

TABLE OF CONTENTS

1. FEATURES.....	2
2. SPECIFICATIONS.....	3
3. PH CALIBRATION PROCEDURE.....	4
3-1 Calibrating Consideration.....	4
3-2 Equipment Required for Calibration.....	4
3-3 Two Point Calibration.....	4-5
3-4 Single Point Calibration.....	6
3-5 Others.....	6
4. PH TEMPERATURE COMPENSATION.....	6
4-1 Manual Temperature Compensation.....	6-9
4-2 Automatic Temperature Compensation.....	9
5. MEASURING PROCEDURE.....	9
5-1 PH Measurement.....	9
5-2 Temperature Measurement.....	10
5-3 Data Hold.....	10
5-4 Data Record (Max., Min., readings).....	10
5-5 Quick Measuring Diagram Procedures.....	11
6. AUTO POWER DISABLE.....	12
7. RS232 PC Serial Interface.....	12
8. BATTERY REPLACEMENT.....	13
9. OPTIONAL PROBES & ACCESSORIES.....	13-14

1. FEATURES

- Master meter is a professional PH/mV meter.
PH range: 0 – 14 PH x 0.01 PH
MV range: -1999 mV – 1999mV.
- The 760 can use the optional Conductivity Probe (760CP), Dissolved Oxygen Probe (760DOP), to be a professional Conductivity meter or a Dissolved Oxygen meter. After connecting a new probe, no new calibration procedures are required. ** PLUG and PLAY function**
- The 760 also features a mV function for mV measurements.
- Wide manual temperature compensation adjustment can be easily operated by pushing button on the front panel.
- Optional ATC (Auto Temperature Compensation) probe is available for PH measurement.
- Microprocessor circuit assures high accuracy and reliable performance.
- Large LCD, dual function display.
- Records Maximum and Minimum readings with recall.
- Data Hold.
- Auto shut off saves battery life.
- Powered by 9VDC battery.
- RS-232 PC serial interface.
- °C or °F can be converted by pushing a button on the front panel.
- PH calibration is easily done by pushing a button on the front panel.
- PH function with high input impedance helps to avoid measuring errors.
- Wide variety of applications: Water conditioning, aquariums, beverage industry, Photography, quality control, Schools and Colleges.

2. SPECIFICATIONS

General Specifications

Display	51 mm x 32 mm, dual function LCD display, 15 mm (0.6") digit size
Measurement	pH (0 to 14 pH) mV (-1,999 to 1,999 mV)
Temperature Compensation for pH measurement	Manual - 0 to 100 C, able to be adjusted by pushing a button on the front panel
pH Calibration	pH7, pH4 and pH10, 3 points of calibration to ensure the best linearity and accuracy
Data Hold	Hold the current reading on the display
Memory Recall	Maximum and Minimum readings can be saved and retrieved by the Recall function
Data Output	RS-232 PC Serial Interface
Overload Indicator	"----" symbol on display
pH Electrode	Any pH electrode with a BNC connector
Operating Temperature	32 to 122 F (0 to 50 C)
Operating Humidity	Maximum 80% R.H.
Sampling Time	Approximately 0.8 seconds
Power Supply	9 VDC Battery, Approximately 7mA
Weight	250 g / 0.55 lb. (battery included)
Optional Accessories	pH Electrode (760PH) ATC Temperature Probe (760ATC) Conductivity Probe (760CP) Dissolved Oxygen Probe (760DOP) Software and Communication Cable (AK 760)

2-2 Electrical Specifications (232 +- 5 °C)

Measurement	Range	Resolution	Accuracy
PH	0 to 14 PH	0.01 PH	+ - (0.02 PH + 2 dgt
mV	0 to 1999 mV	1 mV	+ - (0.5% + 2 dgt)
<p>* PH accuracy is based on calibrated meter only.</p> <p>* Specification tests under the environment RF Field Strength less than V/M & frequency less than 30 MHz only.</p>			

3. PH Calibration Procedure

3-1 Calibration Consideration

The most ideal PH Electrode generates 0 mV at PH 7.00 (177.4 mV at PH 4) and the model 760 has been always calibrated with signals which simulates the most ideal PH Electrode (based on 25 °C ambient environment). However not every PH Electrode is as accurate as the most ideal one, so calibration procedure are necessary for accurate measurements.

