fisherbrand

Operations Manual

Electrochemistry Meters

accumet AB315 pH/mV Meter User Manual

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Chapter 1 Introduction

Thank you for purchasing the Fisherbrand™ accumet™ AB315 pH/mV bench meter. The accumet AB300 meters are designed to provide the important functions needed for routine measurements with simplified, convenient, easy-to-use functionality.

The accumet AB315 pH meters are capable of measuring pH, mV, relative mV (RmV) and temperature and offer a large, backlit display for clear viewing with small footprint to conserve laboratory bench space.

Ensure important data is preserved with a 500-point data log with date/time stamp that can also be exported to a printer or computer using the meter communication port.

All accumet AB315 pH meters include a meter-attached electrode holder and universal 100-240V power adapter with wall plugs for US/Japan, Euro, UK/Singapore, Australia/New Zealand and China. Additional meter accessories can be viewed at www.fishersci.com.

1.1 Intended Use

1.1.1 Intended Use

This device is a bench laboratory meter intended for use in a typical, indoor, controlled, laboratory environment. This device should only be used for analytical testing in accordance with these instructions.

1.1.2 Non-Intended Use

This device is not a Medical Device. It is not intended to be used to diagnose, treat, cure, or prevent disease.

1.1.3 Safety

CAUTION: This symbol, in the context of a CAUTION, indicates a potentially hazardous situation which if not avoided could result in minor to moderate injury or damage to the equipment.

Note: This symbol, in the context of a Note, indicates to follow the manufacturer specified instructions, notes and requirements set out in the instruction manuals.

CAUTION: Before using or maintaining this product, please be sure to read the manual carefully. Failure to follow these instructions may cause the product to malfunction.

CAUTION: Use this product only in the way described in the product literature and in this manual. Before using it, verify that this product is suitable for its intended use. If the product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

CAUTION: Do not modify system components. Use OEM exact replacement equipment or parts. Before use, confirm that the product has not been altered in any way.

Note: Unauthorized repair of your meter will invalidate the warranty. Contact accumet Technical Support at 1-888-358-4706 or accumet@fishersci.com for additional information.

1.1.4 Power Connection

See the Universal Power Supply Assembly section for complete instructions on assembling and installing the included meter power supply.

Note: Position the meter so the operator can access the power connection and unplug the power adapter in the event of a fault so the hazard of electrocution can be removed.

1.2 Cleaning Instructions (Meter Only)

Wipe the exterior surfaces (except the display panel) using a lint free cloth dampened in clean water.

Wipe the display panel with a clean microfiber cloth dampened with clean water, taking caution to wipe lightly to avoid scratching the meter display.

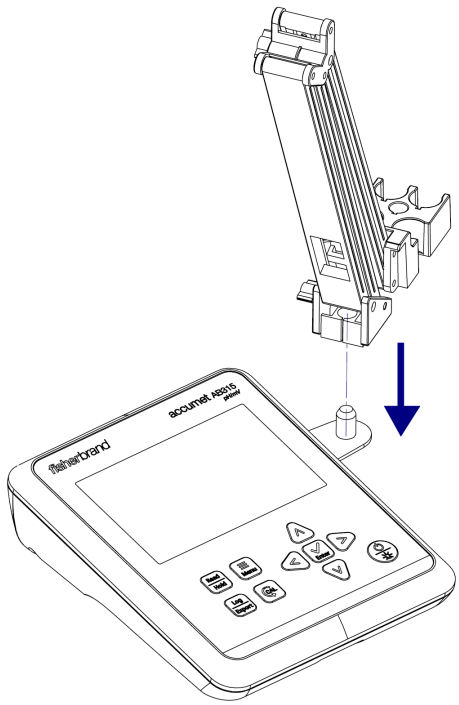
The meter keypad can also be cleaned using a clean microfiber cloth dampened with IPA (isopropyl alcohol) for disinfection purposes.

Chapter 2 Getting Started

2.1 Electrode Holder Installation

The meter-attached electrode holder (Catalog Number 13-637-671) can be installed on either side of the meter.

1. Unpack the base plate and stand with electrode holder from the meter box.
2. Turn the meter over, with the meter display facing down, on a clean dry surface.
3. Identify the side of the meter that the holder will be installed on and remove the screw between the circles on that side of the meter.
4. Align the base plate of the holder with the circles on the meter.
5. Replace the screw from step 3 to attach the base plate to the meter.
6. Turn the meter over, with meter display facing up.
7. Insert the stand with electrode holder into the metal post on the base plate.

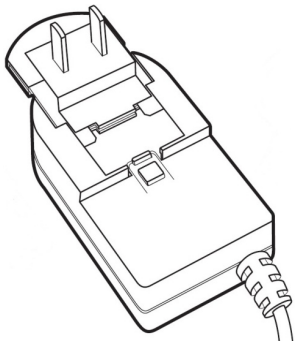


8. Place the electrodes into the electrode holder.

2.2 Universal Power Supply Assembly

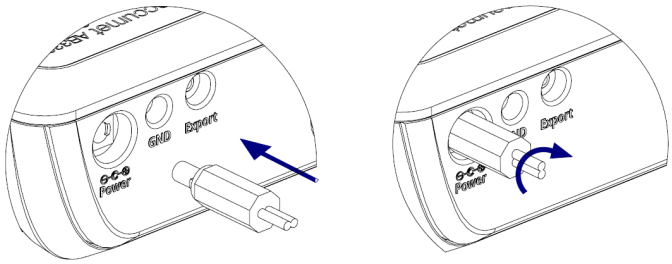
A universal power adapter (Catalog Number 13-637-010) with US/Japan, Euro, UK/Singapore, Australia/New Zealand and China wall plug plates is included with the meter. This universal power adapter is specifically for use with this meter. Use of other power adapters can damage the meter and will void the warranty.

1. Unpack the power supply provided with the meter.
2. Select the appropriate wall plug plate for the power outlet that will be used.
3. Slide the appropriate wall plug plate into the groove on the back of the power adapter.



4. Connect the assembled power adapter to a power outlet and meter input.
   a. To connect the power adapter with the meter, insert the power adapter plug and twist to lock the connection.

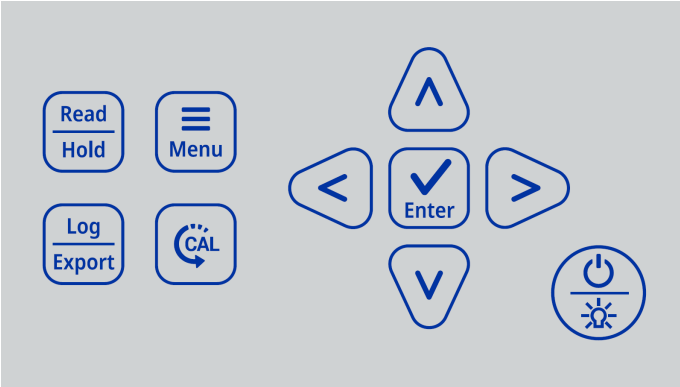
Note: The power adapter plug has two prongs that allow the power adapter to be locked onto the meter. These two prongs must be properly aligned when connecting it to ensure it is fully connected and locked onto the meter.



5. You are now ready to turn on the meter.

CAUTION: Use of a surge protector or uninterrupted power supply (UPS) is recommended, as an unintended power surge of electricity to the meter may damage the meter and void the warranty.

2.3 Keypad Functions



Key	Function
Read Hold	In Continuous measure mode, press to hold a reading on the display and then press again to release a reading on the display. In Auto-Read measure mode, press to start a new reading. Press to escape the Setup Menu and Calibration mode without saving changes.
Log Export	In Continuous measure mode, press to save the reading to the data log and export to an external device if one is connected.
Menu	Press to enter the Setup Menu. Press to exit the Setup Menu.
CAL	Press to enter the Calibration mode. Press while in the Calibration mode to save and end the calibration when performing a one to four point pH calibration.
< >	Press to scroll through menu items in the Setup Menu; the list is cyclical. In the Measure mode, press and hold (long press) for three seconds as a shortcut key to change the measure type from pH to RmV.
∧ ∨	Press to change a setting in the Setup Menu. Press to scroll through a list or change a numeric value. In the Calibration mode, press to manually change the calibration value. In the Measure mode, press and hold (long press) for three seconds as a shortcut key to view current date and time setting.
Enter	Press to save a setting in the Setup Menu. Press to accept a calibration point in the Calibration mode.
⏻	Press to power on the meter. When the meter is on, press to turn the backlight off or on. When the meter is on, press and hold for three seconds to power off the meter.

2.3.1 Setup Menu Scrolling

To scroll through the Setup Menu list:

- Press the “Menu” key to enter the Setup Menu.
- The first Setup Menu item will always be show.
- Press the ▷ key to scroll to the second item or press the ◁ key to scroll to the last item.
- The item list is cyclical and will scroll from the last item to the first item as the ▷ key is pressed.

2.3.2 Setup Menu Value Changes

For all numeric value changes, press the △ or ▽ key to edit a value:

- Press the △ key once to increase the value by one least significant digit/unit.
- Press the ▽ key once to decrease the value by one least significant digit/unit.
- Press and hold the △ key to quickly increase the numeric value.
- Press and hold the ▽ key to quickly decrease the numeric value.

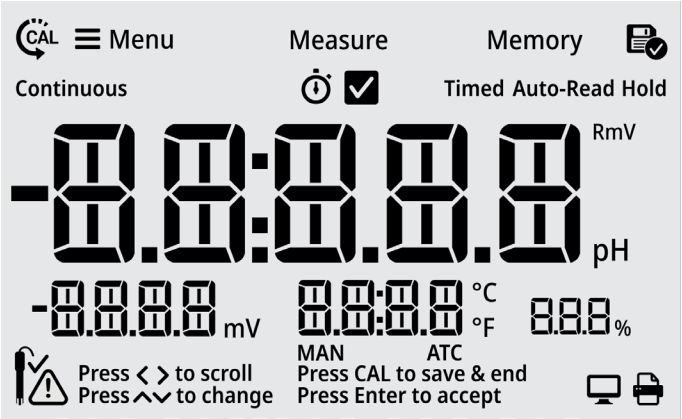
2.3.3 Mode Shortcut Key

In the main measure mode, press and hold (long press) the ◁ or ▷ key for approximately three seconds to change the main measure mode to pH or relative mV (RmV).

