PROTECTA
Electronics Co. Ltd

Independent static overcurrent relay

EI

User's guide

Document ID: 24-13-15848-00

EUROPROT

Budapest, 2006

User's manual version information

Version	Datum	Modification	Compiled by
.00	May 1995	First Hungarian version	Póka
.01	June 2006	English version	Petri

CONTENTS

1 Application, main features

1.1 Application

The EI type static overcurrent relay can be applied in any areas of the electric power system, if a simple overcurrent protection function is required. With application of a core balance CT, the device can be applied as an earth fault indicator.

1.2 Main features

The EI electronic overcurrent protection has a special construction, the main characteristics of which are as follows:

- The construction of the case is designed to be mounted on the rail of the terminal boxes.
- The size of the casing is small: width: 45 mm, height: 120 mm, depth 111 mm (with the rail of the terminals, see Fig.1).
- The overcurrent protection has a setting range between 0.05 A and 14.6 A.
- The low current version of the device needs auxiliary DC power supply.
- The medium and high current versions of the protection can be ordered as a self-powered device.
- In the self-powered version the output of the relay is a contact for AC current.
- In the version with external power supply the output is an NO relay contact. If additional relay contacts are needed, the casing can be extended, according to the ordering.

2 Construction, arrangement, external connections

The EI type static overcurrent protection device is housed in a closed steel case; it is constructed of module system elements, containing electronic circuits. The front view and the side view of the housing are shown on Fig. 1.

