

# OM 352/652



## OM 352UNI VOLTMETER AND AMMETER

PROCESS MONITOR

OHMMETER

THERMOMETER FOR Pt, Ni, Cu

THERMOMETER  
FOR THERMOCOUPLES

DISPLAY UNIT FOR LINEAR  
POTENTIOMETERS

## OM 352AC

AC VOLTMETER AND AMMETER

## OM 352DC

DC VOLTMETER AND AMMETER

## OM 652UC

UNIVERSAL COUNTER

### Description

The OM 352 model series are simple 3 1/2 digit panel programmable instruments designed for maximum usefulness and user comfort while maintaining its fair price. Versions UNI, DC and AC are available.

Type OM 352UNI is a multifunction instrument with the option of configuration for 8 different input options, easily configurable in the instrument menu. Versions OM 352DC and OM 352AC are suitable for measurement of larger ranges of DC and AC voltages and currents.

The instrument is based on an 8-bit microcontroller with A/D converter, which ensures good accuracy, stability and easy operation of the instrument.

The OM 652UC type is a universal low-cost counter/frequencymeter/stopwatch/timer.

### Operation

The instrument is set and controlled by five control keys located on the front panel. All programmable settings of the instrument may be performed in three adjusting modes:

**Light menu** is protected by optional number code and contains solely items necessary for instrument setting

**Profi menu** is protected by optional number code and contains complete instrument setting

**User menu** may contain arbitrary items from the programming menu (LIGHT/PROFI), which determine the right (see, change). Access w/o password.

Standard equipment is the OM Link interface, which together with operation program enables modification and filing of all instrument settings as well as perform firmware updates (with OML cable). The program is also designed for visualization and filing of measured values from more instruments.

All settings are stored in the EEPROM memory (they hold even after the instrument is switched off).

### Options

**Excitation** is suitable for feeding of sensors and transmitters. It is isolated, with continuously adjustable value in the range of 5...24 VDC.

- 3 1/2 digit programmable projection (352)
- 6 digit programmable projection (652)
- Multifunction device (DC, PM, RTD, T/C, DU)
- Digital filter, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 80...250 V AC/DC

OMLINK

### Options

- Excitation • Dual comparator • Data output • Analog output
- Power supply 10...30 V AC/DC

**Comparators** are assigned to monitor two limit values with relay output. The limits have adjustable hysteresis within the full range of the display as well as selectable delay of the switch-on in the range of 0...99,9 s. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

**Data outputs** are for their rate and accuracy suitable for transmission of the measured data for further projection or directly into the control systems. We offer an isolated RS232 and RS485 with the ASCII/MODBUS/PROFIBUS protocols.

**Analog outputs** will find their place in applications where further evaluating or processing of measured data is required in external devices. We offer universal analog output with the option of selection of the type of output - voltage/current. The value of analog output corresponds with the displayed data and its type and range are selectable in menu.

**Time backup (UC)** is suitable where time needs to be measured even in case of supply voltage outage (upon power supply outage the instrument does not display)

### Standard functions

#### PROGRAMMABLE PROJECTION

**Selection:** of input type and measuring range

**Setting:** manual, in menu optional projection on the display may be set for both limit values of the input signal

**Setting (UC):** measuring mode counter/frequency/timer/clock with adjustable calibration coefficient, time base and projection

**Projection:** ±1999, resp. -99999...99999

#### COMPENSATION

**of conduct (RTD):** automatic (3- and 4-wire) or manual in menu (2-wire)

**of conduct in probe (RTD):** internal connection (conduct resistance in measuring head)

**of CJC (T/C):** manual or automatic, in menu it is possible to perform selection of the type of thermocouple and compensation of cold junctions, which is adjustable or automatic (temperature at the input brackets)

#### LINEARIZATION

**Linearization:** through linear interpolation in 25 points (solely via OM Link)

#### DIGITAL FILTERS

**Exponential average:** from 2...100 measurements

**Rounding(UC):** setting the projection step for display

**Filtration constant (UC):** transmits input signal up to 5...1 000 Hz

#### FUNCTIONS

**Preset (UC):** initial non-zero value, which is always read after resetting the instrument to zero

**Setting current value (UC):** initial value, e.g. amount passed-through

**Tare:** resetting display upon non-zero input signal

#### EXTERNAL CONTROL

**Hold:** display/instrument blocking

**Lock:** control keys blocking

**Resetting:** counter resetting

**Start/Stop:** stopwatch/timer control

## Technical data

### PROJECTION

**Display:**  $\pm 1999$  resp. 999999, red or green 7-segment LED, digit height 14 mm  
 -1999...9999, red/green/orange 7-segment. LED, height 20 mm  
**Decimal point:** setting - in menu  
**Brightness:** setting - in menu

