

VARIMETER Active Power Transducer MH 9398

Translation
of the original instructions



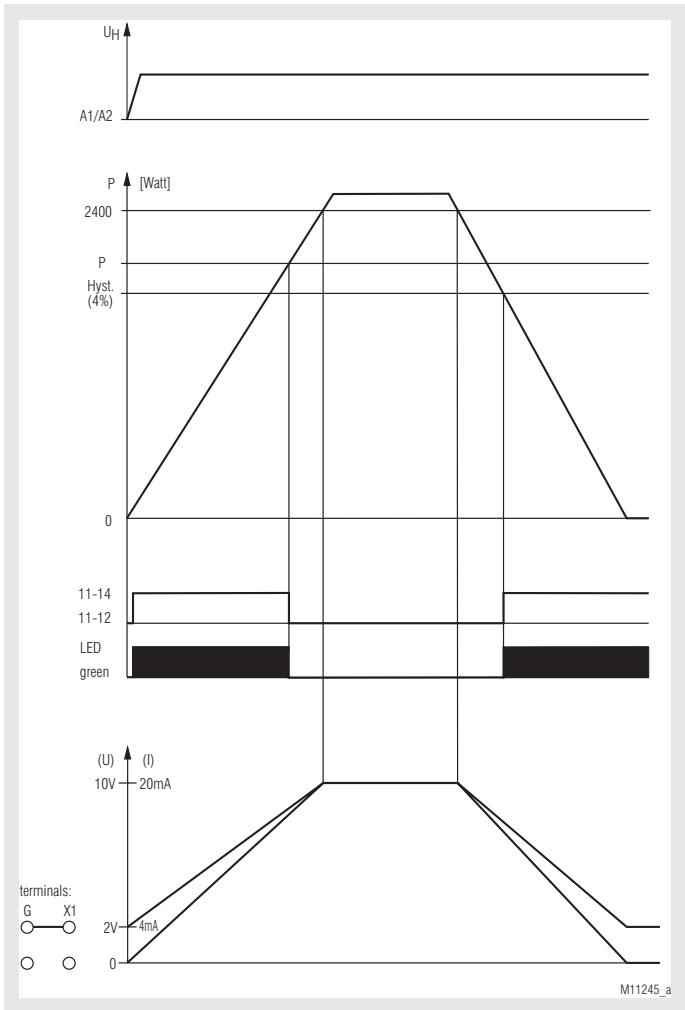
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Product Description

The active power transducer MH 9398 of the VARIMETER-family monitors reliably the effective power of single phase electric consumers. Adjustment is simply done via 2 rotary switches. When exceeding the adjusted threshold the output relay switches. In addition the unit has 2 galvanic separated analogue outputs. These provide the momentary active power value. LEDs indicate the connected supply and the state of the output relay.

Function Diagram



Your Advantages

- Universal use because of relay- and analogue outputs
- Reliability overload detection by active power measuring
- To extend the life of your electric drives
- Preventive maintenance
- Quicker fault locating

Features

- According to IEC/EN 60255-1
- Measurement procedures: active power measuring
- Detection of overload
- Galvanic separate analogue signals, optionally with
 - 0 ... 20 mA and 0 ... 10 V or
 - 4 ... 20 mA and 2 ... 10 V
- Adjustable response value
- Fixed hysteresis
- Single-phase
- LED indication for auxiliary voltage and contact position
- De-energized on trip
- As option with pluggable terminal blocks for easy exchange of devices
 - With screw terminals
 - Or with cage clamp terminals
- Width: 45 mm

Approvals and Markings



*) pending

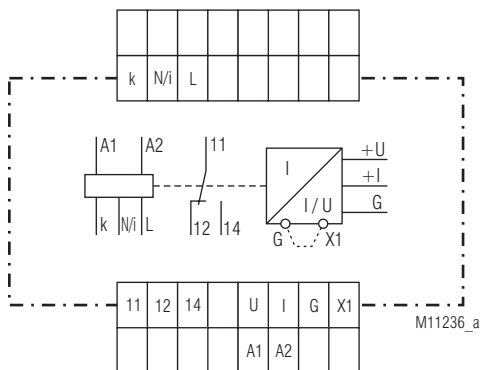
Applications

The active power transducer can be used to monitor single phase electrical motors with variable load and other single phase loads.

