD110	SV2H-07L-2	RV2H-1HG1-D110
		AC/DC220-240V	RV8H-1L1-AD220	SV2H-07L-3	RV2H-1HG1-D110
	2-Pole	DC6V	RV8H-2L-D6	SV2H-07L-4	RV2H-2G-D5
		DC9V	RV8H-2L-D9	SV2H-07L-4	RV2H-2G-D9
		DC12V	RV8H-2L-D12	SV2H-07L-4	RV2H-2G-D12
		DC18V	RV8H-2L-D18	SV2H-07L-4	RV2H-2G-D18
		DC24V	RV8H-2L-D24	SV2H-07L-4	RV2H-2G-D24
		AC/DC12V	RV8H-2L-AD12	SV2H-07L-1	RV2H-2G-D12
		AC/DC18V	RV8H-2L-AD18	SV2H-07L-1	RV2H-2G-D18
		AC/DC24V	RV8H-2L-AD24	SV2H-07L-1	RV2H-2G-D24
		AC/DC48V	RV8H-2L-AD48	SV2H-07L-2	RV2H-2G-D48
		AC/DC60V	RV8H-2L-AD60	SV2H-07L-2	RV2H-2G-D60
		AC/DC110-125V	RV8H-2L-AD110	SV2H-07L-2	RV2H-2G-D110
		AC/DC220-240V	RV8H-2L-AD220	SV2H-07L-3	RV2H-2G-D110
Spring Clamp Terminal Type	1-Pole	DC6V	RV8H-1S1-D6	SV2H-07LS-4	RV2H-1HG1-D5
		DC9V	RV8H-1S1-D9	SV2H-07LS-4	RV2H-1HG1-D9
		DC12V	RV8H-1S1-D12	SV2H-07LS-4	RV2H-1HG1-D12
		DC18V	RV8H-1S1-D18	SV2H-07LS-4	RV2H-1HG1-D18
		DC24V	RV8H-1S1-D24	SV2H-07LS-4	RV2H-1HG1-D24
		AC/DC12V	RV8H-1S1-AD12	SV2H-07LS-1	RV2H-1HG1-D12
		AC/DC18V	RV8H-1S1-AD18	SV2H-07LS-1	RV2H-1HG1-D18
		AC/DC24V	RV8H-1S1-AD24	SV2H-07LS-1	RV2H-1HG1-D24
		AC/DC48V	RV8H-1S1-AD48	SV2H-07LS-2	RV2H-1HG1-D48
		AC/DC60V	RV8H-1S1-AD60	SV2H-07LS-2	RV2H-1HG1-D60
		AC/DC110-125V	RV8H-1S1-AD110	SV2H-07LS-2	RV2H-1HG1-D110
		AC/DC220-240V	RV8H-1S1-AD220	SV2H-07LS-3	RV2H-1HG1-D110
	2-Pole	DC6V	RV8H-2S-D6	SV2H-07LS-4	RV2H-2G-D5
		DC9V	RV8H-2S-D9	SV2H-07LS-4	RV2H-2G-D9
		DC12V	RV8H-2S-D12	SV2H-07LS-4	RV2H-2G-D12
		DC18V	RV8H-2S-D18	SV2H-07LS-4	RV2H-2G-D18
		DC24V	RV8H-2S-D24	SV2H-07LS-4	RV2H-2G-D24
		AC/DC12V	RV8H-2S-AD12	SV2H-07LS-1	RV2H-2G-D12
		AC/DC18V	RV8H-2S-AD18	SV2H-07LS-1	RV2H-2G-D18
		AC/DC24V	RV8H-2S-AD24	SV2H-07LS-1	RV2H-2G-D24
		AC/DC48V	RV8H-2S-AD48	SV2H-07LS-2	RV2H-2G-D48
		AC/DC60V	RV8H-2S-AD60	SV2H-07LS-2	RV2H-2G-D60
		AC/DC110-125V	RV8H-2S-AD110	SV2H-07LS-2	RV2H-2G-D110
		AC/DC220-240V	RV8H-2S-AD220	SV2H-07LS-3	RV2H-2G-D110

