Harmonics

Flicker

Email

Alarm management

Reporting

Memory 128 MByte

EN 50160 / ISO 50001 Made in Germany

UMG 605 – Power quality analysers for DIN rails

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

Interfaces
- Ethernet
- RS232
- RS485 (Modbus)
- RS485 (DSUB9) for Profibus

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 the 63rd harmonic, direct / indirect
- Flicker measurement
- Short-term interruptions (> 20 ms)
- Transient recorder (> 50 µs)
- Starting currents
- Unbalance
- Half wave RMS recordings (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)

Temperature measurement
- PT100, PT1000, KTY83, KTY84

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

Areas of application

- Power quality monitoring
- Ethernet gateway for subordinate measurement points
- Analysis of electrical disturbances in the event of network problems
- Report generator for various power quality standards
- Control tasks e.g. depending on measured value or limit values being reached
- Measured value transducer for building management systems or PLC

Main features

Power quality

- Continuous power quality monitoring (e.g. EN 50160)
- Harmonics analysis up to the 63rd harmonic, even and odd
- Interharmonics
- Distortion factor THD-U / THD-I
- Measurement of positive, negative and zero sequence component
- Flicker measurement in accordance with DIN EN 61000-4-15
- Logging and storage of transients (> 50 µs)
- Recording of short-term interruptions (> 20 ms)
- Monitoring start-up processes
- Recorder for limit value events
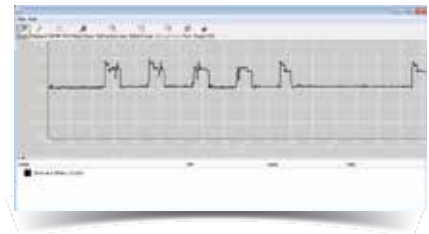
Fig.: GridVis®– Flicker Monitoring

Power

- 4 voltage and 4 current measurement inputs
- Logging and digitalisation of effective values (true RMS) of currents and voltages (15 – 440 Hz)
- Continuous sampling of the voltage and current measurement inputs at 20 kHz
- Recording of over 2,000 measured values per measurement cycle (200 ms)
- Stipulation of nominal current possible for measuring current events
- Fourth current measurement input is suitable for measuring the current in the neutral or PE conductor or for measuring any potential difference between N and PE.
- Large measured data memory (memory range = 5 000 000 measured values)
- Simple remote polling of measured data via the device's own homepage
- All interfaces can be used simultaneously
- Up to 4 ports can be accessed simultaneously

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Impressive reporting with GridVis®

- Automatic generation and sending of power quality reports
- Power quality reports per EN 50160, EN 61000-2-4, IEEE519
- Illustration of the ITI-(CBEMA) curve
- Freely definable time planning for the generation of reports

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.: Automatic reporting

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

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.: Alarm management, alarm list (logbook)

