





RH Series Power Relays

SPDT through 4PDT, 10A contacts Midget power relays

The RH series are miniature power relays with a large capacity. The RH relays feature 10A contact capacity as large as the RR series and the same size as IDEC's miniature relays. The compact size saves space.

| Standard | Mark | Approval Organization / File No. |
|-----------------|---|--|
| UL508 |  | UL recognized, File No. E55996 No. E66043 |
| CSA C22.2 No.14 |  | CSA File No. LR35144 |
| EN61810-1 |  | TÜV SÜD |
| |  | EU Low Voltage Directive |



| Termination | Style | SPDT | | DPDT | | |
|-------------------|---|---------------------------------------|---|--|--|---------------------------------------|
| | | Part No. | Coil Voltage Code * | Part No. | Coil Voltage Code * | |
| Plug-in Terminal | Basic | RH1B-U* RH1B-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | RH2B-U* RH2B-UW* | AC6, AC12, AC24, AC50, AC100-110, AC110-120, AC200-220, AC220-240 DC6, DC12, DC24, DC48, DC100-110 | |
| | With Indicator | RH1B-UL* RH1B-ULW* | | RH2B-UL* RH2B-ULW* | | |
| | With Check Button | — | | RH2B-UC* | | |
| | With Indicator and Check Button | — | | RH2B-ULC* | | |
| | Top Bracket Mounting | RH1B-UT* RH1B-UTW* | | RH2B-UT* RH2B-UTW* | | |
| | With Diode (DC coil only) | RH1B-UD* RH1B-UDW* | | DC6, DC12, DC24, DC48, DC100, DC110 | | RH2B-UD* RH2B-UDW* |
| | With Indicator and Diode (DC coil only) | RH1B-ULD* RH1B-ULDW* | | — | | RH2B-ULD* RH2B-ULDW* |
| PC Board Terminal | Basic | RH1V2-U* RH1V2-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | RH2V2-U* RH2V2-UW* | AC6, AC12, AC24, AC50, AC100-110, AC110-120, AC200-220, AC220-240 DC6, DC12, DC24, DC48, DC100-110 | |
| | With Indicator | — | — | RH2V2-UL* RH2V2-ULW* | | |
| | With Diode (DC coil only) | RH1V2-UD* RH1V2-UDW* | DC6, DC12, DC24, DC48, DC100 | RH2V2-UD* RH2V2-UDW* | DC6, DC12, DC24, DC48, DC100-110 | |

• Part number ending with W is cadmium free.

Part No. Development

When ordering, specify the Part No. and coil voltage code.

(Example) **RH2B-U** **AC100-110**
 Part No. Coil Voltage Code

RH Series Power Relays

| Termination | Style | 3PDT | | 4PDT | | |
|-------------------|---|---|--|--|--|---|
| | | Part No. | Coil Voltage Code * | Part No. | Coil Voltage Code * | |
| Plug-in Terminal | Basic | RH3B-U* RH3B-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | RH4B-U* RH4B-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | |
| | With Indicator | RH3B-UL* | | RH4B-UL* RH4B-ULW* | | |
| | With Check Button | RH3B-UC* | | RH4B-UC* | | |
| | With Indicator and Check Button | RH3B-ULC* | | RH4B-ULC* | | |
| | Top Bracket Mounting | RH3B-UT* RH3B-UTW* | | RH4B-UT* RH4B-UTW* | | |
| | With Diode (DC coil only) | RH3B-D*(Note) RH3B-DW*(Note) | | DC6, DC12, DC24, DC48, DC100, DC110 | | RH4B-UD* RH4B-UDW* |
| | With Indicator and Diode (DC coil only) | RH3B-LD*(Note) RH3B-LDW*(Note) | | | | RH4B-ULD* RH4B-ULDW* |
| PC Board Terminal | Basic | RH3V2-U* RH3V2-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | RH4V2-U* RH4V2-UW* | AC6, AC12, AC24, AC50, AC100, AC110, AC115, AC120, AC200, AC220, AC230, AC240 DC6, DC12, DC24, DC48, DC100, DC110 | |
| | With Indicator | RH3V2-UL* RH3V2-ULW* | | RH4V2-UL* RH4V2-ULW* | | |
| | With Diode (DC coil only) | RH3V2-D*(Note) RH3V2-DW*(Note) | | DC6, DC12, DC24, DC48, DC100, DC110 | | RH4V2-UD* RH4V2-UDW* |
| | With Indicator and Diode (DC coil only) | RH3V2-LD*(Note) RH3V2-LDW*(Note) | | | | RH4V2-ULD* RH4V2-ULDW* |

Note: No standard approval.

- Part number ending with W is cadmium free.

Part No. Development

When ordering, specify the Part No. and coil voltage code.

