

# USER MANUAL

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Firmware Version ZMT217



ZAXCOM.COM

# ZFR400

the ultimate stealth recorder

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# ZFR400



## 1. Card / Power Key

- Push and hold for 2 seconds to power on the ZFR400.
- Push and hold 3 seconds followed by a quick press of the MENU key to power the ZFR400 off .
- Press 3 times quickly to access the sub menus.
- Press 3 times quickly to return to the home screen.

## 2. OLED Display

### 3. Menu / Play Key

- Press it to access the next menu item.
- Press it with the CARD key to playback a segment.

## 4. INC / Record Key

- Increases the parameters of a menu item.
- Pressing INC with the CARD key will manually put the ZFR400 into record. Please note recording can be initiated while in any menu and not only from the home screen.
- Pressing while not recording will start playback.
- Pressing while playing back will advance playback, multiple presses will cause playback to advance in larger increments, press and hold will advance to the next segment.

## 5. DEC / Stop Key

- Decreases the parameters of the menu items.
- Pressing DEC with the CARD key will stop the recording. Please note recording can be stopped while in any menu and not only from the home screen.
- Pressing while playing back will cause the ZFR400 to stop playback, then if pressed again will cause playback to jump back within that segment. Press and hold will jump back to the previous segment.

## 6. Microphone Connector (3 pin Lemo)

**1. Micro SD Card Slot**

Inserting a Micro SD card:

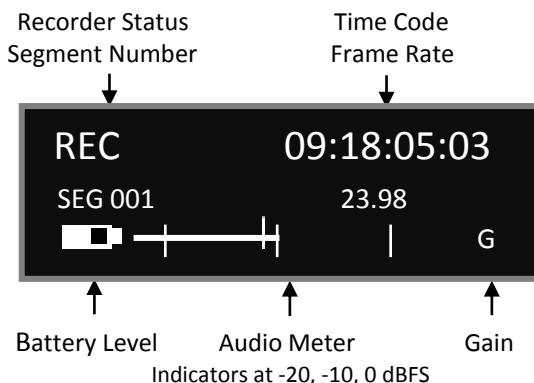
With the OLED screen of the ZFR400 facing you, turn the card so the finger contacts are facing away towards the battery compartment and pointing down toward the slot. Insert the card into the slot and press it down until there is a slight click. To remove it, press the card in until the same click is heard again.

**2. Microphone Connector (3 pin Lemo)****3. Battery Compartment**

ZFR400 uses 1 NP50 battery.

**Warning:** Some batteries can vary in size which may cause some batteries to get caught on the gasket when opening the battery door. If this happens DO NOT fully open the battery door or try to reclose the door while the battery is stuck, as this can damage the power connector and will need to be sent in for service. If a battery gets caught please pull the battery off the door first.

## Home Screen



**Transport Status** - Displays the current mode of the recording feature.

- STOP - Recording / Playback is stopped
- LREC - ZFR400 is recording in LOOP RECORD mode.
- REC - ZFR400 is recording in NON-LOOP RECORD mode.
- PLAY - ZFR400 is playing back a recorded audio file.

**Time Code and Frame Rate** - Displays the time code that is being recorded or playing back.

**SEG** - Displays the number of recorded segments on the micro SD card. Please note that regardless of the size of the card it is limited to 500 segments.

**Battery** - This displays the approximate percentage of remaining battery power.

**Audio Meter** - Displays the modulation of the inputted audio signal.

**Gain** - "G" Appears when the ZFR400 is receiving change of gain commands via ZaxNet.

## Main Menu

To cycle through the main menu press the MENU key.

### Home Screen



Recorded files can be played back from the home screen.

#### Playing back from the home screen

- Pressing the INC key while stopped will play the segment number that is displayed.
- Pressing the DEC key while playing back will stop the playback.
- Holding the INC key will jump ahead one segment.
- Pressing the DEC key while stopped will jump back.
- Pressing the INC key while in play mode will cause the playback to jump ahead, repeated quick presses will cause playback to advance in larger increments.
- Holding the DEC key will jump back one segment.

### Microphone Gain Set



The microphone gain is adjusted from this menu. This menu displays the gain in decibels and a meter indicating the audio signal. The meter is displayed horizontally from left to right. Pressing the INC key increases the gain and pressing the DEC key will decrease the gain.

### Lock Page



← Countdown clock starting at 5 seconds



← After the ZFR400 locks

This page enables a key lock function so no parameters can be changes. When the lock page is landed on a countdown clock will begin. After 5 seconds the ZFR400 will lock and the display will indicated that it is LOCKED and after 5 seconds will go blank. If this screen is exited before the 5 seconds are up the ZFR400 will not lock. To lock the ZFR400 before the 5 seconds press and hold the DEC key.

