

Section

E

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- RY Series E-19

Latching Relays

- RR2KP Series E-23
- RH2L Series E-26
- RY2KS Series E-29
- RY2L Series E-32






Solid State Relays

- RSS Series E-35

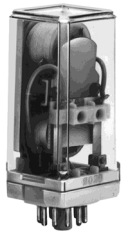


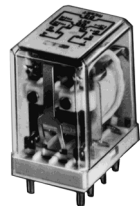


Selection Guides


General Purpose Relays

	RU Series		RR Series	RH Series	RM Series	RY Series	
Appearance							
Page	E-3		E-6	E-10	E-16	E-19	
Contact Configuration	2, 4 Form C		1, 2, 3 Form C	1, 2, 3, 4 Form C	2 Form C	2, 4 Form C	
Contact Rating (resistive)	DPDT: 10A, 30V DC 10A, 250V AC 4PDT: 6A, 30V DC 6A, 250V AC		10A, 30V DC 10A, 120V, 240V AC 1/3HP, 240V AC 1/4HP, 120V AC	10A, 30V DC 10A, 120V, 240V AC 1/3HP, 240V AC 1/6HP, 120V AC	5A, 30V DC 5A, 120V AC, 240V AC	DPDT: 3A, 30V DC; 3A, 120V AC, 240V AC 4PDT: 5A, 30V DC; 5A, 120V AC, 240V AC	
Contact Material	DPDT	AuSn0In (silver tin oxide indium)	Silver	Silver-cadmium oxide	Silver	Standard	Silver, gold-plated
	4PDT	AuAg/Ag (gold-silver alloy on silver)				Bifurcated	Silver-palladium alloy (Ag-PD Alloy)

General Purpose Latching Relays

	RR2KP Series	RH2L Series	RY2KS Series	RY2L Series
Appearance				
Page	E-23	E-26	E-29	E-32
Contact Configuration	2 Form C	2 Form C	2 Form C	2 Form C
Contact Rating (resistive)	10A, 30V DC 10A, 120V AC	10A, 30V DC 7.5A, 240V AC 10A, 120V AC	3A, 30V DC 3A, 120V AC	3A, 30V DC 3A, 120V AC 3A, 240V AC
Contact Material	Silver	Silver-cadmium oxide	Silver, gold-plated	Silver, gold-flashed

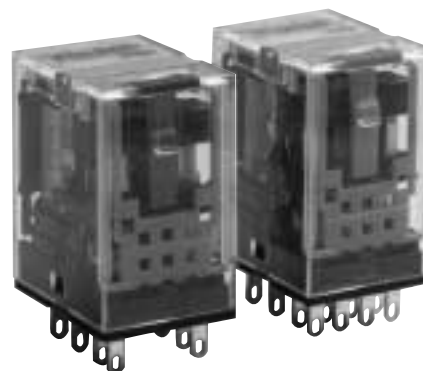
Solid State Relays

	RSS Series
Appearance	
Page	E-35
Contact Configuration	1 Form A (SPST-NO)
Contact Rating	10, 25, 50, 75, 90A 48V AC to 660V AC Output Ratings
Output	Dual SCR (zero crossing)

RU Series — General Purpose Relays

Key features of the RU series include:

- Non-polarized LED indicator
- Solder-free construction (lead-free)
- No internal wires
- Mechanical flag indicator
- Manual latching lever with color coding for AC or DC coil
- Snap-on marking plate
- Cadmium-free contacts
- Contact rating 6A: 4PDT
10A: DPDT



Specifications		RU2	RU4
	Contact Material	AuSn0In (silver tin oxide indium)	AuAg/Ag (gold-silver alloy on silver)
	Contact Resistance	50 mΩ maximum	
	Minimum Applicable Load	24VDC, 5mA (reference value)	
	Operating Time	20 msec maximum	
	Release Time	20 msec maximum	
	Maximum Continuous Applied Voltage (AC/DC) at 20°C	110%	
	Minimum Operating Voltage (AC/DC) at 20°C	80%	
	Drop-Out Voltage (AC) at 20°C	30%	
	Drop-Out Voltage (DC) at 20°C	10%	
	Power Consumption	1.1-1.4VA (AC); 0.9-1.0W (DC)	
	Dielectric Strength	Between contact and coil: 2,500VAC, 1 minute	Between contact and coil: 2,500VAC, 1 minute
		Between poles: 2,500VAC, 1 minute	Between poles: 2,000VAC, 1 minute
	Frequency Response	Between contacts of the same pole: 1,000VAC, 1 minute	Between contacts of the same pole: 1,000VAC, 1 minute
	Vibration Resistance	Operating extremes: 10 to 55Hz, Amplitude 1.0 mm p-p Damage limits: 10 to 55Hz, Amplitude 1.0 mm p-p	
	Shock Resistance	Operating extremes: 150 m/s ² (15G) Damage limits: 1,000 m/s ² (100G)	
	Life Expectancy	Mechanical: AC: 20,000,000 operations minimum DC: 30,000,000 operations minimum Electrical: see electrical life curve	
	Degree of Protection	IP40	
	Operating Temperature	-55 to +70°C (no freezing)	
	Weight	35g	



UL Recognized
File No. E66043



E

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. Coil Voltage:
RU4S - A110

Part Numbers

Part Numbers: RU Series with Options

Termination	Contact Configuration	Basic Part No.
S: Solder/plugin	DPDT	RU2S
	4PDT	RU4S

Part Numbers: Sockets

Relays	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount
RU2	SM2S-05	SM2S-05C	SY4S-51	SY4S-61 SY4S-62
RU4	SY4S-05	SY4S-05C	SY4S-51	SY4S-61 SY4S-62

Springs & Clips (optional)	
Part Number	Use With
SY4S-02F1 SFA-101 SFA-202	use with SY4S-05, -05C & SM2S-05, -05C
SFA-301 SFA-302 SY4S-51F1	use with SY4S-51, -61



See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

E

Ratings

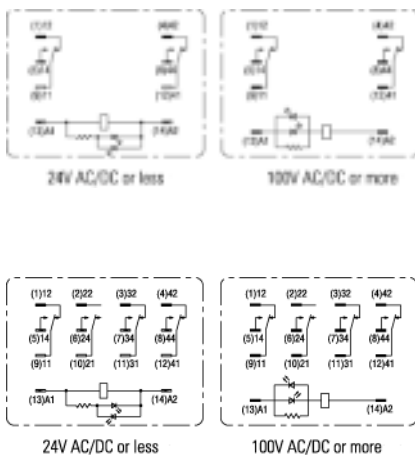
Coil Ratings

Rated Voltage		Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C	Inrush Current	Inductance	
		60Hz	50Hz			Energizing	De-Energizing
AC	24V	37.5mA	—	164 Ω	60mA	1.8H	0.96H
	110-120V	8.4mA	—	4,550 Ω	14mA	36H	22H
	220-240V	4.2mA	—	18,230 Ω	7mA	144H	87H
DC	12V	83.3mA		160 Ω	N/A		
	24V	41.7mA		605 Ω			
	110V	9.1mA		12, 100 Ω			

Contact Ratings

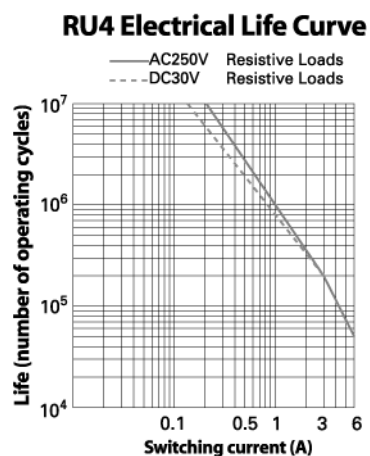
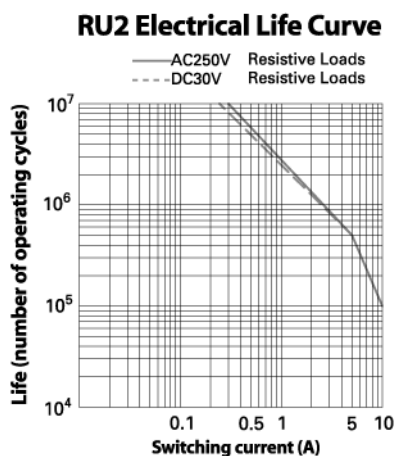
Voltage		Resistive	Inductive
30V DC	DPDT	10A	5A
	4PDT	6A	3A
110V DC	DPDT	0.6A	0.3A
	4PDT	0.4A	0.2A
120V AC	DPDT	10A	5A
	4PDT	6A	3A
240V AC	DPDT	10A	5A
	4PDT	6A	3A

Internal Circuit



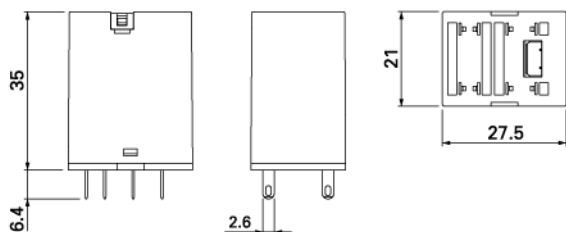
Electrical Life Curves

E

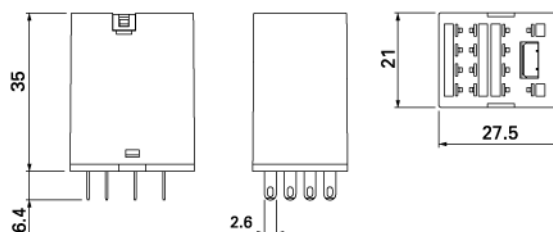


Dimensions

RU2 Dimensions



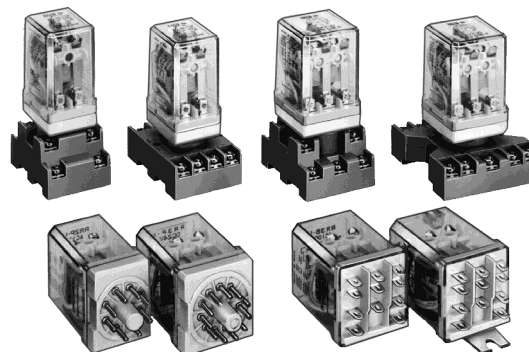
RU4 Dimensions



RR Series — General Purpose Power Relays

Key features of the RR series include:

- High reliability and long service life
- Available in octal (8- and 11-pin) or square (11-blade) base
- Options include check button for test operation, indicator light, and side flange
- DIN rail, surface and panel type sockets available for a wide range of mounting applications



UL Recognized
File Nos. E67770



CSA Certified
File No. LR35144



File No. BL95111332319*
* Pin Style Only
(does not apply to blade style)



* Pin Style Only

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. **Coil Voltage:**
RR3PA-U — AC120V

Specifications

Contact Material	Silver
Contact Resistance	30mΩ maximum (initial value)
Minimum Applicable Load	24V DC/10mA, 5V DC/20mA (reference value)
Operating Time	25ms maximum
Release Time	25ms maximum
Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
Minimum Operating Voltage (AC/DC) at 20°C	80% of the rated voltage
Drop-Out Voltage (AC) at 20°C	30% of the rated voltage
Drop-Out Voltage (DC) at 20°C	15% of the rated voltage
Power Consumption	AC: approximately 3VA (50Hz), 2.5VA (60Hz) DC: approximately 1.5W
Insulation Resistance	100MΩ minimum (measured with 500V DC megger)
Dielectric Strength	Pin (RR2P, RR3PA) Between live and dead parts: 1,500V AC, 1 minute Between contact circuit and operating coil: 1,500V AC, 1 minute Between contact circuits: 1,500V AC, 1 minute (1,000V AC between NO-NC contacts) Blade (RR1BA, RR2BA, RR3B) Between live and dead parts: 2,000V AC, 1 minute Between contact circuit and operating coil: 2,000V AC, 1 minute Between contact circuits: 2,000V AC, 1 minute Between contacts of same polarity: 1,000V AC, 1 minute
Frequency Response	1,800 operations/hour
Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
Vibration Resistance	0 to 6G (55Hz maximum)
Shock Resistance	100N (approximately 10G)
Life Expectancy	Electrical: over 500,000 operations (120V, 50/60Hz, 10A) Mechanical: over 10,000,000 operations
Operating Temperature	−30 to +70°C
Weight	RR2P: 90g, RR3P/RR3PA: 96g (approximately) RR1BA/RR2BA/RR3B: 82g (approximately)

Part Numbers

Part Numbers: RR Series with Options

Termination	Contact Configuration	Basic Part No.	Indicator Light	Check Button	Light and Check Button	Side Flange
P, PA (pin)	DPDT	RR2P-U	RR2P-UL	RR2P-UC	RR2P-ULC	—
	3PDT	RR3PA-U	RR3PA-UL	RR3PA-UC	RR3PA-ULC	—
B, BA (blade)	SPDT	RR1BA-U	RR1BA-UL	RR1BA-UC	RR1BA-ULC	RR1BA-US
	DPDT	RR2BA-U	RR2BA-UL	RR2BA-UC	RR2BA-ULC	RR2BA-US
	3PDT	RR3B-U	RR3B-UL	RR3B-UC	RR3B-ULC	RR3B-US



1. RR1BA, RR2BA, and RR3PA are U.S. standard terminal arrangements.
2. For diode option on DC coils please consult factory.

