# **OMB** 412



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OMLINK



- VERTICAL BARGRAPH 24 LED WITH DISPLAY
- MULTIFUNCTION INPUT (DC, PM, RTD, T/C, DU)
- DIGITAL FILTERS, TARE, LINEARIZATION
- SIZE OF DIN 48 X 96 MM
- POWER SUPPLY 80...250 V AC/DC
- Option

Comparators • Data output • Analog output • Data record Power supply 10...30 V AC/DC

### 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:

 $\ensuremath{\text{LIGHT}}$   $\ensuremath{\text{MENU}}$  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

 $\mbox{USER}$  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.

The OMB 412UNI 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 an 8-bit microcontroller with a multichannel 24-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

# **OMB** 412UNI

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

# **OMB** 412PWR

AC VOLTMETER AND AMMETER AC NETWORK ANALYSER

**OMB** 412UQC UNIVERSAL COUNTER

# 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\_{\rm RMS}), current (A\_{\rm 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: 24 LED + 3-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

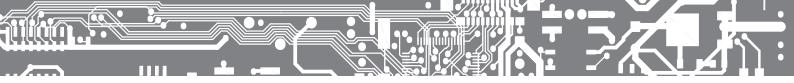
Range: 5...24 VDC, for feeding of sensors and transmitters

# 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: 24 three-color LED with 3-digit aux.display (-99...999), digit height 9,1 mm Decimal point: setting - in menu Brightness: setting - in menu

INSTRUMENT ACCURACY

**TK:** 50 ppm/\* Accuracy: ±0,1% of range + 1 digit (for projection 9999 and 5 meas./s) ±0,15% of range + 1 digit ±0,3%(0,6/0,9%) of range + 1 digit Accuracy of cold junction measureme RTD, T/C PWR ent:: ±1,5°C Refer (1)...40 meas/s, 0,6...5 meas/s (PWR) Overload capacity: 2x; 10x (t < 30 ms) - not for > 250 V and 5 A Measuring modes (PWR): voltage ( $V_{mea}$ ), current ( $A_{mea}$ ), real power (W), frequency (Hz) and with calculation of 0, S, cos fi Linearization: by linear interpolation in 50 points Time base (UQC): 0,05...50 s Calibration constant (UQC): 0/00001...999999 Filtration constant (UQC): 0/10/20/45/55/.../1000/2000 Hz PRESET (UOC): 0...9999999 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  $\operatorname{\mathsf{OM}}$  Link: Company communication interface for operation, setting and update of instruments Calibration: at 25°C and 40 % ch.

#### COMPARATOR

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

Protocol: ASCIL 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  $\geq$  0,4,  $I_{\rm STP}^<$  40 A/1 ms 80...250 V AC/DC, ±10 %, max. 13,5 VA, PF  $\geq$  0,4,  $I_{\rm STP}^<$  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: 48 x 96 x 120 mm Panel cutout: 90.5 x 45 mm

#### OPERATING CONDITIONS

ction: connector terminal board, section < 1,5/2,5 mm<sup>2</sup> Con 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

PI - Primary insulation, DI - Double insulation

#### MEASURING RANGES

OMB 412 is a multifunction instrument available in following types and ranges	

# Type UNI, standard [code "U"] DC: +60/+150/+300/+1 200 mV

00.	200/2100/2000/21 200 111
PM:	05/20 mA/420 mA; ±2/±5/±10/±40 V
OHM:	0100 Ω/01/10/100 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

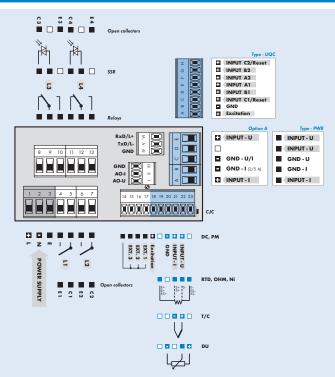
type PWF input U: input I:

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

#### type UQC

suring 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

#### 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 termianIs GND (main board/additional board) by external connection

#### CONNECTING INDIVIDUAL INPUTS DC

PM

±60/±150/±300/±1200 mV ±2/±5/±10/40 V

INPLIT ......

#### 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
в	Expansion about three inputs (PM)			SSI input
С				line input
к			060/150/300 mV	
Р			01/2,5/5 A	
S		010/120 V		
U		0250/450 V		
z	on request	on request	on request	

# ORDER CODE

	г											_
OMB 412				- [						1		
Туре		U N	1		•	•	•	•	•	•	•	•
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		PW	R*		•	••	•	•	•	•	•	•
Order code shall not include bla	nk spaces!	υọ	C*		٠	٠	•	٠	٠	٠	٠	٠
Power supply	10	.30 V A	.c/nc		٥							
		250 V A			1							
Option, see table "Order co			,			?						
Comparators			none				0					-
•	1x re	elay (Fo	rm C)				1					
	2x rel	lays (Fo	rm C)				2					
	3x rel	ays (Fo	rm C)				3					
	4x rel	ays (Fo	rm C)				4					
	2х ор	en colle	ectors				5					
	4х ор	en colle	ectors				6					
2x ope	en collectors + 2x rel	lays (Fo	orm C)				7					
	2x rel	lays (Fo	orm C)				8					
			SSR				9					
	2x b	pistabil	relays				А					
	1x re	elay (Fo	rm C)				В					
Analog output			no					0				
,	es (Compensation <							1				
/	s (Compensation < 1	000 Ω,	'24 V]	_				2				
Data output			none						0			
			5 232						1			
			5 485						2			
			DBUS						З			
		PRO	FIBUS	_					4			
Excitation			yes	_						1		
Data record			no								0	
			RTC								1	
	FAST	(only fo		_	_						2	
Colour of digital display			red									1
0.1			green	_								2
Other	customer version,	do not	fill in									

For complete technical parameters of OMB 412UQC see the universal counter OM 602UQC

\* Launch for sale has not been set