HORIBA
Scientific

LAQUA

pH	ORP	Ion	Conductivity
Resistivity	Total Dissolved Solids		Salinity

Benchtop Water Quality Meters

LAQUA 1000 Series

METERS 2 YEAR WARRANTY

MADE IN JAPAN

www.horiba-laqua.com

LAQUA

Benchtop Water Quality Instruments
LAQUA 1000 Series

Intuitive and easy to use

- Soft-touch operation panel
- Scratch-proof and chemical-resistant glass panel
- Large display – 5.5 inches
- Small footprint – 170(W) x 174(D) x 73(H) mm
- Protection cover included

History of the HORIBA pH Meter

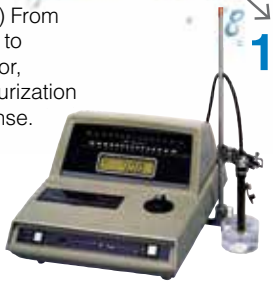
1950

HORIBA introduces Japan's first glass electrode pH meter.

1964

M-5 (benchtop) From a vacuum tube to a semiconductor, allowing miniaturization and fast response.

1977



Model F-7AD (benchtop) Incorporating an industry-first LCD display, the combination of a glass electrode, a reference electrode and a temperature-compensating electrode, makes testing easier.

1980

Model F-80 (benchtop) The world's first instrument capable of measuring pH at 1/1000 resolution, includes an integral computer, with automatic calibration and a self-diagnostic function.

L-7 (integrated) Introduction of a small, hand-held pH meter with the measurement electrode integrated within the main device.

1987

C-1 (card) Development of the world's first flat sensor.

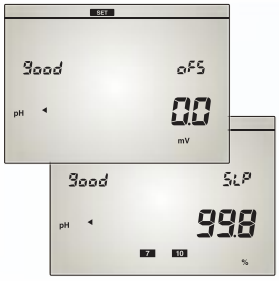
1990

B-111 (Pen type) Pen type sensor allows small samples to be tested.

360° Maneuverability

- Light-weight electrode stand can be integrated with meter or placed separately
- Base of electrode stand can be used as a convenient platform for placing beakers
- Height-adjust stopper controls vertical slide of electrode stand arm

*Taller electrode stand (650 mm) with telescopic shaft also available



Electrode Status

- Electrode condition updated after each calibration and stored information can be viewed anytime
- Alert when electrode deteriorates with usage
- Programmable calibration reminders*

Stability function aids documentation

- Fuzzy logic determines when measured value is stable and freezes the reading on the LCD display

Diagnostic messages

- Meter performs diagnosis at various stages and reports errors
- Up to 10 error codes facilitate troubleshooting-specific issues

Data management

- Internal memory with indexed data
- Automatically log measured values to memory with Auto Log function
- Input sample ID for easier sample referencing*
- Date/time stamping with real-time clock*
- Output to printer, PC or USB memory-stick*
- RS232C or USB* for data output

GLP / GMP

- Important information such as model number, serial number, calibration data, electrode condition and parameters can be printed out*
- Date / time stamping of calibration performed
- Number of calibration points done and value of calibration solutions recorded
- Electrode parameters are captured and printed*

Universal Power Adapter

- Multi-voltage (100-240V)
- 6 types of international standard plugs included

*For selected models

LAQUA

1993

F-20 (benchtop) The world's first wireless pH meter. Large graphical display gives user instructions on screen.

2003

F-50 (desktop) World's first color LCD display. Navigation panel guides operators in how to use the meter as well as resolving errors.

D-50 (portable) Waterproof IP67-rated housing and multi parameter.

2011

LAQUA Benchtop Water Quality Instruments

2012

LAQUAtwin Pocket Ion Meters

2013

LAQUAHandheld Water Quality Instruments

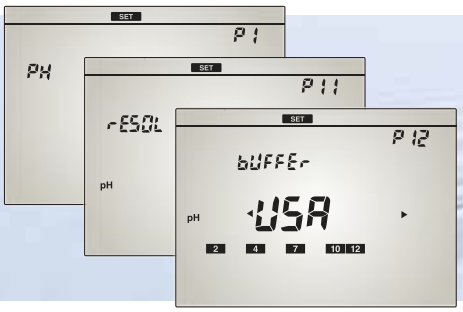
LAQUA

Benchtop Water Quality Instruments

LAQUA 1000 Series

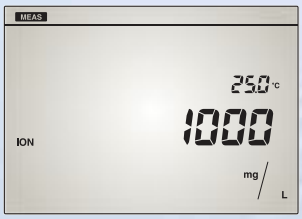
Sophisticated Simplicity

Rugged Reliability

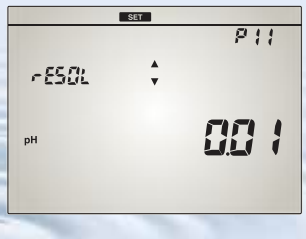


- Fuss-free advanced meter options such as Buffer Selection, Switchable Resolutions, Auto-Stable/Auto-Hold Measurment, Unit Selections, etc.

