Evertz Camera Adapter System

Instruction Manual

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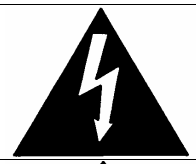
IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of un-insulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature ac-companying the product.

- Read this information.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the plug provided does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
WARNING DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT.
WARNING TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE.
WARNING THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

INFORMATION TO USERS IN EUROPE

NOTE

This equipment with the CE marking complies with both the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065 Product Safety
- EN55103-1 Electromagnetic Interference Class A (Emission)
- EN55103-2 Electromagnetic Susceptibility (Immunity)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE	EN60065 EN55103-1: 1996 EN55103-2: 1996	Safety Emission Immunity

	EN504192 2005 Waste electrical products should not be disposed of with household waste. Contact your Local Authority for recycling advice

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment. Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

Evertz Microsystems Ltd FC For Commercial Use	Tested to comply with FCC Standards	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary version	Sep 04
1.0	First release version	Oct 04
1.1	Updated to add audio monitoring and other menu items	Dec 04
1.2	Updated to April firmware features	Apr 05
1.3	Updated to August firmware release features	Sep 05
1.4	Updated to November 4 firmware release features	Nov 05
1.5	Updated to April 20, 2006 firmware release features	Aug 06
1.5.1	Updated 2:3:3:2 Pulldown sequence drawing	May 07
1.5.2	Revised Sony camera information	Jun 08
1.5.3	Minor typos in Intercom menus fixed	Oct 08
1.5.4	Updated Camera Adapter Power Connections (Bottom Side) drawing	Feb 09
1.5.5	Updated List of Cameras Supported	Mar 09
1.5.6	Updated weight specifications for camera adapter & ECA-PS DC-DC Power Converter	Jun 09

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Although every attempt has been made to accurately describe the features, installation and operation of this product in this manual, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this manual is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

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CHAPTER 1: OVERVIEW

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1. OVERVIEW

The Evertz Camera Adapter system provides a versatile fiber-optic enabled accessory to Sony HDW-F900, Sony XDCAM-HD, Panasonic High Definition, and Sony Standard definition camcorders. There are three components to the system, each linked via fiber optic cable.

The Camera adapter and Base Stations are available in several models to support a wide variety of cameras as shown in Table 1-1.

Camera		Camera Adapter Model	Base Station Model	Fiber Connector
Mfg	Models			
Panasonic	HDC-27V, HDX-900, HPX 300, HPX 500, HPX-2000, HPX-3000, HPX2700, HPX 3700	ECAP-1394-FSCH-HD	ECB- FSCH -HD	Fischer 1053
		ECAP-1394-LEMO-HD	ECB-LEMO-HD	Lemo 3K Series
Sony	HDW-700A*, HDW-750, HDW-F900(R), HDCAM	ECAS-1394-HD (not-fiber enabled)	---	
Sony	HDW-700A*, HDW-750, HDW-F900(R), HDCAM	ECAS-1394-FSCH-HD	ECB-FSCH -HD	Fischer 1053
		ECAS-1394-LEMO-HD	ECB-LEMO-HD	Lemo 3K Series
Sony	PDW-350, PDW-355, PDW-700 XDCAM HD	ECAX-1394-FSCH-HD	ECB-FSCH-HD	Fischer 1053
		ECAX-1394-LEMO-HD	ECB-LEMO-HD	Lemo 3K Series
Sony	DVW, DNW, IMX Series	ECAS-1394-FSCH	ECB-FSCH	Fischer 1053
		ECAS-1394-LEMO	ECB-LEMO	Lemo 3K Series

* HDW-700A camera requires a simple modification (contact factory)

Table 1-1: Camera Adapter and Base Station Models

The non-fiber version of the camera-back adapter for the Sony HD cameras, and the fiber enabled high definition versions operating as a stand-alone unit, provide HDSDI with embedded audio and time code, NTSC/PAL, SDI and IEEE1394A downconverted video, and two analog audio inputs for channels 3 and 4 (on Sony models). The standard definition camera-back adapters provide SDI with embedded audio and time code, NTSC/PAL and IEEE1394A video and two analog audio inputs for channels 3 and 4.

When the fiber enabled HD camera adapters are connected to the ECB-HD base station, the camera video is transported to the base over fiber and broken out to HDSDI video with embedded audio and time code, analog or AES audio, LTC, NTSC/PAL, SDI, and IEEE1394A downconverted video with time code. The base station has inputs for return HDSDI, NTSC/PAL, four channels of analog or AES audio, genlock, time code, and IFB. The fiber also transports bi-directional RTS intercom, camera remote control (with viewfinder menus), and contact closure tallies. Standard definition models provide similar functionality except they do not provide down conversion capability.

When the Camera power option is installed in the base station (-CP versions), the base station can send 125 watts of DC power over a hybrid copper/fiber optic cable to the camera adapter. This DC voltage is converted to battery voltage by the ECA-PS power module, which mounts on the camera adapter in place of a battery. When power is sent down the hybrid cable, the camera and accessories can be powered over a distance up to 2 km.

1.1. FEATURES

1.1.1. Camera-Back Adapter – Stand alone features and Non-fiber version

- Sony models connect directly to camera multi-pin connector, serial digital video output with embedded camera time code and audio
- Panasonic models connect to serial digital output from camera – extra serial digital outputs
- Serial digital video input for connecting to "pool feeds"
- NTSC/PAL camera video out (on HD models, downconverted and aspect ratio converted – supports 4:3 center crop, anamorphic squeeze or 16:9 letter box)
- Auxiliary serial digital output switchable as second output from camera, (or downconverter on HD models)
- Sony models embed camera time code and audio on serial digital outputs
- IEEE 1394 port for output and control of DV devices.
- Sony models have inputs for audio 3 & 4 selectable as Line, Microphone (with phantom power) or AES
- Draws power from camera supply (battery connector or 4 pin XLR)
- Sony models available with Sony/IDX, PAG or Anton-Bauer battery connectors
- Panasonic models available with Sony/IDX or Anton-Bauer battery connectors
- 12 VDC accessory power outlet
- On-screen display menu system

1.1.2. Additional Features when connected to Base Station

- Serial digital Return Video available on Aux SDI output
- Four channels of AES or Analog Return Audio
- NTSC/PAL Return Video
- Tri-level or bi-level genlock return to camera
- LTC to and from camera
- Camera control from control panel connected to Base Station (camera menu video input on Sony models)
- 2 channel Intercom - 5-pin XLR intercom headset connector at camera adapter, RTS beltpack connection at base station
- IFB return channel to camera adapter
- Piezo electric speaker with volume control for intercom monitoring
- RS-422/232 channel to base station for metadata or accessory control
- Four GPI/O channels simple control or tally between camera and base station – two each direction
- Status LEDs for SDI and NTSC/PAL return video, Intercom Talk and Fiber Link OK
- Available with LEMO 3K series fiber-optic connector – contact factory for other connector options

1.1.3. Base Station

- Camera serial digital video output
- Return serial digital video input
- NTSC/PAL camera video out (On HD models, downconverted and aspect ratio converted – supports 4:3 center crop, anamorphic squeeze or 16:9 letter box modes)
- HD models have serial digital output from downconverter.
- Four channels of analog audio and AES out (de-embedded from camera serial digital video)
- IEEE 1394 port for output and control of DV devices
- Remote control to camera (camera luminance video output with menus on Sony models)
- NTSC/PAL Return Video In
- Genlock In (Analog black burst or Tri-level)
- Four channels of analog audio or AES in (return audio to camera adapter – selectable)
- Support for 2W RTS intercom – belt pack 3 pin XLR interface
- IFB return input to camera adapter
- RS-422/232 channel to camera adapter
- 4 GPI/O channels simple control or tally between camera and base station – 2 each direction
- LTC In to camera from external Time code generator
- LTC Out from camera Time code generator
- Front panel control via pushbuttons and LED display
- Status LEDs for Camera Video, Audio and Time code present, Return video, audio and time code, genlock, intercom, IFB present, and fiber links OK
- Status LEDs for camera power ON and Ground Fault on CP versions
- 10/100 Mbps Ethernet
- One-rack unit main frame with one-rack unit audio breakout panel
- Auto-ranging 90-250VAC 50/60 Hz power supply
- Optional high voltage DC supply to send camera power to ECA-PS power converter (-CP version)
- Front panel power switches for Base power and Camera power (-CP versions)
- Available with LEMO 3K series fiber-optic connector – contact factory for other connector options

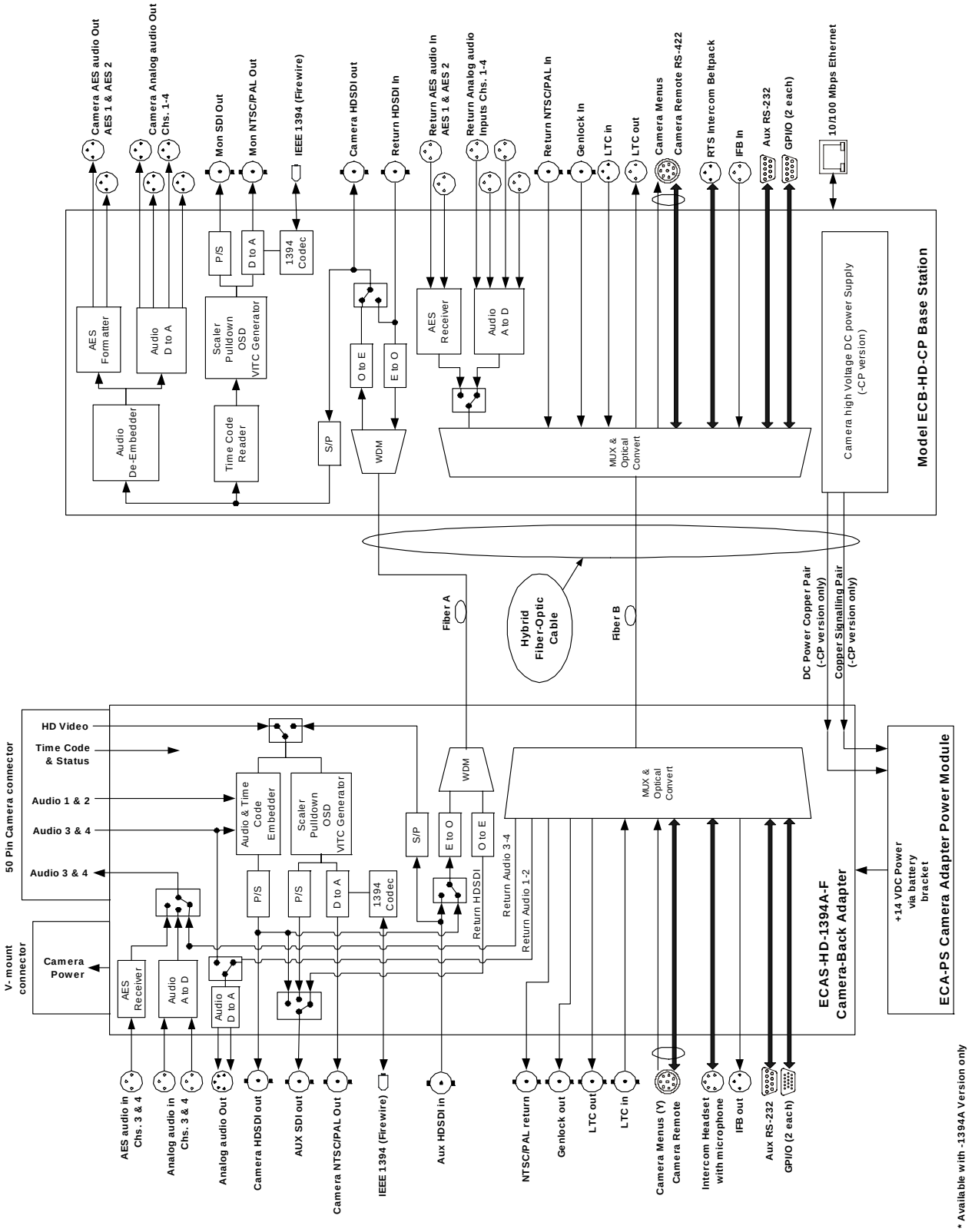

Figure 1-1: ECAS Camera Adapter System Block Diagram

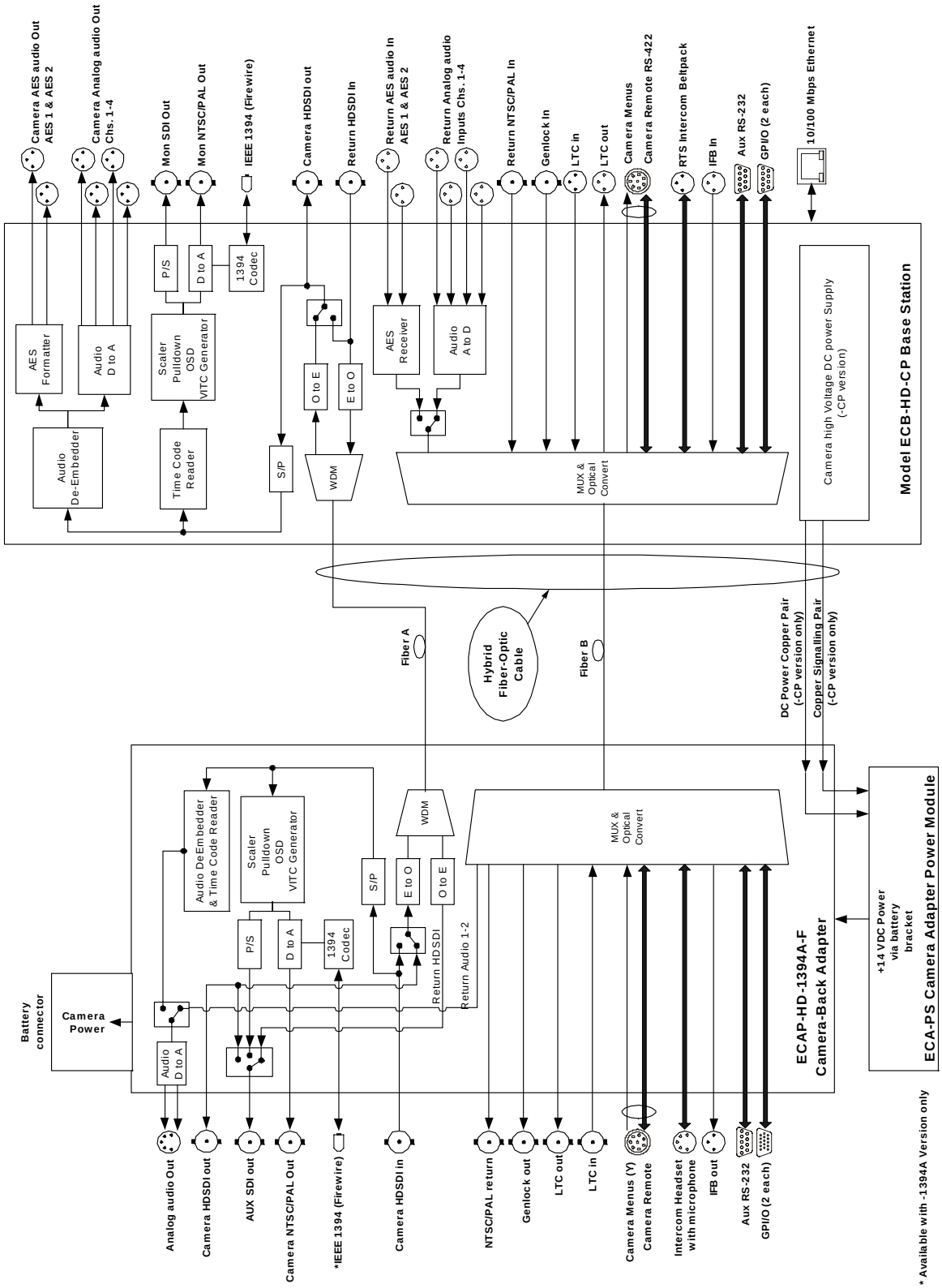

Figure 1-2: ECAX and ECAP HD Camera Adapter System Block Diagram

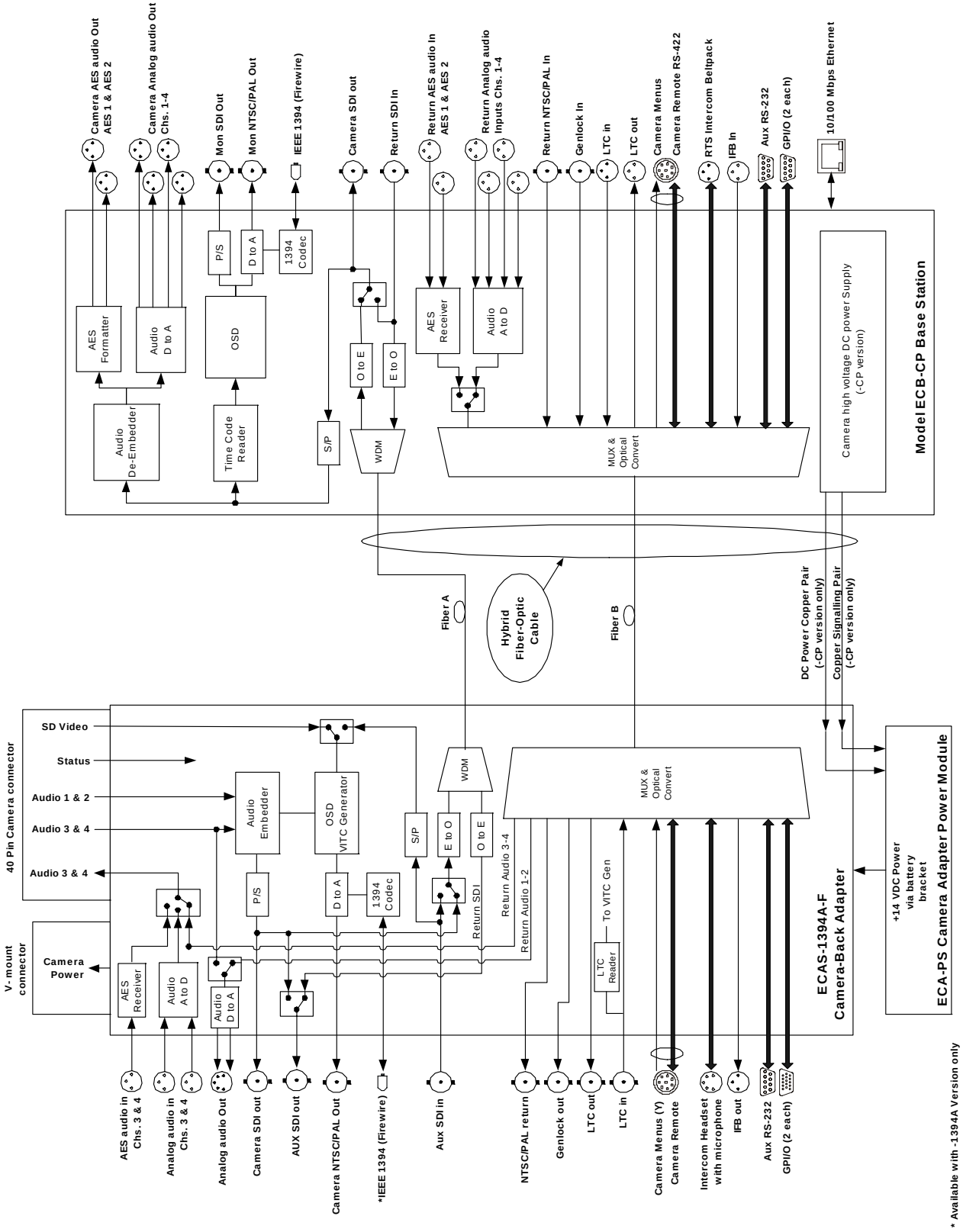

Figure 1-3: Sony SD Camera Adapter System Block Diagram

1.2. HOW TO USE THIS MANUAL

This manual is organised into five chapters: Overview, Installation, Camera Adapter Operation, Base Station Operation, and Technical Description. This chapter contains a quick summary of the features and a glossary to define concepts and terms used throughout the remainder of the manual.

Chapter 2 gives a detailed description of the rear panel connectors, and how the unit should be connected into your system.

Chapter 3 gives a detailed description of the operation of the Camera Adapter controls, starting with an overview of the pushbuttons and panel indicators.

Chapter 4 gives a detailed description of the operation of the Base Station controls, starting with an overview of the pushbuttons and front panel indicators.

Chapter 5 gives the specifications, instructions on how to update the firmware in the unit and other technical issues.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important safety related operating and maintenance (servicing) instructions in the literature accompanying the product.

This symbol is intended to alert the user to important operating instructions.

1.3. GLOSSARY

4:2:2: A commonly used term for a component digital video format. The details of the format are specified in the ITU-R601 standard. The numerals 4:2:2 denote the ratio of the sampling frequencies of the luminance channel to the two colour difference channels. For every four luminance samples, there are two samples of each colour difference channel.

AES: Audio Engineering Society: A professional organisation that recommends standards for the audio industries.

AES-3: See AES/EBU.

AES/EBU: Informal name for a digital audio standard established jointly by the Audio Engineering Society and the European Broadcasting Union organisations. This audio standard is formally known as AES3-1992.

ANALOG: An adjective describing any signal that varies continuously as opposed to a digital signal that contains discrete levels representing digits 0 and 1.

A-TO-D CONVERTER (ANALOG-TO-DIGITAL): A circuit that uses digital sampling to convert an analog signal into a digital representation of that signal.

BIT: A binary representation of 0 or 1. One of the quantized levels of a pixel.

BIT PARALLEL: Byte-wise transmission of digital video down a multi-conductor cable where each pair of wires carries a single bit. This standard is covered under SMPTE 125M, EBU 3267-E and CCIR 656.

BIT SERIAL: Bit-wise transmission of digital video down a single conductor such as coaxial cable. May also be sent through fiber optics. This standard is covered under SMPTE 259M and CCIR 656.

BIT STREAM: A continuous series of bits transmitted on a line.

BNC: Acronym for British Naval Connector or Bayonet Nut Connector or Bayonet Neill Concelman - a coaxial cable connector used extensively in professional television systems. These connectors have a characteristic impedance of 75 ohms and are standardised by the IEC 169-8 standard.

BYTE: A complete set of quantized levels containing all the bits. Bytes consisting of 8 to 10 bits per sample are typical in digital video systems.

CABLE EQUALIZATION: The process of altering the frequency response of a video amplifier to compensate for high frequency losses in coaxial cable.

CCIR: International Radio Consultative Committee: An international standards committee. (This organisation is now known as ITU.)

CCIR-601: (This document now known as ITU-R601).

CCIR-656: (This document now known as ITU-R656).

CLIFF EFFECT: (also referred to as the 'digital cliff') This is a phenomenon found in digital video systems that describes the sudden deterioration of picture quality due to a large number of bit errors, often caused by excessive cable lengths. The digital signal will be perfect even though one of its signal parameters is approaching or passing the specified limits. At a given moment however, the parameter will reach a point where the data can no longer be interpreted correctly, and the picture will be totally unrecognisable.

COMPONENT ANALOG: The non-encoded output of a camera, video tape recorder, etc., consisting of the three primary colour signals: red, green, and blue (RGB) that together convey all necessary picture information. In some component video formats these three components have been translated into a luminance signal and two colour difference signals, for example Y, B-Y, R-Y.

COMPONENT DIGITAL: A digital representation of a component analogue signal set, most often Y, B-Y, R-Y. The encoding parameters are specified by CCIR-601. CCIR-656 and SMPTE 125M specify the parallel interface.

COMPOSITE ANALOG: An encoded video signal such as NTSC or PAL video that includes horizontal and vertical synchronizing information.

COMPOSITE DIGITAL: A digitally encoded video signal, such as NTSC or PAL video that includes horizontal and vertical synchronizing information.

D1: A component digital video recording format that uses data conforming to the CCIR-601 standard. Records on 19 mm magnetic tape. (Often used incorrectly to refer to component digital video.)

D2: A composite digital video recording format that uses data conforming to SMPTE 244M. Records on 19 mm magnetic tape. (Often used incorrectly to refer to composite digital video.)

D3: A composite digital video recording format that uses data conforming to SMPTE 244M. Records on 1/2" magnetic tape.

DARS (Digital Audio Reference Signal) A reference signal conforming to the format and electrical specification of the AES3-1992 standard, but often has only the preamble active. This signal is used for synchronization in digital audio studio applications. The recommended practice AES11-1997 gives further information on the use of a DARS reference.

dB - A symbol indicating that a measurement is made using a logarithmic scale similar to that of the decibel (see below) in that a difference of 10 dB- corresponds to a factor of 10. In each case, the actual measurement is compared to a fixed reference level r and the "decibel" value is defined to be 10 log10(a/r). Many units of this kind have been used and only a few of the more common ones are mentioned in the next entries. In each case the dB symbol is followed by a second symbol identifying the specific measurement. Often the two symbols are not separated (as in "dBA"), but the Audio Engineering Society recommends that a space be used (as in "dB A").

dB FS Abbreviation for "decibels full scale," a unit of power as measured by a digital device. A digital measurement has a maximum value M depending on the number of bits used. If the actual power measurement is p, the dB FS value displayed is 20·log10(p/M) dB FS. Since p cannot exceed M, this reading is always negative.

dB m, dB W Logarithmic units of power used in electronics. These units measure power in decibels above the reference level of 1 milliwatt in the case of dB m and 1 watt in the case of dB W. A power of n watts equals 10 log n dB W; conversely, a power of p dB W equals 10(p/10) watts. The same formulas link dB m to milliwatts. An increase of 10 dB m or 10 dB W represents a 10-fold increase in power. Since 1 watt = 1000 milliwatts, 0 dB W = 30 dB m.

dB u A logarithmic unit of power, similar to dB m but computed from voltage measurements. The reference level is 0.775 volts, the voltage which generates a power of 1 milliwatt across a circuit having an impedance of 600 ohms. A voltage of V volts corresponds to a power of 20·log10(V/0.775) dB u.

decibel (dB) A customary logarithmic measure most commonly used (in various ways) for measuring sound. The human ear is capable of detecting an enormous range of sound intensities. Furthermore, our perception is not linear. Experiment shows that when humans perceive one sound to be twice as loud as another, in fact the louder sound is about ten times as intense as the fainter one. For this reason, sound is measured on logarithmic scales. Informally, if one sound is 1 bel (10 decibels) "louder" than another, this means the louder sound is 10 times louder than the fainter one. A difference of 20 decibels corresponds to an increase of 10 x 10 or 100 times in intensity. The beginning of the scale, 0 decibels, can be set in different ways, depending on exactly which aspect of sound is being measured. See also dB- (above).

DROP FRAME: A method of adjusting the nominal 30 frame per second counting rate of SMPTE 12M time code to the actual counting rate of approximately 29.97 frames per second – a difference of 1 part in 1001. This correction drops 108 frames per hour by skipping frame counts 0 and 1 at the beginning of each minute, except minutes 0, 10, 20, 30, 40 and 50.

EBU (European Broadcasting Union) An organisation of European broadcasters that among other activities provides technical recommendations for the 625/50 line television systems.

EBU TECH 3267-E: The EBU recommendation for the parallel interface of 625 line digital video signal. This is a revision of the earlier EBU Tech 3246-E standard, which was in turn derived from CCIR-601.

EDH Error Detection and Handling (EDH) is defined in SMPTE RP-165 as a method of determining when bit errors have occurred along the digital video path. According to RP-165, two error detection checkwords are used, one for active picture samples, and the other on a full field of samples. Three sets of flags are used to convey information regarding detected errors, to facilitate identification of faulty equipment or cabling. One set of flags is associated with each checkword, and the third is used to evaluate ancillary data integrity. The checkwords and flags are combined into a special error detection data packet that is included as ancillary data in the serial digital signal.

EMBEDDED AUDIO: Digital audio is multiplexed onto a serial digital video data stream according to the SMPTE 272M (standard definition) or SMPTE 299M (high definition) standards.

HDSDI: High Definition Serial Digital Interface - a standardised interface for transmitting high definition digital television signals using a coaxial cable in serial form. Often used informally to refer to the 4:2:2 sampled high definition serial digital television signals as specified in SMPTE 292M.

ITU: The United Nations regulatory body governing all forms of communications. ITU-R (previously CCIR) regulates the radio frequency spectrum, while ITU-T (previously CCITT) deals with the telecommunications standards.

ITU-R BT470: An international standard for the PAL composite analogue television system.

ITU-R601: An international standard for component digital television from which was derived SMPTE 125M and EBU 3246-E standards. ITUR-601 defines the sampling systems, matrix values and filter characteristics for both Y, B-Y, R-Y and RGB component digital television signals. This document was formerly known as CCIR-601.

ITU-R656: The physical parallel and serial interconnect scheme for ITU-R601. ITU-R656 defines the parallel connector pinout as well as the blanking, sync and multiplexing schemes used in both parallel and serial interfaces. It reflects definitions found in EBU Tech 3267 (for 625 line systems) and SMPTE 125M (parallel 525 line systems) and SMPTE 259M (serial 525 line systems). This document was formerly known as CCIR-656.

LTC: (Linear Time Code or Longitudinal Time Code) This time and address control signal standardised by SMPTE 12M has been in widespread use in the professional video and audio industries since 1975. It is typically written on a time code or address track of a video recorder and provides an individual frame number for each video frame recorded. LTC is also commonly used to distribute time of day information to wall clocks, automation systems and other devices throughout a television facility. In regions of the world using the NTSC or similar non-integer (1/1.001) frame rates, LTC locked to the video frame rate does not maintain accurate time and must be corrected regularly when it is used convey time of day information. (See **DROP FRAME.**)

NTP: The public domain software package called NTP (Network Time Protocol) is an implementation of the TCP/IP network protocol with the same name. NTP is now widely used around the world to achieve high accuracy time synchronization for computers across a network. The protocol supports an accuracy of time down to nanoseconds however; the real accuracy that can be achieved also depends on the operating system and the network performance.

PIXEL: The smallest distinguishable and resolvable area in a video image. A single point on the screen. In digital video, a single sample of the picture. Derived from the words *picture element*.

RESOLUTION: The number of bits (four, eight, ten, etc.) determines the resolution of the signal. Eight bits is the minimum resolution for broadcast television signals.

4 bits = a resolution of 1 in 16.
8 bits = a resolution of 1 in 256.
10 bits = a resolution of 1 in 1024.

RP 168: The SMPTE Recommended Practice for the definition of the vertical interval switching point for synchronous video switching. This recommended practice also defines a default alignment between standard definition and high definition synchronizing pulse signals.

RP 188: The SMPTE Recommended Practice for transmitting time code in the ancillary data space of serial digital television signals.

SERIAL DIGITAL (SDI): (Serial Digital Interface) A standardised interface for transmitting digital television signals using a coaxial cable in serial form. Often used informally to refer to the 4:2:2 sampled standard definition serial digital television signals as specified in SMPTE 259M.

SMPTE (Society of Motion Picture and Television Engineers): A professional organisation that recommends standards for the film and television industries.

SMPTE 12M: The SMPTE standard for the Time and Address Control signal in widespread use in the professional video and audio industries. SMPTE 12M defines the specifications for both Linear Time Code (LTC) and Vertical Interval Time Code (VITC).

SMPTE 125M: The SMPTE standard for bit parallel digital interface for component video signals. SMPTE 125M defines the parameters required to generate and distribute component video signals on a parallel interface.

SMPTE 170M: The SMPTE standard for the NTSC Composite Analogue Television signals.

SMPTE 259M: The SMPTE standard for the serial digital interface for standard definition 10 bit 4:2:2 component and 4Fsc composite interfaces. (Often referred to as SDI.)

SMPTE 276M: The SMPTE standard for transmission of AES digital audio over coaxial cable.

SMPTE 274M: The SMPTE standard for HDTV 1920 x 1080 line scanning and analogue and parallel interfaces for multiple frame rates.

SMPTE 292M: The SMPTE standard for the serial digital interface for High Definition television signals. (Often referred to as HD SDI.)

SMPTE 296M: The SMPTE standard for HDTV 1280 x 720 line progressive images - scanning and analogue and parallel interfaces.

SMPTE 309M: The SMPTE standard for the encoding Date and Time Zone information into SMPTE 12M Time code signals.

TRS: Timing reference signals used in composite digital systems. (It is four words long).

TRS-ID: Abbreviation for "Timing Reference Signal Identification". A reference signal used to maintain timing in composite digital systems. (It is four words long.)

VITC: **(**Vertical Interval Time Code). This time and address control signal standardised by SMPTE 12M is encoded on one or more lines in the vertical interval of standard definition television signals.

CHAPTER 2: INSTALLATION

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2. INSTALLATION

2.1. ATTACHING THE CAMERA ADAPTER TO THE SONY CAMERA

The ECAS series camera adapters are designed to mount on the rear of the Sony DVW, DNW series, and IMX series camcorder. The ECAS-HD series camera adapters are designed to mount on the rear of the Sony HDW-F900, HDW-700A, HDW-730 and HDW-750 camcorders.

The HDW-700A requires a simple modification to one of its circuit boards in order for it to work with the ECAS-HS series camera adapters. Contact the Evertz Factory for further information.

The ECAS-HD series can also be mounted on the read or Panasonic Varicam camcorders using the ECAS-PAN-MNT-KIT mounting kit. This kit consists of an adapter plate that mounts on the Panasonic camera and two adapter cables for the Panasonic remote control. Contact the factory for more information on the mounting kit.

Before you begin, make sure that the Sony factory supplied cover plate for the camera multi-pin connector is removed. Press the camera adapter against the back of the camcorder, aligning the parallel video connector, and the metal mounting clip to the mating connectors on the camera. Carefully slide the camera adapter down until it is fully seated on the camera connector.

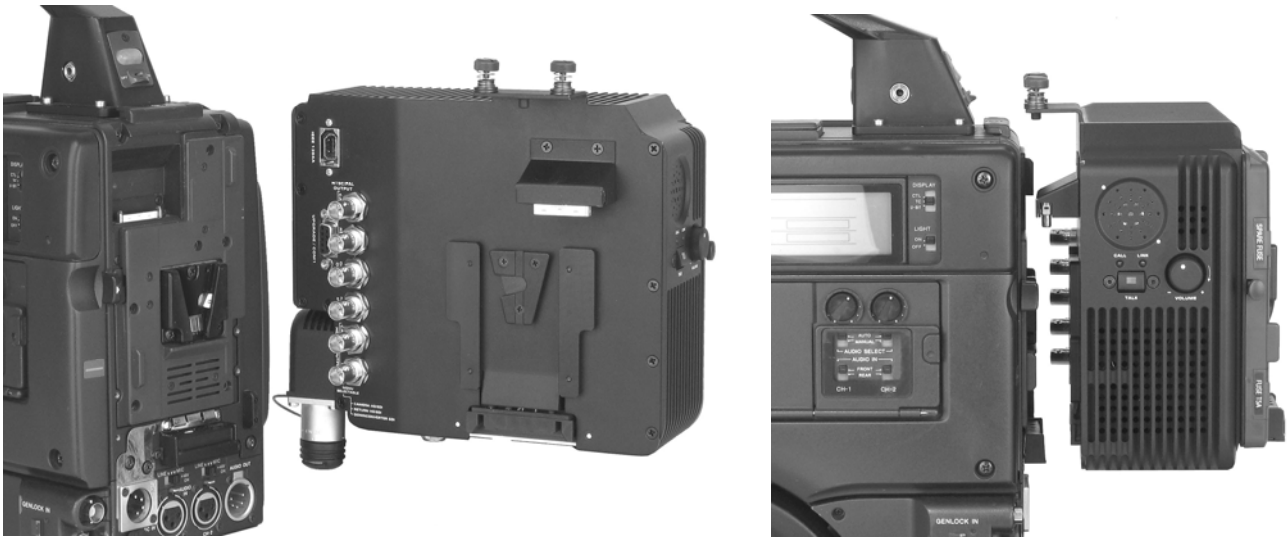


Figure 2-1: Mounting the Sony Camera Adapter on the Rear of the Camcorder

The latching button on the side of the camera should snap into position when the module is properly installed. Fasten the two screws at the top of the camera to secure the camera adapter to the camera.

To detach the camera adapter from the camera, remove the screws that fasten it to the camera body. Hold the latching button on the rear of the camera in and carefully pull the module up.

Figure 2-2: ECAS-HD Mounted with Battery Pack

2.2. ATTACHING THE CAMERA ADAPTER TO THE PANASONIC CAMERA

The ECAP-HD series camera adapters are designed to mount on the rear of the Panasonic AJ-HDC20A or AJ-HDC27Varicam Cameras. The camera comes fitted from the factory with a bracket for an Anton Bauer or IDX battery pack. The ECAP-HD mounts directly to this battery bracket so it must be ordered with the battery adapter plate that matches the one on the camera.

Figure 2-3: Mounting the Panasonic Camera Adapter on the Camcorder

When you are done, the adapter should be mounted to the rear of the camera as shown in Figure 2-4.

Figure 2-4: ECAP-HD Mounted on Rear of the Camera with ECA-PS Power Converter

2.2.1. Attaching the Sony HD Version Adapter to the Panasonic HD Cameras

The ECAS-HD series camera adapters are normally designed to mount on the rear of the Sony HD camera, but may also be mounted on the Panasonic AJ-HDC20A or AJ-HDC27Varicam Cameras by using the ECAS-PAN-MNT-KIT conversion kit. This kit includes an adapter mounting plate and two cables to adapter to the Panasonic camera remote control. Complete mounting instructions are included with the mounting kit. When you use the mounting kit the ECAS-HD adapter should be mounted to the rear of the Panasonic camera as shown in Figure 2-5.

Figure 2-5: ECAS-HD Mounted on Rear of the Panasonic Camera using Mounting Kit Adapter Plate

2.3. ATTACHING THE ACCESSORY MOUNTING BRACKET TO THE CAMERA ADAPTER

The ECAS-ACCMNT mounting bracket is designed to attach a studio viewfinder or wireless mic to the camera adapter. The mounting bracket is fitted with two thumbscrews, which are inserted into the two mounting holes on the top of the adapter rear plate as shown below.

Figure 2-6: Mounting the Accessory Mounting Bracket to the Camera Adapter

2.4. CAMERA ADAPTER CONNECTIONS

Figure 2-8 to Figure 2-11 show the various connectors on the camera adapter. Sections 2.4.1 to 2.4.11 give an overview of the connectors and their functions.

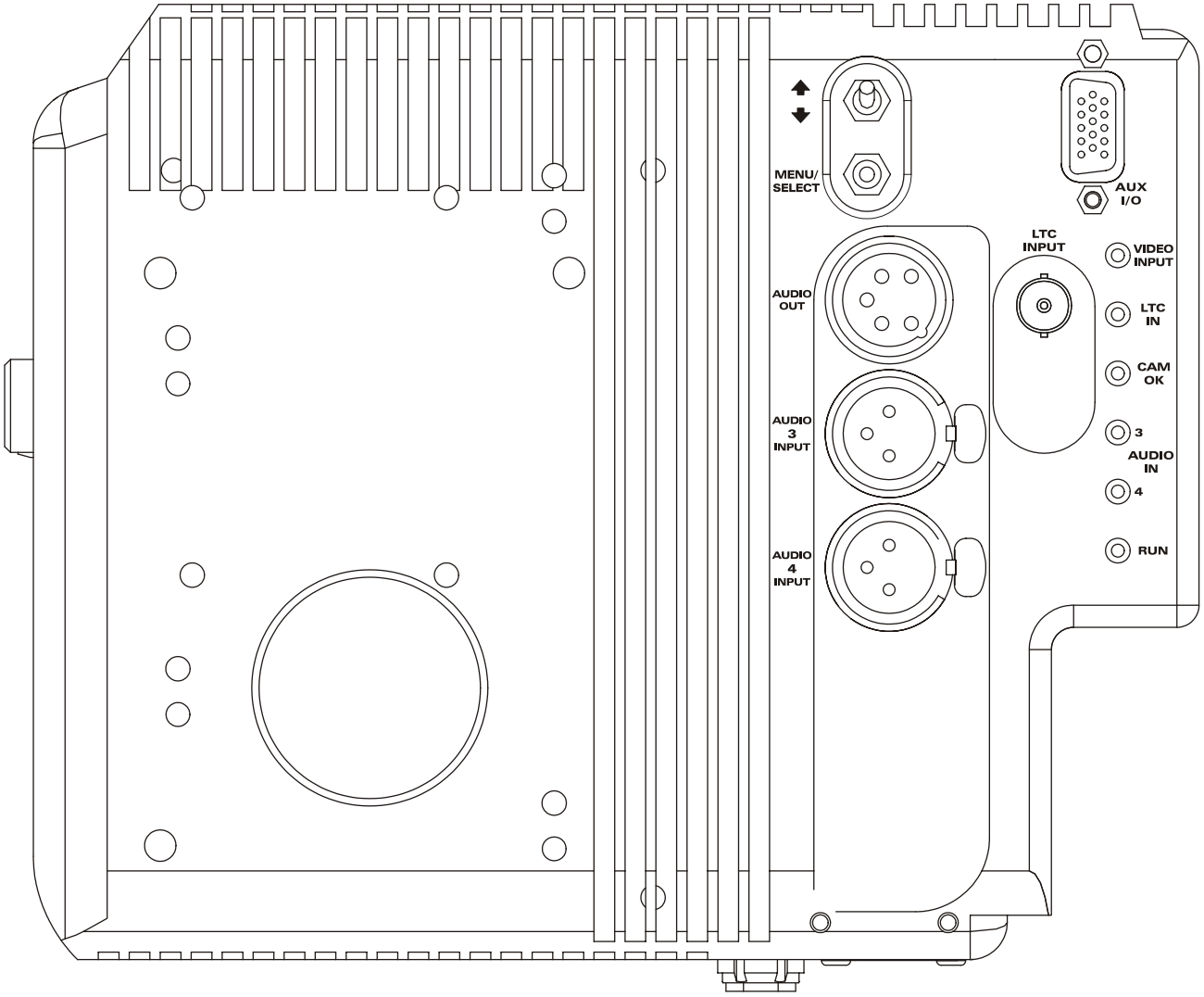


Figure 2-7: Camera Adapter Signal Connections (Battery Side) – Non-Fiber Version

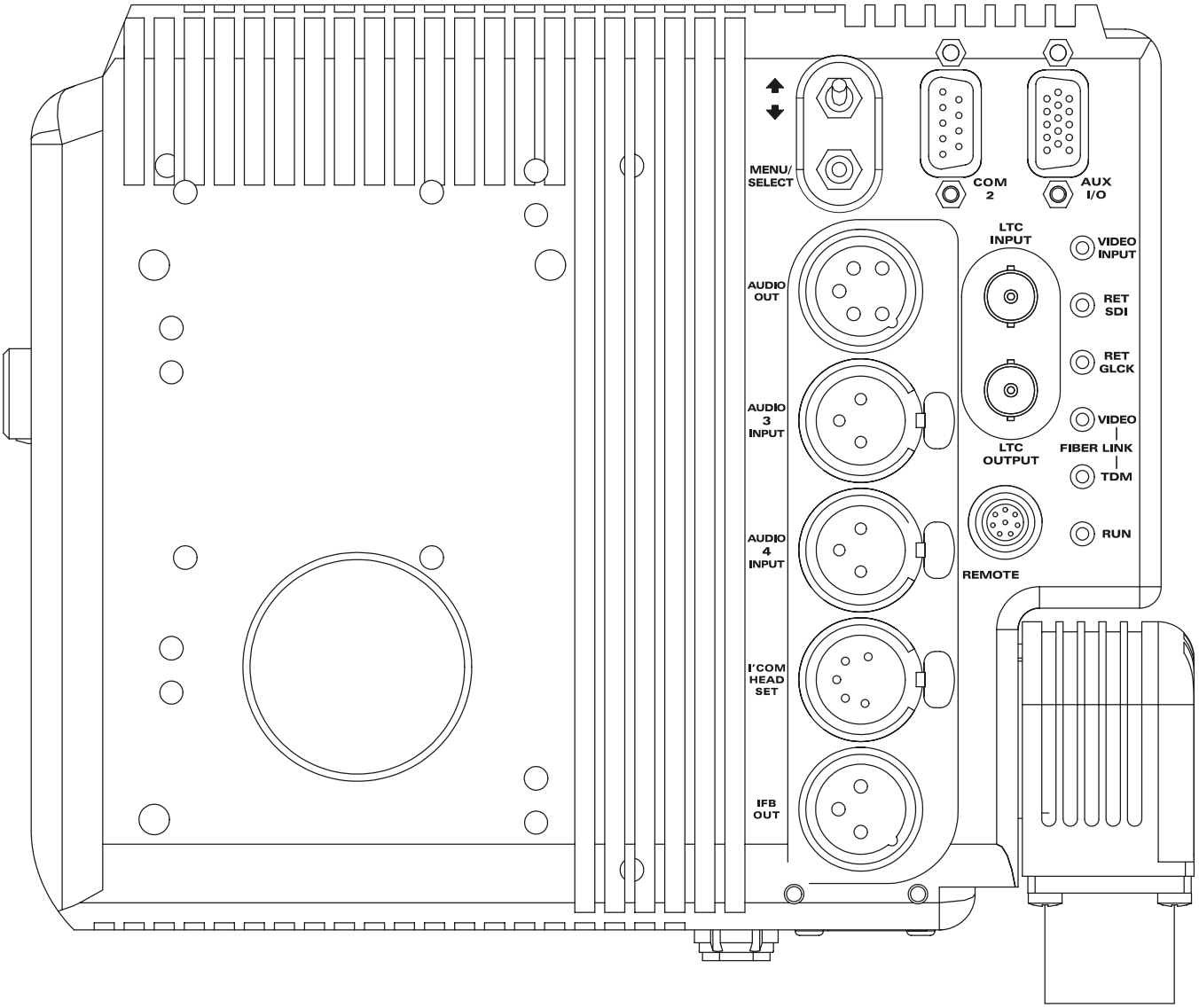


Figure 2-8: Camera Adapter Signal Connections (Battery Side) – Fiber Versions

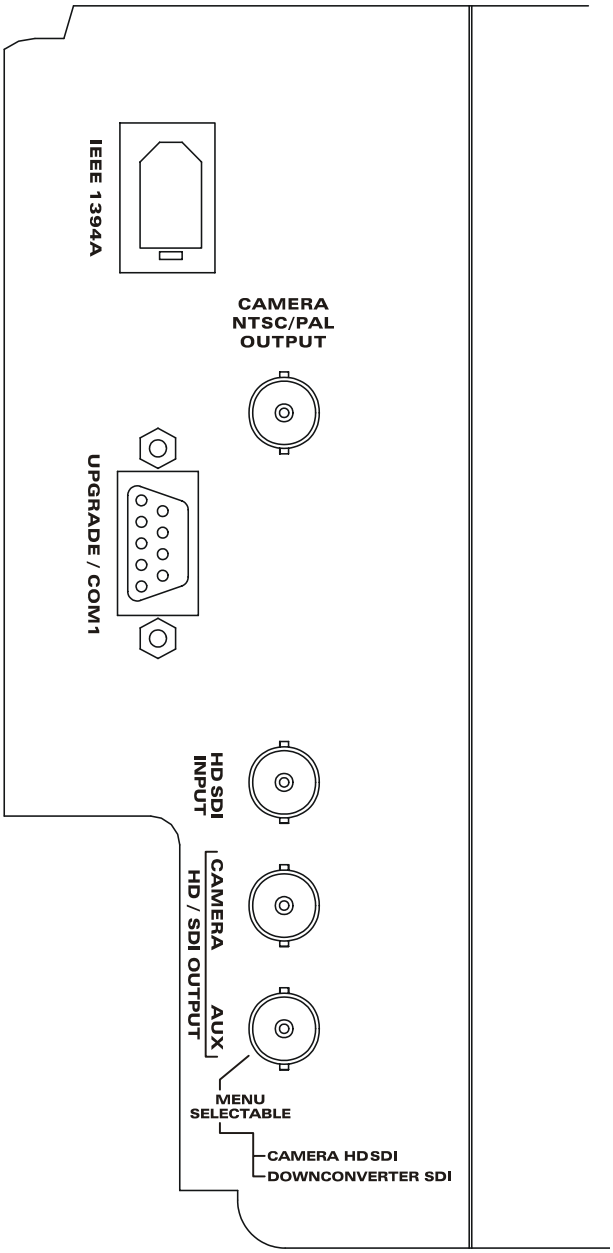
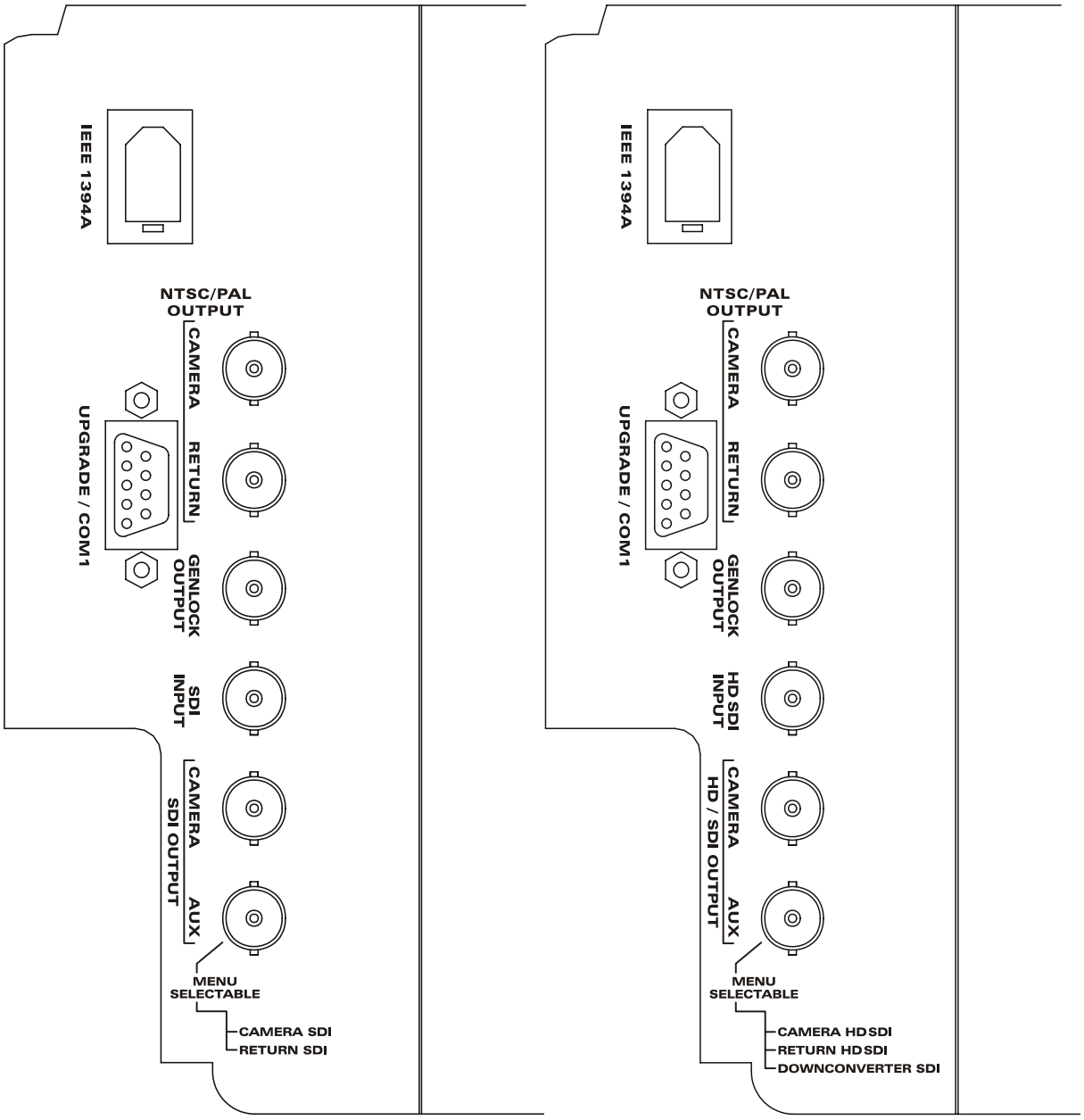


Figure 2-9: Camera Adapter Signal Connections (Camera Side) –Non-Fiber Versions



(a) Standard Definition **(b) High Definition**

Figure 2-10: Camera Adapter Signal Connections (Camera Side) – Fiber Versions

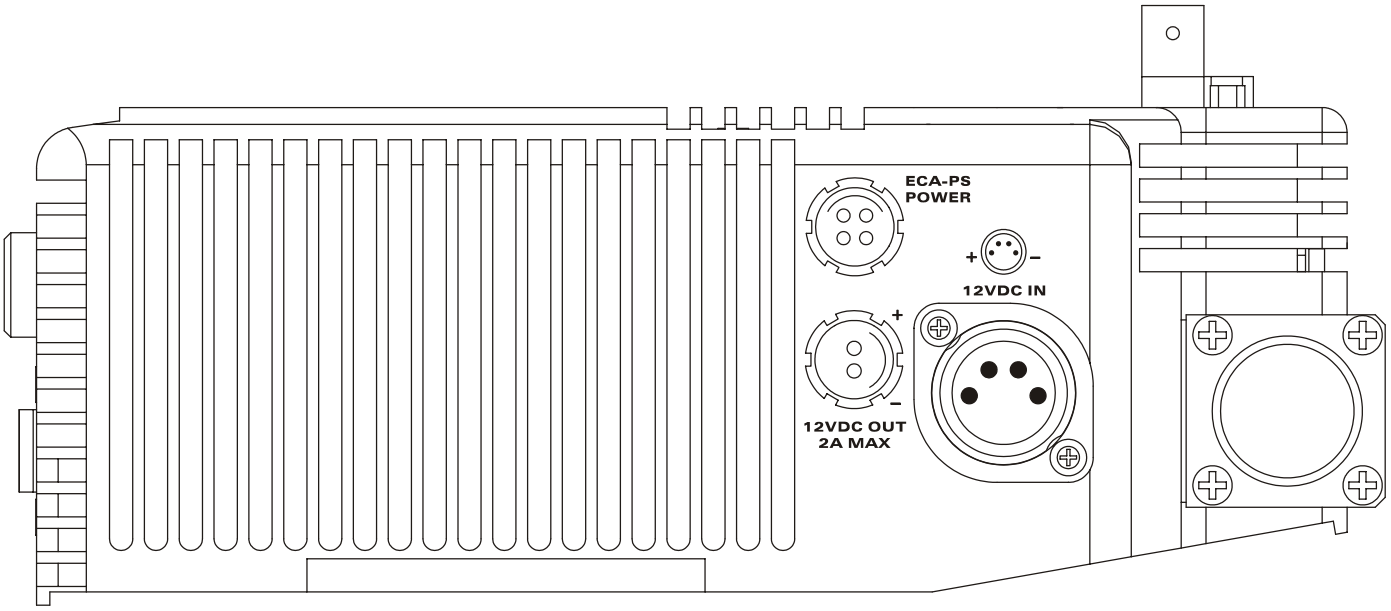


Figure 2-11: Camera Adapter Power Connections (Bottom Side)

2.4.1. Serial Digital Video Connections – SD Models

SDI INPUT: This BNC connector is a standard definition serial digital video input, compatible with the SMPTE 259M standard. This input can be used to connect to a "pool feed" as an alternate input to the camera parallel video connector. The *Video Source* menu item on the VIDEO menu is used to select the input video source.

