
- BARGRAPH - 50 LED WITH DISPLAY AND LCD SCALE
- MULTIFUNCTION INPUT (DC, PM, RTD, T/C, DU)
- DIGITAL FILTERS, TARE, LINEARIZATION
- SIZE OF DIN 160 X 80 MM
- POWER SUPPLY 80...250 V AC/DC
- Option
  Comparators • Data output • Analog output • Data record
  Power supply 10...30 V AC/DC

# OMB 452

OMLINK

The OMB 452 model series are programmable, three-color panel bargraphs with auxiliary display and adjustable LCD scale. The instruments are designed as dimensional replacement of the ZEPAKOMP instruments. Available are types UNI, PWR and UQC.

Type OMB 452UNI is a multifunction instrument with the option of configuration for 8 different types of input, easily configurable in the instrument menu.

The instrument is based on an 8-bit microcontroller with multi-channel 24-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

**OMB** 452UNI
DC VOLTMETER AND AMMETER
PROCESS MONITOR
OHMMETER
THERMOMETER FOR Pt/Cu/Ni/Termocouples
DISPLAY UNIT FOR LINEAR POTENTIOMETERS

**OMB** 452PWR
AC VOLTMETER AND AMMETER
AC NETWORK ANALYSER

**OMB** 452UQC
UNIVERSAL COUNTER

## OPERATION

The instrument is set and controlled by two control keys and a turn knob located on the front panel. All programmable settings of the instrument are implemented in three setting 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).

## OPTION

**COMPARATORS** are assigned to monitor one, two, three or four limit values with relay output. The user may select limits regime: LIMIT/DOSING/FROM-TO. 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/MESSBUS/MODBUS/PROFIBUS protocol.

**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.

**MEASURED DATA RECORD** is an internal time control of data collection. It is suitable where it is necessary to register measured values. Two modes may be used. FAST is designed for fast storage (40 records/s) of all measured values up to 8 000 records. Second mode is RTC, where data record is governed by Real Time with data storage in a selected time segment and cycle. Up to 266 000 values may be stored in the instrument memory. Data transmis sion into PC via serial interface RS232/485 and OM Link.

## STANDARD FUNCTIONS

### PROGRAMMABLE PROJECTION

**Selection:** of input type and measuring range
**Measuring range:** adjustable as fixed or with automatic change (OHM)
**Scale:** LCD, freely programmable
**Measuring modes (PWR):** voltage ($V_{RMS}$), current ($A_{RMS}$), real power (W), frequency (Hz) and with calculation of Q, S, cos fi
**Setting (UQC):** measuring mode 2x counter (UP/DW, IRC)/2x frequency/timer/clock with adjustable calibration coefficient, time base and projection
**Setting:** manual, in menu optional projection on the display may be set for both limit values of the input signal
**Projection:** 50 LED + 6-digit auxiliary display

### COMPENSATION

**Of conduct (RTD, OHM):** 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

### LINEARIZATION

**Linearization (DC, PM, DU):** through linear interpolation in 50 points (solely via OM Link)

### DIGITAL FILTERS

**Filtration constant (UQC):** transmits input signal up to 10...2 000 Hz
**Floating/Exp./Arithmetic average:** from 2...30/100/100 measurements
**Rounding:** setting the projection step for display

### EXCITATION

**Range:** 5...24 VDC, for feeding of sensors and transmitters

### MATHEMATIC FUNCTIONS

**Min/max. value:** registration of min/max. value reached during measurement
**Tare:** designed to reset display upon non-zero input signal
**Peak value:** the display shows only max. or min. value
**Mat. operations:** polynome, 1/x, logarithm, exponential, power, root, sin x and at the same time between inputs - sum, difference, product, quotient

### EXTERNAL CONTROL

**Lock:** control keys blocking
**Hold:** display/instrument blocking
**Tare:** tare activation
**Resetting MM:** resetting min/max value

## TECHNICAL DATA

**PROJECTION**

Display: 50 three-color LED + three-color LED for indication of the limits, 6-digit display (-999...9999+2 char.), 4x digit height 14 mm, 2x digit height 10 mm, illuminated and freely programmable LCD scale
Decimal point: setting - in menu
Brightness: setting - in menu

