

## Specifications

|                          | Range                                     | Resolution    | Accuracy   |
|--------------------------|---|---------------|--|
| pH                       | 0.00 ~ 14.00 pH                           | 0.01 pH       | ±0.02 pH   |
| mV                       | -999.9 ~ 999.9mV                          | 0.1 mV        | ±0.2 mV @ -99.9 ~ 99.9mV<br>±2 mV @ other ranges |
| Temperature Compensation | -23° ~ 176°F (-5°~ 80°C)                  | 0.1°F (0.1°C) | ±0.5°F (±0.3°C)                                  |
| Dimension                | 7" x 2 5/8" x 1 1/2" (171 x 70 x 39.5 mm) |               |  |
| Weight                   | 8.7 oz (247g)                             |               |  |
| Power                    | 4 AAA Batteries                           |               |  |

## Warranty

Sper Scientific warrants this product against defects in materials and workmanship for a period of **five (5) years** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover probes, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty. To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD  
7720 E Redfield Rd, Suite 7, Scottsdale, AZ 85260  
WWW.SPERSCIENTIFIC.COM,  
INFO@SPERSCIENTIFIC.COM

The defective unit must be accompanied by a description of the problem and your return address. Register your product online or return your warranty card within 10 days of purchase.

# Datalogging pH Meter

850059

## Instruction Manual

SPER  
SCIENTIFIC



## TABLE OF CONTENTS

|                                    |         |
|------------------------------------|---------|
| Introduction .....                 | 3       |
| Panel Description .....            | 4       |
| Setup Procedure .....              | 5 - 6   |
| Calibration .....                  | 7 - 10  |
| Measurement Procedures .....       | 11 - 13 |
| Clear MEM Data .....               | 14      |
| Datalogging .....                  | 15-16   |
| Clear LOG Data .....               | 17      |
| Software Configuration.....        | 18 - 22 |
| Trouble Shooting Error Codes ..... | 22      |
| Auto Power Off.....                | 23      |
| Battery Replacement.....           | 23      |
| Storage.....                       | 23      |
| Optional Accessories .....         | 23      |
| Specifications .....               | 24      |
| Warranty.....                      | 24      |

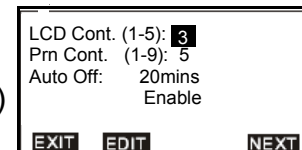
### FIRST TIME USE



Before using the Datalogging pH Meter for the first time ensure that the user-defined settings have been configured (see page 5-6), and that the meter has been calibrated (see page 7-10).

### Auto Power Off

To prolong battery life, the meter will turn off automatically at the set interval (1~20 minutes) if no buttons are pressed. To edit or disable this feature, press **F4** (SET) to access the setup mode, then use the **F2** (EDIT), **▲** or **▼** buttons and **Keypad** to make changes.



### Battery Replacement

When the low battery icon is displayed, open the battery cover, install 4 fresh AAA batteries and replace the cover. Remove the batteries during prolonged periods of non-use.

### Storage

Always rinse the pH electrode in de-ionized or tap water before and after storage. The pH electrode's probe is stored in a protective cap containing KCl<sub>4</sub> solution.

