UMG 509-PRO

Multifunctional power analyzer

for panel mounting 144 x 144 mm

MÜLLER ZIEGLER Elektrische Messgeräte

Interfaces
- Ethernet
- Profibus (DSUB-9)
- RS485 Modbus (terminal strip)

Communication
- Protocols: Profibus (DP/V0)
- Modbus (RTU, TCP, Gateway)
- TCP/IP
- BACnet (optional)
- HTTP (homepage)
- FTP (file transfer)
- SNMP, TFTP
- NTP (time synchronisation)
- SMTP (email function)
- DHCP

Power quality
- Harmonics up to 63th harmonic
- shot term interruptions (> 20 ms)
- Transient recorder (> 50 µs)
- Starting currents (> 20 ms)
- Unbalance

Measured data memory
- 256 MB Flash
- 32 MB SDRAM

Thermistor input
- PT100, PT1000, KTY83, KTY84

Accuracy of measurement
- Energy: class 0,2S (.../5 A)
- Current 0,2%, voltage 0,1%

Inputs / outputs
- 2 digital inputs
- 2 digital outputs

Networks
- TN-, TT-, IT networks
- 3- and 4-phase networks
- up to 4 single-phase networks

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made in germany

Version 23.03.01 • Technical changes reserved.
The current status of the brochure is available at www.mueller-ziegler.de.

Application

The multifunctional power analyzer UMG 509PRO is used for the continuous monitoring of the voltage quality in power distribution systems and energy management systems (ISO 50001) as well as in test fields. The visualization of the energy supply in LV main boards, the analysis of electrical disturbances in case of network problems and the cost center analysis are among the tasks of the device.

Special features

• Continuous monitoring of the power quality	• Visualisation of the energy supply in the LVDB
• Energy management systems (ISO 50001)	• Cost centre analysis
• Master device with Ethernet gateway for subordinate measurement points	• Remote monitoring in the property operation
• Analysis of electrical disturbances in the event of power quality problems	• Use in test fields (e.g. in universities)

Main features

Power quality

- Harmonics analysis up to 63rd harmonic
- Acquisition of short-term interruptions
- Acquisition of transients
- Display of waveforms (current and voltage)
- Unbalance
- Vector diagram

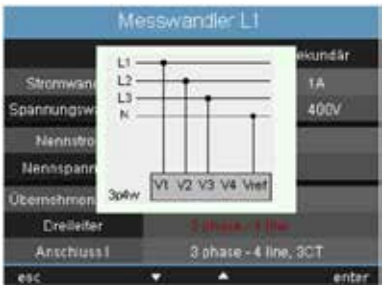

Fig.: Example for the configuration of current measurement via 3 current transformers in a threephase 4-wire network on the UMG 509-PRO display

RCM (Residual Current Monitoring)

- Continuous monitoring of residual currents (Residual Current Monitor, RCM)
- Alarming in case a preset threshold fault current reached
- Near-realtime reactions for triggering countermeasures
- Permanent RCM measurement for systems in permanent operation without the opportunity to switch off
- Ideal for the central earthing point in TN-S systems

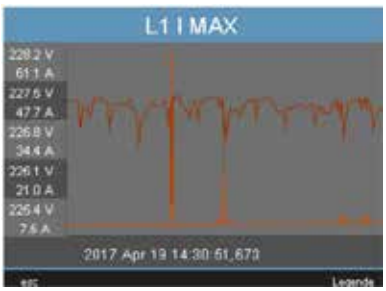

Fig.: Illustration of the full wave effective values for an event (voltage drop)

Modern communications architecture via Ethernet

- Ethernet interface and web server
- Faster, better cost-optimised and more reliable communication system
- High flexibility due to the use of open standards
- Integration in PLC systems and BMS through additional interfaces
- BACnet optionally available
- Up to 4 ports simultaneous
- Versatile IP protocols