(Example) **RH3B-U** **AC110**
 Part No. Coil Voltage Code

Coil Ratings

| Rated Voltage (V) | | | | Rated Current (mA) ±15% at 20°C | | | | | | | | Coil Resistance (Ω) ±10% at 20°C | | | | Operation Characteristics (against rated values at 20°C) | | |
|-------------------|---------|---------|------|---------------------------------|-----------|---------|------|--------|----------|--------|-------|----------------------------------|--------|-------------|-------------|--|---------------------|-----------------|
| SPDT | DPDT | 3PDT | 4PDT | 50Hz | | | | 60Hz | | | | SPDT | DPDT | 3PDT | 4PDT | Max. Continuous Applied Voltage | Min. Pickup Voltage | Dropout Voltage |
| | | | | SPDT | DPDT | 3PDT | 4PDT | SPDT | DPDT | 3PDT | 4PDT | | | | | | | |
| 6 | 6 | 6 | 6 | 170 | 240 | 330 | 387 | 150 | 200 | 280 | 330 | 18.8 | 9.4 | 6.4 | 5.4 | 110% | 80% maximum | 30% minimum |
| 12 | 12 | 12 | 12 | 86 | 121 | 165 | 196 | 75 | 100 | 140 | 165 | 76.8 | 39.3 | 25.3 | 21.2 | | | |
| 24 | 24 | 24 | 24 | 42 | 60.5 | 81 | 98 | 37 | 50 | 70 | 83 | 300 | 153 | 103 | 84.5 | | | |
| 50 | 50 | 50 | 50 | 20.5 | 28.9 | 39.5 | 47 | 18 | 24 | 34 | 40 | 1,280 | 680 | 460 | 340 | | | |
| 100 | 100-110 | 100 | 100 | 10.5 | 10.3-11.8 | 20 | 23.5 | 9 | 9.1-10.0 | 17 | 20 | 5,220 | 3,360 | 1,940 | 1,560 | | | |
| 110 | — | 110 | 110 | 9.6 | — | 18.1 | 21.6 | 8.4 | — | 15.5 | 18.2 | 6,950 | — | 2,200 | 1,800 | | | |
| 115 | 110-120 | 115 | 115 | 8.9 | 9.4-10.8 | 17.1 | 20.8 | 7.8 | 8.0-9.2 | 14.8 | 17.5 | 7,210 | 4,290 | 2,620 | 1,910 | | | |
| 120 | — | 120 | 120 | 8.6 | — | 16.4 | 19.5 | 7.5 | — | 14.2 | 16.5 | 8,100 | — | 2,770 | 2,220 | | | |
| 200 | 200-220 | 200 | 200 | 5.6 | 5.1-5.9 | 9.8 | 11.8 | 4.9 | 4.3-5.0 | 8.5 | 10 | 21,442 | 13,690 | 8,140 | 6,360 | | | |
| 220 | — | 220 | 220 | 4.7 | — | 8.8 | 10.7 | 4.1 | — | 7.7 | 9.1 | 25,892 | — | 10,800 | 7,360 | | | |
| 230 | 220-240 | 230 | 230 | 4.7 | 4.7-5.4 | 8.5 | 10.3 | 4.1 | 4.0-4.6 | 7.4 | 8.7 | 26,710 | 18,820 | 11,500 | 8,520 | | | |
| 240 | — | 240 | 240 | 4.9 | — | 8.2 | 9.8 | 4.3 | — | 7.1 | 8.3 | 26,710 | — | 12,100 | 9,120 | | | |
| DC | SPDT | DPDT | 3PDT | 4PDT | SPDT | DPDT | 3PDT | 4PDT | SPDT | DPDT | 3PDT | 4PDT | 110% | 80% maximum | 10% minimum | | | |
| | 6 | 6 | 6 | 6 | 128 | 150 | 240 | 250 | 47 | 40 | 25 | 24 | | | | | | |
| | 12 | 12 | 12 | 12 | 64 | 75 | 120 | 125 | 188 | 160 | 100 | 96 | | | | | | |
| | 24 | 24 | 24 | 24 | 32 | 36.9 | 60 | 62 | 750 | 650 | 400 | 388 | | | | | | |
| | 48 | 48 | 48 | 48 | 18 | 18.5 | 30 | 31 | 2,660 | 2,600 | 1,600 | 1,550 | | | | | | |
| | 100 | 100-110 | 100 | 100 | 10 | 8.2-9.0 | 14.5 | 15 | 10,000 | 12,250 | 6,900 | 6,670 | | | | | | |
| 110 | — | 110 | 110 | 8 | — | 12.8 | 15 | 13,800 | — | 8,600 | 7,340 | | | | | | | |

RH Series Power Relays

Contact Ratings

| Maximum Contact Capacity | | | | | | |
|--------------------------|--------------------|-------------------------|----------------------|-------------|-----------|-----------|
| Contact | Continuous Current | Allowable Contact Power | | Rated Load | | |
| | | Resistive Load | Inductive Load | Voltage (V) | Res. Load | Ind. Load |
| SPDT | 10A | 1540VA AC 300W DC | 990VA AC 210W DC | 110 AC | 10A | 7A |
| | | | | 220 AC | 7A | 4.5A |
| | | | | 30 DC | 10A | 7A |
| DPDT 3PDT 4PDT | 10A | 1650VA AC 300W DC | 1100VA AC 225W DC | 110 AC | 10A | 7.5A |
| | | | | 220 AC | 7.5A | 5A |
| | | | | 30 DC | 10A | 7.5A |

