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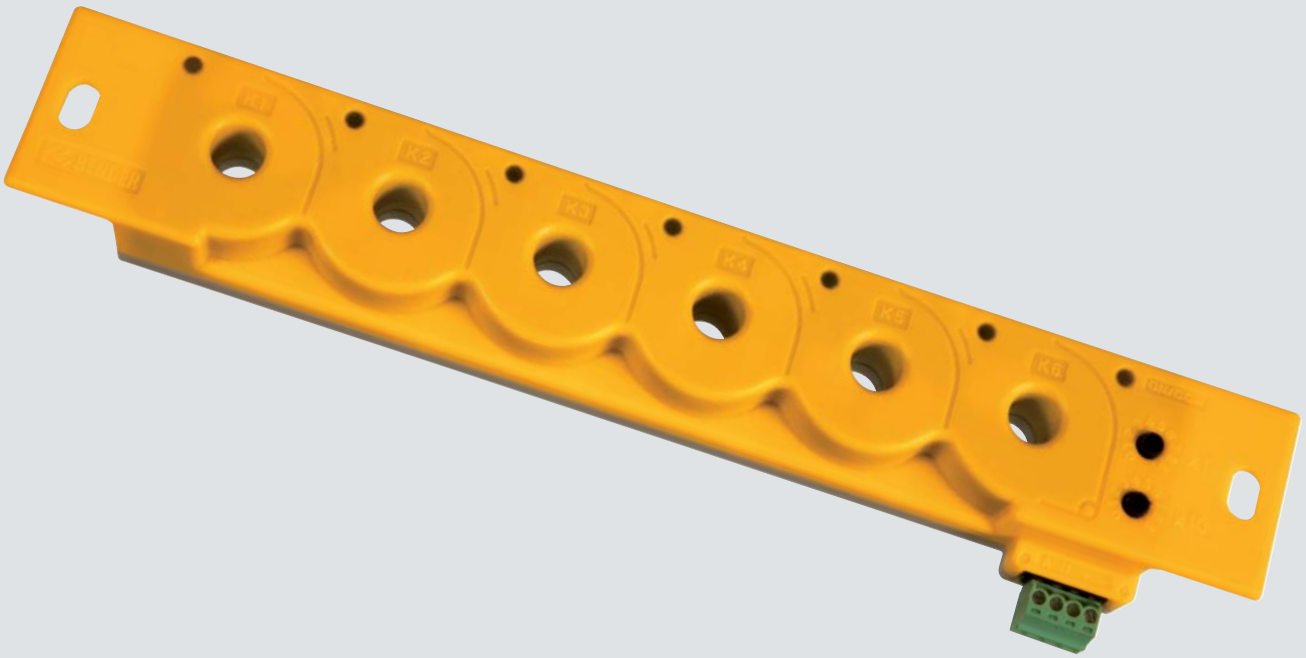
# Insulation fault locator EDS151

Insulation fault locator with integrated measuring current transformers for EDS systems



TDB108025en / 08.2011

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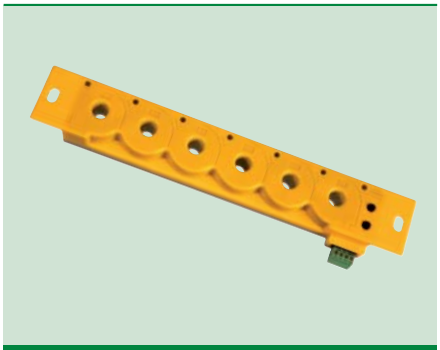


EDS151

## Device features

- Insulation fault location in AC, AC/DC and DC-IT systems
- 6 measuring channels with measuring current transformer per EDS151
- Up to 528 measuring channels can be combined by the BMS bus in the IT system being monitored: 88 x 6 measuring channels
- Response sensitivity 0.5 mA
- A response time of up to 8 s in the AC system according to IEC 61557-9
- RS-485 interface with BMS protocol
- BMS address range 3…90
- Cyclical self test

## Approvals

AE25

## Product description

The insulation fault locator EDS151 in conjunction with the A-ISOMETER® iso-MED427P, the automatic transfer switching device ATICS or the locating current injector PGH474, are designed for insulation fault location in unearthed power supplies (IT systems). The locating current pulse generated by the iso-MED427P, ATICS or PGH are detected using the integrated measuring current transformers and evaluated by the insulation fault locators. The integration of six measuring current transformers in an EDS151 permits all current-carrying conductors of an outgoing line to be routed through. The response time for an alarm message inclusively indication on the respective display device is max. 8 s (e.g. MK2430).

