

P30 Series Portable Water Quality Meters

P30 Series

Features 8 meters including dual channel modes

pH

ION

ORP

DO

EC

As low as **1/30**
the power consumption

(compared to previous models)

Waterproof
Construction

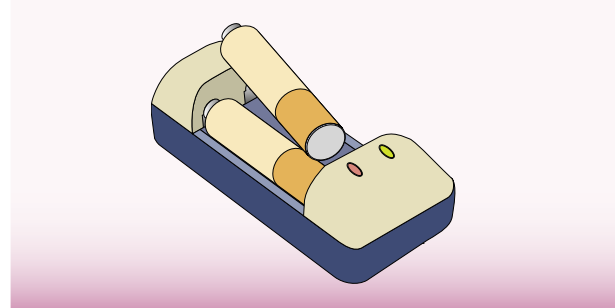
1 000 Data
Points Memory



Low Power Consumption & Waterproof Construction Perfect for Field Measurements

Can use rechargeable nickel-hydrogen batteries

Enables you to dramatically reduce battery waste. (Rechargeable nickel-hydrogen AA batteries are sold separately.)



Improved indicator that is easier to read Dual channel meters that can display two items simultaneously

The custom LCD indicators are 1.2 times larger than previous models, making them easier to read. Additionally, dual channel meters can display two items simultaneously. This makes it easier to read data for two separate items in real time.



1000 Data points memory capacity

Can specify auto memory at fixed time intervals*

Ideal for brief (half day) simple monitoring, etc.

*Short interval memory function: 1 sec. - 99 min. 59 sec.,
or Long interval memory function: 2 min. - 99 hr. 59 min.
(For the long interval memory function, the power goes OFF [into sleep mode] after the first minute measurement and remains off until the next measurement is made.)

Two year warranty for the main unit

(Sensors and other parts are not covered under the warranty.)

Superb expandability (except HM-30P, RM-30P)

Can be connected to PCs, external printers, recorders, and other devices

Desktop-level expandability allows you to manage data easily.

Supporting functions for enhanced validation

Utilizing the concepts from previous models, we have developed a number of functions essential for measurement control, such as sensors with built-in memory, calibration history, and calibration interval warning function.



Lineup

Please refer to the Specifications & Function table for detailed information about each model.
(If you want an electrode that is not fitted as standard, please place separate orders for the "main unit only" and the electrode you need.)

pH Temperature

Portable pH Meter HM-30P

Common type for conducting pH measurements

Comes with the pH combination electrode GST-2739C.



DO Temperature

Portable DO Meter DO-31P

Can be used to conduct field measurements of DO/BOD

Comes with the immersion type DO electrode "Cal-memo (Calibration Memo)" OE-270AA.

Note : For conducting BOD measurements, please place orders for the "main unit only" and the "DO electrode for the incubator bottle OE-470AA".



DO electrode for the incubator bottle

pH ORP Temperature

Portable pH Meter HM-31P

High performance model that can conduct pH or ORP measurements

Comes with the pH combination electrode "Cal-memo (Calibration Memo)" GST-2729C.

ORP electrode is sold separately.



ch1 Electrical Conductivity Electrical Resistivity Salinity Temperature

ch2 pH ORP Temperature

Portable Electrical Conductivity/pH Meter WM-32EP

High performance dual channel type that can simultaneous display electrical conductivity and pH

Comes with the pH combination electrode "Cal-memo (Calibration Memo)" GST-2729C, and the electrical conductivity cell "Cal-memo (Calibration Memo)" CT-27112B.

The ORP electrode is sold separately.



Dual channel type

ORP Temperature

Portable ORP Meter RM-30P

Common type for ORP measurement

Comes with the ORP combination electrode PST-2739C.



ch1 pH ORP Ion Temperature

ch2 pH ORP Ion Temperature

Portable Ion/pH Meter IM-32P

High performance dual channel type that can be used for ion measurements

Comes with the pH combination electrode "Cal-memo (Calibration Memo)" GST-2729C.

The ORP electrode, ion electrode, and ion standard solutions are sold separately.



Dual channel type

Electrical Conductivity Electrical Resistivity Salinity Temperature

Portable Electrical Conductivity Meter CM-31P

Can be used general environmental measurements as well as pure water measurements

CM-31P
(for general environmental measurements)

Comes with the electrical conductivity cell "Cal-memo (Calibration Memo)" CT-27112B.

CM-31P-W
(for pure water measurements)

Comes with the electrical conductivity cell "Cal-memo (Calibration Memo)" CT-27111D for pure water, and special flow cell CEF-22A (made of PP).

Make sure to select the one that best fits your needs.



Electrical conductivity cell for pure water

ch1 DO Temperature

ch2 pH ORP Temperature

Portable DO/pH Meter DM-32P

High performance dual channel type that can simultaneous display DO and pH

Comes with the pH combination electrode "Cal-memo (Calibration Memo)" GST-2729C, and the immersion type DO electrode "Cal-memo (Calibration Memo)" OE-270AA.

Note : For conducting BOD measurements, please place orders for the "main unit only" and the "DO electrode for the incubator bottle OE-470AA".



