

IDEC relays and accessories

The following are the IDEC relays and relay accessories resold by Banner Engineering Corp and recommended for use with the SureCross wireless product line.

| Model | Description | IDEC Model |
|-----------------|--------------------------------------|--------------------------|
| BWA-RELAY-12V | 12 volt relay (blade style) and base | RH1B-UDC24V with SH1B-05 |
| BWA-RELAY-24V | 24 volt relay (blade style) and base | RH1B-UDC12V with SH1B-05 |
| | | |
| BWA-RH1B-UDC12V | 12 volt relay only, blade style | RH1B-UDC12V |
| BWA-RH1B-UDC24V | 24 volt relay only, blade style | RH1B-UDC24V |
| BWA-SH1B-05 | Relay base only | SH1B-05 |

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. RH1 = E66043
RH2 = E66043
RH3 = E66043
RH4 = E55996



CSA Certified
File No. LR35144



File No. B020813332452



| | | |
|----------------|---|---|
| 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 | 100MΩ2min (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-UL | RH1B-UC | RH1B-ULC | 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-UL | RH1V2-UC | RH1V2-ULC | — |
| | 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 | — |

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 | 2770Ω | 2220Ω |
| | 240V† | 3.2mA | 5.5mA | 7.1mA | 8.3mA | 3.7mA | 6.5mA | 8.2mA | 9.8mA | 3,1200Ω | 15,210Ω | 12,100Ω | 9120Ω |
| | | SPDT | | DPDT | | 3PDT | | 4PDT | | SPDT | DPDT | 3PDT | 4PDT |
| DC | 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 | 1550Ω |
| | 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.

Ratings con't
Contact Ratings

| # of Poles | Max Contact Power | | General Ratings | | |
|-------------------|--------------------|--------------------|-----------------|-----------|------------|
| | Resistive | Inductive | Voltage | Resistive | Inductive* |
| RH1 | AC1540VA DC300W | AC990VA DC210W | AC110 | 10A | 7A |
| | | | AC220 | 7A | 4.5A |
| | | | DC30 | 10A | 7A |
| RH2 RH3 RH4 | AC1650VA DC300W | AC1100VA DC225W | AC110 | 10A | 7.5A |
| | | | AC220 | 7.5A | 5A |
| | | | DC30 | 10A | 7.5A |



* $\cos\phi = 0.3$
L/R - 7ms

UL Ratings

| Voltage | Resistive | | | General Use | | | Horse Power Rating |
|---------|-----------|------|------|-------------|------|------|--------------------|
| | RH1, RH2 | RH3 | RH4 | RH1, RH2 | RH3 | RH4 | RH1, RH2, RH3 |
| AC240V | 10A | 7.5A | 7.5A | 7A | 6.5A | 5A | 1/3HP |
| AC120V | 10A | 10A | 10A | 7A | 7.5A | 7.5A | 1/6HP |
| DC30V | 10A | 10A | — | 7A | — | — | — |
| DC28V | 10A | 10A | 10A | 7A | — | — | — |

TÜV Ratings

| Voltage | RH1 | RH2 | RH3 | RH4 |
|---------|-----|-----|------|------|
| AC240V | 10A | 10A | 7.5A | 7.5A |
| DC30V | 10A | 10A | 10A | 10A |

CSA Ratings

| Voltage | Resistive | | | | General Use | | | | HP Rating |
|---------|-----------|-----|-----|------|-------------|------|-----|------|-----------|
| | RH1 | RH2 | RH3 | RH4 | RH1 | RH2 | RH3 | RH4 | RH1, 2, 3 |
| AC240V | 10A | 10A | — | 7.5A | 7A | 7A | 7A | 5A | 1/3HP |
| AC120V | 10A | 10A | 10A | 10A | 7.5A | 7.5A | — | 7.5A | 1/6HP |
| DC30V | 10A | 10A | 10A | 10A | 7A | 7.5A | — | — | — |

