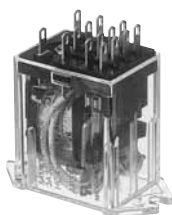


Plug-in type

PC board type



TM type

### FEATURES

1. Long track record means reliable quality.
2. Can provide switching across the range from low to high level power loads (100  $\mu$ A to 10 A).
3. Full range of types  
Standard types include 1 Form C, 2 Form C, 3 Form C, 4 Form C, 4-pole bifurcated (twin), plug-in type, PC board type, and TM type.
4. HC relay with LED indication type also available
5. UL, CSA approval is standard  
Compliance also with Japanese Electrical Appliance and Material Control Law.

2. Office equipment, automatic vending machines, telecommunications equipment, disaster prevention equipment, copiers, measuring devices, medical equipment, amusement devices, etc.
3. All types of household appliance

#### About Cd-free contacts

We have introduced Cadmium free type products to reduce Environmental Hazardous Substances. (The suffix "F" should be added to the part number. The Suffix "F" is required only for 1 Form C, 2 Form C, 3 Form C contact type. The 4 Form C and 4 Form C bifurcated (twin) contact type is originally cadmium-free, the suffix "F" is not required.) Please replace parts containing Cadmium with Cadmium-free products and evaluate them with your actual application before use because the life of a relay depends on the contact material and load.

### TYPICAL APPLICATIONS

Suitable for factory automation equipment and automotive devices

1. Control panels, power supply equipment, molding equipment, machine tools, welding equipment, agricultural equipment, etc.

RoHS Directive compatibility information  
<http://www.mew.co.jp/ac/e/environment/>

## ORDERING INFORMATION

#### Contact arrangement

- 1: 1 Form C
- 2: 2 Form C
- 3: 3 Form C
- 4: 4 Form C
- 4D: Bifurcated contact (twin)

#### Terminal arrangement

- H: Plug-in type  
 HL: Plug-in with LED indication  
 HP: PC board type  
 HPL: PC board with LED indication  
 HTM: TM type

#### Coil voltage

AC 6, 12, 24, 48, 100 (100/110), 120 (110/120), 200 (200/220), 240 (220/240) V  
 DC 6, 12, 24, 48, 100 (100/110) V

#### Contact material

| Contact arrangement       | Contact material | Ag alloy (cadmium-free) | AgNi type |
|---------------------------|------------------|-------------------------|-----------|
| 1 Form C                  |                  | F                       |           |
| 2 Form C                  |                  | F                       |           |
| 3 Form C                  |                  | F                       |           |
| 4 Form C                  |                  |                         | Nil       |
| Bifurcated contact (twin) |                  |                         | Nil       |

HC  -  -  -

Notes: UL/CSA approved type is standard.

Please inquire about VDE (1 Form C, 2 Form C, and 4 Form C only) and TV-3 (1 Form C and 2 Form C only) approved products.

# HC

## TYPES

### 1) Plug-in type

| Coil voltage | 1 Form C       | 2 Form C       | 3 Form C       | 4 Form C     | 4 Form C (twin) |
|--------------|----------------|----------------|----------------|--------------|-----------------|
|              | Part No.       | Part No.       | Part No.       | Part No.     | Part No.        |
| 6V AC        | HC1-H-AC6V-F   | HC2-H-AC6V-F   | HC3-H-AC6V-F   | HC4-H-AC6V   | HC4D-H-AC6V     |
| 12V AC       | HC1-H-AC12V-F  | HC2-H-AC12V-F  | HC3-H-AC12V-F  | HC4-H-AC12V  | HC4D-H-AC12V    |
| 24V AC       | HC1-H-AC24V-F  | HC2-H-AC24V-F  | HC3-H-AC24V-F  | HC4-H-AC24V  | HC4D-H-AC24V    |
| 48V AC       | HC1-H-AC48V-F  | HC2-H-AC48V-F  | HC3-H-AC48V-F  | HC4-H-AC48V  | HC4D-H-AC48V    |
| 100/110V AC  | HC1-H-AC100V-F | HC2-H-AC100V-F | HC3-H-AC100V-F | HC4-H-AC100V | HC4D-H-AC100V   |
| 110/120V AC  | HC1-H-AC120V-F | HC2-H-AC120V-F | HC3-H-AC120V-F | HC4-H-AC120V | HC4D-H-AC120V   |
| 200/220V AC  | HC1-H-AC200V-F | HC2-H-AC200V-F | HC3-H-AC200V-F | HC4-H-AC200V | HC4D-H-AC200V   |
| 220/240V AC  | HC1-H-AC240V-F | HC2-H-AC240V-F | HC3-H-AC240V-F | HC4-H-AC240V | HC4D-H-AC240V   |
| 6V DC        | HC1-H-DC6V-F   | HC2-H-DC6V-F   | HC3-H-DC6V-F   | HC4-H-DC6V   | HC4D-H-DC6V     |
| 12V DC       | HC1-H-DC12V-F  | HC2-H-DC12V-F  | HC3-H-DC12V-F  | HC4-H-DC12V  | HC4D-H-DC12V    |
| 24V DC       | HC1-H-DC24V-F  | HC2-H-DC24V-F  | HC3-H-DC24V-F  | HC4-H-DC24V  | HC4D-H-DC24V    |
| 48V DC       | HC1-H-DC48V-F  | HC2-H-DC48V-F  | HC3-H-DC48V-F  | HC4-H-DC48V  | HC4D-H-DC48V    |
| 100/110V DC  | HC1-H-DC100V-F | HC2-H-DC100V-F | HC3-H-DC100V-F | HC4-H-DC100V | HC4D-H-DC100V   |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

