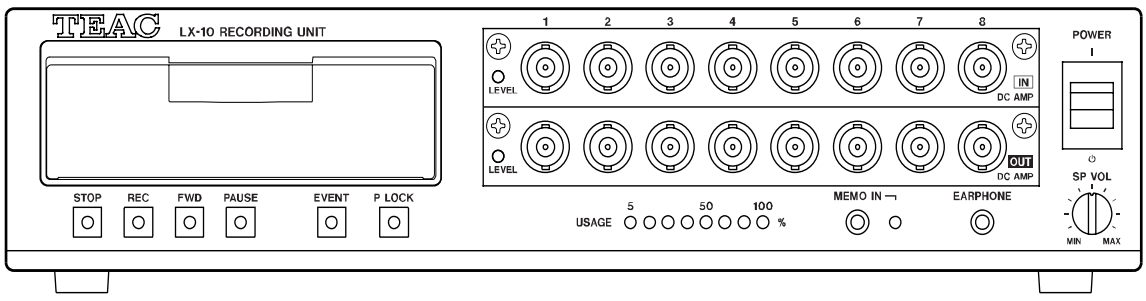
TEAC

RECORDING UNIT

LX Series

Instruction Manual

Please read this manual before using the product, and keep the manual handy.



TEAC Corporation May 2006 D00634900D

CAUTION:

- Read all of these Instructions.
- Save these Instructions for later use.
- Follow all Warnings and Instructions marked on the product.

1) Read instructions -- All the safety and operating instructions should be read before the product is operated.

2) Retain instructions -- The safety and operating instructions should be retained for future reference.

3) Heed Warnings -- All warnings on the product and in the operating instructions should be adhered to.

4) Follow instructions -- All operating and use instructions should be followed.

5) Cleaning -- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

6) Attachments -- Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7) Water and Moisture -- Do not use this product near water -- for example, near a bath tub, wash bowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.

8) Accessories -- Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Any mounting of the product should follow the manufacturer l s instructions, and should use a mounting accessory recommended by the manufacturer.

9) Ventilation -- Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer l s instructions have been adhered to.

10) Power Sources -- This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

11) Grounding or Polarization -- This product may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

12) Power-Cord Protection -- Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the product.

13) Lightning -- For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

14) Overloading -- Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in risk of fire or electric shock.

15) Object and Liquid Entry -- Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

16) Servicing -- Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

17) Damage Requiring Service -- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
a) when the power-supply cord or plug is damaged.
b) if liquid has been spilled, or objects have fallen into the product.
c) if the product has been exposed to rain or water.
d) if the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
e) if the product has been dropped or damaged in any way.
f) when the product exhibits a distinct change in performance -- this indicates a need for service.

18) Replacement Parts -- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

19) Safety Check -- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

20) Heat -- The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

FCC Part 15

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution

Changes or modifications to this equipment not expressly approved by TEAC CORPORATION for compliance could void the user's authority to operate this equipment.

For the customers in Europe

WARNING

This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Pour les utilisateurs en Europe

AVERTISSEMENT

Il s'agit d'un produit de Classe A. Dans un environnement domestique, cet appareil peut provoquer des interférences radio, dans ce cas l'utilisateur peut être amené à prendre des mesures appropriées.

Für Kunden in Europa

Warnung

Dies ist eine Einrichtung, welche die Funk-Entstörung nach Klasse A besitzt. Diese Einrichtung kann im Wohnbereich Funkstörungen versursachen ; in diesem Fall kann vom Betrieber verlang werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.

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7. MISCELLANEOUS
This agreement is governed by the laws of Japan.

Should you have any questions concerning this Agreement, or if you desire to contact TEAC for any reason, please write to the address set forth below:

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Fax: +81-422-52-1990

Section 7 Appendixes

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Section 1 Preface

Overview

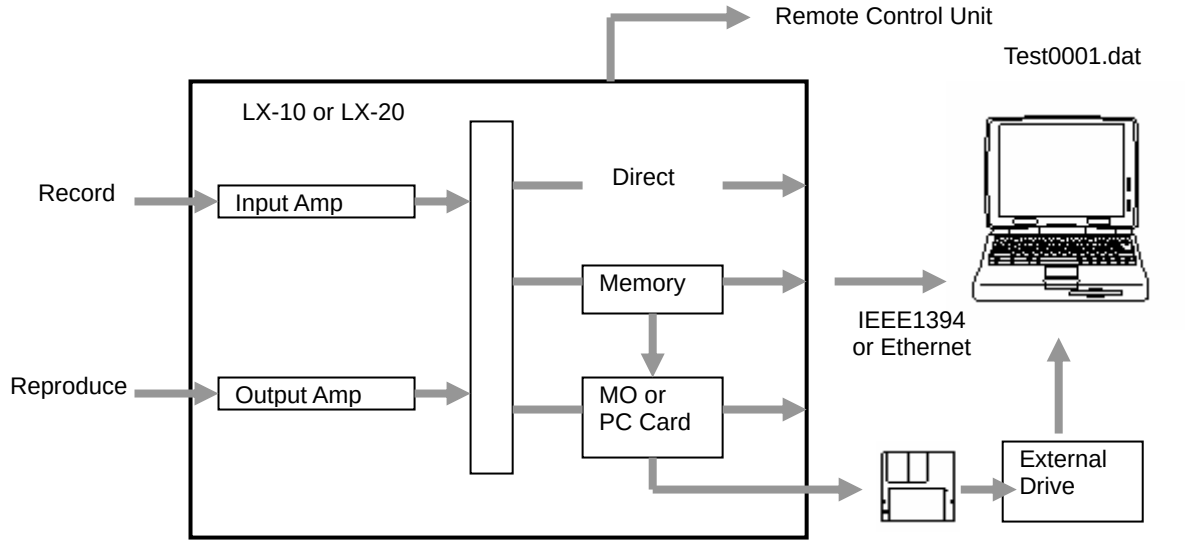
The LX series instrumentation data recorders can record and reproduce signals of a maximum 48 kHz sampling frequency via 8 channels onto MO (Magneto Optical Disk) or PC card media. Recorded data on the media is stored as PC files. The maximum input channels are 32 channels by using the selectable types of the 8 channels input cards and the optional channel expansion unit.

You can choose the recording media among the followings: Recording to the internal memory, 3.5 inch MO, PC card, and a PC.

The file format is TEAC's proprietary TAFFmat format. TAFFmat files can be loaded into commercially available analysis software.

From a PC you can use the supplied LX Navi software to set recording conditions such as the input range or sampling frequency. The interface with a PC is hot-pluggable and compatible with IEEE 1394, so after setup you can disconnect the LX while the power is still on, and start or stop recording by using control buttons on the main unit. You can also use LX Navi to record or reproduce while connected to a PC. You can chose the 100BASE-TX Ethernet interface as alternative.

An optional color LCD remote control unit is available to set recording conditions, to record and reproduce, and to monitor by using bar meters.



Features

- Input/Output Amps

The LX main unit equips 2 slots and the optional expansion unit provides additional 2 slots for installing the input amps and/or the output amps. The input/output amp provides 8 channels inputs/outputs from the below selections.

DC input amp card:	Use to connect voltages and/or to connect signals of external amplifiers. Another DC input amp card for meeting lower sampling frequencies is available.
PA amp input card:	Addition to voltage inputs, use to connect IEPE (Integrated Electronics Piezoelectric)type accelerometers. Another PA amp card for providing A/C weighting filter is available.
ST amp input card:	Use to connect strain gauges and/or gage-type sensors, also voltages.
Analog output amp card:	Use to reproduce analog signals.

- Recording Modes

You can select either MO drive or PC card drive for data recording on to a removable media.

Memory recording:	Recording to 64MB (add up to 512 MB as option) internal memory. Stored data can be transferred to the removable media or the PC.
MO recording:	Recording to 1.3GB MO. Stored data on the MO can be loaded into the PC by using an MO drive mounted.
PC card recording:	Stored data on the PC card can be loaded into the PC by using the PC card slot.
PC recording:	ecording directly into the PC.

You can also transfer data to a PC while recording to memory or the media, or automatically save to the media after recording to memory.

- Sampling Frequency Series

Addition to the LX-10/10L providing with 96 kHz sampling frequency series, the LX-20/20L provide with the selections of the sampling frequency series of 102.4 kHz, 100 kHz, 96 kHz, or 65.536 kHz and the tachometer pulse inputs.