CAMERA SDI OUTPUT: This BNC connector is used to output a standard definition SMPTE 259M serial digital copy of the input video. The input video can be selected from the camera parallel video connector or from the **SDI INPUT** BNC.

AUX SDI OUTPUT: This BNC connector is used to output standard definition serial digital video, compatible with the SMPTE 259M standard.

The function of the output is controlled using the *Aux SDI Out* menu item on the *VIDEO* menu and may be selected from one of two choices:

- Additional output of the signal on the **CAMERA SDI OUTPUT** BNC
- Output of the Return SDI when connected to a base station

2.4.2. Serial Digital Video Connections – HD Models

HD SDI INPUT: This BNC connector is a high definition SMPTE 292M serial digital video input.

For Sony models this input can be used to connect to a "pool feed" as an alternate input source to the camera parallel video connector. The *Video Source* menu item on the VIDEO menu is used to select the input video source.

For Panasonic models this BNC connector is used as the primary video input to the camera adapter and should be connected to the HDSDI output from the camera.

CAMERA HD OUTPUT: This BNC connector is used to output a high definition SMPTE 292M serial digital copy of the input video.

For Sony models the input video can be selected from the camera parallel video connector or from the **HDSDI INPUT** BNC.

For Panasonic models this BNC connector is used to output a SMPTE 292M serial digital copy of the input video from the **HDSDI INPUT** BNC.

AUX HD/SDI OUTPUT: This BNC connector is used to output serial digital video, compatible with the SMPTE 259M or the SMPTE 292M standard.

The function of the output is controlled using the *Aux SDI Out* menu item on the *VIDEO* menu and may be selected from one of three choices:

- Additional output of the signal on the **HDSDI CAMERA OUTPUT** BNC
- Output of the Return HDSDI when connected to a base station (Fiber enabled versions only)
- Standard definition SDI (SMPTE 259M) output from the downconverter

2.4.3. Analog Video Connections

CAMERA NTSC/PAL OUTPUT: For SD models this BNC connector is used to output the video from the camera as NTSC or PAL analogue composite video.

For HD models this BNC connector is used to output a downconverted copy of the video from the camera as NTSC or PAL analogue composite video.

RETURN NTSC/PAL OUTPUT: On Fiber versions, this BNC connector is used to output the return NTSC or PAL analogue composite video signal received from the base station over the fiber optic link.

GENLOCK OUTPUT: On Fiber versions, this BNC connector is used to output the return Genlock signal received from the base station over the fiber optic link. For SD models this will normally be an NTSC or PAL colour black video reference signal. For HD models this will normally be tri-level sync signal in the same video format that the camera is operating. This genlock signal should be connected to the genlock input on the camera.

2.4.4. DV/IEEE1394A Connections

IEEE1394A: This IEEE 1394 standard 6 pin connector located on the camera side of the adapter allows for direct connection of a laptop or DV recorder/editor for 'on the set' video capture and rough cut editing. The 1394A port outputs SMPTE 314M compatible 25 Mb/s standard definition video with embedded audio and time code. In applications where the input video format is 24 and 23.98 frames per second, the output DV stream can have a 2:3:3:2 cadence to facilitate 2:3 pulldown removal. (See section 3.5.5 for information on the *SD Out Pulldown* menu item.)

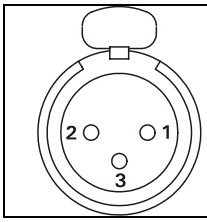
The 1394A port can also be used as an input from a laptop or DV recorder to play back recorded DV material through the camera adapter's NTSC and SDI outputs. This facility is useful for client viewing of rough cut editing or select scene dailies on the set. (See section 3.9.1.)

No power is provided from the IEEE1394A connector

2.4.5. Audio Connections

AUDIO 3 INPUT, AUDIO 4 INPUT: These two 3 pin female XLR connectors, available only on Sony models, are used to connect line or microphone level analogue audio for the camera audio 3 and 4 channels. When microphone levels are used, either 12 or 48 volt phantom power can be supplied to the microphone. Audio for channels 3 and 4 can also be supplied from the AES inputs (on the **AUX I/O** connector) to the camera adapter or from return audio when connected to a base station.

The *Audio* menu is used to select Camera audio source, the input level, and whether phantom power will be supplied. When the *Audio Source* menu item is set to *Camera 1 / 2 Only* power to the audio input and output circuitry is turned off in order to conserve battery power.



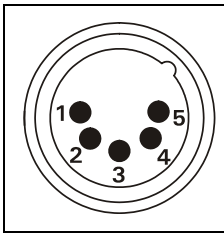
Pin #	Name	Description
1	---	No connection
2	IN+	Audio In + input
3	IN-	Audio in – input

Table 2-1: Camera Adapter Analogue Audio Input Pin Definitions

AUX I/O: Two pins on the **AUX I/O** connector are used to input a balanced AES pair for the camera audio 3 and 4 channels. See Table 2-11 for the pinout of the **AUX I/O** connector. Audio for channels 3 and 4 can also be supplied from the analogue audio inputs or from return audio when connected to a base station. The *Audio* menu is used to select Camera audio source. When the *Audio Source* menu item is set to *Camera 1 / 2 Only* power to the audio input and output circuitry is turned off in order to conserve battery power.

AUDIO OUTPUT: This 5 pin male XLR connector, available only on Sony models, is a stereo analogue audio output whose output is controlled by the *Audio Source* menu item on the *Audio* menu.

When the *Audio Source* menu item is set to *Local 3 / 4* the **AUDIO OUTPUT** is used to monitor the camera audio 3 and 4 channels. On Fiber version units connected to a base station, when the *Audio Source* menu item is set to *Return 1 / 2 / 3 / 4* the **AUDIO OUTPUT** is used to output return audio channels 1 and 2 which should be connected to the Audio 1 and 2 input XLR connectors on the camera. When the *Audio Source* menu item is set to *Camera 1 / 2 Only* power to the audio input and output circuitry is turned off in order to conserve battery power.

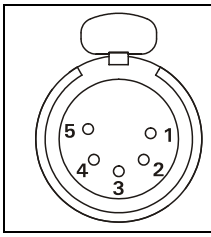


Pin #	Name	Description
1	GND	Signal Ground
2	OUTA+	Audio Out A + output
3	OUTA-	Audio Out A – output
4	OUTB+	Audio Out B + output
5	OUTB-	Audio Out B – output

Table 2-2: Camera Adapter Analogue Audio Output Pin Definitions

2.4.6. Intercom Headset Connections (Fiber versions only)

I'COM HEAD SET: On the Fiber versions this 5 pin female XLR connector is used to connect a two channel intercom headset to the camera adapter. The microphone signal from the headset is sent to the base station over the fiber optic link. The two channel headset output is received from the base station over the fiber optic link. At the Base station the RTS party line intercom signal is connected to the **INTERCOM INPUT** connector. The *Intercom* menu item on the base station *Power Save* menu is used to turn off power to the intercom input and output circuitry at the camera adapter and base station (in order to conserve battery power) when the intercom function is not being used. The camera adapter *Intercom/IFB* menu has controls, which are used to configure the intercom operation.

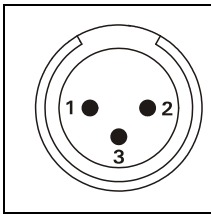


Pin #	Name	Description
1	MIC-	Microphone in - input
2	MIC+	Microphone in + input
3	GND	Signal Ground
4	LEFT	Headset Left output
5	RIGHT	Headset Right output

Table 2-3: Camera Adapter Intercom Headset Pin Definitions

2.4.7. IFB Connections (Fiber versions only)

IFB OUT: This 3 pin male XLR connector is used to output the return IFB analogue audio signal received from the base station over the fiber optic link. At the Base station the signal from your IFB system is connected to the **IFB INPUT** connector. The *IFB* menu item on the base station *Power Save* menu is used to turn off power to the IFB input and output circuitry at the camera adapter and base station (in order to conserve battery power) when the IFB function is not being used. The camera adapter *Intercom/IFB* menu has controls, which are used to configure the IFB operation.

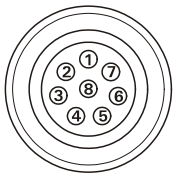


Pin #	Name	Description
1	GND	Signal Ground
2	IFB OUT+	IFB Out + output
3	IFB OUT-	IFB Out – output

Table 2-4: Camera Adapter IFB Out Pin Definitions

2.4.8. Camera Remote Connections (Fiber versions only)

REMOTE: This 8 pin female connector is used to connect the remote control port on the camera to the camera adapter using the cable provided with the camera adapter. The bi-directional serial remote control data is sent to and from the base station over the fiber optic link. On Sony cameras that are so equipped, the camera luminance video with the camera menus are also sent to the base station. At the Base station the **REMOTE** control port is connected directly to the camera remote control panel using a standard remote control panel interface cable. The *Camera Menus* menu item on the base station *Power Save* menu is used to turn off power to the camera menu video input and output circuitry at the camera adapter and base station (in order to conserve battery power) when the Camera menus are not being transported over the fiber.



Pin #	Name	Description
1	TX+	RS232/422 TX+ Out
2	TX-	RS232/422 TX- Out
3	RX+	RS232/422 RX+ In
4	RX-	RS232/422 RX- In
5	Y GND	Camera Y Gnd
6	---	n/c
7	GND	Gnd
8	Y	Camera Y (Menus)

Table 2-5: Camera Adapter Remote Pin Definitions

For Sony cameras equipped with 8 pin remote control connectors, use the WPECAS-REM-8 cable. Connect one end of this cable to the **REMOTE** connector on the camera adapter and the other end to the 8 pin Remote control connector on the Sony camera. See Figure 2-20.

ECAS End			Camera End
Hirose 8 pin male MXR-8P-8P	ECAS Signal Name	Sony RMB Cable	Hirose 8 pin male MXR-8P-8P
1	TX+ Out	Brown	3
2	TX- Out	Red	4
3	RX+ In	Orange	1
4	RX- In	Yellow	2
5	Video GND	Coax Shield	5
6	+ 12V Out)	nc	6
7	Power GND	Green	7
8	Video Y In (Out)	Coax Centre	8
Case	Shield	Braid	Case

Table 2-6: WPECAS-REM-8 Sony Remote Camera Cable

For Sony cameras equipped with 6 pin remote control connectors, use the WPECAS-REM-6 cable. Connect the 8 pin end of this cable to the **REMOTE** connector on the camera adapter and the 6 pin end to the 6 pin Remote control connector on the Sony camera.

Adapter End			Camera End	
Pin #	Name	Cable	Pin #	Name
1	RX+	n/c		
2	RX-	n/c		
3	TX+	----Pair 1a---	2	RX+
4	TX-	----Pair 1b---	1	RX-
5	Y GND	Coax shield	4	Y GND
6	---	n/c		
7	GND	Pair 1 & 2 Gnd	3	GND
8	Y	Coax	5	Y

Table 2-7: WPECAS-REM-6 Sony Remote Camera Cable

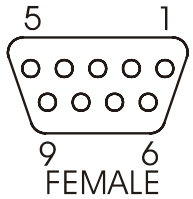
For Panasonic cameras equipped with 6 pin remote control connectors use the WPECAP-REM-6 cable. Connect the 8 pin end of this cable to the **REMOTE** connector on the camera adapter and the 6 pin end to the 6 pin Remote control connector on the Panasonic camera. See Figure 2-21.

Camera End			ECAP End	
Hirose 6 pin male HR10A-7P-6P	**Panasonic Signal Name**	**Panasonic ECU Cable**	**ECAP Signal Name**	**Hirose 8 pin male MXR-8P-8P**
1	CAMCONT	Brown	TX+ Out	1
			TX- Out	2
2	CAMDATA	Blue	RX+ In	3
			RX- In	4
4	ECU ON	Red	GND	5
			N/C	6
6	GND	Black	GND	7
			Video Y In (Out)	8
Case		Shield	Shield	Case

Table 2-8: WPECAP-REM-6 Panasonic Remote Camera Cable

2.4.9. Serial Port Connections

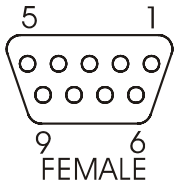
COM1/UPGRADE: This female 9 pin D connector (located on the camera side of the adapter) is used for connecting a computer to upload firmware to the camera adapter. It is also used as a diagnostic port for troubleshooting. See section 5.1.3 for information on upgrading the firmware.



Pin #	Name	Description
1		
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7		
8		
9		

Table 2-9: Camera Adapter COM1/UPGRADE Port Pinout

COM2: On Fiber versions, this female 9 pin D connector located on the battery side of the adapter is used for communications with intelligent lenses, camera dollies or other metadata source devices. The bi-directional serial remote data is sent to and from the base station over the fiber optic link. At the Base station the COM2 port can be connected to controller devices or metadata encoders such as the Evertz HD9045PVE. Communications can be set to either RS422 or RS232 levels using the *COM2 Level* menu item on the *UTILITY* menu.



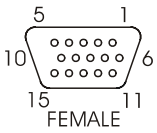
Pin #	Name	Description
1	GND	Chassis ground
2	TxD/Tx-	RS-232/RS-422 TX- Transmit Output
3	RxD/Rx-	RS-232/RS-422 RX- Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	RTS/Rx+	RS-232 RTS RS-422 RX+ Receive Input
8	CTS/Tx+	RS-232 CTS/RS-422 TX+ Transmit Output
9		

Table 2-10: Camera Adapter COM2 Port Pinout

When configured for RS-232 communications, the pinout is a standard DCE configuration. When configured for RS-422 communications, the pinout is NOT a SMPTE standard RS-422 pinout.

2.4.10. GPIO Connections

AUXIO: This female 15 pin high density D connector located on the battery side of the adapter is used for connecting the general purpose inputs and outputs. See section 2.8 for information about connecting the GPI inputs and outputs. The *GPIO Functions* menu is used to select the functions of the GPI inputs and outputs. This connector also has an AES input for sending channels 3 and 4 to the camera.



Pin #	Name	Description
1	AES IN+	Balanced AES in+ input
2	GND	Signal ground
3	GPO1 C	GPO1 Common contact
4	GPO1 NC	GPO1 Normally closed contact
5	GPO1 NO	GPO1 Normally open contact
6	AES IN-	Balanced AES in- input
7	GND	Signal ground
8	GND	Signal ground
9	GPI1	GPI 1 Input
10	GPI2	GPI 2 Input
11	GND	Signal ground
12	GND	Signal ground
13	GPO2 C	GPO2 Common contact
14	GPO2 NC	GPO2 Normally closed contact
15	GPO2 NO	GPO2 Normally open contact

Table 2-11: Camera Adapter AUX I/O Port Pinout

2.4.11. Time Code Connections

LTC IN: This BNC connector is an unbalanced input for linear time code from the camera. On Fiber versions this LTC is sent to the base station over the fiber optic link.

The *VITC/ATC Source* menu item on the *TIMECODE* menu is used to select the source of time code for the camera adapter VITC and ATC inserters. On Sony SD cameras and the Sony HDW-700A HD camera, the **LTC IN** is the normal source of time code from the camera. On Sony HD cameras except the HDW-700A, time code is normally received from the 50 pin connector on the rear of the camera. On Panasonic HD cameras, time code is normally embedded on the input HDSDI signals.

On Sony HDW-700A and DVW-700 camcorders the timecode is not available on the parallel connector. You will have to connect the LTC out from the camcorder to the LTC IN connector on the camera adapter. Set the *VITC/ATC Source* menu item to *Adapter LTC In* to use the LTC input as the time code source.

LTC OUT: On Fiber versions, this BNC connector is an unbalanced output for linear time code from the camera adapter. **LTC OUT** is normally connected to the time code input connector on the camera and is usually used to bring return time code from the base station to the camera over the fiber optic link. The *LTC Out Source* menu item on the *TIMECODE* menu is used to select the source of time code for the LTC output.

2.4.12. Power Connections

12VDC IN: Power is provided to the Camera adapter from the camera battery or through the male 4 pin XLR connector **EXT DC IN** connector. Apply +12VDC to pin 4 and ground to pin 1 of the XLR. When the power is being supplied from the XLR connector, the battery is disconnected to avoid discharging the battery. Power supplied from the battery or through the EXT DC connector is also passed through to the camera regardless of when the power switch in the On position.

12VDC OUT: This 2 pin Fischer 103 series connector provides a 12 volt output to power camera accessories. The output is internally fused at 2 amps with a re-settable fuse. The mating connector for this accessory power outlet is a Fischer S103-A051 or WS103-A051 connector.

ECA-PS POWER: When the Fiber version camera adapters are connected to a base station with the camera power option (CP versions of the base station), a high voltage DC signal from the base station is supplied through a hybrid copper/fiber optic cable. This power enters the hybrid fiber connector on the camera adapter, and is connected to the ECA-PS Power converter, which mounts on the camera adapter battery connector.

Connect the “pin” end of the WPECA-PS-PWR or WPECA-PS-PWR-RA interconnect cable supplied with the power converter to the **ECA-PS POWER** connector on the bottom of camera adapter. Connect the “socket” end of this cable to the **HIGH VOLTAGE DC IN** connector on the bottom of the ECA-PS power converter. When all the connections are in place the high voltage DC can be turned on at the base station. If any of the cables are disconnected, the high voltage automatically shuts down to prevent accidental electrical shock.

2.5. BASE STATION CONNECTIONS

Figure 2-12 shows the various connectors on the Base Station. Figure 2-14 shows the connectors on the audio breakout panel. Sections 2.5.1 to 2.5.11 give an overview of the connectors and their functions.

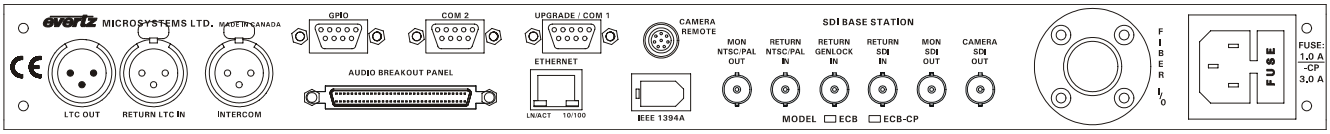


Figure 2-12: SD Base Station Rear Panel showing LEMO Connector

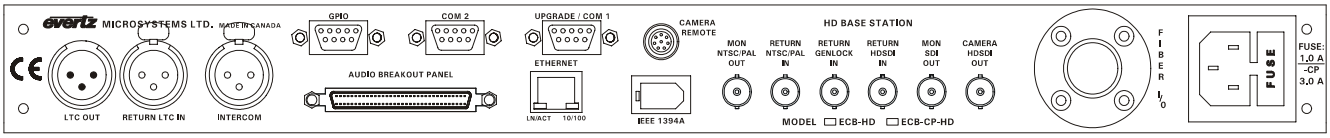


Figure 2-13: HD Base Station Rear Panel showing LEMO Connector

2.5.1. Serial Digital Video Connections – SD Models

RETURN SDI IN: This BNC connector is used to connect a return standard definition serial digital video signal, compatible with the SMPTE 259M standard to send over the fiber optic link to the camera adapter. The input can also be viewed directly at the base station as an alternate input to the camera video being received over the fiber optic link by setting the *Video Source* menu item on the *VIDEO* menu to *Return SDI In*. (See section 4.5.1.)

CAMERA SDI OUT: This BNC connector is used to output the standard definition SMPTE 259M serial digital video being received from the camera adapter over the fiber optic link.

MON SDI OUT: This BNC connector is used to output a SMPTE 259M serial digital monitor video signal with optional character burn-ins superimposed over the video being received from the camera adapter over the fiber optic link.

2.5.2. Serial Digital Video Connections – HD Models

RETURN HDSDI IN: This BNC connector is used to connect a return high definition serial digital video signal, compatible with the SMPTE 292M standard to send over the fiber optic link to the camera adapter. The input can also be viewed directly at the base station as an alternate input to the camera video being received over the fiber optic link by setting the *Video Source* menu item on the *VIDEO* menu to *Return HDSDI In*. (See section 4.5.1)

CAMERA HDSDI OUT: This BNC connector is used to output the high definition SMPTE 292M serial digital video being received from the camera adapter over the fiber optic link.

MON SDI OUT: This BNC connector is used to output a downconverted copy of the video being received from the camera over the fiber optic link. This standard definition SMPTE 259M serial digital video signal video will have VITC and optional character burn-ins superimposed.

2.5.3. Analog Video Connections

CAMERA NTSC/PAL OUT: For SD models this BNC connector is used to output the video being received from the camera over the fiber optic link as NTSC or PAL analogue composite video.

For HD models this BNC connector is used to output a downconverted copy of the video being received from the camera over the fiber optic link as NTSC or PAL analogue composite video.

RETURN NTSC/PAL IN: This BNC connector is used to input the return NTSC/PAL video being sent to the camera adapter over the fiber optic link.

GENLOCK IN: This BNC connector is used to input the return Genlock signal being sent to the camera adapter over the fiber optic link. For SD models this will normally be an NTSC or PAL colour black video reference signal. For HD models this will normally be tri-level sync signal in the same video format that the camera is operating.

2.5.4. DV/IEEE1394A Connections

IEEE1394A: This IEEE 1394 standard 6 pin connector allows for direct connection of a laptop or DV recorder/editor for on the set video capture and rough cut editing. The 1394A port outputs SMPTE 314M compatible 25 Mb/s standard definition video with embedded audio and time code. In applications where the input video format is 24 and 23.98 frames per second, the output DV stream can have a 2:3:3:2 cadence to facilitate 2:3 pulldown removal. (See section 4.5.5 for information on the *SD Out Pulldown* menu item.)

The 1394A port can also be used as an input from a laptop or DV recorder to play back recorded DV material through the camera adapter's NTSC and SDI outputs. This facility is useful for client viewing of rough cut editing or select scene dailies on the set. (See section 4.9.1.)

No power is provided from the IEEE1394A connector.

2.5.5. Audio Connections

Audio and IFB connections to the Base station are on the ECB-BHP Audio Breakout Panel, which connects to the **AUDIO BREAKOUT PANEL** connector using the SCSI cable provided.

When connecting the Audio Breakout Panel cable, insert the cable carefully into the connector on the Base Station and the breakout panel, being careful not to bend the pins. Press it firmly in place and hand tighten the hold down screws firmly to provide proper strain relief.

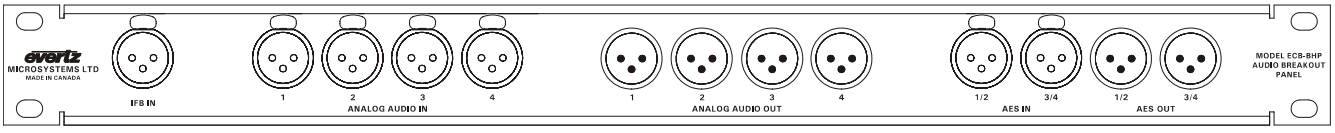
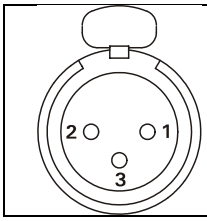


Figure 2-14: Base Station Audio Breakout Panel

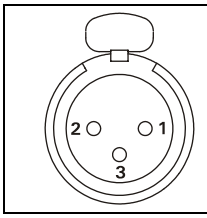
ANALOG AUDIO IN: These four 3 pin female XLR connectors (located on the Audio breakout panel) are used to input line level analogue audio for the Return audio channels 1 to 4. Return audio can also be supplied from the AES inputs. The *Return Audio In* menu item on the *Audio* menu is used to select Return audio source.



Pin #	Name	Description
1	---	No connection
2	IN+	Audio In + input
3	IN-	Audio in – input

Table 2-12: Base Station Analogue Audio Input Pin Definitions

AES IN: These two 3 pin female XLR connectors located on the Audio breakout panel are used to input two balanced AES pairs for the Return audio channels 1 to 4. Return audio can also be supplied from the Analogue Audio inputs. The *Return Audio In* menu item on the *Audio* menu is used to select Return audio source. Setting the *Return Audio In* menu item to *AES* will disable the power to the analogue audio input circuitry, as it is not being used.

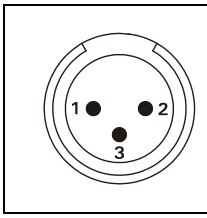


Pin #	Name	Description
1	GND	Signal Ground
2	AES IN+	AES In + input
3	AES IN-	AES in – input

Table 2-13: Base Station AES Input Pin Definitions

ANALOG AUDIO OUT: These four 3 pin male XLR connectors (located on the Audio breakout panel) are used to output the audio being de-embedded from the camera video received over the fiber optic link. The de-embedded audio can also be output as balanced AES. The *Audio Out* menu item on the *Audio* menu is used to select whether the de-embedded audio will be output as analogue or AES. (See section 4.8.1.)

When the The *Audio Out* menu item is set to *Analog/In Loop* or *Dly Anlg/In Loop* the analog audio connected to the **ANALOG AUDIO IN** connectors will be converted to an AES signal and output on the **AES OUT** connectors. This output can be connected to another base station's **AES IN** connectors providing a convenient way to connect the same return audio to multiuple base stations. See section 4.8.1.

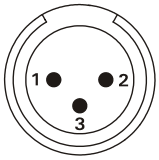


Pin #	Name	Description
1	GND	Signal Ground
2	OUT+	Audio Out + output
3	OUT-	Audio Out – output

Table 2-14: Base Station Analogue Audio Output Pin Definitions

AES OUT: These two 3 pin male XLR connectors located on the Audio breakout panel are used to output the audio being de-embedded from the camera video received over the fiber optic link as two balanced AES pairs. The de-embedded audio can also be output as balanced analogue audio. (See section 4.8.1.) The *Audio Out* menu item on the *Audio* menu is used to select whether the de-embedded audio will be output as analogue or AES. (See section 4.8.1.) Setting the *Return Audio In* menu item to *AES*, will disable the power to the analogue audio output circuitry, as it is not being used.

When the The *Audio Out* menu item is set to *Analog/In Loop* or *Dly Anlg/In Loop,* the analog audio connected to the **ANALOG AUDIO IN** connectors will be converted to an AES signal and output on the **AES OUT** connectors. This output can be connected to another base station's **AES IN** connectors providing a convenient way to connect the same return audio to multiple base stations. See section 4.8.1.



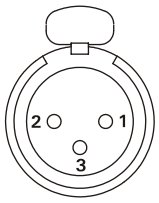
Pin #	Name	Description
1	GND	Signal Ground
2	AES OUT+	AES Out + output
3	AES OUT-	AES Out – output

Table 2-15: Base Station AES Output Pin Definitions

2.5.6. IFB Connections

IFB IN: This 3 pin female XLR connector (located on the Audio breakout panel) is used to input a line level return IFB analogue audio signal to be sent to the camera adapter over the fiber optic link. See section 2.5.5 for information on connecting the audio breakout panel to the base station.

The *IFB* menu item on the *Power Save* menu is used to disable the IFB input and output circuitry on the camera adapter and base station when it is not being used. If you are transporting an IFB signal over the fiber optic link, make sure that this menu item is set to *On.*



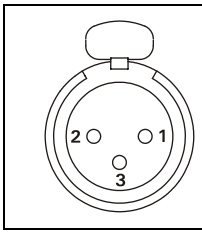
Pin #	Name	Description
1	---	No connection
2	IFB IN+	IFB In + input
3	IFB IN-	IFB in – input

Table 2-16: Base Station IFB In Pin Definitions

2.5.7. Intercom Connections

INTERCOM: This 3 pin female XLR connector, located on the rear of the main Base station unit is used to connect to a RTS party line intercom system.

The *Intercom* menu item on the *Power Save* menu is used to disable the intercom input and output circuitry on the camera adapter and base station when it is not being used. If you are transporting an intercom signal over the fiber optic link, make sure that this menu item is set to *On.* The camera adapter *Intercom/IFB* menu items are used to configure the intercom operation.



Pin #	Name	Description
1	GND	Signal Ground
2	CH1	Channel 1 audio & DC power
3	CH2	Channel 2 audio

Table 2-17: Base Station Intercom Pin Definitions

2.5.8. Camera Remote Connections

REMOTE: This 8 pin female connector is used to connect directly to a Sony camera remote control panel using a standard Sony interface cable. When used with suitably equipped cameras, the camera luminance signal with the viewfinder menus is also provided on this connector. See Figure 2-20.

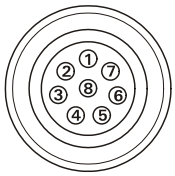
When connecting to a Panasonic camera remote control panel you will have to connect the 8 pin end of the supplied adapter cable to the **REMOTE** connector on the base station (Evertz part number WPECB-EC3-PAN6P). Connect the 6 pin end of your Panasonic remote control panel interface cable into the 6 pin female end of the adapter cable. See Figure 2-21.

ECB End			EC3 End	
Hirose 8 pin male MXR-8P-8P	**ECB Signal Name**	**Panasonic ECU Cable**	**Panasonic Signal Name**	**Hirose 6 pin female HR10A-7J-6S**
1	TX+ Out	Blue	CAMDATA	2
2	TX- Out			
3	RX+ In	Brown	CAMCONT	1
4	RX- In			
5	Video GND			
6	+ 12V Out	Red	+12V	5
7	Power GND	Black	GND	6
8	Video Y In (Out)			
Case	Shield	Shield	Shield	Case

Table 2-18: WPECB-EC3-PAN6P Base Station Panasonic Remote Panel Adapter Cable

The *Camera Menu* item on the *Power Save* menu is used to disable the viewfinder luminance video input and output circuitry on the camera adapter and base station when it is not being used. If you are using a Sony camera and transporting the viewfinder or camera luminance with the camera menus over the fiber optic link, make sure that this menu item is set to *On.*

The 12VDC output pin on the **REMOTE** connector is to provide power to remote control panels such as the Sony RM-B150 or Panasonic EC-3 and is internally fused at 100 milliamps.

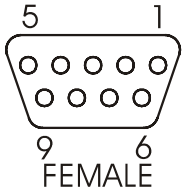


Pin #	Name	Description
1	TX+	RS232/422 TX+ Out
2	TX-	RS232/422 TX- Out
3	RX+	RS232/422 RX+ In
4	RX-	RS232/422 RX- In
5	Y GND	Camera Y Gnd
6	12VDC	12 Volts DC Out
7	GND	Gnd
8	Y	Camera Y (Menus) Out

Table 2-19: Camera Remote Pin Definitions

2.5.9. Serial Port Connections

COM1: This female 9 pin D connector is used for connecting a computer to upload firmware to the base station. It is also used as a diagnostic port for troubleshooting. See section 5.1.3 for information on upgrading the firmware.

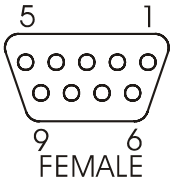


Pin #	Name	Description
1		
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7		
8		
9		

Table 2-20: COM1 Port Pinout

COM2: This female 9 pin D connector is used for communications between controller devices or metadata encoders such as the Evertz HD9045PVE and intelligent lenses, camera dollies or other metatdata source devices. The bi-directional serial remote data is sent to and from the camera adapter over the fiber optic link. At the Camera adapter the COM2 port can be connected to lenses and other metadata source devices. Communications can be set to either RS422 or RS232 using the *COM2 Level* menu item on the *UTILITY* menu, and connecting the ribbon cable for the COM2 connector to the appropriate header.

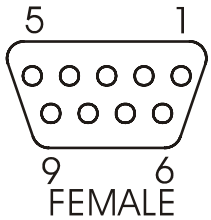
By default the COM2 port is configured as an RS232 DCE port with the pinout shown in Table 2-21. To re-configure COM2 back to its default pinout select *RS232* levels for COM 2 using the *COM2 Level* menu item on the *UTILITY* menu and install the COM2 ribbon cable on header J34 (labelled RS232 DCE).



Pin #	Name	Description
1		
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	RTS	RS-232 RTS Input
8	CTS	RS-232 CTS Output
9		

Table 2-21: Base Station COM2 Port RS232 DCE Pinout

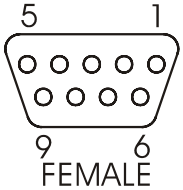
To configure COM2 as an RS422 Tributary port with the pinout shown in **Table 2-22** select *RS422* levels for COM 2 using the *COM2 Level* menu item on the *UTILITY* menu and install the COM2 ribbon cable on header J32 (labelled RS422 TRIB).



Pin #	Name	Description
1		
2	Tx-	RS-422 TX- Transmit Output
3	Rx+	RS-422 RX+ Receive Input
4	Gnd	Signal Ground
5		
6	Gnd	Signal Ground
7	Tx+	RS-422 TX+ Transmit Output
8	Rx-	RS-422 RX- Receive Input
9		

Table 2-22: Base Station COM2 Port RS422 Tributary Pinout

To configure COM2 as an RS422 Controller port with the pinout shown in Table 2-23 select *RS422* levels for COM 2 using the *COM2 Level* menu item on the *UTILITY* menu and install the COM2 ribbon cable on header J38 (labelled RS422 CONT).

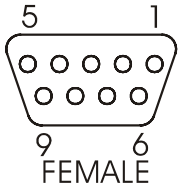


Pin #	Name	Description
1		
2	Rx-	RS-422 RX- Receive Input
3	Tx+	RS-422 TX+ Transmit Output
4	Gnd	Signal Ground
5		
6	Gnd	Signal Ground
7	Rx+	RS-422 RX+ Receive Input
8	Tx-	RS-422 TX- Transmit Output
9		

Table 2-23: Base Station COM2 Port RS422 Controller Pinout

2.5.10. GPIO Connections

GPIO: This female 9 pin female D connector is used for connecting the general purpose inputs and outputs. See section 2.8 for information about connecting the GPI inputs and outputs. The *GPIO Functions* menu is used to select the functions of the GPI inputs and outputs.



Pin #	Name	Description
1	GPO2 NC	GPO2 Normally closed contact
2	GPO2 NO	GPO2 Normally open contact
3	GND	Signal ground
4	GPO1 NC	GPO1 Normally closed contact
5	GPO1 NO	GPO1 Normally open contact
6	GPO2 C	GPO2 Common contact
7	GPI2	GPI 2 Input
8	GPI1	GPI 1 Input
9	GPO1 C	GPO1 Common contact

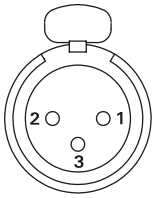
Table 2-24: Base Station GPIO Port Pinout

2.5.11. Ethernet Network Connections

ETHERNET: This RJ-45 connector is an Ethernet port used for high speed FTP firmware upgrades and to network base stations together in multi-camera applications. See section 2.6 for information on connecting to an Ethernet network. See section 4.13.6 for information on setting the I/P addresses for the system. See section 4.16 for information on networking base stations together.

2.5.12. Time Code Connections

LTC IN: This 3 pin female XLR connector is a balanced input for return time code to be sent to the camera adapter over the fiber optic link. When using an unbalanced input source, the signal should be applied to pin 3 of the **LTC IN** connector. Normally, the unused input (pin 2) should be connected to ground (pin 1).

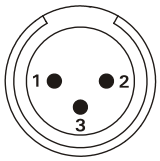


Pin #	Name	Description
1	GND	Signal Ground.
2	LTC IN+	LTC In + input
3	LTC IN-	LTC in – input

Table 2-25: LTC In Pin Definitions

LTC OUT: This 3 pin female XLR connector is a balanced output for SMPTE 12M linear time code. This LTC is normally received from the camera adapter over the fiber optic link, however the *LTC Out Source* menu item on the *TIMECODE* menu may be used to select alternate sources of time code for the LTC output. When the *LTC Out Source* menu item is set to *Return LTC In* the **LTC OUT** becomes an active loop through from the LTC IN connector to facilitate "daisy chaining" the same LTC to multiple base stations.

Pin 1 of the XLR is ground, and pins 2 and 3 provide a balanced output. When using a VTR with an unbalanced input, the signal should be connected to Pin 3 of the **LTC OUT** XLR. Pin 2 should be left open.



Pin #	Name	Description
1	GND	Signal Ground
2	LTC OUT+	LTC Out + output
3	LTC OUT-	LTC Out – output

Table 2-26: LTC Out Pin Definitions

2.5.13. Power Connections

The Base Station power supply operates on either 100-115 or 220-240 volts AC at 50 or 60 Hz and automatically senses the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel. The power cord should be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length.

The IEC 320 power entry module combines a standard power inlet connector, two 5 x 20 mm fuse holders and an EMI line filter. See section 5.5.1 for information on changing the fuses.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE GROUND PIN OF THE MAINS PLUG MUST BE MAINTAINED

2.5.14. Mounting

The Base Station is equipped with rack mounting angles and fits into a standard 19 inch by 1.75 inch by 17.75 inch (483 mm x 45 mm x 451mm) rack space. The mounting angles may be removed if rack mounting is not desired.

Audio and IFB connections to the Base station are on the ECB-BHP Audio Breakout Panel, which connects to the **AUDIO BREAKOUT PANEL** connector using the SCSI cable provided. Mount the breakout panel within 3 feet of the base station unit.

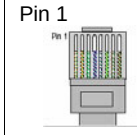
When connecting the Audio Breakout Panel cable, insert the cable carefully into the connector on the Base Station and the breakout panel, being careful not to bend the pins. Press it firmly in place and hand tighten the hold down screws firmly to provide proper strain relief.

2.6. CONNECTING THE BASE STATION TO AN ETHERNET NETWORK

The Base Station is designed to be used with either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. The cable must be "straight through" with a RJ-45 connector at each end. Make the network connection by plugging one end of the cable into the RJ-

45 receptacle of the Base Station and the other end into a port of the supporting hub. If you are connecting the base station directly to a PC, then you will have to use a crossover cable.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Table 2-27. A colour code wiring table is provided in Table 2-27 for the current RJ 45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also refer to the notes following the table for additional wiring guide information.



Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit –	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive –	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Table 2-27. Standard RJ45 Wiring Colour Codes

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, so it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins, a crossover cable made for one will also work with the other.
- Pairs may be solid colours and not have a stripe.
- Category 5 cables must use Category 5 rated connectors.

The maximum cable run between the Base Station and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. Base Station and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The Base Station rear panel is fitted with two LEDs to monitor the Ethernet connection.

10/100: This amber LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

LN/ACT: This dual purpose green LED indicates that the Base Station has established a valid linkage to its hub, and whether the Base Station is sending or receiving data. This LED will be ON when the Base Station has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the Base Station is sending or receiving data. The LED will be OFF if there is no valid connection.

Once you have established a valid link you will have to set up the network I/P address for the base station and camera adapter. See section 4.13.6. When you have set up the I/P addresses you should be able to 'ping' each of the devices in the system. See section 4.16 for more information on networking base stations together.

2.7. FIBER OPTIC CONNECTIONS

Fiber versions of the Camera adapter (Fiber versions) are fitted with a fiber optic connector mounted on an articulating arm. The base stations are fitted with a mating fiber optic connector on the rear panel. The camera adapters and base stations can be ordered with one of two connector options for the fiber interconnect. The customer is required to provide the optical fiber with the correct connectors to connect the modules together. See sections 2.7.5.1 to 2.7.5.2 for specific information on each connector type.

2.7.1. Safety

CLASS 1 LASER PRODUCT

Background colour: yellow
Triangular band: black
Symbol: black

2.7.2. Assembly

Assembly or repair of the laser sub-module is performed only at the Evertz facility by qualified Evertz technical personnel.

2.7.3. Handling And Connecting Fibers

Never touch the end face of an optical fiber.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage caused by heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 5 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable.

2.7.4. Making Sure The Optical Fibers Are Clean

Dust particles on the ends of the optical fiber greatly increase the signal loss at interconnections, and large dust particles can even obscure light transmission altogether. To minimize the effects of dust contamination at the interconnections, it is very important to ensure that optical fibers are clean before mating and after unmating. Contact the connector manufacturer for the connector type used on your system for the proper cleaning accessories. It is good practice to clean the ferrule in the fiber connector before mating it to the camera adapter or base station to minimize optical losses at each connection.

Whenever a fiber cable is unmated it must be covered immediately. The camera adapter and base station, and most fiber cable manufacturers provide a rubber boot that fits over the fiber connector body for this purpose.

2.7.5. Fiber Optic Cables

For applications where camera power must be supplied from the base station, Evertz recommends hybrid fiber optic cable compatible with the SMPTE 311M standard. This cable uses two single mode fibers, two auxiliary (power) copper wires and two signal copper wires and allows camera power to be sent down the cable over distances up to 6600 feet (2000 meters). For applications where only a fiber connection is required to the base station, other 2-strand, single mode fiber optic cables may be used. This cable must be terminated with the appropriate fiber connectors to mate with the camera adapter and base station.

2.7.5.1. Lemo Hybrid Copper/Fiber Connection

The LEMO 3K.93C connectors (installed on units fitted with the -LEMO option) are widely used throughout the industry and are available from many sources. Cables fitted with the LEMO connectors should have a plug connector on the camera adapter end of the cable and a socket connector on the base station end.

When the -LEMO fiber connector option is ordered, the camera adapter is fitted with an EDW 3K.93C Lemo hybrid receptacle connector, and the base station is fitted with a FXW 3K.93C Lemo hybrid plug connector. To insert the cable into the camera adapter, align the red mark on the EDW and cable connectors and press firmly until the latches snap into place. To remove the cable pull back on the release sleeve to release the latches. Then carefully slide the connector out. To minimize the contamination of the optical fiber connections it is always advisable to immediately cover both of the connectors with the dust caps.

To insert the cable into the base station, align the red mark on the FXW and cable connectors and press firmly until the latches snap into place. To remove the cable push the release ring on the FXW (base station) connector to release the latches. Then carefully slide the connector out. To minimize the contamination of the optical fiber connections it is always advisable to cover both of the connectors with the dust caps immediately.

To clean the Lemo connectors properly, you will need special cleaning accessories for the Lemo 3K.93C connectors available from your Lemo connector supplier. Evertz recommends that you purchase the DCS maintenance cleaning tool (Lemo part # DCS.91.F23.LA) that is the recommended tool for cleaning the contacts. It contains a spongy alcohol reservoir, up to 16 cleaning swabs, and a tool for extracting and inserting the contact alignment sleeves. At a minimum you need the WST cleaning Kit (Lemo part # WST.KI.125.34) and the DCS Alignment Extraction tool (Lemo part # DCS.F2.035.PN).

2.7.5.2. Fischer Hybrid Copper/Fiber Connection

The Fischer 1053 series connectors (installed on units fitted with the -FSCH option) are a new connector designed to be compliant with the SMPTE 305M standard and are only available from Fischer connector cable assembly facilities at this time. Cables fitted with the Fischer connectors should have an SE-1053-HDTV plug connector on the camera adapter end of the cable and a SE-1053-HDTV receptacle connector on the base station end.

When the -FISCH fiber option is ordered, the camera adapter is fitted with a DBQ-1053-HDTV Fischer hybrid receptacle connector, and the base station is fitted with a DSQ-1053-HDTV Fischer hybrid plug connector. To insert the cable into the camera adapter, align the red mark on the DBQ and SE cable connectors and press firmly until the latches snap into place. To remove the cable, pull back on the release sleeve to release the latches. Then carefully slide the connector out. To minimize the contamination of the optical fiber connections it is always advisable to cover both of the connectors with the dust caps immediately.

To insert the cable into the base station, align the red mark on the DSQ and KE cable connectors and press firmly until the latches snap into place. To remove the cable, push the release ring on the DSQ (base station) connector to release the latches, then carefully slide the connector out. To minimize the contamination of the optical fiber connections it is always advisable to immediately cover both of the connectors with the dust caps.

Contact your Fischer connector supplier to obtain the appropriate cleaning accessories for the 1053 series connectors.

2.8. CONNECTING THE GENERAL PURPOSE INPUTS AND OUTPUTS

The 15 pin AUXI/O connector on the camera adapter and the 9 pin GPIO connector on the base station each have two programmable general purpose inputs (GPI) and two programmable general purpose outputs (GPO) as shown in Table 2-11 and Table 2-24. The schematic representation is in Figure 2-15. The GPIs are opto-isolated inputs that have an active pullup to +5 VDC. The GPOs are relay contacts that are normally closed when the power is off.

2.8.1. Connecting the General Purpose Inputs

The GPI's functions are assigned to various functions using the *GPI Function* menu items. (See section 3.10.1 and 4.10.1.) The GPI inputs can be set to activate on high or low levels, or rising or falling edges using the *GPI Trigger* menu items. (See section 3.10.2and 4.10.2.) When the GPI inputs are set to activate on low levels, which means a ground level on the input will trigger the GPI function. See Figure 2-15 and Figure 2-16.

2.8.2. Connecting the General Purpose Outputs

The Programmable GPOs are assigned to particular functions using the *GPO Function* menu item. (See section 3.10.3 and 4.10.3.) The GPOs will be in the de-energized state when the power is off, so all contacts will be closed. When the unit is powered up the GPO Relay contacts will open. See Figure 2-15 and Figure 2-16.

