LogStick

Temperature and humidity Data-Logger

LS300-TH

Users Manual

Attention on safety　　Please guard.

Please read this "Attention on safety" well and use it ahead of the use correctly.

It divides by displaying ⚠warning and ⚠attention and it explains danger and the extent caused when wrong handling is done.

⚠	Warning	The one with possibility of relating to important results such as deaths and serious injuries when wrong handling is done

⊘ Use prohibition	**Do not pull out and do not use the battery when abnormality occurs by any chance.** It causes a fire and the electric shock when abnormally using it. Please pull out the battery from the main body, and request the repair at once.
	Smoke has risen, and it doesn't use it when it is abnormal of smelling to strangeness etc. It causes a fire and the electric shock when abnormally using it. It moves to the place that doesn't spread to surroundings, and please pull out the battery from the main body after confirming safety, and request the repair at once.
	Do not use it when damaging it. It causes a fire and the electric shock.
⊘ Remodeling prohibition	**Do not resolve, and remodel it.** It causes a fire and the electric shock by the short and generation of heat.
⊘ Prohibition	**Do not use it outside the purpose.** Do not use it in the usages other than the measurement of the temperature and humidity.
	Do not put the foreign body. When metals and the combustible one, etc. enter the inside, it causes a fire and the electric shock.
	Do not put it on the place where child's hand reaches. Please do not set it up in the place where child's hand reaches in the measurement place etc.It swallows, and it causes the injury.
⊘ Water wet prohibition	**Do not wet it with water.** It causes a fire and the electric shock. Please note use in outdoor and near the window in rain, the snow inside, and the coast and the waterside, etc. especially.
❗ Correct battery	**Use a specified battery.** When a correct battery is not used, it causes a fire, the electric shock, and the breakdown.

⚠	Attention	The one related to damage of injury or house and household goods, etc. when wrong handling is done

⊘ Installation prohibition	**Do not put it on the following places when you set it up.** 　Place where lamp soot and steam are hit directly 　Place where sunlight strikes directly 　As for the temperature and humidity outside the specification 　The transformation of the short, generation of heat, and the case etc. might be caused when putting it on such a place, and it cause a fire, the electric shock, and the breakdown. 　The range that this machine can use is a temperature: -20-70　　and humidity: It becomes 5-90%RH.
⊘ Prohibition	**Not putting the heavy one on main body, and up field** The balance collapses, and might it fall, and it cause the injury and the breakdown.
	Put neither finger nor the foreign body in the connector and the space. It causes the injury and the breakdown.
⊘ Wet person prohibition	**Do not touch by a wet hand.** It might cause the electric shock and the breakdown.
⚠ Attention	**Aged deterioration** 　The battery terminal and the USB connector might become the loose connections by the vibration and the aged deterioration.
	Note static electricity. There is a possibility of causing destruction by static electricity. Please let the touch static electricity go into the metal etc. to prevent it before touching this machine.
❗ Observing strictly	**Pull out the battery when not using it for a long term.** It might cause the breakdown because of the liquid leakage of the battery.

As for this product, building in the equipment related to the life, equipment that needs the container machine and high reliability and safety, and the container machine (medical, aerospace relation, ransportation relation, and nuclear power relation, etc.) etc. are not considered. Even if the accident resulting in injury or death and the property damage occur by having used this product with these equipment and container machine, our company doesn't assume the responsibility at all.

**Thank you indeed for purchasing temperature and humidity data logger 'LS300-TH'.
It explains the handling method and the directions point of this product in this manual.
Please read this manual to use it ahead of the use correctly and safely.
Please read when it is necessary after it reads.**

Attention

It is prohibited to reprint all of the content of this book partially without permission.

This product might change the specification without a previous notice for the
function addition and the quality improvement.

Please acknowledge being not able to assume any responsibility such as the losses an
Passive damages in which the operation of this product is assumed to be a reason
beforehand.

It is sensor
It is equipped with the humidity Sen Synge element and the band gap temperature sensor of
electrostatic capacity Polymer that measures relative humidity as a temperature and a humidity
sensor of this machine.

notes in humidity sensor
The humidity sensor measures the capacity change of the permittivity by the
moisture adsorption.
Therefore, dust and the vehicle exhaust emission, etc.
The steam of the organic compound quality might influence the Polymer layer.
Therefore, there is use under the environment where a large amount of these are
floating by measurements and is a possibility that the drift doing and the error of measurement occur.
Moreover, when the sensor is polluted because of these, pollution is gradually discharged under
a clean environment. However, please note becoming in the sensor permanent damage at high density
organism pollution.

Contents

1 Outline

   LS300-TH builds the highly accurate temperature humidity sensor into, and can record mea
sured temperature and humidity at constant intervals. The use of button battery (CR1220) can
be enabled by achieving low power consumption, and it record for the small size and a long
time. The clock function is built into the main body, and measured value and date are
recorded at the same time. The confirmation can do detailed data to change the dependence
temperature humidity to it.
   Moreover, the data recorded with the application software can be easily transmitted by
using the USB interface for the connection with the personal computer.

2 Explanation of each part
Main body externals

Communication LED

Open   Log LED

Surface   **Side**   **Back**
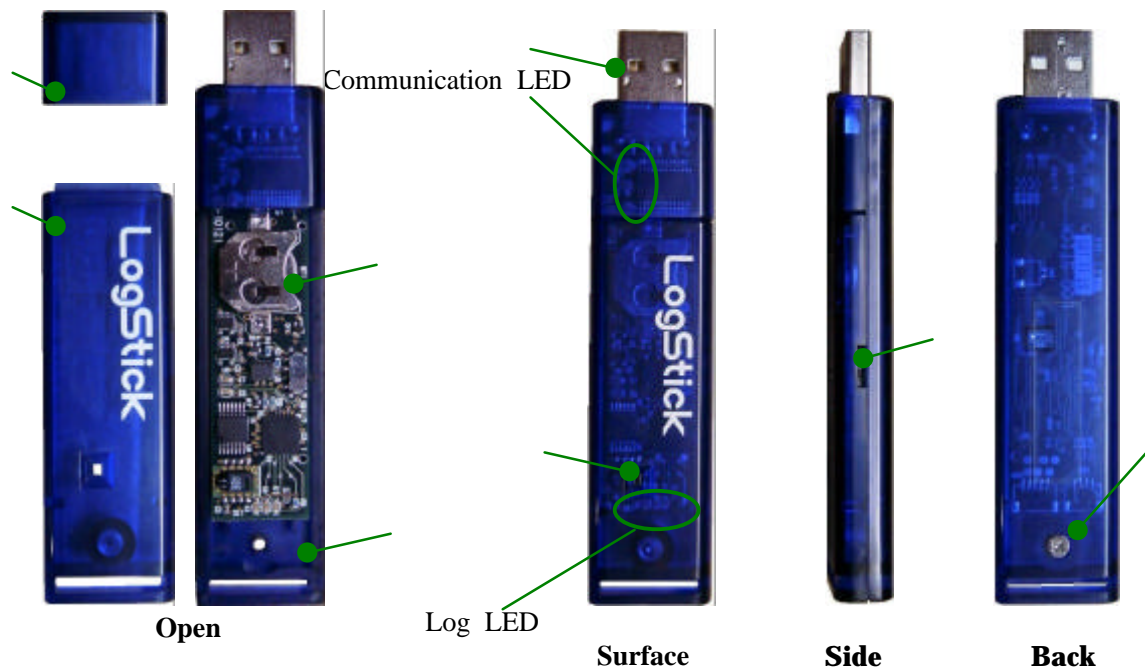
Name and explanation of each part

   USB connector cover
   Cover
   Main body case
   Battery   : Please use CR1220.
   USB connector : It connects it with the personal computer.
   Temperature and the humidity sensor : Please do not close this part.
   Record stop switch. : The record is temporarily interrupted by moving to the USB connector side.
   Machine screw for battery exchange. : M2×6 plate machine screw

   Communication LED   When communicating with the personal computer, it lights.
   Log LED   Green   When the log is recorded, it lights.
                    Red   When the voltage of the battery decreases, it blinks in five seconds.
                    ─── Attention ───

   If the voltage decrease is detected, a present log record is ended.
   All the settings before it exchanges it are initialized when changing a battery.
   Therefore, please connect with the personal computer, and set it when you restart the log record.

