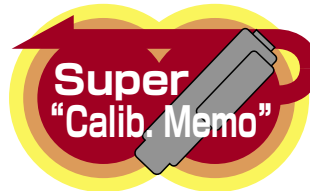


**pH Meter  
Conductivity Meter  
Multi-function Water Quality Meter**  
(pH / ORP / Ions / Conductivity / Dissolved oxygen)

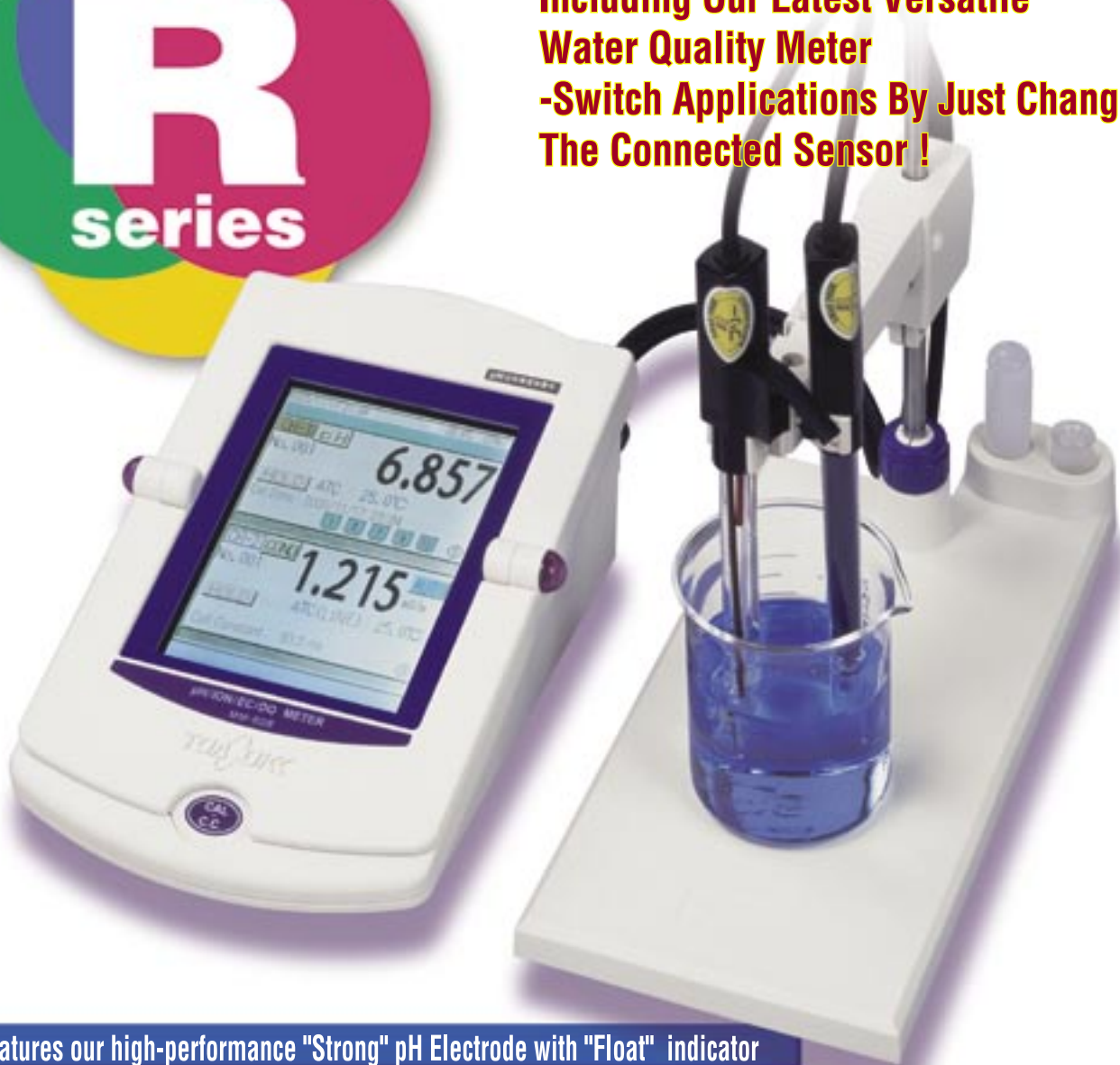


(Some sensors not applicable)

## R-Series



**Including Our Latest Versatile  
Water Quality Meter  
-Switch Applications By Just Changing  
The Connected Sensor !**



- Features our high-performance "Strong" pH Electrode with "Float" indicator
- Records ambient conditions together with measurement data
- USB interface\*
- LAN interface\*

\*Available for models HM-30R, CM-30R, MM-60R as standard feature.



# High Performance With Easy Operation

## The perfect Solution For Sophisticated Analysis And Data Management



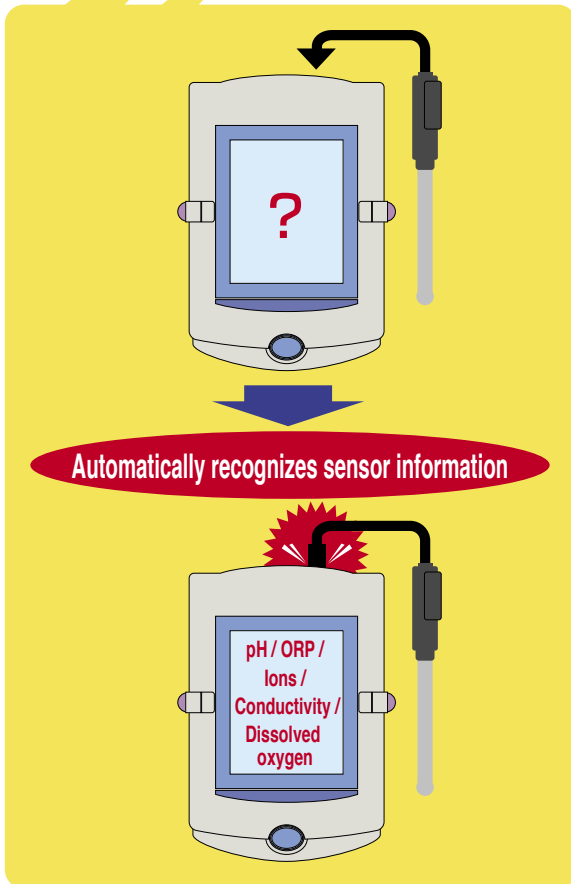
**A smart versatile water quality meter that automatically selects the measuring parameter by recognizing the connected sensor, turns up!**

- **Just connect the appropriate sensor to quickly change measurement to pH, ORP, ion, conductivity or DO**

(Model MM-60R)



The measurement screen automatically changes when the sensor with built-in memory is connected. Simultaneous, two channel measurement and display is also available.



Example of pH / conductivity measurement screen



Example of pH / ORP measurement screen

- **Flexible sensor combination with 2-channel connection**

pH, ORP, Ion, conductivity, or dissolved oxygen cells can be connected to either channel. It is possible to create pH/ conductivity meters, pH/ ion meters, two-channel dissolved oxygen meters, or any other application method depending on the application.

**pH Meter**      **HM-30R / 25R**  
**R-series**      **Conductivity Meter**      **CM-30R / 25R**  
**Multi-function Water Quality Meter**      **MM-60R**



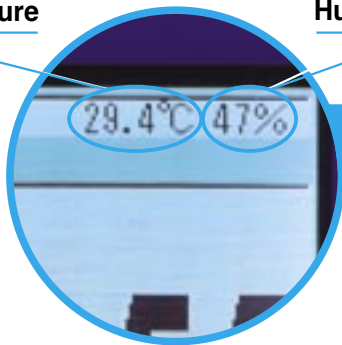
## Further Improvement for compliance with GLP & Validation Support Capability

### Room circumstance (ambient temperature, humidity) display and recording capability

(Models: HM-30R, CM-30R, MM-60R)

Ambient temperature

Humidity



Attaching the optional temperature and humidity sensor to the main unit enables advanced measurement control by recording both the measurements and the room circumstance at the time of measurement.

### Calibration resume data function

(Models: HM-30R, CM-30R, MM-60R)



### Up to 20-run calibration history recording capability

- Calibration date
- Sensor type
- Sensor production number
- (Ambient temperature • Humidity)
- Calibration data and more



Screen of pH calibration history



Screen of calibration history of conductivity measurements

### Optional external plain paper printer enables long-term data recording

In addition to the measurement data, the sensor type\*, sensor production number\*, and calibration data can be printed. (\* When using memory with a built-in sensor)

### Supports device management

Certification for all instruments is available to support quality management systems. Checking devices are also available for user validation.

