HORIBA

Explore the future

JQA-E-90039(Head Office/Factory) ISO 14001 Award of Certification
Horiba received these standards for excellence from the International Organization for Standardization.
ISO 9001 JQA-0298

CE marking compliant

Water Quality Monitoring System

U-20XD Series

NEW

HEAVY-DUTY STAINLESS STEEL PROTECTIVE COVER

- 1 month continuous monitoring
- Depth up to 100 meters
- GPS function
- 13 simultaneous parameters

Visit Our Web Site at

http://www.horiba-water.com

The U-20XD Series: Same Innovative features,now with Xtra Durable design

- **Heavy-duty stainless steel protective cover**
- **Pelican® carrying case standard** (U-22XD Only)
- **Rubber-made sensor guard to protect sensors and prevent contamination**

Water is as precious as life itself. That's why current threats to water supplies make water quality analysis vital to our very existence. HORIBA has created the Multi-function Water Quality Monitoring System. Years of HORIBA sensor technology development have reached their culmination in the form of a 47-mm diameter sensor probe: a compact monitoring solution offering high pressure tolerance, long-term continuous measurement capability and highly accurate, simultaneous analysis of 13 parameters. In addition to the Water Quality Monitoring System's own capabilities, it was designed by HORIBA to be compatible with GPS and other data processing techniques.

One-touch calibration makes work easy

Just submerge the probe into the calibration beaker filled with standard solution and press the button for simultaneous onepoint calibration. The system also enables two-point calibration where high-precision measurement data is required.

- **Press a button**
  One point calibration for all 5 parameters (pH, Conductivity, Turbidity, DO, Depth) at once with pH4 solution.
- **Press another button**
  One point calibration for all 3 Ion parameters (Cl^-, NO_3^-, Ca^{2+} only) at once with Ion one-point calibration solution.

▲Control Unit

Murti-Probe ▶

Six sensors, including Turbidity in Two-inches probe

Turbidity sensor

Fits in a 2-inch well

Dry cell battery operated meter

You don't have to worry about charging the battery.
Just buy a common dry cell battery at a store.

Pelican® carrying case standard for the U-22XD SET

World's First!
HORIBA's high-precision dissolved oxygen sensor (Patented)

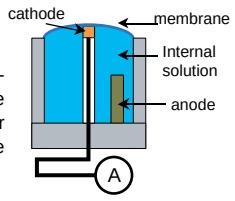
With its membrane galvanic cell, the HORIBA dissolved oxygen sensor is virtually impervious to eddies and flows in the solution. Highly precise measurements can now be obtained with an ease.

HORIBA DO Sensor needs no stirring, quick response

● Diaphragm Galvanic Battery Method

Cathode : $O_2+2H_2O+4e^- \rightarrow 4OH^-$
Anode : $2Pb+4OH^- \rightarrow 2PbO+2H_2O+4e^-$

Larger the cathode surface is, more it is influenced by the eddies and flows of samples. The cathode of the new DO sensor is 1/45 smaller than the old type, obtained 95% influence free from the water flow!!



● Response efficiency

Response from Air to Zero-gas	U-20
T90	30 sec
T95	55 sec

Polarographic method may have slower response.

● Membrane replacement

Membrane of DO sensor can be replaced by the membrane replacement kit.

Up to one month
Data logging

The sensor's built-in memory function enables continuous measurement for as long as one month*—— just by leaving the probe submerged in the sample. Personnel need not to be present during the measurement process —— the data can even be captured by personal computers in remote locations.

*With measurements every 15 minutes.

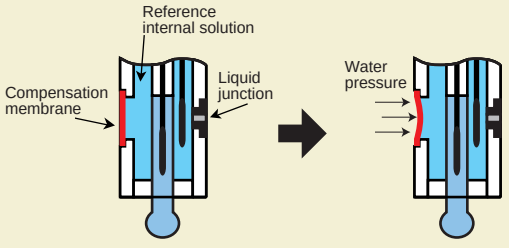
Simultaneous measurement of
13 parameters

With the W-23XD unit (only), simultaneous measurements of up to 13 parameters (from pH, dissolved oxygen, and conductivity to seawater specific gravity and a variety of ions) can be obtained —— much more quickly and easily than with conventional instruments. With its powerful measurement capabilities, the compact U-20XD series is recommended for all water quality researchers and professionals.

