

## OMB 402UNI

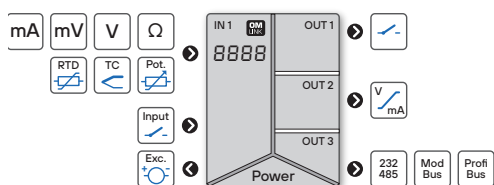
- Horizontal bargraf - 30 LED with display
- Multifunction input (DC, PM, RTD, T/C, DU)
- Digital filters, Tare, Linearization
- Size of DIN 96 x 48 mm
- Power supply 10...30 V AC/DC; 80...250 V AC/DC

### Option

Comparators ● Data output ● Analog output ● Measured data record



### UNIVERSAL BARGRAPH



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 microcontroller and multichannel 24-bit  $\Delta\Sigma$  ADC, which secures high accuracy, stability and easy operation of the instrument.

### 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.

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 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

**Wiring (RTD, OHM):** automatic (3- or 4-wire) or manual in menu (2-wire)

**Probes (RTD):** internal wiring (resistance of conductors in the measuring head)

**CJC (T/C):** manual or automatic (terminal temperature)

#### FUNCTIONS

**Linearization:** non-linear signal is converted by a 50-point linear interpolation

**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 Min/Max:** resetting min/max value

## TECHNICAL DATA

### INPUT

No. of inputs	1	
	The range is adjustable in the instrument menu	
<b>DC</b> Range	±60 mV ±150 mV ±300 mV ±1200 mV	> 100 MΩ > 100 MΩ > 100 MΩ > 100 MΩ
<b>PM</b> Range	0...20 mA 4...20 mA ±2 V ±5 V ±10 V ±40 V	< 400 mV < 400 mV 1 MΩ 1 MΩ 1 MΩ 1 MΩ
<b>OHM</b> Range	0...100 Ω 0...1/10/100 kΩ	
Connection	2, 3- and 4-wire	
<b>RTD</b> Range	Pt 100/500/1 000, 3 850 ppm/°C Pt 100, 3 920 ppm/°C Pt 50, 3 910 ppm/°C Pt 100, 3 910 ppm/°C	-50°...450°C -50°...450°C -200°...1100°C -200°...450°C
Connection	2, 3- and 4-wire	
<b>Ni</b> Range	Ni 1 000/10 000, 5 000 ppm/°C Ni 1 000/10 000, 6 180 ppm/°C	-50°...250°C -200°...250°C
Connection	2, 3- and 4-wire	
<b>Cu</b> Range	Cu 50/100, 4 260 ppm/°C Cu 50/100, 4 280 ppm/°C	-50°...200°C -200°...200°C
Connection	2, 3- and 4-wire	
<b>T/C</b> Range	J (Fe-CuNi) K (NiCr-Ni) T (Cu-CuNi) E (NiCr-CuNi) B (PtRh30-PtRh6) S (PtRh10-Pt) R (Pt13RhPt) N (OmegaGalvo) L (Fe-CuNi)	-200°...900°C -200°...1300°C -200°...400°C -200°...690°C 300°...1 620°C -50°...1 760°C -50°...1 740°C -200°...1 300°C -200°...900°C
CJC	adjustable -20°...99°C or automatical	
<b>DU</b> Sensor power supply	2 VDC/6 mA, potentiometer resistance > 500 Ω	

### OPTION „A“

No. of inputs	1	
	The range is adjustable in the instrument menu	
<b>DC</b> Range	±0.1 A ±0.25 A ±0.5 A ±1 A ±5 A ±10 V ±250 V ±500 V	< 300 mV < 300 mV < 300 mV < 30 mV < 150 mV 20 MΩ 20 MΩ 20 MΩ

### EXTERNAL INPUT

No. of inputs	3, on contact	
<b>Function</b>	OFF LOCK HOLD PASS. TARE CL. TA CL. M.M. SAVE CL. ME CHAN. A FIL. A MAT. FN. SWIT.	no function assigned control keys blocking measurement paused menu access blocking tare activation tare resetting resetting min/max value data recording start (FAST/RTC) data recording reset (FAST/RTC) value display „Channel A“ value display „Channel A“ + filter value display „Math. functions“ sequential or BCD channel switching

