LogStick

Temperature and humidity Data-Logger

LS350-TH

Users Manual

Manual Ver.3.00 2010/10

Safety Instructions

Please read this "Safety Instructions" carefully and use instruments correctly.

Displaying ⚠warning or ⚠attention. It explains danger or when wrong handling is done.

⚠ Warning When the wrong handling is done, death or serious injury occurs.

 Use prohibition	**Remove the battery and stop recoding, when abnormality occurs by any chance.** It causes a fire and the electric shock when abnormally using it. Please remove the battery, and request the repair at once.
	Smoke or Starage smell It causes a fire and the electric shock when abnormally using it. Move the instrument to safe place, and re move battery after check safety, and request the repair at once.
	Don't use damaged instrument. It causes a fire and the electric shock.
 Remodeling prohibition	**Do not dismantle and remodel.** It causes a fire and the electric shock by the short and generation of heat.
 Prohibition	**Do not use it abnormally.** Do not use it in the usages other than the measurement of the temperature and humidity.
	Do not put the foreign matter. It causes a fire or the short circuit. Do not put the metal particles inside.
	Do not put it on the place where child's hand reaches. Child swallows it, or 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 i nside, 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 When wrong handling is done, it causes damage to house or your property.

 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 hands prohibition	**Do not touch with 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 in the metal etc. to prevent it before touching this machine.
 Remove batte ry	**Remove 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 containermachi ne 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 for purchasing data logger 'LS350-TH'.
This manual explains the handling procedure.
Please read this carefully, and use correctly and safely.
Please read whenever it is necessary.

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 in order to add new function 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.

I am afraid that I cannot guarantee to the acquisition data of the disappearance and the failure, etc. of the recorded data of this product.

【It is sensor】

The capacitive humidity sensor provides digital and fully calibrated output which allows for easy integration. The humidity sensors' excellent long term stability has been very well perceived and the cutting edge low energy consumption is unachieved and makes them the right choice for any remote application.

【 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 makes damage to the sensor.
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.

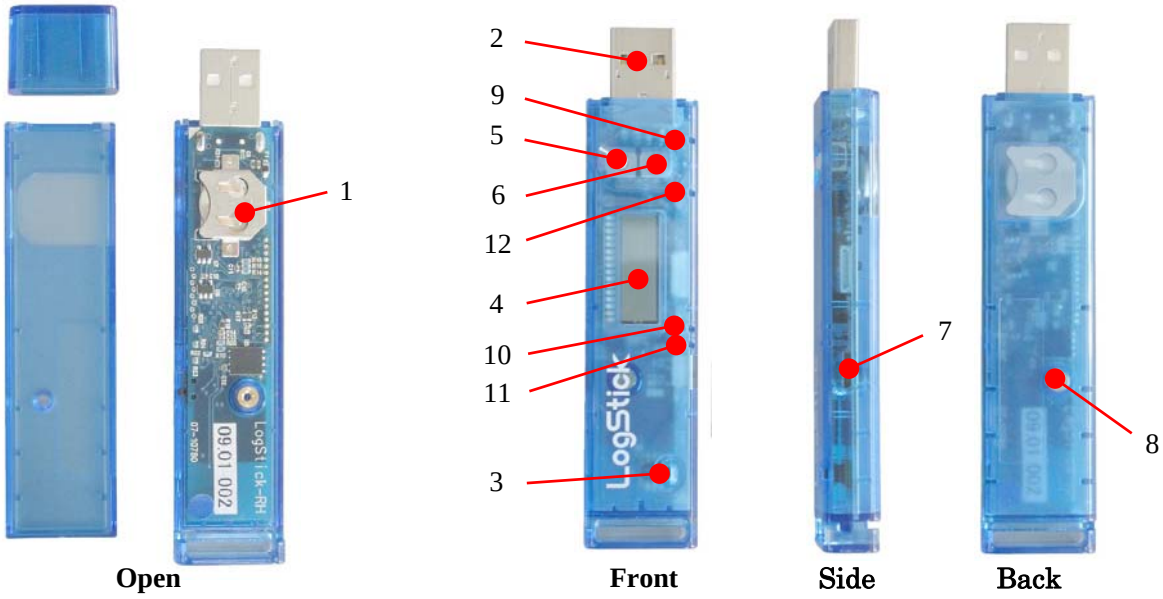
Contents

1 Overview

· LS350-TH has the highly accurate temperature humidity sensor, and can record temperature and humidity at constant intervals.
· With a small battery (CR1220/CR1225) LogStick works, and record for a longtime.
· Internal clock can record the data with time log.
· Small LCD is available, and it is useful for setting. (ex. start/stop recording or checking data)
· The application software can easily transmit the data to PC with USB interface.

2 Explanation of each part

Main body



Part names and functions

1. Battery : Choose CR1220 or CR1225.
2. USB connector : It connects it with the PC.
3. Temperature/ Humidity Sensor : Measures the temperature and humidity. Please do not cover here.
4. LCD : A state of operation, present temperature and humidity, etc. are displayed.
5. Mode SW : For the setting and the state confirmation.
6. Setting SW : For the setting.
7. Display Mode SW : Slide the switch to the USB connector side.
   1. The temperature and humidity (No-record)
   2. Recording points (data Recorded)
8. Screw for cover : M2×6 Countersunk screw
9. Communication LED (Green) : When communicating with the PC, it lights.
10. Alarm LED (Orange) : When the data reaches to the Max. or Min. temperature, it blinks in five seconds.
11. Log LED (Green) : When the log is recorded, it lights.
12. BatteryStatusLED (Red) : When the voltage of the battery decreases, it blinks in Three 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.
· When LCD is always on, the battery level turns low soon. Please switch off the display.

3 Setting up LS350-TH

The following preparations are necessary to use LS350-TH.

1) Battery exchange
2) Driver installation
3) Setting the COM port
4) Application software installation

3.1 Battery exchange

3.1.1 Remove USB connector cap

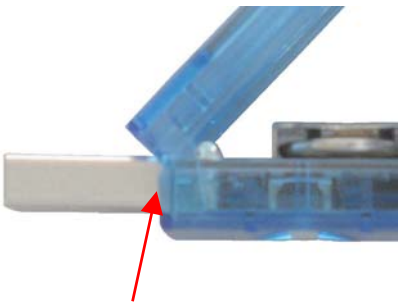
3.1.2 Remove a screw

Loose a screw with a driver, and please remove a screw.
Be careful not to lose a screw.

remove a screw

3.1.3 Remove a cover

Remove a cover. *Note* There is small hook on a battery side.
Slide and lift the cover carefully. and please remove it.



Slide and lift the cover carefully.

3.1.4 Remove an old battery

Push and remove an old battery with a wooden/plastic toothpick.

Push from this side
* Don't use metal, because of short circuit.

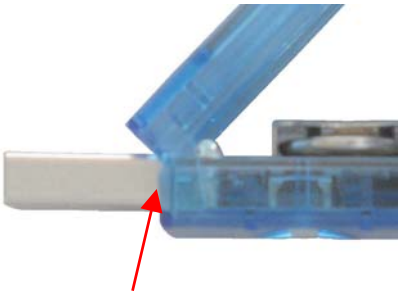
3.1.5 Set a new battery

Please insert the new battery. "+" side is up.
* Be careful for direction of battery. It causes severe electrical damage.

Please insert a battery from this side "+" side is up.
* Choose an appropriate battery. (CR1220)

3.1.6 Close a cover

Close a cover with hook.



Close a cover with hook.

3.1.7 Tighten a screw

Do not tighten the screw too much.

Attention

· This is an electronic device. Be careful for the operational error or damage with electric static (ESD). Touch metal before open the case.
measures to miss static electricity by all means.
· LogStick's battery is only for the test. Please change battery before use.
· Recorded data is not erased in case of battery replacement.
Otherwise saving a data is recommended.

