VARIMETER PRO

Multifunctional measuring relay with Modbus connection - UG 9400

The multifunctional measuring relay UG 9400 of the VARIMETER PRO series allows easy parameterisation, monitoring and diagnosis via the Modbus RTU interface.

Up to nine measuring functions are combined in an enclosure that is only 22.5 mm wide.

Depending on the requirements, the measuring relay monitors the three-phase mains simultaneously for over/undervoltage, voltage asymmetry, over/undercurrent, cos phi, frequency and phase sequence. It can also be used in single-phase mains.

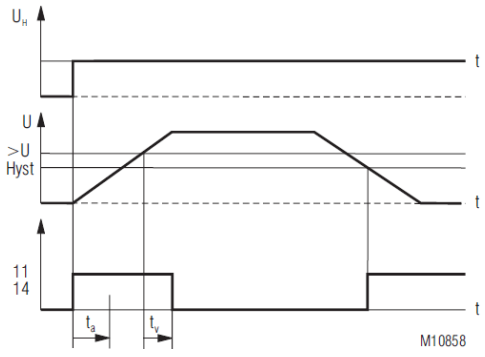
The monitoring functions can be set independently of each other. The UG 9400 has 2 relay outputs. Each monitoring function can be assigned to relay 1 and/or relay 2.

To extend the current measuring range > 12 A a current transformer can be connected upstream, whose transformation ratio is parameterised via Modbus.

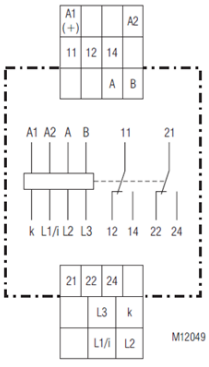
Up to nine measuring functions

Voltage | Frequency | Current | cos phi | Active Power | Reactive Power | Apparent Power | Assymetry | Phase sequence

Function Diagram



Circuit Diagram



Terminal designation	Signal description
A1 (+), A2	Auxiliary voltage AC or DC
L1/i, L2, L3	Voltage measuring input AC
L1/i , k	Current measuring path AC
11, 12, 14	Indicator relay (C/O contact)
21, 22, 24	Indicator relay (C/O contact)
A	Modbus signal A
B	Modbus signal B

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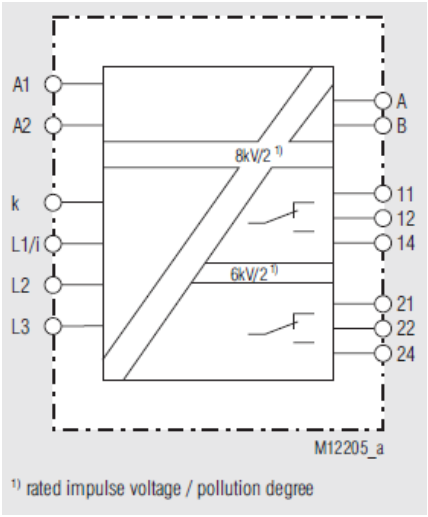
Modbus RTU interface

The integrated Modbus RTU interface offers extensive diagnostic options. Process, parameter and configuration data can be transmitted via the RS-485 interface. Response values for all monitoring functions can be set precisely. The present bus system is realised according to the master-slave principle. The Modbus master takes control of the system. A maximum of 32 Modbus slaves can be connected to the bus. The Modbus RTU protocol according to specification V1.1b3 is used for communication of the measuring relay with a higher-level control. For more information on the interface, wiring guidelines, device identification and communication monitoring, please refer to our Modbus RTU user manual.

High dielectric strength



1) rated impulse voltage / pollution degree

Rated impulse voltage / Pollution degree

Auxiliary voltage / measuring input: 8 kV / 2	IEC/EN 60664-1
Auxiliary voltage / bus: 8 kV / 2	IEC/EN 60664-1
Auxiliary voltage / contacts: 8 kV / 2	IEC/EN 60664-1
Measuring input / bus: 8 kV / 2	IEC/EN 60664-1
Measuring input / contacts: 8 kV / 2	IEC/EN 60664-1
Contacts / bus: 8 kV / 2	IEC/EN 60664-1
Contacts 11,12,14 / 21,22,24: 6 kV / 2	IEC/EN 60664-1
Within contact path: 1.5 kV / 2	IEC/EN 60664-1

Features

- Multifunctional measuring relay according to IEC/EN 60255-1
- High dielectric strength
- With galvanic separated Modbus RTU interface
- Start-up time delay, response delay
- Adjustable hysteresis 0.2 ... 50 % of the response value
- Adjustable current transformer turns ratio in register 30012
- Error memory
- 2 change-over contacts
- Relay function energized / de- energized on trip parameterizable
- 22.5 mm width

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Advantages and customer benefits

- Simultaneous monitoring of up to 9 measured variables
- Min, max value or window monitoring
- Large measuring range 3 AC 24 ... 690 V
- Auxiliary voltage ranges AC/DC 24 ... 230 V or AC 24 ... 400 V
- Easy parameterisation, monitoring and fault diagnosis
- User-friendly device configuration simplifies adaptation to the application
- Early detection of errors and irregularities
- Increases system availability and productivity
- Avoids expensive downtimes and repairs
- Preventive maintenance
- Compact design