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 |



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

Spring & Clips (optional)

| Part Number | Use With |
|------------------------------------|--------------|
| SY2S-02F1③ SFA-101① SFA-202② | SH1B-05, 05C |
| SY4S-51F1③ SFA-301① SFA-302② | SH1B-51, 62 |
| SY4S-02F1③ SFA-101① SFA-202② | SH2B-05, 05C |
| SY4S-51F1③ SFA-301① SFA-302② | SH2B-51, 62 |
| SH3B-05F1③ SFA-101①, -202② | SH3B-05, 05C |
| SY4S-51F1③ SFA-301① SFA-302② | SH3B-51, 62 |
| SH4B-02F1③ SFA-101①, -202② | SH4B-05, 05C |
| SY4S-51F1③ SFA-301① SFA-302② | SH4B-51, 62 |



- ① Top latch
② Side latch
③ Pullover spring

Internal Circuits

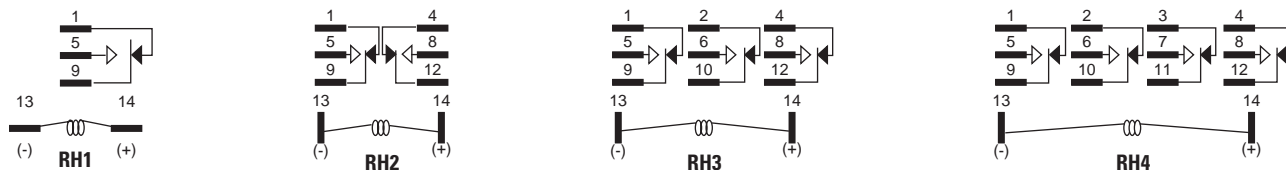
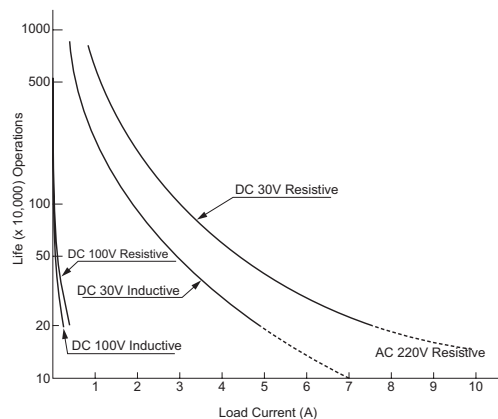
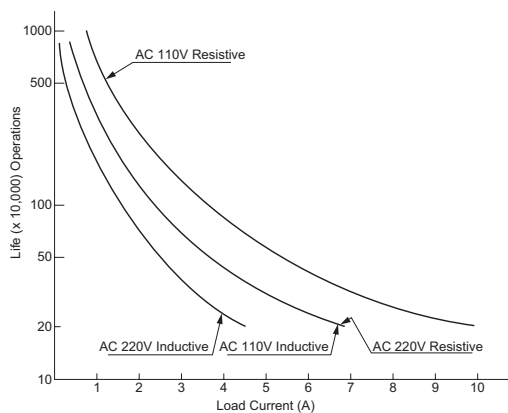


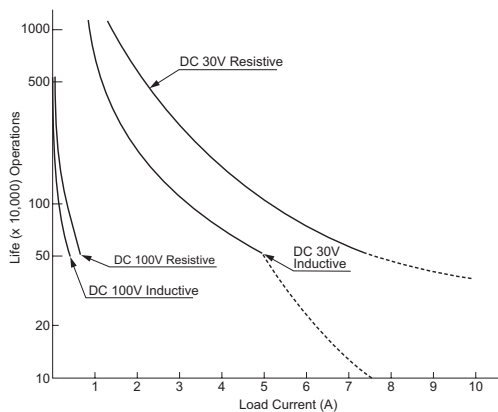
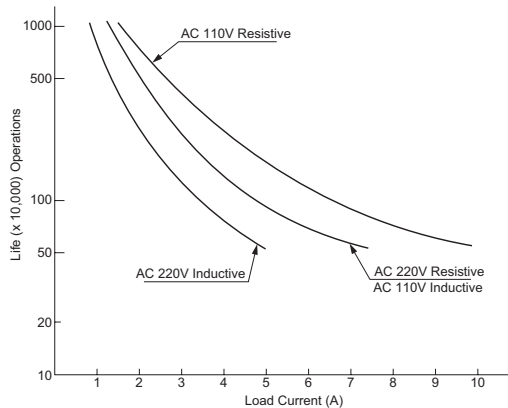
Image as viewed from bottom of relay. Refer to socket for exact wiring layout (Section F).