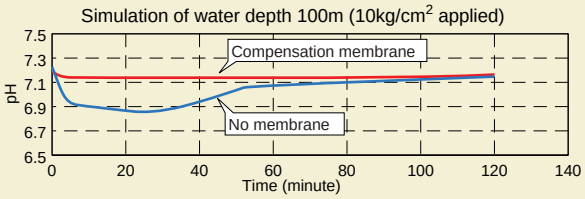
Measurement at depths as low as
100 meters

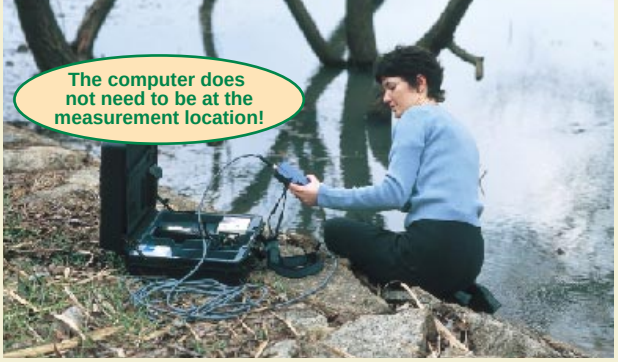
With its superior durability and high pressure resistance, the newly developed sensor facilitates measurements as far as 100 meters below the water surface. Thus, in addition to rivers, lakes and other shallow bodies, high-precision measurement can now be readily obtained —— and water quality can be monitored —— at dams, and even in the open sea.

Pressure compensation membrane



Simulation of water depth 100m (10kg/cm^2 applied)





System enables

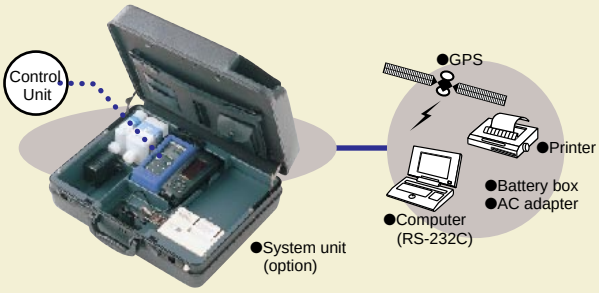
GPS

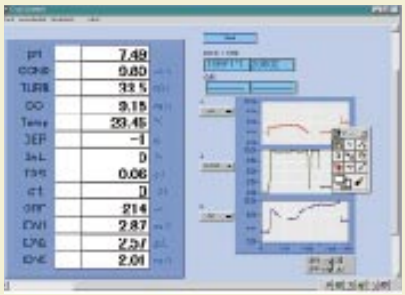
and numerous other data processing mechanisms

System capabilities can be greatly increased by installing the Global Positioning System (GPS), supplied with unit U-2002. GPS allows measurement of location and time, in addition to water quality, and enables main unit screen display of the obtained data —— an indispensable function for maintaining detailed records. With the acquired longitude, latitude and depth data, subject locations can be mapped in 3-D.

GPS functions by processing satellite signals to provide position measurement with pinpoint accuracy. It is widely employed in air and sea navigation, as well as car navigation systems.

The system unit alone is compatible with many I/O interfaces.





