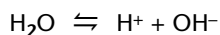




pH Meters

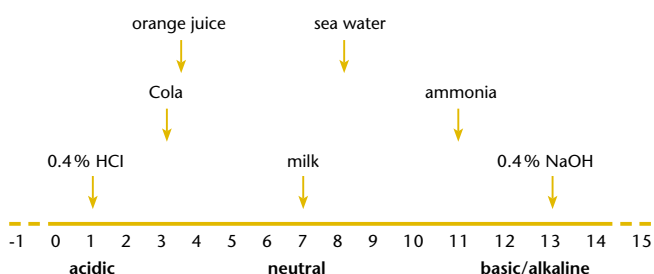
pH Value

The water molecule has the property of dissociating into two ionic components in aqueous solutions.



The H^+ ion is termed hydrogen ion or proton, the OH^- ion hydroxide ion.

The pH value describes the activity of hydrogen ions in aqueous solutions on a scale of -1 to 15. Based on this scale, liquids are characterized as being acidic, alkaline or neutral: a solution which is neither acidic or alkaline is neutral. This corresponds to a value of 7 on the scale. Acidity indicates a higher activity of hydrogen ions and a pH value lower than 7. Alkaline solutions are characterized by a lower hydrogen ion activity or higher hydroxide ion activity, respectively, and a pH value above 7. The graph below uses examples to illustrate the pH scale.



The pH scale is logarithmic. A difference of one pH unit represents a tenfold, or ten times increase or reduction of hydrogen ion activity in the solution. This explains how a solution's aggressiveness increases with the distance from the neutral point.

The pH value can be measured using electrochemical measuring systems, litmus paper, indicators and colorimeters. Of these methods, electrochemical sensors provide the most accurate results.

The pH electrode is an electrochemical sensor that consists of a measuring electrode and a reference electrode. The measuring electrode is made of special glass which, due to its surface properties, is particularly sensitive to hydrogen ions. It is filled with a buffer solution which has a pH value of 7. When placing the pH electrode into a test solution, the change in voltage is measured by the electrode by comparing the measured voltage to the stable reference electrode. This change is recorded by the meter and converted into the pH value displayed.

Application Range pH Measurement												
● Recommended by WTW ○ Conditionally applicable – Not recommended												
Application range	inoLab®						Profiline pH 1970i	VARIO® pH	Portable meters			
	pH 720/7200*	pH 730/7300*	pH/ION 735/7350*	pH 740/7400*	pH/ION 740/7400*	pH/ION/Cond 750/7500*			Profiline			pH/ION 340i/3400i*
									pH 3110	pH 3210	pH 3310	
Routine measurement	●	○	○	○	○	○	○	●	●	●	○	○
Routine measurement with documentation	-	●	●	●	●	●	●	-	-	-	●	●
AQA with documentation	-	●	●	●	●	●	●	-	-	-	●	●
R&D high resolution and precision	-	●	●	●	●	●	●	-	-	●	●	●
Control measurements	-	●	●	●	●	●	●	●	-	●	●	●
LIMS connection	-	●	●	●	●	●	●	-	-	-	○	○
Quality assurance	-	●	●	●	●	●	●	-	-	●	●	●
Training	●	●	●	●	○	○	○	●	●	●	○	○
Service	-	-	-	-	-	-	●	●	●	●	●	●
Laboratory measurements	●	●	●	●	●	●	●	●	-	-	○	○
Field measurements	-	-	-	-	-	-	●	-	●	●	●	●
Depth measurements	-	-	-	-	-	-	●	-	-	-	-	-
External control/ PC connection/ PC control	-	●	-	●	●	●	●	-	-	-	●	●
pH/ISE function	-	-	●	●	●	●	-	-	-	-	-	●
Ion-specific measurement programs	-	-	●	-	●	●	-	-	-	-	-	-
<i>see page</i>	24	24	38	25	39	39/66	26	28	27	27	27	41

* North American version For pH measurement with multi-parameter instruments, see pages 8 and 62