Pressing the INC key when the ZFR400 is locked will display the ZMT's group and unit code, and the serial number. Pressing the DEC key will display the units name, battery voltage and current record segment number.

#### Unlocking the ZFR400

Press and hold the MENU key and press INC keys 5 times. Or power down and reboot the ZFR400.

## Sub Menus

### Menu groups

The ZFR400 has five sub menu groups

- **Time Code** - Changes the time code parameters of ZFR400.
- **Record** - Changes the parameters of the on-board recorder.
- **ZaxNet** - Changes the parameters of the ZaxNet transceiver.
- **Audio** - Changes the parameters of the transmitted and recorded audio.
- **Setup** - Changes the parameters of the general operation on the ZFR400.

### Accessing and navigating the menu groups

From in the home screen press the CARD key three times, or hold the MENU key while booting up, to access the sub menu groups. Then pressing the INC or DEC key will cycle between the menu items.

### Entering and navigating a sub menu

When landing on the desired menu group, press the MENU key to enter that menu.

To return to the top of the menu press the MENU key to cycle to the top or press and hold the MENU key for 1.5 seconds.

### Exiting the extended menu

Press the CARD key 3 times, or press the MENU key to cycle through the sub menu items until HOME MENU is displayed then press the MENU key.

## TIME CODE MENU

### Time Code Frame Rate Set

TIMECODE 23.98

GEN 09:18:05:02

This menu is where the time code frame rate is set.

The ZFR400 will lock to and record all standard time code frame rates.

- 23.98, 24, 25, 29.97DF, 29.97DF, 30 DF, 30 NDF

### Time Code Source Select

TC SOURCE:

ZAXNET (RF)

The time code source menu selects how the ZFR400 will receive its time code.

- **ZAXNET (RF)** - The ZFR400 will receive time code via ZaxNet from a Nomad, a QRX235, IFB100/200, TRX900CL or a TRX transmitter or another ZFR recorder that is transmitting ZaxNet time code.
- **AUDIO INPUT** - The ZFR400, with a proper cable, will receive time code via the microphone input. When time code is connected, it takes the ZFR400 approximately three seconds to recognize the TC. The screen will display TIME CODE followed by JAM when it is recognized. Please note that when using the microphone input connector, the audio level of the time code signal needs to be between -30 and -10 dBFS on the unit's meter. Any level above -10 may cause clipping, which will prevent proper reading of time code.

### TC Jam Mode Select

TC JAM MODE:

AUTO-JAM NORMAL

This menu controls if the ZFR400 will go into record when it receives a record run time code.

- **AUTO-JAM NORMAL** - The ZFR400 will continuously jam time code via ZaxNet and will go into record when receiving a record command via ZaxNet or if the unit is put into record manually by pressing the CARD and INC keys simultaneously.
- **AUTO-LOAD REC RUN** - In Auto-Load mode the ZFR400 will go into record when it detects rolling time code, and will stop when the time code stops. If time code is lost because the IFB signal is too weak the unit will not stop but will continue in whatever state it was in until the time code signal is restored.

## Mute Time Code Transmission Until Jammed

MUTE TC SEND  
UNTIL JAMED: OFF

If the mute time code menu is set to ON the ZaxNet ZFR400 will not broadcast time code over ZaxNet until the ZFR400 receives time code and jams its own internal time code generator. This prevents the ZaxNet from sending incorrect time code to another device.

## Auto Frame Rate Enable

AUTO FRAME RATE  
ON (23.98)

When turned ON the ZFR400 will automatically set its frame rate to the frame rate that is being transmitted from the ZaxNet transmitter that is feeding the ZFR400. If auto frame rate is set to OFF the frame rate will need to be adjusted manually. Please note that auto frame rate will only work when the time code is being received over ZaxNet and will not work when time code is being received via the audio input.

## RECORD MENU

### SD Card Format

*This menu will only appear if a card was inserted prior to booting up*

PRESS UP KEY 5X:  
TO ERASE CARD

The Micro SD card is erased and formatted from this menu. To format the card press the INC key five times. Please note that all cards need to be formatted in the ZFR400 prior to recording.

Before formatting the card, the ZFR400 can optionally be named (see set up menu). When a ZFR400 is named that name is included in the recorded file names. By naming the ZFR400 it makes it easier to differentiate files from different recorders, so for example the card can be identified with the talents name, or any other unique identifier. The card name menu is located at the end of the set up menu. The factory default name is the ZFR400's serial number.

### Partial Format

If the card's FAT32 file structure gets corrupt while doing a file transfer, and the card is no longer recognized by the ZFR400 or by ZaxConvert, a partial format can be done. The partial format rewrites the FAT32 file structure and leaves the recorded audio untouched. To do a partial format from this menu press the DEC key 9 times "PARTIAL FORMAT" will then be displayed.

