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PHH-830 pH/mV/ORP and Temperature Pocket Pal® Meter

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1. SPECIFICALTIONS

1-1 General Information

Circuit :	Custom one-chip of microprocessor circuit.
Display :	76.5mm×50.5mm×2.7mm super large LCD dual display.
Measurement :	pH : 0 to 14 pH mV : 0 to 1999mV Temperature : 0 to 100(32 to 200)
Temperature compensation	
for pH range :	Manual(MTC): 0 to 100 (32 to 200), adjusting by push button or button on front panel. Automatic(ATC): 0 to 100 (32 to 200),adjusting with the optional temperature probe.
Calibration for pH range :	Built in (pH4.010 and pH7.000) calibration (AL) on front panel, high reliability.
Auto data hold :	The A indicator will halt in LCD from flash status when the electrode output becomes stable.
Memory recall :	Single recording: 99 records. Continuous recording: Have 99 sets of records, MAX. 3000 points.
Auto power off :	10 minutes.
Over input indication :	Indicate by " "
pH electrode :	Any kind of Ph electrode can be connected with BNC connector.
Operating temperature :	0 to 50 (32 to 122).
Operating humidity :	Max 80% RH.
Sampling rate :	About 1.5 time per second.
Battery life :	Approx. 120 hours.
Calibration date :	Record the last data of adjustment.

Power supply :	6 AA Batteries.	
Power current :	Approx. DC 20mA.	
Data output :	RS232 PC serial interface.	
Dimensions :	187(L) × 73(W) × 53(H)	
Weight :	Approx. 320g with batteries.	
Application range :	Stains Lotion Chemical Brew Bacteriology Fil thy water Pulp Pharmacy Ferment Electroplate Dr ink Aquaculture etc.	
Accessories :	Carrying case, Instruction manual, Software, Batteries, RS-232 Cable, 9pin to 25pin Gender changer.	
Option Accessories :	pH 4 buffer solution, pH 7 buffer solution, pH electrode, Temperature probe.	

1-2 Electrical Specifications

(23 ±5)

Measurement	Range	Resolution	Accuracy
рН	0 to 14pH	0.001pH	±0.01pH
mV	0 to 600mV 601mV to 1999mV	0.1mV	±(0.05%+1d) ±0.1%
Temp()	0 to 100	0.1	±0.5
Temp()	32 to 200	0.1	±0.9

2. FRONT PANEL DESCRIPTION



(Fig-1)

- 1). LCD : Measured values, unit, symbols, and decimal points are displayed.
- 2). Input socket : BNC connector for pH and mV.
- 3). Input socket : Earphone jack for temperature probe.
- 4). (O) : Button for power on/off.
- 5). **(** : Button for moving to the desired parameters.
- 6). **(A)** : Button for increasing the value of parameters.
- 7). Eutton for moving to the desired parameters.
- 8). The second s

9).	 Button for entering/escaping the mode of parameter settings. Don't release the key to increase the value rapidly. Press button, it will display calendar year and month, day, hour, minute, second. If user press & hold the button for 2 seconds, it will perform as the following: Parameters (in sequence): Calendar year (from Year 2000 to Year 2099) Calendar month-day (from 01-01 to 12-31) Calendar hour-minute (from 00h:00m to 23h:59m) MTC (from 0.0 to 100.0 or 32.0 to 200.0) Interval time (from 002s to 255s)
10).	$\textcircled{\circ}$: Button for selecting temperature unit $\ .$
11).	(\bullet_{F}) : Button for selecting temperature unit
12).	 In continuous measurement mode, pH Meter will not stop measuring even the reading is same as previous reading. Press Travel button again to hold the reading.
13).	\mathbb{P}^{H} : Button for measuring pH.
14).	$\mathbb{P}^{\mathbb{P}}$: Button for measuring mV.
15).	 Single record : Press ^{MEM} button to get and memorise the reading. Continuous recording : Press & hold ^{MEM} button for 2 secs, it will start continous recording. (M1~M99 sets, MAX 3000 points/1 set). Memory Clearing: Press & hold ^{MEM} button and to re-power on the meter, LCD will appear " Clr " indicator, it means that the memories have been cleared
16).	(READ) : To read the memorized value for pH mV temperature (R1~R99 sets).
17).	 Press & hold ^(3S) button for 3 secs to enter into the adjustment mode, select the reference calibrated value of pH or temperature by pressing , then pess button to complete the adjustment.

18). (Test) : Press (Test) button, the A indicator will flash and halt in LCD (around 10 secs), the reading is also held , the meter stops measuring at this moment.

