



Data Sheet
OM 402PWR

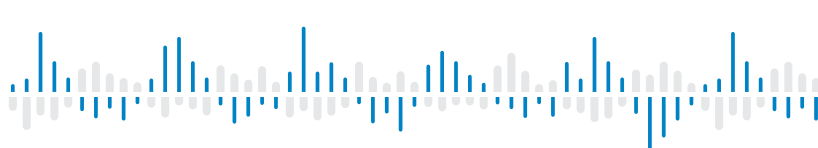
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Bristol Instruments
65 Sprague Street
Boston, MA 02136

Toll free
877-866-8500



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 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 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

Measuring modes: 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: 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

INPUT

Number of inputs	1		
AC Range	partially fixed - by order		
	0...60 mV	21 k Ω	Input 1 - I
	0...150 mV	21 k Ω	Input 1 - I
	0...300 mV	1,2 k Ω	Input 1 - I
	0...1 A	< 150 mV	Input 1 - I
	0...2,5 A	< 150 mV	Input 1 - I
	0...5 A	< 150 mV	Input 1 - I
	0...10 V	150 k Ω	Input 2 - U
	0...120 V	930 k Ω	Input 3 - U
	0...250 V	730 k Ω	Input 2 - U
	0...450 V	930 k Ω	Input 3 - U
	Instrument can also be used for DC input signals		
Input frequency	0...400 Hz for amplitude from 8 V		
Meas. quant.	Voltage (VRMS)		
	Current (ARMS)		
Ext. inputs	Active power (P)	3 inputs, on contact	
	frequency (Hz)	The following functions can be assigned:	
	with calculation	input off	
	reactive power (Q)	display stop	
	apparent power (S)	control keys blocking	
power factor (cos ϕ)	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

TC: 50 ppm/ $^{\circ}$ C
Accuracy: $\pm 0,3\%$ (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
Measuring modes (PWR): voltage (V_{rms}), current (A_{rms}), power (W), frequency (Hz) and with calculation Q, S, cos ϕ
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/ $^{\circ}$ 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 $^{\circ}$ C and 40 % r.h.

COMPARATOR

Type: digital, menu adjustable, contact switch-on < 30 ms
Hysteresis mode: switching limit, hysteresis band (Lim and $\pm 1/2$ Hys.) and time ($\pm 99,9$ 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
TC: 15 ppm/ $^{\circ}$ 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 $\Omega/12$ V or 1000 $\Omega/24$ V)

EXCITATION

Adjustable: 5...24 VDC/max. 1,2 W, separated

POWER SUPPLY

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

MECHANIC PROPERTIES

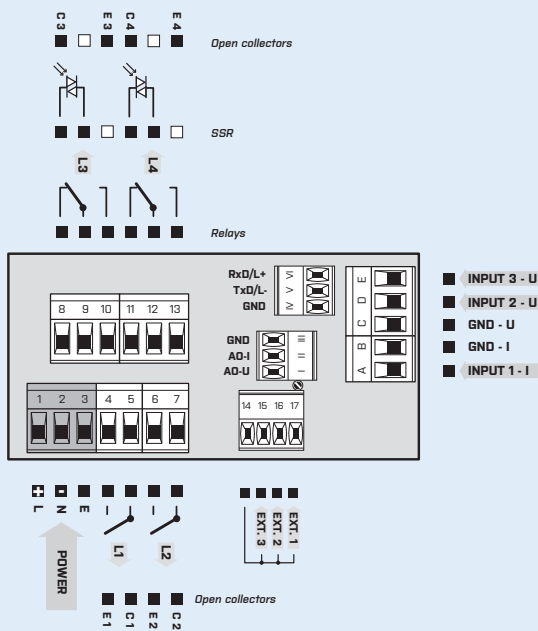
Material: Noryl GF20 SE1, incombustible UL 94 V-1
Dimensions: 96 x 48 x 120 mm (w x h x d)
Panel cutout: 90,5 x 45 mm (w x h)

OPERATING CONDITIONS

Connection: connector terminal blocks, section < 1,5/2,5 mm 2
Stabilization period: within 5 minutes after switch-on
Working temperature: -20...60 $^{\circ}$ C
Storage temperature: -20...80 $^{\circ}$ C
Protection: IP64 (front panel only)
EL safety: EN 61010-1, A2
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

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									
Measuring range - U	0...10/120 V 0...250/450 V on request	1	S								
Measuring range - I	0...60/150/300 mV 0...1/2,5/5 A on request		U								
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 2x open collector + 2x relays (Form C) 2x relays (Form C) 2x SSR 2x relays, bistable 1x relay (Form C)		Z	K	P	Z					
Analog output	no yes (compensation < 600 $\Omega/12$ V) yes (compensation < 1000 $\Omega/24$ V)					0					
Data output	no RS 232 RS 485 MODBUS* PROFIBUS					1					
Excitation	no yes						0				
Data record	no RTC						1				
Display color	red (14 mm) green (14 mm) red/green (20 mm)								1		
Specification	customized version, do not fill in									2	
											3
											00

Basic configuration of the instrument is indicated in bold.

* Unavailable in combination with RTC/FAST