I931 Ionomètre de paillasse

Caractéristiques :

Ionomètre professionnel pour connecter toute électrode à ion spécifique
Conçu pour une utilisation sur paillasse en laboratoire
Ecran géant, Bras flexible porte électrode, alimentation sur secteur.
2 à 5 Points de Calibration : (0.001, 0.01, 0.1, 1, 10, 100, 1000, 10000ppm, mg/L, mol/L, mmoL/L)
Lecture directe de la concentration en ion.
Différentes unités de mesure au choix : ppm, mg/L ou mol/L.
La compensation automatique de température fournit une lecture précise sur toute la gamme et une icône de stabilité affiche automatiquement l'état de la mesure du courant.
Fonction Hold pour geler la lecture sur l'écran et une mesure en mV est disponible pour afficher la performance de l'électrode

Diagnostic automatique de l'électrode avec affichage de la pente.
Guide d'utilisation et d'aide en lecture sur l'écran géant de l'instrument
Menu système entièrement paramètrable sur 8 critères avec choix du nombre de points de calibration, de la précision, de la stabilité de lecture, de l'arrêt automatique etc. Mémoire interne avec capacité de stockage de 500 données.
Possibilité de transfert des données sur PC via un logiciel dédié.

Inclus:
Instrument, Bras flexible porte-électrode, Sonde de Temperature , cable USB et adaptateur prise secteur
Electrode (s) à ion spécifique et standards de calibration à choisir par l'utilisateur en fonction de ses besoins analytiques

Model	I931
Gamme Ion :	0.001～19999ppm, mg/L, mol/L (en fonction de la gamme de mesure de l'électrode à ion spécifique)
Précision Ion :	±0.5% pleine échelle (Monovalent), ±1% pleine échelle (Divalent)
Gamme mV :	-1999.9～1999.9mV
Précision mV :	±0.2mV
Gamme Température :	0～105°C, 32～221°F
Précision Température :	±0.5°C, ±0.9°F
Points de Calibration :	2～5 points (0.001, 0.01, 0.1, 1, 10, 100, 1000, 10000ppm, mg/L, mol/L, mmoL/L)
Temperature Compensation	0～100°C, 32～212°F, Manuelle ou Automatique
Fonction Hold :	Manuelle ou Automatique
Réglage de la stabilité	Basse ou Haute
Rappel calibration :	0 à 31 jours
Mémoire interne :	Stocke jusqu'à 500 données
Sortie :	Interface USB
Alimentation :	DC5V, avec adaptateur AC , 220VAC/50Hz
Dimmensions :	210(L)×188(W)×60(H)mm
Poids :	1.5kg

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Introduction

Thank you for selecting the I931 benchtop ion meter. This manual provides a step-by-step guide to help you operate the meter, please carefully read the following instructions before use.

Unpacking the Meter

Before unpacking, ensure that the current work environment meet following conditions.

- Relative humidity is less than 80%.
- Ambient temperature is greater than 0°C and less than 60°C.
- No potential electromagnetic interference.

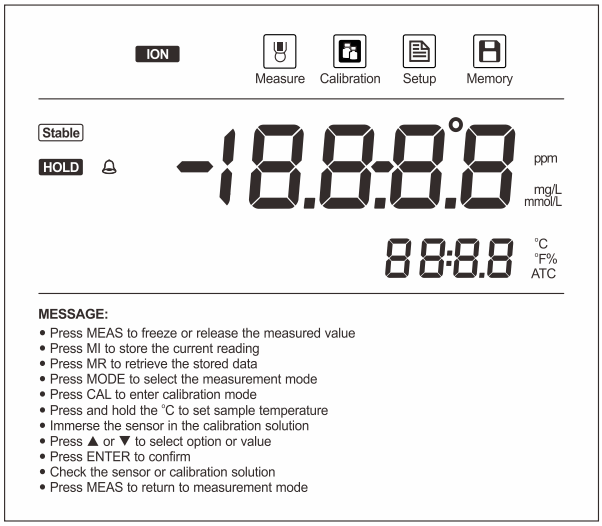
The following list describes the standard accessories of the meter. After the unpacking, please check all accessories are complete. If any are damaged or missing, please contact nearest distributor.

ACCESSORIES:

- Temperature Probe
- USB Cable
- DC5V Power Adapter

Display

I931 benchtop ion meter is equipped with a clear and bright LCD display that used to show measured values, mode indicators and help message. The following table describes the meaning of each indicator.