2.3.4 Date and Time View Shortcut Key

In the main measure mode, press and hold (long press) the △ or ▽ key for approximately three seconds to view the current date and time settings.

2.4 Display Overview

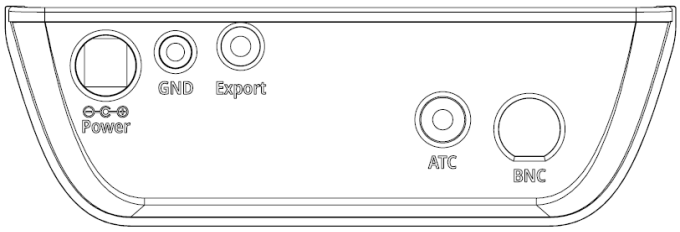


Icon	Description
	Main Measurement Field: Displays pH or RmV readings in Measure mode.
	2nd Measurement Field: Displays raw mV readings in Measure mode.
	3rd Measurement Field: Displays temperature value as °C or °F in Measure mode.
	4th Measurement Field: Displays calibration slope value in Measure mode.
Press < > to scroll	Press ◁ ▷to scroll Icon: On-screen text prompt shown when keys can be used to scroll through a list; for example, scroll through list of Setup Menu options.
Press ∧∨ to change	Press △ ▽ to change Icon: On-screen text prompt shown when keys can be used to change a value; for example, to change the temperature value in the Setup Menu.
Press CAL to save & end	Press CAL to save & end Icon: On-screen text prompt shown when in calibration mode and calibration can be saved and ended, when one to four points are complete.
Press Enter to accept	Press Enter to accept Icon: On-screen text prompt shown when changes must be saved by pressing the "Enter" key on the keypad.

Icon	Description
CAL	Calibration Icon: Indicates meter is in the calibration mode; also shown with the Setup Menu Icon and Memory Icon when viewing the calibration log.
Menu	Setup Menu Icon: Indicates meter is in the Setup Menu mode.
Measure	Measure Icon: Indicates meter is in the Measure mode.
Memory	Memory Icon: Indicates meter is in the Setup Menu and viewing the data log or calibration log.
	Log Saved Icon: Indicates meter is actively saving data to the data log or calibration log.
Continuous	Continuous Icon: Indicates the current meter read type is Continuous and measurement values are continuously updated on the display.
	Stopwatch Icon: Indicates meter measurement stability criteria for current measurement is stabilizing/not ready and meter is actively reading.
	Checkmark Icon: Indicates meter measurement stability criterial for current measurement is stable/ready and meter has determined the measurement is complete.
Timed	Timed Icon: Indicates the current meter read type is Timed, measurement values are continuously updated on the display and logged/exported according to the selected time intervals.
Auto-Read	Auto-Read Icon: Indicates the current meter read type is Auto-Read, measurement value is updated on the display until stable and then measurement is logged/exported and locked on display until the "Read" key is pressed again.
Hold	Hold Icon: Indicates meter is in Continuous read type, the "Hold" key has been pressed and the measurement is locked on the display until the "Hold" key is pressed again.
MAN	MAN Icon: Indicates no temperature probe is connected to the meter, user must use the Setup Menu to enter the sample temperature.
ATC	ATC Icon: Indicates a temperature probe is connected to the meter and actively sending temperature readings.

Icon	Description
	Electrode Good Icon: Indicates the pH electrode condition is good, based on the last saved calibration data and resulting slope value.
	Electrode Warning Icon: Indicates the pH electrode condition is fair or bad, based on the last saved calibration data and resulting slope value.
	Computer Export Icon: Indicates meter is actively exporting measurement data or calibration data to a computer.
	Printer Export Icon: Indicates meter is actively exporting measurement data or calibration data to a printer.

2.5 Meter Connections



Input	Function
Power	Universal power supply
GND	Ground
Export	Connection to printer or computer
ATC	Connection to ATC temperature probe
BNC	Connection to pH or ORP (redox) electrode

2.6 Electrode Information

The accumet AB315 pH/mV meter is compatible with pH electrodes and ORP (redox) electrodes with a BNC connector. The accumet AB315 pH/mV meter can be purchased in a meter only configuration (purchase electrode separately) or kitted with different electrodes.

Refer to the electrode instructions for specific care and maintenance procedures. The following are general recommendations for electrode preparation.

1. Remove the protective cap/bottle from the electrode and save for storage.
2. Rinse any salt deposits off the electrode using distilled or deionized water.
3. If the electrode is refillable, uncover the fill hole and add filling solution to the electrode up to the fill hole. The fill hole should remain open when the electrode is in use.
4. Soak the electrode in storage solution when first preparing the electrode and when the electrode is not in use.
5. Connect the electrode to the meter.

2.7 Meter Startup Sequence

When the meter is powered on, it displays a set of startup screens, starting with all segments lit screen, followed by the meter info screen and then the meter self-test screen.

The meter info screen shows the meter model number and current software revision.

After the meter info screen, the meter performs a series of internal self-tests to verify that the meter is operating correctly and then the self-test results are shown.

Finally, the meter proceeds to the main measure mode.

Chapter 3
Setup Menu

3.1 Setup Menu Overview

Use the meter Setup Menu to customize meter settings.

1. In the Measure Mode, press the “Menu” key to access the meter Setup Menu.
2. The first Setup Menu item (View Logs, Data Log) will be shown. To scroll through the Setup Menu list, press the ◁ or ▷ key.
   a. Press the ▷ key to scroll to the second item.
   b. Press the ◁ key to scroll to the last item.
   c. The list is cyclical, so continue to press the ▷ key to scroll from the last item to the first item.
3. To change a setting within a Setup Menu item, press the △ or ▽ key.
   a. For numeric value changes:
      i. Press the △ key once to increase the value by one least significant digit/unit.
      ii. Press the ▽ key once to decrease the value by one least significant digit/unit.
      iii. Press and hold the △ key to quickly increase the value.
      iv. Press and hold the ▽ key to quickly decrease the value.
4. Once a setting is changed, press the “Enter” key to save the change.
5. When viewing data logs or calibration logs, press the “Menu” key to go back to the main Setup Menu list.
6. Press the “Read” key at any time to exit the Setup Menu and return to the main measure mode.

Setup Menu Item

Setting Options for Setup Menu Item

#	Setup Menu Item	Description
1	View Logs	View up to 500 data log points and active pH, RmV and temperature calibrations
2	Log Export Type	Set the export type as computer or printer
3	Export All Logs	Send all saved data logs and calibration logs to the selected export device
4	Temperature Calibration or Manual Temperature Input	When an ATC probe is connected, use the Temp. Calibration menu to perform a temperature offset calibration
		When no ATC probe is connected, use the Manual Temp. Input menu to enter the sample temperature value
5	Measure Mode	Set the main measure mode to pH or relative mV (RmV)
6	pH Resolution	Set the displayed pH resolution as 0.1 or 0.01 pH units
7	Calibration Buffer Set	Set the pH buffers to be used for automatic buffer recognition during pH calibrations
8	Read Type	Set the read type to define how measurements are performed and when measurements are saved and exported
9	Timed Interval	When Timed is set as the Read Type, set the time interval to be used to automatically save and export measurements
10	Calibration Due Alarm	Set the calibration due alarm interval; an alarm is triggered if a calibration is not performed within the specified time interval
11	Temp. Units	Set the temp. units as °C or °F
12	Set Date Format	Set the date format as month-day-year (MM.DD.YYYY) or day-month-year (DD.MM.YYYY)
13	Set Date Value	Set the day, month and year
14	Set Time Value	Set the time in AM/PM format
15	Audio Mode	Set the audible beep on or off
16	Sleep Mode	Set the sleep mode on or off
17	Clear Data	Erase all data logs or erase all calibration logs
18	Factory Reset	Erase all data logs, calibration logs and settings and return the meter to its factory default state.

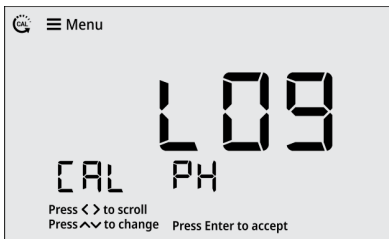
3.2 Setup Menu Items

3.2.1 View Logs

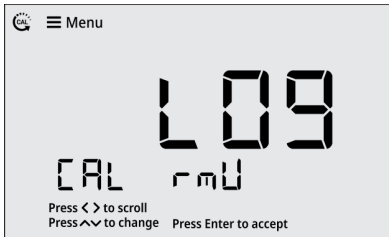
View up to 500 data log points and active pH, RmV and temperature calibrations. When the “Menu” key is pressed, the View Logs setup menu item is always shown first.

