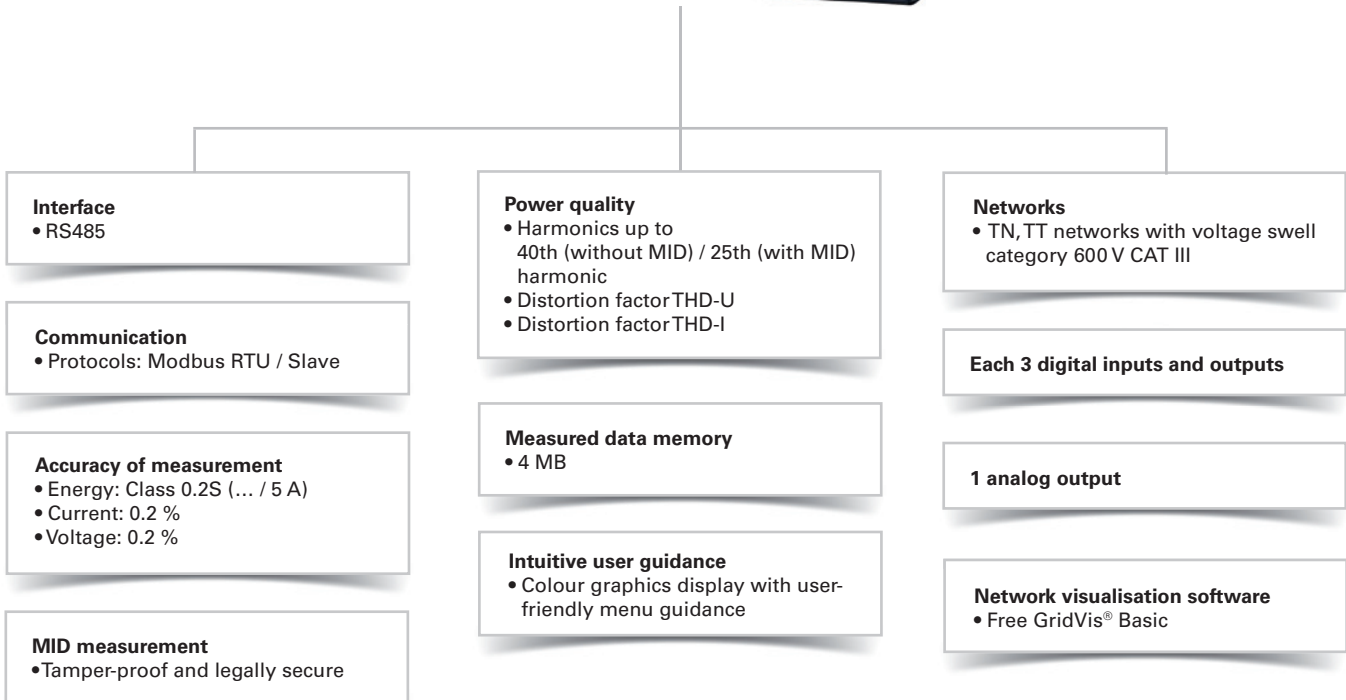


UMG 96-PA

4-in-1 energy measurement device - four functions one solution





Areas of application



- Measurement, monitoring and checking of electrical characteristics in energy distribution systems
- Recording of load profiles in energy management systems (e.g. ISO 50001)
- Acquisition of the energy consumption for cost centre analysis
- Measured value transducer for building management systems or PLC (Modbus)
- As MID variant, suitable for accounting applications
- Optional module-based extension for residual and leakage current measurement
- Near-realtime reactions for triggering countermeasures
- Permanent RCM measurement for systems in permanent operation without the opportunity to switch off

Main features



Power quality

- Harmonics analysis up to 40th harmonic (without MID) / 25th harmonic (with MID)
- Distortion factor THD-U / THD-I
- Minimum and maximum values
- Measurement of positive, negative and zero sequence component

