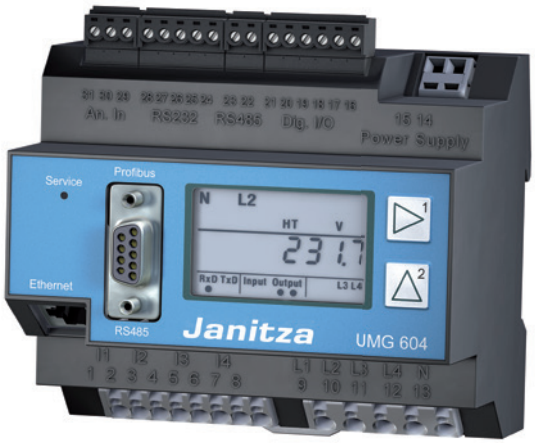
Harmonics

Memory 128 MByte

Events




Modbus master, Ethernet gateway

Homepage

Graphic programming

ISO 50001
Made in Germany

## UMG 604 – Power analyser

**Communication**
- Profibus (DP/ V0)
- Modbus (RTU, UDP, TCP, Gateway)
- TCP/IP
- BACnet (optional)
- HTTP (configurable homepage)
- FTP (file transfer)
- SNMP
- TFTP
- NTP (time synchronisation)
- SMTP (email function)
- DHCP

**Interfaces**
- Ethernet
- RS232
- RS485

**Accuracy of measurement**
- Energy: Class 0.5S (... / 5 A)
- Current: 0.2 %
- Voltage: 0.2 %

**Peak demand management (optional)**
- Up to 64 switch-off stages

**Power quality**
- Harmonics up to 40th harmonic
- Short-term interruptions (> 20 ms)
- Transient recorder (> 50 µs)
- Starting currents (> 20 ms)
- Unbalance
- Full wave effective value recording (up to 4.5 min.)

**Networks**
- IT, TN, TT networks
- 3 and 4-phase networks
- Up to 4 single-phase networks

**Measured data memory**
- 128 MByte Flash

**Programming language**
- Jasic®

**2 digital inputs**
- Pulse input
- Logic input
- State monitoring
- HT / LT switching
- Emax resetting

**2 digital outputs**
- Pulse output kWh / kvarh
- Switch output
- Threshold value output
- Emax output
- Logic output

(expandable via external I/O modules, see chapter 05, Industrial data communications)

**Temperature measurement**
- PT100, PT1000, KTY83, KTY84

**Network visualisation software**
- GridVis®-Basic (in the scope of supply)

# Areas of application

- Master device for energy management systems, (e.g. ISO 50001)
- Measurement, monitoring and checking of electrical characteristics in energy distribution systems
- Consumption data acquisition
- Monitoring of the power quality (harmonics, short-term interruptions, transients, starting currents, etc.)
- Measured value transducer for building management systems or PLC
- Control tasks e.g. depending on measured value or limit values being reached
- Peak demand management
- Ethernet gateway for subordinate measurement points
- Remote monitoring

# Main features

**Power quality**

- Harmonics analysis up to 40th harmonic
- Unbalance
- Distortion factor THD-U / THD-I
- Measurement of positive, negative and zero sequence component
- Short-term interruptions (> 20 ms)
- Logging and storage of transients (> 50 µs)
- Start-up processes
- Fault recorder function
- Rotary field indication

Fig.: DIN rail mounting (6 TE)

**DIN mounting rail (6TE):**
**Simple and cost-optimised installation**

- Mounting on a 35 mm DIN rail
- Clear cost advantages in the switch cabinet construction through lower installation and connection effort
- Simple integration into the LVDB, in machinery construction, in installation subdistribution panel for building management systems, in IT and in data centres

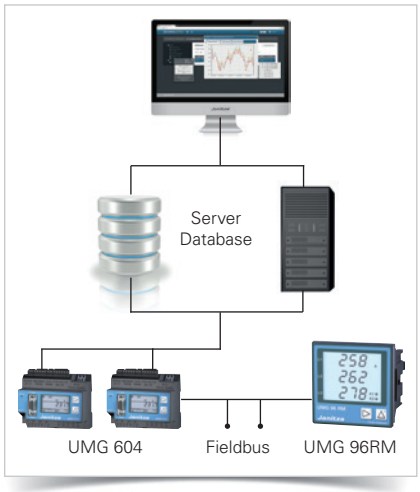



Fig.: Modern communication architecture

**Modern communications architecture via Ethernet**

- Rapid, cost-optimised and reliable communication through integration into an existing Ethernet architecture
- Integration in PLC systems and building management systems
- High flexibility due to the use of open standards
- Simultaneous polling of interfaces possible

