HORIBA
Scientific

LAQUA

pH	ORP	Ion	Conductivity
Resistivity	Total Dissolved Solids		Salinity

Benchtop Water Quality Instruments

Colour Touchscreen Meters

METERS 2 YEAR WARRANTY

MADE IN JAPAN

www.horiba-laqua.com

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Benchtop Water Quality Instruments
Colour Touchscreen Meters

2011

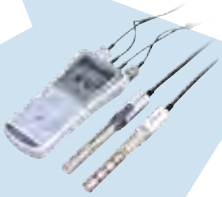
LAQUA Benchtop Water Quality Instruments

2012

LAQUAtwin Pocket Water Quality Meters

2013

LAQUA Handheld Water Quality Instruments



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

2003

F-50 (desktop) The world's first pH meter with colour LCD display. Navigation panel guides operators on how to use the meter as well as resolve errors.

1993

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

1990

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

1987

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

1980

Model F-80 (benchtop) The world's first instrument capable of measuring pH at 0.001 resolution includes an integral computer with automatic calibration and a self-diagnostic function.

L-7 (integrated) Introduction of a small, handheld pH meter with integrated electrode.

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.

1964

M-5 (benchtop) conversion from vacuum tube to semiconductor allows miniaturization and development of fast response meter

1950

HORIBA introduces Japan's first glass electrode pH meter.

History of the HORIBA pH Meter

The humble beginning of HORIBA...

In 1950, Dr. Masao Horiba pioneered and launched Asia's first pH meter in Kyoto, Japan. Since then, HORIBA has been introducing several of the world's firsts such as the first 0.001 resolution pH meter, the first flat sensor featured in the Cardy, the first wireless pH meter, the first colour LCD display, etc.

Touchscreen Precision. The New Benchmark.

- Large touch screen color graphic LCD—5.7 inches (115.2 x 86.4 mm)
- Chemical-resistant, 2mm thick super white glass panel with protection cover
- Easy to clean and elegant round body
- GLP / GMP compliant
- Switchable display—digital, graph, and analog
- Effortless single-touch operations—tap, flick, and drag
- 2-Channel display and simultaneous measurements for F-73 and F-74 models
- Data acquisition software in mini USB is included
- Small footprint—170 (W) x 174 (D) x 73 (H) mm

Protection Cover

Data Acquisition Software

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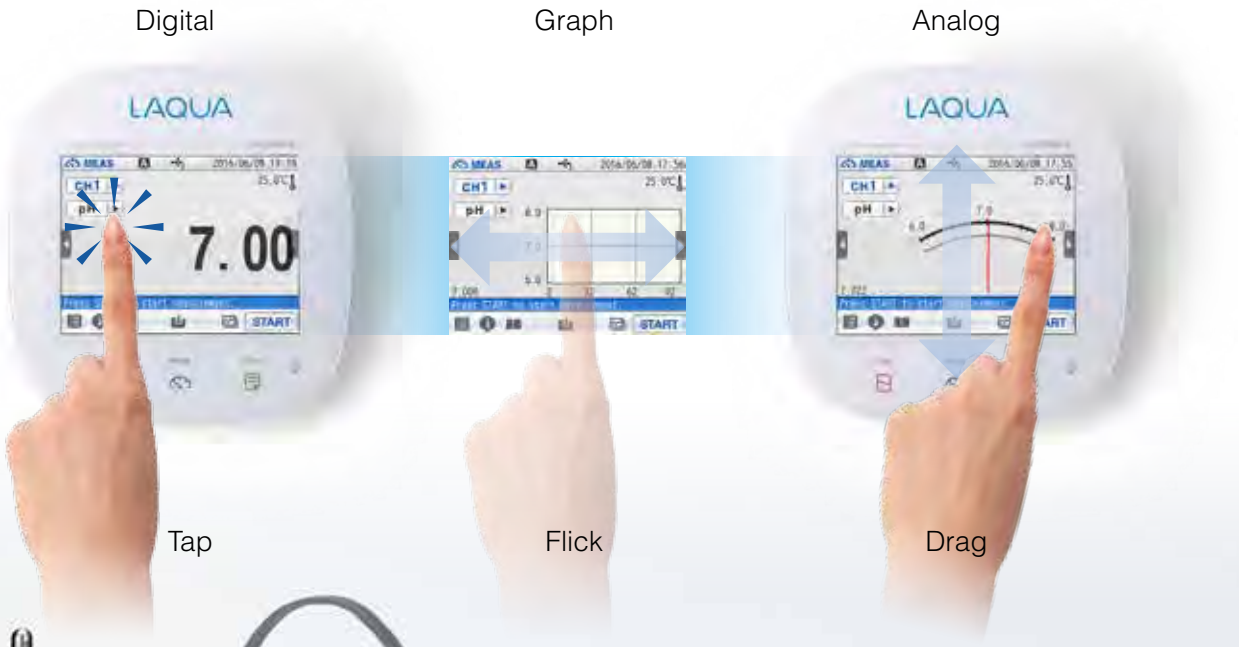
Intuitive Touch-Control Operation