#### Issuing certifications (Fee required)

- Traceability certificate
- Certification of calibration
- Test results

#### Documents (Option)

- Guide for creating Standard Operating Procedures

#### Optional test devices

- pH checker
- Temperature check plug
- Conductivity check plug

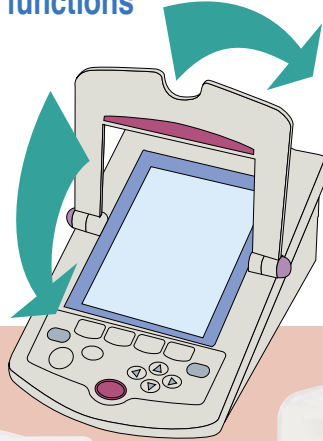


# Enhanced Operability

## ● Flip cover allows access to detailed functions

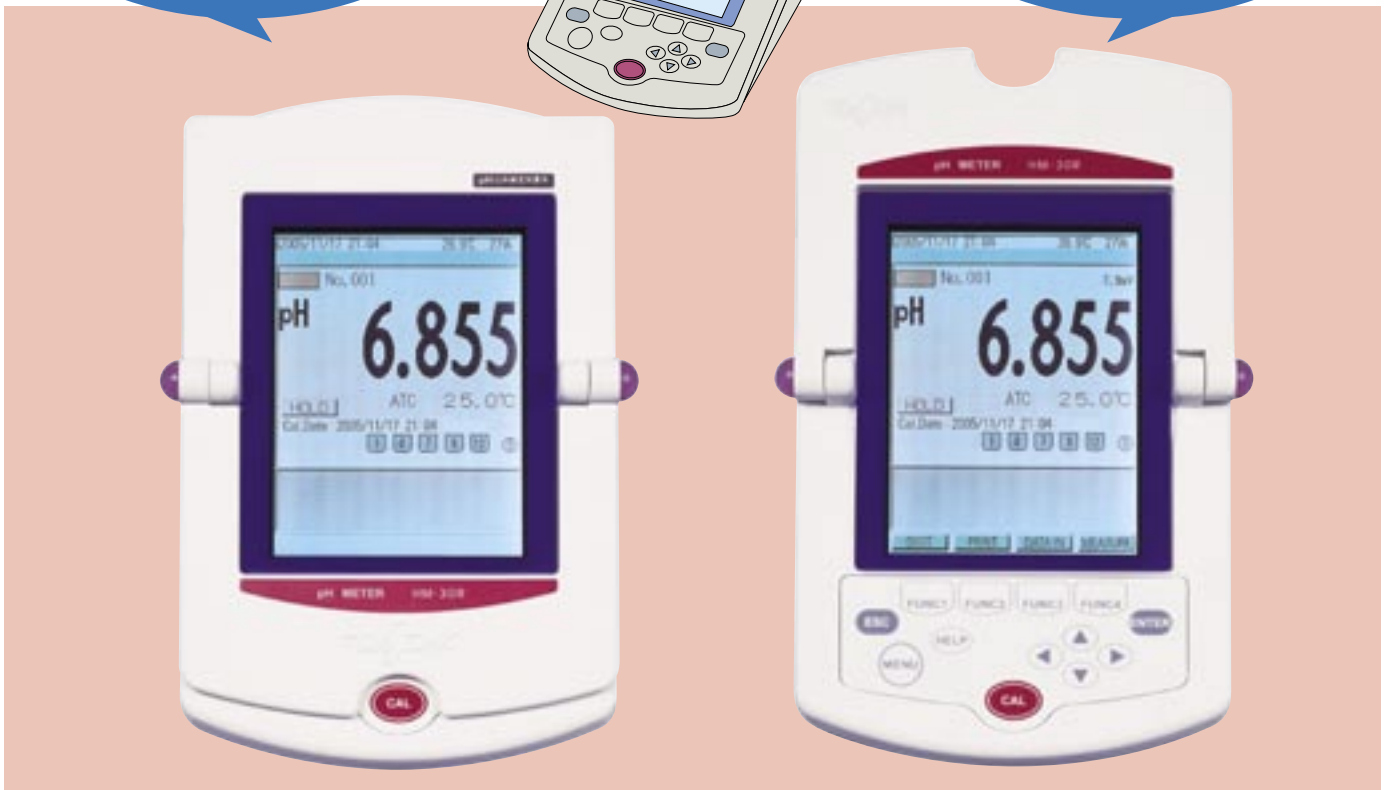
Close for single key operation

**When all you need is the pH calibration key.**



Open for function operation

**When you want to access more detailed functions.**



## ● Handy remote key operation

(Models: HM-30R, CM-30R, MM-60R)

Adding the optional, drip-proof remote switch enables :

- Auto hold
- Data memory
- Print key

Further improving measurement operability.



## ● Useful HELP function

Context sensitive "Help" function available to assist user (For example to show manipulation guide when calibration error is occurred)



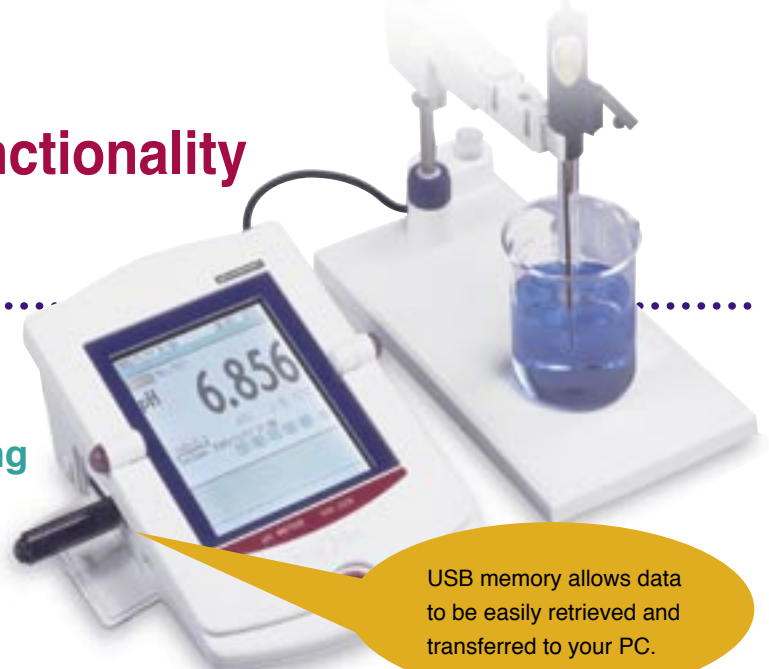
## Advanced Functionality

### ● USB (host) standard equipment

(Models: HM-30R, CM-30R, MM-60R)

#### Large capacity memory for storing measurement data.

Importing data into your PC becomes more easier:  
Data can be saved to USB memory and imported into your PC in CSV format using the R-LOG software.



USB memory allows data to be easily retrieved and transferred to your PC.

### ● Network interface (LAN connectivity standard equipment)

(Models: HM-30R, CM-30R, MM-60R)

Dedicated R-LOG software enables data import to PC.



### ● Compatible with electronic recording and electronic signature regulations (FDA 21 CFR Part 11\*)

(Models: HM-30R, CM-30R, MM-60R)

Electronic recording can be established by connecting to a PC or network  
(Please inquire about the PC software for Part 11)

※FDA 21CFR Part11

Regulations for electronic recording and electronic signatures issued in 1997 by the US Food and Drug Administration

### ● Enhanced security function (Models: HM-30R, CM-30R, MM-60R)

Users are restricted by employing passwords. This equipment also enables restrictions on data access by setting unit.

### ● Enhanced printing function (The HM-25R and CM-25R models are not capable of some printing functions.)

Various items from calibration date, measured value, room temp./humidity to sensor type, the serial, calibration data, operator can be printed out. The contents is equivalent to report. It is possible to skip some printing items at your option.





# Lineup

A complete range of instruments are available from basic models through to advanced multi-function models



Standard type compatible with GLP/Part 11  
0.01/0.001 pH conversion display possible

## pH Meter **HM-30R**

C/W pH Electrode GST-5741C as standard accessories

- Large-size color graphic, LCD display
- Data memory (300 data items)
- 0.01/0.001 pH conversion display possible
- Laboratory circumstance (Ambient temperature, humidity) measurements, recordable (Option)
- USB (Host) and LAN compatibility are provided as standard
- Capable of connecting to RS-232C/External printer
- Capable of automated measurement (Connects to turntable)

(Measurement function/ range)

pH : 0.000~14.000

ORP : 0.0~±2000.0 mV (Electrode sold separately)

Temperature : 0~100.0°C



Simplified, affordable model

## pH Meter **HM-25R**

C/W pH Electrode GST5731C as standard accessories

- Large-size, easy-to-read custom LCD display
- Data memory (300 data items)
- Capable of connecting to RS-232C/External printer

(Measurement function/ range)

pH : 0.00~14.00

ORP : 0.0~±2000 mV (Electrode sold separately)

Temperature : 0~100.0°C



Conductivity Resistivity Salinity Concentration Temperature (Ambient temperature and humidity)

## Standard type compatible for GLP/Part 11 Pure water temperature compensation function

### Conductivity Meter **CM-30R**

C/W EC cell CT-57101B as standard accessories

- Large color graphic LCD display
- Data memory (300 data items)
- Laboratory circumstance (ambient temperature, humidity) measurement and recording capability (Option)
- USB (Host) and LAN are provided as standard
- Capable of connecting to RS-232C external printer
- Capable of automated measurement (Connects to turntable)
- USP measurement compatible