Parameter
 pH
 ORP
 ISE
 Dissolved Oxygen (D.O.)
 Conductivity
 Multi-parameter
 Data logger/flow + level
 BOD/Respiration
 Photometers
 Turbidity
 Colony Counter
 Software/Printers

Laboratory pH Meters

Along with weight and temperature measurements, pH is the most commonly measured parameter in the laboratory. With inoLab®, WTW offers a family of laboratory instruments that meet all application requirements from routine measurements to research applications.

inoLab® pH 720/7200*

- Routine meter for precise measurement values (0.001 pH)
- Large display
- Easy-to-clean membrane keypad

Simple and reliable

Easy-to-use routine laboratory pH/mV meter with large multi-functional display for pH and temperature, automatic temperature compensation, and MultiCal® calibration system. For battery or line power operation.



inoLab® pH 730/7300*

- Supports all GLP needs
- Optional built-in printer
- Data logger with memory for 800 data sets

Compact and precise

Precision pH/mV meter with large multifunctional display for pH and temperature, automatic temperature compensation, MultiCal® calibration system, built-in measurement storage with GLP-conforming documentation and digital interface. Shown with optional built-in printer.



* North American version

inoLab® pH 740/7400*

- Computer-controlled precision meter
- EMC-stabilized
- Upgradeable firmware/software

Additional features

- 5-point calibration
- Selectable buffers
- Real-time graphic display
- Built-in digital recorder
- Connection for bar-code reader or PC keyboard
- User selectable languages
- Multi-level GLP functions
 - Password-protected operator levels
- Free-of-charge downloads for MultiLab® pilot or terminal

Flexible and powerful

High-performance pH/mV/ION meter with graphic display and digital recorder function for pH, temperature and ion-selective measurement, automatic temperature compensation, high resolution (0.001 pH), MultiCal® calibration system, built-in measurement storage with GLP-compliant documentation and digital interface. PC keyboard interface for connecting an external keyboard or barcode reader. Includes software for direct control by PC. Built-in printer option available.



Technical Data

Model	pH 720/7200*	pH 730/7300*	pH 740/7400*
Range/Resolution	pH -2.000 ... +19.999 pH -2.00 ... +19.99 pH mV -999.9 ... +999.9 mV -1,999 ... +1,999 mV Temperature -5.0 ... +105.0 °C (23 ... 221 °F)	pH -2.000 ... +20.000 pH -2.00 ... +20.00 pH mV -999.9 ... +999.9 mV -2,000 ... +2,000 mV Temperature -5.0 °C ... +105.0 °C (23 ... 221 °F)	pH -2.000 ... +20.000 pH -2.00 ... +20.00 pH mV -999.9 ... +999.9 mV -2,000 ... +2,000 mV Temperature -5.0 °C ... +105.0 °C (23 ... 221 °F)
Accuracy (±1 digit)	pH ±0.005 pH ±0.01 pH mV ±0.3 mV, ±1 mV Temperature ±0.1 K	±0.005 pH ±0.01 pH ±0.3 mV, ±1 mV ±0.1 K	±0.004 pH ±0.01 pH ±0.2 mV, ±1 mV ±0.1 K
Calibration	MultiCal® automatic calibration: AutoCal 2-/3-point AutoCal-Tec 2-/3-point ConCal® 1-/2-point ISECal -	MultiCal® automatic calibration: 2-/3-point 2-/3-point 1-/2-point -	MultiCal® automatic calibration: 2-/3-/4-/5-point 2-/3-/4-/5-point 1-/2-point 2- and 3-point

Ordering Information

inoLab® Laboratory pH Meter SETs		□ Order No.	▲ Order No.
inoLab® pH 720/7200* SET	Simple and reliable pH meter, including SenTix® 42/41, including accessories, without passive multi-function box	1A10-2117	1A10-1112
inoLab® pH 730/7300* SET	Compact precision pH meter with serial interface, including SenTix® 82/81, passive multi-function box and accessories	1A20-2119	1A20-1114
inoLab® pH 740P/7400P* SET	The intelligent pH measuring station, terminal with integrated printer, including SenTix® 82/81 und accessories	1A31-2119	1A31-1114
inoLab® Box	Passive multi-function box, not included in inoLab® pH 720/7200* SETs	109 810	109 810



