RJ Series Slim Power Relays PC Board Terminal

Compact power relays. High switching capacity up to 16A.

- Contact configurations:
  SPDT, SPST-NO, DPDT, DPST-NO.
  SPDT, SPST-NO are available in high capacity type.
- Bifurcated contact relays also available for high reliability.
  (Minimum applicable load: 1V DC, 100μA)
- Compact housing—only 12.7-mm wide.
- High contact rating
  RJ1V (1-pole): 12A, 16A
  RJ2V (2-pole): 8A
- IDEC's unique spring return mechanism ensures long electrical and mechanical life.
  Electrical life: 200,000 operations (AC load)
  Mechanical life: 30 million operations (AC coil, SPDT, DPDT)
- Flux-tight structure
- Lloyd's Register and DNV certified.

See website for details on approvals and standards.

PC Board Terminal

Package quantity: 1

No. of poles	Type	Contact	Part No. (Ordering No.)	Code: ☐
1-pole (1 contact)	Standard	SPDT	RJ1V-C-☐	A12, A24, A100, A110, A115, A120, A200, A220, A230, A240
		SPST-NO	RJ1V-A-☐	
	High capacity	SPDT	RJ1V-CH-☐	
		SPST-NO	RJ1V-AH-☐	
2-pole (2-contact)	Standard	DPDT	RJ2V-C-☐	
		DPST-NO	RJ2V-A-☐	
	Bifurcated Contact	DPDT	RJ22V-C-☐	
		DPST-NO	RJ22V-A-☐	

Coil Voltage Code

Code	Coil voltage
A12	12V AC
A24	24V AC
A100	100-(110)V AC
A110	110V AC
A115	115V
A120	120V AC
A200	200-(220)V AC
A220	220V AC
A230	230V AC
A240	240V AC

100 and A200 are 3 rated coils.
(Refer to coil rating table)

Contact Ratings

No. of Poles	Style	Contact	Allowable Contact Power		Rated Load			Allowable Switching Current	Allowable Switching Voltage	Minimum Applicable Load (*1)
			Resistive Load	Inductive Load	Voltage	Resistive Load	Inductive Load cos ø = 0.3 L/R = 7 ms			
1	Plain	NO	3000VA AC 360W DC	1875VA AC 180W DC	250V AC	12A	7.5A	12A	250V AC 125V DC	5V DC, 100 mA
					30V DC	12A	6A			
		NC	3000VA AC 180W DC	1875VA AC 90W DC	250V AC	12A	7.5A			
					30V DC	6A	3A			
	High Capacity	NO	4000VA AC 480W DC	2000VA AC 240W DC	250V AC	16A	8A	16A	250V AC 125V DC	5V DC, 100 mA
					30V DC	16A	8A			
		NC	4000VA AC 240W DC	2000VA AC 120W DC	250V AC	16A	8A			
					30V DC	8A	4A			
2	Plain	NO	2000VA AC 240W DC	1000VA AC 120W DC	250V AC	8A	4A	8A	250V AC 125V DC	5V DC, 10 mA
					30V DC	8A	4A			
		NC	2000VA AC 120W DC	1000VA AC 60W DC	250V AC	8A	4A			
					30V DC	4A	2A			
	Bifurcated Contact	NO NC	250VA AC 30W DC	100VA AC 15W DC	250V AC	1A	0.4A	1A	250V AC 125V DC	1V DC, 100 μA
					30V DC	1A	0.5A			

*1) Measured at operating frequency of 120 operations / min (failure rate level P, referencevalue)

Standard Ratings

UL ratings

Voltage	Resistive								General Use	
	RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)		RJ22 (Bifurcated Contact)		RJ22 (Bifurcated Contact)	
	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC
AC250V	12A	6A	8A	4A	16A	8A	—	—	1A	1A
30V DC	12A	6A	8A	4A	16A	8A	1A	1A	—	—

VDE ratings

Voltage	Resistive					AC-15, DC-13 (Note)	
	RJ1 (plain)	RJ2 (plain)	RJ1 (high capacity)	RJ22 (Bifurcated Contact)		RJ1 (plain)	RJ2 (plain)
	NO	NO	NO	NO	NC	NO	NO
AC250V	12A	8A	16A	1A	1A	6A	3A
30V DC	12A	8A	16A	1A	1A	2.5A	2A

Note: The operational current represents the classification by making and breaking currents (IEC 60947-5-1.)

