HORIBA

Explore the future

ELECTRODES & ACCESSORIES

●pH(ORP) ●ION ●CONDUCTIVITY ●DO

CONTENTS

pH ELECTRODES
METALLIC ELECTRODES
ION ELECTRODES
CONDUCTIVITY ELECTRODES
DO ELECTRODES
ACCESSORIES

■ Applicable Product Models

pH Meter	F-50 Series, F-20Ⅱ Series, F-20 Series, F-10 Series, M-10 Series
Portable **pH Meter**	D-50 Series, D-20 Series, D-10 Series
Compact **pH Meter**	B-111/112, B-211/212
Conductivity Meter	DS-10 Series, DS-50 Series
Portable **Conductivity Meter**	ES-10 Series, ES-51
Compact **Conductivity Meter**	B-173
Compact **Ion Meter**	C-121, C-122, C-131, C-141
Portable **DO Meter**	OM-10 Series, OM-51
Water Quality Monitoring System	U-10/U-20XD/W-20XD Series

<Reference>

The liquid junction is the section where the liquid inside the reference electrode comes in contact with the sample liquid. Several junction types are available (ceramic, sleeve, etc.), to meet the requirements of specific samples or applications.

Liquid junction type	Features
Ceramic	A broad range of pH measurements. (Please note that samples of high viscosity may cause clogging.)
Movable sleeve	The larger liquid junction area is ideal for samples of high liquid junction potential, such as those with (1) high viscosity, (2) high salt concentration, or (3) low ionic strength. The liquid junction is easy to clean. High internal solution outflow volume.
Fixed sleeve	The large liquid junction area makes this type somewhat similar to the movable sleeve type. Not recommended for samples of high viscosity, as the sleeve cannot be cleaned.
Double junction	Combination of the ceramic type and the movable sleeve type overcomes the disadvantages of using either separately. When the outflow of the KCl in the internal solution presents a problem, placing the sample or other salt solution in the external tube will ensure stable measurements.

ELECTRODE SELECTION GUIDE

		Combination Electrodes with Temperature Compensation Sensors								Combination Electrodes without Temperature Compensation Sensors				Discrete pH Glass Electrodes			Reference Electrodes for Discrete Electrodes			
		9621-10D	9611-10D	9669-10D	9677-10D	6367-10D	6377-10D	6378-10D	6252-10D	6066-10C	6069-10C	6251-10C	6261-10C	1066A-10C	1076A-10C	6961-15C	2565A-10T	2461A-15T	2060A-10T	2660A-10T
			ToupH	Micro	High viscosity	High accuracy	Non-aqueous	Test tubes	For Food Applications	Standard	Slender test tubes	Needle	Flat	Standard	Non-aqueous	Distribution	Double	Distribution	Standard	Sleeve
By Application	For school use		○																	
	For outdoor use	○																		
By Shape	Flask	○	○	○	○	○	○	○		○	○			○	○		○		○	○
	Test tube			○				○			○									
	NMR tube	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×	×	×
	Trace sample			○				○			○		○							
	Beaker	○	○	○	○	○	○	○		○	○			○	○		○		○	○
	Solid (surface measurement)	×	×	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×
	Flow-through	×	×	×	×	×	×	×	×	×	×	×	×	×	×	○	×	○		
By Condition	Strong alkalinity (pH12-10)														○		○			
	Strong acidity (pH0-2)		○		○		○							○	○		○			
	High temperature (60-100°C)	○													○		○		○	○
	Drastic thermal change	○																		
	Low ionic strength	○					○								○		○			○
	Non-aqueous solution						○								○		○			○
	High viscosity				○									○	○		○			
	KCl-reactive solution														○		○			
Food Sample	Beer				○		○								○		○			
	Milk	○	○		○	○	○			○				○	○		○			
	Yogurt				○	○	○							○	○		○			
	Fruit juice		○		○	○	○							○	○		○			
	Konjak (Devil's tongue)								○			○								
	Meat, fish								○			○								
	Emulsion													○	○		○			
	Honey													○	○		○			
	Bread								○			○								
Chemicals	Oil	×					○							○	○		○			
	Surfactant		○				○							○	○		○			
	Suspension						○							○	○		○			
	Paint	×					○							○	○		○			
	Photo developer	×	×	×	×	×	×	×	×	×	×	×	×		○	×	○	×	×	×
	Organic solvent	×																		
	Liquid fertilizer																			
Bio-chemical	Dialysis						×								○		○			
	TRIS buffer													○	○		○			
	Skin	×	×	×	×	×	×	×	×	×	×	×	○	×	×	×	×	×	×	×
Environ-mental	Swimming pool	○	○		○	○	○	○							○		○			
	Sea water	○	○		○	○	○	○							○		○			
	Acid rain	○					○							○	○		○			
	Soil								○			○								
	Tap water	○					○								○		○			
	Ion-exchanged water	○					○								○		○			

○: Recommended ×: Prohibited or risk of damage

pH METER and ELECTRODE COMBINATION TABLE

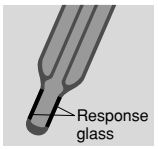
	pH					ORP		ION		Conductivity Electrode Cells	DO Electrode
	3-in-1 Electrode	Combination Electrode	Cordless Electrode	Single Electrode*1	Reference Electrode	3-in-1 Combination Electrode	Single Electrode*1	Combination Electrode	Single Electrode*1		
	9611-10D	6066-10C	6330	1066A-10C	2060A-10T	9300-10D	3060-10C	6560-10C	8001-10C	9382-10D	9520-10D
	9621-10D	6069-10C	6336	1076A-10C	2660A-10T			6561-10C	8002-10C		9551-20D
	9669-10D			6961-10C	2565A-10T	6861-10C		5002A-10C	8003-10C	3551-10D	9551-100D
	9677-10D	6251-10C			2461A-10T			6581-10C	8004-10C	3552-10D	9550-20D
		6261-10C						6582-10C	8005-10C	3553-10D	9550-100D
	6366-10D							6583-10C	8006-10C	3561-10D	
	6367-10D								8007-10C	3562-10D	
	6377-10D								8008-10C	3573-10D	
	6378-10D								8009-10C	3574-10D	
	6252-10D								8010-10C		
									8011-10C		
									1512A-10C		
									8201-10C		
									8202-10C		
Type									8203-10C		
F-51・52	○	○	×	○	○	○	○	×	×	×	×
F-53	○	○	×	○	○	○	○	○	○	×	×
F-54	○	○	×	○	○	○	○	×	×	○	×
F-55	○	○	×	○	○	○	○	○	○	○	×
D-51, D-21	○	○	×	×	×	×	×	×	×	×	×
D-52, D-22	○	○	×	×	×	○	×	×	×	×	×
D-53, D-23	○	○	×	×	×	○	×	○	×	×	×
D-54, D-24	○	○	×	×	×	○	×	×	×	○	×
D-55, D-25	○	○	×	×	×	○	×	×	×	×	○
F-21・22・21Ⅱ・22Ⅱ	○	○	×	○	○	○	○	×	×	×	×
F-22C・22ⅡC	○	○	○	○	○	○	○	×	×	×	×
F-23・24・23Ⅱ・24Ⅱ	○	○	×	○	○	○	○	○	○	×	×
F-23C・24C・23ⅡC・24ⅡC	○	○	○	○	○	○	○	○	○	×	×
M-11, F-11・12	○	○*2	×	○*2	○*2	×	×	×	×	×	×
M-12・13, F-13・14・15・16	○	○	×	○	○	○	○	×	×	×	×
D-11・12	○	○*2	×	×	×	×	×	×	×	×	×
D-13・14	○	○*2	×	×	×	○	×	×	×	×	×

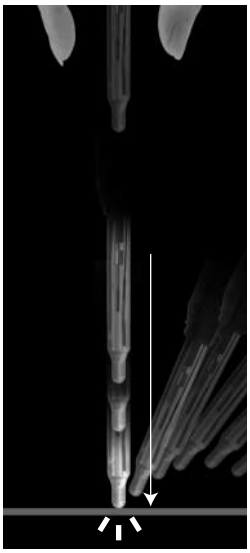
○: Applicable ×: Not applicable *1: Reference electrode required for measurement *2: Temperature compensation electrode (4163-10T) required for measurement

"ToupH Electrode"

More impact-resistant and unbreakable

The response glass in conventional electrodes had to be thin to keep electric resistance low and sensitivity high. The new ToupH electrode uses glass of lower electric resistance, resulting in a relatively thicker and substantially tougher response glass — especially at the tip — while improving sensitivity and response.

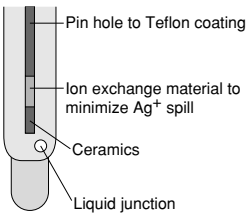




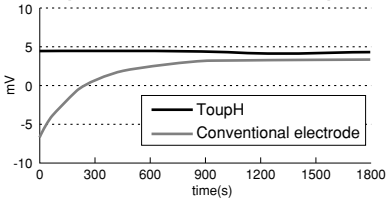
"Silver Ion Trap"

Clogging-resistant liquid junction and faster response time

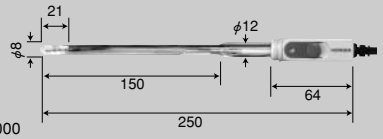
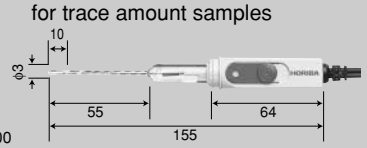
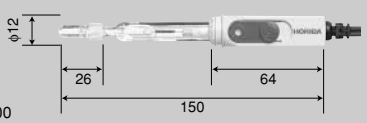
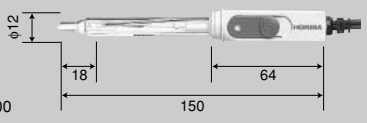
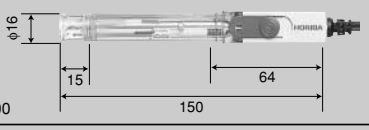
The silver/silver chloride internal electrode in the reference electrode is known to cause silver clogging at the liquid junction and to react with the sample, which can affect the reproducibility and response time. The silver ion trap in the new electrode suppresses the outflow of silver ions, thereby minimizing clogging at the liquid junction and ensuring more stable measurement. The new design also minimizes sample deterioration by silver.



