Kalstein

YR series Laboratory pH/ORP/Ion/Conductivity/DO Meters

YR01821/ YR01825/ YR01827 / YR01828/ YR01830/ YR01831 and YR01832

User's Manual

Thank you very much for purchasing our Kalstein´s **YR series Laboratory pH/ORP/Ion/Conductivity/DO Meters**.

Please read the "Operating Instructions" and "Warranty" before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the "Warranty" at a hand place for future reference.


Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

OUR SERVICES

Benefits and Support

In Kalstein France, we take care of the full satisfaction of our customers, that is why we provide value-added services of the highest level based on our experience.

Online Inductions and Trainings

In any part of the world, receive your induction or training from our specialized team of engineers

Quick Response

Our work team is always available to response all your consults or questions, in order to support you in any situation.

#Letsgivemore 💚

Thanks to your purchase, a donation will be made to a non-profit foundation that fights against breast cancer and helps most vulnerable communities.

Technical Support

Enjoy of personalized advice for the correct preventive and corrective maintenance of your equipment, thanks to Kalstein's manuals and articles, special catalogues and video tutorials.

Delivery Logistics

We take care of all the necessary logistics for the dispatch of your goods, whether is by sea, land or.air.

Kalstein Worldwide

With more than 25 years growing with our customers, Kalstein's multiformat and modern content, is now present in more than 10 countries and increasing.

Name and model

YR series Laboratory pH/ORP/Ion/Conductivity/DO Meters.

FUNCTION AND APPLICATION

Kalstein´s YR series Laboratory pH/ORP/Ion/Conductivity/DO Meters includes models below:

Single Parameter Meters

Multiparameter Meters

Model	Measurement Parameters
YR01821	pH, mV, ORP
YR01825	pH, mV, ORP, ion, water hardness
YR01827/ YR01827-1/ YR01827-2	Conductivity, TDS, salinity, resistivity, conductivity ash
YR01830/ YR01830-1/ YR01830-2	Conductivity, TDS, salinity, resistivity, conductivity ash
YR01828/ YR01828-1/ YR01828-2	Conductivity, TDS, salinity, resistivity
YR01831	Dissolved oxygen, BOD, OUR, SOUR
YR01832	Dissolved oxygen

This user manual provides a step-by-step guide to help you operate the meter, please carefully read the following instructions according to the model you have purchased.

Environmental Conditions

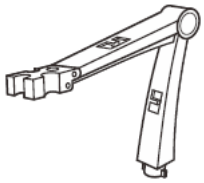
Before unpacking, ensure that current environmental conditions meet the following requirements.

- Relative humidity is less than 80%
- Ambient temperature between 0° C (32° F) and 50° C (122° F)
- No potential electromagnetic interference
- No corrosive gas exists

Packing List

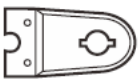
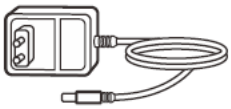
The following list describes all components of the meter. If any items are missing or damaged, contact the supplier immediately.

1

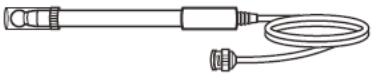
Meter, electrode arm

2

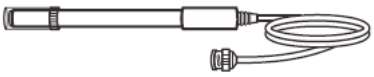
Base plate, power adapter

3



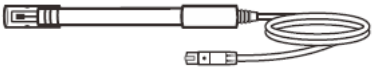

pH electrode, pH buffer reagents

4




Ion selective electrode, standard solutions, ionic strength adjuster ★

5

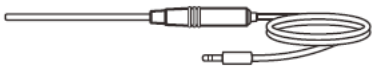



Conductivity electrode, conductivity standard solutions

6

Dissolved oxygen electrode, electrolyte solution, membrane cap

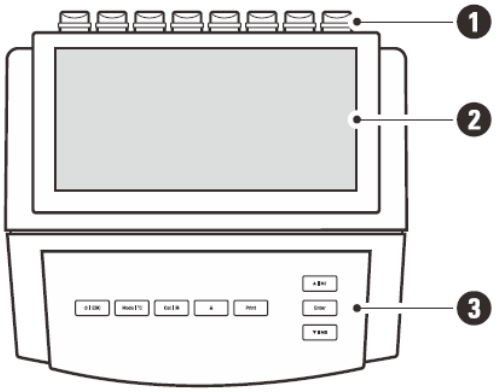
7



Index:

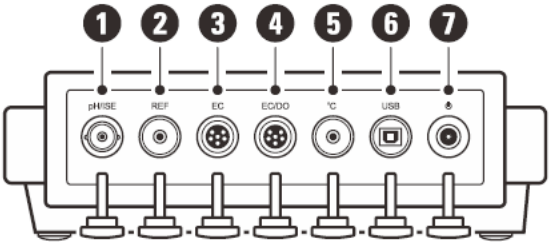
Model/Components	1	2	3	4	5	6	7
YR01821/ YR01825	•		•		•		•
YR01827/ YR01827-1/ YR01827-2	•		•		•		•
YR01828/ YR01828-1/ YR01828-2	•		•		•		•
YR01831/ YR01832		•		•		•	

METER OVERVIEW



1	Sensor connections
2	Display
3	Membrane keypad

Connectors



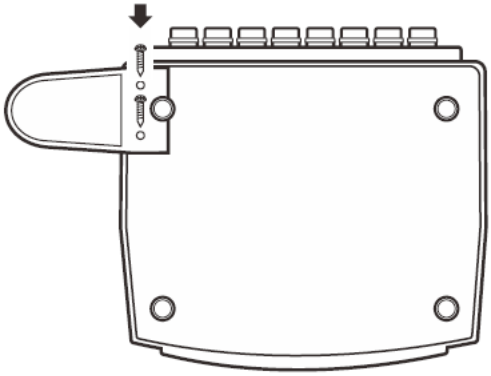
1	Socket for pH, ORP or ion selective electrode (BNC)
2	Socket for reference electrode (3.5 mm jack)
3	Socket for 4-pole conductivity electrode (6-pin DIN)
4	Socket for 2-pole conductivity electrode or dissolved oxygen electrode (6-pin DIN)
5	Socket for temperature probe (3.5 mm jack)
6	USB-B interface to the computer or printer
7	Socket for power adapter

Keypad

Key	Function
⏻ I ESC	• Switch the meter on or off • Return to measurement mode
Mode I °C	• Select the measurement mode • Press and hold the key to set the temperature
Cal I 🖹	• Start calibration • Press and hold the key to enter the setup menu
🔒	• Lock or unlock the measurement
Print	• Print a measurement
▲ I MI	• Store current reading to memory • Increase value or scroll up the menu items
▼ I MR	• View the data log or calibration log • Decrease value or scroll down the menu items
Enter	• Confirm the calibration or displayed option

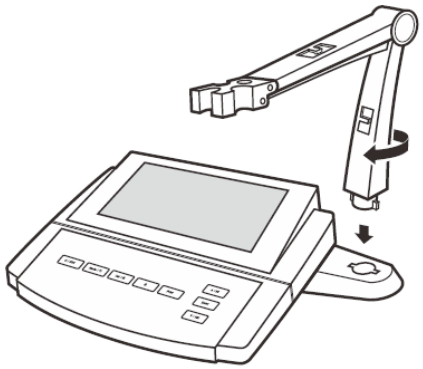
Installing the Electrode Holder

1.1 Take out the electrode arm and base plate from the accessory box. Turn the meter over. Align the base plate with the circular holes on the meter, moderately tighten two screws.



1.2 The base plate of electrode arm has a circular hole, the electrode arm has a connecting rod. Insert the connecting rod into the circular hole and swivel the electrode arm 90° . Electrode holder

is now ready to swing into desired position.

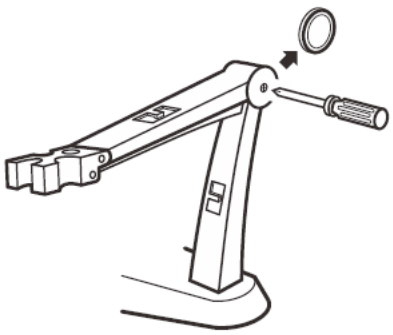


Adjusting the Electrode Arm

After installation, if the electrode arm automatically rises or falls, you are able to adjust the screw until arm locate at any position.

2.1 Remove the plastic cover from the right side of the electrode arm.

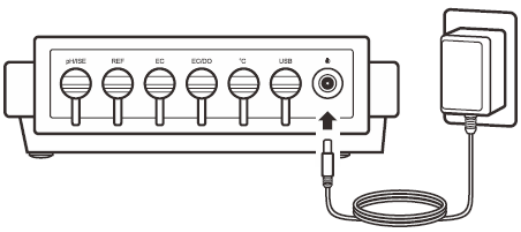
2.2 Use the screwdriver to tighten the screw moderately.



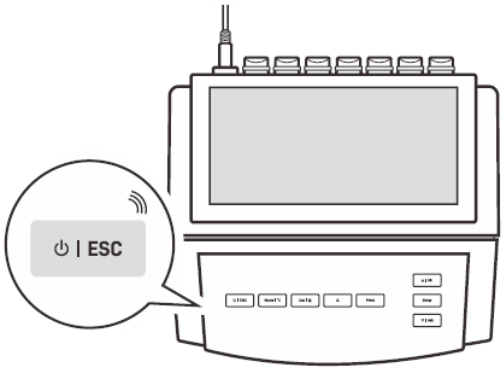
2.3 Insert the plastic cover to previous position.

- **Switching the Meter On and Off**

1. Connect the power adapter to the meter and wall outlet.



2. Press and hold the ⏻ key to switch on or off the meter.



General Settings

The Kalstein´s A series meter contains 10 general settings in the setup menu, the following table describes the functions of each menu item.

DISPLAY

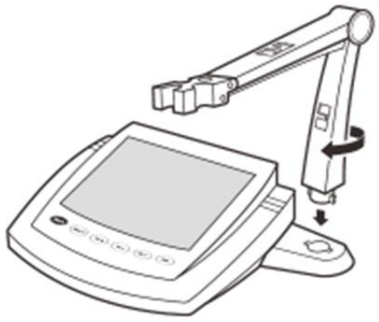
Icon	Description
	Indicates that the meter is in the measurement mode
	Indicates that the meter is in the calibration mode
	Indicates that the meter is in the setup mode
	Indicates that you are viewing the stored readings or a reading is stored into the memory
Slope 	If the pH electrode slope exceeds the allowed range after calibration, the icon automatically disappears
	If the electrode has not been recalibrated within a specified time period, the icon automatically shows
ATC	Indicates that the automatic temperature compensation is enabled
Stable	Shown when the measurement is stable
HOLD	Shown when the reading is locked
pH	pH mode
ORP	Oxidation reduction potential (ORP) mode
ION	Ion concentration mode
COND	Conductivity mode
TDS	Total dissolved solids (TDS) mode
SAL	Salinity mode
RES	Resistivity mode
DO	Dissolved oxygen mode

KEYPAD

Key	Function
Meas | 🔒	• Switch the meter on or off • Lock or unlock the measurement • Exit the calibration, settings, data logs and return to the measurement mode
Mode | °C	• Select the measurement mode • Press and hold the key to enter the temperature setting
Cal | 🖹	• Start calibration • Press and hold the key to enter the setup menu
MI | ▲	• Store current reading to memory • Increase value or scroll up through a list of options
MR | ▼	• View the data logs or calibration logs • Decrease value or scroll down through a list of options
Enter	• Confirm the calibration or displayed option • Press and hold the key to switch the backlight on or off

INSTALLING THE ELECTRODE HOLDER

Take out the electrode arm from the accessory box. The base plate of electrode arm has a circular hole, the electrode arm has a connecting rod. Insert the connecting rod into the circular hole and swivel the electrode arm 90 degrees. The electrode holder is now ready to swing into desired position.



Adjusting the Electrode Arm

After installation, if the electrode arm automatically rises or falls, you are able to adjust the screw until arm locate at any position.

1. Remove the plastic cover from the right side of the electrode arm.

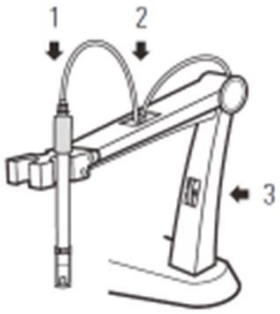
2. Use the screwdriver to tighten the screw moderately.

3. Insert the plastic cover to previous position.

CONNECTION

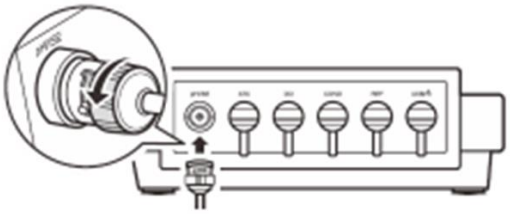
Connecting the Electrode

Take out the electrode from the packaging. Follow the steps below to place electrode into the left or right side of the electrode arm.



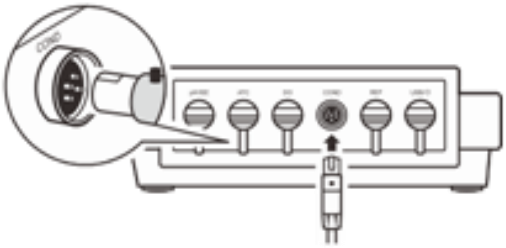
- For the pH, ORP or Ion Selective Electrode:

Insert BNC connector into the connector socket labeled pH/ISE. Rotate and push the connector clockwise until it locks.



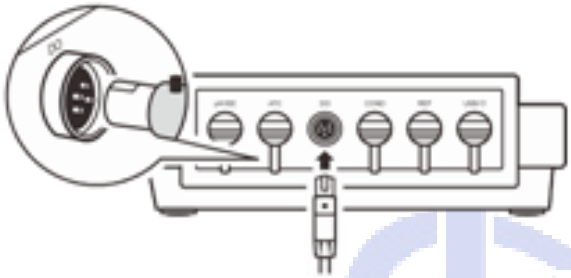
- For the Conductivity Electrode:

Insert 6-pin connector into the connector socket labeled COND. Ensure the connector is fully seated.



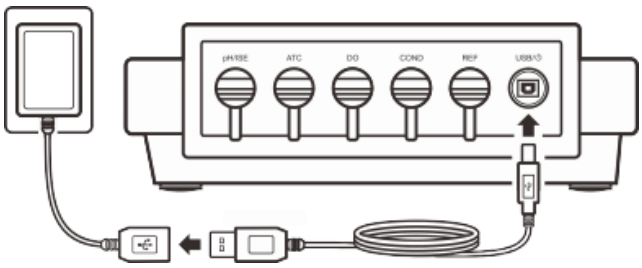
- For the Dissolved Oxygen Electrode:

Insert 6-pin connector into the connector socket labeled DO



Connecting the Power Adapter

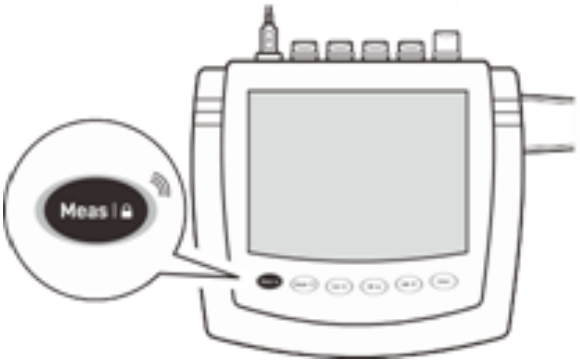
Connect the USB cable to the meter and DC 5V power adapter. Plug the power adapter into the wall outlet.



Switching the Meter On and Off

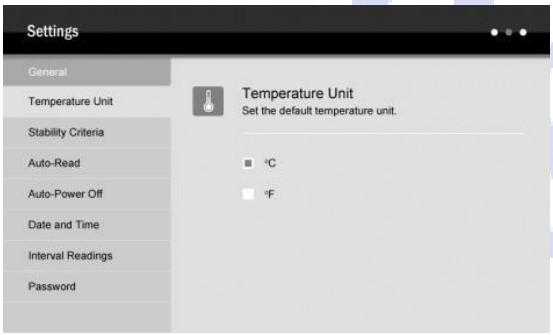
- Press the Meas key and release to switch on the meter.

- Press and hold the Meas key to switch off the meter.



GENERAL SETTINGS

The YR series meter contains an integrated setup menu for customizing the function parameters. In the different modes, the display will show the corresponding menu items. For the general settings, the option will be applied to all modes once setting is changed.



