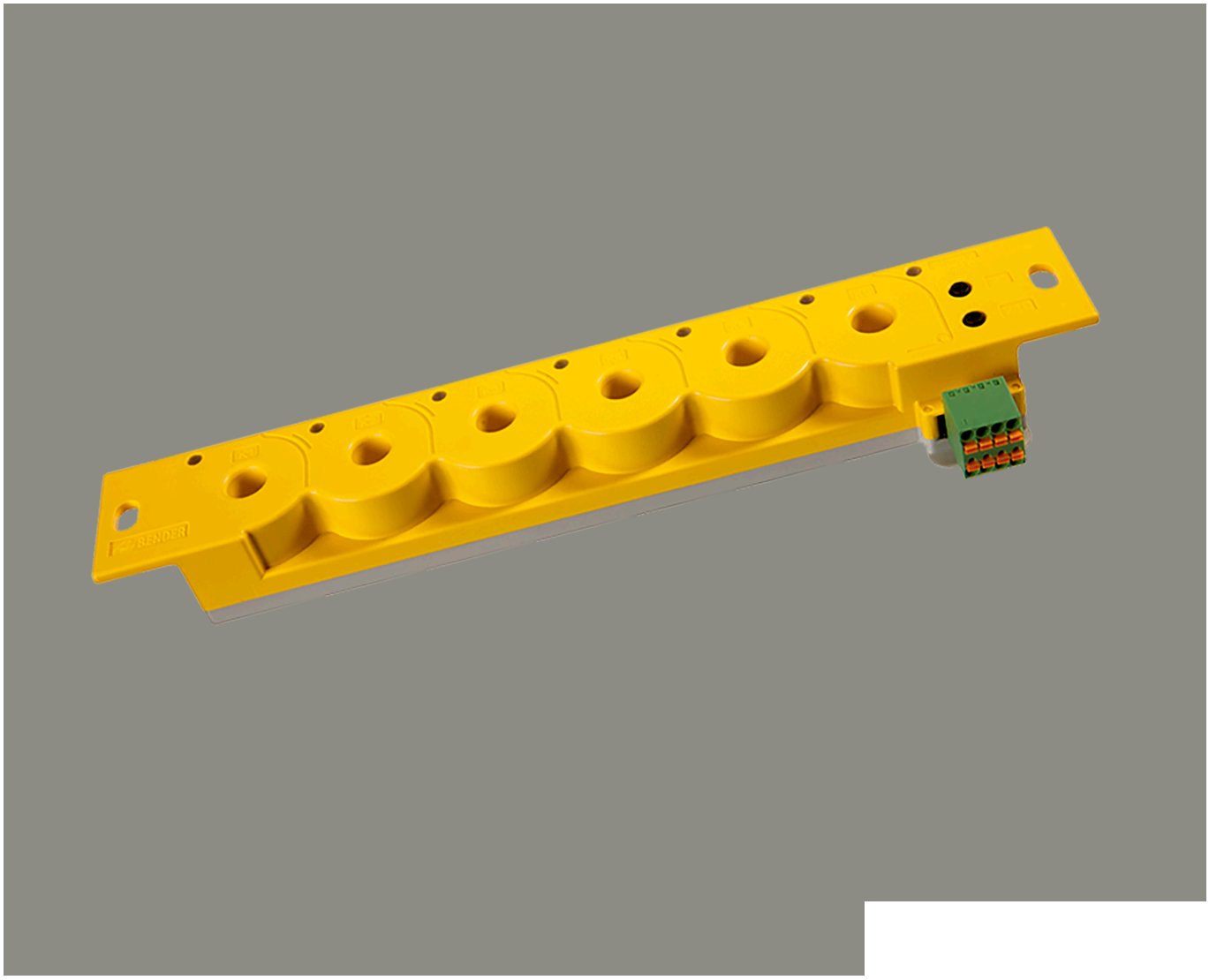
ISOSCAN® EDS151

Insulation fault locator with integrated measuring current transformers for EDS systems



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BENDER

ISOSCAN® EDS151

Insulation fault locator with integrated measuring current transformers for EDS systems

