

# **U905 Catalog Section**

A note from IDEC:















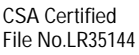

*Due to continuous product improvements, specifications are subject to change without notice.*

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**Selection Guides, continued**

**General Purpose Relays**

	RR Series	RH Series	RM Series	RY Series
<b>Appearance</b>				
<b>Page</b>	D-8	D-11	D-14	D-17
<b>Features</b>	<ul style="list-style-type: none"> <li>• Highly reliable</li> <li>• Large capacity</li> <li>• 8-pin, 11-pin, or 11-blade plug-in base</li> <li>• 1 to 3 pole switching</li> <li>• AC or DC coils</li> </ul>	<ul style="list-style-type: none"> <li>• Compact midget size</li> <li>• Highly reliable</li> <li>• Large capacity</li> <li>• AC or DC coils</li> <li>• 1 to 4 pole switching</li> </ul>	<ul style="list-style-type: none"> <li>• Compact miniature size</li> <li>• Highly reliable</li> <li>• AC or DC coils</li> </ul>	<ul style="list-style-type: none"> <li>• Compact ice-cube size</li> <li>• 2- or 4-pole switching</li> <li>• Bifurcated contacts for dry circuit switching</li> </ul>
<b>Options</b>	Indicator light Check button Side flange	Indicator light Check button Top mount	Indicator light Check button Top mount	Indicator light Check button Top mount
<b>Contact Configuration</b>	1, 2, 3 Form C	1, 2, 3, 4 Form C	2 Form C	2, 4 Form C
<b>Contact Rating (resistive)</b>	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
<b>Contact Material</b>	Silver	Silver-cadmium oxide	Silver	Silver, gold-plated
<b>Minimum Electrical Life</b>	500,000 operations (10A, 120V AC)	500,000 operations (10A, 120V AC)	500,000 operations (5A, 240V AC)	200,000 operations (DPDT: 3A, 120V AC) (4PDT: 5A, 120V AC)
<b>Minimum Mechanical Life</b>	10,000,000 operations	50,000,000 operations	50,000,000 operations	50,000,000 operations
<b>Dielectric Strength (between contact and coil)</b>	2,000V AC, 1 minute	2,000V AC, 1 minute	2,000V AC, 1 minute	2,000V AC, 1 minute (4-pole version)
<b>Coil Voltage</b>	6, 12, 24, 48, 110V DC 6, 12, 24, 120, 240V AC	6, 12, 24, 48, 110V DC 6, 12, 24, 120, 240V AC	6, 12, 24, 48, 110V DC 6, 12, 24, 120, 240V AC	6, 12, 24, 48, 110V DC 6, 12, 24, 120, 240V AC
<b>Power Consumption (approximately)</b>	2.5VA/1.5W	SPDT: 1VA/0.8W 2PDT: 1.2VA/0.9W 3PDT: 1.7VA/1.5W 4PDT: 2VA/1.5W	1.4VA/0.9W	DPDT: 1.0VA/0.8W 4PDT: 1.2VA/0.9W
<b>Termination</b>	Pin/Blade	Blade/PCB	Blade/PCB	Blade/PCB
<b>Sockets</b>	SR2P SR3P SR3B	SH1B SH2B SH3B SH4B	SY4S	SY2S SY4S
<b>Approvals</b>	 UL Recognized Files No. E67770 E59804 E64245   * File No. BL951113332319   *	   CSA Certified File No. LR35144   *	 UL Recognized Files No. E59804 E64245   * File No. BL951113332319   *	   CSA Certified File No. LR35144   *

**D**



\* CE marking and TUV ratings do not apply to RR blade style relays.

## Selection Guides, continued

### General Purpose Latching Relays

	RR2KP Series	RH2L Series	RY2KS Series	RY2L Series
Appearance				
Page	D-20	D-22	D-24	D-26
<b>D</b> Features	<ul style="list-style-type: none"> <li>• Magnetic dual coil</li> <li>• Self-maintaining without power</li> <li>• Separate set and reset coils</li> <li>• AC or DC coils</li> </ul>	<ul style="list-style-type: none"> <li>• Midget size latch relay</li> <li>• 10A capacity</li> <li>• Dual coil</li> <li>• Power saving pulse input</li> <li>• Indicator shows set-reset condition</li> <li>• AC or DC coils</li> </ul>	<ul style="list-style-type: none"> <li>• Magnetic dual coil</li> <li>• Self-maintaining without power</li> <li>• Separate set and reset coil</li> <li>• AC or DC coils</li> </ul>	<ul style="list-style-type: none"> <li>• Miniature size latch relay</li> <li>• 3A capacity</li> <li>• Dual coil</li> <li>• Power saving pulse input</li> <li>• Mechanical indicator to show set/reset condition</li> <li>• AC or DC coils</li> </ul>
Options	Check button	—	Check button	—
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
Minimum Electrical Life	500,000 operations	200,000 operations	200,000 operations	200,000 operations
Minimum Mechanical Life	5,000,000 operations	10,000,000 operations	5,000,000 operations	10,000,000 operations
Dielectric Strength (between contact and coil)	1,500V AC, 1 minute	2,000V AC, 1 minute	1,500V AC, 1 minute	1,500V AC, 1 minute
Coil Voltage	6, 12, 24, 110V DC 6, 12, 24, 120, 240V AC	6, 12, 24V DC 6, 12, 24, 120V AC	6, 12, 24, 110V DC 6, 12, 24, 120, 240V AC	6, 12, 24V DC 6, 12, 24, 120V AC
Power Consumption	AC: 2.2VA DC: 1.5W	1.2VA/2W (set) 0.5VA/0.9W (reset)	AC: 1.5VA DC: 1.2W	0.7VA/1.2W (set) 0.35VA/0.6W (reset)
Termination	Pin	Blade/PCB	Blade	Blade/PCB
Sockets	SR3P	SH3B	SY4S	SY4S
Approvals	UL Recognized Files No. E67770 E55996		CSA Certified File No. LR35144	

### Sockets (for reference only)

#### Panel Mount



SH1B-51



SH3B-51



SY2S-61









SY4S-51

For more socket information, see Section F.