Ratings

Coil Ratings

Rated Voltage		Rated Current ±15% at 20°C		Coil Resistance ±10% at 20°C	Inrush Current	Inductance	
		60Hz	50Hz			Energizing	De-Energizing
AC	6V	420mA	490mA	4.9Ω	720mA	0.04H	0.02H
	12V	210mA	245mA	18Ω	365mA	0.15H	0.08H
	24V	105mA	121mA	79Ω	182mA	0.57H	0.32H
	120V	20.5mA	24mA	2100Ω	35mA	15H	8.2H
	240V	10.5mA	12.1mA	8330Ω	18mA	57H	32H
DC	6V	240mA		25Ω	N/A		
	12V	120mA		100Ω			
	24V	60mA		400Ω			
	48V	30mA		1600Ω			
	110V	13mA		8460Ω			

E

Contact Ratings

Voltage	Resistive			Inductive			Motor Load
	Nominal	UL	CSA	Nominal	UL	CSA	UL
30V DC	10A	10A	10A	7.5A	7A	7.5A	—
110V DC	0.5A	—	—	0.3A	—	0.5A	—
120V AC	10A	10A	10A	7.5A	7.5A	7.5A	1/4 hp
240V AC	7.5A	10A	10A	5A	7A	7A	1/3 hp



Inductive load:
 $\cos \phi = 0.3$, $L/R = 7ms$.

Applicable Sockets

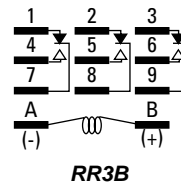
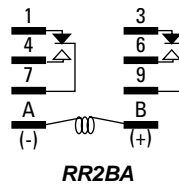
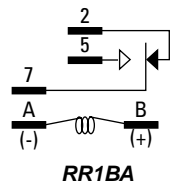
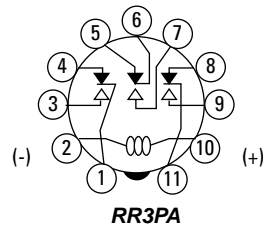
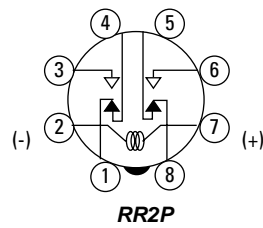
Part Numbers: Sockets

Relays	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	Springs & Clips (optional)	
				Part Numbers	Use With
RR2P	SR2P-05 SR2P-06	SR2P-05C	SR2P-51	SR2B-02F1	SR2P-05, -05C, -06
				SR3P-01F1	SR2P-51
RR3PA	SR3P-05 SR3P-06	SR3P-05C	SR3P-51	SR3B-02F1	SR3P-05, -05C, -06
				SR3P-01F1	SR3P-51
RR1BA RR2BA RR3B	SR3B-05	—	SR3B-51	SR3B-02F1	SR3B-05 SR3B-51

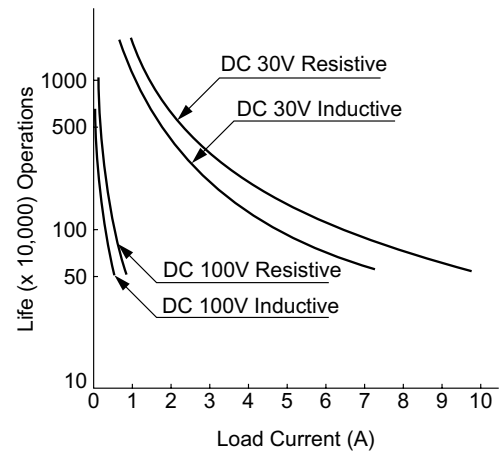
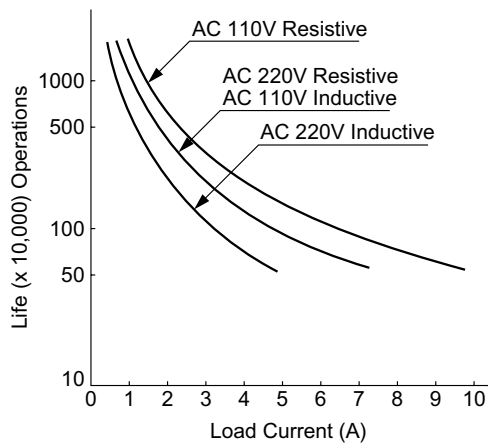


See Section F for details on sockets. All DIN rail mount sockets listed can be mounted using DIN rail BNDN1000.

Internal Circuit



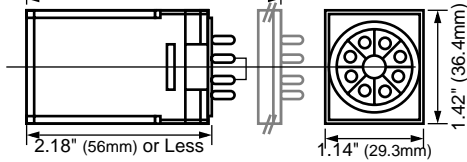
Electrical Life Curves



Dimensions

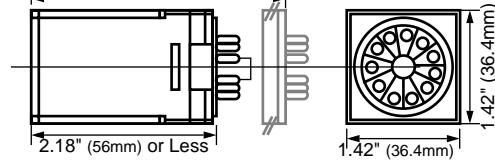
**8-Pin
RR2P**

Total length from panel surface including socket:
SR2P-05: 3.33" (85.3mm) [3.44" (88.3mm) maximum]
SR2P-51: 2.48" (63.6mm) [2.68" (68.7mm) maximum]



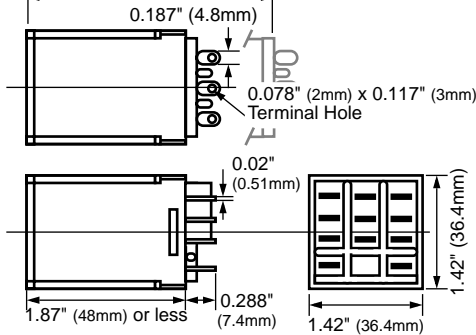
**11-Pin
RR3PA**

Total length from panel surface including socket:
SR2P-05: 3.33" (85.3mm) [3.44" (88.3mm) maximum]
SR2P-51: 2.48" (63.6mm) [2.68" (68.7mm) maximum]



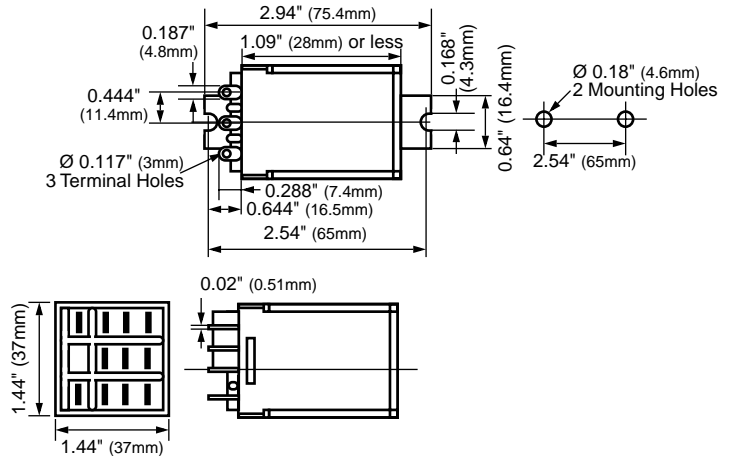
**Blade
RR1BA, RR2BA, RR3B**

Total length from panel surface including socket:
SR3B-02: 2.87" (73.7mm) [3.0" (76.7mm) maximum]
SR3B-51: 2.21" (56.6mm) [2.36" (60.6mm) maximum]



Note: Dimensions in [] include hold-down spring.

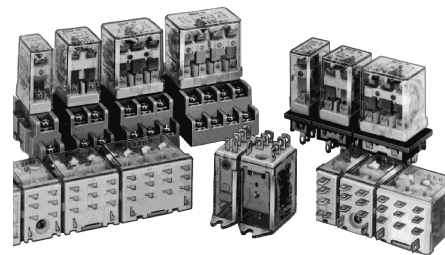
**Side Flange
RR1BA-US, RR2BA-US, RR3B-US**



RH Series — General Purpose Midget Relays

Key features of the RH series include:

- Compact midget size saves space
- High switching capacity (10A)
- Choice of blade or PCB style terminals
- Relay options include indicator light, check button, and top mounting bracket
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications



UL Recognized
Files No. E67770
E59804



CSA Certified
File No. LR35144



File No. BL95111332319



E

Specifications

Contact Material	Silver cadmium oxide
Contact Resistance	50mΩ maximum (initial value)
Minimum Applicable Load	24V DC/30mA, 5V DC/100mA (reference value)
Operating Time	SPDT (RH1), DPDT (RH2): 20ms maximum 3PDT (RH3), 4PDT (RH4): 25ms maximum
Release Time	SPDT (RH1), DPDT (RH2): 20ms maximum 3PDT (RH3), 4PDT (RH4): 25ms maximum
Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
Minimum Operating Voltage (AC/DC) at 20°C	80% of the rated voltage
Drop-Out Voltage (AC)	30% or more of the rated voltage
Drop-Out Voltage (DC)	10% or more of the rated voltage
Power Consumption	SPDT (RH1): DC: 0.8W AC: 1.1VA (50Hz), 1VA (60Hz) DPDT (RH2): DC: 0.9W AC: 1.4VA (50Hz), 1.2VA (60Hz) 3PDT (RH3): DC: 1.5W AC: 2VA (50Hz), 1.7VA (60Hz) 4PDT (RH4): DC: 1.5W AC: 2.5VA (50Hz), 2VA (60Hz)
Insulation Resistance	100MΩ min (measured with a 500V DC megger)
Dielectric Strength	SPDT (RH1) Between live and dead parts: 2,000V AC, 1 minute; Between contact circuit and operating coil: 2,000V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute DPDT (RH2), 3PDT (RH3), 4PDT (RH4) Between live and dead parts: 2,000V AC, 1 minute; Between contact circuit and operating coil: 2,000V AC, 1 minute; Between contact circuits: 2,000V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute
Frequency Response	1,800 operations/hour
Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
Vibration Resistance	0 to 6G (55Hz maximum)
Shock Resistance	SPDT/DPDT: 200N (approximately 20G) 3PDT/4PDT: 100N (approximately 10G)
Life Expectancy	Electrical: over 500,000 operations at 120V AC, 10A; (over 200,000 operations at 120V AC, 10A for SPDT [RH1], 3PDT [RH3], 4PDT [RH4]) Mechanical: 50,000,000 operations
Operating Temperature	−30 to +70°C
Weight	SPDT: 24g, DPDT: 37g (approximately) 3PDT: 50g, 4PDT: 74g (approximately)

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No.

RH2B-U

Coil Voltage:

AC110-120V

Part Numbers

Part Numbers: RH Series with Options

Termination	Contact Configuration	Basic Part No.	Indicator Light	Check Button	Indicator Light and Check Button	Top Bracket
B (blade)	SPDT	RH1B-U	RH1B-L*	—	—	RH1B-UT
	DPDT	RH2B-U	RH2B-UL	RH2B-UC	RH2B-ULC	RH2B-UT
	3PDT	RH3B-U	RH3B-UL	RH3B-UC	RH3B-ULC	RH3B-UT
	4PDT	RH4B-U	RH4B-UL	RH4B-UC	RH4B-ULC	RH4B-UT
V2 (PCB 0.078" [2mm] wide)	SPDT	RH1V2-U	RH1V2-L*	—	—	—
	DPDT	RH2V2-U	RH2V2-UL	RH2V2-UC	RH2V2-ULC	—
	3PDT	RH3V2-U	RH3V2-UL	RH3V2-UC	RH3V2-ULC	—
	4PDT	RH4V2-U	RH4V2-UL	RH4V2-UC	RH4V2-ULC	—



* RH1B(V2)-L is not UL recognized.

Ratings

Coil Ratings

Rated Voltage		Rated Current ±15% at 20°C								Coil Resistance ±15% at 20°C			
		60Hz				50Hz				SPDT	DPDT	3PDT	4PDT
		SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT				
AC	6V	150mA	200mA	280mA	330mA	170mA	238mA	330mA	387mA	18.8Ω	9.4Ω	6.0Ω	5.4Ω
	12V	75mA	100mA	140mA	165mA	86mA	118mA	165mA	196mA	76.8Ω	39.3Ω	25.3Ω	21.2Ω
	24V	37mA	50mA	70mA	83mA	42mA	59.7mA	81mA	98mA	300Ω	153Ω	103Ω	84.5Ω
	120V*	7.5mA	11mA	14.2mA	16.5mA	8.6mA	12.9mA	16.4mA	19.5mA	7,680Ω	4,170Ω	2,770Ω	2,220Ω
	240V†	3.2mA	5.5mA	7.1mA	8.3mA	3.7mA	6.5mA	8.2mA	9.8mA	3,1200Ω	15,210Ω	12,100Ω	9,120Ω
DC		SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT
	6V	128mA	150mA	240mA	250mA	47Ω	40Ω	25Ω	24Ω				
	12V	64mA	75mA	120mA	125mA	188Ω	160Ω	100Ω	96Ω				
	24V	32mA	36.9mA	60mA	62mA	750Ω	650Ω	400Ω	388Ω				
	48V	18mA	18.5mA	30mA	31mA	2,660Ω	2,600Ω	1,600Ω	1,550Ω				
	110V‡	8mA	9.1mA	12.8mA	15mA	13,800Ω	12,100Ω	8,600Ω	7,340Ω				



* For RH2 relays = 110/120V AC.