- Interface to PC

You can select either IEEE1394 (LX-10/20) for higher speed data transfer or 100BASE-TX (LX-10L/20L) for LAN configuration on an interface to communicate with a PC.

- Real Time Monitor

You can monitor the data as formats of wave forms, bar graphs, and digital displays on the PC display while recording. You can reproduce the recorded data on the internal memory or the media.

A Variety of Recording Triggers

Manual:	Starts recording manually.
Level Trigger:	Starts recording by detecting level changes in a specified channel.
External Trigger:	Starts recording by using an external signal as the trigger.
	Pre-trigger: A pre-trigger can record the data that was read into a buffer before a recording-startcondition (based on a level trigger or external trigger) was satisfied.
Post-trigger:	Continues to record for a set period even after a recording-stop condition (based on a level trigger or external trigger) was satisfied.

Interval operation: Repeatedly starts and stops recording for a specified number of times, during a specified period.

- Event Marks

You can mark data during recording, and search for such event marks when you want to reproduce some recorded data.

- Recording and Reproducing Voice Memos

A microphone amp and a speaker are built in, so you can record and reproduce (listen to) voice memos.

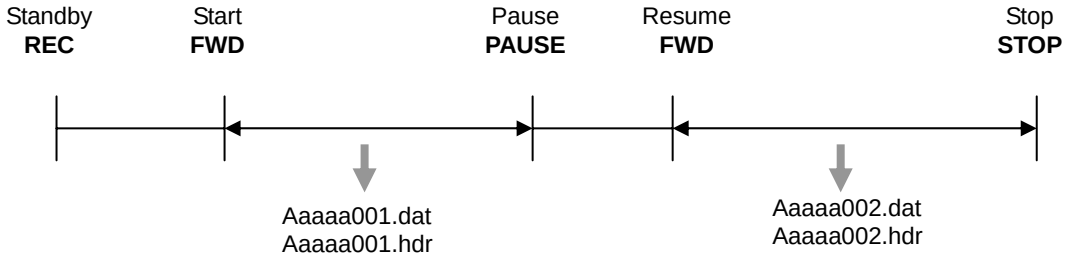
About TAFFmat

TAFFmat (an acronym for Teac Data Acquisition File Format) is a file format composed of the following:

- a data file containing A/D (analog to digital) converted data. The file is in binary format with the extension dat.
- a header file containing information such as recording conditions. The file is in text format with the extension hdr.

This document uses the term ID to refer to a collection of data collected from the start of recording on the LX series until the recording is stopped or paused. For each ID, one data file and one header file is recorded. A voice memo is recorded as a WAV file with the extension wav.

The above files share a common file name, to which is appended an ID number. When a new file name is specified, this ID number becomes 1. Each time recording starts, this number is incremented by 1.

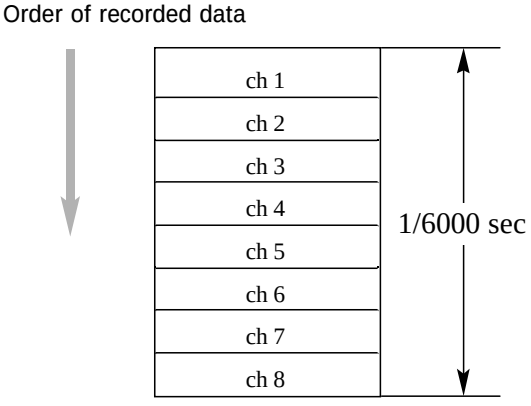


A/D-converted data is recorded as 2-byte integers from -32768 to +32767. Negative numbers are expressed as complements of 2. The byte order is from the lower bytes to the higher bytes. The data order is as follows: first sampling channel order -> second sampling channel order ->...-> last sampling channel order. At the LX series, ADC value +/- 25000 represents +/- 100 % of the input range.

This document uses the term scan to refer to a collection of data resulting from one sampling. A data file is a collection of scan repetitions.