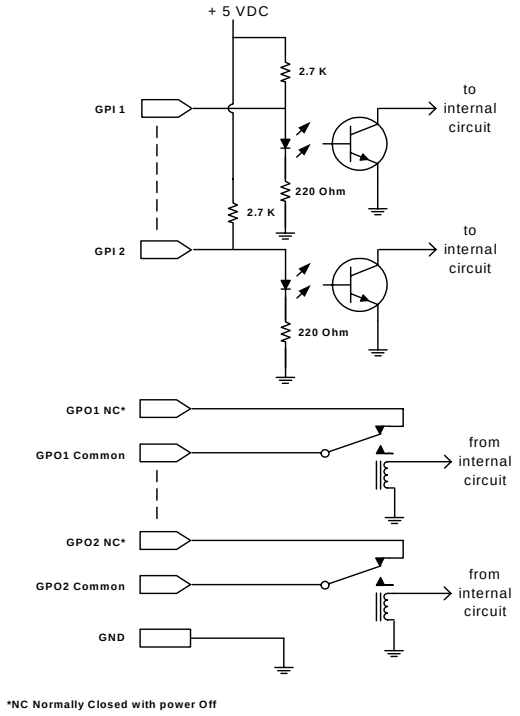


Figure 2-15: General Purpose I/O Schematic

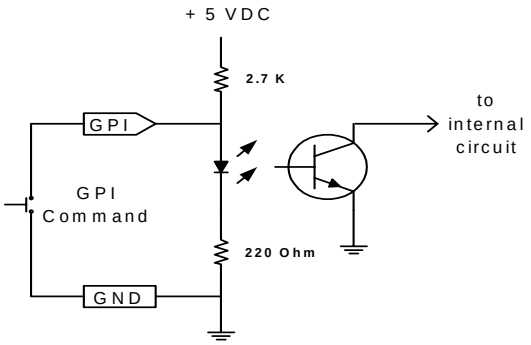


Figure 2-16: Connecting the General Purpose Inputs

2.9. TYPICAL CONNECTIONS

The following diagrams provide an overview of the typical connections when using the camera adapter and base station.

2.9.1. Connecting the Audio – Sony Cameras

Audio inputs for channels 1 and 2 are input directly to the Camcorder using the XLR connectors on the rear of the camera. Channels 3 and 4 must be sent to the camera directly from the camera adapter. If you are using only channels 1 and 2, set the adapter's *Audio Source* menu item to *Camera 1 / 2 Only.*

2.9.1.1. Inputting Audio 3 and 4 at the Camera

The Camera adapter allows you to input channels 3 and 4 as either mic or line levels using the XLR connectors on the camera adapter or as AES using the Aux I/O DB-15 connector. Set the adapter's *Audio Source* menu item to *Local 3 / 4.* Use the adapter's *Local Audio Input* menu to select type of audio input you are using. The connections for microphone audio sources are shown in Figure 2-17. See section 2.4.5 for more information on the connecting the audio.

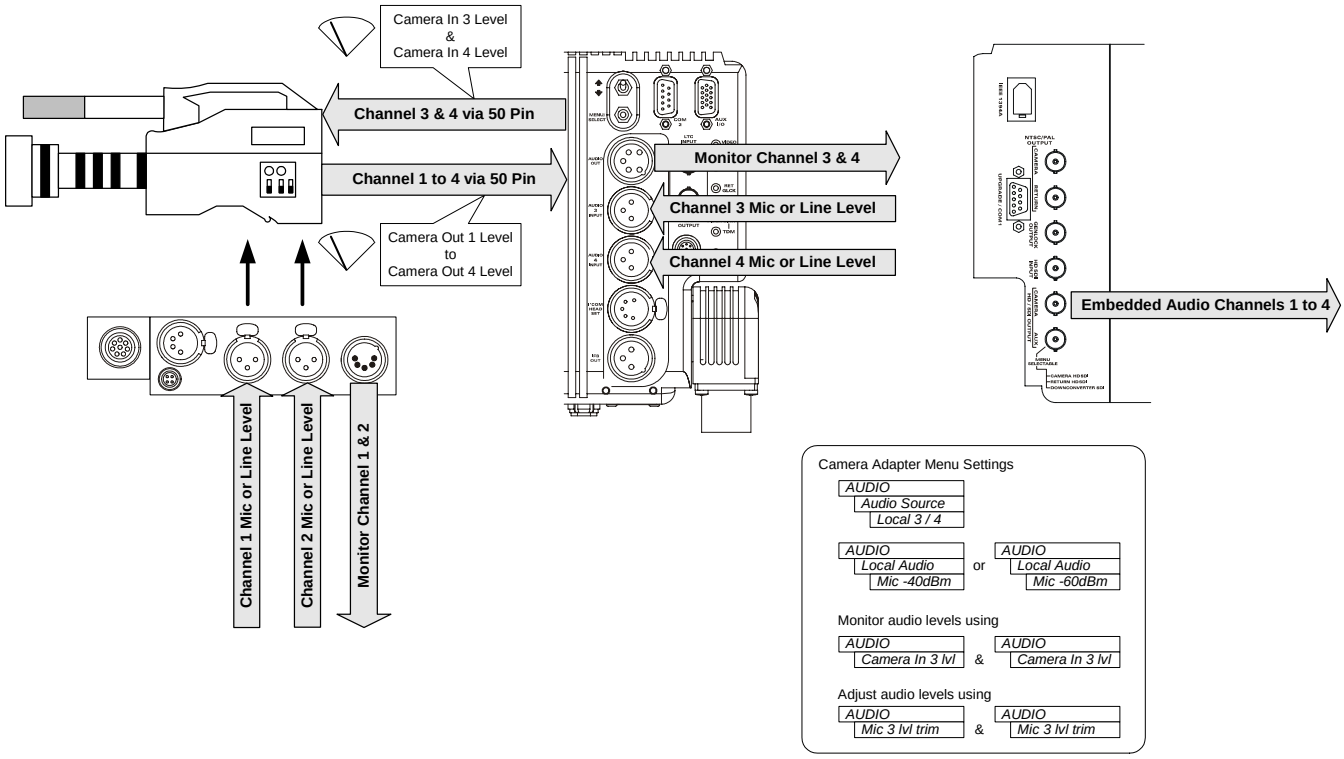


Figure 2-17: Connecting Channel 3 & 4 Audio at the Sony Camera Adapter

2.9.1.2. Sending Audio from the Base to the Camera

Connect up to four channels of analog line level audio to the base station using the XLR connectors on the audio breakout panel. The analog audio is converted to AES by the base station and sent to the camera over the fiber optic connection. Using an XLR Y cable the camera adapter allows you to input channels 3 and 4 as either mic or line levels using the XLR connectors on the camera adapter, as shown in Figure 2-18.

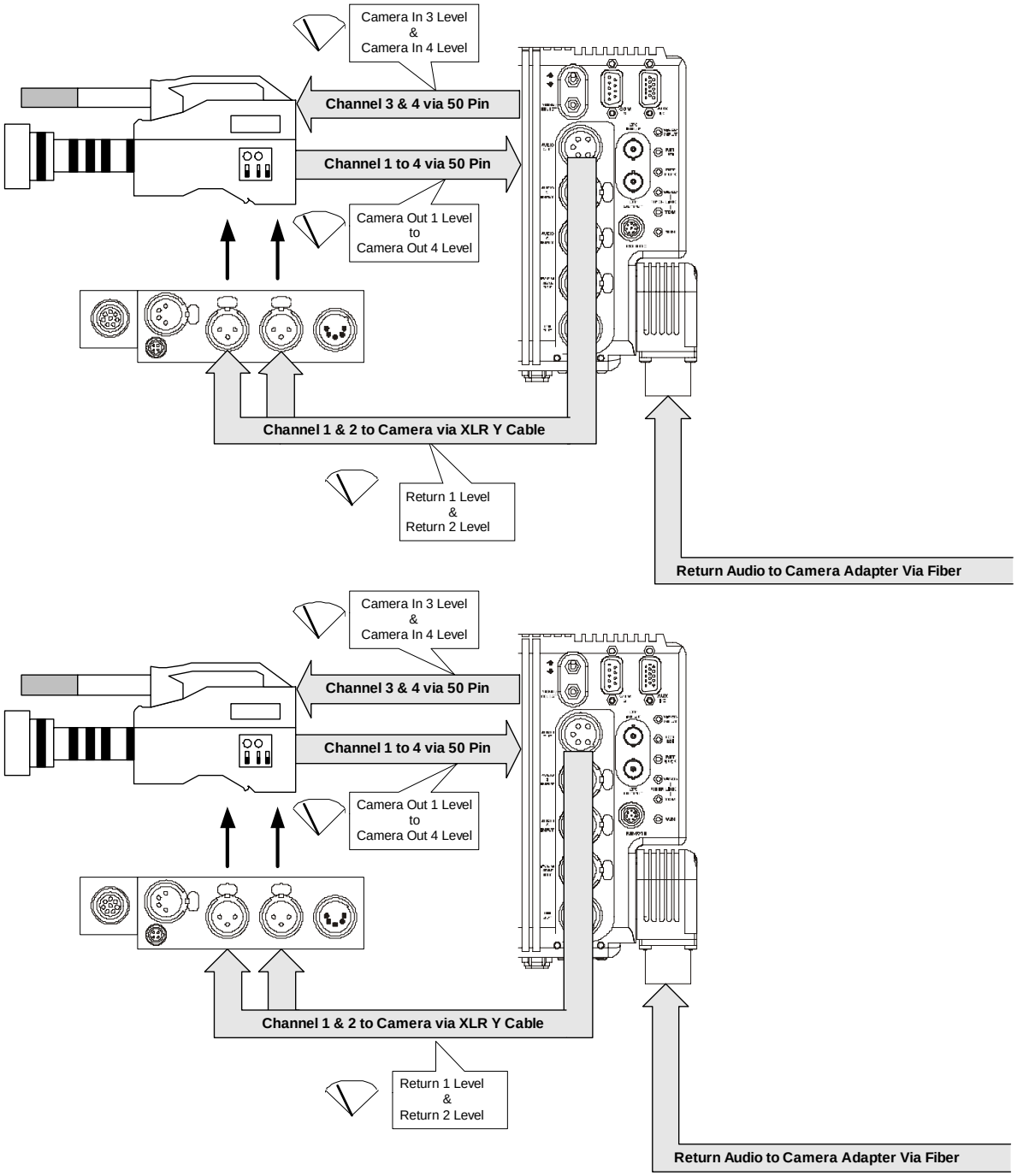
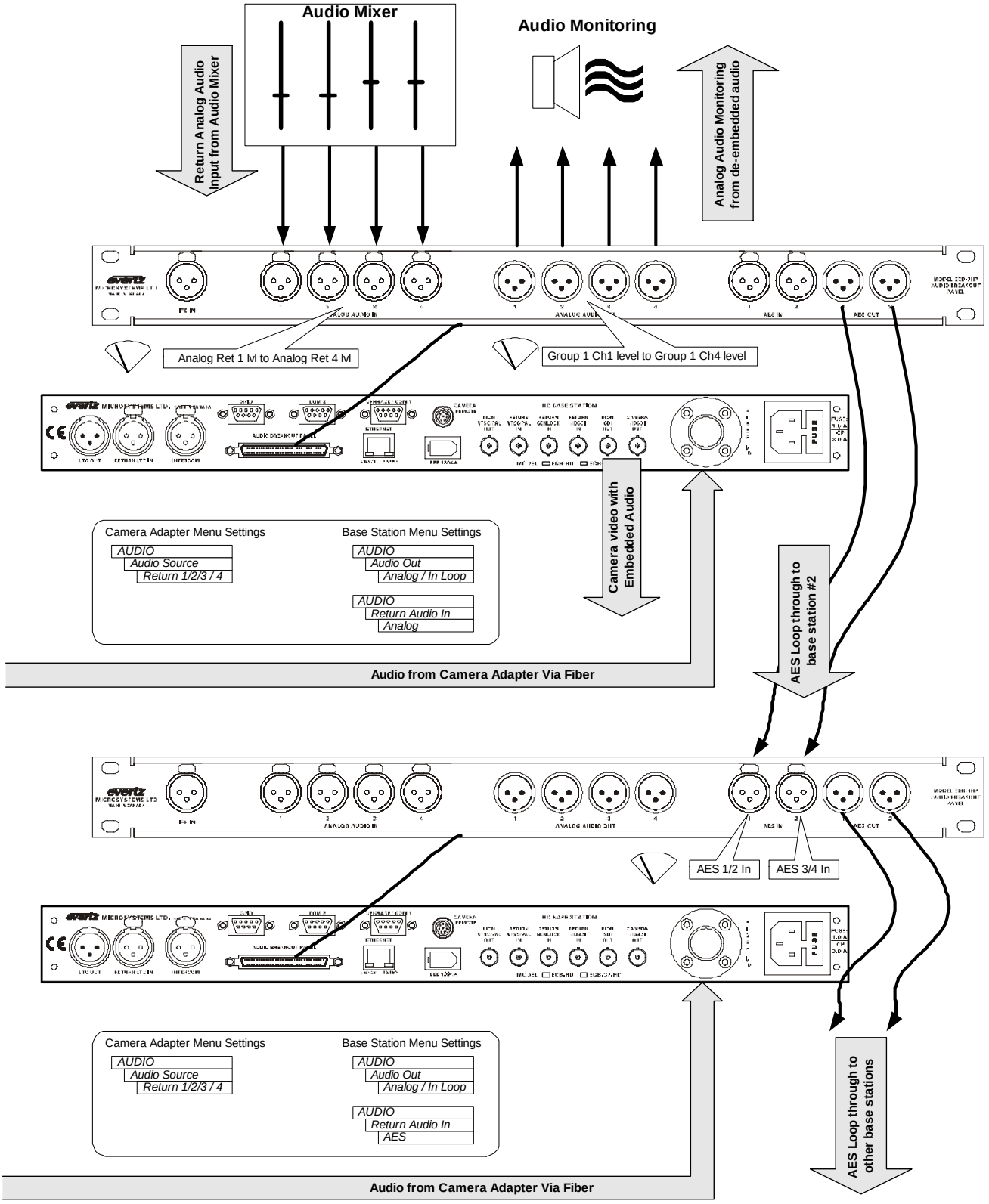


Figure 2-18: Sending 4 Channels from the Base Station to the Sony Camera Adapter


Audio Mixer
Audio Monitoring
Return Analog Audio Input from Audio Mixer
Analog Audio Monitoring from de-embedded audio
Analog Ret 1 lvl to Analog Ret 4 lvl
Group 1 Ch1 level to Group 1 Ch4 level
Camera Adapter Menu Settings
AUDIO
Audio Source
Return 1/2/3 / 4
Base Station Menu Settings
AUDIO
Audio Out
Analog / In Loop
AUDIO
Return Audio In
Analog
Camera video with Embedded Audio
AES Loop through to base station #2
Audio from Camera Adapter Via Fiber
AES 1/2 In
AES 3/4 In
Camera Adapter Menu Settings
AUDIO
Audio Source
Return 1/2/3 / 4
Base Station Menu Settings
AUDIO
Audio Out
Analog / In Loop
AUDIO
Return Audio In
AES
AES Loop through to other base stations
Audio from Camera Adapter Via Fiber

2.9.2. Connecting the Audio – Panasonic Cameras

Audio inputs for channels 1 and 2 are input directly to the Camcorder using the XLR connectors on the rear of the camera. There is no provision to record channels 3 and 4 on the Panasonic camcorders. If you are using only channels 1 and 2, set the adapter's *Audio Source* menu item to *Camera 1 / 2 Only.*

2.9.2.1. Sending Audio from the Base to the Camera

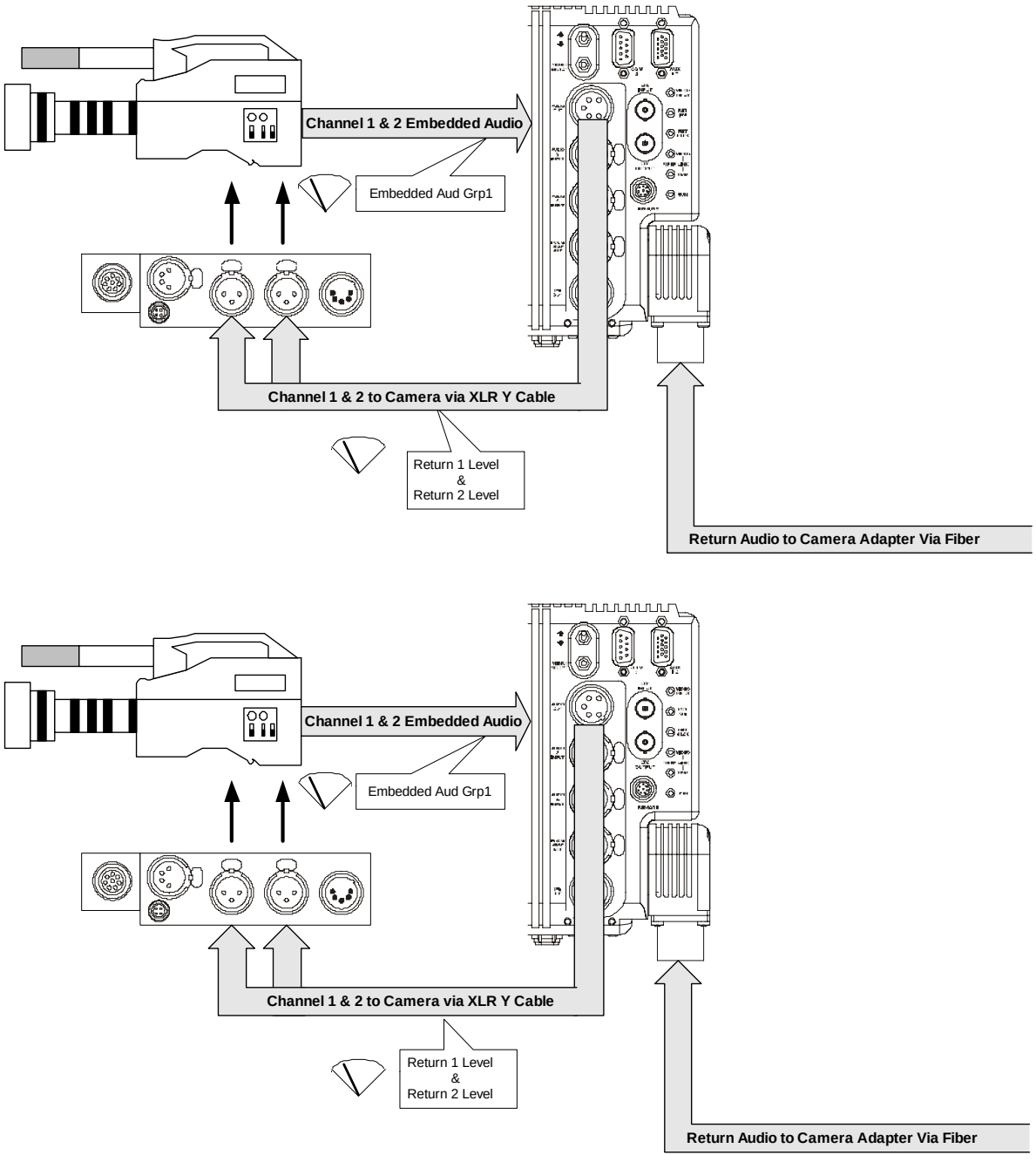
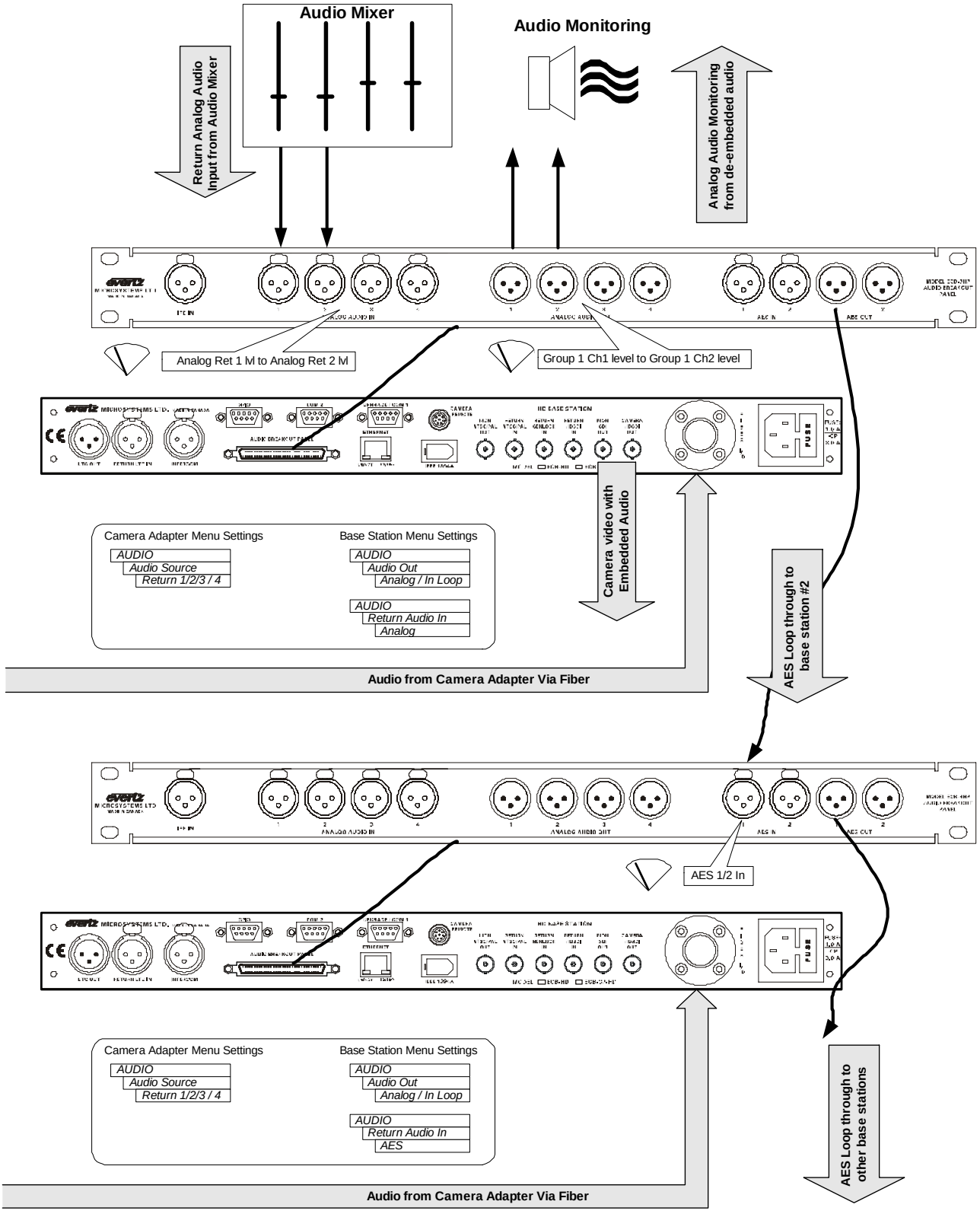


Figure 2-19: Sending Audio from the Base Station to the Panasonic Camera Adapter


Audio Mixer
Audio Monitoring
Return Analog Audio Input from Audio Mixer
Analog Audio Monitoring from de-embedded audio
Analog Ret 1 M to Analog Ret 2 M
Group 1 Ch1 level to Group 1 Ch2 level
Camera video with Embedded Audio
Camera Adapter Menu Settings
AUDIO
Audio Source
Return 1/2/3 / 4
Base Station Menu Settings
AUDIO
Audio Out
Analog / In Loop
AUDIO
Return Audio In
Analog
Audio from Camera Adapter Via Fiber
AES Loop through to base station #2
AES 1/2 In
Camera Adapter Menu Settings
AUDIO
Audio Source
Return 1/2/3 / 4
Base Station Menu Settings
AUDIO
Audio Out
Analog / In Loop
AUDIO
Return Audio In
AES
Audio from Camera Adapter Via Fiber
AES Loop through to other base stations

Connect up to four channels of analog line level audio to the base station using the XLR connectors on the audio breakout panel. The analog audio is converted to AES by the base station and sent to the camera over the fiber optic connection. Using an XLR Y cable (such as is shown) in the Camera adapter allows you to input channels 3 and 4 as either mic or line levels using the XLR connectors on the camera adapter, as shown in

2.9.3. Connecting the Camera Remote Paint Control – Sony Cameras

Connect the Sony remote control panel to the **CAMERA REMOTE** connector on the base station rear panel using the standard Sony supplied cable. Connect one end of the Remote control cable supplied with the ECAS unit (Evertz part number WP-ECA-REM-SONY8P) to the Remote connector on the Sony camcorder. Connect the other end of this cable to the **REMOTE** connector on the camera adapter. The Remote control serial data and Camera luminance video with menus is carried over the fiber as shown in Figure 2-20 below.

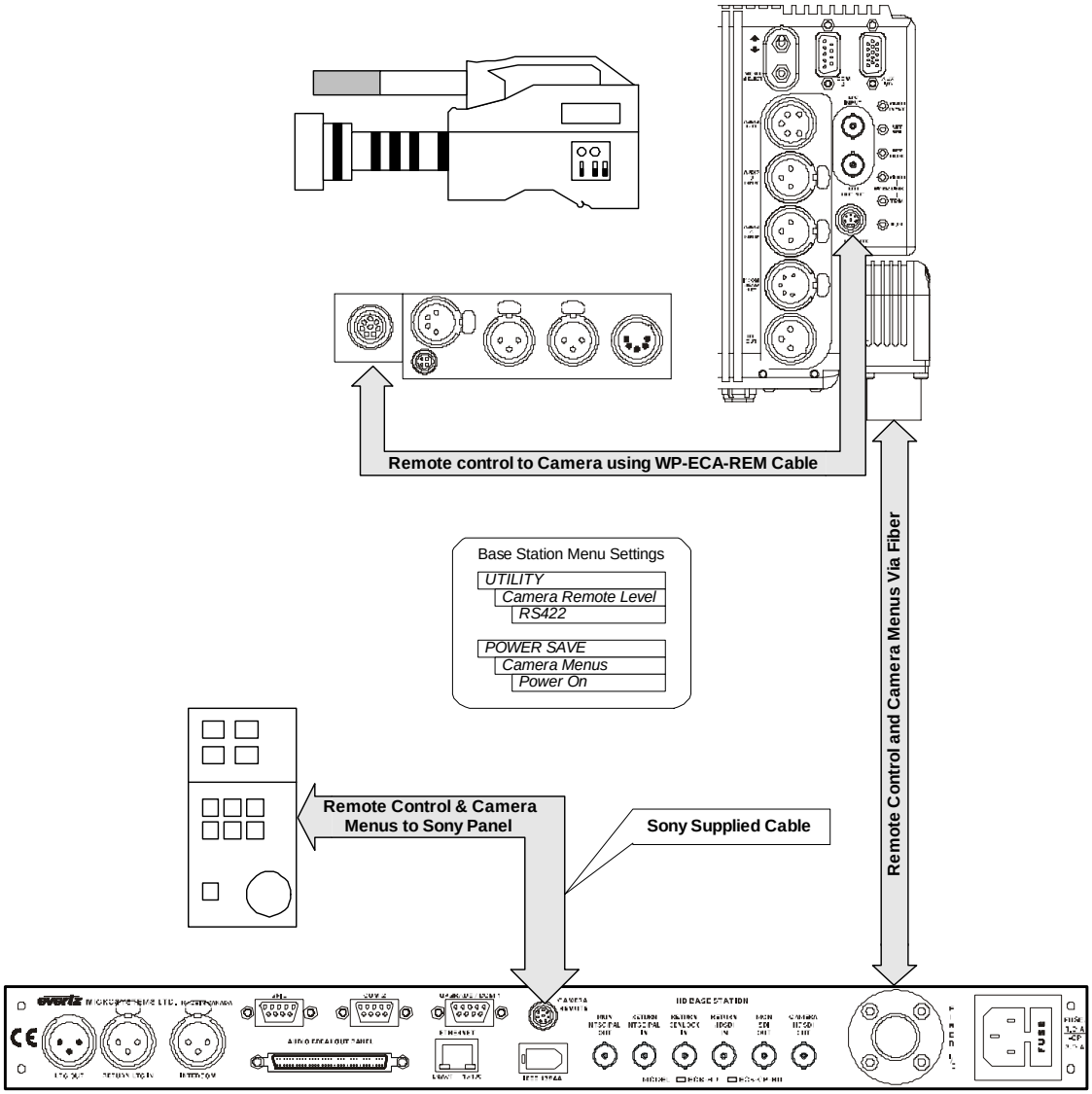


Figure 2-20: Connecting the Sony Camera Paint Remote Control Panel

2.9.4. Connecting the Camera Remote Paint Control – Panasonic Cameras

Connect the adapter cable supplied with the ECAP unit (Evertz part number WP-ECB-REM-PAN6P) to the **CAMERA REMOTE** connector on the base station rear panel. Connect the Panasonic remote control panel to the standard Panasonic supplied cable to the other end of the adapter cable. Connect one end of the Remote control cable supplied with the ECAP unit (Evertz part number WP-ECA-REM-PAN6P) to the Remote connector on the Panasonic camcorder. Connect the other end of this cable to the **REMOTE** connector on the camera adapter. The Remote control serial data and Camera luminance video with menus is carried over the fiber as shown in Figure 2-21 below.

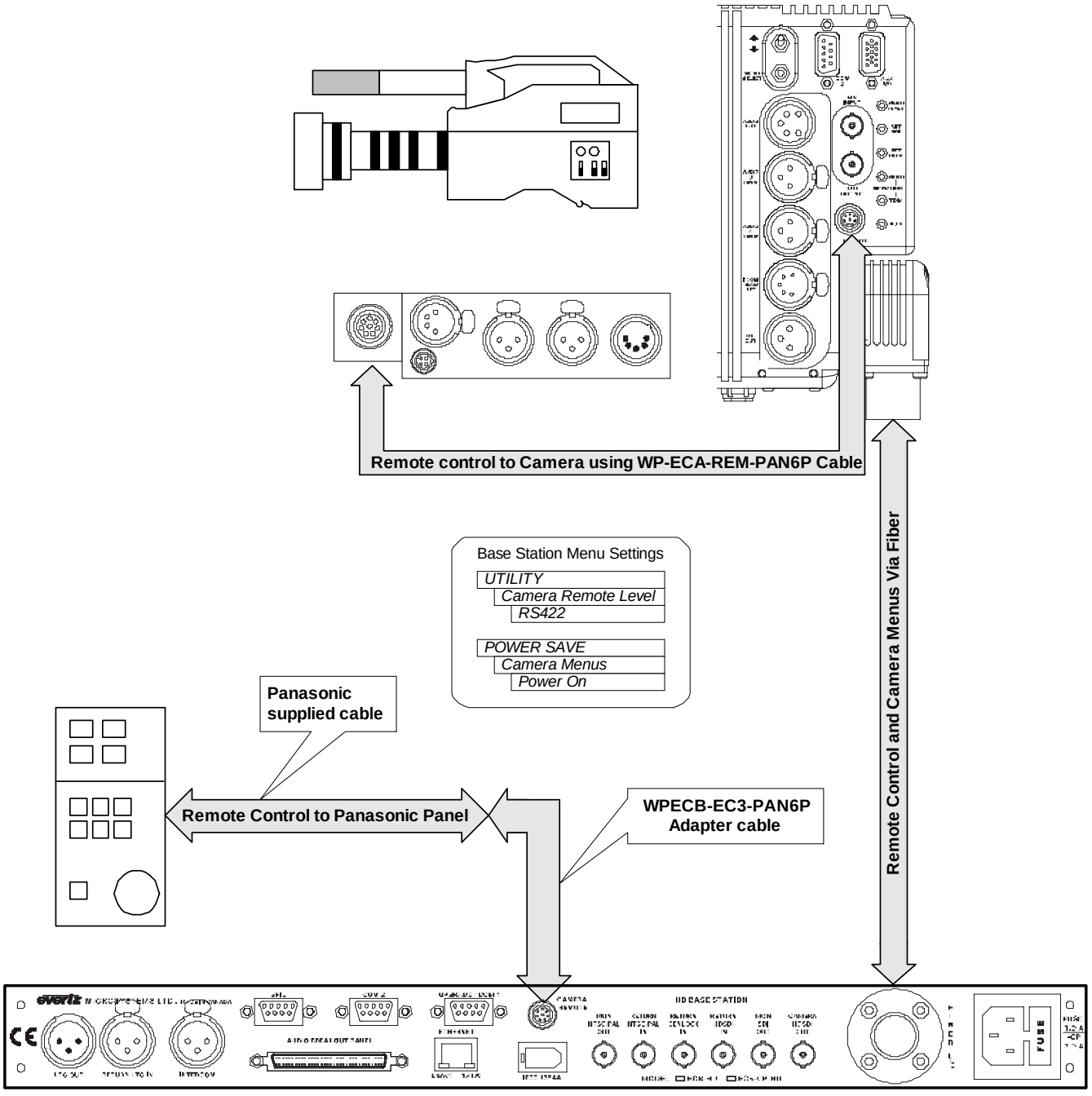


Figure 2-21: Connecting the Panasonic Camera Paint Remote Control Panel

2.9.5. Connecting the Party Line Intercom

Connect the RTS Intercom party line to the **INTERCOM** XLR connector on the base station rear panel. Connect the intercom headset to the **I'COM** 5 pin XLR connector on the camera adapter. Intercom microphone and headset audio is carried over the fiber as shown in Figure 2-22 below.

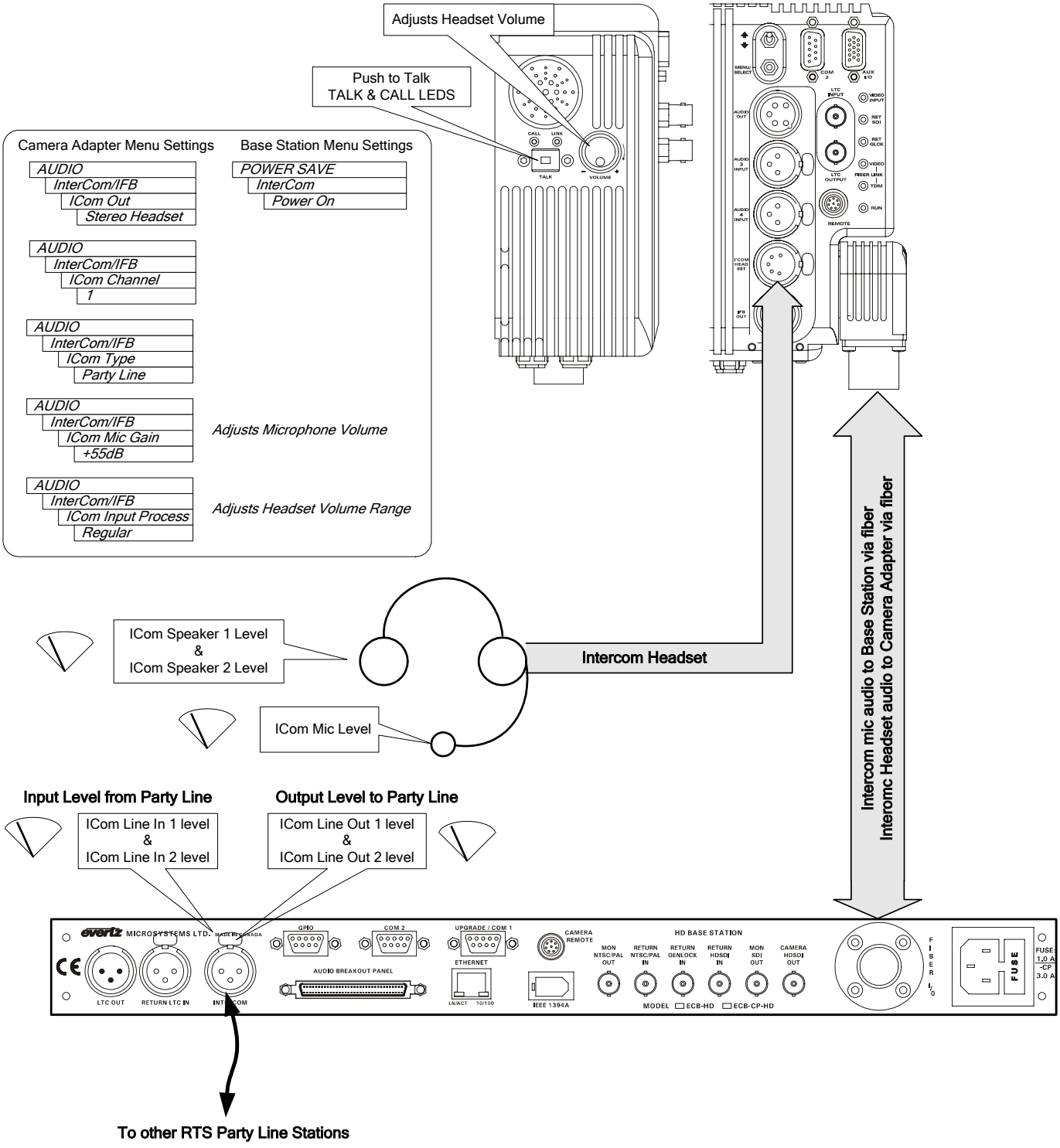


Figure 2-22: Connecting Party Line Intercom

CHAPTER 3: HOW TO OPERATE THE CAMERA ADAPTER

TABLE OF CONTENTS

Figures

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3. HOW TO OPERATE THE CAMERA ADAPTER

The ECA series camera adapters combine the latest LSI technology with sophisticated embedded microcontroller firmware to provide a powerful, camera adapter/down-converter system. They can be used as standalone camera adapters providing Serial Digital video out and additional audio inputs to the cameras. The real power of the adapter is realised when it is connected to a Base Station unit.

3.1. AN OVERVIEW OF SWITCHES AND USER CONTROLS

Figure 3-1 and Figure 3-2 show the location of the user controls and status LEDs on the camera adapter.

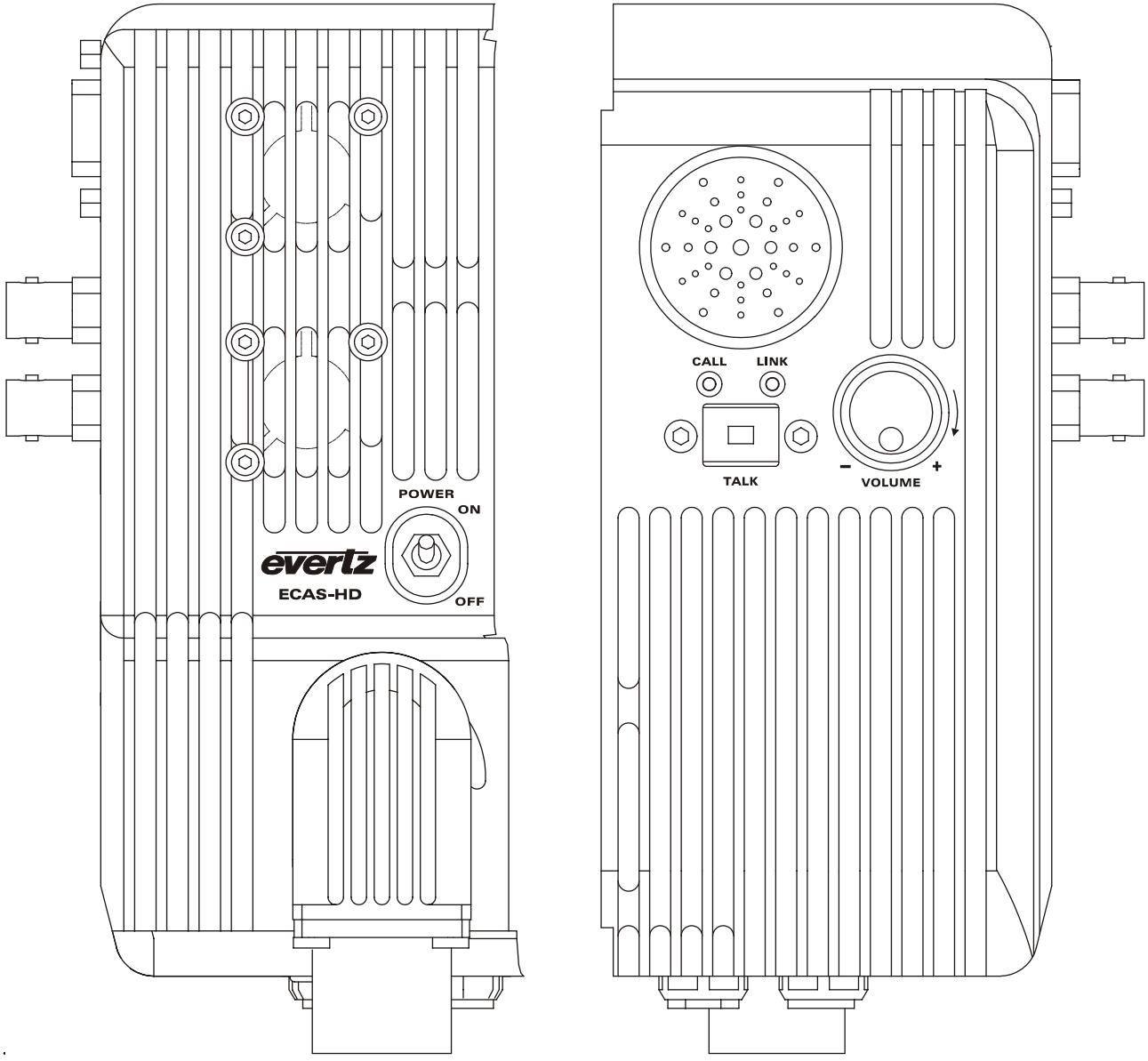
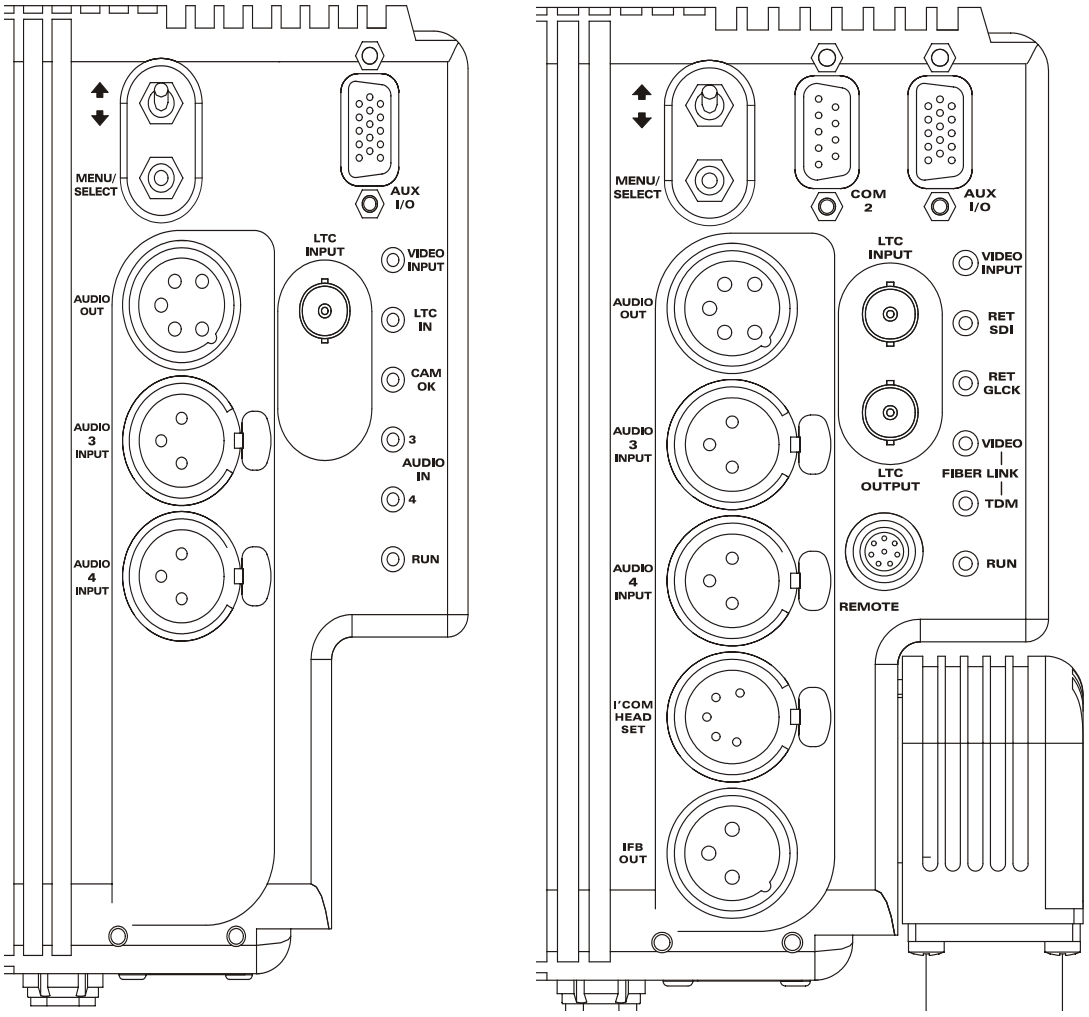


Figure 3-1: Camera Adapter Switches and Controls (Left and Right Sides)



(a) Non-Fiber Version **(b) Fiber Version**

Figure 3-2: Camera Adapter Switches and Controls (Battery Side)

The pushbutton and toggle switch are used to control the on-screen *Setup* menu system that provides a quick and simple method of configuring the camera adapter for your application. Sections 3.2 to 3.11.7 give detailed information on the specific operations required to control the ECA camera adapter. For information about operating the ECB Base station see chapter 4.

3.1.1. Overview of the Switches and Controls

POWER: The **POWER** switch is located on the right side of the adapter, just above the fiber optic connector arm. When the **POWER** switch is in the ON position power is supplied to the camera adapter. The RUN LED will normally be on indicating that there is power supplied to the unit. Power from the Battery connector or the **12VDC IN** connector is fed through to the camera and the **12VDC OUT** Accessory power connector regardless of the adapter **POWER** switch setting.

The **PUSHBUTTON** and ↑ ↓ momentary toggle switch located on the battery side of the adapter is used to navigate the *Setup menu* system.

PUSHBUTTON: The **PUSHBUTTON** is used to enter the *Setup* menu. When in the *Setup* menu the **PUSHBUTTON** is used to move to access the next sub-menu levels or to select a menu parameter that is to be changed.

↑, ↓ (TOGGLE SWITCH) When in the *Setup* menu, the ↑ and ↓ momentary toggle switch is used to move to various items in the menu system.

On Fiber versions, the **TALK** pushbutton and volume control knob are located on the left side of the adapter.

TALK: The **TALK** momentary pushbutton is used to enable the intercom microphone when an intercom headset is connected to the camera adapter. Press the button to talk. Release the button to mute the microphone. When the microphone is live, the TALK LED will be On.

VOLUME: The **VOLUME** control is used set the volume of the intercom headset audio when the headset is connected to the camera adapter. When the headset is not connected to the camera adapter the **VOLUME** control adjusts the speaker volume. Turn the knob clockwise to increase the volume. Turn the knob counter-clockwise to decrease the volume.

3.1.2. An Overview of the Status Indicators

3.1.2.1. Non Fiber Version Status Indicators

There are six status indicators located on the battery side of the adapter that show operational status at a glance.

VIDEO INPUT: This green LED indicates that there is video present on the input (camera or serial digital) that is selected by the *Input Source* menu.

LTC IN: This green LED indicates that there is a linear time code signal connected to the **LTC IN** BNC connector.

CAM OK: This green LED indicates that the camera adapter is communicating with the Sony camcorder.

AUDIO IN 3, 4: These two green LEDs indicate that there is analog audio connected to the **AUDIO 3 INPUT** and **AUDIO 4 INPUT** XLR connectors and that the camera adapter is sending this audio to the camcorder over the parallel camera connector. The *AUDIO* menu is used to configure the audio inputs of the camera adapter.

RUN: This green LED indicates that the camera adapter unit is functioning normally. Under normal operation it will flash off and on continuously.

3.1.2.2. Fiber Version Status Indicators

There are six status indicators located on the battery side of the adapter that show operational status at a glance.

VIDEO INPUT: This green LED indicates that there is video present on the input (camera or serial digital) that is selected by the *Input Source* menu.

RET SDI: This green LED indicates that there is a return HDSDI (HD models) or SDI (SD models) signal coming from the base station.

RET GLCK: This green LED indicates that there is a return genlock signal coming from the base station.

VIDEO FIBER LINK: This green LED indicates that the video fiber link to and from the base station is connected. This fiber link is used to transport the camera video to the base station and return HDSDI (HD models) or SDI (SD models) back to the camera.

TDM FIBER LINK: This green LED indicates that TDM fiber link to and from the base station is connected. This fiber link is used to transport the return audio, intercom, LTC, serial data and GPIO data to and from the base station.

RUN This green LED indicates that the camera adapter unit is functioning normally. Under normal operation it will flash off and on continuously.

There is one status indicator located on the operator side of the adapter that is used for fiber link connection status.

LINK: This green LED indicates that both the video and TDM fiber links to and from the base station are connected. (Both the VIDEO FIBER LINK and TDM FIBER LINE LEDs will also be On.) When the LED is blinking rapidly that indicates that only the Video Fiber link is connected. (The VIDEO FIBER LINK LED will also be On.) When the LED is blinking slowly that indicates that only the TDM Fiber link is connected. (The TDM FIBER LINK LED will also be On.)

There are two status indicators located on the operator side of the adapter that are used for intercom operational status.

CALL: This green LED will flash to indicate that there is an intercom CALL signal being received on the fiber optic link from the base station.

TALK: This green LED indicates that the intercom microphone is live when it is On.

3.2. AN OVERVIEW OF THE ON SCREEN MENU SYSTEM

The key to the operational flexibility of the ECA camera adapter lies in the *Setup* menu system. The *Setup* menu system uses an on-screen display available on the *Camera NTSC/PAL* output BNC and provides a quick, intuitive method of configuring the camera adapter, guiding you to the correct setup for your application.

