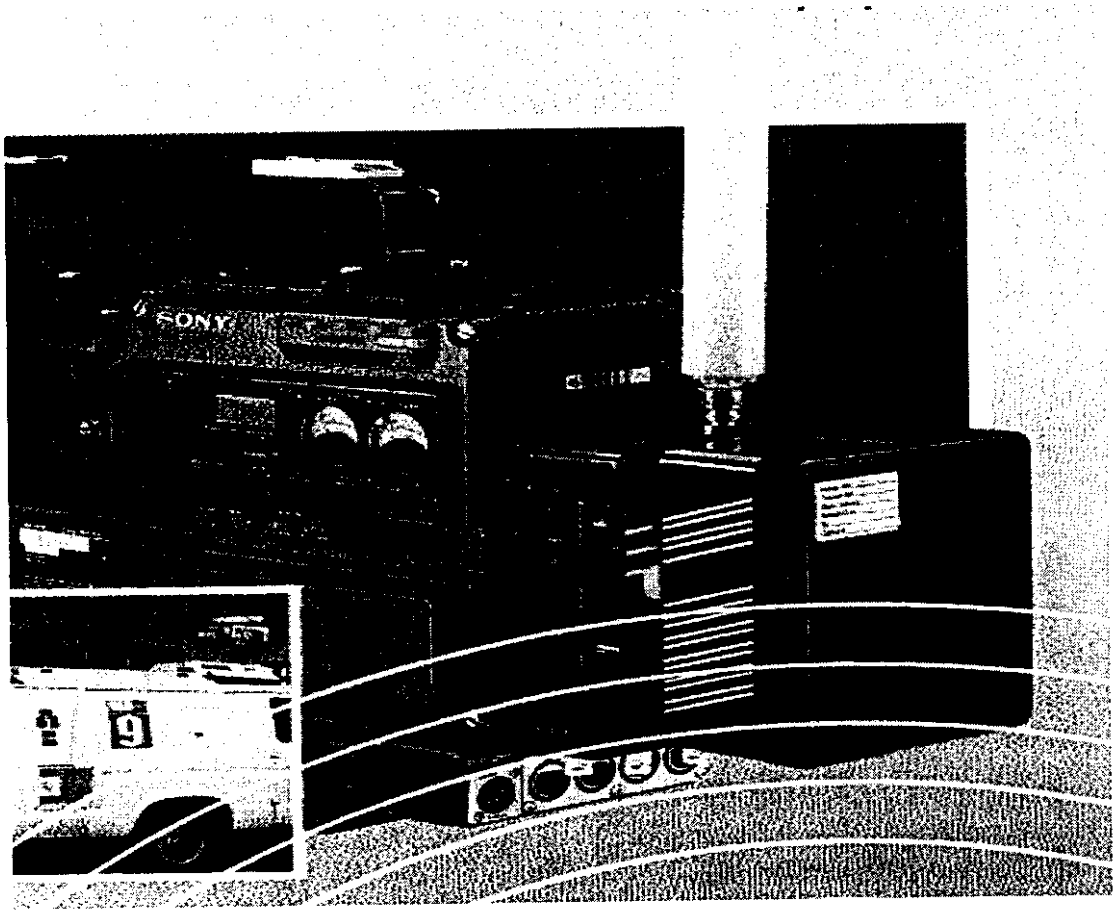
EXHIBIT F

Paragraph 2.983(d)(8)

Instruction Manual

DynaPIX® TRIAD™ Diversity Quick Start Guide



TEST REPORT R-3318N
FCC ID: I125VTX250

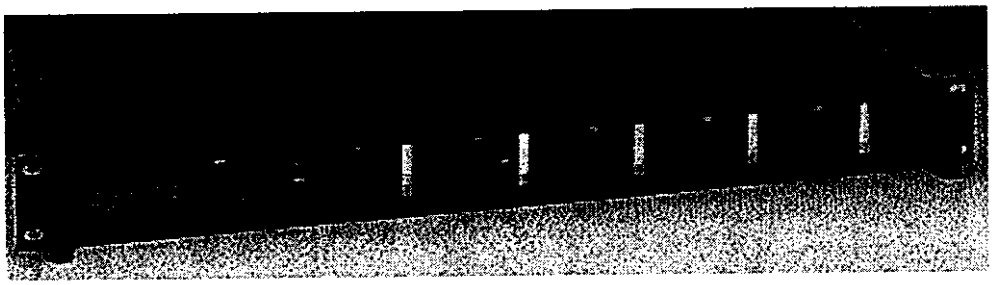
DynaPIX® TRIAD™ Wireless Video Diversity System Overview

Congratulations! You've purchased or are renting a "true" diversity wireless video system, with up to five receivers installed. DynaPIX Triad is a third generation system, reflecting numerous upgrades and improvements over the past five years. We hope that it meets your expectations, and we're prepared to assist you to make sure you're satisfied.

