Owner's Manual

ZFR800

Handheld Recording Microphone

Zaxcom

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Change History

2007-04-05

- Initial release.

2007-05-31

- Replaced ZaxConvert screenshots with currently shipping software.
- Added Transcend SD Media, recording media size, power switch, headphone output, and 10 dB pad information.

Trademarks

Table of Contents

Getting Started

What's in the Box

The following items are included in the ZFR800 Recording System:

- ❏ ZFR800 Recorder

Features

- ❏ Fault tolerant recording
- ❏ Removable miniSD recording media
- ❏ Record up to eight hours of uncompressed audio with a 2 GB memory card
- ❏ 32KHz, 44.100KHz, 48KHz, 48.048KHz sample rates
- ❏ 24 bit A-D converter with 24-bit file output
- ❏ Accepts Shure™ screw on heads (*microphone heads are purchased separately*)
- ❏ Built-in SMPTE time code generator and reader
- ❏ RF Receiver for remote time code synchronization and remote control
- ❏ Continuous record mode with record markers (Infinite Pre-Record Buffer)
- ❏ All aluminum uniform diameter body (Perfect for broadcast flags)
- ❏ Frequency selectable high pass filter
- ❏ Selectable peak limiter
- ❏ 10 hour running time on a single cell battery
- ❏ RF receiver for Time code entry and remote control
- ❏ Camera friendly design with a uniform diameter body perfect for broadcast flags
- ❏ Graphic backlit LCD display
- ❏ Headphone monitor output for quality control
- ❏ Zaxcom file conversion utility for both Mac OS X and Windows XP.
- ❏ Broadcast wave or compressed file output
- ❏ Ergonomic camouflaged keypad for single handed operation of all recording functions

The TRX800 and ZFR800 are designed, manufactured and serviced in the USA by Zaxcom.

About the ZFR800

The ZRF800 is revolutionary in it s features and design. A true broadcast hand held that includes SMPTE time code. The code is jammed from the internal wireless receiver so it is always frame accurate.

The miniSD card is instantly removable. Flash memory has a finite life due to memory burnout. With a removable card you will always be ready to go. Instantly hand off recorded audio without handing off the recorder. When larger memory cards come out you are ready to go. Just plug it in.

The Handheld can record continuously so you will never miss a thing. Markers are instantly set with the push of a button to identify key points in memory for fast transfer of recorded material.

The Handheld is made from lightweight aluminum for a professional look and feel. The uniform diameter body is at home in the hands of a rock star or a news journalist alike. There are no visual distractions of different buttons or colors or company logos to get in the way of the performance being given or the story being told. Because the handheld body is a uniform tube the talent will not distracted by the feel of buttons or display.

Use the microphone capsule you are used to. The handheld will accept screw on heads from Shure". This gives you the sonic profile that your Artists or Journalists demand.

The ZFR800 has two recording modes, continuous and traditional record/stop. In continuous mode the handheld records from the moment it is switched on. This provides a continuous recording that may be instantly marked and identified to aid in transferring just the audio you want while providing an infinite Pre-Record buffer.

The Handheld records full resolution and bandwidth files at all times. If an MP3 type file and a full bandwidth file are both needed, the included PC/MAC conversion utility can generate both after the recording has been made. Any sample rate can be output from the transfer utility as well.

The recording file system used in the hand held is the Zaxcom Mobile Audio Recording Format. This is a fault tolerant system that eliminates the possibility of lost audio files due to the data centric nature of FAT32 file system. If power is lost during a recording no audio will ever be lost up to the point of the power disruption. The file system has been optimized for flash memory to avoid flash memory burn out due to the file system writing the directory in the same location over and over again as it would on a typical hard disk storage system.

Getting To Know Your ZFR800

1. Record button
2. Menu button
3. Increment button
4. Decrement button
5. LCD screen
6. MiniSD slot
7. Headphone jack

Record Button

The record button is located farthest from the display and has a circular symbol. This is button is indicated by the 1 in the above figure.

The record key on the ZFR800 is used to put the unit in record mode, stop mode, and to mark files.