### INSTRUMENT ACCURACY

**TC:** 50 ppm/°C  
**Accuracy:**  $\pm 0,2\%$  of range + 1 digit  
 $\pm 0,3\%$  of range + 1 digit (AC, T/C)  
*Accuracy applies for projection  $\pm 1999$*   
 $\pm 0,05\%$  of value + 1 digit (UC)  
 $\pm 0,01\%$  of value  $\pm 2$  ms (UC - stopwatch)  
 $\pm 0,01\%$  of value  $\pm 130$  ms (UC - RTC)  
**Accuracy of cold junction measurement:**  $\pm 1^\circ\text{C}$   
**Rate:** 0,5...10 meas./s  
**Overload capacity:** 10x ( $t < 30$  ms) - not for  $< 200$  V and 5A; 2x  
**Resolution:** 0,1°C (RTD), 1°C (T/C)  
**Watch-dog:** reset after 500 ms  
**Functions:** HOLD, LOCK, Digital filters, Tare  
**Functions (UC):** Data backup, Time backup, Preset  
**Input filters (UC):** Filtration constant, Rounding  
**Time base (UC):** 0,5/1/5/10/50 s  
**Calibration constant (UC):** 0,00001...999999  
**Filtration constant (UC):** 0/5/40/100/1000 Hz  
**PRESET (UC):** 0...999999  
**OM Link:** Company communication interface for operation, setting and update of instruments

**Calibration:** at  $25^\circ\text{C}$  and 40% r.h.

### COMPARATOR

**Type:** digital, setting in programming mode, contact switch  $< 50$  ms  
**Limits:**  $\pm 1999$ ; -99999...999999; ; -999...9999  
**Hysteresis:** 0...1999; 999999; -999...9999  
**Delay:** 0...99,9 s  
**Output:** 2x Form A relays (250 VAC/30 VDC, 3 A)  
*On request open collector may be fitted*

### DATA OUTPUT

**Protocol:** ASCII, MODBUS - RTU, PROFIBUS  
**Data format:** 8 bit + no parity + 1 stop bit  
 7 bit + even parity + 1 stop bit (Messbus)  
**Rate:** 300...230 400 Baud  
 9 600 Baud...12 Mbaud (PROFIBUS)  
**RS 232:** isolated  
**RS 485:** isolated, addressing (max. 31 instruments)

### ANALOG OUTPUT

**Type:** isolated, programmable with resolution of max. 4 000 points, AO corresponds with the displayed data, type and range are selectable in programming mode  
**Non-linearity:** 0,2% of range  
**TC:** 50 ppm/°C  
**Rate:** response to change of value  $< 250$  ms  
**Ranges:** 0...2/5/10 V, 0...5 mA, 0/4...20 mA (comp.  $< 500$  M)

### EXCITATION

**Adjustable:** 5...24 VDC/max. 1,2 W

### POWER SUPPLY

10...30 V AC/DC,  $\pm 10\%$ , max. 13,5 VA  
 80...250 V AC/DC,  $\pm 10\%$ , max. 13,5 VA  
*Power supply is protected by a fuse inside the instrument*

### MECHANIC PROPERTIES

**Material:** Noryl GFN2 SE1, incombustible UL 94 V-I  
**Dimensions:** 96 x 48 x 120 mm  
**Panel cutout:** 90,5 x 45 mm

### OPERATING CONDITIONS

**Connection:** connector terminal board, section  $< 2,5$  mm<sup>2</sup>  
**Stabilization period:** within 15 minutes after switch-on  
**Working temperature:**  $-20^\circ\text{C}$ ... $60^\circ\text{C}$   
**Storage temperature:**  $-25^\circ\text{C}$ ... $85^\circ\text{C}$   
**Cover:** IP64 (front panel only), IP20  
**El. safety:** EN 61010-1, A2  
**Dielectric strength:** 4 kVAC after 1 min between supply and input  
 4 kVAC after 1 min between supply and data/analog output  
 4 kVAC after 1 min between supply and relay output  
 2,5 kVAC after 1 min between supply and data/analog output  
**Insulation resistance:** for pollution degree II, measuring cat. III.  
 power supply  $> 670$  V (PI), 300 V (DI)  
 input, output, Exc.  $> 300$  V (PI), 150 V (DI)  
**EMC:** EN 61326-1  
**Seismic capacity:** IEC 980: 1993, par. 6

PI - Primary insulation, DI - Double insulation

## Measuring ranges

**OM 352 is a multifunction instrument available in following types and ranges**

#### type UNI

**DC:**  $\pm 20/\pm 60/\pm 1\ 000$  mV  
**PM:** 0...20 mA/4...20 mA/0...2 V/0...5 V/0...10 V  
**OHM:** 0...300  $\Omega$ /0...1,5 k $\Omega$ /0...3 k $\Omega$ /0...30 k $\Omega$   
**RTD:** Pt 50/100/500/1 000  
**Cu:** Cu 50/Cu 100  
**Ni:** Ni 1 000/10 000  
**T/C:** J/K/T/E/B/S/R/N/L  
**DU:** Linear potentiometer (min. 500  $\Omega$ )

