UMG 508

Multifunctional Power Analyser
with Ethernet and BACnet

The Power Analyser UMG 508 is an all-rounder for the front door panel mounting. The device is equipped with a colourful graphic display with intuitive user interface. The extensive measuring functions, such as monitoring of short term interruptions, inrush currents, transients, harmonics up to the 40th order …) are unique in this price range.

Extensive communication options, such as RS485 (Modbus RTU, Profibus), Ethernet TCP / IP, BACnet, HTTP, FTP, SNMP, SMTP, SNTP, or DNS allow a cost effective and rapid integration into existing communication structures.

The measurement is made on 4 separate current inputs, either for three phase systems with additional measurements in N or PE or the measurement of 4 individual single-phase loads. The UMG 508 has per each current input a separate energy counter. The very large data memory of 256 MB permits the logging of all readings for months even without intermediate reading.

Areas of application

- Monitoring of a wide range of electrical and energy parameters
- Continuous monitoring of the power quality parameters
- Ethernet-Gateway for subordinate measurement devices
- Analysis of electrical faults and root cause analysis in case of power failures
- Cost centre management
- Remote monitoring for real estate management
- Usage in test facilities (e.g. in Universities)

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Main features and customer's benefit

User-friendly graphical color display with intuitive user interface

The high-resolution graphic display provides informative presentations of line graphs, FFT harmonic as bar diagram, clear display of the kWh-month values, alarm management / event viewer with dates and time stamp, and many other features.

In addition to the information content the redesign of the UMG displays focused very much on a user-friendly, self-explanatory and intuitive operation of the UMG 508.

Modern communication architecture via Ethernet: Cost-effective, fast and safe communication

In many cases the costs for installation and communication (e.g. peripheral equipment for field buses) exceed those for the respective power meters. Integration of the UMG 508 in an existing Ethernet architecture means a fast, cost- efficient and reliable communication. Additional interfaces enable the integration of the power analysers into PLC or building automation systems. The use of open standards offers great flexibility to the user.

Modbus Gateway: Easy integration of devices without Ethernet interface

With the Modbus Gateway function of UMG 508 you can connect less sophisticated Modbus RTU meters to Ethernet. The UMG 508 can be used simultaneously as a gateway for sub-meters or prior instruments existing within the installation. Each instrument with a Modbus RTU interface can be connected, if its data format and function codes correspond. Data can be scaled and labelled.

Highspeed Modbus

The UMG 508 series can transfer data via RS485 interface with a speed of up to 921.6 kB/s among each other device of this series.

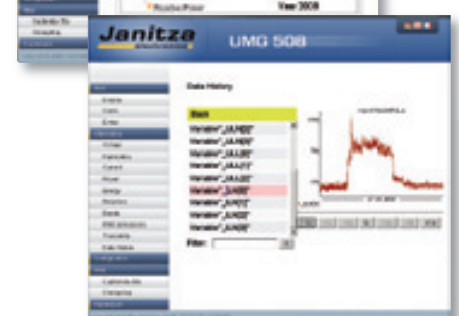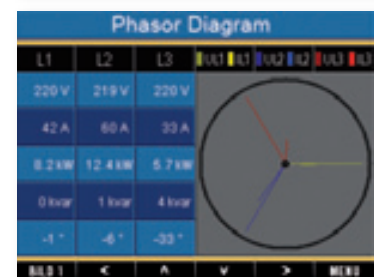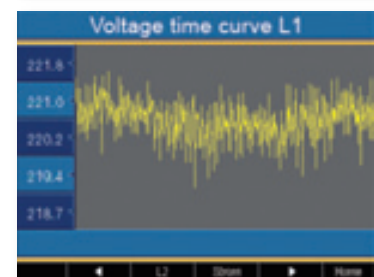### Alarm management: E-mail and homepage inform you, wherever you are...

Who would not agree? Just leaving the building the first call arrives about certain problems in production, computer failure, energy breakdown...

By using a webbrowser and IP address you have direct access to the extremely powerful homepage of your UMG 508. You get detailed information about the actual condition of your powergrid from the homepage. Online data as well as historical data and graphs of events are available. Via homepage you can directly calculate the costs of your energy consumption and export it into a CSV-file or print it out.

