

# Section 5 Operations

---

Specifying Recording Devices and File Names .....	5-2
Recording to Memory .....	5-4
Recording to Media (MO/PC Card) .....	5-6
Recording to PC .....	5-8
Caution On recording files recorded Pc using the LXmain unit.....	5-9
Recording Operations .....	5-10
Exchanging Media .....	5-11
Copying .....	5-12
Reproducing .....	5-13
Reproducing Operations .....	5-14
Moving Reproducing Point (Skip) .....	5-14
Searches .....	5-15
Convenient Features .....	5-16
Displaying Waveform .....	5-16
Channel Property .....	5-17
Displaying Bar Meter .....	5-18
Displaying Digital Values .....	5-18
Viewing Header Information .....	5-18
Changing Modes .....	5-19
Stopping Fan .....	5-20
Listening to Data by Sound .....	5-20
LX Stand-alone Operations .....	5-21
Recording to Media .....	5-22
Recording to Memory .....	5-23
Reproducing .....	5-24
Recording Synchronization .....	5-25
Settings and Recording Operations .....	5-26
Connecting Recording Synchronization Cables and Turning on Power ....	5-26
Operations .....	5-27
Miscellaneous .....	5-32

# Specifying Recording Devices and File Names

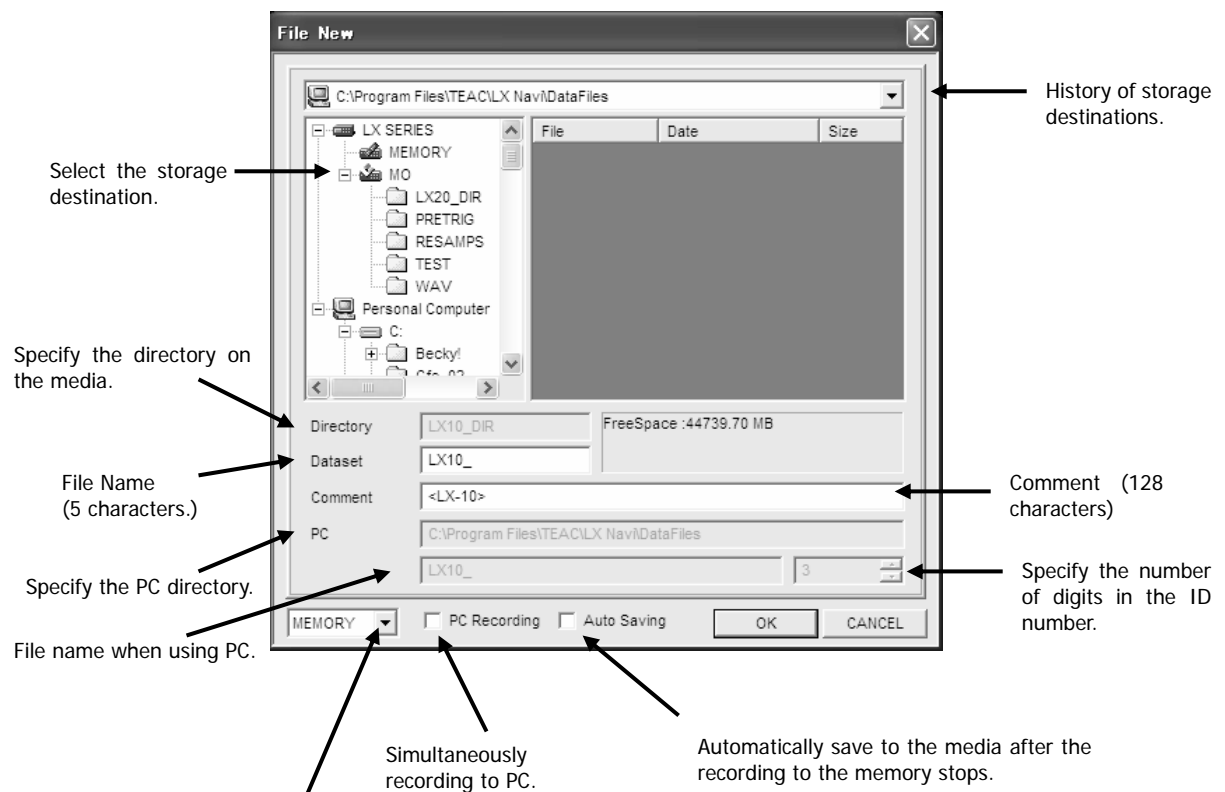
## Specifying Recording Devices and File Names

The general procedure for recording is as follows:

1. Choose **File New**, and specify the recording device and the file name. (The mode becomes the recording mode.)
2. Use the toolbar or the buttons on the main unit to record.
3. If you are recording to the memory, use the **Copy** dialog to copy to the media (MO/PC card).

A combination of the sampling frequency vs. the number of analog input channels is varied depending on the selected recording mode, such as, the type of the recording media and the number of tachometer input channels. See "1-13 Sampling Frequency and Number of Channels".

### File New



You can also select the recording device here.

- About File Names

When Recording to Memory or to Media

To specify a file name, use 5 alphanumeric characters. The following characters cannot be used :

. , ; : < > [ ] \* ? = " / \ |

The system attaches a 3-digit ID number (starting from 001) to these 5 characters to make a total of 8 characters. If you specify 4 or fewer characters, the system changes the total number of characters to 8 by using a 0 before the 3-digit ID number to pad each of the missing locations.

- When Recording to a PC

When recording to a PC, or when recording to a PC while recording to memory or media, there is no restriction on the length of the file name. The following characters cannot be used :

. , ; : < > [ ] \* ? = " / \ |

In the entry box on the right of the file name, you can choose how many digits to use for the ID numbers appended to the file name. Use up to 8 digits for the ID number. For example, if you enter 2 in the entry box, Data files have the extension .dat. Header files have the extension .hdr.

- Data files have the extension .dat. Header files have the extension .hdr.
- Do not add numeric characters to the end of a file name. If you do so, the following problem might occur.

Example:

Suppose you specify the file name as "LX10", the 8-character file names are constructed as follows:

```
LX100001
      Increment
LX100002
      Increment
LX100003
```

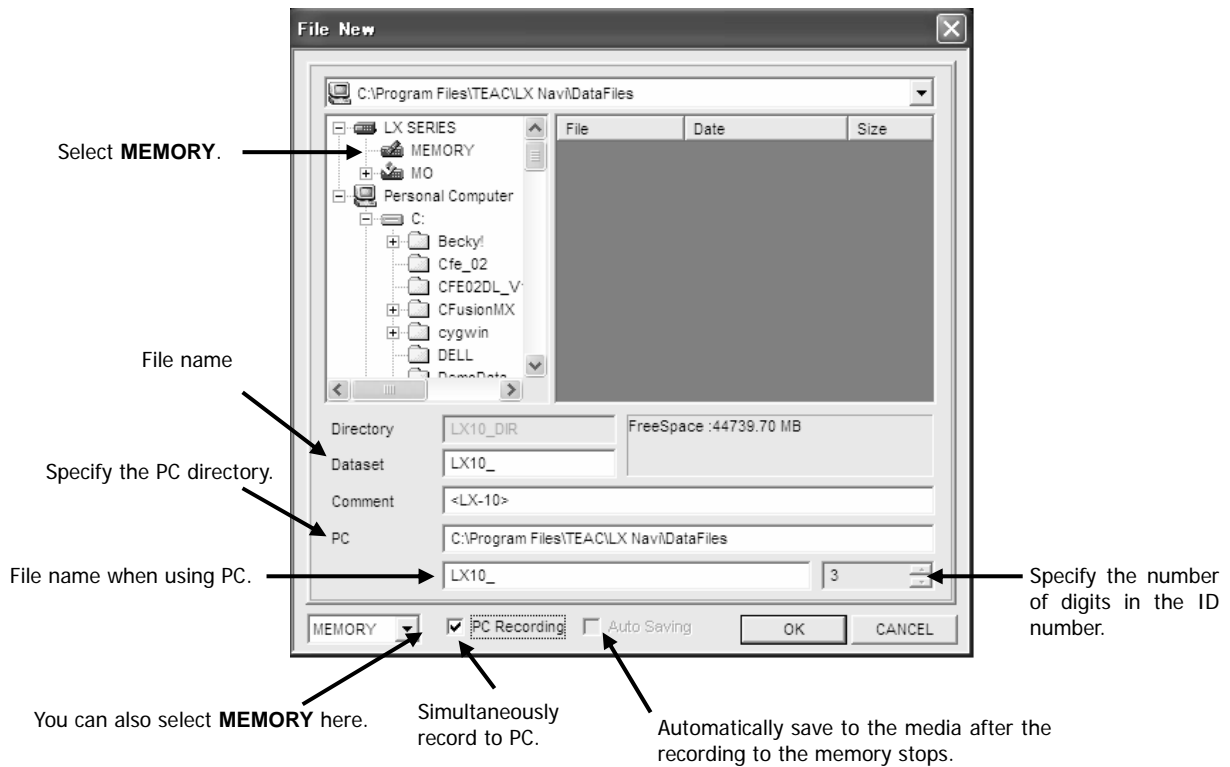
If you then specify a new file as "LX1" and record it to the same folder, the system will find that there is an existing file called LX100001 and so, to prevent overwriting this file, the system will use LX100004 as the new file name.

- About Comments

You can enter a comment using up to 128 alphanumeric characters. This comment is written into the header file.

## Specifying Recording Devices and File Names

### Recording to Memory



When you are recording to memory, the message **Do you copy data?** is displayed after recording stops. If you click **Yes**, the **Copy** dialog box is displayed. Use this dialog box to copy the data to the media or PC. If you again record data or power off the main unit before copying, the data in memory will be lost.

