# MULTIFUNCTIONAL ENERGY ANALYZER

**INTERFACES (DEVICE SPECIFIC)**
- RS-485
- Profibus
- Profinet
- M-Bus
- USB

**COMMUNICATION (DEVICE SPECIFIC)**
- Modbus RTU
- Profibus DP Vo
- Profinet
- TCP/IP
- M-Bus

**POWER QUALITY**
- Harmonics up to the 40th harmonic
- Rotating field components
- Distortion factor THD-U / THD-I

**ENERGY MANAGEMENT**
- Load profiles
- 8 tariffs

**MEASURING ACCURACY**
- Class 0.2S
- Current 0.2%
- Voltage 0.2%

**UP TO 6 DIGITAL OUTPUTS**
- Pulse output
- Switch output
- Limit value output
- Logic output
- Remote via Modbus/Profibus

**UP TO 4 DIGITAL INPUTS**
- Pulse input
- Logic input
- State monitoring

# UMG 96RM SERIES


## ENERGY MANAGEMENT

Extensive energy measurement data, high accuracy: 0.5S active energy

## COMMUNICATION

RS-485, Modbus RTU onboard in basic device, various interfaces

## DISPLAY

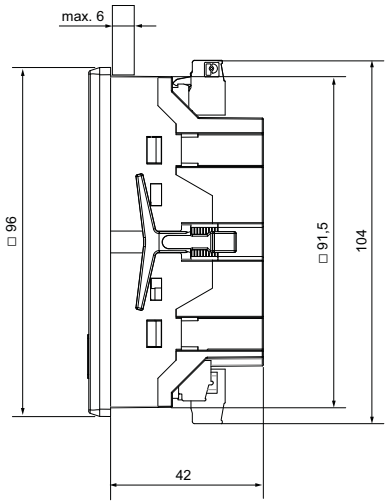
Simple 2-button operation/ LED backlight

**MEASUREMENT**

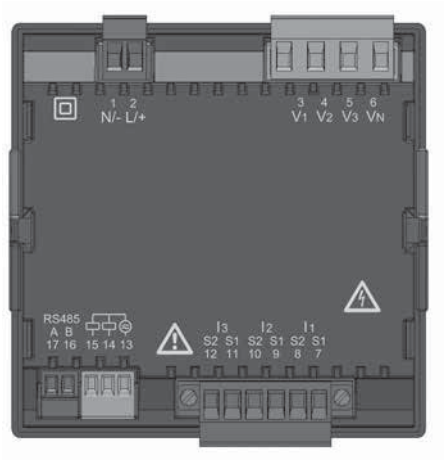
## UMG 96RM – DIMENSIONED DRAWING

*All dimensions in mm*

Side view, UMG 96RM

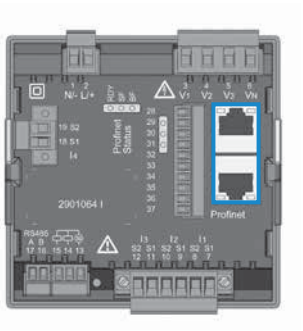



Rear view, UMG 96RM (basic device)

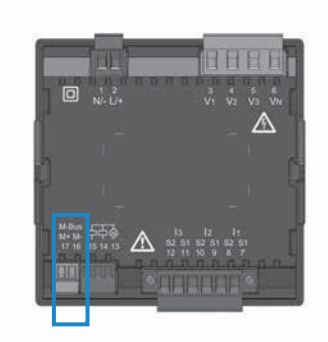



*Cutout dimensions: $92^{+0.8}$ x $92^{+0.8}$ mm*

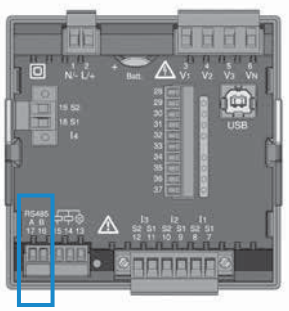
*The illustrations shown here are examples. Further dimensional and connection diagrams can be requested or viewed on our homepage.*