Dual channel type

>>>

Full lineup of high-reliability sensors for a variety of uses

- Waterproof sensors perfect for field measurement.
- The "Cal-memo (Calibration Memo)" sensor has built-in memory and is designed for validation support.
 - Can store calibration data and cell constants
 - Realizes advanced measurement control
 - Free of setting errors for cell constants and ion species
- Our original built-in float for monitoring the internal solution concentration allows the user to instantly recognize when the solution needs to be replaced. (pH/ORP)



| Corresponding sensors | |
|-----------------------|-----------|
| GST-2729C | CT-57101B |
| GST-2739C | CT-57101A |
| PST-2729C | CT-57101C |
| PST-2739C | |



[pH/ORP]

| Electrode | Use | Measuring range | Lead length | Remarks |
|---|---------------------------------------|----------------------|---------------|--|
| pH combination electrode "Cal-memo (Calibration Memo)" GST-2729C <small>Waterproof type</small> | General environment/immersion | pH0~14 0~100°C | 1m (Standard) | Electrode with HM-31P/WM-32EP fitted as standard (Lead length: 1 m) Approval of type by Measurement Law |
| | | | 3m | |
| | | | 5m | |
| | | | 11m | |
| pH combination electrode GST-2739C <small>Waterproof type</small> | General environment/immersion | pH0~14 0~100°C | 1m (Standard) | Electrode with HM-30P fitted as standard (Lead length: 1 m) Approval of type by Measurement Law |
| | | | 3m | |
| | | | 5m | |
| | | | 11m | |
| pH combination electrode "Cal-memo (Calibration Memo)" ELP-031 | Organic solvent-containing solution | pH0~14 0~100°C | 1m | Approval of type by Measurement Law |
| pH combination electrode "Cal-memo (Calibration Memo)" ELP-040 | Fluorinated acid solution-resistance* | pH2~12 0~50°C | 1m | Replaceable type glass electrode tip glass electrode tip (5082L) |
| ORP combination electrode "Cal-memo (Calibration Memo)" PST-2729C <small>Waterproof type</small> | General environment/immersion | 0~±2000mV 0~100°C | 1m (Standard) | |
| | | | 5m | |
| | | | 11m | |
| ORP combination electrode PST-2739C <small>Waterproof type</small> | General environment/immersion | 0~±2000mV 0~100°C | 1m (Standard) | Electrode with RM-30P fitted as standard (Lead length: 1 m) |
| | | | 5m | |
| | | | 11m | |

*1 The glass electrode is affected by fluorinated acid solution. However, because this product is a replaceable type glass electrode tip, a reduction in operating costs can be expected. In regards to measuring the 1% fluorinated acid solution (at 25°C, for 1 min.), approximately 1000 measurements can be performed.

| Product Name | Code number |
|---|-------------|
| pH4.01 standard solution, 500 mL | 143F191 |
| pH6.86 standard solution, 500 mL | 143F192 |
| pH9.18 standard solution, 500 mL | 143F193 |
| Reference electrode internal solution, 50 mL (4 bottles) (3.3 mol/L KCl solution) | RE-4-20 |
| ORP check solution (pH4.01 standard solution, 500 mL + quinhydrone powder, 5 packs) | 143F196 |
| Abrasive for ORP electrode, 10mL | AO-001 |



[Electrical Conductivity]

| Cell | Use | Meas. Range (Cell Constant) | Lead Length | Remarks |
|--|---|---|---------------|---|
| Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-27112B <small>Waterproof type</small> | General environment/immersion | 0.1mS/m~10S/m(250m ⁻¹) 0~80°C | 1m (Standard) | Cell with CM-31P/WM-32EP fitted as standard (Lead length: 1 m) |
| | | | 5m | |
| | | | 11m | |
| Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-27111D | pure water measurement/flow-through type | 5μS/m~20mS/m(1m ⁻¹) 0~80°C | 1m | Cell with CM-31P-W fitted as standard <Flow cell sold separately.>*2 Note: Cannot be connected to WM-32EP. |
| Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-57101B | General environment/tabletop use | 100μS/m~10S/m(100m ⁻¹) 0~100°C | 1m | |
| Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-57101A | High electrical conductivity/tabletop use | 1mS/m~100S/m(1000m ⁻¹) 0~100°C | 1m | |
| Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-57101C | Low electrical conductivity/tabletop use | 5μS/m~1S/m(10m ⁻¹) 0~100°C | 1m | Note: When you perform measurements in pure water, you must use CT-27111D. |

*2 If you order the full CM-31P-W set, a flow cell is also fitted as standard.

| Product Name | Code number |
|---|-------------|
| Electrical conductivity cell check solution, C solution, 100 mL (4 bottles) | OB100001 |
| Electrical conductivity cell check solution, B solution, 250 mL (2 bottles) | OB100002 |
| Flow cell (made of PP) | CEF-22A |
| Flow cell (made of SUS) | CEF-23A |