† For RH2 relays = 220/240V AC.

‡ For RH2 relays = 100/110V DC.

Rated Voltage		Coil Inrush				Coil Inductance							
						Energizing				De-Energizing			
		SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT
AC	6V	250mA	340mA	520mA	620mA	0.09H	0.08H	0.05H	0.05H	0.06H	0.04H	0.03H	0.02H
	12V	120mA	170mA	260mA	310mA	0.037H	0.30H	0.22H	0.18H	0.22H	0.16H	0.12H	0.10H
	24V	56mA	85mA	130mA	165mA	1.5H	1.2H	0.9H	0.73H	0.9H	0.63H	0.5H	0.36H
	120V*	12mA	16mA	26mA	33mA	37H	33H	21H	18H	22H	15H	12H	9H
	240V†	7mA	8mA	12mA	16mA	130H	130H	84H	73H	77H	62H	47H	36H
DC		SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT
	6V												
	12V												
	24V	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	48V												
	110V‡												



* For RH2 relays = 110/120V AC.

† For RH2 relays = 220/240V AC.

‡ For RH2 relays = 100/110V DC.

Ratings con't

Contact Ratings

Voltage	Rating	Resistive				Inductive				Motor Load		
		SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT	4PDT	SPDT	DPDT	3PDT
28V DC	UL	10A	10A	10A	10A	7.5A	—	—	7.5A	—	—	—
	UL	—	—	—	—	—	7A	—	—	—	—	—
30V DC	CSA	10A	10A	10A	10A	7A	7.5A	—	—	—	—	—
	Nominal	—	—	—	—	—	—	7.5A	7.5A	—	—	—
110V DC	Nominal	0.5A	0.5A	0.5A	0.5A	0.3A	0.3A	0.3A	0.3A	—	—	—
120V AC	UL	—	—	—	—	7.5A	—	—	—	1/6	1/6	1/6
	CSA	10A	10A	10A	10A	7.5A	7.5A	—	7.5A	—	—	—
	Nominal	—	—	—	—	7A	—	7.5A	—	—	—	—
240V AC	UL	10A	10A	—	7.5A	7A	7A	*	—	1/3	1/3	1/3
	CSA	—	—	—	—	—	—	7A	—	—	—	—
	Nominal	7A	7.5A	7.5A	4.5A	5A	5A	5A	5A	—	—	—



1. * 6.5A/pole, 20A total.

2. Inductive load $\cos \phi = 0.3$, $L/R = 7ms$.

E

Applicable Sockets

Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Surface Mount	Panel Mount	PCB Mount
RH1B	SH1B-05	SH1B-05C	—	SH1B-51	SH1B-62
RH2B	SH2B-05	SH2B-05C	SH2B-02	SH2B-51	SH2B-62
RH3B	SH3B-05	SH3B-05C	—	SH3B-51	SH3B-62
RH4B	SH4B-05	SH4B-05C	—	SH4B-51	SH4B-62

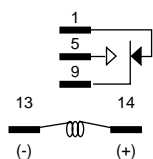
Spring & Clips (optional)

Part Number	Use With
SY2S-02F1 SFA-101 SFA-202	SH1B-05, 05C
SY4S-51F1 SFA-301 SFA-302	SH1B-51, 62
SY4S-02F1 SFA-101 SFA-202	SH2B-05, 05C
SY4S-51F1 SFA-301 SFA-302	SH2B-51, 62
SH3B-05F1 SFA-101, -202	SH3B-05, 05C
SY4S-51F1 SFA-301 SFA-302	SH3B-51, 62
SH4B-02F1 SFA-101, -202	SH4B-05, 05C
SY4S-51F1 SFA-301 SFA-302	SH4B-51, 62

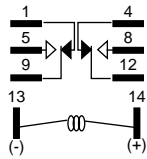


See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

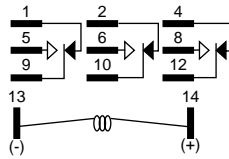
Internal Circuits



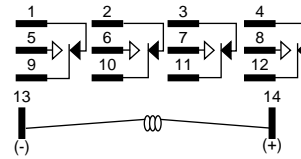
RH1



RH2



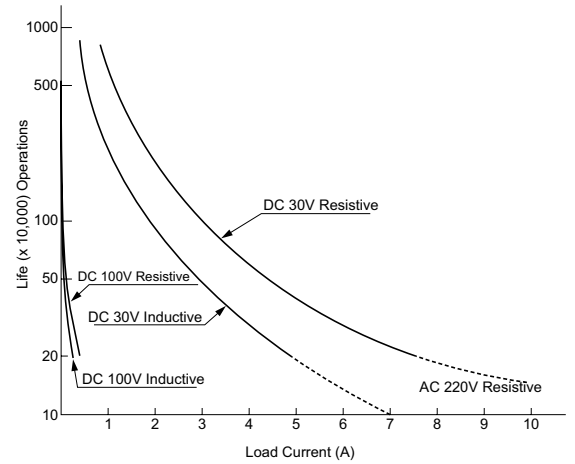
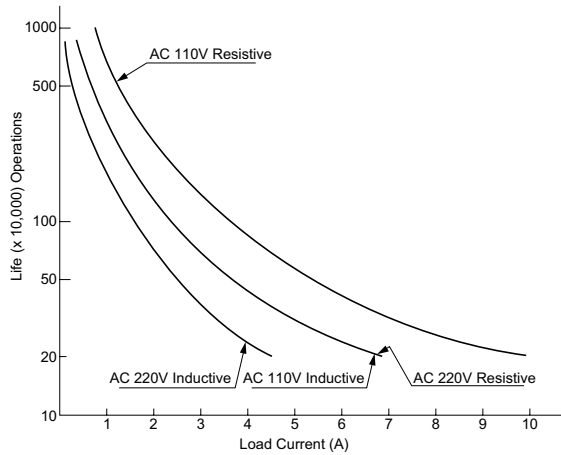
RH3



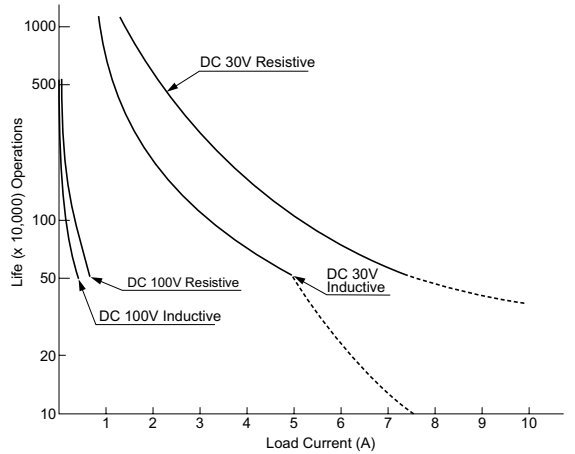
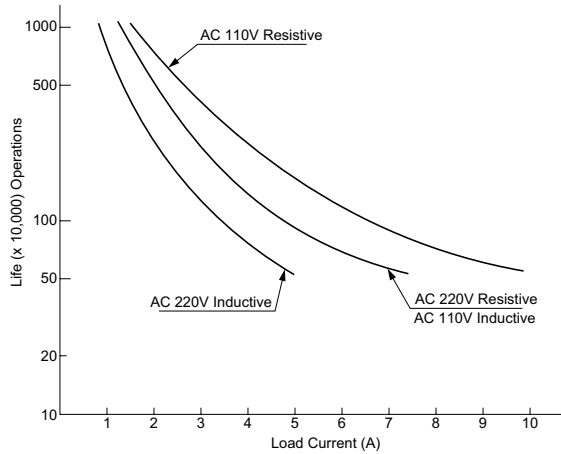
RH4

Electrical Life Curves

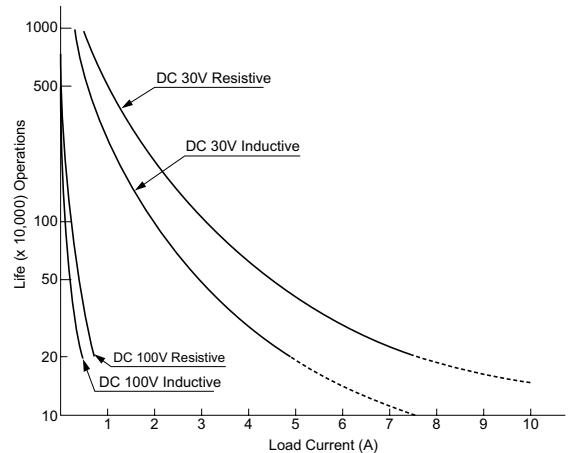
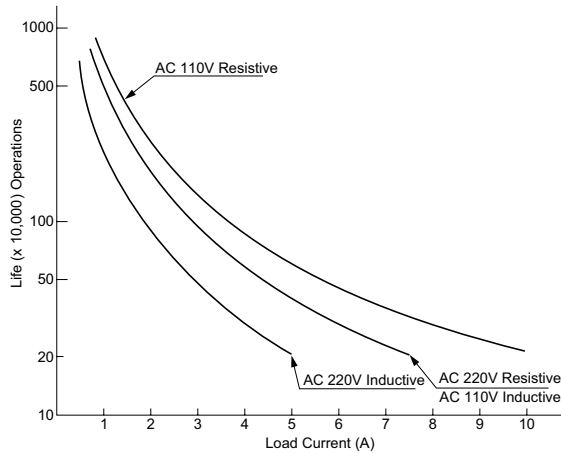
RH1



RH2



RH3 and 4

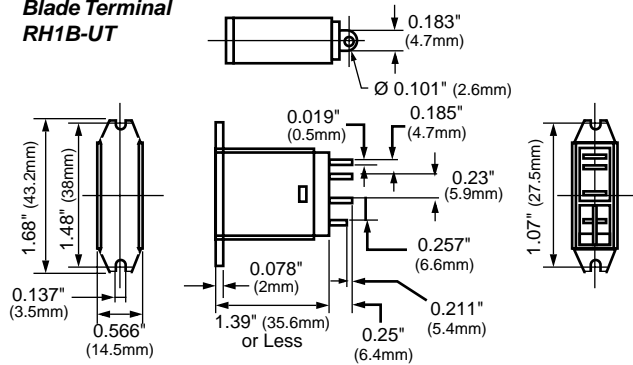


Dimensions

Top Bracket Mounting

Blade Terminal

RH1B-UT

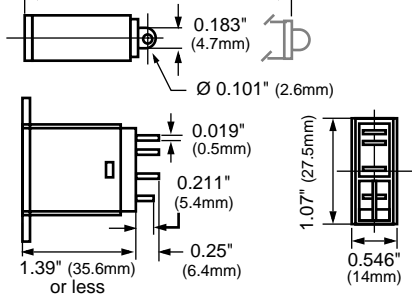


Plug-in

Blade Terminal

RH1B

Total length from panel surface including socket:
SH1B-05: 2.40" (61.5mm) maximum; **SH1B-51:** 1.54" (39mm) maximum
 Total length from panel surface including hold-down spring:
SH1B-05: 2.48" (63.5mm) maximum; **SH1B-51:** 1.62" (41.6mm) maximum

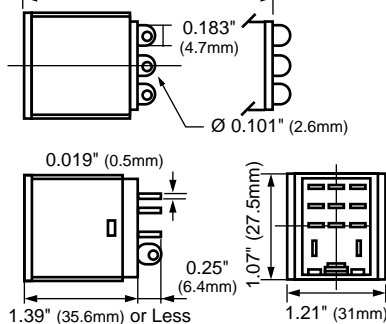


Plug-in

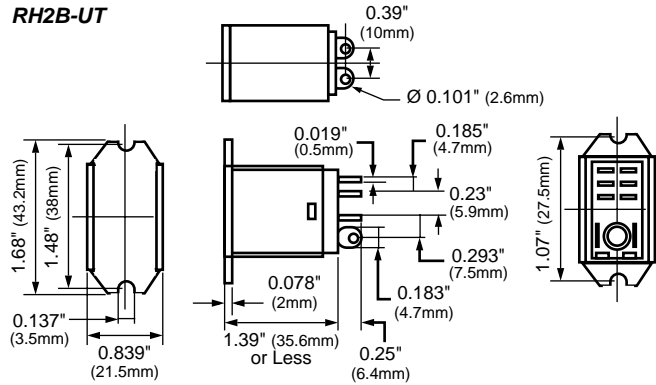
Blade Terminal

RH3B

Total length from panel surface including socket:
SH3B-05: 2.57" (66mm) maximum
 Total length from panel surface including hold-down spring:
SH3B-05: 2.65" (68mm) maximum