360° Electrode Stand Maneuverability

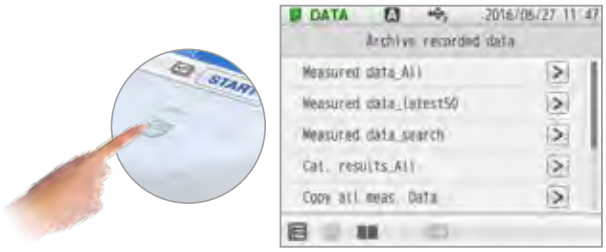
- Each meter comes with standard (Height: 384mm) electrode stand with arm
- Electrode stand arm holds up to 3 electrodes
- Taller electrode stand (Height: 650mm) with telescopic shaft is also available
- Arm level is adjusted by pressing and holding down the clip end while moving it up or down the shaft
- Stopper controls vertical slide of the electrode stand arm
- Arm rotates 360° so beakers can be conveniently positioned anywhere around the stand

Universal Power Adapter

- Multi-voltage (100-240V)
- 6 types of international standard plugs included (US, UK, EU, Australia / New Zealand, Korea and China)

Data Management

Data Key

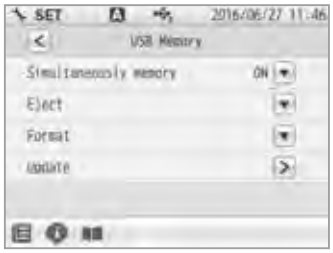


- Data key shows settings that allow users to search, view, delete, and copy data from meter to USB flash drive

Sample ID

- Meter internal memory stores up to 2000 data with sample ID for easy reference

Data Storage



- Data can be stored simultaneously on both meter and USB flash drive (if inserted)
- Calibration and measurement data are logged automatically at set time interval

Data Search

- Data search by date, parameter, or sample ID

Meter Connections

- Data output via USB to PC / USB flash drive or via RS232C to PC / printer
- Analog output adjustment—voltage output can be acquired from digital multimeter or recorder connected to the analog output connector

Custom Printout

- Auto or manual printing of calibration and measurement values for record keeping
- Printout contents can be customized based on user preference or GMP/GLP requirements—date and time, operator, electrode and meter information, electrode status, and calibration data

Meter Security

- Password setting for security
- Up to 25 administrators or operators can be registered

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Benchtop Water Quality Instruments
Colour Touchscreen Meters

Intelligent Assistant

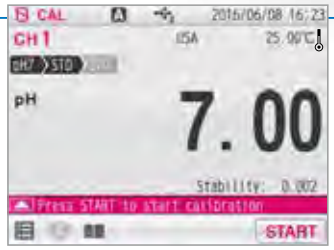
Provides step-by-step guidance on calibration, sample measurement, application methods, maintenance, inspection and troubleshooting

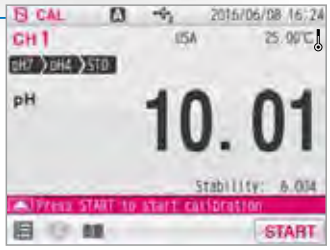
SMART

Calibration Support Function

Enjoy hassle-free calibration with on screen support. The meter will walk you through the steps of calibration.

- Auto Buffer Recognition
- Auto Calibration Function



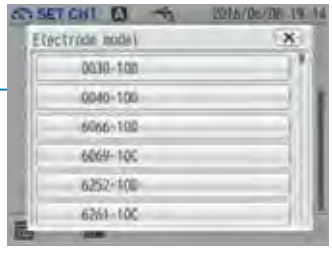


Reading Stability Check

- Perform proper calibration with stable readings
- Determine the stability of reading at a glance in either digital or graph display during pH and ion calibration
- Stability value is a deviation between the maximum and minimum readings in the last 10 seconds

Electrode Status

- Electrode condition and results such as calibrated values, offset, acid and alkaline slopes, are shown at the end of calibration
- Programmable calibration reminder and alarm for measured values exceeding set limits