A momentary toggle switch (shown as 🡅 and 🡇 in this manual) and **PUSHBUTTON** located on the battery side of the adapter are used to navigate the on-screen *Setup* menus used to configure the adapter.

To enter the *Setup* menu system, hold the toggle switch in the 🡇 position and press the **PUSHBUTTON**. This will bring you to the main *Setup* menu where you can use the toggle switch to move up and down the list of available sub menus. In the OSD, an arrow (➔) moves up and down the left hand side of the menu items to indicate which item you are currently choosing. Once the arrow is on the desired item, press the **PUSHBUTTON** to access the next menu level.

- **STATUS**
  - Fiber Status
    - Fiber Video Receive
    - Fiber Video Transmit
    - Fiber TDM Basic
    - Fiber TDM Rx Errors
    - Fiber TDM Tx Errors
    - TDM Rx Error Total
    - TDM Tx Error Total
  - Video Status
    - NTSC Return Out
    - Genlock Return Out
    - Viewfinder In
    - HDSDI Video In
    - Fiber Video In
    - 720P Ref
    - 6Hz Ref
    - Video Delay
  - Program Audio Status
    - Camera 12 Audio Out
    - Cam 1 Out level
    - Cam 2 Out level
    - Camera 34 Audio Out
    - Cam 3 Out level
    - Cam 4 Out level
    - 1394A Audio
    - Return 12 Audio
    - Return 1 level
    - Return 2 level
    - AES/Return 34 Audio
    - Analog 3 In
    - Analog 4 In
    - AES 3 In
    - AES 4 In
    - Camera In 3 level
    - Camera In 4 level
    - Embedded Aud Gr1
    - Embedded Aud Gr2
    - Embedded Aud Gr3
    - Embedded Aud Gr4
  - InterCom/IFB Status
    - IFB Audio
    - IFB Out L
    - IFB In level
    - ICom Mic level
    - ICom Speaker 1 lvl
    - ICom Speaker 2 lvl
  - Comm Port Status
    - CamRem to Fiber
    - CamRem Out Level
    - Com2 to Fiber
    - Com2 Out Level
  - 1394 Status
    - Firewire Bus
    - Codec Mode
    - DV Deck
    - Network Status
    - Net Neighbours
  - Misc Status
    - Fan 1
    - Fan 2
    - Internal temperature
- **VIDEO**
  - Video Source
  - Aux SDI Out
  - Auto Video Detect
  - Video Standard
  - SD Aspect Ratio
  - SD Out Pull-24Fr
  - SD Pulldown Ref
  - Red/Blue Swap
  - NTSC Setup
  - Test Signal
- **CHAR WINDOWS**
  - OSD Windows
  - Timecode Windows
    - HD Time Window
    - HD Time Vert
    - HD Time Horz
    - HD Pull Display
    - SD Time Window
    - SD Time Vert
    - SD Time Horz
    - User Bits Window
    - User Bits Vert
    - User Bits Horz
  - Debug Windows
    - Debug Window 1
    - DB Win 1 Display
    - DB Win 1 Vert
    - …..
    - Debug Window 3
    - DB Win 3 Display
    - DB Win 3 Vert
- **TIMECODE**
  - Video TC Source
  - LTC Out Source
  - LTC Out Rate
  - HD ATC Inserter
  - SD VITC Inserter
  - 525 VITC Lines
  - 625 VITC Lines
  - VITC User Bits
- **AUDIO**
  - InterCom/IFB
    - ICom Mic Gain
    - ICom Mic level
    - ICom SideTone
    - ICom Channel
    - ICom Out
    - ICom Input Process
    - ICom Speaker 1 lvl
    - ICom Speaker 2 lvl
    - ICom Noise Thresh
    - ICom Type
    - IFB Volume
  - Audio Source
  - Local Audio In
  - Mic 3 In Lvl Trim
  - Camera In 3 level
  - Mic 4 In Lvl Trim
  - Camera In 4 level
  - Phantom Power
  - SD Audio Delay
  - SD Audio Delay Ena
  - Analog Threshold
- **1394A**
  - DV Mode
  - DV Audio Source
  - DV Auto Record
  - DV Codec Reset
- **GPIO FUNCTIONS**
  - GPI1 Function
  - GPI1 Trigger
  - GPI2 Function
  - GPI2 Trigger
  - GPO1 Function
  - GPO2 Function
- **FIRMWARE**
  - Adapter Version
  - Adapter Options
  - DV Codec Version
  - FPGA Rev
  - Base Version
  - Base Options
  - Factory Reset Most
  - Factory Reset
- **UTILITY**
  - Internal temperature
  - Fan #1 Mode
  - Fan #2 Mode
  - InterCom Mute
  - IFB Mute
  - Audio Embedder
  - Camera Type
  - Control Gang
  - Configuration
- **ENGINEERING**
  - Calibrate
  - HD H Filter
  - DV Audio In
  - Audio Clk
  - SRC 3/(4) In
  - Cam 3/4 In
  - SRC 1/(2) In
  - Audio Out XLR
  - InterCom/IFB
  - Tone L Mute
  - Tone R Mute
  - Fiber Out
  - Camera HDSDI Out
  - Test

Figure 3-3: Camera Adapter Menu Overview

The top of the menu screen will show the word *CAMERA* followed by the *System Ident* and then a colon. The *System Ident* is a letter or number allowing the user to distinguish between multiple camera adapters and base stations. The *System Ident* is set in the base station and will be sent to the camera adapter that is connected via the fiber optic cable. See section 4.13.4 for information on setting the *System Ident*. If the base station connected to this camera adapter is networked and this camera adapter is a member of a network control gang then the words *GANGED* will also show at the top of the menu screens to remind you that changing this camera adapter's menu settings will also affect other members of the gang. See section 3.12.7 for more information on ganged menu operation.

On all menus, there are two extra selectable items: *Back* and *Exit*. Selecting *Back* will take you to the previous menu (the one that was used to access the current menu) while *Exit* will return the display to its normal operating mode. On the main menu, BACK and EXIT will both take you to the normal operating mode.

Once in a sub menu, there may be another menu layer, or there may be a list of parameters (shown with an = symbol) to adjust. If there is another set of menu choices, use the toggle switch to select the desired menu item and press the pushbutton.

To adjust any parameter, use the toggle switch to move up or down to the desired parameter and press the pushbutton. The arrow will move to the right hand side of the line (<) indicating that you can now adjust the parameter. Using the toggle switch, adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you press the toggle switch up and decrease if you push the toggle switch down.

When you have stopped at the desired value, press the pushbutton. This will update the parameter to the selected value and move the arrow back to the left side of the parameter list (🗎). Continue selecting and adjusting other parameters or use the *BACK* or *EXIT* menu items.

Sections 3.3 to 3.13 provide detailed descriptions of the *Setup* menus. The tables in these sections are arranged in an indented structure to indicate the path taken to reach the control.

3.3. SETUP ON SCREEN MENU – MAIN MENU

The *Setup* menu is arranged in a layered structure that groups similar configuration items together. The following section gives a brief description of the first level of menus that appear when you enter the *Setup* menu. Selecting one of these items will take you to the next menu level. Sections 3.4 to 3.11.7 provide detailed descriptions of each of the sub menus. The tables in sections 3.4 to 3.11.7 are arranged in an indented structure to indicate the path taken to reach the control. Menu items or parameters that are underlined indicate the factory default values.

The descriptions of the *Setup* menu apply to both the SD and HD versions unless otherwise noted.

STATUS	Controls the display of various status information on the on-screen display
VIDEO	Configures the video standards and other items related to the video outputs
CHAR WINDOWS	Configures of the on-screen character window displays
TIMECODE	Configures the time code sources and other items related to the time code
AUDIO	Configures the audio inputs and outputs
1394A	Configures of the 1394 DV Codec
GPIO FUNCTIONS	Configures of the general purpose inputs and outputs
FIRMWARE	Displays firmware versions
UTILITY	Miscellaneous hardware functions
ENGINEERING	Debug engineering items

3.4. DISPLAYING THE CAMERA ADAPTER STATUS

The *STATUS* menu shows status information about the camera adapter operation. The chart below shows the items available in the *STATUS* menu. Sections 3.7.1 to 3.7.7 gives detailed information about each menu item. These status displays are generally for engineering use only.

Fiber Status	Displays the camera adapter fiber status items
Video Status	Displays the camera adapter video status items
Program Audio Status	Displays the camera adapter program audio status items
Intercom/IFB Status	Displays the camera adapter intercom and IFB status items
Comm Port Status	Displays the camera adapter communication port status items
1394 Status	Displays the camera adapter 1394 Codec status items
Network Status	Displays the Ethernet interface status items
Misc Status	Displays miscellaneous status information

3.4.1. Displaying the Camera Adapter Fiber Status Information

STATUS
Fiber Status

Fiber Video Receive	Video received at camera adapter from base station (missing/ok)
Fiber Video Transmit	Video received at base station from camera adapter (missing/ok)
Fiber TDM Basic	Time Division Multiplexed (TDM) fiber basic communications (bad/good)
Fiber TDM Rx Errors	TDM Fiber receive errors/sec at camera adapter from base station
Fiber TDM Tx Errors	TDM Fiber receive errors/sec at base station from camera adapter
TDM Rx Error Total	Total TDM Fiber receive errors at camera adapter from base station
TDM Tx Error Total	Total TDM Fiber receive errors at base station from camera adapter

This control allows the user to display the Camera Adapter Fiber status displays.

Note: When TDM Basic is bad, the TDM Rx errors and TDM TX errors status do not have any meaning.

3.4.2. Displaying the Camera Adapter Video Status Information

STATUS
Camera Video Status

NTSC Return Out	Return NTSC video received from base station
Genlock Return Out	Return Genlock received from base station
Viewfinder In	Viewfinder video input on REMOTE Connector (sent to base station)
HDSDI Video In	HDSDI input video at camera adapter
Fiber Video In	Video received on fiber from base station
720P Ref	Status of reference for NTSC/PAL relationship to 720P video
6 Hz Ref	Status of reference for 2:3 Pulldown relationship to 24fps video
Video Delay	Video input-to-output delay, measured in HD frames

This control allows the user to display the Camera Adapter Video status displays.

3.4.3. Displaying the Camera Adapter Program Audio Status Information

STATUS
Program Audio Status

This control allows the user to display the Camera Adapter Program Audio status displays.

Camera 12 Audio Out	Status of Audio 12 out from camera (SRC1)
Cam 1 Out Level	Level of Channel 1 output from camera
Cam 2 Out Level	Level of Channel 2 output from camera
Camera 34 Audio Out	Status of Audio 34 out from camera (SRC2)
Cam 3 Out Level	Level of Channel 3 output from camera
Cam 4 Out Level	Level of Channel 4 output from camera
1394 Audio	Status of 1394 Codec Audio
Return 12 Audio	Status of return audio 12 out from base
Return 1 Level	Signal Detector – return 1 audio from base
Return 2 Level	Signal Detector – return 2 audio from base
AES/Return 34 Audio	Status of return audio 34 out from base
Analog 3 In	Signal Detector – Channel 3 analog audio in to adapter
Analog 4 In	Signal Detector – Channel 4 analog audio in to adapter
AES 3 In	Signal Detector – Channel 3 AES audio in to adapter
AES 4 In	Signal Detector – Channel 4 AES audio in to adapter
Camera In 3 Level	Level of audio 3 in to camera
Camera In 4 Level	Level of audio 4 in to camera
Embedded Aud Gr1	Signal Detector – Embedded Audio Group 1
Embedded Aud Gr2	Signal Detector – Embedded Audio Group 1
Embedded Aud Gr3	Signal Detector – Embedded Audio Group 1
Embedded Aud Gr4	Signal Detector – Embedded Audio Group 1

These items are only applicable when ECAS is receiving audio through the rear parallel connector of Sony Cameras

These items are only applicable when adapter is receiving return audio from the base station via the fiber link

These items are only applicable when adapter is receiving audio on local inputs

These items are only applicable when adapter is receiving video on Aux SDI input

3.4.4. Displaying the Camera Adapter Intercom/IFB Status Information

STATUS
Intercom/IFB Status

This control allows the user to display the Camera Adapter Intercom/IFB status displays.

IFB Audio	Status of IFB audio received from base (SRC6)
IFB Out L	Signal Detector – IFB audio from base
IFB In Level	Level of IFB input from fiber
ICom Mic Level	Level of intercom microphone input
ICom Speaker 1 Lvl	Level of intercom channel 1 output to headset/speaker
ICom Speaker 2 Lvl	Level of intercom channel 2 output to headset/speaker

3.4.5. Displaying the Camera Adapter Communication Port Status Information

STATUS
Comm Port Status

This control allows the user to display the Camera Communication Port status displays.

CamRem to Fiber	Status of camera remote control signal going onto fiber
CamRem Out Level	Status of camera remote control signal going to REMOTE connector
Com2 to Fiber	Status of Com2 signal going onto fiber
Com2 Out Level	Status of Com2 signal going to COM2 connector

3.4.6. Displaying the 1394 Codec Status Information

STATUS	This control allows the user to display the 1394 Codec status displays
1394 Codec Status	
Firewire Bus	Firewire Bus status – connected, or not connected
Codec Mode	1394 Code mode – encode, decode, or off
DV Deck	DV dec type connected to codec
Deck Class	Device type of DV record device
Deck Mfr	Manufacturer of DV record device

3.4.7. Network Status

STATUS	This control allows the user to display a list of all camera adapter and base station units available on the subnet set by the *System IP Configuration* menu item. See section 4.13.6.
Network Status	
Net Neighbours	

The following example screen shows sample units on a network.

System ID	Local Device	Gang Number	Net IP	Base IP	Cam IP
Back					
Exit					
1 =		Gang:0	N:10	B:11	C:12
2 =	<-	Gang:1	N:20	B:21	C:22
3 =		Gang:1	N:30	B*31	C:32
4 =		Gang:1	N:40	B*31	C:42
A =	*	Gang:1	N:40	B:41	C:42

Figure 3-4: Network Neighbours Status Screen

System ID: The System ID of the Camera adapter/Base Station pair is shown in this column. All the information on this line relates to the device pair with this system ID
* will be shown in the **Local Device** column if there is more than one system with this System ID.

Local Device: <- will be shown in this column if the device displaying the status screen is part of this system.

Gang Number: Shows the Gang number of the camera adapter of this system. Will show 0 is the camera adapter is not a part of any gang.

Net IP: Shows the fourth octet of the Network CPU IP address for this system. A * will be shown in place of the: when there is an IP conflict for this Network CPU.

Base IP: Shows the fourth octet of the Base Station IP address for this system. A * will be shown in place of the: when there is an IP conflict for this Base Station.

Cam IP: Shows the fourth octet of the Camera Adapter IP address for this system. A * will be shown in place of the: when there is an IP conflict for this Camera Adapter.

The Network Neighbours status screen may take several minutes to update completely after changes to the network configuration.

3.4.8. Displaying the Miscellaneous Status Information

STATUS	This control allows the user to display the status of fans 1 and 2.
Misc Status	
Fan 1	Fan 1 – off, on, or failed
Fan 2	Fan 2 – off, on, or failed
Internal temperature	Displays temperature info in degrees Celsius

3.5. CONFIGURING THE VIDEO CONTROLS

The *VIDEO* menu items are used to configure parameters associated with the input and output video standards, Auxiliary SDI output, and gain for the NTSC/PAL analog video outputs. On HD versions of the camera adapter this menu is also used to configure the down-converter aspect ratio and pulldown. The chart below shows the items available in the *VIDEO* menu. Sections 3.5.1 to 3.5.9 give detailed information about each menu item.

Video Source	Selects the video input source
Aux SDI Out	Selects what video will be output from the AUX SDI OUT connector
Auto Video Detect	Selects the auto video standard detect mode
Video Standard	Selects the video input and output standards
SD Aspect Ratio	Selects the aspect ratio of the down-converter output (HD models)
SD Out Pull – 24Fr	Selects the pulldown cadence of the down-converter output (HD models)
SD Pulldown Ref	Selects the reference source for the pulldown cadence of the down-converter output (HD models)
Red/Blue Swap	Adjusts the timing of the Cr/Cb sample data for earlier rev Sony HD Cameras (applicable only to early Sony HD Cameras)
NTSC Setup	Sets whether the NTSC setup pedestal will be on the Camera NTSC/PAL video output
Test Signal	Selects the test signal from the internal video test generator

3.5.1. Setting the Video Input Source

VIDEO
Video Source
Camera
HDSDI Input
Test Gen

With this control, you can select the source of video for the camera adapter.

When set to Camera, the adapter will use the multi-pin connector on the rear of the camera as its source of input video (Sony versions only).

When set to HDSDI Input, the adapter will use the serial digital video connected to the HDSDI IN BNC connector as its source of input video. This is the default for Panasonic HD versions.

When set to Test Gen, the adapter will use the internal video test generator as its source of input video. The Test Signal menu item selects the type of test signal being output.

3.5.2. Setting the Source of Video for the AUX SDI Output

VIDEO
Aux SDI Out
Camera HDSDI
Return HDSDI
Scaler SDI

On the HD versions, you can select the source of video for the Aux SDI Out connector with this control.

When set to Camera HSDI, the AUX SDI OUT BNC connector outputs a second copy of the video present on the CAMERA HDSDI OUT BNC.

When set to Return HSDI, the AUX SDI OUT BNC connector outputs the return HD serial digital signal being received from the base station over the fiber optic link (fiber versions only).

When set to Scaler SDI, the adapter outputs a standard definition serial digital video from the down-converter.

3.5.3. Selecting the Video Standard

There are two controls that are used to select the input and output video standard for the camera adapter.

VIDEO
Auto Video Detect
On
Off

With this control, you can select whether the camera adapter will auto-detect the input video standard.

When set to On, the camera adapter will auto-detect the input video standard from the selected video source. On HD versions, the camera adapter will also attempt to select the best output video format for the down-converter. The Video Standard menu will be greyed out, but will show the detected video standard from the list below.

If the detected output video format is different than the one desired, then set this menu item to Off, and use the Video Standard menu to manually select the desired format.

When set to *Auto,* the module cannot distinguish between *1080i/59.94* and *1080p/29.97sF* input video so it will be selected as *1080i/59.94*. Similarly *1080p/25sF* will be selected as *1080i/50*.

VIDEO
HD Input Std
1080i/59.94/NTSC
1080i/50/PAL
1080p/23.98sF/NTSC
1080p/24sF/PAL
1080p/24sF/NTSC30
1080i/60/NTSC30
720p/59.94/NTSC
720p/50/PAL
720P/60@24/PAL
720P/60@25/PAL
720P/60@50/PAL

With this control, you can manually set the input video standard for the HD camera adapter when the Auto Video Detect menu item is set to Off.

1080i/59.94 input, NTSC output
1080i/50 input, PAL output
1080p/23.98sF input, NTSC output
1080p/24sF input, PAL output
1080p/24sF input, 525i/60 output
1080i/60sF input, 525i/60 output
720p/59.94 input, NTSC output
720p/50 input, PAL output
720p/60 input, camera set to 24FPS, PAL output
720p/60 input, camera set to 25FPS, PAL output
720p/60 input, camera set to 50FPS, PAL output

When you select one of the 720p video formats you will also need to set the *SD Pulldown Ref* menu item in order to properly determine the correct picture cadence on the down-converted output.

3.5.4. Setting the Output Aspect Ratio (HD versions only)

VIDEO
SD Aspect Ratio
4:3 Side Cut
4:3 Squeeze
16:9 Letterbox

SDTV monitors are usually 4:3, so there is a need for some simple aspect ratio conversion from the HDTV 16:9 formats. With this control, you can set the aspect ratio of the down-converter output for the HD camera adapter.

When set to 4:3 side cut, the left and right sides of the picture are discarded.

When set to 4:3 squeeze, the picture is compressed horizontally (becomes anamorphic) resulting in tall, thin people. The picture will be stretched again when viewed on a 16:9 standard definition monitor.

When set to 16:9 letter box, the whole picture is re-sized to occupy fewer lines. The unused lines at the top and bottom of the picture are left black.

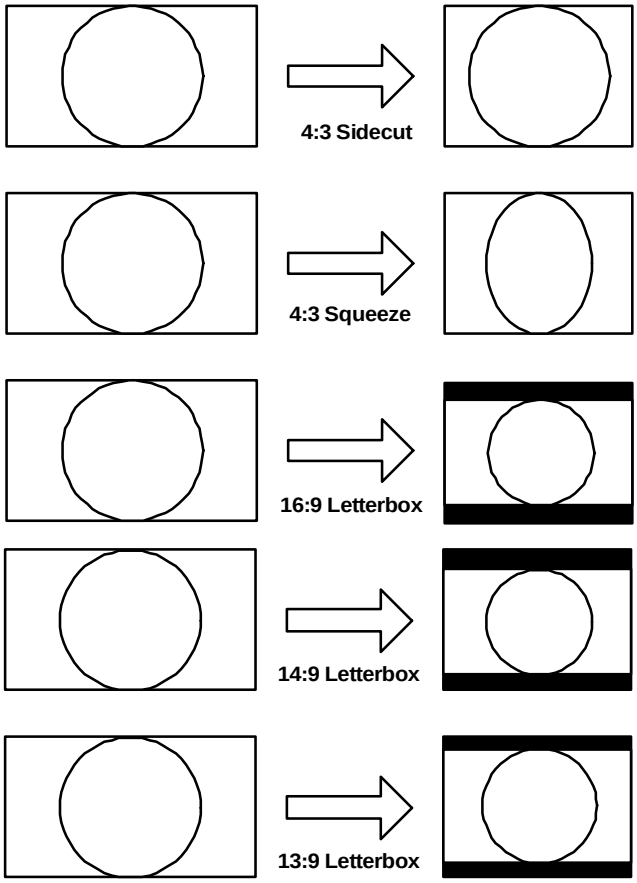


Figure 3-5: Aspect Ratio Conversions

3.5.5. Setting the Pulldown Cadence of the Downconverter Output (HD versions only)

VIDEO
SD Out Pull – 24Fr
2:3:2:3
2:3:3:2

With this control, you can set the pulldown sequence of the down-converter output required when down-converting 1080p/23.98 video to 525i/59.94 or 1080p/24 video to 625i/50.

When set to 2:3:2:3, the normal 2:3:3:2 field picture sequence is used for the down-converter. This sequence, shown in Figure 3-6, provides the minimum motion judder and is suitable for videotape recording.

When set to 2:3:3:2, the two extra fields of the picture sequence are grouped into one video frame. This sequence, shown in Figure 3-7, provides some additional motion judder, but facilitates the 2:3 pulldown removal while capturing the IEEE 1394 DV video stream.

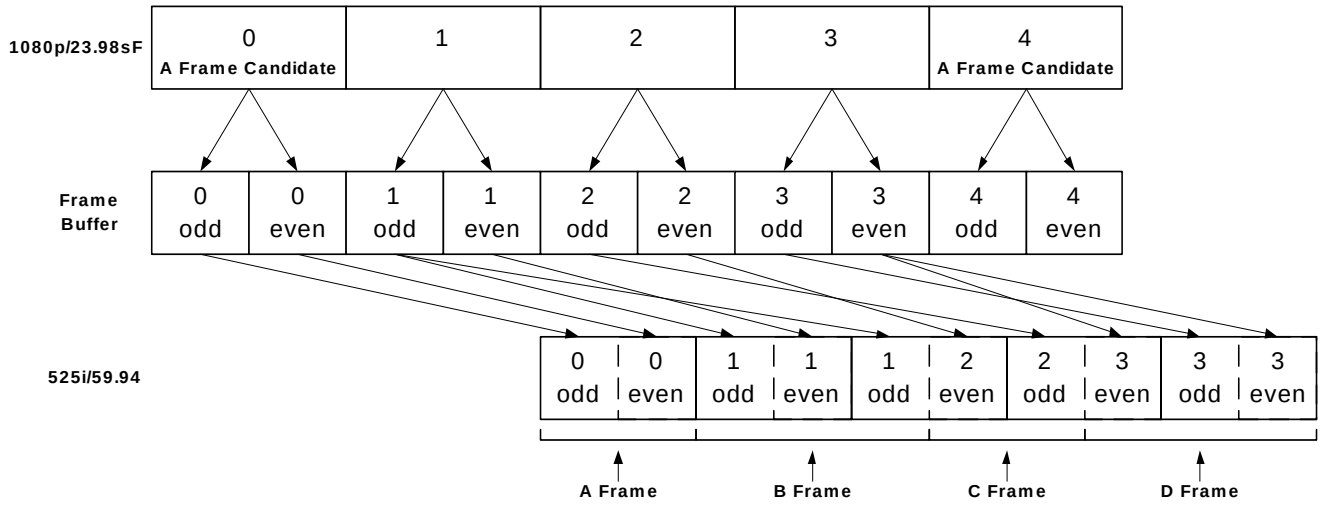


Figure 3-6: 2:3:2:3 Pulldown Sequence – 24/23.98 Fps Input Video

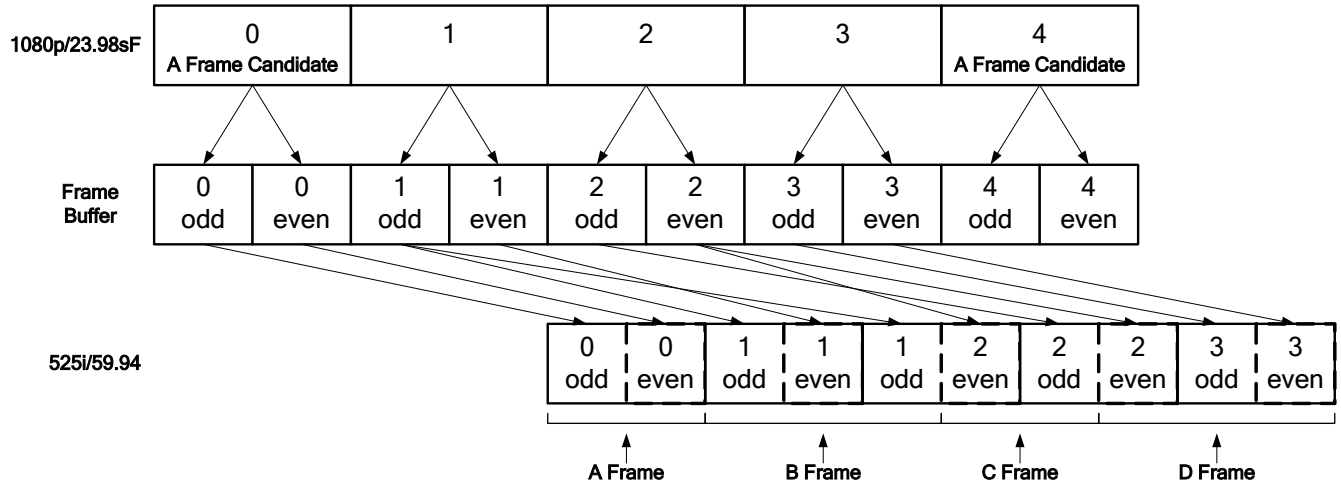


Figure 3-7: 2:3:3:2 Pulldown Sequence – 24/23.98 Fps Input Video

3.5.6. Setting the Pulldown reference for of the Downconverter Output (HD Versions only)

VIDEO
- *SD Pulldown Ref*
  - *VideoTC Source*
  - *VideoTC Src UB*
  - *Adapter LTC*
  - *Return LTC*
  - *Adapter LTC UB*
  - *Return LTC UB*
  - *Freerun*

With this control, you can set the frame reference pulldown sequence of the down-converter output for the HD camera adapter. The pulldown sequence is required when down-converting 1080p/24(23.98) video or 720p/60(59.94) with 24 or 25 frames per second content.

When set to *Video TC Source*, the time code on the HD input will be used to derive the pulldown cadence. When set to *Adapter LTC*, the time code that is connected to the camera adapter LTC IN BNC will be used to derive the pulldown cadence. (This is an alternate method of connecting the camera's time code to the camera adapter.) These settings may be used when you are **recording** the down-converted output and must have it aligned to the camera's time code. Note that the picture may break up momentarily each time the camera starts and stops as the down-converter cadence relocks to the time code.

When set to *Return LTC* the time code that is being input to the base station Return LTC In XLR and sent up the fiber to the camera adapter will be used to derive the pulldown cadence. The Return LTC should be properly aligned to the system standard definition genlock reference. This setting should be used when you are **switching** the down-converted output live and must have it aligned to other standard definition signals.

When set to *Freerun,* the pulldown cadence will freerun. This setting should be used when you are using the down-converted output for monitoring purposes only and you are **not recording** the down-converted signal. The picture will remain stable as the camera starts and stops.

When the input video standard is 720p/60 or 720p/59.94 there are three additional menu items available. These menu items allow the active picture flags that the Panasonic Varicam places into the user bits to control the pulldown cadence.

When set to *Video TC Src UB*, the active picture flags from the user bits of the HD input's embedded time code will be used to derive the pulldown cadence. When set to *Adapter LTC UB*, the active picture flags from the time code that is connected to the camera adapter LTC IN BNC will be used to derive the pulldown cadence. (This is an alternate method of connecting the Varicam's time code to the camera adapter.). These settings may be used when you are **recording** the down-converted output and must have it aligned to the camera's time code. Note that the picture may break up momentarily each time the camera starts and stops as the down-converter cadence relocks to the time code.

When set to *Return LTC UB* the active frame flags in the user bits of the time code that is being input to the base station Return LTC In XLR and sent up the fiber to the camera adapter will be used to derive the pulldown cadence.

If the camera is the video source its playback timecode (ATC or LTC) may not be properly aligned to other cameras or to other signals in the system. In these cases the down-converted video will be aligned to the HD input video.

3.5.7. Compensating for Differences in Camera Red/Blue Timing

VIDEO
Red/Blue Swap
Off
On

This control allows the user to adjust for differences in the camera's red/blue signal timing and is only used on earlier Sony model HDW-F900 cameras.

3.5.8. Setting the NTSC Setup Pedestal on the Analog Video Output

VIDEO
NTSC Setup
Off
On

This control determines how the NTSC setup pedestal will be applied on the camera NTSC/PAL video output.

Note: The NTSC setup pedestal should not be present when operating in Japan.

Set the control to On to apply the setup pedestal to the active picture starting.

Set the control to Off to remove the setup pedestal from the active picture.

3.5.9. Selecting the Video Test Signal

VIDEO
Test Gen Signal
75% Colour Bars
Luma Ramp
Chroma Ramp
Sweep

This control is used to select the test signal that will be output when the Input Source menu item is set to Test Gen.

3.6. CONFIGURING THE ON SCREEN CHARACTER BURN-IN WINDOWS

The *CHAR WINDOWS* menu items are used to configure parameters associated with character burn-in windows. The chart below shows the items available in the *CHAR WINDOWS* menu. Sections 3.6.1 to 3.6.2.2 gives detailed information about each menu item.

OSD Windows	Global OSD window enable
Time Code Windows	Configures the time code windows
Debug Windows	Configures the debug windows

3.6.1. Selecting Whether Any Character Windows Will Be Displayed

CHAR WINDOWS
OSD Windows
Off
On

This control allows the user to enable or disable the character burn-in keyer.

When set to Off, all character windows will be turned off.

When set to On, the character windows enabled by the Time Code Windows and Status Windows menu times will be turned on.

3.6.2. Configuring The Time Code Windows

On the SD versions, there are two time code windows available. The *SD Time code* window shows the time bits of the time code source set by the *VITC Source* menu item. The *User Bits* window shows the user bits of the time code source set by the *VITC/ATC Source* menu item.

On the HD versions, there are three time code windows available. The *HD Time code* window shows the time bits of the time code source set by the *VITC/ATC Source* menu item. When the HD video standard is different than the downconverted video standard, an addition *Pulldown* display can be shown at the right side of the *HD Time code* window. The *SD Time code* window shows the downconverted SD time code that has been converted from the HD time code. The *User Bits* window shows the user bits of the time code source set by the *VITC/ATC Source* menu item.

The *Time code Windows* menu contains items that are used to enable the time code windows and to set their position on the screen. There are three menu items for each character window to enable the window and set its horizontal and vertical position. The *HD Time code* window has one additional menu item to enable the *Pulldown* display. For the sake of simplicity only the menu items for the *HD Time code* window will be shown in the manual.

3.6.2.1. Enabling the HD Time Code Window

CHAR WINDOWS
Time Code Windows
HD Time Window
Off
On

This control allows the user to enable or disable the HD Time Code character window.

When set to Off, the HD Time Code character window will be turned off.

When set to On, the HD Time Code character window will be displayed if the OSD Windows menu item is set to On.

3.6.2.2. Setting the Vertical Position of the HD Time Code Window

CHAR WINDOWS
Time Code Windows
HD Time Vert
1 to max vert posn

This control allows the user to set the vertical position of the HD Time Code character window.

1 to 24.

3.6.2.3. Setting the Horizontal Position of the HD Time Code Window

- *CHAR WINDOWS*
  - *Time Code Windows*
    - *HD Time Horz*
      - *1 to max hor posn*

This control allows the user to set the horizontal position of the HD Time Code character window.

1 to 39.

3.6.2.4. Enabling the HD Time Code Window Pulldown Display

- *CHAR WINDOWS*
  - *Time Code Windows*
    - *HD Pull Display*
      - *Off*
      - *On*

This control allows the user to enable or disable the pulldown display for the HD Time Code character window.

When set to Off, the HD Pulldown character window will be turned off.

When se to On, the HD Pulldown character window will be displayed if the HD Time code Window is set to On.

3.6.3. Configuring the Debug Windows

There are three windows available to show various debug displays about the camera adapter operation. The *Debug Windows* menu contains items that are used to enable the three windows and to set their vertical position on the screen. (The horizontal position of the debug windows is fixed as many of the debug window displays occupy the entire character line.) There are three menu items for each character window to enable the window, to select what information will be shown and to set its vertical position. For the sake of simplicity only the menu items for the *Debug Window 1* will be shown in the manual.

3.6.3.1. Enabling the Debug Window

- *CHAR WINDOWS*
  - *Debug Windows*
    - *Debug Window 1*
      - *Off*
      - *On*

This control allows the user to enable or disable the Debug 1 character window.

When set to Off, the Debug 1 character window will be turned off.

When set to On, the Debug 1 character window will be displayed if the OSD Windows menu item is set to On.

3.6.3.2. Selecting What Information is Displayed in the Debug Character Window

See sections 5.4.1 to 5.4.17 for a description of the contents of the debug character windows.

CHAR WINDOWS	This control allows the user to set what is displayed in the Debug 1 character window.
Debug Windows	
DB Win 1 Display	
Camera Status	Displays the tape transport status from camera (Sony HD versions only)
Camera TC	Displays time code from camera parallel connector (Sony versions only)
Adapter LTC	Displays camera adapter LTC time code
Return LTC	Displays return LTC time code from base station (fiber versions)
Adapter LTC UB	Displays camera adapter LTC user bits
Return LTC UB	Displays returns LTC user bits from base station (fiber versions)
VITC output	Displays the VITC output
LTC output	Displays the LTC output
DV TC Output	Displays the DV TC output
HDSDI In ATC	Displays Ancillary time code from HDSDI input
HDSDI In ATC UB	Displays Ancillary user bits from HDSDI input
Video Std	Displays video standard in use
Temperature	Displays internal temperature
Hardware	Displays GPI inputs, GPO outputs, and switch settings
Fiber TDM	Displays status information about the fiber connection (fiber versions)
ATC Inserter	Displays status information about the Ancillary time code inserter
ATC Inserter UB	Displays status information about the Ancillary time code user bits
Config Status	Displays time before configuration settings are saved in FLASH memory
Pulldown Ref	Displays the pulldown reference
TC In Re	Displays the values of input time codes relative to Video TC Source
Summary	Displays summary info
DV Statusl	Displays the status of the DV connection

3.6.3.3. Setting the Vertical Position of the Debug Window

CHAR WINDOWS	This control allows the user to set the vertical position of the Debug 1 character window.
Debug Windows	
DB Win 1 Vert	
1 to max vert posn	1 to 24.

3.7. CONFIGURING THE TIME CODE

The *TIME CODE* menu items are used to configure parameters associated with the adapter time codes. The chart below shows the items available in the *TIMECODE* menu. Sections 3.7.1 to 3.7.7 gives detailed information about each menu item.

Video TC Source	Selects the source of the Video time code
LTC Out Source	Selects the source of the LTC output time code
LTC Out Rate	Selects the frame rate of the LTC output time code
HD ATC Inserter	Enables/disables the Ancillary Time code inserter (HD versions only)
SD VITC Inserter	Enables/disables the VITC inserter
525 VITC Line	Sets the VITC insertion line on 525 line video outputs
625 VITC Line	Sets the VITC insertion line on 625 line video outputs
VITC User bits	Sets the source of the VITC user bits (HD versions Only)

3.7.1. Selecting the Source of Time code for the Video Outputs

TIMECODE
- *Video TC Source*
  - *Video Source*
  - *Adapter LTC In*
  - *Return LTC*
  - *Free Run*

With this control, you can select the source of time code that will be inserted on the HD and SD output video of the camera adapter.

When set to Video Source, the time code source will be determined by the Video Source menu item setting. When the Video Source menu item is set to Camera, the time code will be taken directly from the multi-pin connector on the rear of the cameras (Sony models only). When the Video Source menu item is set to HDSDI Input, the time code will be extracted from the HDSDI input by the ATC time code reader.

When set to Adapter LTC In, the time code source will be the time code connected to the camera adapter LTC In connector.

When set to Return LTC, the time code source will be the time code connected to the base station RETURN LTC IN connector and sent up the fiber optic link to the camera adapter (fiber versions only).

On Sony HDW-700A camcorders the timecode is not available on the parallel connector. You will have to connect the LTC out from the camcorder to the LTC IN connector on the camera adapter. Set the *VITC/ATC Source* menu item to *Adapter LTC In* to use the LTC input aas the time code source.

3.7.2. Selecting the Source of Time code for the Adapter LTC Output

TIMECODE
LTC Out Source
Video Source
Return LTC
Test Gen
Adapter LTC In

With this control, you can select the source of time code that will be inserted on the HD and SD output video of the camera adapter.

When set to Video Source, the LTC output time code source will be determined by setting the Video Source menu item. When the Video Source menu item is set to Camera, the time code will be taken directly from the multi-pin connector on the rear of the cameras (Sony models only). When the Video Source menu time is set to HDSDI Input, the ATC time code reader will extract the LTC output time code from the HDSDI input.

When set to Return LTC, the LTC output time code will be the time code connected to the base station RETURN LTC IN connector and sent up the fiber optic link to the camera adapter. Connect the LTC OUT to the camera's LTC input connector to send the same time code to all cameras of a multi-camera shoot using this mode (fiber versions only).

When set to Test Gen, the time code output will be a free running number generated locally in the camera adapter. This function is useful for testing valid time code connections.

When set to Adapter LTC In, the LTC output time code will be the time code connected to the camera adapter LTC IN connector. This mode is usually used for testing purposes only.

3.7.3. Selecting the frame rate of the LTC Output (HD versions only)

TIMECODE
LTC Out Rate
SD Video
HD Video
Return LTC
Adapter LTC In

This control determines whether the LTC output of the camera adapter will be operating at the HD or SD rates. The time code source is set using the LTC Source menu item. This menu item may change when a different time code source is selected.

When set to SD Video, the LTC output will be at the down-converted video frame rate. If the LTC Source menu item is set to Video Source, the LTC will be in time with the down-converted video from the video source.

When set to HD Video, the LTC output will be at HD time code frame rate. If the LTC Source menu item is set to Video Source, the LTC will be in time with the HD video from the video source.

When set to Return LTC, the LTC output will be set by the Return LTC frame rate. If the LTC Source menu item is set to Return LTC, this choice is the only one available.

When set to Adapter LTC In, the LTC output will be set by the Adapter LTC input frame rate. If the LTC Source menu item is set to Adapter LTC In, this choice is the only one available.

3.7.4. Selecting Whether RP188 Ancillary Time Code will be Inserted on the HD Video Outputs (HD versions only)

TIMECODE
HD ATC Inserter
Off
On

This control determines whether RP 188 ancillary time code (ATC) will be inserted on the HDSDI video outputs. The time code source is set using the VITC/ATC Source menu item. The user bits will be transferred from the source along with the time bits.

When set to Off, the ATC inserter will be disabled.

When set to On, the ATC inserter will be enabled.

3.7.5. Selecting Whether VITC will be Inserted on the SD Video Outputs

TIMECODE
SD VITC Inserter
Off
On

This control determines whether vertical interval time code (VITC) will be inserted on the SDI and Camera NTSC/PAL video outputs. The 525 VITC Line and 625 VITC Line menu items set the insertion line for the VITC.

The time code source is set using the VITC Source (VITC/ATC Source on the HD version) menu item. On SD versions, the user bits will be transferred from the source along with the time bits. On HD versions, the user bits will be transferred from the source set by the SD VITC user bits menu item.

When set to Off, the VITC inserter will be disabled.

When set to On, the VITC inserter will be enabled.

3.7.6. Setting the VITC Line for 525 Line Video Outputs

TIMECODE
525 VITC Line
14 & 16
10 to 20

This control determines the line numbers where VITC will be inserted in 525 line video when the SD VITC Inserter menu item is set to On.

VITC will be inserted on two non-adjacent lines as selected by this menu item.

3.7.7. Setting the VITC Line for 625 Line Video Outputs

TIMECODE
625 VITC Line
19 & 21
6 to 22

This control determines the line numbers where VITC will be inserted in 625 line video when the SD VITC Inserter menu item is set to On.

VITC will be inserted on two non-adjacent lines as selected by this menu item.

3.7.8. Setting The Contents Of The VITC User Bits (HD versions only)

TIMECODE *VITC User Bits* *Source user bits* *HD Time Code*	This control determines whether VITC user bits will contain the original HD time numbers or the original user bit numbers. The VITC generator must be enabled using the SD VITC Inserter menu item. When the incoming video is at a different frame rate than the down-converted video, it is often useful to carry the original time code information in the VITC user bits. For other applications, it is necessary to carry the user bits from the time code source into the VITC user bits.

3.8. CONFIGURING THE AUDIO

The *AUDIO* menu items are used to configure parameters associated with the audio and intercom functions of the camera adapter. The chart below shows the items available in the *AUDIO* menu. Sections 3.8.1 to 3.8.1.1 give detailed information about each menu item.

InterCom/IFB	A set of sub menus that is used to control the Intgercom and IFB (Fiber versions only)
Audio Source	Selects the source of the camera audio
Local Audio In	Configures the camera adapter local audio input
Mic 3 In Lvl Trim	Adjusts the Audio 3 input microphone level from the nominal –40dB or -60dB level
Camera In 3 Level	Status display showing the input level of channel 3 audio to the camera
Mic 4 In Lvl Trim	Adjusts the Audio 4 input microphone level from the nominal –40dB or -60dB level
Camera In 4 Level	Status display showing the input level of channel 4 audio to the camera
Phantom Power	Enables/disables the phantom power for the microphone inputs
SD Audio Delay	Sets the audio delay for SD outputs
SD Audio Delay Ena	Enables or bypasses embedded audio and DV audio delay
Analog Threshold	Selects analog audio silence detector threshold

3.8.1. Configuring the Intercom and IFB Functions (Fiber versions only)

The *InterCom/IFB* sub-menu items are used to configure parameters associated with the intercom and IFB functions of the camera adapter. These menu items are only available on fiber versions of the Camera adapter. The chart below shows the items available in the *InterCom/IFB* submenu. Sections 3.8.1 to 3.8.1.1 give detailed information about each menu item.

ICom Mic Gain	Sets the microphone level for the intercom headset microphone
ICom Mic Level	Status display showing the intercom microphone input level
ICom Side Tone	Sets the intercom microphone feedback level
ICom Channel	Sets the intercom talk/listen channel
ICom Out	Selects the Intercom output device – mono or stereo headset, speaker
ICom Input Process	Selects the Intercom input processing party/matrix line
Icom Speaker 1 Level	Status display showing the level of channel 1 output to headset/speaker
Icom Speaker 2 Level	Status display showing the level of channel 2 output to headset
Icom Noise Thresh	Selects the Intercom dynamic noise gate threshold
Icom Type	Selects the Intercom party line or matrix type
IFB Volume	Sets the IFB headset output level

3.8.1.1. Selecting the Intercom Microphone Gain

AUDIO
- *InterCom/IFB*
  - *ICom Mic Gain*
    - *45dB*
    - *0 to +60dB*

With this control, you can select the amount of gain that will be applied to the intercom headset microphone you are using. The microphone output audio level is shown on the Icom Mic Level display to help you set the correct operating level.

3.8.1.2. Selecting the Intercom Microphone Level

AUDIO
- *InterCom/IFB*
  - *ICom Mic Level*
    - *-49.5 dBFS*

With this control, you can monitor the current intercom microphone level.

3.8.1.3. Selecting the Intercom SideTone Level

AUDIO
InterCom/IFB
ICom Side tone
0
0 to 255

With this control, you can select the amount of feedback you will hear back in the headset from the microphone. Adjust this control while talking into the microphone to set the desired side tone level. The numbers do not have any specific meaning.

3.8.1.4. Selecting the Intercom Channel

AUDIO
InterCom/IFB
ICom Channel
1
2

With this control, you can select the intercom talk/listen channel.

When the Intercom Out control is set to Stereo Headset, you will be able to listen to both channels at the same time. This control sets the talk channel.

3.8.1.5. Selecting the Intercom Output Device

AUDIO
InterCom/IFB
ICom Out
Speaker
Stereo headset
Mono headset
Stereo-One Chnl

With this control, you can select the intercom output device.

When set to Speaker, you will be able to listen to one channel at a time on the camera adapter speaker. The ICom Channel control sets the talk/listen channel.

When set to Stereo Headset, you will be able to listen to both channels on a double muff headphone. The ICom channel control sets the talk channel.

When set to Mono Headset, you will be able to listen to one channel at a time on a single muff headphone, or a double muff headphone with the muff wires together. The ICom Channel control sets the talk/listen channel.

When set to Stereo-One Chnl, you will be able to listen to one channel at a time, sent to both muffs on a double muff headphone. This mode will allow the user to hear the intercom channel at a greater volume than otherwise possible, as both muffs are driven with the same volume level. The ICom Channel control sets the talk/listen channel.

3.8.1.6. Selecting the Intercom Input Processing

AUDIO
InterCom/IFB
ICom Input Process
Regular
Loud
Louder
Very Loud
Loudest
Calibrate

With this control, you can select various types of input processing that is applied to the audio being received from the other station on the intercom line. This control allows you to optimize the intercom volume levels for various types of applications.

When set to Regular, the intercom audio is amplified linearly over the complete 4Vpp party line or +20dBu maximum range.

When set to Loud, the intercom audio is amplified linearly over the 2Vpp party line or +10dBu nominal range.

When set to Louder, the intercom audio is optimized for maximum volume at –5dB from nominal.

When set to Very Loud, the intercom audio is optimized for maximum volume at –10dB from nominal.

When set to Loudest, the intercom audio is optimized for maximum volume at –15dB from nominal.

Calibrate is only available in Engineering mode.

3.8.1.7. Selecting the Intercom Speaker 1 Level

AUDIO
InterCom/IFB
ICom Speaker 1 lvl
-50.0 dBFS

With this control, you can monitor the current level of intercom channel 1 output to headset/speaker.

3.8.1.8. Selecting the Intercom Speaker 2 Level

AUDIO
InterCom/IFB
ICom Speaker 2 lvl
-54.9 dBFS

With this control, you can monitor the current level of intercom channel 2 output to headset.

3.8.1.9. Selecting the Intercom Noise Threshold Level

AUDIO
InterCom/IFB
ICom Noise Thresh
none
-3 to -96dBFs

With this control, you can select the noise floor threshold for the intercom audio. Audio below this level will be muted by the intercom input processing circuitry.

3.8.1.10. Selecting the Intercom Type

AUDIO
InterCom/IFB
ICom Type
Party Line
Matrix

With this control, you can set the base station for the type of intercom you are using. At this time, only RTS Party Line intercom systems are supported.

3.8.1.11. Setting the IFB Volume

AUDIO
InterCom/IFB
IFB Volume
0 dB
0 to -50dB

With this control, you can set the signal level that matches the IFB headset you are using.

3.8.2. Selecting the Source of Audio for the Camera

3.8.2.1. Selecting the Audio Source - Panasonic Versions

AUDIO
Audio Source
Camera 1 / 2 Only
Return 1 / 2 / 3 / 4
OdBFS Tone
-20dBFS Tone

The Panasonic cameras have two analog audio inputs directly on the camera. With this control, you can select the source of audio that will be sent to the camera via the multi-pin connector. See section 2.9.2 for information on connecting audio to the Panasonic cameras.

When set to Camera 1/2 only, the camera audio is taken from the camera's XLR audio inputs. The camera adapter's audio functions are powered off.

When set to Return 1/2/3/4, the audio for both audio channels is connected to the base station RETURN AUDIO IN or RETURN AES IN connectors and sent up the fiber optic link to the camera adapter. Return audio channels 1 and 2 are output on the camera adapter's AUDIO OUT XLR connector and should be connected to the Audio channel 1 and 2 inputs on the camcorder (fiber versions only).

In order to send return audio from the base station you need to select the type of return audio input on the base station menu. See section 4.8.2.

Select *0dBFs Tone* or *–20dBFS Tone*, to output test tones on the audio outputs. The tones are output on the camera adapter's AUDIO OUT XLR connector and should be connected to the Audio channel 1 and 2 inputs on the camcorder.

3.8.2.2. Selecting the Audio Source - Sony versions

AUDIO
- *Audio Source*
  - *Camera 1 / 2 Only*
  - *Local 3 / 4*
  - *Return 1 / 2 / 3 / 4*
  - *OdBFS Tone*
  - *-20dBFS Tone*
  - *Analog Loopback*

The Sony cameras have two analog audio inputs directly on the camera. However, these cameras have the ability to record up to four channels of audio. Channels 1 and 2 are taken directly from the analog inputs on the camera. Channels 3 and 4 can be sent to the camera through the multi-pin connector on the back of the camera. With this control, you can select the source of audio that will be sent to the camera via the multi-pin connector. See section 2.9.1 for information on connecting audio to the Sony Cameras.