**Selection Guides, continued**

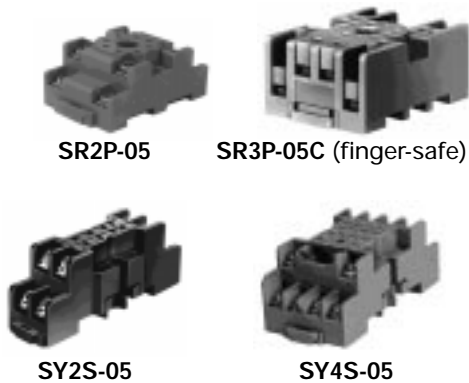
**Solid State Relays**

		RSS Series	RA Series	RB Series
Appearance				
Page		D-35	D-39	D-42
Isolation Method		Phototransistor coupler	Phototransistor coupler	Phototransistor coupler
Zero-Voltage Switching		Yes	Yes	Yes
Input Rating	Voltage Range	DC: 4 – 32V AC: 90 – 280V	3 – 28V DC	3 – 28V DC
	Impedance	1500Ω (DC) 40K, +10% (AC)	1.2kΩ (approximately)	1.5kΩ (approximately)
Output Rating	Maximum Load Current	10, 25, 50, 75, and 90A	1.2A	1.5A, 2A
	Voltage Range	48 – 660V AC	70 – 250V AC	5 – 60V DC
	Drop-Out Voltage	1.5V, maximum	0.8V DC, minimum	0.8V DC, minimum
Mounting Style		Panel mount	Blade/Plug-in, Pin/Plug-in, PC mount	
Sockets		—	SR2P-... SH1B-...	SR2P-... SH1B-... SH2B-...
Approvals		  UL Recognized Files No. E59804	 CSA Certified File No. LR38595-94M	—

**D**

**Sockets (for reference only)**

**DIN Rail Mount**



**DIN Rail**



**PC Mount**



**Hold-Down Springs/Clips**



For more details on sockets, see Section F.

## 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  
E59804  
E64245



CSA Certified  
File No. LR35144



File No. BL951113332319\*  
\* Pin Style Only  
(does not apply to blade style)



\* Pin Style Only

<b>Specifications</b>	<b>Contact Material</b>	Silver
	<b>Contact Resistance</b>	30mΩ maximum (initial value)
	<b>Minimum Applicable Load</b>	24V DC/10mA, 5V DC/20mA (reference value)
	<b>Operating Time</b>	25ms maximum
	<b>Release Time</b>	25ms maximum
	<b>Power Consumption</b>	AC: approximately 3VA (50Hz), 2.5VA (60Hz) DC: approximately 1.5W
	<b>Insulation Resistance</b>	100MΩ minimum (measured with 500V DC megger)
	<b>Dielectric Strength</b>	<b>Pin</b> (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)  <b>Blade</b> (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
	<b>Frequency Response</b>	1,800 operations/hour
	<b>Temperature Rise</b>	Coil: 85°C maximum Contact: 65°C maximum
	<b>Vibration Resistance</b>	0 to 6G (55Hz maximum)
	<b>Shock Resistance</b>	100N (approximately 10G)
	<b>Life Expectancy</b>	Electrical: over 500,000 operations (120V, 50/60Hz, 10A) Mechanical: over 10,000,000 operations
	<b>Operating Temperature</b>	-30 to +70°C
<b>Weight</b>	RR2P: 90g, RR3P/RR3PA: 96g (approximately) RR1BA/RR2BA/RR3B: 82g (approximately)	



See page D-29 for dimensions.

### Operational Characteristics

<b>Maximum Continuous Applied Voltage (AC/DC) at 20°C</b>	110% of the rated voltage
<b>Minimum Operating Voltage (AC/DC) at 20°C</b>	80% of the rated voltage
<b>Drop-Out Voltage (AC) at 20°C</b>	30% of the rated voltage
<b>Drop-Out Voltage (DC) at 20°C</b>	15% of the rated voltage

### Ordering Information

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

<b>Basic Part No.</b>	<b>Coil Voltage:</b>
<u>RR3PA-U</u>	<u>AC120V</u>

**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.

**Part Numbers: Sockets**

Relays	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Panel Mount	Spring (optional)
RR2P	SR2P-05 SR2P-06	SR2P-05C	SR2P-51	SR2B-02F1 SR3P-01F1
RR3PA	SR3P-05 SR3P-06	SR3P-05C	SR3P-51	SR3B-02F1
RR1BA RR2BA RR3B	SR3B-05	—	SR3B-51	SR3B-02F1



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

**D**

**Ratings**

**Coil Ratings**

Rated Voltage	Rated Current ±15% at 20°C		Coil Resistance ±10% at 20°C	
	60Hz	50Hz		
AC	6V	420mA	490mA	4.9Ω
	12V	210mA	245mA	18Ω
	24V	105mA	121mA	79Ω
	120V	20.5mA	24mA	2100Ω
	240V	10.5mA	12.1mA	8330Ω
DC	6V	240mA		25Ω
	12V	120mA		100Ω
	24V	60mA		400Ω
	48V	30mA		1600Ω
	110V	13mA		8460Ω

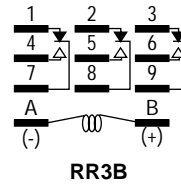
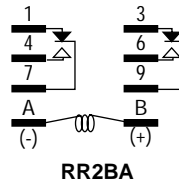
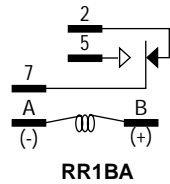
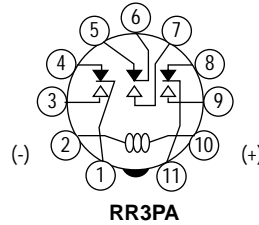
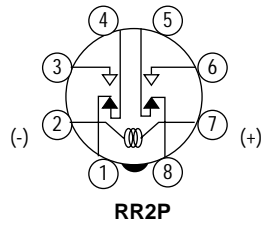
**Contact Ratings**

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



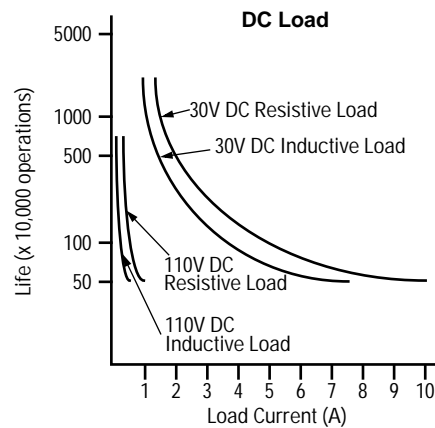
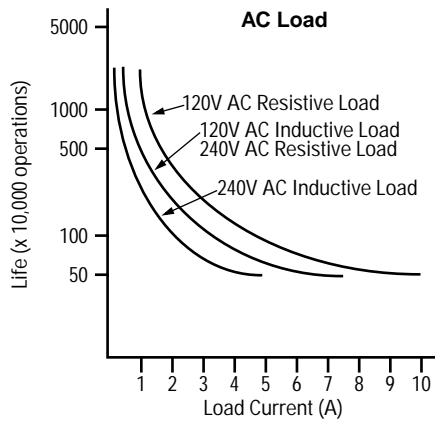
3. Inductive load  $\cos \phi = 0.3$ ,  $L/R = 7ms$ .