* North American version

□ with BNC plug, ▲ with DIN plug

For other SETs or electrodes in SET, see WTW Product Details

Portable pH Meters

ProfiLine pH Field Meters

All WTW meters in the ProfiLine pH 1970i series are both waterproof (IP 66) and submersible (IP 67). In addition, these units float, a convenient feature when used in field applications at lakes or streams. With GLP memory functions, real-time clock, a display corresponding to the recorder output, 800 data records memory capacity, a carry handle and strap.

ProfiLine pH 1970i

- Robust, shockproof
- Fully waterproof
- Standard pH measurement and pH measurement down to depths of 100 m (330 ft)

The ProfiLine 1970i, supplied with integrated powerful NiMH rechargeable batteries, is a complete pH measuring system. When used with the TA 197 pH Depth Armature, the ProfiLine 1970i, with its built-in preamplifier, is accurate to a depth of 100 m (330 ft).



Depth armature TA 197 pH

Technical Data

Model	ProfiLine pH 1970i	
Range/ Resolution	pH	-2.00 ... +19.99 pH,
	mV	-199.9 ... +199.9 mV; -1999... +1999 mV
	Temp.	-5.0 ... +105.0 °C (23 ... 221 °F)
Accuracy (±1 digit)	pH	±0.01 pH,
	mV	±0.5 at +15 °C ... +35 °C (59 ... 95 °F), ±1 at +15 °C ... +35 °C (59 ... 95 °F)
	Temp.	±0.1 K
Calibration	MultiCal® automatic calibration: 1,2,3-point calibration, AutoCal, AutoCal-Tec and ConCal®	

Ordering Information

ProfiLine pH Field Meter – with universal power supply 100-240 VAC (50/60 Hz) included	Order No.
ProfiLine pH 1970i Robust, waterproof, submersible pH/mV meter	3A30-110



For depth armatures for measurements down to depths of 100 m (330 ft)
see WTW Product Details

NEW

ProfiLine 3000 series

The **pH 3110** is the right choice for those looking for a simple, rugged and waterproof device for portable pH measurement. The keypad with only 6 buttons and the automatic AutoRead function for reproducible measured values provide safe pH measurements and prevent errors.

ProfiLine pH 3110

- pH or ORP measurements
- 3-point calibration
- Built-in calibration timer



A convenient pH/mV instrument for many applications: The **pH 3210** is a portable precision pH/mV meter with an intuitive user interface. The unique Continuous Measurement Control (CMC) feature ensures that measured values and calibration ranges are within the optimum range, particularly useful for someone less familiar with pH measurements.

The **pH 3310** is an elegant combination of a portable meter and data logger for those who automatically save measurement data and want to further process data on a PC. Measurement characteristics and ease-of-use correspond to those of the pH 3210.

ProfiLine pH 3210/3310

- 22 buffer pre-programmed sets
- CMC for measuring in the optimum measuring range
- 5-point calibration

Technical Data

Model	ProfiLine pH 3110	ProfiLine pH 3210	ProfiLine pH 3310
Range/Resolution	pH -2.000 ... +19.999 ±0.005 pH mV -1200.0 ... +1200.0 ±0.3 mV	-2.000 ... +19.999 ±0.005 pH -1200.0 ... +1200.0 ±0.3 mV	-2.000 ... +19.999 ±0.005 pH -1200.0 ... +1200.0 ±0.3 mV
Accuracy	-2000 ... +2000 ±1 mV Temperature -5.0 ... +105.0 ±0.1 °C (23 ... 221 °F)	-2500 ... +2500 ±1 mV -5.0 ... +105.0 ±0.1 °C (23 ... 221 °F)	-2500 ... +2500 ±1 mV -5.0 ... +105.0 ±0.1 °C (23 ... 221 °F)
Calibration	1, 2 or 3-point calibration WTW technical buffers, DIN/NIST buffers	1, 2, 3, 4, 5-point calibration WTW technical buffers, DIN/NIST buffers plus 20 additional buffer sets	1, 2, 3, 4, 5-point calibration WTW technical buffers, DIN/NIST buffers plus 20 additional buffer sets
Memory/Logger	–	Manual 200	Manual 200/5000 automatic
Display	7-Segment LCD, customized	LCD Graphic, backlight	LCD Graphic, backlight
Continuous operation	Up to 2500 hrs.	Up to 1000 hrs. without/150 hrs. with backlight	Up to 1000 hrs. without/150 hrs. with backlight