Applications

- Monitoring of electrical and physical operating variables in complex and extensive plants
- Voltage-dependent switching in the event of overvoltage or undervoltage
- Motor protection in the event of phase faults
- Transformer protection in case of asymmetrical load
- Frequency monitoring for frequency converters
- Mains monitoring of cooling transporters during loading and unloading, in pumping stations & contactor controls
- Function monitoring of lamps in signalling systems
- Load monitoring in crushing plants
- Start-up monitoring of slip-ring motors
- Monitoring for broken V-belts in fan drives
- Process and chemical technology / supply and disposal technology

Target industries

- Engineering and planning offices
- Mechanical and plant engineering
- Control and switchgear construction
- Industrial service and maintenance
- Building and electrical installation technology

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Order designation / Price / Delivery time (Standard type)

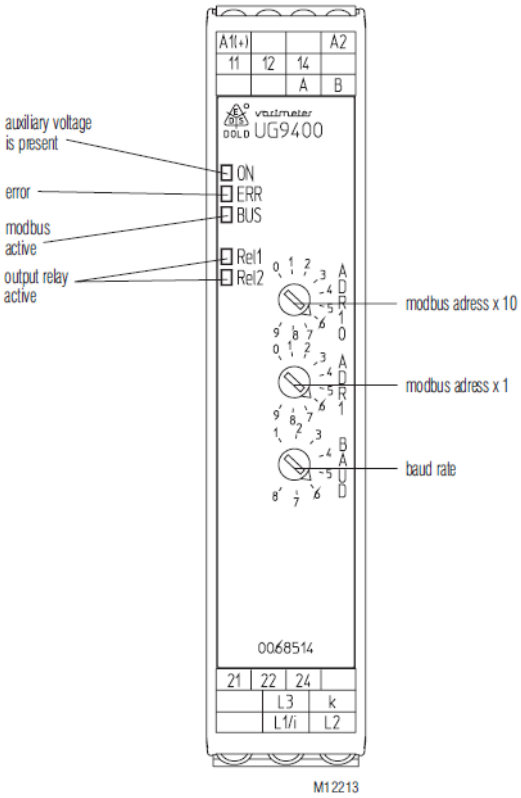
UG 9400.12PM 3 AC 24 ... 690V AC 12 A UH = AC/DC 24 ... 230 V
Order number: 0068514
List price 2021: 343,66 €
Delivery time: as of now

UG 9400.12PM 3 AC 24 ... 690V AC 12 A UH = AC 24 ... 400 V
Item number: 0068515
List price 2021: 343,66 €
Delivery time: as of now

Competitive comparison

To our knowledge, currently there is no multifunctional measuring relay with a Modbus RTU interface. Siemens has a monitoring relay with IO-Link (no Modbus).

Device settings



Rotary switch ADR10: - Device address x 10
Rotary switch ADR1: - Device address x 1
Rotary switch BAUD: - Baud rate

The device address and baud rate are only read after applying the auxiliary voltage!

Bus interface

Protocol	Modbus Serial RTU
Address	1 to 99
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 baud
Data bit	8
Stop bit	2
Parity	none

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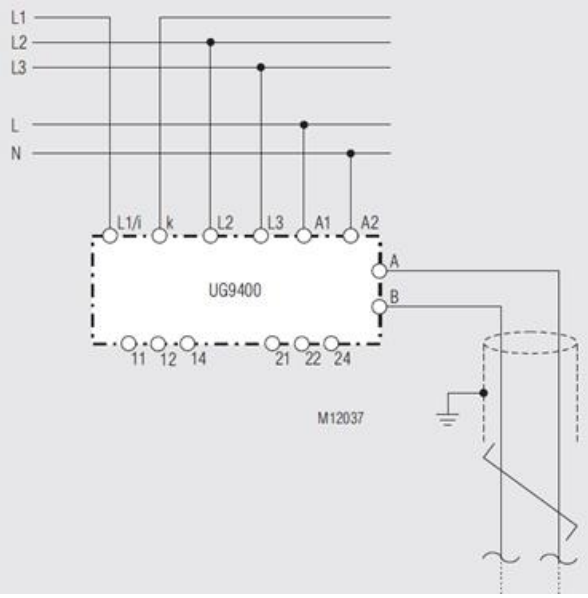
Commissioning and setting instructions

1. Connect the device according to the application example.
2. Set the unit address and baud rate using the rotary switch.
3. Connect the device to the power supply.
4. Parameterise the device via Modbus.

Terminals i and k are provided for feeding the current from L1. For larger currents, a current transformer must be connected upstream. If current measurement is not intended, input k is not connected.



Data sheet and user manual Modbus can be found in the attachment.

For further information, please contact the head office.

Attachment:

Data sheet UG 9400
User manual Modbus
Overview customer benefits

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