



## Power Quality Analyser UMG 605-PRO

Data sheet

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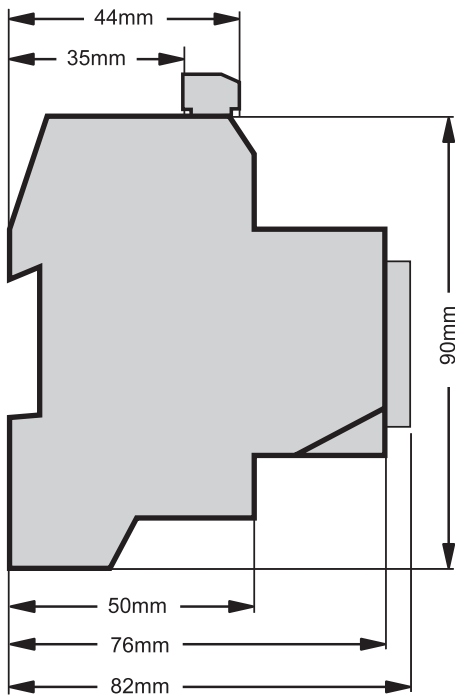
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# DEVICE VIEWS

## Front view



## Side view



All dimensions in mm

# TECHNICAL DATA

<b>General</b>	
Net weight	350 g
Device dimensions	Approx. l=107.5 mm, w=90 mm, h=82 mm (per DIN 43871:1992)
Horizontal pitch	6 HP
Housing flammability rating	UL 94V-0
Installation position	any
Fastening/assembly	35 mm DIN rail (per IEC/EN60999-1, DIN EN 50022)
Battery	Type Lithium CR2032, 3 V

<b>Transport and storage</b>	
The following information applies to devices which are transported or stored in the original packaging.	
Free fall	1 m
Temperature	-20 °C to +70 °C

<b>Ambient conditions during operation</b>	
The device is intended for weather-protected, stationary use. Protection class II in acc. with IEC 60536 (VDE 0106, Part 1), i.e. ground wire connection is not required! The device meets the operational conditions in accordance with DIN IEC 60721-3-3.	
Working temperature range	-10 °C to +55 °C
Relative humidity	5 to 95% RH (at 25°C without condensation)
Operating altitude	0 to 2000 m above sea level
Pollution degree	2
Installation position	upright
Ventilation	forced ventilation is not required.
Protection against ingress of solid foreign bodies and water	IP20 in accordance with EN60529 September 2014, IEC60529:2013

<b>Supply voltage</b>	
Protection of the supply voltage (fuse)	6 A, type B (approved i.a.w. UL/IEC)
230 V option:	
<ul style="list-style-type: none"> <li>• Nominal range</li> <li>• Operating range</li> <li>• Power consumption</li> <li>• Overvoltage category</li> </ul>	95 V to 240 V (50/60Hz) / DC 135 V to 340 V +-10% of nominal range max. 3.2 W / 9 VA 300 V CATII
90 V option (without UL approval):	
<ul style="list-style-type: none"> <li>• Nominal range</li> <li>• Operating range</li> <li>• Power consumption</li> <li>• Overvoltage category</li> </ul>	50 V to 110 V (50/60 Hz) / DC 50 V to 155 V +-10% of nominal range max. 3.2 W / 9 VA 300 V CATII
24V option:	
<ul style="list-style-type: none"> <li>• Nominal range</li> <li>• Operating range</li> <li>• Power consumption</li> <li>• Overvoltage category</li> </ul>	20 V to 50 V (50/60 Hz) / DC 20 V to 70 V +-10% of nominal range max. 5 W / 8 VA 150 V CATII

<b>Terminal connection capacity (supply voltage)</b>	
Connectable conductors. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.08 - 2.5 mm <sup>2</sup> , AWG 28 - 12
Terminal pins, core end sheath	1.5 mm <sup>2</sup> , AWG 16

<b>Digital inputs</b>	
(Pulse input S0)	
Maximum counter frequency	20 Hz
Switching input	
Input signal present	18 V to 28 V DC (typical 4 mA)
Input signal not present	0 to 5 V DC, current less than 0.5 mA
Response time (Jasic program)	200 ms
Cable length	up to 30 m unshielded, from 30 m shielded

