

## 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

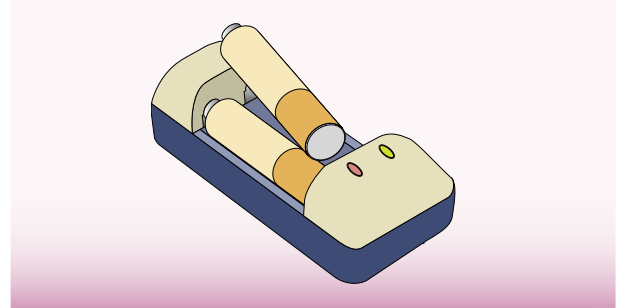
1 000 Data  
Points Memory



# 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 <sup>-1</sup> ) 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 <sup>-1</sup> ) 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 <sup>-1</sup> ) 0~100°C	1m	
Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-57101A	High electrical conductivity/tabletop use	1mS/m~100S/m(1000m <sup>-1</sup> ) 0~100°C	1m	
Electrical conductivity cell "Cal-memo (Calibration Memo)" CT-57101C	Low electrical conductivity/tabletop use	5μS/m~1S/m(10m <sup>-1</sup> ) 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 <sup>-</sup> (pH5~6)	OH <sup>-</sup> =10 <sup>1</sup> HPO <sub>4</sub> <sup>2-</sup> , HCO <sub>3</sub> <sup>-</sup> =10 <sup>3</sup> (pH7~8) Cl <sup>-</sup> , Br <sup>-</sup> , I <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> =10 <sup>5</sup>
Chloride ion combination electrode CL-2021	CL-200B (Solid membrane)	1~35,000mg/L Cl <sup>-</sup> (pH5~6)	S <sup>2-</sup> =Cannot coexist CN <sup>-</sup> , I <sup>-</sup> =10 <sup>-5</sup> Br <sup>-</sup> , S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> =10 <sup>-2</sup> NO <sub>3</sub> <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , CO <sub>3</sub> <sup>2-</sup> , PO <sub>4</sub> <sup>3-</sup> , F <sup>-</sup> =10 <sup>3</sup>
Bromide ion combination electrode BR-2021	BR-200 (Solid membrane)	0.8~80,000mg/L Br <sup>-</sup> (pH5~6)	S <sup>2-</sup> =Cannot coexist CN <sup>-</sup> , I <sup>-</sup> =10 <sup>-4</sup> S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> , SCN <sup>-</sup> =10 <sup>0</sup> Cl <sup>-</sup> =10 <sup>2</sup> NO <sub>3</sub> <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , CO <sub>3</sub> <sup>2-</sup> , F <sup>-</sup> =10 <sup>4</sup>
Iodide ion combination electrode I-2021	I-200 (Solid membrane)	0.01~127,000mg/L I <sup>-</sup> (pH5~6)	S <sup>2-</sup> , reducing substances=Cannot coexist CN=10 <sup>0</sup> S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> =10 <sup>1</sup> SCN <sup>-</sup> =10 <sup>3</sup> Br <sup>-</sup> =10 <sup>4</sup> NO <sub>3</sub> <sup>-</sup> , CO <sub>3</sub> <sup>2-</sup> , PO <sub>4</sub> <sup>3-</sup> , Cl <sup>-</sup> , F <sup>-</sup> =10 <sup>5</sup>
Cyanide ion combination electrode CN-2021	CN-200B (Solid membrane)	0.003~26mg/L CN <sup>-</sup> (pH12~13)	S <sup>2-</sup> =Cannot coexist I <sup>-</sup> =10 <sup>-1</sup> S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> =10 <sup>1</sup> Br <sup>-</sup> =10 <sup>3</sup> NO <sub>3</sub> <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , PO <sub>4</sub> <sup>3-</sup> =10 <sup>4</sup> CO <sub>3</sub> <sup>2-</sup> , Cl <sup>-</sup> , F <sup>-</sup> =10 <sup>5</sup>
Nitrate ion combination electrode N-2031	N-300 (Liquid membrane)	0.62~62,000mg/L NO <sub>3</sub> <sup>-</sup> (pH5~6)	I <sup>-</sup> =10 <sup>-3</sup> Br <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> =10 <sup>0</sup> Cl <sup>-</sup> =10 <sup>1</sup> CH <sub>3</sub> COO <sup>-</sup> , SO <sub>4</sub> <sup>2-</sup> , CO <sub>3</sub> <sup>2-</sup> , F <sup>-</sup> =10 <sup>2</sup>
Sulfide ion combination electrode S-2021	S-200 (Solid membrane)	0.3~32,000mg/L S <sup>2-</sup> (pH13 or more)	—