1. Press the △ or ▽ key to scroll through the data and calibration log options.

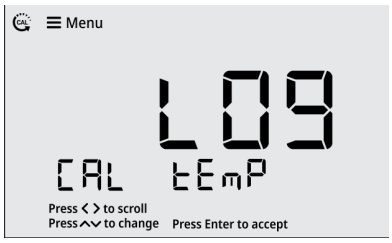
Press ▽ key



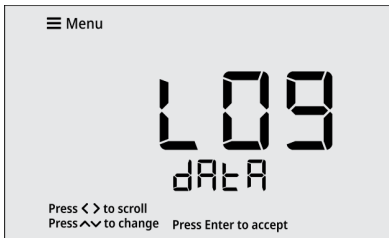
Press ▽ key



Press ▽ key



Press ▽ key

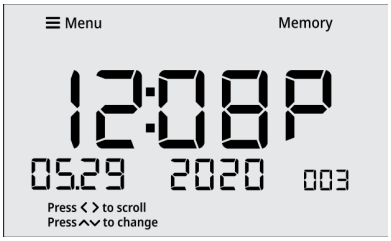


2. Press the “Enter” key to view the display log.

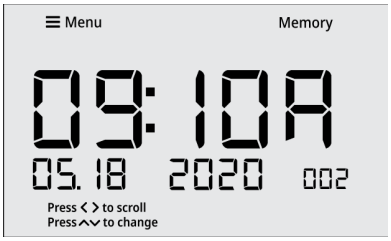
3.2.1a Viewing the Data Log

1. Press the “Enter” key to view the display log.

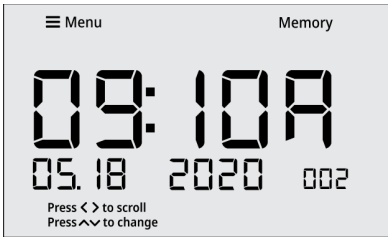
2. For the data log, press the ◁ or ▷ key to scroll through the data log points. Scroll through data log points when viewing the date/time screens or the measurement data screens.



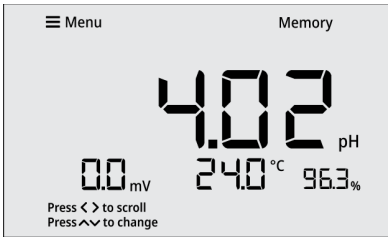
Press ▷ key



3. For the data log, press the △ or ▽ key to change the view from the date/time screen to the measurement data screen.



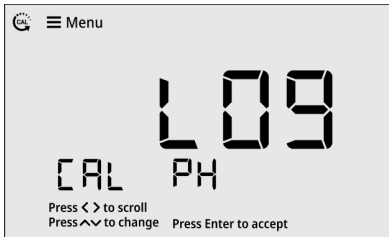
Press △ or ▽ key



4. If desired, press the “Log/Export” key to export the individual data log point being viewed.
5. Press the “Menu” key to return to the main Setup Menu list.

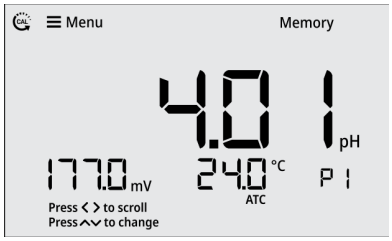
3.2.1b Viewing the Calibration Log

1. Press the “Enter” key to view the display log.

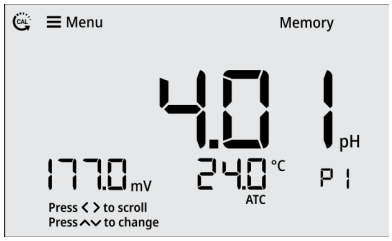


2. For the calibration log, press the △ or ▽ key to change the view from the date/time screen to the calibration data screen.

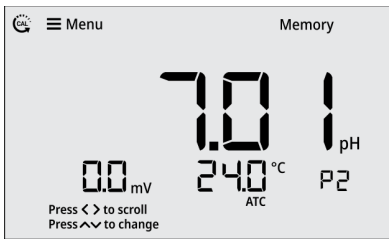
Press △ or ▽ key



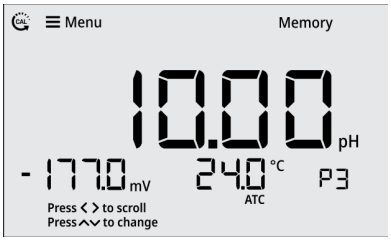
3. For the calibration log, press the ◁ or ▷ key to scroll through the calibration log data.



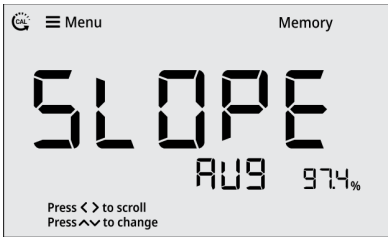
Press ▷ key



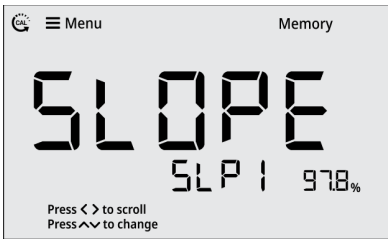
Press ▷ key



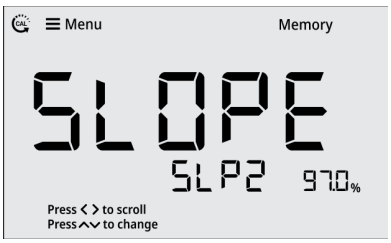
Press ▷ key



Press ▷ key



Press ▷ key

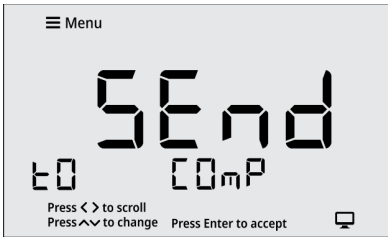


4. If desired, press the “Log/Export” key to export the individual calibration log being viewed.
5. Press the “Menu” key to return to the main Setup Menu list.

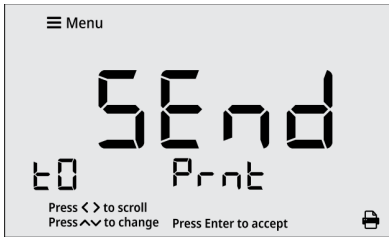
3.2.2 Log Export Type

Set the log export type as computer or printer. If computer is selected, the logs are exported in CSV format. If printer is selected, the logs are exported in list format.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Log Export Type item is shown.



2. Press the △ or ▽ key to change the setting to computer or printer.



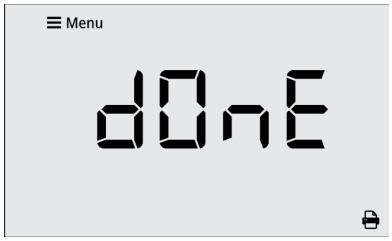
3. Press the “Enter” key to save the change.

3.2.3 Export All Logs

Send all saved data logs and calibration logs to the selected export device.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Export All Logs item is shown.

2. Press the “Enter” key to export all saved logs to the selected export device.

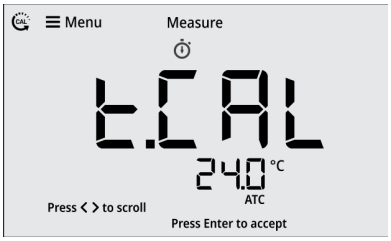


3.2.4 Temperature Calibration or Manual Temperature Input

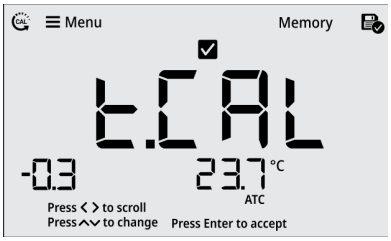
3.2.4a Temperature Calibration

When an ATC probe is connected, use the Temperature Calibration menu to perform a one-point temperature offset calibration, up to ±5.0 °C.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Temp. Calibration item is shown.



2. The temperature value will blink, indicating the reading from the ATC probe is being measured.
3. Once the reading is stable, the value will stop blinking and the checkmark icon will be shown.
4. Press the △ or ▽ key to adjust the temperature value in the 3rd field. The temperature offset value will be shown in the 2nd field.
   a. Press the △ key to increase the value by 0.1°. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease the value by 0.1°. Press and hold the ▽ key to quickly decrease.

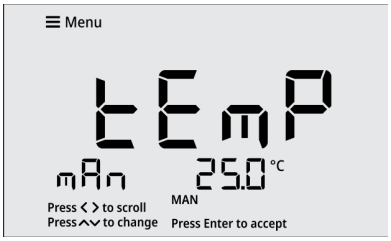


5. Press the “Enter” key to save the change.

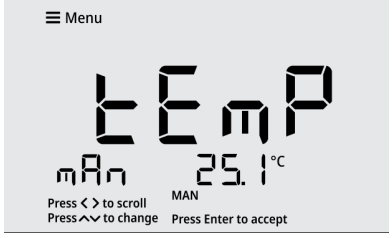
3.2.4b Manual Temperature Input

When no ATC probe is connected, use the Manual Temperature Input menu to enter the sample temperature value, from -5.0 °C to 105.0 °C.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Manual Temperature Input item is shown.



2. Press the △ or ▽ key to adjust the temperature value.
   a. Press the △ key to increase the value by 0.1°. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease the value by 0.1°. Press and hold the ▽ key to quickly decrease.

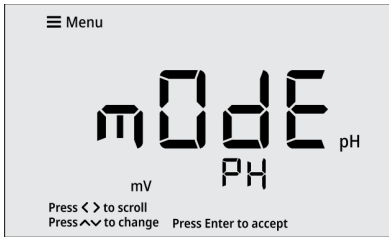


3. Press the "Enter" key to save the change.

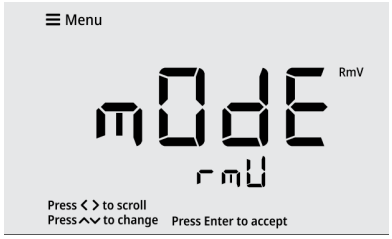
3.2.5 Measure Mode

Set the main measure mode to pH or relative mV (RmV).

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Measure Mode item is shown.