3 Preparation to use LS300-TH

The following preparations are necessary to use LS300-TH.

1) Battery exchange
2) Driver installation
3) Acquisition of COM port number
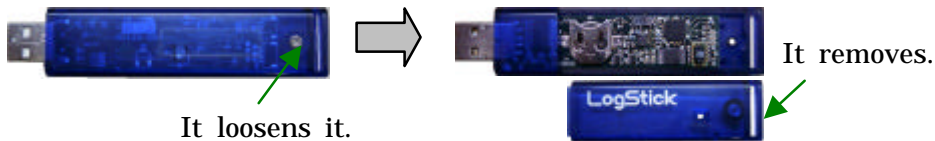4) Application soft installation

3-1 Battery exchange

3-1-1 The cover is removed.

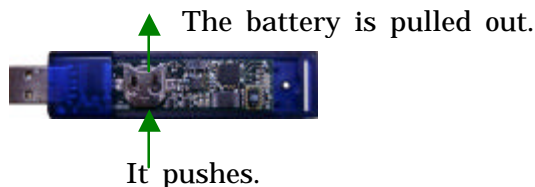Please the driver must loosen the machine screw for the battery exchange and remove the cover.
The driver must use plus driver's NO.1.
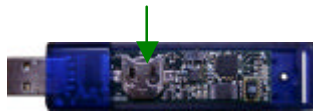In this case, please do not lose the machine screw.

It loosens it.

It removes.

3-1-2 An old battery is pulled out.

Please push the battery with the insulation thing such as wooden toothpicks, and pull it out.

The battery is pulled out.

It pushes.

3-1-3 A new battery is inserted.

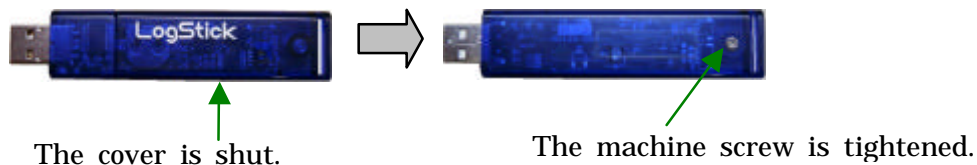Please insert a new battery. (The plus is the upper part.)

A new battery is inserted.

3-1-4 The cover is shut.

Please cover with the cover, and tighten the machine screw.
There is fear of damage when strongly tightening too much.

The cover is shut.

The machine screw is tightened.

Attention

The battery in purchase with is for the test.
Please actually exchange it for a new battery before starting using.
We will recommend the download of data beforehand though data doesn't disappear by the battery exchange.

3-2 Driver installation

```
Recommended spec
  OS
    Windows XP   Windows Vista
  CPU 500MHz or more
    Intel Pentium/Celeron family or compatible CPU
  Memory 256MB or more
  Hard disk: Empty capacity of 10MB or more
  Size of display: 1024×748 or more
```

Because the RS232C USB conversion chip is built into LS300-TH, it is recognized from the personal computer side as COM port.

First of all, the driver for the RS232C USB conversion chip is installed before LS300-TH is connected.

The driver installation program is executed.
"CDM *.*.*.exe "of the driver software is executed. (* version number)
When the display of "FTDI CDM Driver Installation process completed." appears, it ends pushing 'Enter'.

Double-clicking
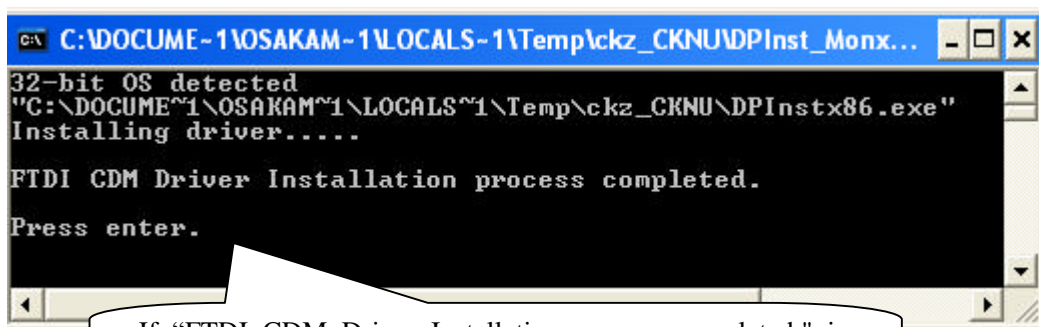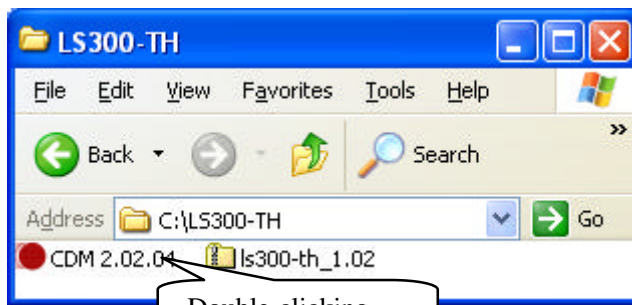
If "FTDI CDM Driver Installation process completed." is displayed, it ends pushing "'Enter'".

8

3-3 Acquisition of COM port number

The COM port number is acquired.

3-3-1 Please connect LS300-TH with the personal computer.

The property of device manager USB(Universal Serial Bus) controller USB Serial Converter is opened after it connects it, and the check is put in " Load VCP" of Advanced.
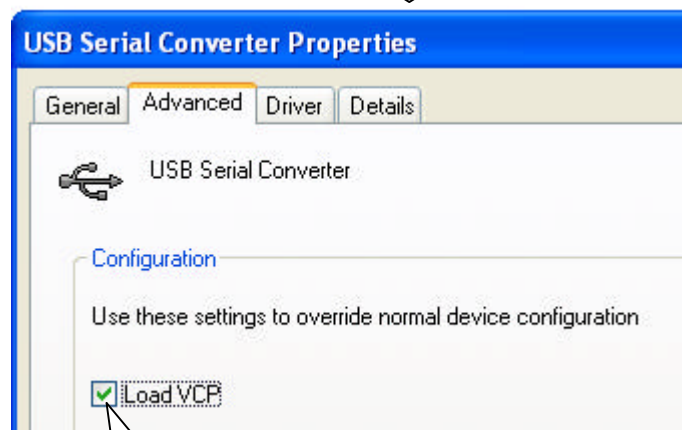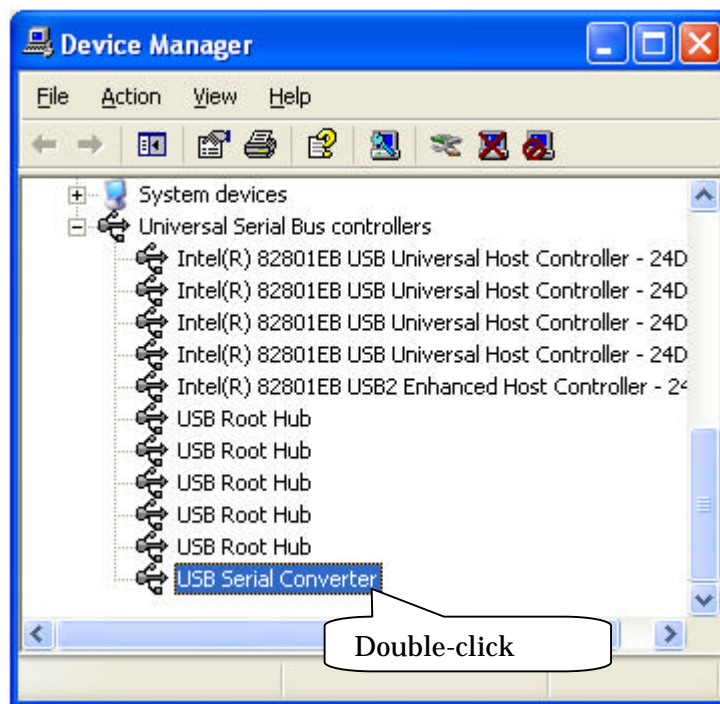
The method of displaying the device manager is as follows.

