

Data Sheet  
**OMX 102**

*Distributed by*



[www.bristolinstruments.com](http://www.bristolinstruments.com)

Bristol Instruments  
90 Canal Street, 4th Floor  
Boston, MA 02114

Toll free  
877-866-8500



## OMX 102

OMLINK

The OMX 102 model range are DIN rail mountable programmable transmitters designed with the utmost versatility and user comfort in mind whilst keeping the cost at a favourable level. The OMX 102 various executions are UNI, DC, PWR, UQC and T. As a standard the instrument is fitted with a backlit LCD display which projects measured values and configuration settings.

OMX 102UNI is a multifunctional instrument with 8 possible input configurations easily adjustable in the instrument's menu.

OMX 102DC and OMX 102PWR are designed to measure extended AC and DC voltage and current.

The instrument is based on an 32-bit microcontroller with A/D converter, which ensures good accuracy, stability and easy operation of the instrument.

The OMX 102UQC type is a universal low-cost counter/frequencymeter/stopwatch/timer.

- PROGRAMMABLE ISOLATED TRANSMITTERS
- 2x MULTIFUNCTION INPUT (DC, PM, RTD, T/C, DU)
- LCD DISPLAY, DIGITAL FILTER, TARE
- 2x OUTPUT  
0/4...20 mA/0...5 mA/0,2...2,2 kHz, 0...2/5/10 V/±10 V
- POWER SUPPLY 80...250 V AC/DC
- Option  
Excitation • Comparators • Data output • Data record  
Power supply 10...30 V AC/DC

### OMX 102DC

DC VOLTMETER AND AMMETER

### OMX 102PWR

AC VOLTMETER AND AMMETER  
AC NETWORK ANALYSER

### OMX 102UNI

DC VOLTMETER AND AMMETER  
PROCESS MONITOR  
OHMMETER  
THERMOMETER FOR PT/CU/NI/TC  
FOR LINEAR POTENTIOMETERS

### OMX 102UQC

UNIVERSAL COUNTER

### OMX 102T

TRANSMITTER FOR STRAIN GAUGE

### OPERATION

The instrument is set and controlled by two 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 and USB 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

**EXCITATION** is suitable for feeding of sensors and transmitters. It is isolated, with adjustable value in the range of 5/12/17/24 VDC.

**COMPARATORS** are assigned to monitor two limit values with relay output. 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, CAN and LAN.

### STANDARD FUNCTIONS

#### PROGRAMMABLE INPUT

**Selection:** of input type and measuring range

**Setting:** manual, in menu it is possible to set for both limit values of the input signal arbitrary type (V, mA, Hz) and range of the analog output as well as projection on the LCD display

**Weighing function (T):** manual or automatic calibration, signalization of stabilized equilibrium, zero stabilization, aut. zero monitoring, defined number of segm. on the scale

**Setting (UQC):** measuring mode counter/frequency/timer/ counter for IRC/clock with adjustable calibration coefficient, time base and projection

#### ANALOG OUTPUT

**Type:** isolated, programmable with resolution of max. 16 bit, rate < 1 ms

**Rozsah:** 0...2/5/10 V, ±10 V, 0...5 mA, 0/4...20 mA, 0,2...2 200 Hz

#### 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

#### LINEARIZATION

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

#### DIGITAL FILTERS

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

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

**Filtration constant (UQC):** transmits input signal up to 10...1 000 Hz

#### FUNCTIONS

**Preset (UQC):** initial non-zero value, which is always read after resetting the instrument to zero

**Setting current value (UQC):** initial value, e.g. amount passed-through

**Tare:** designed to reset display upon non-zero input signal

#### EXTERNAL CONTROL

**Hold:** display/instrument blocking

**Lock:** control keys blocking

**Resetting (UQC):** counter resetting

**Start/Stop (UQC):** stopwatch/timer control

## TECHNICAL DATA

### PROJECTION

**Display:** LCD with backlighting, 2x 3 characters + 2x description (3 characters)

**Description:** second and fourth line of LCD display may be used for description of measured quantity, resp. output quantity v menu)