2. Press the △ or ▽ key to set the measure mode.

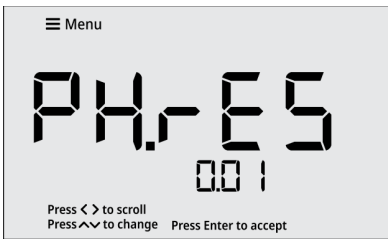


3. Press the "Enter" key to save the change.

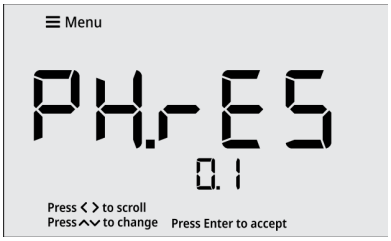
3.2.6 pH Resolution

Set the displayed pH resolution as 0.1 or 0.01 pH units.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the pH Resolution item is shown.



2. Press the △ or ▽ key to set the pH resolution.



3. Press the "Enter" key to save the change.

3.2.7 Calibration Buffer Set

Set the pH buffer set as USA, NIST, DIN or FSCI for automatic buffer recognition during pH calibrations.

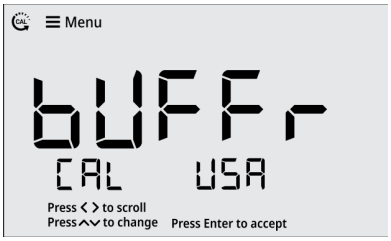
USA: 2.00, 4.01, 7.00, 10.01, 12.00

NIST: 1.68, 4.01, 6.87, 9.18, 12.46

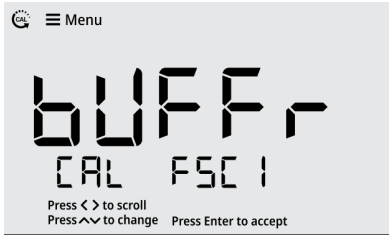
DIN: 1.09, 3.06, 4.65, 6.79, 9.23, 12.75

FSCI: 1.00, 3.00, 6.00, 8.00, 10.00, 13.00

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Calibration Buffer Set item is shown.



2. Press the △ or ▽ key to set the pH buffer set.



3. Press the “Enter” key to save the change.

3.2.8 Read Type

Set the Read Type as Continuous, Auto-Read or Timed to define how measurements are performed and when measurements are saved and exported.

Continuous:

In the Continuous measure mode, measurements are continuously updated on the display and the stopwatch (stabilizing) or checkmark (stable) icon indicates the measurement stability status. Press the “Log/Export” key to save a measurement to the data log and export.

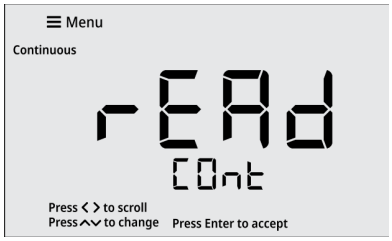
Auto-Read:

In the Auto-Read measure mode, press the “Read” key to start a measurement. When the measurement is stable, the checkmark (stable) icon is shown and the measurement is locked on the display until the “Read” key is pressed again. The stable measurement is automatically saved to the data log and exported.

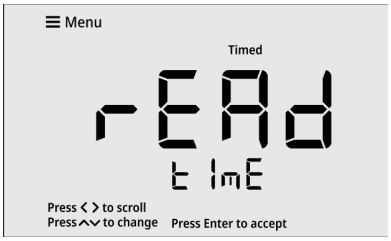
Timed:

In the Timed measure mode, the measurement values are continuously updated on the display. Measurements are automatically saved to the data log and exported at the selected time intervals, from 5 seconds to 60 minutes, the entire time the meter is in the measurement mode.

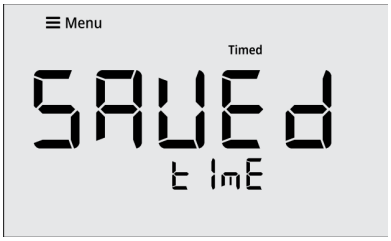
1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Read Type item is shown.



2. Press the △ or ▽ key to set the read type.



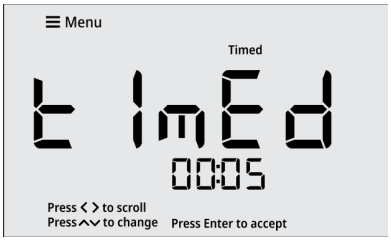
3. Press the “Enter” key to save the change.



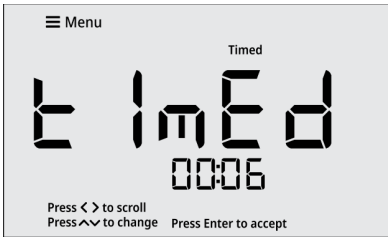
3.2.9 Timed Interval

When Timed is set as the Read Type, set the time interval from 5 seconds to 60 minutes. This time interval is used to automatically save and export measurements.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Timed Interval item is shown.



2. Press the △ or ▽ key to adjust the time value.
   a. Press the △ key to increase the time value by one second. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease the time value by one second. Press and hold the ▽ key to quickly decrease.

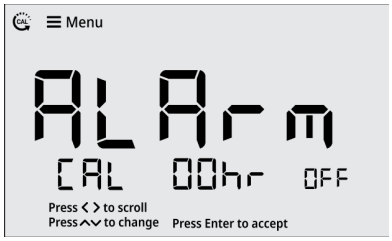


3. Press the “Enter” key to save the change.

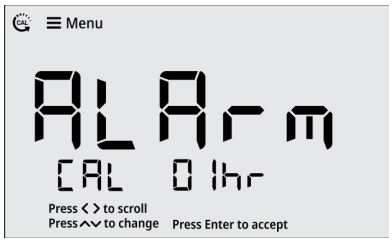
3.2.10 Calibration Due Alarm

Set the calibration due alarm interval from 0 hours (off) to 60 hours. An alarm is triggered if a calibration is not performed within the specified time interval.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Calibration Due Alarm item is shown.



2. Press the △ or ▽ key to adjust the alarm value.
   a. Press the △ key to increase the alarm value by one hour. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease the alarm value by one hour. Press and hold the ▽ key to quickly decrease.

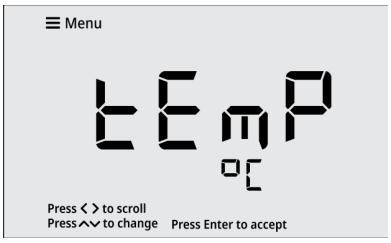


3. Press the “Enter” key to save the change.

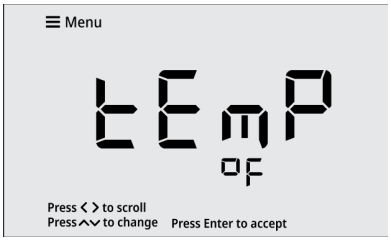
3.2.11 Temperature Units

Set the temperature units as °C (Celsius) or °F (Fahrenheit).

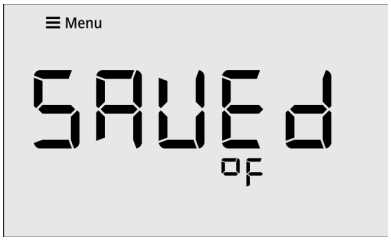
1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Temperature Units item is shown.



2. Press the △ or ▽ key to set the temperature units.



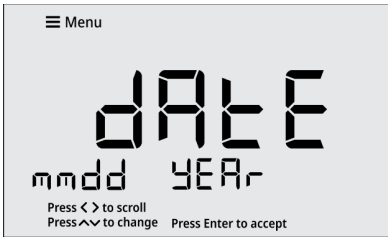
3. Press the “Enter” key to save the change.



3.2.12 Set Date Format

Set the date format as month-day-year (MM.DD.YYYY) or day-month-year (DD.MM.YYYY).

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Set Date Format item is shown.



2. Press the △ or ▽ key to set the date format.

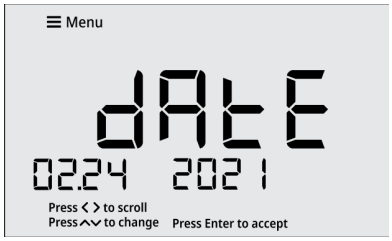
3. Press the “Enter” key to save the change.

3.2.13 Set Date Value

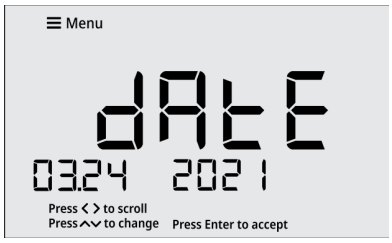
Set the month, day and year values.

The date format used for this Setup Menu item will match the setting in the Set Date Format item. For this example, the month-day-year (MM.DD.YYYY) format is shown.

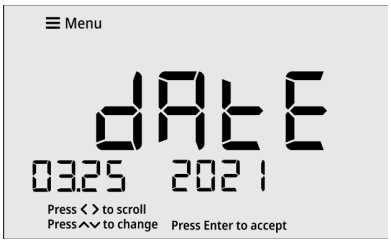
1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Set Date Value item is shown.



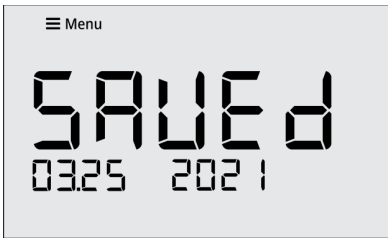
2. The month value will flash. Press the △ or ▽ key to adjust the month.
   a. Press the △ key to increase by one month. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease by one month. Press and hold the ▽ key to quickly decrease.
3. Press the “Enter” key to save the change.



4. The day value will flash. Press the △ or ▽ key to adjust the day.
   a. Press the △ key to increase by one day. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease by one day. Press and hold the ▽ key to quickly decrease.
5. Press the “Enter” key to save the change.