If you click **No** for the message **Do you copy data?**, you can choose **File** then **Copy** to copy the data before again recording or powering off the main unit.

1. Select **New** from the **File** menu.
2. Select **<MEMORY>** as the storage destination.
3. Type a file name within 5 characters at **Dataset**.
4. Click **OK**.

- When Memory Becomes Full

If memory becomes full during recording, recording stops and a message is displayed on the PC screen.

- Recording to a PC While Recording to Memory

To record to a PC while recording to memory, select **PC Recording**, enter the storage-destination directory in PC, and then type the file name in the entry box below that. Also specify the number of digits in the ID number.

Dropouts may occur in the data recorded on the PC if the PC cannot keep up with the transfer speed. Even in this case, the data recorded in memory is not lost. If the data transfer rate of the PC does not catch up the data transfer rate of the LX, the dropout will occur. The data transfer rate of the PC required for continuing the data transfer to the PC can be estimated that the PC needs to receive approximately 1.5 times of 10 seconds data generating by the data transfer rate of the LX within 10 seconds.

Data transfer rate of the LX = Sampling frequency x Number of channels x 2bytes/second

The voice memo is not recorded on the PC though it is kept in memory.

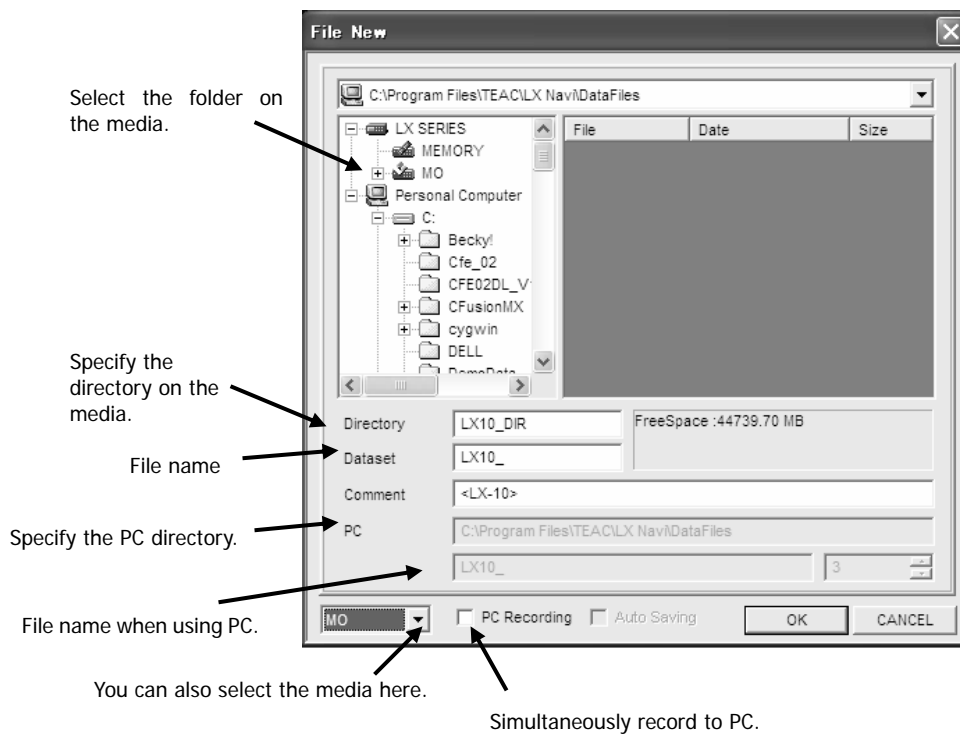
- Automatically Save Data to Media

You can specify that data is to be automatically saved to the media after recording to memory stops. Before opening this **New** dialog box, insert the media. Select **Auto Saving** and enter the folder name in **Directory**. Use up to 8 characters for the folder name, with upper case used for alphabetic characters. However, if you forget to insert the media before recording starts, you will be unable to copy automatically even if you insert the media later. In such a case, use **File** and then **Copy** to copy.

Even if **Auto Saving** is selected, when the LX is powered off the setting is disabled. So select **Auto Saving** each time you turn the power on. Do not use this function when using the LX as a stand-alone device because, in such a situation, the system does not know how much free space is left on the media.

## Specifying Recording Devices and File Names

### Recording to Media (MO/PC Card)



When recording with a maximum sampling frequency can be set under the selected channel configuration, use a formatted media that has not been used for recording. If you use the media that has already been recorded on, recording might stop.

1. Make sure that a formatted media is inserted in the main unit.
  2. From the **File** menu choose **New**.
  3. Select a folder on the media as the storage destination. When using the media for the first time, enter a folder name in **Directory**. For the folder name, use up to 8 characters (alphabetic characters are upper-case).
  4. In **Dataset**, enter a file name. Use up to 5 characters.
  5. Click **OK**.
- Recording to the media cannot start if no media has been inserted. (The REC button has no effect.)

- Recording to a PC While Recording to Memory

To record to a PC while recording to memory, select **PC Recording**, enter the storage-destination directory in PC, and then type the file name in the entry box below that. Also specify the number of digits in the ID number.

Dropouts may occur in the data recorded on the PC if the PC cannot keep up with the transfer speed. Even in this case, the data recorded in memory is not lost. If the data transfer rate of the PC does not catch up the data transfer rate of the LX, the dropout will occur. The data transfer rate of the PC required for continuing the data transfer to the PC can be estimated that the PC needs to receive approximately 1.5 times of 10 seconds data generating by the data transfer rate of the LX within 10 seconds.

Data transfer rate of the LX = Sampling frequency x Number of channels x 2bytes/second

The voice memo is not recorded on the PC though it is kept in memory.

- When Media Becomes Full

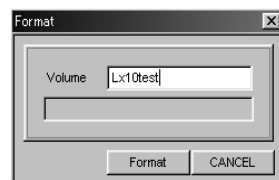
If media becomes full during recording, recording stops and a message is displayed on the PC screen.

- Formatting Media

A specified MO disk is not formatted. Use the following procedure to format the MO disk the first time you use it. You cannot record to the MO disk by overwriting files. If the MO disk becomes full and the data is not needed, reformat the MO disk.

You can also format the PC card as same as you format the MO disk.

1. From the **File** menu of LX Navi, choose **Format**. The following dialog box appears.



2. In **Volume**, enter the volume name. Use up to 8 characters.

3. Click **Format**.

4. When the displayed status changes from Now Formatting to Complete, formatting has finished. Close the dialog box.

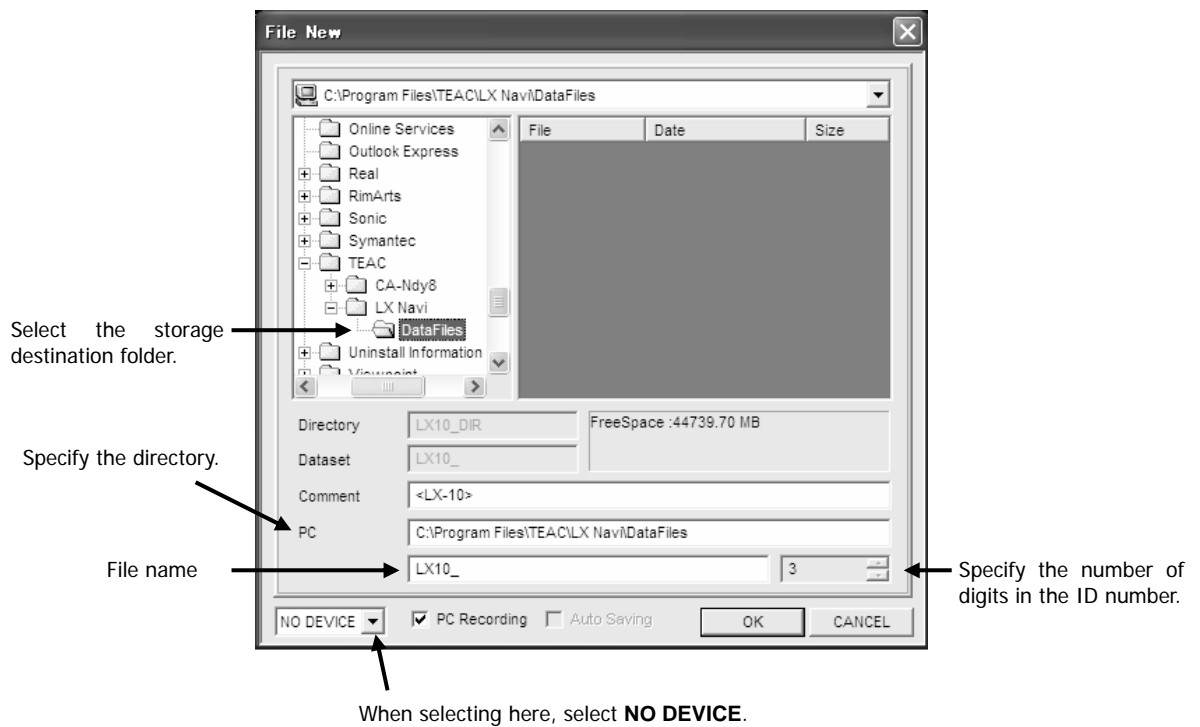
Use FAT16 option whenever formatting the PC card under Windows operation.

Do not use FAT32 option for formatting the card.

## Specifying Recording Devices and File Names

---

### Recording to PC



1. From the **File** menu, select **New**.
2. Select a PC folder as the storage destination.
3. Type the file name.
4. Specify the number of digits in the ID number.
5. Click **OK**.



