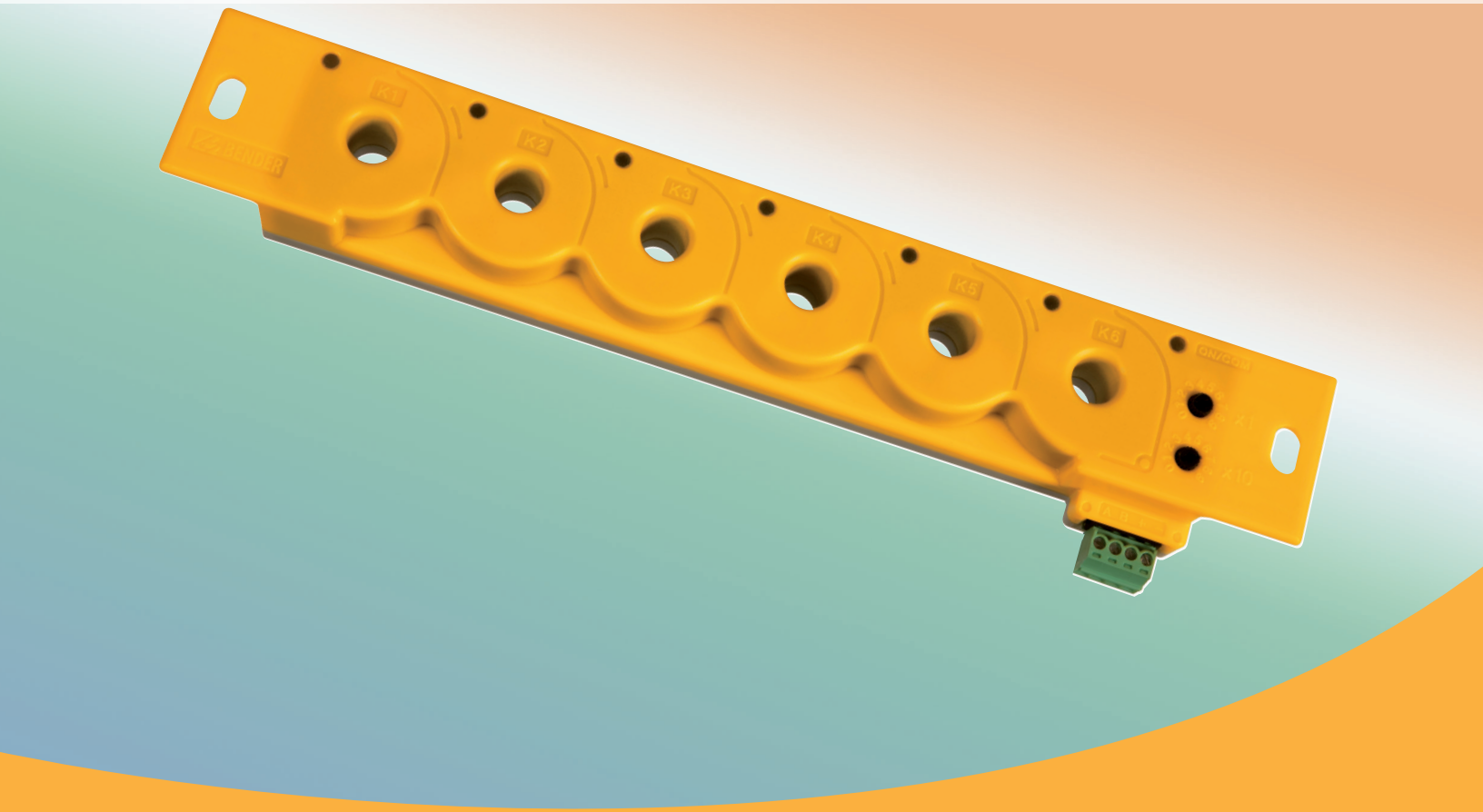
BENDER
The Power in Electrical Safety™

EDS151

Ground Fault Location Module

For Use With LIM2010 Line Isolation Monitor



Technical Bulletin

NAE2012720 / 01.2013

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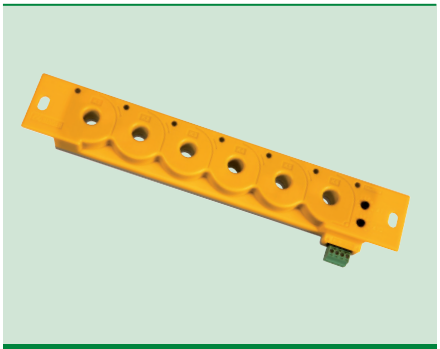