### Optional Accessories

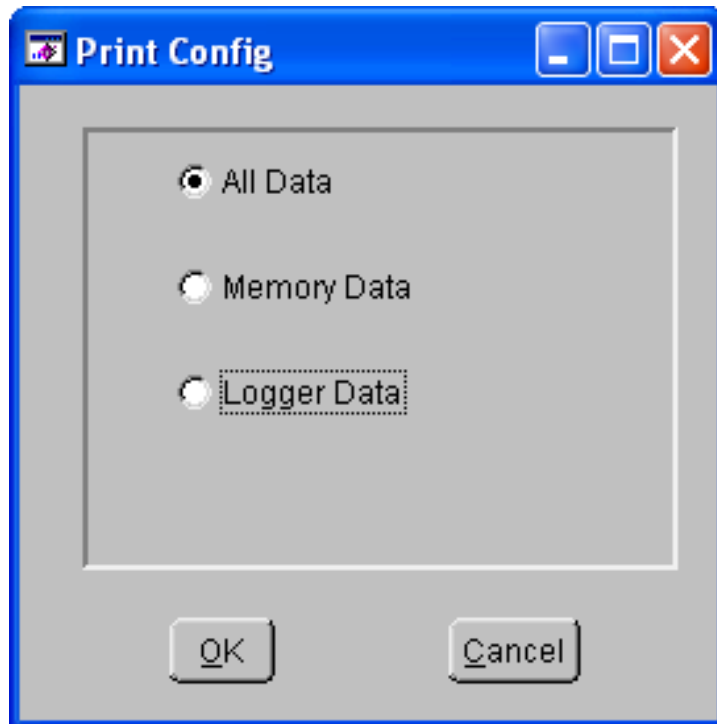
- 840016 - General Purpose pH Probe
- 840049 - Spear Tip pH Probe
- 840089 - Rubber Holster
- 840090 - Water Resistant Pouch
- 840092 - Bench-Top Tripod
- 840093 - Field Tripod
- 840094 - USB-RS232 Adapter
- 840096 - AC Adapter
- 850088 - ORP Probe
- 850059P - ATC pH Probe
- 860008 - pH 4 Solution
- 860009 - pH 7 Solution
- 860010 - pH 10 Solution
- 860011 - De-ionized Water

## SOFTWARE CONFIGURATION

### Print Options

Memory and Logger data is displayed in sequential order.  
Select the data to be printed from the following three choices:

- All Data
- Memory Data
- Logger Data



## TROUBLESHOOTING ERROR CODES

- E2: The value is under-range.
- E3: The value is over-range.
- E4: The source data that relates to the value is in error.
- E31: Measurement error.

## INTRODUCTION

The Datalogging pH Meter is the ideal handheld instrument for measuring either pH or mV together with temperature in °C or °F.

