

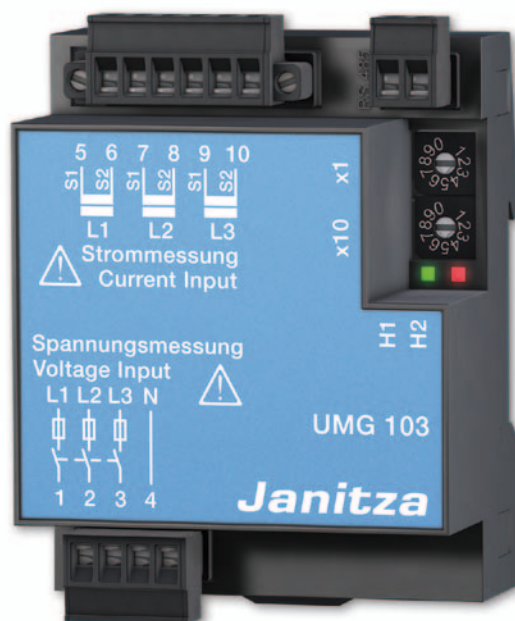


UMG 103 – Universal measuring equipment

for DIN rail mounting

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Universal measuring devices of the UMG 103 product family are mainly designed for use in low voltage distribution systems. The UMG 103 is a measuring instrument with an effective energy class of 0.5S.

In addition to a large quantity of electrical measurement values, the UMG 103 offers a multitude of additional functions such as the measurement of harmonics, the storage of minimum and maximum values, operating hour meter, bi-metallic strip function and password protection. The interface and field bus capabilities (Modbus) enable the communication of measurement data and incorporation into a comprehensive energy management system.

Areas of application

- For measuring and checking electrical parameters in energy distribution systems
- Cost centre management solutions for data collection
- Limit value monitoring, measurement value generator for building management systems or PLC
- Monitoring harmonics

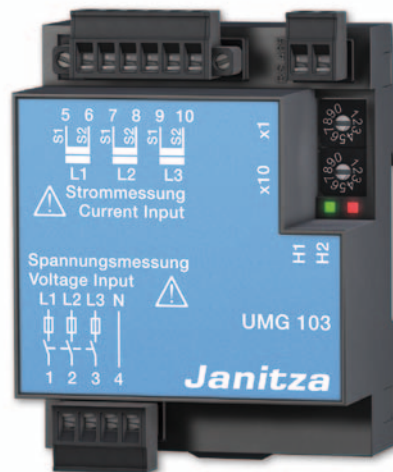
Various versions with UL-approval available!

UMG 103 Universal measuring instrument

for DIN rail mounting

The UMG 103 is a very compact universal measuring instrument for mounting on DIN rails. The compact dimensions even enable installation in limited spaces such as in installation sub-distribution boards. Installation and connection costs are significantly reduced by mounting the instrument on a 35mm DIN rail.

In order to make use of the extensive functions of modern measuring instruments, the interconnection and central analysis of data plays an important role. This is the reason for not using a display; two LEDs show the current operating status. The communication of measurement data takes place through a very fast RS485/Modbus interface.



Main features

- Measurement in TN and TT networks
- 3 voltage measurement inputs (300V CAT III), 3 current measurement inputs
- Continuous scanning of the voltage and current measurement inputs
- High measurement accuracy, effective energy class 0.5; U/I, 0.2%
- Harmonic analysis up to the 25th order
- Including GridVis software
- RS 485 (Modbus RTU, slave)
- Mounting on 35mm DIN rail
- Suitable for integration in installation distribution panels

The UMG 103 performance level is usually sufficient for sub-measurements in connection with higher performance power analysers such as the UMG 604 or the UMG 508 applied in more complex energy management systems. In this case, the UMG 103 serves as data measurement point which takes the measurement data and passes it on to a higher-level point (master device). Using power analysers such as the UMG 604 with an integrated Modbus/Ethernet-gateway and integrated web server, data are brought onto the Ethernet level or are visualised on the homepage. Some examples of applications are cost centre management systems in office buildings, monitoring feeders to sub-distribution panels, motor control centres or in IT and data centres.