### Ethernet-Modbus gateway

- Simple integration of Modbus-RTU devices into an Ethernet architecture through the Modbus gateway function
- Integration of devices with identical file formats and matching function codes possible via Modbus RTU interface

### High-speed Modbus

- Fast and reliable data exchange via RS485 interface
- Speed up to 921.6 kB/s

### Graphical programming

- Comprehensive programming options on the device, 7 programs simultaneously (PLC functionality)
- Jasic® source code programming
- Functional expansions far beyond pure measurement
- Complete APPs from the Janitza library

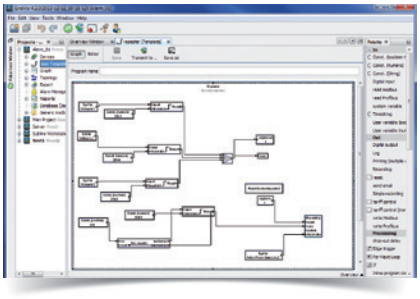


Fig.: Graphical programming

### Convenient home page and email functions

- Information can be received conveniently by email and via the device homepage
- Access to powerful device homepage via web browser
- Online data, historical data, graphs, events and much more, is available direct from the homepage


Fig.: Illustration of the online data via the device's own homepage

### Large measurement data memory

- 128 MByte
- 5,000,000 saved values
- Recording range up to 2 years
- Recording freely configurable

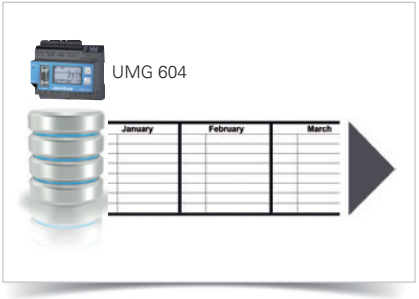
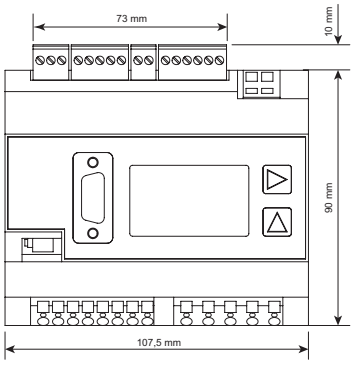