3. 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 a button adjustment on the meter, or it may be automatic with an optional temperature sensing probe immersed in the test solution.

> Temperature compensation mode :

- 1). Automatic temperature compensation: To connect the optional temperature probe with earphone jack and immerse in the test solution, LCD will appear "ATC" sign.
- 2). Manual temperature compensation: You can enter temperature between 0.0 to 100.0 manually. (An ATC probe will override manual compensation.) The preset temperature of pH Meter 0 is 25 .Use button or button to change temperature. Press to enter the value and move on.

4. CALIBRATING PROCEDURE

4-1 pH Calibrating Procedure

It is necessary to make the following calibration procedures, if user intends to keep the instrument and the electrode at high accuracy or it is the first time for user to use the meter and the electrode.

If the inaccuracy of the electrode is too large, LCD will display "Err".

1). Connect the combination pH electrode to the BNC socket and place the electrode into the buffer solution (pH 7.00).





2). Select ATC mode or MTC mode.

3). Waiting for the reading to be stable.

4). Press and hold $\frac{33}{CAL}$ button for 3 seconds to enter into the calibration mode.





6). Press 🕑 button to complete offset calibration.



7). Rinse electrode and blot with lint-free tissue.





(Fig-9)

8). Slope calibration (pH 4.010), repeat steps 2 to 7.





 Press ^(3S)_{CAL} button for 3 seconds, LCD will display the date of last adjustment.

4-2 Temperature Calibrating Procedure

- 1). Plug in the "optional temperature probe" into the earphone jack. Place the temperature probe into the 0 ice solution.
- 2). Press $\binom{3}{CAL}$ button is hold 3 seconds.
- 3). Select mode.
- 4). Press 🛃 button then complete calibration.

5. MEASURING PROCEDURE

5-1 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 pushing the power on/off button.
- 3). If the operation is under the "ATC", then please refer to 3-1 measuring procedures.
- 4). If the operation is under the "MTC", then please refer to 3-2 measuring procedures.
- 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.

5-2 mV Measurement

The instrument builds in mV measuring function letting you make ORP or other precised mV measurements.

Select the mV function, the meter will show the mV values on the display.

5-3 Temperature Measurement

- 1). Plug in the "optional temperature probe" into the earphone jack.
- 2). Press $({}^{\bullet}C)$ or $({}^{\bullet}F)$ button to select temperature units.
- Place the temperature probe into the tested solution, then the meter will show the temperature value and ATC sign. If take the temperature probe out, then the meter will show the MTC sign.

5-4 Auto Data Hold

Press and hold $\overline{\mathbb{T}_{opple}}$ button during measurement. When the reading is stable, **A** indicator will flash and then halt on LCD.

If you want to cancel the data hold status, press to button again to revert to the measuring status and **A** will disappear.

Press button again to hold the reading.

5-5 Data Record (Record & Read & Clear)

1). Memorize the readings

pH Meter can memorize the readings up to 99 records. Press MEM button

to record data represented by $M(1\sim99)$. If press ^{MEM} button and hold around 2 seconds, it will enter into continuous recording status. (M1~M99 sets, MAX 3000 points).

2). Recalling memory

Press READ button, LCD will show the last record. Press or button to review the data you recorded. R1 to R99 indicates the order of readings you measured.

3). Memories Clearance

Press and hold ^[MEM] button to re-power on the meter. It will enter into the measuring mode until LCD shows " CIr " symbol.

6. SETTING PROCEDURE

Pls. follow the following steps to set up the parameters for ① Calendar Year, ② Monty-Day & Time (Hour:Minute), ③ Manual temperature compensation, ④ Interval time of record.

- 1). Press around 2 secs until hearing second beeping and the digit is flicking in LCD, then you are entering into the setting mode.
- 2). To set up for Year by pressing.





- 3). Press 🕨 to set up for next parameter.
- 4). To set up for Month by pressing or button.

}-[] 0043 ∞

- 5). Press 🕨 to set up for next parameter.
- 6). To set up for Date by pressing \frown or \bigtriangledown button.

7). Press 🕨 to set up for next parameter.

8). To set up for Hour by pressing \frown or \bigcirc button.

1-0	1	
0043		Ø

9). Press 🕨 to set up for next parameter.

10). To set up for Minute by pressing \blacktriangle or \bigcirc button.

11). Press 🕨 to set up for next parameter.

12). To set up for Manual temperature compensation by pressing or button.



13). Press \blacktriangleright to set up for next parameter.

14). To set up for Interval time of record by pressing A or v button.



15). Press enter to finish the settings and return to measuring mode.