For WindowsXP
Start button control panel system Hardware device manager
For WindowsVista
Start button control panel device manager

3-3-2 LS300-TH is extracted from the personal computer.
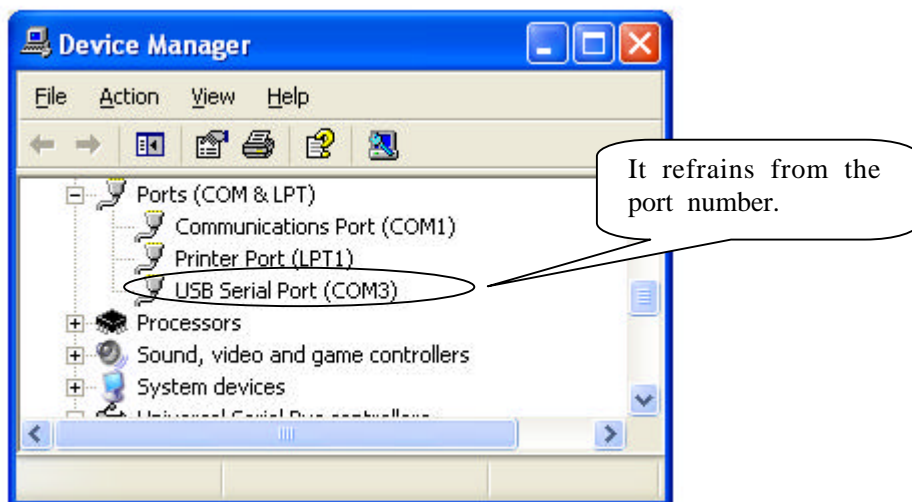LS300-TH is extracted from the personal computer once.

3-3-3   LS300-TH is connected with the personal computer.
LS300-TH is connected with the personal computer again.
The thing that USB Serial Port(COMxx) is displayed in device manager   port (COM and LPT) is confirmed.
In this case, please refrain from the port number.

It refrains from the port number.

3-3-4　Installation of application software

All the operations of LS300-TH are done with special application software.
The special application software is installed.

The setup program is executed.

″ LogStick***.msi″ of the application software is executed.
Please install it according to the screen instruction of the setup program now.

1

Double-click

2

3

4

5

6
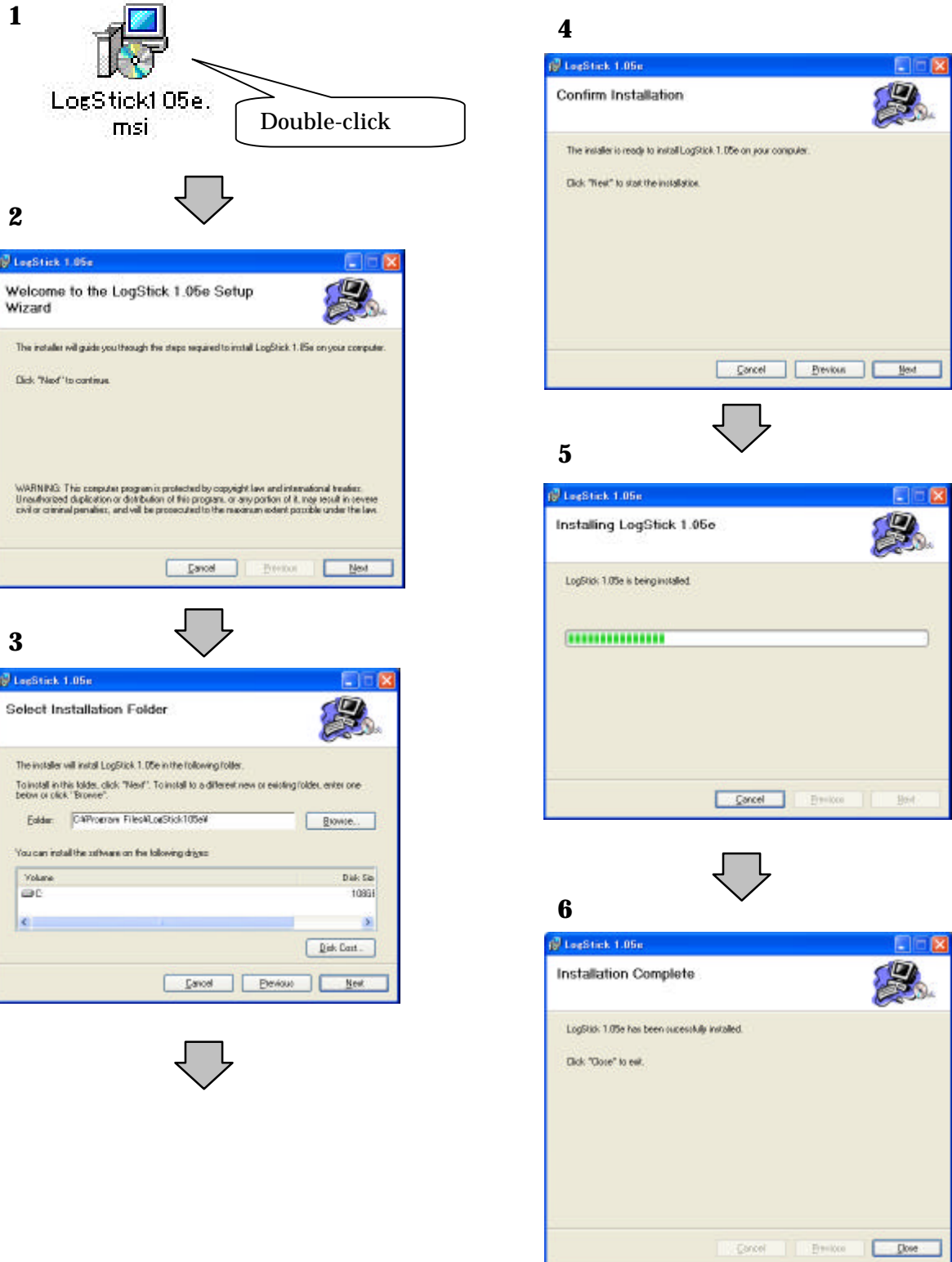
4 Use of application software

The application software is executed by start button (all) program LogStick.

4-1 Communication

The automatic operation of the port number and the manual operation are selected in the communication.

┌─ Attention ───

Please use a manual selection when cannot it select automatically, and Auto Select be done by the environment used usually.

└──

4-1-1 Port number Auto Select

The port number of LS300-TH is set by the automatic operation, and the communication begins.

4-1-2 Port number manual operation selection

When menubar Tool "Communication" is clicked, the communication dialog is displayed. Please select the port number from which it refrains by "Acquisition of the COM port number ", and click "Communication beginning".
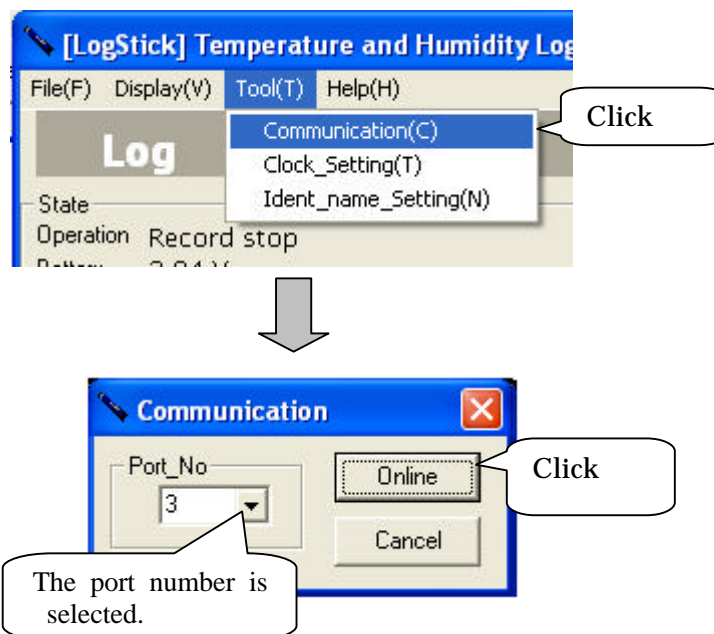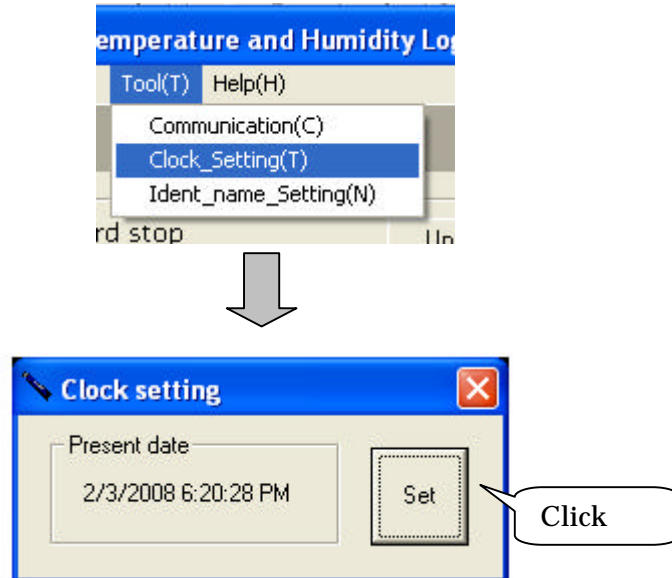
4-2 Clock setting

An internal date is set.

