HORIBA
Scientific

LAQUA

pH	ORP	Ion	Conductivity
Resistivity	Total Dissolved Solids	Dissolved Oxygen	Salinity

ELECTRODES

6 MONTHS WARRANTY

MADE IN JAPAN

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LAQUA Electrode Technology

Born from the fusion of our technical expertise and state-of-the-art manufacturing

As a leading pH electrode manufacturer, HORIBA uses the latest technology for all your measurement needs.

Since the development of Japan's first glass electrode for pH meter, HORIBA has focused on continually improving our electrode technology, especially in materials and manufacturing. HORIBA is committed to continually explore and employ groundbreaking solutions in manufacturing next-generation electrodes so that we always provide you with the newest and best electrodes.

pH Electrode Selection Guide

			3-in-1 ELECTRODES								
			PLASTIC					STANDARD ToupH	LONG ToupH	MICRO ToupH	SLEEVE ToupH
			9651-10D	9625-10D	9630-10D	9631-10D	9632-10D	9615S-10D	9680S-10D	9618S-10D	9681S-10D
Specification	Applicable temperature range (°C)		0-60	0-100	0-100	0-60	0-100	0-100	0-100	0-60	0-60
	Diameter (mm)		16	16	16	16	16	12	8	3	12
	Length (mm)		150	150	150	155	150	198	283	185	203
pH - Sample Conditions											
Aqueous Solution	Conductivity	Normal (over 100 mS/m)	◉	◉	◉	◉	◉	◉	◉	◉	◉
		Low (approx.10 ~100 mS/m			◉						○
		Very low (approx. 5 ~100 mS/m			○						○
		High (approx. 5 S/m)	○	○	○	○	○	○	○		◉
	Strong alkaline (pH 10-12)						◉	○	○		○
	Strong acidity (pH 0-2) * Except HF sample					◉		◉			
	Quick heat change (within 50°C)		◉	◉	◉	◉	◉				
	High viscosity (approx. 5 Pa·S)										◉
	Containing non-aqueous solvent							○	○	○	○
	Suspension							○	○	○	◉
Solid/ Semisolid	Inside										
	Surface										
Sample Containers	Microtube/plate (> 50 µL)									◉	
	Ampule	> ø4 mm								◉	
	Micro container (> 2 mL)								○	◉	
	Tube	ID:13 mm, L:100 ~ 150 mm							◉		
	Beaker	10 mL ~ 1 L	◉	◉	◉	◉	◉	◉	○	○	○
	Large container (> 1 L)		○	○	○	○	○	○	◉		
	Petri dish										
	Droplet										
Water	Pure/ion-exchange water (approx. 0.1 mS/m)/ Distilled water (approx. 0.5 mS/m)							○			
	Tap/drinking water (approx. 10 mS/m)		○	○	◉			○			○
	Surface water				◉			○			○
	Pharmaceutical water/ Enviromental water/acid rain		○	○	○			○			○
Chemical reagent/ solvent	Caustic/strong acid (Except HF sample)					◉		◉			○
	Hydrofluoric acid					◉					
	Surfactant							○			◉
	Water-based paint							○			◉
	Dye/coloring agent										◉
Pharmaceutical/ biological sample	Protein-containing sample							○		○	◉
	Medicinal preparation									○	○
	Enzyme solution								○	◉	
	Tris buffer							◉		○	○
	Suspension							○			◉
	Agar medium										
Food	Jam							○			◉
	Meat/fish/Fruit/vegetable/ Dough										
	Honey										
	Cheese/butter										
	Yogurt		○	○	○			○			○
Beverage/ seasoning	Beer		○	○	○			○			◉
	Milk/Carbonated drink/juice/ sauce/soy sauce							○			◉
	Mayonnaise/ketchup							○			◉
Cosmetic/ lotion	Beauty cream/mascara							○			◉
	Gel/soap/shampoo/Hairdye lotion							○			◉
	Emulsified liquid							○			○

	COMBINATION ELECTRODES										ISFET ELECTRODES
	SLEEVE	NON-AQUEOUS	NEEDLE	PLASTIC	STANDARD ToupH	MICRO ToupH	SLEEVE ToupH	LONG	LONG ToupH	FLAT	GENERAL
	6367-10D	6377-10D	6252-10D	9425-10C	9415-10C	9418-10C	9481-10C	6069-10C	9480-10C	6261-10C	0040-10D
	0-60	0-60	0-60	0-100	0-100	0-60	0-60	0-60	0-100	0-50	0-60
	12	12	12	16	12	3	12	3	8	12	16
	150	150	150	150	198	185	203	291	283	150	190
	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
		◉					○				
		◉					○				
				○	○		◉		○		
	○				○		○		○		
					◉						
				◉							
	○	◉					◉				
	○	◉			○	○	○		○		○
		◉			○	○	◉		○		○
			○								
										◉	◉
						◉					
						◉		○			
						◉		○	○		
								◉	◉		
	○	○	○	◉	◉	○	○	○	○	○	○
				○	○				◉		
										◉	◉
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		◉			○						
		◉		○	○		○				
		◉			○		○				
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		○			○		○				
		○			○		◉				
	○				○	○	◉				
		○				○	○				
			○			◉			○		
					◉	○	○				
		◉			○		◉				
										◉	◉
		○	○		○		◉			○	◉ (surface)
			◉							○	◉ (surface)
		◉									○ (surface)
			○							○	○ (surface)
	○		○	○	○		○			○	◉ (surface)
	○	◉		○	○		◉				
	○	○			○		◉				
		○			○		◉				
		○	○		○		◉				
		○			○		◉				
		◉			○		○				

◉ Recommended ○ Can be measured

Expertise in Manufacturing

Sophisticated processing technology

HORIBA's in-house expertise in the manufacture of electrodes is the accumulation of more than 60 years of experience. Our sophisticated electrode processing technology provides flexibility in designing various shapes of the electrode bulb and different structural designs of the electrodes.

Thick membrane technology

HORIBA's glass moulding technology allows the manufacture of tougher pH glass bulbs.

Miniaturization

Invention Award (Japan)

Unique flat electrode design as well as 3mm diameter micro-electrode with integrated temperature sensor (US Patent No. 7314541/ China Patent No. ZL0315796)

Fast response & highly accurate

ToupH glass bulb does not compromise responsiveness and sensitivity (US Patent No. 8262877). Specially designed electrodes are available for hydrofluoric acid & strong alkaline application.

Double-junction electrodes

All HORIBA pH combination electrodes are double-junction electrodes. Flexible to use in a wide-range of applications.

Convenient slider

Refillable electrodes are equipped with a slider to open or close the refilling port easily.

Built-in clip for hooking onto electrode stand arm

Top housing of electrodes is designed with a built-in clip to hook onto HORIBA's electrode stands.

