User's Manual

TRX900AA

Digital Transmitter

Firmware v8.19
Release Date: June 2013

Zaxcom Digital Wireless is protected under patent #'s: 7,711,443 & 7,929,902

NOTE: All specifications in this manual are subject to change without notice.

Zaxcom

230 West Parkway, Unit 9, Pompton Plains, NJ 07444 USA
Tel: 973-835-5000
www.zaxcom.com

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Table of Contents

KNOWING YOUR TRX-900AA **3**

MAIN MENU **6**
Navigating the Main Menu *6*
Exiting the Main Menu *6*
Audio Gain *6*
UHF Transmit Frequency *6*
Transport Control *6*
Timecode Frame Rate *7*
IFB Earpiece Select *7*
Time Left *7*
Lock Page *7*

EXTENDED MENU **8**
Navigating the Extended Menu *8*
Exiting the Extended Menu *8*
High Pass Filter Adjust *8*
Limiter *8*
1K Notch Filter *8*
2K Notch Filter *9*
UHF Signal Format *9*
UHF Transmitter Power Level *9*
IFB Receive Mode *10*
IFB Voting Enable *10*
IFB Receive to Transmit time *11*
ZaxNet IFB Receive Frequency *11*
ZaxNet IFB Transmit Frequency *12*
IFB Dropout Compensator *12*
IFB Receive Pulse *12*
Power-Up Mode *13*
Format Recording Card *13*
Time Code Jam Mode *14*
Time Code Source *14*
Time Code Output *14*
Group ID *15*
Unit ID *15*
Dynamics *16*
Analog to Digital Converter *17*
Battery Type *17*
Recording Mode *17*
Boot Up Mode *18*
Mute Switch *18*
Left Right Switch *18*
Side Tone Gain *18*
IFB Remote Control *19*
IFB Jam Threshold *19*
QRX Program *19*
Home Screen Record / Stop *19*
Phase Invert Channel *20*
TX Disable *20*
Low Battery Stop *20*
Record On Bootup *21*
Name *21*
Encryption Menu *21*
Encryption Code page *22*

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 2 of 39

ACCESSORIES **23**
STA ADAPTER 23
STA OPERATIONS 24
Attaching the STA to the TRX-900AA *24*
Adjusting the Input Level *24*
Powering the TRX-900AA via the STA *24*
Audio/Timecode Output Connection *24*
Timecode Input *24*
Operation of the STA *24*
MSA-100 MUTE SWITCH 26
EA-100 EARPIECE ADAPTER 27

MEDIA **28**
Media Capacity *28*
Recording Format *28*

FIRMWARE **29**
UPDATING TRX FIRMWARE 29
UPDATING AN ERX WITH YOUR TRX-900 30

INPUTTING AUDIO **31**

WIRING DIAGRAMS **31**
Two Wire Microphone Configuration *31*
Three Wire Microphone Configuration *31*
Balanced Line Level and Timecode Input *31*
Line Level into STA Adaptor *32*
Audio / Timecode out of STA Adaptor *32*
Timecode Into STA / TCA-100 ..... *32*

ANTENNA CUTTING CHART **33**

OPERATING FREQUENCIES **34**
ZAXNET REMOTE CONTROL AND TIMECODE 34
UHF AUDIO 34

SPECIFICATIONS **35**

PRODUCT SUPPORT **37**
CONSUMER ALERT 37

ZAXCOM WARRANTY POLICY AND LIMITATIONS **38**

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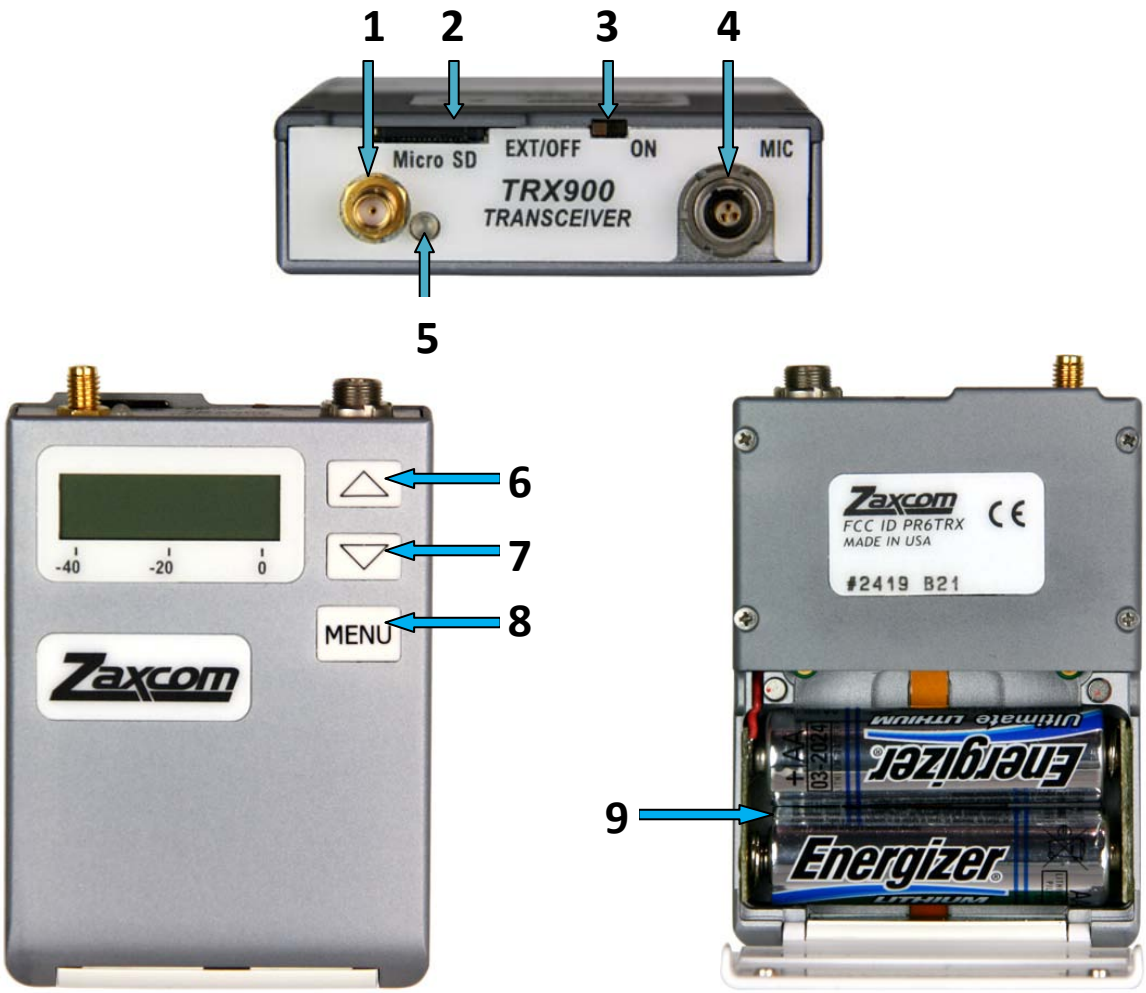
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 3 of 39

Knowing your TRX-900AA



1. **SSMA Antenna Connector**
2. **Media Slot Media Slot**
   To insert a micro SD card, with the screen facing you, turn the card so the finger contacts are facing to you and down toward the slot. Insert it into the slot and press it down until you here a slight click. To remove it, press the card in until you hear the same click again.
3. **Power Switch**
   The switch position to the left is OFF and to the right is ON. But if using external power via an STA adaptor the left position "EXT" is ON.
4. **Microphone / Input connector.**
5. **Dual color Status LED**
   - **Green -** Unit is on**.**
   - **Red -** Unit inexpediently stopped recording.
   - **Green / Red flickering -** Unit is recording.