Notes

The relay also responds to overload on reverse power. Overload in the current path is indicated by a fast flashing of the LEDs.

Circuit Diagram



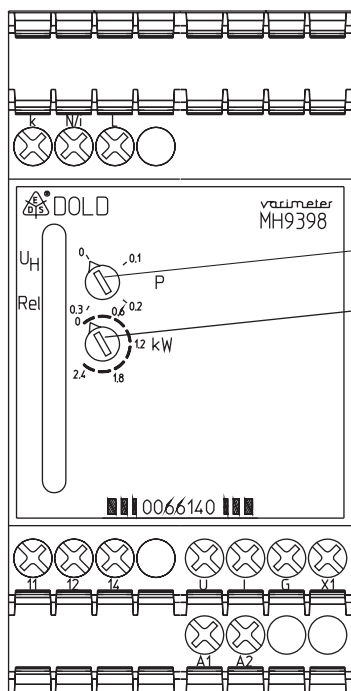
Connection Terminals

Terminal designation	Signal designation
A1 , A2	Auxiliary voltage AC
N/i, L	Voltage measuring input AC
N/i , k	Current measuring path AC
11, 12, 14	Indicator relay (C/O contact)
U, I, G, X1	Analogue output voltage / current

Set Up Procedure

The connection has to be made according to the connection examples. To connect the current of L1 the Terminals I and k are available. If the current to be measured exceeds the maximum continuous current of the input and external current transformer has to be used.

Setting



M11243_b

Setting

Setting facilities

P:

Poti 1: Fine adjustment 0 ... 0.3 kW
(endvalue = 0.3 kW):

Poti 2: 8 ranges adjustable:
0 ... 0.3 kW
0.3 ... 0.6 kW
0.6 ... 0.9 kW
0.9 ... 1.2 kW
1.2 ... 1.5 kW
1.5 ... 1.8 kW
1.8 ... 2.1 kW
2.1 ... 2.4 kW

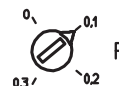
Example

Response value: 1.6 kW

Fine adjustment

(Upper rotary switch):

0.1 kW



Range selection

(Lower rotary switch):

1.5 ... 1.8 kW



Indicators

Green LED "U_H":

On, when auxiliary voltage present

Green LED "P":

Permanent on: Relay 1 active

Overload within the current range is indicated by fast flashing of the LED.

Technical Data

Measuring value: Effective power single-phase
Nominal measuring value: 2.4 kW

Auxiliary Voltage A1 / A2

Nom. auxiliary voltage U_H : AC 230 V (0,8 ... 1,1 x U_H)
Nominal frequency: 50 / 60 Hz
Input current
At AC 230 V: 15 mA
Nominal consumption: 2.5 W

Voltage Measuring Input N / L

Nominal voltage U_N : AC 230 V
Measuring range: AC 12 ... 230 V (0,8 ... 1,1 x U_H)

Current Measuring Input i / k

Nominal current I_N : AC 10 A
Measuring range: AC 100 mA ... 10 A
Max. overload
Continuously: 16 A
Short time < 10 s: Max. 25 A

Overload within the current range is indicated by fast flashing of the LED.

Nominal frequency: 50 / 60 Hz
Frequency range: 45 ... 400 Hz

Setting range (at absolute scale)

Response value: 0 ... 2.4 kW setting at absolute scale
Setting
Range: 8 ranges 0 ... 2.4 kW
Rel: Fine adjustment 0 ... 0.3 kW
Measuring accuracy
(In % of setting value): $\pm 4\%$
Hysteresis
(In % of setting value): < 4 %
Reaction time: < 350 ms
Start up delay: 500 ms fixed

Output

Contact: 1 changeover contact
Thermal current I_{th} : 4 A
Switching capacity
To AC 15:
NO contacts: 3 A / AC 230 V IEC/EN 60947-5-1
NC contacts: 1 A / AC 230 V IEC/EN 60947-5-1
To DC 13: 1 A / DC 24 V IEC/EN 60947-5-1
Electrical life
At 3 A, AC 230 V $\cos \varphi = 1$: 2×10^5 switch. cycl. IEC/EN 60947-5-1
Short circuit strength
max. fuse rating: 4 A gG / gL IEC/EN 60947-5-1
Mechanical life: 30×10^6 switching cycles

Analogue output U / I / G

The analogue outputs are galvanic separated from the measuring circuit and indicate the actual value in the complete possible measuring range.

