HIOKI

INSTRUCTION MANUAL

9332

WAVE COMMUNICATOR

HIOKI E. E. CORPORATION

Contents

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Introduction

Thank you for purchasing this HIOKI "9332 WAVE COMMUNICATOR." To get the maximum performance from the unit, please read this manual first, and keep this at hand.

Notes on Use

The contents of the display screens, operating manual and data conversion methods may be changed without notice.
In order to ensure safe operation and to obtain maximum performance from the unit, observe the cautions listed below.

⚠CAUTION

- Do not drop or bend floppy disks, or subject them to other strong shocks.
- Do not leave floppy disks in direct sunlight, near strong magnetic fields, or close to heating equipment.
- Keep water away from the disk.
- HIOKI cannot accept responsibility for any incidental problems occurring as a result of use of the software.

The following symbols are used in this Instruction Manual to indicate the relative importance of cautions and warnings.

⚠CAUTION	Indicates that incorrect operation presents possibility of injury to the user or damage to the equipment.
NOTE	Denotes items of advice related to performance of the equipment or to its correct operation.

Hioki CD-R Development Management Manual

- Handle the disc by its edge to avoid getting fingerprints on the label side or rubbing off lettering.
- Never touch the recording surface of the disc. Further, never place the disc on a hard surface with the recording surface facing downward.
- To prevent blurring of label lettering, keep the disc away from water and volatile solvents such as alcohol.
- When writing on the label side of the disc, use a oil-based felt-tip marker. Never use instruments with hard tips such as ballpoint pens, as these can damage the disc. Further, do not affix adhesive labels to the disc.
- Never leave the disc exposed to direct sunlight or high temperatures since such conditions can destroy the disc by deforming it.
- To remove stains, dust, or fingerprints from the disc, wipe it using a soft, dry cloth or CD cleaner. Always wipe radially, from the inside of the disc toward the outside, and never wipe around the disc in a circular direction. Never use abrasive or solvent based cleaners.
- The manufacturer disclaims all responsibility for any trouble experienced with your computer system or other problems consequent to purchase of the product.

Chapter 1 Product Overview

(1) Communications functions

- Communications with the MEMORY HiCORDER can be carried out through a modem or RS-232C connection.
- You can download MEMORY HiCORDER waveform data and store it on a personal computer.
- You can download MEMORY HiCORDER setting files and store them on the personal computer. You can then upload them to a MEMORY HiCORDER as required.
- The software keeps track of multiple connections, so you can carry out communications with more than one MEMORY HiCORDER unit.

(2) Arrival notification (using modem connection only)

- Using the notification function of the MEMORY HiCORDER, you can receive notification when a trigger is issued, or when waveform capture is completed.
- When the notification arrives, a popup message appears on the computer screen. A simultaneous audible warning is also possible.
- For notification when waveform capture is complete, you can receive the waveform data.

(3) Waveform display

- You can display an image of the waveform data from the MEMORY HiCORDER on the screen.
- You can convert all or a specified part of the displayed waveform data to CSV* format and save it.

(4) Settings Editor

- You can create new MEMORY HiCORDER setting files (file extension .set).
- You can also edit setting files that have been downloaded from a MEMORY HiCORDER.
- Using the communications functions, remote control of the MEMORY HiCORDER is possible.
- Created setting files can be read directly into the MEMORY HiCORDER.

* CSV format (comma-separated values):
This format consists of text data values separated by commas. It can be read directly into most spreadsheet software.

Chapter 2 Product Specification

2.1 General

Supplied medium	CD-R (1)
Supported units	HIOKI 8807/8808
Operating environment	PC/AT compatible Windows 95 SP1 or later, Windows 98, Windows NT4.0 SP3 or later, Windows 2000, Windows XP* (English)
Supported modems	Any guaranteed to operate under Windows 95, Windows 98, Windows NT4.0, Windows 2000, Windows XP
Interface	Serial port and normal telephone circuit (simultaneous use not possible)
Operating restrictions	Do not use this application at the same time as another application which uses a modem or serial port.

*: Windows is a registered trademark of Microsoft Corporation.

2.2 Functional Specification

Communications functions

Data transfer	Proprietary protocol
Data received	Waveform file, setting files
Data transmitted	Setting files (excluding settings affecting communications)
File types	File formats saved on the MEMORY HiCORDER (file extensions .mem, .rec, .rms, .set) 9332 setting files (file extension .wvc)
Data transmitted	Setting files (.set) only
Data received	Setting files (.set) and waveform files (.mem, .rec, .rms)
Log function	Transfer date and time, transfer contents, and file name saved in log file Recorded when waveform data received, setting data sent or received, or trigger received

Registered connections

Maximum saved	Limited only by main memory
Details stored	Name, folder for saving, dialing code, telephone number, recorder type, waveform range, etc

Trigger input function

Communication means	One modem only
Notification means	Dialog box, plus selectable .wav file audible warning
Waveform data receipt	Yes
Setting file receipt	No

Setting file editing function

File format	File format saved by MEMORY HiCORDER (file extension .set)
File contents	Settings allowed by MEMORY HiCORDER
New setting file creation	Yes
Setting file editing	Yes

Waveform display function

Displayed waveforms	All channels (formats displayed: .mem, .rec, .rms)
ASCII conversion	MEMORY HiCORDER waveform data conversion to CSV format; saving all or part of data
Scroll functions	Yes
Cursor function	No

Chapter 3 Setup and Operation of the 9332 WAVE COMMUNICATOR

3.1 Required System Configuration

Using WAVE COMMUNICATOR requires the following hardware and software.

- Personal computer system — CPU Pentium, at least 90 MHz
At least 32 MB of RAM
At least 5 MB of free hard disk space
- Operating system — Microsoft Windows 95, Windows 98, Windows NT4.0, Windows 2000, Windows XP (English)
- Mouse or suitable pointing device
- CD-ROM drive
- MEMORY HiCORDER unit — 8807 or 8808, V2.00 or later

❑ Using a modem
- A modem that will operate under the operating system used
- A telephone circuit without special features such as "call waiting" which can interrupt the communications function.

❑ Using a direct connection
- A computer with an appropriate serial port
- A direct connection to the 8807 or 8808 requires the optional 9612 RS-232C CABLE.

3.2 CD-R files

The files on the supplied CD-R are arranged in the following folders.

Folder name	Contents
Japanese	WaveCommunicator setup for Japanese version
English	WaveCommunicator setup for English version
8807	Upgrade files for 8807/8808

3.3 Installation

Use the following procedure to install the software (English).

1. Shut down all currently running applications.
2. Insert the supplied CD-R disc into the CD-ROM drive.
3. Execute the setup file on the CD-R.
   Supposing the drive letter for the CD-ROM drive is R (if another letter, substitute before the colon) then in the Windows Start menu, select Run, and enter R:\english\setup.exe, then click **OK**.
4. The 9332 installer start: follow the directions on the screen to complete the installation.

NOTE

- If other applications are running, the installation may not proceed correctly. Be sure to close all other applications before beginning the installation. In particular, if any virus protection software is running it may prevent installation, and should be shut down before beginning.
- If the 9332 is already installed, first uninstall the existing version before installing the new one.

3.4 Uninstallation

Use the following procedure to uninstall the software.

1. Select **Start - Settings - Control Panel - Add/Remove Programs**.
2. Select **9332 WAVE COMMUNICATOR**.
3. This runs the uninstaller, and removes the software.

3.5 Starting WAVE COMMUNICATOR

1. Select **Start - Programs - HIOKI - 9332 WAVE COMMUNICATOR** in sequence.
2. The main window, with the **9332 WAVE COMMUNICATOR** title bar appears.

NOTE

- If the "**Large Fonts**" screen setting is made, some of the captions in the WAVE COMMUNICATOR windows may not be visible properly. In this case, select **Control Panel - Display - Settings**, then select "**Small Fonts**."
- If the personal computer has a power-saving function, WAVE COMMUNICATOR may not operate correctly. Ensure that any power-saving function is disabled.

3.6 Exiting WAVE COMMUNICATOR

1. In the main window, select **File - Exit**.
2. If a warming message appears, click **Yes** to save the 9332 settings before exiting, **No** to exit without saving, or **Cancel** to return to the program. Once you exit the program, all data about the connection is lost; be sure to save the data before exiting.
3. This terminates the program.

3.7 Modem Installation

To use WAVE COMMUNICATOR through a modem connection requires modem installation. For more details, refer to the documentation supplied with your modem. If the modem is not installed correctly, the program may not operate normally.

