



14.0×9.0×5.0

US E158859 R5604271  
Patent No: 02217796.5

P

**Features**

- DIL Pitch Terminals .High Sensitivity :0.14W or 0.10W Nominal Power.
- Conforms to FCC Part 68 1.5kV Surge and Dielectric 1000VAC.
- Monostable or bistable relays Single and double Coil magnet latching Type available.
- Application for Telecommunication Equipment,Office Equipment,Security Alarm Systems, Measuring instruments, Medical Monitoring Equipment,Audio Visual Equipment, Flight Simulator,Sensor Control.

**Ordering Information**

$\frac{P}{1}$   $\frac{L}{2}$   $\frac{12}{3}$   $\frac{W}{4}$

1 Part number: P  
2 Operating function: NIL: Single Side Stable;  
L:1 Coil Latching; K:2 Coil Latching  
3 Coil rated voltage(V): DC:3,4.5,5,6,9,12,24  
4 Contact material: NIL: AgPd; W: AgNi

**Contact Data**

|                                    |                                                     |                                                                                                                    |  |
|------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--|
| Contact Arrangement                | 2C (DPDT(B-M)) (Bifurcated Crossbar)                |                                                                                                                    |  |
| Contact Material                   | AgPd(Stationary Contact: Gold clad) AgNi(Gold clad) |                                                                                                                    |  |
| Contact Rating (resistive)         | 1A,2A/30VDC; 0.5A/125VAC                            |                                                                                                                    |  |
| Max. Switching Power               | 60W 62.5VA                                          | Min. Switching load: 0.01mA/10mV (Reference Value)                                                                 |  |
| Max. Switching Voltage             | 220VDC 250VAC                                       | Max. Switching Current:2A                                                                                          |  |
| Contact Resistance or Voltage drop | ≤50mΩ                                               | Item 4.12 of IEC 61810-7                                                                                           |  |
| Operation life                     | Electrical                                          | 1A/30VDC: 2×10 <sup>5</sup> (Ag Ni: 1×10 <sup>5</sup> )<br>0.5A/125VAC: 1×10 <sup>5</sup> Item 4.30 of IEC 61810-7 |  |
|                                    | Mechanical                                          | 10 <sup>5</sup> Item 4.31 of IEC 61810-7                                                                           |  |

**CAUTION:**

Relays previously tested or used above 10mA resistive at 6V maximum (DC or peak AC) open circuit are not recommended for subsequent use in low level applications.