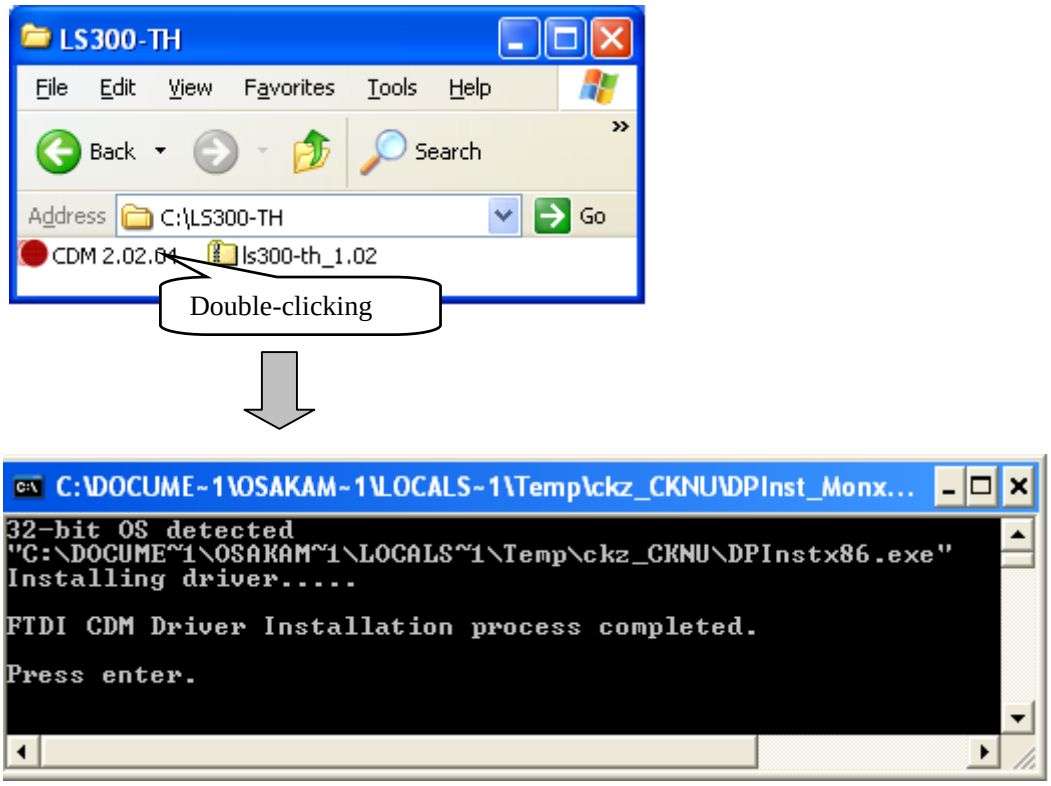
3.2 Driver installation

Recommended PC specifications	
· OS	Windows 2000, Windows XP(SP2 or more), Windows VISTA(32bit), Windows 7(32bit),
· CPU	1GHz or more
· Memory specification	512MB or more
· Hard disk capacity	10MB or more free disk space
· Size of display	1024×768 or more

LS300-TH has a “RS232C>USB convert tip” on board, PC recognize Logstick as serial COM port.
At first I install a driver for RS232C → USB conversion tips.

Run a driver installation program

Click“ CDM *.*.*.exe". (* is version number)



3.3 Check COM port number

Please memorize COM port number

.

3.3.1 Connect LogStick to PC

After connecting LogStick to PC.

Open Device Manager window → click + of Universal Serial Bus controllers → "USB Serial Converter" is shown. And see Property of it.

Tick the checkbox "Load VCP" in "Advanced" tab.

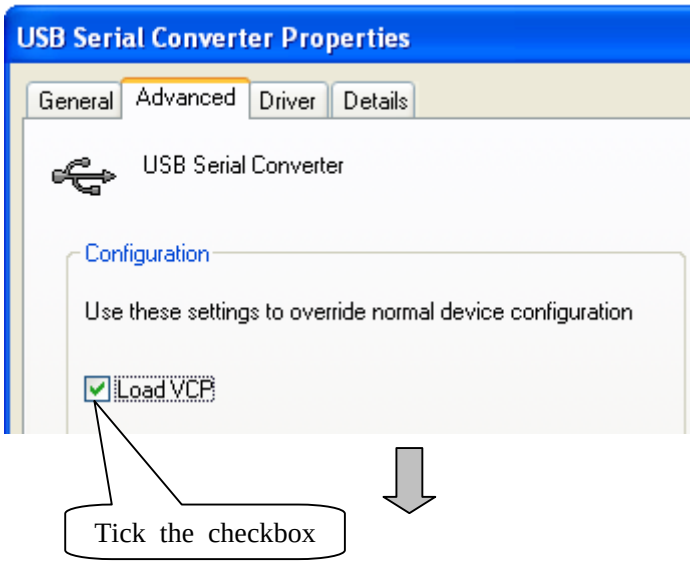
To access the device manager is as follows.

For WindowsXP

Start button → control panel → system→ Hardware → device manager

For WindowsVista / Windows7

Start button → control panel → device manager



3.3.2 Remove LogStick

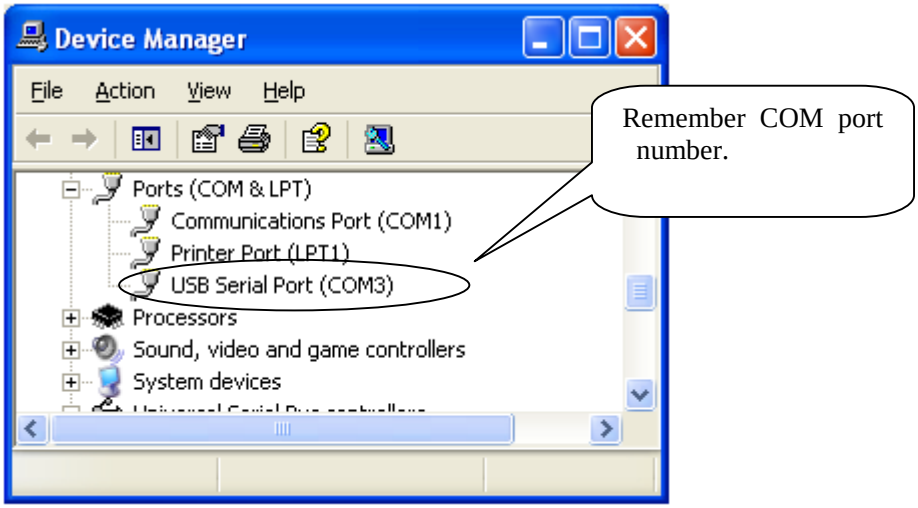
Please remove LogStick from PC.

3.3.3 Connect LogStick to PC

Connect LogStick to a PC again

Confirm there is indication of USB Serial Port (COM**) to a Device Manager → Ports (COM & LPT).

Remember COM port number.



3.4 Software Installation

"LogStick control" software can operate all of the setting.

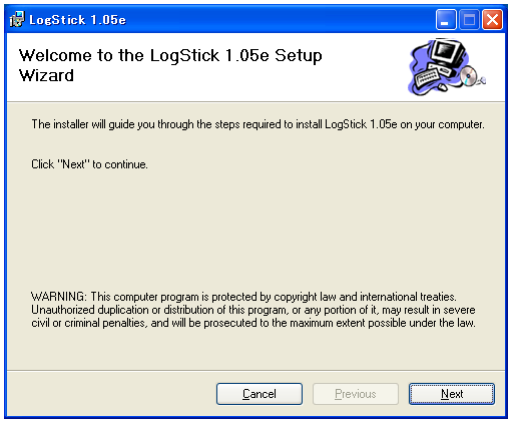
Run a setup program

Double click "LogStickControl_v***.msi". (* means version number)

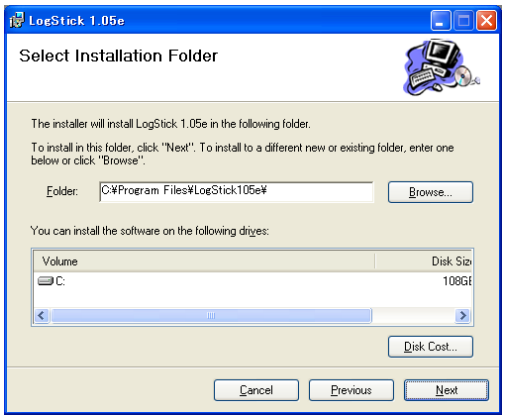
Click " Next ", and Follow the procedures below.