Flow control

For flow control between the modem and the personal computer, avoid software flow control (XON/XOFF). Set the flow control as follows.

1. Select **Start - Settings - Control Panel - Modems.**
2. In **Modems Properties**, click the modem to be used.
3. Click **Properties**.
4. In the **Connection** tab, click **Details**.
5. Select hardware (RTS/CTS). If your modem does not support hardware flow control, do not use flow control at all.

Modem initialization

Depending on the modem used or the telephone circuit, WAVE COMMUNICATOR may not operate properly. In this case, try setting an appropriate modem initialization string. Use the following procedure.

1. Select **Start - Settings - Control Panel - Modems**.
2. Click the modem being used in **Modems Properties**.
3. Click **Properties**.
4. In **Connection - Advanced - Extra settings**, enter the AT command for initializing the modem. For details of AT commands, refer to the documentation for the modem.

❑ Using internal telephone circuits

The modem may not be able to detect dial tone or busy tone. Set it not to wait for dial tone.
AT command: X1 or X3

❑ If the line is cut off while the modem is operating

If there is a modem incompatibility problem, the carrier detect may be lost. In this case, set carrier detect to be permanently on.
AT command: &C0
The AT commands may vary from modem to modem. For details, refer to the modem documentation.

3.8 Upgrading the Memory HiCorder

To use the 9332 WaveCommunicator requires the Memory HiCorder software to have fax/modem support. First check the Memory HiCorder software version, which appears on the title screen when the unit is powered on.

❑ Version for fax/modem support: 8807/8808 Version 2.00 or later

If the currently installed version does not have fax/modem support, an upgrade is necessary.

Upgrading

1. Have ready a PC card (SRAM card or flash ATA card) which can be used with the Memory HiCorder: check the Memory HiCorder manual for a list of cards which are known to operate. Also make sure that the PC card can be written on your computer. The PC card must have a free capacity of at least 1.6 MB.

2. Insert the supplied CD-R into the CD-ROM drive.

3. Copy the upgrade files on the CD-R (file extension .PRG) to the PC card. The upgrade files are in separate folders for each Memory HiCorder model. For example, the 8807 folder includes upgrade files for models 8807/8808. Within the folder, for example, the file 8807V200.PRG is the upgrade file for the 8807/8808 version 2.00. If the Memory HiCorder version is already later than this, no upgrade is required; be careful not to install an older version in error.

4. Get the Memory HiCorder ready. Make sure the unit has a reliable power supply, if possible using an uninterruptible power supply. Note that if the power should fail during the upgrade process, it is necessary to send the unit for repair.

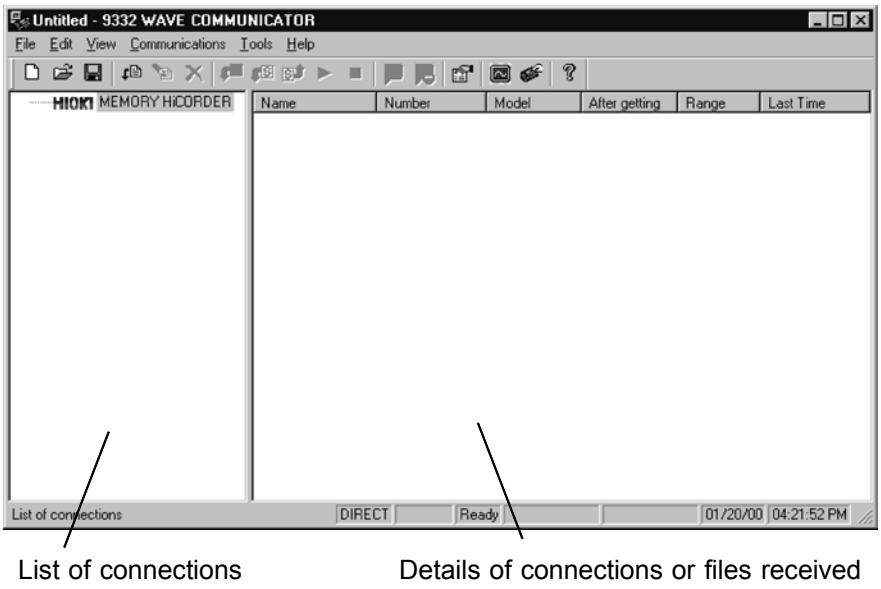
5. Carry out the upgrade. Insert the PC card in the Memory HiCorder, and display the File screen. On the File screen, the upgrade file appears on the PC card. Select the upgrade file, and execute Load. This starts the upgrade process, which takes about three minutes. Leave the unit alone until the upgrade process completes, whereupon it will restart automatically. This completes the upgrade.

NOTE Be very careful not to disconnect the power supply during the upgrade. If the power should fail during the upgrade process, it is necessary to send the unit for repair.

Chapter 4 Using WAVE COMMUNICATOR

4.1 Main Window

Starting WAVE COMMUNICATOR displays the main window.

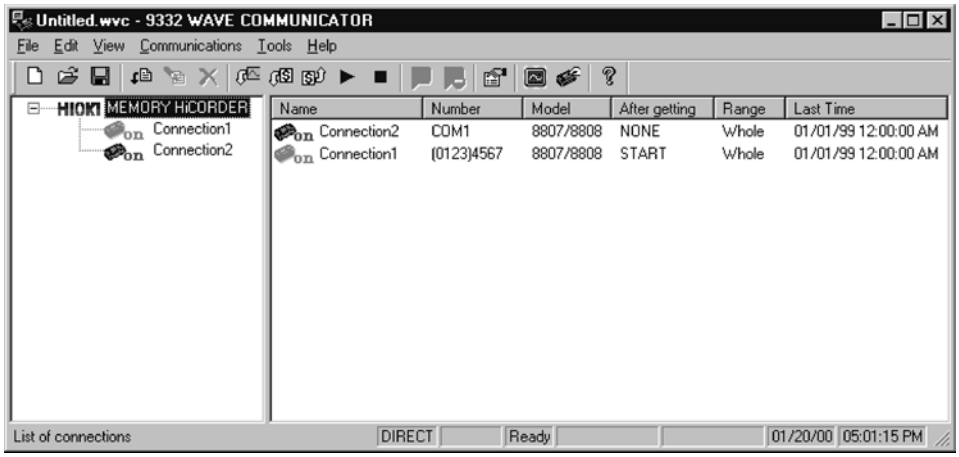


The main window provides the following functions.

- Registering multiple connections, and saving and loading the list.
- Communications functions can use a modem or RS-232C interface. (Getting waveform data, Getting and sending setting files, Trigger input function, Communications settings)
- Start waveform viewer
- Start Settings Editor
- The right pane of the main window shows details of the connections or received files.

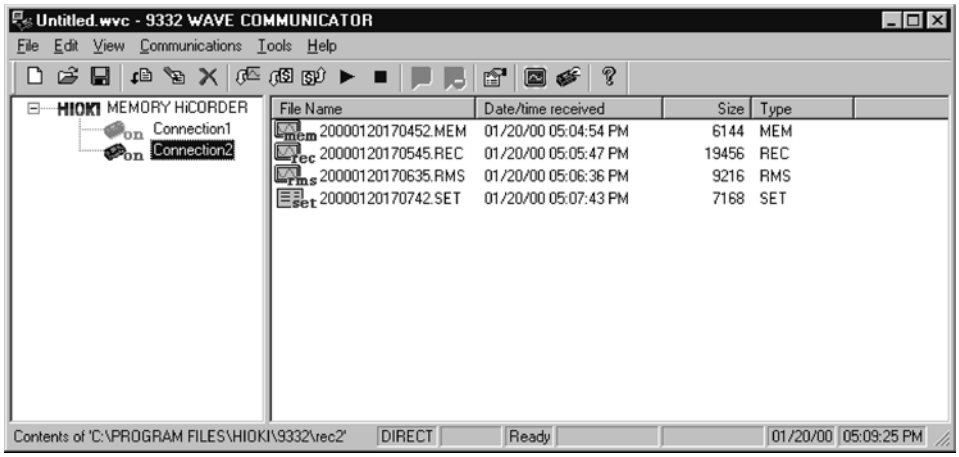
(1) Displaying details of connections

Click **MEMORY HiCORDER** in the connections.



(2) Displaying received files

Click the connection in the list.



