

Measure and  
Display up to  
**11 Items**  
Simultaneously

**Rugged  
Outdoor  
Design**

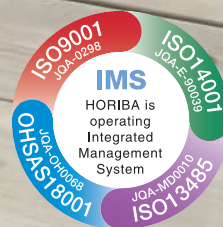
Multi-parameter Water Quality Meters

## U-50 Series

### Multi-parameter Water Quality Meters



**CE**  
CE marking compliant



# Measure and Display 11 Parameters Simultaneously with Newly Designed Control Unit and Sensor Technology.

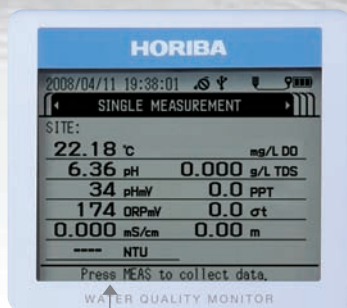
Intuitive software assures ease of use and operation efficiency.

Experience the durability and performance of an instrument that exceeds your expectations in the field testing of ground water and surface water applications.

Measure and  
Display up to  
**11 Items**  
Simultaneously

## Control Unit Features:

- Easy to read LCD Display
- One-hand operation
- On-screen icon displays battery power and GPS, USB and probe unit connectivity
- Quick-connect connector (cable to control unit)
- Shock resistant cover
- Backlight display



Operating instructions



Rugged  
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Design

## Sensor Probe Unit Features:

- Turbidity Sensor conforms to US EPA method 180.1
- Minimum dissolved oxygen sensor maintenance with screw-on type membrane cap
- Chemical resistant materials of construction
- Optional ToupH pH electrode\* that is difficult to break
- Field replaceable sensors



\*Prevents damage during maintenance.

# Innovative Features,

Multi-parameter Water Quality Meters

U-50 Series

Design and Performance that Makes Measurement Easy in a Variety of Applications



●Measurement at a Drainage Ditch or Wharf

Instantaneously monitor, collect and store data while moving the submersed sensor probe unit.



●Measurement in Marshes

The control unit's waterproof design allows the user to work without concern of splashing or accidentally dropping the control unit in the water. The backlight display allows the user to take measurements in the dark.



●Measurements in Surface Water

The long 30 meter cable option allows the user to deploy the sensor probe unit and collect measurement data at varying depths. The GPS models facilitate environmental surveys of oceans, lakes and rivers.



●Measuring Ground Water from an Intake

With the sensor probe lowered and submersed at an intake, 10,000 data sets can be stored in the control unit and transferred to a PC later.



# Exceptional Performance and Optimal Design for field ap

## Control Unit >>>

### Easy to read LCD Display and Easy Operation



- All 11 parameters measurement data is listed on screen.
- Text size can be changed to large font.
- Small control unit design for operation with one hand.
- Icon display information.



- Operation instructions on-screen.
- Variable display contrast compensates for extreme ambient lighting conditions.

### Control Unit Design for Field Operations

- Auto-calibration feature provides hassle free calibration of pH, dissolved oxygen, conductivity, turbidity and depth.
- Shock resistant cover designed for rough treatment in the field and is easily cleaned.
- Cable can be easily connected and disconnected with quick-connect fitting.



