

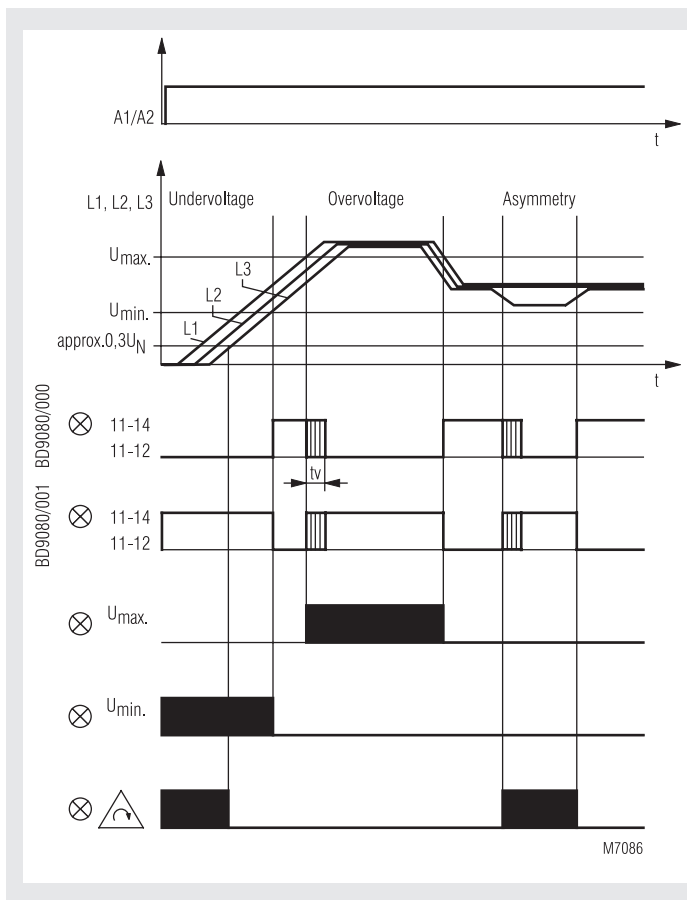
Monitoring Technique

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
- Adjustable time delay 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 Markings



*) see variants

Applications

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

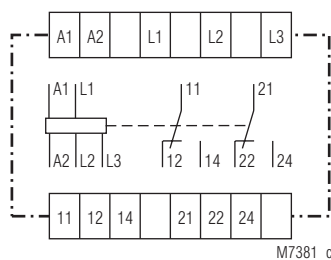
Indication

- | | |
|--------------------|---|
| 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 Δ : | on, in event of: <ul style="list-style-type: none"> - 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_n 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 ... 80 V, AC/DC 80 ... 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 x 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 impulse 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:	DIN 46 228-1/-2/-3/-4
Fixed screw terminals	
Cross section:	0.1 ... 4 mm ² (AWG 28 - 12) solid or 0.1 ... 2.5 mm ² (AWG 28 - 12) stranded wire with ferrules
Stripping length:	10 mm
Fixing torque:	0.8 Nm
Wire fixing:	Cross-head screw / M3,5 box terminals
Mounting:	DIN rail IEC/EN 60 715
Weight:	325 g
Dimensions	

Width x height x depth:	45 x 74 x 133 mm
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Classification to DIN EN 50155	
Vibration and shock resistance:	Category 1, Class B IEC/EN 61 373
Protective coating of the PCB:	No

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
• 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

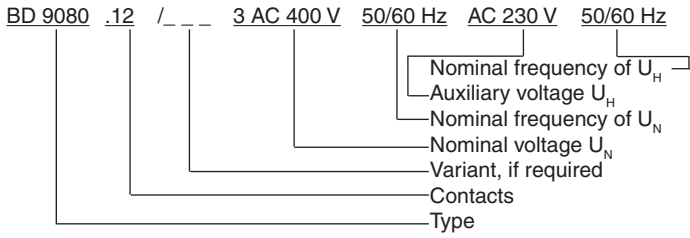
Variants

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
 BD 9080.12/200: indicates only under- and overvoltage with extended temperature range of - 40 ... + 70 °C

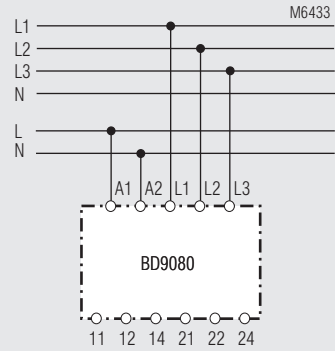
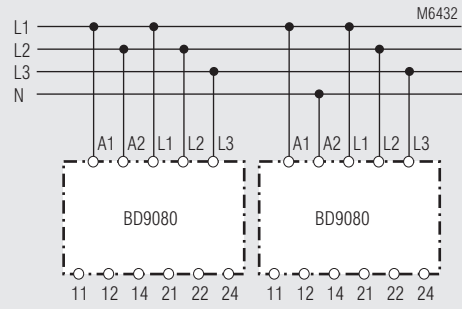
Remark

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!

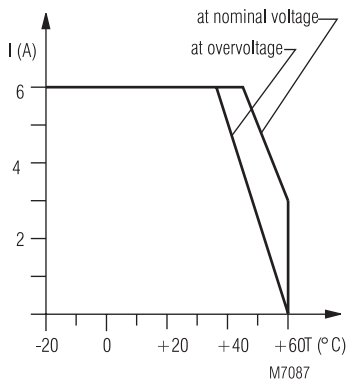
Ordering example for variant



Connection Examples



Characteristic



Continuous current limit curve