## Internal Circuit



D

## Electrical Life Curves



**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  
E64245



CSA Certified  
File No. LR35144



File No. BL951113332319



<b>Specifications</b>	<b>Contact Material</b>	Silver cadmium oxide
	<b>Contact Resistance</b>	50mΩ maximum (initial value)
	<b>Minimum Applicable Load</b>	24V DC/30mA, 5V DC/100mA (reference value)
	<b>Operating Time</b>	SPDT (RH1), DPDT (RH2): 20ms maximum 3PDT (RH3), 4PDT (RH4): 25ms maximum
	<b>Release Time</b>	SPDT (RH1), DPDT (RH2): 20ms maximum 3PDT (RH3), 4PDT (RH4): 25ms maximum
	<b>Power Consumption</b>	<b>SPDT (RH1):</b> DC: 0.8W AC: 1.1VA (50Hz), 1VA (60Hz) <b>DPDT (RH2):</b> DC: 0.9W AC: 1.4VA (50Hz), 1.2VA (60Hz) <b>3PDT (RH3):</b> DC: 1.5W AC: 2VA (50Hz), 1.7VA (60Hz) <b>4PDT (RH4):</b> DC: 1.5W AC: 2.5VA (50Hz), 2VA (60Hz)
	<b>Insulation Resistance</b>	100MΩ min (measured with a 500V DC megger)
	<b>Dielectric Strength</b>	<b>SPDT (RH1)</b> 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
		<b>DPDT (RH2), 3PDT (RH3), 4PDT (RH4)</b> 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
	<b>Frequency Response</b>	1,800 operations/hour
	<b>Temperature Rise</b>	Coil: 85°C maximum Contact: 65°C maximum
	<b>Vibration Resistance</b>	0 to 6G (55Hz maximum)
	<b>Shock Resistance</b>	SPDT/DPDT: 200N (approximately 20G) 3PDT/4PDT: 100N (approximately 10G)
	<b>Life Expectancy</b>	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
<b>Operating Temperature</b>	-30 to +70°C	
<b>Weight</b>	SPDT: 24g, DPDT: 37g (approximately) 3PDT: 50g, 4PDT: 74g (approximately)	

**Operational Characteristics**

<b>Maximum Continuous Applied Voltage (AC/DC) at 20°C</b>	110% of the rated voltage
<b>Minimum Operating Voltage (AC/DC) at 20°C</b>	80% of the rated voltage
<b>Drop-Out Voltage (AC)</b>	30% or more of the rated voltage
<b>Drop-Out Voltage (DC)</b>	10% or more of the rated voltage

**Ordering Information**

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

<b>Basic Part No.</b>	<b>Coil Voltage:</b>
<u>RH2B-U</u>	<u>AC110-120V</u>



See page D-29 for dimensions.



## 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	—

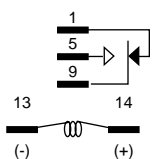
1. \* RH1B(V2)-L is **not** UL recognized.  
 2. For Coil and Contact Ratings, see the next page.

### D Part Numbers: Sockets

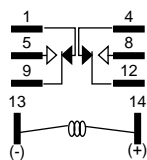
Relay	Standard DIN Rail Mount	Finger-Safe DIN Rail Mount	Surface Mount	Panel Mount	PCB Mount	Spring (optional)
RH1B	SH1B-05	SH1B-05C	—	SH1B-51	SH1B-62	SY2S-02F1 SFA-101 SFA-202 SY4S-51F1 SFA-301 SFA-302
RH2B	SH2B-05	SH2B-05C	SH2B-02	SH2B-51	SH2B-62	SY4S-02F1 SFA-101 SFA-202 SY4S-51F1
RH3B	SH3B-05	SH3B-05C	—	SH3B-51	SH3B-62	SH3B-05F1 SFA-101, -202 SY4S-51F1
RH4B	SH4B-05	SH4B-05C		SH4B-51	SH4B-62	SH4B-02F1 SFA-101, -202 SY4S-51F1

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

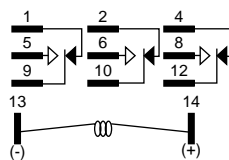
## Internal Circuit



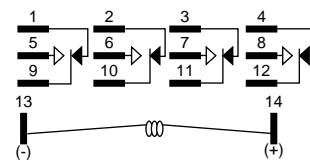
RH1



RH2



RH3



RH4

**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					
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	27,70Ω	22,20Ω
	240V†	3.2mA	5.5mA	7.1mA	8.3mA	3.7mA	6.5mA	8.2mA	9.8mA	3,1200Ω	15,210Ω	12,100Ω	91,20Ω
DC	6V	SPDT		DPDT		3PDT		4PDT		SPDT	DPDT	3PDT	4PDT
	12V	128mA		150mA		240mA		250mA		47Ω	40Ω	25Ω	24Ω
	24V	64mA		75mA		120mA		125mA		188Ω	160Ω	100Ω	96Ω
	48V	32mA		36.9mA		60mA		62mA		750Ω	650Ω	400Ω	388Ω
	110V‡	18mA		18.5mA		30mA		31mA		2,660Ω	2,600Ω	1,600Ω	15,50Ω



\* For RH2 relays = 110/120V AC.  
 † For RH2 relays = 220/240V AC.  
 ‡ For RH2 relays = 100/110V DC.



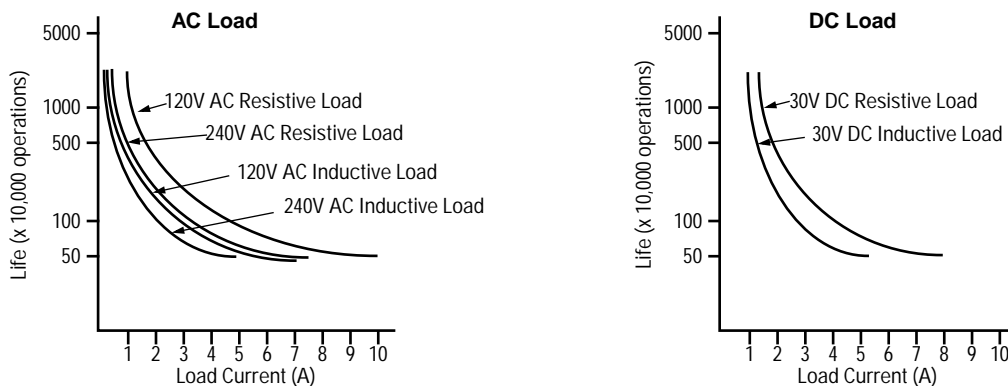
**Contact Ratings**

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



1. \* 6.5A/pole, 20A total.  
 2. Inductive load  $\cos \phi = 0.3$ ,  $L/R = 7ms$ .