Ordering Information

ProfiLine Portable pH Meter SETs		Order No.
pH 3110 SET 2	Robust and waterproof portable pH meter, for battery operation, in portable case set with SenTix® 41	2AA112
pH 3210 SET 2	Robust and waterproof portable pH meter with data logger, for battery operation, in portable case set with SenTix® 41	2AA212
pH 3310 SET 5	Robust and waterproof portable pH meter with data logger and USB Mini-B interface, for battery operation, in portable case set with SenTix® F	2AA315



For other electrodes in Sets see WTW Product Details

VARIO®

You notice it immediately: in addition to its ergonomic form, the new VARIO® has no keys. The innovative touch screen allows access to all functions with one-touch simplicity.

VARIO® pH

- Compatible with most electrode types
- One-hand operation
- Twistable display

Measuring in no time at all

Simply touch the display – and VARIO® is ready for use. Immersion in the solution starts the measurement automatically. The stable measurement can be read from the large display together with the temperature. Memory has capacity for up to 50 measured values which can be stored for later evaluation.



When the VARIO® is not being used for pH measurements, it can be used as a laboratory clock or timer.



Light, handy, rugged – it finds a place in every laboratory coat without dripping or leaving nasty stains, as it can be stored without KCl.



The VARIO® can operate continuously for 1500 hours on one easily replaced AA (1.5 V) battery.

VARIO® comes standard with a special glass electrode that is protected by a plastic casing. The conical protective cap does not require KCl – this prevents the electrode from dripping and protects it from drying out.

The VARIO® can do even more.

The adapter included in the VARIO® Set allows compatibility with commercially available precision electrodes. The VARIO® measures as accurately and reliably as any portable instrument.

The VARIO® is an essential tool whenever speed is required in the laboratory or in production.



Technical Data

Model	VARIO® pH
pH range	-2.00 ... 16.00
pH accuracy	±0.01 pH
Temperature	-5.0 ... 100.0 °C (23 ... 212 °F)
Automatic buffer recognition	TEC/NIST
Calibration points	3 (MultiCal®)

Ordering Information

VARIO®		Order No.
VARIO® SET V	VARIO® in the portable case set, incl. short electrode with built-in temperature probe and technical buffer 4 and 7	2V00-001V



For other electrodes, see WTW Product Details

SenTix® pH electrodes for every application

SenTix® quality electrodes by WTW – convenient measurement and precision.

- Low-resistance glass membranes guarantee stable measuring signals even at low temperatures.
- Silver ion-free reference electrolyte, together with the proven platinum wire diaphragm, prevent measurement problems by precipitating silver compounds.
- Functional slide for accessing the refill opening for electrodes with liquid electrolyte.
- Typical connections: Waterproof DIN connector, BNC connector, fixed cable (1 or 3 m, 3 ft. or 9 ft.) or connector head (S7 or SMEK).

IDS pH/ORP electrodes, see page 14



Low-maintenance pH electrodes with gel electrolyte

Ideal for portable measurements, as well as for routine measurements in-the-laboratory. With or without built-in temperature probe all electrodes have robust plastic shafts and a low-maintenance gel reference system.

New: The SenTix® F with temperature-stable iodine/iodide system, specifically for measurements at changing temperature conditions.



