ISOSCAN® EDS150/151

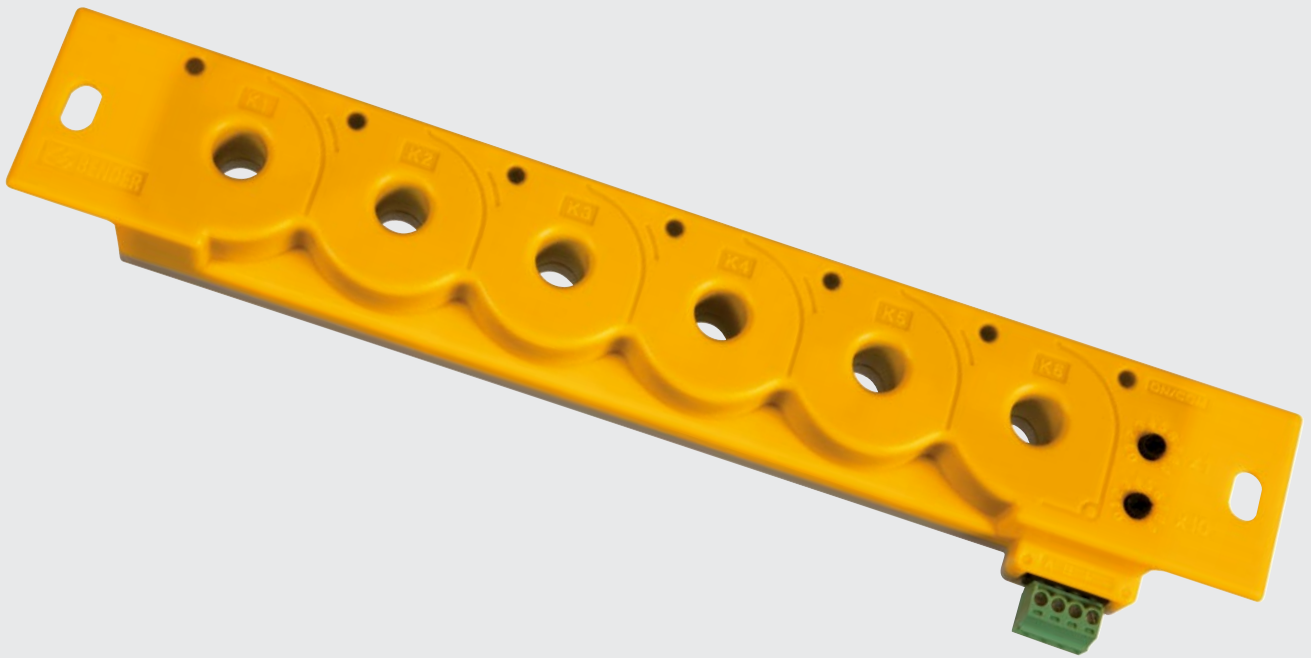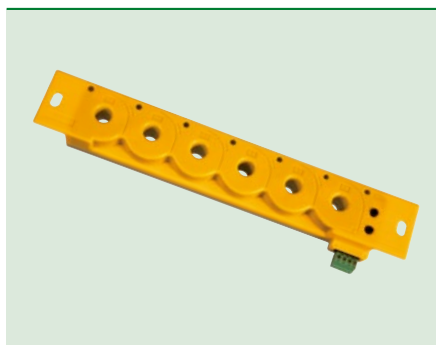Insulation fault locator with integrated measuring current transformers for EDS systems

ISOSCAN® EDS150/151

Insulation fault locator with integrated measuring current transformers for EDS systems

ISOSCAN® EDS151

Device features

- Insulation fault location in AC, AC/DC and DC IT systems
- 6 measuring channels with measuring current transformer per EDS150/151
- 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 EDS150: 5 mA, EDS151: 0.5 mA
- A response time of up to 8 s in the AC system acc. to IEC 61557-9
- RS-485 interface with BMS protocol
- BMS address range 3…90
- Cyclical self test

Approvals

CE EAC c(UL)us LISTED

Product description

The insulation fault locator EDS150/151 in conjunction with the ISOMETER® IRDH575 or the locating current injector PGH, are designed for insulation fault location in unearthed power supplies (IT systems). The locating current pulse generated by the ISOMETER® IRDH575 or the locating current injector 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 EDS150/151 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/MK800).