┌─Attention───┐

  It is not necessary to usually set it because it sets it automatically when it
 begins to record the log.

└───┘

Please select menubar   Tool   clock setting.
The date is suitable for the clock of the personal computer.

Click

4-3 Recognition name setting

An arbitrary name can be set as a recognition name.
It becomes easy to manage when measuring it by this with two or more equipment.
Please click menubar   Tool   recognition name setting.
The recognition name can be set up to four characters.

Click

Recognition name input
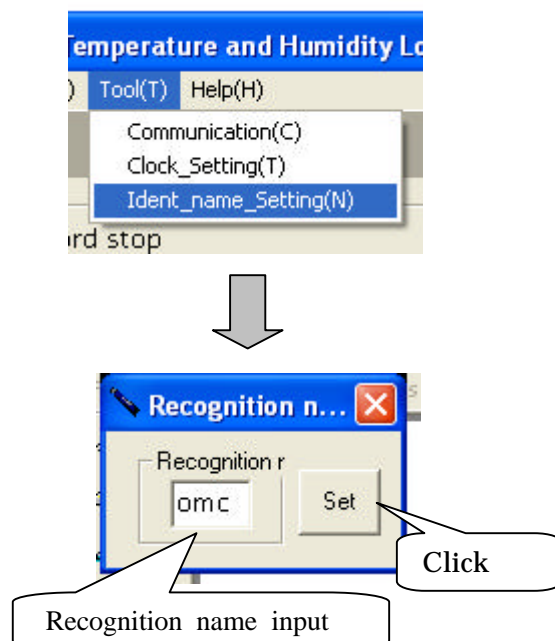
4-4 Log record

The feature of the log record is as follows.
The temperature and the humidity data measured at set record intervals are recorded in an internal memory.
The record interval can be set in 2-59 seconds and it set it in 1-240 minutes.
  (The factory setting is 60 minutes.)
The record beginning date can be reserved one month ahead.
The record in the memory can be selected in the one time mode or the loop mode.
One time mode: When the number of records becomes 15000 points, the record is ended.
Loop mode: It keeps being recorded that the number of records exceeds 15000 points
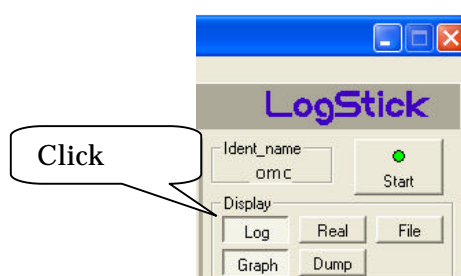   from the oldest data to the overwrite 60000 points or less.
The record can temporarily be interrupted by using the switch on the side.
  (Interrupt on the USB connector side.)

Attention
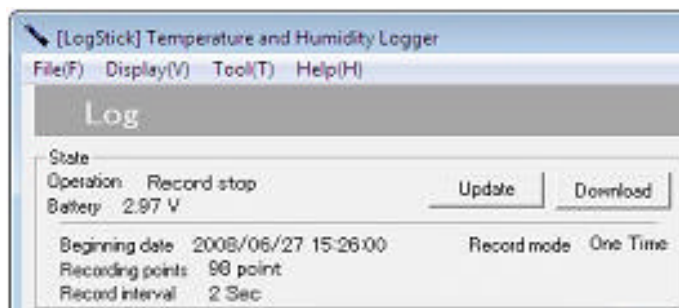
The measurement resolution decreases every two seconds.

Please click the display to operate the log record and click "Log".

Click

It is possible to operate it on "Log" screen as follows.

4-4-1 State confirmation
A present state is confirmed clicking "Update".

Operation   Operation is displayed. (record stops, recording, reserving)
Battery   The battery voltage is displayed.

Beginning date   The record beginning date is displayed.
Recording points   Recording points are displayed.
Record interval   The record interval is displayed.
Record mode   The record mode is displayed. (One time , Loop)
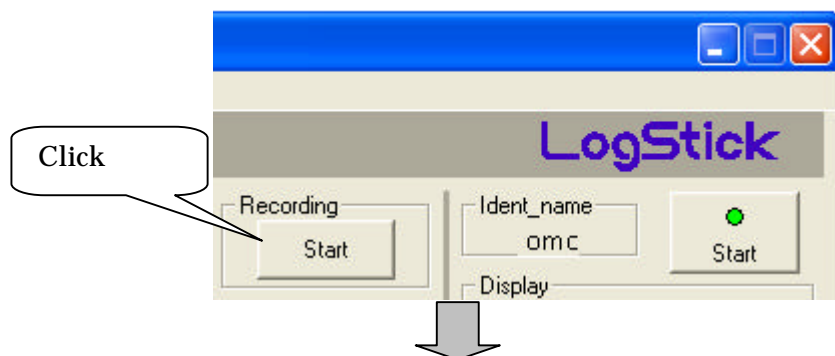

Attention

The display of the voltage of the battery is a standard.
Please exchange the batteries beforehand before the record of a long-term log.
When the voltage of the battery becomes 2.5V or less, the log record cannot be operated.

4-4-2 Record beginning

When "Record beginning" is clicked, the record beginning dialog is displayed.

The recognition name, the record mode, and the record interval are set.
Please put the check in "When beginning to record, in is reserved",
and set the date when you reserve the beginning time.
Please click "Record beginning" ("Reservation registration") after all the settings end.

Attention

When "Record beginning" ("Reservation registration") is clicked, the data before is deleted.
Please exchange the batteries beforehand before the record of a long-term log.
For "Record beginning"
After the time set at record intervals at the clicked date passes, the first data is recorded.
For "Reservation registration"
The first data is recorded at the set record beginning date.

Explanation of each item

Record mode

One time: When the number of records becomes 15000, the record is ended.
Loop : It overwrites from the oldest data even if the number of
records exceeds 15000 and it keeps recording.
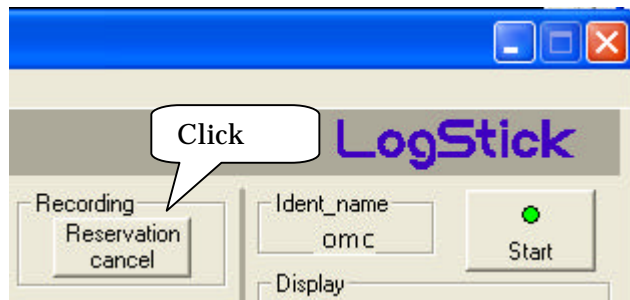
Record interval

The record interval is set.

Reservation

The date when the record begins is set.

4-4-3 Record end/reservation cancellation

Reservation cancellation ("record stop ") is clicked.

4-4-4 Download

Recorded temperature and humidity data are transmitted to the personal computer.
Please click "Download ".
When forwarding to the personal computer ends, the graph or the dump data is displayed.

Attention

Please do not do other operations while downloading it.
Please set the download mode to a low-speed mode, and download it again
when the message of "Failed in download" appears while downloading it.
(Refer to 4-4-5 download to the mode.)