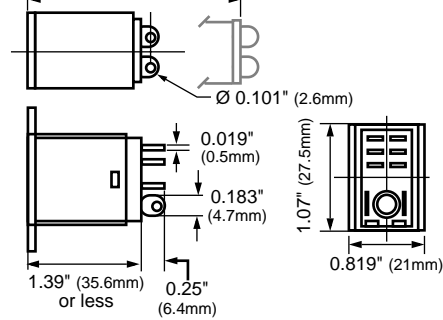


RH2B-UT



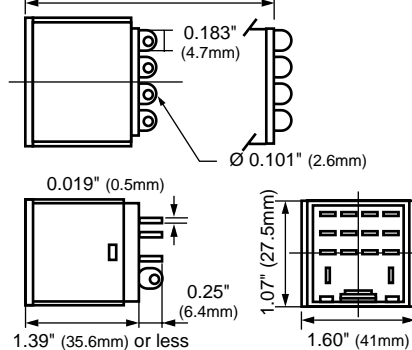
RH2B

Total length from panel surface including socket:
SH2B-05: 2.40" (61.5mm) maximum; **SH2B-51:** 1.54" (39.6mm)
 Total length from panel surface including hold-down spring:
SH2B-05: 2.48" (63.5mm) maximum; **SH2B-51:** 1.62" (41.6mm)



RH4B

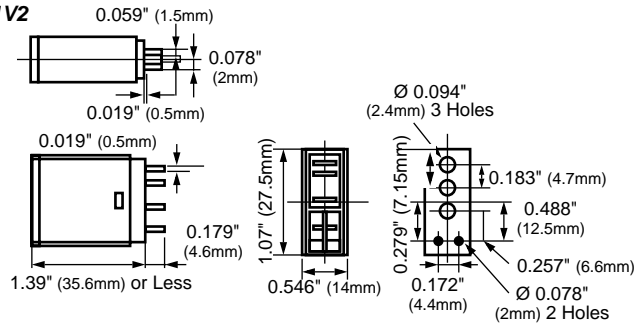
Total length from panel surface including socket:
SH4B-05: 2.40" (61.5mm) or less; **SH4B-51:** 1.54" (39.6mm)
 Total length from panel surface including hold-down spring:
SH4B-05: 2.48" (63.5mm) or less; **SH4B-51:** 1.62" (41.6mm)



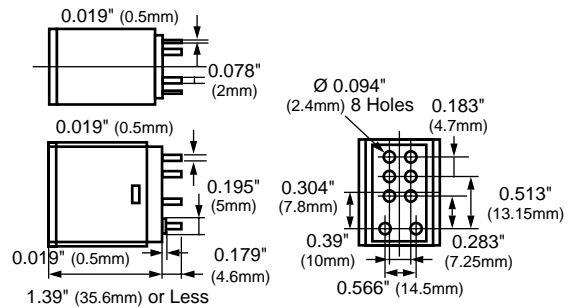
Dimensions

PCB Terminal

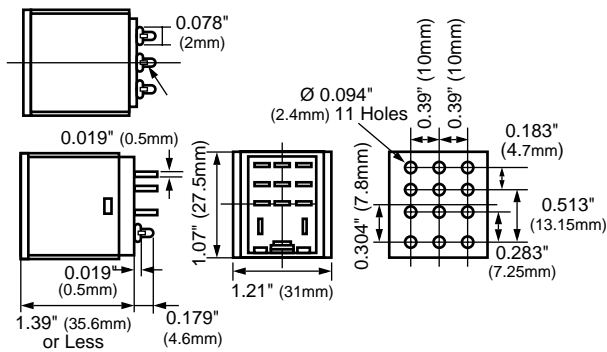
RH1V2



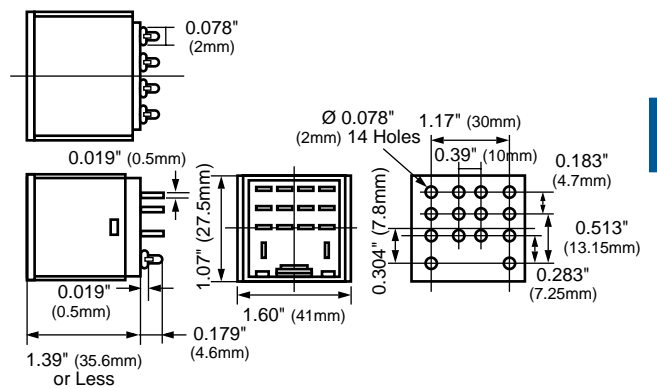
RH2V2



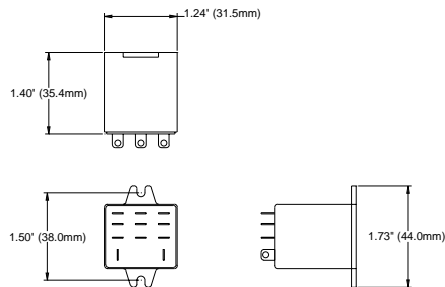
RH3V2



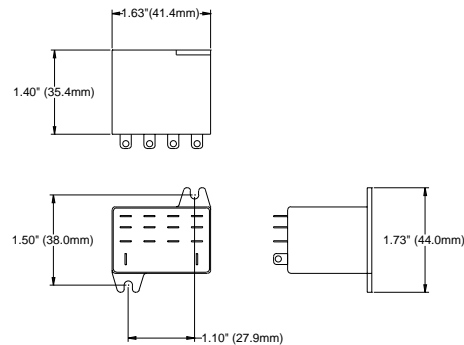
RH4V2



RH3B-UT



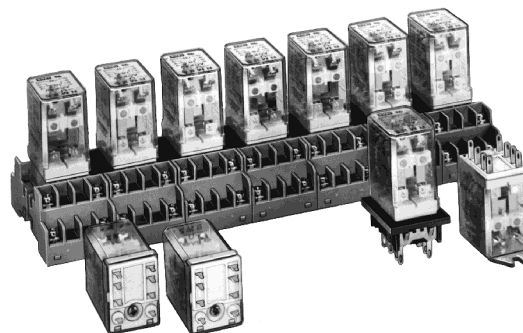
RH4B-UT



RM Series — General Purpose Miniature Relays

Key features of the RM series include:

- Compact miniature size saves space
- High reliability and long service life
- Choice of plug-in/solder or PCB type terminals
- Options include models with indicator light, check button, and top mount bracket
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications



UL Recognized
Files No. E59804



File No. BL951113332319



CSA Certified
File No. LR35144

E

Specifications

Contact Material	Silver
Contact Resistance	30mΩ maximum (initial value)
Minimum Applicable Load	24V DC/10mA, 5V DC/20mA (reference value)
Operating Time	20ms maximum
Release Time	20ms maximum
Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
Minimum Operating Voltage (AC/DC) at 20°C	80% of the rated voltage
Drop-Out Voltage (AC)	30% or more of the rated voltage
Drop-Out Voltage (DC)	10% or more of the rated voltage
Power Consumption	AC: Approximately 1.2VA (60Hz); 1.4VA (50Hz) DC: Approximately 0.9W
Insulation Resistance	100MΩ minimum (measured with 500V DC megger)
Dielectric Strength	Between live and dead parts: 2,000V AC, 1 minute Between contact circuit and operating coil: 2,000V AC, 1 minute Between contact circuits: 2,000V AC, 1 minute (1,000V between NO-NC contacts)
Frequency Response	1,800 operations/hour
Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
Vibration Resistance	0 to 6G (55Hz maximum)
Shock Resistance	200N (approximately 20G)
Life Expectancy	Electrical: over 500,000 operations (240V AC, 5A) Mechanical: over 50,000,000 operations
Operating Temperature	–30 to +70°C
Weight	35g (approximately)

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No.

RM2S-U

Coil Voltage:

AC110-120V

Part Numbers

Part Numbers: RM Series with Options

Termination	Contact Configuration	Part No.	Indicator Light	Check Button	Indicator Light and Check Button	Top Bracket
S: Solder/ plug-in	DPDT	RM2S-U	RM2S-UL	RM2S-UC	RM2S-ULC	RM2S-UT
V: PCB, 0.031" (0.8mm) wide	DPDT	RM2V-U	RM2V-UL	RM2V-UC	RM2V-ULC	—

Ratings

Coil Ratings

		Rated Current $\pm 15\%$ at 20°C		
Rated Voltage (V)		60Hz	50Hz	Coil Resistance $\pm 10\%$ at 20°C
AC	6	200mA	240mA	9.4Ω
	12	100mA	121mA	39.3Ω
	24	50mA	60.5mA	153Ω
	120*	11mA	13.1mA	4170Ω
	240 †	5.5mA	6.6mA	15210Ω
DC	6	150mA		40Ω
	12	75mA		160Ω
	24	36.9mA		650Ω
	48	18.5mA		2600Ω
	110‡	9.1mA		12100Ω



* For RM2 relays = 110/120V AC.

† For RM2 relays = 220/240V AC.

‡ For RM2 relays = 100/110V DC.

Contact Ratings

Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	5A	5A	5A	2.5A	—	2.5A
110V DC	0.4A	0.4A	—	0.4A	—	0.4A
120V AC	5A	5A	5A	2.5A	2.5A	2.5A
240V AC	5A	5A	5A	2A	2A	2A

Applicable Sockets

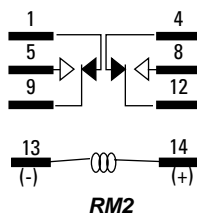
Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount	Spring (optional)
RM2S	SM25-05 SY4S-05	SM25-05C SY4S-05C	SY4S-51	SY4S-61 SY4S-62	SY4S-51F1 SFA-101 SFA-202 SFA-302 SFA-301

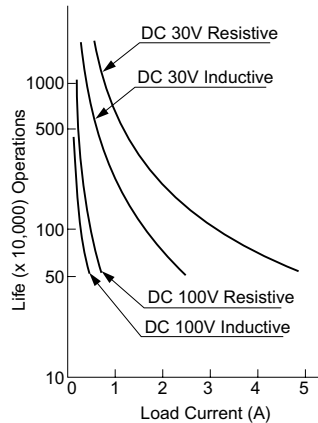
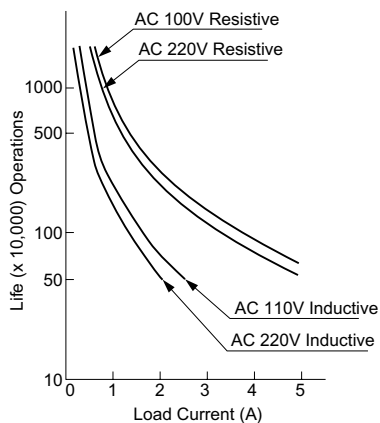


See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuit



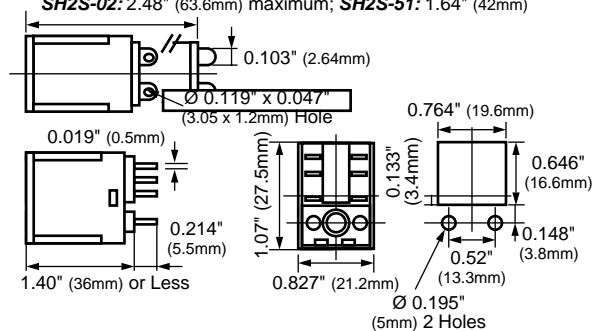
Electrical Life Curves



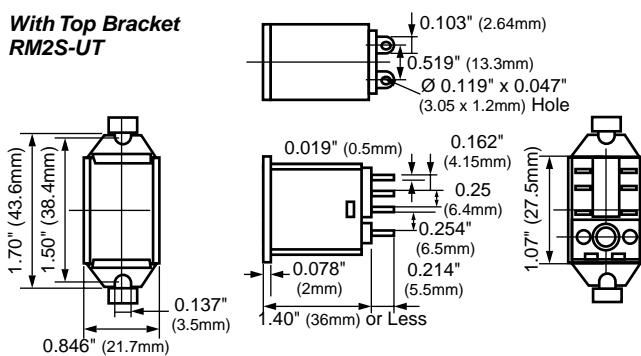
Dimensions

Solder Terminal Plug-in RM2S

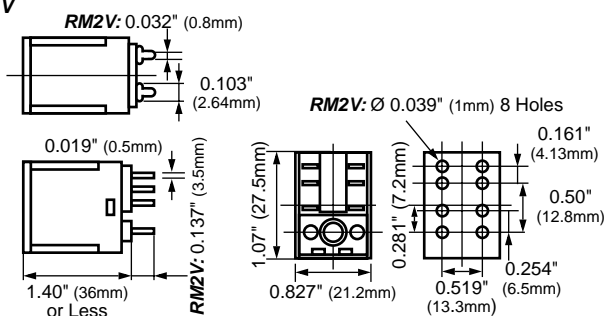
Total length from panel surface including socket:
SH2S-02: 2.40" (61.6mm) maximum; **SH2S-51**: 1.56" (40mm)
 Total length from panel surface including hold-down spring:
SH2S-02: 2.48" (63.6mm) maximum; **SH2S-51**: 1.64" (42mm)