### Time Left on Card

*This menu will only appear if a card was inserted prior to booting up*

TIME LEFT 20 H  
TIME USED 4 H

This page displays the remaining record time left on the card as well as the time already recorded on the card.

### Automatic Record after Boot up

RECORD ON BOOTUP  
OFF

Record on boot up allows recording to automatically start after the ZFR400 boots up.

- **ON** - Recording will automatically start after the ZFR400 boots up.
- **OFF** - The ZFR400 will boot up and wait for a ZaxNet command or a manual trigger to start recording.  
To manually trigger record – simultaneously press the CARD and INC key.

## Recording Mode Set

**RECORD MODE:**  
**LOOP RECORD**

Record mode sets what the ZFR400 will do after the card is full.

- **NON-LOOP RECORD** - Once the card is full the recording will stop and FULL will be displayed. This setting prevents over-writing any portion of the audio.
  - **LOOP RECORD** - Once the card is full, the new audio will begin over-writing the oldest audio on the card.
- Please note that regardless of the record mode setting the card can only record 500 files.

## Low Battery Stop Set

**LOW BATT STOP:**  
**NEVER STOP**

Low battery stop will set the amount of time, after a low battery warning occurs, the ZFR400 will close the current file and stop recording.

This is to prevent possible file corruption if the unit constantly powers off and on due to a dead battery.

- **NEVER STOP** - The onboard recorder will not stop recording unless it is manually stopped by a key press, or when it receives a stop command via ZaxNet or if the battery dies.
- **Any interval from 1 to 99 minutes** - Once the battery indicator starts blinking the ZFR400 will continue to record for the time set here - then the ZFR400 will close the file and stop recording.

## ZAXNET MENU

### ZaxNet Mode

ZAXNET MODE: TX

This menu sets the mode of the ZaxNet transceiver.

- **OFF** - The ZaxNet transceiver is disabled. The ZFR400 will not receive ZaxNet commands or time code and it will not send any ZaxNet audio. Please note if ZaxNet mode is set to OFF the several ZaxNet menu items will not appear.
- **RX** - The ZaxNet transceiver will receive ZaxNet commands and time code.  
This screen will display what ZaxNet data is being received by the ZFR400. Including total received information packets, ZaxNet TC received and remote control commands received. This information is used for debugging purposes.  
Please note if the RX to TX Time is enabled the ZFR400 will not be able to be set to RX mode.
- **TX** - The ZaxNet transceiver will send ZaxNet confidence audio and time code.

### ZaxNet Receive Frequency Set

*This menu will only appear if ZaxNet is set to receive (RX) mode*

RX FREQ : 2.403 RX

SIGNAL : 28 |

The ZaxNet receive frequency is the frequency that the ZFR400 will get its wireless time code and remote control commands on. This frequency will need to match the frequency of the corresponding ZaxNet transmitter. The ZaxNet transmitter can be a QRX with QIFB, Nomad, TRX900CL or IFB100/200. The ZFR400 can also receive ZaxNet time code from another TRX / ZMT transmitter or a ZFR recorder that is transmitting ZaxNet on this frequency. Please keep in mind that the range will be limited when receiving ZaxNet from a TRX or ZFR.

When the ZFR400 is receiving a valid ZaxNet signal the signal strength will be shown as well as signal strength meter that runs vertically on the far right side of the screen.

### ZaxNet Transmit Frequency Set

*This menu will only appear if ZaxNet is set to transmit (TX) mode*

ZAXNET TX FREQ:

2.473

The ZaxNet transmit frequency is the frequency that the ZFR400 will broadcast time code and confidence audio on. Please note the ZaxNet transmitted audio is for quality control purposes and the expected range will be less than 20 feet.

## Group Code Set

**REMOTE CONTROL**  
**GROUP CODE = 1**

This menu is where the ZFR400 is assigned to a group. The group code allows ZFR400s to be grouped together so they can be controlled via ZaxNet without affecting others.

So for example a ZFR400 set to Group 1 will be controlled by a ZaxNet transmitter set to Group 1 and a ZFR400 assigned to group 2 will be controlled by a Group 2 ZaxNet transmitter. This is helpful if two or more people on set are sending ZaxNet commands. The different group codes allow each person to be independent and not interfere with each other. Most users leave the group set to 1 on all of their Zaxcom products. Group codes can be set from 1 to 99.

## Unit Code Set

**REMOTE CONTROL**  
**UNIT CODE = 001**

This menu is where the ZFR400 is assigned a unit code. The unit code is a unique number used to identify each ZFR400 within a particular group. This allows individual ZFR400s within the same group to be independently controlled. Each ZFR400 should have a different unit code.

