



## OM 402PWR

The OM 402 model series are 4-digit panel programmable instruments designed for maximum efficiency and user comfort while maintaining their favourable price.

Type OM 402PWR is a universal alternating current V-A meter with the extension of functions for further network analysis. The instrument measures voltage, current, active power, frequency, and with calculation also reactive power, apparent power and cos φ.

The instrument is based on a single-chip microcontroller with a true RMS converter, which ensures good accuracy, stability and easy operation of the instrument.



## AC V-A METER/NETWORK ANALYSER

- 4-DIGIT PROGRAMMABLE PROJECTION
- RANGE: 0...1/2,5/5 A; 0...60/150/300 mV;  
0...10/120/250/450 V
- 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  
Data record • Three-color display • 20 mm

## OM 402PWR

AC VOLTMETER AND AMMETER  
AC NETWORK ANALYSER

## 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 DML 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).

## OPTION

**COMPARATORS** are assigned to monitor one, two, three or four limit values with relay output. As a user you can select the mode limit: LIMIT/BATCH/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/PROFIBUS protocols.

**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. 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

**Measuring range:** adjustable in menu

**Measur. modes (PWR):** voltage ( $V_{RMS}$ ), current ( $A_{RMS}$ ), power (W), frequency (Hz) and with calculation reactive power (Q), apparent power (S), power factor (cos φ)

**Setting:** manual, optional projection on the display may be set in menu for both limit values of the input signal, e.g. input 0...60 mV > 0...500.0

**Projection:** -999...9999

## FUNCTIONS

**Linearization:** linear interpolation in 50 points (only via OM Link)

**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

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

## DIGITAL FILTERS

**Floating/Exp./Arithm. average:** from 2...30/100/100 measurements

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

## EXTERNAL CONTROL

**Lock:** control keys blocking

**Hold:** display/instrument blocking

**Tare:** activation and tare resetting

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

## TECHNICAL DATA

### INPUT

AC Range	partially fixed - by order	
D...60 mV	21 kΩ	Input 1 - I
D...150 mV	21 kΩ	Input 1 - I
D...300 mV	1,2 kΩ	Input 1 - I
D...1 A	< 150 mV	Input 1 - I
D...2,5 A	< 150 mV	Input 1 - I
D...5 A	< 150 mV	Input 1 - I
D...10 V	150 kΩ	Input 2 - U
D...120 V	930 kΩ	Input 3 - U
D...250 V	730 kΩ	Input 2 - U
D...450 V	930 kΩ	Input 3 - U
Input frequency	D...400 Hz for amplitude from 8 V	
Meas. quantif.	Voltage $V_{meas}$ Current $I_{meas}$ Active power [P] frequency [Hz]	
	<i>with calculation</i> reactive power [Q] apparent power [S] power factor [cos fi]	
Ext. inputs	3 inputs, on contact The following functions can be assigned: OFF input off HOLD display stop LOCK control keys blocking PASS. menu access blocking TARE I tare activation for „Channel I“ TARE U tare activation for „Channel U“ TARE P tare activation for „Channel P“ TARE F tare activation for „Channel F“ C.T. AL. tare resetting on all channels C.T. ACT. tare resetting on current channel SAVE data recording start [FAST/RTC] SWIT. sequential or BCD channel switching	

### PROJECTION

**Display:** -99999...999999, single color 14-segment LED;  
-999...9999, 3-color 7-segment LED  
**Digit height:** 14 or 20 mm  
**Display color:** red or green [height 14 mm]  
red/green/orange [height 20 mm]  
**Description:** last two characters on the display may be used for description of measured quantities (menu adjustable - only 14 mm display)  
**Decimal point:** adjustable - in menu  
**Brightness:** adjustable - in menu