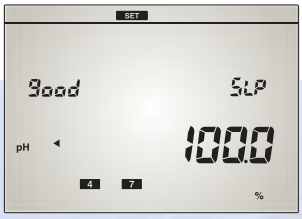
- pH or ORP measurements in all pH meters

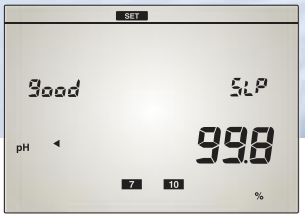


- Ion measurements in pH 1300 with respective Ion Selective Electrode

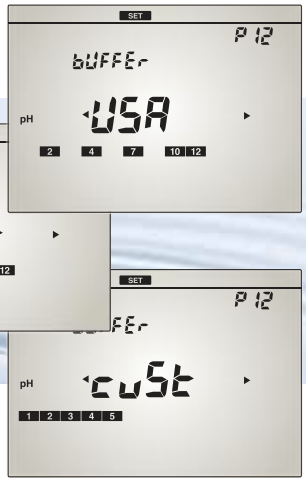


- Switchable pH Resolutions — 0.1, 0.01, 0.001





- Separate acid and alkaline slope calculation



- USA, NIST or Custom buffer options
- Up to 5-point calibration

pH Meters

Model	PH 1100 pH/ORP/Temp (°C)	PH 1200 pH/ORP/Temp (°C)	PH 1300 pH/ORP/Ion/Temp (°C)
pH range	-2.00 to 19.99 pH	-2.000 to 19.999 pH	-2.000 to 19.999 pH
Resolution	0.1 / 0.01 pH	0.1 / 0.01 / 0.001 pH	0.1 / 0.01 / 0.001 pH
Accuracy	±0.01 pH	±0.003 pH	±0.003 pH
Cal points	5	5	5
Buffer options	USA, NIST	USA, NIST, Custom	USA, NIST, Custom
ORP range	±1999.9 mV	±1999.9 mV	±1999.9 mV
Resolution	0.1 mV	0.1 mV	0.1 mV
Accuracy	±0.2 mV	±0.2 mV	±0.2 mV
Ion range	--	--	0.00 µg/l to 9999 g/l
Resolution	--	--	3 significant digits
Accuracy	--	--	±0.8% full scale
Cal points	--	--	Up to 5
Temperature range	-30.0 °C to 130 °C	-30.0 °C to 130 °C	-30.0 °C to 130 °C
Resolution	0.1 °C	0.1 °C	0.1 °C
Accuracy	±0.4 °C	±0.4 °C	±0.4 °C
Cal option	Yes (±5.0 °C range in 0.1 °C increments)	Yes (±5.0 °C range in 0.1 °C increments)	Yes (±5.0 °C range in 0.1 °C increments)
Memory	500	999	999
Data-logging	--	Yes	Yes
Real time clock	--	Yes	Yes
Date/time stamping	--	Yes	Yes
Auto Shut-off	Yes (programmable: 1 to 30 mins)	Yes (programmable: 1 to 30 mins)	Yes (programmable: 1 to 30 mins)
Auto-Hold	Yes	Yes	Yes
Averaging/Stability	Yes, Automatic	Yes, Automatic	Yes, Automatic
Offset display	Yes	Yes	Yes
Slope display	Yes (independent acid and alkaline slopes depending on calibration)	Yes (independent acid and alkaline slopes depending on calibration)	Yes (independent acid and alkaline slopes depending on calibration)
Cal Alarm	Yes (programmable: 1 to 400 days)	Yes (programmable: 1 to 400 days)	Yes (programmable: 1 to 400 days)
Electrode status	On screen display	On screen display	On screen display
Diagnostic messages	Yes	Yes	Yes
Display	Custom LCD	Custom LCD	Custom LCD
Inputs	BNC, phono, DC sockets	BNC, phono, DC sockets	BNC, phono, DC sockets
Outputs	RS232C	USB, RS232C	USB, RS232C
Power requirements	AC adaptor 100 ~ 240 V, 50/60 Hz	AC adaptor 100 ~ 240 V, 50/60 Hz	AC adaptor 100 ~ 240 V, 50/60 Hz
Electrode stand	Integrated	Integrated	Integrated
Weight	500g	500g	500g
Dimensions	170 (L) x 174 (D) x 73 (H) mm	170 (L) x 174 (D) x 73 (H) mm	170 (L) x 174 (D) x 73 (H) mm