Menu Items and Options	
Temperature Unit Set the default temperature unit.	
°C	Default
°F	
Stability Criteria Set when a measurement is recognized as stable.	
Standard	Default
High-accuracy	
Auto-Read If enabled, the meter will automatically sense a stable reading and lock the measurement, the Hold icon appears on the screen.	
Enable	
Disable	Default

Auto-Power Off If enabled, the meter will automatically switch off if no key is pressed within 3 hours.	
Enable	
Disable	Default
Date and Time Set the year, month, day, hour, minute for data log and calibration log.	
Interval Readings Set the time interval for sending reading to the printer or computer.	
Off	Default
10, 30, 60 seconds	
10, 30 minutes	

Password Set the password protection for calibration and settings. If enabled, the user must enter a 4-digit password to access above modes. If the setting value is 0000, the password protection will invalid.	
Enable	
Disable	Default
Brightness Set the brightness level of backlight.	
Low, mid, high	
Clear Stored Data Delete all data logs in the memory.	
Enable	
Disable	Default
Factory Reset Reset the meter to factory default settings. If enabled, all of the meter settings and calibration logs will be deleted and reset, the meter must be recalibrated.	
Enable	
Disable	Default

- Setting a Default Option

1.1 In the measurement mode, press and hold the key to enter the setup menu.

1.2 Press the ▲/▼ key to select an option or set a value, press the **Enter** key toconfirm.

1.3 Repeat the steps above until the meter returns to the measurement mode.

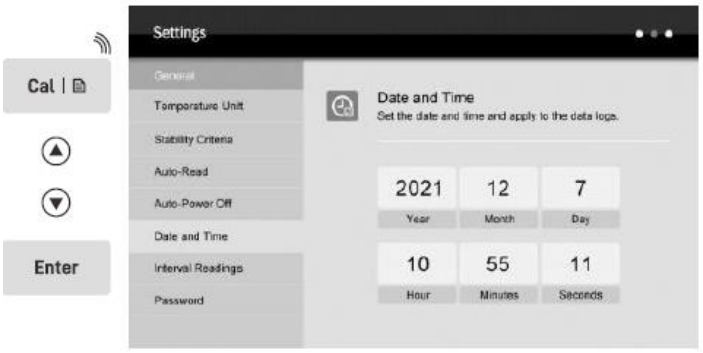
- Setting the Date and Time

2.1 In the measurement mode, press and hold the key to enter the setup menu.

2.2 Press the ▲ key to high light *Date and Time*, press the **Enter** key to confirm.

2.3 Press the ▲/ ▼key to set the Year, press the **Enter** key to save and move the cursor to Month.

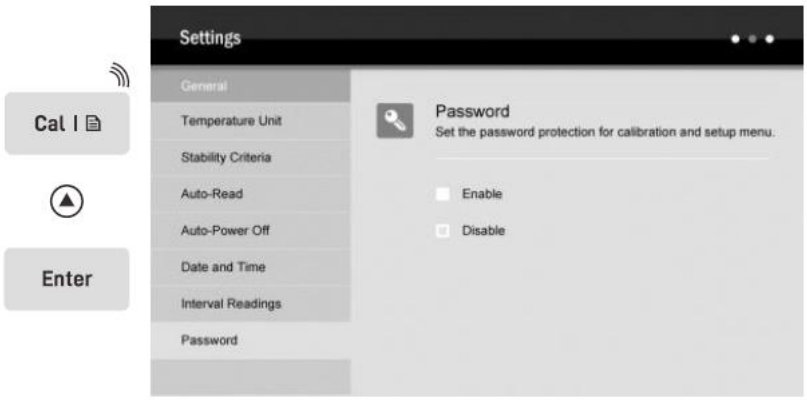
2.4 Repeat the steps above to set the month, day, hour, minute until the meter returns to the measurement mode.



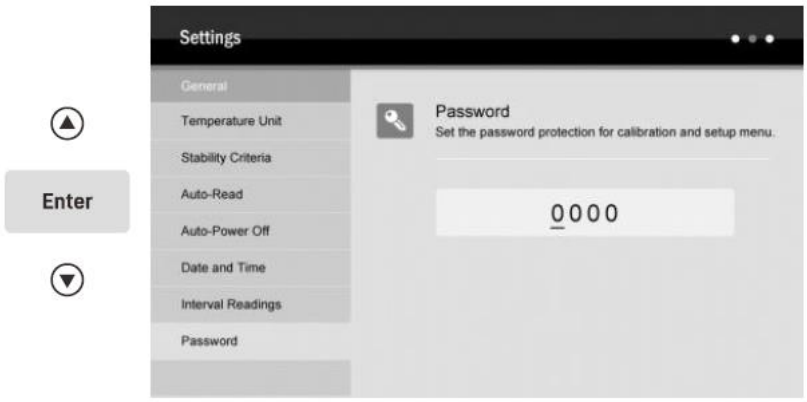
- **Setting the Password**

3.1 In the measurement mode, press and hold the key to enter the setup menu.

3.2 Press the ▲key to high light ***Password***, press the **Enter** key to confirm.



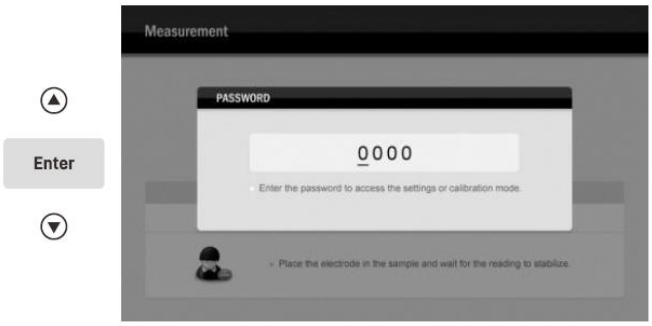
3.3 Press the ▲key to select the ***Enable***. Press the **Enter** key, the screen shows 0000.



Unlock the Password

If your password has been created, the meter will show a password protection screen when pressing the Cal key. Press the ▲/▼ key to enter the password, press the **Enter** key to confirm. If passwordis correct, the meter will unlock immediately.

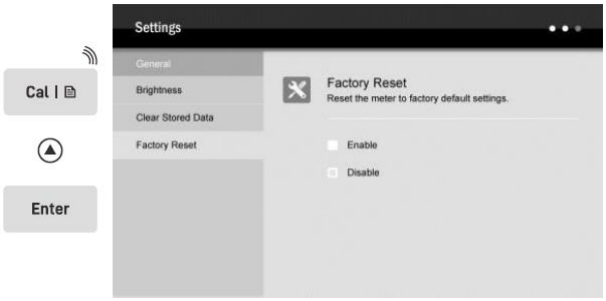
If you forgot your password, please contact the supplierand providing the serial number of meter.



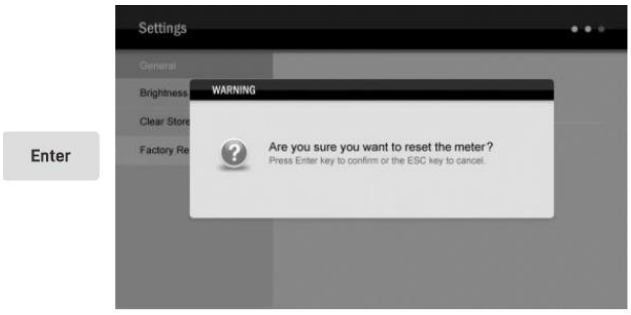
Factory Reset

4.1 In the measurement mode, press and hold the key to enter the setup menu.

4.2 Press the ▲key to highlight *Factory Reset*, pressthe **Enter** key to confirm.



4.3 Press the ▲key to select the *Enable*, press the **Enter** key, the screen shows "Are you sure you want to reset the meter?"



4.4 Press the **Enter** key to confirm or the **ESC** key to cancel.

To exit the setting without saving changes, press the ESC key.

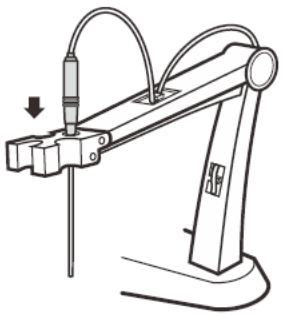
- **Temperature Calibration**

The Kalstein´s A series meter is supplied with a TP-10K temperature probe for measurement and temperature compensation. If the measured temperature reading differs from that of an accurate thermometer, the probe needs to be calibrated.

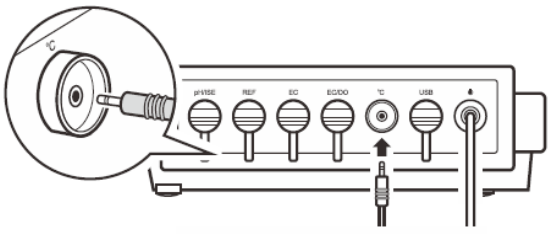
The dissolved oxygen electrode installed with a built-in temperature sensor and do not need to use this probe.

Connecting the Temperature Probe

1.1 Place the temperature probe into the circular hole located at the center of the electrode arm.

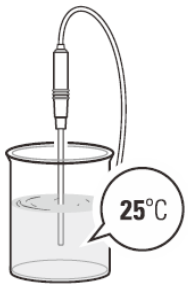


1.2 Insert the jack plug to the connector socket labeled **° C**. Ensure the connector is fully seated.



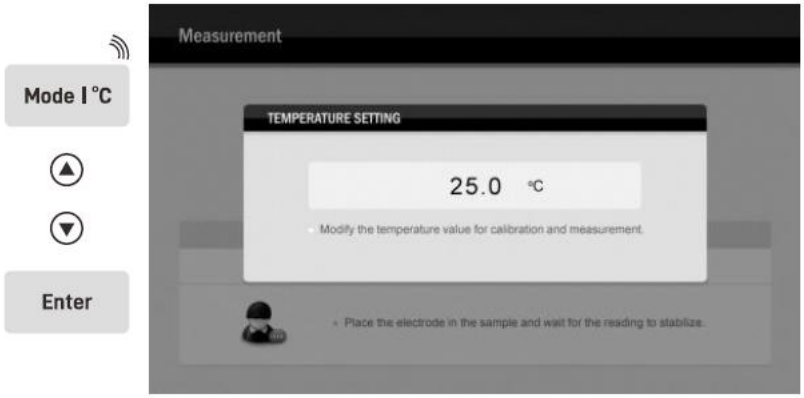
Calibrating the Temperature Probe

2.1 Place the temperature probe in a solution with a known accurate temperature and wait for the reading to stabilize.



2.2 Press and hold the °C key to enter the temperature setting.

2.3 Press the ▲/▼ key to modify the temperature value, press the Enter key to save.



To exit the calibration without saving changes, press the ESC key.

YR01821/ YR01825

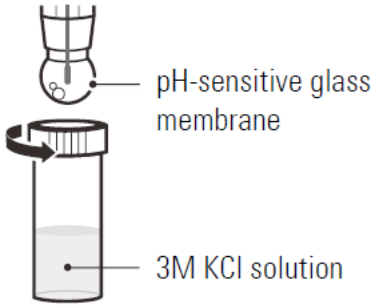
PH CALIBRATION AND MEASUREMENT

This section is applicable to models YR01821 and YR01825 meters.

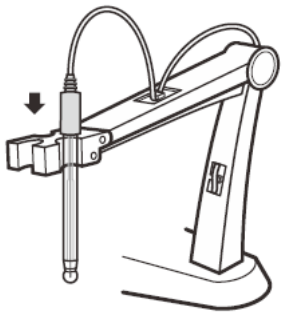
- **Prior to Use**

Connecting the pH Electrode

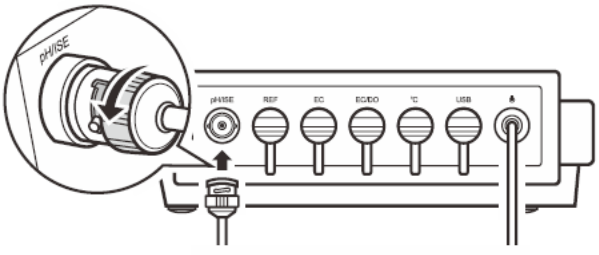
1. Take out the pH electrode from packaging. Remove the protective cap from the bottom of electrode. If tiny air bubbles are present inside the pH-sensitive glass membrane, gently shake the electrode downward to remove air bubbles.



2. Place electrode into the left or right side of the electrode arm.

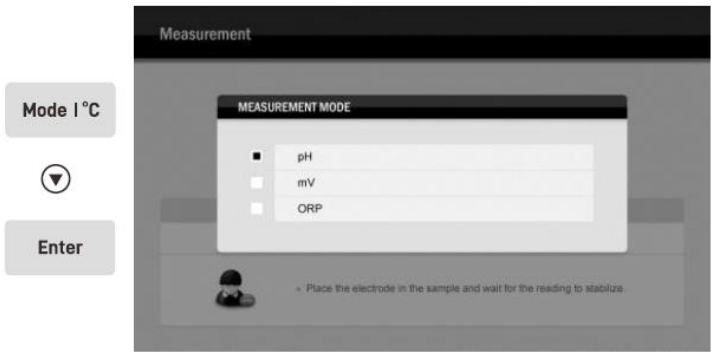


3. Insert BNC connector into the connector socket labeled pH/ISE. Rotate and push the connector clockwise until it locks.



Selecting the Measurement Mode

Press the **Mode** key and the ▼ key to select thepH, press the **Enter** key to confirm.



- **pH Settings**

The A series meter contains 7 pH settings and 10 general settings in the setup menu.

Menu Items and Options	
Sample ID Set the sample ID to associate reading with the data log.	
0000 to 9999	Default 0000
pH Buffer Group Set the pH buffer group for calibration and auto-recognition.	
USA	Default
NIST	
DIN	
Custom (any 2 to 5 values > 1 pH apart)	
Calibration Points Set the number of calibration points.	
1 to 5 points	Default 3 points
Resolution Set the resolution of the pH measurement.	
0.001	Default
0.01	
STC Solution Temperature Coefficient is used to correct the pure water samples with a conductivity of less than 30 µS/cm. If enabled, the readings will automatically reference to 25°C (77°F).	
High purity water	
Sample contained the ammonia or phosphate	
Off	Default
Alarm Limits Set the high and low limit values to activate alarm.	
Enable (setting range: -2.00 to 20.00 pH)	
Disable	Default
Calibration Due Set the calibration interval to activate alarm.	
Enable (setting range: 1 to 31 days)	
Disable	Default

If you want to change the current settings, press and hold the key to enter the setup menu, press the ▲/▼ key to select an option or set a value, press the **Enter** key to confirm.

During the setting process, press and hold the ▲/▼ key will make the value change faster.

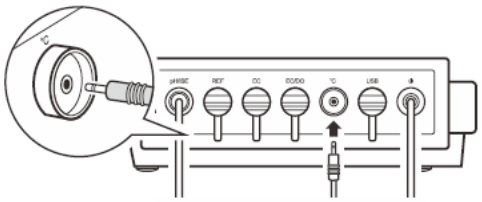
- To exit the setting without saving changes, press the **ESC** key.

- **Temperature Compensation**

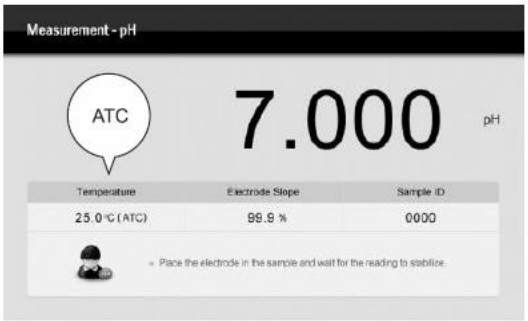
For better accuracy, we recommend the use of either a sensor with a built-in or a separate temperature probe. The meter will calculate the pH slope with measured temperature and show the temperatura compensated readings.

Automatic Temperature Compensation

Connect the temperature probe to meter (refer to the *Connecting the Temperature Probe* section on page 8).



The ATC icon appears on the screen, the meter is now switched to theautomatic temperature compensation mode.



Manual Temperature Compensation

If the meter does not detect a temperature probe, the **MTC** icon will show on the screen indicating the meter is switched to the manual temperature compensation mode. To set the temperature value follow the steps below.

1.Press and hold the **°C** key to enter the temperature setting.

2. Press the ▲/▼ key to modify the temperature value.

3. Press the **Enter** key to save.

Press and hold the ▲/▼ key will make the value change faster.

- **pH Calibration**

The A series meter allows 1 to 5 points pH calibration. We recommendthat you perform at least 2 points calibration for high accuracy measurement. The meter will automatically recognize and calibrate tofollowing standard buffer values.

USA Standard Buffers	pH 1.68, 4.01, 7.00, 10.01, 12.45
NIST Standard Buffers	pH 1.68, 4.01, 6.86, 9.18, 12.45
DIN Standard Buffers	pH 1.09, 3.06, 4.65, 6.79, 9.23, 12.75

If the Custom option is selected, the meter will allow 2 to 5 points calibration. Single point calibration should only be carried out with pH 7.00, 6.86 or 6.79, otherwise calibration will not be accepted.

Make sure to calibrate the meter when attaching a new pH electrode or during first use. Do not reuse the buffer solutions after calibration, contaminants in solution will affect the calibration and eventually the accuracy of the measurement.

For better result, we recommend to enable the automatic temperature compensation. If the manual temperature compensation is selected, all buffer and sample solutions must be at the same temperature and you have entered the correct temperature value to the meter.

