

UMG 96-PA

Modular energy measurement device
for panel mounting 96 x 96 mm



Interface

- RS485

Communication

- Protocols: Modbus RTU / Slave

MID measurement

- Temper-proof and legally secure

Power quality

- Harmonics up to 40th (without MID) / 25th (with MID) harmonic
- Distortion factor THD-U
- Distortion factor THD-I

Measured data memory

- 4 MB

Meter reading

- Certification acc. to PTB-A 50.7

Accuracy of measurement

- Energy: class 0,2S (.../5 A)
- Current and voltage: 0,2%

Inputs / outputs

- 3 digital inputs
- 3 digital outputs
- 1 analog output

Networks

- TN-, TT-networks with voltage swell category 600 V CAT III



Application

The modular energy measurement devices of the UMG 96-PA series are used to measure, monitor and control electrical parameters in energy distribution systems. The recording of load profiles (in energy management systems) are just as much a task of the devices as the recording of energy consumption for cost center analysis. The MID variant is suitable for billing-related applications. The devices can be modularly expanded for differential and residual current measurement.



Special features

<ul style="list-style-type: none"> • Measurement, monitoring and checking of electrical characteristics in energy distribution systems 	<ul style="list-style-type: none"> • Optional module-based extension for residual and leakage current measurement
<ul style="list-style-type: none"> • Recording of load profiles in energy management systems (e.g. ISO 50001) 	<ul style="list-style-type: none"> • Near-realtime reactions for triggering countermeasures
<ul style="list-style-type: none"> • Acquisition of the energy consumption for cost centre analysis 	<ul style="list-style-type: none"> • Permanent RCM measurement for systems in permanent operation without the opportunity to switch off
<ul style="list-style-type: none"> • Measured value transducer for building management systems or PLC (Modbus) 	<ul style="list-style-type: none"> • As MID variant, suitable for accounting applications



Main features

Power quality

- Harmonics analysis up to 40th harmonic
- 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)
- Neutral measurement (I4 – current measurement)

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



Fig.: UMG 96-PA energy measurement device



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



Fig.: UMG 96-PA colour graphics display

MID-compliant measurement

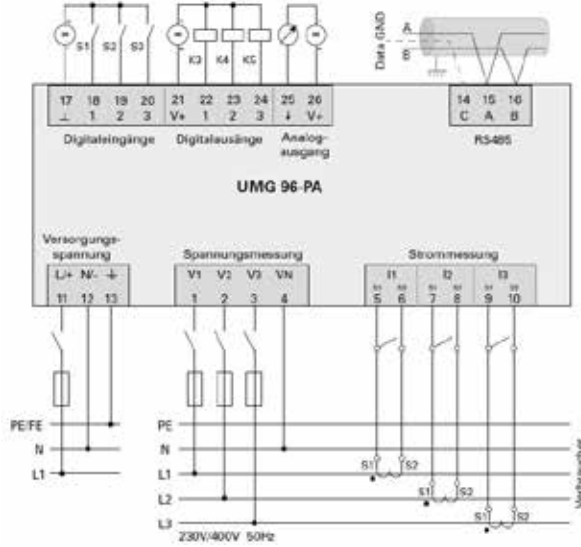
- Certified and tamper-proof measurement
- Legally secure accounting & energy acquisition (EEG [German renewable energy sources] law, StromStG [German electricity tax law])
- Fulfillment of legal stipulations

Zählerstandsg. UMG 96-PA MID+			
Status	Zählerstand [kWh]	02.10.2019	
✓	Bez. 64750.57 Gel. 2.30	07:00	
✓	Bez. 64751.79 Gel. 2.30	07:15	
✓	Bez. 64753.05 Gel. 2.30	07:30	
✓	Bez. 64754.42 Gel. 2.30	07:45	
Menu		Home	Suche