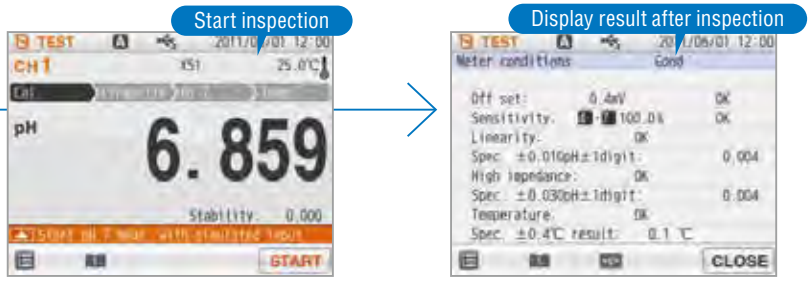


- Temperature indicator appears when a temperature probe or electrode with integrated temperature sensor is connected to the meter
- Temperature sensor calibration function
- Electrode model, either selected from preset list or entered manually, and lot or MFG no. (entered manually) are included in stored data and printouts

Inspection Function

Easy navigation for meter and electrode inspections using a simulator. Various industrial standards (JIS, USP, EP, JP, CP) are also supported.

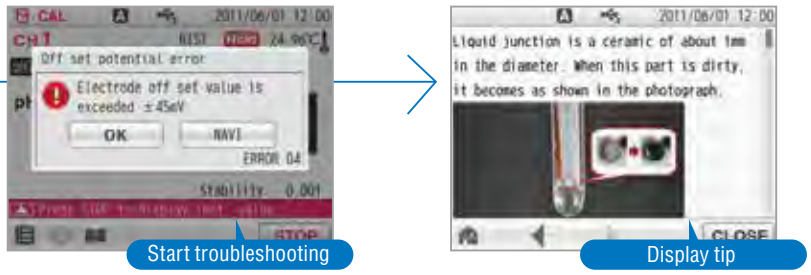
- Convenient for IQ / OQ / PQ validation



NAVIGATION

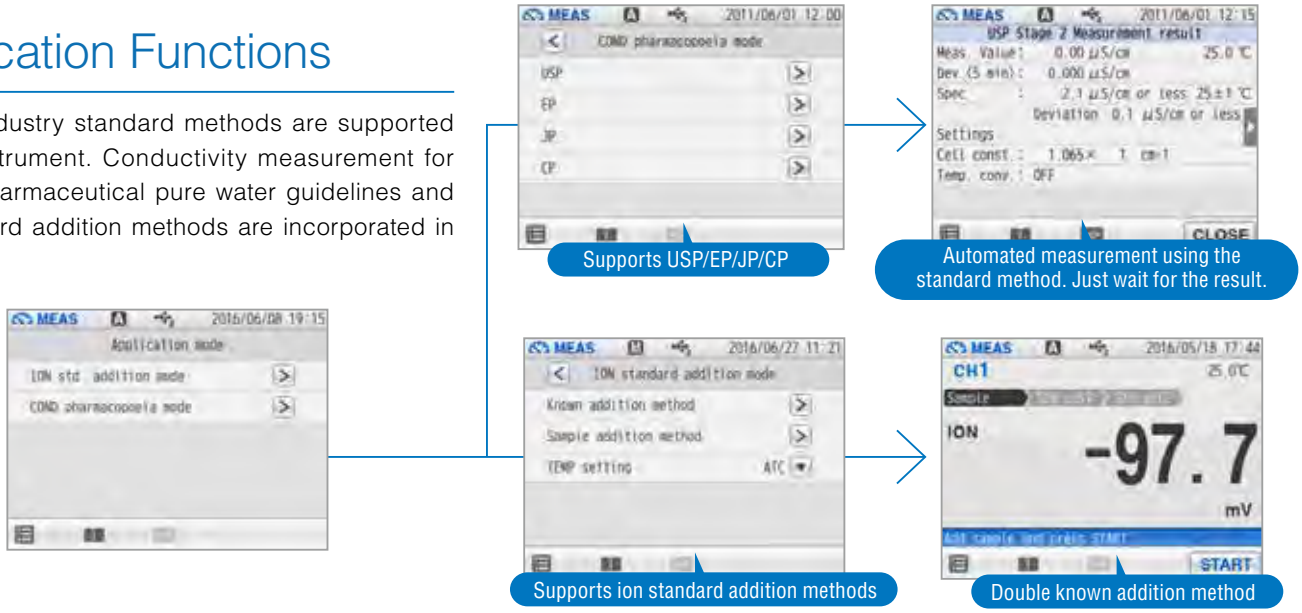
Troubleshooting Function

On-screen support for resolving a problem that occurs during calibration or sample measurements. A user's guide is incorporated in the software to assist with any operational difficulties.