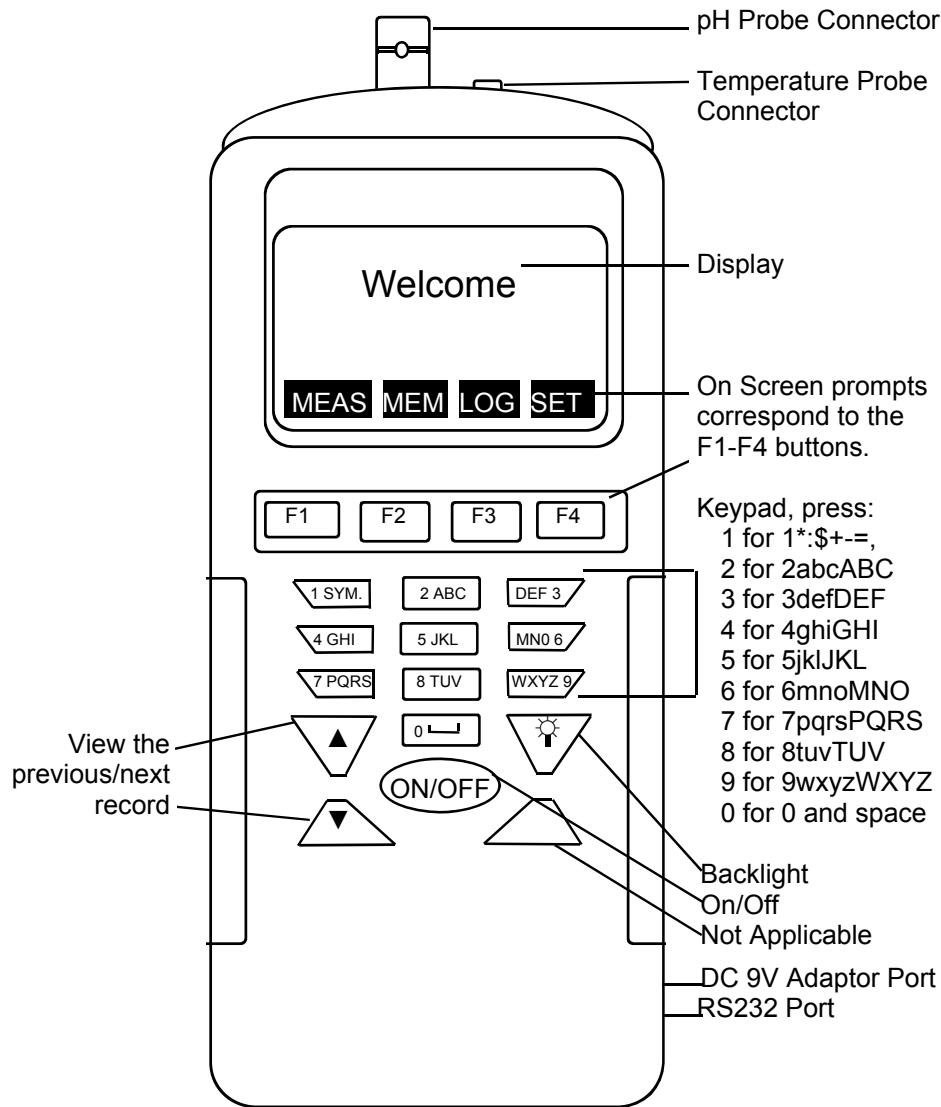
This pH meter features ATC or manual temperature compensation as well as 5 points of calibration, automatic buffer solution recognition, and a user-friendly interface with a large backlight display.

The RS232 port, cable and software allow for up to 99 manual measurement as well as automatic logging of up to 4000 measurements.

This unit can also auto power off and comes with a tripod mount and carrying case as well as a pH probe, several buffer solutions in refillable kit-sized bottles and 4 AAA batteries.



## PANEL DESCRIPTION



## SOFTWARE CONFIGURATION

### Command Options

There are four command options supported by the software. Choose the correct mode before uploading or downloading data.

- Download Memory Data
- Download Logger Data
- Download All Data
- Upload Memory Description