1

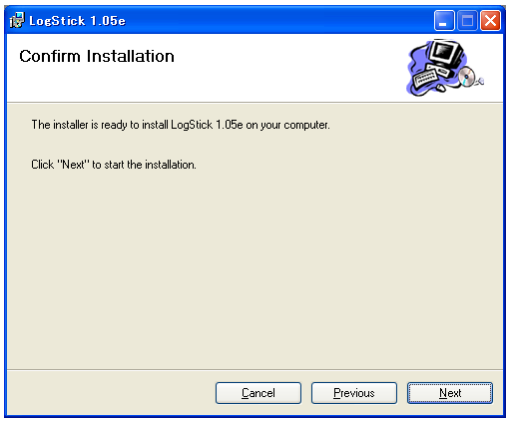
2



3



4



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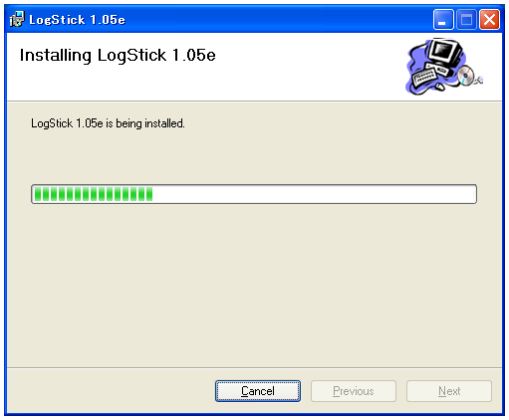

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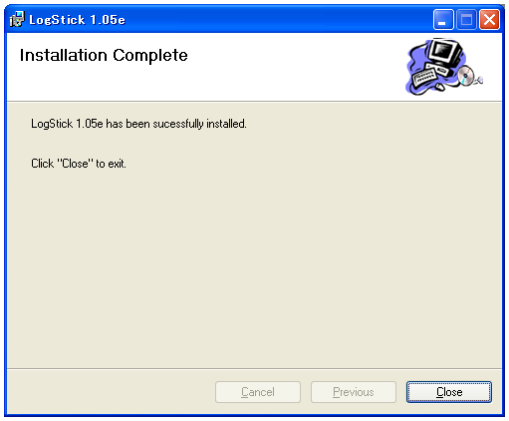
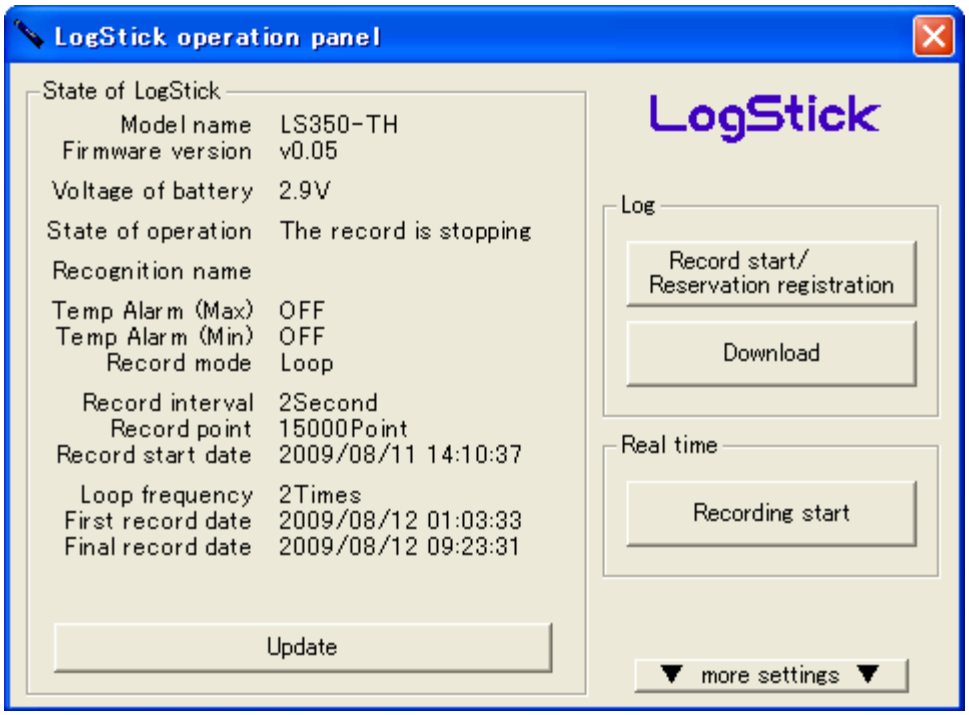


4 Operation with PC software

Execute the application software for LogStick installed in chapter 3.
In the application software, you can choose the unit to Centigrade / Fahrenheit .
Please select the unit for which it hopes by "Tool" → "Setting" of the menu-bar.

4.1 PC communication

LogStick is recognized automatically by being connected to the USB port of the PC. "LogStick operation panel" shows present settings, when the connection is succeeded.



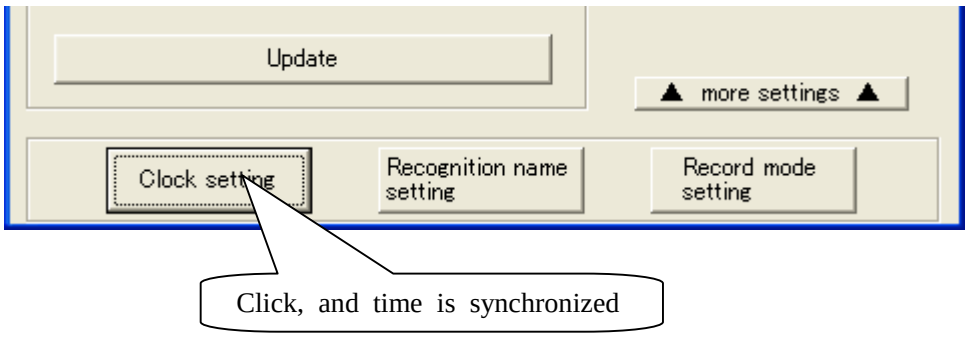
4.2 Various settings

"▼ more settings ▼" Show / Hide other setting panel.

4.2.1 Clock setting

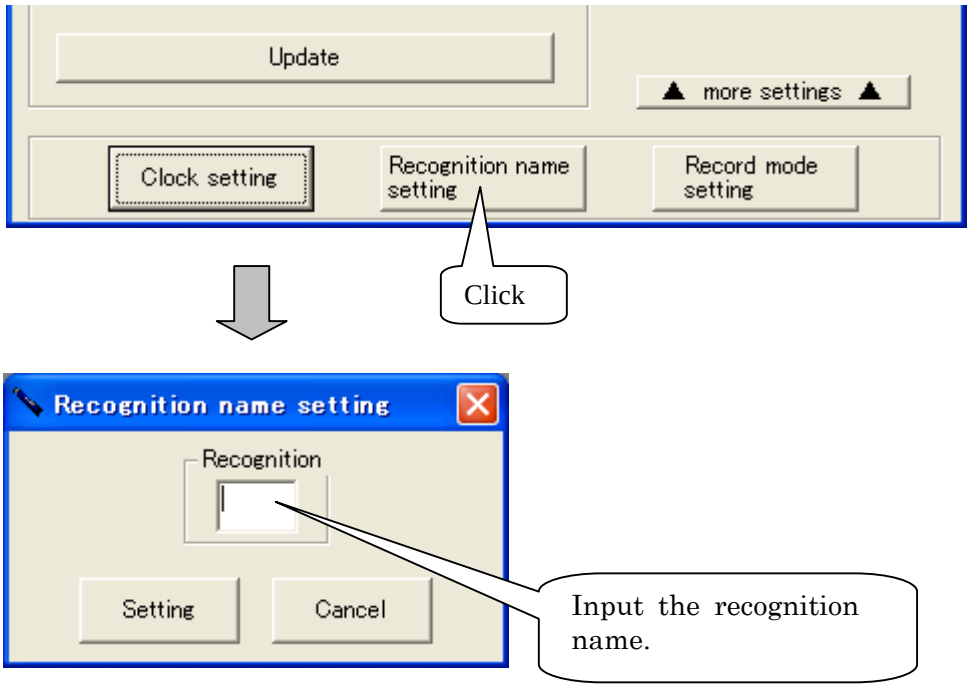
LogStick is synchronized with current PC time.

> Attention
>
> When the recoding starts with PC software, time is automatically set to PC time.
> This operation is not necessary.



4.2.2 Recognition name setting (ID Setting)

[Recognition name setting] window opens by clicking. And the recognition name can be set. The recognition name (= LogStick ID) consists of four characters.

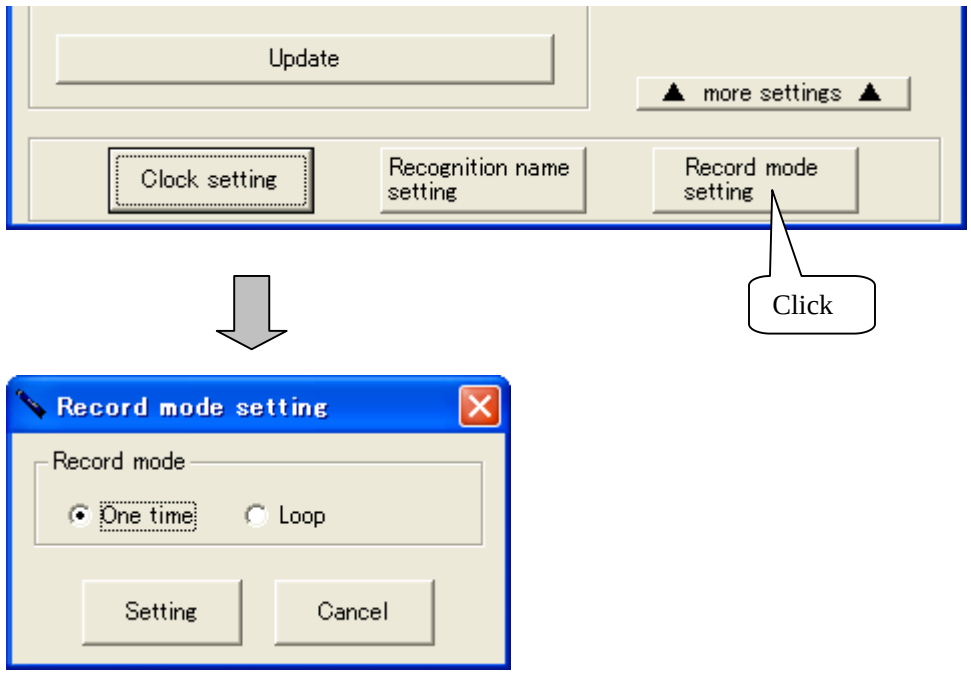


4.2.3 Record mode setting

[Record mode setting] window opens by clicking and the mode of the record can be set. Record mode setting shows operation when becoming the number of maximum records while recording.

