

SB471 / SB473 / SB476

Fault voltage monitor



SB476

Device features

- Voltage monitoring of 1, 3 or 6 secondary circuits
- Messages of several SB47x devices are combined to one common alarm
- Alarm LEDs for fault voltage per channel, PE/KE interruption interruption of the measuring lead
- Connection monitoring of measuring lead and earth connection
- Fault memory
- Reset button
- 1 potential-free changeover contact (SB476)
- 2 potential-free changeover contacts (SB471, SB473)
- Modular DIN rail enclosure

Approvals and certifications



Product description

The relays of the SB47x series monitor the secondary circuits of welding transformers for fault voltages. A total of six secondary circuits can be monitored. The versions SB473 and SB476 can be linked for common alarm messages.

Application

- Monitoring of welding equipment

Function

Both measuring connections (z.B. E1/E2) are connected to different points on the same secondary circuit. Also the two earth connection terminals are connected to the PE conductor (PE) at different points. If the measured fault voltage value exceeds the response value, the alarm LED of the respective measuring circuit lights up and the alarm relay switches.

The alarm relay is in N/C operation so that in the event of supply voltage failure a message is ensured.

When the fault (touch voltage) has been eliminated, the alarm relay switches back to its original state and the alarm LED goes out after pressing the reset button.

To ensure a safe condition, the connecting wires to the welding circuits being monitored and the connecting wires to earth are continuously monitored. If one or several measurement or earth connections are interrupted, the alarm relay switches.

In addition, the alarm LED ON (interruption earth connection) and/or the alarm LED of the respective channel flashes.

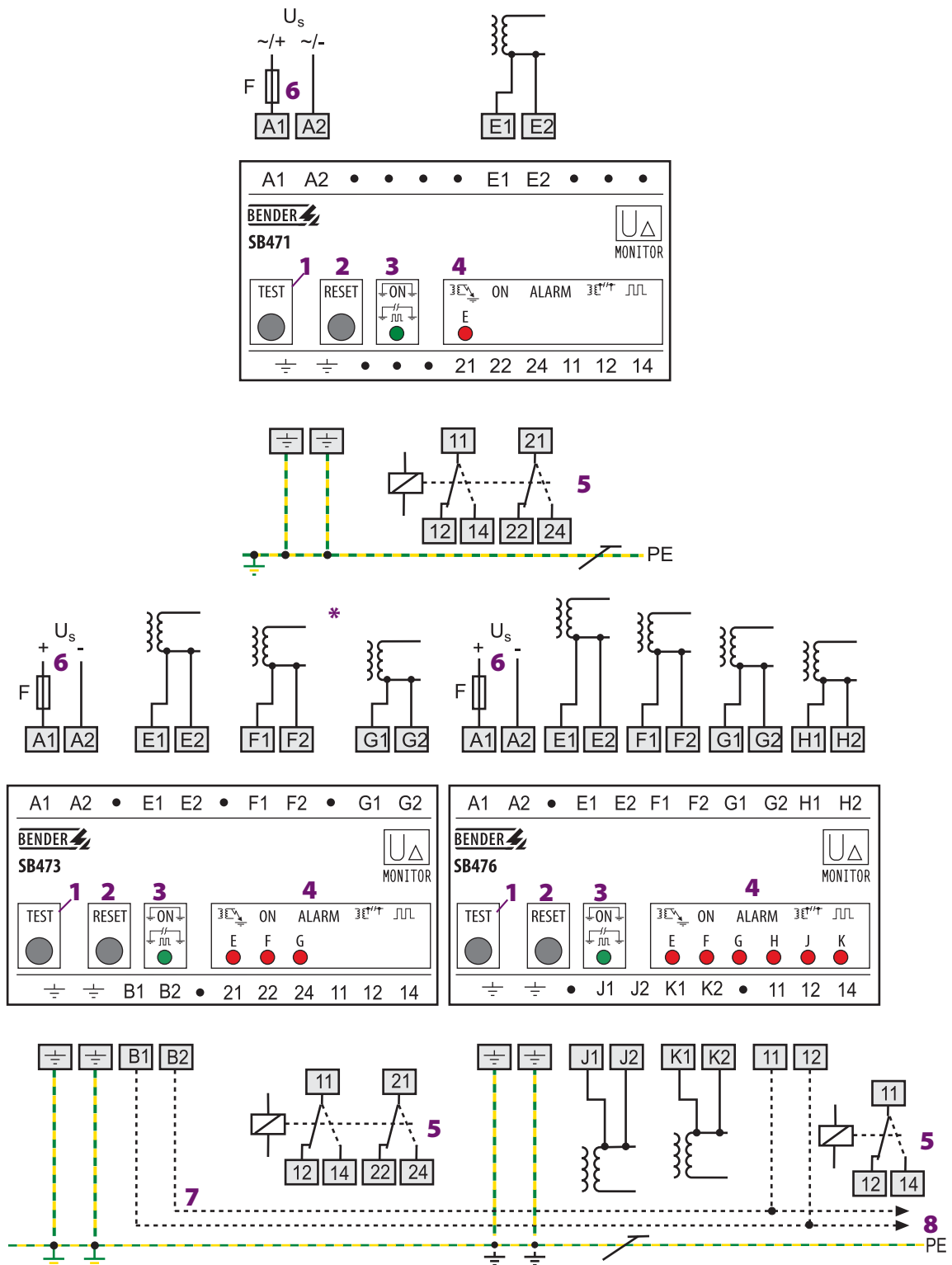
The device function can be tested by pressing the test button.