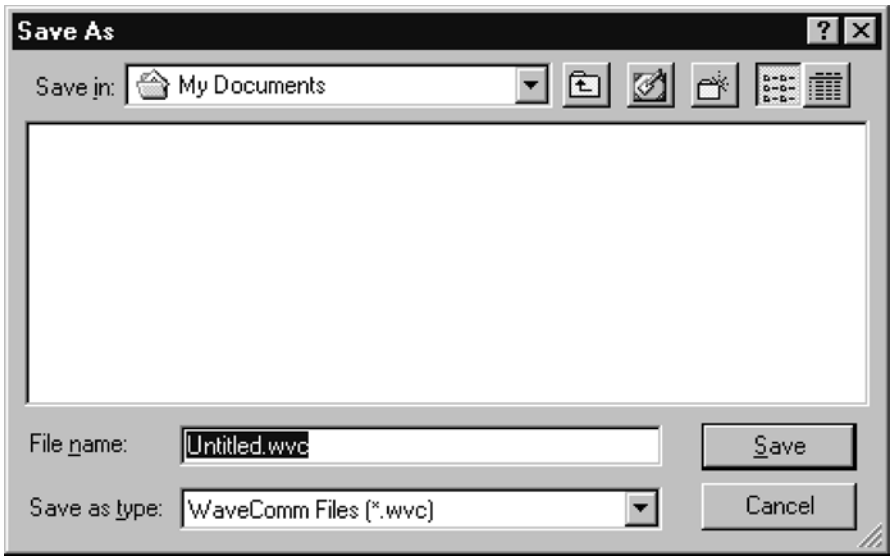
4.2 Saving and Loading Connections and Settings

You can save and load the connections and their communications settings. Before carrying out a communications task, you must either create new connection settings, or load the settings from a file.

WAVE COMMUNICATOR saves the connections and their the settings in a file with the file extension .wvc.

(1) Saving the connections and communications settings

1. Select **File - Save as...**
2. The **Save as...** dialog box appears. Enter the file name to save, and click **Save**.



(2) Overwriting the connections and communications settings

1. Select **File - Save**.
2. Once you have saved with a specified file name, this function overwrites the file with the current settings.

(3) Loading the connections and communications settings

1. Select **File - Open**.
2. The **Open** dialog box appears: select the file to load, and click **Open**.

(4) Creating a new connections

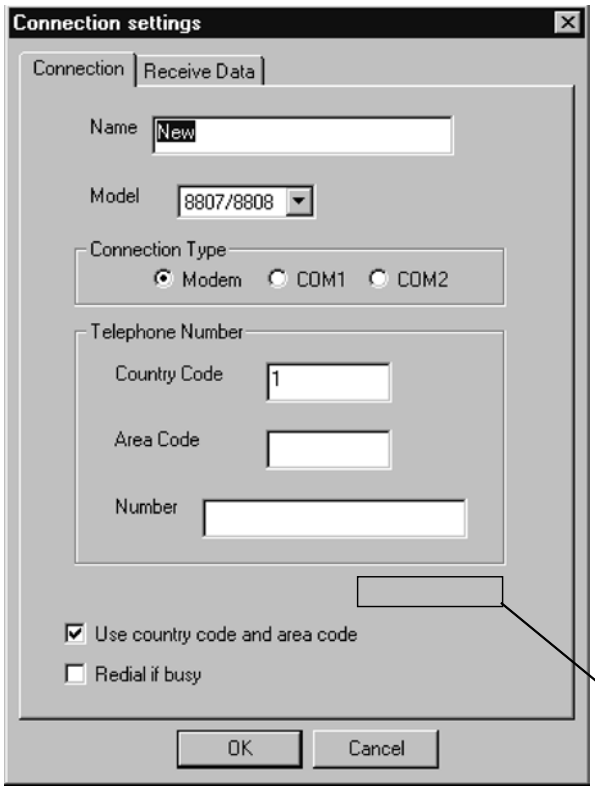
1. Select **File - New**.
2. The current connections disappears, and the communications settings revert to their default settings. Be warned!

4.3 Creating the Settings for a Connection

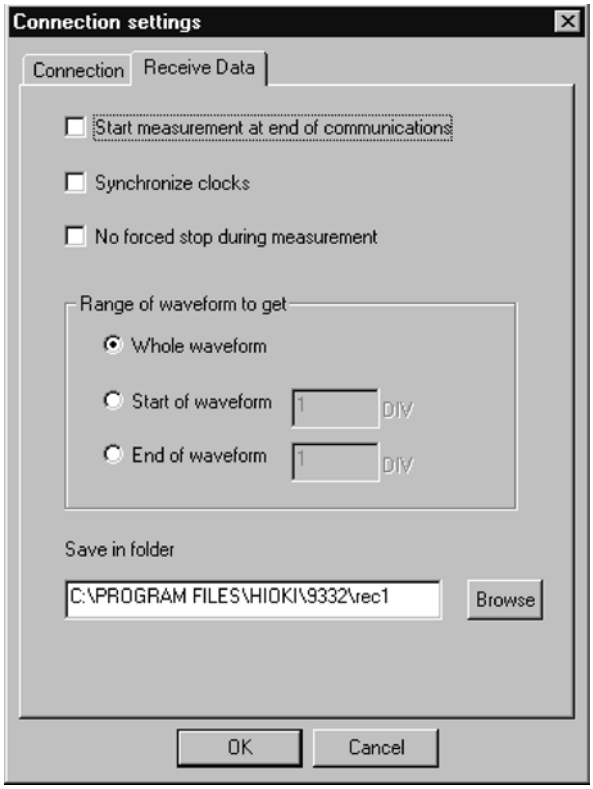
In order to carry out communications, you must first create the settings required for the device to which you want to connected.
You can specify the settings independently for each connection.

Adding a new connection

1. Select **Edit - NewConnection**.
   You can also right-click the mouse on the connections and select from the context menu.
2. The **Connection Settings** dialog box appears. Make the appropriate settings.



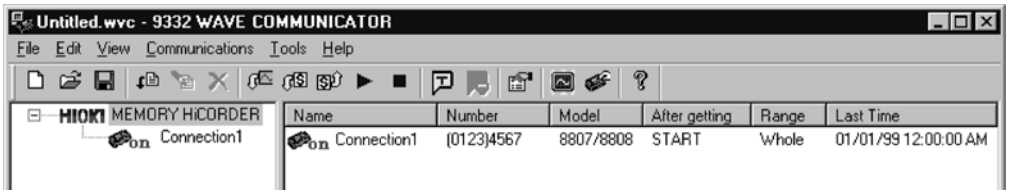
When amending the settings, this shows the actual number the modem will use for dialing.



Name	This is the name that appears in the connections.
Model	Select the model of MEMORY HiCORDER.
Connection Type	Select the type of connection used for this device. **Modem**: Modem communications over a telephone line **COM1**: Direct connection to serial port COM 1 **COM2**: Direct connection to serial port COM 2
Telephone Number	If you selected **Modem for Connection Type**, enter the country code, area code, and number. • You can include a dialing control character (the parameter of the AT D command). For details of the D command parameters, refer to the documentation supplied with your modem. • Once you have created the entry for a connection, when you come to amend the entry, underneath the telephone number entry box appears the actual number dialed by the modem. Use this as a reference when entering the telephone number. • Country and area settings made in the Control - Modem - Dialup Properties are taken as the default country code.
Use country code and area code	Check this box to enable the country code and area code. If you leave this unchecked, only the number in **Telephone number** is valid.
Redial if busy	Check this to redial if the first attempt fails. (Maximum two attempts.)
Start measurement at end of communications	If the MEMORY HiCORDER is currently measuring when the connection is made, this forcibly stops measurement. Check this box to resume measurement after getting the measurement data.
Synchronize clocks	This synchronizes the MEMORY HiCORDER clock to the clock in the personal computer. The correction is made when you get waveform data or transfer a setting file.

Save in folder	Specify the folder in which you want to save waveform data from the MEMORY HiCORDER. By default, a folder named "rec+<number>" is created in the folder containing the WAVE COMMUNICATOR executable file. Click the **Browse** button to display the **Browse Folders** dialog box, where you can select a folder, then click **OK**. If the specified folder does not already exist, it is created automatically.
Range of waveform to get	Specify the range of waveform data to get. You can select only a part of the waveform data recorded on the MEMORY HiCORDER. Getting only part of the waveform data will reduce the communications time. If you select other than **Whole waveform**, specify the number of divisions. **Whole waveform**: Get all of the recorded waveform data. **Start of waveform**: Get the specified number of divisions of waveform data from the start. **End of waveform**: Get the specified number of divisions of waveform data from the end.
No forced stop during measurement	Normally if the MEMORY HiCORDER is measuring when a communications task starts, whether getting waveform data or transferring a setting file. To prevent the MEMORY HiCORDER from being forcibly stopped in this way, check this box. In this case, if the MEMORY HiCORDER is measuring, no communications tasks will take place.

