

The device fronts can deviate!

LP Power Analyzer

UMG 96-PQ-L-LP

(from firmware 3.50)

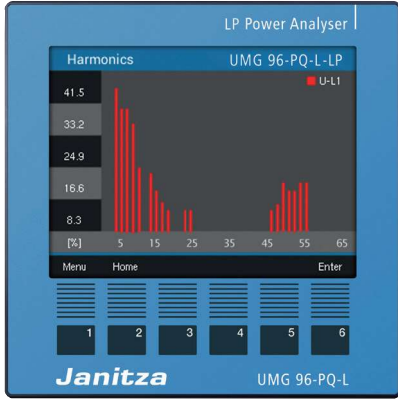
Data sheet

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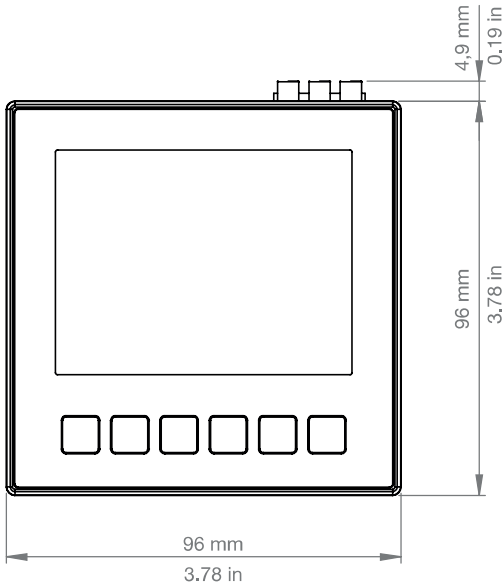
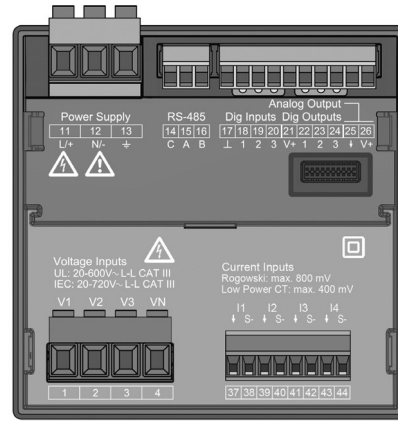
DEVICE VIEWS

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

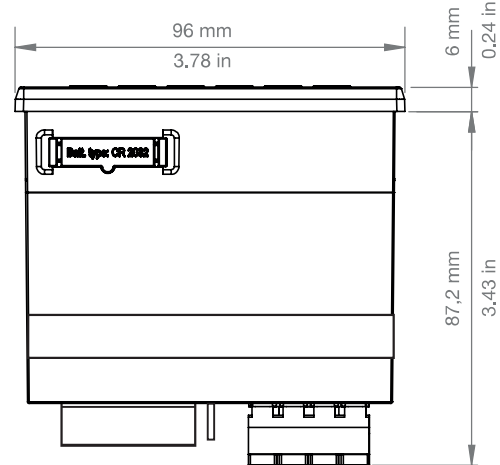
Front view



Rear view

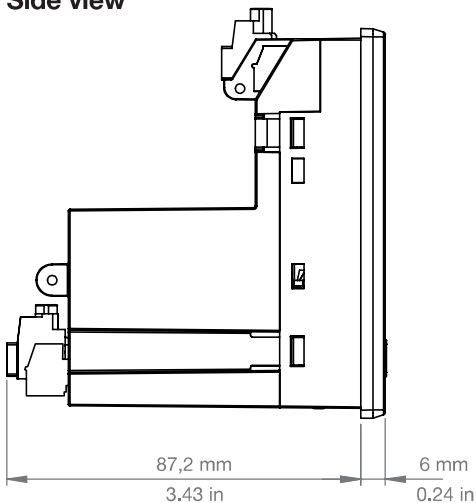


Bottom view



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

Side view



LOW-POWER CURRENT MEASUREMENT

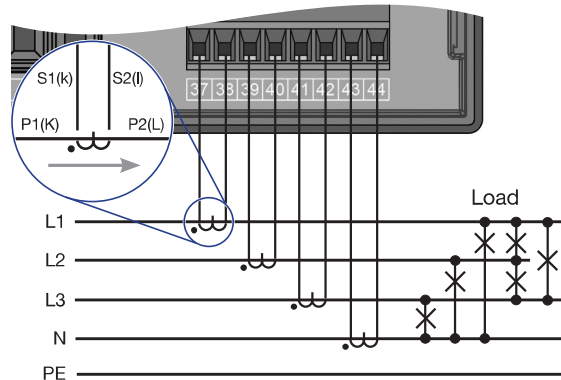
The **UMG 96-PQ-L-LP** is based on the proven **UMG 96-PQ-L** measurement device, but has four inputs for current measurement. The following types of current sensors can be used:

- Low-power current transformers (passive small-signal current transformers according to IEC 61869-10)
- active Rogowski coils (with integrator) or
- passive Rogowski coils (integrator circuit in the UMG 96-PQ-L-LP switched on).

