AMS-850
FL-2000 User's Manual

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Thank you for purchasing the AMS-850.

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1. Overview

AMS-850 is the software that allows you to download data from the Compact Thermo Logger, easily create graphs, tables, or CSV files, and print the data. The following operating environment is needed to use this software.

OS : Microsoft Windows 7
Microsoft Windows 8.1
Microsoft Windows 10

Requires a PC of specifications sufficient to run the above operating systems.

※ All PCs under the recommended environment are not guaranteed to work successfully with AMS-850.
※ AMS-850 can be used only by the user that has a system administrative right (Administrator).
※ AMS-850 does not support Mac OS.
※ Microsoft® Windows® 7, Windows® 8.1, Windows® 10 are registered trademarks of Microsoft Corporation in the United States and other countries.

2. Simple Guide to Operation

- **Upon first use of AMS-850 (installation)**
  (1) Turn on the power to the measuring instrument and set the CD-ROM in your computer.
  (2) Install AMS-850.
  (3) Connect the measuring instrument to the computer with the communication cable.
  (4) Launch AMS-850 and set up the communication port.
  * For details, refer to Chapter 4, "Installation."

- **To download the data saved in the measuring instrument**
  (1) Connect the measuring instrument to the computer with the communication cable.
  (2) Turn on the power to the measuring instrument.
  (3) Launch AMS-850 and choose Input data from the Communication menu.
  (4) Specify the destination folder in which to save the data.
  * For details, refer to Section 6.3, "Downloading Data from the Measuring Instrument."

- **To display the data contained in a file**
  (1) Choose Open from the File menu.
  (2) Specify a file name to open.
  (3) In the View menu, you can choose between Display the Graph and Display the data list display.
  * For details, refer to Section 6.5, "Loading and Displaying an Existing File."

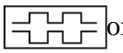
- **To open a saved file in Excel**
  (1) Choose Create Text file from the File menu.
  (2) Specify a file name.
  (3) Specify the range of data you wish to be converted into a CSV file and click OK. A text file will be created, which can then be opened in Excel.
  * For details, refer to Section 6.9, "Using Data in Spreadsheet Software."

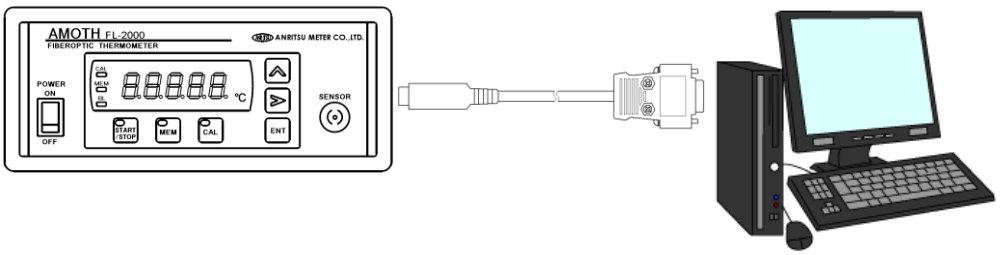
- **To draw a graph in real time**
  (1) Connect the measuring instrument to the computer with the communication cable.
  (2) Turn on the power to the measuring instrument.
  (3) Choose Remote setting from the Communication menu.
  (4) Set the timing with which to obtain data, and other measurement parameters here.
  (5) Choose Set Real-time data autosaving from the Settings menu and then set the destination folder in which to save files and other items.
  (6) Choose Real Measurement from the Communication menu.

(7) Specify the destination folder in which to save data.
(8) Set the vertical and horizontal axes of a graph and other items.
    * For details, refer to Section 6.4, “Making Real Measurement Method.”

3. Connecting the Measuring Instrument

3.1 When Using RS-232C Cable for connection

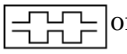
For connection to the PC side, plug the RS-232C cable into the connector marked with  or .



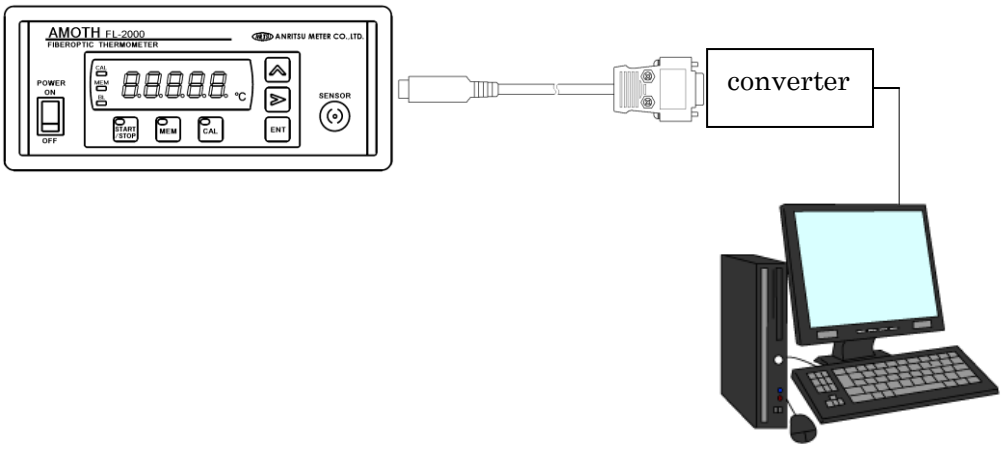
CAUTION

If the measuring instrument does not need to communicate with the PC, be sure to isolate it from the PC (by removing the communication cable). If the measuring instrument remains connected to the PC while you run other software applications on the PC, the measuring instrument may operate erratically or malfunction.

3.2 PC without a RS-232C port

If your PC is not equipped with a  or connector, use the provided USB-RS232C converter.

Read the user's manual for the provided USB-RS232C converter. Follow the instructions in the manual to connect the converter to your PC, and then use the dedicated FL-2000 cable to connect the FL-2000.



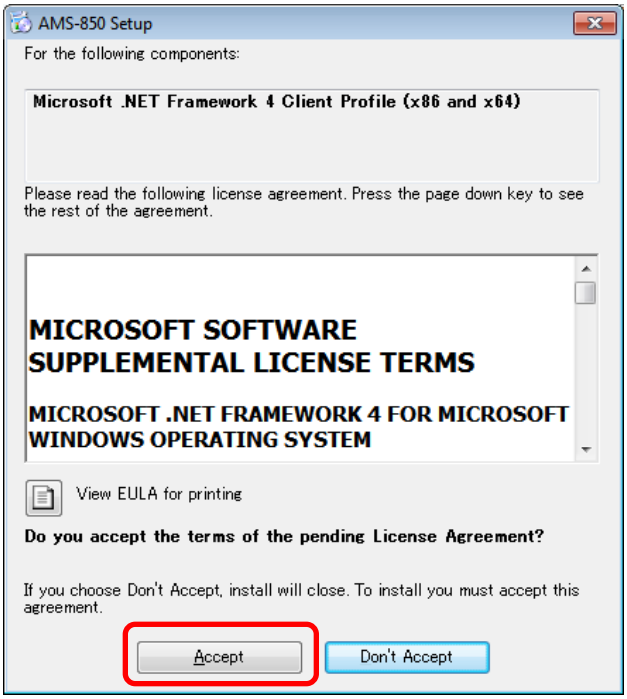
4. Installation

Close all of the currently active software applications. AMS-850 may not be installed correctly if another software application is running.

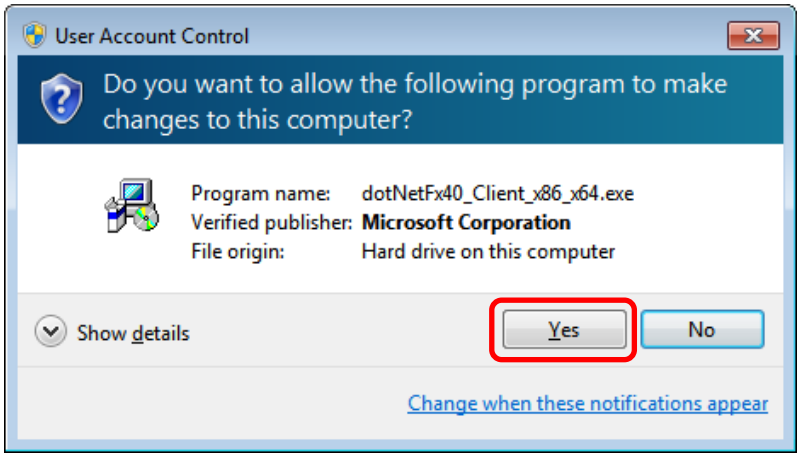
4.1 Installing AMS-850

(1) Set the AMS-850 CD-ROM into the CD-ROM drive of your computer.
After a few moments, the [Install Program] window opens.
※ If the window does not open automatically, select My Computer on the Desktop and then double-click the CD-ROM icon.

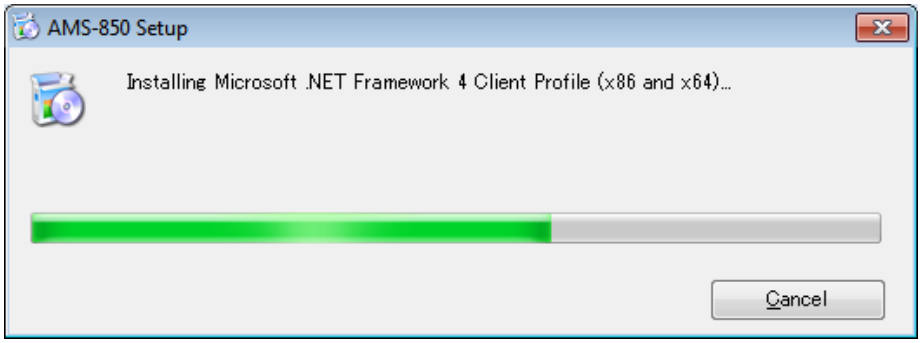
(3) Microsoft .NET Framework 4 is required on your computer to work the AMS-850.
If it is not installed on your computer, Setup screen is displayed.
Read the contents, click [Accept] if there is no problem.



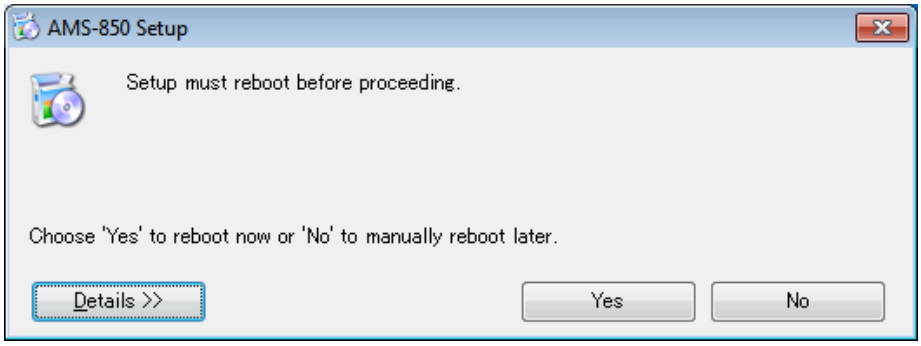
Click【Yes】.



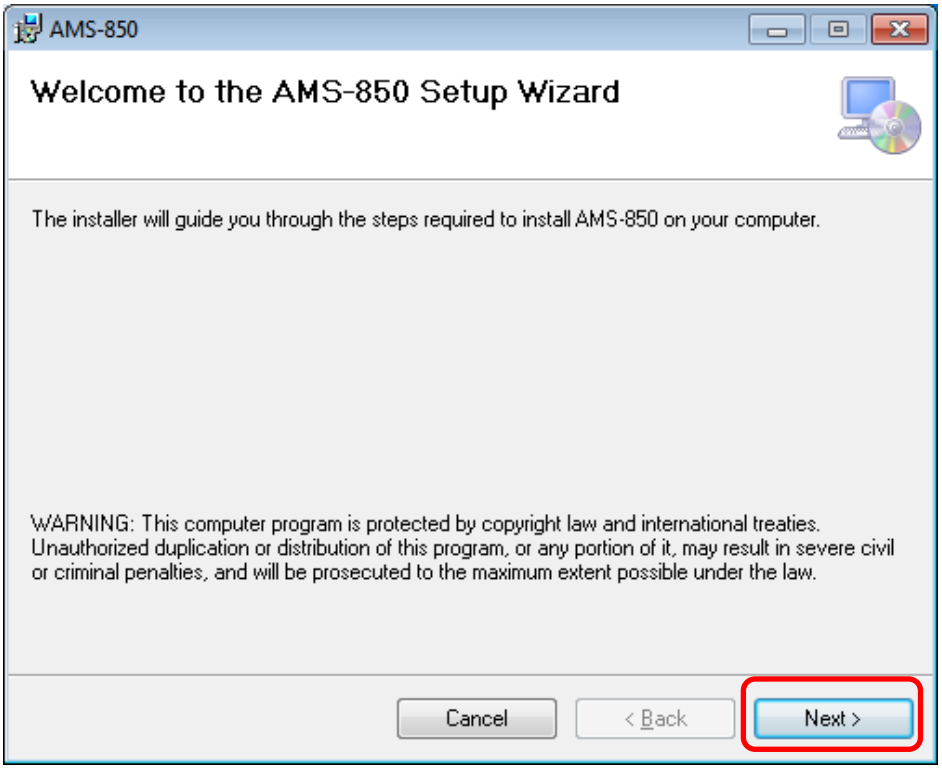
Setup starts.

