UMG 508
Multifunction power analyser

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

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

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

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

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
- 256 MByte Flash
- 32 MB SDRAM

PLC functionality
- Graphical programming
- Jasic® programming language
- Programming of threshold values etc.

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

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

Network visualisation software
- Free GridVis®-Basic

Ethernet-Modbus gateway

Alarm management

Colour graphical display

Graphic programming

Ethernet connection

Power quality
Areas of application

- Continuous monitoring of the power quality
- Energy management systems (ISO 50001)
- Master device with Ethernet gateway for subordinate measurement points
- Visualisation of the energy supply in the LVDB
- Analysis of electrical disturbances in the event of power quality problems
- Cost centre analysis
- Remote monitoring in the property operation
- Use in test fields (e.g. in universities)

Main features

**High quality measurement with high sampling rate**

(20 kHz per channel)

**Power quality**

- Harmonics analysis up to 40th harmonic
- Acquisition of short-term interruptions
- Acquisition of transients
- Display of waveforms (current and voltage)
- Unbalance
- Vector diagram

**User-friendly, colour graphical display with intuitive user guidance**

- High resolution graphics display
- User-friendly, self-explanatory and intuitive operation
- Clear and informative representation of online graphs and further power quality events

**Modern communications architecture via Ethernet**

- Ethernet interface and web server
- Faster, better cost-optimised and more reliable communication system
- High flexibility due to the use of open standards
- Integration in PLC systems and BMS through additional interfaces
- BACnet optionally available

Fig.: GridVis® – Graph set

Fig.: Large colour display, e.g. 12 monthly demand values

Fig.: Illustration of the full wave effective values for an event
Modbus Gateway function

- Economical connection of devices without Ethernet interface
- Integration of devices with Modbus-RTU interface possible
- Data can be scaled and described
- Minimised number of IP addresses required

Graphical programming

- Comprehensive programming options (PLC functionality)
- Jasic® source code programming
- Sustainable functional expansions far beyond pure measurement
- Complete APPs from the Janitza library

Powerful alarm management

- Can be programmed via the graphic programming or Jasic® source code
- All measured values can be used
- Can be arbitrarily, mathematically processed
- Individual forwarding via email sending, switching of digital outputs, writing to Modbus addresses etc.
- Watchdog APP
- Further alarm management functions via GridVis®-Service alarm management

Fig.: GridVis® topology view

Ethernet connection

Fig.: The alarm management system reports events arising in good time.

Fig.: Example for the configuration of current measurement via 3 current transformers in a three-phase 4-wire network on the UMG 508 display
Dimension diagrams

All dimensions in mm

Side view

View from below

Cut out: 138+0.8 x 138+0.8 mm

Typical connection
# Device overview and technical data

<table>
<thead>
<tr>
<th>Item number</th>
<th>52.21.001</th>
<th>52.21.002</th>
</tr>
</thead>
<tbody>
<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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item number (UL)</th>
<th>52.21.011</th>
<th>52.21.012</th>
</tr>
</thead>
<tbody>
<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 280 V DC</td>
<td>48 to 180 V DC</td>
</tr>
</tbody>
</table>

## Device options

- BACnet communication

### General

- **Net weight (with attached connectors):** approx. 1080 g
- **Device dimensions:** approx. l = 144 mm, w = 144 mm, h = 75 mm
- **Battery:** Type VARTA CR1/2AA, 3 V, Li-Mn
- **Service life of backlight:** 40000h (50% of initial brightness)

### Transport and storage

The following information applies to devices which are transported or stored in the original packaging.

- **Free fall:** 1 m
- **Temperature:** -25° C to +70° C
- **Relative humidity:** 0 to 90% RH

### Ambient conditions during operation

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

- **Rated temperature range:** K55 (–10° C to +55° C)
- **Relative humidity:** 0 to 75% RH
- **Operating altitude:** 0 to 2000 m above sea level
- **Pollution degree:** 2
- **Installation position:** any
- **Ventilation:** forced ventilation is not required.

**Protection against ingress of solid foreign bodies and water**

- **Front**
- **Rear side**

  - **IP40 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

- **Nominal range:** 95 V to 240 V (45 – 65Hz) or DC 80 V to 340 V
- **Operating range:** +6% / –10% of nominal range
- **Power consumption:** max. 10 W, max. 15 VA

#### 24 V option

- **Nominal range:** 44 V to 130 V (45 – 65Hz) or DC 48 V to 180 V
- **Operating range:** ± 10% of nominal range
- **Power consumption:** max. 6 W / 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
### 8 digital inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum counter frequency</td>
<td>20 Hz</td>
</tr>
<tr>
<td>Response time (Jasic program)</td>
<td>200 ms</td>
</tr>
<tr>
<td>Input signal present</td>
<td>18 V to 28 V DC (typical 4 mA)</td>
</tr>
<tr>
<td>Input signal not present</td>
<td>0 to 5 V DC, current less than 0.5 mA</td>
</tr>
</tbody>
</table>