ORP Electrode

Model	Part No.	Material	Temp. Range (°C)	Application
9300-10D	3014046710	Pt / Glass	0 - 60	Waterproof; Platinum on the flat tip allows measurement of small volume samples

Ion Selective Electrodes (ISEs)

Model	Part No.	Combination ISE	Temp. Range (°C)	Measurement Range	Replacement Tip	Part No.
5002S-10C	3200698386	Ammonia (NH_3)	0 - 50	0.1 - 1,000 mg/L NH_3	NH_3 Membrane Caps	3200705774
6583S-10C	3200697410	Calcium (Ca^{2+})	0 - 50	0.4 - 40,080 mg/L Ca^{2+}	7683S	3200697414
6560S-10C	3200697407	Chloride (Cl^-)	0 - 50	0.35 - 35,000 mg/L Cl^-	7660S	3200697411
6561S-10C	3200693774	Fluoride (F^-)	0 - 50	0.2 - 19,000 mg/L F^-	7661S	3200693606
6581S-10C	3200697408	Nitrate (NO_3^-)	0 - 50	0.62 - 62,000 mg/L NO_3^-	7681S	3200697412
6582S-10C	3200697409	Potassium (K^+)	0 - 50	0.04 - 39,000 mg/L K^+	7682S	3200697413

Conductivity Cells

Type	Model	Part No.	Temp. Range (°C)	Cell Constant	Measurement Range	Application
Submersible	3551-10D	3014081712	0 - 60	0.1 cm^{-1}	0.1 µS/cm - 10 mS/cm	Low conductivity water (e.g., deionized, distilled)
				10 m^{-1}	10 µS/m - 1 S/m	
	9382-10D	3014046709	0 - 80	1 cm^{-1}	1 µS/cm - 100 mS/cm	General purpose use; Waterproof
				100 m^{-1}	0.1 mS/m - 10 S/m	
	3552-10D	3014081545	0 - 100	1 cm^{-1}	1 µS/cm - 100 mS/cm	General purpose use
				100 m^{-1}	0.1 mS/m - 10 S/m	
	3553-10D	3014081714	0 - 60	10 cm^{-1}	10 µS/cm - 1 S/cm	High conductivity water
				1000 m^{-1}	1 mS/m - 100 S/m	
Flow	3561-10D	3014082350	0 - 60	0.1 cm^{-1}	0.1 µS/cm - 10 mS/cm	Low conductivity water (e.g., deionized, distilled)
				10 m^{-1}	10 µS/m - 1 S/m	
	3562-10D	3014082513	0 - 60	1 cm^{-1}	1 µS/cm - 100 mS/cm	General purpose use
				100 m^{-1}	0.1 mS/m - 10 S/m	
	3573-10C	3014082590	0 - 60	10 cm^{-1}	10 µS/cm - 1 S/cm	High conductivity water
				1000 m^{-1}	1 mS/m - 100 S/m	
	3574-10C	3014082592	0 - 60	10 cm^{-1}	10 µS/cm - 100 mS/cm	Small volume sample (e.g., column chromatography)
				1000 m^{-1}	1 mS/m - 10 S/m	

• Material: All have platinum-platinum black / glass-body, except 9382-10D (titanium-platinum black / plastic-body).

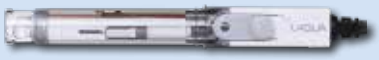
Dissolved Oxygen Probes

Type	Model	Part No.	Temp. Range (°C)	Measurement Range	Replacement Tip	Part No.
Field	9551-20D	3014047090	0 - 40	0 - 19.99 mg/L DO	5401	3014072770
	9551-100D	3014047091	0 - 40	0 - 19.99 mg/L DO	5401	3014072770
Lab	9520-10D	3014046711	0 - 45	0 - 19.99 mg/L DO	7541	3014074145

pH Combination Electrodes (G, R)

HORIBA pH Combination electrodes manufactured with 1 meter cable terminating in BNC connector allow these electrodes to be used with any pH meter[1]. Enjoy the full spectrum of features and benefits of these electrodes on your existing pH meter[1]. (For applications where temperature measurement and compensation is required, please refer to the 3-in-1 pH electrodes).

[1] pH meters must have BNC connector

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
ToupH Standard Electrode **9415-10C** General laboratory application  3200611623 Overall length: 198 mm Diameter of probe: 12 mm Connector: BNC	0-14	0-100	Ceramic	The electrode offers quick stability and drift reduction. • Constructed with responsive glass that is 10X stronger than JIS standards • The one-touch refilling port slider allows one-hand operation • Waterproof, Pb-free glass Perfect for preparing pH buffers and other aqueous test solutions.
Standard Plastic Electrode **9425-10C** General field application  3200611625 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	0-14	0-100	Ceramic	The electrode has plastic body, which is ideal for field measurement. • Can be submerged up to 1m depth and 30mins (with refilling port closed) • Waterproof, Pb-free glass Recommended for field use. For measurement of tap water and drinking water.
ToupH Sleeve Electrode **9481-10C** High viscosity application  3200611631 Overall length: 203 mm Diameter of probe: 12 mm Connector: BNC	0-14	0-60	Movable sleeve	The electrode gives stable readings in highly viscous samples. • The liquid junction is designed with a movable sleeve that can be cleaned easily and prevents clogging • Waterproof, Pb-free glass For measurement of highly viscous samples and samples containing non-aqueous solvents (e.g., cosmetics, paints).
ToupH Micro Electrode **9418-10C** Precious trace amount sample  3200611627 Overall length: 185 mm Diameter of probe: 3 mm Connector: BNC	0-14	0-60	Ceramic	The electrode can measure samples as small as 50µL. • Compatible with extremely small containers (e.g., micro tubes) • Temperature sensor is placed next to the bulb for quick response • Waterproof Suitable for low-volume samples and wide range of aqueous solutions.
ToupH Long Electrode **9480-10C** For large containers and long test tubes  3200611628 Overall length: 283 mm Diameter of probe: 8 mm Connector: BNC	0-14	0-100	Ceramic	The long, thin body of the electrode is perfect for large containers and test tubes. • 283mm length, 8mm diameter • Constructed with responsive glass that is 10X stronger than JIS standards • Waterproof, Pb-free glass For measuring samples (e.g., microbial culture fluids) in test tubes and tall beakers.
Long Electrode **6069-10C** For very slender test tubes  3014081107 Overall length: 291 mm Diameter of probe: 3.15 mm Connector: BNC	0-14	0-60	Ceramic	The long, thin body of the electrode is perfect for very slender test tubes. • 291mm length, 3mm diameter • Waterproof For measuring samples in slender tubes (e.g., NMR test tube).