Example:

Data of 1 scan when the sampling frequency is 6 kHz:



Notes on Usage

- Use of a UPS is Recommended

We recommend that you use a UPS (Uninterruptible Power Supply) whenever you use an AC adapter. This can protect important data during a power stoppage. If power is turned off while a media is in a drive, data recorded on that media might become unreadable. Use an optional battery unit to back up the operation at the power stoppage.

- Use Specified Media Only

Use 1.3 GB, 3.5 inch MO disks from Fujitsu Ltd.
Use PC cards checked by TEAC in advance (contact us for information).
Other media might be unable to record or reproduce correctly.

PC Cards Checked by TEAC for Correct Operations (As of August 2005)

<table>
<tr><td colspan="2">Sun Disk
Compact Flash</td><td colspan="2">Buffalo
Compact Flash</td><td colspan="2">Micro Drive</td></tr>
<tr><td>128MB</td><td>SDCFB-128-801</td><td>64MB</td><td>RCF-X64MY</td><td>340MB</td><td>DMDM-10340</td></tr>
<tr><td>256MB</td><td>SDCFH-256-903</td><td>256MB</td><td>RCF-G256M</td><td>1GB</td><td>DSCM-11000</td></tr>
<tr><td rowspan="2">512MB</td><td>SDCFB-512-801</td><td>1GB</td><td>RCF-G1G</td><td></td><td></td></tr>
<tr><td>SDCFH-512-801</td><td>2GB</td><td>RCF-G2G</td><td></td><td></td></tr>
<tr><td rowspan="2">1GB</td><td>SDCFB-1000-801</td><td colspan="2" rowspan="2">Lexar Media
Compact Flash</td><td colspan="2" rowspan="2">Rnesas PCMCIA TYPEⅡ
Flash memory card</td></tr>
<tr><td>SDCFB-1024-J60</td></tr>
<tr><td>SDCFH-1024-903</td><td>1GB</td><td>CF1GB-80-380</td><td>128MB</td><td>HB288128A5</td></tr>
<tr><td rowspan="2">2GB</td><td>SDCFB-2000-801</td><td>2GB</td><td>CF2GB-40-380</td><td>512MB</td><td>HB28B512A6</td></tr>
<tr><td>SDCFH-2048-J60</td><td colspan="2" rowspan="2">I･O Data
Compact Flash</td><td>1GB</td><td>HB28B1000A6</td></tr>
<tr><td colspan="2" rowspan="2">Hagiwara sys-com
Compact Flash</td><td>2GB</td><td>HB28B2000A8H</td></tr>
<tr><td>256MB</td><td>CFX-256M</td><td></td><td></td></tr>
<tr><td>1GB</td><td>HPC-CF1GZP</td><td>1GB</td><td>CF40-1G</td><td></td><td></td></tr>
</table>

- Remove Media Before Powering Off the LX

Remove the media before you power off the LX. If you power off the LX while data is being written, data recorded on that media might become unreadable. Also, remove the media before moving the LX main unit. Moving the unit while the media is inserted might result in damage, in particular on a MO disk.

- Remove Media

Remove the media only at the STOP state of the REC mode.

- Never Remove Recorded File, Never Rename File/Folder Name of Recorded File By Windows Operation

If you manipulate the recorded files on the media by Windows operation, such as partially removing the file, or renaming the file/folder name, the link between the data file and the header file will be lost or the writing speed to the media to support the specifications cannot be assured, and then the data will become unreadable on the PC when such media is re-inserted in the LX.
Write-protect an MO disk before inserting it into a PC drive.

- Clean Disk and Lens

Dust might collect on an MO disk or lens after they have been used for a long time. This dust might cause errors. To prevent this problem, clean the MO disk and lens using a cleaning kit (separate purchase). The period after which cleaning is required depends on the environment but, as a general rule, clean once every three months.

- ✓ To clean an MO disk, use the cleaning kit TZ-381 (separate purchase). To clean a lens, use the lens cleaner 0240470 (separate purchase).
- ✓ For details on how to clean, see the explanation supplied with the cleaning kit.

- Handling PC Card

To discharge static electricity from your body, touch a metallic surface near you before handling the unit. Never touch the media being inserted to the PC card slot while recording and playing back.

- Make Sure to Select FAT16 When Formatting Media by Windows Operation

The LX file format does not support FAT32, use FAT16 format before using.