CSA ratings

Voltage	Resistive						Inductive								General Use	
	RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)		RJ1 (plain)		RJ2 (plain)		RJ1 (high capacity)		RJ22 (Bifurcated Contact)		RJ22 (Bifurcated Contact)	
	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC
AC250V	12A	12A	8A	8A	16A	16A	7.5A	7.5A	4A	4A	8A	8A	—	—	1A	1A
30V DC	12A	6A	8A	4A	16A	8A	6A	3A	4A	2A	8A	4A	1A	1A	—	—

Coil Ratings

Rated Voltage		Coil Voltage Code	Rated Current (mA) ±15% (at 20°C)		Coil Resistance (Ω) ±10% (at 20°C)	Operating Characteristics (against rated values at 20°C)			Power Consumption
			50 Hz	60 Hz		Minimum Pickup Voltage (initial value)	Dropout Voltage (initial value)	Maximum allowable voltage (*2)	
AC 50/60 Hz (*1)	12V	A12	87.3	75.0	62.5	80% maximum	30% minimum	140%	Approx. 1.1 VA (50Hz) Approx. 0.9 to 1.2VA (60Hz)
	24V	A24	43.9	37.5	243				
	110V	A110	9.6	8.2	5270				
	115V	A115	9.1	7.8	6030				
	120V	A120	8.8	7.5	6400				
	220V	A220	4.8	4.1	21530				
	230V	A230	4.6	3.9	24100				
	240V	A240	4.3	3.7	25570				

*1: 100-(110)V and 200-(220)V are 3 rated coils.
100-(110)V is 100V AC (50/60Hz), 110V AC (60Hz)
200- (220)V is 200V AC (50/60 Hz), 220V AC (60Hz).
*2: Maximum allowable voltage is the maximum voltage that can be applied to relay coils.

Specifications

Model		RJ1V Plain	RJ1V High Capacity	RJ2V Plain	RJ22V (Bifurcated Contact)
Number of Poles		1-pole		2-pole	
Contact Configuration		SPDT, SPST-NO		DPDT, DPST-NO	DPDT (Bifurcated Contact), DPST-NO (Bifurcated Contact)
Contact Material		Ag-Ni	Ag-Sn-In	Ag-Ni	Ag-Ni+Au
Enclosure Ratings		Flux-tight			
Contact Resistance (initial value) (*1)		50 mΩ maximum			
Operate Time (*2)		15 ms maximum			
Release Time (*2)		10 ms maximum			
Impulse Withstand Voltage		10,000V (between contact and coil)			
Dielectric Strength	Between contact and coil	5000V AC, 1 minute			
	Between contacts of the same pole	1000V AC, 1 minute			
	Between contacts of different poles	—		3000V AC, 1 minute	
Vibration Resistance	Operating extremes	10 to 55 Hz, amplitude 0.75 mm			
	Damage limits	10 to 55 Hz, amplitude 0.75 mm			
Shock Resistance	Operating extremes	NO contact: 200 m/s² (20G), NC contact: 100 m/s² (10G)			
	Damage limits	1000 m/s² (100G)			
Electrical Life (rated load)		AC load: 200,000 operations minimum (operation frequency 1,800 operations per hour) DC load: 100,000 operations minimum (operation frequency 1,800 operations per hour)			AC load: 100,000 operations minimum (operation frequency 1,800 operations per hour) DC load: 200,000 operations minimum (operation frequency 1,800 operations per hour)
Mechanical Life (no load)		30 million times or more (SPDT contact, operating frequency 18,000 times/hour) 10 million times or more (SPST-NO contact, operating frequency 18,000 times/hour)			10 million times or more (operating frequency 18,000 times/hour)
Operating Temperature (*3)		–40 to +70°C (no freezing)			
Operating Humidity		5 to 85% RH (no condensation)			
Weight (approx.)		SPDT: 17g SPST-NO: 16g		DPDT: 17g DPST-NO: 16g	

*1: Measured using 5V DC, 1A voltage drop method.
*2: Measured at the rated voltage (at 20°C), excluding contact bounce time.
*3: 100% rated voltage.

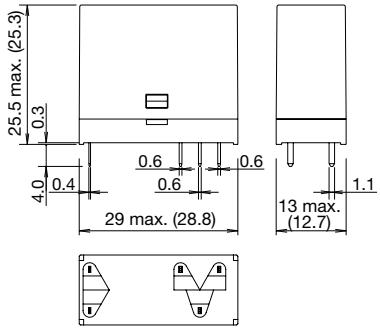
Relay coil tape color

Coil voltage	Coil color
12V AC	Yellow
24V AC	White
100-(110)V AC	Yellow
110V AC	Clear
115V AC	Yellow
120V AC	Blue
200-(220)V AC	Yellow
220V AC	Black
230V AC	Yellow
240V AC	Red

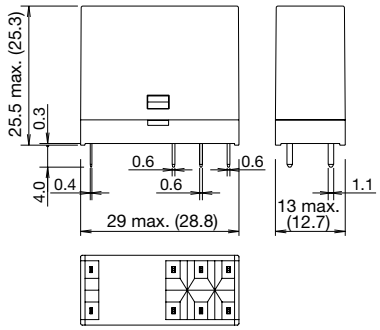
Dimensions

All dimensions in mm.