Note: Inductive load for the rated load — $\cos \phi = 0.3$, L/R = 7 ms

UL Ratings (silver cadmium oxide)

| Voltage | Resistive | | | General use | | | Horse Power Rating | | |
|---------|------------|------|------|-------------|------|------|--------------------|--------|-----|
| | RH1 RH2 | RH3 | RH4 | RH1 RH2 | RH3 | RH4 | RH1 RH2 | RH3 | RH4 |
| 240V AC | 10A | 7.5A | 7.5A | 7A | 6.5A | 5A | 1/3 HP | 1/3 HP | — |
| 120V AC | — | 10A | 10A | — | 7.5A | 7.5A | 1/6 HP | 1/6 HP | — |
| 30V DC | 10A | 10A | — | 7A | — | — | — | — | — |
| 28V DC | — | — | 10A | — | — | — | — | — | — |

UL Ratings (cadmium free)

| Voltage | Resistive | | | General use | | | Horse Power Rating | | |
|---------|------------|-----|-----|-------------|-----|-----|--------------------|--------|-----|
| | RH1 RH2 | RH3 | RH4 | RH1 RH2 | RH3 | RH4 | RH1 RH2 | RH3 | RH4 |
| 240V AC | 10A | 10A | 10A | 10A | 10A | 10A | 1/3 HP | 1/3 HP | — |
| 120V AC | — | — | — | — | — | — | 1/6 HP | 1/6 HP | — |
| 30V DC | 10A | 10A | 10A | 7A | — | — | — | — | — |

CSA Ratings (Silver cadmium oxide/cadmium free)

| Voltage | Resistive | | | | General use | | | | Horse Power Rating |
|---------|-----------|-----|-----|-----|-------------|------|-----|------|--------------------|
| | RH1 | RH2 | RH3 | RH4 | RH1 | RH2 | RH3 | RH4 | RH1, 2, 3 |
| 240V AC | 10A | 10A | 10A | 10A | 7A | 7A | 7A | 5A | 1/3 HP |
| 120V AC | 10A | 10A | 10A | 10A | 7.5A | 7.5A | — | 7.5A | 1/6 HP |
| 30V DC | 10A | 10A | 10A | 10A | 7A | 7.5A | — | — | — |

TÜV Ratings (silver cadmium oxide/cadmium free)

| Voltage | RH1 | RH2 | RH3 | RH4 |
|---------|-----|-----|------|------|
| 240V AC | 10A | 10A | 7.5A | 7.5A |
| 30V DC | 10A | 10A | 10A | 10A |

AC: $\cos \phi = 1.0$, DC: L/R = 0 ms

Specifications

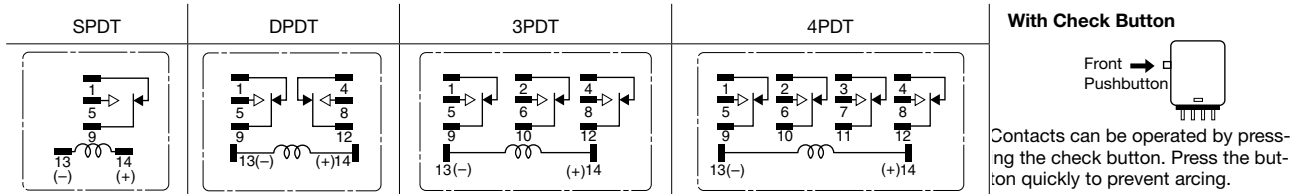
| | | |
|-----------------------------|--|---|
| Contact Material | Silver cadmium oxide/cadmium free (Ag-alloy) | |
| Contact Resistance *1 | 50 mΩ maximum | |
| Minimum Applicable Load | 24V DC, 30 mA; 5V DC, 100 mA (reference value) | |
| Operate Time *2 | SPDT/DPDT | 20 ms maximum |
| | 3PDT/4PDT | 25 ms maximum |
| Release Time *2 | SPDT/DPDT | 20 ms maximum |
| | 3PDT/4PDT | 25 ms maximum |
| Power Consumption (approx.) | SPDT | AC: 1.1 VA (50 Hz), 1 VA (60 Hz), DC: 0.8W |
| | DPDT | AC: 1.4 VA (50 Hz), 1.2 VA (60 Hz), DC: 0.9W |
| | 3PDT | AC: 2 VA (50 Hz), 1.7 VA (60 Hz), DC: 1.5W |
| | 4PDT | AC: 2.5 VA (50 Hz), 2 VA (60 Hz), DC: 1.5W |
| Insulation Resistance | 100 MΩ minimum (500V DC megger) | |
| Dielectric Strength | SPDT | Between live and dead parts: 2000V AC, 1 minute *3 Between contact and coil: 2000V AC, 1 minute Between contacts of the same pole: 1000V AC, 1 minute |
| | DPDT/3PDT/4PDT | Between live and dead parts: 2000V AC, 1 minute Between contact and coil: 2000V AC, 1 minute Between contacts of different poles: 2000V AC, 1 minute Between contacts of the same pole: 1000V AC, 1 minute |
| Operating Frequency | Electrical: | 1,800 operations/h maximum |
| | Mechanical: | 18,000 operations/h maximum |
| Vibration Resistance | Damage limits: | 10 to 55 Hz, amplitude 0.5 mm |
| | Operating extremes: | 10 to 55 Hz, amplitude 0.5 mm |
| Shock Resistance | Damage limits: | 1,000 m/s ² |
| | Operating extremes: | 200 m/s ² (SPDT, DPDT) 100 m/s ² (3PDT, 4PDT) |
| Mechanical Life | 50,000,000 operations minimum | |
| Electrical Life | DPDT | Silver cadmium oxide contact: 500,000 operations minimum (110V AC, 10A) Cadmium free (Ag-alloy) contact: 300,000 operations minimum |
| | SPDT/3PDT/4PDT | 200,000 operations minimum (110V AC, 10A) |
| Operating Temperature *4 | SPDT | -25 to +50°C (no freezing) |
| | DPDT/3PDT/4PDT | -25 to +40°C (no freezing) |
| Operating Humidity | 45 to 85% RH (no condensation) | |
| Storage Temperature | -55 to +70°C (no freezing) | |
| Storage Humidity | 45 to 85% RH (no condensation) | |
| Weight (approx.) | SPDT: 24g, DPDT: 37g, 3PDT: 50g, 4PDT: 74g | |