[DO]

| Electrode | Use | Measuring range | Lead | Remarks |
|---|-------------------------------|---|---------------|--|
| DO electrode "Cal-memo (Calibration Memo)" OE-270AA <small>Waterproof type</small> | General environment/immersion | If a standard membrane is used: 0~20mg/L If a high concentration membrane is used: 0~50mg/L (High concentration membrane set is sold separately.) | 3m (Standard) | Electrode with DO-31P/DM-32P fitted as standard (Lead length: 3 m) |
| | | | 5m | |
| | | | 11m | |
| DO electrode "Cal-memo (Calibration Memo)" OE-570BA <small>Waterproof type</small> | General environment/immersion | 0~50mg/L (High concentration membrane set is sold separately.) | 3m (Standard) | Can be used to conduct zero flow rate measurements |
| | | | 5m | |
| | | | 11m | |
| DO electrode "Cal-memo (Calibration Memo)" OE-470AA | Incubator bottle | 0~20mg/L | 1m | Equipped with a stirring function. (Recommended for conducting BOD measurements) |
| DO electrode "Cal-memo (Calibration Memo)" OE-470BA | Incubator bottle | | 1m | Can be used to conduct zero flow rate measurements |



| Product Name | Code | Remarks |
|--|----------|---|
| DO module | OEC-002 | Exclusive to OE-270AA One-touch fitting type featuring an integral construction made up of an electrode, membrane, and electrolysis solution. |
| Membrane set for OE-270AA (3 sets) | OCC00001 | For OE-270AA (standard measurement) |
| Membrane set for OE-270AA (high concentration DO) (3 sets) | OCC00002 | For OE-270AA (high concentration measurement) |
| Membrane set for OE-570BA (3 sets) | OCC00023 | For OE-570BA (standard measurement) |
| Membrane set for OE-570BA (high concentration DO) (3 sets) | OCC00024 | For OE-570BA (high concentration measurement) |
| Membrane set for OE-470AA (3 sets) | OCC00003 | For OE-470AA (measurement) |
| Membrane cartridge for OE-470AA (5 pieces) | OCT-2502 | For OE-470AA (measurement) |
| Membrane set for OE-470BA (3 sets) | OCC00022 | For OE-470BA (measurement) |
| Underwater stirrer | OSM00002 | For OE-270AA/570BA |
| Electrolysis solution R-9, 50 mL (3 bottles) | OBG00007 | For OE-270AA/570BA/470AA/470BA |
| Sodium sulfite 50 g | 143A030 | Used for preparing zero solution |

[Ion]

The ion sensing portion is a replaceable tip (except membrane electrode).
Lead length is 1 m.



- Notes: (1) The ion electrode is not provided for waterproof function and temperature measurement function. Measurable solution temperature range is 0 - 50 °C.
(2) The batch measurement method is primarily used to conduct ion measurements. This method is conducted after sampling, which uses beakers and other apparatuses.
(3) In addition to the electrode, the standard solution, ionic strength adjuster, and reference electrode external solution are also required for conducting ion measurements.
(4) Make sure to contact us before you conduct ion measurements. We ask this because in certain cases it can be difficult to conduct ion measurements, such as when there are coexisting ions in the sample.

