

# pH Meters

## pH Electrodes and Accessories



SenTix® PLUS Electrodes	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® 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
Measuring range pH	0 ... 14 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...80 °C (32...176 °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)	
Reference electrolyte	Gel				Gel			KCl 3 mol/l, Ag <sup>+</sup> -free		KCl 3 mol/l, Ag <sup>+</sup> -free			KCl 3 mol/l, Ag <sup>+</sup> -free		KCl 3 mol/l, Ag <sup>+</sup> -free	
Membrane shape	cylindrical				cylindrical			cylindrical		conical			conical		spherical	
Membrane resistance	<1 GΩ at 25 °C (77 °F)				<1 GΩ at 25 °C (77 °F)			<1 GΩ at 25 °C (77 °F)		<600 MΩ at 25 °C (77 °F)			<600 MΩ at 25 °C (77 °F)		<600 MΩ at 25 °C (77 °F)	
Diaphragm	Fiber				Fiber			ceramics		Platinum			Platinum		Platinum	
Shaft material	Noryl				Noryl			ceramics		Glass			Glass		Glass	
Shaft length (±0.08 in./±2 mm)	4.72 in. (120 mm)				4.72 in. (120 mm)			4.72 in. (120 mm)		4.72 in. (120 mm)			4.72 in. (120 mm)		6.79 in. (170 mm)	
Shaft Ø (±0.02 in./±0.5 mm)	0.47 in. (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. (12 mm)	
Temperature Sensor	-				built-in NTC (30 KΩ)			built-in NTC (30 KΩ)		-			built-in NTC (30 KΩ)		built-in NTC (30 KΩ)	
Connection	(1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(1)	(2)	(2)	(2)	(2)	(2)	(2)
Electrode cable	(3)	(4)	(5)	(4)	(4)	(5)	(4)	(4)	(4)	(3)	(4)	(4)	(4)	(4)	(4)	(4)
Electrode plug	(6)/(7)	(6)	(6)	(7)	(6)+(8)	(6)+(8)	(7)+(8)	(6)+(8)	(7)+(8)	(6)/(7)	(6)	(7)	(6)+(8)	(7)+(8)	(6)+(8)	(7)+(8)



SenTix® PLUS Electrodes	SenTix® L 103 655	SenTix® Mic-D 103 660	Mic-B 103 661	SenTix® HWS 103 662	SenTix® RJS 103 663	SenTix® pH 103 667	SenTix® R 103 668	SenTix® B 103 669
Measuring range pH	0 ... 14 pH	0 ... 14 pH		0 ... 14 pH	2 ... 13 pH	0 ... 14 pH	-	-
Operating range °C (°F)	10...100 °C (50...212 °F)	-5...100 °C (23...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)
Reference electrolyte	KCl 3 mol/l	KCl 3 mol/l		KCl 3 mol/l	Referid®	-	KCl 3 mol/l	Double electrolyte system
Membrane shape	Spherical	Cylindrical		Spherical	Calotte	Spherical	-	-
Membrane resistance	<600 MΩ at 25 °C (77 °F)	<1 GΩ at 25 °C (77 °F)		<600 MΩ at 25 °C (77 °F)	<600 MΩ at 25 °C (77 °F)	<600 MΩ at 25 °C (77 °F)	-	-
Diaphragm	Platinum	Platinum		Cut	Split ring	-	Platinum	Cut
Shaft material	Glass	Glass		Glass	Glass	Glass	Glass	Glass
Shaft length (±0.08 in./±2 mm)	16.73 in. (425 mm)	3.78 in. (96 mm)		6.69 in. (170 mm)	4.72 in. (120 mm)	4.72 in. (120 mm)	4.72 in. (120 mm)	4.06 in. (103 mm)
Shaft-Ø (±0.02 in./±0.5 mm)	0.47 in. (12 mm)	0.12 in. (3 mm)		0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)
Temperature sensor	built-in NTC (30 KΩ)	-		built-in NTC (30 KΩ)	built-in NTC (30 KΩ)	-	-	-
Connection	(9)	(6), (7)		(9)	-	(3)	(10)	(10)