With Top Bracket RM2S-UT



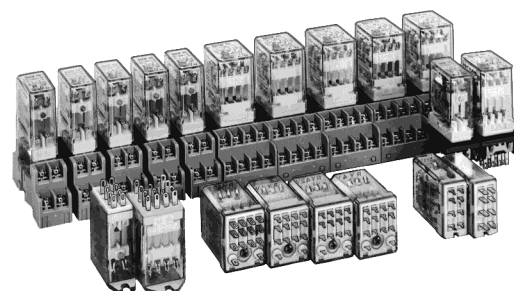
PCB Terminal RM2S, RM2V



RY Series — General Purpose Miniature Relays

Key features of the RY series include:

- Compact miniature size saves space
- 2PDT and 4PDT models, available with bifurcated crossbar contacts, ensure reliable low-current switching for dry circuit applications
- Choice of plug-in/solder or PCB type terminals
- Options include check button for test operation and indicator lights on 4PDT models
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications



Specifications	Contact Material	RY2, RY4: Silver (Ag), gold-plated RY22, RY42: Ag-Pd alloy
	Contact Resistance	RY2, RY4: 50mΩ maximum RY22, RY42: 100mΩ maximum
	Minimum Applicable Load	DPDT/4PDT: 5V DC, 10mA/24V DC, 5mA (reference value) Bifurcated contacts: DPDT/4PDT: 1V DC, 100μA (reference value)
	Operating Time	20ms maximum
	Release Time	20ms maximum
	Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
	Minimum Operating Voltage (AC/DC) at 20°C	80% of the rated voltage
	Drop-Out Voltage (AC)	30% or more of the rated voltage
	Drop-Out Voltage (DC)	10% or more of the rated voltage
	Power Consumption	RY2, RY22: DC: approximately 0.8W AC: approximately 1.1VA (50Hz), 1VA (60Hz) RY4, RY42: DC: approximately 0.9W AC: approximately 1.4VA (50Hz), 1.2VA (60Hz)
	Insulation Resistance	100MΩ minimum (measured with 500V DC megger)
	Dielectric Strength	DPDT: Between live and dead parts: 1,500V AC, 1 minute; Between contact and coil: 1,500V AC, 1 minute; Between contacts of different poles: 1,500V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute 4PDT: Between live and dead parts: 2,000V AC, 1 minute; Between contact and coil: 2,000V AC, 1 minute; Between contacts of different poles: 2,000V AC, 1 minute; Between contacts of the same pole: 1,000V AC, 1 minute
	Frequency Response	1,800 operations/hour
	Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
	Vibration Resistance	0 to 6G (55Hz maximum)
	Shock Resistance	RY2, RY22: 100N (approximately 10G) RY4, RY42: 200N (approximately 20G)
	Life Expectancy	RY2, RY4: Electrical: over 200,000 operations (120V, 3A) Mechanical: over 50,000,000 operations RY22, RY42: Electrical: over 200,000 operations (120V AC, 1A) Mechanical: over 50,000,000 operations
	Operating Temperature	−30 to +70°C
	Weight	DPDT: 23g; 4PDT: 34g (approximately)



UL Recognized
Files No. E59804



E



File No. BL951113332319



CSA Certified
File No. LR35144

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No.

RY4S-U

Coil Voltage:

AC110-120V

Part Numbers

Part Numbers: RY Series with Options

Termination	Contact Configuration	Basic Part No.	Indicator Light	Check Button	Indicator Light and Check Button	Top Bracket
S Solder/plug-in	DPDT	RY2S-U	RY2S-L *	—	—	RY2S-UT
	DPDT (bifurcated contacts)	RY22S-U	RY22S-L *	—	—	RY22S-UT
	4PDT	RY4S-U	RY4S-UL	RY4S-UC	RY4S-ULC	RY4S-UT
	4PDT (bifurcated contacts)	RY42S-U	RY42S-UL	RY42S-UC	RY42S-ULC	RY42S-UT
V PCB 0.031" (0.8mm) wide	DPDT	RY2V-U	RY2V-L *	—	—	—
	DPDT (bifurcated contacts)	RY22V-U	RY22V-L *	—	—	—
	4PDT	RY4V-U	RY4V-UL	RY4V-UC	RY4V-ULC	—
	4PDT (bifurcated contacts)	RY42V-U	RY42V-UL	RY42V-UC	RY42V-ULC	—

* RY2S-L, RY22-L, RY2V-L, and RY22V-L are not UL recognized or CSA certified.



E

Ratings

Coil Ratings

Rated Voltage (V)		Rated Current ±15% at 20°C				Coil Resistance ±10% at 20°C		Coil Inrush (60Hz)		Coil Inductance			
		60Hz		50Hz						Energizing		De-Energizing	
AC		DPDT	4PDT	DPDT	4PDT	DPDT	4PDT	DPDT	4PDT	DPDT	4PDT	DPDT	4PDT
	6V	150mA	200mA	170mA	240mA	18.8Ω	9.4Ω	250mA	340mA	0.09H	0.08H	0.06H	0.04H
	12V	75mA	100mA	86mA	121mA	76.8Ω	39.3Ω	120mA	170mA	0.37H	0.30H	0.22H	0.16H
	24V	37mA	50mA	42mA	60.5mA	300Ω	153Ω	56mA	85mA	1.5H	1.2H	.9H	0.63H
	120V*	7.5mA	11mA	8.6mA	13.1mA	7,680Ω	4,170Ω	12mA	16mA	37H	33H	22H	15H
	240V †	3.2mA	5.5mA	3.7mA	6.6mA	31,200Ω	15,210Ω	7mA	8mA	130H	130H	77H	62H
DC		DPDT		4PDT		DPDT	4PDT	N/A					
	6V	128mA		150mA		47Ω	40Ω						
	12V	64mA		75mA		188Ω	160Ω						
	24V	32mA		36.9mA		750Ω	650Ω						
	48V	18mA		18.5mA		2,660Ω	2,600Ω						
	110V‡	—		9.1mA		—	12,100Ω						

For RY4/R42 relays = AC110/120V AC.

For RY4/R42 relays = 220/240V AC.

For RY4/R42 relays = 100/110V DC.

Contact Ratings (gold plated)

Voltage	Contact	Resistive		Inductive	
		UL	CSA	UL	CSA
30V DC	DPDT	3A	3A	3A	1.5A
	4PDT	5A	5A	5A	1.5A
100V DC	DPDT	0.2A	—	0.2A	0.2A
	4PDT	0.2A	—	0.2A	0.2A
120V AC	DPDT	3A	3A	1.5A	1.5A
	4PDT	5A	5A	5A	5A
240V AC	DPDT	3A	3A	0.8A	0.8A
	4PDT	5A	5A	5A	5A

Contact Ratings (bifurcated)

Voltage	Resistive UL/CSA	Inductive UL/CSA
30V DC	1A	0.5A
120V AC	1A	0.5A
240V AC	0.8A	0.4A

Applicable Sockets

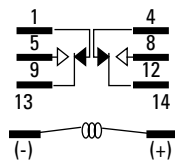
Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount	Spring (optional)
					Part Number Use With
RY2S RY22S	SY2S-05	SY2S-05C	SY2S-51	SY2S-61	SY2S-02F1 SFA-101 SFA-202
					SY2S-05, -05C
					SFA-301 SFA-302 SY4S-51F1
					SY2S-51, -61
RY4S RY42S	SY4S-05	SY4S-05C	SY4S-51	SY4S-61 SY4S-62	SY4S-02F1 SFA-101 SFA-202
					SY2S-05, -05C
					SFA-301 SFA-302 SY4S-51F1
					SY4S-51, -61

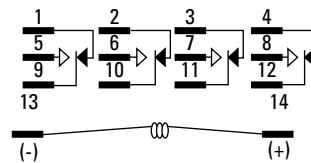


See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuits



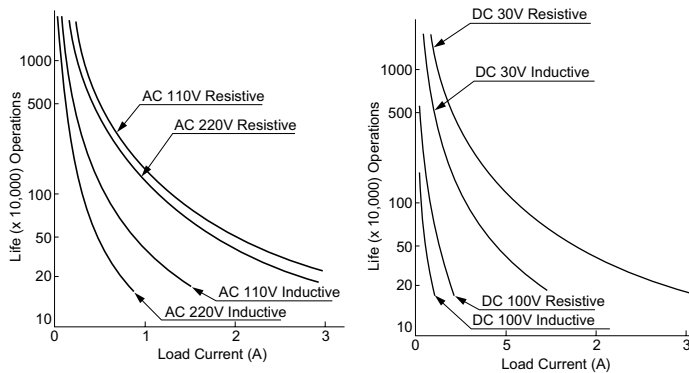
RY2, RY22



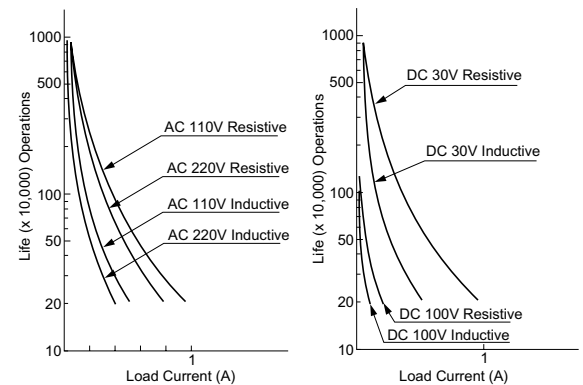
RY4, RY42

Electrical Life Curves

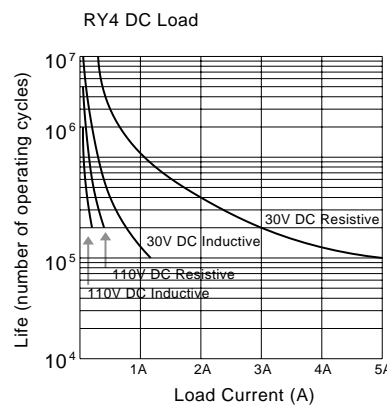
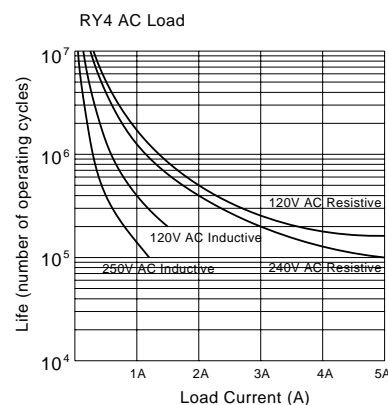
RY2



Bifurated Contacts RY42, RY22



RY4

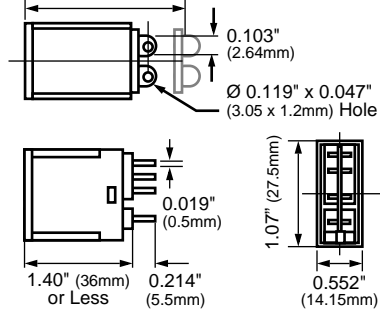


Dimensions

Solder Terminal

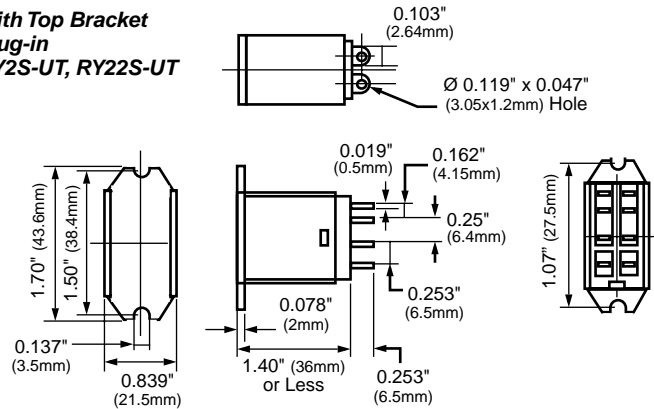
Plug-in RY2S RY22S

Total length from panel surface including socket:
SY2S-02: 2.40" (61.6mm) maximum; **SY2S-51**: 1.56" (40mm)
 Total length from panel surface including hold-down spring:
SY2S-02: 2.48" (63.6mm) maximum; **SY2S-51**: 1.64" (42mm)



