

## Miniature Relay PT

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



F0191-B

### Applications

Universal use in control and automation

### Approvals

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

| Contact data                                         | PT2                              | PT3           | PT5         |
|------------------------------------------------------|----------------------------------|---------------|-------------|
| Contact configuration                                | 2 CO                             | 3 CO          | 4 CO        |
| Contact set                                          | single contact                   |               |             |
| Type of interruption                                 | micro disconnection              |               |             |
| Rated voltage / max. switching voltage AC            | 240 / 400 VAC                    | 240 / 400 VAC | 240/240 VAC |
| Rated current                                        | 12 A                             | 10 A          | 6 A         |
| Maximum breaking capacity AC                         | 3000 VA                          | 2500 VA       | 1500 VA     |
| Limiting making capacity, max 20 ms                  | 24 A                             | 20 A          | 12 A        |
| Contact material                                     | AgNi90/10, AgNi90/10 gold plated |               |             |
| Minimum contact load                                 | 12V/10mA, 20mV/1mA gold plated   |               |             |
| Rated frequency of operation with / without load     | 6/600 min <sup>-1</sup>          |               |             |
| Operate time                                         | typ 15 ms                        |               |             |
| Release time DC coil without / with protection diode | typ 10 / 18 ms                   |               |             |
| Bounce time DC coil NO / NC contact                  | typ 6 / 8 ms                     |               |             |

### Contact ratings

| Type | Contact | Load | Ambient temp. [°C] | Cycles |
|------|---------|------|--------------------|--------|
|------|---------|------|--------------------|--------|

#### IEC 61810

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

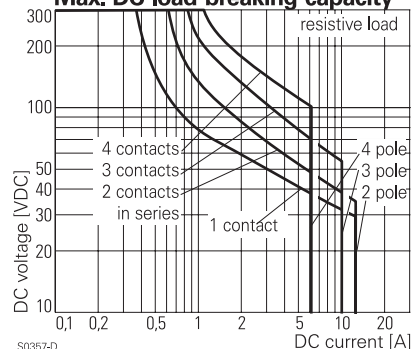
#### UL 508

|      |          |                                |      |                     |
|------|----------|--------------------------------|------|---------------------|
| PT 2 | CO       | 12 A, 250 VAC, general purpose | 70°C | 6.000               |
| PT 2 | CO       | 12 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 2 | NO of CO | 12 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 2 | NC of CO | 12 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 3 | CO       | 10 A, 250 VAC, general purpose | 70°C | 6.000               |
| PT 3 | CO       | 10 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 3 | NO of CO | 10 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 3 | NC of CO | 10 A, 250 VAC, resistive       | 70°C | 100x10 <sup>3</sup> |
| PT 5 | CO       | 6 A, 250 VAC, general purpose  | 70°C | 6.000               |
| PT 5 | CO       | 6 A, 250 VAC, resistive        | 70°C | 100x10 <sup>3</sup> |
| PT 5 | NO of CO | 6 A, 250 VAC, resistive        | 70°C | 100x10 <sup>3</sup> |
| PT 5 | NC of CO | 6 A, 250 VAC, resistive        | 70°C | 100x10 <sup>3</sup> |

#### EN60947-4-1

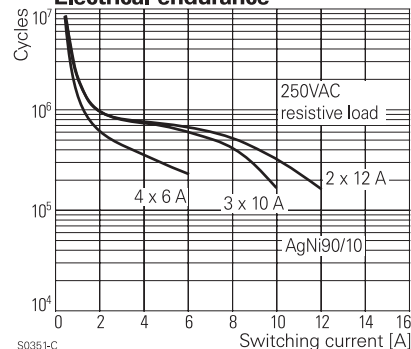
|      |          |                                                         |      |  |
|------|----------|---------------------------------------------------------|------|--|
| PT 2 | NO of CO | 400 VAC, 3,75 A, AC3, opposite polarity                 | 70°C |  |
| PT 2 | NO of CO | 230 VAC, 1,7A, AC5b (400W lamp load), opposite polarity | 70°C |  |
| PT 3 | NO of CO | 250 VAC, 2 A, AC3, opposite polarity                    | 70°C |  |
| PT 3 | NO of CO | 230 VAC, 1,7A, AC5b (400W lamp load), opposite polarity | 70°C |  |
| PT 5 | NO of CO | 250 VAC, 3 A, AC3, same polarity                        | 70°C |  |
| PT 5 | NO of CO | 230 VAC, 1,7A, AC5b (400W lamp load), same polarity     | 70°C |  |

### Max. DC load breaking capacity



S0357-D

### Electrical endurance



S0351-C

## Miniature Relay PT (Continued)

### Coil data

|                                                    |             |
|----------------------------------------------------|-------------|
| Rated coil voltage range DC coil                   | 6...220 VDC |
| AC coil                                            | 6...230 VAC |
| Operative range to IEC 61810 DC coil, AC-coil 50Hz | 2           |
| AC coil 60 Hz at 70°C, % of $U_{rtd}$              | 90...110%   |