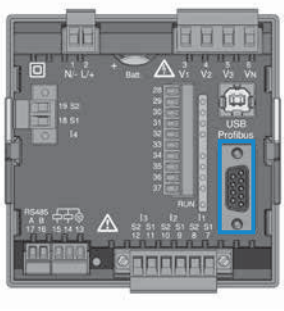

*Rear view UMG 96RM-PN*
*Profinet variant*



*Rear view UMG 96RM-M*
*M-Bus variant*

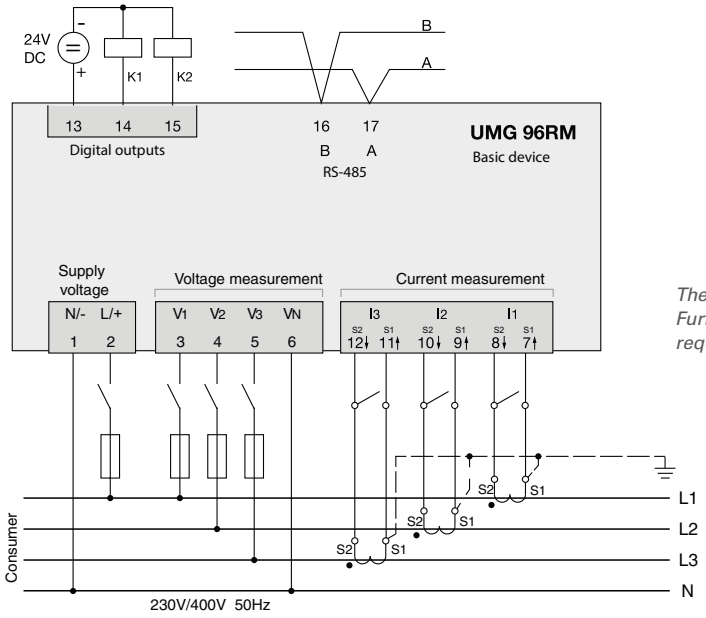



*Rear view UMG 96RM-CBM*
*Modbus variant*




*Rear view UMG 96RM-P*
*Profibus variant*

## UMG 96RM – CONNECTION EXAMPLE




*The illustration shown here is an example. Further connection diagrams can be requested or viewed on our homepage.*


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

*Fig.: UMG 96RM-PN with Profinet interface*

## UMG 96RM SERIES – TECHNICAL DATA

| | UMG 96RM*1 | UMG 96RM-M*1 | UMG 96RM-CBM*1 | UMG 96RM-P*1 | UMG 96RM-PN*1 |
|---|---|---|---|---|---|
| **PART NUMBER (90–277 VAC/90–250 VDC)** | **52.22.061** | **52.22.069** | **52.22.066** | **52.22.064** | **52.22.090** |
| **PART NUMBER (24–90 VAC/90–250 VDC)** | **52.22.070** | **52.22.073** | **52.22.067** | **52.22.065** | **52.22.091** |
| Interfaces | RS-485 | M-Bus | RS-485, USB | RS-485, Profibus, USB | RS-485, Ethernet, Profinet |
| **PROTOCOLS** | | | | | |
| Modbus RTU | ● | – | ● | ● | ● |
| Modbus TCP | – | – | – | – | ● |
| Profibus DP V0 | – | – | – | ● | – |
| Profinet | – | – | – | – | ● |
| M-Bus | – | ● | – | – | – |
| DHCP or DCP | – | – | – | – | ● |
| ICMP (ping) | – | – | – | – | ● |
| **MEASUREMENT DATA RECORDING** | | | | | |
| Current measurement channels | 3 | 3 | 4 | 4 | 4 (+2) |
| Memory size / recording duration (according to factory setting) | – | – | 256 MB / approx. 2 months | 256 MB / approx. 2 months | – |
| Battery | – | – | Type CR2032 3 V, Li-Mn | Type CR2032 3 V, Li-Mn | – |
| Clock | – | – | ● | ● | – |
| **DIGITAL INPUTS AND OUTPUTS** | | | | | |
| Digital inputs | – | – | 4 | 4 | 3*3 |
| Digital outputs (as switching or pulse output) | 2 | 2 | 6 | 6 | 2 (+3)*3 |
| **MECHANICAL PROPERTIES** | | | | | |
| Device dimensions in mm (W x H x D)*2 | 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 |

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

*• = included – = not included*

**1 UL certification included.*
**2 For exact device dimensions, see operating manual.*
**3 Optional 3 digital inputs or outputs (no pulse output)*

## GENERAL

| | |
|---|---|
| Backlight service life | 40000 h (50% of the original brightness) |

## TRANSPORT AND STORAGE

The following information applies to devices that are transported or stored in their original packaging.

| | |
|---|---|
| Free fall | 1 m |
| Temperature | K55 (–25 °C to +70 °C) (–13 °F ..to 158 °F) |
| Relative humidity | 0 to 90% RH |

## ENVIRONMENTAL CONDITIONS DURING OPERATION

The UMG 96RM is intended for weather-protected, stationary use.
Protection class II according to IEC 60536 (VDE 0106, Part 1).

| | |
|---|---|
| Rated temperature range | K55 (–10 °C ... +55 °C) (14 °F ..to 131 °F) |
| Relative humidity | 0 to 75% RH |
| Operating elevation | 0 ... 2000 m above sea level |
| Pollution degree | 2 |
| Mounting orientation | As desired |
| Ventilation | No forced ventilation required |
| Protection against foreign matter and water<br>– Front<br>– Rear<br>– Front with seal | <br>IP40 according to EN60529<br>IP20 according to EN60529<br>IP54 according to EN60529 |