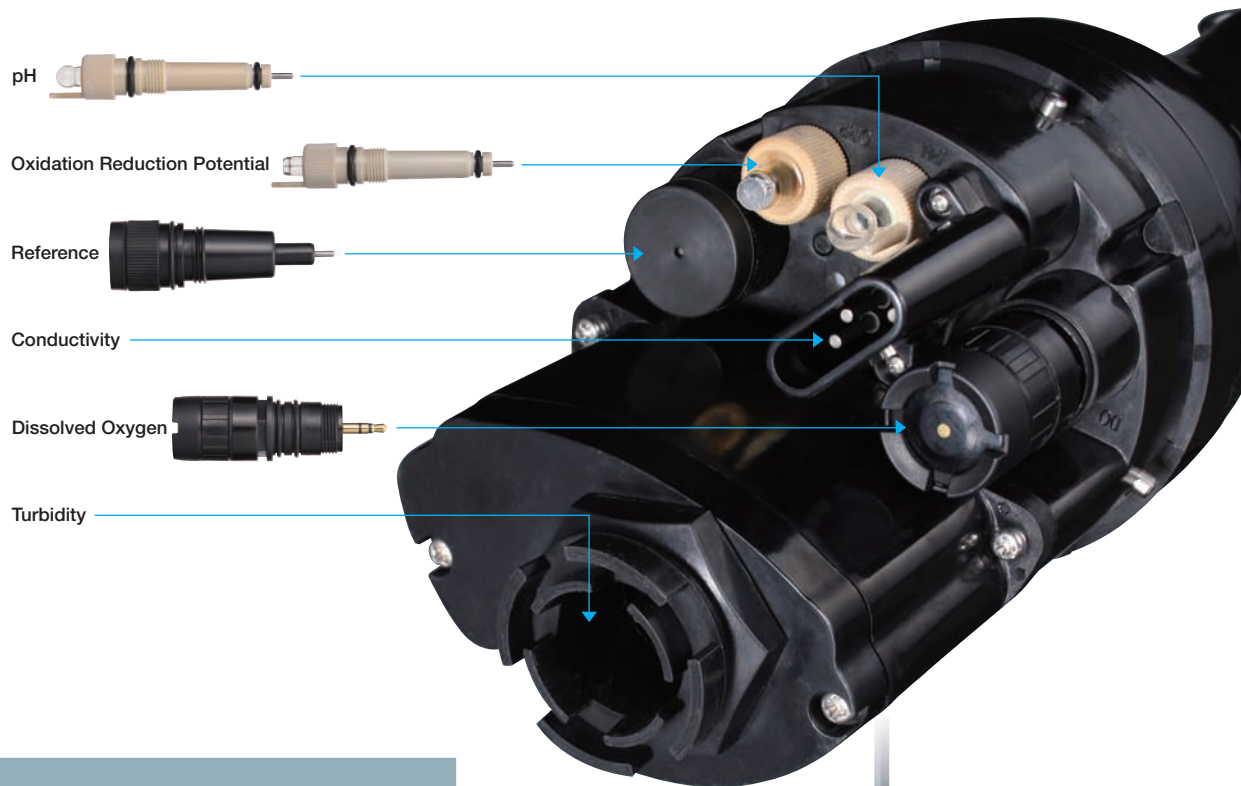
### Data Management

- Auto hold function freezes average data values on the screen to offer more time to verify or transcribe data.
- Diagnostic functions notify the user of errors.
- Integral USB connection for data transfer to a PC. USB cable is sold separately and includes software.
- Selectable measurement units allow the operator to report data without the need to convert data to desired units of measure.



### ■ GPS Compatible (U-52G/53G)

The system can be used in conjunction with the Global Positioning System (GPS) to record latitude, longitude, and other location data for individual measurements. This is particularly useful for environmental surveys.



## Sensor Probe Unit >>>

### Multiple Sensors Housed in Each Probe

- Multiple sensors allow for the measurement of 11 parameters simultaneously. (pH, pH (mv), ORP, DO, COND, Salinity, TDS, Seawater Specific Gravity, Temperature, Turbidity, Water depth)
- Turbidity Sensor conforms to US EPA method 180.1 (Model U-53). Precision has been improved over conventional instruments. The Model U-53 high precision field replaceable turbidity sensor with wiper has a resolution of 0.01 NTU.
- Improved stability of the dissolved oxygen sensor has been achieved with a new 3 electrode design for fast response and polarographic sensor for ease of maintenance.
- pH and ORP electrodes can be replaced individually