<b>Digital outputs</b>	
2 digital outputs; semiconductor relays, not short-circuit proof	
Switching voltage	max. 60 V DC, 30 V AC
Switching current	max. 50 mAeff AC/DC
Response time (Jasic program)	200 ms
Output of voltage dips	20 ms
Output of voltage exceedance events	20 ms
Switching frequency	max. 20 Hz
Cable length	up to 30 m unshielded; from 30 m shielded

<b>Temperature measurement input</b>	
Update time	approx. 200 ms
Connectable sensors	PT100, PT1000, KTY83, KTY84
Total burden (sensor + cable)	max. 4 kOhm
Cable length	up to 30 m unshielded, from 30 m shielded

Sensor type	Temperature range	Resistor range	Measurement uncertainty
KTY83	-55 °C to +175 °C	500 Ohm to 2.6 kOhm	± 1.5% rng <sup>1)</sup>
KTY84	-40 °C to +300 °C	350 Ohm to 2.6 kOhm	± 1.5% rng <sup>1)</sup>
PT100	-99 °C to +500 °C	60 Ohm to 180 Ohm	± 1.5% rng <sup>1)</sup>
PT1000	-99 °C to +500 °C	600 Ohm to 1.8 kOhm	± 1.5% rng <sup>1)</sup>

<sup>1)</sup> rng = metering range

<b>Terminal connection capacity: Digital inputs and outputs, temperature measurement input</b>	
Single core, multi-core, fine-stranded	0.2 - 1.5 mm <sup>2</sup> , AWG 24-16
Cable end sleeve (not insulated)	0.2 - 1.5 mm <sup>2</sup>
Cable end sleeve (insulated)	0.2 - 1.5 mm <sup>2</sup>
Tightening torque	0.25 Nm (2.21 lbf in)
Stripping length	7 mm (0.2756 in)

<b>Voltage measurement inputs</b>	
Three-phase 4-conductor systems (L-N/L-L)	max. 277 V / 480 V
Three-phase 3-conductor systems (L-L)	max. 480 V
Resolution	0.01 V
Crest factor	2 (related to 480 Vrms)
Overvoltage category	300 V CAT III
Measurement surge voltage	4 kV
Protection of voltage measurement	1 - 10 A
Impedance	4 MOhm / phase
Power consumption	approx. 0.1 VA
Sampling rate	20 kHz / phase
Transients	> 50 $\mu$ s
Frequency of the fundamental oscillation	15 Hz to 440 Hz
- Resolution	0.001 Hz

<b>Current measurement inputs</b>	
Rated current	5 A
Rated current	6 A
Protection when measuring directly (without a current transformer)	6 A, char. B (approved i.a.w. UL/IEC)
Resolution on the display	10 mA
Crest factor	2 (related to 6 Amps)
Overvoltage category	300 V CAT III
Measurement surge voltage	4 kV
Power consumption	approx. 0.2 VA (Ri = 5 mOhm)
Overload for 1 sec.	100 A (sinusoidal)
Sampling rate	20 kHz

<b>Measurement precision phase angle</b>	0,15 °
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<b>Terminal connection capacity (current measurement and voltage measurement)</b>	
Conductors to be connected. Only one conductor can be connected per terminal!	
Single core, multi-core, fine-stranded	0.08 - 4.0 mm <sup>2</sup> , AWG 28-12
Cable end sleeve (not insulated)	0.25 - 2.5 mm <sup>2</sup>
Cable end sleeve (insulated)	0.25 - 2.5 mm <sup>2</sup>
Stripping length	8-9 mm (0.31 - 0.35 in)

<b>RS232 interface</b>	
Connection	5-pin screw-type terminals
Protocol	Modbus RTU/slave
Transmission rate	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps

<b>RS485 interface</b>	
Connection	2-pin screw-type terminals
Protocol	Modbus RTU/slave, Modbus RTU/master
Transmission rate	9.6 kbps, 19.2 kbps, 38.4 kbps, 57.6 kbps, 115.2 kbps, 921.6 kbps

<b>Profibus interface</b>	
Connection	SUB D 9-pin
Protocol	Profibus DP/V0 per EN 50170
Transmission rate	9.6 kBaud to 12 MBaud

<b>Ethernet interface</b>	
Connection	RJ45
Function	Modbus gateway, embedded web server (HTTP)
Protocols	TCP/IP, EMAIL (SMTP), DHCP client (BootP), Modbus/TCP(port 502), ICMP (ping), NTP, TFTP, Modbus RTU over Ethernet (port 8000), FTP SNMP.

