

## Miniature Relay PT

- 2 pole 12A, 3 pole 10A or 4 pole 6A, 2, 3 or 4 form C (CO) contacts
- DC or AC coil
- Switching performance up to 3000VA
- Relay height 29mm
- Mechanical indicator, optional LED and protection diode
- Manual test tab, optionally lockable
- White marking tabs

Typical applications  
Universal use in control and automation



F0191-B



### Approvals

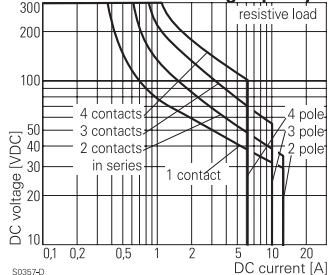
VDE REG.-Nr. 115719, UL E214025, Lloyds 00/20059(E2)  
Technical data of approved types on request

| Contact Data                                | PT2                                                           | PT3              | PT5              |
|---------------------------------------------|---------------------------------------------------------------|------------------|------------------|
| Contact arrangement                         | 2 form C<br>2 CO                                              | 3 form C<br>3 CO | 4 form C<br>4 CO |
| Rated voltage                               |                                                               | 240VAC           |                  |
| Max. switching voltage                      | 400VAC                                                        | 400VAC           | 240VAC           |
| Rated current                               | 12A                                                           | 10A              | 6A               |
| Limiting making current, max. 20ms          | 24A                                                           | 20A              | 12A              |
| Limiting breaking current                   | 12A                                                           | 10A              | 6A               |
| Limiting short-time current                 |                                                               | 300A/30ms        |                  |
| Switching power                             | 3000VA                                                        | 2500VA           | 1500VA           |
| Contact material                            | AgNi90/10, AgNi90/10 gold plated                              |                  |                  |
| Min. recommended contact load               | 12V at 10mA<br>gold plated: 20mV at 1mA<br>30mV at 100mA/6VDC |                  |                  |
| Initial voltage drop                        |                                                               |                  |                  |
| Frequency of operation<br>with/without load | 360/36000h <sup>-1</sup>                                      |                  |                  |
| Operate time typ., DC coil                  | 15ms                                                          |                  |                  |
| Release time typ., DC coil, without/with PD | 10/18ms                                                       |                  |                  |
| Bounce time typ., DC coil, form A/form B    | 6/8ms                                                         |                  |                  |

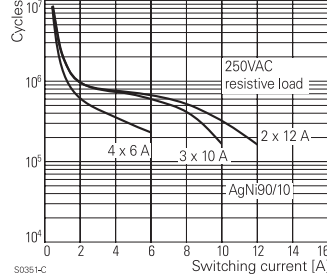
### Contact ratings

| Type             | Contact          | Load                      | Cycles              |
|------------------|------------------|---------------------------|---------------------|
| <b>IEC 61810</b> |                  |                           |                     |
| PT 2 DC/AC coil  | C (CO)           | 12A, 250VAC, cosφ=1, 70°C | 70x10 <sup>3</sup>  |
| PT 2 DC/AC coil  | A (NO) of C (CO) | 9A, 250VAC, cosφ=1, 80°C  | 150x10 <sup>3</sup> |
| PT 2 DC/AC coil  | A (NO) of C (CO) | 4A, 250VAC, cosφ=1, 80°C  | 300x10 <sup>3</sup> |
| PT 3 DC/AC coil  | C (CO)           | 10A, 250VAC, cosφ=1, 70°C | 100x10 <sup>3</sup> |
| PT 5 DC/AC coil  | C (CO)           | 6A, 250VAC, cosφ=1, 70°C  | 100x10 <sup>3</sup> |

### Max. DC load breaking capacity



### Electrical endurance



### Contact Data (continued)

#### Contact ratings

| Type          | Contact          | Load                               | Cycles              |
|---------------|------------------|------------------------------------|---------------------|
| <b>UL 508</b> |                  |                                    |                     |
| PT 2          | C (CO)           | 12A, 250VAC, general purpose, 70°C | 6.000               |
| PT 2          | C (CO)           | 12A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 2          | A (NO) of C (CO) | 12A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 2          | A (NO) of C (CO) | 12A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 3          | C (CO)           | 10A, 250VAC, general purpose, 70°C | 6.000               |
| PT 3          | C (CO)           | 10A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 3          | A (NO) of C (CO) | 10A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 3          | B (NC) of C (CO) | 10A, 250VAC, resistive, 70°C       | 100x10 <sup>3</sup> |
| PT 5          | C (CO)           | 6A, 250VAC, general purpose, 70°C  | 6.000               |
| PT 5          | C (CO)           | 6A, 250VAC, resistive, 70°C        | 100x10 <sup>3</sup> |
| PT 5          | A (NO) of C (CO) | 6A, 250VAC, resistive, 70°C        | 100x10 <sup>3</sup> |
| PT 5          | B (NC) of C (CO) | 6A, 250VAC, resistive, 70°C        | 100x10 <sup>3</sup> |