## SUPPLY VOLTAGE

| | |
|---|---|
| Option 230 V:<br>Nominal range<br>Power consumption | <br>90 V - 277 V (50/60 Hz) or DC 90 V - 250 V; 300 V CAT III<br>max. 4.5 VA / 2 W (RM-M)<br>max. 5.5 VA / 3 W (RM)<br>max. 6 VA / 3 W (RM-CBM)<br>max. 7.5 VA / 4 W (RM-P)<br>max. 8.5 VA / 5 W (RM-PN) |
| Option 24 V:<br>Nominal range<br>Power consumption | <br>24 V - 90 V AC / DC; 150 V CAT III<br>max. 2.5 VA / 2 W (RM-M)<br>max. 4.5 VA / 3 W (RM)<br>max. 5 VA / 3 W (RM-CBM)<br>max. 6.5 VA / 5 W (RM-P)<br>max. 7 VA / 5 W (RM-PN) |
| Operating range | ±10% of nominal range |
| Internal fuse, not replaceable | Type T1A / 250 V/277 V according to IEC 60127 |
| Recommended overcurrent protective device for the line protection (UL approval) | Option 230 V: 6 - 16 A<br>Option 24 V: 1 - 6 A<br>(Char. B) |

## CONNECTION CAPACITY OF THE TERMINALS (SUPPLY VOLTAGE)
## CONNECTIBLE CONDUCTORS. ONLY ONE CONDUCTOR MAY BE CONNECTED PER TERMINAL!

| | |
|---|---|
| Single core, multi-core, fine-stranded | 0.2 - 2.5 mm2, AWG 26 - 12 |
| Terminal pins, wire ferrules | 0.2 - 2.5 mm2 |
| Tightening torque | 0.4 – 0.5 Nm (3.54 - 4.43 lbf in) |
| Strip length | 7 mm (0.2756 in) |
| Measuring range L-N | 0[1] ... 300 Vrms (max. overvoltage 400 Vrms) |

## VOLTAGE MEASUREMENT

| | |
|---|---|
| Three-phase 4-conductor systems with rated voltages up to | 277 V/480 V (±10%) |
| Three-phase 3-conductor systems, non-grounded, with rated voltages up to | IT 480 V (±10%) |
| Overvoltage category | 300 V CAT III |
| Rated surge voltage | 4 kV |
| Measuring range L-N | 0[1] .. 300 Vrms (max. overvoltage 520 Vrms) |
| Measuring range L-L | 01) .. 520 Vrms (max. overvoltage 900 Vrms) |
| Resolution | 0.01 V |
| Crest factor | 2.45 (related to the measuring range) |
| Impedance | 3 MΩ/phase |
| Power consumption | approx. 0.1 VA |
| Sampling frequency | 21.33 kHz (50 Hz), 25.6 kHz (60 Hz) per measurement channel |
| Frequency of the fundamental oscillation<br>Resolution | 45 Hz ... 65 Hz<br>0.01 Hz |

*1) The UMG 96RM can only determine measured values if a voltage L1-N of greater than 20 Vrms (4-wire measurement) or a voltage L1-L2 of greater than 34 Vrms (3-wire measurement) is present at voltage measurement input V1.*

## CURRENT MEASUREMENT

| | |
|---|---|
| Nominal current | 5 A |
| Measuring range | 0 ... 6 Arms |
| Crest factor | 1.98 |
| Resolution | 0.1 mA (display 0.01 A) |
| Overvoltage category | 300 V CAT II |
| Rated surge voltage | 2 kV |
| Power consumption | approx. 0.2 VA (Ri = 5 mΩ) |
| Overload for 1 s | 120 A (sinusoidal) |
| Sampling frequency | 21.33 kHz (50 Hz), 25.6 kHz (60 Hz) per measurement channel |

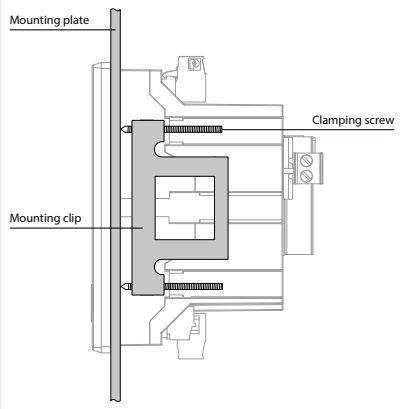



*Fig.: The mounting into a switchboard is done via the lateral fastening clips (UMG 96RM-P / UMG 96RM-CBM)*

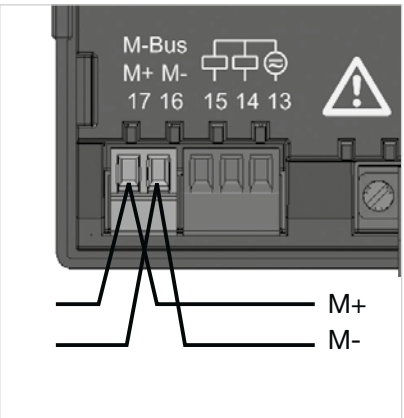



*Fig.: M-Bus interface with 2-pole plug contact*

*Fig.: 2-pole plug contact with cable connection (cable type: 2 x 0.75 mm²) via twin wire ferrules*