One time: When the number of records becomes 15000, the record is automatically ended.

Loop : It overwrites from the oldest data when the number of records exceeds 15000 and it keeps recording.(Four loops the maximum.)



4.3 Log record

The feature of the log record is as follows.

- The temperature and the humidity data measured by the set recording interval are recorded in an internal memory.
- The recording interval can be set in 2-59 seconds and in 1-240 minutes.
- The date when the record is started 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: reaching 15000 data, recording stops automatically.
  - Loop : recording is continued after 15000 records. Old data is overwritten. (Max. Four loops)
- The alarm can be set at the temperature of the Max.temp or Min.temp. .(Refer to 4.3.7 (Alarms) for details.)

4.3.1 Operation panel

A present setting can be confirmed by clicking "Update".

The item that can be confirmed is as follows.

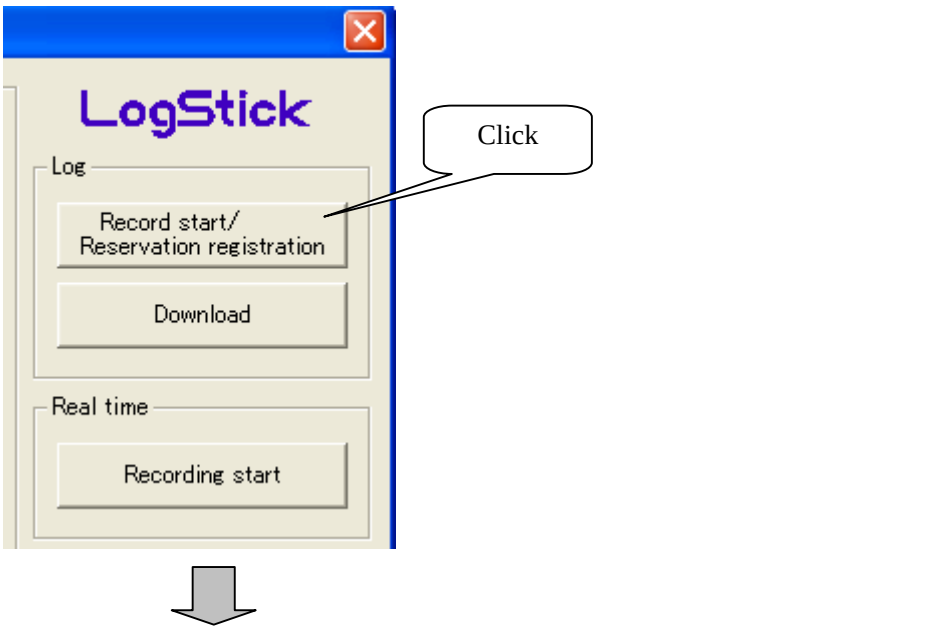
Model name	: Model name of connected device
Firmware version	: Software version of LogStick
Voltage of battery	: Battery voltage
State of operation	: State of operation of LogStick (record stops, recording, reserving)
Recognition name	: Recognition name means LogStick's ID
Temp Alarm (Max)	: When the Maximum temperature alarm has set, the temperature is displayed.
Temp Alarm (Min)	: When the Minimum temperature alarm has set, the temperature is displayed.
Record mode	: Record mode to which LogStick is set (One time, Loop)
Record start date	: Date LogStick starts recording
First record date	: Date of the first data
Final record date	: Date of the last data

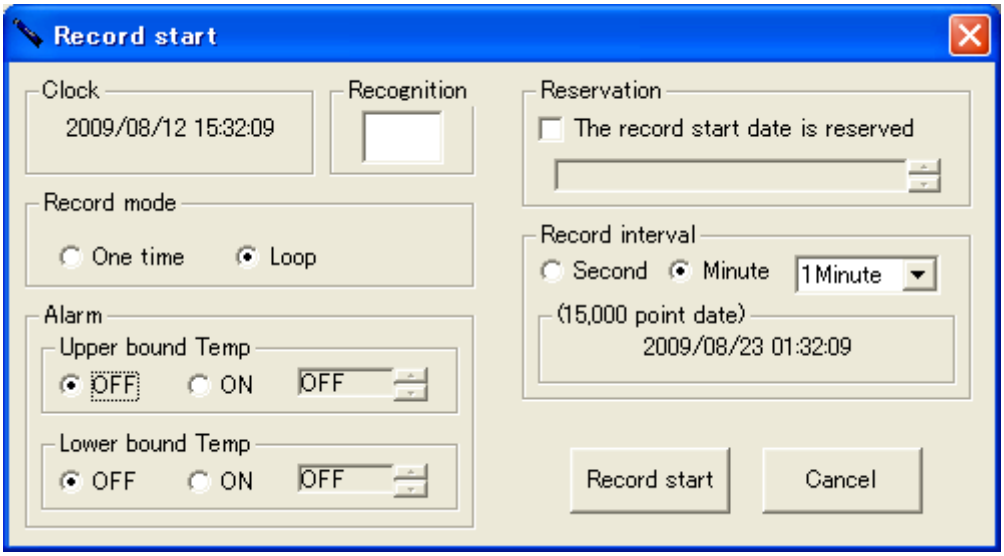
Attention

- Battery voltage level is rough.
- Changing the battery is recommended before the long-term recording.
- Lowest battery voltage level is 2.5V or less. LogStick stop recoding.

4.3.2 Record start

When "Record start" is clicked, [Record start] window opens.





The recognition name, the record mode, the alarm, and the recording interval are set.
Please put the check in "The record start date is reserved", and set the date when you reserve the beginning time.
Please click "Record start" after all the settings end.

Attention

· When you click "Record start", the data memory is deleted.
· Please change the batteries before a long-term recording.
· The first data will be recorded after the 1st interval time.
· In "Reservation registration mode", The first data will be recorded when reaching Reservation time.

Explanation of each item

· Clock

Current PC time is displayed.
The internal clock is synchronized with PC time.

· Recognition

You can set 4 characters as LogStick's ID.

· Record mode

One time: When the number of records becomes 15000, the record is automatically ended.
Loop : It overwrites from the oldest data when the number of records exceeds 15000 and it keeps recording.(Four loops the maximum.)

· Alarm(Refer to 4.3.7 alarms for details.)

Upper bound Temp : The Max. Temperature (Alarm lamp turns on)
Lower bound Temp : The Min. Temperature (Alarm lamp turns on)

· Recording interval

The recording interval is set.
(15000 point date): Time when 15000 points can be recorded when the record of a present setting begins is displayed.

· Reservation

LogStick starts recording automatically on this time.

4.3.3 Record end/Reservation cancellation

"The record is stopped and download it" (Stop recording ,and save) in [LogStick operation panel] dialog ("Reservation cancellation" when the reservation is operating) is clicked.

Attention

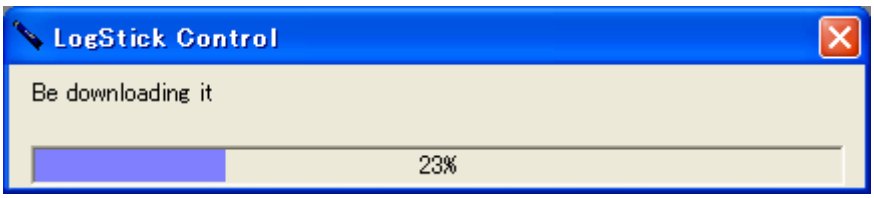
· As the recording stops, recorded data are automatically downloaded.

