

# Current and Voltage Controls 1-Phase AC/DC Over Current Type EII

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- AC/DC over current metering (open circuit) relay
- Current measuring through internal shunt
- 3 position rotary switch for selection of measuring range
- Measuring ranges: 0.4 mA - 10 A
- Adjustable current limit on relative scale
- Adjustable time function (0.1-10 s)
- Adjustable hysteresis
- Programmable latching at set level
- Output: 5 A SPDT
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 22.5 mm Euronorm housing
- LED-indication for relay and power supply ON
- Galvanically separated power supply

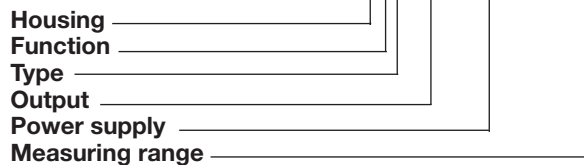
## Product Description

EII is a precise AC/DC over current metering relay and often used in applications where small loads have to be controlled. The advantage of

using the latch function is that the output relay can be kept energized so that e.g. a short-circuit can be indicated.

## Ordering Key

**EII C 230 20mA**



## Type Selection

| Mounting     | Output | Measuring range | Supply: 24 VAC         | Supply: 115 VAC        | Supply: 230 VAC        |
|--------------|--------|-----------------|------------------------|------------------------|------------------------|
| For DIN-rail | SPDT   | 0.4 - 20 mA     | <b>EII C 024 20mA</b>  | <b>EII C 115 20mA</b>  | <b>EII C 230 20mA</b>  |
|              | SPDT   | 10 - 500 mA     | <b>EII C 024 500mA</b> | <b>EII C 115 500mA</b> | <b>EII C 230 500mA</b> |
|              | SPDT   | 0.2 - 5 A       | <b>EII C 024 5A</b>    | <b>EII C 115 5A</b>    | <b>EII C 230 5A</b>    |
|              | SPDT   | 0.4 - 10 A      | <b>EII C 024 10A</b>   | <b>EII C 115 10A</b>   | <b>EII C 230 10A</b>   |

## Input Specifications

| Input                   | Through terminals Y1 & Y2 | current level                      |
|-------------------------|---------------------------|------------------------------------|
| <b>Measuring ranges</b> |                           | <b>Internal resist. Max. curr.</b> |
| <b>20 mA type</b>       |                           |                                    |
| Rotary                  | 1: 0.4 - 2 mA             | 50 Ω 50 mA                         |
| Switch                  | 2: 1 - 5 mA               | 50 Ω 50 mA                         |
| Position                | 3: 4 - 20 mA              | 50 Ω 50 mA                         |
| <b>500 mA type</b>      |                           |                                    |
| Rotary                  | 1: 10 - 50 mA             | 3.9 Ω 600 mA                       |
| Switch                  | 2: 40 - 200 mA            | 3.9 Ω 600 mA                       |
| Position                | 3: 100 - 500 mA           | 3.9 Ω 600 mA                       |
| <b>5 A type</b>         |                           |                                    |
| Rotary                  | 1: 0.2 - 1 A              | 0.05 Ω 6 A                         |
| Switch                  | 2: 0.4 - 2 A              | 0.05 Ω 6 A                         |
| Position                | 3: 1 - 5 A                | 0.05 Ω 6 A                         |
| Max. current for 10 s   |                           | 30 A                               |
| <b>10 A type</b>        |                           |                                    |
| Rotary                  | 1: 0.4 - 2 A              | 0.01 Ω 12 A                        |
| Switch                  | 2: 1 - 5 A                | 0.01 Ω 12 A                        |
| Position                | 3: 2 - 10 A               | 0.01 Ω 12 A                        |
| Max. current for 10 s   |                           | 40 A                               |
| Max. line voltage       |                           | 277/480 VAC/DC                     |

## Output Specifications

| Output                          | SPDT relay                                  |
|---------------------------------|---|
| <b>Rated insulation voltage</b> | 250 VAC (contact/elect.)                    |
| <b>Contact ratings (AgCdO)</b>  | μ (micro gap)                               |
| Resistive loads                 | AC 1 5 A, 250 VAC                           |
|                                 | DC 1 5 A, 24 VDC                            |
| Small inductive loads           | AC 15 2 A, 250 VAC                          |
|                                 | DC 13 3 A, 24 VDC                           |
| <b>Mechanical life</b>          | ≥ 40 x 10 <sup>6</sup> operations           |
| <b>Electrical life</b>          | ≥ 10 <sup>5</sup> operations (at max. load) |
| <b>Operating frequency</b>      | ≤ 7200 operations/h                         |
| <b>Dielectric strength</b>      |   |
| Dielectric voltage              | 2 kVAC (rms)                                |
| Rated impulse withstand volt.   | 4 kV (1.2/50 μs)                            |