3. After making all the settings, click **OK**.
   This registers the new connection, and displays its name in the connections.



4. Double-click on a connection or press the space bar to toggle communications on and off.
   When a connection shows "off" no communications take place with it.

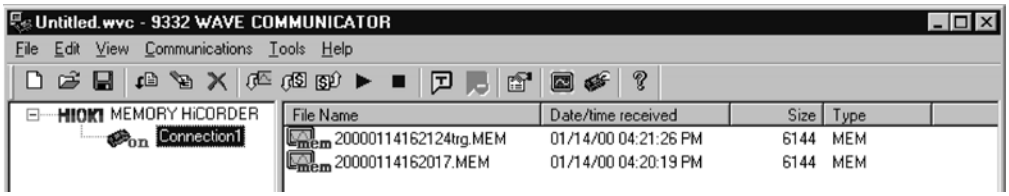
on : communications enabled

off : no communications

Modifying a Connection

You can change the settings for a device in the connections.

1. In the connections, click the device whose settings you want to modify, highlighting it.



Click on device

2. Select **Edit - Modify**.
   The **Modify Connection Settings** dialog box appears. Use the same operations as in the **Add Connection** dialog box to modify the settings.
   You can also right-click the mouse on the connections and select from the context menu.

Deleting a device

You can delete a device from the connections.

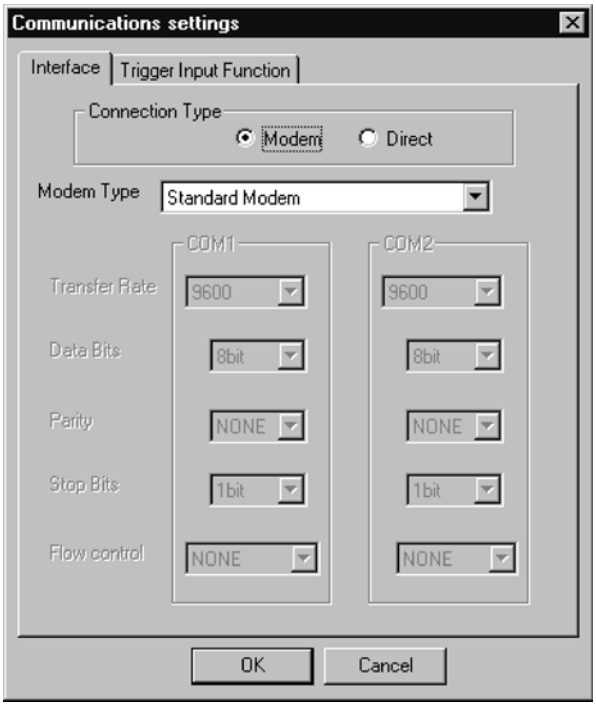
1. In the connections, click **Edit - Delete**.

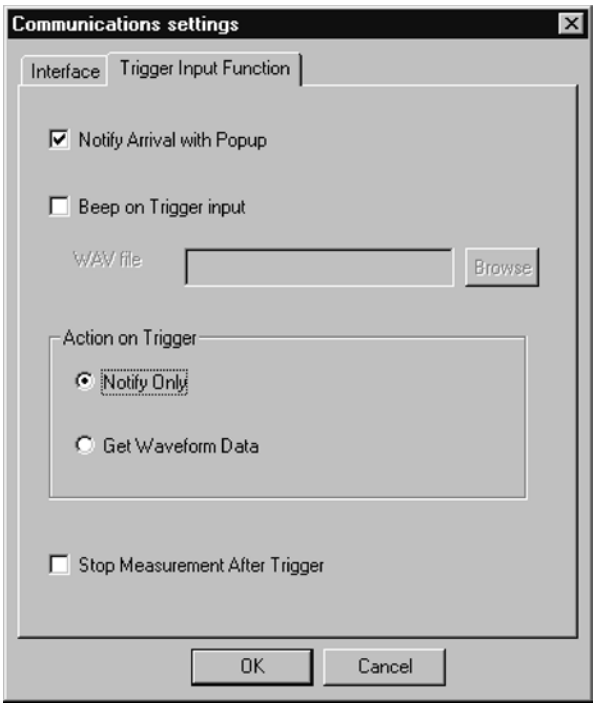
2. A popup dialog asks you to confirm deleting the device. To do so, click **OK**.
   You can also right-click the mouse on the connections and select from the context menu.

4.4 Communications Settings

These settings control communications and the trigger input function. The communications settings are required, before you can carry out any communications.

1. Select **Communications - Settings**.
2. The **Communications Settings** dialog box appears.





3. Set the items as required.

Interface

This tab includes settings relating to the connection for communications.

Connection Type	Select **Modem** or **Direct**. Note that WAVE COMMUNICATOR cannot operate with modem and direct connections simultaneously. If you set the connection type to **Modem**, then a device with a setting of COM1 or COM2 is ignored. Similarly, when you set the connection type to **Direct**, a device with the **Modem** setting is ignored.
Modem Type	If you set **Connection Type to Modem**, select the type of modem. If there is more than one modem installed on the computer, you can only select one modem here.
Transfer Rate, Data Bits, Parity, Stop Bits, Flow control	If you set **Connection Type to Direct**, make these settings. They must be the same as on the MEMORY HiCORDER unit.

Trigger input function

Set the operation to carry out when a trigger arrives from the MEMORY HiCORDER.

Notify Arrival with Popup	When a trigger from the MEMORY HiCORDER arrives, this displays a popup message. If you do not check this box, the popup does not appear on the screen.
Beep on Trigger Input	When a trigger from the MEMORY HiCORDER arrives, this plays the sound from a WAV file. To use this function, the sound source must be installed.
WAV File	When **Beep on Trigger Input** is checked, this specifies the WAV file (file extension .wav) to be used as the sound source. Click the **Browse** button to select from the **Select File** dialog box.
Action on Trigger	This specifies whether or not to get waveform data from the MEMORY HiCORDER when a trigger arrives. If you select **Notify Only**, then the notification is given without getting waveform data, and then the connection terminates. If you select **Get Waveform Data**, then the waveform data is downloaded from the MEMORY HiCORDER, and then the connection is terminated.
Stop Measurement After Trigger	When the MEMORY HiCORDER trigger setting is REPEAT or AUTO, the MEMORY HiCORDER normally restarts measurement after the trigger. However, if this box is checked, the MEMORY HiCORDER does not restart measurement. Normally leave this unchecked. For more details, see "Action on Trigger" in Section 4.10, "Trigger Function on MEMORY HiCORDER Trigger or Measurement Completion."

4. Click **OK** to update the settings.
   The **Connection Type setting** appears in the status bar.

   When Modem is selected

   When Direct is selected

4.5 Getting Waveform Data

This function transfers waveform data recorded on the MEMORY HiCORDER to the computer.

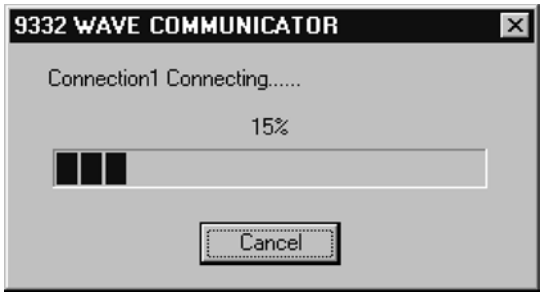
- The waveform data which can be transferred has the same file formats as those saved on the MEMORY HiCORDER.

Memory recorder function	file extension .mem
Recorder function	file extension .rec
Effective value recorder function	file extension .rms

- Waveform data is transferred from all connections in the list. If you do not need to collect data from a device, double-click the device in the list, and change the communications setting to "off".
- If you have **Modem** selected in the communications settings, then any connections set to **COM1** or **COM2** will be ignored when transferring data. Similarly, if the communications setting is **Direct**, no data will be transferred from connections set to **Modem**.
- If the MEMORY HiCORDER is in the process of measurement, this stops automatically to transfer data. To restart measurement after transferring data, change the settings in the connections, by checking the "**Start measurement at end of communications**" check box.