Reference electrode response time over 3 months (tap water).

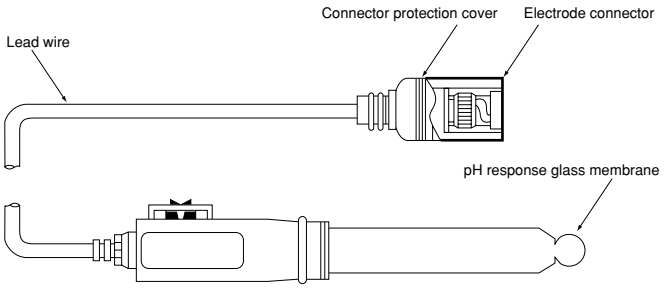


3-in-1 Electrode (Waterproof, Silver Ion Trap Construction)

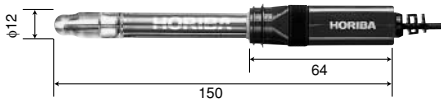
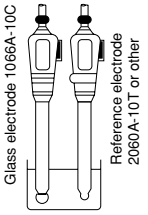
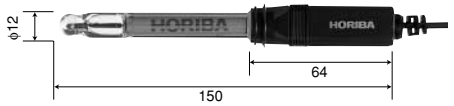
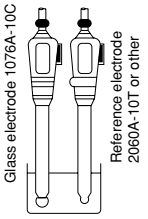
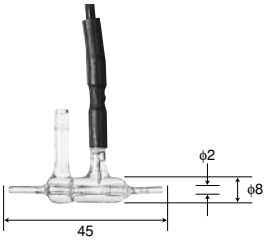
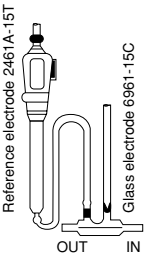
Type	Applicable temperature range(°C)	pH range	Liquid junction	Internal solution	Feature
9678-10D Thick Membrane Electrode NEW ToupH  9003018000	0-100 (Submerged measurements: 0-50)	0-14	Ceramic	#300 (KCl)	The first totally lead free electrode parts for laboratory needs : The use of thick glass improves the resistance to impact and chemical proof. In addition, introduce of silver ion trap minimies the clogging at the liguid junction. Ideal for measuring small amount of sample from long and thin test tube and large container with depth. It is water Proofed.
9669-10D Micro electrode for trace amount samples ToupH  9096001900	0-60	0-14	Ceramic	#300 (KCl)	Micro-electrode with a built-in temperature sensor for trace sample measurements (0.3mL). The highly responsive temperature sensor and the clog-resistant liquid junction design assure stable measurements.
9677-10D Sleeve electrode for slurry samples ToupH  9096002000	0-60	0-14	Movable sleeve	#300 (KCl)	More break-resistant thick glass membrane. The movable sleeve allows easy cleaning of the liquid junction and replacement of the internal solution. Ideal for measuring samples of high viscosity.
9611-10D Thick membrane electrode ToupH  9096001800	0-80	0-14	Ceramic	#300 (KCl)	More impact-resistant and easier to clean, the thick glass membrane realizes rapid response while minimizing clogging at the liquid junction and ensuring stable measurements. For all lab needs. (Post-9610-10D model)
9621-10D Plastic-body electrode  9096001700	0-100 (Submerged measurements: 0-50)	0-14	Ceramic	#300 (KCl)	Cased in a plastic body to enable field measurements. The slide-type internal solution filler permits submerged measurements in depths up to 1m (for up to 30 minutes). The glass membrane, which offers excellent response to low-conductivity water, and the clog-resistant liquid junction design make this model ideal for both tap water and pure water measurements. (Post-9620-10D model)

pH ELECTRODES (GLASS ELECTRODES)

Glass electrodes measure the pH value in the sample solution by detection of electromotive force, i.e., voltage.
HORIBA's superior glass electrodes have all the qualities required for accurate measurement and testing: they are responsive to changes in electromotive force, sensitive to very slight alkaline differences, have a low internal resistance, and are extremely durable. HORIBA's electrodes are perfect not only for laboratory pH measurement conditions, but are in widespread general use for pH measurement.
Our series of electrodes for use with HORIBA's F, M, & D Series of pH meters incorporate a composite lithium glass for the pH-responsive glass membrane. This gives them extremely high sensitivity. They connect to the industry-standard universal BNC connectors. The holder portion has a squared-off design to prevent the elecIrode from rolling, protecting it from damage.



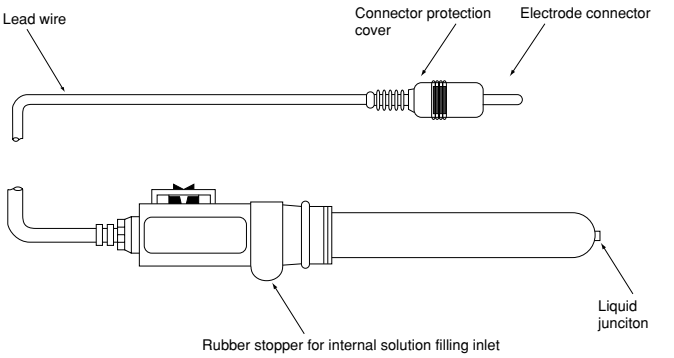
Glass Electrodes

Type	Usage	Applicable temperature range(°C)	pH range	Applicable reference electrode	Feature
1066A-10C Standard type  9003012200	 	0-100	0-14	2060A 2660A 2565A	Very durable minimum alkali errors. Most widely used for general pH measurements.
1076A-10C For measurement of low-conductivity water and non-aqueous solvents.  9003014200	 	0-100	0-14	2060A 2660A 2565A	Uses a glass membrane highly sensitive to low-conductivity water and non-aqueous solvents. Can also be used for ordinary pH measurement.
6961-15C Small sample amount flow type  9003012400	 	0-50	0-12	2461A	A glass electrode with a pH response membrane like a slender tube. Becomes a combination pH electrode of small sample amount flow type when combined with the reference electrode 2461A-15T by providing a pinhole liquid junction in the slender tube. (Allows a small amount of sample to be measured while it is distributed.)

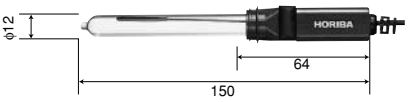
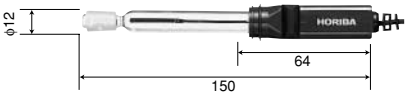
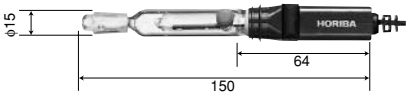
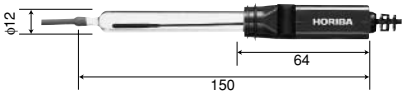
Electrode connector and lead wire length:
10 of -10C, -10T, or -10D in the last part of each type shows that the lead wire length is 1.0m. C, T, and D denote connector types for the main unit. The connector type suited for the main unit should be selected.
Can be connected to the D connector on the D series or to the C, T, or D connector on the standard F series and M series of popular HORIBA pH meters.

pH ELECTORODES (REFERENCE ELECTRODES) & TEMPERATURE COMPENSATION ELECTRODES

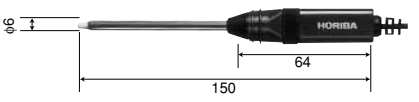
Reference electrodes constitute part of the detection portion of pH meters; they are used together with a glass electrode to isolate the electromotive force generated in the glass electrode. HORIBA's reference electrodes use a top-quality internal reference electrode and a liquid junction with numerous special features; this gives them an incredible stable indication of electrical potential, making them particularly suitable as reference electrodes in all types of pH and electrical potential measurement. These electrodes have a double-junction configuration, incorporating two types of liquid junction, using capillary tubes, a sleeve with large surface area, and an easy-to-use ceramic filter.



Reference Electrodes

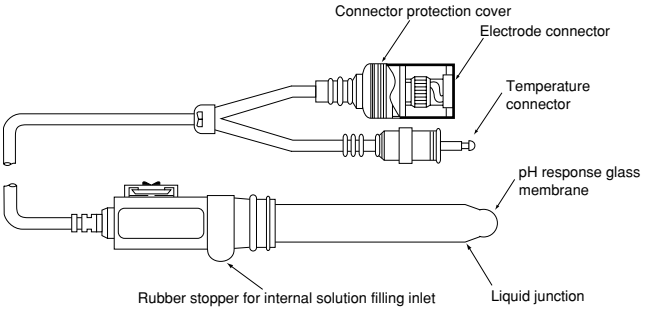
Type	Applicable temperature range(°C)	Liquid junction	Internal solution	Applicable glass electrode	Feature
2060A-10T Standard type  9003012500	0-100	Ceramic	#300 (KCl)	1066A 1076A	Suitable for a wide range of pH measurements since the resistance of the liquid junciton is small.
2660A-10T Sleeve type  9003012600	0-100	Sleeve	#300 (KCl)	1066A 1076A	Particularly suitable for measurements of suspensions, emulsions, paste, and non-aqueous solutions since the resistance of the liquid junction is small. The cleaning of the liquid junction and the replacement of the internal solution can be carried out easily.
2565A-10T Double-junciton type  9003012700	0-100	Intermediate: Ceramic External: Sleeve	#300 (KCl)	1066A 1076A	Suitable for measurements of liquid other than normal aqueous solutions, such as suspensions, emulsions, paste, and non-aqueous solutions. When the potassium chloride solution of the internal solution reacts with the sample, measurements can be stably carried out by filling the sample or any other chloride solution in the external jacket. The replacement of the internal solution and the cleaning of the liquid junction can be carried out easily.
2461A-15T For small sample amount flow Salt bridge  9003012800	0-50	Salt Bridge	#300 (KCl)	6961	Connected to the electrode 6961-15C for very small sample amounts when used.