Electrical Life Curves

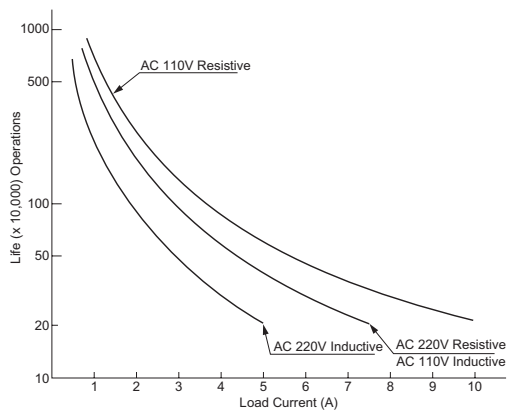
RH1



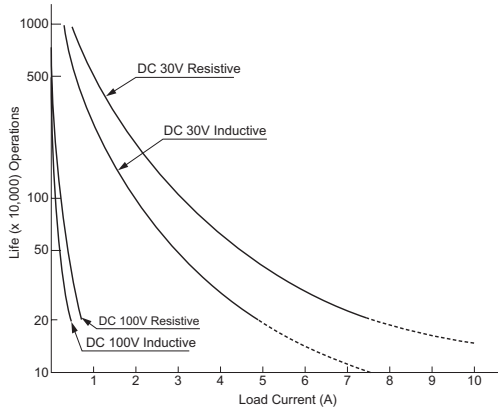
RH2

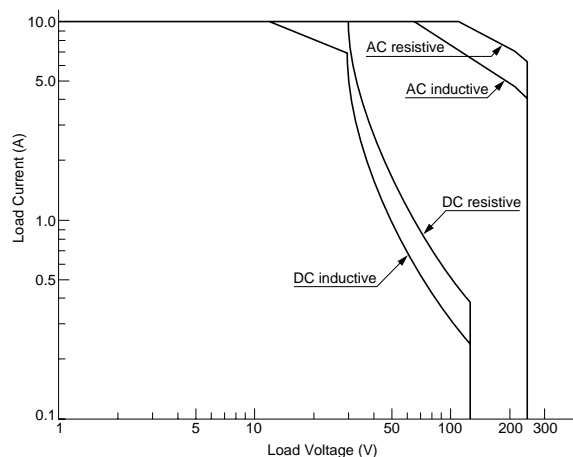
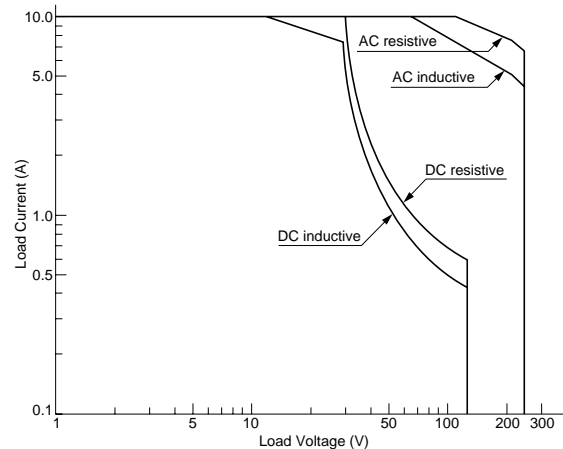
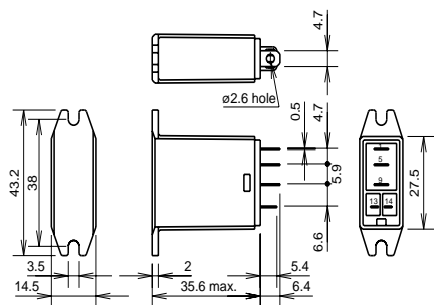
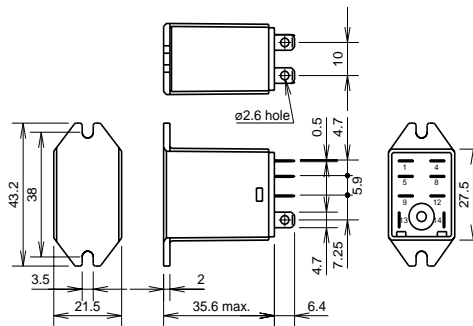
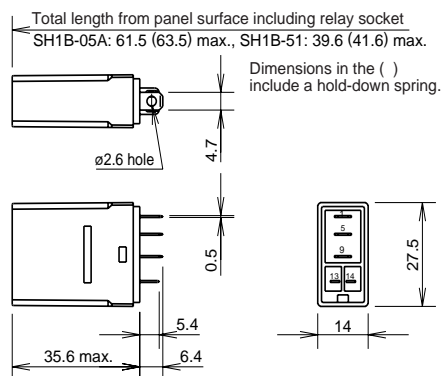
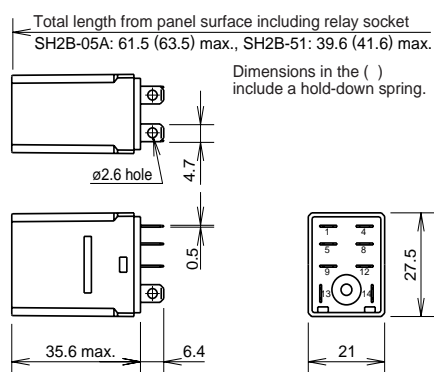


RH3



RH4



Maximum Switching Capacity
RH1

RH2/RH3/RH4

Dimensions
**Top Bracket Mounting
Blade Terminal
RH1B-UT**

RH2B-UT

**Plug-in Blade Terminal
RH1B**

RH2B


All dimensions in mm.

Plug-in Blade Terminal RH3B