Features

- 3 Voltage measurement inputs (600 V CATIII)
- 3 Current measurement inputs
- Continuous sampling of the voltage and current measurement inputs
- Measurement of the reactive distortion power
- Sampling rate 8.33 kHz
- Transfer of the measured values via a serial interface



Extension of functions by add-on modules

- 2 analogue inputs – can be selected as 0–20 mA analogue inputs or as RCM measuring inputs with detection of cable breaks and additional temperature measurement
- Module – selectable with Ethernet interface
- Continuous monitoring of residual currents (Residual Current Monitoring, RCM)



Fig.: UMG 96-PA energy measurement device



Fig.: UMG 96-PA incl. module with Ethernet connection

Digital IOs

- Additional application options with comprehensive peripherals (three digital inputs and outputs and an analogue output)
- Extensive configuration of IOs for intelligent integration for monitoring of limit values and message upon exceedance



User-friendly, colour graphical display with intuitive user guidance

- High resolution colour graphical display 320 x 240 pixels, 6 buttons
- User-friendly, self-explanatory and intuitive operation
- Illustration of measured values in numeric form, as a bar graph or line graph



MID-compliant measurement

- Certified and tamper-proof measurement
- Legally secure accounting & energy acquisition (EEG [German renewable energy sources] law, StromStG [German electricity tax law])
- Fulfilment of legal stipulations

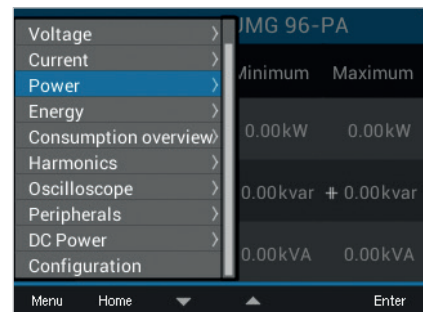
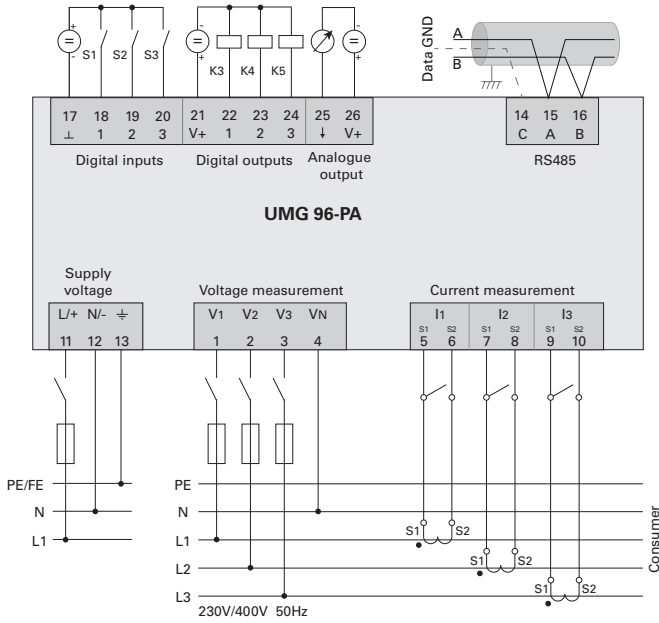