### Caution on reproducing files recorded to a PC using the LX main unit

Follow the procedure below in order to record using a PC, to copy recorded files inside a PC to an MO or PC card and to reproduce recorded data properly, using the LX main unit.

1. When the PC recorded file has a long file name, change it to a short file name on the PC HDD (8 letters + 3 extension characters for the file name). Change 1 group of recorded data (data file, header file, web file) to the same file name, and leave the extension name as it is. Half-width alphanumeric characters and half-width sign characters may be used for file names. The following characters cannot be used :

. , ; : < > [ ] \* ? = " / \ |

2. Create a directory on the PC HDD, inputting an 8 character or less directory name, (e.g. "LX10\_DIR"), and copy the short file name of the LX recorded data file.

3. After formatting media on an MO or PC card using the LX main unit, place the media into the MO drive or PC card slot connected to the PC.

4. There is a sub directory in the root directory of the MO or PC card called "TEAC\_LX"  
Copy each directory made in step 2 under the "TEAC\_LX" directory here.  
    \ (Media root directory)

        |  
        TEAC\_LX (automatic created when formatted using the LX main unit)

        |  
        LX10\_DIR (copy the directory on the PC)  
        · (multiple directories possible)

The total size of files you wish to copy (data files, header files, and web files) may be larger than the MO or CF card capacity, in which case, reproducing may not be possible using the LX main unit.

Data recorded with the LX-20 tachometer channel enabled, may corrupt reproducing data, in which case, normal waveform regeneration is not possible using LX10 (F). (This also applies to direct recording using LX main unit media)

Immediately after purchasing a PC card use a PC to format the file system to FAT (FAT16) before use. If formatting is not carried out, normal use may not be possible under LX.

# Recording Operations

---


## Recording Operations

When you choose **File** and **New**, and then select the recording device and the file name, the mode becomes the recording mode and you can start recording.

The following procedure shows how to record two IDs. Also, during recording, we will mark data by adding event marks to the data.

1. Ensure that the mode shown in the status display is RECORD. If it is VIEW, click the REC button on the far left of the window to change the mode to RECORD.


2. If data is saved automatically to the media after recording to memory stops (that is, **Auto Saving** is selected), or when recording to the media, ensure that the media is inserted.

3. Click the  button on the toolbar. Alternatively, press the **REC** button on the main unit.


The action display will show RECSTANDBY, and the input waveform will be displayed in the waveform display area.

4. After 3 seconds, click  on the toolbar. Alternatively, press the FWD button on the main unit.

The action display shows REC and recording starts. When recording to memory or recording to the media, the USAGE LEDs show the percentage of the total capacity used.


5. Click  on the toolbar. Alternatively, press the **EVENT** button on the main unit.

The display of the event mark count will show 0001. The number of scans at this instant is recorded in the header file. If a new event mark is not separated by the previous mark by 2 or more seconds, the mark is not valid.


6. Click  on the toolbar. Alternatively, press the **PAUSE** button on the main unit.

The recording of the first ID ends, and the system enters the pause status. The action display shows RECSTANDBY.


When recording to the media, you cannot perform another recording until the system has finished writing to the media.

7. Click  on the toolbar. Alternatively, press the **FWD** button on the main unit.

Recording of the second ID starts.

8. Click  on the toolbar after 3 seconds or more. Alternatively, press the STOP button on the main unit.

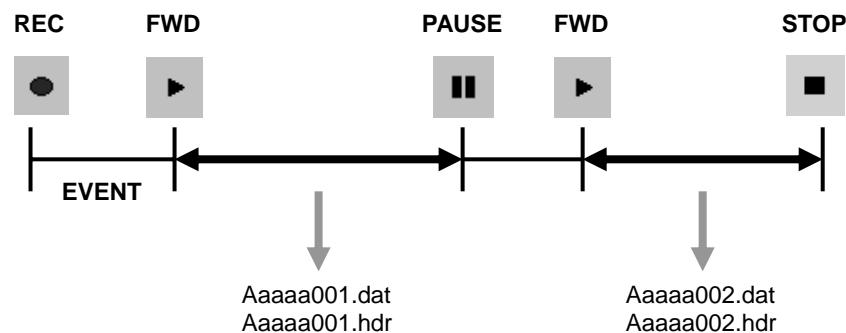
Recording stops.

If you record a voice memo in PC recording, put the system in the recording-standby status by clicking  or pressing the PAUSE button before you stop recording. Otherwise, the voice is not recorded.

9. When recording to memory, the message Do you copy data? is displayed after recording stops. If you click **Yes**, the **Copy** dialog box is displayed. Use this dialog box to copy the data to the media or PC. (See the next page for details.) If you again record data or power off the main unit before copying, the data in memory will be lost. Or the data in memory will be lost if you playback.

If you have selected the **Auto Saving** option (after choosing **File** and then **New**) and the media has been inserted, the above message is not displayed and the data in memory is automatically saved to the media.

The above procedure records the files shown in the following diagram.



## Exchanging Media

- When Recording to Media

When the media becomes full during recording, a message is displayed and recording stops. The file up to that point is made. You can replace the media and again start recording.

- When "Auto Saving" Is Selected

When the media becomes full during copying, a message is displayed and copying stops. The file up to that point is made. If you then replace the media, the remaining data will not be copied automatically. In such a case, use the **Copy** dialog box to copy the remaining data. After replacing the media, you can again start recording.

- Directory and ID Number After Media is Replaced

When the media is replaced, the directory and file name specified in the **New** dialog box are made on the media and data is recorded; however, the ID number again starts from 1. Also if the directory or file name specified in the **New** dialog box already exists on the media, the last ID number is incremented by 1 and the new sequential ID number is used.

# Copying

## Copying

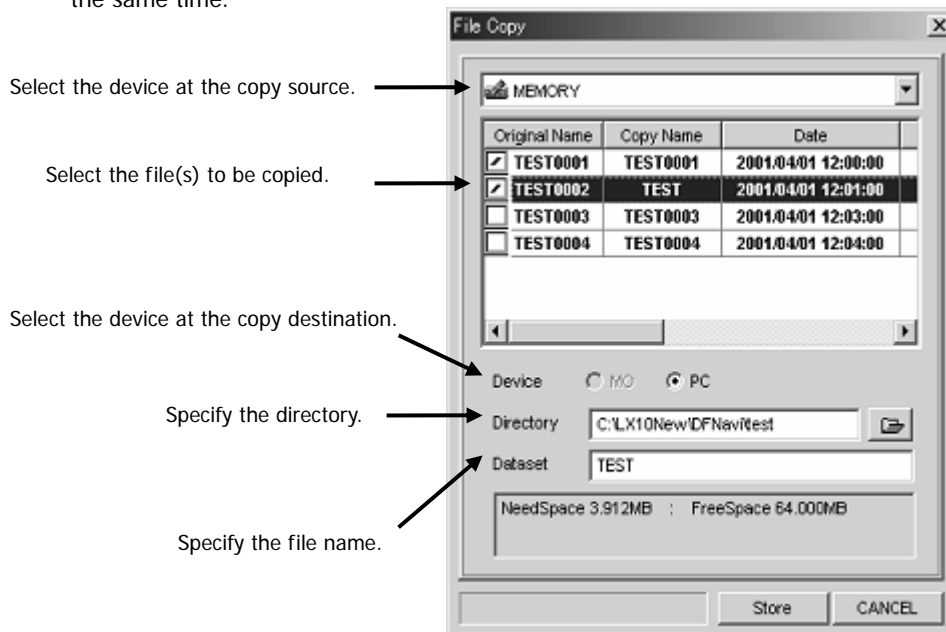
Recorded data files can be copied in the following three directions:

Memory to Media

Memory to PC

Media to PC

- When a data file is copied, the header file paired with the data file and also the sound file are copied at the same time.

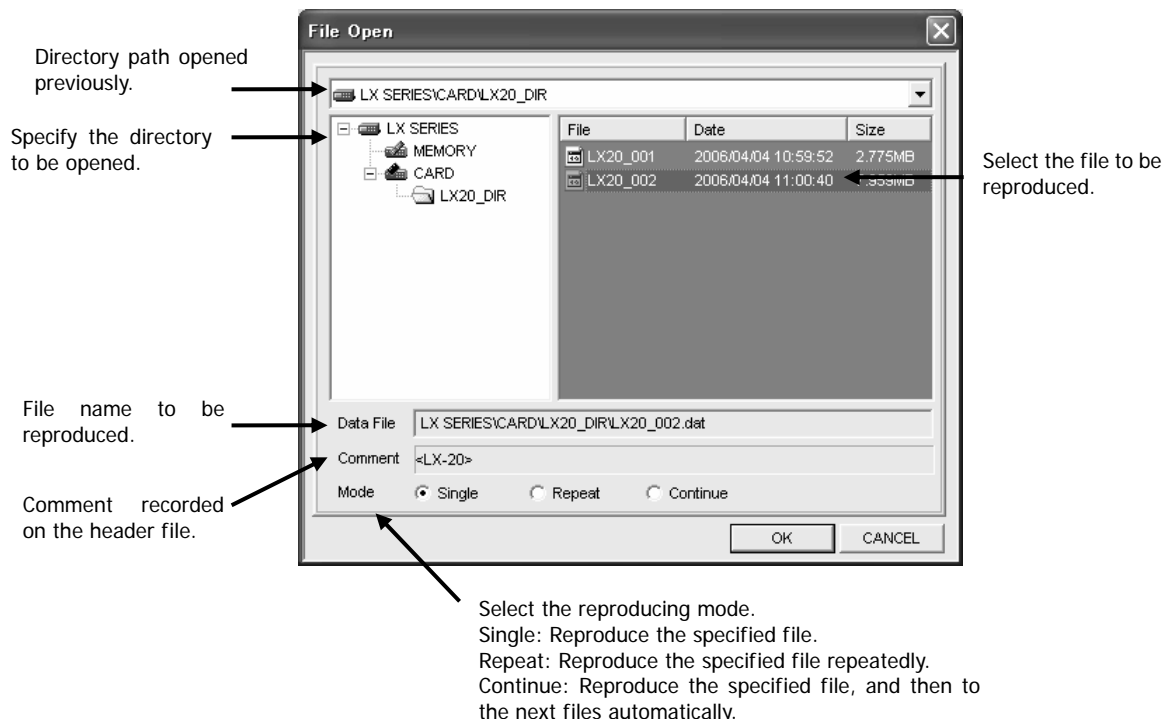



1. From the **File** menu, choose **Copy**.
2. Select the copy source device or folder to be copied.
3. Select the data file to be copied by turning the check box of the data file ON.
4. In **Device**, click **MEDIA** to copy to the media and click **PC** to copy to the PC.
5. In **Directory**, specify the copy destination directory.
6. Click **Store**.

