
Power Quality Analyser

# UMG 605-PRO

Data sheet

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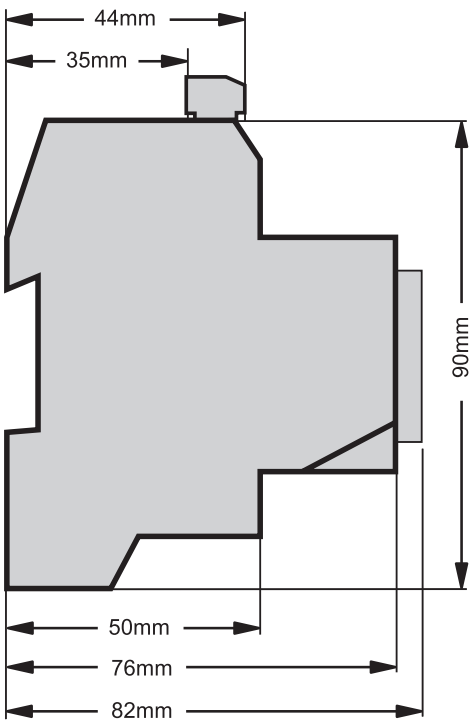
Janitza®

# DEVICE VIEWS

**Front view**


**Side view**




All dimensions in mm

# TECHNICAL DATA

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

| Transport and storage<br>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 |

| Ambient conditions during operation | |
|---|---|
| The device is intended for weather-protected, stationary use.<br>Protection class II in acc. with IEC 60536 (VDE 0106, Part 1), i.e. ground wire connection is not required!<br>The devicemeets 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 |

| Supply voltage | |
|---|---|
| Protection of the supply voltage (fuse) | 6 A, type B (approved i.a.w. UL/IEC) |
| 230 V option:<br>• Nominal range<br>• Operating range<br>• Power consumption<br>• Overvoltage category | <br>95 V to 240 V (50/60Hz) / DC 135 V to 340 V<br>+-10% of nominal range<br>max. 3.2 W / 9 VA<br>300 V CATII |
| 90 V option (without UL approval):<br>• Nominal range<br>• Operating range<br>• Power consumption<br>• Overvoltage category | <br>50 V to 110 V (50/60 Hz) / DC 50 V to 155 V<br>+-10% of nominal range<br>max. 3.2 W / 9 VA<br>300 V CATII |
| 24V option:<br>• Nominal range<br>• Operating range<br>• Power consumption<br>• Overvoltage category | <br>20 V to 50 V (50/60 Hz) / DC 20 V to 70 V<br>+-10% of nominal range<br>max. 5 W / 8 VA<br>150 V CATII |

| **Terminal connection capacity (supply voltage)**<br>Connectable conductors. Only one conductor can be connected per terminal! | |
|---|---|
| Single core, multi-core, fine-stranded | 0.08 - 2.5 mm², AWG 28 - 12 |
| Terminal pins, core end sheath | 1.5 mm², AWG 16 |

| **Digital inputs** | |
|---|---|
| (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 |

| **Digital outputs**<br>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;<br>from 30 m shielded |

| **Connectable conductors** | |
|---|---|
| Single core, multi-core, fine-stranded | 0.08 - 1.5 mm² |
| Terminal pins, core end sheath | 1 mm², only one conductor can be connected per terminal! |

| **Temperature measurement input** | |
|---|---|
| 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[1)] |
| KTY84 | -40 °C to +300 °C | 350 Ohm to 2.6 kOhm | ± 1.5% rng[1)] |
| PT100 | -99 °C to +500 °C | 60 Ohm to 180 Ohm | ± 1.5% rng[1)] |
| PT1000 | -99 °C to +500 °C | 600 Ohm to 1.8 kOhm | ± 1.5% rng[1)] |

[1)] rng = metering range

| **Connectable conductors** | |
|---|---|
| Single core, multi-core, fine-stranded | 0.08 - 1.5mm² |
| Terminal pins, core end sheath | 1 mm², only one conductor can be connected per terminal! |

| Voltage measurement inputs | |
|---|---|
| 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 µs |
| Frequency of the fundamental oscillation | 15 Hz to 440 Hz |
| - Resolution | 0.001 Hz |

| Current measurement inputs | |
|---|---|
| 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 |

| Measurement precision phase angle | 0,15 ° |
|---|---|

| Terminal connection capacity (current measurement and voltage measurement)<br>Connectable conductors. Only one conductor can be connected per terminal! | |
|---|---|
| Single core, multi-core, fine-stranded | 0.08 - 4 $mm^2$, AWG 28 - 12 |
| Terminal pins, core end sheath | 2.5 $mm^2$, AWG 14 |

| RS232 interface | |
|---|---|
| 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 |

| RS485 interface | |
|---|---|
| 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 |