Application Functions

Various industry standard methods are supported by the instrument. Conductivity measurement for several pharmaceutical pure water guidelines and ion standard addition methods are incorporated in the meter.



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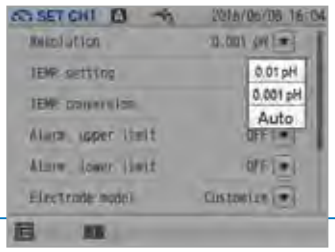
Colour Touchscreen Meters



pH

- 5 pH buffer groups
  - USA (1.68, 4.01, 7.00, 10.01, 12.45)
  - NIST (1.68, 4.01, 6.86, 9.18, 12.45)
  - NIST2 (1.68, 4.01, 6.86, 10.01, 12.45)
  - China (1.68, 4.01, 6.86, 9.18, 12.46)
  - Custom (any pH buffers)
- Up to 5 calibration points
- 0.01 and 0.001 pH Resolutions
- Auto setting allows the meter to toggle between 0.01 and 0.001 resolution depending on the stability of the reading
- Auto calibration / Auto buffer recognition

mV

- Display absolute potential and relative potential

ADVANCED

ORP

- Capable of 1-point calibration

Ion

- Make your own calibration curve with maximum of 5 points or perform standard addition techniques
- Programmed with standard addition methods—known addition and sample addition (single and double are available for both methods)
- Measurement units - µg/L, mg/L, g/L, mmol/L, mol/L

Conductivity

- Automatic / manual calibration up to 4 points
- Adjustable temperature coefficient and reference temperature for temperature compensated readings
- Selectable cell constants – 0.1, 1.0, 10.0
- Auto ranging S/cm and S/m units, fix mS/cm unit
- Support conductivity standard methods for pharmaceutical water—USP, EP, JP and CP

Total Dissolved Solids (TDS)

- Programmed with 4 predetermined TDS curves for accurate measurement—Linear, EN27888, 442, and NaCl
- Select the TDS curve suitable for your application
- Calibration only in conductivity mode is required

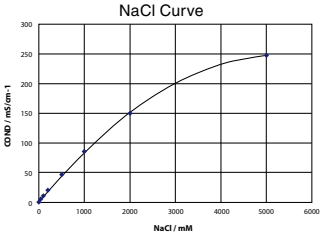
TDS Calibration Curves

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

Salinity

- Programmed with 2 predetermined salinity curves—NaCl and seawater
- Salinity value is calculated based on measured conductivity value
- 1-point calibration using standard solution
- Measurement units—percentage (%) and parts per thousand (ppt)

NaCl Curve



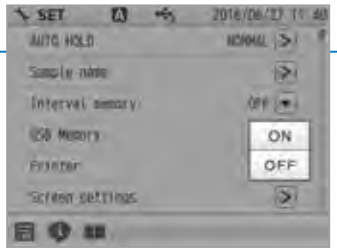
Auto Stable / Auto Hold

- In measurement mode, the meter displays live readings continuously
- Activate auto hold by tapping START
- Auto hold settings—Exact, Normal, Brief, Time, Customize, and Manual

FEATURES

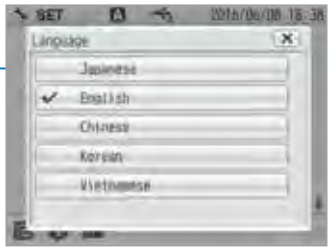
Auto Log Data

- Log data automatically by setting time interval from 1 to 999 seconds



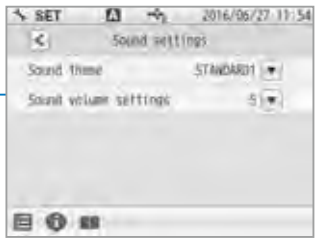
Multi-Language

- Choose a language that you are familiar with—English, Japanese, Chinese, Korean, and Vietnamese



Sound Setting

- Play a click sound every time you tap a key



Screen Settings

- Set stylish theme on your meter screen—Standard, Cool, Monotone, and Kyoto
- Power saving mode—turns off the backlight to save power

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Benchtop Water Quality Instruments
Colour Touchscreen Meters

F-73
Dual Channel

F-72
Single Channel

Features:

- Up to 5 calibration points for pH and Ion
- 5 pH buffer groups – USA, NIST, NIST2, China, and Custom
- 0.01 and 0.001 pH resolutions
- pH calibration interval setting – 1 to 999 days
- 1-point ORP calibration
- Ion calibration curve and standard addition methods
- Temperature sensor calibration function
- Single channel for F-72 and dual channel display for F-73

Ordering Information:		
Meter Kit*	 **F-72A-S** (3999960011) • F-72 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack • 502-S - pH 4.01, 7.00, 10.01, 3.33M KCl solutions (250ml each)	 **F-73A-S** (3999960012) • F-73 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack • 502-S - pH 4.01, 7.00, 10.01, 3.33M KCl solutions (250ml each)
Meter with Electrode Stand	**F-72G** (3000347100) • F-72 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB	**F-73G** (3000347200) • F-73 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB
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
USA pH Buffer Set	**502-S** (3999960016) • pH 4.01, 7.00, 10.01, 3.33M KCl solutions (250ml each)	**502-S** (3999960016) • pH 4.01, 7.00, 10.01, 3.33M KCl solutions (250ml each)
NIST pH Buffer Set	**501-S** (3999960015) • pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml each)	**501-S** (3999960015) • pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml each)

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

Model	F-72 pH/ORP/Ion/Temp (°C)	F-73 Dual Channel pH/ORP/Ion/Temp (°C)
pH Range	-2.000 to 20.000 pH	-2.000 to 20.000 pH
Resolution	0.01 / 0.001 pH	0.01 / 0.001 pH
Accuracy	± 0.001 pH	± 0.001 pH
Calibration Points	Up to 5	Up to 5
Buffer Options	USA, NIST, NIST2, China, Custom	USA, NIST, NIST2, China, Custom
ORP Range	± 1999.9 mV	± 1999.9 mV
Resolution	0.1 mV	0.1 mV
Accuracy	±0.2 mV	±0.2 mV
Ion Range	0.000 µg/L to 9999 g/L (mol/L)	0.000 µg/L to 9999 g/L (mol/L)
Resolution	4 significant digits	4 significant digits
Accuracy	± 0.3% of full scale	± 0.3% of full scale
Calibration Points	Up to 5	Up to 5
Temperature Range	-30.0 °C to 130.0 °C	-30.0 °C to 130.0 °C
Resolution	0.1 °C	0.1 °C
Accuracy	±0.4°C	±0.4°C
Calibration Option	Yes	Yes
Navigation Function	Yes	Yes
Memory	2000	2000
Auto Data-Logging	Yes	Yes
Data Search	Yes	Yes
Custom Printing	Yes	Yes
Real Time Clock	Yes	Yes
Date / Time Stamp	Yes	Yes
Sample ID Input	Yes	Yes
Operator ID Input	Yes	Yes
Password Setting	Yes	Yes
Auto Stable / Auto Hold	Yes	Yes
Offset / Slope Display	Yes (independent acid and alkaline slopes depending on calibration)	Yes (independent acid and alkaline slopes depending on calibration)
Calibration Alarm Limit	Yes	Yes
Electrode Status	On screen display	On screen display
Diagnostic Messages	Yes	Yes
Display	Touch screen color graphic LCD	Touch screen color graphic LCD
Languages	English / Japanese / Chinese / Korean / Vietnamese	English / Japanese / Chinese / Korean / Vietnamese
Inputs	BNC, phono, DC socket	Dual BNC, dual phono, DC socket
Outputs	USB, RS232C, analog output	USB, RS232C, analog output
Power Requirements	AC adaptor 100 ~ 240V, 50/60 Hz	AC adaptor 100 ~ 240V, 50/60 Hz
Electrode Stand	Stand alone	Stand alone
Weight	700g	700g
Dimensions	170 (W) x 174 (D) x 73 (H) mm	170 (W) x 174 (D) x 73 (H) mm

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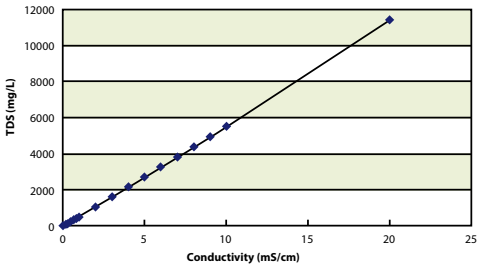
Benchtop Water Quality Instruments
Colour Touchscreen Meters

Features:

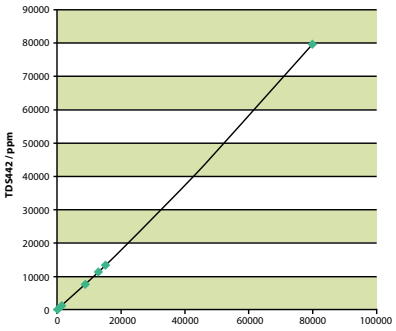
- Wide conductivity range
- Automatic / manual conductivity calibration
- Up to 4 calibration points
- Adjustable temperature coefficient, reference temperature, and cell constant
- Temperature sensor calibration function
- Auto ranging S/cm and S/m and fix mS/cm conductivity units
- Parts per thousand (ppt) and percentage (%) salinity units
- NaCl and seawater salinity curves
- 4 Total dissolved solids (TDS) curves – EN27888, Linear, NaCl, 442

DS-72
Single Channel

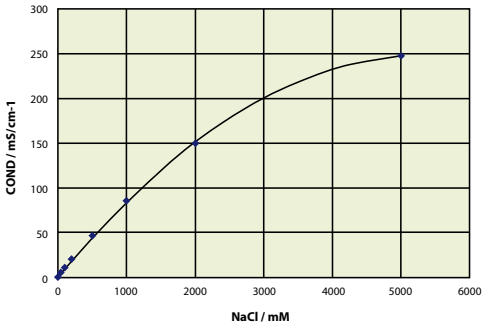
EN 27888 Curve



442 (Myron) Curve



NaCl Curve



Ordering Information:

Meter Kit	 **DS-72A-S** (3999960013) • DS-72 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB • 3552-10D - Platinum/Platinum black, glass-body k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack • 503-S - 84µS/cm, 1413µS/cm, 12.88mS/cm & 111.8mS/cm conductivity standard solutions (250ml each)
Meter with Electrode Stand	**DS-72G** (3000347600) • DS-72 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB
Conductivity Cell	**3552-10D** (3014081545) • Platinum/Platinum black, glass-body k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack
Conductivity Standard Solutions Set	**503-S** (3999960017) • 84µS/cm, 1413µS/cm, 12.88mS/cm & 111.8mS/cm conductivity standard solutions (250ml each)

Model	DS-72 EC/TDS/Res/Sal/Temp (°C)
EC Range	0.000 µS/cm to 19.99 mS/cm (k=0.1) 0.00 µS/cm to 199.9 mS/cm (k=1.0) 0.0 µS/cm to 1.999 S/cm (k=10.0)
Resolution	0.05% of full scale
Accuracy	±0.6% of full scale (±1.5% full scale > 18.0 mS/cm)
Reference Temperature	15 to 30°C (adjustable)
Temperature Coefficient	0.00 to 10.00% (adjustable)
Cell Constants	0.1 / 1.0 / 10.0
Calibration Points	4 (Auto / Manual)
Measurement Units	Auto-Ranging / Manual S/cm, S/m, Fix (mS/cm)
TDS Range	0.01 mg/L to 1000 g/L
Resolution	0.01 mg/L
Accuracy	±0.1% of full scale
TDS Curves	EN27888, Linear (0.40 to 1.0), 442, NaCl
Resistivity Range	0.00 kΩ.cm to 199.9 MΩ•cm (k=0.1) 0.000 kΩ.cm to 19.99 MΩ•cm (k=1.0) 0.0 Ω.cm to 1.999 MΩ•cm (k=10.0)
Resolution	0.05% of full scale
Accuracy	±0.6% of full scale (±1.5% full scale > 1.80 MΩ•cm)
Salinity Range	0.00 to 80.00 ppt / 0.000 to 8.000%
Resolution	0.01 ppt / 0.001%
Accuracy	0.2% of full scale
Salinity Curves	NaCl / Seawater
Temperature Range	-30.0 °C to 130.0 °C
Resolution	0.1 °C
Accuracy	± 0.4 °C
Navigation Function	Yes
Memory	2000
Auto Data-Logging	Yes
Data Search	Yes
Custom Printing	Yes
Real Time Clock	Yes
Date / Time Stamp	Yes
Sample ID Input	Yes
Operator ID Input	Yes
Password Setting	Yes
Auto Stable / Auto Hold	Yes
Diagnostic Messages	Yes
Display	Touch screen color graphic LCD
Languages	English / Japanese / Chinese / Korean / Vietnamese
Inputs	BNC, phono, DC socket
Outputs	USB, RS232C, analog output
Power Requirements	AC adaptor 100~240V, 50/60 Hz
Electrode Stand	Stand alone
Weight	700g
Dimensions	170 (W) x 174 (D) x 73 (H) mm