INDEX:

Measure	Measurement mode indicator: Indicates meter is in the measurement mode	Stable	Stable indicator: Indicates the measured value has stabilized
Calibration	Calibration mode indicator: Indicates meter is in the calibration mode	Hold	Hold indicator: Indicates the displayed value has been frozen
Setup	Setup mode indicator: Indicates meter is in SETUP mode		Calibration Due Reminder: Prompts user to calibrate the meter regularly
Memory	Memory mode indicator: Indicates data is stored into memory	ATC	Automatic Temperature Compensation: Indicates meter is in the temperature compensation mode

Keypad

The meter has a succinct membrane keypad, names and symbols describe the each function key controls.

MEAS | 🔒

- Power the meter ON/OFF.
- Freezes the measured value on the display, press the key again to resume measuring.
- In the calibration or temperature setting mode, exits current mode and returns to measurement.

MODE | °C

- Toggles between ion concentration and mV measurement modes.
- Press and hold the key to enter temperature setting mode.

CAL | 🗎

- Press the key to enter the calibration mode.
- Press and hold the key to enter the setup menu.

MI | ▲

- Press the key to store current measured value.
- Press ▲ key in setup mode to scroll up through menu.
- Press ▲ key in temperature setting mode to increase the setting values.

MR | ▼

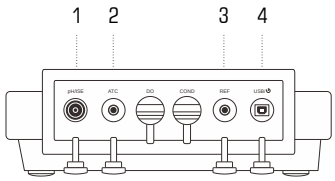
- Press the key to view calibration report or stored data.
- Press ▼ key in setup mode to scroll down through menu.
- Press ▼ key in temperature setting mode to decrease the setting values.

ENTER

- Confirms the calibration, setting value or displayed option.
- Press and hold the key to turn On/Off the backlight.

Connectors

I931 benchtop ion meter provides 4 connectors for connecting the various types of sensors. Listed in the below table are the details of these connectors.



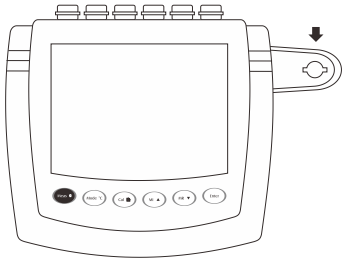
INDEX:

NO.	CONNECTOR	FUNCTION
1	ISE	For connecting the Ion Selective Electrode
2	ATC	For connecting the temperature probe
3	REF	For connecting the reference electrode
4	USB/⏻	For connecting the USB cable and DC5V power adapter

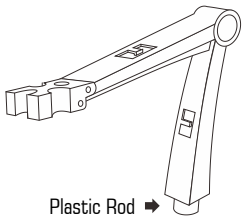
Connecting the Electrode Holder

The meter comes with an easy-to-use holder for mounting a variety of Ion Selective Electrodes and temperature probe. If necessary, please follow the steps below to install the electrode holder.

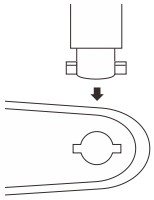
1. The base of the electrode holder with an irregular round hole.



2. The electrode arm has a plastic rod.



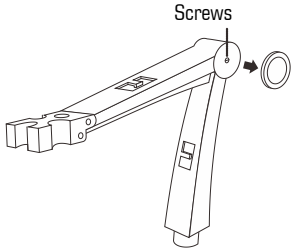
3. Insert the plastic rod into the irregular round hole and swivel the electrode arm 90°. Electrode holder is now ready to swing into desired position.



ADJUSTMENT OF ELECTRODE ARM:

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

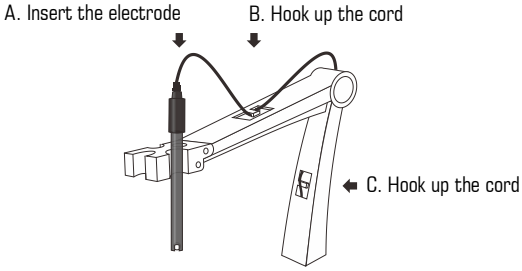
1. Remove the plastic cover from the electrode arm.



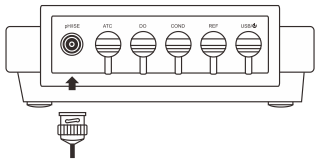
2. Use the screwdriver to tighten the screw moderately.
3. Insert the plastic cover to previous position. Installation is completed.

Connecting the Electrode

1. Take out the Ion Selective Electrode from the packaging. Follow the steps below to place the electrode into left or right sides of the electrode arm.



2. Insert the BNC connector into the corresponding connector socket. Rotate and push the connector clockwise until it locks. After connection is completed, DO NOT pull on the sensor cord. Always make sure that the connector is clean and dry.