Temperature Compensation Electrode

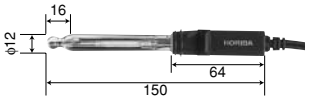
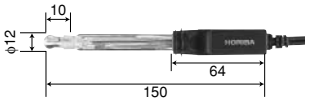
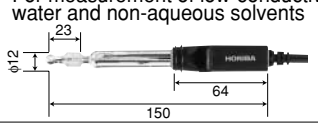
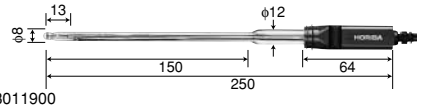
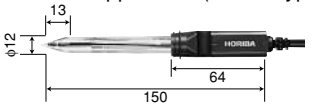
Type	Applicable temperature range(°C)	Applicable	Temperature compensation element	Feature
4163-10T  9003013000	0-100	Temperature compensation and measurement	Thermistor	Used to automatically compensate the changes in the electromotive force of the pH electrode due to temperatures and also to measure temperatures.

pH ELECTRODES (3-in-1 ELECTRODES)

Combination electrodes are a glass electrode and a reference electrode incorporated into one unit. 3-in-1 electrodes incorporate a glass electrode and a reference electrode-plus a temperature compensation electrode-into a single unit.
These electrodes are compact and easy to use; they give superb results in pH measurements over a broad range of sample liquids and test conditions. Also, since the glass membrane and the liquid junction are adjacent, only a small amount of sample fluid is required and they are extremely simple to clean. The internal reference electrode uses a solution of 3.33 mol/L KCl.

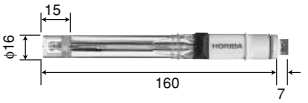
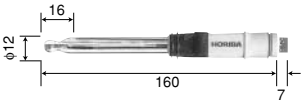


3-in-1 Electrode

Type	Applicable temperature range(°C)	pH range	Liquid junction	Internal solution	Feature
6366-10D Standard type (ceramic)  9003011700	0-100	0-14	Ceramic	#300 (KCl)	The most standard pH electrode. (Standard accessory M series and models F-21Ⅱ, F-22Ⅱ, F-23Ⅱ.)
6367-10D Standard type (sleeve)  9003011800	0-60	0-14	Sleeve	#300 (KCl)	Uses a sleeve for the liquid junction, improving the stability and repeatability. For measuring pH at high accuracy. (Standard accessory for model F-24Ⅱ.)
6377-10D For measurement of low-conductivity water and non-aqueous solvents  9003014100	0-60	0-14	Movable sleeve	#300 (KCl)	Uses a glass membrane highly sensitive to low-conductivity water and non-aqueous solvents. Movable sleeve used at the liquid junction.
6378-10D For test tubes  9003011900	0-60	0-14	Ceramic	#300 (KCl)	Can be used not only for general purposes, but also for measuring pH of a small amount of sample in a long, slender container such as a test tube.
6252-10D For food application (needle type)  9003013800	0-60	0-12	Ceramic	#300 (KCl)	Needle electrode allows measurement of aqueous solutions too.

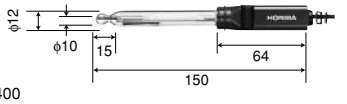
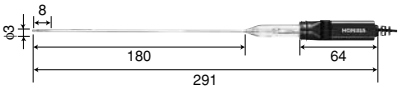
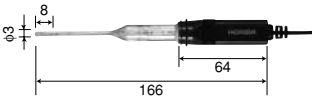
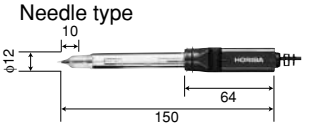
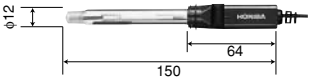
3-in-1 Electrode (Cordless Electrode*)

* Marketed only for Japanese and U.S. market.

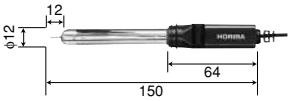
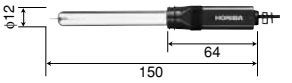
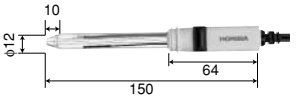
Type	Applicable temperature range(°C)	pH range	Liquid junction	Internal solution	Feature
6330 Plastic body type  9003014300	0-80	0-14	Ceramic	#300 (KCl)	Cordless electrode with plastic body(standard accessory for models F-22ⅡC, F-23ⅡC, F-24ⅡC).
6336 Standard type  9003014400	0-80	0-14	Ceramic	#300 (KCl)	Special cordless electrode with glass body.

pH ELECTRODES (COMBINATION), METALLIC ELECTRODES (FOR ORP MEASUREMENT) & ISFET ELECTRODES

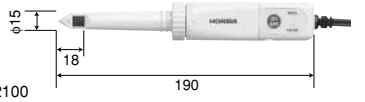
Combination Electrodes

Type	Applicable temperature range(°C)	pH range	Liquid junction	Internal solution	Feature
6066-10C Standard type  9003013400	0-100	0-14	Ceramic	#300 (KCl)	A combination electrode incorporating a glass electrode and a reference electrode into single unit, which allows pH values to be measured easily.
6069-10C For very slender test tubes  9003013500	0-60	0-14	Ceramic	#310 (KCl with AgCl)	For measuring pH of a small amount of sample in a slender tube (more than 3.5 mm dia.) such as a NMR test tube.
6069MP-10C  9003017900	0-60	0-14	Ceramic	#300 (KCl)	This slim electrode φ3mm is suitable for biological or pharmaceutical applications, allowing the measurement for the trace amount sample, such as 0.3ml, in a micro tube.
6251-10C Needle type  9003013600	0-50	0-12	Sleeve	#300 (KCl)	Since its tip is very sharp, this electrode can be directly thrusted into solid samples such as meat, fruits, and animal tissues to measure their pH values.
6261-10C Flat type  9003013700	0-50	0-12	Sleeve	#300 (KCl)	Since the pH response membrane and the liquid junction are located on the same surface, pH values on the surfaces of skin, leather, paper, and leaves can be measured.

Metallic Electrodes (For ORP Measurement)

Type	Applicable temperature range(°C)	Electrode material	Applicable reference electrode	Internal solution	Feature
6861-10C Platinum combination type  9003013100	0-60	Pt	——	#300 (KCl)	A combination electrode for measuring oxidation reduction potentials (ORP), which incorporates a metallic electrode and a reference electrode into a single unit. It is the most standard electrode.
3060-10C Platinum single polarity type  9003013300	0-60	Pt	2060A 2660A 2565A	——	Used for an indication electrode in measurements of oxidation-reduction potentials.
9300-10D Waterproof platinum combination type  9096000400	0-60	Pt	——	#300 (KCl)	Waterpoof. Uses a flat type metallic electrode, which allows a small amount of sample to be measured.

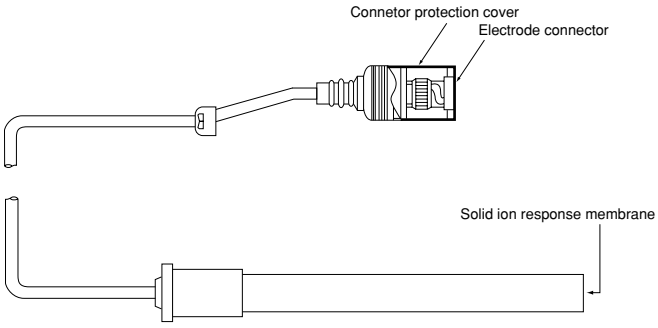
ISFET Electrode

Type	Applicable temperature range(°C)	pH range	Liquid junction material	Feature
0030-10D Needle type  9096002100	0-60	0-14	ABS, epoxy, polyethylene, Ta_2O_5, platinum	Ideal for food processing and other applications where glass is prohibited, and as well as for penetration measurements in soil.

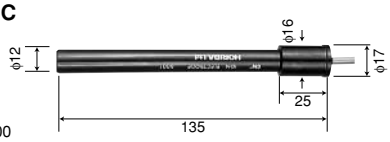
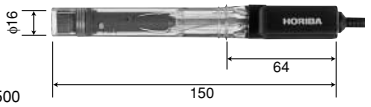
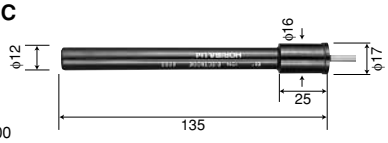
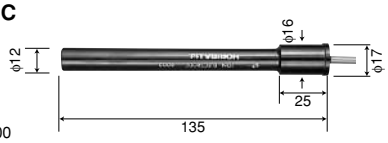
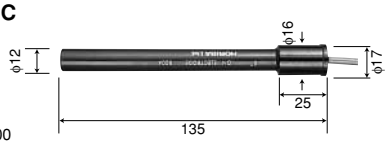
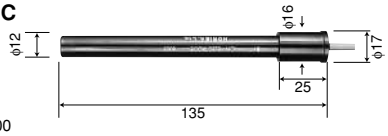
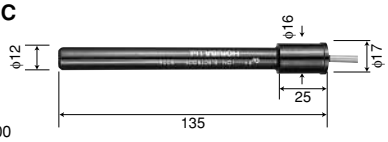
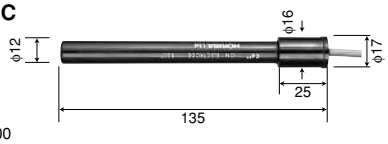
Type	Remarks
0131 ISFET cartridge 9096002200	Replacement for ISFET electrode

ION ELECTRODES See P5 for information about reference electrodes.