### ■ U-5X series specification comparison list

|                                     | U-51 | U-52 | U-52G | U-53 | U-53G |
|-------------------------------------|------|------|-------|------|-------|
| pH                                  | ●    | ●    | ●     | ●    | ●     |
| ORP (Oxidation Reduction Potential) | ●    | ●    | ●     | ●    | ●     |
| Dissolved Oxygen                    | ●    | ●    | ●     | ●    | ●     |
| Conductivity                        | ●    | ●    | ●     | ●    | ●     |
| Salinity                            | ●    | ●    | ●     | ●    | ●     |
| TDS (Total Dissolved Solids)        | ●    | ●    | ●     | ●    | ●     |
| Seawater Specific Gravity           | ●    | ●    | ●     | ●    | ●     |
| Temperature                         | ●    | ●    | ●     | ●    | ●     |
| Turbidity (LED)                     | —    | ●    | ●     | —    | —     |
| Turbidity (Tungsten lamp)           | —    | —    | —     | ●    | ●     |
| Water depth                         | —    | —    | ●     | ●    | ●     |
| GPS                                 | —    | —    | ●     | —    | ●     |



## U-50 Series Specifications



|                                                                                                              |                                                    | U-51                                                                  | U-52                                             | U-52G                    | U-53                                                                                    | U-53G |
|--------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------|-------|
| Sensor Probe                                                                                                 | Measurement temperature                            | -10 to 55℃                                                            |                                                  |                          |                                                                                         |       |
|                                                                                                              | Maximum sensor diameter                            | Approx. 96 mm                                                         |                                                  |                          |                                                                                         |       |
|                                                                                                              | Probe length                                       | Approx. 340 mm                                                        |                                                  |                          |                                                                                         |       |
|                                                                                                              | Cable length                                       | Standard: 2 m, option: 10, 30 m                                       |                                                  |                          |                                                                                         |       |
|                                                                                                              | Mass                                               | Approx. 1,800 g (Approx. 3.97 lbs)                                    |                                                  |                          |                                                                                         |       |
|                                                                                                              | Automatic calibration (uses pH4)                   | ●                                                                     |                                                  | ●                        |                                                                                         | ●     |
|                                                                                                              | Turbidity wiper                                    | —                                                                     | —                                                | —                        | ●                                                                                       | ●     |
|                                                                                                              | Measurement depth                                  | Max. 30 m                                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Liquid contact part material (liquid end material) | PPS, glass, SUS316L, SUS304, FKM, PEEK,Q, titanium, FEP membrane, POM |                                                  |                          |                                                                                         |       |
| Water resistance                                                                                             | JIS protection level 8                             |                                                                       |                                                  |                          |                                                                                         |       |
| Control Unit                                                                                                 | Outer dimensions                                   | 115 (W) x 66 (D) x 283 (H) mm                                         |                                                  |                          |                                                                                         |       |
|                                                                                                              | Mass                                               | Approx. 800 g (Approx. 1.76 lbs)                                      |                                                  |                          |                                                                                         |       |
|                                                                                                              | LCD                                                | 320 x 240 liquid crystal display with backlight (black and white)     |                                                  |                          |                                                                                         |       |
|                                                                                                              | Data memory                                        | 10,000                                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Communication                                      | USB                                                                   |                                                  |                          |                                                                                         |       |
|                                                                                                              | Battery                                            | C batteries x 4                                                       |                                                  |                          |                                                                                         |       |
|                                                                                                              | Water resistance                                   | JIS protection level 7 (when sensor cable is fitted)                  |                                                  |                          |                                                                                         |       |
|                                                                                                              | Battery Life                                       | Approx. 70 hours (without backlight)                                  |                                                  | Approx. 500 measurements |                                                                                         |       |
|                                                                                                              | Storage temperature                                | -10 to 60℃                                                            |                                                  |                          |                                                                                         |       |
| Ambient temperature                                                                                          | -5 to 45℃                                          |                                                                       |                                                  |                          |                                                                                         |       |
| pH<br>●Two-point calibration<br>●Automatic temperature                                                       | Measurement principle                              | Glass electrode method                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | pH0 to 14                                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.01pH                                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±0.05pH                                                               |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | ±0.1pH                                                                |                                                  |                          |                                                                                         |       |
| Oxidation Reduction Potential (ORP)                                                                          | Measurement principle                              | Platinum electrode method                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | -2000 mV to +2000 mV                                                  |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 1 mV                                                                  |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±5 mV                                                                 |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | ±15 mV                                                                |                                                  |                          |                                                                                         |       |