(1): Plug head, (2): Fixed cable, (3): AS/DIN, AS/DIN-3 or AS/BNC, (4): Cable length 3 ft (1 m), (5): Cable length 9 ft (3 m), (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® PLUS Special Electrodes

	SenTix® H	SenTix® HW	SenTix® SP	SenTix® Sur	SenTix® Mic	SenTix® V	SenTix® FET-D	.../-B
<b>Order No.</b>	103 644	103 650	103 645	103 646	103 647	103 690	103 700	103 702
<b>Measuring range pH</b>	0 ... 14 pH	0 ... 14 pH	2 ... 13 pH	2 ... 13 pH	0 ... 14 pH	0 ... 14 pH	0 ... 14 pH	0 ... 14 pH
<b>Operating range °C</b> (32 ... 176 °F)	0 ... 80 °C (32 ... 140 °F)	0 ... 60 °C (32 ... 176 °F)	0 ... 80 °C (32 ... 122 °F)	0 ... 50 °C (32 ... 212 °F)	0 ... 100 °C (32 ... 176 °F)	0 ... 80 °C (32 ... 176 °F)	0 ... 60 °C	0 ... 60 °C
<b>Reference electrolyte</b>	KCl 3 mol/l, Ag <sup>+</sup> -free	KCl 3 mol/l, Ag <sup>+</sup> -free	Referid®	Referid®	KCl 3 mol/l, Ag <sup>+</sup> -free	KCl 3 mol/l, Ag <sup>+</sup> -free	KCl 3 mol/l, Ag <sup>+</sup> -free	KCl 3 mol/l, Ag <sup>+</sup> -free
<b>Membrane shape</b>	Cylindrical	Cylindrical	Spear	Flat	Cylindrical	Flat	Gel	ISFET
<b>Membrane resistance</b>	<2 GΩ at 25 °C (77 °F)	<800 MΩ at 25 °C (77 °F)	<400 MΩ at 25 °C (77 °F)	<1 GΩ at 25 °C (77 °F)	<700 MΩ at 25 °C (77 °F)	<500 MΩ at 25 °C (77 °F)	—	—
<b>Diaphragm</b>	Cut	Cut	Hole	Split ring	Ceramic	Fiber	fritted polyethylene	—
<b>Shaft material</b>	Glass	Glass	Glass	Glass	Glass	Noryl	ABS	—
<b>Shaft length</b> (±0.08 in./±2 mm)	6.69 in. (170 mm)	6.69 in. (170 mm)	2.56/0.98 in. (65/25 mm)	4.72 in. (120 mm)	1.57/3.15 in. (40/80 mm)	1.22/0.79 in. (31/20 mm)	3.39 in. (86 mm)	—
<b>Shaft Ø</b> (±0.02 in./±0.5 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.59/0.02 in. (15/5 mm)	0.47 in. (12 mm)	0.47 in. (12 mm)	0.67/0.75 in. (17/19 mm)	0.67 ... 0.51 in. (17 ... 13 mm)	—
<b>Connection</b>	Plug head	Plug head	Plug head	Plug head	Plug head	—	DIN	BNC
<b>Electrode cable*</b> or AS/BNC	AS/DIN, AS/DIN-3, or AS/BNC	AS/DIN, AS/DIN-3, or AS/BNC	AS/DIN, AS/DIN-3, or AS/BNC	AS/DIN, AS/DIN-3, or AS/BNC	AS/DIN, AS/DIN-3, or AS/BNC	—	fixed cable (39.37 in./1 m)	—
<b>Electrode plug</b> as selected	DIN plug or BNC, as selected	DIN plug or BNC, as selected	DIN plug or BNC, as selected	DIN plug or BNC, as selected	DIN plug or BNC, as selected	—	—	—
<b>Temperature sensor</b>	—	—	—	—	—	NTC (30 KΩ)	NTC (30 KΩ)	—

\* not included

## Calibration and Maintenance Supplies

The new buffer bottles from WTW

- easy to dispense
- easy to use
- reliable calibration



All WTW Technical buffers are certified accurate and are NIST/DIN traceable (see page 115, Services).