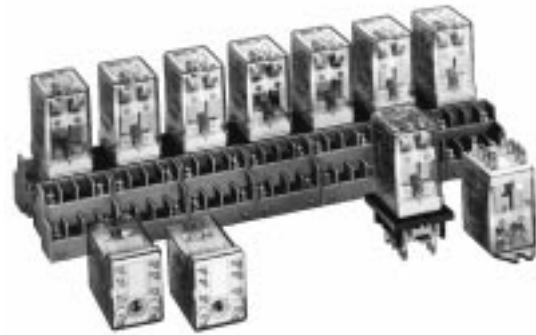
**Electrical Life Curves**



## 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. E64245  
E59804



File No. BL951113332319



CSA Certified  
File No. LR35144

D

<b>Specifications</b>	<b>Contact Material</b>	Silver
	<b>Contact Resistance</b>	30mΩ maximum (initial value)
	<b>Minimum Applicable Load</b>	24V DC/10mA, 5V DC/20mA (reference value)
	<b>Operating Time</b>	20ms maximum
	<b>Release Time</b>	20ms maximum
	<b>Power Consumption</b>	AC: Approximately 1.2VA (60Hz); 1.4VA (50Hz) DC: Approximately 0.9W
	<b>Insulation Resistance</b>	100MΩ minimum (measured with 500V DC megger)
	<b>Dielectric Strength</b>	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)
	<b>Frequency Response</b>	1,800 operations/hour
	<b>Temperature Rise</b>	Coil: 85°C maximum Contact: 65°C maximum
	<b>Vibration Resistance</b>	0 to 6G (55Hz maximum)
	<b>Shock Resistance</b>	200N (approximately 20G)
	<b>Life Expectancy</b>	Electrical: over 500,000 operations (240V AC, 5A) Mechanical: over 50,000,000 operations
	<b>Operating Temperature</b>	-30 to +70°C
<b>Weight</b>	35g (approximately)	

### Operational Characteristics

<b>Maximum Continuous Applied Voltage (AC/DC) at 20°C</b>	110% of the rated voltage
<b>Minimum Operating Voltage (AC/DC) at 20°C</b>	80% of the rated voltage
<b>Drop-Out Voltage (AC)</b>	30% or more of the rated voltage
<b>Drop-Out Voltage (DC)</b>	10% or more of the rated voltage

### 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

See page D-31 for dimensions.

**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	—

**Part Numbers: Sockets**

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



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



**Ratings**

**Coil Ratings**

Rated Voltage (V)	Rated Current ±15% at 20°C			Coil Resistance ±10% at 20°C
	60Hz	50Hz		
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



2. \* For RM2 relays = 110/120V AC.

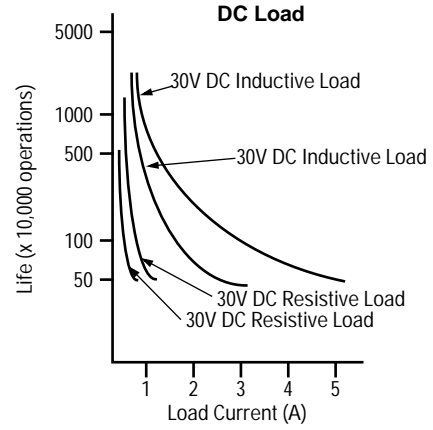
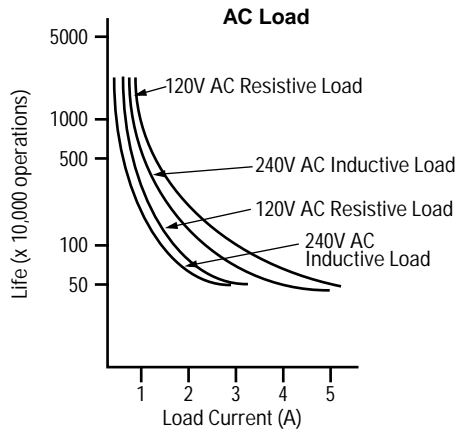
† For RM2 relays = 220/240V AC.

‡ For RM2 relays = 100/110V DC.

**Contact Ratings**

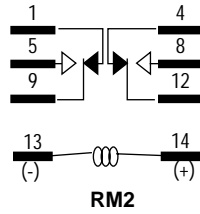
Voltage	Resistive			Inductive		
	Nominal	UL	CSA	Nominal	UL	CSA
30V DC	5A	5A	5A	2.5A	—	2.5A
110V DC	0.4A	0.4A	—	0.4A	—	0.4A
120V AC	5A	5A	5A	2.5A	2.5A	2.5A
240V AC	5A	5A	5A	2A	2A	2A

## Electrical Life Curves



**D**

## Internal Circuit



**RY Series — General Purpose Miniature Relays**

Key features of the RY series include:

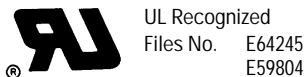
Compact miniature size saves space

2PDT and 4PDT models, available with bifurcated crossbar contacts, ensure reliable low-current switching for dry circuit applications

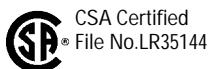
Choice of plug-in/solder or PCB type terminals

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



File No. BL951113332319



<b>Specifications</b>	<b>Contact Material</b>	RY2, RY4: Silver (Ag), gold-plated RY22, RY42: Ag-Pd alloy
	<b>Contact Resistance</b>	RY2, RY4: 50mΩ maximum RY22, RY42: 100mΩ maximum
	<b>Minimum Applicable Load</b>	DPDT/4PDT: 5V DC, 10mA/24V DC, 5mA (reference value) Bifurcated contacts: DPDT/4PDT: 1V DC, 100μA (reference value)
	<b>Operating Time</b>	20ms maximum
	<b>Release Time</b>	20ms maximum
	<b>Power Consumption</b>	<b>RY2, RY22:</b> DC: approximately 0.8W AC: approximately 1.1VA (50Hz), 1VA (60Hz) <b>RY4, RY42:</b> DC: approximately 0.9W AC: approximately 1.4VA (50Hz), 1.2VA (60Hz)
	<b>Insulation Resistance</b>	100MΩ minimum (measured with 500V DC megger)
	<b>Dielectric Strength</b>	<b>DPDT:</b> 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 <b>4PDT:</b> 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
	<b>Frequency Response</b>	1,800 operations/hour
	<b>Temperature Rise</b>	Coil: 85°C maximum Contact: 65°C maximum
	<b>Vibration Resistance</b>	0 to 6G (55Hz maximum)
	<b>Shock Resistance</b>	RY2, RY22: 100N (approximately 10G) RY4, RY42: 200N (approximately 20G)
	<b>Life Expectancy</b>	<b>RY2, RY4:</b> Electrical: over 200,000 operations (120V, 3A) Mechanical: over 50,000,000 operations <b>RY22, RY42:</b> Electrical: over 200,000 operations (120V AC, 1A) Mechanical: over 50,000,000 operations
	<b>Operating Temperature</b>	-30 to +70°C
<b>Weight</b>	DPDT: 23g; 4PDT: 34g (approximately)	

**Operational Characteristics**

<b>Maximum Continuous Applied Voltage (AC/DC) at 20°C</b>	110% of the rated voltage
<b>Minimum Operating Voltage (AC/DC) at 20°C</b>	80% of the rated voltage
<b>Drop-Out Voltage (AC)</b>	30% or more of the rated voltage
<b>Drop-Out Voltage (DC)</b>	10% or more of the rated voltage

**Ordering Information**

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

<b>Basic Part No.</b>	<b>Coil Voltage:</b>
<u>RY4S-U</u>	<u>AC110-120V</u>

See page D-32 for dimensions.