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

| Ethernet interface | |
|---|---|
| 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**<br>Measurement via current transformer ../5 A | | | | |
|---|---|---|---|---|
| **Function** | **Symbol** | **Precision class** | **Metering range** | **Display range** |
| | | | | |
| Total active power | P | 0.5[5] (IEC61557-12) | 0 to 15.3kW | 0 W to 9999 GW |
| Total reactive power | QA [6], Qv [6] | 0.5[5] (IEC61557-12) | 0 to 15.3 kvar | 0 varh .. 9999 Gvar |
| Total apparent power | SA, Sv [6] | 0.5[5] (IEC61557-12) | 0 to 15.3 kVA | 0 VA to 9999 GVA |
| Total active energy | Ea | 0.5[5] (IEC61557-12)<br>0.5S[5] (IEC62053-22) | 0 to 15.3 kWh | 0 Wh to 9999 GWh |
| Total reactive energy | ErA [6], ErV [6] | 1[5] (IEC61557-12) | 0 to 15.3 kvarh | 0 varh .. 9999 Gvarh |
| Total apparent energy | EapA,EapV[6] | 0.5[5] (IEC61557-12) | 0 to 15.3 kVAh | 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[7] (IEC61557-12) | 0.005 to 7 Amps | 0 A to 9999 kA |
| Measured neutral conductor current | IN | 0.25[7] (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 [1] | Unba | 0.2 (IEC61557-12) | 10 to 600 Vrms | 0 V to 9999 kV |
| Voltage unbalance [2] | Unb | 0.2 (IEC61557-12) | 10 to 600 Vrms | 0 V to 9999 kV |
| Voltage harmonics [8] | Uh | Cl. 1 (IEC61000-4-7) | Up to 3 kHz | 0 V to 9999 kV |
| THD of the voltage [3] [8] | THDu | 1.0 (IEC61557-12) | Up to 3 kHz | 0% to 999 % |
| THD of the voltage [4] [8] | THD-Ru | 1.0 (IEC61557-12) | Up to 3 kHz | 0% to 999 % |
| Current harmonics [8] | Ih | Cl. 1 (IEC61000-4-7) | Up to 3 kHz | 0 A to 9999 kA |
| THD of the current [3] [8] | THDi | 1.0 (IEC61557-12) | Up to 3 kHz | 0% to 999 % |
| THD of the current [4] [8] | 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 |

| **Measurement in the frequency range of 15 to 45 / 65 to 440 Hz**<br>Measurement via current transformer ../5 A | | | | |
|---|---|---|---|---|
| **Function** | **Symbol** | **Precision class** | **Metering range** | **Display range** |
| | | | | |
| Total active power | P | 1[5] (IEC61557-12) | 0 to 15.3kW | 0 W to 9999 GW |
| Total reactive power | QA[6] , Qv[6] | 1[5] (IEC61557-12) | 0 to 15.3 kvar | 0 varh .. 9999 Gvar |
| Total apparent power | SA, Sv[6] | 1[5] (IEC61557-12) | 0 to 15.3 kVA | 0 VA to 9999 GVA |
| Total active energy | Ea | 1[5] (IEC61557-12) | 0 to 15.3 kWh | 0 Wh to 9999 GWh |
| Total reactive energy | ErA[6], ErV[6] | 2[5] (IEC61557-12) | 0 to 15.3 kvarh | 0 varh .. 9999 Gvarh |
| Total apparent energy | EapA, EapV[6] | 1[5] (IEC61557-12) | 0 to 15.3 kVAh | 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 [1] | Unba | 0.5 (IEC61557-12) | 10 to 600 Vrms | 0 V to 9999 kV |
| Voltage unbalance [2] | Unb | 0.5 (IEC61557-12) | 10 to 600 Vrms | 0 V to 9999 kV |
| Voltage harmonics [8] | Uh | Cl. 2 (IEC61000-4-7) | Up to 3 kHz | 0 V to 9999 kV |
| THD of the voltage [3] [8] | 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 ../1A 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

| **Specifications per IEC 61000-4-30 class S** | | |
|---|---|---|
| **Characteristic** | **Uncertainty** | **Metering range** |
| Frequency | ± 50 mHz | 42.5 Hz – 57.5 Hz,<br>51 Hz – 69 Hz |
| Supply voltage level | ± 0.5% of Udin | 20% – 120% of Udin |
| Flicker | ± 5% of measured value | 0.4 – 4.0 Pst |
| Drops and excessive increases | Amplitude: ± 1% of Udin<br>Duration: ± 1 period | N/A |
| Voltage interruptions | Duration: ± 1 period | N/A |
| Unbalance | ± 0,3% | 1% – 5% u2<br>1% – 5% u0 |
| Harmonics | IEC 61000-4-7 class 2 | 10% – 100% of<br>IEC 61000-2-4 class 3 |
| Interharmonics | IEC 61000-4-7 class 2 | 10% – 200% of<br>IEC 61000-2-4 class 3 |
| Mains signal voltage | In the range 3%-15% of Udin, ± 5% of Udin. | 3% – 15% of Udin |
| Downward/upward deviation | ± 0.5% of Udin | 10% – 150% of Udin |

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