- About No MO/PC Card Drive

The drive is not installed. Naturally, the functions concerning the recording to the media are disabled.

- About No Output Amp Model

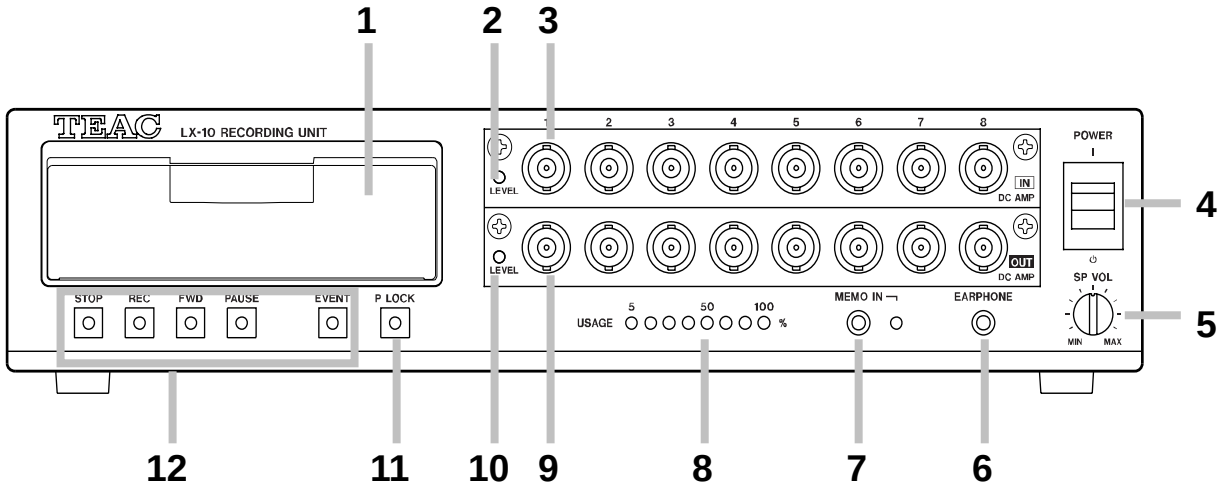
The output amplifier is not installed. Naturally, the functions concerning the output amp are disabled. However, you can view the reproduced data on a PC.

- Power OFF While Amp Calibration State

When turning on the power of the LX unit, the unit goes into the calibration of the installed amps automatically (Input level LED on each amp are flashing in red), and then goes to the ready state for operations (Input level LED turns on green). Turning the power OFF while the amp calibration state initializes the setting parameters.

Names and Parts

Front



1 Drive

Opening the cover reveals the disk slot.

2 Input level LED

When the input signal for some channel is larger than +/- 10 % of a set input range, the LED glows green.

When the signal exceeds +/- 115 % of the range, the LED glows red.

3 Input connector

Inputs the signal to be measured.

4 Power switch

Pushing the switch up turns on the power. Pushing the switch down turns off the power.

5 Volume knob

Adjust the volume for reproducing voice memos.

6 EARPHONE jack

Connects to an earphone when you are using the earphone to listen to voice memos.

When an earphone is inserted, sound does not come from the speaker.

7 MEMO IN jack

Connects to a microphone used for voice memos.

8 USAGE LEDs

Indicates the usage rate of the recording device. During recording to memory, these LEDs indicate what percentage of the total memory is being used. During recording to a media, these LEDs indicate what percentage of the total media capacity is being used. During recording to a PC, these LEDs indicate what percentage of memory is being used as the buffer for transmitting data. From the left, the LEDs indicate the percentages of 5, 10, 20, 35, 50, 70, 90, and 100%.

These LEDs also function as a low-voltage alarm, and blink when the power voltage falls to 11 V or less. In such a situation, recording or reproduction stops.

9 Output connector (When the analog playback amp card is installed into the slot.)

Outputs the reproduced signal. Outputs the input signal during recording-standby status or during recording. You can set the output range in 0.1 V steps, from 1 V to 5 V.

10 Output level LED (When the analog playback amp card is installed into the slot.)

When the output signal for some channel is larger than +/-10% of a set output range, the LED glows green. When the signal exceeds +/-115% of the range, the LED glows red.