In order to record audio channels 3 and 4 on the camera, you will have to set the appropriate menu items in the camera.

When set to *Camera 1 / 2 Only,* the camera audio is taken from the camera's XLR audio inputs. The camera adapter's audio functions are powered off.

When set to *Local 3 / 4,* the audio for channels 3 and 4 is connected to the camera adapter's analog or AES inputs. The audio for channels 1 and 2 is connected directly to the camcorder's Audio 1 and 2 input XLR connectors. The camera adapter's audio output can be used to monitor the audio that has been recorded on channels 3 and 4 of the camera. The *Local Audio In* menu item is used to select the type of audio input.

When set to *Return 1 / 2 / 3 / 4,* the audio for all 4 audio channels is connected to the base station **RETURN AUDIO IN** or **RETURN AES IN** connectors and sent up the fiber optic link to the camera adapter. Return audio channels 1 and 2 are output on the camera adapter's AUDIO OUT XLR connector and should be connected to the Audio channel 1 and 2 inputs on the camcorder. Return audio channels 3 and 4 are sent directly to the camera through the multi-pin connector on the rear of the camcorder. (Fiber versions only)

In order to send return audio from the base station you need to select the type of return audio input on the base station menu. See section 4.8.2.

Select *0dBFs Tone* or *–20dBFS Tone*, to output test tones on the audio outputs. The tones for audio channels 1 and 2 are output on the camera adapter's **AUDIO OUT XLR** connector and should be connected to the Audio channel 1 and 2 inputs on the camcorder. The tones for audio channels 3 and 4 are sent directly to the camera through the multi-pin connector on the rear of the camcorder.

Select *Analog Loopback*, to test the functions of the audio input and output circuitry. The audio from Analog inputs 3 and 4 are output directly to the camera adapter's AUDIO OUT XLR connector.

3.8.3. Selecting the Line/ Microphone or AES Audio Inputs (Sony versions Only)

AUDIO
Local Audio In
Line +4dBu
Mic –40dBu
Mic –60dBu
AES

With this control, you can select the type of audio input for audio channels 3 and 4 that will be sent to the camera via the multi-pin connector. This menu item is only applicable when the Audio Source menu item is set to Local 3/4.

When set to Line +4dBu, the input audio circuitry is configured to accept line level inputs. Connect the line level audio for channels 3 and 4 to the AUDIO 3 IN and AUDIO 4 IN three-pin XLR connectors on the camera adapter.

When set to Mic -40dBu, or Mic –60dBu, the input audio circuitry is configured to accept the respective microphone level inputs. Connect the microphone level audio for channels 3 and 4 to the AUDIO 3 IN and AUDIO 4 IN three-pin XLR connectors on the camera adapter. If the microphones require external power, select the appropriate phantom power voltage using the Phantom Power menu item.

When set to AES, the input audio circuitry is configured to accept a balanced AES signal input. Connect the AES audio for channels 3 and 4 to pins 1 and 6 of the AUXI/O 15-pin D connector on the camera adapter.

3.8.4. Setting the Microphone Input Levels (Sony Versions Only)

There are two controls that allow you to adjust independently the microphone input levels. For the sake of simplicity, only the controls for microphone input 3 will be shown.

AUDIO
Mic 3 In Lvl Trim
0 dB
–5 to +5 dB

With this control, you can adjust the microphone input levels from the nominal –40 or –60dB levels. This menu item is only applicable when the Local Audio In menu item is set to Mic –40dBu, or Mic –60dBu.

When set to 0dB, the nominal level selected by the Local Audio In control is used. The audio level going to the camera is shown on the Camera in 3 Level display to help you set the correct operating level. Setting the control to another value adjusts the level from the nominal.

3.8.5. Selecting the Microphone Phantom Power Voltage (Sony Versions Only)

AUDIO
Phantom Power
Off
12 volt
48 volt

With this control, you can select the type of phantom power that will be supplied to the microphones. This menu item is only applicable when the Local Audio In menu is set to Mic –40dBu, or Mic –60dBu.

When set to Off, phantom power is not supplied to the microphones.

When set to 12 volt, 12V DC phantom power is supplied to the microphones.

When set to 48 volt, 48V DC phantom power is supplied to the microphones.

3.8.6. Setting the SD Audio Delay

AUDIO *SD Audio Delay* *4000* *2000 to 6500*	This control allows the user to adjust the amount of delay being applied to the embedded audio on the down-converted SD and 1394 audio. Delay values are set in samples.

3.8.7. Enabling the SD Audio Delay

AUDIO *SD Aud delay ena* *Enable* *Bypass*	This control allows the user to turn off the delay being applied to the embedded audio on the down-converted SD and in the 1394 audio. Set to Enable to apply the delay set by the SD Audio Delay menu item. Set to Bypass to disable the delay.

3.8.8. Setting the Analog Audio Silence Threshold

AUDIO *Analog Threshold* *0 dBFs to –132 dBFs*	This control allows the user to set the level at which the analog audio will be detected as missing. You can set the threshold in 6 dB increments

3.9. CONFIGURING THE IEEE 1394 DV CODEC

The *1394A* menu items are used to configure parameters associated with the 1394A DV Codec. The chart below shows the items available in the *1394A* menu. Sections 3.9.1 and 3.9.2 give detailed information about each menu item.

DV Mode	Selects whether the IEEE1394A port will be used as an output or input
DV Audio Source	Selects the source of the IEEE 1394A DV Codec Audio
DV Auto Record	Selects the Auto Record function for the DV Codec
DV Codec Reset	Resets the 1394 Connection to the recording DV device

In order to use the IEEE 1394A codec functions of the camera adapter you will have to set the *IEEE 1394A* menu item on the *POWER SAVE* menu to On

3.9.1. Selecting the DV Codec Operating Mode

1394A
DV Mode
Encode
Decode
Off

With this control, you can select whether the 1394A codec will be used as an input or output device.

When set to Encode, the 1384A codec will be used as an output and will encode the standard definition output video into an SMPTE 314M compliant 25Mb/s DV stream. The DV output will contain the embedded time code from the output video and two channels of audio selected by the DV Audio Source menu item.

When set to Decode, the 1394A codec will be used as an input and will decode an incoming SMPTE 314 M compliant 25Mb/s DV stream. The decoded video will be available on the Camera NTSC/PAL and Camera SDI (Aux SDI for the HD versions) BNC outputs. The embedded time code on the DV input video will be inserted as VITC on the video outputs. The two channels of audio decoded from the DV stream will be embedded on the SDI (Aux SDI for the HD versions) BNC outputs and will also be available on the AUDIO OUT 5 pin XLR connector as analog audio.

When set to Off, the 1394 codec will be disabled.

3.9.2. Selecting the DV Codec Audio Source

1394A
DV Audio Source
Ch 1/2
Ch 3/4
Tone

The SMPTE 314M DV25 standard allows the encoding of two audio channels along with the video. With this control, you can select which two channels of audio will be encoded by the DV codec.

Select *Ch1/2* to encode audio channels 1 and 2 in the DV stream.

Select *Ch 3/4* to encode audio channels 3 and 4 in the DV stream.

Select *Tone* to put the Tone generator signal into the DV stream.

3.9.3. Selecting the DV Codec Auto Record Function

1394A
DV Auto Record
Off
Sony
Varicam

With this control, you can select whether the DV device will automatically go into record when the camera starts recording.

Manual or external tally start and stop 1394 DV record
Use Sony camera record status to enable 1394 DV record
Use Varicam ANC UB flags to enable 1394 DV record

When using the Varicam camcorder, it is sometimes impossible to distinguish whether the camcorder is in record or playback mode using the timecode flags. In these rare instances the DV record command may be sent to the DV device when the camcorder is in playback mode.

3.9.4. Resetting the DV Codec

1394A *DV Codec Reset* *No* *Yes*	With this control, you can reset the 1394 connection to the DV recording device. Select Yes, and press the push button to proceed.

3.10. CONFIGURING THE GENERAL PURPOSE INPUTS AND OUTPUTS

The *GPIO FUNCTIONS* menu items are used to configure parameters associated with the general purpose inputs and outputs of the camera adapter. The chart below shows the items available in the *GPIO FUNCTIONS* menu. The camera adapter is fitted with two general purpose inputs (GPI) and with two general purpose outputs. There are identical menu items that are used to configure each input and output. For the sake of simplicity only the menu items for GPI1 and GPO1 are shown in the manual. Sections 3.10.1 to 3.10.3 give detailed information about each menu item.

GPI1 Function	Selects the function of the GPI 1 input
GPI1 Trigger	Selects whether GPI1 will trigger on high or low levels or rising or falling edges
GPI2 Function	Selects the function of the GPI 2 input
GPI2 Trigger	Selects whether GPI2 will trigger on high or low levels or rising or falling edges
GPO1 Function	Selects the function of the GPO 1 output relay
GPO2 Function	Selects the function of the GPO 2 output relay

3.10.1. Selecting the Function of the GPI Inputs

- *GPIO FUNCTIONS*
  - *GPI1 Function*
    - *GPI1 to Base*
    - *OSD Windows*
    - *Intercom Talk*
    - *Intercom Call*
    - *Intercom Channel*
    - *1394 Record*
    - *Aspect Ratio*
    - *Reset Rec Total*

This control is used to select the function of the GPI 1 input. The GPI1Trigger menu item is used to select whether GPI1 will become active on high or low levels, or on rising or falling edges.

Select *GPI1 to Base* to send the GPI1 contract closure information over the fiber optic link to the base station.

Select *OSD Windows* to use GPI1 contact closures to turn the on-screen character windows on and off.

Select *Intercom Talk* to use GPI1 contact closures to activate the intercom microphone. This function will duplicate the function of the intercom talk button on the operator side of the camera adapter.

Select *Intercom Call* to use the GPI1 contact closures to send an intercom call signal to other belt packs connected to the intercom connector of the base station.

Select *Intercom Channel* to use GPI1 contact closures to select the intercom talk channel to other belt packs connected to the intercom connector of the base station.

Select *1394 Record* to use GPI1 contact closures to send a record command to the DV record device connected to the 1394A connector.

Select *Aspect Ratio* to use GPI1 contact closures to select one of the three aspect ratios of the down-converter (HD versions only). See section 3.5.4.

Select *Reset Rec Total* to use GPI1 contact closures to reset the elapsed Record time counter used to keep track of the amount of tape that has been used. On some Sony camcorders this counter will be automatically reset when the tape is ejected. On other camcorders that do not provide a “Tape Eject” tally, you can use this GPI function to reset the counter.

3.10.2. Selecting the How the GPI Triggers

- *GPIO FUNCTIONS*
  - *GPI1 Trigger*
    - *Active Closed*
    - *Active Opened*
    - *Toggle Closing*
    - *Toggle Opening*

This control is used to select whether GPI1 will become active on opening or closing transitions or will toggle states when the GPI1 is operated. The function of the GPI1 input is set using the GPI1 Function menu item.

When set to *Active Closed*, the selected GPI1 function will activate when the GPI1 input is being closed to ground. For example, the OSD windows could turn on when the input goes from opened to closed.

When set to *Active Opened*, the selected GPI1 function will activate when the GPI1 input is being opened (released from being closed to ground). For example, the OSD windows could turn on when the input goes from closed to opened.

When set to *Toggle Closing*, the selected GPI1 function will change state when the GPI1 input is being closed to ground. For example, if the OSD windows are on, they will turn off when the input goes from opened to closed. Similarly, if the OSD windows are off, they will turn on when the input goes from opened to closed.

When set to *Toggle Opening*, the selected GPI1 function will change state when the GPI1 input being opened (released from being closed to ground). For example, if the OSD windows are on, they will turn off when the input goes from closed to opened. Similarly, if the OSD windows are off, they will turn on when the input goes from closed to opened.

3.10.3. Selecting the GPO Functions

- *GPIO FUNCTIONS*
  - *GPO1 Function*
    - *None*
    - *Base GPI1*
    - *Local GPI1*
    - *Intercom Call*
    - *Intercom Talk*
    - *Record Tally*
    - *Rec-Flag Tally*
    - *Test*
    - *Test-on*
    - *Test-off*

This control is used to select the function of the GPO1 relay output. There are normally open and normally closed rely contacts provided.

Select None to disable the GPO1 output.

Select Base GPI1 to activate the output when the base station GPI1 input is closed to ground. The base station contact closure information is sent to the camera adapter over the fiber optic link.

Select Local GPI1 to activate the output when the local GPI1 input at the camera adapter is closed to ground. This function is useful for testing the relay output.

Select Intercom Call to activate the output when the base station receives a call signal from the party line intercom. The intercom call information is sent to the camera adapter over the fiber optic link.

Select Intercom Talk to activate the output when the Intercom Talk switch at the camera adapter is pressed. This function is useful for signalling when the intercom microphone is active.

Select Record Tally to activate the output when the Sony camcorder issues a record tally signal to the camera adapter. This function is useful for signalling when the camcorder is recording.

Select Rec-Flag Tally to activate the output when the Panasonic camera issues the correct flag bits in the user bits of the camera time code and the time code is lower than the Max TC counter value. This function is useful for signalling when the Panasonic camcorder is recording. Use the GPI function to reset the Max TC counter when a new video tape is inserted into the camcorder.

Select Test to toggle the GPO relay between the open and closed conditions. Select Test-on to activate the GPO relay to the closed condition. Select Test-off to de-activate the GPO relay to the open condition. These functions are useful for testing the relay output.

3.11. FIRMWARE UTILITIES

The *FIRMWARE* menu items are used to view the firmware versions of the microprocessors inside the camera adapter and base station. The chart below shows the items available in the *FIRMWARE* menu. Sections 3.11.1 to 3.11.5 give detailed information about each menu item.

The Camera adapter and base station must have compatible versions of firmware to operate properly. If any of the versions showing on the *Firmware version* screen show question marks (??) or the word *Incompatible* for the version that indicates that the version with the question marks is not compatible with the camera adapter firmware. We recommend upgrading both the camera adapter and base station firmware to the current version on the Evertz FTP site (www.evertz.com)

Adapter Version	Shows the application firmware version of the camera adapter
Adapter Options	Shows the options installed in the camera adapter
DV Codec Version	Shows the firmware version of the DV Codec in the camera adapter
FPGA Rev	Shows the revision of the FPGA logic in the camera adapter
Base Version	Shows the application firmware version of the base station
Base Options	Shows the options installed in the base station
Factory Reset Most	Reset most Camera Adapter saved settings to factory default but keep network, ident, gang, and calibrate menu settings
Factory Reset	Resets the all Camera Adapter saved settings to factory defaults (Engineering mode only)

3.11.1. Viewing the Camera Adapter Firmware Version

FIRMWARE
Adapter Version
HD Cam 1.0 b25

This control is used to view the application firmware version of the camera adapter.

3.11.2. Viewing the Camera Adapter Options

FIRMWARE
Adapter Options
Fiber, 1394

This control is used to view the options installed in the camera adapter.

3.11.3. Viewing the DV Codec Firmware Version

FIRMWARE
DV Codec
1.0b25

This control is used to view the firmware version of the DV Codec processor in the camera adapter.

3.11.4. Viewing the FPGA Version

FIRMWARE
FPGA Rev
1.0b25

This control is used to view the version of the FPGA logic in the camera adapter.

3.11.5. Viewing the Base Station Firmware Version

FIRMWARE
Base Version
HD Base 1.0 b25

This control is used to view the application firmware version of the base station when the camera adapter is connected by the fiber optic link.

Incompatible versions will be indicated by a flashing version number.

3.11.6. Viewing the Base Station Options

FIRMWARE
Base Options
Fiber, 1394, Camera Power

This control is used to view the options installed in the base station.

3.11.7. Resetting the Most Common Camera Adapter Settings to Factory Defaults

FIRMWARE
Factory Reset Most
No
Yes

This control is used to reset most saved settings to their factory defaults, while still keeping the network, ident, gang, and calibrate menu settings.

Select *Yes* to erase most user menu settings and reboot the unit.

This function is only available on the Engineering menus and should only be used by qualified personnel.

3.11.8. Resetting All the Camera Adapter Settings to Factory Defaults

FIRMWARE
Factory Reset
No
Yes

This control is used to reset the camera adapter to its factory defaults.

Resetting the unit will erase all user menu settings and reboot the unit.

This function is only available on the Engineering menus and should only be used by qualified personnel. Using this function may result in the loss of network communication with the device, and losing factory calibration levels on some hardware signal paths.

3.12. CONFIGURING MISCELLANEOUS CAMERA ADAPTER FUNCTIONS

The *UTILITY* menu items are used to control miscellaneous functions such as fan modes, intercom and IFB mute, etc. The chart below shows the items available in the *UTILITIES* menu

Internal Temperature	Displays the internal temperature of the camera adapter
Fan #1 Mode	Controls the mode for fan # 1
Fan #2 Mode	Controls the mode for fan # 2
Intercom Mute	Mutes the Intercom output
IFB Mute	Mutes the IFB output
Audio Embedder	Enables/disables the audio embedder for the Camera (HD) SDI output
Camera Type	Selects the camera type
Control Gang	Enables ganged operation of menu controls
Configuration	Displays configuration controls

3.12.1. Viewing the Camera Adapter Internal Temperature

UTILITY
Internal Temperature
Temp:

This control is used to view the readings of the three temperature sensors in the camera adapter.

3.12.2. Setting the Fan Operating Modes

There are identical menu items that are used to configure the operating mode for each of the two fans in the camera adapter. For the sake of simplicity only the menu item for fan 1 is shown in the manual.

UTILITY
Fan 1 mode
On
Auto
35 C
….
70 C
Off

This control selects the operating mode for Fan 1.

Fan is always on
Fan is on unless camera is in Record (or temperature exceeds 71)
Fan will turn on at maximum speed at various internal temperatures (degrees Celsius)

Fan is always off
Caution: Unit may overheat if fan is turned off.

3.12.3. Muting the Intercom Output

UTILITY
Intercom Mute
Normal
Mute

This control mutes the selected intercom output device.

3.12.4. Muting the IFB Output

UTILITY
IFB Mute
Normal
Mute

This control mutes the selected IFB output device.

3.12.5. Selecting Whether Audio will be embedded on the HD and SD SDI Video Outputs

UTILITY
Audio Embedder
Off
On

This control determines whether the audio will be embedded on the HD and SD SDI video outputs.

When set to Off, the audio embedders will be disabled.

When set to On, the audio embedders will be enabled.

3.12.6. Selecting Camera type

UTILITY
Camera Type
Sony
Varicam

This control allows the user to select whether a Sony or Panasonic Varicam camera is being used.
Set to *Sony* for all Sony Models
Set to *Varicam* for all Panasonic Models

3.12.7. Ganged Menu Control Operation

When the Camera adapter is part of a Network Gang, changing its menu items will cause the menus of all the other member camera adapters in the same gang to follow the menu changes. Ganged operation is disabled while in Engineering mode. You can also send the camera adapter configuration to other gang members. (see section 3.12.8.1). When the Camera adapter is part of a gang the word **GANGED** will be shown at the top of its menu screen to remind you that you are affecting other devices in the network. See section 4.16 for more information about networking large systems.

UTILITY
Control Gang
None
1 to 5

This control allows the user to assign this camera adapter to a specific gang (grouping) of networked camera adapters.
Set to *None* if you do not want to this camera adapter part of a gang.
Select the gang number you want this camera adapter to be a part of.

3.12.8. Sending and Retrieving Configurations from other Networked Camera Adapters

There are two menu items that allow you to load the camera adapter configuration from other camera adapters on the network, or to send this camera adapter's configuration to other camera adapters. In order to see these menu items the camera adapter must be connected to a base station that is networked to other base stations on a common subnet. See section 4.13.6 for information on setting the I/P addresses for the system. See section 4.16 for a more complete description of features available when camera adapters and base stations are networked.

3.12.8.1. Sending Configurations to other Networked Camera Adapters

UTILITY	This control is used to send this Camera Adapter's configuration settings to another Camera Adapter on the network.
Configuration	
Send Config to	
None	Do not send this configuration
1 to 9, A to Z	Select individual camera adapters by their System ID number
Gang 1 to Gang 5	Select groups of camera adapters by their Gang number

You will be prompted to confirm your choice as sending the camera adapter configuration will overwrite the settings in the target device.

3.12.8.2. Getting Configurations from other Networked Camera Adapters

UTILITY	This control is used to set this Camera Adapter's configuration settings from another Camera Adapter on the network.
Configuration	
Get Config from	
None	Do not get any configuration
1 to 9, A to Z	Select individual camera adapters by their System ID number
Gang 1 to Gang 5	Select groups of camera adapters by their Gang number

You will be prompted to confirm your choice as getting the camera adapter configuration will overwrite the settings in this camera adapter.

3.13. ENGINEERING FUNCTIONS

The *ENGINEERING* menu items are used for troubleshooting or diagnostic purposes to control various hardware devices inside the camera adapter. These menu items are not used during normal operation of the camera adapter and are not available within the normal *SETUP* menu. In order to access the *ENGINEERING* menu you must enter the menu system by pressing the pushbutton while holding the toggle switch in the Up position. The chart below shows the items available in the *ENGINEERING* menu

The *ENGINEERING* menu choices will overwrite some of the normal configurations choices from the other menus and should only be used under the direction of Evertz service personnel. All *ENGINEERING* menu items except those in the *Calibration* menu are not saved in non-volatile memory and will be restored to their normal settings on power up.

Calibrate	Sets various hardware calibration levels
HD H Filter	Selects the HD horizontal filter
DV Audio In	Selects the audio input for the IEEE 1394A Codec in Encode mode
Audio Clk	Selects the source of the sample rate converter clock
SRC 3 / (4) In	Selects the input source for Sample Rate Converters 3 and 4
CAM 3 / 4 In	Selects the source of the camera 3 / 4 audio input
SRC 1 / (2) In	Selects the input source for Sample Rate Converters 1 and 2
Audio Out XLR	Selects the source of audio for the Audio Out connector
Intercom/IFB	Selects the source of the Intercom Headset and IFB audio (mux 8, 12)
Tone L Mute	Mutes Left channel Tone Generator
Tone R Mute	Mutes Right channel Tone Generator
Fiber Out	Selects the source of video to send to the base station over fiber
Camera HDSDI Out	Selects the source of video for the Camera (HD) SDI output
Test	Performs Hardware Tests

3.13.1. Calibrating Hardware Levels

The *Calibration* menu items are used to set hardware gain levels for the video outputs and other calibration items.

NTSC/PAL Gain	Adjusts the Camera NTSC/PAL video output gain
NTSC/PAL Hue	Adjusts the Camera NTSC/PAL video hue gain
NTSC/PAL Y Gain	Adjusts the Camera NTSC/PAL video luminance output gain
NTSC/PAL CrCb Gain	Adjusts the Camera NTSC/PAL video chroma output gain
Menu Y Gain	Adjusts the Camera Menu luminance video gain
Reset Cal Items	Reset the Calibrate menu settings
Test	Various items used to test the camera adapter hardware

3.13.1.1. Setting the Camera NTSC/PAL Video Output Gain

ENGINEERING
Calibrate
NTSC/PAL Gain
-64 to 64

This control allows the user to adjust the output gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

3.13.1.2. Setting the Camera NTSC/PAL Video Output Hue

ENGINEERING
Calibrate
NTSC/PAL Hue
-127- to 127

This control allows the user to adjust the hue of the camera NTSC/PAL video output in steps of 0.5 degrees.

3.13.1.3. Setting the Camera NTSC/PAL Video Output Luminance Gain

ENGINEERING
Calibrate
NTSC/PAL Y Gain
-127- to 127

This control allows the user to adjust the output luminance gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

3.13.1.4. Setting the Camera NTSC/PAL Video Output Chroma Gain

ENGINEERING
Calibrate
ITSC/PAL CrCb Gain
-127- to 127

This control allows the user to adjust the output chroma gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

3.13.1.5. Setting the Camera Menu Luminance Gain

ENGINEERING
Calibrate
Menu Y Gain
-40 to 40

This control allows the user to adjust the output luminance gain of the luminance channel used to return the camera menus to the base station. When set to 0, the nominal output video level will be 100 IRE.

3.13.2. Selecting the HD H Filter

ENGINEERING
HD H Filter
Min
-10 to -1
Nominal
1 to 10
Max

This control allows the user to set the sharpness of the HD Horizontal filter applied before downconversion.

3.13.3. Selecting the DV Audio Input

ENGINEERING
DV Audio In
Camera 1/2
Camera 3/4
SDI In 1/2
SDI In 3/4
Tone

This control allows the user to manually override the normal DV audio input. This menu setting is not remembered during a power cycle.

3.13.4. Selecting the Audio Clock Source

ENGINEERING
Audio Clk
Camera
Local/SDI

This control allows the user to manually override the normal audio clock source. This menu setting is not remembered during a power cycle.

3.13.5. Selecting the SRC 3/4 Source

ENGINEERING
SRC 3/(4) In
AES 3/4
Return 1/2 (3/4)
SDI In 1/2 (3/4)
Analog 1/2 (3/4)
AES 0dBFS Tone
AES –20dBFS Tone

This control allows the user to manually override the normal audio inputs to SRC 3 and 4. This menu setting is not remembered during a power cycle.

3.13.6. Selecting the Camera 3/4 Source

ENGINEERING
Cam 3/4 In
SRC4
Audio 3/4

This control allows the user to manually override the normal camera audio channel 3 & 4 input source. This menu setting is not remembered during a power cycle.

3.13.7. Selecting the SRC 1/(2) Source

ENGINEERING
SRC 1/(2) In
Cam Out 1/2 (3/4)
SDI In 1/2 (3/4)

This control allows the user to manually override the normal audio inputs to SRC 1 and 2. This menu setting is not remembered during a power cycle.

3.13.8. Selecting the Audio Output Source

ENGINEERING
Audio Out XLR
SRC4
Audio 3/4 In
SDI In 3/4
Cam Out 3/4
SRC3
DV Codec Out
SDI In 1/2
Cam Out 1/2
0dBFS Tone
-20dBFS Tone

This control allows the user to manually override the normal audio output XLR source. This menu setting is not remembered during a power cycle.

3.13.9. Muting the Left Channel of the Tone Generator

Since the Tone L and Tone R Mute menu items are identical, only the Tone L Mute menu item is included in the manual.

ENGINEERING
Tone L Mute
Normal
Mute

This control allows the user to mute the tone generator left channel. This menu setting is not remembered during a power cycle.

3.13.10. Selecting the Fiber Output Source

ENGINEERING
Fiber Out
HDSDI In Direct
Video Source

This control allows the user to manually override the normal fiber output video source. This menu setting is not remembered during a power cycle.

3.13.11. Selecting the Camera HDSDI Output Source

ENGINEERING
Camera HDSDI Out
HDSDI In Direct
Video Source

This control allows the user to manually override the normal video source camera HDSDI output BNC. This menu setting is not remembered during a power cycle.

3.13.12. Testing the Equipment

The *Test* menu items are used to enable equipment test modes. These menu items are not remembered during a power cycle.

LED Test	Tests all LEDs except RUN
Cam Remote Test	Tests camera remote control inputs and outputs
COM 2 Test	Tests COM 2 inputs and outputs
COM 2 Level	Selects COM2 signal level
Camera Remote Level	Adjusts the Camera Menu luminance video gain
InterCom	Enables intercom mic/headset
IFB	Enables IFB I/O

3.13.12.1. Testing the LED Indicators

ENGINEERING
Test
LED Test
Off
On

When this control is turned on, the camera adapter will slowly toggle all LED indicators except RUN.

3.13.12.2. Testing the Camera Remote Control Inputs and Outputs

ENGINEERING
Test
Cam Remote Test
Off
Local Loopback
Remote Loopback

When set to Local Loopback, the camera adapter slowly toggles the camera control signal to the camera for local loopback test. This requires an external loopback on the local connector.

When set to Remote Loopback, the camera adapter slowly toggles the camera control signal to the base for remote loopback test. This requires an external loopback on the remote connector.

3.13.12.3. Testing the COM2 Inputs and Outputs

ENGINEERING
Test
COM 2 Test
Off
Local Loopback
Remote Loopback

When this control is set to Local Loopback, the camera adapter slowly toggles the COM2 signal to the camera for a local loopback test. This requires an external loopback on the local connector.

When this control is set to Remote Loopback, the camera adapter slowly toggles the COM2 signal to the base for a remote loopback test. This requires external loopback on the remote connector.

3.13.12.4. Selecting the COM 2 Signal Level

ENGINEERING
Test
COM 2 Level
RS232
RS422

When set to RS232, the signal level is +/-5V, single-ended.

When set to RS422, the signal level is +5V, complimentary pairs.

This setting can be overridden by the base station.

3.13.12.5. Selecting the Camera Remote Signal Level

ENGINEERING
Test
Camera Remote Level
RS232
RS422

When set to RS232, the signal level is +/-5V, single-ended.

When set to RS422, the signal level is +5V, complimentary pairs.

This setting can be overridden by the base station.

3.13.12.6. Enabling the Intercom Mic/Headset

ENGINEERING
Test
InterCom
Power off
Power on

This control allows the user to enable or disable the intercom mic/headset.

3.13.12.7. Enabling the IFB I/O

ENGINEERING
Test
IFB
Power off
Power on

This control allows the user to enable or disable the IFB I/O.

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CHAPTER 4: HOW TO OPERATE THE BASE STATION

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4. HOW TO OPERATE THE BASE STATION

The ECB series Base Stations combine the latest LSI technology with sophisticated embedded microcontroller firmware to provide a powerful, flexible camera adapter/fiber link system. When the HD camera adapter is connected to the ECB-HD base station, the camera video is transported to the base over fiber and broken out to HDSDI video with embedded audio and time code, analog or AES audio, LTC, NTSC/PAL, SDI and IEEE1394A downconverted video with time code. The base station has inputs for return HDSDI, NTSC/PAL, four channels of analog or AES audio, genlock, time code and IFB. The fiber also transports bi-directional RTS intercom, camera remote control (with viewfinder menus), and contact closure tallies. Standard definition models provide similar functionality except for the downconverter.

4.1. AN OVERVIEW OF KEY AND DISPLAY FUNCTIONS

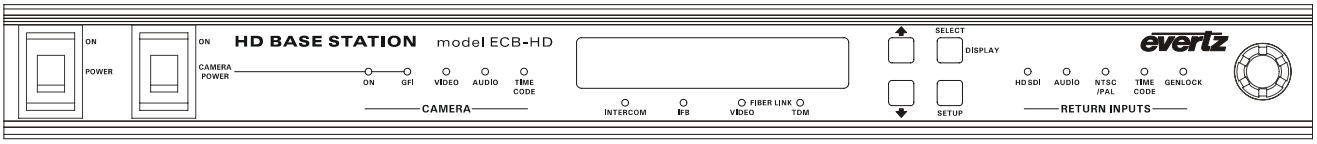

Figure 4-1: Model ECB-HD Front Panel Layout

The front panel controls consist of a 16 digit alphanumeric display, 14 LED status indicators, a 4 pushbutton keypad, and a shaft encoder knob. The front panel also contains a power switch for the main base station power and the optional high voltage camera power output.

The keypad is used to control the front panel *Setup* menu system, and to provide control of the front panel display. The shaft encoder knob is used to navigate the front panel menu system and to adjust the position of the on screen character windows.

A front panel *Setup* menu provides a quick and simple method of configuring the 5600MSC for your application. Sections 4.2 to 4.13 give detailed information on the specific operations required to control the base station.

4.1.1. The Setup Pushbutton Group

The Setup pushbutton group consists of the **SELECT, SETUP,** ↑, ↓ keys and the **SHAFT ENCODER** knob and is used to navigate the *Setup* menu system.

SETUP: Enters the *Setup* menu. When you are in one of the *Setup* menus the **SETUP** key is used to move to the next high sub-menu levels.

SELECT: When in one of the *Setup* menus the **SELECT** key is used to move to the next lower sub-menu levels or to select a menu parameter that is to be changed

↑, ↓, SHAFT ENCODER: When in one of the *Setup* menus, the ↑ and ↓ arrow keys are used to move to various items in the menu system. Turning the **SHAFT ENCODER** knob clockwise (to the right) has the same effect as pressing the ↑ key. Turning the **SHAFT ENCODER** knob counter-clockwise (to the left) has the same effect as pressing the ↓ key (See also section 4.2)

4.1.2. The Display Button Group

The Display pushbutton group consists of the **DISPLAY** key and is used to select the information being displayed on the front panel when you are not in one of the *Setup* menus. Press the **DISPLAY** again to select various *Display* items.

DISPLAY: Allows you to quickly view the video time code and other items.

4.1.3. An Overview of the Status Indicators

There are 14 status indicators located on the front panel that show operational status of the 5600MSC at a glance.

Five status LEDs on the left side give operational status of items related to the Camera Adapter end of the system.

CAMERA POWER ON: On base stations fitted with the camera power option (-CP versions) this green LED indicates that the high voltage camera power is being supplied down the hybrid fiber/copper cable to the ECA-PS power converter module. This LED will be On when the *Camera Power* front panel switch is On, the hybrid fibre/copper cable is connected at both the base station and camera adapter, and the ECA-PS Power converter module is connected to the appropriate connector on the camera adapter. (See section 2.4.12) If the connection is broken at any location then the camera power will automatically shut down and the LED will be Off, regardless of the position of the front panel switch.

CAMERA POWER GFI: On base stations fitted with the camera power option (-CP versions) this red LED indicates that the high voltage camera power supply has detected excessive current leaking to ground (i.e. the ground fault interruption circuitry is active) and that the camera power is automatically shut down. To restore camera power, turn off the *Camera Power* front panel switch and check for shorts in the cable. These may be caused by exposing the camera end of the cable to excessive moisture. After you have removed the ground fault, reconnect the cable to the camera adapter and turn on the *Camera Power* switch. If the ground fault continues, contact Evertz service personnel.

VIDEO: This green LED indicates that the base station is receiving video from the camera adapter over fiber optic link #1.

AUDIO: This green LED indicates that the base station is detecting embedded audio on the video being received from the camera adapter over fiber optic link #1.

TIME CODE: This green LED indicates that the base station is detected embedded time code on the video being received from the camera adapter over fiber optic link #1.

Five status LEDs on the left side and under the dot matrix display show the presence of return signals being sent to the camera adapter from Base Station

HDSDI (SDI): This green LED indicates that the base station is receiving a return SDI (HDSDI on HD versions) signal. This signal will be sent to the camera adapter over fiber optic link #1. This signal can also be selected as the video input to the base station using the *Video Source* menu item.

AUDIO This green LED indicates that the base station is receiving at least one return audio (analogue or AES) signal. This signal will be sent to the camera adapter over fiber optic link #2.

NTSC/PAL: This green LED indicates that the base station is receiving a return NTSC or PAL analogue video signal. This signal will be sent to the camera adapter over fiber optic link #2.

TIME CODE: This green LED indicates that the base station is receiving a return LTC time code signal. This signal will be sent to the camera adapter over fiber optic link #2.

GENLOCK: This green LED indicates that the base station is receiving a return genlock signal. This signal will be sent to the camera adapter over fiber optic link #2.

INTERCOM: This green LED indicates that the base station is receiving audio to or from a party line intercom system. This signal will be sent to and received from the camera adapter over fiber optic link #2.

IFB: This green LED indicates that the base station is receiving a return IFB signal. This signal will be sent to the camera adapter over fiber optic link #2.

Two status LEDs under the dot matrix display show the status of the two fiber links between the camera adapter and the base station

FIBER LINK VIDEO, TDM These green LEDs indicate that the corresponding fiber link is active.

4.1.4. Front Panel Displays

The **DISPLAY** key is used to select what data is being displayed in the alphanumeric display. Press the **DISPLAY** key again to see the various *Display* items. The leftmost characters of the display indicate what is being displayed as follows:

`SYSTEM ID:  1`	System Id
`V:  12:34:56.00`	Video Time Code on camera video
`U:  12 34 56 78`	Video Time Code User Bits on camera video
`RLTC:12:34:56.00`	Return LTC in Time
`RLUB:12 34 56 78`	Return LTC in User Bits
`ALTC:12:34:56.00`	Adapter LTC in Time
`ALUB:12 34 56 78`	Adapter LTC in User Bits
`ATC: 12:34:56.00`	Return HDSDI In Ancillary Time code Time
`AUB: 12 34 56 78`	Return HDSDI In Ancillary Time code User Bits
`GTC: 12:34:56.00`	Free Run time code generator Time
`GUB: 12 34 56 78`	Free Run time code generator User Bits

4.1.5. Special Front Panel Indicators

The following special indicators are used between the seconds and frames digits of the front panel time display to identify non-drop frame and drop frame code when the time code is counting at 29.97 frames per second.

Non Drop Frame	Colon (:)
Drop Frame	Period (.)

4.2. AN OVERVIEW OF THE SETUP MENU SYSTEM

The key to the operational flexibility of the Base Station lies in the *Setup* menu system which provides a quick, intuitive method of configuring the base station, guiding you to the correct setup for your application. The *Setup* menu uses an On Screen Display (OSD) available on the *Camera NTSC/PAL* and *Camera SDI* video outputs of the base station. The menu can also be viewed on the 16 digit front panel alphanumeric display if a video monitor is not available.

The *Setup* menu system consists of a main menu with several choices for each menu item. The **SELECT, SETUP,** ↑, ↓ and **SHAFT ENCODER** knob are used to navigate the menu.

To enter the *Setup* menu system, press the **SETUP** key. This will bring you to the main *Setup* menu where you can use the arrow keys (↑, ↓) or turn the **SHAFT ENCODER** knob to move up and down the list of available top level menu items. In the OSD, an arrow (🗎) moves up and down the left hand side of the menu items to indicate which item you are currently choosing. This top level menu item is also displayed in UPPER CASE on the front panel. Once you have chosen the desired top level menu item, press the **SELECT** key to enter the next lower menu level. Sub menu items are shown in Title Case (The First Letter Of Each Word Is Capitalized) on the front panel.

The top of the menu screen will show the word *BASE* followed by the *System Ident* and then followed by a colon. The *System Ident* is a letter or number allowing the user to distinguish be multiple camera adapters and base stations. The *System Ident* is set in the base station and will be sent to the camera adapter that is connected via the fiber optic cable. See section 4.13.4 for information on setting the *System Ident*. If the Base station is networked and is a member of a network control gang then the wors *GANGED* will also show at the top of the menu screens to remind you that changing this base station's menu settings will also affect other members of the gang. See section 4.13.5 for more information on ganged menu operation.

On all menus, there are two extra items: *Back* and *Exit*. Selecting *Back* is equivalent to pressing the **SETUP** key at any time in the menu, and will take you to the previous menu (the one that was used to get into the current menu). Selecting *Exit* will exit the *Setup* menu and return the display to its normal operating mode. On the main menu, *BACK* and *EXIT* will both take you to the normal operating mode.

Once in a sub menu, there may be another menu layer, or there may be a list of parameters to adjust. If there is another set of menu choices, use the arrow keys (↑, ↓) or turn the **SHAFT ENCODER** knob to display the desired item within the sub-menu and press the **SELECT** key to get to the bottom of the menu tree where a list of parameters to be adjusted will be shown with an = symbol on the OSD and in Sentence case on the front panel. The first letter of the parameter is capitalized.

To adjust any parameter, use the arrow keys (↑, ↓) or turn the **SHAFT ENCODER** knob to move up or down to the desired parameter and press the **SELECT** key. On the OSD, the arrow will move to the right hand side of the line (🗎) indicating that you can now adjust the parameter. On the front panel the active value for the parameter will be shown in Sentence case. Using the arrow keys (↑, ↓) or **SHAFT ENCODER** knob, adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you press the ↑ key or turn the **SHAFT ENCODER** to the right and decrease if you press the ↓ key or turn the **SHAFT ENCODER** to the left.

- **STATUS**
  - Fiber Status
    - Fiber Video Receive
    - Fiber Video Transmit
    - Fiber TDM Basic
    - Fiber TDM Rx Errors
    - Fiber TDM Tx Errors
    - TDM Rx Error Total
    - TDM Tx Error Total
  - Video Status
    - NTSC Return Out
    - Genlock Return Out
    - Viewfinder In
    - HDSDI Video In
    - Fiber Video In
    - 720P Ref
    - 6Hz Ref
    - Video Delay
  - Program Audio Status
    - 1394 Audio
    - Analog Ret 1 Lvl
    - Analog Ret 2 Lvl
    - Analog Ret 3 Lvl
    - Analog Ret 4 Lvl
    - AES 1 In
    - AES 2 In
    - AES 3 In
    - AES 4 In
    - Embedded Audio Gr 1
    - Group 1 Ch 1 Level
    - Group 1 Ch 2 Level
    - Group 1 Ch 3 Level
    - Group 1 Ch 4 Level
    - Embedded Aud Gr 2
    - Embedded Aud Gr 3
    - Embedded Aud Gr 4
  - InterCom/IFB Status
    - ICom Line In 1 lvl
    - ICom Line In 2 lvl
    - IFB In Level
    - ICom Line Out 1 Lvl
    - ICom Line Out 2 Lvl
  - Comm Port Status
    - CamRem to Fiber
    - CamRem Out Level
    - Com2 to Fiber
    - Com2 Out Level
  - 1394 Status
    - Firewire Bus
    - Codec Mode
    - DV Deck
    - Deck Class
    - Deck Mfr
  - Network Status
    - Net Neighbours
    - ECN IP
    - ECB IP
    - ECA IP
    - Gateway IP
    - Subnet Mask
    - MAC Address
    - Net Activity
  - Misc Status
    - Fan 1
    - Fan 2
    - Internal temperature

- **VIDEO**
  - Video Source
  - Mon SDI Out
  - Auto Video Detect
  - Video Standard
  - SD Aspect Ratio
  - SD Out Pull-24Fr
  - SD Pulldown Ref
  - NTSC Setup
  - Test Signal

- **CHAR WINDOWS**
  - OSD Windows
  - Timecode Windows
    - HD Time Window
    - HD Time Vert
    - HD Time Horz
    - HD Pull Display
    - SD Time Window
    - SD Time Vert
    - SD Time Horz
    - User Bits Window
    - User Bits Vert
    - User Bits Horz
  - Debug Windows
    - Debug Window 1
    - DB Win 1 Display
    - DB Win 1 Vert
    - .....
    - Debug Window 3
    - DB Win 3 Display
    - DB Win 3 Vert

- **TIMECODE**
  - Video TC Source
  - LTC Out Source
  - LTC Out Rate
  - HD ATC Inserter
  - SD VITC Inserter
  - 525 VITC Lines
  - 625 VITC Lines
  - VITC User Bits

- **POWER SAVE**
  - Scaler
  - Return Genlock
  - Return NTSC
  - Camera Menaus
  - Intercom
  - IFB

- **AUDIO**
  - Audio Out
    - Analog
    - AES
    - Analog/AES
    - 0 dBFS Tone
    - -20 dBFS Tone
    - Delayed Analog
    - Delayed AES
    - Delay AES/Analog
    - Loopback
    - Analog/In Loop
    - Dly Anlg/In Loop
  - Return Audio In
  - SD Audio Delay
  - SD Aud Delay Ena
  - Analog Threshold

- **1394A**
  - DV Mode
  - DV Audio Source
  - DV Auto Record
  - DV Codec Reset

- **GPIO FUNCTIONS**
  - GPI1 Function
  - GPI1 Trigger
  - GPI2 Function
  - GPI2 Trigger
  - GPO1 Function
  - GPO2 Function

- **FIRMWARE**
  - Base Version
  - Base Options
  - DV Codec Version
  - FPGA Revision
  - Adapter Version
  - Adapter Options
  - Net I/f Version
  - Net I/f Options
  - Factory Reset Most
  - Factory Reset

- **UTILITY**
  - Internal Temperature
  - COM 2 Level
  - Camera Remote Level
  - System Ident
  - Control Gang
  - System IP Configuration
  - System IP
  - Configuration

- **ENGINEERING**
  - Calibrate
  - HD H Filter
  - DV Audio In
  - Audio Clk
  - SRC 3/(4) In
  - Cam 3/4 In
  - SRC 1/(2) In
  - Audio Out XLR
  - InterCom/IFB
  - Tone L Mute
  - Tone R Mute
  - Fiber Out
  - Camera HDSDI Out
  - Test

Figure 4-2: Base Station Menu Overview

When you have selected the desired parameter value press the **SELECT** key to make that value the active value. On the OSD, the arrow (🗎) will move back to the left side of the parameter list. On the Front Panel the menu item will be shown again. Press the **SETUP** key move back up to the next higher menu level. You can select other parameters from that sub-menu by using the use the arrow keys (↑, ↓) or turning the **SHAFT ENCODER** knob, followed by the **SELECT** key. Alternately you can move up one more menu level by pressing the **SETUP** key.

Sections 4.3 to 4.15 provide detailed descriptions of the *Setup* menus. The tables in these sections are arranged in an indented structure to indicate the path taken to reach the control.

4.3. SETUP ON SCREEN MENU – MAIN MENU

The *Setup* menu is arranged in a layered structure that groups similar configuration items together. The following section gives a brief description of the first level of menus that appear when you enter the *Setup* menu. Selecting one of these items will take you to the next menu level. Sections 4.3 to 4.13.7 provide detailed descriptions of each of the sub menus. The tables in sections 4.3 to 4.13.7 are arranged in an indented structure to indicate the path taken to reach the control. Menu items or parameters that are underlined indicate the factory default values.

The descriptions of the *Setup* menu apply to both the SD and HD versions unless otherwise noted.

STATUS	Controls the display of various status information on the On Screen Display
VIDEO	Configures the video standards and other items related to the video outputs
CHAR WINDOWS	Configuration of the On Screen Character window displays
TIMECODE	Configures the time code sources and other items related to the Time code
AUDIO	Configures the audio inputs and outputs and the intercom microphone level
1394A	Configures the 1394 DV Codec
GPIO FUNCTIONS	Configures the General purpose inputs and outputs
POWER SAVE	Manages power of unused I/O devices
FIRMWARE	Displays firmware versions
UTILITY	Contains miscellaneous hardware functions
ENGINEERING	Debug Engineering Items
CAMERA MENUS	Provides access to camera adapter menus

4.4. DISPLAYING THE BASE STATION STATUS

The *STATUS* menu shows various status information about the camera adapter operation. The chart below shows the items available in the *STATUS* menu. The chart below shows the items available in the *STATUS* menu. Sections 4.4.1 to 4.4.8 give detailed information about each menu item. These status displays are generally for engineering use only.

Fiber Status	Displays the base station fiber status items
Video Status	Displays the base station video status items
Program Audio Status	Displays the base station program audio status items
Intercom/IFB Status	Displays the base station intercom and IFB status items
Comm Port Status	Displays the base station communication port status items
1394 Status	Displays the base station 1394 codec status items
Network Status	Displays the Ethernet interface status
Misc Status	Displays miscellaneous status information

4.4.1. Displaying the Base station Fiber Status Information

STATUS
- *Base Fiber Status*
  - *Fiber Video Receive*
  - *Fiber Video Transmit*
  - *Fiber TDM Basic*
  - *Fiber TDM Rx Errors*
  - *Fiber TDM Tx Errors*
  - *TDM Rx Error Total*
  - *TDM Tx Error Total*

This control allows the user to display the Base Station Fiber status displays.

Video received at base station from camera adapter (missing/ok)
Video received at camera adapter from base station (missing/ok)
Time Division Multiplexed (TDM) fiber basic communications (bad/good)
TDM Fiber receive errors/sec at base station from camera adapter
TDM Fiber receive errors/sec at camera adapter from base station
Total Fiber multiplexed signals receive errors
Total Fiber multiplexed signals receive errors

Note: When TDM Basic is bad, the TDM Rx Errors and TDM errors status do not have any meaning.

4.4.2. Displaying the *Base station* Video Status Information

STATUS	This control allows the user to display the Base Station Video status displays.
Video Status	
NTSC Return In	Return NTSC video input at base station
Genlock Return In	Return Genlock input at base station
Viewfinder Out	Viewfinder video output on REMOTE Connector – sent from adapter
HDSDI In	Return HDSDI Input Video at base station
Fiber Video In	Video received on fiber from camera adapter
720P Ref	Status of reference for NTSC/PAL relationship to 720p video
6 Hz Ref	Status of reference for 2:3 pulldown relationship to 24fps video
Video Delay	Video input-to-output delay, measured in HD frames

4.4.3. Displaying the *Base station* Program Audio Status Information

STATUS	This control allows the user to display the Camera Adapter Program Audio Status displays.	
Program Audio Status		
1394 Audio	Status of 1394 Codec Audio (SRC7)	These items are only applicable when ECB is receiving return audio through the analog audio input XLRs
Analog Ret 1 Lvl	Level of channel 1 analog return audio to camera	
Analog Ret 2 Lvl	Level of channel 2 analog return audio to camera	
Analog Ret 3 Lvl	Level of channel 3 analog return audio to camera	
Analog Ret 4 Lvl	Level of channel 4 analog return audio to camera	
AES 1 In	Signal detector – channel 1 AES return audio in	These items are only applicable when receiving AES return audio
AES 2 In	Signal detector – channel 2 AES return audio in	
AES 3 In	Signal detector – channel 3 AES return audio in	
AES 4 In	Signal detector – channel 4 AES return audio in	
Embedded Aud Gr1	Signal detector – embedded audio group 1	These items are only applicable when adapter is receiving audio on local inputs
Group 1 Ch 1 Level	Level of embedded audio group 1 channel 1	
Group 1 Ch 2 Level	Level of embedded audio group 1 channel 2	
Group 1 Ch 3 Level	Level of embedded audio group 1 channel 3	
Group 1 Ch 4 Level	Level of embedded audio group 1 channel 4	
Embedded Aud Gr2	Signal detector – embedded audio group 2	
Embedded Aud Gr3	Signal detector – embedded audio group 2	
Embedded Aud Gr4	Signal detector – embedded audio group 2	

4.4.4. Displaying the *Base station* Intercom/IFB Status Information

STATUS	This control allows the user to display the Base Station Intercom/IFB status displays.
Intercom/IFB Status	
ICom Line In 1 lvl	Level of intercom party/matrix line input, channel 1
ICom Lin In 2 lvl	Level of intercom party/matrix line input, channel 2
IFB In level	Level of IFB input
ICom Line Out 1 lvl	Level of intercom channel 1 to party/matrix line input
ICom Line Out 2 lvl	Level of intercom channel 2 to party/matrix line input

4.4.5. Displaying the *Base station* Communication Port Status Information

STATUS	This control allows the user to display the Base Station Communication Port status displays.
Comm Port Status	
CamRem to Fiber	Status of camera remote control signal going onto fiber
CamRem Out Level	Status of camera remote control signal going to remote connector
Com2 to Fiber	Status of Com2 signal going onto fiber
Com2 Out Level	Status of Com2 signal going to COM2 connector

4.4.6. Displaying the 1394 Codec Status Information

STATUS	This control allows the user to display the 1394 codec status displays.
1394 Codec Status	
Firewire Bus	Firewire Bus status – connected, or not connected
Codec Mode	1394 Codec Mode – encode, decode, or off
DV Deck	DV deck type connected to codec
Deck Class	Device type of DV record device
Deck Mfr	Manufacturer of DV record device

4.4.7. Displaying the *Base station* Network Status Information

STATUS	This control allows the user to display the Base Station Network CPU status displays.
Network Status	
Net Neighbours	Status of network ECA/ECB neighbours
ECN IP	IP address of Network CPU
ECB IP	IP address of Base Station
ECA IP	IP address of Camera Adapter
Gateway IP	IP address of Gateway
Subnet Mask	Ethernet Subnet Mask
MAC Address	Ethernet MAC Address
Net Activity	Network Activity Indicator

4.4.7.1. Network Neighbour Status

STATUS	This control allows the user to display a list of all camera adapter and base station units available on the subnet set by the *System IP Configuration* menu item. See section 4.13.6.
Network Status	
Net Neighbours	

The following example screen shows sample units on a network.