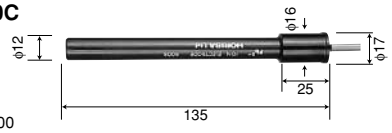
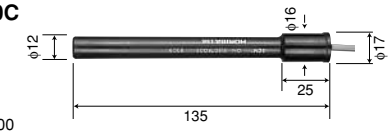
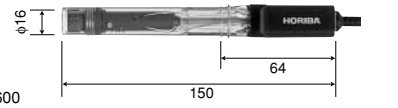
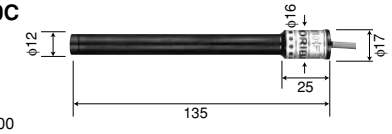
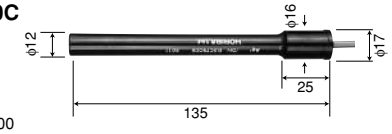
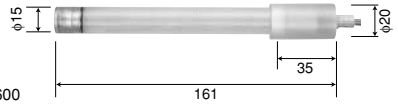
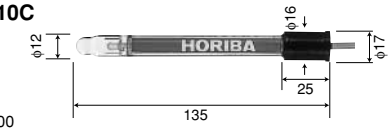
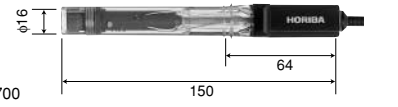
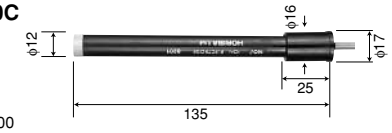
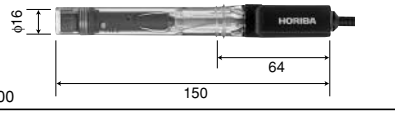
Ion-selective electrodes are responsive to concentration of particular ions in the test liquid and are variable-potential electrodes. They are used in conjunction with reference electrodes to measure the concentration of particular ions. HORIBAs years of experience and know-how in this field are behind the wide range of ion electrodes we offer.
When measurements are made using an ion meter, by calibrating with various standard solutions, direct readings of the concentration of the ion in question can be taken. Note that since volume-detection level changes with temperature, measurements must be taken at a fixed temperture.

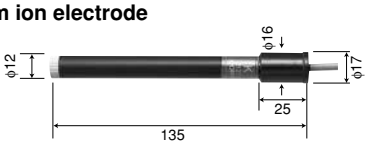
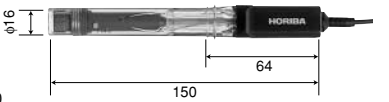
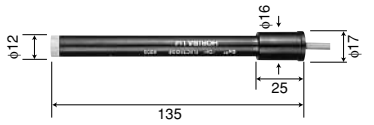


①: Measuring range ②: pH range ③: Applicable temperature range ④: Response time (90%)

Type	Measuring range	Applicable reference electrode	Selection coefficient
Cyanide ion electrode 8001-10C  9003015500	①: 0.03 to 2,600 mg/L CN^- (10^{-6} to 10^{-1} mol/L CN^-) ②: 2.6 mg/L (10^{-4} mol/L) CN^- pH 12 to 13 ③: 0 to 50°C ④: Within 10 seconds	2060A, 2565A	S^{2-}, MnO_4^- = Not acceptable I^- = 0.1 $S_2O_3^{2-}$ = 1
Chloride ion electrode (combination) 6560-10C  9003014500	①: 0.35 to 35,000 mg/L Cl^- (10^{-5} to 1 mol/L Cl^-) ②: 350 mg/L (10^{-2} mol/L) Cl^- pH 3 to 11 ③: 0 to 50°C ④: Within 5 seconds	———	$S_2O_3^{2-}$, 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
Chloride ion electrode 8002-10C  9003015600	①: 0.35 to 35,000 mg/L Cl^- (10^{-5} to 1 mol/L Cl^-) ②: 350 mg/L (10^{-2} mol/L) Cl^- pH 3 to 11 ③: 0 to 50°C ④: Within 5 seconds	2565A	$S_2O_3^{2-}$, 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
Sulfide ion electrode 8003-10C  9003015700	①: 0.32 to 32,000 mg/L S^{2-} (10^{-5} to 1 mol/L S^{2-}) ②: 3.2 mg/L (10^{-4} mol/L) S^{2-} pH 12 to 14 ③: 0 to 50°C ④: Within 10 seconds	2060A, 2565A	CN^- = Not acceptable $S_2O_3^{2-}$= 10 I^-, F^-, Cl^-, PO_4^{2-}, SO_4^{2-}= 1,000
Iodide ion electrode 8004-10C  9003015800	①: 0.0127 to 12,700 mg/L I^- (10^{-7} to 10^{-1} mol/L I^-) ②: 1,270 mg/L (10^{-2} mol/L) I^- pH 2 to 11 ③: 0 to 50°C ④: Within 10 seconds	2060A, 2565A	MnO_4^-, S^{2-},CN^- = Not acceptable $S_2O_3^{2-}$= 10 NO_3^- = 100 Br^-= 1,000
Bromide ion electrode 8005-10C  9003015900	①: 0.8 to 80,000 mg/L Br^- (10^{-5} to 1 mol/L Br^-) ②: 800 mg/L (10^{-2} mol/L) Br^- pH 1.5 to 11.5 ③: 0 to 50°C ④: Within 5 seconds	2565A	$S_2O_3^{2-}$, I^-, S^{2-}, CN^- = Not acceptable MnO_4^- = 1 Cl^-, PO_4^{2-}= 100 F^-, NO_3^-, SO_4^{2-}= 1,000
Copper ion electrode 8006-10C  9003016000	①: 0.06 to 6,350 mg/L Cu^{2+} (10^{-6} to 10^{-1} mol/L Cu^{2+}) ②: 6.35 mg/L (10^{-4} mol/L) Cu^{2+} pH 2 to 6 ③: 0 to 50°C ④: Within 10 seconds	2565A	Fe^{2+} = 0.1 Ni^{2+}, Na^+ = 1,000
Cadmium ion electrode 8007-10C  9003016100	①: 0.1 to 11,240 mg/L Cd^{2+} (10^{-6} to 10^{-1} mol/L Cd^{2+}) ②: 11 mg/L (10^{-4} mol/L)Cd^{2+} pH 3 to 8 ③: 0 to 50°C ④: Within 10 seconds	2060A, 2565A	Cu^{2+}, Hg^{2+}, Ag^+ = Not acceptable Pb^{2+}= 0.1 Fe^{3+}= 1 Cr^{3+}, Fe^{2+}= 100 Ni^{2+} = 1,000

