HandyLab 7series

THE NEW MOBILE MEMOSENS® MEASURING DEVICES

SI Analytics

a xylem brand

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The new mobile pH measuring devices by SI Analytics with Memosens® technology offers increased safety and a user-friendly interface

MEMOSENS® - superior engineering

When measuring pH, both the sensor and electrical connection to the measuring device are critical for providing quality process data. TTraditional analog sensors contain high interior resistors that require a high-ohm connection to the measuring device. The presence of moisture on the sensor contacts can cause inaccurate readings and even sensor failure. This risk is eliminated by Memosens technology. The measured value is processed in the sensor head, digitalized, and then transmitted to the measuring device without metal contacts; there is no interference.

MEMOSENS® Electrodes by SI Analytics

HandyLab 780 with Memosens®-Elektrode

Sensor and PC connections as well as electrode storage.

MEMOSENS

This is how you secure your data

With conventional analog systems the sensor must be calibrated with every replacement. This is due to the calibration data being stored only in the measuring device. The Memosens concept solves this problem by saving the calibration data in the sensor head. When connected to the measuring device, they automatically identify themselves with their serial number and part number and transmit their calibration data to the measuring device. There is no additional calibration required to ensure an accurate measurement.

- Increased safety due to digital signal transmission. External interferences are eliminated, calibration data is transferred securely, and sensor data is transmitted easily.
- The sensor data is stored in the sensor.
- Predictive maintenance thanks to the possibility to track the sensor's past performance.
- Submersible thanks to its hermetically sealed plug-in head.
- Memosens® is an open system, which means that it is supported by several manufacturers and is a defacto standard.

Advantages MEMOSENS®

HandyLab 7series

The new mobile Measuring Devices by SI Analytics

Can be converted into abench 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)

MEMOSENS


pH 6.18
10.12.13
23.5 °C
13:54
meas
cal
set
clock
on/off
SI Analytics

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[*)]	ORP (Redox) calibration (zero point offset)	
	Perm. calibration range	ΔmV (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 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	
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		
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 Transport/storage temperature Relative humidity	-10 … +55 °C –25 … +70 °C 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	

*) 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

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.

MEMOSENS


pH
6.18
10.12.13
23.5 °C
13:54
meas
cal
set
STO
clock
RCL
on/off
SI Analytics


pH
6.01
25
19.09.13
14:38
meas
cal
STO
RCL
SI Analytics

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)	
	Perm. calibration range	ΔmV (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	1×10^{12} Ω (0 … 35 °C)	
	Input current	1×10^{-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	
	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 (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	LCD STN 7-segment display with three lines and symbols		
Status displays	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 – 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		
	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), 4x Akku NiMH or 1x Li-Ion battery pack, chargeable via USB
	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	

*) 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

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).

MEMOSENS


pH 6.01
19.09.13
25 °C
14:38
meas
cal
set
STO
clock
RCL
on/off
SI Analytics

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)	
	Perm. calibration range	ΔmV (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 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 Pt 1000:	–20 … +120 °C -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	
	Data entry	Data entry of zero point and incline	
AutoCal Buffer Sets[*)]	Knick CaliMat NIST Technical NIST-Standard DIN 19267	Ciba (94) HACH SI Analytics techn. buffer Reagecon	Hamilton Mettler-Toledo
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	LCD STN 7-segment display with three lines and symbols		
Status displays	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	up to 100 Memosens calibration logs can be saved	
(Memosens only)	– 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
	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	

*) 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

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 Sensoface.

MEMOSENS

- 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
	Sensor adaptation[*)]	ORP (Redox) calibration (zero point offset)
	Perm. calibration range	ΔmV (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 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
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
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)
	Display resolution[5)] (autoranging)	
	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. %
	Concentration definition	
	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_2SO_4	0.00 ... 9.99 wt. % (–17 ... 110 °C)
	HNO_3	0.00 ... 9.99 wt. % (–17 ... 50 °C)
	Sensor adaptation:	
	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	

