

Undervoltage and overvoltage relays SUR357Z/SUR358Z

for 3AC or 3NAC systems





SUR358Z

Device features

- Undervoltage and overvoltage monitoring for 3AC/3NAC systems
- Without external supply voltage
- SUR357Z Common alarm relay for undervoltage and overvoltage
- SUR358Z Separate alarm relays for undervoltage and overvoltage
- Adjustable response value:
0.7...0.95 x U_n /1.05...1.3 x U_n
- Nominal system voltages:
3AC 100 V, 110 V, 230 V, 400 V, 500 V, 690 V
- Adjustable response delay:
0.5...5 s
- Power On LED, Alarm LED
- Alarm relay with two potential-free changeover contacts

Approvals



Product description

The SUR357Z/358Z series relays are designed for voltage monitoring in three-phase AC systems. The relays can be used for undervoltage and overvoltage monitoring (window function). Neutral conductor connection is not required, hence the relays are suitable for 3AC and 3NAC systems. Supply voltage and measuring voltage are galvanically separated. Special input transformers attenuate interferences from the system. The devices include an input circuit protection.

Typical applications

- Monitoring of the power supply of motors and electrical installations
- Monitoring of loads
- Switching on and switching off at a certain voltage level
- Monitoring of stand-by and emergency supply systems
- Supply voltage monitoring of portable loads

Function SUR357Z

When the supply voltage applied is within the set response range, the alarm relay is in N/C operation (relay energised) and the alarm LED lights up. When the value of the nominal system voltage U_n falls below the set response value $< U_n$, the alarm LED goes out. When the voltage exceeds the response value $> U_n$ the alarm LED goes out. The common alarm relay switches after the response delay has elapsed. If the response values are again within the set response range, the SUR357Z switches back to its original state after approx. 200 ms.

Funktion SUR358Z

When the voltage applied is within the set response range, the alarm relay K1 for undervoltage works in N/C operation (relay energised) and the alarm relay K2 for overvoltage is in N/O operation (relay de-energised). When the value of the nominal system voltage U_n falls below the set response value $< U_n$ the alarm LED " $< U_n$ " lights up and the alarm relay K2 switches after the set response delay has elapsed.

When the nominal system voltage U_n exceeds the set response value $> U_n$ the alarm LED " $> U_n$ " lights up and the alarm relay K2 switches after the set response delay has elapsed. When the response values are again within the set response range, the SUR358Z switches back to its original state after approx. 200 ms.

Note

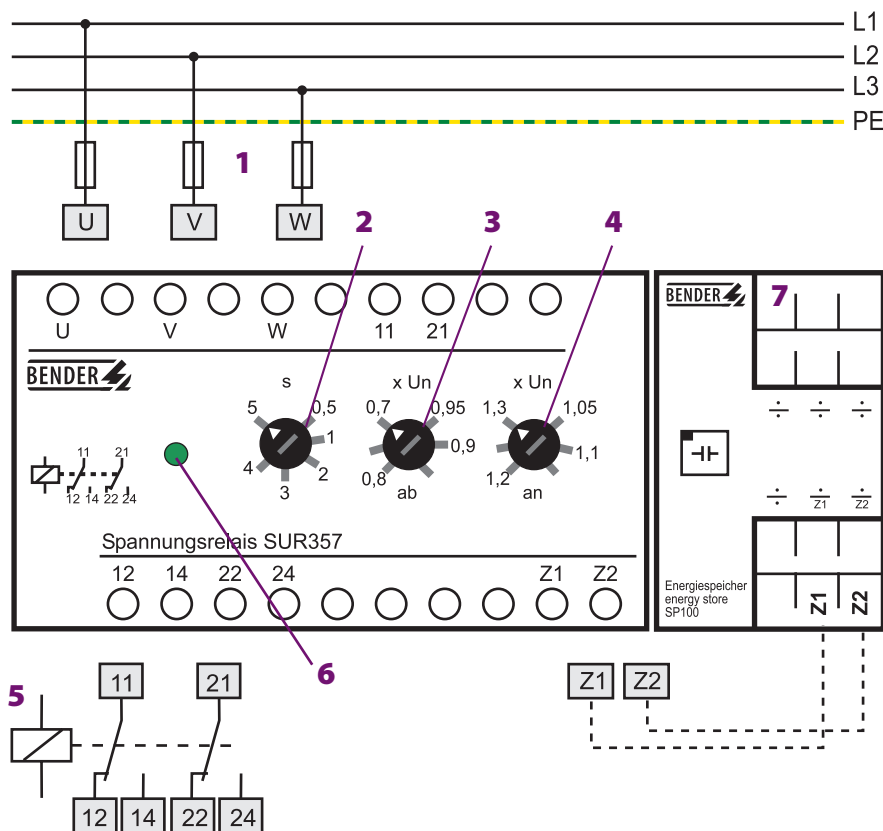
False alarms resulting from short-time operational measurement errors can be suppressed by setting a time delay. In case of complete system failure, the time delay is not effective, except for the device operating time. If the delay function is to be maintained in case of complete system failure, the energy backup SP100 is recommended to be used.