### 2) Plug-in type (with LED indication)

| Coil voltage | 1 Form C        | 2 Form C        | 3 Form C        | 4 Form C      | 4 Form C (twin) |
|--------------|-----------------|-----------------|-----------------|---------------|-----------------|
|              | Part No.        | Part No.        | Part No.        | Part No.      | Part No.        |
| 6V AC        | HC1-HL-AC6V-F   | HC2-HL-AC6V-F   | HC3-HL-AC6V-F   | HC4-HL-AC6V   | HC4D-HL-AC6V    |
| 12V AC       | HC1-HL-AC12V-F  | HC2-HL-AC12V-F  | HC3-HL-AC12V-F  | HC4-HL-AC12V  | HC4D-HL-AC12V   |
| 24V AC       | HC1-HL-AC24V-F  | HC2-HL-AC24V-F  | HC3-HL-AC24V-F  | HC4-HL-AC24V  | HC4D-HL-AC24V   |
| 100/110V AC  | HC1-HL-AC100V-F | HC2-HL-AC100V-F | HC3-HL-AC100V-F | HC4-HL-AC100V | HC4D-HL-AC100V  |
| 110/120V AC  | HC1-HL-AC120V-F | HC2-HL-AC120V-F | HC3-HL-AC120V-F | HC4-HL-AC120V | HC4D-HL-AC120V  |
| 200/220V AC  | HC1-HL-AC200V-F | HC2-HL-AC200V-F | HC3-HL-AC200V-F | HC4-HL-AC200V | HC4D-HL-AC200V  |
| 220/240V AC  | HC1-HL-AC240V-F | HC2-HL-AC240V-F | HC3-HL-AC240V-F | HC4-HL-AC240V | HC4D-HL-AC240V  |
| 6V DC        | HC1-HL-DC6V-F   | HC2-HL-DC6V-F   | HC3-HL-DC6V-F   | HC4-HL-DC6V   | HC4D-HL-DC6V    |
| 12V DC       | HC1-HL-DC12V-F  | HC2-HL-DC12V-F  | HC3-HL-DC12V-F  | HC4-HL-DC12V  | HC4D-HL-DC12V   |
| 24V DC       | HC1-HL-DC24V-F  | HC2-HL-DC24V-F  | HC3-HL-DC24V-F  | HC4-HL-DC24V  | HC4D-HL-DC24V   |
| 48V DC       | HC1-HL-DC48V-F  | HC2-HL-DC48V-F  | HC3-HL-DC48V-F  | HC4-HL-DC48V  | HC4D-HL-DC48V   |
| 100/110V DC  | HC1-HL-DC100V-F | HC2-HL-DC100V-F | HC3-HL-DC100V-F | HC4-HL-DC100V | HC4D-HL-DC100V  |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

### 3) PC board type

| Coil voltage | 1 Form C        | 2 Form C        | 3 Form C        | 4 Form C      | 4 Form C (twin) |
|--------------|-----------------|-----------------|-----------------|---------------|-----------------|
|              | Part No.        | Part No.        | Part No.        | Part No.      | Part No.        |
| 6V AC        | HC1-HP-AC6V-F   | HC2-HP-AC6V-F   | HC3-HP-AC6V-F   | HC4-HP-AC6V   | HC4D-HP-AC6V    |
| 12V AC       | HC1-HP-AC12V-F  | HC2-HP-AC12V-F  | HC3-HP-AC12V-F  | HC4-HP-AC12V  | HC4D-HP-AC12V   |
| 24V AC       | HC1-HP-AC24V-F  | HC2-HP-AC24V-F  | HC3-HP-AC24V-F  | HC4-HP-AC24V  | HC4D-HP-AC24V   |
| 48V AC       | HC1-HP-AC48V-F  | HC2-HP-AC48V-F  | HC3-HP-AC48V-F  | HC4-HP-AC48V  | HC4D-HP-AC48V   |
| 100/110V AC  | HC1-HP-AC100V-F | HC2-HP-AC100V-F | HC3-HP-AC100V-F | HC4-HP-AC100V | HC4D-HP-AC100V  |
| 110/120V AC  | HC1-HP-AC120V-F | HC2-HP-AC120V-F | HC3-HP-AC120V-F | HC4-HP-AC120V | HC4D-HP-AC120V  |
| 200/220V AC  | HC1-HP-AC200V-F | HC2-HP-AC200V-F | HC3-HP-AC200V-F | HC4-HP-AC200V | HC4D-HP-AC200V  |
| 220/240V AC  | HC1-HP-AC240V-F | HC2-HP-AC240V-F | HC3-HP-AC240V-F | HC4-HP-AC240V | HC4D-HP-AC240V  |
| 6V DC        | HC1-HP-DC6V-F   | HC2-HP-DC6V-F   | HC3-HP-DC6V-F   | HC4-HP-DC6V   | HC4D-HP-DC6V    |
| 12V DC       | HC1-HP-DC12V-F  | HC2-HP-DC12V-F  | HC3-HP-DC12V-F  | HC4-HP-DC12V  | HC4D-HP-DC12V   |
| 24V DC       | HC1-HP-DC24V-F  | HC2-HP-DC24V-F  | HC3-HP-DC24V-F  | HC4-HP-DC24V  | HC4D-HP-DC24V   |
| 48V DC       | HC1-HP-DC48V-F  | HC2-HP-DC48V-F  | HC3-HP-DC48V-F  | HC4-HP-DC48V  | HC4D-HP-DC48V   |
| 100/110V DC  | HC1-HP-DC100V-F | HC2-HP-DC100V-F | HC3-HP-DC100V-F | HC4-HP-DC100V | HC4D-HP-DC100V  |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

Note: Please add "-31" before "-F" in the part number when ordering the PC board type 0.9 mm width terminal (ex) HC1-HP-AC6V-31-F.