Note: Above values are initial values.

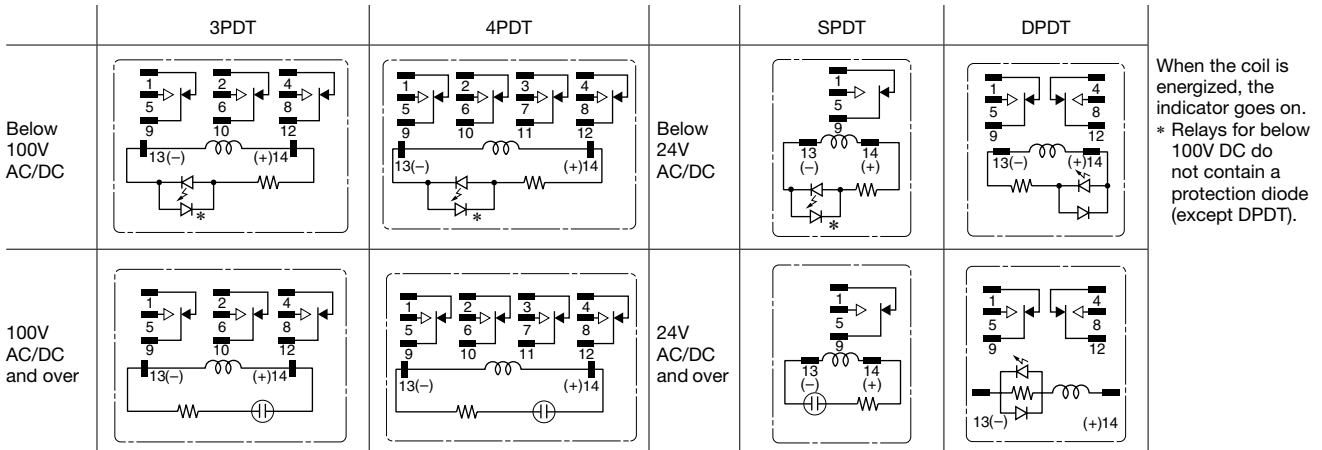
- *1: Measured using 5V DC, 1A voltage drop method
- *2: Measured at the rated voltage (at 20°C), excluding contact bouncing
Release time of relays with diode: 40 ms maximum
- *3: Relays with indicator or diode: 1000V AC, 1 minute
- *4: For use under different temperature conditions, refer to Continuous Load Current vs. Operating Temperature Curve. The operating temperature range of relays with indicator or diode is -25 to +40°C.

Internal Connection (Bottom View)

