Industrial Transmitters

MemoTrans

Ultra compact transmitter for Memosens sensors.
Quick installation and simple operation.

MemoTrans, the first 2-wire multi-parameter transmitter in a compact housing with direct connection to Memosens sensors.

Multiparameter
One device for all Memosens sensors and parameters:

- pH
- ORP
- Conductivity
- Oxygen

Compact Housing
The slim, compact housing combines functionality and robustness. The space-saving MemoTrans can be used everywhere and with all Knick fittings. Robust and with a high degree of protection (IP 67/68, NEMA 6), MemoTrans is also optimally suited to complex applications.

HART
Configuration, calibration and diagnostics can be carried out via HART FDI package. This enables direct integration in all standard control systems. Also bus operation (multi-drop mode) is implemented. Operation on site is possible with a HART handheld terminal.

Robust and Dependable
The compact housing means MemoTrans can be used flexibly. MemoTrans is the right transmitter for places where a display is no longer required. Space-saving, compact and with direct sensor connection for Memosens sensors.

HART® COMMUNICATION PROTOCOL

The inductive connection of Memosens sensors is resistant to

- Moisture
- Dirt
- Corrosion
- Salt bridges
- Interference potentials

MemoTrans is so small and compact that it fits in almost all process fittings.

Condition at a Glance
Integrated green/red LED displays the alarm and fault conditions of the compact transmitter and Memosens sensor. This means personnel can quickly remedy faults on site and return measuring points to operation without long interruptions.

Excellent On-Site Protection
A high degree of protection – IP 67/68, NEMA 6 – ensures unlimited use of the compact transmitter – even outdoors.

Facts and Features
- Operation via HART FDI package
- Compact housing with IP 67/68, NEMA 6
- Multiparameter
- Green/red LEDs for status display

3 year warranty!

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Product Range

Device	MemoTrans compact transmitter						–					–				
Type	2-wire / 4 ... 20 mA, HART	MT	2	0	1											
Approvals	General Safety + CSA C/US General Purpose					N										
Process variable	Memosens Multiparameter							MSMULTI								
Cable length	3 m / 10 ft												3			
	7 m / 23 ft												7			
	15 m / 49 ft												15			

Device	MemoTrans compact transmitter						–					–		–		
Type	2-wire / 4 ... 20 mA	MT	2	0	1											
Approvals	General Safety + CSA C/US General Purpose					N										
Process variable	Memosens pH glass sensor: Output pH 0 … 14							MSPH								
	Memosens ORP sensor: Output -1500 … 1500 mV							MSORP								
	Memosens conductivity sensor: Output 0 … 20 µS/cm							MSCOND1								
	Memosens conductivity sensor: Output 0 … 500 µS/cm							MSCOND2								
	Memosens conductivity sensor: Output 0 … 20 mS/cm							MSCOND3								
	Memosens conductivity sensor: Output 0 … 500 mS/cm							MSCOND4								
	Memosens amp. oxygen sensor: Output 0 … 200 µg/l							MSOXY1								
	Memosens amp. oxygen sensor: Output 0 … 20 mg/l							MSOXY2								
Cable length	3 m / 10 ft												3			
	7 m / 23 ft												7			
	15 m / 49 ft												15			
Option	Low limit alarm: 3.6 mA															0

