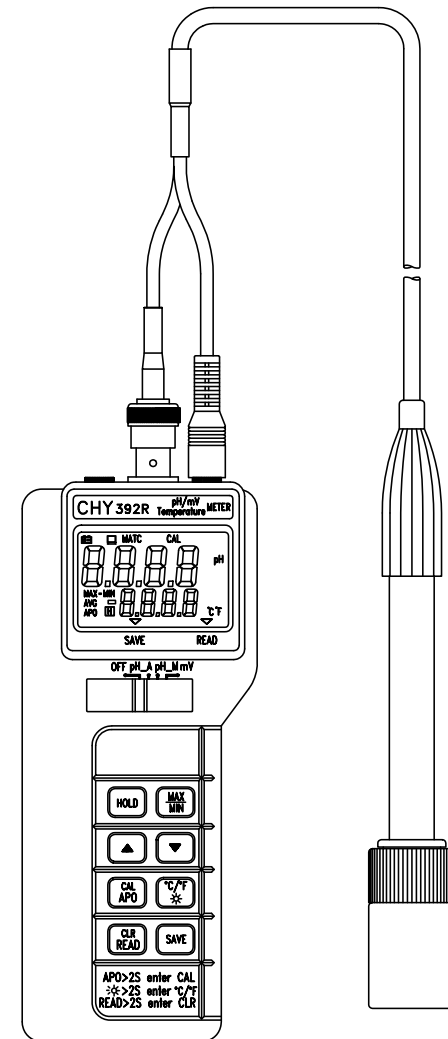# Operator's Manual
MODEL 392R

Ⅲ Setup, Start & Exit on Software

A. Quick Start At the 392R

1. Install the RS-232 cable between PC's Com port and 392R's RS-232 port.
   Please make sure:
   - The RS232 cable connector (to meter) faced up with panel.
   - Physical Com port number has to be the same as setup in software.
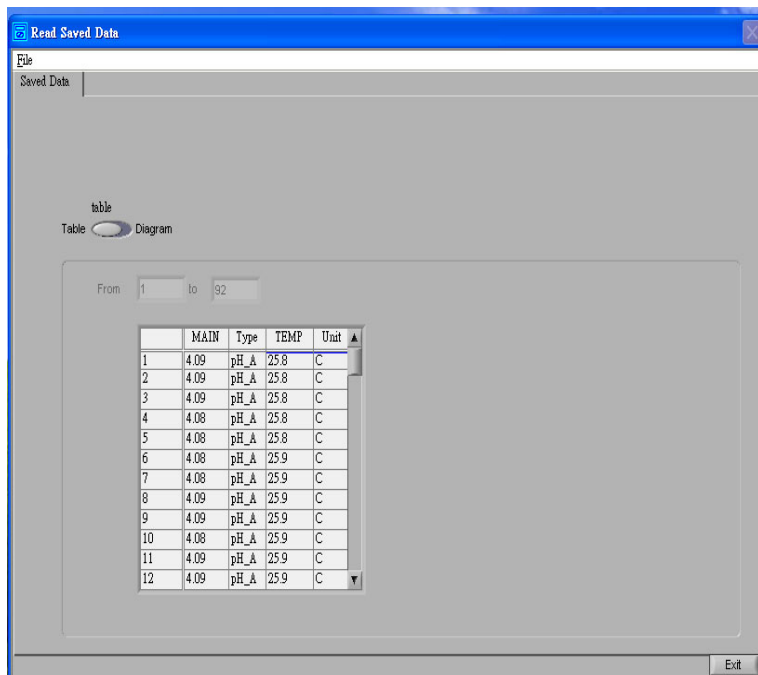2. Turn the 392R on.

B. At the PC

setup

1. Open the 392R software by double-clicking on the icon SETUP.exe.
2. Please double-clicking 392R on the file C:\ 392R\ to start the 392R application.

C. Quick Exit

1. Click Exit to exit 392R application.

Button	Description

[FILE NAME]	1. DEFAULT-saving: the file name saved with time.xls
	    Such as: C:\392R\data\06161133.xls.
	    This file was saved at 11:33 am. June 16.
	2. User-saving: the file name saved by user.