17
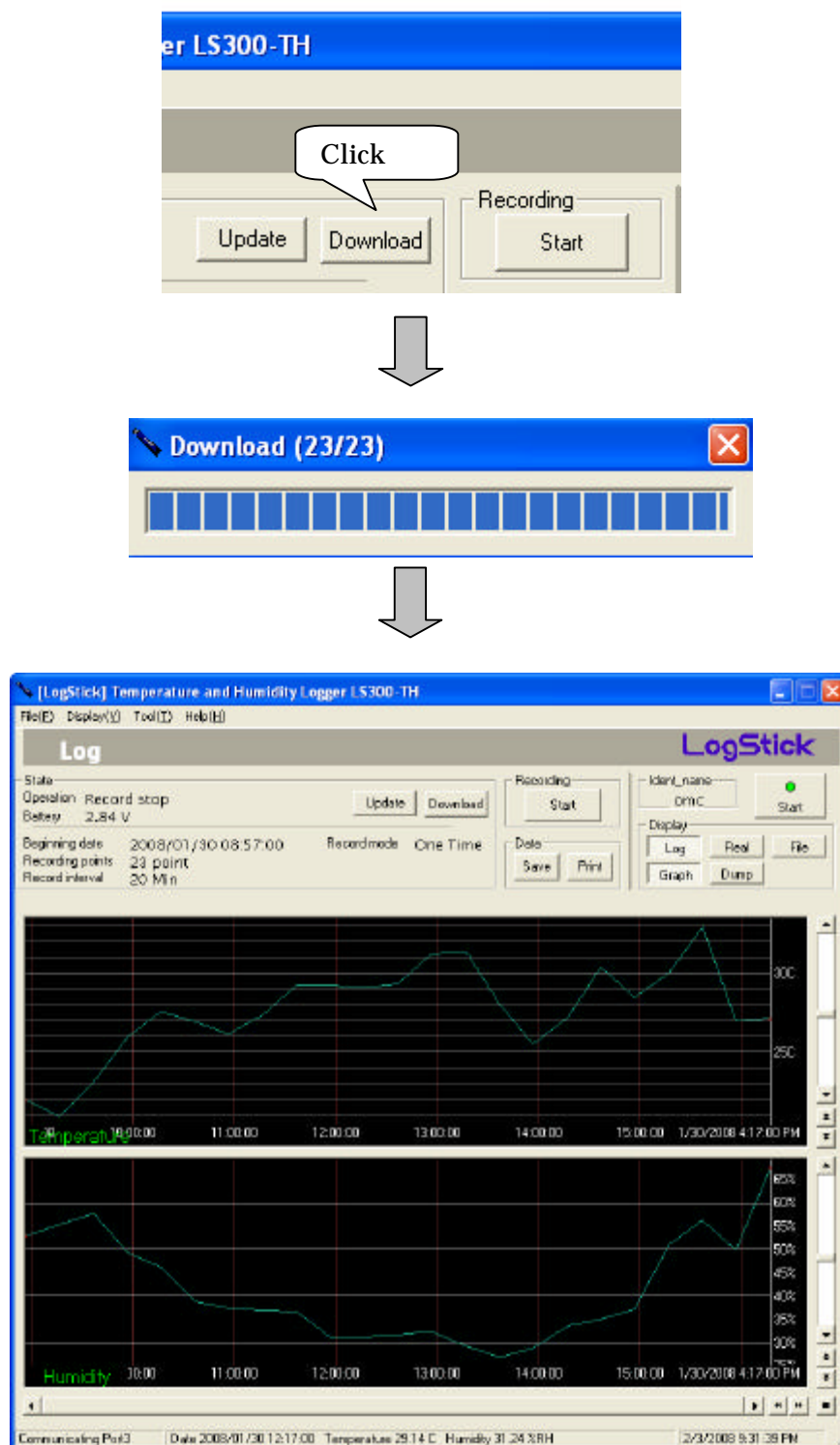
4-4-5 Download mode

There are a high-speed mode and a low-speed mode.
Please set to a high-speed mode, and download it usually.
(Default is a high-speed mode.)
Please set to a low-speed mode, and download it again when the
message of "Failed in download" appears while downloading it.
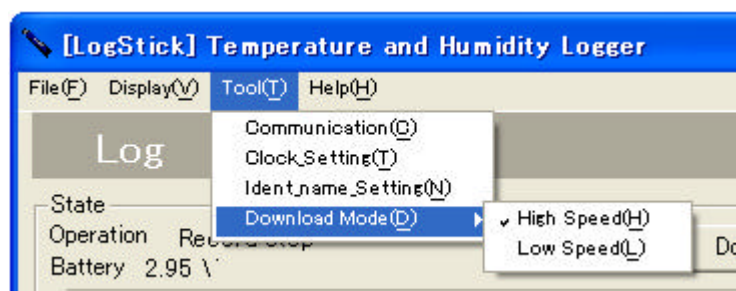
4-5 Real-time measurement

The feature of a Real-time measurement is as follows.

A present temperature and humidity are measured while connected with the personal computer.
The measurement interval can be set in 2-59 seconds,1-240 minutes at a continuous measurement.

> ─── Attention ───
>
> The measurement resolution decreases every two seconds.

Please make the display "Real time" to operate a real-time measurement.
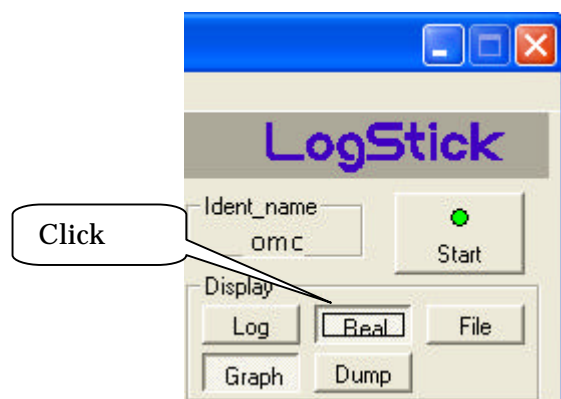
It is possible to operate it on "Real time" screen as follows.

4-5-1 One time measurement

A present temperature and humidity are measured while connected with the personal computer.
Please click "one time measurement ".

> ─── Attention ───
>
> An interval set item is disregarded.
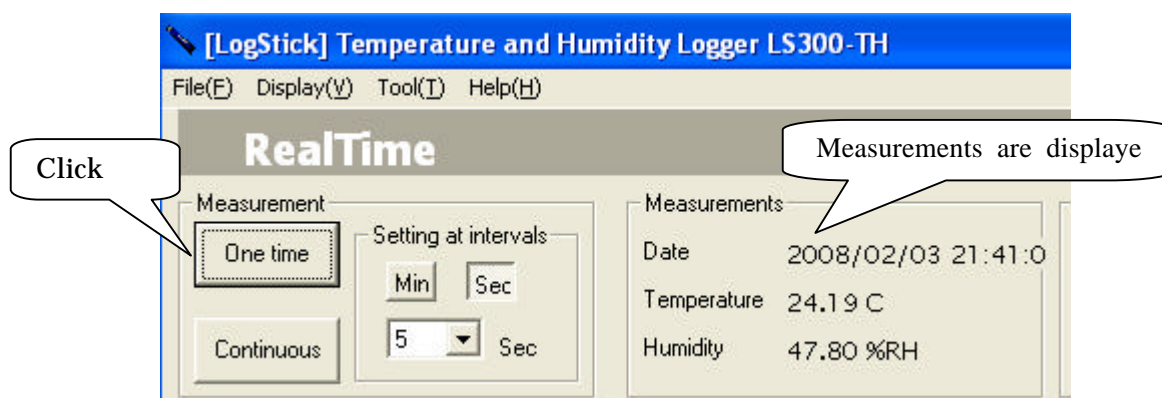
4-5-2 Continuous measurement

The temperature at constant intervals and humidities are measured while connected with the personal computer.

Measurements do the graph or the dump display.