EDS151

Features

- Ground fault location in isolated power systems for healthcare facilities
- Works with LIM2010 line isolation monitor
- Integratable option into BENDER's isolated power panels
- Up to six branches monitored by a single module
- Integrated current transformers
- 24 VAC / 24 VDC supply voltage
- Multiple modules interconnectable via RS-485 for complete ground fault location system
- RS-485 connection to MK800 / MK2430 remote indicating station for display of located fault
- 0.5 mA response sensitivity for tracer signal
- Cyclical self-test

Approvals

c UL us LISTED

Description

The EDS151, when used in conjunction with the LIM2010 line isolation monitor, locates ground faults in isolated power systems in healthcare facilities. Once a fault is detected by the LIM2010, a tracer signal is used to locate the fault down to the branch level. Each module can monitor up to six separate branches using the integrated current transformers. Multiple EDS151 devices may be connected together to create a ground fault location system. Once a fault is located, the connected MK800 or MK2430 remote indicating station will display which branch has the fault.

Current transformers are integrated into the module. The EDS151 is compact in size and is easily integrated into panel and rack systems.

EDS151 modules may be integrated at the factory into BENDER's isolated power panels for healthcare facilities as an additional option. Contact a representative for more information.

Function

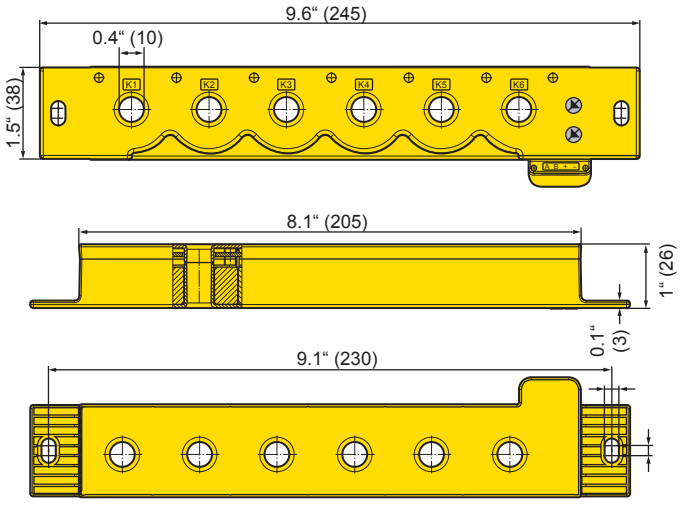
Fault location is initiated automatically once the LIM2010 line isolation monitor detects a Total Hazard Current (THC) of 6 mA or more. Once started, the LIM2010 will generate a tracer signal, and the EDS151 scans all channels in parallel. All interconnected EDS151 devices also scan in parallel.

When the response value of 0.5 mA for the generated tracer signal is exceeded on any of the channels, the respective alarm LED illuminates. The connected MK2430/MK800 remote will display the module and channel that the fault has been located on. Alarms on the EDS151 will automatically clear once the fault has been cleared.

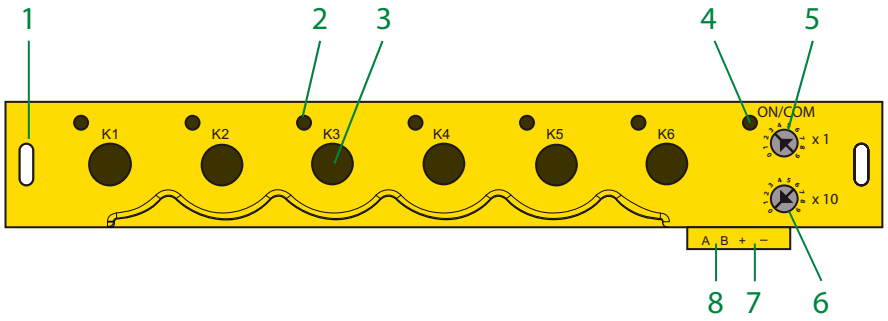
If the EDS151 measures more than 1 A of ground fault current on a channel, the alarm message "residual current fault > 1 mA" will appear on the connected remote. This function is only active while the LIM2010 is generating the tracer signal.