| Dissolved Oxygen (DO)<br>●Salinity conversion (0 to 70 PPT/automatic)<br>●Automatic temperature compensation | Measurement principle                              | Polarographic method                                                  |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | 0 to 50.0 mg/L                                                        |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.01 mg/L                                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±0.1 mg/L                                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | 0 to 20 mg/L: ±0.2 mg/L    20 to 50 mg/L: ±0.5 mg/L                   |                                                  |                          |                                                                                         |       |
| Conductivity (COND)<br>●Auto range<br>●Automatic temperature conversion (25℃)                                | Measurement principle                              | 4 AC electrode method                                                 |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | 0 to 10 S/m (0 to 100 mS/cm)                                          |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.000 to 0.999 mS/cm: 0.001                                           | 1.00 to 9.99 mS/cm: 0.01                         | 10.0 to 99.9 mS/cm: 0.1  |                                                                                         |       |
|                                                                                                              | Repeatability                                      | 0.0 to 99.9 mS/m: 0.1                                                 | 0.100 to 0.999 S/m: 0.001                        | 1.00 to 9.99 S/m : 0.01  |                                                                                         |       |
|                                                                                                              | Accuracy                                           | *±1% F.S. (Median of two-point calibration)                           |                                                  |                          |                                                                                         |       |
| Salinity                                                                                                     | Measurement principle                              | Conductivity conversion                                               |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | 0 to 70 PPT (permillage)                                              |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.1 PPT                                                               |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±1 PPT                                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | ±3 PPT                                                                |                                                  |                          |                                                                                         |       |
| Total Dissolved Solid (TDS)<br>●Conversion factor setting                                                    | Measurement principle                              | Conductivity conversion                                               |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | 0 to 100 g/L                                                          |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.1% F.S.                                                             |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±2 g/L                                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | ±5 g/L                                                                |                                                  |                          |                                                                                         |       |
| Seawater specific gravity<br>●Display σ <sub>t</sub> , σ <sub>0</sub> , σ <sub>15</sub>                      | Measurement principle                              | Conductivity conversion                                               |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | 0 to 50 σ <sub>t</sub>                                                |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.1 σ <sub>t</sub>                                                    |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | ±2 σ <sub>t</sub>                                                     |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | ±5 σ <sub>t</sub>                                                     |                                                  |                          |                                                                                         |       |
| Temperature                                                                                                  | Measurement principle                              | Thermistor method                                                     |                                                  |                          |                                                                                         |       |
|                                                                                                              | Range                                              | -10 to 55℃                                                            |                                                  |                          |                                                                                         |       |
|                                                                                                              | Resolution                                         | 0.01℃                                                                 |                                                  |                          |                                                                                         |       |
|                                                                                                              | Repeatability                                      | *±0.10℃ (at calibration point)                                        |                                                  |                          |                                                                                         |       |
|                                                                                                              | Accuracy                                           | JIS class B platinum thermometer sensor (±0.3+0.005   t  )            |                                                  |                          |                                                                                         |       |
| Turbidity (TURB)                                                                                             | Measurement principle                              |                                                                       | LED light source and 30° scattering method       |                          | Tungsten lamp source and 90° scattering method                                          |       |
|                                                                                                              | Range                                              |                                                                       | 0 to 800 NTU                                     |                          | 0 to 1000 NTU                                                                           |       |
|                                                                                                              | Resolution                                         |                                                                       | 0.1 NTU                                          |                          | 0.01 NTU                                                                                |       |
|                                                                                                              | Repeatability                                      | —                                                                     | *±5% (Reading) or ± 0.5 NTU whichever is greater |                          | ±3% (Reading) or ±0.1 NTU whichever is greater                                          |       |
|                                                                                                              | Accuracy                                           |                                                                       | ±5% (Reading) or ±1 NTU whichever is greater     |                          | 0 to 10 NTU: ±0.5 NTU<br>10 to 1000 NTU: 3% (Reading)<br>or ±1 NTU whichever is greater |       |
| Water depth                                                                                                  | Measurement principle                              |                                                                       |                                                  | Pressure method          |                                                                                         |       |
|                                                                                                              | Range                                              | —                                                                     | —                                                | 0 to 30 m                |                                                                                         |       |
|                                                                                                              | Resolution                                         |                                                                       |                                                  | 0.5 m                    |                                                                                         |       |
|                                                                                                              | Repeatability                                      |                                                                       |                                                  | ±1% F.S.                 |                                                                                         |       |
|                                                                                                              | Accuracy                                           |                                                                       |                                                  | ±0.3 m                   |                                                                                         |       |
| GPS                                                                                                          | 12 channel parallel                                | —                                                                     | —                                                | ●                        | —                                                                                       | ●     |

