UMG 96RM
Multifunctional power analyzer
for panel mounting 96 x 96 mm

Communication (device-specific)
- Modbus (RTU)
- Profinet
- TCP/IP (Option)
- M-BUS

Power quality
- Harmonics up to 40th harmonic
- Rotary field components
- Distortion factor THD-U/THD-I
- Wave form display (Option)

Interfaces (device-specific)
- RS485
- Profinet
- M-Bus
- Ethernet / USB

Networks
- TN-, TT-, IT-networks
- 3- and 4-phase networks
- up to 4 single-phase networks

Up to 4 digital inputs
- Pulse input
- Logic input
- State monitoring

Accuracy of measurement
- Energy: class 0.3S (../5 A)
- Current and voltage: 0.2%

Up to 6 digital outputs
- Pulse output kWh / kvarh
- Switch output
- Threshold value output
- Logic output
- Remote via Modbus / Profinet

Measured data memory (device-specific)
- up to 256 MB Flash

Power Grid Monitoring Software
- Free GridVis® Basic

www.mueller-ziegler.de
Application
The UMG 96RM multifunction measuring device is primarily designed for use in low-voltage and medium-voltage distribution systems. The device measures harmonics up to the 40th harmonic, has rotating field components and can display data in wave form. The device has up to four digital inputs and 6 digital outputs. The measurement data memory is 256 MB.

Special features

- Compact construction saves space and costs during installation
- Seamless and sustained recording thanks to large measured data memory or via the online data acquisition (e.g. GridVis®-Service)
- Comprehensive communications options and protocols
- Multifaceted, pre-defined reports for power quality and energy consumption analysis (via GridVis®-Service)
- High data security and redundancy
- Simple report generation at the press of a button or automatically in accordance with defined time plans
- Precision measurement results provide an effective infrastructure as well as high production availability
- Generic Modbus profile: Arbitrary Modbus-capable devices and systems from other manufacturers can be incorporated and visualised in the monitoring solutions
- Long-term availability of the measurement devices guarantees simple retrofitting with system expansions

Main features

Energy data acquisition & load profile
- Detailed acquisition of the energy data and the load profile
- More transparency in energy supply through energy analyses
- Safer design of the power distribution systems

Cost centre analysis
- Determination of energy costs
- Breakdown and allocation of energy consumers

Energy management systems (ISO 50001)
- Continuous increase in energy efficiency
- Cost reduction
- UMG 96RM series multifunctional power analysers are an important part of energy management systems

Transparency of energy supply
- More transparency through a multi-stage, scalable measurement system
- Acquisition of individual events through continuous measurement with high resolution

Power quality monitoring
- Notification of inadequate power quality
- Introduction of measures to address network problems
- Prevention of production downtimes
- Significantly longer service life for equipment
- Improved sustainability

Measurement accuracy of 0.2 % (V), kWh class = 0.5S
- High sampling rate at 21.3 kHz
- Reliable measurement accuracy of 0.2 % (V)
- Effective energy class (kWh): 0.5S
Energy meter with 8 tariffs, effective and reactive energy

- Energy measurement in 4 quadrants, each with 8 tariffs for effective and reactive energy
- Safe and precise acquisition of operational values for individual electrical loads

Communications options

Ethernet, Profibus, Modbus, M-Bus, ...

- Numerous interfaces and protocols, guaranteeing an easy system connection (energy management system, PLC, SCADA, BMS)

Large measurement data memory

- Saving of measurement data possible over very long periods of time
- Recording freely user configurable

Harmonics analyser

- Harmonics analysis up to 40th harmonic
- Information about power quality, grid disturbances and possible „network polluters“

Pluggable screw terminals

- Convenient installation even where spaces are tight

Backlight

- Large, high-contrast LCD display with backlighting
- Very good readability and intuitive operation, even in poor lighting conditions

Basic device

- RS485 interface with Modbus protocol and 2 digital outputs enable quick and low-cost monitoring of power quality and energy consumption

Profibus and digital IOs

- The Profibus connection is used in systems where the UMG 96RM-P is to be incorporated into the automation environment (PLC controllers)

M-Bus

- The UMG 96RM-M can be simply and cost-effectively integrated into consumption data acquisition systems via the M-Bus connection.
- The M-Bus is primarily used for the acquisition of consumption data collection from various different consumption meters, such as water, gas, heat or current.

Ethernet (TCP/IP) with the UMG 96RM-EL

- Simple integration into the Ethernet (LAN) network
- Fast and reliable data communication

4th current transformer input

- Continuous monitoring of the N-conductor by means of the 4th current input
- Available with variants UMG 96RM-P and UMG 96RM-CBM
Dimensions

Cut out: \(92 \times 92 \times 44 \text{ mm}\)

The illustrations shown here are examples. Further dimensional drawings and connection diagrams are available on request.

Typical connection variant

The illustration shown here is an example. Further connection diagrams are available on request.

