

The device fronts may differ

Power Analyzer

UMG 96-PA

(from Firmware 3.41)

UMG 96-PA^{MID+}

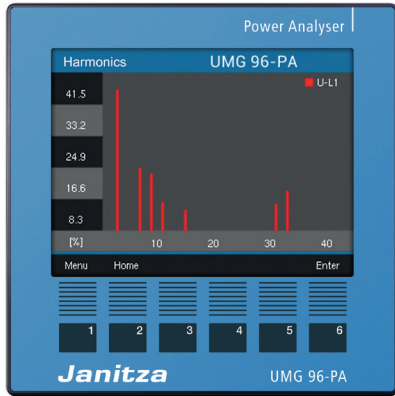
(from Firmware 3.41)

Data sheet

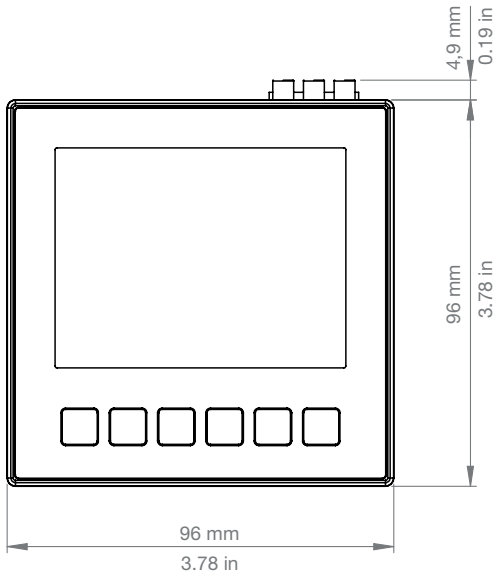
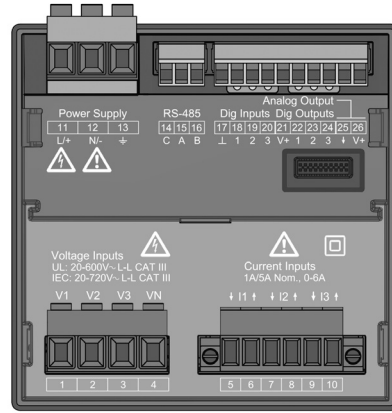
DEVICE VIEWS

The figures are for illustration purposes only and are not to scale.

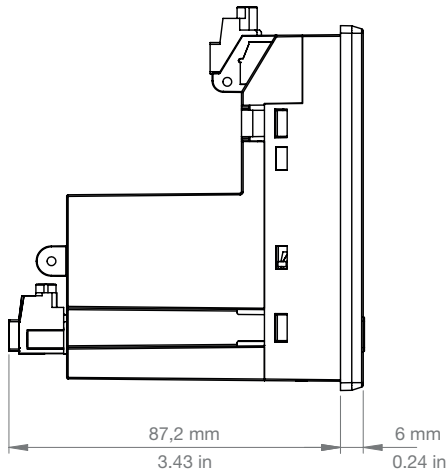
Front view



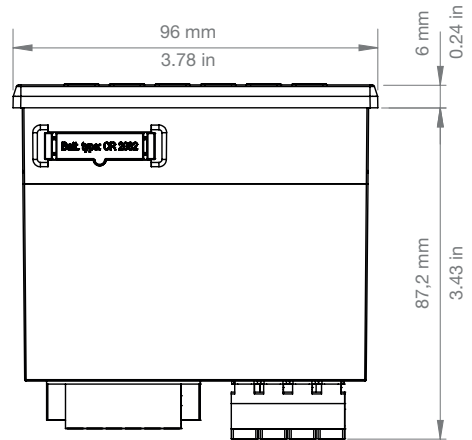
Rear view



Side view



Bottom view



Cut-out size:
 $92^{+0.8}$ mm x $92^{+0.8}$ mm.
 $(3.62^{+0.03}$ x $3.62^{+0.03}$ in)

TECHNICAL DATA

General	
Net weight (with attached plug-in connectors)	approx. 250 g (0.55 lbs)
Package weight (incl. accessories)	approx. 500 g (1.1 lbs)
Battery	Type Lithium CR2032, 3 V, (UL 1642 approved)
Data memory	8 MB
Backlight service life	40000 h (backlight reduces to approx. 50% over this period)
Impact resistance	IK07 according to IEC 62262

