Harmonics

Memory 128 MByte

Events

Modbus master,
Ethernet gateway

Homepage

Graphic
programming

Jasic®

ISO 50001
Made in Germany

UMG 604 – Power analyser

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

Interfaces
• Ethernet
• RS232
• RS485

Accuracy of measurement
• Energy: Class 0.5S (… / 5 A)
• Current: 0.2 %
• Voltage: 0.2 %

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

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
• 128 MByte Flash

Programming language
• Jasic®

2 digital inputs
• Pulse input
• Logic input
• State monitoring
• HT / LT switching

2 digital outputs
• Pulse output kWh / kvarh
• Switch output
• Threshold value output
• Logic output

(expandable via external I/O modules,
see FBM modules in chapter 05)

Temperature measurement
• PT100, PT1000, KTY83, KTY84

Network visualisation software
• GridVis®-Basic (in the scope of supply)
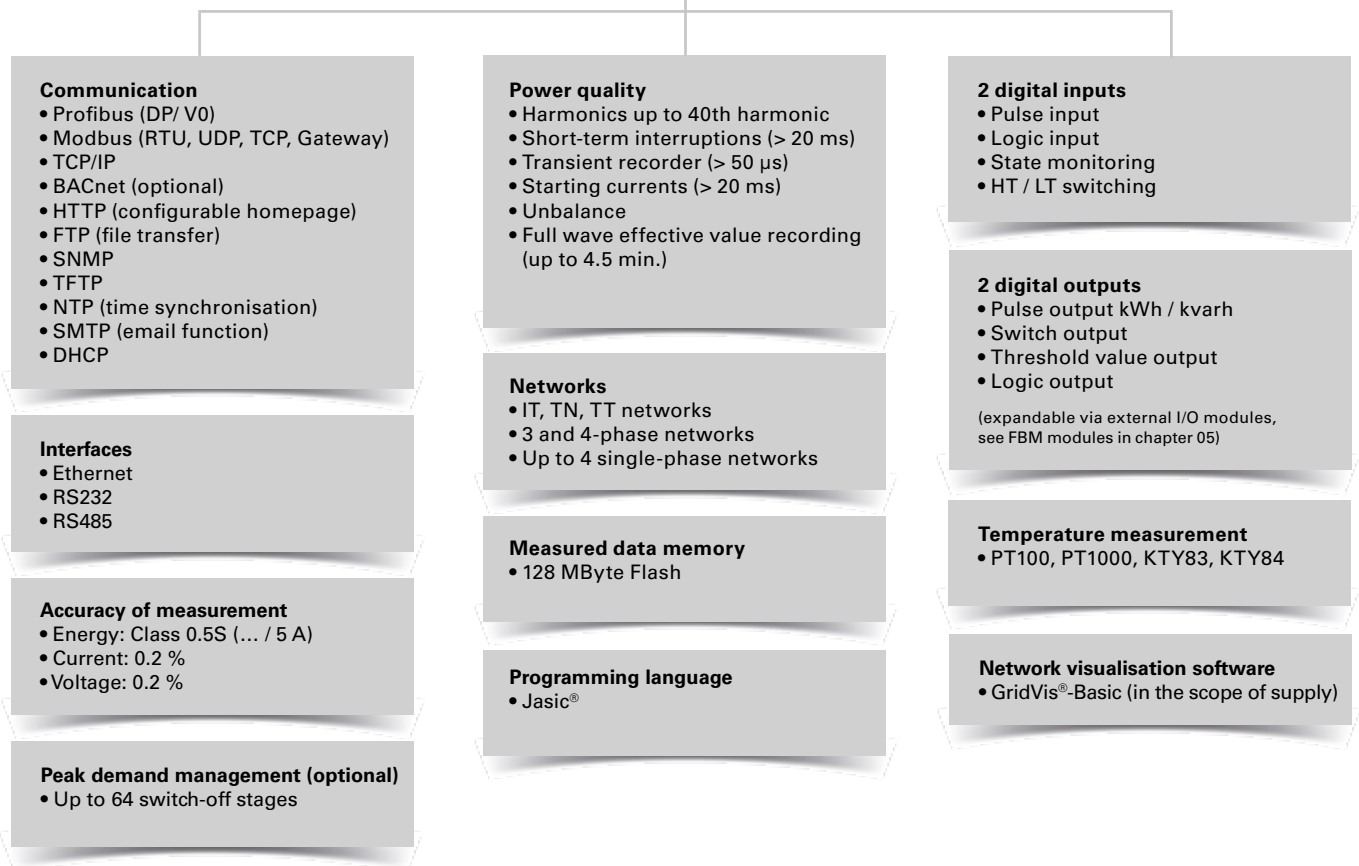
Areas of application