Fig.: Battery insertion on the rear (UMG 96RM-CBM and UMG 96RM-P)

Fig.: UMG 96RM-PN with Profinet interface
## Technical data

### Supply voltage

#### Option 230 V

- **Nominal range**: 90 V - 277 V (50/60 Hz) oder DC 90 V - 250 V, 300 V CAT III
- **Power consumption**:
  - max. 4,5 VA / 2 W (RM-M)
  - max. 5,5 VA / 3 W (RM)
  - max. 5 VA / 2 W (RM-EL)
  - max. 6 VA / 3 W (RM-CBM)
  - max. 7,5 VA / 4 W (RM-P)
  - max. 8,5 VA / 5 W (RM-PN)

#### Option 24 V

- **Nominal range**: 24 V - 90 V AC/DC, 300 V CAT III
- **Power consumption**:
  - max. 2,5 VA / 2 W (RM-M)
  - max. 3,5 VA / 2 W (RM)
  - max. 4,5 VA / 3 W (RM-EL)
  - max. 5 VA / 3 W (RM-CBM)
  - max. 6,5 VA / 5 W (RM-P)
  - max. 7 VA / 5 W (RM-PN)
- **Operating range**: +/- 10% of nominal range
- **Internal fuse (not replaceable)**: Type T1A / 250 VDC / 227 VAC acc. to IEC 60127
- **Recommended overcurrent protection device for line protection (certified under UL)**:
  - **Option 230 V**: 6-16 A (Char. B)
  - **Option 24 V**: 1 - 6 A

### Voltage measurement

- **3-phase 4-wire systems with rated voltages up to**: 277/480 V (+/- 10%)
- **3-phase 3-wire systems unearthed, with rated voltages up to**: IT 480 V (+/1 10%)
- **Overvoltage category**: 300 V CAT III
- **Measurement voltage surge**: 4 kV
- **Metering range L-N**: 0 V - 300 Vrms (max. overvoltage 520 Vrms)
- **Metering range L-L**: 0 V - 520 Vrms (max. overvoltage 900 Vrms)
- **Measurement range exceedance L-N**: U_L > 300 Vrms
- **Resolution**: 0,01 V
- **Crest factor**: 2,45 (related to the measurement range)
- **Impedance**: 3 MΩ / phase
- **Power consumption**: ca. 0,1 VA
- **Sampling rate**: 21,33 kHz (50 Hz), 25,6 kHz (60 Hz) for each measur. channel
- **Frequency of the fundamental oscillation**: 45 Hz ... 65 Hz, resolution 0,01 Hz

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1. The UMG 96RM can only determine measured values if a voltage L1-N greater than 20 Veff (4-wire measurement) or a voltage L1-L2 greater than 34 Veff (3-wire measurement) is applied at the voltage measurement input V1.
### Current measurement
- Rated current: 5 A
- Metering range: 0-6 Arms
- Crest factor: 1.98
- Resolution: 0.1 mA (display 0.01 A)
- Overvoltage category: 300 V CAT II
- Measurement voltage surge: 2 KV
- Power consumption: ca. 0.2 VA (Ri = 5 m Ω)
- Overload for 1 sec.: 120 A (sinusoidal)
- Sampling rate: 21.33 kHz (50 Hz), 25.6 kHz (60 Hz) for each measurm. channel

### Terminal connection capacity
- Supply voltage: Connectable conductors (only one conductor can be connected per terminal)
- Single core, multi-core, fine-stranded: 0.2 - 2.5 mm², AWG 26-12
- Terminal pins, core end sheath: 0.2 - 2.5 mm²
- Tightening torque: 0.4 - 0.5 Nm (3.54 - 4.43 lbf in)
- Stripping length: 7 mm (0.2756 in)

### Type overview / prices

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| Measurement data recording | | | | | | |
| Current measurement channels | 3 | 3 | 3 | 4 | 4 | 4 (+2) |
| Memory (Flash) | - | - | - | 256 MB | 256 MB | - |
| Battery | - | - | - | Type CR2032 3V, Li-Mn | Type CR2032 3V, Li-Mn | - |
| Clock | - | - | - | - | - | - |

| Digital inputs and outputs | | | | | | |
| Digital inputs | - | - | - | 4 | 4 | 3 |
| Digital outputs (as switch or pulse output) | 2 | 2 | - | 6 | 6 | 2 (+3) |

| Mechanical properties | | | | | | |
| Device dimensions in mm (W x H x D) | 96 x 96 x approx. 48 | 96 x 96 x approx. 48 | 96 x 96 x approx. 48 | 96 x 96 x approx. 78 | 96 x 96 x approx. 78 | 96 x 96 x approx. 78 |
| Type | UMG 96RM | UMG 96RM-M | UMG 96RM-EL | UMG 96RM-CBM | UMG 96RM-P | UMG 96RM-PN |
| Version UH 230 V | 52.22.061 | 52.22.069 | 52.22.068 | 52.22.066 | 52.22.064 | 52.22.090 |
| Price | 282,00 € | 282,00 € | 314,00 € | 397,00 € | 424,00 € | 515,00 € |
| Version UH 24 V | 52.22.070 | 52.22.073 | 52.22.072 | 52.22.067 | 52.22.065 | 52.22.091 |
| Price | 282,00 € | 282,00 € | 314,00 € | 397,00 € | 424,00 € | 515,00 € |