▲Example of typical measurement screen

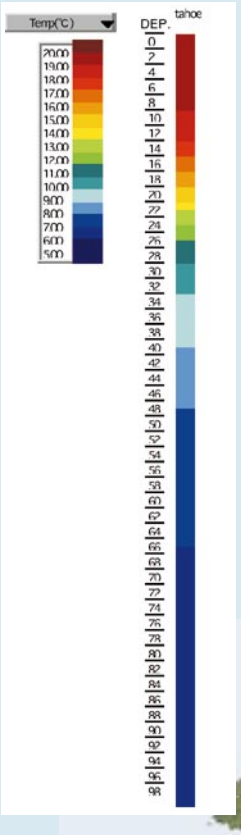
▲Example showing GPS and mapping software application

(GPS MAP'N TRACK made by MAGELLAN SYSTEM CORPORATION is used for mapping software.)

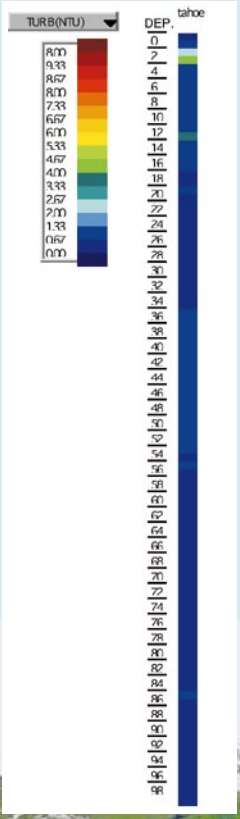
WATER QUAUTY DATA

U.S.A. : Lake Tahoe

Temperature

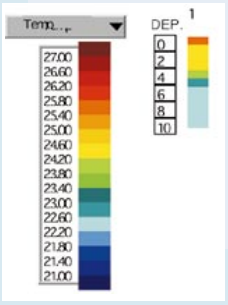


Turbidity

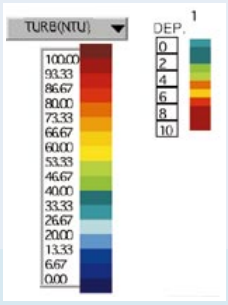


Argentine : Los Chorrilos River

Temperature



Turbidity



ILEC

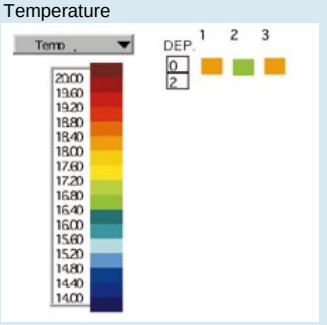
This product has been developed in cooperation with the International Lake Environment Committee (ILEC)