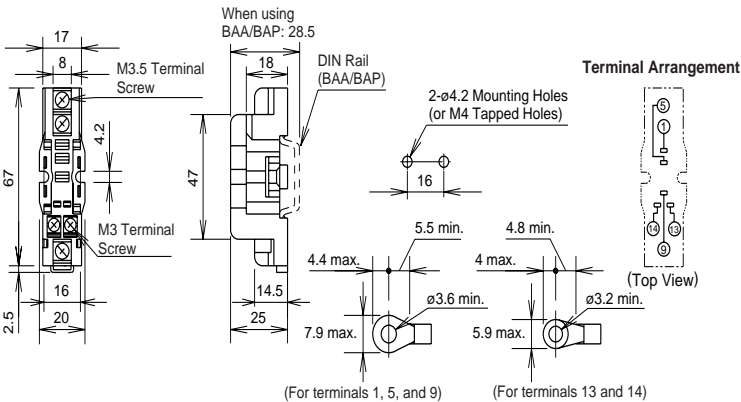
SH Series: DIN Rail Snap-Mount Sockets

SH1B Sockets



SH1B-05

| | |
|-------------------|---|
| Style | 5-blade, snap-mount/surface mount |
| Terminal/Torque | (Coil) M3 screws/(5.5 - 9 in•lbs) (contact) M3.5 screws (9 - 11.5 in•lbs) with captive wire clamp |
| Wire Size | Maximum up to 2-#12AWG |
| Electrical Rating | 250V, 10A |
| Compatible Relay | RH1B |
| Hold-Down Spring | SY2S-02F1 |
| Hold-Down Clip | SFA-101 (top notch), SFA-202 (side notch) |





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