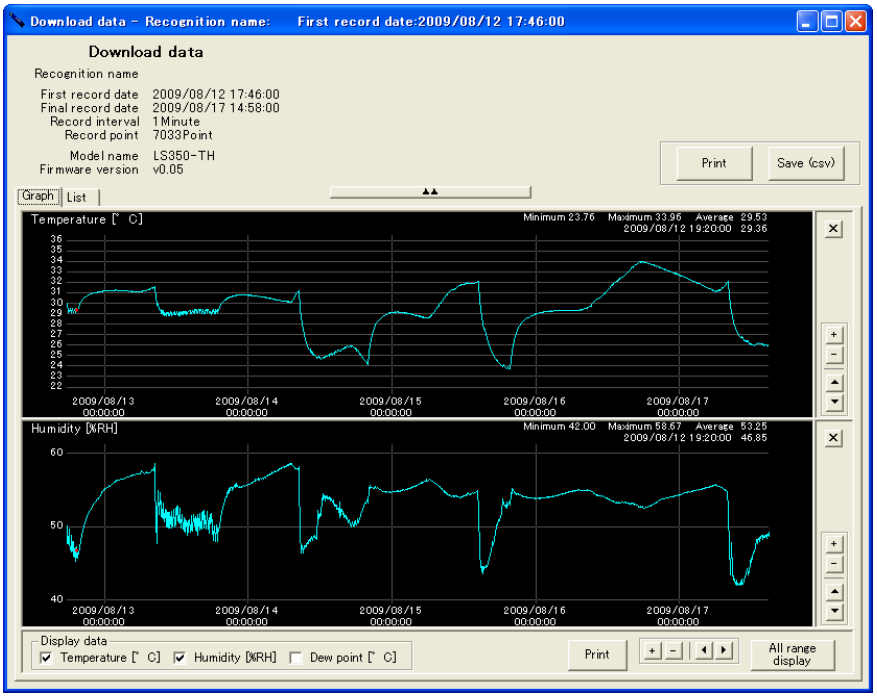
4.3.4 Download

The temperature and the humidity data recorded by clicking "Download" of [LogStick operation panel] dialog are transmitted to the PC.
When download to the PC ends, the graph is displayed.

Attention

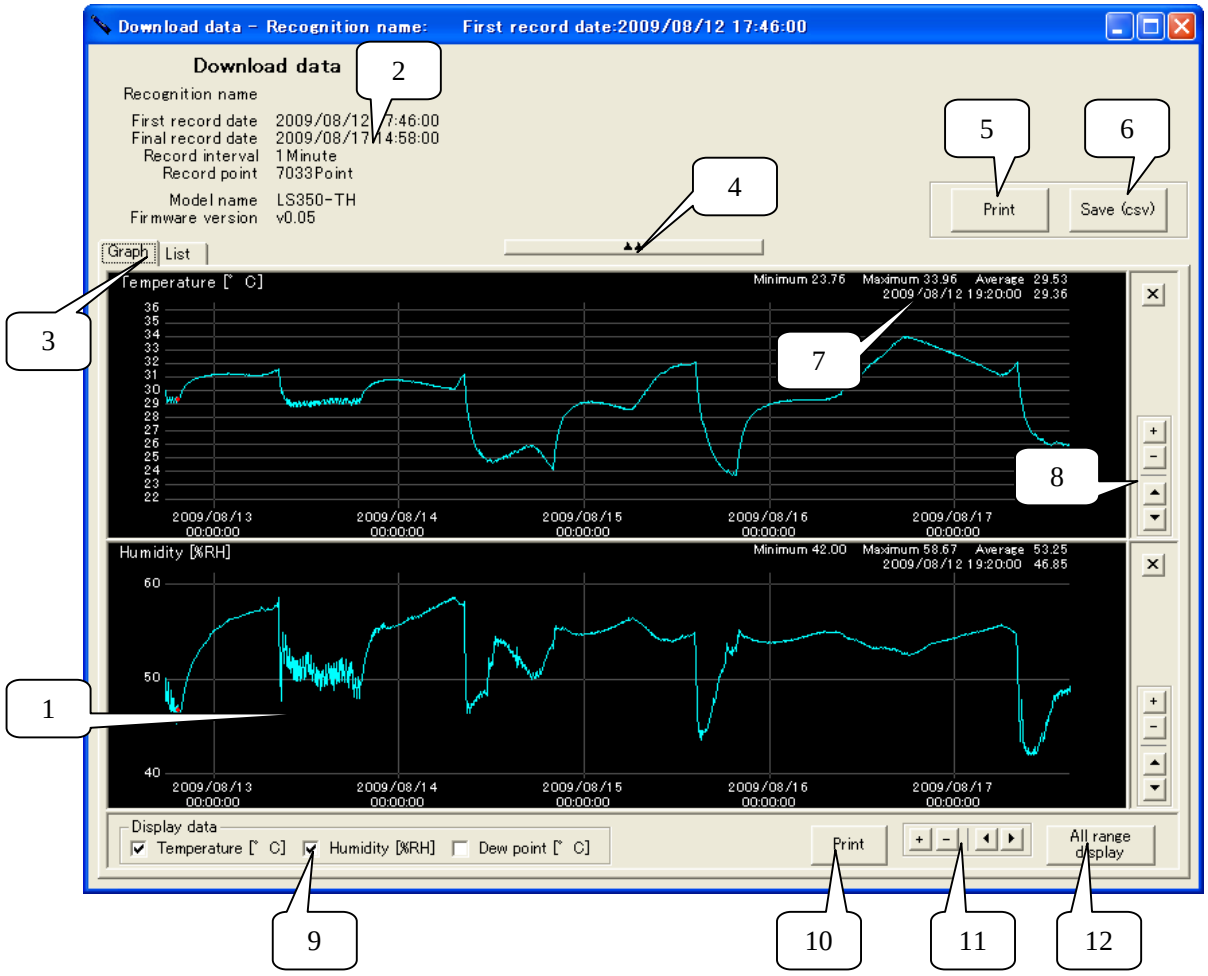
· Please do not operate software while downloading.





4.3.5 Display of download data (Graph)

The following functions exist in the graphical representation of the download data.



1. Data (Graph style)
   The graph style data is displayed.
   The expansion becomes possible by enclosing the part to be displayed with the cursor.

   > Attention
   >
   > The range of the selection reddens when a possible range is exceeded when expanding with the cursor and it is not possible to expand.

2. Information panel
   Measurement information is displayed.
3. Graph / List change tab
4. Show / Hide information panel

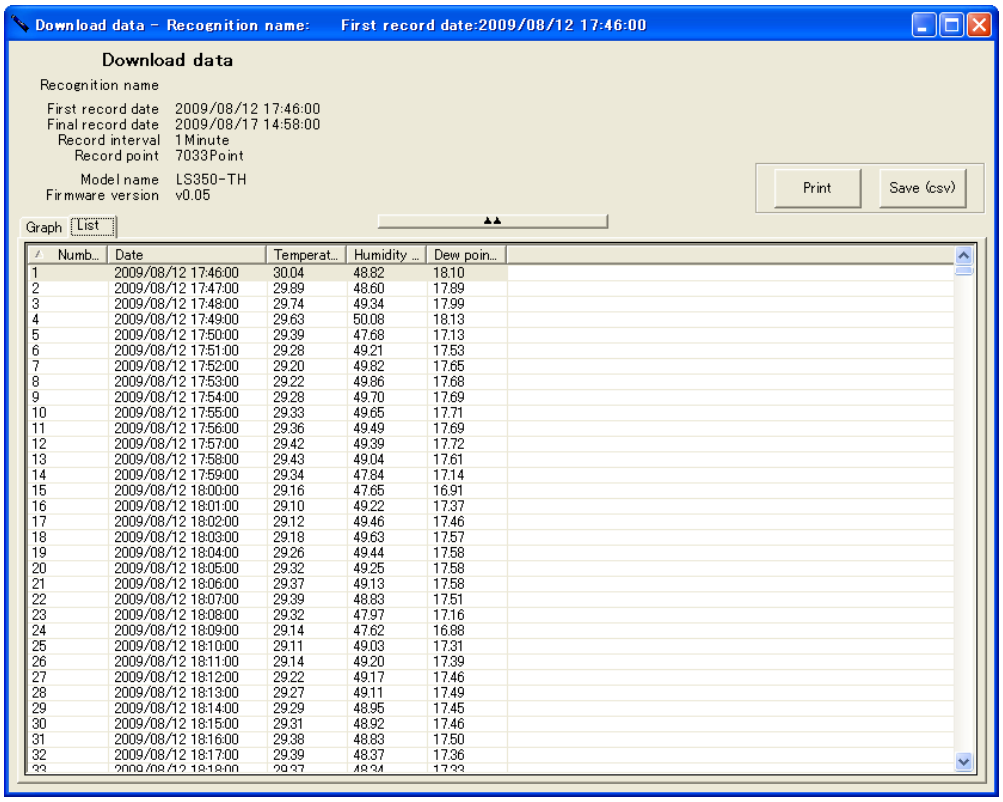
5. Print
   Data or Graph print.

> Attention
>
> Not every printer can print correctly. It depends on printer type.