Dimensions

Dimensions in inches (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 conductors for each branch (K1 - K6)

4 - ON/COM LED:
Power On LED and RS-485 bus activity for EDS151

5 - Sets the ones position of the communication bus address

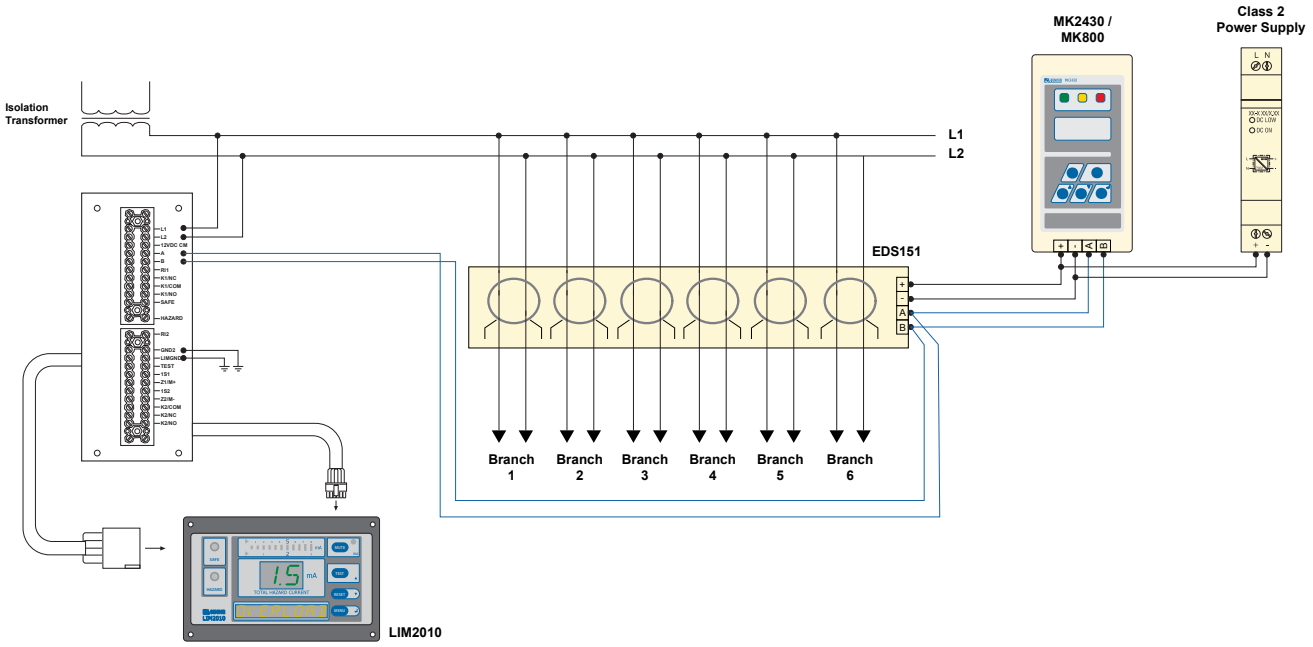
6 - Set the tens position of the communication bus address

7 - 24 VAC / 24 VDC supply voltage connection

8 - RS-485 connection for communication bus

Wiring Diagram

Termination is required at the beginning and end of the RS-485 chain. Termination is added by either changing the R_{on} switch to "on" (if switch is available on device) or by placing a 120 Ω resistor across terminals A and B.



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

Monitored system:

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	DC, AC 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

Ordering Information

Ground Fault Location Module

Product Type	Supply Voltage	Approval	Ordering No.
EDS151	AC/DC 24 V	cULus	B 9108 0101

Accessories

Product Type	Description	Approval	Article No.
MK2430	Digital Remote Station	cULus	*
MK800	Digital Remote Station	cULus	*
CP-D 24/0.42	Class 2 Power Supply For EDS151 and Remotes	cULus	P 1380 0049

* Multiple versions of these devices are available. See the respective technical bulletins for more information.

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