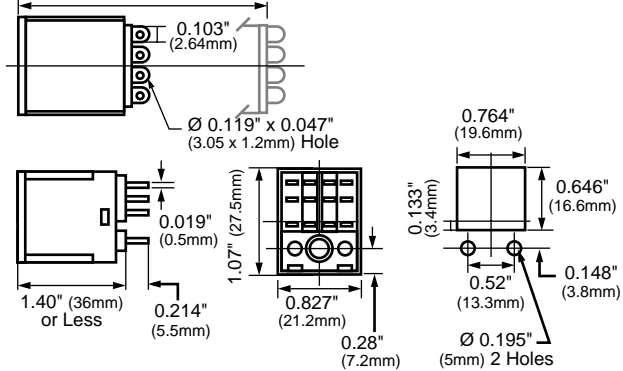
With Top Bracket

Plug-in RY2S-UT, RY22S-UT

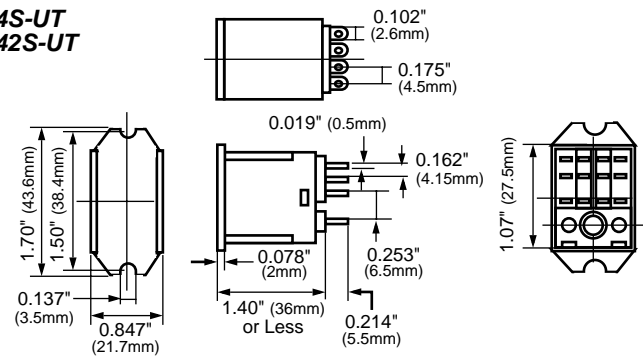


RY4S RY42S

Total length from panel surface including socket:
SY4S-02: 2.40" (61.6mm) maximum; **SY4S-51**: 1.56" (40mm)
 Total length from surface including hold-down spring:
SY4S-02: 2.48" (63.6mm) maximum; **SY4S-51**: 1.64" (42mm)

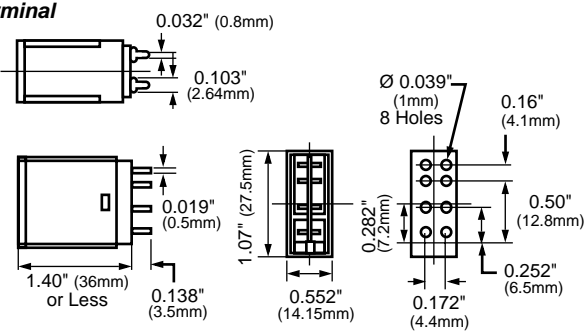


RY4S-UT RY42S-UT



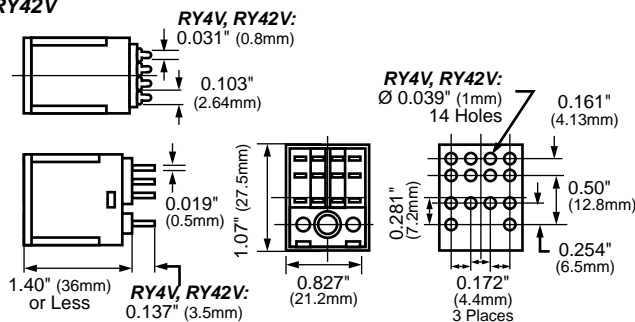
PCB Terminal

RY2V RY22V



PCB Terminal

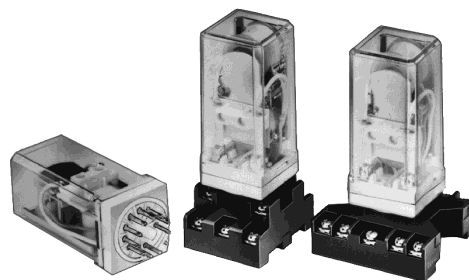
RY4V, RY42V



RR2KP Series — Magnetic Latching Relays

Key features of the RR2KP series include:

- Standard octal base (11-pin) termination
- Operates by pulse input and maintains condition even during power failure
- Coils rated for continuous duty
- High vibration and shock resistance
- Excellent self-holding performance (magnetic latch)
- Optional manual check button for circuit testing
- DIN rail, surface, and panel mount sockets available for a wide range of mounting applications



Specifications	Contact Material	Silver
	Contact Resistance	30mΩ maximum (initial value)
	Minimum Applicable Load	5V DC, 100mA
	Operating Time	25ms maximum
	Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage without overheating
	Minimum Set and Reset Voltage at 20°C	80% of the rated voltage
	Power Consumption	AC: approximately 2.4VA (50Hz), 2.2VA (60Hz) DC: approximately 1.5W
	Insulation Resistance	100MΩ minimum (with 500V DC megger)
	Dielectric Strength	Between live and dead parts: 1,500V AC, 1 minute Between contact circuit and opposite coil: 1,500V AC, 1 minute Between contact circuits: 1,500V AC, 1 minute (1,000V between NO-NC contacts)
	Frequency Response	1,800 operations/hour
	Temperature Rise	Coil: 85°C maximum; Contact: 65°C maximum
	Vibration Resistance	0 to 6G (55Hz maximum)
	Shock Resistance	100N (approximately 10G)
	Life Expectancy	Electrical: over 500,000 operations (120V, 10A) Mechanical: over 5,000,000 operations



UL Recognized
File No. E67770



CSA Certified
File No. LR35144

E

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. **Coil Voltage:**
RR2KP-U – AC120V

Part Numbers

Part Numbers: RR2KP Series

Termination	Contact Configuration	Standard	With Check Button
P: 11-Pin	DPDT	RR2KP-U	RR2KP-UC

Ratings

Coil Ratings

		Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C
Rated Voltage		60Hz	50Hz	
AC	6V	429mA	467mA	3.5Ω
	12V	184mA	200mA	23.8Ω
	24V	92mA	100mA	95Ω
	120V	22mA	24mA	2,200Ω
	240V	10.6mA	11.5mA	9,190Ω
DC	6V	240mA		25Ω
	12V	120mA		100Ω
	24V	60mA		400Ω
	48V	30mA		1,600Ω
	110V	13.8mA		7,960Ω

Contact Ratings

Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	10A	10A	10A	7.5A	7A	7.5A
100V DC	0.5A	—	—	0.5A	—	0.5A
120V AC	10A	10A	10A	7.5A	7.5A	7.5A
240V AC	7.5A	10A	10A	5A	7A	7A



2. Inductive load $\cos \phi = 0.3$, $L/R = 7\text{ms}$.

3. UL/CSA motor load rating 1/4 HP at 120V AC and 1/3 HP at 240V AC.

Applicable Sockets

Part Numbers: Sockets

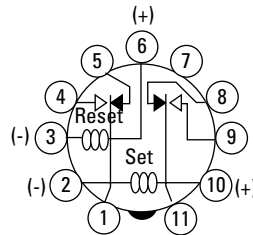
Relay	Snap DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel	Spring (optional)
RR2KP	SR3P-05 SR3P-06	SR3P-05C	SR3P-51	SR3P-06F3 SR3P-51F3



1. See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuits

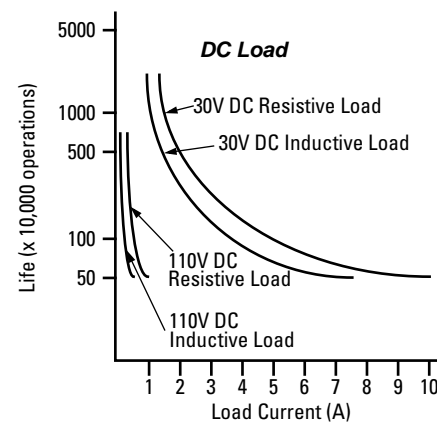
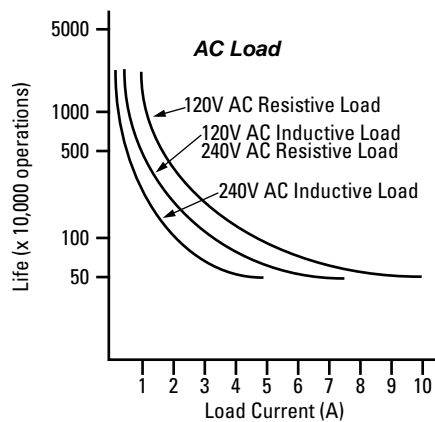
RR2KP Series



Bottom View

Shown in reset (unlatched) position.

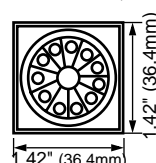
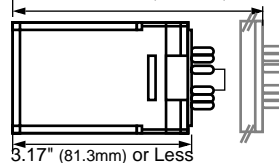
Electrical Life curves



Dimensions

**Plug-in
RR2KP**

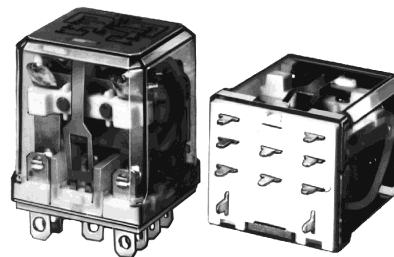
Total length from panel surface including socket:
SR3P-05: 4.13" (106mm) maximum; **SR3P-51**: 3.45" (88.4mm) maximum
 Total length from panel surface including hold down springs:
SR3P-05: 4.27" (109.5mm) maximum; **SR3P-51**: 3.62" (92.9mm) maximum



RH2L Series — Magnetic Latching Relays

Key features of the RH2L series include:

- Compact miniature size saves board space
- Power-saving operation by pulse inputs eliminates the need for continuous control voltage
- Coils rated for continuous duty
- Built-in operation indicator to show set/reset condition
- Available with blade and PC mount terminals
- DIN rail, surface, panel, and PCB type sockets available for a wide range of mounting applications
- Excellent self-holding performance (magnetic latching)



UL Recognized
File No. E67770



CSA Certified
File No. LR35144

E

Specifications

Contact Material	Silver cadmium oxide
Contact Resistance	50mΩ or less (initial value)
Minimum Applicable Load	5V DC, 100mA
Operating Time	30ms (AC); 20 ms (DC)
Maximum Continuous Applied Voltage (AC/DC)	110% of rated voltage
Minimum Set and Reset Voltage at 20°C	80% of rated voltage
Set Time	30ms or less (AC); 20ms or less (DC)
Reset Time	30ms or less (AC); 20ms or less (DC)
Power Consumption	Set coil: AC: approximately 1.2V; DC: approximately 2W Reset coil: approximately 0.5VA; DC: approximately 0.9W
Insulation Resistance	100MΩ minimum
Dielectric Strength	Between live and dead parts: 2,000V AC, 1 minute Between contact circuit and opposite coil: 2,000V AC, 1 minute Between contact circuits: 1,500V AC, 1 minute Between contacts of same pole: 1,000V AC, 1 minute
Frequency Response	1,800 operations/hour
Vibration Resistance	60N (approximately 6G) Maximum frequency 55Hz
Shock Resistance	100N or more (approximately 10G)
Life Expectancy	Electrical: over 200,000 operations Mechanical: over 10,000,000 operations
Operating Temperature	–30 to +70°C
Weight	50g

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. **Coil Voltage:**
RH2LB-U – AC120V

Part Numbers

Part Numbers: RH2L Series

Termination	Contact Configuration	Part No.
B: Blade	DPDT	RH2LB-U
V2: PCB - 0.079" (2mm)	DPDT	RH2LV2-U

Ratings

Coil Ratings

Rated Voltage		Set Coil			Reset Coil		
		Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C	Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C
		60Hz	50Hz		60Hz	50Hz	
AC	6V	220mA	227mA	8.8Ω	68mA	68.7mA	6.9Ω
	12V	100mA	103mA	41.6Ω	34mA	34.2mA	30.2Ω
	24V	50mA	51.2mA	182Ω	17.1mA	17.1mA	105Ω
	120V	10mA	10.3mA	4,670Ω	4.2mA	4.2mA	2,680Ω
DC	6V	333mA		18Ω	150mA		40Ω
	12V	167mA		72Ω	75mA		160Ω
	24V	83mA		288Ω	37.5mA		640Ω
	48V	42mA		1,150Ω	18.8mA		2,560Ω

E

Contact Ratings

Voltage	Resistive		Inductive		Motor Load	
	UL	CSA	UL	CSA	UL	CSA
30V DC	10A	10A	—	7.5A	—	—
120V AC	10A	10A	7.5A	7.5A	1/6HP	1/6HP
240V AC	7.5A	7.5A	6.5A	5A	1/3HP	1/3HP

Applicable Sockets

Part Numbers: Sockets

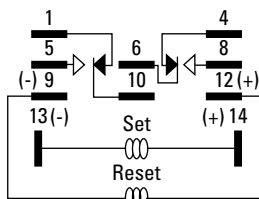
Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount	Spring (optional)
RH2LB	SH3B-05	SH3B-05C	SH3B-51	SH3B-62	SFA-101 SY4S-51F1



See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuits

RH2L Series

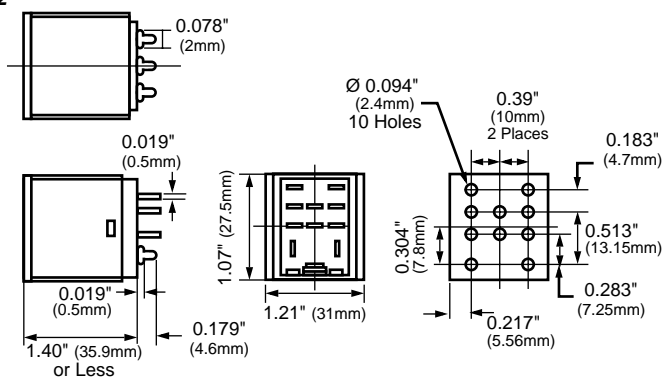


Bottom View

Shown in reset (unlatched) position.