Sodium ion combination electrode NA-2011	NA-100B (Glass membrane)	2.3~23,000mg/L Na <sup>+</sup> (pH10~11)	Mg <sup>2+</sup> , Ca <sup>2+</sup> , Zn <sup>2+</sup> , NH <sub>4</sub> <sup>+</sup> , K <sup>+</sup> , Li <sup>+</sup> =10 <sup>3</sup>
Potassium ion combination electrode K-2031	K-300B (Liquid membrane)	0.39~3,900mg/L K <sup>+</sup> (pH5~6)	H <sup>+</sup> =10 <sup>2</sup> NH <sub>4</sub> <sup>+</sup> =3×10 <sup>2</sup> Na <sup>+</sup> =2×10 <sup>3</sup> Li <sup>+</sup> =10 <sup>4</sup>
Calcium ion combination electrode CA-2031	CA-300 (Liquid membrane)	0.4~40,000mg/L Ca <sup>2+</sup> (pH5~6)	Pb <sup>2+</sup> , Zn <sup>2+</sup> =10 <sup>1</sup> Mn <sup>2+</sup> =10 <sup>2</sup> Cu <sup>2+</sup> , Mg <sup>2+</sup> , Cd <sup>2+</sup> , Ba <sup>2+</sup> , Fe <sup>2+</sup> =10 <sup>3</sup> Ni <sup>2+</sup> =10 <sup>4</sup>
Cadmium ion combination electrode CD-2021	CD-200 (Solid membrane)	0.01~1,120mg/L Cd <sup>2+</sup> (pH5~6)	Hg <sup>2+</sup> , Ag <sup>+</sup> , Cu <sup>2+</sup> =Cannot coexist Pb <sup>2+</sup> , Fe <sup>3+</sup> =10 <sup>0</sup> Cr <sup>3+</sup> =10 <sup>2</sup> Na <sup>+</sup> , K <sup>+</sup> , Mg <sup>2+</sup> , Ca <sup>2+</sup> , Zn <sup>2+</sup> , Al <sup>3+</sup> =10 <sup>5</sup>
Copper ion combination electrode CU-2021	CU-200 (Solid membrane)	0.06~630mg/L Cu <sup>2+</sup> (pH5~6)	Ag <sup>+</sup> , Hg <sup>2+</sup> =Cannot coexist Fe <sup>3+</sup> =10 <sup>-1</sup> Al <sup>3+</sup> =10 <sup>1</sup> Cr <sup>3+</sup> =10 <sup>2</sup> Ni <sup>2+</sup> =10 <sup>3</sup> Na <sup>+</sup> , Mg <sup>2+</sup> , Ca <sup>2+</sup> =10 <sup>4</sup>
Silver ion combination electrode AG-2021	AG-200 (Solid membrane)	0.1~108,000mg/L Ag <sup>+</sup> (pH5~6)	Hg <sup>2+</sup> =Cannot coexist Mg <sup>2+</sup> =10 <sup>3</sup> Ca <sup>2+</sup> , Cu <sup>2+</sup> , Pb <sup>2+</sup> , Cd <sup>2+</sup> , Zn <sup>2+</sup> =10 <sup>4</sup> Na <sup>+</sup> , K <sup>+</sup> =10 <sup>6</sup>
Ammonia combination electrode AE-2041	—	0.09~1,800mg/L NH <sub>4</sub> <sup>+</sup> (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
NH4 standard solution NH4-1000, 500 mL	143A041	For AE-2041. NH4: 1000 mg/L
NH4-N standard solution NH4-N, 500 mL	143A042	For AE-2041. NH4-N: 1000 mg/L
NO3 standard solution NO3-1000, 500 mL	143C486	For N-2031. NO3: 1000 mg/L
NO3-N standard solution NO3-N, 500 mL	143C487	For N-2031. NO3-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

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
	ch2	—			—		pH, ORP	pH, ORP, Ion
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 0-200.0kΩ·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 0-200.0kΩ·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 <sup>*1</sup>	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 <sup>*1</sup> 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) <sup>*2</sup>	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 <sup>*4</sup>	Approx. 600hours	Approx. 1500hours	Approx. 400hours <sup>*4</sup>	
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)					
				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).

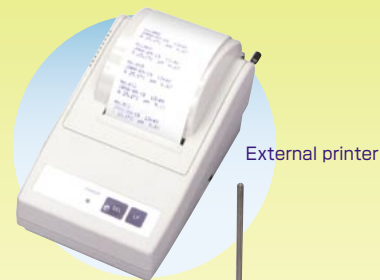
## For laboratory use

Product Name	Code number	Remarks
AC adapter		Ask
Electrode stand (with column and stopper)	694881OK	
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.