SenTix® pH Electrodes									
Model	SenTix® 20 103 630	SenTix® 21 103 631	SenTix® 21-3 103 632	SenTix® 22 103 633	SenTix® 41 103 635	SenTix® 41-3 103 636	SenTix® 42 103 637	SenTix® F 103 676	SenTix® F-3 103 677
Measuring range pH	0 ...14 pH				0 ...14 pH			0 ... 14 pH	
Operating range °C (°F)	0 ... 80 °C (32 ... 176 °F)				0 ... 80 °C (32 ... 176 °F)			0 ... 80 °C (32 ... 176 °F)	
Reference electrolyte	Gel				Gel			Gel	
Membrane shape	Cylindrical				Cylindrical			Cylindrical	
Membrane resistance at 25 °C (77 °F)	<1 GΩ				<1 GΩ			<1 GΩ	
Diaphragm	Fiber				Fiber			Fiber	
Shaft material	Plastic				Plastic			Plastic	
Shaft length**	120 mm (4.72 in.)				120 mm (4.72 in.)			120 mm (4.72 in.)	
Shaft Ø***	12 mm (0.47 in.)				12 mm (0.47 in.)			12 mm (0.47 in.)	
Temperature probe	—				Built-in NTC (30 KΩ)			Built-in NTC (30 KΩ)	
Connection	①	②	②	②	②	②	②	②	②
Electrode cable	③*	④	⑤	④	④	⑤	④	④	⑤
Electrode plug	⑥/⑦	⑥	⑥	⑦	⑥+⑧	⑥+⑧	⑦+⑧	⑥+⑧	⑥+⑧

* not included
 ** ±2 mm/±0.08 in.
 *** ±0.5 mm/±0.02 in.

①: Plug head, ②: Fixed cable, ③: AS/DIN, AS/DIN-3 or AS/BNC, ④: Cable length 1 m (3 ft),
 ⑤: Cable length 3 m (9 ft), ⑥: DIN plug, ⑦: BNC plug, ⑧: Banana plug

Fast and precise – pH electrodes with liquid electrolyte



For demanding measurements in-the-laboratory. SenTix® electrodes with liquid electrolyte, an easy-to-clean glass shaft and platinum diaphragm can be used even for complicated samples. For those who need an electrode with liquid electrolyte for a portable measurement: The SenTix® 51/52 with plastic shaft, built-in temperature probe and ceramic diaphragm is suited for nearly any measuring task.



SenTix® pH Electrodes

Model	SenTix® 51 103 651	SenTix® 52 103 652	SenTix® 60 103 639	SenTix® 61 103 640	SenTix® 62 103 641	SenTix® 81 103 642	SenTix® 82 103 643	SenTix® 91 103 695	SenTix® 92 103 696	SenTix® L 103 655
Measuring range pH	0 ... 14 pH		0 ... 14 pH			0 ... 14 pH		0 ... 14 pH		0 ... 14 pH
Operating range °C (°F)	0 ... 80 °C (32...176 °F)		0 ... 100 °C (32...212 °F)			0 ... 100 °C (32...212 °F)		0 ... 100 °C (32...212 °F)		10 ... 100 °C (50 ... 212 °F)
Reference electrolyte	KCl 3 mol/l, Ag ⁺ -free		KCl 3 mol/l, Ag ⁺ -free			KCl 3 mol/l, Ag ⁺ -free		KCl 3 mol/l, Ag ⁺ -free		KCl 3 mol/l
Membrane shape	Cylindrical		Conical			Conical		Spherical		Spherical
Membrane resistance at 25 °C (77 °F)	<1 GΩ		<600 MΩ			<600 MΩ		<600 MΩ		< 600 MΩ
Diaphragm	Ceramics		Platinum			Platinum		Platinum		Platinum
Shaft material	Plastic		Glass			Glass		Glass		Glass
Shaft length**	120 mm (4.72 in.)		120 mm (4.72 in.)			120 mm (4.72 in.)		170 mm (6.69 in.)		425 mm (16.73 in.)
Shaft Ø***	12 mm (0.47 in.)		12 mm (0.47 in.)			12 mm (0.47 in.)		12 mm (0.47 in.)		12 mm (0.47 in.)
Temperature probe	Built-in NTC (30 KΩ)		-			Built-in NTC (30 KΩ)		Built-in NTC (30 KΩ)		Built-in NTC (30 KΩ)
Connection	②	②	①	②	②	②	②	②	②	①
Electrode cable	④	④	③*	④	④	④	④	④	④	⑨*
Electrode plug	⑥+⑧	⑦+⑧	⑥/⑦	⑥	⑦	⑥+⑧	⑦+⑧	⑥+⑧	⑦+⑧	⑥+⑧/⑦+⑧