**4) PC board type (with LED indication)**

| Coil voltage | 1 Form C         | 2 Form C         | 3 Form C         | 4 Form C       | 4 Form C (twin) |
|--------------|------------------|------------------|------------------|----------------|-----------------|
|              | Part No.         | Part No.         | Part No.         | Part No.       | Part No.        |
| 6V AC        | HC1-HPL-AC6V-F   | HC2-HPL-AC6V-F   | HC3-HPL-AC6V-F   | HC4-HPL-AC6V   | HC4D-HPL-AC6V   |
| 12V AC       | HC1-HPL-AC12V-F  | HC2-HPL-AC12V-F  | HC3-HPL-AC12V-F  | HC4-HPL-AC12V  | HC4D-HPL-AC12V  |
| 24V AC       | HC1-HPL-AC24V-F  | HC2-HPL-AC24V-F  | HC3-HPL-AC24V-F  | HC4-HPL-AC24V  | HC4D-HPL-AC24V  |
| 100/110V AC  | HC1-HPL-AC100V-F | HC2-HPL-AC100V-F | HC3-HPL-AC100V-F | HC4-HPL-AC100V | HC4D-HPL-AC100V |
| 110/120V AC  | HC1-HPL-AC120V-F | HC2-HPL-AC120V-F | HC3-HPL-AC120V-F | HC4-HPL-AC120V | HC4D-HPL-AC120V |
| 200/220V AC  | HC1-HPL-AC200V-F | HC2-HPL-AC200V-F | HC3-HPL-AC200V-F | HC4-HPL-AC200V | HC4D-HPL-AC200V |
| 6V DC        | HC1-HPL-DC6V-F   | HC2-HPL-DC6V-F   | HC3-HPL-DC6V-F   | HC4-HPL-DC6V   | HC4D-HPL-DC6V   |
| 12V DC       | HC1-HPL-DC12V-F  | HC2-HPL-DC12V-F  | HC3-HPL-DC12V-F  | HC4-HPL-DC12V  | HC4D-HPL-DC12V  |
| 24V DC       | HC1-HPL-DC24V-F  | HC2-HPL-DC24V-F  | HC3-HPL-DC24V-F  | HC4-HPL-DC24V  | HC4D-HPL-DC24V  |
| 48V DC       | HC1-HPL-DC48V-F  | HC2-HPL-DC48V-F  | HC3-HPL-DC48V-F  | HC4-HPL-DC48V  | HC4D-HPL-DC48V  |
| 100/110V DC  | HC1-HPL-DC100V-F | HC2-HPL-DC100V-F | HC3-HPL-DC100V-F | HC4-HPL-DC100V | HC4D-HPL-DC100V |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

Note: Please add "31" before "F" in the part number when ordering the PC board type 0.9 mm width terminal (ex) HC1-HPL-AC6V-31-F.

**5) TM type**

| Coil voltage | 1 Form C         | 2 Form C         | 3 Form C         | 4 Form C       | 4 Form C (twin) |
|--------------|------------------|------------------|------------------|----------------|-----------------|
|              | Part No.         | Part No.         | Part No.         | Part No.       | Part No.        |
| 6V AC        | HC1-HTM-AC6V-F   | HC2-HTM-AC6V-F   | HC3-HTM-AC6V-F   | HC4-HTM-AC6V   | HC4D-HTM-AC6V   |
| 12V AC       | HC1-HTM-AC12V-F  | HC2-HTM-AC12V-F  | HC3-HTM-AC12V-F  | HC4-HTM-AC12V  | HC4D-HTM-AC12V  |
| 24V AC       | HC1-HTM-AC24V-F  | HC2-HTM-AC24V-F  | HC3-HTM-AC24V-F  | HC4-HTM-AC24V  | HC4D-HTM-AC24V  |
| 48V AC       | HC1-HTM-AC48V-F  | HC2-HTM-AC48V-F  | HC3-HTM-AC48V-F  | HC4-HTM-AC48V  | HC4D-HTM-AC48V  |
| 100/110V AC  | HC1-HTM-AC100V-F | HC2-HTM-AC100V-F | HC3-HTM-AC100V-F | HC4-HTM-AC100V | HC4D-HTM-AC100V |
| 110/120V AC  | HC1-HTM-AC120V-F | HC2-HTM-AC120V-F | HC3-HTM-AC120V-F | HC4-HTM-AC120V | HC4D-HTM-AC120V |
| 200/220V AC  | HC1-HTM-AC200V-F | HC2-HTM-AC200V-F | HC3-HTM-AC200V-F | HC4-HTM-AC200V | HC4D-HTM-AC200V |
| 6V DC        | HC1-HTM-DC6V-F   | HC2-HTM-DC6V-F   | HC3-HTM-DC6V-F   | HC4-HTM-DC6V   | HC4D-HTM-DC6V   |
| 12V DC       | HC1-HTM-DC12V-F  | HC2-HTM-DC12V-F  | HC3-HTM-DC12V-F  | HC4-HTM-DC12V  | HC4D-HTM-DC12V  |
| 24V DC       | HC1-HTM-DC24V-F  | HC2-HTM-DC24V-F  | HC3-HTM-DC24V-F  | HC4-HTM-DC24V  | HC4D-HTM-DC24V  |
| 48V DC       | HC1-HTM-DC48V-F  | HC2-HTM-DC48V-F  | HC3-HTM-DC48V-F  | HC4-HTM-DC48V  | HC4D-HTM-DC48V  |
| 100/110V DC  | HC1-HTM-DC100V-F | HC2-HTM-DC100V-F | HC3-HTM-DC100V-F | HC4-HTM-DC100V | HC4D-HTM-DC100V |

Standard packing: Carton: 20 pcs.; Case: 200 pcs.