2 Applicable Standards

Applicable Standards	Certification Organization / File No.
UL508, UL1059 CSA C22.2 No.14 CSA C22.2 No.158	UL/c-UL Listing File No. E55996
EN60999-1 EN61000-6-2 EN61000-6-4	EU Low Voltage and EMC Directive

3 Operating Conditions

Part No.	Output Allowable Current	Operating Temperature
RV8H-1L1-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110	12A (6A per terminal)	-40～+70℃ (no freezing)
	16A (8A per terminal)	-40～+55℃ (no freezing)
RV8H-1L1-AD220	16A (8A per terminal)	-40～+55℃ (no freezing)
RV8H-2L-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110	6A	-40～+70℃ (no freezing)
	8A	-40～+55℃ (no freezing)
RV8H-2L-AD220	8A	-40～+55℃ (no freezing)
RV8H-1S1-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110	12A (6A per terminal)	-40～+70℃ (no freezing)
RV8H-1S1-AD220		-40～+55℃ (no freezing)
RV8H-2S-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110	6A	-40～+70℃ (no freezing)
RV8H-2S-AD220		-40～+55℃ (no freezing)

Operating Humidity : 5 to 85% RH (no condensation)
Storage Temperature : -40 to +85℃ (no freezing)
Storage Humidity : 5 to 85% (no condensation)
Atmospheric Pressure : 86～106kPa
Pollution Degree : 3

4 Agency Approved Ratings

UL and c-UL Ratings

	Number of Poles	Voltage	Resistive
Screw Terminal	1-pole	AC 250V	16A (8A per terminal) at 55℃ 12A (6A per terminal) at 70℃
	2-pole		8A at 55℃ 6A at 70℃
	1-pole	DC 24V	16A (8A per terminal) at 55℃ 12A (6A per terminal) at 70℃
	2-pole		8A at 55℃ 6A at 70℃
Spring Clamp Terminal	1-pole	AC 250V	12A (6A per terminal) at 70℃
	2-pole		6A at 70℃
	1-ploe	DC 24V	12A (6A per terminal) at 70℃
	2-pole		6A at 70℃

5 Contact Ratings

	Number of Poles	Allowable Contact Power		Rated Load		
		Resistive Load	Inductive Load	Voltage	Resistive Load	Inductive Load
Screw Terminal	1-pole	AC 4000VA DC 384W	B300/R300	AC 250V DC 24V	16A (8A per terminal) at 55℃ 12A (6A per terminal) at 70℃	B300/R300
	2-pole	AC 2000VA DC 192W			8A at 55℃ 6A at 70℃	
Spring Clamp Terminal	1-pole	AC 3000VA DC 288W	B300/R300	AC 250V DC 24V	12A (6A per terminal) at 70℃	B300/R300
	2-pole	AC 1500VA DC 144W			6A at 70℃	

	Number of Poles	Allowable Switching Current	Minimum Applicable Load (reference value)
Screw Terminal	1-pole	16A	6V DC, 100mA
	2-pole	8A	5V DC, 10mA
Spring Clamp Terminal	1-pole	12A	6V DC, 100mA
	2-pole	6A	5V DC, 10mA

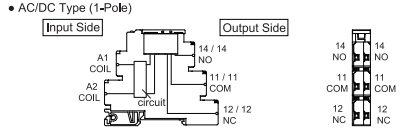
6 Input Ratings

Input Rated Voltage (V)		Rated Currrent (mA) ±15% (Note1) (at 23℃)			Operating Characteristics (against rated values)				Power Consumption (W)
		DC	AC50Hz	AC60Hz	Maximum Allowable Voltage (at 23℃)	Minimum Pickup Voltage (at 23℃)	Dropout Voltage (at 23℃)	Maximum Continuous Applied Voltage (Note2)	
DC	6V	75.0	-	-	120%	80% maximum	7% minimum	110% (Note3)	0.45
	9V	44.0	-	-					0.40
	12V	32.0	-	-					0.38
	18V	24.0	-	-					0.43
	24V	20.0	-	-					0.48
AC/DC	12V	32.0	29.0	29.0	110%				0.38
	18V	24.0	24.0	24.0					0.43
	24V	20.0	21.0	21.0					0.50
	48V	7.6	9.0	9.0					0.43
	60V	7.6	9.0	9.0					0.54
	110-125V	4.4-5.1	5.3-5.8	5.3-5.8					0.73
	220-240V	4.0-4.6	4.5-5.2	4.8-5.5					1.32