6. Save
   Recorded data is saved as CSV file.(Refer to 4.5 Save of data for details)
7. Simple information on the displayed data
   "Maximum", "Minimum", and "Average" within the range where the graph is displayed are displayed.
   Detailed information at the cursor position is displayed by matching the cursor to the graph.
8. Expansion reduction/Movement (Data range)
   The expansion reduction and the movement of the displayed graph can be done.
9. Selection of the displayed data
   The graph displayed on the data display screen is selected.
   The graph can display "Temperature", "Humidity", and "Dew point".
10. Print
    Equal to "5. print"
11. Expansion reduction/Movement (Time axis)
    The expansion reduction and the movement of the displayed graph can be done.
12. Full screen
    The display range in the graph is made full screen.

4.3.6 Display download data (List)

The download data can be displayed by list style.



Numb...	Date	Temperat...	Humidity ...	Dew poin...
1	2009/08/12 17:46:00	30.04	48.82	18.10
2	2009/08/12 17:47:00	29.89	48.60	17.89
3	2009/08/12 17:48:00	29.74	49.34	17.99
4	2009/08/12 17:49:00	29.63	50.08	18.13
5	2009/08/12 17:50:00	29.39	47.68	17.13
6	2009/08/12 17:51:00	29.28	49.21	17.53
7	2009/08/12 17:52:00	29.20	49.82	17.65
8	2009/08/12 17:53:00	29.22	49.86	17.68
9	2009/08/12 17:54:00	29.28	49.70	17.69
10	2009/08/12 17:55:00	29.33	49.65	17.71
11	2009/08/12 17:56:00	29.36	49.49	17.69
12	2009/08/12 17:57:00	29.42	49.39	17.72
13	2009/08/12 17:58:00	29.43	49.04	17.61
14	2009/08/12 17:59:00	29.34	47.84	17.14
15	2009/08/12 18:00:00	29.16	47.65	16.91
16	2009/08/12 18:01:00	29.10	49.22	17.37
17	2009/08/12 18:02:00	29.12	49.46	17.46
18	2009/08/12 18:03:00	29.18	49.63	17.57
19	2009/08/12 18:04:00	29.26	49.44	17.58
20	2009/08/12 18:05:00	29.32	49.25	17.58
21	2009/08/12 18:06:00	29.37	49.13	17.58
22	2009/08/12 18:07:00	29.39	48.83	17.51
23	2009/08/12 18:08:00	29.32	47.97	17.16
24	2009/08/12 18:09:00	29.14	47.62	16.88
25	2009/08/12 18:10:00	29.11	49.03	17.31
26	2009/08/12 18:11:00	29.14	49.20	17.39
27	2009/08/12 18:12:00	29.22	49.17	17.46
28	2009/08/12 18:13:00	29.27	49.11	17.49
29	2009/08/12 18:14:00	29.29	48.95	17.45
30	2009/08/12 18:15:00	29.31	48.92	17.46
31	2009/08/12 18:16:00	29.38	48.83	17.50
32	2009/08/12 18:17:00	29.39	48.37	17.36
33	2009/08/12 18:18:00	29.37	48.34	17.33

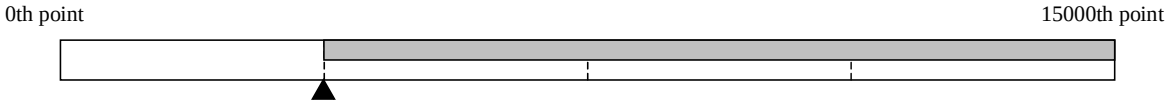
4.3.7 Alarm

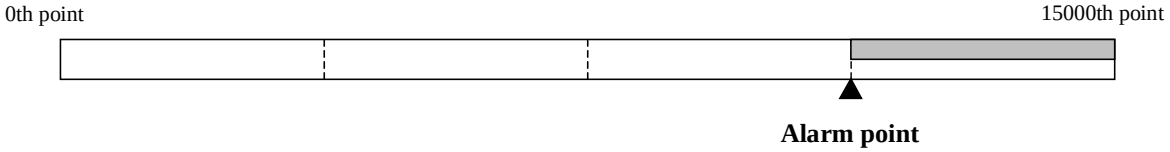
The temperatures recorded as the set Max. or Min. temperature can be compared.
When the data exceeds Max. or Min. temperature, the following operation is done.

· Orange LED blinks every 5 seconds.
· 7500 data is protected after alarm. (at the loop mode)
· When new data hangs to the protection data area, blinking and the measurement of LED are ended.

Writing image in memory

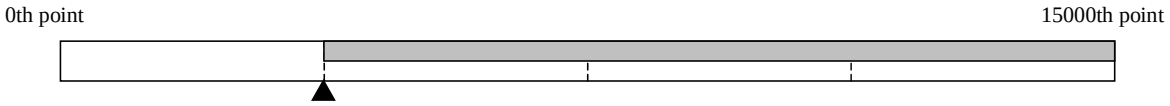
(One time mode)



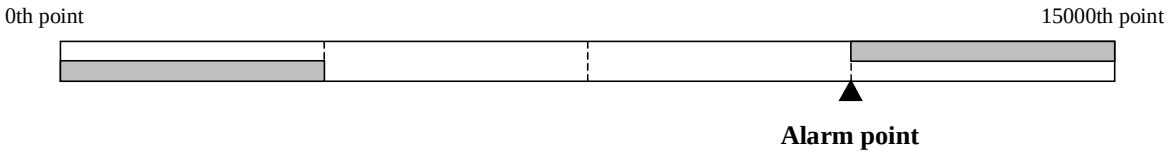


- The LED lighting begins by abnormal generation. When recording up to 15000 points of the maximum record point, the record is ended.

(Loop mode)



- The LED lighting begins by abnormal generation. When recording up to 15000 points of the maximum record point when recording points are 7500 points or less, the record is ended.



- The LED lighting begins by abnormal generation. When 7500 points are recorded when recording points are 7500 points or more, the record is ended.

Recorded data after it is alarm point

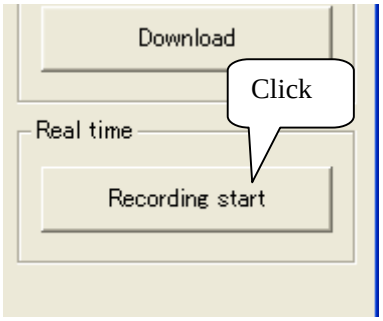
4.4 Real-time recording

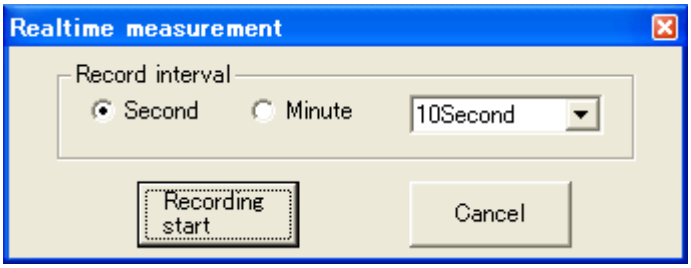
Real-time recording procedure is as follows.

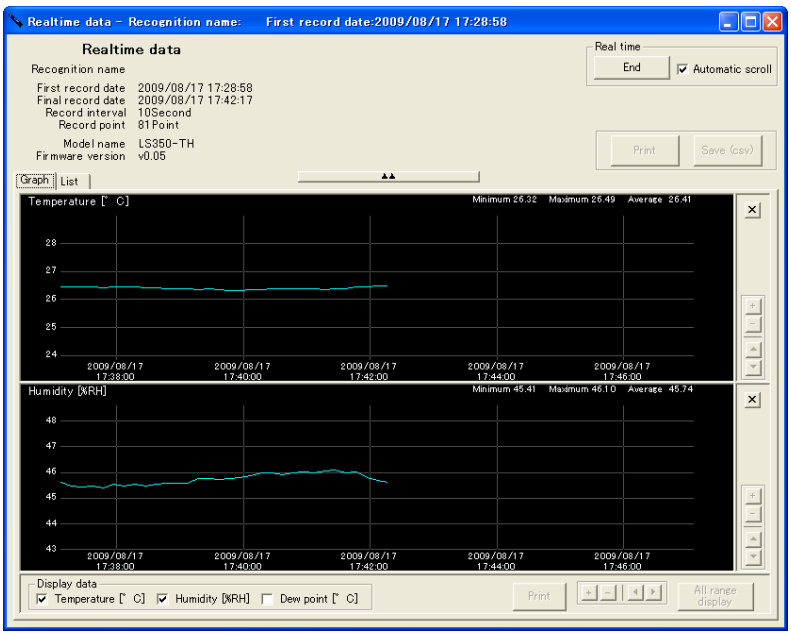
· A present temperature and humidity are always measured while connected with the personal computer.
· The measured interval can be set in 2-59 seconds and it set it in 1-240 minutes.

