

## Features

### kWh Energy meter - 1-phase

Type 7E.12 10(25)A - 2 module wide

Type 7E.13 5(32)A - 1 module wide

Type 7E.16 10(65)A - 2 module wide

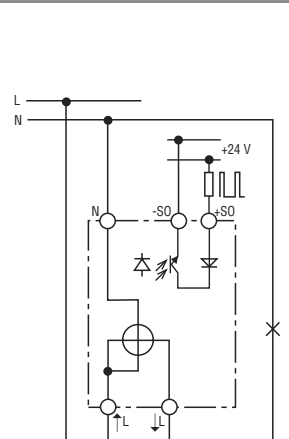
- Complies with EN 62053-21 and prEN 50470
- Certified by PTB (Physikalisch - Technischen Bundesanstalt)
- Accuracy class 1
- Protection class II
- Pulse output for remote energy management; SO interface (open collector) according DIN 43864 to link the energy meter to a centrally located monitoring/management system
- Tamper-proof cover with lead seal facility available as an accessory
- Space saving small size
- 35 mm rail (EN 50022) mount

For outline drawing see page 5

### 7E.12.8.230.0002



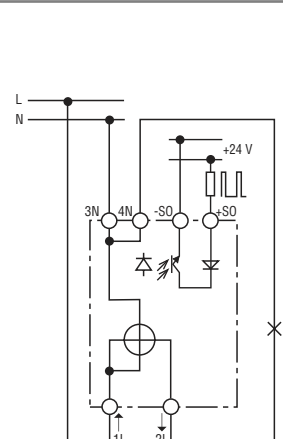
- Nominal current 10 A (25 A Maximum)
- 1-phase 230 V AC
- 35 mm wide



### 7E.13.8.230.0000



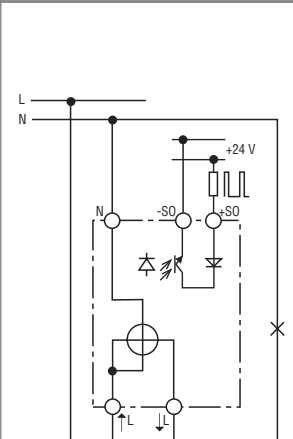
- Nominal current 5 A (32 A Maximum)
- 1-phase 230 V AC
- 17.5 mm wide



### 7E.16.8.230.0000



- Nominal current 10 A (65 A Maximum)
- 1-phase 230 V AC
- 35 mm wide



### Specification

|   |      |                                      |  |                   |
|---|------|--------------------------------------|--|-------------------|
| Nominal/Maximum current measuring                     | A    | 10/25                                | 5/32                                   | 10/65             |
| Minimum measured current                              | A    | 0.04                                 | 0.02                                   | 0.04              |
| Current range (within accuracy class)                 | A    | 0.5...25                             | 0.25...32                              | 0.5...65          |
| Maximum peak current                                  | A    | 750 (10 ms)                          | 960 (10 ms)                            | 1,950 (10 ms)     |
| Supply (& monitored) voltage                          | V AC | 230                                  | 230                                    | 230               |
| Operating range                                       |      | $(0.8...1.15)U_N$                    | $(0.8...1.15)U_N$                      | $(0.8...1.15)U_N$ |
| Frequency   | Hz   | 50/60                                | 50/60                                  | 50/60             |
| Rated power   | W    | < 0.5                                | < 0.4                                  | < 0.5             |
| Display, Reading (digit height 4 mm)                  |      | Six digit counter, red decimal digit | Seven digit counter, red decimal digit |                   |
| Max. totalising count/Min. totalising count kWh       |      | 99,999.9/0.1                         | 999,999.9/0.1                          | 999,999.9/0.1     |
| LED- Pulses per kWh                                   |      | 2,000                                | 2,000                                  | 1,000             |
| <b>Open collector- output specification (SO+/SO-)</b> |      |                                      |  |                   |
| Voltage (external supply)                             | V DC | 5...30                               | 5...30                                 | 5...30            |
| Maximum current                                       | mA   | 20                                   | 20                                     | 20                |
| Maximum leakage current @30 V/25 °C                   | µA   | 10                                   | 10                                     | 10                |
| Pulses per kWh  |      | 1,000                                | 1,000                                  | 1,000             |
| Pulse length  | ms   | 50                                   | 50                                     | 50                |
| Internal series resistance                            | Ω    | 100                                  | 100                                    | 100               |
| Maximum Cable length (30 V/20 mA)                     | m    | 1,000                                | 1,000                                  | 1,000             |
| <b>Technical data</b>                                 |      |                                      |  |                   |
| Accuracy class  |      | I                                    | I                                      | I                 |
| Ambient temperature (Within accuracy class)           | °C   | -10...+45                            | -10...+45                              | -10...+45         |
| Ambient temperature (Outside accuracy class)          | °C   | -20...+55                            | -20...+55                              | -20...+55         |
| Protective class                                      |      | II                                   | II                                     | II                |
| Protection category: Housing/terminal                 |      | IP 50/IP 20                          | IP 50/IP 20                            | IP 50/IP 20       |
| <b>Approvals</b> (according to type)                  |      | <b>CE</b>                            | <b>CE PTB</b>                          |                   |