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Page 4 of 39

6. **INC / Record Key**
   - Increases the parameters of a menu item.
   - When in the Home Screen pressing and holding it with the **Home Screen Record** enabled will put the TRX into record.
   - When in the Transport Control Screen while not recording will cause the TRX to play back.
   - Press it while playing back to fast forward.
   - Press and hold while in the Transport Control Screen to advance to the next segment.
   - Press it in the Home Screen to display the current segment number.
7. **DEC / Stop Key**
   - Decreases the parameters of the menu items.
   - When in the Home Screen pressing and holding it with the **Home Screen Record** enabled will stop the recording.
   - When playing back from the Transport Control Screen will cause the TRX to stop.
   - Press and hold while in the Transport Control Screen will jump back to the previous segment.
   - Holding it while playing back will take you to the start of that segment.
8. **Menu Key**
   - Press it will access the Menu
   - Press it again will take you to additional Menu items
   - Pressing it while powering up will take you into the **Extended Menu**
9. **Battery Compartment**

   The TRX-900AA will use 2 AA batteries. You can use alkaline, Lithium or NiMH batteries

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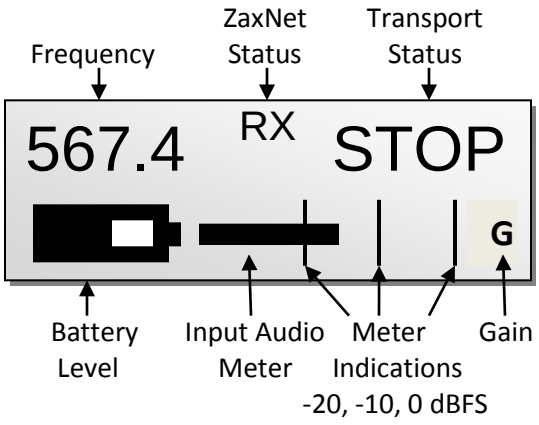
Page 5 of 39

Home Screen



Frequency – This is theUHF transmit frequency of the TRX-900AA.
If the transmitter is being used in **RECORD ONLY** mode "**NOTX"** will be displayed.

ZaxNet Status

- **RX** – The transmitter is set to receive ZaxNet timecode and commands.
- **TX** – The transmitter is sending ZaxNet timecode and audio.
- **JAM** - The transmitter has jammed timecode.

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

- **STOP** – Recording / Playback is stopped
- **LREC** – TRX is recording and LOOP RECORD mode is enabled
- **REC** – TRX is recording and NON-LOOP RECORD mode is enabled
- **WAIT** – May appear just before going into record, or if the card is ejected while recording.

Input Audio Meter- Displays the modulation of the inputted audio signal.
In the case of a TRX-900AA with an STA adaptor if the transmitter is set to STEREO mode you would see both the left and right audio levels.

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

When in the home screen:

- Press and hold the **INC** key to display the number of record segments are on the card.
  Note that regardless of the size of the card it is limited to 256 segments.
- Press and hold the **DEC** key to display the current battery voltage
- If **Home Screen Record** is enabled the **INC** and **DEC** keys can be used to start the internal recorder.

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Page 6 of 39

Main Menu

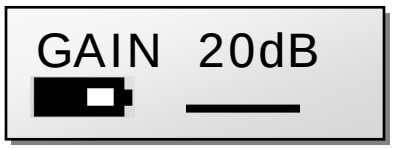
Navigating the Main Menu

- Press the MENU Button to enter the menu.
- To advance to the next menu press the MENU Button again.

Exiting the Main Menu

- To exit the menu at any time press and hold the MENU button for 1.5 seconds

Audio Gain



Analog Gain

Digital Gain

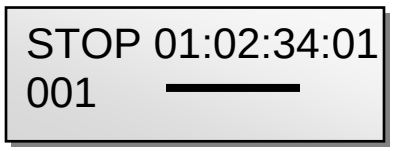
This menu sets the gain of the incoming audio. The meter indicates the audio signal it is displayed horizontally from left to right. If the TRX-900AA has an STA-100 / 150 (analog) attached this menu will not be functional. In that case the gain is adjusted on the trim pots on the STA. In the case of a STA-042 (digital) the gain would be adjusted with the digital gain menu. The digital gain menu will replace the analog menu.

UHF Transmit Frequency

This menu sets the UHF transmit frequency of the transmitter.

- Short presses of the ***INC*** or ***DEC*** *key* causes the value to change by 0.1 MHz.
- Holding the ***INC*** or ***DEC*** *key* causes the value to change by 0.5 MHz.

Transport Control



This page displays the transport status of the transmitter.

The top line displays the current mode: **REC**, **PLAY** or **STOP** followed by the timecode.
The bottom line contains the segment number and the audio level.

Playing back from the transport screen

- Pressing the **INC** key while stopped will play the segment that is displayed.
- Pressing the **INC** key while in play mode will fast forward.
- Pressing the **DEC** key while playing back will stop the playback.
- Holding the **DEC** key while playing back will take you to the start of that segment.
- Pressing the **DEC** key while stopped will rewind.

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Page 7 of 39

Timecode Frame Rate

```
TIMECODE    23.98
GEN     01:02:34:01
```

This menu sets the timecode frame-rate that will be recorded.
The TRX-900AA will lock to and record all standard timecode frame rates.

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

IFB Earpiece Select

```
IFB EARPIECE
REC/PLAY
```

This menu sets what audio will be outputted from an STA audio out connector or EA-100 adaptor.

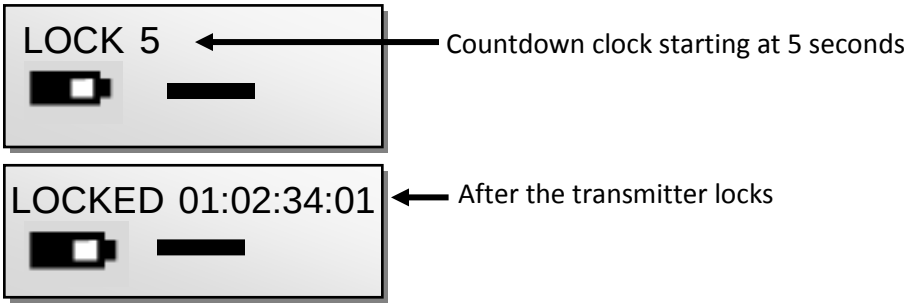
- **REC/PLAY -** Outputs the audio from the SD card - this is the audio that is either currently being recorded or playing back.
- **IFB RX AUDIO -** Outputs the audio that is being received from ZaxNet IFB.
- **IFB MIX ALL -** Outputs a mix of the recording / playback audio and the IFB audio.
- **IFB MIX REMOTE -** This setting is not functional in the TRX-900AA.