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 monitored IT system: 88 × 6 measuring channels
- Response sensitivity 0.5 mA
- Response time: maximum 8 s in AC systems
- RS-485 interface with BMS protocol
- BMS address range 3…90
- Cyclical self test

Standards and certifications

The ISOSCAN® conforms to the following standards:

- IEC 61557-9
- EN 61557-9
- DIN EN 61557-9
- IEC 61326-2-4
- UL 508

Product description

The insulation fault locator EDS151 in conjunction with the ISOMETER® isoMED427, the ATICS® transfer switching device 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® isoMED427, the ATICS® transfer switching device 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 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 a status LED.

Applikation

- 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

Function

Insulation fault location is started by the ISOMETER® isoMED427P, 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.

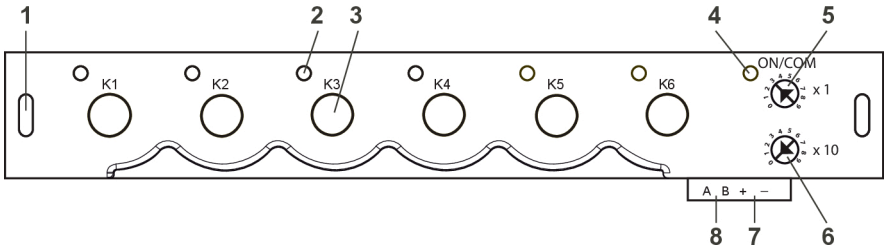
An automatic self test monitoring the function of all measuring current transformers is carried out on an hourly basis. When a device error occurs, all alarm LEDs K1…K6 flash.

The alarm status remains activated until

- the no longer detects an insulation fault or
- the insulation monitoring device signals via the BMS bus that the insulation fault is eliminated.

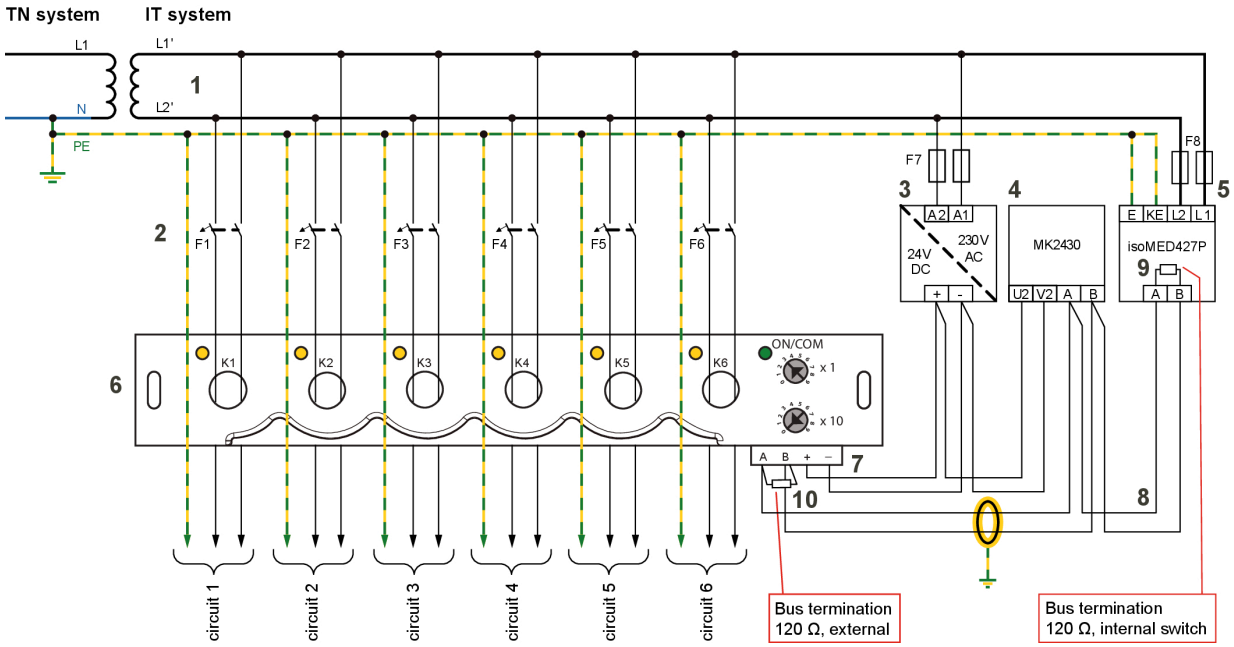
If residual currents > 1 A occur on the measuring current transformers, insulation fault location on the respective channel is terminated and the alarm message **residual current fault > 1 A** is output via the BMS bus (RCM function). The RCM function is active only during the insulation fault location process.

