

HandyLab 7series

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HandyLab 7series

The new mobile Measuring Devices by SI Analytics



Can be converted into a bench top unit from a mobile unit in mere seconds



Hanger for use in the field



Brief functional description on the protective cover

Selection Table HandyLab 7series

Application	HandyLab 700	HandyLab 750	HandyLab 750EX	HandyLab 780
Memosens® pH and ORP (Redox)	■	■	■	■
Memosens® Conductivity				■
Memosens® Oxygen				■
Analog pH and ORP (Redox)	■	■	■	■
Temperature	■	■	■	■
Ex-Zone 0/1	–		■	–
PC Program HandyLab Pilot	–	■	■	■
Micro USB-B	–	■	■	■
Data logger (values)	–	5,000	5,000	10,000
Li-Ion battery	–	■	–	■
Display	LCD segment	LCD segment	LCD segment	QVGA-TFT Color graphic
Multiple languages	–	–	–	■
Help functions	–	–	–	■

HandyLab 7series - offers increased safety and a user-friendly interface:

- Brings the advantages of digital Memosens® technology, offering increased safety and a user-friendly interface to laboratories, technical colleges, field and process.
- Durable and chemical resistant housing
- Has passed the standardized drop test from 1 m height on cement
- The protective cap protects the device.
- The HandyLabs can be hung up on a hook integrated into the housing.
- By flipping the protective flap and holding hooks, these HandyLab devices can either be suspended or used as bench top units.
- The integrated electrode vessel protects the sensors from drying out or being damaged and is detachable from the housing.
- Simultaneous pH/mV and temperature display
- Can be connected to Memosens® as well as analog sensors
- Protection class IP 67/ IP 66 (splash water protected)



HandyLab 700

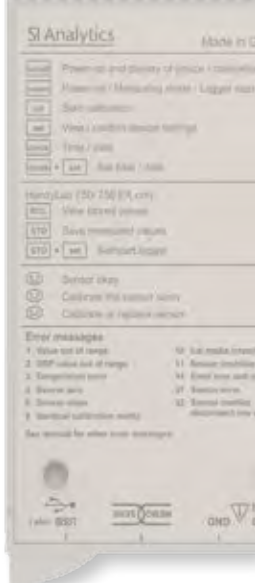
Entering the world of mobile Memosens®



Durable design for daily measurements

- ▶ Contrast-rich and scratch-resistant clear glass LCD display
- ▶ Self-explanatory operation with one clear text line
- ▶ Display of the sensor status at one glance with Senso-face
- ▶ Calibration of up to 3 points with automatic buffer detection (from 10 buffers)
- ▶ Manual calibration by indicating random buffer values
- ▶ Real-time clock and display of battery charging status
- ▶ Extended operating time of more than 1,000 hours with standard batteries (4 x AA)





HandyLab 700 - Specifications

Measuring parameters

Memosens pH (also called ISFET)	Connection: Female connector M8 (4-way) for Memosens laboratory cable
	Display areas ¹⁾ -2.000 ... +16.000 pH -2000 ... +2000 mV -50 ... +250 °C

Memosens Redox	Connection: Female connector M8 (4-way) for Memosens laboratory cable
	Display areas ¹⁾ -2000 ... +2000 mV -50 ... +250 °C
	Sensor adaptation ^{*)} Perm. calibration range
	ORP (Redox) calibration (zero point offset) Δ mV (Offset) -700 ... +700 mV

pH/mV (analog)	Connection	pH female connector DIN 19 262 (13/4 mm)
	Measuring Range pH	-2 ... 16
	Decimal places ^{*)}	2 or 3
	Input Resistance	$1 \times 10^{12} \Omega$ (0 ... 35 °C)
	Input current	1×10^{-12} A (with RT, double up every 10 K)
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.01 pH, TK < 0.001 pH/K
	Measuring range mV	-1300 ... +1300
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.1 % v. M. + 0.3 mV TK < 0.03 mV/K