http://www.ilec.or.jp

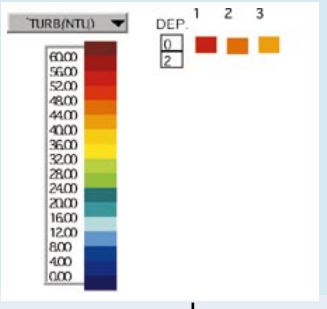
AROUND THE WORLD

Denmark : Lading Marsh

Temperature

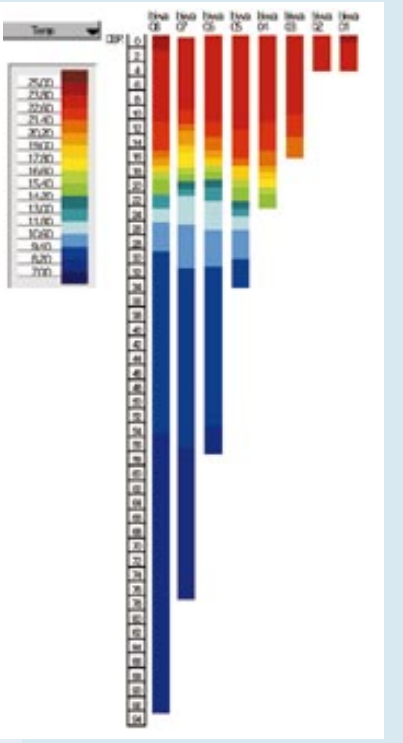


Turbidity

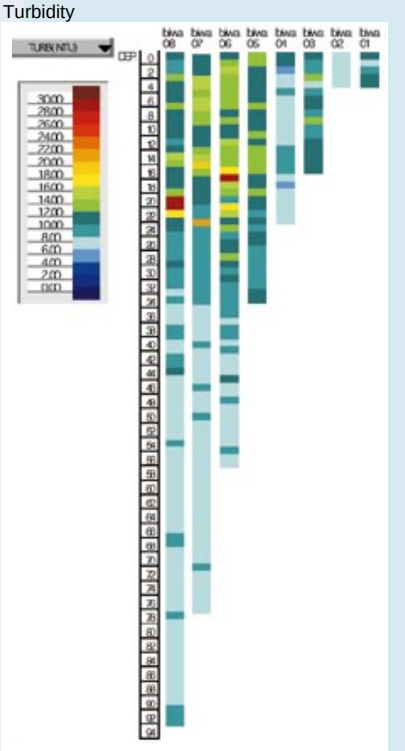


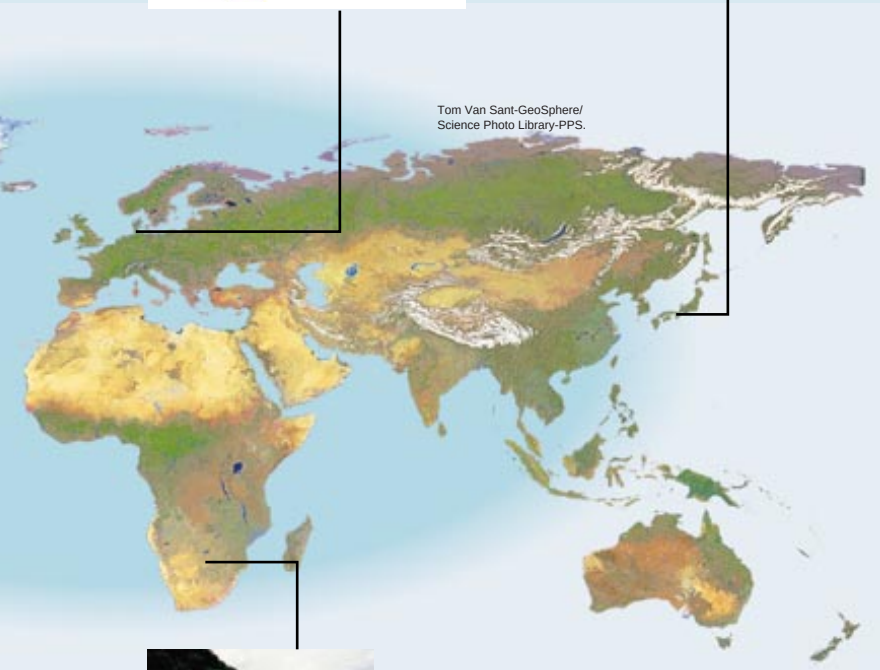
Japan : Lake Biwa

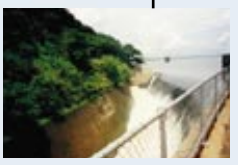
Temperature



Turbidity

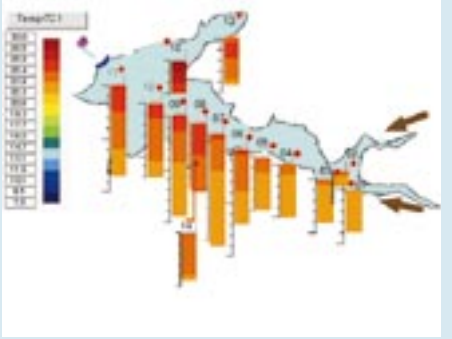






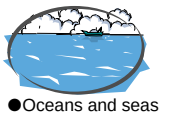
Zimbabwe : Lake Chivero

Temperature



Turbidity

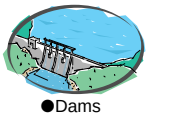
U-20 series applications

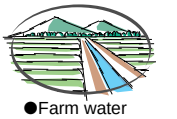

●Oceans and seas

●City sewage water

●Lakes and marshes

●Factory drainage


●Dams


●Farm water

●Wells and ground water

●Nurseries

U-22XD SET

Cable not detachable

Pelican® carrying case as a standard case

Sensor probe with built-in sensors (depth, conductivity, temperature, turbidity)