## Features

### kWh Energy meter - 3-phase

Type 7E.36-0000 10(65)A - Single tariff

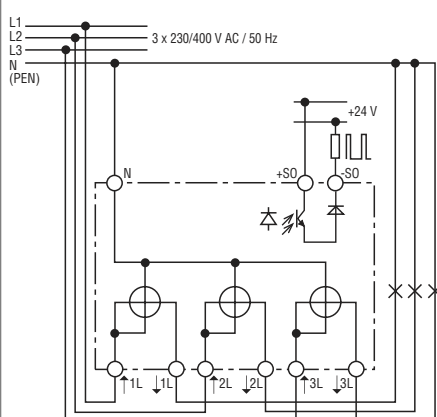
Type 7E.36-0002 10(65)A - Dual tariff

- Complies with EN 62053-21 and prEN 50470
- Certified by PTB (Physikalisch - Technischen Bundesanstalt)
- Accuracy class B
- Protection class II
- Pulse output for remote energy management; SO interface (open collector) according DIN 43864 to link the energy meter to a centrally located monitoring/management system
- Tamper-proof cover with lead seal facility available as an accessory
- 35 mm rail (EN 50022) mount

### 7E.36.8.400.0000



- Nominal current 10 A (65 A Maximum)
- 3-phase
- 70 mm wide

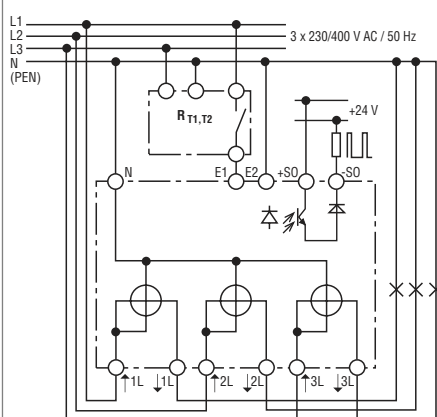


### 7E.36.8.400.0002



- Nominal current 10 A (65 A Maximum)
- 3-phase
- Dual tariff (Day and Night)
- 70 mm wide