Time Left

```
TIME LEFT     20H
TIME USED      4H
```

This page displays the remaining time left on the card and the time already recorded on the card.
This page will not be displayed if no card is present.

Lock Page



This page enables a lock function to prevent any accidental changes.
When you land on this page the countdown clock will begin. After 5 seconds the transmitter will lock and the display will indicated **LOCKED**.
If you exit this screen before the 5 seconds is up the transmitter will not lock.
Even though the key's will be locked you can press the ***INC*** or ***DEC*** *key* to temporarily display the current battery voltage in place of the battery icon.

To Unlock

- Simultaneously press the ***MENU*** and ***INC*** *keys*.
  Or
- Powering down the unit will clear the lock.

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Page 8 of 39

Extended Menu

Navigating the Extended Menu

- Press and hold the ***MENU** key* while powering up the unit.
- Pressing the ***MENU*** key will advance you to the next menu item.

Exiting the Extended Menu

- Cycle the power
  Or
- Hold down the ***MENU** key* to get back to the EXTENDED MENU home page then press the ***INC** key*.

High Pass Filter Adjust

HIGH PASS: OFF

This menu turns on and adjusts the frequency of the high pass filter.

- The high pass filter range is ***30Hz*** to ***220Hz*** in ***10Hz*** increments.

Limiter

LIMITER: OFF

LIMITER: -10dB
FROM FULL SCALE ← Level when the limiter will act.

This menu enables/disables and adjusts the limiter. The limiter is pre analog to digital converter.

- Range: **-2dB** to **-30dB** in **1dB** increments**.**

When the input signal is too high the audio can clip and results in distortion and popping. The limiter can be used to prevent clipping.

NOTE: If you have a STA adaptor attached and you are transmitting in stereo mode - the limiter will be disabled.

1K Notch Filter

1K NOTCH FILTER
OFF

This menu enables/disables the 1K notch filter.
The 1K notch filter is used to eliminate a 1K the test tone being outputted to the STA adaptor or EA-100**.**

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Page 9 of 39

2K Notch Filter

2K NOTCH FILTER
OFF

This menu enables/disables the 2K notch filter.
The 2K notch filter is useful in removing digital RF interference that can be introduced into the microphone**.**

UHF Signal Format

TX FORMAT:
US MONO

This menu adjusts the transmission format

- **US MONO -** This format is used for mono transmission. It is used by customers in the US and other countries where a 200 kHz channel is legal.
  *This setting will be used with **0=US** on the Zaxcom ENG receiver or **NORMAL** on the QRX*
- **STEREO -**This format is used for stereo transmission of a TRX-900AA. It is used by customers in the US and other countries where a 200kHz channel is legal
  *This setting will be used with **2=ST** on the Zaxcom ENG receiver or **NORMAL** on the QRX*
- **EUROPEAN** -This format is used for European customers and other countries where a normal width channel is NOT legal.
  *This setting will be used with **1=EU** on the ENG Zaxcom receiver or **NARROW** on the QRX*
- **US MONO-R** -Similar to **US MONO**. This can be used to force mono audio to the right channel.
  *This setting will be used with **0=US** on the Zaxcom receiver*

IMPORTANT: Any change to this page **REQUIRES** a reboot before the new setting takes effect.

IMPORTANT: If the Transmission Format set here and the Reception Format on the associated receiver do not match, the receiver will be unable to correctly decode the audio from this transmitter.

UHF Transmitter Power Level

Available on a TRX-900AA running software version 8.10 or higher

TX POWER: 50 MW

This menu adjusts the UHF transmit power of the transmitter.

- The TRX-900AA can be set at 10, 25, 50mW

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Page 10 of 39

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IFB Receive Mode

Available on a TRX-900AA running software version 8.10 or higher

RXMODE=RX

This menu will allow the TRX to receive ZaxNet commands.

- **OFF** – The transmitter will not receive any ZaxNet commands
- **RX**- The transmitter will receive ZaxNet commands

NOTE: If this is set to ***OFF*** the next 6 ZaxNet menu items will not appear.

NOTE: If the **IFB RX to TX** setting is set anything other than **Normal** you will not be allowed to set this setting to OFF.

IFB Voting Enable

Available on a TRX-900AA running software version 8.10 or higher

IFB VOTING
NORMAL (OFF)

This menu allows you to enable / disable the IFB Voting function.

The purpose of voting is to allow transmitter to choose and switch to the stronger signal from two different ZaxNet transmitters. One purpose of this is if you are on a large set you can place a second IFB transmitter at a different location and the TRX will choose the stronger signal. Just set the second IFB transmitting frequency to exactly 2MHz higher than the first unit.

NOTE: This Page only will appear if you have the **IFB RX TO TX** mode set to **NORMAL RX** and **RX MODE** is not set to **OFF.** Meaning that if the TRX-900AA will ever be in a transmit mode IFB voting no longer applies and will not be available.

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Page 11 of 39

IFB Receive to Transmit time

Available on a TRX-900AA running software version 8.10 or higher

IFB RX TO TX:
NORMAL RX

The TRX will receive ZaxNet only and **NOT** transmit ZaxNet TC and audio.

IFB RX TO TX:
0 SECS: TX ONLY

The TRX will transmit ZaxNet TC and audio only and will **NOT** receive wireless TC.

IFB RX TO TX:
20 SECS

Adjustable from 1 up to 20 Seconds. After boot up the TRX will search for a ZaxNet signal for XX seconds before it begins to transmit ZaxNet TC and Audio

This menu sets how long after power up that the transmitter will search for ZaxNet timecode before it begins transmitting IFB audio for monitoring purposes.

IMPORTANT: After changing this setting a re-boot is required

ZaxNet IFB Receive Frequency

Available on a TRX-900AA running software version 8.10 or higher

RXFREQ: 2.403

When the TRX is receiving a ZaxNet signal you will also see:

RXFREQ: 2.403 RX
SIGNAL: 28

ZaxNet signal frequency and ***RX*** shows that it is being received

Signal strength meter

This is where you set the ZaxNet receive frequency.

- This frequency is the frequency that the transmitter will receive wireless ZaxNet TC and commands as long as this frequency matches the frequency of the corresponding ZaxNet transmitter - which can be a Nomad or IFB100/200.
- This frequency is the frequency that the transmitter will receive TC from another TRX transmitter or a ZFR recorder as long as this frequency matches the frequency of the corresponding transmitter.

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Page 12 of 39

ZaxNet IFB Transmit Frequency

Available on a TRX-900AA running software version 8.10 or higher

IFB TX FREQ:
2.420

This is where you set the ZaxNet transmit frequency. This is the frequency that the transmitter will broadcast timecode and ZaxNet audio on for the purpose of confidence audio monitoring via an ERX receiver or Nomad. Note - the expected range will be less than 30 feet.