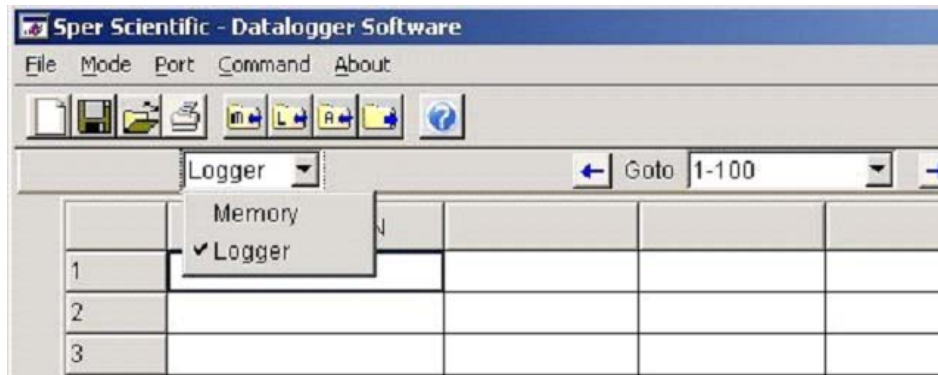


# SOFTWARE CONFIGURATION

## Mode Menu Option

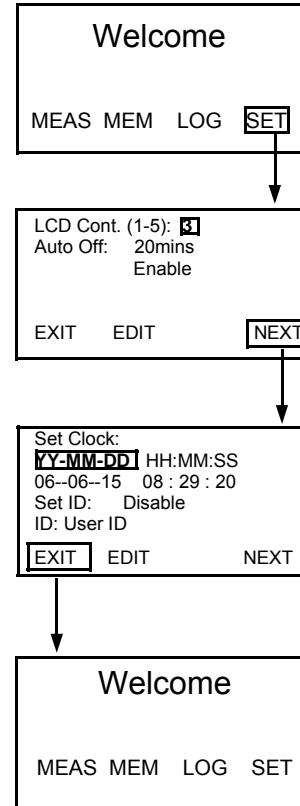
There are two data modes: Memory and Logger.

1. Select the data mode from Mode on the main menu or the drop-down menu.
2. In Logger mode, select “GoTo” to choose the logged data range you wish to display.



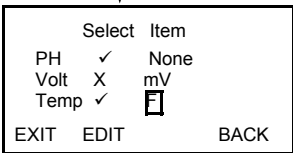
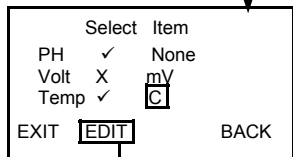
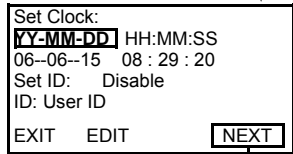
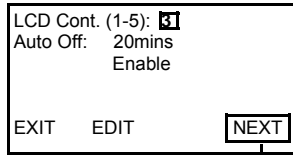
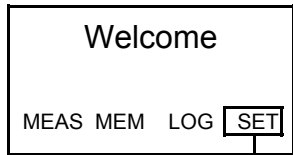
# SET-UP PROCEDURE

Turn the meter on using the **ON/OFF** button. You will see the **Welcome** menu shown below.



1. Press **F4** (SET) to enter the setup mode.
2. Use the **▲** or **▼** buttons to move the on-screen cursor, **F2** (EDIT), and the **Keypad** to input changes.
3. If changes are made, press the **F4** (ENTER) button to save the new settings or **F1** (ABORT) to cancel the change.
4. Press **F4** (NEXT) to access the next page.
5. Press **F1** (EXIT) to return to the Welcome menu.

## SET-UP PROCEDURE

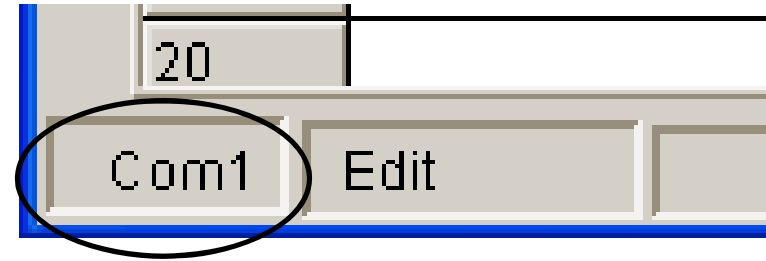


1. **LCD Cont.** (1-5): Display contrast, 5 = least contrast.
2. **Auto Off:** 1~20 minutes, Enable/Disable.
3. **Set Clock:** Select the date mode MM-DD-YY, DD-MM-YY or YY-MM-DD and set local time.
4. **Set ID:** Enable/Disable datalogging.
5. **ID:** Alpha/numeric user name.
6. **Select Item:** Press **F2** (EDIT) to select X = not selected, ✓ = selected.
7. Press the **F2** (EDIT), ▲ or ▼ buttons to cycle through the 3 units of measurement: pH, millivolt, and temperature.
8. With the temperature item selected, press the **F2** (EDIT) to switch between C and F.
9. Press **F1** (EXIT) to save changes and return to the Welcome menu.

## SOFTWARE CONFIGURATION

### Communications Port Settings

1. Select the Com port and ensure that the meter is communicating with the PC.
2. The selected Com port is displayed in the bottom-left hand corner of the software screen.



