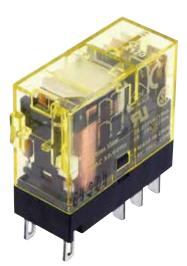
Slim Power Relays

RJ Series



Compact and rugged power relays. Large switching capacity.

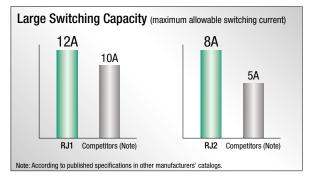
Plug-in terminal relays ideal for various applications such as control panels and machine tools.



- See website for details on approvals and standards.
- Lloyd Register type approved.

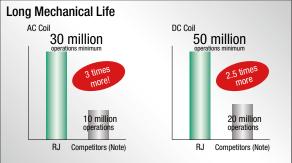
Large Switching Capacity

Highly conductive materials ensure stable electric conduction of current.



Excellent Durability

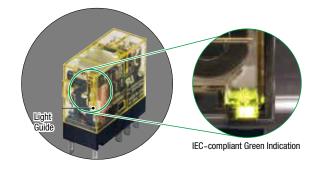
Our unique return spring structure provides improved durability and reliability of all mechanical parts.



Note: According to published specifications in other manufacturers' catalogs

High Visibility LED Indicator

IDEC's Unique Light Guide Structure. An RJ relay can be easily identified with the illuminating LED. IEC-compliant Green Indication.



Wide variety of models

Diode, reverse polarity diode, and RC circuits are available. Wide variety of AC/DC coil voltages.

elays & Socket

APEM Switches & Pilot Lights Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Proof Terminal Blocks

RJ Series Slim Power Relays

Plug-in Terminal

Shape		diode (DC coil only) LED indicator)	2-pole: Standard (with LED Indicator)			
	1-	pole (SPDT)	2-	pole (DPDT)		
Style	Part No.	Code	Part No.	Code		
Standard		A12, A24, A100,A110		A12, A24, A100,A110		
(with LED Indicator)	RJ1S-CL-□	A200, A220	RJ2S-CL-□	A200, A220		
Simple	BJ1S-C-□	D5, D6, D12, D24, D48	BJ2S-C-□	D5, D6, D12, D24, D48		
(without LED Indicator)	nj13-0-L	D100	hJ23-0-∐	D100		
With diode (DC coil only)	RJ1S-CLD-□	A12, A24, A100,A110	BJ2S-CLD-□	A12, A24, A100,A110		
(with LED indicator) A1: -, A2: +		A200, A220	NJZ3-GLD-L	A200, A220		
With diode (DC coil only) (without LED indicator)	RJ1S-CD-□	D5, D6, D12, D24, D48	BJ2S-CD-□	D5, D6, D12, D24, D48		
A1: -, A2: +		D100	NJ23-00-	D100		
With diode (DC coil only)	RJ1S-CLD1-□	D5, D6, D12, D24, D48	RJ2S-CLD1-	D5, D6, D12, D24, D48		
(with LED indicator) A1: +, A2: -		D100		D100		
Without diode (DC coil only)	RJ1S-CD1-□	D5, D6, D12, D24, D48	BJ2S-CD1-□	D5, D6, D12, D24, D48		
		D100	1525-001-	D100		
With RC	RJ1S-CLR-□	A12, A24, A100,A110	RJ2S-CLR-□	A12, A24, A100,A110		
(with LED indicator)		A200, A220		A200, A220		
With RC	RJ1S-CR-□	A12, A24, A100,A110	BJ2S-CR-□	A12, A24, A100,A110		
(without LED indicator)		A200, A220		A200, A220		

Coil Voltage Code *

Code	Rated Coil Voltage
A12	12V AC
A24	24V AC
A110	110V AC
A115	115V AC
A120	120V AC
A220	220V AC
A230	230V AC
A240	240V AC
D5	5V DC
D6	6V DC
D12	12V DC
D24	24V DC
D48	48V DC
D100	100-110V DC

Note: Specify a coil voltage code in place of \Box in the Part No.



LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

Sockets

Contact Ratings

	or marin	3-								
No. of Poles Contact		Allowable Co	ontact Power		Rated Load			Allaurahla		DIN Rail Products
		Resistive Load Inductive Load		Voltage	Resistive Load	Inductive Load $\cos \phi = 0.3$ L/R = 7 ms	Allowable Switching Current	Allowable Switching Voltage	Minimum Applicable Load (Note)	
	NO	3000VA AC	1875VA AC	250V AC	12A	7.5A				RJ
		360W DC	180W DC	30V DC	12A	6A	12A	250V AC	5V DC, 100 mA	DU
'	NC:	3000VA AC		250V AC	12A	7.5A	IZA	125V DC	(reference value)	RU
		180W DC		30V DC	6A	3A				RV8H
	NO	2000VA AC	1000VA AC	250V AC	8A	4A				RL
	2	240W DC	120W DC	30V DC	8A	4A	8A	250V AC 125V DC	5V DC, 10 mA (reference value)	
2		2000VA AC	000VA AC 1000VA AC	250V AC	8A	4A				
NC	120W DC	60W DC	30V DC	4A	2A					

Note: Measured at operating frequency of 120 operations per minute. Failure rate level P.

Approved Ratings

		U	IL			CSA							VDE			
Voltage		Resi	stive		Resistive			Inductive			Resistive		AC-15, DC-13 (Note)			
	R	J1	R	J2	R	J1	R	J2	R	J1	R	J2	RJ1	RJ2	RJ1	RJ2
	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NC	NO	NO	NO	NO
250V AC	12A	12A	8A	8A	12A	12A	8A	8A	7.5A	7.5A	4A	4A	12A	8A	6A	3A
30V DC	12A	6A	8A	4A	12A	6A	8A	4A	6A	3A	4A	2A	12A	8A	2.5A	2A

Note: According to the utilization categories of IEC60947-5-1

Coil Ratings

Ç 0	0011 114	ingo														
Sockets			0.1	Without LED Indicator			With LED Indicator			Operating Characteristics (against rated values at 20°C)						
ets	Rated	Voltage Coil Voltage Code		Rated Current (mA) ±15% (at 20°C)		Coil Resistance (Ω) ±10% (at 20°C)	Rated Current (mA) ±15% (at 20°C)		Coil Resistance (Ω) ±10% (at 20°C)	Resistance (Ω) Pickup		Maximum Allowable Voltage	Power Consumption			
				50 Hz	60 Hz	±10% (at 20 0)	50 Hz	60 Hz	±10% (at 20 0)	voltage		(Note)				
APEM		12V AC	A12	87.3	75.0	62.5	91.1	78.8	62.5							
APEIN		24V AC	A24	43.9	37.5	243	47.5	41.1	243							
Switches &		110V AC	A110	9.6	8.2	5270	9.5	8.1	5270							
Pilot Lights	AC 1	115V AC	A115	9.1	7.8	6030	9.0	7.7	6030				80% 30%	140%	Approx.	
Control Boxes	50/60 Hz	120V AC	A120	8.8	7.5	6400	8.7	7.4	6400				maximum	minimum	140 /0	0.9 VA (60Hz)
Emergency		220V AC	A220	4.8	4.1	21530	4.8	4.1	21530							
Stop Switches		230V AC	A230	4.6	3.9	24100	4.6	3.9	24100							
Enabling Switches		240V AC	A240	4.3	3.7	25570	4.3	3.7	25570							
Safety Products		5V	D5	1(06	47.2	11	10	47.2							
		6V	D6	88	3.3	67.9	92	2.2	67.9							
Explosion Proof	DC	12V	D12 44.2		1.2	271	48	8.0	271	70%	70% 10%	170%	Approx.			
	24V	D24	22	2.1	1080	25	5.7	1080	maximum minimum			0.53W				
Terminal Blocks		48V	D48	11	.0	4340	10).7	4340							
Relays & Sockets		100-110V	D100	5.3	-5.8	18870	5.2-	-5.7	18870			160%				

Note: Maximum allowable voltage is the maximum voltage that can be applied to relay coils. Circuit Protectors