3-2 Required Equipment for Calibration

1. PH Electrode
2. PH buffer solution

3-3 Two Point Calibration Procedure

1. Power on the instrument by pressing the “Power” button
2. Press the “PH/mV” button to let the meter operate under the PH function with a “PH” symbol on the display.
3. Adjust the “Temperature Compensation Value” to make it same as the temperature value of the PH buffer solution.

4.

PH 7 Calibration

Connect the PH Electrode with to “BNC” socket and immerse the electrode in the PH 7 buffer solution.

Press the “CAL” button then the upper display shows the text “CAL” and the lower display shows the default calibration value.

CAL

7.00

* The text “CAL” will flash for about 5 seconds. After that, the meter calibrates itself automatically. The upper display will show the calibrated value, the lower display will show the temperature value.

CAL
25.0

5. **PH 4 or PH 10 Calibration**

Rinse the electrode with water.

Immerse the electrode in the PH4 buffer solution (or PH 10 buffer solution).

Press the “CAL “ button then the upper display shows “CAL” and the lower display shows the default calibration value.

CAL
4.00

The word “CAL” will flash for around 5 seconds.

After that, the meter will calibrate itself automatically.

The upper display will show the calibrated value, the lower display will show the temperature value.

4.00
25.00

6. Rinse the electrode with distilled water.
7. Repeat above procedures (4 – 5) at least two times.
8. The 760 and PH electrode are now ready for use.

3-4 Single Point Calibration

If PH 4 and PH 10 are not available, single point (PH 7) calibration can be executed from procedures of 3-3 (1) to (4). However for more accurate measuring results and linearity, two-point calibration is always recommended.

3-5 Others

Above calibration procedures are effective only when the reading values within ± 1 PH of the calibration point. However, if the reading values are beyond:

- ❖ **1 PH of PH 7 (> Ph 8, <PH 6)**
- ❖ **1 PH of PH 4 (> PH 5, <PH 3)**
- ❖ **1 Ph of PH 10 (> PH 11, <PH 9)**

the calibration procedures are:

1. Connect the PH Electrode to the “PH BNC Input” socket.
2. Power on the instrument by pressing the “Power” button.
3. Press the “mV” button to select the PH function with a “PH” symbol on the display.
4. Set the “Manual temperature compensation” value to 25 °C refer to 4-1 calibration procedures.
5. Place the electrode into the solution (PH 7, PH 4 or PH10), then the instrument the PH value on the display.
6. * For measuring the PH7 standard solution, adjust the PH 7 VR (Fig.3) until the display value within PH 3 to PH 5.
* For measuring the PH 4 standard solution, adjust the PH 4 VR (Fig. 3) until the display value is within PH 3 to PH 5.
* For measuring the PH 10 standard solution, adjust the PH 10 VR (Fig. 3) until the display value is within PH 9 to PH 11.
7. The following calibration procedures will be the same 3-3 and 3-4.

4. PH Temperature Compensation

To enable the meter to gain highly accurate measuring results from different kinds of solutions, the temperature compensation calibration are necessary.

For manual temperature compensation calibration procedures please refer to 4-1.

For automatic temperature compensation calibration procedures please refer to 4-2.

4-1 Manual temperature compensation procedures

Before the manual temperature compensation calibration procedures, make sure that there are no other probe connected.

Power on the instrument by pressing the “Power” button

1. Press the “mV” button to select the PH function with the PH function on the display.

2. “TEMP. C” button is used to adjust the following values:

- A. Temperature compensation value.
- B. PH 4 Default calibration value.
- C. PH 7 Default calibration value
- D. PH 10 Default calibration value

A. Adjusting the Temperature compensation value

- Press the “Temp. C” button first; the upper display will show the measured value, and the lower display will show the manual temperature compensation value.

