USER MANUAL

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Software Version 2.11

ZAXCOM

ZAXCOM.COM

ERX3TCD

ZaxNet Audio &Time Code Receiver

Knowing your ERX

1. **OLED Screen**	6. **Battery Compartment**
2. **INC Key**	7. **1/8" Locking Headphone Jack**
3. **Menu key**	8. **Power Switch**
4. **DEC Key**	9. **Signal / Power LED**
5. **Time Code key**	10. **Volume Knob**

ERX Control Keys

- **MENU** - Holding the menu key while powering up will open the extended menu.
  When in extended menu the menu key is used to advance to the next menu item**.**
  When alternative IFB frequency is enabled the menu key will access the alternative frequencies.
- **INC** (Up Arrow) - Used to increase the parameter of a menu item.
  In the home screen the INC key is used to toggle between time code, scene, take and user bits. The INC key is also used to toggle through the alternative IFB frequency.
- **DEC** (Down Arrow) – Used to decrease the parameter of a menu item.
  In the home screen the DEC key used to toggle between time code, scene, take and user bits. The DEC key is also used to toggle through the alternative IFB frequency.
- **TIME CODE** - Alternately freezes/unfreezes the displayed time code.
  When in the home screen pressing the time code key three times quickly, will access the extended menu.

ERX Main Display
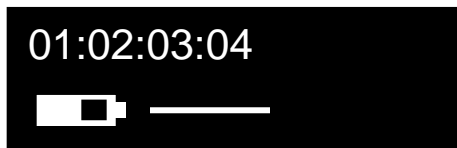
The main screen of the ERX will display timecode, battery level and receive audio level.

If the ERX is receiving signal from a Zaxcom recorder the scene, take and user-bits can be displayed by pressing and holding the INC or DEC key.
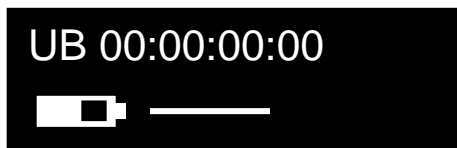
ERX Receive Antennas

The ERX has four receive antennas located behind the faceplate as indicated below. Please note if placed in a pocket, ERX should be facing out. To ensure better performance don't place anything in front of these areas that could block reception

Colored Knobs

Optional colored knobs are available for the ERX; please contact your dealer for details.

Extended Menu

Accessing and navigating the extended menu
- Press and hold the MENU key while powering up the ERX or press the time code key 3 times from the home screen.
- Pressing the MENU key will advance to the next menu item.
- Press and hold the menu key will navigate back to the top of the extended menu.

Exiting the extended menu
- Cycle the power.
  Or
- Hold down the MENU key to get to the extended menu home screen then press the INC key.

Maximum Volume Set

MAX VOLUME: 23dB

The max volume menu sets the maximum headphone output volume of the ERX.
If the volume mode menu is set to FIXED the ERX output level will be the level that is set in this menu and will not be affected by the headphone knob. This can be useful to prevent an accidental change to the output level of an ERX that is feeding audio to a camera.

Time Code Frame Rate Set
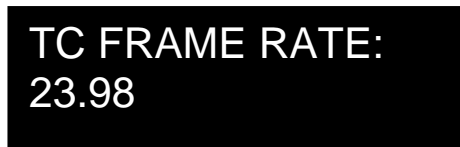
TC FRAME RATE:
23.98

The time code frame rate menu allows the time code frame-rate of the ERX's internal time code reader / generator to be manually set. The ERX can support all standard time code frame rates.
The frame rate options are: 23.98, 24, 25, 29.97DF, 29.97DF, 30 DF, 30 NDF

Auto Frame Rate Enable

AUTO FRAME RATE:
ON (23.98)
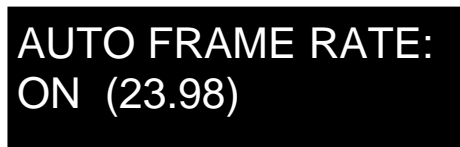
Auto frame rate allows the ERX to adjust its time code frame rate to match the incoming frame rate of the transmitter feeding it.
- ON - The ERX will change time code frame rate automatically to match the incoming fame rate.
- OFF - The ERX will not automatically change its frame rate, the frame rate will need to be adjusted in the time code frame rate set menu.

IFB Receive Frequency Set

```
FREQ: 2.403 RX
SIGNAL: A01 B01    ||
```

The IFB receive menu is where the ZaxNet receive frequency is set.