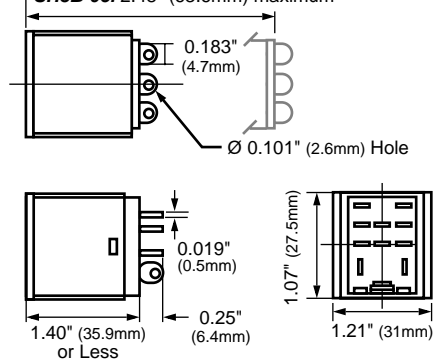
Dimensions

PCB Terminal RH2LV2



Plug-in RH2LB

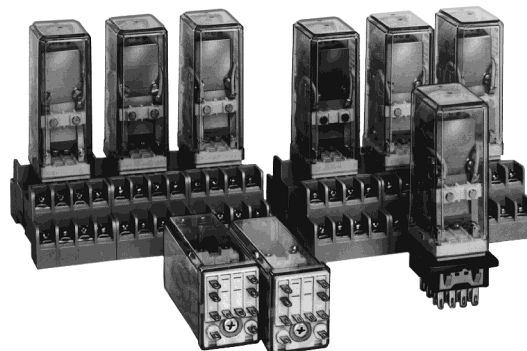
Total length from panel surface including socket;
SH3B-05: 2.40" (61.6mm) maximum
Total length from panel surface including hold-down spring:
SH3B-05: 2.48" (63.6mm) maximum



RY2KS Series — Miniature Magnetic Latching Relays

Key features of the RY2KS series include:

- Standard “ice cube” base, solder lug (14-pin) termination
- Operates by pulse input and maintains condition even during power failure
- High vibration and shock resistance
- Excellent self-holding performance
- Optional manual check button for circuit testing
- DIN rail, surface, and panel mount sockets available for a wide range of mounting applications
- UL recognized and CSA certified



Specifications	Contact Material	Silver, gold-plated
	Contact Resistance	50mΩ maximum (initial value)
	Minimum Applicable Load	5V DC, 100mA
	Operating Time	25ms maximum
	Release Time	25ms maximum
	Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
	Set and Reset Voltages (AC/DC) at 20°C	80% of the rated voltage
	Power Consumption	AC: approximately 1.6V (50Hz), 1.5VA (60Hz) DC: approximately 1.2W
	Insulation Resistance	100MΩ minimum (with 500V DC megger)
	Dielectric Strength	Between live and dead parts: 1,500V AC, 1 minute Between contact circuit and opposite coil: 1,000V AC, 1 minute Between contact circuits: 1,000V AC, 1 minute (700V between NO-NC contacts)
	Frequency Response	1,800 operations/hour
	Temperature Rise	Coil: 85°C maximum Contact: 65°C maximum
	Vibration Resistance	0 to 6G (55Hz maximum)
	Shock Resistance	20G minimum
	Life Expectancy	Electrical: over 200,000 operations (240V AC, 3A) Mechanical: over 5,000,000 operations
	Operating Temperature	–30 to +70°C
	Weight	67g (approximately)



UL Recognized
File No. E55996



CSA Certified
File No. LR35144

E

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. **Coil Voltage:**
RY2KS-U – AC120V

Part Numbers

Part Numbers: RY2KS Series

Termination	Contact Configuration	Standard	With Check Button
S: Solder/plug-in	DPDT	RY2KS-U	RY2KS-UC

Ratings

Coil Ratings

		Rated Current $\pm 15\%$ at 20°C		
Rated Voltage		60Hz	50Hz	Coil Resistance $\pm 10\%$ at 20°C
AC	6V	250mA	260mA	6.3Ω
	12V	115mA	120mA	30.3Ω
	24V	56mA	58mA	132Ω
	120V	10.8mA	11.2mA	3,840Ω
DC	6V	200mA		30Ω
	12V	100mA		120Ω
	24V	50mA		480Ω
	48V	25mA		1,920Ω
	110V	11mA		10,000Ω

Contact Ratings

Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	3A	3A	3A	1.5A	—	1.5A
100V DC	0.2A	—	—	0.12A	—	0.2A
120V AC	3A	3A	3A	1.5A	1.5A	1.5A
240V AC	3A	3A	3A	0.8A	0.8A	0.8A



2. Inductive load $\cos \phi = 0.3$, $L/R = 7ms$.

Applicable Sockets

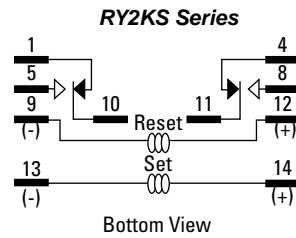
Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount	Spring (optional)
RY2KS	SY4S-05	SY4S-05C	SY4S-51	SY4S-61 SY4S-62	SFA-202 SY4S-51F3



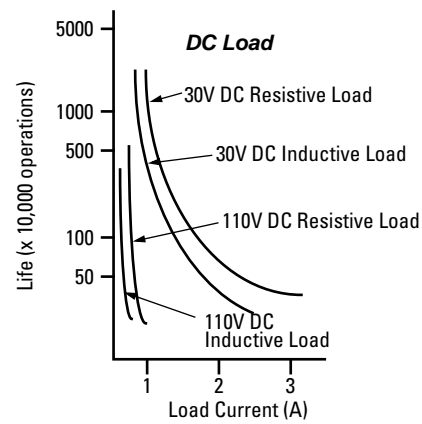
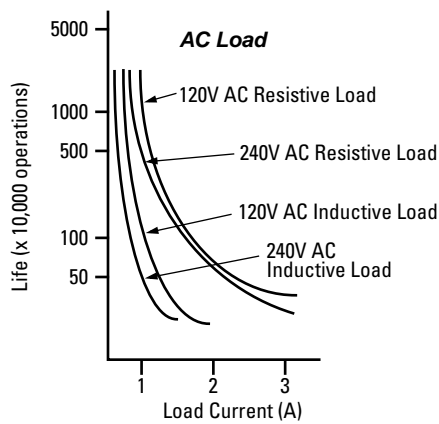
1. See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuits



Shown in reset (unlatched) position.

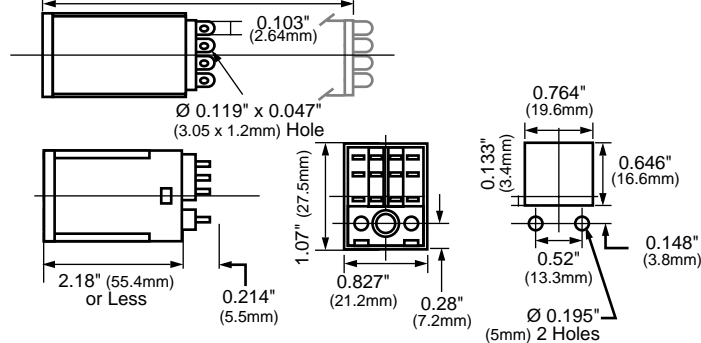
Electrical Life Curves



Dimensions

**Plug-in
RY2KS**

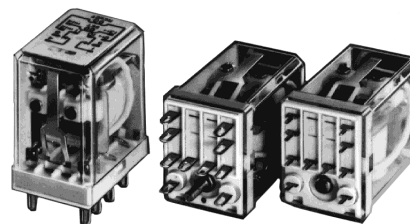
Total length from panel surface including socket:
SY4S-05: 3.20" (82.1mm) maximum; **SY4S-51:** 2.34" (59.9mm)
 Total length from panel surface including hold-down spring:
SY4S-05: 3.28" (84.1mm) maximum; **SY4S-51:** 2.45" (62.9mm)



RY2L Series — Miniature Magnetic Latching Relays

Key features of the RY2L series include:

- Standard “ice cube,” 14-pin solder lug termination
- Operates by pulse input and maintains condition even during power failure
- Coils rated for continuous duty
- Excellent self-holding performance (magnetic latch)
- Built-in operation indicator to show set/reset condition
- DIN rail, surface, and panel mount sockets available for a wide range of mounting applications



UL Recognized
File No. E55996



CSA Certified
File No. LR35144

E

Specifications

Contact Material	Silver, gold-plated
Contact Resistance	50mΩ or less (initial value)
Minimum Applicable Load	5V DC, 100mA
Operating Time	30ms or less (AC); 20ms or less (DC)
Release Time	30ms or less (AC); 20ms or less (DC)
Maximum Continuous Applied Voltage (AC/DC) at 20°C	110% of the rated voltage
Set and Reset Voltages (AC/DC) at 20°C	80% of the rated voltage
Power Consumption	Set coil: DC: approximately 1.2W AC: approximately 0.75VA (50Hz); 0.7VA (60Hz) Reset coil: DC: approximately 0.60W AC: approximately 0.35VA
Insulation Resistance	100MΩ minimum
Dielectric Strength	Between live and dead parts: 1,500V AC, 1 minute Between contact circuit and operating coil: 1,000V AC, 1 minute Between contact circuits: 1,000V AC, 1 minute Between contacts of same pole: 700V AC, 1 minute
Response Frequency	1,800 operations/hour
Vibration Resistance	60N (0–6G); Maximum frequency 55Hz
Shock Resistance	100N or more (10G or more)
Life Expectancy	Electrical: 200,000 operations Mechanical: 10,000,000 operations
Operating Temperature	–30 to +70°C
Weight	34g (approximately)

Ordering Information

Order standard voltages for fastest delivery. Allow extra delivery time for non-standard voltages.

Basic Part No. **Coil Voltage:**
RY2LS-U – AC120V

Part Numbers

Part Number: RY2L Series

Termination	Contact Configuration	Part No.
S: Solder/plug-in	DPDT	RY2LS-U
V: PCB — 0.032" (0.8mm) wide	DPDT	RY2LV-U

Ratings

Coil Ratings

Rated Voltage	Set Coil				Reset Coil		
	Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C		Rated Current $\pm 15\%$ at 20°C		Coil Resistance $\pm 10\%$ at 20°C
	60Hz	50Hz			60Hz	50Hz	
AC	6V	120mA	127mA	14.3 Ω	61mA	61.8mA	7.8 Ω
	12V	60mA	64mA	64.6 Ω	30.5mA	31.1mA	34.1 Ω
	24V	30mA	32mA	282 Ω	14.2mA	14.4mA	127 Ω
	120V	6mA	6.3mA	7,480 Ω	2.8mA	2.8mA	3,380 Ω
DC	6V	200mA		30 Ω	100mA		60 Ω
	12V	100mA		120 Ω	51mA		235 Ω
	24V	51mA		470 Ω	25.5mA		940 Ω
	48V	25.5mA		1,880 Ω	12.8mA		3,760 Ω

Contact Ratings

Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	3A	3A	3A	1.5A	—	1.5A
110V DC	—	—	—	0.2A	—	0.2A
120V AC	3A	3A	3A	1.5A	1.5A	1.5A
240V AC	3A	3A	3A	0.8A		



2. Inductive load $\cos \phi = 0.3$, $L/R = 7ms$.

Applicable Sockets

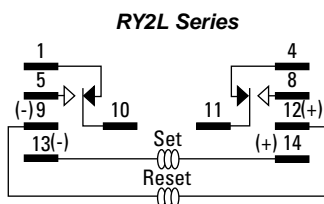
Part Numbers: Sockets

Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	PC Mount	Spring (Optional)
RY2LS	SY4S-05	SY4S-05C	SY4S-51	SY4S-61 SY4S-62	SFA-101 SFA-202 SFA-301 SFA-302 SY4S-51F1



1. See Section F for details on sockets. All DIN rail mount sockets shown above can be mounted using DIN rail BNDN1000.

Internal Circuits

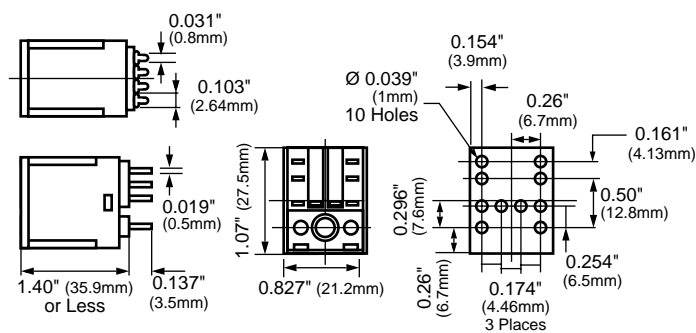


Bottom View

Shown in reset (unlatched) position.