ION ELECTRODES

Type	Measuring range	Applicable reference electrode	Selection coefficient
Lead ion electrode **8008-10C**  9003016200	①: 2 to 20,000 mg/L Pb^{2+} (10^{-5} to 10^{-1} mol/L Pb^{2+}) ②: 20 mg/L (10^{-4} mol/L)Pb^{2+} pH 4.5 to 6.5 ③: 0 to 50°C ④: Within 10 seconds	2565A	Cu^{2+}, Hg^{2+}, S^{2-}, Ag^{+} = Not acceptable Fe^{3+} = 0.01 Cr^{3+} = 1 Cd^{2+} = 10 Ni^{2+}, Mg^{2+}, Zn^{2+} = 100 NH_4^{+}, K^{+} = 1,000
Thiocyanate ion electrode **8009-10C**  9003016300	①: 0.6 to 5,800 mg/L SCN^{-} (10^{-5} to 10^{-1} mol/L SCN^{-}) ②: 5.8 mg/L (10^{-4} mol/L)SCN^{-} pH 2 to 12 ③: 0 to 50°C ④: Within 30 seconds	2565A	CN^{-}, I^{-}, S^{2-}, $S_2O_3^{2-}$ = Not acceptable Br^{-} = 1 Cl^{-} = 100
Fluoride ion electrode (combination) **6561-10C**  9003014600	①: 0.02 to 19,000 mg/L F^{-} (10^{-6} to 1 mol/L F^{-}) ②: 20 mg/L (10^{-3} mol/L) F^{-} pH 4 to 10 ③: 0 to 50°C ④: Within 5 seconds	———	Possible interference when multiply-charged ion (ex. Al^{3+}, Fe^{3+}) coexisted and foamed the complex.
Fluoride ion electrode **8010-10C**  9003016400	①: 0.02 to 19,000 mg/L F^{-} (10^{-6} to 1 mol/L F^{-}) ②: 20 mg/L (10^{-3} mol/L) F^{-} pH 4 to 10 ③: 0 to 50°C ④: Within 5 seconds ✻1	2060A, 2565A	Possible interference when multiply-charged ion (ex. Al^{3+}, Fe^{3+}) coexisted and foamed the complex.
Silver ion electrode **8011-10C**  9003016500	①: 0.01 to 110,000 mg/L Ag^{+} (10^{-7} to 1 mol/L Ag^{+}) ②: 1 mg/L (10^{-5} mol/L) Ag^{+} pH 2 to 10 ③: 0 to 50°C ④: Within 10 seconds	2565A	Hg^{2+} = Not acceptable Cu^{2+}, Cd^{2+}, Pb^{2+}, Zn^{2+}, Mg^{2+}, Ca^{2+}, Na^{2+}, K^{+} = over 1,000
Ammonia ion electrode (combination) **5002A-10C**  9003016600	①: 0.1 to 1,000 mg/L NH_3 ②: Adjust more than pH 12 ③: 0 to 50°C ④: Within 30 seconds when substituting low concentration to high concentration Within 2 minutes when substituting high concentration to low concentration	———	———
Sodium ion electrode **1512A-10C**  9003016700	①: 2.3 to 230,000 mg/L Na^{+} (10^{-4} to 10 mol/L Na^{+}) ②: 230 mg/L (10^{-2} mol/L) Na^{+} Over pH 4.5 ③: 0 to 60°C ④: Within 30 seconds ✻1	2565A	K^{+}, Li^{+} = 10 NH_4^{+}= 20 Ca^{2+} = 500
Nitrate ion electrode (combination) **6581-10C**  9003014700	①: 0.62 to 62,000 mg/L NO_3^{-} (10^{-5} to 1 mol/L NO_3^{-}) ②: 62 mg/L (10^{-3} mol/L) NO_3^{-} pH 3 to 7 ③: 0 to 50°C ④: Within 15 seconds ✻2	———	ClO_4^{-} = 0.03 I^{-} = 0.1 Br^{-} = 2 NO_2^{-} = 3 Cl^{-} = 40 F^{-} = 200 CH_3COO^{-} = 300 SO_4^{2-} = over 1,000
Nitrate ion electrode **8201-10C**  9003016800	①: 0.62 to 62,000 mg/L NO_3^{-} (10^{-5} to 1 mol/L NO_3^{-}) ②: 62 mg/L (10^{-3} mol/L) NO_3^{-} pH 3 to 7 ③: 0 to 50°C ④: Within 15 seconds ✻2	2565A	ClO_4^{-} = 0.03 I^{-} = 0.1 Br^{-} = 2 NO_2^{-} = 3 Cl^{-} = 40 F^{-} = 200 CH_3COO^{-} = 300 SO_4^{2-} = over 1,000
Potassium ion electrode (combination) **6582-10C**  9003014800	①: 0.04 to 39,000 mg/L K^{+} (10^{-6} to 1 mol/L K^{+}) ②: 3.9 mg/L (10^{-4} mol/L) K^{+} pH 5 to 11 ③: 0 to 50°C ④: Within 15 seconds ✻3	———	Rb^{+} = 0.4 Cs^{+} = 3 NH_4^{+} = 70 Li^{+}, Na^{+}, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+} = over 1,000

Type	Measuring range	Applicable reference electrode	Selection coefficient
Potassium ion electrode **8202-10C**  9003016900	①: 0.04 to 39,000 mg/L K^+ (10^{-6} to 1 mol/L K^+) ②: 3.9 mg/L (10^{-4} mol/L) K^+ pH 5 to 11 ③: 0 to 50°C ④: Within 15 seconds ✻3	2565A	Rb^+ = 0.4 Cs^+ = 3 NH_4^+ = 70 Li^+, Na^+, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+} = over 1,000
Calcium ion electrode (combination) **6583-10C**  9003014900	①: 0.4 to 40,080 mg/L Ca^{2+} (10^{-5} to 1 mol/L Ca^{2+}) ②: 4.0 mg/L (10^{-4} mol/L) Ca^{2+} pH 5 to 11 ③: 0 to 50°C ④: Within 15 seconds ✻4	———	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
Calcium ion electrode **8203-10C**  9003017000	①: 0.4 to 40,080 mg/L Ca^{2+} (10^{-5} to 1 mol/L Ca^{2+}) ②: 4.0 mg/L (10^{-4} mol/L) Ca^{2+} pH 5 to 11 ③: 0 to 50°C ④: Within 15 seconds ✻4	2060A, 2565A	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

•The response time is the time which is required to reach 90% response when the ion concentration is gradually changed from 10^{-4} mol/L to 10^{-2} mol/L with the solution stirred.

Exception:

✻1: 90% responce when ion concentration is changed to 10^{-6} mol/L ~ 10^{-2} mol/L
✻2: 95% responce when ion concentration is changed to 10^{-3} mol/L ~ 10^{-1} mol/L
✻3: 95% responce when ion concentration is changed to 10^{-4} mol/L ~ 10^{-2} mol/L
✻4: 95% responce when ion concentration is changed to 10^{-4} mol/L ~ 10^{-1} mol/L

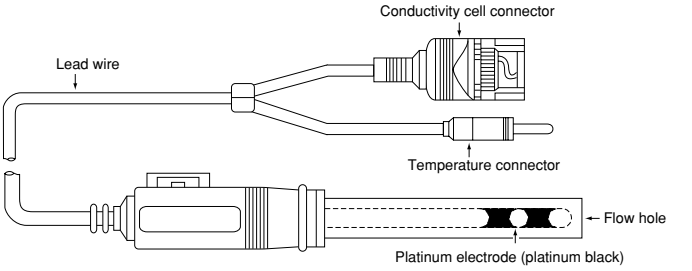
•The selection coefficient is a ratio of the limit concentration of coexisting ions (mol/L) to the ion concentration to be measured (mol/L); The value of 1000 means that the coexisting ions can be permitted up to 1000 times the ion measured and "not acceptable" means that chemical change occurs in the solid response membrane.

Cartridges for Ion Sensor Replacement

Type		Feature
7660 9003015000	**Chloride ion cartridge**	Replacement electrode tip for combination ion electrodes
7661 9003015100	**Fluoride ion cartridge**	Replacement electrode tip for combination or single electrodes
7681 9003015200	**Nitrate ion cartridge**	
7682 9003015300	**Potassium ion cartridge**	
7683 9003015400	**Calcium ion cartridge**	
Membrane(NH_3) 9012001000		Membrane set (6 pcs) for NH_3 electrodes
370 9012000900	**Internal solution for NH_3 electrodes**	Contains 250 mL
O-ring 9012001100		Neoprene ring set (10 pcs) for NH_3 electrodes (JIS B 2401-P7)

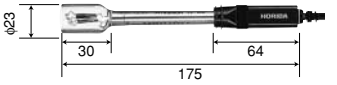
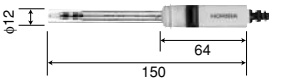
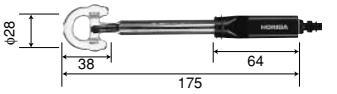
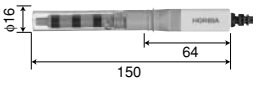
CONDUCTIVITY ELECTRODE CELLS

Conductivity is calculated as the inverse of the resistance R(in ohms) of the sample solution as S/m = V/m between two parallel electrode plates with a surface area of $1m^2$ separated by a distance of 1m. Since conductivity changes depending on temperature of the sample solution, values are shown at the standard temperature equivalent of 25°C. HORIBA's conductivity electrodes also have a built-in thermistor for temperature measurement, making them perfect for temperature measurement and for obtaining values equivalent to those at the standard 25°C, when used in conjunction with the conductivity meter. Since the conductivity gives valuable information about the ion composition of the sample solution, it is expect that these useful electrodes will continue to find a wide range of applications in the future.



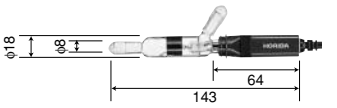
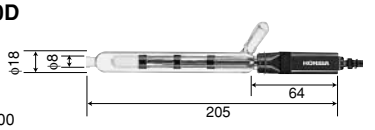
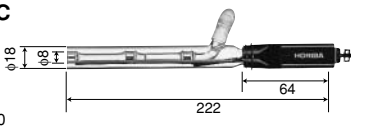
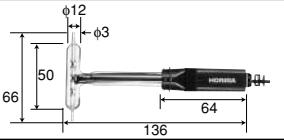
Conductivity Cells (Submersible Type)

(*1) The cell constants are within ±10% of the values shown.

Type	Cell constant (cm^{-1})	Measuring range	Sample amount required (mL)	Temperature compensation element	Applicable temperature range(°C)	Remarks
3551-10D  9056000800	0.1	0.1 µS/cm to 10mS/cm	50	Incorporated	0-60	For low conductivity water (deionized water or other)
3552-10D  9056000900	1	1 µS/cm to 100 mS/cm	15	Incorporated	0-100	For general purposes (provided as a standard accessory for the DS-10 series)
3553-10D  9056001000	10	10 µS/cm to 1 S/cm	50	Incorporated	0-60	For high conductivity water
9382-10D  9096000300	1	1 µS/cm to 100 mS/cm	20-30	Incorporated	0-80	Waterproof. For general purposes.

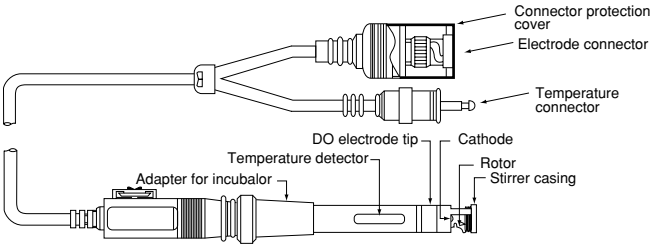
Conductivity Cells (Flow Type)

(*1) The cell constants are within ±10% of the values shown.