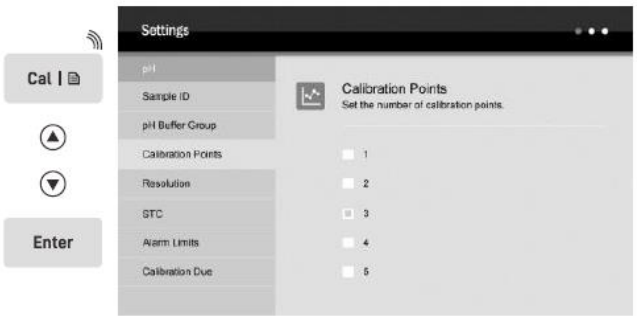
Stir the standards and samples at a uniform rate that will help you get most accurate readings.

Setting the Number of Calibration Points

1. Press and hold the key to enter the setup menu.

2. Press the ▼ key to highlight Calibration Points, press the **Enter** key to confirm.

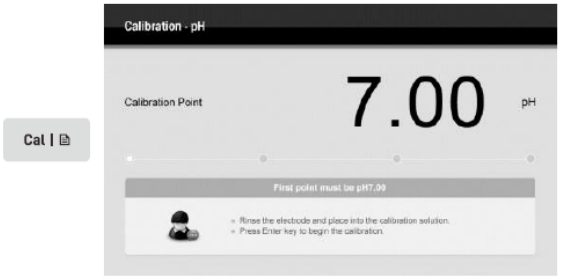
3. Press the ▲/▼ key to select the number of calibration points, press the **Enter** key to save.



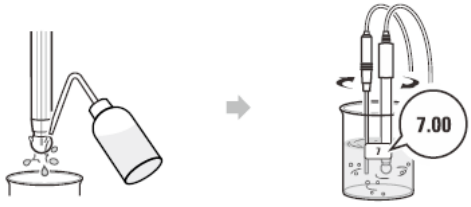
Single Point Calibration

1.1 Ensure that you have selected 1 point calibration in the setup menu.

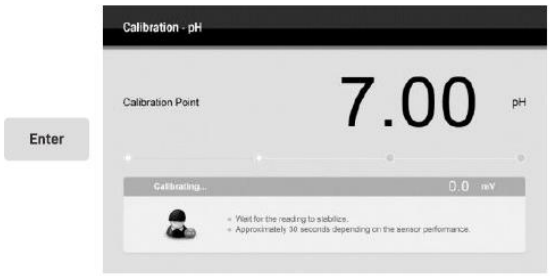
1.2 Press the Cal key, the screen shows "Calibration Point 7.00" (or 6.86, 6.79, depending on the selected pH buffer group).



1.3 Rinse the pH electrode with distilled water, place the electrode (and temperature probe) into the pH 7.00 buffer solution, stir gently to create a homogeneous solution.



1.3 Press the **Enter** key, the status bar shows "Calibrating…"

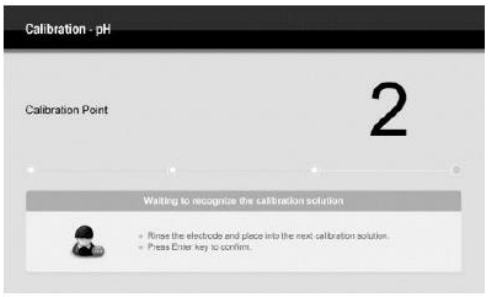


1.5 Wait for the mV reading to stabilize, the meter will automatically show "Calibration is completed" and return to the measurement mode.

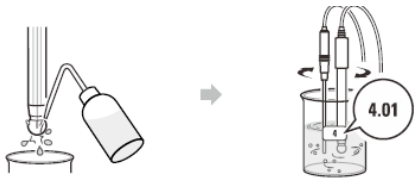
Multipoint Calibration

2.1 Ensure that you have selected 2 to 5 points calibration in the setup menu.

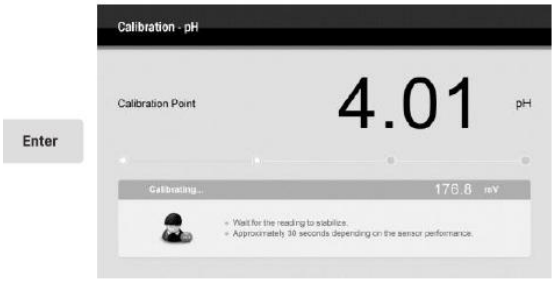
2.2 Repeat steps 1.2 through 1.4 above. When the first calibration point is completed, the screen will show "Calibration Point 2", the meter prompts you to continue with second point calibration.



2.3 Rinse the pH electrode with distilled water, place the electrode (and temperature probe) into the next buffer solution (e.g., pH 4.01).

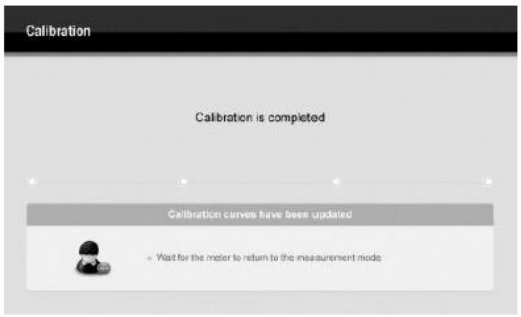


2.4 Press the Enter key, the meter automatically recognizes the buffer solution and begins the calibration.



2.5 When the mV reading has stabilized, the screen will show "Calibration Point 3" , the meter prompts you to continue with third point calibration.

2.6 Repeat the steps 2.3 and 2.4 above until the meter returns to the measurement mode. Calibration is completed.



pH Calibration with Custom Buffers

3.1 Ensure that you have selected the *Custom* option in the setup menu, the buffer solutions should be at least 1 pH unit apart from each other.

3.2 Rinse the pH electrode with distilled water, place the electrode (and temperature probe) into the buffer solution, stir gently and wait until the measurement is stable.

3.3 Press the **Cal** key, the status bar shows "Setting the calibration value".

3.4 Press the ▲/ ▼key to set the value, press the **Enter** key to begin the calibration.

3.5 When the mV reading has stabilized, the status bar will show "Setting the calibration value" again, the meter prompts you to continue with second point calibration.

3.6 Repeat the steps 3.2 and 3.4 above until the meter returns to the measurement mode. Calibration is completed.

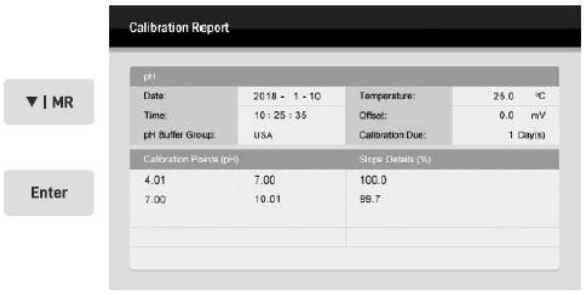
If the calculated electrode slope is not between 70% to 110% after the calibration, the pH electrode should be replaced.

- To exit the calibration without saving changes, press the **ESC** key.

Viewing the Calibration Log

4.1 Press the **MR** key, the screen shows a Data Log Menu.

4.2 Press the **Enter** key to view the calibration report.

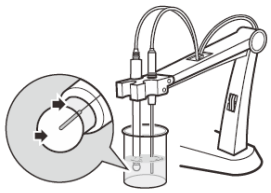


4.3 Press the **ESC** key to return to the measurement mode.

If the meter is not calibrated or custom buffer is used, the calibration report will be unavailable.

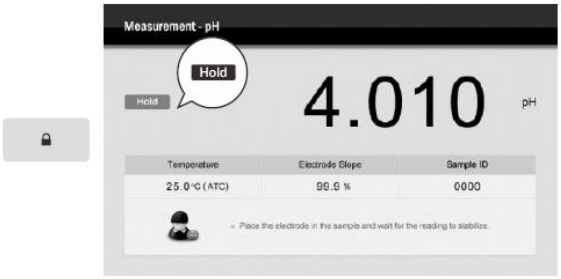
- **pH Measurement**

1. Rinse the pH electrode with distilled water. Place the electrode (and temperature probe) into the sample solution and stir gently. Note, the pH-sensitive glass membrane and liquid junction must be completely immersed into the solution.



2. If the Auto-Read option in the setup menu is enabled, the meter will automatically sense a stable reading and lock measurement, the Hold icon appears on the screen. Press the key to resume measuring.

If the option is disabled, the meter will continuously measure and update the readings.



3. Wait for the measurement to stabilize and record the reading.

4. When all of the samples have been measured, rinse the electrode according to the instructions in the *Electrode Maintenance*.

• During the measurement process, never wipe the pH-sensitive glass membrane as this will cause static interference, blot dry with a lint-free tissue to remove waterdrops on electrode.

• If your sample is pure water, low ionic or low conductivity water, we recommend measuring the pH in the smallest sample volume possible or adding 0.3 ml of the 3M KCl to 100 ml of the sample solution. Note, only high purity KCl can be used.

• To record the measurement at the predefined time intervals, refer to the *Interval Readings* section on page 42.

• Electrode Maintenance

Cleaning the pH Electrode

Since pH electrode is susceptible to contamination, thoroughly clean as necessary after each use.

• General Cleaning

Rinse the pH electrode with distilled water and soak in 3M KCl solution.

• Salt Deposits

Dissolve the deposit by immersing the electrode in warm tap water. Rinse the electrode with distilled water and soak in 3M.

KCl solution.

• Oil or Grease

Place the electrode in the detergent or ethanol solution for 15 minutes. Rinse the electrode with distilled water and soak in 3M

KCl solution.

• Protein

(1) Add 1% pepsin to 0.1M HCl solution.

(2) Place the electrode in above solution for 15 minutes.

(3) Rinse the electrode with distilled water and soak in 3M KCl solution.

• Clogged Liquid Junction

(1) Heat a diluted KCl solution to 60° C (140° F).

(2) Place the electrode into the heated solution for 10 minutes.

(3) Allow the electrode to cool in unheated KCl solution.

Reactivating the pH Electrode

If the pH-sensitive membrane has dried out, the electrode response will become sluggish. Immerse the electrode in a pH 4.01 buffer solution for about 30 minutes to rehydrate. If this fails, the electrode requires activation.

1. Soak the electrode in a 0.1M of HCl for 10 minutes.
2. Remove and rinse with distilled water, then place into a 0.1M of NaOH for 10 minutes.
3. Remove and rinse again, and soak in 3M KCl solution for at least 6 hours.

If these steps fail to restore the response, replace the electrode.

Storing the pH Electrode

• For best results, always soak the electrode in 3M KCl solution.

• If above solution is not available, use a pH 4.01 buffer solution.

DO NOT store the electrode in distilled or deionized water that will deplete the hydration layer of the pH-sensitive membrane and render the electrode useless.

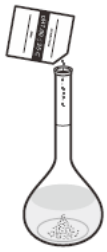
• If you do not use the electrode for a period longer than 1 month, store the electrode in storage solution.

• Appendix

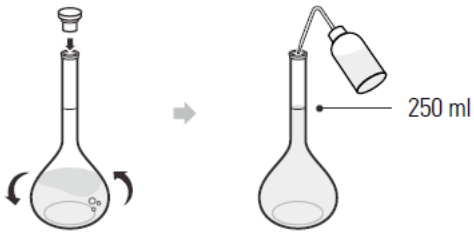
Preparation ofpH Buffer Solutions

The meter is packaged with the pH4.01,7.00,10.01 buffer reagentsrequired for calibration.

1. Half fill a 250mlvolumetric flask with distilledwaterandaddthe pH7.00 buffer reagent.



2. Swirl the volumetric flask gently to dissolve the reagent and fill to the mark with distilled water.



3. Cap and upend the volumetric flask several times to mix the solution.

Preparation of pH 4.01 and 10.01 buffer solutions are the same as above.

• Prepared buffer solution should be stored in hermetically sealed glass container and avoid direct sunlight.

Preparation of Electrode Storage Solution

• Dissolve 24.6 grams of analytical grade potassium chloride (KCl) reagent in 100 ml distilled water.

• Add pH 4.01 standard buffer and adjust solution to pH 4.

Optional Accessories

pH Electrodes

Order Code	Description
E201-BNC	For general purpose applications
E202-BNC	For measuring the flat surface samples
P11	For measuring the non-high temperature liquids

P11-LiCl	For measuring the non-aqueous samples
P11-NA	For measuring the biofuels
P13	For measuring the micro-volume samples
P15	For measuring the low conductivity samples
P16	For measuring the liquids with Tris buffers
P18	For measuring the slurries or soils
P19	For measuring the semisolids
P21	For measuring the colloids
P22	For measuring the high temperature liquids

Temperature Probe

Order Code	Description
TP-10K	Range: 0 to 100°C (32 to 221°F), 1 m (3.3 ft.) cable

Solutions

Order Code	Description
PHCS-USA	pH 4.01, 7.00, 10.01 buffer solutions, 480 ml
PHCS-NIST	pH 4.01, 6.86, 9.18 buffer solutions, 480 ml
PHCS-ES	Electrode storage solution, 480 ml
PHCS-GC	Removes inorganic residues, 480 ml
PHCS-PR	Removes protein contamination, 480 ml

Communication and Power Supply

Order Code	Description
USB-2303B	USB connector A to B, 1 m (3.3 ft.) cable
DCPA-12V	DC 12V power adapter, european standard plug

YR01821/ YR01825

ORP CALIBRATION AND MV MEASUREMENT

This section is applicable to models YR01821 and YR01825 meters.

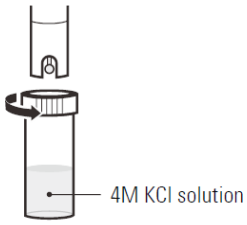
- **Prior to Use**

Connecting the ORP Electrode

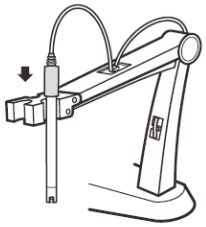
The Kalstein´s A series meter is capable of measuring the oxidation reduction potential of aqueous solutions through connecting an ORP electrode, selectable sensor includes following options.

Order Code	Description
501	For measuring the sample with strong redox potential
502	For measuring the sample with weak redox potential
504	For measuring the high temperature samples (< 100°C)

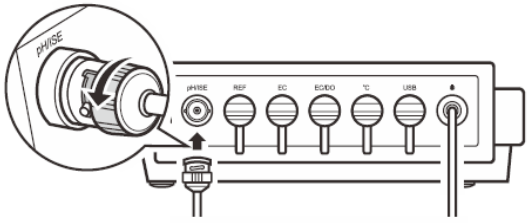
1. Take out the ORP electrode from packaging. Remove the protective cap from the bottom of electrode.



2. Place electrode into the left or right side of the electrode arm.



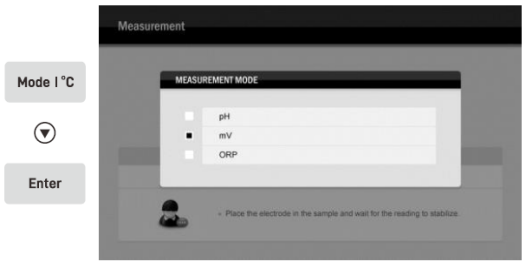
3. Insert BNC connector into the connector socket labeled pH/ISE. Rotate and push the connector clockwise until it locks.



Selecting the Measurement Mode

•Raw millivolt (mV)

Press the **Mode** key and the ▼ key to select the *mV*, press the **Enter** key to enter the absolute mV measurement mode.



Relative millivolt (R.mV)

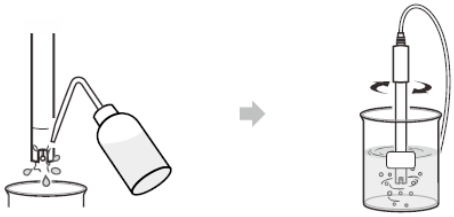
Press the **Mode** key and the ▼ key to select the *ORP,* press the **Enter** key to enter the relative mV measurement mode.

The meter only allows performing a calibration orviewing the calibration report in the ORP mode.

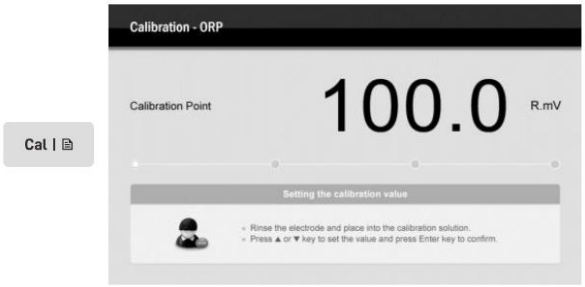
• ORP Calibration

The A series meter allows 1 point calibration in the ORP mode, but calibration is not necessary unless exact readout agreement with a work standard and at a specific ORP value is needed.