Specifications

MT201N-MSMULTI		
Input	Multiparameter Memosens input for pH, ORP sensors and ISFET, conductivity and amperometric oxygen sensors	
Measured value transmission	4 ... 20 mA HART	
Measuring range	See documentation for connected sensor	
pH, ORP display range*)	pH value:	–2.00 ... 16.00
	pH raw value:	–2000 ... 2000 mV
	Glass impedance:	0.0 ... 200,000.0 MΩ
	Reference impedance:	0.0 ... 2,000,000.0 Ω
	ORP:	–2000 ... 2000 mV
	ORP %:	–3,000.0 ... 3,000.0 %
	rH:	0.0 ... 70.0 rH
	Temperature:	–50.0 ... 150.0 °C / –58.0 ... 302.0 °F / 223.2 ... 423.2 K
Conductivity display range*)	Conductivity:	0.000 ... 2,000 mS/cm / 0.000 ... 2,000,000 µS/cm 0.000 ... 2.000 S/cm / 0.000 ... 200,000,000 µS/cm 0.000 ... 20,000 mS/m / 0.000 ... 200.0 S/m
	Resistance:	0.000 ... 200.000.000 Ωcm
	Raw value (uncompensated conductivity):	0.000 ... 2,000 mS/cm / 0.000 ... 2,000,000 µS/cm 0.000 ... 2.000 S/cm / 0.000 ... 200,000,000 µS/cm 0.000 ... 20,000 mS/m / 0.000 ... 200.0 S/m
	Temperature:	0.0 ... 100.0 °C / 32.0 ... 212.0 °F / 223.2 ... 523.2 K
Oxygen display range*)	Partial pressure:	0.00 ... 400.0 hPa
	Concentration in liquids:	0.00 ... 20.00 mg/l / –20.00 ... 120,000,00 µg/l / –0.02 ... 120.00 ppm / -20.00 ... 120,000.00 ppb
	Concentration in gas phase:	0.00 ... 20.00 %vol, –200.00 ... 2,000,000.00 ppmVol
	Raw value nA:	0.00 ... 12,000.00 nA
	Temperature:	–50.0 ... 250.0 °C / –58.0 ... 482.0 °F / 223.2 ... 523.2 K
pH/ ORP sensor standardization Operating modes	pH calibration:	1-point calibration 2-point calibration Calibration by sampling
	ORP calibration:	1-point calibration (mV) 2-point calibration (%)
pH buffer sets	Endress+Hauser	2.00 / 4.00 / 7.00 / (9.00) / 9.22 / 10.00 / 12.00
	Ingold/Mettler	2.00 / 4.01 / 7.00 / 9.21
	DIN 19266	1.68 / 4.01 / 6.86 / 9.18
	DIN 19267	1.09 / 4.65 / 6.79 / 9.23 / 12.75
	Merck/Riedel	2.00 / 4.01 / 6.98 / 8.95 / 12.00
	Hamilton	1.09 / 1.68 / 2.00 / 3.06 / 4.01 / 5.00 / 6.00 7.00 / 8.00 / 9.21 / 10.01 / 11.00 / 12.00
Conductivity sensor standardization Operating modes	– Cell constant	

*) Display ranges may vary depending on the sensor type. Refer to the documentation for the connected sensor.

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Specifications

Oxygen sensor standardization Operating modes	– Slope – Zero point – Electrolyte – Save electrolyte replacement – Save membrane cap		
Calibration timer	0000 ... 10,000 h (hours)		
Measurement error	± 50 µA ± 20 µA Temperature drift	at 20 mA at 4 mA Max. permitted drift of current output: 1.5 µA/K	T = 25 °C / 77 °F T = 25 °C / 77 °F
Response time of current output	t_{90} = max. 500 ms for a jump from 0 to 20 mA		
Resolution of current output	< 5 µA		
Time	Date and time are only running as long as the device is supplied with power. When power supply is disrupted, the clock will be reset to default:	Date: 1/1/1970	Time: 0:00 hrs
Alarm indication	Green/red LED (depending on alarm settings)		
HART communication	Digital transmission of device identification, measured values, status and messages, parameter setting, calibration		
pH calibration data	Date, time, mode (calibration method), number of calibrations, zero, slope, isothermal point, buffer 1/2, delta zero, delta slope, serial number of calibration unit (device serial number)		
ORP calibration data	Date, time, mode (calibration method), number of calibrations, offset, buffer 1, delta offset, serial number of calibration unit (device serial number)		
Conductivity calibration data	Date, time, mode (calibration method), number of calibrations, cell constant, delta cell constant, conductivity reference value, temperature, serial number of calibration unit (device serial number)		
Oxygen calibration data	Date, time, device serial number, number of calibrations, mode (calibration method), zero, delta zero, slope, delta slope		
EMC	EN 61326-1 EN 61326-2-3	EN 61326-2-5 EN 301489-1	EN 301489-17 NAMUR NE 21
Electrical safety	EN 61010-1		
RoHS conformity	2011/65/EU (L174/88)		

