UMG 511
Class A power quality analyser

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

Networks
- IT, TN, TT networks
- 3 and 4-phase networks

Measured data memory
- 256 MByte Flash

Programming language
- Graphical programming
- Jasic®
- PLC functionality

Accuracy of measurement
- Energy: Class 0.2S (... / 5 A)
- Current: 0.2 %
- Voltage: 0.1 %

Power quality acc. Class A
- Harmonics up to the 63rd harmonic
- Flicker measurement
- Short-term interruptions (> 10 ms)
- Transient recorder (> 50 μs)
- Starting currents (> 10 ms)
- Unbalance
- Half wave RMS recordings (up to 4.5 min.)

8 digital inputs
- Pulse input
- Logic input
- State monitoring
- HT / LT switching

5 digital outputs
- Pulse output kWh / kvarh
- Switch output
- Threshold value output
- Logic output (expandable via external I/O modules)

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

Network visualisation software
- Free GridVis®-Basic
- PQ Report Generator

Interfaces
- Ethernet
- Profibus / RS485 (DSUB-9)

Alarm management

Interfaces
- Ethernet
- Profibus / RS485 (DSUB-9)
Areas of application

- Continuous monitoring of the power quality
- Harmonics analysis with power quality problems
- Checking the internal supply network according to EN 61000-4-7, EN 61000-4-15, EN 61000-4-30
- Fault analysis in case of problems with the energy supply
- Documentation of the power quality for customers and regulatory authorities
- Ethernet Gateway for subordinate measurement points
- Report generator for power quality standards: EN 50160, IEE519, ITIC …
- Report generator for energy consumptions
- Energy Dashboard
- Remote monitoring of critical processes

Main features

Power quality

- Harmonics analysis up to the 63rd harmonic, even / odd (U, I, P, Q)
- Interharmonics (U, I)
- Distortion factor THD-U / THD-I / TDD
- Measurement of positive, negative and zero sequence component
- Unbalance
- Direction of rotation field
- Voltage crest factor
- Flicker measurement in accordance with DIN EN 61000-4-15
- Logging and storage of transients (> 50 µs)
- Short-term interruptions (> 10 ms)
- Monitoring start-up processes

High quality measurement

- Constant true RMS measurement
- Measurement process in accordance with IEC 61000-4-30
- Certified accuracy of measurement according to class A
- Continuous sampling of the voltage and current measurement inputs at 20,000 Hz
- 400 measurement points per period
- Recording of over 2,000 measured values per measurement cycle
- Accuracy of active energy measurement: Class 0.2S
- Fast measurement even enables the logging of rapid transients from 50 µs
- Logging of currents and voltages (15 – 440 Hz)
User-friendly, colour graphical display with intuitive user guidance

- High resolution colour graphical display 320 x 240, 256 colours, 6 buttons
- User-friendly, self-explanatory and intuitive operation
- Backlight for optimum reading, even in darker environments
- Illustration of measured values in numeric form, as a bar graph or line graph
- Clear and informative representation of online graphs and power quality events
- Multilingual: German, English, Russian, Spanish, Chinese, French, Japanese, Turkish ...

Various characteristics

- 4 voltage and 4 current measurement inputs, i.e. logging of N and / or PE possible
- 8 digital inputs, e.g. as data logger for S0 meter
- 5 digital outputs for alarm message or e.g. for connection to a BMS or PLC
- Free name assignment for the digital IOs, e.g. if used as data logger

Comprehensive communication and connection possibilities

- Modbus
- Profibus
- Ethernet (TCP/IP)
- Digital IOs
- BACnet (optional)
- Configurable Firewall

Modern communications architecture via Ethernet

- Simple integration in an Ethernet network
- Reliable and cost-optimised establishment of communication
- Ideal for Master-Slave structures
- High flexibility due to the use of open standards
- Integration in PLC systems and BMS through additional interfaces
- Various IP protocols: SNMP, ICMP (Ping), NTP, FTP ...
Measuring device homepage
• Web server on the measuring device, i.e. device’s inbuilt homepage
• Function expansion possible through APPs
• Remote operation of the device display via the homepage
• Comprehensive measurement data incl. PQ (transients, events…)
• Online data directly available via the homepage, historic data optional via the APP measured value monitor, 51.00.245

