

ISOSCAN[®] EDS551

Insulation fault locator with integrated measuring current transformers





Device features

- Insulation fault location in AC and AC/DC IT systems
- 4 or 6 measuring channels with measuring current transformer per EDS551
- Up to 30 measuring channels for each monitored IT system / sub-system: 5×6 measuring channels
- Response time t_{ai} (at $R_f \leq 0.5 \times R_{an}$ and $C_e \leq 0.5 \mu F$ according to IEC 61557-9): 3...5 s
- RS-485 interface with BSC protocol
- NFC interface for communication via Bender Connect App
- BSC address range 1...247
- Cyclical self test
- Measurement of insulation resistance, leakage capacitance and impedance per measuring channel
- Individually adjustable response value for insulation resistance per measuring channel

Brief description

Function

In combination with the ISOMETER® isoMED527 or LIM7, the ISOSCAN® EDS551 locates insulation faults in unearthed power supplies (IT systems). To achieve this, it records the measurement signals generated by the ISOMETER® with its integrated measuring current transformers and analyses them.

Measuring channels

The EDS551 is available with four or six active measuring channels. All current-carrying cables of an outgoing circuit can be routed through the active measuring channels. The inactive channels on the EDS551-4 are marked with plugs.

For device variants see "Ordering details", page 7.

Interfaces

Several EDS551 devices can be connected via Bender Smart Connect (BSC) using the RS-485 interface. Alarm messages also appear on connected indicator devices. Activities on the RS-485 interface are indicated by a signal LED.

The device can be configured and read out via the NFC interface using the Bender Connect app.

NFC (Near Field Communication)



The NFC interface can be used to transmit a previously configured device parameter setting directly to the device.



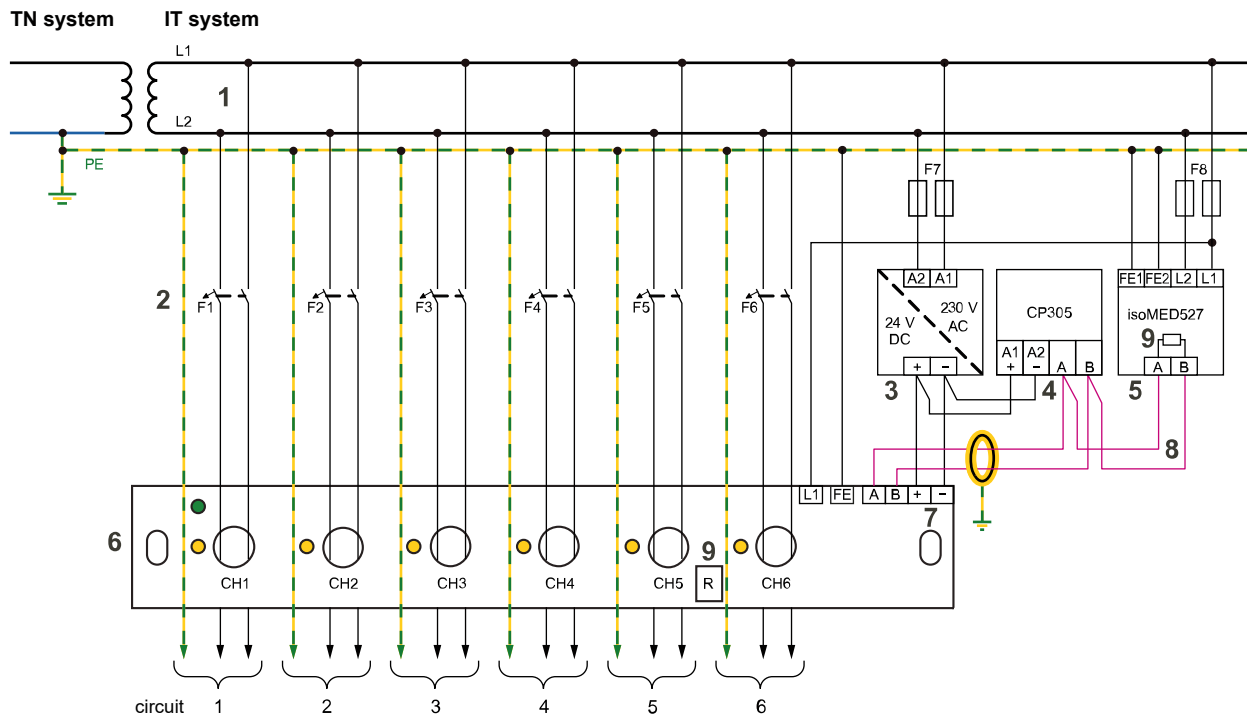
This function is available only via the Bender Connect App, which is available for [iOS](#) and [Android](#).

