

# UMG 604-PRO

## Power analyser

**Harmonics**



**Memory 128 MByte**



**Events**



**Modbus master,  
Ethernet gateway**



**Homepage**



**Graphic  
programming**

**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  $\mu$ 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**

- 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**

- Free GridVis®-Basic



## 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  $\mu$ s)
- Start-up processes
- Fault recorder function
- Rotary field indication

### 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.: DIN rail mounting (6TE)

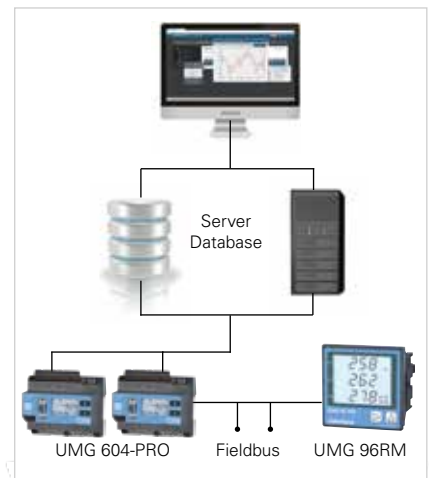


Fig.: Modern communication architecture



### 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

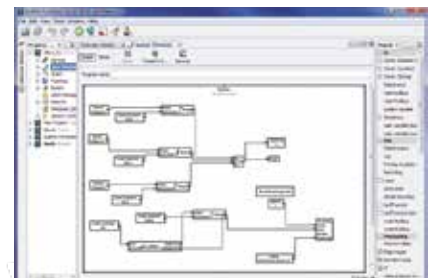


Fig.: Graphical programming

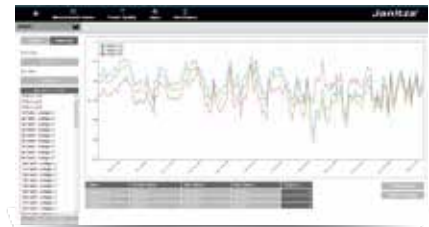


Fig.: Illustration of the online data via the device's own homepage

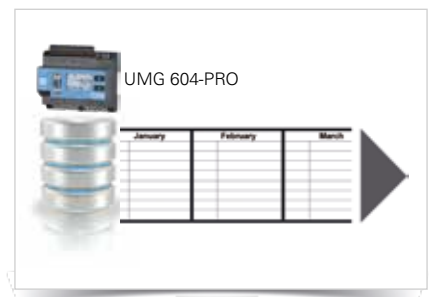
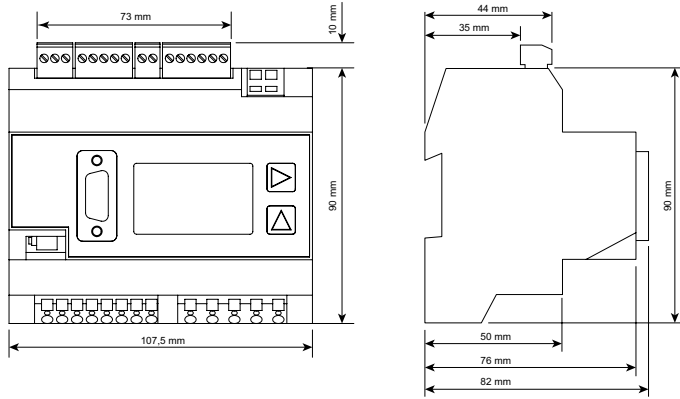