- If you are copying from memory, data will remain in memory even after copying has finished, so the USAGE LEDs will remain lit.
- Changing File Name When Copying (Valid only when copying to the PC)  
When changing a file name, click the file that you want to change. The file will be highlighted. In Dataset, type the name of the file after the change. The name of the file after the change is displayed in **Copy Name**.
- The DATASET in the copied header file keeps the original file name. See Section 6 File Formats for details of the header file.

## Reproducing

You can reproduce data that has been recorded to memory or media.



1. From the **File** menu choose **Open**.
2. Select the file to be reproduced.
3. Click **OK**. (The mode in the status display becomes VIEW.)
4. Click  on the toolbar. Alternatively, press the FWD button on the main unit.

The action display changes to PLAY, and reproduction begins.

### ● Changing Reproduction Rate

You can reproduce data at a different rate from recording rate. To change the rate, first open the file by following the steps described on the left, and then change **Sample** setting on the left of the main window, or from **Setup** menu choose **System** and change **Sample** setting.

Changing the reproduction rate does not change the sampling frequency setting for recording.

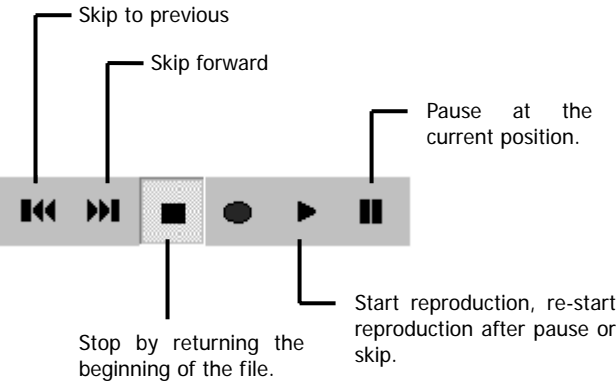
The rate of voice memo reproduction is not changed even when **Sample** setting is changed. In this case, the data and the voice do not synchronize.

At the LX-20/20L, changing the reproduction rate is possible within the same sampling frequency series.

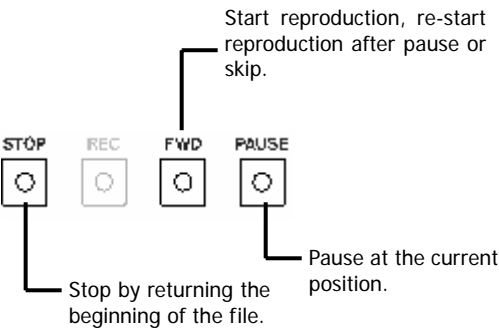
The recorded file under the low-speed sampling (1 kHz to 1/60 Hz) can be reproduced by changing the reproduction rate at 1.5 kHz or higher.

Reproducing Operations

At the LX Navi



At the LX main unit



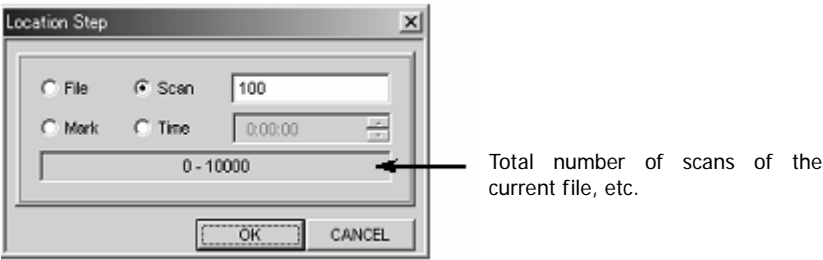
The skip functions are available during a pause or in the stopped status. For details, see the next.

Moving Reproducing Point (Skip)

Skipping enables you to move the reproduction point. The skip function is available in the paused or stopped status. When you click the button, the reproduction point moves from the current location to the previous point. When you click the button, the reproduction point moves from the current location to the following point. (Displaying of a waveform is from the start or restart of reproduction after a skip.)

You can specify the range of the movement by one click.

To specify the range of the movement click on the toolbar. The following dialog box is displayed.



You can select from the following 4 options:

File

Moves from the current file to the older file (determined by ID number) in the same folder.

Scan

Moves the specified number of scans only. When you select **Scan**, the lower box displays the total number of scans of the current file.

Mark

Moves to the preceding or following event mark. When you select **Mark**, the lower box displays the total number of event marks in the current file.

Time

Moves the selected time (hours:minutes:seconds). When you select **Time**, the lower box displays the time when recording to the current file started, and the time when recording to the current file ended.

## Searches

You can narrow searches by using the status display area.

1. With the View mode set in the paused or stopped status, click on any of the status-display boxes indicated by arrows in the following diagram. After the color of the characters changes, click again.



2. Specify the goal of the search.

### Event search

Searches for the specified event mark.

The lower 2 boxes show the range of values that can be searched.



### Count search

Searches for times (hours: minutes: seconds) from the start of recording.

The lower 2 boxes show the range of values that can be searched.

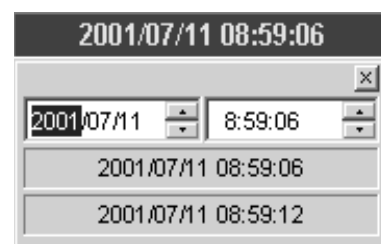


### Time search


Searches using your specified recording date and time.

Enter the date (year/month/day) and time (hour: minute: second).

The lower 2 boxes show the range of values that can be searched.



3. After specifying the goal of the search, click the close button to close the dialog box. At the goal point, the system enters the stopped status.

4. Click  on the toolbar. Data is reproduced starting from the goal point.

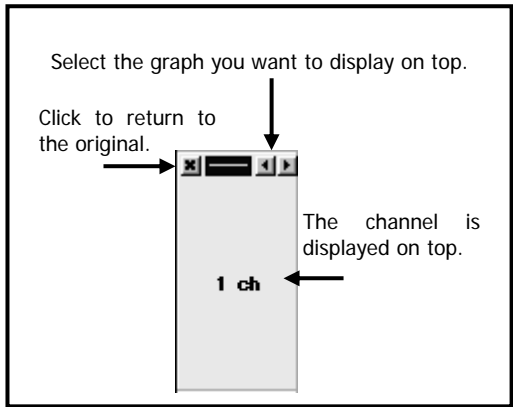
# Convenient Features

## Convenient Features

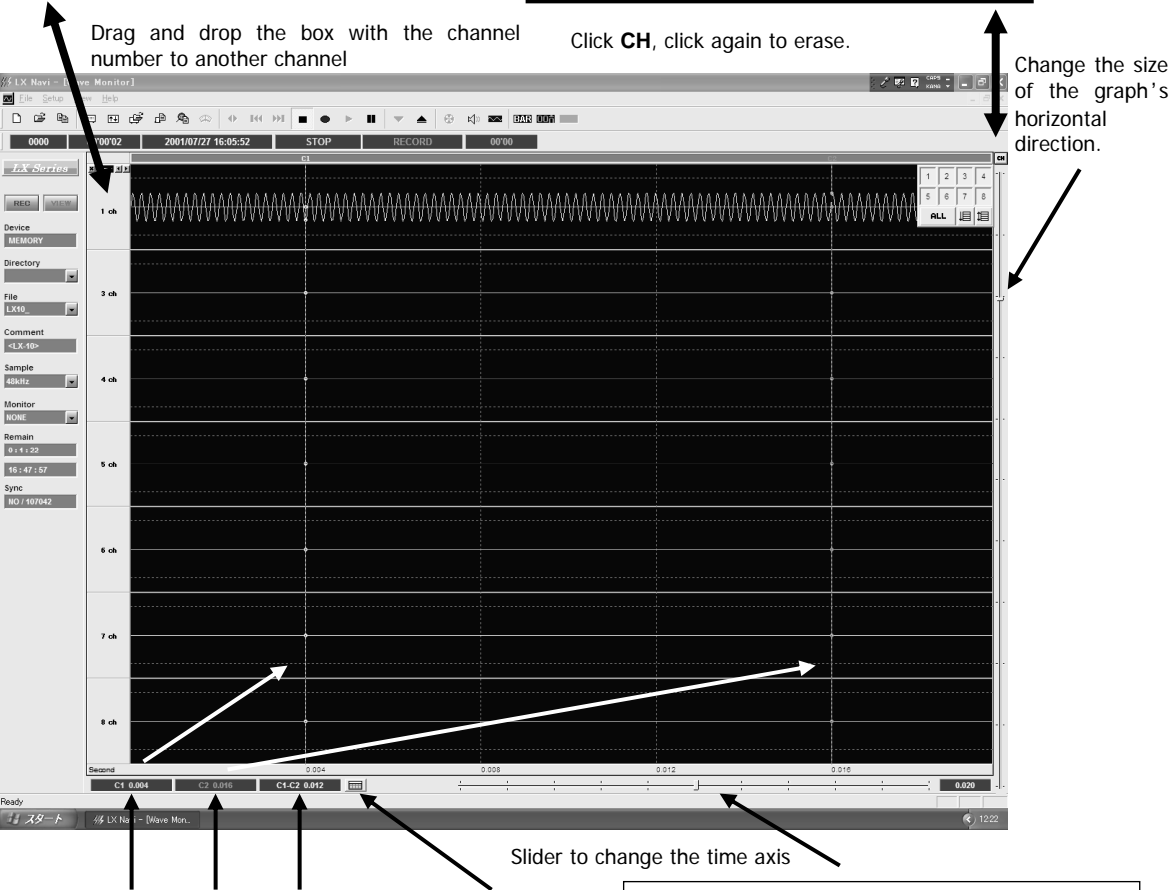
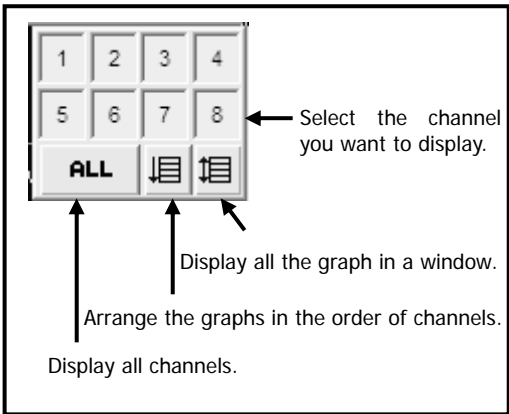
### Displaying Waveform