- Master device for energy management systems, (e.g. ISO 50001)
- Measurement, monitoring and checking of electrical characteristics in energy distribution systems
- Consumption data acquisition
- Monitoring of the power quality (harmonics, short-term interruptions, transients, starting currents, etc.)
- Measured value transducer for building management systems or PLC
- Control tasks e.g. depending on measured value or limit values being reached
- Peak demand management
- Ethernet gateway for subordinate measurement points
- Remote monitoring

Main features

Power quality

- Harmonics analysis up to 40th harmonic
- Unbalance
- Distortion factor THD-U / THD-I
- Measurement of positive, negative and zero sequence component
- Short-term interruptions (> 20 ms)
- Logging and storage of transients (> 50 µs)
- Start-up processes
- Fault recorder function
- Rotary field indication

Fig.: DIN rail mounting (6 TE)

DIN mounting rail (6TE):
Simple and cost-optimised installation

- Mounting on a 35 mm DIN rail
- Clear cost advantages in the switch cabinet construction through lower installation and connection effort
- Simple integration into the LVDB, in machinery construction, in installation subdistribution panel for building management systems, in IT and in data centres

Modern communications architecture via Ethernet

- Rapid, cost-optimised and reliable communication through integration into an existing Ethernet architecture
- Integration in PLC systems and building management systems
- High flexibility due to the use of open standards
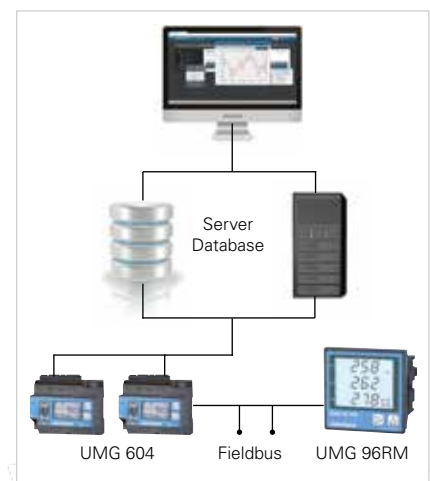- Simultaneous polling of interfaces possible

Fig.: Modern communication architecture

Janitza®

Ethernet-Modbus gateway

- Simple integration of Modbus-RTU devices into an Ethernet architecture through the Modbus gateway function
- Integration of devices with identical file formats and matching function codes possible via Modbus RTU interface

High-speed Modbus

- Fast and reliable data exchange via RS485 interface
- Speed up to 921.6 kB/s

Graphical programming

- Comprehensive programming options on the device, 7 programs simultaneously (PLC functionality)
- Jasic® source code programming
- Functional expansions far beyond pure measurement
- Complete APPs from the Janitza library
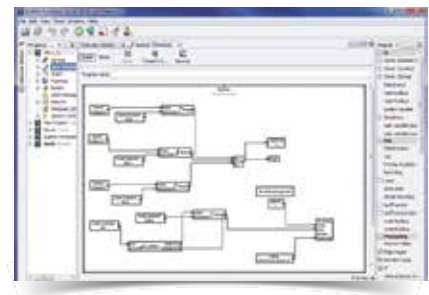
Convenient home page and email functions

- Information can be received conveniently by email and via the device homepage
- Access to powerful device homepage via web browser
- Online data, historical data, graphs, events and much more, is available direct from the homepage

Large measurement data memory

- 128 MByte
- 5,000,000 saved values
- Recording range up to 2 years
- Recording freely configurable

Fig.: Graphical programming

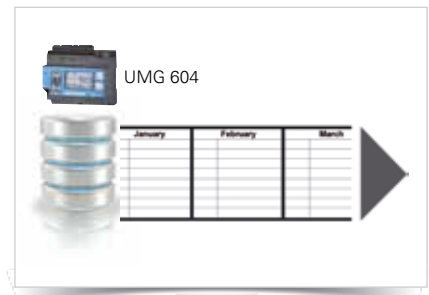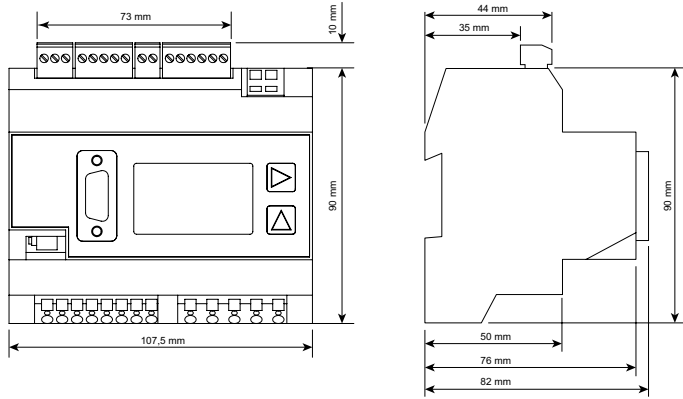Fig.: Illustration of the online data via the device's own homepage

