



Data Sheet
OM 402PWR

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INSTRUMENTS

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- 4-DIGIT PROGRAMMABLE PROJECTION
- MULTIFUNCTION INPUT (DC, PM, RTD, T/C, DU)
- DIGITAL FILTERS, TARE, LINEARIZATION
- SIZE OF DIN 96 x 48 MM
- POWER SUPPLY 80...250 V AC/DC
- Option
 - Comparators • Data output • Analog output
 - Data record • Power supply 10...30 V AC/DC
 - Three-color display - 20mm

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.

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 transmission into PC via serial interface RS232/485 and OM Link.

OM 402

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

Type OM 402UNI is a multifunction instrument with the option of configuration for 8 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 and multichannel 24-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

OM 402UNI

DC VOLTMETER AND AMMETER
 PROCESS MONITOR
 OHMMETER
 THERMOMETER FOR PT/CU/NI/TERMOCOUPLES
 DISPLAY UNIT FOR LINEAR POTENTIOMETERS

OM 402LC

WEIGHING INDICATOR

OM 402PWR

AC VOLTMETER AND AMMETER
 AC NETWORK ANALYSER

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 Φ

Setting: manual, in menu optional projection on the display may be set for both limit values of the input signal, e.g. input 0...39,99 V > 0...850,0

Projection: -99999...999999

EXCITATION

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

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 (temperature at the input brackets)

LINEARIZATION

Linearization: through linear interpolation in 50 points (solely via OM Link)

DIGITAL FILTERS

Floating/Exp./Arithmetic average: from 2...30/100/100 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 mathematic operations between inputs

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 14mm,
-999...9999, red/green/orange 7-segment LED, height 20mm
Description: last two characters on the display may be used for description of measured quantities (adjustable in the menu)
Decimal point: setting - in menu
Brightness: setting - in menu

INSTRUMENT ACCURACY

TK: 50 ppm/°C
Accuracy: ±0,1% of range + 1 digit (for projection 9999 and 5 meas./s)
±0,15% of range + 1 digit RTD, T/C
±0,3% (0,6/0,9%) of range + 1 digit PWR
Accuracy of cold junction measurement: ±1,5°C
Rate: 0,1...40 meas./s, 0,5...5 meas./s (PWR)
Overload capacity: 2x; 10x [t < 30 ms] - not for > 250 V and 5 A
Measuring modes (PWR): voltage (V_{RMS}), current (A_{RMS}), real power (W), frequency (Hz) and with calculation of Q, S, cos φ
Linearization: by linear interpolation in 50 points
Digital 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, < 266k data
FAST (UNI) - display value, < 8k data
Resolution (RTD, T/C): 1°/0,1°/0,01°C
Watch-dog: reset after 0,4 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 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

DATA OUTPUT

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)

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. < 600 Ω/12 V or 1 000 Ω/24 V]

EXCITATION

Adjustable: 5...24 VDC/max. 1,2 W
Fixed: 10 VDC, max. load 80 Ω

POWER SUPPLY

10...30 V AC/DC, ±10%, max. 13,5 VA, PF≥0,4, I_{STR} < 40 A/1 ms
80...250 V AC/DC, ±10%, max. 13,5 VA, PF≥0,4, I_{STR} < 40 A/1 ms
Power supply is protected by a fuse inside the instrument

MECHANICAL PROPERTIES

Material: Noryl GFN2 SE1, incombustible UL 94 V-1
Dimensions: 96 x 48 x 120 mm
Panel cutout: 90,5 x 45 mm

OPERATING CONDITIONS

Connection: connector terminal board, section < 1,5/2,5 mm²
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 > 870 V [Z], 300 V [DI]
input, output, Exc. > 300 V [Z], 150 V [DI]
EMC: EN 61326-1
Seismic capacity: IEC 980: 1993, par. 6
SW validation (UNI): Class B, C in compliance with IEC 62138, 61226

PI - Primary insulation, DI - Double insulation

MEASURING RANGES

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

type UNI, standard (code „0“)