IFB Dropout Compensator

This menu will only appear if the TRX-900AA IFB is set to receive ZaxNet.

IFB DROPOUT
COMPENSATOR ON

This is where you enable /disable the IFB drop out compensator.
The drop out compensator looks at the received audio surrounding a short duration drop out and replaces the lost audio with audio that will match together the audio surrounding the drop out.

IFB Receive Pulse

Available on a TRX-900AA running software version 8.10 or higher
This menu will only appear if the TRX-900AA IFB is set to go into transmit mode.

IFB RX PULSE:
NEVER

IFB RX PULSE:
600 SECS

Note: You would need to use this setting if you are monitoring audio via an ERX receiver and you still want the transmitter to update TC

This is where you set how often the transmitter will search for Timecode while operating.
When enabled this tells the transmitter to leave ZaxNet transmit mode once every XX seconds to go into receive mode so it can re-jam its timecode wirelessly via ZaxNet. This has no affect on the UHF audio transmission.

- The settings are **NEVER** or any interval between **10** and **999** seconds.

NOTE: When the TRX-900AA searches for TC it will temporally go out of transmit mode for approximately 1 second as it receives a TC signal.

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Page 13 of 39

Power-Up Mode

POWER UP MODE:
LOCKED

This menu determines if the keys will lock after power-up.

- **LOCKED** – After power-up has completed, the transmitter will automatically go into **Lock Mode** to prevent accidental changes to the settings.
- **UNLOCKED** – The keys are unlocked upon power-up. You can always lock the keys by going in to the **Lock Screen** in the Main Menu.

Unlocking the Transmitter

Simultaneously press the ***MENU*** and ***INC*** *keys*.

Format Recording Card

PRESS UP KEY 5X
TO ERASE CARD

This menu will allow you to erase and format the micro SD card.

IMPORTANT: Even though many cards are sold preformatted, you must format the card in the transmitter prior to recording. Only cards formatted in the unit will work properly.

NOTE: This menu will only appear if a card was inserted prior to booting up. Also if the micro SD card is removed this page will not appear.

To Format a Card:

1. Before formatting the card, you may want to name the transmitter. Naming the card makes it easier to differentiate files from different recorders - for example you can name the card with the talents name. The NAME menu is located at the end of the Extended Menu (page 19 of this manual).
2. With the power 'OFF', insert the memory card into the media slot with the label to the back of the unit. Press it all the way in till it "clicks".
3. Power up the transmitter while holding the Menu key to enter the Extended Menu.
4. Advance to this menu.
5. Press the ***INC*** *key* 5 times.
6. You will see ***"FORMATTING FAT 32"***
7. The TRX will displays "**SUCCESS"** or "**FORMAT FAILED ERROR"**
8. If **"SUCCESS"** appears power cycle the TRX and make sure the unit will record.

NOTE: If you see a "**FORMAT FAILED ERROR**" try to re-format the card and if it fails again **DO NOT** use that card in the transmitter.

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Page 14 of 39

Time Code Jam Mode

TC JAM MODE:
AUTO-JAM NORMAL

If you are using record run timecode this menu controls weather the TRX-900AA will go into record when it receives running timecode.

- **AUTO-JAM NORMAL**– The TRX will continuously jam timecode via ZaxNet.
- **AUTO-LOAD REC RUN** – The TRX will continuously jam timecode via ZaxNet and will start and stop the recording if the unit is receiving record run timecode.
  In this mode the transmitter will go into record mode when it detects rolling timecode. And the will stop when the timecode stops. If timecode 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 timecode signal is restored.

Time Code Source

TC SOURCE:
IFB (RF)

This menu selects how the TRX-900AA will receive its timecode.

- **IFB (RF)** – The transmitter will receive timecode via ZaxNet being broadcast from Nomad, an IFB100/200, another TRX transmitter or a ZFR recorder.
- **AUDIO INPUT**– The transmitter, with a proper cable, will receive timecode via the microphone input.
- **SIDE CONNECTOR -** The transmitter will receive its timecode from the timecode in connector from the STA adaptor or TCA-100.

When timecode is connected, it takes the transmitter approximately three seconds to recognize the TC. The screen displays **TIME CODE** followed by **JAM** when it is recognized. When the word **JAM** disappears, the timecode input source can be disconnected and normal operation can be resumed.

NOTE: When using the mic input connector, the audio level of the timecode 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 timecode.

Time Code Output

TIMECODE OUTPUT:
OFF

This menu selects how the TRX-900AA will output timecode on the 3.5mm connector on a STA adaptor.

- **OFF-** No timecode will be outputted on the STA and audio will be sent on the connector.
- **ON: OUT LEFT-** Time code signal will be on the tip of the 3.5mm connector (Left) and will replace the audio out.
- **ON: OUT RIGHT -** This setting is not applicable to the TRX-900AA.
- **ON: OUT BOTH -**This setting is not applicable to the TRX-900AA.

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Page 15 of 39

Group ID

REMOTE CONTROL
GROUP ID = 1

This allows you to set your TRX-900 to a "**GROUP**" to be controlled via ZaxNet.
So for example a transmitter set to Group 1 will control all Group 1 receivers and a Group 2 transmitter will control all Group 2 receivers. This allows you to control a group of receivers without affecting others. This will also help if two or more people on set are sending ZaxNet commands each person will be independent and won't interfere with each other. Most users leave this set to 1 on all their Zaxcom products.

Group codes can be set from **1** to **99**

Unit ID

REMOTE CONTROL
UNIT CODE=ALL

This assigns a unique number identify the TRX-900 within a particular group. This allows individual devices in one group to be independently controlled.

You can assign a number from **1** to **200**

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Page 16 of 39

Dynamics

DYNAMICS ← Dynamics OFF

DYNAMICS PARMS ON ← When the Parameters are ON you can adjust the Dynamic Menu

The Dynamics is a soft knee compressor that is located after the analog to digital converter. The Dynamics 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 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**" 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

- **PARMS**(Parameters): **OFF** / **ON:** This turns the entire compressor/expander on or off.
- **Link L-R: OFF** / **ON:** This links the left and right of a stereo unit. So if one side of the signal needs compressing / expansion the other side will kick in to match.
- **SPEED** (Decay Speed) **: SLOWEST** / **SLOW** / **NORMAL** / **FAST** / **FASTEST**
  Sets the speed in how gradual the decrease of signal level happens immediately after a signal reaches its peak. This is typically set to **FAST**.
- **ATTACK** (Attack Speed) **: SLOWEST** / **SLOW** / **NORMAL** / **FAST** / **FASTEST**
  Sets the speed in how fast the gain is turned down 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 **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 2 dB. A higher ratio setting makes the compressor more aggressive.
- **CMP THRESH** (Compressor Threshold): Valid range: **0** to **–96dB**, in **1dB** steps.
  Sets the level which gain reduction occurs. This is typically set to -12dB from full scale.
- **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, 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 a1:2.0 expansion ratio means for every 1 dB below the expansion threshold the gain will be reduced 2 dB.
- **EXP THRESH** (Expansion Threshold)**:** Valid range: **0** to **–96dB**, in **1dB** steps.
  Sets the threshold above which gain reduction occurs. This is typically set to -80dB.
- **REDUCE** (Expander Gain Reduction)**:** Valid range: **0** to **–36dB**, in **1dB** steps.
  Sets the limit on the amount of gain reduction caused by the expander. This is typically set to -6dB.
- **GAIN** (Make-up Gain)**:** Valid range: **0** to **30dB**, In **1dB** steps.
  Used to compensate for the gain reduction caused by the action of 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 used.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 17 of 39

Analog to Digital Converter

ADC: STA-100

This menu sets where the analog audio signal is converted to a digital signal.