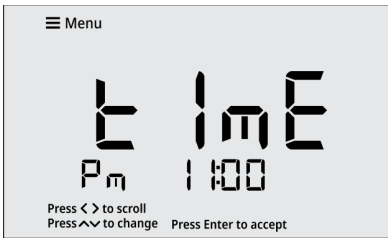
6. The year value will flash. Press the △ or ▽ key to adjust the year.
   a. Press the △ key to increase by one year. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease by one year. Press and hold the ▽ key to quickly decrease.
7. Press the “Enter” key to save the change.



3.2.14 Set Time Value

Set the time in AM/PM format.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Set Time Value item is shown.



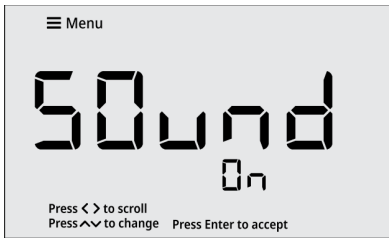
2. The AM/PM setting will flash. Press the △ or ▽ key to set the AM or PM time.
3. Press the “Enter” key to save the change.
4. The hour value will flash. Press the △ or ▽ key to adjust the hours.
   a. Press the △ key to increase by one hour. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease by one hour. Press and hold the ▽ key to quickly decrease.
5. Press the “Enter” key to save the change.

6. The minutes value will flash. Press the △ or ▽ key to adjust the minutes.
   a. Press the △ key to increase by one minute. Press and hold the △ key to quickly increase.
   b. Press the ▽ key to decrease by one minute. Press and hold the ▽ key to quickly decrease.
7. Press the “Enter” key to save the change.

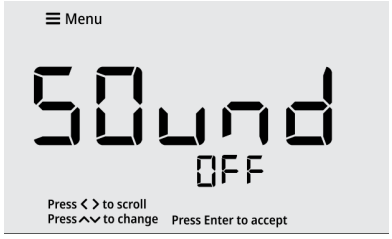
3.2.15 Audio Mode

Set the audible beep on or off. The audible beep is used each time a meter key is pressed, when a measurement stabilizes and when an alarm is triggered.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Audio Mode item is shown.



2. Press the △ or ▽ key to set the audio mode.

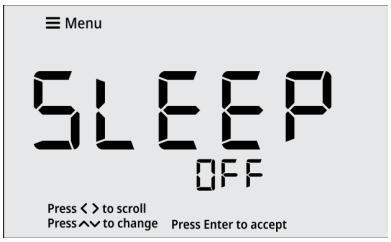


3. Press the “Enter” key to save the change.

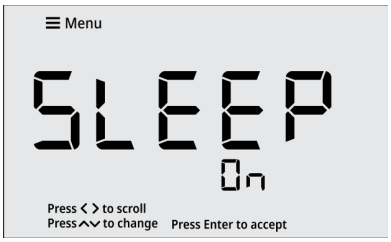
3.2.16 Sleep Mode

Set the sleep mode on or off. When the meter sleep mode is on, the meter will enter sleep mode when no keys are pressed for 20 minutes. Once the meter is in sleep mode, press the “Power” key to resume using the meter. Make sure sleep mode is off when taking timed measurements.

1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Sleep Mode item is shown.



2. Press the △ or ▽ key to set the sleep mode.

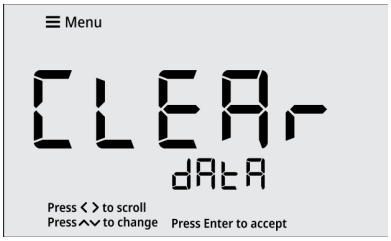


3. Press the “Enter” key to save the change.

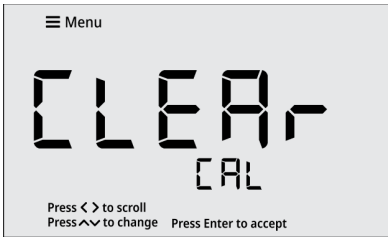
3.2.17 Clear Data

Erase all data logs or erase all calibration logs

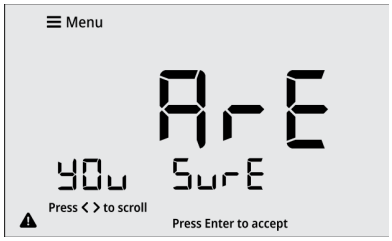
1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Clear Data item is shown.



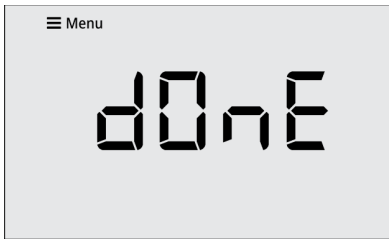
2. Press the △ or ▽ key to select the data log (dAtA) or calibration log (CAL) to be cleared.



3. Press the “Enter” key to confirm the selection.



4. Press the “Enter” key again to ensure the selected log is not accidentally erased.
5. The meter will confirm when the selected log is fully erased.

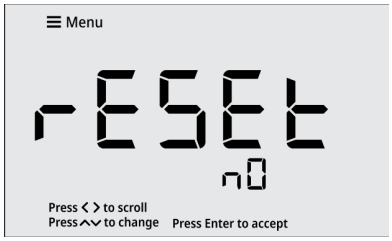


6. The meter will return to the measurement screen.

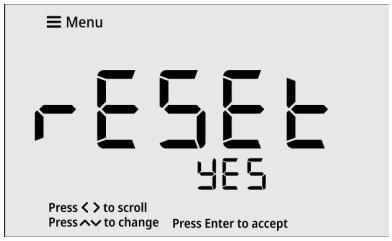
3.2.18 Factory Reset

Erase all data logs, calibration logs and settings and return the meter to its factory default state.

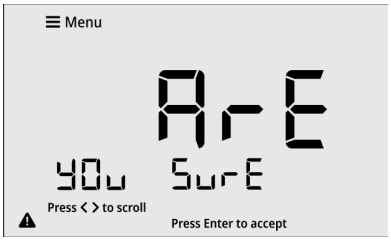
1. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Factory Reset item is shown.



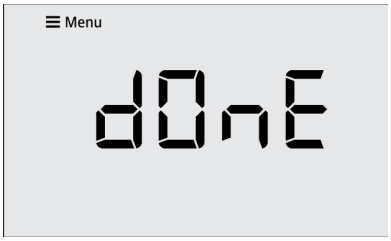
2. Press the △ or ▽ key to select YES to start the factory reset.



3. Press the “Enter” key to confirm the selection.



4. Press the “Enter” key again to ensure all meter data is not accidentally erased.
5. The meter will confirm when the factory reset is fully complete.



6. The meter will restart and then return to the measurement screen.

Chapter 4 Calibration

4.1 pH Calibration

4.1.1 pH Calibration Overview

For best results, periodic calibration with known, accurate and fresh pH buffers is recommended.

Calibrate with pH buffers that bracket the expected measuring range while including a neutral buffer (pH 7.00 or 6.86). For example, if samples will be pH 6.2 to 9.5, calibration with 4.01, 7.00, and 10.01 will work well.

Perform a calibration with one to five pH buffers. The non-volatile meter memory retains the most recent, active calibration data when powered off.

During the pH calibration, the meter will automatically recognize each pH buffer value using the pH buffer set selected in the setup menu and the mV signal measured by the pH electrode. Once the reading is stable, the meter will automatically display the buffer value at its measured temperature from the selected buffer set.

The following pH buffers are automatically recognized:

- USA: 2.00, 4.01, 7.00, 10.01, 12.00
- NIST: 1.68, 4.01, 6.87, 9.18, 12.46
- DIN: 1.09, 3.06, 4.65, 6.79, 9.23, 12.75
- FSCI: 1.00, 3.00, 6.00, 8.00, 10.00, 13.00

Refer to the Calibration Buffer Set section to change the pH buffer group.

If the mV value does not correspond to within ± 60mV of a pH buffer in the selected buffer set, once the pH reading is stable, the meter will display the theoretical pH value of the buffer according to the last pH calibration that was performed or, if no calibration has been performed, the meter will display the theoretical pH value of the buffer according to the Nernst equation.

During calibration, each auto-recognized pH buffer value can be accepted or edited as needed. If the pH buffer value needs to be manually adjusted, use the △ or ▽ key to edit the value of the pH buffer at its measured temperature.

To eliminate temperature errors associated with the pH electrode, use an automatic temperature compensation (ATC) probe for best accuracy.

During the pH calibration, press the “Cal” key to save and end the calibration after accepting the last desired calibration point. For example, to perform a two point calibration, press the “Cal” key after accepting the second calibration point. This allows the operator to perform a pH calibration using one to five points for each calibration without having to program the number of calibration points prior to the calibration.

4.1.2 pH Calibration Procedure

1. Ensure the active measure mode is pH.
2. Press the “Cal” key to start the calibration.
3. Rinse the pH electrode and ATC probe and place into the pH buffer.
4. Wait for the pH value to stabilize. While the reading is stabilizing, the stopwatch icon is shown and the reading flashes. When the reading is stable, the checkmark icon is shown, and the reading is solid.
5. Once the reading is stable, press the “Enter” key to accept the pH buffer value or press the △ or ▽ key to edit the value.
   a. Press the “Enter” key to accept the pH buffer value and proceed to the next calibration point.

   or

   b. Press the △ or ▽ key to edit the value. Once the desired pH value is shown, press the “Enter” key to accept the pH buffer value and proceed to the next calibration point.
6. To calibrate with another pH buffer, repeat steps 3-5, or to save and end the calibration, press the “Cal” key.
   a. When performing a one point pH calibration, press the △ or ▽ key to edit the slope value and then press the “Enter” key to accept.
7. The meter will display the calculated slope value and then proceed to the main measure mode.