Prior to Use

- Remove the protective cap from the bottom of the Ion Selective Electrode.
- Soak the electrode in the diluted standard solution (e.g., 100ppm) for at least 10 minutes.

Power On/Off

- Press MEAS key to turn on the meter, the display shows measured values, mode indicators and help messages.
- Press and hold the MEAS key for 3 seconds, the meter will turn off.
- If you do not press any key within the specified time period, the meter will turn off automatically.

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To disable the auto-off function, please read the SETUP MENU section.

Setup Menu

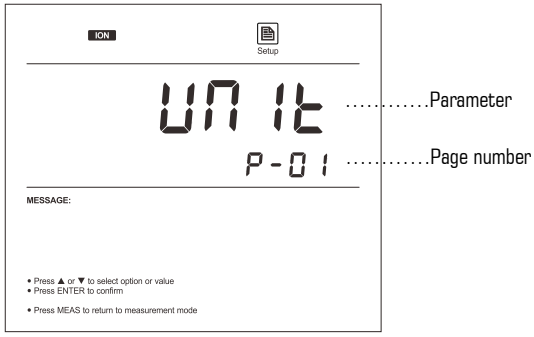
I931 benchtop ion meter contains an integrated setup menu that allows you to customize each displayed option to meet measurement requirements.

PARAMETER	DESCRIPTION	OPTIONS	DESCRIPTION	DEFAULT
UNIt	Measurement Unit: Sets the default ion concentration and temperature units.	ppm	Parts per million	●
		mg/L	Milligrams per liter	
		mol/L	Moles per liter	
		°C	Degrees Celsius	●
		°F	Degrees Fahrenheit	
CAL	Calibration Points: Select the number of calibration points.	2	2 points	●
		3	3 points	
		4	4 points	
		5	5 points	
ION	Ion Valence: Select the ion valence of sensor.	1	Monovalent	●
		2	Divalent	
StA	Stable Criteria: Sets the stability criteria for measurement. When the "LO" option is enabled, measuring value will stabilize quickly, but reading is less accurate. When the "HI" option is enabled, measuring value will stabilize slowly, but guarantees high accuracy.	LO	Low	●
		HI	High	
HOLd	Auto-Hold: When the auto-hold function is enabled, the meter will automatically sense a stable end-point reading and freeze it.	YES	Enable	
		NO	Disable	●
OFF	Auto-Power Off: When the auto-off power is enabled, if you do not press any key within a specified time period, the meter will automatically turn off.	10	10 minutes	
		20	20 minutes	
		30	30 minutes	
		NO	Disable	●
CALL	Calibration Due: When calibration due reminder is enabled, if you do not recalibrate meter within a specified time period, the meter will automatically show 🔔 indicator.	1...31	1 to 31 days	
		OFF	Disable	●

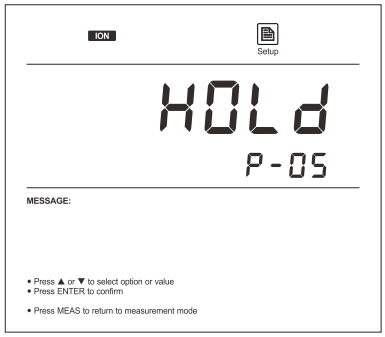
dAtE	Date and Time: Sets the date and time of the meter.	---	---	
CLr	Clear stored data: Clear all stored data.	YES	Enable	
		nO	Disable	●
rSt	Reset: Reset function allows user to restore the meter back to factory default parameters. When this function is enabled, all calibration values and selected parameters will be lost or reset.	YES	Enable	
		nO	Disable	●

SETTING THE DEFAULT PARAMETERS:

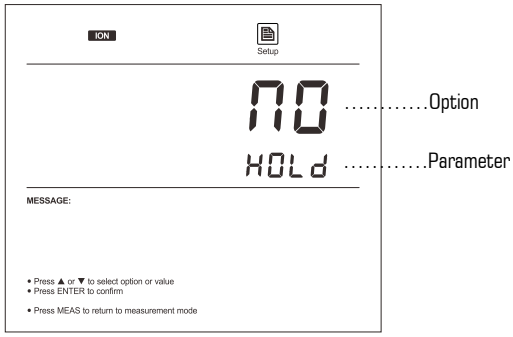
1. Press and hold the 🗎 key for 3 seconds, the meter enters setup menu, the display shows selectable parameter and page number.



