Data Sheet

Programmable Isolated Transmitter
Model OMX 103UNI

Distributed by

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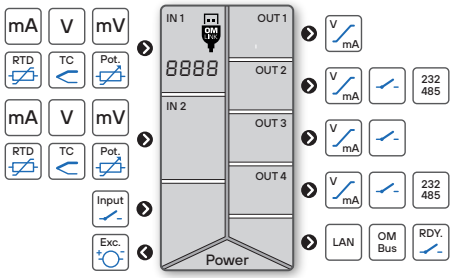
OMX 103UNI

- 2x multifunction input (DC, PM, RTD, T/C, DU)
- LCD display, Digit. filters, Tare, Linearization
- 3x Card slots
- Galvanic separation 2.5 kVAC
- Power supply 10...30 V AC/DC; 80...250 V AC/DC

Option

Comparators ● Data output ● Data record

PROGRAMMABLE ISOLATED TRANSMITTER



The OMX 103 model series are DIN rail mountable adjustable trasmitters designed with the utmost versatility and user comfort whilst keeping the cost at a favourable level.

Type OMX 103UNI is a multifunction two-input instrument with 8 possible input configurations easily adjustable in the instrument´s menu.

Modular concept of the device allows any card to be fitted in 3 slots. This can be performed on the end-user level. The trasmitters can be used, for example, as a splitter with up to 4 analogue outputs.

The instrument is based on a 32-bit processor and multichannel 24-bit ΔΣ ADC, which ensures good accuracy, stability and easy operation of the instrument.

For displaying measured data, easier setup and clear function arrangement, the instrument is delivered with a backlit LCD display.

OPERATION

The instrument is set and controlled by two buttons located on the front panel.All programmable settings of the instrument may be performed in three adjusting modes:

LIGHT MENU is protected by an optional number code and contains solely items necessary for instrument setting.

PROFI MENU is protected by an optional number code and contains complete instrument setting.

USER MENU may contain arbitrary items from the programming menu (LIGHT/ PROFI), which determine the access rights (see, change). Access w/o password.

Standard equipment is the OM Link and USB interfaces, which together with operation program enables modification and filing of all instrument settings as well as performing firmware updates. The program is also designed for visualization and filing of measured values from more instruments.

The measured units can be projected on the display.

OPTIONS

COMPARATORS are assigned to monitor six 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.

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.

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/Modbus/PROFIBUS protocols and LAN.

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 RS 232/485 and OM Link.

STANDARD FUNCTIONS

PROGRAMMABLE INPUT
Selection: of input type and measuring range
Standard setting: any display values can be assigned to Min and Max values of a defined standard input signal
Teach-in: any display values can be assigned to Min and Max values of actual (unknown) input signal
Manual setting: known Min and Max input signal values can be entered manually and any display values can be assigned to each signal

EXCITATION
Range: 24 VDC/1 W, isolated

COMPENSATION
Wiring (RTD, OHM): automatic (3- or 4-wire) or manual in menu (2-wire)
Probes (RTD): internal wiring (resistance of conductors in the measuring head)
CJC (T/C): manual or automatic (terminal temperature)

FUNCTIONS
Linearization: non-linear signal is converted by a 177-point linear interpolation
Tare: designed to reset display upon non-zero input signal
Min./max. value: registration of min./max. value reached during measurement
Peak value: the display shows only max. or min. value
Mathemat. operations: polynom, 1/x, logarithm, exponential, power, root, sin x and operations between inputs

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
Hold: display/instrument blocking
Lock: control keys blocking
Tare: activation and tare resetting
Resetting Min/Max: resetting min/max value