LAQUA

Benchtop Water Quality Instruments
Colour Touchscreen Meters

Features:

- Combine the functions of F-72 and DS-72 models
- Dual channel and simultaneous measurements
  - Channel 1: pH, Ion, mV, ORP
  - Channel 2: Conductivity, Salinity, Resistivity and TDS
- Switchable single or dual channel display

F-74
Dual Channel

Channel 1: pH

Channel 2: Conductivity

Dual Channel

Ordering Information:

Meter Kit*	 **F-74A-S** (3999960014) • F-74 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB • 9615S-10D - refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack • 3552-10D - Platinum/Platinum black, glass-body k=1.0 conductivity cell with integrated temperature sensor, 1m cable, BNC & phono jack • 502-S - pH 4.01, 7.00, 10.01, 3.33M KCl solutions (250ml each) • 503-S - 84µS/cm, 1413µS/cm, 12.88mS/cm & 111.8mS/cm conductivity standard solutions (250ml each)
Meter with Electrode Stand	**F-74G** (3000347400) • F-74 meter • electrode stand • protection cover • power adaptor with 6 plugs • data acquisition software in USB
pH Electrode	**9615S-10D** (3200585428) • refillable, glass-body pH electrode with integrated temperature sensor, 1m cable, BNC & phono jack
Conductivity Cell	**3552-10D** (3014081545) • Platinum/Platinum black, glass-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, 7.00, 10.01, 3.33M KCl solutions (250ml each)
NIST pH Buffer Set	**501-S** (3999960015) • pH 4.01, 6.86, 9.18, 3.33M KCl solutions (250ml each)
Conductivity Standard Solutions Set	**503-S** (3999960017) • 84µS/cm, 1413µS/cm, 12.88mS/cm & 111.8mS/cm conductivity standard solutions (250ml each)

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

Models	F-74 Dual Channel pH/ORP/Ion/EC/TDS/Res/Sal/Temp (°C)
pH Range	-2.000 to 20.000 pH
Resolution	0.01 / 0.001 pH
Accuracy	± 0.001 pH
Calibration Points	Up to 5
Buffer Options	USA, NIST, NIST2, China, Custom
ORP Range	± 1999.9 mV
Resolution	0.1 mV
Accuracy	± 0.2 mV
Ion Range	0.000 µg/L to 9999 g/L (mol/L)
Resolution	4 significant digits
Accuracy	± 0.3% of full scale
Calibration Points	Up to 5
EC Range	0.000µS/cm to 19.99mS/cm (k=0.1) 0.00 µS/cm to 199.9 mS/cm (k=1.0) 0.0 µS/cm to 1.999 S/cm (k=10.0)
Resolution	0.05% of full scale
Accuracy	±0.6% of full scale (±1.5% full scale > 18.0 mS/cm)
Reference Temperature	15 to 30°C (adjustable)
Temperature Coefficient	0.00 to 10.00% (adjustable)
Cell Constants	0.1 / 1.0 / 10.0
Calibration Points	4 (Auto / Manual)
Measurement Units	Auto Ranging / Manual S/cm, S/m, Fix (mS/cm)
TDS Range	0.01 mg/L to 1000 g/L
Resolution	0.01 mg/L
Accuracy	±0.1% of full scale
TDS Curves	EN27888, Linear (0.40 to 1.0), 442, NaCl
Resistivity Range	0.00 kΩ.cm to 199.9 MΩ•cm (k=0.1) 0.000 kΩ.cm to 19.99 MΩ•cm (k=1.0) 0.0 Ω.cm to 1.999 MΩ•cm (k=10.0)
Resolution	0.05% of full scale
Accuracy	±0.6% of full scale (±1.5% full scale > 1.80 MΩ•cm)
Salinity Range	0.00 to 80.00 ppt / 0.000 to 8.000 %
Resolution	0.01 ppt / 0.001%
Accuracy	0.2% of full scale
Salinity Curves	NaCl / Seawater
Temperature Range	-30.0 °C to 130.0 °C
Resolution	0.1 °C
Accuracy	± 0.4 °C
Navigation Function	Yes
Memory	2000
Auto Data-Logging	Yes
Data Search	Yes
Custom Printing	Yes
Real Time Clock	Yes
Date / Time Stamp	Yes
Sample ID Input	Yes
Operator ID Input	Yes
Password Setting	Yes
Auto Stable / Auto Hold	Yes
Offset / Slope Display	Yes (independent acid and alkaline slopes depending on calibration)
Calibration Alarm Limit	Yes
Electrode Status	On screen display
Diagnostic Messages	Yes
Display	Touch screen color graphic LCD / dual channel display
Languages	English / Japanese / Chinese / Korean / Vietnamese
Inputs	Dual BNC, dual phono, DC socket
Outputs	USB, RS232C, analog output
Power Requirements	AC adaptor 100~240V, 50/60 Hz
Electrode Stand	Stand alone
Weight	700g
Dimensions	170 (W) x 174 (D) x 73 (H) mm

