

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
Memosens Conductivity	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
	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	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)	
EMV	As per directive 2011/65/EU	
RoHS Conformity		

^{*)} parameterizable

1) Measuring ranges depend on Memosens sensor

2) As per DIN EN 60746-1, with rated operating conditions

3) ± 1 digit

4) Plus sensor errors

5) c = Cell constant