

Power Analyser

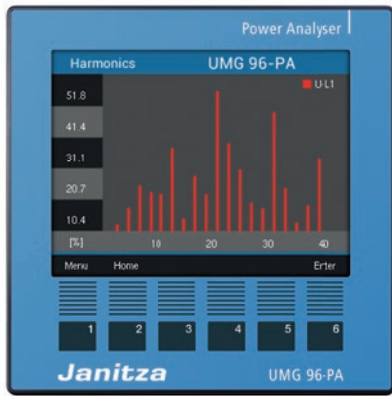
## UMG 96-PA

(firmware 2.0 and higher)

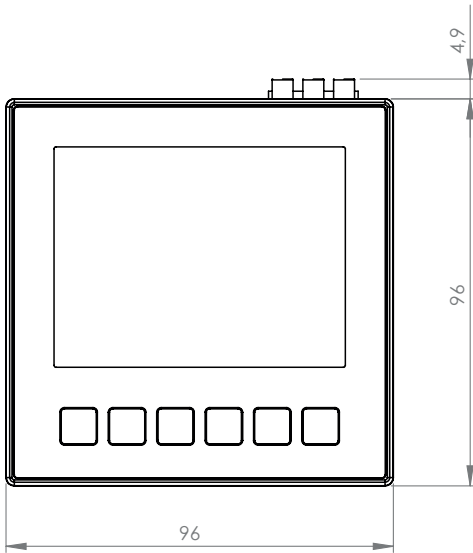
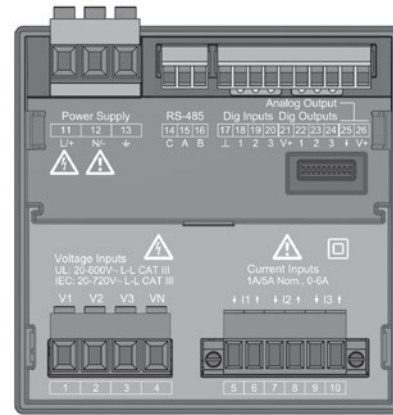
Data sheet

# DEVICE VIEWS

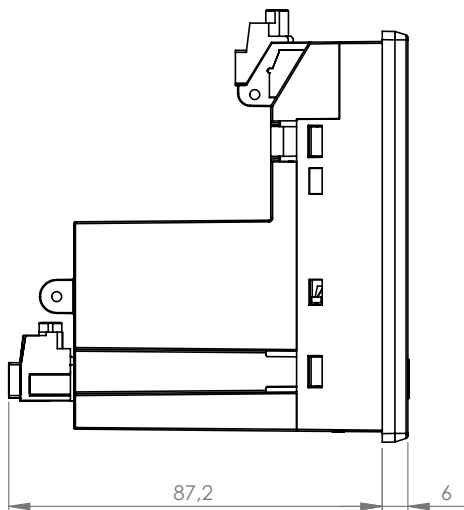
**Front view**



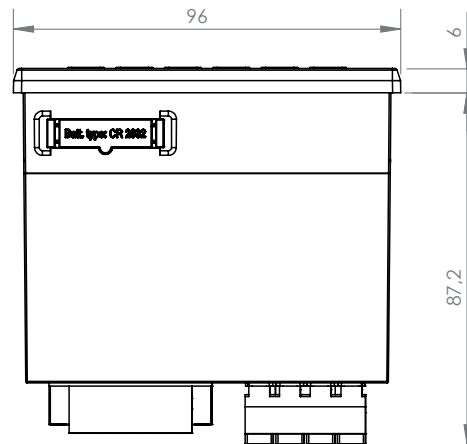
**Rear view**



**Side view**



**Bottom view**



Cut-out size: 92<sup>+0,8</sup> mm x 92<sup>+0,8</sup> mm.