## 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	—

**D** 1. \* RY2S-L, RY22-L, RY2V-L, and RY22V-L are not UL recognized or CSA certified.

### Part Numbers: Sockets

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

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

## Ratings

### Coil Ratings

	Rated Voltage (V)		Rated Current ±15% at 20°C				Coil Resistance ±10% at 20°C	
			60Hz		50Hz			
	DPDT	4PDT	DPDT	4PDT	DPDT	4PDT	DPDT	4PDT
AC	6V	6V	150mA	200mA	170mA	240mA	18.8Ω	9.4Ω
	12V	12V	75mA	100mA	86mA	121mA	76.8Ω	39.3Ω
	24V	24V	37mA	50mA	42mA	60.5mA	300Ω	153Ω
	120V	120V*	7.5mA	11mA	8.6mA	13.1mA	7,680Ω	4,170Ω
	240V	240V †	3.2mA	5.5mA	3.7mA	6.6mA	31,200Ω	15,210Ω
DC	DPDT	4PDT	DPDT		4PDT		DPDT	4PDT
	6V	6V	128mA		150mA		47Ω	40Ω
	12V	12V	64mA		75mA		188Ω	160Ω
	24V	24V	32mA		36.9mA		750Ω	650Ω
	48V	48V	18mA		18.5mA		2,660Ω	2,600Ω
—	110V ‡	—	—	9.1mA		—	12,100Ω	

3. \* For RY4/R42 relays = AC110/120V AC.  
 † For RY4/R42 relays = 220/240V AC.  
 ‡ For RY4/R42 relays = 100/110V DC.

**Ratings, continued**

**Contact Ratings (gold plated)**

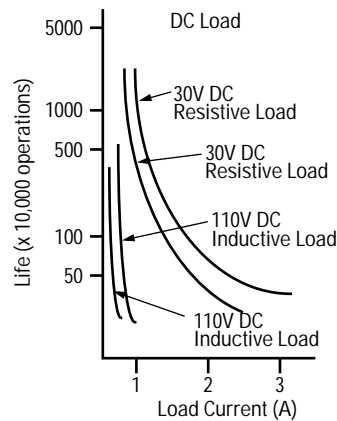
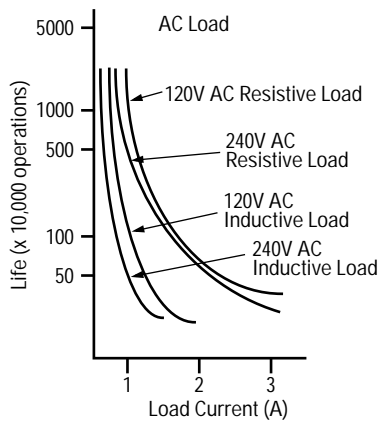
Voltage	Contact	Resistive		Inductive	
		UL	CSA	UL	CSA
30V DC	DPDT	3A	3A	3A	1.5A
	4PDT	5A	5A	5A	1.5A
100V DC	DPDT	0.2A	—	0.2A	0.2A
	4PDT	0.2A	—	0.2A	0.2A
120V AC	DPDT	3A	3A	1.5A	5A
	4PDT	5A	5A	5A	5A
240V AC	DPDT	3A	3A	0.8A	5A
	4PDT	5A	5A	5A	5A

**Contact Ratings (bifurcated)**

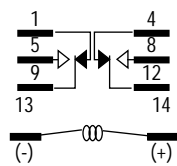
Voltage	Resistive UL/CSA	Inductive UL/CSA
30V DC	1A	0.5A
120V AC	1A	0.5A
240V AC	0.8A	0.4A

**D**

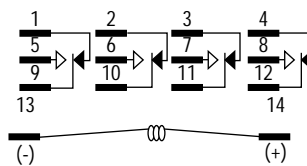
**Electrical Life Curves**



**Internal Circuit**



**RY2, RY22**



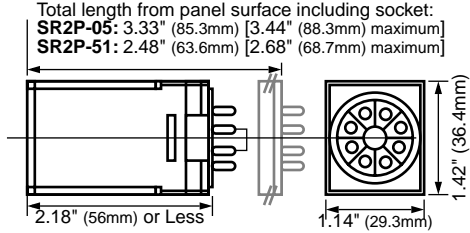
**RY4, RY42**



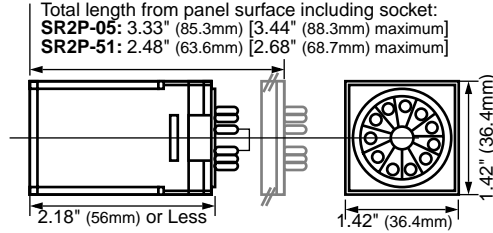
**General Purpose and Latching Relay Dimensions**