Transport and storage	
The following information applies to devices that are transported or stored in their original packaging.	
Free fall	1 m (39.37 in)
Temperature	-25 °C (-13 °F) to +70 °C (158 °F)
Relative air humidity (non-condensing)	0 to 90% RH

Environmental conditions during operation	
Install the device in a weather-protected and stationary location. Protection class II according to IEC 60536 (VDE 0106, Part 1).	
Rated temperature range	-10 °C (14 °F) ... +55 °C (131 °F)
Relative air humidity (non-condensing)	0 to 75% RH
Operating elevation	0 .. 2000 m (1.24 mi) above sea level
Pollution degree	2
Mounting orientation	As desired
Ventilation	No forced ventilation required.
Protection against foreign matter and water	
- Front	IP40 according to EN60529
- Rear	IP20 according to EN60529
- Front with seal	IP54 according to EN60529
Electromagnetic environmental conditions	class E2 (MID 2014/32/EU)
Mechanical environmental conditions	class M1 (MID 2014/32/EU)

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 (50/60Hz) 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 replaceable	Type T1A / 250 V DC / 277 V AC according to IEC 60127	
Recommended overcurrent protective device for the line protection (UL approval)	Option 230 V: 6 - 16 A (Char. B) Option 24 V: 1 - 6 A (Char. B)	

* The 24 V option only applies to the UMG 96-PA!

Voltage measurement	
3-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 MID: see table „Technical data for the MID+ certified measuring device“.
3-phase 3-conductor systems with rated voltages up to	600 V (+-10%)
Single-phase 2-conductor system with rated voltages up to	480 V (+-10%)
Oversvoltage category	600 V CAT III, 300 V CAT IV
Rated surge voltage	6 kV
Protection of the voltage measurement	1 - 10 A tripping characteristic B (with IEC/UL approval)
Measuring range L-N	0 ¹⁾ ... 600 V _{rms} (max. oversvoltage 800 V _{rms})
Measuring range L-L	0 ¹⁾ ... 1040 V _{rms} (max. oversvoltage 1350 V _{rms})
Resolution	0.01 V
Crest factor	2.45 (related to the measuring range)
Impedance	3 MΩ/phase
Power consumption	approx. 0.1 VA
Sampling frequency	8.13 kHz
Frequency of the fundamental oscillation	45 Hz .. 65 Hz
- Resolution	0.01 Hz
Fourier analysis	1st - 40th harmonic

- 1) The device only determines measured values if a voltage L1-N of greater than 20 V_{eff} (4-conductor measurement) or a voltage L1-L2 of greater than 34 V_{eff} (3-conductor measurement) is applied to voltage measurement input V1.

Current measurement	
Nominal current	5 A
Measurement range	0.005 .. 6 A _{rms}
Crest factor	2 (relative to 6 A _{rms})
Oversvoltage category	300 V CAT II
Rated surge voltage	2,5 kV
Power consumption	approx. 0.2 VA (Ri=5 mΩ)
Overload for 1 s	60 A (sinusoidal)
Resolution	0.1 mA (display 0.01 A)
Sampling frequency	8.13 kHz
Fourier analysis	1st - 40th harmonic

Technical data for the MID+ certified measuring device	
Voltage range	3 x 57.7/100 V ... 3 x 289/500 V ¹⁾
Current range	0.002 ... 6 A
Frequency range	45-65 Hz
Reference frequency	50 Hz
Accuracy class	B
Pulse valency S0 (puls constant)	10000 pulses/kWh ²⁾
Electromagnetic compatibility	class E2 (MID 2014/32/EU)
Mechanical compatibility	class M1 (MID 2014/32/EU)
Suitable grid systems	1p2w, 3p3w, 3p4w

- 1) When measuring voltage using a voltage converter, the following applies to the UMG 96-PA-MID+:
Use calibrated / permissible voltage transformers for a MID-compliant measurement (secondary: 3 x 57.7 / 100 V - 3 x 289/500 V).
- 2) The pulse valency S0 is automatically adapted to the voltage transformer ratio that has been set. The momentary pulse valency S0 appears in the *Active energy* measuring display.