Overview:

The TRIAD system is designed to provide a wireless video and stereo audio link from an NTSC or PAL signal source to a monitor or recorder located up to 1000' (300m) away. Range may be extended through the use of various antenna options. In general, the quoted range is Line of Sight (LOS), although the signal can go through some objects. The more objects you go through, the greater your range is diminished.

Your system is crystalled with three frequencies between 2.4 and 2.5 GHz. These frequencies are selected by means of a switch on the transmitter and receiver. Two audio subcarriers are provided, at 6.0 KHz and 6.5 kHz.



Different antenna configurations are available depending on your application. This guide discusses two primary applications, ENG and Studio Production.

Quick Start:

OK, your event starts in two hours and you're just opening this case. It's the first time you've ever seen a wireless video system. Reading a manual just isn't going to happen. Don't despair! The next two pages will give you the basics you need to know.

1. Open the case, and remove the top two sets of foam. A lot of stuff, but it goes together easily.

2. From the bottom set of foam, remove the VTX transmitter. It probably is designed to mount to the back of a camera using the Anton/Bauer Gold Mount system. If your camera uses Anton/Bauer, mount the transmitter to the back of the camera. The transmitter will be powered by the Anton/Bauer battery when it is attached. (Turn the transmitter "off" for now. The transmitter will use some power, even without the camera "on".) Go to step 4.

3. If you have a NP-1 or other power source, you will use the Universal Connector to provide power to the transmitter. In the cutout next to where the transmitter was, remove the Lemo connector to pig tail cable assembly. Refer to page 5, and attach 12-15 VDC to the pig tail leads. You can do this by wiring the pig tail to a connector compatible with your camera's auxiliary power output, or to a battery pack.

4. If you're just sending video, attach the BNC-BNC cable in the kit to the video output connector on the camera and the BNC video connector on the bottom of the transmitter. If the BNC connectors obstruct the porch of the camera, or it is not physically possible to make a connector, you will have to use the Universal side connector. Refer to page 5 for pinout information.

5. If you are transmitting audio and/or time code text, you will need to use the Universal side connector. Refer to page 5 for pinout information.

6. Remove the omni-directional white rod antenna from the case and screw it onto the TNC connector on the top of the VTX transmitter. You may also have an AE-1 Antenna Extender (black). If you do, mount this to the transmitter's TNC connector, and then mount the antenna on it.

7. Your next step will be to determine receiving antenna placement. This will also dictate where the receiver rack will be located, especially if you are using the standard 12' long antenna cables. If you do the following, you will improve video performance:

   - Mount the antennas as high as possible, preferably above head level
   - Spread the antennas out as much as possible
   - Make sure there are no obstructions between the transmitter and the antennas, i.e. columns or walls
   - Make sure the antennas are not all at the same height, as you will get reflections from the ceiling or floor that impact each antenna to the same extent. For example, ----- is bad, -_-_- is good.
   - Pay attention to the beam width of the antennas. The standard receiver antennas have a beam width of 36° degrees. Make sure they overlap the same area, or else you won't truly have diversity.

1. Most of the time the Quick Grip Mounts included in the kit will be useful. Using a screwdriver or your fingers, screw one antenna onto each Quick Grip. Remove one TNC-TNC cable; attach one end to the antenna, and the other end to RX1 on the back of the rack. Repeat in a logical order until all receivers have an antenna attached. Pay attention to the labeling of the TNC's on the rack; they are not in order.

   Note: The Quick Grip mounts have a gimble mechanism, which allows you to "aim" the antennas towards where you want coverage. Make sure that once you have positioned the antennas appropriately, you tighten this mechanism.

2. Provide 10-32 VDC power to the rack. A power supply is included in the kit, terminated with the appropriate 4-pin XLR connector which mates with the rack, along with a standard 3 prong power cord.

3. Remove another BNC-BNC cable from the case, and connect to the Video Output on the back of the rack, and the Video Input on your monitor/recorder. If you need to have the rack in one area, you may run up to 150' of 75 ohm low loss cable to your monitor/recorder without significant signal loss. If you're using audio, remove the XLR cables and wire your audio outputs appropriately.