### 5 digital outputs

Semiconductor relays, not short-circuit proof

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching voltage</td>
<td>max. 50 V DC, 30 V AC</td>
</tr>
<tr>
<td>Switching current</td>
<td>max. 50 mA eff AC/DC</td>
</tr>
<tr>
<td>Response time (Jasic program)</td>
<td>200 ms</td>
</tr>
<tr>
<td>Output of voltage dips</td>
<td>20 ms</td>
</tr>
<tr>
<td>Output of voltage exceedance events</td>
<td>20 ms</td>
</tr>
<tr>
<td>Pulse output (energy pulse)</td>
<td>max. 20 Hz</td>
</tr>
<tr>
<td>Cable length</td>
<td>up to 30 m unshielded, from 30 m shielded</td>
</tr>
</tbody>
</table>

### Terminal connection capacity

<table>
<thead>
<tr>
<th>Type</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid/flexible</td>
<td>0.14 – 1.5 mm², AWG 28-16</td>
</tr>
<tr>
<td>Flexible with core end sheath without plastic sleeve</td>
<td>0.25 – 1.5 mm²</td>
</tr>
<tr>
<td>Flexible with core end sheath with plastic sleeve</td>
<td>0.25 – 0.5 mm²</td>
</tr>
<tr>
<td>Tightening torque</td>
<td>0.22–0.25 Nm</td>
</tr>
<tr>
<td>Stripping length</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

### 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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overvoltage category</td>
<td>600 V CAT III</td>
</tr>
<tr>
<td>Measurement voltage surge</td>
<td>6 kV</td>
</tr>
<tr>
<td>Metering range L/N</td>
<td>0 V⁰ to 600 V&lt;sub&gt;max&lt;/sub&gt;</td>
</tr>
<tr>
<td>Metering range L/L</td>
<td>0 V⁰ to 1000 V&lt;sub&gt;max&lt;/sub&gt;</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01 V</td>
</tr>
<tr>
<td>Crest factor</td>
<td>1.6 (related to 600 V&lt;sub&gt;max&lt;/sub&gt;)</td>
</tr>
<tr>
<td>Impedance</td>
<td>4 MOhm / phase</td>
</tr>
<tr>
<td>Power consumption</td>
<td>approx. 0.1 VA</td>
</tr>
<tr>
<td>Sampling rate</td>
<td>20 kHz / phase</td>
</tr>
<tr>
<td>Transients</td>
<td>&gt; 50 μs</td>
</tr>
<tr>
<td>Frequency of the fundamental oscillation</td>
<td>40 Hz to 70 Hz</td>
</tr>
<tr>
<td>- Resolution</td>
<td>0.001 Hz</td>
</tr>
</tbody>
</table>

1) The device can only determine measured values, if an L/N voltage of greater than 10 V<sub>eff</sub> or an L/L voltage of greater than 18 V<sub>eff</sub> is applied to at least one voltage measurement input.

### Current measurement

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<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 (R&lt;sub&gt;i&lt;/sub&gt; = 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 / phase</td>
</tr>
</tbody>
</table>
### Terminal connection capacity (voltage and current measurement)

<table>
<thead>
<tr>
<th>Connectable conductors</th>
<th>Only one conductor can be connected per terminal!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single core, multi-core, fine-stranded</td>
<td>0.2 – 2.5 mm², AWG 24-12</td>
</tr>
<tr>
<td>Terminal pins, core end sheath</td>
<td>0.25 – 2.5 mm²</td>
</tr>
<tr>
<td>Tightening torque</td>
<td>0.5 – 0.6 Nm</td>
</tr>
<tr>
<td>Stripping length</td>
<td>7 mm</td>
</tr>
</tbody>
</table>

### RS485 interface

| Connection | Plug, SUB D 9-pin |
| Protocol | Modbus RTU/slave, Modbus RTU/master, Modbus RTU/gateway |
| 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-pole |
| Protocol | Profibus DP/V0 per EN 50170 |
| Transmission rate | 9.6 kbaud to 12 MBaud |

### Ethernet interface (10/100Base-TX)

| Connection | RJ45 |
| Function | Modbus gateway, embedded web server (HTTP) |
| Protocols | TCP/IP, EMAIL (SMTP), DHCP client (BootP), Modbus/TCP, Modbus RTU over Ethernet, FTP, ICMP (Ping), NTP, TFTP, BACnet (optional), SNMP |

### Firmware

| Firmware update | Update via GridVis® software. Firmware download (free of charge) from the website: www.janitza.com |

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