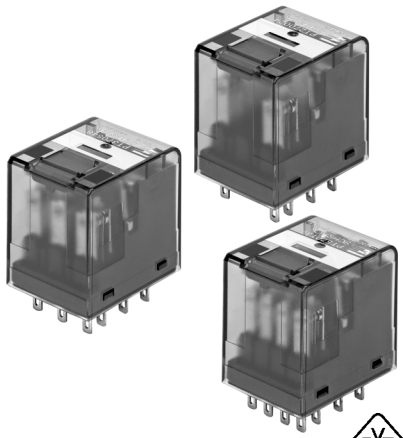
# Miniature Relay PT

- **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**


F0191-B

Typical applications
Universal use in control and automation

## Approvals

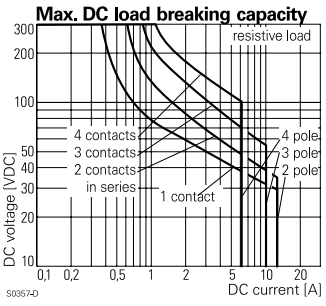
VDE Cert. No. 40009108, UL E214025, Lloyds 00/20059
Technical data of approved types on request

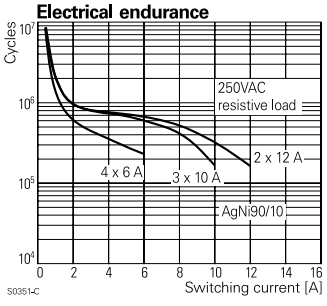
## Contact Data

| 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 | |
| Initial voltage drop | | 30mV at 100mA/6VDC | |
| Frequency of operation<br>with/without load | | 360/36000h$^{-1}$ | |
| 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 |
|---|---|---|---|
| **IEC 61810** | | | |
| PT 2 DC/AC coil | C (CO) | 12A, 250VAC, cosφ=1, 70°C | 70x10$^3$ |
| PT 2 DC/AC coil | A (NO) of C (CO) | 9A, 250VAC, cosφ=1, 80°C | 150x10$^3$ |
| PT 2 DC/AC coil | A (NO) of C (CO) | 4A, 250VAC, cosφ=1, 80°C | 300x10$^3$ |
| PT 3 DC/AC coil | C (CO) | 10A, 250VAC, cosφ=1, 70°C | 100x10$^3$ |
| PT 5 DC/AC coil | C (CO) | 6A, 250VAC, cosφ=1, 70°C | 100x10$^3$ |




## Contact Data (continued)

### Contact ratings

| Type | Contact | Load | Cycles |
|---|---|---|---|
| **UL 508** | | | |
| PT 2 | C (CO) | 12A, 250VAC, general purpose, 70°C | 6.000 |
| PT 2 | C (CO) | 12A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 2 | A (NO) of C (CO) | 12A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 2 | A (NO) of C (CO) | 12A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 3 | C (CO) | 10A, 250VAC, general purpose, 70°C | 6.000 |
| PT 3 | C (CO) | 10A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 3 | A (NO) of C (CO) | 10A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 3 | B (NC) of C (CO) | 10A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 5 | C (CO) | 6A, 250VAC, general purpose, 70°C | 6.000 |
| PT 5 | C (CO) | 6A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 5 | A (NO) of C (CO) | 6A, 250VAC, resistive, 70°C | 100x10$^3$ |
| PT 5 | B (NC) of C (CO) | 6A, 250VAC, resistive, 70°C | 100x10$^3$ |
| **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 | |
| PT 2 | A (NO) of C (CO) | DC coil, AC-15, 250VAC/4A, opposite polarity 6.050 | |
| PT 3 | A (NO) of C (CO) | DC coil, AC-15, 250VAC/4A, same polarity 6.050 | |
| PT 5 | A (NO) of C (CO) | DC coil, AC-15, 250VAC/4A, same polarity 6.050 | |
| PT 2 | A (NO) of C (CO) | AC coil, AC-15, 250VAC/2A, opposite polarity 6.050 | |
| PT 3 | A (NO) of C (CO) | AC coil, AC-15, 250VAC/2A, same polarity 6.050 | |
| PT 5 | A (NO) of C (CO) | AC coil, AC-15, 250VAC/2A, same polarity 6.050 | |
| PT2/3/5 | A (NO) of C (CO) | DC-13, 24VDC/4A 6.050 | |

| Mechanical endurance | |
|---|---|
| DC coil | 30x10$^6$ operations |
| AC coil | 20x10$^6$ operations |