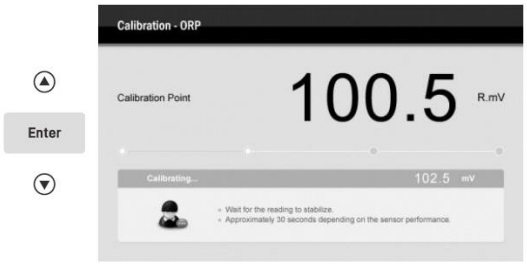
1.1 Rinse the ORP electrode with distilled water, place the electrode into the standard solution, stir gently and wait until the measurement is stable.



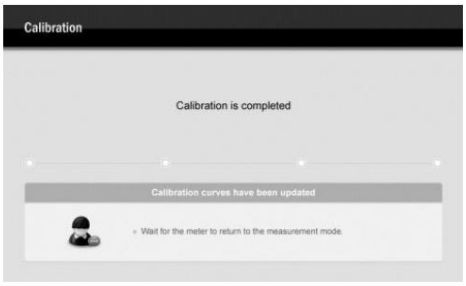
1.2 Press the **Cal** key, the status bar shows "Setting the calibration value".



1.3 Press the ▲/▼ key to set the value. Press the Enter key, the meter begins the calibration.



1.4 Wait for the mV reading to stabilize, the meter will automatically show "Calibration is completed" and return to the measurement mode.

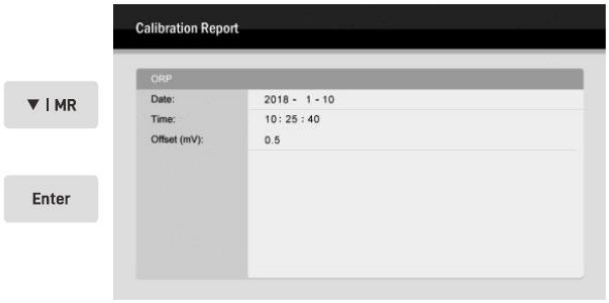


To exit the calibration without saving changes, press the **ESC** key.

Viewing the Calibration Log

2.1 Press the **MR** key, the screen shows a Data Log Menu.

2.2 Press the **Enter** key to view the calibration report.

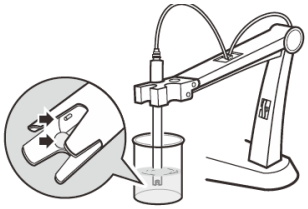


2.3 Press the **ESC** key to return to the measurement mode.

If the meter is not calibrated, the calibration report will be unavailable.

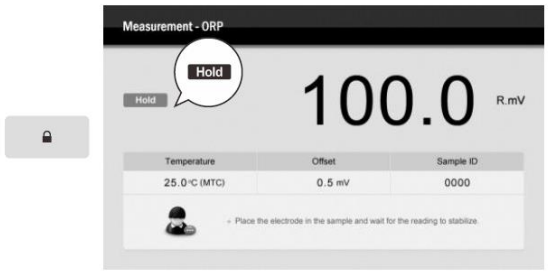
- **mVMeasurement**

1.Rinse the ORP electrode with distilledwater.Place the electrodeinto the sample solution and stir gently. Note, the sensing element and liquid junctionmustbe completely immersed into the solution.



2. If the Auto-Read option in the setup menu is enabled, the meter will automatically sense a stable reading and lock measurement, the Hold icon appears on the screen. Press the key to resume measuring.

If the option is disabled, the meter will continuously measure and update the readings.



3. Wait for the measurement to stabilize and record the reading.

4. When all of the samples have been measured, rinse the electrode with distilled water and soak in 4M KCl solution.

The ORP electrode may give unstable readings in solutions that contain chromous, vanadous and titanous ions or other ions that are stronger reducing agents than hydrogen or platinum.

- To record the measurement at the predefined time intervals, refer to the *Interval Readings* section on page 42.

- **Electrode Maintenance**

- Rinse the ORP electrode thoroughly with distilled water after use.

• In the corrosive chemicals, viscous solutions and solutions with heavy metals or proteins, take readings quickly and rinse electrode immediately.

• If the electrode response becomes sluggish, refer to the instructions below to clean the electrode.

(1) Inorganic Deposits

Place the electrode in 0.1M HCl solution for 10 minutes. Rinse the electrode with distilled water and soak in 4M KCl solution for at least 6 hours.

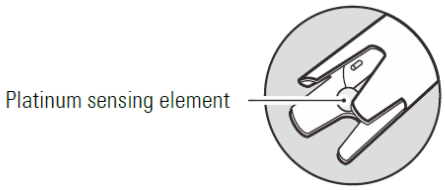
(2) Oil or Grease

Place the electrode in detergent such as dishwashing liquid for about 30 minutes. Rinse the electrode with distilled water and soak in 4M KCl solution.

(3) If the platinum sensing element is severely contaminated, polish the platinum surface gently with an abrasive paper of 600 grid.

Place the electrode in 0.1M HCl solution for 10 minutes. Remove and rinse with distilled water, then soak in 4M KCl solution for at least 6 hours.

If the electrode does not restore normal performance, replace the electrode.



Storing the ORP Electrode

If you do not use the electrode for long periods, store the electrode in 4M KCl solution or storage solution.

• Appendix

Preparation of ORP Standard Solutions

Quinhydrone solution A: Dissolve 3gramsof quinhydrone reagent in 500ml ofthe pH4.01 buffer solution, stir the solution for 10 minutes.Undissolved quinhydrone reagent must be present. Ifnecessary, add thereagent.

Temperature	Potential (±10 mV)
20°C	268 mV
25°C	263 mV
30°C	260 mV

Quinhydrone solution B: Dissolve 3 g rams of quinhydrone reagent in 500 ml of the pH 7.00 buffer solution, stir the solution for 10 minutes. Undissolved quinhydrone reagent must be present. If necessary, add the reagent.

Temperature	Potential (±10 mV)
20°C	94 mV
25°C	87 mV
30°C	80 mV

Due to the quinhydrone solution is susceptible to air oxidation in storage, make sure to prepare the fresh solution before use.

Preparation of Electrode Storage Solution

- Dissolve 29.8 grams of analytical grade potassium chloride (KCl) reagent in 100 ml distilled water.
- Add pH 4.01 standard buffer and adjust solution to pH 4.

YR01825

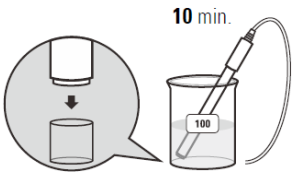
ION CALIBRATION AND MEASUREMENT

This section is applicable to model YR01825 meters

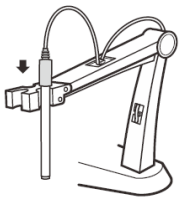
- **Prior to Use**

Connecting the Ion Selective Electrode

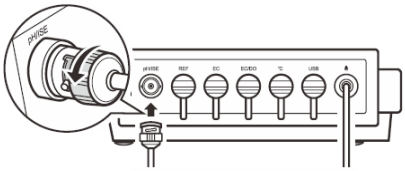
1.1 Take out the ion selective electrode from packaging. Remove the protectivecap from the bottom of electrode. Soak the electrode in a 100 ppm standard solution (water hardness electrode in a10 mmol/L standard solution) for about 10 minutes.



1.2 Place electrode into the left or right side of the electrode arm.

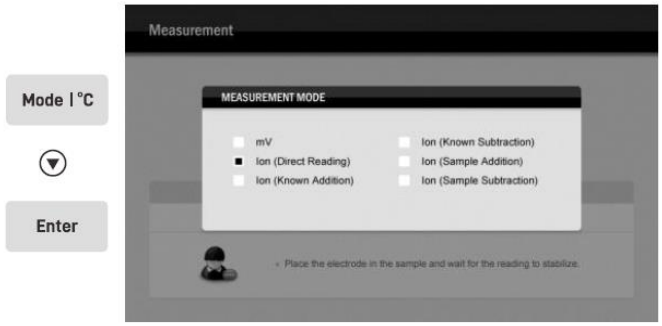


1.3 Insert BNC connector into the connector socket labeled pH/ISE. Rotate and push the connector clockwise until it locks.



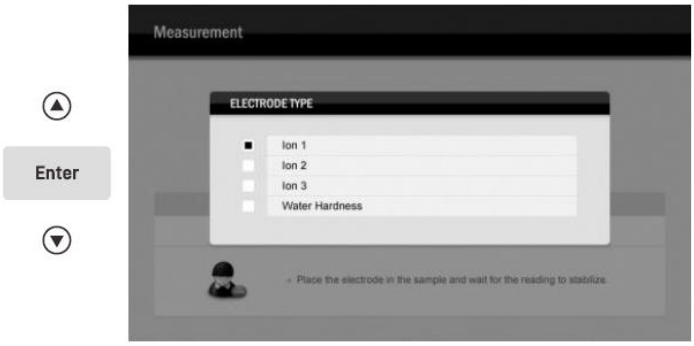
Selecting the Measurement Mode

2.1 Press the **Mode** key and the ▼ key to select the *Ion (Direct Reading)*, press **Enter** key to confirm.



2.2 Press the ▲/ ▼key to select an electrode type for storing and recalling the electrode slope, press **Enter** key to confirm.

The A series meter is able to store up to 3 electrode slopes in memory. For example, you select the Ion 1 and use the fluoride electrode to calibrate the meter, select the Ion 2 and use the chloride electrode to calibrate the meter. The electrode slopes will be saved in the selected electrode type separately after the calibration.



- **Ion Settings**

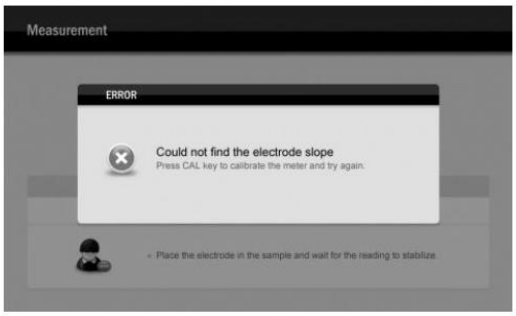
The A series meter contains 7 ion settings and 10 general settings in the setup menu.

Menu Items and Options	
Sample ID Set the sample ID to associate reading with the data log.	
0000 to 9999	Default 0000
Concentration Unit Set the default ion concentration unit.	
ppm	Default
mg/L	
mol/L	
mmol/L	
Water Hardness Unit Set the default water hardness unit.	
°dH (German degree)	Default
°e (English degree)	
°f (French degree)	
mg/L($CaCO_3$), mg/L (CaO), mg/L (Ca^{2+})	
mmol/L	

Calibration Points Set the number of calibration points.	
2 to 5 points	Default 2 points
Ionic Valency Set the valence of the ion selective electrode.	
Monovalent	Default
Divalent	
Alarm Limits Set the high and low limit values to activate alarm.	
Enable (setting range: 0 to 30000)	
Disable	Default
Calibration Due Set the calibration interval to activate alarm.	
Enable (setting range: 1 to 31 days)	
Disable	Default

If you want to change the current settings, press and hold the key to enter the setup menu, press the ▲/▼key to select an option or set a value, press the **Enter** key to confirm.

If the ion concentration unit has converted, the meter will show "Can not find the electrode slope" always and wait for calibration. Press the **Cal** key and refer to the *Ion Calibration* section to perform the calibration, the meter will switch to selected unit when calibration is completed.



During the setting process, press and hold the ▲/▼ key will make the value change faster.

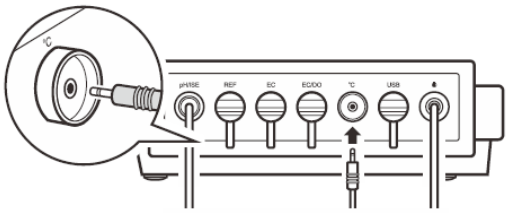
•To exit the setting without saving changes, press the **ESC** key.

- **Temperature Compensation**

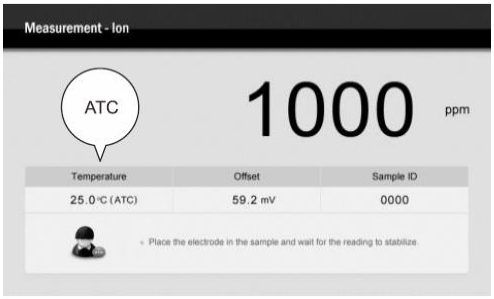
Due to the temperature difference between the standard and sample solutions will cause approximately 2% measurement error for every degree centigrade of temperature change, we recommend to enable the temperature compensation during the calibration and measurement.

Automatic Temperature Compensation

Connect the temperature probe to meter (refer to the *Connecting the Temperature Probe* section).



The ATC icon appears on the screen, the meter is now switched to the automatic temperature compensation mode.



Manual Temperature Compensation

If the meter does not detect a temperature probe, the MTC icon will show on the screen indicating the meter is switched to the manual temperature compensation mode. To set the temperature value follow the steps below.

1.Press and hold the **°C** key to enter the temperature setting.

2. Press the ▲/▼ key to modify the temperature value.

3. Press the **Enter** key to save.

Press and hold the ▲/▼ key will make the value change faster.

- **Calibration**

The A series meter allows 2 to 5 points ion calibration, acceptable calibration points include the following options.

Before beginning the calibration, ensure that the ionic valency option in the setup menu matches connected electrode. All of the standards and samples should be at the same temperature and calibration points cover the anticipated range of the samples.

For the low concentration or sample contains the interference ions, we recommend to add the ionic strength adjuster (ISA) to all of the standards and samples. A typical addition would be 2 ml ISA to 100 ml of standard and sample.

For the low level sodium determination (< 1 ppm), make sure to use the laboratory plastic beaker as a container.

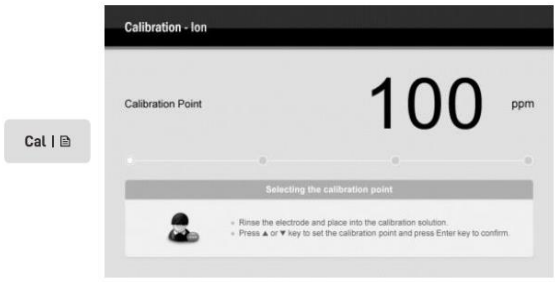
Stir the standards and samples at a uniform rate that will help you get most accurate readings.

Ion Concentration Calibration

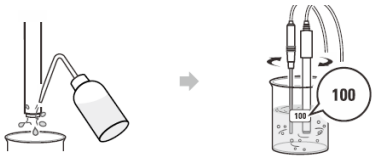
1.1 Ensure that the meter is in the Ion (Direct Reading) mode.

1.2 Press the **Cal** key, the screen shows "Calibration Point 100 ppm".

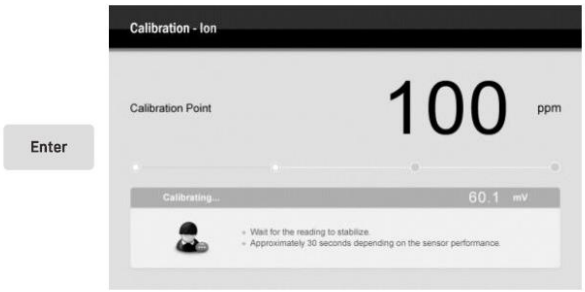
1.3 If necessary, press the ▲/▼ key to select first calibration point, the meter will automatically perform the calibration from the low to high concentrations.



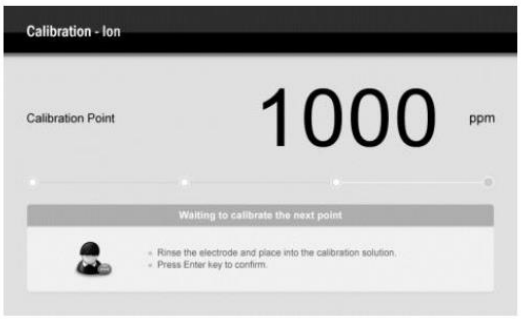
1.4 Rinse the ion selective electrode with distilled water, then rinse with a small amount of standard solution. Place the electrode (and temperature probe) into the standard solution, stir gently to create a homogeneous solution.



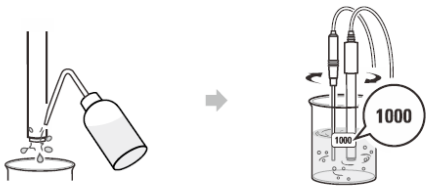
1.5 Press the **Enter** key, the status bar shows "Calibrating…"



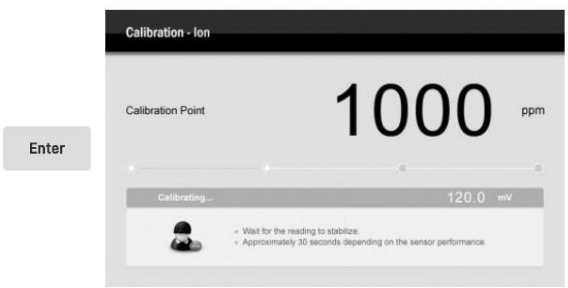
1.6 When the mV reading has stabilized, the screen will show "Calibration Point 1000 ppm", the meter prompts you to continue with second point calibration.