### Coil versions, DC-coil

| Coil code | STD | LED bipolar | LED+ PD* | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ohm | Rated coil power mW | opt. LED power mW |
|-----------|-----|-------------|----------|-------------------|---------------------|---------------------|---------------------|---------------------|-------------------|
| 006       | L06 | LA6         |          | 6                 | 4.5                 | 0.6                 | 48±10%              | 750                 | 3.5               |
| 012       | L12 | LB2         |          | 12                | 9.0                 | 1.2                 | 192±10%             | 750                 | 10                |
| 024       | L24 | LC4         |          | 24                | 18.0                | 2.4                 | 777±10%             | 741                 | 18                |
| 048       | L48 | LE8         |          | 48                | 36.0                | 4.8                 | 3072±10%            | 750                 | 38                |
| 060       | L60 | LG0         |          | 60                | 45.0                | 6.0                 | 4845±12%            | 743                 | 56                |
| 110       | M10 | MB0         |          | 110               | 82.5                | 11.0                | 16133±15%           | 750                 | 96.5              |
| 220       | N20 | NC0         |          | 220               | 165.0               | 22.0                | 64533±15%           | 750                 | 202.5             |

All figures are given for coil without preenergization, at ambient temperature +23°C

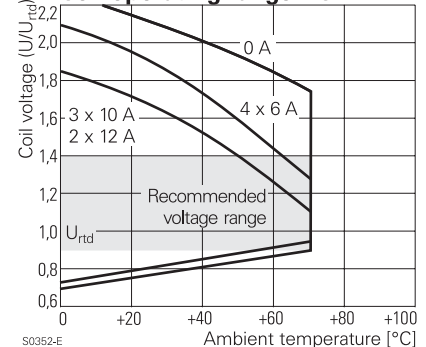
\*) Protection diode PD; standard polarity: +A1 / -A2

### Coil versions, AC-coil 50 / 60 Hz

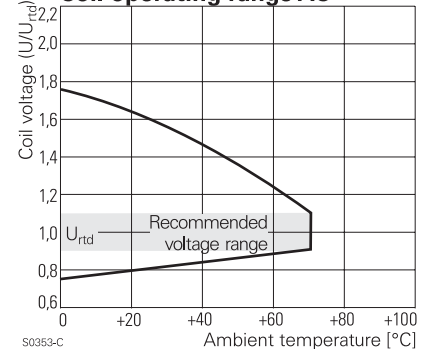
| Coil code  | STD        | LED | Rated voltage VAC | Operate voltage 50 / 60 Hz VAC | Release voltage 50 / 60 Hz VAC | Coil resistance Ohm | Rated coil power 50 / 60 Hz VA |
|------------|------------|-----|-------------------|--------------------------------|--------------------------------|---------------------|--------------------------------|
| 506        | R06        |     | 6                 | 4.8 / 5.4                      | 1.8                            | 11±10%              | 1.0 / 0.85                     |
| 512        | R12        |     | 12                | 9.6 / 10.8                     | 3.6                            | 48±10%              | 1.0 / 0.85                     |
| <b>524</b> | <b>R24</b> |     | <b>24</b>         | <b>19.2 / 21.6</b>             | <b>7.2</b>                     | <b>192±10%</b>      | <b>1.0 / 0.79</b>              |
| 548        | R48        |     | 48                | 38.4 / 43.2                    | 14.4                           | 777±10%             | 1.0 / 0.87                     |
| 560        | R60        |     | 60                | 48.0 / 54.0                    | 18.0                           | 1306±10%            | 1.0 / 0.87                     |
| 615        | S15        |     | 115               | 92.0 / 103.5                   | 34.5                           | 4845±12%            | 1.0 / 0.86                     |
| <b>730</b> | <b>T30</b> |     | <b>230</b>        | <b>184.0 / 207.0</b>           | <b>69.0</b>                    | <b>19465±15%</b>    | <b>1.0 / 0.90</b>              |

All figures are given for coil without preenergization, at ambient temperature +23°C

### Coil operating range DC



### Coil operating range AC



### Insulation

|                                           | PT2                   | PT3                   | PT5                   |
|-------------------------------------------|-----------------------|-----------------------|-----------------------|
| Dielectric strength coil-contact circuit  | 2500 V <sub>rms</sub> | 2500 V <sub>rms</sub> | 2500 V <sub>rms</sub> |
| open contact circuit                      | 1200 V <sub>rms</sub> | 1200 V <sub>rms</sub> | 1200 V <sub>rms</sub> |
| adjacent contact circuits                 | 2500 V <sub>rms</sub> | 2500 V <sub>rms</sub> | 2000 V <sub>rms</sub> |
| Clearance / creepage coil-contact circuit | ≥ 4/4 mm              | ≥ 4/4 mm              | ≥ 4/4 mm              |
| adjacent cont. circuits                   | ≥ 3.5/9.5 mm          | ≥ 2.6/3.5 mm          | ≥ 1.8/3.5 mm          |
| Material group of insulation parts        | IIIa                  |                       |                       |
| Insulation to IEC 61810-1                 |                       |                       |                       |
| Type of insulation coil-contact circuit   | basic                 | basic                 | basic                 |
| open contact circuit                      | micro disc.           | micro disc.           | micro disc.           |
| adjacent contact circuits                 | basic                 | basic                 | functional            |
| Rated insulation voltage                  | 250 V                 | 250 V                 | 250 V                 |
| Pollution degree                          | 2                     | 2                     | 2                     |
| Rated voltage system                      | 230 / 400 V           | 240 V                 | 240 V                 |
| Overvoltage category                      | III                   | III                   | III                   |