$R_{T1,T2}$  = Tariff switching equipment



For outline drawing see page 5



| Specification                                   |      |   |                   |
|---|------|---|-------------------|
| Nominal/Maximum current measuring               | A    | 10/65   | 10/65             |
| Minimum measured current                        | A    | 0.04  | 0.04              |
| Current range (within accuracy class)           | A    | 0.5...65  | 0.5...65          |
| Maximum peak current                            | A    | 1,950 (10 ms)   | 1,950 (10 ms)     |
| Supply (& monitored) voltage                    | V AC | 3 x 230   | 3 x 230           |
| Operating range                                 |      | $(0.8...1.15)U_N$   | $(0.8...1.15)U_N$ |
| Frequency                                       | Hz   | 50/60   | 50/60             |
| Rated power per phase                           | W    | < 1.5   | < 1.5             |
| Display, Reading, Indication                    |      | Seven digit counter, red decimal digit, digit height 4 mm |                   |
| Max. totalising count/Min. totalising count kWh |      | 999,999.9/0.1   | 999,999.9/0.1     |
| LED- Pulses per kWh                             |      | 100   | 100               |
| Open collector- output specification (SO+/SO-)  |      |   |                   |
| Voltage (external supply)                       | V DC | 5...30  | 5...30            |
| Maximum current                                 | mA   | 20  | 20                |
| Maximum leakage current @30 V/25 °C             | µA   | 10  | 10                |
| Pulses per kWh                                  |      | 100   | 100               |
| Pulse length                                    | ms   | 50  | 50                |
| Internal series resistance                      | Ω    | 100   | 100               |
| Maximum Cable length (30 V/20 mA)               | m    | 1,000   | 1,000             |
| Technical data                                  |      |   |                   |
| Accuracy class                                  |      | B   | B                 |
| Ambient temperature                             | °C   | -25...+55   | -25...+55         |
| Protective class                                |      | II  | II                |
| Protection category: Housing/terminal           |      | IP 50/IP 20   | IP 50/IP 20       |
| Approvals (according to type)                   |      | CE PTB  |                   |

## Ordering information

Example: Energy meter 32 A/230 V AC, with PTB certified, accuracy class 1, available with Tamper-proof lead sealed cover as accessory, for 35 mm rail (EN 50022) mounting.

|                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
|                                 | 7 | E | . | 1 | 3 | . | 8 | . | 2 | 3 | 0 | . | 0 | 0 | 0 | 0 |  |
| <b>Series</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Function</b>                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 1 = 1-phase                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 3 = 3-phase                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Current</b>                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2 = 25 A                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 3 = 32 A                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 6 = 65 A                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Supply version</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 8 = AC 50 Hz                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Option</b>                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 0 = Standard                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2 = Standard (7E.12 only)       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 2 = Dual tariff (7E.36 only)    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>Supply voltage</b>           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 230 = 230 V AC 50/60 Hz         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 400 = 3 x 230/400 V AC 50/60 Hz |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| <b>All versions/width</b>       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7E.12.8.230.0002/35 mm          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7E.13.8.230.0000/17.5 mm        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7E.16.8.230.0000/35 mm          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7E.36.8.400.0000/70 mm          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 7E.36.8.400.0002/70 mm          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

