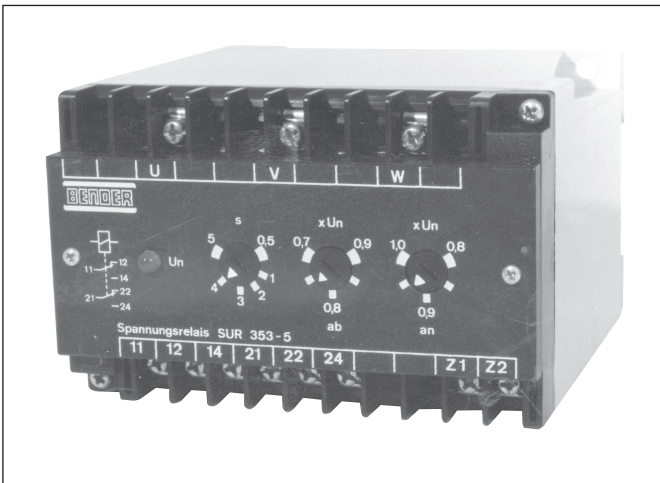




for three-phase alternating mains to 660 V



The delay time is adjustable. The built-in green indicating light is extinguished if a fault occurs. The device is reconnected with-out delay as soon as all three external conductor voltages have reached the preset nominal value  $U_{Nan}$ .

### Mode of operation

The actual values of the external conductor voltages are obtained by means of measuring transformers galvanically separated from the main system. Interference is eliminated from the values to be monitored which are then fed to an electronic evaluation circuit. This evaluating circuit compares the actual values with two nominal values in absolute terms. The nominal values  $U_{Nab}$  and  $U_{Nan}$  are individually adjustable.

If one or several external conductor voltages are below the preset nominal value  $U_{Nab}$ , a delayed switching instruction is given. The delay time is adjustable.

The resetting of the output relay to its normal operating position takes place automatically and without delay, cancelling the start of a switching instruction if the external conductor voltages exceed the preset nominal value  $U_{Nab}$  by app.

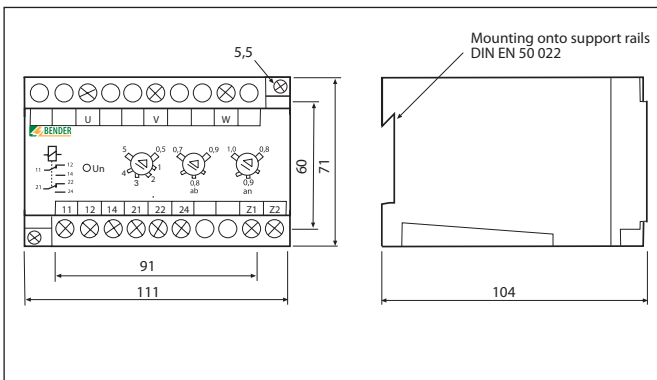
2%. Consequently, indication is given.

If, however, one or several voltages remain below the reconnection stage  $U_{Nab} + 2\%$ , for a period longer than the set time delay, indication is given and the output relay drops out. (Closed current circuit).

At the moment of response the adjustable reconnection stage  $U_{Nan}$  is activated.

The output relay returns to its normal position only when all external conductor voltages exceed the nominal value  $U_{Nan}$ .

### Dimension diagram



### Description of the instrument

Undervoltage relays SUR 353-5 monitor three-phase alternating mains and signal voltage reductions within the main system. No star point connection is required and they are therefore universally suitable for three- and four-wire mains.

The input voltage (auxiliary voltage) for the supply of the electronics is derived from the mains to be monitored.

The response values for  $U_{Nab}$  reclose voltage  $U_{Nan}$  and time delay are continuously adjustable. Auxiliary- and measuring voltages are galvanically separated from the main system. Special input transformers suppress the transfer of interference factors from the main system. If used for mains with voltage peaks (thyristor controls and similar sources), an additional protective circuit can be installed. In case of rated mains voltages  $> 380 V$  a protective circuit is standard.

Two floating change-over contacts are available for output signals. The output relay is excited during normal operation

(Closed current circuit). It drops out with delay if the voltage reduction exceeds the predetermined nominal value.

