

## Energy Analyzer UMG 96-S2

Datasheet

# USE & FUNCTION

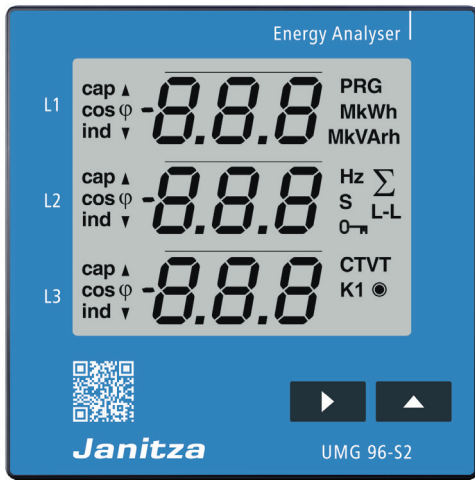
## Energy Analyzer UMG 96-S2

Essential functions of the UMG 96-S2:

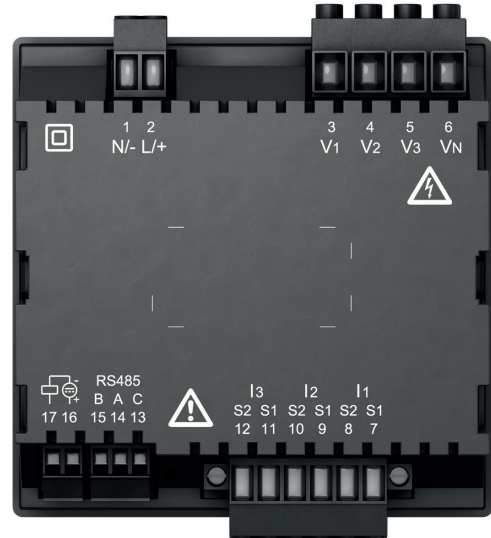
- 3 voltage measurements, 230/400 V, 300 V CAT III.
- 3 current measurements (via current transformer).
- RS485 interface.
- 1 digital output.
- Integrated front panel unit with the dimensions 96 x 96 mm.
- Connection via pluggable screw terminals.
- Operation via 2 keys.
- Password protection.