### PROJECTION

<b>Bargraph display</b>	30 LED
<b>Bar color</b>	red / green / orange
<b>Display</b>	99999...999999, single color 7-segment LED
<b>Digit height</b>	9.1 mm
<b>Display color</b>	red or green
<b>Description</b>	last two characters on the display may be used for description of measured quantities
<b>Decimal point</b>	adjustable - in menu
<b>Brightness</b>	adjustable - in menu

### INSTRUMENT SPECIFICATION

<b>TC</b>	50 ppm/°C
<b>Accuracy</b>	±0.1% of FS + 1 digit ±0.15% of FS + 1 digit <i>above accuracies apply for projection 9999 and 5 meas/s</i>
<b>Rate</b>	0.1...40 measurement/s
<b>Overload</b>	10x (t < 30 ms), 2x <i>not valid for 250/450 V and 5 A ranges</i>
<b>Compensation of conduct</b>	< 30 Ω
<b>Measurement accuracy CJC</b>	±1.5°C
<b>Resolution</b>	0.1°C / 1°C
<b>Functions</b>	offset, Min/max value, Tare, peak value, math. functions
<b>Digital filters</b>	exponential / floating / arithmetic average, rounding
<b>Math functions</b>	polynomial / inverse polynomial / logarithm / exponential / power / root
<b>Linearization</b>	linear interpolation in 50 points <i>setup only via OM Link</i>
<b>Data record</b>	RTC 15 ppm/°C, time-date-display value < 266k data FAST display value < 8k data
<b>OM Link</b>	company communication interface for operation, setting and update of instruments
<b>Watch-dog</b>	reset after 400 ms
<b>Calibration</b>	at 25°C and 40 % rh.

### RELAYS / OC OUTPUT

No. of outputs	up to 4	
<b>Type</b>	digital, menu adjustable	
<b>Mode</b>	HYSTER. WINDOW BATCH	active above set value active in the set window / band active in set period
<b>Function Relays/OC</b>	CLOSE OPEN	is closed in active mode is open in active mode
<b>Limits</b>	-99999...999999	
<b>Hysteresis</b>	0...999999	
<b>Delay</b>	0...99.9 s	
<b>Outputs</b>	1...2x relay with switch-on contact (Form A) (250 VAC/30 VDC, 3 A)* 2x bistable relays (250 VAC/250 VDC, 3 A/0.3 A) 2...4x open collector (30 VDC/100 mA)	
<b>Relays</b>	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300	

### ANALOG OUTPUTS

No. of outputs	1	
<b>Type</b>	isolated, adjustable with 16-bit DAC, output type and range is selectable	
<b>TC</b>	15 ppm/°C	
<b>Non-linearity</b>	0.1% from FS	
<b>Accuracy</b>	±0.02 % of FS	
<b>Rate</b>	response to change of value < 1 ms	
<b>Ranges</b>	0...25 / 10 V, ±10 V, resistive load ≥ 1 kΩ 0...5 / 20 mA / 4...20 mA, compensation < 600 Ω/12 V or 1000 Ω/24 V Indication of error message (output < 3.2 mA)	

### DATA OUTPUTS

No. of outputs	1	
<b>Protocol</b>	ASCII, MESSBUS, Modbus RTU, PROFIBUS DP	
<b>Data format</b>	8 bit + no parity + 1 stop bit (ASCII) 7 bit + even parity + 1 stop bit (Messbus)	
<b>Rate</b>	300...230 400 Baud 9 600 Baud...12 Mbaud (PROFIBUS)	
<b>RS 232</b>	isolated	
<b>RS 485</b>	isolated, addressing (max. 31 instruments)	

### EXCITATION

<b>Adjustable</b>	5...24 VDC, < 12 W, isolated
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### POWER SUPPLY

