

Power Analyser

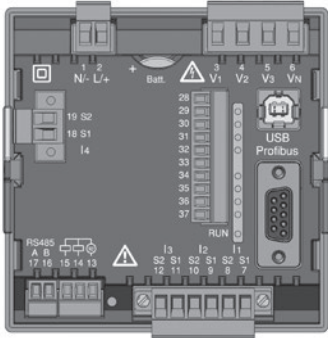
UMG 96RM-P

UMG 96RM-CBM

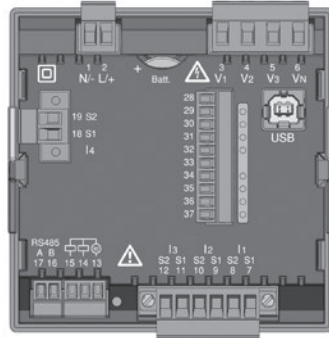
Data sheet

DEVICE VIEWS

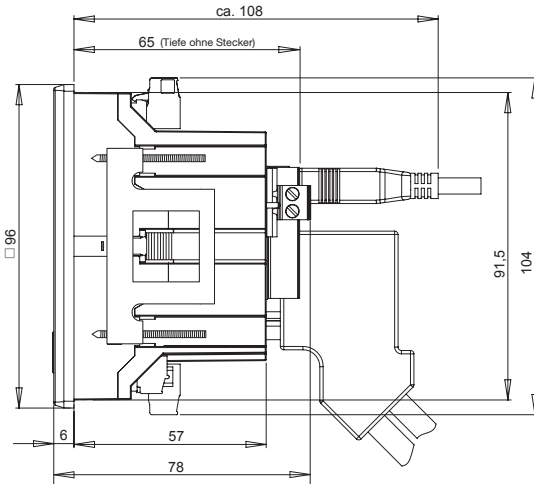
Rear view UMG 96RM-P



Rear view UMG 96RM-CBM

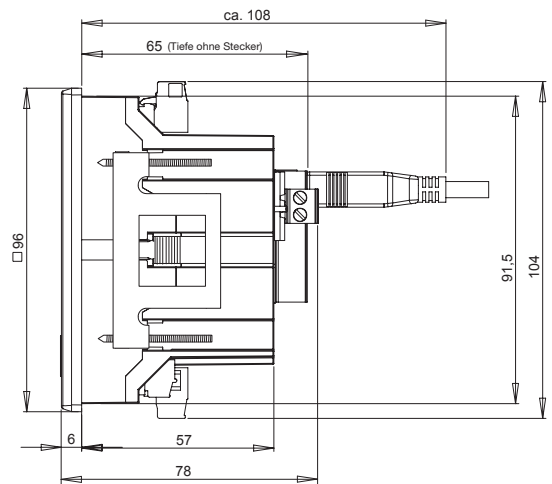


Side view of UMG 96RM-P
with USB and Profibus connectors inserted



All dimensions in mm

Side view of UMG 96RM-CBM
with USB connector inserted



Cut-out size: $92^{+0,8}$ mm x $92^{+0,8}$ mm.

TECHNICAL DATA

| General | |
|--|---|
| Net weight (with attached connectors) | approx. 358g |
| Packaging weight (including accessories) | approx. 790g |
| Battery | Lithium battery CR2032, 3V (approval i.a.w. UL 1642) |
| Service life of the backlight | 40000h (after this period of time the background lighting efficiency will reduce by approx. 50 %) |

| Transport and storage | |
|---|------------------------|
| The following information applies for devices that are transported or stored in their original packaging. | |
| Free fall | 1m |
| Temperature | K55 (-25 °C to +70 °C) |
| Relative humidity | 0 to 90% RH |

| Ambient conditions during operation | |
|---|-------------------------------------|
| The UMG 96RM-CBM/-P is intended for use in weather-protected, fixed locations. Protection class II according to IEC 60563 (VDE 0106, part 1). | |
| Rated temperature range | K55 (-10°C .. +55°C) |
| Relative humidity | 0 to 75 % RH |
| Operational altitude | 0 .. 2000 m above sea level |
| Degree of pollution | 2 |
| Installation position | vertical |
| Ventilation | Forced ventilation is not required. |
| Foreign body and water protection | |
| - Front | IP40 according to EN60529 |
| - Back | IP20 according to EN60529 |
| - Front with seal | IP54 according to EN60529 |

| Power supply voltage | | |
|--|--|---|
| Option 230V | Nominal range | 90V - 277V (50/60Hz) or DC 90V - 250V; 300V CATIII |
| | Power consumption | UMG 96RM-P: max. 7,5VA / 4W UMG 96RM-CBM: 6VA / 3W |
| Option 24V | Nominal range | 24V - 90V AC / DC; 150V CATIII |
| | Power consumption | UMG 96RM-P: max. 6,5VA / 5W UMG 96Rm-CBM: 5VA / 3W |
| Operating range | +-10% of nominal range | |
| Internal fuse, not replaceable | Typ T1A / 250V/277V according IEC 60127 | |
| Recommended overcurrent protection device for line protection (certified under UL) | Option 230V: 6 - 16A Option 24V: 1 - 6A (Char. B) | |