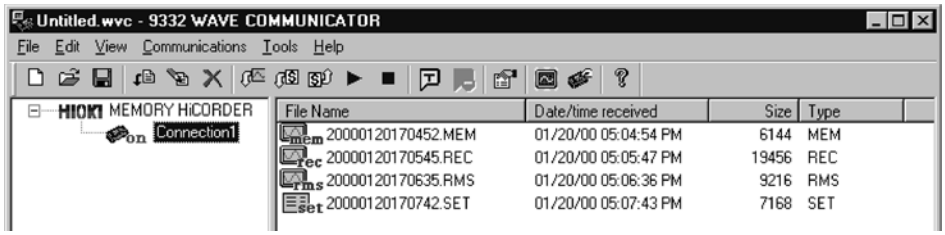
Transferring the waveform data

1. Select **Communications - Get Waveform**.
2. You will be prompted, asking whether it is OK to stop measurement on the MEMORY HiCORDER. If so, click **OK**. If there is a connection which you do not want to stop, double-click on the device name, and change the communications setting to "off".
3. The communications operation starts.
4. If communications are interrupted, click **Cancel**. In this case, the communications with the current connection are abandoned, and communications with the next connection starts.



5. If no MEMORY HiCORDER is found on a connection, or if communications error occurs, then a dialog box appears to indicate the communications problem. Click **OK** to start the next connection.
6. When data has been obtained from all of the connections, a dialog box for ending
communications appears. Click **OK** to end communications.

7. The transferred waveform data is saved in the specified folders, one for each connection. Click on a connection in the list to display the files obtained from the device in the right hand pane of the main window.



8. You can display images of the waveform data received. For more details, see Chapter 5, "Displaying Waveforms."

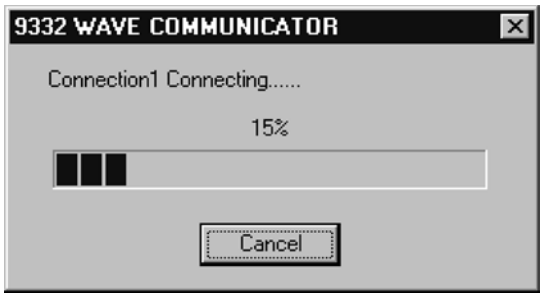
4.6 Getting Setting Files

This function transfers setting files from the MEMORY HiCORDER to the computer.

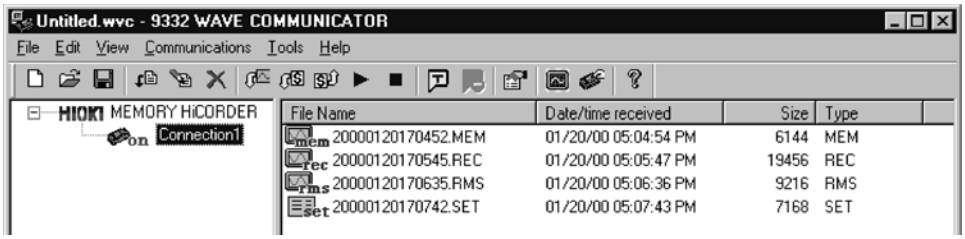
- The setting data is transferred in the same format as the file saved on the MEMORY HiCORDER. By copying a setting files to a PC card, you can read it directly into a MEMORY HiCORDER. (File extension .set)
- Setting files are transferred from all connections in the list. If you do not need to get the setting file from a device, double-click the device in the list, and change the communications setting to "off".
- If you have **Modem** selected in the communications settings, then any connections set to **COM1** or **COM2** will be ignored when transferring data. Similarly, if the communications setting is **Direct**, no data will be transferred from connections set to **Modem**.
- You can transfer setting files even if the MEMORY HiCORDER is carrying out measurement, without it stopping. The setting of the "**Start measurement at end of communications**" check box is ignored.

Getting the setting files

1. Select **Communications - Settings File - Get**.
2. You will be prompted, asking whether it is **OK** to start communications. If so, click **OK**.
3. The communications operation starts.
4. If communications are interrupted, click **Cancel**. In this case, the communications with the current connection are abandoned, and communications with the next connection starts.



5. If no MEMORY HiCORDER is found on a connection, or if communications error occurs, then a dialog box appears to indicate the communications problem. Click **OK** to start the next connection.
6. When the setting files have been obtained from all of the connections, a dialog box for ending communications appears. Click **OK** to end communications.
7. The transferred setting files are saved in the specified folders, one for each connection. Click on a connection in the list to display the file obtained from a device in the right hand pane of the main window.



8. Once you have obtained a setting file, you can modify it in the Settings Editor. For more details, see Chapter 6, "Creating and Modifying Setting Files."

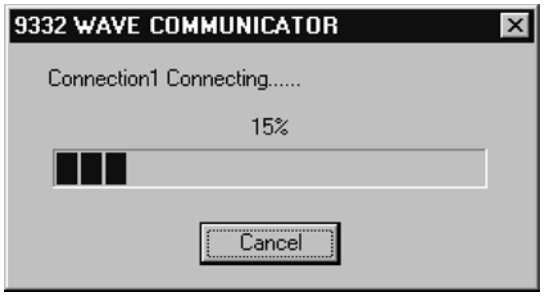
4.7 Sending Setting Files

This function sends a setting file to the MEMORY HiCORDER units, changing their settings.

- The setting data is transferred in the same format as the file saved on the MEMORY HiCORDER. After modifying a setting file from the MEMORY HiCORDER using the Settings Editor, you can return it to the MEMORY HiCORDER, to update the settings . (File extension .set)
- You can also send a setting file newly created with the Settings Editor. For more details of creating setting files, see Chapter 6, "Creating and Modifying Setting Files."
- The same setting file is transferred to all connections in the list. If you do not need to send the setting file to a device, double-click the device in the list, and change the communications setting to "off".
- If you have **Modem** selected in the communications settings, then any connections set to **COM1** or **COM2** will be ignored when transferring data. Similarly, if the communications setting is **Direct**, no data will be transferred to connections set to **Modem**.
- If the MEMORY HiCORDER is in the process of measurement, this is stopped automatically before sending the setting file. To restart measurement after transferring the setting file, change the settings in the connections, by checking the "**Start measurement at end of communications**" check box.

Transferring the setting file

1. Select **Communications - Settings File - Send**.
2. You will be prompted, asking whether it is OK to stop measurement on the MEMORY HiCORDER. If so, click **OK**. If there is a connection which you do not want to stop, click **Cancel**, and change the communications setting to "off".
3. The **Select File** dialog box appears. Select the setting file (file extension: .set) and click **Open**.
4. The communications operation starts.



5. If communications are interrupted, click **Cancel**. In this case, the communications with the current connection are abandoned, and communications with the next connection starts.
6. If no MEMORY HiCORDER is found on a connection, or if communications error occurs, then a dialog box appears to indicate the communications problem. Click **OK** to start the next connection.
7. When the setting file has been sent to all of the connections, a dialog box for ending communications appears. Click **OK** to end communications.

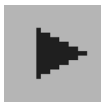
By right-clicking on a setting file in the list of received files, and selecting **Send Settings to Recorder**, you can transmit the setting file. In this case the **Select File dialog** box does not appear.

4.8 Starting Measurement on the MEMORY HiCORDER

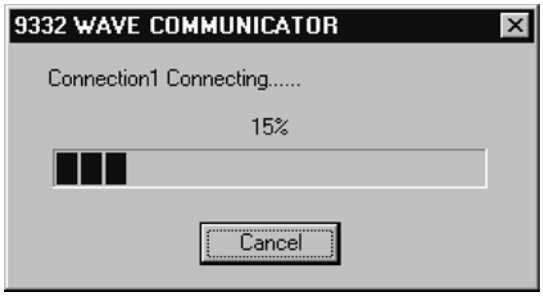
This starts measurement on the MEMORY HiCORDER.

- This starts measurement on all connections in the list. If you do not need to start measurement on a device, double-click the device in the list, and change the communications setting to "off".
- If you have **Modem** selected in the communications settings, then any connections set to **COM1** or **COM2** will be ignored when starting measurement. Similarly, if the communications setting is **Direct**, measurement will not start on connections set to **Modem**.
- If a MEMORY HiCORDER is already carrying out measurement, it continues without pause.

Starting measurement



1. Select **Communications - Abort Measurement**.
2. You will be prompted, asking whether it is OK to start communications. If so, click **OK**.
3. The communications operation starts.
4. If communications are interrupted, click **Cancel**. In this case, the communications with the current connection are abandoned, and communications with the next connection starts.



5. If no MEMORY HiCORDER is found on a connection, or if communications error occurs, then a dialog box appears to indicate the communications problem. Click **OK** to start the next connection.
6. When measurement has been started on all of the connections, a dialog box for ending communications appears. Click **OK** to end communications.