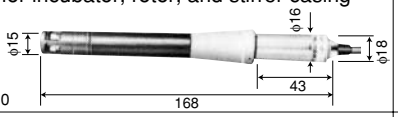
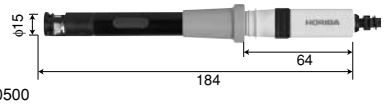
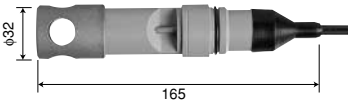
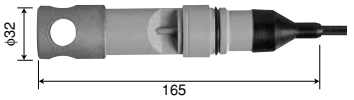
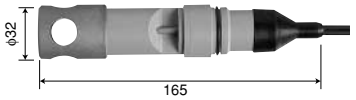
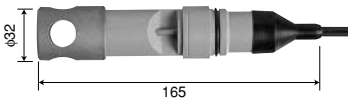
Type	Cell constant (cm^{-1})	Measuring range	Sample amount required (mL)	Temperature compensation element	Applicable temperature range(°C)	Remarks
3561-10D  9056001100	0.1	0.1 µS/cm to 10 mS/cm	10	Incorporated	0-60	For low conductivity water (pure water or other)
3562-10D  9056001200	1	1 µS/cm to 100 mS/cm	16	Incorporated	0-60	For general purposes
3573-10C  9056001300	10	10 µS/cm to 1 S/cm	4	Not provided	0-60	For high conductivity water
3574-10C  9056001400	10	10 µS/cm to 100 mS/cm	0.25	Not provided	0-80	For column chromatography using a very small amount of sample

DO ELECTRODES & DO ELECTRODE TIPS

DO Electrodes detect oxygen that diffuses through the oxygen-permeable membrane to determine the amount of dissolved oxygen. The method for measuring dissolved oxygen based on this principle is referred to as the diaphragm electrode method. DO measurement can be carried out much more simply than chemical analysis, which requires complex preparatory procedures to eliminate the effects of deoxidized and oxidized substances. HORIBA's DO electrodes use innovative disposable probe tips. This eliminates the troublesome replacement of membranes and fluid that plagued conventional methods. Each disposable tip comes with its own rotor, so it is not necessary to prepare a separate rotor for each sample. In addition, the electrode has an adaptor for easy use with an incubator in BOD measurement.

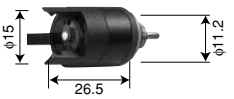


DO Electrodes

Type	Applicable temperature range(°C)	Measuring range	Response time	Feature
5410-10C (For DO-8F) Adapter for incubator, rotor, and stirrer casing  9074000100	0-45	DO: 0-19.99mg/L O_2: 0-50% Temperature: 0-45°C (When used with dissolved oxygen meter DO-8F)	20 seconds (90% response time at constant temperature)	A DO electrode exclusively for DO-8F. This is a disposable chip type electrode (7541), which uses a detachable stirrer and a precision platinum resistance bulb for its temperature measuring element.
9520-10D For laboratories  9096000500	0-45	DO: 0-19.99mg/L Temperature: 0-40°C (When used with dissolved D-25)	20 seconds (90% response time at constant temperature)	Waterproof. Uses a thermistor with a disposable ship-type electrode 7541 as the thermometric element.
9551-20D For field immersible type (2 m cable)  9096002300	0-40	DO: 0-19.99mg/L Temperature: 0-40°C (When used with dissolved D-55, OM-51)	30 seconds (90% response time at constant temperature)	Waterproof. Uses a thermistor with a disposable ship-type electrode 5401 as the thermometric element.
9551-100D For field immersible type (10 m cable)  9096002400	0-40	DO: 0-19.99mg/L Temperature: 0-40°C (When used with dissolved D-55, OM-51)	30 seconds (90% response time at constant temperature)	Waterproof. Uses a thermistor with a disposable ship-type electrode 5401 as the thermometric element.
9550-20D For field immersible type (2 m cable)  9096000600	0-40	DO: 0-19.99mg/L Temperature: 0-40°C (When used with dissolved D-25, OM-10 series)	30 seconds (90% response time at constant temperature)	Waterproof. Uses a thermistor with a disposable ship-type electrode 5401 as the thermometric element.
9550-100D For field immersible type (10 m cable)  9096000700	0-40	DO: 0-19.99mg/L Temperature: 0-40°C (When used with dissolved D-25, OM-10 series)	30 seconds (90% response time at constant temperature)	Waterproof. Uses a thermistor with a disposable ship-type electrode 5401 as the thermometric element.

DO Electrode Tips

•A commercially available stirrer should be used.

Type	Remarks
5401  9033010000	A DO electrode chip for replacement. (For the above-mentioned 9551-20D, 9551-100D, 9550-20D, 9550-100D, 5450-20D and 5450-100D)
7541  9074000200	A DO electrode chip for replacement. (For the above-mentioned 5410-10C, 9520-10D)

ACCESSORIES

For Electrode

Sensor holder

9003017100

For attaching an ion electrode or the like with a round electrode cap to the stand arm.

9621 Electrode protector tube (5 units/pack)

9003012000

Protects the tip of the 9621-10D electrode. Because the electrode is already encased in a plastic sheath, just slip this protective tube over the tip and your pH meter is ready to for work in the field.

Electrode protector cap (5 units/pack)

9003012100

Protects electrodes during storage or transportation.

For 50, 20, 10 Series

Digital simulator X-51

pH, mV, ION, DO simulator (for periodic inspection of the electrode)

Digital simulator X-52

Conductivity simulator (for periodic inspection of the electrode)

For 50 Series (D-50, F-50, DS-50, ES-50, OM-50 Series)

Printer (for GLP/GMP compliance)

9096003500

CBM-910-24RJ100-A

There are printers for 100V, 120V and 230V power supplies. Please consult our sales staff when ordering 120V and 230V models.

The model numbers for 120V and 230V are listed below.
120V: CBM-910-24RJ-120-A
230V: CBM-910-24RJ-230-A

Printer cable

9096003800

Cable to connect a plain paper printer and a 50-series electrode

Printer paper

9096003900

20 rolls
(for 50-series electrode plain paper printers)

Ink ribbon

9096004000

5 pcs/set

AC adapter

9096003100

AC adaptor cable is also recommended with the purchase of a new AC adaptor.

AC adapter cable

9096003200

There are AC adapter cables for 100V, 120V and 230V power supplies. Please consult our sales staff when ordering 120V and 230V models.

The part number for 120V and 230V cables are listed below.
120V: KPT419C (LTCE-2FX0.75 70-C) KS15F
230V: KP10 (SPT-2#18:2P60 DEG) KS15C

Serial cable

9096004800

Cable to connect an electrode and a personal computer (serial, 9 pins)

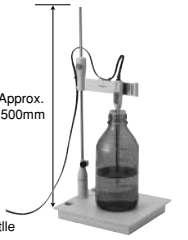
Electrode stands

Electrode stand for F-50/DS-50

9096002600

For F-50, DS-50

FA-50S Electrode stand (long type)



*electrode and botlle are not included

DP-50S Electrode stand

9096002700

For D-50, ES-50, OM-50

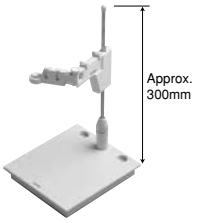
*meter and electrode are not included

Arm, for electrode stand

9096002800

For "DP-50S", "FA-50S" and "Electrode stand for F-50/DS-50"

FA-20S Electrode stand (adjustable type)



Arm, for electrode stand (adjustable type)

9003017700

Accessories

Connector cover

9096002900

For D-50, ES-50, OM-50

Strap

9096005200

For D-50, ES-50, OM-50

Soft case

9096005100

For D-50, ES-50, OM-50

Compact flash memory card

9096003000

For F-53, 54, 55

Analog (alarm) output cable

9096004900

For F-52, 53, 54, 55 and DS-52

Maintenance Parts for Earlier Models

Output cord

9078000200

Connect a recorder to make easy work of data analysis after measurement. Applicable models: D-20, 10, OM-10 and D-10 series

AC-10 AC adapter

Applicable models: D-20, F-20, ES-10, OM-10, D-10 and DS-10 series

Printer paper (10 rolls)

9079000400

Applicable models: F-15, 16, DS-15, and F-20 series

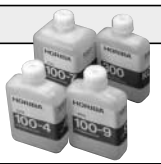
Dual electrode holder

9096001100

Applicable model: D-20 series
Adaptor for fitting two electrodes

STANDARD SOLUTIONS, INTERNAL SOLUTION for REFERENCE ELECTRODE & CLEANING SOLUTIONS

pH Standard Solution SET (accuracy: ±0.02 pH)



Type		Name	pH value(25°C)	Volume(mL)	Remarks
101-S	9003003500	Phosphate standard equimolal solution	6.86	500	Use undiluted. The set contains standard and internal solutions, as shown.
		Phthalate standard solution	4.01	250	
		Borate standard solution	9.18	250	
		Internal Solution for Reference Electrode (300)	——	250	

pH Standard Solution (accuracy: ±0.02 pH)

Type		Name	pH value(25°C)	Volume(mL)	Remarks
100-2	9003001500	Oxalate standard solution	1.68	500	The original solution should be used as it is. For general use as standard solution sets, 101-S (100-4.7.9 and #310 internal solution) are also available.
100-4	9003001600	Phthalate standard solution	4.01	500	
100-7	9003001700	Phosphate standard equimolal solution	6.86	500	
100-9	9003001800	Borate standard solution	9.18	500	
100-10	9003001900	Carbonate standard solution	10.02	500	

Condensed pH Standard Solution (accuracy: ±0.02 pH)