Recommendation for a maximum number of devices on a circuit breaker:

Option 230V : Circuit breaker B6A: max. 4 devices / Circuit breaker B16A: max. 11 devices

Option 24V : Circuit breaker B6A: max. 3 devices / Circuit breaker B16A: max. 9 devices

| Connection capacity of the terminals (power supply) | |
|---|--|
| Connectable conductor. Only one conductor may be connected per contact point! | |
| Single-wire, multi-wire, finely stranded conductor | 0.2 - 2.5mm ² , AWG 26 - 12 |
| Pin terminals, ferrules | 0.2 - 2.5mm ² |
| Tightening torque | 0.4 - 0.5Nm |
| Stripping length | 7mm |

| Digital outputs | |
|---|------------------------|
| 6 digital outputs, semi-conductor relay, not short circuit protected. | |
| Switching voltage | max. 33V AC, 60V DC |
| Switching current | max. 50mAeff AC/DC |
| Reaction time | 10/12 periods + 10ms * |
| Pulse output (energy pulses) | max. 50Hz |

* Reaction time at 50 Hz, for example: 200 ms + 10 ms = 210 ms

| Digital inputs | |
|--|-------------------------------------|
| 4 optional digital outputs, semiconductor relays, not short-circuit proof. | |
| Maximum counter frequency | 20Hz |
| Input signal present | 18V .. 28V DC (typical 4mA) |
| Input signal not present | 0 .. 5V DC, current less than 0.5mA |

| Cable lengths (digital inputs and outputs) | |
|---|------------|
| Up to 30m | Unshielded |
| More than 30m | Shielded |

| Connection capacity of the terminals (digital in-/outputs) | |
|---|---------------------------------------|
| Rigid/flexible | 0.14 - 1,5mm ² , AWG 28-16 |
| Flexible with ferrules without plastic sleeve | 0.20 - 1.5mm ² |
| Flexible with ferrules with plastic sleeve | 0.20 - 1.5mm ² |
| Tightening torque | 0.20 - 0.25Nm |
| Stripping length | 7mm |

| Serial interfaces | |
|---|---|
| RS485 - Modbus RTU/slave | 9.6kbps, 19.2kbps, 38.4kbps, 57.6 kbps, 115.2kbps |
| Stripping length | 7mm |
| USB (receptacle) | USB 2.0, type B, max. transfer rate 921.6 kbps |
| Profibus (only UMG96RM-P) - Profibus DP/V0 - Receptacle | - 9.6kbps to 12Mbps - D-sub, 9-pole |

| Connection capacity of the terminals (RS485) | |
|---|---------------------------|
| Single-wire, multi-wire, finely stranded conductor | 0.20 - 1.5mm ² |
| Pin terminals, ferrules | 0.20 - 1.5mm ² |
| Tightening torque | 0.20 - 0.25Nm |
| Stripping length | 7mm |

| Voltage metering | |
|---|---|
| Three-phase, 4-wire systems with nominal voltages up to | 277V/480V (+-10%) |
| Three-phase, 3-wire systems, unearthed, with nominal voltages up to | IT 480V (+-10%) |
| Overvoltage category | 300V CAT III |
| Rated surge voltage | 4kV |
| Metering range L-N | 0 ¹⁾ .. 300 Vrms (max. overvoltage 520 Vrms) |
| Metering range L-L | 0 ¹⁾ .. 520Vrms (max. overvoltage 900Vrms) |
| Resolution | 0.01V |
| Crest factor | 2.45 (relative to the metering range) |
| Impedance | 3M Ω /phase |
| Power consumption | approx. 0.1VA |
| Sampling rate | 21.33kHz (50Hz), 25.6 kHz (60Hz) per measuring channel |
| Mains frequency - Resolution | 45Hz .. 65Hz 0.01Hz |

- ¹⁾ The UMG 96RM-P/CBM can only detect measurements when a voltage L1-N greater than 20V eff (4-wire measurement) at voltage input V1 or a voltage L1-L2 greater than 34V eff (3-wire measurement) is applied.

