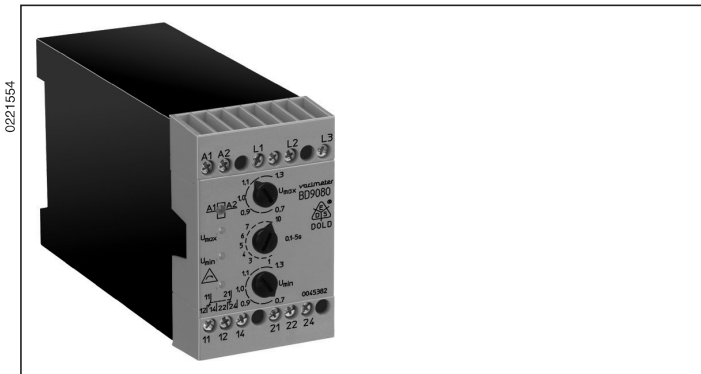
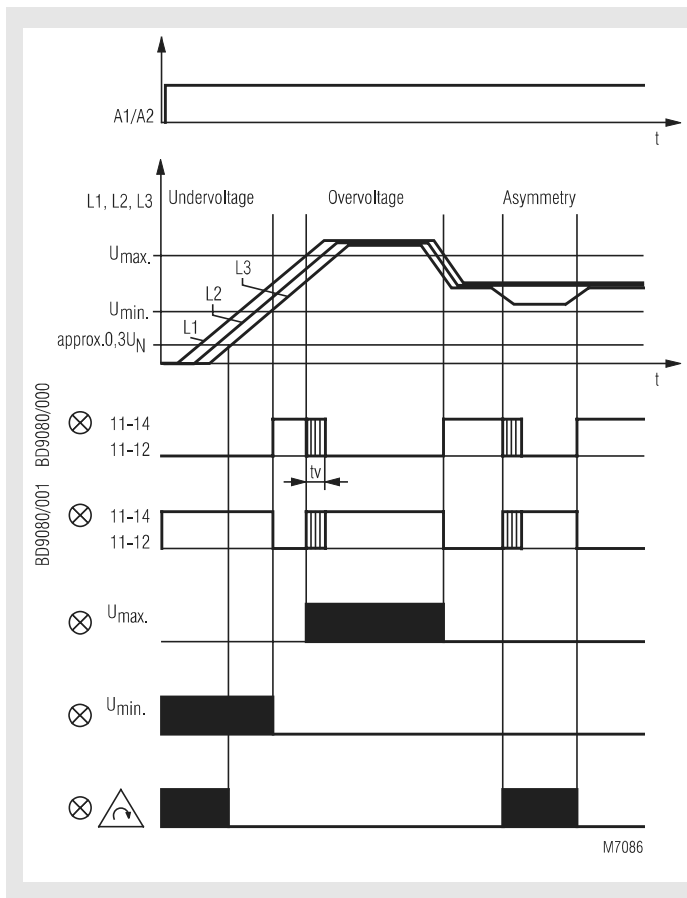


## VARIMETER PRO Phase Monitor BD 9080



- According to IEC/EN 60255-1, IEC/EN 60255-26, DIN VDE 0435-303
- Monitoring of
  - Under- and overvoltage
  - Asymmetry
  - Phase failure
  - Phase sequence
- Release time adjustable between 0.1 ... 5 s
- One LED in each case for
  - Auxiliary voltage A1/A2
  - Overvoltage  $U_{max}$
  - Undervoltage  $U_{min}$
  - Asymmetry / Phase sequence / Power failure
  - Contact position
- Closed circuit operation
- 2 changeover contacts
- As option available with open circuit operation
- Width 45 mm

### Function Diagram



### Approvals and Marking



\* see variants

### Applications

For mounting three-phase networks for undervoltage, overvoltage, phase sequence, asymmetry, power failure.

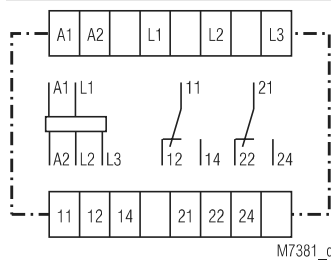
### Indication

- LED A1 / A2: on, when operating voltage present
- LED  $U_{max}$ : on, in event of overvoltage
- LED  $U_{min}$ : on, in event of undervoltage
- LED  $\Delta$ : on, in event of:
  - asymmetry
  - incorrect phase sequence
  - power failure
- LED: on, when output relay activated

### Notes

Measurement procedures: arithmetical mean value measurement over several half-waves of rectified phase voltages L1/L2 and L2/L3. Reference phase is L3. Networks with or without neutral can be monitored. The auxiliary voltage to be applied to A1/A2 can also be taken from the three-phase network which is to be monitored. This reduces to 0.8 - 1.1  $U_H$  the permitted range of voltage of the network to be monitored.

### Circuit Diagram



## Technical Data

### Input Circuit

#### Nominal voltage $U_N$

L1 / L2 / L3: 3 AC 230, 400, 690 V  
(other voltages on request)

#### Setting range:

0.7 ... 1.3  $U_N$

**Overload capacity of  $U_N$ :** 1.5  $U_N$  / 2  $U_N$  (10 s) max. 1 000 V

**Nominal frequency of  $U_N$ :** 50 / 60 Hz

**Frequency range of  $U_N$ :** 45 ... 65 Hz

**Accuracy:**  $\leq \pm 0.5\%$  of  $U_N$

**Power consumption with  $U_N$ :** L1 approx. 0.5 mA

L2 approx. 0.5 mA

L3 approx. 0.8 mA

**Hysteresis:**  $\leq 5\% \times U_A$  ( $U_A$  = response value)

#### Asymmetry detection

Voltage:  $U_A \pm 8 \dots 20\%$

**Fault angle:** approx.  $120^\circ \pm 15^\circ$

**Temperature influence:**  $\leq 0.08\% / K$

### Auxiliary Circuit

#### Auxiliary voltage $U_H$

A1 / A2: AC 110, 230, 400 V  
AC/DC 24 ... 60 V,  
AC/DC 110 ... 230 V  
(other voltages on request)