| Electrode name | Model name of the ion replacement tip | Measuring range (optimal pH range) | Effect of coexistent ion*/Remarks |
|--|---------------------------------------|--|---|
| Fluoride ion combination electrode F-2021 | F-200 (Solid membrane) | 0.019~19,000mg/L F ⁻ (pH5~6) | OH ⁻ =10 ¹ HPO ₄ ²⁻ , HCO ₃ ⁻ =10 ³ (pH7~8) Cl ⁻ , Br ⁻ , I ⁻ , NO ₃ ⁻ , SO ₄ ²⁻ , S ₂ O ₃ ²⁻ =10 ⁵ |
| Chloride ion combination electrode CL-2021 | CL-200B (Solid membrane) | 1~35,000mg/L Cl ⁻ (pH5~6) | S ²⁻ =Cannot coexist CN ⁻ , I ⁻ =10 ⁻⁵ Br ⁻ , S ₂ O ₃ ²⁻ =10 ⁻² NO ₃ ⁻ , SO ₄ ²⁻ , CO ₃ ²⁻ , PO ₄ ³⁻ , F ⁻ =10 ³ |
| Bromide ion combination electrode BR-2021 | BR-200 (Solid membrane) | 0.8~80,000mg/L Br ⁻ (pH5~6) | S ²⁻ =Cannot coexist CN ⁻ , I ⁻ =10 ⁻⁴ S ₂ O ₃ ²⁻ , SCN ⁻ =10 ⁰ Cl ⁻ =10 ² NO ₃ ⁻ , SO ₄ ²⁻ , CO ₃ ²⁻ , F ⁻ =10 ⁴ |
| Iodide ion combination electrode I-2021 | I-200 (Solid membrane) | 0.01~127,000mg/L I ⁻ (pH5~6) | S ²⁻ , reducing substances=Cannot coexist CN=10 ⁰ S ₂ O ₃ ²⁻ =10 ¹ SCN ⁻ =10 ³ Br ⁻ =10 ⁴ NO ₃ ⁻ , CO ₃ ²⁻ , PO ₄ ³⁻ , Cl ⁻ , F ⁻ =10 ⁵ |
| Cyanide ion combination electrode CN-2021 | CN-200B (Solid membrane) | 0.003~26mg/L CN ⁻ (pH12~13) | S ²⁻ =Cannot coexist I ⁻ =10 ⁻¹ S ₂ O ₃ ²⁻ =10 ¹ Br ⁻ =10 ³ NO ₃ ⁻ , SO ₄ ²⁻ , PO ₄ ³⁻ =10 ⁴ CO ₃ ²⁻ , Cl ⁻ , F ⁻ =10 ⁵ |
| Nitrate ion combination electrode N-2031 | N-300 (Liquid membrane) | 0.62~62,000mg/L NO ₃ ⁻ (pH5~6) | I ⁻ =10 ⁻³ Br ⁻ , NO ₂ ⁻ =10 ⁰ Cl ⁻ =10 ¹ CH ₃ COO ⁻ , SO ₄ ²⁻ , CO ₃ ²⁻ , F ⁻ =10 ² |
| Sulfide ion combination electrode S-2021 | S-200 (Solid membrane) | 0.3~32,000mg/L S ²⁻ (pH13 or more) | — |
| Sodium ion combination electrode NA-2011 | NA-100B (Glass membrane) | 2.3~23,000mg/L Na ⁺ (pH10~11) | Mg ²⁺ , Ca ²⁺ , Zn ²⁺ , NH ₄ ⁺ , K ⁺ , Li ⁺ =10 ³ |
| Potassium ion combination electrode K-2031 | K-300B (Liquid membrane) | 0.39~3,900mg/L K ⁺ (pH5~6) | H ⁺ =10 ² NH ₄ ⁺ =3×10 ² Na ⁺ =2×10 ³ Li ⁺ =10 ⁴ |
| Calcium ion combination electrode CA-2031 | CA-300 (Liquid membrane) | 0.4~40,000mg/L Ca ²⁺ (pH5~6) | Pb ²⁺ , Zn ²⁺ =10 ¹ Mn ²⁺ =10 ² Cu ²⁺ , Mg ²⁺ , Cd ²⁺ , Ba ²⁺ , Fe ²⁺ =10 ³ Ni ²⁺ =10 ⁴ |
| Cadmium ion combination electrode CD-2021 | CD-200 (Solid membrane) | 0.01~1,120mg/L Cd ²⁺ (pH5~6) | Hg ²⁺ , Ag ⁺ , Cu ²⁺ =Cannot coexist Pb ²⁺ , Fe ³⁺ =10 ⁰ Cr ³⁺ =10 ² Na ⁺ , K ⁺ , Mg ²⁺ , Ca ²⁺ , Zn ²⁺ , Al ³⁺ =10 ⁵ |
| Copper ion combination electrode CU-2021 | CU-200 (Solid membrane) | 0.06~630mg/L Cu ²⁺ (pH5~6) | Ag ⁺ , Hg ²⁺ =Cannot coexist Fe ³⁺ =10 ⁻¹ Al ³⁺ =10 ¹ Cr ³⁺ =10 ² Ni ²⁺ =10 ³ Na ⁺ , Mg ²⁺ , Ca ²⁺ =10 ⁴ |
| Silver ion combination electrode AG-2021 | AG-200 (Solid membrane) | 0.1~108,000mg/L Ag ⁺ (pH5~6) | Hg ²⁺ =Cannot coexist Mg ²⁺ =10 ³ Ca ²⁺ , Cu ²⁺ , Pb ²⁺ , Cd ²⁺ , Zn ²⁺ =10 ⁴ Na ⁺ , K ⁺ =10 ⁶ |
| Ammonia combination electrode AE-2041 | — | 0.09~1,800mg/L NH ₄ ⁺ (pH12 or more) | Volatile amines |
| Carbon dioxide combination electrode CE-2041 | — | Dissolved gas 1.49~1,490mg/L | Dissolved gas : Volatile weak acid Airborne gas : Acid gas Note : A cell for calibration (CGC-202L) and an adapter for calibration (6791140K) sold separately. |

*Effect of coexistent ion (selectivity coefficient for 0.1 mol/L ion concentration)

If an ion coexists in the solution, it can cause data errors when measuring the targeted ion. The effects of the coexistent ion are shown here.

A selectivity coefficient of 10x means that if the solution contains a coexistent ion that is 10 times greater than the value of the targeted ion that is measured, an error occurs in which the value of the targeted ion equals the coexistent ion value.

If the concentration level of the coexistent ion is high enough to affect the measured values, we recommend conducting pretreatment in order to prevent interference.