#### EN60947-4-1

|      |                  |                                                              |
|------|------------------|--------------------------------------------------------------|
| PT 2 | A (NO) of C (CO) | 400VAC, 3.75A, AC3, opposite polarity, 70°C                  |
| PT 2 | A (NO) of C (CO) | 230VAC, 1.7A, AC5b (400W lamp load), opposite polarity, 70°C |
| PT 3 | A (NO) of C (CO) | 250VAC, 2A, AC3, opposite polarity 70°C                      |
| PT 3 | A (NO) of C (CO) | 230VAC, 1.7A, AC5b (400W lamp load), opposite polarity, 70°C |
| PT 5 | A (NO) of C (CO) | 250VAC, 3A, AC3, same polarity 70°C                          |
| PT 5 | A (NO) of C (CO) | 230VAC, 1.7A, AC5b (400W lamp load), same polarity, 70°C     |

#### Mechanical endurance

|         |                               |
|---------|-------------------------------|
| DC coil | 30x10 <sup>6</sup> operations |
| AC coil | 20x10 <sup>6</sup> operations |

### Coil Data

|                                     |                            |
|-------------------------------------|----------------------------|
| Coil voltage range                  | 6 to 220VDC<br>6 to 230VAC |
| Operative range, IEC 61810          |                            |
| DC coil, AC-coil 50Hz               | 2                          |
| AC coil 60 Hz at 70°C               | 90..110% of rated voltage  |
| Coil insulation system according UL | class 155 (F)              |

**Miniature Relay PT** (Continued)

**Coil Data** (continued)

**Coil versions, DC coil, standard**

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ <sup>1)2)</sup> | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|---------------------------------------------------|---------------------|
| 006       | 6                 | 4.5                 | 0.6                 | 48                                                | 750                 |
| 012       | 12                | 9.0                 | 1.2                 | 192                                               | 750                 |
| 024       | 24                | 18.0                | 2.4                 | 777                                               | 741                 |
| 048       | 48                | 36.0                | 4.8                 | 3072                                              | 750                 |
| 060       | 60                | 45.0                | 6                   | 4845 <sup>1)</sup>                                | 743                 |
| 110       | 110               | 82.5                | 11                  | 16133 <sup>2)</sup>                               | 750                 |
| 220       | 220               | 165.0               | 22                  | 64533 <sup>2)</sup>                               | 750                 |

**Coil versions, DC coil with bipolar LED or LED and protection diode**

| Coil bipol. LED LED PD <sup>3)</sup> | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ <sup>1)2)</sup> | Rated coil +LED pwr. mW |
|--------------------------------------|-------------------|---------------------|---------------------|---------------------------------------------------|-------------------------|
| L06 LA6                              | 6                 | 4.5                 | 0.6                 | 48                                                | 750+3.5                 |
| L12 LB2                              | 12                | 9.0                 | 1.2                 | 192                                               | 750+10                  |
| L24 LC4                              | 24                | 18.0                | 2.4                 | 777                                               | 741+18                  |
| L48 LE8                              | 48                | 36.0                | 4.8                 | 3072                                              | 750+38                  |
| L60 LG0                              | 60                | 45.0                | 6.0                 | 4845 <sup>1)</sup>                                | 743+56                  |
| M10 MB0                              | 110               | 82.5                | 11.0                | 16133 <sup>2)</sup>                               | 750+96.5                |
| N20 NC0                              | 220               | 165.0               | 22.0                | 64533 <sup>2)</sup>                               | 750+202.5               |

1) Coil resistance  $\pm 12\%$ , 2) Coil resistance  $\pm 15\%$ ,

3) Protection diode PD; standard polarity: +A1/-A2

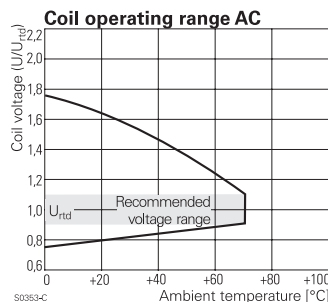
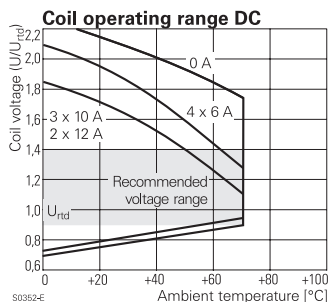
All figures are given for coil without pre-energization, at ambient temperature  $+23^\circ\text{C}$