Temperature	Connection: 2 x Ø 4 mm for integrated or separate temperature sensor		
	Measuring ranges	NTC 30 kΩ	-20 ... +120 °C
		Pt 1000:	-40 ... +250 °C
	Measuring cycle	approx. 1s	
	Operation measurement deviation ^{2, 3, 4)}	< 0.2 K (Tamb = 23 °C); TK < 25 ppm/K	

pH Calibration

Operating Modes^{*)}	AutoCal - Calibration with automatic buffer detection
	Manual - manual calibration while entering individual buffer values
	Data entry - data entry of zero point and incline

AutoCal Buffer Sets^{*)}	Knick CaliMat	Ciba (94)	Hamilton
	NIST Technical	HACH	Mettler-Toledo
	NIST-Standard	SI-Analytics techn. buffer	
	DIN 19267	Reagecon	

Perm. calibration range	Zero point	6 ... 8 pH
	For ISFET:	-750 ... +750 mV work point (asymmetrical)
	Slope	approx. 74 ... 104 %

Calibration Timer^{*)}	Sample interval 1 ... 99 days, can be switched off
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Display - Operation

Sensoface	Provides information regarding the sensor status, evaluation of zero point/incline, setting time, calibration interval status display (friendly, neutral, sad).
Display	LCD STN 7-segment display with three lines and symbols
Status displays	For battery status
Notes	Sand timer
Keyboard	[on/off], [cal], [meas], [set], [▲], [▼], [clock]

Diagnostic Functions	Sensor data (Memosens only)	Manufacturer, sensor type, serial number, operating time
	Calibration data	Calibration date, zero point and slope
	Device self-test	Automatic memory test (FLASH, EEPROM, RAM)
	Machine data	Device type, software version, hardware version
Data retention	Parameters, calibration data > 10 years	
Climate - rated operating conditions	Ambient temperature	-10 ... +55 °C
	Transport/storage temperature	-25 ... +70 °C
	Relative humidity	0 ... 95 %, short-term dew permitted
Energy supply	Auxiliary energy	Batteries 4x AA (Mignon) alkaline or lithium
	Operating time	approx. 1,000 h (Alkaline)
Casing	material	PA12 GF30 + TPE
	Type of protection	IP66/67 with pressure compensation
	Dimensions	approx. 132 x 156 x 30 mm
	Weight	approx. 500 g
Certificates - testing mark - device safety		
EMV	DIN EN 61326-1 (General Requirements)	
	Interference Emission	Class B (residential)
	Interference resistance	Industry Branch
	DIN EN 61326-2-3 (Special Requirements for Pressure Transducers)	
RoHS Conformity	As per directive 2011/65/EU	

HandyLab 750

Portable Memosens® world with data storage and USB interface



- ▶ Store up to 5,000 data points
- ▶ HandyLab Pilot software for evaluation of data from digital Memosens® sensors.
- ▶ HandyLab Pilot software (included with delivery), allows easy management and evaluation of stored data and can be used for device configuration.
- ▶ Contrast-rich and scratch-resistant clear glass display.
- ▶ Self-explanatory operation with one clear text line
- ▶ Display of the sensor status at one glance with Senso-face.
- ▶ Calibration of up to 3 points with automatic buffer detection.
- ▶ Manual calibration by indicating random buffer values
- ▶ Real-time clock and display of battery charging status.
- ▶ Extended operating time of more than 1,000 hours with standard batteries (4 x AA) or use of a Li-Ion accumulator, even with very high or low operating temperatures. The battery is charged via the USB interface.