**Coil Parameter**

| Dash numbers           | Coil voltage VDC |       | Coil resistance Ω ±10% | Pick up voltage VDC(max) (75%of rated voltage) | Release voltage VDC(min) (10% of rated voltage) | Coil power W | Operate Time ms | Release /Reset Time ms |
|------------------------|------------------|-------|------------------------|------------------------------------------------|-------------------------------------------------|--------------|-----------------|------------------------|
|                        | Rated            | Max.  |                        |                                                |                                                 |              |                 |                        |
| P-003                  | 3                | 7.5   | 64.3                   | 2.25                                           | 0.3                                             | 0.14         | Approx.2        | Approx.1               |
| P-004                  | 4.5              | 11.25 | 144.6                  | 3.38                                           | 0.45                                            | 0.14         |                 |                        |
| P-005                  | 5                | 12.5  | 178                    | 3.75                                           | 0.5                                             | 0.14         |                 |                        |
| P-006                  | 6                | 15.0  | 257                    | 4.50                                           | 0.6                                             | 0.14         |                 |                        |
| P-009                  | 9                | 22.5  | 579                    | 6.75                                           | 0.9                                             | 0.14         |                 |                        |
| P-012                  | 12               | 30.0  | 1028                   | 9.00                                           | 1.2                                             | 0.14         |                 |                        |
| P-024                  | 24               | 48.0  | 2880                   | 18.0                                           | 2.4                                             | 0.20         |                 |                        |
| <b>1 Coil Latching</b> |                  |       |                        |                                                | <b>Reset(Max)</b>                               |              |                 | <b>Reset</b>           |
| PL-003                 | 3                | 8.7   | 90                     | 2.25                                           | -2.25                                           | 0.10         | Approx.2        | Approx.1               |
| PL-004                 | 4.5              | 13.0  | 202.5                  | 3.38                                           | -3.38                                           | 0.10         |                 |                        |
| PL-005                 | 5                | 14.5  | 250                    | 3.75                                           | -3.75                                           | 0.10         |                 |                        |
| PL-006                 | 6                | 17.4  | 360                    | 4.50                                           | -4.50                                           | 0.10         |                 |                        |
| PL-009                 | 9                | 26.1  | 810                    | 6.75                                           | -6.75                                           | 0.10         |                 |                        |
| PL-012                 | 12               | 34.8  | 1440                   | 9.00                                           | -9.00                                           | 0.10         |                 |                        |
| PL-024                 | 24               | 57.6  | 3840                   | 18.0                                           | -18.0                                           | 0.15         |                 |                        |
| <b>2 Coil Latching</b> |                  |       | <b>Set Coil</b>        | <b>Reset Coil</b>                              | <b>Reset(Max)</b>                               |              |                 | <b>Reset</b>           |
| PK-003                 | 3                | 6     | 45                     | 45                                             | 2.25                                            | 2.25         | Approx.2        | Approx.1               |
| PK-004                 | 4.5              | 9     | 101                    | 101                                            | 3.38                                            | 3.38         |                 |                        |
| PK-005                 | 5                | 10    | 125                    | 125                                            | 3.75                                            | 3.75         |                 |                        |
| PK-006                 | 6                | 12    | 180                    | 180                                            | 4.50                                            | 4.50         |                 |                        |
| PK-009                 | 9                | 18    | 405                    | 405                                            | 6.75                                            | 6.75         |                 |                        |
| PK-012                 | 12               | 24    | 720                    | 720                                            | 9.00                                            | 9.00         |                 |                        |
| PK-024                 | 24               | 36    | 1920                   | 1920                                           | 18.0                                            | 18.0         |                 |                        |

- CAUTION:**
- 1.The use of any coil voltage less than the rated coil voltage will compromise the operation of the relay.
  - 2.Pickup and release(reset) voltage are for test purposes only and are not to be used as design criteria.
  - 3.When latching relays are installed in equipment, the latch and reset coil should not be pulsed simultaneously. Coil should not be pulsed with less than the nominal coil voltage and pulse width should be a minimum of three times the specified operate time of the relay. If these conditions are not followed, it is possible for the relay to be in the magnetically neutral position .

**Characteristics**

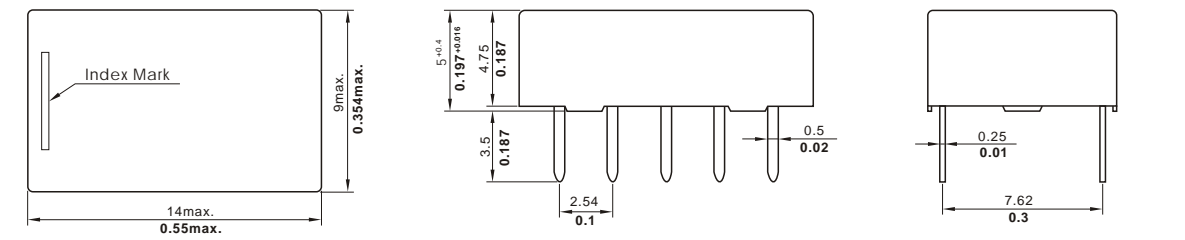
|                           |                                                                            |                              |
|---------------------------|----------------------------------------------------------------------------|------------------------------|
| Electrostatic capacitance |                                                                            |                              |
| Between open Contacts     | Approx.0.4pF                                                               | Item 4.41 of IEC 61810-7     |
| Between coil & Contacts   | Approx.0.9pF                                                               | Item 4.41 of IEC 61810-7     |
| Between Contact Poles     | Approx.0.2pF                                                               | Item 4.41 of IEC 61810-7     |
| Insulation Resistance     | 1000MΩ min(at 500VDC)                                                      | Item 7 of IEC 60255-5        |
| Dielectric Strength       |                                                                            |                              |
| Between open Contacts     | 1000VAC 1min                                                               | Item 6 of IEC 60255-5        |
| Between coil & Contacts   | 1000VAC 1min                                                               | Item 6 of IEC 60255-5        |
| Between Contact Poles     | 1000VAC 1min                                                               | Item 6 of IEC 60255-5        |
| Surge Withstand Voltage   |                                                                            |                              |
| Between open Contacts     | 1500V                                                                      | FCC 68                       |
| Between coil & Contacts   | 1500V                                                                      | FCC 68                       |
| Between Contact Poles     | 2500V                                                                      | FCC 68                       |
| Shock resistance          | Functional:500m/s <sup>2</sup> 11ms;<br>Survival:1000 m/s <sup>2</sup> 6ms | IEC 68-2-27 Test Ea          |
| Vibration resistance      | 10-55Hz Double amplitude Functional: 3mm<br>Survival:5mm                   | IEC 68-2-6 Test Fc           |
| Terminals strength        | 5N                                                                         | IEC 68-2-21 Test Ua1         |
| Solderability             | 235℃ ±2℃ 3±0.5s                                                            | IEC 68-2-20 Test Ta method 1 |
| Temperature Range         | -40~70℃(-40~158° F)                                                        |                              |
| Mass                      | 1.5g                                                                       |                              |