Ordering information:

Kit*	**PH1100-S** (3999960176) • PH1100 meter • electrode stand • power adaptor • pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea) • 9625-10D - refillable, plastic-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack	**PH1200-S** (3999960177) • PH1200 meter • electrode stand • power adaptor • pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea) • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack	**PH1300-S** (3999960178) • PH1300 meter • electrode stand • power adaptor • pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea) • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack
Meter with electrode stand	**PH1100** (3200647407) • PH1100 meter • electrode stand • power adaptor • protection cover	**PH1200** (3200647408) • PH1200 meter • electrode stand • power adaptor • protection cover	**PH1300** (3200647409) • PH1300 meter • electrode stand • power adaptor • protection cover
pH Electrode	**9615S-10D** (3200585428) • refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack	**9615S-10D** (3200585428) • refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack	**9615S-10D** (3200585428) • refillable glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack
USA pH buffer set	**502-S** (3999960016) pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea)	**502-S** (3999960016) pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea)	**502-S** (3999960016) pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea)
NIST pH buffer set	**501-S** (3999960015) pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml ea)	**501-S** (3999960015) pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml ea)	**501-S** (3999960015) pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml ea)

*Kit with 501-S is available upon request. Add 'N' suffix to the order code when ordering.

LAQUA

Benchtop Water Quality Instruments

LAQUA 1000 Series

- Wide measurement range
- EC/TDS/Res/Sal in one meter
- Auto-calibration
- Multi-calibration points
- Preset TDS calibration curves
- Preset Salinity calibration curves
- Rugged conductivity cell construction

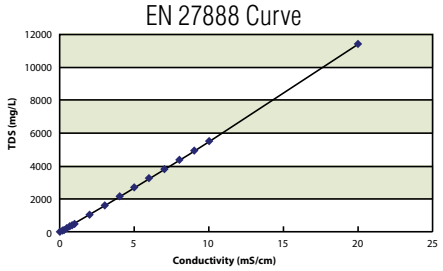
Conductivity Meter

Model	EC 1100 EC/TDS/Res/Sal/Temp (°C)
EC range	.. µS/cm to 19.99 µS/cm .. µS/cm to 1999.0 µS/cm .. µS/cm to 20.00 mS/cm .. µS/cm to 200.0 mS/cm .. µS/cm to 2000.0 mS/cm
Resolution	0.05% F.S.
Accuracy	±0.6% F.S. (±1.5% F.S. > 18.0 ms/cm)
Ref. temp.	15 to 30 °C (selectable)
Temp. coefficient	0.0 to 10.0% (selectable)
Cell constants	0.1 / 1.0 / 10.0
Cal points	4 points (Auto/Manual)
Units setting	Auto ranging / Manual µS/cm or mS/cm or S/m
TDS range	0.01 ppm to 9.99 ppm 0.1 ppm to 999.9 ppm 1 ppm to 10.00 ppt 10 ppm to 100.0 ppt 100.0 ppm to 1000.0 ppt
Resolution	0.01ppm / 0.1 ppt
Accuracy	±0.1% F.S.
TDS curves	EN27888, 442, linear (0.40 to 1.0), NaCl
Resistivity Range	0.000 Ω/cm to 20.000 Ω/cm 0.00 Ω/cm to 200.0 MΩ/cm
Resolution	0.05% F.S.
Accuracy	0.6% F.S. (±1.5% F.S.. > 1.80 MΩ/cm)
Salinity	0.0 to 100.0 ppt 0.00 to 10.00 %
Resolution	0.1 ppt / 0.1%
Accuracy	0.2% F.S.
Cal curves	NaCl / Sea water
Temperature range	-30.0 °C to 130 °C
Resolution	0.1 °C
Accuracy	±0.4 °C
Memory	500
Data-logging	Yes
Real time clock	Yes
Date/time stamping	Yes
Auto Shut-off	Yes (programmable: 1 to 30 mins)
Auto-Hold	Yes
Diagnostic messages	Yes
Display	Custom LCD
Inputs	BNC, phono, DC sockets
Outputs	USB, RS232C
Power requirements	AC adaptor 100 ~ 240 V, 50/60 Hz
Electrode stand	Integrated
Weight	500g
Dimensions	170 (L) x 174 (D) x 73 (H) mm