Unit codes can be assigned any number from 1 to 200.

## ZaxNet Voting Enable

*This menu will only appear if ZaxNet is set to receive (RX) mode*

**ZAXNET VOTING:**  
**NORMAL (OFF)**

The purpose of voting is to allow the ZaxNet receiver in the ZFR400 to choose, and switch to, the stronger signal from two different ZaxNet transmitters. One purpose of this is if on a large set a second IFB transmitter can be placed at a different location so the ZaxNet receiver in the ZFR400 can choose the stronger signal. Please note that the second ZaxNet transmitting frequency must be set 2MHz higher than the first ZaxNet transmitter.

## ZaxNet Receive Before Transmit Time

**RX TO TX TIME:**  
OFF (NORMAL RX)

Receive only mode.

← The ZaxNet transceiver will only receive ZaxNet and NOT go into transmit mode. Therefore no ZaxNet TC and/or audio will be transmitted. This setting shuts off the ZaxNet transmitter.

**ZAXNET RX TO TX:**  
0 SEC: TX ONLY

Transmit only mode.

← The ZaxNet transceiver will only transmit ZaxNet TC and audio and will NOT receive wireless TC or ZaxNet commands. This setting shuts off the ZaxNet receiver.

**ZAXNET RX TO TX:**  
20 SEC

Receive then Transmit mode.

← After boot up the ZaxNet transceiver will search for a ZaxNet signal for the selected time so it can receive and lock time code before it begins to transmit TC and confidence audio.

This menu adjusts the state of the ZaxNet transceiver.

This menu also sets how long after boot-up up the ZFR400 will search for ZaxNet time code before it begins transmitting its audio over ZaxNet for monitoring purposes. This is so the ZFR400 can lock to ZaxNet time code source before the unit will send confidence audio over ZaxNet.

## IFB Receive Pulse Set

*This menu will only appear if ZaxNet is set to go into transmit in the RX to TX Time menu.*

ZAXNET RX PULSE:  
OFF

← The ZaxNet transceiver will stay in transmit mode and never go into receive mode.

IFB RX PULSE  
600 SECS

← In this example the ZaxNet transceiver will go out of transmit mode every (600 seconds) 10 minutes. This setting would be used so the ZFR400 could update its time code while monitoring audio via an ERX receiver.

This menu sets the interval that the ZaxNet transceiver will stop sending confidence audio and search for time code.

When enabled the pulse setting tells the ZaxNet transceiver to leave ZaxNet transmit mode once every XXX seconds and go into receive mode so it can re-jam its time code wirelessly via ZaxNet. This setting would be used so the ZFR400 could update its time code while monitoring audio via an ERX receiver. Please note when the ZaxNet transceiver searches for ZaxNet it will temporarily go out of transmit mode for approximately 1 second as it searches for ZaxNet time code. The settings are NEVER or any interval between 5 and 999 seconds.

## Record Beep Set

*This menu will only appear if ZaxNet is set to transmit (TX) mode*

ZNET RECORD BEEP  
OFF

When the record beep is set to ON, and the ZFR400 is recording, the confidence audio sent to the ERX via ZaxNet will have an audible beep, in user variable intervals, giving conformation that the ZFR400 is indeed recording. The beeps will only be heard in the ERX and will not be recorded on the card. The intervals can be set between 2 to 18 seconds in 2 second increments.

## AUDIO MENU

### High Pass Filter

HIGH PASS FILTER:  
90Hz

The high pass filter is turned on and adjusted from this menu.  
The high pass filter range is 70Hz to 220Hz in 10Hz increments.

### 2K Notch Filter

2K NOTCH FILTER  
ON

The 2K notch filter is useful in removing digital RF interference that can be introduced into some microphones.

## Dynamics



The dynamics is a soft knee compressor that is located after the analog to digital converter which will limit the dynamic range to prevent clipping during occurrences of loud audio. Dynamics is comprised of both a compressor and an expander, which operate jointly. The compressor in the dynamics can set to mild or extreme compression and features a soft knee for more transparent operation.

### To enter the Dynamics Menu

Press the INC or DEC key - "PARMS" (parameters) will be displayed on the right.

To move to the next parameter, press the MENU key.

To exit this page, hold the MENU key for 1 second.

