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 Kit with 21 CFR Part 11 Software	**F-74A-S-CFR** (3999960214)
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 TougH	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 TougH glass electrode (9615S-10D)

STANDARD TougH

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 TougH glass electrode (9618S-10D)

MICRO TougH

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 TougH glass electrode (9680S-10D)

LONG TougH

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 TougH glass electrode (9681S-10D)

SLEEVE TougH

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.)

Metallic Electrode (For ORP Measurement)

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

Conductivity Cells (Submersible Type)

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

Conductivity Cells (Flow Type)

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

501-S NIST pH Buffer Solution Kit

502-S USA pH Buffer Solution Kit

503-S Conductivity Standard Solution Kit

ORP Powders

220 250

230

Cleaning Solutions

pH Buffer Solution Kits			
Code	Part No.	Description	Volume
501-S	3999960015	NIST pH Buffer Solution Kit (pH 4.01, 6.86, 9.18 buffers & 3.33M KCl)	250ml each
502-S	3999960016	USA pH Buffer Solution Kit (pH 4.01, 7.00, 10.01 buffers & 3.33M KCl)	250ml each

pH Buffer Solutions			
Code	Part No.	Description	Volume
500-2	3999960028	pH 1.68 Buffer Solution at 25°C	500ml
500-4	3999960029	pH 4.01 Buffer Solution at 25°C	500ml
500-686	3999960030	pH 6.86 Buffer Solution at 25°C	500ml
500-7	3999960031	pH 7.00 Buffer Solution at 25°C	500ml
500-9	3999960032	pH 9.18 Buffer Solution at 25°C	500ml
500-10	3999960033	pH 10.01 Buffer Solution at 25°C	500ml
500-12	3999960034	pH 12.46 Buffer Solution at 25°C	500ml

Conductivity Standard Solution Kit			
Code	Part No.	Description	Volume
503-S	3999960017	Conductivity Standard Solution Kit (84µS/cm, 1413µS/cm, 12.88mS/cm & 111.8mS/cm)	250ml each

Conductivity Standard Solutions			
Code	Part No.	Description	Volume
500-21	3999960035	84 µS/cm Conductivity Standard Solution	500ml
500-22	3999960036	1413 µS/cm Conductivity Standard Solution	500ml
500-23	3999960037	12.88 mS/cm Conductivity Standard Solution	500ml
500-24	3999960038	111.8 mS/cm Conductivity Standard Solution	500ml

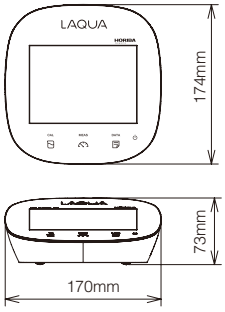
ORP Powders			
Code	Part No.	Description	Volume
160-51	3200043618	89 mV at 25°C (for 250ml solution)	10 sachets/pack
160-22	3200043617	258 mV at 25°C (for 250ml solution)	10 sachets/pack

pH/ORP Electrode Filling Solutions			
Code	Part No.	Description	Volume
525-3	3999960023	3.33M KCl	250ml
300	3200043640	3.33M KCl	250ml

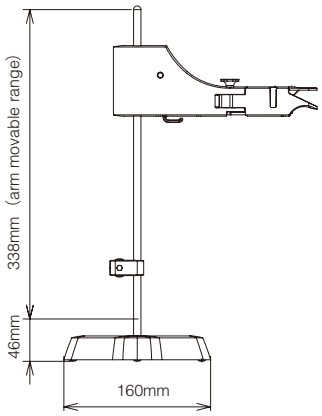
pH Electrode Cleaning Solutions			
Code	Part No.	Description	Volume
220	3014028653	For removing inorganic residues from glass membrane and liquid junction	2 x 50ml
230	3200530494	For removing inorganic and organic residues from glass membrane (30ml Solution A & 100ml Solution B)	30ml & 100ml
250	3200366771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