7. ELECTRODE PRECAUTIONS AND LIMITATIONS

- 1). Do not allow the electrode to go dry.
- 2). Do not wipe the electrode tip. Blot it with a lint-free tissue.
- 3). Do not leave the electrode in organic solvents, strongly basic solutions, concentrated fluoride solutions or hydrofluoric acid for extended periods. If measurements are made in these solutions, readings should be taken quickly and the electrode should be rinsed immediately with deionized water. After rinsing the electrode, soak it in 7.0 buffer for two hours before using again.
- 4). Do not use the electrodes in solutions that exceed a temperature range of 0 to100 .

5)).	pН	only	
- /	-		,	

98.0 – 102.0%
Electrode is in good condition.
95.0 – 97.9%
Electrode needs to be cleaned.
92.0 – 94.9%
10



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, low slope values, continuous drift, or erratic readings, follow the procedures listed below.

8-1 Cleaning the pH Bulb

- 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 7.0 buffer for two hours before using.
- 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 7.0 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 7.0 buffer for two hoursbefore 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.

9. BATTERY REPLACEMENT

1). When the LCD show " [-]", it indicates that the normal battery output is less than 6.8V. It is time to replace the battery.

- 2). Remove the battery cover.
- 3). Replace with 6 AA (heavy duty type) and place back the cover.
- 4). Make sure the battery cover is secured after replacing the battery.

10. DATALOGGING

10-1 Software

1). PC Hardware requirements

□ HDD 1.44MB disk, 486 PC or above, with COM1, COM2 commports.

G EGA or higher monitor.

□ 4M bytes or more memory size.

- 2). PC Hardware setup :
 - ① Switch off all power related to your PC.
 - ② Connect the socket (female) of RS-232 cable to PC's COM1 or COM2 commport.



③ Switch on all power.

④ Connect the socket (male) of RS-232 cable to pH Meter.

- 3). Software Installation
 - Before installing the software of pH Meter, start up windows 95/98 operating ststem.
 - 2 Close all application.
 - ③ Insert the pH Meter disk1 into drive A or drive B.
 - ④ Click "Start " menu and move mouse pointer to " Run ", then click this button.



Run	?×
<u> </u>	Type the name of a program, folder, or document, and Windows will open it for you.
<u>O</u> pen:	a:\setup
	OK Cancel <u>B</u> rowse

- S A " Run " window appears then user need to key in "A:\SETUP" or "B:\SETUP" and click "OK".
- © Setup program will run automatically.





⑦ Click " NEXT "



- 8
- a). Click " NEXT "
 - or
- b). If user is willing to set up on a different folder, click " Browse ".



Icick "NEXT "



 $\mathbf{1}$



Ψ

⁽¹⁾ Insert the pH Meter Disk2 into drive A or B, and then click "OK".



10-2 Parameter Settings

- 1). Start up program:
- ① Run the pH Meter software

Click "Start " from Start menu, move mouse pointer to " Programs ", then move pointer to " Omega " (default), move mouse pointer to "pH Meter " then click.



^② Move mouse pointer to available commport (COM1 , COM2) then click.



2). RS-232 Settings :

① Baud rate : 9600	② Parity	: None
3 Data bits : 8	④ Stop bit	: 1



- 3). Time Settings Move mouse pointer to Time Set and click it to input the time of PC to the pH Meter.
- 4). Inner sampling time of pH Meter
- ① Move mouse pointer to Single Red then click it.
- ② In the "Memory" window, drag mouse to highlight the values of " Sampling ".



Input the sampling time that you intend to set up, then click "Sampling" button to complete it.

10-3 Download datalogger (pH Meter → PC)

To read recorded data in memory (EEPROM).

- 1). Single Record
 - Move mouse pointer to Single Red and click it.
 A "Memory" window appears.

G. Memory	×
MemorySize	Remaining
32.0 K	9.4K
Time of	f Meter
00/05/11-	-10:45:08
Single Record	Sampling 1 sec

As above, the total memory size is 32K, 9.4K is remained. The inner time of pH Meter is 00/05/11-10:45:08.





② In the "Memory" window, move mouse pointer to _____ (at the left bottom corner of "Memory" window) then click to read.

Datal	List								
ve P	'let	Pint							
			8 Re	cords	Comp	deted			
	Т	Date	Time	Values	Unit	Temp	C/F	A/H	Bt
	1	00/05/08	08:38:01	9,708	pН	25.0	C	MIC	
	2	00/05/08	08:38:23	7.096	pH	25.0	Υ.	MTC	
	3	00/05/08	08.38.29	8,741	pH	25.0	C	MTC	
	4	00/05/08	08:38:32	10.396	pH	25.0	°C –	MTC .	
	5	00/05/08	11:53:20	5.648	pH	25.0	C	MTC	
	6	00/05/08	12:00:08	6.820	pH	25.9	10	ATC	
	7	00/05/08	12:06:47	6.824	pH	28.9	C	ATC	
	8	00/05/08	12:09:47	6.800	pH	26.6	τî.	ATC	

2). MultiRecords

① Move mouse pointer to Multi Rec and click it A "Memory" window appears.