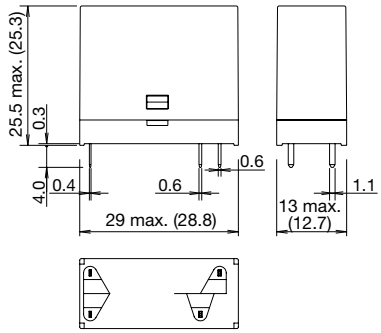
RJ1V-C-☐
Plain SPDT



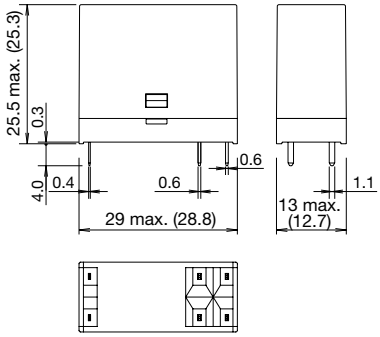
RJ1V-CH-☐
High Capacity SPDT
RJ2V-C-☐
Plain DPDT
RJ22V-C-☐
Bifurcated Contact



RJ1V-A-☐
Plain SPST-NO



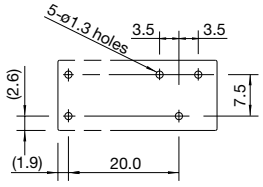
RJ1V-AH-☐
High Capacity SPST-NO
RJ2V-A-☐
Plain DPST-NO
RJ22V-A-☐
Bifurcated Contact



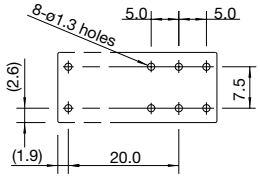
Mounting Hole Layout (Bottom View)

All dimensions in mm.

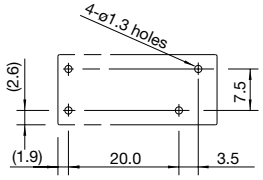
RJ1V-C-☐



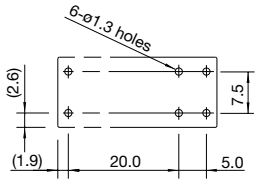
RJ1V-CH-☐
RJ2V-C-☐
RJ22V-C-☐



RJ1V-A-☐



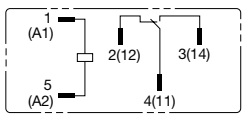
RJ1V-AH-☐
RJ2V-A-☐
RJ22V-A-☐



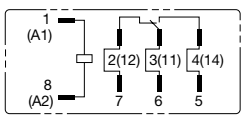
Internal Circuit Diagram (Bottom View)

All dimensions in mm.

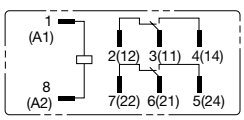
RJ1V-C-☐



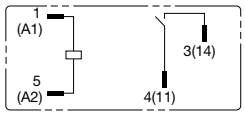
RJ1V-CH-☐



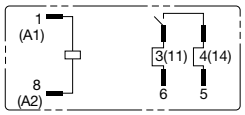
RJ2V-C-☐
RJ22V-C-☐



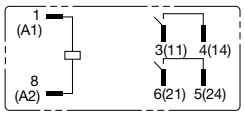
RJ1V-A-☐



RJ1V-AH-☐



RJ2V-A-☐
RJ22V-A-☐

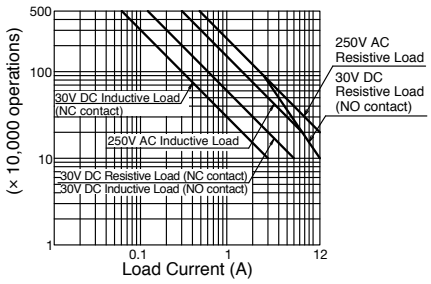


Note: IEC notation in ( ).

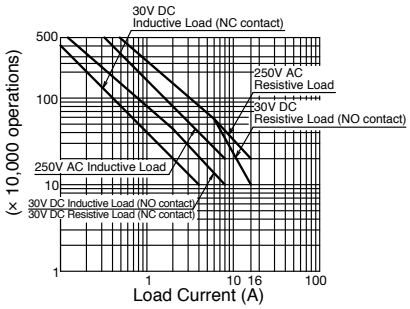
Characteristics (reference)