3. When connected, "PC Mode" and the Com port number (1-8) are displayed on the meter.

## SOFTWARE CONFIGURATION

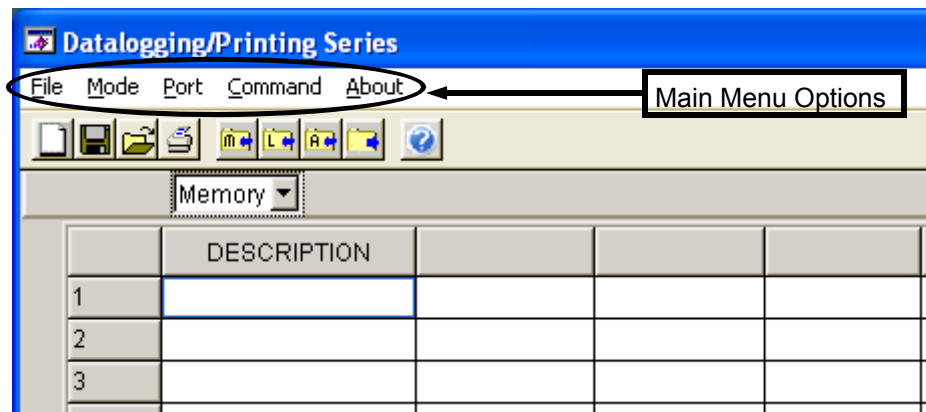
Use the included RS-232 cable and software to download saved data to a PC for further analysis, or to upload settings to save time with the datalogger parameter set-up.

### PC requirements

- Operating System: Windows98 or above.
- Hardware: Serial Port or compatible USB—RS232 Adapter.

### Main Menu Options

- File
- Mode
- Port
- Command
- About



## CALIBRATION

It's best to perform a calibration when the probe has not been used for a long time, when using the meter with a new probe for the first time, or when the readings seem erratic.

*Note:* During calibration, you can press **F2** (RST) to cancel the process and restore the default setting.

There are 5 points of calibration using USA or NIST pH buffers 1.68, 4, 7, 10, 12 and 12.45.

### Calibration with ATC

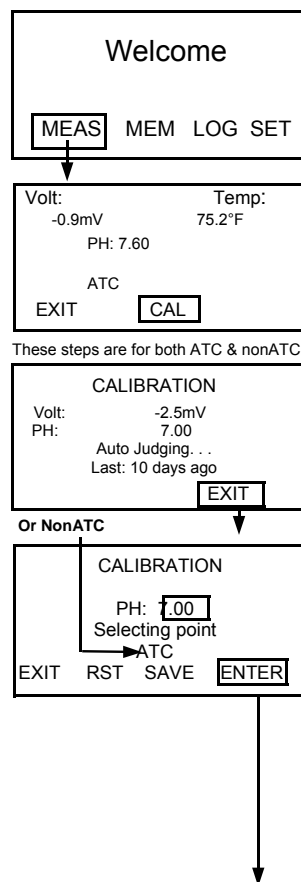
1. Start the calibration with pH 7. Immerse the tip of the **Probe** into the buffer solution.

2. With the meter on, press the **F1** (MEAS) button to start the calibration process.

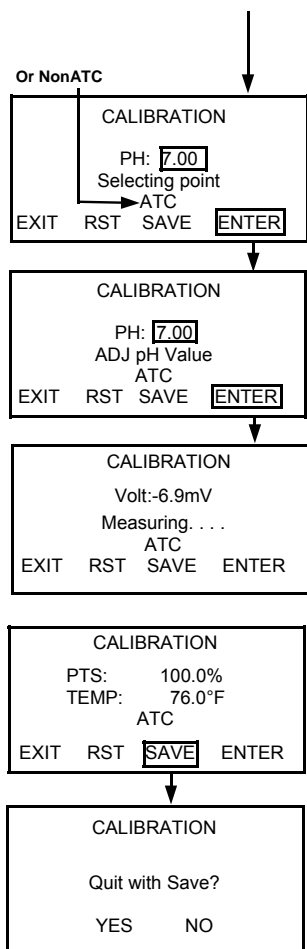
3. Press the **F3** (CAL) button for at least 2 seconds to enter the calibration mode.