Alternatively, an e-mail informs you, if overload occurs, short-term interruptions disrupt your production process, harmonics reduce the life expectancy of your technical equipment... The applications are ceaseless.
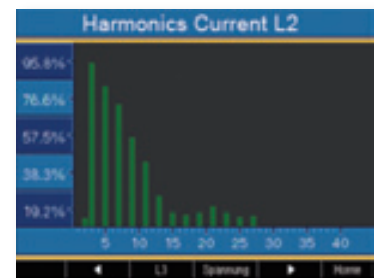
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Router

PLC

Software

Grids
- TN, TT - grids
- 3 and 4 wire grids
- up to 4 single phase grids
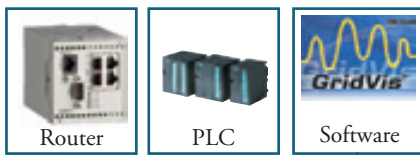
Interfaces
- Ethernet
- Profibus / RS485(D-Sub9)

8 Digital inputs
- Pulse input
- Alarm input logic
- Condition monitoring
- High/ low tariff changeover
- Emax reset

5 Digital outputs
- Pulse output kWh/ kvarh
- Switching output
- Limit output
- Emax output
- Logical output

Communication
- Protocols: Profibus (DP/V0)
- Modbus (RTU, UDP, TCP, Gateway)
- TCP/IP
- BACnet
- HTTP: freely programmable homepage
- FTP (file transfer)
- SNMP
- TFTP (automatic configuration)
- NTP (time synchronisation)
- SMTP (e-mail function)
- DHCP

Memory
- 256 MByte Flash
- 16 Mbyte RAM

Power quality
- Harmonics, 1st- 40th
- Short-term interruptions
- Transients (>50 μs)
- Inrush currents (> 10 ms)
- Unbalance
- Full period RMS
  recording (< 4.5 min.)

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

Maximum demand control
- 64 outputs

Programming language *Jasic®*

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Power analyser

Overview of product variants UMG 508

Supply voltage								Interfaces					
95...240V AC, 80...340V DC ±10% of nominal range	44...130V AC 48...180V DC ±10% of nominal range	20...50V AC 20...70V DC ±10% of nominal range	4 voltage and 4 current inputs	Additional memory 256 MB Flash	8 digital inputs	5 digital outputs	RS 485*	Ethernet 100baseT	Profibus DP V0*	7 freely programmable application programmes	Type	Item number
●			●	●	●	●	●	●	●	●	UMG 508	**52.21.001**
	●		●	●	●	●	●	●	●	●	UMG 508	**52.21.002**
		●	●	●	●	●	●	●	●	●	UMG 508	**52.21.003**

optionally available		
Application programme EMax function	EMAX	**52.21.080**
BACnet communication	BACnet	**52.21.081**

- = not possible   ● = contained   *1 DSUB-9 connector

Features

Memory		256 MB
Clock		+/- 1 min per month
Integrated logic		Programming language Jasic®
Operating hours counter		yes
Weekly switching clock		Jasic®

Peripherals

Digital inputs	as status or pulse input	8
Digital outputs	as switching or pulse output	5
Password protection		yes
Maximum demand control	**optional 64 channels**	**yes**
Software	**GridVis**	**yes**

Communication

Interfaces		
RS 485*	9.6, 19.2, 38.4, 76.8, 115.2, 921.6 kbps	yes
Profibus DP*	Sub D9-pole up to 12 Mbps	yes
Ethernet 10/100 Base- TX	RJ-45 connector	yes
Protocols		
Modbus RTU		yes
Profibus DP V0		yes
Modbus TCP		yes
Modbus over TCP		yes
Modbus gateway		yes
HTTP	homepage (configurable)	yes
SMTP	e-mail	yes
SNTP	time synchronization	yes
TFTP	automatic configuration	yes
FTP	file transfer	yes
SNMP		yes
DHCP		yes
TCP/IP		yes
BACnet		yes

*1 DSUB-9 connector

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Technical data

Nominal voltage	3-phase 4-wire grid (L-N, L-L)	417/720 V AC +10%
	3-phase 3-wire grid (L-L)	480 V AC +10%
Overvoltage class		600 V CATIII
Quadrants		4
Continuous Measurement		yes
Sampling rate, 8 channels	per channel	20 kHz
Weight		1 kg
Dimensions		H=144 mm x W=144 mm x D=81 mm
Mounting	according to IEC EN60999-1/ DIN EN50022	Frontpanel mounting
Working temperature		-10…55 °C
Connectable wires (U/I)	one wire, more wires, fine stranded wires	0,08 - 2,5 mm²
	cable end sleeve	1,5 mm²
Protection class	according to EN60529	IP 20