11 P LOCK button

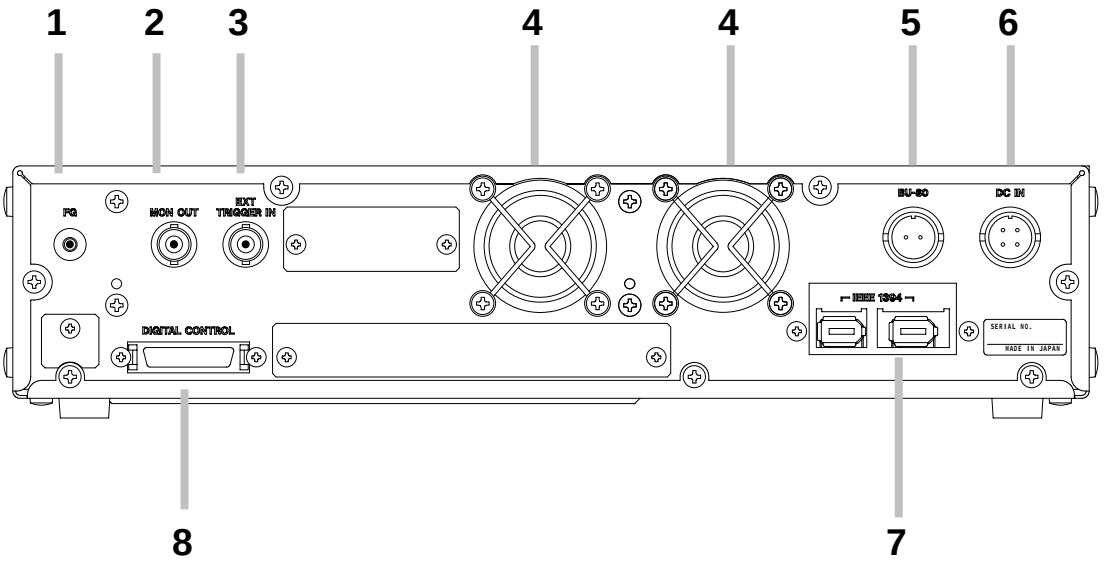
Pressing this button for 3 seconds causes the lamp to glow and disables the five buttons on the left: STOP, REC, FWD, PAUSE, and EVENT. To release the lock, again press the button for 3 seconds.

12 Recording/reproduction control buttons

Buttons used for recording or reproduction. Details are given later.

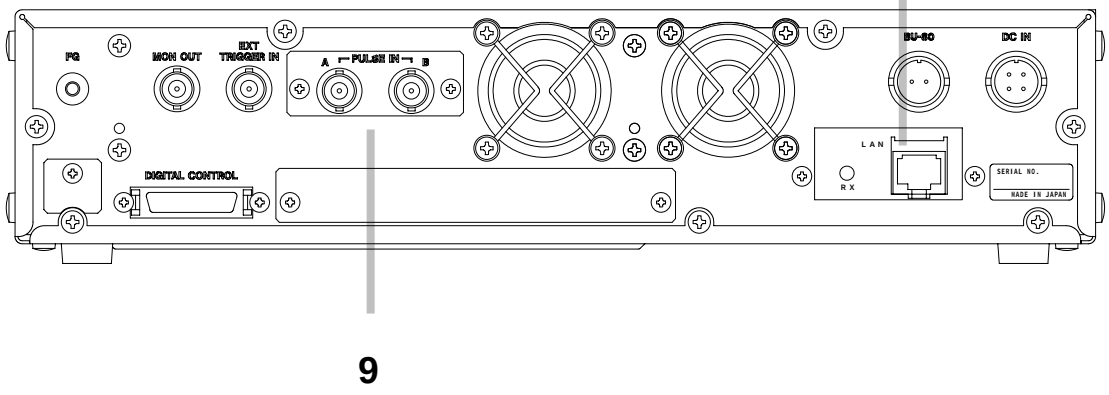
Rear

LX-10 IEEE 1394 Version



The LX-10L LAN version has an interface (at 7) shown below.

LX-20L LAN Version



The LX-20 IEEE 1394 version has an interface (at 7) shown above.

