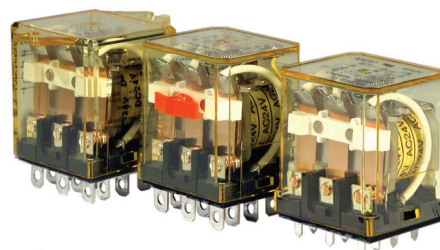


## RH Series Compact Power Relays

### Key features

- SPDT through 4PDT, 10A contacts
- Compact power type relays
- Miniature power relays with a large capacity
- 10A contact capacity
- Compact size saves space



### Part Number Selection

| Contact   | Model                                   | Part Number    |              | Coil Voltage Code<br><b>(Standard Stock in bold)</b>  |   |
|---|---|----------------|--------------|---|---|
|   |   | Blade Terminal | PCB Terminal |   |   |
| <br>SPDT   | Standard                                | RH1B-U □       | RH1V2-U □    | AC6V, AC12V, <b>AC24V</b> , AC110V, <b>AC120V</b> , AC220V, <b>AC240V</b> DC6V, <b>DC12V, DC24V</b> , DC48V, DC110V |   |
|   | With Indicator                          | RH1B-UL □      | —            |   |   |
|   | With Check Button                       | RH1B-UC □      | —            |   |   |
|   | With Indicator and Check Button         | RH1B-ULC □     | —            |   |   |
|   | Top Bracket Mounting                    | RH1B-UT □      | —            |   |   |
|   | With Diode (DC coil only)               | RH1B-UD □      | RH1V2-UD □   |   | DC6V, <b>DC12V, DC24V</b> , DC48V, DC110V     |
|   | With Indicator and Diode (DC coil only) | RH1B-ULD □     | —            |   | <b>DC12V, DC24V</b> , DC48V, DC110V           |
| <br>DPDT | Standard                                | RH2B-U □       | RH2V2-U □    | AC6V, AC12V, <b>AC24V, AC110-120V, AC220-240V</b> DC6V, <b>DC12V, DC24V</b> , DC48V, DC100-110V                     |   |
|   | With Indicator                          | RH2B-UL □      | RH2V2-UL □   |   |   |
|   | With Check Button                       | RH2B-UC □      | —            |   |   |
|   | With Indicator and Check Button         | RH2B-ULC □     | —            |   |   |
|   | Top Bracket Mounting                    | RH2B-UT □      | —            |   |   |
|   | With Diode (DC coil only)               | RH2B-UD □      | RH2V2-UD □   |   | DC6V, <b>DC12V, DC24V</b> , DC48V, DC100-110V |
|   | With Indicator and Diode (DC coil only) | RH2B-ULD □     | RH2V2-ULD □  |   |   |
| <br>3PDT | Standard                                | RH3B-U □       | RH3V2-U □    | AC6V, AC12V, <b>AC24V</b> , AC110V, <b>AC120V</b> , AC220V, <b>AC240V</b> DC6V, <b>DC12V, DC24V</b> , DC48V, DC110V |   |
|   | With Indicator                          | RH3B-UL □      | RH3V2-UL □   |   |   |
|   | With Check Button                       | RH3B-UC □      | —            |   |   |
|   | With Indicator and Check Button         | RH3B-ULC □     | —            |   |   |
|   | Top Bracket Mounting                    | RH3B-UT □      | —            |   |   |
|   | With Diode (DC coil only)               | RH3B-UD □      | —            |   | DC6V, DC12V, DC24V, DC48V, DC110V             |
|   | With Indicator and Diode (DC coil only) | RH3B-ULD □     | —            |   |   |
| <br>4PDT | Standard                                | RH4B-U □       | RH4V2-U □    | AC6V, AC12V, <b>AC24V</b> , AC110V, <b>AC120V</b> , AC220V, <b>AC240V</b> DC6V, <b>DC12V, DC24V</b> , DC48V, DC110V |   |
|   | With Indicator                          | RH4B-UL □      | RH4V2-UL □   |   |   |
|   | With Check Button                       | RH4B-UC □      | —            |   |   |
|   | With Indicator and Check Button         | RH4B-ULC □     | —            |   |   |
|   | Top Bracket Mounting                    | RH4B-UT □      | —            |   |   |
|   | With Diode (DC coil only)               | RH4B-UD □      | RH4V2-UD □   |   | DC6V, DC12V, DC24V, DC48V, DC110V             |
|   | With Indicator and Diode (DC coil only) | RH4B-ULD □     | —            |   |   |



PCB terminal relays are designed to mount directly to a circuit board without any socket.