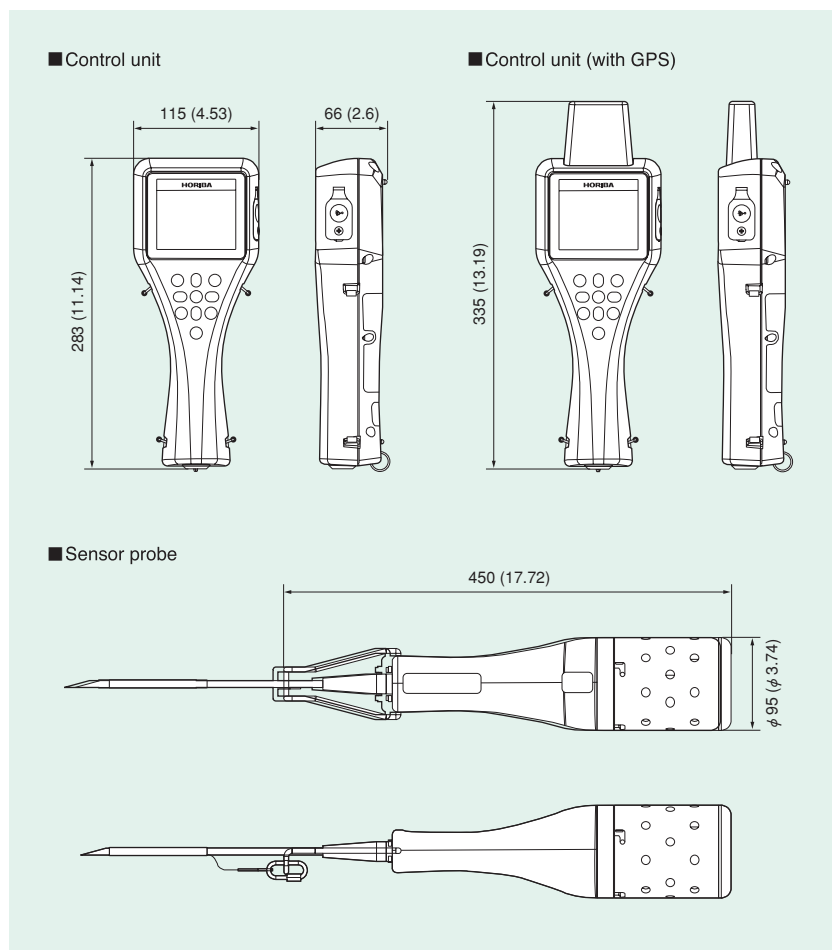
### Note:

\* Battery life based on continuous operation using alkaline C dry batteries when the monitor temperature is over 20°C and the backlight OFF.