When the ZFR800 is in stop mode, pressing the record key places the unit in the record mode. A single beep tone from the headphone monitor indicates the ZFR800 is now in the record mode.

When in the record mode, pressing and holding the record button for two seconds stops the recording. A dual beep tone from the headphone monitor indicates the ZFR800 is no longer recording and is in the stop mode.

When in the record mode, pressing the record key for one second or less places a track marker on the audio. This enables the post production staff to easily find that specific location in the audio file. Three beep tones from the headphone monitor indicates a track marker has been placed on the audio track.

NOTE: Audio beeps are not placed on the actual audio track.

Menu Button

The menu button on the ZFR800, indicated by the 2 in the above figure, is a square symbol. Pressing this button brings up the ZFR800 options.

Turning the ZFR800 On and Off

A power switch is located in the battery compartment near the positive battery contact. To operate the power switch, the battery door must be opened.

About the Headphone Output Connector

The ZFR800 headphone connector is used to monitor the recorded audio, and playback of the recorded audio. Since the ZFR800 is a mono device and the headphone output is designed to feed a mono headphone. If a stereo headphone is connected to the ZFR800, only one channel is active.

NOTE: There is currently no control over the headphone level. A future software revision will add a headphone volume level adjustment.

Monitor Beep Tones

Monitor beep tones signal when the ZFR800 recording state is changed. The chart below indicates the meaning of the tones.

	Indicates
Single Beep	Record mode
Dual Beep	Stop mode
Triple Beep	File marked

Using the Microphone Pad

A 10 dB pad is available on the ZFR800. The switch for the pad is located under the screw on the microphone capsule. It can be identified by the label on the interface board. Use a small screwdriver or toothpick to enable or disengage the 10 dB pad. Under normal conditions and for best quality audio, use the ZFR800 without enabling the pad. However, if you are using the ZFR800 with extremely high audio levels, enable the pad.

NOTE: It is normal for the noise floor to be a little higher than normal when the pad is enabled.

Mini SD Media Requirements

The ZFR800 records audio on MiniSD cards, and only SanDisk or Transcend MiniSD cards can be used. These brands of media are required because other brands of SD Memory can get jammed in the MiniSD Slot and damage the unit.

Any damage to the unit due to non-Sandisk or Transcend media voids the warranty.

Only use SanDisk normal speed MiniSD card media, or Transcend 80x speed media. These cards have been tested to ensure they have an acceptable write delay time.

Do not use SanDisk Ultra II cards. Formatting an Ultra II card in a ZFR800 may make the card unusable.

Recording Media Size

You can use SanDisk or Transcend mini SD memory cards from 128 MB to 2 GB. The 2 GB Mini SD card records a single track of audio for 12 hours without erasing any recorded audio on the card. Additional times on the various media sizes are listed in the following table.

Mini SD Size	Time Available
128 MB	45 minutes
256 MB	1.5 hours
512 MB	3 hours
1 GB	6 hours
2 GB	12 hours

Recording on the ZFR800

All audio from the ZFR800 is placed on the Mini SD card. This card is formatted using the ZFR800 and uses a FAT32 file system. By using the FAT32 file system, all Mini SD cards can be read by Windows and Mac OS computers.

Audio is recorded to the memory card as a single Broadcast WAV or .ZTF (Zaxcom Transcription Format) file. To use this audio file, you must use ZaxConvert, a transfer and conversion utility developed by Zaxcom. ZaxConvert is available for both Windows and Mac OS and freely available from Zaxcom s web site at http://www.zaxcom.com. It reads and converts the audio from the Mini SD card and places it on your computer.

Audio Quality

The high quality error free audio is always the utmost importance on the ZFR800. So when recording, audio is always stored at 24-bit/48 kHz. The ZaxConvert utility allows you to convert the file to 16-bits if desired, and a variety of different sample rates from the original 48˚kHz.

Audio Modes

There are two recording modes on the ZFR800. There is a loop mode and a conventional mode.