**Voltage range of  $U_H$ :** 0.8 ... 1.1  $U_H$

**Nominal frequency of  $U_H$ :** 50 / 60 Hz

**Frequency range of  $U_H$ :** 45 ... 500 Hz

**Nominal consumption:** 2.4 VA

### Output Circuit

#### Contacts

BD 9080.12: 2 changeover contacts

**Response-/Release time:** approx. 900 / 150 ms

**Time delay  $t_v$ :** 0.1 ... 5 s

**Thermal current  $I_{th}$ :** 6 A

(see continuous current limit curve)

#### Switching capacity

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

**Electrical life:** IEC/EN 60 947-5-1

to AC 15 at 1 A, AC 230 V:

NO contact:  $2.5 \times 10^5$  switching cycles

#### Permissible switching

**frequency:** 20 switching cycles / s

#### Short circuit strength

**max. fuse rating:** 4 A gL IEC/EN 60 947-5-1

**Mechanical life:**  $\geq 50 \times 10^6$  switching cycles

### General Data

**Operating mode:** Continuous operation

**Temperature range:** -20 ... +60°C

#### Clearance and creepage distances

rated impuls voltage /

pollution degree

auxiliary voltage: 6 kV / 2 IEC 60 664-1

Contact / contact: 4 kV / 2 IEC 60 664-1

#### EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF irradiation: 10 V/m IEC/EN 61 000-4-3

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

#### Degree of protection

Housing: IP 40 IEC/EN 60 529

Terminals: IP 20 IEC/EN 60 529

**Housing:** Thermoplastic with V0 behaviour  
according to UL subject 94

## Technical Data

**Vibration resistance:** Amplitude 0.35 mm IEC/EN 60 068-2-6  
frequency 10 ... 55 Hz,

**Climate resistance:** 20 / 060 / 04 IEC/EN 60 068-1

**Wire connection:** 2 x 2.5 mm<sup>2</sup> solid  
DIN 46 228-1/-2/-3/-4 or  
2 x 1.5 mm<sup>2</sup> stranded wire with sleeve  
DIN 46 228-1/-2/-3/-4

**Wire fixing:** Flat terminals with self-lifting  
clamping piece IEC/EN 60 999-1

**Mounting:** DIN rail IEC/EN 60 715

**Weight:** 325 g

### Dimensions

**Width x height x depth:** 45 x 74 x 133 mm

### UL-Data

**Switching capacity:** Pilot duty B300



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



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

### Standard Type

BD 9080.12 3 AC 400 V AC 230 V

Article number: 0045382 stock item

• Output: 2 changeover contacts

• Nominal voltage  $U_N$ : 3 AC 400 V

• Auxiliary voltage  $U_H$ : AC 230 V

• Closed circuit operation

• Width: 45 mm

## Variants

BD 9080.12/61:

with UL-approval on request

BD 9080:

with CCC-approval on request

BD 9080.12/001:

open circuit operation

BD 9080.12/020:

output relay

indicates only under- and overvoltage

with extended temperature range of

- 40 ... + 70 °C

BD 9080.12/200:

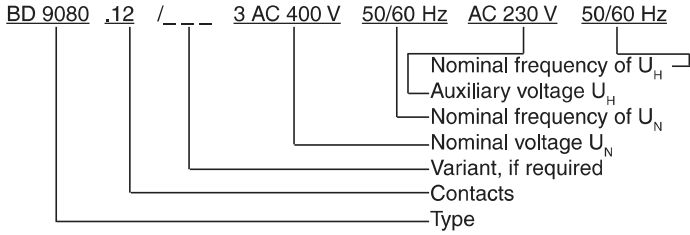
### Remark

At an ambient temperature of + 70°C the device has to be mounted with 2 cm space to the neighbour units and the necessary air circulation must be provided.

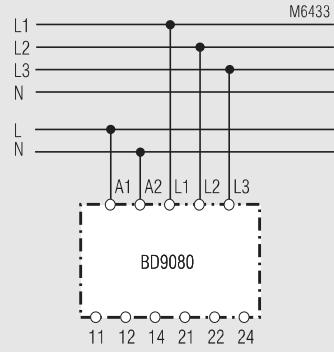
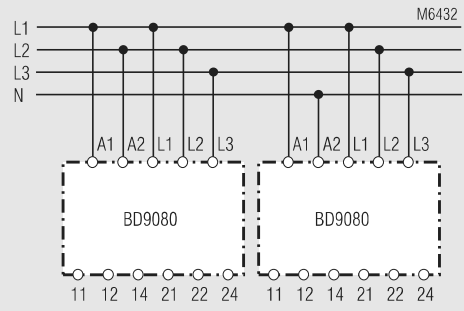
The contact current must not be more then 2 A.

The life of the product may be reduced by the higher ambient temperature!

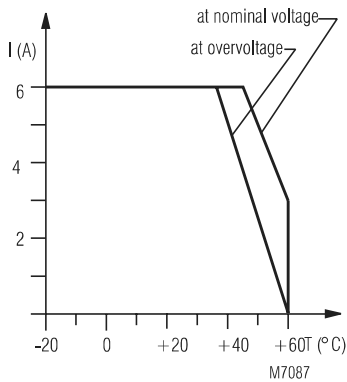
### Ordering example for variant



## Connection Examples



## Characteristic



Continuous current limit curve

