

Products > Professional Field Recorders > **FR-2 Field Memory Recorder**

MAIN FEATURES

- Records to innovative PCMCIA 1.8" hard disk drives and Type II Compact Flash
- Industry-standard BWF format. Stereo/mono selectable
- "File per Take" system with scene & auto take naming/increment
- Up to an 'industry-first' 24-bit 192KHz recording in the field
- 132 x 65 dot matrix LCD for ease of use & high visibility in the field
- Takes 'off-the-shelf' AA-size NiMH batteries for approx. 2 hours field operation (Compact Flash)
- Easy file transfer to PC/Mac via PCMCIA, CF adaptor or standard onboard USB connection
- Quick file naming on-board or via external keyboard (USB port as standard)
- Pre-recording loop buffer of approx. 10 seconds ensures no soundbite is ever missed
- Tough rigid housing designed for the rigors of location use
- Optional fully-featured timecode generator/reader card

OVERVIEW

Designed specifically for location sound recording, broadcast & sound effects acquisition, TV & radio documentary, and in fact any application where high quality audio recording is required, the Fostex FR-2 sets a new price performance ratio in the compact portable two track recorder market.

Flexibility is the keyword with the FR-2. Recording industry-standard Broadcast Wav Files (BWF) to either PCMCIA 1.8" hard drives or Type II Compact Flash cards, the FR-2 brings many features from Fostex's experience as a long-term leader in digital location recording such as a 10 second pre-record buffer, battery power, on-board limiter, and phantom powered balanced mic inputs. Of particular note is the file per take system with scene & auto take naming which was developed on the industry acclaimed PD-6 & DV40.

Specific 'firsts' on the FR-2 include the ability to record up to 24-bit 192KHz, making it the first choice where the highest quality sound effects acquisition is required; and the optional timecode card which has a fully-featured reader/generator, including 23.976, and external word/video references, making it an ideal basic production or location back-up recorder.

Annexe 1

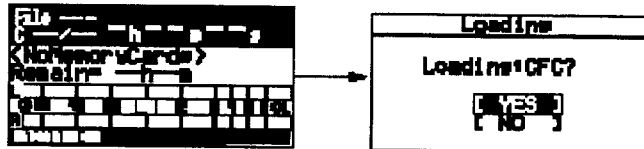
FR-2 Field Memory Recorder (Chapter 2: Before using the FR-2)

• Inserting a card

The following description assumes that no memory card is inserted to the unit and the power is turned on. "NoMemoryCards" is shown on the display. In the following procedure example, let's assume we are going to use a virgin CompactFlash card which is FAT32 formatted.

- 1) Insert a memory card to card slot (1).

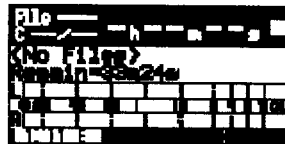
When inserting a memory card to the slot, the display shows the screen for asking you whether loading the card or not. (If you insert an ATA to slot (2), "Loading: PCMCIA?" is shown.)



- 2) While "YES" is highlighted, press the [ENTER] key.

The FR-2 starts loading the card.

When loading is completed, "<No Files>" is shown on the display, together with the remaining time (or space) of the card. This shows that no audio file exists on the card. When making recording, an audio file is automatically created on the card. For details, see "Chapter 5: Recording/playback" from 47 pages.



If you load a memory card on which any audio files created by the FR-2 are stored, the first file in the entry list ("File001") automatically is selected and the recorder locates the beginning of that file, while the display shows the Home screen of the file.

***When loading a used FAT32 formatted card**

When loading a card which has been used with a PC, etc., the display also shows "<No Files>", as the screen example above. If any data is recorded on the card, the remaining space which can be used for recording by the FR-2 may be smaller. Therefore, we recommend to format the card using the "Format" menu item on the "Disk" menu in the MENU mode. See "Formatting a memory card" on page 76 for details.

***When loading a card which is not FAT32 formatted**

When loading a card which is not FAT32 formatted, the display shows a warning message ("Illegal Format!"). You need to format the card according to the procedure described in "Initial format of a memory card" on the next page.