4. "Auto Judging . . ." and the number of days since the last calibration is displayed. The meter is automatically determining the buffer solution's value at this time. Press **F4** (ENTER) to continue.

5. If "XX days" is displayed, the clock has not been set. (see **Set-Up Procedure** on pages 5-6)



## CALIBRATION



6. The calibration point that best matches the buffer solution is displayed. To manually change the calibration point (1.68, 4, 7, 10, 12, or 12.45), use the ▲ or ▼ buttons.
7. Press **F4** (ENTER) again. As needed, use the ▲ or ▼ buttons to adjust the pH value to  $\pm 0.5$ , then press **F4** (ENTER).
8. "PTS" is the sensitivity of the probe. "Failure!!" is displayed when the range is not within 85~105%. If this occurs, replace the probe.
9. For multiple-point calibration, press **F4** (ENTER) and repeat the above steps to perform up to 5 points of calibration.
10. When finished, press **F3** (SAVE). Confirmation is displayed, press **F2** (YES) to quit and save, or **F3** (NO) to return to the previous menu.

## CLEAR LOG DATA

1. While at the Welcome menu, press **F3** (LOG) to view data recorded with Datalogger.
2. Press **F3** (SET) then press **F4** (NEXT) access the menu option to clear data.
3. To delete all records, press **F2** (CLR) for at least 2 seconds.
4. The confirmation, "Clear All?" is displayed. Press **F2** (CLR) to delete all LOG Data records.
5. Press **F4** (BACK) then press **F1** (EXIT) to return to the Welcome menu.

## DATALOGGING

```

Begin: 08-02-20
Start: 02:28:06
End: 08-02-21
Suspend: 03:28:55
Rate: 60Sec(s)
Expect: 4000Point(s)
Remain: 3977Point(s)
EXIT EDIT VIEW NEXT
    
```

```

0022: 02-20 03:28:55
PH: 6.02
Volt: 57.9mV
Temp: 74.4°F
0023:
PH:
Volt:
EXIT START SET NEXT
    
```

```

Logging . . .
STOP MEAS VIEW
    
```

```

0023: 02-20 07:34:28
PH: 3.19
Volt: 200.1mV
Temp: 86.1°F
0024:
PH:
Volt:
STOP MEAS ESC
    
```

```

0024 : 02-20 07:34:29
Volt Temp:
-34.6mV 86.1°F
PH: 7.53
ESC
    
```

- "Expect" is the total number of memory points (4000).
- "Remain" shows the number of available data points (4000 minus the number of already recorded data points).

1. Press **F3** (LOG) to view data-logs.
2. Press **F2** (START) to begin the logging function. Datalogging will automatically begin and end according to the set parameters. If the maximum number of data points is reached, logging stops and the records are held in the datalogger.
3. To display your recorded measurements, press **F4** (VIEW), or to display real-time measurements, press **F2** (MEAS). Press **F1** (ESC) to escape view mode.

4. To quit recording, press **F1** (STOP).
5. To review the previous or next 100 data points press **F4** (NEXT), then press **F1** (P-PG) or **F2** (N-PG).
6. Press **F2** (START) to continue recording. The previously recorded data points are not erased.