A total of 88 EDS151 devices can be connected via an RS-485 interface (BMS protocol). Hence, up to 528 circuits can be monitored. Activities on the BMS bus are indicated by an alarm LED.

## Application

- Insulation fault location in AC, AC / DC and DC IT systems

## Function

Insulation fault location is started by the A-ISOMETER® iso-MED427P, the ATICS® transfer switching device or the locating current injector PGH474. Once started, the insulation fault locator EDS151 starts scanning all measuring channels 1...6. When the response value of 0.5 mA is exceeded in one of the channels, the associated alarm LED lights up. The current alarm message and the respective address and channel number will be output via the BMS interface. The faulty circuit will be shown on either an alarm and test combination or a BMS master featuring a display.

If there is more than one EDS151, all devices will be started simultaneously. An error outputted by channel 1, for example, can be clearly assigned to the respective EDS151 by its BMS address. An automatic self test monitoring the function of all measuring current transformers is carried out on an hourly basis. When a device error occurs, all alarm LEDs K1…K6 flash.

The alarm status remains activated until the EDS151 no longer detects an insulation fault or the insulation monitoring device signals via the BMS bus that the insulation fault is eliminated. If residual currents > 1 A occur on the measuring current trans formers, insulation fault location on the respective channel will be terminated and the alarm message "residual current fault > 1 A" will be outputted via the BMS bus (RCM function). The RCM function is active only during the insulation fault location process.

## Standards

EDS151 complies with the requirements of IEC 61557-9.

## Ordering details

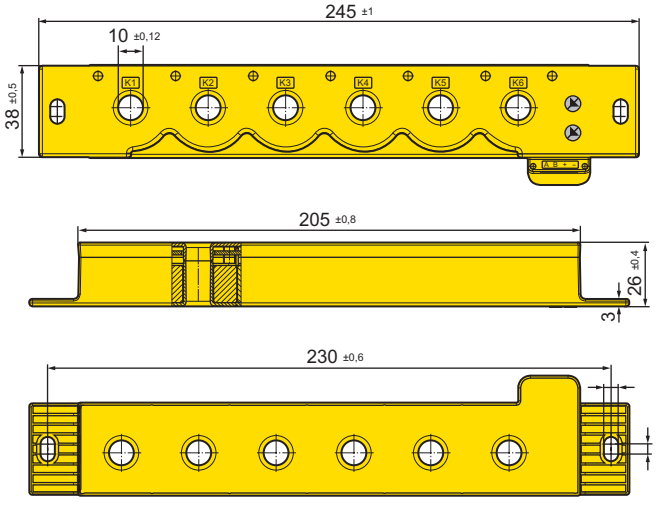
| Type | Supply voltage | Output voltage | Art. No. | Note |
|---|---|---|---|---|
| EDS151 | AC 17…24 V, 50…60Hz* DC 14…28 V* | -- | B 9108 0101 | -- |
| AN410 | AC 90…264 V, 47…63Hz* DC 120…370 V* | DC 24 V, 420 mA | B 924 209 | Supplies up to six EDS151 |
| AN430 | AC 85…264 V, 47…63Hz* | DC 24 V, 1300 mA | B 924 208 | Supplies up to 20 EDS151 |
| AN450 | AC 230 V, 50…60 Hz | AC 20 V, 500 mA | B 924 201 | Supplies up to six EDS151 |
| AN450-133 | AC 127 V, 50…60 Hz | AC 20 V, 500 mA | B 924 203 | Supplies up to six EDS151 |