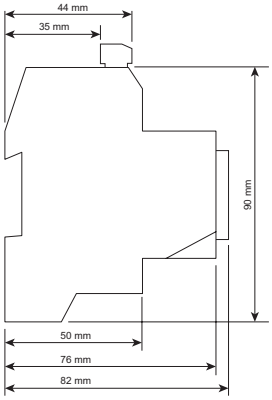

Fig.: Large measurement data memory

# Dimension diagrams

All dimensions in mm

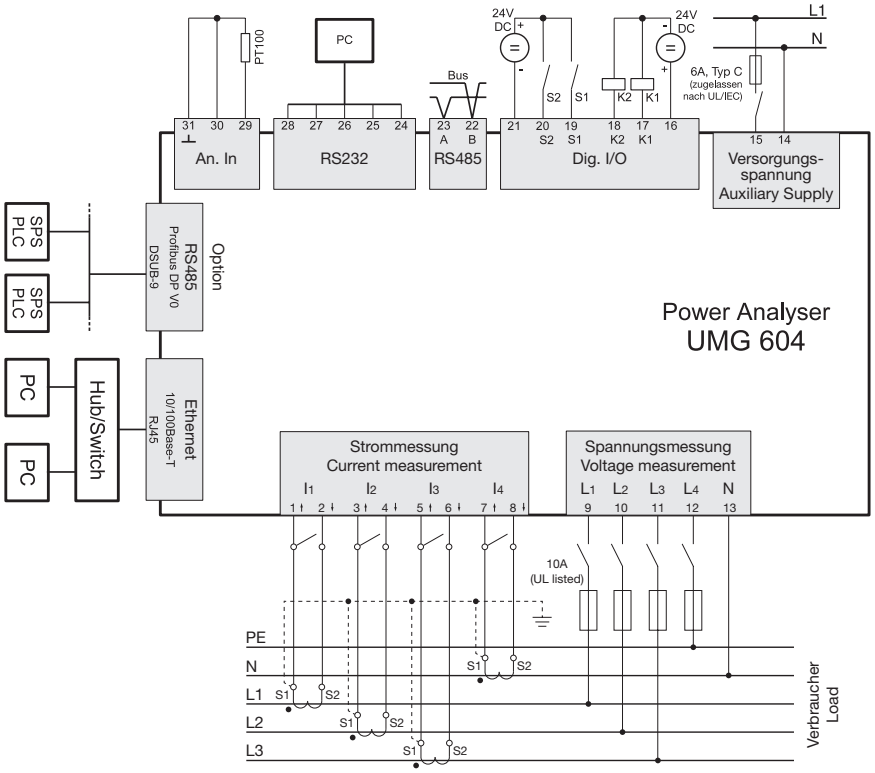



Front view




Side view

# Typical connection



# Device overview and technical data

| | UMG 604E | | | UMG 604EP | |
|---|---|---|---|---|---|
| **Item number** | **52.16.002** | **52.16.012** | **52.16.022** | **52.16.001** | **52.16.021** |
| **Item number (UL)** | **52.16.202** | - | - | **52.16.201** | - |
| Supply voltage AC | 95 ... 240 V AC | 50 ... 110 V AC | 20 ... 55 V AC | 95 ... 240 V AC | 20 ... 55 V AC |
| Supply voltage DC | 135 ... 340 V DC | 50 ... 155 V DC | 20 ... 77 V DC | 135 ... 340 V DC | 20 ... 77 V DC |
| **Communication** | | | | | |
| **Interfaces** | | | | | |
| RS485: 9.6 – 921.6 kbps (Screw-type terminal) | • | • | • | • | • |
| RS232: 9.6 – 115.2 kbps (Screw-type terminal) | • | • | • | • | • |
| Profibus DP: Up to 12 Mbps (DSUB-9 plug) | - | - | - | • | • |
| Ethernet 10/100 Base-TX (RJ-45 socket) | • | • | • | • | • |
| **Protocols** | | | | | |
| Modbus RTU, Modbus TCP, Modbus RTU over Ethernet | • | • | • | • | • |
| Modbus Gateway for Master-Slave configuration | • | • | • | • | • |
| Profibus DP V0 | - | - | - | • | • |
| HTTP (homepage configurable) | • | • | • | • | • |
| SMTP (email) | • | • | • | • | • |
| NTP (time synchronisation) | • | • | • | • | • |
| TFTP | • | • | • | • | • |
| FTP (File-Transfer) | • | • | • | • | • |
| SNMP | • | • | • | • | • |
| DHCP | • | • | • | • | • |
| TCP/IP | • | • | • | • | • |
| BACnet (optional) | • | • | • | • | • |
| ICMP (Ping) | • | • | • | • | • |
| **Device options** | | | | | |
| Emax function | **52.16.080** | **52.16.080** | **52.16.080** | **52.16.080** | **52.16.080** |
| BACnet communication | **52.16.081** | **52.16.081** | **52.16.081** | **52.16.081** | **52.16.081** |

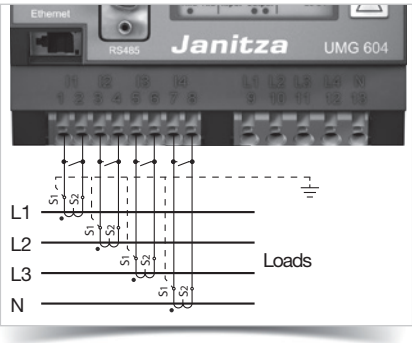



Fig.: Current measurement via current transformers

| **General** | |
|---|---|
| Use in low and medium voltage networks | • |
| Accuracy voltage measurement | 0.2 % |
| Accuracy current measurement | 0.2 % |
| Accuracy active energy (kWh, .../5 A) | Class 0.5S |
| Number of measurement points per period | 400 |
| Uninterrupted measurement | • |
| **RMS - momentary value** | |
| Current, voltage, frequency | • |
| Active, reactive and apparent power / total and per phase | • |
| Power factor / total and per phase | • |
| **Energy measurement** | |
| Active, reactive and apparent energy [L1,L2,L3, L4, ∑ L1–L3, ∑ L1–L4] | • |
| Number of tariffs | 8 |
| **Recording of the mean values** | |
| Voltage, current / actual and maximum | • |
| Active, reactive and apparent power / actual and maximum | • |
| Frequency / actual and maximum | • |
| Demand calculation mode (bi-metallic function) / thermal | • |
| **Other measurements** | |
| Clock | • |
| Weekly timer | Jasic® |

Comment:
For detailed technical information please refer to the operation manual and the Modbus address list.