2. Press ▲ or ▼ key to scroll through menu, select the parameter you want to set (Refer to Setup Menu section).



3. Press ENTER key to confirm, the display shows an option in the submenu.



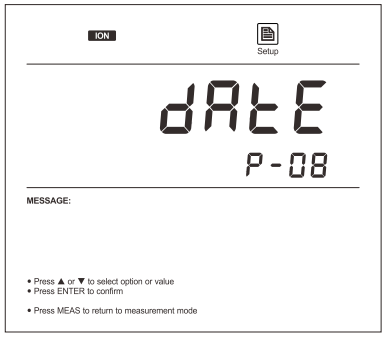
4. Press ▲ or ▼ key to select the desired option.
5. Press ENTER key to confirm, the meter returns to measurement mode. Setting is completed.

EXIT THE SETUP MENU:
During the setup mode, if you want to exit setup menu, press MEAS key, the meter will return to measurement mode immediately.

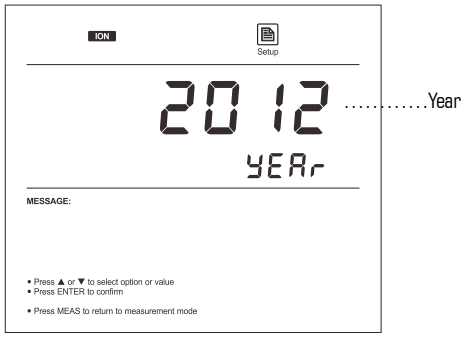
Setting the Date and Time

I931 benchtop ion meter has a real time clock that is used to time-stamp stored measured value and calibration data. Follow the steps below to set the date and time during the first use.

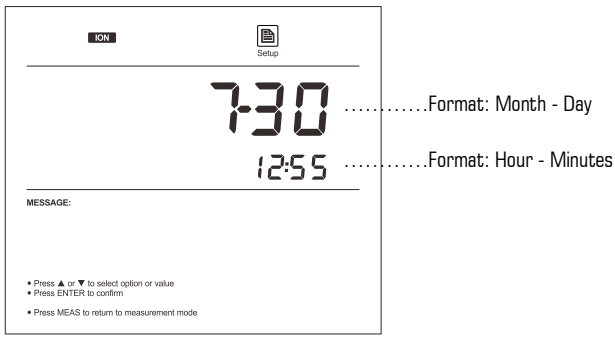
1. Press and hold the 🗎 key for 3 seconds to enter the setup menu.
2. Press ▲ or ▼ key until the display shows "Date" option.



3. Press ENTER key to confirm, the meter shows current year.



4. Press ▲ or ▼ key to set the year.
5. Press ENTER key to confirm, the meter shows current date and time ((Format: mm-dd, hh-mm)



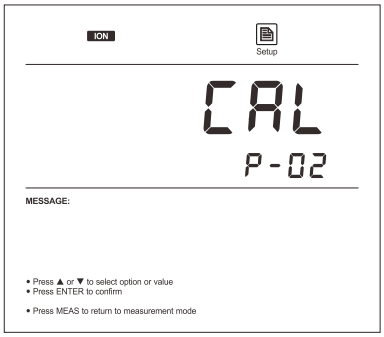
6. Press ▲ or ▼ key to set the date and time.
7. Press ENTER key to confirm, the meter returns to measurement mode. Setting is completed.

Selecting the Calibration Points

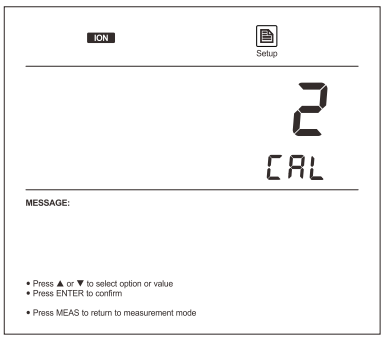
I931 benchtop ion meter supports ion concentration calibration up to 5 points with minimum of 2 points, available calibration points include the following options.

MEASUREMENT UNITS	CALIBRATION POINTS
ppm	0.001, 0.01, 0.1, 1, 10, 100, 1000, 10000
mg/L	0.001, 0.01, 0.1, 1, 10, 100, 1000, 10000
mol/L	0.001, 0.01, 0.1, 1, 10
mmol/L	0.001, 0.01, 0.1

If you need to modify the number of calibration points, please follow the steps below.
1. Press and hold the 🗎 key for 3 seconds to enter the setup menu.
2. Press ▲ key, the display shows "CAL/P-02" (Calibration Point) option.



3. Press ENTER key to confirm, the meter enters the setting mode.
4. Press ▲ or ▼ key to select the number of calibration points.