Fig.: UMG 96-PA+MID



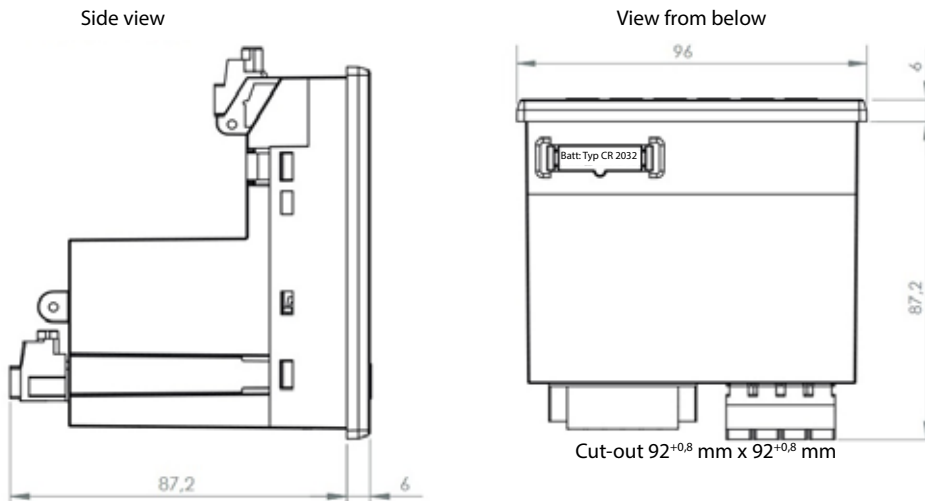
Typical connection variant



The illustration shown here is an example. Further connection diagrams can be requested.



Dimensions





General data

General	Service life of backlight	40000 h (50% of the initial brightness)
	Net weight (with attached connectors)	approx. 250 g (0.55 lb)
	Package weight (incl. accessories)	approx. 500 g (1.1 lb)
	Battery	Type Lithium CR2032, 3V (approval in acc. with UL 1642)
Transport and storage	Free fall	1 m
	Temperature	-25° C to +70° C (-13° F to 131° F)
	Relative humidity, non condensing	0 to 90% RH
Ambient conditions during operation	Protection class	II acc. to IEC 60536 (VDE 0106, part 1)
	Rated temperature range	-10° C to +55° C (14° F to 131° F)
	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	acc. to EN 60529
	- Front / - Rear / - Front with seal	IP40 / IP 20 / IP 54



Technical data

Supply voltage	Option 230 V	
	Nominal range	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
	Option 24 V	
	Nominal range	24 V - 90 V AC/DC, 300 V CAT III
	Power consumption	max. 4,5 VA / 2 W
	Operating range	+/- 10% of nominal range
	Internal fuse (not replaceable)	Type T1A / 250 VDC / 227 VAC acc. to IEC 60127
	Recommended overcurrent protection device for line protection (certified under UL)	Option 230 V: 6-16 A Option 24 V: 1 - 6 A (Char. B)