22
×
1003
1 00/05/0808:37/30 2 00/05/0808:38/07
3 00/05/0811:53/28 4 00/05/0811:59/51 5 00/05/0812:00/05
5 00/05/0812/00/25 6 00/05/0812/00/47 7 00/05/0812/01/20
8 00/05/0812:06/55 9 00/05/0812:15/28
the second

The blue bar will display downloaded percentage. Please wait while downloading.

As above, the total memory size is 32K, 9.4K is remained. The inner time of pH Meter is 00/05/11-10:45:08.

② Move mouse pointer to the listed record and then click if willing to read.



 $\mathbf{\Psi}$

🛋 Da	taList									×
Save	Plot	Print								
			171 R	ecords	Con	pleted				
		Data -		ht-t-re-	11-2		0.5		- Ere	
	-	Uale .	Ine Incorr	V-84.60	UNC	Temp	0/1	A/M	BI	-
	- 1	00/05/08	1206/55	6.836	pH	25.0	1	MIL		
	2	00/05/08	12:06:56	6.896	pH	28.6	t	ATC		
	3	00/05/08	12:06:57	6.B74	pH	28.6	L.	ATC	_	
	- 4	00/05/08	12:06:58	7.022	рH	28.6	τ	ATC		
	5	00/05/08	12:06:59	7.022	pH	28.5	c	ATC		
	5	00/05/08	12:07:00	6.998	pН	28.5	Ċ	ATC		
	7	00/05/08	12:07:01	6.846	pH	28.5	°C –	ATC		
	8	00/05/08	12:07:02	6.B46	pН	28.5	τ	ATC		
	9	00/05/08	12:07:03	6.823	pH	28.5	°C –	ATC		
	10	00/05/08	12:07:04	6.808	pH	28.5	τ	ATC		
	11	00/05/08	12:07:05	6.000	pH	28.4	τ	ATC		
	12	00/05/08	12:07:06	6.792	pН	28.4	Ϋ́.	ATC		
	13	00/05/08	12:07:07	6.792	pH	28.4	Ċ	ATC		
	14	00/05/08	12:07:08	6.804	pH	28.3	°C	ATC		
	15	00/05/08	12:02:09	6.815	рH	28.3	Ϋ́.	ATC		
	16	00/05/08	12:07:10	6.815	рH	28.3	Ϋ́.	ATC		
	17	00/05/08	120211	6.825	оH	28.3	Ť.	ATC		
	18	00/05/08	12:07:12	6,833	pH	28.2	τ.	ATC		
	19	00/05/08	12/07/12	6 833	oH	28.2	1	ATC		
	20	00/05/08	12:07:12	6 839	pH1	28.2	τ.	ATC		-1
	248	ner contro	1210214	nntt	1.1.1.1	: 2n2	1.	COLUMN 1		

SAVE To save recorded data in HDD applying for other applications such as EXCEL, WORD. For example, P.23.

- a). Move mouse pointer to "SAVE " then click this button.
- b). A dialog box will come up. Input the name of the file if willing to save as.
- c). Click "Save ".

Save As				2 ×
Savejn	🔄 pH_Mater	•	1 <u>1</u>	
File game.			- 1	Same
Save as type:	Data Files (*.dat)		3	Cancel
	C Open as read-only			

10-4 Data Invert

- 1). Save data by RS-232 communication port in PC.
 - ① Run pH Meter software, check if pH Meter connected with PC well. If not connected, the "NO COM " signal will display, please be sure RS-232 cable line is connected with COM1 or COM2. After connection, the reading will be shown, and COM1 or COM2 also will be shown in the screen.

Save An Texe Set Life Single Re Doen File Sangling 10,45 Multi Rec	
р. / ОВР / Такризатат Минг 7.006 рн 25.0 ус	
	J
T HER READ	
File Name Samping: 2 sac	

② Move mouse pointer to Save As and click this button, you can find the "Save As " dialog box, please change to new file name: *.xls from original file *.dat then press enter. For example : test.xls

ave As				88
Savejix	ig pH_Meter	-		9 🛱 🏛
ilo gane:	[_	Save
ieve as (sper	Data Files (1.dat)		-	Save Cancel

 $\mathbf{1}$

0	2
	- 1

Stop Piec Time Set List Sing Open File Sangling 2/7 Mul	ke Rec M Rec
pH/ORP/Temperature Men 7.006	₽Н
Trees CAL 10'S	
Recording 8 Corm2	J.,

In the "File Name " column, the file name you key-in will be shown.