Display and operating elements, interface



1	Opening for screw mounting	**5**	Set the ones position of the BMS address
2	Alarm LEDs measuring channels K1…K6	**6**	Set the tens position of the BMS address
3	Cable lead-through of the measuring current transformers for the measuring channels K1…K6	**7**	Connection to the supply voltage
4	ON/COM LED: Power On LED and bus activity	**8**	Connection RS-485, BMS bus

Wiring diagram



1	Transformer for the IT system to be monitored	**6**	Insulation fault locator EDS151
2	Circuit-breakers for the circuits	**7**	Supply voltage U_S DC 24 V
3	AN410 for DC 24 V supply voltage	**8**	Serial interface BMS
4	Alarm indicator and test combination MK2430 for indication of alarm messages (BMS master)	**9**	Terminating resistor BMS bus (120 Ω, internally connected)
5	isoMED427P insulation monitoring device with locating current injector for insulation fault location systems	**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	6 kV
Pollution degree	3

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	
AC	≤ 3 VA
DC	≤ 1.5 W

Measuring circuit

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

EDS function:

Response value I_{an}	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 2 × 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 °C
For UL applications:	
Max. surrounding air temperature	55 °C

Classification of climatic conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3K22
Transport (IEC 60721-3-2)	2K11
Long-term storage (IEC 60721-3-1)	1K22

Classification of mechanical conditions acc. to IEC 60721

Stationary use (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

Connection

Connection type	pluggable push-wire terminal
For UL applications:	
Use 60 °C/75 °C copper conductors only!	
Connection properties	
rigid, flexible	0.2…1.5 mm² (AWG 24…16)
Multi-conductor connection (2 conductors with the same cross section)	
rigid, 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
Degree of protection	
internal components (DIN EN 60529)	IP30
terminals (DIN EN 60529)	IP20
Flammability class	UL 94 V-0
Screw mounting	2 × M6
Tightening torque	1.5 Nm
Software version	D353 V1.0x
Weight	≤ 340 g

( )* = factory setting

Ordering details

Type	Note	Supply voltage U_S	Output voltage	Art. No.
EDS151	---	AC 17…24 V, 50…60 Hz*, DC 14…28 V*	---	B91080101
AN410	Supplies up to 6	AC 90…264 V, 47…63 Hz* DC 120…370 V*	DC 24 V, 420 mA	B924209
AN450	Supplies up to 3	AC 230 V, 50…60 Hz	AC 20 V, 500 mA	B924201

* Absolute values of the voltage range

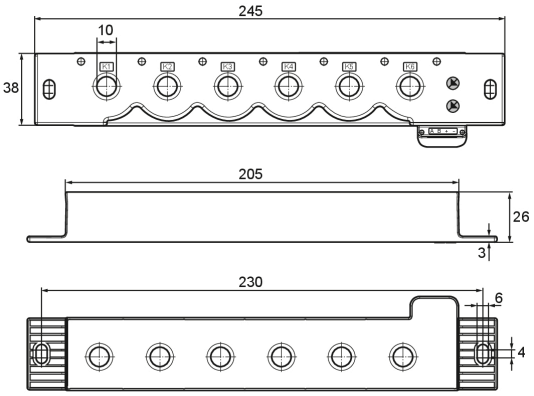
CAUTION

Only use power supply units according to IEC 60364-7-710

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



All dimensions are given in mm

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