Electrical Life Curve

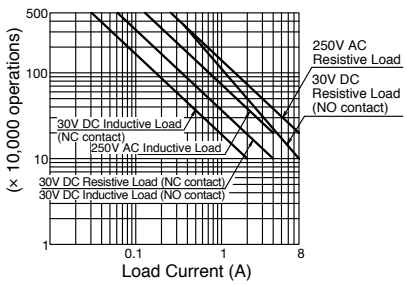
RJ1V Plain



RJ1V High Capacity

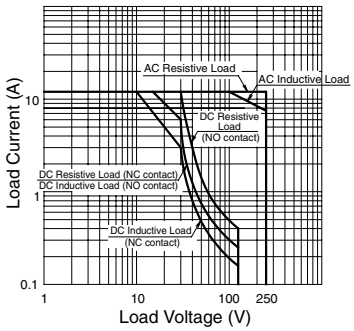


RJ2V Plain

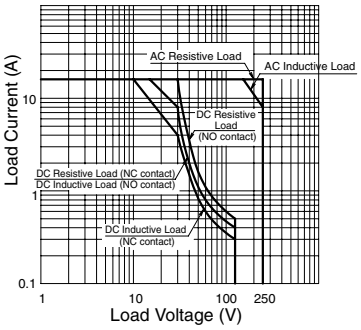


Maximum Switching Current

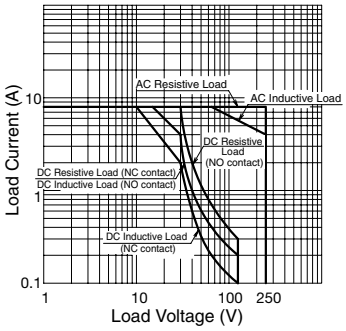
RJ1V Plain



RJ1V High Capacity

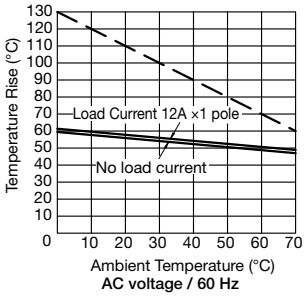


RJ2V Plain

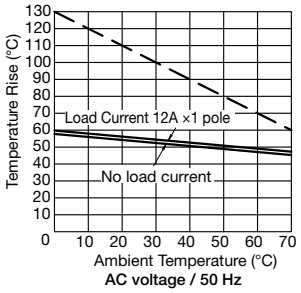


Ambient Temperature vs. Temperature Rise Curves

RJ1V Plain

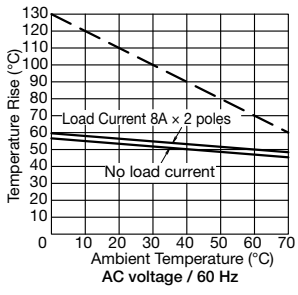


AC voltage / 60 Hz

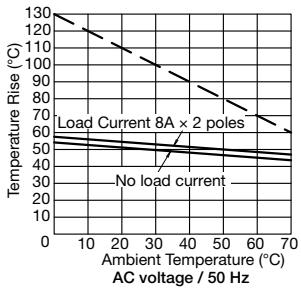


AC voltage / 50 Hz

RJ2V Plain

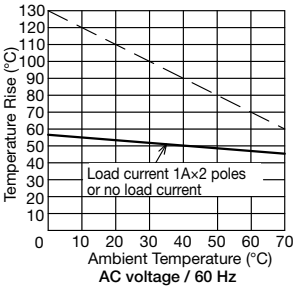


AC voltage / 60 Hz

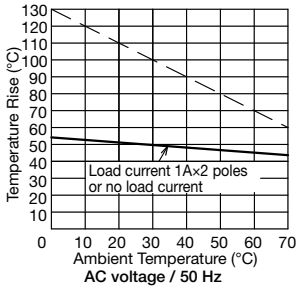


AC voltage / 50 Hz

RJ22V Bifurcated Contact



AC voltage / 60 Hz



AC voltage / 50 Hz

Note: When the rated coil voltage (100%) is applied. 3 rated coil is at 100% for the higher voltage.
When 100-(110)V: 100V AC (50Hz), 110V AC (60Hz).
When: 200-(220)V: 200V AC (50Hz), 220V AC (60Hz).

Note: The dashed lines indicate the allowable temperature rise of the coil at different ambient temperature.

Safety Precautions

- Turn off the power to the product before starting installation, removal, wiring, maintenance, or inspection. Failure to turn power off may cause electrical shock or fire.
- Be sure to use the product within the rated specifications. Failure to turn power off may cause electrical shock or fire.
- For wiring, use wires of proper size to meet voltage and current requirements. Tighten the terminal screws to the recommended tightening torque.

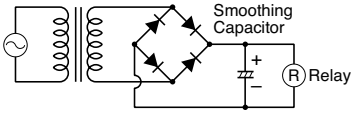
Instructions

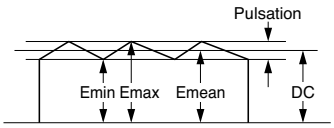
1. Driving Circuit for Relays

(1) To make sure of correct relay operation, apply rated voltage to the relay coil.

(2) Input voltage for DC coil

A complete DC voltage is best for the coil power to make sure of stable operation. When using a power supply containing a ripple voltage, suppress the ripple factor within 5%. When power is supplied through a rectification circuit, relay operating characteristics, such as pickup voltage and dropout voltage, differ on the ripple factor. Connect a smoothing capacitor to check the characteristics, as shown below.

