

LAQUA



pH	ORP	Ion	Conductivity
Resistivity	Total Dissolved Solids	Salinity	

ELECTRODES



www.horiba-laqua.com



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											COMBINATION ELECTRODES				
		PLASTIC					STANDARD ToupH	LONG ToupH	MICRO ToupH	SLEEVE ToupH	SLEEVE	NON-AQUEOUS	NEEDLE	PLASTIC	STANDARD ToupH	MICRO ToupH	SLEEVE ToupH
		9651-10D	9625-10D	9630-10D	9631-10D	9632-10D	9615S-10D	9680S-10D	9618S-10D	9681S-10D	6367-10D	6377-10D	6252-10D	9425-10C	9415-10C	9418-10C	9481-10C
Specification	Applicable temperature range (°C)	0-60	0-100	0-100	0-60	0-100	0-100	0-100	0-60	0-60	0-60	0-60	0-60	0-100	0-100	0-60	0-60
	Diameter (mm)	16	16	16	16	16	12	8	3	12	12	12	12	16	12	3	12
	Length (mm)	150	150	150	155	150	198	283	185	203	150	150	150	150	198	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			●				○			○		●		○		○
Chemical reagent/solvent	Pharmaceutical water/ Environmental water/acid rain	○	○	○				○			○		○		○		○
	Caustic/strong acid (Except HF sample)				●		●			○					●		○
	Hydrofluoric acid				●												
	Surfactant							○			●		○		○		●
Pharmaceutical/biological sample	Water-based paint						○			●		○		○		●	
	Dye/coloring agent						○			●		○		○		●	
	Protein-containing sample						○		○	●	○			○	○	○	●
	Medicinal preparation								○	○	○		○		○	○	○
	Enzyme solution								○	○	○		○		○	○	○
Food	Tris buffer						●		○	○			○		○	○	○
	Suspension						○		○	○		○		○	○	○	○
	Agar medium									○		○		○		○	○
	Jam						○			○		○		○		○	○
	Meat/fish/Fruit/vegetable/Dough												○				○
Beverage/seasoning	Honey											●					
	Cheese/butter																
	Yogurt	○	○	○			○			○	○		○	○	○		○
	Beer	○	○	○			○			○	○		○	○	○		○
Cosmetic/lotion	Milk/Carbonated drink/juice/sauce/soy sauce						○			○		○		○		○	○
	Mayonnaise/ketchup						○			○		○		○		○	○
	Beauty cream/mascara						○			○		○		○		○	○
	Gel/soap/shampoo/Hairdye lotion						○			○		○		○		○	○
Emulsified liquid						○			○		○		○		○	○	

● 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



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.

ELECTRODES			ISFET ELECTRODES
LONG	LONG ToupH	FLAT	GENERAL
6069-10C	9480-10C	6261-10C	0040-10D
0-60	0-100	0-50	0-60
3	8	12	16
291	283	150	190

●	●	●	●
	○		
	○		
	○		○
	○		○
		●	●
		●	●

○			
○	○		
●	●		
○	○	○	○
	●		
		●	●
		●	●

	○		
		●	●
		○	○(surface)
		○	○(surface)
		○	○(surface)
		○	○(surface)
		○	○(surface)

ORP Electrode

Model	Electrode Material	Temp. Range (°C)	Application	Part No.
9300-10D	Pt	0-60	Waterproof. Flat platinum sensor allows low-volume sample.	3014046710

Ion Selective Electrodes

Combination ISE*	Model	Measurement Range	Interfering Ion Influence	Part No.	Replacement Tip	
					Model	Part No.
Chloride	6560-10C	0.4-35,000 mg/L Cl ⁻	Br=0.03 NO ₃ ⁻ , F ⁻ , HCO ₃ ⁻ , SO ₄ ²⁻ , PO ₄ ³⁻ =1,000	3014093430	7660	3014093436
Fluoride	6561-10C	0.2-19,000 mg/L F ⁻	(ex. Al ³⁺ , Fe ³⁺) coexisted and foamed the complex.	3014093431	7661	3014093438
Nitrate	6581-10C	0.62-62,000 mg/L NO ₃ ⁻	CH ₃ COO=300 SO ₄ ²⁻ =Over 1000	3014093432	7681	3014068364
Potassium	6582-10C	0.04-39,000 mg/L K ⁺	Li ⁺ , Na ⁺ , Mg ²⁺ , Sr ²⁺ , Ba ²⁺ =Over 1000	3014093433	7682	3014069795
Calcium	6583-10C	0.4-40,080 mg/L Ca ²⁺	Mn ²⁺ =500 Mg ²⁺ =1,000 Na ⁺ , K ⁺ , Ba ²⁺ , NH ₄ ⁺ =Over 1,000	3014093434	7683	3014068795
Ammonia	5002A-10C	0.1-1,000 mg/L NH ₃	—	3014093560	membrane (NH ₃)	3014067083