- **STA-100 -** This setting is used when feeding audio into a STA-100
- **STA-150** - This setting is used when feeding audio into a STA-150
- **STA-042** - This setting is used when feeding digital audio into a STA-042
- **INTERNAL** - This setting is used when analog microphone attached to the microphone connector.

IMPORTANT: Any change to this page **REQUIRES** a reboot before the new setting takes effect.

Battery Type

BATTERY TYPE:
NIMH QRX

This menu adjusts the battery type you are using so the receiver can properly display the remaining battery capacity.

- The settings are NIMH, Lithium and Alkaline (Displayed as " - - - -")

NOTE: In the menu you will see "**ENG**" and "**QRX**" options for these battery types as well. This is so each type Zaxcom receiver model"ENG" RX-900 or "QRX" QRX-100 can correctly display the transmitter's battery level.

Recording Mode

RECORD MODE:
LOOP RECORD

This adjusts what the transmitter will do after you reach the record capacity of the card.

- **NON-LOOP RECORD** (recommended setting) - Once the card has filled up, recording will stop and **FULL** will be displayed. This prevents over-writing any portion of the audio.
- **LOOP RECORD** - Once the media has filled up, the new audio will begin over-writing the oldest audio on the card.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 18 of 39

Boot Up Mode

BOOT UP IN
NORMAL MODE

- **REMOTE STANDBY** – The transmitter boots up in Low Power Standby mode. The TRX-900AA will be waiting for a ZaxNet ***"WAKE"*** command to come up to full power.
- **STANDBY MODE** – The transmitter boots up in Low Power Standby mode. The TRX-900AA will be waiting for you to ***Press Menu*** to come up to full power.
- **NORMAL MODE** – The transmitter will boot up in Normal mode.

Mute Switch

MUTE SWITCH:
DISABLED

This enables /disables the **MSA-100 Mute Switch**. The mute switch cuts out the UHF transmitted audio while maintaining the UHF signal.

- **OFF-** Mute switch is disabled.
- **ENABLE POSITIVE** -Mute switch is enables and functions in its normal position.
- **ENABLE NEGATIVE -** Mute switch is enabled and the switch function is reversed.

Left Right Switch

LR SWITCH MODE
OFF

This menu turns on the left / right switch mode.
This function allows the wireless user to cause the audio to switch from the left output to the right output of a stereo RX900 receiver when the key is pressed.
You can select the ***UP***, ***DOWN***, or ***MENU*** key to act as the trigger.

NOTE: This is only compatible with the RX900S Receiver

Side Tone Gain

SIDE TONE GAIN
OdB

This boosts what audio level is being fed to the **EA-100** or the audio output of an **STA** adaptor.

- This is user selectable to 0db, +6dB, +9dB, +12dB.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 19 of 39

IFB Remote Control

This menu will not appear if the IFB settings allow the TRX to go into transmit mode.

```
ALLOW IFB REMOTE
CONTROL: ON
```

This menu turns ON / OFF if the TRX-900AA will accept remote control commands via ZaxNet.

IFB Jam Threshold

```
IFB JAM THRESH
1000 MS (DEFAULT)
```

This menu sets how much the timecode has to jump before a new record file is forcibly created.

IMPORTANT: When a new file is created, while a take is in progress, about a half of second of the audio will be lost.

QRX Program

```
PRESS ↑ TO SEND
QRX  PROG  FILE
```

This is used to update the software on a QRX-100.

To Update the QRX Software:

1. With a computer copy the QRX software onto a formatted micro SD card.
2. Place the card in the transmitter
3. Power up the transmitter.
4. Advance to this menu.
5. Press the INC key.
6. The transmitter will begin to transmit the software to a QRX-100 that is set to receive the software. The transmitter will continually resend the program until you manually stop it.

Home Screen Record / Stop

```
ALLOW HOME SCRN
REC-STOP: ON
```

This allows the TRX-900AA to use the ***INC*** and ***DEC*** keys to start the internal recorder from the ***HOME SCREEN***.

If this is turned ***ON*** when in the ***Home Screen:***

- Press and hold the ***INC*** key for 1.5 seconds the TRX-900AA will start recording.
- Press and hold the ***DEC*** key for 1.5 seconds the TRX-900AA will stop recording.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 20 of 39

Phase Invert Channel

PHASE INVER CH2
OFF

This will invert the phase of channel 2 (Right) audio to correct for a phasing issue.
This would only be used in if you had a TRX-900AA with an STA adaptor and were using stereo mode.

TX Disable

Available on a TRX-900AA running software version 8.10 or higher

TX DISABLE:
NORMAL TX MODE

- **Record Only Mode** – This will set the TRX-900AA to act as a standalone recorder and will not transmit any RF audio on the UHF band.
- **Normal TX Mode** – This will set the TRX-900AA to both transmit RF audio and record on its internal SD card.

Low Battery Stop

Available on a TRX-900AA running software version 8.10 or higher

LOW BATT STOP:
NEVER STOP

LOW BATT STOP:
5 MINUTES

This menu sets the amount of time after a low battery warning the on-board recorder will close the current file and stop recording.
This is to prevent possible file corruption if the unit powers off and on due to a dead battery.

- **NEVER STOP** - The recorder will not stop recording unless you stop it.
- **Any interval from 1 to 99 minutes** - once the battery indicator starts blink a low battery warning the transmitter will continue to record for the time set in the menu - then it will close the file and stop recording.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 21 of 39

Record On Bootup

Available on a TRX-900AA running software version 8.10 or higher

```
RECORD ON BOOTUP
ON
```

This menu will determine if the TRX-900AA will automatically go into record after the unit boots up.

- **ON** - The transmitter will automatically start to record after it boots up.
- **OFF** - The transmitter will wait for a ZaxNet command or a manual record trigger to start recording.

Name

```
NAME: SN1234
        ↑
```

This menu changes the name of the transmitter.
The name entered into the unit becomes part of the name of the audio files generated by the unit and is also included in the metadata of the BWF file. Naming the unit aids in identifying the files from several different wireless.

The maximum Name length is 8 characters. You can select any letter or number and can even use spaces.

To set/change the name:

1. Press the ***INC*** or ***DEC*** *key* to change the character in the current position.
2. Press the ***MENU*** *key* to proceed to the next character.
3. When finished, press and hold the ***MENU*** *key* set the name and leave this page or you can cycle the power.

