



Data Sheet

Digital Isolated Transmitter
Model OMX 333iUNI

Distributed by

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III INSTRUMENTS

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OMX 333iUNI

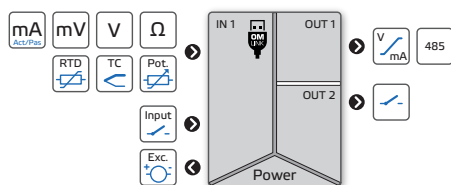


- Multifunction input (DC, PM, RTD, T/C, DU)
- Output 0/4...20 mA/0...5 mA/0...2/5/10 V/±10 V
- Teach-in, Digital filters, Tare, Linearization
- Quick configuration by DIP switch
- PC configurable via USB port
- Excitation 24 VDC
- Galvanic separation 2.5 kVAC
- Power supply 10...30 VDC / 24 VAC

Option

Comparators ● Data output

DIGITAL ISOLATED TRANSMITTER



The OMX 333i model series are simple DIN rail mountable adjustable transmitters.

The OMX 333iUNI is a multifunction isolated transmitter. It can be configured for 10 different input variants. Setting of both the input and output ranges can be done conveniently by a DIP switch located on the side of the housing or from a PC via the OM Link SW.

This device is based on a 32-bit processor, 24-bit $\Delta\Sigma$ ADC and 16-bit DAC, which guarantees high accuracy and excellent stability.

OPERATION

The device can be configured either by DIP switch located on the side of the housing or by PC using the OM Link SW. The same SW can be used to edit and archive all device settings, as well as to perform firmware updates and customer calibration.

Tech-in process can be performed for the measuring range currently selected using the front panel buttons.

All settings are stored in the EEPROM memory (preserved even after power-off).

OPTION

COMPARATORS are intended for monitoring two limit values with relay or open collector output. A wide selection of operating modes from basic activation when Above/Below pre-set value, Window - from/to or Batch - period and time, enables many requirements to be met. Another option is to set the mode of contact in idle state (NO/NC), pulse – contact closure for a defined duration or continuous mode - safety relay (IEC EN 61496).

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 RS485 with ASCII and Modbus protocol.

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

ANALOG OUTPUT

Type: isolated, programmable with a resolution of 16 bit, rate < 0.2 ms

Ranges: 0...2/5/10 V/±10 V, 0...5 mA/0/4...20 mA

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 100-point linear interpolation

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

Fixed tare: fixed preset tare

Min./max. value: registration of min./max. value reached during measurement

Simulation: test mode in which range, value and duration of the step can be set

Math functions: polynomial, inverse polynomial, logarithm, exponential, power, root

DIGITAL FILTERS

Floating average: from 2...30 measurements

Exponential average: from 2...100 measurements

Arithmetic average: from 2...100 measurements

Rounding: setting a „shorter“ number for further signal processing

EXTERNAL CONTROL

Hold: display/instrument blocking

Lock: control keys blocking

Tare: activation and tare resetting

Resetting Min/Max: resetting min/max value

Hold Min/Max: start of a measurement to evaluate the Min/Max value

Sample: start of a one-time measurement

Opening of a limit: a command to open the relay when in LATCH mode (safety relay)

TECHNICAL DATA

INPUT

No. of inputs	1		
	The range is selectable either by DIP switch or by OM Link free SW from PC		
DC Range	+60 mV	> 10 MΩ	Input 3
	+75 mV	> 10 MΩ	Input 3
	+100 mV	> 10 MΩ	Input 3
	+150 mV	> 10 MΩ	Input 3
	+300 mV	> 10 MΩ	Input 3
	+1000 mV	> 10 MΩ	Input 3
PM Range	+20 V	1 MΩ	Input 1
	+40 V	1 MΩ	Input 1
	+100 mA	< 200 mV	Input 5
	+5 mA	< 200 mV	Input 5
	+20 mA	< 200 mV	Input 5
OHM Range	0...100 / 300 Ω		
	0...1 / 3 / 10 / 30 / 100 kΩ		
Connection	2, 3- and 4-wire with broken cable/sensor detection		
Pt 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 with broken cable/sensor detection		
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 with broken cable/sensor detection		
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 with broken cable/sensor detection		
NTC Range	NTC 1 2k2, B ₂₉₈ = 3600	-40°...125°C	
	NTC 2 2k0, B ₂₉₈ = 3528	-40°...125°C	
	NTC 3 10k, B ₂₉₈ = 3435	-40°...125°C	
	NTC 4 10k, B ₂₉₈ = 3977	-40°...125°C	
	NTC 5 12k, B ₂₉₈ = 3740	-40°...125°C	
	NTC 6 20k, B ₂₉₈ = 4263	-40°...125°C	
Connection	2, 3- and 4-wire with broken cable/sensor detection		
PTC Range	KTY 81/210	-55°...150°C	
Connection	2, 3- and 4-wire with broken cable/sensor detection		
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 (PtRh10-PtRh6)	300°...1 620°C	
	S (PtRh10-Pt)	-50°...1 760°C	
	R (PtRh10-Pt)	-50°...1 740°C	
	N (Omega alloy)	-200°...1 300°C	
	L (Fe-CuNi)	-200°...900°C	
	XX (Chromel-Copel)	-200°...800°C	
	Connection	with broken cable/sensor detection	
CJC	adjustable: -20°...99°C or automatic		
DU Sensor power supply	1.65 VDC/3 mA, potentiometer resistance > 500 Ω		

