2YEAR
WARRANTY

OMEGA™

User's Guide

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HH414

Handheld Temperature /Humidity Meter with USB 32K pt. Data Logger

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FEATURES

1) New compact hand held size measures and records single thermocouple K type with 1 meter remote temperature and relative humidity sensor probe.
2) Applying to duct measurements or harsh environment.
3) Quick response and high accuracy single input thermocouple and extend TRH probe.
4) Relative function to compare the reference temperature per second.
5) Backlight function for working in dark area.
6) Hold function: Freeze current readings on LCD.
7) Maximum/Minimum/Average: Record since powered on.
8) Auto power off: Save power energy when not used. Enable to disable the function.
9) Temperature unit: Switchable.
10) Display T1 (K), T2 (Remote TRH), T1-T2, T1 REL, T2 REL with Time and Date.
11) Off-line data logging 32,000 pts.

MATERIAL SUPPLIED

- Meter
- 9V battery
- Universal 9V plug adaptor
- Calibration certificate
- Manual website card
- K type probe x 1 pc
- Remote sensor probe x 1 pc
- USB cable
- Free software to download from website
- Black carrying case.

SPECIFICATION

Spec./ Model no.	**HH414**
Input	**Single K + Remote Temp. RH**
Remote temp. range	-20~60℃ (-4~140℉)
Remote temp. accuracy	±0.6℃(1.2℉)
Remote RH range	0.0~99.9%
Remote RH accuracy	±2.5%(@25℃, <70%), others±5%
Resolution	0.1℃/℉, 0.1%
K Temp. range	-200~1370℃ (-328~2498℉)
Resolution (K)	0.1℃/0.1℉(-99.9~199.9℃), others 1℃/1℉
Accuracy (K)	±(0.3% rdg + 1°C/2℉): -50~1370°C; others ±(0.1% of rdg ±2°C)@23±5°C,<75% RH condition
Function	Alarm setting. Max. Min. AVG. REL. Hold,

	T1 (Or Air T). Tripod mountable. APO
Backlight	YES
Memory	Off-line 32,000 points
Temperature Coefficient	0.1 times the applicable accuracy specification 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)
Operating Temperature	0~50°C (32 to 122°F) at < 80% RH
POWER	9V Battery / AC/DC adaptor (Option)
Incl. bead probe K	1 K bead wire sensor
Dimension	Meter: 180 x 68.5 x 50 mm Temp. RH sensor probe: 180 x 12 x 10 mm with 150mm cable

KEYPAD (CONTROLS)

UNIT: Press **UNIT** to select ℃/℉.

Go to next setting (under setting mode).

HOLD: Press **"HOLD"** to hold and release it to go back to normal measurement mode.

Increase the value (under setting mode).

Long press the button to clear MAX/MIN/AVG readings.

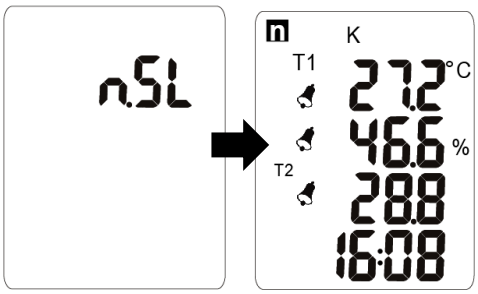
MODE: Press **MODE** button to change operation mode T1 T2, T1-T2, T1 REL and T2 REL.

Move to left digit (under setting mode).

PWR: Press **"PWR"** to turn on the meter or long press it to turn off the meter.

Short press to turn on / off alarm.

HOLD+PWR: Meter will turn off automatically after 15 minutes if no press action is taken. To disable auto power off function, when the meter is off, press and hold **"HOLD"** button then press **"PWR"** button to turn on the meter, the primary LCD shows "**n.SL**" and then enter to normal measurement mode. Display shows "**n**", now the sleep mode is disabled.



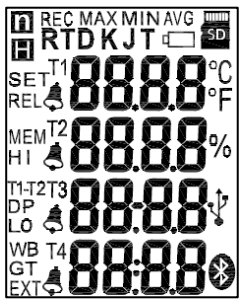
MAX/MIN: Press **MAX/MIN** to change operation mode from Temp. → MAX → MIN → Avg. → Temp. circularly.