**Coil versions, AC coil, 50/60Hz**

| Coil code STD LED | Rated voltage VAC | Operate voltage 50/60Hz VAC | Release voltage 50/60Hz VAC | Coil resistance $\Omega \pm 10\%$ <sup>1)2)</sup> | Rated coil power 50/60Hz VA |
|-------------------|-------------------|-----------------------------|-----------------------------|---------------------------------------------------|-----------------------------|
| 506 R06           | 6                 | 4.8/5.4                     | 1.8                         | 11                                                | 1.0/0.85                    |
| 512 R12           | 12                | 9.6/10.8                    | 3.6                         | 48                                                | 1.0/0.85                    |
| 524 R24           | 24                | 19.2/21.6                   | 7.2                         | 192                                               | 1.0/0.79                    |
| 548 R48           | 48                | 38.4/43.2                   | 14.4                        | 777                                               | 1.0/0.87                    |
| 560 R60           | 60                | 48.0/54.0                   | 18.0                        | 1306                                              | 1.0/0.87                    |
| 615 S15           | 115               | 92.0/103.5                  | 34.5                        | 4845 <sup>1)</sup>                                | 1.0/0.86                    |
| 730 T30           | 230               | 184/207                     | 69.0                        | 19465 <sup>2)</sup>                               | 1.0/0.90                    |

1) Coil resistance  $\pm 12\%$ , 2) Coil resistance  $\pm 15\%$

All figures are given for coil without pre-energization, at ambient temperature  $+23^\circ\text{C}$



**Insulation Data**

|                                    | PT2                           | PT3                     | PT5                     |
|------------------------------------|-------------------------------|-------------------------|-------------------------|
| Initial dielectric strength        |                               |                         |                         |
| between open contacts              | 1200V <sub>rms</sub>          | 1200V <sub>rms</sub>    | 1200V <sub>rms</sub>    |
| between contact and coil           | 2500V <sub>rms</sub>          | 2500V <sub>rms</sub>    | 2500V <sub>rms</sub>    |
| between adjacent contacts          | 2500V <sub>rms</sub>          | 2500V <sub>rms</sub>    | 2000V <sub>rms</sub>    |
| Initial surge withstand voltage    |                               |                         |                         |
| between contact and coil           | 5000V (1.2/50 $\mu\text{s}$ ) |                         |                         |
| Clearance/creepage                 |                               |                         |                         |
| between contact and coil           | $\geq 4/4\text{mm}$           | $\geq 4/4\text{mm}$     | $\geq 4/4\text{mm}$     |
| between adjacent contacts          | $\geq 3.5/9.5\text{mm}$       | $\geq 2.6/3.5\text{mm}$ | $\geq 1.8/3.5\text{mm}$ |
| Material group of insulation parts | IIIa                          |                         |                         |

**Other Data**

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at [www.te.com/customer-support/rohssupportcenter](http://www.te.com/customer-support/rohssupportcenter)

|                                                            |                                |
|------------------------------------------------------------|--------------------------------|
| Ambient temperature                                        | -40 to $+70^\circ\text{C}$     |
| Cold storage, IEC 60068-2-1                                | $-40^\circ\text{C}/16\text{h}$ |
| Dry heat, IEC 60068-2-2                                    | $85^\circ\text{C}/16\text{h}$  |
| Category of environmental protection IEC 61810             | RTII - flux proof              |
| Vibration resistance (functional), form A (NO)/form B (NC) | 7/4g                           |
| Shock resistance (functional), form A (NO)/form B (NC)     | 20/5g                          |
| Terminal type                                              | PCB-THT, plug-in quick-connect |
| Cover retention, pull/push force                           | 100/100N                       |
| Weight                                                     | 30g                            |
| Mounting distance, for mounting on PCB                     | 5mm                            |
| Resistance to soldering heat THT IEC 60068-2-20            | $270^\circ\text{C}/10\text{s}$ |
| Packaging unit                                             | 10/250pcs.                     |

**Accessories**

For details see datasheet

[Accessories Miniature Relay PT](#)

Note: indicated contact ratings and electrical endurance data for direct wiring of relays (according IEC 61810-1); for relays mounted on sockets deratings may apply.