Please set the measurement interval and click "continuous measurement "
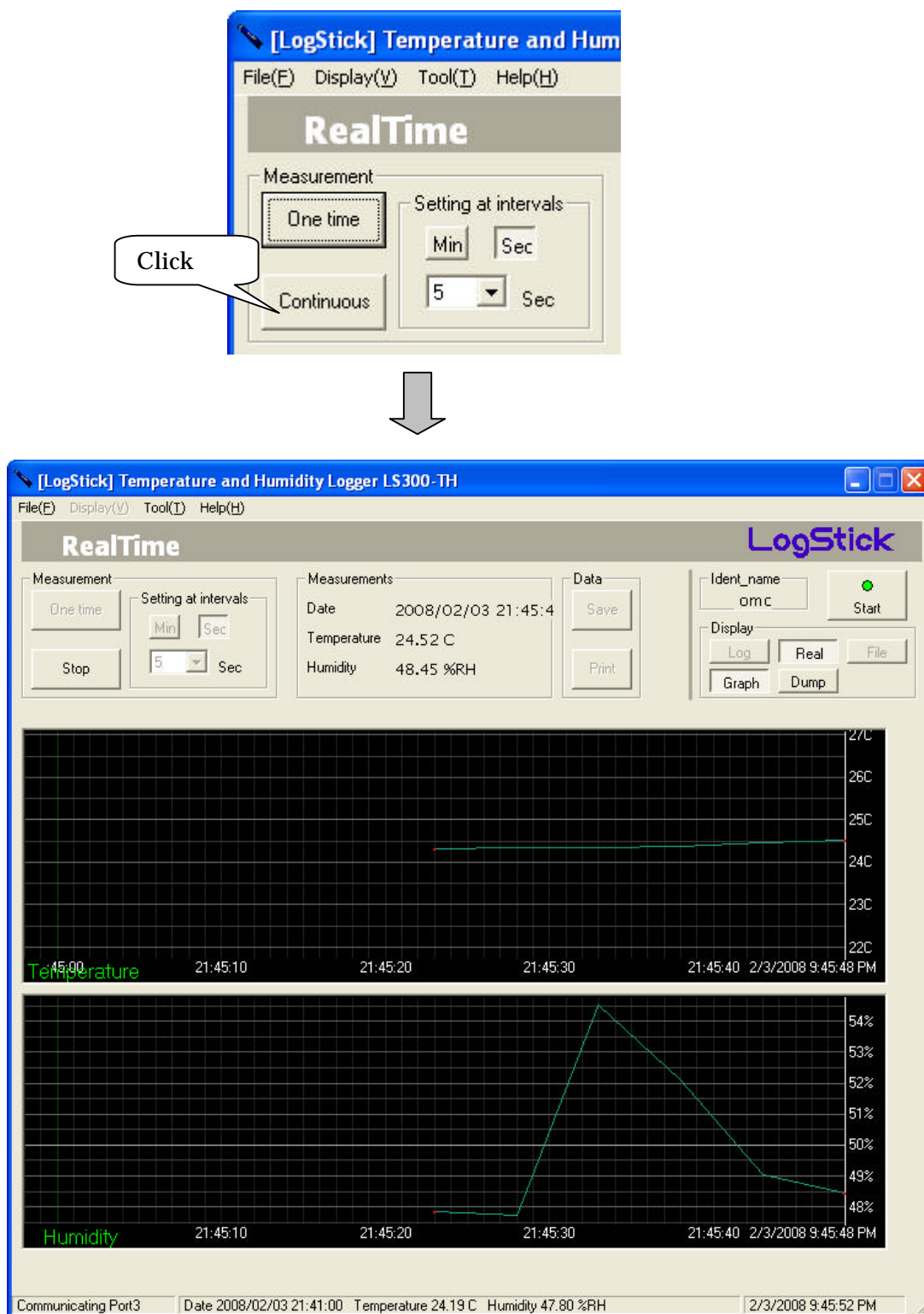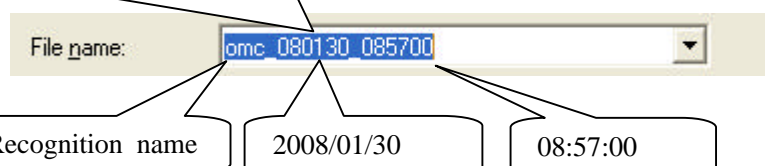
4-6 File preservation of temperature and humidity data

The recorded data can be preserved in the file of Comma Separated Value.
When "Save" is clicked, the file Save dialog is displayed.

Log　　　　　　**Real-Time**

Click

Click

The saving place and the file name are specified.
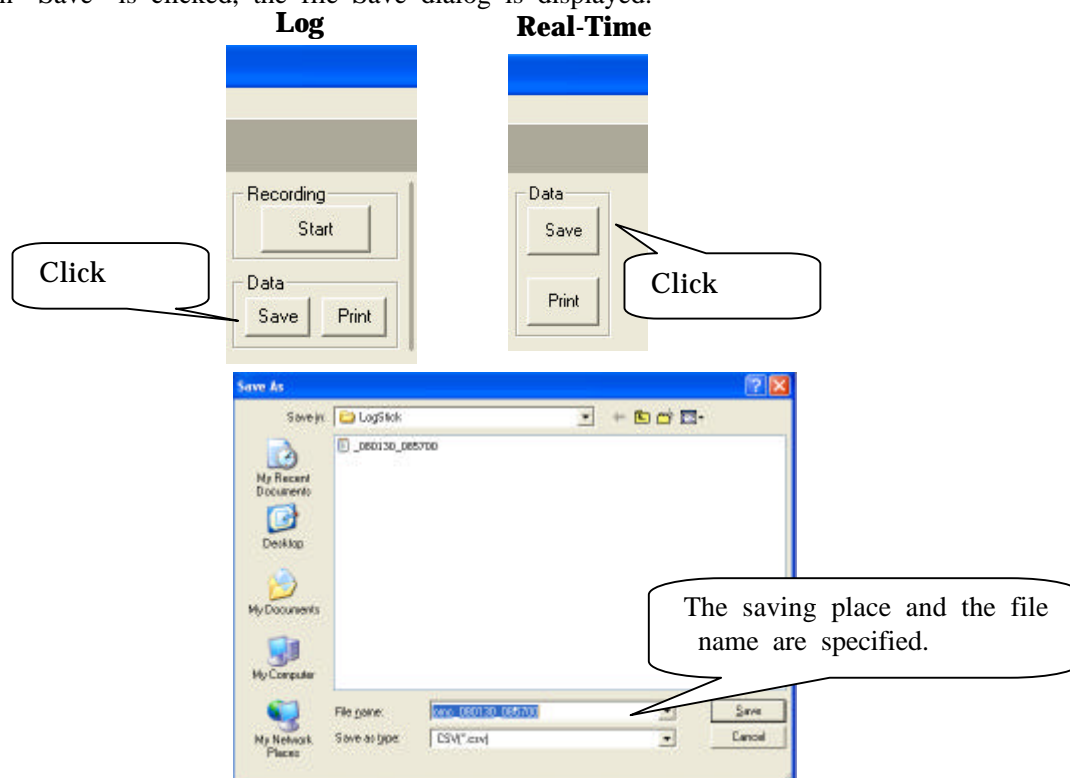
An initial value of the file name shows the recognition name and the record

File name: omc_080130_085700

Recognition name　　　2008/01/30　　　08:57:00

The saved file can be inspected by the spreadsheet like the note pad and Excel,

The record interval is preserved every second.
for example: 2Sec.

Attention

Time and data might be omitted according to the spreadsheet used.
In that case, please change, and display the setting of the spreadsheet.
　Example:The second with Excel2003 at the display
　　Please set it to second display at format > cell > display form > time.