SET: Long press button to enter Hi/Lo T1 temp., Hi/Lo T2 temp., Hi/Lo RH%, Date/Time setting.

BKLT: Short press to activate/deactivate the backlight function. Decrease the value (under setting mode).

Long press to active **Key start** function (Logging mode).

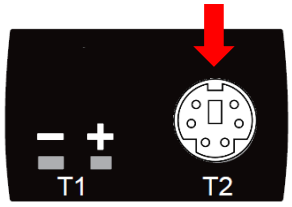
LCD FULL DISPLAY



OPERATION

(1) INSTALLATION

Install K type sensor to left port, make sure the polarity (-+) is plugged in correct side. Install remote temperature probe to right Mini Din port.



(2) POWER ON / OFF

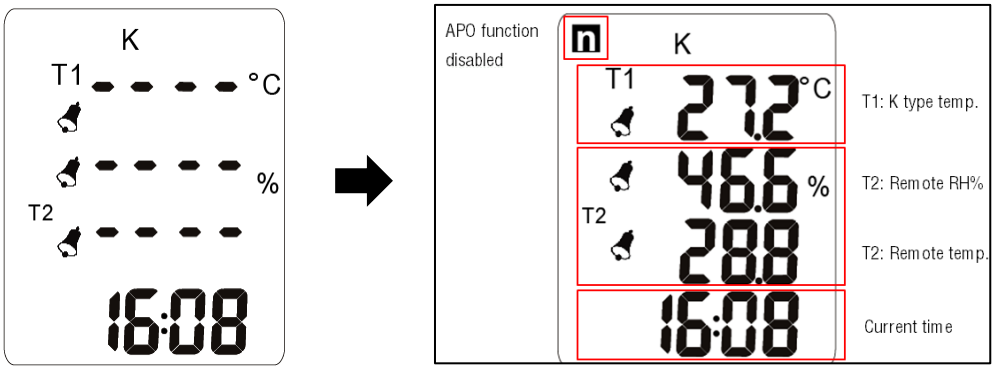
NOTE: Do not use 9V adaptor / battery at the same time, or the meter will be damaged gradually.

Press **"PWR"** button to turn on the meter and the full screen of LCD will quick show on the display, the meter now is in normal measurement mode. While the meter is on, long press **"PWR"** button to turn off the meter.

Note: Make sure you have plugged in the thermocouple probe before turning on.

(3) TAKING MEASUREMENT

Make sure you have plugged in K type sensor probe and remote sensor probe on the top of the meter, if the probe is not plugged in appropriately, LCD shows " - - - - " on the display. Under normal measurement mode, display will show T1 temp., T2 temp., T2 relative humidity (remote sensor probe) and current time.



NOTE: Remove batteries when not use.

(4) CHANGE UNIT

Press **"UNIT"** button to change unit "℃" or "℉". The meter's default temperature unit is degrees C. After setting to degrees F the unit will revert to degrees C when powered off and back on.

(5) MAX/MIN/AVG

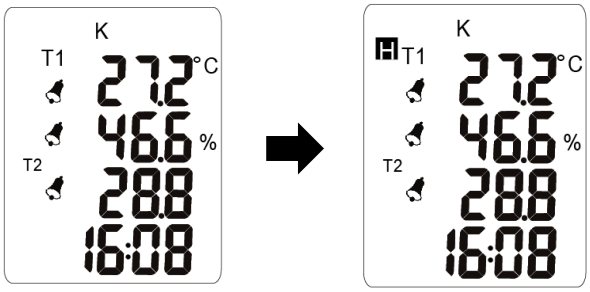
Press **MAX/MIN** button to change operation mode from T1 T2 → MAX → MIN → AVG →T1 T2 circularly. Analysis value will calculate since power on or reset. Once concentration of gas exceeds or lower than current Max or Min value, the readings will be updated.

RESET MAX/MIN/AVG: Long press **HOLD** button more than 2 sec. to reset MAX/MIN/AVG analysis value. The MAX/MIN/AVG value is updated to current reading.