# FUNCTION PERFORMANCE CHARACTERISTICS

Measurement in the frequency range 50/60 Hz				
Measurement via current transformer ..1/5 A				
Function	Symbol	Precision class	Metering range	Display range
Total active power	P	0.5 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kW	0 W to 9999 GW
Total reactive power	QA <sup>6)</sup> , Qv <sup>6)</sup>	0.5 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kvar	0 varh to 9999 Gvar
Total apparent power	SA, Sv <sup>6)</sup>	0.5 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kVA	0 VA to 9999 GVA
Total active energy	Ea	0,5 (IEC61557-12) 0,5S (IEC62053-22) 0,2 (ANSI C12.20)	0 to 9999 GWh	0 Wh to 9999 GWh
Total reactive energy	ErA <sup>6)</sup> , ErV <sup>6)</sup>	1 <sup>5)</sup> (IEC61557-12)	0 to 9999 Gvarh	0 varh to 9999 Gvarh
Total apparent energy	EapA, EapV <sup>6)</sup>	0.5 <sup>5)</sup> (IEC61557-12)	0 to 9999 GVAh	0 VAh to 9999 GVAh
Frequency	f	0.05 (IEC61557-12)	40 to 70 Hz	40 Hz to 70 Hz
Phase current	I	0.25 <sup>7)</sup> (IEC61557-12)	0.005 to 7 Amps	0 A to 9999 kA
Measured neutral conductor current	IN	0.25 <sup>7)</sup> (IEC61557-12)	0.005 to 7 Amps	0 A to 9999 kA
Computed neutral conductor current	INc	1 (IEC61557-12)	0.005 to 21 A	0 A to 9999 kA
Voltage	U L-N	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage	U L-L	0.2 (IEC61557-12)	18 to 1000 Vrms	0 V to 9999 kV
Power factor	PFA, PFV	0.5 (IEC61557-12)	0.00 to 1.00	0 to 1
Short-term flicker, long-term flicker	Pst, Plt	Cl. A (IEC61000-4-15)	0.4 Pst to 10.0 Pst	0 to 10
Voltage dips	Udip	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage increases	Uswl	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Transient overvoltages	Utr	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage interruptions	Uint	Duration +- 1 cycle	-	-
Voltage unbalance <sup>1)</sup>	Unba	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage unbalance <sup>2)</sup>	Unb	0.2 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage harmonics <sup>8)</sup>	Uh	Cl. 1 (IEC61000-4-7)	Up to 3 kHz	0 V to 9999 kV
THD of the voltage <sup>3) 8)</sup>	THDu	1.0 (IEC61557-12)	Up to 3 kHz	0% to 999 %
THD of the voltage <sup>4) 8)</sup>	THD-Ru	1.0 (IEC61557-12)	Up to 3 kHz	0% to 999 %
Current harmonics <sup>8)</sup>	Ih	Cl. 1 (IEC61000-4-7)	Up to 3 kHz	0 A to 9999 kA
THD of the current <sup>3) 8)</sup>	THDi	1.0 (IEC61557-12)	Up to 3 kHz	0% to 999 %
THD of the current <sup>4) 8)</sup>	THD-Ri	1.0 (IEC61557-12)	Up to 3 kHz	0% to 999 %
Mains signal voltage (interharmonics voltage)	MSV	IEC 61000-4-7 Class 1	10% – 200% of IEC 61000-2-4 class 3	0 V to 9999 kV