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 Tec	TPL 4/7 Trace	TPL 10 Trace	TPL 10 Tec
inoLab® 7xx/197i/ Multi 350i	●	●	●	●	—	●	●	—
VARIO pH	●	●	●	●	—	●	●	—
pH 315i, 330i, 340i, pH/ION 340i	●	●	●	●	—	●	●	—
pH/Cond 340i, pH/Oxi 340i, Multi 340i	●	●	●	●	—	●	●	—
inoLab® Level 1,2,3/ pH 197	●	●	●	—	●	●	—	●
pH 330, 340, pH/ION 340	●	●	●	—	●	●	—	●
MultiLine P3/P4	—	—	●	—	●	●	—	●

Ordering informations for calibration and maintenance supplies see brochure "Product Details".

For information visit [www.WTW.com](http://www.WTW.com) for a customer care center near you or inside US: call WTW 800 645 5999.

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### Applications for SenTix® PLUS Electrodes

	SenTix® V	SenTix® 20 21-..., 22	SenTix® 41, 41-3, 42,RJS	SenTix® 51, 52	SenTix® 60, 61 62	SenTix® 81, 82	SenTix® 91, 92, L	SenTix® H	SenTix® HW, HWS	SenTix® Sp	SenTix® Sur	SenTix® Mic, MIC-D, MIC-B	SenTix® FET	SenTix® ORP**, PtR, Ag, AU Au, ORP*
Acids				○	●	●	●	○	○					
Ammonia				○	○	○	○	●						
Aquarium water	●	●	●	●	○	○	○							ORP, PtR*
Beer				●	●	●	●	○						
Beverages				●	●	●	●	○	○				○	
Bleach solution				○	○	○	○	●						
Boiler feedwater					○	○	○		●					
Bread										●			●	
Cheese										●			●	
Coffee extract				○	●	●	●	○	●				●	
Condensate									●					
Cosmetics	○							○	●				●	
Demineralized water									●					
Developer				○	○	○	○	●	○					
Dispersion colors	○		RJS*					○	●					
Distilled water									●					
Drinking water	○	○	○	●	●	●	●	○	○					
Electroplating baths	○		RJS*	●	●	●	●	○	○					
Electroplating wastewater	●	●	●	○	○	○	○	○	○					○
Extracts				○	○	○	○	○	○	●				
Fixing baths			RJS*	○	○	○	○	●	●					ORP, PtR*
Fruit										●			●	
Fruit juice	○			●	●	●	●	○	○				○	
Groundwater		○	○	○	○	○	○		○					PtR*
Household cleansers	○	○	○	○	●	●	●	●	○					
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					●	●	●	○	●			MIC-D/-B*		
Rainwater				○	○	○	○		●					
Saliva	●										●	○	●	
Salt solutions	○	○	○	○	●	●	●	○	○					
Sausage										●			●	
Seawater				○	○	○	○	●	●					
Shampoo	○								●				●	
Skin	○										●			
Soil extract	●	●	●	●	○	○	○	○						
Solids (penetration)										●				
Solids (surface)	○										●			
Sulfide-containing liquids			RJS*					○	●					PtR*
Surface water	○	○	○	●	●	●	●	○	○					
Suspensions			RJS*					●	●					
Swimming pool water	●	●	●	●	○	○	○							
Tapwater	○	○	○	●	●	●	●	○	○					
Tris buffer solutions								●	●					
Vegetable juice	○	○	○	●	●	●	●	○	○				○	
Vegetables										●			●	
Wastewater	○	●	●	●	○	○	○							PtR*
Wine				●	●	●	●		●					
Yogurt	○	○	○	○	●	●	●			●			●	

● recommended by WTW ○ suitable for this application

\* recommended for the mentioned type only

\*\* for ORP Measurement see page 22