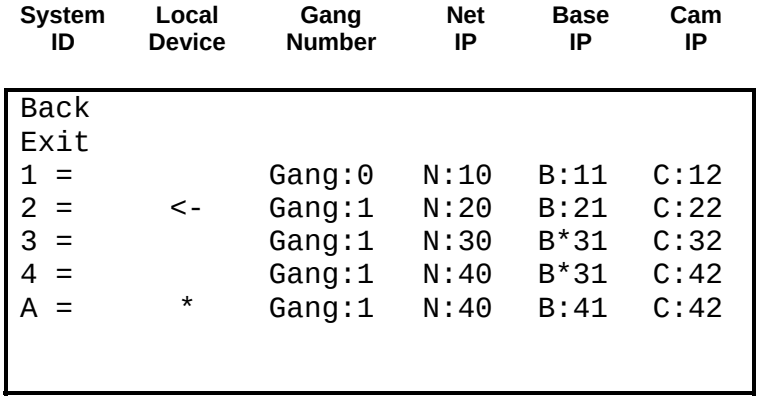

Figure 4-3: Network Neighbours Status Screen

System ID The System ID of the Camera adapter/Base Station pair is shown in this column. All the information on this line relates to the device pair with this system ID
* will be shown in the **Local Device** column if there is more than one system with this System ID

Local Device <- will be shown in this column if the device displaying the status screen is part of this system.

Gang Number Shows the Gang number of the base station of this system. Will show 0 is the base station is not a part of any gang.

Net IP: Shows the fourth octet of the Network CPU IP address for this system. An asterisk (*) will be shown in place of the colon (:) when there is an IP conflict for this Network CPU.

Base IP: Shows the fourth octet of the Base Station IP address for this system. An asterisk (*) will be shown in place of the colon (:) when there is an IP conflict for this Base Station.

Cam IP: Shows the fourth octet of the Camera Adapter IP address for this system. An asterisk (*) will be shown in place of the colon (:) when there is an IP conflict for this Camera Adapter.

The Network Neighbours status screen may take several minutes to update completely after changes to the network configuration.

4.4.8. Displaying the Miscellaneous Status Information

STATUS	This control allows the user to display the miscellaneous status displays
Misc Status	
Fan 1	Fan 1 – off, on, or failed
Fan 2	Fan 2 – off, on, or failed
Internal Temperature	Displays the temperature info

4.5. CONFIGURING THE VIDEO CONTROLS

The *VIDEO* menu items are used to configure parameters associated with the input and output video standards, and the gain for the NTSC/PAL analog video outputs. On HD versions of the base station this menu is also used to configure the downconverter aspect ratio and pulldown. The chart below shows the items available in the *VIDEO* menu. Sections 4.5.1 to 4.5.8 give detailed information about each menu item.

Video Source	Selects the video input source
Mon SDI Out	Selects what video will be output from the MON SDI OUT connector
Auto Video Detect	Selects the auto video standard detect mode
Video Standard	Selects the video input and output standards
SD Aspect Ratio	Selects the aspect ratio of the downconverter output (HD models)
SD Out Pull - 24Fr	Selects the pulldown cadence of the downconverter output (HD models)
SD Pulldown Ref	Selects the reference source for the pulldown cadence of the downconverter output (HD models)
NTSC Setup	Sets whether the NTSC setup pedestal will be on the Camera NTSC/PAL video output
Test Signal	Selects the test signal from the internal video test generator

4.5.1. Setting the Video Input Source

VIDEO
Video Source
Fiber from Camera
Return HDSDI In
Test Gen

With this control, you can select the source of video for the base station.

When set to Fiber from Camera, the base station will use the video being received from the camera over the video fiber optic link as its source of input video. This is the default setting.

When set to Return HDSDI In, the base station will use serial digital video connected to the RETURN HDSDI BNC connector as its source of input video.

When set to Test Gen, the base station will use the internal video test generator as its source of input video. The Test Signal menu item selects the type of test signal being output.

4.5.2. Setting the Source of Video for the MON SDI Output

VIDEO
Mon SDI Out
Return HDSDI
Video Source HD
Scaler SDI

On the HD versions, you can select the source of video for the Aux SDI OUT connector with this control.

When set to Return HDSDI, the Aux SDI OUT connector outputs the return HD serial digital signal being input at the base station.

When set to Video Source HD, the Aux SDI OUT connector outputs a second copy of the video present on the CAMERA HDSDI OUT BNC.

When set to Scaler SDI, the adapter outputs the standard definition serial digital video from the down-converter.

4.5.3. Selecting the Video Standard

There are two controls that are used to select the input and output video standard for the base station.

VIDEO
Auto Video Detect
On
Off

With this control, you can select whether the base station will auto-detect the input video standard.

When set to On, the base station will auto-detect the input video standard from the selected video source. On HD versions, the base station will also attempt to select the best output video format for the down-converter. The Video Standard menu will be greyed-out, but will show the detected video standard from the list shown below.

When set to Off, the user must set the video standard using the Video Standard menu item.

When set to *Auto,* the unit cannot distinguish between *1080i/59.94* and *1080p/29.97sF* input video so it will be selected as *1080i/59.94*. Similarly *1080p/25sF* will be selected as *1080i/50*.

VIDEO
Video Standard
1080i/59.94/NTSC
1080i/50/PAL
1080p/23.98sF/NTSC
1080p/24sF/PAL
1080p/24sF/NTSC30
1080i/60/NTSC30
720p/59.94/NTSC
720p/50/PAL
720P/60@24/PAL
720P/60@25/PAL
720P/60@50/PAL

With this control, you can set the input video standard for the HD camera adapter when the Auto Video Detect menu item is set to Off.

1080i/59.94 input, NTSC output
1080i/50 input, PAL output
1080p/23.98sF input, NTSC output
1080p/24sF input, PAL output
1080p/24sF input, 525i/60 output
1080i/60sF input, 525i/60 output
720p/59.94 input, NTSC output
720p/50 input, PAL output
720p/60 input, camera set to 24FPS, PAL output
720p/60 input, camera set to 25FPS, PAL output
720p/60 input, camera set to 50FPS, PAL output

When you select one of the 720p video formats you will also need to set the *SD Pulldown Ref* menu item in order to properly determine the correct picture cadence on the down-converted output.

4.5.4. Setting the Output Aspect Ratio (HD versions only)

VIDEO
SD Aspect Ratio
4:3 Side Cut
4:3 Squeeze
16:9 Letterbox

SDTV monitors are usually 4:3, so there is a need for some simple aspect ratio conversion from the HDTV 16:9 format. With this control, you can set the aspect ratio of the down-converter output for the HD base station.

When set to 4:3 side cut, the left and right sides of the picture are discarded.

When set to 4:3 squeeze, the picture is compressed horizontally (becomes anamorphic), resulting in tall, thin people. The picture will be stretched again when viewed on a 16:9 standard definition monitor.

When set to 16:9 letterbox, the whole picture is re-sized to occupy fewer lines. The unused lines at the top and bottom of the picture are left black.

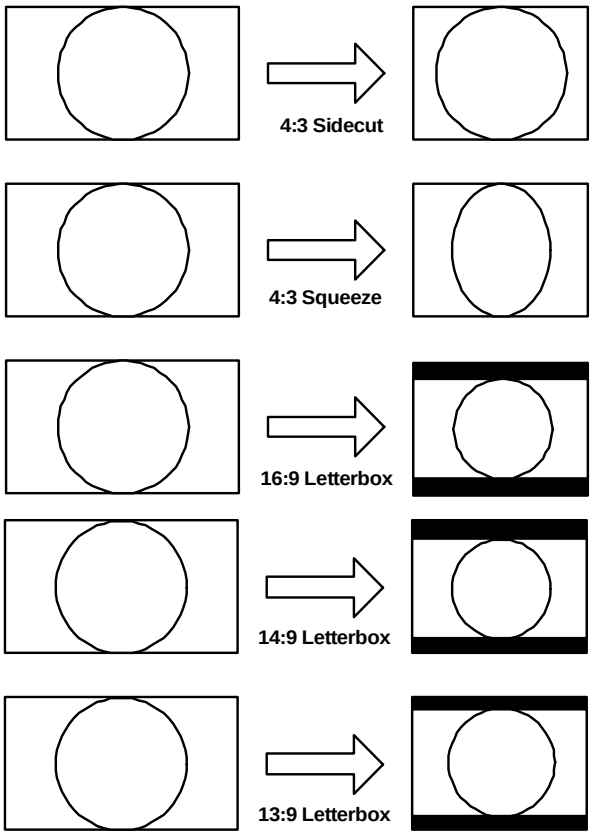

Figure 4-4: Aspect Ratio Conversions

4.5.5. Setting the Pulldown Cadence of the Downconverter Output (HD versions only)

VIDEO
SD Out Pull - 24Fr
2:3:2:3
2:3:3:2

With this control, you can set the pulldown sequence of the down-converter output for the HD base station. The pulldown sequence is required when down-converting 1080p/23.98 video to 525i/59.94.

When set to 2:3:2:3, the normal 2:3:2:3 field picture sequence is used for the down-converter. This sequence, shown in Figure 4-5 below, provides the minimum motion judder, and is suitable for videotape recording.

When set to 2:3:3:2, the two extra fields of the picture sequence are grouped into one video frame. This sequence, shown in Figure 4-6 below, provides some additional motion judder, but facilitates 2:3 pulldown removal while capturing the IEEE 1394 DV video stream.

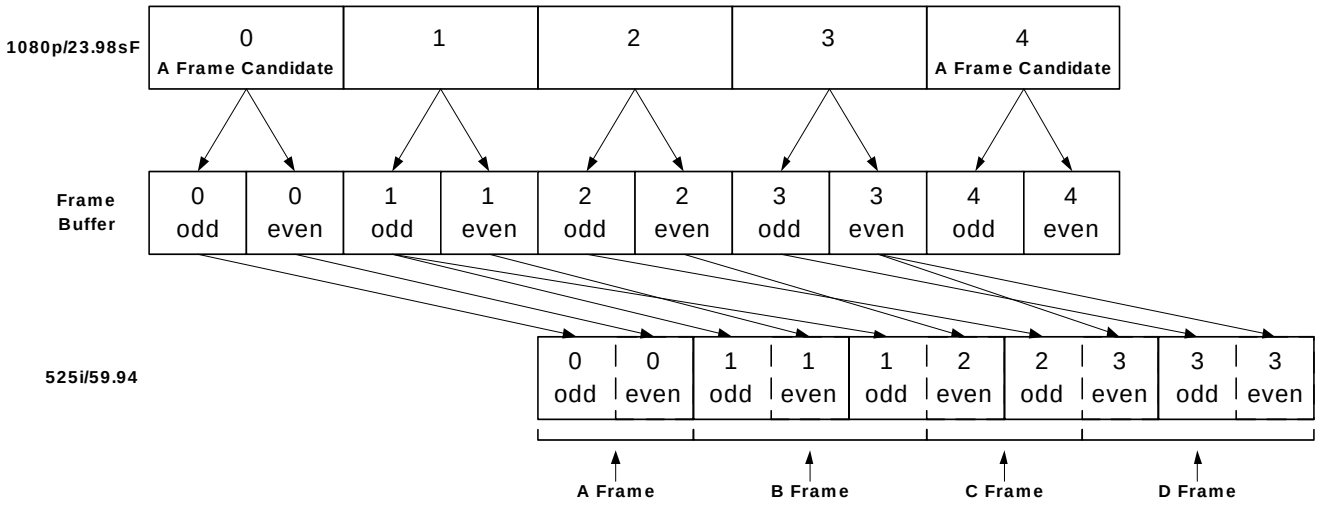

Figure 4-5: 2:3:2:3 Pulldown Sequence – 23.98 Fps Input Video

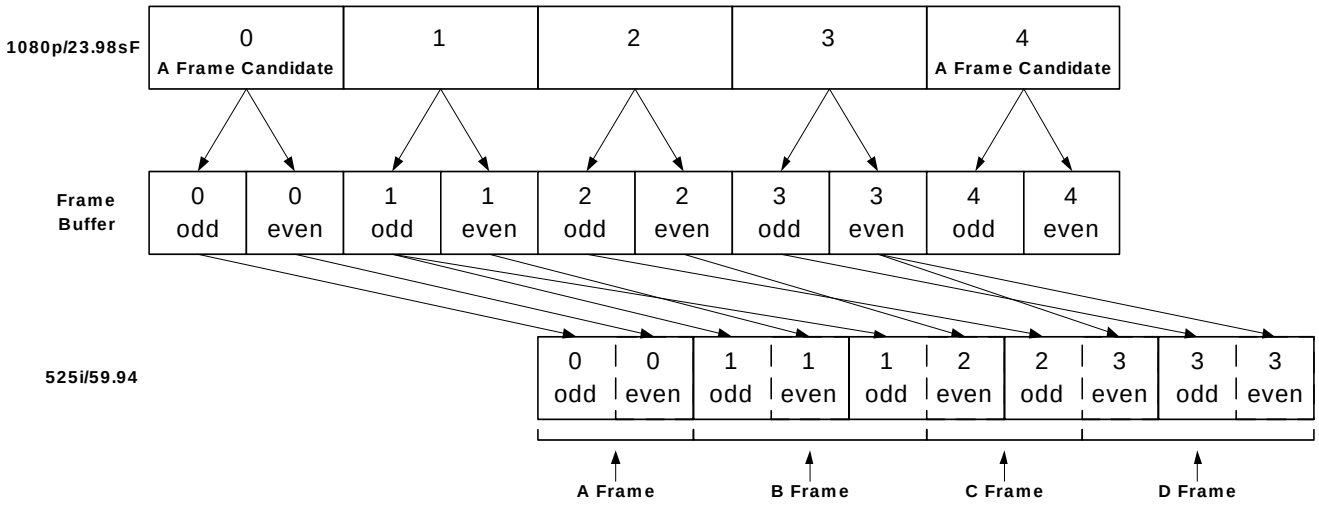

Figure 4-6: 2:3:3:2 Pulldown Sequence – 23.98 Fps Input Video

4.5.6. Setting the Pulldown reference for of the Downconverter Output (HD Versions only)

VIDEO
SD Pulldown Ref
VideoTC Source
VideoTC Src UB
Adapter LTC
Return LTC
Adapter LTC UB
Return LTC UB
Freerun

With this control, you can set the frame reference pulldown sequence of the down-converter output for the HD camera adapter. The pulldown sequence is required when down-converting 1080p/24(23.98) video or 720p/60(59.94) with 24 or 25 frame per second content.

When set to *Video TC Source*, the time code on the HD input will be used to derive the pulldown cadence. When set to *Adapter LTC*, the time code that is connected to the camera adapter LTC IN BNC and sent down the fiber to the base station will be used to derive the pulldown cadence. (This is an alternate method of connecting the camera's time code to the camera adapter.) These settings may be used when you are **recording** the down-converted output and must have it aligned to the camera's time code. Note that the picture may break up momentarily each time the camera starts and stops as the down-converter cadence relocks to the time code.

When set to *Return LTC* the time code that is being input to the base station Return LTC In XLR will be used to derive the pulldown cadence. The Return LTC should be properly aligned to the system standard definition genlock reference. This setting should be used when you are **switching** the down-converted output live and must have it aligned to other standard definition signals.

When set to *Freerun,* the pulldown cadence will freerun. This setting should be used when you are using the down-converted output for monitoring purposes only and you are **not recording** the down-converted signal. The picture will remain stable as the camera starts and stops.

When the input video standard is 720p/60 or 720p/59.94 there are three additional menu items available. These menu items allow the active picture flags that the Panasonic Varicam places into the user bits to control the pulldown cadence.

When set to *Video TC Src UB*, the active picture flags from the user bits of the HD input's embedded time code will be used to derive the pulldown cadence. When set to *Adapter LTC UB*, the active picture flags from the time code that is connected to the camera adapter LTC IN BNC and sent down the fiber to the base station will be used to derive the pulldown cadence. (This is an alternate method of connecting the Varicam's time code to the camera adapter.) These settings may be used when you are **recording** the down-converted output and must have it aligned to the camera's time code. Note that the picture may break up momentarily each time the camera starts and stops as the down-converter cadence relocks to the time code.

When set to *Return LTC UB* the active frame flags in the user bits of the time code that is being input to the base station Return LTC In XLR will be used to derive the pulldown cadence.

If the camera is the video source its playback timecode (ATC or LTC) may not be properly aligned to other cameras or to other signals in the system. In these cases the down-converted video will be aligned to the HD input video.

4.5.7. Setting the NTSC Setup Pedestal on the Analog Video Output

VIDEO
NTSC Setup
Off
On

This control determines how the NTSC Setup Pedestal will be applied on the MON NTSC/PAL video output. The NTSC setup pedestal should not be present when operating in Japan.

4.5.8. Selecting the Video Test Signal

VIDEO
Test Gen Signal
75% Colour Bars
Luma Ramp
Chroma Ramp
Sweep

This control is used to select the test signal that will be output when the Input Source menu item is set to Test Gen.

4.6. CONFIGURING THE ON SCREEN CHARACTER BURN-IN WINDOWS

The *CHAR WINDOWS* menu items are used to configure parameters associated with character burn-in windows. The chart below shows the items available in the *CHAR WINDOWS* menu. Sections 4.6.1 to 4.6.3 give detailed information about each menu item.

OSD Windows	Global OSD window enable
Time Code Windows	Enables/disables the time code windows
Debug Windows	Configures the debug windows

4.6.1. Selecting Whether Any Character Windows Will Be Displayed

CHAR WINDOWS
OSD Windows
Off
On

This control allows the user to enable or disable the character burn-in keyer.

When set to Off, all character windows will be turned Off.

When set to On, the character windows enabled by the Time Code Windows and Status Windows menu items will be turned on.

4.6.2. Configuring The Time Code Windows

On the SD versions, there are two time code windows available. The *SD Time code* window shows the time bits of the time code source set by the *VITC Source* menu item. The *User Bits* window shows the user bits of the time code source set by the *VITC/ATC Source* menu item.

On the HD versions, there are three time code windows available. The *HD Time code* window shows the time bits of the time code source set by the *VITC/ATC Source* menu item. When the HD video standard is different than the downconverted video standard, an addition *Pulldown* display can be shown at the right side of the *HD Time code* window. The *SD Time code* window shows the downconverted SD time code that has been converted from the HD time code. The *User Bits* window shows the user bits of the time code source set by the *VITC/ATC Source* menu item.

The *Time code Windows* menu contains items that are used to enable the time code windows and to set their position on the screen. There are three menu items for each character window to enable the window and set its horizontal and vertical position. The *HD Time code* window has one additional menu item to enable the *Pulldown* display. For the sake of simplicity only the menu items for the *HD Time code* window will be shown in the manual.

4.6.2.1. Enabling the HD Time Code Window

CHAR WINDOWS
Time Code Windows
HD Time Window
Off
On

This control allows the user to enable or disable the HD Time Code character window.

When set to Off, the HD Time Code character window will be not be displayed.

When Se to On, the HD Time Code character window will be displayed if the OSD Windows menu item is set to On.

4.6.2.2. Setting the Vertical Position of the HD Time Code Window

CHAR WINDOWS
Time Code Windows
HD Time Vert
1 to max vert posn

This control allows the use to set the vertical position of the HD Time Code character window.

4.6.2.3. Setting the Horizontal Position of the HD Time Code Window

CHAR WINDOWS
Time Code Windows
HD Time Horz
1 to max hor posn

This control allows the user to set the horizontal position of the HD Time Code character window.

4.6.2.4. Enabling the HD Time Code Window Pulldown Display

CHAR WINDOWS
Time Code Windows
HD Pull Display
Off
On

This control allows the user to enable or disable the pulldown display for the HD Time Code character window.

When set to Off, the HD Pulldown character window will be not be displayed.

When set to On, the HD Pulldown character window ill be displayed if the HD Time Code window menu item is set to On.

4.6.3. Configuring the Debug Windows

There are three windows available to show various debug displays about the base station operation. The *Debug Windows* menu contains items that are used to enable the three windows and to set their vertical position on the screen. (The horizontal position of the debug windows is fixed as many of the debug window displays take the entire character line.) There are three menu items for each character window to enable the window, to select what information will be shown and to set its vertical position. For the sake of simplicity only the menu items for the *Debug Window 1* will be shown in the manual.

4.6.3.1. Enabling the Debug Window

CHAR WINDOWS	This control allows the user to enable or disable the Debug 1 character window.
Debug Windows	
Debug Window 1	
Off	When set to Off, the Debug 1 character window will be turned Off.
On	When set to On, the Debug 1 character window will be displayed if the OSD Windows menu item is set to On.

4.6.3.2. Selecting What Information is Displayed in the Debug Character Window

See sections 5.4.1 to 5.4.17 for a description of the contents of the debug character windows.

CHAR WINDOWS	This control allows the user to set what is displayed in the Debug 1 character window.
Debug Windows	
DB Win 1 Display	
Adapter LTC	Displays time code from camera adapter LTC returned over the fiber
Return LTC	Displays time code from base station return LTC input
Adapter LTC UB	Displays camera adapter LTC user bits returned over the fiber
Return LTC UB	Displays return LTC user bits from base station
VITC Output	Displays the vase station VITC output
LTC Output	Displays the base station LTC output
DV TC Output	Displays the 1394 time code output
HDSDI In ATC	RP188 time code from HDSDI input
HDSDI In ATC UB	Displays Ancillary user bits from HDSDI input
Video Std	Displays the video standard in use
Temperature	Displays the internal temperature
Hardware	Displays GPI inputs, GPO outputs, and switch settings
Fiber TDM	Displays status information about the fiber connection (fiber versions)
ATC Inserter	Displays status information about the Ancillary Time Code inserter
Config Status	Displays time before configuration settings are saved in FLASH memory
Pulldown ref	Displays the pulldown reference
TC In Rel	Displays the values of input time codes relative to Video TC source
Summary	Displays summary info
DV Status	Displays DV connection status

4.6.3.3. Setting the Vertical Position of the Debug Window

CHAR WINDOWS	This control allows the user to set the vertical position of the Debug window 1.
Debug Windows	
DB Win 1 Vert	
1 to max vert posn	

4.7. CONFIGURING THE TIME CODE

The *TIME CODE* menu items are used to configure parameters associated with the adapter time codes. The chart below shows the items available in the *TIMECODE* menu. Sections 4.7.1 to 4.7.7 give detailed information about each menu item.

Video TC Source	Selects the source of the Video output Time code
LTC Out Source	Selects the source of the Video output Time code
LTC Out Rate	Selects the frame rate of the LTC output time code
SD VITC Inserter	Enables/disables the VITC inserter
525 VITC Lines	Sets the VITC insertion line on 525 line video outputs
625 VITC Line	Sets the VITC insertion line on 625 line video outputs
VITC User Bits	Sets the source of the VITC user bits

4.7.1. Selecting the Source of Time code for the Video Outputs

TIMECODE
Video TC Source
Video Input ATC
Adapter LTC In
Return LTC
Free Run

With this control, you can select the source of time code that will be inserted on the output video of the base station.

When set to *Video Input VITC, (Video Input ATC* for HD versions) the time code will be extracted from the video input source (as determined by the *Video Source* menu item) by the VITC (RP188 ATC for HD versions) time code reader.

When set to *Adapter LTC In,* the time code source will be the time code connected to the camera adapter LTC In connector and sent up the fiber optic link to the base station (fiber versions only).

When set to *Return LTC,* the time code source will be the time code connected to the base station RETURN LTC In connector.

When set to *Free Run* the time code output will be a free running number generated locally in the camera adapter. This function is useful for testing valid time code connections and is available in Engineering mode only.

4.7.2. Selecting the Source of Time code for the LTC Output

TIMECODE
LTC Out Source
Video Input ATC
Adapter LTC In
Return LTC
Test Gen

With this control, you can select the source of time code that will be come out the LTC OUT connector of the base station.

When set to *Video Input ATC*, the LTC output time code will be extracted from the video input source (as determined by the Input Source menu item) by the VITC (RP188 ATC on HD versions) time code reader.

When set to *Adapter LTC In,* the time code source will be the time code connected to the adapter LTC In connector and sent to the base station of the fiber optic link #2.

When set to *Return LTC In,* the time code source will be the time code connected to the Return LTC In connector. This mode is useful to provide an active loop through of the return LTC for connecting multiple base stations together

When set to *Test Gen,* the time code output will be a free running number generated locally in the camera adapter. This function is useful for testing valid time code connections.

4.7.3. Selecting the frame rate of the LTC Output (HD versions only)

TIMECODE
LTC Out Rate
SD Video
HD Video
Adapter LTC
Return LTC In

This control determines whether the LTC output of the camera adapter will be operating at the HD or SD rates. The time code source is set using the LTC Source menu item. This menu item may change when a different time code source is selected.

When set to SD Video, the LTC output will be at the down-converted video frame rate. If the LTC Source menu item is set to Video Source, the LTC will be in time with the down-converted video from the video source.

When set to HD Video, the LTC output will be at HD time code frame rate. If the LTC Source menu item is set to Video Source, the LTC will be in time with the HD video from the video source.

When set to Adapter LTC, the LTC output will be set by the Adapter LTC input frame rate. If the LTC Source menu item is set to Adapter LTC In, this choice is the only one available.

When set to Return LTC In, the LTC output will be set by the Return LTC frame rate. If the LTC Source menu item is set to Return LTC In, this choice is the only one available.

4.7.4. Selecting Whether VITC will be Inserted on the SD Video Outputs

TIMECODE
SD VITC Inserter
Off
On

This control determines whether vertical interval time code (VITC) will be inserted on the SDI and Camera NTSC/PAL video outputs. The 525 VITC Line and 625 VITC Line menu items set the insertion line for the VITC.

The time code source is set using the VITC Source (VITC/ATC Source on the HD version) menu item. The user bits will be transferred from the source along with the time bits.

When set to Off, the VITC inserter will be disabled.

When set to On, the VITC inserter will be enabled.

4.7.5. Setting the VITC Line for 525 Line Video Outputs

TIMECODE
525 VITC Line
14/16
10 to 20

This control determines the line numbers where VITC will be inserted in 525 video when the SD VITC Inserter menu item is set to On.

4.7.6. Setting the VITC Line for 625 Line Video Outputs

TIMECODE
625 VITC Line
19/21
6 to 21

This control determines the line numbers where VITC will be inserted in 625 video when the SD VITC Inserter menu item is set to On.

4.7.7. Setting The Contents Of The VITC User Bits (HD versions only)

TIMECODE *VITC User Bits* *Source user bits* *HD Time Code*	This control determines whether VITC user bits will contain the original HD time numbers or the original user bit numbers. The VITC generator must be enabled using the SD VITC Inserter menu item. When the incoming video is at a different frame rate than the down-converted video, it is often useful to carry the original time code information in the VITC user bits. For other applications it is necessary to carry the user bits from the time code source into the VITC user bits.

4.8. CONFIGURING THE AUDIO

The *AUDIO* menu items are used to configure parameters associated with the audio and intercom functions of the base station. The chart below shows the items available in the *AUDIO* menu. Sections 4.8.1 and 4.8.2 give detailed information about each menu item.

Audio Out	Selects whether the Audio output will be analog or AES
Return Audio In	Selects whether the Return Audio input will be analog or AES
SD Audio Delay	Selects audio delay for SD outputs
SD Aud Delay Ena	Enables SD embedded audio and DV audio delay
Analog Threshold	Selects the analog audio silence detector threshold

In order to use any of the audio functions of the base station you will have to set the *Audio I/O* menu item on the *POWER SAVE* menu to On

4.8.1. Selecting the Analog or AES Audio Output

Analog outputs are available as four line level outputs on the **ANALOG AUDIO OUT** 3 pin male XLR connectors on the audio breakout panel. AES outputs are available as two balanced AES outputs on the **AES OUT** 3 pin male XLR connectors on the audio breakout panel.

AUDIO
Audio Out

Analog	Analog outputs in time with video source
AES	AES outputs in time with source
Analog/ AES	Analog and AES outputs in time with source
0dBFS Tone	0dBFS test tone on the analog and AES outputs
-20dBFS Tone	-20dBFS test tone on the analog and AES outputs
Delayed Analog	Analog outputs delayed to down-converter
Delayed AES	AES outputs delayed to down-converter
Delay AES/Analog	Analog and AES delayed to down-converter
Loopback	Analog input looped to analog output, AES input looped to AES output
Analog/In Loop	Analog outs in time with video source
Dly Anlg/In Loop	Analog outs delayed to down-converter

With this control, you can configure the audio outputs of the base station.

De-embedded from video source

De-embedded from video source (HD only)

De-embedded from video source AES out -> audio in

The *Analog /In Loop* and *Dly Anlg/In Loop* modes provide an active loop through and are useful to when connecting the same program audio to multiple base stations. Connect the input to the analog or AES inputs of the first base station in the chain and set the *Return Audio Input* menu accordingly. Connect the AES out from the first base station to the AES input of the second one and set the *Return Audio Input* menu item to AES. Connect the AES output from the second to the AES of the third etc. See section 2.9.1.2 for sample configuration drawing.

4.8.2. Selecting the Analog or AES Audio Return Audio Inputs

AUDIO
Return Audio In

Analog
AES

With this control, you can select the type of audio input for return audio being sent to the camera adapter over the fiber optic link #2.

When set to Analog, the return audio is configured as four line level inputs available on the ANALOG AUDIO IN 3-pin female XLR connectors on the audio breakout panel.

4.8.3. Setting the SD Audio Delay

AUDIO
SD Audio Delay

4000
2000 to 6500

This control allows the user to adjust the amount of delay being applied to the embedded audio on the down-converted SD and 1394 audio.

Delay values are set in samples.

4.8.4. Enabling the SD Audio Delay

AUDIO
SD Aud delay ena

Enable
Bypass

This control allows the user to turn off the delay being applied to the embedded audio on the down-converted SD and in the 1394 audio.

Set to Enable to apply the delay set by the SD Audio Delay menu item.

Set to Bypass to disable the delay.

4.8.5. Setting the Analog Audio Silence Threshold

AUDIO *Analog Threshold* *0 dBFs to –132 dBFs*	This control allows the user to set the level at which the analog audio will be detected as missing. You can set the threshold in 6 dB increments

4.9. CONFIGURING THE IEEE 1394 DV CODEC

The *1394A* menu items are used to configure parameters associated with the 1394A DV Codec. The chart below shows the items available in the *1394A* menu. Sections 4.9.1 to 4.9.4 give detailed information about each menu item.

DV Mode	Selects whether the IEEE1394A port will be used as an output or input
DV Audio Source	Selects the source of the IEEE 1394A DV Codec Audio.
DV Auto Record	Selects the Auto Record function for the DV Codec.
DV Codec Reset	Resets the 1394 Connection to the recording DV device.

In order to use the IEEE 1394A codec functions of the base station you will have to set the *IEEE 1394A* menu item on the *POWER SAVE* menu to On

4.9.1. Selecting the DV Codec Operating Mode

1394A *DV Mode* *Encode* *Decode* *Off*	With this control, you can select whether the 1394A codec will be used as an input or output device. When set to Encode, the 1394A codec will be used as an output and will encode the standard definition output video into an SMPTE 314M compliant 25 Mb/s DV stream. The DV output will contain the embedded time code from the output video and two channels of audio selected by the DV Audio Source menu item. When set to Decode, the 1394A codec will be used as an input and will decode an incoming SMPTE 314M compliant 25Mb/s DV stream. The decoded video will be available on the camera NTSC/PAL and Camera SDI BNC outputs. The embedded time code on the DV input video will be inserted as VITC on the video outputs. The two channels of audio decoded from the DV stream will be embedded on the SDI BNC outputs and will also be available on the ANALOG AUDIO OUT 1 and 3 or AES 1 connectors as selected by the Audio Out menu When set to Off, the 1394 codec will be disabled.

4.9.2. Selecting the DV Codec Audio Source

1394A
DV Audio Source
Ch 1/2
Ch ¾
Tone

The DV25 standard allows the encoding of two audio channels along with the video. With this control, you can select which two channels of audio will be encoded by the DV codec.

Select Ch 1/2 to encode audio channels 1 and 2 in the DV stream.

Select Ch 3/4 to encode audio channels 3 and 4 in the DV stream.

Select *Tone* to put the Tone generator signal into the DV stream.

4.9.3. Selecting the DV Codec Auto Record Function

1394A
DV Auto Record
Off
Sony
Varicam

With this control, you can select whether the DV device will automatically go into record when the camera starts recording.

Manual or external tally start and stop 1394 DV record
Use Sony camera record status to enable 1394 DV record
Use Varicam ANC UB flags to enable 1394 DV record

4.9.4. Resetting the DV Codec

1394A
DV Reset
No
Yes

With this control, you can reset the 1394 connection to the DV recording device.

Select Yes and press the push button to proceed.

4.10. CONFIGURING THE GENERAL PURPOSE INPUTS AND OUTPUTS

The *GPIO FUNCTIONS* menu items are used to configure parameters associated with the general purpose inputs and outputs of the base station. The chart below shows the items available in the *GPIO FUNCTIONS* menu. There are identical menu items that are used to configure each input and output. For the sake of simplicity only the menu items for GPI1 and GPO1 are shown in the manual. Sections 4.10.1 to 4.10.3 give detailed information about each menu item.

GPI1 Function	Selects the function of the GPI 1 input
GPI1 Trigger	Selects whether GPI1 will trigger on high or low levels or rising or falling edges
GPI2 Function	Selects the function of the GPI 2 input
GPI2 Trigger	Selects whether GPI2 will trigger on high or low levels or rising or falling edges
GPO1 Function	Selects the function of the GPO 1 output relay
GPO2 Function	Selects the function of the GPO 2 output relay

4.10.1. Selecting the Function of the GPI Inputs

- *GPIO FUNCTIONS*
  - *GPI1 Function*
    - *GPI1 to Camera*
    - *OSD Windows*
    - *1394 Record*
    - *Aspect Ratio*
    - Reset Rec Total

This control is used to select the function of the GPI 1 input. The GPI1 Trigger menu item is used to select whether GPI1 will become active on high or low levels, or on rising or falling edges.

Select *GPI1 to Camera* to send the GPI1 contact closure information over the fiber optic link to the camera adapter.

Select *OSD Windows* to use GPI1 contact closures to turn the on-screen character windows on and off.

Select *1394 Record* to use GPI1 contact closures to send a record command to the DV record device connected to the 1394A connector.

Select *Aspect Ratio* to use the GPI1 contact closures to select one of the three aspect ratios of the down-converter (HD versions only). See section 4.5.4.

Select *Reset Rec Total* to use GPI1 contact closures to reset the elapsed Record time counter used to keep track of the amount of tape that has been used. On some Sony camcorders this counter will be automatically reset when the tape is ejected. On other camcorders that do not provide a "Tape Eject" tally, you can use this GPI function to reset the counter.

4.10.2. Selecting the How the GPI Triggers

- *GPIO FUNCTIONS*
  - *GPI1 Trigger*
    - *Active Closed*
    - *Active Opened*
    - *Toggle Opening*
    - *Toggle Closing*

This control is used to select whether GPI1 will become active on opening or closing transitions or will toggle states when the GPI1 is operated. The function of the GPI1 input is set using the GPI1 Function menu item.

When set to *Active Closed*, the selected GPI1 function will activate when the GPI1 input is being closed to ground. For example, the OSD windows could turn on when the input goes from opened to closed.

When set to *Active Opened*, the selected GPI1 function will activate when the GPI1 input is being opened (released from being closed to ground). For example, the OSD windows could turn on when the input goes from closed to opened.

When set to *Toggle Closing*, the selected GPI1 function will change state when the GPI1 input is being closed to ground. For example, if the OSD windows are on, they will turn off when the input goes from opened to closed. Similarly, if the OSD windows are off, they will turn on when the input goes from opened to closed.

When set to *Toggle Opening*, the selected GPI1 function will change state when the GPI1 input being opened (released from being closed to ground). For example, if the OSD windows are on, they will turn off when the input goes from closed to opened. Similarly, if the OSD windows are off, they will turn on when the input goes from closed to opened.

4.10.3. Selecting the GPO Functions

GPIO FUNCTIONS	
GPO1 Function	None Camera GPI1 Base GPI1 Record Tally Rec-Flag Tally Test Test-on Test-off

This control is used to select the function of the GPO1 relay output. There are normally open and normally closed relay contacts provided.

Select none to disable the GPO1 output

Select *Camera GPI1* to activate the output when the GPI1 input at the camera adapter is closed to ground. The camera adapter contact closure information is sent to the base station over the fiber optic link #2.

Select *Base GPI1* to activate the output when the base station GPI1 input is closed to ground. This function is useful for testing the relay output.

Select *Record Tally* to activate the output when the Sony Camcorder issues a record tally signal to the camera adapter. This function is useful for signalling when the camcorder is recording.

Select *Rec-Flag Tally* to activate the output when the Panasonic camera issues the correct flag bits in the user bits of the camera time code and the time code is lower than the Max TC counter value. This function is useful for signalling when the Panasonic Camcorder is recording. Use the GPI function to reset the Max TC counter when a new videotape is inserted into the camcorder.

Select *Test* to toggle the GPO relay between the open and closed conditions. Select Test-on to activate the GPO relay to the closed condition. Select Test-off to de-activate the GPO relay to the open condition. These functions are useful for testing the relay output.

4.11. CONFIGURING THE POWER SAVE FUNCTIONS

The *POWER SAVE* menu items are used to disable unused I/O hardware in order to conserve power. When the Base Station is connected to the Camera Adapter, the associated I/O hardware at the camera adapter is also powered down. The chart below shows the items available in the *POWER SAVE* menu. Sections 4.11.1 to 4.11.6 give detailed information about each menu item.

Scaler	Enables/disables the Scaler (HD versions only)
Return Genlock	Enables/disables the return genlock output circuitry
Return NTSC	Enables/disables the return NTSC/PAL circuitry
Camera Menus	Enables/disables the Camera Menu Luminance Input circuitry on the Camera Remote Input
Intercom	Enables/disables the Intercom Headset I/O circuitry
IFB	Enables/disables the IFB Output circuitry

4.11.1. Powering down the Scaler Circuitry (HD versions only)

POWER SAVE
Scaler
Power off
Power on

This control is used to power down the Scaler (HD versions only) to conserve power when the scaler is not in use.

Select Power off to disable the scaler.

Select Power on to turn on the power to the scaler circuitry.

4.11.2. Powering down the Return Genlock Output Circuitry

POWER SAVE
Return Genlock
Power off
Power on

This control is used to power down the Return Genlock input circuitry to conserve power when the return genlock is not in use.

Select power off to disable the return Genlock.

Select power on to turn on the return Genlock circuitry.

4.11.3. Powering down the Return NTSC/PAL Output Circuitry

POWER SAVE
Return NTSC/PAL
Power off
Power on

This control is used to power down the Return NTSC/PAL input circuitry to conserve power when the return NTSC/PAL input is not being used.

Select Power off to disable the return NTSC/PAL output.

Select Power on to turn on the return NTSC/PAL output circuitry.

4.11.4. Powering down the Camera Menu Luminance Input Circuitry

POWER SAVE
Camera Menus
Power off
Power on

This control is used to power down the Camera Menu Luminance output circuitry to conserve power when the Camera Menu Luminance output is not in use.

Select Power off to disable the Camera Menu Luminance Input.

Select Power on to turn on the Camera Menu Luminance circuitry.

4.11.5. Powering down the Intercom Headset Circuitry

POWER SAVE
Intercom
Power off
Power on

This control is used to power down the intercom circuitry to conserve power when the intercom functions of the base station are not being used.

Select Power off to disable the Intercom circuitry.

Select Power on to turn on the Intercom circuitry.

4.11.6. Powering down the IFB Output Circuitry

POWER SAVE *IFB* *Power off* *Power on*	This control is used to power down the IFB input circuitry to conserve power when the IFB function of the base station is not in use. Select Power off to disable the IFB circuitry. Select Power on to turn on the IFB circuitry.

4.12. FIRMWARE UTILITIES

The *FIRMWARE* menu items are used to view the firmware versions of the microprocessors inside the base station and camera adapter. The chart below shows the items available in the *FIRMWARE* menu. Sections 4.12.1 to 4.12.6 give detailed information about each menu item.

The Camera adapter and base station must have compatible versions of firmware to operate properly. If any of the versions showing on the *Firmware version* screen show question marks (??) or the word *Incompatible* for the version that indicates that the version with the question marks is not compatible with the base station firmware. We recommend upgrading both the camera adapter and base station firmware to the current version on the Evertz FTP site (www.evertz.com)

Base Version	Shows the application firmware version of the base station
Base Options	Shows the options installed in the camera adapter
DV Codec Version	Shows the firmware version of the DV Codec in the base station
FPGA Revision	Shows the revision of the FPGA logic in the base station
Adapter Version	Shows the application firmware version of the camera adapter
Adapter Options	Shows the options installed in the camera adapter
Net I/f Version	Shows the application firmware version of the base station network interface CPU
Net I/f Options	Shows the options installed in the base station network interface CPU
Factory Reset Most	Resets most Base Station saved settings to factory default, but keep network, ident, gang, and calibrate menu settings
Factory Reset	Resets the all Base Station saved settings to factory defaults (Engineering mode only)

4.12.1. Viewing the Base station Firmware Version

FIRMWARE *Base Version* *HD Base 1.0 b25*	This control is used to view the application firmware version of the base station.

4.12.2. Viewing the Base Station Options

FIRMWARE
Base Options
Fiber, 1394, Camera Power

This control is used to view the options installed in the base station.

4.12.3. Viewing the DV Codec Firmware Version

FIRMWARE
DV Codec
1.0b25

This control is used to view the firmware version of the DV Codec processor in the base station.

4.12.4. Viewing the FPGA Version

FIRMWARE
FPGA Rev
1.0b25

This control is used to view the version of the FPGA logic in the base station.

4.12.5. Viewing the Camera Adapter Firmware Version

FIRMWARE
Adapter Version
HD Cam 1.0 b25

This control is used to view the application firmware version of the camera adapter when the base station is connected by the fiber optic link.

Incompatible versions will be indicated by a flashing version number.

4.12.6. Viewing the Camera Adapter Options

FIRMWARE
Adapter Options
Fiber, 1394

This control is used to view the options installed in the camera adapter.

4.12.7. Viewing the Base Station Network CPU Firmware Version

FIRMWARE
Net I/f Version
Net 1.0 b25

This control is used to view the application firmware version of the base station network interface CPU.

Incompatible versions will be indicated by a flashing version number.

4.12.8. Viewing the Base Station Network CPU Options

FIRMWARE
Net I/f Options
Matrix, PRem

This control is used to view the options installed in the Base Station Network CPU.

4.12.9. Resetting the Most Common Base Station Settings to Factory Defaults

FIRMWARE
Factory Reset Most
No
Yes

This control is used to reset most saved settings to the factory default, while still keeping the network, ident, gang, and calibrate menu settings.

Select *Yes* to erase most user menu settings and reboot the unit.

This function is only available on the Engineering menus and should only be used by qualified personnel.

4.12.10. Resetting All the Base Station Settings to Factory Defaults

FIRMWARE *Factory Reset* *No* *Yes*	This control is used to reset the base station to its factory defaults. Select *Yes* to erase all user menu settings and reboot the unit.

This function is only available on the Engineering menus and should only be used by qualified personnel. Using this function may result in the loss of network communication with the device, and losing factory calibration levels on some hardware signal paths.

4.13. CONFIGURING MISCELLANEOUS BASE STATION FUNCTIONS

The *UTILITY* menu items are used to display internal temperature such as temperature, intercom and IFB mute, etc. The chart below shows the items available in the *UTILITY* menu. Sections 4.13.1 to 4.13.2 give detailed information about each menu item.

Internal Temperature	Displays the internal temperature of the base station
COM 2 Level	Selects RS232 or RS422 levels for COM 2 signals
Camera Remote Level	Selects RS232 or RS422 levels for the Camera Remote signal
System Ident	Selects the identification number for this system
Control Gang	Allows for ganged operation of menu controls
System IP Configuration	Sets the IP addresses for system configuration controls
System IP	Sets the IP addresses for the system
Configuration	Provides configuration controls

4.13.1. Viewing the Base Station Internal Temperature

UTILITY *Internal Temperature* *Temp:*	This control is used to view the readings of the two temperature sensors in the base station adapter.

4.13.2. Selecting the Signal Level for the COM 2 Data Port

UTILITY
COM 2 Level
RS232
RS422

This control is used to select the signal levels for the COM 2 port. Setting this control at the base station also controls the levels at the camera adapter.

4.13.3. Selecting the Signal Level for the Camera Remote Data Port

UTILITY
Camera Remote Level
RS232
RS422

This control is used to select the signal levels for the Camera Remote port. Setting this control at the base station also controls the levels at the camera adapter.

4.13.4. Setting the System ID Number

UTILITY
System Identification
1 to 9, A to Z

This control allows the user to assign a system ID number to the base station and camera adapter connected to it. This ID is useful in multi-camera applications where there are several units. The System ID will show at the top of each screen of the on-screen menus and may also be shown on the front panel using the DISPLAY button. The System ID number can also be used to identify pairs base stations and camera adapters when updating firmware.

4.13.5. Ganged Menu Control Operation

When the Base Station is part of a Network Gang, changing its menu items will cause the menus of all the other member Base Stations in the same gang to follow the menu changes. Ganged operation is disabled while in Engineering mode. You can also send the Base Station configuration to other gang members. (see section 4.13.7.1). When the Base Station is part of a gang the word **GANGED** will be shown at the top of its menu screen to remind you that you are affecting other devices in the network. See section 4.16 for more information about networking large systems.

UTILITY
Control Gang
None
1 to 5

This control allows the user to other base stations in a specific gang when the menus of this base station are operated.
Set to *None* if you do not want to control other gang members.
Select the gang number you want to control from this base station.

4.13.6. Setting the System Network I/P Addresses

The Base Station and Camera adapter can be controlled over a TCP/IP connection using a good quality, straight-thru Ethernet cable, terminated at both ends with RJ-45 male connectors, as shown in section 2.6. Normally the Base Station is connected to the network through a Ethernet hub.

Each base station / camera adapter pair is a mini network of three processors each with its own IP address. The base station keeps track of these addresses and comes with factory assigned IP addresses for itself, and the camera adapter connected to it via the fiber optic link and for the Network CPU interface which is located inside the base station. These IP addresses are listed in Table 4-1 below:

Device	Pre-assigned IP address			
Network CPU	192	168	9	10
Base Station	192	168	9	11
Camera Adapter	192	168	9	12

Table 4-1: Factory Default IP Addresses

If connecting multiple base stations, take care to use different IP address ranges for each. For example set the system addresses for System 1 to 10, 11 and 12, and for system 2 to 20, 21, and 22, etc.; that way the IP address will not overlap and will be easy to remember.

The *System IP Configuration* sub-menu items on the *UTILITY menu* allow the user to change the IP addresses to match the requirements of their network. Each network address consists of a set of four 'octets' separated by periods (e.g. 192.168.9.10). The first three octets are common to all three devices in the system. The remaining octet is unique to each device. In a private network, typical network addresses could be identified as 192.168.9.XXX. The Subnet mask for this network is set to 255.255.255.0.

The "Gateway" item tells the base station network interface the IP address of the "gateway" (commonly referred to as the "firewall"). In its simplest sense the gateway could be the PC directly connected to the base station and running the network application software. This gateway links to and communicates with other network gateways. In a private network, this gateway could be identified as 192.168.9.YYY. You should not need to change this item unless you change the upper three octets of the network IP address.

To set the network address component, press the **SELECT** key and then turn the shaft encoder knob until you reach the desired value. Press the **SELECT** key to save the entered value. If you are unsure how to configure the network addresses contact your network administrator.

After changing the IP addresses exit the menu system. Then wait 30 seconds and reboot the base station for the new IP address to take effect. Shortly after you reboot the base station you will be able to see all the Camera Adapters and Base Stations that are available on the network using the Network Status screen. See section 3.4.7.

Common 1st Octet	Sets the first octet of the system IP addresses – common to all devices
Common 2nd Octet	Sets the second octet of the system IP addresses – common to all devices
Common 3rd Octet	Sets the third octet of the system IP addresses – common to all devices
Net CPU Address	Sets the minor (fourth octet) of the Network CPU IP address
Base Address	Sets the minor (fourth octet) of the Base Station IP address
Adapter Address	Sets the minor (fourth octet) of the Camera Adapter IP address
Gateway Address	Sets the minor (fourth octet) of the Gateway IP address

4.13.7. Sending and Retrieving Configurations from other Networked Base Stations

There are two menu items that allow you to load the base station configuration from other base stations on the network, or to send this base station's configuration to other base stations. In order to see these menu items the base station must be networked to other base stations on a common subnet. See section 4.13.6 for information on setting the I/P addresses for the system. See section 4.16 for a more complete description of features available when camera adapters and base stations are networked.