In the Bender Connect App, the device must first be registered. The device-specific setting options are then displayed and can be configured. During data transmission, feedback is provided indicating whether the parameter configuration was successful.

Parameter settings can be transmitted to the device via the Bender Connect App by holding the smartphone close to the device:

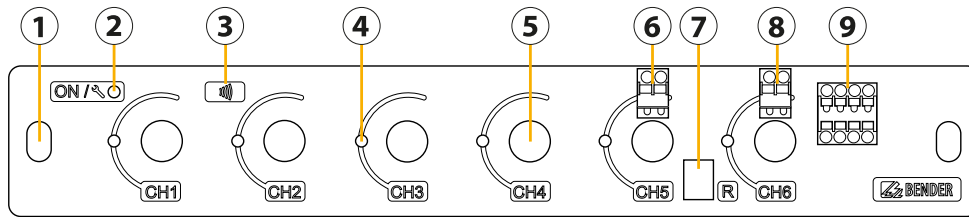
- When the device is **unpowered**, parameter settings can be transmitted and are automatically activated once the device is connected to the power supply.
- When the device is **powered**, parameter configuration requires that the NFC interface is activated on the device beforehand.

Wiring diagram



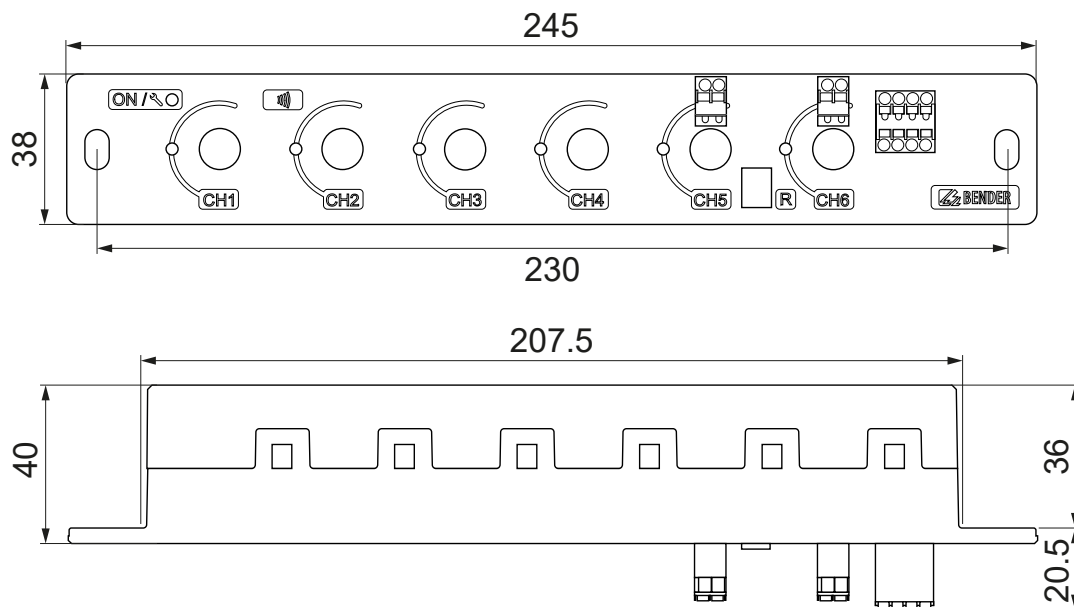
1	Transformer for IT system to be monitored	6	Insulation fault locator EDS551
2	Circuit breakers	7	Supply voltage $U_s = DC\ 24\ V$
3	AN410 for DC 24 V supply voltage	8	RS-485 interface
4	CP305 alarm indicator and test combination for signalling alarms (BSC master)	9	DIP switch for RS-485 terminating resistor
5	isoMED527 or LIM7 insulation monitoring device		

Display, operating controls and connections



- 1 Opening for screw mounting
- 2 Status LED (RGB)
- 3 NFC antenna for connection with Bender Connect app
- 4 Alarm LEDs for the measuring channels CH1...CH6 (yellow)
- 5 CT openings for passing through the electrical wires for the measuring channels CH1...CH6
- 6 L1: Connection to an external conductor of the IT network
L1': Connection for loop-through to L1 of another EDS551
- 7 DIP switch for bus line terminating resistor (status can be queried via the interface parameter "Bus termination")
- 8 FE: Connection to functional earth
FE': Connection for loop-through to FE of another EDS551
- 9 A, B: Connection for RS-485 interface
A', B': Connection for loop-through to A, B of another EDS551
+, -: Connection for power supply
+', -': Connection for loop-through to +, - of another EDS551