* Absolute values of the voltage range

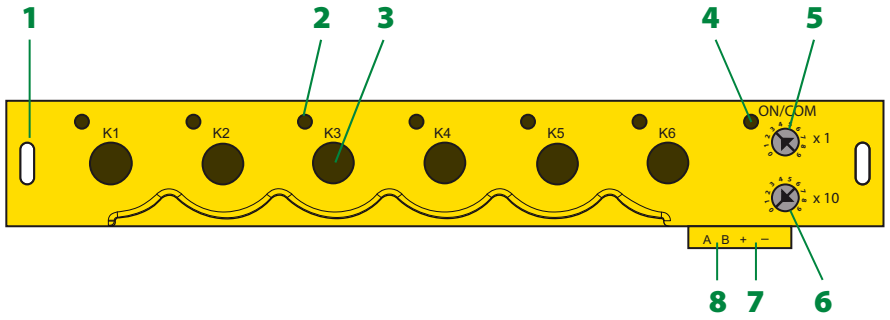
When using power supply units for the supply of EDS devices, only use power supply units providing protective separation (reinforced insulation) between the primary and secondary voltage, as stipulated in the IEC 60364-7-710 standard. All power supply units listed in the table above comply with the requirements of this standard!

## Dimension diagram

Dimensions in mm

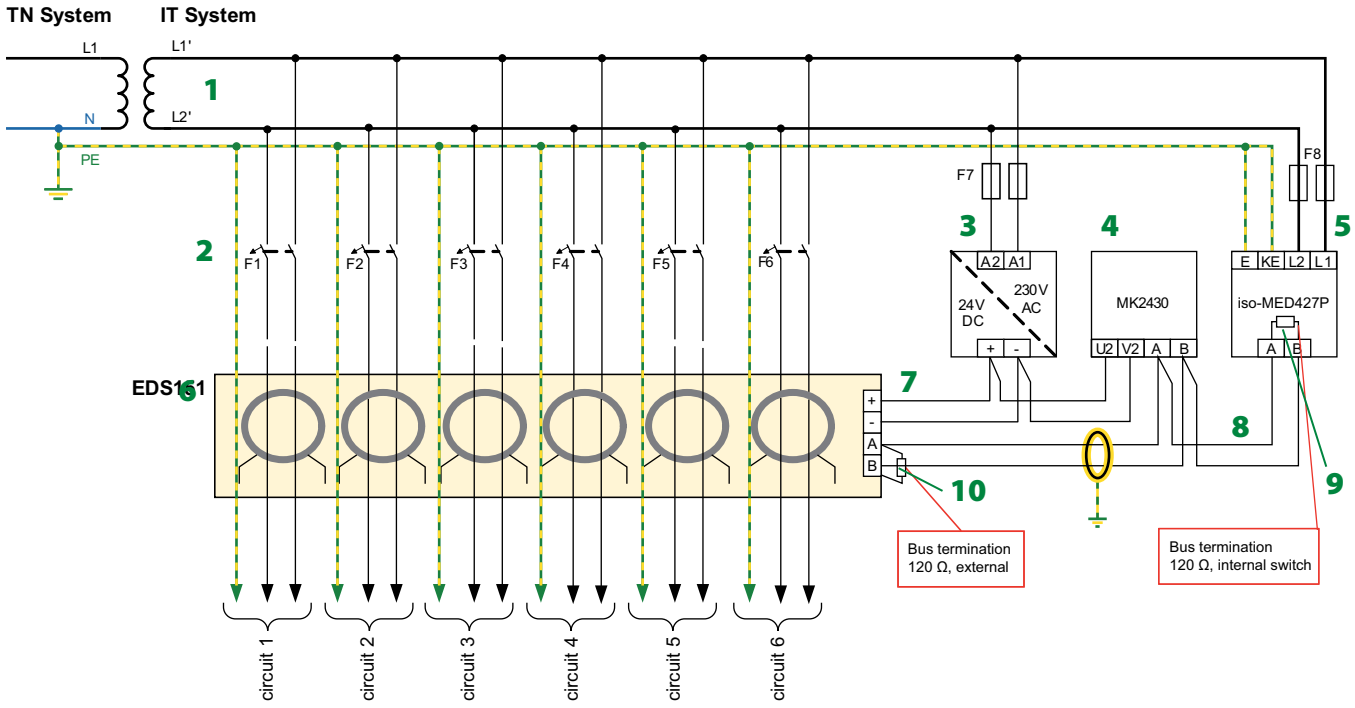


## Display and operating elements




1 - Opening for screw mounting
2 - Alarm LEDs for the measuring channels K1…K6
3 - CT openings for passing through the electrical wires for the measuring channels K1…K6
4 - ON/COM LED:
Power On LED and bus activity EDS151
5 - Set the ones position of the BMS address
6 - Set the tens position of the BMS address
7 - Connection to the power supply
8 - Connection for the RS-485, BMS bus