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High-speed Modbus

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

Fig.: Graphical programming

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

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

Large measurement data memory

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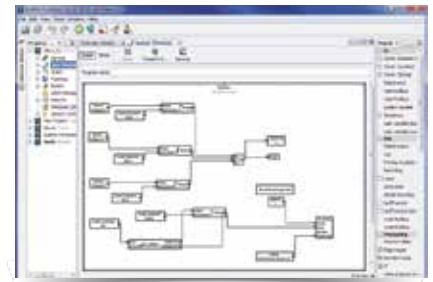- Recording freely configurable by the user
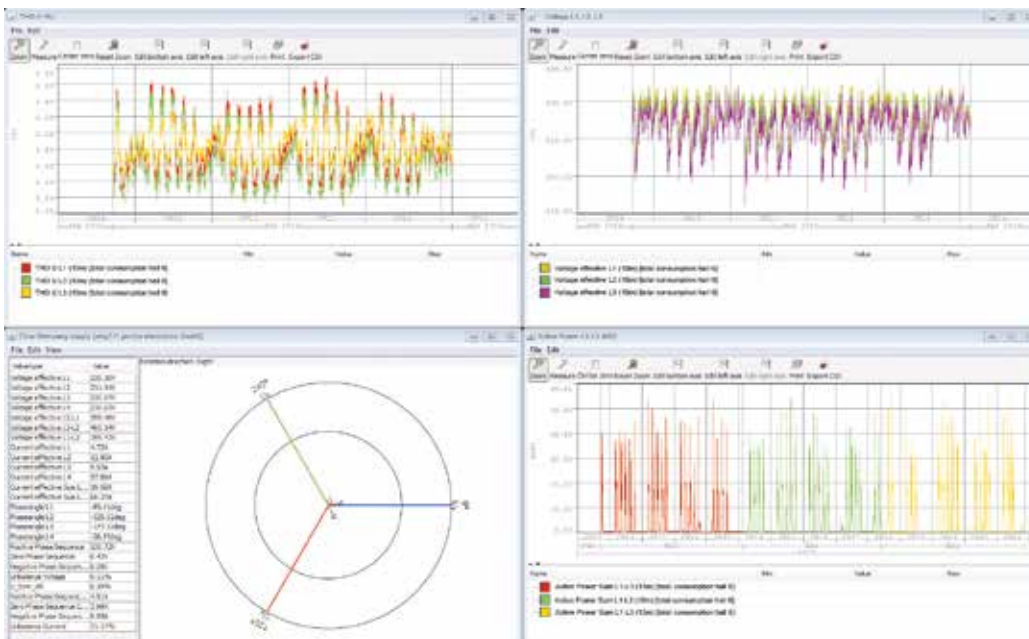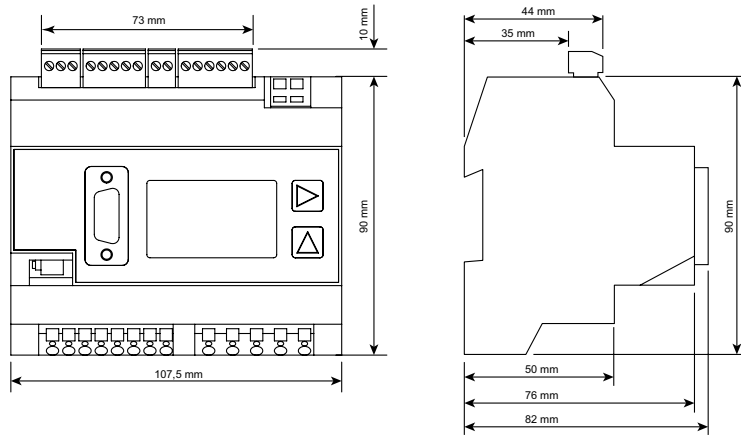

UMG 605

Fig.: Large measurement data memory

Fig.: GridVis® Graphset with THD-U, voltage, phasor diagram and load profile (kW)

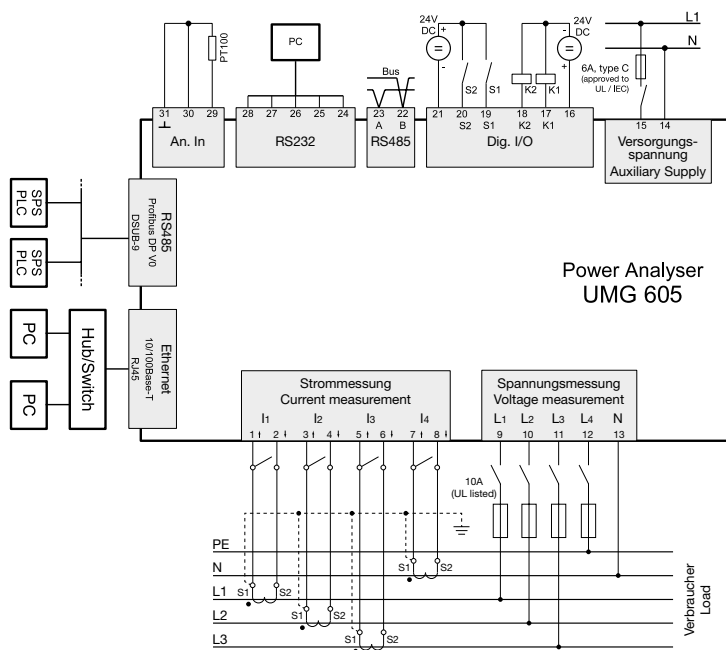*Janitza*®

Dimension diagrams

All dimensions in mm

73 mm
10 mm
90 mm
107,5 mm

44 mm
35 mm
90 mm
50 mm
76 mm
82 mm

Front view

Side view

Typical connection

PT100

PC

Bus

24V DC +

S2 S1

24V DC -

K2 K1

L1
N

6A, type C
(approved to
UL / IEC)