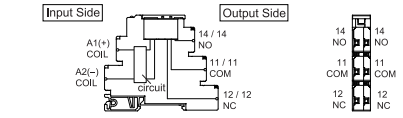
Note1 : Input voltages lower than 24V : ±10%
Note2 : At rated Operating Temperature
Note3 : Rated Voltage 240V : 106%

7 Terminal Arrangement

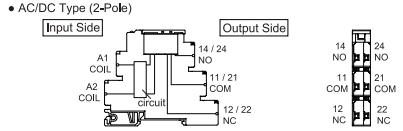
- AC/DC Type (1-Pole)



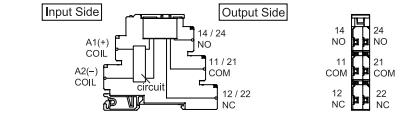
- DC Type (1-Pole)



- AC/DC Type (2-Pole)



- DC Type (2-Pole)

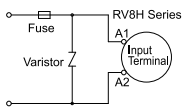


8 Notes for Operation

- Use a 15A non-time delay fuse for protection against short-circuits.
- When a lightning surge may enter the input circuit of models AD12, AD18, and AD24, and when a lightning surge and noise may enter the input circuit of models AD48, AD60,and AD110 of the following products, use a proper varistor. Otherwise, failure may occur.

Corresponding products	Recommend varistor
RV8H-1L1-AD12	Panasonic ERZV07D390
RV8H-1L1-AD18	
RV8H-1L1-AD24	
RV8H-1L1-AD48	Panasonic ERZV14D121
RV8H-1L1-AD60	
RV8H-1L1-AD110	Panasonic ERZV14D221
RV8H-2L-AD12	Panasonic ERZV07D390
RV8H-2L-AD18	
RV8H-2L-AD24	
RV8H-2L-AD48	Panasonic ERZV14D121
RV8H-2L-AD60	
RV8H-2L-AD110	Panasonic ERZV14D221
RV8H-1S1-AD12	Panasonic ERZV07D390
RV8H-1S1-AD18	
RV8H-1S1-AD24	
RV8H-1S1-AD48	Panasonic ERZV14D121
RV8H-1S1-AD60	
RV8H-1S1-AD110	Panasonic ERZV14D221
RV8H-2S-AD12	Panasonic ERZV07D390
RV8H-2S-AD18	
RV8H-2S-AD24	
RV8H-2S-AD48	Panasonic ERZV14D121
RV8H-2S-AD60	
RV8H-2S-AD110	Panasonic ERZV14D221

Example of circuit

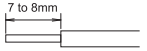


- Do not use in conditions above the operating temperature rating, otherwise, fire, failure, or malfunction may occur.

9 Wiring Instructions

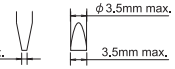
- RV8H-1L1-☐ , RV8H-2L-☐

Use the following applicable wires for wiring.
AWG14, CU(copper), Stranded or Solid wire : 1
AWG16, CU(copper), Stranded wire : 2 max.
AWG16, CU(copper) Solid wire : 2 max.



Strip the wire insulation 7 to 8 mm from the end.
Stripping the wire insulation too short may cause the wire to come loose. Stripping the wire insulation too long may cause a short-circuit with the adjacent socket. Make sure to twist stranded wire to prevent loosening.

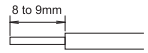
For wiring, use the optional screwdriver(S3TL-D06-35-100) or the following applicable screwdriver.
Phillips screwdriver : ϕ3.5mm max. (Bit No.1)
Flat screwdriver : see the right figure



Recommended tightening torque :
0.3 N • m to 0.4 N • m (UL certified value : 0.35N • m)

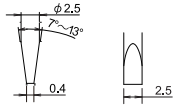
- RV8H-1S1-☐ , RV8H-2S-☐

Use the following applicable wire gauges for wiring.
AWG20 to AWG14, CU(copper), Stranded or Solid wire : 1



Strip the wire insulation 8 to 9 mm from the end.
Stripping the wire insulation too short may cause the wire to come loose. Stripping the wire insulation too long may cause a short-circuit with the adjacent socket. Make sure to twist stranded wire to prevent loosening.

