

# **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

Comparators • Data output • Analog output Data record • Three-color display - 20 mm

# **OM** 402PWR



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

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

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

#### **OM** 402PWR

AC VOLTMETER AND AMMETER AC NETWORK ANALYSER

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

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.

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

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

Measuring modes (PWR): voltage  $(V_{RMS})$ , current  $(A_{RMS})$ , power (W), frequency (Hz)and with calculation reactive power (Q), apparent power (S), power factor (cos fi) 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: non-linear signals can be linearized by the means of a linearization table (up to 50 points)

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: polynom, 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

Number of inputs		1								
AC	Range	partially fixed - by order								
		060 mV	21 kΩ	Input 1 - I						
		0150 mV	21 kΩ	Input 1 - I						
		0300 mV	1,2 kΩ	Input 1 - I						
		01 A	< 150 mV	Input 1 - I						
		02,5 A	< 150 mV	Input 1 - I						
		05 A	< 150 mV	Input 1 - I						
		010 V	150 kΩ	Input 2 - U						
		0120 V	930 kΩ	Input 3 - U						
		0250 V	730 kΩ	Input 2 - U						
		0450 V	930 kΩ	Input 3 - U						
		Instrument car	also be used for DC	input signals						
	Input	0400 Hz								
	frequency	for amplitude from 8 V								
	Meas.	Voltage (VRMS								
	quantit.	Current (ARMS								
		Active power (	P)							
		frequency (Hz)								
		with calculatio	n							
		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								
			trol keys blocking							
			nu access blocking							
			activation for "Char							
		TARE U tare	activation for "Char	inei U						

tare activation for "Channel I" tare activation for "Channel I" tare activation for "Channel P" tare activation for "Channel F" tare resetting on all channels tare resetting on all channels

tare resetting on current channel data recording start (FAST/RTC)

sequential or BCD channel switching

TARE P TARE E

SAVE

SWIT

Display: -9999...99999, single color 14-segment LED; -999...999, 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

TC: 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 measurement/s

Overload capacity: 2x; 10x (t < 30 ms) - not for > 250 V and 5 A

Linearization: linear interpolation in 50 points (only via OM Link)
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 and ±1/2 Hys.) and

time (±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: 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)

Type: isolated, programmable with a 16-bit D/A converter, output type and range are optional in the menu

linearity: 0,1% of range

Non-linearity: ( TC: 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. L. < 40 A/1 ms. isolated 80...250 V AC/DC, ±10 %, PF≥0,4, IS<sub>TP</sub>< 40 A/1 ms, isolated

Consumption: < 9,4 W/9,2 VA

#### MECHANIC PROPERTIES

Material: NorvI GFN2 SE1, incombustible UL 94 V-I Dimensions: 96 x 48 x 120 mm (w x h x d)

Panel cutout: 90,5 x 45 mm (w x h)

#### **OPERATING CONDITIONS**

Connection: connector terminal blocks, section < 1.5/2.5 mm<sup>2</sup>
Stabilization period: within 5 minutes after switch-on
Working temperature: -20°...60°C
Storage temperature: -20°...80°C

Protection: IP64 (front panel only)

Dielectric strength: 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

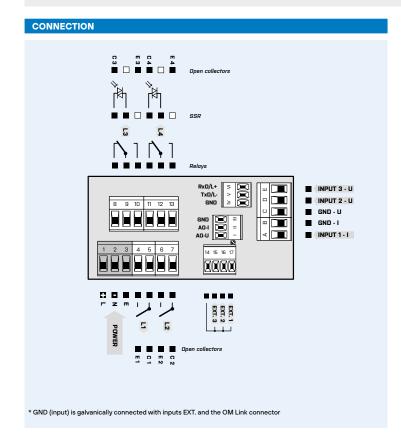
2,5 kVAC per 1 min test between input and data/analog output

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



			Т	Г	Т	Г		Г	Г		
OM 402PWR	<b>-</b>	$ldsymbol{\bot}$	_				_		_	Ш	_
Power supply	1030 V AC/DC	0									
	80250 V AC/DC	1									
Measuring range - U	010/120 V		S								
	0250/450 V		U								
	on request		Z								
Measuring range - I	060/150/300 mV			K							
	01/2,5/5 A			P							
	on request			Z							
Comparators	no				0						
	1x relay (Form A)				1						
	2x relay (Form A)				2						
3x re	lays (2x Form A + 1x Form C)				3						
4x rei	ays (2x Form A + 2x Form C)				4						
	2x open collector				5						
				6							
2x open collector + 2x relays (Form C)					7						
	2x relays (Form C)				8						
	2x SSR				9						
	2x relays, bistable				Α						
	1x relay (Form C)				В						
Analog output	no					0					
yes (c	compensation < 600 Ω/12 V)					1					
yes (co	mpensation < 1000 Ω/24 V)					2					
Data output	no						0				
	RS 232						1				
	RS 485						2				
	MODBUS*						3				
	PROFIBUS						4				
Excitation	no							0			
	yes							1			
Data record	no								0		
	RTC								1		
Display color	red (14 mm)									1	
	green (14 mm)									2	
	red/green (20 mm)									3	
Specification custon	mized version, do not fill in										

Basic configuration of the instrument is indicated in bold.

\* Unavailable in combination with RTC/FAST