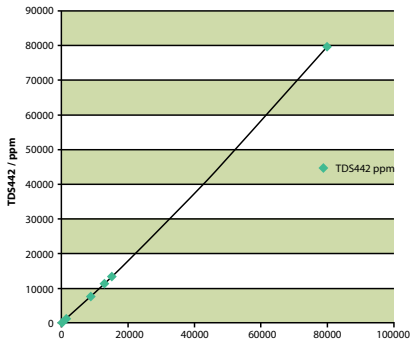
TDS Calibration Curves

Application	Key chemical species	TDS selection
Aquaculture, pickling	NaCl	NaCl
Boiler water, HVAC	Na_2SO_4, $NaHCO_3$, NaCl	442 (Myron)
Environmental	EN standard for environmental water	EN 27888
General application	Not known	KCl (linear factor) Default: 0.5 Selectable: 0.4 to 1.0

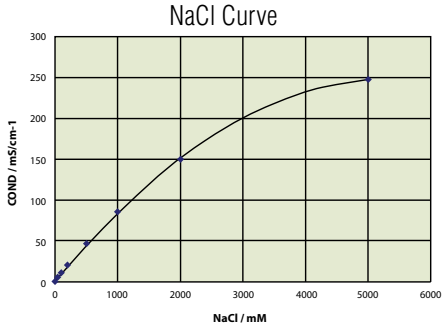
EN 27888 Curve



442 (Myron) Curve



NaCl Curve



Ordering information:

Kit	**EC1100-S** (3999960179) • EC1100 meter • electrode stand • power adaptor • 84uS/cm, 1413 uS/cm, 12.88 mS/cm, 111.8 mS/cm solutions (250ml ea) • 9382-10D - plastic-body, k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack
Meter with electrode stand	**EC1100** (3200647411) • EC1100 meter • electrode stand • power adaptor • protection cover
Conductivity cell	**9382-10D** (3014046709) • plastic-body, k=1.0 with integrated temperature sensor conductivity cell, 1m cable, BNC & phono jack
Conductivity standard solutions set	**503-S** (3999960017) • 84uS/cm, 1413 uS/cm, 12.88 mS/cm, 111.8 mS/cm solutions (250ml ea)

Multi-Parameter Meter

- pH/ORP/EC/TDS/Res/Sal/Temp (°C) in one meter
- Combination of PH 1200 & EC 1100
- Simultaneous measurement on 2 channels

- Dual channel, dual display

Model	**PC 1100** Dual Channel pH/ORP/ EC/TDS/Res/Sal/Temp (°C)
pH range	-2.000 to 19.999 pH
Resolution	0.1 / 0.01 / 0.01 pH
Accuracy	±0.003 pH
Cal points	5
Buffer options	USA, NIST, Custom
ORP range	±1999.9 mV
Resolution	0.1 mV
Accuracy	±0.2 mV
EC range	.. µS/cm to 19.99 µS/cm .. µS/cm to 1999.0 µS/cm .. µS/cm to 20.00 mS/cm .. µS/cm to 200.0 mS/cm .. µS/cm to 2000.0 mS/cm
Resolution	0.05% F.S.
Accuracy	±0.6% F.S. (±1.5% F.S. > 18.0 ms/cm)
Ref. temp.	15 to 30 °C (selectable)
Temp. coefficient	0.0 to 10.0% (selectable)
Cell constants	0.1 / 1.0 / 10.0
Cal points	4 points (Auto/Manual)
Units setting	Auto ranging / Manual µS/cm or mS/cm or S/m
TDS range	0.01 ppm to 9.99 ppm 0.1 ppm to 999.9 ppm 1 ppm to 10.00 ppt 10 ppm to 100.0 ppt 100.0 ppm to 1000.0 ppt
Resolution	0.01ppm / 0.1 ppt
Accuracy	±0.1% F.S.
TDS curves	EN27888, 442, linear (0.40 to 1.0), NaCl
Resistivity Range	0.000 Ω/cm to 20.000 Ω/cm 0.00 Ω/cm to 200.0 MΩ/cm
Resolution	0.05% F.S.
Accuracy	0.6% F.S. (±1.5% F.S.. > 1.80 MΩ/cm)
Salinity	0.0 to 100.0 ppt 0.00 to 10.00 %
Resolution	0.1 ppt / 0.1%
Accuracy	0.2% F.S.
Cal curves	NaCl / Sea water
Temperature range	-30.0 °C to 130 °C
Resolution	0.1 °C
Accuracy	±0.4 °C