#### Ordering Information

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

(example) **RH3B-U** **AC120V**  
 Part No.                      Coil Voltage Code

Switches & Pilot Lights

Signaling Lights

Relays & Sockets

Timers

Contactors

Terminal Blocks

Circuit Breakers

Switches & Pilot Lights

**Sockets** (for Blade Terminal Models)

| Relays | Standard DIN Rail Mount <sup>1</sup> | Finger-safe DIN Rail Mount <sup>1</sup> | Through Panel Mount | PCB Mount |
|--------|--------------------------------------|---|---------------------|-----------|
| RH1B   | SH1B-05                              | SH1B-05C                                | SH1B-51             | SH1B-62   |
| RH2B   | SH2B-05                              | SH2B-05C                                | SH2B-51             | SH2B-62   |
| RH3B   | SH3B-05                              | SH3B-05C                                | SH3B-51             | SH3B-62   |
| RH4B   | SH4B-05                              | SH4B-05C                                | SH4B-51             | SH4B-62   |



1. DIN Rail mount socket comes with two horseshoe clips. Do not use unless you plan to insert pullover wire spring. Replacement horseshoe clip part number is Y778-011.

Signaling Lights

**Hold Down Springs & Clips**

| Appearance | Item                     | Relay                  | For DIN Mount Socket   | For Through Panel & PCB Mount Socket |
|------------|--------------------------|------------------------|------------------------|--------------------------------------|
|            | Pullover Wire Spring     | RH1B                   | SY2S-02F1 <sup>2</sup> | SY4S-51F1                            |
|            |                          | RH2B                   | SY4S-02F1 <sup>2</sup> |                                      |
|            |                          | RH3B                   | SH3B-05F1 <sup>2</sup> |                                      |
|            |                          | RH4B                   | SH4B-02F1 <sup>2</sup> |                                      |
|            | Leaf Spring (side latch) | RH1B, RH2B, RH3B, RH4B | SFA-202 <sup>3</sup>   | SFA-302 <sup>3</sup>                 |
|            | Leaf Spring (top latch)  | RH1B, RH2B, RH3B, RH4B | SFA-101 <sup>3</sup>   | SFA-301 <sup>3</sup>                 |



2. Must use horseshoe clip when mounting in DIN mount socket. Replacement horseshoe clip part number is Y778-011.  
3. Two required per relay.

Relays & Sockets

**AC Coil Ratings**

| Voltage (V)    | Rated Current (mA) ±15% at 20°C |          |      |      |         |         |      |      | Coil Resistance (Ω) ±10% at 20°C |        |        |       | Operation Characteristics (against rated values at 20°C) |                |                 |
|----------------|---------------------------------|----------|------|------|---------|---------|------|------|----------------------------------|--------|--------|-------|--|----------------|-----------------|
|                | AC 50Hz                         |          |      |      | AC 60Hz |         |      |      | SPDT                             | DPDT   | 3PDT   | 4PDT  | Max. Continuous Applied Voltage                          | Pickup Voltage | Dropout Voltage |
|                | SPDT                            | DPDT     | 3PDT | 4PDT | SPDT    | DPDT    | 3PDT | 4PDT |                                  |        |        |       |  |                |                 |
| 6              | 170                             | 240      | 330  | 387  | 150     | 200     | 280  | 330  | 18.8                             | 9.4    | 6.4    | 5.4   |  |                |                 |
| 12             | 86                              | 121      | 165  | 196  | 75      | 100     | 140  | 165  | 76.8                             | 39.3   | 25.3   | 21.2  |  |                |                 |
| <b>24</b>      | 42                              | 60.5     | 81   | 98   | 37      | 50      | 70   | 83   | 300                              | 153    | 103    | 84.5  |  |                |                 |
| 110            | 9.6                             | —        | 18.1 | 21.6 | 8.4     | —       | 15.5 | 18.2 | 6,950                            | —      | 2,200  | 1,800 |  |                |                 |
| <b>110-120</b> | —                               | 9.4-10.8 | —    | —    | —       | 8.0-9.2 | —    | —    | —                                | —      | —      | —     |  |                |                 |
| <b>120</b>     | 8.6                             | —        | 16.4 | 19.5 | 7.5     | —       | 14.2 | 16.5 | 8,100                            | —      | 10,800 | 7,360 |  |                |                 |
| 220            | 4.7                             | —        | 8.8  | 10.7 | 4.1     | —       | 7.7  | 9.1  | 25,892                           | —      | 10,800 | 7,360 |  |                |                 |
| <b>220-240</b> | —                               | 4.7-5.4  | —    | —    | —       | 4.0-4.6 | —    | —    | —                                | 18,820 | —      | —     |  |                |                 |
| <b>240</b>     | 4.9                             | —        | 8.2  | 9.8  | 4.3     | —       | 7.1  | 8.3  | 26,710                           | —      | 12,100 | 9,120 |  |                |                 |