(Measurement function/ range)

Conductivity : 0~200.0 S/m (7 ranges)

Resistivity : 0~2.000MΩ·m (7 ranges)

Concentration : 0~200.0% (3 ranges)

Salinity : 0~4.00%

Temperature : 0~100.0°C



Conductivity Resistivity Salinity Temperature

## Simplified, affordable model

### Conductivity Meter **CM-25R**

C/W EC cell CT-57101B as standard accessories

- Large-size, easy-to-read custom LCD display
- Data memory (300 data items)
- Capable of connecting to RS-232C external printer
- Capable of USP measurement

(Measurement function/ range)

Conductivity : 0~200.0 S/m (7 ranges)

Resistivity : 0~2.000MΩ·m (7 ranges)

Salinity : 0~4.00%

Temperature : 0~100.0°C



pH ORP Ion Conductivity Resistivity Salinity Concentration Dissolved oxygen Saturation Temperature x2 (Ambient temperature and humidity)

## A fully-featured, two channel multi-function water quality meter compatible with GLP / Part 11

### Multi-function Water Quality Meter **MM-60R**

Sensors are separately sold

- Large color graphics display
- Data memory (each channel 300 data items)
- Laboratory circumstance (ambient temperature, humidity) measurement and recording capability (Option)
- USB (Host) and LAN are provided as standard
- Capable of connecting to RS-232C external printer
- Capable of automated measurement (Connects to turntable)
- USP measurement compatible (Conductivity)

(Measurement function/ range)

pH : 0.000~14.000

ORP : 0.0~±2000.0 mV

Ion : 0.01 μg~999.9g/L (Actual measuring range is specified per using ion electrode)

Conductivity : 0~200.0 S/m (7 ranges)

Resistivity : 0~2.000MΩ·m (7 ranges)

Salinity : 0~4.00%

Concentration : 0~200.0% (3 ranges)

Dissolved oxygen : 0.00~20.00 mg/L

Saturation : 0~200%

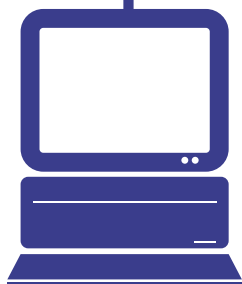
Temperature : 0~100.0°C



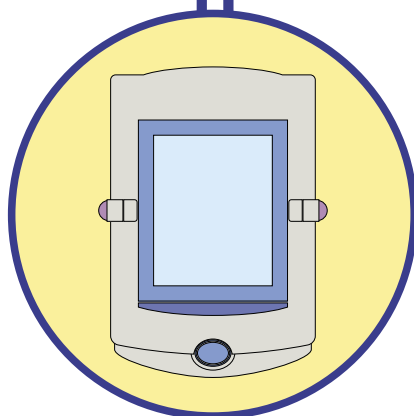
# Multi-samples Measuring System Brings Effectiveness At Your Laboratory By Connecting To Turn-table Unit (TTT-510), R-series Meter Becomes Capable For Automated Multi-samples Measurement

Models: HM-30R, CM-30R, MM-60R

## R-series Connection Examples



Measurement data can be saved in CSV format using the dedicated R-LOG software



### ● Automated measurement of up to 100 samples possible.

There are four kinds of turn-table (12, 18, 36 & 60 samples) available. 100 samples type turn-table is also available by option.

### ● Chemical resistant cleaning reservoir and various electrode cleaning methods enable wide application for many kinds of sample measurement.

It can cope with various sample measurement by chemical solution cleaning (acid washing, alkali washing, organic solvent washing such as alcohol)/bubbling washing etc., in addition with standard pure water shower and air blow cleaning method.

### ● Electrode holding tank available for overnight operation.

After the final measurement, the electrode is stored in a storage tank filled with pure water, so there are no concerns that the electrode will dry out.

### ● pH Calibration on turn-table and repetitive sample measurement.

Automatic pH calibration is possible by placing pH standard solutions at designated position. And it is also possible to repeat measurement on the same sample.

## [Examples of system application]

In addition to the standard system for multiple pH sample measurement, we provide a system capable of employment for diverse uses. Please inquire for details.

### ■ A multi-samples analysis system combined with "Reference electrode unit by flow through analysis"

It is capable to achieve high accurate measurement to low buffer reaction samples that are normally affected by small volume of KCl inner solution leakage from electrode.

- Multiple sample measurement of pH for boiler water, acid rain, and underground water applications.

### ■ A system for measuring multiple samples for pH and conductivity using the multi-function water quality meter (MM-60R)\*

This system enables the simultaneous measurement of multiple samples for both pH and conductivity.

<A multiple sample pH/EC measurement combined with "Reference electrode unit by flow through analysis">

- Multiple sample measurement of pH / EC for boiler water, acid rain, and underground water applications.

<The system uses general electrodes / simultaneous immersion>

- The measurement of pH / EC for samples (plating solution) in which the KCl contamination from the pH electrode can be ignored for conductivity measurement control

\*The number of samples is limited depending on system content.



# Enhanced Peripheral Tool Options For Advanced Analytical Control

**Automated continuous multiple  
sample measurement capability**

## TTT-510

### Turntable

Multiple sample measurement is possible depending on the application.

\*100 sample model is a special version. Turn table plate is fixed at 100 samples and can not be exchanged for other plates (eg. 60 sample plate)

\*Beakers and stirring bars are sold separately.



## Specifications

Display unit	LCD display
Operating keys / switch	Flat keyboard
Number of samples / Beakers used	12 samples 200 mL, 300 mL tall beaker 18 samples 100 mL tall beaker (Manufacturer's designation) 36 samples 30 mL, 50 mL tall beaker (Manufacturer's designation) 60 samples / (100 samples) 20 mL cell (Manufacturer's designation)
Cleaning mode	① Pure water shower → Air blow ② Pure water bubbling → Pure water shower → Air blow ③ Liquid chemical shower → Pure water shower → Air blow ④ Liquid chemical bubbling → Pure water shower → Air blow ⑤ Liquid chemical bubbling → Pure water bubbling → Pure water shower → Air blow ⑥ Liquid chemical bubbling → Liquid chemical shower → Air blow ⑦ Liquid chemical shower → Air blow ⑧ Liquid chemical bubbling → Pure water bubbling → Liquid chemical shower → Air blow Note : • Air blow cleaning is effective when the optional air pump is attached. • Liquid chemical cleaning is effective when the optional liquid chemical pump is attached. • Bubbling is effective when the optional bubbling pump and the waste water valve are attached.
Cleaning time (Individual settings possible)	Pure water shower cleaning : 1-9999 seconds Liquid chemical shower cleaning : 1-9999 seconds Pure water bubbling : 1-9999 seconds Liquid chemical bubbling : 1-9999 seconds
Air blow frequency	1-9 times (Setting possible)
Input/Output	• Device control output (For use with this company's designated product only) • Automated burette ATB-511 for output • RS-232C output • Over-head stirrer unit power output • Air pump power output for air blow • Power output for liquid chemical pump • Air pump power output from bubbling • Control output for waste water valve
End detection	Setting for final sample number by key operation or using endpin
Cleaning tank material	Teflon®, Daiflon
Electrode storage tank	Standard
Stirring time before measurement	0~9999 seconds
Waiting time before measurement	0~9999 seconds
Measurement repetitions for same sample	1~9 times (Setting possible)
Alarm / Cleaning tank solution level / Using float switch	Cleaning water 1 (Pure water) / Empty Cleaning water 2 (Liquid chemical) / Empty Waste water / Full
Peripheral temperature	5~40°C
Power source	AC line 50/60 Hz
Power consumption	Approx. 55VA (When optional pump / valve not in use) Maximum of approx. 175VA (When optional liquid chemical pump is in operation)
External dimensions	Main unit : Approx. W380 mm×H392 mm×D622 mm Maximum size when moving : Approx. W 415 mm (with table plate)×H518 mm×D622 mm
Weight	Approx. 18 kg (Not including table and electrodes)

## Standard Accessories

Table (Designated for 12, 18, 36, and 60 samples)	×1
Electrode holder (Designated samples / use)	×1
Pure water tank (10 L, with float switch)	×1
Waste water tank (10 L, with float switch)	×1
Endpin	×1
Pure water tube	×1
Waste water tube	×1
Polyethylene Beaker (200 mL)	×1
Operation Manual	×1

\*The attachment cable for the measurement device is sold separately based on the model designation

## Options

- R-series connection cable
- Air pump
- Bubbling pump
- Liquid chemical pump
- Waste water valve

## For controlling the measurement environment (ambient temperature, humidity)

### 6949070K

#### Temperature and humidity sensor

Applicable Models : HM-30R, CM-30R, MM-60R

When requiring higher control for measurement, it is possible to take environmental data such as the room temperature and humidity at the time of the measurement and record it with the measurement result.