Memory	999
Data-logging	Yes
Real time clock	Yes
Date/time stamping	Yes
Auto Shut-off	Yes (programmable: 1 to 30 mins)
Auto-Hold	Yes
Averaging/Stability	Yes, Automatic
Offset display	Yes
Slope display	Yes (independent acid and alkaline slopes depending on calibration)
Cal Alarm	Yes (programmable: 1 to 400 days)
Electrode status	On screen display
Diagnostic messages	Yes
Display	Custom LCD, Dual channel display
Inputs	Dual BNC, dual phono, DC sockets
Outputs	USB, RS232C
Power requirements	AC adaptor 100 ~ 240 V, 50/60 Hz
Electrode stand	Integrated
Weight	500g
Dimensions	170 (L) x 174 (D) x 73 (H) mm

Ordering information:

Kit*	**PC1100-S** (3999960180) • PC1100 meter • electrode stand • power adaptor • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack • 9382-10D - plastic-body, k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack • pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea) • 84uS/cm, 1413 uS/cm, 12.88 mS/cm, 111.8 mS/cm solutions (250ml ea)
Meter with electrode stand	**PC1100** (3200647410) • PC1100 meter • electrode stand • power adaptor • protection cover
pH Electrode	**9615S-10D** (3200585428) • refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack
Conductivity cell	**9382-10D** (3014046709) • plastic-body, k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack
USA pH buffer set	**502-S** (3999960016) • pH 4.01, 7.01, 10.01, 3.33M KCl solutions (250ml ea)
NIST pH buffer set	**501-S** (3999960015) • pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml ea)
Conductivity standard solutions set	**503-S** (3999960017) • 84uS/cm, 1413 uS/cm, 12.88 mS/cm, 111.8 mS/cm solutions (250ml ea)

*Kit with 501-S is available upon request. Add 'N' suffix to the order code when ordering.

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	LONG
			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	6069-10C
Specification	Applicable temperature range (°C)		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	0-60
	Diameter (mm)		16	16	16	16	12	8	3	12	12	12	12	16	12	3	12	3
	Length (mm)		150	150	155	150	198	283	185	203	150	150	150	150	198	185	203	291
pH - Sample Conditions																		
Aqueous Solution	Conductivity	Normal (over 100 mS/m)	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
		Low (approx.10 ~100 mS/m		◉						○		◉					○	
		Very low (approx. 5 ~100 mS/m		○						○		◉					○	
		High (approx. 5 S/m)	○	○	○	○	○	○		◉				○	○		◉	
	Strong alkaline (pH 10-12)					◉	○	○		○	○				○		○	
	Strong acidity (pH 0-2) * Except HF sample				◉		◉								◉			
	Quick heat change (within 50°C)		◉	◉	◉	◉								◉				
	High viscosity (approx. 5 Pa·S)									◉	○	◉					◉	
	Containing non-aqueous solvent						○	○	○	○	○	◉			○	○	○	
	Suspension						○	○	○	◉		◉			○	○	◉	
Solid/ Semisolid	Inside												○					
	Surface																	
Sample Containers	Microtube/plate (> 50 µL)								◉							◉		
	Ampule	> ø4 mm							◉							◉		○
	Micro container (> 2 mL)							○	◉							◉		○
	Tube	ID:13 mm, L:100 ~ 150 mm						◉										◉
	Beaker	10 mL ~ 1 L	◉	◉	◉	◉	◉	○	○	○	○	○	○	◉	◉	○	○	○
	Large container (> 1 L)		○	○	○	○	○	◉						○	○			
	Petri dish																	
	Droplet																	
Water	Pure/ion-exchange water (approx. 0.1 mS/m)/ Distilled water (approx. 0.5 mS/m)						○					◉			○			
	Tap/drinking water (approx. 10 mS/m)		○	◉			○			○		◉		○	○		○	
	Surface water			◉			○			○		◉			○		○	
	Pharmaceutical water/ Enviromental water/acid rain		○	○			○			○		○		○	○		○	
Chemical reagent/ solvent	Caustic/strong acid (Except HF sample)				◉		◉			○					◉		○	
	Hydrofluoric acid				◉													
	Surfactant						○			◉		○			○		◉	
	Water-based paint						○			◉		○			○		◉	
	Dye/coloring agent									◉		○					◉	
Pharmaceutical/ biological sample	Protein-containing sample						○		○	◉	○				○	○	◉	
	Medicinal preparation								○	○		○				○	○	
	Enzyme solution							○	◉				○			◉		
	Tris buffer						◉		○	○					◉	○	○	
	Suspension						○			◉		◉			○		◉	
	Agar medium																	
Food	Jam						○			◉		○	○		○		◉	
	Meat/fish/Fruit/vegetable/ Dough												◉					
	Honey											◉						
	Cheese/butter												○					
	Yogurt	○	○				○			○	○		○	○	○		○	
Beverage/ seasoning	Beer	○	○				○			◉	○	◉		○	○		◉	
	Milk/Carbonated drink/juice/ sauce/soy sauce						○			◉	○	○			○		◉	
	Mayonnaise/ketchup						○			◉		○			○		◉	
Cosmetic/ lotion	Beauty cream/mascara						○			◉		○	○		○		◉	
	Gel/soap/shampoo/Hairdye lotion						○			◉		○			○		◉	
	Emulsified liquid						○			○		◉			○		○	