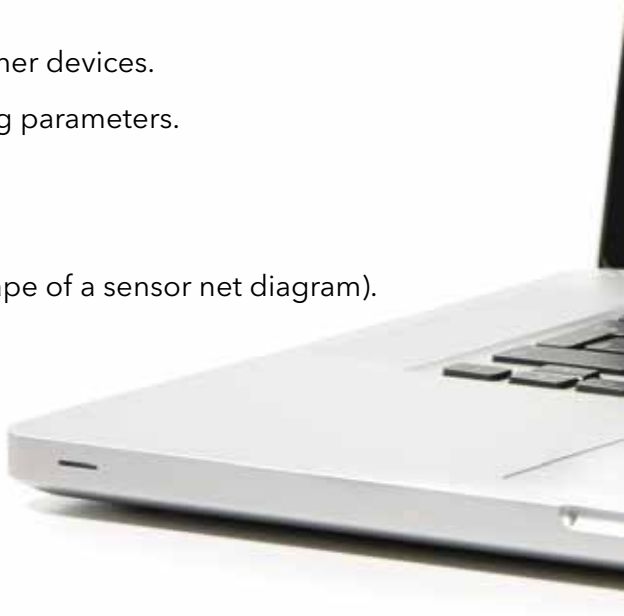
pH Calibration			
Operating Modes*)	AutoCal	Calibration with automatic buffer detection	
	Manually	Manual calibration while entering individual buffer values	
	Data entry	Data entry of zero point and slope	
AutoCal Buffer Sets*)	Knick CaliMat	Ciba (94)	Hamilton
	NIST Technical	HACH	Mettler-Toledo
	NIST-Standard	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		
Display - Operation			
Device operation	clear menu guide with graphic symbols and detailed easy-to-understand operating instructions		
Languages	German, English, French, Spanish, Italian, Portuguese		
Sensoface	Provides information regarding the sensor status, evaluation of zero point/slope, setting time, calibration interval status display (friendly, neutral, sad).		
Display	QVGA TFT display with white backlight		
Status displays	for battery status, logger		
Notes	Sand timer		
Keyboard	[on/off], [meas], [enter], [▲], [▼], [◀], [▶], 2 Softkeys with context-related population		
Diagnostic Functions	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	
Data retention	Parameters, calibration data > 10 years		
Data transmission	1x Micro USB-B for data transmission to the PC		
Data logger	10,000 memory positions		
	Recording:	controlled manually, by intervals or events	
Calibration data logger MemoLog (Memosens only)	up to 100 Memosens calibration logs can be saved – 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	HID, installation without driver	
	Proper	Data exchange and configuration via the software HandyLab Pilot	
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), 4x Akku NiMH or 1x Li-Ion battery pack, chargeable via USB	
	Operating time	approx. 500 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		

*) 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

HandyLab Pilot - PC-Software

HandyLab Pilot is the ideal interface between Memosens® and the PC

- Windows interface for intuitive operation.
- The software is automatically connected to HandyLab 750, 750EX and 780 when the devices are connected to the PC.
- Automatic detection of the measuring devices
- If multiple measuring devices are connected, the user can select which one they would like displayed.
- Easy management and evaluation of the measuring data.
- Simple configuration of multiple measuring devices as well as update of the device software if needed.
- Device configurations can be saved and transferred to other devices.
- Set minimum and maximum limit values for the measuring parameters.
- Set difference values.
- Enter your own buffer sets.
- Display device and sensor information (with pH in the shape of a sensor net diagram).
- Save data as CSV files or export into Microsoft® Excel.
- Print function.