PH
7.91
026.1 °C

- Using the “left” button, “up” button and the “down” button (Fig 1) to adjust the manual temperature compensation value.

B. Adjust the PH 4 default calibration value

- When the manual temperature compensation values need to be adjusted, press the “TEMP. C” button. The upper display will show the values of “4.00” and the lower display will show the PH 4 calibration default value.

PH
4.00
04.03

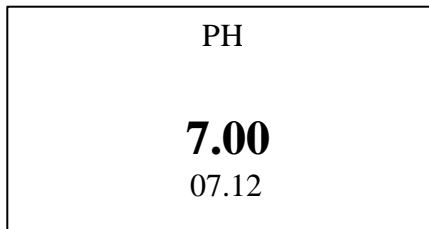
- Use the “up” button and the “down” button to adjust the PH default calibration value.

- The adjustment range of “PH 4” default calibration value is limited to within 4.0 to 0.20 PH.

C. Adjust the PH 7 default value

- **When the PH 4 default value needs to be adjusted simply press the “Temp. C” button once to adjust the PH 7 default calibration value.**

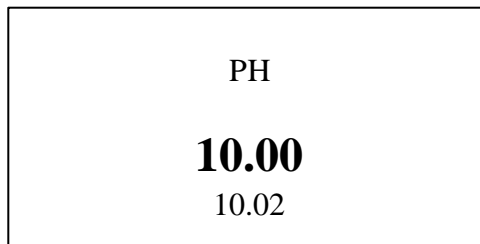
The upper display will show the value of “7.00” and the lower display will show the “PH 7 default calibration value”.



- ❖ Use the “up” button and the “down” button to adjust the PH 7 default calibration value.
- ❖ The adjustment range of “PH 7 default calibration value” is limited to within 0.7 to 0.20 PH.

D. Adjust the PH 10 default value

- **When the PH 7 default calibration value needs to be adjusted press the “TEMP. C” button once to adjust the PH 10 default calibration value.**



- ❖ Use the “up” button and the “down” button to adjust the PH 10 default calibration value.
- ❖ The adjustment range of “PH 10” default calibration value” is limited to within 10.0 to 0.20 PH.

E. Finishing the adjustments

- **When the PH 10 default calibration value needs to be adjusted press the “TEMP. C” button once again to finish the manual temperature calibration procedures and return to the measuring mode.**

Consideration:

If you want to skip any of the procedures above, just press “TEMP. C” button. The above PH default calibration values you set will become the default value when you execute the PH Calibration Procedures.

4-2 Automatic temperature compensation

- 1) Connect the optional “ATC Temp Probe (760ATC)” directly into the probe input socket. **Slide the “lock switch” into the locked position.**
- 2) Power on the instrument by pressing the “Power” button.
- 3) Press the “PH/mV” button to select the PH function with the PH symbol on the display.
- 4) Place the temperature probe into the solution, then the probe will compensate automatically for the PH measurement.

5. MEASURING PROCEDURE

Make sure that the lock switch is in the lock position before taking any measurements.

5-1 PH Measurement

Performing the calibration procedures are recommended before taking any measurements.

- 1) Connect the PH Electrode to the BNC input socket.
- 2) Power on the instrument by pressing the “Power” button.
- 3) Press the “PH/mV” button to select the PH function with a “PH” symbol on the display.
- 4) * If you are operating under “Manual temperature compensation” please refer to the above section 4-1 calibration procedures.
*If you are operating under “Automatic temperature compensation” then please refer to the above section 4-2 calibration procedures.
- 5) Place the electrode into the solution, then the instrument will have the PH value on the display.

After the measurement is taken, rinse the electrode with distilled water.

5-2 Temperature Measurement

- 1) Connect the optional “ATC temperature probe (760 ATC)” into the probe input socket
- 2) * If you intend to measure “°C”, then press the “°C/°F” button and select the “°C” unit.
* If you intend to measure “°F”, then press the “°C/°F” button and select the “°F” unit.
- 3) Place the temperature probe into the solution, and the instrument will have the temperature value on the display.

