# **OMB 402**



- Horizontal bargraph 1 x 30 LED with display
- Multifunction device (DC, PM, RTD, T/C, DU)
- Digital filters, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 80...250 V AC/DC



## **Options**

- Excitation Comparators Data output Analog output Data record
- Power supply: 10...30 V AC/DC

### **OMB 402UNI**

DC VOLTMETER AND AMMETER

**PROCESS MONITOR** 

**OHMMETER** 

THERMOMETER FOR Pt

THERMOMETER FOR Ni

**THERMOMETER** 

FOR THERMOCOUPLES

**DISPLAY UNIT FOR LINEAR POTEN-**

**TIOMETERS** 

## OMB 402PWR OMB 402UQC

AC NETWORK ANALYSER UNIVERSAL COUNTER

## Description

The OMB 402 model series are panel programmable three-color bar graphs with auxiliary display designed for maximum efficiency and user comfort while maintaining its favourable price. Three versions are available: UNI, PWR and UQC.

The OMB 402UNI is a multifunction instrument with the option of configuration for 7 various input options, easily configurable in the instrument menu.

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

### 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

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.

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 131 000 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)

Measuring modes (PWR): voltage ( $V_{RMS}$ ), current ( $A_{RMS}$ ), real power (W), frequency

(Hz) and with calculation of Q, S,  $\cos \Psi$ 

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

Projection: 30 LED + 6 digit auxiliary display

### COMPENSATION

of conduct (RTD, OHM): in menu it is possible to perform comp. for 2-wire connection 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 (DC, PM, DU): by linear interpolation in 50 points (solely via OM Link)

## DIGITAL FILTERS

Input filter (UQC): lets through input signal up to 10...2000 Hz

Exponen. average: from 2...100 measurements

Rounding: setting the projection step for display

### **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

Display: 30 three-color LED with 6 digit aux.display (9,1 mm) Decimal point: setting - in programming mode **Brightness:** setting - in programming mode

### **INSTRUMENT ACCURACY**

TC: 100 ppm/°C Accuracy: ±0,1 % of range + 1 digit ±0,15% of range + 1 digit (RTD, T/C) ±0,3% of range + 1 digit (PWR)

The accuracy applies for projection 9999 and rate 5 meas./s

**Rate:** 0,1...40 meas./s

Overload capacity: 10x (t < 30 ms) - not for > 250 V, 5 A; 2x Measuring modes (PWR): voltage  $(V_{\text{BMS}})$ , current  $(A_{\text{BMS}})$ , real power (W), frequency (Hz) and with calculation of Q, S, cos  $\Psi$ Linearization (DC, PM, DU): by linear interpolation in 50 points Time base (UQC): 0,05...50 s Calibration constant (UQC): 0,00001...999999

Input filter (UQC): 0/10/20/45/55/.../1000/2000 Hz PRESET (UQC): 0...999999

Input filters: exp./ floating/ arithmetic average, Rounding Functions: Offset, Min/max value, 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, < 131k data FAST - display value, < 8k data

Watch-dog: reset after 1,2 s

OM Link: Company communication interface for operation,

setting and update of instruments Calibration: at 25°C and 40% r.h.

Type: digital, setting in prog. mode, contact switch < 30 ms

Limits: -99999...999999 Hysteresis: 0...999999 Delay: 0...99,9 s

Output: 2x relay Form A (250 VAC/30 VDC, 3 A) and 2x Form C relay (250 VAC/50 VDC, 3 Å), 2x/4x open collector, 2x SSR, 2x latching relay

### 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 (DIN Messbus)
Rate: 600...230 400 Baud

RS 232: isolated RS 485: isolated, addressing (max. 31 instruments)

### ANALOG OUTPUT

Type: isolated, programmable with resolution of max. 10 000 points, AO corresponds with the displayed data, type and range are selectable in programming mode

Non-linearity: 0,2% of range

TC: 100 ppm/°C

Rate: response to change of value < 150 ms

Ranges: 0...2/5/10 V, 0...5 mA, 0/4...20 mA (on request ±10V)

 $(comp. < 500 \Omega/12 V or < 1 000 \Omega/24 V)$ 

### **EXCITATION**

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

### **POWER SUPPLY**

10...30 V AC/DC, ±10%, 10 VA 80...250 V AC/DC, ±10%, 10 VA

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: 0°...60°C
Storage temperature: -10°...85°C

Cover: IP65 (front panel only)

El. safety: EN 61010-1, A2 Insulation resistance: for pollution degree II, measuring cat. III.

power supply > 670 V (PI), 300 V (DI)

input, output, Exc. > 300 V (PI), 250 V (DI)

EMC: EN 61000-3-2+A12; EN 61000-4-2, 3, 4, 5, 8, 11; EN

550222, A1, A2

PI - Primary insulation, DI - Double insulation

## Measuring ranges

### OMB 402 is a multifunction instrument available in following types and ranges

type UNI

0...60/150/300/1200 mV

0...5 mA/0...20 mA/4...20 mA/ $\pm$ 2 V/ $\pm$ 5 V/ $\pm$ 10 V/ $\pm$ 40 V 0...100  $\Omega$ /0...1 k $\Omega$ /0...10 k $\Omega$ /0...10 k $\Omega$ PM:

онм:

RTD: Pt 100/Pt 500/Pt 1000 Ni 1 000/Ni 10 000 Ni: T/C J/K/T/E/B/S/R/N

DU: Linear potentiometer (min.  $500 \Omega$ )

type UNI, option A
DC: 0...1

0...1 A/0...5 A/±30 V/±120 V/±500 V type PWR

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

type UQC

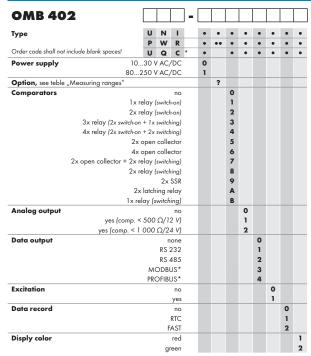
Measuring mode (UQC): 2x UP or DW counter, UP or DW counter + frequency, UP/DW counter, UP/DW counter for IRC + frequency, timer/clock/phase (0,02...100 kHz/200 kHz for IRC)

		B147B	B11/B	
	UNI	PWR	PWR	UQC
w/o	0 = Standard			contact, TTL, NPN/PNP
Α	01/5 A, 030/120/500 V			
K			060/150/300 mV	
P			01/2,5/5 A	
S		010/120 V		
U		0250/450 V		
Z	on request	on request	on request	

### Connection

## OMB 4x2UQC INPUT C2/RESET INPUT B2 INPUT A2 INPUT C1/RESET INPUT B1 INPUT A1 GND Excitation INPUT-U ٥ 9 10 11 12 13 GND\* GND\* E3 INPUT-1 14 15 16 17 18 19 20 21 22 23 □ ■ □ □ □ DC, PM <u>ブ</u> INPUT-1 INPUT-1 GND Excitation EXT. 1 EXT. 2 EXT. 3 5 12 POWER SUPPLY RTD, OHM, Ni E+ S+ S- E-ES+ S- E-ES+ ES-□ ■ □ ■ □ T/C □ ■ □ ■ □ DU لها \* GND (Option A) has galvanic connection with EXT inputs and OM Link connector

## Order code



\* Scheduled for sale in 1st Q of 2007

For complete technical parameters of OMB 402UQC see the universal counter OM 602UQC