Encryption Menu

```
ENCRYPTION MENU:
HIDDEN
```

This hides the Encryption Menu.

- **HIDDEN** the encryption menu doesn't appear when you cycle through the menu settings.
- **ON** the Encryption will appear.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 22 of 39

Encryption Code page

ID1:000 ID0:000
↑

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

To adjust 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.

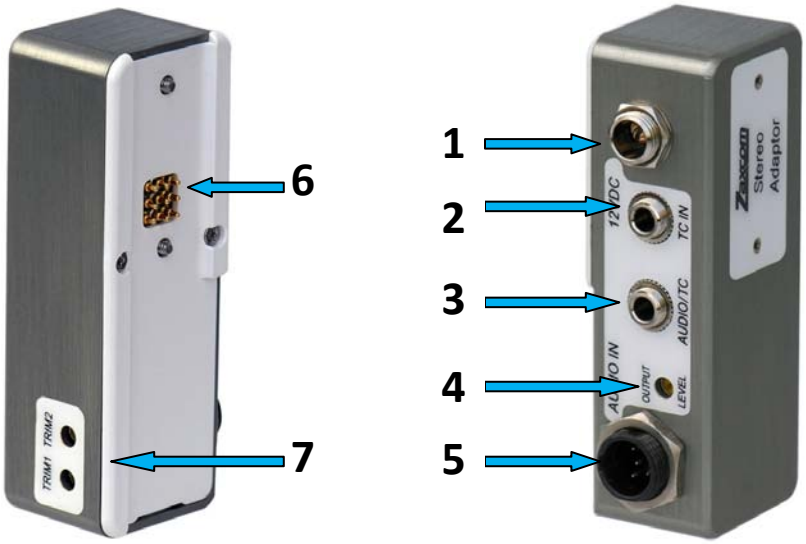
NOTE: Both of these codes should always be set to **000** for normal un-encrypted operation.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 23 of 39

Accessories

STA Adapter

The STA adaptors adds the ability to input two balanced lineline audio signals into the TRX-900AA, output audio and timecode as well as giving you the ability to power the unit from an external DC source. Both the STA 100 and 150 take in analog audio; but the STA-100 has the connectors on the back of the unit, while the STA-150 has the cables on the side. The STA-042 has the same form factor of the STA-150 but can input a digital signal and can support an AES-42 signal.



1. **Power Connector -** Use a Switchcraft 760K to feed the STA DC power.
2. **Timecode In Connector (3.5 mm TS)**
3. **Audio / Timecode Out Connector (3.5 mm TS)**
4. **Audio Out Level adjust**
5. **Audio Input Connector (TA5)**
6. **Contact Pad**
7. **Input trim adjustment**

STA - 150

STA042

STA-100 Attached to a TRX-900AA

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RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 24 of 39

STA Operations

Attaching the STA to the TRX-900AA

The STA attaches with two screws. Align the contact pads on the STA and the TRX-900AA and tighten the two screws, alternating between the two screws until the STA is firmly attached. Tighten the screws until snug without over tightning.

Adjusting the Input Level

Connect a line level source to the TA5 connector. The line level input needs to be between -6 and +8 dBu. Output tone from a mixer and adjust the 2 input pots so the meter on the LCD screen are at a level of -20 dBFS. The stereo adapter does not have a limiter function so it is important not to overdrive or clip the input of the stereo adapter.
In the case of the STA-042 the gain is adjusted on the ***Audio Gain*** menu ***(page 6).***

Powering the TRX-900AA via the STA

Connecting a 12 VDC power source to the stereo adapter is optional. If no power source is connected to the STA can operate from the unit's internal battery.
When the STA is connected to a 12 VDC power source, the TRX-900AA will be powered when the power switch is in the 'OFF' position. If both batteries are installed in the unit and external power is connected, the TRX-900AA will not be able to power down unless an external power switch is used to remove the external power.

Audio/Timecode Output Connection

The 3.5 mm audio output connection is used to monitor audio or to output timecode.
To choose what audio you what to monitor go to the ***IFB Earpiece*** menu ***(Page 7)***. The audio output level can be adjusted in the ***Side Tone Gain*** menu ***(page 18).***
If you want to output timecode instead of audio see ***Time Code Output*** menu ***(page14).***

Timecode Input

The timecode input is used to jam the TRX-900AA timecode generator. For the TRX-900AA to use the timecode from the STA go to the ***Time Code Source*** menu and set to "***SIDE CONNECTOR" (page14)***.

Operation of the STA

To use the stereo adapter select ***STEREO*** in the ***UHF Signal Format*** menu in the ***(Page 9)*** and select the appropriate ***Analog to Digital Converter*** in the Extended Menu ***(page 17).***

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 25 of 39

TCA-100 Timecode Adapter

The **TCA-100** timecode adaptor is used to jam timecode input to the TRX-900AA. To input timecode with the **TCA-100** go to the ***Time Code Source*** Menu and set it to "***SIDE CONNECTOR" (page14)***.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 26 of 39

MSA-100 Mute Switch

The **MSA-100** adapter allows talent to turn 'OFF' the mic for privacy while still sending RF from the transmitter.
The **MSA-100** is enabled in the ***Mute Switch*** Menu ***(page 18).***

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 27 of 39

EA-100 Earpiece Adapter

The **EA-100** is used for monitoring audio from the TRX-900AA. You can choose what to monitor from the ***IFB Earpiece*** Menu ***(Page 7).***
While the **EA-100** has its own volume knob the audio level can be adjusted in the ***Side Tone Gain*** ***(page 18).*** The side tone gain will adjust the audio before it is sent to the knob on the **EA-100**.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 28 of 39

Media

While any size card will work we recommend using a 4GB micro SD card. We also recommend that you buy a brand name card such as Transcend, SanDisk, or Delkin. You should always buy your cards from a reputable dealer because counterfeit cards exist and can cause recording issues.
We also recommend that you test your card before taking them out into the field.

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

1. Format the card in the transmitter.
2. Power cycle the unit.
3. Record at least 20 minutes of audio to a card with no timecode source.
4. Look at the Main Screen it should still be recording in segment #1.

Media Capacity

The TRX can use MiniSD cards, ranging in size from 128 MB to 16 GB. While any size card will work we recommend using 4GB cards.
Available recording times are as follows:

Media Size	Available Recording Time
128 MB	45 minutes
256 MB	1.5 hours
512 MB	3 hours
1 GB	6 hours
2 GB	12 hours
4 GB	24 hours
8 GB	48 hours
16 GB	96 hours

IMPORTANT: The transmitter will **NOT** record onto the card if:

- The card was not present when the unit was powered up
- If the card was removed while the power was 'ON'
- If the LOW BATTERY is being displayed.

NOTE: Regardless of the size of the card the TRX will only be able to record 254 segments on the card.

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 can only be recognized by Zaxcom's ZaxConvert program. Using ZaxConvert will transfer the file to a Broadcast Wave or MP3 file. This utility is available to anyone for free from the Zaxcom website ***http://www.zaxcom.com/software-updates***

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 29 of 39

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/software-updates
Newer version of Beta software may be found on the Zaxcom Forums:
http://www.zaxcom.com/forum

Each time a unit is powered up, the firmware version number is displayed briefly on the LCD screen. Pressing the ***DEC*** *key* during the boot up will slow down the screen to allow easier viewing of the information.