[INTV]	Enter the number of second between recording input reading.
[LIST]	Enter the number of message history then view the message by shifting bar.
[CLR]	Clear the message window.
[REC]	Start the recording.
[OFF]	Stop the recording.

Open\Read data

Button	Description
[Exit]	To exit 392R application.

1. Introduction

- This instrument is a portable easy to use 3 ½ digit, compact-sized pH/mV meter.
- Dual display pH (mV) & Temperature.
- Auto power off function to extend battery life (by user selective).
- Automatic Temperature Compensation and Manual Compensation.
- RS 232 Interface with Windows Software.
- Software download link:
  http://WWW.chy-meter.com//data/outer_web/1492-00392R/1492-00392R-103.zip
- Data Storage: 128 measured data.

2. General

Low battery indication: The "⊡" is displayed when the battery voltage drops below the operating level.

Accuracy: Stated accuracy at 23°C±5°C (79°F±9°F), < 70% relative humidity.

Operating environment: Meter: 0°C to 50°C (32°F to 122°F) at < 70% relative humidity.

pH electrode: 0°C to 80°C (32°F to 176°F).

Storage environment: -20°C to 60°C (-4°F to 140°F) at < 80% relative humidity with battery and pH electrode removed form meter.

Measurement rote: 1 time per second, nominal.

EMC-instrument unspecified for use in EMC field ≥ 0.5V/m.

Battery: Standard 9V battery (NEDA 1604, IEC 6F22 006P).

Battery life: 200 hours typical with carbon zinc battery.

Dimensions: 165mm(H) x 65mm(W) x 35mm(D).

Weight: 260g.

Accessories: Instruction manual, Batteries, RS232 cable, pH4.01, pH7.00 and pH10.01 buffer solution, pH electrode (combo.).

Option Accessories: pH electrode, pH4.01, pH7.00 and pH10.01 buffer solution, Carrying case.

3. Specifications

Accuracy stated at ambient temperature 18 to 28°C(65 to 82°F), <70% R.H.

Temperature Coefficient: 0.1 times the applicable accuracy per °C from 0°C to 18°C and 28°C to 50°C(32°F to 64°F and 82°F to 122°F)

Measurement	Range	Resolution	Accuracy
pH	0.00 to 14.00	0.01pH	±0.03pH*
mV	-1000mV to 1000mV(Auto)	0.1mV/1mV	±(0.5% rdg+2dgts)
Temp(°C)	0 to 80°C	0.1°C	±1°C
Temp(°F)	32 to 176°F	0.1°F	±2°F

*Not include pH electrode error

Input impedance: $10^{12}\Omega$.
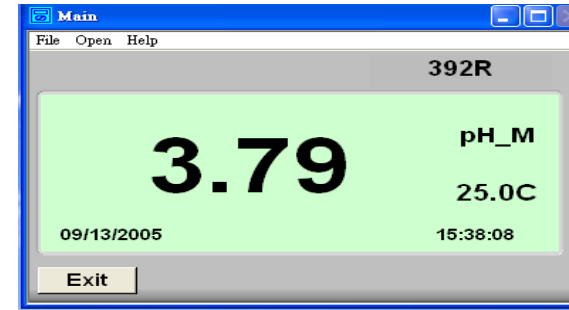
Note: Probe can't be interchanged.

Ⅰ Install the 392R Software

1. Run setup.exe on your 392R software.
2. Change the path if necessary or choose "Finish" button to install program directly.