Fig.: Large measurement data memory



## Dimension diagrams

All dimensions in mm

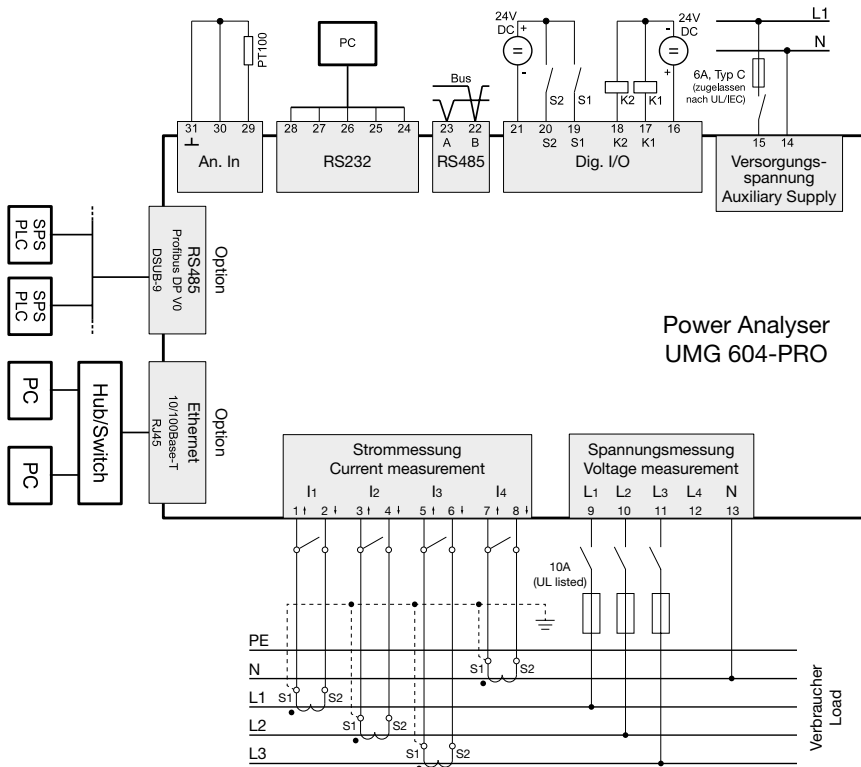


Front view

Side view



## Typical connection





## Device overview and technical data

Item number	UMG 604E-PRO			UMG 604EP-PRO	
	52.16.202	52.16.012	52.16.222	52.16.201	52.16.221
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
<b>Communication</b>					
<b>Interfaces</b>					
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)	•	•	•	•	•
<b>Protocols</b>					
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)	•	•	•	•	•
<b>Device options</b>					
Emax function (peak demand management)					
BACnet communication	52.16.081	52.16.081	52.16.081	52.16.081	52.16.081

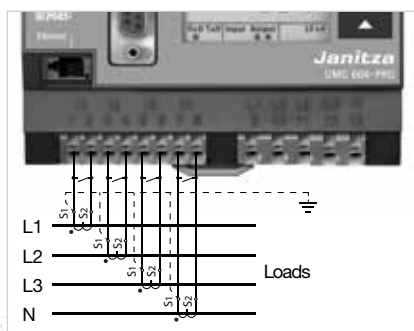


Fig.: Current measurement via current transformers

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	•
<b>RMS - momentary value</b>	
Current, voltage, frequency	•
Active, reactive and apparent power / total and per phase	•
Power factor / total and per phase	•
<b>Energy measurement</b>	
Active, reactive and apparent energy [L1,L2,L3, L4, $\Sigma$ L1-L3, $\Sigma$ L1-L4]	•
Number of tariffs	8
<b>Recording of the mean values</b>	
Voltage, current / actual and maximum	•
Active, reactive and apparent power / actual and maximum	•
Frequency / actual and maximum	•
Demand calculation mode (bi-metallic function) / thermal	•
<b>Other measurements</b>	
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 $\mu$ s
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 $\mu$ s

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

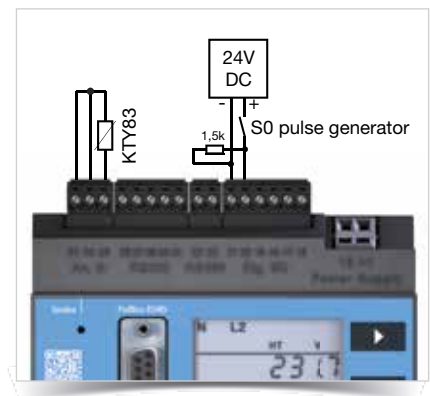


Fig.: Example temperature input (KTY83) and S0 pulse transducer

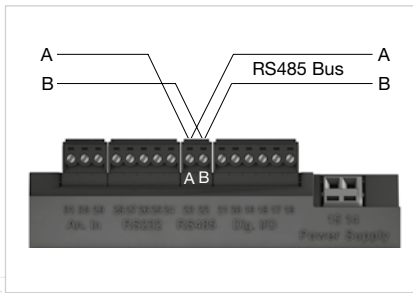


Fig.: RS485 interface, 2 pin plug contact

<b>Measured current input</b>	
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
<b>Digital inputs and outputs</b>	
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 unshielded, from 30 m shielded
<b>Mechanical properties</b>	
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 mm <sup>2</sup> 1.5 mm <sup>2</sup>
<b>Environmental conditions</b>	
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
<b>Electromagnetic compatibility</b>	
Electromagnetic compatibility of electrical equipment	Directive 2004/108/EC
Electrical appliances for application within particular voltage limits	Directive 2006/95/EC
<b>Equipment safety</b>	
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
<b>Noise immunity</b>	
Industrial environment	IEC/EN 61326-1
Electrostatic discharge	IEC/EN 61000-4-2
Voltage dips	IEC/EN 61000-4-11
<b>Emissions</b>	
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
<b>Safety</b>	
Europe	CE labelling
USA and Canada	UL variants available
<b>Firmware</b>	
Firmware update	Update via GridVis® software. Firmware download (free of charge) from the website: <a href="http://www.janitza.com">http://www.janitza.com</a>

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