## DEVICE VIEWS

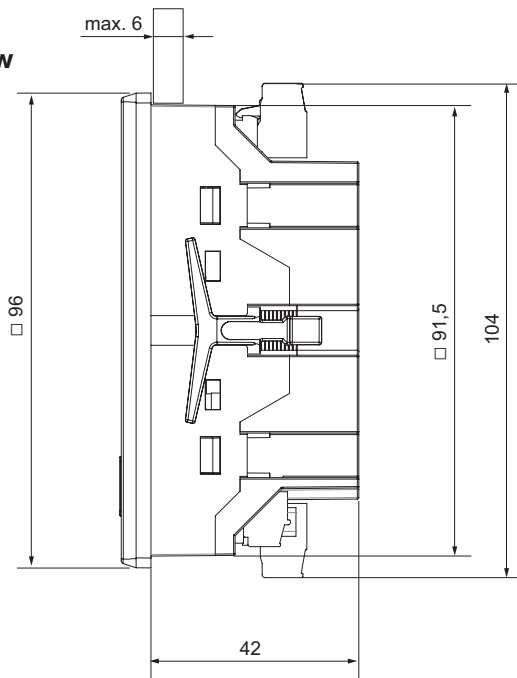
Front view



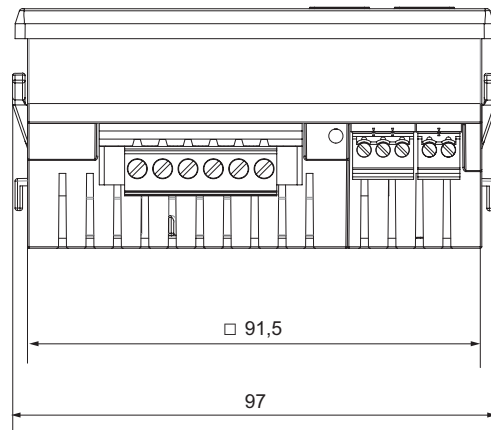
Rear view



Side view



View from below



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

# TECHNICAL DATA

<b>General information</b>	
Net weight (with attached connectors)	Approx. 250 g
Packaging weight (including accessories)	Approx. 500 g
Impact resistance	IK07 according to IEC 62262
<b>Transport and storage</b>	
The following information applies to devices which are transported and stored in the original packaging.	
Free fall	1 m
Temperature	K55 (-25 C up to +70 C)
Relative humidity	0 to 90% RH
<b>Ambient conditions during operation</b>	
Use the UMG 96-S2 in a weather-protected, stationary application. Protection class II in accordance with IEC 60536 (VDE 0106, Part 1).	
Operating temperature range	K55 (-10 C .. +55 C)
Relative humidity	0 to 75% RH
Operating altitude	0 .. 2000 m above sea level
Degree of pollution	2
Installation position	discretionary
Ventilation	no external ventilation required
Protection against foreign bodies and water	
- Front	IP40 i.a.w. EN60529
- Rear	IP20 i.a.w. EN60529
- Front side with sealing	IP54 i.a.w. EN60529
<b>Supply voltage</b>	
Nominal range	AC 90 V - 265 V (50/60 Hz) or DC 90 V - 250 V, 300 V CATIII
Operating range	+/-10% of nominal range
Power consumption	max. 1.5 VA / 0.5 W
Internal fuse, not exchangeable	Type T1A / 250 VDC / 277 VAC according to IEC 60127
Recommended overcurrent protection device for the line protection	6-16 A (Char. B, IEC-/UL approval)
<b>Voltage measurement</b>	
3-phase 4-conductor systems with nominal voltages up to	230 V/400 V (+/-10%) according to IEC
Overvoltage category	300 V CAT III
Measurement voltage surge	4 kV
Fuse for the voltage measurement	1 - 10 A (with IEC/UL approval)
Measuring range L-N	0 <sup>1)</sup> .. 300 Vrms (max. overvoltage 400 Vrms)
Measuring range L-L	0 <sup>1)</sup> .. 425 Vrms (max. overvoltage 620 Vrms)
Measurement range exceedance L-N	$U_{L-N} > 300$ Vrms
Resolution	0.01 V
Crest factor	1.9 (related to the measurement range)
Impedance	3 M $\Omega$ /phase
Power consumption	Approx. 0.1 VA
Sampling frequency	8 kHz
Frequency of the basic oscillation	45 Hz .. 65 Hz
- resolution	0.01 Hz

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

<b>Current measurement</b>	
Rated current	x/1 and x/5 A
Metering range	0 .. 6 Arms
Measurement range exceedance	$I > 7 A_{eff}$
Crest factor (based on the rated current)	2
Resolution	1 mA (display 0.01 A) at .. /5 A 1/4 mA at .. /1 A
Overvoltage category	300 V CAT II
Measurement voltage surge	2 kV
Power consumption	approx. 0.2 VA ( $R_i=5\text{ m}\Omega$ )
Overload for 1 s	60 A (sinusoidal)
Sampling frequency	8 kHz
<b>Serial interface</b>	
RS485 - Modbus RTU/slave	9.6 kbps, 19.2 kbps, 38.4 kbps
<b>Digital output</b>	
1 digital output, semiconductor relay, not short-circuit proof.	
Switching voltage	max. 60 V DC
Switching current	max. 50 mA <sub>eff</sub> DC
Pulse output (energy pulse)	Max. 12.5 Hz
<b>Terminal connection capacity (supply voltage)</b>	
Connectable conductor (Connect only one conductor per terminal!):	
Single core, multi-core, fine-stranded	0.08 - 2.5 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
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Single core, multi-core, fine-stranded	0.08 - 2.5 mm <sup>2</sup> , AWG 28-12
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<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 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

# FUNCTION CHARACTERISTICS

Function	Symbol	Accuracy class	Metering range	Display range
Total active power	P	0.5 <sup>5)</sup> (IEC61557-12)	0 W .. 5.4 kW	0 W .. 999 GW *
Total reactive power	QA, Qv	1 (IEC61557-12)	0 var .. 5.4 kvar	0 var .. 999 Gvar *
Total apparent power	SA, Sv	0.5 <sup>5)</sup> (IEC61557-12)	0 VA .. 5.4 kVA	0 VA .. 999 GVA *
Total active energy	Ea	0.5S <sup>5) 6)</sup> (IEC61557-12)	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) 6)</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 Arms .. 6 Arms	0 A .. 999 kA
Calculated neutral conductor current	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..300 Vrms	0 V .. 999 kV
Voltage	U L-L	0.2 (IEC61557-12)	18 Vrms..620 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 voltage swells	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)	1 .. 15 (only odd)	0 V .. 999 kV
THD of the voltage <sup>3)</sup>	THDu	1.0 (IEC61557-12)	0 % .. 999 %	0 % .. 999 %
THD of the voltage <sup>4)</sup>	THD-Ru	-	-	-
Current harmonics	Ih	Cl. 1 (IEC61000-4-7)	1 .. 15 (only odd)	0 A .. 999 kA
THD of the current <sup>3)</sup>	THDi	1.0 (IEC61557-12)	0 % .. 999 %	0 % .. 999 %
THD of the current <sup>4)</sup>	THD-Ri	-	-	-
Mains signal voltage	MSV	-	-	-

1) In relation to the amplitude.

2) In relation to the phase and amplitude.

3) In relation to the mains frequency.

4) In relation to the effective value.

5) Accuracy class 0.5 with ../5A transformer.  
Accuracy class 1 with ../1A transformer.

6) Accuracy class 0.5S according to IEC62053-22.

\* If the max. total energy value is reached, the display "0" appears.

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