All dimensions in mm

# TECHNICAL DATA

General	
Net weight (with connectors attached)	Approx. 250 g
Packaged weight (incl. accessories)	Approx. 500 g
Battery	Lithium type CR2032, 3V (approved as per UL 1642)
Life cycle of the backlighting	40000 h (Backlighting diminishes over this time period to approx. 50%)

Transport and storage	
The following details apply for devices that are transported and stored in the original packaging.	
Free fall	1 m
Temperature	-25 °C to +70 °C
Relative humidity (non-condensing)	0 to 90% RH

Environmental conditions for operation	
The device is suitable for weather-protected, non-mobile use. Protection class II as per IEC 60536 (VDE 0106, Part 1).	
Measurement temperature range	-10 °C .. +55 °C
Relative humidity (non-condensing)	0 to 75 % RH
Operating height	0 .. 2000 m over NN
Pollution degree	2
Installation position	Discretionary
Ventilation	External ventilation is not required.
Protection from foreign objects and water - Front - Back - Front with seal	IP40 according to EN60529 IP20 according to EN60529 IP54 according to EN60529

Supply voltage		
Option 230 V	Nominal range	AC 90 V - 277 V (50/60 Hz) or DC 90 V - 250 V, 300 V CATIII
	Power consumption	Max. 4,5 VA / 2 W
Option 24 V	Nominal range	AC 24 V - 90 V (50/60 Hz) or DC 24 V - 90 V, 150 V CATIII
	Power consumption	Max. 4.5 VA / 2 W
Operating range	+-10% of nominal range	
Internal fuse not exchangeable	Type T1A / 250 V DC / 277 V AC according to IEC 60127	
Recommended overvoltage protective device for the Line protection (UL approval)	Option 230 V: 6 - 16 A (Char. B) Option 24 V: 1 - 6 A (Char. B)	

Recommendation for the maximum number of devices on the line circuit breaker:

Option 230V : Line circuit breaker B6A: max. 4 devices / Line circuit breaker B16A: max. 11 devices

Option 24V : Line circuit breaker B6A: max. 3 devices / Line circuit breaker B16A: max. 9 devices

<b>Voltage measurement</b>	
Three-phase 4 conductor systems with rated voltages up to	417 V / 720 V (+-10%) according to IEC 347 V / 600 V (+-10%) according to UL
Single-phase 2 conductor systems with rated voltages up to	480 V (+-10%)
Overvoltage category	600 V CAT III
Measurement voltage surge	6 kV
Fuse for the voltage measurement	1 - 10 A (with IEC/UL approval)
Measuring range L-N	0 <sup>1)</sup> .. 600 V <sub>rms</sub> (max. overvoltage 800 V <sub>rms</sub> )
Measuring range L-L	0 <sup>1)</sup> .. 1040 V <sub>rms</sub> (max. overvoltage 1350 V <sub>rms</sub> )
Resolution	0.01 V
Crest factor	2.45 (related to the measurement range)
Impedance	3 M $\Omega$ /phase
Power consumption	Approx. 0.1 VA
Sampling frequency	8.33 kHz
Frequency of the basic oscillation - resolution	45 Hz .. 65 Hz 0.01 Hz

1) The device only determines the measured values if voltage L1-N is greater than 20 V<sub>eff</sub> (4-conductor measurement) or voltage L1-L2 is greater than 34 V<sub>eff</sub> (3-conductor measurement) on voltage measurement input V1

<b>Current measurement</b>	
Rated current	5 A
Metering range	0.005 .. 6 A <sub>rms</sub>
Crest factor (based on the rated current)	2 (based on 6 A <sub>rms</sub> )
Overvoltage category	300 V CAT II
Measurement voltage surge	2 kV
Power consumption	Approx. 0.2 VA (R <sub>i</sub> =5 m $\Omega$ )
Overload for 1 sec.	60 A (sinusoidal)
Resolution	0.1 mA (Display 0.01 A)
Sampling frequency	8.33 kHz

<b>Serial interface</b>	
RS485 - Modbus RTU/Slave	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps

<b>Digital outputs</b>	
3 digital outputs, semiconductor relays, not short-circuit proof.	
Switching voltage	Max. 33 V AC, 40 V DC
Switching current	Max. 50 mA <sub>eff</sub> AC/DC
Response time	Approx. 200 ms
Pulse output (energy pulse)	Max. 50 Hz

<b>Digital inputs</b>	
3 digital inputs, semiconductor relays, not short-circuit proof.	
Maximum counter frequency	20 Hz
Input signal present	18 V .. 28 V DC (typical 4 mA)
Input signal not present	0 .. 5 V DC, current less than 0.5 mA

<b>Line length (digital inputs/outputs)</b>	
Up to 30 m	Unshielded
Greater than 30 m	Shielded

<b>Analog output</b>	
External power supply	Max. 33 V
Current	0 .. 20 mA
Update time	1 s
Load	Max. 300 $\Omega$
Resolution	10 Bit