• = included - = not included

| Power quality measurements | |
|---|---|
| Harmonics per order / current and voltage | 1st – 40th |
| Harmonics per order / active and reactive power | 1st – 40th |
| Distortion factor THD-U in % | • |
| Distortion factor THD-I in % | • |
| Voltage unbalance | • |
| Current and voltage, positive, zero and negative sequence component | • |
| Transients | 50 µs |
| Error / event recorder function | • |
| Short-term interruptions | 20 ms |
| Oscillogram function (waveform U and I) | • |
| Full wave effective values (U, I, P, Q) | • |
| Under and overvoltage recording | • |
| **Measured data recording** | |
| Memory (Flash) | 128 MB |
| Average, minimum, maximum values | • |
| Measured data channels | 8 |
| Alarm messages | • |
| Time stamp | • |
| Time basis average value | freely user-defined |
| RMS averaging, arithmetic | • |
| **Displays and inputs / outputs** | |
| LCD display | • |
| Digital inputs | 2 |
| Digital outputs (as switch or pulse output) | 2 |
| Thermistor input (PT100, PT1000, KTY83, KTY84) | • |
| Voltage and current inputs | each 4 |
| Password protection | • |
| Peak load management (optionally 64 channels) | • |
| **Software GridVis®-Basic*1** | |
| Online and historic graphs | • |
| Databases (Janitza DB, Derby DB); MySQL, MS SQL with higher GridVis® versions) | • |
| Manual reports (energy, power quality) | • |
| Graphical programming | • |
| Topology views | • |
| Manual read-out of the measuring devices | • |
| Graph sets | • |
| **Programming / threshold values / alarm management** | |
| Application programs freely programmable | 7 |
| Graphical programming | • |
| Programming via source code Jasic® | • |

| Technical data | |
|---|---|
| Type of measurement | Constant true RMS<br>Up to 40th harmonic |
| Nominal voltage, three-phase, 4-conductor (L-N, L-L) | 277 / 480 V AC |
| Nominal voltage, three-phase, 3-conductor (L-L) | 480 V AC |
| Measurement in quadrants | 4 |
| Networks | TN, TT, IT |
| Measurement in single-phase/multi-phase networks | 1 ph, 2 ph, 3 ph, 4 ph and up to 4 times 1 ph |
| **Measured voltage input** | |
| Overvoltage category | 300 V CAT III |
| Measured range, voltage L-N, AC (without potential transformer) | 10 ... 600 Vrms |
| Measured range, voltage L-L, AC (without potential transformer) | 18 ... 1,000 Vrms |
| Resolution | 0.01 V |
| Impedance | 4 MOhm / phase |
| Frequency measuring range | 45 ... 65 Hz |
| Power consumption | approx. 0.1 VA |
| Sampling frequency | 20 kHz / phase |
| Transients | > 50 µs |

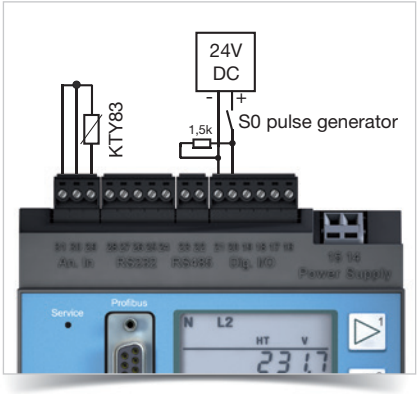



Fig.: Example temperature input (KTY83) and S0 pulse transducer

Comment:
For detailed technical information please refer to the operation manual and the Modbus address list.

• = included - = not included

*1 Optional additional functions with the packages GridVis®-Professional, GridVis®-Enterprise and GridVis®-Service.