printer

HandyLab 750 - Specifications

Measuring parameters

Memosens pH (also called ISFET)	Connection: Female connector M8 (4-way) for Memosens laboratory cable	
	Display areas ¹⁾	-2,000 ... +16,000 pH -2000 ... +2000 mV -50 ... +250 °C
Memosens Redox	Connection: Female connector M8 (4-way) for Memosens® lab cable	
	Display areas ¹⁾	-2000 ... +2000 mV -50 ... +250 °C
	Sensor adaptation*)	ORP (Redox) calibration (zero point offset)
pH/mV (analog)	Perm. calibration range	ΔmV (Offset) -700 ... +700 mV
	Connection: pH female connector DIN 19 262 (13/4 mm)	
	Measuring Range pH	-2 ... 16
	Decimal places*)	2 or 3
	Input Resistance	1 x 10 ¹² Ω (0 ... 35 °C)
	Input current	1 x 10 ⁻¹² A (for RT, doubles every 10 K)
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.01 pH, TK < 0.001 pH/K
	Measuring range mV	-1300 ... +1300 mV
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.1 % v. M. + 0.3 mV; TK < 0.03 mV/K
Temperature	Connection: 2 x Ø 4 mm for integrated or separate temperature sensor	
	Measuring ranges	NTC 30 kΩ -20 ... +120 °C Pt 1000: -40 ... +250 °C
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.2 K (Tamb = 23 °C); TK < 25 ppm/K
pH Calibration Operating Modes*)	AutoCal	Calibration with automatic buffer detection
	Manually	Manual calibration while entering individual buffer values
AutoCal Buffer Sets*)	Data entry	Data entry of zero point and incline
	Knick CaliMat	Ciba (94) Hamilton
	NIST Technical	HACH Mettler-Toledo
	NIST-Standard	SI Analytics techn. buffer
	DIN 19267	Reagecon
Perm. calibration range	Zero point	6 ... 8 pH
	For ISFET:	-750 ... +750 mV; work point (asymmetric)
	Slope	approx. 74 ... 104 %
Calibration Timer*)	Sample interval 1 ... 99 days, can be switched off	
Display - Operation Sensoface	provides information regarding the status of the sensor Evaluation of zero point/slope, setting time, calibration interval Status display (friendly, neutral, sad)	
Display Status displays	LCD STN 7-segment display with three lines and symbols For battery status, logger	
Notes	Sand timer	
Keyboard	[on/off], [cal], [meas], [set], [▲], [▼], [STO], [RCL], [clock]	

Diagnostic Functions	Sensor data (Memosens only)	Manufacturer, sensor type, serial number, operating time
	Calibration data	Calibration date, zero point and slope
	Device self-test	Automatic memory test (FLASH, EEPROM, RAM)
	Machine data	Device type, software version, hardware version
Data retention	Parameters, calibration data > 10 years	
Data transmission	1x Micro USB-B for data transmission to the PC	
Data logger	5.000 memory positions	
Calibration data logger MemoLog (Memosens only)	Recording	controlled manually, by intervals or events
	up to 100 Memosens calibration logs can be saved	
	- Recording can be displayed on the display	
	- directly readable via MemoSuite® (USB): Manufacturer, sensor type, serial no., zero point, incline, calibration date	
Communication	USB 2.0	
	Profile	HID, installation without driver
	Use	Data exchange and configuration via the software HandyLab Pilot
Climate - rated operating conditions		
Energy supply	Ambient temperature	-10 ... +55 °C
	Transport/storage temperature	-25 ... +70 °C
	Relative humidity	0 ... 95 %, short-term dew permitted
	Auxiliary energy	Batteries 4x AA (Mignon), 4x Akku NiMH or 1x Li-Ion battery pack, chargeable via USB
Casing	Operating time	approx. 1,000 h (Alkaline)
	material	PA12 GF30 + TPE
	Type of protection	IP66/67 with pressure compensation
	Dimensions	approx. 132 x 156 x 30 mm
Certificates - testing mark - device safety	Weight	approx. 500 g
	DIN EN 61326-1 (General Requirements)	
	Interference Emission	Class B (residential)
	Interference resistance	Industry Branch
EMV	DIN EN 61326-2-3 (Special Requirements for Pressure Transducers)	
RoHS Conformity	As per directive 2011/65/EU	

HandyLab 750EX

Portable Memosens® world with data storage and USB interface for the use in potentially explosive areas



- ▲ For use in potentially explosive areas up to zone 0/1.
- ▲ Store up to 5,000 data points.
- ▲ Micro-USB connection to communicate with the software HandyLab Pilot software for evaluation of data from digital Memosens® sensors.
- ▲ HandyLab Pilot software (included with delivery), allows easy management and evaluation of stored data and can be used for device configuration.
- ▲ Contrast-rich and scratch-resistant clear glass display.
- ▲ Self-explanatory operation with one clear text line.
- ▲ Display of the sensor status at one glance with Senso-face.
- ▲ Calibration of up to 3 points with automatic buffer detection.
- ▲ Manual calibration by indicating random buffer values.
- ▲ Real-time clock and display of battery charging status.
- ▲ Extended operating time of more than 1,000 hours with standard batteries (4 x AA).