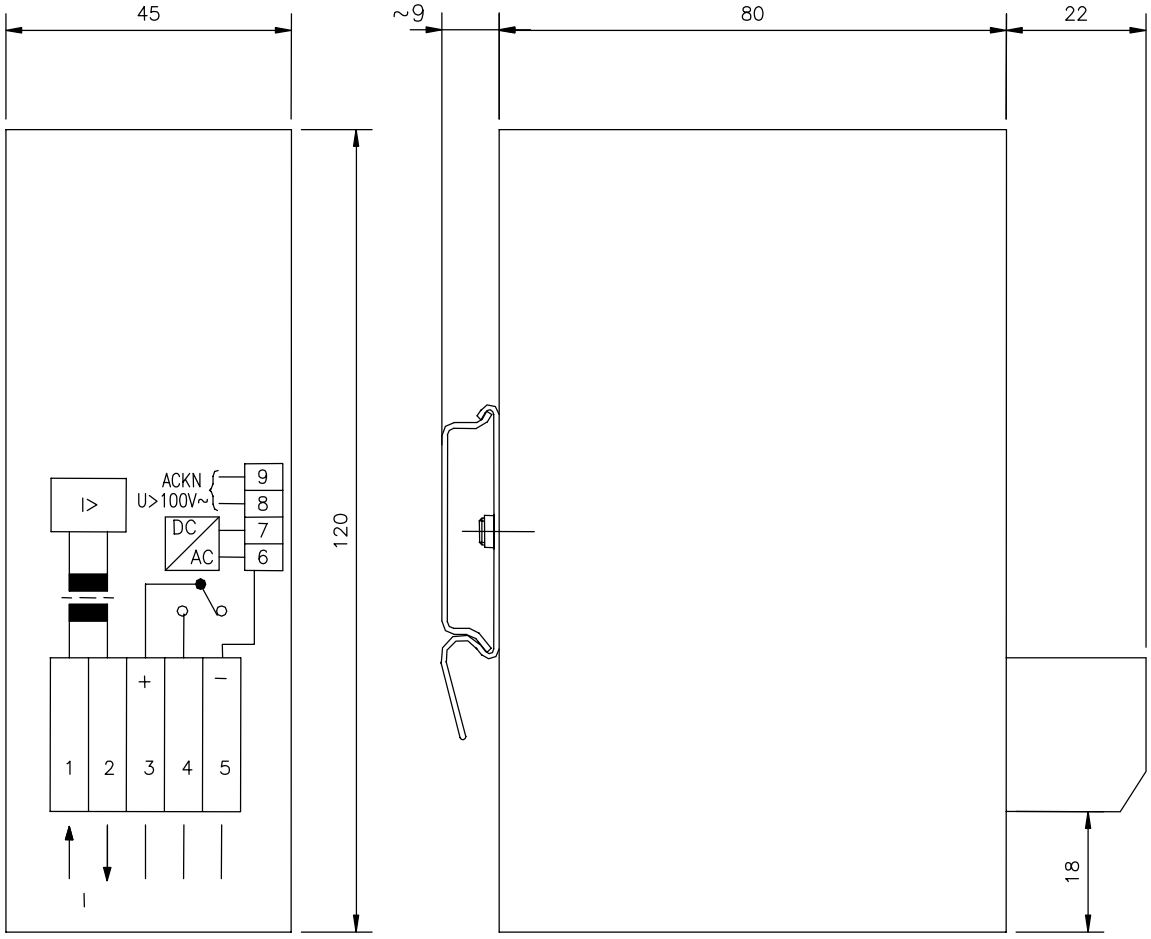

Fig.1 Front view and side view of the EI overcurrent relay

The external connectors of the device are of the type made by Weindmüller, VAGO or ADK12. The current is connected to the external connectors No. 1 and No.2 of the device. The external power supply is connected to No.3 (+) and No.5 (-). If the relay operates, then the positive voltage connected to the connector No. 3 is switched to connector No.4. In the self-powered version the energy, needed for the operation of the electronic circuits, is transformed from the input current. In this case the otput is a change-over contact, the NO output location is identical with that of the previous version, but the additional NC contact is connected to the connector No.5.

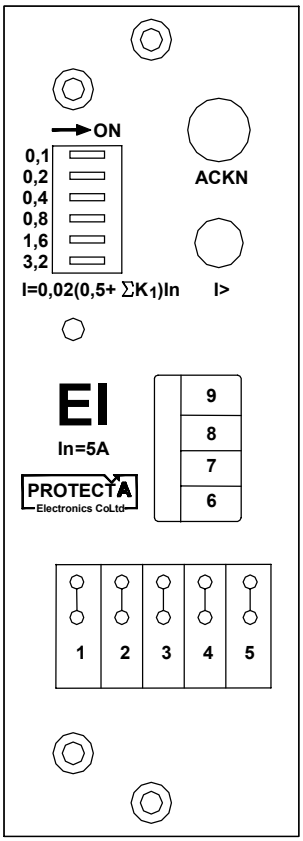

Fig.2 The front panel of the EI overcurrent relay

The green LED of the power supply module is located in the middele of the left side on the front panel, which signals the normal operation of the device. This state means charged energy storage of the self-powered supply module.

The micro-switch set for the setting is located on the top left corner of the front panel. On the right side a red LED is indicating the trip command. The white push-button serves acknowledgement. In the self-powered version the latching of the red LED is solved by a small battery, which provides sufficient energy for about 60 hours continuous signalling.

The six components of the micro-switch set are arranged vertically on the top left corner of the front panel. The "ON" position of the micro-swithes is on the right side.

The "K1" values of the switches is indicated on the front panel, in the sequence from top to bottom:

Ki = 0,1 0,2 0.4 0.8 1.6 3.2

The setting formula is as follows:

$$Iset = C2^* (C1 + \Sigma Ki)^* In$$

$$C1 = 0.5 \text{ or } 1$$

$$C2 = 0{,}02 \ldots 2$$

At ordering . the following information must be defined:

- the "In" rated current of the relay,
- the required setting range,
- the need of additional relay contacts,
- and for the medium and high current version the need of auxiliary power supply,
- the need of extended setting range.

3 Technical specification

Rated current, In	1 A or 5 A (or according to special request)
Rated frequency	50 or 60 Hz
Overload capacity Current circuits, thermal 1s Continuous Dynamic current limit	 50 x In 2 x In 100 x In
Overcurrent relay drop-off ratio	<0,85 (or according to special request)
Overcurrent relay accuracy	±5 %
Number of output contacts In self-powered version With auxiliary power supply Extension according to ordering up to (NO or NC as defined)	 1 change-over 1 NO 4
Output relay contacts (Schrack print relays) Rated making voltage Continuous load current Rated making current Breaking capacity, at 220 V DC At conductive load L/R= 40 ms load	 250 V 8 A 16 A 0.25 A 0,14 A
Rated voltage Tolerance range	110 … 220 V 88 … 320 V
Rated operating temperature range	0°C … +50°C
Insulation test (IEC 255)	2 kV, 50 Hz 5 kV 1,2/50 µs
Disturbance test (IEC255)	2,5 kV, 1 MHz

4 Core balance CT

Type:	AFV 150
Rated secondary current:	1 A
Rated primary current:	150 A
Rated power:	5 VA
Accuracy class:	10 P
Accuracy limit factor:	10
Continuous load:	2xIn
Turns ratio a_i:	150
Inside diameter:	170 mm
Outside diameter:	240 mm
Mass:	5 kg