Power Supplies

Specifications

LED Illumination	Model		RJ1S	RJ2S			
Controllers	Number of Poles		1-pole	2-pole			
	Contact Configu	uration	SPDT	DPDT			
Operator Interfaces	Contact Materia	al	Silver-nickel alloy				
	Degree of Prote	ction	IP40				
Sensors	Contact Resista	nce (initial value) (*1)	50 mΩ maximum				
AUTO-ID	Operate Time (*	⁵ 2)	15 ms maximum				
	Release Time (*	2)	10 ms maximum (with diode/with RC: 20 ms maxin	num)			
	D : 1 . 1 .	Between contact and coil	5000V AC, 1 minute	5000V AC, 1 minute			
	Dielectric Strength	Between contacts of the same pole	1000V AC, 1 minute	1000V AC, 1 minute			
Relays	Suengui	Between contacts of different poles	-	3000V AC, 1 minute			
Cookete	Vibration	Operating extremes	10 to 55 Hz, amplitude 0.75 mm				
Sockets	Resistance	Damage limits	10 to 55 Hz, amplitude 0.75 mm				
DIN Rail Products	Shock	Operating extremes	NO contact: 200 m/s2, NC contact: 100 m/s2				
110000	Resistance	Damage limits	1000 m/s ²				
	Electrical Life (rated load)		AC load: 200,000 operations minimum (operation frequency 1800 operations per hour) DC load: 100,000 operations minimum (operation frequency 1800 operations per hour)				
RJ	Mechanical Life (no load)		AC coil: 30,000,000 operations minimum (operation frequency 18,000 operations per hour) DC coil: 50,000,000 operations minimum (operation frequency 18,000 operations per hour)				
RU	Operating Temperature (*3)		-40 to +70°C (no freezing)				
	Operating Hum	idity	5 to 85% RH (no condensation)				
RV8H	Weight (approx	.)	19g				

RL Note: Above values are initial values.

*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.

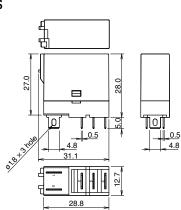
Applicable Socket

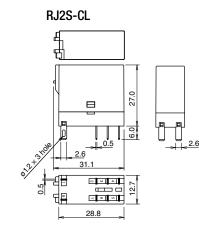
Terminal	Part	Dogo		
Terminar	RJ1S (1-pole)	RJ2S (2-pole)	Page	
Standard Screw Terminal	SJ1S-05B	SJ2S-05B		
Finger-safe Screw Terminal	SJ1S-07L	SJ2S-07L	H-043	
Push-in Terminal	SJ1S-21L	SJ2S-21L		

Relay Coil Tape Color

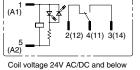
Coil Voltage	Coil Color
12V AC	Yellow
24V AC	White
110V AC	Clear
115V	Yellow
120V AC	Blue
220V AC	Black
230V AC	Yellow
240V AC	Red
5V DC	Yellow
6V DC	Yellow
12V DC	Yellow
24V DC	Green
48V DC	Yellow
100-110V DC	Yellow

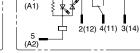
Dimensions RJ1S



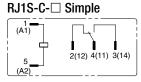


RJ1S-CL- Standard (w/LED Indicator)

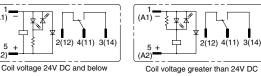




Coil voltage greater than 24V AC/DC



RJ1S-CLD- With Diode (w/LED Indicator)

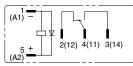


(A1

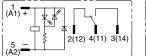
RJ1S-CD-□ With Diode

(A1)

(A2)

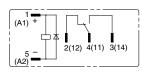


RJ1S-CLD1-□ With Diode (w/LED Indicator)

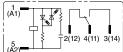




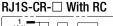
RJ1S-CD1-□ With Diode

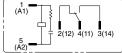


RJ1S-CLR-□ With RC (w/LED Indicator)



Coil voltage 24V AC and below





Coil voltage greater than 24V AC

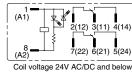


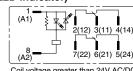
(12)

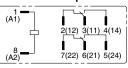
2(12) 4(11) 3(14)

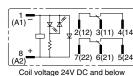
2(12) 4(11) 3(14)

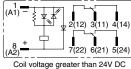




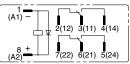




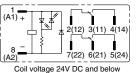


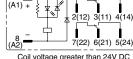


RJ2S-CD-□ With Diode



RJ2S-CLD1- With Diode (w/LED Indicator)





Coil voltage greater than 24V DC

RJ2S-CD1-□ With Diode

(A1) +
\downarrow \downarrow 2(12) 3(11) 4(14)
(A2) 7(22) 6(21) 5(24)