HandyLab 750EX - Specifications

Measuring parameters

Memosens pH (also called ISFET)	Connection: Female connector M8 (4-way) for Memosens laboratory cable		
	Display areas ¹⁾	-2.000 ... +16.000 pH -2,000 ... +2,000 mV -50 ... +250 °C	
Memosens Redox	Connection: Female connector M8 (4-way) for Memosens laboratory cable		
	Display areas ¹⁾	-2,000 ... +2,000 mV -50 ... +250 °C	
	Sensor adaptation*)	ORP (Redox) calibration (zero point offset)	
pH/mV (analog)	Perm. calibration range	ΔmV (Offset) -700 ... +700 mV	
	Connection: pH female connector DIN 19 262 (13/4 mm)		
	Measuring Range pH	-2 ... 16	
	Decimal places*)	2 or 3	
	Input Resistance	1 x 10 ¹² Ω (0 ... 35 °C)	
	Input current	1 x 10 ⁻¹² A (with RT, double up every 10 K)	
	Measuring cycle	approx. 1s	
	Operation measurement deviation ^{2, 3, 4)}	< 0.01 pH, TK < 0.001 pH/K	
	Measuring range mV	-1,300 ... +1,300 mV	
	Measuring cycle	approx. 1s	
	Operation measurement deviation ^{2, 3, 4)}	< 0.1 % v. M. + 0.3 mV	
		TK < 0.03 mV/K	
Temperature	Connection: 2 x Ø 4 mm for integrated or separate temperature sensor		
	Measuring ranges	NTC 30 kΩ -20 ... +120 °C Pt 1000: -40 ... +250 °C	
	Measuring cycle	approx. 1s	
	Operation measurement deviation ^{2,3,4)}	< 0.2 K (Tamb = 23 °C); TK < 25 ppm/K	
pH Calibration Operating Modes*)	AutoCal	Calibration with automatic buffer detection	
	Manually	Manual calibration while entering individual buffer values	
AutoCal Buffer Sets*)	Data entry	Data entry of zero point and incline	
	Knick CaliMat	Ciba (94)	Hamilton
	NIST Technical	HACH	Mettler-Toledo
	NIST-Standard	SI Analytics techn. buffer	
	DIN 19267	Reagecon	
Perm. calibration range	Zero point	6 ... 8 pH	
	For ISFET:	-750 ... +750 mV; work point (asymmetric)	
	Slope	approx. 74 ... 104 %	
Calibration Timer*)	Sample interval 1 ... 99 days, can be switched off		
Display - Operation Sensoface	Provides information regarding the sensor status, evaluation of zero point/slope, setting time, calibration interval status display (friendly, neutral, sad).		
Display Status displays	LCD STN 7-segment display with three lines and symbols for battery status, logger		
Notes	Sand timer		
Keyboard	[on/off], [cal], [meas], [set], [▲], [▼], [STO], [RCL], [clock]		

Diagnostic Functions	Sensor data (Memosens only)	Manufacturer, sensor type, serial number, operating time
	Calibration data	Calibration date, zero point and slope
	Device self-test	Automatic memory test (FLASH, EEPROM, RAM)
	Machine data	Device type, software version, hardware version
Data retention	Parameters, calibration data > 10 years	
Data transmission	1x Micro USB-B for data transmission to the PC	
Data logger	5,000 memory positions	
	Recording	controlled manually, by intervals or events
Calibration data logger MemoLog (Memosens only)	up to 100 Memosens calibration logs can be saved	
Communication	- Recording can be displayed on the display	
	- directly readable via MemoSuite (USB): Manufacturer, sensor type, serial no., zero point, incline, calibration date	
	USB 2.0	
	Profile	HID, installation without driver
	Proper	Data exchange and configuration via the software HandyLab Pilot
Climate - rated operating conditions		
	Ambient temperature	-10 °C ≤ Ta ≤ +40 °C T4 -10 °C ≤ Ta ≤ +50 °C T3
	Transport/storage temperature	-25 ... +70 °C
	Relative humidity	0 ... 95 %, short-term dew permitted
Energy supply	Auxiliary energy	Batteries 4x AA (Mignon)
	Operating time	approx. 1,000 h (Alkaline)
Casing	material	PA12 GF30 + TPE
	Type of protection	IP66/67 with pressure compensation
	Dimensions	approx. 132 x 156 x 30 mm
	Weight	approx. 500 g
Certificates - testing mark - device safety		
EMV	DIN EN 61326-1 (General Requirements)	
	Interference Emission	Class B (residential)
	Interference resistance	Industry Branch
	DIN EN 61326-2-3 (Special Requirements for Pressure Transducers)	
Explosion protection	Europe	ATEX II 1 G Ex ia IIC T4/T3 Ga
RoHS Conformity	As per directive 2011/65/EU	

