

RI-ELR60 Series

Earth Leakage Relay with Adjustable Trip Level



- 2 Module width DIN rail mounted
- True RMS Earth Leakage monitoring
- Type A leakage detection
- LED bargraph for indication of leakage current
- Test and reset function
- For use with RI-CBCT core balanced transformers
- Single phase (2 wire) or 3 phase (3 or 4 wire)
- Core balanced transformer error (open and short circuit)
- SPDT relay output 5A
- Selectable trip time delay
- Selectable trip level
- Failsafe output relay (required for Annex M)

Product Description

The RI-ELR60 is an Earth Leakage relay with adjustable trip level and trip delay. The trip level may be selected between 30mA and 30A, and the trip delay between 0 and 9 seconds.

Note: When the trip level is set to 30mA, trip time is instantaneous.

Designed to detect low level leakage currents and to operate a contact if the leakage current exceeds the selected trip level. All phase conductors of the circuit being monitored are passed through the aperture of an RI-CBCT core balance transformer. The transformer output is connected to the relay which monitors the proportional leakage current.

An LED chain on the front of the relay provides visual indication of leakage current, along with power status and trip indication.

A single change over contact is provided for alarm indication.

Parameters

Adjustable trip level : 30mA...30A

Adjustable time delay : 0...30 seconds

Test/reset facility:-

1. Front panel push button
2. Remote through normally open push button contact
3. By removal and re-applying auxiliary supply

Note: The relay will remain in trip state until reset as above

Standard Type A to IEC/EN60947-2 Annex M

Response time:-

- <30mS if leakage current $\geq 5 \times$ set point
- <50mS if leakage current $\geq 1 \times$ set point

Display

Display type	LED and rotary potentiometer
LED size	3mm
Displayed parameters	Leakage current Trip indication Set trip level (rotary dial with scale) Trip time delay (rotary dial with scale) CBCT error (leakage current LEDs will flash)
Measured resolution	LEDs : 25%, 50%, 75%, TRIP

Programming

Programmable parameters	Set trip level ($I_{\Delta N}$) Trip time delay (ignored for 30mA selection)
Programming access	Via front rotary potentiometers
Adjustment resolution	Trip delay : 0, 0.15, 0.25, 0.5, 1, 2, 3, 5, 7.5, 9s Trip level : 0.03, 0.1, 0.3, 0.5, 1, 3, 5, 10, 20, 30A
Memory retention	Non volatile memory / rotary potentiometers

Input

Connection (1ph, 3ph etc., configurable)	Single phase , Three phase four wire, Three phase three wire
Current transformer connection	Yes - 1000:1
Monitored leakage current	4mA...30A
Trip level	Pre-trip : 25...75% display only Trip : 30mA...30A (user selectable)
Accuracy	$\pm 5\%$ of set value
Hysteresis	15% (reset is disabled until $< 85\%$ leakage)
Trip time delay	30mA (setpoint) = Instantaneous. >30mA (setpoint) 0...9seconds (user selectable)
Reset	Front push-button or remote connection
Test	Front push-button or remote connection
Operating characteristic	Type A (IEC/EN60947-2)
Impulse voltage withstand	4kV 1.2/50us 0.5J
AC voltage withstand	2.5kV 50Hz 1min (Input, Output, Auxiliary Supply) / 4kV (all circuits to Earth)
Frequency	47...63Hz

Auxiliary Supply

Voltage range	AC : 230V, 110V $\pm 20\%$ DC : 24Vdc $\pm 10\%$
Operating frequency	47...63Hz
Power consumption	$< 3VA$

Outputs

Number of relay outputs	One SPDT changeover contact
Relay output function	Position: 15-18 (Healthy, powered) 15-16 (Unpowered, Tripped)
Relay contact rating	AC 250V/5A (AC1), 250V/3A (AC3) DC 25V/5A (DC1)
Contact life expectancy	>100,000 operations

Insulation

Installation category	III
Pollution degree	2
Insulation voltage rating	300V (L-N)