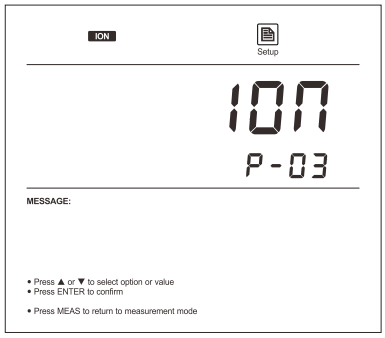


5. Press ENTER key to confirm, the meter returns to measurement mode. Setting is completed.

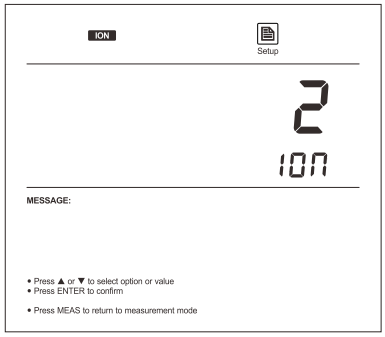
Selecting the Ion Valence

The meter is capable of connecting a variety of ion selective electrodes. For the divalent ions, you need to set the ion valence before calibration or measurement.

1. Press and hold the 🗎 key for 3 seconds to enter the setup menu.
2. Press ▲ key, the display shows "ION/P-03" (Ion Valence) option



3. Press ENTER key to confirm, the meter enters the setting mode.
4. Press ▲ or ▼ key to select the ion valence.

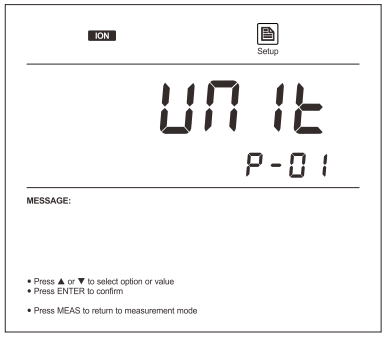


5. Press ENTER key to confirm, the meter returns to measurement mode. Setting is completed.

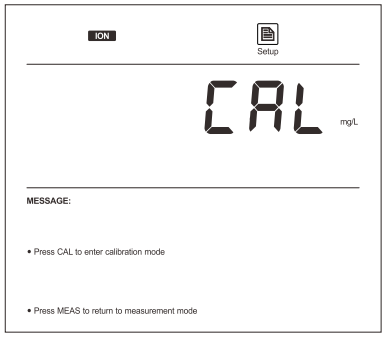
Selecting the Concentration Unit

I931 benchtop ion meter is capable of using the mg/L, ppm or mol/L as measurement unit of concentration. The factory default is ppm. If you need to convert measurment unit, the meter must be recalibrated.

1. Press and hold the key for 3 seconds to enter the setup menu.
2. Press ▲ key, the display shows "UNIT" option.



3. Press ENTER key to confirm, the meter enters the setting mode.
4. Press ▲ or ▼ key to select the desired concentration unit (ppm, mg/L, mol/L).
5. Press ENTER key to confirm, the "CAL" indicator will flashing uninterruptedly indicating that the meter is waiting for calibrating.



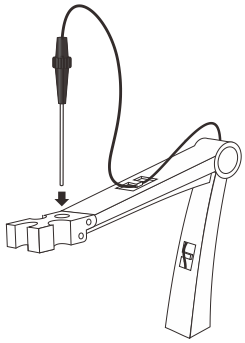
6. Press CAL key to enter the calibration mode or MEAS key to cancel option.

Temperature Compensation

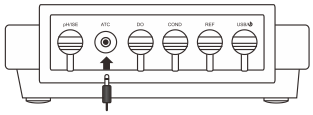
In order to get accurate measuring results, you need to enable the manual or automatic temperature compensation before measurement or calibration.

AUTOMATIC TEMPERATURE COMPENSATION:

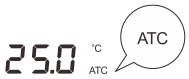
- Place the temperature probe into the circular hole of electrode arm.



- Insert the connector of temperature probe into corresponding connector socket (Marked "ATC").



- The "ATC" indicator will show on the display, the meter is now switched to automatic temperature compensation mode.



MANUAL TEMPERATURE COMPENSATION:

1. DO NOT connect the temperature probe to meter.
2. Press and hold the °C key for 3 seconds to enter temperature setting mode.
3. Press ▲ or ▼ key to set the temperature value of sample.
4. Press ENTER key to confirm, the meter returns to measurement mode. Setting is completed.