To manually adjust the receive frequency press the INC or DEC keys to match the transmit frequency.

When a valid signal is received, RX is displayed on the right side of the frequency. The second line displays the signal strength and two vertical signal strength indicators will be displayed.

Pressing the TIME CODE key while on this page the ERX will cycle through the following:

- FREQ - Overall signal strength of all antennas are displayed.
- FRONT- Signal strength of only the front antennas are displayed.
- SIDE - Signal strength of only the side antennas are displayed.

When using auto scan or when using the alternate frequency option the word "signal" on the bottom line of this menu will show the actual frequency that the ERX is receiving on.

Audio Delay Set

```
AUDIO DELAY:
OFF
```
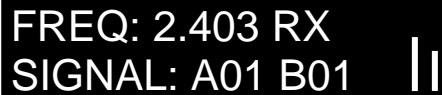
The audio delay menu sets a variable delay to the output audio. A delay is useful if the ERX is being used for personal monitoring and there is a video processing delay to the monitors - so engaging the delay will delay the audio to match the video. The audio delay can be adjusted from 5MS to 400MS in 5MS increments.
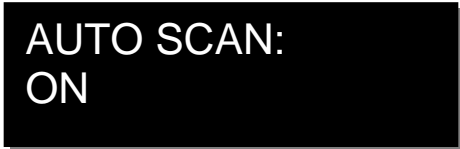
Software Update

```
PRESS UP 5X TO
UPDATE SOFTWARE
```

The software update menu is used to initiate the software update process.

After pressing the INC key 5 times, the ERX will start to look for software being transmitted from a compatible transmitter. Please see the firmware section at the end of this manual for more information on how to update the ERX software.

Auto Scan Enable

AUTO SCAN:
ON

When auto scan is enabled the ERX will automatically search for, and lock to, a valid ZaxNet transmit frequency. Therefore if the transmitters' frequency is changed, the ERX will automatically search for the new frequency so the ERX doesn't need to be manually set to the new frequency. Please note if the ERX goes out of range auto scan will assume that the frequency was changed and will start scanning for the new frequency, but when the ERX comes back into range of the transmitter it will lock up to the correct frequency

Group ID Set

REMOTE CONTROL
GROUP ID =1

Group ID allows the ERX to be set to a group. Setting a ZaxNet transmitter to a group allows audio, time code and data to be sent to just the ERX receivers with the same group ID. So for an ERX to receive a ZaxNet signal its group code needs to match the group code set on the transmitter.
So for example a transmitter set to group 1 will send to all group 1 ERX receivers and a group 2 transmitter will send to all group 2 ERX receivers. Group codes can be set from 1 to 99

IFB Voting Enable

IFB VOTING:
NORMAL (OFF)

IFB voting lets the ERX choose and switch to the stronger signal from two different ZaxNet transmitters. One purpose of this is, on a large set, a second transmitter can be placed at a different location and the ERX will automatically choose the stronger signal. To use the IFB voting just set the second transmitting frequency a minimum of 2MHz higher than the first unit. Then set the frequency in this menu to match the frequency on the second IFB transmitter.

Time Code Output Enable

TIMECODE OUTPUT
OFF

The ERX can output time code through either side of the headphone jack. When sending time code to the headphone jack, the time code will override the audio to that selected output. The ERX can be configured to send audio only, time code only or time code and audio simultaneously. Adjusting the settings in this menu will allow the ERX to act as an audio monitor, a time code device or both. The later allows for the ERX to be mounted on a camera and feed the camera both audio and time code simultaneously. The output cable should be wired to match the time code / audio routing set in this menu.

- **OFF** - Time code output is disabled and only audio will be outputted from the headphone jack.
- **ON: OUT BOTH** -Outputs only time code to both left and right out of the headphone jack.
- **ON: OUT RIGHT** - Outputs time code to the right side and audio to the left side of the headphone jack.
- **ON: OUT LEFT** - Outputs time code to the left side and audio to the right side of the headphone jack.

Time Code Delay Set

TC DELAY
0 (NORMAL)

The time code delay menu allows the time code out of the ERX to be advanced or delayed to create a time code offset. The time code adjustments can be set from -50 frames to +50 frames in 0.5 frame increments.