* 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.
 *The selection coefficient is a ratio of the limit concentration of coexisting ions (mol/L) to the ion concentration to be measured (mol/L); A value of 1000 means that the coexisting ions can be permitted up to 1000 times the ion measured and "N/A" means that chemical change occurs in the solid response membrane.

Conductivity Cells

	Cell constant cm ⁻¹ (m ⁻¹)	Model	Measurement Range	Minimum Volume (mL)	Application	Temp. Range (°C)	Part No.
Submersible Type	0.1 (10)	3551-10D	0.1 µS/cm-10 mS/cm (10 µS/m-1 S/m)	50	For low conductivity water (deionized water or other)	0-60	3014081712
	1 (100)	9382-10D	1 µS/cm-100 mS/cm (0.1 mS/m-10 S/m)	20-30	Waterproof; For general purpose use	0-80	3014046709
	1 (100)	3552-10D	1 µS/cm-100 mS/cm (0.1 mS/m-10 S/m)	15	For general purpose use	0-100	3014081545
	10 (1000)	3553-10D	10 µS/cm-1 S/cm (1 mS/m-100 S/m)	50	For high conductivity water	0-60	3014081714
Flow Type	0.1 (10)	3561-10D	0.1 µS/cm-10 mS/cm (10 µS/m-1 S/m)	10	For low conductivity water (pure water or other)	0-60	3014082350
	1 (100)	3562-10D	1 µS/cm-100 mS/cm (0.1 mS/m-10 S/m)	16	For general purpose use	0-60	3014082513
	10 (1000)	3573-10C	10 µS/cm-1 S/cm (1 mS/m-100 S/m)	4	For high conductivity water	0-60	3014082590
	10 (1000)	3574-10C	10 µS/cm-100 mS/cm (1 mS/m-10 S/m)	0.25	For column chromatography using a very small amount of sample	0-60	3014082592

• Conductive material: Titanium coated with platinum black • Body housing: Glass except 9382-10D - Plastic







Dissolved Oxygen Probes


Type	Model	Measurement Range	Temp. Range (°C)	Response Time	Part No.
Field	9551-20D	DO: 0-19.99mg/L	0-40	30 seconds (90% response time at constant temperature)	3014047090
	9551-100D	DO: 0-19.99mg/L	0-40	30 seconds (90% response time at constant temperature)	3014047091
Lab	9520-10D	DO: 0-19.99mg/L	0-45	20 seconds (90% response time at constant temperature)	3014046711

pH Combination Electrodes

HORIBA pH Combination electrodes manufactured with 1 meter cable terminating in BNC connector allow these electrodes to be used with any pH meter¹. Enjoy the full spectrum of features and benefits of these electrodes on your existing pH meter¹. (For applications where temperature measurement and compensation is required, please refer to the 3-in-1 pH electrodes).