Modbus Gateway function

- Economical connection of devices without Ethernet interface
- Integration of devices with Modbus-RTU interface possible
- Data can be scaled and described
- Minimised number of IP addresses required

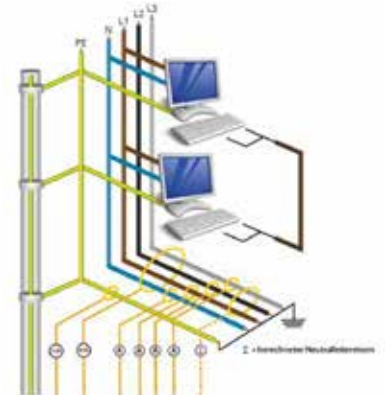
Fig.: Example RCM measurement

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Graphical programming

- Comprehensive programming options (PLC functionality)
- Jasic® source code programming
- Sustainable functional expansions far beyond pure measurement
- Complete APPs from the Janitza library

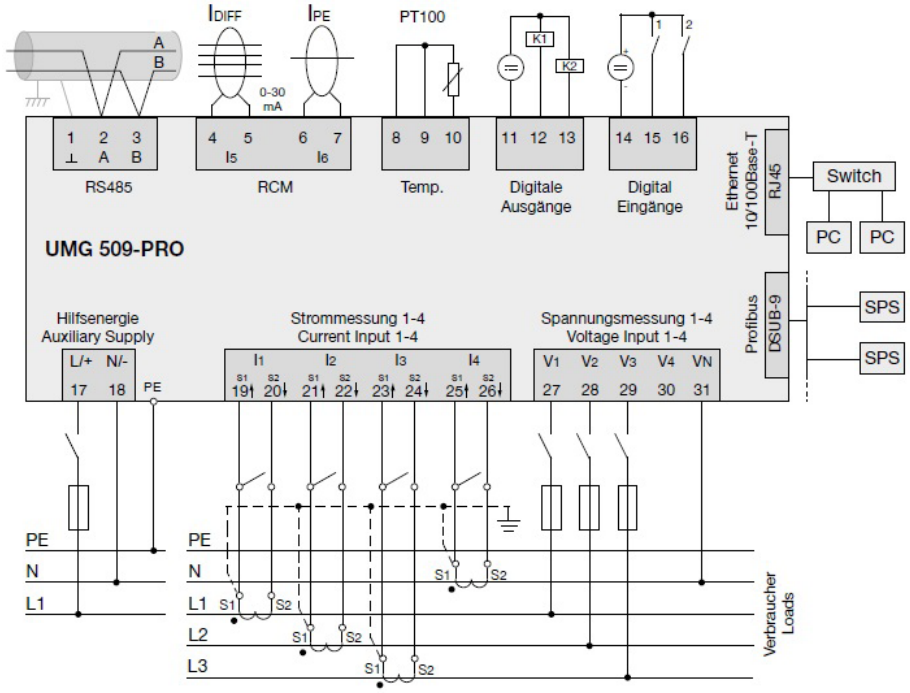
Fig.: UMG 509-PRO Rear view

*Powerful alarm management **

- Can be programmed via the graphic programming or Jasic® source code
- All measured values can be used
- Can be arbitrarily, mathematically processed
- Individual forwarding via email sending, switching of digital outputs, writing to Modbus addresses etc.
- Watchdog APPs

* The range of functions depends on the selected GridVis® edition. An overview of the activated functions per edition can be found on: https://www.gridvis.com/gridvis-editions.html