- ③ In the "Recording" column, No. of PC record will be displayed from 1 up to end.
- If user intead to end this record, please move mouse pointer to Stop Rec and click it. The "Recording " signal will disappear.

2). Apply for Excel :

- ① Open Microsoft EXCEL, go to "open file ", from the searching function.
 - a). Find the EXCEL type. For example, test.xls. Select test.xls then click "open" button.



Open		? ×
Loak ju		
E total		
		Cancel
		Atvanced
And files d	hat match these search interval	
File game:	Tegt or property:	End Now
Ries of the	es Manauft Fund Files	New Search
	Al file:	
1 Million	Mitsesoft Eccel Files	
	Lotue 1-2-3 Ples	
	Quattro Pro/DOS Piles	
	Parsent works 2.0 Pars	

b). From the "Files of type ", click the pull down pointer, then choose "All Files ", select sample.dat then click "open" button.

Open		7 2
Laokija 🔛 pH_Plater	- E (E # # # # # # # # #	2
2 phi_Neter		Qpen
Some dot		Cancel
Dhinak Jau		Advanced
First Bar that match there much other in-		
File pane:	Tegt or property:	Bnd Now
Pries of type: Al Pries	Last godfied: any time	Neg Search
4 Note from Manager Front Plan	4	
Text Files Lotus 1/2/3 Eller	-	
Quattro Pro/DOS Files Messariti Martin 2 O Files	-	
CLEASING AND R. P. M.		

2 The " Test Import Wizard " then appears, click finish button, the selected data will show in excel type.

est Import Wize	ed - Step 1 of 3				2 ×
he Text Wizard he 1 this is correct, ch Original data type	es determined that ye loose Next, or choos	our data is Deli ie the Data Typ	mited. We that best describ	es your data	
Choose the file ty	pe that best describ	es your data:			
@ Delinited	- Characters such	has commas or	tabs separate each	h field.	
C Fixed width	- Fields are aligne	ed in columns ee	ith spaces between	each Reid.	
	Start import at gos	- 1 ;	nie grign:	Windows (4NSI)	×
Preview of file Cil	Start import at gow Program Files)TESign	: 1	국 키는 Grigin: le.dat.	Windows (4NSI)	*
Preview of file Cit	Start import at gee Program Files()TES(p) 16 08 : 24 : 53 7	 I ; H_Meter/sample DD61pH12 DD61rpH13 	E.dat.	Windows (ANSI)	-
Preview of file Cil 1 1 100/05/1 2 2 100/05/1 3 3 100/05/1	Start import at goe Program Files)TESipi 16 08 : 24 : 53 7 16 08 : 24 : 55 7 16 08 : 24 : 57 7	 1 H_Meter/isampl 0064 pH 12 0064 pH 12 0064 pH 12 	E.dat.	Windows (ANSI)	÷
Preview of file Cit 1 1 100/05/1 2 2 100/05/1 3 3 100/05/1 4 4 100/05/1	Shart import at per Program Files()TES(p) 16 08 : 24 : 53 : 7 16 08 : 24 : 55 : 7 16 08 : 24 : 57 : 7 16 08 : 24 : 57 : 7	 1 006 pH 2 	Pile grign: e.dst. 25.01 °C1 NTC 25.01 °C1 NTC 25.01 °C1 NTC 25.01 °C1 NTC	Windows (4h5l)	ł
Preview of file CI 2 2100/05/1 3 3100/05/1 4 4100/05/1 5 5100/05/2 5 5100/05/2	Shart import at per Program Files()TES(p) 16:08:24:53:7 16:08:24:55:7 16:08:24:59:7 16:08:24:59:7 16:08:24:59:7 16:08:25:01:7	 1 006 pH 2 	Pile gright: e dat. 25.01 * CLMTC 25.01 * CLMTC	Windows (4h5l)	Ľ
Preview of file CI 2 2100/05/1 3 3100/05/1 4 4100/05/1 5 5100/05/1 5 6100/05/1 4 4	Start import at gov Program Files)TESip 16 108 : 24 : 53 17 16 108 : 24 : 55 17 16 108 : 24 : 57 17 16 108 : 24 : 57 17 16 108 : 25 : 01 17 16 108 : 25 : 03 17		Pile gright: 6 dat. 25.01 * CLINTC	Windows (ANSI)	ł
Preview of file Cil 2 2 100/05/2 3 3 100/05/2 4 4 100/05/2 5 6 100/05/2 5 6 100/05/2 1	Start import at pow Program Files)TESip 16108: 24: 5317 16108: 24: 5517 16108: 24: 5517 16108: 24: 5717 16108: 24: 5017 16108: 25: 0317	 1 1 006 pH 1 006 pH 2 006 pH 2 006 pH 3 	Plie grigh: e.dat. 25.01 °C1 MTC 25.01 °C1 MTC 25.01 °C1 MTC 25.01 °C1 MTC 25.01 °C1 MTC 25.01 °C1 MTC 25.01 °C1 MTC	Windows (AhSI)	
Preview of file Cil 22100/05/2 33100/05/2 44100/05/2 55100/05/2 556100/05/2 1	Start import at gow Program Files(TES)p 16108 : 24 : 53 7 16108 : 24 : 55 7 16108 : 24 : 57 7 16108 : 24 : 57 7 16108 : 24 : 50 7 16108 : 25 : 03 7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Plie grigh: e.dat. 25.01 °CINTC 25.01 °CINTC 25.01 °CINTC 25.01 °CINTC 25.01 °CINTC 25.01 °CINTC 25.01 °CINTC	Windows (4hSI)	