### Dynamics Parameters

- **Link L-R:** OFF / ON: If using a stereo ZFR400 this links the left and right signal so if one side of the signal needs compressing / expansion the other side will do the same to match.
- **SPEED** (Decay Speed) : SLOWEST / SLOW / NORMAL / FAST / FASTEST  
Sets how gradual the signal level decreases after a signal reaches the threshold setting. This is typically set to FAST.
- **ATTACK** (Attack Speed) : SLOWEST / SLOW / NORMAL / FAST / FASTEST  
Sets the speed in how fast the gain is reduced once the signal exceeds the threshold setting. This is typically set to FAST.
- **CMP RATIO** (Compressor Ratio): Valid range: 1.0: to 5.0:1, in 0.1 steps.  
The amount of gain reduction is determined by the compressor ratio setting.  
A compressor ratio for example of 2.0:1 means for every 1 dB above the compressor threshold the gain will be reduced 2dB. A higher ratio setting makes the compressor more aggressive.
- **CMP THRESH** (Compressor Threshold): Valid range: 0 to -96dB, in 1dB steps.  
This sets the level in which gain reduction occurs.
- **CMP KNEE:** (Compressor Soft Knee): Valid range: 0 to 20dB, In 1dB steps.  
Sets the compressor's soft knee. A soft knee reduces "softens" the audible change from uncompressed to compressed, this is useful especially for higher ratios where the changeover is more noticeable
- **EXP RATIO** (Expansion Ratio): Valid range: 1:1.00 to 1:4.00, In 0.01 steps  
Sets the expansion ratio. For example a 1:2.0 expansion ratio means for every 1 dB below the expansion threshold the gain will be reduced 2dB.
- **EXP THRESH** (Expansion Threshold): Valid range: 0 to -96dB, in 1dB steps.  
Sets the threshold above which gain reduction occurs.
- **REDUCE** (Expander Gain Reduction): Valid range: 0 to -36dB, in 1dB steps.  
This sets the limit on the amount of gain reduction caused by the expander.
- **GAIN** (Make-up Gain): Valid range: 0 to 30dB, In 1dB steps.  
Gain is used to compensate for the gain reduction caused by the compressor. Because the compressor is reducing the gain (or level) of the signal, the ability to add a fixed amount of make-up gain at the output is provided so that an optimum level can be reached.

## SETUP MENU

### Test Tone

TEST TONE: ON

| | |

The ZFR400 has an internal tone generator so the signal chain can be properly gain staged. From this menu pressing the INC key will turn on the tone generator pressing the INC key will cycle through the different tone options (500Hz at -20, 1000Hz at -20 or 500Hz at full scale).

### Key Lock On Boot Up

KEY LOCK ON BOOT:

UNLOCKED

This menu sets what happens to the keys on the face of the ZFR400 after boot-up.

- **LOCKED** - After boot-up has completed, the ZFR400 will automatically lock and the keys will not function. This is to prevent accidental changes to the settings. To unlock the keys at any time - simultaneously press the MENU and INC key 5 times.
- **UNLOCKED** - After boot-up the keys will remain unlocked. In unlocked mode the keys can still be locked going in to the lock screen in the main menu and wait 5 seconds.

### ERX Firmware Update

*This menu will only appear if ZaxNet is set to transmit (TX) mode*

PRESS ↑ TO SEND

ERX PROG FILE

This menu is used to update the firmware on an ERX receiver. If ZaxNet mode is set to transmit (TX) then this menu will appear and allow for ERX firmware to be updated.

For complete update instructions see the FIRMWARE section in the back of this manual.

### Low Battery Stop

LOW BATT STOP:

NEVER STOP

Low battery stop will set the amount of time, after a low battery warning occurs, the ZFR400 will close the current file and stop recording.

This is to prevent possible file corruption if the unit constantly powers off and on due to a dead battery.

- **NEVER STOP** - The ZFR400 will not stop recording unless it is manually stopped by a key press, or when it receives a stop command via ZaxNet or if the battery dies.
- **Any interval from 1 to 99 minutes** - Once the battery indicator starts blink a low battery warning the ZFR400 will continue to record for the time set here - then it will close the file and stop recording.

## OLED Brightness Adjust

OLED BRIGHTNESS:  
3

This setting adjusts the brightness of the OLED display. The brightness setting is from 0 to 3 with 3 being the brightest.

## OLED Display Dim

DISPLAY DIM:  
OFF (NORMAL)

This setting adjusts the brightness of the OLED display. The brightness can be set from 0 to 3 with 3 being the brightest and 0 the dimmest.

## Information Page

--- INFO ---  
FIRMWARE V2-03  
SN: 1234 DsP:1B (ZHD)  
OPT = 03

This page displays the current firmware version, the serial number, the DSP version, and the option code.

## Hide Encryption Menu

ENCRYPTION MENU:  
ON

This setting will hide the encryption menu. A hidden encryption menu allows for quicker navigation and prevents accidental changes.

- **HIDDEN** - The encryption menu doesn't appear when cycling through the menu settings.
- **DISPLAYED** - The encryption menu will appear.