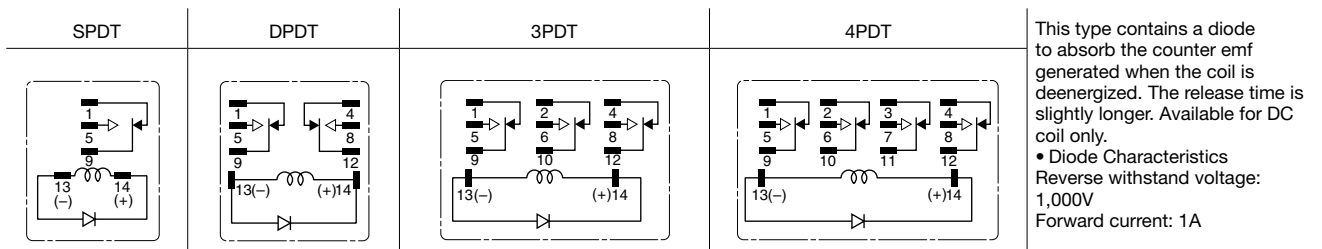
Basic



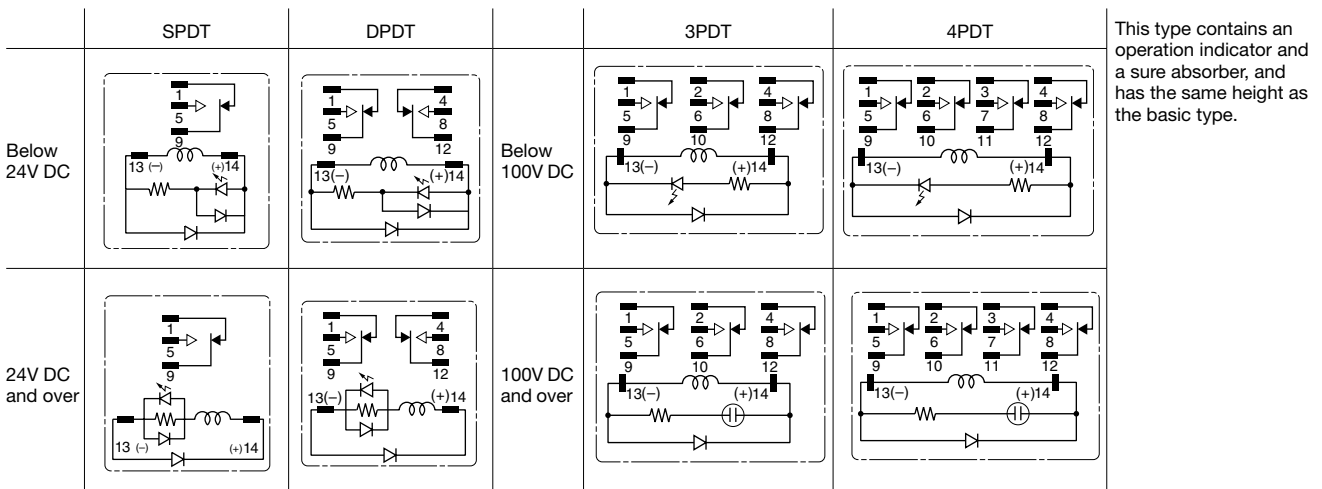
With Indicator (-L)



With Diode (-D)



With Indicator and Diode (-LD)



Relays

RJ

RU

RY

RM

RH

RR

RV8H

RF1V

RF2

Sockets

SJ

DF

SU

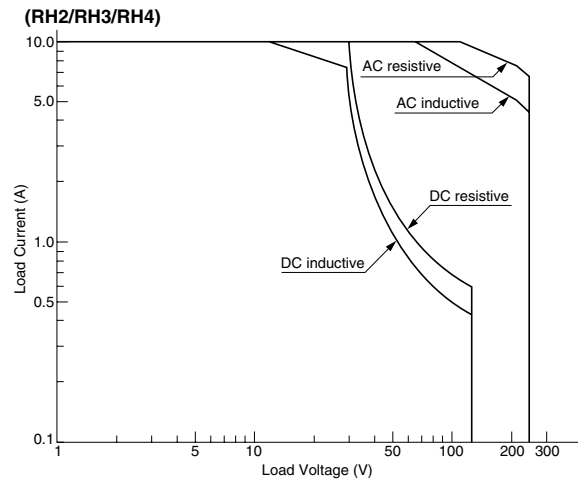
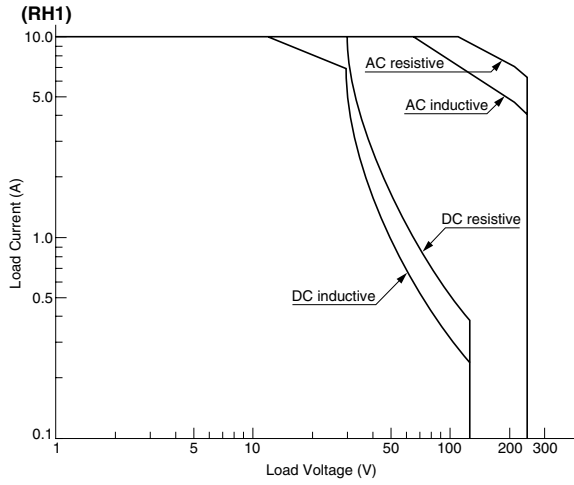
SF1V

Relay
Sockets

RH Series Power Relays

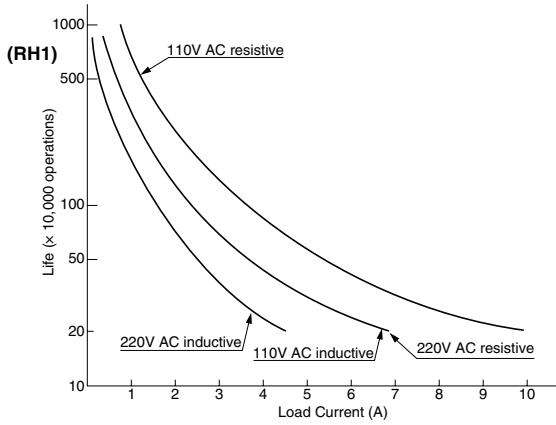
Characteristics (Reference Data)