**RR Series**

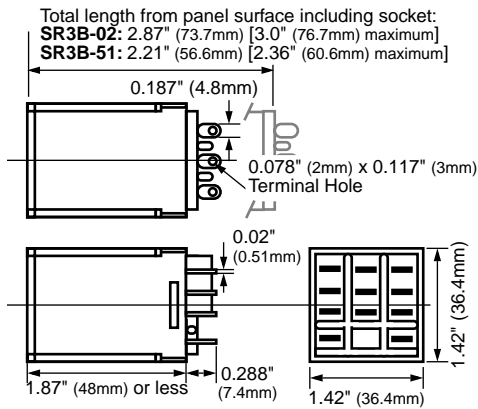
**8-Pin  
RR2P**



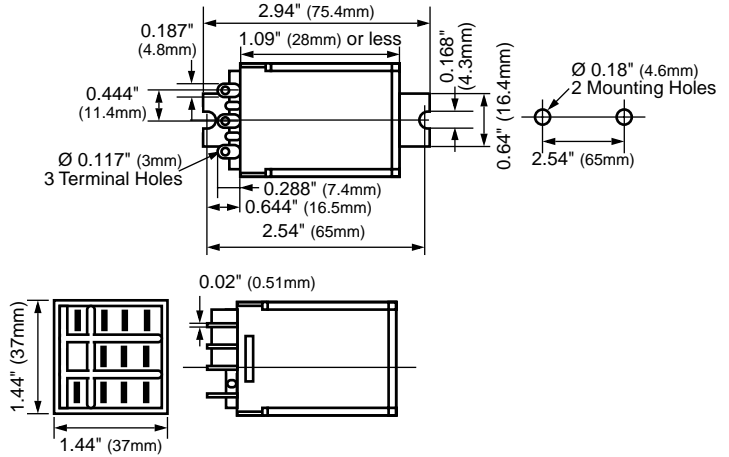
**11-Pin  
RR3PA**



**Blade  
RR1BA, RR2BA, RR3B**



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



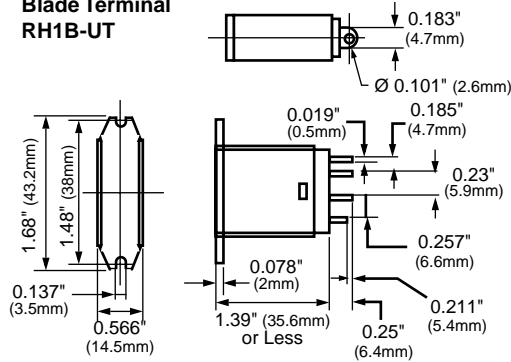
*Note: Dimensions in [ ] include hold-down spring.*



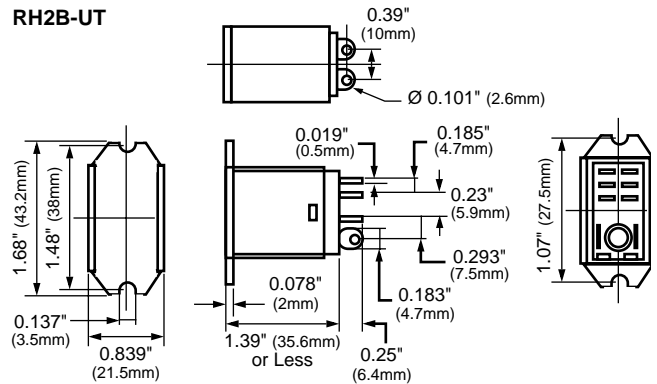
**RH Series**

**Top Bracket Mounting**

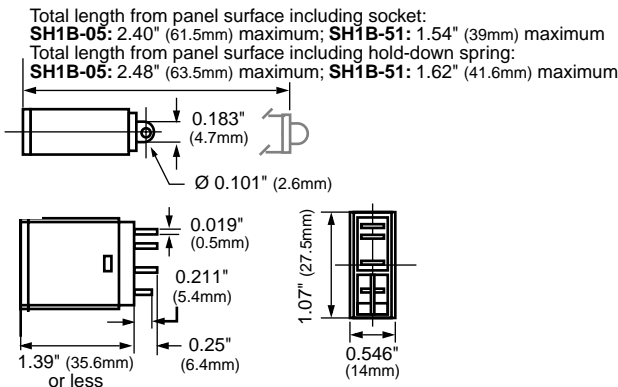
**Blade Terminal  
RH1B-UT**



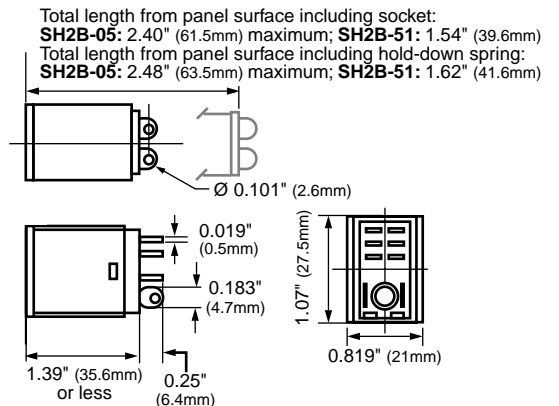
**RH2B-UT**



**Plug-in  
Blade Terminal  
RH1B**



**RH2B**



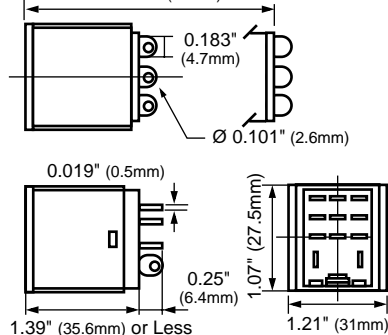
### Dimensions, continued

#### RH Series, continued

##### Plug-in Blade Terminal

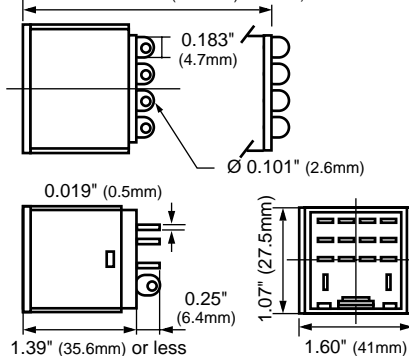
##### RH3B

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



##### RH4B

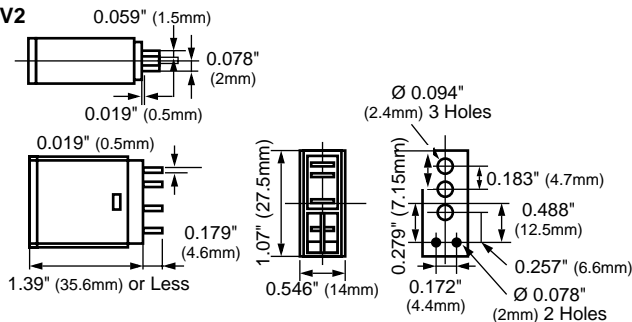
Total length from panel surface including socket:  
**SH4B-05:** 2.40" (61.5mm) or less; **SH4B-51:** 1.54" (39.6mm)  
 Total length from panel surface including hold-down spring:  
**SH4B-05:** 2.48" (63.5mm) or less; **SH4B-51:** 1.62" (41.6mm)