4-7 Reading of temperature and humidity data file

The temperature and the humidity data file preserved in the personal computer are read. Please make the display "File" to operate reading the file.
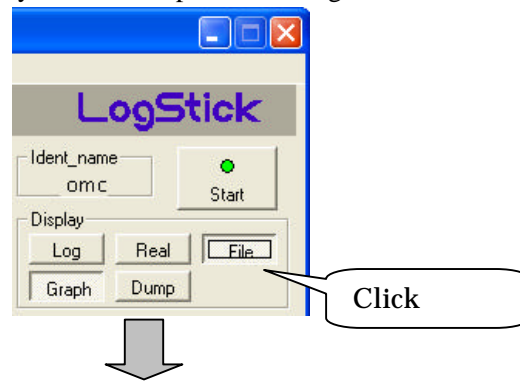
Click

Please click "Load"and select the file read by the dialog.
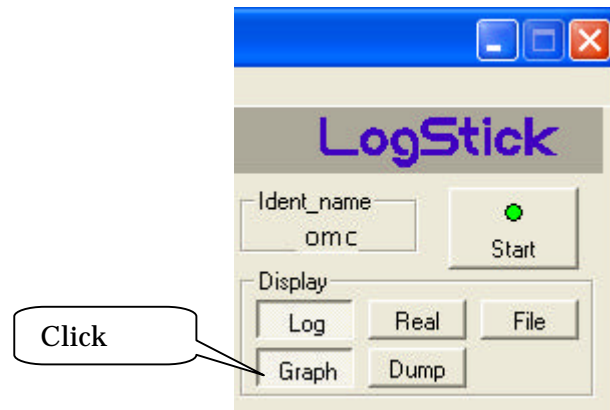

Click

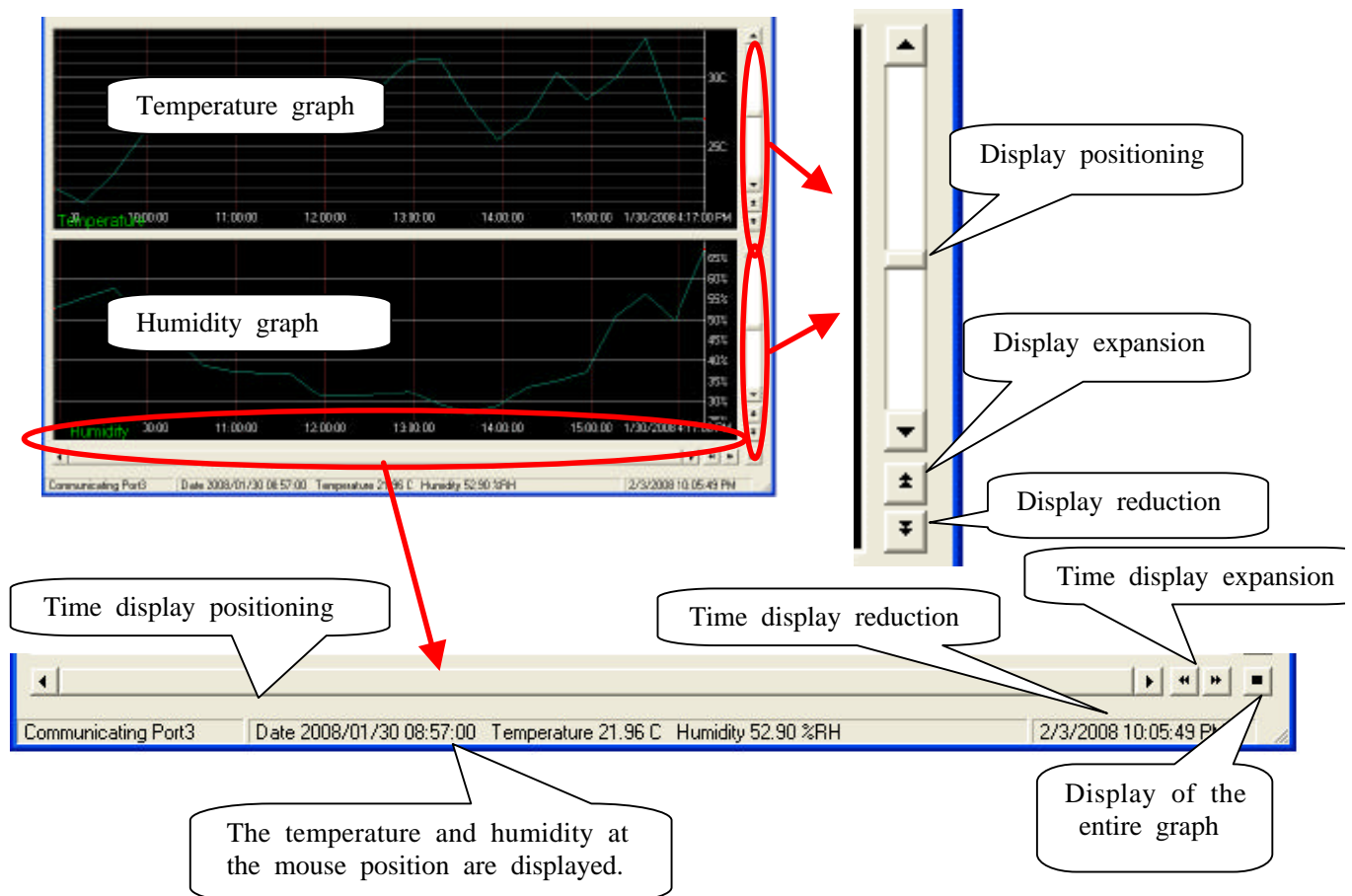The file is selected.
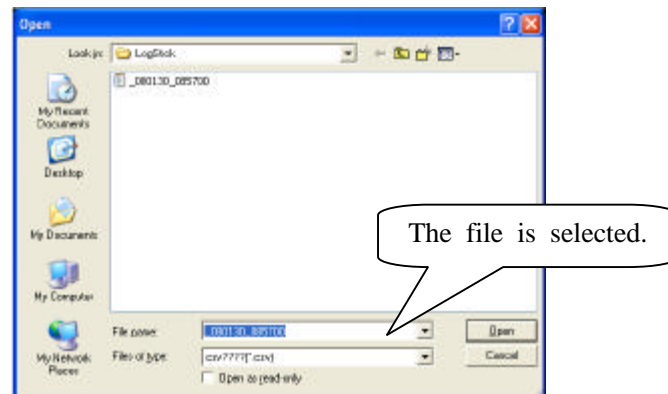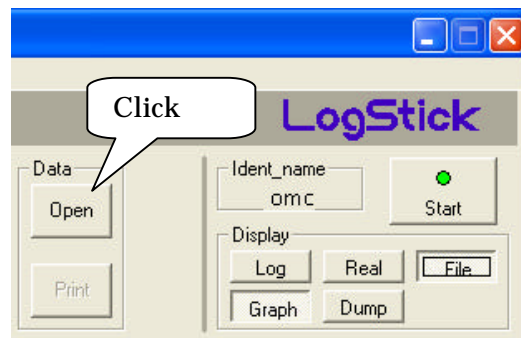
4-8 Graphical /Dump display

As for the temperature and the humidity data, the display confirmation can be done by the graph and the dump.

4-8-1 Graphical display

The switch to the graphical display clicks "Graph "

Click

Graph display each part explanation

Temperature graph

Humidity graph

Display positioning

Display expansion

Display reduction

Time display expansion

Time display positioning

Time display reduction

Display of the entire graph

The temperature and humidity at the mouse position are displayed.

Communicating Port3   Date 2008/01/30 08:57:00   Temperature 21.96 C   Humidity 52.90 %RH   2/3/2008 10:05:49 PM

4-8-2 Dump display
The switch to the dump display clicks "dump ".