click " Next "

2 X Test Import Wizard - Step 2 of 3 This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below. Delmiters: Tgeat consecutive delimiters as one E Segjeolon E Comma F Lab ٠ E Space E Other: Text Qualifier: Data preview 00/05/16 08:24:53 00/05/16 08:24:55 00/05/16 08:24:55 00/05/16 08:24:57 00/05/16 08:24:59 00/05/16 08:25:01 00/05/16 08:25:03 .006 pH .006 pH .006 pH .006 pH .006 pH 25.0 25.0 25.0 25.0 25.0 NTCCCCCC HNO-FIELD ٠ 77777 00000 006 K Cancel < Back Next > Binish

 $\mathbf{1}$

click " Next "

26

 $\mathbf{\Psi}$

Text Import Wizard - Step 3 of 3	7 ×
This screen lets you select each column and set the Data Format. Column data format 'General converts numeric values to numbers, date values to dates, and all remaining values to text. If you Date:	
Data preview General General GeneralGenerGenerGenerGeneral	
1 00/05/16 08:24:53 7.006 pH 25.0 °C MTC 00/05/16 08:24:55 7.006 pH 25.0 °C MTC 00/05/16 08:24:57 7.006 pH 25.0 °C MTC 00/05/16 08:24:57 7.006 pH 25.0 °C MTC 00/05/16 08:24:59 7.006 pH 25.0 °C MTC 00/05/16 08:25:03 7.006 pH 25.0 °C MTC	-
Cancel < Back Next >	sh

click " Next "

F Comma Style H C D А в E 1 1 00/05/16 8:24:53 7.005 pH 25 °C MTC 2 00/05/16 7.006 pH 25 °C 2 3 4 5 6 7 8 9 8:24:55 MTC 7.006 pH 3 00/05/16 8:24:57 25 °C MTC 7.006 pH 4 00/05/16 8:24:59 25 °C MTC 5 00/05/16 8:25:01 7.006 pH 25 °C MTC 6 00/05/16 8:25:03 7.006 pH 25 °C MTC 7 00/05/16 8:25:05 7.006 pH 25 °C MTC 8 00/05/16 8:25:07 7.006 pH 25 °C MTC 9 00/05/16 8:25:09 7.006 pH 25 °C MTC

 $\mathbf{1}$

10-5 Communicating Operation

- 1). Switch off all power related to your PC.
- 2). Connect the socket (female) of RS-232 cable to PC's COM1 or COM2 commport.
- 3). Switch on all power.
- 4). Connect the socket (male) of RS-232 cable to pH Meter.
- 5). Run the pH Meter software

Click "Start" from Start menu, move mouse pointer to "Programs", then move pointer to "Omega" (default), move mouse pointer to "pH Meter" then click.



6). Move mouse to available commport (COM1, COM2) then click.



7). Main tableau



Save Az Tine Set Lint Single Rec Dpen File Sampling T/F MultiRec
PH/ORP/Temperature Meter
T pH mV
TF HEM READ
File Name: Sampling: 2 tec

- ① Time Settings Move mouse pointer to Time Set and click it to input the time of PC to the pH Meter..
- @ PC SAMPLING (Default : 2 seconds). Change the sampling time of PC.

