

The device front can deviate!

## LP Power Analyzer

# UMG 96-PQ-L-LP

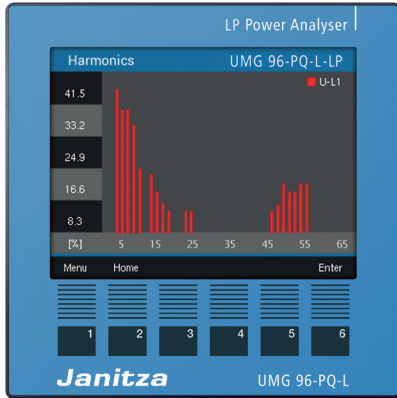
(from firmware 3.50)

Data sheet

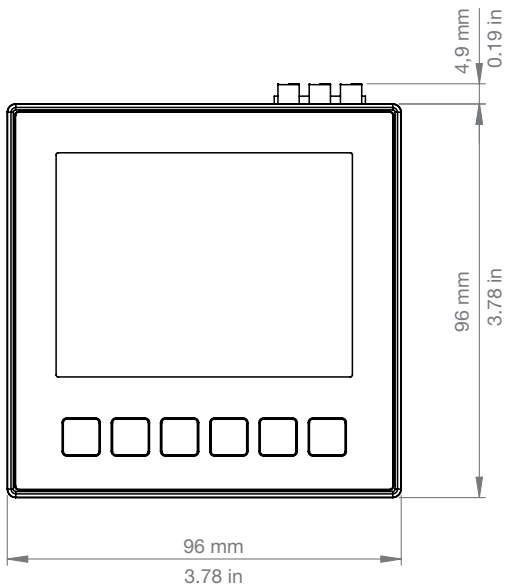
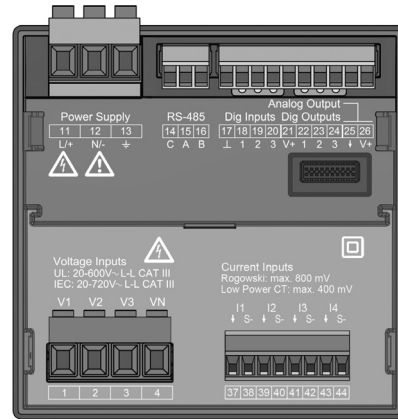
# DEVICE VIEWS

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

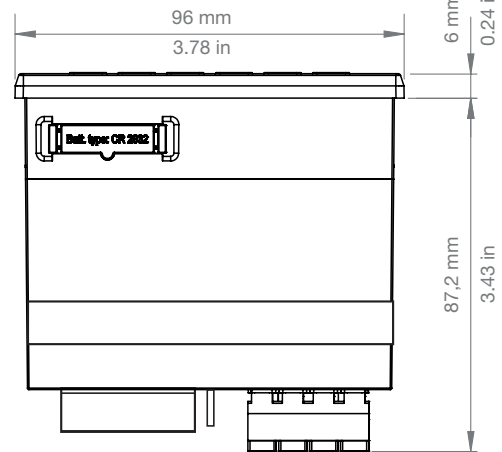
## Front view



## Rear view

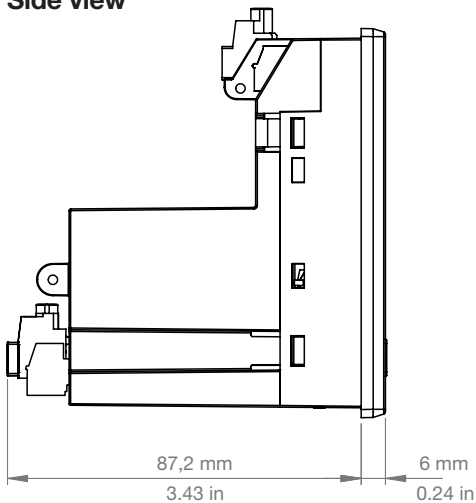


## Bottom view



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

## Side view



# LOW-POWER CURRENT MEASUREMENT

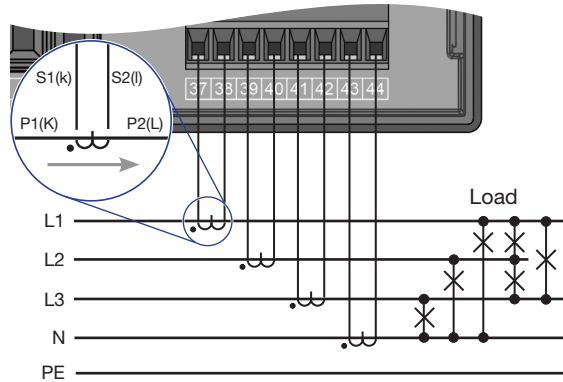
The UMG 96-PQ-L-LP is based on the proven UMG 96-PQ-L measurement device, but has four inputs for current measurement. The following types of current sensors can be used:

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

A current overview of available low-power current transformers can be found at [www.janitza.com](http://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 <sup>1)</sup>	5236006
	TN / TT networks, 24 V option <sup>1)</sup>	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](http://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 <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 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<sub>eff</sub> (4-conductor measurement) or a voltage L1-L2 of greater than 34 V<sub>eff</sub> (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 <sub>eff</sub> 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

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

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

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

<b>Connection capacity of the terminals (low-power current measurement)</b>	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm <sup>2</sup> , AWG 28-16
Wire ferrules (non-insulated)	0.2 - 1.5 mm <sup>2</sup> , AWG 26-16
Wire ferrules (insulated)	0.2 - 1.5 mm <sup>2</sup> , AWG 26-16
Tightening torque	0.2 - 0.25 Nm (1.77 - 2.21 lbf in)
Strip length	7 mm (0.2756 in)

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

<b>Connection capacity of the terminals (digital inputs/outputs, analog output)</b>	
Connectible conductors. Only connect one conductor per terminal point!	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm <sup>2</sup> , AWG 28-16
Wire ferrules (non-insulated)	0.2 - 1.5 mm <sup>2</sup> , AWG 26-16
Wire ferrules (insulated)	0.2 - 1.5 mm <sup>2</sup> , 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 <sup>1)</sup>	THDu	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of voltage <sup>2)</sup>	THD-Ru	-	-	-
Current harmonics	Ih	Cl. 1 (IEC61000-4-7)	1 .. 65	0 A .. 999 kA
THD of current <sup>1)</sup>	THDi	1.0 (IEC61557-12)	0% .. 999%	0% .. 999%
THD of current <sup>2)</sup>	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](http://www.janitza.com).

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