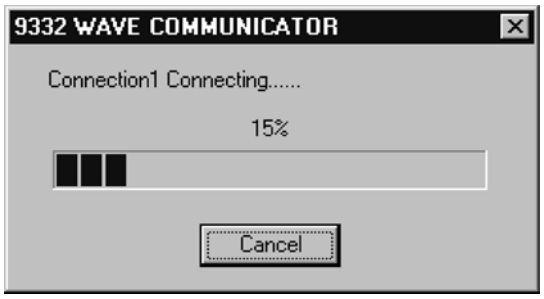
4.9 Stopping Measurement on the MEMORY HiCORDER

This stops MEMORY HiCORDER measurement.

- This stops measurement on all connections in the list. If you do not need to stop measurement on a device, double-click the device in the list, and change the communications setting to "off".
- If you have **Modem** selected in the communications settings, then any connections set to **COM1** or **COM2** will be ignored when stopping measurement. Similarly, if the communications setting is **Direct**, measurement will not stop on connections set to **Modem**.

Stopping measurement

1. Select **Communications - Abort Measurement**.
2. You will be prompted, asking whether it is OK to start communications. If so, click **OK**.
3. The communications operation starts.
4. If communications are interrupted, click **Cancel**. In this case, the communications with the current connection are abandoned, and communications with the next connection starts.



5. If no MEMORY HiCORDER is found on a connection, or if communications error occurs, then a dialog box appears to indicate the communications problem. Click **OK** to start the next connection.
6. When measurement has been stopped on all of the connections, a dialog box for ending communications appears. Click **OK** to end communications.

4.10 Trigger Function on MEMORY HiCORDER Trigger or Measurement Completion

When a trigger is generated on the MEMORY HiCORDER, or waveform capture completes, a signal can be received by WAVE COMMUNICATOR. At the end of waveform capture, the waveform data is transferred at the same time as the signal.

- The trigger input function is only possible with a modem connection, so you must set the communications settings for the device used to **Modem**. With a direct connection, the trigger will not be received from the MEMORY HiCORDER.
- While waiting for a trigger signal, it is not possible to carry out other communications tasks, such as receiving data. It is necessary to suspend the trigger input function before carrying out a communications task.

Setting trigger input identifiers

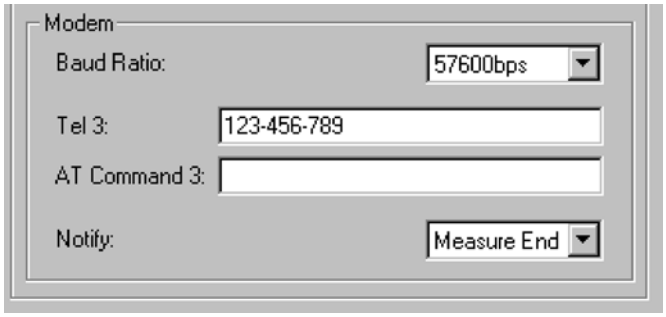
When a trigger signal is received, this function checks whether the signal came from one of the connections in the list with a trigger input identifier. If the connection has an identifier set, then waveform data is received and saved to the specified folder. If the signal comes from a connection with no identifier set, then the waveform data is not received.
Use the following procedure to set the trigger input identifier.

1. Use the procedure in Section 4.3, "Creating the Settings for a Connection." This simultaneously sets the identifier for each of the connections. Set Connection Type to Modem.
2. Carry out one of the following four communications tasks. Make sure that the device for which you want the trigger to be notified has communications enabled.
   Section 4.5 "Getting Waveform Data"
   Section 4.6 "Getting Setting Files"
   Section 4.7 "Sending Setting Files"
   Section 4.8 "Starting Measurement on the MEMORY HiCORDER"
   Section 4.9 "Stopping Measurement on the MEMORY HiCORDER"
3. Carrying out this communications task automatically sends the identifier for identifying each connection to the MEMORY HiCORDERs, and completes the setting of trigger input identifiers.
   Always carry out this operation before going into trigger standby, if there is any change in the connections.
   The identifiers are not displayed on the personal computer or MEMORY HiCORDER.
4. Saving the connections and settings also saves the identifiers. Once an identifier is set on a MEMORY HiCORDER, it remains until the MEMORY HiCORDER is reset. (It is maintained if the MEMORY HiCORDER is powered off in the normal way.)

Making the MEMORY HiCORDER Trigger Notification Settings

To use the trigger notification function on a connected MEMORY HiCORDER, you must first make the **Notify** settings on the MEMORY HiCORDER. For details of how to do this on the MEMORY HiCORDER itself, refer to the Operation Manual. This section describes how to make the settings using the communications function.

1. In the Settings Editor, create the setting file. For more details, see Chapter 6, "Creating and Modifying Setting Files."
   In the Fax/Modem tab, make the following settings.



Tel 3	This is the number to dial when a trigger occurs (the telephone number of the computer on which WAVE COMMUNICATOR is installed).
AT command 3	The modem initialization string for making a call. Enter if required.
Notify	Select **Trigger** or **Measurement End**. **Trigger**: Notify when a trigger occurs. **Measurement End**: Notify when waveform capture is completed. Transfer the waveform data at the same time.

   In the **Trigger** tab, if you set **Trigger mode** to REPEAT or AUTO, then measurement resumes after sending trigger notification.
2. Send the new setting file, using the procedure in Section 4.7, "Sending Setting Files."
   If you check the Start measurement at end of communications box, after sending the setting file, the MEMORY HiCORDER starts waveform capture.
3. This completes the settings. When the trigger or measurement end occurs on the MEMORY HiCORDER, it will make the telephone call.

Waiting for trigger input

To accept a call from the MEMORY HiCORDER, WAVE COMMUNICATOR must be in the Trigger Standby mode. Use the following procedure to select **Trigger Standby**.

1. Check that in the communications settings the **Connection Type** is set to **Modem**.

2. Select **Communications - Trigger - Standby**.
3. This puts WAVE COMMUNICATOR on standby for trigger input; "**Trigger Standby**" appears In the status bar. While on standby for trigger input, no other communications tasks can be carried out.

If the modem is powered off while on standby, then the standby state is invalidated. In this case, first end standby, then return to standby mode.

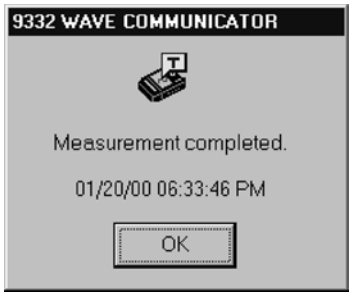
Ending trigger input standby

1. Select **Communications - Trigger - Abort**.
2. This ends the trigger input standby. The status bar shows "**Ready**."

Action on trigger input

When a trigger signal arrives, the follow actions occur automatically.

1. When the line rings, a connection is established automatically.
2. In the communications settings, if **Notify Arrival with Popup** is checked, a dialog box appears.



3. In the communications settings, if Beep on Trigger Input is checked, the specified sound file is played.
4. In the communications settings, if Action on Trigger is set to Get Waveform Data, then the waveform data captured by the end of measurement is transferred. The specified part of the waveform data is transferred, according to the setting. The transferred waveform data is saved in the specified folder for each Connection. Click on a connection in the list to display the files obtained from the device in the right hand pane of the main window.

- If the MEMORY HiCORDER notification setting is Trigger, then no waveform data is transferred.
- Even if the trigger signal comes from a connection for which the communications is "off," the waveform data is still transferred.

5. In the settings for a connection, if Start measurement at end of communications is checked, then the MEMORY HiCORDER starts measurement. If the MEMORY HiCORDER trigger mode is REPEAT or AUTO, it goes into the trigger waiting state, regardless of the Start measurement at end of communications setting.
6. When the data transfer ends, WAVE COMMUNICATOR returns to the trigger standby state.

- If the frequency of notifications from the MEMORY HiCORDER is high, then because of the busy state on the MEMORY HiCORDER, it may be difficult for WAVE COMMUNICATOR to make the connection. In this case, in the communications settings it is recommended to check Stop measurement after trigger. When this is checked, when the next trigger arrives measurement on the connection is forcibly stopped.

4.11 Communications Log

All communications carried out by WAVE COMMUNICATOR are recorded in a log file. You can look at this file with Notepad or any other text editor.

