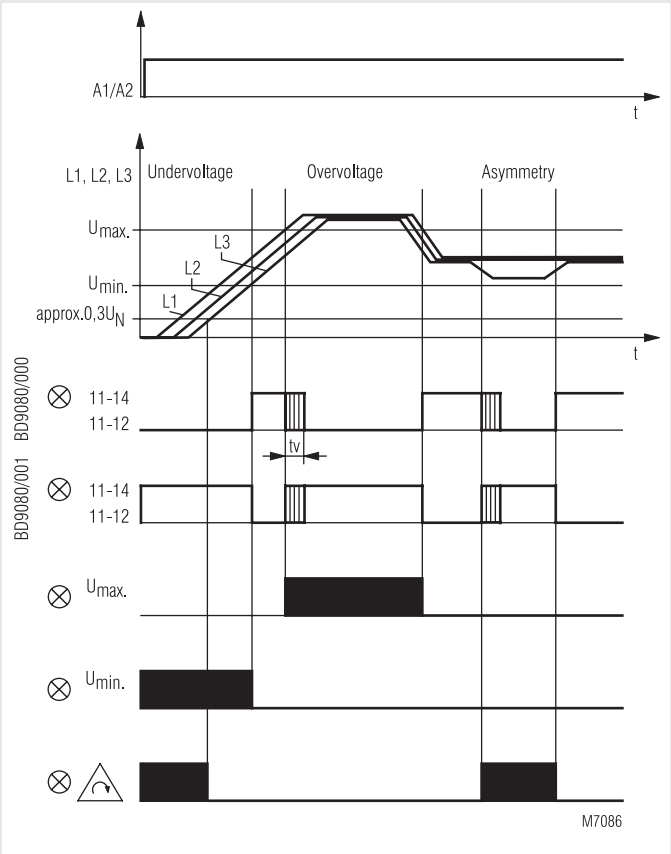
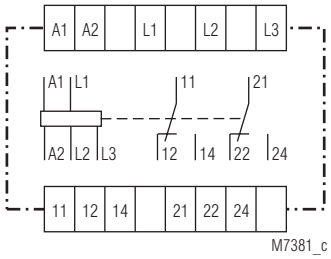
VARIMETER PRO
Phase Monitor
BD 9080

0221554

Function Diagram



Circuit Diagram



- According to IEC/EN 60255-1
- 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

Approvals and Markings

Canada / USA

A025518

*) 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: - 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:	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:	≤ ± 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:	≤ 5 % x U_A (U_A = response value)	
Asymmetry detection		
Voltage:	U_A ± 8 ... 20 %	
Fault angle:	approx. 120° ± 15°	
Temperature influence:	≤ 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:	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:	≥ 50 x 10^6 switching cycles	

General Data

Operating mode:	Continuous operation	
Temperature range		
Operation:	- 20 ... + 60°C	
Storage:	- 20 ... + 60°C	
Altitude:	< 2,000 m	
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
Overvoltage category:	III	
EMC		
Electrostatic discharge:	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation		
80 MHz ... 2.7 GHz:	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
HF wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011

Technical Data

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 frequency 10 ... 55 Hz,	IEC/EN 60 068-2-6
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 mm² (AWG 28 - 12) solid or 0.1 ... 2.5 mm² (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

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 indicates only under- and overvoltage
BD 9080.12/200:	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.

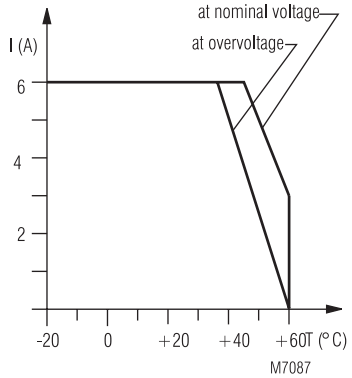
The life of the product may be reduced by the higher ambient temperature!

Ordering example for variant

BD 9080 .12 /_ _ _ 3 AC 400 V 50/60 Hz AC 230 V 50/60 Hz

- Nominal frequency of U_H
- Auxiliary voltage U_H
- Nominal frequency of U_N
- Nominal voltage U_N
- Variant, if required
- Contacts
- Type

Characteristic



Continuous current limit curve

Connection Examples