| Product Name | Code | Remarks |
|---|----------|--|
| Exchange liquid junction for ion sensor (10 pieces) | OLF00001 | For all ion combination electrodes (except AE/CE-2041) |
| Exchange membrane for ammonia electrode (10 sheets) | AE-FILM | For AE-2041 |
| Membrane cartridge for carbon dioxide gas electrode (4 pieces) | CTC-211 | For CE-2041 |
| Calibration cell for carbon dioxide electrode | CGC-202L | For CE-2041 |
| Calibration adapter | 6791140K | For CE-2041 |
| KCl saturated solution, 100 mL | 143F237 | For the internal solutions of all ion combination electrodes (except AE/CE-2041). Reference external solution for CA-2031 and I/S//F-2021. |
| RE-2 reference electrode external solution, 100 mL | 143F238 | Reference external solution for NA-2011 and CL/BR/CN/CD/CU/AG/F-2021 |
| RE-3 reference electrode external solution, 100 mL | 143F239 | Reference external solution for K/N-2031 |
| Ammonia electrode internal solution, 50 mL (3 bottles) | OBG00005 | For AE-2041 |
| Carbon dioxide electrode internal solution RE-11, 500 mL | 143D042 | For CE-2041 |
| Na standard solution NA-1000, 500 mL | 143E031 | For NA-2011. Na: 1000 mg/L |
| Cl standard solution CL-1000, 500 mL | 143A281 | For CL-2000. Cl: 1000 mg/L |
| Br standard solution BR-1000, 500 mL | 143C483 | For BR-2021. Br: 1000 mg/L |
| I standard solution I-1000, 500 mL | 143H091 | For I-2021. I: 1000 mg/L |
| CN standard solution, 500 mL *Toxi | CN-100 | For CN-2021. CN: 100 mg/L Hazardous Material |
| Cd standard solution CD-100, 500 mL | 143B500 | For CD-2021. Cd: 100 mg/L |
| K standard solution K-1000, 500 mL | 143B482 | For K-2031. K: 1000 mg/L |
| Ca standard solution CA-1000, 500 mL | 143B481 | For CA-2031. Ca: 1000 mg/L |
| NH ₄ standard solution NH ₄ -1000, 500 mL | 143A041 | For AE-2041. NH ₄ : 1000 mg/L |
| NH ₄ -N standard solution NH ₄ -N, 500 mL | 143A042 | For AE-2041. NH ₄ -N: 1000 mg/L |
| NO ₃ standard solution NO ₃ -1000, 500 mL | 143C486 | For N-2031. NO ₃ : 1000 mg/L |
| NO ₃ -N standard solution NO ₃ -N, 500 mL | 143C487 | For N-2031. NO ₃ -N: 1000 mg/L |
| F standard solution F-1000, 500 mL | 143F391 | For F-2021. F: 1000 mg/L |
| F buffer standard solution F-10, 500 mL | 143F393 | For F-2021. F: 10 mg/L (for special use) |
| F buffer standard solution F-100 500 mL | 143F392 | For F-2021. F: 10 mg/L (for special use) |
| Carbon dioxide electrode calibration powder (10 packs) | 143D044 | For CE-2041. |
| Ionic strength adjuster ISA-NA, 500 mL | 143A338 | For NA-2021. |
| Ionic strength adjuster ISA-CL 500 mL | 143A334 | For AG/CL/BR/I-2021. |
| Ionic strength adjuster ISA-CN 500 mL | 143A335 | For CN-2021. Hazardous Material |
| Ionic strength adjuster ISA-CU 500 mL | 143A336 | For CU/CD-2021. Hazardous Material |
| Ionic strength adjuster ISA-K 500 mL | 143A337 | For K-2031. |
| Ionic strength adjuster ISA-CA 500 mL | 143A333 | For CA-2031. |
| Ionic strength adjuster TISAB-01 500 mL | 143A279 | For F-2021. For general purpose use. |
| Ionic strength adjuster TISAB-11 500 mL | 143A280 | For F-2021. For solutions that contain heavy metals. |
| Ionic strength adjuster ISA-NO 500 mL | 143A340 | For N-2031. |
| Ionic strength adjuster ISA-NH 500 mL | 143A339 | For AE-2041. Hazardous Material |
| Ionic strength adjuster ISA-CO 500 mL | 143D045 | For CE-2041. |
| Ionic strength adjuster ISA-S (powder) (10 packs) | 143A332 | For S-2021. |

Note : We do not sell silver ion standard and sulfide ion standard solutions. If you need these solutions, you must prepare yourself, following the steps listed in the instruction manual.

*Toxic : Exercise caution when handling.