Note:
1. Check the 392R software for virus before installation.
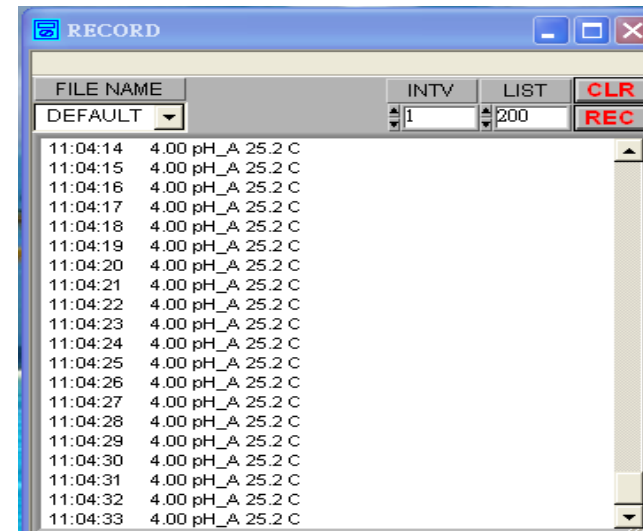2. System required: 80486-33 with 16MB RAM or better.

Ⅱ 392R Software Operate manual

File

➢ Open File To Excel   To open excel file of REC data and save data.
➢ Print Window Print Main Window

Open\Display\List

? LCD show E3 at pH_A: The temperature of solution under 0°C (32°F).
? Can not into CAL mode: Checking plug is damaged the "⊟" symbol is showed.
? Can not save data: Checking the pH value and temperature value is show "OL" or " -OL", and
Check the "⊟" symbol is showed.

10. Battery Replacement

Power is supplied by a 9 volt "transistor" battery. (NEDA1604, IEC6F22). The "⊟" appears on the LCD display when replacement is needed. To replace the Battery, remove the two screws from the back of the meter and lift off the battery cover. Remove the battery from battery contacts.

11. Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives of solvents.

4. Front Panel Description
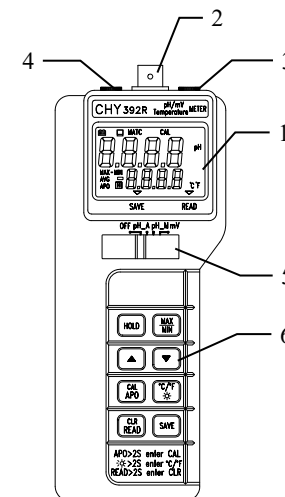
1. LCD: Measured values, unit, symbols and decimal points are displayed.
2. Input Socket: BNC connector for pH and mV.
3. Input Socket: Earphone (3.5mm) jack for temperature plug.
4. Input Socket: Earphone (2.5mm) jack for RS232 cable.
5. Slide Switch: Turn on/off meter and operation mode selection.
6. Push Buttons: Button for controlling meter.

4.1 Slide Switch

OFF: Turn off power.
pH_A: Measure pH with automatic temperature compensation.
pH_M: Measure pH with manual temperature compensation.
mV: Measure mV.

4.2 Push Button Functions

"HOLD" Button:

Press the "HOLD" button to enter the data hold mode, the "H" annunciator is displayed at the bottom-left of display. When data hold mode is selected, the pH meter held the present readings and stops all further measurements. Press the "HOLD" button again to cancel data hold mode, causing pH meter to resume taking measurements.

"MAX/MIN" Button:

Press the "MAX/MIN" button to enter the MAX, MIN, MAX-MIN, AVG recording mode. (displays the Maximum reading, Minimum reading, "MAX-MIN" reading and "AVG" reading in record mode)
In this mode, press "HOLD" button to stop recording, all values are frozen, press " HOLD" button again to restart recording. In this mode, the APO function and other buttons are disabled, excluding "HOLD" and Back-light buttons. Press and hold down the "MAX/MIN" button for more than 2 seconds to exit the MAX/MIN function.

"☼" and "°C/°F" Button:

Press "☼" button to trigger on the Back-light function, press the "☼" button again to cancel the Back-light function.
Press and hold down the "°C/°F" button for more than 2 seconds to change degrees Celsius(°C) or degrees Fahrenheit(°F).
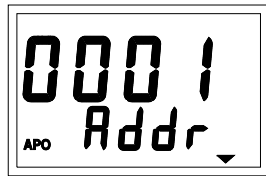
"▲" or "▼" Button:

1. In pH_M range, press the "▲" or "▼" to increase or decrease the compensation temperature.
2. In READ data mode, press the "▲" or "▼" to select the recorded data.
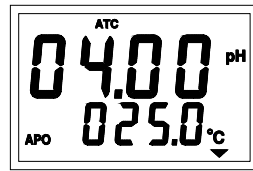
"SAVE" Button:

Press the "SAVE" button to save present data(pH or mV and Temp.) into memory, and indication of "▼"(SAVE) is shown.