Updating TRX Firmware

1. Download the firmware from the Zaxcom website and load it onto a formatted card.
2. Insert the card into the TRX transmitter.
3. Simultaneously hold down the ***INC*** and ***DEC*** *keys* while powering up the unit.
4. The screen will display "**BURN ROM**" with the version of firmware you are loading.
5. From power up to "**DONE**" will take about 30 seconds.
6. Upon completion, cycle the power to run on the new version.

WARNING: Do not power down the unit during the upgrade process. Before upgrading the software be sure to insert a fresh set of batteries. If the unit should lose power during the upgrade, it will need to be sent back to Zaxcom for repair.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 30 of 39

Updating an ERX with your TRX-900

Your transmitter can be used to update the software in a Zaxcom ERX receiver. Your transmitter must be running version 7.02 or higher to do so.

1. Format a card in your TRX.
2. With a computer perform the following:
   A. Delete the "DELETE.ME" file on the card
   B. Download the ERX firmware "ERX-XXX.bin" from the Zaxcom website and load it onto a card formatted by the TRX.
3. Insert the card into the TRX.
4. Check that the ERX is set to the same ZaxNet frequency that the TRX is set to. Check that the GROUP ID is set the same in both the TRX and ERX. And make sure encryption is shut off.
5. Boot up the ERX while holding the Menu key to get to the ERX EXTENDED menu.
6. On the ERX Press menu 5 times till you see the software update page.
7. Press the INC key on the ERX 5 times till you see WAITING FOR PROGRAM.
8. Power up the TRX.
9. If your TRX is running software version 8.0 or higher in the EXTENDED Menu shut off RX to TX mode.
10. Go to the LOCK page and press down 6 times quickly to get to the FACTORY Menu.
11. Press the MENU key once to get to the IFBMODE page.
12. Press the INC key 3 times till you see IFBMODE 3 TX.
13. Press MENU 3 times until you see SEND ERX PROG FILE.
14. Press the INC key to trigger the update process.
15. The ERX should indicate its progress after a few seconds.
16. When the ERX has been updated the screen will display "SUCCESS".

WARNING DO NOT LEAVE THE TRX IN IFBMODE 3 TX.
If you do the TRX may not boot up when power cycled. If this happens hold the MENU and DOWN keys while booting to force the IFB to OFF. Then go to the IFB Mode in the factory menu to set IFB mode to IFBMODE 1 RX. Though as of version 8.19 this is no longer an issue.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 31 of 39

Inputting Audio

The TRX900AA use an unbalanced microphone input via a 3-pin micro-LEMO connector. You can use an unbalanced dynamic microphone or a powered lavaliere.

You can use a line-level input though an inline pad is required.

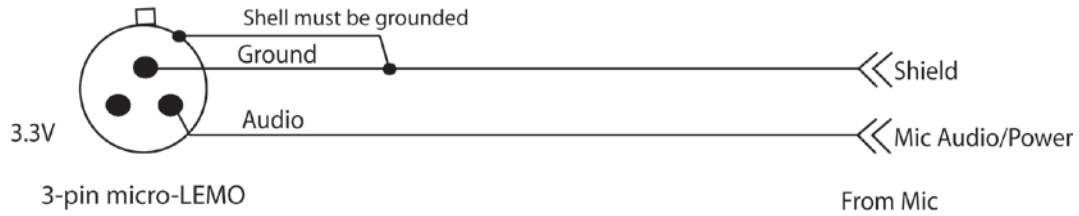
Wiring Diagrams

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

- FGB.00.303.CLAD.22 – has a latch with a pull release (recommended for RFI prevention).
- FVB.00.303.NLA – has a latch with a twist release.

IMPORTANT: It is recommended that the ground gets attached to the shell of the LEMO connector.

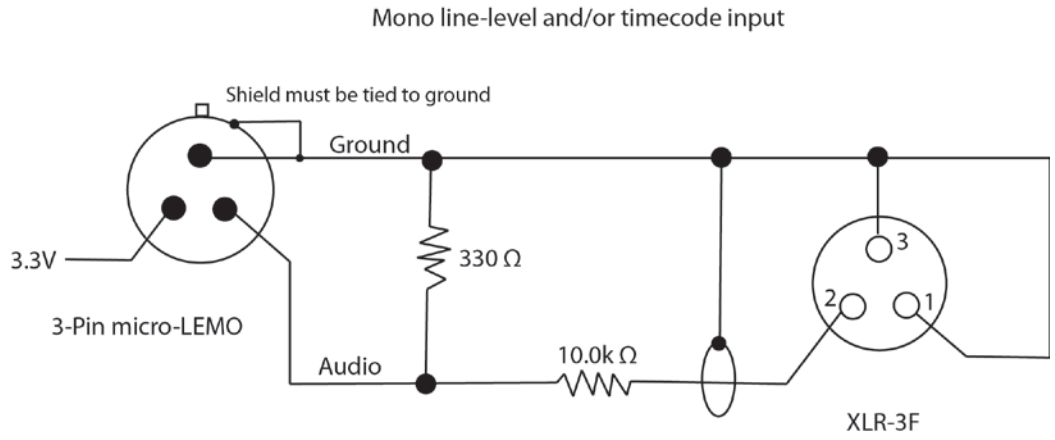
Two Wire Microphone Configuration



Three Wire Microphone Configuration

Please contact your microphone manufaturer.

Balanced Line Level and Timecode Input



Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 32 of 39

Line Level into STA Adaptor

XLR Out of Mixer		TA5 On STA Adaptor
PIN 1 on both	→	PIN 1
PIN 2 - Left	→	PIN 2
PIN 3 - Left	→	PIN 3
PIN 2 - Right	→	PIN 5
PIN 3 - Right	→	PIN 4

Audio / Timecode out of STA Adaptor

The ***Time Code Output*** menu ***(page14)*** will determine if the STA will output timecode or audio.