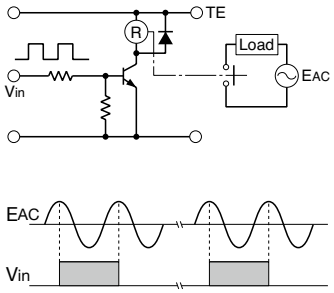




$$\text{Ripple Factor (\%)} \quad \frac{Emax - Emin}{Emean} \times 100\%$$

Emax = Maximum of pulsating current
Emin = Minimum of pulsating current
Emean = DC mean value

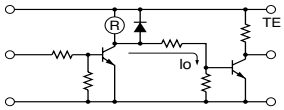
(3) Operating the relay in sync with an AC load



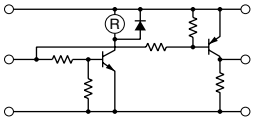
If the relay operates in sync with the relay contact, the relay life may be reduced. If this is the case, select a relay in consideration of the required reliability for the load Or, make the relay turn on and off irrespective of the AC power phase or near the point where the AC phase crosses zero voltage.

(4) Leakage current while relay is off

Incorrect



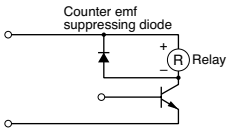
Correct



When driving an element at the same time as the relay operation, special consideration is needed for the circuit design. As shown in the incorrect circuit below, leakage current (Io) flows through the relay coil while the relay is off. Leakage current causes the coil release failure or adversely affects the vibration resistance and shock resistance. Design a circuit as shown in the correct example.

(5) Surge suppression for transistor driving circuits

When the relay coil is turned off, a high-voltage pulse is generated. Be sure to connect a diode to suppress the counter electromotive force. Then, the coil release time becomes slightly longer. To shorten the coil release time, connect a Zener diode between the collector and emitter of the controlling transistor. Select a Zener diode with a Zener voltage slightly higher than the power voltage.



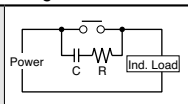
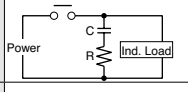
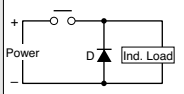
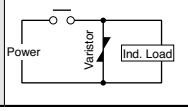
(6) Counter-electromotive force diode model has polarity. Be sure to connect according to the diagram. Incorrect wiring may cause malfunction.

2.Protection for relay contacts

(1) The contact ratings show maximum values. Make sure that these values are not exceeded even momentarily. When an inrush current flows through the load, the contact may become welded. If this is the case, connect a contact protection circuit, such as a current limiting resistor.

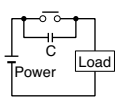
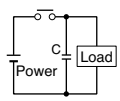
(2) Contact protection circuit

When switching an inductive load, arcing causes carbides to form on the contacts, resulting in increased contact resistance. In consideration of contact reliability, contact life, and noise suppression, the use of a surge absorbing circuit is recommended. Note that the release time of the load becomes slightly longer. Check the operation using an actual load. Incorrect use of a contact protection circuit will adversely affect switching characteristics. Typical examples of contact protection circuits are shown in the following table.

RC		This protection circuit can be used when the load impedance is smaller than the RC impedance in an AC load power circuit. R: Resistor of approximately the same resistance value as the load C: 0.1 to 1 µF
		This protection circuit can be used for both AC and DC load power circuits. R: Resistor of approximately the same resistance value as the load C: 0.1 to 1 µF
Diode		This protection circuit can be used for DC load power circuits. Use a diode with the following ratings. Reverse withstand voltage: Power voltage of the load circuit × 10 Forward current: More than the load current
Varistor		This protection circuit can be used for both AC and DC load power circuits. For a best result, when using on a power voltage of 24 to 48V AC/DC, connect a varistor across the load. When using on a power voltage of 100 to 240V AC/DC, connect a varistor across the contacts.

(3) Do not use a contact protection circuit as shown below.

When the relay coil is turned off, a high-voltage pulse is generated.

	This protection circuit is very effective in arc suppression when opening the contacts. But, the capacitor is charged while the contacts are opened. When the contacts are closed, the capacitor is discharged through the contacts, increasing the possibility of contact welding.
	This protection circuit is very effective in arc suppression when opening the contacts. But, when the contacts are closed, a current flows to charge the capacitor, causing contact welding.

Generally, switching a DC inductive load is more difficult than switching a DC resistive load. Using an appropriate arc suppressor will improve the switching characteristics of a DC inductive load.

Instructions

3. PCB Mounting

(1) When using two or more RJ relays on a PC board, maintain at least 5mm distance between the relays.

(2) Manual soldering: Use a soldering iron of 60W (350°C), and quickly complete soldering with approximately 3 seconds. Sn-Ag-Cu is recommended when using lead-free solder.

(3) Auto-soldering: Solder at 250°C within 4 to 5 seconds.

(4) Because the terminal part is filled with epoxy resin, do not excessively solder or bend the terminal. Otherwise, air tightness will degrade.

(5) Avoid the soldering iron from touching the reay cover or the epoxy filled terminal part.

(6) Use a non-corrosive resin flux.

(7) When mounting the relays closely together, make sure that it does not affect other electric components. Do not use relays in the vicinity of he strong magnetic field as this may affect relay operation.

(8) Instructions on PCB mounting
Mounting on PCB with warpage may damage the copper foil or displace the solder if used for a long period of time or subjected to vibration. Furthermore, avoid installation methods that may cause warping, as this can affect the relay characteristics.