Serial interface	
RS-485 - Modbus RTU/Slave	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps

Digital outputs	
3 digital outputs, solid state relays, not short-circuit proof.	
Switching voltage	max. 33 V AC, 40 V DC
Switching current	max. 50 mA _{eff} AC/DC
Response time	approx. 200 ms
Pulse output	max. 50 Hz (energy pulses)
UMG 96-PA-MID+: The measured value „active energy“ (applied/delivered) is assigned to digital output 1 (terminal 21/22).	

Digital inputs	
3 digital inputs, solid state relays, not short-circuit proof.	
Maximum counter frequency	20 Hz
Input signal applied	18 V .. 28 V DC (typically 4 mA)
Input signal not applied	0 .. 5 V DC, current less than 0.5 mA

Cable length (digital inputs/outputs)	
Up to 30 m (32.81 yd)	Unshielded
Greater than 30 m (32.81 yd)	Shielded

Analog outputs	
External power supply	max. 33 V
Current	0 .. 20 mA
Update time	1 s
Load	max. 300 Ω
Resolution	10 bit

Connecting capacity of the terminals (supply voltage)	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 4.0 mm ² , AWG 28-12
Wire ferrules (non-insulated)	0.2 - 2.5 mm ² , AWG 26-14
Wire ferrules (insulated)	0.2 - 2.5 mm ² , AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Strip length	7 mm (0.2756 in)

Connecting capacity of the terminals (voltage measurement)	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 4.0 mm ² , AWG 28-12
Wire ferrules (non-insulated)	0.2 - 2.5 mm ² , AWG 26-14
Wire ferrules (insulated)	0.2 - 2.5 mm ² , AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Strip length	7 mm (0.2756 in)

Connecting capacity of the terminals (current measurement)	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 4 mm ² , AWG 28-12
Wire ferrules (non-insulated)	0.2 - 2.5 mm ² , AWG 26-14
Wire ferrules (insulated)	0.2 - 2.5 mm ² , AWG 26-14
Tightening torque	0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
Strip length	7 mm (0.2756 in)

Terminal connection capacity (serial interface)	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm ² , AWG 28-16
Wire ferrules (non-insulated)	0.2 - 1.5 mm ² , AWG 26-16
Wire ferrules (insulated)	0.2 - 1.5 mm ² , AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Strip length	7 mm (0.2756 in)

Connecting capacity of the terminals (digital inputs/outputs, analog output)	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm ² , AWG 28-16
Wire ferrules (non-insulated)	0.2 - 1.5 mm ² , AWG 26-16
Wire ferrules (insulated)	0.2 - 1.5 mm ² , AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Strip length	7 mm (0.2756 in)

FUNCTION PERFORMANCE CHARACTERISTICS

Function	Symbol	Accuracy class	Measurement range	Display range
Total active power	P	0.5 ⁵⁾ (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 ⁵⁾ (IEC61557-12)	0 VA .. 12.6 kVA	0 VA .. 999 GVA *
Total active energy	Ea	0.2 ⁵⁾ (IEC61557-12) 0.2S ⁵⁾ (IEC62053-22) 0.2 ⁶⁾ (ANSI C12.20)	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 ⁵⁾ (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 Arms .. 7 Arms	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 Vrms .. 600 Vrms	0 V .. 999 kV
Voltage	U L-L	0.2 (IEC61557-12)	18 Vrms .. 1040 Vrms	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 imbalance (L-N) ¹⁾	Unba	-	-	-
Voltage imbalance (L-N) ²⁾	Unb	-	-	-
Voltage harmonics	Uh	Cl. 1 (IEC61000-4-7)	1 .. 40.	0 V .. 999 kV
THD of voltage ³⁾	THDu	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of voltage ⁴⁾	THD-Ru	-	-	-
Current harmonics	Ih	Cl. 1 (IEC61000-4-7)	1 .. 40.	0 A .. 999 kA
THD of current ³⁾	THDi	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of current ⁴⁾	THD-Ri	-	-	-
Mains signal voltage	MSV	-	-	-

1) Referenced to the amplitude.

2) Referenced to the phase and amplitude.

3) Referenced to the fundamental oscillation.

4) Referenced to the effective value.

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

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

6) UMG 96-PA only.

*When the maximum total energy values are reached, the display returns to 0 W.

INFORMATION

Detailed information on the device functions and data can be found in the usage information that is enclosed with the device or is available for download at www.janitza.de!

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