Portable Water Quality Meters P30 Series Specification and Function Table

| Product Name | Portable pH Meter | Portable ORP Meter | Portable pH Meter | Portable Electrical Conductivity Meter | Portable DO Meter | Portable Electrical Conductivity/pH Meter | Portable Ion/pH Meter | Portable DO/pH Meter | |
|---|--|---|---|--|---|---|---|--|---------|
| Model Name | HM-30P | RM-30P | HM-31P | (For general environment) CM-31P (For pure water) CM-31P-W | DO-31P | WM-32EP | IM-32P | DM-32P | |
| Measuring method | Glass electrode method | Platinum electrode method | pH : Glass electrode method ORP : Platinum electrode method | AC two-electrode method | Membrane type galvanic cell method | pH : Glass electrode method Electrical conductivity : AC two-electrode method | pH : Glass electrode method Ion : Ion electrode method | pH : Glass electrode method DO : Membrane type galvanic cell method | |
| Display | Custom LCD | | | | | Custom LCD (simultaneous display of dual channel measured data) | | | |
| Sensor Connection | ch1 | pH | ORP | pH, ORP | Electrical Conductivity | DO | Electrical Conductivity | pH, ORP, Ion | DO |
| | ch2 | — | | | — | | pH, ORP | pH, ORP, Ion | pH, ORP |
| Measuring Range | pH : 0.00-14.00 Temperature : 0-100.0°C | ORP : 0-±2000mV Temperature : 0-100.0°C | pH : 0.00-14.00 ORP : 0-±2000mV Temperature : 0-100.0°C | [If standard cell is used] Electrical conductivity : 0.1mS/m-10S/m Electrical resistivity : 0.1Ω·m-10kΩ·m Salinity (NaCl equivalent from electrical conductivity) : 0-4.00% Temperature : 0-80.0°C [If cell for pure water is used] Electrical conductivity : 5μS/m-20mS/m Electrical resistivity : 500·m-182kΩ·m Temperature : 0-80.0°C *If the cell for tabletop use is used, the measuring range differs according to the cell that is used. | [If standard membrane is used] DO : 0-20.00mg/L Saturation rate : 0-200% Temperature : 0-50.0°C [If high concentration membrane is used] DO : 0-50.0mg/L Saturation rate : 0-500% Temperature : 0-50.0°C | pH : 0.00-14.00 ORP : 0-±2000mV Temperature : 0-100.0°C [If standard cell is used] Electrical conductivity : 0.1mS/m-10 S/m Electrical resistivity : 0.1Ω·m-10kΩ·m Salinity (NaCl equivalent obtained by electrical conductivity) : 0-4.00% Temperature : 0-80.0°C *If the cell for tabletop use is used, the measuring range differs according to the cell that is used. | pH : 0.00-14.00 ORP : 0-±2000mV Temperature : 0-100.0°C Ion : differs according to the electrode that is used. (Temperature measuring function is not provided.) | pH : 0.00-14.00 ORP : 0-±2000mV Temperature : 0-100.0°C [If standard membrane is used] DO : 0-20.00mg/L Saturation rate : 0-200% Temperature : 0-50.0°C [If high concentration membrane is used] DO : 0-50.0mg/L Saturation rate : 0-500% Temperature : 0-50.0°C | |
| Display Range | pH : -2.00-16.00 Temperature : -5-110.0°C | ORP : 0-±2200mV Temperature : -5-110.0°C | pH : -2.00-16.00 ORP : 0-±2200mV Temperature : -5-110.0°C | Electrical conductivity : 0-200.0μS/m 0-2.000mS/m 0-20.00mS/m 0-2.000S/m 0-20.00S/m 0-200.0S/m Electrical resistivity : 0.005-2.000Ω·m 0-20.00Ω·m 0-2.000kΩ·m 0-20.00kΩ·m 0-2.000MΩ·m 0-20.00MΩ·m Salinity (NaCl) : 0-4.04% Temperature : -5-110.0°C *In regards to the range, the electrical conductivity/resistivity differs according to the cell that is used. | [If standard membrane is used] DO : 0-22.00mg/L Saturation rate : 0-220% [If high concentration membrane is used] DO : 0-55.0mg/L Saturation rate : 0-550% Temperature : -5-110.0°C | pH : -2.00-16.00 ORP : 0-±2200mV Temperature : -5-110.0°C Electrical conductivity : 0-200.0μS/m 0-2.000mS/m 0-20.00mS/m 0-2.000S/m 0-20.00S/m 0-200.0S/m Electrical resistivity : 0.005-2.000Ω·m 0-20.00Ω·m 0-2.000kΩ·m 0-20.00kΩ·m 0-2.000MΩ·m 0-20.00MΩ·m Salinity (NaCl) : 0-4.04% Temperature : -5-110.0°C *In regards to the range, the electrical conductivity/resistivity differs according to the cell that is used. | pH : -2.00-16.00 ORP : 0-±2200 mV Temperature : -5-110.0°C Ion : 0.0μg/L-999 g/L | pH : -2.00-16.00 ORP : 0-±2200mV Temperature : -5-110.0°C [If standard membrane is used] DO : 0-22.00mg/L Saturation rate : 0-220% [If high concentration membrane is used] DO : 0-55.0mg/L Saturation rate : 0-550% Temperature : -5-110.0°C | |
| Electrical Conductivity/Resistivity Range Switching | — | | | Auto/manual | — | Auto/manual | — | — | |
| Electrical Conductivity/Resistivity Unit Switching | — | | | Can switch between SI Units (S/m, Ω·m) and the previous units (S/cm, Ω·cm). | — | Can switch between SI Units (S/m, Ω·m) and the previous units (S/cm, Ω·cm). | — | — | |
| Repeatability (Main unit) | pH : ±0.02pH Temperature : ±0.2°C | ORP : ±2mV Temperature : ±0.2°C | pH : ±0.02pH ORP : ±2mV Temperature : ±0.2°C | Electrical conductivity : ±0.5%FS Electrical resistivity : ±0.5%FS Salinity : ±0.5%FS Temperature : ±0.2°C | [If standard membrane is used] DO : ±0.03mg/L Saturation rate : ±2% [If high concentration membrane is used] DO : ±0.2mg/L Saturation rate : ±2% Temperature : ±0.2°C | pH : ±0.02pH ORP : ±2mV Electrical conductivity : ±0.5%FS Electrical resistivity : ±0.5%FS Salinity : ±0.5%FS Temperature : ±0.2°C | pH : ±0.02 pH ORP : ±2 mV Temperature : ±0.2°C | pH : ±0.02pH ORP : ±2mV [If standard membrane is used] DO : ±0.03mg/L Saturation rate : ±2% [If high concentration membrane is used] DO : ±0.2mg/L Saturation rate : ±2% Temperature : ±0.2°C | |
| Temperature Compensation | Auto/Manual | — | Auto/Manual Not applied to ORP | Switch setting between Auto/Manual/None (For salinity and auto only) Temperature compensation method : Linear/pure water dual temperature compensation Reference temperature : 25°C Temperature coefficient : 0-9.99% (optional setting) | Auto | pH : Auto/Manual Electrical Conductivity/Resistivity : Switch setting between Auto/Manual/None (For salinity and auto only) Temperature compensation method : Linear method Reference temperature : 25°C Temperature coefficient : 0-9.99% (optional setting) | Auto/Manual Not applied to ORP and ion | pH : Auto/Manual DO : Auto | |
| Calibration | Capable of three-point calibration | — | Capable of three-point calibration | Cell constant calibration | Zero/span calibration | pH : Capable of three-point calibration Electrical conductivity : Cell constant calibration | pH/ion : Capable of three-point calibration | pH : Capable of three-point calibration DO : Zero/span calibration | |