5-3 Data Hold

Press the “HOLD” button, this feature will hold the measured value and the LCD will indicate a “HOLD” symbol on the display during the measurement.

**Press the “HOLD” button again to exit the data hold function.*

5-4 Data record (Max., Min. readings)

- ❖ The data record function records the maximum and minimum readings. To operate press the “REC.” button to start the Data Record function, a “REC.” symbol will appear on the display.
- ❖ With the “REC.” symbol on the display:
 - A) Press the “REC.” button once and the “REC. Max” will appear on the display along with the maximum value.

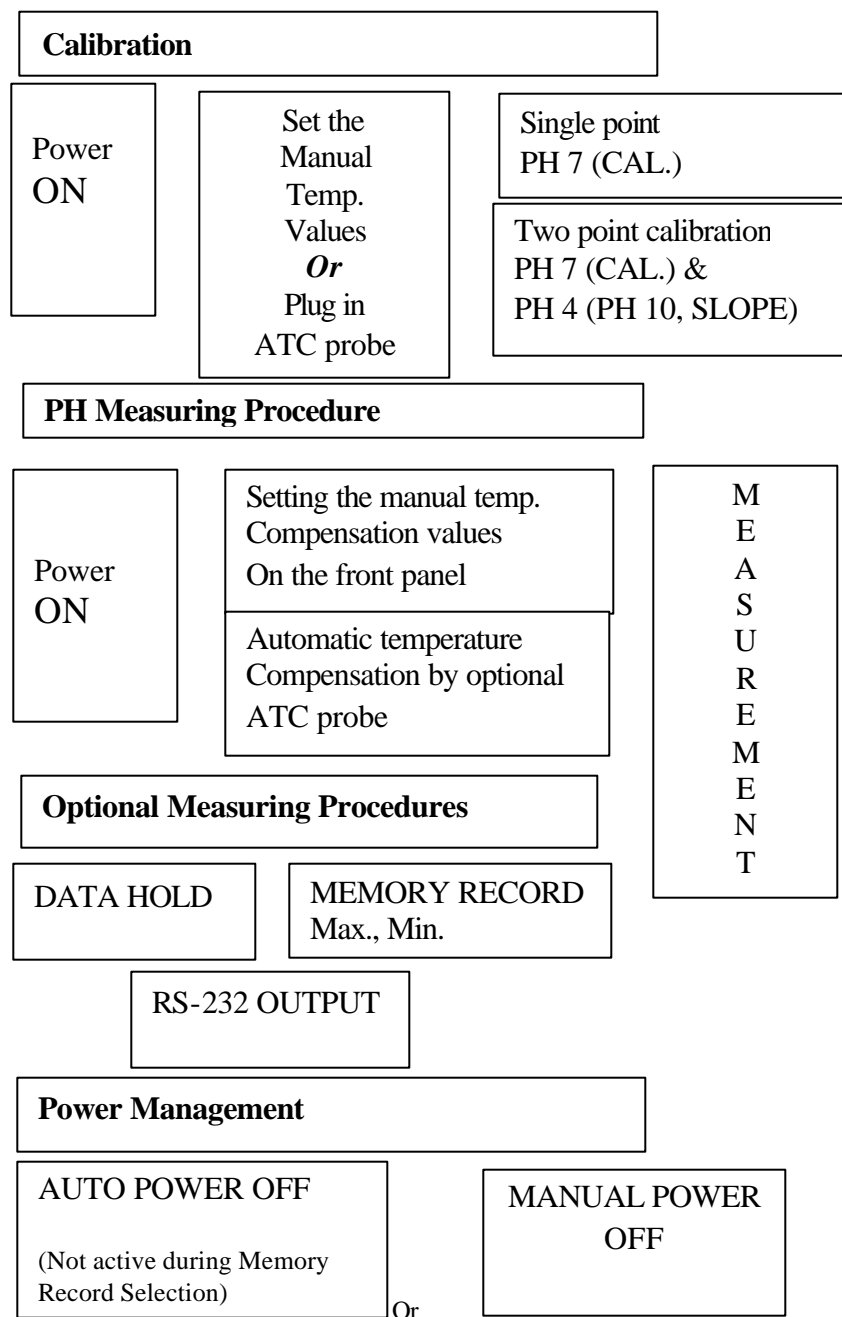
If you intend to delete the maximum value, just press the “HOLD” button for a few seconds then the display will show the “REC” symbol only and execute the memory function continuously.

