

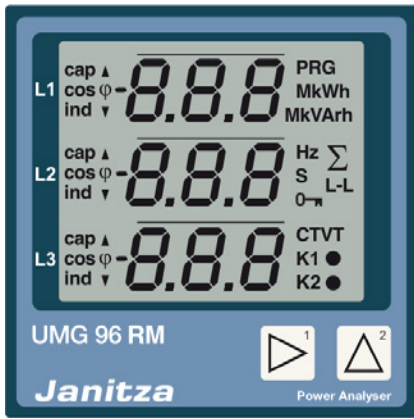
Power Analyser

## UMG 96RM-PN

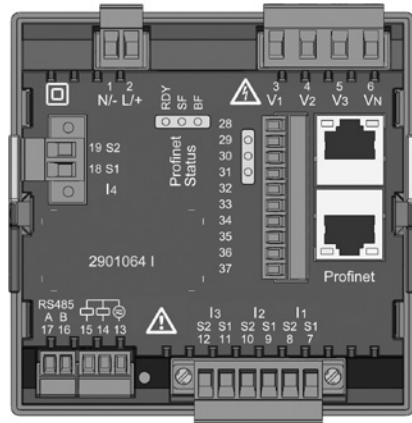
Data sheet

# DEVICE VIEWS

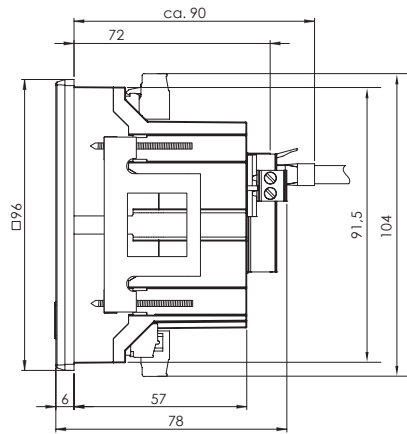
Front view



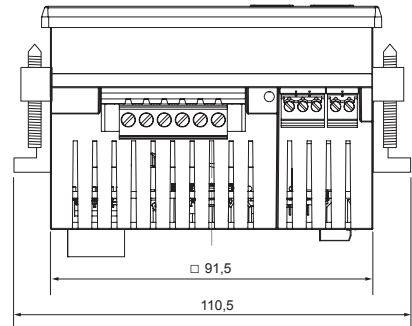
Rear view



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 attached connectors)	Approx. 380g
Package weight (incl. accessories)	Approx. 780g
Service life of backlight	40,000 hrs (backlighting is reduced by around 50% over this period)

Transport and storage	
The following information applies to devices which are transported or stored in the original packaging.	
Free fall	1m
Temperature	K55 (-25°C to +70°C)
Relative humidity	0 to 90% RH

Ambient conditions during operation	
The UMG 96RM is intended for weather-protected, stationary use. Protection class II in acc. with IEC 60536 (VDE 0106, Part 1).	
Rated temperature range	K55 (-10°C to +55°C)
Relative humidity	0 to 75% RH
Operating altitude	0 to 2000m above sea level
Pollution degree	2
Mounting position	Upright
Ventilation	Forced ventilation is not required.
Protection against ingress of solid foreign bodies and water - Front - Rear - Front with seal	IP40 in acc. with EN60529 IP20 in acc. with EN60529 IP54 in acc. with EN60529

Power supply voltage		
Option 230V	Nominal range	90V - 277V (50/60Hz) or DC 90V - 250V; 300V CATIII
	Power consumption	max. 8.5VA / 5W
Option 24V	Nominal range	24V - 90V AC / DC; 150V CATIII
	Power consumption	max. 7VA / 5W
Operating range	+-10% of nominal range	
Internal fuse, not replaceable	Typ T1A / 250V/277V according IEC 60127	
Recommended overcurrent protection device for line protection (certified under UL)	Option 230V: 6 - 16A Option 24V: 1 - 6A (Char. B)	


Recommendation for a maximum number of devices on a circuit breaker:

Option 230V : Circuit breaker B6A: max. 4 devices / Circuit breaker B16A: max. 11 devices  
Option 24V : Circuit breaker B6A: max. 3 devices / Circuit breaker B16A: max. 9 devices