## Technical data

| Insulation EN 62053-21  |                                       |                      |                | 7E.12, 7E.13, 7E.16                         |                | 7E.36                                       |                |  |     |  |
|---|---------------------------------------|----------------------|----------------|---|----------------|---|----------------|--|-----|--|
| Insulation rated voltage  |                                       |                      |                | V   | 250            |   | 250            |  |     |  |
| Overvoltage category  |                                       |                      |                |   | IV             |   | IV             |  |     |  |
| Isolation   | between active part SO+/SO– terminals |                      | kV (1.2/50 μs) | 6   |                |   | 6              |  |     |  |
|   | adjacent phases                       |                      | kV (1.2/50 μs) | —   |                |   | 6              |  |     |  |
| Insulation  | between supply and SO+/SO–            |                      | V AC           | 4,000                                       |                |   | 4,000          |  |     |  |
|   | between adjacent phases               |                      | V AC           | —   |                |   | 4,000          |  |     |  |
| Protection class  |                                       |                      |                |   | II             |   | II             |  |     |  |
| EMC Specification   |                                       |                      |                | Reference standard                          |                |   |                |  |     |  |
| Electrostatic discharge   |                                       | contact discharge    |                | EN 61000-4-2                                |                | 8 kV  |                |  |     |  |
|   |                                       | air discharge        |                | EN 61000-4-2                                |                | 15 kV                                       |                |  |     |  |
| Radio-Frequency Electromagnetic Field (80...1,000)MHz   |                                       |                      |                | EN 61000-4-3                                |                | 10 V/m                                      |                |  |     |  |
| Fast Transients (Burst) (5-50 ns, 5 kHz)  |                                       | on Supply Terminals  |                | EN 61000-4-4                                |                | Class 4 (4 kV)                              |                |  |     |  |
|   |                                       | on SO+/SO– Terminals |                | EN 61000-4-4                                |                | Class 4 (2 kV)                              |                |  |     |  |
| Surge (1.2/50 μs)   |                                       | on Supply Terminals  |                | EN 61000-4-5                                |                | Class 4 (4 kV)                              |                |  |     |  |
|   |                                       | on SO+/SO– Terminals |                | EN 61000-4-5                                |                | Class 3 (1 kV)                              |                |  |     |  |
| Radio-Frequency Common Mode (0.15...80)MHz on Supply terminals  |                                       |                      |                | EN 61000-4-6                                |                | 10 V  |                |  |     |  |
| Radiated and Conducted Emission   |                                       |                      |                | EN 55022                                    |                | Class B                                     |                |  |     |  |
| Other data  |                                       |                      |                |   |                |   |                |  |     |  |
| Pollution degree  |                                       |                      |                | 2   |                |   |                |  |     |  |
| Vibration resistance  | (10...60)Hz                           | mm                   | 0.075          |   |                |   |                |  |     |  |
|   | (60...150)Hz                          | g                    | 1              |   |                |   |                |  |     |  |
| Vibration resistance of the internal mechanical counter (10...500)Hz  |                                       |                      | g              | 2   |                |   |                |  |     |  |
| Schock resistance   |                                       |                      | g/18 ms        | 30  |                |   |                |  |     |  |
| Schock resistance of the internal mechanical counter  |                                       |                      | g/18 ms        | 350   |                |   |                |  |     |  |
| Power lost to the environment   |                                       |                      |                | 7E.12, 7E.13                                | 7E.16          |   | 7E.36          |  |     |  |
|   |                                       |                      |                | without current                             | W              | 0.4   | 0.4            |  | 1.5 |  |
|   |                                       |                      |                | with maximum current                        | W              | 1   | 2              |  | 6   |  |
| Supply terminals  |                                       |                      |                | 7E.12, 7E.13                                |                | 7E.16, 7E.36                                |                |  |     |  |
| Max. wire size  |                                       | mm²                  |                | solid cable                                 | stranded cable | solid cable                                 | stranded cable |  |     |  |
|   |                                       |                      |                | 1...6                                       | 0.75...4       | 1.5...16                                    | 1.5...16       |  |     |  |
|   |                                       | AWG                  |                | 18...10                                     | 18...12        | 16...6                                      | 16...6         |  |     |  |
|  Screw torque for I <sub>max</sub> |                                       | Nm                   |                | 0.8...1.2                                   |                | 1.5...2                                     |                |  |     |  |
|   |                                       |                      |                | M4 Pozidrive No.1, Phillips No.1, Flat No.1 |                |   |                |  |     |  |
| SO+/SO– terminals   |                                       |                      |                |   |                |   |                |  |     |  |
| Max. wire size  |                                       | mm²                  |                | solid cable                                 | stranded cable | solid cable                                 | stranded cable |  |     |  |
|   |                                       |                      |                | 2.5   | 1.5            | 2.5   | 1.5            |  |     |  |
|   |                                       | AWG                  |                | 14  | 16             | 14  | 16             |  |     |  |
|  Screw torque for I <sub>max</sub> |                                       | Nm                   |                | 0.5   |                | 0.8   |                |  |     |  |
|   |                                       |                      |                | M3 Pozidrive No.1, Phillips No.1, Flat No.1 |                |   |                |  |     |  |
|   |                                       |                      |                | M4 Pozidrive No.1, Phillips No.1, Flat No.1 |                | M4 Pozidrive No.1, Phillips No.1, Flat No.1 |                |  |     |  |

