

EDS3060 system – device components

Insulation fault evaluator EDS165

Mobile residual current location system for TN and TT systems (AC and pulsating DC currents)



EDS3060



EDS165

Product description EDS3060 system

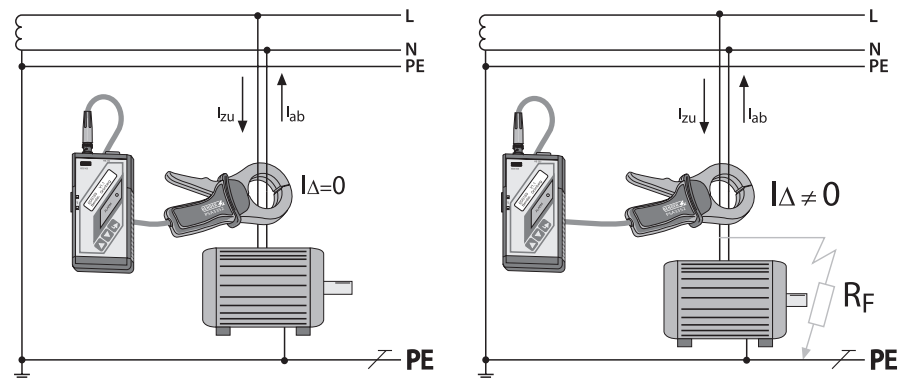
The portable EDS3060 system is designed to be used as a supplement to the RCMS system. The rugged aluminium case includes an insulation fault evaluator EDS165, two current clamps PSA3020 / PSA3052 and various accessories (BNC adaptor, accumulator charger,...). The current clamp PSA3165 can be ordered as an option. It can be used to keep track of the insulation fault path or to check additional circuits.

Supplied by accumulators, the EDS165 is used in combination with current clamps. Values are indicated on an LC display and settings are carried out via the function keys.

Used in combination with the current clamps PSA3020, PSA3052 and PSA3165, the EDS165 is suitable for various wire cross sections.

The clearly legible LC display informs the user about the residual current existing in the respective circuit and shows whether the value has been exceeded. Furthermore, the LC display indicates the type of current clamp connected, the buzzer mode, the charge state of the accumulator, the preset system frequency, the buzzer mode and the activation of the alarm memory.

In the RCM mode, the EDS165 operates according to the residual current measurement principle. Kirchhoff's law states that the sum of the currents entering any junction of wires equals the sum of the current leaving that junction.



The value of the incoming current I_{zu} and outgoing current I_{ab} is equal, but the vector is reverse, so that the sum of the currents is zero. Recognizing this, the EDS165 does not issue an alarm message.

Due to an insulation fault R_f a portion of the outgoing current I_{ab} leaves the junction. The value of the current is no longer zero. When the value of the residual current is equal or exceeds or falls below the set response value, the EDS165 signals an alarm message.

The residual current at each measuring point is shown on the display. If the residual current is greater than the set response value, also an acoustic signal will be given provided that the buzzer has been activated.

For long time measurements at one point of the system, the fault memory must be activated (memory on) in menu 2 (m2 - memory). In this way, it is possible to find intermittent residual currents too, provided that they are higher than the set response value.

Note

If insulation faults of the same value occur at different conductors, the sum of the current through the current clamp can be zero again, because such symmetrical faults cannot be detected with residual current measurement.

Device features EDS165

- Portable hand-held enclosure, supply via accumulators or power supply unit
- RCM or EDS function, selectable
- LC display
- Menu-driven settings
- Alarm threshold settings with alarm function
- Membrane keyboard
- RS232 interface
- BNC connection for current clamps
- Connection monitoring for current clamps and CTs
- Can also be connected to permanently installed measuring current transformers
- Acoustic signal in case of alarm messages
- Residual current indication in RCM mode
- Measuring range RCM mode: 10 mA...10 A
- Response value in EDS mode: 5 mA
- Fault current indication in EDS mode



Product description EDS165

The portable insulation fault evaluator EDS165 provides the following measuring functions:

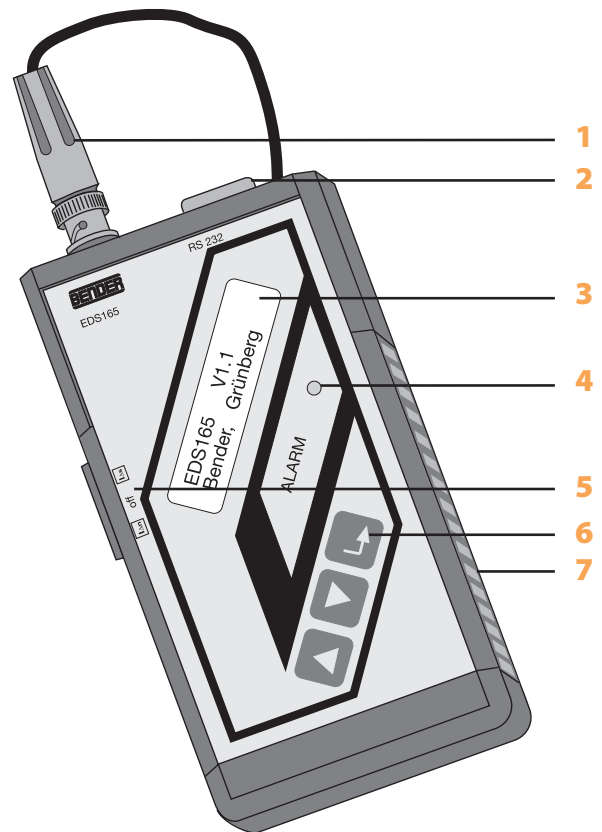
- Evaluator within a mobile insulation fault location system EDS3065 (EDS mode)
- Evaluator within a permanently installed insulation fault location system EDS470 or EDS1000 (EDS mode)
- Residual current measuring device (RCM mode).

Use in the RCM mode

The EDS165 is used as a residual current measuring device in TN and TT systems, or in IT systems provided that certain system requirements are fulfilled. Residual current measurement is only possible in energized systems.

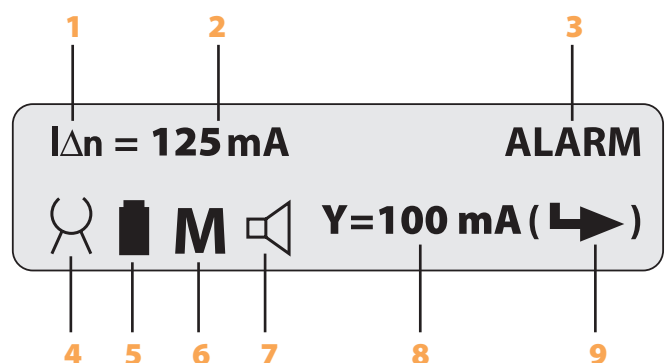
- Check whether the system is live.
- Connect the current clamp.
- Set the the operating mode selector switch at the EDS165 to position $I_{\Delta n}$ and wait until the basic menu appears on the display.
- Check whether the correct current clamp is set in menu 4 (m4 - set sensor), current clamp PSA3052 is factory set.
- Check whether a response value has been set ($I_{\Delta n} = XX \text{ mA}$) which is suitable for practical purposes. The response value is factory set to 100 mA.
- Start the measurement at an appropriate position in the system. When you do this, start as near as possible to the incoming supply and move on radially in the direction of the loads.
- During the measurement hold the current clamp steadily. Encircle the conductors as symmetrically as possible. Make sure that you do not exert pressure on the arms of the current clamp.
- During measurement, encircle all the system conductors, but not the PE. Do not encircle any shielded leads.
- The residual current at each measuring point is shown on the display. If the residual current is greater than the set response value, also an acoustic signal will be given provided that the buzzer has been activated.
- For long time measurements at one point of the system, the fault memory must be activated (memory on) in menu 2 (m2 - memory). In this way, it is possible to find intermitten residual currents too, provided that they are higher than the set response value.