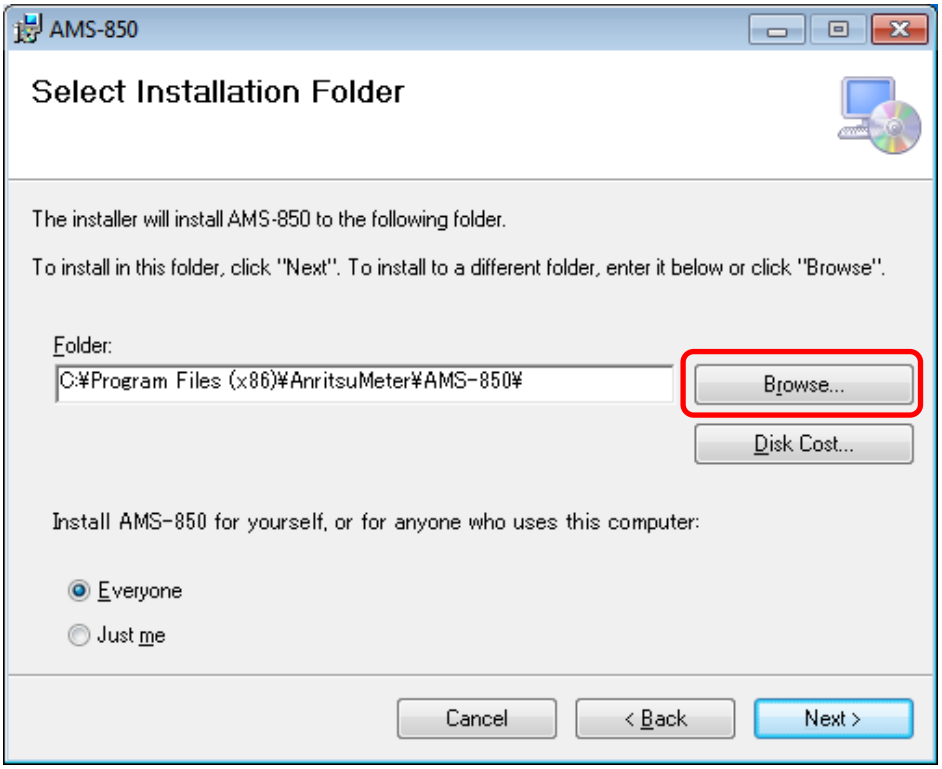


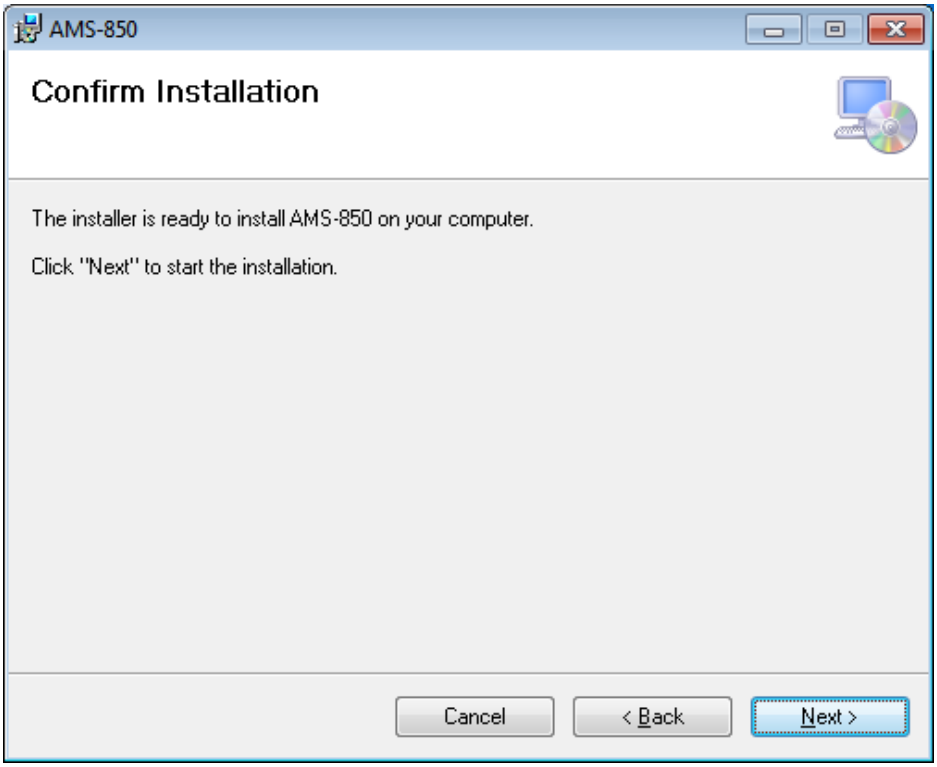
Restart when finished.



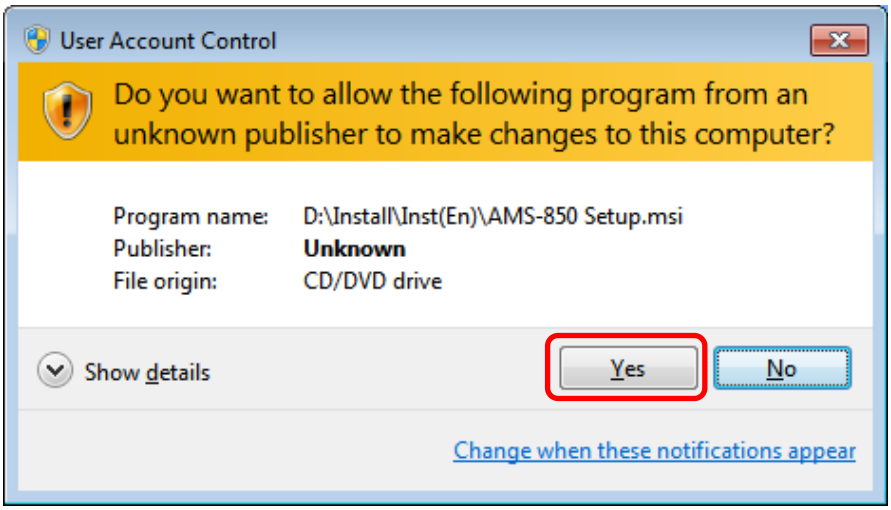
(4) Follow the instructions to complete the installation.

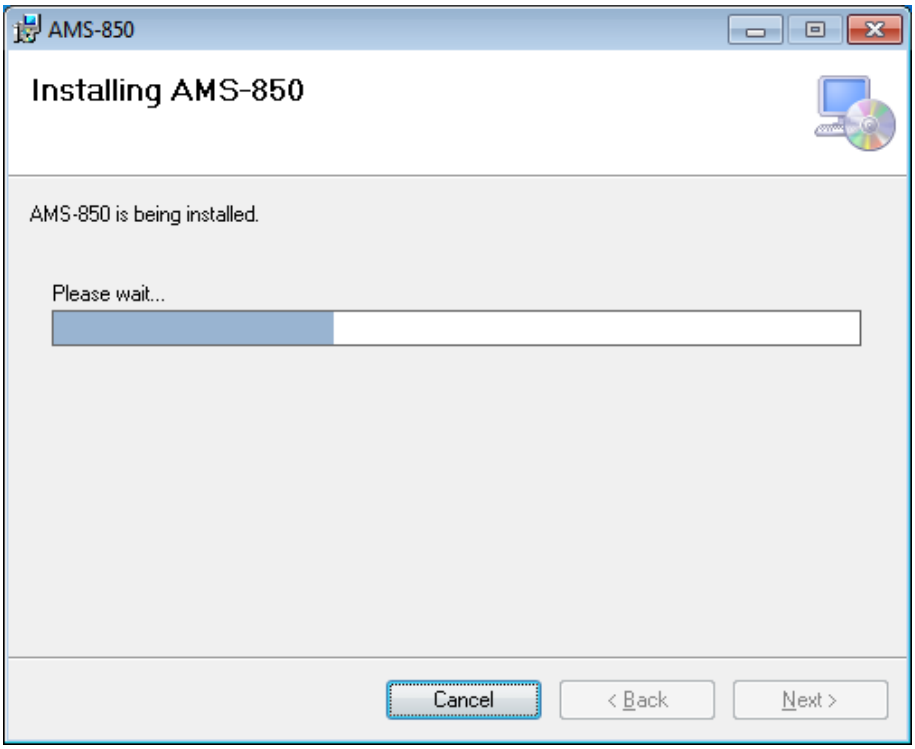




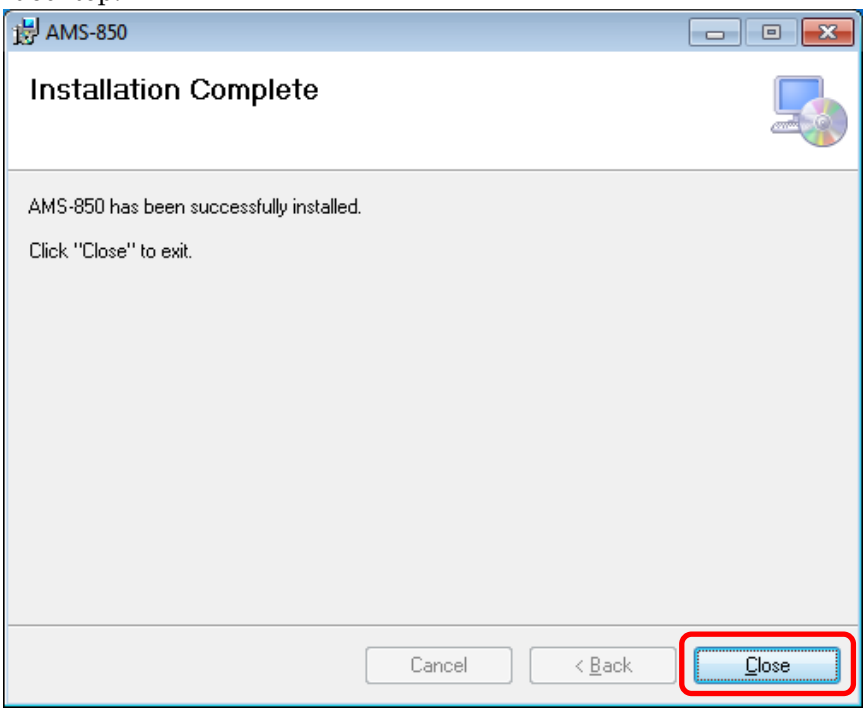

AMS-850
Confirm Installation
The installer is ready to install AMS-850 on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

Click【Yes】.


User Account Control
Do you want to allow the following program from an unknown publisher to make changes to this computer?
Program name: D:\Install\Inst(En)\AMS-850 Setup.msi
Publisher: Unknown
File origin: CD/DVD drive
Show details
Yes
No
Change when these notifications appear



(5) AMS-850 installation is complete, Click [Close].
AMS-850 is registered in the Start menu. Then, the shortcut is created on the desktop.

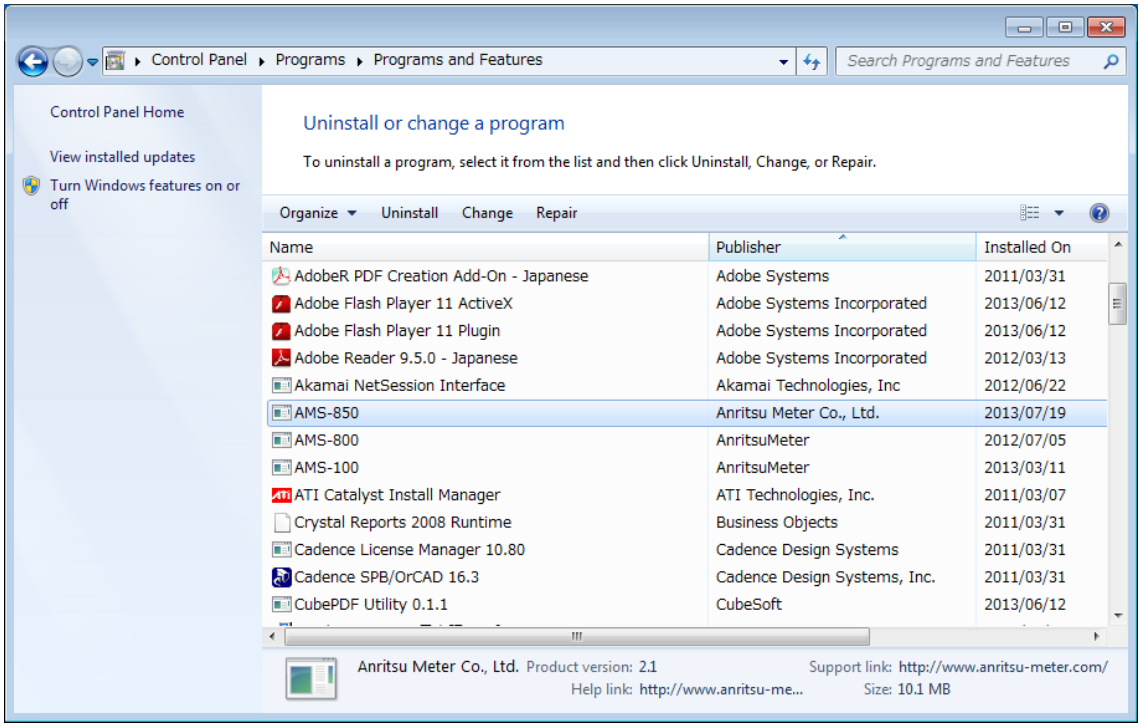


* Make sure the software is installed by a user with administration privileges. For details, consult your system administrator.

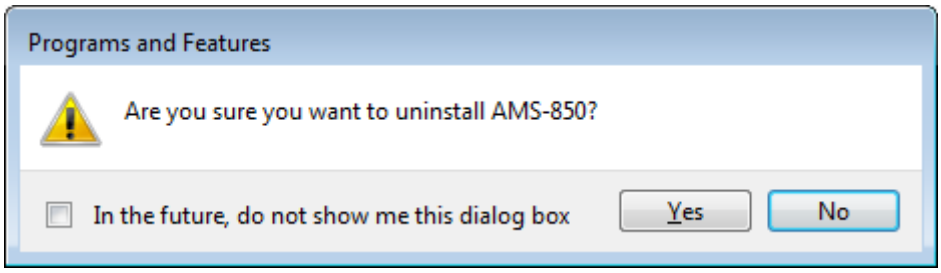
4.2 Uninstalling AMS-850

(1) From the [Start] menu, select [Settings] and then [Add/Remove Programs].

(2) Select AMS-850, and then click [Change/Remove(C)].