**INSTRUMENT ACCURACY**

TK: 50 ppm/°C
Accuracy: ±0,1% of range + 1 digit (for projection 9999 and 5 meas./s) — RTD, T/C
±0,15% of range + 1 digit
±0,3% (0,6/0,9%) of range + 1 digit — PWR
Accuracy of cold junction measurement:: ±1,5°C
Rate: 0,1...40 meas./s, 0,5...5 meas./s (PWR)
Overload capacity: 2x; 10x (t < 30 ms) - not for > 250 V and 5 A
Measuring modes (PWR): voltage ($V_{RMS}$), current ($A_{RMS}$), real power (W), frequency (Hz) and with calculation Q, S, cos fi
Linearization: by linear interpolation in 50 points
Time base (UQC): 0,2...50 s
Calibration constant (UQC): 0,00001...999999
Filtration constant (UQC): 0/10/20/45/55/.../1000/2000 Hz
PRESET (UQC): 0...999999
Digital filters: Exp./Floating/Arithmetic average, Rounding
Functions: Ofset, Min/max. hod., Tare, Peak value, Mat. operations
Ext. control: HOLD, LOCK, Tare, Reset
Data record: measured data record into instrument memory
RTC - 15 ppm/°C, time-date-display value, < 266k data
FAST (UNI) - display value, < 8k data
Watch-dog: reset after 0,4 s
OM Link: Company communication interface for operation, setting and update of instruments

Calibration: at 25°C and 40 % r.h.

**COMPARATOR**

Type: digital, setting in menu, contact switch < 30 ms
Limits: -99999...999999
Hysteresis: 0...999999
Delay: 0...99,9 s
Output: 1..4x relays Form A (250 VAC/50 VDC, 3 A), 2x/4x open collector, 1..4x bistabil relays

**DATA OUTPUT**

Protocol: ASCII, MESSBUS, MODBUS - RTU, PROFIBUS
Data format: 8 bit + no parity + 1 stop bit (ASCII)
7 bit + even parity + 1 stop bit (Messbus)
Rate: 600...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 16-bit D/A converter, type and range are selectable in programming mode
Non-linearity: 0,1% of range
TK: 15 ppm/°C
Rate: response to change of value < 1 ms
Ranges: 0...2/5/10 V, ±10 V, 0...5 mA, 0/4...20 mA (comp. < 500 Ω/12 V or 1 000 Ω/24 V)

**EXCITATION**

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

**POWER SUPPLY**

10...30 V AC/DC, ±10 %, max. 13,5 VA, PF ≥ 0,4, $I_{STP}$ < 40 A/1 ms
80...250 V AC/DC, ±10 %, max. 13,5 VA, PF ≥ 0,4, $I_{STP}$ < 40 A/1 ms
Power supply is protected by a fuse inside the instrument

**MECHANIC PROPERTIES**

Material: Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions: 160 x 80 x 80 mm
Panel cutout: 160 x 70 mm

**OPERATING CONDITIONS**

Connection: connector terminal board, section < 1,5/2,5 mm²
Stabilization period: within 15 minutes after switch-on
Working temperature: -20°...60°C
Storage temperature: -20°...80°C
Cover: IP64 (front panel only)
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 input and data/analog output
Insulation resistance: for pollution degree II, measuring cat. III.
Power supply > 670 V (ZI), 300 V (DI)
input, output, Exc. > 300 V (ZI), 150 V (DI)
EMC: EN 61326-1
Seismic capacity: IEC 980: 1993, par. 6
SW validation: class B, C in compliance with IEC 62138, 61226

PI - Primary insulation, DI - Double insulation

## MEASURING RANGES

**OMB 452 is a multifunction instrument available in following types and ranges**

**type UNI, standard (code „0")**

DC: ±60/±150/±300/±1 200 mV
PM: 0...5/20 mA/4...20 mA; ±2/±5/±10/±40 V
OHM: 0...100 Ω/0...1/10/100 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000
T/C: J/K/T/E/B/S/R/N/L
DU: Linear potentiometer (min. 500 Ω)

**type UNI, Option A**

DC: ±0,1/±0,25/±0,5/±2/±5 A; ±100/±250/±500 V

**type PWR**

input U: 0...10/120/250/450 V
input I: 0...60/150/300 mV; 0...1/2,5/5 A

**type UQC**

Measuring mode (UQC): input frequency 0,002 Hz...1 MHz (500 kHz for QUADR and UP/DW)
2x UP or DW counter, UP or DW counter + frequency, UP/DW counter, UP/DW counter for IRC + frequency, timer/clock/phase