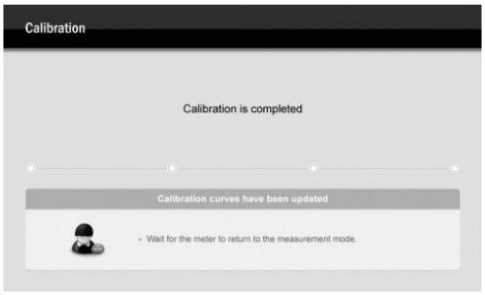
1.7 Rinse the ion selective electrode with distilled water, then rinse with a small amount of standard solution. Place the electrode (and temperature probe) into the next standard solution and stir gently.



1.8 Press the **Enter** key, the meter begins the calibration.



1.9 When the mV reading has stabilized, the screen will show the next calibration point.



2.0 Repeat the steps 1.7 and 1.8 above until the meter returns to the measurement mode. Calibration is completed.

To exit the calibration without saving changes, press the **ESC** key.

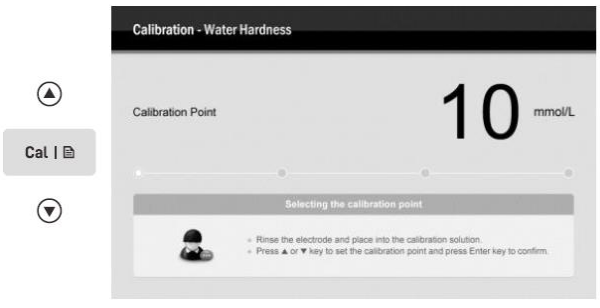
Water Hardness Calibration

The A series meter allows 2 to 5 points water hardness calibration, acceptable calibration points include the 0.01, 0.1, 1, 10, 100, 1000 mmol/L.

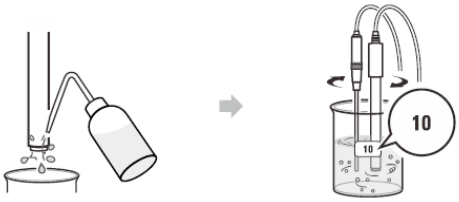
2.1 Ensure that the meter is in the Ion (Direct Reading) > Water Hardness mode.

2.2 Press the Cal key, the screen shows "Calibration Point 0.01 mmol/L".

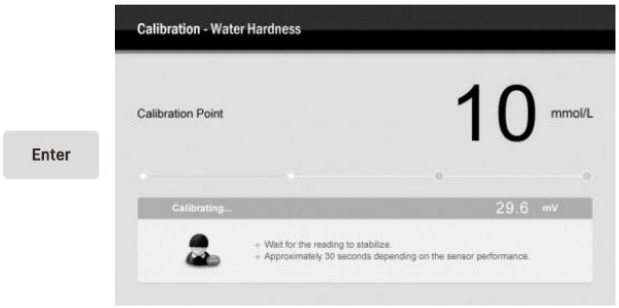
2.3 Press the ▲/ ▼ key to select first calibration point (e.g.,10mmol/L), the meter will automatically perform the calibration from the low to high concentrations.



2.4 Rinse the water hardness electrode with distilled water, then rinse with a small amount of standard solution. Place the electrode (and temperature probe) into the standard solution, stir gently to create a homogeneous solution.



2.5 Press the **Enter** key, the status bar shows "Calibrating…"



2.6 When the mV reading has stabilized, the screen will show "Calibration Point 100 mmol/L", the meter prompts you to continue with second point calibration.

2.7 Repeat the steps 2.4 and 2.5 above until the meter returns to the measurement mode. Calibration is completed.

Viewing the Calibration Log

3.1 Press the **MR** key, the screen shows a Data Log Menu.

3.2 Press the **Enter** key to view the calibration report.

3.3 Press the **ESC** key to return to the measurement mode.

If the meter is not calibrated, the calibration report will be unavailable.

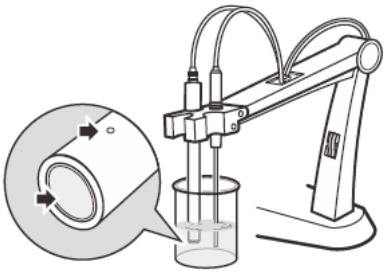
- **Ion Measurement**

The A series meter contains the 5 ion concentration measurement methods, including the direct reading, known addition/subtraction and sample addition/subtraction. If you selected mol/L or mmol/L as the concentration unit, the incremental method will be disabled, the screen will always show "**Could not find the electrode slope**", the meter must be recalibrated in the concentration unit ppm or mg/L.

Direct Reading

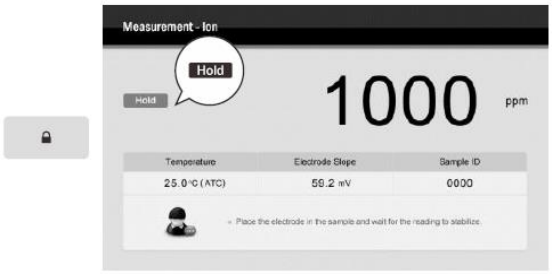
1.1 Ensure that the meter is in the Ion (Direct Reading) mode.

1.2 Rinse the ion selective electrode with distilled water. Place the electrode (and temperature probe) into the sample solution and stir gently. Note, the ion sensitive membrane and liquid junction must be completely immersed into the solution.



1.3 If the Auto-Read option in the setup menu is enabled, the meter will automatically sense a stable reading and lock measurement, the Hold icon appears on the screen. Press the 🔒 key to resume measuring.

If the option is disabled, the meter will continuously measure and update the readings.



1.4 Wait for the measurement to stabilize and record the reading.

1.5 When all of the samples have been measured, rinse the electrode with distilled water.

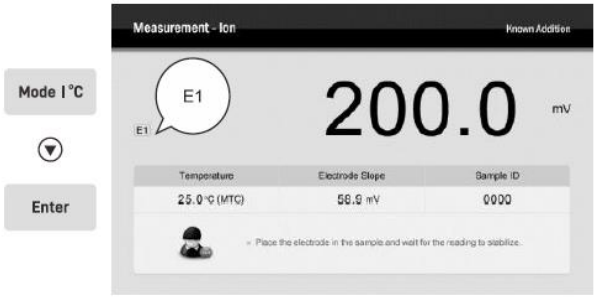
During the measurement process, never wipe the ion sensitive membrane, blot dry with a lint-free tissue to remove waterdrops on electrode.

• To record the measurement at the predefined time intervals, refer to the *Interval Readings* section.

Known Addition

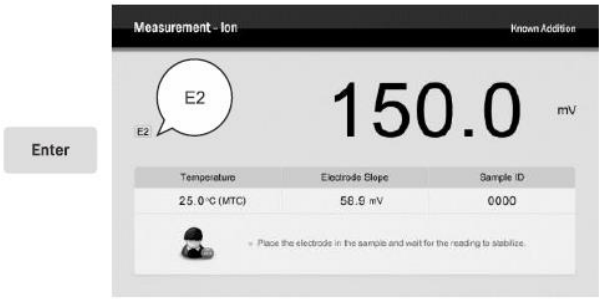
2.1 Press the **Mode** key and the ▼ key to select the Ion (Known Addition), press the **Enter** key to confirm.

2.2 Press the ▼key to select theelectrode type (e.g., Ion 1). Press the **Enter** key, the meter begins to measure the first Mv value, the iconE1 appears on the left of the screen.



2.3 Rinse the ion selective electrode with distilled water, place the electrode (and temperature probe) into the sample solution. Wait for the measurement to stabilize.

2.4 When the reading is stable, press the Enter key, the meter begins to measure the second mV value, the icon E2 appears on the screen.

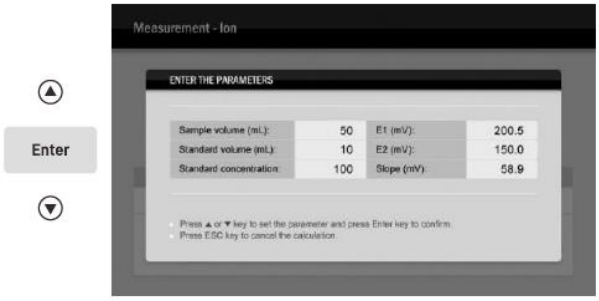


2.5 Add a known volume of standard solution to the sample and wait for the measurement to stabilize.

2.6 When the reading is stable, press the Enter key, the screen shows a parameter list and waits for entering the sample volume, standard volume and standard concentration (ppm or mg/L).

2.7 Press the ▲/ ▼key to enter the value, press the **Enter** key to confirm. When the setting is completed, the meter will calculate and show the known addition result.

2.8 Press the **ESC** key to take a measurement again.



Known Subtraction

The procedure for known subtraction is similar to the known addition method. The difference is that the standard solution does not contain the same ionic species that you are trying to measure in the sample.

Instead, it contains an ion that will complex or precipitate the ion of interest, removing it from the sample.

3.1 Press the **Mode** key and the ▼ key to select the Ion (Known Subtraction), press the **Enter** key to confirm.

3.2 Repeat steps 2.2 through 2.7 above until the meter shows the known subtraction result.

Sample Addition

This method is similar to the known addition method, except that the sample is added to the standard solution.

4.1 Press the **Mode** key and the ▼ key to select the *Ion (Sample Addition),* press the **Enter** key to confirm.

4.2 Press the ▼ key to select the electrode type (e.g., Ion 1). Press the **Enter** key, the meter begins to measure the first mV value, the iconE1 appears on the screen.

4.3 Rinse the ion selective electrode with distilled water, place the electrode (and temperature probe) into the standard solution. Wait for the measurement to stabilize.

4.4 When the reading is stable, press the **Enter** key, the meter begins to measure the second mV value, the icon E2 appears on the screen.

4.5 Add a known volume of sample to the standard solution and waitfor the measurement to stabilize.

4.6 When the reading is stable, press the **Enter** key, the screen shows a parameter list and waits for entering the sample volume, standard volume and standard concentration (ppm or mg/L).

4.7 Press the ▲/ ▼key to enter the value, press the **Enter** key to confirm. When the setting is completed, the meter will calculate and show the sample addition result.

4.8 Press the **ESC** key to take a measurement again.

Sample Subtraction

This method is similar to the known subtraction method, except that the sample is added to the standard solution.

5.1 Press the **Mode** key and the ▼ key to select the *Ion (Sample Subtraction),* press the **Enter** key to confirm.

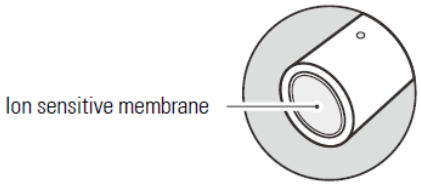
5.2 Repeat steps 4.2 through 4.7above until the meter shows the sample subtraction result.

• Electrode Maintenance

• Rinse the ion selective electrode thoroughly with distilled water after use, wipe clean with a lint-free tissue, then replace protective cap and store the electrode in a dry and cool area.

• Never scratch the ion sensitive membrane on the bottom of the electrode.

• If the electrode response becomes sluggish, soak the electrodein standard solution for at least 1 hour.



• Appendix

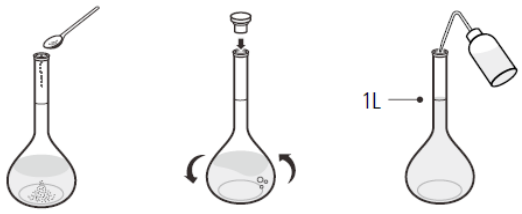
Preparation of Ion Standard Solution (1000ppm)

1.1 Half fill a 1 liter volumetric flask with distilled water and add the analytical grade reagent according to the instructions in table below.

Ion Type	Reagent	Weight
Ammonium	NH_4Cl	2.97 g
Bromide	NaBr	1.29 g
Cadmium	$Cd(NO_3)_2 \cdot 4H_2O$	2.74 g
Calcium	$CaCl_2 \cdot 2(H_2O)$	3.67 g
Chloride	NaCl	1.65 g
Cupric	$Cu(NO_3)_2 \cdot 3H_2O$	3.80 g
Cyanide	NaCN	1.88 g
Fluoride	NaF	2.21 g
Iodide	NaI	1.18 g
Lead	$Pb(NO_3)_2$	1.60 g
Nitrate	$NaNO_3$	1.37 g
Potassium	KCl	1.91 g
Silver	$AgNO_3$	1.57 g
Sodium	NaCl	2.54 g
Sulfide	$Na_2S \cdot 9H_2O$	7.49 g
Ammonia	NH_4Cl	3.15 g

1.2 Swirl the volumetric flask gently to dissolve the reagent and fill to the mark with distilled water.

1.3 Cap and upend the volumetric flask several times to mix the solution.



Preparation of Water Hardness Standard Solution (100 mmol/L)

2.1 Half fill a 1 liter volumetric flask with distilled water and add 14.7 grams of analytical grade calcium chloride (CaCl 2 • 2H 2 O) reagent.

2.2 Swirl the volumetric flask gently to dissolve the reagent and fill to the mark with distilled water.

2.3 Cap and upend the volumetric flask several times to mix the solution.

Optional Accessories

Ion Selective Electrodes

Order Code	Description	Range
ISE-NH4	Ammonium (NH_4^+)	0.1 to 18000 ppm
ISE-Br	Bromide (Br^-)	0.4 to 81000 ppm
ISE-Cd	Cadmium (Cd^{2+})	0.1 to 11200 ppm
ISE-Ca	Calcium (Ca^{2+})	0.02 to 40100 ppm
ISE-Cl	Chloride (Cl^-)	1 to 35000 ppm
ISE-Cu	Cupric (Cu^{2+})	0.06 to 6400 ppm
ISE-CN	Cyanide (CN^-)	0.03 to 260 ppm
ISE-F	Fluoride (F^-)	0.02 to 1900 ppm
ISE-I	Iodide (I^-)	0.06 to 127000 ppm
ISE-Pb	Lead (Pb^{2+})	0.2 to 20800 ppm
ISE-NO3	Nitrate (NO_3^-)	0.4 to 62000 ppm
ISE-K	Potassium (K^+)	0.04 to 39000 ppm
ISE-Ag	Silver (Ag^+)	0.01 to 107900 ppm
ISE-Na	Sodium (Na^+)	0.002 to 69000 ppm
ISE-S	Sulfide (S^{2-})	0.003 to 32000 ppm
ISE-NH3	Ammonia (NH_3)	0.01 to 17000 ppm
ISE-WH	Water hardness	0.05 to 200 mmol/L

Standard Solutions

Order Code	Description	Volume
ION-NH4	1000 ppm ammonium standard	480 ml
ION-Br	1000 ppm bromide standard	480 ml
ION-Cd	1000 ppm cadmium standard	480 ml
ION-Ca	1000 ppm calcium standard	480 ml
ION-Cl	1000 ppm chloride standard	480 ml
ION-Cu	1000 ppm cupric standard	480 ml
ION-F	1000 ppm fluoride standard	480 ml
ION-I	1000 ppm iodide standard	480 ml
ION-Pb	1000 ppm lead standard	480 ml
ION-NO3	1000 ppm nitrate standard	480 ml
ION-K	1000 ppm potassium standard	480 ml
ION-Ag	1000 ppm silver standard	480 ml
ION-Na	1000 ppm sodium standard	480 ml
ION-WH	100 mmol/L water hardness standard	480 ml

Ionic Strength Adjusters

Order Code	Description	Volume
ISA-NH4	Ammonium (NH_4^+)	480 ml
ISA-Br	Bromide (Br^-)	480 ml
ISA-Cd	Cadmium (Cd^{2+})	480 ml
ISA-Ca	Calcium (Ca^{2+})	480 ml
ISA-Cl	Chloride (Cl^-)	480 ml
ISA-Cu	Cupric (Cu^{2+})	480 ml
ISA-CN	Cyanide (CN^-)	480 ml
ISA-F	Fluoride (F^-)	480 ml
ISA-I	Iodide (I^-)	480 ml
ISA-Pb	Lead (Pb^{2+})	480 ml
ISA-NO3	Nitrate (NO_3^-)	480 ml
ISA-K	Potassium (K^+)	480 ml
ISA-Ag	Silver (Ag^+)	480 ml
ISA-Na	Sodium (Na^+)	480 ml
ISA-NH3	Ammonia (NH_3)	480 ml
ISA-WH	Water hardness	480 ml

Filling Solution

Order Code	Description
FS-NH3	Filling solution for ammonia electrode, 480 ml

Temperature Probe

Order Code	Description
TP-10K	Range: 0 to 100°C (32 to 221°F), 1 m (3.3 ft.) cable

Communication and Power Supply

Order Code	Description
USB-2303B	USB connector A to B, 1 m (3.3 ft.) cable
DCPA-12V	DC 12V power adapter, european standard plug

YR01827/ YR01827-1/ YR01827-2/ YR01828/ YR01828-1/ YR01828-2

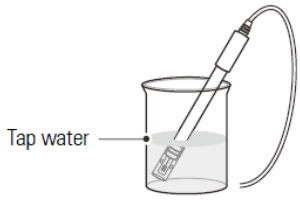
CONDUCTIVITY/ TDS/SALINITY/ RESISTIVITY/CONDUCTIVITY ASH CALIBRATION AND MEASUREMENT

This section is applicable to Kalstein´s series YR01827 and YR01828 meters.