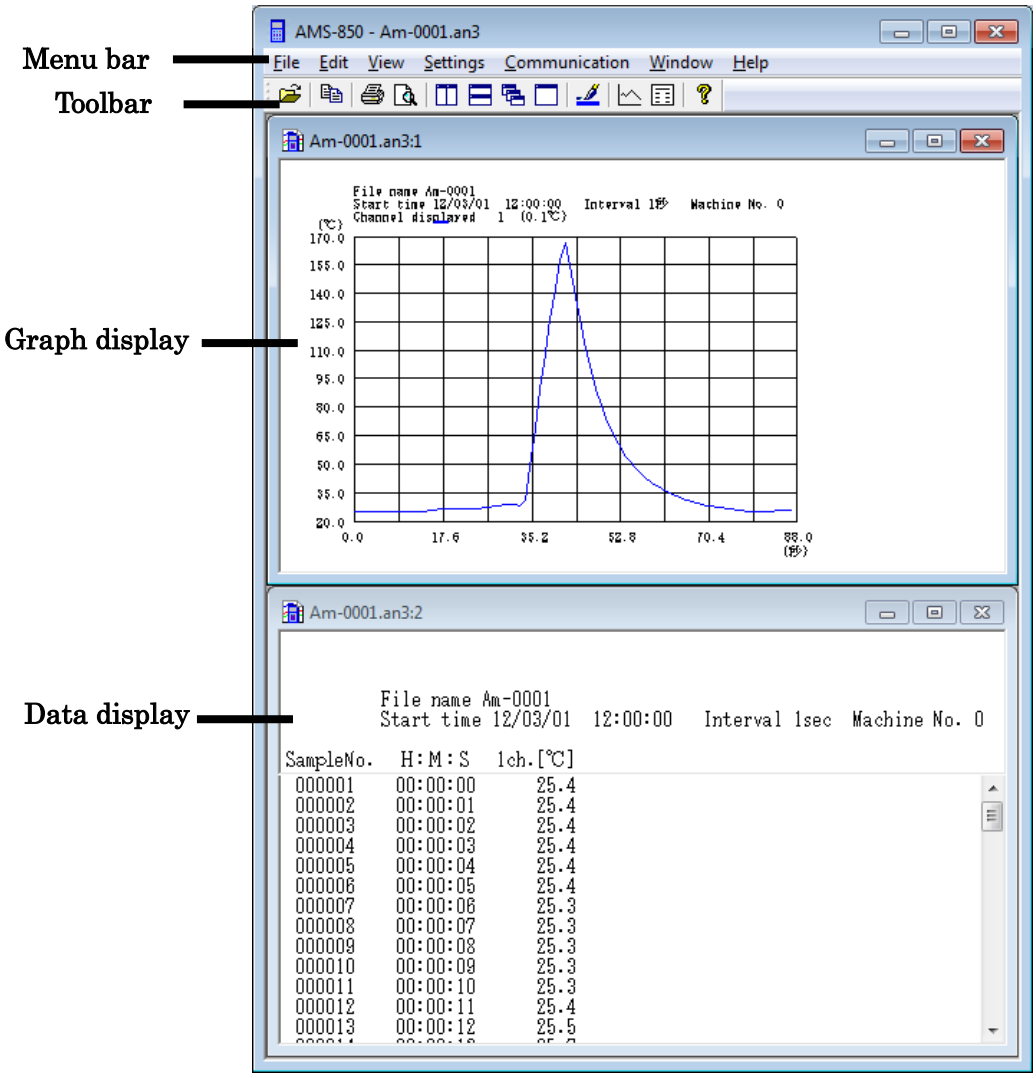
(3) Click [Yes (Y)] to remove AMS-850.



※ The saved data files will remain in their respective folders even after AMS-850 is uninstalled.

5. Screen Configuration

5.1 Names and Functions of the Main Screen



Menu bar: Allows you to set functions and perform measurements.
Toolbar: Contains the frequently used functions that have been turned into buttons.
Graph display: Displays measurement data as a graph.
Data display: Displays measurement data in list form.

5.2 Operation Method

<Operation with a mouse>

Clicking the left mouse button on an item in the menu bar or toolbar allows you to select the item.

In the data display or graph display screen, furthermore, you can use the mouse to scroll the screen.

<Operation from the keyboard>

You can use the keyboard to select items in the menu bar or toolbar as you do with the mouse.

The English letters corresponding to menu items have an underscored letter, as in File, thus can be typed in using the keyboard to select a menu or perform an operation, as shown below.

- Menu bar: ALT (GRPH) + English letter (e.g., File, Communication)
- Pulldown menu: English letter (e.g., Open, Print)
- TAB key: Moves to the subsequent input point (for example, between items in a dialog box).

<Entering alphanumeric characters>

Numbers must be entered in half-width characters when setting up graphs and other performing other operations.

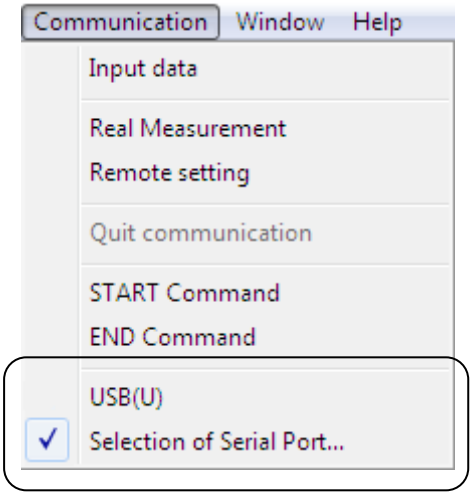
You can use either half-width or full-width characters for file names and notes.

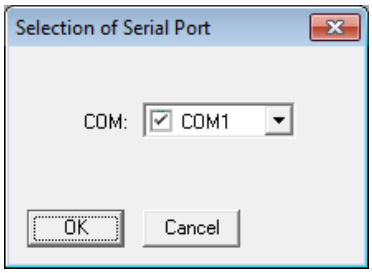
Do not use special characters for file names.

6. Using the Software

6.1 Setting the Communication Port

● In the Communication menu, select the port on your computer that is to be used for communication with the measuring instrument.
When you are using USB, select USB here.





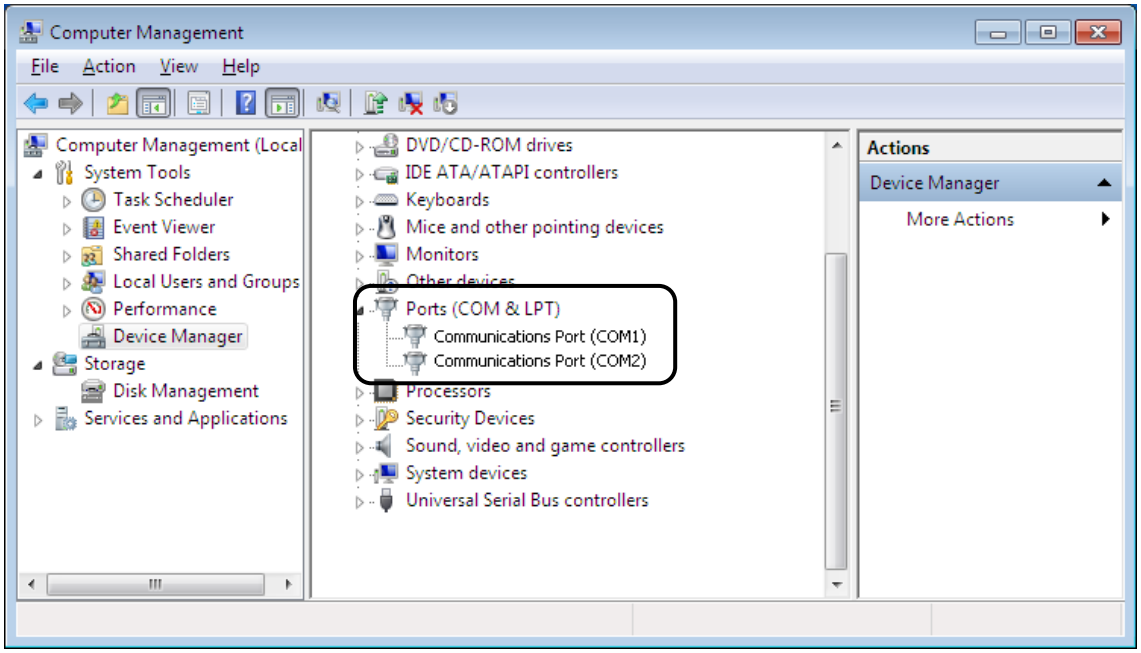
※ If you do not know which serial port number to use or you wish to check whether the USB cable is connected, follow the procedure below:

※ FL-2000 cannot select USB communication.

(1) From the Start menu of Windows, choose Settings and then Control Panel.

(2) In Control Panel, choose System and open Device Manager. Then, check the following:

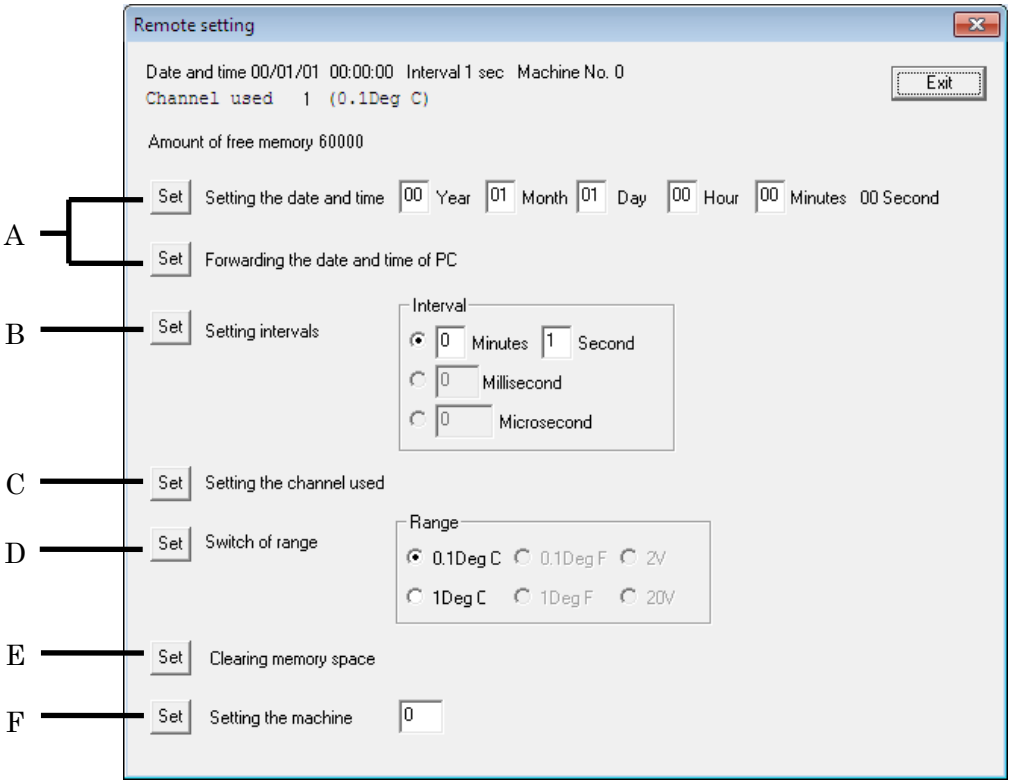
- For RS-232C communication, check the COM number of the port.
- For USB communication, check to see that "DCUSB" is shown in Universal Serial Bus controllers. If it is not shown, temporarily remove the USB cable and then reinsert.



6.2 Making or Changing Settings on the Measuring Instrument

(1) Connect the measuring instrument to the computer with the communication cable, and turn on the power to the measuring instrument.

(2) Choose Remote setting from the Communication menu.



A. Setting the clock

This value is fixed at "00 (year) 01 (month) 01 (day) 00 (hour) 00 (minutes) 00 (seconds)." It cannot be changed.

B. Setting measurement intervals

This value is fixed at "1 second." It cannot be changed.

C. Setting the channels used for measurement

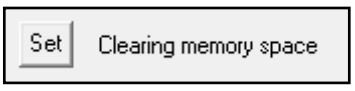
This value is fixed at "Channel 1 temperature." It cannot be changed.

D. Setting resolutions

This value is fixed at "0.1°C." It cannot be changed.

E. Clearing memory

Clears the data stored in the internal memory of the FL-2000.



F. Setting machine No.

This value is fixed at "0." It cannot be changed.

6.3 Downloading Data from the Measuring Instrument

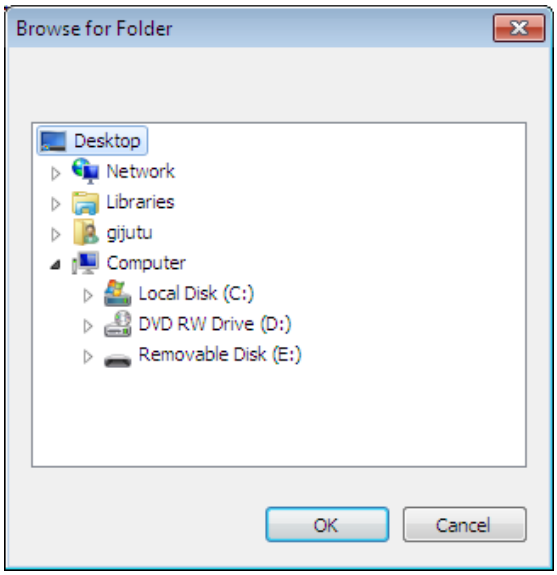
Download the data saved in the measuring instrument into your computer to create a file.

The data in the measuring instrument is separated in block units, and one file is created for each block.

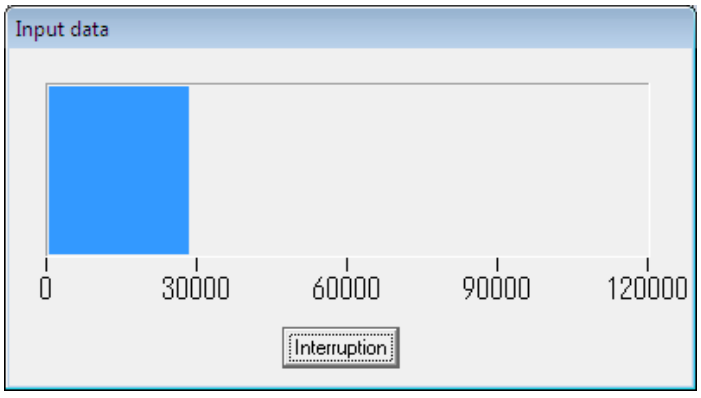
(1) Connect the measuring instrument and computer with the communication cable, and turn on the power to the measuring instrument.