| Product Name | Portable pH Meter | Portable ORP Meter | Portable pH Meter | Portable Electrical Conductivity Meter | Portable DO Meter | Portable Electrical Conductivity/pH Meter | Portable ion/pH Meter | Portable DO/pH Meter | |
|---|---|---|--|--|--|---|--|--|---|
| Model Name | HM-30P | RM-30P | HM-31P | (For general environment) CM-31P (For pure water) CM-31P-W | DO-31P | WM-32EP | IM-32P | DM-32P | |
| Temperature Calibration | One-point calibration | | | | | | | | |
| Correction function (Called by Key Input) | — | | | | Salinity correction Atmospheric pressure correction | — | | (DO) Salinity correction Atmospheric pressure correction | |
| Data Memory | 1000 data points | | | | | | | | |
| Auto Hold Function | Provided (Stability threshold : Fixed) | | | | | | | | |
| Clock Function | Provided (To be shown while conducting a measurement) | | | | | | | | |
| Interval Memory Function | Provided (Interval: The interval can be specified between 1 sec.-99 min. 59 sec. or 2 sec.-99hr. 59 min.) | | | | | | | | |
| Printing Function | — | | Can connect the external printer EPS-P30 (option) | | | | | | |
| RS-232C Interface ^{*1} | Connectable Devices | PC or external printer EPS-P30 (option) | | | | | | | |
| | Communication Specifications | Communication system: Start-stop synchronous method Baud rate: 19,200 bps Character length: 8 bits Parity: None Stop bit: 1 bit | | | | | | | |
| Analog Output ^{*1} Connecting Cable available separately as an option | Number of Outputs/ Items | ch1 | — | Number of outputs : 2 Measured value and temperature | Number of outputs : 3 Measured value, temperature, and range (only for electrical conductivity/resistivity) | Number of outputs : 2 Measured value and temperature | Number of outputs : 3 Measured value, temperature, and range (only for electrical conductivity/resistivity) | Number of outputs : 2 Measured value (not available for ion) and temperature | Number of outputs : 2 Measured value and temperature |
| | | ch2 | — | — | — | — | Number of outputs : 2 Measured value and temperature | Number of outputs : 2 Measured value (not available for ion) and temperature | Number of outputs : 2 Measured value and temperature |
| | Output Specifications | — | pH : ±700mV (pH0-14) ORP : ±1 V (0-±2000mV) Temperature : 0-1V (0-100°C) | Electrical conductivity/ electrical resistivity/ salinity : 0-1V FS (each range) Range : 100mV/range Temperature : 0-1 V (0-100°C) | DO/saturation rate : 0-1V FS (each range) Temperature : 0-1 V (0-100°C) | pH : ±700mV (pH0-14) ORP : ±1V (0-±2000mV) resistivity/ salinity : 0-1V FS (each range) Range : 100 mV/range Temperature : 0-1V (0-100°C) | pH : ±700mV (pH0-14) ORP : ±1V (0-±2000mV) Temperature : 0-1V (0-100°C) | pH : ±700mV (pH0-14) ORP : ±1V (0-±2000mV) DO/saturation rate : 0-1V FS (each range) Temperature : 0-1V (0-100°C) | |
| Waterproof Construction | IP67 (Enabled if the sensor is connected and if the external I/O portions are masked) (Can be immersed in water for 1m and 30 min.) | | | | | | | | |
| Performance Compensation Temperature/humidity | 0-45° C, 90% or below (no condensation) | | | | | | | | |
| Power Source | AA alkaline battery/nickel-hydrogen battery (2 pieces) | | | AA alkaline battery/nickel-hydrogen battery (2 pieces) or special AC adapter (6VA option) | | | | | |
| Power Consumption ^(if 3 volt battery is used) ^{*2} | Approx. 0.003W | Approx. 0.003W | Approx. 0.003W | Approx. 0.009W | Approx. 0.014W | Approx. 0.009W | Approx. 0.004W | Approx. 0.014W | |
| Battery Life | Approx. 2000hours | Approx. 2000hours | Approx. 2000hours | Approx. 600hours | Approx. 400hours ^{*4} | Approx. 600hours | Approx. 1500hours | Approx. 400hours ^{*4} | |
| Outside Dimensions | Approx. 68 (w) x 35 (h) x 173 (d) mm | | | | | | | | |
| Mass (Including Batteries) | Approx. 280g | | | | | Approx. 300g | | | |

* 1) If the sample is earthed, make sure to use RS-232C and analog output in a insulated condition.

If you want to simultaneously (realtime) use RS-232C interface and analog output, you must have the special option cable. Please contact us for details.

* 2) The power consumption (consumption current) values shown are for when option devices (e.g. PC, printer) are not connected. If option devices are connected, the power consumption might be approximately twice as high as the values shown, depending on the model.

* 3) Except for when the DO electrode with the stirring function is connected.