Loop Mode

The loop mode provides a way to continuously record audio. Once the media card is filled, current audio replaces the previously recorded audio at the beginning of the recording. The table on the previous page shows the media sizes and how much recording time is available before audio is looped. When in the loop mode, the ZFR800 displays LREC on the front status display.

Conventional Mode

The conventional mode never replaces any audio on the media card while recording. When the Mini SD card is full the recording is automatically stopped and you must erase or change the media card to continue recording. When in the conventional mode, the ZFR800 displays REC on the front status display.

Memory cards from 128 MB to 2 GB can be used in the ZFR800. A 2 GB card records a single track of audio for eight hours without erasing any recorded audio on the card.

Important: The ZFR800 will not record to the memory card if it is not present when the unit is powered up or if it is removed with power on. If the card is ejected with power on the card must be reinserted and the ZFR800 power cycled in order to resume the recording function.

Menus

This section describes each of the menus in the ZFR800 and their function. To access all menus, except the main menu, the menu button on the unit is pressed until desired menu appears.

Main Menu

The Main menu contains the following four important pieces of information.

- ❏ Transport status - upper left corner
- ❏ Current time code of the segment - upper left
- ❏ Battery indication - lower left
- ❏ Audio level - bottom of the meter

Gain Menu

Access: Press the menu button until Gain appears in the top left of the LCD display.

The audio gain is used to set the gain of the microphone preamplifier. Use the increment and decrement keys to set the microphone gain. The gain is adjustable over a range of 36 dB. The gain should be set so that the meter is peaking between —20 and —10˚dB. This is about half way between —20˚dB and 0˚dB on the meter.

Time code menu

Access: Press the menu button until Time Code appears in the top left of the LCD display.

When accessed, the current generator time code value appears in the menu. The current frame rate also appears. Use the increment or decrement keys to change the current time code rate. If the rate is set to Auto, the ZFR800 automatically sets the rate when the unit is jammed.

Lock Menu

Access: Press the menu button until Lock appears in the top left of the LCD display.

The ZFR800 can be locked so that the Menu Key, INC and DEC keys are inoperative.

Locking the ZFR800

8. Enter the Lock menu.
9. Remain in the Lock menu for 5 seconds.
   The ZFR800 automatically locks the keys.

Unlocking the ZFR800

1. Press the Menu and Up Arrow keys simultaneously.
   The ZFR800 unlocks the keys.

HIGH-PASS FILTER Menu

Access: Press the menu button until High Pass appears in the top left of the LCD display.

The High-Pass filter menu indicates different high-pass filter cutoff frequencies. You can select a frequency from 30˚Hz to 220˚Hz. Use the Increment and decrement keys to change the high pass cutoff frequency.

All Filters are implemented in the digital domain, so the automatic compressor/limiter may engage even when no substantial audio is heard. The purpose of the limiter is to prevent the mic preamp from over-driving the A/D converter. Therefore the limiter operates on audio before it has been processed by the high-pass filter. If there is a massive amount of low frequency audio content being filtered out by the high pass filter, such as wind noise, you may hear the effects of the limiter without hearing the audio that caused the limiter to engage. If this problem occurs then the gain is set too high. Reduce the mic preamp gain below that level which triggers the limiter.

Limiter Menu

Access: Press the menu button until Limiter appears in the top left of the LCD display.

The LCD display also displays the current status of the limiter. Use the Increment and Decrement Keys to enable or disable the limiter.

When the input signal is too high for the gain setting, it is clipped and results in distortion and popping. The limiter is used to prevent clipping by beginning to engage around 10 dB from clipping. When using lavaliere microphones, you normally would enable the limiter function on the ZFR800. However if the input signal being fed to the ZFR800 is coming from a mixer that is using a limiter, you should not use the limiter function on the ZFR800.

Transport Buttons

The transport buttons; record, play, and stop, are located on the top of the ZFR800.

Record button

This button is used to put the ZFR800 into the record mode. If the record button is pressed when the ZFR800 is already in record mode the ZFR800 closes the current file and open up a new file at the time the button is pressed. The green LED blinks to confirm the creation of a new file. This is done to mark a point in time to make it easier to identify in post-production.