## Encryption Code Set

ID1: 000 ID2: 000



If an encryption code is set the ZaxNet transmitted audio will be encrypted and can only be listened to if the receiver has the matching encryption code entered. When receiving an audio signal and the codes do not match, all that will be heard is white-noise or silence. So if using encryption it is important to make sure the matching receiver has the same code.

These two sets of numbers are formed into a single six-digit encryption code which provides a total of 16,777,216 possible combinations.

Please note that both of these codes should be set to 000 for normal un-encrypted operations

### Adjusting the encryption code

1. Momentarily press the MENU key to advance to the next character.
2. To change the designated character, press the INC or DEC key.
3. To exit this page, press and hold the MENU key for 1 second.

### Hide Name Menu

NAME MENU:  
ON

This setting will hide the name menu. A hidden name menu allows for quicker navigation and prevents accidental changes.

- **HIDDEN** - The name menu doesn't appear when cycling through the menu settings.
- **DISPLAYED** - The name menu will appear.

### Name Set

NAME: 1234  
↑

The name menu allows the ZFR400 to be named to be changed from the default name - which is the unit's serial number. The name entered becomes part of the name of the recorded audio files, and is also included in the metadata of the BWF file. Naming the unit aids in identifying the files from several different ZFR400s. The maximum name length is 8 characters. Any letter or number can be used. If desired a space can even be used.

To set/change the ZFR400 name:

1. Press the INC or DEC key to change the character in the current position above the arrow.
2. Press the MENU key to proceed to the next character.
3. When finished, press and hold the MENU key to set the name.

## Media

While any size card will work in the ZFR400 we recommend using a 4GB Micro SD card. We also recommend only buying a brand name card such as Transcend, SanDisk. And very importantly please buy all cards from a reputable dealer because counterfeit cards exist and can cause recording issues.

We also highly recommend that the all cards are tested before taking them out into the field.

Here is a simple testing procedure to determine if the card will function correctly:

1. Format the card in the ZFR400.
2. Power cycle the ZFR400.
3. Record at least 20 minutes of audio to the card with no time code source.
4. Look at the Main Screen it should still be recording in segment #1.
5. Playback and listen to the file.

## Media Capacity

The ZFR400 can use Micro SD cards, up to 16 GB. While any size card will work we recommend using 4GB cards. All cards that are used in the ZFR400 must be formatted in the ZFR400 to work properly. Please note that regardless of the size of the card the onboard recorder will only be able to record up to 500 individual segments on any given card.

Available recording times depend on the selected modulation and are as follows:

SD Card Size	Available Record Time
1 GB	6 hours
2 GB	12 hours
4 GB	25 hours
8 GB	50 hours
16 GB	100 hours

Please note the ZFR400 will **NOT** record onto the card if:

- The card was not inserted before the ZFR400 booted up.
- If the card was removed while the power was on.
- If LOW BATTERY is being displayed.

## Recording Format

The media card is formatted using a FAT32 file system. While recording, the unit places all recorded audio in a single file on the media. The files generated by the recorder (.zax format) can only be recognized by Zaxcom's ZaxConvert program. Using ZaxConvert will transfer the file to a Broadcast Wave or MP3 file. ZaxConvert is available to anyone for free from the Zaxcom website <http://www.zaxcom.com/support/updates/>

## Firmware

Each unit is shipped with the latest firmware version installed. As newer firmware becomes available it can be downloaded from the Zaxcom website:

<http://www.zaxcom.com/support/updates/>

Newer version of beta firmware may be found on the Zaxcom Forums:

<http://www.zaxcom.com/forum>

### Updating the ZFR400 firmware

1. Format a micro SD card in the ZFR400.
2. Remove the card and with a computer delete the “SNXXXX.ME” file.
3. Download the ZFR400 firmware “ZMT-XXX.bin” from the Zaxcom website and copy it onto the formatted card.
4. Power down the ZFR400 and insert the card into the ZFR400.
5. Simultaneously hold down the INC and DEC keys while powering up the unit.
6. The screen will display “BURN ROM” with the version of firmware that is loading.
7. From power up to “DONE” will take about 30 seconds.
8. Upon completion, cycle the power and confirm that the ZFR400 is running the new firmware.

**WARNING:** Before updating the firmware be sure to insert a fresh battery and do not power down the unit during the update process, if the unit should lose power during the upgrade, it may need to be sent back to Zaxcom for repair.