**Decimal point:** setting - in menu

### INSTRUMENT ACCURACY

**TK:** 50 ppm/°C

**Accuracy:** ±0,15% of range + 1 digit (for 20 meas./s)

±0,3/±0,6/±0,9% of range + 1 digit

±0,05% of value + 1 digit

±0,01% of value ±2ms (UQC - stopwatch)

±0,01% of value ±130ms (UQC - RTC)

**Accuracy of cold junction measurement:** ±1,5°C

**Rate:** 0,5...160 meas./s, 0,6...5 meas./s for PWR

**Overload capacity:** 2x; 10x (t < 30 ms) - not for > 200 V and 5 A

**Resolution:** 0,1°C (RTD), 1°C (T/C), for display

**Watch-dog:** reset after 20 ms

**Functions:** HOLD, LOCK, Digital filters, Tare

**Linearization (DC, PM, DU):** by linear interpolation in 50 points

**Functions (UQC):** Data backup, Time backup, Present

**Input filters (UQC):** Filtration constant, Rounding

**Time base (UQC):** 0,5/1/5/10/50 s

**Calibration constant (UQC):** 0,01m...999M

**Filtration constant (UQC):** 0,5/4/10/100/1000 Hz

**PRESET (UQC):** 0,01m...999M

**Measuring modes (PWR):** voltage (V<sub>RMS</sub>), current (A<sub>RMS</sub>), real power (W),

frequency (Hz) and with calculation of Q, S, cos φ

**Data record:** measured data record into instrument memory

**RTC** - 15 ppm/°C, time-date-display value, < 266k data

PWR, T/C

UQC

UQC

UQC

**FAST (UNI)** - display value, < 8k data

**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-on < 50 ms

**Limits:** 999, resp. -99M...999M

**Hysteresis:** 0...999, resp. 999 k

**Delay:** 0...99,9 s

**Output:** 2x Form A relays (250 VAC/30 VDC, 3 A)

### DATA OUTPUT

**Protocol:** ASCII, MESSBUS, MODBUS - RTU, PROFIBUS

**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), 1 Mbaud (CAN)

**RS 232/RS 485:** isolated, adresace (max. 31 instruments/RS485)

**Ethernet:** 10/100BaseT, Security Protocols, POP3, ftp, http

### ANALOG OUTPUT

**Type:** isolated, dual 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)

**Frequency:** isolated, programmable, open collector with inside power resistor, 0,2...2 200 Hz

### EXCITATION

**Adjustable:** 5/12/17/24 VDC/max. 2,5 W, isolated

### POWER SUPPLY

10...30 V AC/DC, ±10%, max. 13,5 VA, PF ≥ 0,4, I<sub>grm</sub> < 40 A/1 ms

80...250 V AC/DC, ±10%, max. 13,5 VA, PF ≥ 0,4, I<sub>grm</sub> < 40 A/1 ms

Power supply is protected by a fuse inside the instrument

### MECHANICAL PROPERTIES

**Material:** PA 66, incombustible UL 94 V-1, blue

**Dimensions:** 113 x 98 x 35 mm

**Installation:** to DIN rail 35 mm wide

### OPERATING CONDITIONS

**Connection:** connector terminal board, section < 1,5/2,5 mm<sup>2</sup>

**Stabilization period:** within 15 minutes after switch-on

**Working temperature:** -20...60°C

**Storage temperature:** -20...80°C

**Cover:** IP20

**Construction:** safety class I

**El. safety:** EN 61010-1, A2

**Dielectric strength:** 4 kVAC after 1 min between supply and inputs

4 kVAC after 1 min between supply and data/anal. outputs

4 kVAC after 1 min between input and relays

3,75 kVAC after 1 min between input and data/anal. outputs

3,75 kVAC after 1 min between inputs

**Insulation resistance:** for pollution degree II, measuring cat. III.

Power supply, input, output, Exc. > 600 V (Z), 300 V (D)

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

OMX 102 is a multifunction instrument available in following types and ranges

### type UNI (Channel 1 and 2)

**DC:** ±30/±60/1000 mV; ±20/±40/±80 V; ±90/±180 mA

**PM:** ±5/±20 mA/4...20 mA; ±2/±5/±10 V

**OHM:** 0...100/300 Ω/0...1,5/3/30 kΩ

**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 DC - Hi:** ±1/±5 A; ±25/±50/±100/±200/±400 V (Channel 1)

**Type PWR:** 0...1/5 A,

0...60/300 mV; 0...10/120/250/450 V (Channel 1)