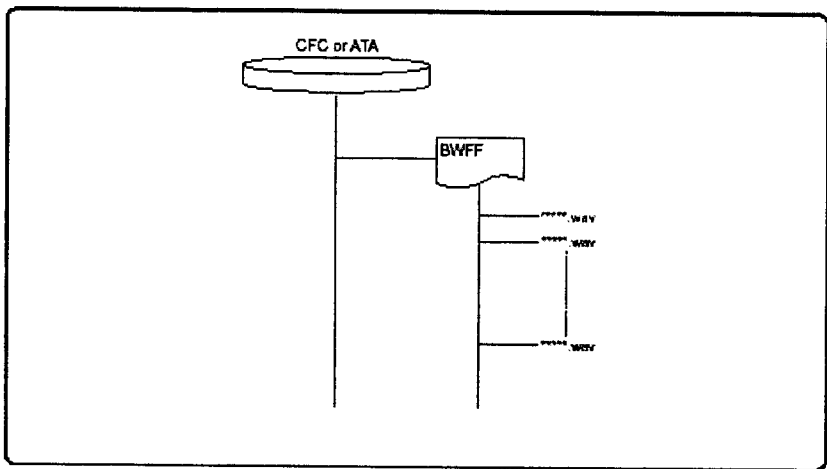
FR-2 Field Memory Recorder (Chapter 5: Recording/playback)

About recording system

The FR-2 uses the FAT32 (File Allocation Table 32) file system and supports the most common BWF (Broadcast Wave File) file format.

You can make recording in the stereo (L/R) or mono track mode. When recording in stereo, two (L and R) WAV files are created, while a single WAV file is created when recording in mono.

A BWF file created is stored in the "bwff" folder which is created on a CFC/ATA (see the figure below). The FR-2 uses the "1 take - 1 file" system. With this system, each time you make recording, a new audio file is created on the card. Note that you cannot make additional recording or overwriting to an existing file.



By connecting the FR-2 to your PC, you can transfer an audio file recorded by the FR-2 to the PC, and vice versa. Therefore, you can copy an audio file recorded by the FR-2 to a PC hard drive or export it to a computer application such as Digidesign Pro Tools.

The table below shows the approximate recording time on a 1GB card (CFC or ATA). Note that actual recording time may be slightly different depending on card manufacturers.

FS/BIT	Recording time in stereo	Recording time in mono
22.05kHz / 16bit	Approx. 192 minutes	Approx. 384 minutes
44.1kHz / 16bit	Approx. 96 minutes	Approx. 192 minutes
44.1kHz / 24bit	Approx. 64 minutes	Approx. 128 minutes
48kHz / 16bit	Approx. 90 minutes	Approx. 180 minutes
48kHz / 24bit	Approx. 60 minutes	Approx. 120 minutes
88.2kHz / 24bit	Approx. 32 minutes	Approx. 64 minutes
96kHz / 24bit	Approx. 30 minutes	Approx. 60 minutes
176.4kHz / 24bit	Approx. 16 minutes	Approx. 32 minutes
192kHz / 24bit	Approx. 15 minutes	Approx. 30 minutes

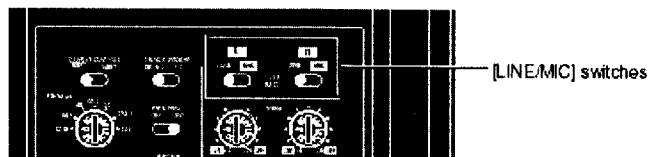
FR-2 Field Memory Recorder (Chapter 5: Recording/playback)

Recording analog audio

To record analog audio, some control and switch settings are necessary.

Selecting the input source

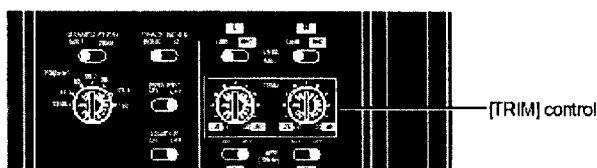
Set the [LINE/MIC] switch for each (L, R) channel appropriately according to the source (microphone or line) connected to the associated [ANALOG IN] (L/MONO or R) connector.



