

Power quality

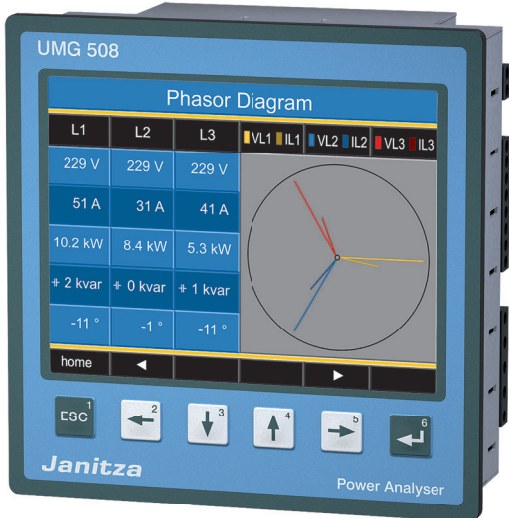


Ethernet connection



Graphic programming





Colour graphical display



Ethernet-Modbus gateway



Alarm management





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

Interfaces

- Ethernet
- Profibus / RS485 (DSUB-9)

Accuracy of measurement

- Energy: Class 0.2 (... / 5 A)
- Current: 0.2 %
- Voltage: 0.1 %

Power quality

- Harmonics up to 40th harmonic
- Short-term interruptions (> 20 ms)
- Transient recorder (> 50 μ s)
- 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
- Emax resetting

5 digital outputs

- Pulse output kWh / kvarh
- Switch output
- Threshold value output
- Emax output
- Logic output

Peak demand management (optional)

- Up to 64 switch-off stages

Network visualisation software

- GridVis®-Basic (in the scope of supply)

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

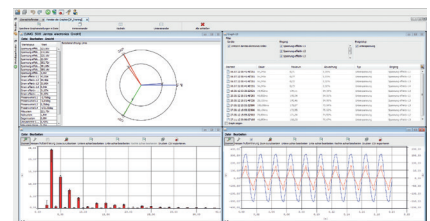


Fig.: GridVis® – Graph set



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

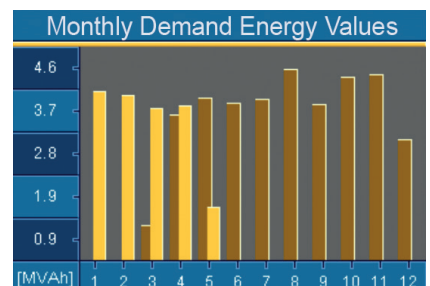


Fig.: Large colour display, e.g. 12 monthly demand values



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



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

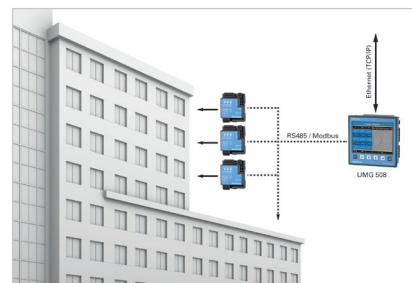


Fig.: GridVis® topology view

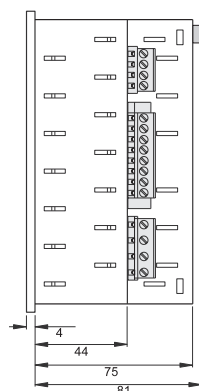


Fig.: The alarm management system reports events arising in good time.