Typical connection variant



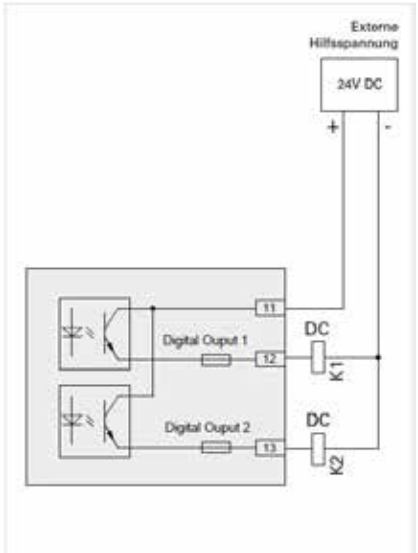


Fig.: Example for two electronical relays connected to the digital outputs

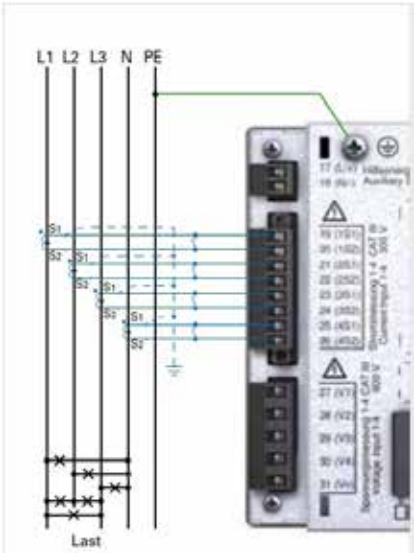
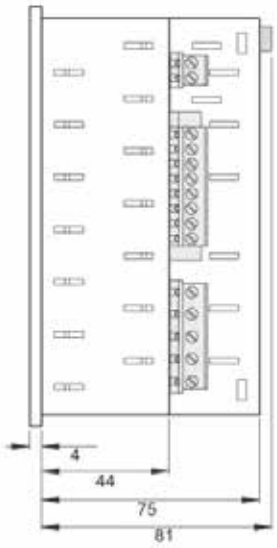
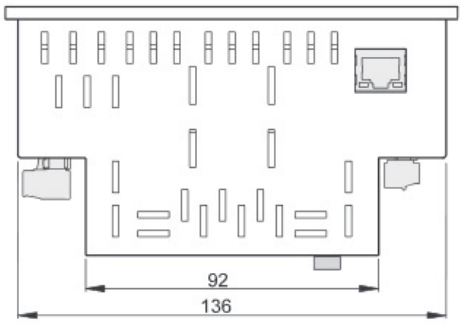


Fig.: Example current measurement

Dimensions



Side view
Cut-out $138^{+0,8}$ mm x $138^{+0,8}$ mm



View from below

General data

General	Net weight (with attached connectors)	approx. 1080 g (2.38 lb)
	Dimensions (W x H x D)	approx. 144x75x144 mm (5.67x2.95x5.67 in)
	Battery	Type Lithium CR2032, 3V (approval in acc. with UL 1642)
	Clock (in temperature range -40 °C to 85 °C)	+-5 ppm (corresp. to approx. 3 min per year)
Transport and storage	Free fall	1 m (39.37 in)
	Temperature	-25° C to +70° C (-13° F to 158° F)
Ambient conditions during operation	Protection class (The device is intended for weather-protected, stationary use.). The device must be connected to the ground wire connection!	I acc. to IEC 60536 (VDE 0106, part 1)
	Working temperature range	-10° C to +55° C (14° F to 131° F)
	Relative humidity	5 to 95% (at 25° C/77° F) without condensation
	Operating altitude	0 to 2000 m above sea level
	Pollution degree	2
	Installation position	upright
	Ventilation	forced ventilation is not required
	Protection against ingress of solid foreign bodies and water	acc. to EN 60529
	- Front / - Rear / - Front with seal	IP40 / IP 20

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Technical data

Supply voltage	***Option 230 V***	
	Nominal range	95 V - 240 V (50/60 Hz) or DC 80 V - 300 V, 300 V CAT III
	Power consumption	max. 14 VA / 7 W
	Option 24 V	
	Nominal range	48 V - 110 V (50/60 Hz) or DC 24 V - 150 V, 300 V CAT III
	Power consumption	max. 13 VA / 9 W
	Operating range	+/- 10% of nominal range
	Protection of the supply voltage (fuse)	6 A, type B (approved as per UL/IEC)