Packing List

- Main unit
- Sensor probe with the cable (2m, 10m, 30m).
  Type of cable length is selected depending on applications
- Sensor ● pH4 standard solution (250 ml)
- pH intemal solution (250 ml) ● Syringe (with needle)
- Sensor spanner ● Calibration beaker ● Grip holder
- Carrying case ● Dry cell 6F22 (S006P) (1 piece)
- Dry cells (R03) (3 pieces) ● Operation manual
- Consumables

■U-22XD SET measurement parameters

Maximum probe size	47mm
pH	●
Dissolved oxygen	●
Conductivity	●
Salinity	●
Total dissolved solids (TDS)	●
Seawater specific gravity	●
Temperature	●
Turbidity	●
Depth	●
Oxidation reduction potential (ORP)	●
Data logging	●

U-20XD series

Application requiring various cable lengths, measurement at multiple points, or connecting the probe with your tool, select necessary parts from the following table.

Cable detachable

Control Unit

W-2000
Control Unit, Grip holder, Batteries

Cables

W-002C 2m
W-010C 10m
W-030C 30m
W-100C 100m

Multi-Probe

Sensor probe with built-in sensors (depth, conductivity, temperature, turbidity)

W-22XD

Packing List

pH4 standard solution, Reference solution, Calibration beaker, Batteries, Instruction manual, Consumables

W-23XD

Packing List

pH4 standard solution, Reference solution, Ion auto-cal solution, Calibration beaker, Batteries, Instruction manual, Consumables

■U-20XD series measurement parameters

	W-22XD	W-23XD
Maximum probe size	47mm	97mm
pH	(●)option	(●)option
Dissolved oxygen	(●)option	(●)option
Conductivity	●	●
Salinity	●	●
Total dissolved solids (TDS)	●	●
Seawater specific gravity	●	●
Temperature	●	●
Turbidity	●	●
Depth	●	●
Oxidation reduction potential (ORP)	(●)option	(●)option
Data logging	●	●
100m depth mess.		●
Nitrate ion*		(●)option
Calcium ion*		(●)option
Chloride ion*		(●)option
Fluoride ion*		(●)option
Potassium ion*		(●)option
Ammonia*		(●)option

*Optional sensor
(replacement with other ion sensors is possible).

●Sensors

Sensors	Internal Solution	Cartridge	Membrane Replacement Kit
pH	#330 (P/N:9037005200)	–	–
pH/ORP	#330 (P/N:9037005200)	–	–
DO	–	–	Approx. 50 uses (P/N:9037007400)*
Nitrate Ion	#302 (P/N:9037006600)	#7681 (P/N:9003015200)	–
Chloride Ion	#301 (P/N:9037006700)	#7660 (P/N:9003015000)	–
Calcium Ion	#300 (P/N:9003003200)	#7683 (P/N:9003015400)	–
Fluoride Ion	#300 (P/N:9003003200)	#7682 (P/N:9003015300)	–
Potassium Ion	#303 (P/N:9037006900)	#7661 (P/N:9003015100)	–
Ammonia	#370 (P/N:9012000900)	–	Approx. 6 uses (P/N:9037007000)

*includes internal solution

● Standards and calibration solutions

pH4	#100-4 (P/N:9003001600)
pH7	#100-7 (P/N:9003001700)
pH9	#100-9 (P/N:9003001800)
ORP (89mV at 25℃)	#160-51 (P/N:9003003100)
ORP (258mV at 25℃)	#160-22 (P/N:9003003000)
Ion one-point calibration solution	#130 (P/N:9037005200)