#### Specifications

Content	Temperature	Humidity
Measurement range	0~50°C	5~90%RH
Display range	-5~110°C	0~100%RH
Display resolution	0.1°C	1%RH
Measurement accuracy	±1.0°C (at 25°C) ±1.5°C (All measurement ranges)	±8%RH

## Additional one-key device

### 6949080K

#### Remote switch

Applicable Models : HM-30R, CM-30R, MM-60R

Can be utilized as auto hold, data memory, and print key.



## For plain paper printing

### EPS-R

#### External printer (with connecting cable)

Applicable Models : HM-25R / 30R, CM-25R / 30R, MM-60R



A compact size with a chart width of about 60 mm. Data can be saved for long periods.

### 118B603

Connecting cable for external printer

### P000119

Printer paper (20 rolls)

### ORD00001

Ink ribbon (1 piece)

## For data management using a PC

### R-LOG

#### USB/LAN data collection software

Applicable Models : HM-30R, CM-30R, MM-60R

- Capable of importing data held in USB memory to a PC in CSV format.
- Capable of importing data to a PC in CSV format using a network (LAN).

### G-LOG2

#### Data collection software

Applicable Models : HM-25R / 30R, CM-25R / 30R, MM-60R

- Capable of importing data to a PC in the CSV format using the RS-232C
- ※ Use the RS-232C connecting cable (118B604) designated by this company for R-series connections.

### 118B604

RS-232C Connecting cable (2 m)

## Multi-electrodes connection for multi-point measurement

### ES-1G Electrode Selector

Models : HM-30R, MM-60R

Connect up to 5 pH / ORP / Ion electrodes

### ES-1GC Cell Selector

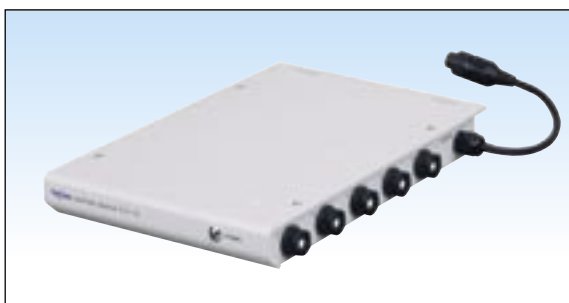
Models : CM-30R, MM-60R

Connect up to 5 conductivity cells

### ES-1GD Electrode Selector

Mode I: MM-60R

Connect up to 5 dissolved oxygen electrodes



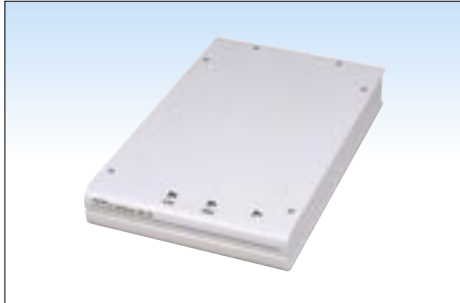
\*Only one electrode selector among three type of selector units can be connected only to Channel No.1 of MM-60R.

## For simple pH adjustment control

### AC-1V Control box

Models : HM-30R, CM-30R, MM-60R

100VAC is turned ON or OFF if the measured value exceeds the upper or lower limit when it is connected to alarm terminal of pH meter. pH controlling can be done if 100VAC reagent pump is connected with the control box.



\*The MM-60R can be used only with 1 channel.

## For periodic device checks

### PC-1G

pH checker

Models : HM-25R / 30R, MM-60R



### EC-1G

Conductivity check plug

Models: CM-25R / 30R, MM-60R



### TC-1G

Temperature check plug

Models : HM-25R / 30R, CM-25/30R, MM-60R



## Single function electrode adapter

**OJD00001** Electrode adaptor (For pH / ORP / Ion)

**OJD00002** Electrode adaptor (For conductivity)

## Other main unit options and accessories

Product name	Model
Stirrer	ST-15
Electrode Stand (with support and stopper)	6948810K
Electrode holder	O1B00001
Electrode attachment (G)	O1B00004
Electrode attachment (J)	O1B00005
Electrode attachment (ION)	O1B00006
Electrode attachment (DP)	O1B00007
Electrode attachment (N)	O1B00008

## Parts for electrodes and standard solutions

Product name	Model
<b>pH Standard solution / Internal solution</b>	
Oxalate pH standard solution pH 1.68 (500 mL)	143F194
Phthalic acid pH standard solution pH 4.01 (500 mL)	143F191
Neutral phosphate pH standard solution pH 6.86 (500 mL)	143F192
Borate pH standard solution pH 9.18 (500 mL)	143F193
Carbonate pH standard solution pH 10.02 (500 mL)	143F195
Reference electrode internal solution KCL3.3N (50 mL × 3)	OBG00002
<b>ORP check solution</b>	
ORP check solution (Quinhydrone)	143F196
ORP electrode grinding compound	AO-001
<b>Conductivity check solution</b>	
C solution for conductivity cell check (100 mL × 4)	OBI00001
B solution for conductivity cell check (250 mL × 3)	OBI00002
<b>Ion standard solution</b>	
Liquid junction parts for ion sensors (10 bags)	OLF00001
Na standard solution (500 mL)	NA-1000
I standard solution (500 mL)	I-1000
Br standard solution (500 mL)	BR-1000
Cd standard solution (500 mL)	CD-100
Cl standard solution (500 mL)	CL-1000
Cu standard solution (500 mL)	CU-100
NH <sub>4</sub> standard solution (500 mL)	NH <sub>4</sub> -1000
F standard solution (500 mL)	F-1000
NO <sub>3</sub> standard solution (500 mL)	N03-1000
NO <sub>3</sub> -N standard solution (500 mL)	N03-N
NH <sub>4</sub> -N standard solution (500 mL)	NH <sub>4</sub> -N
Ca standard solution (500 mL)	CA-1000
K standard solution (500 mL)	K-1000
F buffering standard solution (500 mL)	F-10
F buffering standard solution (500 mL)	F-100

Calibration solution powder for CO <sub>2</sub> (10 bags)	CGS-111
Ion strength adjuster (500 mL) for F	TISAB-01
Ion strength adjuster (500 mL) for F	TISAB-11
Ion strength adjuster (500 mL) for Na	ISA-NA
Ion strength adjuster (500 mL) for Cl	ISA-CL
Poisonous ion strength adjuster (500 mL) for CN	ISA-CN
Poisonous ion strength adjuster (500 mL) for NH <sub>4</sub>	ISA-NH
Ion strength adjuster (500 mL) for Cu, Cd	ISA-CU
Ion strength adjuster (500 mL) for NO <sub>3</sub>	ISA-NO
Ion strength adjuster (500 mL) for Ca	ISA-CA
Ion strength adjuster (500 mL) for K	ISA-K
Ion strength adjuster (500 mL) for CO <sub>2</sub>	ISA-CO
Reference electrode internal solution KCl Sat. (50 mL×3)	OBG00001
Reference electrode outer chamber solution	RE-2
Reference electrode outer chamber solution	RE-3
Ammonia electrode internal solution RE- NH <sub>4</sub> (50 mL×3)	OBG00005
Inner Solution for Carbon dioxide electrode	RE-11
Exchange membranes for ammonia electrode internal solution (10 sheet)	AE-FILM
Membrane cartridge (4 sheet package)	CTC-211
<b>Dissolved oxygen electrode parts</b>	
For DO module OE-270AA	OEC-002
For DO membrane set OE-270AA (3 pieces)	OCC00001
For DO membrane set OE-270AA high concentration DO (3 pieces)	OCC00002
For DO membrane set OE-570BA (3 pieces)	OCC00023
For DO membrane set OE-570BA high concentration DO (3 pieces)	OCC00024
For DO membrane set OE-470AA (3 pieces)	OCC00003
For DO membrane cartridge OE-470AA (5 pieces)	OCT-2502
For DO membrane set OE-470BA (3 pieces)	OCC00022
Electrolytic solution R-9 (50 mL×3)	OBG00007
Sodium sulfite (50 g)	NA2S03-5



pH standard solution

# Reliable, high performance Sensor- Essential For Precise Measurement of Water Quality

"Calib. Memo"

"Calib. Memo": The type, manufacturer's production number, and calibrated data in memory

## pH / ORP electrodes



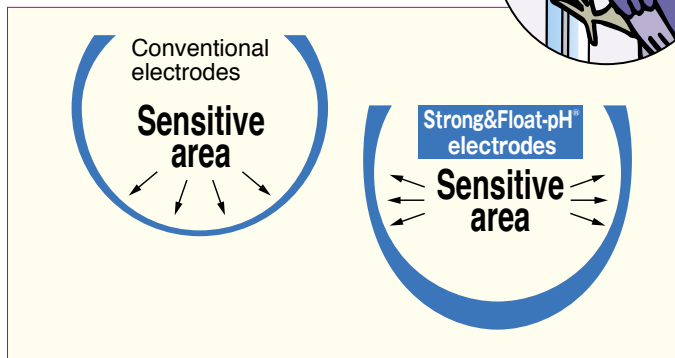
Durable, high-performance electrodes available as standard, providing excellent reliability

### Strong & Float-pH<sup>®</sup> electrodes

#### Strong

Care-free operation with durable glass electrode

- Electrodes of which tip parts are reinforced by our original sensor technology, are ready for service (more than ten times tougher against breakage shock comparing to our conventional one)



#### Float

Built-in floats enable recognition of internal solution concentration at a glance

- Constant reference internal solution concentrations are important for stable and accurate pH measurements. The internal solution replacement time can be determined at a glance from the float condition. This results in stable measurement control at all times.