(2) Choose Input data from the Communication menu.

(3) Specify the destination folder into which data is to be saved, and click OK.



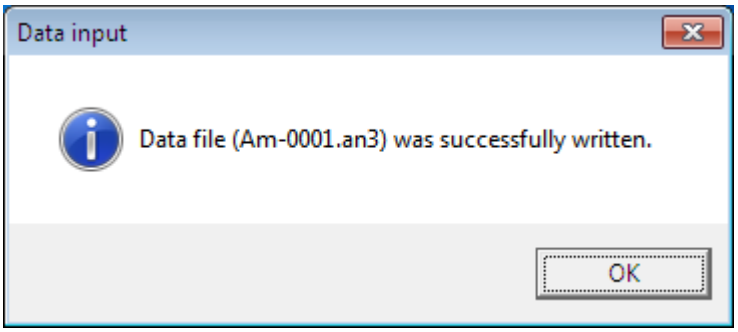
During communication, a transfer bar is displayed as shown below, allowing you to confirm the progress of data transfer. Pressing Interruption here causes the communication to stop, and the data currently being transferred or not yet transferred is not saved in the PC.



※ Do not press any keys on the measuring instrument during communication, as this will terminate transfer or cause a malfunction.

※ Since the data in the measuring instrument is retained even after you selected to run Data Input, if a communication error, etc. occurs during communication, reselect Data Input.

When Data Input finishes and all data has been transferred, a newly created data file is displayed.



(a) File names

The files are named "Am-****.an3".

The **** part in the file name denotes a number assigned for each directory from 0001 to 9999. Even if a file is deleted, all other file numbers remain unchanged.
For example, if when files up to the number 9999 are saved on the hard disk, files from 0001 to 9998 are deleted, the file with the number 9999 remains intact. In this case, because the file with the largest number (9999) remains saved, no more data can be saved in the directory where this file exists.
If new data needs to be stored in this directory, rename the file or take other appropriate measures.
Example: Change the name "Am-9999.an3" to "Am-0001.an3."

(b) File size

The file size is comprised of the following.

File size = (header part) + (data part) x (amount of data)

・Header part (information on measurement) = 1,024 bytes
・Data part (per data on each channel) = 2 bytes

Example 1: If the data size is 3 KB
File size = 1,024 + 2 x 3,000
= 7,024 bytes
= approx. 7 KB

Example 2: If the data size is 120 KB
File size = 1,024 + 2 x 120,000
= 241,024 bytes
= approx. 240 KB

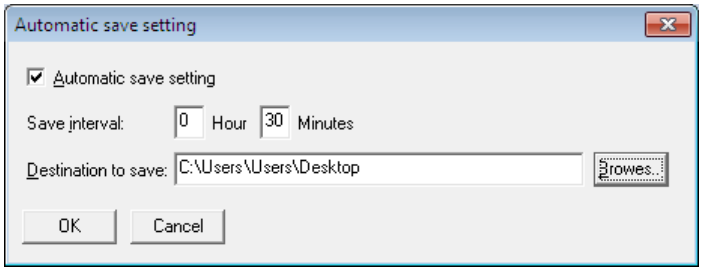
6.4 Real Measurement Method

This method displays a graph during measurement. The data is saved to a file.

(1) Connect the measuring instrument to the computer with a communication cable, and turn on the power to the measuring instrument.

(2) Choose Set Real-time data autosaving from the Settings menu.

※ During real measurement, the data is saved at predetermined intervals. Consequently, even if the power to the PC is suddenly shut down, the data saved up to this point exists as a backup file. The file can be opened in AMS-850 by changing its extension (dat) to the one that corresponds to the measuring instrument you used for measurement (an3).

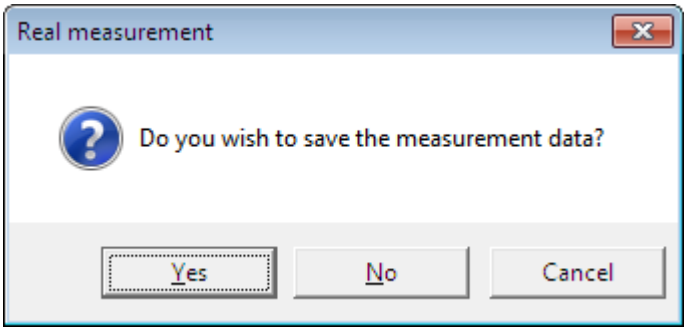


① Select to enable or disable automatic saving.

② Set the interval in which you wish data to be automatically saved.
The time interval can be set in the range 1 minute to 23 hours 59 minutes.

③ Specify the destination folder into which to save.
The names of the files created by autosaving are named according to date with the extension “dat” added.
Example:C:¥Program Files¥Anritsu-Meter¥AMS-850¥DATA¥050401.dat
April 1, 2005

(3) Choose Real Measurement from the Communication menu.



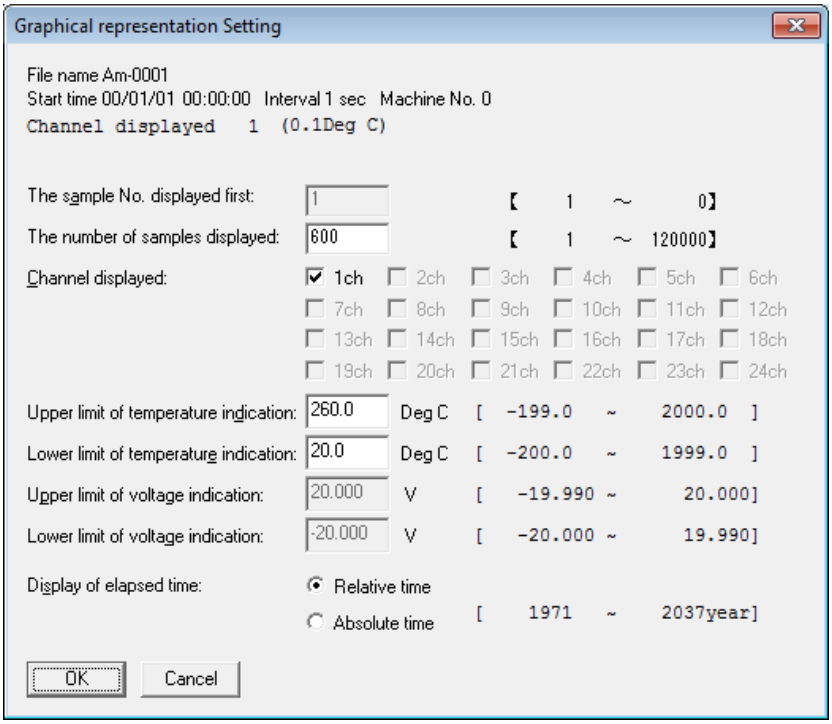
(4) To create a file, click Yes and specify the destination folder into which to save. The files are named “Am-※※※※※.an3” (※※※※※ denotes file numbers 0001 to 9999). If the amount of data in a file exceeds the limit, the file number is incremented by 1 and the next data that follows is saved to a new file.

※ The measurement underway is temporarily halted when a new file is created, thus data for several intervals during which time measurement is halted may not be acquired.

The amount of data that can be saved to one file will be 120,000 dates.

※ If measurement is taken over a long time and disk space runs out, measurement is aborted and a message is displayed on the screen.

(5) Set the type of graph you wish to be displayed.



① Set intervals on the horizontal axis according to the number of displayed samples.

To find the number of samples from the time

Number of samples = maximum time on the horizontal axis (in seconds)/ interval (in seconds)

Example: To calculate the number of samples, in order to display the data (measured at 1-second intervals) for 60 minutes

Number of samples = 60 minutes x 60 (seconds) x 1 (second)

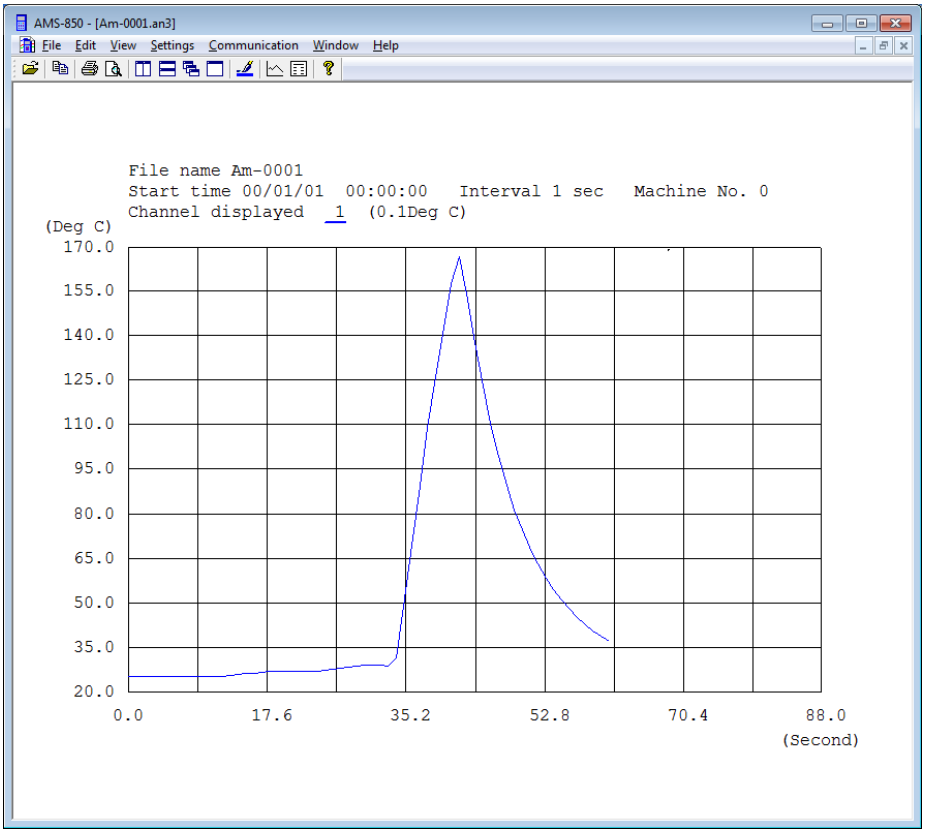
= 3600

② Select the channels whose data you wish to be graphically displayed. "Channel 1 temperature" is the only available choice on the FL-2000.

③ Set the upper-limit and lower-limit display values to set up the vertical axis.
You cannot set the upper or lower voltage display limit on FL-2000.

Upper limit of temperature indication:	2000.0	Deg C	[-199.0	~	2000.0]
Lower limit of temperature indication:	-200.0	Deg C	[-200.0	~	1999.0]
Upper limit of voltage indication:	20.000	V	[-19.990	~	20.000]
Lower limit of voltage indication:	-20.000	V	[-20.000	~	19.990]

④ When all parameters have been set, click OK.
Measurement will start.
The time is fixed at "00 (year) 01 (month) 01 (day) 00 (hour) 00 (minutes) 00 (seconds)." It cannot be changed.



To finish real measurement, choose Quit communication from the Communication menu.

● **Viewing the data preceding the time currently displayed on the screen during measurement**

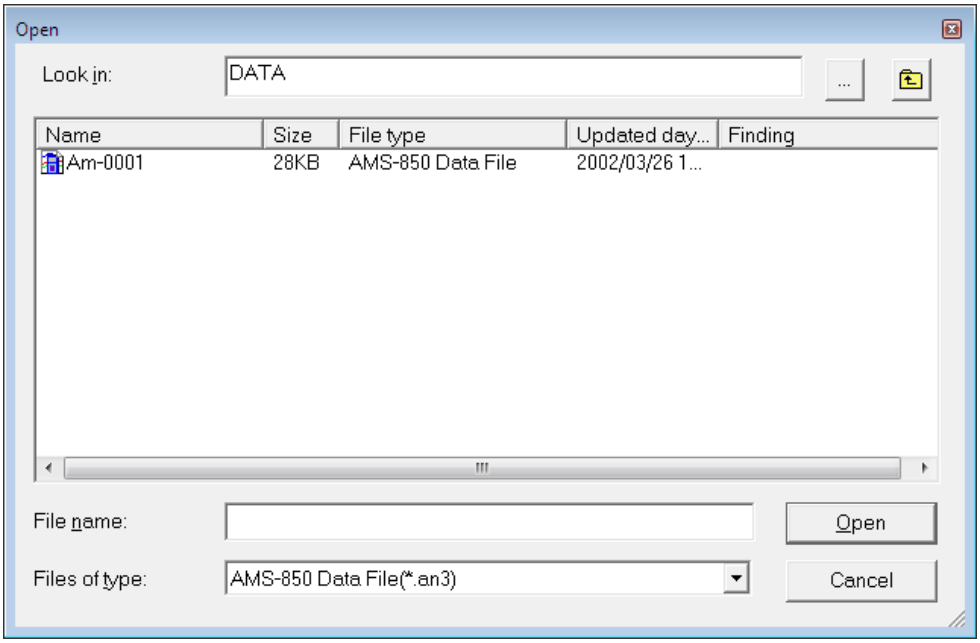
① Choose Scroll the graph from the View menu.
② Drag the gauge and move the mouse left or right.
This will move the horizontal axis of the graph to the desired point.