## LED indication (Normal operation)

| Type           | Energy consumption |     |      | Pulses per kWh | Pulse space | The LED Pulse rate represents the instantaneous power being consumed, according to the following |
|----------------|--------------------|-----|------|----------------|-------------|--|
|                | None               | Low | High |                |             |  |
| 7E.12<br>7E.13 |                    |     |      | 2,000          | 100 ms      | $kW = (\text{number of pulse per Minute}) / 33.3$  |
| 7E.16          |                    |     |      | 1,000          | 100 ms      | $kW = (\text{number of pulse per Minute}) / 16.7$  |
| 7E.36          |                    |     |      | 100            | 150 ms      | $kW = (\text{number of pulse per Minute}) / 1.7$   |

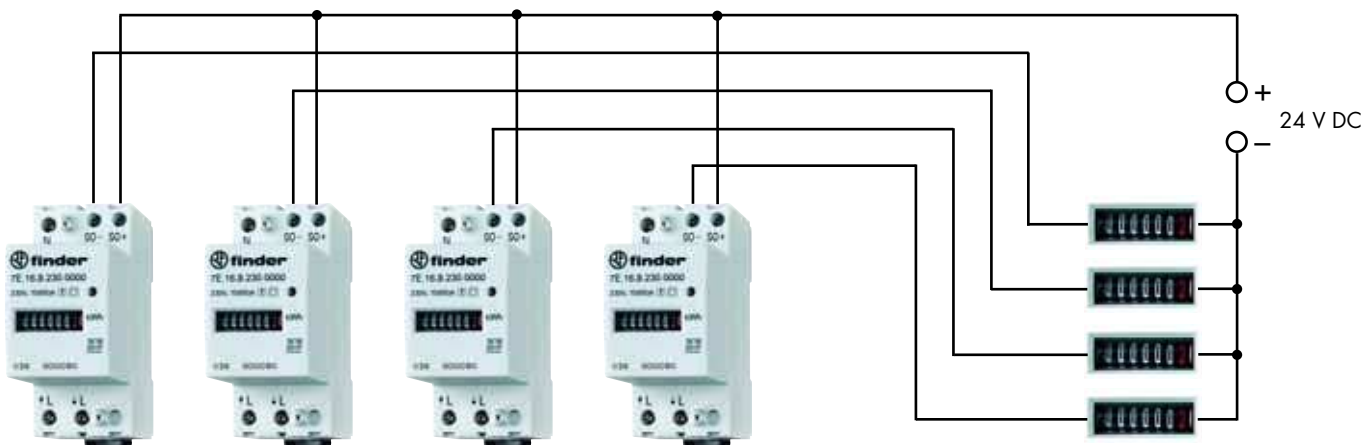
## LED indication (Abnormal operation)

Status indicates errors of installation, as below

| Type                    |   |  |  |
|-------------------------|---|--|--|
| 7E.12<br>7E.13<br>7E.16 | Device ON, incorrect connection (L-N inverted). Mark = 600 ms, Space = 600 ms<br> |  |  |
| 7E.36                   | Mark = 100 ms,<br>Phase L1 ↑ L1 ↓ inverted or loss<br>                            | Phase L2 ↑ L2 ↓ inverted or loss<br>               | Phase L3 ↑ L3 ↓ inverted or loss<br>                             |
|                         | Phase L1 ↑ L1 ↓ and L2 ↑ L2 ↓ inverted or loss<br>                                | Phase L1 ↑ L1 ↓ and L3 ↑ L3 ↓ inverted or loss<br> | Phase L1 ↑ L1 ↓ and L2 ↑ L2 ↓ and L3 ↑ L3 ↓ inverted or loss<br> |

