

# SOUND DEVICES



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## 2.24 Badger

Beta Firmware For All 7-Series Recorders

User Guide Addendum

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2.24 Badger beta firmware adds new features and improves the performance of all 7-Series recorders. Badger re-introduces MP3 file recording and adds MP2 and FLAC file recording giving the recorder the capability of reducing data size when necessary.

In addition to new file types, enhanced multi-unit linking is new to version 2.24. Linked recorders will share sample accurate start and stop times. The CL-1 will now roll multiple linked units.

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*Revision 2.24 firmware is unreleased, unsupported, non-production code. We expect that there are bugs in this code. It is released expressly in order to preview future functionality and to find bugs and errors through user's experience. Use at your own risk. We strongly recommend against using for any type of critical production or recording. Unreleased firmware should only be tested by users with a thorough understanding of the operation of the 7-Series Recorders. Revert to the present release revision, 2.15, for critical use and support.*

*If you experience performance problems, lockups, bugs, or other anomalies with this revision, please report them to Sound Devices using either e-mail ([support@sounddevices.com](mailto:support@sounddevices.com)) or from our web-based case assignment tool.*

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## Added Features

- MP3-file format recording at numerous data rates
- MP2 file format recording at numerous data rates
- FLAC file format recording and playback

## Changes

- Multiple linked units now record with sample-accurate start and stop times, making file management easier in post production
- CL-1 can be used to roll multiple linked recorders

## Fixes

- Increased accuracy of drop frame calculation (previously was losing 0.1 frame/hour)
- Gain accuracy improved, better match between actual gain and displayed gain
- Files can be played back when selected from the Setup Menu File: View Files (bug introduced in 2.15).

# File Types

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Sound Devices has implemented MP2, MP3, and FLAC file types to allow the ability to reduce data storage when necessary.

## FLAC

Free Lossless Audio Codec is a lossless data compression algorithm specifically designed for audio. It is a convenient way to extend recording time with no effect on audio quality. It is suitable for recording and archiving. FLAC, in particular, offers data compression rates that range anywhere between 30% and 60%, depending on the audio program. Sound Devices also introduces Wave Agent ([www.waveagent.com](http://www.waveagent.com)) a free Windows based software used to extract FLAC to WAV as well as combining monophonic files and splitting polyphonic files.

### What to consider when recording FLAC:

- notes are currently disabled, all other metadata is stored
- input routing is limited to inputs 1 and 2 and tracks A and B only

- limits your sampling rate to 96 kHz
- limits recording to only one storage medium at a time
- The 7-Series can play back the recorded FLAC files.
- Use Sound Devices Wave Agent software ([www.waveagent.com](http://www.waveagent.com)) to extract Broadcast Wave files from 7-Series recorded FLAC files.

## MP2

MPEG-1 Layer II is a lossy compression algorithm often used for speech recording.

### What to consider when recording to MP2:

- time code is disabled (no BEXT or iXML data)
- limits the user to recording 2 track files data rates 256 kb/s and above
- limits your input routing to inputs 1 and 2 and tracks A and B only
- limits your sampling rate to 48 kHz
- limits your bit depth to 16 bit
- limits recording to only one storage medium at a time

## MP3

MPEG-1 Layer III is a lossy compression algorithm often used for music.

### What to consider when recording to MP3:

- time code is disabled (no BEXT or iXML data)
- limits your input routing to inputs 1 and 2 and tracks A and B only
- limits your sampling rate to 48 kHz
- limits your bit depth to 16 bit
- limits recording to only one storage medium at a time

The chart below indicates the limitations of all file types available on Sound Devices 7-Series recorders.

File Format	Bit Depth (bits)	Sampling Rate - kHz (Bit Rate – kbps)	Maximum Number of Tracks	File Extension	Multi-Medium Recording
PCM	16 or 24	32 to 192	4	.WAV	yes
FLAC	16 or 24	32 – 96	2	.FLAC	no
MP2 (mono)	16	32, 44.1, 48 (64, 96, 128, 160, 192)	1	.MP2	no
MP2 (stereo)	16	32, 44.1, 48 (64, 96, 128, 160, 192, 256, 320, 384) *	2	.MP2	no
MP3 (mono)	16	32, 44.1, 48 (32, 64, 96, 128, 160, 192, 256, 320)	1	.MP3	no
MP3 (stereo)	16	32, 44.1, 48 (32, 64, 96, 128, 160, 192, 256, 320) **	2	.MP3	no

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\* For MP2-Stereo, the per-channel bit rate is half of the selected bit rate.

\*\* MP3-Stereo uses Joint Stereo Coding, which improves per-channel resolution over MP2-Stereo but can not be quantified into a specific per-channel bit rate.

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Sample rate, bit depth, media select, input routing, and time code mode can all be effected when MP2, MP3, and FLAC are selected. When switching back to WAV file type the user will have to reset the setup menu appropriately. For example once MP2 or MP3 have been selected the user must manually re-activate the desired time code mode after re-selecting another file type.

## Multi-Unit Linking Addition

Two or more units linked via C-Link ports will carry word clock, time code (702T, 744T), and now the files will have sample accurate start and stop times making file management easier in post. The CL-1 connected to the master recorder will successfully start and stop recording on all linked units.

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*Playback is not linked with multiple, linked 7-Series recorders.*

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