◉ Recommended ○ Can be measured

		ISFET ELECTRODE
LONG ToupH	FLAT	GENERAL
9480-10C	6261-10C	0040-10D
0-100	0-50	0-60
8	12	16
283	150	190
◉	◉	◉
○		
○		
○		○
○		○
	◉	◉
○		
◉		
○	○	○
◉		
	◉	◉
	◉	◉
○		
	◉	◉
	○	◉ (surface)
	○	◉ (surface)
		○ (surface)
	○	○ (surface)
	○	◉ (surface)

Stable measurement for a wide range of samples. Standard ToupH glass electrode (9615S-10D)

STANDARD ToupH

High stability and drift reduction. No more worries about the timing of your measurement value readings.

- Uses responsive glass that is 10 times stronger than JIS standard. The domed shape provides strength in all directions, greatly reducing damage concerns.
- Constructed with smooth surfaces for easy wiping and cleaning.

Recommended

Perfect for preparing buffers. Can be used on a wide range of aqueous test solutions.

Stable measurement for routine testing. Standard plastic electrode (9625-10D)

STANDARD

The electrode has a plastic body which is ideal for general purpose measurement.

- Can be submerged up to 1m depth and 30mins. (with refilling port closed)
- Waterproof, Pb-free

Recommended

Ideal for general purpose use. For measurement of tap water and drinking water.

For extremely small samples Micro ToupH glass electrode (9618S-10D)

MICRO ToupH

This pH electrode with temperature compensation sensor can take measurements from samples as small as 50µL, the smallest in the world.

- Our original manufacturing technology (Japanese Patent No. 4054245) is used to produce 2-ply piping 3mm in diameter.
- Compatible with extremely small containers such as micro tubes etc.
- The temperature sensor is located at the tip for high-speed temperature response. Refrigerated samples can be measured without needing to wait for them to return to room temperature.

Recommended

Can be used for a wide range of aqueous solutions, including those that cannot be obtained in large quantities.
We recommend using our specialized cleaning solution after measuring samples that contain proteins.

For using a large container Long ToupH glass electrode (9680S-10D)

LONG ToupH

283 mm length & 8 mm diameter. The long, thin design makes this electrode perfect for measuring in large containers and test tubes.

- Uses responsive glass that is 10 times stronger than JIS standard. The domed shape provides strength in all directions, greatly reducing damage concerns.

Recommended

For measuring samples such as microbe culture fluids in test tubes.
We recommend that it be used with the long type electrode stand (FA-70L).

For highly viscous samples Sleeve ToupH glass electrode (9681S-10D)

SLEEVE ToupH

Stable measurement can also be achieved for high viscous samples.

- The liquid junction section is constructed with a moveable sleeve that can be rinsed clean, preventing highly viscous samples from clogging the liquid junction, and maintaining stable measurement performance

Recommended

For highly viscous samples and solutions, and samples that contain non-aqueous solvents (such as cosmetics or paints). We recommend that you take measurements while using the graph display function to confirm stable responses.
(We recommend washing with a neutral detergent after use with samples that contain oil.)

For the surface of solid samples General ISFET pH electrode (0040-10D)

GENERAL ISFET

The sensor is located on the flat surface of the electrode tip, with less than a 100 µm protrusion from the housing.