Maximum Switching Capacity

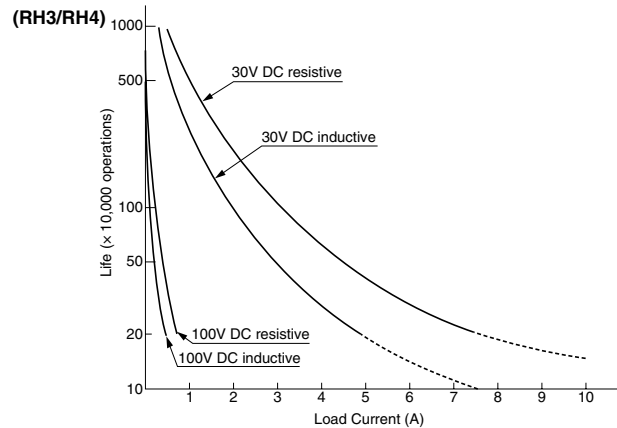
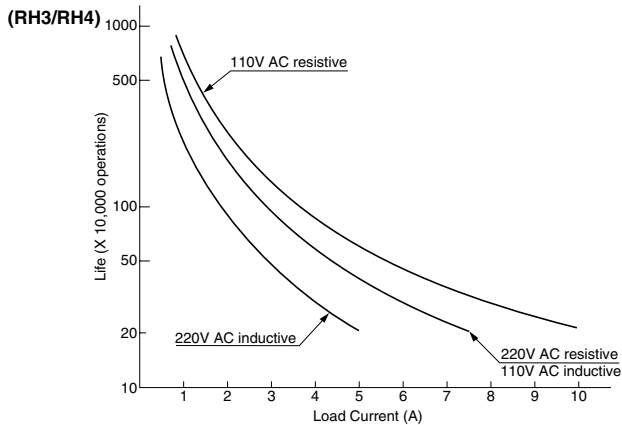
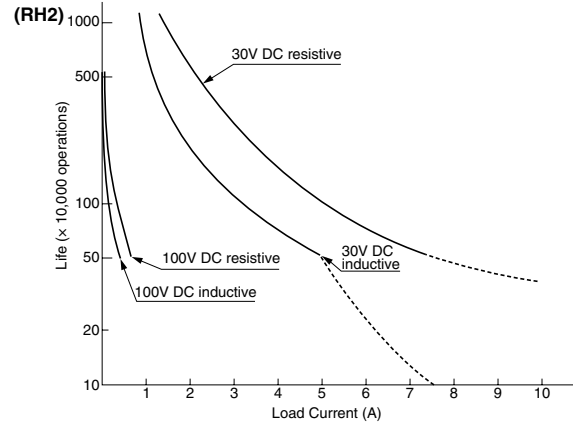
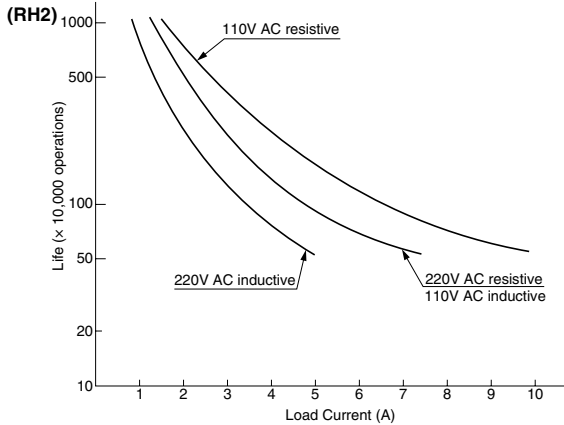
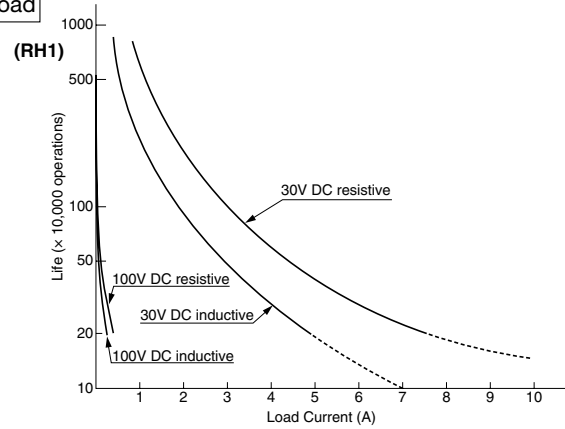


Electrical Life Curve

AC Load

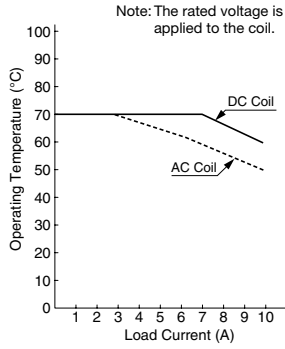


DC Load

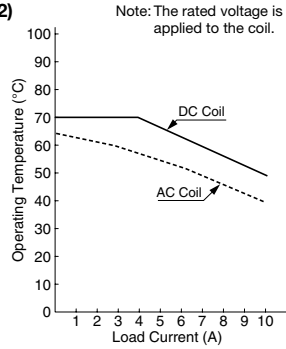


Continuous Load Current vs. Operating Temperature Curve (Basic, With Check Button, and Top Bracket Mounting)

