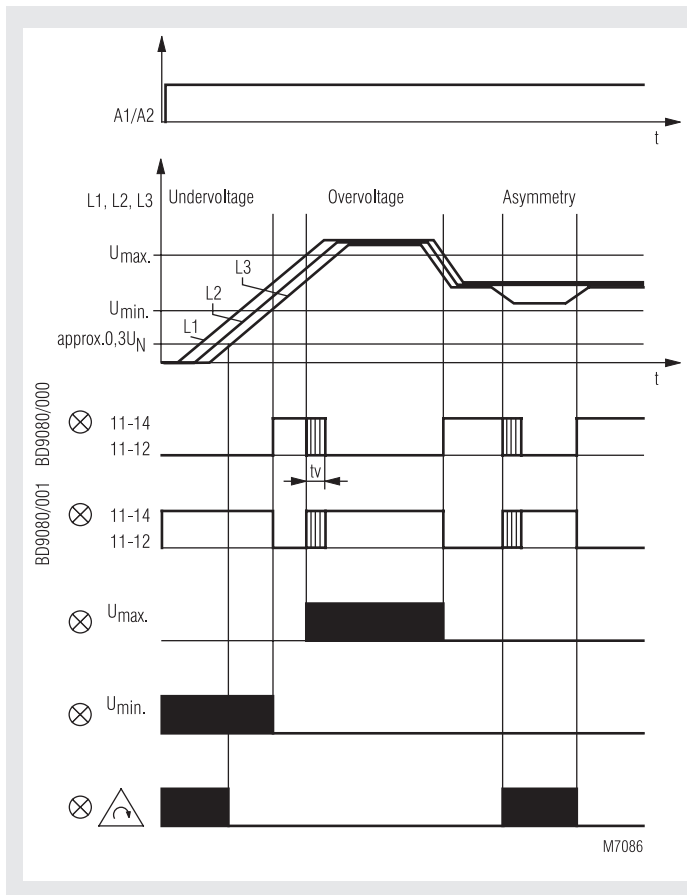




- According to IEC/EN 60 255, DIN VDE 0435-303
- Monitoring of
  - Under- and overvoltage
  - Asymmetry
  - Phase failure
  - Phase sequence
- Release time adjustable between 0.1 ... 5 s
- One LED in each case for
  - Auxiliary voltage A1/A2
  - Overvoltage  $U_{max}$
  - Undervoltage  $U_{min}$
  - 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

1. LED A1 / A2: on, when operating voltage present
2. LED  $U_{max}$ : on, in event of overvoltage
3. LED  $U_{min}$ : on, in event of undervoltage
4. LED  $\Delta$ : on, in event of:
  - asymmetry
  - incorrect phase sequence
  - power failure
5. 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.

### Technical Data

#### Input circuit

#### Nominal voltage $U_N$

L1 / L2 / L3:

3 AC 230, 400, 690 V  
(other voltages on request)

#### Setting range:

#### 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

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

#### Hysteresis:

#### Asymmetry detection

Voltage:

$U_A \pm 10 \dots 20\%$

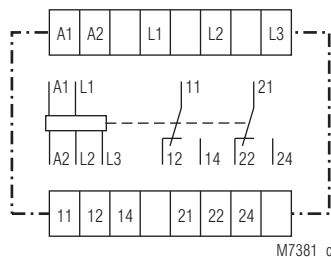
Fault angle:

approx.  $120^\circ \pm 15^\circ$

Temperature influence:

$\leq 0.08\% / K$

### Circuit diagram



## Technical Data

### 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: 3 A / AC 230 V IEC/EN 60 947-5-1

NC contact: 1 A / AC 230 V IEC/EN 60 947-5-1

#### Electrical life:

to AC 15 at 1 A, AC 230 V:

NO contact: 2.5 x 10<sup>5</sup> 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:** ≥ 50 x 10<sup>6</sup> 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

#### Vibration resistance:

Amplitude 0.35 mm IEC/EN 60 068-2-6

frequency 10 ... 55 Hz,

20 / 060 / 04 IEC/EN 60 068-1

#### Climate resistance:

#### 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

DIN rail IEC/EN 60 715

#### Weight:

325 g

### Dimensions

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

## 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

## Variant

BD 9080.12/61

3 AC 400 AC 400 V,

3 AC 480 AC 480 V:

with UL-approval

BD 9080.12/001:

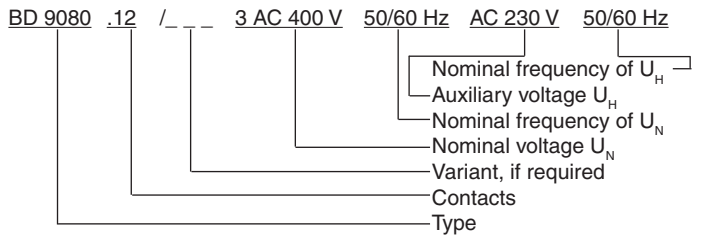
open circuit operation

BD 9080.12/020:

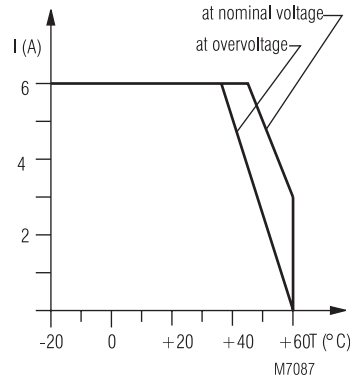
output relay

indicates only under- and overvoltage

## Ordering example for Variant



## Characteristic



Continuous current limit curve

## Connection examples