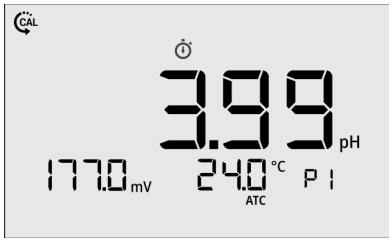
Note: *Press the “Read” key at any time to abort the calibration and return to the main measure mode.*

4.1.3 pH Calibration Example

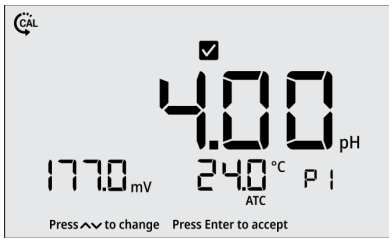
The following is an example of a three point pH calibration using auto-recognized pH 4.01, 7.00 and 10.01 pH buffers. The pH buffers can be read in any order. For this example, pH buffers are read lowest to highest.

1. Press the “Cal” key to start the pH calibration. The active Calibration Buffer Set is shown.

2. Rinse the pH electrode and ATC probe and place into the pH 4.01 buffer.

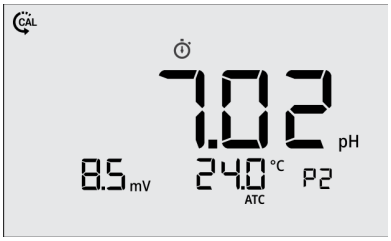


3. Wait for the pH value to stabilize.

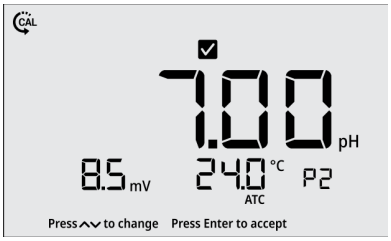


4. Once the reading is stable, press the “Enter” key.

5. Rinse the pH electrode and ATC probe and place into the pH 7.00 buffer.

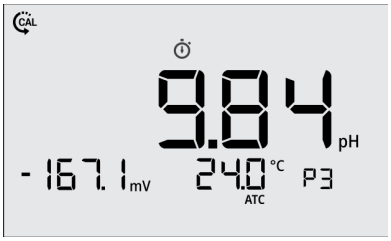


6. Wait for the pH value to stabilize.

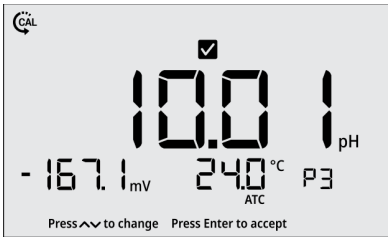


7. Once the reading is stable, press the “Enter” key.

8. Rinse the pH electrode and ATC probe and place into the pH 10.01 buffer.



9. Wait for the pH value to stabilize.



10. Once the reading is stable, press the “Enter” key.

11. Press the “Cal” key to save and end the calibration. The “Cal” key can be pressed when either the “SAVEd” or “4thPt” screens is shown.

12. The average slope value is shown.

13. The meter proceeds to the main measure mode.

4.1.4 pH Value vs. Temperature

USA Buffer Set

Temp. (°C)	pH 2.00 Buffer	pH 4.01 Buffer	pH 7.00 Buffer	pH 10.01 Buffer	pH 12.00 Buffer
0	2.01	4.00	7.11	10.32	12.76
10	2.01	4.00	7.06	10.18	12.44
15	2.00	4.00	7.03	10.12	12.28
20	2.00	4.01	7.01	10.06	12.14
25	2.00	4.01	7.00	10.01	12.00
30	2.00	4.02	6.98	9.97	11.88
35	2.00	4.02	6.97	9.93	11.79
40	2.00	4.03	6.97	9.89	11.66
50	2.00	4.06	6.96	9.83	11.43
60	2.00	4.09	6.97	9.79	11.22
70	2.01	4.12	7.00	9.78	11.01
80	2.01	4.16	7.03	9.78	10.81

NIST Buffer Set

Temp. (°C)	pH 1.68 Buffer	pH 4.01 Buffer	pH 6.86 Buffer	pH 9.18 Buffer	pH 12.46 Buffer
0	1.67	4.00	6.98	9.46	13.47
10	1.67	4.00	6.92	9.33	13.03
15	1.67	4.00	6.90	9.28	12.83
20	1.68	4.01	6.88	9.23	12.64
25	1.68	4.01	6.86	9.18	12.46
30	1.68	4.02	6.85	9.14	12.29
35	1.69	4.02	6.84	9.11	12.14
40	1.69	4.03	6.84	9.07	11.99
50	1.71	4.06	6.83	9.01	11.73
60	1.72	4.09	6.84	8.96	11.50
70	1.74	4.12	6.85	8.92	11.30
80	1.77	4.16	6.86	8.89	11.13

DIN Buffer Set

Temp. (°C)	pH 1.09 Buffer	pH 3.06 Buffer	pH 4.65 Buffer	pH 6.791 Buffer	pH 9.23 Buffer	pH 12.75 Buffer
0	1.08	3.10	4.67	6.89	9.48	13.37
10	1.09	3.10	4.66	6.84	9.37	13.37
15	1.09	3.08	4.65	6.82	9.32	13.17
20	1.09	3.07	4.65	6.80	9.27	12.96
25	1.09	3.06	4.65	6.79	9.23	12.75
30	1.10	3.05	4.65	6.78	9.18	12.61
35	1.10	3.04	4.65	6.77	9.13	12.45
40	1.10	3.04	4.66	6.76	9.09	12.29
50	1.11	3.04	4.68	6.76	9.00	11.98
60	1.11	3.04	4.70	6.76	8.92	11.69
70	1.11	3.04	4.72	6.76	8.88	12.43
80	1.12	3.05	4.75	6.78	8.85	12.19

FSCI Buffer Set

Temp. (°C)	pH 1.00 Buffer	pH 3.00 Buffer	pH 6.00 Buffer	pH 8.00 Buffer	pH 10.00 Buffer	pH 13.00 Buffer
0	0.97	3.02	6.04	8.19	10.27	14.02
10	0.98	3.02	6.02	8.11	10.17	13.60
15	0.99	3.02	6.01	8.07	10.12	13.39
20	0.99	3.02	6.00	8.03	10.05	13.19
25	1.00	3.00	6.00	8.00	10.00	13.00
30	1.00	3.00	6.00	7.97	9.95	12.83
35	1.01	2.99	6.00	7.94	9.90	12.68
40	1.01	2.99	6.01	7.91	9.86	12.53
50	1.01	2.98	6.04	7.87	9.78	12.25
60	1.02	2.97	6.07	7.85	9.71	11.99
70	1.02	2.97	6.11	7.82	9.65	11.74
80	1.02	2.97	6.16	7.79	9.58	11.51

4.2 Millivolt (mV) Offset Adjustment

Oxidization Reduction Potential (ORP or Redox) is useful as a relative indicator of the oxidizing or reducing nature of a sample solution. The mV offset adjustment using the relative mV (RmV) mode allows readings to be comparable to a reference.

1. Ensure the active measure mode is RmV.
2. Press the “Cal” key to start the calibration.
3. Rinse the ORP electrode and ATC probe and place into the ORP standard.
4. Wait for the RmV value to stabilize. While the reading is stabilizing, the stopwatch icon is shown and the reading flashes. When the reading is stable, the checkmark icon is shown, and the reading is solid.
5. Once the reading is stable, press the △ or ▽ key to edit the value.
6. Once the desired RmV value is shown, press the “Enter” key to save and end the calibration.
7. The meter will display the calculated offset value and then proceed to the main measure mode.

Note: *The meter allows an offset of up to ±250 mV from the measured raw mV value.*

Note: *Press the “Read” key at any time to abort the calibration and return to the main measure mode.*

4.3 Temperature Calibration

The thermistor sensor used for automatic temperature compensation and measurement is both accurate and stable, so frequent calibration is not required.

When an ATC probe is connected to the meter, use the Temperature Calibration item within the Setup Menu to perform a one-point offset calibration, up to ±5.0 °C.

Use the Temperature Units item in the meter Setup Menu to select the displayed temperature units as degrees Celsius or Fahrenheit.

1. Place the ATC probe into a solution with a stable temperature and NIST traceable thermometer.
2. Press the “Menu” key to enter the Setup Menu.
3. Press the ◁ or ▷ key to scroll through the Setup Menu list until the Temp. Calibration item is shown.
4. The temperature value will blink, indicating the reading from the ATC probe is being measured.
5. Once the reading is stable, the value will stop blinking and the checkmark icon will be shown.
6. Press the △ or ▽ key to adjust the temperature value. The temperature offset value will be shown in the 2nd field.
   c. Press the △ key to increase the value by 0.1°. Press and hold the △ key to quickly increase.
   d. Press the ▽ key to decrease the value by 0.1°. Press and hold the ▽ key to quickly decrease.
7. Press the “Enter” key to save the change.

Note: *Press the “Read” key at any time to abort the calibration and return to the main measure mode.*

Chapter 5 Measurements

5.1 Read Types

The Read Type selected in the meter Setup Menu will determine how measurements are performed and when measurements are saved to the data log and exported to an external device. Set the Read Type as Continuous, Auto-Read or Timed to define.

5.1.1 Continuous

In the Continuous measure mode, measurements are continuously updated on the display and the stopwatch (stabilizing) or checkmark (stable) icon indicates the measurement stability status.

Press the “Log/Export” key to save a measurement to the data log and export.

At any time during the measurement, press the “Hold” key to lock the measurement on the display (Hold icon will be shown on the display) and then press the Hold key a second time to release the hold and view live measurements again.

5.1.2 Auto-Read

In the Auto-Read measure mode, press the “Read” key to start a measurement.

When the measurement is stable, the checkmark (stable) icon is shown and the measurement is locked on the display until the “Read” key is pressed again.

The stable measurement is automatically saved to the data log and exported.

5.1.3 Timed

In the Timed measure mode, the measurement values are continuously updated on the display.