Accessories

Code	Part No.	Description
 LAQUA-SW-21CFR11	3200707161	21 CFR Part 11 Software includes CD with PIN code, USB cable, and manual
 Printer  Printer cable	3014030147 (230v) 3014030146 (120v)	Printer (for GLP/GMP compliance) Cable sold separately, Plain paper
	3014030148	Printer cable (1.5 m)
 Ink ribbon  Printer paper	3014030149	Printer paper (20 rolls)
	3014030150	Ink ribbon (5 pcs/set)
 Universal AC adapter	3200647413	Multi-Voltage (100-240V) with 6 plugs, (US, UK, EU, ANZ, Korea and China) 1.8 m cable
 X-51  X-52	3014028368	Digital simulator X-51 (pH, mV, Ion, DO, temperature simulator)
	3014028370	Digital simulator X-52 (Conductivity, temperature simulator)
 LCD protection sheet  Protection cover	3200382462	LCD protection sheet (2 pcs/pack)
	3200382441	Protection cover (Protects the meter for F-70, DS-70, 1000 series)
 USB cable Serial cable	3200373941	USB cable (to connect meter and PC.)
	3014030152	Analog cable (Analog (alarm) output cable)
	3014030151	Serial cable (to connect meter and PC (Serial, 9 pins))
FA-70S	3200382557	Adjustable, free-standing electrode stand (Height: 384 mm) *image on the right*
FA-70L	3200382560	Long, free-standing electrode stand (Height: 450-650mm) *image on the right*
	3200373991	Arm for electrode stand FA-70A, FA-70S, & FA-70L
	3200373961	Electrode holders, 2pcs (for mounting electrode with round cap on electrode stand arm)
	3200382477	Electrode protection caps, 3pcs (for 9615S-10D, 9618S-10D, 9681S-10D pH electrode)
	3200043508	Electrode protection caps, 5pcs (for 9621-10D, 9625-10D, 9630-10D, 9631-10D, 9632-10D, 6367-10D, 6377-10D, 6252-10D, 6261-10C, 1066A-10C, 1076-10C, 2060-10T, 9300-10D, 9382-10D, 3552-10D pH electrode)
	3200382482	Electrode protection cap for long electrode (for 9680S-10D, 9480-10C pH Electrode)

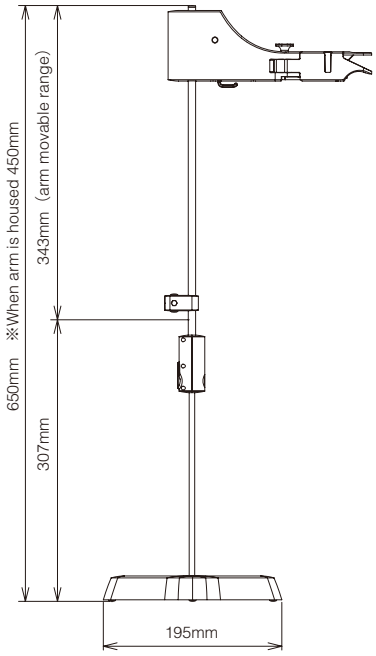


Body • Standard Electrode Stand



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

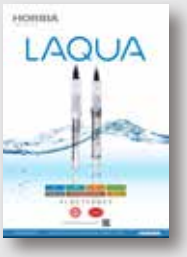
With over 60 years of engineering excellence, HORIBA's diverse range of water quality analyzers and electrodes are ideal for everyday laboratory needs through to the most demanding of applications. Visit our website for a wealth of useful information and water quality measurement tips to help you obtain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

Benchtop Meters

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

Handheld Meters

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



Electrodes

Various electrodes to match any application. A wide range of products for both benchtop and portable systems are available, including easy and reliable standard models, application-focused models for small samples or large containers, and special electrodes for specific sample characteristics.

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.

RoHS

HORIBA Instruments (Singapore) Pte. Ltd.
83 Science Park Drive, #02-02A,
The Curie, Singapore 118258
Phone: 65 6908-9660
Fax: 65 6745-8155
e-mail: **laqua@horiba.com**
www.horiba-laqua.com

HORIBA UK Limited
Kyoto Close, Moulton Park,
Northampton NN3 6FL
Phone: 44 (0) 1604 542567
Fax: 44 (0) 1604 542699
e-mail: **waterquality@horiba.com**
www.horiba.com/uk

IMS HORIBA Group is operating Integrated Management System ISO9001 ISO14001 OHSAS18001

Brochure HBTC-05-2017B