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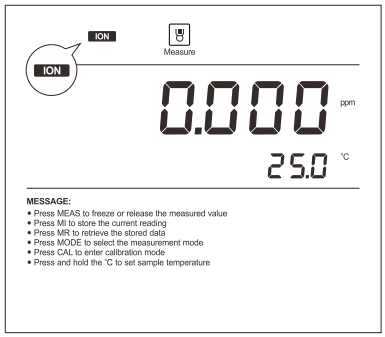
In the temperature setting mode, press ▲ or ▼ key once, the setting value will increase or decrease by 0.1. Press and hold the ▲ or ▼ key, the setting value will increase or decrease by 1.

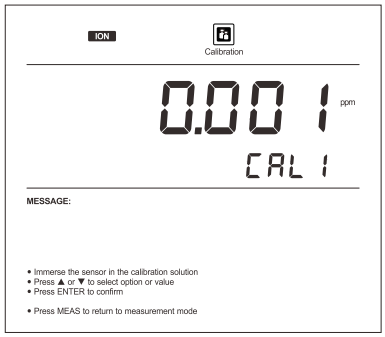
Ion Concentration Calibration

To obtain accurate measurement results, we recommend that you perform ion calibration and measurement at same temperature. If you are not calibrate the meter or calibration is not successfully, the display will always show "0.000".

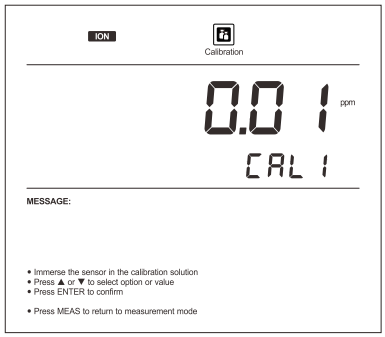
1. Press MODE key until the meter shows ION indicator.



2. Press CAL key, the meter shows 0.001ppm (or mg/L, mol/L, mmol/L).

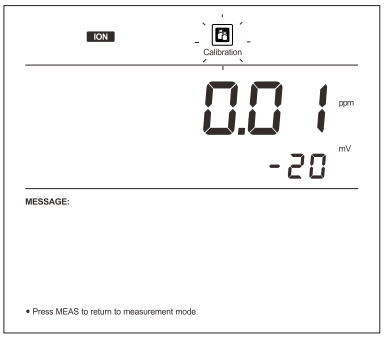


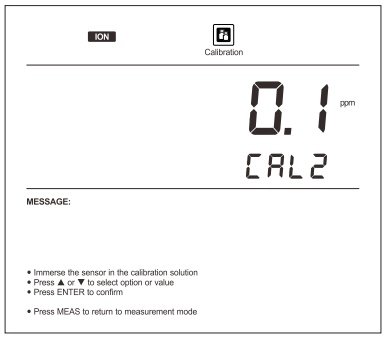
3. If necessary, press ▲ or ▼ key to select the desired calibration point (e.g., 0.01ppm).



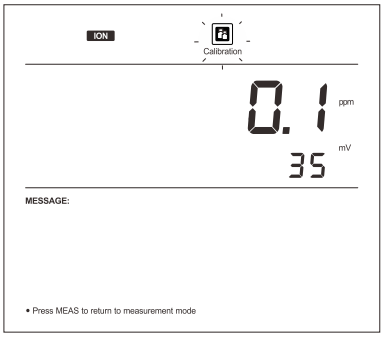
4. Rinse the Ion Selective Electrode with distilled water, then rinse with a small amount of ion standard solution.
5. Dip the electrode into corresponding calibration solution. Stir the sensor gently to create a homogenous solution.

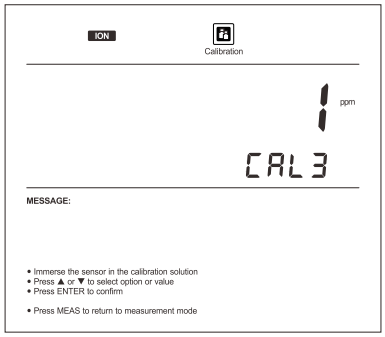
6. Press ENTER key to confirm, “Calibration” indicator begins flashing. Wait for the measured value to stabilize, the display shows “0.1/CAL2”. The meter prompts you to continue with second point calibration.



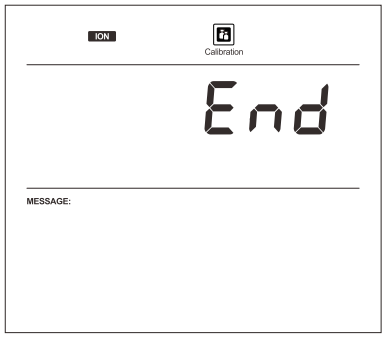


7. Rinse the Ion Selective Electrode with distilled water. Dip the electrode into corresponding calibration solution. Stir the sensor gently.
8. Press ENTER key, “Calibration” indicator begins flashing. Wait for the measured value to stabilize, the display shows “1/CAL3”. The meter prompts you to continue with third point calibration.