(1) Name of the log file

A folder logfiles is created in the folder containing the WAVE COMMUNICATOR executable file. The log files are created in this folder. The file name of the log file changes every month.
E.g. The log file for July 1999 has the name: 1999_07.log

(2) Contents of log file

The format is as follows.
Date - time - operation - device - file name

Date	Date of the communications operation
Time	Time of the communications operation
Operation	Communications operation Getting waveform data or setting file: Receive Sending setting file: Transmit Trigger signal (trigger): Arrive_Trig Trigger signal (measurement end): Arrive_Store_End Start trigger standby: Start_TrigWait Stop trigger standby: Stop_TrigWait MEMORY HiCORDER start measurement: Start_Store MEMORY HiCORDER stop measurement: Stop_Store
Device	Name of the device communicated with For a trigger input, if not one of the connections, this is shown as "Unknown."
File name	Name of file transferred (full path name)

Chapter 5 Displaying Waveforms

5.1 Displaying Waveforms

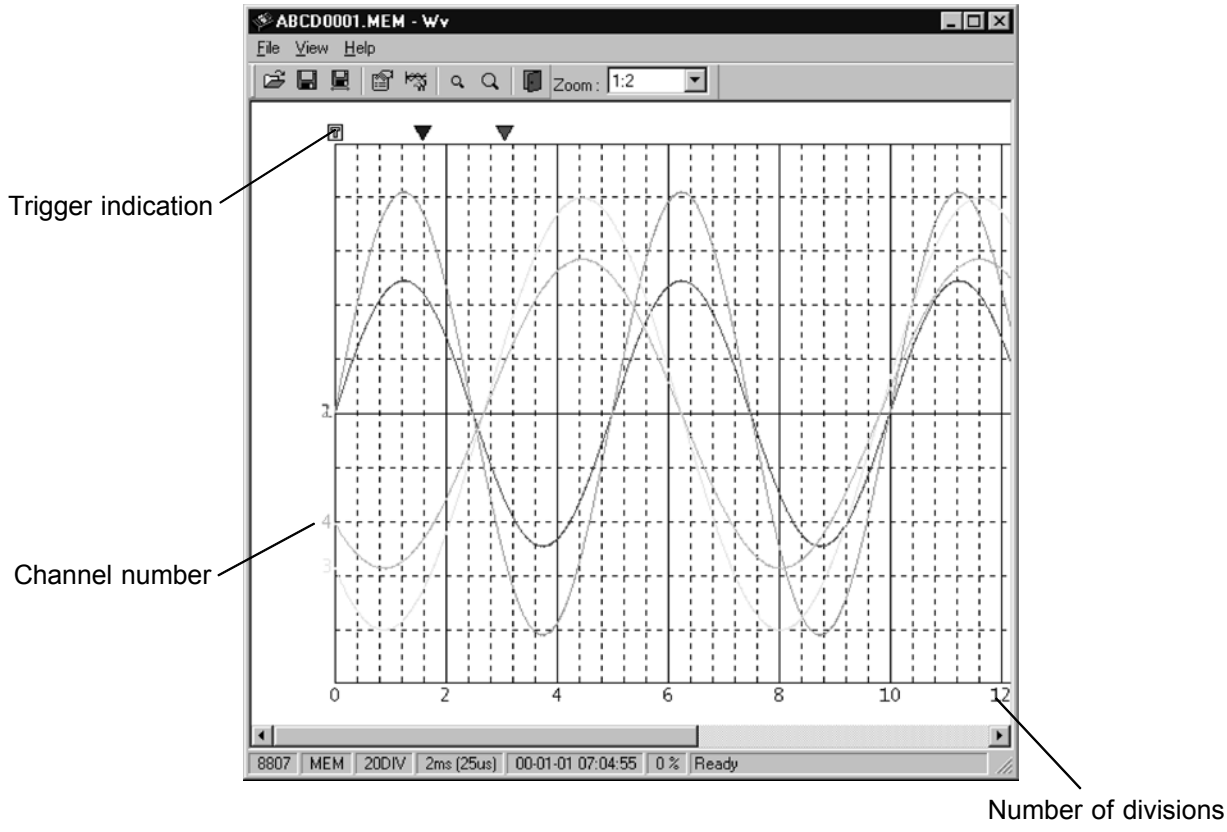
This function displays transferred waveform data graphically.

Starting the waveform viewer

1. Click on the device in the list of connections for which you want to display a waveform.
2. From the list of files, click the waveform file to display.
3. Select **Tools - Waveform Viewer**.
   If you carry out this operation without selecting a waveform file, the waveform viewer starts without reading in a waveform. Alternatively, you can double-click on a waveform file to display the waveform.
4. The waveform viewer starts, with "Wv" in the title bar.

5.2 Using the Waveform Viewer

This section describes how to use the waveform viewer Wv.



Opening a waveform file

Select **File - Open**.

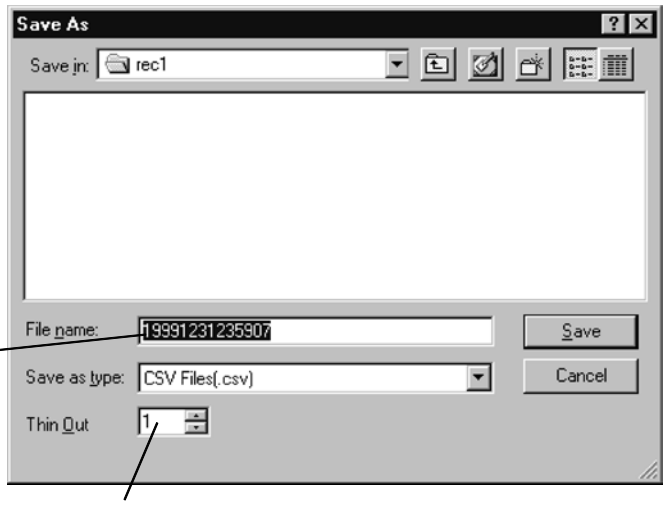
The **Open** dialog box appears: select a waveform file, and click **Open**. (file extensions: .mem, .rec, .rms)

Converting waveform data to CSV format

By converting transferred waveform data, saving it in CSV format, you can read it into a spreadsheet program such as Excel*. Only the displayed channel is converted.
*: Excel is a registered trademark of Microsoft Corporation.

Converting and saving the whole waveform data

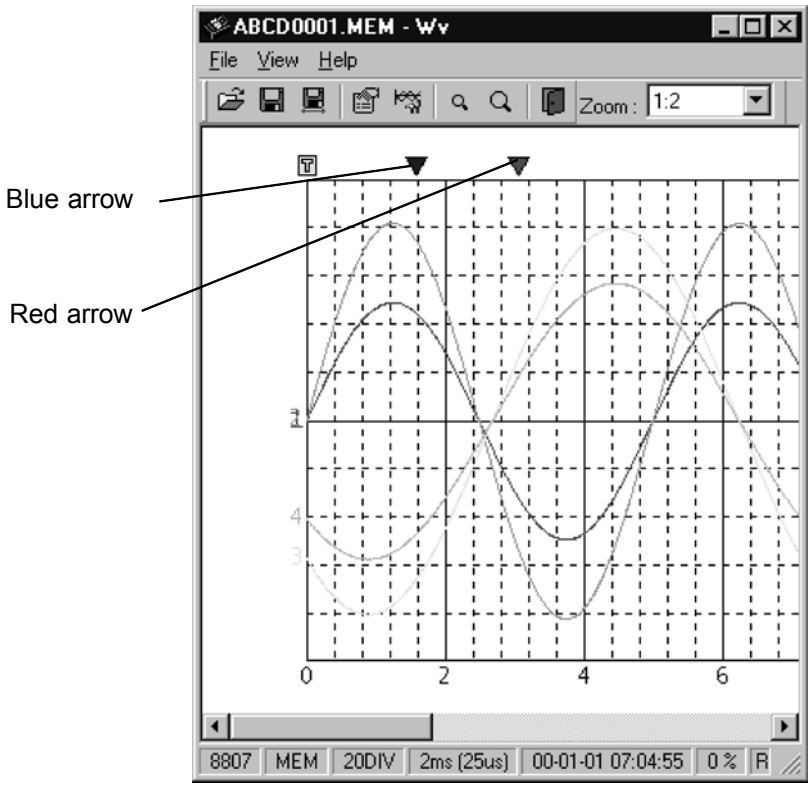
1. Select **File - Save All**.
   A dialog box appears, for selecting the file name.



2. Set the file name and sample thinning-out frequency, and click **OK**.

Converting and saving a specified interval

1. Drag the red and blue arrows, to specify the interval to be saved.
   Hold down the **Shift** key and left-click in the viewer to move the blue arrow.
   Hold down the **Ctrl** key and left-click in the viewer to move the red arrow.



2. Select **File - Save Between Cursors**.
3. **A** dialog box appears.
   Set the file name and sample thinning-out frequency, and click **OK**.

Zooming the waveform display

This function allows you to display the waveform with a different time axis magnification.