<b>Terminal connection capacity (supply voltage)</b>	
Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.08 - 4.0 mm <sup>2</sup> , AWG 28-12
Terminal pins, core end sheath	0.2 - 2.5 mm <sup>2</sup>
Tightening torque	0.4 - 0.5 Nm
Stripping length	7 mm

<b>Terminal connection capacity (voltage measurement)</b>	
Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.08 - 4.0 mm <sup>2</sup> , AWG 28-12
Terminal pins, core end sheath	0.2 - 2.5 mm <sup>2</sup>
Tightening torque	0.4 - 0.5 Nm
Stripping length	7 mm

<b>Terminal connection capacity (current measurement)</b>	
Connectable conductors. Only one conductor can be connected per terminal.	
Single core, multi-core, fine-stranded	0.2 - 2.5 mm <sup>2</sup> , AWG 26-12
Terminal pins, core end sheath	0.2 - 2.5 mm <sup>2</sup>
Tightening torque	0.4 - 0.5 Nm
Stripping length	7 mm

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

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

## FUNCTION PERFORMANCE CHARACTERISTICS

Function	Symbol	Precision class	Measurement range	Display range
Total effective power	P	0.5 <sup>5)</sup> (IEC61557-12)	0 W .. 12.6 kW	0 W .. 999 GW *
Total reactive power	QA, Qv	1 (IEC61557-12)	0 var .. 16.6 kvar	0 var .. 999 Gvar *
Total apparent power	SA, Sv	0.5 <sup>5)</sup> (IEC61557-12)	0 VA .. 12.6 kVA	0 VA .. 999 GVA *
Total effective energy	Ea	0.2 <sup>5)</sup> (IEC61557-12) 0.2S <sup>5)</sup> (IEC62053-22)	0 Wh .. 999 GWh	0 Wh .. 999 GWh *
Total reactive energy	ErA, ErV	1 (IEC61557-12)	0 varh .. 999 Gvarh	0 varh .. 999 Gvarh *
Total apparent energy	EapA, EapV	0.5 <sup>5)</sup> (IEC61557-12)	0 VAh .. 999 GVAh	0 VAh .. 999 GVAh *
Frequency	f	0.05 (IEC61557-12)	45 Hz .. 65 Hz	45.00 Hz .. 65.00 Hz
Phase current	I	0.2 (IEC61557-12)	0 A <sub>rms</sub> .. 7 A <sub>rms</sub>	0 A .. 999 kA
Neutral conductor current, calculated	INc	1.0 (IEC61557-12)	0.03 A .. 25 A	0,03 A .. 999 kA
Voltage	U L-N	0.2 (IEC61557-12)	10 V <sub>rms</sub> .. 600 V <sub>rms</sub>	0 V .. 999 kV
Voltage	U L-L	0.2 (IEC61557-12)	18 V <sub>rms</sub> .. 1040 V <sub>rms</sub>	0 V .. 999 kV
Power factor	PFA, PFV	0.5 (IEC61557-12)	0.00 .. 1.00	0.00 .. 1.00
Short-term flicker, long-term flicker	Pst, Plt	-	-	-
Voltage dips (L-N)	Udip	-	-	-
Voltage swells (L-N)	Uswl	-	-	-
Transient overvoltages	Utr	-	-	-
Voltage interruptions	Uint	-	-	-
Voltage symmetry (L-N) <sup>1)</sup>	Unba	-	-	-
Voltage symmetry (L-N) <sup>2)</sup>	Unb	-	-	-
Voltage harmonics	Uh	Kl. 1 (IEC61000-4-7)	1 .. 40	0 V .. 999 kV
Voltage THD <sup>3)</sup>	THDu	1.0 (IEC61557-12)	0 % .. 999 %	0 % .. 999 %
Voltage THD <sup>4)</sup>	THD-Ru	-	-	-
Current harmonics	Ih	Kl. 1 (IEC61000-4-7)	1 .. 40	0 A .. 999 kA
Current THD <sup>3)</sup>	THDi	1.0 (IEC61557-12)	0 % .. 999 %	0 % .. 999 %
Current THD <sup>4)</sup>	THD-Ri	-	-	-
Network signal voltage	MSV	-	-	-

1) Reference to amplitude.

2) Reference to phase and amplitude.

3) Reference to fundamental oscillation. \*

4) Reference to effective value.

5) Accuracy class 0.2/0.2S with ../5A transformer.

Accuracy class 0.5/0.5S with ../1A transformer.

\* When the maximum total energy levels have been reached, the device jumps back to 0 W.

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