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Thank you for selecting a Fisher Scientific accumet pH meter. This manual describes the operation of the accumet AR50 meter. The state-of-the-art meter that you have purchased is easy to operate and will guide you through the various functions by displaying easy to understand prompts. This operating manual should answer any questions that might arise in operating your meter; however, do not hesitate to call our Fisher Lab Equipment Technical Support Hotline at 1-800/943-2006 or 412/490-6260, if you need any assistance.

This meter is designed to provide all the information necessary to guide you through the process of measuring pH, mV, ion concentration, or conductivity with a series of prompts on the screen.

The accumet Research AR50 provides microprocessor precision in a compact benchtop design that is easy to use. One touch screen controls all procedures, letting you:

- Measure pH, absolute mV, relative mV, ion concentration or conductivity.
- Select one of three sets of standard buffer groups.
- Implement automatic buffer recognition.
- Standardize with up to five standard or custom buffers.
- Customize your display screen and operating parameters.
- Assign operator and sample identification numbers.
- Specify ion selective electrode type.
- Store 250 data points in the meter's memory or transfer data to a computer or printer.
- Access extensive online help with just a touch of a button.

It all adds up to rapid, completely automatic, intuitive operation.



The following is a listing of what you should have received with your new accumet AR50 pH/mV/Ion/Conductivity meter.

Meter with kit includes meter power supply electrode arm support bracket electrode arm electrode (13-620-285) ATC probe (13-620-19) manual and literature * Note that this meter does not include a conductivity cell.

Meter only includes meter power supply electrode arm support bracket manual and literature

If any of these items are missing, please contact the Fisher Products Group Electrochemistry Operation by dialing 412/490-6267.

Accessory Conductivity Probes and Ion Selective Electrodes are available and can be ordered by calling Fisher Customer Service at 800/766-7000.

2-cell Conductivity Probes:

Cell Constant	Optimal Conductivity Range	Glass Body	<u>Epoxy Body</u>
0.1	0.5 to 200 µS/cm	13-620-156	13-620-161
1.0	0.01 to 2 mS/cm	13-620-155	13-620-160
10.0	1 to 200 mS/cm	13-620-157	13-620-162

4-cell Conductivity Probes:

Cell Constant	Optimal Conductivity Range	Glass Body	<u>Epoxy Body</u>
1.0	0.01 to 20 µS/cm	13-620-163	13-620-165
10.0	1 to 200 mS/cm	13-620-164	13-620-166

Display	screen size measurement display height temp/etc. display height menu options help screens configurable display keypad controls	640x480 digit LCD 4 1/2" x 6" 3/4" 1/4" extensive extensive yes context specific touchscreen
Memory	internal diagnostics programmable data storage programmable data output print interval programmable alarm	250 data pts yes store on stable, time, manual output on stable, time, manual 1 to 9,999 sec yes
pH Mode	range resolution relative accuracy automatic buffer recognition manual buffer recognition calibration points auto lock FET	-2.000 to 20.000 0.1/0.01/0.001 ± 0.002 yes yes 5 yes yes yes
mV Mode	range resolution accuracy	± 1800.0 0.1 ± 0.1
Ion Mode	range resolution relative accuracy calibration points incremental methods	1x10 ⁻⁶ to 9.99x10 ¹⁰ 0.1/0.01/0.001 ± 0.17n% 5 KA, KS, AA, AS



Conductivity Mode	9	
	cell constants range conductivity resistivity salinity accuracy	0.1, 1.0, 10 0 to 3x10 ⁵ μS/cm 30 ohm⋅cm to 100 megohm⋅cm 2 to 42 ppt 0.5%
Temperature Mod	e range	-5.0 to +105.0 °C
	resolution	0.1 °C
	accuracy	± 0.2 °C
General	inputs/outputs	2BNC, 2Pin, 2ATC, 2-pin cond. RS232, DIN (for FET and 4 cell cond.)
e	ectrical requirements	115 V/60 Hz, 230 V/50 Hz
	output from PSU	12VDC, 500mA
line voltage tolerance		± 10%
	input impedance	>10 ¹² ohms
	meter size	5.5" x 7.5" x 3.25"
	meter weight	1.86 lb.
Operating Conditi	ons	
0	perating temperature	5-45 °C

operating temperature operation humidity maximum operating altitude installation category Pollution category degree 5-45 °C 5-80 % noncondensing 2000m II











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pH and ION SPECIFIC ELECTRODES

This meter allows you to use two types of pH electrodes: the conventional glass pH electrode and the AccuFET field effect transistor (FET) pH electrode. If both types of pH electrodes are connected, the meter will read the AccuFET electrode. This meter also allows you to use ion specific electrodes.



If both a conventional electrode and an AccuFET electrode are connected to the meter, do not put them in a solution together because you will get inaccurate measurements. Carefully remove the protective cover from the end of the electrode. Before first using your glass pH electrode, or whenever the electrode is dry, soak it 2-4 hours in an electrode storage solution, pH 4 Buffer, or KCI solution. Before using your ion specific electrode, consult the manufacturer's instructions for electrode preparation.





If a combination electrode isn't used, connect the indicating pH electrode into the BNC input connector. Plug the reference electrode into the reference pin jack. Also, install the ATC probe into the ATC jack.

Note: Be sure to connect all probes to the appropriate channel connectors (for example: Input 1, Ref 1, and ATC 1).

Option: Connect the optional AccuFET electrode by plugging it into the FET jack on the back meter panel. Allow the AccuFET to warm up five minutes before use.