A total of 88 EDS150/151 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
- DC main circuits in industrial plants, power stations and ships
- IT systems for medical locations and control circuits (EDS151)

Function

Insulation fault location is started by the ISOMETER® IRDH575 or the locating current injector PGH. Once started, the insulation fault locator EDS150/151 starts scanning all measuring channels 1…6. When the response value of 0.5/5 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 EDS150/151, all devices will be started simultaneously. An error outputted by channel 1, for example, can be clearly assigned to the respective EDS150/151 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 EDS150/151 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 >10 A at EDS150 resp. > 1 A at EDS151 occur on the measuring current trans formers, insulation fault location on the respective channel will be terminated and the alarm message residual current fault > 1/10 A will be outputted via the BMS bus (RCM function). The RCM function is active only during the insulation fault location process.

Standards

The ISOSCAN® EDS150/151 series complies with the requirements of the device standards: IEC 61557-9.

Displays and controls
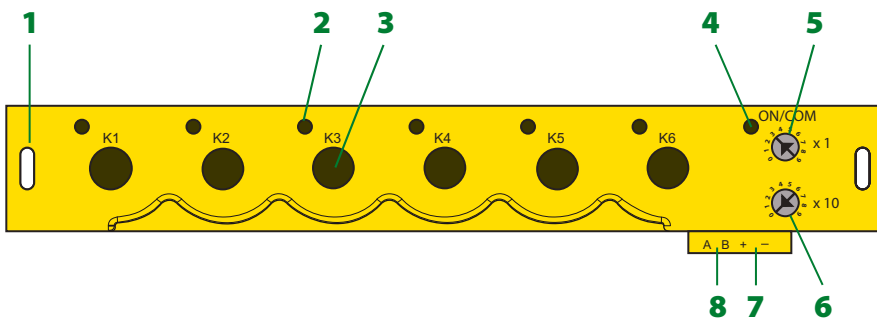
1 - Opening for screw mounting

2 - Alarm LEDs measuring channels "K1…K6"

3 - Cable lead-through of the measuring current transformers for the measuring channels K1…K6

4 - "ON/COM" LED: Power On LED and bus activity

5 - Set the ones position of the BMS address

6 - Set the tens position of the BMS address

7 - Connection to the supply voltage

8 - Connection RS-485, BMS bus

Wiring diagram
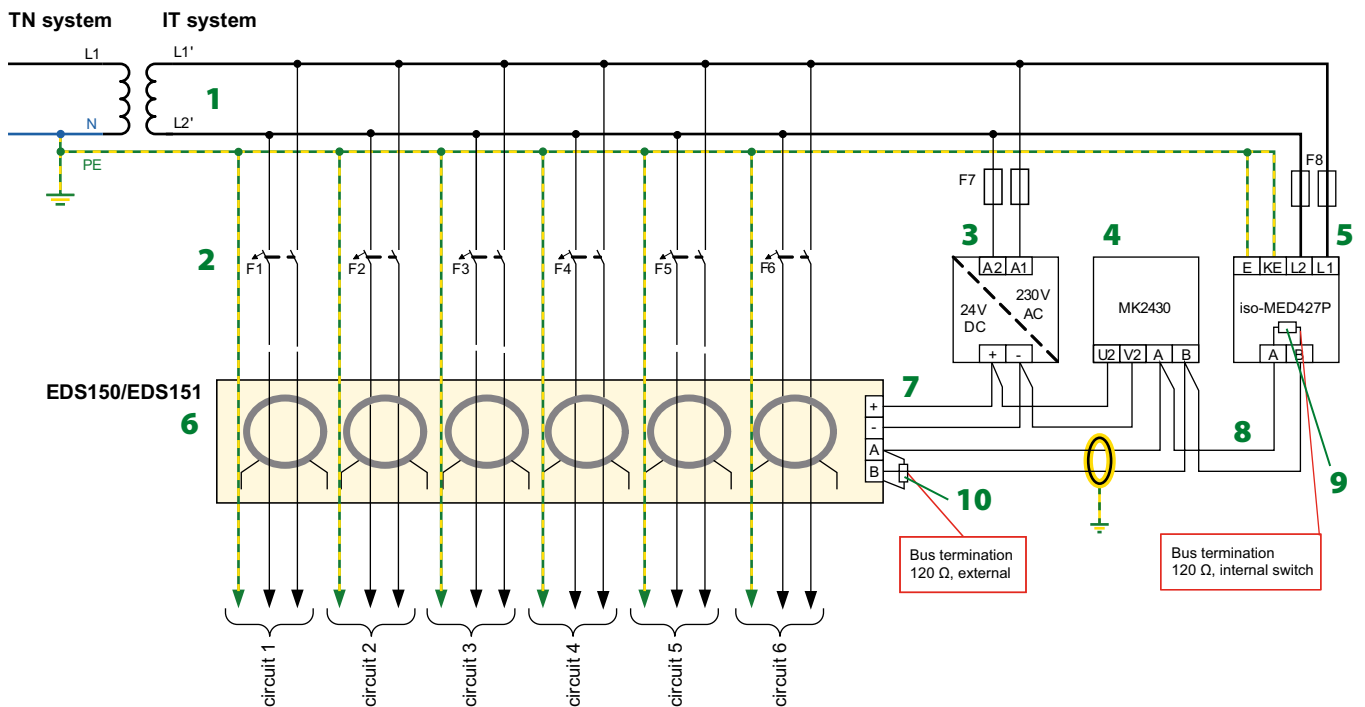
1 - Transformer for the IT system to be monitored

