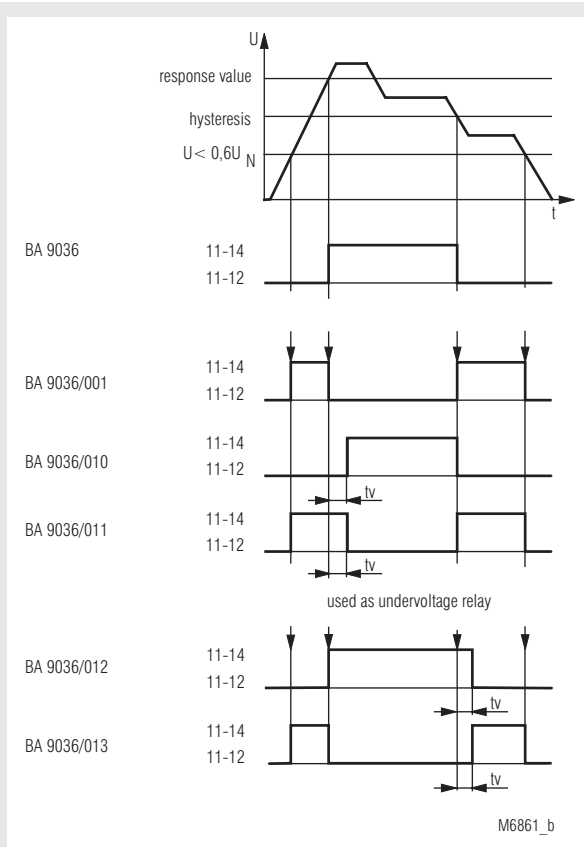


## VARIMETER Voltage Relay BA 9036



- According to IEC/EN 60255-1, IEC/EN 60255-26, VDE 0435 part 303
- Single-phase
- Measuring ranges from 24 to 400
- Settable response and release value
- Without auxiliary supply
- optionally available with adjustable time delay
- with LED indicators for operation and state of contacts
- 2 changeover contacts
- Width 45 mm

### Function Diagram



### Approvals and Marking



\* see variants

### Application

Monitoring of voltage in DC and AC systems

### Indicators

upper LED: on, when voltage connected  
lower LED: on, when output contact activated

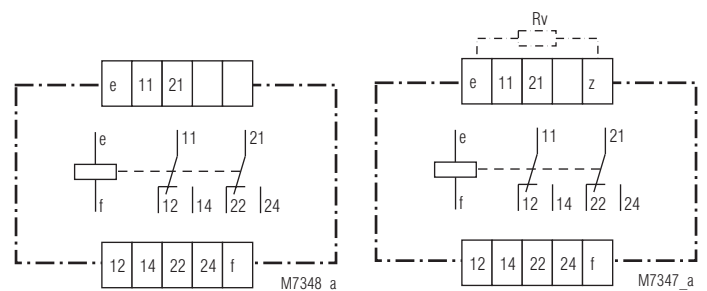
### Notes

#### Mounting instruction for units with external series resistor

The external resistor conducts mains voltage and heats up during operation. It has to be mounted at a suitable location in the cabinet so that touch protection is provided. Because of the heat dissipation a suitable distance to neighbour devices has to be kept.

When using a drop resistor the measuring has to be connected to e and f.

### Circuit Diagrams



BA 9036  
connection diagram for AC voltage

BA 9036  
connection diagram for DC voltage

### Connection Terminals

Terminal designation	Signal designation
e, f	Nominal voltage
e, z	Series resistor (DC)
11, 12, 14, 21, 22, 24	changeover contact

## Technical Data

### Input

<b>Nominal voltage <math>U_N</math>:</b>	AC 42, 110, 127, 230, 240, 290, 400 V DC 24, 48, 60 V DC 110*, 127*, 220*, 240 V* (*) with external drop resistor DC 110 V*: ZWS 20 SL1.5 k $\Omega$ 20 W DC 127 V*: ZWS 20 SL1.6 k $\Omega$ 20 W DC 220 V*: ZWS 35 SL 3.9 k $\Omega$ 35 W DC 240 V*: ZWS 35 SL4.7 k $\Omega$ 35 W
<b>Nominal consumption:</b>	6 VA / 10 W
<b>Nominal frequency:</b>	50 / 60 Hz
<b>Frequency range:</b>	$\pm 5 \%$
<b>Temperature influence:</b>	$< 0.05 \%$ / K
<b>Max. overload:</b>	1.2 $U_N$ continuously

### Setting Ranges

<b>Setting:</b>	0.85 ... 1.05 $U_N$
<b>Hysteresis:</b>	0.75 ... 0.95 of setting value
<b>Setting accuracy:</b>	$\pm 5 \%$
<b>Repeat accuracy:</b>	$\pm 0.5 \%$
<b>Time delay <math>t_v</math>:</b>	0.5 ... 10 s adjustable ( $U > 0.6 \times U_N$ )