Type		Name	pH value(25°C)	Volume(mL)	Remarks
110-4	9003002300	Condensed phthalate standard solution	4.01	500	Should be diluted when used. The pH values shown are those obtained when the original solution is diluted with pure water at a volume ratio of 1 to 4. For general use.
110-7	9003002400	Condensed phosphate standard equimolal solution	6.86	500	
110-10	9003002500	Condensed carbonate standard solution	10.02	500	

Standard Solution for Accurate Measurements (N.B.S., accuracy: ±0.003 pH)

Type		Name	pH value		Volume(mL)	Remarks
			25°C	37°C		
100-B4	9003002000	Phthalate standard solution	4.008	4.030	500	The original solution should be used as it is. This standard solution is for very accurate measurements based on N.B.S. The pH values shown do not necessarily match with those shown in JIS.
100-B7	9003002100	Phosphate standard solution	7.413	7.383	500	
100-B9	9003002200	Borate standard solution	9.180	9.082	500	

Powder for pH Standard Solution (accuracy: ±0.05 pH)

Type		Name	pH value(25°C)	Remarks
150-4	9003002700	Powder for phthalate standard solution	4.01	The pH value shown are those obtained when one packet is dissolved in 500 ml of pure water. One packet contains powder for 500 mL. For use in field at factories (10 packets per set)
150-7	9003002800	Powder for neutral phosphate standard solution	6.86	
150-9	9003002900	Powder for borate standard solution	9.18	

Powder for ORP Standard Solution (accuracy: ±15 mV)

Type		Name	ORP value(25°C)	Remarks
160-51	9003003100	Powder for ORP standard solution	89 mV (vs, 3.33 mol/L KCl-AgCl)	The ORP values shown are those obtained when one packet is dissolved in 250 mL of pure water. This standard solution should be used immediately after conditioning and can-not be used for 2 hours or more. (10 packets per set)
160-22	9003003000	Powder for ORP standard solution	258 mV (vs, 3.33 mol/L KCl-AgCl)	

Note: The pH standard solution by a reliable manufacturer should be selected because they are used as reference for pH measurements. It is recommended for safety not to use the standard liquid which was allowed to stand for long hours after opening its bottle or which was once used.

Internal Solution for Reference Electrode

Type		Name	Concentration	Volume(mL)	Remarks
300	9003003200	For 6327, 6328, F, M, and D-10 series electrodes	3.33 mol/L KCl	250	The original solution should be used as it is. Powder for internal solution (350) is also available for a large amount of internal solution. (The powder is used by dissolving it in pure water.)
310	9003003300	For H-7 and old type pH meter electrodes	3.33 mol/L KCl (AgCl, saturation in normal temp.)	250	

Powder for Internal Solution for Reference Electrode

Type		Remarks
350	9003003400	500g. Dissolve in 2L of pure water.

Electrode Cleaning Solution

Type		Name	Volume(mL)	Composition	Remarks
220	9096002500	Electrode cleaning solution	50 x 2 pcs	Hydrochloric acid 1% Thiourea 10%	For removing inorganic sample residues from glass electrodes, and for cleaning liquid junctions

ELECTRODES & ACCESSORIES for TWIN/CARDY

Exclusively for TWIN pH Electrode (Combination Electrode)

Type	Measuring range	Sample amount required	Measuring temperature	Liquid junction	Remarks
0113 (For the B-211, B-212, B-213) 9088000500 	pH 2 to 12	Approx. 0.1 mL	5 to 40°C	Porous macromolecule	Glass electrode and reference electrode integrated on a 1mm-thick substrate. Waterproof construction protects the instrument.

Exclusively for TWIN Conductivity Cell

Type	Measuring range	Cell capacity	Temperature compensation element	Measuring temperature	Remarks
0413 (For the B-173) 9088000400 	0 to 19.9mS/cm	Approx. 0.1 mL	Incorporated	5 to 35°C	Ideal for measuring trace samples, such as acid rain.

Exclusively for CARDY Ion Electrode

Type	Measuring range	Sample amount required	Measuring temperature	Liquid junction	Remarks
Sodium ion electrode 0221 (For the C-121 and C-122) 9076003000 	0.1% (w/w) to 10% (w/w) NaCl	Approx. 0.1 mL	5 to 35°C	Porous macromolecule	Flat electrode for sodium ion which is so selective that pH or other ions do not affect it.
Potassium ion electrode 0231 (For the C-131) 9076007200 	39 to 3,900 mg/L	Approx. 0.1 mL	5 to 35°C	Porous macromolecule	Flat electrode for potassium ion.
Nitrate ion electrode 0241 (For the C-141) 9076007600 	62 to 6,200 mg/L	Approx. 0.1 mL	5 to 35°C	Porous macromolecule	Flat electrode for nitric acid ion.

Accessories for TWIN/CARDY

■B-211, B-212
Standard solution set

Y031
9088000600
pH7 14 mL× 6 

Y032
00000000
pH4 14 mL× 6 

■C-121
Standard solution set 

Y022
9076008400
NaCl 0.5% 4 mL× 2
NaCl 5.0% 4 mL× 2
De-ionized water 14 mL× 4

■B-173
Standard solution set 

Y023
9076008500
0.01 mol/LKCl 4 mL× 4
De-ionized water 14 mL× 4

■C-122 Na^+
Standard solution set 

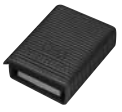
Y024
9076007000
Na^+ 2000 mg/L 4 mL× 2
Na^+ 150 mg/L 4 mL× 2
De-ionized water 14 mL× 4

■C-131 K^+
Standard solution set 

Y025
9076007400
K^+ 2000 mg/L 4 mL× 2
K^+ 150 mg/L 4 mL× 2
De-ionized water 14 mL× 4

■C-141NO_3^-
Standard solution set 

Y026
9076007800
NO_3^- 2000 mg/L 4 mL× 2
NO_3^- 150 mg/L 4 mL× 2
De-ionized water 14 mL× 4

■Soft case
(tiny laboratory) 

Y091
9076008100

■Sampling sheet

Y011A
9076008000
11 mm×6 m×5 rolls 

■B-111, B-112, B-211, B-212
Twin accessories kit

Y092
9088008000 

Earlier models
pH ELECTRODES
METALLIC ELECTRODES
CONDUCTIVITY ELECTRODES
ACCESSORIES

EARLIER MODELS pH ELECTRODES, METALLIC ELECTRODES

3-in-1 Electrodes

Type	Applicable temperature range(°C)	pH range	Liquid junction	Internal solution	Applicable models
6328-10C For accurate measurements 9003010400	0-80	0-14	Ceramic	#300(KCl)	7, 8 Series (Detail: A)
6327-10C For very accurate measurements 9003009900	0-60	0-14	Sleeve	#300(KCl)	7, 8 Series (Detail: A)
6300 Standard type exclusively for L-7LC 9055000100	0-50	0-14	Plastic fiber	#310 (KCl with AgCl)	L-7LC Series

Reference Electrodes

Type	Applicable temperature range(°C)	Internal solution	Liquid junction	Applicable models
2080A-06T Ceramic type standard 9003004400	0-60°C	#310 (KCl with AgCl)	Ceramic	7, 8 Series (Detail: B)

Temperature Compensation Electrodes

Type	Applicable temperature range(°C)	Feature	Applicable models
4143-06T 9003009100	0-100	Temperature compensation electrode	7, 8 Series

Metallic Electrodes (For ORP Measurement)

Type	Applicable temperature range(°C)	Material of electrode trip	Internal solution	Applicable models
6811-06C Platinum combination type 9003009000	0-50	Pt	#310 (KCl with AgCl)	7, 8 Series (Detail: A)
3010-06T Platinum single polarity type 9003007300	0-60	Pt	——	7, 8 Series (Detail: B)
3211-06T Silver single 9003007400	0-60	Ag	——	7, 8 Series (Detail: B)

● Applicable models

A: H-7 Series, M-7EII, F-7LC, M-7II, F-7II, F-7SSII, F-7AD, M-8E, F-8E, M-8L, M-8, M-8S, M-8AD, F-8L, F-8, F-8DP, F-8AT, N-8F, N-7IONII
(use CB-7 with M-7E, M-7, F-7, F-7SS or F-7DE)

B: M-7E, M-7, F-7, F-7SS, F-7DE, M-7EII, F-7LC, M-7II, F-7II, F-7SSII, F-7AD, M-8L, M-8, M-8S, M-8AD, F-8L, F-8, F-8DP, F-8AT, N-8F, N-7IONII
(use CB-7 with H-7 Series, M-8E or F-8E)

EARLIER MODELS CONDUCTIVITY ELECTRODES

Conductivity Cell (Submersible Type)

Type	Cell constant (*1) (cm^{-1})	Measuring range	Sample amount required	Temperature compensation element	Applicable temperature range
3451-06C For low conductivity water 9056000100	0.1	0.1 µS/cm to 10 mS/cm	50 mL	Incorporated	0-50°C
3452-06C For general-purpose 9056000200	1	1 µS/cm to 100 mS/cm	30 mL	Incorporated	0-50°C
3453-06C For high conductivity water 9056000300	10	10 µS/cm to 1 S/cm	100 mL	Incorporated	0-50°C

(*1) The cell constants are within ±10% of the values shown.