If the SB476 is used in combination with SB473, the SB473 will output a common alarm for all of the three welding circuits as well as for all connected SB476. The cable length must not exceed 50 m.

Alarm messages

Condition				Messages		
U_S	$U_F >$	Connection system	Connection PE	LED "ON"	LED "E...K"	Relay
on		ok	ok	×		on
on		open	ok	×	flashes	de-energised
on	×	ok	ok	×	on	de-energised
on		ok	open	flashes		de-energised
off						de-energised

Wiring diagram



- 1 - Test button "TEST"
- 2 - Reset button "RESET"
- 3 - LED Power On flashes in the event of connection interruption
- 4 - One Alarm LED per measuring circuit
- 5 - Alarm relay in N/C operation Contact position in operating mode is marked by dotted lines. (without fault voltage)
- 6 - U_s 6 A fuse
- 7 - Connection possibility for one or several SB476. In this case, the SB473 will output a common alarm message
- 8 - Additional SB476 devices (max. cable length 50 m)
- F - 6 A fuse is recommended
- * - Unassigned inputs have to be bridged individually

Technical data

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 500 V
Rated impulse voltage/pollution degree	
SB471 / SB473	6 kV/3
SB476	4 kV/3

Supply voltage

Supply voltage U_S	see ordering information
Power consumption	≤ 3 VA

Measuring circuit

Number of welding transformers SB471	1
Number of welding transformers SB473	3
Number of welding transformers SB476	6
Response value	
U_F for sinusoidal voltages	AC 50...1000 Hz 21.6...24 V
U_F for DC voltages	DC 19...24 V
Response time t_{an} at $1.1 \times U_{Fmax}$	≤ 100 ms
Response time for coupling monitoring	≤ 5 s
Recovery time t_b	≤ 500 ms

Switching elements

Number of switching elements	1 x 2 (471/473), 1 x 1 (476)
Operating principle	N/C operation

Fault memory behaviour

Electrical endurance, number of cycles	12000
Contact class	IIB
Rated contact voltage	AC 250 V/DC 300 V
Making capacity	AC/DC 5 A
Breaking capacity	2 A, AC 230 V, $\cos \phi$ 0.4 0.2 A, DC 220 V, L/R = 0.04 s

Environment/EMC

EMC immunity	acc. to IEC 61000-6-2
EMC emission	acc. to IEC 61000-6-4
Shock resistance IEC 60068-2-27 (device in operation)	15 g/11 ms
Bumping IEC 60068-2-29 (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 not in operation)	2 g / 10...150 Hz
Ambient temperature, during operation	-10...+55 °C
Ambient temperature, during storage	-45...+70 °C
Climatic class acc. to IEC 60721-3-3	3K5 (except condensation and formation of ice)

Other

Operating mode	continuous operation
Mounting	any position
Connection type	modular terminals
Connection properties	
single wire	0.2...4 mm ²
flexible with end ferrules with end ferrules	0.25...2.5 mm ²
Degree of protection, internal components (IEC 60529)	IP30
Degree of protection, terminals (IEC 60529)	IP20
Screw mounting	2 x M4
DIN rail mounting acc. to	IEC 60715
Flammability class	UL94V-0
Product standard	DIN VDE 0545-1
Operating manual	BP308001
Weight	≤ 360 g

Ordering information

Type	Supply voltage U_S	Art. No.
SB471-34	AC 10...65 V, DC 10...90 V	B 9308 3006
SB471-35	AC 65...276 V, DC 90...308 V	B 9308 3007
SB473-34	AC 10...65 V, DC 10...90 V	B 9308 3001
SB473-35	AC 65...276 V, DC 90...308 V	B 9308 3003
SB476-34	AC 10...65 V, DC 10...90 V	B 9308 3002
SB476-35	AC 65...276 V, DC 90...308 V	B 9308 3004

Dimension diagram

Dimensions in mm