## Coil Data

| 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) |



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# 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 Ω±10%[1)2)] | 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[1)] | 743 |
| 110 | 110 | 82.5 | 11 | 16133[2)] | 750 |
| 220 | 220 | 165.0 | 22 | 64533[2)] | 750 |

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

| Coil code bipol. LED | LED+ PD[3)] | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10%[1)2)] | 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[1)] | 743+56 |
| M10 | MB0 | 110 | 82.5 | 11.0 | 16133[2)] | 750+96.5 |
| N20 | NC0 | 220 | 165.0 | 22.0 | 64533[2)] | 750+202.5 |

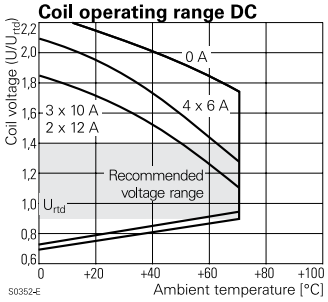
1) Coil resistance ±12%, 2) Coil resistance ±15%,
3) Protection diode PD; standard polarity: +A1/-A2
All figures are given for coil without pre-energization, at ambient temperature +23°C

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

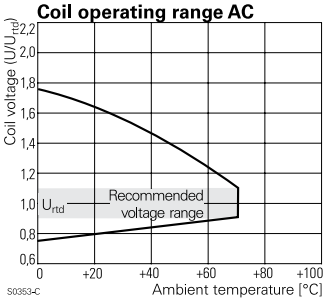
| Coil code STD | LED | Rated voltage VAC | Operate voltage 50/60Hz VAC | Release voltage 50/60Hz VAC | Coil resistance Ω±10%[1)2)] | Rated coil power 50/60Hz VA |
|---|---|---|---|---|---|---|
| 506 | R06 | 6 | 4.8/5.4 | 1.8 | 11 | 1.0/0.85 |
| 512 | R12 | 12 | 9.6/10.8 | 3.6 | 48 | 1.0/0.85 |
| 524 | 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[1)] | 1.0/0.86 |
| 730 | T30 | 230 | 184/207 | 69.0 | 19465[2)] | 1.0/0.90 |

1) Coil resistance ±12%, 2) Coil resistance ±15%
All figures are given for coil without pre-energization, at ambient temperature +23°C

**Coil operating range DC**




**Coil operating range AC**




| Insulation Data | PT2 | PT3 | PT5 |
|---|---|---|---|
| Initial dielectric strength | | | |
| between open contacts | 1200$V_{rms}$ | 1200$V_{rms}$ | 1200$V_{rms}$ |
| between contact and coil | 2500$V_{rms}$ | 2500$V_{rms}$ | 2500$V_{rms}$ |
| between adjacent contacts | 2500$V_{rms}$ | 2500$V_{rms}$ | 2000$V_{rms}$ |
| Initial surge withstand voltage between contact and coil | 5000V (1.2/50µs) | | |
| Clearance/creepage between contact and coil | ≥3/4mm | | |
| Material group of insulation parts | IIIa | | |
| Pollution degree | 2 | | |

## Other Data

| | |
|---|---|
| Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at | www.te.com/customersupport/rohssupportcenter |
| Ambient temperature | -40 to +70°C |
| Cold storage, IEC 60068-2-1 | -40°C/16h |
| Dry heat, IEC 60068-2-2 | 70°C/16h |
| 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°C/10s |
| 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



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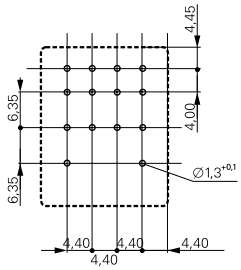
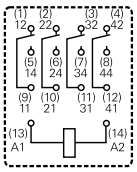
## Miniature Relay PT (Continued)