**RATING****1. Coil data****1) AC coils (50/60Hz)**

| Type     | Nominal coil voltage | Pick-up voltage<br>(at 20°C 68°F)               | Drop-out voltage<br>(at 20°C 68°F)                 | Nominal coil current<br>[±20%] (at 20°C 68°F) |             | Coil inductance   |                   | Nominal operating power |       | Max. allowable voltage<br>(at 70°C 158°F) |
|----------|----------------------|-------------------------------------------------|----------------------------------------------------|-----------------------------------------------|-------------|-------------------|-------------------|-------------------------|-------|-------------------------------------------|
|          |                      |                                                 |                                                    | 50Hz                                          | 60Hz        | N.C.<br>condition | N.O.<br>condition | 50Hz                    | 60Hz  |                                           |
| Standard | 6V AC                | 80%V or less of<br>nominal voltage<br>(Initial) | 30%V or more<br>of nominal<br>voltage<br>(Initial) | 224mA                                         | 200mA       | 0.078H            | 0.074H            | 1.3VA                   | 1.2VA | 110%V of<br>nominal voltage               |
|          | 12V AC               |                                                 |                                                    | 111mA                                         | 100mA       | 0.312H            | 0.295H            | 1.3VA                   | 1.2VA |                                           |
|          | 24V AC               |                                                 |                                                    | 56mA                                          | 50mA        | 1.243H            | 1.181H            | 1.3VA                   | 1.2VA |                                           |
|          | 48V AC               |                                                 |                                                    | 28mA                                          | 25mA        | 4.974H            | 4.145H            | 1.3VA                   | 1.2VA |                                           |
|          | 100/110V AC          |                                                 |                                                    | 13.4/14.7mA                                   | 12/13.2mA   | 23.75H            | 20.63H            | 1.3VA                   | 1.2VA |                                           |
|          | 110/120V AC          |                                                 |                                                    | 12.2/13.5mA                                   | 10.9/11.9mA | 27.19H            | 25.57H            | 1.3VA                   | 1.2VA |                                           |
|          | 200/220V AC          |                                                 |                                                    | 6.7/7.4mA                                     | 6/6.6mA     | 85.98H            | 81.76H            | 1.3VA                   | 1.2VA |                                           |

Notes: 1. The relay operates in a range of 80% to 110% V of the voltage rating, but ideally, in consideration of temporary voltage fluctuations, it should be operated at the rated voltage. In particular, for AC operation, if the applied voltage drops to 80% V or more below the rated voltage, humming will occur and a large current will flow leading possibly to coil burnout.

2. The maximum allowable voltage is the maximum voltage fluctuation value for the coil power supply. This value is not a permissible value for continuous operation. (This value differs depending on the ambient temperature. Please contact us for details.)

**2) DC coils**

| Type     | Nominal coil voltage | Pick-up voltage<br>(at 20°C 68°F)               | Drop-out voltage<br>(at 20°C 68°F)              | Nominal coil current<br>[±10%]<br>(at 20°C 68°F) | Coil resistance<br>[±10%]<br>(at 20°C 68°F) | Nominal operating power | Max. allowable voltage<br>(at 70°C 158°F) |
|----------|----------------------|-------------------------------------------------|-------------------------------------------------|--------------------------------------------------|---------------------------------------------|-------------------------|-------------------------------------------|
| Standard | 6V DC                | 80%V or less of<br>nominal voltage<br>(Initial) | 10%V or more of<br>nominal voltage<br>(Initial) | 150mA                                            | 40Ω                                         | 0.9W                    | 110%V of<br>nominal voltage               |
|          | 12V DC               |                                                 |                                                 | 75mA                                             | 160Ω                                        | 0.9W                    |                                           |
|          | 24V DC               |                                                 |                                                 | 37mA                                             | 650Ω                                        | 0.9W                    |                                           |
|          | 48V DC               |                                                 |                                                 | 18.5mA                                           | 2,600Ω                                      | 0.9W                    |                                           |
|          | 100/110V DC          |                                                 |                                                 | 10/11mA                                          | 10,000Ω                                     | 1.0W                    |                                           |

Notes: 1. The coil resistance for DC operation is the value measured when the coil temperature is 20°C 68°F. Compensate ±0.4% for every ±1°C change in temperature.

2. The relay operates in a range of 80% to 110% V of the voltage rating, but ideally, in consideration of temporary voltage fluctuations, it should be operated at the rated voltage.

3. For use with 200 V DC, connect a 10 KΩ (5W) resistor, in series, to the 100 V DC relay.

4. The maximum allowable impress voltage is the maximum voltage fluctuation value for the coil power supply. This value is not a permissible value for continuous operation. (This value differs depending on the ambient temperature. Please contact us for details.)