Click

When the item is clicked, the ascending order and the descending order queue up

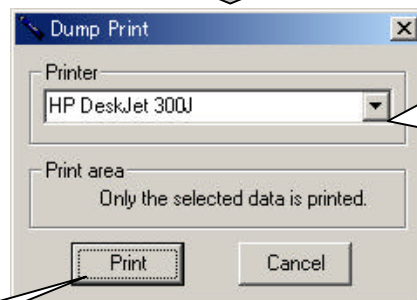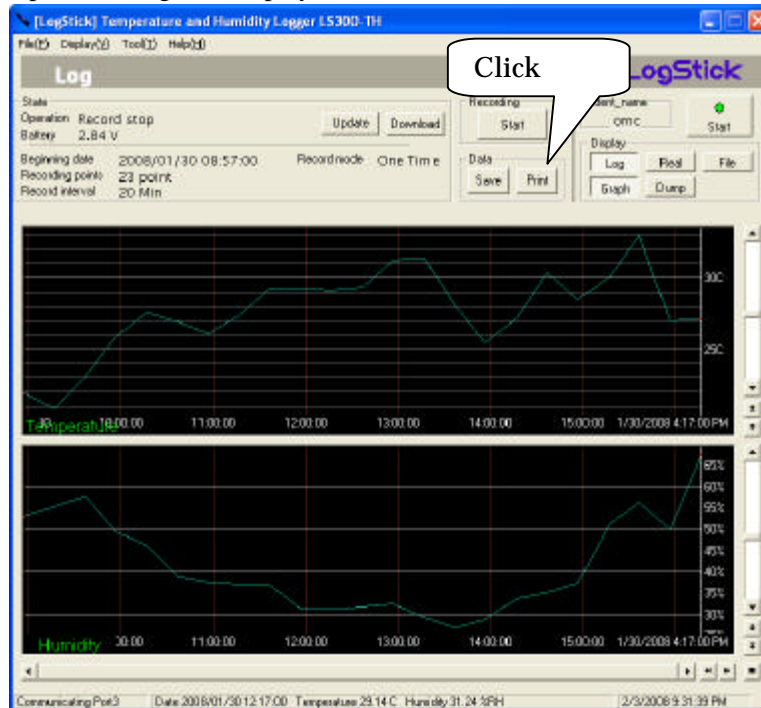| / Record No	Date	Temp (C)	Humi (%RH)	Remarks
00001	2008/01/30 08:57:00	21.96	52.90	
00002	2008/01/30 09:17:00	20.92	55.46	Minimum temperature
00003	2008/01/30 09:37:00	23.10	57.68	
00004	2008/01/30 09:57:00	25.93	49.34	
00005	2008/01/30 10:17:00	27.54	46.27	
00006	2008/01/30 10:37:00	26.93	38.86	
00007	2008/01/30 10:57:00	26.16	37.34	
00008	2008/01/30 11:17:00	27.34	37.01	
00009	2008/01/30 11:37:00	29.24	36.60	
00010	2008/01/30 11:57:00	29.25	31.32	
00011	2008/01/30 12:17:00	29.14	31.24	
00012	2008/01/30 12:37:00	29.33	31.75	
00013	2008/01/30 12:57:00	31.25	32.31	
00014	2008/01/30 13:17:00	31.41	29.19	
00015	2008/01/30 13:37:00	28.03	26.90	Minimum humidity
00016	2008/01/30 13:57:00	25.51	28.91	
00017	2008/01/30 14:17:00	27.19	33.62	
00018	2008/01/30 14:37:00	30.40	35.03	
00019	2008/01/30 14:57:00	28.50	37.23	
00020	2008/01/30 15:17:00	30.06	50.98	
00021	2008/01/30 15:37:00	32.93	56.33	Maximum temperature
00022	2008/01/30 15:57:00	26.98	49.93	
00023	2008/01/30 16:17:00	27.12	67.57	Maximum humidity

Communicating Port3   2/3/2008 10:18:12 PM

4-9 Print

4-9-1 Graph print

The printed range is displayed, and "Print" is clicked.

Click

printed range is displayed.
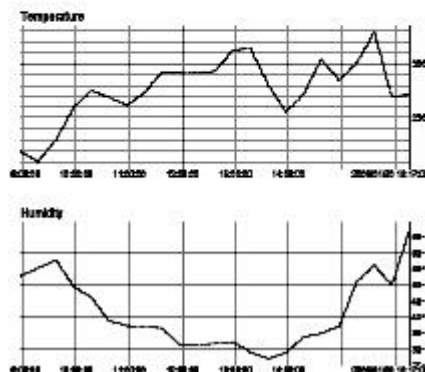
The printer is selected.
A standard setting of the printer becomes effective.
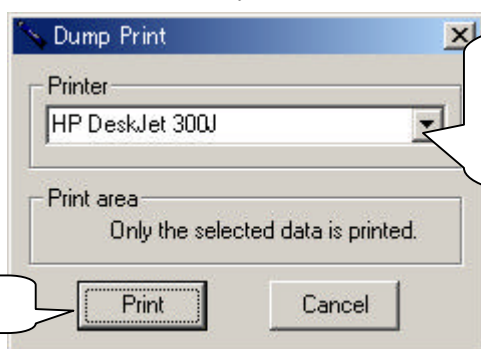Please set the form to the A4 length.

Click

4-9-2 Dump print

The printed data is selected by mouse and "Shift key" (range selection)
and "Ctrl key" (individual selection), and "Print" is clicked.

Click
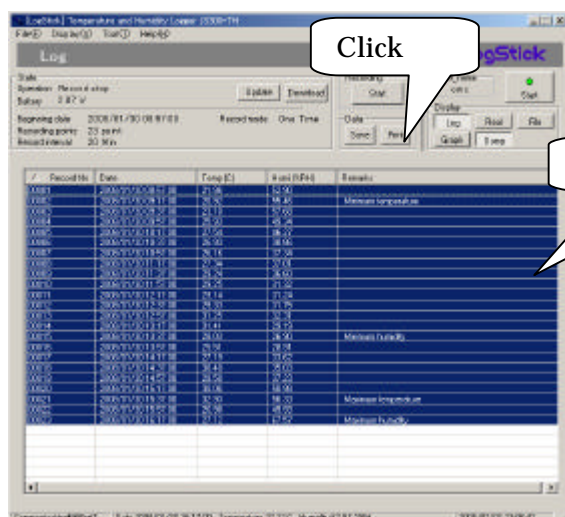
printed data is selected.

The printer is selected.
A standard setting of the printer becomes effective.
Please set the form to the A4 length.

Click

5 Specification

Sensor specification			
Temperature Sensor	Number of channels	1CH	
	Range	-20 deg C - +70 deg C –4 deg F- +158 deg F	
	Resolution	0.01 deg C(14 bit) more than 3seconds sampling rate	
		0.04 deg C(12 bit) 2 seconds sampling rate	
		0.02 deg F(14 bit) more than 3seconds sampling rate	
		0.07 deg F(12 bit) 2 seconds sampling rate	
	Accuracy	±0.8 deg C(at 25decC) ±0.7 F(at 77 deg F) **Fig.1**	
Humidity Sensor	Number of channels	1CH	
	Range	5-90%	
	Resolution	0.03%RH(12bit) more than 3seconds interval	
		0.5%RH (8bit) 2 seconds interval	
	Accuracy	± 4.0% (20-80%) **Fig.2**	

Product specification	
Storage capacity	15000 points or less (100 times or less of prohibition/permission switch)
Measurement interval	2-59 sec,1-240 min
Interface	USB
Clock function	Building into
Battery	CR1220 (It is possible to exchange it.)
Battery longevity	One year(In measurement interval = one hour.)

Size
100 * 10 *21 mm

Weight
About 20g(The weight of the battery doesn't contain it.)

OS(The personal computer control software free is distributed.)
Windows Xp   Windows Vista

Accessory
CR1220   Button battery for test(Install it in the main body.) Keeping bag for main body Guarantee certificate Install Software CD

Fig.1
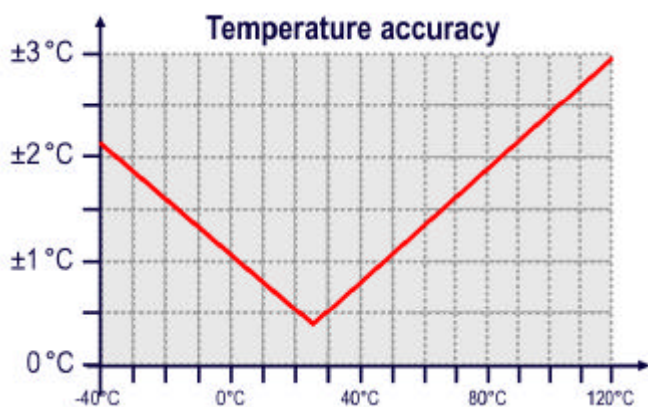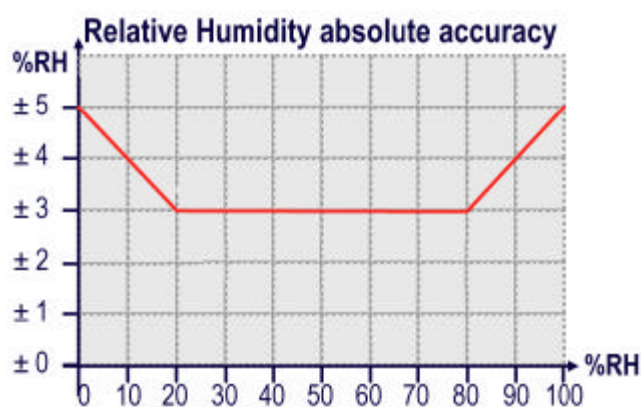 The temperature measurement accuracy changes depending on the measurement temperature.

Fig.2
The humidity measurement accuracy changes depending on the measurement humidity.

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