<b>Range</b>	10...30 V AC/DC, ±10 %, PF ≥ 0.4, I <sub>typ</sub> < 40 A / 1 ms, isolated 80...250 V AC/DC, ±10 %, PF ≥ 0.4, I <sub>typ</sub> < 40 A / 1 ms, isolated <i>Protection by fuse inside the device</i>
<b>Consumption</b>	< 10.3 W / 10.1 VA

### MECHANIC PROPERTIES

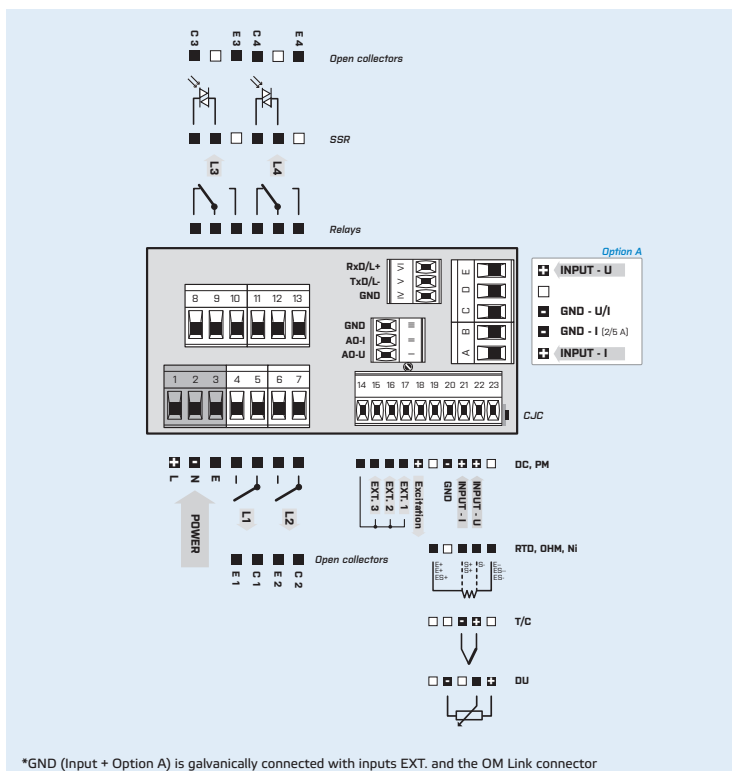
<b>Material</b>	Noryl GFN2 SE1, incombustible UL 94 V-1, black
<b>Dimensions</b>	96 x 48 x 120 mm (w x h x d)
<b>Panel cutout</b>	90.5 x 45 mm (w x h)

### OPERATING CONDITIONS

<b>Connection</b>	connector terminal blocks, section < 1.5 / 2.5 mm <sup>2</sup>
<b>Stabilization period</b>	within 5 minutes after switch-on
<b>Working temperat.</b>	-20°...60°C
<b>Storage temperat.</b>	-20°...85°C
<b>Working humidity</b>	< 95 % r.v., non condensing
<b>Protection</b>	IP64, front panel only
<b>Construction</b>	safety class I
<b>El. safety</b>	EN 61010-1, A2
<b>Dielectric strength</b>	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
<b>Insulation resist.*</b>	for pollution degree II, measuring cat. III power supply, input > 670 V (PI), 300 (DI) input, output, excitation > 300 V (PI), 150 V (DI)
<b>EMC</b>	EN 61326-1, Industrial area
<b>Seismic capacity</b>	IEC 980: 1993, par. 6
<b>SW validation</b>	Class B, C in compl. with IEC 62138, 61226

\* PI - Primary insulation, DI - Double insulation

## CONNECTION



## ORDER CODE

### OMB 402UNI

<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 SSR 2x relays, bistable 1x relay (Form C)	<b>0</b> <b>1</b> <b>2</b> <b>3</b> <b>4</b> <b>5</b> <b>6</b> <b>7</b> <b>8</b> <b>9</b> <b>A</b> <b>B</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>4</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