●U-20XD series specifications

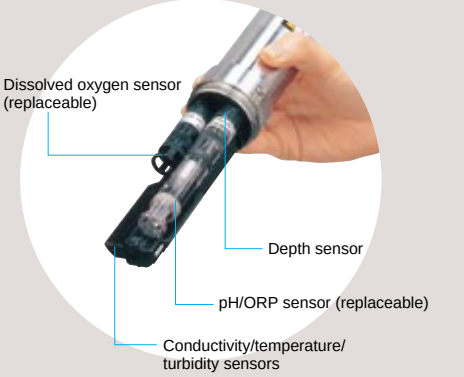
			U-22XD SET	W-22XD	W-23XD
Control Unit	Water proof construction	IP-67	●	(●)	(●)
Multi-Probe ✻1	Measurement temperature	0~55°C	(to 30 m)	Option	Option
	Storage temperature	-5~60°C			
	Measurement depth ✻2	to 100 m			
	Maximum probe size	95 mm			
	Probe length	430 mm			
	Continuous use ✻3	30days			
	Data logging	○			
	Manual data memory (2880 items)	○			
	Automatic calibration	○			
pH ●Two-point calibration ●Automatic temperature compensation	Measurment Principle	Glass electrode method	●	(●) Option	(●) Option
	Range	pH 0~14			
	Resolution	0.01 pH			
	Repeatability	±0.05 pH			
	Accuracy	±0.1 pH			
Dissolved oxygen ●Salt correction (0 to 40 ppt /automatic) ●Automatic temperature compensation	Measurment Principle	Diaphragm galvanic battery method	●	(●) Option	(●) Option
	Range	0~19.99 mg/L			
	Resolution	0.01 mg/L			
	Repeatability	±0.1 mg/L			
	Accuracy	±0.2 mg/L			
Conductivity ●Auto range ●Automatic temperature conversion (25°C) ●SI units	Measurment Principle	4 AC electrode method	●	●	●
	Range	0~9.99 S/m			
	Resolution	0.1%F.S			
	Repeatability	±1%			
	Accuracy	±3%			
Salinity	Measurment Principle	Conductivity conversion	●	●	●
	Range	0~4%			
	Resolution	0.01%			
	Repeatability	±0.1%			
	Accuracy	±0.3%			
Total Dissolved Solids (TDS) ●Conversion factor setting	Measurment Principle	Conductivity conversion	●	●	●
	Range	0~100 g/L			
	Resolution	0.1%F.S			
	Repeatability	±2 g/L			
	Accuracy	±5 g/L			
Seawater specific gravity ●Display σ_t, σ_0, σ_{15}	Measurment Principle	Conductivity conversion	●	●	●
	Range	0~50 σ_t			
	Resolution	0.1 σ_t			
	Repeatability	±2 σ_t			
	Accuracy	±5 σ_t			
Temperature	Measurment Principle	Thermistor method	●	●	●
	Range	0~55°C			
	Resolution	0.01°C			
	Repeatability	±0.3°C			
	Accuracy	±1.0°C			
Turbidity ●Unit selection	Measurment Principle	Penetration and scattering method	●	●	●
	Range	0~800 NTU			
	Resolution	0.1 NTU			
	Repeatability	±3%			
	Accuracy	±5%			
Water depth	Measurment Principle	Pressure method	●	●	●
	Range(NTU or mg/L)	0~100m			
	Resolution	0.1 m			
	Repeatability	±3%			
	Accuracy	±5%			
Oxidation reduction potential(ORP)	Measurment Principle	Platinum electrode method	●	(●) Option	(●) Option
	Range	±1999 mV			
	Resolution	1 mV			
	Repeatability	±5 mV			
	Accuracy	±15 mV			
Ion ●Auto range	Measurment Principle	Ion electrode method	—	—	(●) Option
	Resolution	0.1%F.S			
	Repeatability	±5%			
	Accuracy	±10%			
Nitric acid ion	Range	NO_3^-: 0.62~62,000 mg/L(pH 3~7)			(●) Option
Chloride ion		Cl^-: 0.4~35,000 mg/L(pH 3~11)			
Calcium ion		Ca^{2+}: 0.4~40,080 mg/L(pH 5~11)			(●) Option
Fluoride ion		F^-: 0.02~19,000 mg/L(pH4~10:20 mg/L)			
Potassium ion		K^+: 0.04~39,000 mg/L(pH5~11:3.9 mg/L)			
Ammonia		NH_3: 0.1~1,000 mg/L(pH 12 or more)			
Simultaneously measurable parameters			10	10	13