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
Flat Electrode (G, R) **6261-10C**  Overall length: 150 mm Diameter of probe: 12 mm Connector: BNC 3014081807	0-12	0-50	Sleeve	The sensor is located on the flat surface of the tip. • Measurement can be made from minute amount of moisture on solid sample surface • Pure water can be applied for samples with no moisture • Waterproof Perfect for measuring samples in shallow containers (e.g., petri dishes) and gelatinous materials (e.g., nutrient agar). For surface measurement of meat, paper, skin, and cloth.

3-in-1 pH Glass Body Electrodes[2] (GRT)

HORIBA pH Combination electrodes with an integrated thermistor offer higher accuracy as these electrodes measure temperature concurrently with pH. The pH meter is able to continuously monitor and compensate for temperature effects automatically.

[2] Only compatible with HORIBA pH meters

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
ToupH Standard Electrode **9615S-10D** General laboratory application  Overall length: 198 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3200585428	0-14	0-100	Ceramic	The electrode offers quick stability and drift reduction. • Constructed with responsive glass that is 10x stronger than JIS standards • The one-touch refilling port slider allows one-hand operation • Waterproof, Pb-free glass Perfect for preparing pH buffers and other aqueous test solutions.
ToupH Sleeve Electrode **9681S-10D** High viscosity application  Overall length: 203 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3200585463	0-14	0-60	Movable sleeve	The electrode gives stable readings in highly viscous samples. • The liquid junction is designed with a movable sleeve that can be cleaned easily and prevents clogging • Waterproof, Pb-free glass For measurement of highly viscous samples and samples containing non-aqueous solvents (e.g. cosmetics, paints).
ToupH Micro Electrode **9618S-10D** Precious trace amount sample  Overall length: 185 mm Diameter of probe: 3 mm Connectors: BNC & phono jack 3200585447	0-14	0-60	Ceramic	The electrode can measure samples as small as 50µL. • Compatible with extremely small containers (e.g. micro tubes) • Temperature sensor is placed next to the bulb for quick response • Waterproof Suitable for low-volume samples and a wide range of aqueous solutions.
ToupH Long Electrode **9680S-10D** For large containers and long test tubes  Overall length: 283 mm Diameter of probe: 8 mm Connectors: BNC & phono jack 3200585428	0-14	0-100	Ceramic	The long, thin body of the electrode is perfect for large containers and test tubes. • 283mm length, 8mm diameter • Constructed with responsive glass that is 10x stronger than JIS standards • Waterproof, Pb-free glass For measuring samples (e.g. microbial culture fluids) in test tubes and tall beakers.
Needle Electrode **6252-10D** For food application  Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3014080850	0-12	0-60	Ceramic	Needle electrode allows measurement of food samples and aqueous solutions.

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
Low-Conductivity Electrode **6377-10D** For pure water & non-aqueous solvents  3014093085 Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack	0-14	0-60	Movable sleeve	Uses a glass membrane that is highly sensitive to low-conductivity water and non-aqueous solvents.
Standard Sleeve Electrode **6367-10D**  3014079136 Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack	0-14	0-60	Sleeve	Uses a sleeve at the liquid junction for improved stability and repeatability. For measuring pH at high accuracy.

3-in-1 pH Plastic Body Electrodes[2] (GRT)

[2] Only compatible with HORIBA pH meters

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Applications
Gel-filled pH Electrode **9651-10D**  3200642020 Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	0-14	0-60	Porous sintered polyethylene	The plastic body of the electrode is filled with gel electrolyte. Less maintenance is needed as refilling is not required. • Can be submerged up to 1m depth of water for 30mins. • Waterproof, Pb-free glass Recommended for field use.
Standard Plastic Electrode **9625-10D; 9625-20D; 9625-30D** For Field  3200360505; 3200393025; 3200393026 Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	0-14	0-100	Ceramic	The electrode has a plastic body which is ideal for field measurement. • Can be submerged up to 1m depth of water for 30mins. (with refilling port closed) • Waterproof, Pb-free glass Recommended for field use. For measurement of tap water and drinking water.
Hydrofluoric Acid Resistant Electrode **9631-10D**  3200524119 Overall length: 155 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	2-12	0-60	Ceramic	The electrode can measure 1% hydrofluoric acid solution (at 25°C, immersed at 1min.) for about 1000 times. • Rolled glass design for long-term reliable measurement and easy maintenance • Compliant with Japan's Measurement Act Certification • Waterproof, Pb-free glass Suitable for drain water measurement after etching process.
Strong Alkali Resistant Electrode **9632-10D**  3200524120 Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	0-14	0-100	Ceramic	The alkali-resistant glass membrane has higher resistance and longer stability (about 5X in 0.1mol/L sodium at 60°C, pH 13) than conventional electrodes. • Waterproof, Pb-free glass Suitable for strong alkali samples such as plating solutions.
Standard Plastic Electrode **9630-10D** For tap water  3200528726 Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	0-14	0-100	Ceramic	The electrode can measure samples with low conductivity or buffering capacity. • Made of high purity multicomponent lithium series glass • Waterproof, Pb-free glass Suitable for tap water measurement and quality control in water purification plant. Recommended to use with cleaning solution 230.

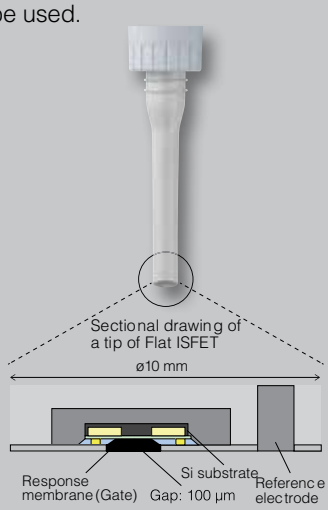
Next-Generation Electrode Technology

Semiconductor technology without glass

HORIBA started researching **ISFET (Ion Sensitive Field Effect Transistor)** using semiconductor technology many years ago and continued to improve its quality. This has provided a new solution for environments where glass material cannot be used.

ISFET

Applicable electrode: 0040-10D



What is an ISFET (semiconductor sensor)?

ISFET is the abbreviation of **Ion Sensitive Field Effect Transistor**.
The response part uses a semiconductor based sensor.

Special features of the ISFET

1. Will not crack or break like conventional glass electrodes
2. The sensor is flat and very small enabling the measurement of extremely small samples
3. Easy handling and maintenance - simply clean with a toothbrush
4. Can be stored dry

The flat electrode has a distance of less than 100 µm between the housing and sensor

The unique structure allows measurements to be taken from the smallest amount of moisture on solid objects and prevents bubbles being trapped on the sensor when measuring samples in a beaker.

Reduction of static electricity effect

The combination of HORIBA's unique semiconductor device structure together with the improved electrostatic protection circuit results in a significant reduction of the static electricity effect that had previously been the weak point of a semiconductor sensor.