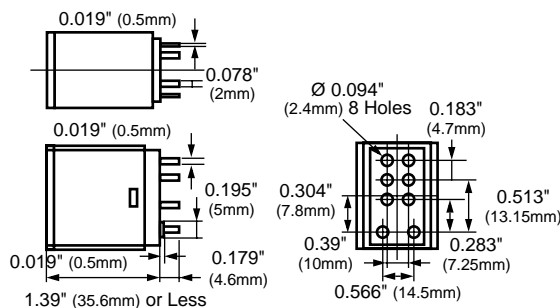
D

##### PCB Terminal

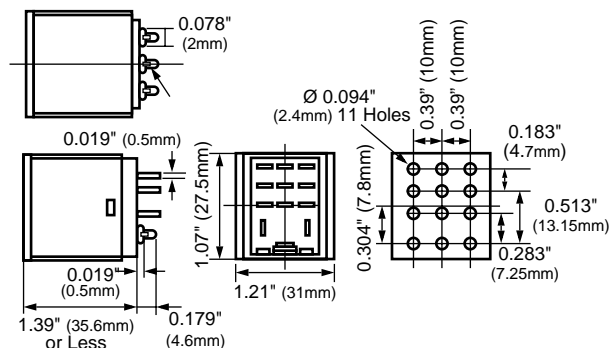
##### RH1V2



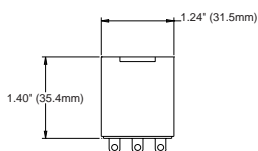
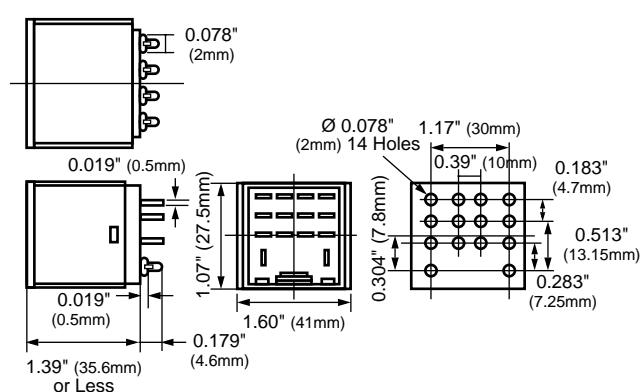
##### RH2V2



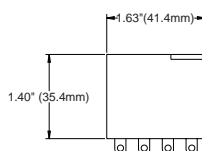
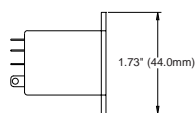
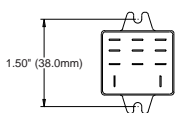
##### RH3V2



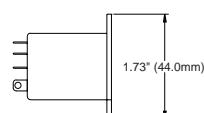
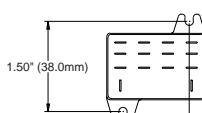
##### RH4V2



##### RH3B-UT



##### RH4B-UT



### Dimensions, continued

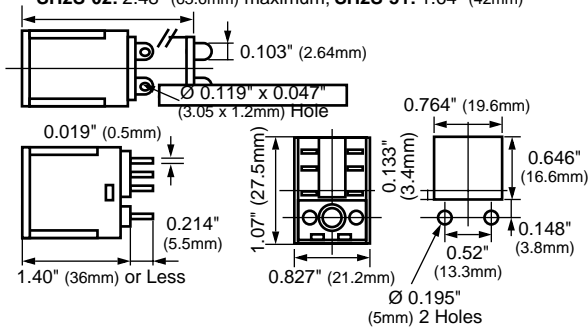
#### RM Series

##### Solder Terminal

##### Plug-in

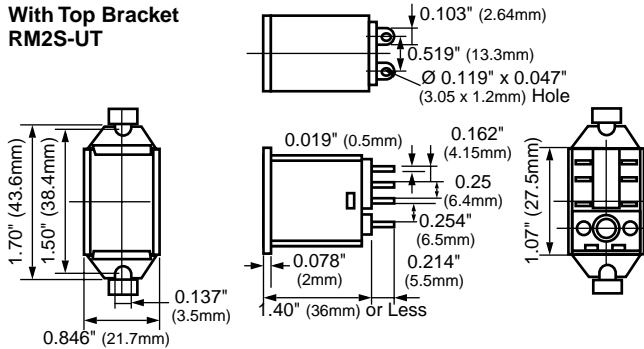
##### RM2S

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)



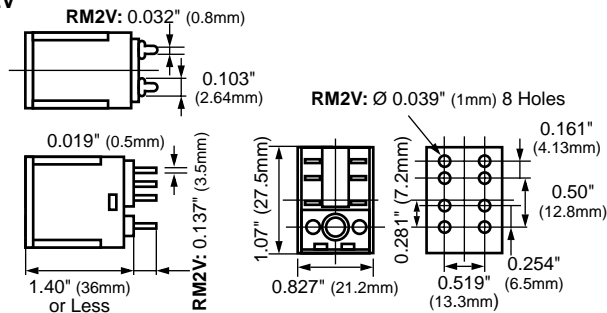
##### With Top Bracket

##### RM2S-UT



##### PCB Terminal

##### RM2S, RM2V



### Dimensions, continued

#### RY Series

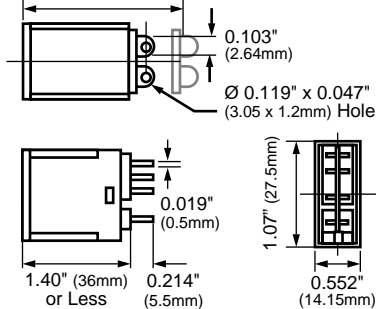
##### Solder Terminal

##### Plug-in

##### RY2S

##### RY22S

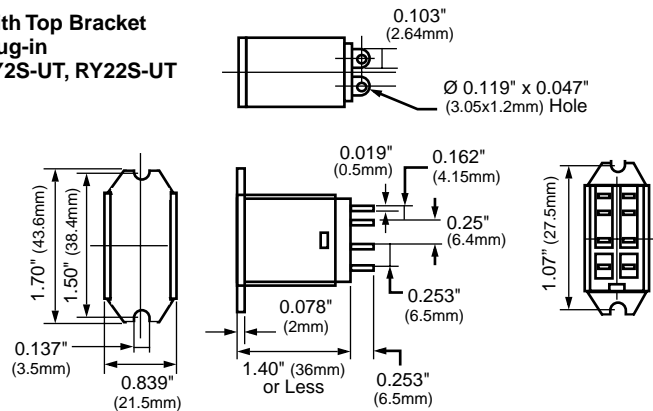
Total length from panel surface including socket:  
**SY2S-02:** 2.40" (61.6mm) maximum; **SY2S-51:** 1.56" (40mm)  
 Total length from panel surface including hold-down spring:  
**SY2S-02:** 2.48" (63.6mm) maximum; **SY2S-51:** 1.64" (42mm)