Standards

The SUR357Z/358Z series complies with the requirements of the device standards: IEC 60255-6.

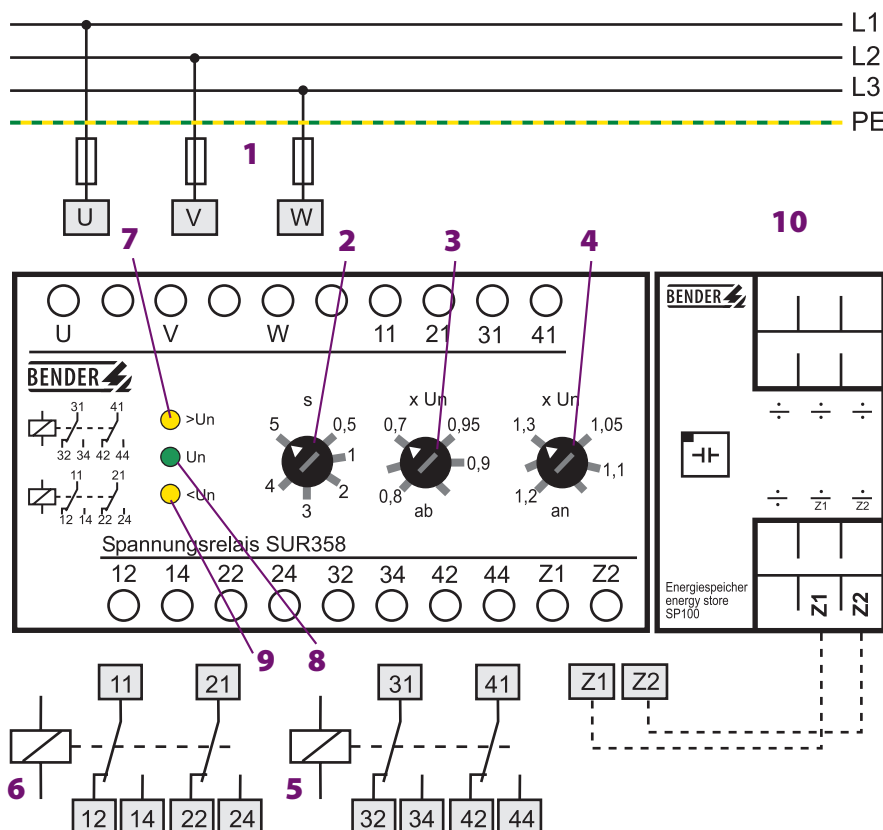


Wiring diagram SUR357Z



- 1 - 6 A fuse
- 2 - Setting potentiometer for response delay "s"
- 3 - Setting potentiometer for undervoltage "x U_n "
- 4 - Setting potentiometer for overvoltage "x U_n "
- 5 - Alarm relay with two changeover contacts
- 6 - Alarm LED lights under normal conditions and goes out in the event of overvoltage, undervoltage and system failure.
- 7 - SP100 energy backup
An additional means to delay the time for approximately 5 s in the event of complete system failure