4.13.7.1. Sending Configurations to other Networked Base Stations

UTILITY	This control is used to send this Base Station's configuration settings to other Base Stations on the network.
Configuration	
Send Config to	
None	Do not send this configuration
1 to 9, A to Z	Select individual base stations by their System ID number
Gang 1 to Gang 5	Select groups of base stations by their Gang number

You will be prompted to confirm your choice as sending the base stations configuration will overwrite the settings in the target base stations.

4.13.7.2. Getting Configurations from other Networked Base Stations

UTILITY	This control is used to set this Base Station's configuration settings from another Base Station on the network.
Configuration	
Get Config from	
None	Do not get any configuration
1 to 9, A to Z	Select individual base stations by their System ID number
Gang 1 to Gang 5	Select groups of base stations by their Gang number

You will be prompted to confirm your choice as getting the base stations configuration will overwrite the settings in this base stations.

4.14. ENGINEERING FUNCTIONS

The *ENGINEERING* menu items are used for troubleshooting or diagnostic purposes to control various hardware devices inside the base station. These menu items are not used during normal operation of the camera adapter and are not available within the normal *SETUP* menu. In order to access the *ENGINEERING* menu you must enter the menu system by pressing the pushbutton while holding the ↑ button. The chart below shows the items available in the *ENGINEERING* menu

The Engineering menu choices will overwrite some of the normal configurations choices from the other menus and should only be used under the direction of Evertz service personnel. All *ENGINEERING* menu items except those in the *Calibration* menu are not saved in non-volatile memory and will be restored to their normal settings on power up.

Calibrate	Sets various hardware calibration levels.
DV Audio In	Selects the audio input for the IEEE 1394A Codec in Encode mode
Audio 1 / 2 Out	Selects the source for the Audio 1 and 2 channel outputs
Audio 3 / 4 Out	Selects the source for the Audio 3 and 4 channel outputs
Intercom/IFB	Selects the source of the Intercom Headset and IFB audio (mux 8, 12)
Tone L Mute	Mutes Left channel Tone Generator
Tone R Mute	Mutes Right channel Tone Generator
Fiber Out	Selects the source of video to send to the camera adapter over fiber
Camera HDSDI Out	Selects the source of video for the Camera HDSDI output
Test	Performs Hardware Tests

4.14.1. Calibrating Hardware Levels

The *Calibration* menu items are used to set hardware gain levels for the video outputs and other calibration items.

NTSC/PAL Gain	Adjusts the Camera NTSC/PAL video output gain
NTSC/PAL Hue	Adjusts the Camera NTSC/PAL video hue gain
NTSC/PAL Y Gain	Adjusts the Camera NTSC/PAL video luminance output gain
NTSC/PAL CrCb Gain	Adjusts the Camera NTSC/PAL video chroma output gain
Ret Video Gain	Adjusts the Return NTSC/PAL video gain
Genlock Gain	Adjusts the Return Genlock gain
Reset Cal items	Rests the Calibrate menu settings

4.14.1.1. Setting the Camera NTSC/PAL Video Output Gain

ENGINEERING *Calibrate* *NTSC/PAL Gain* *-64 to 64*	This control allows the user to adjust the output gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

4.14.1.2. Setting the Camera NTSC/PAL Video Output Hue

ENGINEERING
Calibrate
NTSC/PAL Hue
-127 to 127

This control allows the user to adjust the hue of the camera NTSC/PAL video output in steps of 0.5 degrees.

4.14.1.3. Setting the Camera NTSC/PAL Video Output Luminance Gain

ENGINEERING
Calibrate
NTSC/PAL Y Gain
-127 to 127

This control allows the user to adjust the output luminance gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

4.14.1.4. Setting the Camera NTSC/PAL Video Output Chroma Gain

ENGINEERING
Calibrate
ITSC/PAL CrCb Gain
-127 to 127

This control allows the user to adjust the output chroma gain of the camera NTSC/PAL video output. When set to 0, the nominal output video level will be 100 IRE.

4.14.1.5. Setting the Return NTSC/PAL Video input Gain

ENGINEERING
Calibrate
Return Video Gain
-40 to 40

This control allows the user to adjust the input gain of the return NTSC/PAL video. When set to 0, the nominal video level will be 100 IRE.

4.14.1.6. Setting the Return Genlock input Gain

ENGINEERING
Calibrate
Genlock Gain
-40 to 40

This control allows the user to adjust the input gain of the return Genlock. When set to 0, the nominal sync level will be 300 mv.

4.14.1.7. Resetting the Calibrate Menu Settings

ENGINEERING
Calibrate
Reset Cal items

This control allows the user to reset the calibrate menu settings.

4.14.2. Muting the Left Channel of the Tone Generator

Since the Tone L and Tone R Mute menu items are identical, only the Tone L Mute menu item is included in the manual.

ENGINEERING
Tone L Mute
Normal *Mute*

This control allows the user to mute the tone generator left channel. This menu setting is not remembered during a power cycle.

4.14.3. Selecting the Fiber Output Source

ENGINEERING
Fiber Out
HDSDI In Direct Video Source

This control allows the user to manually override the normal fiber output video source. This menu setting is not remembered during a power cycle.

4.14.4. Selecting the Camera HDSDI Output Source

ENGINEERING
Camera HDSDI Out
HDSDI In Direct Video Source

This control allows the user to manually override the normal video source camera HDSDI output BNC. This menu setting is not remembered during a power cycle.

4.14.5. Testing the Equipment

The *Test* menu items are used to enable equipment test modes. These menu items are not remembered during a power cycle.

LED Test	Tests all LEDs except RUN
Cam Remote Test	Tests camera remote control inputs and outputs
COM 2 Test	Tests COM 2 inputs and outputs

4.14.5.1. Testing the LED Indicators

ENGINEERING
Test
LED Test
Off
On

When this control is turned on, the camera adapter will slowly toggle all LED indicators except RUN.

4.14.5.2. Testing the Camera Remote Control Inputs and Outputs

ENGINEERING
Test
Cam Remote Test
Off
Local Loopback
Remote Loopback

When set to Local Loopback, the camera adapter slowly toggles the camera control signal to the camera for local loopback test. This requires an external loopback on the local connector.

When set to Remote Loopback, the camera adapter slowly toggles the camera control signal to the base for remote loopback test. This requires an external loopback on the remote connector.

4.14.5.3. Testing the COM2 Inputs and Outputs

ENGINEERING
Test
COM 2 Test
Off
Local Loopback
Remote Loopback

When this control is set to Local Loopback, the camera adapter slowly toggles the COM2 signal to the camera for a local loopback test. This requires an external loopback on the local connector.

When this control is set to Remote Loopback, the camera adapter slowly toggles the COM2 signal to the base for a remote loopback test. This requires external loopback on the remote connector.

4.15. CONTROLLING THE CAMERA ADAPTER MENUS FROM THE BASE STATION

The *CAMERA MENUS* item on the top level of the menus allows you to control the camera adapter menu sytstem when the camera adapter is connected to the base station through a fiber optic link. When you select *CAMERA MENUS* on the top level of the menu and press **SELECT** you will enter the camera adapter menus. The prompt at the top of the screen will change to show the word *CAMERA* followed by the camera adapter *System Ident* and then followed by a colon, indicating that you have entered the camera adapter menu system. The background of the menu characters will also become semi-transparent to help identify that you are controlling the camera adapter and not the base station. See sections 3.2 to 3.13 for more information on operating the camera adapter menus.

4.16. NETWORKING MULTIPLE SYSTEMS TOGETHER

In large multi-camera systems where there are many camera adapters and base stations it is often desirable to connect the base stations to an Ethernet network. When networked together you can perform the following functions:

- Automatically control all the networked devices from one common point.
    - When you operate the menu system on one camera adapter or base station you can have all the other devices in the group (gang) automatically controlled at the same time.
    - This facilitates making quick changes to settings on many devices.
    - When you are controlling one of the camera adapters through its base station interface, you can control ALL of the devices in the network from one common point.
    - You can set up to 5 gangs within the network
- Manually send the configuration of a Camera adapter or Base Station to other similar devices on the network.
    - This allows you to have control over when the configuration of the devices will be updated
    - You can send the configuration to individual devices or to gangs.
- Manually get the configuration of a Camera adapter or Base Station from other similar devices on the network.
    - This allows you to quickly update the configurations of new devices you add to the network.
    - You can get the configuration from individual devices or to gangs.

You can also connect the network to a PC to have additional functionality. These features can be controlled manually using FTP commands or using the free utility programs available on the Evertz Web Site.

- Save the configuration of a complete Camera adapter/ Base Station system to a file on the PC.
    - Uses the free *ECABNetCFGSave* utility program. See section 5.3.1.
- Send a saved configuration file from the PC to one or more Camera adapter/Base Station systems on the network.
    - Uses the free *ECABNetCFGLoad* utility program. See section 5.3.2.
- Load firmware to one or more Camera Adapters and/or Base Stations.

- Uses the free *ECABUpgrade* utility program (see section 5.2.1) or using FTP (see section 5.2.2)

In order to network multiple base stations together you must connect the Base stations to each other using a hub. (See section 2.6) Next you must set the IP address for each system. (See section 4.13.6.)

If you wish to connect a PC into the system you will also have to set its IP address so they are on the same subnet as the base stations.

Each base station / camera adapter pair is a mini network of three processors each with its own IP address. The base station keeps track of these addresses and comes with factory assigned IP addresses for itself, and the camera adapter connected to it via the fiber optic link and for the Network CPU interface which is located inside the base station. These IP addresses are listed in Table 4-1.

If connecting multiple base stations, take care to use different IP address ranges for each. For example set the system addresses for System 1 to 10, 11 and 12, and for system 2 to 20, 21, and 22, etc.; that way the IP address will not overlap and will be easy to remember.

If there is an IP address conflict with other devices in the network the Front panel display of the Base Station will display a flashing message

`IP CONFLICT`

After setting the IP addresses for each system you need to set unique System ID values for each Base Station/Camera Adapter pair. This value is stored in the base station and sent to the camera adapter connected to it when the fiber connection is established. (See section 4.13.4)

If the Base Station has a System Ident conflict with other Base Stations in the network the Front panel display of the Base Station will display a flashing message

`IDENT CONFLICT`

If you want the devices configured in one or more gangs you will also have to set the gang number in each camera adapter and base station. (See section 3.12.7 and 4.13.5)

Once you have configured each system you will be able to see all the camera adapters and base stations connected to the network using the *Network Status* screen on one of the base stations or camera adapters.

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CHAPTER 5: TECHNICAL DESCRIPTION

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5. TECHNICAL DESCRIPTION

5.1. SPECIFICATIONS

5.1.1. Camera Adapter

5.1.1.1. Parallel Digital Video Input (Sony Versions)

Standards: 525i/59.94 and 625i/50 (SD Models)
All standards supported in HDW-F900 camera (HD Models)
Connectors: 40 pin parallel camera connector (SD Models)
50 pin parallel camera connector (HD Models)

5.1.1.2. Serial Digital Video Input

Standards: SMPTE 259M-C 270 Mb/s (SD Models)
SMPTE 292M 1.5 Gb/s (HD Models)
Connectors: BNC per IEC 60169-8 Amendment 2
Equalisation: Automatic to 130 meters using Belden 1694 or equivalent
Return Loss: >15 dB to 270 MHz (SD models)
>15 dB to 1 GHz, >12 dB to 1.5 GHz (HD models)

5.1.1.3. Serial Digital Video Output

Standards: Same as input video
Embedded Audio: Camera audio embedded in Group 1
according to SMPTE 299M (HD) or SMPTE 272M (SD)
Connectors: BNC per IEC 60169-8 Amendment 2
Number of Outputs:
Non-Fiber: 1 from input video
1 selectable from input video, or downconverted SDI (HD models)
Fiber: 1 from input video
1 selectable from Input video, base station return or downconverted SDI (HD models)
Signal Level: 800 mV nominal
DC Offset: 0V +/- 0.5V
Rise/Fall Time: 740 ps nominal (SD), 200 ps nominal (HD)
Return Loss: >15 dB at 270 Mb/s (SD), >12 dB at 1.5 Gb/s (HD)
Time code: Camera time code inserted as VITC (SD) or RP188 ATC (HD)

5.1.1.4. Analog Video Outputs

Standards:	SMPTE 170M (NTSC), ITU-R BT470-6 (PAL)
Number of Outputs:	
Non-Fiber models:	1from Input video (downconverted on HD models)
Fiber models:	1 from Input video (downconverted on HD models) 1 from Base station return NTSC/PAL input
Connector:	BNC per IEC 60169-8 Amendment 2.
System Bandwidth:	8 MHz
Output Level:	1.0V p-p (nominal), adjustable from 0.5V to 1.5V
Output Impedance:	75Ω
Return Loss:	> 30 dB up to 5 MHz
SNR:	>70 dB
Differential Gain:	<1.0%
Differential Phase:	<0.7°

5.1.1.5. Analog Audio Inputs

Number of inputs:	2 balanced analogue audio
Connector:	3 pin female XLR
Input Level:	
Microphone:	-60 or –40 dBu, user selectable
Line:	+4dBu
Phantom Power:	12 or 48 VDC on Microphone level inputs
Frequency Response:	0.1dB (max, 20Hz to 20KHz)
THD + Noise:	-90dB or 0.003% (max, 20Hz to 20KHz, @0dBFS)
Crosstalk:	-100dB (max, 20Hz to 20KHz, measured channel connected at input)
S/N Ratio:	100dB (min)
Channel Phase:	0.5degrees (max, 20Hz to 20KHz)
Input Impedance:	10K (min, balanced)
Resolution:	24 Bits

5.1.1.6. AES Audio Input

Standard:	AES3-1992
Number of Inputs:	1
Connector:	2 pins on female High density DB15
Input Level:	2 to 7V p-p
Input Impedance:	110 ohms balanced
Return Loss:	>14dB 100kHz to 6MHz
Equalization:	Automatic to 300m with Belden 1800B (or equivalent) @ 48kHz AES signal
Sampling Frequency:	48kHz

5.1.1.7. Analog Audio Output

Type:	Balanced
Connectors:	5 pin male XLR
Number of Outputs:	2, selectable from camera channels 3-4 or base station return channels 1-2
Output Impedance:	66Ω
Freq. Response:	0.3dB (max, 20Hz to 20KHz)
THD + Noise:	-90dB or 0.003% (max, 20Hz to 20KHz, @0dBFS)
Crosstalk:	-100dB (max, 20Hz to 20KHz, measured channel connected at input)
S/N Ratio:	100dB (min)
Channel Phase:	0.5degrees (max, 20Hz to 20KHz)
Output Impedance:	66 (nom, differential)
Output Level:	-7 dBu nominal

5.1.1.8. Electrical

Voltage:	+ 12VDC
Power:	20 watts
Connector:	4 pin male XLR or battery bracket
Battery Brackets:	
+AB option:	Bracket for Anton Bauer Gold mount batteries
+IDX option:	Bracket for IDX V-Style mount batteries
+PAG option:	Bracket for PAGlok mount batteries
Safety:	ETL Listed, complies with EU safety directives
EMI/RFI:	Complies with FCC Part 15 Class A regulations Complies with EU EMC directive
Accessory Power:	2 pin Fischer 103 series female connector nominal 12 VDC, 2 A

5.1.1.9. Physical

Dimensions:	6 " H x 6 " W x 2.25 " D (150 mm H x 150 mm W x 60 mm D)
Weight:	approx. 4.5 lbs. (2 Kg)

5.1.2. Base Station

5.1.2.1. Return Serial Digital Video Input

Standards:	SMPTE 259M-C 270 Mb/s (SD Models) SMPTE 292M 1.5 Gb/s (HD Models)
Connector:	BNC per IEC 60169-8 Amendment 2
Equalisation:	Automatic to 250 meters using Belden 1694 or equivalent (SD models) Automatic to 130 meters using Belden 1694 or equivalent (HD models)
Return Loss:	>15 dB to 270 MHz (SD Models) >15 dB to 1 GHz, >12 dB to 1.5 GHz (HD Models)
Output:	Optical output to camera adapter and Auxiliary video input to base station.

5.1.2.2. Serial Digital Video Output

Input:	From optical input
Standards:	Same as input video to Camera Adapter
Embedded Audio:	Camera audio embedded in Group 1 according to SMPTE 272M (SD) or SMPTE 299M (HD)

Connectors:	BNC per IEC 60169-8 Amendment 2
Number of Outputs:	2 SDI (SD models) 1 HDSDI and 1 selectable HDSDI from input video or downconverted SDI (HD models)
Signal Level:	800 mV nominal
DC Offset:	0V +/- 0.5V
Rise/Fall Time:	740 ps nominal (SD) 200 ps nominal (HD)
Return Loss:	>15 dB at 270 Mb/s (SD) >12 dB at 1.5 Gb/s (HD)
Time code:	Camera time code inserted as VITC (SD) or RP188 ATC (HD)

5.1.2.3. Analog Video Output

Standards:	SMPTE 170M (NTSC), ITU-R BT470-6 (PAL)
Number of Outputs:	1 from camera video (downconverted on HD models)
Connector:	BNC per IEC 60169-8 Amendment 2.
System Bandwidth:	8 MHz
Output Level:	1.0V p-p (nominal), adjustable from 0.5V to 1.5V
Output Impedance:	75Ω
Return Loss:	> 30 dB up to 5 MHz
SNR:	>70 dB
Differential Gain:	<1.0%
Differential Phase:	<0.7°

5.1.2.4. Return Analog Audio Inputs

Input Level:	+4dBu
Number of Inputs:	4 return program audio
Connectors:	3 pin female XLR type on breakout panel
Input Impedance:	>20KΩ
Equalisation:	200 meters @ 48kHz using Belden 1800B or equivalent
Headroom:	> +24dBu
Transport Quantization:	24 bit

5.1.2.5. Return AES Audio Inputs

Standard:	AES3-1992
Number of Inputs:	2
Connectors:	3 pin female XLR type on breakout panel
Input Level:	2 to 7V p-p
Input Impedance:	110 ohms balanced
Return Loss:	>14dB 100kHz to 6MHz
Equalization:	Automatic to 300m with Belden 1800B (or equivalent) @ 48kHz AES signal
Sampling Frequency:	48kHz

5.1.2.6. Analog Audio Outputs

Type:	Balanced analogue audio de-embedded from input video
Number of Outputs:	4
Connectors:	3 pin male XLR type on breakout panel
Freq. Response:	±0.1dB (max, 20Hz to 20KHz)
THD + Noise:	-90dB or 0.003% (max, 20Hz to 20KHz, @0dBFS)

Crosstalk:	-100dB (max, 20Hz to 20KHz, measured channel connected at input)
S/N Ratio:	100dB (min)
Channel Phase:	±0.5degrees (max, 20Hz to 20KHz)
Output Impedance:	66Ω (nom, balanced)
Output Level:	+4dBu nominal

5.1.2.7. AES Audio Outputs

Standard:	AES3-1992
Number of Outputs:	2 pairs de-embedded from input video
Connectors:	3 pin male XLR type on breakout panel
Output Level:	2 to 7V p-p
Impedance:	110 ohms balanced
Return Loss:	>14dB 100kHz to 6MHz
Sampling Frequency:	48kHz

5.1.2.8. Ethernet

Network Type:	Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100 Mbps baseband CSMA/CD local area network Ethernet 10 Base-T IEEE 802.3 standard for 10 Mbps baseband CSMA/CD local area network
Connector:	RJ-45
Function:	Firmware upgrades via FTP, control and monitoring of camera adapter and base station

5.1.2.9. Electrical

Voltage:	Autoranging 100 - 240 Volts AC, 50/60 Hz
Standard version:	Power for base station only
Input Power:	40 Watts
Fuse Rating:	250 V, 1 amp, time delay
-CP Version	High voltage camera power
Input Power:	300 watts max – depends on camera power consumption
Fuse Rating:	250 V, 3 amp, time delay
Camera Power:	125 watts at battery voltage at output of ECA-PS Power Supply converter
Max Distance:	2 Km
Safety:	Auto shutdown when ECA-PS not connected at camera end Ground Fault Interruption
Safety:	ETL Listed, complies with EU safety directives
EMI/RFI:	Complies with FCC Part 15 Class A regulations Complies with EU EMC directive

5.1.2.10. Physical

Dimensions:	19“ W x 1.75” H x 18.75” D. (483mm W x 45mm H x 477mm D)
Weight:	
Standard version:	8 lbs. (3.5Kg)
-CP Version:	10 lbs (4.5Kg)

5.1.3. Fiber Enabled Camera Adapters And Base Station

5.1.3.1. Fiber Optic I/O

Connector:	
-AMPH version	Amphenol HFP series hermaphroditic on Camera adapter and Base Station
-FSCH version	Fischer 1053 HDTV series, DBQ on Camera adapter, DSQ on Base Station
-LEMO version	Lemo 3K.93C series, UDW on Camera adapter, FXW on Base Station
Rx Sensitivity:	-28 dBm
Tx Wavelength:	1310 nm, 1550 nm
Optical Power Output:	-1 dBm
Rise & Fall Time:	200 ps nominal
Jitter:	<0.25 UI
Return Loss:	>14 dB
Cable Type:	2 single mode fibers in SMPTE 311M compliant ruggedized hybrid copper/fiber cable assembly

5.1.3.2. Return Analog Video Input/Output

Standards:	SMPTE 170M (NTSC), ITU-R BT470-6 (PAL)
Signal Level:	1.0V p-p nominal, adjustable from 0.5V to 1.5V
Video Headroom:	>120%
DC Offset:	0V +/- 0.5V
Gain Equalisation:	200 meters of Belden 8281 or equivalent
Return Loss:	> 30 dB up to 5 MHz
Connectors:	BNC per IEC 60169-8 Amendment 2.
Impedance:	75Ω
Transport Quantization:	8 bit

5.1.3.3. Return Genlock Input/Output

Standards:	SMPTE 170M (NTSC), ITU-R BT470-6 (PAL) colour Black (SD Models) SMPTE 274M, SMPTE 296M Tri-level sync (HD Models)
Connector:	BNC per IEC 60169-8 Amendment 2
Signal Level:	1.0V p-p nominal,
Video Headroom:	>120%
DC Offset:	0V +/- 0.5V
Connectors:	BNC per IEC 60169-8 Amendment 2.
Impedance:	75Ω
Transport Quantization:	8 bit

5.1.3.4. DV Input/Output (-1394 Enabled Camera adapters and all Base Stations)

Standard:	IEEE 1394a, SMPTE 314M 25 Mb/s
Connector:	6 pin IEEE !394A
Time code:	Camera time code embedded on DV video stream

5.1.3.5. LTC Input and Output

Standard:	SMPTE 12M Linear Time Code to and from Base Station
Number:	1 input and 1 output at each end
Connector:	
Camera Adapter:	BNC per IEC 60169-8 Amendment 2., unbalanced, 75Ω
Base Station:	3 pin male XLR Output, 3 pin female XLR input, 100Ω
Input Signal Level:	0.2 to 4V p-p
Output Signal Level:	1V p-p nominal
Rise/Fall Time:	40 µs +/- 10 µs

5.1.3.6. General Purpose Inputs and Outputs

Number:	2 Inputs and 2 outputs ate each end
Type:	Opto-isolated inputs, with pull ups to +5V Dry relay N.O and N.C. outputs menu selectable functions and level
Connector:	
Camera Adapter:	female High density DB15
Base Station:	female High density DB9

5.1.3.7. Camera Remote Control

Connector:	8 pin female Hirose MXR Series
Signal:	RS-232/422 (menu selectable) data Camera luminance (Y) 1 v p-p (when connected to Sony Cameras only) Base Station supplies + 12 VDC to power for camera remote panel
Baud Rate:	Up to 3M baud
Latency:	< 1 us

5.1.3.8. Metadata Serial Port

Number of Channels:	1
Connector:	Female DB-9
Signal:	RS-232/422 (menu selectable) data
Baud Rate:	Up to 3M baud
Latency:	< 1 us

5.1.3.9. Firmware Upgrade Serial Port

Connector:	Female DB-9
Signal:	RS-232 data
Baud Rate:	115200 baud
Format:	8 data bits, no parity, 2 stop bits
Protocol:	Firmware upgrades

5.1.3.10. Intercom

Standard:	RTS 2 wire party line belt pack
Connector:	
Camera Adapter:	5 pin female XLR stereo headset connector
Base Station:	3 pin female XLR beltpack connector

5.1.3.11. IFB

Input Level: +4dBu
Number of Inputs: 1 IFB return audio
Connector:
Camera Adapter: 3 pin male XLR
Base Station: 3 pin female XLR type on breakout panel
Input Impedance: >20KΩ

5.1.4. ECA-PS DC-DC Power Converter

5.1.4.1. Electrical

Input Voltage:
ECA-PS: Autoranging 150 - 250 Volts DC
ECA-PS-160: Autoranging 200 - 250 Volts DC
Input Connector: 4 pin Fischer 103 series male
Output Voltage: 14VDC nominal
Output Connector:
+AB option: Anton Bauer Gold Mount
+IDX option: IDX V groove
+PAG option: PAG Lok
Aux Power Outputs:
Connectors: 2 pin Fischer 103 series female
4 pin XLR female
Max Current: 2A per output
Max Output Power:
ECA-PS: 120 watts
ECA-PS-160: 160 watts
Max Distance:
ECA-PS: 6600 feet (2 Km)
ECA-PS-160: 3300 feet (1 Km)
Indicators: Input OK (Green)
Output OK (Green)
Overload (Red)

5.1.4.2. Physical

Dimensions:
ECA-PS: 4.5“ W x 6” H x 2.25” D.
(120mm W x 150mm H x 60mm D)
ECA-PS-160: 4.5“ W x 6.25” H x 2.25” D
(120mm W x 160mm H x 60mm D)
Weight: 2.75 lbs. (1.25Kg)

5.2. UPGRADING FIRMWARE

The ECA series camera adapters and ECB series base stations contain application firmware that is contained in a FLASH EPROM device. From time to time firmware updates will be provided to add additional features to the unit. In addition the base stations contain a separate set of firmware for the network interface CPU.

Sometimes, updating the firmware in the unit will cause a reset of the non-volatile memory settings to their factory default values, including the IP addresses of the units. If this occurs, you may not be able to upgrade the firmware until you re-program your custom IP addresses back into the base station. In order to be able to restore the menu settings you have configured for your system it is advisable to save the current configuration using the procedure outlined in section 5.3.1 before you update the firmware. If the non-volatile settings are reset during the firmware upgrade you will be able to restore them using the procedure outlined in section 5.3.2 after you have restored the IP addresses of the base station.

There are three methods of updating the firmware in the ECA series camera adapters and ECB series base stations: ECABUpgrade Utility, File Transfer Protocol (FTP) and Serial Upload. Due to the large size of the firmware binary files the FTP method is the preferred method of updating the firmware. If you have a non-fiber version of the camera adapter you will have to upgrade the firmware using the serial port method.

Prior to initiating the upgrade process

- Power up both the camera adapter and base station and connect the fiber optic cable. Confirm the version of code currently installed on the units by using the Firmware Version menu item in the base station. See section 4.12.
- For non-fiber camera adapters power up the camera adapter and view the firmware version using the Firmware Version menu item in the camera adapter. See section 3.11.
- Download the new application code from the Evertz FTP site (www.evertz.com) Unzip the file into a temporary working folder on your PC.
- You may choose to place all the ECA, ECB and ECN software into the same directory, or into a subdirectory (such as C:\EVERTZ\ECA_ECB\FIRMWARE), or into individual subdirectories (such as C:\EVERTZ\ECA_ECB\REV_1_1 etc)

Set up a temporary working folder on your c:\ drive with a maximum 8 character folder name. This will make it easier to navigate the file system from the command prompt that only allows 8 character file names in some operating systems.

Firmware file names use the following naming conventions. (xxxx is the build number)

Firmware File name	Description
eca_b_sd_xxxx	Standard definition Camera adapter main application firmware
ecb_b_sd_xxxx	Standard definition Base Station main application firmware
eca_b_hd_xxxx	High definition Camera adapter main application firmware
ecb_b_hd_xxxx	High definition Base Station main application firmware
ecn_b_xxxx	All Base Stations Network interface CPU firmware
d3cl_xxxx	A1394 Codec firmware

To update the firmware using the ECABupGrade Utility process follow the procedure outlined in section 5.2.1. To update the firmware using the FTP upgrade process follow the procedure outlined in section 5.2.2. To update the firmware using the serial upgrade process follow the procedure outlined in section 5.2.3.

5.2.1. ECABupGrade Utility Method of Updating Firmware

You will need the following equipment in order to update the Firmware using the FTP process:

- PC with Ethernet network port.
- Appropriate Ethernet cable as outlined in section 2.6.
- New firmware supplied by Evertz.

5.2.1.1. Step 1 – Establishing a valid Network Connection

Before any Ethernet upgrades can be initiated, the user must determine the IP address of the base station and camera adapter units. Both the PC/laptop and the units must be on the same subnet for the FTP upgrade to work properly. If you are using Windows 2000 use the Settings\Network and dialup connections on the start menu to configure the IP settings of your computer as shown in Figure 5-1.

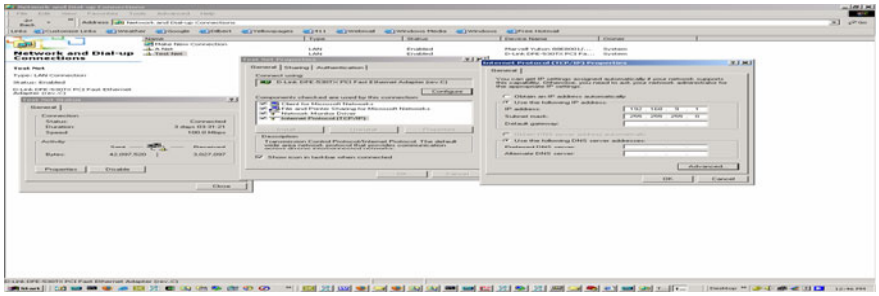


Figure 5-1: Setting the IP Address of your Computer

1. The *System IP* menu item allows the user to set the networking parameters of the unit. See section 4.13.6. If you are not sure how to set the network parameters, contact your networking/IT administrator.

   Once you return to the Main Menu wait for 30 seconds for the new network parameters to be saved in the Flash memory and power cycle the base station so that the new settings will take effect.

2. Connect a crossover network cable from the PC/laptop to the unit. If you are connecting through a hub then use a straight through network cable as shown in section 2.6.

5.2.1.2. Step 2 – Upgrading the Application Code

The ECABupGrade utility is a free software utility that can be used to upgrade the three components (ECA,ECB and ECN) of a camera adapter system, and can upgrade multiple systems in a single use. Download the ECA_util.zip file from the downloads section of the Evertz web site (www.evertz.com/download.php). Choose the firmware downloads section and then the Camera adapter system tab.

3. Unzip the ecabupgrade.exe, the supplied rev_def.ini and the sample camsys.ini into the same directory, somewhere in the folder tree above the .BIN files you wish to load. For example you may want to put them in C:\EVERTZ\ECA_ECB.

4. If you received a different rev-def.ini file in the zip file containing the firmware BIN files, you should place it into the same directory where you placed the ecabupgrade.exe file. This file contains the latest firmware revision information for the system.

5. Save a copy of the supplied camsys.ini file for reference purposes, to something like camsys_original.ini. the camsys.ini file lists the IP addresses of each of the components of your system. Edit the camsys.ini file so that it more accurately reflects the configuration of your multi-camera system.

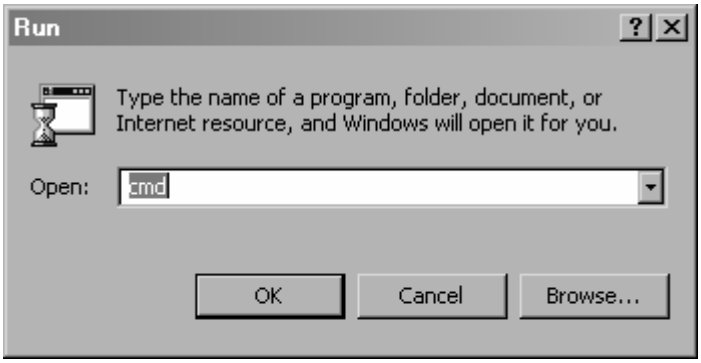
```
[1]                  ; Unit heading which indicates the following addresses belong to system ID '1'
ECA=192.168.9.12     ; an example of an IP address belonging to an ECA unit
ECB=192.168.9.11     ; an example of an IP address belonging to an ECB unit
ECN=192.168.9.10     ; an example of an IP address belonging to an ECN unit

[2]                  # Unit heading which indicates the following addresses belong to system ID '2'
ECA=192.168.9.22     # an example of an IP address belonging to an ECA unit
ECB=192.168.9.21     # an example of an IP address belonging to an ECB unit
ECN=192.168.9.20     # an example of an IP address belonging to an ECN unit

[3]                  # Unit heading which indicates the following addresses belong to system ID '3'
ECA=192.168.9.32     # an example of an IP address belonging to an ECA unit
ECB=192.168.9.31     # an example of an IP address belonging to an ECB unit
ECN=192.168.9.30     # an example of an IP address belonging to an ECN unit
```

Figure 5-2: Sample Camsys.Ini File Showing Three Systems

6. Open a Command prompt window. This can be accomplished by using the run command under the start button, type “cmd”; see figure below for an example:



7. Change to the directory where you put ECABupGrade.exe. For example "`CD C:\EVERTZ\ECA_ECB\`"

8. Type `ecabupgrade –h<enter>` to check that the program runs, and will give you a list of help information. Figure 5-5-3 shows the help screen from the program

9. Verify the network connections and locations of the latest available software on your PC using one of the following commands.

   - `ecabupgrade --noupgrade`

This example will examine the current directory, and all subdirectories, searching for the latest firmware for each of the ECA, the ECB and ECN components of the system. The "--noupgrade" option will allow you to proof check the files and connections. The program will list which files would have been sent to which IP addresses. See example in Figure 5-4.

- `ecabupgrade -D FIRMWARE --noupgrade`
  This example shows how to access *.BIN files which are located in a diferent directory, such as C:\EVERTZ\ECA_ECB\FIRMWARE. You may specify a relative or absolute directory path for the program. Note that the option "-D" is a capital letter. See example in Figure 5-5.
- `ecabupgrade -s 1 -s Q --noupgrade`
  This example shows how to select a specific system(s), as defined in camsys.ini, such as the camera system labeled "1" and the camera system labeled "Q" See example in Figure 5-6.
- `ecabupgrade -t ecb -t ecn --noupgrade`
  This example shows how to select only a certain type(s) of software to upgrade, such as the ECB software and the ECN software. See example in Figure 5-7.
- `ecabupgrade -A ECA_B_HD_123.BIN -B ECB_B_HD_456.BIN --noupgrade`
  This example shows how to select a specific .BIN file for the ECA and ECB. In this example, the ECN will be selected from latest available, as discussed above. See example in Figure 5-8.
- `ecabupgrade -b 192.168.9.11 -a 192.168.9.12 -a 192.168.9.22 --noupgrade`
  This example shows how to select specific destination(s) which are not defined in your camsys.ini file, such as the ECB located at 192.168.9.11 and the ECA's located at 192.168.9.12 and 192.168.9.22. See example in Figure 5-9.
- `ecabupgrade -R 1.0.050826 --noupgrade`
  In this example the various build numbers associated with Revision 1.0.050826 will be determined from the default ref_def.ini file, and will be sent to all the systems defined in the default camsys.ini file. See example in Figure 5-10.

If you are unable to establish a valid connection with some of the devices, make sure that the IP addresses in your camsys.ini file match the IP addresses that you have programmed into your base station units. Also make sure that the PC has an IP address with the same subnet as the units.

If you have incompatible firmware versions already in the camera adapter and base station then you may not be able to establish a valid connection to the devices. You will have to use the serial port upgrade method outlined in section 5.2.3

10. Upload the software into the units using one of the following command examples

- `ecabupgrade`
  This example shows the easiest way to load the software. The program will examine the current directory and all it's subdirectories to determine the latest software to load for the ECA, ECB and ECN components and will attempt to load them to each of the systems defined in camsys.ini. The user will be notified of destinations that are not on line. When a destination is sucessfully found, the user will be prompted for a Y(ES) answer for each of the destinations. If the new software and the old software are the same build number, the user will be prompted again for a Y(ES) answer. See example in Figure 5-11.
- `ecabupgrade -y`
  This example is similar to the previous, except that there will be no user prompts. It is the same as answere Y(ES) to all the prompts.

- `ecabupgrade -y --boot`
  This example shows the addition of the "--boot" option which causes the destination to reboot after the new software is loaded.
- `ecabupgrade -y --factoryreset`
  This example shows the addition of the "--factoryreset" option which causes the destination to erase all the saved settings ***(including IP addresses)*** after the new software is loaded, and then reboot.
- `ecabupgrade -A ECA_B_HD_123.BIN -B ECB_B_HD_456.BIN`
  This example shows how to select a specific .BIN file for the ECA and ECB. In this example, the ECN will be selected from latest available, as discussed above
- `ecabupgrade -R 1.0.050826`
  In this example the various build numbers associated with revision 1.0.050826 will be determined from the default ref_def.ini file, and will be sent to all the systems defined in the default camsys.ini file. See example in Figure 5-12.

If you are having trouble upgrading using the ECABupGrade utility use the manual FTP procedure outlined in section 5.2.2.

5.2.1.3. Step 3 – Completing the Upgrade

1. When you are done upgrading all the devices you can close the command window and disconnect the network cable.

5.2.1.4. Sample Screens from ECAB Upgrade Utility

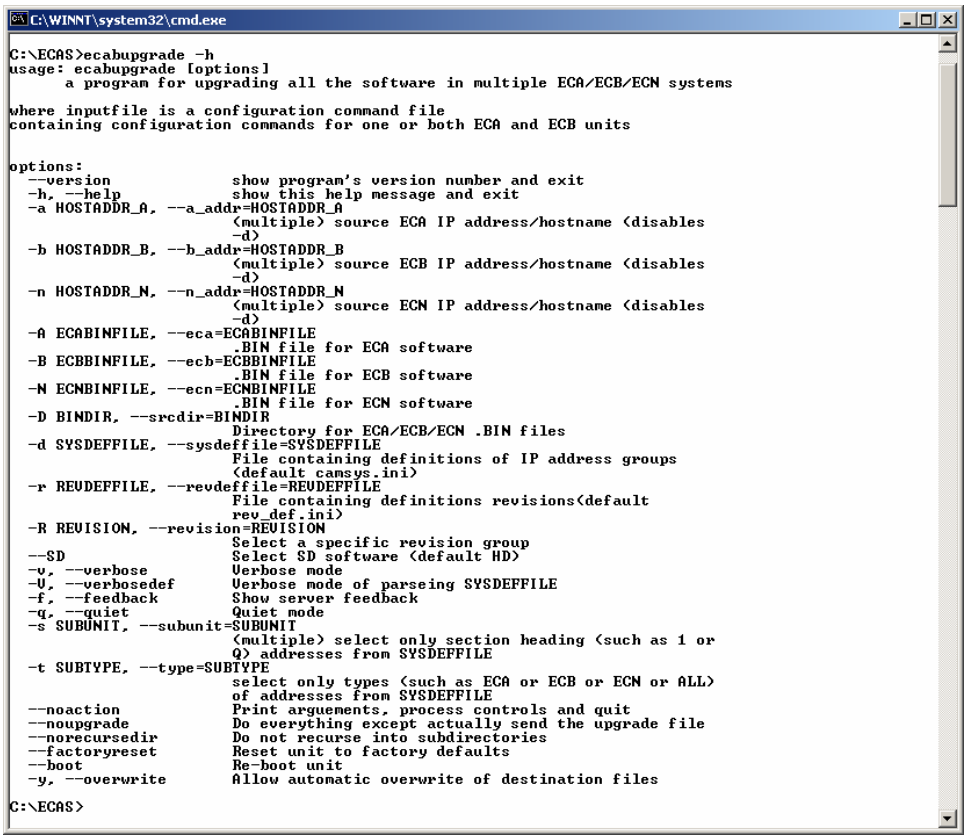


Figure 5-5-3: Help Screen from ECABUpgrade utility

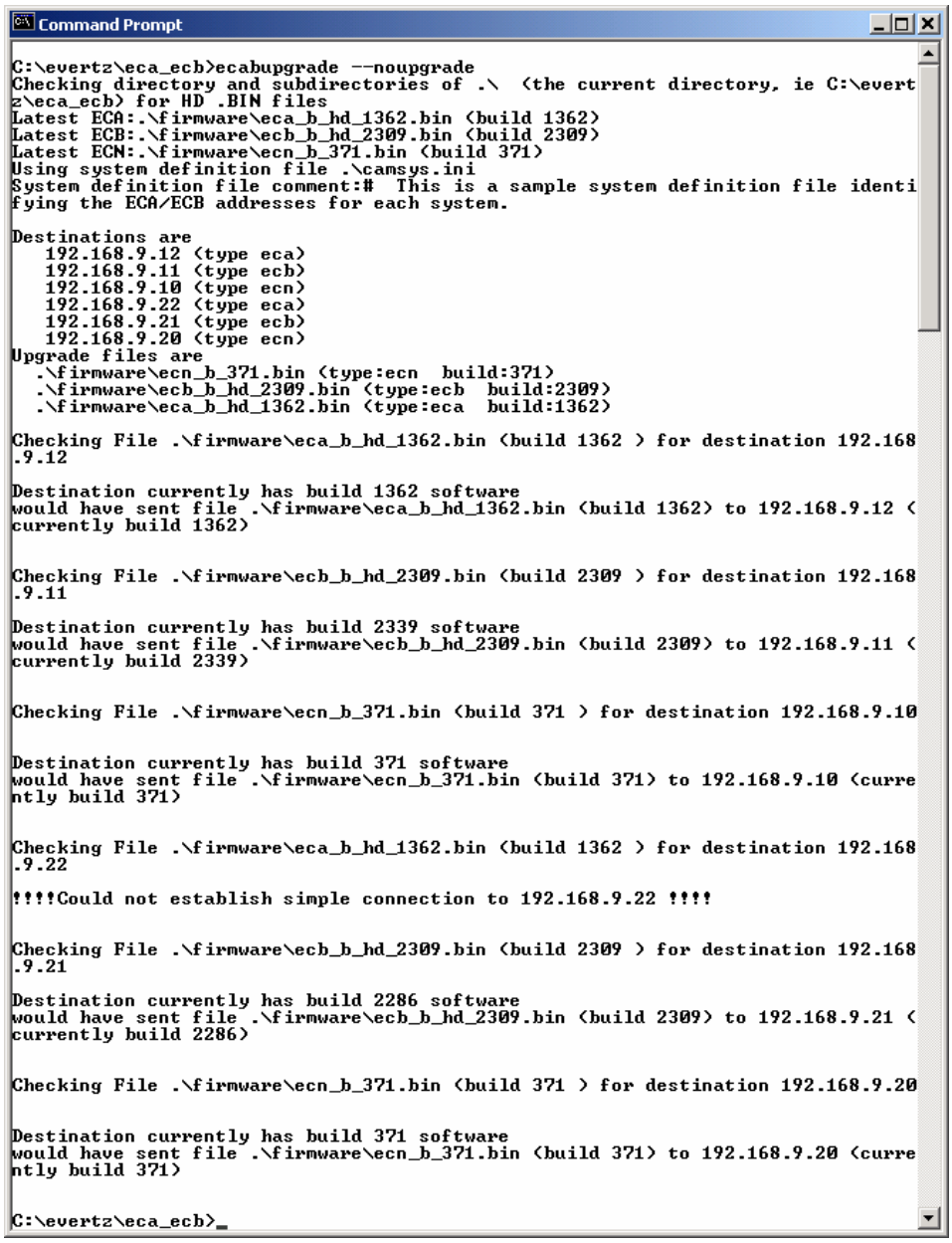


Figure 5-4: Sample Screen for Testing The Upgrade

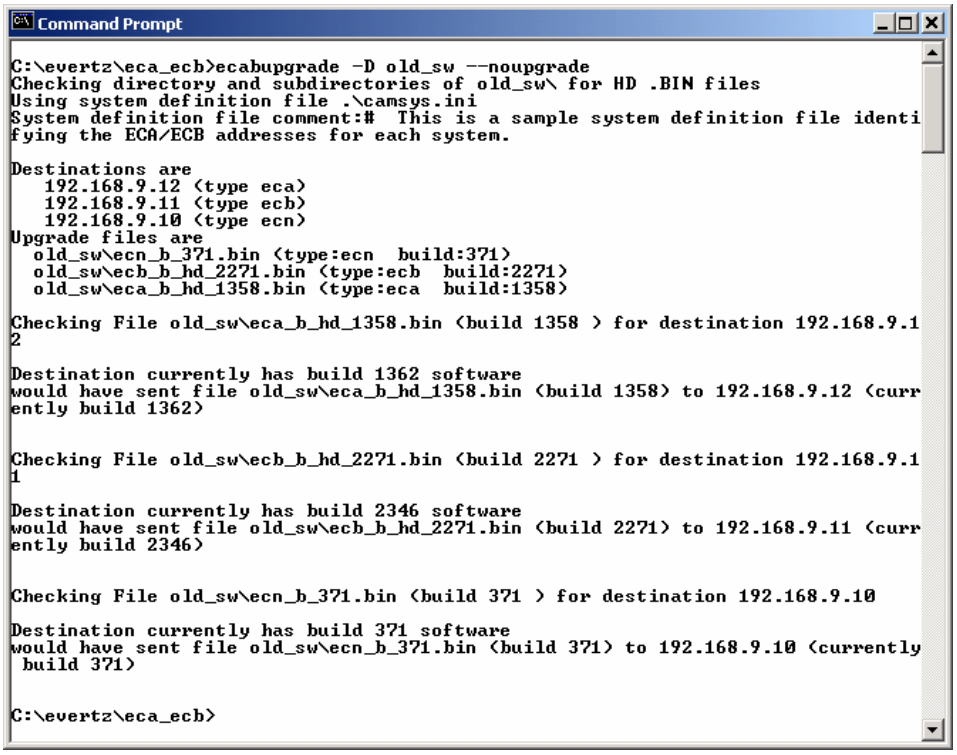


Figure 5-5: Sample Screen for Testing The Upgrade - Accessing Files In Another Directory

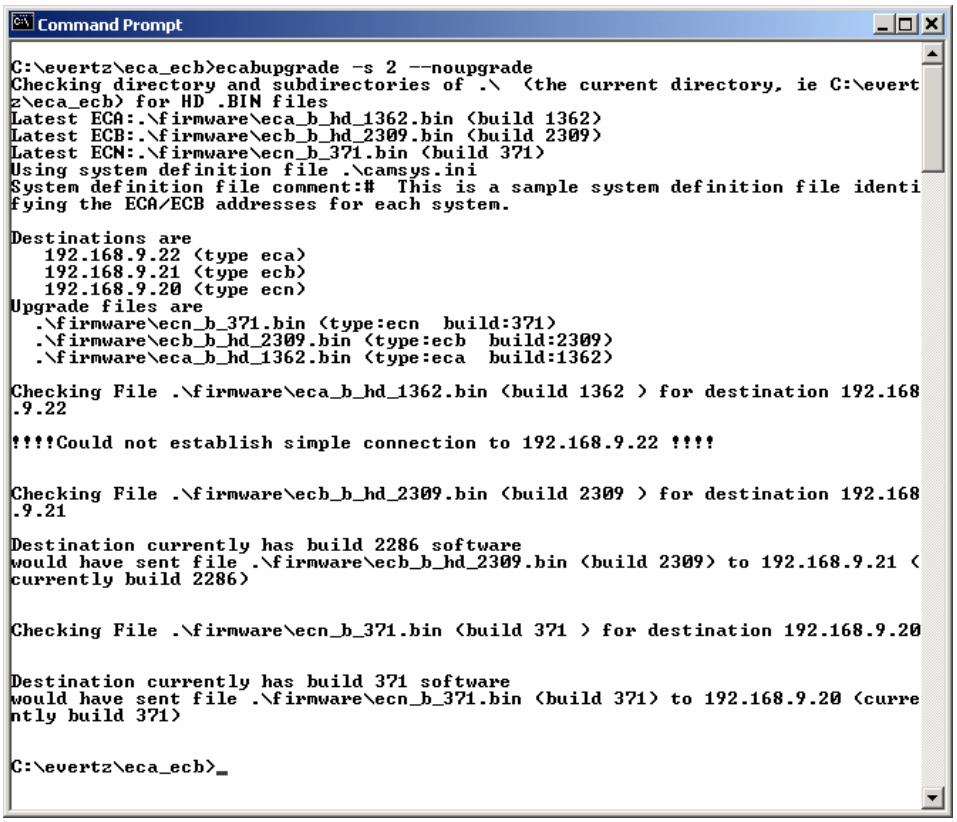


Figure 5-6: Sample Screen for Testing The Upgrade Of Only 1 System

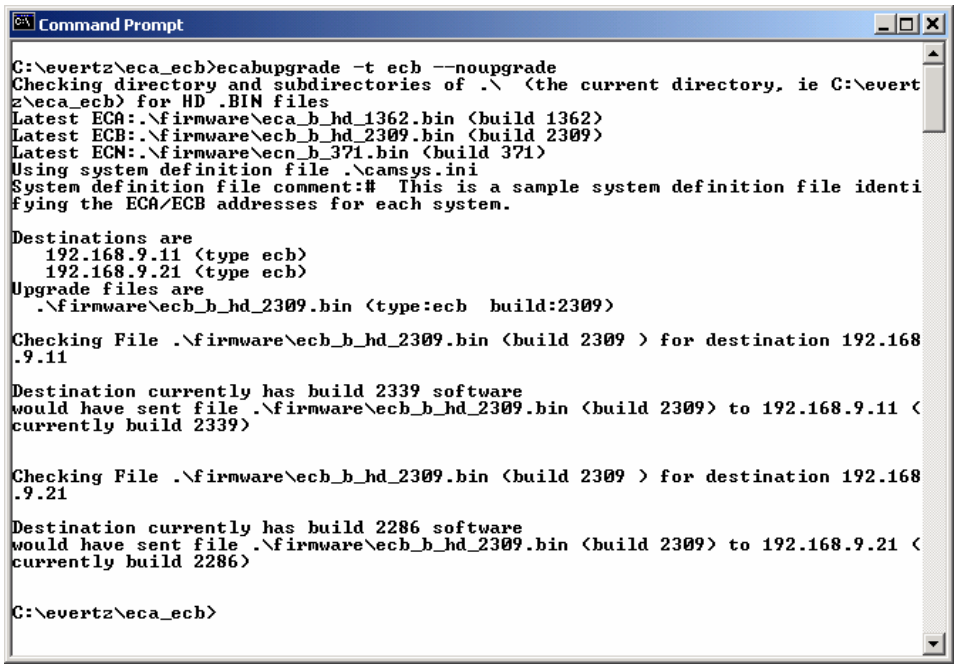


Figure 5-7: Sample Screen for Testing The Upgrade Of One Type Of Unit (ECB)