※ **Real Measurement is dependent on the performance of your PC. Measurement delays or errors may occur, particularly when other software is running.**

6.5 Loading and Displaying an Existing File

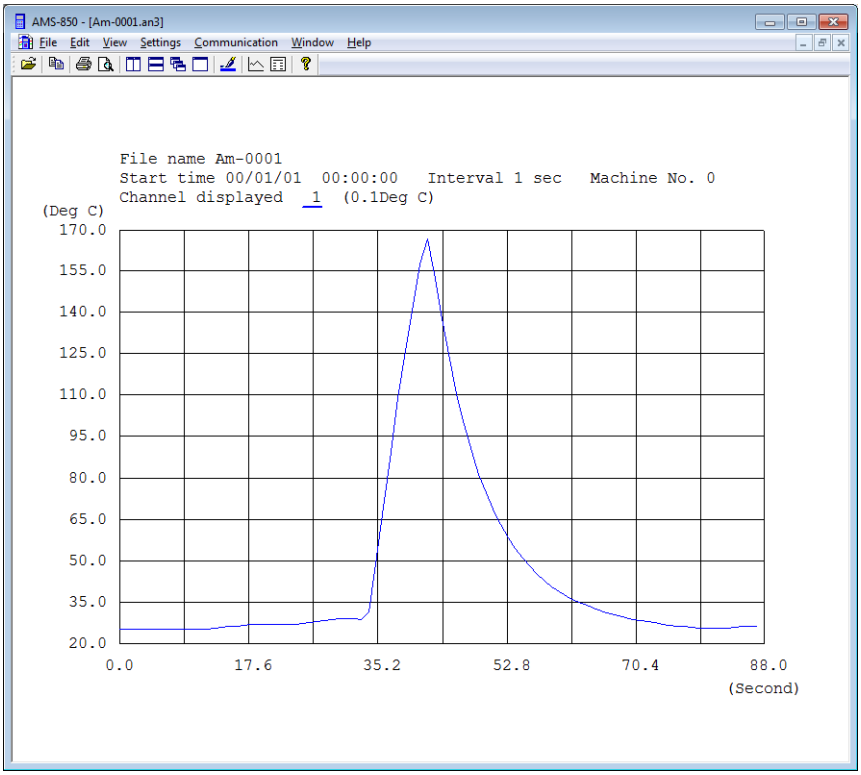
Open one of the files that have already been saved by AMS-850 and display it graphically or as a data list.

① Choose Open from the File menu.

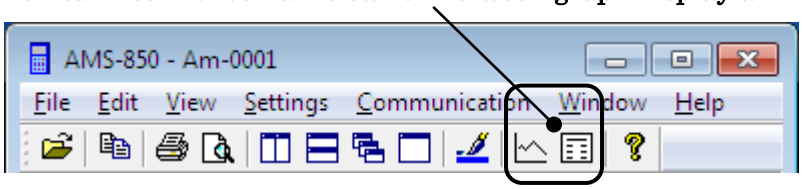


② Specify the file you wish to open and click Open.

※ Check to see that the file name you have selected is shown in the file name column before you click Open.

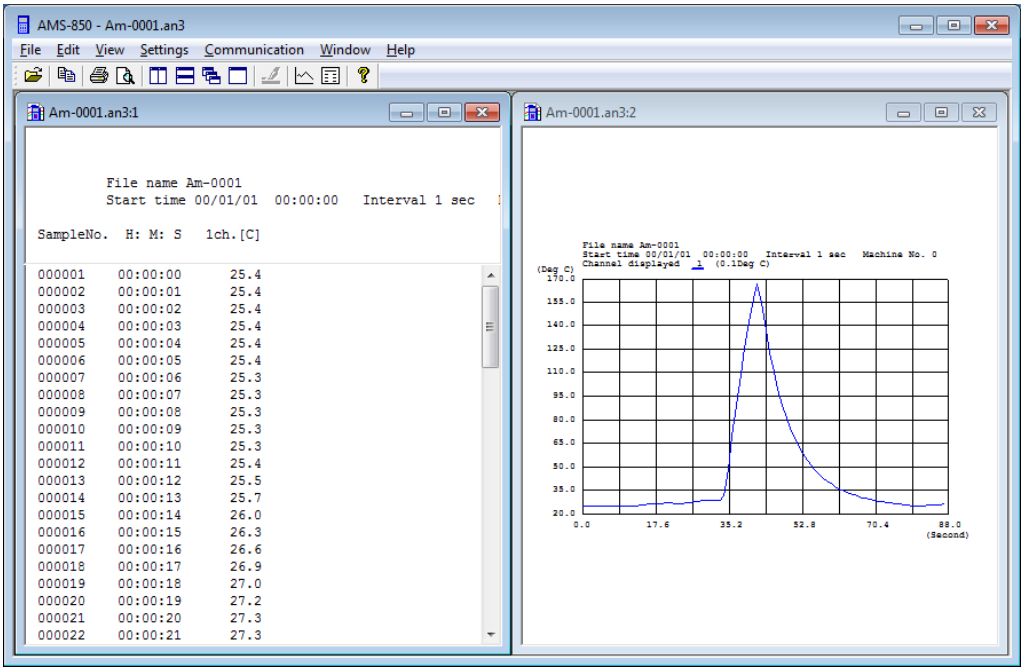


● You can use the toolbar to switch between graph display and data display.



<To display a graph and data simultaneously>

- While a graph is active, choose New Window from the Window menu. Two instances of the same graph will be opened, so use the toolbar to change one of the two graphs to data display.



※ If you wish to change the display range of the graph or the line color or line type of the graph, refer to Section 6.7, “Graph Display.”

※ The time is fixed at “00 (year) 01 (month) 01 (day) 00 (hour) 00 (minutes) 00 (seconds).” It cannot be changed.

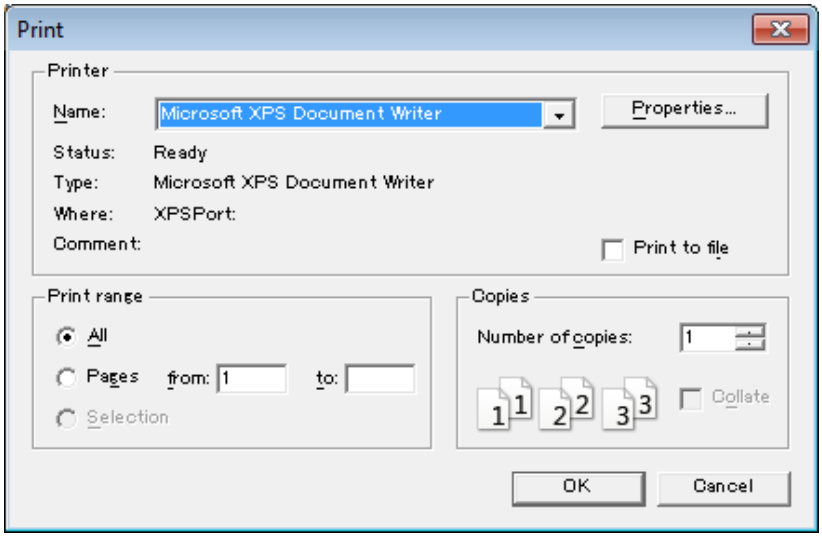
6.6 Printing Graphs and Data

You can print the graph or data or remarks being displayed on the screen via a printer.

① Activate the target you wish to print (e.g., graph or data).

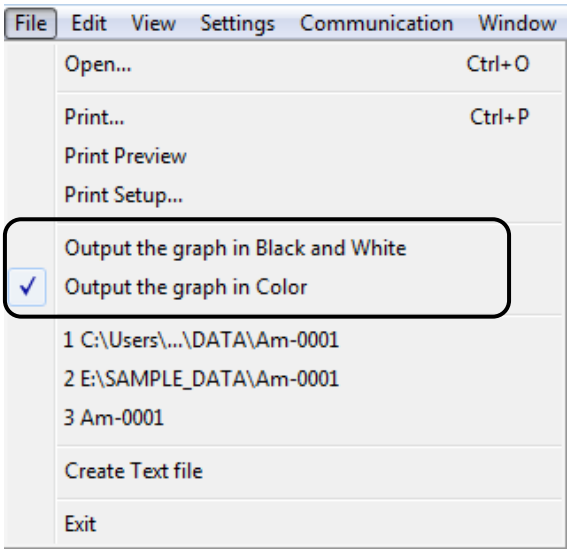
* Note that multiple graphs or sets of data displayed on the screen are only printable singularly.

② Choose Print Setup from the File menu, and then set up your printer.



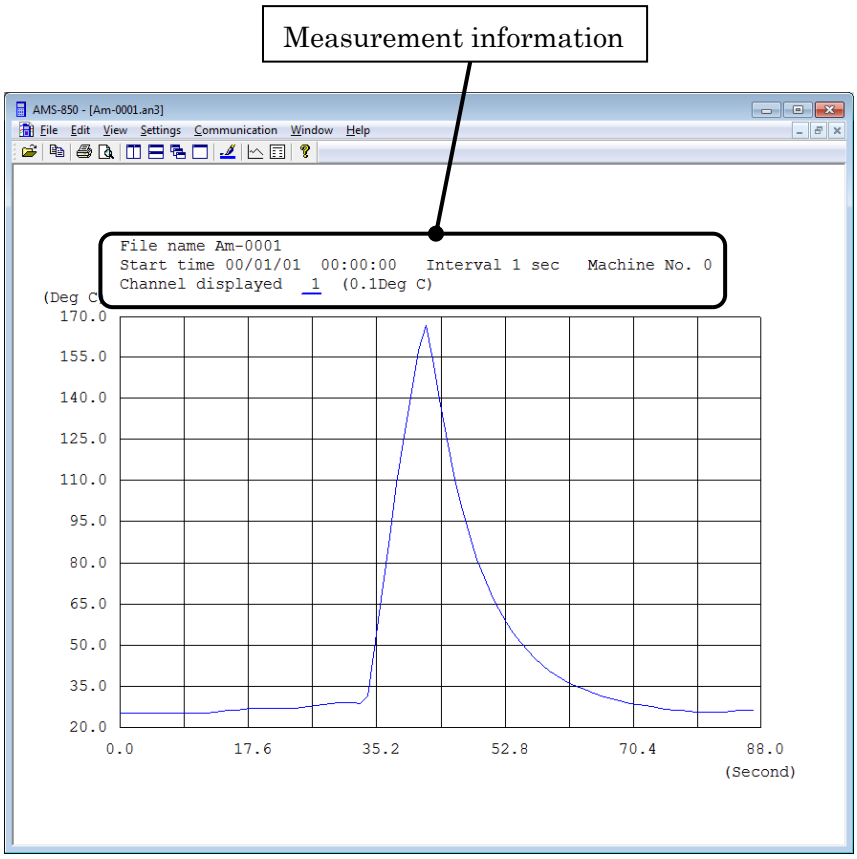
③ In the File menu, select the type of graph to be printed. Select color or black and white (depending on printer type).

Some monochrome-only printers cannot print lightly colored lines. In that case, select to black and white.



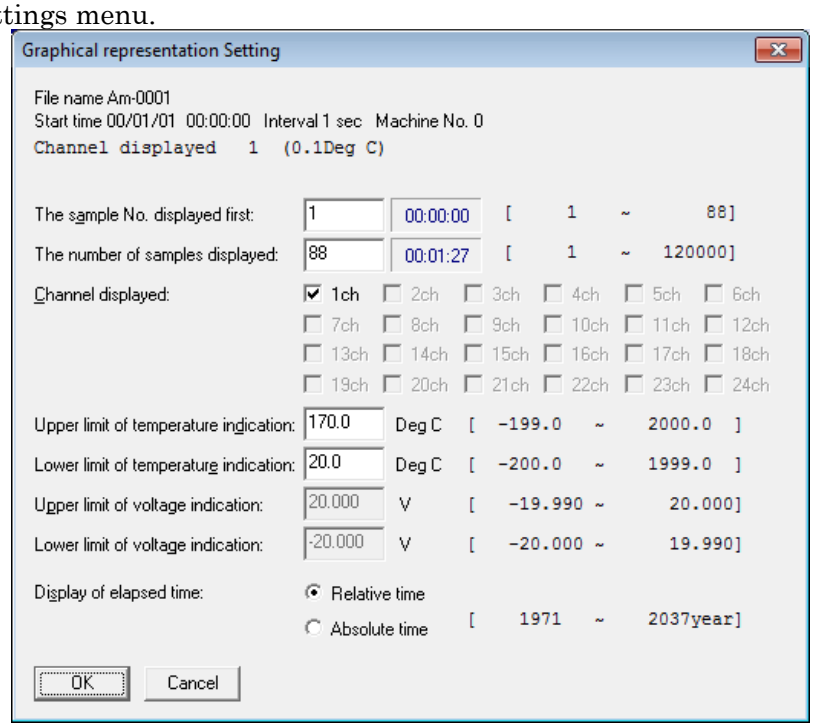
④ Choose Print from the File menu, and then click OK to print.

6.7 Graph Display

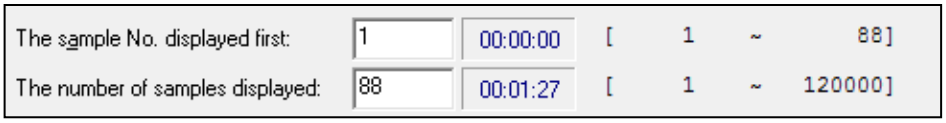


A. Setting the display range

- Activate the graph and choose Set the graphical representation from the Settings menu.



(a) Changing the scale of the horizontal axis

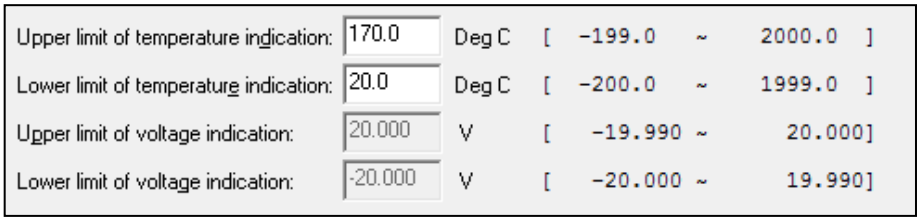


① Set First Sample No. to specify the minimum value on the horizontal axis.

② Set Samples to specify the measurement data sequence number on the horizontal axis.

* Clicking the time displayed to the right of the input column allows you to edit the approximate value for the start or the end time.