Specifications

Rated operating conditions			
Ambient temperature	–20 ... 85 °C / –4 ... 185 °F		
Process temperature	Fitting in meas. position	Tprocess = max. 100 °C / 212 °F, continuous operation	
		Tambient = max. 60 °C / 140 °F, continuous operation	
	Fitting in service position	Tprocess = max. 145 °C / 293 °F, continuous operation	
		Tambient = max. 60 °C / 140 °F, continuous operation	
Relative humidity	5 … 95 % not condensing		
Max. altitude above MSL	< 2000 m / < 6562 ft. above MSL		
Transport/Storage temperature	–40 ... 85 °C / –40 ... 185 °F		
Output	4 … 20 mA current loop floating, protected against inverse polarity, HART communication		
Linearization/transmission behavior	Linear		
Supply voltage	12.6 ... 30 V DC	(with fault current > 20 mA)	
	14 ... 30 V DC	(with fault current < 4 mA)	
Surge protection	IEC 61 000-4-4 and IEC 61 000-4-5, ± 1 kV each		
Failure signal	3.6 ... 23 mA		
Connection	2-wire cable	HART/4 ... 20 mA positive:	Blue
		HART/4 ... 20 mA negative:	White
Housing	PEEK	Color: light gray	RAL 7035
Memosens closure	PEEK	Color: black	
Cable	TPE	Color: black	Approx. 5 mm dia.
Optical waveguide	PC	Color: transparent	
Cable length	3 m / 10 ft	7 m / 23 ft	15 m / 49 ft
Impact loads	The product is designed for mechanical impact loads of 1 J (IK06) as per the requirements of EN 61010-1.		
Dimensions	See dimension drawing		
Protection	IP 67, IP 68, NEMA 6		
Weight	MemoTrans	with 3 m / 10 ft cable	approx. 190 g (7 oz)
		with 7 m / 23 ft cable	approx. 380 g (13 oz)
		with 15 m / 49 ft cable	approx. 760 g (27 oz)
Connections	Terminals, conductor cross-section max. 2.5 mm²		
Simulation	Specific parameters can be simulated for test purposes: Current, measured value or temperature		