BACnet protocol for building communication
• Optimal interoperability between devices from various manufacturers
• Predefined BIBBs (BACnet Interoperability Building Block)
• BACnet is optionally available with UMG 511
• UMG 511 supports the device type B-SA with the BIBBs DS-RP-B and DS-WP-B
• Furthermore, the BIBBs DS-COV-B and DM-UTC-B are also supported

Modbus Gateway function
• Economical connection of subordinate measuring devices without Ethernet interface
• Integration of devices with Modbus-RU interface possible (harmonisation of data format and function code necessary)
• Data can be scaled and described
• Minimised number of IP addresses required
• Tried and tested integrated solution without additional hardware

Programming / PLC functionality
• Further processing of the measurement data in the measuring device (local intelligence)
• Monitoring and alarm functions simple to program
• Sustainable functional expansions far beyond pure measurement
• Comprehensive programming options with
  - Jasic® source code programming
  - Graphical programming
• Complete APPs from the Janitza library

Large measurement data memory
• 256 MB data memory
• Memory range up to 2 years (configuration-dependent)
• Individually configurable recordings
• Recording averaging times can be freely selected
• PQ recordings template preconfigured for conventional standards (e.g. EN 50160)
• User-defined memory segmenting possible

Powerful alarm management
• Information available immediately by email
• Inform maintenance personnel via the powerful device homepage
• Via digital outputs, Modbus addresses, GridVis® software
• Programming via Jasic® or graphical programming
• Further alarm management functions via GridVis®-Service alarm management

Peak load representation and peak load management
• Illustration of the 3 highest monthly power peaks on the LCD display (P, Q, S)
• Rolling bar chart representation of the peak power values over 3 years on the LCD display (P, Q, S)
• Plain text representation on the LCD display (P)

GridVis®-Basic power quality analysis software
• Multilingual
• Manual read-out of the measuring devices
• Manual report generation (power quality and energy consumption reports)
• Comprehensive PQ analysis with individual graphs
  - Online graphs
  - Historic graphs
  - Graph sets
• Integrated databases (Janitza DB, Derby DB)
• Graphical programming
• Topology views
• High memory range

Certified quality through independent institutes
• ISO 9001
• Energy management certified according to ISO 50001
• Class A certificate (IEC 61000-4-30)
• UL certificate
• EMC-tested product
Dimension diagrams

All dimensions in mm

Cut out: 138 x 138 mm

Typical connection
Device overview and technical data

<table>
<thead>
<tr>
<th>Item number</th>
<th>UMG 511</th>
<th>UMG 511</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item number (UL)</td>
<td>52.19.011</td>
<td>52.19.012</td>
</tr>
<tr>
<td>AC supply voltage</td>
<td>95 to 240 V AC</td>
<td>44 to 130 V AC</td>
</tr>
<tr>
<td>Supply voltage DC</td>
<td>80 to 340 V DC</td>
<td>48 to 180 V DC</td>
</tr>
<tr>
<td>Device options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BACnet communication</td>
<td>52.19.081</td>
<td>52.19.081</td>
</tr>
</tbody>
</table>

General

Net weight
1080 g

Device dimensions
approx. l = 144 mm, w = 144 mm, h = 75 mm

Battery
Type VARTA CR1/2AA, 3 V, Li-Mn

Transport and storage

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 UMG 511 is intended for weather-protected, stationary use. The UMG 511 must be connected to the ground wire connection! Protection class I in acc. with IEC 60536 (VDE 0106, Part 1).

Working temperature range
-10° C to +55° C

Relative humidity
5 to 95%, (at +25° C) without condensation

Pollution degree
2

Operating altitude
0 to 2000 m above sea level

Installation position
any

Ventilation
forced ventilation is not required.

