OM 402UNI

- **4-digit programmable projection**
- **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**

OML**i**NK

Options

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

OM 402UNI	DC VOLTMETER AND AMMETER
	PROCESS MONITOR
	OHMMETER
	THERMOMETER FOR Pt
	THERMOMETER FOR Ni
	THERMOMETER FOR THERMOCOUPLES
	DISPLAY UNIT FOR LINEAR POTENTIOMETERS
OM 402PWR	AC NETWORK ANALYSER

Description

The OM 402 model series are 4 digit panel programmable instruments designed for maximum efficiency and user comfort while maintaining their favourable price. Two models are available: UNI and PWR.

Type OM 402UNI is a multifunction instrument with the option of configuration for 7 various input options, easily configurable in the instrument menu. By further options of input modules it is feasible to measure larger ranges of DC voltage and current or increase the number of inputs up to 4 (applies for PM). 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 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). The measured units may be projected on the display.

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 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 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 Ψ
Setting: manual, in menu optional projection on the display may be set for both limit values of the input signal
Projection: -99999...999999

COMPENSATION

of conduct (RTD, OHM):   in menu it is possible to perform compensation 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: by linear interpolation in 50 points (solely via OM Link)

DIGITAL FILTERS

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

EXTERNAL CONTROL

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

Technical data

PROJECTION
Display: -99999...999999, red or green 14-segment LED, digit height 14 mm
-999...9999, red/green 7-segment LED, height 20 mm
Description: last two characters on the display may be used for description of measured quantities (adjustable in the menu)
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 > 250/450V, 5 A; 2x
Measuring modes (PWR): voltage (V_{RMS}), current (A_{RMS}), real power (W), frequency (Hz) and with calculation of Q, S, cos Ψ
Linearization: by linear interpolation in 50 points
Input filters: exp./ floating/ arithmetic average, Rounding
Functions: Offset, Min/max value, Tare, Peak value, Mat. operations
Ext. control: HOLD, LOCK, Tare, Min/Max
Data record: measured data record into instrument memory
RTC - 15 ppm/°C, time-date-display value, < 250k data
FAST - display value, < 8k data
Resolution: 0,1°C (RTD), 1°C (T/C)
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.

COMPARATOR
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 A), 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 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%, 10 VA
80...250 V AC/DC, ±10%, 10 VA
Power 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 mm²
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

OM 402 is a multifunction instrument available in following types and ranges

type UNI
DC: 0...60/150/300/1200 mV
PM: 0...5 mA/0...20 mA/4...20 mA/±2 V/±5 V/±10 V/±40 V
OHM: 0...100 Ω/0...1 kΩ/0...10 kΩ/0...100 kΩ (Autorange)
RTD: Pt 100/Pt 500/Pt 1000
Ni: Ni 1 000/Ni 10 000
T/C: J/K/T/E/B/S/R/N
DU: Linear potentiometer (min. 500 Ω)

type UNI, option A
DC: 0...1 A/0...5 A/±30 V/±120 V/±500 V

type UNI, option B (expansion about three inputs)
PM: 3x 0...5 mA/0...20 mA/4...20 mA/±2 V/±5 V/±10 V/±40 V

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

	UNI	PWR	PWR
zero	0 = Standard		
A	0...1/5 A, 0...30/120/500 V		
B	expansion about three inputs (PM)		
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 (Option A) has galvanic connection with EXT inputs and OM Link connector

Order code

OM 402 ☐☐☐ - ☐☐☐☐☐☐☐☐

Type		U N I	•	•	•	•	•	•	•	•
		P W R	•	••	•	•	•	•	•	•
Power supply	10...30 V AC/DC	0								
	80...250 V AC/DC	1								
Option, see teble „Measuring ranges"		?								
Comparators	no		0							
	1x relay *(switch-on)*		1							
	2x relay *(switch-on)*		2							
	3x relay *(2x switch-on + 1x switching)*		3							
	4x relay *(2x switch-on + 2x switching)*		4							
	2x open collector		5							
	4x open collector		6							
	2x open collector + 2x relay *(switching)*		7							
	2x relay *(switching)*		8							
	2x SSR		9							
	2x latching relay		A							
	1x relay *(switching)*		B							
Analog output	no			0						
	yes (comp. < 500 Ω/12 V)			1						
	yes (comp. < 1 000 Ω/24 V)			2						
Data output	none				0					
	RS 232				1					
	RS 485				2					
	MODBUS*				3					
	PROFIBUS*				4					
Excitation	no					0				
	yes					1				
Data record	no						0			
	RTC						1			
	FAST						2			
Display color	red *(14 mm)*									1
	green *(14 mm)*									2
	red/green *(20 mm)**									3

* Scheduled for sale in 1st Q of 2007