Environmental Conditions

Reference temperature	23°C ± 2°C
Specified temperature operating range	-20...55°C
Storage temperature	-20...75°C
Relative humidity	0...95%, non condensing
Installation type	Indoors

Mechanical

Housing	
Housing	2 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Device housing (by means of a tamper evident seal) and front flap by seals
Housing material	Self-extinguishing polycarbonate (UL94 V-0)
Protection degree (IEC/EN60529)	IP20 (terminals), IP54 (front of housing)
Weight	<217g
Termination	
Current input terminal type	Rising clamp
Max. wire size	4mm ²
Auxiliary supply terminal type	Rising clamp
Max. wire size	4mm ²
Relay output terminal type	Rising clamp
Max. wire size	4mm ²
Screw tightening torque	0.5Nm

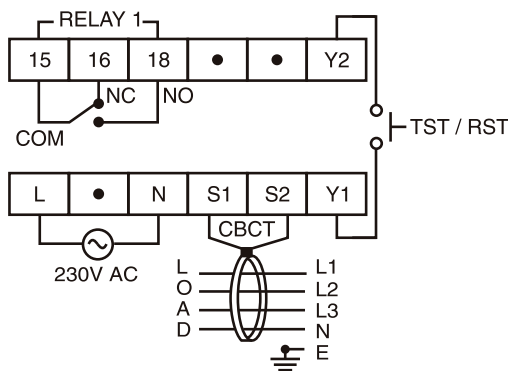
Conformity

Electromagnetic compatibility	IEC/EN61326-1, IEC/EN55011 Class A, IEC/EN61000-4-2, -3, -4, -5, -6, -8, -11
Accuracy and functionality	IEC/EN60947-2 Annex M, IEC/EN60755, IEC/EN62020
Safety	IEC/EN61010

LED Indication

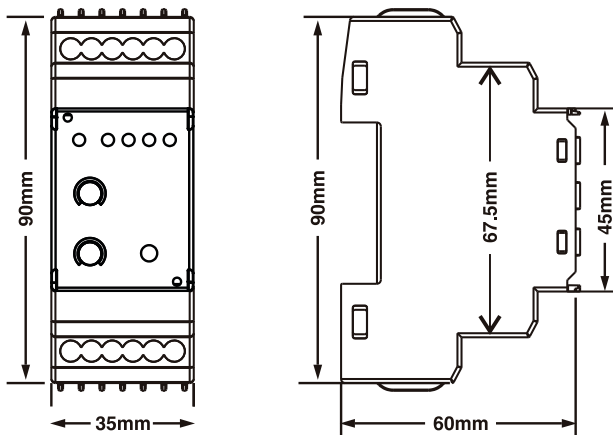
Conditions / LED	ON (Yellow)	25% (Green)	50% (Green)	75% (Green)	T (Red)
Power On	ON	OFF	OFF	OFF	OFF
Tripped Indication	ON	ON	ON	ON	ON
CBCT Error / Absent / Short	ON	<i>Blink</i>	<i>Blink</i>	<i>Blink</i>	<i>Blink</i>
25% Leakage Current	ON	ON	OFF	OFF	OFF
50% Leakage Current	ON	ON	ON	OFF	OFF
75% Leakage Current	ON	ON	ON	ON	OFF

Terminal Connections



Note: Unpowered, Tripped status shown.

Dimensions



Model Selection Table

Supply Voltage	Model
230Vac (±20%)	RI-ELR60-230V
110Vac (±20%)	RI-ELR60-110V
24Vdc (±20%)	RI-ELR60-24VDC

CBCT Accessories

Inner Diameter	Turns Ratio	Nominal Current	Model
35mm	1000:1	100A	RI-CBCT35
70mm	1000:1	200A	RI-CBCT70
120mm	1000:1	600A	RI-CBCT120
210mm	1000:1	1600A	RI-CBCT210
310mm	1000:1	2000A	RI-CBCT310