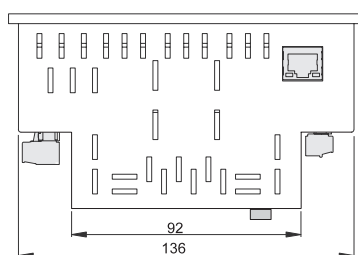


Dimension diagrams

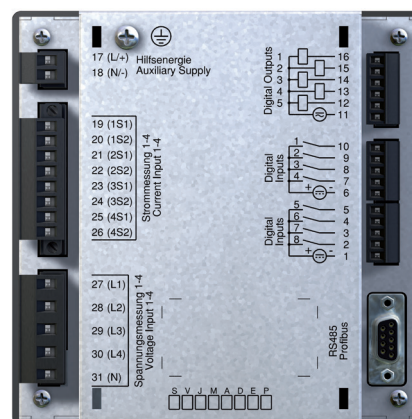
All dimensions in mm



Side view



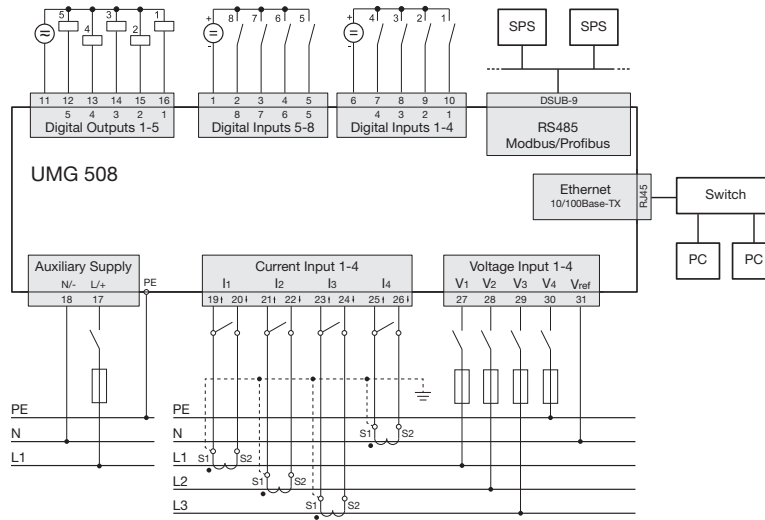
View from below



Ethernet connection



Typical connection



Device overview and technical data

	UMG 508		
Item number	52.21.001	52.21.002	52.21.003
Supply voltage AC	95 ... 240 V AC	44 ... 130 V AC	20 ... 50 V AC
Supply voltage DC	80 ... 340 V DC	48 ... 180 V DC	20 ... 70 V DC
Item number (UL)	52.21.011	52.21.012	
Supply voltage AC	95 ... 240 V AC	44 ... 130 V AC	
Supply voltage DC	80 ... 280 V DC	48 ... 180 V DC	
Device options			
Emax function	52.21.080	52.21.080	52.21.080
BACnet communication	52.21.081	52.21.081	52.21.081

General	
Use in low, medium and high voltage networks	•
Accuracy voltage measurement	0.1 %
Accuracy current measurement	0.2 %
Accuracy active energy (kWh, .../5 A)	Class 0.2
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, Σ L1-L3, Σ L1-4]	•
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	
Operating hours measurement	•
Clock	•
Weekly timer	Jasic®
Power quality measurements	
Harmonics per order / current and voltage	1st – 40th
Harmonics per order / active and reactive power	1st – 40th

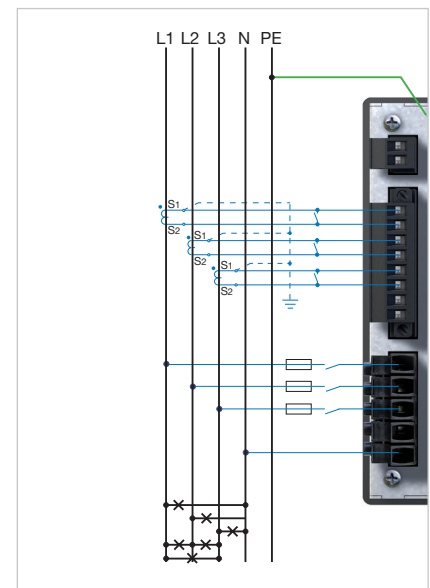


Fig.: Current and voltage measurement

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

• = included - = not included

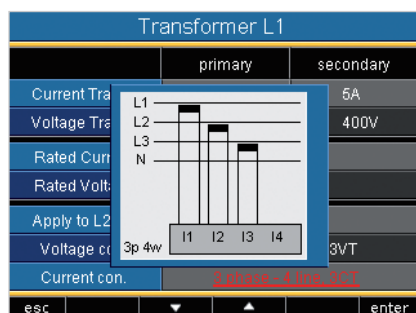


Fig.: Example for the configuration of current measurement via 3 current transformers in a three-phase 4-wire network on the UMG 508 display