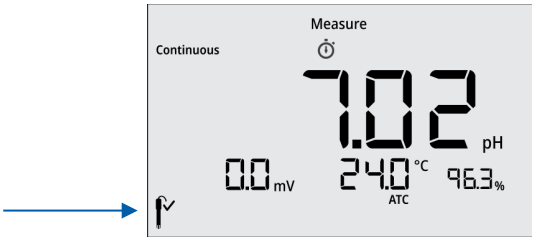
Measurements are automatically saved to the data log and exported at the selected time intervals, from 5 seconds to 60 minutes, the entire time the meter is in the measurement mode.

5.2 pH and ORP Measurements

1. Rinse the electrode with distilled water or appropriate solution and blot gently with a lint-free tissue to remove excess water.
2. Place the electrode into the sample, submerging the measurement sensor and reference junction.
3. Allow time for the reading to stabilize.
   a. The meter displays the stopwatch icon while the reading is stabilizing.
   b. The meter displays the checkmark icon when the reading is stable.
4. Note the displayed measurements as required.
5. Remove the electrode from the sample.
6. Repeat steps 1-5 for all samples.
7. When all samples have been measured, store the electrode per instructions in the electrode manual.

5.3 pH Electrode Icon

The pH Electrode Icon indicates the condition of the pH electrode based on the last saved calibration data and resulting slope value.



Electrode Good: pH calibration slope is 92.0% to 102.0%

Electrode Warning: pH calibration slope is 82.0% to 91.9% or 102.1% to 114.0%, recommended actions include:

- Check that all pH buffers are fresh, uncontaminated and not expired
- Clean and condition the pH electrode

Electrode Error: pH calibration slope is less than 82.0% or higher than 114.0%, recommended actions include:

- Replace all pH buffers
- Replace pH electrode

Refer to the Troubleshooting section for more recommended actions.

5.4 Data Viewing

Store up to 500 data points in the meter memory. Use the View Logs item in the meter Setup Menu to view the data log points, active pH calibration log, active RmV calibration log and active temperature calibration log.

The data log shows the most recent data log point first. The meter will save up to 500 data log points and then automatically overwrite the oldest data log point with the newest data log point when the limit is reached. Each data log point is saved with its associated date and time stamp. To view the time stamp with seconds included, the data log must be exported to a computer or printer.

The pH calibration log shows each calibration point and the calculated slope value. Three, four and five point pH calibrations will display the average slope value and then the appropriate number of segmented slope values. The RmV calibration log shows the RmV value with raw mV value and temperature. The temperature calibration log shows the temperature and offset value. Each calibration log is saved with its associated date and time stamp. To view the time stamp with seconds included, the calibration log must be exported to a computer or printer.

Note: *If desired, when in the View Logs item in the meter Setup Menu, press the "Log/Export" key to export the individual data log point or calibration log being viewed.*

5.5 Data Exporting

Export data from the meter to a computer or printer. Use the Log Export Type item in the meter Setup Menu to set the export type as computer or printer. If computer is selected, logs are exported in CSV format. If printer is selected, logs are exported in list format. Meter serial communication protocol:

Computer Setting	Printer Setting
Baud Rate : 9600 bps Data bits: 8 Parity: None Stop bits: 1 Flow Control: None	Baud Rate : 9600 bps Data bits: 8 Parity: None Stop bits: 1 Flow Control: None

5.5.1 Remote Commands

Remote commands allow the meter to be interfaced with computer software like LIMs and HyperTerminal. The remote engine receives input from the serial port and processes it. Commands sent to the remote interface will be in the form of "OPCODE <OPERAND> CR".

- Only one command can be executed at a time. A new command cannot be issued until the previous command is done and prompt is given, shown as the greater than symbol (">") followed by a space.
- Empty commands (i.e. just a <CR>) will be ignored and a new prompt will be issued.
- <CR> (Carriage Return, ASCII 13) is used to terminate a command. Whenever this character is received, the internal buffer will be processed.
- Remote commands are not case sensitive.

Remote Command: GETMEAS <CR>

Prints the current measurement immediately.

Remote Command: GETMEAS Data Count <CR>

Example: GETMEAS 2. Prints the current measurement for a set number of times.

Remote Command: GETCAL <CR>

Prints all current calibration data. If no calibration is saved, returns ">" to receive next command.

Remote Command: GETCAL MODE <CR>

Example: GETCAL PH. Prints the calibration data for specific mode. MODE: PH or RMV.

Remote Command: GETLOG <CR>

Prints all logged measurement data. If no data is logged, returns ">" to receive next command. Output format is based on the Log Export Type setting.

Remote Command: SYSTEM <CR>

Prints the system information including meter model, serial number, software version, date and time.

Remote Command: SETCSV <CR>

Sets the output format to Comma Separated Values (CSV).

Remote Command: SETKEYLOCK NUMBER <CR>

Example: SETKEYLOCK 1. Locks or unlocks the meter keypad. NUMBER = 1 (lock) or 0 (unlock).

Remote Command: SETRTC YYYY-MM-DD-HH-MM-SS-TIMEMODE <CR>

Example: SETRTC 2021-08-19-01-32-00-1. Sets the date and time for the meter. TIME MODE = 1 (PM) or 2 (AM).

Remote Command: SETMODE MODE <CR>

Example: SETMODE PH. Sets the meter measurement mode. MODE: PH or RMV.

Remote Command: GETMODE <CR>

Prints the active measurement mode.

Chapter 6 Troubleshooting

6.1 Meter Troubleshooting

Meter display not powering on:

- Verify that power cord is fully plugged into meter and wall outlet
- The power adapter plug has two prongs used to lock it onto the meter; ensure the prongs are properly aligned when connecting it with the meter
- Check that the wall outlet is functional
- Press the "Power" key on the meter

Meter not responding to any key presses:

- Verify that the meter is not in the HOLD mode, if the HOLD icon is shown on the display, press the "Read/Hold" key to release the measure display
- Check that the key being pressed is active in the current meter mode
- Unplug and reconnect the meter power supply
- Contact accumet Technical Support

Meter error shown:

- pH Out of Range, RmV Out of Range, Temperature Out of Range:
  - Ensure electrode is connected to meter
  - Check that electrode does not have any damage or cracks
  - Ensure the electrode is properly immersed in the sample solution, with the electrode sensing bulb and reference junction submerged below the top of the sample solution
  - Verify cables do not have any damage
  - Perform a factor reset on the meter
- pH Electrode Icon:
  - Troubleshoot pH buffers and pH electrode
  - Replace pH buffers
  - Clean and condition pH electrode
  - Replace pH electrode as needed

6.2 Measurement Troubleshooting

Reading is unstable, slow to stabilize

- Clean electrode to remove build-up or contaminants, 0.1M HCl is recommended and adding pepsin is helpful if protein build-up occurs
- If electrode was stored dry, soak electrode in storage solution for at least 30 minutes
- If electrode is refillable, add electrode fill solution and ensure the fill hole is uncovered during use
- Check electrode for damage, cracks or breaks
- Check cables for damage or breaks
- Remove any interfering devices from area
- Replace old electrode with new electrode
- If sample temperature is changing, allow temperature to stabilize

Reading freezes on display

- Check meter Read Type setting
  - If meter Read Type is set to Continuous, check that the Hold function is not enabled – the Hold icon will be shown on the display when the Hold function is enabled – press the "Read/Hold" key to disable
  - If meter Read Type is set to Auto-Read, press the "Read" key to start a new measurement
- Check electrode for damage, cracks or breaks
- Check cables for damage or breaks
- Replace old electrode with new electrode

6.3 Technical Support

Contact our accumet Technical Support team at 1-888-358-4706 or accumet@fishersci.com