* not included

** ±2 mm/±0.08 in.

*** ±0.5 mm/±0.02 in.

①: Plug head, ②: Fixed cable, ③: AS/DIN, AS/DIN-3 or AS/BNC, ④: Cable length 1 m (3 ft), ⑥: DIN plug, ⑦: BNC plug, ⑧: Banana plug, ⑨: AS S/D1 or AS S/D3 or AS S/B1 or AS S/B3, ⑩: AS S/R

SenTix® Special Electrodes – pH electrodes for unique applications

Special samples need special electrodes. SenTix® Special Electrodes can take on the challenges associated with measuring the pH value of surfaces, solids, suspensions, emulsions, low ionic samples, smallest volumes and more. For those who require a non-glass electrode: The SenTix® FET can be used with every WTW pH meter.



SenTix® Special pH Electrodes								
Model	SenTix® H 103 644	SenTix® HW 103 650	SenTix® HWS 103 662	SenTix® SP 103 645	SenTix® SP-DIN 103 730	SenTix® Sur 103 646	SenTix® FET-D 103 700	.../-B 103 702
Measuring range pH	0 ... 14 pH	0 ... 14 pH	0 ... 14 pH	2 ... 13 pH	2 ... 13 pH	2 ... 13 pH	0 ... 14 pH	
Operating range °C	0 ... 80 °C (32 ... 176 °F)	0 ... 60 °C (32 ... 140 °F)	-5 ... 100 °C (23 ... 212 °F)	0 ... 80 °C (32 ... 176 °F)	0 ... 80 °C (32 ... 176 °F)	0 ... 50 °C (32 ... 122 °F)	0 ... 60 °C (32 ... 140 °F)	
Reference electrolyte	KCl 3 mol/l, Ag ⁺ -free			Polymer		Polymer	KCl 3.3 mol/l, Ag ⁺ -free	
Membrane shape	Cylindrical	Cylindrical	Spherical	Spear		Flat	ISFET	
Membrane resistance at 25 °C (77 °F)	< 2 GΩ	< 800 MΩ	< 600 MΩ	< 400 MΩ		< 1 GΩ	—	
Diaphragm	Cut	Cut	Cut	Hole		Split ring	Fritted polyethylene	
Shaft material	Glass	Glass	Glass	Plastic		Glass	Plastic	
Shaft length (±2 mm/±0.08 in.)	170 mm (6.69 in.)	170 mm (6.69 in.)	170 mm (6.69 in.)	65/25 mm (2.56/0.98 in.)		120 mm (4.72 in.)	86 mm (3.39 in.)	
Shaft Ø (±0.5 mm/±0.02 in.)	12 mm (0.47 in.)	12 mm (0.47 in.)	12 mm (0.47 in.)	15/5 mm (0.59/0.02 in.)		12 mm (0.47 in.)	17 ... 13 mm (0.67 ... 0.51 in.)	
Temperature probe	—		Built-in NTC (30 KΩ)	—		NTC (30 KΩ)		
Connection	①	①	①	①	②	①	②	②
Electrode cable*	③*	③*	③*	③*	④	③*	④	④
Electrode plug	⑥/⑦	⑥/⑦	⑥+⑧/⑦+⑧	⑥/⑦	⑥	⑥/⑦	⑥+⑧	⑦+⑧