Dimension diagram



dimensions in mm

Technical data

Insulation coordination

General

Overvoltage category	IEC 61010-1 / 61010-2-30: CAT III Mains circuit: CAT II UL 508 / UL 840: OVC III
Pollution degree outside ($U_n < 300$ V)	2

Definitions and rated voltage

Connection circuit definition	Function	Terminal	Rated voltage	Applicable standard
IC1	Measuring circuit 1	L1	300 V	IEC 61010-1
IC2	Measuring circuit 2	CH1...CH6	300 V	IEC 61010-2-030 UL 840
IC3	Supply circuit	+, –	50 V	IEC 61010-1; UL 508
IC4	Control circuit 1	A, B	50 V	IEC 61010-1
IC5	Control circuit 2	FE (= GND)	50 V	IEC 61010-2-030 UL 840

Rated impulse voltage (5 s)

Source/destination circuit	Basic insulation		Reinforced insulation	
	DC	AC	DC	AC
IC1 / (IC2-5)	4 kV	2.210 kV	6.4 kV	3.510 kV
IC2 / (IC3-5)	4 kV	2.210 kV	6.4 kV	3.510 kV
IC3 / (IC4-5)	1.9 kV	1.35 kV	-	-
IC4 / IC5	1.216 kV	0.86 kV	-	-

Long-term stress (1 min)

Source/destination circuit	Basic insulation		Reinforced insulation	
	DC	AC	DC	AC
IC1 / (IC2-5)	2.1 kV	1.5 kV	4.2 kV	3.0 kV
IC2 / (IC3-5)	2.1 kV	1.5 kV	4.2 kV	3.0 kV
IC3 / (IC4-5)	1.9 kV	1.35 kV	-	-
IC4 / IC5	1.216 kV	0.86 kV	-	-

Rated insulation voltage

IC1/(IC2-5)	OVC III	300 V
IC2/(IC3-5)	OVC III	300 V
IC3/(IC4-5)	OVC II	50 V
IC4/IC5	OVC II	50 V

Protective separation (reinforced insulation) between

IC1 / (IC2-5)	CAT III	300 V
IC2 / (IC3-5)	CAT III	300 V

Voltage tests (routine test) according to IEC 61010-1

IC1 / (IC2-5)	AC 2.2 kV
IC2 / (IC3-5)	AC 2.2 kV
IC3 / (IC4-5)	AC 105 V
IC4 / IC5	AC 105 V

Supply voltage

Terminal	X1+, X1–
Main voltage supply U_s	DC 24 V (–30...+15 %)
Power consumption DC	≤ 1 W

Monitored IT system

Nominal system voltage U_n	AC 24...230 V (±15 %)
Frequency f_n of U_n	AC 50...60 Hz (±15 %)

Measuring circuit

Permissible system leakage capacitance C_e	≤ 5 µF
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Number of measuring channels	per device	per system (max. 5 EDS551)
EDS551-6	6	max. 30
EDS551-4	4	max. 20

Insulation resistance R

Response value R_{an}	50...200 kΩ
Step size	5 kΩ
Response uncertainty	± 20 %, min. 1 kΩ
Hysteresis	20 %
Response time t_{al} (at $R_t \leq 0.5 \times R_{an}$ and $C_e \leq 0.5$ µF; according to IEC 61557-9)	3...5 s (±1 s)
Rated frequency	42...69 Hz
Measuring range at $C_e \leq 1$ µF	0...500 kΩ
Measuring uncertainty	± 20 %, min. 1 kΩ

Impedance Z

Measuring range	0...500 kΩ
Measuring uncertainty	± 20 %, min. 10 kΩ

Leakage capacitance C

Messbereich	0...5 µF
Measuring uncertainty	± 20 %, min. 20 nF

Interfaces

RS-485	
Connection	A, B
Protocol	Bender Smart Connect (BSC)
Parity	even, no, odd
Stop bits	1 / 2 / auto
Cable	Recommended: CAT 6/7, minimum AWG 23, twisted pairs Alternatively: J-Y(St)Y, minimum 2 × 0.8 mm
Cable length (for 19,2 kbit/s)	≤ 900 m
Termination resistor (internal via DIP switch)	120 Ω (0.25 W)
Device address, Bender Smart Connect	1...247

NFC

Frequency	13.56 MHz
Transmitting power (modulating; in 0 m distance, e.g.) ¹	0 W

- ¹
- Electromagnetic interference may cause NFC failure.
 - The device does not transmit any radio waves when used as intended.