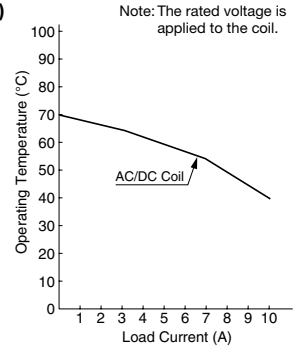
(RH1)



(RH2)



(RH3/RH4)

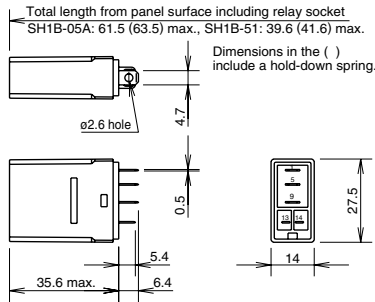


Dimensions

SPDT Plug-in Terminal
RH1B-U/RH1B-UL/RH1B-UD/ULD



(Photo: RH1B-U)



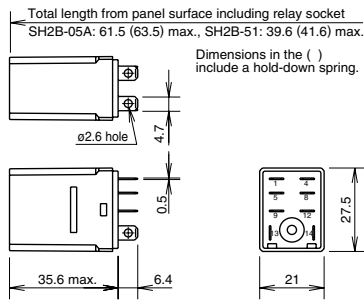
Applicable Socket and Hold-down Spring

| Mounting Style | Socket | | Hold-down Spring |
|-----------------------|----------|--|----------------------|
| | Part No. | | |
| DIN Rail Mount Socket | SH1B-05* | | SFA-101 SFA-202 |
| Panel Mount Socket | SH1B-51 | | SY4S-51F1 SFA-301 |
| PC Board Mount Socket | SH1B-62 | | SFA-302 |

DPDT Plug-in Terminal
RH2B-U/RH2B-UL/RH2B-UD/RH2B-ULD



(Photo: RH2B-U)



Applicable Socket and Hold-down Spring

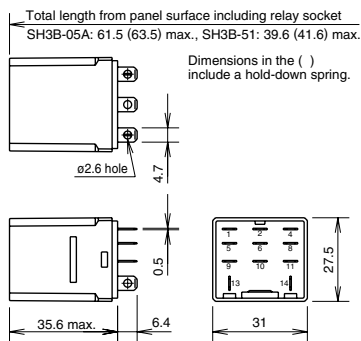
| Mounting Style | Socket | | Hold-down Spring |
|-----------------------|--------------------|--|--|
| | Part No. | | |
| DIN Rail Mount Socket | SH2B-05* (Note) | | SFA-202 SFA-101 |
| Panel Mount Socket | SH2B-51 | | SY4S-51F1 SFA-302(Note) SFA-301(Note) (SY4S-02F1) |
| PC Board Mount Socket | SH2B-62 | | |

Note: Not applicable with SH2B-62.
• (SY4S-02F1) is for the relay with check button.

3PDT Plug-in Terminal
RH3B-U/RH3B-UL/RH3B-D/RH3B-LD



(Photo: RH3B-U)

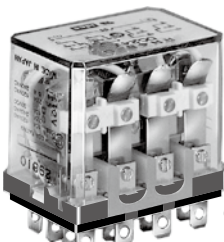


Applicable Socket and Hold-down Spring

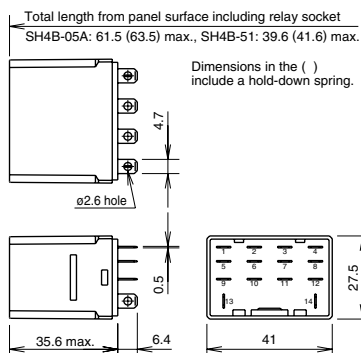
| Mounting Style | Socket | | Hold-down Spring |
|-----------------------|----------|--|------------------------|
| | Part No. | | |
| DIN Rail Mount Socket | SH3B-05* | | SFA-101 SFA-202 |
| Panel Mount Socket | SH3B-51 | | SY4S-51F1 SFA-301 |
| PC Board Mount Socket | SH3B-62 | | SFA-302 (SH3B-05F1) |

• (SH3B-05F1) is for the relay with check button.

4PDT Plug-in Terminal
RH4B-U/RH4B-UL/RH4B-UD/RH4B-ULD



(Photo: RH4B-U)



Applicable Socket and Hold-down Spring

| Mounting Style | Socket | | Hold-down Spring |
|-----------------------|----------|--|--------------------------------|
| | Part No. | | |
| DIN Rail Mount Socket | SH4B-05* | | SFA-101 SFA-202 |
| Panel Mount Socket | SH4B-51 | | SY4S-51F1 (Note) SFA-301 |
| PC Board Mount Socket | SH4B-62 | | SFA-302 (SH4B-02F1) |