   Make sure the monitor has a 75 ohm internal termination. If it does not, you will need to provide a tee and a 75 ohm load.

4. Turn the power switch "on", on the front of the rack. A green LED will indicate power is on. Turn your monitor on.

5. Now turn your camera "on" and your transmitter "on". Select channel "A" on both the transmitter and receiver.

6. Turn all receivers "on". You should see a green LED appear above each RSSI signal display, indicating each receiver is receiving power. You should also see video on your monitor.

7. Optional: You may try channels B and C as well, as one may be better than the others. Make sure both transmitter and receivers are set to the same channel.

8. All your LED RSSI displays are probably at peak levels, especially if your camera is right next to the antennas

9. The final step is to make sure you have optimal receive antenna placement. You will need two people for this step, and a pair of two-way radios will help. The camera operator should walk around the area where you want to shoot. Turn off receivers 2-5, leaving only Receiver 1 "on". Make sure that Receiver 1's antenna is optimally placed, i.e. no blockage to the camera's location and strong RSSI where the camera is being used. Next, turn Receiver 1 "off" and Receiver 2 "on". Repeat this step until all five receiver antennas are suitably located.

System Components:

Your TRIAD system has four major components:

- VTX Series Transmitter
- Transmitter Antenna
- TRIAD Receiver Rack
- Receiver Antennas

VTX-100 and VTX-250 Transmitters

The VTX-100 is a FCC Part 15 approved transmitter, with an output power of approximately 5 MW using the omni-directional rod antenna supplied with the unit. No user license is required for operation in the United States or Canada.

The VTX-250 is a 250 MW transmitter, designed for use by users with Part 74 broadcaster licensees, certain government agencies, and for export. The antenna is removable, and you may want to try different antennas depending on your application.

Both the VTX-100 and VTX-250 are available with either a flat metal plate or an Anton/Bauer™ Mount, depending on how you plan to attach the transmitter to the camera. The antenna may be mounted up to 8' from the transmitter without significant effect on range (VTX-250 only). When using a rod antenna on the transmitter, make sure it remains vertical during transmission.

The standard configuration includes (4) BNC connectors on the bottom of the Transmitter. YOU DO NOT NEED TO CONNECT TO THEM. All signals on the BNC's are also brought out the side mount Lemo connector. If the cabling to the BNC's interferes with the camera porch, you can use the side connector. If the connectors interfere with the porch, call your dealer and ask for blank connector plate "C-1".

The chart on the following page provides a pinout of the Universal Connector.

Universal Connector

Pin 1: 11-32 Vdc input

Max. Input current:	600 mA.

Pin 2: LTC Data Input

Input impedance:	75 ohms
Input format:	SMPTE LTC

Pin 3: Video Input

Input Impedance:	75 ohms
Input level:	1 Vpp

Pin 4: Ground

Pin 5 and 6: Right Positive and Negative Balanced Inputs

Balanced mode:

Input impedance:	10k ohms.
Input level:	-46 dBu (4 mV rms)

Unbalanced mode (Right Negative Balanced Input grounded):

Input impedance:	8k ohms.
Input level:	-40 dBu (8 mV rms)

Pin 7 and 8: Left Positive and Negative Balanced Inputs

Balanced mode:

Input impedance:	10k ohms.
Input level:	-46 dBu (4 mV rms)

Unbalanced mode (Left Negative Balanced Input grounded):

Input impedance:	8k ohms.
Input level:	-40 dBu (8 mV rms)

Pin 9: Left Audio Line Input

Input impedance:	600 ohms
Input level:	1 Vpp

Pin 10: Right Audio Line Input

Input impedance:	600 ohms
Input level:	1 Vpp

BNC Connectors

TIMECODE: Same as Universal Connector pin 2.

AUDIO-LEFT: Same as Universal Connector pin 9.

AUDIO-RIGHT: Same as Universal Connector pin 10.

VIDEO: Same as Universal Connector pin 3.

The VTX Series has three switches on the camera operator side of the transmitter:

- Power On/Off
- Channel A,B,C three position switch
- LTC Time Code Text burn-in window On/Off

LED's are provided to indicate which position is active.

When your LTC Time Code switch is in the "ON" position, you will automatically have a time code window appears in the video transmission.

Note: When the transmitter is attached to a camera and battery using the Anton/Bauer mount, it will transmit at very low power even if the camera is in the "off" power position and it is receiving no video signal.