You may see the decimated plots on the viewing waveform depending on the sampling frequency settings and/or the display time scale.

#### View overlapping waveforms



#### Select the channel to display



Display the time axis grid of the cursor location. **C1-C2** is the time difference. During a pause, you can move this by dragging the cursor.

Click here to display the list on the next page, click again to erase.

#### Sampling Frequency    Display Period

1.5 kHz	Up to 10 s
3 kHz	Up to 5 s
6 kHz	Up to 2 s
12 kHz	Up to 1 s
24 kHz	Up to 500 ms
48 kHz	Up to 200 ms
96 kHz	Up to 100 ms
(In case 1.5 kHz to 96 kHz sampling frequencies are selected.)	



Channel Property

Value of cursor position      Differences between 2 cursor position values

Channel	Range	DispRange	Offset	Cursor (C1)	Cursor (C2)	Abs (C1-C2)	Channel Name
1 ch	2.00000V	2.00000V	0.00000V	-0.94152V	0.99560V	1.93712V	LX-10_DC100K
2 ch	2.00000V	2.00000V	0.00000V	0.00040V	0.00040V	0.00000V	LX-10_DC100K
3 ch	2.00000V	2.00000V	0.00000V	0.00064V	0.00056V	0.00008V	LX-10_DC100K
4 ch	2.00000V	2.00000V	0.00000V	-0.00032V	-0.00040V	0.00008V	LX-10_DC100K
5 ch	2.00000V	2.00000V	0.00000V	0.00000V	0.00000V	0.00000V	LX-10_DC100K
6 ch	2.00000V	2.00000V	0.00000V	0.00040V	0.00040V	0.00000V	LX-10_DC100K

Double click the desired channel.

Coefficient value and units

Unit conversion expression

Channel name

Graph line color

Graph back ground color

Offset value

Return to the default.    Return to the default.    Change the display range.    Reset the graph color settings to the default.

Converting Units

You can use engineering units instead of the physical units to be written in the VERT\_UNITS line of the header file. The coefficient (SLOPE value) is accordingly converted and written in the header file.

In the above dialog box, the entered conversion expression is for the situation where you are recording a signal from an acceleration sensor outputting an acceleration of 9.8 m/s2 by 1 V. When there is an offset value for when the input is 0 V, type the value in Offset value. When these are changed, in the header file the units for VERT\_UNITS and the SLOPE and Y\_OFFSET values change.

Disp Range

Dragging the slider changes the waveform graph range.

Channel Name

You can name each channel.

Line Color

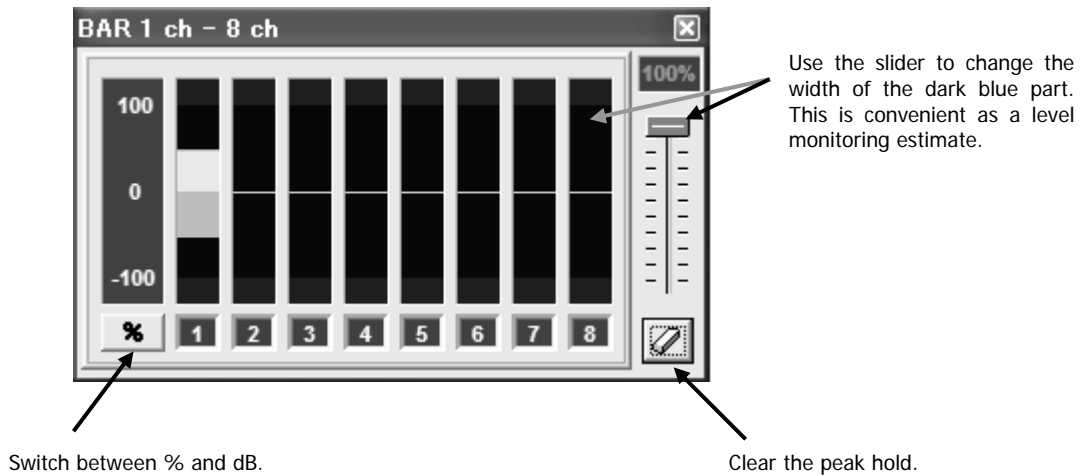
Selects the color of the graph lines. Clicking **Same** changes the graph lines of all graphs to the same color.

Back Color

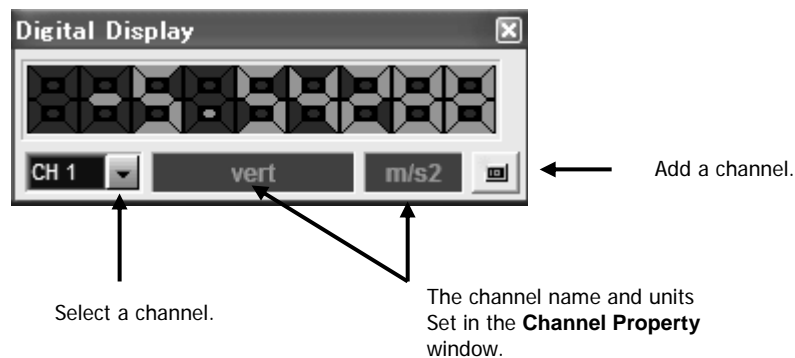
Select the background color of a graph. Clicking **Same** changes the background of all graphs to the same color.

\_\_\_\_\_

To display the bar meter, choose **View** and then **Bar**.

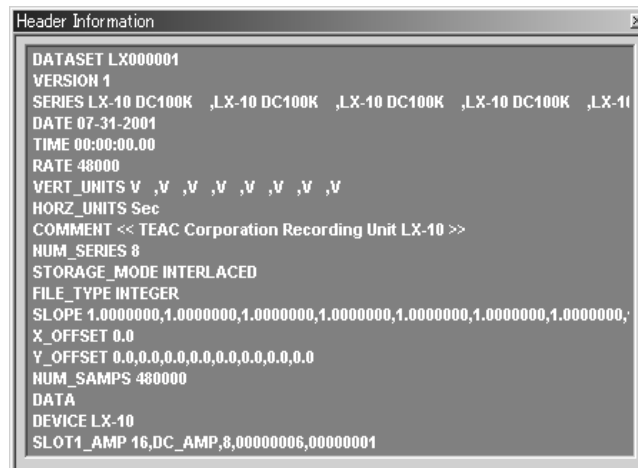


To display digital values, choose **View** and then **Digit**.



To display header information, choose **View** and then **Hdr**. This takes effect after you select a file in the

Header Information



Changing Modes

In the lower left of the main window, you can see the recording device and the file name, and select the file to be reproduced.

Switch between the recording mode and view mode.

<In Recording mode>      <In View mode>

Display the storage location and file name.

Select the file to bereproduced.

Comments written using **File** and **New**.      Comment written in the file being reproduced.

Select the sampling frequency.      Select the reproducing rate.

Select the monitoring channel.      Select the monitoring channel.

Period recordable on the selected device (hours:minutes:seconds)      0 : 21 : 32

Period recordable on the PC (hours:minutes:seconds)      19 : 12 : 07

Serial number or recorder name of the LX target      SNo. 107000

### Stopping Fan

You can stop the cooling fan on the LX by clicking the fan button on the toolbar. (If you have already stopped the fan and recorded data, wait for about 10 minutes before you again stop the fan and record.) This button behaves differently depending on the **Fan** setting in the **System** dialog.



- When **Fan** is set to **ON**

The fan button is enabled after the recording-standby status is established. By clicking the button you can stop the fan from that moment until you click it again. You can repeat this until the total fan-stop time is 10 minutes. The remaining fan-stop time is shown on the status display.

- When **Fan** is set to **OFF**

The fan button is enabled only during the recording-standby status. By clicking the button you can stop the fan only once for the maximum of one minute. The remaining fan-stop time is shown on the status display. After you start recording, the fan button is disabled and the cooling fan is stopped for 10 minutes.