Timers

Contactors

**DC Coil Ratings**

| 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 | SPDT                             | DPDT   | 3PDT  | 4PDT  | Max. Continuous Applied Voltage                          | Pickup Voltage | Dropout Voltage |
| 6           | 128                             | 150     | 240  | 250  | 47                               | 40     | 25    | 24    | 110%   | 80% maximum    | 10% minimum     |
| 12          | 64                              | 75      | 120  | 125  | 188                              | 160    | 100   | 96    |  |                |                 |
| <b>24</b>   | 32                              | 36.9    | 60   | 62   | 750                              | 650    | 400   | 388   |  |                |                 |
| 48          | 18                              | 18.5    | 30   | 31   | 2,660                            | 2,600  | 1,600 | 1,550 |  |                |                 |
| 100-110     | —                               | 8.2-9.0 | —    | —    | —                                | 12,250 | —     | —     |  |                |                 |
| 110         | 8                               | —       | 12.8 | 15   | 13,800                           | —      | 8,600 | 7,340 |  |                |                 |



Standard coil voltages are in **BOLD**.

Terminal Blocks

Circuit Breakers

## Specifications

|                                    |  |  |  |
|------------------------------------|--|--|--|
| Contact Material                   | Silver cadmium oxide                           |  |  |
| Contact Resistance <sup>1</sup>    | 50mΩ maximum                                   |  |  |
| Minimum Applicable Load            | 24V DC, 30 mA; 5V DC, 100 mA (reference value) |  |  |
| Operating Time <sup>2</sup>        | SPDT<br>DPDT                                   | 20ms maximum   |  |
|                                    | 3PDT<br>4PDT                                   | 25ms maximum   |  |
| Release Time <sup>2</sup>          | SPDT<br>DPDT                                   | 20ms maximum   |  |
|                                    | 3PDT<br>4PDT                                   | 25ms maximum   |  |
| Power Consumption (approx.)        | SPDT   | AC: 1.1VA (50Hz), 1VA (60Hz)   | DC: 0.8W   |
|                                    | DPDT   | AC: 1.4VA (50Hz), 1.2VA (60Hz)   | DC: 0.9W   |
|                                    | 3PDT   | AC: 2VA (50Hz), 1.7VA (60Hz)   | DC: 1.5W   |
|                                    | 4PDT   | AC: 2.5VA (50Hz), 2VA (60Hz)   | DC: 1.5W   |
| Insulation Resistance              | 100MΩ minimum (500V DC megger)                 |  |  |
| Dielectric Strength <sup>3</sup>   | SPDT   | Between live and dead parts: 2,000V AC, 1 minute                                 | Between contact and coil: 2,000V AC, 1 minute          |
|                                    | DPDT<br>3PDT<br>4PDT                           | Between live and dead parts: 2,000V AC, 1 minute                                 | Between contacts of the same pole: 1,000V AC, 1 minute |
| Operating Frequency                | Electrical:                                    | 1,800 operations/hour maximum  |  |
|                                    | Mechanical:                                    | 18,000 operations/hour maximum   |  |
| Vibration Resistance               | Damage limits:                                 | 10 to 55Hz, amplitude 0.5 mm   |  |
|                                    | Operating extremes:                            | 10 to 55Hz, amplitude 0.5 mm   |  |
| Shock Resistance                   | Damage limits:                                 | 1,000m/s <sup>2</sup> (100G)   |  |
|                                    | Operating extremes:                            | 200m/s <sup>2</sup> (20G - SPDT, DPDT)<br>100m/s <sup>2</sup> (10G - 3PDT, 4PDT) |  |
| Mechanical Life                    | 50,000,000 operations minimum                  |  |  |
| Electrical Life                    | DPDT   | 500,000 operations minimum (120V AC, 10A)  |  |
|                                    | SPDT<br>3PDT<br>4PDT                           | 200,000 operations minimum (120V AC, 10A)  |  |
| Operating Temperature <sup>4</sup> | SPDT<br>DPDT                                   | -25 to +70°C (no freezing)   |  |
|                                    | 3PDT<br>4PDT                                   |  |  |
| Operating 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.