Lab PILOT

SI Analytics

HandyLab Pilot

Order information for HandyLab 7series

Type No.	Order No.	Description
HL700AL90pH	285205110	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with AquaLine 90 pH, Z544, K1A and DIN buffer solutions in vials
HL700N1052A	285205120	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with N1052A and DIN buffer solutions in vials
HL700A7781120NMSN	285205130	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with A7781-120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL700H8281120NMSN	285205140	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with H8281-120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL 700-PL83120NMSN	285205150	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with PL83120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL700SL83120NMSN	285205160	Set pH-Meter HandyLab 700 for analog and Memosens® pH electrodes with SL83120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL750AL90pH	285205180	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with AquaLine 90 pH, Z544, K1A and DIN buffer solutions in vials
HL750N1052A	285205190	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with N1052A and DIN buffer solutions in vials
HL750A7781120NMSN	285205200	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with A7781-120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL750H8281120NMSN	285205210	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with H8281-120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL750PL83120NMSN	285205220	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with PL83120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL750SL83120NMSN	285205230	Set pH-Meter HandyLab 750 for analog and Memosens® pH electrodes with SL83120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL750EXA7781120NMSN	285205250	Set pH-Meter HandyLab 750 EX for analog and Memosens® pH electrodes with A7781-120 NMSN, Z544, NMSN1M8EX and DIN buffer solutions in vials
HL750EXH8281120NMSN	285205260	Set pH-Meter HandyLab 750 EX for analog and Memosens® pH electrodes with J8281-120 NMSN, Z544, NMSN1M8EX and DIN buffer solutions in vials
HL750EXPL83120NMSN	285205270	Set pH-Meter HandyLab 750 EX for analog and Memosens® pH electrodes with PL83120 NMSN, Z544, NMSN1M8EX and DIN buffer solutions in vials
HL750EXSL83120NMSN	285205280	Set pH-Meter HandyLab 750 EX for analog and Memosens® pH electrodes with SL83120 NMSN, Z544, NMSN1M8EX and DIN buffer solutions in vials
HL780AL90pH	285205320	Set pH-Meter HandyLab 780 for analog and Memosens® pH electrodes with AquaLine 90 pH, Z544, K1A and DIN buffer solutions in vials
HL780N1052A	285205330	Set pH-Meter HandyLab 780 for analog and Memosens® pH electrodes with N1052A and DIN buffer solutions in vials
HL780A7781120NMSN	285205340	Set pH-Meter HandyLab 780 for analog und Memosens® pH electrodes with A7781-120 NMSN, Z544, NMSN1M8 and DIN-buffer solution in vials

Type No.	Order No.	Description
HL780H8281120NMSN	285205350	Set pH-Meter HandyLab 780 for analog and Memosens® pH electrodes with H8281-120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL780PL83120NMSN	285205360	Set pH-Meter HandyLab 780 for analog and Memosens® pH electrodes with PL83120 NMSN, Z544, NMSN1M8 and DIN buffer solutions in vials
HL780SL83120NMSN	285205370	Set pH-Meter HandyLab 780 for analog and Memosens® pH electrodes with SL83120 NMSN, Z544, NMSN1M8 and DIN buffer solution in vials

Order information for electrodes

Type No.	Order No.	Description
A7781-120 NMSN	285114765	Low-maintenance pH combination electrode with NTC 30K, glass shaft, 3 x ceramic diaphragm, gel electrolyte, Silamid® reference system, ball membrane, A glass, Memosens® threaded plug head, length 120 mm, 12 mm Ø, -5...+80 °C, 0...14 pH
AquaLine 90 pH	285113176	Plastic shaft, fiber diaphragm, gel electrolyte, Silamid® reference system, cylinder membrane, A glass, threaded plug head, length 120 mm, 12 mm Ø, -5...+80 °C, 2...13 pH
H8281-120 NMSN	285111020	Low-maintenance pH combination electrode with NTC 30K, glass shaft, KPG ring gap diaphragm, Referid® electrolyte, Silamid® reference system, spherical membrane, A glass, Memosens® threaded plug head, length 120 mm, 12 mm Ø, -5...+80 °C, 2..13 pH
N 1052 A	1054512	Glass shaft, platinum diaphragm, KCl 3 mol/l electrolyte, Silamid® reference system, temperature sensor Pt 1000, ball membrane, A glass, DIN- +4 mm banana plug, length 120 mm, 12 mm Ø, -5...+100 °C, 0..00.14 pH
PL 83-120 NMSN	285113495	Low-maintenance pH combination electrode with NTC 30K, glass shaft, Silamid® reference system, 2-hole diaphragm, DuraLid reference system, ball membrane, H glass, Memosens® threaded plug head, length 120 mm, 12 mm Ø, 0..14, 0...130 °C
SL 83-120 NMSN	285114025	Low-maintenance pH combination electrode with NTC 30K, hot steam sterilizable, CIP and SIP capable, glass shaft, Silamid® reference system, ceramic diaphragm, pressure applied RheoLid reference system, ball membrane, S glass, Memosens® threaded plug head, length 120 mm, 12 mm Ø, 0..14, 0....140 °C