## 2. Specifications

| Characteristics            | Item                                              |                          | Specifications                                                                                                                                                                           |                                    |                                  |                                    |                                    |
|----------------------------|---------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------|------------------------------------|------------------------------------|
| Contact                    | Arrangement                                       |                          | 1 Form C                                                                                                                                                                                 | 2 Form C                           | 3 Form C                         | 4 Form C                           | 4 Form C (twin)                    |
|                            | Contact pressure                                  |                          | Approx. 0.294N{30gf}                                                                                                                                                                     | Approx. 0.147N{15gf}               | Approx. 0.147N{15gf}             | Approx. 0.098N{10gf}               | Approx. 0.127N{13gf}               |
|                            | Initial contact resistance, max                   |                          | Max. 30 mΩ (By voltage drop 6 V DC 1A)                                                                                                                                                   |                                    |                                  |                                    |                                    |
|                            | Contact material                                  |                          | Ag alloy (cd free) + Au flash                                                                                                                                                            |                                    |                                  |                                    | AgNi type + Au clad                |
| Rating                     | Nominal switching capacity (resistive load)       |                          | 10A 250V AC                                                                                                                                                                              | 7A 250V AC                         | 7A 250V AC                       | 5A 250V AC                         | 3A 250V AC                         |
|                            | Max. switching power (resistive load)             |                          | 2,500VA                                                                                                                                                                                  | 1,750VA                            | 1,750VA                          | 1,250VA                            | 750VA                              |
|                            | Max. switching voltage                            |                          | 250VAC                                                                                                                                                                                   |                                    |                                  |                                    |                                    |
|                            | Max. switching current                            |                          | 10A                                                                                                                                                                                      | 7A                                 | 7A                               | 5A                                 | 3A                                 |
|                            | Nominal operating power                           |                          | AC (50Hz): 1.3VA, AC (60Hz): 1.2VA, DC: 0.9 to 1.1W                                                                                                                                      |                                    |                                  |                                    |                                    |
|                            | Min. switching capacity (Reference value)*1       |                          | 1mA 1V DC                                                                                                                                                                                |                                    |                                  |                                    | 100μA 1V DC                        |
| Electrical characteristics | Insulation resistance (Initial)                   |                          | Min. 1,000MΩ (at 500V DC)<br>Measurement at same location as "Initial breakdown voltage" section.                                                                                        |                                    |                                  |                                    |                                    |
|                            | Breakdown voltage (Initial)                       | Between open contacts    | 700 Vrms for 1min. (Detection current: 10mA.)                                                                                                                                            |                                    |                                  |                                    |                                    |
|                            |                                                   | Between contact sets     | 700 Vrms for 1min. (Detection current: 10mA.)                                                                                                                                            |                                    |                                  |                                    |                                    |
|                            |                                                   | Between contact and coil | 2,000 Vrms for 1min. (Detection current: 10mA.)                                                                                                                                          |                                    |                                  |                                    |                                    |
|                            | Temperature rise (at 70°C 158°F)                  |                          | Max. 80°C (By resistive method, nominal voltage)                                                                                                                                         |                                    |                                  |                                    |                                    |
|                            | Operate time (at 20°C 68°F)*2                     |                          | Max. 20ms (Nominal voltage applied to the coil, excluding contact bounce time.)                                                                                                          |                                    |                                  |                                    |                                    |
|                            | Release time (at 20°C 68°F)*2                     |                          | Max. 20ms (Nominal voltage applied to the coil, excluding contact bounce time.) (without diode)                                                                                          |                                    |                                  |                                    |                                    |
| Mechanical characteristics | Shock resistance                                  | Functional               | Min. 196 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)                                                                                                   |                                    |                                  |                                    |                                    |
|                            |                                                   | Destructive              | Min. 980 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)                                                                                                                          |                                    |                                  |                                    |                                    |
|                            | Vibration resistance                              | Functional               | 10 to 55 Hz at double amplitude of 1 mm (Detection time: 10μs.)                                                                                                                          |                                    |                                  |                                    |                                    |
|                            |                                                   | Destructive              | 10 to 55 Hz at double amplitude of 2 mm                                                                                                                                                  |                                    |                                  |                                    |                                    |
| Expected life              | Mechanical                                        |                          | Min. 5×10 <sup>7</sup> : AC coil type (at 180 cpm); Min. 10 <sup>8</sup> : DC coil type (at 180 cpm)                                                                                     |                                    |                                  |                                    |                                    |
|                            | Electrical (resistive load)                       |                          | Min. 2×10 <sup>5</sup> (at 20 cpm)                                                                                                                                                       | Min. 2×10 <sup>5</sup> (at 20 cpm) | Min. 10 <sup>5</sup> (at 20 cpm) | Min. 2×10 <sup>5</sup> (at 20 cpm) | Min. 2×10 <sup>5</sup> (at 20 cpm) |
| Conditions                 | Conditions for operation, transport and storage*3 |                          | Ambient temperature: -50°C to +70°C -58°F to +158°F (without LED); -50°C to +60°C -58°F to +140°F (with LED)<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature) |                                    |                                  |                                    |                                    |
|                            | Max. Operating speed                              |                          | 20 cpm (at max. rating)                                                                                                                                                                  |                                    |                                  |                                    |                                    |
| Unit weight                |                                                   |                          | Approx. 30g 1.06 oz                                                                                                                                                                      |                                    |                                  |                                    |                                    |

Notes: In accordance with the Electrical Appliance and Material Safety Law, you cannot exceed a voltage of 150V AC when using the 4 Form C type. For more information, please inquire.

\*1 This value can change due to the switching frequency, environmental conditions and desired reliability level, therefore it is recommended to check this with the actual load.

\*2 For the AC coil types, the operate/release time will differ depending on the phase.