Move mouse pointer to Sampling. The dialog box - "Input Sampling Time " will be shown. Input the sampling time that you intead to set, then click " OK " to complete this setting.

Input Sampling Time	×
Enter the SAMPLING TIME in seconds (1 <= t <= 86400)	OK Cancel
E	

⁽³⁾ Move mouse pointer to Save As then click this button. You can find the "Save As " dialog box, please change to new file name : *.xls from 29

original file *.dat then press enter. For example : test.xls

Save As			1 X
Savejix	🔛 pH_Meter	- 🗈 c	1 💷
File pane:			Save
Sieve as type:	Data Files (1.6a)	*	Cancel
	E Open as pead-only		





In "File Name ", the file name C:\...\TEST.XLS will be displayed.

④ In "Recording" column, the No.of PC record will be displayed from 1 up to end.

S If user intead to end this record, please move mouse pointer to Stop Rec, then click this button. The "Recording " signal will disappear.

6 Move mouse pointer to Open File then click this button. There comes a

dialog box to open file. Input the saved file name to read.

Open			7 ×
Look jn	当 pll_Meter	- 🗈 🖻	1 🖽 🏢
File pane:	-		<u>Open</u>
Files of gaper	Data Files (*.dat)	*	Cancel
	Dpen as read only		

 \odot To show reading values in "GRAPH" type, move mouse pointer to <u>pH/mV</u> / <u>'C/'F</u> then click. Choose the unit if willing to read.



To show reading values in LIST type, move mouse pointer List
 List

and then click this button to launch.

	D-ate	Time	Values	Unit	Temp	C/F	A/M	Bt
3	00/05/16	09.16.37	7.006	pН	25.0	°C	MTC	
4	00/05/16	09:16:39	7.006	pH	25.0	1C	MTC	
5	00/05/16	09:16:41	7.006	pН	25.0	°C	MTC	
6	00/05/16	09:16:43	7.006	pH	25.0	°C	MTC	
7	00/05/16	09:16:45	7.005	pH	25.0	°C –	MTC	
8	00/05/16	09:16:47	7.006	pH	25.0	°C	MTC	
9	00/05/16	09:16:49	7.006	pH	25.0	C	MTC	
10	00/05/16	09:16:51	7.006	pH	25.0	°C	MTC	
11	00/05/16	09:16:53	7.006	pH	25.0	10	MTC	
12	00/05/16	09:16:55	7.006	pH	25.0	τ	MTC	
13	00/05/16	09:16:57	7.006	pH	25.0	°C	MTC	
14	00/05/16	09:16:59	7.006	pH	25.0	τ	MTC	
15	00/05/16	09:17:01	7.006	pH	25.0	°C	MTC	
16	00/05/16	09:17:03	7.006	pH	25.0	°C	MTC	
17	00/05/16	09:17:05	7.006	pH	25.0	T	MTC	
18	00/05/16	09:17:07	7.006	pH	25.0	°C	MTC	
19	00/05/16	09:17:09	7.005	pН	25.0	°C	MTC	
20	00/05/16	09:17:11	7.006	pH	25.0	°C	MTC	

- (9) To read recorded data in memory (EEPROM).
 - a). Single Record :
 - \Rightarrow Move mouse pointer to <u>Single Rec</u> and then click this button.
 - A "Memory" window appears.

📬, Memory	×
MemorySize	Remaining
32.0 K	9.4K
Time o	f Meter
00/05/11—	<mark>—10:45:08</mark>
Single Record	Sampling
Single Record	1 sec

As above, the total memory size is 32K, 9.4K is remained. The inner time of pH Meter is 00/05/11-10:45:08.

 \Rightarrow In the "Memory" window, move mouse pointer to $\frac{\text{Single Record}}{32}$ (at the

left bottom corner of "Memory" window) then click to read.

atal.is								
e Pist	Pint							
		8 Re	cords	Comp	deted			
	Date	Time	Values	Unit	Temp	C/F	A/M	81
1	00/05/08	08:38:01	5,708	pН	25.0	C	MIC	
2	00/05/08	08:38:23	7.096	pH	25.0	Υ.	MTC	
3	00/05/08	08.38.29	8,741	pH	25.0	C	MTC	
- 4	00/05/08	08/38/32	10.396	pH	25.0	°C	MTC .	
- 5	00/05/08	11:53:20	5.648	pH	25.0	C	MTC	
8	00/05/08	12:00:08	6.820	pH	25.9	Υ.	ATC	
7	00/05/08	12:06:47	6.824	pH	28.9	C	ATC	
8	00/05/08	12:09:47	6.800	pH	26.6	τ	ATC	

b). MultiRecords :

Multi Rec

and then click this button. ⇒ Move mouse pointer to A "Memory" window appears.