### Updating ERX firmware with a ZFR400

1. From the ZaxNet menu set ZaxNet mode to transmit (TX).
2. Check that the ERX is set to the same ZaxNet frequency that the ZFR400 is set to transmit on. Check that the GROUP ID is set the same in both the ZFR400 and ERX, and make sure encryption is shut off.
3. Format a micro SD card in ZFR400.
4. Remove the card, and with a computer delete the “SNXXXX.ME” file.
5. Download the ERX firmware “ERX-XXX.bin” from the Zaxcom website and copy it onto the formatted card.
6. Insert the card into the ZFR400.
7. Proceed to the SETUP MENU and select PRESS UP TO SEND ERX PROG FILE
8. From the firmware update menu on the ERX press the INC key 5 times to see WAITING FOR PROGRAM.
9. Press the INC key on the ZFR400 to trigger the update process.
10. The ERX should indicate its progress after a few seconds.
11. When the ERX has been updated the screen will display “SUCCESS”.

**WARNING:** Before updating the firmware be sure to insert a fresh battery and do not power down the unit during the update process, if the unit should lose power during the upgrade, it may need to be sent back to Zaxcom for repair.

## Inputting Audio

The ZFR400 use an unbalanced microphone input via a 3-pin micro-LEMO connector. An unbalanced dynamic microphone or a powered lavalier can be used.

The ZFR400 can also accept a line-level input, though an inline pad is required.

## Recommended Microphones

Zaxcom recommends the following microphones for use with the ZFR400:

Countryman EMW, B3, B6, Sanken COS-11D, DPA 4063

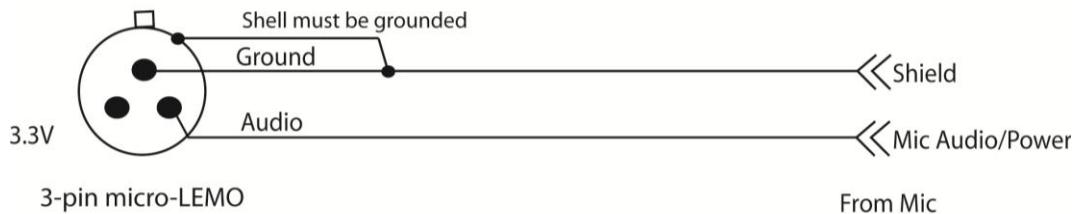
## Wiring Diagrams

The following 3-pin micro-LEMO connectors mate with the microphone connector:

- FGB.00.303.CLAD.22 – has a latch with a pull release.
- FVB.00.303.NLA – has a latch with a twist release.

Please note it is required that the ground gets attached to the shell of the LEMO connector.

### Two Wire Microphone Configuration

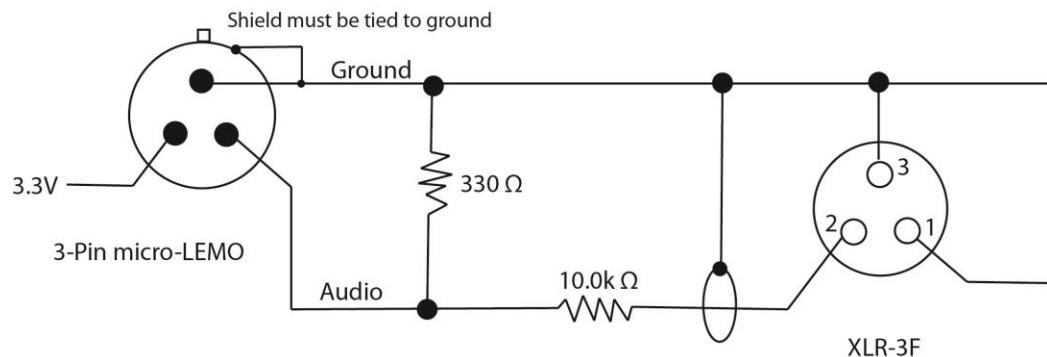


### Three Wire Microphone Configuration

*Please contact the microphone manufacturer.*

## Balanced Line Level and time code Input

Mono line-level and/or timecode input



## Product Support

- Register your product with Zaxcom: <http://zaxcom.com/support/product-registration/>
- Download the latest **Firmware** from: <http://zaxcom.com/support/updates/>
- Download the latest **User Manuals** from: <http://zaxcom.com/support/updates/>
- Submit Technical Questions** at: <http://www.zaxcom.com/submit-a-technical-question>
- Submit information for **Repair Services** at: <http://www.zaxcom.com/support/repairs>
- Join the **Zaxcom User Forum** at: <http://www.zaxcom.com/forum/forum.php>
- Join the **Zaxcom Face Book User Group** at: <https://www.facebook.com/groups/682199065139938/>

## Specifications

### ZFR400 Audio

A-D Dynamic Range: 127dB  
Analog distortion: 0.002%  
A-D system: NeverClip Zaxcom proprietary  
Frequency Response: Mode 0: 20 Hz to 16 kHz / T & M Mode 0.2 Hz to 16 kHz  
Mic Power: 3.3VDC  
Mic Connector: 3-Pin Micro LEMO  
Mic impedance: 6.8 k Ω  
ADC Bit-Depth: 24 Bits