SenTix® Special pH Electrodes								
Model	SenTix®			SenTix® RJS 103 663	SenTix® pH 103 667	SenTix® R 103 668	SenTix® B 103 669	SenTix® V 103 690
	Mic 103 647	Mic-D 103 660	Mic-B 103 661					
Measuring range pH	0 ... 14 pH			2 ... 13 pH	0 ... 14 pH	—	—	0 ... 14 pH
Operating range °C (°F)	0 ... 100 °C (32 ... 212 °F)	-5 ... 100 °C (23 ... 212 °F)		0 ... 80 °C (32...176 °F)	0 ... 80 °C (32...176 °F)	-5 ... 100 °C (23 ... 212 °F)	-5 ... 100 °C (23 ... 212 °F)	0 ... 80 °C (32 ... 176 °F)
Reference electrolyte	KCl 3 mol/l, Ag ⁺ -free			Polymer	—	KCl 3 mol/l, Ag ⁺ -free	Double electrolyte system	Gel
Membrane shape	Cylindrical			Calotte	Spherical	—	—	Flat
Membrane resistance at 25 °C (77 °F)	< 700 MΩ		< 1 GΩ	< 600 MΩ	< 600 MΩ	—	—	< 500 MΩ
Diaphragm	Ceramic	Platinum		Split ring	—	Platinum	Cut	Fiber
Shaft material	Glass			Glass	Glass	Glass	Glass	Noryl
Shaft length (±2 mm/±0.08 in.)	40/80 mm (1.57/3.15 in.)	96 mm (3.78 in.) ***		120 mm (4.72 in.)	120 mm (4.72 in.)	120 mm (4.72 in.)	103 mm (4.06 in.) ***	31/20 mm (1.22/0.79 in.)
Shaft Ø **	12/5 mm (0.47/0.02 in.)	3 mm (0.12 in.)		12 mm (0.47 in.)	12 mm (0.47 in.)	12 mm (0.47 in.)	12 mm (0.47 in.)	17/19 mm (0.67/0.75 in.)
Temperature probe	—			Built-in NTC (30 KΩ)	—	—	—	NTC (30 KΩ)
Connection	①	②		①	①	①	①	—
Electrode cable*	③*	④		③*	③*	⑩*	⑩*	
Electrode plug	⑥/⑦	⑥/⑦		⑥+⑧/⑦+⑧	⑥/⑦	⑧	⑧	

* not included
 ** (±0.5 mm/±0.02 in.)
 *** from upper edge of ground
 ①: Plug head, ②: Fixed cable, ③: AS/DIN, AS/DIN-3 or AS/BNC, ④: Cable length 1 m (3 ft), ⑤: Cable length 3 m (9 ft),
 ⑥: DIN plug, ⑦: BNC plug, ⑧: Banana plug, ⑨ AS S/D1 or AS S/D3 or AS S/B1 or AS S/B3, ⑩ AS S/R

Calibration and Maintenance Supplies

All WTW Technical Buffers are certified accurate and are NIST/DIN traceable.

(see page 135, Services).

Buffer bottles from WTW

- Easy-to-dispense
- Easy-to-clean
- Reliable calibration



QSC (Quality Sensor Control):

The QSC kit, consisting of three precision DIN buffers including pH 4.01, pH 6.87 and pH 9.18 with a deviation of ± 0.01 pH at 25 °C allows an initial calibration of the IDS pH electrodes. Ideal for quality control: All subsequent calibrations are compared with this calibration and therefore deliver the precise current state of the sensor.



Applicable buffers

	PL 4/7/9 DIN/NIST	APL 4/7/9 STAPL 4/7/9 DIN/NIST	TEP 4/7 Trace	TEP 10 Trace	TEP 10	TPL 4/7 Trace	TPL 10 Trace	TPL 10
inoLab® series 700/7000*, Multi 350i/3500i*	●	●	●	●	-	●	●	-
VARIO® pH	●	●	●	●	-	●	●	-
pH 3110, pH 3210, pH 3310, pH 315i/3150i*, 330i/3300i*, 340i/3400i*, pH/ION 340i/3400i*, pH 197i/1970i	●	●	●	●	-	●	●	-
pH/Cond 340i/3400i*, pH/Oxi 340i/3400i*, Multi 340i/3400i*, Multi 3410, 3420, 3430, Multi 197i/1970i	● **	● **	●	●	-	●	●	-
inoLab® Level 1, 2, 3/pH 197	●	●	●	-	●	●	-	●