TECHNICAL DATA

INPUT

No. of inputs	1 or 2 The range is adjustable in the instrument menu		
DC Range	±90/180 mA	< 200 mV	Input 1
	±30 / 60 mV	> 10 MΩ	Input 3
	±1000 mV	> 10 MΩ	Input 3
	±20 / 40 / 80 V	1,25 MΩ	Input 2
PM Range	±5 / ±20 mA	< 400 mV	Input 1
	4...20 mA	< 400 mV	Input 1
	±2 / 5 / 10 V	1 MΩ	Input 2
OHM Range	0...15/30/150/300 Ω 0...1/3/15 kΩ 0...30 kΩ (only for 2- or 4-wire connection)		
Connection	2-, 3- and 4-wire		
RTD Range	Pt 100/500/1 000, 3 850 ppm/°C		-50°...450°C
	Pt 100, 3 920 ppm/°C		-50°...450°C
	Pt 50, 3 910 ppm/°C		-200°...1100°C
	Pt 100, 3 910 ppm/°C		-200°...450°C
Connection	2-, 3- and 4-wire		
Ni Range	Ni 1 000/10 000, 5 000 ppm/°C		-50°...250°C
	Ni 1 000/10 000, 6 180 ppm/°C		-200°...250°C
Connection	2-, 3- and 4-wire		
Cu Range	Cu 50/100, 4 260 ppm/°C		-50°...200°C
	Cu 50/100, 4 280 ppm/°C		-200°...200°C
Connection	2-, 3- and 4-wire		
T/C Range	J (Fe-CuNi)		-200°...900°C
	K (NiCr-Ni)		-200°...1 300°C
	T (Cu-CuNi)		-200°...400°C
	E (NiCr-CuNi)		-200°...690°C
	B (PtRh30-PtRh6)		300°...1 820°C
	S (PtRh10-Pt)		-50°...1 760°C
	R (Pt13Rh-Pt)		-50°...1 740°C
	N (Omegalloy)		-200°...1 300°C
	L (Fe-CuNi)		-200°...900°C
CJC	adjustable -20°...99°C or automatical		
DU Sensor power supply	2 VDC/6 mA, potentiometer resistance > 500 Ω		

EXTERNAL INPUT

No. of inputs	2, on contact or 24 V	
Function	OFF	no function assigned
	LCK.	control keys blocking
	HLD.	measurement paused
	PAS.	menu access blocking
	TA.A	tare activation, input 1
	TA.B	tare activation, input 2
	C.TA	tare resetting, input 1
	C.TB	tare resetting, input 2
	C.M.M.	resetting min/max value
	SAV.	data recording start (FAST/RTC)
	C.ME.	data recording reset (FAST/RTC)
	M. FN.	value display „Math. functions"

PROJECTION

Display	2x -99...999 LCD with backlighting
Description	2x 3 characters on the display may be used for description of measured quantities
Decimal point	adjustable - in menu

INSTRUMENT SPECIFICATION

TC	50 ppm/°C	
Accuracy	±0.15 % of FS + 1 digit	
	±0.25% of FS + 1 digit	Ni 1000TD
	±0.3% of FS + 1 digit	T/C
	above accuracies apply for projection 9999 and 10 meas./s	
Rate	0.5...80 measurement/s	
Overload	10x (t < 30 ms), 2x	
Compensation of conduct	< 30 Ω	RTD
Measurement accuracy CJC	±1.5°C	T/C
Resolution	0.1°C	RTD
	1°C	T/C
Functions	offset, Min/max value, Tare, peak value, math. functions	
Digital filters	exponential / floating / arithmetic average, rouding	
Math functions	polynomial / inverse polynomial / logarithm / exponential / power / root	
Linearization	linear interpolation in 177 points and 3 tables *setup only via OM Link*	
Data record	RTC 15 ppm/°C, time-date-display value < 266k data	
	FAST display value < 8k data	
OM Link	company communication interface for operation, setting and update of instruments (microUSB)	
Watch-dog	reset after 400 ms	
Calibration	at 25°C and 40 % r.h.	

RELAYS / OC OUTPUT

No. of outputs	up to 6
Type	digital, menu adjustable
Mode	HYSTER. active above set value WINDOW active in the set window / band BATCH active in set period
Function Relays/OC	CLOSE is closed in active mode OPEN is open in active mode
Limits	-99999...999999
Hysteresis	0...999999
Delay	0...99.9 s
Outputs	1...6x relay with switching contact (Form C) (250 VAC/50 VDC, 3 A)* 1...6x open collector (30 VDC/100 mA)
Relays	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

* values apply for resistance load

ANALOG OUTPUTS

No. of outputs	up to 4
Type	isolated, adjustable with 16-bit DAC, output type and range is selectable
TC	15 ppm/°C
Non-linearity	0.1 % from FS
Accuracy	±0.02 % of FS
Rate	response to change of value < 1 ms
Ranges	0...2 / 5 / 10 V, ±10 V, resistive load ≥ 1 kΩ 0...5 / 20 mA /4...20 mA, comp. < 600 Ω/12 V Indication of error message (output < 3.2 mA)

DATA OUTPUTS

No. of outputs	up to 2
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	300...230 400 Baud 9 600 Baud...12 Mbaud (PROFIBUS)
RS 232	isolated
RS 485	isolated, addressing (max. 31 instruments)
Ethernet	10/100BaseT, TCP/IP Modbus (Slave)