Stop Button

Pressing the stop button puts the ZFR800 into the stop mode. If the stop button is pressed when the ZFR800 is in the stop mode the playback segment pointer is decremented to the previously recorded segment. The word stop on the display change to show the segment number that is ready to play.

ZFR800 Recording Operation

Card Formatting

The memory card must be formatted by the ZFR800 before recording is possible.

To format the memory card do the following.

1. With the power off insert the memory card into the ZFR800
2. When the unit has fully initialized, press the menu key repeatedly until the instruction appears in the display indicating how to erase the memory card.
3. Press the up arrow key 5 times to begin the Erasing and formatting of the memory card. The ZFR800 displays its progress in formatting the memory card.

Important: Ensure the ZFR800 indicates that the formatting was successful before the card is used for actual recording. If the formatting fails **do not** use the memory card for recording in the ZFR800.

A 2 GB MiniSD card takes approximately 20 seconds to format.

Jamming ZFR800 Time Code

Time code is jammed into the ZFR800 by IFB800 time code/remote control transmitter. The ZFR800 sets itself to the rate transmitted. Time code accuracy of the ZFR800 is about 1 frame in 5 hours.

Important: The ZFR800 will not keep time code running with power off.

Setting the ZFR800 Name

The name set into the ZFR800 becomes part of the file name of the audio files generated by the ZFR800. It is also included in the metadata. 8 characters are provided for the ZFR800 name. The ZFR800 name will appear for a few seconds on power up in the LCD display window.

Setting the ZFR800 name

1. Press and hold the menu key as the ZFR800 is powered up.
2. Release the menu key when the unit has fully initialized.
3. Press the menu key repeatedly until NAME: appears in the display with an arrow pointing to the first character.
4. Press the up and down arrow keys to change the character that the arrow is pointing to. The characters A-Z and 0 to 9 are the available characters.
5. Press the menu button to proceed to the next character.

When finished press and hold the menu button to leave this function or power down the ZFR800 and the power it on to resume normal operation.

Transport Control Menu

Press the menu key on the ZFR800 until the transport status is located on the left side of the display. The current transport time code is displayed. When in this menu it is possible to stop the ZFR800 from recording and to play back recorded material.

Pressing the Down arrow key places the ZFR800 into stop mode. While in stop mode the playback pointer can be moved backwards by pressing the down arrow key.

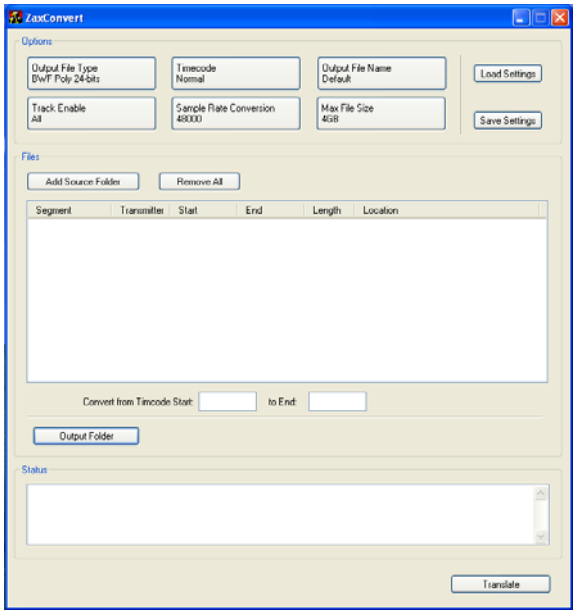
Pressing the UP arrow key places the ZFR800 into play mode. While in play mode the playback pointer can be moved forwards by pressing the up arrow key.

The current playback time code is displayed in the transport control menu.