ISFET ELECTRODES ISFET

ISFET is the abbreviation of Ion Sensitive Field Effect Transistor. Since ISFET is robust and will not crack like the conventional glass electrodes, it can be easily handled and maintained. The response part is equipped with a flat and miniature semiconductor-based sensor, which makes the measurement even on extremely small samples possible. Combination of HORIBA's unique semiconductor device structure and improvement of the electrostatic protection circuit enables to reduce greatly the static electricity effect that had been the weak point of the semiconductor sensor. Now the measurement has become more comfortable and reliable.

Model	pH Range	Operating Temperature Range (°C)	Liquid Junction	Applications
General ISFET pH electrode **0040-10D**  3200367925 Overall length: 190.6 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	0-14	0-60	Porous sintered polyethylene	The sensor is located on the flat surface of the tip (<100µm from the housing). • Measurement can be made from minute amount of moisture on solid sample surface • Pure water can be applied for samples with no moisture • Use of semiconductor sensor prevents damage such as crack or breakage • Waterproof • Replacement sensor (0141) 3200367926 Perfect for measuring samples in shallow containers (e.g., petri dishes) and gelatinous materials (e.g., nutrient agar). For surface measurement of meat, paper, skin, and cloth.

Metallic Electrode (For ORP Measurement)

Model	Operating Temperature Range (°C)	Electrode Material	Internal Solution	Applications
ORP Electrode **9300-10D** Waterproof platinum 3-in-1 type  3014046710 Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack	0-60	Pt / Glass	#300 (KCl)	Waterproof; Platinum on the flat tip allows measurement of small volume samples

Conductivity Electrode Cells

HORIBA Conductivity cells are available as Submersible type and Flow type, as well as in a variety of cell constants ranging from 0.1 to 10.0.

The HORIBA Conductivity cells are integrated with temperature sensor (except for 3573 & 3574) and the wetted material is **Platinum / Titanium, coated with Platinum black**. Rugged Titanium allows cell to be used in a wide range of applications, including highly corrosive samples such as concentrated acids and sea water. Maintenance is simple – soak in deionized/demineralized water or with the conditioning solution.

Conductivity Cells (Submersible Type)

Model	Cell Constant	Measurement Range	Temp. Range (°C)	Cell Material	Thermistor	Minimum Sample Volume (ml)	Application
3551-10D  Overall length: 175 mm Diameter of probe: 23 mm Connectors: BNC & phono jack 3014081712	0.1 cm^{-1}	0.1 µS/cm - 10 mS/cm	0 - 60	Pt-Pt black / Glass	Built-in	50	Low conductivity water (e.g., deionized, distilled)
	10 m^{-1}	10 µS/m - 1 S/m					
3552-10D  Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3014081545	1 cm^{-1}	1 µS/cm - 100 mS/cm	0 - 100	Pt-Pt black / Glass	Built-in	15	General purpose use
	100 m^{-1}	0.1 mS/m - 10 S/m					
3553-10D  Overall length: 175 mm Width of probe: 28 mm Connectors: BNC & phono jack 3014081714	10 cm^{-1}	10 µS/cm - 1 S/cm	0 - 60	Pt-Pt black / Glass	Built-in	50	High conductivity water
	1000 m^{-1}	1 mS/m - 100 S/m					
9382-10D  Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3014046709	1 cm^{-1}	1 µS/cm - 100 mS/cm	0 - 80	Ti-Pt black / Plastic	Built-in	20-30	General purpose use; Waterproof
	100 m^{-1}	0.1 mS/m - 10 S/m					

Conductivity Cells (Flow Type)

Model	Cell Constant	Measurement Range	Temp. Range (°C)	Cell Material	Thermistor	Minimum Sample Volume (ml)	Application
3561-10D  Overall length: 143 mm Diameter of probe: 18 mm Connectors: BNC & phono jack 3014082350	0.1 cm^{-1}	0.1 µS/cm - 10 mS/cm	0 - 60	Pt-Pt black / Glass	Built-in	10	Low conductivity water (e.g., deionized, distilled)
	10 m^{-1}	10 µS/m - 1 S/m					
3562-10D  Overall length: 205 mm Diameter of probe: 18 mm Connectors: BNC & phono jack 3014082350	1 cm^{-1}	1 µS/cm - 100 mS/cm	0 - 60	Pt-Pt black / Glass	Built-in	16	General purpose use
	100 m^{-1}	0.1 mS/m - 10 S/m					
3573-10C  Overall length: 222 mm Diameter of probe: 18 mm Connector: BNC 3014082590	10 cm^{-1}	10 µS/cm - 1 S/cm	0 - 60	Pt-Pt black / Glass	—	4	High conductivity water
	1000 m^{-1}	1 mS/m - 100 S/m					
3574-10C  Overall length: 136 mm Diameter of probe: 66 mm Connector: BNC 3014082592	10 cm^{-1}	10 µS/cm - 100 mS/cm	0 - 60	Pt-Pt black / Glass	—	0.25	Small volume sample (e.g., column chromatography)
	1000 m^{-1}	1 mS/m - 10 S/m					

Combination ISE

Ion-selective electrodes are responsive to concentration of particular ions in the test liquid and are variable-potential electrodes. They are used in conjunction with reference electrodes to measure the concentration of particular ions. HORIBA's years of experience and know-how in this field are behind the wide range of ion electrodes we offer.

When measurements are made using an ion meter, calibrating it with various standard solutions will give direct readings of the ion concentration. Note that since volume-detection level changes with temperature, measurements must be taken at a fixed temperature.