(6) DATA HOLD

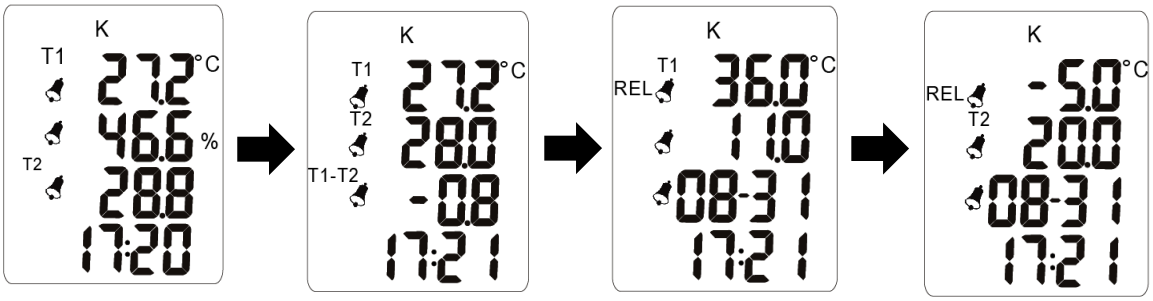
Freeze display by short pressing **"HOLD"** button, and release it to go back to the temperature reading by short pressing button again. When the reading is freeze, the display will show "**H**".

NOTE: Under "**HOLD**" mode, the current reading status and time will be locked, press HOLD button to release freeze status.



(7) CHANGE MODE

Press **MODE** button to change operation mode T1. T2 with time, T1-T2 with time, T1-REL with Date and time, T2-REL with Date and time. REL stands for relative reading.



(8) REL FUNCTION

This is a very useful function to quick check temperature variation by saving a value as standard (reference).

For example:

When the reading shows 25℃, now meter saves 25℃ and LCD shows 0.0℃. Simultaneously with REL icon, put the sensor at 36℃object, LCD shows 11℃. Move the sensor to 29℃, the LCD automatically shows 4℃. When the object's temperature is 20℃, now the reading will show -5℃.

(9) ALARM ON/OFF: (Default: Alarm ON)

Short press **POWER** to turn ON/OFF beeper sound.

(10) K temperature Hi/Lo alarm setting - Default: Hi temp. 40℃(104℉), Lo temp. 10℃(50℉)

Remote temperature Hi/Lo alarm setting - Default: Hi temp. 40℃(104℉), Lo temp. 10℃(50℉)

Remote RH% Hi/Lo alarm setting (Default: Hi RH% 70%, Lo RH% 20%)

SET: Long press to enter alarm setting.

MODE: Move to left digit.

MAX/MIN: Move to right digit.

HOLD: Number goes up.

BKLT: Number goes down.

UNIT: Short press to toggle K temp. Hi/Lo setting →Remote temp. Hi/Lo setting → Remote RH% Hi/Lo setting → Year/Month/Date setting.

K type temp. adjustable range: -200~1370℃(-328~2498℉)

Remote temp. adjustable range: -20~60℃(-4~140℉)

Remote humidity adjustable range: 0~90%

(11) SETTING YEAR/DATE/TIME:

Long press **SET** button to enter alarm setting mode, skip Hi/Lo alarm setting by pressing **UNIT** button six times. The digit of year will flash on the display, adjust the value by pressing buttons.

HOLD: Number goes up.

BKLT: Number goes down.

UNIT: Short press to toggle Year/Date/Time.

After setting completed, long press **SET** button to save the setting and return to normal measurement mode.

YEAR adjustable range: 2019~2050

Month adjustable range: 01~12

Date adjustable range: Depends on month.