Current sensor type	Suitable current sensors
<ul style="list-style-type: none"> · Low power current transformers · Active Rogowski coil (with integrator) 	Nominal signal e.g. 333 mVrms, (max. 400 mVrms)
<ul style="list-style-type: none"> · Passive Rogowski coil (integrator in the UMG 96-PQ-L-LP) 	Maximum signal 800 mVrms

A current overview of available low-power current transformers can be found at www.janitza.com.

Connection example for current measurement with low-power current sensors



The 4th current measurement input can be used to measure the RMS current in the neutral conductor, protective conductor, or in a separate conductor. The measured current is not used to calculate power and energy values.

Low-power current transformers are supplied with pre-assembled connecting cables with a small conductor cross-section, which are connected directly to the measurement device. Short-circuit terminals are not required, which simplifies installation and saves space in the switchboard cabinet. The connecting cables must not be extended, as they are matched to the transformer.

ORDERING INFORMATION

Variant	Network system, supply	Part number
UMG 96-PQ-L-LP	TN / TT networks, 230 V option ¹⁾	5236006
	TN / TT networks, 24 V option ¹⁾	5236007

1) See „Supply voltage“ on page 4.

i INFORMATION

Detailed information on the device functions can be found in the usage information enclosed with the device or is available for download at www.janitza.com.

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	64 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 (6562 ft) 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)	

Voltage measurement	
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
Three-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%)
Overvoltage 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. overvoltage 800 V _{rms})
Measuring range L-L	0 ¹⁾ .. 1040 V _{rms} (max. overvoltage 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	13.67 kHz
Sampling frequency (IT variant)	13.98 kHz
Frequency of the fundamental oscillation - Resolution	45 Hz .. 65 Hz 0.01 Hz
Fourier analysis	1st - 65th Harmonics

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	
Measuring range: Low-power current transformers or active Rogowski coils (setting: <i>Low Power</i>)	0.3 .. 400 mV RMS
Measuring range: passive Rogowski coils (setting: <i>Rogowski</i>)	1 .. 800 mV RMS
Crest factor	2
Overload for 1 second	3 V
Resolution	0.0001 V
Sampling frequency	13.67 kHz
Fourier analysis	1st - 65th Harmonics (I1 .. I3) 1st - 40th harmonic (I4)

Serial interface	
RS-485 - Modbus RTU/client device	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)

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

Connection 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)

Connection 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)

Connection capacity of the terminals (low-power current measurement)	
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)

Connection capacity of the terminals (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)

Connection 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)

PERFORMANCE CHARACTERISTICS OF FUNCTIONS

Function	Symbol	Accuracy class	Measuring range	Display range
Total active power	P	0.5 (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 (IEC61557-12)	0 VA .. 12.6 kVA	0 VA .. 999 GVA *
Total active energy	Ea	0.5 (IEC61557-12) 0.5S (IEC62053-22) 0.5 (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 (IEC61557-12)	0 VAh .. 999 GVAh	0 VAh .. 999 GVAh *
Frequency	f	0.05 (IEC61557-12)	42.5 Hz .. 69 Hz	42.50 Hz .. 69.00 Hz
Phase current: - Low power circuit - Rogowski circuit	I	0.5 (IEC61557-12) 0.5 (IEC61557-12)	0,3 .. 400 mV rms 1 .. 800 mV rms	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
Transient overvoltages	Utr	-	-	-
Voltage harmonics	Uh	Cl. 1 (IEC61000-4-7)	1 .. 65	0 V .. 999 kV
THD of voltage ¹⁾	THDu	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of voltage ²⁾	THD-Ru	-	-	-
Current harmonics	Ih	Cl. 1 (IEC61000-4-7)	1 .. 65	0 A .. 999 kA
THD of current ¹⁾	THDi	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of current ²⁾	THD-Ri	-	-	-
Accuracy of events		20 ms	-	-
Short-term flicker, long-term flicker	Pst, Plt	-	-	-

1) Referenced to the fundamental oscillation.

2) Referenced to the effective value.

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

INFORMATION

The accuracy classes refer to the measuring inputs of the device. Upstream transformers can influence the accuracy.

For low-power current transformers, we recommend using at least 10 A primary current and a maximum cable length of 5 m. Suitable current transformers can be found in our catalog or at www.janitza.com.

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