Protection against ingress of solid foreign bodies and water
- Front
- Rear
IP50 in acc. with EN60529
IP20 in acc. with EN60529

Supply voltage

Installations of overvoltage category
300 V CAT III

Protection of the supply voltage (fuse)
6 A, char. B (approved i.a.w. UL/IEC)

230 V option (item no. 52.19.001)
- Nominal range:
- Operating range:
- Power consumption:
95 V to 240 V (45-65 Hz) or DC 80 V to 340 V
+6% ~10% of nominal range
max. 10 W, max. 15 VA

80 V option (item no. 52.19.002)
- Nominal range:
- Operating range:
- Power consumption:
44 V to 130 V (45-65 Hz) or DC 48 V to 180 V
± 10% of nominal range
max. 6 W, max. 9 VA

Terminal connection capacity (supply voltage)

Connectable conductors. Only one conductor can be connected per terminal!

| Single core, multi-core, fine-stranded | 0.2 – 2.5 mm², AWG 24 - 12 |
| Terminal pins, core end sheath          | 0.25 – 2.5 mm² |
| Tightening torque                      | 0.5 – 0.6 Nm |
| Stripping length                       | 7 mm |
Chapter 02
UMG 511

Inputs and outputs

<table>
<thead>
<tr>
<th>8 digital inputs</th>
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<tr>
<td>- Maximum count frequency</td>
</tr>
<tr>
<td>- Response time (Jasic program)</td>
</tr>
<tr>
<td>- Input signal present</td>
</tr>
<tr>
<td>- Input signal not present</td>
</tr>
</tbody>
</table>

5 digital outputs, semiconductor relays, not short-circuit proof.

| Switching voltage | max. 60 V DC, 30 V AC |
| Switching current | max. 50 mA eff AC/ DC |
| Response time (Jasic program) | 200 ms |
| Output of voltage dips | 20 ms |
| Output of voltage exceedance events | 20 ms |
| Pulse output (work pulse) | max. 20 Hz |

Cable length
up to 30 m unshielded, from 30 m shielded

Terminal connection capacity (inputs and outputs)

| Rigid/flexible | 0.14 – 1.5 mm², AWG 28-16 |
| Flexible with core end sheath without plastic sleeve | 0.25 – 1.5 mm² |
| Flexible with core end sheath with plastic sleeve | 0.25 – 0.5 mm² |
| Tightening torque | 0.22 – 0.25 Nm |
| Stripping length | 7 mm |

Voltage measurement

The voltage measurement inputs are suitable for measurements in the following power supply systems:

- Three-phase 4-conductor systems with rated voltages up to 417 V/720 V (+10%)
- Three-phase 3-conductor systems with rated voltages up to 600 V (+10%)

From a safety and reliability perspective, the voltage measurement inputs are designed as follows:

| Overvoltage category | 600 V CAT III |
| Measurement voltage surge | 6 kV |

| Metering range L-N | 0 V to 600 V rms |
| Metering range L-L | 0 V to 1000 V rms |
| Resolution | 0.01 V |
| Crest factor | 1.6 (related to 600 V rms) |
| Impedance | 4 MOhm/phase |
| Power consumption | approx. 0.1 VA |
| Sampling rate | 20 kHz / phase |
| Transients | 50 µs |
| U_{din}¹ as per EN61000-4-30 | 100 to 250 V |
| Flicker range (dU/U) | 27.5% |
| Frequency of the fundamental oscillation | 15 Hz to 440 Hz |
| - Resolution | 0.001 Hz |

¹ The UMG 511 can only determine measured values, if an L-N voltage of greater than 10 Veff or an L-L voltage of greater than 18 Veff is applied to at least one voltage measurement input.

² U_{din} = arranged input voltage according to DIN EN 61000-4-30
Chapter 02
UMG 511

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<tr>
<th>Current measurement</th>
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<tr>
<td>Rated current</td>
<td>5 A</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1 mA</td>
</tr>
<tr>
<td>Metering range</td>
<td>0.001 to 74 A &lt;sub&gt;max&lt;/sub&gt;</td>
</tr>
<tr>
<td>Crest factor</td>
<td>2.4</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>300 V CAT III</td>
</tr>
<tr>
<td>Measurement voltage surge</td>
<td>4 kV</td>
</tr>
<tr>
<td>Power consumption</td>
<td>approx. 0.2 VA (Ri = 5 mOhm)</td>
</tr>
<tr>
<td>Overload for 1 sec.</td>
<td>120 A (sinusoidal)</td>
</tr>
<tr>
<td>Sampling rate</td>
<td>20 kHz</td>
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<td>Stripping length</td>
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<td>Firmware update</td>
<td>Update via GridVis®software. Firmware download (free of charge) from the website: <a href="http://www.janitza.com">www.janitza.com</a></td>
</tr>
</tbody>
</table>

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

Fig.: User-friendly system of IP addresses, date, time and password
Fig.: Automatically generated power quality and energy report