Hour adjustable range: 00~23

Minute adjustable range: 0~59

(12) TEMPERATURE&HUMIDITY OFFSET FUNCTION:

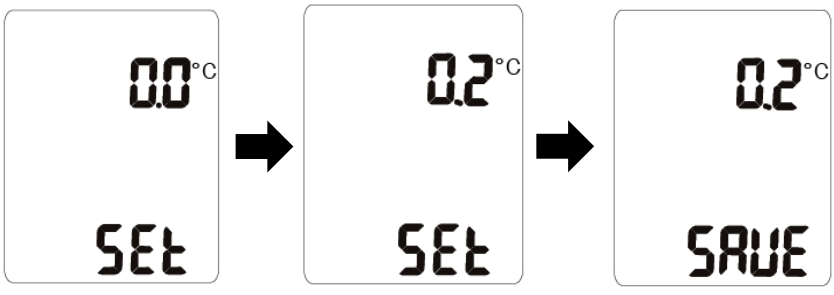
The meter is designed with precision and free maintenance capacitor humidity sensor and thermistor temperature sensor. For long time usage, or special accurate purpose, user may do the offset function to adjust Temperature and Humidity per standard value.

NOTE: Under power off condition. press and hold **MODE+BKLT** buttons by left fingers, and then press **PWR** button by right fingers, LCD shows 0.0 ℃ and SET, now release all fingers , to add the value by pressing **HOLD** button , to reduce value by pressing **BKLT** button. Short press **UNIT** to toggle ℃/℉.

If you want to escape temperature adjustment to RH%, short press **SET** button, and follow the same steps.

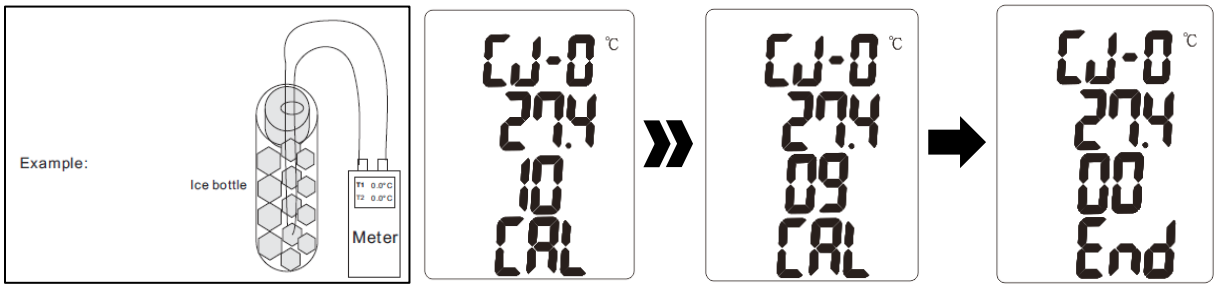
Long press **SET** button to save the adjustment value , LCD shows **SAVE** in 2 seconds, then power off the meter, the offset function is completed and values are adjusted.

NOTE: Only ±9.9℃, ±9.9℉ ,±9.9% are available to be adjusted. Long press **HOLD** or **BKLT** button may quick to select the values.



(13) ICE POINT (0℃) calibration:

1. Sensor part put in an ice bottle with full crushed ice.
2. Plug in K type probe for T1.
3. Press **SET+UNIT** buttons for few seconds, the meter will enter T1 K ice point calibration, "**CJ-0**" shows on the display. CJ means cold junction.
4. Long press **SET+UNIT** buttons again to start zero calibration with number counts down from 10.
5. After 10 seconds calibration, the display shows "**End**" and return to normal measurement automatically.
6. The calibration completed.



ERROR MESSAGES:

OL2	T1 temperature, T2 temperature or T2 Humidity over the range.
---	Thermocouple is disconnected.

WARNING

1. Always plug thermocouple sensor in before turning on the meter, or the displays on LCD are meaningless.
2. Make sure you plug sensor with correct polarity.

BATTERY REPLACEMENT

When the power is week (less than 3.3V), battery icon " ▭ "will appear on the display, when the power less than 2.9V, the LCD display will flash.

1. Turn off the instrument.
2. Remove the battery compartment.
3. Change the battery.
4. Cover the compartment cover.

DATALOGGER SOFTWARE

USB driver installation

A. Install logger driver before installing software on Window system
   The **PL2303_Prolific_DriverInstaller_v110.exe** driver is for Windows operation system, follow the installation steps hereunder:
   a) Step 1, click "PL2303_Prolific_DriverInstaller_v110.exe" for driver installation.
   b) The set up status
   c) Click **"NEXT"** to continue

d) After complete the installation, press **"Finished"**

B. Install the logger software for Windows XP or above (For 1st time installation the software), reinstall the software, please remove the old version first.