1 FG terminal

Connects the grounding wire.

2 MON OUT connector

Outputs in analog format, the signal of a channel during recording-standby status, recording, or reproduction. You use the supplied LX Navi software to select the channel you want to monitor. You can set the output range in 0.1 V steps, from 1 V to 5 V. The same filter as for the output amp is applied to this monitor output.

Outputs the generator output signal at the LX-20/20L.

3 EXT TRIGGER IN connector

Inputs the trigger signal when using an external contact signal as the trigger to start recording.

4 Cooling fan

Exhaust fans used for cooling the main unit. Do not cover the outlet vent.

5 BU-80 connector

Uses to connect the optional battery unit.

6 DC IN connector

Inputs power in the range from +11 to 30 V.

7 IEEE 1394 connector (LX-10/20 IEEE 1394 version)

Connects to a PC. Use a recommended interface card on the PC.

100BASE-TX connector (LX-10L/20L LAN version)

Connects to a PC. LED located side of the connector flashes while communications.

8 DIGITAL CONTROL connector

Use when using a contact signal to control recording or reproduction.

9 PULSE IN A/B connector (LX-20/20L version)

Connects tachometer pulse inputs.

Recording Times

- Recording to Memory, 8 channels, 64 MB standard memory (when not recording voice memos)

Sampling frequency (Value in brackets is the recording bandwidth with tolerances of +/-0.5 dB)		Recording time
96 kHz	(40 kHz)	40 s
48 kHz	(20 kHz)	80 s
24 kHz	(10 kHz)	160 s
12 kHz	(5 kHz)	320 s
6 kHz	(2.5 kHz)	640 s (approx. 10 min)
3 kHz	(1.25 kHz)	1,280 s (approx. 21 min)
1.5 kHz	(625 Hz)	2,560 s (approx. 42 min)

- Recording to MO, 8 channels (when not recording voice memos)

* This recording time at a 48 kHz sampling frequency is the value when using an MO disk on which nothing is recorded after formatting.

Sampling frequency (Value in brackets is the recording bandwidth with tolerances of +/-0.5 dB)		Recording time
48 kHz	(20 kHz)	1,600 s (approx. 26 min) *
24 kHz	(10 kHz)	3,200 s (approx. 53 min)
12 kHz	(5 kHz)	6,400 s (approx. 106 min)
6 kHz	(2.5 kHz)	12,800 s (approx 213 min)
3 kHz	(1.25 kHz)	25,600 s (approx. 7 h)
1.5 kHz	(625 Hz)	51,200 s (approx. 14 h)

- Recording to PC card, 8 channels, 1 GB PC card is used (when not recording voice memos)

* This recording time at a 48 kHz sampling frequency is the value when using an MO disk on which nothing is recorded after formatting.

Sampling frequency (Value in brackets is the recording bandwidth with tolerances of +/-0.5 dB)		Recording time
48 kHz	(20 kHz)	1,230 s (approx. 20 min) *
24 kHz	(10 kHz)	2,470 s (approx. 41 min)
12 kHz	(5 kHz)	4,940 s (approx. 82 min)
6 kHz	(2.5 kHz)	9,890 s (approx. 164 min)
3 kHz	(1.25 kHz)	19,790 s (approx. 329 m)
1.5 kHz	(625 Hz)	39,360 sec (approx. 11 h)

- Media recording time can be calculated as follows (result by approximately times.):

Recording Time (seconds) = (Media Capacity (Bytes) x 0.9) / [(Number of Analog Input Channels + Number of Tachometer Input Channels) x Sampling Frequency (Hz) x 2 + 8000]

Media Capacity x 0.9: Considering recording overhead of the media and an additional capacity needed for the header files, multiply 0.9 (90%) for the used capacity for data files.

Refer the tables later for a combination of the Sampling Frequency vs. the number of analog input channels can be selected in each recording mode.

Number of tachometer input channels: use "2" in 16 bits mode, "2" for 32 bits/1 channel mode, or "4" for 32 bits/2 channels mode. Use "0" instead of 8000 when the memo voice recording turns to OFF.

Sampling Frequency and Number of Channels

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.