### Listening to Data by Sound

You can play back the data of the monitored channel as sound by clicking the speaker button on the toolbar. When you click this button during reproduction, the data of the monitored channel instead of a voice memo is played back from the speaker.



### LX Stand-alone Operations

The last settings specified by LX Navi (such as the recording device, file name, and other settings) are stored in the LX main unit even if the power is turned off. When the LX is removed from the PC, the LX operates according to those settings.

- Cautions on Operating as a Stand-Alone Device

IEEE 1394 enables hot-pluggable connections, so the LX-10/20 main unit can be connected or disconnected while the PC is powered on. (However, do not disconnect the LX-10/20 main unit while it is communicating with the PC.) When the LX-10/20 is disconnected, LX Navi outputs an error message and terminates. In such a case, if you reconnect the LX-10/20 and restart LX Navi, the LX-10/20 can again be recognized.

When moving the LX main unit, remove the media before turning off the power. Moving the unit while the media is inserted might result in damage.

When recording to the media, insert a formatted media before opening (**File** then **New**) the **New** dialog box. Also ensure that the same media is inserted before recording starts. If no media is inserted, recording cannot start (the REC button has no effect).

When recording to memory, after recording stops and while the power is still turned on, connect to a PC and copy the data to the media or PC. If you again record data, reproduce data, or power off the main unit before copying, the data in memory will be lost.

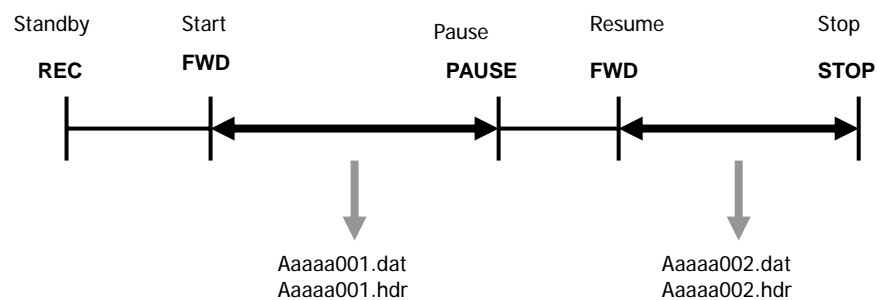
- When recording to memory using LX as a stand-alone device, do not select the Auto Saving option (**File**, **New**, and then **Auto Saving**). When recording to memory, the system does not know how much free space is left on the media, so there is a danger that some data might be lost when saving. Also note that, even if the **Auto Saving** option is selected, powering off the LX resets this option to the disabled status.

## LX Stand-alone Operations

---

### Recording to Media

1. Insert the media in the LX.
  2. In the LX Navi, from the **File** menu choose **New**.
  3. Select the **MO/PC CARD** as the recording device, specify the directory and file name, and then click **OK**.
  4. Eject the media, and terminate the LX Navi.
  5. Power off the LX, remove the IEEE 1394/LAN cable from the rear, and move the LX to the place where you want to take measurements.
  6. Power on the LX and insert the same media.
  7. Press the REC button and then the FWD button. Recording will start.
  8. Press the PAUSE button.  
Recording will pause. Recorded data will be grouped into one ID.  
After this, each time the FWD and PAUSE buttons are pressed, an ID will be recorded, and the ID numbers will be incremented automatically.
  9. To stop recording, press the STOP button.
  10. When writing to the media finishes, the eject button eject usable. When moving the main unit, first press the eject button and remove the MO media. Remove manually on the PC card media.
- After the above, if you turn off the power and then turn it back on and record to the same media, the ID number will be automatically incremented and data will be recorded to the same file name. In the example illustrated in the diagram below, the file will become Aaaaa003.



When the media becomes full

When the media becomes full during recording, the recording stops and the data up to that point is made into a file. You can then replace the media and restart recording. If you are using the LX as a stand-alone device, you cannot format the media so prepare formatted media beforehand. On the new media, the system will make the directory specified in the **New** dialog box and use the specified file name; however, the ID number will again begin from 1. Also if the directory or file name specified in the **New** dialog box already exists on the media, the last ID number is incremented by 1 and the new sequential ID number is used.

### Recording to Memory

When recording to memory while using LX as a stand-alone device, after recording stops keep the LX powered on, connect to a PC, and transfer the data in memory to an MO disk or the PC.

1. In the LX Navi, from the **File** menu select **New**.
2. Specify memory as the recording device, specify the file name, and then click **OK**.
3. Terminate the LX Navi.
4. Power off the LX, remove the IEEE 1394/LAN cable from the rear, and move the LX to the place where you want to take measurements.
5. Power on the LX.
6. Press the REC button, and then press the FWD button. Recording starts.
7. Press the PAUSE button.  
Recording will pause. Recorded data will be grouped into one ID.  
After this, each time the FWD and PAUSE buttons are pressed, an ID will be recorded, and the ID numbers will be incremented automatically.
8. To stop recording, press the STOP button.
  - Take care in this situation because the data in memory will be lost if you again press the REC button, start reproducing, or power off the LX.
9. Use an IEEE 1394/LAN cable to connect to the PC.
10. Start the LX Navi.
11. From the **File** menu choose **Copy**, and copy the data recorded to memory to the PC.
  - When recording to memory using LX as a stand-alone device, do not select the Auto Saving option (**File**, **New**, and then **Auto Saving**). When recording to memory, the system does not know how much free space is left on the media, so there is a danger that some data might be lost when saving. Also note that, even if the **Auto Saving** option is selected, powering off the LX resets this option to the disabled status.

## LX Stand-alone Operations

---

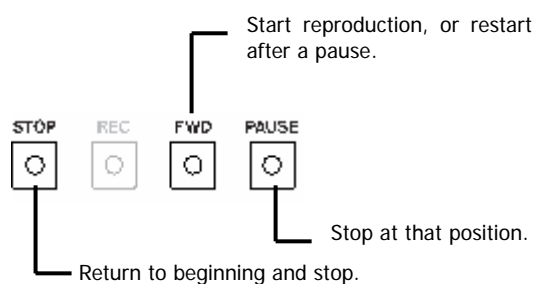
### Reproducing

Even when using the LX as a stand-alone device, you can reproduce and output the last data (last ID) recorded to memory or to the media. However, when the power is turned off, any data in memory will be lost and you will be unable to reproduce such data.

To reproduce data, press the FWD button on the front of the LX.

To pause reproducing data, press the PAUSE button.

To stop reproducing data, press the STOP button.





### Recording Synchronization

This section explains the optional recording synchronization function of the LX multiple units.

The LX Navi sets a master unit and up to 3 slave units connected with the recording synchronization cable within the total of 10 m (as of November 2005) for recording synchronization recording.

- The following PC (personal computer) system specifications are necessary for the recording synchronization function.

OS: Windows XP / Windows 2000

CPU: Pentium 2.0GHz or better

Memory: 256Mbyte or more

Free HDD space: 2Gbyte or more

LX Navi version: V1.71H or later,

- If you use the IEEE1394 interface model of the LX and you need to update the LX Navi, update the device driver to the latest (see Section 2).
- You cannot use the IEEE1394 interface model and the Ethernet interface model mixed for the recording synchronization.
- When the recording synchronization function is enabled and LxNavi is started up, the reproducing operation cannot be used. Before using the reproducing operation, re-launch LxNavi, disabling the master/slave settings and execute it as an independent unit.
- Change the settings of the sampling frequency of recording and the recording media destination (Memory, MO, PC card) to that of the master unit and slave unit. When controlling the master unit and slave unit using a single PC, (simultaneously launching multiple units with LxNavi using recording synchronization) set the directory name and file name of the file to be recorded, so they do not duplicate.
- When controlling the master unit and slave unit using a single PC, limitations may occur in the operation of the maximum sampling frequency and in the save function of Lx Navi settings content.
- When using recording synchronization, launch LxNavi operations in order; master unit, slave 1, slave 2, etc. When ending the program, end operations in the opposite order to which they were started and lastly close the LxNavi master unit.
- Use the optional LX View PL-S1001 wave monitor software or the AFC NEO PL-S1002 file converter software to merge the multiple files recorded.
- Keep minimum numbers to open the main windows of the slave units; otherwise the real time monitor cannot be processed depending on the selected sampling frequency.

# Recording Synchronization

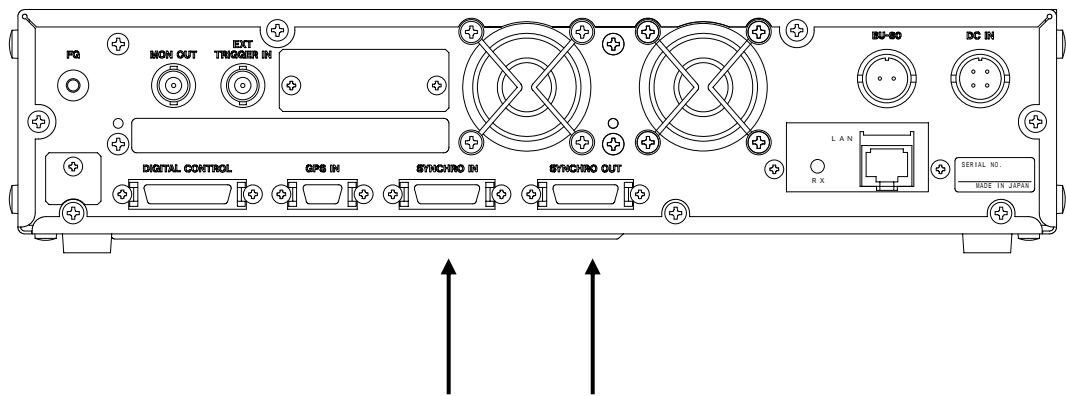
## Settings and Recording Operations

Use the LX Navi menu of each master/slave unit for the amp and input range parameter settings, the sampling frequency, and so on. Make sure to use the same sampling frequency and the recording media for the units to be recording synchronized.