HandyLab 780

Portable multi-parameter Memosens® world



Durable design for everyday use measurements

- ▶ With Memosens® sensor measurement of pH, conductivity and dissolved oxygen by simple sensor exchange
- ▶ Automatic detection of the measuring parameter with Memosens® sensors.
- ▶ Automatic compensation of the ambient pressure for oxygen measurement
- ▶ Storage of up to 10,000 data points.
- ▶ Micro-USB connection to communicate with the HandyLab Pilot software for evaluation of data from digital Memosens® sensors.
- ▶ HandyLab Pilot software (included with delivery), allows for easy management and evaluation of stored data and can be used for device configuration.
- ▶ Contrast-rich and scratch-resistant clear glass display.
- ▶ Self-explanatory operation with extensive information and help text.
- ▶ Display of the sensor status at one glance with Senso-face.



- ▶ Calibration of up to 3 points with automatic buffer detection.
- ▶ Manual calibration by indicating random buffer values.
- ▶ Real-time clock and display of battery charging status.
- ▶ Extended operating time of more than 1,000 hours with standard batteries (4 x AA) or Li-Ion accumulators, even with very high or low operating temperatures. The batteries are charged via the USB interface.



HandyLab 780 - Specifications

Measuring parameters

Memosens pH (also called ISFET)	Connection: Female connector M8 (4-way) for Memosens laboratory cable	
	Display areas ¹⁾	-2.000 ... +16.000 pH -2000 ... +2000 mV Temperature -50 ... +250 °C
Memosens Redox	Connection: Female connector M8 (4-way) for Memosens laboratory cable	
	Display areas ¹⁾	mV -2000 ... +2000 mV
	Temperature	-50 ... +250 °C
pH/mV (analog)	Sensor adaptation ^{*)}	ORP (Redox) calibration (zero point offset)
	Perm. calibration range	ΔmV (Offset) -700 ... +700 mV
Temperature	Connection: pH female connector DIN 19 262 (13/4 mm)	
	Measuring Range pH	-2 ... 16
	Decimal places ^{*)}	2 or 3
	Input Resistance	1 x 10 ¹² Ω (0 ... 35 °C)
	Input current	1 x 10 ⁻¹² A (with RT, double up every 10 K)
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.01 pH, TK < 0.001 pH/K
	Measuring range mV	-1300 ... +1300
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.1 % v. M. + 0.3 mV TK < 0.03 mV/K
	Connection: 2 x Ø 4 mm for integrated or separate temperature sensor	
Memosens Conductivity	Measuring ranges	NTC 30 kΩ -20 ... +120 °C Pt 1000 -40 ... +250 °C
	Measuring cycle	approx. 1s
	Operation measurement deviation ^{2, 3, 4)}	< 0.2 K (Tamb = 23 °C); TK < 25 ppm/K
Memosens Conductivity	Connection: Female connector M8, 4-way for Memosens® laboratory cable alternative	
	Measuring cycle	approx. 1s
	Temperature compensation:	linear 0 ... 20 %/K, reference temperature adjustable
		nLF: 0 ... 120 °C
		NaCl
		HCl (pure water with traces)
		NH ₃ (pure water with traces)
		NaOH (pure water with traces)
	<u>Display resolution⁵⁾ (autoranging)</u>	
	conductivity	0.01 μS/cm (c < 0.5 cm ⁻¹) 0.01 μS/cm (c = 0.05 ... 0.2 cm ⁻¹) 0.1 μS/cm (c > 0.2 cm ⁻¹)
	spec. resistance	00.00 ... 99.99 MΩ • cm
	Salinity	0.0 ... 45.0 g/kg (0 ... 30 °C)
	TDS	0 ... 1999 mg/l (10 ... 40 °C)
	Concentration	0.00 ... 9.99 wt. %
	<u>Concentration definition</u>	
	NaCl	0.00 ... 9.99 wt. % (0 ... 60 °C)
	HCl	0.00 ... 9.99 wt. % (-20 ... 50 °C)
	NaOH	0.00 ... 9.99 wt. % (0 ... 100 °C)
	H ₂ SO ₄	0.00 ... 9.99 wt. % (-17 ... 110 °C)
	HNO ₃	0.00 ... 9.99 wt. % (-17 ... 50 °C)
	<u>Sensor adaptation:</u>	
	Cell constant	Input of the cell constant with simultaneous display of the conductivity value and the temperature
	Enter solution	Input of the conductivity of the calibration solution with simultaneous display of the cell constant and the temperature
	Auto	Automatic determination of the cell constant with KCl solution or NaCl solution
Memosens Oxygen	Connection: Female connector M8, 4-way for Memosens laboratory cable	
	Display areas ¹⁾	Saturation 0.000 ... 200.0 % Concentration 000 μg/l ... 20.00 mg/l Partial pressure 0.0 ... 1000 mbar
	Measuring range temperature ¹⁾	-20 ... 150 °C
	Sensor adaptation: Automatic calibration air and moisture adjustable, zero point calibration	