Recording Condition 1

Recording Mode: Media recording to MO or PC card, while transferring data to PC

Memo Voice Recording: ON or OFF

Interface to PC: IEEE1394 or Ethernet

102.4 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*102.4	42	4	2	2	N/A
*51.2	21	8	4	4	4
25.6	10	16	8	8	8
12.8	5	32	24	24	24
5.12	2	32	32	32	32
2.56	1	32	32	32	32
1.28	0.53	32	32	32	32

100 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*100	41	4	2	2	N/A
*50	20	8	4	4	4
20	8	16	8	8	8
10	4.1	32	24	24	24
5	2	32	32	32	32
2	0.8	32	32	32	32
1	0.4	32	32	32	32

96 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*96	40	4	2	2	N/A
*48	20	8	4	4	4
24	10	16	8	8	8
12	5	32	24	24	24
6	2.5	32	32	32	32
3	1.25	32	32	32	32
1.5	0.625	32	32	32	32

65.536 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*65.536	27	4	2	2	N/A
*32.768	13	8	4	4	4
16.384	6	16	8	8	8
8.192	3	32	24	24	24
4.096	1.7	32	32	32	32
2.048	0.8	32	32	32	32
1.024	0.4	32	32	32	32

Remarks: Cannot select the moving average other than 1 (one) at the Sampling Frequency settings shown with *(asterisk).

Sampling Frequency and Number of Channels

Recording Condition 2

Recording Mode: Memory recording

Memo Voice Recording: ON or OFF

Interface to PC: IEEE1394 or Ethernet

102.4 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*102.4	42	8	4	4	N/A
*51.2	21	16	8	8	8
25.6	10	32	24	24	24
12.8	5	32	32	32	32
5.12	2	32	32	32	32
2.56	1	32	32	32	32
1.28	0.53	32	32	32	32

100 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*100	41	8	4	4	N/A
*50	20	16	8	8	8
20	8	32	24	24	24
10	4.1	32	32	32	32
5	2	32	32	32	32
2	0.8	32	32	32	32
1	0.4	32	32	32	32

96 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*96	40	8	4	4	N/A
*48	20	16	8	8	8
24	10	32	24	24	24
12	5	32	32	32	32
6	2.5	32	32	32	32
3	1.25	32	32	32	32
1.5	0.625	32	32	32	32

65.536 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*65.536	27	8	4	4	N/A
*32.768	13	16	8	8	8
16.384	6	32	24	24	24
8.192	3	32	32	32	32
4.096	1.7	32	32	32	32
2.048	0.8	32	32	32	32
1.024	0.4	32	32	32	32

Remarks: Cannot select the moving average other than 1 (one) at the Sampling Frequency settings shown with *(asterisk).

Recording Condition 3

Recording Mode: PC direct recording

Memo Voice Recording: ON or OFF

Interface to PC: IEEE1394

102.4 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*102.4	42	8	4	4	N/A
*51.2	21	16	8	8	8
25.6	10	32	24	24	24
12.8	5	32	32	32	32
5.12	2	32	32	32	32
2.56	1	32	32	32	32
1.28	0.53	32	32	32	32

100 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*100	41	8	4	4	N/A
*50	20	16	8	8	8
20	8	32	24	24	24
10	4.1	32	32	32	32
5	2	32	32	32	32
2	0.8	32	32	32	32
1	0.4	32	32	32	32

96 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*96	40	8	4	4	N/A
*48	20	16	8	8	8
24	10	32	24	24	24
12	5	32	32	32	32
6	2.5	32	32	32	32
3	1.25	32	32	32	32
1.5	0.625	32	32	32	32

65.536 kHz Series		Max. number of analog input channels based on the tachometer input setting			
Sampling Frequency (kHz)	Bandwidth (kHz)	No	16bits 2ch	32bits 1ch	32bits 2ch
*65.536	27	8	4	4	N/A
*32.768	13	16	8	8	8
16.384	6	32	24	24	24
8.192	3	32	32	32	32
4.096	1.7	32	32	32	32
2.048	0.8	32	32	32	32
1.024	0.4	32	32	32	32

Remarks: Cannot select the moving average other than 1 (one) at the Sampling Frequency settings shown with *(asterisk).