Transmitter Antennas

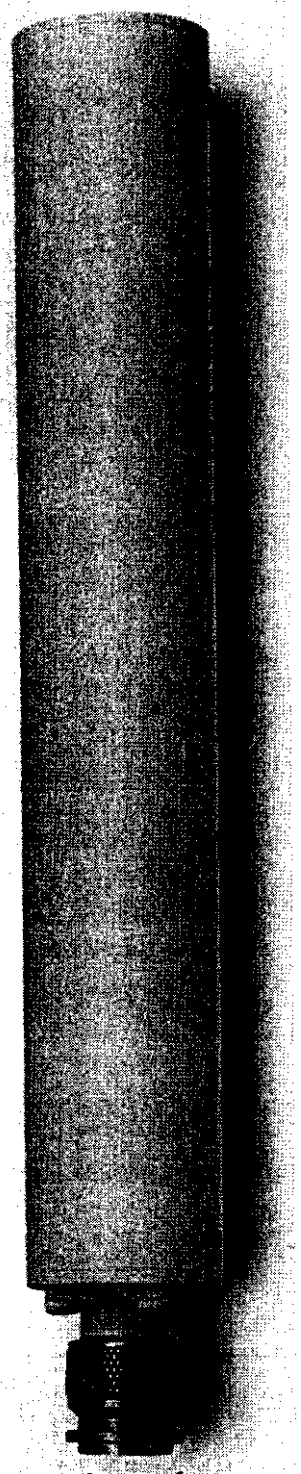
All VTX series transmitters come with an omnidirectional, Right Hand Circularly Polarized (RHCP), 5 dBi rod antenna. The pattern to this antenna is found in the attached addendum. This antenna works best when in the vertical position.

An antenna extender (AE-1) is available as an option. The AE-1 comes with a break away connector, so if it is bumped hard, the AE-1's connector will break, not the bulk head connector on the transmitter. The antenna extender is ideal when you want to get the antenna above head and obstacle levels, such as people and cars. Human bodies attenuate signals, and cars reflect signals, both of which will negatively effect system performance.

In certain situations, you may want to use a different antenna, such as a high gain patch antenna or a dish antenna; you may remote the antenna 8' (2.5m) from the transmitter using low loss cable without any significant signal loss. The standard antenna may easily be removed. Be sure that the antenna you choose does not place so much strain on the antenna connector that it causes it to break. This connector is by far the weakest link in your system!

For optimal performance in high multipath environments, such as ballrooms or indoor auditoriums, a "stick man" will be beneficial. A directional transmitting antenna mounted on a light stand will reduce multipath and improve performance.

The DynaPIX Wireless Video Reference Guide has a complete section on antennas. You may also contact your DynaPIX distributor to discuss your requirements, or call the factory direct.

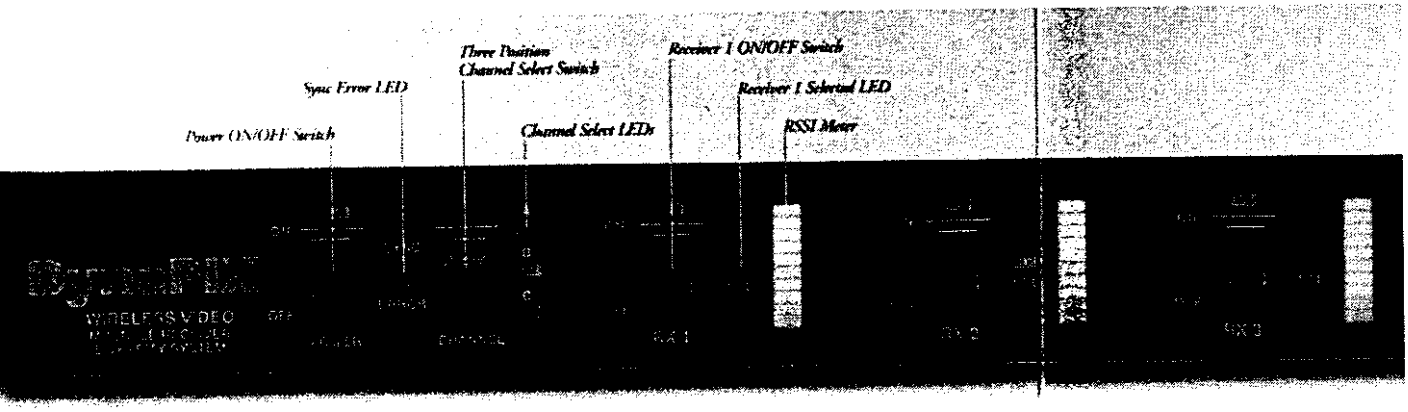


Omnidirectional, circularly polarized dipole antenna. Shown at actual size.