**Safety approvals**

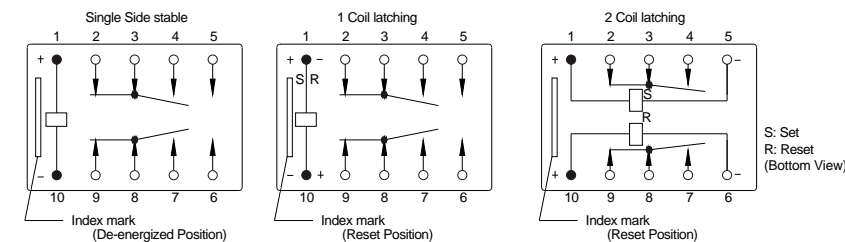
|                 |                          |                       |
|-----------------|--------------------------|-----------------------|
| Safety approval | UL&CUR                   | TUV                   |
| Load            | 1A,2A/30VDC, 0.5A/125VAC | 1A/30VDC, 0.5A/125VAC |

**Dimensions**

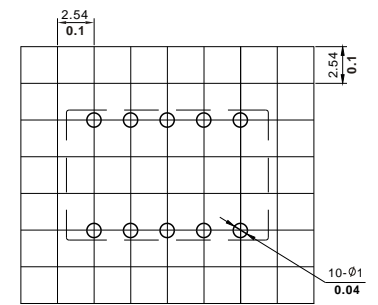
mm/inch



Dimensions



Wiring diagram (Bottom view)



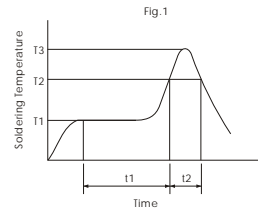
Mounting (Bottom view)

- NOTES 1).Dimensions are in millimeters.  
2).Inch equivalents are given for general information only.

**SOLDERING and MOUNTING RECOMMENDATIONS**

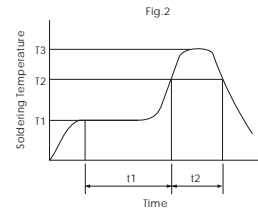
1. Conditions for Terminal Soldering by reflow soldering method

a. In case of Infrared Soldering



T1: +120 to +150°C(+248 to +302°F)  
 T2: +180 to +200°C(+356 to +392°F)  
 T3: +245°C(+473°F)Max.  
 T1: 60 to 90 Sec.  
 T2: +30Sec.Max.

b. In case of Vapor Phase Soldering



T1: +120 to +150°C(+248 to +302°F)  
 T2: +180 to +200°C(+356 to +392°F)  
 T3: +215°C(+419°F)Max.  
 T1: +40 to 60Sec  
 T2: +60Sec.Max.

2. Usage of Stand-Off A & B in Base Area

The Stand-Offs shown in the Fig. 3 are designed to Anchor Relays temporarily to PC Board with glue before Terminal Soldering.