At normal levels

When the float sinks, change internal solution

#### Silver ion trap reference electrodes

Further enhancing measurement performance

- Silver ion trap function is added to reference electrode. Measurement performance is improved further to low buffer reaction solution such as tap water and alkali nature solution etc.

### pH measurement of hydrofluoric acid solutions now available

#### Plastic sensor unit with hydrofluoric acid-resistant glass electrode tip

Hydrofluoric acid solutions corrode glass electrodes. With this electrode, only the tip needs to be replaced. This is much cheaper than having to replace the complete electrode assembly thus reducing cost. It is possible to make about 1,000 times of measurement at 1% hydrofluoric acid solution (25°C, 1 minute measurement period)

Glass electrode tips make replacement easy





## Conductivity cells



- **“Calib. Memo” sensors make automatic readings of cell constants possible**

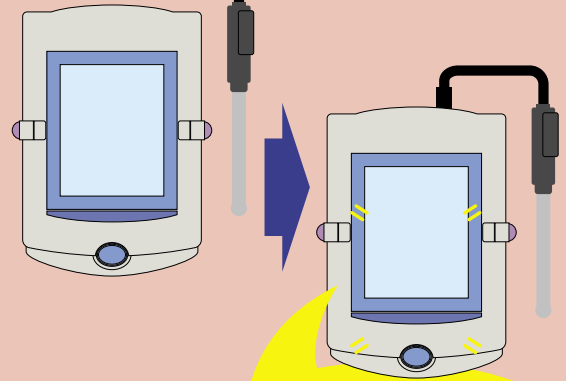
It is no exaggeration to say that conductivity cells will each have different values. It is necessary to input the cell constants first when measuring conductivity.

"Calibration Memo" technology enables a meter to read the cell constant value to enter it to itself automatically just connecting a conductivity cell.

It eliminates the cell setting procedure and input error.



Just by connecting the cell to the main unit



Enables the automated reading of cell constants

## Ion electrodes

- **Various tip type combination ion electrode are available**

(Except membrane electrodes)

- **As the calibration data are memorized inside of the electrode itself, it is convenient to use different kinds of ion electrodes at the same meter**



Easy-to-replace tip type ion electrodes

## Dissolved oxygen electrodes

- **Many high performance DO sensors including non-stirring type are available**

The non-stirring DO electrode (OE-470BA) can function without sample agitation or stirring. Rapid response DO electrode (OE-470AA) simplifies DO measurement for BOD application.



# R-Series pH, ORP Electrode Table

“Calib. Memo”



Lead Free  
Electrode Models  
GST-5741C PST-5721C  
GST-5731C PS-5111C  
GST-5711C

Product Name		pH Combined Electrode “Calib.Memo” (R-Series)				
Model Name	<b>Strong</b> GST-5741C General Purpose use	<b>Strong</b> ELP-031 Organic Solvent use	<b>Strong</b> ELP-032 Precision Measurement use	GST-5723S Precision Trace Amount Measurement use	GST-5724C Insertion Measurement use	
Dimensions						
Conc. Moni.(Float)	○	○	○	○	○	
Silver ion trap	○	—	—	—	—	
Measurement range	pH	pH0~14	pH0~14	pH0~11	pH0~12	
	Temp.	0~100°C	0~100°C	0~60°C	0~60°C	
Required sample Volume <sup>※</sup>	1mL	3mL	2mL	1mL	0.5mL	
Features	Reinforced strength electrode tip, easy-to-use, for standard measurements. HM-30R standard attached electrode	Moveable sleeve is adopted for liquid junction parts. It is easy to clean junction part. It is applicable for precision measurement.	It stems occurrence of liquid junction potential and is easy to use with fixed sleeve. Suitable for precision measurement.	Trace sample high-precision measurement capability.	Directly spear this electrode into fruits, meats, gelatinous foodstuffs, tofu etc for measurement.	

Product Name		pH Combined Electrode “Calib.Memo” (R-Series)				
Model Name	<b>Strong</b> ELP-035 Trace sample volume use	<b>Strong</b> ELP-036 Ultra Trace sample volume use	<b>Strong</b> ELP-037 Test Tube use	<b>Strong</b> ELP-038 Narrow Test Tube use	GST-5720C Flow Monitoring use	
Dimensions						
Conc. Moni.(Float)	—	—	—	—	○	
Silver ion trap	—	—	—	—	—	
Measurement range	pH	pH0~13	pH0~13	pH0~13	pH0~12	
	Temp.	0~100°C	0~60°C	0~100°C	0~60°C	
Required sample Volume <sup>※</sup>	0.5mL	0.3mL	0.5mL	0.3mL	—	
Features	5-mm diameter electrode smart. Easy-to-use trace volume sample use type.	3-mm diameter electrode for ultra-trace volume sample use.	8-mm diameter long body electrode for standard test tube insertion use.	3-mm diameter long body electrode for narrow test tube insertion, MMR tubes, etc.	250-μl cell capacity. Tubular glass membrane used enabling continuous measurements and also preventing air contact.	

Conc. Moni : Concentration Monitor

Product Name	pH Combined Electrode "Calib.Memo" (R-Series)		pH Combined Electrode (R-Series)	pH Combined Electrode (HM-7J / 20J)
Model Name	ELP-039 Strong Alkali use	ELP-040 Hydrofluoric Acid Bath use	<b>Strong</b> GST-5731C General Purpose use	GST-5711C General Purpose use
Dimensions				
Conc. Moni. (Float)	○	○	○	○
Silver ion trap	○	—	○	○
Measurement range	pH	pH0~14	pH2~12	pH0~14
	Temp.	0~100°C	0~50°C	0~100°C
Required sample Volume <sup>※</sup>	1mL	30mL	1mL	1mL
Features	Suitable for accurately measuring alkali solutions at pH 12 or above.	Plastic main body with replaceable glass electrode tip.  Glass electrode tip (5082L)	Reinforced strength electrode tip, easy-to-use, for standard measurements. HM-25R standard attached electrode	General purpose, easy-to-use electrode.

Product Name	ORP Combined Electrode "Calib. Memo" (R-Series)	ORP Combined Electrode (HM-7J / 20J)
Model Name	PST-5721C General Purpose use	PS-5111C General Purpose use
Dimensions		
Conc. Moni. (Float)	○	○
Silver ion trap	○	○
Measurement range	pH	—
	Temp.	0~100°C
Required sample Volume <sup>※</sup>	1mL	1mL
Features	Platinum, reference, temperature sensor incorporated into a single ORP measurement electrode.	Platinum, reference sensor incorporated into a single ORP measurement electrode.



# Conductivity Cell Table

"Calib. Memo"



Lead Free Cell Models  
 CT-57101B CT-57101A C-50101B  
 CT-57101C CT-27111D C-50101C  
 C-50101A

Product Name	Immersion Conductivity Cell "Calib. Memo" (R-Series)			Flow-Through Type Conductivity Cell "Calib. Memo" (R-Series)				
Model Name	CT-57101B General Purpose use	CT-57101C Low Conductivity use	CT-57101A High Conductivity use	CT-87101B General Purpose use	CT-27111D* <sup>1</sup> Pure Water use	CT-87101C Low Conductivity use	CT-87102A* <sup>2</sup> High Conductivity use	
Dimensions								
Measurement range	EC	100 μS/m~10S/m {1 μS/cm~100mS/cm}	5 μS/m~1S/m {0.05 μS/cm~10mS/cm}	1mS/m~100S/m {10 μS/cm~1S/cm}	100 μS/m~10S/m {1 μS/cm~100mS/cm}	5 μS/m~20mS/m {0.05 μS/cm~200 μ/cm}	5 μS/m~1S/m {0.05 μS/cm~10mS/cm}	10mS/m~100S/m {100 μS/cm~1S/cm}
	Temp.	0~100°C	0~100°C	0~100°C	0~100°C	0~80°C	0~100°C	0~100°C
Cell constant	100m <sup>-1</sup>	10m <sup>-1</sup>	1,000m <sup>-1</sup>	100m <sup>-1</sup>	1m <sup>-1</sup>	10m <sup>-1</sup>	2,000m <sup>-1</sup>	
Required sample Volume*	Volume no less than: 4mL φ14mm×26mm	Volume no less than: 6mL φ14mm×42mm	Volume no less than: 39mL φ36mm×38mm	—	—	—	—	
Features	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Simple straight cell design</li> <li>The cell structure is designed hardly to get affection of air bubble.</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Simple straight cell design</li> <li>The cell structure is designed hardly to get affection of air bubble.</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Simple cell shape</li> <li>As the cell structure is so designed to let air bubble remove easily, stable measurement can be expected.</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Used for general purpose flow measurements</li> <li>Required internal cell volume : 4 mL</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Used for pure water measurements</li> <li>Required flow cell internal volume : 8 mL</li> <li>*1 A separate flow cell will be required when in use. Polypropylene flow cell (CEF-22A) and SUS flow cell (CEF-23A) are available.</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Measures low conductivity samples by flow measurement without influence of CO<sub>2</sub> gas.</li> <li>Required internal cell volume : 15 mL</li> </ul>	<ul style="list-style-type: none"> <li>Built in temperature sensor</li> <li>Small volume flow cell</li> <li>Required internal cell volume : 1 mL</li> <li>*2 A syringe rubber septum or pump tube will be required when in use.</li> </ul>	