- Measurements can be made from a minute amount of moisture on the solid sample surface.
- Use of a semiconductor sensor means there are no concerns that the electrode will be damaged.
- Also perfect for measuring samples in shallow containers such as Petri dishes.
- Repalceable sensor

Recommended

For highly viscous samples and solutions, and samples that contain non-aqueous solvents (such as cosmetics or paints). We recommend that you take measurements while using the graph display function to confirm stable responses.
(We recommend washing with a neutral detergent after use with samples that contain oil.)

ORP Electrode

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

Ion Selective Electrodes

Combination ISE*	Model	Measurement Range	Interfering Ion Influence	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^{2-}=1,000	3014093430
Fluoride	6561-10C	0.2~19,000 mg/L F^-	(ex. Al^{3+}, Fe^{3+}) coexisted and foamed the complex.	3014093431
Nitrate	6581-10C	0.62~62,000 mg/L NO_3^-	CH_3COO^-=300 SO_4^{2-}=Over 1000	3014093432
Potassium	6582-10C	0.04~39,000 mg/L K^+	Li^+, Na^+, Mg^{2+}, Sr^{2+}, Ba^{2+}=Over 1000	3014093433
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
Ammonia	5002A-10C	0.1~1,000 mg/L NH_3	—	3014093560

Replacement Tip

Model	Part No.
7660	3014093436
7661	3014093438
7681	3014068364
7682	3014069795
7683	3014068795
membrane (NH_3)	3014067083

Metallic Electrode (For ORP Measurement)

Type

9300-10D Waterproof platinum combination type

3014046710 — L: 150 mm, Ø: 12 mm, Connector: BNC

Type

5002A-10C Ammonia ion electrode (combination)

3014093560 — L: 161 mm, Ø: 15 mm, Connector: BNC

6560-10C Chloride ion electrode (combination)

3014093430 — L: 150 mm, Ø: 16 mm, Connector: BNC

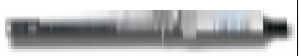
6561-10C Fluoride ion electrode (combination)

3014093431 — L: 150 mm, Ø: 16 mm, Connector: BNC

6581-10C Nitrate ion electrode (combination)

3014093432 — L: 150 mm, Ø: 16 mm, Connector: BNC

6582-10C Potassium ion electrode (combination)



3014093433 — L: 150 mm, Ø: 16 mm, Connector: BNC

6583-10C Calcium ion electrode (combination)

3014093434 — L: 150 mm, Ø: 16 mm, Connector: BNC

• 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

Conductivity Cells (Submersible Type)

Type

3551-10D

3014081712 — L: 175 mm, Ø: 23 mm, Connectors: BNC & phono jack

3552-10D

3014081545 — L: 150 mm, Ø: 12 mm, Connectors: BNC & phono jack

3553-10D

3014081714 — L: 175 mm, Ø: 28 mm, Connectors: BNC & phono jack

9382-10D

3014046709 — L: 150 mm, Ø: 16 mm, Connectors: BNC & phono jack

Conductivity Cells (Flow Type)

Type

3561-10D

3014082350 — L: 143 mm, Ø: 18 mm, Connectors: BNC & phono jack

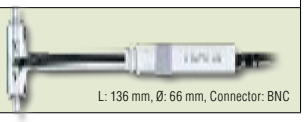
3562-10D

3014082350 — L: 205 mm, Ø: 18 mm, Connectors: BNC & phono jack

3573-10C

3014082590 — L: 222 mm, Ø: 18 mm, Connector: BNC

3574-10C



3014082592 — L: 136 mm, Ø: 66 mm, Connector: BNC

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

*Electrodes carry a 6-month warranty against manufacturing defects only

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

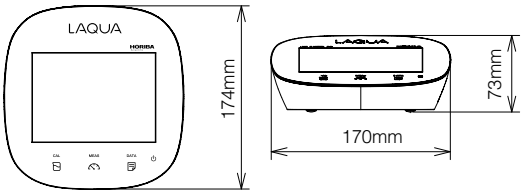
Internal Filling Solution for Electrodes