Follow below steps to install software:

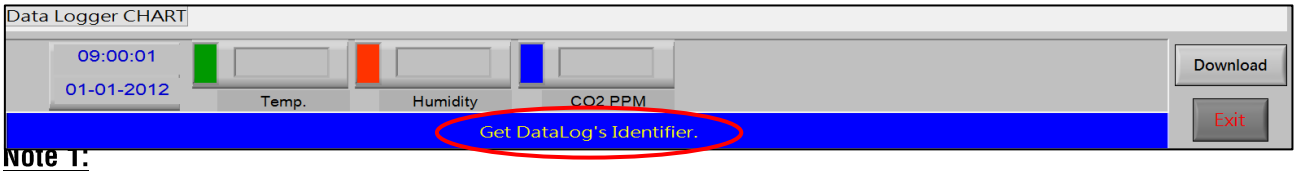
a) Step 2, click **" Setup.exe"** to start installation.
b) Select the destination folder you want to save by click **"Browse"** button
c) Once you finish the selection, press **"Next"**
d) Select **" I accept the License Agreement(s)"**, press **NEXT** button
e) Click **"Next"** button.
f) Press **Finish** button to complete the installation
g) Restart the Windows system

C. Run the software from Windows XP/VISTA/WIN 7/WIN 8/WIN10

a) Plug the USB cable into USB port, since you have already installed the USB driver, computer will automatically detect logger.
b) Find **"Datalogger"** in START→ PROGRAMS
c) Select logger software folder

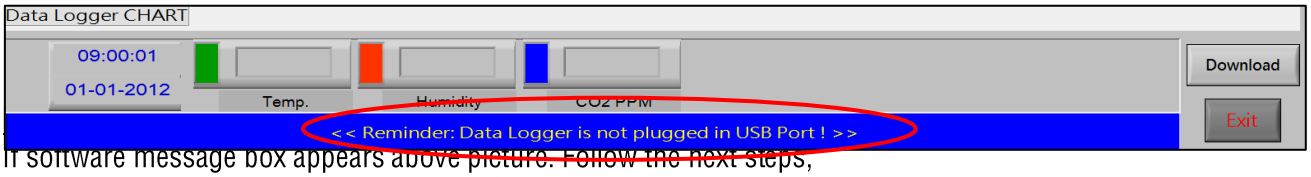
Reminder:

Software is installed completed. "Get DataLog's Identifier" shows as below, then press **SETTING** button to enter Logger setting from the tool bar.



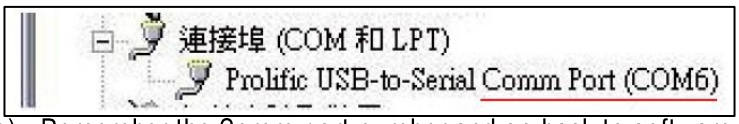
Note 1:

If logger is not plugged in USB port, the warning message "Reminder: Data Logger is not plugged in USB port!)". Make sure logger is plugged in and choose the correct COM port.