Applications

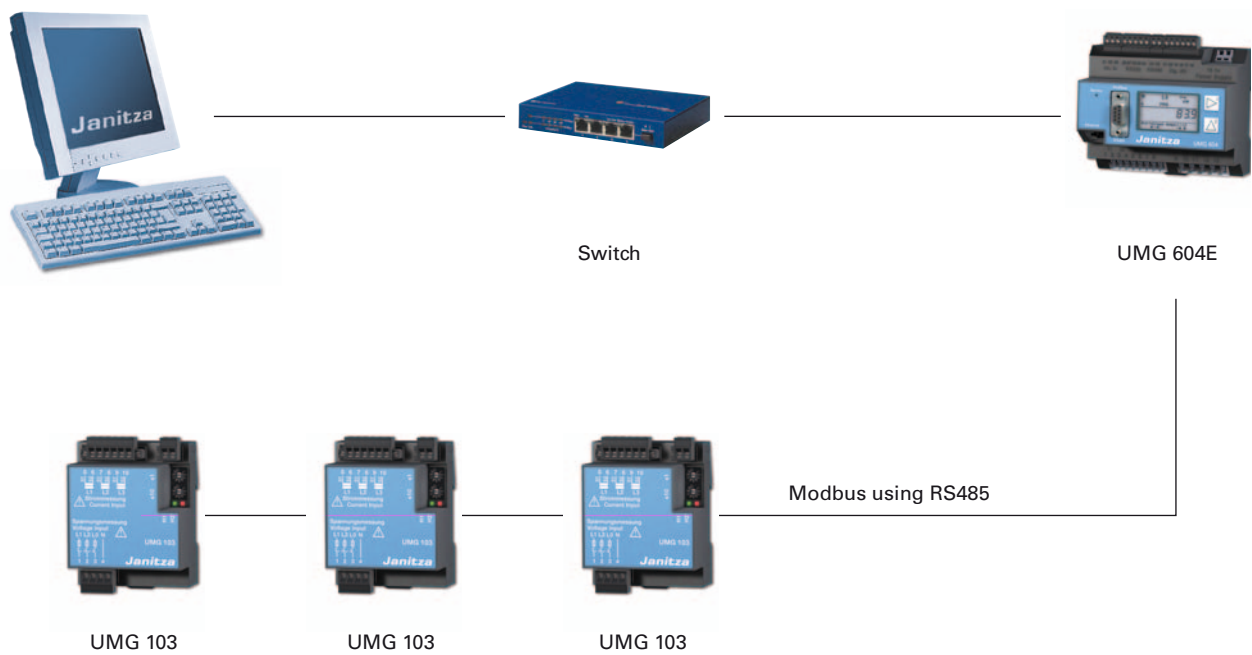
The UMG 103 is intended for the measurement and calculation of electrical parameters such as current, voltage, power, consumption or harmonics etc. in building installations, on distribution panels, on circuit breakers and on server racks. The UMG 103 is fixed into cabinets or small installation distributors in any installation position. The measurement values can be read out using the serial interface. The highest, lowest and energy values are recorded every two seconds in a non-volatile memory.

The voltage measurement inputs are designed for the measurement in low voltage networks in which nominal voltages up to 300V against ground and surge voltages up to over voltage category III can occur. The UMG 103 is mainly suitable for measurements in low voltage networks because it takes the supply voltage from the measurement voltage and a voltage converter would be therefore necessary for HV grids.

Communication options: Online reading



The connection of a UMG 103 to a PC using an interface converter



The connection of several UMG 103's to a PC using a UMG 604 (with optional Ethernet)

Overview of product variants

Description	Type	Operating voltage	Item number
Universal measuring device 50/60Hz; Current transformer: ..1/5A	UMG 103	from one phase L-N: 115 ... 240V AC $\pm 10\%$ from three phase L-N: 80 - 240V AC $\pm 10\%$	52.18.001

Measurement range

Voltage L-N	50-240 V-AC
Voltage L-L	85-415 V-AC
Current (CTs: x/1 and x/5A)	0,001...7,5A
Frequency, mains	45...65 Hz

General technical data

Over voltage category	CAT III	300 V-AC
Nominal voltage	3-phase 4-wire grid	L-N: 240V AC $\pm 10\%$, L-L: 415V AC $\pm 10\%$
Scanning rate		5.4 kHz per channel
Quadrants		4
Weight		150g
Dimensions		B=71.5 mm, H=90 mm, T=46 mm
Mounting		35 mm DIN rail
Working temperature		-10...+55 °C
Storage temperature		-20...+70 °C
Protection class	According to EN 60529	IP20
Connectable conductors (U/I)	Single wire, multi-wire, fine-wire, Pin cable lugs, ferrule	0.08-2.5 mm ² 1.5 mm ²

Measurement values

Voltage	L1, L2, L3, L1-L2, L2-L3, L1-L3	0.2%
Current	L1, L2, L3, N calculated	0.2%
Effective, reactive and apparent power	L1, L2, L3, sum	Accuracy $\pm 0.4\%$
Cos-phi, power factor	L1, L2, L3, sum	
Effective/reactive energy	Consumed/inductive	Class 0.5S(kWh)
Frequency	L1, L2, L3	Accuracy $\pm 0.1\%$
Average value		Yes
Minimum/maximum value		Yes
Operating hour meter		Yes

Power quality

Harmonics 1-25th harmonic order, uneven	Current, voltage, L1, L2, L3	Accuracy: 0.5%
Distortion factor THD-U in %	L1, L2, L3	Accuracy: 0.5%
Distortion factor THD-I in %	L1, L2, L3	Accuracy: 0.5%