4.4.1 Real-time measurement

Connect LogStick to PC, and click real-time "Real-time recording".
[Realtime measurement] dialog appears, and set the interval time.
And click "Recording start".

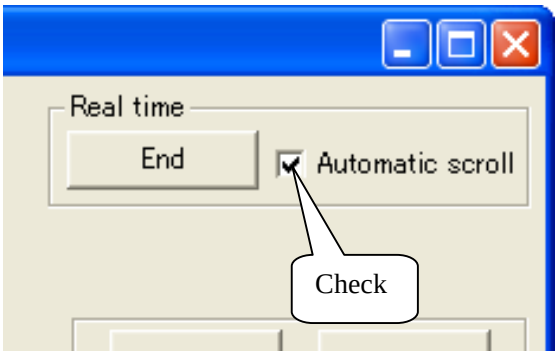






4.4.2 Automatic scroll

When "Automatic scroll" is checked, graph shows the latest data.
* The graph-expansion doesn't work.



4.5 Save data

The recorded data will be converted to CSV files. (Comma Separated Value)
When "File save" dialog appears, choose a folder to save.
The saved file name is as follows

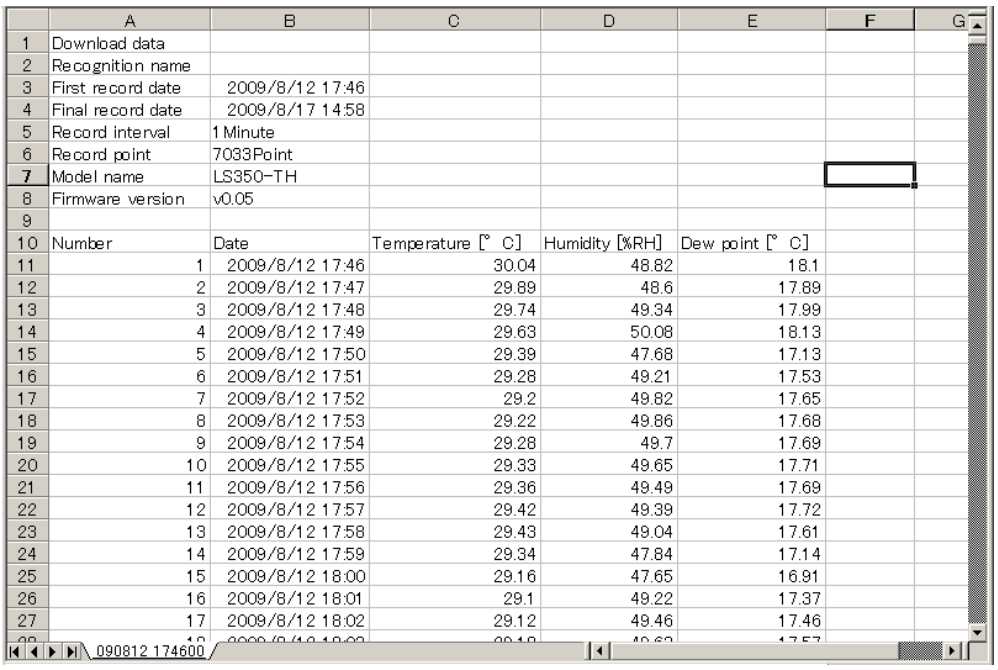
(Example) LOG1_090701_150000.csv

1 2 3

1. Recognition name (Example) LOG1
2. Record start date (Example) July 1, 2009
3. Record start time (Example) 15:00:00

4.5.1 Check the data

Saved CSV file can be read by the note pad or Microsoft Excel, etc.



	A	B	C	D	E	F	G
1	Download data						
2	Recognition name						
3	First record date	2009/8/12 17:46					
4	Final record date	2009/8/17 14:58					
5	Record interval	1 Minute					
6	Record point	7033Point					
7	Model name	LS350-TH					
8	Firmware version	v0.05					
9							
10	Number	Date	Temperature [° C]	Humidity [%RH]	Dew point [° C]		
11	1	2009/8/12 17:46	30.04	48.82	18.1		
12	2	2009/8/12 17:47	29.89	48.6	17.89		
13	3	2009/8/12 17:48	29.74	49.34	17.99		
14	4	2009/8/12 17:49	29.63	50.08	18.13		
15	5	2009/8/12 17:50	29.39	47.68	17.13		
16	6	2009/8/12 17:51	29.28	49.21	17.53		
17	7	2009/8/12 17:52	29.2	49.82	17.65		
18	8	2009/8/12 17:53	29.22	49.86	17.68		
19	9	2009/8/12 17:54	29.28	49.7	17.69		
20	10	2009/8/12 17:55	29.33	49.65	17.71		
21	11	2009/8/12 17:56	29.36	49.49	17.69		
22	12	2009/8/12 17:57	29.42	49.39	17.72		
23	13	2009/8/12 17:58	29.43	49.04	17.61		
24	14	2009/8/12 17:59	29.34	47.84	17.14		
25	15	2009/8/12 18:00	29.16	47.65	16.91		
26	16	2009/8/12 18:01	29.1	49.22	17.37		
27	17	2009/8/12 18:02	29.12	49.46	17.46		

090812 174600

Attention

· If the time or data is long, it doesn't show all.
Change cell property and the setting of the spreadsheet.

4.6 Reading save data

The reading procedures are the following two.

Procedure 1

Menubar "File" > "Open the data file" and select the file.

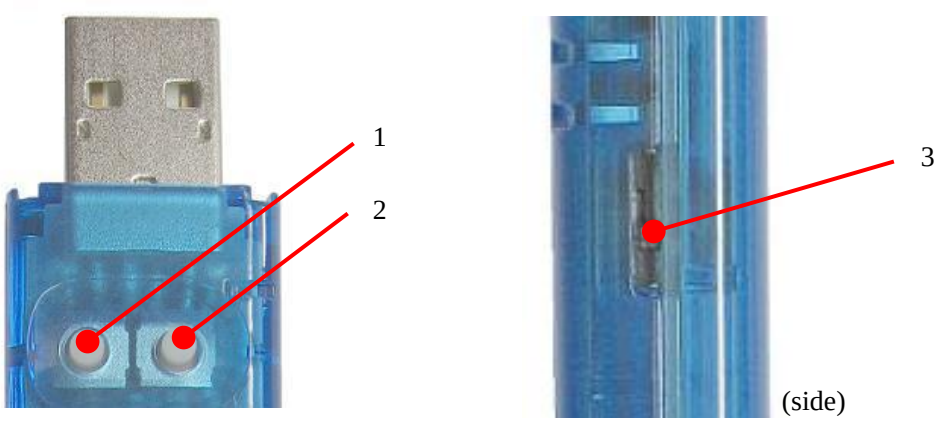
Procedure 2

Drag and drop the file on LogStick Control window.

5 Operation 2 with Switch

User can set Logstick with it's switch.

5.1 Name of switch



1. Mode SW : for Setting and the state confirmation.
2. Setting SW : for Setting.
3. Display Mode SW : Sliding the switch to the USB connector side. Display shows
   1.The temperature and humidity (No-record)
   2.Recording points (data Recorded)

Attention

· When LCD is always on, the battery level turns low soon.
Please switch off the display.

5.2 Display temperature and humidity

Push "mode Switch". and temperature and humidity is displayed.
Displayed temperature and humidity become as follows by the state of the main body.

· Stop recording · · · A present temperature and humidity are displayed.
· Recording · · · The temperature and the humidity recorded at the end are displayed.
The mark is displayed in LCD while recording.

Light off : Stop recording
Light on : Recording

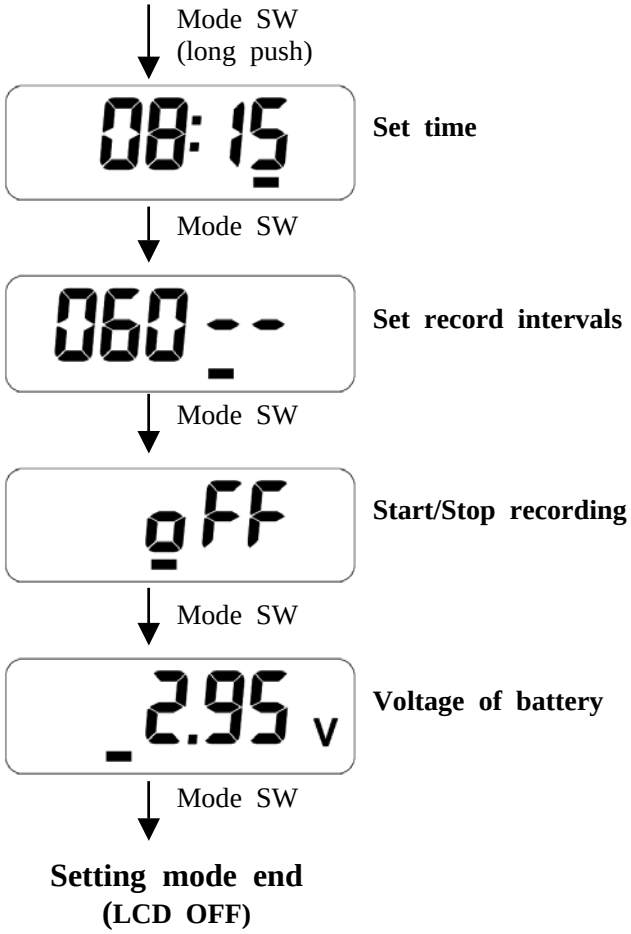
Attention

· Temperature and the humidity displayed by LCD have the case that the humidity is different from recorded temperature in numerical value. The LCD indication is an error to demand it by operation of the facility, and, as for this, it is it in the value that a recorded value is accurate.
· The temperature degree is only a centigrade, and it doesn't correspond to the display by Fahrenheit.