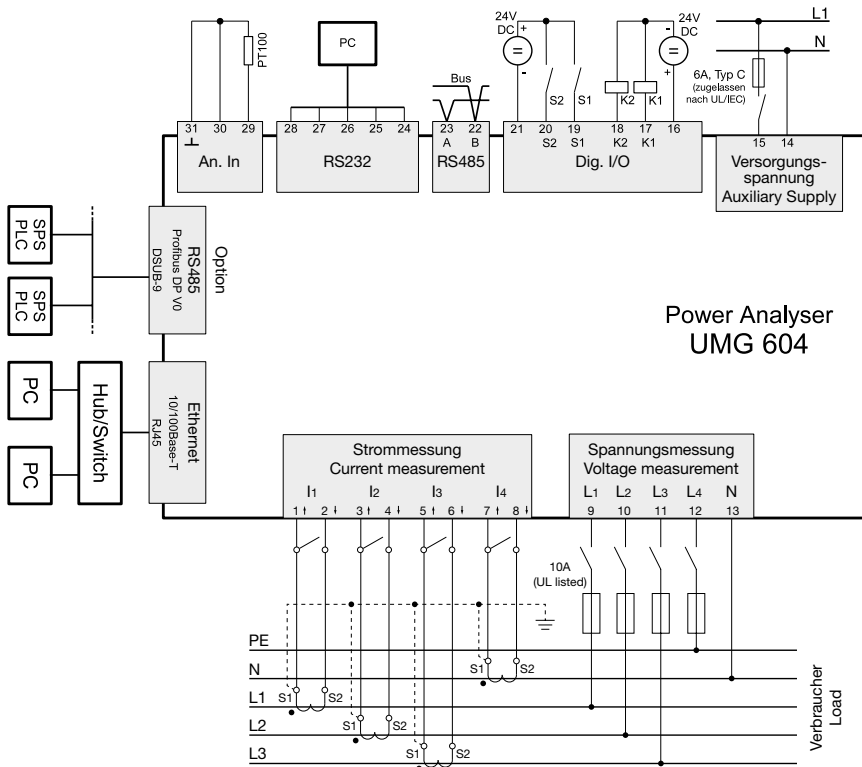Fig.: Large measurement data memory

Dimension diagrams

All dimensions in mm

Front view

Side view

Typical connection

Device overview and technical data

|		UMG 604E		UMG 604EP	
Item number		52.16.012			
Item number (UL)	52.16.202	-	52.16.222	52.16.201	52.16.221
Supply voltage AC	95 ... 240 V AC	50 ... 110 V AC	20 ... 50 V AC	95 ... 240 V AC	20 ... 50 V AC
Supply voltage DC	135 … 340 V DC	50 … 155 V DC	20 … 70 V DC	135 … 340 V DC	20 … 70 V DC
Communication					
Interfaces					
RS485: 9.6 – 921.6 kbps (Screw-type terminal)	•	•	•	•	•
RS232: 9.6 – 115.2 kbps (Screw-type terminal)	•	•	•	•	•
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)	•	•	•	•	•
Device options					
BACnet communication	52.16.081	52.16.081	52.16.081	52.16.081	52.16.081
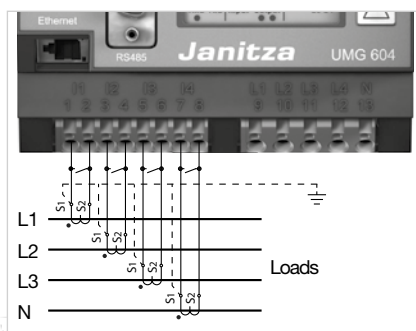
Fig.: Current measurement via current transformers

General	
Use in low and medium voltage networks	•
Accuracy voltage measurement	0.2 %
Accuracy current measurement	0.25 %
Accuracy active energy (kWh, …/5 A)	Class 0.5S
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–L4]	•
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	
Clock	•
Weekly timer	Jasic®