Measuring range

Voltage L-N, AC (without VT)		10…600 V rms
Voltage L-L, AC (without VT)		18…1000 V rms
Current (Transformer: x/1 und x/5 A)		0.005...6 A
Frequency of fundamental		40...70 Hz
Grids		TN, TT
Measurement in grids		1ph, 2ph, 3ph, 4ph up to 4 times 1ph

Measured values

Voltage	L1, L2, L3, L4, L1-L2, L2-L3, L1-L3	accuracy ±0.1 %
Current	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4	accuracy ±0.2 %
K-factor	L1, L2, L3, L4	yes
Rotating current components	Positive/ Negative/ Zero Phase Sequence	yes
Real, apparent, reactive power	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4	accuracy ±0.4 %
Cos-phi / phase angle	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4	yes
Phase angle	L1, L2, L3, L4	yes
Real energy (kWh)	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4: - Consumed real energy (rate 1, rate 2) - Supplied real energy (rate 1, rate 2)	Class 0.2 (…/5 A), Class 1 (…/1 A)
Reactive energy (Karh)	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4: - Inductive energy (rate 1, rate 2) - Capacitive reactive energy	Class 2
Reactive energy (kVAh)	L1, L2, L3, L4, Sum L1-L3, Sum L1-L4	yes
Wave form voltage	L1, L2, L3, L4	yes
Frequency of mains		accuracy ±0.1%
Average values		yes
Minimum and maximum values		yes

Power quality

Harmonics, 1st- 40th	Current, voltage, real/reactive power (±) L1, L2, L3, L4	accuracy ±0.5%
Distortion factor THD-U in %	L1, L2, L3, L4	yes
Distortion factor THD-I in %	L1, L2, L3, L4	yes
Unbalance		yes
Positive/ Negative/ Zero Phase Sequence		yes
Transients	50 µs	yes
Inrush-currents	10 ms	yes
Malfunction writer		yes
Short-term interruptions		yes

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Dimensional drawing

4
44
75
81

Side view

92
136
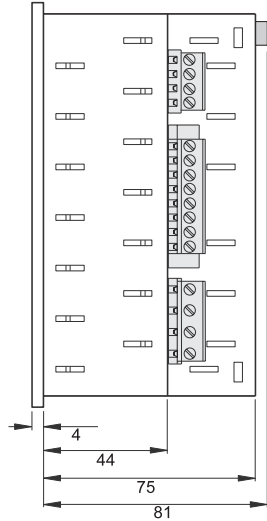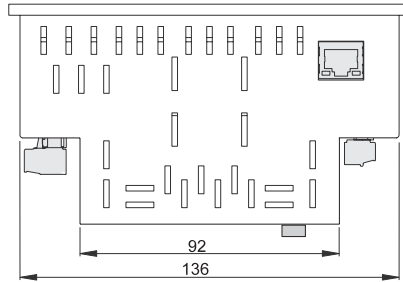
View from below.
All measurement data in mm.

Connection illustration

Ethernet connection

Typical connection

| 5 | 4 | 3 | 2 | 1 |

| 11 | 12 | 13 | 14 | 15 | 16 |
| 5 | 4 | 3 | 2 | 1 |

Digital Outputs 1-5

+ 8	7	6	5

| 1 | 2 | 3 | 4 | 5 |
| 8 | 7 | 6 | 5 |

Digital Inputs 5-8

+ 4	3	2	1

| 6 | 7 | 8 | 9 | 10 |
| 4 | 3 | 2 | 1 |

Digital Inputs 1-4

SPS   SPS

DSUB-9

RS485
Modbus/Profibus

UMG 508

Hilfsenergie
Auxiliary Supply
N/-   L/+   PE
18   17

Strommessung 1-4
Current Input 1-4
I1   I2   I3   I4
19 20 21 22 23 24 25 26

Spannungsmessung 1-4
Voltage Input 1-4
V1   V2   V3   V4   Vref
27   28   29   30   31

Ethernet
10/100Base-TX

RJ45

PE
N
L1

PE
N
L1
L2
L3

Hub/Switch

PC   PC