Voltage measurement	
Three-phase 4-conductor systems with rated voltages up to	277V/480V (+-10%)
Three-phase 3-conductor systems, unearthed, with rated voltages up to	IT 480V (+-10%)
Overvoltage category	300V CAT III
Measurement surge voltage	4kV
Measurement range L-N	0 <sup>1)</sup> to 300Vrms (max. overvoltage 520Vrms )
Measurement range L-L	0 <sup>1)</sup> to 520Vrms (max. overvoltage 900Vrms)
Resolution	0.01V
Crest factor	2.45 (related to the measurement range)
Impedance	3M $\Omega$ /phase
Power consumption	approx. 0.1VA
Sampling rate	21.33 kHz (50Hz), 25.6 kHz (60Hz) for each measurement channel
Frequency range of the fundamental oscillation - Resolution	45Hz to 65Hz 0.01Hz

<sup>1)</sup> The UMG 96RM-PN can only detect measurements when a voltage L1-N greater than 20V eff (4-wire measurement) at voltage input V1 or a voltage L1-L2 greater than 34V eff (3-wire measurement) is applied.

Current measurement I1 - I4	
Rated current	5A
Measurement range	0 to 6Arms
Crest factor	1,98
Resolution	0.1mA (display 0.01A)
Overvoltage category	300V CAT II
Measurement surge voltage	2kV
Power consumption	Approx. 0.2 VA (Ri=5m $\Omega$ )
Overload for 1 sec.	120A (sinusoidal)
Sampling rate	21.33 kHz (50Hz), 25.6 kHz (60Hz) for each measurement channel

Residual current monitoring I5 / I6	
Rated current	30mArms
Measurement range	0 .. 40mArms
Triggering current	50 $\mu$ A
Resolution	1 $\mu$ A
Crest factor	1.414 (related to 40mA)
Burden	4 Ohm
Overload for 1 sec.	5A
Sustained overload	1A
Overload for 20 ms	50A
Residual current monitoring	i.a.w. IEC/TR 60755 (2008-01), type A 

<b>Thermistor input</b> 2 optional inputs	
Update time	1 second
Connectable sensors	PT100, PT1000, KTY83, KTY84
Total burden (sensor + cable)	Max. 4 kOhm

Sensor type	Temperature range	Resistor range	Measurement uncertainty
KTY83	-55°C to +175°C	500Ohm to 2.6kOhm	± 1.5% rng
KTY84	-40°C to +300°C	350Ohm to 2.6kOhm	± 1.5% rng
PT100	-99°C to +500°C	60Ohm to 180Ohm	± 1.5% rng
PT1000	-99°C to +500°C	600Ohm to 1.8kOhm	± 1.5% rng

<b>Serial interface</b>	
RS485 to Modbus RTU/Slave	9.6kbps, 19.2kbps, 38.4kbps, 57.6 kbps, 115.2kbps
Stripping length	7mm

<b>Ethernet / ProfiNet interface</b>	
Connection	RJ45
Functions	Embedded webserver (HTTP)
Protocols	TCP/IP, Modbus/TCP (Port 502), ICMP (Ping), NTP, Modbus RTU over Ethernet (Port 8000), FTP, ProfiNet (SNMP, DCP, MRP, LLDP, DCOM, RPC ...)
Conformance Class (CC)	B – Switch class C (IRT)
ProfiNet version	2.2
ProfiNet profiles	PROFenergy V1.1, Entity Class 2

<b>Digital outputs</b> 2 and 3 optional additional digital outputs, semiconductor relay, not short-circuit proof	
Switching voltage	Max. 33V AC, 60V DC
Switching current	max. 50mAeff AC/DC
Response time	10/12 periods + 10ms *
Pulse output (energy pulses)	Max. 50Hz

\* Response time, e.g. at 50 Hz: 200ms + 10ms = 210 ms

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

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

<b>Terminal connection capacity (voltage and current measurement)</b>		
Connectable conductors. Only one conductor can be connected per terminal!		
	<b>Current</b>	<b>Voltage</b>
Single core, multi-core, fine-stranded	0.2 - 2.5mm <sup>2</sup> , AWG 26-12	0.08 - 4.0mm <sup>2</sup> , AWG 28-12
Terminal pins, core end sheath	0.2 - 2.5mm <sup>2</sup>	0.2 - 2.5mm <sup>2</sup>
Tightening torque	0.4 - 0.5Nm	0.4 - 0.5Nm
Stripping length	7mm	7mm

<b>Terminal connection capacity (residual current and temperature measurement inputs and digital inputs/outputs)</b>	
Rigid/flexible	0.14 - 1.5mm <sup>2</sup> , AWG 28-16
Flexible with core end sheath without plastic sleeve	0.20 - 1.5mm <sup>2</sup>
Flexible with core end sheath with plastic sleeve	0.20 - 1.5mm <sup>2</sup>
Tightening torque	0.20 - 0.25Nm
Stripping length	7mm