RJ2S-CLR-□ With RC (w/

1 (A1) 2(12) 3(11) 4(14) 8 (A2) 7(22) 6(21) 5(24)
Coil voltage 24V AC and below

B.I2S-CB-□ With BC

2(12) 3(11) 4(14)				
╎╵╏╴╴╴╴╴				
8 (A2) 7(22) 6(21) 5(24)				

/LED Indicator)					
(A1)	2(12) 3	(11) 4(14)			

Coil voltage greater than 24V AC

Sockets DIN Rail Products

RU
RV8H
RL

APEM Switches &

Pilot Lights

Control Boxes

Emergency Stop Switches

Safety Products

Explosion Proof

Terminal Blocks

Circuit

Protectors

Power Supplies

LED Illumination

Controllers

Operator

Interfaces Sensors

AUTO-ID

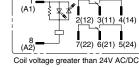
Enabling

Switches

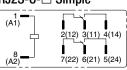
All dimensions in mm.

RJ2S-CL- Standard (w/LED Indicator)

2(12) 3(11) 4(14)



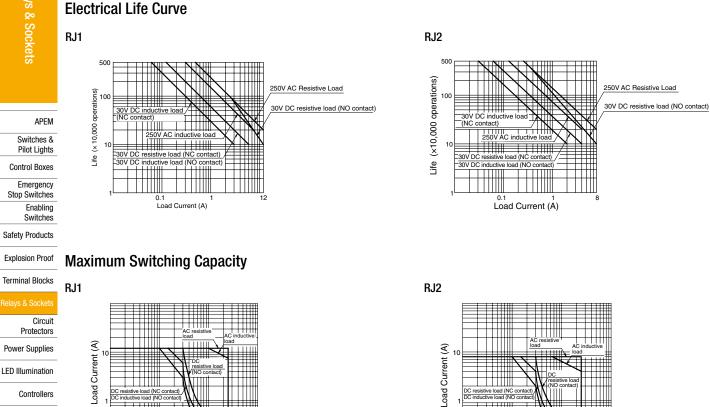




RJ2S-CLD-□ With Diod

le (v	w/LED Indicat	or)
14)	(A1) -	,2(12) 3(11)
24)		7(22) 6(21)

Relays & Sockets



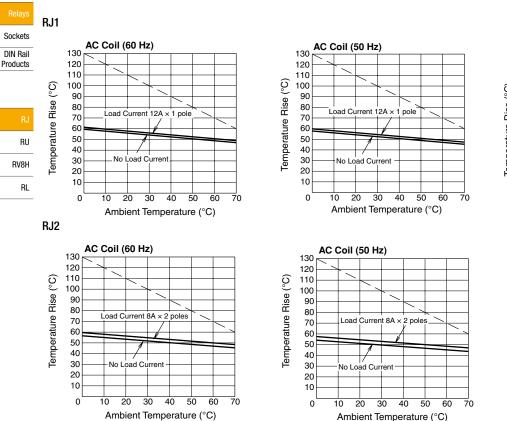
Operating Temperature and Coil Temperature Rise

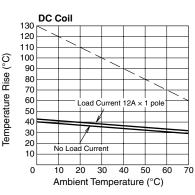
100 250

10

Load Voltage (V)

0.1



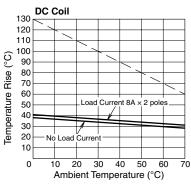


10

100 250

Load Voltage (V)

0.1



The above temperature rise curves show characteristics when 100% the rated coil voltage is applied. The slanted dashed line indicates allowable temperature rise for the coil at different ambient temperatures.

Operator Interfaces Sensors

AUTO-ID

APEM

Switches & Pilot Lights

Control Boxes Emergency

Stop Switches Enabling Switches

Safety Products

Explosion Proof

Terminal Blocks

Circuit Protectors

Power Supplies

LED Illumination

Controllers

Operator Interfaces

Sensors

AUTO-ID

RU	
RV8H	
RL	

Safety Precautions

Turn off the power to the relay before starting installation, removal, wiring, maintenance, and inspection of the relays. Failure to turn power off may cause electrical shock or fire hazard.

Observe specifications and rated values, otherwise electrical shock or fire hazard may be caused.

Use wires of the proper size to meet the voltage and current

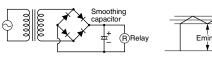
requirements. Tighten the terminal screws on the relay socket to the proper tightening torque.