Zooming in

Select **View - Zoom In**.

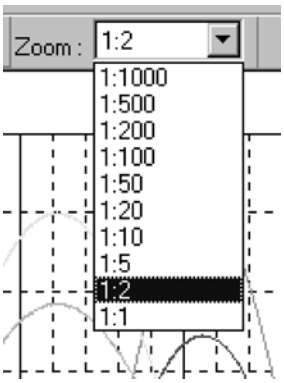
Zooming out

Select **View - Zoom Out**.

Setting the magnification

Select **View - Set Magnification**.

Alternatively , use the toolbar for setting.

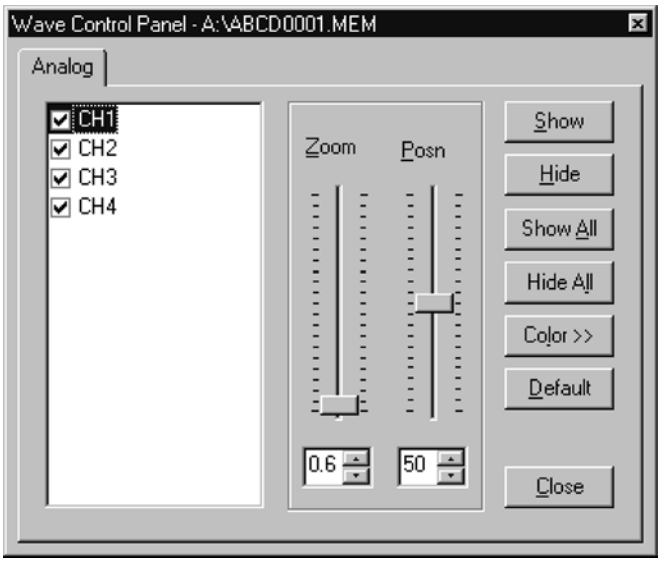


There are restrictions on the magnification factors that can be selected, depending on the recording length.

Display settings for individual channels

Select **View - Wave Control Panel**.

You can now select the display for each channel separately.



CH1 to CH4	This indicate the channels, 1 to 4. When a check mark is present the corresponding channel is displayed.
Zoom	Set the magnification on the voltage axis for the specified channel.
Posn	Set the position of the specified channel.
Show	Display the waveform of the specified channel.
Hide	Do not display the specified channel.
Show All	Display all channels.
Hide All	Do not display all channels.
Color >>	Change the color of the specified channel.
Default	Set all values in the waveform control panel back to their default values.
Close	Close the waveform control panel.

Displaying waveform information

Select **View - Properties**.
This displays information about the currently displayed waveform file.

Exiting the waveform viewer

Select **File - Exit**.
This closes the waveform viewer.

Chapter 6 Creating and Modifying Setting Files

Using the Settings Editor, you can create and modify setting files (file extension .set) for the MEMORY HiCORDER.

6.1 Starting the Settings Editor

(1) Creating a new file

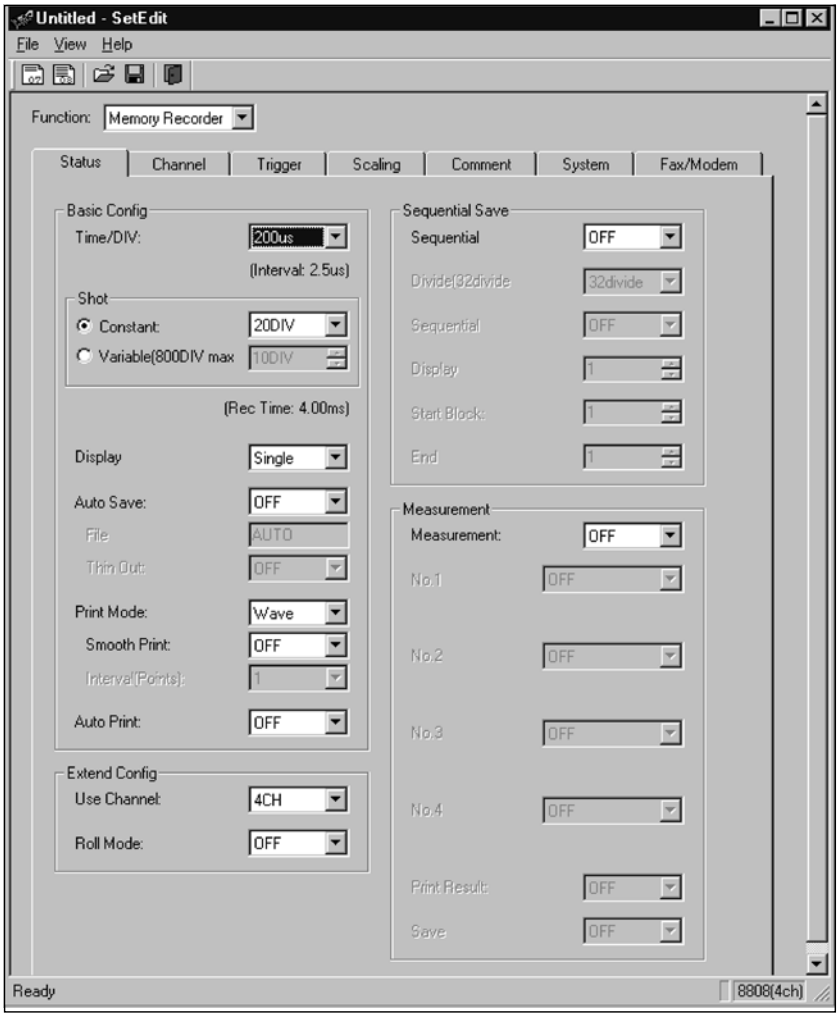
1. Select **Tools - Settings Editor**.
   This starts the Settings Editor.

2. From the Settings Editor menus, select **File - New**, then select the model for which you want to create a setting file.
   This displays the default settings.

(2) Modifying a file

1. Click on the connection in the list for which you want to modify the setting file.
2. Click the setting file to be edited in the file list.
3. Select **Tools - Settings Editor**.
   This displays the contents of the file in the Settings Editor.
   Alternatively, you can double-click the setting file to start the Settings Editor.

6.2 Using the Settings Editor



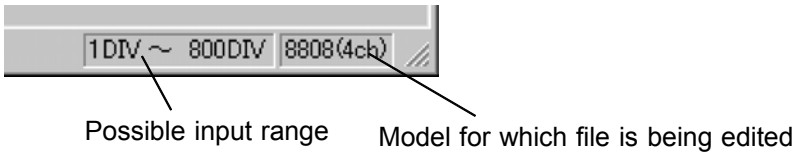
This section describes how to use the Settings Editor.

1. Opening a setting file
   This opens an existing setting file. After making modifications, you can resave the setting file.
   Select **File - Open**.
   The **Select File** dialog box appears. Select the setting file to edit, and click **Open**.
2. Saving a new setting file
   Select **File - Save as...**
   The **Save as** dialog box appears. Enter the file name, and click **Save**.

3. Resaving an existing setting file
   Select **File - Save**.
   If the file is newly created, the **Save as** dialog box appears.

4. Creating a new setting file
   Select **File - New - 8807 Setting File**.
   Create a setting file for the model 8807.
   Select **File - New - 8808 Setting File**.
   Create a setting file for the model 8808.
   This displays all of the settings in their default state on the MEMORY HiCORDER (as after a system reset).

5. Exiting the Settings Editor
   Select **File - Exit**.
6. Status bar indications



6.3 Details of Settings

- The settings are the same as on the MEMORY HiCORDER. For details of individual settings, refer to the Instruction Manual for the MEMORY HiCORDER.
- The MEMORY HiCORDER settings are divided into a number of sheets. Click the corresponding tab to display a sheet.
- The Function setting is independent of the sheets.
- Note that some of the settings available on the MEMORY HiCORDER itself cannot be set with this program (time axis display magnification, A/B cursors, etc.). For these settings, in the case of a new file, the MEMORY HiCORDER reverts to the default settings. If the file was first downloaded from the MEMORY HiCORDER, these settings remain unchanged.

Status tab	Basic settings, extended settings, sequential save, arithmetic settings.
Channel tab	Analog channel and logic channel settings.
Trigger tab	Trigger settings.
Scaling tab	Scaling settings.
Comment tab	Comment settings.
System tab	Environment, printer, screen copy, RS-232C settings. The RS-232C settings are not applied for communications when sending setting files.
Fax/Modem tab	Fax and modem settings. The telephone number and AT command can only include alphanumeric characters.

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Instruction Manual

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