<b>Cable length (digital inputs / outputs, temperature measurement input)</b>	
Up to 30m	Not screened
Longer than 30m	Screened

<b>Terminal connection capacity (serial interface)</b>	
Single core, multi-core, fine-stranded	0.20 - 1.5mm <sup>2</sup>
Terminal pins, core end sheath	0.20 - 1.5mm <sup>2</sup>
Tightening torque	0.20 - 0.25Nm
Stripping length	7mm

# FUNCTION PERFORMANCE CHARACTERISTICS

Function	Symbol	Precision class	Measurement range	Display range
Total effective power	P	0.5 <sup>5)</sup> (IEC61557-12)	0 to 5.4 kW	0 W to 999 GW *
Total reactive power	QA, Qv	1 (IEC61557-12)	0 to 5.4 kvar	0 varh to 999 Gvar *
Total apparent power	SA, Sv	0.5 <sup>5)</sup> (IEC61557-12)	0 to 5.4 kVA	0 VA to 999 GVA *
Total effective energy	Ea	0.5 <sup>5)</sup> (IEC61557-12) 0,5S <sup>5)</sup> (IEC62053-22)	0 to 5.4 kWh	0 Wh to 999 GWh *
Total reactive energy	ErA, ErV	1 (IEC61557-12)	0 to 5.4 kvarh	0 varh to 999 Gvarh *
Total apparent energy	EapA, EapV	0.5 <sup>5)</sup> (IEC61557-12)	0 to 5.4 kVAh	0 VAh to 999 GVAh *
Frequency	f	0.05 (IEC61557-12)	45 to 65 Hz	45.00 Hz to 65.00 Hz
Phase current I1 - I3	I	0.2 (IEC61557-12)	0 to 6 Arms	0 A to 999 kA
Measured neutral conductor current I4	IN	1 (IEC61557-12)	0 to 6 Arms	0 A to 999 kA
Residual currents I5, I6	IDiff	1 (IEC61557-12)	0 to 40 mArms	0 A to 999 kA
Computed neutral conductor current	INc	1.0 (IEC61557-12)	0.03 to 25 A	0.03 A to 999 kA
Voltage	U L-N	0.2 (IEC61557-12)	10 to 300 Vrms	0 V to 999 kV
Voltage	U L-L	0.2 (IEC61557-12)	18 to 520 Vrms	0 V to 999 kV
Power factor	PFA, PFV	0.5 (IEC61557-12)	0.00 to 1.00	0.00 to 1.00
Short-term flicker, long-term flicker	Pst, Plt	-	-	-
Voltage dips (L-N)	Udip	-	-	-
Voltage rises (L-N)	Uswl	-	-	-
Transient overvoltages	Utr	-	-	-
Voltage interruptions	Uint	-	-	-
Voltage unbalance (L-N) <sup>1)</sup>	Unba	-	-	-
Voltage unbalance (L-N) <sup>2)</sup>	Unb	-	-	-
Voltage harmonics	Uh	Cl. 1 (IEC61000-4-7)	Up to 2.5 kHz	0 V to 999 kV
THD of the voltage <sup>3)</sup>	THDu	1.0 (IEC61557-12)	Up to 2.5 kHz	0% to 999%
THD of the voltage <sup>4)</sup>	THD-Ru	-	-	-
Current harmonics	Ih	Cl. 1 (IEC61000-4-7)	Up to 2.5 kHz	0 A to 999 kA
THD of the current <sup>3)</sup>	THDi	1.0 (IEC61557-12)	Up to 2.5 kHz	0% to 999%
THD of the current <sup>4)</sup>	THD-Ri	-	-	-
Mains signal voltage	MSV	-	-	-

<sup>1)</sup> Referred to amplitude.

<sup>2)</sup> Referred to phase and amplitude.

<sup>3)</sup> Referred to mains frequency.

<sup>4)</sup> Referred to root mean square value.

<sup>5)</sup> Accuracy class 0.5/ 0.5S with ..5 A transformer.  
Accuracy class 1 with ..1 A transformer.

\* The display returns to 0 W when the maximum total energy values are reached.

Janitza electronics GmbH  
Vor dem Polstück 6  
35633 Lahnau, Germany  
Support Tel. +49 6441 9642-22  
e-mail: [info@janitza.com](mailto:info@janitza.com)  
[www.janitza.com](http://www.janitza.com)

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