



Data Sheet  
**OMB 502DC**

*Distributed by*



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## DC V-A METER

- 5-digit programmable projection
- Range:  $\pm 99,999 \text{ mV} \dots \pm 300,00 \text{ V}$   
 $\pm 999,99 \text{ }\mu\text{A} \dots \pm 5,0000 \text{ A}$
- Mathematic functions, Digital filters, Tare
- Accuracy: 0,02 %, Rate: 100 meas./s
- 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

# OM 502DC



Type OM 502DC is a precision 5-digit programmable panel V-A meter. The instrument is based on a single-chip microcontroller with a fast 24-bit sigma-delta converter, which secures high accuracy, stability and easy operation of the instrument.

**OM 502DC**  
DC VOLTMETER AND AMMETER

## 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). 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. 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

**Setting:** manual, optional projection on the display may be set in menu for both limit values of the input signal, e.g. input 0...300,0 V > 0...450,0  
**Projection:** -99999...99999

### EXCITATION

**Range:** 5...24 VDC/1,2 W, for feeding sensors and transmitters

### 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 average:** from 2...30 measurements

**Exponential average:** from 2...100 measurements

**Arithmetic average:** from 2...100 measurements

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

### EXTERNAL CONTROL

**Lock:** control keys blocking

**Hold:** display/instrument blocking

**Tare:** tare activation

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

## TECHNICAL DATA

INPUT			
Number of inputs	1		
DC	Range	fixed - by order	
		±999,99 µA	< 300 mV
		±9,9999 mA	< 300 mV
		±99,999 mA	< 300 mV
		±999,99 mA	< 50 mV
		±5,0000 A	< 10 mV
		±99,999 mV	1,8 MΩ
		±999,99 mV	1,8 MΩ
		±9,9999 V	1,8 MΩ
		±99,999 V	1,8 MΩ
		±999,99 V	1,8 MΩ
		±300,00 V	1,8 MΩ
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	tare activation		
CL. TA.	tare resetting		
CL. M.M.	resetting min/max value		
SAVE	data recording start (FAST/RTC)		
CL. ME.	data recording reset (FAST/RTC)		
CHAN. A.	value display „Channel A“		
FIL. A.	value display „Channel A“ + filter		
MAT. FN.	value display „Math. functions“		

**PROJECTION**  
 Display: -99999..999999, single color 14-segment LED;  
 Digit height: 14 mm  
 Display color: red or green  
 Description: the last two characters on the display can be used to describe the measured quantities  
 Decimal point: adjustable - in menu  
 Brightness: adjustable - in menu

**INSTRUMENT ACCURACY**  
 TC: 50 ppm/°C  
 Accuracy: ±0,02% of range + 1 digit (for projection 99999 and 10 meas./s)  
 ±0,1% of range + 1 digit **DC (5 A)**  
 ±0,05% of range + 1 digit **DC (1 A)**

Rate: 1...100 measurement/s  
 Overload capacity: 2x; 10x (t < 30 ms) - not for 300 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, Mat. operations  
 Data record: measured data record into instrument memory  
 RTC - 15 ppm/°C, time-date-display value < 266k data  
 FAST - display value < 8k data  
 Watch-dog: reset after 400 ms  
 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 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  
 9 600 Baud...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/°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

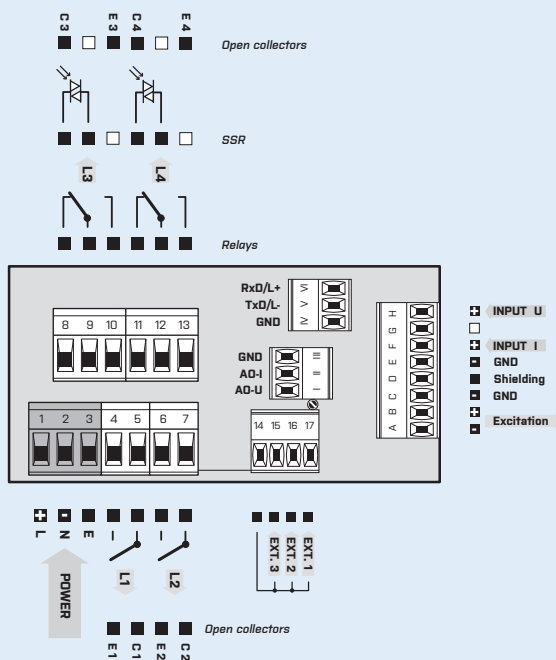
**POWER SUPPLY**  
 Range: 10...30 V AC/DC, ±10%, PF≥0,4, I<sub>STP</sub>< 40 A/1 ms, isolated  
 80...250 V AC/DC, ±10%, PF≥0,4, I<sub>STP</sub>< 40 A/1 ms, isolated  
 Consumption: < 8,0 W/7,8 VA  
 Power supply is protected by a fuse inside the instrument.

**MECHANIC PROPERTIES**  
 Material: Noryl GFN2 SE1, incombustible UL 94 V-1  
 Dimensions: 96 x 48 x 120 mm (w x h x d)  
 Panel 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°...85°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

PI - Primary insulation, DI - Double insulation

## CONNECTION



## ORDER CODE

OM 502DC		- [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] - [ ]									
<b>Power supply</b>	10...30 V AC/DC	<b>0</b>									
	80...250 V AC/DC	<b>1</b>									
<b>Measuring range</b>	±99,999 mV	<b>A</b>									
	±999,99 mV	<b>B</b>									
	±9,9999 V	<b>C</b>									
	±99,999 V	<b>D</b>									
	±300,00 V	<b>E</b>									
	±999,99 µA	<b>K</b>									
	±9,9999 mA	<b>L</b>									
	±99,999 mA	<b>M</b>									
	±999,99 mA	<b>N</b>									
	±5,0000 A	<b>P</b>									
<b>Comparators</b>	none	<b>0</b>									
	1x relay (Form A)	<b>1</b>									
	2x relay (Form A)	<b>2</b>									
	3x relays (2x Form A + 1x Form C)	<b>3</b>									
	4x relays (2x Form A + 2x Form C)	<b>4</b>									
	2x open collector	<b>5</b>									
	4x open collector	<b>6</b>									
	2x open collector + 2x relays (Form C)	<b>7</b>									
	2x relays (Form C)	<b>8</b>									
	2x SSR	<b>9</b>									
	2x bistable relays	<b>A</b>									
	1x relay (Form C)	<b>B</b>									
<b>Data output</b>	none	<b>0</b>									
	RS 232	<b>1</b>									
	RS 485	<b>2</b>									
	MODBUS*	<b>3</b>									
	PROFIBUS	<b>4</b>									
<b>Analog output</b>	no	<b>0</b>									
	yes (compensation < 600 Ω/12 V)	<b>1</b>									
	yes (compensation < 1 000 Ω/24 V)	<b>2</b>									
<b>Excitation</b>	yes	<b>1</b>									
<b>Data record</b>	no	<b>0</b>									
	RTC	<b>1</b>									
	FAST	<b>2</b>									
<b>Display color</b>	red									<b>1</b>	
	green									<b>2</b>	
<b>Specification</b>	customized version, do not fill in										<b>00</b>

Basic configuration of the instrument is indicated in bold.

\* Unavailable in combination with RTC/FAST