🖌 Метогу	×
MemorySize Remaining	22
32.0 K 9.4K	
Time of Meter	
Sampling	
1 sec	
	•
le l	V
s. Nenoy	¥
Kenoy KenoySize Renaining	¥ 1002
Nemony NemonySize Remaining 32.0 K 9.4K	100%
Memory Memory5ize Remaining 32.0 K 9.4K Time of Meter	× 100% 100%/0808.37/30 200/05/0808.38/07 300/05/0811:53/20 400/05/0811:53/20 400/05/0811:53/51 500/05/0811:53/51
Memory MemorySize Bemoning 32.0 K 9.4K Time of Meter	1000: 1 00/05/0808.37/30 2 00/05/0808.38/07 3 00/05/0808.38/07 4 00/05/0811:50/51 5 00/05/0811:50/51 5 00/05/0812:00/25 6 00/05/0812:00/47 7 00/05/0812:00/47
Memory Memory5ize Remaining 32.0 K 9.4K Time of Meter	X 100% 1 00/05/0808.37/30 2 00/05/0808.37/30 2 00/05/0808.38/07 3 00/05/0811:50/28 4 00/05/0811:50/28 5 00/05/0812:00/25 6 00/05/0812:00/25 8 00/05/0812:05/28 9 00/05/0812:05/28
Memory MemorySize Remaining 32.0 K 9.4K Time of Meter Sampling L sec	100% 1 00/05/0808.37/30 2 00/05/0808.38/07 3 00/05/0812.02 4 00/05/0811.50/51 5 00/05/0812.00/25 6 00/05/0812.00/47 7 00/05/0812.00/47 8 00/05/0812.00/47 9 00/05/0812.05/55 9 00/05/0812.05/55 9 00/05/0812.15/28 10 20/00/2107.33/31

The blue bar will display downloaded percentage pleas wait while downloading.

As above, the tatal memorysize is 32K, 9.4K remained.

The inner time of pH Meter is 00/05/11-10:45:08.

⇒ Move mouse pointer to the listed record and then click if willing to read.







AB.	Plot	Print							
171 Records Completed									
		Date	Tine	Values	Unit	Tenp	C/F	A/N	Bt
	1	00/05/08	12:06:55	6.896	pН	25.0	Ϋ́.	MTC	
	2	00/05/08	12:06:56	6.896	pН	28.6	τ	ATC	
	3	00/05/08	12:06:57	6.874	pН	28.6	°C –	ATC	
	- 4	00/05/08	12:06:58	7.022	pН	28.6	τ	ATC	
	5	00/05/08	12:06:59	7.022	pH	28.5	τ.	ATC	
	- 6	00/05/08	12:07:00	6.998	pН	28.5	τ.	ATC	
	7	00/05/08	12:07:01	6.846	pH	28.5	τ.	ATC	
	8	00/05/08	12:07:02	6.B46	pН	28.5	τ	ATC	
	-9	00/05/08	12:07:03	6.823	pH	28.5	°C –	ATC	
	10	00/05/08	12:07:04	6.808	pН	28.5	τ	ATC	
	11	00/05/08	12:07:05	6.000	pH	28.4	°C –	ATC	
	12	00/05/08	12:07:06	6.792	pН	28.4	Έ.	ATC	
	13	00/05/08	12:07:07	6.792	pH	28.4	°C –	ATC	
	14	00/05/08	12:07:08	6.804	pН	28.3	τ.	ATC	
	15	00/05/08	12:07:09	6.815	pH	28.3	C	ATC	
	16	00/05/08	12:07:10	6.815	pН	28.3	τ.	ATC	
	17	00/05/08	12:07:11	6.825	pH	28.3	τ	ATC	
	18	00/05/08	12:07:12	6.833	pH	28.2	°C –	ATC	
	19	00/05/08	12:07:13	6.833	pH	28.2	τ	ATC	
	20	00/05/08	12:07:14	6.839	nH	28.2	î.	ATC	

SAVE To save recorded data in HDD applying for other applications such as EXCEL, WORD. For example, P.23.

 $\hfill\square$ Move mouse pointer to " Save " then click this button.

- A dialog box will come up. Input the name of the file if user intead to save as.
- Click " Save ".

Save As				2 ×
Saveja	🔤 pH_Meter	×	۵ و	۲ III 🛛 🕈
File game:				<u>≦ave</u>
Save as \$per	Data Files (*.dat)			Cancel
	🗖 Open as read-only			
		-		

WARRANTY/DISCLAIMER ==

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