(9) Mounting Direction
Take into consideration the mounting direction in order to fully demonstrate the performance of the relay. Typical characteristics that are greatly affected by mounting orientation include shock resistance (shock noise characteristics), life span, and contact reliability.

- Ideally, the relay should be mounted so that the direction of movement of the movable iron piece is perpendicular to the direction of vibration/shock.
- When used with large loads (generally more than self-coil) that may cause arcing, contact debris may accumulate around the contacts and degrade the insulation resistance between circuits. In such cases, make sure that the relays are mounted in the standard mounting direction.
  Note: The standard mounting direction is usually when the contacts are on top and the coil on the bottom.
- It is not recommended to use a single relay for both large and small loads. When a large load is used, the generated contact debris may cause failure to maintain the cleanliness of the micro-load opening/closing contacts. Therefore, when using multi-pole relays, avoid mounting directions and terminal connections where the small load contact is positioned lower than the large load contact.

(10) Mounting space
When installing a large number of relays close to each other, note the following:

- Note the ambient temperature of the relay. Close mounting of a large number of replays may generate abnormal heat due to mutual interference of heat. Leave enough space between the replays to avoid heat buildup. Check the minimum mounting space between the relays.
- When multiple PCBs with relays are mounted to a rack, the temperature may rise excessively. When mounting relays, leave enough space so that heat will not build up, and so that the relays' ambient temperature remains within the specified operating temperature range.

4 . Usage, transport, and storage conditions

- Condensation occurs when there is a sudden change in temperature under high temperature and high humidity conditions. The relay insulation may deteriorate due to condensation.
- Condensation or other moisture may freeze on the relay when the temperature is lower than 0°C. This causes problems such as sticking of movable parts or delays in operation.
- Plastic parts may become brittle when used in low temperature and low humidity environments.

5. Other precautions

(1) General notice
① To maintain the initial performance, do not drop or provide shock to the relay.
② The relay cover cannot be removed from the base during normal operation. To maintain the initial characteristics, do not remove the relay cover.
③ Use the relay in environments free from condensation, dust, sulfur dioxide (SO_2), and hydrogen sulfide (H_2S).
④The relay cannot be washed as it is not a sealed type. Also make sure that flux does not leak to the PCB and enter the relay. (Except RF2 RTII models)

(2) Connecting outputs to electronic circuits
When the output is connected to a load which responds very quickly, such as an electronic circuit, contact bouncing causes incorrect operation of the load. Take the following measures into
① Connect an integration circuit.
② Suppress the pulse voltage due to bouncing within the noise margin of the load.

(3) UL- and CSA ratings may differ from the product ratings specified by IDEC depending on the certification organizations and local conditions.

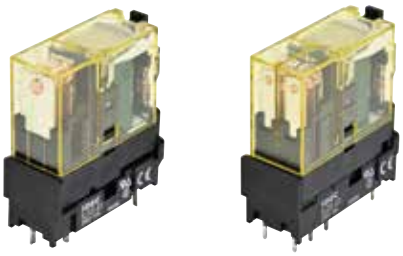
(4) Do not use relays in the vicinity of he strong magnetic field as this may affect relay operation.

SJ Series Relay Sockets (PC Board Socket)

- PC board sockets applicable for RJ series slim power relays (plug-in type).
- Relays can be replaced easily by using RJ series slim power relay (plug-in type) with SJ sockets.

Note: SJ sockets (PC board type) cannot be attached to RJ series slim power relays.

- See the table below for details on RJ series slim power relay (plug-in type) https://apac.idec.com/c/RJ_Series?page=1



See website for details on approvals and standards.

Sockets

Type	Part No.	Ordering No.	Package Quantity	Applicable Relay
PC Board Socket	SJ1S-61	SJ1S-61PN10	10	RJ1S
		SJ1S-61PN50	50	
	SJ2S-61	SJ2S-61PN10	10	RJ2S RJ22S
		SJ2S-61PN50	50	

Specifications

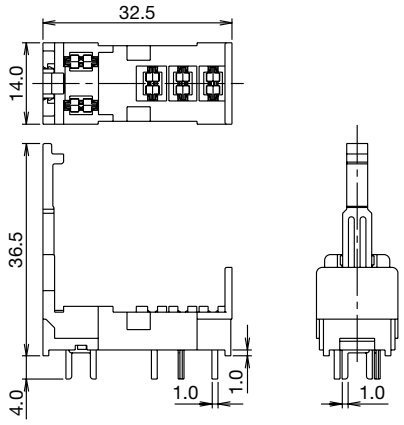
Model		SJ1S-61	SJ2S-61
Rated Current		12A	8A
Rated Insulation Voltage		250V AC/DC	
Dielectric Strength	Between contact and coil	5000V AC, 1 min.	
	Between contacts of the different pole	—	3000V AC, 1 min.
	Between contacts of the same pole	1000V AC, 1 min.	
Vibration Resistance	Damage limits	90m/s^2	
	Resonance	Frequency 10 to 55Hz, amplitude 0.75mm	
Shock Resistance (damage limits)		1000m/s^2	
Operating Temperature		–40 to +70°C (no freezing)	
Operating Humidity		5 to 85% RH (no condensation)	
Storage Temperature		–55 to +85°C (no freezing)	
Storage Humidity		5 to 85% RH (no condensation)	
Weight		4.2g	4.5g

- The above are same when used with a RJ series slim power relays.

