



Data Sheet

**Digital Isolated Transmitter**  
**Model OMX 390DU**

*Distributed by*



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## OMX 390DU



- Input for potentiometer
- Output 0/4...20 mA/0...5 mA/0...2/5/10 V/±10 V
- Rate up to 7200 meas./s
- Teach-in, Digital filters, Tare, Linearization
- Quick configuration by DIP switch
- PC configurable via USB port
- Galvanic separation 2.5 kVAC
- Power supply 10...30 VDC/24 VAC

### Option

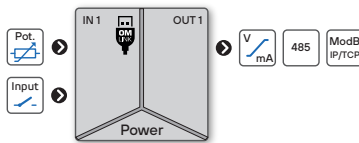
Data output

The OMX 390 model series are very fast DIN rail mountable digital transmitters with a Teach-in function.

Type OMX 390DU is a isolated transmitter for potentiometers. 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, fast 24-bit  $\Delta\Sigma$  ADC with PGA and 16-bit DAC, which guarantees high accuracy and excellent stability.

### DIGITAL ISOLATED TRANSMITTER



### OPERATION

The device can be configured either by DIP switches 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. A standard microUSB cable is required for PC to device connection.

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

**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 protocol.

### STANDARD FUNCTIONS

#### PROGRAMMABLE INPUT

**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 < 160  $\mu$ s

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

#### FUNCTIONS

**Linearization:** non-linear signal is converted by a 100-point linear interpolation

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

**Offset:** compensation for the difference between measured and actual/requr. value

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

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

#### 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

**Hold Min/Max/Max-Min/AVG:** triggering the measurement for Min/Max/AVG value

**Cumulative measurement:** series of measurements with their total sum

**Sample:** start of a one-time measurement

## TECHNICAL DATA

### INPUT

No. of inputs	1 The range is selectable either by DIP switch or by OM Link free SW from PC
DU Sensor power supply	25 VDC/3 mA, potentiometer resistance > 500 Ω

### EXTERNAL INPUT

No. of inputs	2, on contact																										
Function	<table border="0"> <tr> <td>OFF</td> <td>No function assigned</td> </tr> <tr> <td>TARE</td> <td>Activation of Tare</td> </tr> <tr> <td>CL.TAR</td> <td>Clear Tare</td> </tr> <tr> <td>TAR-CL</td> <td>Activat. of Tare (-1 s) + clear Tare (-1 s)</td> </tr> <tr> <td>T-IN-OF</td> <td>Activation of Tech-In for Offset</td> </tr> <tr> <td>CUM.SUM</td> <td>Control of Cumulative measurement</td> </tr> <tr> <td>HOLD</td> <td>Measurement paused</td> </tr> <tr> <td>SAMPLE</td> <td>Initiates a one-off measurement</td> </tr> <tr> <td>HLD.MIN</td> <td>Hold - Value of Minimum*</td> </tr> <tr> <td>HLD.MAX</td> <td>Hold - Value of Maximum*</td> </tr> <tr> <td>HLD.M-M</td> <td>Hold - Value of MAX-MIN*</td> </tr> <tr> <td>HLD.AVG</td> <td>Hold - Average value*</td> </tr> <tr> <td>KEY.LCK</td> <td>Device buttons blocked</td> </tr> </table>	OFF	No function assigned	TARE	Activation of Tare	CL.TAR	Clear Tare	TAR-CL	Activat. of Tare (-1 s) + clear Tare (-1 s)	T-IN-OF	Activation of Tech-In for Offset	CUM.SUM	Control of Cumulative measurement	HOLD	Measurement paused	SAMPLE	Initiates a one-off measurement	HLD.MIN	Hold - Value of Minimum*	HLD.MAX	Hold - Value of Maximum*	HLD.M-M	Hold - Value of MAX-MIN*	HLD.AVG	Hold - Average value*	KEY.LCK	Device buttons blocked
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\*The value is calculated from the period since the previous activation of the ext. input.

### INSTRUMENT SPECIFICATION

TC	15 ppm/°C
Accuracy	±0.01% of FS
Rate	100...7 200 measurements/s speed of 400 meas./s is with FFT signal filtering
Latency	< 580 μs
Overload	10x (t < 30 ms), 2x
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.

### 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	0.024 % from FS
Accuracy	±0.02 % of FS ±0.03 % of FS ±0.05 % of FS
Rate	response to change of value < 160 μs
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
Type	RS 485, isolated 10/100BaseT
Protocol	Modbus RTU Modbus TCP/IP (Slave)
Rate	600...230 400 Baud 100 Mbits/s
Data format	Format 8bits + parity + stop bit Parity none / even / odd Stop bit 1 / 1.5 / 2
Addressing	1...247 instruments
Line termination	by internal resistance 120 Ω wire jumper on the connector of the last device

### POWER SUPPLY

Range	10...30 VDC / 24 AC, ±10 %, PF ≥ 0.4, I <sub>typ</sub> < 40 A / 1 ms, isolated Protection by fuse inside the device
Consumption	< 1.4 W / 13 VA

### MECHANIC PROPERTIES

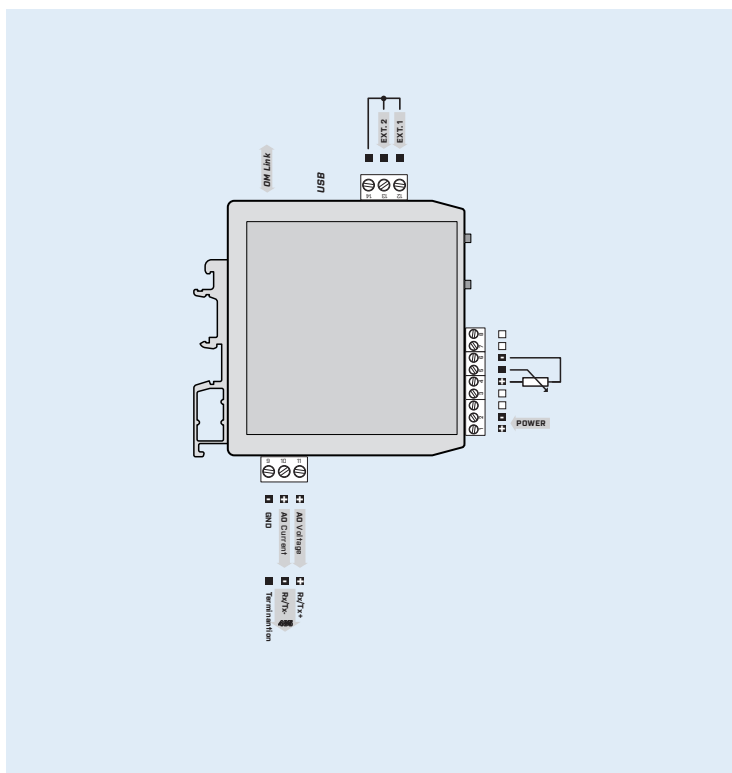
Material	PA66, incombustible UL 94 V-0, blue
Dimensions	25 x 79 x 90.5 mm (w x h x d)
Installation	to DIN rail 35 mm wide

### OPERATING CONDITIONS

Connection	connector terminal blocks, section < 1.5 mm <sup>2</sup>
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
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 390DU

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Output	Analog	1	□
	Data - RS 485	2	
	Data - Ethernet	3	
Specification	customized version, do not fill in		<b>00</b>

Basic configuration of the instrument is indicated in bold.