(b) Changing the scale of the vertical axis

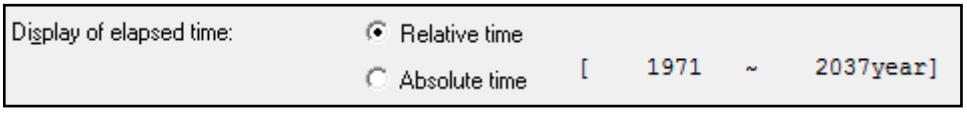


- Set the upper-limit and lower-limit display values to specify the display range on the vertical axis.
  For the temperature display range, set Upper Range (Temp.) and Lower Range (Temp.).

(c) Setting to show or hide channels

- Choose to show or hide channels.
  Do not start measurement before select channels.

(d) Selecting time display

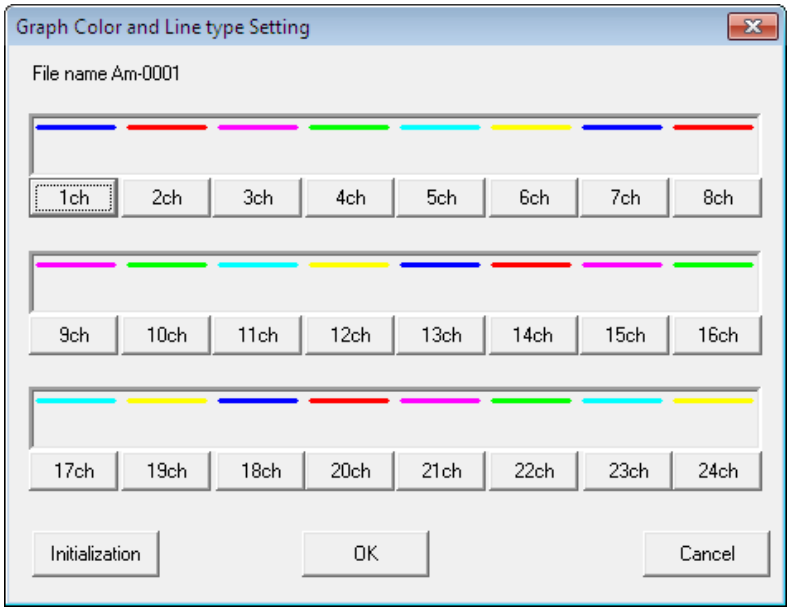


- Select the format of time in which you wish the time to be displayed.
  - Relative time indicates the lapsed time from start of measurement.
  - The FL-2000 always displays the absolute time from "00 (year) 01 (month) 01 (day) 00:00:00."

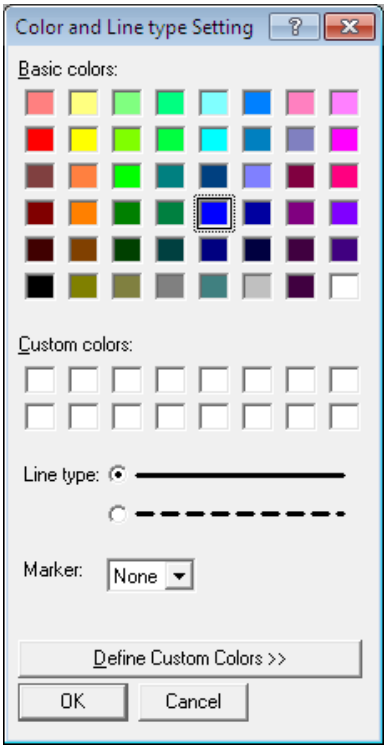
B. Setting line colors and line types

Graphs can be drawn with different line colors or different line types for each channel.

① Choose Set the graph Color and Line type from the Settings menu.



② Click the button for the channel whose line colors or line types you wish to change.



③ Select your desired color from Basic Colors or Custom Colors.

④ For the line type, select solid line or broken line.

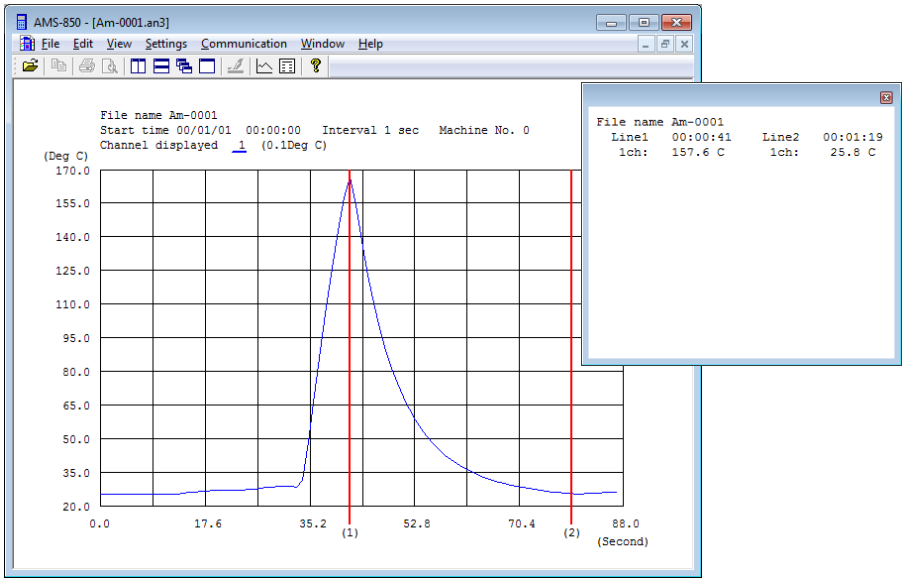
⑤ For the marker, select the one desired.

C. Enlarged display

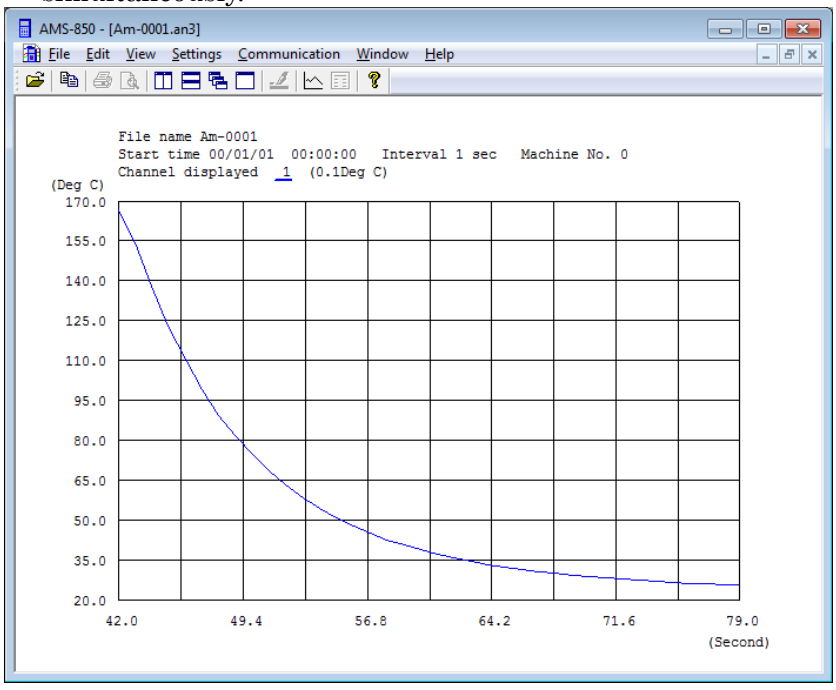
(a) Enlarging

① Choose Enlarge the selection from the View menu.

② Hold down the left mouse button on number ① or ② of the red magnification bar while moving the mouse, and the magnification bar will move. Specify the range of the graph you wish to be enlarged. (You also can use the arrow keys to move the magnification bar.)



① Press the right mouse button and then click Zoom.
The range of the graph specified by the magnification bars ① and ② will be enlarged.
In addition, data in positions ① and ② are displayed simultaneously.



(b) To reverse the enlarged display

● Choose Restore the display range from the View menu.

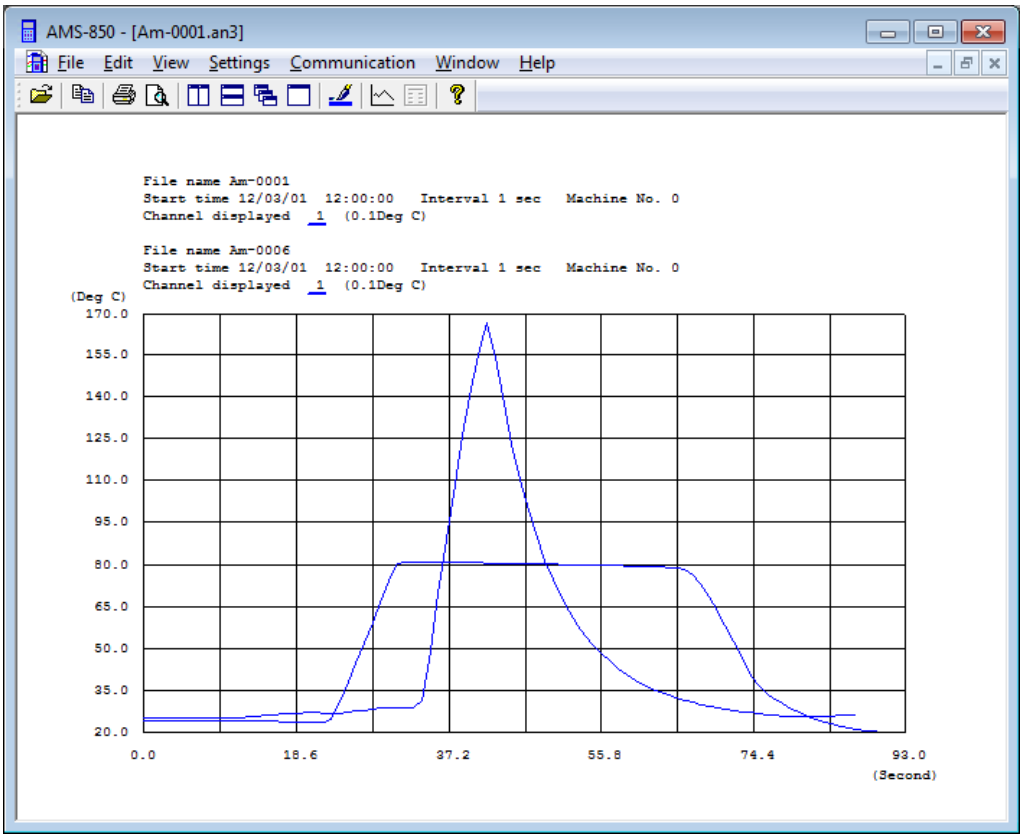
The enlarged range of the graph will be returned to its original size.

D. Merging two graphs

You can merge two different files into a single file for graph display.

① Open the first file (see Section 8.5).

② Choose Merge files from the Edit menu, select the second file in it, and then click File Open.



* Note that the following files cannot be merged.

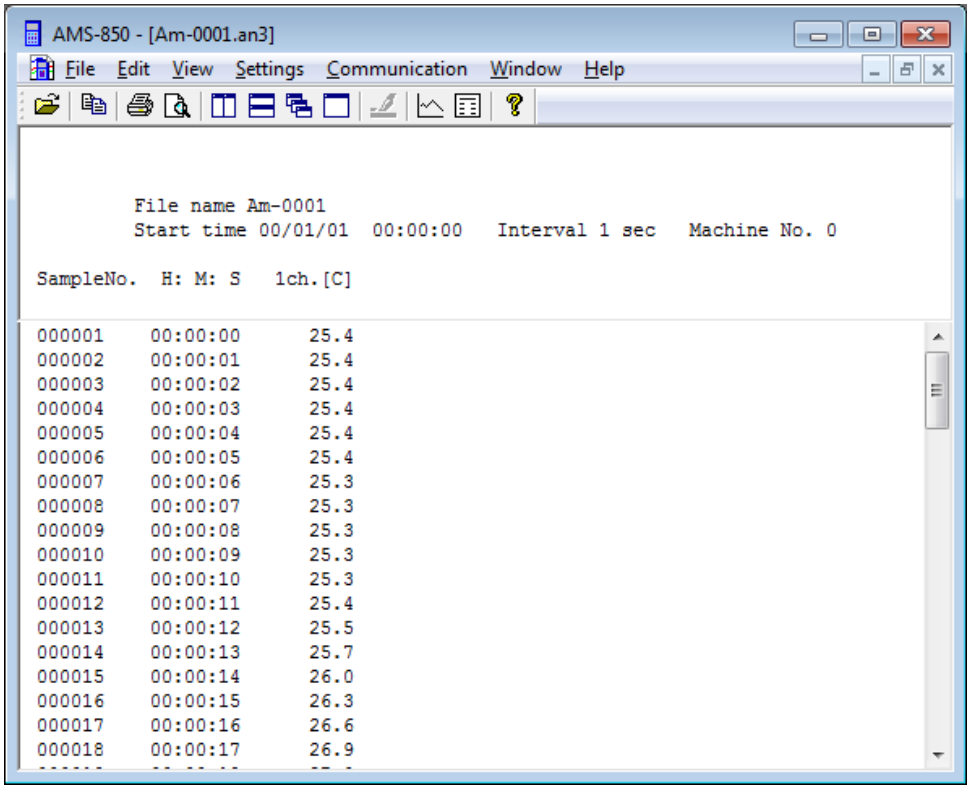
Files derived from manual measurement

Data files derived from measurement with a 1999.9 mV voltage range

Combination of files in different units of temperature, °C and °F

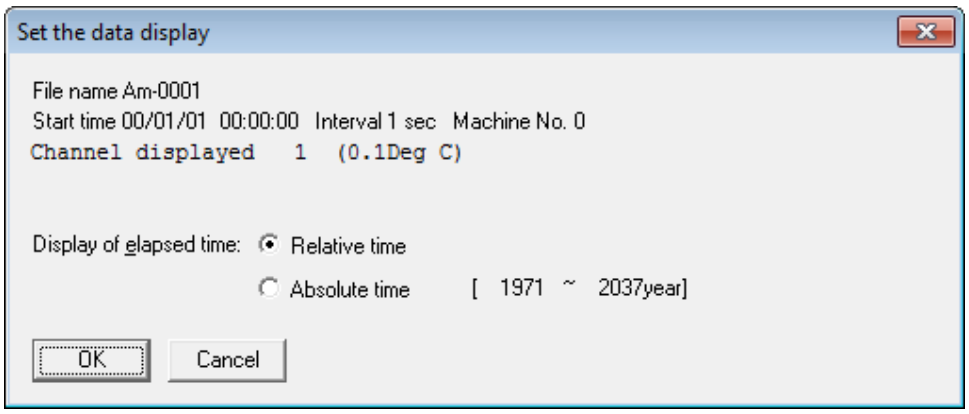
Combination of files in different time interval, 1 or more second and less than 1 second.