2 - Circuit-breakers for the circuits

3 - AN410 for DC 24 V supply voltage

4 - Alarm indicator and test combination MK2430/MK800 for indication of alarm messages from the EDS150/151 (BMS master)

5 - IRDH575 insulation monitoring devices with locating current injector for insulation fault location systems

6 - Insulation fault locator EDS150/151 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/3

Voltage ranges

IT system being monitored:

Nominal system voltage U_n	see IRDH575, PGH (EDS150)
	AC 20…276 V, DC 20…308 V (EDS151)
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 AC	≤ 3 VA
Power consumption DC	≤ 1.5 VA

Measuring circuit

Number of measuring channels (per device/system)	6/528

EDS function:

Response value	EDS150: 5 mA
	EDS151: 0.5 mA
Relative uncertainty	± 30 %
Rated frequency	42…460 Hz
Measuring range EDS function	EDS150: 5…25 mA,
	EDS151: 0.5…2.5 mA
Response time in the AC system acc. to IEC 61557-9	≤ 8 s

RCM function:

Response value	EDS150: 10 A
	EDS151: 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
Cable (twisted pair, one end of shield connected to PE)	two-core, recommended: J-Y(St)Y min. 2 x 0.8
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…+55 ℃

For UL application:

Maximum ambient temperature 55 ℃

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 terminal

For UL application:

Only use 60/75℃ copper conductors!

Connection rigid /flexible/conductor sizes	0.2…1.5 mm² (AWG 24…16)

Multi-conductor connection (2 conductors of 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 ferrule with plastic sleeve	0.25…0.75 mm²
Stripping length	10 mm

Other

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	≤ 340 g

( )* = factory setting

Ordering information

Measuring range	Response value		Supply voltage [1] U_S		Type	Art. No.
	EDS function	RCM function	AC	DC		
5…25 mA	5 mA	10 A	17…24 V, 50…60 Hz	14…28 V	EDS150	B 9108 0103
0.5…2.5 mA	0.5 mA	1 A			EDS151	B 9108 0101

[1] Absolut values

Accessories

Type designation	Art. No.
Mounting clip for enclosure XM150	B 9108 0110

Suitable system components and accessories

Type designation	Voltage supply	Output voltage	Explanation	Type	Art. No.
Power supply unit	AC 90…264 V, 47…63 Hz/DC 120…370 V	DC 24 V, 420 mA	For the supply of max. 6 EDS15…	AN410	B 924 209
	AC 230 V, 50…60 Hz	AC 20 V, 500 mA	For the supply of max. 6 EDS15…	AN450	B 924 201
	AC 127 V, 50…60 Hz	AC 20 V, 500 mA	For the supply of max. 6 EDS15…	AN450-133	B 924 203

⚠ According to IEC 60364-7-710 only power supply units providing "Safe separation" (reinforced insulation) may be used for the supply voltage between the primary and secondary side. All power supply units listed above comply with this requirement!

Dimension diagram

Dimensions in mm