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

• = included - = not included

Power quality measurements	
Harmonics per order / current and voltage	1st – 40th
Harmonics per order / active and reactive power	1st – 40th
Distortion factor THD-U in %	•
Distortion factor THD-I in %	•
Voltage unbalance	•
Current and voltage, positive, zero and negative sequence component	•
Transients	50 µs
Error / event recorder function	•
Short-term interruptions	20 ms
Oscillogram function (waveform U and I)	•
Full wave effective values (U, I, P, Q)	•
Under and overvoltage recording	•
Measured data recording	
Memory (Flash)	128 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 display	•
Digital inputs	2
Digital outputs (as switch or pulse output)	2
Thermistor input (PT100, PT1000, KTY83, KTY84)	•
Voltage and current inputs	each 4
Password protection	•
Peak load management (optionally 64 channels)	•
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)	277 / 480 V AC
Nominal voltage, three-phase, 3-conductor (L-L)	480 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	300 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 … 1,000 Vrms
Resolution	0.01 V
Impedance	4 MOhm / phase
Frequency measuring range	45 ... 65 Hz
Power consumption	approx. 0.1 VA
Sampling frequency	20 kHz / phase
Transients	> 50 µs

Fig.: Example temperature input (KTY83) and S0 pulse transducer

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

• = included   - = not included

*[1] Optional additional functions with the packages GridVis®-Professional, GridVis®-Service and GridVis®-Ultimate.
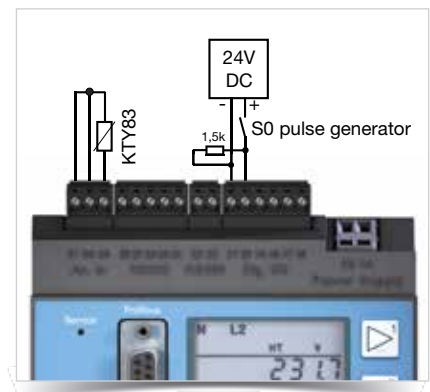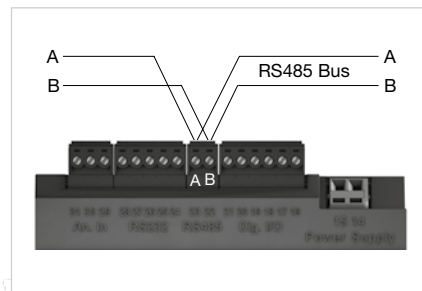
Fig.: RS485 interface, 2 pin plug contact

Measured current input	
Rated current	1 / 5 A
Resolution	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.	100 A (sinusoidal)
Sampling frequency	20 kHz
Digital inputs and outputs	
Number of digital inputs	2
Maximum counting frequency	20 Hz
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	2
Switching voltage	max. 60 V DC, 30 V AC
Switching current	max. 50 mA Eff AC / DC
Output of voltage dips	20 ms
Output of voltage exceedance events	20 ms
Pulse output (energy pulse)	max. 20 Hz
Maximum cable length	up to 30 m unscreened, from 30 m screened
Mechanical properties	
Weight	350 g
Device dimensions in mm (H x W x D)	90 x 107.5 x approx. 82
Battery	Type Lithium CR2032, 3 V
Protection class per EN 60529	IP20
Assembly per IEC EN 60999-1 / DIN EN 50022	35-mm DIN rail
Connecting phase (U / I), Single core, multi-core, fine-stranded Terminal pins, core end sheath	0.08 to 2.5 mm² 1.5 mm²
Environmental conditions	
Temperature range	Operation: K55 (-10 ... +55 °C)
Relative humidity	Operation: 5 to 95 % (at 25 °C)
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	
Industrial environment	IEC/EN 61326-1
Electrostatic discharge	IEC/EN 61000-4-2
Voltage dips	IEC/EN 61000-4-11
Emissions	
Class B: Residential environment	IEC/EN 61326-1
RFI Field Strength 30 – 1,000 MHz	IEC/CISPR11/EN 55011
Radiated interference voltage 0.15 – 30 MHz	IEC/CISPR11/EN 55011
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

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

• = included   - = not included

Switch
Communication using TCP/IP
Internet

UMG 511
Class A power quality analyser
Report generator according to
standard EN 50160 etc.
Power quality monitoring
Harmonic analysis

UMG 508
Multifunctional quality analyser
Monitoring of power supplies
Monitoring of short-therm interruption

Computer environment
Programming and assessment software GridVis®
Cost centre data collection
Power quality
Analysis tools
Database management
Alarm management
User administration

Ethernet

UMG 604 / UMG 96RM-E
Multifunctional power analysers
Cost centre analysis
Energy data collection and reporting

UMG 509
Multifunction power
analyser with RCM

Prophi®
Power factor
correction

UMG 96RM
Multifunctional power analyser
Measurement, monitoring and control of electrical data
Energy data collection

Modbus

UMG 104
Energy meter
Monitoring of power quality
Energy data collection and reporting

Modbus

UMG 103-CBM
Universal measuring
instrument
Cost centre data collection
Limit value monitoring

UMG 20CM
RCM and energy meter
Operating and residual current
monitoring
Energy data collection

ProData®
Data logger
Data collector for media consumption
Energy data collection

Janitza®