

## VARIMETER Voltage Relay BA 9037

Translation  
of the original instructions



- According to IEC/EN 60255-1
- Single phase
- Measuring ranges from 24 to 400 V
- Response and release value adjustable independent of each other
- Under- and overvoltage detection
- Without auxiliary supply
- Large setting range
- With time delay
- Closed circuit operation
- Insensitive to harmonics
- LED indicators for operation and state of contacts
- Width 45 mm

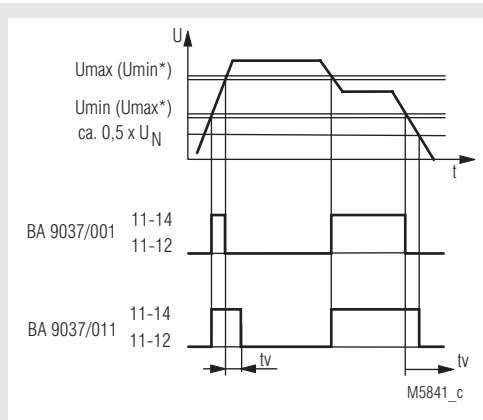
### Product Description

The voltage relay BA 9037 of the VARIMETER series monitors DC or AC networks for overvoltages and undervoltages. The measurement is very simple and can be carried out without much wiring effort, as no separate auxiliary voltage is required. Early detection of impending failures and preventive maintenance prevent costly damage and as a user you benefit from the operational safety and high availability of your system.

### Approvals and Markings



### Function Diagram



\*  $U_{min}$  and  $U_{max}$  can also be exchanged. The hysteresis of the setting values is  $< 4\%$  of the response value

### Applications

Under- and overvoltage detection in AC or DC voltage systems

### Indicators

Upper LED: On, when voltage connected  
Lower LED: On, when output contact activated

### Technical Data

#### Input

**Nominal voltage  $U_N$ :** AC/DC 24, 42, 60V (protected against wrong polarity). These units are calibrated for DC voltage. When AC voltage is connected the setting has an offset of 11 %.  
AC 110, 127, 230, 240, 400 V

**Measuring ranges:** 0.7 ... 1.3  $U_N$

**Voltage range:** 0.6 ... 1.4  $U_N$

**Nominal consumption:**

DC 24 V 1 W  
AC 24 V 2 VA  
AC 230 V 5 VA

**Nominal frequency:** 50 / 60 Hz

**Frequency range:**  $\pm 5\%$

**Temperature influence:**  $< 0.05\% / K$

### Setting Ranges

**Response value:**

$U_{min}$  infinite 0.7 ... 1.3  $U_N$

$U_{max}$  infinite 0.7 ... 1.3  $U_N$

**Hysteresis:**

At  $U_{min}$  bzw.  $U_{max} < 0.96$

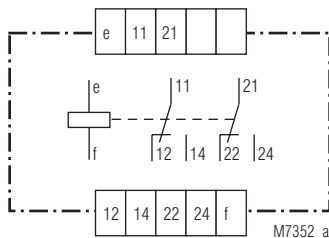
**Setting accuracy:**

$< \pm 5\%$

**Repeat accuracy:**

$< \pm 0.5\%$

### Circuit Diagram



BA 9037.12

Technical Data	
<b>Output</b>	
<b>Contacts:</b>	2 changeover contacts
<b>Release delay:</b>	24 V < 20 ms 220 V < 150 ms 500 V < 150 ms
<b>Thermal current I<sub>th</sub>:</b>	See continuous current limit curve (max. 5 A per contact)
<b>Switching capacity</b>	
To AC 15	
NO contact:	3 A / AC 230 V IEC/EN 60947-5-1
NC contact:	1 A / AC 230 V IEC/EN 60947-5-1
<b>Electrical life</b>	IEC/EN 60947-5-1
At 3 A, AC 230 V cos φ = 1:	5 x 10 <sup>5</sup> switching cycles
<b>Permissible switching frequency:</b>	6000 switching cycles / h
<b>Short circuit strength</b>	
<b>Max. fuse rating:</b>	4 A gG / gL IEC/EN 60947-5-1
<b>Mechanical life:</b>	> 30 x 10 <sup>6</sup> switching cycles
General Data	