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/Hair dye lotion						○			◉		○			○		◉	
	Emulsified liquid						○			○		◉			○		○	

◉ Recommended ○ Can be measured

		ISFET ELECTRODE
LONG TougpH	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 TougpH glass electrode (9615S-10D)

STANDARD TougpH

water proof Pb Free

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

water proof Pb Free

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 TougpH glass electrode (9618S-10D)

MICRO TougpH

water proof

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 TougpH glass electrode (9680S-10D)

LONG TougpH

water proof Pb Free

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 TougpH glass electrode (9681S-10D)

SLEEVE TougpH

water proof Pb Free

Stable measurement can also be achieved for high viscous samples.

- The liquid junction section is constructed with a movable 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

water proof

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.
- Replaceable 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

Metallic Electrode (For ORP Measurement)

Type

9300-10D Waterproof platinum combination type

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

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

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

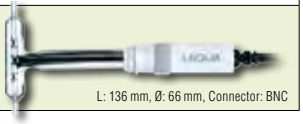
3562-10D

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

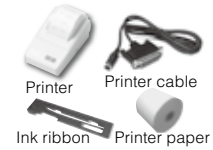
Conductivity Solutions

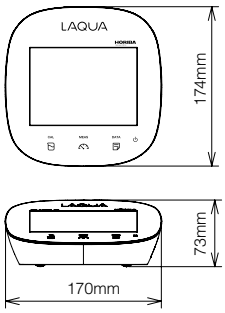
Conductivity Standard Solution at 25°C	500-21	84 uS/cm	500ml	3999960035
	500-22	1413 uS/cm	500ml	3999960036
	500-23	12.88 mS/cm	500ml	3999960037
	500-24	111.8 mS/cm	500ml	3999960038

Internal Filling Solution for Electrodes

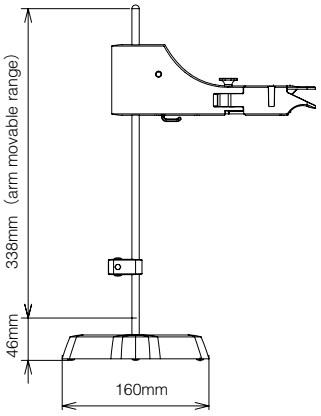
Name	Type	Specification	Volume	Part No.
Internal Filling Solution for pH Combination Electrode	525-3	3.33 M KCl	250ml	3999960023
Internal Filling Solution for Reference Electrode	300	3.33 M KCl	250ml	3200043640

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-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

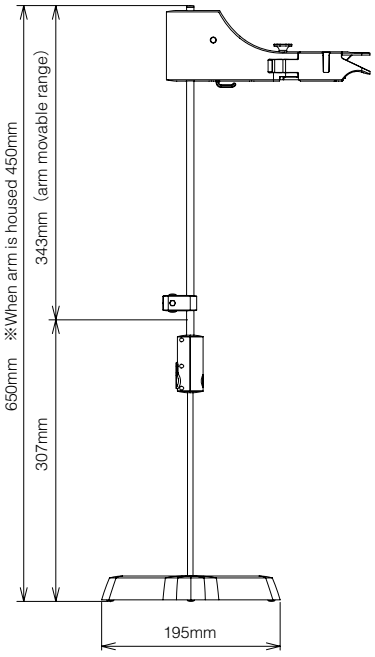


Body • Standard Electrode Stand



Long Type Electrode Stand

※Stretch shaft



Standard Electrode Stand FA-70S (384mm)

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

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.

SUPPORT HORIBA CUSTOMER SUPPORT SYSTEM

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

Technical Support

Please contact us with any technical questions about our products.

www.horiba.com/wq/support

User Support

Our support website is available for registered customers and features:

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

www.horiba.co.jp/register

Validation Support

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

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

*Optional services

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

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IMS HORIBA Group is operating Integrated Management System ISO9001 ISO14001 OHSAS18001

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