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16		15	14
⊥								A	B		S2	S1	K2	K1				

An. In

RS232

RS485

Dig. I/O

Versorgungs-
spannung
Auxiliary Supply

SPS
PLC

SPS
PLC

PC

PC

Hub/Switch

RS485
Profibus DP V0
DSUB-9

Ethernet
10/100Base-T
RJ45

Power Analyser
UMG 605

Strommessung
Current measurement

Spannungsmessung
Voltage measurement

I1		I2		I3		I4			L1	L2	L3	L4	N
1	2	3	4	5	6	7	8		9	10	11	12	13

10A
(UL listed)

PE
N
L1   S1   S2
L2   S1   S2
L3   S1   S2

S1   S2

Verbraucher
Load

Device overview and technical data

	UMG 605		
Item number		**52.16.028**	
Item number (UL)	**52.16.227**	**-**	**52.16.229**
Supply voltage AC	95 ... 240 V AC	50 ... 110 V AC	20 ... 50 V AC
Supply voltage DC	135 … 340 V DC	50 … 155 V DC	20 … 70 V DC
Device options			
BACnet communication	**52.16.083**	**52.16.083**	**52.16.083**

Fig.: Measurement via 3 voltage transformers in a three-phase 4-wire network with asymmetric loading

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	
Operating hours measurement	•
Clock	•
Weekly timer	Jasic®
Power quality measurements	
Harmonics per order / current and voltage	1st – 63rd
Harmonics per order / active and reactive power	1st – 63rd
Interharmonics - current / voltage	•
Distortion factor THD-U in %	•
Distortion factor THD-I in %	•
Voltage unbalance	•
Current and voltage, positive, zero and negative sequence component	•
Flicker: Short-term, long-term, present	•
Transients	50 µs
Error / event recorder function	•
Short-term interruptions	> 20 ms
Oscillogram function (waveform U and I)	•
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	•

Comment:
For detailed technical information please refer to the operation manual and the Modbus address list.
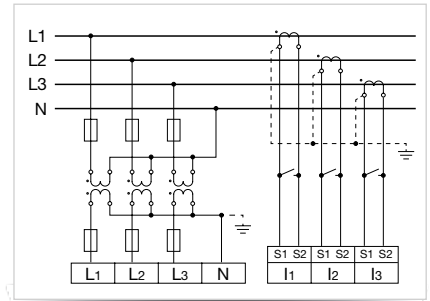
• = included   - = not included

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Fig.: Example of a master - slave combination

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)	•
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 connector)	•
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 the 63rd 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 ... 1000 Vrms
Resolution	0.01 V
Impedance	4 MOhm / phase
Frequency measuring range	15 ... 440 Hz
Power consumption	approx. 0.1 VA
Sampling frequency	20 kHz / phase
Transients	> 50 µs

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.

| Measured current input	
Rated current	1 / 5 A
Resolution	1 mA
Measurement range	0.001 ... 8.5 Arms
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
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	2
Switching voltage	max. 60 V DC, 30 V AC
Switching current	max. 50 mA Eff AC / DC
Reaction time (Jasic® program)	200 ms
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	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 mounting rails
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 A: Industrial 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
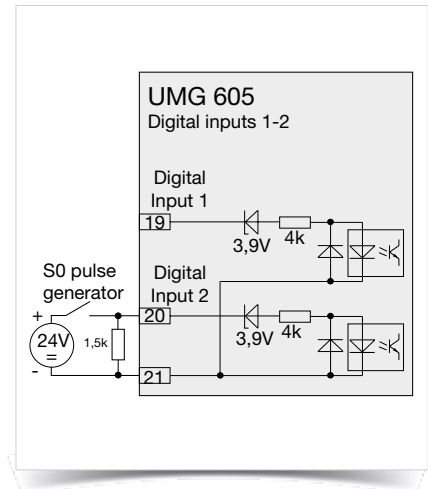
Fig.: Example for the connection of an S0 pulse transducer to digital input 2

Comment:
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• = included   - = not included

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