EXCITATION

Fixed	24 VDC, <1 W, isolated

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 *Protection by fuse inside the device.*
Consumption	< 9.4 W / 9.2 VA

MECHANIC PROPERTIES

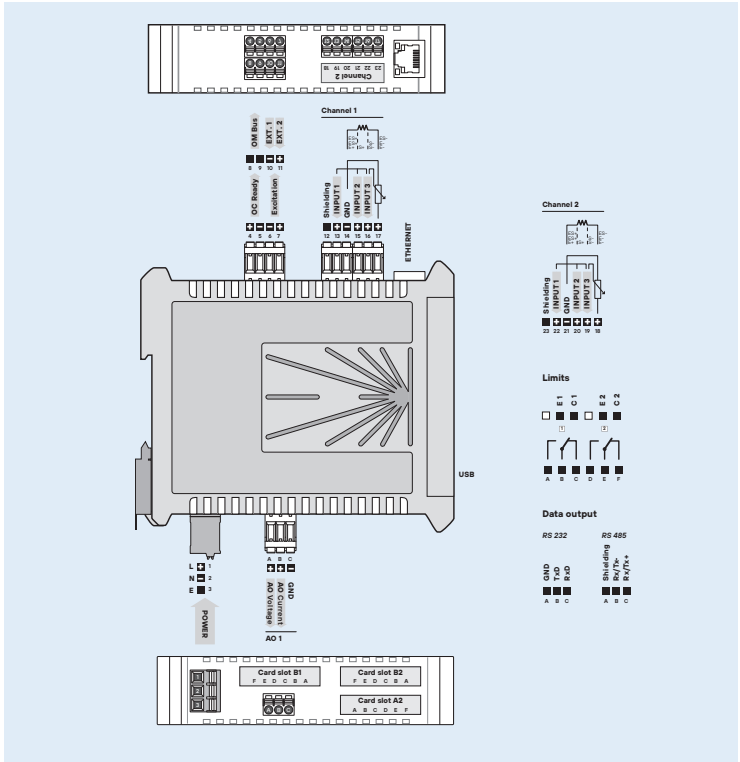
Material	PA 66, incombustible UL 94 V-I, blue
Dimensions	35 x 98 x 113 mm (w x h x d)
Installation	on DIN rail, width 35 mm

OPERATING CONDITIONS

Connection	connector terminal blocks, section < 1.5 / 2.5 mm²
Stabilization period	within 5 minutes after switch-on
Working temperat.	-20°...60°C
Storage temperat.	-20°...85°C
Working humidity	< 95 % r.v., non condensing
Protection	IP20
Construction	safety class I
El. safety	EN 61010-1, A2
Dielectric strength	4 kVAC per 1 min test between supply and input 2.5 kVAC per 1 min test between supply and data/ analog output 2.5 kVAC per 1 min test between input and data/ analog output 4 kVAC per 1 min test between input and relay output
Insulation resist.*	for pollution degree II, measuring cat. III power supply, input > 600 V (PI), 300 (DI) input, output, excitation > 600 V (PI), 300 V (DI)
EMC	EN 61326-1, Industrial area
Seismic qualification	IEC/IEEE 60980-344 Edition 1.0, 2020, par. 6, 9
Mechanical resistance	EN 60068-2-6 ed. 2:2008

* PI - Primary insulation, DI - Double insulation

CONNECTION



ORDER CODE

OMX 103UNI - [ ][ ][ ] - [ ][ ][ ] - [ ][ ] - [ ]

Power supply	10...30 VDC / 24 VAC	**0**									
	80...250 V AC/DC	**1**									
Number inputs	1 input		**A**								
	2 inputs		**B**								
Analogue output	no			**0**							
	yes			**1**							
Card A2	no				**0**						
	Comparator - 2x relays				**1**						
	Comparator - 2x open collectors				**2**						
	Analogue output				**3**						
	RS 232				**4**						
	RS 485				**5**						
	Profibus				**6**						
Card B1	no					**0**					
	Comparator - 2x relays					**1**					
	Comparator - 2x open collectors					**2**					
	Analogue output					**3**					
Card B2	no						**0**				
	Comparator - 2x relays						**1**				
	Comparator - 2x open collectors						**2**				
	Analogue output						**3**				
	RS 232						**4**				
	RS 485						**5**				
Ethernet - TCP/IP Modbus	no							**0**			
	yes							**1**			
Data record	no								**0**		
	yes								**1**		
Specification	customized version, do not fill in										**00**

Basic configuration of the instrument is indicated in bold.