¹pH meters must have BNC connector





Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
<p>9415-10C General laboratory application ToupH Standard ToupH electrode</p>  <p>3200611623</p> <p>Overall length: 198 mm Diameter of probe: 12 mm Connector: BNC</p>	0-14	0-100	Ceramic	<p>The electrode offers quick stability and drift reduction.</p> <ul style="list-style-type: none"> 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 <p>Perfect for preparing pH buffers and other aqueous test solutions.</p>
<p>9425-10C General field application Field plastic electrode</p>  <p>3200611625</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	0-14	0-100	Ceramic	<p>The electrode has plastic body, which is ideal for field measurement.</p> <ul style="list-style-type: none"> Can be submerged up to 1m depth and 30mins (with refilling port closed) Waterproof, Pb-free glass <p>Recommended for field use. For measurement of tap water and drinking water.</p>
<p>9481-10C High viscosity application ToupH Sleeve ToupH electrode</p>  <p>3200611631</p> <p>Overall length: 203 mm Diameter of probe: 12 mm Connector: BNC</p>	0-14	0-60	Movable sleeve	<p>The electrode gives stable readings in highly viscous samples.</p> <ul style="list-style-type: none"> The liquid junction is designed with a movable sleeve that can be cleaned easily and prevents clogging Waterproof, Pb-free glass <p>For measurement of highly viscous samples and samples containing non-aqueous solvents (e.g., cosmetics, paints).</p>
<p>9418-10C Precious trace amount sample ToupH Micro ToupH electrode</p>  <p>3200611627</p> <p>Overall length: 185 mm Diameter of probe: 3 mm Connector: BNC</p>	0-14	0-60	Ceramic	<p>The electrode can measure samples as small as 50µL.</p> <ul style="list-style-type: none"> Compatible with extremely small containers (e.g., micro tubes) Temperature sensor is placed next to the bulb for quick response Waterproof <p>Suitable for low-volume samples and wide range of aqueous solutions.</p>
<p>9480-10C For large containers and long test tubes ToupH Long ToupH electrode</p>  <p>3200611628</p> <p>Overall length: 283 mm Diameter of probe: 8 mm Connector: BNC</p>	0-14	0-100	Ceramic	<p>The long, thin body of the electrode is perfect for large containers and test tubes.</p> <ul style="list-style-type: none"> 283mm length, 8mm diameter Constructed with responsive glass that is 10X stronger than JIS standards Waterproof, Pb-free glass <p>For measuring samples (e.g., microbial culture fluids) in test tubes and tall beakers.</p>
<p>6069-10C For very slender test tubes</p>  <p>3014081107</p> <p>Overall length: 291 mm Diameter of probe: 3.15 mm Connector: BNC</p>	0-14	0-60	Ceramic	<p>The long, thin body of the electrode is perfect for very slender test tubes.</p> <ul style="list-style-type: none"> 291mm length, 3mm diameter Waterproof <p>For measuring samples in slender tubes (e.g., NMR test tube).</p>

Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
6261-10C Flat type  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. <ul style="list-style-type: none"> • 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 Electrodes²

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.

²Only compatible with HORIBA pH meters


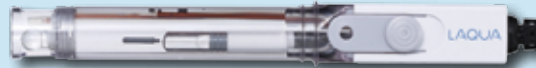



Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
9615S-10D General laboratory application ToupH Standard ToupH electrode  Overall length: 198 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3200585428	0-14	0-100	Ceramic	The electrode offers quick stability and drift reduction. <ul style="list-style-type: none"> • 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.
9681S-10D High viscosity application ToupH Sleeve ToupH electrode  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. <ul style="list-style-type: none"> • 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).
9618S-10D Precious trace amount sample ToupH Micro ToupH electrode  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. <ul style="list-style-type: none"> • 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.
9680S-10D For large containers and long test tubes ToupH Long ToupH electrode  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. <ul style="list-style-type: none"> • 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.

Continued on the next page

Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Application
6252-10D For food application (needle type)  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.
6377-10D For measurement of low-conductivity water and non-aqueous solvents  Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3014093085	0-14	0-60	Movable sleeve	Uses a glass membrane that is highly sensitive to low-conductivity water and non-aqueous solvents.
6367-10D Standard type (sleeve)  Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack 3014079136	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 Electrodes²

²Only compatible with HORIBA pH meters

Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Applications
9651-10D Gel-filled pH electrode  Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3200642020	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. <ul style="list-style-type: none"> Can be submerged up to 1m depth of water for 30mins. Waterproof, Pb-free glass Recommended for field use.
9625-10D; 9625-20D; 9625-30D Standard type  Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3200360505; 3200393025; 3200393026	0-14	0-100	Ceramic	The electrode has a plastic body which is ideal for field measurement. <ul style="list-style-type: none"> 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.
9631-10D Hydrofluoric acid resistant electrode  Overall length: 155 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3200524119	2-12	0-60	Ceramic	The electrode can measure 1% hydrofluoric acid solution (at 25°C, immersed at 1min.) for about 1000 times. <ul style="list-style-type: none"> 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.
9632-10D Strong alkali resistant electrode  Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3200524120	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. <ul style="list-style-type: none"> Waterproof, Pb-free glass Suitable for strong alkali samples such as plating solutions.
9630-10D For tap water  Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack 3200528726	0-14	0-100	Ceramic	The electrode can measure samples with low conductivity or buffering capacity. <ul style="list-style-type: none"> 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