**PCB layout / terminal assignment**
Bottom view on pins

4 pole

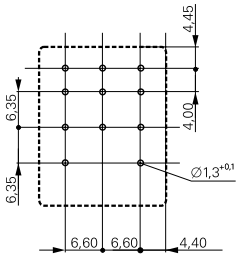



S0354-AA

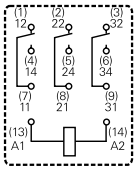



S0354-AD

3 pole

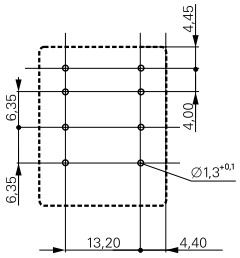



S0354-AB

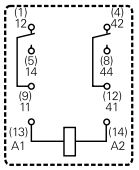



S0354-AE

2 pole



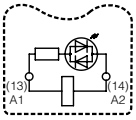

S0354-AC



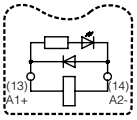

S0354-AF

Circuit

LED

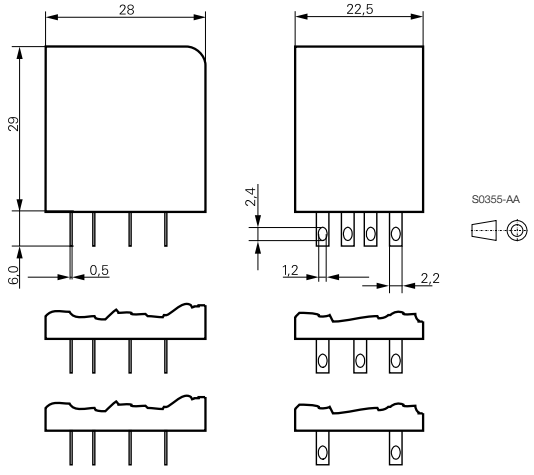



protection diode+LED

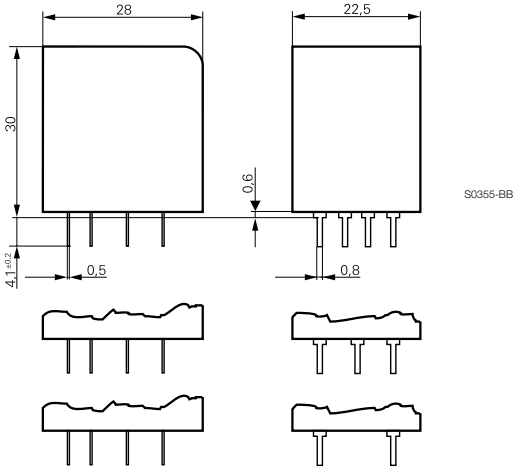



**Dimensions**

Solder- and plug-in terminals (standard version)




PCB version



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## Miniature Relay PT (Continued)

**Product code structure** — Typical product code: **PT 5 7 0 730**

**Type**
**PT** Miniature Relay PT

**Contact arrangement**
**2** 2 form C contacts (2 CO contacts)
**3** 3 form C contacts (3 CO contacts)
**5** 4 form C contacts (4 CO contacts)

**Contact material**
**7** AgNi 90/10, with test button
**2** AgNi 90/10, without test button
**8** AgNi 90/10 gold plated, with test button
**3** AgNi 90/10 gold plated, without test button

**Version**
**0** Standard: solder/plug-in terminal
**1** PCB terminals

**Coil**
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 | solder/ | DC coil | 24VDC | 4-1419111-2 |
| PT270524 | 2 CO contacts | test button | plug-in | AC coil | 24VAC | 4-1419111-8 |
| PT270615 | | | terminal | | 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 | solder/ | DC coil | 24VDC | 6-1419111-1 |
| PT370110 | 3 CO contacts | test button | plug-in | | 110VDC | 6-1419111-3 |
| PT370524 | | | terminal | 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 | solder/ | DC coil | 24VDC | 1-1393154-2 |
| PT570524 | 4 CO contacts | test button | plug-in | AC coil | 24VAC | 8-1419111-7 |
| PT570615 | | | terminal | | 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 | solder/ | DC coil | 24VDC | 1-1393154-7 |
| PT580524 | | gold plated | plug-in | AC coil | 24VAC | 2-1393154-1 |
| PT580730 | | test button | terminal | | 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 |



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