Note: The accuracy rating value is obtained from measurements at an intermediate point of the standard solution after two-point calibration (at room temperature and pressure).
The repeatability and accuracy rating percentages are based on the full scale (except for salinity).
✻1: Organic solvents, strong acids, and strong alkaline solvents cannot be measured.
✻2: The maximum depth for ion measurements are 100 m for nitric acid ion, chioride ion, fluoride ion, 15 m for calcium ion, ammonia, and 3 m for potassium ion.
✻3: Based on the data measured automatically at 15 minutes intervals. The battery life taken into account. Periodical maintenance and calibration is necessary when a lot of shellfishes and seaweeds exist at the measurement point.

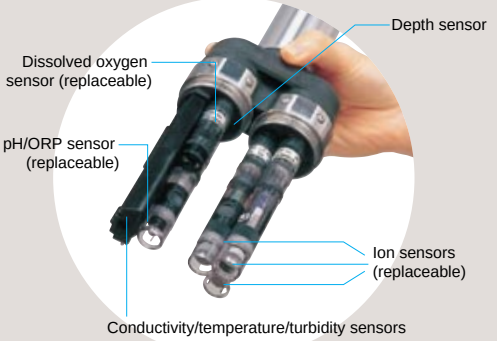
● Influence of Hindering Ions, The values show permissible coexistence limits

Nitrate Ion	ClO_4=0.03 I^-=0.1 Br^-=2 NO_2=3 Cl^-=40 F^-=200 CH_3COO^-=300 SO_4^{2-}= more than 1000
Chloride Ion	$S_2O_3^{2-}$, S^{2-}, I^-, Ag^+, Hg^{2+}=Not possible SCN^-=0.3 MnO^{4-}=0.1 Br^-=0.03
Calcium Ion	Fe^{3+}=0.1 Fe^{2+},Zn^{2+}=1 Sr^{2+}=50 Ni^{2+}, Cu^{2+}=70 Co^{2+}=350 Mn^{2+}=500 Mg2+=1,000 Na^+,K^+, Ba^{2+}, NH_4^+=more than 1000
Fluoride Ion	OH^-=10, All negative ions except for OH^- is permissible
Potassium Ion	Rb^+=0.4 Cs^+=3 NH_4^+=70 Li^+, Na^+, Mg^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}=more than 1000
Ammonia	—

●U-22XD SET, W-22XD sensor



●W-23XD sensor



●Option

■System unit
Model U-2002
(with GPS, printer, and sample software)

Please specify the printer voltage: 100, 110, 220V

■Carrying Case
W-2010(for cable length less than 10m),
W-2030(for cable length more than 30m)

Please select appropriate carrying case depending on your cable length.
✻Multi-probe guard or Flow Through Cell can only be stored in W-2030

■Extension Unit
Model U-2001

Attaching the extension adapter to the main unit enables connection of an AC adapter, analog output, and RS-232C interface.

■Multi-probe Guard
Model W-2200

✻Multi-Probe not included

■Flow Through Cell
Model W-2100

Applicable only for U-22XD set and W-22XD.

