# **Instruction Manual**

# No. 1731-00 Digital Salt Meter Model SK-10S

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# Cautions before use

- A special treatment has been applied to the tip of the sensor. Never touch it with your bare hands.
- Be sure not to drop it or let it bump against the container. If the sensor is hit against a hard object or a strong impact is applied to it, its inner part could be damaged.
- If the sample contains any conductive substance other than salt, an inaccurate measurement could result due to the effect of such substance.
- Keep them away from water or solution since the sensor unit (except the part to be directly inserted into the sample) and the main unit are not waterproof. Otherwise, the unit may malfunction.

# <u>Notes</u>

1. The unit can be used only to measure liquids.

- The unit may display readings when used to measure solid matter, powder or gel matter, but the readings are not necessarily correct.
- When measuring, if the sensor touches any solid matter present in the sample, the measurement values could be affected.
- The readings may be unstable when the sample is flowing.
- 2. When there is a large temperature difference between the sample and the sensor Measurement error may occur when there is a large temperature difference between the sample and the sensor. To obtain accurate measurement, allow the sensor to adapt to the sample temperature by immersing it in the sample for about 30 seconds.

The unit is designed to measure samples between -5 to  $70^{\circ}$ C. If the temperature falls outside this range, "0 – L" appears and if the temperature exceeds the range, "0 – H" appears on the display, indicating that measurement is disabled.



Avoid immersing the sensor into an extremely hot liquid. Doing so may cause a malfunction.

# 3. Measuring range

The measuring range for salinity concentration is 0.1 to 10.1%. Measuring a high-salinity solution is largely affected by the sample temperature and sensor condition.

Since precise measurement of a high-salinity solution requires special expertise and equipment, this unit should only be used for reference purposes.



Note that if the sensor is used for measuring a high-salinity solution, which consumes much power, battery life is greatly shortened

# Name of Section



# Setting up the salt meter

1. Open the battery cover at the back of the main unit by sliding it in the direction of the arrow. Connect the battery to the battery snap with the polarities (+/-) aligned correctly. Securely slide back the battery cover.

The battery attached with the unit is for verifying operation. Therefore, the battery life may be shorter. Before using the unit for the first time, install a new battery.

2. Remove the sensor protective tube from the sensor probe before using the unit.

#### Using the salt meter (measuring salinity concentration)

- Turn on the unit by pressing the Power/Measure key on the main unit.
  NB: The unit cannot be turned on with the Measure key on the sensor probe.
- 2. The display "CAL" appears for approximately one second. This indicates that the unit is now ready for measurement.

NB: If any other information appears at this point, it is likely that the sensing part is dirty. Wash the tip of the sensor and wipe it off with a clean cloth or the like, and then press the Power/Measure key again.

Washing the sensing part thoroughly before use will improve measurement accuracy. Always wash the sensor before use especially when it is intended to be used for measuring high-salinity solutions. (Refer to "Washing the sensor".)

- 3. Immerse the sensing part into the sample, and then press the Measure key on the probe (or press the Power/Measure key on the main unit).
  - NB: If the tip of the probe is not immersed in the sample deep enough, accurate measurement may not be achieved. Likewise, do not immerse the tip too deeply to avoid the possible influence of the bottom of the container on the measurement values.



NUSE nonconductive containers such as glass, pottery and ceramic for accurate measurement. Do not use Metal containers.

# Calculating the average value

Stable measurement can be achieved by measuring several times and calculating the average value. The unit calculates the average of up to nine measurements although it is possible to measure as many times as needed.

- Press the Average key after at least two measurements (no operation when pressed after one • measurement) to obtain the average value.
- The display starts flashing and the average value appears together with [AVE] on the display. The numerical value on the upper-right corner indicates the number of measurements performed. The average value is rounded off to one decimal place and displayed.

# Auto power-off function

The unit is equipped with an auto power-off function. This function turns off the unit if there is no operation for about one minute.

The range of concentration measurement and gram equivalent are retained.

While measuring in intervals, the unit does not automatically turn off.

# Warning for Low Battery

When the battery is exhausted, "LO-BAT" appears on the display. Replace the battery to new one. Otherwise, operation will not be possible.

# Displaying the gram equivalent (amount of solute)

The unit is equipped with a function that automatically calculates the salt content from the salinity concentration in the solution. Automatic calculation uses the predetermined solvent amount. Since the amount of solvent is retained even after the unit is turned off, it is useful to enter the usual amount into the unit.

- To use this function, first press the Select key to move the cursor (triangle arrow) to the [g (gram)] position.
- To change the solvent amount, press the Change/OK key to display the set amount. The default (factory value) is set to 0.2 liter (200 cc). Press the [+] key (shared with the Average key) to increase the amount and press the [-] key (shared with the Select key) to decrease the amount. The amount range to be set is 0.1 to 100 liters.
- Upon setting the amount, press the Change/OK key to confirm the setting.
- Insert the sensor into the sample to be measured, and then press the Measure key. The unit to be displayed is [g]

The averaging function cannot be used for the gram equivalent.

# Measuring in intervals

The unit is equipped with an interval function. This function allows the user to start measuring at predetermined time intervals, without pressing the Measure key each time.

The time interval to be set is between 1 to 60 seconds in 1-second steps and 60 minutes in 1-minute steps.

- To set the interval, press the Change/OK key while in the concentration measurement mode. When the unit enters the interval setting mode, the value [0] should be displayed as the default.
- Press the [+] key to increase the time and press the [-] key to decrease the time.
- Press the Change/OK key again to start the interval measurement,.
- Since the unit cannot be turned off automatically while interval measurement is under way, an alarm is sounded to warn the user. A 1-second alarm sounds continuously regardless of the interval time set.
- To turn off the unit while in the interval mode, press the Measure key (on the main unit or sensor probe). When the unit is turned on again, the interval measurement setting is enabled so that a new interval measurement can be started immediately.
- To cancel the interval measurement, use the Change/OK key to set the interval time to [0]

# Care after use

Thoroughly wash the sensor after use.

If the unit is stored with sample solution adhering to it, a coating could form. This coating will adversely affect the measuring values or cause a malfunction; thus, make sure to wash the sensor after each use.

#### Washing the sensor

The sensor must be washed to keep it clean and functioning properly.

- Wet a soft sponge with commercially available ordinary neutral detergent. When washing the sensor, do not use any special solutions (alkaline or acid) or abrasives.
- Gently wash the sensor by rubbing it with the sponge, then rinse thoroughly with clean tap water.
- It is recommended not to wipe the sensor after washing; leave it to air dry.
- After use, protect the sensing part by covering it with Sensor protective tube.

Cat. No.	No. 1731-00 Digital Salt Meter
Model	SK-10S
Measuring factor	Salinity concentration
Detecting method	Electric resistance type
Measuring range	0.1 to 10.0% (at -5 to 70°C)
Accuracy	$\pm 0.1$ at 0 to 1%, $\pm 0.2$ at 1% or more. $\pm 0.3$ at 2% or more
	$\pm 0.5$ at 3% or more, $\pm 1.0$ at 5% or more. $\pm 1.5$ at 8% or more
Functions	Average, Measuring in interval, Displaying gram equivalent.
	Auto power-off, Low battery
Power requirement	One 9VDC battery (006P)
Consumption current	150mA (Max.)
Operation ambient	0 to 55°C, 20 to 80%rh (no condensing)
Dimensions	Main body: 62 (w) x 148 (H) x 24 (D)mm
	Probe: 198 (L) x 16 (W) x 16 (D)mm
	Cord length: 0.5m
Weight	145g (including a battery)
Accessories	One 9V battery (6F22 006P), carrying case