9. Repeat steps 7 to 8 above until the display shows “END”, the meter returns to measurement mode automatically. Calibration is completed.



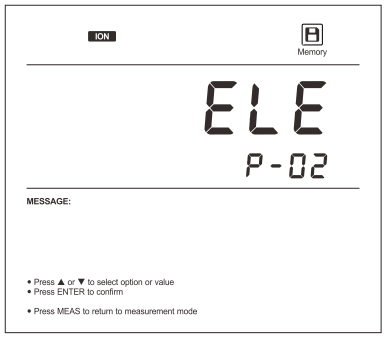
EXIT THE CALIBRATION:

During the calibration process, if you want to exit calibration, press MEAS key, the meter will return to measurement mode immediately.

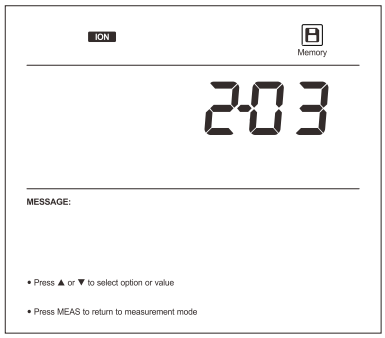
Ion Calibration Report

This program lets you check the slope of the Ion Selective Electrode.

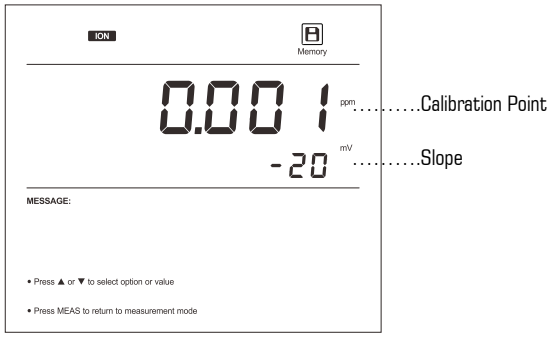
1. Press MR key in the ion measurement mode, the meter shows “LOC/P-01”.
2. Press ▲ or ▼ key until the display shows “ELE/P-02” (Electrode Diagnosis).



3. Press ENTER key to confirm, the meter shows the last calibration date (Format: mm-dd).



4. Press ▼ key, the meter shows calibration point and its slope.

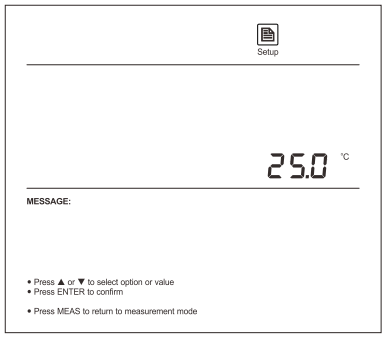


5. After the browsing, press MEAS key to exit the current mode.

Temperature Calibration

During the measurement, when automatic temperature compensation is enabled, if the temperature reading displayed differs from that of an accurate thermometer, you need to calibrate the meter.

1. Press and hold the °C key for 3 seconds to enter temperature calibration mode, the display shows current temperature reading.



2. Press ▲ or ▼ key to set the temperature value.
3. Press ENTER key to confirm. Calibration is completed.

Ion Concentration Measurement

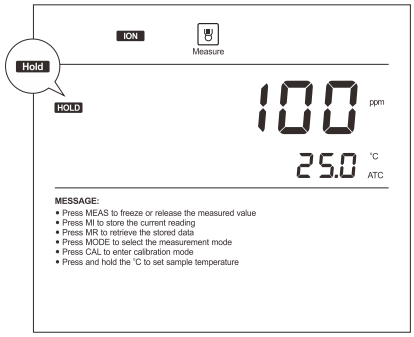
1. Press MODE key until the meter shows ION indicator.
2. Rinse the Ion Selective Electrode thoroughly with distilled water. Dip the electrode into the sample solution.
3. If your sample is belong to low concentration liquids or some interfering ions are present in the solution, we suggest you that adding the Ionic Strength Adjuster into the sample solution.
4. Stir the sensor gently. Wait for the reading to stabilize, record the measured value on the display.

mV Measurement

Press MODE key until display shows measurement unit "mV". Rinse the electrode thoroughly with distilled water. Dip the electrode into the sample solution. Wait for the measured value to stabilize, record the reading on the display.