Distributed by:
Fisher Scientific
300 Industry Drive
Pittsburgh, PA 15275

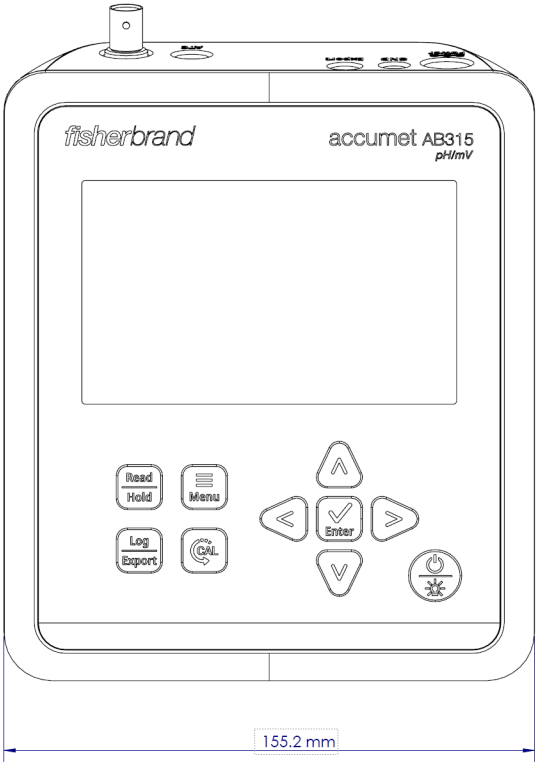
Chapter 7
Meter Info

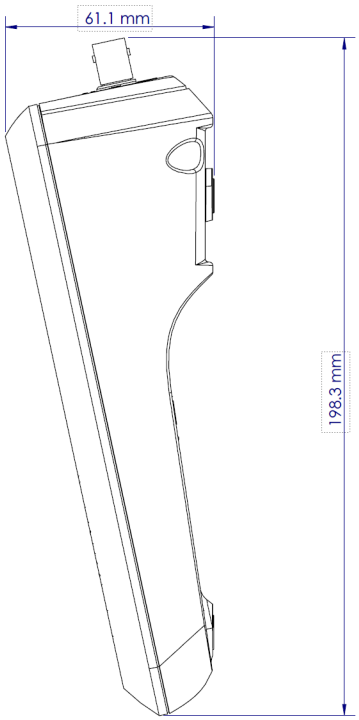
7.1 Meter Specifications

pH	
Range	-2.00 to 18.00 pH
Resolution	0.1, 0.01 pH
Relative Accuracy	±0.01 pH ±1 LSD
Calibration Points	1 to 5 points
Calibration Method	Automatic buffer recognition with manual buffer entry option
Calibration pH Buffer Sets	USA: 2.00, 4.01, 7.00, 10.01, 12.00 NIST: 1.68, 4.01, 6.87, 9.18, 12.46 DIN: 1.09, 3.06, 4.65, 6.79, 9.23, 12.75 FSCI: 1.00, 3.00, 6.00, 8.00, 10.00, 13.00
Slope Display	Yes
mV / RmV	
Range	±2000 mV
Resolution	0.1 mV
Relative Accuracy	±0.2 mV or ±0.05 % of the reading, whichever is greater
Calibration Points	1 point
Offset Adjustment	Up to ±250 mV
Temperature	
Range	-5.0 to 105.0 ºC, 23.0 to 221.0 ºF
Resolution	0.1 ºC, 0.1 ºF
Relative Accuracy	±0.3 ºC, ±0.5 ºF
Calibration Points	1 point
Offset Adjustment	Up to ±5 ºC, up to ±9 ºF
Features	
Display	5” backlit LCD
Time and Date	Yes
Read Types	Continuous, Auto-Read, Timed
Timed Interval	5 seconds to 60 minutes
Hold Function	Yes
Data Log	500 data sets with time and date
Calibration Log	Active pH, RmV, temperature
Calibration Alarm	Yes
Sleep Mode	Yes

Memory	Non-volatile
Input	BNC, ATC
Data Output	Computer or printer
Data Output Format	CSV or print
Warranty	3 years
Certifications	CE, TUV 3-1, FCC Class A
Enclosure	IP-54
Power	100-240 VAC, 50-60Hz, 9 DC adapter, 1.3A
Dimensions (L x W x H)	198.3 mm x 155.2 mm x 61.1 mm, 7.81” x 6.11” x 2.41”
Weight	700 grams, 1.54 lbs.
Environmental Conditions	
Environmental Conditions	Indoors
Altitude	Up to 2,000 Meters
Operating Temperature	5°C to 45°C
Operating Relative Humidity	5 to 85%, non-condensing
Storage Temperature	-20°C to 60°C
Storage Relative Humidity	5 to 85%, non-condensing
Mains Fluctuation	±10% of range (100-240VAC)
Installation Category	II
Pollution Degree	2
Protection Class	III

7.2 Meter Dimensions





7.3 Warranty

This meter is supplied with a warranty against significant deviations in material and workmanship for a period of three (3) years from date of purchase. Electrode warranties are separate from the meter and differ based on the selected electrode.

If meter repair or adjustment is necessary within the designated warranty period and has not been the result of abuse or misuse, please contact the Technical Support Team for return authorization and a correction will be made without charge. The manufacturer will determine if the meter problem is due to deviations or customer misuse.

Out of warranty products will be repaired on a charged basis.

The warranty on your meter shall not apply to defects resulting from:

- Improper or inadequate maintenance by customer
- Unauthorized modification or misuse
- Operation outside of the environment specifications of the products

7.3.1 Return of Items

Authorization must be obtained from our Technical Support Team or authorized distributor before returning items for any reason. Please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. The manufacturer will not be responsible for damage resulting from careless or insufficient packing. A restocking charge will be made on all unauthorized returns.

Note: *The manufacturer reserves the right to make improvements in design, construction, and appearance of products without notice.*

Chapter 8 Regulatory Compliance

8.1 European Union

The European voltage models of this product meet all the applicable requirements of the European Directives and therefore display the CE Marking. These Directives include those captured in the EU Declaration of Conformity. The most current EU Declaration of Conformity may be obtained from the manufacturer.

8.2 Product Safety

This product family has been tested to applicable product standards by TUV SUD a Nationally Recognized Test Laboratory (NRTL).

8.3 Electromagnetic Compatibility

8.3.1 FCC Statement (USA)

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

8.4 Canadian ISED IC Notice

This ISM digital apparatus complies with Canadian ICES-001.

Cet appareil ISM est conforme á la norme NMB-001 du Canada.

8.5 Environmental Compliance

8.5.1 REACH - Europe

We are committed to meeting all compliance obligations to evaluate, communicate, and register any Substances of Very High Concern (SVHC), substances of authorization and finding alternates where appropriate.

8.5.2 RoHS - Europe

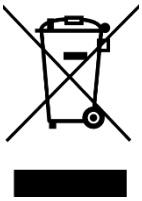
We are determined to reduce the impact we have on the environment, and so can declare that this product fully complies with the European Parliament's RoHS2 and RoHS2 amendment (Restriction of Hazardous Substances) Directive 2011/65/EU and 2015/863/EU, with respect to all the following substances:

- Lead (0,1 %)
- Mercury (0,1 %)
- Cadmium (0,01 %)
- Hexavalent chromium (0,1 %)
- Polybrominated biphenyls (PBB) (0,1 %)
- Polybrominated diphenyl ethers (PBDE) (0,1 %)

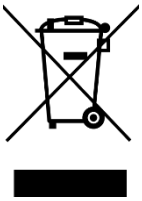
- Bis(2-ethylhexyl) phthalate (DEHP) (0,1%)
- Butyl benzyl phthalate (BBP) (0,1%)
- Dibutyl phthalate (DBP) (0,1%)
- Diisobutyl phthalate (DIBP) (0,1%)

Our compliance relies on declarations from our suppliers, testing and evaluations per the assessment requirements defined in standard EN 63000:2018. This confirms that any potential trace contamination levels of the substances listed above are below the maximum level set by the latest regulations or are exempt due to their application.

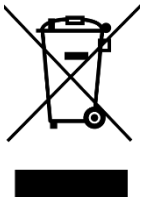
8.6 WEEE Compliance



WEEE Compliance. This product is required to comply with the European Union's Waste Electrical & Electronic Equipment (WEEE) Directive 2012/19/EU. It is marked with the following symbol. Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State, and this product should be disposed of or recycled through them. Further information on our compliance with these Directives, the recyclers in your country, and information on Thermo Scientific products which may assist the detection of substances subject to the RoHS Directive are available at www.thermofisher.com/



WEEE Konformittät. Dieses Produkt muss die EU Waste Electrical & ElectronicEquipment (WEEE) Richtlinie 2012/19/EU erfüllen. Das Produkt ist durch folgendes Symbol gekennzeichnet. Thermo Fisher Scientific hat Vereinbarungen getroffen mit Verwertungs-/Entsorgungsanlagen in allen EU-Mitgliederstaaten und dieses Produkt muss durch diese Firmen widerverwetet oder entsorgt werden. Mehr Informationen über die Einhaltung dieser Anweisungen durch Thermo Scientific, dieVerwerter und Hinweise die Ihnen nützlich sein können, die Thermo Fisher Scientific Produkte zu identizfizieren, die unter diese RoHS. Anweisungfallen, finden Sie unter www.thermofisher.com/



Conformità WEEE. Questo prodotto deve rispondere alla direttiva dell' Unione Europea 2012/19/EU in merito ai Rifiuti degli Apparecchi Elettrici ed Elettronici (WEEE). marcato col seguente simbolo.Thermo Fischer Scientific ha stipulato contratti con una o diverse società di riciclaggio/smaltimento in ognuno degli Stati Membri Europei. Questo prodotto verrà smaltito o riciclato tramite queste medesime. Ulteriori informazioni sulla conformità di Thermo Fisher Scientific con queste Direttive, l'elenco delle ditte di riciclaggio nel Vostro paese e informazioni sui prodotti Thermo Scientific che possono essere utili alla rilevazione di sostanze soggette alla Direttiva RoHS sono disponibili sul sito http://www.thermofisher.com/

Conformité WEEE. Ce produit doit être conforme à la directive euro-péenne (2012/19/EU) des Déchets d'Equipements Electriques et Electroniques (DEEE). Il est marqué par le symbole suivant. Thermo Fisher Scientific s'est associé avec une ou plusieurs compagnies de recyclage dans chaque état membre de l'union européenne et ce produit devraitêtre collecté ou recyclé par celles-ci. Davantage d'informations sur laconformité de Thermo Fisher Scientific à ces directives, les recycleurs dans votre pays et les informations sur les produits Thermo Fisher Scientific qui peuvent aider le détection des substances sujettes à la directive RoHS sont disponibles sur http://www.thermofisher.com/

Chapter 9
Ordering Info

Description	Catalog Number
accumet AB315 pH/mV bench meter with electrode stand, universal 110-240V power supply	13-636-AB315
accumet AB315 pH/mV bench meter standard kit with pH/ATC epoxy-body double junction gel-filled electrode, electrode stand, universal 110-240V power supply	13-636-AB315A
accumet AB315 pH/mV bench meter bio kit with pH glass-body double junction refillable electrode, ATC probe electrode stand, universal 110-240V power supply	13-636-AB315B
accumet pH/ATC polymer-body double junction gel-filled electrode	13-620-111
accumet pH/ATC polymer-body single junction refillable electrode	13-620-530A
accumet pH/ATC polymer-body double junction refillable electrode	13-620-631
accumet pH polymer-body single junction gel-filled electrode	13-620-108A
accumet pH glass-body single junction refillable electrode	13-620-285
accumet pH glass-body double junction refillable electrode	13-620-223A
accumet pH rugged bulb glass-body double junction refillable electrode	13-620-185
accumet stainless steel ATC temperature probe	13-620-19
accumet ORP electrode	13-620-81
accumet meter-attached electrode stand	13-637-671
accumet AB315 and AB330 meter replacement universal power cord, 110-240V	13-637-010
accumet AB315 and AB330 meter computer cable	13-637-011
accumet AB315 and AB330 meter dust cover	13-637-012
accumet compact thermal printer, 100-240V	13-637-690

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