DC: ±60/±150/±300/±1 200 mV
PM: 0...5/20 mA/4...20 mA; ±2/±5/±10/±40 V
OHM: 0...100 Ω/0...1/10/100 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 UNI, Option B (expansion abt three inputs)

PM: 3x 0...5/20 mA/4...20 mA; ±2/±5/±10/±40 V

type LC

LC: 1...4/2...8/4...16 mV/V

type PWR

input U: 0...10/120/250/450 V

input I: 0...60/150/300 mV; 0...1/2,5/5 A

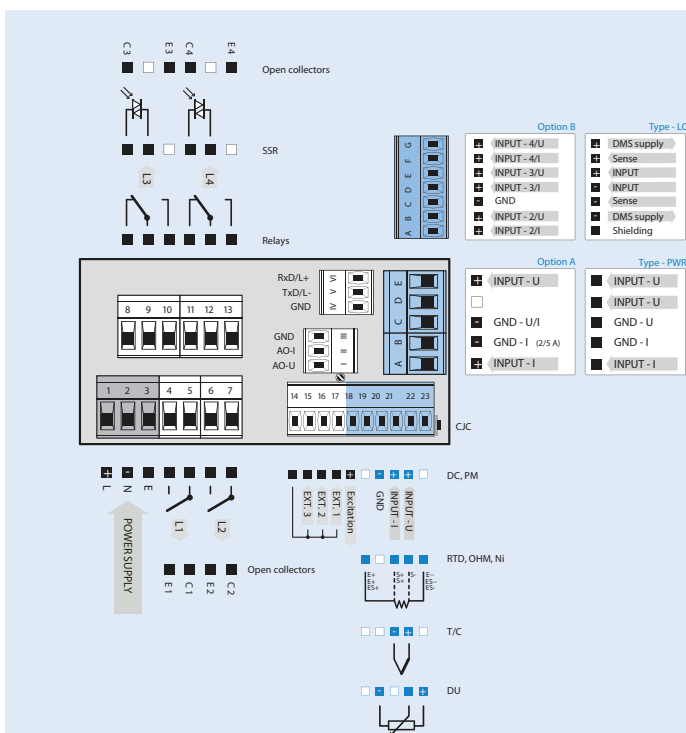
CONNECTING INDIVIDUAL INPUTS

	INPUT „I“	INPUT „U“
DC		±60/±150/±300/±1200 mV
PM	0...5/0...20 mA/4...20 mA	±2/±5/±10/40 V

ORDER CODE SPECIFICATION

	UNI	LC	PWR - U	PWR - I
W/O	standard	1...4/2...8/4...16 mV/V		
A	±0,1/±0,25/±0,5/±2/±5 A ±100/±250/±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



ORDER CODE

OM 402		Order code specification			
Type	UNI	LC	PWR - U	PWR - I	
Power supply	10...30 V AC/DC	80...250 V AC/DC			0
Option, see table „Order code specification“					1
Comparators	no				0
	1x relay (Form A)				1
	2x relays (Form A)				2
	3x relays [2x Form A + 1x Form C]				3
	4x relays [2x Form A + 2x Form C]				4
	2x open collectors				5
	4x open collectors				6
	2x open collectors + 2x relays (Form C)				7
	2x relays (Form C)				8
	2x SSR				9
	2x relays, bistabil				A
	1x relay (Form C)				B
Analog output	no				0
	yes (Compensation < 600 Ω/12 V)				1
	yes (Compensation < 1 000 Ω/24 V)				2
Data output	no				0
	RS 232				1
	RS 485				2
	MODBUS*				3
	PROFIBUS				4
Excitation	yes				1
Data record	no				0
	RTC				1
	FAST (only for UNI)				2
Display color	red (14 mm)				1
	green (14mm)				2
	red/green (20mm)				3
Other	customer version, do not fill in				00
	SW validation - IEC 62138, IEC 61226				VS

Default execution is shown in bold

* not compatible with RTC