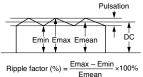
Instructions

Driving Circuit for Relays

- 1. To make sure of correct relay operation, apply rated voltage to the relay coil.
- 2. Input voltage for the DC coil:

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

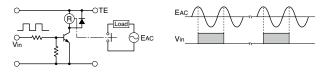




Emax = Maximum of pulsating current = Minimum of pulsating current Emin Emean = DC mean value

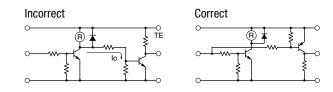
3. Operating the relay in synchronism with AC load:

If the relay operates in synchronism with the AC power voltage of the load, 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.

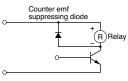


4. Leakage current while relay is off:

When driving an element at the same time as the relay operation. a special consideration is needed for the circuit design. As shown in the incorrect circuit below, Leakage current (lo) 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, causing the transistor to deteriorate and sometimes to break. 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 transistor. Select a Zener diode with a Zener voltage slightly higher than the power voltage.





Ρ

APEM

Switches & Pilot Lights Control Boxes Emergency Stop Switches Enabling Switches Safety Products Explosion Terminal B Prote Power Sup LED Illumir Contr Ope Inter Se

Protection for Relay Contacts

Instructions

 The contact ratings show maximum values. Make sure that these values are not exceeded. 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.
Contact protection circuit:

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

Judoto	_		
n Proof Blocks ockets	RC	Power C R Ind. Load	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 μ F
Circuit ectors upplies nation		Power R	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
rollers perator rfaces ensors ITO-ID	Diode	Power D Ind. Load	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
Relays	Varistor	Power Ind. Load	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.

Sockets DIN Rail

RU

RV8H

AU

Products 3. Do not use a contact protection circuit as shown below:

Power	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.
Power Load	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, however, will improve the switching characteristics of a DC inductive load.

Other Precautions

1. General notice:

- To maintain the initial characteristics, do not drop the relay or shock the relay.
- The relay cover cannot be removed from the base during normal operation. To maintain the initial characteristics, do not remove the relay cover.
- Use the relay in environments free from condensation of dust, sulfur dioxide (SO₂), and hydrogen sulfide (H₂S).
- Make sure that the coil voltage does not exceed the applicable coil voltage range.
- 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 consideration.

- a) Connect an integral circuit.
- b) Suppress the pulse voltage due to bouncing within the noise margin of the load.
- UL- and CSA-approved ratings may differ from product rated values determined by IDEC.
- 4. Do not use relays in the vicinity of strong magnetic field as this may affect relay operation.
 - DC diode type has polarity.
 - The surge absorbing element on AC relays with RC or DC relays with diode is provided to absorb the counter electromotive force generated by the coil. When the relay is subject to an excessive external surge voltage, the surge absorbing element may be damaged. Add another surge absorbing provision to the relay to prevent damage.

elay																			
elays & Sockets																			
Soc																			
ket																			
	_																		
			_										 					 	
																			-
APEM Switches &																			
Pilot Lights	_												 					 	 -
Control Boxes																			_
Emergency Stop Switches Enabling Switches																			
Safety Products																			
Explosion Proof																			
Terminal Blocks										-									
Relays & Sockets						-						-	-						-
Circuit Protectors		-				-					-		-			-			-
Power Supplies			_																
LED Illumination						-		-		-			-			-	-		
																			 _
Controllers	_																		-
Operator Interfaces						-													
Sensors		_											 						
AUTO-ID	_																		
Sockets																			
DIN Rail Products																			
FIUUUCIS																			
RJ																			
RU										-									
RV8H		_				-							-						
RL			_			-					-		-						
			_				 						 					 	 -
		_				-				-			-						-
	_		_							<u> </u>								 	
		_				-							-						
				 L			 1			 				1					 L



CÔNG TY TNHH THƯƠNG MẠI KỸ THUẬT ĐIỆN CITY

Nhà phân phối thiết bị điện công nghiệp hàng đầu Việt Nam











TE TAIWAN METERS





LIÊN HỆ VỚI CHÚNG TÔI

Địa chỉ: 125 Phú Châu, KP1, P. Tam Bình, TP. Thủ Đức, TP. HCM Hotline: 0909 808 905 (Zalo) Email: minh.diencity@gmail.com Website: diencity.com