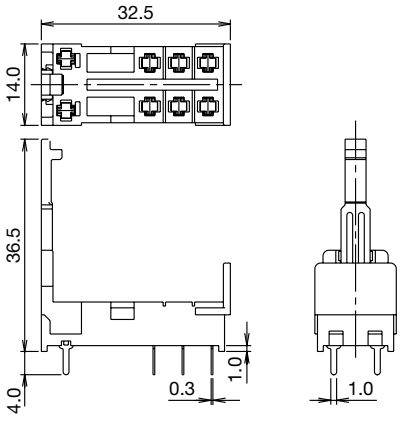
Dimensions

All dimensions in mm.

SJ1S-61



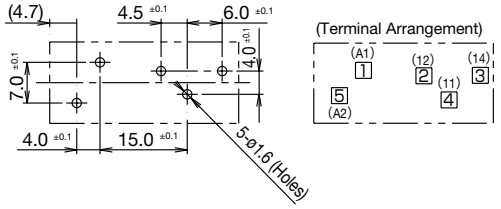
SJ2S-61



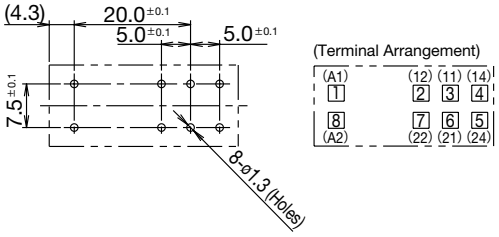
Mounting Hole Layout (Bottom View)

All dimensions in mm.

SJ1S-61



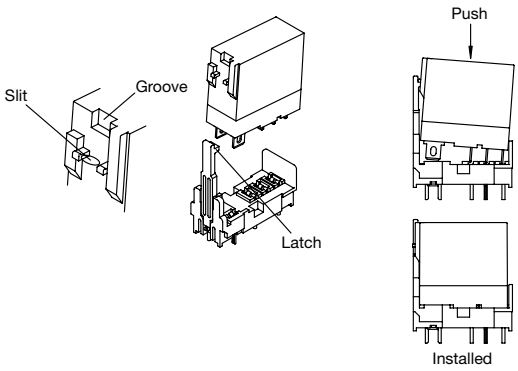
SJ2S-61



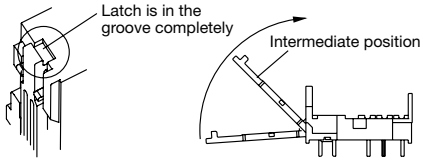
Operating Instructions

Installing the relay

Press in the relay to the socket by guiding the latch to pass through the slit.



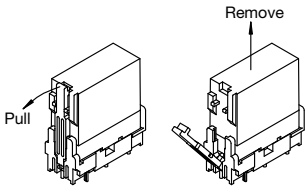
The relay is in place if the latch fits the groove completely.
If the latch is not in the groove, insert the latch.



The latch swings open and can stop at the intermediate position. After mounting the relay, insert the latch into the groove of the relay.

Removing the relay

Pull the latch, and pull out the relay from the socket.



The relay can be removed by fingers or by using the removal tool (MT-101).

Description & Shape	Part No.
Removal Tool 	MT-101

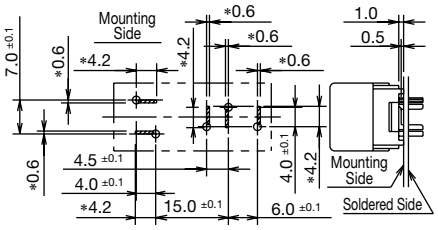
Soldering

Use a soldering iron of 60W (350°C), and quickly complete soldering with approximately 3 seconds. Do not use flow or dip soldering.
Sn-Ag-Cu is recommended when using lead-free solder.

PC Board Pattern Design

Press in the relay to the socket by guiding the latch to pass through the slit.

On the bottom of SJ1S-61, metal parts other than the solder leads re exposed to the mounting side of PC board as shown in the following figure as marked with ∗. Take these metal parts into consideration when designing the PC board.



Ordering Terms and Conditions

Thank you for using IDEC Products.

By purchasing products listed in our catalogs, datasheets, and the like (hereinafter referred to as "Catalogs") you agree to be bound by these terms and conditions. Please read and agree to the terms and conditions before placing your order.

1. Notes on contents of Catalogs

(1) Rated values, performance values, and specification values of IDEC products listed in this Catalog are values acquired under respective conditions in independent testing, and do not guarantee values gained in combined conditions.
Also, durability varies depending on the usage environment and usage conditions.