**Product Sets**

Complete sets consisting of a relay mounted on a socket see

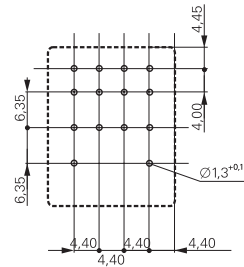
[Package PT](#)

## Miniature Relay PT (Continued)

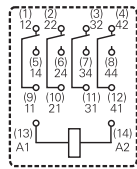
### PCB layout / terminal assignment

Bottom view on pins

4 pole

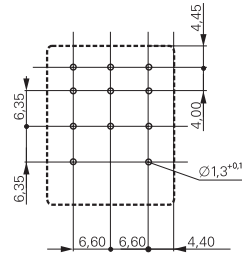


S0354-AA

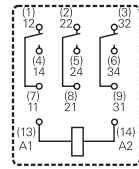


S0354-AD

3 pole

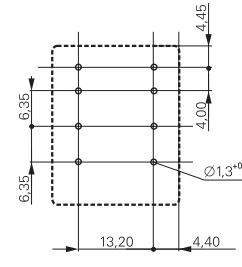


S0354-AB

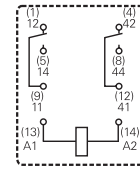


S0354-AE

2 pole



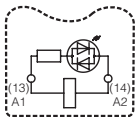
S0354-AC



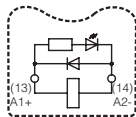
S0354-AF

Circuit

LED

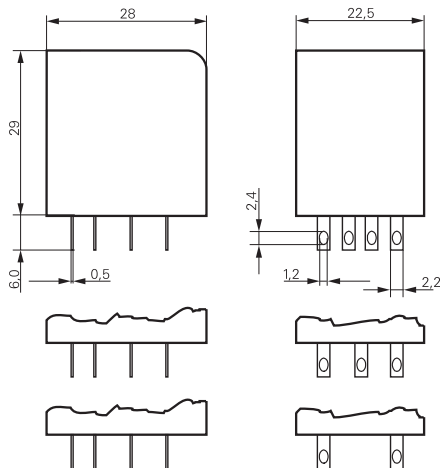


protection diode+LED



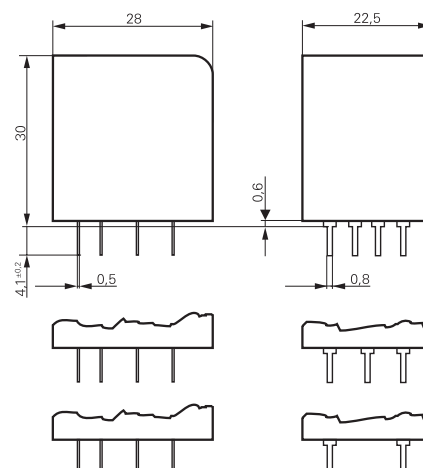
### Dimensions

Solder- and plug-in terminals (standard version)



S0355-AA

PCB version



S0355-BB

**Miniature Relay PT** (Continued)

**Product code structure**

Typical product code **PT 5 7 0 730**

|                                                |                                     |                       |                                             |
|------------------------------------------------|-------------------------------------|-----------------------|---------------------------------------------|
| <b>Type</b>                                    |                                     | PT Miniature Relay PT |                                             |
| <b>Contact arrangement</b>                     |                                     |                       |                                             |
| 2                                              | 2 form C contacts (2 CO contacts)   |                       |                                             |
| 3                                              | 3 form C contacts (3 CO contacts)   |                       |                                             |
| 5                                              | 4 form C contacts (4 CO contacts)   |                       |                                             |
| <b>Contact material</b>                        |                                     |                       |                                             |
| 7                                              | AgNi 90/10, with test button        | 8                     | AgNi 90/10 gold plated, with test button    |
| 2                                              | AgNi 90/10, without test button     | 3                     | AgNi 90/10 gold plated, without test button |
| <b>Version</b>                                 |                                     |                       |                                             |
| 0                                              | Standard, 2.8mm quick connect term. | 1                     | PCB terminals                               |
| <b>Coil</b>                                    |                                     |                       |                                             |
| Coil code: please refer to coil versions table |                                     |                       |                                             |
| Other types on request                         |                                     |                       |                                             |