### INSTRUMENT ACCURACY

**TK:** 50 ppm/°C  
**Accuracy:** ±0,3% [0,6/0,9%] of range + 1 digit [for proj. 9999 and 5 measur./s]  
**Rate:** 0,5...5 measur./s  
**Overload capacity:** 2x; 10x [t < 30 ms] - not for > 250 V and 5 A  
**Measur. modes [PWR]:** voltage  $V_{meas}$ , current  $I_{meas}$ , power [W], frequency [Hz] and with calculation Q, S, cos fi  
**Linearization:** linear interpolation in 50 points  
**Digital filters:** Exp./Floating/Arithm. average, Rounding  
**Functions:** offset, min./max. value, tare, peak value  
**Data record:** measured data record into instrument memory  
RTC - 15 ppm/°C, time-date-display value < 266k data  
**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, menu adjustable, contact switch-on < 30 ms  
**Hysteresis mode:** switching limit, hysteresis band „Lim ±1/2 Hys.“ and time [0...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]

### ANALOG OUTPUTS

**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  
**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, separated

### POWER SUPPLY

**Range:** 10...30 V AC/DC, ±10%, PF ≥ 0,4,  $I_{STP}$  < 40 A/1 ms, isolated  
80...250 V AC/DC, ±10%, PF ≥ 0,4,  $I_{STP}$  < 40 A/1 ms, isolated  
**Consumption:** < 9,4 W/9,2 VA  
**Power supply is protected by a fuse inside the instrument.**

### MECHANIC PROPERTIES

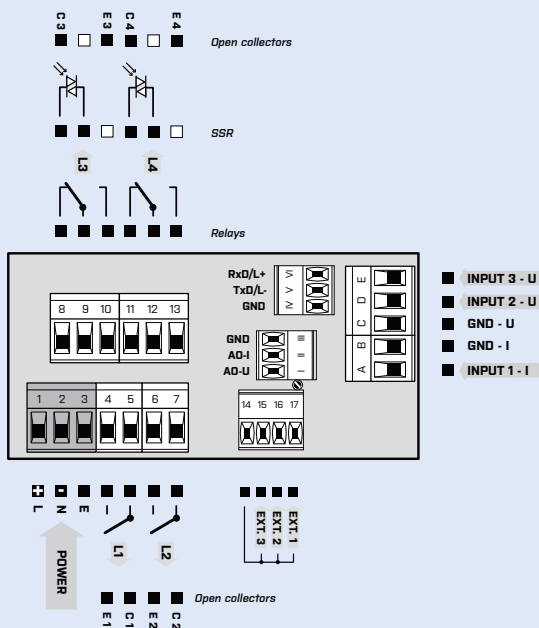
**Material:** Noryl GFN2 SE1, incombustible UL 94 V-1  
**Dimensions:** 96 x 48 x 120 mm [w x h x d]  
**Panel output:** 90,5 x 45 mm [w x h]

### OPERATING CONDITIONS

**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 input 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 [UNI]:** Class B, C in compl. with IEC 62138, 61226

PI - Primary insulation, DI - Double insulation

## CONNECTION



\* GND [input] is galvanically connected with inputs EXT. and the OM Link connector

## ORDER CODE

### OM 402PWR

Power supply	10...30 V AC/DC 80...250 V AC/DC	0	1																			
Measuring range - U	0...10/120 V	S	U	Z																		
	D...250/450 V on request																					
Measuring range - I	0...60/150/300 mV	K	P	Z																		
	D...1/2,5/5 A on request																					
Comparators	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																						
Analog output	no																					
	yes [compensation < 600 Ω/12 V] yes [compensation < 1000 Ω/24 V]																					
Data output	no																					
	RS 232																					
	RS 485																					
	MODBUS* PROFIBUS																					
Excitation	no																					
	yes																					
Data record	no																					
	RTC																					
Display color	red [14 mm]																					
	green [14 mm]																					
	red/green [20 mm]																					
Specification	customized version, do not fill in																					00

Basic configuration of the instrument is indicated in bold.

\* Unavailable in combination with RTC/FAST