(2) Reference data and reference values listed in Catalogs are for reference purposes only, and do not guarantee that the product will always operate appropriately in that range.

(3) The specifications / appearance and accessories of IDEC products listed in Catalogs are subject to change or termination of sales without notice, for improvement or other reasons.

(4) The content of Catalogs is subject to change without notice.

2. Note on applications

(1) If using IDEC products in combination with other products, confirm the applicable laws / regulations and standards.
Also, confirm that IDEC products are compatible with your systems, machines, devices, and the like by using under the actual conditions. IDEC shall bear no liability whatsoever regarding the compatibility with IDEC products.

(2) The usage examples and application examples listed in Catalogs are for reference purposes only. Therefore, when introducing a product, confirm the performance and safety of the instruments, devices, and the like before use. Furthermore, regarding these examples, IDEC does not grant license to use IDEC products to you, and IDEC offers no warranties regarding the ownership of intellectual property rights or non-infringement upon the intellectual property rights of third parties.

(3) When using IDEC products, be cautious when implementing the following.

i. Use of IDEC products with sufficient allowance for rating and performance

ii. Safety design, including redundant design and malfunction prevention design that prevents other danger and damage even in the event that an IDEC product fails

iii. Wiring and installation that ensures the IDEC product used in your system, machine, device, or the like can perform and function according to its specifications

(4) Continuing to use an IDEC product even after the performance has deteriorated can result in abnormal heat, smoke, fires, and the like due to insulation deterioration or the like. Perform periodic maintenance for IDEC products and the systems, machines, devices, and the like in which they are used.

(5) IDEC products are developed and manufactured as general-purpose products for general industrial products. They are not intended for use in the following applications, and in the event that you use an IDEC product for these applications, unless otherwise agreed upon between you and IDEC, IDEC shall provide no guarantees whatsoever regarding IDEC products.

i. Use in applications that require a high degree of safety, including nuclear power control equipment, transportation equipment (railroads / airplanes / ships / vehicles / vehicle instruments, etc.), equipment for use in outer space, elevating equipment, medical instruments, safety devices, or any other equipment, instruments, or the like that could endanger life or human health

ii. Use in applications that require a high degree of reliability, such as provision systems for gas / waterworks / electricity, etc., systems that operate continuously for 24 hours, and settlement systems

iii. Use in applications where the product may be handled or used deviating from the specifications or conditions / environment listed in the Catalogs, such as equipment used outdoors or applications in environments subject to chemical pollution or electromagnetic interference
If you would like to use IDEC products in the above applications, be sure to consult with an IDEC sales representative.

3. Inspections

We ask that you implement inspections for IDEC products you purchase without delay, as well as thoroughly keep in mind management/maintenance regarding handling of the product before and during the inspection.

4. Warranty

(1) Warranty period

The warranty period for IDEC products shall be one (1) year after purchase or delivery to the specified location. However, this shall not apply in cases where there is a different specification in the Catalogs or there is another agreement in place between you and IDEC.

(2) Warranty scope

Should a failure occur in an IDEC product during the above warranty period for reasons attributable to IDEC, then IDEC shall replace or repair that product, free of charge, at the purchase location / delivery location of the product, or an IDEC service base. However, failures caused by the following reasons shall be deemed outside the scope of this warranty.

i. The product was handled or used deviating from the conditions / environment listed in the Catalogs

ii. The failure was caused by reasons other than an IDEC product

iii. Modification or repair was performed by a party other than IDEC

iv. The failure was caused by a software program of a party other than IDEC

v. The product was used outside of its original purpose

vi. Replacement of maintenance parts, installation of accessories, or the like was not performed properly in accordance with the user's manual and Catalogs

vii. The failure could not have been predicted with the scientific and technical standards at the time when the product was shipped from IDEC

viii. The failure was due to other causes not attributable to IDEC (including cases of force majeure such as natural disasters and other disasters)

Furthermore, the warranty described here refers to a warranty on the IDEC product as a unit, and damages induced by the failure of an IDEC product are excluded from this warranty.

5. Limitation of liability

The warranty listed in this Agreement is the full and complete warranty for IDEC products, and IDEC shall bear no liability whatsoever regarding special damages, indirect damages, incidental damages, or passive damages that occurred due to an IDEC product.

6. Service scope

The prices of IDEC products do not include the cost of services, such as dispatching technicians. Therefore, separate fees are required in the following cases.

(1) Instructions for installation / adjustment and accompaniment at test operation (including creating application software and testing operation, etc.)

(2) Maintenance inspections, adjustments, and repairs

(3) Technical instructions and technical training

(4) Product tests or inspections specified by you

The above content assumes transactions and usage within your region. Please consult with an IDEC sales representative regarding transactions and usage outside of your region. Also, IDEC provides no guarantees whatsoever regarding IDEC products sold outside your region.

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		India	IDEC Controls India Private Ltd.	**Taiwan**	IDEC Taiwan Corporation		