## Wiring diagram




1 - Transformer for the IT system to be monitored
2 - Circuit-breakers for the circuits 1 to 6
3 - AN430 resp. AN410 for DC 24 V supply voltage
4 - Alarm indicator and test combination MK2430 for indication of alarm messages from the EDS151 (BMS master)
5 - Insulation monitoring device iso-MED427P with locating current injector for insulation fault location systems
6 - Insulation fault locator EDS151 with integrated measuring current transformers
7 - Supply voltage $U_S$ DC 24 V
8 - Serial interface BMS
9 - Terminating resistor BMS bus (120 Ω, internally connected)
10 - Terminating resistor BMS bus

## Technical data

### Insulation coordination acc. to IEC 60664-1 / IEC 60664-3

| | |
|---|---|
| Rated insulation voltage | AC 250 V |
| Rated impulse voltage/pollution degree | 6 kV / III |

### Voltage ranges

| | |
|---|---|
| **IT system being monitored:** | |
| Nominal system voltage $U_n$ | AC 20…265 V / DC 20…308 V |
| Nominal frequency $f_n$ | 42…460 Hz |
| **Supply voltage:** | |
| Supply voltage $U_S$ | AC 17…24 V, DC 14…28 V |
| Frequency range of the supply voltage | 50…60 Hz |
| Power consumption | ≤ 1.5 VA |

### Measuring circuit

| | |
|---|---|
| Number of measuring channels (per device/system) | 6 / 528 |
| **EDS function:** | |
| Response value | 0.5 mA |
| Relative uncertainty | ± 30 % |
| Rated frequency | 42…460 Hz |
| Measuring range EDS function | 0.5…2.5 mA |
| Response time in the AC system according to IEC 61557-9 | ≤ 8 s |
| Scanning time for all channels | approx. 72 s |
| **RCM function:** | |
| Response value | 1 A |
| Relative uncertainty | ± 30 % |
| Frequency range | 42…68 Hz |

### Displays

| | |
|---|---|
| **LEDs:** | |
| ON / COM, green | operation indicator / bus activity |
| ALARM K1…K6, yellow | EDS and RCM function |

### Interface

| | |
|---|---|
| Interface / protocol | RS-485 / BMS |
| Connection | terminals A/B |
| Shielded cable (shield connected to PE on one side | two-core, e.g.: J-Y(St)Y 2x0.8 |
| Cable length | ≤1200 m |
| Terminating resistor | 120 Ω (0.25 W) |
| Device address, BMS bus | 3…90 ( 3)* |

### Environment / EMC

| | |
|---|---|
| EMC | IEC 61326-2-4 |
| Operating temperature | -25 °C…+55 °C |
| Classification of climatic conditions acc. to IEC 60721: | |
| Stationary use (IEC 60721-3-3) | 3K5 (except condensation and formation of ice) |
| Transport (IEC 60721-3-2) | 2K3 (except condensation and formation of ice) |
| Long-term storage (IEC 60721-3-1) | 1K4 (except condensation and formation of ice) |
| Classification of mechanical conditions acc. to IEC 60721: | |
| Stationary use (IEC 60721-3-3) | 3M4 |
| Transport (IEC 60721-3-2) | 2M2 |
| Storage (IEC 60721-3-1) | 1M3 |

### Connection

| | |
|---|---|
| Connection type | pluggable push-wire terminals |
| Connection properties: | |
| rigid, flexible / conductor sizes AWG | 0.2…1.5 mm² / AWG 24…16 |
| Multi-conductor connection (2 conductors with the same cross section): | |
| rigid | 0.2…1.5 mm² |
| flexible | 0.2…1.5 mm² |
| flexible with ferrule without plastic sleeve | 0.25…1.5 mm² |
| flexible with TWIN ferrule with plastic sleeve | 0.25…0.75 mm² |
| Stripping length | 10 mm |

### General data

| | |
|---|---|
| Operating mode | continuous operation |
| Position of normal use | any |
| Enclosure material | polycarbonate |
| Flammability class | UL94 V-0 |
| Screw mounting | 2 x M6 |
| Tightening torque | 1.5 Nm |
| Software version | D353 V1.0x |
| Weight | approx. 340 g |

( )* = factory setting



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The Power in Electrical Safety©

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