Environment/EMC

EMC standard	IEC 61326-2-4
Ambient temperatures	
Operating temperature	–25...55 °C (–13...131 °F)
Transport	–25...70 °C (–13...158 °F)
Long-term storage	–25...55 °C (–13...131 °F)
Altitude of operation	≤ 3000 m (10,000 ft) AMSL

**Climatic classes according to IEC 60721
(temperature and relative humidity)**

Fixed installation (IEC 60721-3-3)	3K22
Transport (IEC 60721-2)	2K11
Long-term storage (IEC 60721-3-1)	1K22

Mechanical classification according to IEC 60721

Fixed installation (IEC 60721-3-3)	3M11
Transport (IEC 60721-3-2)	2M4
Long-term storage (IEC 60721-3-1)	1M12

Connection
General

Terminal	X1	FE, L1
Connection type	pluggable push-wire terminal	pluggable push-wire terminal
Nominal current	≤ 8 A	≤ 8 A
Conductor size	AWG 24...16	AWG 26...16
Stripping length	10 mm (0.4")	9 mm (0.35")

Wire Specification

Terminal	X1	FE, L1
solid, stranded	0.2...1.5 mm ² (≈ AWG 24...16)	0.14...1.5 mm ² (≈ AWG 26...16)
stranded with ferrule without plastic sleeve	0.25...1.5 mm ² (≈ AWG 23...16)	0.25...1.5 mm ² (≈ AWG 23...16)
stranded with ferrule and plastic sleeve	0.25...0.75 mm ² (≈ AWG 23...18)	0.25...0.5 mm ² (≈ AWG 23...20)

Other

Operating mode	continuous operation
Position of normal use	any
Enclosure material	CYCOLOY™ CY6414
Screw mounting	2 × M6 (Tightening torque: 1.5 Nm)
Degree of protection, internal components (DIN EN 60529)	IP30
Degree of protection, terminals (DIN EN 60529)	IP20
Flammability class	UL 94 V-0
Software version	D0837 / V1.0.x
Dimensions	245 × 38 × 40 (mm)
Weight	290 g

()* = factory setting

Standards and certifications
Standards

The ISOSCAN® EDS551 conforms to the following standards:

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

Marks

Licences

For a list of the open-source software used see our [Website](#).

EU Declaration of Conformity

Hereby, Bender GmbH & Co. KG declares that the device covered by the Radio Directive complies with Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following Internet address:

https://www.bender.de/fileadmin/content/Products/CE/CEKO_EDS551.pdf

Ordering details

Type	Note	Supply voltage	Output voltage	Art. No.
EDS551-4	4 measuring channels	DC 24 V (–30...15 %)	---	B71080451
EDS551-4	4 measuring channels inkl. Function Module A			B71080452
EDS551-6	6 measuring channels			B71080651
EDS551-6	6 measuring channels inkl. Function Module A			B71080652
isoMED527-L-2	Required for the use of EDS551	AC 100...240 V (–30 % / +15 %)	---	B81625521
isoMED527-L-2	Inkl. Function Module A, required for the use of EDS551	AC 100...240 V (–30 % / +15 %)	---	B81625523
LIM7	Required for the use of EDS551 in UI applications	AC 100...240 V (–30 % / +15 %)	---	B81625520
AN410	Supplies up to 6 EDS551	AC 90...264 V (47...63 Hz)* DC 120...370 V*	DC 24 V, 420 mA	B924209
CP305	Remote Alarm Indicator	AC/DC 24 V (AC 50/60 Hz)	---	B95100051
EDS551 Steckerkit	Replacement connector kit	---	---	B71080050

* Absolute values of the voltage range

**ADVICE**

According to IEC 60364-7-710, only power supply units with protective separation (reinforced insulation) between the primary and secondary voltage may be used to provide the supply voltage. The power supply units specified above fulfil this requirement.

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

Recommended device combinations

Device combination	Insulation monitoring device	Insulation fault locator	Alarm indicator and test combination
1	isoMED527-L-2 = S	EDS551 = S	CP305 = M
2	isoMED527-L-2 = S	EDS551 = S	CP9xx = M

S Slave

M Master



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Subject to change!
The specified standards take into account the
edition valid until 06.2026 unless otherwise
indicated.