##### With Top Bracket

##### Plug-in

##### RY2S-UT, RY22S-UT

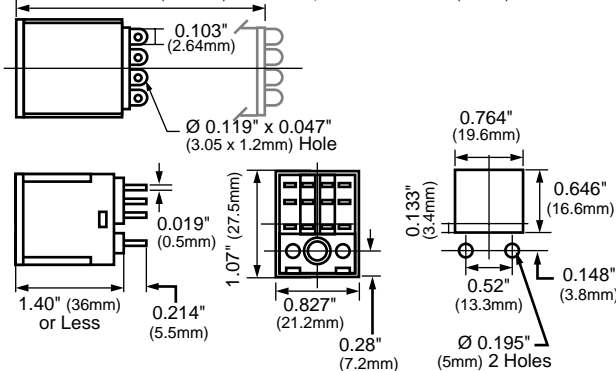


D

##### RY4S

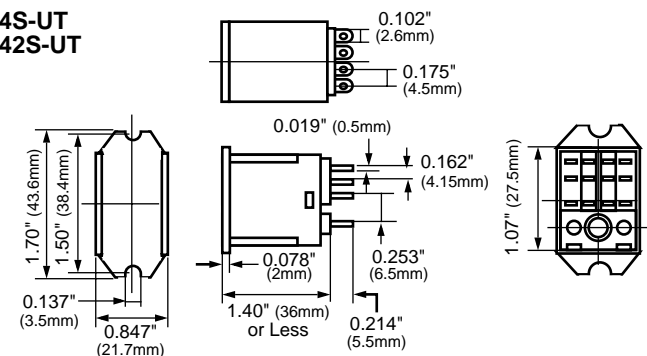
##### RY42S

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

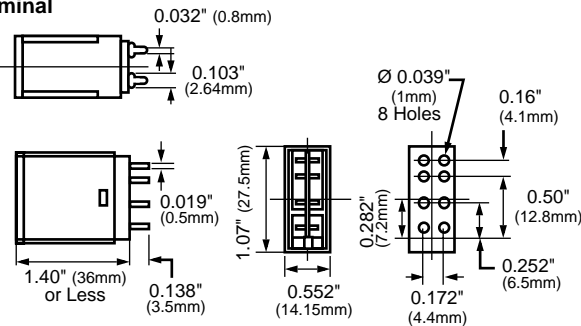
##### RY42S-UT



##### PCB Terminal

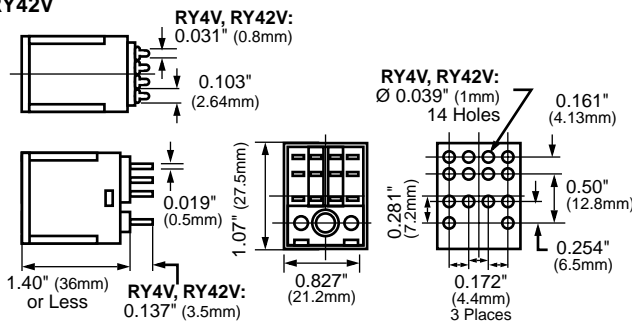
##### RY2V

##### RY22V



##### PCB Terminal

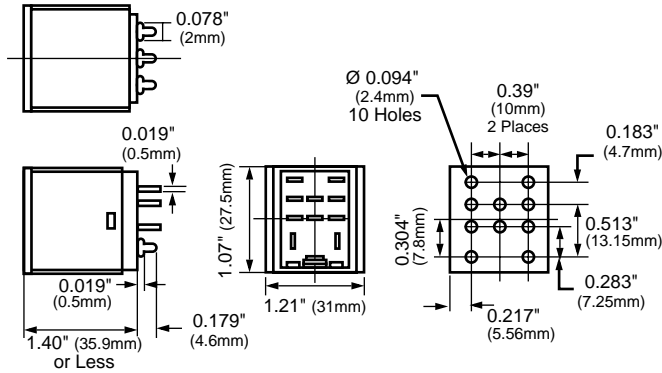
##### RY4V, RY42V



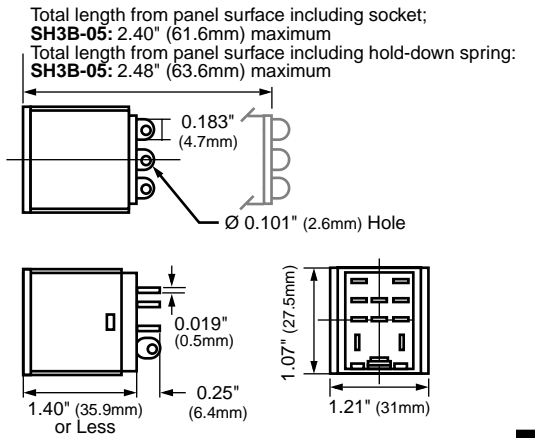
### Dimensions, continued

#### RH2L Series

##### PCB Terminal RH2LV2

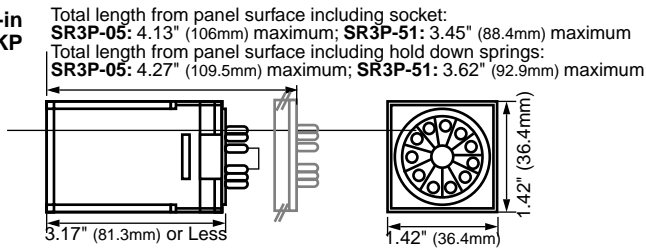


##### Plug-in RH2LB



#### RR2KP Series

##### Plug-in RR2KP

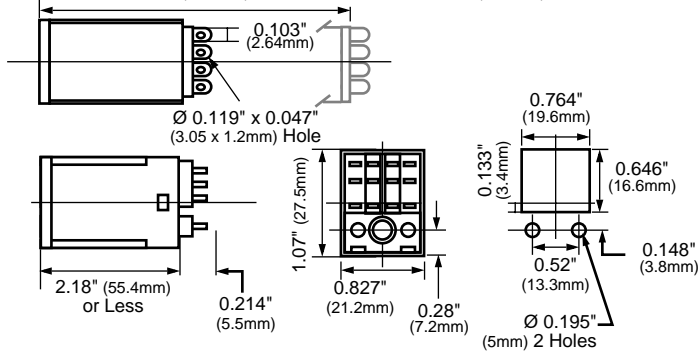


### Dimensions, continued

#### RY2KS Series

**Plug-in  
RY2KS**

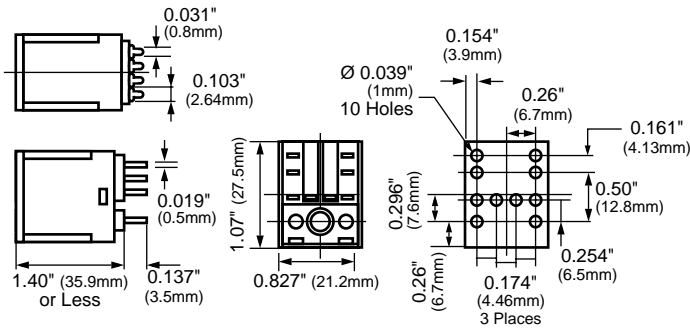
Total length from panel surface including socket:  
**SY4S-05:** 3.20" (82.1mm) maximum; **SY4S-51:** 2.34" (59.9mm)  
 Total length from panel surface including hold-down spring:  
**SY4S-05:** 3.28" (84.1mm) maximum; **SY4S-51:** 2.45" (62.9mm)



**D**

#### RY2L Series

**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)