pH Calibration Operating Modes^{*)}	AutoCal Manually	Calibration with automatic buffer detection Manual calibration while entering individual buffer values
AutoCal Buffer Sets^{*)}	Data entry Knick CaliMat NIST Technical NIST-Standard DIN 19267	Data entry of zero point and slope Ciba (94) HACH SI Analytics techn. buffer Reagecon
Perm. calibration range	Zero point For ISFET: Slope Sample interval 1 ... 99 days, can be switched off	6 ... 8 pH -750 ... +750 mV work point (asymmetrical) approx. 74 ... 104 %
Calibration Timer^{*)} Display - Operation Device operation	clear menu guide with graphic symbols and detailed easy-to-understand operating instructions	
Languages Sensoface	German, English, French, Spanish, Italian, Portuguese Provides information regarding the sensor status, evaluation of zero point/slope, setting time, calibration interval status display (friendly, neutral, sad).	
Display Status displays Notes Keyboard Diagnostic Functions	QVGA TFT display with white backlight for battery status, logger Sand timer [on/off], [meas], [enter], [▲], [▼], [◀], [▶], 2 Softkeys with context-related population Sensor data (Memosens only): Manufacturer, sensor type, serial number, wear, operating time Calibration data: Calibration date, zero point and incline Device self-test: Automatic memory test (FLASH, EEPROM, RAM) Machine data: Device type, software version, hardware version Parameters, calibration data > 10 years	
Data retention Data transmission Data logger	1x Micro USB-B for data transmission to the PC 10,000 memory positions Recording: controlled manually, by intervals or events up to 100 Memosens calibration logs can be saved	
Calibration data logger MemoLog (Memosens only)	- Recording can be displayed on the display - directly readable via MemoSuite (USB): Manufacturer, sensor type, serial no., zero point, slope, calibration date	
Communication	USB 2.0 Profile Proper	HID, installation without driver Data exchange and configuration via the software HandyLab Pilot
Climate - rated operating conditions	Ambient temperature Transport/storage temperature Relative humidity	-10 ... +55 °C -25 ... +70 °C 0 ... 95 %, short-term dew permitted
Energy supply	Auxiliary energy Operating time	Batteries 4x AA (Mignon), 4x Akku NiMH or 1x Li-Ion battery pack, chargeable via USB approx. 500 h (Alkaline)
Casing	material Type of protection Dimensions Weight	PA12 GF30 + TPE IP66/67 with pressure compensation approx. 132 x 156 x 30 mm approx. 500 g
Certificates - testing mark - device safety EMV	DIN EN 61326-1 (General Requirements) Interference Emission Class B (residential) Interference resistance Industry Branch DIN EN 61326-2-3 (Special Requirements for Pressure Transducers)	
RoHS Conformity	As per directive 2011/65/EU	

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