<b>Operating mode:</b>	Continuous operation	
<b>Temperature range:</b>	- 40 ... + 70 °C (see continuous current limit curve)	
Operation:	- 40 ... + 60 °C	
Storage:	≤ 2000 m IEC 60664-1	
<b>Altitude:</b>	IEC 60664-1	
<b>Clearance and creepage distances</b>		
Rated impulse voltage / pollution degree:	4 kV / 2 IEC 60664-1	
Overvoltage category:	III up to 300 V II > 300 V up to 400 V	
<b>EMC</b>		
Electrostatic discharge:	8 kV (air) IEC/EN 61000-4-2	
HF irradiation:		
80 MHz ... 6 GHz:	20 V/m IEC/EN 61000-4-3	
Fast transients:	2 kV IEC/EN 61000-4-4	
Surge voltages between		
wires for power supply:	1 kV IEC/EN 61000-4-5	
Between wire and ground:	2 kV IEC/EN 61000-4-5	
HF-wire guided:	10 V IEC/EN 61000-4-6	
Interference suppression:	Limit value class B EN 55011	
<b>Degree of protection</b>		
Housing:	IP 40 IEC/EN 60529	
Terminals:	IP 20 IEC/EN 60529	
<b>Housing:</b>	Thermoplastic with V0 behaviour according to UL subject 94	
<b>Vibration resistance:</b>	Amplitude 0.35 mm IEC/EN 60068-2-6 frequency 10 ... 55 Hz	
<b>Climate resistance:</b>	40 / 070 / 04 IEC/EN 60068-1	
<b>Terminal designation:</b>	EN 50005	
<b>Wire connections:</b>	DIN 46228-1/-2/-3/-4	
	2 x 2.5 mm <sup>2</sup> solid or 2 x 1.5 mm <sup>2</sup> stranded wire with sleeve Captive plus-minus terminal screws M3.5 with self-lifting clamping piece IEC/EN 60999-1	
Wire fixing:		
Stripping length:	10 mm	
<b>Fixing torque:</b>	0.8 Nm	
<b>Mounting:</b>	DIN rail IEC/EN 60715	
<b>Weight:</b>	240 g	

Dimensions	
<b>Width x height x depth:</b>	45 x 73 x 132 mm

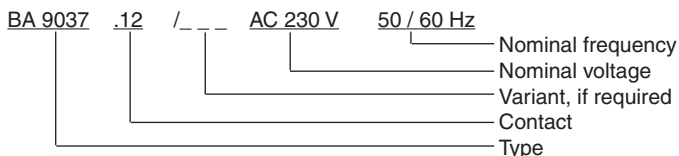
#### Classification to DIN EN 50155

<b>Vibration and shock resistance:</b>	Category 1, Class B IEC/EN 61373
<b>Protective coating of the PCB:</b>	No

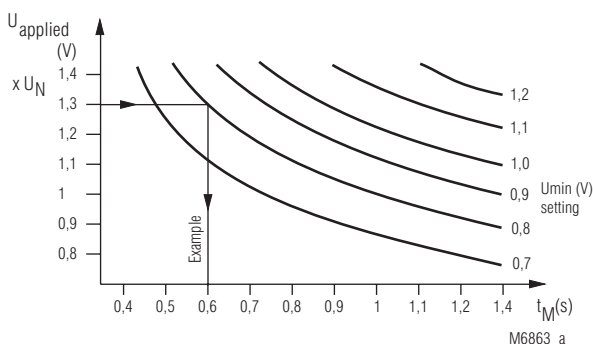
Standard Type	
BA 9037.12/001 AC / DC 24 V	
Article number:	0030758
• Without time delay	
• Output:	2 changeover contacts
• Nominal voltage U <sub>N</sub> :	AC / DC 24 V
• Width:	45 mm

Variant	
BA 9037.--/011:	Adjustable time delay t <sub>v</sub> 1 ... 20 sec. If the voltage drops below 0.5 U <sub>N</sub> the time delay is inactive, and the contacts fall back immediately.

#### Ordering example for variant

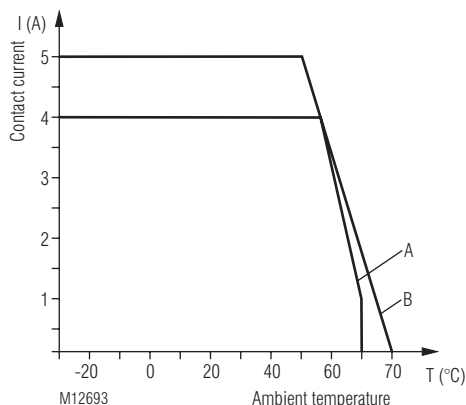


#### Characteristics



#### Operate delay t<sub>M</sub>:

The diagram shows the relation of the operate delay to the applied measuring voltage U<sub>applied</sub> and the setting of U<sub>min</sub> when the voltage is switched on. A slow voltage change reduces the delay.



A = Device mounted without distance.  
B = Device mounted with 2cm distance, heated by devices with same load.

#### Continuous current limit curve