EXTERNAL INPUT

No. of inputs	1, on contact	
Function	OFF	no function assigned
	TARE	tare activation
	CL.TAR.	reset of Tare
	CL.M.M.	reset of Min/Max. values
	CL.REL.	open relay/OC (Type LATCH)
	HOLD	measurement paused
	SAMPLE	take a one-off measurement
	HLD.MIN	start measurement of MIN
	HLD.MAX	start measurement of MAX
	HLD.M.M	start measurement of MAX-MIN
	KEY.LCK.	device buttons blocked

INSTRUMENT SPECIFICATION

TC	50 ppm/°C	
Accuracy	±0,07 % of FS	DC, PM
	±0,05 % of FS	OHM - 100k/300k
	±0,1 % of FS	the specified accuracy applies to 20 measurements/s
Rate	1...400 measurements/s	speed of 400 meas./s is with FFT signal filtering
Latency	< 2.5 ms	
Overload	10x (t < 30 ms), 2x	
Compensation of conduct	< 30 Ω	RTD
Measurement accuracy CJC	±15°C	T/C
Functions	Teach-in, tare, preset tare, min/max value, math. functions, delayed start, simulation	
	Digital filters: exponential / floating / arithmetic average, rounding	
Math functions	polynomial / inverse polynomial / logarithm / exponential / power / root	
Linearization	linear interpolation in 100 points setup only via OM Link	
OM Link	company communication interface for operation, setting and update of instruments (microUSB)	
Watch-dog	reset after 500 ms	
Calibration	at 25°C and 40 % rh.	

RELAYS / OC OUTPUT

No. of outputs	2	
Type	digital, configurable in menu	
Mode	RISE	active above set value
	DROP	active below set value
	WINDOW BATCH	active in the set window / band active in set periods
Function Relays/OC	SW. ON	is closed in active mode
	SW. OFF	is open in active mode
Limits	-99999...999999	
	Hysteresis 0...999999	
	Delay 0...999.9 s	
Outputs	2x relays with switch-on contact (Form A) (250 VAC/30 VDC, 3 A)* 2x open collector (30 VDC/100 mA)	
Relays	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300	

ANALOG OUTPUT

No. of outputs	1	
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 < 0.2 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 broken current loop Indication of error message (output < 3.2 mA)		

DATA OUTPUTS

No. of outputs	1	
Protocol	ASCII, Modbus RTU	
Data format	8 bit + no parity + 1 stop bit	
Rate	300...230 400 Baud	
RS 485	isolated, addressing (max. 31 instruments)	

EXCITATION

Fixed voltage	24 VDC < 60 mA, isolated
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POWER SUPPLY

Range	10...30 VDC / 24 AC, ±10 %, PF ≥ 0.4, I _{typ} < 40 A / 1 ms, isolated Protection by fuse inside the device
Consumption	< 3.1 W / 3.0 VA

MECHANIC PROPERTIES

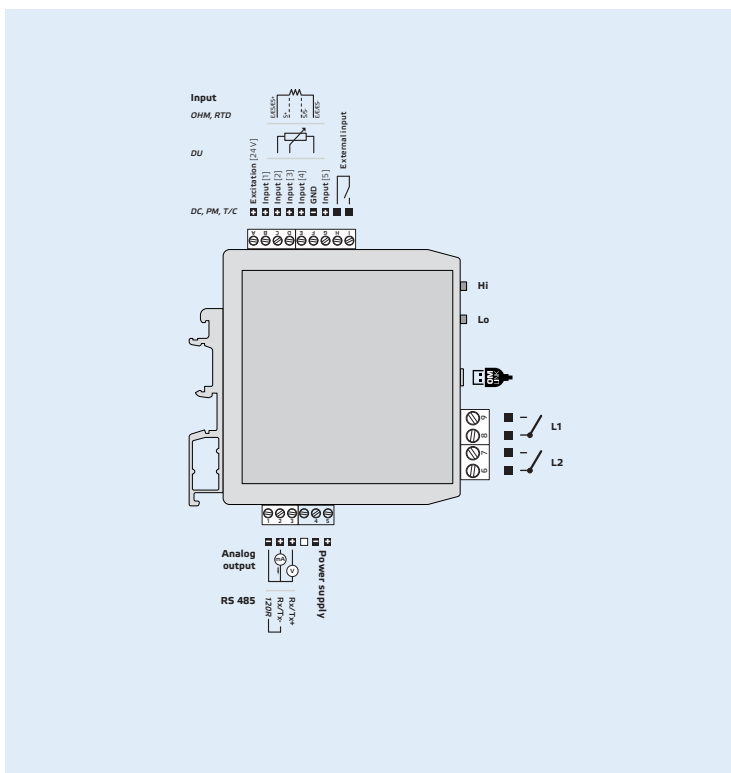
Material	PA66, incombustible UL 94 V-0, blue
Dimensions	25 x 79 x 90.5 mm (w x h x d)
Installation	to DIN rail 35 mm wide

OPERATING CONDITIONS

Connection	connector terminal blocks, section < 1.5/2.5 mm ²
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	2.5 kVAC for 1 min. test between supply and input 2.5 kVAC for 1 min. test between input and outputs 4 kVAC for 1 min. test between input and relays
Insulation resist.*	for pollution degree II, measurement cat. III power supply > 300 V (PI), 255 V (DI) Input/outputs > 300 V (PI)
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 333iUNI		-	-	-
Comparators	no	0		
	2x relay (Form A)	2		
	2x open collector	4		
Output	none	0		
	analog	1		
	RS 485s	2		
Specification	customized version, do not fill in			00

Basic configuration of the instrument is indicated in bold.