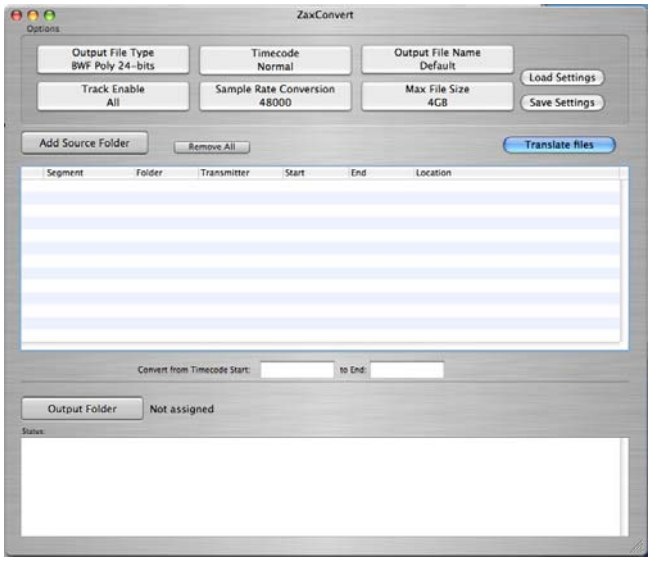
ZaxConvert

About ZaxConvert

The ZaxConvert software is available for both Microsoft Windows and Mac OS X. The software is functionally identical on both operating systems. You must use the ZaxConvert software to convert the audio from .ZAX files to .WAV files.



Windows XP — Main Window



Mac OS X — Main Window

Using ZaxConvert

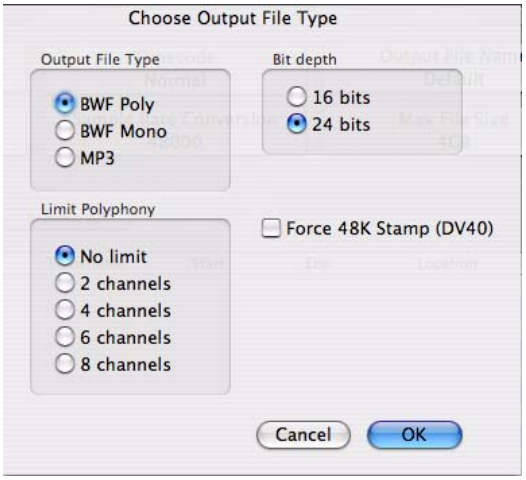
When you use ZaxConvert, you must first assign an output folder. Next, add your source folder. The following buttons contain additional options that are available when translating ZAX files to broadcast WAV files:

- ❏ Output File Type
- ❏ Time Code
- ❏ Sample Rate Conversion
- ❏ Maximum File Size
- ❏ Output File Name
- ❏ Track Enable

When displayed on the main screen, the button shows the current setting.

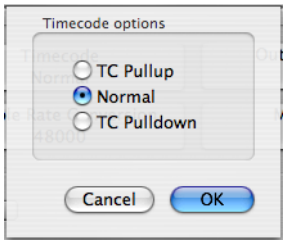
Output File Type

This menu allows you to select the number of channels, bit depth, and output file type. In addition, if the Post Production facility is using a DV40, you can force a 48K stamp to be used on the output files.



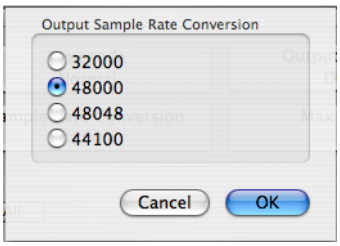
Time Code

This menu allows you to pull up or pull down time code, or leave the time code as it was set during the recording of the audio.



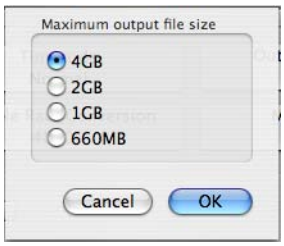
Sample Rate Conversion

This menu allows you to convert the sample rate from the 48 kHz sample rate used by the ZFR800 when recording audio.



Maximum File Size

This menu allows you to set the maximum file size of the audio tracks. This is useful when trying to place audio on media or when trying to limit the file size. Many audio applications can only handle files that are 2 GB or smaller due to limitations in the .WAV file format.



Output File Name

Reserved for future use.

Track Enable

Reserved for future use.