Order information for accessories

Type No.	Order No.	Description
NMSN1M8	285205380	Plug/cable combination 1.5 m for digital sensors with Memosens threaded plug head for HandyLab 7series
NMSN1M8EX	285205290	Plug/cable combination ATEX 1.5 m for digital sensors with Memosens threaded plug head for HandyLab 7series
NMSN3M8EX	285205300	Plug/cable combination ATEX 3.28 yd for digital sensors with Memosens threaded plug head for HandyLab 7series
Z540	285205470	Li-Ion batteries (can only be charged via USB for HandyLab 750 and 780)
Z541	285205480	Sensor case (5 ea.) for the liquid-tight storage for HandyLab 7series
Z542	285205490	Durable field case for storage and transport for HandyLab 7series and sensor
Z543	285205500	Temperature sensor Pt1000 for HandyLab 7series
Z544	285205510	3 adapters for storage of sensors with 12 mm diameter and Pg13.5 thread in the HandyLab 7series case Z541

Memosens® - Sensors

Mobile multi-parameter Memosens® world with data storage

Our sensors, e.g. the H8281HD, have been proven for decades and make up the basis of our Memosens® sensors. Analog measurements are processed in the Memosens® plug head and converted to interference-resistant digital signals. When the sensors are connected to the measuring device, they automatically identify themselves with their serial number and part number and process the calibration data stored in the sensor.

Advantages producing reliable measurements

- When connected with HandyLab 7series, there are several advantages for the applications of e.g. samplers in the process. These often contain a multitude of sensors to cover your measurement tasks. Compared to conventional systems, there is no need to calibrate the sensor for every replacement as the calibration data is ow saved in the sensor itself.
- The possibility to distinguish between sensors of the same type by their serial numbers allows for easy allocation and documentation of electronically recorded and saved measurement results.

- In addition to the facilitation of the documentation tasks, the uncertainties during the calibration, such as "hidden serial numbers" etc. are drastically reduced – pesky and time-consuming tasks which hinder the operation and favor errors.
- The sensors used to measure pH and ORP (Redox) deliver very small electrical voltages, which can only be measured safely over a limited length (a few meters) of cable when using analog models. Especially outside the laboratory, the measuring points are often difficult to access. Here, the Memosens® concept assists by having the calibration data stored in the sensor and via a digital signal transmission.

Memosens® - Sensors - Order Information

Type No.	Order No.	Description
A7781-120 NMSN	285114765	Low maintenance pH combination electrode with NTC 30K, glass shaft, 3 x ceramic junction, gel electrolyte, Silamid®-reference system, sphere membrane, A-glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, -5...+80 °C, 0...14 pH [1]
A7781-225 NMSN	285114770	Low maintenance pH combination electrode with NTC 30K, glass shaft, 3 x ceramic junction, gel electrolyte, Silamid®-reference system, sphere membrane, A-glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, -5...+80 °C, 0...14 pH [1]
FL A 93-120 MF NMSN	285118180	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, -30...+100°C, 0...14 pH
FL S 93-120 MF NMSN	285118200	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 300, sphere membrane, S-glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, +10...+135°C, 0...14 pH
FL A 93-225 MF NMSN	285118185	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, -30...+100°C, 0...14 pH
FL A 93-280 MF NMSN	285118190	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 280 mm, 12 mm Ø, -30...+100°C, 0...14 pH
FL A 93-380 MF NMSN	285118195	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 200, sphere membrane, A-glass, Memosens® screw plug head, length 380 mm, 12 mm Ø, -30...+100°C, 0...14 pH
FL S 93-225 MF NMSN	285118210	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 300, sphere membrane, S-glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, +10...+135°C, 0...14 pH
FL S 93-280 MF NMSN	285118220	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 300, sphere membrane, S-glass, Memosens® screw plug head, length 280 mm, 12 mm Ø, +10...+135°C, 0...14 pH
FL S 93-380 MF NMSN	285118230	Liquid electrolyt comb. electrode with NTC 30K and integrated plastic adapter for hose connection incl. Pg13.5 thread, platinum junction, electrolyte L 300, sphere membrane, S-glass, Memosens® screw plug head, length 380 mm, 12 mm Ø, +10...+135°C, 0...14 pH
H 8281-120 NMSN	285111020	Low maintenance pH combination electrode, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, dome membrane, H-glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...+100 °C, 2...13 pH[1]
H 8281-225 NMSN	285111040	Low maintenance pH combination electrode, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, dome membrane, H-glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...+100 °C, 2...13 pH [1]
H 8281-325 NMSN	285111050	Low maintenance pH combination electrode, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, dome membrane, H-glass, Memosens® screw plug head, length 325 mm, 12 mm Ø, 0...+100 °C, 2...13 pH[1]
H 8281-360 NMSN	285111030	Low maintenance pH combination electrode, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, dome membrane, H-glass, Memosens® screw plug head, length 360 mm, 12 mm Ø, 0...+100 °C, 2...13 pH [1]
H 8281-425 NMSN	285111060	Low maintenance pH combination electrode, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, dome membrane, H-glass, Memosens® screw plug head, length 425 mm, 12 mm Ø, 0...+100 °C, 2...13 pH [1]
PL 83-120 NMSN	285113495	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]