## CALIBRATION

### Calibration without ATC

```

Welcome
MEAS MEM LOG SET
    
```

```

Volt: Temp:
-34.9mV 75.2°F
PH: 7.60
NonATC
EXIT TEMP CAL
    
```

```

RANGE: 23.0~176.0°F
Temp: 75.2°
EXIT CLR +/- ENTER
    
```

Note: Temperature value was changed from 75.2° to 76.3°

```

RANGE: 23.0~176.0°F
Temp: 76.3°
EXIT RST SAVE ENTER
    
```

```

Volt: Temp:
-34.9mV 76.3°F
PH: 7.60
NonATC
EXIT TEMP CAL
    
```

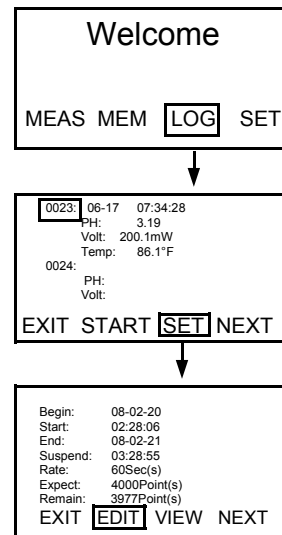
1. When using a standard pH probe that does not feature ATC, start the calibration with pH 7. Take a temperature measurement of the pH buffer.
2. Immerse the tip of the **Probe** into the buffer solution.
3. With the meter turned on, press the **F1** (MEAS) button to begin.
4. Press the **F2** (TEMP) button and use the Keypad, **▲** or **▼** buttons, and/or **F3** (+/-) to adjust the temperature value. "OVER RANGE" is displayed when the setting is not within 23.0°~176.0°F (-5~80°C).
5. Press the **F3** (CAL) button for at least 2 second to enter the calibration mode.
6. "Auto Judging . . ." and the number of days since the last calibration is displayed. The meter automatically determines the buffer solution's value at this time.

## CALIBRATION

7. If "XX days" is displayed, the clock has not been set (see **Set-Up Procedure** on pages 5-6).
8. Press **F4** (ENTER) and the calibration point that best matches the buffer solution is displayed. To manually change the calibration point (1.68, 4, 7, 10, 12, or 12.45), use the ▲ or ▼ buttons.
9. Press **F4** (ENTER). As needed, use the ▲ or ▼ buttons to adjust the pH value to  $\pm 0.5$ , then press **F4** (ENTER) again.
10. As needed, use the ▲ or ▼ buttons to adjust the temperature value for each buffer, then press **F4** (ENTER).
11. "PTS" is the sensitivity of the probe. "Failure!!" is displayed when the range is not within 85~105%. If this occurs, replace the probe.
12. For multiple-point calibration, press **F4** (ENTER) and repeat the above steps to perform up to 5 points of calibration.
13. When finished, press **F2** (YES) to quit and save, or **F3** (NO) to return to the previous menu.

## DATALOGGING

### Auto Logging Setup



This function automatically records (logs) up to 4000 measurements based on user-defined parameters.

1. Press **F3** (LOG) to enter this function.
2. Press **F3** (SET) to setup your datalogging parameters.
3. Press **F2** (EDIT), and use the **Keypad** to edit the selected parameter. Press **F4** (ENTER) to accept each value.
4. Use the ▲ or ▼ buttons to select "Begin" date, "Start" time, "End" date, "Suspend" time, or sampling "Rate".
5. Repeat steps 2-4 as needed.
6. Press **F1** (EXIT) to return to the Welcome menu.

*Note:* The date mode, **MM-DD-YY**, **DD-MM-YY** or **YY-MM-DD**, defaults to the initial setting. For 24 hour logging, set the Start time to **00:00:00** and the Suspend (end) time to **23:59:59**.

The sampling "Rate" is adjustable from **1** to **7200 Sec(s)**.

(see **FIRST TIME USE** on page 2).