Model	Accessories Included	Temp. Range (°C)	Measurement Range	pH Range
 **Ammonia ion (NH_3) electrode** **5002S-10C** 3200698386 Overall length: 161 mm Diameter of probe: 15 mm Connector: BNC	• membrane cap, 3pcs • 1000mg/L ammonium ion standard solution, 50ml • 100mg/L ammonium ion standard solution, 50ml • ammonia electrode filling solution, 50ml • ammonia ionic strength adjustor, 50ml • syringe • dropper • protective pipe • manual	0 - 50	0.1 - 1,000 mg/L NH_3	Adjust more than pH 12
 **Calcium ion (Ca^{2+}) electrode** **6583S-10C** 3200697410 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	• calcium electrode tip, 2pcs • 1000mg/L calcium ion standard solution, 50ml • 100mg/L calcium ion standard solution, 50ml • calcium electrode filling solution, 50ml • calcium ionic strength adjustor, 50ml • syringe • dropper • protective pipe • manual	0 - 50	0.4 - 40,080 mg/L Ca^{2+} (10^{-5} to 1 mol/L Ca^{2+})	4.0 mg/L (10^{-4} mol/L) Ca^{2+}, pH 5 to 11
 **Chloride ion (Cl^-) electrode** **6560S-10C** 3200697407 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	• chloride electrode tip • 1000mg/L chloride ion standard solution, 50ml • 100mg/L chloride ion standard solution, 50ml • chloride electrode filling solution, 50ml • chloride ionic strength adjustor, 50ml • syringe • dropper • protective pipe • water-resistant abrasive sheet • manual	0 - 50	0.35 - 35,000 mg/L Cl^- (10^{-5} to 1 mol/L Cl^-)	350 mg/L (10^{-2} mol/L) Cl^-, pH 3 to 11
 **Fluoride ion (F^-) electrode** **6561S-10C** 3200693774 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	• fluoride electrode tip • 1000mg/L fluoride ion standard solution, 50ml • 100mg/L fluoride ion standard solution, 50ml • fluoride electrode filling solution, 50ml • fluoride ionic strength adjustor, 50ml • syringe • dropper • protective pipe • manual	0 - 50	0.2 - 19,000 mg/L F^- (10^{-6} to 1 mol/L F^-)	20 mg/L (10^{-3} mol/L) F^-, pH 4 to 10
 **Nitrate ion (NO_3^-) electrode** **6581S-10C** 3200697408 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	• nitrate electrode tip, 2pcs • 1000mg/L nitrate ion standard solution, 50ml • 100mg/L nitrate ion standard solution, 50ml • nitrate electrode filling solution, 50ml • nitrate ionic strength adjustor, 50ml • syringe • dropper • protective pipe • manual	0 - 50	0.62 - 62,000 mg/L NO_3^- (10^{-5} to 1 mol/L NO_3^-)	62 mg/L (10^{-3} mol/L) NO_3^-, pH 3 to 7
 **Potassium ion (K^+) electrode** **6582S-10C** 3200697409 Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC	• potassium electrode tip, 2pcs • 1000mg/L potassium ion standard solution, 50ml • 100mg/L potassium ion standard solution, 50ml • potassium electrode filling solution, 50ml • potassium ionic strength adjustor, 50ml • syringe • dropper • protective pipe • manual	0 - 50	0.04 - 39,000 mg/L K^+ (10^{-6} to 1 mol/L K^+)	3.9 mg/L (10^{-4} mol/L) K^+, pH 5 to 11

Selection Coefficient	Replacement Tip	Electrode Filling Solution	100mg/L Standard Solution	1000mg/L Standard Solution	Ionic Strength Adjustor	Applications
—	 **NH_3 electrode membrane caps** 3200705774	500-NH3-IFS 3200697173	500-NH4-SL 3200697172	500-NH4-SH 3200697171	500-NH3-ISA 3200697174	Agriculture, Soil, Power Station Water, Fish Tanks, Sea Water, Waste Water, Plating Baths, Air / Stack Gases and Biological Cultures or Samples
Fe^{3+} = 0.1, Fe^{2+}, Zn^{2+} = 1, Sr^{2+} = 50 Ni^{2+}, Cu^{2+} = 70, Co^{2+} = 350 Mn^{2+} = 500, Mg^{2+} = 1,000 Na^+, K^+, Ba^{2+}, NH_4^+ = over 1,000	 **7683S** 3200697414 **Calcium**	500-CA-IFS 3200697177	500-CA-SL 3200697176	500-CA-SH 3200697175	500-CA-ISA 3200697178	Agriculture / Plant Tissue, Soil, Water Softening Systems, Boiler Feed Water, Drinking / Mineral Water, Biological Cultures, Dental / Clinical Analysis and Dairy / Food / Beverages Applications
$S_2O_3^{2-}$, S^{2-}, I^-, Ag^+, Hg^{2+} = Not acceptable SCN^-= 0.3, MnO_4^-= 0.1 Br^-= 0.03 NO_3^-, F^-, HCO_3^-, SO_4^{2-}, PO_4^{2-}= 1,000	 **7660S** 3200697411 **Chloride**	500-CL-IFS 3200697169	500-CL-SL 3200697168	500-CL-SH 3200697167	500-CL-ISA 3200697170	Agriculture, River / Tap Water, Plant Tissue, Soils, Boiler Feed Water, Clinical Analysis, Sweat, Urine, Cement, Plating Baths and Dairy / Food / Beverages Samples
Possible interference when multiply-charged ion (ex. Al^{3+}, Fe^{3+}) coexisted and foamed the complex.	 **7661S** 3200693606 **Fluoride**	500-F-IFS 3200697165	500-F-SL 3200697164	500-F-SH 3200697163	500-F-TISAB 3200697166	Dental / Toothpaste / Mouth Wash, Drinking / Seawater, Wastewater, Air / Stack Gases, Acids, Soils, Food, Biological Fluids, Plant Tissue, Coal, Carbonated Beverages and Bone
ClO_4^-, I^- = Not acceptable, Br^-= 2 NO_2^-= 3, Cl^- = 300 HCO_3^-, $H_2PO_4^-$, SO_4^{2-}=over 1000	 **7681S** 3200697412 **Nitrate**	500-NO3-IFS 3200697181	500-NO3-SL 3200697180	500-NO3-SH 3200697179	500-NO3-ISA 3200697182	Agriculture / Plant Tissue / Fertilizers, Surface / Seawater / Drinking Water, Sewage Effluent, Soils, Meats, Vegetables, Foods / Beverages
Rb^+ = 0.4, Cs^+ = 3, NH_4^+ = 70 Li^+, Na^+, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+} = over 1,000	 **7682S** 3200697413 **Potassium**	500-K-IFS 3200697185	500-K-SL 3200697184	500-K-SH 3200697183	500-K-ISA 3200697186	Agrculture / Plant Tissue, Soils, Wastewater, River / Tap Water, Clinical Analysis, Saliva, Serum, Fertilizers, Soils and Wines, Dairy / Foods / Beverages

Note: Detailed information on standard solutions, ISAs, and filling solutions can be found on page 14