"READ/CLR" Button:

Press the "READ" button to read saved data, and use the "▲" or "▼" button to select recorded data (Fig-1, Fig-2). Press again to exit this mode.

 (Fig-1)   (Fig-2)

Press and hold down the "CLR" button for more than 2 seconds to clear the memory, LCD will show Clr(main display) and Addr(sub display). (Fig-3)

 (Fig-3)

"APO/CAL" Button:

Press the "APO" button to trigger on or off APO(auto power off) function and the "APO" annunciator is displayed. (It will auto power off when no operation for 10 mins).
It can enter into calibration procedure by pressing and holding down "CAL" button for more than 2 seconds.

mV Measurement

The instrument builds in mV measuring function letting you make ORP or other precise mV measurements.
Power on the instrument by slide switch and select mV partition.
The meter will show the mV value on the display.

8. pH electrode Maintenance

The proper way of using and protecting the electrode, it will prolong the life of the glass membrane. If your pH electrode is exhibiting by slow response, continuous drift, or erratic readings, follow the procedures listed below.

8.1 Cleaning the pH Bulb

8.1.1 Protein contamination:

Soak the electrode bulb/tip in a 10% solution of pepsin for 30 minutes. Rinse with deionized water and soak the electrode in pH7.00 buffer for two hours before using.

8.1.2 Oil contamination:

Wash the electrode with a 50% water-acetone solution. Do not soak the electrode in the acetone solution, or it will deteriorate the bottom seals of the plastic electrode, Rinse with deionized water and soak the electrode in pH7.00 buffer for two hours before using.

8.2 Recondition the pH Bulb

Only resort to this procedure if the preceding maintenance and cleaning procedures fail to restore acceptable electrode performance. Rinse immediately with deionized water and soak in pH7.00 buffer for two hours before using.

Caution

To prevent permanent damage, care should be taken to prevent liquid permeating the pH meter. Meanwhile, the batteries should be taken out if user will not use the meter for a long period. Also, to choose the fitted pH electrode is required.
Please always keep the pH glass bulb wet by 4M KCL.
Always rinse the pH electrode and reference junction in de-ionized water before next use.
Never touch or rub glass bulb for lasting pH electrode life.

9. Trouble Shooting

? Power on but no display: Check the battery are in place and making good contact or correct polarity, replace a new battery.
? Unstable reading: Clean the probe and recalibrate or make sure sample entirely covers the sensor, or replace a new probe and re-calibrate if you find a broken probe.
? Slow response: Clean probe by immersing the electrode in tap water for 10-15 minutes, then thoroughly rinse with distilled water or use a general purpose electrode cleaner.
? LCD Show E1 at pH_A: Check your temperature plug has to 3.5 mm earphone Jack.
? LCD show E2 at pH_A: The temperature of solution over 100°C (212°F).

5. Press and hold down "CAL" button for more than 2 seconds to enter the temperature calibration, and the sub(Temp.) display blanking. (Fig-19)
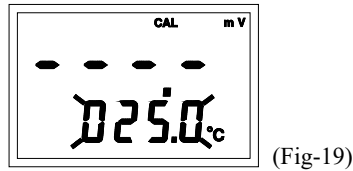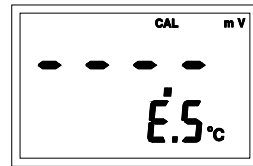

(Fig-19)