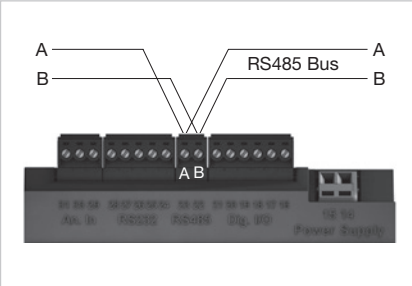
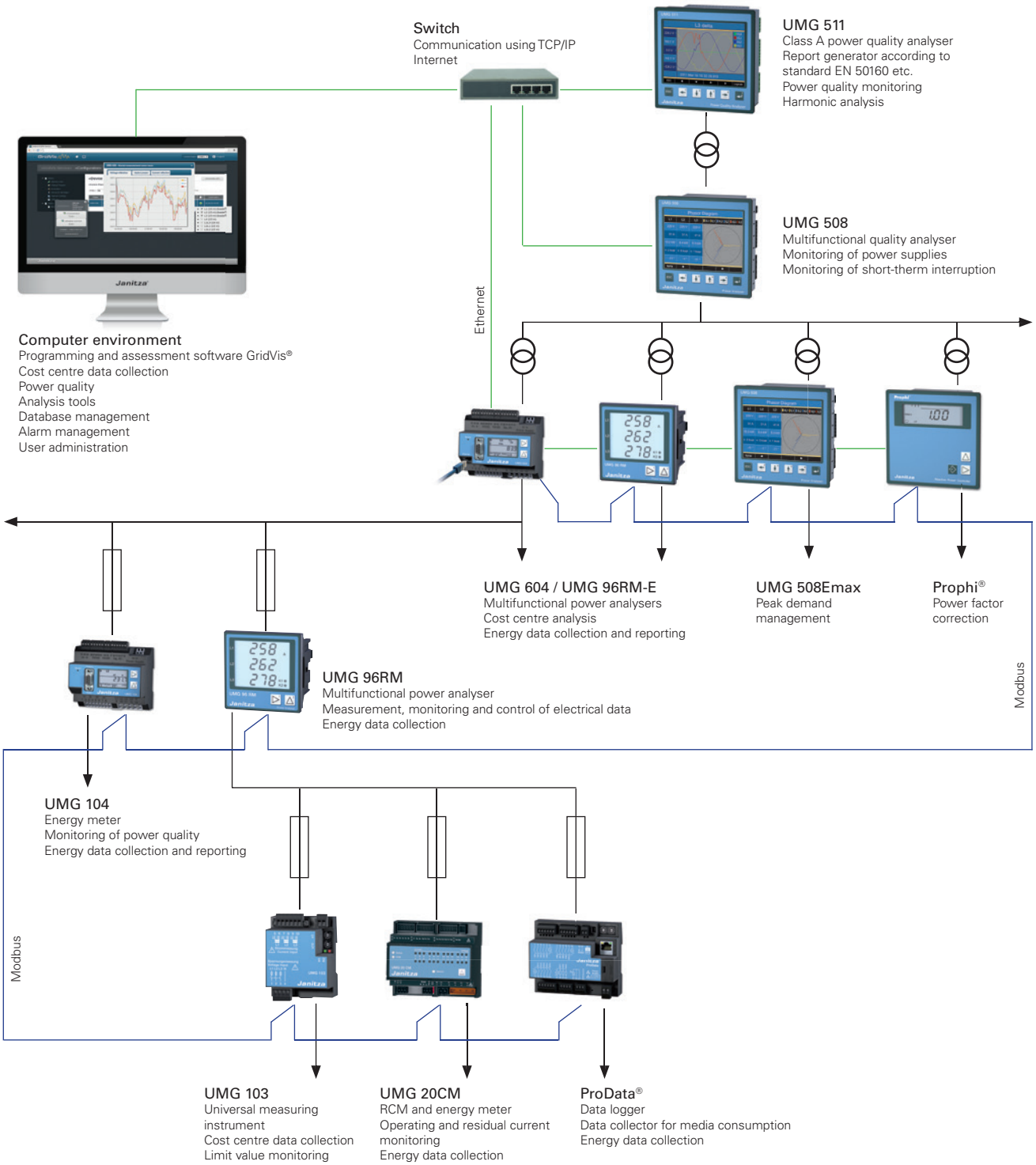