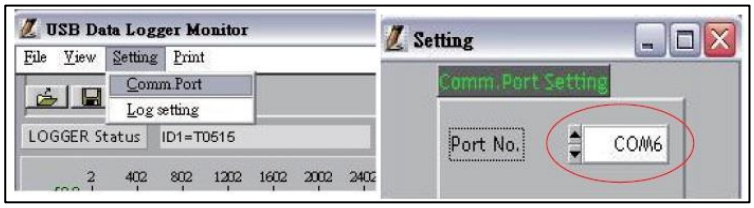


If software message box appears above picture. Follow the next steps,

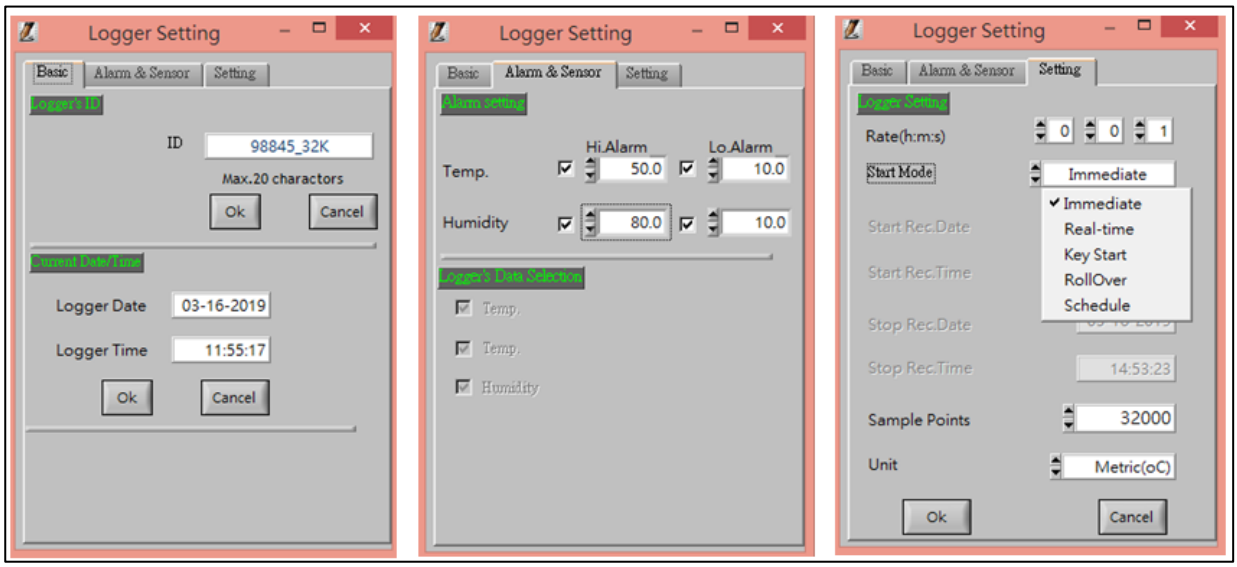
a) Click "My computer" "Content" in hardware content, click "Device manager" to find the listed (COMx) under ports (COM % LPT as below. If you may find "Prolific USB- to-Seriral Comm port, it means the logger is connected to computer properly.



b) Remember the Comm port number and go back to software
c) Click "Setting" "Comm port" select the port number as you see from step1, then press OK button.



LOGGER SETTING



Pic 1 Pic 2 Pic 3

BASIC(Pic 1)

1:ID setting

Maximum 20 characters , name your logger press **OK** button to confirm

►Please type in capital. Space is unacceptable.

2:Current Date/Time

Clock setting, the system automatically shows current date and time of your pc. Press **OK** to confirm.

Note: Schedule date & time refer to current PC date and time

►Please click **OK** to sync the meter's date and time every time.

ALARM & SENSOR (Pic 2)

1. Edit Temp. & Humidity Hi/Lo alarm setting and sync to the meter.
2. Appear the parameter K temp., remote temp. and humidity sensor.

SETTING (Pic 3)

1. Set sample point (K=1,000 multiple basis within total memory points).
2. Set sample rate, start mode to record:
   Select “hour(1~6), “minute(0~59)”,“second(0~59)” time interval.
   Select 5 start modes from:

- Immediate(Logger start recording immediately)
- Real-time (PC is always connected with the logger)
- Key start/off (Start/stop recording by long pressing **BKLT** button)
- Roll-over (when memory are full, logger covers the earliest memory automatically)
- Schedule(Select the date and time, meter will start recording)

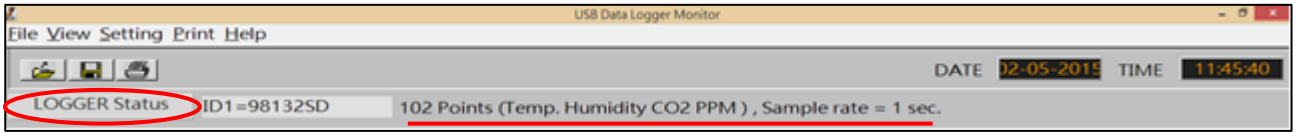
“MEM” icon will flash when the data logging is activated.

3. Select Unit : Select Temperature unit °C/°F for recording, press **OK** to confirm.

LOGGER STATUS

Before download data, press LOGGER status to show ID, Records, Sample rate, Unit.