6.8 Data Display



A. Setting the format for time in which you wish the time to be displayed

① Choose Set the Data display from the Settings menu.



② Select the format of time in which you wish the time to be displayed.

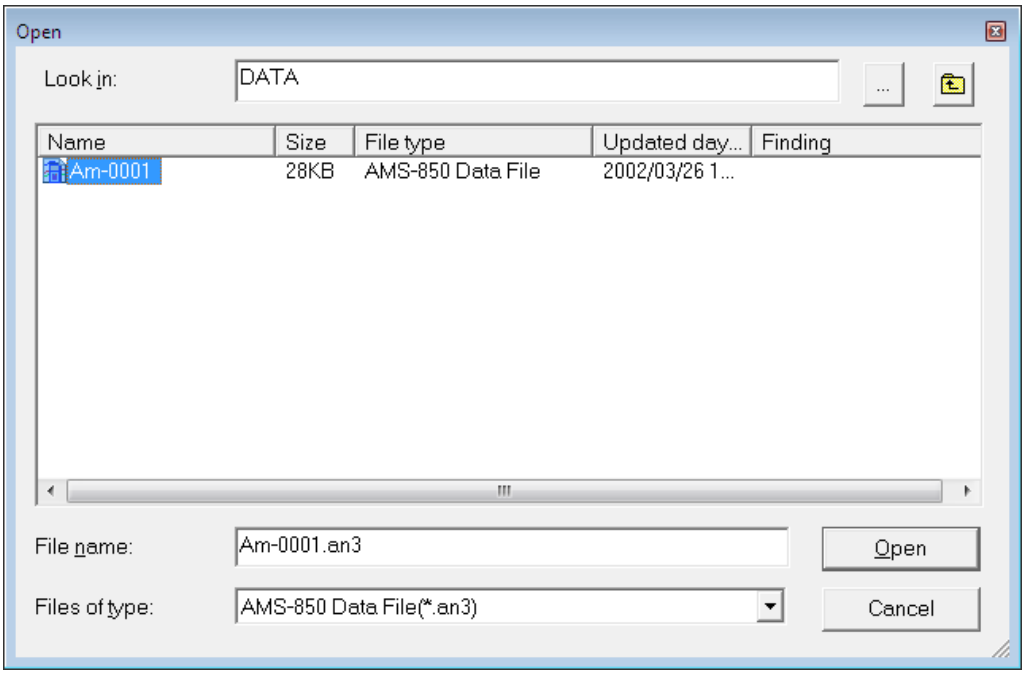
- Relative time indicates the lapsed time from start of measurement.

※ The FL-2000 always displays the absolute time from “00 (year) 01 (month) 01 (day) 00:00:00.”

6.9 Using Data in Spreadsheet Software

The data files created by AMS-850 can be converted into CSV files for use in Excel or other spreadsheet software.

(1) Choose Create Text file from the File menu.



(2) Specify the file you wish to convert and click Open.

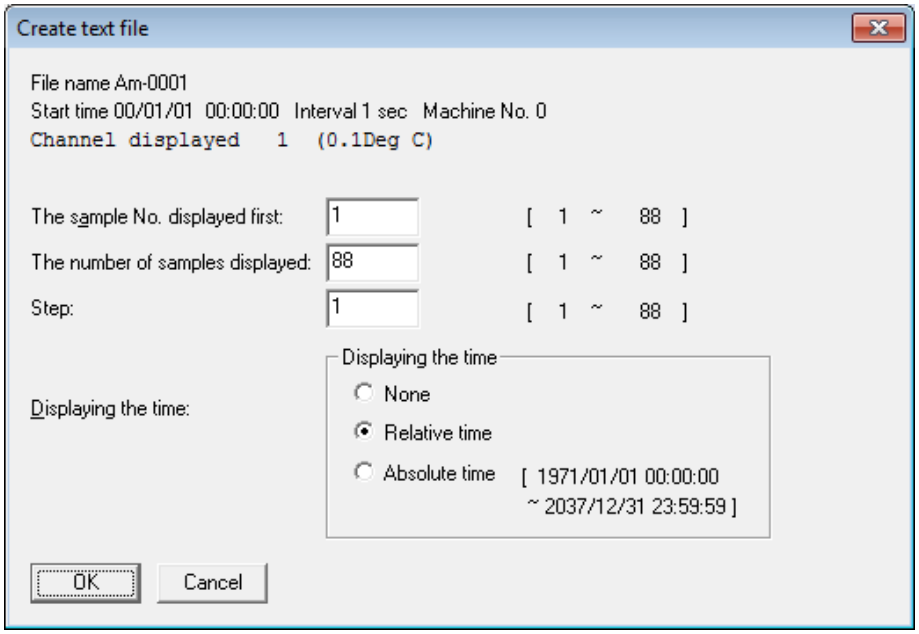
The converted file is created in the same directory as its source file.

This file is named after the source file by changing its extension to ".csv."

Example:

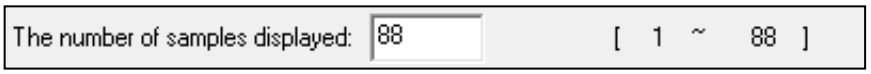
Source file	C:¥Data¥Am-0001.an3
Converted file	C:¥Data¥Am-0001.csv

(3) Set the format in which you wish a text file to be saved.



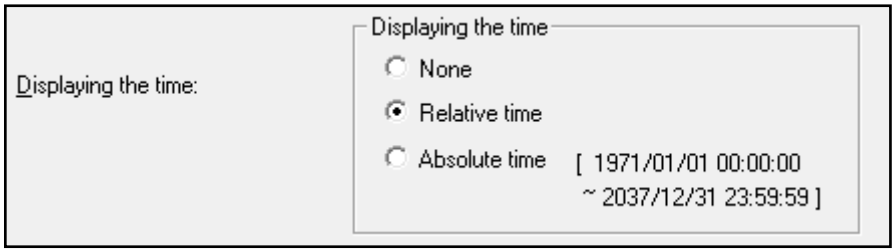
① Set the sequence number of the data from which you wish a text file to be created.

② Set the number of data items present in one file.
The number of data items actually created is
(Number of data items) = number of displayed data items / number of steps



③ To create a text file by interleaving or "thinning out" the source data file, you need to set the increment amount.
* Depending on the spreadsheet software used, the number of data items that can be loaded is limited. If the source file contains a large amount of data, interleave it following the above procedure or split the file.

④ Select the format of time in which you wish the time to be displayed when a text file is created.



・Relative time indicates the lapsed time from start of measurement.

※ The FL-2000 always displays the absolute time from "00 (year) 01 (month) 01 (day) 00:00:00."

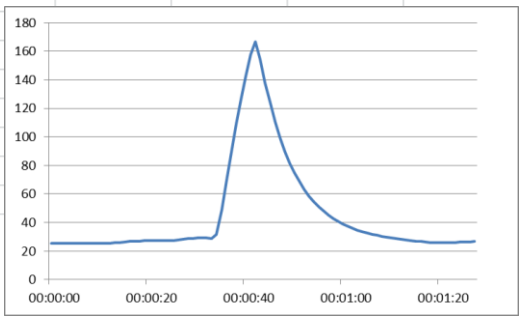
*** When Relative time is selected, the time can only be displayed in the range 00:00:00 to 23:59:59 (hours:minutes:seconds). Please note that the data collected during 24 hours or longer is displayed in the above range of time repeatedly.**

⑤ Double-clicking a text file with the mouse launches spreadsheet software.

If you are using Excel, the file will be displayed in a manner similar to the samples shown below. You can create a graph from the file by making use of the functions of Excel.

<Time display: Relative time>

	A	B	C	D	E	F	G
1	File name	Am-0001					
2							
3	Start time	0	Year	1	Month	1	Day
4		0	Hour	0	Minutes	0	Second
5							
6	Interval	0	Hour	0	Minutes	1	Second
7		0	Millisecond	0	Microsecond		
8							
9	MachineNo	0					
10							
11							
12		File name	Am-0001				
13		Start time	00/01/01	00:00:00	Interval 1Sec	Machine No.0	
14							
15	Sample N	H: M: S	1ch.[Deg C]				
16	1	00:00:00	25.4				
17	2	00:00:01	25.4				
18	3	00:00:02	25.4				
19	4	00:00:03	25.4				
20	5	00:00:04	25.4				
21	6	00:00:05	25.4				



6.10 Pasting Data into a Document File

① Launch AMS-850 and open a data file (see Section 8.5).

② Choose Copy from the Edit menu. The screen data will be copied to the clipboard.

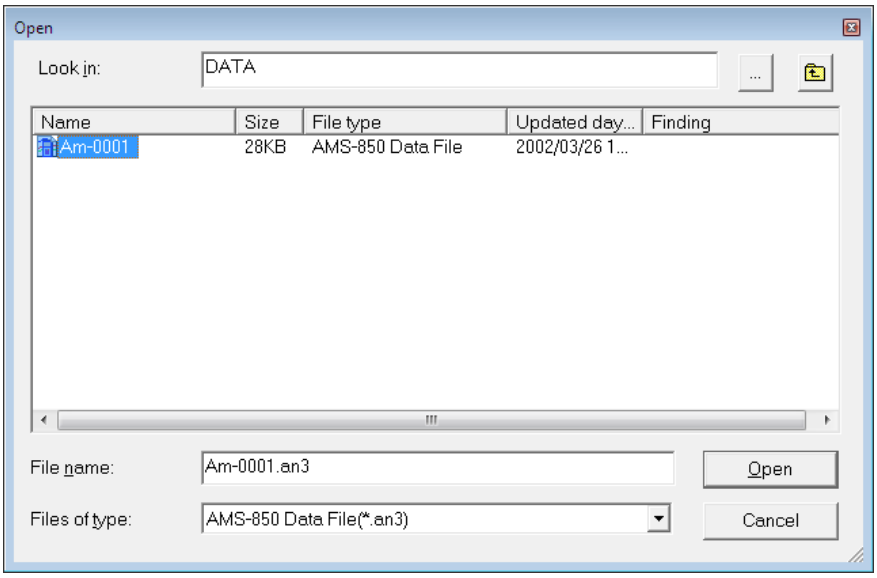
③ Open a document file created in Word, etc.

④ Move the mouse to your desired position in the document and paste the copied data at that position.

6.11 Attaching a Remark to Graphs or Data

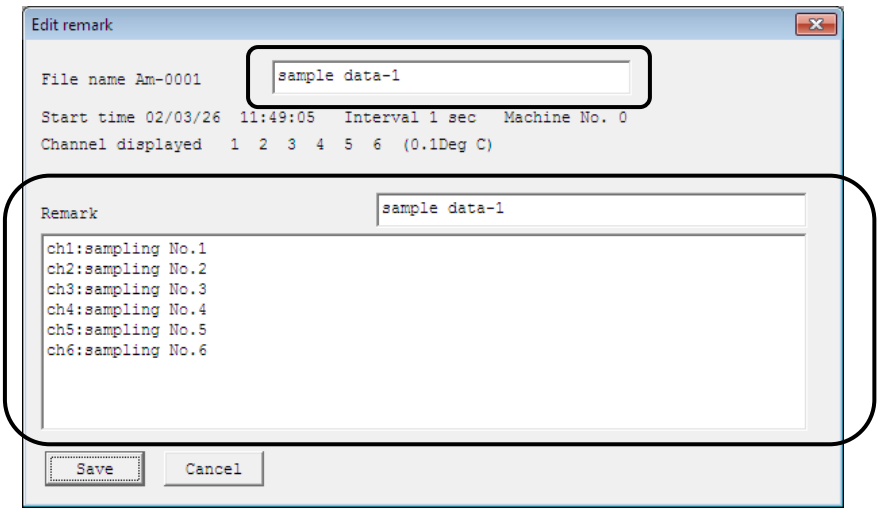
A. How to create a remark

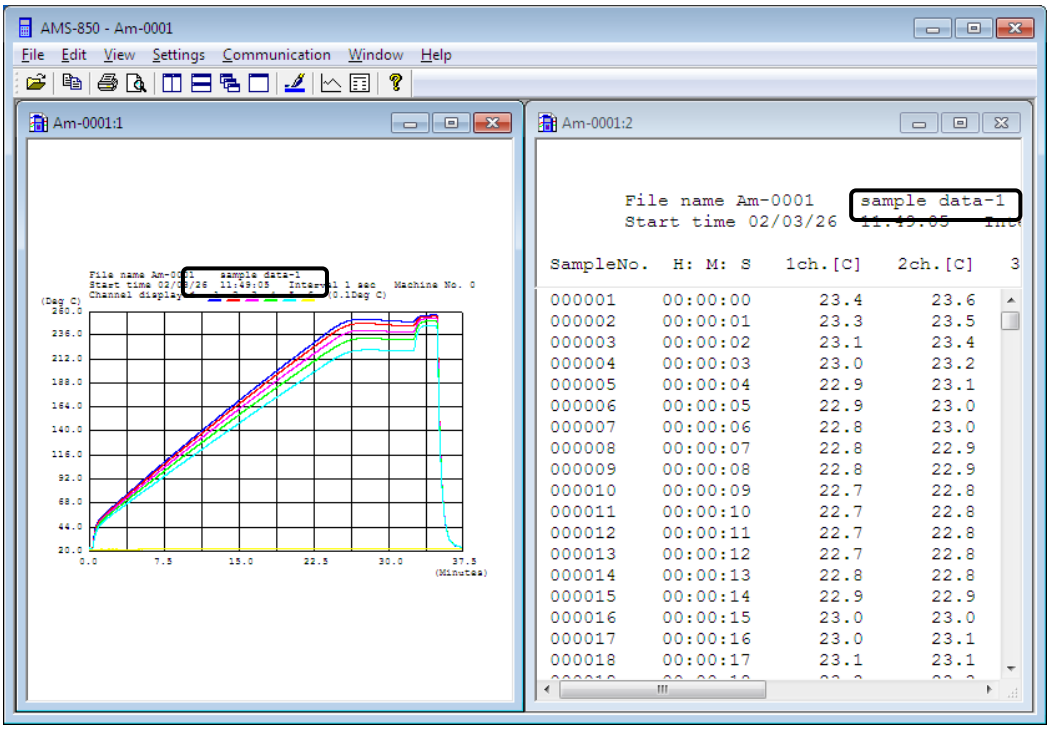
① Choose Edit remark from the Edit menu.