## CLEAR MEM DATA

1. While viewing data recorded with Multiple Measurement (MEM), Press **F4** (NEXT) to access the menu option for clear data.
2. To delete a single record, use the ▲ or ▼ buttons to move the on-screen cursor. Then, press and release **F2** (CLR) to delete the selected record.
3. The confirmation, “Clear ?” is displayed. Press **F2** (CLR) to delete the selected record from MEM Data.
4. To delete all records, press **F2** (CLR) for at least 2 seconds.
5. The confirmation, “Clear All?” is displayed. Press **F2** (CLR) to delete all records from MEM Data.
6. Press **F1** (EXIT) to return to the Welcome menu.

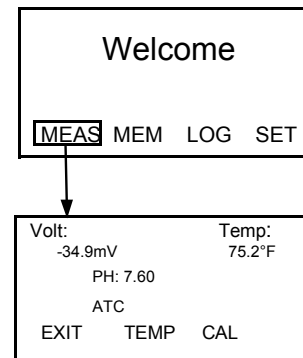
## MEASUREMENT PROCEDURES

### Measurement Modes

There are three measurement modes:

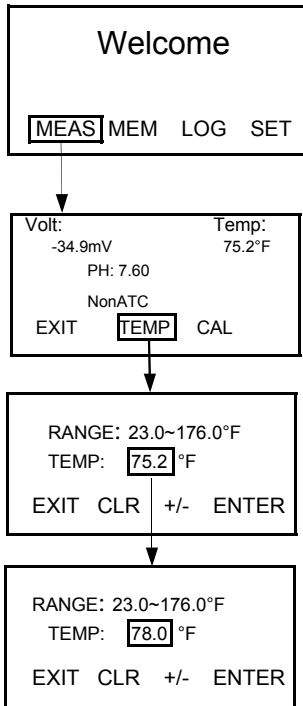
- **F1** (MEAS) Single Measurement
- **F2** (MEM) Multiple Measurement
- **F3** (LOG) Auto Logging

### Single Measurement with ATC



1. Immerse the **Probe's** tip in the solution to be measured.
2. Press **F1** (MEAS) and a single measurement is displayed.
3. Press **F1** (EXIT) to return to the Welcome menu.

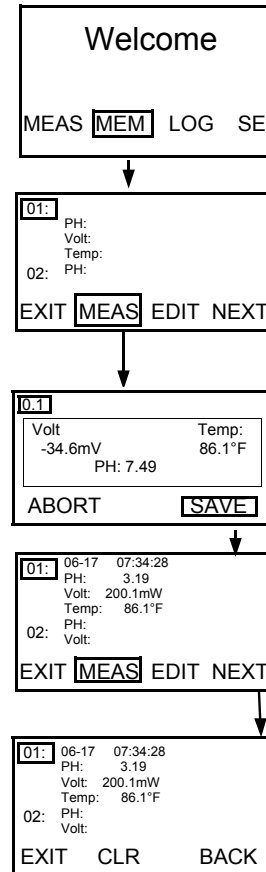
## MEASUREMENT PROCEDURES



### Single Measurement without ATC

1. Immerse the **Probe's** tip in the solution to be measured.
2. Press **F1** (MEAS) and a single measurement is displayed.
3. Press **F2** (TEMP) to change the temperature value. Use the Keypad, **▲** or **▼** buttons, and/or **F3** (+/-) to change the temperature value.
4. Press **F4** (ENTER) to save the setting and return to the pH measurement.
5. Press **F1** (EXIT) to return to the menu without making a change.

## MEASUREMENT PROCEDURES



### Multiple Measurement (MEM Data)

This option will allow you to manually record up to 99 data points with real time and editable file names.

1. Press **F2** (MEM) to enter this function.
2. Press **F2** (MEAS) and the first measurement is displayed.
3. To save the data, press **F4** (SAVE).
4. Use the Keypad, **▲** or **▼** buttons to select the next data point number.
5. To take another measurement, repeat steps 2-4 as needed.
6. If desired, press **F3** (EDIT) to edit the file name of a recorded data point. Then, use the **Keypad** to edit the file name. Cycle through the characters by depressing the key until the desired character is highlighted.