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

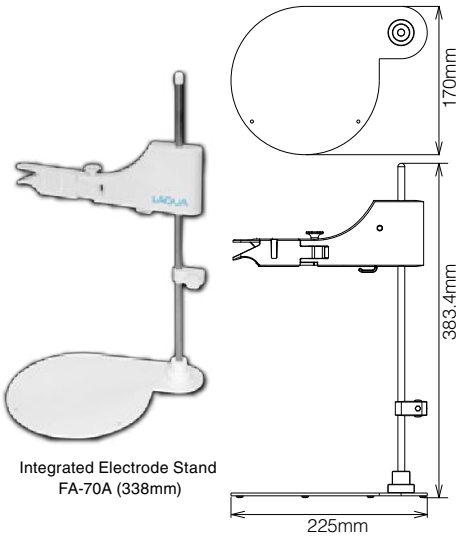
Accessories

		Name	Part No.
Printer	 Printer / Printer cable / Ink ribbon / Printer paper	Printer (for GLP/GMP compliance) Cable sold separately, Plain paper	3014030147 (230v) 3014030146 (120v)
		Printer cable (1.5 m)	3014030148
		Printer paper (20 rolls)	3014030149
		Ink ribbon (5 pcs/set)	3014030150
Power	 Universal AC adapter	Multi-Voltage (100-240V) with 6 plugs, 1.8 m cable	3200647413
For Inspection	 X-51 / X-52	Digital simulator X-51 (pH, mV, Ion, DO simulator)	3014028368
		Digital simulator X-52 (Conductivity simulator)	3014028370
Meter Accessories	 LCD protection sheet / Protection cover	LCD protection sheet (2 pcs/pack)	3200382462
		Protection cover (Protects the meter for F-70, DS-70 series)	3200382441
Communication and Output	 USB cable / Serial cable	USB cable (Cable to connect meter and PC.)	3200373941
		Analog cable (Analog (alarm) output cable)	3014030152
		Serial cable (Cable to connect meter and PC (Serial, 9 pins))	3014030151
Electrode Stand (images on the right)	 Arm for electrode stand	FA-70A Integrated Electrode Stand (Standard) for Benchtop Meter (Height 338 mm)	3200644455
		FA-70S Electrode stand (adjustable) (Free-standing type. Height 384 mm)	3200382557
		FA-70L Electrode stand (long) (Free-standing type. Height 450~650mm)	3200382560
		Arm for electrode stand (For FA-70S, FA-70L)	3200373991
Electrode Accessories		Sensor Holder (Used for Mounting Electrode Stand, 2 pcs.)	3200373961
		Electrode Protection Cap (Standard) (For 9615S-10D, 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 9678/9680S pH Electrode, 1 pc.)	3200382482

Meter Body



Integrated Electrode Stand

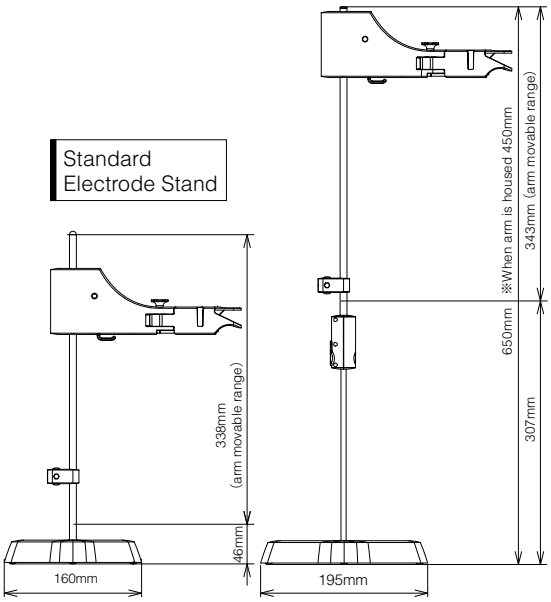


Integrated Electrode Stand
FA-70A (338mm)

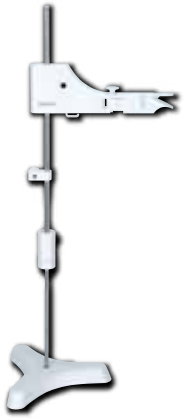
Long Electrode Stand

※Stretch shaft

Standard Electrode Stand



Standard Electrode Stand
FA-70S (384mm)

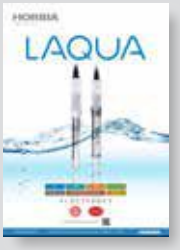


Long Electrode Stand
FA-70L (450~650mm)

Visit HORIBA's website!

Water Quality Analyzers www.horiba-laqua.com

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



Electrodes

HORIBA's superior electrode technology has been employed in manufacturing our unparalleled tough pH glass bulbs and unique flat sensors. Our electrodes have different designs to cater a wide range of applications—from pure water to complex samples. Select the suitable electrode that is specially designed for your application.

Handheld Meters

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

Pocket Meters

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

Application Notes

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

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HORIBA offers a variety of services to 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.

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

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