



**More than just a
Multimeter**

The UMG 104 equipped with a 500 MHz DSP (digital signal processor) is a very fast and powerful power analyser.

The continuous scanning of the 8 channels with 20 kHz per channel allows the recording of all electrical parameters (more than 800 values), minimum - and maximum - values, and the main power quality values such as harmonics (up to the 40th, each phase with the detection of direction). Based on these data loss of production can be avoided, concepts can be developed, such as the electricity cost reduction programs, and measures introduced. And finally the improvements can be monitored and recorded with the UMG 104 as well.

Using modern communication architectures, the acquired data are fed to a central location, in powerful databases, stored centrally and made available for further processing in an open architecture. The easy integration into an existing building control system or PLC environment extends the capabilities of the UMG 104.

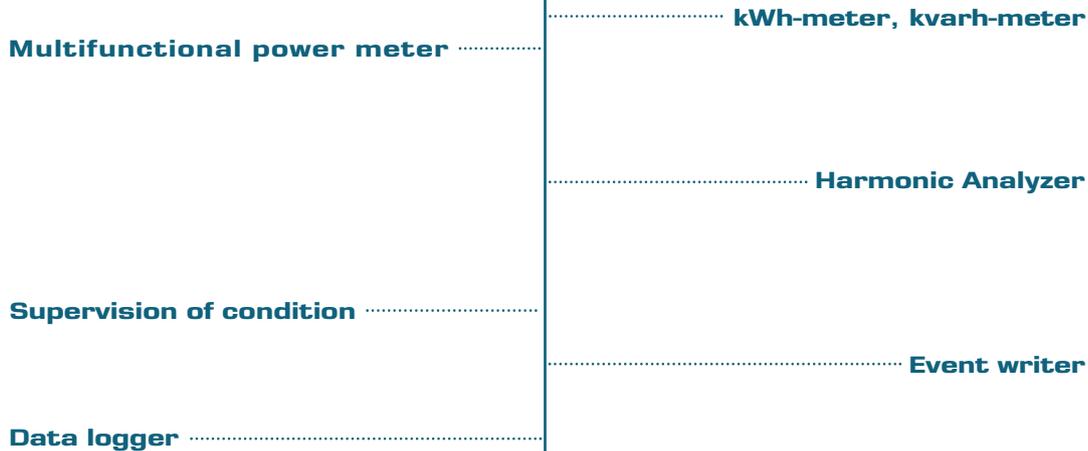
Applications:

- Replacement of analogue and digital instrumentation
- Consumption data collection and analysis (load profiles)
- Continuous power quality monitoring
- Cost center management, i.e. breakdown of energy costs, e.g. allocation per product
- Remote control and monitoring of equipment and processes
- Protection of networks
- “Sensor” for building management systems or PLC

Power analyser

excess value by additional functions

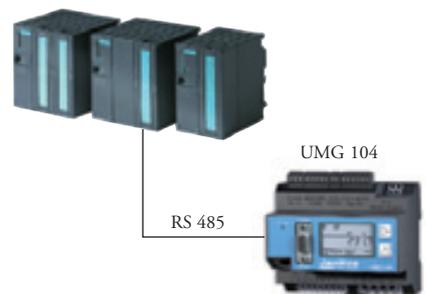
By integration of new functions, the UMG 104 exceeds all limits of digital panel meters:



The UMG 104 can accept up to 4 current and 4 voltage inputs, which allows monitoring of up to 4 single phase circuits. Potential applications include data centers, office buildings, motor control centers, etc.

Cost-effective, fast and safe communication Modbus and Profibus

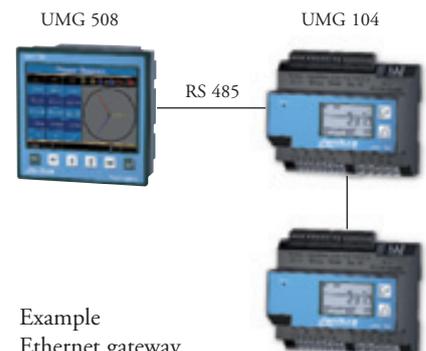
In many cases the costs for installation and communication (e.g. peripheral equipment for field buses) exceed those for the respective power meters. Integration of the UMG 104 in an existing field bus architecture means a fast, cost-efficient and reliable communication. Additional interfaces enable the integration of the power analysers into PLC or building automation systems. The use of open standards offers great flexibility to the user.