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Specifications

MT201N-MSPH			
Input	Fixed range Memosens input for pH and ISFET sensors		
Measured value transmission	4 ... 20 mA		
Measuring range	See documentation for connected sensor		
pH display range*)	pH value:	0.00 ... 14.00	
MT201N-MSORP			
Input	Fixed range Memosens input for ORP sensors		
Measured value transmission	4 ... 20 mA		
Measuring range	See documentation for connected sensor		
ORP display range*)	ORP	1500 ... 1500 mV	
MT201N-MSCOND			
Input	Fixed range Memosens input for conductivity sensors		
Measured value transmission	4 ... 20 mA		
Measuring range	See documentation for connected sensor		
Conductivity display range*)	Conductivity	Type MSCOND1	0 ... 20 µS/cm
		Type MSCOND2	0 ... 500 µS/cm
		Type MSCOND3	0 ... 20 mS/cm
		Type MSCOND4	0 ... 500 mS/cm
MT201N-MSOXY			
Input	Fixed range Memosens input for amperometric oxygen sensors		
Measured value transmission	4 ... 20 mA		
Measuring range	See documentation for connected sensor		
Oxygen display range*)	Concentration in liquids:	Type MSOXY1	0 ... 200 µg/l
		Type MSOXY2	0 ... 20 mg/l
General data			
Measurement error	± 50 µA	at 20 mA	T = 25 °C / 77 °F
	± 20 µA	at 4 mA	T = 25 °C / 77 °F
	Temperature drift	Max. permitted drift of current output: 1.5 µA/K	
Resolution of current output	< 5 µA		
EMC	EN 61326-1	EN 61326-2-5	EN 301489-17
	EN 61326-2-3	EN 301489-1	NAMUR NE 21
Electrical safety	EN 61010-1		
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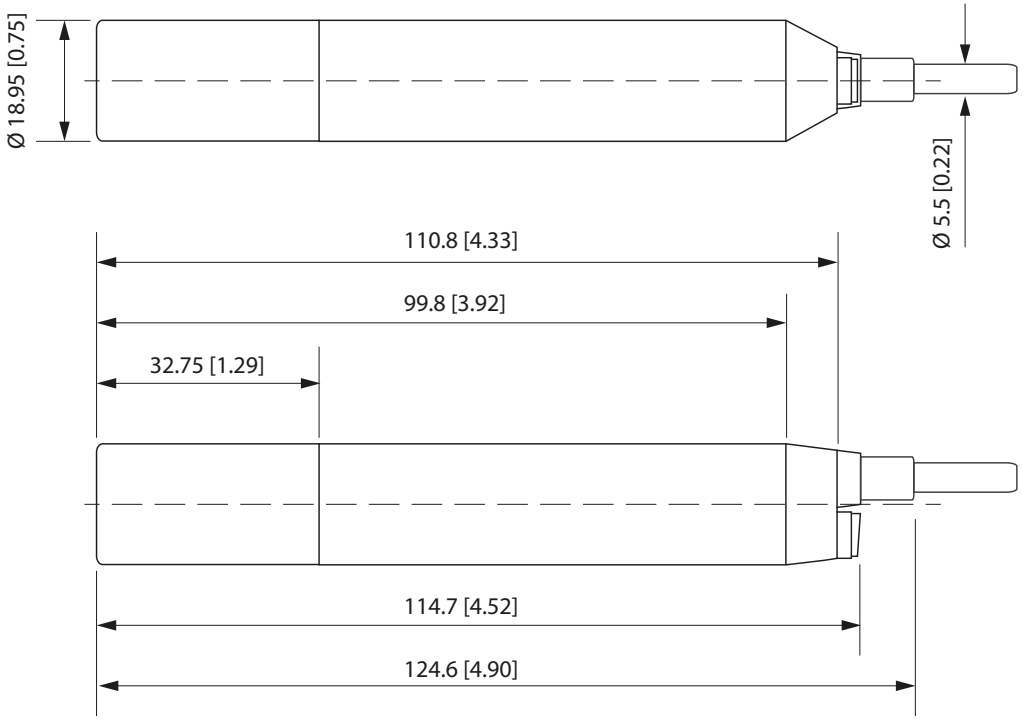
	Fitting in service position	Tprocess = max. 145 °C / 293 °F, continuous operation Tambient = max. 60 °C / 140 °F, continuous operation	
Relative humidity	5 ... 95 % not condensing		
Max. altitude above MSL	< 2000 m / < 6562 ft. above MSL		
Transport/Storage temperature	–40 ... 85 °C / -40 ... 185 °F		
Output	4 ... 20 mA current loop floating, protected against inverse polarity		
Linearization/transmission behavior	Linear		
Supply voltage	12.6 ... 30 V DC 14 ... 30 V DC	(with fault current > 20 mA) (with fault current < 4 mA)	
Surge protection	IEC 61 000-4-4 and IEC 61 000-4-5, ± 1 kV each		
Failure signal	3.6 mA		
Connection	2-wire cable	4 ... 20 mA positive: 4 ... 20 mA negative:	Blue White
Housing	PEEK	Color: light gray	RAL 7035
Memosens closure	PEEK	Color: black	
Cable	TPE	Color: black	Approx. 5 mm dia.
Optical waveguide	PC	Color: transparent	
Cable length	3 m / 10 ft	7 m / 23 ft	15 m / 49 ft
Impact loads	The product is designed for mechanical impact loads of 1 J (IK06) as per the requirements of EN 61010-1.		
Dimensions	See dimension drawing		
Protection	IP 67, IP 68, NEMA 6		
Weight	MemoTrans	with 3 m / 10 ft cable with 7 m / 23 ft cable with 15 m / 49 ft cable	approx. 190 g (7 oz) approx. 380 g (13 oz) approx. 760 g (27 oz)
Connections	Terminals, conductor cross-section max. 2.5 mm²		

*) Display ranges may vary depending on the sensor type. Refer to the documentation for the connected sensor.

Dimension Drawing



All dimensions in mm [inches].