Fig.: RS485 interface, 2 pin plug contact

| | |
|---|---|
| **Measured current input** | |
| Rated current | 1 / 5 A |
| Resolution | 1 mA |
| Measurement range | 0.001 ... 8.5 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 frequency | 20 kHz |
| **Digital inputs and outputs** | |
| Number of digital inputs | 2 |
| Maximum counting frequency | 20 Hz |
| Input signal present | 18 ... 28 V DC (typical 4 mA) |
| Input signal not present | 0 ... 5 V DC, current < 0.5 mA |
| Number of digital outputs | 2 |
| Switching voltage | max. 60 V DC, 30 V AC |
| Switching current | max. 50 mA Eff AC / DC |
| Output of voltage dips | 20 ms |
| Output of voltage exceedance events | 20 ms |
| Pulse output (energy pulse) | max. 20 Hz |
| Maximum cable length | up to 30 m unscreened, from 30 m screened |
| **Mechanical properties** | |
| Weight | 350 g |
| Device dimensions in mm (H x W x D) | 90 x 107.5 x approx. 82 |
| Battery | Type Lithium CR2032, 3 V |
| Protection class per EN 60529 | IP20 |
| Assembly per IEC EN 60999-1 / DIN EN 50022 | 35-mm DIN rail |
| Connecting phase (U / I),<br>Single core, multi-core, fine-stranded<br>Terminal pins, core end sheath | <br>0.08 to 2.5 mm²<br>1.5 mm² |
| **Environmental conditions** | |
| Temperature range | Operation: K55 (-10 ... +55 °C) |
| Relative humidity | Operation: 5 to 95 % (at 25 °C) |
| Operating height | 0 ... 2,000 m above sea level |
| Degree of pollution | 2 |
| Installation position | user-defined |
| **Electromagnetic compatibility** | |
| Electromagnetic compatibility of electrical equipment | Directive 2004/108/EC |
| Electrical appliances for application within particular voltage limits | Directive 2006/95/EC |
| **Equipment safety** | |
| Safety requirements for electrical equipment for measurement, regulation, control and laboratory use –<br>Part 1: General requirements | IEC/EN 61010-1 |
| Part 2-030: Particular requirements for testing and measuring circuits | IEC/EN 61010-2-030 |
| **Noise immunity** | |
| Industrial environment | IEC/EN 61326-1 |
| Electrostatic discharge | IEC/EN 61000-4-2 |
| Voltage dips | IEC/EN 61000-4-11 |
| **Emissions** | |
| Class B: Residential environment | IEC/EN 61326-1 |
| RFI Field Strength 30 – 1,000 MHz | IEC/CISPR11/EN 55011 |
| Radiated interference voltage 0.15 – 30 MHz | IEC/CISPR11/EN 55011 |
| **Safety** | |
| Europe | CE labelling |
| USA and Canada | UL variants available |
| **Firmware** | |
| Firmware update | Update via GridVis® software.<br>Firmware download (free of charge)<br>from the website:<br>http://www.janitza.com/downloads/ |

Comment:
For detailed technical information please refer to the operation manual and the Modbus address list.

• = included - = not included


Switch
Communication using TCP/IP
Internet
UMG 511
Class A power quality analyser
Report generator according to standard EN 50160 etc.
Power quality monitoring
Harmonic analysis
UMG 508
Multifunctional quality analyser
Monitoring of power supplies
Monitoring of short-therm interruption
Ethernet
Computer environment
Programming and assessment software GridVis®
Cost centre data collection
Power quality
Analysis tools
Database management
Alarm management
User administration
UMG 604 / UMG 96RM-E
Multifunctional power analysers
Cost centre analysis
Energy data collection and reporting
UMG 508Emax
Peak demand management
Prophi®
Power factor correction
Modbus
UMG 96RM
Multifunctional power analyser
Measurement, monitoring and control of electrical data
Energy data collection
UMG 104
Energy meter
Monitoring of power quality
Energy data collection and reporting
Modbus
UMG 103
Universal measuring instrument
Cost centre data collection
Limit value monitoring
UMG 20CM
RCM and energy meter
Operating and residual current monitoring
Energy data collection
ProData®
Data logger
Data collector for media consumption
Energy data collection

Smart Energy &
Power Quality Solutions

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Sales partner

Version 01/2015 • Subject to technical alterations.

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