



Data Sheet  
**OMB 402UNI**

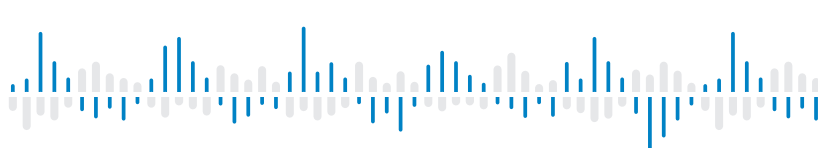
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## OMB 402UNI



The OMB 402 model series are panel programmable three-color bargraphs with auxiliary display designed for maximum efficiency and user comfort while maintaining its favourable price.

The OMB 402UNI is a multifunction instrument with the option of configuration for 8 various input options, easily configurable in the instrument menu.

The instrument is based on a single-chip microcontroller with multichannel 4-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

### UNIVERSAL BARGRAPH

- Horizontal bargraf - 30 LED with display
- Multifunction input (DC, PM, RTD, T/C, DU)
- Digital filters, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC
- Option  
Comparators • Data output • Analog output • Measured data record

### OMB 402UNI

DC VOLTMETER AND AMMETER  
PROCESS MONITOR  
OHMMETER  
THERMOMETER FOR Pt/Cu/Ni/THERMOCOUPLES  
DISPLAY UNIT FOR LINEAR POTENTIOMETERS

### OPERATION

The instrument is set and controlled by five buttons 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 performing 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 (settings hold even after the instrument is switched off). The measured units may be projected on the display.

### OPTION

**COMPARATORS** are assigned to monitor four or eight limit values with relay output. For each input the user may select an arbitrary number of relays with the regime: LIMIT/BATCH/FROM-TO. The limits have adjustable hysteresis within full range of the display and selectable delay of the switch-on within the range of 0...99 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 and the option of assigning it to arbitrary input. The value of analog output corresponds with the displayed data. 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 transmission into PC via serial interface RS232/485 and OM Link.

### STANDARD FUNCTIONS

#### PROGRAMMABLE PROJECTION

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

**Measuring range:** adjustable, either fixed or with automatic change (OHM)

**Setting:** manual, optional projection on the display may be set in menu for both limit values of the input signal, e.g. input 0...10,00 V > 0...850.0

**Projection:** 30 LED + 6-digit auxiliary display

#### EXCITATION

**Range:** 5...24 VDC/1,2 W, for feeding sensors and transmitters

#### COMPENSATION

**Of conduct (RTD, OHM):** automatic (3- or 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 of terminals)

#### FUNCTIONS

**Linearization:** non-linear signals can be linearized by the means of a linearization table (up to 50 points)

**Tare:** designed to reset display upon non-zero input signal

**Min./max. value:** registration of min./max. value reached during measurement

**Peak value:** the display shows only max. or min. value

**Mathemat. operations:** polynom, 1/x, logarithm, exponential, power, root, sin x

#### DIGITAL FILTERS

**Floating average:** from 2...30 measurements

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

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

**Rounding:** setting the projection step for display

#### EXTERNAL CONTROL

**Lock:** control keys blocking

**Hold:** display/instrument blocking

**Tare:** tare activation

**Resetting MM:** resetting min/max value

## TECHNICAL DATA

INPUT	
Number of inputs	1
<b>DC</b> Range	optional in configuration menu
±60 mV	> 100 MΩ
±150 mV	> 100 MΩ
±300 mV	> 100 MΩ
±1 200 mV	> 100 MΩ
<b>PM</b> Range	optional in configuration menu
0...20 mA	< 400 mV
4...20 mA	< 400 mV
±2 V	1 MΩ
±5 V	1 MΩ
±10 V	1 MΩ
±40 V	1 MΩ
<b>OHM</b> Range	optional in configuration menu with autorange
0...100 Ω	
0...1 kΩ	
0...10 kΩ	
0...100 kΩ	
Connection	2, 3 or 4 wire
<b>Pt</b> Type	optional in configuration menu
EU > 100/500/1 000 Ω, 3 850 ppm/°C	-50°...450°C
US > 100 Ω, 3 920 ppm/°C	-50°...450°C
RU > 50 Ω, 3 910 ppm/°C	-200°...1 100°C
RU > 100 Ω, 3 910 ppm/°C	-200°...450°C
Connection	2, 3 or 4 wire
<b>Ni</b> Type	optional in configuration menu
Ni 1 000/10 000 with 5 000 ppm/°C	-50°...250°C
Ni 1 000/10 000 with 6 180 ppm/°C	-50°...250°C
Connection	2, 3 or 4 wire
<b>Cu</b> Type	optional in configuration menu
Cu 50/100 with 4 260 ppm/°C	-50°...200°C
Cu 50/100 with 4 280 ppm/°C	-200°...200°C
Connection	2, 3 or 4 wire
<b>T/C</b> Type	optional in configuration menu
J (Fe-CuNi)	-200°...900°C
K (NiCr-Ni)	-200°...1 300°C
T (Cu-CuNi)	-200°...400°C
E (NiCr-CuNi)	-200°...690°C
B (PtRh30-PtRh6)	300°...1 820°C
S (PtRh10-Pt)	-50°...1 760°C
R (Pt13Rh-Pt)	-50°...1 740°C
N (Omegalloy)	-200°...1 300°C
L (Fe-CuNi)	-200°...900°C
<b>DU</b> P. supply	2 VDC/6 mA, Potentiometer resistance > 500 Ω
Ext. inputs	3 inputs, on contact