## Supply Specifications

|                                 |                                  |
|---------------------------------|----------------------------------|
| <b>Power supply</b>             | Overvoltage cat. III (IEC 60664) |
| Rated operational voltage       | (IEC 60038)                      |
| Through pins A1 & A2            | 024 24 VAC, -10/+15%             |
|                                 | 115 115 VAC, -10/+15%            |
|                                 | 230 230 VAC, -10/+15%            |
| Voltage interruption            | ≤ 40 ms                          |
| Dielectric voltage              | ≥ 2 kVAC (rms)                   |
| Rated impulse withstand voltage | 4 kV (1.2/50 μs)                 |
| <b>Rated operational power</b>  | 1.5 VA                           |

## General Specifications

|                        |  |
|------------------------|--|
| <b>Power ON delay</b>  | < 2 s  |
| <b>Power OFF delay</b> | > 200 ms   |
| <b>Reaction time</b>   | τ < 200 ms<br>worst case reaction time may be up to 5 x τ<br>Adjustable delay on operate built-in (0.1-10 s) |
| <b>Accuracy</b>        |  |
| Input                  | ±10% (DC/AC @ 50 Hz)   |
| ON delay               | 10 s, -1/+3 s on max.<br>< 0.1 s on min.   |
| Temperature drift      | ≤ 0.2%/°C (≤ 0.11%/°F)   |
| <b>Indication for</b>  |  |
| Power supply ON        | LED, green   |
| Output ON              | LED, yellow  |
| <b>Environment</b>     |  |
| Degree of protection   | IP 20  |
| Pollution degree       | 3  |
| Operating temperature  | -20° to +50°C (-4° to +122°F)  |
| Storage temperature    | -50° to +85°C (-58° to +185°F)   |
| <b>Weight</b>          | 140 g  |
| <b>Screw terminals</b> |  |
| Tightening torque      | Max. 0.5 Nm acc. to IEC 60947  |
| <b>Approvals</b>       | UL, CSA, SEV   |

## Mode of Operation

EII measures both AC and DC over current through an internal shunt.

### Example 1

(no connection between terminals Z1 & Z2)

The relay operates when the measured value exceeds the set level for more than the set delay time.

The relay releases when the current drops min. 5% below the set level (see hysteresis), or when power supply is interrupted.

### Example 2

(connection between terminals Z1 & Z2)

The relay operates and latches in operating position when the

measured value exceeds the set level for more than the set delay time.

Provided that the voltage has dropped min. 5% below the set point (see hysteresis), the relay will release when the interconnection between terminals Z1 & Z2 is interrupted, or power supply is interrupted.

If the measured value is above the set level when power supply is applied, the relay will operate immediately with no time delay.

The yellow LED is flashing until the delay-time has expired or the measured value drops below the fixed hysteresis (5%) again.

## Range/Level/Time Setting

### Upper knob:

Setting of current range on rotary switch.

### Centre knob:

Current level setting on relative scale.

### Lower knob:

Setting of ON delay on absolute scale (0.1-10 s).

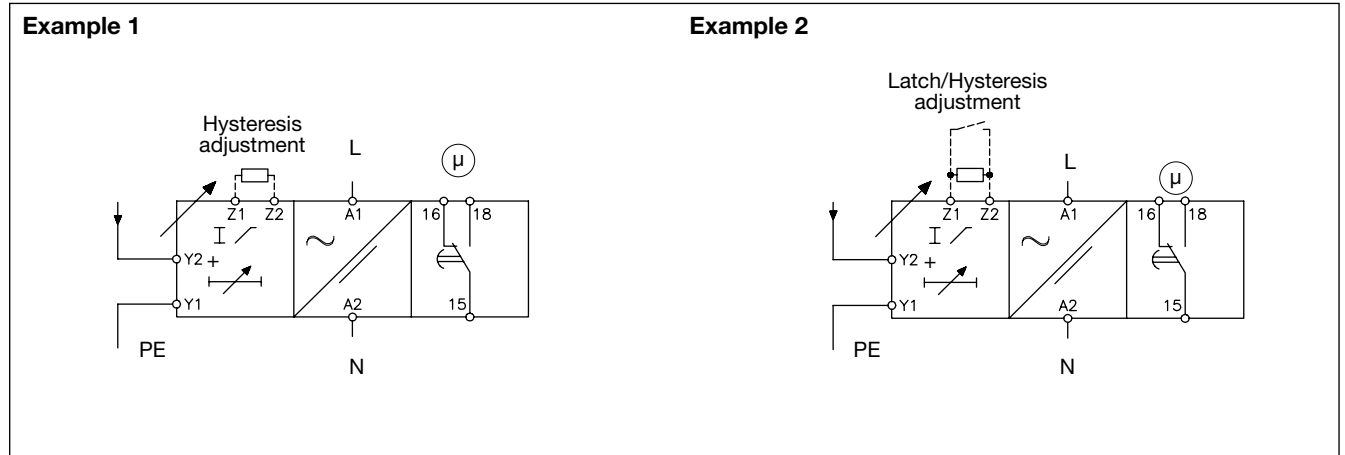
### Hysteresis

Normally 5%. The hysteresis can be extended by inserting a resistor between terminals Z1 & Z2.

Approx.

10%: 39 kΩ  
25%: 12 kΩ  
50%: 4.7 kΩ  
75%: 2.2 kΩ  
Latch: <500 Ω

## Wiring Diagrams



## Operation Diagrams