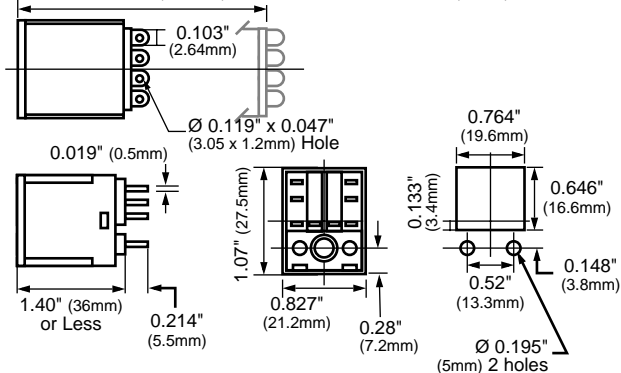
Dimensions

PCB Terminal RY2LV



Plug-in RY2LS

Total length from panel surface including socket:
SY4S-05: 2.42" (62.1mm) maximum; **SY4S-51:** 1.56" (40mm)
 Total length from panel surface including hold-down spring:
SY4S-02: 2.50" (64.1mm) maximum; **SY4S-51:** 1.64" (42mm)



RSS Series — Panel Mount Solid State Relays

Key features of the RSS series include:

- Input status LED Indicator
- Dual SCR output
- Direct bond copper substrate
- Internal transient protection – built-in snubber
- EMC compliant (level 3)
- Photo isolation
- 1200 volt blocking voltage
- 4000 volt optical isolation
- Zero voltage turn-on
- 100% tested at rated current
- High surge capability
- Optional finger-safe terminal cover (RSS-CVR)



10, 25, 50, 75, 90A Current Ratings
48V AC to 660V AC Output Ratings

E

Input Specifications	Series	RSSDN	RSSAN
	Voltage Range	4 to 32V DC	90 to 280V AC
	Input Current	current regulated (10mA)	
	Pick Up Voltage	4V DC	90V AC
	Drop Out Voltage	1V DC	10V AC
	Dielectric Strength (Input-Output-Base)	4000 RMS (min)	4000 RMS (min)
	Capacitance (Input to Output)	8pF	8pF
	Rev. Voltage Protection	Yes (–32VDC)	N/A

Output Specifications	Current (continuous)	10A	25A	50A	75A	90A
	1-Cycle Surge Current	150A	300A	750A	1000A	1200A
	1-Second Surge Current	30A	75A	150A	225A	300A
	Minimum Holding Current	50mA	50mA	100mA	100mA	100mA
	Voltage Drop at Rated Current	1.6V (maximum)				
	Voltage Range	48 - 660V AC				
	Contact	1 Form A (SPST-NO)				
	Over Voltage Rating	1200 PIV				
	Frequency Range	47 to 80Hz				
	Off-State Leakage at Rated Voltage	20mA (maximum)				
	Turn-On Time	1/2 cycle @ 60Hz				
	Turn-Off Time	1/2 cycle @ 60Hz				
	Zero Voltage Switching	Yes				
	Static DV/DT	200V/μsec				
	Commutating DV/T	Snubbed for 0.5 power factor at rated load				

Part Numbers

Part Numbers: RSS Series

Continuous Output Current	DC Input	AC Input
10A	RSSDN-10A	RSSAN-10A
25A	RSSDN-25A	RSSAN-25A
50A	RSSDN-50A	RSSAN-50A
75A	RSSDN-75A	RSSAN-75A
90A	RSSDN-90A	RSSAN-90A



2. The fingersafe cover is part no. RSS-CVR.

Recommended Loads

Transformer Loads

Transformer loads sometimes result in severe inrush current when the transformer saturates during the first cycle. Use a relay rated for this surge, which has a 1/2 cycle surge current greater than the maximum applied line voltage ÷ the transformer's primary resistance (approximately 10x rated current).

Recommended Loads

SSR Rating	at 120V AC	at 240V AC
2A	150VA	300VA
4A	200VA	400VA
10A	500VA	1KVA
25A	1KVA	2KVA
50A	2KVA	4KVA

Heater Loads

When using solid state relays for driving heaters where the load is switched on and off rapidly and continuously, severe thermal stress will result. In such cases, use an SSR relay at no more than 75% of the rating.

Recommended Loads

SSR Rating	at 120V AC	at 240V AC
2A	250W	500W
4A	400W	800W
10A	1KW	2KW
25A	2KW	4KW
50A	3KW	6KW

Solenoid Valves and Contactors

RSS relays use high-noise immunity circuitry with a snubber to handle the electrical noise generated by inductive loads.

Recommended Loads

SSR Rating	at 120V AC	at 240V AC
2A	250W	500W
4A	400W	800W
10A	900W	1,800W
25A	2,100W	4,200W
50A	3,800W	7,500W

RSS series relays provide a highly reliable means of switching AC loads when applied properly. Read the following technical notes prior to installing IDEC's quality solid state relays.

UL Motor Load Ratings

Part Number	120V	240V	480V
10A	1/2	3/4	3/4
25A	1/2	3/4	3/4
50A	3/4	1 1/2	1 1/2
75A	3/4	5	5
90A	3/4	5	5

Lamp Loads

Zero voltage switching is ideal for driving incandescent lamps, since the cold filament will not be subjected to a large inrush current. Using a zero-switched SSR will reduce inrush current and prolong lamp life.

Recommended Loads

SSR Rating	at 120V AC	at 240V AC
2A	2A	2A
4A	3A	3A
10A	1KW	2KW
25A	2KW	4KW
50A	3KW	6KW

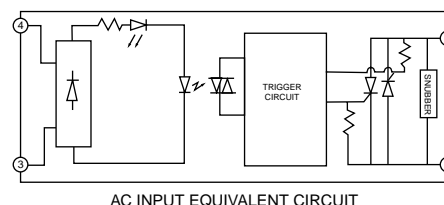
Calculating Input Current

RSS relays (DC in/AC out) have a circuit with 1,000Ω in series with opto-couplers LEDs. At 4V input, the relay will turn on with 3mA: $[4V - (1V \text{ drop across LED}) = 3V]$; $[3V \div 1,000\Omega = 3mA]$.

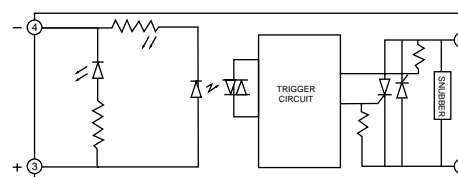
$$[(\text{Input Voltage} - 1) \div \text{Impedance}] = \text{Input Current (A)}$$



At higher voltages, the current will be correspondingly higher.



AC INPUT EQUIVALENT CIRCUIT



DC INPUT EQUIVALENT CIRCUIT

Technical Notes

Environment

Do not install SSRs near sources of excessive heat. Make sure applications are dry and well ventilated.

If SSRs must be installed in an environment subject to high temperatures or poor ventilation, or if SSRs are mounted collectively, reduce the load current so that it does **not** approach the ambient temperature-load current recommendation. (See the Temperature Derating Curves on the following page.)

When SSRs are used with inductive loads, suppress the inrush current to half of the peak surge current.

Heat Sinks

Heat sinks are recommended for 10, 25, 50, 75, and 90 amp rated solid state relays depending on ambient temperature and mounting position. The recommended heat sink dimensions and material are shown in the table:

Output Rating	Dimensions	Material
10A	12" x 12" x 1/8"	Aluminum (black anodized)
25A	12" x 12" x 1/8" (DC/AC)	Aluminum (black anodized)
25A	15" x 15" x 1/8" (AC/AC)	Aluminum (black anodized)
50A	15" x 15" x 1/8"	Aluminum (black anodized)
75A	17" x 17" x 1/8"	Aluminum (black anodized)
90A	17" x 17" x 1/8"	Aluminum (black anodized)

Using a thermal compound between the base of the SSR and the heat sink for heat dissipation is recommended.

Wiring

Locate SSRs as far from motor leads as possible to prevent malfunction from induced current.

Use shielded wires for input leads when they are exposed to a source of induced current.

Mounting

Provide sufficient ventilation.

Use #6 – 32 screws, flat washers, and lock washers to secure mounting on heat sinks.

Vertical mounting is recommended to allow air to flow unimpeded. Horizontal or inverted mounting is possible, but the SSR must be derated according to the derating curves on the following page.

Additional Information

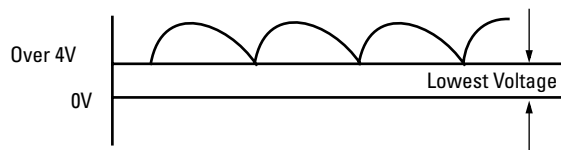
Do not exceed the load voltage and current specifications.

A small-capacity load may not turn off due to the leakage current present after the SSR has turned off. If this is the case, use a resistor in parallel with the load to shunt the leakage current.

Observe the polarity of input terminals. Failure to do so may cause damage to the SSR.

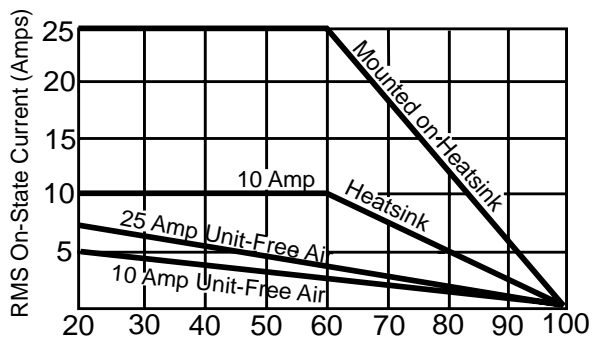
When the SSR output is subjected to a higher than rated voltage, a varistor or other element should be connected to the output terminals to absorb the over-voltage.

When the input signal contains a ripple voltage, the lowest ripple amplitude should exceed the minimum pick-up voltage of 4V.

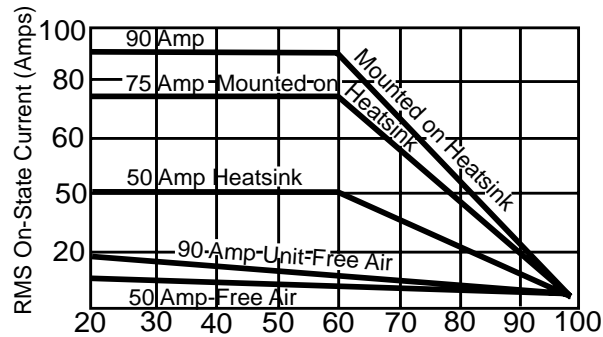


Temperature Derating Curves: RSS Series

Derating Curve
10-Amp and 25-Amp



Derating Curve
50-Amp, 75-Amp, and 90-Amp



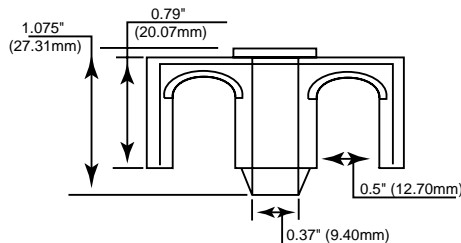
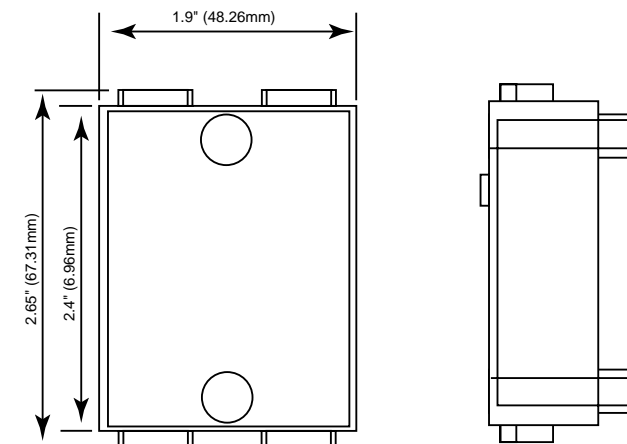
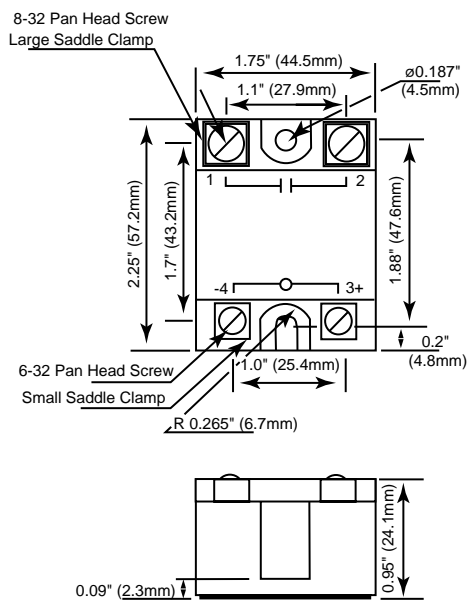
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For information on heat sink size, refer to the Technical Notes on the previous page.

RSS Dimensions

RSS Series



Material: Polycarbonate-Clear