## SO+/SO- Open collector output wiring diagram

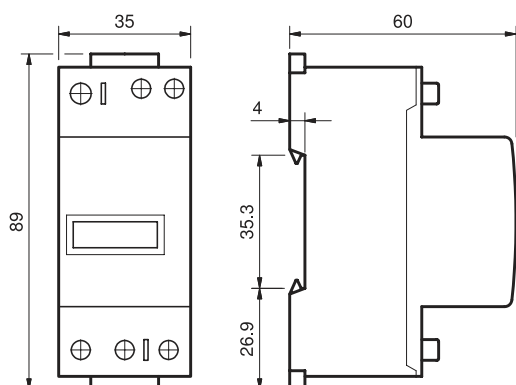
The pulsating open collector output available at terminals SO+ and SO- can be interfaced with the input of a computer, plc or other energy management equipment to allow the remote monitoring of energy consumed.



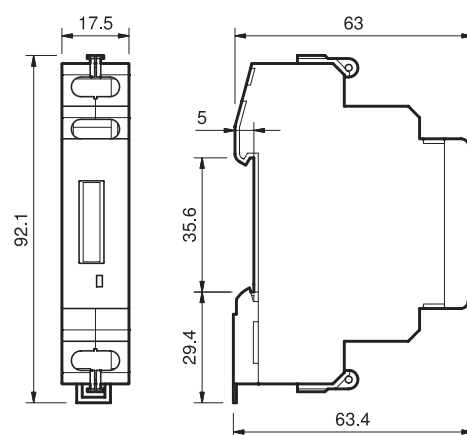
Energy meters – at difference locations  
(Note: Both Single and Dual tariff meters provide only a single pulsating output)

Central monitoring/management system  
(max. 20 mA for each input)

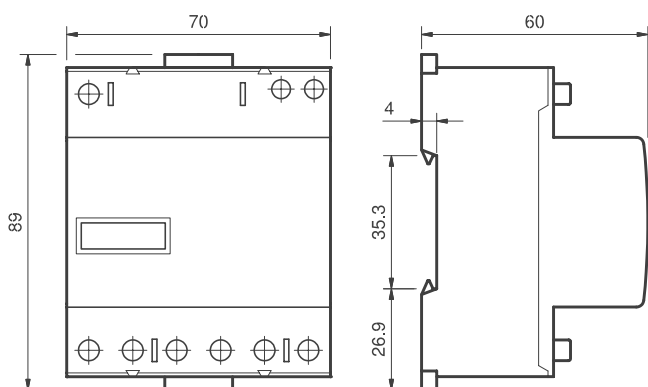
## Outline drawing



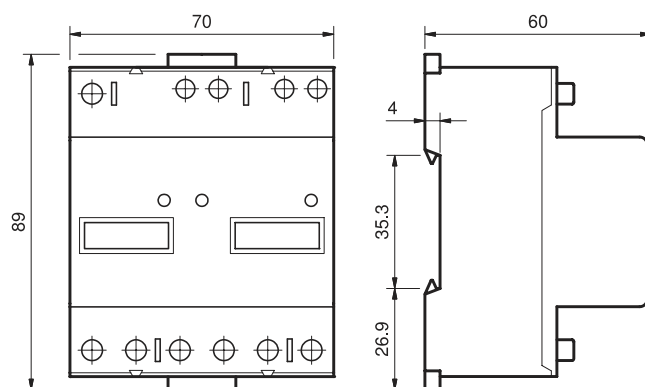
7E.12.8.230.0002 / 7E.16.8.230.0000



7E.13.8.230.0000



7E.36.8.400.0000



7E.36.8.400.0002

## Accessories



07E.13

### Terminal cover for type 7E.12 and 7E.13

For the tamper-proof lead seal use 2 terminal cover

07E.13



07E.16

### Terminal cover for type 7E.16 and 7E.36

7E.16 - For the tamper-proof lead seal use 2 terminal covers

7E.36 - For the tamper-proof lead seal use 4 terminal covers

07E.16