Voltage measurement	*The voltage measurement inputs are suitable for measurements in the following power supply systems:*	
	3-phase 4-wire systems with rated voltages up to	417/720 V 347/600 V UL listed
	3-phase 3-wire systems with rated voltages up to	600 V
	From a safety and reliability perspective, the voltage measurement inputs are designed as follows:	
	Overvoltage category	600 V CAT III
	Measurement voltage surge	6 kV
	Protection of voltage measurement	1 - 10 A
	Metering range L-N	0[1)] - 600 Vrms
	Metering range L-L	0[1)] - 1000 Vrms
	Resolution	0,01 V
	Crest factor	1,6 (related to 600 Vrms)
	Impedance	4 MΩ / phase
	Power consumption	ca. 0,1 VA
	Sampling rate	20 kHz / phase
	Transients	> 50 µs
	Frequency of the fundamental oscillation	45 Hz ... 65 Hz, resolution 0,001 Hz

[1)] The device can only determine measured values, if an L-N voltage of greater than 10 Veff or an L-L voltage of greater than 18 Veff is applied to at least one voltage measurement input.

Current measurement	Rated current	5 A
	Metering range	0,005 to 7 A rms
	Measurement range exceeded (overload)	from 7,5 Arms
	Crest factor	2,4
	Resolution	0,1 mA
	Overvoltage category	Option 230 V: 300 V CAT III Option 24 V: 300 V CAT II
	Measurement voltage surge	4 KV
	Power consumption	ca. 0,2 VA (Ri = 5 m Ω)
	Overload for 1 sec.	120 A (sinusoidal)
	Sampling rate	20 kHz / phase

Residual current monitoring (RCM)	Rated current	30 mA rms
	Metering range	0 - 40 mA rms
	Triggering current	100 µA
	Resolution	1 µA
	Crest factor	1,414 (related to 40 mA)
	Burden	4 Ohm
	Overload for 1 sec.	5 A
	Sustained overload	1 A
	Overload for 20 ms	50 A
	Residual current monitoring	acc. to IEC/TR 60755 (2008-01), type A
	Maximum external burden	300 Ohm (for cable break detection)

Phase angle accuracy	of measurement	0,075°

Digital outputs	2 digital outputs with a joint earth	opto coupler, not short-circuit proof
	Supply voltage	20 to 30 V DC (SELV or PELV supply)
	Switching voltage	max. 30 V AC, 60 V DC
	Switching current	max. 50 mA eff AC/DC
	Response time (Jasic program)	200 ms
	Output of voltage dips	20 ms
	Output of voltage exceedance events	20 ms
	Switching frequency	max. 20 Hz
	Cable length	up to 30 m (32.81 yd) unschielded from 30 m (32.81 yd) schielded

Digital inputs	2 digital inputs with a joint earth	
	Maximum counter frequency	20 Hz
	Response time (Jasic program)	200 ms
	Input signal present	18 V to 28 V DC (typical 4 mA)
	Input signal not present	0 to 5 V DC, current less than 0,5 mA
	Cable length	up to 30 m (32.81 yd) unschielded from 30 m (32.81 yd) schielded

Temperature measurement	3-wire measurement			
	Update time	1 second		
	Connectable sensors	Pt100, Pt1000, KTY83, KTY 84		
	Total burden (sensor + cable)	max. 4 kOhm		
	Cable length	up to 30 m (32.81 yd) unschielded from 30 m (32.81 yd) schielded		
	Sensor type	Temperature range	Resistor range	Measurem. uncertainty
	KTY83	-55° C ... +175° C (-67° F .. to 347° F)	500 Ohm ... 2,6 kOhm	+/- 1,5% rng
	KTY84	-40° C ... +300° C (-40° F .. to 572° F)	350 Ohm ... 2,6 kOhm	+/- 1,5% rng
	Pt100	-99° C ... +500° C (-146,2° F .. to 932° F)	60 Ohm ... 180 Ohm	+/- 1,5% rng
	Pt1000	-99° C ... +500° C (-146,2° F .. to 932° F)	600 Ohm ... 1,8 kOhm	+/- 1,5% rng