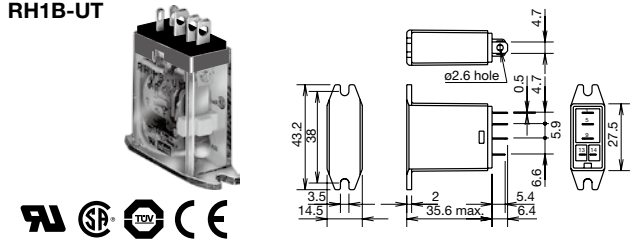
Note: Use two SY4S-51F1 hold-down springs for the SH4B-51 socket.
• (SH4B-02F1) is for the relay with check button.

| Relays |
|---------------|
| RJ |
| RU |
| RY |
| RM |
| RH |
| RR |
| RV8H |
| RF1V |
| RF2 |
| Sockets |
| SJ |
| DF |
| SU |
| SF1V |
| Relay Sockets |

RH Series Power Relays

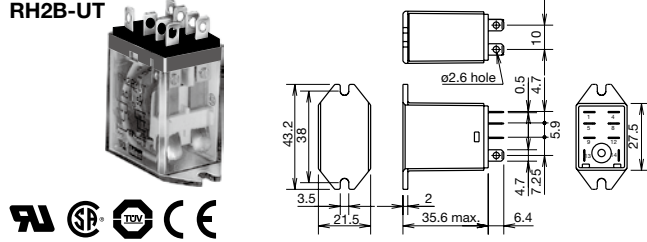
SPDT Plug-in Terminal (Top Bracket Mounting)

RH1B-UT



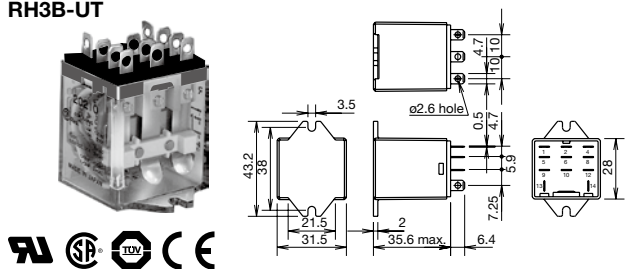
DPDT Plug-in Terminal (Top Bracket Mounting)

RH2B-UT



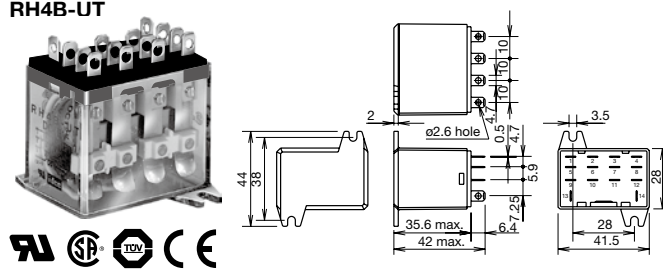
3PDT Plug-in Terminal (Top Bracket Mounting)

RH3B-UT



4PDT Plug-in Terminal (Top Bracket Mounting)

RH4B-UT

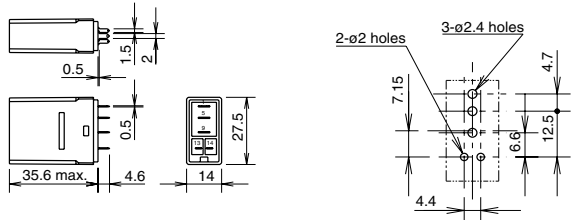


SPDT PC Board Terminal

RH1V2-U/RH1V2-UD



(Photo: RH1V2-U)



DPDT PC Board Terminal

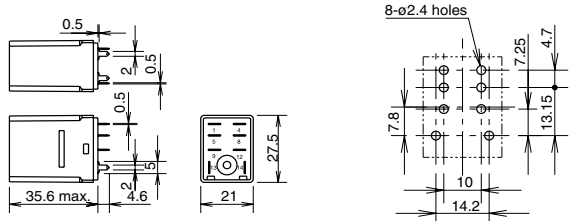
RH2V2-U/RH2V2-UL/
RH2V2-UD



(Photo: RH2V2-U)



(RH2V2-U)



3PDT PC Board Terminal

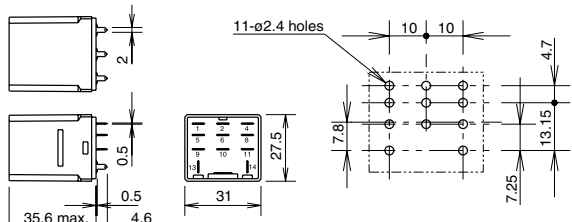
RH3V2-U/RH3V2-UL/
RH3V2-D



(Photo: RH3V2-U)



(RH3V2-U)



4PDT PC Board Terminal

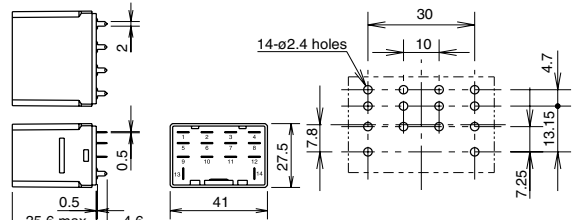
RH4V2-U/RH4V2-UL/
RH4V2-UD



(Photo: RH4V2-U)



(RH4V2-U)



All dimensions in mm.