Hold Function

I931 benchtop ion meter contains two data hold modes. When the Auto-Hold function is enabled, the meter will automatically sense a stable endpoint reading and freeze it, "HOLD" indicator appears on the display. If the Auto-Hold function is disabled, press 🔒 key, the meter will immediately freeze currently displayed value. Press the key again to resume measuring.

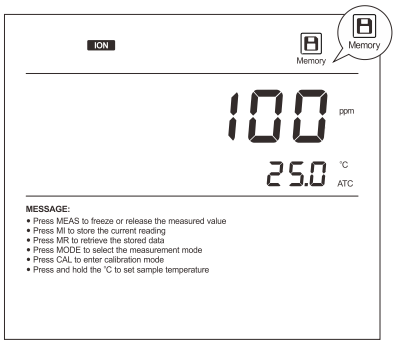


Storing and Recalling Data from Memory

The meter allows up to 500 data sets to be stored and recalled.

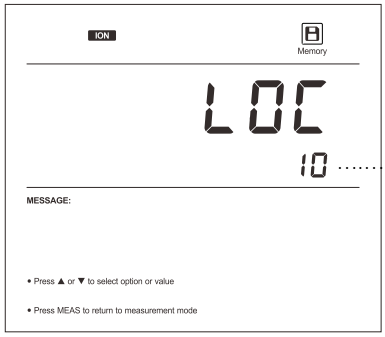
MEMORY INPUT:

During the measurement process, press MI key to input measured value into the memory, “Memory” indicator appears on the display.



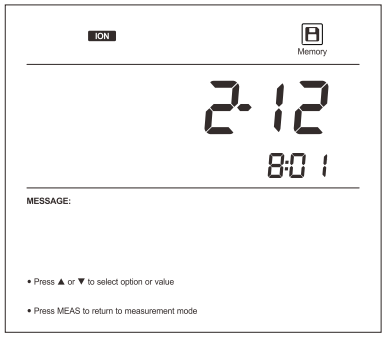
MEMORY RECALL:

1. Press MR key in the measurement mode, the meter shows “LOC” (Data Log).
2. Press ENTER key to confirm, the meter shows page number of the stored data.

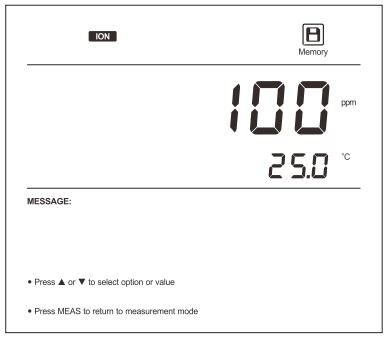


……Page number

3. Press ▼ key, the meter shows date and time of the stored data (Format: mm-dd).



4. Press ▼ key again, the display shows the stored data.



5. After the browsing, press MEAS key to exit the current mode.

Ion Selective Electrode Care and Maintenance

- Ensure that the electrode is thoroughly washed with distilled water after each use.
- DO NOT scratch the sensitive membrane on electrode during the measurement or calibration.
- If you do not use the electrode for long periods, please store the electrode in a dry, cool and well-ventilated area.

Troubleshooting

LCD DISPLAY	CAUSE	CORRECTIVE ACTION
- - -	Electrode dried out	Soak the Ion Selective Electrode in the diluted standard solution at least 15 minutes
	Measured value is out of range	Check the electrode whether clogged, dirty or broken
Err	Incorrect calibration solutions	Using the fresh calibration solutions for calibration
	Electrode is out of service life	Replace the Ion Selective Electrode

Specifications

Ion	Model	I931
	Range	0.001～19999ppm, mg/L, mol/L (Depending on range of ISE)
	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, 10000ppm, mol/L, mg/L
mV	Range	-1999.9～1999.9mV
	Accuracy	±0.2mV
	Resolution	0.1mV
Temperature	Range	0～105°C, 32～221°F
	Accuracy	±0.5°C, ±0.9°F
	Resolution	0.1°C
	Calibration Points	1 point, Measured value ±10°C
Others	Temperature Compensation	0～100°C, 32～212°F, Manual or Automatic
	Hold Function	Manual or Automatic
	Stability Conditions	Low or High
	Calibration Due	0 to 31 days
	Power Off	Manual or Automatic (10, 20, 30 minutes)
	Memory	Stores up to 500 data sets
	Output	USB Communication Interface
	Power Requirements	DC5V, using AC adapters, 220VAC/50Hz
	Dimensions	210(L)×188(W)×60(H)mm
	Weight	1.5kg