EDS165 – operating elements



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|---|----------------------------------|
| 1 - BNC connection for current clamps or measuring current transformers | 4 - Alarm LED |
| 2 - RS232 interface | 5 - Operating mode selector |
| 3 - LC display | 6 - Function keys |
| | 7 - Socket for power supply unit |

EDS165 – Display indication in the RCM mode



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|------------------------------------|-----------------------------|
| 1 - RCM mode | 6 - Memory = ON |
| 2 - Measured residual current | 7 - Buzzer is activated |
| 3 - Response value exceeded | 8 - selected response value |
| 4 - Current clamp connected | 9 - Go on with <ENTER> |
| 5 - Indication of battery charging | |

EDS3060 system – system components

Current clamps



PSA3020



PSA3052



PSA3165

Product description PSA3020, PSA3052, PSA3165

The current clamps PSA3020; PSA3052 and PSA3165 can be used to encircle leads of different diameters. The connection to the EDS165 evaluator is carried out using a BNC connection and a measuring lead of a length of approximately 2 m.

Ordering details

Type	Designation	Art. No.
EDS165	Insulation fault evaluator	B 9108 2001
EDS3060	Mobile residual current location system	B 9108 2006
PSA3020	Current clamp 20 mm	B 980 693
PSA3052	Current clamp 52 mm	B 980 694
PSA3165	Current clamp 100 mm	B 980 697

EDS3060 system – system components

Technical data

Technical data EDS165

Voltage ranges

Supply voltage U_S	DC 6 V
Operating range of U_S (Battery)	4.2 ... 6.2 V
Frequency range, system frequency	45 ... 65 Hz
Power consumption	0.6 W

Measuring circuit

Measuring range with current clamps	10 mA ... 16 A
Measuring range with current transformers	10 mA ... 10 A
Rated residual operating current, alarm	10 mA ... 10 A
Accuracy	$\pm 10\%$
Rated frequency	40 ... 400 Hz

Displays and LEDs

LC display	residual current indication
LED	alarm

Interfaces

Interface	RS232
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General data

EMC immunity	acc. to EN 61543
EMC emission	acc. to EN 61000-6-4
Shock resistance IEC 60068-2-27 (device in operation)	15 g / 11 ms
Bumping IEC 60068-2-29 (during transport)	40 g / 6 ms
Vibration resistance IEC 60068-2-6 (device in operation)	1 g / 10 ... 150 Hz
Vibration resistance IEC 60068-2-6 (device out of operation)	2 g / 10 ... 150 Hz
Ambient temperature (during operation)	-10 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Climatic category DIN IEC 60721-3-3	3K5
Operating mode	continuous operation
Position	any position
Degree of protection, internal components	IP40
BNC connection	IP30
Type of enclosure	portable enclosure
Technical manual	TGH1265
Weight	approx. 370 g

Technical data current clamps

Rated voltage

PSA3020 / 3052	AC 600 V
PSA3165	AC 650 V

Voltage test

PSA3020 / 3052	AC 4 kV
PSA3165	AC 2 kV

Outputs

Measuring output	BNC connection
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General data

EMC immunity	acc. to EN 61543
EMC emission	acc. to EN 61000-6-4
Shock resistance IEC 60068-2-27 (device in operation)	15 g / 11 ms
Bumping IEC 60068-2-29 (during transport)	40 g / 6 ms
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Ambient temperature (during operation)	-10 °C ... +55 °C
Storage temperature range	-40 °C ... +70 °C
Climatic category DIN IEC 60721-3-3	3K5
Operating mode	continuous operation
Position	any position
Degree of protection, internal components	IP40
BNC connection	IP30

Permissible cable diameter

PSA3020	20 mm
PSA3052	52 mm
PSA3165	100 mm

Dimensions of the enclosure

PSA3020	135 x 54.5 x 30 mm
PSA3052	216 x 111 x 45 mm
PSA3165	308 x 150 x 43 mm
Technical manual	TGH1265

Weight

PSA3020	approx. 200 g
PSA3052	approx. 550 g
PSA3165	approx. 1700 g

Note:

The rated voltages indicated above apply to applications on uninsulated busbars. When the current clamps are used for cables, the cable insulation has to be considered.