\*3 The upper operation ambient temperature limit is the maximum temperature that can satisfy the coil temperature rise value.  
Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

## 3. Switching capacity and expected life

### 1) Electrical (at 20 cpm)

| Load            | AC                    |         |                         |         | DC        |           | Expected life          |
|-----------------|-----------------------|---------|-------------------------|---------|-----------|-----------|------------------------|
|                 | Resistive (cos φ = 1) |         | Inductive (cos φ ≒ 0.4) |         | Resistive | Inductive |                        |
| Voltage         | 125V AC               | 250V AC | 125V AC                 | 250V AC | 30V DC    | 30V DC    |                        |
| 1 Form C        | 10A                   | 10A     | 5A                      | 3A      | —         | —         | Min. 2×10 <sup>5</sup> |
|                 | 7A                    | 7A      | 3A                      | 2.5A    | 3A        | 1A        | Min. 5×10 <sup>5</sup> |
|                 | 5A                    | 5A      | 2A                      | 1.5A    | —         | —         | Min. 10 <sup>6</sup>   |
| 2 Form C        | 7A                    | 7A      | 3.5A                    | 2A      | —         | —         | Min. 2×10 <sup>5</sup> |
|                 | 5A                    | 5A      | 2.5A                    | 1.5A    | 3A        | 0.6A      | Min. 5×10 <sup>5</sup> |
|                 | 3A                    | 3A      | 1.5A                    | 1A      | —         | —         | Min. 10 <sup>6</sup>   |
| 3 Form C        | 7A                    | 7A      | —                       | —       | —         | —         | Min. 10 <sup>5</sup>   |
|                 | —                     | —       | 3.5A                    | 2A      | —         | —         | Min. 2×10 <sup>5</sup> |
|                 | 5A                    | 5A      | —                       | —       | 3A        | 0.4A      | Min. 5×10 <sup>5</sup> |
| 4 Form C        | 5A                    | 5A      | 2A                      | 1A      | —         | —         | Min. 2×10 <sup>5</sup> |
|                 | 3A                    | 3A      | 1A                      | 0.8A    | 3A        | 0.4A      | Min. 5×10 <sup>5</sup> |
|                 | 2A                    | 2A      | 0.5A                    | 0.4A    | —         | —         | Min. 10 <sup>6</sup>   |
| 4 Form C (twin) | 3A                    | 3A      | 1A                      | 0.8A    | 3A        | —         | Min. 2×10 <sup>5</sup> |

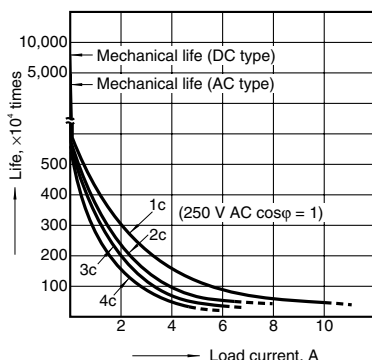
### 2) Mechanical (at 180 cpm)

Min. 5×10<sup>7</sup> (AC coil type); Min. 10<sup>8</sup> (DC coil type)

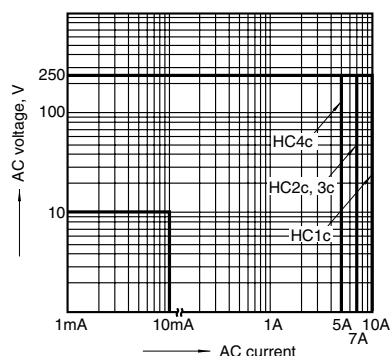
## REFERENCE DATA

### 1. Life curve

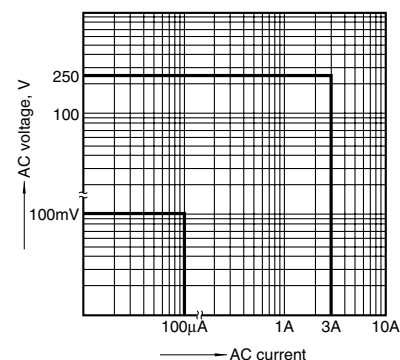
Load: 250 V AC resistive load



### 2.-(1) Switching capacity range (single contact type)



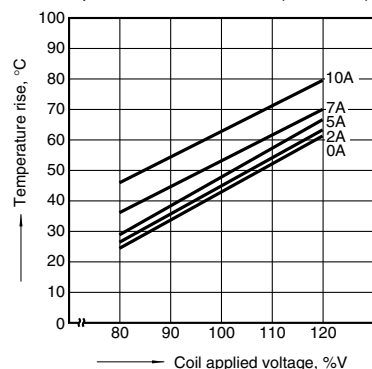
### 2.-(2) Switching capacity range (4-pole bifurcated (twin))



### 3.-(1) Coil temperature rise (1 Form C, AC type)

Measured portion: Inside the coil

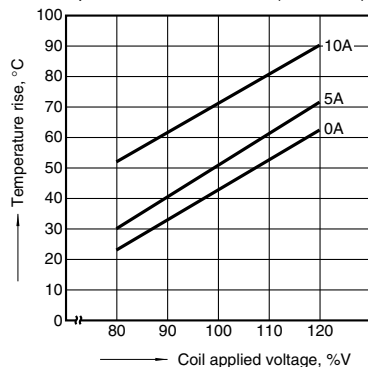
Ambient temperature: 25°C 77°F (See note.)



### 3.-(2) Coil temperature rise (2 Form C, AC type)

Measured portion: Inside the coil

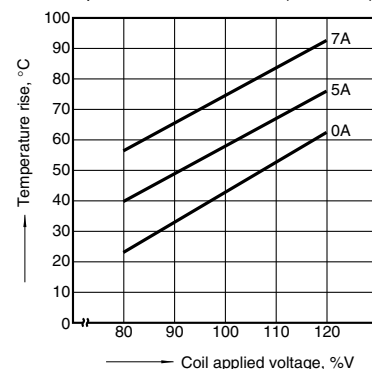
Ambient temperature: 30°C 86°F (See note.)