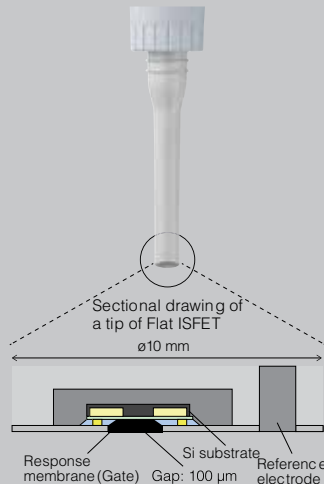
Semiconductor technology without glass

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.

Type	pH Range	Operating Temperature Range (°C)	Liquid Junction	Applications
0040-10D General ISFET pH electrode  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). <ul style="list-style-type: none"> • 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)

Type	Operating Temperature Range (°C)	Electrode Material	Internal Solution	Applications
9300-10D Waterproof platinum combination type  3014046710 Overall length: 150 mm Diameter of probe: 12 mm Connector: BNC	0-60	Pt	#300 (KCl)	Waterproof. Flat platinum sensor allows measurement of low-volume samples.

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.





Type	Measurement Range	Selection Coefficient
<p>Ammonia ion electrode (combination) 5002A-10C</p>  <p>3014093560</p> <p>Overall length: 161 mm Diameter of probe: 15 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.1 to 1,000 mg/L NH₃ Adjust more than pH 12 0 to 50°C Within 30 seconds when substituting low concentration to high concentration Within 2 minutes when substituting high concentration to low concentration 	<p>_____</p>
<p>Chloride ion electrode (combination) 6560-10C</p>  <p>3014093430</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.35 to 35,000 mg/L Cl⁻ (10⁻⁵ to 1 mol/L Cl⁻) 350 mg/L (10⁻² mol/L) Cl⁻, pH 3 to 11 0 to 50°C Within 5 seconds 	<p>S₂O₃²⁻, S²⁻, I⁻, Ag⁺, Hg²⁺ = Not acceptable SCN⁻ = 0.3, MnO₄⁻ = 0.1 Br⁻ = 0.03 NO₃⁻, F⁻, HCO₃⁻, SO₄²⁻, PO₄²⁻ = 1,000</p>
<p>Fluoride ion electrode (combination) 6561-10C</p>  <p>3014093431</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.02 to 19,000 mg/L F⁻ (10⁻⁶ to 1 mol/L F⁻) 20 mg/L (10⁻³ mol/L) F⁻, pH 4 to 10 0 to 50°C Within 5 seconds 	<p>Possible interference when multiply-charged ion (ex. Al³⁺, Fe³⁺) coexisted and foamed the complex.</p>
<p>Nitrate ion electrode (combination) 6581-10C</p>  <p>3014093432</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.62 to 62,000 mg/L NO₃⁻ (10⁻⁵ to 1 mol/L NO₃⁻) 62 mg/L (10⁻³ mol/L) NO₃⁻, pH 3 to 7 0 to 50°C Within 15 seconds 	<p>ClO₄⁻ = 0.03, I⁻ = 0.1, Br⁻ = 2 NO₂⁻ = 3, Cl⁻ = 40, F⁻ = 200 CH₃COO⁻ = 300, SO₄²⁻ = over 1,000</p>
<p>Potassium ion electrode (combination) 6582-10C</p>  <p>3014093433</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.04 to 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 0 to 50°C Within 15 seconds 	<p>Rb⁺ = 0.4, Cs⁺ = 3, NH₄⁺ = 70 Li⁺, Na⁺, Mg²⁺, Ca²⁺, Sr²⁺, Ba²⁺ = over 1,000</p>
<p>Calcium ion electrode (combination) 6583-10C</p>  <p>3014093434</p> <p>Overall length: 150 mm Diameter of probe: 16 mm Connector: BNC</p>	<ol style="list-style-type: none"> 0.4 to 40,080 mg/L Ca²⁺ (10⁻⁵ to 1 mol/L Ca²⁺) 4.0 mg/L (10⁻⁴ mol/L) Ca²⁺, pH 5 to 11 0 to 50°C Within 15 seconds 	<p>Fe³⁺ = 0.1, Fe²⁺, Zn²⁺ = 1, Sr²⁺ = 50 Ni²⁺, Cu²⁺ = 70, Co²⁺ = 350 Mn²⁺ = 500, Mg²⁺ = 1,000 Na⁺, K⁺, Ba²⁺, NH₄⁺ = over 1,000</p>