■AC adapter
Model AC-10

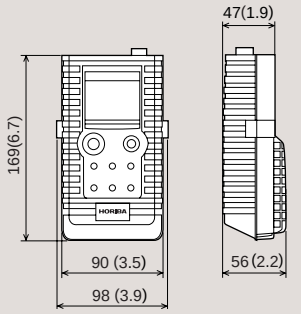
Connection to the extension adapter or system unit is required. Please specify the voltage: 100, 110, 220V

■Communication Cable
Model RS-232C

For RS-232C communication. U-2001 or U-2002 is necessary.

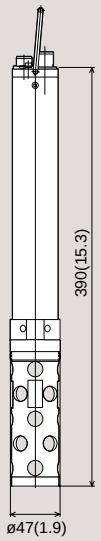
■External dimensions unit: mm (in)

W-2000 Control unit



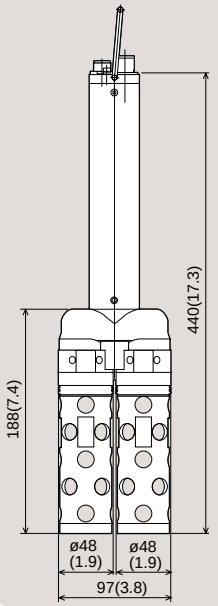
Weight: approx 500 g

W-22XD



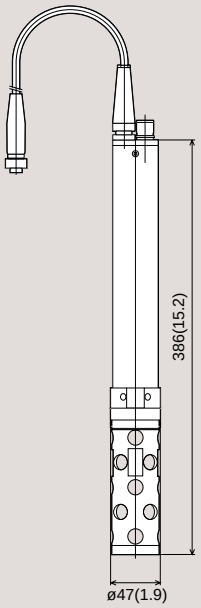
Weight: approx 1300 g

W-23XD



Weight: approx 1800 g

U-22XD



Weight: approx 1400 g (2m cable)
approx 1900 g (10m cable)

Customer Registration System

Register as a Horiba meter user to receive periodical information such as FAQ, Software upgrade, Technical documents and lot others.

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

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

- The contents of this catalog are subject to change without prior notice, and without any subsequent liability to this company.
- The color of the actual products may differ from the color pictured in this catalog due to printing limitations.
- It is strictly forbidden to copy the content of this catalog in part or in full.

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

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

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

Beijing Representative Office
Suite 1409, Tower B,
COFCO Plaza, No. 8,
Jianguomennei Avenue,
Beijing, China, 100005
Phone: 86 10-6522-7573
Fax: 86 10-6522-7582

Shanghai Representative Office
Unit F1 16F
Jiushi Fuxing Mansion,
No. 918, Huaihai Zhong Road,
Shanghai, China, 200020
Phone: 86 21-6415-3689/90
Fax: 86 21-6415-9746

Taiwan Representative Office
No.15 Alley6, Lane 485,
Sec. 1, Kuang Fu Rd.,
Hsin-Chu, Taiwan, R.O.C.
Phone: 886 (3) 5799143
Fax: 886 (3) 5799164

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

●HORIBA INSTRUMENTS Pte. LTD.
10 Ubi Crescent
#05-11/12, Ubi Techpark
Singapore 408564
Phone: 65 745-8300
Fax: 65 745-8155

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

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

●HORIBA / STEC INCORPORATED
1080 E. Duane, Suite. A
Sunnyvale, CA 94086
U.S.A.
Phone: 1 (408) 730-4772
Fax: 1 (408) 730-8975

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

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

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

●HORIBA EUROPE GmbH
Head Office
Hauptstrasse 108
D-65843 Sulzbach
Germany
Phone: 49 (6196) 6718-0
Fax: 49 (6196) 641198

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

HORIBA FRANCE
Rue L. et A. Lumière
Technoparc
F-01630 St-Genis-Pouilly
France
Phone: 33 (4) 50-42-27-63
Fax: 33 (4) 50-42-07-74

HORIBA SWEDEN
Hertig Carlsväg 55-57
S-15138 Södertälje
Sweden
Phone: 46 (8) 550-80701
Fax: 46 (8) 550-80567

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

Bulletin:HRE-1897H

Printed in Japan ZH-TF(SK)53