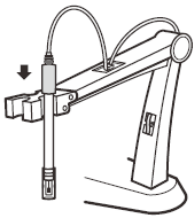
- **Prior to Use**

Connecting the Conductivity Electrode

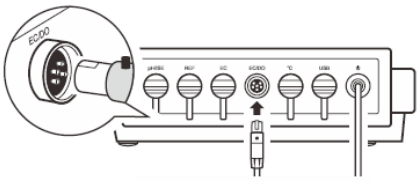
1. Take out the conductivity electrode from packaging. Soak the electrode for about 10 minutes in tap water to remove dirt and oil stains on the sensor surface.



2. Place electrode into the left or right side of the electrode arm.

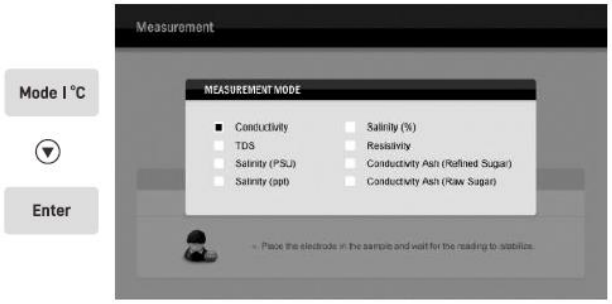


3. Insert 6-pin connector into the connector socket labeled EC/DO. Ensure the connector is fully seated.



Selecting the Measurement Mode

Press the **Mode** key and the ▼ key to select the conductivity, TDS, salinity or resistivity mode, press **Enter** key to confirm.



The YR01827 meter contains the conductivity ash modes.

- **Conductivity/ TDS Settings**

The YR series meter contains 9 conductivity settings, 1 TDS setting and 10 general settings in the setup menu.

Menu Items and Options	
Sample ID Set the sample ID to associate reading with the data log.	
0000 to 9999	Default 0000
Cell Constant Set the cell constant to match connected electrode.	
2-pole electrode (K=0.1)	
2-pole electrode (K=1)	Default
2-pole electrode (K=10)	
4-pole electrode	
Calibration Points Set the number of calibration points.	
1 to 3 points	Default 3 points

Temperature Coefficient

Set the temperature compensation type and coefficient.

The linear temperature compensation is appropriate for most samples. If the current samples are belong to the natural water, using the nonlinear compensation is necessary. Note, non-linear compensation can only be performed at temperature from 0 to 36° C. If the temperature reading is out of above range, the meter will show a warning.

Linear (setting range: 0.0 to 10.0%/°C)	Default 2.1%/°C
Non-linear	

Pure Water Coefficient

The pure water coefficient is used to correct the sample solution with a conductivity of less than 5 μ S/cm. If enabled, the meter will be automatically calculated and applied coefficient for ultra-pure water measurement.

Enable	
Disable	Default

Reference Temperature

Set the normalization temperature for measurement, the readings will automatically compensate to the selected temperature during the measurement.

25°C	Default
20°C	

TDS Factor Set the default TDS conversion factor.	
0.01 to 1.00	Default 0.50
Alarm Limits Set the high and low limit values to activate alarm.	
Enable (setting range: 0 to 999 μS/cm or mS/cm)	
Disable	Default
Calibration Due Set the calibration interval to activate alarm.	
Enable (setting range: 1 to 31 days)	
Disable	Default

If you want to change the current settings, press and hold the key to enter the setup menu, press the ▲/▼ key to select an option or set a value, press the **Enter** key to confirm.

•During the setting process, press and hold the ▲/▼key will make the value change faster.

•To exit the setting without saving changes, press the **ESC** key.

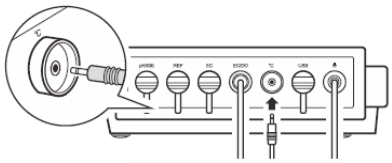
- **Temperature Compensation**

The temperature compensation has a large effect on the conductivity measurement. If enabled, the meter will use the measured conductivity and temperature readings to calculate the result and automatically compensate to the selected reference temperature. If the temperature coefficient is

set to 0, the temperature compensation will be disabled, the meter only shows the actual conductivity at the measured temperature.

Automatic Temperature Compensation

Connect the temperature probe to meter (refer to the *Connecting the Temperature Probe* section).



The ATC icon appears on the screen, the meter is now switched to the automatic temperature compensation mode.

Manual Temperature Compensation

If the meter does not detect a temperature probe, the MTC icon will show on the screen indicating the meter is switched to the manual temperature compensation mode. To set the temperature value follow the steps below.

1. Press and hold the °C key to enter the temperature setting.
2. Press the ▲/▼ key to modify the temperature value.
3. Press the **Enter** key to save.

Press and hold the ▲/▼key will make the value change faster.

- **Selecting a Conductivity Electrode**

The A series meter is capable of using three types of the conductivity electrodes. Before the calibration and measurement, ensure that you have selected a suitable electrode according to the anticipated sample conductivity.

The following table lists the selectable electrode and its effective measurement ranges.

Electrode	Measurement Range	Cell Constant
CON-0.1	0.5 to 100 µS/cm	K = 0.1
CON-1	10 µS/cm to 20 mS/cm	K = 1
CON-10	100 µS/cm to 200 mS/cm	K = 10

If the 4-pole conductivity electrode is selected, its best measurement range will be 100 µ S/cm to 200 mS/cm.

- **Conductivity Calibration**

The A series meter allows 1 to 3 points conductivity calibration. Before calibration, ensure that selected cell constant (K = 0.1, 1, 10) matches connected electrode.

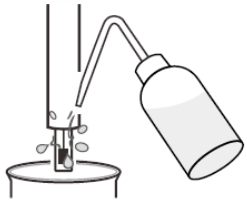
For better accuracy, we recommend to perform 3 points calibration or select a standard solution closest to the sample conductivity you are measuring. The meter will automatically detect the standard solution and prompt the user to perform the calibration. The following table shows the default standard solution for each measurement range.

Measurement Range	Default Standard Solution
0 to 20 µS/cm	10 µS/cm
20 to 200 µS/cm	84 µS/cm
200 to 2000 µS/cm	1413 µS/cm
2 to 20 mS/cm	12.88 mS/cm
20 to 200 mS/cm	111.8 mS/cm

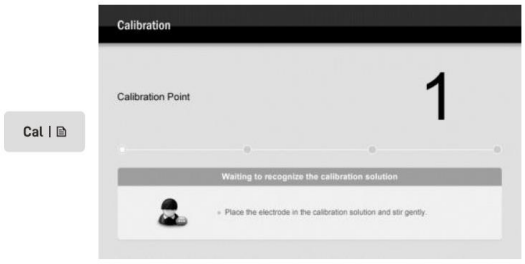
Single Point Calibration

1.1 Ensure that the meter is in the conductivity mode and you have selected 1 point calibration in the setup menu.

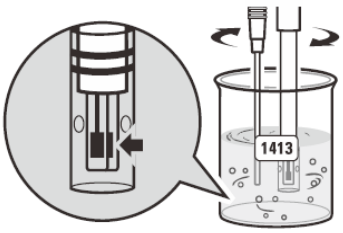
1.2 Rinse the conductivity electrode with distilled water, then rinse with a small amount of standard solution



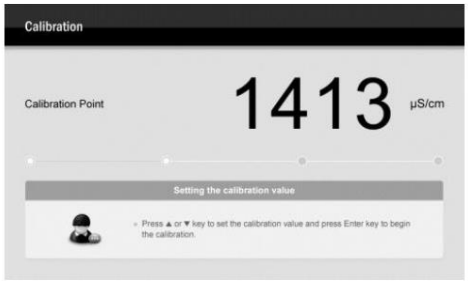
1.3 Press the **Cal** key, the meter shows "Calibration Point 1" and waits for recognizing the standard solution.



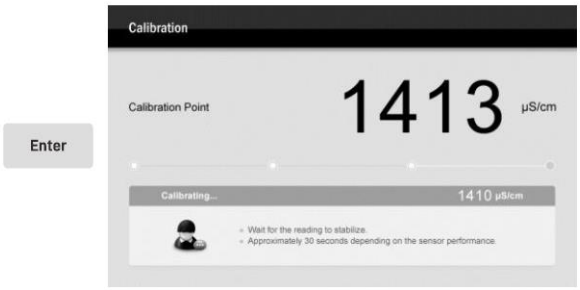
1.4 Place the electrode (and temperature probe) into the standard solution, stir gently to remove air bubbles trapped in the slot of the sensor.



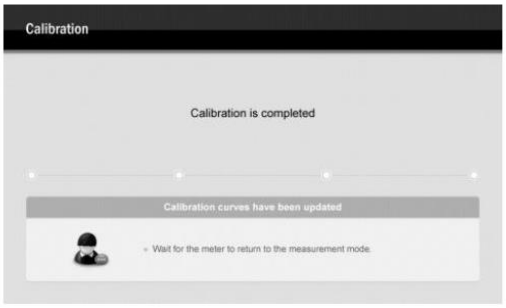
The meter will automatically show current calibration standard (e.g., 1413 μ S/cm). If necessary, press the ▲/▼ key to modify the calibration value.



1.5 Press the **Enter** key, the status bar shows "Calibrating…"



1.6 Wait for the conductivity reading to stabilize, the meter will show "Calibration is completed" and return to the measurement mode.



Multipoint Calibration

2.1 Ensure that you have selected 2 to 3 points calibration in the setup menu. When the first calibration point is completed, the screen will show "Calibration Point 2", the meter prompts you to continue with second point calibration.

2.2 Rinse the conductivity electrode with distilled water, then rinse with a small amount of standard solution.

2.3 Repeat the steps 1.4 and 1.5 above until the meter returns to the measurement mode. Calibration is completed.

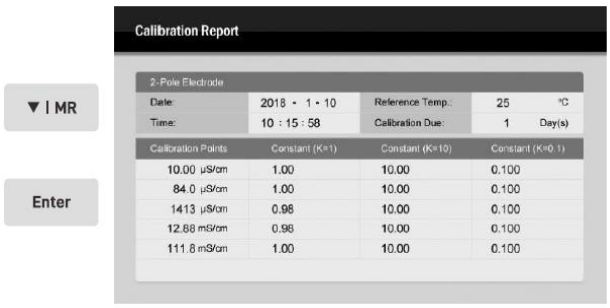
Performing the conductivity calibration will simultaneously calibrate the corresponding TDS, salinity, resistivity and conductivity ash values.

- To exit the calibration without saving changes, press the **ESC** key.

Viewing the Calibration Log

3.1 Press the **MR** key, the screen shows a Data Log Menu.

3.2 Press the **Enter** key to view the calibration report.



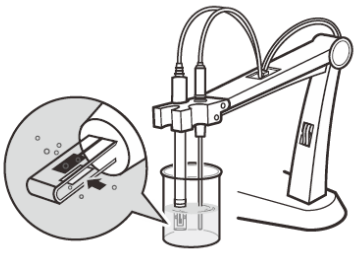
3.3 Press the **ESC** key to return to the measurement mode.

If the meter is not calibrated, the calibration report will be unavailable.

• Measurements

Conductivity/ TDS/Salinity/ Resistivity Measurement

1.1 Rinse the conductivity electrode with distilled water. Place the electrode (and temperature probe) into the sample solution and stir gently. Ensure that no air bubbles on the sensor surface.



1.2 If the Auto-Read option in the setup menu is enabled, the meter will automatically sense a stable reading and lock measurement, the Hold icon appears on the screen. Press the key to resume measuring.

If the option is disabled, the meter will continuously measure and update the readings.

1.3 Wait for the measurement to stabilize and record the reading.

1.4 When all of the samples have been measured, rinse the electrode with distilled water.

If the meter shows "Measured values exceed the range", replace a conductivity electrode that is appropriate for the conductivity range of the sample solution you are measuring.

• To record the measurement at the predefined time intervals, refer to the *Interval Readings* section.

Conductivity Ash Measurement

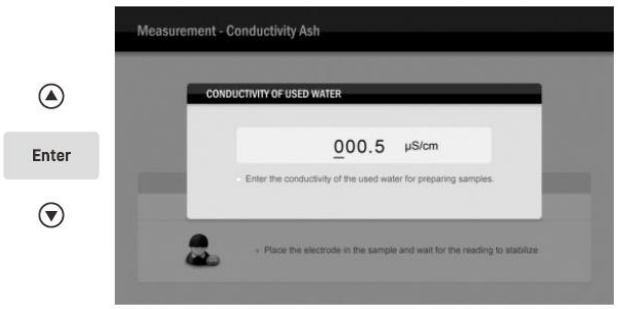
The YR01827 meter contains two conductivity ash measurement modes including the Refined Sugar (ICUMSA GS2/3-17 standard) and Raw Sugar (ICUMSA GS1/3/4/7/8-13 standard).

2.1 Prepare the sugar sample according to the selected ICUMSA method.

2.2 Press the **Mode** key and the ▼ key to select the either Refined Sugar or Raw Sugar measurement mode.

2.3 Press the **Enter** key, the screen shows an input window and waits for entering the conductivity of the used water for preparing sugar solution (range: 0.0 to 100.0 μ S/cm).

2.4 Press the ▲ / ▼key to set the value, press the **Enter** key to confirm. When the setting is completed, the meter will begin the measurement.



2.5 Rinse the conductivity electrode with distilled water, place the electrode (and temperature probe) into the sample solution and stir gently. Wait for the measurement to stabilize and record the reading.

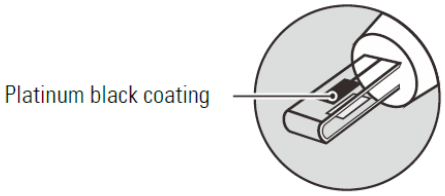
2.6 When all of the samples have been measured, rinse the electrode with distilled water. Conductivity ash measurement can only be performed at temperature range from 15° C to 25° C. If the temperature reading is out of above range, the meter will show a warning.

Conductivity ash measurement can only be performed at temperature range from 15° C to 25° C. If the temperature reading is out of above range, the meter will show a warning.

- **Electrode Maintenance**

• Rinse the conductivity electrode thoroughly with distilled water after use.

• Do not touch the platinum black coating on the sensor surface and always keep it clean.



• If there is a build-up of solids inside the sensor, remove carefully, then recalibrate the electrode.

• If you do not use the electrode for long periods, wipe clean with a lint-free tissue and store the electrode in a dry and cool area.

• If your electrode is model CON-10, store the electrode with tap water. This sensor needs to be kept wet always.

• Appendix

Preparation of Conductivity Standard Solutions

1. Place the analytical grade potassium chloride (KCl) in a beaker and dry in an oven for about 3 hours at 105° C (221° F), then cool to room temperature.
2. Add the reagent to a 1 liter volumetric flask according to the instructions in table below.
3. Fill the distilled water to the mark, mix the solution until the reagent is completely dissolved.

Conductivity Standard	Reagent	Weight
84 µS/cm	KCl	42.35 mg
1413 µS/cm	KCl	745.5 mg
12.88 mS/cm	KCl	7.45 g
111.8 mS/cm	KCl	74.5 g

Calculating the Temperature Coefficient

1. Do not connect the temperature probe to the meter.
2. Press and hold the ° **C** key to enter the temperature setting.
3. Press the ▲ / ▼ key to set the temperature to 25° C and press the **Enter** key to confirm.
4. Place the conductivity electrode into the sample solution, record the temperature value TA and conductivity value CTA.
5. Condition the sample solution and electrode to a temperature TB that is about 5 to 10° C different from TA. Record the conductivity value CTB.

6. Calculate the temperature coefficient using the formula below.

$$T_C = [C_{TB} - C_{TA}] / [C_{TA}(T_B - 25) - C_{TB}(T_A - 25)]$$

Where:
T_C = Temperature coefficient
C_{TA} = Conductivity at temperature A
C_{TB} = Conductivity at temperature B
T_A = Temperature A
T_B = Temperature B

Calculating the Cell Constant

1. Reset the meter.
2. Place the electrode into a standard solution and record the reading.
3. Calculate the cell constant using the following formula.

$$K = (C_{std} / C_{meas}) \times G$$

Where:
K = Cell constant
C_{std} = Value of conductivity standard solution
C_{meas} = Measured value
G = Raw cell constant (0.1, 1 or 10)

Calculating the TDS Conversion Factor

To determine the TDS factor of sample solution, use the formula below.