Standard Accessories

| Product Name | Portable pH Meter | Portable ORP Meter | Portable pH Meter | Portable Electrical Conductivity Meter | Portable DO Meter | Portable Electrical Conductivity/pH Meter | Portable ion/pH Meter | Portable DO/pH Meter | | | |
|---|---|--|---|--|--|---|---|---|----------------------------------|----------------------------------|----------------------------------|
| Model Name | HM-30P | RM-30P | HM-31P | (For general environment) CM-31P (For pure water) CM-31P-W | DO-31P | WM-32EP | IM-32P | DM-32P | | | |
| Standard Accessories | pH combination electrode GST-2739C (Lead length : 1m) | ORP combination electrode PST-2739C (Lead length : 1m) | pH combination electrode GST-2729C (Lead length : 1m) | [CM-31P] Electrical conductivity cell CT-27112B (Lead length : 1m) | DO electrode OE-270AA (Lead length : 3m) | Electrical conductivity cell CT-27112B (Lead length : 1m) | pH combination electrode GST-2729C (Lead length : 1m) | DO electrode OE-270AA (Lead length : 3m) | | | |
| | | | | [CM-31P-W] Electrical conductivity cell CT-27111D Flow cell made of PP CEF-22A | | pH combination electrode GST-2729C (Lead length : 1m) | | pH electrode GST-2729C (Lead length : 1m) | | | |
| | | | | pH4.01 standard solution (100mL) | | 3.3 mol/L KCl solution (50mL) | | pH4.01 standard solution (100mL) | pH4.01 standard solution (100mL) | pH4.01 standard solution (100mL) | pH4.01 standard solution (100mL) |
| | | | | pH6.86 standard solution (100mL) | | Polybeaker (50mL) (3pieces) | | pH6.86 standard solution (100mL) | pH6.86 standard solution (100mL) | pH6.86 standard solution (100mL) | pH6.86 standard solution (100mL) |
| | | | | 3.3 mol/L-KCl solution (50mL) | | | | 3.3 mol/L-KCl solution (50mL) | 3.3 mol/L-KCl solution (50mL) | 3.3 mol/L-KCl solution (50mL) | 3.3 mol/L-KCl solution (50mL) |
| Polybeaker (50mL) (3pieces) | Polybeaker (50mL) (3pieces) | Polybeaker (50mL) (3pieces) | Polybeaker (50mL) (3pieces) | Polybeaker (50mL) (3pieces) | Polybeaker (50mL) (3pieces) | | | | | | |
| AA alkaline batteries (for initial operation) (2 pieces), hand strap, instruction manual | | | | | | | | | | | |

Options Designed to fit your needs, from the field to the lab.

For managing data on PC

| Product Name | Code number | Remarks |
|--------------------------|-------------|--------------------------------------|
| RS-232C connecting cable | 118N062 | For PC connection. Lead length: 2 m. |

For connecting to a recorder or other devices

| Product Name | Code number | Remarks |
|---------------------|-------------|--|
| Analog output cable | 118N063 | Lead length: 1.5 m. Side terminal for connecting to external devices (3 mmY terminal). (This product cannot be used for HM-30P and RM-30P.) |

For data recording

| Product Name | Code number | Remarks |
|--|-------------|--|
| External printer (with connecting cable) | EPS-P30 | Compact sized printer with chart width of approx. 60 mm. Ordinary printing level is sufficient for long-term data storage (Cannot connect to HM-30P and RM-30P.) |
| Printer sheet (20 rolls) | P000119 | |
| Ink ribbon (1 piece) | ORD00001 | |
| Connecting cable for external | 118N061 | *You must have this cable in order to use an external printer (EPS-G/EPS-R). |

For laboratory use

| Product Name | Code number | Remarks |
|---|-------------|--|
| AC adapter | | Ask |
| Electrode stand (with column and stopper) | 6948810K | |
| Electrode holder | OIB00001 | This product cannot be used for DO electrode. |
| Electrode attachment (DP) | OIB00007 | Standard electrode for all P30 series products. (This product cannot be used for DO electrode.) For ELP-040. |
| Electrode attachment(G) | OIB00004 | For sensors that are for tabletop use. |

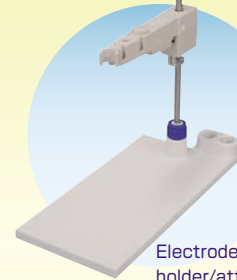
*Please prepare an electrode stand, an electrode holder, and an electrode attachment.

For field measurement

| Product Name | Code number | Remarks |
|-------------------|-------------|--|
| Stick holder | OIB00009 | This product provides a lead length of 5 m or more for waterproof sensors that are immersed. If you have trouble reaching a measurement point, you use this product to safely measure from a position that is more accessible. |
| Twin stick holder | OIB00010 | This product provides a lead length of 5 m or more for waterproof sensors that are immersed. Two sensors can be attached. |
| Anchor (AN-21P) | OIC00001 | Can be used for waterproof sensors that are immersed. Anchor for submerging. |
| Rope for AN-21P | OIZ00002 | φ1 SUS rope |
| Carrying case | ODA00001 | This case allows you to store and carry the main unit, sensor, and other accessories, such as the standard solution. (comes with shoulder belt) |
| Soft case | SC-10P | This portable soft case allows you to store the main unit when it is connected to a sensor. |



External printer



Electrode stand/holder/attachment



Carrying case



Soft case

DKK-TOA CORPORATION



Do not operate products before consulting instruction manual.

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Information and specifications are for a typical system and are subject to change without notice.