### Other data

|                                                 |                           |
|-------------------------------------------------|---------------------------|
| Mechanical endurance DC coil                    | 30x10 <sup>6</sup> cycles |
| AC coil                                         | 20x10 <sup>6</sup> cycles |
| Material                                        |                           |
| RoHS - Directive 2002/95/EC                     | compliant                 |
| Environment                                     |                           |
| Ambient temperature range                       | -40...+70°C               |
| Vibration resistance (function) NO / NC contact | 7/4 g                     |
| Shock resistance (function) NO / NC contact     | 20/5 g                    |
| Category of protection                          | RTII - flux proof         |
| Processing                                      |                           |
| Mounting distance                               | ≥ 0 mm, dense packing     |
| Resistance to soldering heat                    | 270°C / 10s               |
| Relay weight                                    | 30 g                      |
| Packaging unit                                  | 10/250 pcs                |

## Miniature Relay PT (Continued)

### 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, table 12); for relays mounted on sockets deratings may apply.

### Relay Packages

Complete packages consisting of a relay mounted on a socket see Package PT

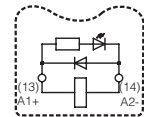
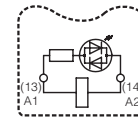
### PCB layout / terminal assignment

Bottom view on pins

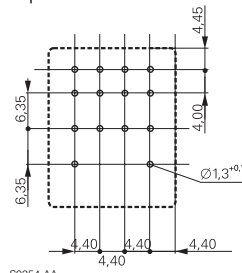
Circuit

LED

protection diode+LED

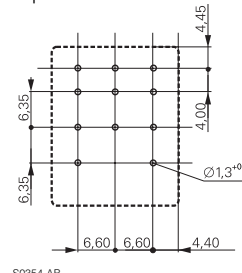


4-pole



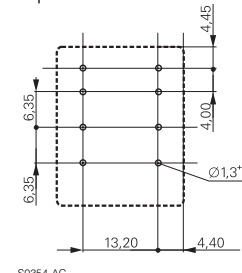
S0354-AA

3-pole

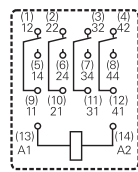


S0354-AB

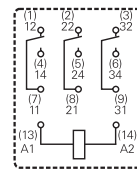
2-pole



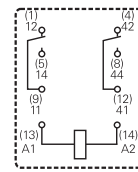
S0354-AC



S0354-AD



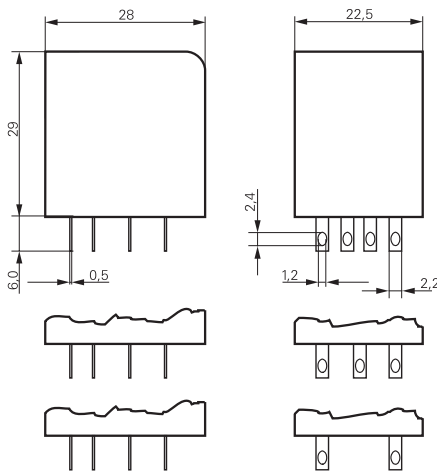
S0354-AE



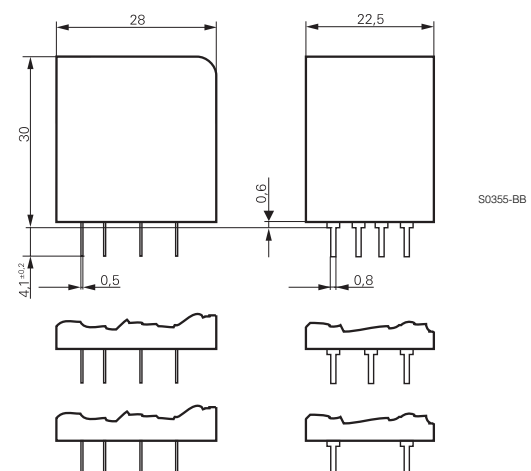
S0354-AF

### Dimensions

Solder- and plug-in terminals (standard version)



PCB version



### Product key

Typical product key

**PT**

**5**

**7**

**0**

**730**

### Type

**PT** Miniature Relay PT

### Contact configuration

- 2** 2 CO contacts (2 form C)
- 3** 3 CO contacts (3 form C)
- 5** 4 CO contacts (4 form C)

### Contact material

- 7** AgNi 90/10, with test button\*)
- 8** AgNi 90/10 gold plated, with test button\*)

### Version

- 0** standard, 2.8 mm quick connect term.
- 1** PCB terminals

### Coil

Coil code: please refer to coil versions table, preferred types in bold print

\*) Version with closed cap without test button available on request  
Other types on request

**Miniature Relay PT** (Continued)

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