Power quality

Ethernet connection

Graphic programming

Colour graphical display

Ethernet-Modbus gateway

Alarm management

ISO 50001 Made in Germany

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 0.2S (... / 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
- 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

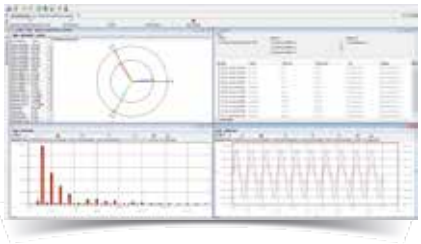


Fig.: GridVis® – Graph set

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

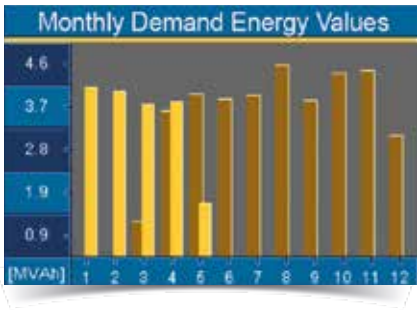


Fig.: Large colour display, e.g. 12 monthly demand values

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

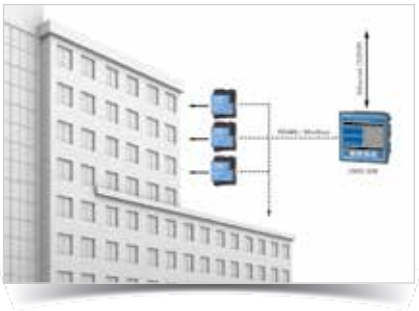


Fig.: GridVis® topology view

Graphical programming

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

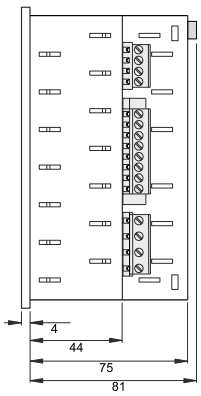
Powerful alarm management

- 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

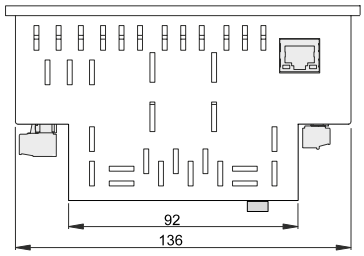
Fig.: The alarm management system reports events arising in good time.

Dimension diagrams

All dimensions in mm



Side view

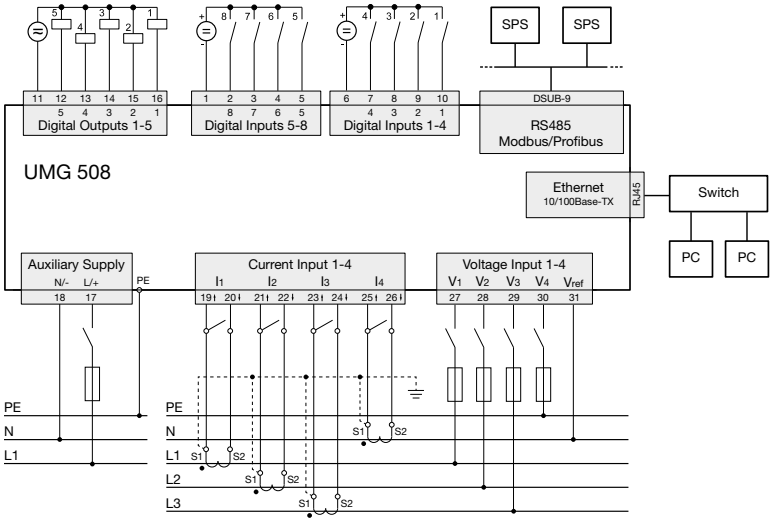


View from below

Ethernet connection

Cut out: 138$^{+0,8}$ x 138$^{+0,8}$ mm

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			
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 0.2S
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, ∑ L1–4]	•
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

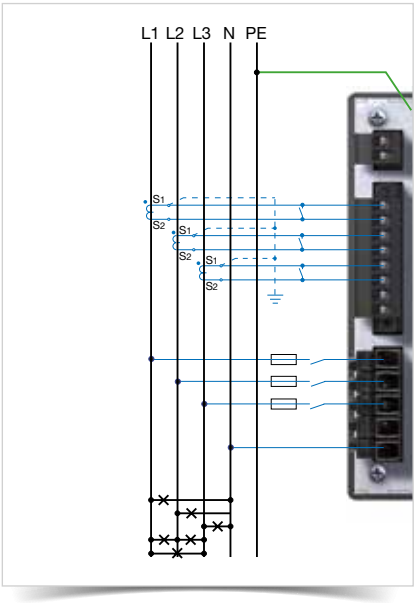


Fig.: Current and voltage measurement

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

• = included - = not included

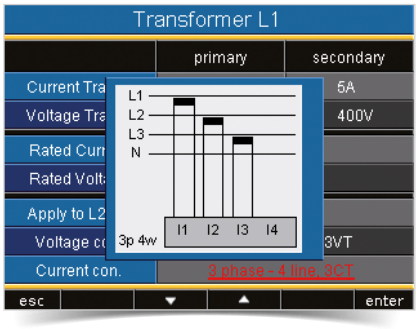


Fig.: Example for the configuration of current measurement via 3 current transformers in a three-phase 4-wire network on the UMG 508 display

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

Comment:
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• = included - = not included

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

*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®-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 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	1 / 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 CR1/2AA, 3 V, Li-Mn
Protection class per EN 60529	Front: IP40; 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 mm² 0.2 to 2.5 mm²
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

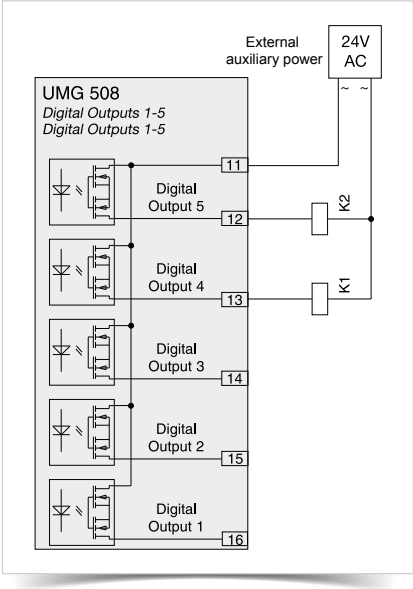

Fig.: Connection of two electronic relays to digital outputs 4 and 5

Comment:
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