FPI.10 PHASE + EARTH FAULT INDICATOR

PHASE AND EARTH FAULT DETECTION AND SIGNALLING FOR MEDIUM VOLTAGE CABLES

GENERAL DESCRIPTION

FPI Phase and Earth Fault Indicator device for earth-fault and phase-fault detection and signalling on medium voltage networks:

- Designed to be installed on MV cables up to 33kV (underground, switchgears, cells, etc.).
- Local and remote fault signalling by means of flashing LEDs and SCADA relay contact.
- Local visual indication by 4 LEDs: 1 LED to indicate Earth Fault, 3 LEDs (one for each phase) to indicate Phase Fault.
- Up to four levels of earth trip current, selectable by internal jumpers (current values can be customer defined).
- Up to four levels of phase trip current, selectable by internal jumpers (current values can be customer defined).
- Four reset modes: time-delay, 230Vac mains voltage, pushbutton reset and remote reset.
- Up to four time-delay values for automatic time reset, selectable by internal jumpers (time-delay values can be customer defined).
- Up to four fault delay values for transient cancellation, selectable by internal jumpers (delay values can be customer defined).
- Correct operation (test) can be checked pressing the pushbutton on the front.
- Self-powered by the internal lithium battery with 10 years lifetime and over 1500 flashing hours.
- Battery can be easily replaced with lithium 3,6V - AA type (no soldering or tools required).
- LED for low-battery indication (less than 20% energy left).
- Electronic module enclosed in IP65 box linked to the external current transformers.
- 3 split-type resin current transformers ring-type (1 CBCT for earth fault + 2 phase CTs for phase fault), composed by two halves that can be installed without MV cables disconnection and held together by metallic screw tie.
- Option: screw terminal output to drive the external flashing indicator (option).

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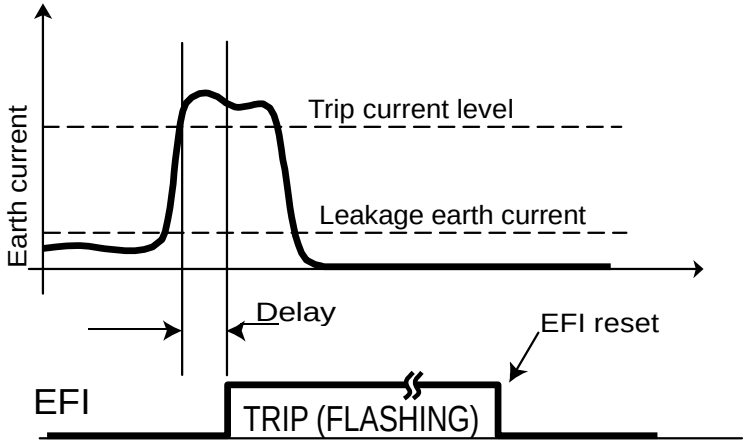
OPERATION

The device continuously checks the earth and phase currents. When the selected trip level is exceeded for more than the selected delay time, the device trips: the LED starts flashing and the SCADA relay gives a pulse signalling, closing the contact for 500ms. If a second fault occurs when the FPI is already tripped, the SCADA contact will close again for 500ms to indicate that a second fault has occurred. The minimum fault duration (delay) time is designed to discriminate real faults from simple line transients.



Example of Earth Fault trip and signalling

DEVICE TEST: simply press the pushbutton when the device is not flashing. The FPI will start flashing and the SCADA relay will give a pulse signalling.

DEVICE RESET: After the device has tripped, it can be reset in the following ways:

- Pressing the pushbutton on the front.
- TIME RESET: the FPI will reset automatically when the selected preset time has elapsed.
- REMOTE RESET: closing the contact or remote pushbutton connected to the screw terminals.
- 230Vac MAINS RESET: the FPI will reset when the mains 230Vac is back after the fault restoration. Simply connect this input to mains 230Vac voltage.

Note: in order to use this reset feature, the 230Vac voltage must disappear when the fault occurs, i.e. it must be cut off by the MV circuit breaker that breaks the faulty line, otherwise the EFI will reset immediately after the fault.

OPTIONAL ACCESSORIES

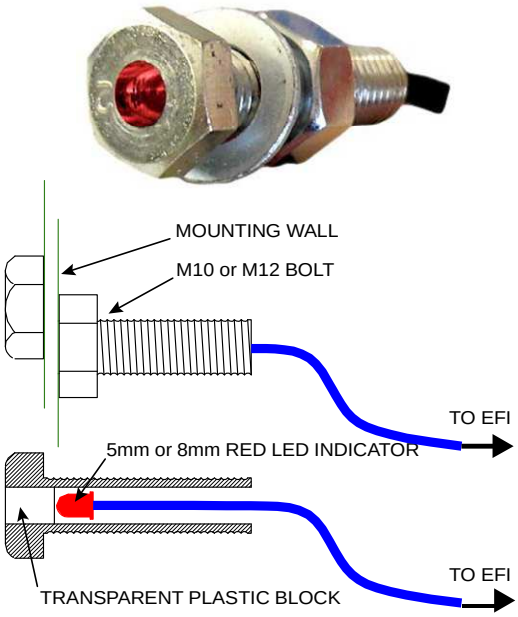
LXI SERIES

LAMP EXTERNAL INDICATORS

LXI.01

LXI.02

BXI BOLT EXTERNAL INDICATOR



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TECHNICAL SPECIFICATIONS

Earth fault trip Current	Jumper selectable: 25 A, 50 A, 80 A, 160 A (±20%). Factory default 25A. (current values can be customer defined)
Phase fault trip Current	Jumper selectable: 250 A, 400 A, 600 A, 1000 A (±20%). Factory default 250A. (current values can be customer defined)
Min. Fault Duration (Delay)	Jumper selectable: 40ms, 60ms, 80ms, 160ms (±20ms). Factory default 40ms. (delay time values can be customer defined)
CT Current Transformers	Resin, split in 2 halves tied by metallic screw tie. CBCT (earth fault) with internal standard diameter 110mm (**CT.01**) - option 150mm (**CT.03**). Phase CTs with internal diameter 50mm.
Visual Fault Signalling	Flashing red LEDs, ultra bright flash at 1 flash per second. Visibility in excess of 5m. Local indication by 4 LEDs: 1 LED to indicate Earth Fault, 3 LEDs (one for each phase) to indicate Phase Fault.
Remote Fault Signalling (SCADA contact)	1 SCADA changeover relay contact - Signalling time (pulse): 500ms. Contact ratings: 1A max, 230Vac, 30W max. (option permanent contact)
Power Supply	Self-powered by internal lithium battery 3,6V - AA type. 10 years lifetime with over 1500 hours flashing time. Battery can be easily replaced with lithium 3,6V - AA standard type (no soldering or tools required). LED for low-battery indication (less than 20% energy left).
Reset modes (All features present)	• Automatic after time delay, jumper selectable: 30 min, 1hr, 2hrs or 4hrs (± 5min). Factory default: 2hrs. (time values can be customer defined) • When the 230 Vac mains voltage is restored (link cable not provided). • By the pushbutton placed on the cover. • By remote NO reset contact (SCADA) or remote pushbutton.
Device Test	By the pushbutton placed on the cover.
Environment	Device Enclosure IP65 Polycarbonate - Ambient temperature -20 to +55 deg C
OPTION: external indicator output	Screw terminal outputs to drive the external flashing indicator.

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We reserve the right to change the design and specification of any item shown herein, therefore the contents shall not form part of any contract or constitute a warranty.

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