Use the LX Navi of the master unit to start and stop recording synchronization, the slave units follows start/stop operation of the master unit.

## Connecting Recording Synchronization Cables and Turning on Power

1. Connect among the LX units to be synchronized by using the synchronization cables.



The <SYNCHRO IN> connector and the <SYNCHRO OUT> connector are used for recording synchronization. Connect the <SYNCHRO OUT> connector of the first unit to the <SYNCHRO IN> connector of the second unit. If you have the third unit, connect the <SYNCHRO OUT> connector of the second unit to the <SYNCHRO IN> connector of the third unit. Then connect another unit accordingly.

2. In case of the IEEE1394 interface models, use the IEEE1394 cables to connect among the units in daisy chain. Connect the PC installed the LX Navi to one of the units.

In case of the Ethernet interface models, use a switching hub to connect the units and the PC installed the LX Navi.

3. Turn ON the powers of the LX units and then the PC.

# Recording Synchronization

## Operations

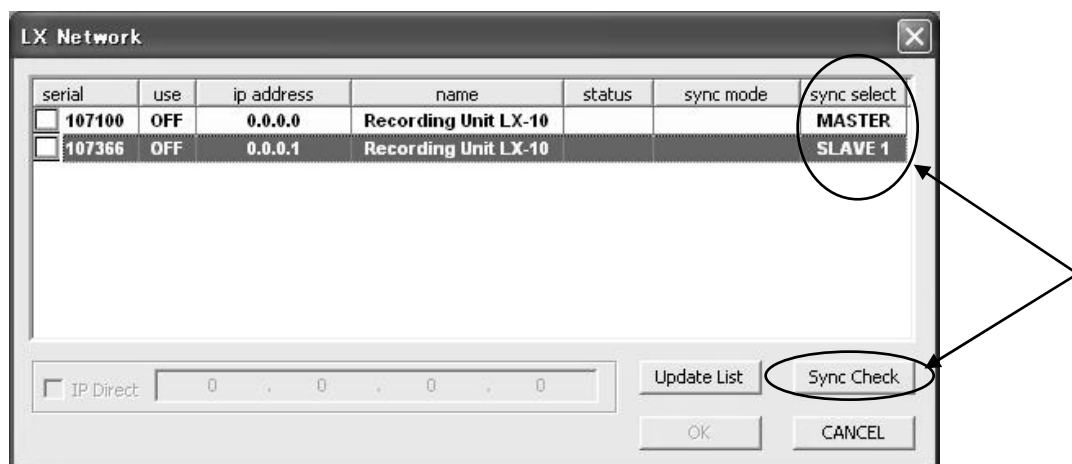
You can set the master unit and the slave unit(s) by using the LX Navi.

1. When starting LxNavi from a PC, the serial number information of the LX series units connected to the same segment is displayed on the LX selection dialog (LX Network).

Click master, slave 1, slave 2...etc in the order of the "sync select" column. Setting information will be displayed for the area clicked upon. (Setting this operation once skips this process next time.)

Click the "Sync Check" button. As a result, verification of specified LX synchronized operation settings and a verification test of the settings and the synchronized connection are done.

In the example diagram below, 2 LX Series units are connected to the same group, and the serial number 107100 for the master and 107366 for slave 1 have been selected (Click master and slave 1 in the order you wish to set them, in the "sync select" column). In this state, clicking the "Sync Check" button performs verification of synchronization mode settings and the synchronized connection.



Explanation of the LX selection dialog (LX Network) columns.

"Serial"	Displays the serial numbers of the LX series recorder connected to the same segment.
"use"	Displays "ON" if in use and "OFF" if not in use.
"ip address"	Displays IP addresses.
"name"	Displays names set in LX. (Model IEEE1394 is an unchanging name)
"status"	Displays the results of verification tests for the connection status and synchronization connection.
"Sync mode"	Displays the synchronization settings of the LX main unit
"sync select"	Displays the set (linked) order of the master unit and slave unit for synchronized operations.

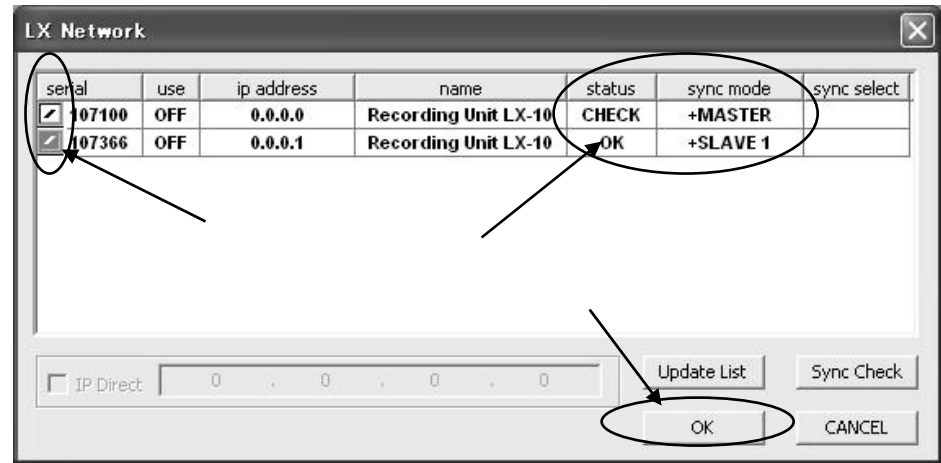
# Recording Synchronization

Explanation of names displayed immediately after launching the program or after "Update List" has been performed.

After Initial display & "Update List" are performed	Check BOX display status	"Status" display	"sync mode" display
Executable unit (previously executed unit)	Check mark present		
Non-executable unit	No check mark present		
Unit in use (non-executable)	Red check mark present (Grey background)	USE	
Unit of outside IP address outside (non-executable)	No check mark present (Grey background)	IP ERR	

2. The dialog in the diagram below is displayed when "Sync Check is clicked upon. A check mark is displayed for the unit set to the master unit and a check mark with a grey background is displayed for the unit set to the slave unit. Confirm the verification test results for the synchronized connection and that a check mark is displayed in the check box, and click "OK".

The diagram below shows that the serial number 107100 for master and 107366 for slave 1 have been set, that the synchronized connection verification is indicated properly (under "status", **CHECK** is displayed for the master unit, and **OK** is displayed for the slave unit), and that a check mark is automatically displayed in the check box next to the serial number.(The check box for the slave unit is grey) Clicking the "OK" button in this state will launch LxNavi, which controls the master unit.



Explanation of names after executing "sync check"

After executing "Sync Check"	Check box display status	"Status" display	Sync mode display
The set master unit of synchronization operations	Check mark present	CHECK	MASTER
The set master unit of synchronization operations (connection result OK)	Check mark present (grey background)	OK	SLAVE n (n is the slave number)
The set master unit of synchronization operations (connection result NG)	No check mark present	NG	SLAVE n (n is the slave number)
Set stand-alone unit	No check mark present		NO SYNC
Non-responsive unit model for synchronization operations	No check mark present		NOT SUPPORT
Unit in which a communications error has occurred	Red check mark present (grey background)	ERROR	
Unit in use	Red check mark present (grey background)	(USE)	
Unit outside IP address group	No check mark present (grey background)	(IP ERR)	

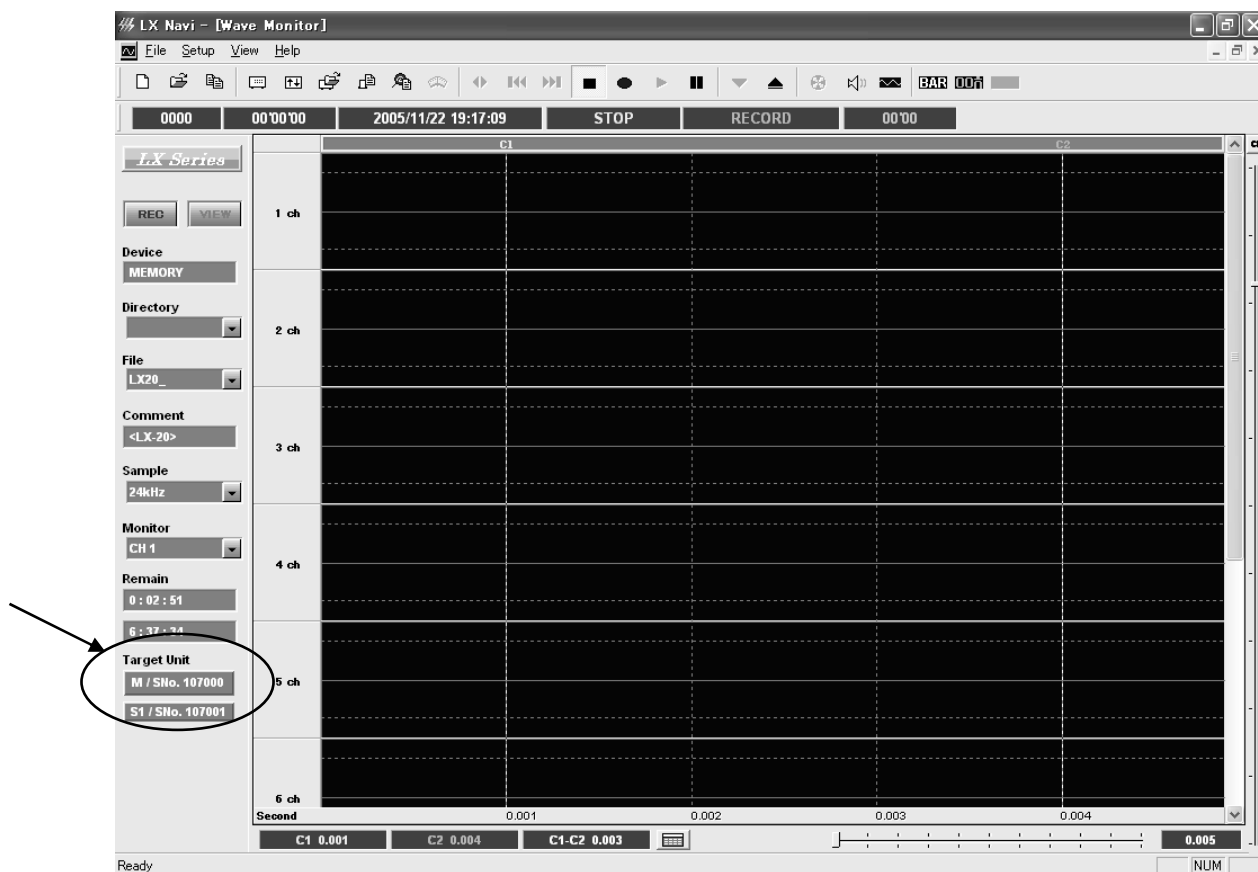
A "+" mark will be displayed in front of modified settings under "sync mode".