② Specify a file name and click Open.

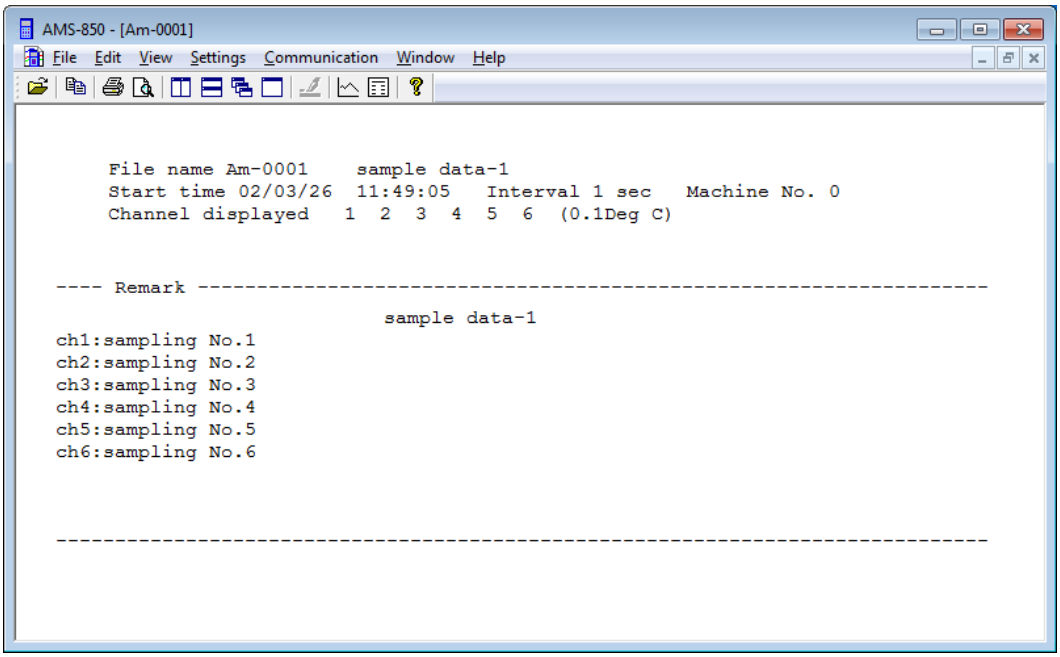
③ Enter a remark representing the content of data recorded in the file or the conditions under which data was recorded.





B. How to check details of the remark

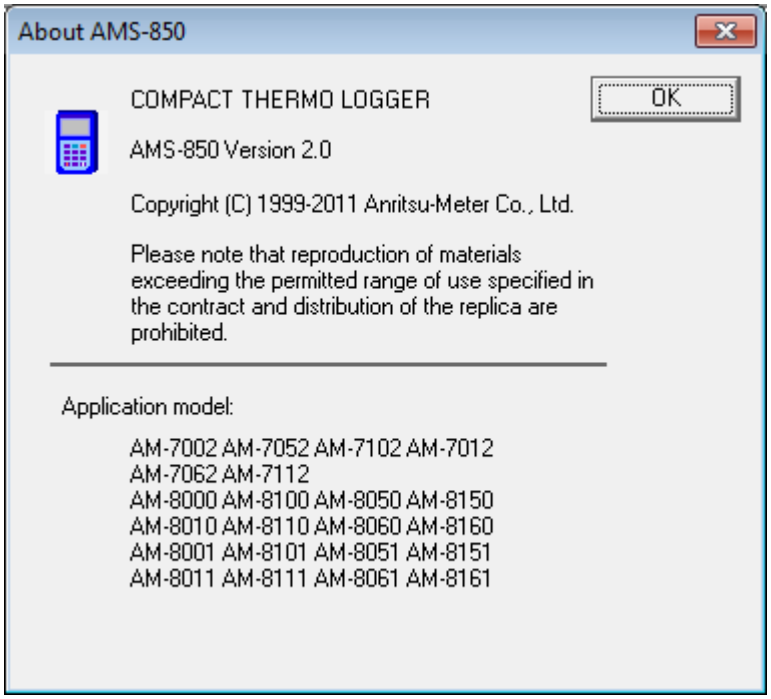
- Choose Display Remark from the View menu.



7. Version Information

Choosing About AMS-850 from the Help menu allows you to check which version of AMS-850 is installed on your computer.

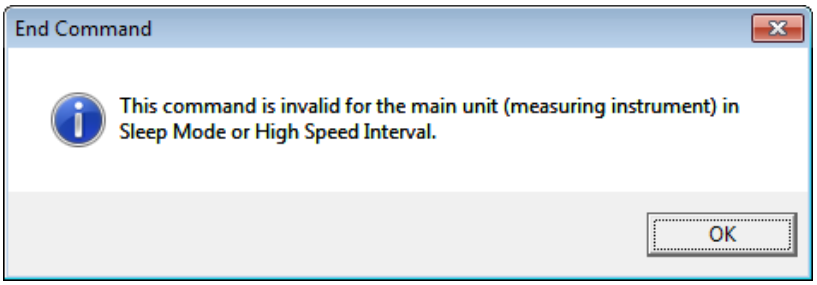
Note that the software version is subject to change without notice.



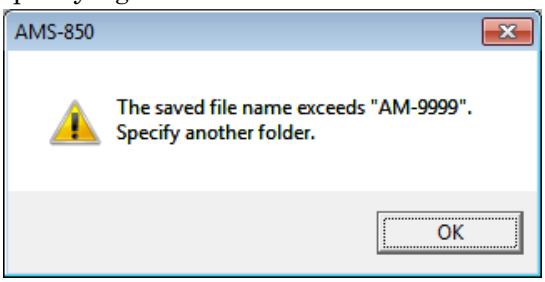
8. Error Messages

The following presents typical error messages output in this software application. If one of these error messages is displayed, a handling error or problem on your PC or equipment might have occurred.
Carefully read this manual for details on how to solve the problem. If the problem persists, contact Anritsu Meter.

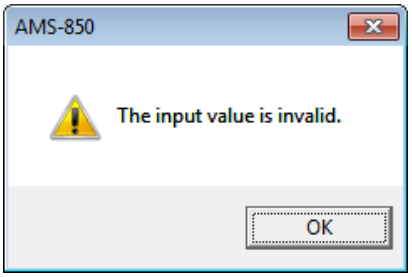
(1) Information displayed when the END command is executed
This information is displayed when [END command (E)] is executed from the [Communication (C)] menu. The FL-2000 accepts the command without any problems.



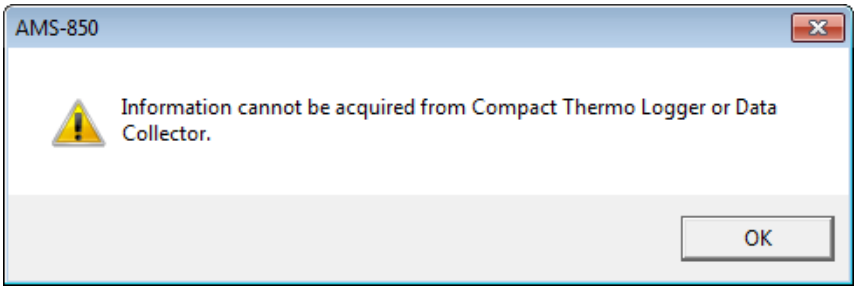
(2) AM-9999 already exists in data storage location
Change the storage location for the measurement data by creating a new folder or specifying a different location.



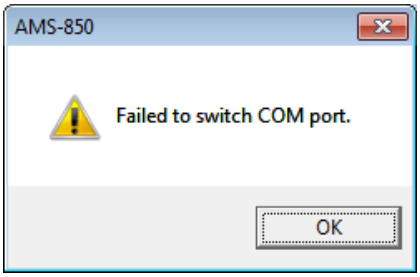
(3) If the value you have entered is incorrect
This error might occur when the input range is exceeded, or when an unrecognizable character is entered for graph display. Check the values and characters entered.



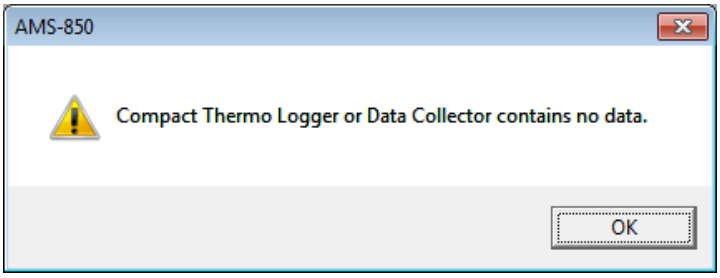
(4) If the measuring instrument cannot be communicated with
Confirm the following: FL-2000 is powered on; communication cables are properly connected; and communication ports are correctly set.



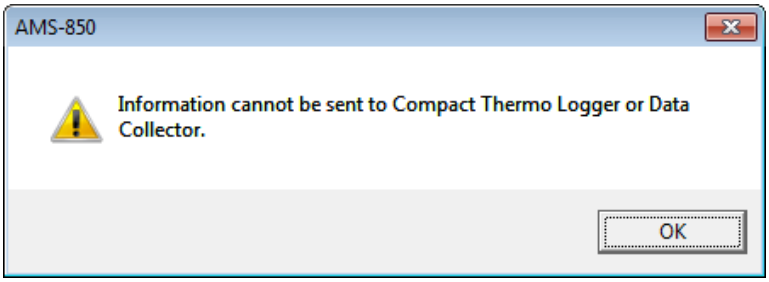
(5) If the measuring instrument is not connected to your PC
Check whether the communication port on your PC is set to USB, or whether there are any problems with the communication port settings.



(6) When [Data input (I)] is executed from [Communication (C)] menu.
Confirm the following: communication cables are properly connected; and communication ports are correctly set.



(7) If an invalid value is entered on the FL-2000
This message is displayed when a setting that is not available on the FL-2000 is entered or selected in [Remote setting (R)] in the [Communication (C)] menu. Check the values that were selected or entered.



9. Command List

9.1 Explanation of the Menu Bar

<File>

① **Open**

Opens a data file.

② **Print**

Prints graph display, data display, or remarks via printer.

③ **Print Preview**

Previews the print data.

④ **Print Setup**

Sets up a printer.

⑤ **Output the graph in Black and White**

Selects printer output mode for a graph so that the graph will be printed in black and white.

⑥ **Output the graph in Color**

Selects printer output mode for a graph so that the graph will be printed using color.

⑦ **Create Text file**

Converts a data file into text format.

⑧ **Exit (End of Application)**

Quits AMS-850.

<Edit>

① **Copy**

Copies graph display, data display, or remarks to the clipboard.

② **Edit remark**

Attaches a remark to graphs or data.

③ **Merge files**

Combines graphs in two data files into a single graph for display on the screen.

<View>

① **Enlarge the Select**

Enlarges the selected range of a displayed graph.

② **Scroll the graph**

Scrolls the horizontal axis of a graph during real measurement.

③ **Restore the display range**

Reverses the enlarged range of a graph to its original size.

④ **Display the Graph**

Displays measurement data graphically.

⑤ **Display the Data**

Displays measurement data in list form.

⑥ **Display Remark**

Displays information on a file, etc. as a remark or caption.

<Settings>

① Set the graphical representation

Sets the vertical and horizontal axes of a graph, and other parameters.

② Set the Data display

Sets the format of time displayed during data display.

③ Set the graph Color and Line type

Sets the line colors, line types, etc. of a graph.

④ Set Real-time data autosaving

Sets the destination folder in which the backup data for real measurement is saved.

<Communication>

① Input Data

Downloads data from the measuring instrument into a PC.

② Real Measurement

Displays the data recorded in the measuring instrument graphically in real time.

③ Remote setting

Sets the clock and measurement conditions of the measuring instrument.

④ Quit communication

Stops communication.

⑤ START Command

Sends the START command to the measuring instrument.

⑥ END Command

Sends the END command to the measuring instrument.

⑦ USB

Sets the type of communication port interface to USB.

⑧ Serial Port COM1–6

Sets a communication port to one of the serial ports on a PC.

<Window>

① New Window

Opens a new graph or data list.

② Cascade

Displays open graphs or data lists in a cascade.

③ Tile Vertically

Tiles the graphs or data lists on the screen vertically, i.e., side by side.

④ Tile Horizontally

Tiles the graphs or data lists on the screen horizontally, i.e., one below another.

⑤ Arrange Icons

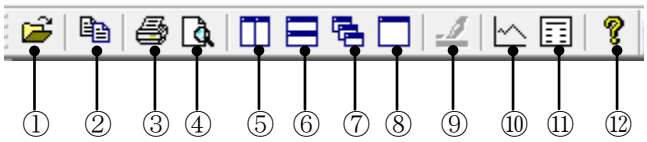
Arranges the icons representing displayed graphs or data lists in order.

<Help>

① About AMS-850

Shows the version information on AMS-850.

9.2 Explanation of the Toolbar



① Opens a data file.
② Copies graphs or data to the clipboard.
③ Prints graphs or data.
④ Previews the data to be printed.
⑤ Tiles the windows horizontally, i.e., one below another.
⑥ Tiles the windows vertically, i.e., side by side.
⑦ Cascades windows in a neat stack with all windows visible.
⑧ Fills the whole screen with a window.
⑨ Sets line colors and line types of a graph.
⑩ Displays measurement data graphically.
⑪ Displays measurement data in list form.
⑫ Displays version information.

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