Ion Electrodes		*All ion electrodes (except combination electrodes) require a sensor holder for attaching to the electrode stand. *Please be aware of the hindering ion and pH range interference of ion electrodes. *D-73 connects combination type ion electrodes only.			
Electrode Name	Model	Measuring Range	Applicable reference electrode	Interfering ion influence*1	Part No.
Sodium ion electrode	1512A-10C	2.3~230,000 mg/L Na^+	2565A	K^+, Li^+=10 NH_4^+=20 Ca^{2+}=500	3014068526
Cyanide ion electrode	8001-10C	0.03~2,600 mg/L CN^-	2060A • 2565A	S^{2-}, MnO_4^-=N/A I^-=0.1 $S_2O_3^{2-}$=1	3014094393
Chloride ion electrode	8002-10c	0.4~35,000 mg/L Cl^-	2565A	$S_2O_3^{2-}$, S^{2-}, 1^-, Ag^+, Hg^{2+}=N/A SCN^-=0.3 MnO_4^-=0.1	3014094394
				Br^-=0.03 NO_3^-, F^-, HCO_3^-, SO_4^{2-}, PO_4^{2-}=1,000	
Sulfide ion electrode	8003-10C	0.3~32,000 mg/L S^{2-}	2060A • 2565A	CN^-=N/A $S_2O_3^{2-}$=10 1^-, F^-, Cl^-, PO_4^{2-}, SO_4^{2-}=1,000	3014094395
Iodide ion electrode	8004-10C	0.01~13,000 mg/L I^-	2060A • 2565A	MnO_4^-, S^{2-}, CN^-=N/A $S_2O_3^{2-}$=10 NO_2^-=100 Br^-=1,000	3014094396
Bromide ion electrode	8005-10C	0.8~80,000 mg/L Br^-	2565A	$S_2O_3^{2-}$, I^-, S^{2-}, CN^-=N/A MnO_4^-=1 Cl^-, PO_4^{2-}=100 F^-, NO_3^-, SO_4^{2-}=1,000	3014094397
Copper ion electrode	8006-10C	0.06~6,400 mg/L Cu^{2+}	2565A	Fe^{2+}=0.1 Ni^{2+}, Na^+=1,000	3014094398
Cadmium ion electrode	8007-10C	0.1~11,000 mg/L Cd^{2+}	2060A • 2565A	Cu^{2+}, Hg^{2+}, Ag^+=N/A Pb^{2+}=0.1 Fe^{3+}=1 Cr^{3+} Fe^{2+}=100 Ni^{2+}=1,000	3014094399
Lead ion electrode	8008-10C	2~20,000 mg/L Pb^{2+}	2565A	Cu^{2+}, Hg^{2+}, S^{2-}, Ag^+=N/A Fe^{3+}=0.01 Cr^{3+}=1 Cd^{2+}=10	3014094400
				Ni^{2+}, Mg^{2+}, Zn^{2+}=100 NH_4^+, K^+=1,000	
Thiocyanate ion electrode	8009-10C	0.6~5,800 mg/L SCN^-	2565A	CN^-, I^-, S^{2-}, $S_2O_3^{2-}$=N/A Br^-=1 Cl^-=100	3014094401
Fluoride ion electrode	8010-10C	0.02~19,000 mg/L F^-	2060A • 2565A	Possible interference when multiply-charged ion	3014094439
				(ex. Al^{3+}, Fe^{3+}) coexisted and foamed the complex.	
Silver ion electrode	8011-10C	0.01~110,000 mg/L Ag^+	2565A	Hg^{2+}=N/A Cu^{2+}, Cd^{2+}, Pb^{2+}, Zn^{2+}, Mg^{2+}, Ca^{2+}, Na^+, K^+=Over 1,000	3014094402
Nitrate ion electrode	8201-10C	0.62~62,000 mg/L NO_3^-	2565A	ClO_4^-=0.03 I^-=0.1 Br^-=2 NO_2^-=3 Cl^-=40 F^-=200	3014094403
				CH_3COO^-=300 SO_4^{2-}=Over 1,000	
Potassium ion electrode	8202-10C	0.04~39,000 mg/L K^+	2565A	Rb^+=0.4 Cs^+=3 NH_4^+=70	3014094404
				Li^+, Na^+, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}=Over 1,000	
Calcium ion electrode	8203-10C	0.04~40,080 mg/L Ca^{2+}	2060A • 2565A	Fe^{3+}=0.1 Fe^{2+}, Zn^{2+}=1 Sr^{2+}=50 Ni^{2+} Cu^{2+}=70 Co^{2+}=350	30140688
				Mn^{2+}=500 Mg^{2+}=1,000 Na^+, K^+, Ba^{2+}, NH_4^+=Over 1,000	

DISSOLVED OXYGEN (DO) ELECTRODE & TIPS

HORIBA Dissolved Oxygen (DO) electrodes are galvanic probes with integrated temperature sensors. With galvanic DO probes, calibration can be performed immediately and in air. The HORIBA DO probes use unique and innovative tips which are replaceable. No need to replace membranes or refill electrolytes.

Two models are available: a Laboratory model (9520) that can be used for BOD measurements, and a Field immersible model (9551) housed in a rugged casing available in 2m and 10m cable configurations. The Laboratory 9520 DO probe is fitted with a rotor as well as an adaptor to facilitate BOD measurements.

Dissolved Oxygen Electrodes

Model	Measurement Range	Response Time	Temperature Range (°C)	Features
9520-10D For laboratories  Overall length: 184 mm Diameter of probe: 15 mm 3014046711 Connectors: BNC & phono jack	0-19.99mg/L DO	20 seconds (90% response time at constant temperature)	0-45	Waterproof; It operates with the built-in temperature sensor and replaceable DO tip 7541.
9551-20D For field immersible type (2 m cable)  Overall length: 165 mm Diameter of probe: 32 mm 3014047090 Connectors: BNC & phono jack	0-19.99mg/L DO	30 seconds (90% response time at constant temperature)	0-40	Waterproof; It operates with the built-in temperature sensor and replaceable DO tip 5401.
9551-100D For field immersible type (10 m cable)  Overall length: 165 mm Diameter of probe: 32 mm 3014047091 Connectors: BNC & phono jack	0-19.99mg/L DO	30 seconds (90% response time at constant temperature)	0-40	Waterproof; It operates with the built-in temperature sensor and replaceable DO tip 5401.

Dissolved Oxygen Electrode Tips

Model	Description
5401  3014072770	Replacement DO tip for 9551-20D and 9551-100D
7541  Overall length: 26.5 mm 3014074145 Diameter: 15 mm	Replacement DO tip for 9520-10D

pH Electrode Care and Maintenance Procedures

Your pH electrode will eventually reach the end of its useful life as its performance naturally degrades over time. To maximize the performance of your pH electrode and extend its life span, proper care and regular maintenance are equally required.

Part no. 3014028653
Cleaning Solution 220 - contains 10% thiourea and 1% hydrochloric acid (HCl) for removing inorganic residues on glass membrane and junction

Part no. 3200366771
Cleaning Solution 250 - contains less than 0.5% enzyme protease, less than 0.1% sodium azide, and other ingredients (See SDS) for removing protein residues on glass membrane and junction

Mild detergent

Soft lint-free tissue

Clean water (e.g., tap, distilled or deionized water) in a squirt bottle

Part no. 3200043640
Model 300
3.33 KCl
Internal solution for electrode maintenance.

Refer to the safety data sheet (SDS) of the chemical solution to be used in cleaning and wear the appropriate personal protective equipment for safe handling. Download the SDSs of HORIBA solutions at www.horiba-laqua.com.

Refilling

The pH electrode may be filled with either an ionic liquid solution (refillable or liquid-filled pH electrode) or ionic gel solution (sealed or gel-filled pH electrode). Gel-filled pH electrodes do not require routine refilling and typically require less maintenance than liquid-filled electrodes. Liquid-filled pH electrodes are constructed with refilling port, which is securely covered with a slider. The refilling port allows you to fill or empty the reference chamber.