Time Code Jam Mute

TCJAM MUTE TIME:
0MS (DEFAULT)

The time code mute time menu sets how long the time code output will be muted when the time code is being jammed, or if the time code changes. When this is set to on, any value other than 0MS, the time code output will mute for the duration selected whenever the ERX sees a jump in time code of 2 frames or more. This simulates removing the time code completely from a device and plugging it back in so that the receiving device recognizes that there is new time code. This was added to fix a bug in some older RED camera software versions.

Adjustments can be set from 500MS to 2000MS in 500MS increments.

Please note that if using a Red camera the time code jam mute will likely need to be set to 1000 milliseconds.

Manual Time Code Set

TC TIME ENTRY:
>H 00   M00   JAM

If an ERX is not receiving time code from a ZaxNet time code source the time code generator in the ERX can manually be set from this menu.

To manually enter time code
- Turn off any ZaxNet time code source that will be feeding the ERX.
- Adjust the hour by using the INC and DEC keys.
- Press the time code key to advance the **>** to the minutes
- Adjust the minutes by using the INC and DEC keys.
- Press the time code key to advance the **>** to JAM and press the INC key to jam the ERXs time code generator.
- Please note the seconds and frames will automatically start at 00.

Time Code Auto Calibrate Enable

TC AUTO CAL:
ON

Auto calibration will calibrate the time code generator in each individual ERX to the time code that is feeding the ERX. So when the ERX is out of range of the ZaxNet time code source that is feeding it for an extended period of time the ERX will maintain sync with less than 1 frame drift over 10 hours. Please note the even when auto calibration is turned on the ERX will still constantly update its time code via ZaxNet, when in range of the transmitter, and not rely on its internal time code generator.

Auto calibration procedure
1. Turn on auto calibration.
2. Make sure the frame rate on the ERX and the time code source match, or enable auto frame rate on the ERX.
3. Power cycle the ERX.
4. Send the ERX (or multiple ERXs) undisrupted time code via ZaxNet from a Nomad, IFB 100/200 or TRX900CL.
5. After approximately 11 minutes (1 minute to warm up and 10 minutes to read and sync time code) the ERX will mathematically compensate for the difference between the two and will store that offset in its ROM.
6. After the ERX has calibrated to the time code source auto calibration can be turned off so the ERX will not try to recalibrate every time it is rebooted.

Please note that if there is spotty, or no ZaxNet signal after the ERX boots up it may not calibrate properly. Also note when auto calibration is turned on the ERX will calibrate itself after the first 11 minutes after it boots up and will not recalibrate again until it is rebooted.

Time Code Calibration Value

TC CALIBRATION:
0

The time code calibration value menu will display the auto calibration time code offset. The time code calibration value represents the difference between the source and the time code generator in the ERX which is .062 milliseconds per hour of adjustment. So for example a time code calibration value of -481 will slow down the ERX by 30ms per hour. This menu also allows for manual time code offset adjustments when auto-calibration is turned off by using the INC and DEC keys.
Please note that each ERX will have a different offset.

LED Brightness Set

LED BRIGHTNESS:
BRIGHT

The LED brightness menu will adjust the brightness the top mount LED indicator.
The LED can be set to DIM or BRIGHT

1K Notch Filter Enable

1K NOTCH FILTER
OFF

The 1 kilohertz filter will notch out audio at the 1 kHz frequency. This way if someone is monitoring audio from the ERX and a 1 kHz tone is sent the listener will not hear it.

1K Notch Filter Frequency Adjust
This menu will only appear if the 1K notch Filter is enabled

1K NOTCH FREQ
1000 HZ

The 1 kHz notch frequency menu allows for the frequency of the notch filter to be adjust if the tone generator feeding the ERX isn't exactly at 1 kHz. The notch filter can be set between 960Hz to 1040Hz in 2Hz steps.

ZaxNet Output Enable

ZAXNET OUTPUT
OFF

The ERX time code output can contain ZaxNet commands to communicate to other Zaxcom products. This menu enables / disables the ERX to output the commands that are embedded within the time code output. If the ERX is not sending the time code to another Zaxcom device this should be set to OFF.

Time Code Output Level Adjust

TC OUTPUT LEVEL:
1.0 VOLTS

The time code output level menu allows the time code voltage level to be adjusted to accommodate cameras that need different time code voltage levels to lock time code.
The output level options are: .001, .003, .005, .010, .031, .062, .125, .250, .500, 1.000, 2.000, 3.000

Volume Knob Mode

VOLUME MODE:
VARIABLE

The volume knob mode menu will allow for the ERX volume control knob to be disabled.
This would be used to avoid an accidental change to the output level if an ERX is feeding audio to a camera.
- Variable - Allows the volume knob function normally.
- Fixed Max Gain - The volume knob will not function and the audio output will be set and locked to the level that was set in the maximum volume menu.