Example PLC communication with Profibus or Modbus

Easy integration of devices with Ethernet interface

With the Modbus interface function of UMG 104 you can connect via Modbus gateways (for example UMG 508, UMG 604, ...) to Ethernet. Each instrument with a Modbus RTU interface can be connected, if its data format and function codes correspond. Data can be scaled and labelled.

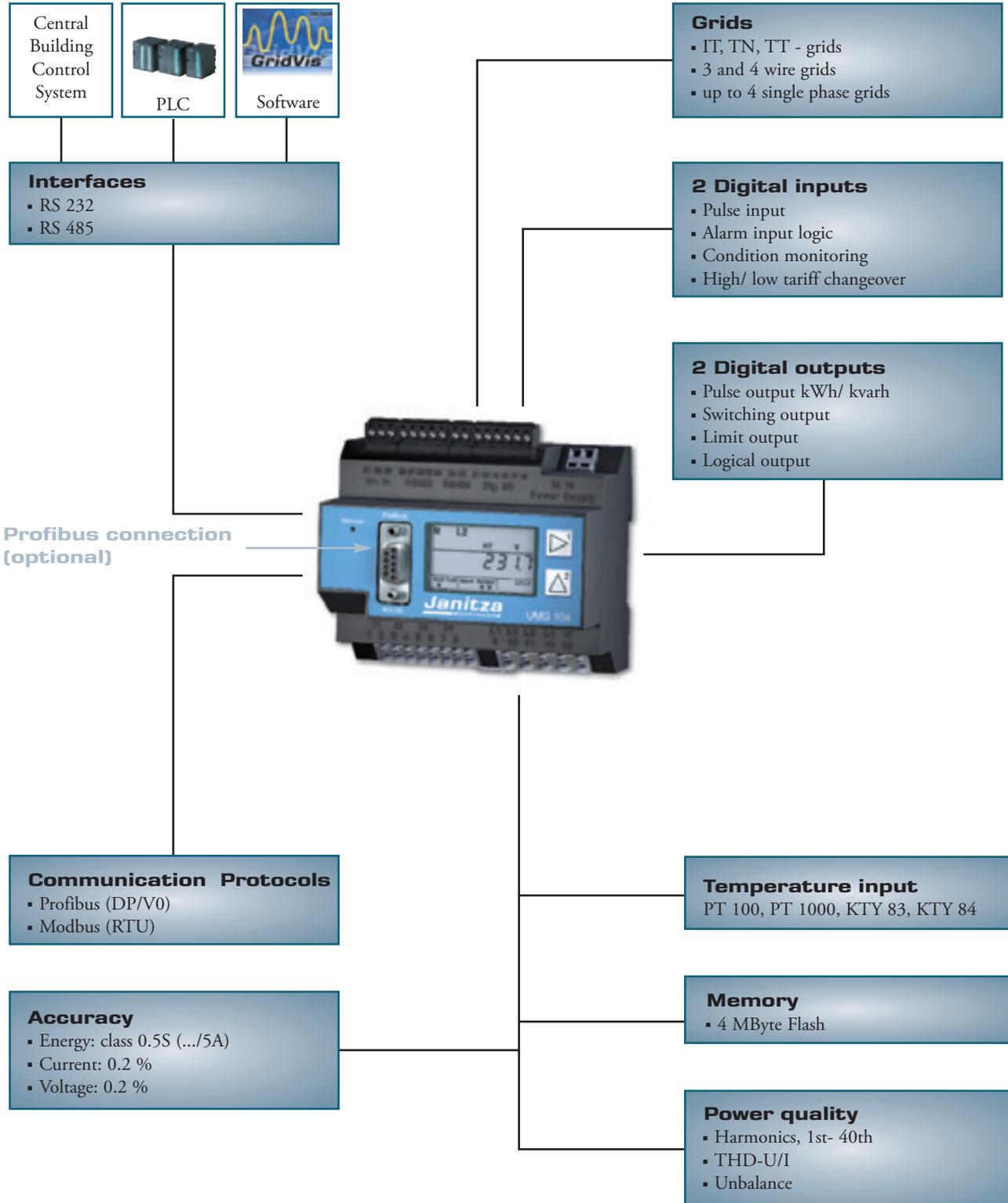


Example Ethernet gateway

Highspeed Modbus

The devices of UMG 104 series can transfer data via RS485 interface with a speed of up to 921.6 kB/s among each other device of this series.

UMG 104 overview



Functions and technical data

Overview of product variants												
Three/four phase power analysers; 50/ 60Hz; current transformer ..1/5A; including GridVis programming and analysis software.												
Supply Voltage			4 Voltage and 4 Current inputs	2 Digital inputs	2 Digital outputs	1 Temperature input	Interfaces		Profibus DP V0	Type	Item no.	
95...240 V AC, 135...340 V DC ±10% of nominal range	50...110V AC ±10% of nominal range	20...55V AC 20...77V DC					RS 232	RS 485				
●			●	●	●	●	●	●	-	UMG 104	52.20.001	
	●		●	●	●	●	●	●	-	UMG 104	52.20.003	
		●	●	●	●	●	●	●	-	UMG 104	52.20.005	
●			●	●	●	●	●	●	●	UMG 104 P	52.20.002	
	●		●	●	●	●	●	●	●	UMG 104 P	52.20.004	
		●	●	●	●	●	●	●	●	UMG 104 P	52.20.006	

- = not possible ● = included

Features		
Memory	Measurement data	4 MB
Clock		+/- 1 min per month
Operating hours counter		yes
Tarifs		4 x real energy / 4 x reactive energy

Peripherals		
Digital inputs	as status or pulse input	2
Digital outputs	as switching or pulse output	2
Temperature input	PT100, PT1000, KTY83, KTY84	1
Password protection		yes
Software	GridVis	yes

Communication		
Interfaces		
RS 232	9.6, 19.2, 38.4, 115.2 kbps	yes
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, variant P
Protocols		
Modbus RTU		yes
Profibus DP V0		yes, variant P