- B) Press the “REC” button again and the “REC. Min” symbol along with the minimum value will appear on the display.

If you intend to delete the minimum value, just press the “HOLD” button for a few seconds then the display will show the “REC” symbol only and execute the memory function continuously.

- C) To exit the memory record function, just press the “REC” button for 2 seconds. The display will revert to the current reading.

5-5 The following are block diagrams for quick measuring procedures



6. DISABLE POWER OFF

This instrument has an “Automatic Power Off” function in order to prolong battery life. The meter will shut off automatically if none of the buttons are pressed in approx. 10 min.

To disable this function, select the memory record function during the measurement by pressing the “REC.” button.

7. RS 232 SERIAL INTERFACE

This instrument features RS-232 output via 3.5 mm terminal.

The signal output is a 16-digit data stream, which can be utilized for users specific application.

RS-232 FORMAT: 9600, N, 8, 1

8. BATTERY REPLACEMENT

- 1) When the left corner of the display shows “ ”, it is necessary to replace the battery. However measurements can still be accurately taken for several hours after the low battery indicator appears before the instrument becomes inaccurate.
- 2) Slide the “battery cover” away from the instrument and remove the battery.
- 3) Replace with a 9V battery.
- 4) Make sure that the battery cover is secure after replacing the battery.

9. OPTIONAL PROBES AND ACCESSORIES

DISSOLVED OXYGEN PROBE	* 760DOP can be used with the 760 to become a professional Dissolved Oxygen Meter								
Model: 760DOP	<table><tr><th><i>Measurement</i></th><th><i>Range</i></th></tr><tr><td>DO</td><td>0 to 20.0 mg/L</td></tr><tr><td>°C</td><td>0 °C to 50 °C</td></tr><tr><td>°F</td><td>32 °F to 122 °F</td></tr></table>	<i>Measurement</i>	<i>Range</i>	DO	0 to 20.0 mg/L	°C	0 °C to 50 °C	°F	32 °F to 122 °F
<i>Measurement</i>	<i>Range</i>								
DO	0 to 20.0 mg/L								
°C	0 °C to 50 °C								
°F	32 °F to 122 °F								

CONDUCTIVITY PROBE	* 760CP can be used with the 760 to become a professional Conductivity meter										
Model: 760CP	<table><tr><th><i>Measurement</i></th><th><i>Range</i></th></tr><tr><td>Conductivity</td><td>2 mS</td></tr><tr><td>Conductivity</td><td>20 mS</td></tr><tr><td>°C</td><td>0 °C to 60 °C</td></tr><tr><td>°C</td><td>32 °F to 140° F</td></tr></table>	<i>Measurement</i>	<i>Range</i>	Conductivity	2 mS	Conductivity	20 mS	°C	0 °C to 60 °C	°C	32 °F to 140° F
<i>Measurement</i>	<i>Range</i>										
Conductivity	2 mS										
Conductivity	20 mS										
°C	0 °C to 60 °C										
°C	32 °F to 140° F										

ATC PROBE Model: 760ATC	* 760ATC can be used with the 760 to become a professional Automatic temp. probe	
	<i>Measurement</i>	<i>Range</i>
	°C	0 °C to 65 °C
	°C	32 °F to 149 °F

CARRYING CASE LC-760	Hard carrying case
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PH ELECTRODE PH-03	Professional, laboratory & field use. 9.5 mm dia. X 120 mm. Epoxy body, 0-14 PH
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BUFFER SOLUTION PH 7	PH 7 standard solution. for calibration purposes
BUFFER SOLUTION PH 4	PH 4 standard solution. for calibration purposes

RS-232 Cable	RS-232 cable for PC interface
AK-760 software	Windows version of application software. Data Logging & Data Record