Connect ion specific electrodes in the same manner as pH electrodes.

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1



Do not discard the BNC shorting cap.



pH and ION SPECIFIC ELECTRODES

Getting Started

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3

Rinse and blot-dry (don't wipe) electrodes between each measurement. Rinse electrodes with distilled or deionized water, or a portion of the next solution to be measured.





Between measurements, store conventional pH electrodes in electrode storage solution, pH 4 buffer, or KCI solution. Always leave the filling hole of liquid filled combination electrodes open. Refill when the level of solution gets below the manufacturer's recommended level. Store ion specific electrodes according to electrode manufacturer's recommendations.



Proper electrode care is fundamental to obtaining reliable pH measurements. Improper care of the electrode may cause the meter reading to drift, respond slowly, or produce erroneous readings. For this reason, the electrode should always be conditioned and used in accordance with manufacturer's instructions. CONDUCTIVITY PROBES

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This meter also allows you to use two types of conductivity cells: the 2-cell conductivity cell with dual pin connector and the 4-cell conductivity cell with DIN connector. The 2-cell conductivity probe works in channel 1 and the 4-cell conductivity cell works in channel 2.

1

Carefully remove the protective cover from the end of the conductivity cell. Before using your conductivity cell, soak it for 5 to 10 minutes in distilled or deionized water.





Connect the 2-cell conductivity cell to the 2-cell jack. Install the ATC probe in the ATC-1 jack.

OR

Connect the 4-cell conductivity cell to the 4-cell jack. The 4-cell accumet conductivity cells have built in ATC probes. Therefore, there is no need to install a separate ATC probe.

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Getting Started



3

Rinse and blot-dry (don't wipe) probe between each measurement. Rinse probe with distilled or deionized water, or a portion of the next solution to be measured.





Between measurements, store conductivity probes dry.

Using the Meter	TOUCH SCREEN OPERATION
	Standby screen
	Fisher Scientific
	11.11
	Touch anywhere to resume



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The new accumet Research benchtop pH meters operate with a state-of-the-art touch screen. The touch screen makes this the easiest meter on the market to operate and care for. When the meter is first plugged in, the STANDBY screen will appear. Touch anywhere on this screen to access the functions of the meter.

The buttons on the right side of the screen control all of the functions of the meter. A light touch on the screen is all that you need to access the various functions. Once you touch a button you will get an audible tone; <u>the screen will not change until you lift your finger</u>. This design prevents rapid uncontrolled scrolling through the various function screens. Function buttons and options change from screen to screen. Easy to understand prompts guide you through the operation of the meter in the selected mode. If you are ever in doubt about what to do, just touch help on the bottom right corner of the screen for detailed information about that screen.

The touch screen is made of a durable polyester material that is chemically resistant. Maintenance is simple with this meter. To clean the screen you just need to wipe it with a damp cloth and dry it with a clean dry towel. For additional information, see cleaning and troubleshooting sections of the manual (pages 160-161).

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Dual screen



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Main screen

Using the Meter

The accumet Research AR50 is a Multi-channel pH meter. With this meter you can switch from channel 1 to channel 2. You can also view both channels at the same time by accessing the dual channel mode. If you set the meter to view both channels, you cannot change the parameters without choosing the screen that you want to modify. The setup parameters for each screen are setup independently of one another.

Choosing a Channel

1

Touch anywhere on the Standby screen.

OR

Touch channel on the main screen.

THEN



Touch 1, 2 or dual to access the channel that you want to view.

To access System Setup from the Standby screen



Touch anywhere on the Standby screen.

2

Touch 1 or 2 on the channel screen to access either channel.



4

Touch setup.

Touch system on the Setup screen.



If you are in any measure mode, touch mode until you access the main screen.



The touch screen of your accumet Research pH meter has "buttons" along the right side of the screen that are common to many of the screens. The following indicates the function of these common buttons.



BUTTON FUNCTIONS

This button accesses the standardization screen from the various std measure modes and initiates standardization of the meter once the standardization screen is accessed. This button is the measure button and directs the meter to measure your meas sample when in the Auto Read function of the pH or Ion modes. This button will access the setup screens for the measuring mode that you are currently using. It can also be used to access the system setup setup screen that allows you to set parameters that are not related to measurements such as the time and the date. The print button will send information to the output device that you have connected to your accumet meter. The output device can be a print printer, data logger or a computer. In addition to this, touching the print button will also send data to the data storage center of the meter if a sample ID# has been assigned to your sample. The arrow keys on the screen move the cursor up and down in order to highlight parameters that you would like to review or edit. The edit button appears on the setup screens. After you have highlighted edit a parameter that you would like to change, the edit button allows you to access the available options for that parameter. The clear button allows you to remove a setup parameter or standard buffer value from the meter's memory that may have been entered at a clear previous time or by a previous user that is no longer of value to you. Touching the clear button erases the value so you may enter a new one. It can also erase a parameter that you may have entered erroneously. The BS button is a backspace button. It appears on keypad screens and BS it allows you to back up and delete a character entered in error. The delete button appears on the "View Stored Data" screens. This delete button allows you to erase the data from the memory of the meter. The prev button appears on the Data Screens when the data stored in prev the meter's memory has been accessed. It allows you to scroll through data points sorted and stored prior to the current data point displayed. The next button appears on the Data Screens when the data stored in the meter's memory has been accessed. It allows you next to scroll through data points sorted and stored after the current data point displayed.

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