The max value is fixed and cannot be changed.

Galvanic separation AC 3750 V

to auxiliary, measuring and output circuit

Terminal U(+) / G(-): 0 ... 10 V, max. 10 mA
Terminal I (+) / G(-): 0 ... 20 mA, max. burden 500 Ω
Selection to 2 ... 10 V / 4 ... 20 mA
by bridging terminals X1 and G

Technical Data

General Data

Nominal operating mode: Continuous operation

Temperature range

Operation: - 20 ... + 60 °C
Storage: - 20 ... + 60 °C

Altitude: < 2000 m

Clearance and creepage distance

Rated impulse voltage /
pollution degree: 4 kV / 2

EMC

Electrostatic discharge (ESD): 8 kV (air) IEC/EN 61000-4-2
HF irradiation

80 MHz ... 2,7 GHz: 10 V / m IEC/EN 61000-4-3
Fast transients: 2 kV IEC/EN 61000-4-4

Surge voltage

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 A*)

*) The device is designed for the usage under industrial conditions (Class A, EN 55011).

When connected to a low voltage public system (Class B, EN 55011) radio interference can be generated. To avoid this, appropriate measures have to be taken

Degree of protection:

Housing: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Housing: Thermoplastic with VO behaviour according to UL Subject 94

Vibration resistance: Amplitude 0.35 mm frequency 10 ... 55 Hz, IEC/EN 60068-2-6

Climate resistance: 20 / 060 / 04 IEC/EN 60068-1

Terminal designation: EN 50005

Wire connection DIN 46228-1/-2/-3/-4

Screw terminals

(integrated):

1 x 4 mm² solid or
1 x 2.5 mm² stranded wire with sleeve or
2 x 1.5 mm² stranded wire with sleeve or
2 x 2.5 mm² solid

Insulation of wires

or sleeve length: 8 mm

Plug in with screw terminals

Max. cross section: 1 x 2.5 mm² solid or
1 x 2.5 mm² stranded wire with sleeve

Insulation of wires

or sleeve length: 8 mm

Plug in with cage clamp terminals

Max. cross section: 1 x 4 mm² solid or
1 x 2.5 mm² stranded wire with sleeve
0.5 mm²

Min. cross section:

Insulation of wires

or sleeve length: 12 ± 0.5 mm

Wire fixing: Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals

Stripping length: 10 mm

Fixing torque: 0.8 Nm

Mounting: DIN-rail

Weight: 360 g IEC/EN 60715

Dimensions

Width x height x depth: 45 x 90 x 97 mm

Standard Type

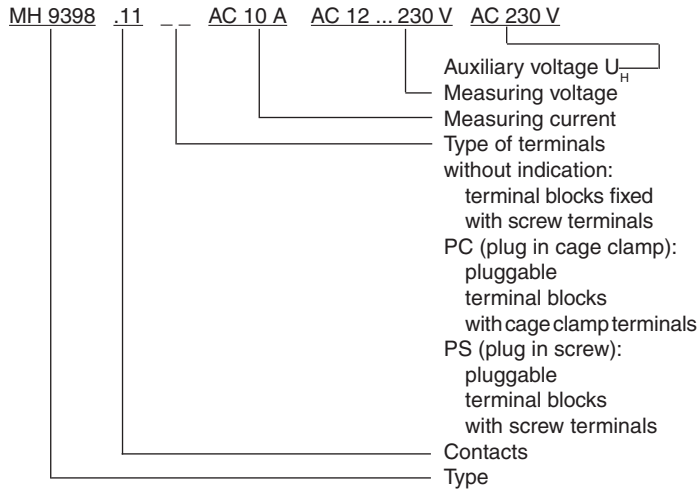
MH 9398.11 AC 10 A AC 12 ... 230 V AC 230 V

Article number: 0066140

- Single-phase, with auxiliary voltage
- Output: 1 C/O contact and 2 analogue outputs
- Nominal current I_N : AC 10 A
- Nominal voltage U_N : AC 230 V
- Auxiliary voltage U_H : AC 230 V
- Width: 45 mm

Ordering Example

Ordering example for variants



Connection Example