6. The preset value is 25.0°C (or 77.0°F) or user can press "▲" or "▼" button to enter determined value in LCD. Press and hold down "CAL" button for more than 2 seconds to complete 25.0°C (or 77.0°F) calibration, and LCD will show SA. (Fig-20, Fig-21)
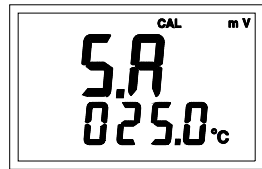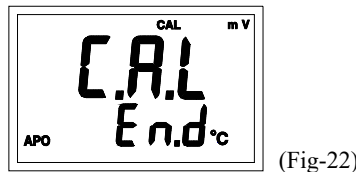

(Fig-20)

(Fig-21)

7. Put pH electrode into a standard which is 70.0±10°C(or 158.0±18°F) and the temperature is stabled, repeat steps 3 to 6.
8. If you complete steps 1 to 7, the LCD will show CAL(main display) and End(sub display). (Fig-22)

(Fig-22)

7. Measuring Procedure

pH Measurement

Calibrate the instruments and pH electrode before measuring.

1. Connect the combination pH electrode to the BNC socket.
2. Power on the instrument by slide switch and select pH_A or pH_M partition.
3. If the operation is under the "ATC", then please refer 5.1.1 Temperature compensation mode.
4. If the operation is under the "MTC", then please refer 5.1.2 Temperature compensation mode.
5. Place the electrode into the measured solution, the instrument will display the pH value.
6. After making the measurement, please rinse the electrode with distilled water.

5. pH Temperature Compensation

Enable the meter to read solutions at various temperatures, the meter will make the correct electrode's temperature dependency to measure the pH value. The compensation may be manual with two buttons adjustment on the meter, or it may be automatic with pH electrode's temperature sensor immersed in test solution.

5.1 Temperature Compensation Mode:

5.1.1 Automatic Temperature Compensation:

Slide the switch to pH_A and connect the 3.5mm plug into earphone (3.5mm).

5.1.2 Manual Temperature Compensation:

Slide the switch to pH_M, you can enter temperature between 0.0°C to 100°C (32.0°F to 212°F).The preset temperature is 25°C (77.0°F), use "▲" or "▼" to increase or decrease the compensation temperature.

6. Calibrating Procedure

6.1 pH Calibration With Automatic Temperature Compensation(ATC):

1. Select the function in pH_A and °C (or °F).
2. Press and hold down "CAL" button for more than 2 seconds to enter the calibrationprocedure.
3. Put pH electrode into buffer solution pH4.01 and agitate the buffer solution.
   (If the solution is inaccurate, LCD will show E4, please check value of buffer solution.)
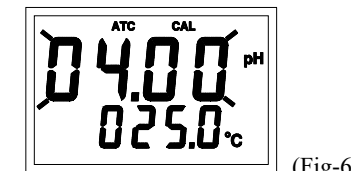   (Fig-4)
4. Wait for the reading to be stable. (Fig-5)
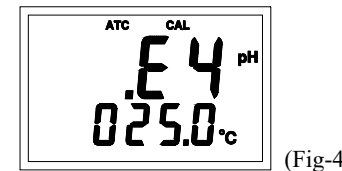
(Fig-4)
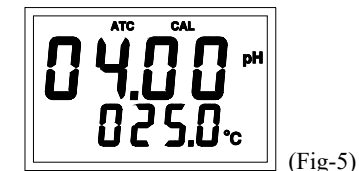
(Fig-5)

5. Press and hold down "CAL" button for more than 2 seconds to enter the pH4.01 mode, and the main(pH) display blanks. (Fig-6)
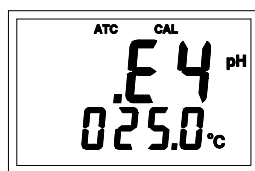

(Fig-6)

6. The preset value is pH4.01 and user can press "▲" or "▼" button to enter determined value in LCD. Press and hold down "CAL" button for more than 2 seconds to complete the pH4.01 calibration, and LCD will show SA. (Fig-7,Fig-8)
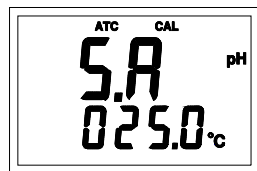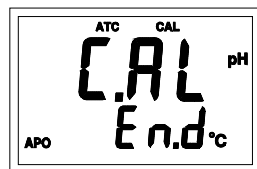