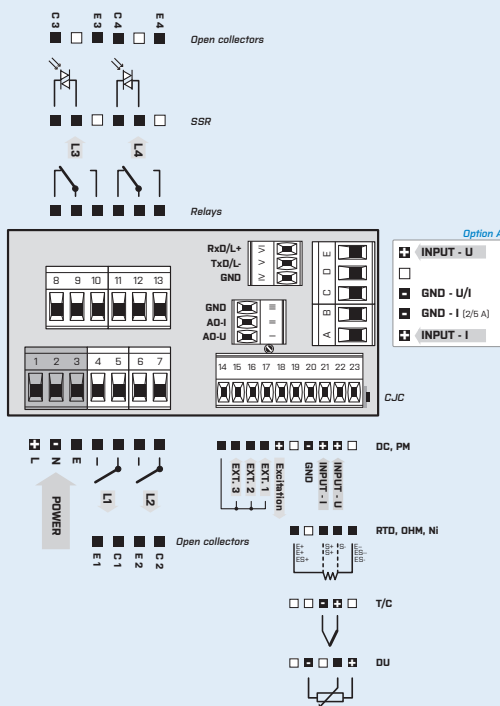
The following functions can be assigned:  
OFF / HOLD / LOCK / PASS. / TARE / CL. TA. /  
CL. M.M. / SAVE / CL. ME. / CHAN. A. / FIL. A. / MAT.  
FN. / SWITCH.

OPTION „A“	
<b>DC</b> Range	optional in configuration menu
±0.1 A	< 300 mV
±0.25 A	< 300 mV
±0.5 A	< 300 mV
±1 A	< 30 mV
±5 A	< 150 mV
±100 V	20 MΩ
±250 V	20 MΩ
±500 V	20 MΩ
<b>PROJECTION</b>	
Bargraph display:	30 LED
Bar color:	red/green/orange
Auxiliary display:	-99999...999999, single color 7-segment LED
Digit height:	9,1mm
Display color:	red or green
Description:	the last two characters on the display can be used to describe the measured quantities
Decimal point:	adjustable - in menu
Brightness:	adjustable - in menu
<b>INSTRUMENT ACCURACY</b>	
TC:	50 ppm/°C
Accuracy:	±0.1% of range + 1 digit (for proj. 9999 and 5 measur./s)
±0.15% of range + 1 digit	RTD, T/C
Accuracy of cold junction measur.:	±1.5°C
Rate:	0,1...40 measurements/s
Overload capacity:	2x; 10x (t < 30 ms) - not for > 250 V and 5 A
Resolution (RTD, T/C):	1/10, 1/10, 0.01°C
Line compensation:	max. 30 Ω (RTD)
Cold junction compens.:	adjustable -20°...99°C or automatic
Linearization:	linear interpolation in 50 points (only via OM Link)
Digital filters:	Exp./Floating/Arithm. average, Rounding
Functions:	Offset, Min/max value, Tare, Peak value, Mat. operations
Data record:	measured data record into instrument memory
RTC - 15 ppm/°C, time-date-display value < 266k data	
FAST - display value < 8k data	
OM Link:	company communication interface for operation, setting and update of instruments
Watch-dog:	reset after 400 ms
Calibration:	at 25°C and 40 % r.h.
<b>COMPARATOR</b>	
Type:	digital, menu adjustable, contact switch-on < 30 ms
Hysteresis mode:	switching limit, hysteresis band (Lim and ±1/2 Hys.) and time (±99.9 s) determining the switching delay
Mode From-To:	switching on and switching off interval
Mode Batch:	period, its multiples and time (0...99.9 s), within which the output is active
Output:	1...2x relays Form A (250 VAC/30 VDC, 3 A) and 1...2x relays Form C (250 VAC/50 VDC, 3 A); 2x/4x open collector (30 VDC/100 mA); 2x SSR (250 VAC/1 A); 2x bistable relays (250 VAC/250 VDC, 3 A/0,3 A)