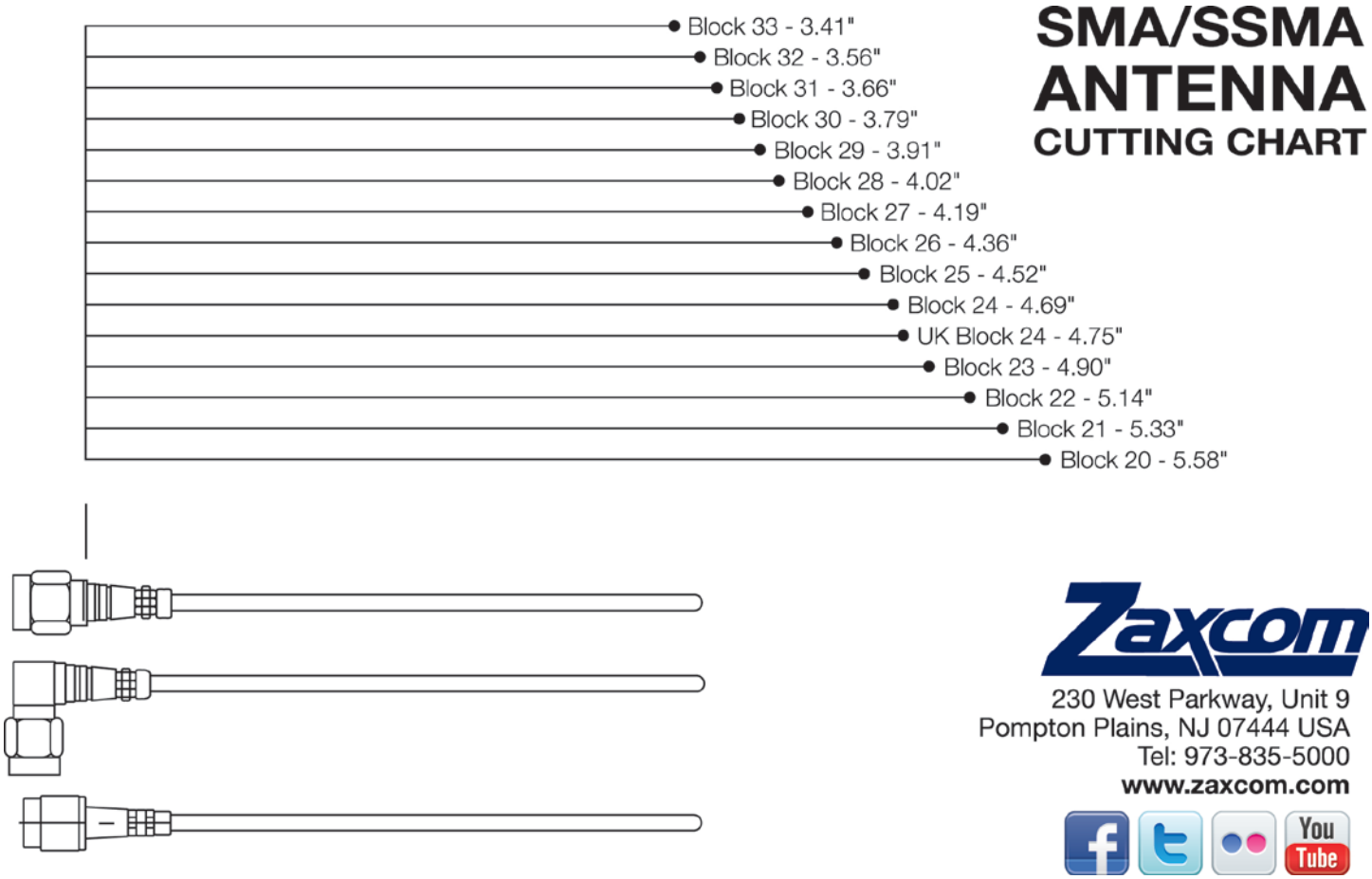
3.5 mm Audio / TC Connector On STA Adaptor		
SIGNAL	→	TIP
NO CONNECTION	→	RING
GROUND	→	SLEEVE

Timecode In to a STA / TCA-100

3.5 mm TC in Connector On STA / TCA Adaptor		
SIGNAL	→	TIP
NO CONNECTION	→	RING
GROUND	→	SLEEVE

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 33 of 39

Antenna Cutting Chart



Operating Frequencies

ZaxNet Remote Control and Timecode

2.403 to 2.475 GHz

UHF Audio

Block	Frequency Range	TV Channels
20	518.0 to 542.0	22 to 25
21	536.0 to 572.0	25 to 30
22	560.0 to 590.0	29 to 33
23	590.0 to 614.0	34 to 37
24	614.0 to 644.0	38 to 42
25	638.0 to 668.0	42 to 46
26	662.0 to 692.0	46 to 50
27	686.0 to 722.0*	50 to 55
28	722.0 to 746.0*	56 to 59
29	740.0 to 770.0*	59 to 63
30	764.0 to 794.0*	63 to 67
31	794.0 to 818.0*	68 to 71
32	818.0 to 842.0	72 to 75
33	860.0 to 872.0	79 to 80
UK	606.0 to 636.0	

**As of 12 June 2009, the USA has phased out analog television. As a result frequencies between 698.0 and 806.0 MHz will no longer available for use in the USA.*
As of 31 August 2011, Canada has phased out analog television. As a result, frequencies between 698.0 and 806.0 MHz are no longer available for use in Canada.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 35 of 39

Specifications

Transmitter
TRX-900AA RF Power Output: 10 / 25 / 50 mW – Software Selectable
RF Modulation: Proprietary Digital Method
RF Frequency Range: 518.0 to 872.0 MHz (Typical Blocks are 36 MHz wide)
RF Frequency Step: 100 KHz
RF Bandwidth US Mode: 200 KHz
RF Bandwidth EU Mode: 125 KHz
Channel Separation: 500 KHz (700 KHz recommended)
Antenna Connector: 50 Ω SSMA Female
Emission Designator: 180 KV2E
FCC Part: 74.861

Transmitter Audio
Dynamic Range: 106 dB
Distortion: 0.001%
Frequency Response: Mode 0: 20 Hz to 16 kHz / T & M Mode 0.2 Hz to 16 kHz
High Pass Filter: Off or 30 to 220 Hz, Steps: 10 (6 dB Per Octave)
System Group Delay: US Mono Mode: 3.6 ms / EU Mode: 6 ms / Stereo mode: 6 ms
Mic Power: 3.3 VDC
Mic Connector: 3-Pin Micro LEMO
Input Range:. -60 to -30 dBu
Impedance: 4.7 k Ω
ADC Bit-Depth:. 24 Bits
ADC Sampling-Rate: 48 kHz

Timecode Reader / Generator
Clock Accuracy: 1.54 PPM (1 Frame Out in 6 Hours)
Timecode Type: SMPTE
Timecode Frame-Rates: 23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Internal Recording – Optional, Part #TRX901
Media: MicroSD Card (Flash Memory)
File Format: .ZAX
Recording Time: 96 Hours (16 GB Card)

2.4 GHz ZaxNet Receiver – Audio Portion Optional, Part #TRX10
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: 4.0 oz. (113 grams) with Battery
Dimensions (H x W x D): 3.38” x 2.3” x .65” (85 mm x 58 mm x 17 mm)
Display: Graphic LCD

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 36 of 39

Power

TRX-900AA: Up to 8 Hours with 2 Lithium AA
External (via Stereo Adapter): 9 to 18 VDC @ 125 mA

All specifications are subject to change without notice.

Zaxcom Digital Wireless is protected under patent #'s: 7,711,443 & 7,929,902

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 37 of 39

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***

Consumer Alert

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.*** 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

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 38 of 39

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 **TRX-900LT/LTS/LTH/LTHS** ("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:
  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 Product, which has been received improperly packaged, altered or physically abused.

Zaxcom, Inc. Exhibit 2031
RØDE Microphones, LLC, et. al v. Zaxcom, Inc.
Page 39 of 39