#### type DC

**DC - Hi:**  $\pm 1$  A/ $\pm 5$  A/ $\pm 20$  V/ $\pm 40$  V/ $\pm 100$  V/ $\pm 200$  V

#### type AC

**AC:** 0...1 A/0...5 A  
 0...60 mV/0...300 mV/0...24 V/0...50 V/0...90 V/0...120 V/0...250 V/0...450 V

#### type UC

**UC:** 0...30 V/0...300 V, comparison levels are adjustable in the menu  
 input frequency 0,02 Hz...50 kHz

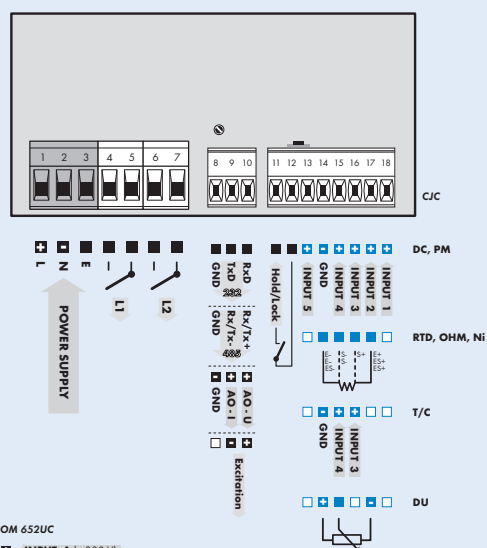
### Connecting individual inputs

|         | INPUT 1         | INPUT 2       | INPUT 3       | INPUT 4       | INPUT 5              |
|---------|-----------------|---------------|---------------|---------------|----------------------|
| DC      | 0...1 V         |               | 0...60 mV     | 0...20 mV     |                      |
| PM      | 0...5/10 V      |               |               | 0...2 V       | 0...20 mA, 4...20 mA |
| T/C     |                 |               | J, K, E, N, L | B, S, R, T    |                      |
| DC - Hi | $\pm 100/200$ V | $\pm 20/40$ V |               |               | $\pm 1\pm 5$ A       |
| AC      | 0...90/450 V    | 0...50/250 V  | 0...24/120 V  | 0...60/300 mV | 0...0,5/1/5 A        |

### Order code specification

|     | UNI                          | UC                                     |
|-----|------------------------------|--|
| w/o | ---                          | counter/frequencymeter/stopwatch/timer |
| A   | Pt 100/0...300 Ohm           |  |
| B   | Pt 500/0...1500 Ohm          |  |
| C   | Pt 1 000/Ni 1 000/0...3 kOhm |  |
| D   | Ni 10 000/0...30 kOhm        |  |
| Z   | on request                   |  |

## Connection



## Order code

### OM 352/652

#### Type

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| U | N | I | . | . | . | . | . | . |
| D | . | . | . | . | . | . | . | . |
| A | . | . | . | . | . | . | . | . |
| U | . | . | . | . | . | . | . | . |

*Order code shall not include blank spaces!*

|  |                          |   |  |  |  |
|--|--------------------------|---|--|--|--|
| <b>Power supply</b>                                  | 10...30 V AC/DC          | 0 |  |  |  |
|  | 80...250 V AC/DC         | 1 |  |  |  |
| <b>Measuring range, see table „Measuring ranges“</b> |                          | ? |  |  |  |
| <b>Comparators</b>                                   | no                       | 0 |  |  |  |
|  | 1x relay (Form A)        | 1 |  |  |  |
|  | 2x relays (Form A)       | 2 |  |  |  |
|  | 1x open collector        | 3 |  |  |  |
|  | 2x open collector        | 4 |  |  |  |
| <b>Output</b>  | none                     | 0 |  |  |  |
|  | Excitation               | 1 |  |  |  |
|  | Analog output            | 2 |  |  |  |
|  | RS 232                   | 3 |  |  |  |
|  | RS 485                   | 4 |  |  |  |
|  | MODBUS*                  | 5 |  |  |  |
|  | PROFIBUS                 | 6 |  |  |  |
| <b>Time backup</b>                                   | no                       | 0 |  |  |  |
|  | yes                      | 1 |  |  |  |
| <b>Display color</b>                                 | red (14 mm)              | 1 |  |  |  |
|  | green (14 mm)            | 2 |  |  |  |
|  | red/green/orange (20 mm) | 3 |  |  |  |

\* Launch for sale has not been set

\*\* In the „UNI“ type the measuring range is selected under the order code solely for RTD, NI, OHM. For other types this item has no significance with default setting „A“ !