Communication

Interfaces		
RS 485	Up to 115.2 kbps	Yes
Protocols		
Modbus RTU/slave		Yes

Typical connection options

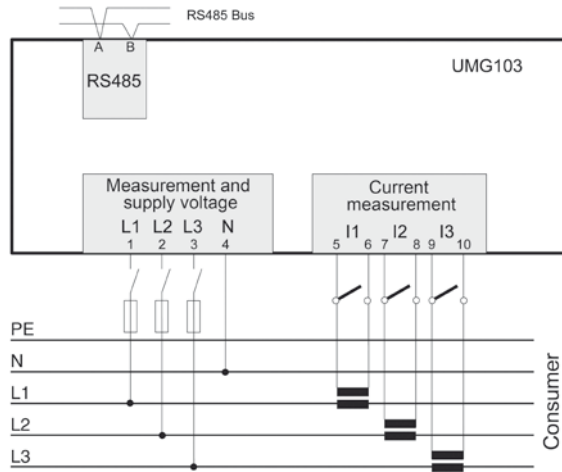


Illustration: connection option UMG 103

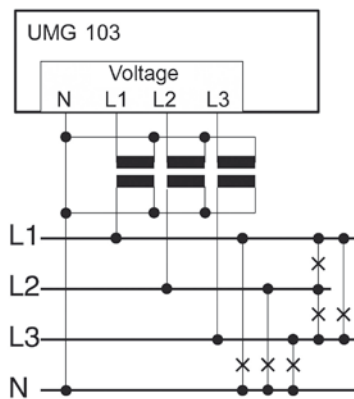


Illustration: connection example for a voltage measurement using a voltage transformer (VT)

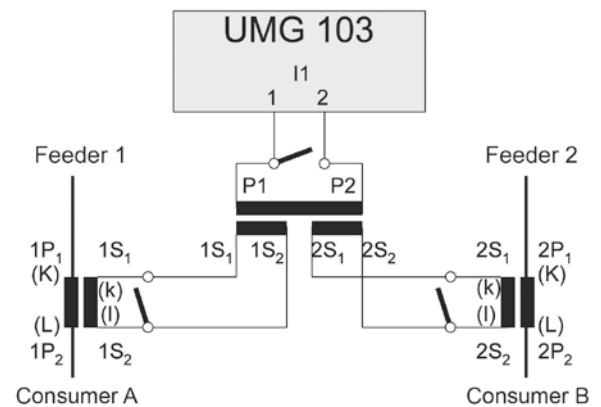
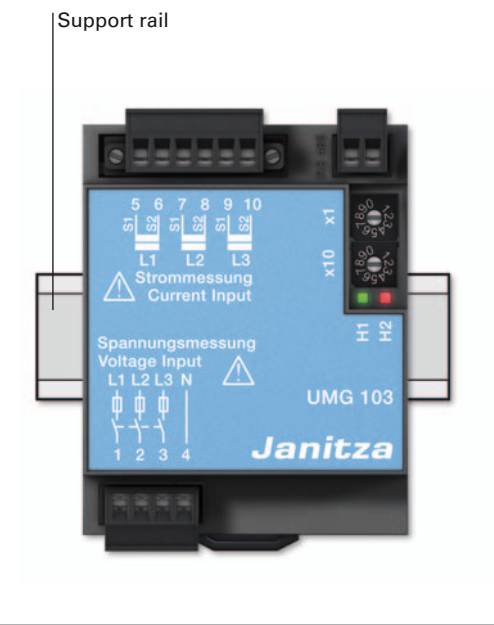


Illustration: current measurement using a sum current transformer (CT)

Mounting illustration



Dimensional drawings

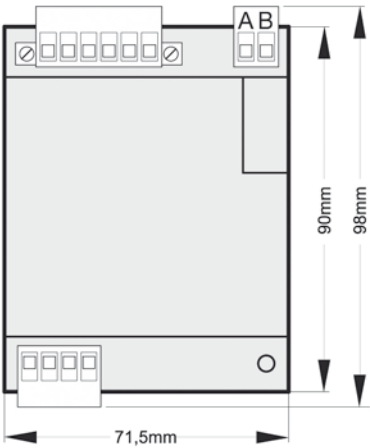


Illustration: front view

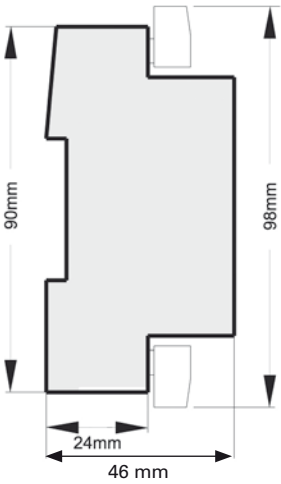


Illustration: side view