RS485 interface	3-wire connection with GND, A, B	
	Protocol	Modbus RTU/slave, Modbus RTU/master, Modbus RTU/gateway
	Transmission rate	9,6 kbps, 19,2 kbps, 38,4 kbps, 57,6 kbps, 115,2 kbps, 921,6 kbps
	Termination resistor	can be activated by micro switch

Profibus interface	Connection	SUB D 9-pin
	Protocol	Profibus DP/V0 acc. to EN 50170
	Transmission rate	9,6 kBaud to 12 MBaud

Ethernet interface	Connection	RJ45
	Function	Modbus, Gateway, Embedded Webserver (HTTP)
	Protocols	CP/IP, EMAIL (SMTP) DHCP client (BootP), Modbus/TCP, Modbus RTU over Ethernet, FTP, ICMP (Ping), NTP, TFTP, BACnet (Option), SNMP

Terminal connection capacity	Supply voltage	Connectable conductors (only one conductor can be connected per terminal!)
	Single core, multi-core, fine-stranded	0,2 - 2,5 mm^2, AWG 24-12
	Terminal pins, core end sheath	0,2 - 2,5 mm^2
	Tightening torque	0,4 - 0,6 Nm
	Stripping length	7 mm (0.2756 in)

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Terminal connection capacity	Voltage measurement	Connectable conductors (only one conductor can be connected per terminal!)
	Single core, multi-core, fine-stranded	0,2 - 2,5 mm², AWG 24-12
	Terminal pins, core end sheath	0,25 - 2,5 mm²
	Tightening torque	0,5 - 0,6 Nm
	Stripping length	7 mm

Terminal connection capacity	Current measurement	Connectable conductors (only one conductor can be connected per terminal!)
	Single core, multi-core, fine-stranded	0,2 - 2,5 mm², AWG 24-12
	Terminal pins, core end sheath	0,25 - 2,5 mm²
	Tightening torque	0,5 - 0,6 Nm
	Stripping length	7 mm (0.2756 in)

Terminal connection capacity	Residual current monitoring	Connectable conductors (only one conductor can be connected per terminal!)
	Rigid/flexible	0,14 - 1,5 mm², AWG 28-16
	Flexible with core end sheath without plastic sleeve	0,20 - 1,5 mm²
	Flexible with core end sheath with plastic sleeve	0,20 - 1,5 mm²
	Tightening torque	0,20 - 0,25 Nm (1.77 - 2,21 lbf in)
	Cable length	up to 30 m (32.81 yd) unschielded from 30 m (32.81 yd) schielded

Terminal connection capacity	Temperature measuring input	Connectable conductors (only one conductor can be connected per terminal!)
	Single core, multi-core, fine-stranded	0,08 - 1,5 mm²
	Terminal pins, core end sheath	1,0 mm²

Terminal connection capacity	Digital inputs and outputs	Connectable conductors
	Rigid/flexible	0,14 - 1,5 mm², AWG 28-16
	Flexible with core end sheath without plastic sleeve	0,25 - 1,5 mm²
	Flexible with core end sheath with plastic sleeve	0,25 - 0,5 mm²
	Tightening torque	0,22 - 0,5 Nm (1.77 - 2,21 lbf in)
	Stripping length	7 mm (0.2756 in)

Firmware	Firmware Update	Please observe the operating instructions

€ Prices

Type	UMG 509-PRO	BACnet communication
Version UH 230 V	52.26.001	52.26.081
Price	***on request***	***on request***
Version UH 24 V	52.26.003	--
Price	***on request***	--