TRIAD Wireless Video Receiver Rack

The TRIAD wireless video receiver rack is a single rack height unit that contains up to five receivers. Each receiver has its own antenna connector. In addition, it contains a logic board (used to determine which receiver is optimal at any point in time, and switch automatically) and power supply board. The logic board contains a multi-pin header, breaking out many video signals for future upgrades.

TRIAD Front Panel
You will notice on the front of the unit that all switches and LED's are well marked. You can select one of three frequencies that are crystalled in the unit.



If you are using a VTX-100, make sure that your receiver uses DTC Channels A, B, and C! These are the channels compatible for unlicensed use.

Make sure that your transmitter and receiver are on the same channel! Each unit will have a label or be engraved with the frequencies installed.

You will see an LED marked "Sync Error". This LED will flash when video sync is lost.

Each receiver has its own LED signal strength indicator. Optimum performance will occur when all LED arrays are in the green zone, but not at peak signal levels. Some receivers should see more signal than others.

When the receivers have power, the green LED above the on/off switch is illuminated. There are five SEL (selected) LED's. Only one will be illuminated at a time, indicating that this is the current active receiver. In a high multi-path environment you may see the active LED move rapidly between receivers. In a stable, low noise environment, it may not move for long periods of time.
Each receiver also has a very important two position On/Off switch.

Using the On/Off Switch during Installation:

Use the Receiver On/Off switch (Not the Power On/Off switch!) during installation. Start by turning all receivers "OFF". Then, connect your first antenna to the antenna output on the back of the unit associated with "RX1". Turn the video transmitter "ON". Check the LED signal strength indicator on RX1. Position the antenna so you have maximum signal strength on the RX1 signal strength LED display.

Turn "Off" RX1, and repeat this set of instructions starting with RX2.

The TRIAD system will automatically analyze and switch to the best receiver of all those in the "ON" position. Make sure that when you've finished selecting your antenna locations, that you turn all receivers to the "ON" position.

TRIAD Back Panel

The TRIAD system has a single 4 pin XLR connector for power, two 3 pin XLR connectors for audio left and right, a BNC connector for video out, and five TNC connectors for the antennas. There is also a circuit breaker provided.

The power input to the TRIAD receiver is 12-32 VDC.

There are also five TNC antenna connectors. Note: They are not in sequential order. It is helpful to install and connect antennas in a logical order, so if you need to move them it is easy to know which antenna goes to which connector.

Receiver Antennas

Of all the system components under your control, the selection and placement of the Receiver Antennas is the most critical.

Antennas may be mounted on "Quick Grips" included with each system. Each Quick Grip will hold two standard 11 dBi patch antennas, but it is preferable if you only mount one antenna per Quick Grip, and space them apart as much as possible.

The front part of the antenna, logo side, should be kept free of metal objects.

Make sure that you have as unobstructed a view between the camera transmitter and the antenna array as possible. In general, higher is better! Try to locate the antenna array above cars and "head level".

If you have a Studio system, you will have one or more omnidirectional, circularly polarized antennas as well as directional, high gain patch antennas. They are likely mounted in our "Quick Grip Mount". Each high gain patch antenna has a 36° beam width. Make sure that the beamwidths of the antennas overlap! If you don't, you will defeat the diversity aspect of the system.

The omnidirectional antenna(s) is provided so that if the camera moves out of the beamwidth of the directional antennas, you will still have a signal path.

Make sure that you have an antenna on each receiver. If you don't, you will receive little or no signal on that receiver. **If one or more receivers do not have antennas attached, turn those receivers off.**

Antenna Options

Depending on your application, you may want to use specialized antennas, which offer increased gain or directionality. DTC offers patch antennas at 5 dBi, 11 dBi, and 17 dBi. We also provide yagi and dish style antennas, boosting gains up to 25 dBi. A copy of common patterns is attached as an addendum.

You may mix and match receiver antennas in one system. For instance, you might use four patch antennas and one dish antenna for a remote shot in a well defined area.

In addition to the major components, you will also have an assortment of cables, depending on your system. Should you have any questions on cabling or set up, call your DynaPIX dealer.

For complete specifications, refer to the product specification sheet.
Thank you for using DynaPIX Products! You can reach DTC Communications in many ways. Call us at 603-880-4411, or toll free in the United States and Canada at 1-800-233-8639. Fax us at 603-880-6965. Visit us on the World Wide Web at Dynapix.com. Or, EMAIL us at Info@DTC.com.