DATA OUTPUTS	
Protocol:	ASCII, MESSBUS, MODBUS RTU, PROFIBUS DP
Data format:	8 bit + no parity + 1 stop bit (ASCII)
	7 bit + even parity + 1 stop bit (Messbus)
Rate:	600...230 400 Baud, 0,0096...12 Mbaud (PROFIBUS)
RS 232:	isolated
RS 485:	isolated, addressing (max. 31 instruments)
<b>ANALOG OUTPUTS</b>	
Type:	isolated, programmable with a 16-bit D/A converter, output type and range are optional in the menu
Non-linearity:	0,1% of range
TC:	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. < 600 Ω/12 V or 1 000 Ω/24 V)
<b>EXCITATION</b>	
Adjustable:	5...24 VDC/max. 1,2 W
<b>POWER SUPPLY</b>	
Range:	10...30 V AC/DC, ±10 %, PF≥0,4, I <sub>STP</sub> < 40 A/1 ms, isolated
	80...250 V AC/DC, ±10 %, PF≥0,4, I <sub>STP</sub> < 40 A/1 ms, isolated
Consumption:	< 10,6 W/10,4 VA
Power supply is protected by a fuse inside the instrument.	
<b>MECHANIC PROPERTIES</b>	
Material:	Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions:	96 x 48 x 120 mm (w x h x d)
Panel cutout:	90,5 x 45 mm (w x h)
<b>OPERATING CONDITIONS</b>	
Connection:	connector terminal blocks, section < 1,5/2,5 mm <sup>2</sup>
Working temperature:	-20°...60°C
Storage temperature:	-20°...80°C
Protection:	IP64 (front panel only)
El. safety:	EN 61010-1, A2
Dielectric strength:	4 kVAC per 1 min test between supply and input
	4 kVAC per 1 min test between supply and data/analog output
	4 kVAC per 1 min test between input and relay output
	2,5 kVAC per 1 min test between input and data/analog output
Insulation resistance:	for pollution degree II, measuring cat. III
	power supply > 670 V (PI), 300 V (DI)
	input, output, PN > 300 V (PI), 150 V (DI)
EMC:	EN 61326-1
Seismic capacity:	IEC 980:1993, par. 6
SW validation:	Class B, C in compl. with IEC 62138, 61226

PI - Primary insulation, DI - Double insulation

## CONNECTION



\*GND (Input + Option A) is galvanically connected with inputs EXT. and the OM Link connector

## ORDER CODE

OMB 402UNI		- [ ] [ ] [ ] [ ] 1 [ ] [ ] - [ ]			
<b>Power supply</b>	10...30 V AC/DC 80...250 V AC/DC	<b>0</b>			
<b>Measuring range</b>	standard option „A“	<b>1</b>			
<b>Comparators</b>	no 1x relay (Form A) 2x relay (Form A) 3x relays (2x Form A + 1x Form C) 4x relays (2x Form A + 2x Form C) 2x open collector 4x open collector 2x open collector + 2x relays (Form C) 2x relays (Form C) 2x relays, bistable 1x relay (Form C)	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Analog output</b>	no yes (compensation < 600 Ω/12 V) yes (compensation < 1000 Ω/24 V)	<b>0</b>	<b>1</b>	<b>2</b>	
<b>Data output</b>	no RS 232 RS 485 MODBUS* PROFIBUS	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>Excitation</b>	yes		<b>1</b>		
<b>Data record</b>	no RTC FAST		<b>0</b>	<b>1</b>	<b>2</b>
<b>Display color</b>	red (14 mm) green (14 mm)				<b>1</b> <b>2</b>
<b>Specification</b>	customized version, do not fill in SW validation - IEC 62138, IEC 61226				<b>00</b> <b>VS</b>

Basic configuration of the instrument is indicated in bold.

\* Unavailable in combination with RTC/FAST