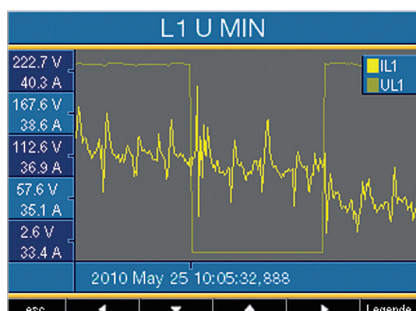


Fig.: Illustration of the full wave effective values for an event

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

*2 With UL variants: 347/600 V

Distortion factor THD-U in %	•
Distortion factor THD-I in %	•
Voltage unbalance	•
Rotary field indication	•
Current and voltage, positive, zero and negative sequence component	•
Transients	> 50 µs
Error / event recorder function	•
Short-term interruptions	20 ms
Oscillogram recording (waveform U and I)	•
Full wave effective values (U, I, P, Q)	•
Under and overvoltage recording	•
Measured data recording	
Memory (Flash)	256 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 colour graphical display 320 x 240, 256 colours, 6 buttons	•
Language selection	•
Digital inputs	8
Digital outputs (as switch or pulse output)	5
Voltage and current inputs	each 4
Password protection	•
Peak load management (optionally 64 channels)	•
Communication	
Interfaces	
RS485: 9.6 – 921.6 kbps (DSUB-9 connector)	•
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)	•
Software GridVis®-Basic¹	
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 Up to 40th harmonic
Nominal voltage, three-phase, 4-conductor (L-N, L-L)	417 / 720 V AC ^{*2}
Nominal voltage, three-phase, 3-conductor (L-L)	600 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	600 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 ... 1000 Vrms
Resolution	0.01 V
Impedance	4 MOhm / phase
Frequency measuring range	40 ... 70 Hz
Power consumption	approx. 0.1 VA
Sampling frequency	20 kHz / phase
Measured current input	
Rated current	5 A
Resolution	0.1 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.	120 A (sinusoidal)
Sampling frequency	20 kHz
Digital inputs and outputs	
Number of digital inputs	8
Maximum counting frequency	20 Hz
Reaction time (Jasic® program)	200 ms
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	5
Switching voltage	max. 60 V DC, 30 V AC
Switching current	max. 50 mA Eff AC / DC
Output of voltage dips	20 ms
Pulse output (energy pulse)	max. 20 Hz
Maximum cable length	up to 30 m unscreened, from 30 m screened
Mechanical properties	
Weight	1080 g
Device dimensions in mm (H x W x D)	144 x 144 x approx. 81
Battery	Type VARTA CR1/2AA, 3 V, Li-Mn
Protection class per EN 60529	Front: IP50; Rear: IP20
Assembly per IEC EN 60999-1 / DIN EN 50022	Front panel installation
Connecting phase (U / I), Single core, multi-core, fine-stranded Terminal pins, core end sheath	0.2 to 2.5 mm ² 0.2 to 2.5 mm ²
Environmental conditions	
Temperature range	Operation: K55 (-10 ... +55 °C)
Relative humidity	Operation: 0 ... 75 % RH
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 – 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	
Class A: Industrial environment	IEC/EN 61326-1, EMV-ILA Version 01-03
Electrostatic discharge	IEC/EN 61000-4-2
Voltage dips	IEC/EN 61000-4-11, EMV-ILA V01-03
Emissions	
Class B: Residential environment	IEC/EN 61326-1, EMV-ILA Version 01-03
Radio disturbanc voltage strength 30 – 1000 MHz	IEC/CISPR11/EN 55011
Radiated interference voltage 0.15 – 30 MHz	IEC/CISPR11/EN 55011
Radiated interference voltage 9 – 150 kHz	EMV-ILA V01-03
Safety	
Europe	CE labelling
USA and Canada	UL variants available
Firmware	
Firmware update	Update via GridVis® software. Firmware download (free of charge) from the website: http://www.janitza.com/downloads/

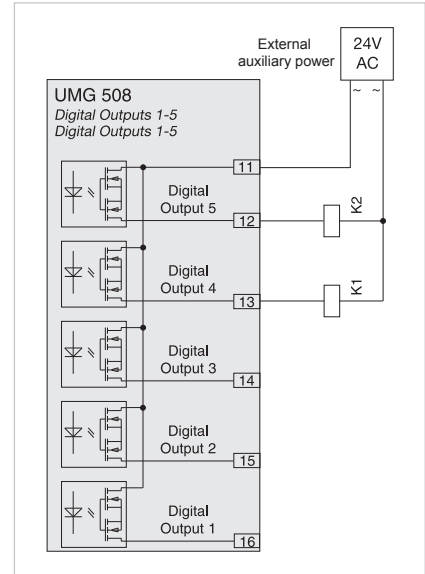


Fig.: Connection of two electronic relays to digital outputs 4 and 5

Comment:
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• = included - = not included

Janitza electronics GmbH
Vor dem Polstück 1
D-35633 Lahnau
Deutschland

Tel.: +49 6441 9642-0
Fax: +49 6441 9642-30
info@janitza.com
www.janitza.com

Marketing partners

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