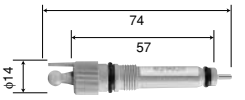
EARLIER MODELS ACCESSORIES

Type	Remarks
Electrode relay box (for single type electrode) **CB-7** 9003010400	Used when a 3-in-1 type electrode is connected to the old type M-7, M-7E, F-7, F-7ss, M-8E, or F-8E pH meter.
Electrode guard L (5 pcs/set) 9044001200	Protects electrode end. For 6326-06C, 6327-10C, 6328-10C, and 6811-06C.
Electrode guard S (5 pcs/set) 9044001100	Protects electrode end. For 6326-06C, 6327-10C, 6328-10C, and 6811-06C.
Printer paper 9063000300	For M-8AD, F-8DP, F-8AT
BNC/G Ion electrode connector 9003017800	The BNC/G conversion adapter enable the BNC connecter electrode to be connected to G connecter type meter.
pH Checker X-5D 9003017800	In addition to generating an electromotive force equivalento to the glass pH electrode for pH meter check, it contains a potentiometer for generating millivolts to check the ORP meter. It is ideal as a portable inspection instrument where many pH or ORP meters are used on a day-to-day basis in factories and laboratories.

ACCESSORIES for U-10, U-20XD/W-20XD SERIES & INTERNAL SOLUTION for REFERENCE ELECTRODE

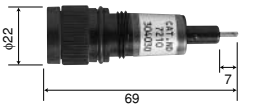
U-10 Electrode Tips

pH Electrode Tip
7112



9037004800

Reference Electrode Tip
7210

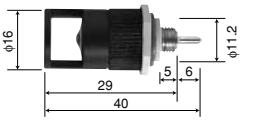


9037005000

Reference electrode internal solution 330
9037005200 3.3 mol/L KCL Gel type 250 mL

Liquid junction
9037005100 For 7210 2 units/set

Do Tip
7542



9037004900

Calibration beaker
9037005300

U-20XD/W-20XD Series Sensors

pH sensor 6230
for U-21/22/23
9037005600

Dissolved oxygen sensor 5460
for U-21/22/23
9037005800

Chloride ion sensor ✳ 6522
for U-23
9037006000

Fluoride ion sensor ✳ 6530
for U-23
9037006300

Ammonia sensor 5012
for U-23
9037006200

pH/ORP sensor 6280
for U-22/23
9037005700

Nitrate ion sensor ✳ 6531
for U-23
9037005900

Calcium ion sensor ✳ 6533
for U-23
9037006100

Potassium ion sensor ✳ 6532
for U-23
9037006400

✳ Ion selective electridge cartridge included.

#5460 membrane replace kit (50 times)
9037007400

#5012 membrane replace kit
9037007000

Internal Solution for Reference Electrode

300	**301**	**302**	**303**
9003003200	9037006700	9037006600	9037006900
Reference electrode internal solution for nitrate ion (50mL)	Reference electrode internal solution for chloride (50mL)	Reference electrode internal solution for calcium/fluoride (250 mL)	Reference internal solution for potassium (50 mL)
370	**Calibration beaker**		
9012000900	9037007300		
Reference internal solution for ammonia (250 mL)	U-20 For automatic calibration		

pH METER F-50 Series navi

- Color display and navigation function for enhanced user-friendliness.
- Enhanced data reliability with validation feature.(GLP/GMP compliance)
- Benchtop multi-parameter meter allows measurement of up to 4 parameters.
- Electronic record, audit trail and electronic signatures are security function features. (FDA 21CFR Part11 compliance)

pH
ORP
ION
COND
RESI
SALT

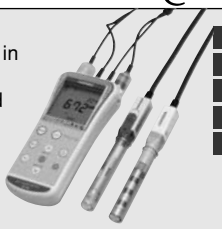
CONDUCTIVITY METER DS-50 Series navi

- Color display and navigation function for enhanced user-friendliness.
- Electronic record, audit trail and electronic signatures are security function features. (FDA 21CFR Part11 compliance)
- Automatic data-logging function.
- Self diagnostic function assures reliable measurement.

COND
RESI
SALT

Portable pH METER D-50 Series navi

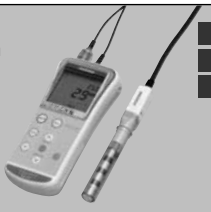
- Revolutionary waterproof meter and electrodes enhance care-free operation in the lab or field.
- Quick connection to PC allows easy and fast data evaluation.
- Portable multi-parameter meter allows measurement of up to 4 parameters.
- Automatic data-logging function.
- Self diagnostic function assures reliable measurement.



pH
ORP
ION
COND
DO

Portable CONDUCTIVITY METER ES-51 navi

- Revolutionary waterproof meter and electrodes enhance care-free operation in the lab or field.
- Quick connection to PC allows easy and fast data evaluation.
- Automatic data-logging function.
- Self diagnostic function assures reliable measurement.



COND
RESI
SALT

Compact pH METER Twin pH B-211/212

- Immersion, scoop, and flat measurement
- Waterproof construction protects the instrument
- Automatic calibration

pH

Cardy Series
Compact SALT METER C-121
Compact ION METERS C-122(Na^+)/C-131(K^+)/C-141(NO_3^-)

Compact CONDUCTIVITY METER Twin COND B-173

- Two measurement methods: drop the sample on the sensor or immerse the sensor in the sample
- Waterproof flat sensor
- Auto-hold and to-calibration functions

COND

Portable DO METER OM-51 navi

- Revolutionary waterproof meter and electrodes enhance care-free operation in the lab or field.
- Quick connection to PC allows easy and fast data evaluation.
- Automatic data-logging function.
- Self diagnostic function assures reliable measurement.

DO
Oxygen
Saturation Oxygen

Portable Water Quality Monitoring System U-20XD Series/W-20XD Series

- U-20XD series applications: Oceans and seas, City sewage water, Lakes and marshes, Dams, Wells and ground water, Factory drainage, Farm water, and Nurseries.
- Systems enable GPS and numerous other data processing mechanisms.
- Up to one month data logging. (With measurements every 15 minutes)
- Measurement at depths as low as 100 meters with its superior durability and high pressure resistance.

pH
DO
COND
SALT
TDS
TEMP
TURB
DEPTH
ORP
ION

Horiba continues contributing to the preservation of the global environment through analysis and measuring technology.

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

http://www.horiba.com e-mail: info@horiba.co.jp

●HORIBA, Ltd.
Head Office
Miyanohigashi, Kisshoin
Minami-ku, Kyoto, Japan
Phone: 81 (75) 313-8123
Fax: 81 (75) 321-5725

Tokyo Sales Office
1-7-8 Higashi-Kanda
Chiyoda-ku, Tokyo, Japan
Phone: 81 (3) 3861-8231
Fax: 81 (3) 3861-8259

TAIWAN Representative Office
3F, NO.18 Lane 676, Chung
Hua Rd, Chupei City,
Hsinchu Hsien, 302,Taiwan
Phone: 886 (3) 656-1012
Fax: 886 (3) 656-8231

●HORIBA TRADING (SHANGHAI) CO., Ltd.
Shanghai Office
Room 1701, United Plaza,
1468 Nanjing Rd. West,
Shanghai, 200040, China
Phone: 21-6289-6060
Fax: 21-6289-5553

Beijing Office
Room 1801, Capital Tower,
Beijing, Tower 1 No.6Jia,
Jianguomenwai Ave.,
Chaoyang District, Beijing,
100022 China
Phone: 10-8567-9966
Fax: 10-8567-9066

●HORIBA KOREA Ltd.
112-6 Sogong-Dong
Choong-ku, Seoul, Korea
Phone: 82 (2) 753-7911
Fax: 82 (2) 756-4972

●HORIBA INSTRUMENTS Pte. LTD.
10 Ubi Crescent
#05-11/12, Ubi Techpark
Singapore 408564
Phone: 65 6745-8300
Fax: 65 6745-8155

●HORIBA INSTRUMENTS INCORPORATED
Irvine Facility
17671 Armstrong Avenue
Irvine, CA 92614, U.S.A.
Phone: 1 (949) 250-4811
Fax: 1 (949) 250-0924

Ann Arbor Facility
5900 Hines Drive
Ann Arbor, MI 48108
U.S.A.
Phone: 1 (734) 213-6555
Fax: 1 (734) 213-6525

●HORIBA / STEC INCORPORATED
HORIBA Technology Center
3265 Scott Boulevard
Santa Clara, CA 95054
U.S.A.
Phone: 1 (408) 730-4772
Fax: 1 (408) 730-8975

●HORIBA GmbH
Kaplanstrasse 5
A-3430 Tulln,
Austria
Phone: 43 (2272) 65225
Fax: 43 (2272) 65230

HORIBA CZECHIA
Organizachi slozka Praha
Petrohradska 13
CZ-101 00 Praha 10, Czech Republic
Phone: 420 (2) 717-464-80
Fax: 420 (2) 717-470-64

●HORIBA INSTRUMENTS LIMITED
Kyoto Close
Summerhouse Road
Moulton Park, Northampton
NN3 6FL, U.K.
Phone: 44 (1604) 542500
Fax: 44 (1604) 542699

●HORIBA EUROPE GmbH
Head Office
Hans-Mess-Str.6
D-61440 Oberursel/Ts.
Germany
Phone: 49 (6172) 1396-0
Fax: 49 (6172) 137385

Leichlingen Facility
Julius-kronenberg Strasse
D-42799 Leichlingen
Germany
Phone: 49 (2175) 8978-0
Fax: 49 (2175) 8978-50

HORIBA FRANCE
12, Avenue des Tropiques
91955 LES ULIS
France
Phone: 33 (1) 69-29-96-23
Fax: 33 (1) 69-29-95-77

HORIBA SWEDEN
Sydhamnsvägen 55-57,
SE-151 38 Södertälje,
Sweden
Phone: 46 (8) 550-80701
Fax: 46 (8) 550-80567

HORIBA ITALY
Europalace
Corso Torino 43/45
10043 Orbassano,Torino,Italy
Phone: 39 (011) 9040601
Fax: 39 (011) 9000448

Bulletin:HRE-1111H

Printed in Japan ZN-Y(SK)23