Product Name	Immersion Conductivity Cell (CM-20J)			
Model Name	C-50101B General Purpose use	C-50101C Low Conductivity use	C-50101A High Conductivity use	
Dimensions				
Measurement range	EC	100 μS/m~10S/m {1 μS/cm~100mS/cm}	5 μS/m~1S/m {0.05 μS/cm~10mS/cm}	1mS/m~100S/m {10 μS/cm~1S/cm}
	Temp.	—	—	—
Cell constant	100m <sup>-1</sup>	10m <sup>-1</sup>	1,000m <sup>-1</sup>	
Required sample Volume*	Volume no less than: 4mL φ14mm×26mm	Volume no less than: 6mL φ14mm×42mm	Volume no less than: 39mL φ36mm×38mm	
Features	<ul style="list-style-type: none"> <li>Simple straight cell design</li> <li>The cell structure is designed hardly to get affection of air bubble.</li> </ul>	<ul style="list-style-type: none"> <li>Simple straight cell design</li> <li>The cell structure is designed hardly to get affection of air bubble.</li> </ul>	<ul style="list-style-type: none"> <li>Simple cell shape</li> <li>As the cell structure is so designed to let air bubble remove easily, stable measurement can be expected.</li> </ul>	

\*Capacity when the smallest possible cell-insertion vessel capacity is used.

# Dissolved Oxygen Electrode Table

"Calib. Memo"

Product Name	Dissolved O <sub>2</sub> Electrode "Calib. Memo" (R-Series)			
Model Name	OE-270AA Immersion / Throw-in use	OE-570BA Immersion / Throw-in use	OE-470BA "Egg Bottle" use	OE-470AA "Egg Bottle" use
Dimensions				
Measurement range	Dissolved O <sub>2</sub>	0~20mg/L		
	Saturation %	0~200% / 0~500%*		0~200%
	Temp.	0~50°C		
Operational temperature range	0~50°C			
Temperature compensation range	5~45°C			
Electrolytic solution	R-9 (0BG0007)			
Diaphragm set	OCC00001 (High conc. DO use: OCC00002)	OCC00023 (High conc. DO use: OCC00024)	OCC00022	OCC00003
Features	Cable length: 3 m (standard) 5 m, 11 m	Suitable for no-flow speed measurements	Suitable for no-flow speed measurements	Built in stirrer

\*0~500% : When high concentration DO membrane is used



# Ion Electrode Table

“Calib. Memo”

Electrode Name	Measurement Range	Optimum pH Range	Measurement Solution Temp	Interference of coexisting ion	Ion Electrode Tip, Replacement Membrane, etc.	
NA-2011 Sodium Ion Combined Electrode	2.3~23,000mg/L Na <sup>+</sup>	pH10~11	0~60°C	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>	NA-100B Sodium ion electrode tip	NA-2011 Glass membrane
CL-2021 Chloride Ion Combined Electrode	1~35,000mg/L Cl <sup>-</sup>	pH5~6	0~50°C	S <sup>2-</sup> =Must be absent 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>	CL-200B Chloride ion electrode tip	CL-2021 Solid membrane
BR-2021 Bromide Ion Combined Electrode	0.8~80,000mg/L Br <sup>-</sup>	pH5~6	0~50°C	S <sup>2-</sup> =Must be absent 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>	BR-200 Bromide ion electrode tip	BR-2021 Solid membrane
I-2021 Iodide Ion Combined Electrode	0.01~127,000mg/L I <sup>-</sup>	pH5~6	0~50°C	S <sup>2-</sup> =Must be absent CN <sup>-</sup> =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>	I-200 Iodide ion electrode tip	I-2021 Solid membrane
CN-2021 Cyanide Ion Combined Electrode	0.003~26mg/L CN <sup>-</sup>	pH12~13	0~50°C	S <sup>2-</sup> =Must be absent I=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>	CN-200B Cyanide ion electrode tip	CN-2021 Solid membrane
CD-2021 Cadmium Ion Combined Electrode	0.01~1,120mg/L Cd <sup>2+</sup>	pH5~6	0~50°C	Hg <sup>2+</sup> , Ag <sup>+</sup> , Cu <sup>2+</sup> =Must be absent 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>	CD-200 Cadmium ion electrode tip	CD-2021 Solid membrane
CU-2021 Copper Ion Combined Electrode	0.06~630mg/L Cu <sup>2+</sup>	pH5~6	0~50°C	Ag <sup>+</sup> , Hg <sup>2+</sup> =Must be absent 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>	CU-200 Copper ion electrode tip	CU-2021 Solid membrane
AG-2021 Silver Ion Combined Electrode	0.1~108,000mg/L Ag <sup>+</sup>	pH5~6	0~50°C	Hg <sup>2+</sup> =Must be absent 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>	AG-200 Silver ion electrode tip	AG-2021 Solid membrane
S-2021 Sulfide Ion Combined Electrode	0.3~32,000mg/L S <sup>2-</sup>	pH13 above	0~50°C	—	S-200 Sulfide ion electrode tip	S-2021 Solid membrane
F-2021 Fluoride Ion Combined Electrode	0.019~19,000mg/L F <sup>-</sup>	pH5~6	0~50°C	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>	F-200 Fluoride ion electrode tip	F-2021 Solid membrane
K-2031 Potassium Ion Combined Electrode	0.39~3,900mg/L K <sup>+</sup>	pH5~6	0~50°C	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>	K-300B Potassium ion electrode tip	K-2031 Liquid membrane
CA-2031 Calcium Ion Combined Electrode	0.4~40,000mg/L Ca <sup>2+</sup>	pH5~6	0~50°C	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>	CA-300 Calcium ion electrode tip	CA-2031 Liquid membrane
N-2031 Nitrate Ion Combined Electrode	0.62~62,000mg/L NO <sub>3</sub> <sup>-</sup>	pH5~6	0~50°C	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>	N-300 Nitrate ion electrode tip	N-2031 Liquid membrane
AE-2041 Ammonium Combined Electrode	0.09~1,800mg/L NH <sub>4</sub> <sup>+</sup>	pH12 above	0~50°C	Volatile amines	AE-FILM Ammonia electrode replacement membrane	AE-2041 (Set of 10)
CE-2041 Carbon Dioxide Electrode	Dissolved gas : 1.49~1,490mg/L	—	0~50°C	Dissolved gas: volatile weak acid Atmosphere: Acidic gas	CTC-211 Diaphragm cartridge	CE-2041 (Set of 4)

## Caution!

- These combined ion electrodes are not designed in water proof and not built with temperature probe, thereby, it is required to draw attention when using it.
- A selectivity coefficient shown in "Interference of coexisting ion" as 10<sup>x</sup> means the degree that coexisting ion in sample solution gives erroneous influence to the reading value for the measuring objective ion. When interfering ion 10<sup>x</sup> coexists in the sample, it will be indicated as equivalent figure with the measuring-objective ion as indication error.
- When the coexisting ions are at a concentration that will affect the measurement value, solution pretreatment will be required to prevent interference.



