

Current and Voltage Controls

1-Phase AC/DC Over Current (Shunt) Type EIK

CARLO GAVAZZI



- AC/DC over current (open circuit) metering relay
- Measuring through external shunt
- 3-position rotary switch for selection of measuring range
- Measuring ranges: 10-50 mV, 12-60 mV, 30-150 mV or 20 -100 mV, 24-120 mV, 60-300 mV
- Adjustable 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

EIK is a precise AC/DC over current (shunt) metering relay. Measures the voltage of an externally connected standard shunt also for high current applications. The built-in LED's indicate the exact

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

Ordering Key

EIK C 230

Housing _____
Function _____
Type _____
Output _____
Power supply _____

Type Selection

Mounting	Output	Measuring range	Supply: 24 VAC	Supply: 115 VAC	Supply: 230 VAC
For DIN-rail	SPDT	10 - 300 mV	EIK C 024	EIK C 115	EIK C 230

Input Specifications

Input		range x 1	range x 2
Through terminals Y1 & Y2			
Through terminals Y1 & Y3			
Measuring ranges		Internal resist.	Max. volt.
x 1 input:			
Rotary 1:	10 - 50 mV	270 Ω	1 V
Switch 2:	12 - 60 mV	270 Ω	1 V
Position 3:	30 - 150 mV	270 Ω	1 V
x 2 input:			
Rotary 1:	20 - 100 mV	540 Ω	2 V
Switch 2:	24 - 120 mV	540 Ω	2 V
Position 3:	60 - 300 mV	540 Ω	2 V
Max. line voltage		277/480 VAC/DC	
Latching		Interconnection of terminals Z1 & Z2. Latching at set level	

Output Specifications

Output	SPDT relay
Rated insulation voltage	250 VAC (contact/elect.)
Contact ratings (AgCdO)	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
Mechanical life	≥ 40 x 10 ⁶ operations
Electrical life	≥ 10 ⁵ operations (at max load)
Operating frequency	≤ 7200 operations/h
Dielectric strength	
Dielectric voltage	2 kVAC (rms)
Rated impulse withstand volt.	4 kV (1.2/50 μs)

Supply Specifications

Power supply	Overvoltage cat. III (IEC 60664) (IEC 60038)
Rated operational voltage	24 VAC $\pm 15\%$, 45 to 65 Hz
Through term. A1 & A2 024	115 VAC $\pm 15\%$, 45 to 65 Hz
115	230 VAC $\pm 15\%$, 45 to 65 Hz
230	≤ 40 ms
Voltage interruption	≥ 2 kVAC (rms)
Dielectric voltage	4 kV (1.2/50 μ s)
Rated impulse withstand voltage	
Rated operational power	1.5 VA

General Specifications

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

Mode of Operation

EIK measures both AC and DC current (voltage) through an external standard 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 time delay.

The relay releases when the current (voltage) 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 time delay.

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 has expired or until the measured value drops below the fixed hysteresis (5%) again.

Range/Level/Time Setting

Upper knob:

Setting of current (voltage) range on rotary switch. When using Y1 & Y3 the scale is multiplied by 2.

Centre knob:

Current (voltage) 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.

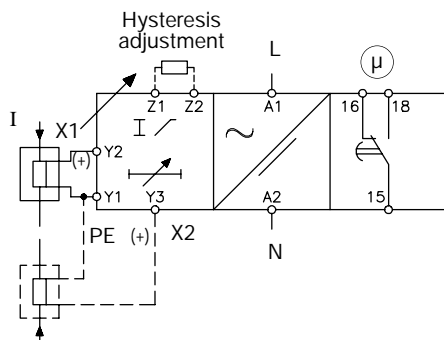
Approx.

10%: 39 k Ω
25%: 12 k Ω
50%: 4.7 k Ω
75%: 2.2 k Ω
Latch: $< 500 \Omega$

Wiring Diagrams

Example 1

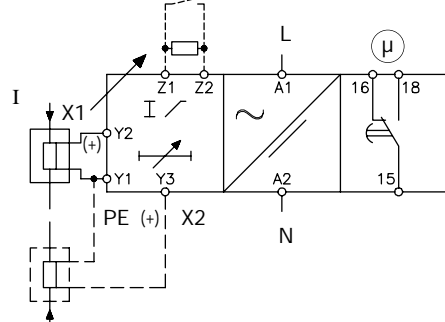
Measuring range x 1, connect Y1 & Y2.



Measuring range x 2, connect Y1 & Y3.

Example 2

Measuring range x 1, connect Y1 & Y2.
Latch/Hysteresis adjustment



Measuring range x 2, connect Y1 & Y3.

Operation Diagrams