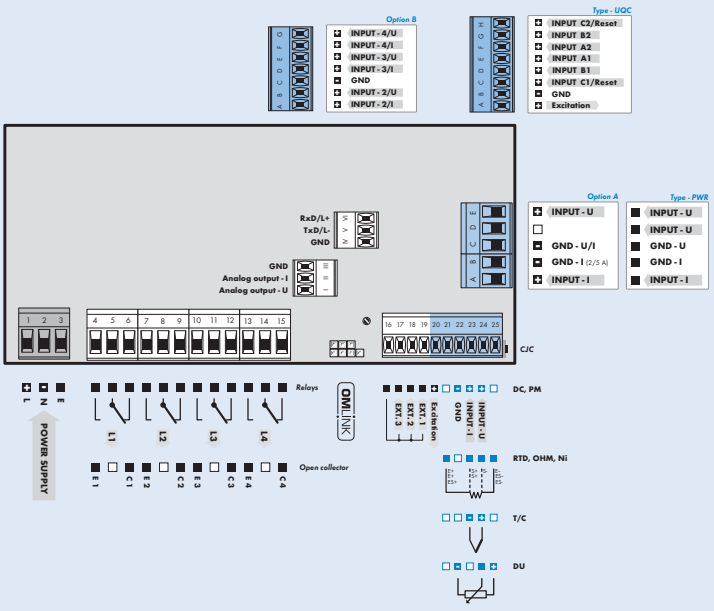
**CONNECTING INDIVIDUAL INPUTS**

| | INPUT „I" | INPUT „U" |
|---|---|---|
| DC | | ±60/±150/±300/±1200 mV |
| PM | 0...5/0...20 mA/4...20 mA | ±2/±5/±10/40 V |

**ORDER CODE SPECIFICATION**

| | UNI | PWR - U | PWR - I | UQC |
|---|---|---|---|---|
| w/o | standard | | | |
| A | ±0,1/±0,25/±0,5//±2/±5 A ±100/±250/±500 V | | | standard contact, TTL, NPN/PNP |
| B | Expansion about three inputs (PM) | | | SSI input |
| C | | | | line input |
| K | | | 0...60/150/300 mV | |
| P | | | 0...1/2,5/5 A | |
| S | | 0...10/120 V | | |
| U | | 0...250/450 V | | |
| Z | on request | on request | on request | |

## CONNECTION




*GND (input + Option A) is galvanically connected with inputs EXT. and the OM Link connector
*In case of Option B we recommend to connect termianls GND (main board/additional board) by external connection

## ORDER CODE

**OMB 452** ☐☐☐ - ☐☐☐☐☐1☐☐ - ☐

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | U | N | I | • | • | • | • | • | • | • | • | |
| Order code shall not include blank spaces! | P | W | R* | • | •• | • | • | • | • | • | • | |
| | U | Q | C* | • | • | • | • | • | • | • | • | |
| Power supply | 10...30 V AC/DC | | | 0 | | | | | | | | |
| | 80...250 V AC/DC | | | 1 | | | | | | | | |
| Option, see table „Order code specification" | | | | | ? | | | | | | | |
| Comparators | none | | | | | 0 | | | | | | |
| | 1x relay (Form C) | | | | | 1 | | | | | | |
| | 2x relays (Form C) | | | | | 2 | | | | | | |
| | 3x relays (Form C) | | | | | 3 | | | | | | |
| | 4x relays (Form C) | | | | | 4 | | | | | | |
| | 2x open collectors | | | | | 5 | | | | | | |
| | 4x open collectors | | | | | 6 | | | | | | |
| | 2x open collectors + 2x relays (Form C) | | | | | 7 | | | | | | |
| Analog output | no | | | | | | 0 | | | | | |
| | yes (Compensation < 500 Ω/12 V] | | | | | | 1 | | | | | |
| | yes (Compensation < 1 000 Ω/24 V] | | | | | | 2 | | | | | |
| Data output | none | | | | | | | 0 | | | | |
| | RS 232 | | | | | | | 1 | | | | |
| | RS 485 | | | | | | | 2 | | | | |
| | MODBUS | | | | | | | 3 | | | | |
| | PROFIBUS | | | | | | | 4 | | | | |
| Excitation | yes | | | | | | | | 1 | | | |
| Data record | no | | | | | | | | | 0 | | |
| | RTC | | | | | | | | | 1 | | |
| | FAST (only for UNI) | | | | | | | | | 2 | | |
| Colour of digital display | red | | | | | | | | | | 1 | |
| | green | | | | | | | | | | 2 | |
| Other | customer version, do not fill in | | | | | | | | | | | 00 |
| | SW validation - IEC 62138, IEC 61226 | | | | | | | | | | | VS |

For complete technical parameters of OMB 452UQC see the universal counter OM 602UQC

Default execution is shown in bold

* Launch for sale has not been set