Specifications

ZFR800 Specifications

Frequency response	20Hz to 20 KHz
A-D resolution	24-Bit
Dynamic range	107dB
Distortion	less than .01%
Recording time	8 Hours on a 2.0 Gig Card
Battery Life	10 Hours
Battery Type	CR123 3.0V
Size	1.46-in. (37 mm) diameter
Length	5.8-in. (147 mm) *without microphone head*
Weight	14 Oz (397 g)

Warranty

Zaxcom Warranty Policy and Limitations

Zaxcom Inc. values your business and always attempts to provide you with the very best service.

No limited warranty is provided by Zaxcom unless your Zaxcom ZFR800 (Product) was purchased from an authorized distributor or authorized reseller. Distributors may sell Products to resellers who then sell Products to end users. Please see below for warranty information or obtaining service. No warranty service is provided unless the Product is returned to Zaxcom Inc. or a Zaxcom dealer in the region where the Product was first shipped by Zaxcom.

Warranty Policy

Zaxcom ZFR800 carries a Standard Warranty Period of one (1) year.

NOTE: The warranty period commences from the date of delivery from the Zaxcom dealer or reseller to the end user.

There are no warranties which extend beyond the face of the Zaxcom limited warranty. Zaxcom disclaims all other warranties, express or implied, regarding the Products, including any implied warranties of merchantability, fitness for a particular purpose or non-infringement. In the United States, some laws do not allow the exclusion of the implied warranties.

Return Material Authorization (RMA)

No Product may be returned directly to Zaxcom without first contacting Zaxcom for a Return Material Authorization ("RMA") number. If it is determined that the ZFR800 may be defective, you will be given an RMA number and instructions for Product return. An unauthorized return, i.e. one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped prepaid and insured to the address on the RMA in an approved shipping container. Your original box and packaging materials should be kept for storing or shipping your Product. To request an RMA, please contact Zaxcom by telephone. There is an RMA form on the Zaxcom web site www.zaxcom.com. Please fill out the form and return it with the product for repair. Zaxcom will return the warranty repair via 2nd day UPS or FedEx at their discretion. If overnight service is required a FedEx or UPS account number must be provided to Zaxcom to cover the shipping expenses.

Warranty Limitations

Zaxcom's limited warranty provides that, subject to the following limitations, each Product will be free from defects in material and workmanship and will conform to Zaxcom's specification for the particular Product.

Limitation of Remedies

Your exclusive remedy for any defective Product is limited to the repair or replacement of the defective Product.

Zaxcom may elect which remedy or combination of remedies to provide in its sole discretion. Zaxcom shall have a reasonable time after determining that a defective Product exists to repair or replace a defective Product. Zaxcom's replacement Product under its limited warranty will be manufactured from new and serviceable used parts. Zaxcom's warranty applies to repaired or replaced Products for the balance of the applicable period of the original warranty or thirty days from the date of shipment of a repaired or replaced Product, whichever is longer.

Limitation of Damages

Zaxcom's entire liability for any defective Product shall in no event exceed the purchase price for the defective Product. This limitation applies even if Zaxcom cannot or does not repair or replace any defective Product and your exclusive remedy fails of its essential purpose.

No Consequential or Other Damages

Zaxcom has no liability for general, consequential, incidental or special damages. These include loss of recorded data, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any Products, the installation of replacement Products, and any inspection, testing, or redesign caused by any defect or by the repair or replacement of Products arising from a defect in any Product.

In the United States, some states do not allow exclusion or limitation of incidental or consequential damages, so the limitations above may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Your Use of the Product

Zaxcom will have no liability for any Product returned if Zaxcom determines that:

- ❏ The product was stolen from Zaxcom
- ❏ The asserted defect:

1. is not present,
2. cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than Zaxcom, or
3. is attributable to misuse, improper installation, alteration (including removing or obliterating labels and opening or removing external covers (unless authorized to do so by Zaxcom or an authorized Service Center)), accident or mishandling while in the possession of someone other than Zaxcom.

- ❏ The Product was not sold to you as new.

Additional Limitations on Warranty

Zaxcom's warranty does not cover Products which have been received improperly packaged, altered, or physically abused.