- To top up or re-fill the reference chamber of liquid-filled pH electrode, push the slider upward to uncover the refilling port and insert a dropper containing fresh 3.33M potassium chloride (KCl) solution. The filling solution should reach the bottom of the refilling port.
- The filling solution level must be maintained just below the refilling port and higher than the pH buffer or sample level during calibration and measurement. This creates a positive head pressure forcing the filling solution to leak into pH buffer or sample through the junction and preventing the reverse.
- Bubbles may form and get trapped within the solution of the sensing tip or reference chamber during transportation. This can affect the operation of your pH electrode. To dislodge the bubbles, gently shake the electrode body.
- If the filling solution inside the reference chamber gets contaminated with sample or microbial growth or the reading is drifting, change the filling solution. Tilt the pH electrode, uncover the refilling port, and draw out the old solution using a dropper before refilling it with fresh 3.33M KCl solution.

Conditioning

Nowadays, combination and 3-in-1 pH electrodes are commonly available. Both types of pH electrodes consist of glass electrode and reference electrode built in one body, but the latter is integrated with temperature sensor for detecting the temperature of the solution being measured.

The glass electrode has a silver-based electrical wire suspended in a neutral solution with KCl contained inside a special glass. The surface of the glass bulb or membrane at the tip of the electrode must be hydrated to function properly. This can be accomplished by immersing the glass membrane in an aqueous solution, where a hydrated layer that is responsible for the pH response of the glass, is developed.

Another component of the pH electrode that must remain hydrated is the junction of the reference electrode. The junction is made of porous material such as ceramic or sintered polyethylene, which allows filling solution of the electrode to leak into the solution being measured. Keeping the reference junction hydrated will prevent precipitation of KCl from the filling solution which may clog it and cause erratic or slow electrode response.

- All pH electrodes come with white protective cap. A sponge wet with pure water is positioned at the bottom of the cap to keep the glass membrane and junction moist. If you find KCl salts formed on the junction or refilling port of your pH electrode, simply rinse off using clean water. This KCl creep from the filling solution is normal.
- A dry pH electrode will give inaccurate reading in pH measurement. Condition a dry pH electrode by soaking the glass membrane and junction in pH 7.00, 4.01 buffer, or tap water for at least 1 hour to regenerate the hydrated layer. Note: High salt solutions such as 3.33M KCl and the like are not recommended for conditioning our pH electrodes. After conditioning, rinse the pH electrode with clean water and proceed with calibration.

Never touch the glass membrane with fingers as oil or dirt may coat the glass and interfere with measurement.

Cleaning

A clean, hydrated glass membrane and free-flowing junction are necessary in performing an accurate measurement of pH. The choice of cleaning solution should effectively remove all contaminants based on sample tested without damaging your pH electrode.

1. If the pH electrode is liquid-filled, uncover the refilling port.
2. Clean the tip of your pH electrode using the appropriate cleaning solution. Make sure that the glass membrane and junction are both immersed in cleaning solution.
   - General samples—Soak the pH electrode in diluted detergent solution for 5 to 10 minutes, while moderately stirring the solution. A strong cleaning solution is needed for clogged junction, stains, and electrodes exhibiting slow response. Soak the pH electrode in cleaning solution 220 or 0.1M HCl for at least 1 hour.
   - Oily samples—Soak the pH electrode in warm, diluted detergent solution for 5 to 10 minutes, while moderately stirring the solution. Alternatively, rinse the pH electrode with methanol or ethanol. Note: Alcohol is only applicable for glass-body electrodes. Never use organic solvents such as alcohol, acetone etc. to clean any plastic-body electrode as they may damage the body and shorten the life span. Use of organic solvents will void the electrode warranty.
   - Protein-containing samples—soak the pH electrode in cleaning solution 250 for at least 1 hour.
3. Rinse the pH electrode with clean water.
4. If the pH electrode is liquid-filled, draw out the old filling solution from the reference chamber and refill it with fresh 3.33M KCl (See Refilling).
5. Condition the pH electrode (See Conditioning).

If calibration with fresh pH buffers failed repeatedly and cleaning failed to restore the performance, replace the pH electrode with a new one.

Storage

pH electrodes must be clean before they are stored for any length of time.

1. If the pH electrode is liquid-filled, cover the refilling port with the slider to prevent evaporation of filling solution.
2. Wash the protective cap with clean water to wet the sponge and remove KCl salts.
3. Insert the pH electrode into the protective cap with wet sponge. The water will not dissipate easily as the cap fit snugly on the electrode body. This environment is enough to keep the glass membrane and junction moist. It is not necessary to fill the cap with clean water and soak the pH electrode tip.

Short-term storage:
Between measurements, the pH electrode can be soaked in pH 7.00 buffer or clean water (e.g., tap, distilled or deionized).

Scan to download

ORP Powders

220 250 300

230

Cleaning Solutions

pH Buffer Solutions

Code	Part No.	Description	Volume
100-2	3200043639	pH 1.68 Buffer Solution at 25°C	500ml
100-4	3200043638	pH 4.01 Buffer Solution at 25°C	500ml
101-SU	3200738717	pH Buffer Set (pH 4.01, 7.00, 10.01, 3.33M KCl)	-
100-7U	3200738711	pH 7.00 Buffer Solution at 25°C	500ml
100-9	3200043636	pH 9.18 Buffer Solution at 25°C	500ml
100-10U	3200738712	pH 10.01 Buffer Solution at 25°C	500ml
12.46	-	Available on request	500ml

Conductivity Standard Solutions

Code	Part No.	Description	Volume
100-21	3200738713	84 µS/cm Conductivity Standard Solution	500ml
100-22	3200738714	1413 µS/cm Conductivity Standard Solution	500ml
100-23	3200738715	12.88 mS/cm Conductivity Standard Solution	500ml
100-24	3200738716	111.8 mS/cm Conductivity Standard Solution	500ml
103-S	3200738718	Conductivity Standard Solution Set (84 µS/cm, 1413 µS/cm, 12.88 mS/cm, 111.8 mS/cm)	-

ORP Powders

Code	Part No.	Description	Volume
160-51	3200043618	89 mV at 25°C (for 250ml solution)	10 sachets/pack
160-22	3200043617	258 mV at 25°C (for 250ml solution)	10 sachets/pack

pH/ORP Electrode Filling Solutions

Code	Part No.	Description	Volume
300	3200043640	3.33M KCl	250ml

pH Electrode Cleaning Solutions

Code	Part No.	Description	Volume
220	3014028653	For removing inorganic residues from glass membrane and liquid junction	2 x 50ml
230	3200530494	For removing inorganic and organic residues from glass membrane (30ml Solution A & 100ml Solution B)	30ml & 100ml
250	3200366771	For removing protein residues from glass membrane and liquid junction	400ml