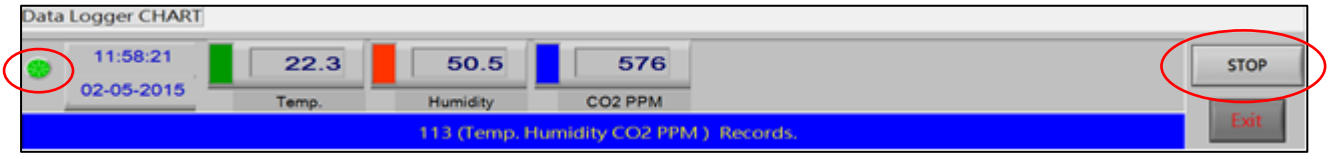
NOTE: Once Download button is pressed, meter won't keep recording.



- **Schedule start mode:**

Select the date and time meter will start recording. The recording start time as software's current time not meter's. Please set up the current time correctly. (Follow the format in software: D-M-Y, H:M:S)

- **Real-time start mode:**



1. After set start mode at real-time, datalogger starts login records. When logger records, the green fan at left flashing.(Meter should be connected with PC all the time, under this mode.)
2. In real-time mode, it shows "**STOP**" button instead of "**DOWNLOAD**" at the right corner. Press "**STOP**" to stop real-time recording.

►Before exit software data has to be downloaded, otherwise data will be cleaned.

- **Key-start/off mode:**

Select the mode to record once long pressing **BKLT** button, long pressing **BKLT** button again to stop recording. Data has to be downloaded before next key-start.

NOTE: After key off the recording, the data has to download before restart the Key-Start function.

- **Roll-over mode:**

After Roll-over mode is selected. Press **OK**, the meter will start to record. When the data is full, it will cover the earliest memory.

Note: Under Key start and Roll-over mode, after downloaded previous data, press **BKLT** button, meter starts recording with same setting.

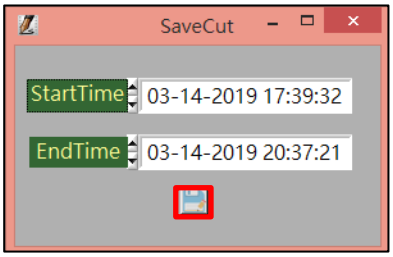
DOWLOAD DATA

Press **DOWNLOAD** button, data download in few seconds, Graph shows automatically, message area shows the downloaded points.

Note : Please do not press **DOWNLOAD** button if you won't stop record. You can press **LOGGER STATUS** button to see recorded points.

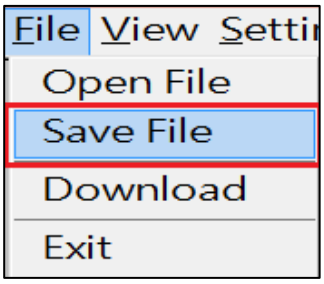
SELECT INTERVAL

Press  to select interval, when the time be selected, press below red part to save the data as csv. file.



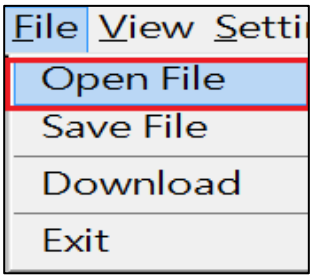
SAVE FILE

Press **SAVE** button or  to save data as CSV. or press  to save data as PDF file format. Don't name the file with symbol dot, otherwise file can't be saved successfully.



OPEN FILE

Press **OPEN FILE** button to select file and show the graph on screen.

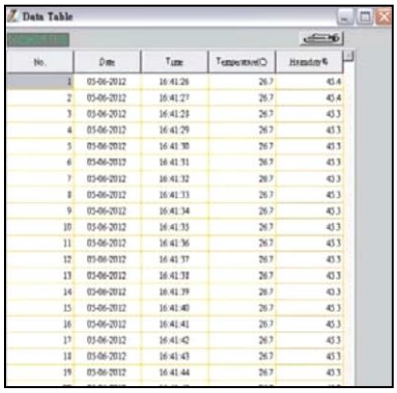


DATA /MESSAGE AREA

The gray area next to "DOWNLOAD" button displaying the parameter and data values .The blue area next to "EXIT" button showing "tips and warning message."