### Time code Reader/Generator

Clock Accuracy: 1.54PPM (1 Frame Out in 6 Hours)  
Time code Type: SMPTE  
Time code Frame Rates: 23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

### Recording

Media: Micro SD Card (Flash Memory)  
File Format: .ZAX convertible to BWAV, MP3  
Recording Time: Up to 100 Hours (16 GB card)

### 2.4 GHz ZaxNet Receiver

RF Frequency Range: 2.403 to 2.475 GHz  
RF Modulation: Digital Spread Spectrum  
RF Frequency Step: 0.001 GHz (1 MHz)  
RF Bandwidth: 1 MHz  
Channel Separation: 2 MHz  
Sensitivity: -96 dBm

### Physical

Weight: 2.2 ounces (62.3 grams) with battery  
Dimensions (H x W x D): 2.25 X 1.5 X .55 inches (57.1 X 38.1 X 13.9 mm)  
Display: Graphic OLED

*All Specifications are subject to change without notice.*

# 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 ZFR400 ("Product") was purchased from an authorized distributor or authorized reseller. Distributors may sell Product to resellers who then sell Product 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**

The Product 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 Product, 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.

## **Troubleshooting & Repair Services**

No Product should be returned to Zaxcom without first going through some basic troubleshooting steps with the dealer you purchased your gear from.

To return a product for repair service, go to the Zaxcom Repair Services page <http://www.zaxcom.com/repairs> and fill in your information; there is no need to call the factory for an RMA. Then send your item(s) securely packed (in the original packaging or a suitable substitute) to the address that was returned on the Repair Services page. Insure the package, as we cannot be held responsible for what the shipper does.

Zaxcom will return the warranty repaired item(s) via two-day delivery within the United States at their discretion. If overnight service is required, a FedEx or UPS account number must be provided to Zaxcom to cover the shipping charges.

\*Please note a great resource to troubleshoot your gear is the Zaxcom Forum: <http://www.zaxcom.com/forum>.

## **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 Product 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 Product, the installation of replacement Product, and any inspection, testing or redesign caused by any defect or by the repair or replacement of Product 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.
- The asserted defect:
- Is not present,
- Cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than Zaxcom, or
- 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 Product, which has been received improperly packaged, altered or physically abused.

## NOTICE:

Most users do not need a license to operate a wireless microphone system. Nevertheless, operating a microphone system without a license is subject to certain restrictions:

- the system may not cause harmful interference,
- it must operate at a low power level (not in excess of 50 milliwatts),
- it has no protection from interference received from any other device.

Purchasers should also be aware that the FCC is currently evaluating the use of wireless microphone systems, and these rules are subject to change. For more information, call the FCC at 1-888-CALL-FCC (TTY: 1-888-TELL-FCC) or visit the FCC's wireless microphone website at:

[www.fcc.gov/cgb/wirelessmicrophones](http://www.fcc.gov/cgb/wirelessmicrophones) To operate wireless microphone systems transmitting with greater than 50mW of radiated power, you must qualify as a Part 74 user and be licensed.

This alert does **NOT** apply to Part 74 users

### RF Exposure:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment is in direct contact with the body of the user under normal operating conditions. This ZFR400 must not be co-located or operating in conjunction with any other antenna or ZFR400.

Under Industry Canada regulations, this radio ZFR400 may only operate using an antenna of a type and maximum (or lesser) gain approved for the ZFR400 by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio ZFR400 and has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Quarter Wave Whip Antenna, 5.19dBi gain, 50 Ohms

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

"This device operates on a no-protection, no-interference basis. Should the user seek to obtain protection from other radio services operating in the same TV bands, a radio licence is required. For further details, consult Innovation, Science and Economic Development Canada's document Client Procedures Circular CPC-2-1-28, Voluntary Licensing of Licence-Exempt Low-Power Radio Apparatus in the TV Bands."

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio (PR6-XRT) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

"Cet appareil fonctionne sur une base sans protection, sans interférence. Si l'utilisateur cherche à obtenir une protection contre d'autres services de radio fonctionnant dans les mêmes bandes de télévision, une licence radio est requise. Pour de plus amples renseignements, veuillez consulter le document CPC-2-1-28, Procédures à l'intention des clients, intitulé Procédures à l'intention des clients, intitulé «Licence volontaire d'appareils radio à faible puissance exempts de licence dans les bandes de télévision»

USA - FCC Part 74, FCC Identifier PR6ZFR400

Canada - Industry Canada RSS 210, IC:12755A-ZFR400

Zaxcom Digital Wireless are protected under following patent #'s:

4,327,066 / 7,711,443 / 7,929,902 / 8,385,814 / 8,878,708 / 8,842,854