(Fig-7)

(Fig-8)

7. Rinse electrode and blot with lint-free tissue.
8. Put pH electrode into buffer solution pH7.00, repeat steps 3 to 7.
9. Put pH electrode into buffer solution pH10.01, repeat steps 3 to 7.
10. If you complete steps 1 to 9, the LCD will show CAL(main display) and End(sub display). (Fig-9)


(Fig-9)

6.2 pH Calibration With Manual Temperature Compensation(MTC):

1. Select the function in pH_M and °C (or °F).
2. Press and hold down "CAL" button for more than 2 seconds to enter the calibration procedure.
3. Put pH electrode into buffer solution pH4.01 and agitate the buffer solution, if the solution is inaccurate, LCD will show E4, please check value of buffer solution.
4. Waiting for the reading to be stable. (Fig-10)
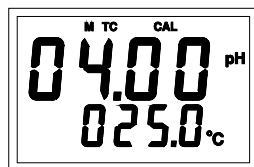
(Fig-10)

5. Press and hold down "CAL" button for more than 2 seconds to enter the pH4.01 mode, and the sub(Temp.) display blanking. (Fig-11)
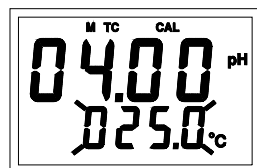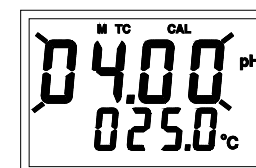

(Fig-11)

6. The preset value is 25.0°C (77.0°F) and user can press "▲" or "▼" button to enter determined value in LCD. Press and hold down "CAL" button for more than 2 seconds to complete the temperature of pH4.01 calibration, and LCD will show SA(Fig-12), then the main display blanking. (Fig-13)
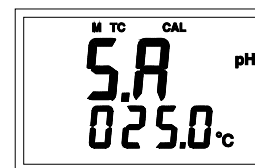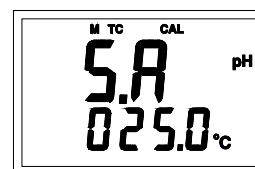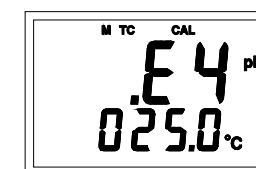

(Fig-12)

(Fig-13)

7. The preset value is pH4.01 and user can press "▲" or "▼" button to enter determined value in LCD. Press and hold down "CAL" button for more than 2 seconds to complete pH4.01 calibration, and LCD will show SA. (Fig-14, Fig-15)
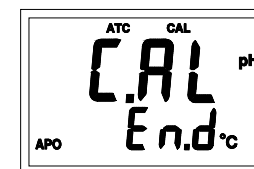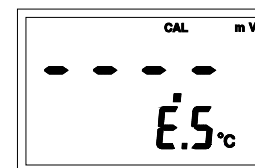

(Fig-14)

(Fig-15)

8. Rinse electrode and blot with lint-free tissue.
9. Put pH electrode into buffer solution pH7.00, repeat steps 3 to 8.
10. Put pH electrode into buffer solution pH10.01, repeat steps 3 to 8.
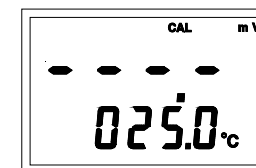11. If you complete steps 1 to 10, the LCD will show CAL(main display) and End(sub display). (Fig-16)

(Fig-16)

6.3 Temperature Calibration:

1. Select the function in mV and °C (or °F).
2. Press and hold down CAL button for more than 2 seconds to enter the calibration mode.
3. Put pH electrode into a standard which is 25.0±10°C (or 77.0±18°F) and the temperature is stable, if the temperature is inaccurate, LCD will show E5, please check value of temperature. (Fig-17)
4. Waiting for the reading to be stable. (Fig-18)

(Fig-17)

(Fig-18)