### 3.-(3) Coil temperature rise (3 Form C, AC type)

Measured portion: Inside the coil

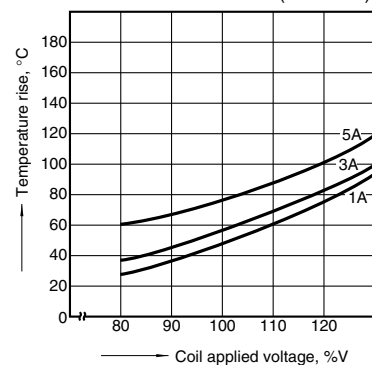
Ambient temperature: 18°C 64°F (See note.)



### 3.-(4) Coil temperature rise (4 Form C, AC type)

Measured portion: Inside the coil

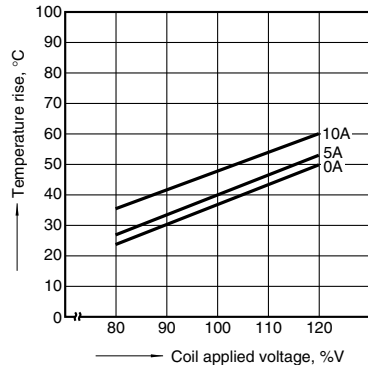
Ambient temperature: 15 to 21°C 59 to 70°F (See note.)



### 3.-(5) Coil temperature rise (1 Form C, DC type)

Measured portion: Inside the coil

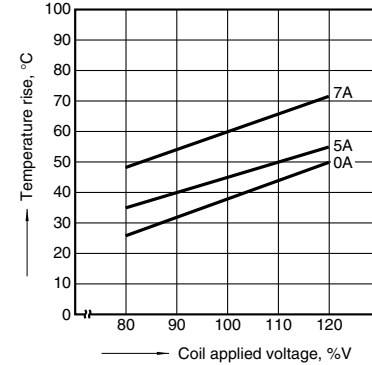
Ambient temperature: 29°C 84°F



### 3.-(6) Coil temperature rise (2 Form C, DC type)

Measured portion: Inside the coil

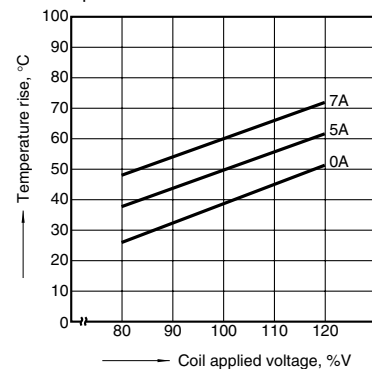
Ambient temperature: 29°C 84°F



### 3.-(7) Coil temperature rise (3 Form C, DC type)

Measured portion: Inside the coil

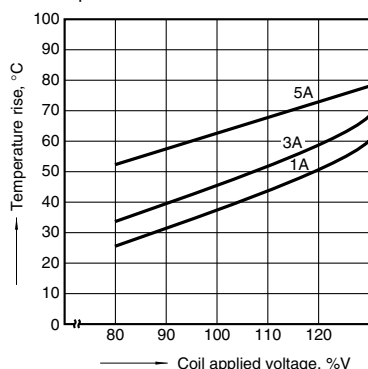
Ambient temperature: 29°C 84°F



### 3.-(8) Coil temperature rise (4 Form C, DC type)

Measured portion: Inside the coil

Ambient temperature: 17 to 18°C 62 to 64°F



### Note: Coil temperature rise

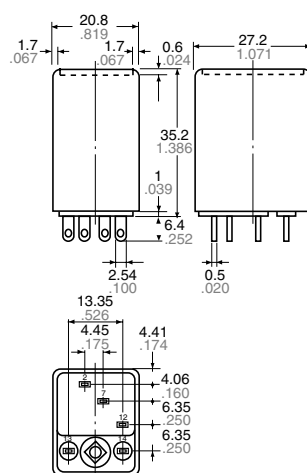
When the nominal voltage is applied to AC 120 or 240 V coil types respectively, the figures of coil temperature rise increase by approx. 10 degrees to the ones shown on each graph.

## DIMENSIONS (Unit: mm inch)

### 1. Plug-in type



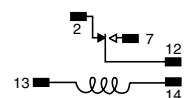
1 Form C type External dimensions



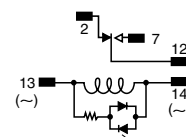
General tolerance:  $\pm 0.3 \pm .012$

Schematic (Bottom view)

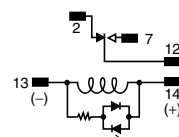
Standard type



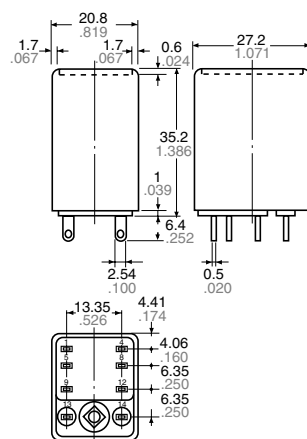
LED AC type



LED DC type



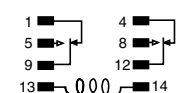
2 Form C type External dimensions



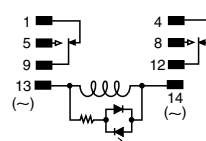
General tolerance:  $\pm 0.3 \pm .012$

Schematic (Bottom view)