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 **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)

Type	Cell Constant (cm ⁻¹)	Measurement Range	Temperature Compensation Element	Temperature Range (°C)	Sample Amount Required (mL)	Applications
3551-10D  3014081712 Overall length: 175 mm Diameter of probe: 23 mm Connectors: BNC & phono jack	0.1	10 µS/m to 1 S/m (0.1 µS/cm~10 mS/cm)	Incorporated	0-60	50	For low conductivity water (deionized water or other)
3552-10D  3014081545 Overall length: 150 mm Diameter of probe: 12 mm Connectors: BNC & phono jack	1	0.1 mS/m to 10 S/m (1 µS/cm~100 mS/cm)	Incorporated	0-100	15	For general purpose use
3553-10D  3014081714 Overall length: 175 mm Width of probe: 28 mm Connectors: BNC & phono jack	10	1 mS/m to 100 S/m (10 µS/cm~1 S/cm)	Incorporated	0-60	50	For high conductivity water
9382-10D  3014046709 Overall length: 150 mm Diameter of probe: 16 mm Connectors: BNC & phono jack	1	0.1 mS/m to 10 S/m (1 µS/cm~100 mS/cm)	Incorporated	0-80	20-30	Waterproof; For general purpose use.

Conductivity Cells (Flow Type)




Type	Cell Constant (cm ⁻¹)	Measurement Range	Temperature Compensation Element	Temperature Range (°C)	Sample Amount Required (mL)	Applications
3561-10D  3014082350 Overall length: 143 mm Diameter of probe: 18 mm Connectors: BNC & phono jack	0.1	10 µS/m to 1 S/m (0.1 µS/cm~10 mS/cm)	Incorporated	0-60	10	For low conductivity water (pure water or other)
3562-10D  3014082350 Overall length: 205 mm Diameter of probe: 18 mm Connectors: BNC & phono jack	1	0.1 mS/m to 10 S/m (1 µS/cm~100 mS/cm)	Incorporated	0-60	16	For general purpose use
3573-10C  3014082590 Overall length: 222 mm Diameter of probe: 18 mm Connector: BNC	10	1 mS/m to 100 S/m (10 µS/cm~1 S/cm)	—	0-60	4	For high conductivity water
3574-10C  3014082592 Overall length: 136 mm Diameter of probe: 66 mm Connector: BNC	10	1 mS/m to 10 S/m (10 µS/cm~100 mS/cm)	—	0-80	0.25	For column chromatography using a very small amount of sample

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 versions are available: a Laboratory version (9520) that can be used for BOD measurements, as well as a Field unit (9551) housed in a rugged casing 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

Type	Measurement Range	Response Time	Temperature Range (°C)	Features
9520-10D For laboratories  3014046711 Overall length: 184 mm Diameter of probe: 15 mm Connectors: BNC & phono jack	DO: 0-19.99mg/L	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)  3014047090 Overall length: 165 mm Diameter of probe: 32 mm Connectors: BNC & phono jack	DO: 0-19.99mg/L	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)  3014047091 Overall length: 165 mm Diameter of probe: 32 mm Connectors: BNC & phono jack	DO: 0-19.99mg/L	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

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



501-S NIST pH Buffer Solution Kit



502-S USA pH Buffer Solution Kit

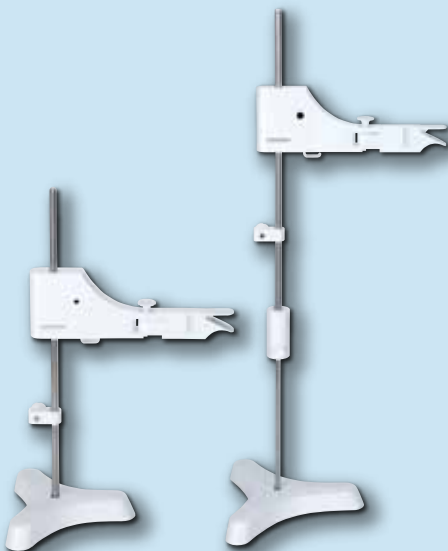


503-S Conductivity Standard Solution Kit



220 250 230

Cleaning Solutions



Standard Electrode Stand
FA-70S (384mm)