Fig.: UMG 96-PA colour graphics display

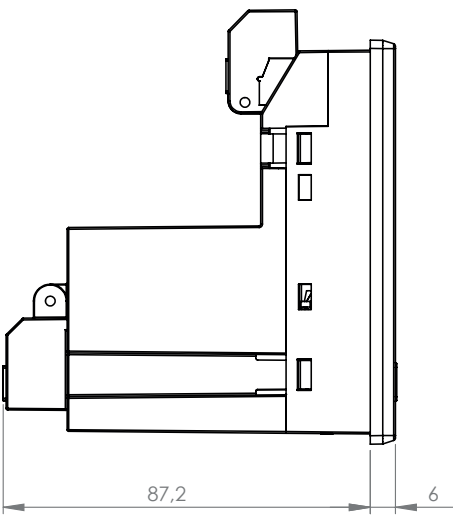


Typical connection variant

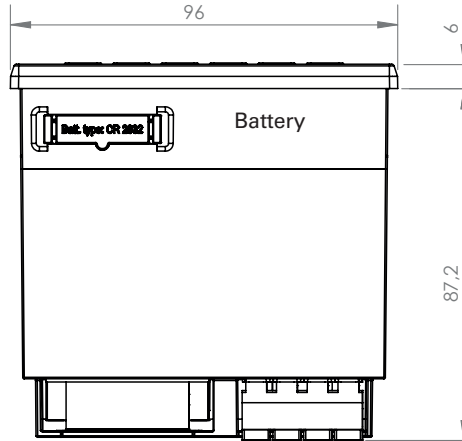


Dimension diagrams

All dimensions in mm



Side view



View from below

Cut-out size: $92^{+0.8} \times 92^{+0.8}$ mm



Device overview and technical data, basic device

Basic device <u>without</u> MID	UMG 96-PA
Item no. (90–277 V AC / 90–250 V DC)	52.32.001
Item no. (24-90 V AC / 24-90 V DC)	52.32.002
Basic device <u>with</u> MID	UMG 96-PA
Item no. (90–277 V AC / 90–250 V DC)	52.32.003

General	
Net weight (with attached connectors)	approx. 250 g
Package weight (incl. accessories)	approx. 500 g
Battery	Lithium battery CR2032, 3 V (approval i.a.w. UL 1642)
Service life of backlight	40000 h (backlighting is reduced by around 50% over this period)

Transport and storage	
The following information applies to devices which are transported or stored in the original packaging.	
Free fall	1 m
Temperature	-25° C to +70° C
Relative humidity non-condensing	0 to 90% RH

Ambient conditions during operation	
Use the device in a stationary and weatherproof location. Protection class II in acc. with IEC 60536 (VDE 0106, Part 1).	
Rated temperature range	-10° C to +55° C
Relative humidity non-condensing	0 to 75% RH
Operating altitude	0 to 2000 m above sea level
Pollution degree	2
Installation position	any
Ventilation	No forced ventilation required.
Protection against ingress of solid foreign bodies and water	
- Front	IP40 in acc. with EN60529
- Rear	IP20 in acc. with EN60529
- Front with seal	IP54 in acc. with EN60529

Supply voltage		
230 V option	Nominal range	AC 90 V – 277 V (50/60 Hz) or DC 90 V – 250 V, 300 V CAT III
	Power consumption	max. 4.5 VA / 2 W
24 V option	Nominal range	AC 24 V – 90 V (50/60Hz) or DC 24 V – 90 V, 150 V CAT III
	Power consumption	max. 4.5 VA / 2 W
Operating range	± 10% of nominal range	
Internal fuse, not replaceable	Type T1A / 250 V DC / 277 V AC according to IEC 60127	
Recommended overcurrent protection device for line protection (certified under UL)	230 V option: 6 – 16 A (Char. B) 24 V option: 1 – 6 A (Char. B)	

Recommendation for the maximum number of devices on a miniature circuit breaker:

230 V option: Miniature circuit breaker B6A: max. 4 devices /miniature circuit breaker B16A: max. 11 devices

24 V option: Miniature circuit breaker B6A: max. 3 devices /miniature circuit breaker B16A: max. 9 devices

Voltage measurement	
Three-phase 4-conductor systems with rated voltages up to	417 V / 720 V ($\pm 10\%$) as per IEC 347 V / 600 V ($\pm 10\%$) as per UL
Single-phase 2-conductor system with rated voltages up to	480 V ($\pm 10\%$)
Overvoltage category	600 V CAT III
Measurement voltage surge	6 kV
Protection of voltage measurement	1 – 10 A (with IEC-/UL approval)
Metering range L-N	0 ¹⁾ to 600 V _{rms} (max. voltage swell 800 V _{rms})
Metering range L-L	0 ¹⁾ to 1040 V _{rms} (max. voltage swell 1350 V _{rms})
Resolution	0.01 V
Crest factor	2.45 (related to the measurement range)
Impedance	3 M Ω /phase
Power consumption	approx. 0.1 VA
Sampling rate	8.33 KHz
Frequency of the fundamental oscillation - Resolution	45 Hz to 65 Hz 0.01 Hz

1) The device only determines measured values, if a voltage L1-N greater than 20 Veff (4 conductor measurement) or a voltage L1-L2 greater than 34 Veff (3 conductor measurement) is applied at the voltage measurement input V1.

Current measurement	
Rated current	5 A
Metering range	0.005 to 6 A _{rms}
Crest factor (with regard to the rated current)	2 (based on 6 A _{rms})
Overvoltage category	300 V CAT II
Measurement voltage surge	2 kV
Power consumption	approx. 0.2 VA (Ri = 5 m Ω)
Overload for 1 sec.	60 A (sinusoidal)
Resolution	0.1 mA (display 0.01 A)
Sampling rate	8.33 KHz

Serial interface	
RS485 to Modbus RTU/Slave	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps

Digital outputs 3 digital outputs, semiconductor relays, not short-circuit proof.	
Switching voltage	Max. 33 V AC, 40 V DC
Switching current	max. 50 mAeff AC/DC
Response time	approx. 200 ms
Pulse output	max. 50Hz (energy pulses)

Digital inputs 3 digital inputs, semiconductor relays, not short-circuit proof.	
Maximum counter frequency	20 Hz
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 (digital inputs/outputs)	
Up to 30m	not shielded
Longer than 30m	shielded

Analogue output	
External supply	max. 33 V
Current	0 to 20 mA
Update time	1 s
Burden	max. 300 Ω
Resolution	10 bit

Terminal connection capacity (supply voltage)	
Connectable conductors. Connect only one conductor per terminal!	
Single core, multi-core, fine-stranded	0.08 – 4.0 mm ² , AWG 28-12
Terminal pins, core end sheath	0.2 – 2.5 mm ²
Tightening torque	0.4 – 0.5 Nm
Stripping length	7 mm

Terminal connection capacity (voltage measurement)	
Connectable conductors. Connect only one conductor per terminal!	
Single core, multi-core, fine-stranded	0.08 – 4.0 mm ² , AWG 28-12
Terminal pins, core end sheath	0.2 – 2.5 mm ²
Tightening torque	0.4 – 0.5 Nm
Stripping length	7 mm

Terminal connection capacity (current measurement)	
Connectable conductors. Connect only one conductor per terminal!	
Single core, multi-core, fine-stranded	0.2 – 2.5 mm ² , AWG 26-12
Terminal pins, core end sheath	0.2 – 2.5 mm ²
Tightening torque	0.4 – 0.5 Nm
Stripping length	7 mm

Terminal connection capacity (serial interface)	
Single core, multi-core, fine-stranded	0.2 – 1.5 mm ² , AWG 28-16
Terminal pins, core end sheath	0.2 – 1.5 mm ²
Tightening torque	0.2 – 0.25 Nm
Stripping length	7 mm

Terminal connection capacity (digital inputs/outputs, analogue output)	
Single core, multi-core, fine-stranded	0.2 – 1.5 mm ² , AWG 28-16
Terminal pins, core end sheath	0.2 – 1.5 mm ²
Tightening torque	0.2 – 0.25 Nm
Stripping length	7 mm

Firmware	
Firmware update	Update via GridVis® software. Firmware download (free of charge) from the website: http://www.janitza.com

Comment: For detailed technical information please refer to the operation manual and the Modbus address list.