Alternative IFB Frequency Set

```
ALTERNATE IFB
FREQ: 2.420
```

The alternative IFB frequency allows the ERX to receive audio from additional ZaxNet sources so a listener could toggle between multiple frequencies from different ZaxNet transmitters. The ERX can toggle up to 12 frequencies. The first frequency is the base frequency set in the IFB receive frequency menu, the second frequency is the alternate frequency that is set in this menu. The additional 10 frequencies will be generated automatically and will be 2MHz increments from the alternative frequency set in this menu.
Please note it is recommended keeping at least 2MHz space between the primary (BASE) and the alternative frequency. So for example if the base frequency is set to 2406 the alternate frequency should be no closer than 2408

Listening to the alternative frequencies

1. From the home screen press the menu key - the current receive frequency will be displayed.
2. Toggle through the alternative frequencies by pressing the INC and DEC keys.
3. Press the menu key to return to the time code display.
4. The metadata displayed will be corresponding to the transmitter being monitored.

```
CHAN: 2.406        CHAN 2.420         CHAN 2.422
        (BASE) 00          (ALT) 01           (ALT) 02
```

Encryption Code Set

```
ID1:000  ID0:000
              ↑
```

The encryption menu sets the encryption code on the ERX receiver to match the optional encryption code set on the transmitter that is feeding it. If an encryption code is set on the transmitter the audio transmitted will be encrypted and can only be listened to if the ERX receiver has the matching encryption code entered. When receiving an audio signal and the codes do not match, all that will be heard is-noise or silence.
The encryption code is made up of two sets of numbers to form a single six-digit encryption code, this provides a total of 16,777,216 possible combinations. Please note for normal unencrypted operations both codes should be set to 000.

Setting 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.

ERX Quick Start Guide - Interfacing with Nomad

Interfacing the ERX with a Nomad

1. In the main menu of Nomad select ZaxNet Setup
2. Scroll down and select Input Configure. Make sure that the input configure is set to 8 or higher. Press the back button and return to the ZaxNet Setup Menu.
3. Power cycle your Nomad
4. Return to the ZaxNet setup menu scroll up and select IFB Mode. Make sure that it is set to TX or TX+RX
5. Scroll down and select the transmit frequency.
6. Scroll down to choose a group code.
7. Power on the ERX while holding the menu button to access the extended menu.
8. Advance to the **Error! Reference source not found.**menu and set the frame rate to the same frame rate that Nomad is set to or turn on the auto-frame rate option.
9. Press the menu key to enter the **Error! Reference source not found.** select menu. Set the receive frequency the same as the transmit frequency that is set in Nomad or turn auto frequency select. If the ERX is receiving a good signal, there will be two vertical signal strength bars on the right side of the screen.
10. Advance to the **Error! Reference source not found.**menu. If using the ERX as an IFB for a personal monitor leave the time code output set to OFF. If the ERX is being used to output time code select "OUT LEFT TIP" or "OUT RIGHT" or "BOTH".
11. If the camera has trouble seeing time code, proceeded to the TC output level menu and adjust the time code voltage level until the camera recognizes the time code.
12. In the Nomad BUS MENU advance to the TAPE / IFB out and route the audio to the ERX. Any combination of card tracks, outputs or returns can be selected.

Firmware

Each ERX 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/software-updates
Newer version of beta software may be found on the Zaxcom forums:
http://www.zaxcom.com/forum

Each time an ERX is powered up, the firmware version number is displayed briefly on the LCD screen displayed as (VER X-XX). Pressing the DEC key during the boot up will slow down the screen to allow easier viewing of the information.