Long Type Electrode Stand
FA-70L (450-650mm)

pH Solution Kits				
Name	Type	Specification	Volume	Part No.
NIST pH Buffer Solution Kit	501-S	(4.01/6.86/9.18/3.33M KCl)	250mL ea	3999960015
USA pH Buffer Solution Kit	502-S	(4.01/7.00/10.01/3.33M KCl)	250mL ea	3999960016
pH Solutions				
Buffer Solution at 25°C	500-2	pH 1.68	500mL	3999960028
	500-4	pH 4.01	500mL	3999960029
	500-686	pH 6.86	500mL	3999960030
	500-7	pH 7.00	500mL	3999960031
	500-9	pH 9.18	500mL	3999960032
	500-10	pH 10.01	500mL	3999960033
500-12	pH 12.46	500mL	3999960034	

Conductivity Solution Kit				
Name	Type	Specification	Volume	Part No.
Conductivity Standard Solution Kit	503-S	(84 uS/cm; 1413 uS/cm; 12.88 mS/cm; 111.8 mS/cm)	250mL ea	3999960017
Conductivity Solutions				
Conductivity Standard Solution at 25°C	500-21	84 uS/cm	500mL	3999960035
	500-22	1413 uS/cm	500mL	3999960036
	500-23	12.88 mS/cm	500mL	3999960037
	500-24	111.8 mS/cm	500mL	3999960038

ORP Powders			
Name	Type	Specification	Part No.
Powder for ORP Standard Solution	160-51	89 mV at 25°C for 250 mL (10 packets per set)	3200043618
	160-22	258 mV at 25°C for 250 mL (10 packets per set)	3200043617

Internal Filling Solutions for Electrodes				
Name	Type	Specification	Volume	Part No.
Internal Filling Solution for pH Combination Electrode	525-3	3.33 M KCl	250mL	3999960023
Internal Filling Solution for Reference Electrode	300	3.33 M KCl	250mL	3200043640

Cleaning Solutions for Electrodes				
Name	Type	Specification	Volume	Part No.
Cleaning Solution	220	Cleaner for pH Electrode (50 mL x 2pcs) for removing inorganic sample residues from glass electrodes, and for cleaning liquid junctions	100mL	3014028653
Cleaning Solution	250	Cleaner for pH Sensor (400mL) for removing protein containing sample residues from glass electrodes, and for cleaning liquid junctions	400mL	3200366771
Cleaning Solution	230	Cleaner for pH Sensor for removing inorganic and organic sample residues from the responsive glass membrane only Solution A (30mL), Solution B (100mL)	100mL, 30mL	3200530494

Accessories			
Name	Images	Specification	Part No.
Electrode Stand	Images on the left	FA-70S Electrode stand (adjustable type) (Free-standing type. Height 384 mm)	3200382557
		FA-70L Electrode stand (long type) (Free-standing type. Height 450-650mm)	3200382560
Arm for Electrode Stand		Arm for electrode stand (For FA-70A, FA-70S, FA-70L)	3200373991
Electrode Accessories		Sensor Holder (Used for Mounting Electrode Stand, 2 pcs.)	3200373961
		Electrode Protection Cap (Standard) (For 9615S-10, 9618S-10D, 9681S-10D pH Electrode, 3 pcs.)	3200382477
		Electrode Protection Cap (Standard) (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, 5 pcs.)	3200043508
		Electrode Protection Cap for Long Electrode (For 9680S-10D, 9480-10C pH Electrode, 1 pc.)	3200382482

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.

SUPPORT HORIBA CUSTOMER SUPPORT SYSTEM

HORIBA offers a variety of services to 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.

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- It is strictly forbidden to copy the content of this catalog in part or in full.
- All brand names, product names and service names in this catalog are trademarks or registered trademarks of their respective companies.
- Windows is a registered trademark of Microsoft Corporation in the United States and other countries.

<http://www.horiba.com> e-mail: laqua@horiba.com

HORIBA Instruments (Singapore) Pte. Ltd.
 83 Science Park Drive
 #02-02A, The Curie
 Singapore 118258
 Phone: 65 6908-9660
 Fax: 65 6745-8155