Calcium Ion Electrode Solutions

Chloride Ion Electrode Solutions

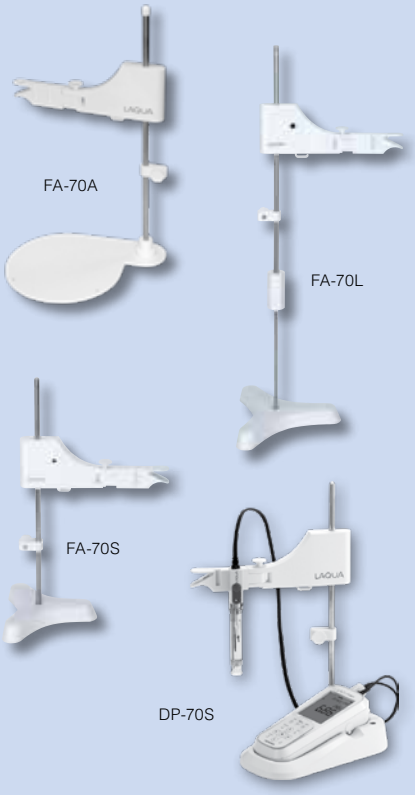
Fluoride Ion Electrode Solutions

Potassium Ion Electrode Solutions

Ammonia Ion Electrode Solutions

Nitrate Ion Electrode Solutions

Ion Standard Solutions			
Code	Part No.	Description	Volume
500-NH4-SH	3200697171	1000 mg/L Ammonium Ion Standard Solution	500ml
500-NH4-SL	3200697172	100 mg/L Ammonium Ion Standard Solution	500ml
500-CA-SH	3200697175	1000 mg/L Calcium Ion Standard Solution	500ml
500-CA-SL	3200697176	100 mg/L Calcium Ion Standard Solution	500ml
500-CL-SH	3200697167	1000 mg/L Chloride Ion Standard Solution	500ml
500-CL-SL	3200697168	100 mg/L Chloride Ion Standard Solution	500ml
500-F-SH	3200697163	1000 mg/L Fluoride Ion Standard Solution	500ml
500-F-SL	3200697164	100 mg/L Fluoride Ion Standard Solution	500ml
500-NO3-SH	3200697179	1000 mg/L Nitrate Ion Standard Solution	500ml
500-NO3-SL	3200697180	100 mg/L Nitrate Ion Standard Solution	500ml
500-K-SH	3200697183	1000 mg/L Potassium Ion Standard Solution	500ml
500-K-SL	3200697184	100 mg/L Potassium Ion Standard Solution	500ml
Ionic Strength Adjustors			
Code	Part No.	Description	Volume
500-NH3-ISA	3200697174	Ammonia Ionic Strength Adjustor	500ml
500-CA-ISA	3200697178	Calcium Ionic Strength Adjustor	500ml
500-CL-ISA	3200697170	Chloride Ionic Strength Adjustor	500ml
500-F-TISAB	3200697166	Fluoride Ionic Strength Adjustor	500ml
500-NO3-ISA	3200697182	Nitrate Ionic Strength Adjustor	500ml
500-K-ISA	3200697186	Potassium Ionic Strength Adjustor	500ml
Ion Selective Electrode Filling Solutions			
Code	Part No.	Description	Volume
500-NH3-IFS	3200697173	Ammonia Electrode Filling Solution	500ml
500-CA-IFS	3200697177	Calcium Electrode Filling solution	500ml
500-CL-IFS	3200697169	Chloride Electrode Filling Solution	500ml
500-F-IFS	3200697165	Fluoride Electrode Filling Solution	500ml
500-NO3-IFS	3200697181	Nitrate Electrode Filling Solution	500ml
500-K-IFS	3200697185	Potassium Electrode Filling Solution	500ml



Accessories		
Code	Part No.	Description
FA-70A	3200644455	Integrated Electrode Stand (Height: 338mm) for bench meter
FA-70S	3200382557	Adjustable, free-standing electrode stand (Height: 384 mm)
FA-70L	3200382560	Long, free-standing electrode stand (Height: 450-650mm)
DP-70S	3200528474	Electrode stand for 100 Series and D-70, ES-70, OM-70 Series handheld meters (Height: 400mm)
	3200373991	Arm for electrode stand FA-70A, FA-70S, & FA-70L
	3200373961	Electrode holders, 2pcs (for mounting electrode with round cap on electrode stand arm)
	3200382477	Electrode protection caps, 3pcs (for 9615S-10D, 9618S-10D, 9681S-10D pH electrode)
	3200043508	Electrode protection caps, 5pcs (for 9621-10D, 9625-10D, 9630-10D, 9631-10D, 9632-10D, 6367-10D, 6377-10D, 6252-10D, 6261-10C, 1066A-10C, 1076-10C, 2060-10T, 9300-10D, 9382-10D, 3552-10D pH electrode)
	3200382482	Electrode protection cap for long electrode (for 9680S-10D, 9480-10C pH Electrode)

Visit HORIBA's website!

Water Quality Analyzers

www.horiba-laqua.com

With over 60 years of engineering excellence, HORIBA's diverse range of water quality analyzers and electrodes are ideal for everyday laboratory needs through to the most demanding of applications. Visit our website for a wealth of useful information and water quality measurement tips to help you obtain the best results in your work.

Benchtop Meters

Developed using extensive feedback from users, our new LAQUA meters deliver the best solution for water quality analysis. Our LAQUA website features an online 'Selection Guide' to enable you to find the perfect LAQUA meter and electrode for your need.

Handheld Meters

In the lab, in the field or anywhere you need it. LAQUA Handheld meters are designed for use with one hand and with an IP67 waterproof rating and shock-resistant casing. Meters can be used for long periods, even in dark places, making it ideal for field measurements in rivers and lakes.

Pocket Meters

Analyzing water quality is simplified when using our LAQUAtwin range of meters. Designed to produce accurate and reliable results. Anyone, anywhere, at any time can measure samples easily with a LAQUAtwin meter. See just how good they are at our website.

Application Notes

LAQUAtwin pocket meters offer quick and convenient alternative to analyze important parameters with high accuracy. Several application notes are available at (http://goo.gl/znwE6j) detailing the use of LAQUAtwin and the results achieved for the respective applications. Additional application notes will be added when available.

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HORIBA offers a variety of services to help you conform to quality standards and international guidelines such as GLP, GMP and ISO

Technical Support

Please contact us with any technical questions about our products.

www.horiba.com/wq/support

User Support

Our support website is available for registered customers and features:

- Data collection software
- Instruction manual downloads
- Measurement tips, etc.

www.horiba.co.jp/register

Validation Support

Please contact us with any questions or requirements for your validation procedure.

- Traceability certification*
- IQ/OQ/PQ support*
- SOP guidance
- FAQ

*Optional services

⚠ Please read the operation manual before using this product to assure safe and proper handling of the product.

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