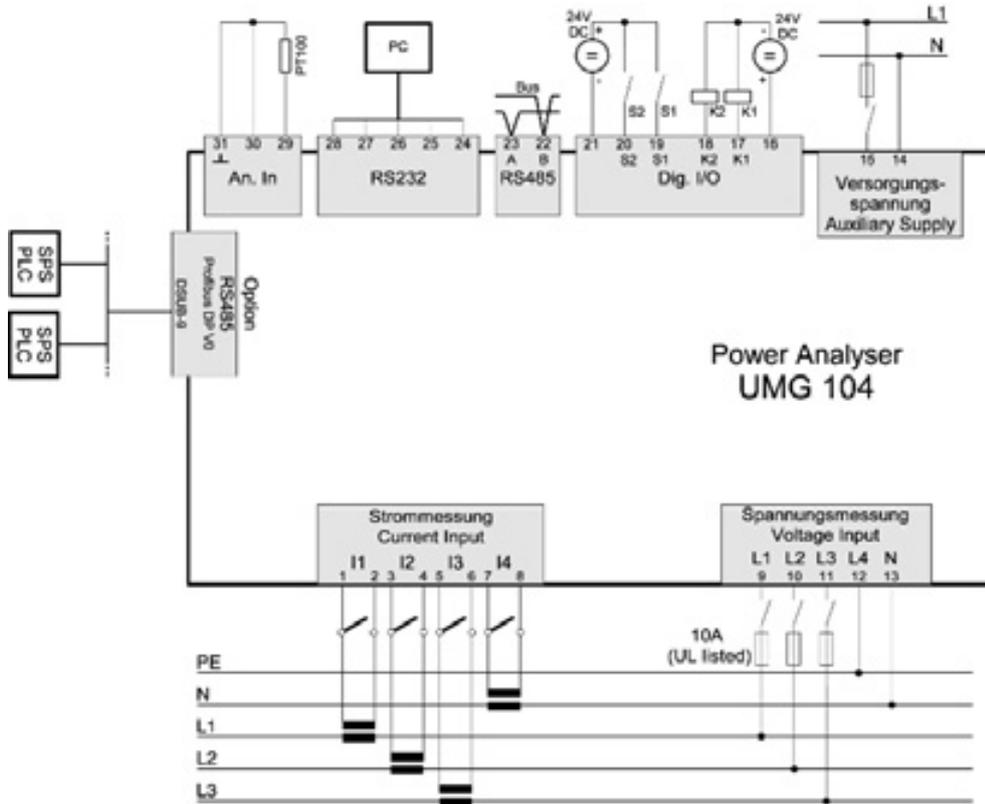
Technical data		
Nominal voltage	3-phase 4-wire grid (L-N, L-L)	277/480 V AC
	3-phase 3-wire grid (L-L)	480 V AC
Overtoltage class		300 V CATIII
Quadrants		4
Continuous Measurement		yes
Sampling rate, 8 channels	per channel	20 kHz
Weight		350 g
Dimensions		W=107.5 mm x D=90 mm x H=82 mm
Mounting	according to IEC EN60999-1/ DIN EN 50022	35 mm DIN rail
Working temperature		-10...55 °C
Connectable wires (U/I)	one wire, more wires, fine stranded wires	0.08 - 2.5 mm ²
	cable end sleeve	1.5 mm ²
Protection class	according to EN60529	IP 20

Measuring range		
Voltage L-N, AC (without PT)		10...300 V AC
Voltage L-L, AC (without PT)		17...520 V AC
Current (Transformer: x/1 und x/5 A)		0.005...7.5 A
Frequency of fundamental		45 ..65 Hz
Grids		IT, TN, TT
Measurement in grids		1ph, 2ph, 3 ph, 4 ph up to 4 times 1ph

Measured values		
Voltage	L1, L2, L3, L4, L1-L2, L2-L3, L1-L3	accuracy ±0.2%
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% (EN61557-12)
Cos-phi / power factor	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 0.5S (.../5 A), Class 1 (.../1 A)
Reactive energy (Kvarh)	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 ±0.01 Hz
Temperature input		accuracy ±1.5%
Average values		yes
Minimum and maximum values		yes

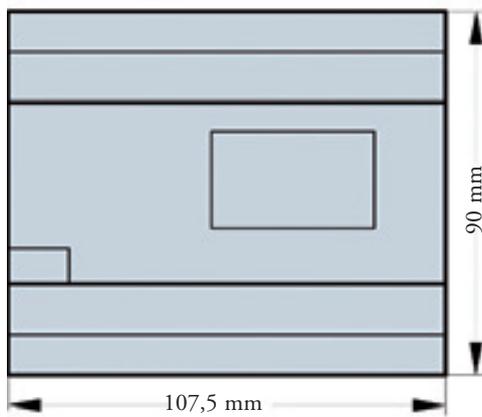
Power quality		
Harmonics, 1st- 40th	Current, voltage, real/reactive power (±) L1, L2, L3, L4	accuracy V, I Class 1 (EN61000-4-7)
Distortion factor THD-U in %	L1, L2, L3, L4	yes
Distortion factor THD-I in %	L1, L2, L3, L4	yes
Unbalance		yes
Positive/ Negative/ Zero Phase Sequence		yes
Inrush-currents	10 ms	no
Malfunction writer		no
Short-term interruptions		no

Connection diagram UMG 104



Dimensional drawing

front view



side view