<b>Measurement in the frequency range of 15 to 45 / 65 to 440 Hz</b>				
Measurement via current transformer ..1/5 A				
<b>Function</b>	<b>Symbol</b>	<b>Precision class</b>	<b>Metering range</b>	<b>Display range</b>
Total active power	P	1 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kW	0 W to 9999 GW
Total reactive power	QA <sup>6)</sup> , QV <sup>6)</sup>	1 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kvar	0 varh to 9999 Gvar
Total apparent power	SA, Sv <sup>6)</sup>	1 <sup>5)</sup> (IEC61557-12)	0 to 12,6 kVA	0 VA to 9999 GVA
Total active energy	Ea	1 <sup>5)</sup> (IEC61557-12)	0 to 9999 GWh	0 Wh to 9999 GWh
Total reactive energy	ErA <sup>6)</sup> , ErV <sup>6)</sup>	2 <sup>5)</sup> (IEC61557-12)	0 to 9999 Gvarh	0 varh to 9999 Gvarh
Total apparent energy	EapA, EapV <sup>6)</sup>	1 <sup>5)</sup> (IEC61557-12)	0 to 9999 GVAh	0 VAh to 9999 GVAh
Frequency	f	0.05(IEC61557-12)	15 to 440 Hz	15 Hz to 440 Hz
Phase current	I	0.5 (IEC61557-12)	0.005 to 7 Amps	0 A to 9999 kA
Measured neutral conductor current	IN	0.5 (IEC61557-12)	0.005 to 7 Amps	0 A to 9999 kA
Computed neutral conductor current	INc	1.5 (IEC61557-12)	0.005 to 21 A	0 A to 9999 kA
Voltage	U L-N	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage	U L-L	0.5 (IEC61557-12)	18 to 1000 Vrms	0 V to 9999 kV
Power factor	PFA, PFV	2 (IEC61557-12)	0.00 to 1.00	0 to 1
Short-term flicker, long-term flicker	Pst, Plt	-	-	-
Voltage dips	Udip	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage increases	Uswl	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Transient overvoltages	Utr	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage interruptions	Uint	Duration +- 1 cycle	-	-
Voltage unbalance <sup>1)</sup>	Unba	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage unbalance <sup>2)</sup>	Unb	0.5 (IEC61557-12)	10 to 600 Vrms	0 V to 9999 kV
Voltage harmonics <sup>8)</sup>	Uh	Cl. 2 (IEC61000-4-7)	Up to 3 kHz	0 V to 9999 kV
THD of the voltage <sup>3) 8)</sup>	THDu	2.0 (IEC61557-12)	Up to 3 kHz	0% to 999 %

1) In relation to the amplitude.

2) In relation to phase and amplitude.

3) In relation to fundamental oscillation.

4) In relation to effective value.

5) The precision class deteriorates by one level for measurements using a ..1/A converter.

6) Calculation from fundamental oscillation.

7) In accordance with standard IEC61557-12

8) measuring range: up to 50. harmonic, but maximum 3 KHz



The UMG 605-PRO meets the requirements according to IEC 61000-4-30 **class A** for: compensation, time uncertainty, marking concept, transient influence quantities

<b>Specifications per IEC 61000-4-30 class S</b>		
<b>Characteristic</b>	<b>Uncertainty</b>	<b>Metering range</b>
Frequency	$\pm 50$ mHz	42.5 Hz – 57.5 Hz, 51 Hz – 69 Hz
Supply voltage level	$\pm 0.5\%$ of $U_{din}$	20% – 120% of $U_{din}$
Flicker	$\pm 5\%$ of measured value	0.4 – 4.0 Pst
Drops and excessive increases	Amplitude: $\pm 1\%$ of $U_{din}$ Duration: $\pm 1$ period	N/A
Voltage interruptions	Duration: $\pm 1$ period	N/A
Unbalance	$\pm 0,3\%$	1% – 5% $u_2$ 1% – 5% $u_0$
Harmonics	IEC 61000-4-7 class 2	10% – 100% of IEC 61000-2-4 class 3
Interharmonics	IEC 61000-4-7 class 2	10% – 200% of IEC 61000-2-4 class 3
Mains signal voltage	In the range 3%-15% of $U_{din}$ , $\pm 5\%$ of $U_{din}$ .	3% – 15% of $U_{din}$
Downward/upward deviation	$\pm 0.5\%$ of $U_{din}$	10% – 150% of $U_{din}$

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