Adjusting the input gain

Using the [TRIM] control for each (L, R) channel, you can adjust the input gain for the associated channel to accept signal within the following nominal input level range.

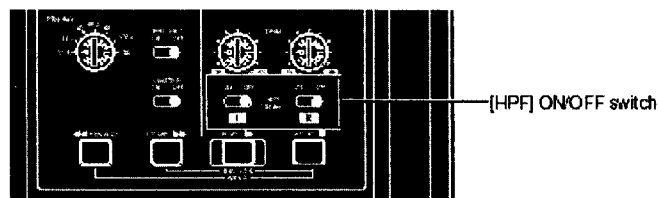
When the [LINE/MIC] switch is set to "LINE"	Between -30 dBu and +4 dBu
When the [LINE/MIC] switch is set to "MIC"	Between -60 dBu and -26 dBu



High-pass Filter

The FR-2 is equipped with the high-pass filter circuit. The cutoff frequency is 100 Hz and the filter slope is -12 dB/oct. The [HPF] switch, which selects ON or OFF of the high-pass filter, is provided for each channel.

The filter is useful to eliminate the wind noise during location recording or unnecessary low frequency noise when recording a voice or sound.

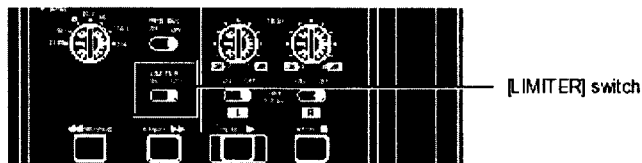


FR-2 Field Memory Recorder (Chapter 5: Recording/playback)

Limiters

By using the limiter, the signal level is prevented from exceeding a certain level. In result, the signal level fluctuation is suppressed. Therefore, the limiter is useful when recording a sound whose level is unknown. You can activate the limiter for both L and R channels by setting the [LIMITER] switch to "ON".

The FR-2 limiter uses the VCA (Voltage Controlled Amplifier) circuit. By default, the threshold is -2 dB under the 24-bit full-scale level (all bits: ON) and the compression ratio is 1:5. The limiter attack time is fixed to approximately 20 ms, while the release time is fixed to approximately 150 ms.

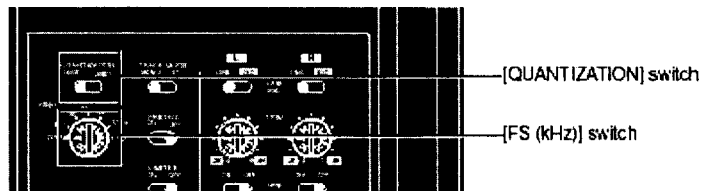


Selecting the sampling frequency/quantization bit length

You can select the desired sampling frequency ("FS " for short) and quantization bit length ("Bit" for short) for recording by using the [FS (kHz)] and [QUANTIZATION] switches on the top panel.

You can select the FS from among 22.05 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz, while you can select the Bit between 16 and 24 bit. The current FS and Bit settings are shown on the Home screen. See the available combination of FS and Bit settings in the table below.

While receiving a digital signal, the FR-2 automatically detects the FS and Bit from the receiving digital signal, which takes priority over the [FS (kHz)] and [QUANTIZATION] switch settings.



FS (kHz)	BIT	
	16bit	24bit
22.05	Yes	
44.1	Yes	Yes
48.0	Yes	Yes
88.2		Yes
96		Yes
176.4		Yes
192		Yes



<Note>: During recording (or input monitor), the FS and Bit follow the current switch settings. While stopped (or during playback), the FS and Bit recorded on the current file are shown.

<Note>: During recording, you cannot change FS and Bit setting. If you change the [FS] select switch setting during recording, the switch setting becomes effective when recording stops.