Voltage measurement	3-phase 4-wire systems with rated voltages up to	417/720 V (+/- 10%) acc. to IEC 347/600 V (+/- 10%) acc. to UL
	Single-phase 2-wire system with rated voltages up to	480 V (+/- 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⁾ - 600 Vrms (max. overvoltage 800 Vrms)
	Metering range L-L	0 ¹⁾ - 1040 Vrms (max. overvoltage 1350 Vrms)
	Resolution	0,01 V
	Crest factor	2,45 (realted to the measurement range)
	Impedance	3 MΩ / phase
	Power consumption	approx. 0,1 VA
	Sampling rate	8,33 kHz
	Frequency of the fundamental oscillation	45 Hz ... 65 Hz, resolution 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 - 6 A rms
	Crest factor	2 (based on 6 A rms)
	Resolution	0,1 mA (display 0,01 A)
	Overvoltage category	300 V CAT II
	Measurement voltage surge	2 KV
	Power consumption	ca. 0,2 VA (Ri = 5 m Ω)
	Overload for 1 sec.	60 A (sinusoidal)
	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. 50 Hz (energy pulses)
Digital inputs	3 digital inputs	semiconductor relays, not short-circuit proof
	Maximum counter frequency	20 Hz
	Input signal present	18 V bis 28 V DC (typical 4 mA)
	Input signal not present	0 to 5 V DC, current less than 0,5 mA
Cable length (digital IOs)	Up to 30 m	not shielded
	Longer than 30 m	shielded
Analog 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 (3.54 - 4.43 lbf in)
	Stripping length	7 mm (0.2756 in)
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 (3.54 - 4.43 lbf in)
	Stripping length	7 mm (0.2756 in)
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 (3.54 - 4.43 lbf in)
	Stripping length	7 mm (0.2756 in)
Terminal connection capacity	Serial interface	Connectable conductors
	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 (1.77 - 2,21 lbf in)
	Stripping length	7 mm (0.2756 in)
Terminal connection capacity	Digital inputs / outputs analog output	Connectable conductors
	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 (1.77 - 2,21 lbf in)
	Stripping length	7 mm (0.2756 in)

Firmware	Firmware Update	Update via GridVis® Power Grid monitoring software Firmware download (free of charge)
Modules for UMG 96-PA	Module types 96-PA-RCM and 96-PA-RCM-EL	
Residual current input	Analogue inputs	2 for residual current or analogue measurement
	Rated current	30 mArms
	Triggering current	50 µA
	Resolution	1 µA
	Update time	1 second
Temperature measurement (1 x)	Connectable sensors	PT100, PT1000, KTY83, KTY84
	Rated current	1/5 A
Current,N-measurement. I4	Overvoltage category	300 V CAT II
	Power consumption	ca. 0,2 VA (Ri = 5 m Ω)
	Sampling rate	8,33 kHz
	Ethernet connection	RJ45, 10/100 Mbit
Interface/protocol	Module with Ethernet connection RJ45	Modbus TCP/IP, Modbus RTU over Ethernet, Modbus Gateway



Technical data modules

The devices of the UMG 96-PA series can be expanded with additional modules for residual and residual current measurement with 2 additional analog outputs, optionally with or without an Ethernet interface.



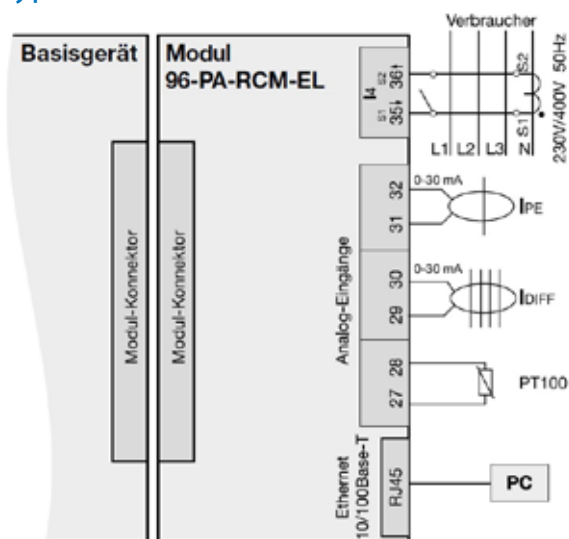
Module 96-PA-RCM without Ethernet interface



Module 96-PA-RCM-EL with Ethernet interface



Typical connection variant



Prices

Type	UMG 96-PA	UMG 96-PA-MID	UMG 96-PA-MID+
Version UH 230 V	52.32.001	52.32.003	52.32.004
Price	on request	use art.-no. 52.32.004	on request
Version UH 24 V	52.32.002	--	--
Price	on request	--	--
Module	Module 96-PA-RCM	Module 96-PA-RDM-EL	
	52.32.011	52.32.010	
	use art.-no. 52.32.010	on request	