**Type T:** 1...4/2...8/4...16 mV/V (Channel 1)

**Type UQC:** 0...30/300 V, (Channel 1/12/17/274

comparison levels are adjustable in the menu, input frequency 0,1 Hz...500 kHz

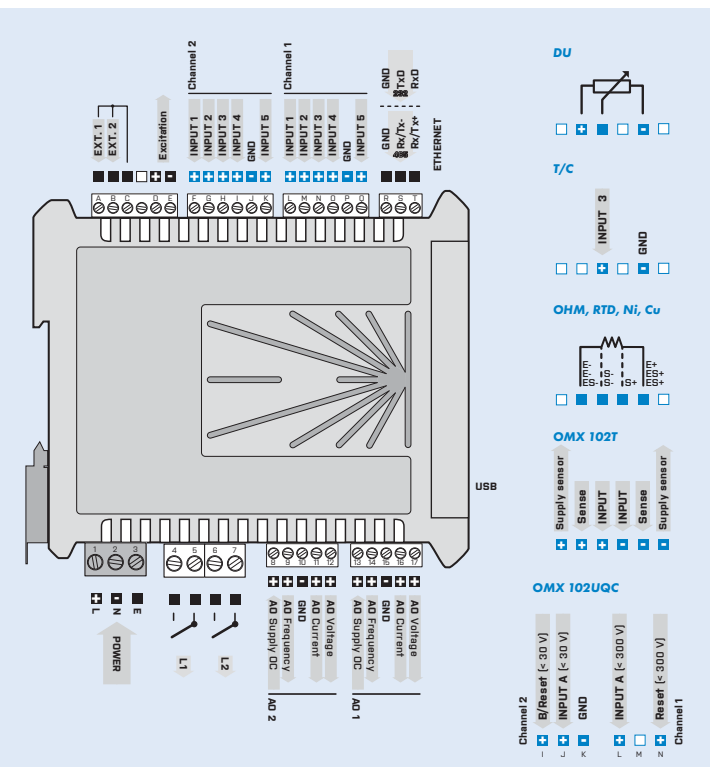
### CONNECTING INDIVIDUAL INPUTS

	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
<b>DC</b>	±20/±40/±80 V		±30/60 mV/±1 V		±90/180 mA
<b>PM</b>	±2/±5/±10 V				±5/20 mA, 4...20 mA
<b>T/C</b>			J/K/T/E/B/S/R/N/L		
<b>DC/Hi</b>	±25/±50/±100 V ±200/±400 V Channel 1				±1/±5 A Channel 2
<b>PWR-I</b>				0...60/300 mV Channel 2	0...1/5 A Channel 2
<b>PWR-U</b>	0...450 V Channel 1	0...250 V Channel 1	0...120 V Channel 1	0...10 V Channel 1	

### ORDER CODE SPECIFICATION

UNI	
<b>A</b>	channel 1
<b>B</b>	channel 1 and 2

## CONNECTION



## ORDER CODE

OMX 102		Order code specification																		
Type		U	N	I	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		D	C	*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		P	W	R	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		U	Q	C	*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		T	*	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Power supply</b>	10...30 V AC/DC 80...250 V AC/DC	0	1																	
<b>Measuring range</b>	see table „Order code specification“	?																		
<b>Comparators</b>	no 1x relay (Form A) 2x relays (Form A) 1x open collector 2x open collectors	0	1	2	3	4														
<b>Analog output</b>	none 1x 2x HART (not with data output)*	0	1	2	3															
<b>Output</b>	none RS 232 RS 485 (ASCII, MESSBUS, MODBUS) CAN* PROFIBUS 10/100BaseT Ethernet*	0	1	2	3	4	7													
<b>Excitation</b>	no Type OMX 102T always comes with excitation in standard	0	1																	
<b>Data record</b>	no RTC FAST (only for UNI)	0	1	2																
<b>Other</b>	customer version, do not fill in SW validation - IEC 62138, IEC 61226																		00	VS

Default execution is shown in bold

\* Launch for sale has not been set