### Output

<b>Contacts:</b>	2 changeover contacts
<b>Thermal current <math>I_{th}</math>:</b>	6 A
<b>Switching capacity</b> to AC 15	
NO contact:	2 A / AC 230 V IEC/EN 60 947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60 947-5-1
to DC 13	
NO contact:	1 A / DC 24 V IEC/EN 60 947-5-1
NC contact:	1 A / DC 24 V IEC/EN 60 947-5-1
<b>Electrical contact life</b> to AC 15 at 1 A, AC 230 V:	$\geq 2.5 \times 10^5$ switching cycles
<b>Short circuit strength</b> <b>max. fuse rating:</b>	4 A gL IEC/EN 60 947-5-1
<b>Mechanical life:</b>	30 x $10^6$ switching cycles

### General Data

<b>Operating mode:</b>	Continuous operation
<b>Temperature range:</b>	- 20 ... + 60°C
<b>Clearance and creepage distances</b> rated impuls voltage / pollution degree:	4 kV / 2 IEC 60 664-1
<b>EMC</b>	
Electrostatic discharge:	6 kV (air) IEC/EN 61 000-4-2
Fast transients:	2 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:	1 kV IEC/EN 61 000-4-5
between wire and ground:	2 kV IEC/EN 61 000-4-5
Interference suppression:	Limit value class B EN 55 011
<b>Degree of protection</b>	
Housing:	IP 40 IEC/EN 60 529
Terminals:	IP 20 IEC/EN 60 529
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94
<b>Vibration resistance:</b>	Amplitude 0.35 mm IEC/EN 60 068-2-6 frequency 10 ... 55 Hz
<b>Climate resistance:</b>	20 / 060 / 04 IEC/EN 60 068-1
<b>Terminal designation:</b>	EN 50 005
<b>Wire connection:</b>	2 x 2.5 mm <sup>2</sup> solid or 2 x 1.5 mm <sup>2</sup> stranded wire with sleeve DIN 46 228-1/-2/-3/-4
<b>Wire fixing:</b>	Flat terminals with self-lifting clamping piece IEC/EN 60 999-1
<b>Mounting:</b>	DIN rail IEC/EN 60 715
<b>Weight:</b>	310 g

### Dimensions

<b>Width x height x depth:</b>	45 x 73 x 132 mm
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## UL-Data

**Nominal voltage  $U_N$ :** AC 120 V

**Switching capacity:** Pilot duty B150



Technical data that is not stated in the UL-Data, can be found in the technical data section.

## CCC-Data

**Thermal current  $I_{th}$ :** 5 A

### Switching capacity

to AC 15

NO contact: 2 A / AC 230 V IEC/EN 60 947-5-1

to DC 13

NO contact: 1 A / DC 24 V IEC/EN 60 947-5-1



Technical data that is not stated in the CCC-Data, can be found in the technical data section.

## Standard Type

BA 9036 AC 230 V 50 Hz

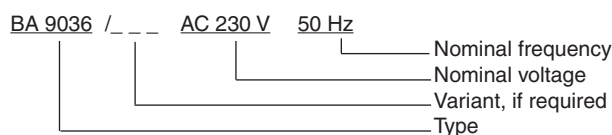
Article number: 0045288 stock item

- Nominal voltage  $U_N$ : AC 230 V
- Width: 45 mm

## Variants

BA 9036/61:	with UL approval on request
BA 9036:	with CCC approval on request
BA 9036/001:	overvoltage / closed circuit operation
BA 9036/010:	overvoltage / open circuit operation / time delay
BA 9036/011:	overvoltage / closed circuit operation / time delay
BA 9036/012:	undervoltage / closed circuit operation / time delay
BA 9036/013:	undervoltage / open circuit operation / time delay

## Ordering example for variants



## Characteristic

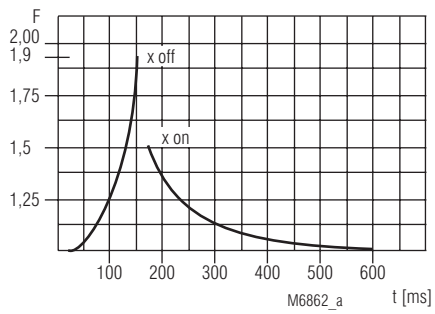


Diagram switching delay

Switching delay  $t_M$ :

The characteristic shows the switching delay depending on the values of  $X_{on}$  -  $X_{off}$  when switching the voltage on or off. A slow voltage change reduces the delay.

Example:

U setting = 200 V  
U applied = 230 V

$$F = \frac{230 \text{ V}}{200 \text{ V}} = 1.1$$

$t_{M, on}$  = approx. 300 ms  
 $t_{M, off}$  = approx. 60 ms

$$F = \frac{U \text{ applied}}{U \text{ setting}}$$

## Accessories

ZWS 20 SL, ZWS 35 SL

Drop resistor