| Product code | Cont. Config. | Cont. material | Version       | Coil           | Coil   | Part number |
|--------------|---------------|----------------|---------------|----------------|--------|-------------|
| PT270024     | 2 form C      | AgNi 90/10     | AMP 2.8       | DC coil        | 24VDC  | 4-1419111-2 |
| PT270524     | 2 CO contacts | test button    | connectors    | AC coil        | 24VAC  | 4-1419111-8 |
| PT270615     |               |                |               |                | 115VAC | 5-1419111-0 |
| PT270730     |               |                |               |                | 230VAC | 5-1419111-1 |
| PT270L24     |               |                |               | DC coil+LED    | 24VDC  | 9-1415001-1 |
| PT270R24     |               |                |               | AC coil+LED    | 24VAC  | 1415002-1   |
| PT270S15     |               |                |               |                | 115VAC | 2-1415039-1 |
| PT270T30     |               |                |               |                | 230VAC | 3-1415002-1 |
| PT271024     |               |                | PCB terminals | DC coil        | 24VDC  | 5-1419111-3 |
| PT271524     |               |                |               | AC coil        | 24VAC  | 5-1419111-6 |
| PT271615     |               |                |               |                | 115VAC | 4-1419135-0 |
| PT271730     |               |                |               |                | 230VAC | 5-1419111-8 |
| PT370024     | 3 form C      | AgNi 90/10     | AMP 2.8       | DC coil        | 24VDC  | 6-1419111-1 |
| PT370524     | 3 CO contacts | test button    | connectors    | AC coil        | 24VAC  | 6-1419111-6 |
| PT370615     |               |                |               |                | 115VAC | 6-1419111-8 |
| PT370730     |               |                |               |                | 230VAC | 6-1419111-9 |
| PT370L24     |               |                |               | DC coil+LED    | 24VDC  | 5-1415002-1 |
| PT370R24     |               |                |               | AC coil+LED    | 24VAC  | 7-1415002-1 |
| PT370S15     |               |                |               |                | 115VAC | 9-1415039-1 |
| PT370T30     |               |                |               |                | 230VAC | 9-1415002-1 |
| PT371024     |               |                | PCB terminals | DC coil        | 24VDC  | 7-1419111-1 |
| PT371524     |               |                |               | AC coil        | 24VAC  | 7-1419111-3 |
| PT371615     |               |                |               |                | 115VAC | 1393154-8   |
| PT371730     |               |                |               |                | 230VAC | 7-1419111-5 |
| PT570024     | 4 form C      | AgNi 90/10     | AMP 2.8       | DC coil        | 24VDC  | 1-1393154-2 |
| PT570524     | 4 CO contacts | test button    | connectors    | AC coil        | 24VAC  | 8-1419111-7 |
| PT570615     |               |                |               |                | 115VAC | 9-1419111-0 |
| PT570730     |               |                |               |                | 230VAC | 9-1419111-1 |
| PT570L24     |               |                |               | DC coil+LED    | 24VDC  | 6-1415001-1 |
| PT570LC4     |               |                |               | DC coil+LED+PD |        | 7-1415541-0 |
| PT570R24     |               |                |               | AC coil+LED    | 24VAC  | 7-1415001-1 |
| PT570S15     |               |                |               |                | 115VAC | 7-1415003-1 |
| PT570T30     |               |                |               |                | 230VAC | 8-1415001-1 |
| PT571024     |               |                | PCB terminals | DC coil        | 24VDC  | 9-1419111-3 |
| PT571524     |               |                |               | AC coil        | 24VAC  | 9-1419111-6 |
| PT571615     |               |                |               |                | 115VAC | 1-1393154-5 |
| PT571730     |               |                |               |                | 230VAC | 9-1419111-8 |
| PT580024     |               | AgNi 90/10     | AMP 2.8       | DC coil        | 24VDC  | 1-1393154-7 |
| PT580524     |               | gold plated    | connectors    | AC coil        | 24VAC  | 2-1393154-1 |
| PT580730     |               | test button    |               |                | 230VAC | 2-1393154-2 |
| PT580L24     |               |                |               | DC coil+LED    | 24VDC  | 5-1415026-1 |
| PT580R24     |               |                |               | AC coil+LED    | 24VAC  | 6-1415026-1 |
| PT580T30     |               |                |               |                | 230VAC | 7-1415026-1 |
| PT581024     |               |                | PCB terminals | DC coil        | 24VDC  | 7-1419135-2 |
| PT581730     |               |                |               | AC coil        | 230VAC | 2-1393154-3 |