### Note:

The reconnection point  $U_{Nan}$  must be set at least 5% higher than the disconnecting point  $U_{Nab}$ .

The devices operate without auxiliary voltage. The supply voltage is derived from the mains to be monitored. In case of a complete mains failure, the delay becomes ineffective.

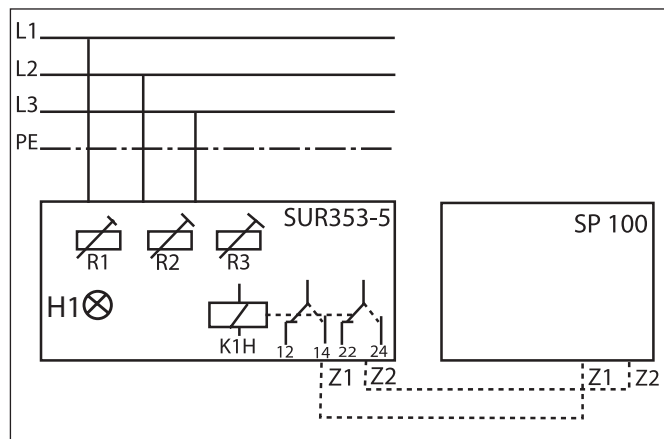
If required, the delay function can be maintained even in case of a total mains failure, by combining SUR 353-5 with an energy store type SP 100. (See sheet 3.5.7).

Right to modifications reserved

## Technical Data SUR353-5

Rated insulation voltage	660 V
Insulation class as per VDE 0110	C
Air gaps and creeping distances contacts	AC 250 V
Measuring range	AC 660 V
Test voltage	3000 V
Nominal operating mode	DB
Rated mains voltage (others on request)	660, 500, 380, 220, 100 V, AC 3
Frequency range $U_N$	50-60 Hz
Operating range $U_N$	0,5 - 1,3 $U_N$
Power absorption approx.	5 VA
Response values , continuously adjustable for under- voltage $U_{Nab}$	0,7 - 0,9 $U_N$
Response retardation, adjustable (others on request)	0,5 - 5 sec
Switching hysteresis , firmly set during response retardation	2% of response value
Reconnection voltage $U_{Nan}$ (effective after operation of response retardation)	0,8 ... 1,0 $U_N$
Switch components (data as per VDE 0435)	2 change-overs
Rated contact voltage	220 V
"Make" capacity	6 A
Breaking capacity at AC 220 V and $\cos \phi = 0,4$	2 A
at AC 110 V and L/R = 0	0,35 A
Permanent current	5 A
Operating mode	closed circuit current
Other details	
Tolerable ambient temperature during storage	-20°C-+70°C 253 ... 343 K
during operation	-10°C ... + 50°C 263 ... 323 K
Position when installed	any
type of connection	terminal connection M 3,5 strip terminal with self-lifting clamp washers
Wire cross section single-wire	2x ( 1-1,5 mm <sup>2</sup> )
fine braid with and sleeve	2x (0,75 - 1,5 mm <sup>2</sup> )
Protection as per DIN 400 50	
Internal components	IP 30
Terminals / with terminal covers	IP 10 / IP 20
Terminal with cover	IP 30
Weight approx.	700g

## Wiring diagram



## Explanations to wiring diagram

- K 1 H Output relay with two free change-overs, in closed circuit (normal operating position shown by dashed line)
- H1 built-in LED lights up during normal operation and turns off if undervoltage and mains failure occur.
- R 1 Adjustment potentiometer for time delay
- R 2 Adjustment potentiometer for  $U_{Nab}$
- R 3 Adjustment potentiometer for  $U_{Nan}$
- SP 100 Energy store for max. 5 sec.  
Additional equipment to maintain delay function in case of total mains failure.

## Ordering details

Type	time delay (sec.)	Rated mains voltage $U_n$	Art.-no
SUR353-5	0,5 ... 5	3AC 100 V	B 933 606
		3AC 660 V	B 933 006
SUR353-7	without	3AC 500 V	B 933 056
		3AC 380 V	B 933 107
		3AC 100 V	B 933 620
		3AC 660 V	B 933 009
		3AC 500 V	B 933 059
		3AC 380 V	B 933 110
SP100			B 935 700