VIEW DATA TABLE

Press view button to get data table with details.

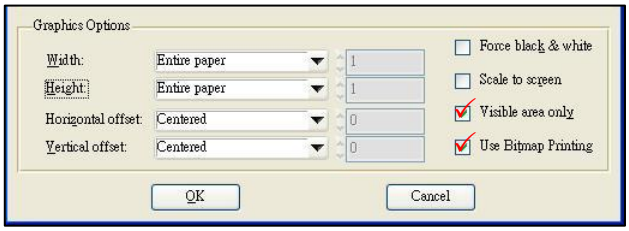


PRINT GRAPH

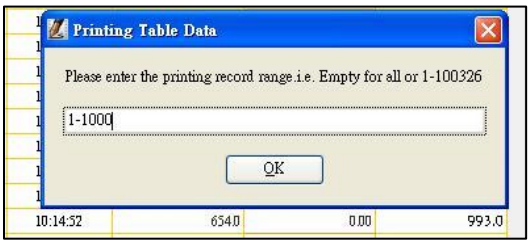
Press **PRINT** button and print graph. Follow the print setting below to print full screen graph. Press **OK** to print **pdf.** file (Pic 8)

PRINT DATA TABLE

Press table data, the screen shows the record range, enter the start number to the end number (For example: 1~500 or 200~1,000…or leave it blank for printing all data). Each file can print 70 points data. Ex: total records is 333 points,
the first printing page will be 1-70 points, second page 71-140 points, third page 219-288 points and final page 288-333 points. Save each pdf file with different name, otherwise the previous data will be covered. (Pic 7)



Pic 7

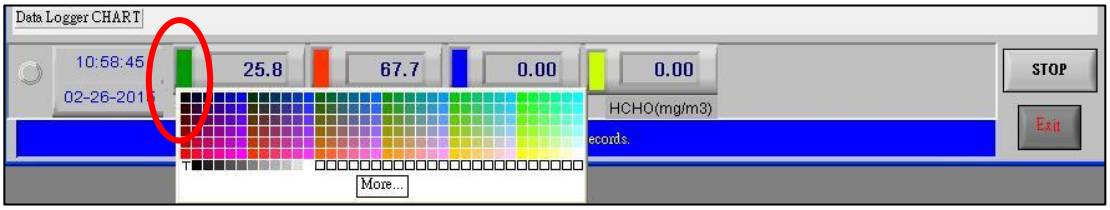


Pic 8

CLEAR DATA

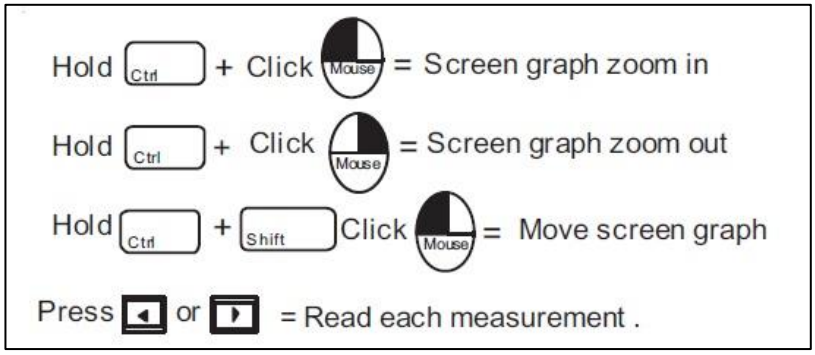
The data is stored in the memory till next setting start; meter will clean previous data automatically. So if you start next data logging, there is no way you can find the data you haven't stored.

LINE COLOR SELECTION



1. Click the color beside the reading (CO_2. temp. humidity), color box appear.
2. Move mouse to review and select color.
3. Click to save, the color appears on line and bar.

ZOOM IN/OUT & MOVE



Note : If the graph size is over zoon in / out, follow the line color selecting, the graph size will go back to default.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **25 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal two **(2) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY / DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

OMEGA is a trademark of OMEGA ENGINEERING, INC.