Factor = Actual TDS / Actual Conductivity @25°C

Where:
Actual TDS = value from the high purity water and precisely weighed NaCl or KCL reagent
Actual Conductivity = the meter measured conductivity value

For example:
Dissolve 64 grams of the potassium chloride (KCl) reagent in 1 liter distilled water. If measured conductivity is 100 mS/cm, then TDS factor is 0.64.

Conductivity to TDS Conversion Factors

Conductivity at 25°C	TDS (KCl)		TDS (NaCl)	
	ppm	Factor	ppm	Factor
84 µS/cm	40.38	0.5048	38.04	0.4755
1413 µS/cm	744.7	0.527	702.1	0.4969
12.88 mS/cm	7447	0.5782	7230	0.5613

Optional Accessories

Conductivity Electrodes

Order Code	Description
CON-0.1	For measuring the pure water
CON-1	For general purpose applications
CON-10	For measuring the high conductivity liquids

Temperature Probe

Order Code	Description
TP-10K	Range: 0 to 100°C (32 to 221°F), 1 m (3.3 ft.) cable

Solutions

Order Code	Description
ECCS-84	Conductivity standard solution 84 µS/cm, 480 ml
ECCS-1413	Conductivity standard solution 1413 µS/cm, 480 ml
ECCS-1288	Conductivity standard solution 12.88 mS/cm, 480 ml
ECCS-1118	Conductivity standard solution 111.8 mS/cm, 480 ml

Communication and Power Supply

Order Code	Description
USB-2303B	USB connector A to B, 1 m (3.3 ft.) cable
DCPA-12V	DC 12V power adapter, european standard plug

YR01831 / YR01832

DO/BOD/OUR/SOUR CALIBRATION AND MEASUREMENT

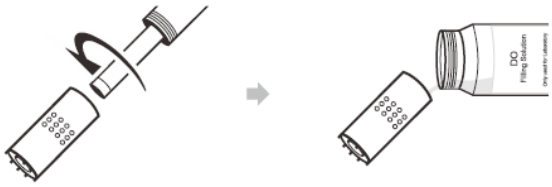
This section is applicable to models YR01831 and YR01832 meters.

- **Prior to Use**

Filling the Electrolyte Solution

1.1 Take out the dissolved oxygen electrode and electrolyte solution from the packaging. Unscrew the membrane cap from the bottom of the electrode, rinse the inside and outside with distilled water and blot dry.

1.2 Fill the membrane cap halfway with electrolyte solution.

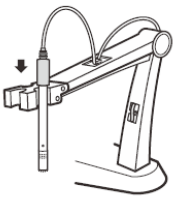


1.3 Screw membrane cap back onto the electrode. Some electrolyte solution will overflow during this process.

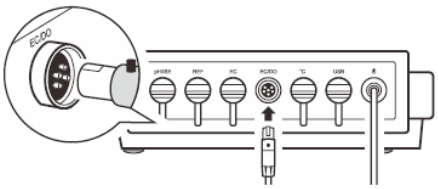
1.4 Check the electrode, ensure that no air bubbles are trapped in the electrolyte solution and the membrane is not creased or damaged.

Connecting and Polarizing the Electrode

2.1 Place electrode into the left or right side of the electrode arm.



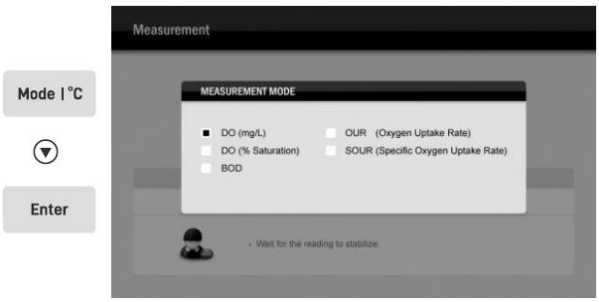
2.2 Insert 6-pin connector into the connector socket labeled EC/DO. Ensure the connector is fully seated.



2.3 Switch on the meter and wait 10 minutes for the electrode to polarize.

Selecting the Measurement Mode

Press the **Mode** key and the ▼ key to select the dissolved oxygen concentration or % saturation mode, press **Enter** key to confirm.



The YR01832 meter contains the BOD, OUR (Oxygen Uptake Rate) and SOUR (Specific Oxygen Uptake Rate) measurement modes.

- **Dissolved Oxygen Settings**

The A series meter contains 7 dissolved oxygen settings and 10 general settings in the setup menu.

Menu Items and Options	
Sample ID Set the sample ID to associate reading with the data log.	
0000 to 9999	Default 0000
Calibration Points Set the number of calibration points.	
1 or 2 point	Default 1 point
Pressure Coefficient Set the barometric pressure coefficient according to the local altitude.	
450.0 to 850.0 mmHg	760.0 mmHg
60.0 to 113.3 kPa	101.3 kPa
Salinity Coefficient Set the salinity compensation coefficient of sample.	
0.0 to 50.0 ppt	Default 0.0 ppt
Concentration Unit Set the default measurement unit.	
mg/L	Default
ppm	

Alarm Limits Set the high and low limit values to activate alarm.	
Enable (setting range: 0.00 to 20.00 mg/L)	
Disable	Default
Calibration Due Set the calibration interval to activate alarm.	
Enable (setting range: 1 to 31 days)	
Disable	Default

If you want to change the current settings, press and hold the key to enter the setup menu, press the ▲ / ▼ key to select an option or set a value, press the **Enter** key to confirm.

- During the setting process, press and hold the ▲ / ▼ key will make the value change faster.
- To exit the setting without saving changes, press the **ESC** key.

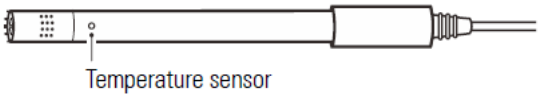
The following table describes the relationship between the altitude and barometric pressure, make sure to set a compatible parameter before the calibration and measurement.

Altitude (m)	kPa	mmHg	Altitude (m)	kPa	mmHg
0	101.3	760	1800	80.9	607
100	100.1	750	1900	79.9	599
200	98.8	741	2000	78.9	592
300	97.6	732	2100	77.9	584
400	96.4	723	2200	76.9	577
500	95.2	714	2300	76.0	570
600	94.0	705	2400	75.0	563
700	92.8	696	2500	74.1	556
800	91.7	688	2600	73.2	549
900	90.5	679	2700	72.3	542
1000	89.4	671	2800	71.4	536
1100	88.3	662	2900	70.5	529
1200	87.2	654	3000	69.6	522
1300	86.1	646	3100	68.7	515
1400	85.0	638	3200	67.9	509
1500	84.0	630	3300	67.0	502
1600	82.9	622	3400	66.2	496
1700	81.9	614	3500	65.4	490

- **Dissolved Oxygen Calibration**

The A series meter allows 1 or 2 points calibration in the dissolved oxygen mode. If you have selected the 1 point calibration in the setup menu, we recommend that you perform a 100% saturation calibration in the air-saturated water. If the 2 points calibration is selected, the zero oxygen solution needs to be used.

During the calibration and measurement, the temperature sensor on electrode must be immersed in solution completely and the solution should keep 0.3 m/s of minimum flow rate to avoid oxygen starvation at the membrane.

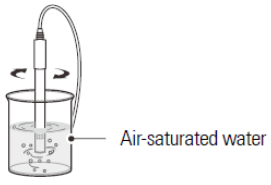


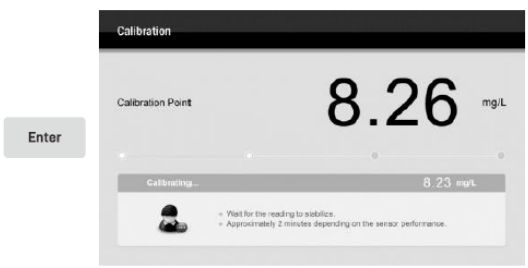
DO Calibration in mg/L or ppm Mode

1.1 Ensure that the meter is in DO (mg/L) mode and you have select the 1 point calibration in the setup menu.

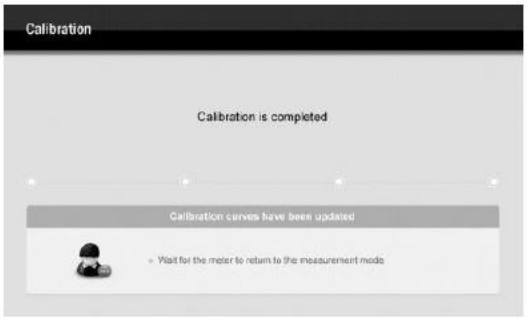
1.2 Press the **Cal** key, the screen shows "Calibration Point 8.26 mg/L".

1.3 Place the dissolved oxygen electrode into the air-saturated water for 10 minutes and stir gently. Press the **Enter** key to begin the calibration.





1.4 Wait for the dissolved oxygen reading to stabilize, the meter will show "Calibration is completed" and return to the measurement mode.

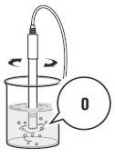


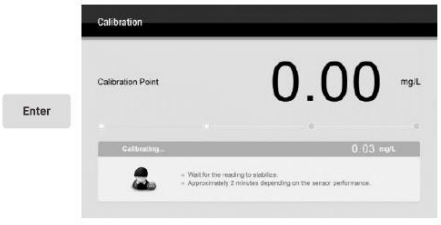
2 Points Calibration

2.1 Ensure that you have selected 2 points calibration in the setup menu.

2.2 Press the **Cal** key and ▼ key, the screen shows "Calibration point 0.00 mg/L".

2.3 Place the electrode into the zero oxygen solution for 10 minutes and stir gently. Press the Enter key to begin the calibration.





2.4 When the dissolved oxygen reading has stabilized, the screen will show "Calibration Point 8.26 mg/L", the meter prompts you to continue with second point calibration.

2.5 Place the electrode into the air-saturated water for 10 minutes and stir gently. Press the **Enter** key to begin the calibration.

2.6 When the dissolved oxygen reading has stabilized, the meter will return to the measurement mode. Calibration is completed.

DO Calibration in % Saturation Mode

3.1 Ensure that the meter is in % saturation mode and you have select the 1 point calibration in the setup menu.

3.2 Press the **Cal** key, the screen shows "Calibration Point 100.0%".

3.3 Hold the dissolved oxygen electrode in the air at 100% relative humidity or place the electrode into the air-saturated water for 10 minutes. Press the **Enter** key to begin the calibration.

3.4 When the dissolved oxygen reading has stabilized, the meter will return to the measurement mode. Calibration is completed.

2 Points Calibration

4.1 Ensure that you have selected 2 points calibration in the setup menu.

4.2 Press the **Cal** key and the ▼ key, the meter shows "Calibration Point 0.0%".

4.3 Place the electrode into the zero oxygen solution for 10 minutes and stir gently. Press the **Enter** key to begin the calibration.

4.4 When the dissolved oxygen reading has stabilized, the screen will show "Calibration Point 100.0%", the meter prompts you to continue with second point calibration.

4.5 Place the electrode into the air-saturated water for 10 minutes and stir gently. Press the **Enter** key to begin the calibration.

4.6 When the dissolved oxygen reading has stabilized, the meter will return to the measurement mode. Calibration is completed.

 To exit the calibration without saving changes, press the **ESC** key.

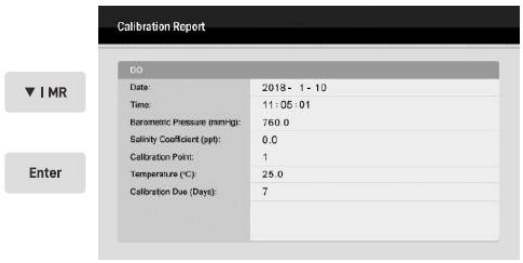
Viewing the Calibration Log

5.1 Press the **MR** key, the screen shows a Data Log Menu.

5.2 Press the **Enter** key to view the calibration report.

5.3 Press the **ESC** key to return to the measurement mode.

If the meter is not calibrated, the calibration report will be unavailable.

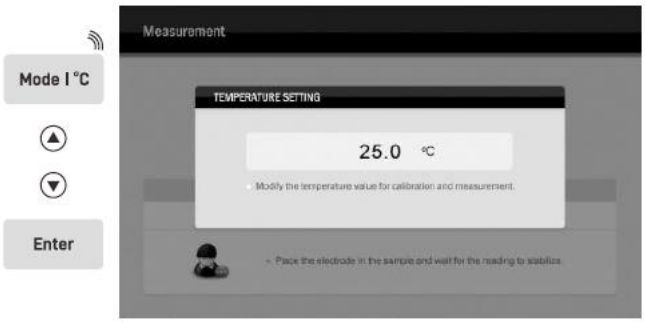


- Temperature Calibration

1. Place the dissolved oxygen electrode in a solution with a known accurate temperature and wait for the reading to stabilize.

2. Press and hold the °C key to enter the temperature setting.

3. Press the ▲ / ▼ key to modify the temperature value, press the **Enter** key to save.

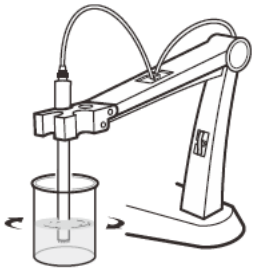


- Measurements

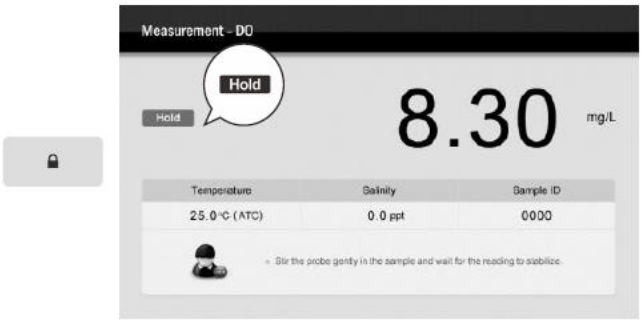
Dissolved Oxygen Measurement

The A series meter can be used to measure the water, wastewater, brine and other liquids. If your sample is seawater or water containing large amounts of salt, make sure to set the salinity coefficient before measurement. Some gas and steam such as chloride, sulfur dioxide, sulfureted hydrogen and carbon dioxide can permeate the membrane via diffusion. Their existence will influence the measurements. If the sample contains the solvent, grease, sulfide and alga, the membrane will be damaged or eroded.

1.1 Set the barometric pressure and salinity coefficient in the setup menu.
1.2 Rinse the dissolved oxygen electrode with distilled water. Place the electrode into the sample solution and stir gently. Wait for the measurement to stabilize and record the reading.



1.3 If the Auto-Read option in the setup menu is enabled, the meter will automatically sense a stable reading and lock measurement, the Hold icon appears on the screen. Press the 🔒 key to resume measuring.
If the option is disabled, the meter will continuously measure and update the readings.

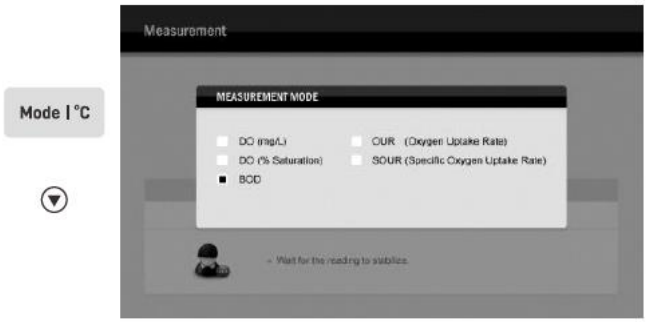


To record the measurement at the predefined time intervals, refer to the *Interval Readings* section.

BOD Measurement

The YR01831 meter contains a BOD measurement mode. A typical process for BOD determination consists of 4 steps: sample preparation, initial measurement, incubation, final measurement.

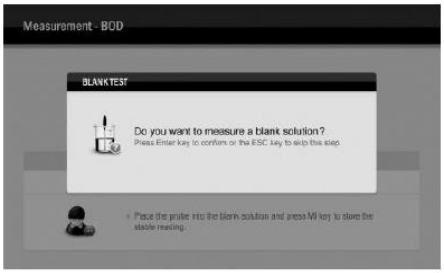
2.1 Press the **Mode** key and the ▼ key to select the BOD.



2.2 Press the **Enter** key, the screen shows "Do you want to measure a blank solution?".

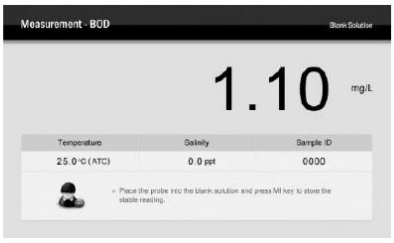
2.3 Press the **Enter** key to take a measurement or the **ESC** key to skip this step.

Enter



2.4 Place the dissolved oxygen electrode into the blank solution. Wait for the reading to stabilize, press the **MI** key to store the measured value.