Updating ERX firmware - using an IFB 100 / 200

1. Format a micro SD card in an IFB 100 / 200.
2. Using a computer insert the micro SD card perform the following:
   - Delete the "DELETE.ME" file on the card.
   - Download the ERX software and load it into the card.
3. Insert the card into the IFB 100 / 200.
4. At each ERX:
   - Insert a fresh set of batteries.
   - Press and hold the MENU key while powering up to enter the extended menu.
   - Set the ERX IFB frequency and group ID to the same frequency and group ID as the IFB100 / 200.
   - Proceed to the software update menu and press the INC Key 5 times. The ERX will display "Waiting For Program". This indicates the ERX is ready to receive the new software. This can be done to multiple ERX's simultaneously so they will all be updated at the same time.
5. At the IFB100 / 200:
   - Press and hold the MENU key while powering up to enter the extended menu.
   - Advance to the "Send ERX Program" menu and press the INC Key.
   - The IFB100 / 200 will indicate that it found the program and has started sending it. The IFB will continue to transmit the program unit manually stopped.
6. The ERX screen will indicate that it is receiving the program..
7. For the ERX's that have completed reprogramming, the screen will display "SUCCESS". If there is a reception error, the affected receiver automatically restart the process with the start of the next cycle
8. Once all units have displayed SUCCESS, at the IFB100 / 200 press the MENU key to stop the process.
9. At each ERX unit cycle the power and verify it is running the new version of software.

Updating ERX firmware - using an TRX transmitter
The TRX900 has to have the IFB option and needs to be running software version 7.02

1. Format a micro SD card in the TRX transmitter.
2. Using a computer with a SD card adapter, perform the following:
   • Delete the "DELETE.ME" file on the card.
   • Download the ERX software and load it into the card.
3. Insert the card into the TRX.
4. At each ERX:
   • Insert a fresh set of batteries.
   • Press and hold the MENU key while powering up to enter the extended menu.
   • Set the ERX IFB frequency and group ID to the same frequency and group ID as the IFB100 / 200.
   • Proceed to the software update menu and press the INC Key 5 times. The ERX will display "Waiting For Program". This indicates the ERX is ready to receive the new software. This can be done to multiple ERX's simultaneously so they will all be updated at the same time.
5. At the TRX transmitter:
   • Go to the factory menu (advance to the lock page and press down 5 times).
   • Press the menu key to get to the IFB MODE page and press the INC key change to IFB mode to TX.
   • Press the menu key and advance to the send ERX program page.
   • Press UP to start transmitting the program. The TRX will continue to transmit the program unit manually stopped.
6. The ERX screen should indicate that it is receiving the program.
7. For the ERX's that have completed reprogramming, the screen will display SUCCESS. If there is a reception error, the   affected receiver automatically restarts the process with the start of the next cycle
8. Once all units have displayed SUCCESS, at the TRX press the menu key to stop the process.
9. Power cycle each ERX and verify it is running the new version of software.
10. Change the IFB mode on the TRX back to "RX". Please note some older versions of TRX software will not power up while the IFB mode is set to TX. If that happens force the IFB mode to OFF by holding the MENU and DOWN key while powering up the TRX

ERX Specifications

IFB 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
DAC Bit-depth: 24 bit
DAC Rate: 48 kHz

Receiver Audio
System Group Delay: 10 ms
Dynamic Range: 96 dB
Distortion: 0.01%
Frequency Response: 60 Hz to 12 kHz
Output Connector: 1/8" Stereo (3.5 mm)
Compatible HP Impedance: 32 to 200 ohms

Time Code Reader/Generator
Clock Accuracy: 1.54 PPM (1 frame out in 6 hours)
Time Code Type: SMPTE
Time Code Frame-rates: 23.98 (23.976), 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Time Code Output
Connector: 1/8" Stereo (3.5 mm)
Level Range: 1 V P-P
Impedance: 32 ohms

Physical
Weight: 2.3 Oz (65 grams) w/o battery
Dimensions: (H x W x D) 4.56" x 2.37" x 0.63" (116 mm x 60 mm x 16 mm)
External Power: N/A
Internal Power: Up to 20 hours (2 AA Lithium batteries)
Display Graphic: LCD panel

Product Support

       Register your product with Zaxcom: *http://www.zaxcom.com/product-registration*
       Download the latest **Firmware** from: *http://www.zaxcom.com/software-updates*
       Download the latest **User Manuals** from: *http://www.zaxcom.com/instruction-manuals*
       Submit Technical Questions at: *http://www.zaxcom.com/submit-a-technical-question*
       Submit information for **Repair Services** at: *http://www.zaxcom.com/repairs*
       Join the **Zaxcom Forum** at: *http://www.zaxcom.com/forum*

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 ERX3TCD ("Product") was purchased from an authorized distributer or authorized reseller. Distributers 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.

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