## Ion Combined Electrode Models

NA-2011, CL-2021, BR-2021, I-2021, CN-2021, CD-2021, CU-2021, AG-2021, S-2021, F-2021, K-2031, CA-2031, N-2031	AE-2041	CE-2041

# pH Meter

## Specifications / Function Table

Model Name	HM-30R	HM-25R	
Measurement Method	Glass Electrode Method		
Display Unit	Color Graphic LCD with Backlight	Custom-built LCD	
Measurement Item/Range	pH	pH0.000~pH14.000	
	ORP	0.0~±2,000.0mV	
	Temp.	0.0~100.0°C	
	Ambient Temp.	0.0~50.0°C	
	Humidity	5~90%RH	
Display Range	pH	pH-2.000~pH16.000	
	ORP	0.0~±2,200.0mV	
	Temp.	-5.0~110.0°C	
	Ambient Temp.	-5.0~110.0°C	
	Humidity	0~100%RH	
Display Resolution	pH	0.01/0.001pH	
	ORP	1/0.1mV	
	Temp.	0.1°C	
	Ambient Temp.	0.1°C	
	Humidity	1%RH	
Repeatability (Meter Main Unit)	pH	±0.001pH±1digit	
	ORP	±0.1mV±1digit	
	Temp.	±0.1°C±1digit	
pH Temperature Compensation Range	ATC (Auto Temperature Compensating): 0~100.0°C MTC (Manual Temperature Compensating): 0~100.0°C		
pH Calibration	JIS Standard Solution, US Standard Solution, Optional Standard Solution	JIS Standard Solution, US Standard Solution, Optional Standard Solution	
	Max. 5-point Calibration	Max. 3-point Calibration	
Temperature Calibration	1-point Calibration		
Ambient Temp. Calibration	1-point Calibration		
Humidity Calibration	1-point Calibration		
Performance Guaranteed Temperature, Humidity	0~45°C 85% or below (condensation-free)		
Data Memory	300 Data		
Print Function	External Printer (Optional)		
Auto Hold Function	●		
Auto Hold Conditions Settings	●		
Statistical Calculation Function	Average Value		
Calibration History Creation Function	Max. 20 run lots		
Interval Measurement	●		
Security Function	●		
Upper / Lower Limit Output Setting	●		
Optional Standard Solution Table Creation Function	●		
mV Shift Function	●		
External Input / Output	RS-232C Interface	2-ch (1-ch: External Printer Output)	
	USB (Host)	1-ch	
	LAN	1-ch	
	External Instrument Connection	1-ch	
	Analog Output	pH	±700mV (pH0~14)
		ORP	±1V (0~±2,000mV)
Temp.		0~1V (0~100°C)	
Alarm		Upper Limit: Open Collector Lower Limit: Open Collector	
Option Connection	Temperature / Humidity Sensor	●	
	External Printer	●	
	Turntable	● (TTT-1/3100/510)	
	Electrode Switch(ES-1G) Control Box (AC-1V)	● ●	
Power Source	AC100 V ~240 V (AC Adapter)	AC line (AC Adapter)	
Power Consumption	Approx. 15 VA	Approx. 4 VA	
Main Unit Dimensions (Excluding Protruding Parts)	Approx. W152 × H98 × D230 mm		
Main Unit Weight	Approx. 1.0 kg	Approx. 0.8kg	

## Standard Accessories

pH Electrode	GST-5741C 1 Pc.	GST-5731C 1 Pc.
Standard Solutions	pH 4.01, pH 6.86 (500 mL) each 1 bottle	
KCl Solution	3.3 mol / L KCl (50 mL) 1 bottle	
Electrode Holder	1 piece	
Electrode Attachment	1 piece (G-type)	1 piece (J-type)
Electrode Stand	1 piece	
Support	1 piece	
Stopper	1 piece	
Polyethylene Beaker	150 mL 3 pieces	
AC Adapter	1 piece	
Ground Wire	1 piece	
Simple User Guide	1 copy	
Operation Manual	1 copy	

# Conductivity Meter

## Specifications / Function Table

Model Name	CM-30R	CM-25R	
Measurement Method	AC 2-Electrode Method		
Display Unit	Color Graphic LCD with Backlight	Custom-built LCD	
Measurement Item / Range	Conductivity	Depending on Cell used	
	Resistivity	Conversion from Conductivity	
	Salinity	Conversion from Conductivity	
	Concentration	Conversion from Conductivity	
	Temp.	0.0~100.0°C	
Display Item / Range	Ambient Temp.	0.0~50.0°C	
	Humidity	5~90%RH	
	Conductivity (Manual / Auto Range Switching)	0~200.0μS/m (0~2.000μS/cm)	0~2.000mS/m (0~20.00μS/cm)
		0~20.00mS/m (0~200.0μS/cm)	0~200.0mS/m (0~2.000mS/cm)
		0~2.000S/m (0~20.00mS/cm)	0~20.00S/m (0~200.0mS/cm)
0~200.0S/m (0~2.000S/cm)		SI Unit (S/m) and Conventional Unit (S/cm) selectable	
0~2.000Ω·m (0~200.0Ω·cm)		0~20.00kΩ·m (0~2.000MΩ·cm)	
Resistivity	0~20.00kΩ·m (0~2.000MΩ·cm)	0~200.0kΩ·m (0~20.00MΩ·cm)	
	0~2.000MΩ·m (0~200.0MΩ·cm)	SI Unit (Ω·m) and Conventional Unit (Ω·cm) selectable	
	Salinity	0~4.00%	
	Concentration (Auto Range Switching)	0~2.000% 0~20.00% 0~200.0%	
	Temp.	-5.0~110.0°C	
Repeatability (Meter Main Unit)	Ambient Temp.	-5.0~110.0°C	
	Humidity	0~100%RH	
	Conductivity	±0.5%F.S.	
	Resistivity	±0.5%F.S.	
	Salinity	±0.5%F.S.	
Temperature Compensation	Concentration	±0.5%F.S.	
	Temp.	±0.1°C±1digit	
	Temperature Compensation Range	ATC (Auto Temperature Compensating): 0~100.0°C MTC (Manual Temperature Compensating): 0~100.0°C	
	None	ATC OFF	
	Standard Temperature Setting	0~100.0°C	
Concentration Conversion Setting	Temperature Coefficient (Linear)	0~10.00%/°C	
	Temperature Coefficient (Curve)	2~10 points	
	Pure Water Dual Temperature Comp.	●	
	Temperature Calibration	1-point Calibration	
	Ambient Temp. Calibration	1-point Calibration	
Option Connection	Humidity Calibration	1-point Calibration	
	Performance Guaranteed Temperature, Humidity	0~45°C 85% or below (condensation-free)	
	Data Memory	300 Data	
	Print Function	External Printer (Optional)	
	Auto Hold Function	●	
External Input / Output	Auto Hold Conditions Settings	●	
	Statistical Calculation Function	Average Value	
	Calibration History Creation Function	Max. 20 run lots	
	Interval Measurement	●	
	Security Function	●	
Option Connection	Upper / Lower Limit Output Setting	●	
	RS-232C Interface	2-ch (1-ch: External Printer Output)	
	USB (Host)	1-ch	
	LAN	1-ch	
	External Instrument Connection	1-ch	
Option Connection	Analog Output	Meas. Value Range Upper Limit : Open Collector Lower Limit : Open Collector	
	Temperature / Humidity Sensor	●	
	External Printer	●	
	Turntable	● (TTT-1/3100/510)	
	Cell Switch(ES-1GC) Control Box (AC-1V)	● ●	
Power Source	AC100 V~240 V (AC Adapter)	AC line (AC Adapter)	
Power Consumption	Approx. 15 VA	Approx. 5 VA	
Main Unit Dimensions (Excluding Protruding Parts)	Approx. W152 × H98 × D230 mm		
Main Unit Weight	Approx. 1.0 kg	Approx. 0.8kg	

## Standard Accessories

Conductivity Cell	CT-57101B 1 Pc.
Electrode Holder	1 piece
Electrode Attachment	1 piece (G-type)
Electrode Stand	1 piece
Support	1 piece
Stopper	1 piece
Polyethylene Beaker	150 mL 1 piece
AC Adapter	1 piece
Ground Wire	1 piece
Simple User Guide	1 copy
Operation Manual	1 copy