\* Accuracy is measured by calibrating 4 points for turbidity and electrical conductivity and 2 points for all other measurements against standard solution.

\* Repeatability is measured by the ability to reproduce the results against the standard solution (at 25°C normal pressure condition).

## ■ Dimensions unit: mm (in)



## ■ Option

| Item                                  | Model  | Code       |
|---------------------------------------|--------|------------|
| Carrying case                         | U-5030 | 3200174772 |
| Flow chamber                          | —      | 3200156570 |
| Probe guard                           | —      | 3200167002 |
| Cable (with data-collection software) | —      | 3200174823 |

## ■ U-50 Series

| Cable length | Model | Code         |
|--------------|-------|--------------|
| <b>U-51</b>  | 2 m   | U-51 (2 m)   |
|              | 10 m  | U-51 (10 m)  |
| <b>U-52</b>  | 2 m   | U-52 (2 m)   |
|              | 10 m  | U-52 (10 m)  |
|              | 30 m  | U-52 (30 m)  |
| <b>U-52G</b> | 2 m   | U-52G (2 m)  |
|              | 10 m  | U-52G (10 m) |
|              | 30 m  | U-52G (30 m) |
| <b>U-53</b>  | 2 m   | U-53 (2 m)   |
|              | 10 m  | U-53 (10 m)  |
|              | 30 m  | U-53 (30 m)  |
| <b>U-53G</b> | 2 m   | U-53G (2 m)  |
|              | 10 m  | U-53G (10 m) |
|              | 30 m  | U-53G (30 m) |

## ■ Standard Accessories

| Item                                    | Quantity |
|-----------------------------------------|----------|
| pH4 standard solution (500mL)           | 1        |
| pH reference internal solution (250 mL) | 1        |
| DO sensor internal solution set         | 1        |
| ● Internal solution (50mL)              |          |
| ● Sandpaper (#8000, #600)               |          |
| ● Syringe                               |          |
| DO Membrane space parts set             | 1        |
| Spanner for DO sensor                   | 1        |
| Cleaning brush                          | 1        |
| Calibration cup                         | 1        |
| Back pack                               | 1        |
| Strap                                   | 1        |
| Alkaline batteries LR14                 | 4        |
| Silicon grease                          | 1        |
| Instruction manual                      | 1        |

## ■ Consumables

| Item             | Model    | Code       |
|------------------|----------|------------|
| pH sensor        | 7112     | 3014057312 |
| pH sensor        | TouPH    | 3200170923 |
| ORP sensor       | 7313     | 3200170920 |
| DO sensor        | 7543     | 3200170924 |
| Reference sensor | 7210     | 3200043582 |
| Reference tip    | —        | 3200043587 |
| Turbidity sensor | U-52/52G | 7800       |
| Turbidity sensor | U-53/53G | 7801       |
| DO membrane cap  | —        | 3200170194 |
| DO Inner fluid   | 50mL     | 306        |

## ■ Standard solution

| Item                     | Model                                   | Code          |
|--------------------------|-----------------------------------------|---------------|
| <b>Standard solution</b> | pH4 (for automatic calibration), 500 mL | 100-4         |
|                          | pH4 (for automatic calibration), 4 L    | 140-4         |
|                          | pH7                                     | 500 mL        |
|                          | pH9                                     | 500 mL        |
|                          | ORP standard solution powder            | For 250 mL×10 |
|                          | ORP standard solution powder            | For 250 mL×10 |
| <b>Internal solution</b> | Internal solution for pH reference      | 250 mL        |

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



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