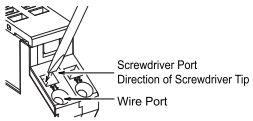
For wiring, use the optional screwdriver(S3TL-D04-25-75) or the applicable screwdriver on the right figure.



- In applications when using ferrules for stranded wires, choose a ferrule from the table shown below:

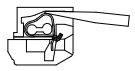
Applicable wire (standard)		IDEC	Phoenix Contact	Nichifu
AWG	mm²			
20	0.5	S3TL-H05-14WA	AI0.5-8WH	NF0.5-8
20	0.75	-	-	NF0.75-8
18	0.75	S3TL-H075-14WW	AI0.75-8GY	-
18	1.0	-	AI1-8RD	NF1.0-8
17	1.0	S3TL-H10-14WY	-	-
16	1.5	S3TL-H15-14WR	AI1.5-8BK	NF1.5-8

- Wire insertion positions, screwdriver insertion positions,and the directions of screwdriver tip are shown below.

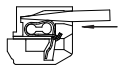


- Wiring Instructions

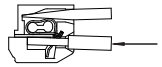
1. Insert an applicable screwdriver into the square-shaped port as shown,until the screwdriver tip touches the bottom of the spring.



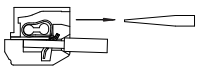
2. Push in the screwdriver until it touches the bottom of the port. The wire port is now open,and the screwdriver is held in place.
The screwdriver will not come off even if you release your hand.



3. While the screwdriver is retained in the port, insert the wire or ferrule into the round-shaped wire port. Each wire port can accommodate one wire or ferrule.

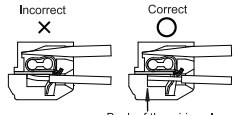


4. Pull out the screwdriver. The connection is now complete.



⚠ CAUTION

- When using wire with insulation diameter of ϕ2.0mm or less, do not insert the wire too deep where the insulation inserts into the spring clamp opening. Otherwise conductivity will not occur. Make sure that the wire insulation is stripped 8 to 9 mm and the wire is inserted to the back of the clamp.

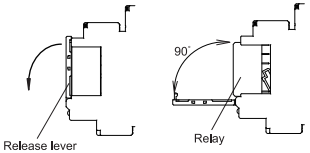


10 Installation and Removal of the Relay and Socket

1.Removing the Relay
Open the release lever in the direction of the arrow,and remove the relay.

⚠ CAUTION

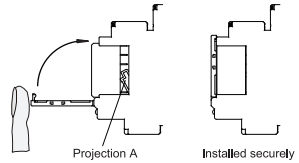
- The relay may pop out when opening the release lever, resulting in possible damage or loss of the relay. To prevent this, hold the relay with your finger when opening the release lever.
- Do not open the release lever more than 90˚, otherwise the socket may be damaged.



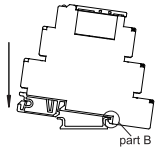
2.Installing the Relay
Open the release lever, and insert the relay into the socket until the bottom of relay touches projection A on the socket. Close the release lever until it is latched.

⚠ CAUTION

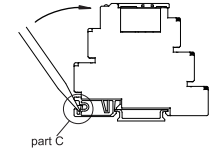
- When installing the relay, do not press it in with your hand. Make sure to use the release lever, otherwise projection A will be damaged.



3.Installing the socket to a DIN rail
Place the groove on the socket(part B)on the DIN rail, and press the socket towards the DIN rail as shown in the figure.

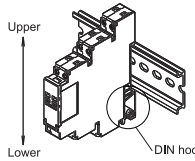


4.Removing the socket from a DIN rail
Insert a small flat screwdriver into the slot (part C) of the socket, and pull out the socket as shown in the figure.



⚠ CAUTION

- When using the RV8H in cold temperature (0℃ or below), install or remove the socket on the DIN rail carefully so that the socket will not be damaged.
- When installing sockets please use end stops to make sure the sockets will not move on the DIN rail.
- If you install the socket in a vertical position (see drawing on the right), please make sure to face the DIN hook at the Lower end of the rail.



11 Disposal

- Dispose of the RV8H Series as industrial waste.

IDEC CORPORATION http://www.idec.com
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Manufacturer: IDEC CORP.
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