"Unit in use" and "units outside IP address group" will not be a target of "sync check".

## Recording Synchronization

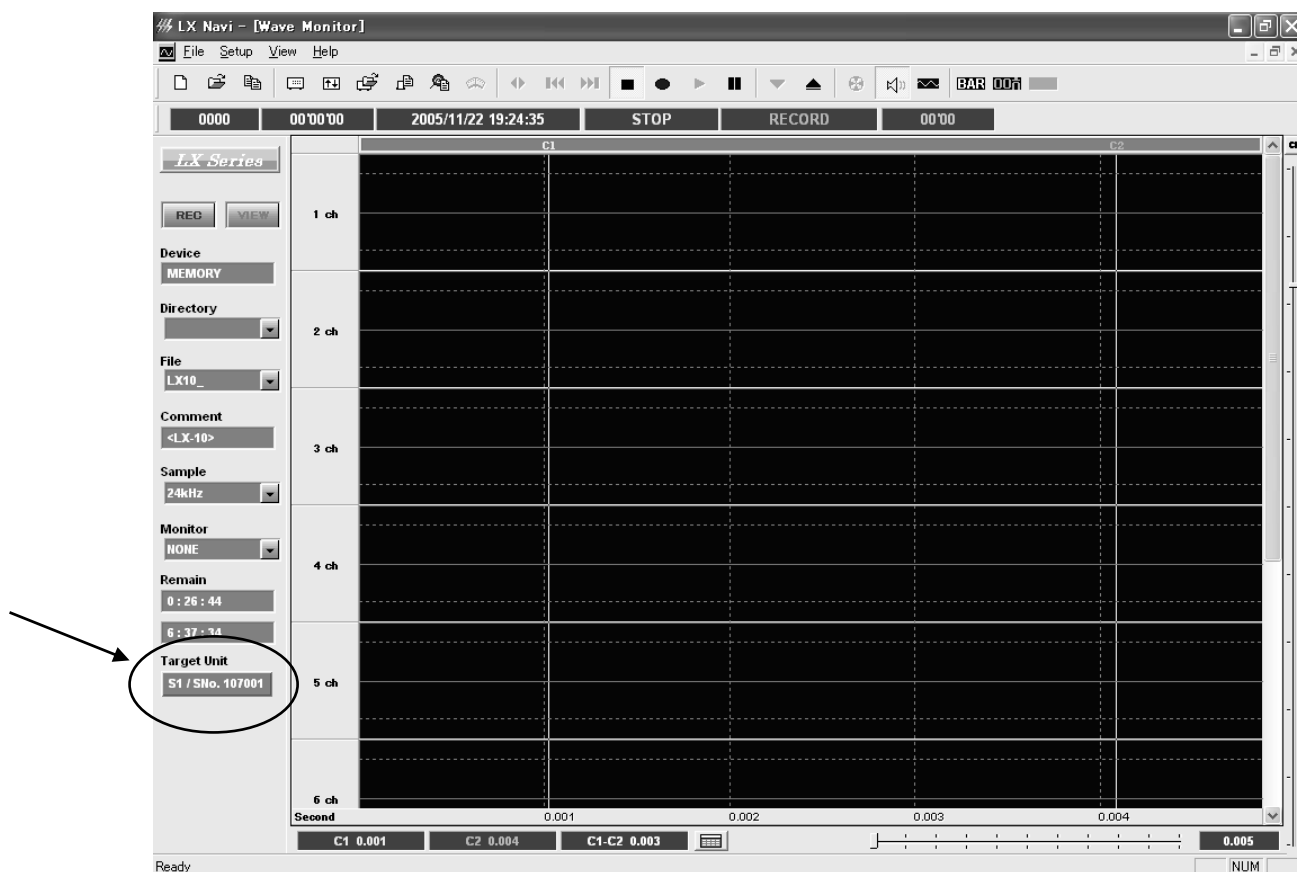
3. The main LX Navi screen of the master unit is displayed. In the bottom left of the screen under **Target Unit** the “M/name or serial number” is displayed. This main screen indicates the master unit. Moreover, the slave unit connected to the master unit is show below in “S\*/ name or serial number”.

In order to launch the LX Navi display screen of the next set slave unit, minimize the main display screen of the displayed master unit.



4. When LX Navi is re-launched from a PC, the LX selection dialog (LX Network) indicated in step 1 is displayed. In order to launch the LX Navi display screen set to the slave unit, click the box in the <serial> field of LX main unit set to the slave unit and click [OK]. (If the background of the check box is grey, click on it twice, confirm that a normal check mark is displayed and click [OK]).

The main LX Navi display screen of the selected slave unit will now be shown. In the bottom left of the screen under **Target Unit** the "S\*/name or serial number" is displayed. This main screen indicates the slave unit.



Open the main display for other slave units connected in the same manner. While maximizing or minimizing the main display screen of the master unit and each slave unit, set each recording condition of the LX main unit.

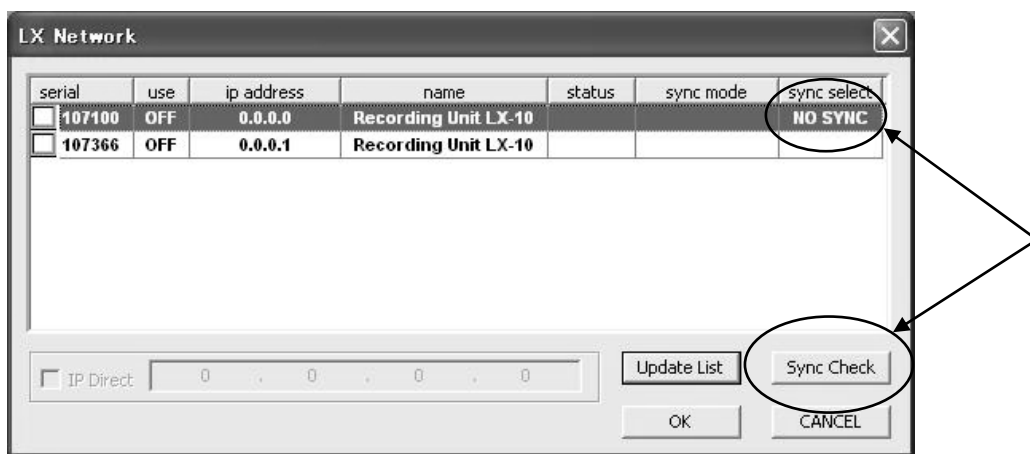
5. If all LX main unit settings of synchronized recording end, close the main screen of all slave units, except for the main screens of the master unit and slave units that require monitoring while recording. Recording can be started and finished by operating the main window of the master unit.

6. Close LxNavi in the opposite order to which it was started (slave n..., slave 1, master).

## Recording Synchronization

### Miscellaneous

- As LxNavi stores previously executed LX main unit serial numbers, if a previously used LX main unit is connected to an identical segment, a check mark will be present upon start-up, making execution possible with a simple click on [OK].
- Since the synchronization settings of the LX main unit are stored after being set only once, the next time the "Sync Check" button is clicked, synchronized connection verification all that is necessary. (Settings for the master and slave selection only have to be done once.)
- If the LX main unit of the performed synchronization settings is used as an independent unit (mode in which normal synchronization operations are not done), clicking on the LX clock "sync select" cell ("NO SYNC" is displayed) will execute "sync check". If this operation is performed once, the settings will be stored in the main unit, and normal start-up methods are all that is necessary next time.



The diagram above shows the state after right clicking on the "sync select" column; where synchronized operation serial number 107100 has been reverted back to independent unit settings. Click the "Sync Check" button while in this state.

If the LX main unit of the performed synchronization settings is used as an independent unit without changing to stand-alone mode, LX may get unstable.  
Change LX to "NO SYNC" before LX is used as stand-alone mode.

- While the LX selection dialog (LX Network) is displayed, clicking on the "sync check" button will display the results of the synchronization connection verification under "Status". "CHECK" will be displayed for the master unit which executed synchronization connection verification, and "OK" will be displayed for a verified slave unit connection. If "NG" is displayed for the slave unit, make sure that the synchronization connection cable is correctly connected, press the "sync check" again, and execute synchronization connection verification.
- If you wish to check the LX connected to the same segment again after the LX selection dialog (LX Network) has been displayed, click the "Update List" button. (If the LX power is turned on after launching LxNavi, etc)