Type No.	Order No.	Description
PL 83-225 NMSN	285113505	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]
PL 83-325 NMSN	285113515	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]
PL 83-360 NMSN	285113525	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]
PL 83-425 NMSN	285113535	Low-maintenance pH combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sphere membrane, H glass, Memosens® screw plug head, length 425 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]
PL 89-120 NMSN	285113565	Low-maintenance metal combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sensor platinum disk, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...130 °C[1]
PL 89-225 NMSN	285113575	Low-maintenance metal combination electrode with NTC 30K, glass shaft, SILAMID® reference, 2 hole junction, DuraLid reference system, sensor platinum disk, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...130 °C [1]
Pt 8281-120 NMSN	285111070	Low maintenance redox-combination electrode with NTC 30K, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, sensor platinum disk 6 mm Ø, Memosens® screw plug head, length 120 mm, 12 mm Ø, -5...+100 °C [1]
Pt 8281-225 NMSN	285111110	Low maintenance redox-combination electrode with NTC 30K, glass shaft, KPG annular gap junction, Referid®-electrolyte, Silamid®-reference system, sensor platinum disk 6 mm Ø, Memosens® screw plug head, length 225 mm, 12 mm Ø, -5...+100 °C [1]
S26250 NMSN	285128350	Liquid electrolyte electrode with NTC 30K and KCl vessel 130 mm, Glass shaft, ceramic junction, electrolyte L 310, Ag/AgCl-reference system, cylinder membrane, S glass, length 250 mm, 12 mm Ø, 0...14 pH, +10...+135 °C [1]
SL 83-120 NMSN	285114025	Low-maint. pH comb. electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic diaphr., press. RheoLid ref. system, sphere membrane, S glass, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...14 pH, 0...140 °C [1]
SL 83-225 NMSN	285114035	Low-maint. pH comb. electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic diaphr., press. RheoLid ref. system, sphere membrane, S glass, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...14 pH, 0...140 °C [1]
SL 83-325 NMSN	285114045	Low-maint. pH comb. electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic diaphr., press. RheoLid ref. system, sphere membrane, S glass, Memosens® screw plug head, length 325 mm, 12 mm Ø, 0...14 pH, 0...140 °C [1]
SL 83-360 NMSN	285114055	Low-maint. pH comb. electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic diaphr., press. RheoLid ref. system, sphere membrane, S glass, Memosens® screw plug head, length 360 mm, 12 mm Ø, 0...14 pH, 0...140 °C [1]
SL 83-425 NMSN	285114065	Low-maint. pH comb. electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic diaphr., press. RheoLid ref. system, sphere membrane, S glass, Memosens® screw plug head, length 425 mm, 12 mm Ø, 0...14 pH, 0...140 °C [1]
SL 89-120 NMSN	285114075	Low-maintenance metal comb. Electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic junction, press. RheoLid ref. system, sensor platinum disk, Memosens® screw plug head, length 120 mm, 12 mm Ø, 0...140 °C
SL 89-225 NMSN	285114085	Low-maintenance metal comb. Electrode with NTC 30K, hot steam sterilizable, CIP and SIP able, glass shaft, SILAMID® ref., ceramic junction, press. RheoLid ref. system, sensor platinum disk, Memosens® screw plug head, length 225 mm, 12 mm Ø, 0...140 °C

All electrodes have in common:
- Temperature sensor NTC30kΩ
- Glass shaft, diameter 12mm

What can Xylem do for you?

We're 12,700 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to www.xyleminc.com

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