Wiring diagram SUR358Z



- 1 - 6 A fuse
- 2 - Setting potentiometer for response delay "s"
- 3 - Setting potentiometer for undervoltage "x U_n "
- 4 - Setting potentiometer for overvoltage "x U_n "
- 5 - Alarm relay K2 for signalling overvoltage
- 6 - Alarm relay K1 for signalling undervoltage
- 7 - Alarm LED lights in the event of overvoltage "> U_n "
- 8 - Power On LED " U_n "
- 9 - Alarm LED lights in the event of undervoltage "< U_n "
- 10 - SP100 energy backup
An additional means to delay the time for approximately 5 s in the event of complete system failure.

Technical data

Insulation coordination acc. to IEC 60664-1

Rated insulation voltage	AC 690 V
Rated impulse voltage/pollution degree	6 kV/3

Supply voltage

Supply voltage U_s	not required
Power consumption	≤ 6 VA

Measuring circuit

Nominal system voltage U_n	see ordering information
Operating range of U_n	0.5...1.3 x U_n
Rated frequency f_n	50/60 Hz
Response value undervoltage	0.7...0.95 x U_n
Response value overvoltage	1.05...1.3 x U_n
Response delay t	0.5...5 s
Hysteresis	< 5 %
Delay on release	approx. 200 ms

Switching elements

Number of changeover contacts	1 x 2 (SUR357Z), 2 x 2 (SUR358Z)
Operating principle	N/C operation (SUR357Z/ SUR358Z undervoltage) N/O operation (SUR358Z overvoltage)
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...+50 °C
Ambient temperature (during storage)	-20...+70 °C
Climatic class acc. to IEC 60721-3-3	3K5 (except condensation and formation of ice)

Connection

Connection	flat terminals with self-lifting clamp washers
Connection properties	
single wire	2 x (1...1.5) mm ²
flexible with end ferrule	2 x (0.75...1.5) mm ²

Other

Operating mode	continuous operation
Mounting	any position
Degree of protection, internal components (IEC 60529)	IP50
Degree of protection, terminals/with terminal covers (IEC 60529)	IP10/IP20
Electrical endurance, number of cycles	12
Screw mounting	refer to dimension diagram
DIN rail mounting acc. to	IEC 60715
Flammability class	UL94V-0
Operating manual	TBP301007
Weight	≤ 700 g

Ordering information

Alarm relays for undervoltage and overvoltage	Nominal system voltage U_n	Type	Art. No.
Common	3AC 100 V	SUR357Z	B 933 603
	3AC 110 V	SUR357Z	B 933 200
	3AC 230 V	SUR357Z	B 933 153
	3AC 400 V	SUR357Z	B 933 697
	3AC 500 V	SUR357Z	B 933 053
	3AC 690 V	SUR357Z	B 933 014
Separate	3AC 100 V	SUR358Z	B 933 605
	3AC 110 V	SUR358Z	B 933 217
	3AC 230 V	SUR358Z	B 933 155
	3AC 400 V	SUR358Z	B 933 701
	3AC 500 V	SUR358Z	B 933 055
	3AC 690 V	SUR358Z	B 933 709

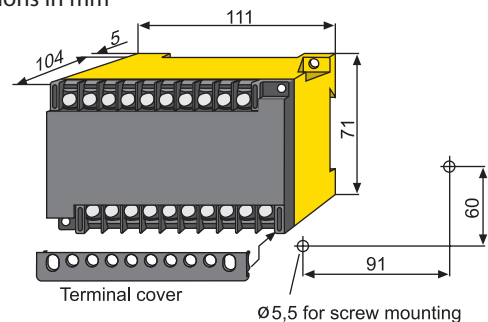
Other voltages on request

Suitable system components

Type designation	Type	Art. No.
Energy backup	SP100	B 935 700

Dimension diagram X200

Dimensions in mm



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