# Multi-function Water Quality Meter

## Specifications / Function Table

Model Name		MM-60R	
Measurement Method		pH : Glass Electrode Method, Conductivity: AC Dual Electrode Dissolved O <sub>2</sub> : Diaphragm Galvanic Cell	
Electrode Inputs		2-ch (2-Channel connection: pH / ORP / Ion / Conductivity / DO Electrode.)	
Display Unit		Color Graphic LCD with Backlight	
Display		Selectable 2-ch Simultaneous Display or Single ch Only Display	
Measurement Item / Range	pH	pH0.000~pH14.000	
	ORP	0.0~±2,000.0mV	
	Ion	Depending on Sensor used	
	Conductivity	Depending on Cell used	
	Resistivity		
	Salinity	Conversion from Conductivity	
	Concentration	Conversion from Conductivity	
	Dissolved O <sub>2</sub>	Depending on Electrode used	
	Saturation %		
	Temp.	0.0~100.0°C When measuring Dissolved O <sub>2</sub> : 0.0~50.0°C Ion : Depending on Electrode	
Ambient Temp.	0.0~50.0°C		
Humidity	5~90%RH		
Display Item / Range	pH	pH-2.000~pH16.000	
	ORP	0.0~±2,200.0mV	
	Ion	0.00μg/L~999.9g/L	
	Conductivity (Manual / Auto Range Switching)	0~200.0μS/m (0~2.000μS/cm)	
		0~2.000mS/m (0~20.00μS/cm)	
		0~20.00mS/m (0~200.0μS/cm)	
		0~200.0mS/m (0~2.000mS/cm)	
		0~2.000S/m (0~20.00mS/cm)	
	Resistivity (Manual / Auto Range Switching)	0~20.00Ω·m (0~200.0Ω·cm)	
		0~20.00kΩ·m (0~2.000kΩ·cm)	
		0~200.0Ω·m (0~20.00kΩ·cm)	
		0~2.000kΩ·m (0~200.0kΩ·cm)	
		0~20.00kΩ·m (0~2.000MΩ·cm)	
	Salinity	0~200.0kΩ·m (0~20.00MΩ·cm)	
		0~2.000MΩ·m (0~200.0MΩ·cm)	
		SI Unit (Ω·m) and Conventional Unit (Ω·cm) selectable	
		0~4.00%	
		0~2.000%	
	Concentration (Auto Range Switching)	0~20.00%	
		0~200.0%	
Dissolved O <sub>2</sub>	0.00~20.00mg/L		
Saturation %	0~200%		
Temp.	-5.0~110.0°C		
Ambient Temp.	-5.0~110.0°C		
Humidity	0~100%RH		
Display Resolution Switching	pH	0.01/0.001pH	
	ORP	1/0.1mV	
	Ion	(0.0μg/L~999g/L) / (0.00μg/L~999.9g/L)	
Repeatability (Meter Main Unit)	pH	±0.001pH±1digit	
	ORP	±0.1mV±1digit	
	Ion	±0.5%F.S.±1digit	
	Conductivity	±0.5%F.S.	
	Resistivity	±0.5%F.S.	
	Salinity	±0.5%F.S.	
	Concentration	±0.5%F.S.	
	Dissolved O <sub>2</sub>	±0.02mg/L±1digit	
	Saturation %	±2%±1digit	
	Temp.	±0.1°C±1digit	
Temperature Compensation	pH	Temperature Compensation Range	ATC (Auto Temperature Compensation) : 0~100.0°C MTC (Manual Temperature Compensation) : 0~100.0°C
		Conductivity/Resistivity	Temperature Compensation Range
	Dissolved O <sub>2</sub>	None	ATC OFF
		Standard Temperature Setting	0~100.0°C
		Temperature Coefficient (Linear)	0~10.00%/°C
Temperature Coefficient (Curve)	2~10 points		
Point Water Quality Temperature Compensation		●	
pH Calibration		JIS Standard Solution, US Standard Solution, Optional Standard Solution Max. 5-point Calibration	
Ion Calibration		Max. 5-point Calibration	
Dissolved O <sub>2</sub> Calibration		Auto Calibration (Zero Span Calibration)	
Temperature Calibration		1-point Calibration	
Ambient Temp. Calibration		1-point Calibration	
Humidity Calibration		1-point Calibration	
EC Conc.		2~10 points	
DO Chloride Compensation Setting		●	
DO ATM Pressure Compensation Setting		●	
Performance Guaranteed Temperature, Humidity		0~45°C 85% or below (condensation-free)	
Data Memory		300 Data each Channel	
Print Function		External Printer (Optional)	
Auto Hold Function		●	
Auto Hold Conditions Settings		●	
Statistical Calculation Function		Average Value	
Calibration History Creation Function		Max. 20 run lots each Channel, 10 Electrode Types	
Interval Measurement		●	
Security Function		●	
Upper / Lower Limit Output Setting		●(1 Channel only)	

External Input / Output	RS-232C Interface	2-ch(1-ch : External Printer Output)	
	USB(Host)	1-ch	
	LAN	1-ch	
	External Instrument Connection	1-ch	
	Analog Output	pH	±700mV (pH0~14)
		ORP	±1V (0~±2,000mV)
		Conductivity / Resistivity / Chloride / Concentration	0~1VF.S.
		Dissolved O <sub>2</sub> / Saturation %	0~1VF.S.
		Range	100 mV / Range
		Temp.	0~1V (0~100°C)
Alarm (1-ch only)		Upper Limit : Open Collector Lower Limit : Open Collector	
Temperature / Humidity Sensor		●	
Option Connection	External Printer	●	
	Turntable	●(TTT-1/3100/510)	
	Electrode Selector (ES-1G)		
	Cell Selector (ES-1GC)	● (Single option can be connected to ch-1)	
	Control Selector (ES-1GD)		
	Control Box (AC-1V)	●	
Power Source	AC100 V~240 V (AC Adapter)		
Power Consumption	Approx. 22 VA		
Main Unit Dimensions (Excluding Protruding Parts)	Approx. W152 × H98 × D230 mm		
Main Unit Weight	Approx. 1.1 kg		

## Standard Accessories

Electrode Holder	1 piece
Electrode Attachment	G-Type × 2, Ion × 1, J × 1, DP × 1
Electrode Stand	1 piece
Support	1 piece
Stopper	1 piece
Polyethylene Beaker	150 mL 3 pieces
AC Adapter	1 piece
Ground Wire	1 piece
Simple User Guide	1 copy
Operation Manual	1 copy



# J-Series

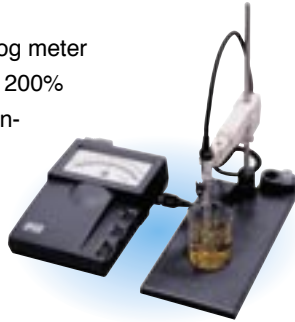
## pH Meter

Practical manually operated analog and digital models

Practical analog display. 2-way AC-DC power source

### HM-7J pH Meter

- Easy-to-read display with analog meter
- pH3.5~0.5 Expansion scale: 200%
- Capable of measuring oxidation-reduction potential (ORP) (electrode sold separately)
- With mV-shift function
- Low price, compact size



Practical digital display. 2-way AC-DC power source

### HM-20J pH Meter

- Easy-to-read of measurements digital display
- Capable of measuring oxidation-reduction potential (ORP) (electrode sold separately)
- With mV-shift function
- Low price, compact size



#### Specifications

Model Name	HM-7J	HM-20J	
Measurement Method	Glass Electrode Method		
Display	Analog meter, pH / mV switching	Digital meter, pH / mV switching	
Measurement Range	pH	Range	pH0~14
		Resolution	0.1pH (scale)
	PH expansion	Range	pH3.5~10.5
		Resolution	0.05pH (scale)
mV	Range	0~±700mV (0~±1400mV by Zero shift)	
	Resolution	10mV (scale)	
Repeatability (Meter Main Unit)	pH	±0.05pH	
	PH expansion	±0.025pH	
	mV	±10mV	
Analog Output	pH	±700mV (pH0~14)	
	mV	±350mV (0~±700mV)	
Temperature Compensation Range	ATC (Auto Temperature Compensating) : 0~100.0°C		
Calibration	Manual (Zero span)		
Operation Temp. Range	0~40°C		
Power Source	AC Line or Size AA battery X2		
Power Consumption	Approx. 3 VA		
Main Unit Dimensions	Approx. W148 X H75 X D221 mm		
Main Unit Weight	Approx. 0.7 kg		

#### Standard Accessories

pH Electrode	GST-5711C 1 Pc.
Standard Solutions	Each 1 bottle
KCL Solution	1 bottle
Electrode Holder	1 piece
Electrode Attachment	1 piece (J-type)
Electrode Stand	1 piece
Support	1 piece
Stopper	1 piece
Polyethylene Beaker	150 mL 3 pieces
Thermometer	1 piece
Power Cable	1 piece
Ground Wire	1 piece
Operation Manual	1 copy

## Conductivity Meter

Practical manually operated digital model

Low price, compact size

### CM-20J

### Conductivity Meter

- Easy-to-read LCD digital display
- SI Unit (S/m) and Conventional Unit (S/cm) selectable
- Operation of AC/ DC 2 power source
- Low price, compact size



#### Specifications

Model Name	CM-20J
Display Unit	LCD
Measurement Range	Depending on Cell used
Display Range	0~2.000mS/m, 0~20.00mS/m, 0~200.0mS/m
	0~2.000S/m, 0~20.00S/m
	Display unit switching ; SI Unit (S/m, Ω·m) and Conventional Unit (S/cm, Ω·cm) selectable
Repeatability (Meter Main Unit)	±0.5% F.S.
Range setting	Manual
Temperature Compensation Range	Manual 0~60°C
Compensation Standard Temperature	25°C fixed
Output Temperature Coefficient (Linear)	2% / °C fixed
Output Conductivity	0~1V F.S.
Frequency of measurement	Auto select with 80hz and 3kHz
Operation Temp. Range	0~40°C
Power Source	AC Line or Size AA battery X2
Power Consumption	Approx. 3 VA
Main Unit Dimensions	Approx. W148XH75XD221 mm
Main Unit Weight	Approx. 0.7 kg

#### Standard Accessories

Cell	1 piece (C-50101B)
Electrode Holder	1 piece
Electrode Stand	1 piece
Support	1 piece
Stopper	1 piece (J-type)
Electrode Attachment	1 piece
Polyethylene Beaker (150 mL)	1 piece
Mercury thermometer	1 piece
AC Cable	1 piece
Ground Wire	1 piece
Former unit	1 set
Operation Manual	1 copy

DKK-TOA CORPORATION



**CAUTION**

Do not operate products before consulting instruction manual.