5.3 Setting mode

LogStick changes to “set mode” by 2 second pushing “the mode switch”.

Pushing Mode Switch, display turns as below.
"Set time" → "Set record intervals" → " Start/ Stop recording " → " Voltage of battery "

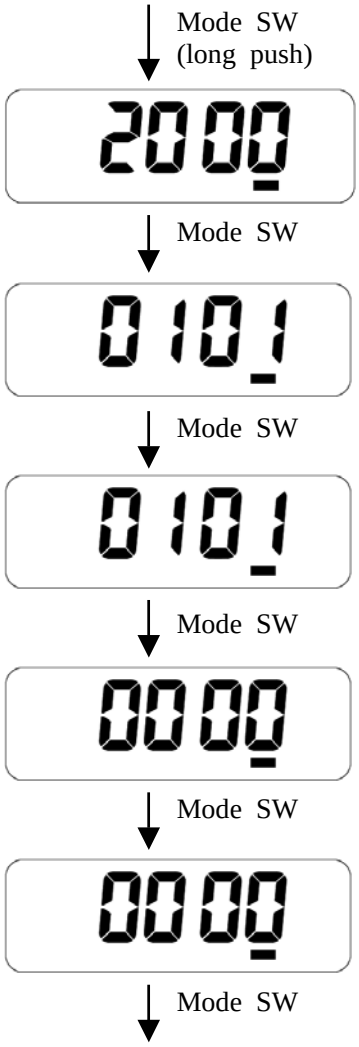


Attention

· Setting finishes automatically when no operation for 10 seconds.
· You can operate nothing, when the LogStick connects to PC.

5.4 Setting time

It becomes possible to set present time by a long push of the mode switch.
In the set procedure, value change by pushing “setting switch”.
Mode switch is pushed, "Year" → "Month" → "Day" → "Hour" → "Minute"



Setting Year
From 2000 to 2099 (push Setting Switch)

Setting Month
From 01 to 12 (push Setting Switch)

Setting Day
From 01 to 31 (push Setting Switch)
* Depends on Month setting.

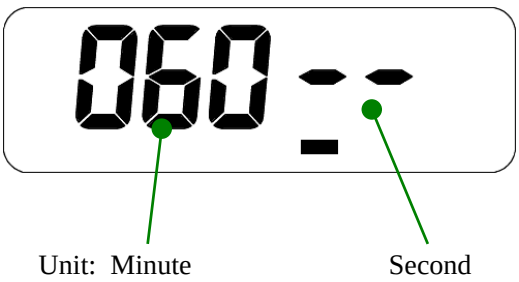
Setting Hour
From 00 to 23 (push Setting Switch)

Setting Minute
From 00 to 59 (push Setting Switch)

Set end
(Display the time)

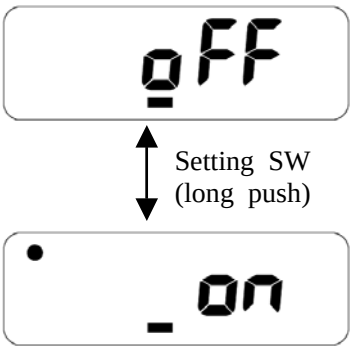
5.5 Setting at record intervals

Push Setting Switch, and setting changes. Left side is " 1-240 minutes" or right side “ 2-59 seconds “.



5.6 Start/ Stop recording

Start or Stop recording is set with a long push on “Setting SW” of Start/ Stop recording.



Stop recording

Start Recording

Attention

The recording change is operated by a long push of “Setting Switch”.
(to avoid no operational error.)

5.7 Voltage of battery

The battery voltage is displayed.

Attention

· Battery voltage is rough. Change the battery before a long-term recoding.
·Recording stops when the voltage becomes 2.5V or less.

5.8 About Display mode switch (side slide switch)

To check temperature, humidity or recording points by LCD, use side slide switch.
Slide the side switch to the USB connector side.
These items are displayed as follows.

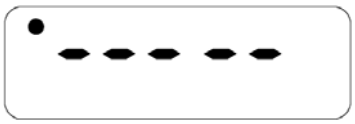
◆ No data or No record reservation.

A present temperature and humidity are alternately displayed.

◆ Record number

Rrecord mark "· " turns on, and the recorded number is displayed.

◆ Record Reservation



"Record Mark" turns on.

Attention

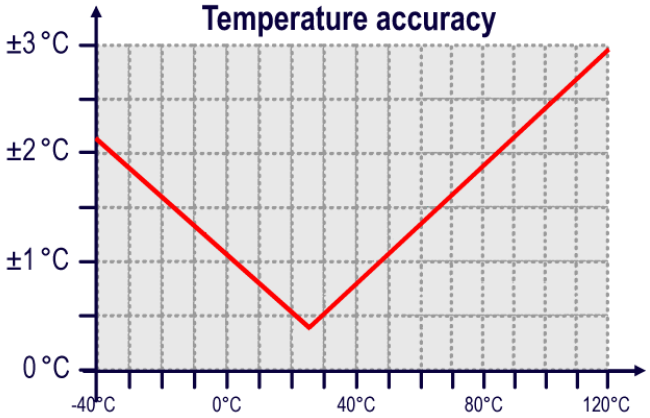
· When LCD is always on, the battery level turns low soon.
Please switch off the display.

6 Specification

Sensor specification		
Temperature Sensor	Number of channels	1ch
	Range	-20 ~ +70°C (-4 ~ +158°F)
	Resolution	0.01°C 14Bit
	Accuracy	±0.8°C (25°C) Fig.1
Humidity Sensor	Number of channels	1ch
	Range	5 ~ 90%
	Resolution	0.03% 12Bit
	Accuracy	±4.0% (20 ~ 80%) Fig.2
Product specification		
Storage capacity	MAX 15000 points	
Measurement interval	2 ~ 59 seconds or 1 ~ 240 minutes	
Interface	USB	
Clock function	Build in	
Battery	CR1220 or CR1225 (It is possible to exchange it.)	
Battery longevity *1	1 Year	(1 hour interval , LCD OFF)
	60Days	(1 minute interval , LCD OFF)
	10Days	(10 seconds interval , LCD OFF)
	7Days	(Not measurement, LCD ON)
LCD Spec.	Reflective TN	
Size		
100.7 (w) × 10.4 (H) × 21.0 (D) (mm)		
Weight		
20g (Without battery)		
OS		
Windows 2000, Windows XP(SP2 or more), Windows VISTA(32bit) , Windows 7(32bit) The PC control software free is distributed.		
Accessory		
CR1220 battery for test (Install it in the main body.) Keeping bag for LogStick. Guarantee certificate		

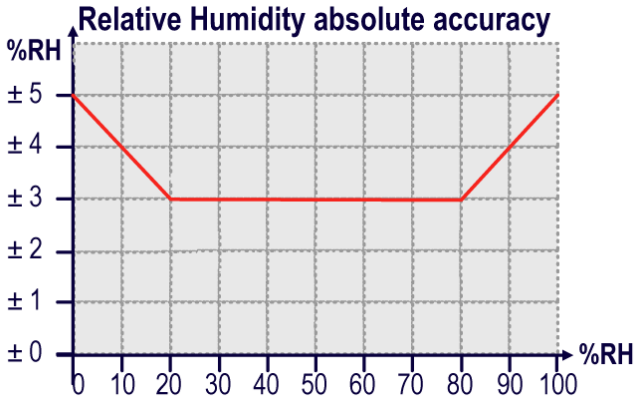
*1 The indication of the battery voltage is rough. The performance of the lithium battery decrease because of the high temperature or low temperature.
Therefore, the battery life might change due to environment or its performance.
The battery life depends on the recording interval. Therefore, Be carefull for setting interval time, battery capacity is needed until the recording end.

Fig.1



The temperature measurement accuracy changes depending on the measurement temperature.

Fig.2



The humidity measurement accuracy changes depending on the measurement humidity.

Osaka Micro Computer,INC