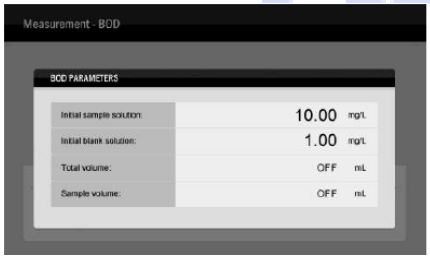
▲ I MI



2.5 The meter will automatically show a parameter list and waits for entering the initial blank concentration, initial sample concentration, total volume and sample volume.

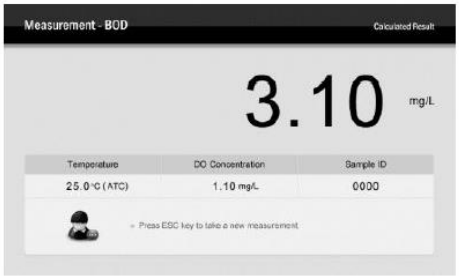
If you need to set the Total Volume and Sample Volume, press the ▲/▼ key until the option shows "ON". Press the **Enter** key, the setting value will show on the screen.

Enter



2.6 Press the ▲/▼ key to set the parameter, press the **Enter** key to confirm. When the setting is completed, the meter will show calculated BOD result.

Enter



2.7 Press the **ESC** key, the meter will take a new measurement.

If you want to exit the BOD measurement, press the **Mode** key to convert the measurement mode.

OUR/SOUR Measurement

The YR01831 meter contains an application for the calculation of Oxygen Uptake Rate (OUR) and Specific Oxygen Uptake Rate (SOUR). Before the measurement, make sure that the OUR or SOUR parameters have been set to desired values.

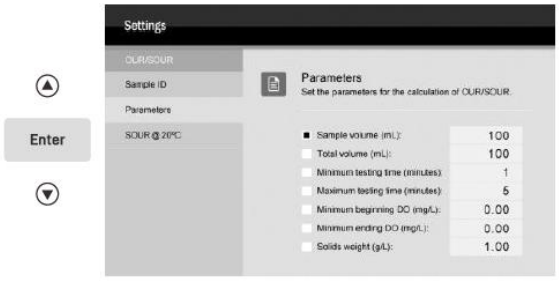
OUR/SOUR Parameters	
Sample ID Set the sample ID to associate reading with the data log.	
0000 to 9999	Default 0000
Sample Volume Set the sample volume.	
Default 100 ml	
Total Volume Set the total volume of sample.	
Default 100 ml	
Minimum Testing Time Set the minimum time of measurement. When the minimum time is reached, the measurement will start.	
Default 1 minute	
Maximum Testing Time Set the maximum time of measurement. When the maximum time is reached, the measurement will end.	
Default 5 minutes	
Minimum Beginning DO Set the minimum dissolved oxygen value allowed at the start of the measurement.	
Default 0.00 mg/L	
Minimum Ending DO Set the minimum dissolved oxygen value allowed during the measurement. If the measured value falls below this value, the measurement will end.	
Default 0.00 mg/L	
Solids Weight Set the total solids or volatile suspended solids concentration of the sample.	
Default 1.00 g/L	
SOUR@20°C This option is applied to the SOUR measurement only. If enabled, the readings will automatically reference to 20°C.	
Enable	
Disable	Default

Setting the Parameters

1.1 Ensure that the meter is in the OUR or SOUR mode. Press and hold the key to enter the setup menu.

1.2 Press the ▲/▼ key to select the *Parameters*, press the **Enter** key to confirm.

1.3 Press the ▲/▼ key to set the option or value, press the **Enter** key to confirm. When the setting is completed, the meter will automatically return to the measurement mode.



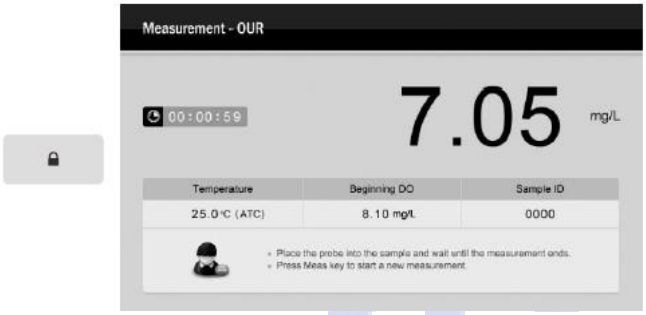
During the setting process, press and hold the ▲/▼ key will make the value change faster.

• To exit the setting without saving changes, press the **ESC** key.

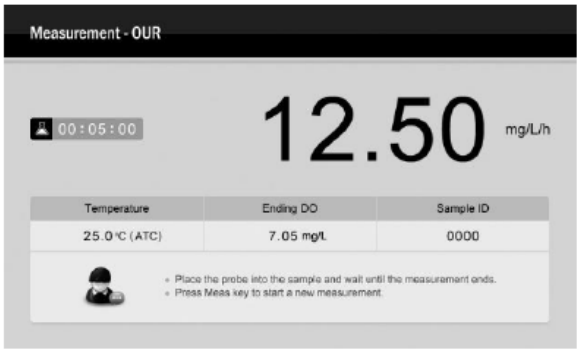
Measurement

2.1 Place the dissolved oxygen electrode into the sample solution and stir gently.

2.2 Press the 🔒 key, the meter begins the measurement, the screen shows the current dissolved oxygen readings.



2.3 When the maximum time is reached, the meter will show the calculated OUR or SOUR result.



During the measurement process, press the 🔒 key, the meter will take a new measurement.

• In the SOUR mode, the *Solids Weight* parameter must be set to correct value. In the OUR mode, this parameter must be set to 1.0.

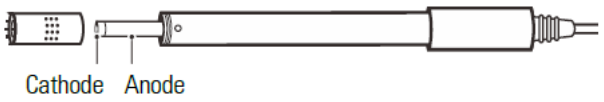
• If you want to exit the OUR and SOUR measurements, press the **Mode** key to convert the measurement mode.

• Electrode Maintenance

• Rinse the dissolved oxygen electrode thoroughly with distilled water after use.

• Do not touch the membrane and always keep it is clean and wet.

• If you do not use the electrode for long periods, screw off the membrane cap and rinse the electrode anode, cathode, membrane cap with distilled water and blot dry. Install the electrode and store dry.



• Appendix

Preparation of Zero Oxygen Solution

Dissolve 500 mg of the sodium sulfate (Na2SO3) reagent and a small amount of cobalt (II) chloride hexahydrate (CoCl2 • 6H2O) in the 250 ml distilled water, mix the solution until reagent is completely dissolved.

Preparation of Air-Saturated Water

Use an air-pump to blow air into distilled water at least 1 hour, while stirring the solution.

Optional Accessories

Dissolved Oxygen Electrode and Components

Order Code	Description
DO100	Dissolved oxygen electrode, range: 0 to 20 mg/L
DO-MEM	Membrane cap, 2 PCS/set

Solution

Order Code	Description
DO-ES	Electrolyte solution, 30 ml

Communication and Power Supply

Order Code	Description
USB-2303B	USB connector A to B, 1 m (3.3 ft.) cable
DCPA-12V	DC 12V power adapter, european standard plug

DATA MANAGEMENT

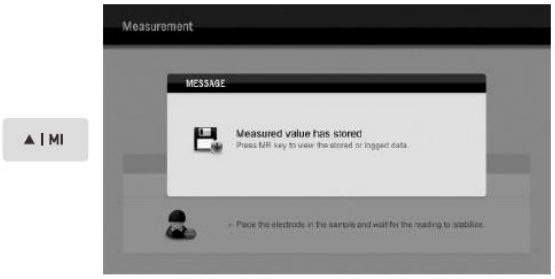
This section is applicable to all models of meters

Data Management

The A series meter is capable of storing and recalling up to 1000 data sets.

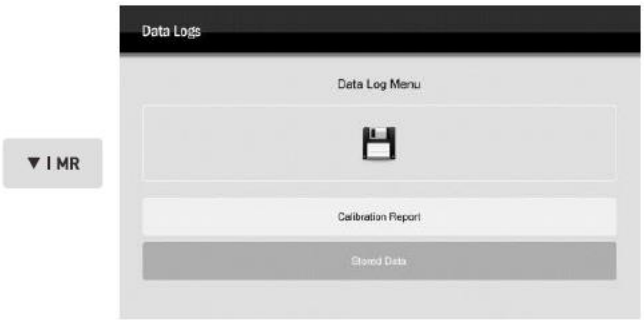
Storing a Measurement Result

During the measurement, press the **MI** key to store the reading into the memory, the screen shows "Measured value has stored".



Viewing the Data Logs

1.1 Press the MR key and the ▼ key to select the *Stored Data*.



1.2 Press the **Enter** key, the screen shows a measurement data list.

1.3 If necessary, press the ▲/▼ key to switch pages.

1.4 Press the **ESC** key to return to the measurement mode.

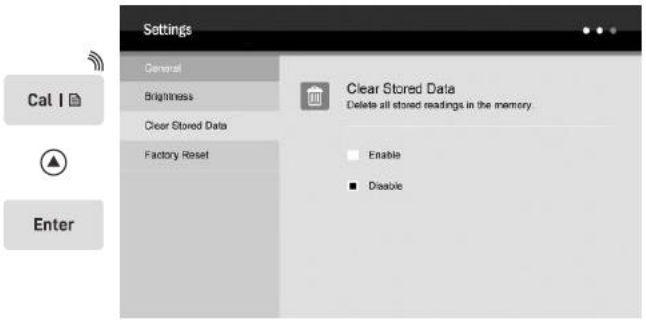
If the meter is not store any data, the screen will show a blank page only.

Deleting the Data Logs

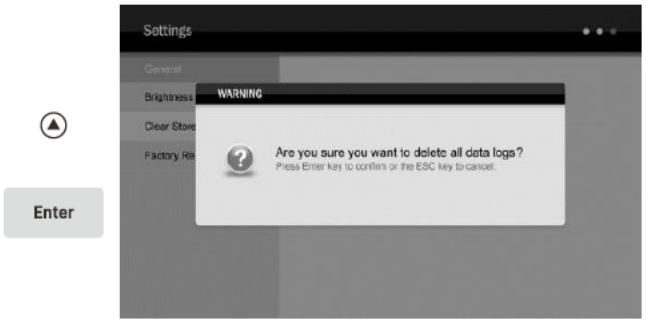
If the memory is full, the meter will automatically show a reminder when the MI key is pressed. To delete data log, please follow the steps below.

2.1 Press and hold the key to enter the setup menu.

2.2 Press the ▲ key to select the ***Clear Stored Data***, press the **Enter** key to confirm.



2.3 Press the ▲ key to select the ***Enable***. Press the **Enter** key, the screen shows "*Are you sure you want to delete all date logs*?"



2.4 Press the **Enter** key to confirm or the **ESC** key to cancel.

- **Print**

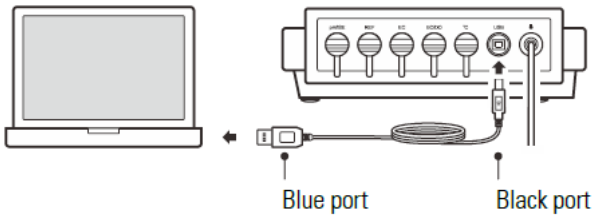
Connect the USB cable to the meter and printer (order code: AB58-GK). Press the **Print** key to print the displayed reading or data logs.

- **Communication**

The A series meter can transfer the data to a computer or import the data to Excel by a DAS software. You are able to download this software from our official website. Before installation, ensure that the Windows 10 operating system has been installed on your computer and you have a USB-2303B data cable.

Receiving the Data

1. Connect the black port of the data cable to meter and the blue port to computer.



2. Click the DAS_A_Series icon, the system automatically scans an available communication port and shows a message box "Found a port on your computer".
3. Click the **OK**, the application starts.
4. Click the **Connect**, the screen shows "Port is connected".
5. Click the **OK**, then click the **Receive**, the stored data will transfer to computer automatically.

If your computer can not find a communication port, click the"PL2303_Prolific_DriverInstaller_V1190.exe" to update the drive program.

Creating an Excel File

When transfer is completed, click the Save as Excel, the readings in data sheet will automatically convert to Excel file.

Note, once the software is closed, all received data will be lost and can not be recovered.

- **Interval Readings**

The A series meter contains an Interval Readings option in setup menu.

If enabled, the meter will automatically send the measurement data to a printer or computer at the predefined time.

1. Press and hold the key to enter the setup menu.

2. Press the ▲ key to select the *Interval Readings*, press the **Enter** key to confirm.

3. Press the ▲/▼ key to select a predefined time, press the **Enter** key to return to the measurement mode.

4. If the meter has been connected to a computer, click the **Receive** button, the measurement data will automatically transfer to DAS software.

If the meter has been connected to a printer, press the **Print** key to print the displayed reading.

Note, the first data needs 1 minute to be shown on the screen.

- Do not press any key on meter during the Interval Readings mode that will cause the communication interruption.

SPECIFICATIONS AND TROUBLESHOOTING

This section is applicable to all models of meters

Meter Specifications

pH	
Range	-2.000 to 20.000 pH
Resolution	0.001, 0.01 pH
Accuracy	±0.002 pH
Calibration Points	1 to 5 points
pH Buffer Options	USA (pH 1.68, 4.01, 7.00, 10.01, 12.45)
	NIST(pH 1.68, 4.01, 6.86, 9.18, 12.45)
	DIN (1.09, 3.06, 4.65, 6.79, 9.23, 12.75)
Temperature Compensation	0 to 100°C (32 to 212°F)

ORP	
Range	±2000.0 mV
Resolution	0.1 mV
Accuracy	±0.2 mV
Calibration Point	1 point (only for ORP mode)

Ion Concentration	
Range	0.001 to 30000 ppm, mg/L, mol/L, mmol/L
Resolution	0.001, 0.01, 0.1, 1
Accuracy	±0.5% F.S. (monovalent)
	±1% F.S. (divalent)
Calibration Points	2 to 5 points
Calibration Solutions	0.001, 0.01, 0.1, 1, 10, 100, 1000, 10000
Temperature Compensation	0 to 100°C (32 to 212°F)

Water Hardness	
Range	0.05 to 200 mmol/L
Resolution	0.01, 0.1, 1
Accuracy	±1% F.S.
Calibration Point	2 to 5 point
Calibration Solutions	0.01, 0.1, 1, 10, 100 mmol/L
Temperature Compensation	0 to 50°C

Conductivity	
Range	0.01 µS/cm to 200.0 mS/cm
Resolution	0.001, 0.01, 0.1, 1
Accuracy	±0.5% F.S.
Calibration Points	1 to 3 points
Calibration Solutions	10 µS/cm, 84 µS/cm, 1413 µS/cm,
	12.88 mS/cm, 111.8 mS/cm
Temperature Compensation	0 to 100°C (32 to 212°F)
Temperature Coefficient	Linear (0.0 to 10.0%/°C)
	Non-linear
	Pure water
Reference Temperature	20°C or 25°C
Cell Constant	2-pole electrodes (K=0.1, 1, 10)
	4-pole electrode

TDS	
Range	0.00 to 100.0 g/L (max. 200 g/L)
Resolution	0.01, 0.1, 1
Accuracy	±1% F.S.
TDS Factor	0.01 to 1.00 (default 0.50)

Salinity	
Range	0.00 to 80.00 ppt, 0.00 to 42.00 psu
	0.00 to 8.00%
Resolution	0.01
Accuracy	±1% F.S.

Resistivity	
Range	0.00 to 30.00 MΩ
Resolution	0.01, 0.1
Calibration Solutions	±1% F.S.

Conductivity Ash	
Range	0.00 to 100%
Resolution	0.01, 0.1, 1
Accuracy	±1% F.S.
Measurement Modes	Refined sugar or raw sugar

Meter Specifications II

Dissolved Oxygen	
Range	0.00 to 20.00 mg/L, 0.0 to 200.0% saturation
Resolution	0.01
Accuracy	±0.2 mg/L, ±2.0%
Calibration Points	1 or 2 points
Temperature Compensation	0 to 50°C (32 to 122°F)
Pressure Correction	60.0 to 112.5 kPa, 450 to 850 mmHg
Salinity Correction	0.0 to 50.0 g/L

Temperature	
Range	0 to 105°C (32 to 221°F)
Resolution	0.1°C (0.1°F)
Accuracy	±0.5°C (±0.9°F)
Calibration Point	1 point

Other Specifications	
Memory	1000 data sets
Communication Interface	USB-B
Operating Temperature	0 to 50°C (32 to 122°F)
Storage Temperature	0 to 60°C (32 to 140°F)
Relative Humidity	< 80% (non-condensing)
Display	7 in. TFT LCD
Power Requirements	DC 12V/2A power adapter
Dimensions	240 (L) × 220 (W) × 80 (H) mm (9.4 × 8.6 × 3.1 in.)
Weight	1.7 kg (3.7 lb)

DISPOSAL

This product is required to comply with the European Union's Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC and may not be disposed of in domestic waste. Please dispose of product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

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