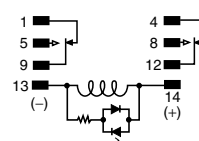
Standard type



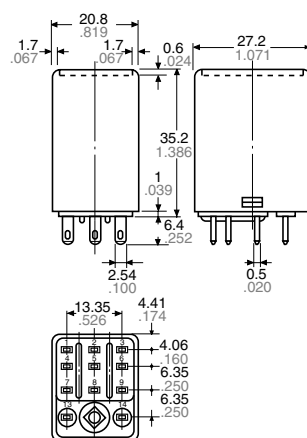
LED AC type



LED DC type



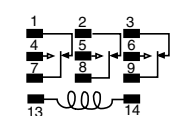
3 Form C type External dimensions



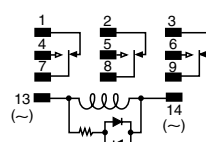
General tolerance:  $\pm 0.3 \pm .012$

Schematic (Bottom view)

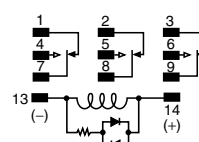
Standard type



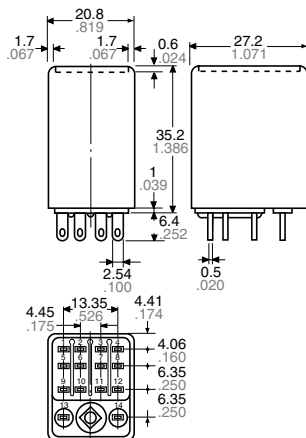
LED AC type



LED DC type

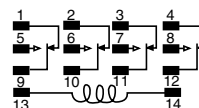


4 Form C and 4-pole bifurcated (twin) types  
External dimensions

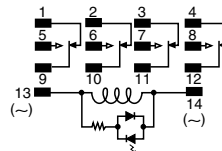


General tolerance:  $\pm 0.3 \pm .012$

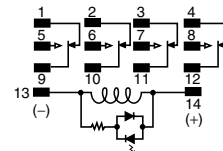
Schematic (Bottom view)  
Standard type



LED AC type

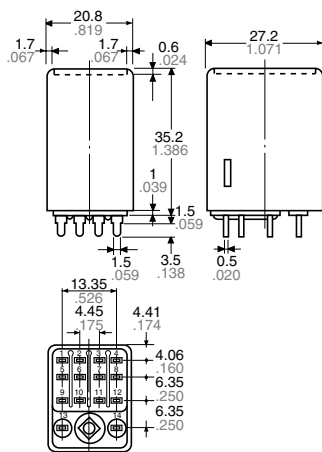


LED DC type



2. PC board type

4 Form C type External dimensions

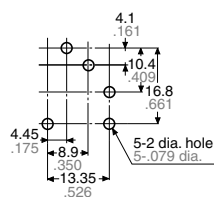


General tolerance:  $\pm 0.3 \pm .012$

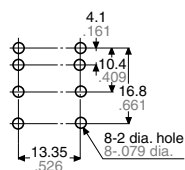
The diagrams show the external dimensions of the 4 Form C and 4-pole bifurcated (twin) types. For 1 Form C, 2 Form C, and 3 Form C, see diagrams at plug-in types (only the terminals are different). Types with 0.9 mm terminal width are also available.

PC board pattern

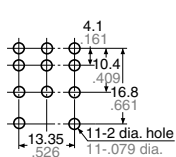
1 Form C



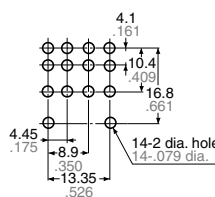
2 Form C



3 Form C



4 Form C

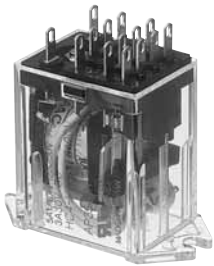


Tolerance:  $\pm 0.1 \pm .004$

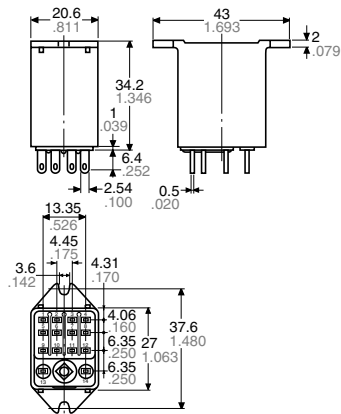
Schematic

Same schematic as plug-in type HC relay

3. TM type



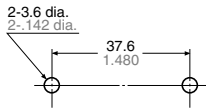
4 Form C type External dimensions



The diagrams show the external dimensions of the 4 Form C and 4-pole bifurcated (twin) types. For 1 Form C, 2 Form C, and 3 Form C, see diagrams at plug-in types (only the terminals are different).

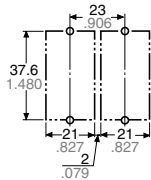
General tolerance:  $\pm 0.3 \pm .012$

Chassis (Panel) cutout



Tolerance:  $\pm 0.1 \pm .004$

Chassis (Panel) cutout in tandem mounting



Schematic

Same schematic as plug-in type HC relay  
Be aware that there is no LED indicator with CR circuit and built-in diode types.

- Notes: 1. In mounting, use M3 screws and M3 washers.  
2. When mounting TM types, use washers to prevent damage or distortion to the polycarbonate cover.  
3. When tightening fixing screws, the optimum torque range should be 0.294 to 0.49 N·m, (3 to 5 kgf·cm).  
Moreover, use washers to prevent loosening.

For Cautions for Use, see Relay Technical Information.