For ordering information for calibration and maintenance supplies, see WTW Product Details

* North American version

** not Multi 340i/3400i*, Multi 197i/1970i

Applications for SenTix® Electrodes

	● Recommended by WTW ○ Conditionally applicable * Only recommended for specified model													
	SenTix® V	SenTix® 20 21-..., 22	SenTix® 41, 1-3, 42, RJS 940, F	SenTix® 51, 52 950	SenTix® 60, 61 62	SenTix® 81, 82 980	SenTix® 91, 92, L	SenTix® H	SenTix® HW, HWS	SenTix® Sp, Sp-DIN	SenTix® Sur	SenTix® Mic, MIC-D, MIC-B	SenTix® FET	SenTix® ORP, ORP 900, PtR, Ag, Au Au, ORP*
Acids					●	●	●		○					
Ammonia					○	○	○	●						
Aquarium water	●	●	●	●	○	○	○							ORP, PtR*
Beer				●	●	●			●					
Beverages				●	●	●	●	○	○				○	
Bleach solution					○	○	○	●	○					
Boiler feedwater					○	○	○		●					
Bread										●			●	
Cheese										●			●	
Coffee extract				○	●	●	●		●				●	
Condensate									●					
Cosmetics	○								●				●	
Deminerlized water									●					
Developer			RJS*		○	○	○	●	○					
Dispersion colors	○		RJS*						●					
Distilled water									●					
Drinking water	○	○	○	●	●	●	●		○					
Electroplating baths	○		RJS*	●	●	●	●		○					
Electroplating wastewater	●	●	●	○	○	○	○		○					○
Extracts					○	○	○		●					
Fixing baths			RJS*	○	○	○	○	●	●					ORP, PtR*
Fruit										●			●	
Fruit juice	○			●	●	●	●		○				○	
Ground water		●	●	○	○	○	○		○					PtR*
Household cleaners	○	○	○	○	●	●	●	●	○					
Juice	○			●	●	●	●		○				○	
Leather	○										●			
Lemonade				●	●	●	●		○				○	
Lyes								●						
Margarine										●			●	
Meat										●			○	
Milk									●				○	
Mineral water				○	●	●	●		○				○	
Non-aqueous liquids				○	○	○	○		○					
Oil/water emulsions			RJS*						●					
Paint, water-soluble	○		RJS*						●				●	
Paper	○										●			
Paper extract					●	●	●							
Protein-containing liquids			F*		●	●	●		●			MIC-D/-B*		
Rainwater					○	○	○		●					
Saliva	●										●	○		
Salt solutions	○	○	○	○	●	●	●	○	●					
Saltwater				○	○	○	○	○	●					
Sausage										●			●	
Shampoo	○								●				●	
Skin	○										●			
Soil extract					●	●	●		●					
Solids (penetration)										●			○	
Solids (surface)	○										●			
Sulfide-containing liquids			RJS*, F*						●					PtR*
Surface water	○	○	○	●	●	●	●	○	○					
Suspensions			RJS*						●					
Swimming pool water	●	●	●	●	○	○	○							
Tap water	○	○	○	●	●	●	●		○					
Tris buffer solutions			F*		●	●	●		●					
Vegetable juice					●	●	●		○				○	
Vegetables										●			●	
Wastewater	○	●	●	○	○	○	○							PtR*
Wine				●	○	●	●							
Yogurt					●	●	●		●	●			●	

** for ORP Measurement see page 34

Parameter
pH
ORP
ISE
Dissolved Oxygen (D.O.)
Conductivity
Multi-parameter
Data logger/flow + level
BOD/Respiration
Photometers
Turbidity
Colony Counter
Software/Printers