

FR-2LE Digital Audio Recorder

from Fostex

Reviewed by LAURA DIMOCK, *Victoria University of Wellington*

1. INTRODUCTION. I used the Fostex FR-2LE digital audio recorder on a three-month field trip to remote Malakula in Vanuatu in 2007. This review specifically evaluates this recorder as a tool for linguistic fieldwork. The main features of this recorder are:

- it records to Compact Flash (CF) cards (I used 4GB Transcend 120x cards)
- it can record mp3 files (192 kbps), wav files up to 96 kHz, 24-bit (stereo or mono with firmware update)
- it has two XLR inputs with 48V phantom power
- it uses four AA batteries or a 7.2V ‘radio control car’ battery

2. PHYSICAL CHARACTERISTICS. This recorder is not one that can fit in your hand or your pocket. It is 57 x 206 x 132 mm, and at 1.16 kg with a bulky 7.2V battery in it, is heavier than many other options. While it is bigger than many recorders, it comes with a strap and is still portable. There is a benefit to its size—the display is easily readable, and there is plenty of room for conveniently-sized buttons and knobs. You can hold the recorder without accidentally pressing something that you shouldn’t.

The outside casing is strong plastic, with a sturdy metal frame underneath. I’ve never been concerned that it would be broken by crushing or dropping. I’m more concerned about water, humidity, sand, and dust. I keep mine in a pelican case with desiccant when not in use, and I didn’t have any problems in three months in Vanuatu.

3. POWER. It can be powered with four AA batteries, a single 7.2V battery such as those used for radio-controlled model cars, or 12V DC input (either from a 12V battery or an AC adapter). Battery life depends on sampling rate, bit rate, etc. I found that recording at 48kHz, 24-bit stereo without phantom powering, I could get 2.5 hours on four alkaline AA (the cheap kind), 4.5 hours on four good quality NiMH AA (2600 mAh), or 8.5 hours on a rechargeable 7.2V battery (NiMH 4200 mAh). That’s not as good as my old minidisc recorder, which would get over ten hours of recording time from a single AA battery, but the FR2-LE is still adequate. Unfortunately, if you want to do much recording, you probably won’t get by with just alkaline AAs, but instead will need some kind of power source for recharging your batteries (I have been using a solar panel). For many field linguists, this is a major inconvenience, but not quite as bad as batteries that can’t be replaced with fresh ones (like those used in the M-Audio MicroTrack). And it is good to know that you can use AAs if necessary.

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4. USER INTERFACE. I appreciate that most of the functions you will need to use when recording in the field are accessible by using buttons and knobs, rather than embedded in a menu somewhere. For other, less frequently used functions, I find the menus intuitive and easy to navigate. For the most part, this digital recorder is accessible to people who have experience only with analogue recording equipment.

The LCD display is easy to read, can be back-lit, and shows you useful information such as recording levels, battery level, elapsed recording time, how much room is left on the CF card, file name, current settings for inputs, phantom power, current date and time, etc. There is also a handy levels-meter on the side (which becomes the top when one uses the shoulder strap). Unfortunately it is made up of LED lights, and unlike the main display, it is difficult to see in bright daylight.

As a playback machine, the FR-2LE can perform basic functions such as play, fast-forward, rewind, etc. It has a built-in speaker which I have found very useful for playing recently recorded texts to a small audience. Its headphone jack produces a little noise. Recordings sound noticeably better when played on a computer. But if I try to use the machine to play back a file for transcription or phonetic analysis, I run into trouble, because it is lacking in some of the more advanced playback features. You can mark up to ninety-nine cue points per audio track, but skipping to the desired point can involve a lot of button pressing. There is no AB repeat or even track-repeat function. When used in combination with a laptop, of course, none of that matters.

To interface with a computer (PC or Mac), you can either use a USB (2.0) cable or remove the CF card and use a card reader. I do the latter, and I appreciate the simplicity. There is generally no need to install any drivers or software. The files just appear as wav files. Thankfully, no conversion software is required.

5. AUDIO. The FR-2LE has two internal microphones. I never use them, so I don't know about their quality, but it's good to know they're there in case of an emergency. This recorder has two XLR inputs (with separate level controls for each), and can therefore be used with any of the high-quality microphones that use XLR connections. Microphones that don't use an XLR connection would require an adaptor.

The main advantage of the FR-2LE over other recorders is the quality of recordings it can produce. Many field recorders make a lot of self-noise (of the hiss or static variety) due to poor quality components, or they don't get enough volume from speech because they are designed for recording music. The FR-2LE seems to have been designed with film-making in mind, and so is capable of recording quiet sounds. When I use this recorder paired with a head-mounted microphone, I get clear sound files with plenty of volume and very little noise. Not only is this pleasant to listen to, but it is very important if you (or anybody else) want to do acoustic analysis of any of your data.

The 96 kHz sampling rate is really overkill for recording speech, so you can cut back to 44.1 kHz to save room on the CF card (but I tend to use 96 kHz anyway). The 24-bit recording ability is nice. A very important feature is that it can record in mono (after a firmware upgrade), which can save a lot of room if you are recording only one speaker. Unfortunately, you can not make files of different sampling rates/bit rates/channel numbers on the same CF card because you choose these settings while formatting the card. So if you

ever need to use different audio formatting options, you'll probably need more than one card (I personally have eight in case of computer failure while in the field). In a way, swapping to another card works like switching to another preset recording mode.

6. OTHER FEATURES. The FR-2LE has many design features to prevent loss of data. When the batteries get critically low, it stops recording, leaving enough time to save everything before shutting down. It also saves the recording to file every 60 seconds in case of sudden loss of power (for example by disconnecting the battery or unplugging the adapter). If you try to delete a file from the CF card on the machine, it doesn't actually delete it at all; it just removes it from a play list so that it is invisible to the machine. The only way to actually delete a file is to reformat the entire card and start from scratch, or delete it with the help of a computer. While this prevents accidental deletion (and maybe also prevents the file structure from being corrupted), it is a problem if you want to delete that file to make room for more recording without losing the other files.

7. SUMMARY. Overall, I really like this machine for field recording when used in combination with a laptop, and when there's access to a power source. It is durable, dependable, simple, and makes recordings of high quality. It has a few annoying shortcomings, but no critical flaws, at least for my own needs.

Pros:	Durable; dependable; simple controls; very good audio quality
Cons:	Cannot delete a single file; levels meters invisible in daylight; large; expensive; short AA battery life
Primary function:	Records digital audio files on Compact Flash cards
Platforms compatible:	Windows, Mac, Linux, etc. (for reading audio files off of CF card)
Cost:	US\$599
Reviewed version:	Firmware version 1.10
Documentation:	Comes with a manual (also available on the manufacturer's website, http://www.fostexinternational.com/docs/pro_products/fr2le.shtml)

Laura Dimock
 Laura.Dimock@vuw.ac.nz