| Current measurement I1 - I4 | |
|------------------------------------|--|
| Rated current | 5A |
| Measurement range | 0 .. 6Arms |
| Crest factor | 1.98 |
| Resolution | 0.1mA (Display 0.01A) |
| Overvoltage category | 300V CAT II |
| Measurement surge voltage | 2kV |
| Power consumption | ca. 0.2 VA (Ri=5m Ω) |
| Overload for 1 sec. | 120A (sinusoidal) |
| Sampling frequency | 21.33kHz (50Hz), 25.6 kHz (60Hz) per measurement channel |

| Connection capacity of the terminals (voltage and current measurement) | | |
|---|--------------------------------------|---------------------------------------|
| Connectable conductor. Only one conductor may be connected per contact point! | | |
| | Current | Voltage |
| Single-wire, multi-wire, finely stranded conductor | 0.2 - 2.5mm ² , AWG 26-12 | 0.08 - 4.0mm ² , AWG 28-12 |
| Pin terminals, ferrules | 0.2 - 2.5mm ² | 0.2 - 2.5mm ² |
| Tightening torque | 0.4 - 0.5Nm | 0.4 - 0.5Nm |
| Stripping length | 7mm | 7mm |

FUNCTION PERFORMANCE CHARACTERISTICS

| Function | Symbol | Accuracy class | Metering range | Display range |
|---------------------------------------|---------------|---|----------------|-----------------------|
| Total real power | P | 0.5 ⁵⁾ (IEC61557-12) | 0 .. 5.4 kW | 0 W .. 999 GW * |
| Total reactive power | QA, Qv | 1 (IEC61557-12) | 0 .. 5.4 kvar | 0 varh .. 999 Gvar * |
| Total apparent power | SA, Sv | 0.5 ⁵⁾ (IEC61557-12) | 0 .. 5.4 kVA | 0 VA .. 999 GVA * |
| Total active energy | Ea | 0.5 ⁵⁾ (IEC61557-12) 0.5S ⁵⁾ (IEC62053-22) | 0 .. 5.4 kWh | 0 Wh .. 999 GWh * |
| Total reactive energy | ErA, ErV | 1 (IEC61557-12) | 0 .. 5.4 kvarh | 0 varh .. 999 Gvarh * |
| Total apparent energy | EapA, EapV | 0.5 ⁵⁾ (IEC61557-12) | 0 .. 5.4 kVAh | 0 VAh .. 999 GVAh * |
| Frequency | f | 0.05 (IEC61557-12) | 45 .. 65 Hz | 45.00 Hz .. 65.00 Hz |
| Phase current | I | 0.2 (IEC61557-12) | 0 .. 6 Arms | 0 A .. 999 kA |
| Measured neutral conductor current I4 | IN | 1 (IEC61557-12) | 0 .. 6 Arms | 0 A .. 999 kA |
| Calculated neutral conductor current | INc | 1 (IEC61557-12) | 0.03 .. 25 A | 0.03 A .. 999 kA |
| Voltage | U L-N | 0.2 (IEC61557-12) | 10 .. 300 Vrms | 0 V .. 999 kV |
| Voltage | U L-L | 0.2 (IEC61557-12) | 18 .. 520 Vrms | 0 V .. 999 kV |
| Displacement factor | PFA, PFV | 0.5 (IEC61557-12) | 0.00 .. 1.00 | 0.00 .. 1.00 |
| Short-term flicker, long-term flicker | Pst, Plt | - | - | - |
| Voltage dips (L-N) | Udip | - | - | - |
| Voltage surges (L-N) | Uswl | - | - | - |
| Transient overvoltages | Utr | - | - | - |
| Voltage interruptions | Uint | - | - | - |
| Voltage unbalance (L-N) ¹⁾ | Unba | - | - | - |
| Voltage unbalance (L-N) ²⁾ | Unb | - | - | - |
| Voltage harmonics | Uh | Class 1 (IEC61000-4-7) | up to 2.5 kHz | 0 V .. 999 kV |
| THD of the voltage ³⁾ | THDu | 1.0 (IEC61557-12) | up to 2.5 kHz | 0 % .. 999 % |
| THD of the voltage ⁴⁾ | THD-Ru | - | - | - |
| Current harmonics | Ih | Class 1 (IEC61000-4-7) | up to 2.5 kHz | 0 A .. 999 kA |
| THD of the current ³⁾ | THDi | 1.0 (IEC61557-12) | up to 2.5 kHz | 0 % .. 999 % |
| THD of the current ⁴⁾ | THD-Ri | - | - | - |
| Mains signal voltage | MSV | - | - | - |

¹⁾ Referred to amplitude.

²⁾ Referred to phase and amplitude.

³⁾ Referred to mains frequency.

⁴⁾ Referred to root mean square value.

⁵⁾ Accuracy class 0.5/ 0.5S with ..5 A transformer.
Accuracy class 1 with ..1 A transformer.

* The display returns to 0 W when the maximum total energy values are reached.

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