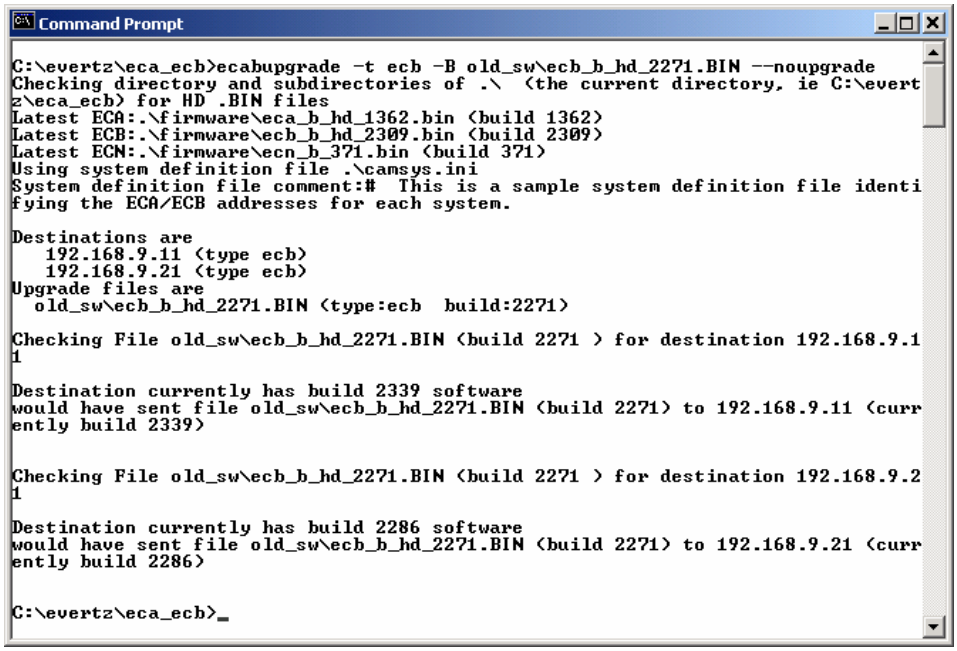


Figure 5-8: Sample Screen For Testing The Upgrade Of One Type Of Unit (ECB) With A Specific Binary File

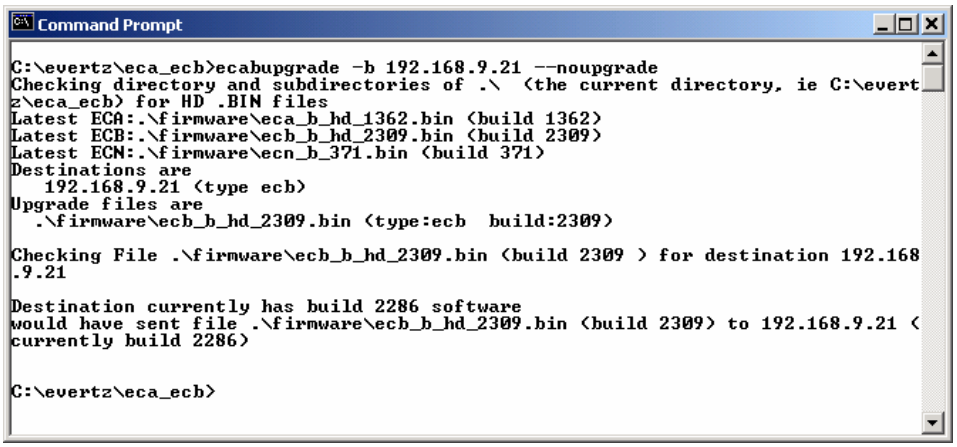


Figure 5-9: Sample Screen for Testing The Upgrade – Of One Unit With A Specific IP Address

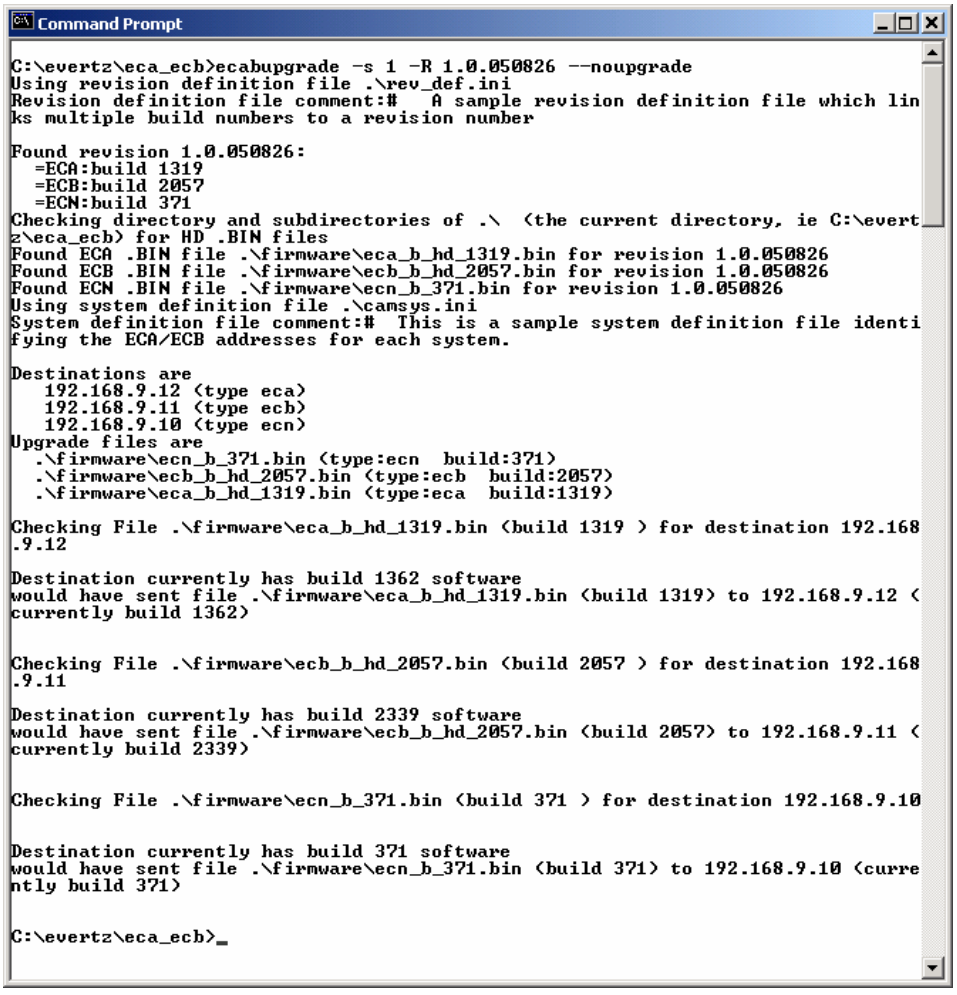


Figure 5-10: Sample Screen For Testing The Upgrade To A Specific Revision Level Of Firmware

Figure 5-11: Sample Screen for Upgrading All Systems Defined In Camsys INI file

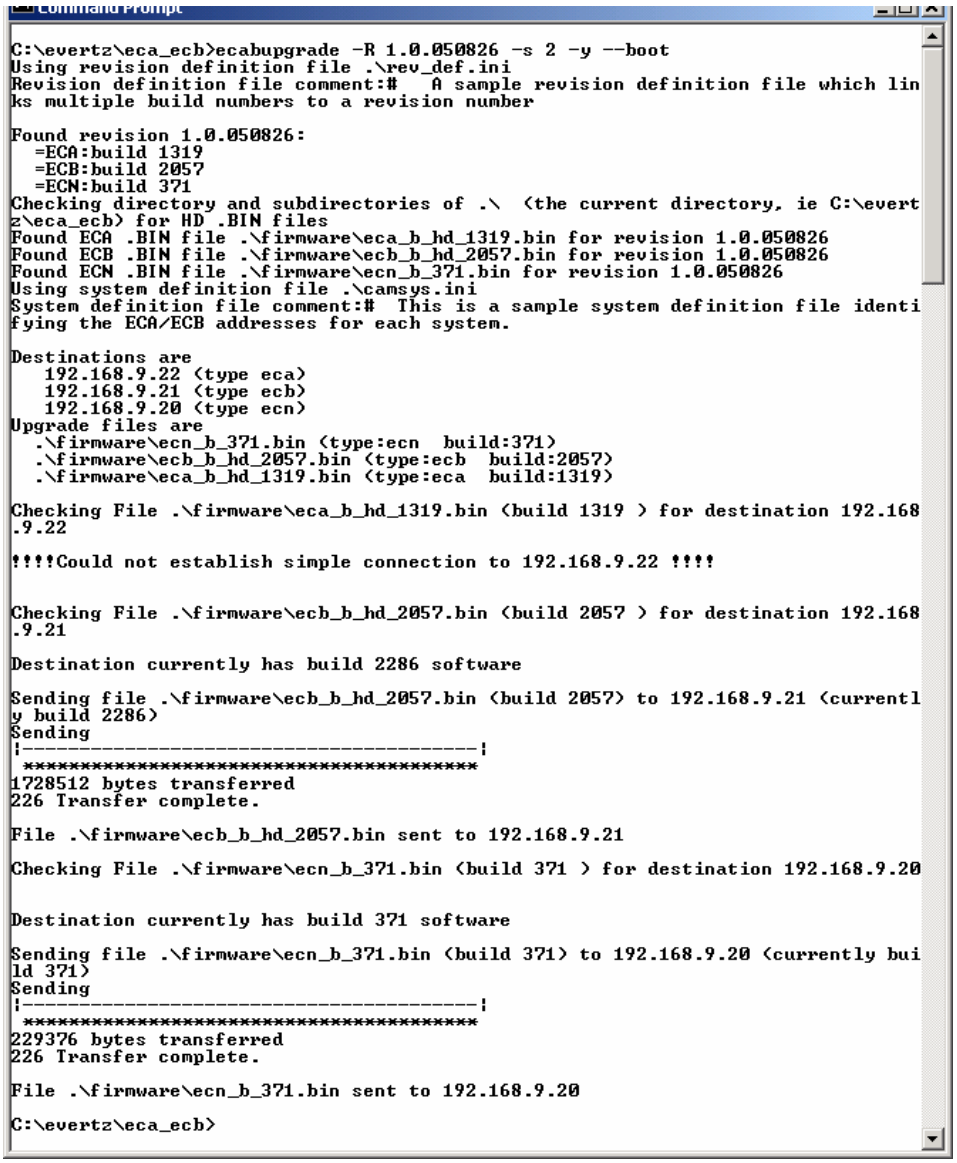


Figure 5-12: Sample Screen For Upgrading All Systems To A Specific Revision Level Of Firmware

5.2.2. Manual FTP (File Transfer Protocol) Method of Updating Firmware

You will need the following equipment in order to update the Firmware using the FTP process

- PC with Ethernet network port.
- Appropriate Ethernet cable as outlined in section 2.6.
- New firmware supplied by Evertz.

5.2.2.1. Step 1 – Establishing a valid Network Connection

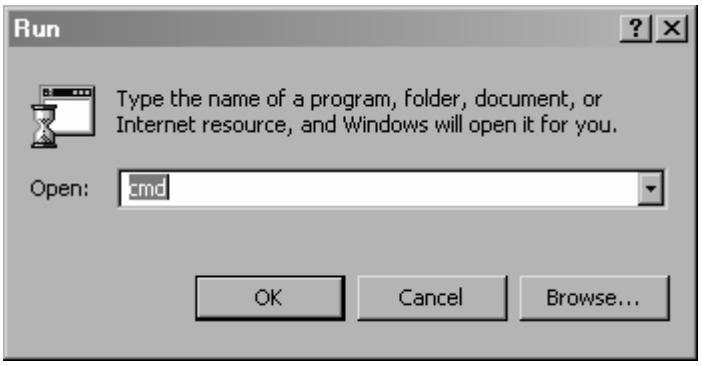
Before any FTP (file transfer protocol) upgrades can be initiated, the user must determine the IP address of the base station and camera adapter units. Both the PC/laptop and the units must be on the same subnet for the FTP upgrade to work properly. See section 5.2.1.1.

2. The *System IP* menu item allows the user to set the networking parameters of the unit. See section 4.13.6. If you are not sure how to set the network parameters, contact your networking/IT administrator.

   Once you return to the Main Menu wait for 30 seconds for the new network parameters to be saved in the Flash memory and power cycle the base station so that the new settings will take effect.

3. Connect a crossover network cable from the PC/laptop to the unit. If you are connecting through a hub then use a straight through network cable as shown in section 2.6.

4. Open a Command Prompt window. This can be accomplished by using the run command under the start button, type "cmd"; see figure below for an example:



5. "Ping" the IP addresses of all three devices in the system. (Camera adapter, base station and network CPU) For example in the command window type:

```
C:\>ping 192.168.9.10 <Enter>
```

   If a proper network connection has been established to the device, a "reply" is displayed on the DOS window. If there is a faulty network connection, a "Destination Host Unreachable" message is provided. If this occurs, either the IP addresses of the nodes should be verified or the network (Ethernet) cable is faulty. For more information, please see section 2.6 of this manual.

If you have incompatible firmware versions already in the camera adapter and base station then you may not be able to 'ping' the devices.

   If you are unable to 'ping' the devices, you will have to use the serial port upgrade method outlined in section 5.2.3

5.2.2.2. Step 2 – Upgrading the application code

The firmware in the camera adapter, base station and network CPU all need to be in a matched set for proper operation of the system. If you are upgrading multiple firmware images you should upgrade the camera adapter first, the base station second and the network CPU last. If you do not follow this order you may not be able to update some parts of the system using the FTP method.

6. In the Command window type: `ftp xxx.xxx.xxx.xxx` (IP address of the module)

7. Press the <Enter> key when prompted for a “Username”

8. Press the <Enter> key when prompted for a “Password”

9. Type “hash” at the “FTP>” to turn on the progress indicator during the ftp upload.

10. At the “FTP>” prompt, type the following: `put “thename of the file.bin”`.
    (For example: “`put ecb_b_hd_1133.bin.bin`)

11. If the application file is not local to where you are performing the ftp, then include the path with the name (For example: `put c:\firmware\ecb_b_hd_1133.bin`)

12. The FTP screen displays a message indicating the successful opening of a data connection to the device.

13. The file transfer takes about 90 seconds during which time you will see the transfer progress indicated by # characters on the ftp screen. When the # characters stop the unit will transfer the firmware to its flash memory. During this process, which takes about 30 seconds, you will not see any activity on the FTP screen.

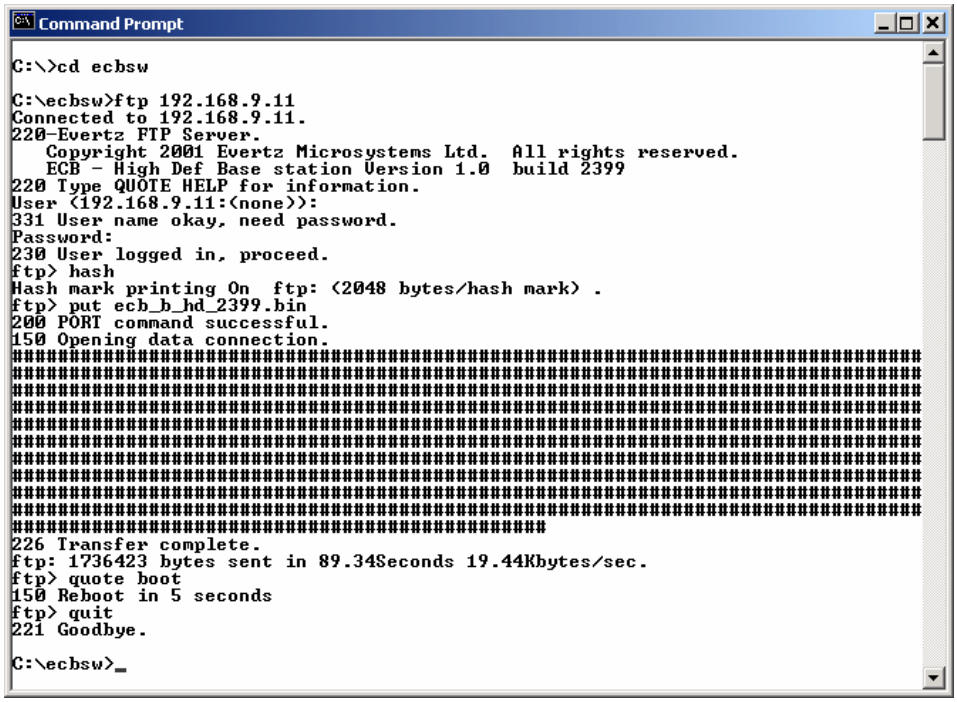
During this time it is mandatory that all power cycles of the unit be avoided.

14. You will see a ‘Transfer complete’ message when the firmware has been successfully written to the flash memory.

15. Type “`quote boot`” at the “FTP>” prompt to reboot the unit so that the new firmware will take effect. You will see a message indicating that the unit will reboot in 5 seconds.

16. Within 5 seconds type “`quit`” at the “FTP>” prompt to exit the FTP session for this unit before it reboots. If you do not quit the session before the reboot then the FTP session will freeze and you will have to type `<ctrl-C>` one or more times to terminate the FTP session.

The screen below shows a typical FTP session for upgrading the base station.



17. Repeat steps 6 to 16 for each firmware image you wish to upload. Remember to use the correct IP address for the device you are upgrading.

5.2.2.3. Step 3 – Completing the Upgrade

18. When you are done upgrading all the devices you can close the DOS window and disconnect the network cable.

5.2.3. Serial Port Method of Upgrading Application Firmware

You will need the following equipment in order to update the camera adapter or base station firmware

- PC with available communications port. The communication speed is 115200 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- "Straight-thru" serial extension cable (DB9 female to DB9 male)
- Terminal program that is capable of Xmodem file transfer protocol. (such as HyperTerminal)
- New firmware supplied by Evertz.

5.2.3.1. Step 1 – Terminal Program Setup

1. Connect the serial cable to the **COM 1/UPGRADE** DB9 connector.

2. Connect the 9 pin connector on the end of the serial update cable to the PCs' RS-232 communications port.

3. Start the terminal program.

4. Configure the port settings of the terminal program as follows:

Baud	**115200**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

5. Power up the camera adapter or base station unit.

5.2.3.2. Step 2 – Invoke Upload Mode From The Terminal Program

7. Power up the unit. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor to the right of the word BOOT> should be spinning for about 5 seconds then the unit will continue to boot.

   For example:

```
EVERTZ MCF5407 MONITOR 2.3 BUILD 8
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
MCF5407 COLD BOOT> |
```

8. The following is a list of possible reasons for failed communications:

   - Defective Serial Upgrade cable.
   - Wrong communications port selected in the terminal program.
   - Improper port settings in the terminal program. (Refer to step 7 for settings). Note that HyperTerminal will not change port settings while connected. Click on HyperTerminal's "Disconnect" Button then click the "Reconnect" button to activate changes to the port settings.
   - PC requires hardware flow control despite the Hyperterminal settings.

9. While the cursor is spinning press the <CTRL> and <X> keys on your computer keyboard at the same time, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.

10. Hit the <ENTER> key on your computer once.

11. Type the word "upgrade", without quotes, and hit the <ENTER> key once.

12. The boot code will ask for confirmation. Type "y", without quotes.

13. You should now see a prompt asking you to upload the file.

5.2.3.3. Step 3 – Uploading the new firmware

14. Upload the "*.bin" file supplied using the X-Modem transfer protocol of your terminal program. If you do not start the upload within 10 minutes the unit's Boot code will time out. You can restart the upgrade process by power cycling the unit.

15. The boot code will indicate whether the operation was successful upon completion of the upload.

For Example:

```
UPLOAD OKAY
MCF5407 COLD BOOT> |
```

16. The following is a list of possible reasons for a failed upload:

- If you get the message "transfer cancelled by remote" you must restart the terminal program and load the bin file, then remove and install the module again.
- The supplied “*.bin” file is corrupt.
- Wrong file specified to be uploaded.
- Wrong file transfer protocol used – make sure you specify Xmodem, not Xmodem 1K.
- The PCs’ RS-232 communications port can’t handle a port speed of 115200.
- Noise induced into the Serial Upgrade cable.

5.2.3.4. Step 4 – Completing the Upgrade

17. Type the word “boot”, without quotes, and hit the <ENTER> key once or power cycle the unit. The unit should now reboot.

18. You can now close the terminal program and disconnect the RS-232 serial cable from the PC.

5.3. SAVING, RESTORING AND PROTECTING SYSTEM CONFIGURATIONS

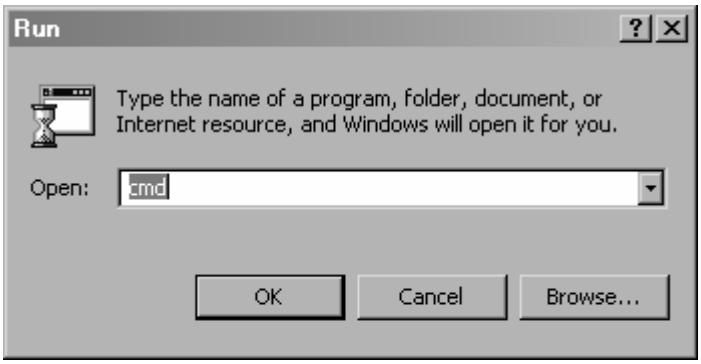
Often it is desirable to save a snapshot of the menu settings of both the camera adapter and base station to a computer file. This file can be used as a backup in the event that the system settings are reset, or when you want to configure multiple systems with identical settings. You can also save different configurations for different applications with different file names, and restore the settings easily. The configuration file can be for either the camera adapter or base station in a system or it can be for both units.

The ECABnetCfgLoad and ECABnetCfgSave programs are free software utilities that can be used to save the menu settings of a camera adapter/base station system to a PC and restore it back into the unit. These programs operate over an ethernet connection to the base station and indirectly over the fiber optic interface to the camera adapter. You can obtain these utilities by downloading the ECA_util.zip file from the downloads section of the Evertz web site (www.evertz.com/download.php). Choose the firmware downloads section and then the Camera adapter system tab.

1. Unzip the ECABnetCfgLoad and ECABnetCfgSave programs, and the sample camsys.ini into the same directory, somewhere in the folder tree above the folder containing the config files you wish to load. For example you may want to put them in C:\EVERTZ\ECA_ECB.

2. Save a copy of the supplied camsys.ini file for reference purposes, to something like camsys_original.ini. The camsys.ini file lists the IP addresses of each of the components of your system. Edit the camsys.ini file so that it more accurately reflects the configuration of your multi-camera system. See Figure 5-2 for a sample of the Camsys.Ini File showing three systems

3. Open a DOS window. This can be accomplished by using the run command under the start button, type “cmd”; see figure below for an example:



4. Change to the directory where you put ECABnetCfgLoad and ECABnetCfgSave programs. For example "`CD C:\EVERTZ\ECA_ECB\`"

5. Type `ecabnetcfgsave –h<enter>` to check that the program runs, and will give you a list of help information. Figure5-13 shows the help screen from the program.

5.3.1. Saving A Configuration from the Camera Adapter /Base Station System

6. Save the configuration from the units into the PC using one of the following command examples

   - `ecabnetcfgsave -s 1 samplecfg.txt`
     This example shows how to save the configuration(s) from system #1 (as defined in the default camsys.ini file) and save to file samplecfg.txt. See example in Figure 5-14.
   - `ecabnetcfgsave -s 1 samplecfg.txt -c "this is my sample cfg"`
     This example operates as above but with the addition of a comment that will be added ot the head of the file. See example in Figure 5-15.
   - `ecabnetcfgsave -y -a 192.168.9.12 -b 192.168.9.11 samplecfg.txt`
     This example shows how to save the configurations from the units at specific IP addresses and save them to the file. The "-y" option allows the output file to be overwritten. See example in Figure 5-16.

5.3.2. Restoring A Saved Configuration to the Camera Adapter /Base Station System

7. Restore the configuration from the PC back into the units using one of the following command examples

   - `ecanetcfgload -s 1 samplecfg.txt`
     This example shows how to send the configuration file samplecfg.txt to the system #1 as defined in the default camsys.ini file. See example in Figure 5-17.
   - `ecanetcfgload -a 192.168.9.12 -b 192.168.9.11 samplecfg.txt`
     This example shows how to send the configuration file to units at the IP addresses specified. The "-a" option specifies ECA addresses (multiple are allowed), and the "-b" option specified ECB addresses (multiple are allowed).
   - `ecanefcfgload -t ecb -t ecb samplecfg.txt`
     This example shows how to send the configuration file to all of the addresses defined in the default camsys.ini file which are of type eca and type ecb (which in this case is the same as sending the complete config to all the units). See example in Figure 5-18.

5.3.3. Sample Screens from ECABNetCfgSave and ECABNetCfgLoad Utilities

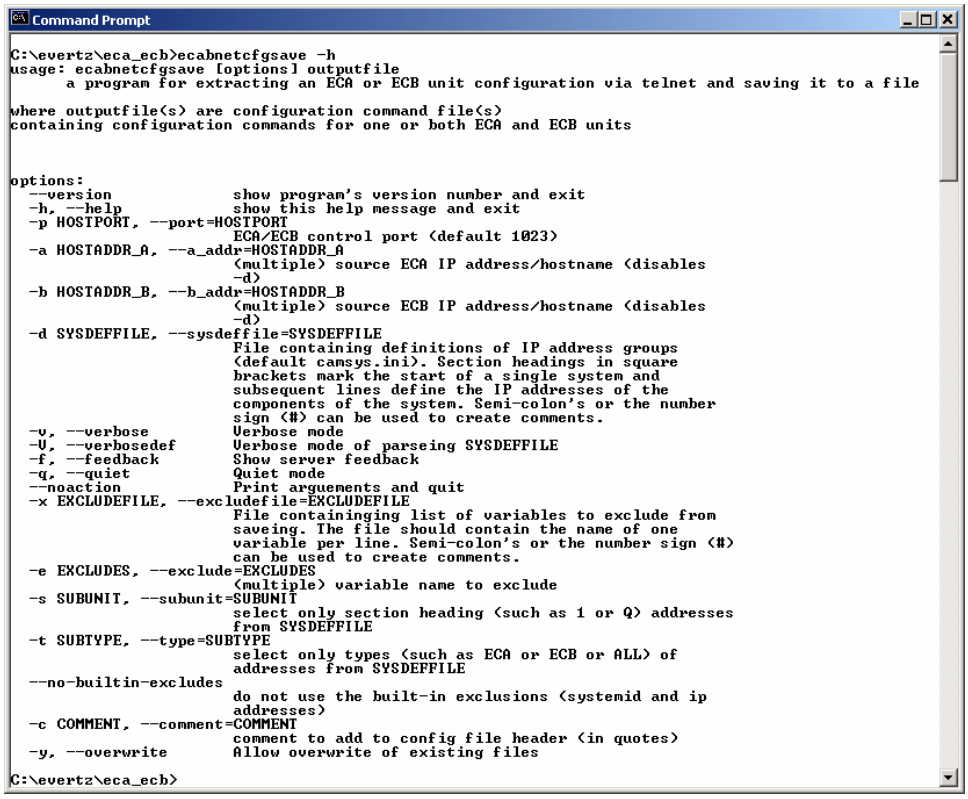


Figure5-13: ECABNetCfgSave Utility Help Screen

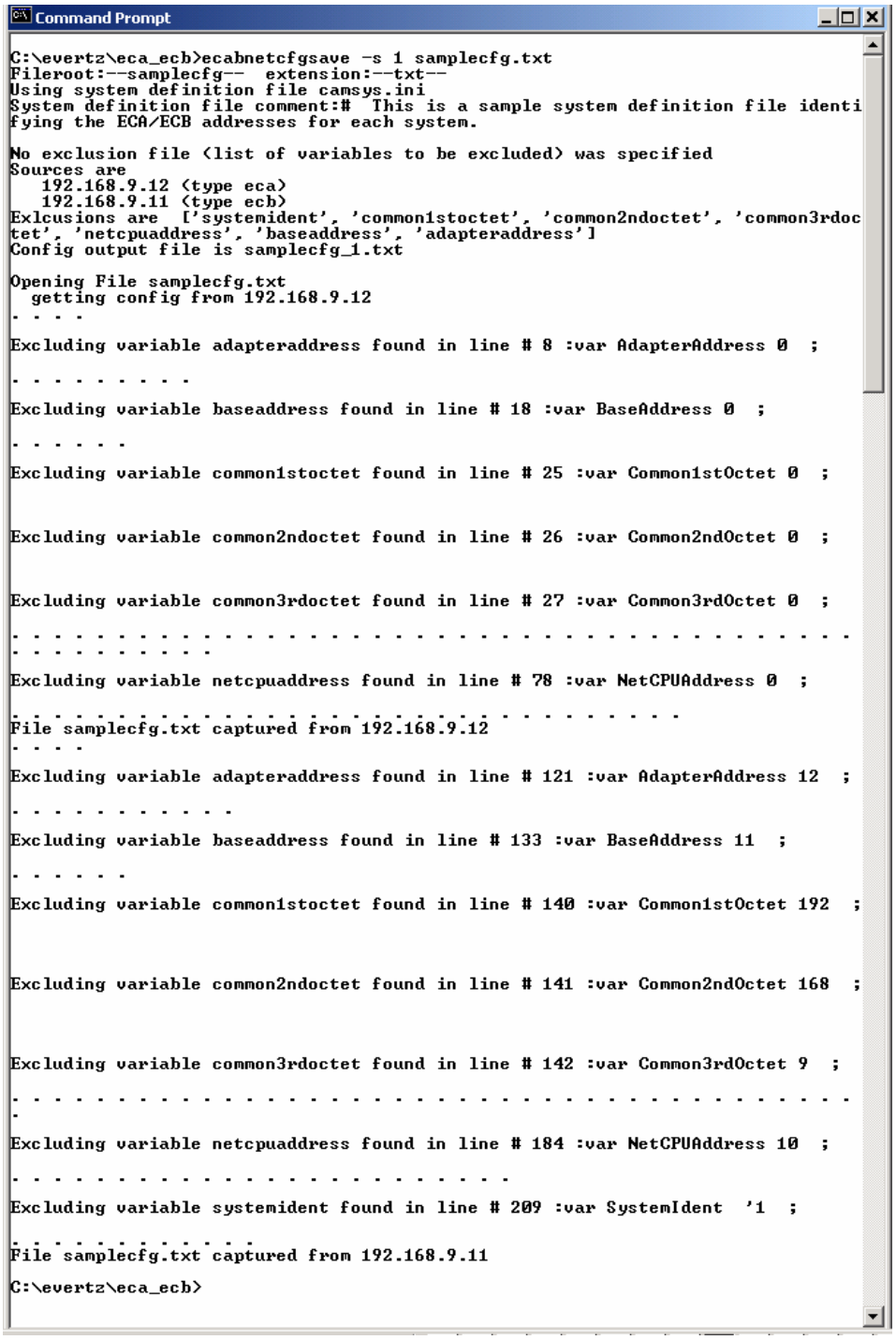


Figure 5-14: Saving The Configuration From System 1

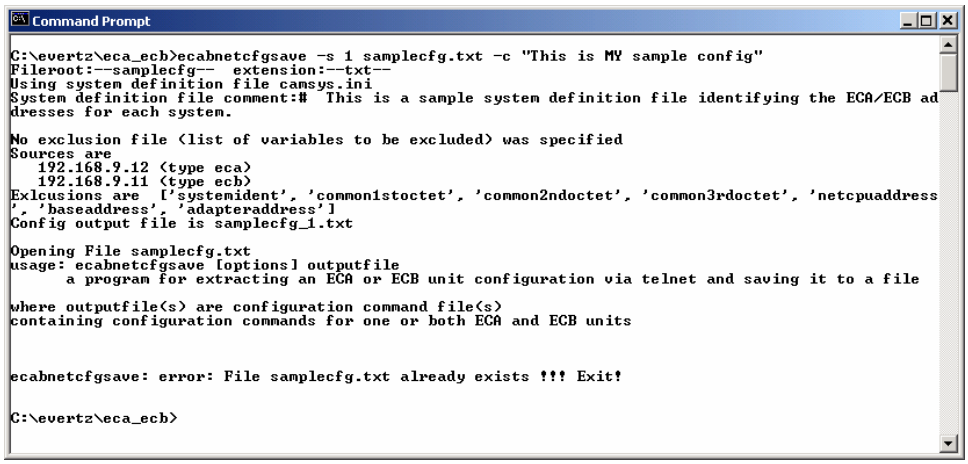


Figure 5-15: Saving The Configuration From System 1 (with Comments)

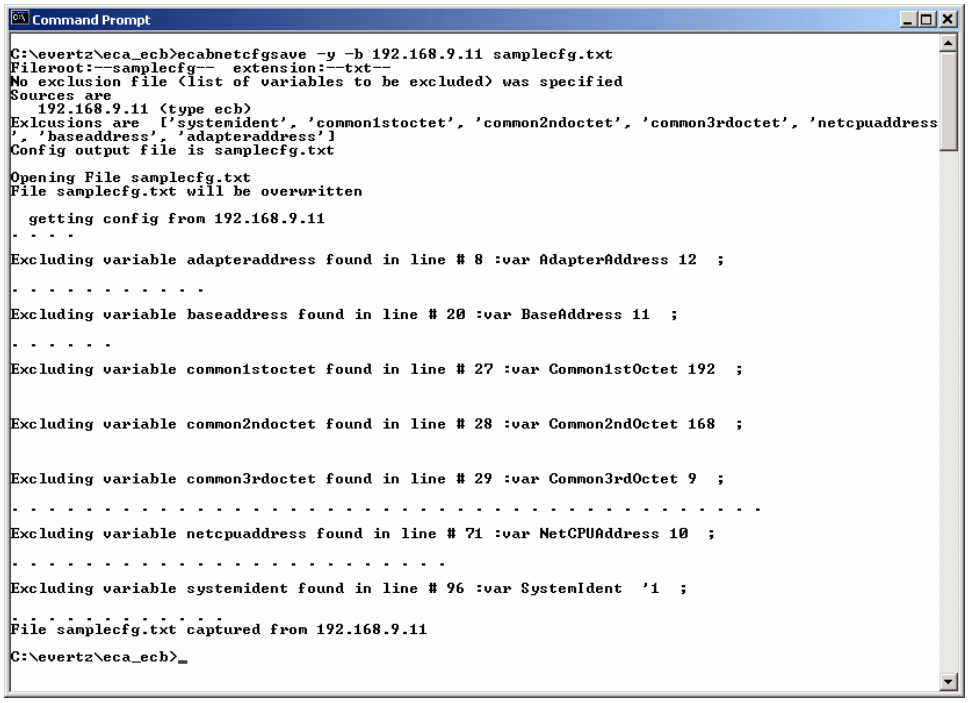


Figure 5-16: Saving The Configuration From A Unit With A Specific IP Address

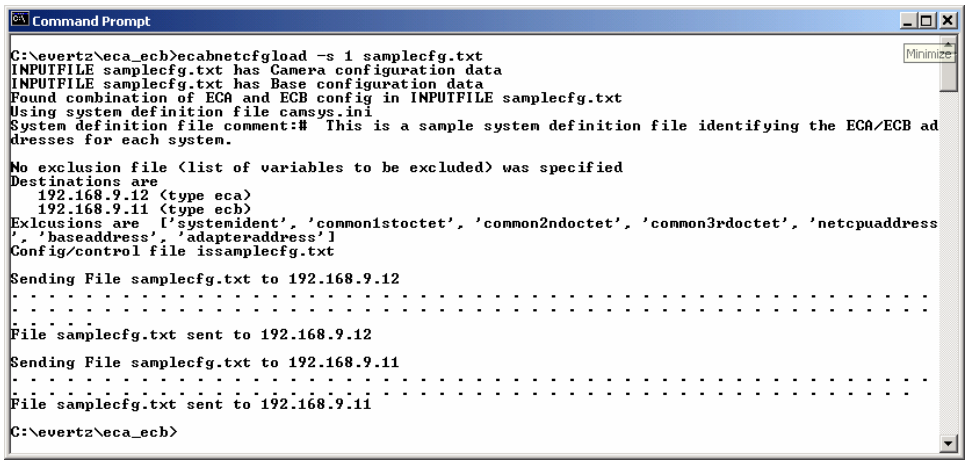


Figure 5-17: Loading The Configuration To System 1

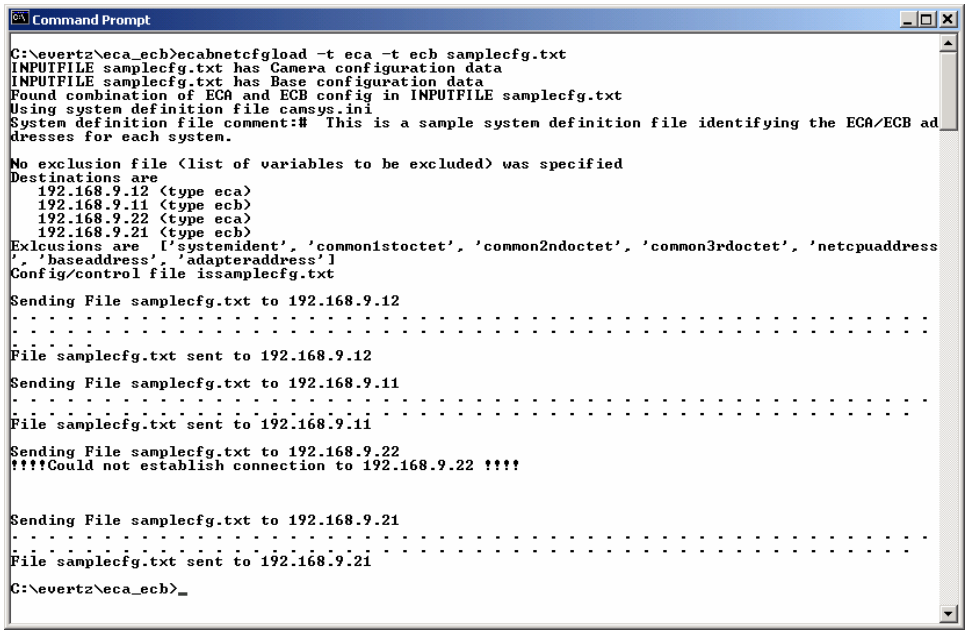


Figure 5-18: Loading The Configuration To all ECA and ECB Units

5.3.4. Protecting the Camera Adapter /Base Station Menu Settings

The following procedure allows Engineers to protect the menu settings against accidental changes by users. This procedure uses the command line interface for the unit available on the serial port and restricts access to the menu system by issuing a lock command with a password. In order to unlock the system, the Engineer will have to issue an unlock command that uses the same password that was used to lock the system.

1. To use the command line interface you will need a PC running a terminal program (such as HyperTerminal). Connect the PC to the serial port and start the terminal program as outlined in section 5.2.3.1. You should see various messages on the screen of the terminal program.

2. The following is a list of possible reasons for failed communications:

   - Defective Serial Upgrade cable.
   - Wrong communications port selected in the terminal program.
   - Improper port settings in the terminal program. (Refer to section 5.2.3.1 for settings). Note that HyperTerminal will not change port settings while connected. Click on HyperTerminal's "Disconnect" Button then click the "Reconnect" button to activate changes to the port settings.
   - PC required hardware flow control lines to be connected in spite of software settings. Loop back the hardware flo control lines at the computer end of the cable.

3. To lock the menu system type `lock PASSWORD PASSWORD` and press the <enter> key

   The PASSWORD can be any numeric password up to 6 digits. Note that you have to enter the password two times. If you do not type exactly the same password both times the command will not lock the system menus. Write the password down somewhere as you will not be able to gain access to the menus again unless you enter the password with the unlock command.

4. To lock the menu system type `unlock PASSWORD` and press the <enter> key

   If you do not type exactly the same password that was used to lock the menus the command will not unlock the system menus. In the event that you have forgotten the password contact Evertz customer support for information on how to force the menus to unlock.

5.4. DEBUG WINDOW DISPLAYS

5.4.1. Camera Status Window (Sony Cameras Only)

`CAM: <List of Camera Statuses>`
Where <List of Camera statuses> is :

`MISSING`	No communications to Camera
`NONE`	No Camera detected

When communications is established with the Sony camera one or more of the following statuses will be displayed:

`EJECT`	Tape is ejecting
`ERR`	Error
`NOCASS`	No cassette
`REC`	Record
`STOP`	Stop
`REW`	Rewind
`FFWD`	Fast forward
`PLAY`	Play
`STILL`	Pause
`LCL`	Local control
`LCK`	Servo locked
`TSO`	Servo speed override
`SHTL`	Shuttle
`JOG`	Jog

VAR	Variable Play
R/F	
CUEDN	Cued
STBY	Standby

5.4.2. Camera Time Code Window

```
CAMTC: %100  +1 S23:59:59:23 @24 12345678
```

%100	valid read rate as a percentage of expected read rate
+1	numeric difference of time code between successful reads
S	dynamics flags P-play, S-stop
23:59:59:23	raw, uncompensated time code read (NOT LIKELY TO EXACTLY MATCH picture content!) ':' will be replaced by '*' when time code not valid, or not readable or discontinuous
@24	time code counting rate / expected rate
12345678	camera user bits

5.4.3. Adapter LTC Reader Window

```
ALTC:%100T0+1L23:59:59:23@24/24 +100
```

':'	LTC threshold set at 50% of frame. or '.' LTC threshold set at 70% of frame.
%100	valid read rate as a percentage of expected read rate
T0	phase of LTC input (0-9) w.r.t video/audio timebase. T1 indicates LTC was complete somewhere between 0% and 10% of the frame.
+1	numeric difference of time code between successful reads
L	dynamics flags L-locked, P-play, F-forward, S-stop, R-reverse
23:59:59:23	raw, uncompensated time code read (NOT LIKELY TO EXACTLY MATCH picture content!) ':' will be replaced by '*' when time code not valid, or not readable or discontinuous
@24/24	time code counting rate / expected rate. Will only show counting rate when it is the same as the expected rate.
+100	average speed of time code as a percent of nominal play speed

5.4.4. Return LTC Reader Window

```
RLTC:%100T0+1L23:59:59:23@24/24 +100
```

':'	LTC threshold set at 50% of frame. or '.' LTC threshold set at 70% of frame.
%100	valid read rate as a percentage of expected read rate
T0	phase of LTC input (0-9) w.r.t video/audio timebase. T1 indicates LTC was complete somewhere between 0% and 10% of the frame.
+1	numeric difference of time code between successful reads
L	dynamics flags L-locked, P-play, F-forward, S-stop, R-reverse
23:59:59:23	raw, uncompensated time code read (NOT LIKELY TO EXACTLY MATCH picture content!) ':' will be replaced by '*' when time code not valid, or not readable or discontinuous
@24/24	time code counting rate / expected rate. Will only show counting rate when it is the same as the expected rate.
+100	average speed of time code as a percent of nominal play speed

5.4.5. Adapter LTC User Bits Window

```
ALUB:%100T0   12 32 56 78
```

':'	LTC threshold set at 50% of frame. or '.' LTC threshold set at 70% of frame.
%100	valid read rate as a percentage of expected read rate
T0	phase of LTC input (0-9) w.r.t video/audio timebase. T1 indicates LTC was complete somewhere between 0% and 10% of the frame.
12 32 56 78	raw, uncompensated user bits read (NOT LIKELY TO EXACTLY MATCH picture content!) ' ' will be replaced by '*' when time code/ user bits not valid, or not readable

5.4.6. Return LTC User Bits Window

```
RLUB:%100T0   12 32 56 78
```

':'	LTC threshold set at 50% of frame. or '.' LTC threshold set at 70% of frame.
%100	valid read rate as a percentage of expected read rate
T0	phase of LTC input (0-9) w.r.t video/audio timebase. T1 indicates LTC was complete somewhere between 0% and 10% of the frame.
12 32 56 78	raw, uncompensated user bits read (NOT LIKELY TO EXACTLY MATCH picture content!) ' ' will be replaced by '*' when time code/ user bits not valid, or not readable

5.4.7. VITC Output Window

```
VTCO: 23:59:59:23@24 12 23 56 78
```

23:59:59:23	VITC time code read output
@24	time code counting rate
12 32 56 78	VITC user bits

5.4.8. LTC Output Window

```
LTCO: 23:59:59:23@24 12 23 56 78
```

23:59:59:23	VITC time code read output
@24	time code counting rate
12 32 56 78	VITC user bits

LTCO: FROM FIBER	Indicates that the LTC Output Source is directly coming from the TDM Fiber
LTCO: FROM LTC IN	Indicates that the LTC Output is directly to the local LTC input

5.4.9. 1394 DV Time code Window

```
DV TCO: 23:59:59:23@24 12 23 56 78
```

23:59:59:23	DV time code read output
@24	time code counting rate
12 32 56 78	DV user bits

DV TCO: CODEC NOT PRESENT	Indicates that there is no 1394 Codec module installed
DV TCO: Codec RESET	Indicates that the 1394 Codec is in Reset mode and not functioning

5.4.10. HDSDI Input Ancillary Time Code Window

```
ATC:L:%100 F1 L23:59:59:23@24/24 +100LVLV
```

L	source type L=RP188LTC, V=RP188 VITC
%100	valid read rate as a percentage of expected read rate
F1	Fields in which data is read - F12 indicates both field 1 and field 2
L	dynamics flags L-locked, P-play, F-forward, S-stop, R-reverse
23:59:59:23	raw, uncompensated time code read NOT LIKELY TO EXACTLY MATCH picture content! ':' will be replaced by '*' when time code not valid, or not readable or discontinuous
@24/24	time code counting rate / expected rate. Will only show counting rate when it is the same as the expected rate
+100	average speed of time code as a percent of nominal play speed
LVLV	Indicates which type of ATC packets are present in field 1 and field 2 only shows when the measured counting rate is the same as the expected rate

5.4.11. HDSDI ATC User Bits Window

```
ATCUB:  12 34 56 78
```

':'	LTC threshold set at 50% of frame. or '.' LTC threshold set at 70% of frame.
%100	valid read rate as a percentage of expected read rate
T0	phase of LTC input (0-9) w.r.t video/audio timebase. T1 indicates LTC was complete somewhere between 0% and 10% of the frame.
+1	numeric difference of time code between successful reads
L	dynamics flags L-locked, P-play, F-forward, S-stop, R-reverse
12 32 56 78	raw, uncompensated user bits read (NOT LIKELY TO EXACTLY MATCH picture content!) ' ' will be replaced by '*' when time code/ user bits not valid, or not readable

5.4.12. Video Standard Window

```
VID:1080P/23.98SF->525i/59.94 AV
```

1080P/23.98SF->525i/59.94	Displays the current input and output video standards,
AV	Indicates auto-video standard switching is enabled

5.4.13. Temperature Window

5.4.13.1. Camera Adapter Temperature Window

```
TEMP:42/+0.1 42/+0.1 42/+0.1 020 020
```

42/+0.1	temperature displays for the 3 temperature sensors – temperature in degrees Celsius, rata of change of temperature
020	fan rotation speed for each fan (hundreds of RPM)

5.4.13.2. Base Station Temperature Window

```
TEMP:42/+0.1 42/+0.1
```

42/+0.1	temperature displays for the 2 temperature sensors – temperature in degrees Celsius, rata of change of temperature

5.4.14. Hardware Window

5.4.14.1. Camera Adapter Hardware Window

`GPI: 00 GPO: 00 SW:1111`

`GPI: 00`	state of GPI 1 and GPI 2 inputs. 1= high, 0 = low
`GPO: 00`	state of GPO 1 and GPO 2 outputs. 1= high, 0 = low, X= unknown because it is coming directly from the GPI at the other end of the fiber
`SW: 1111`	state of toggle switches and pushbuttons

5.4.14.2. Base Station Hardware Window

`GPI: 00 GPO: 00`

`GPI: 00`	state of GPI 1 and GPI 2 inputs. 1= high, 0 = low
`GPO: 00`	state of GPO 1 and GPO 2 outputs. 1= high, 0 = low, X= unknown because it is coming directly from the GPI at the other end of the fiber

5.4.15. TDM Fiber Status Window

`BASIC: Y R%100 T%100 S:1 E:0000/0000`

`Y`	Y= Basic hardware loopback detected, N= basic hardware loopback not detected – no fiber 2 connection
`R%100`	valid receive packet rate as a percentage of expected rate
`T%100`	valid remote receive (transmit) packet rate as a percentage of expected rate
`S: 1`	1=valid software session established
`E:0000/0000`	number of TDM receive/transmit errors

5.4.16. Camera Adapter Ancillary Time Code Inserter Status Window

`ATCGEN:ON L09 23:59:59:23 F1 LV BOTH`

`ON`	ON= ATC inserter is ON, OFF=ATC inserter is turned off
`L09`	Line number where ATC packlets are being inserted
`23:59:59:23`	ATC generator time code
`F1`	Fields in which data is inserted – toggline F1 F2 indicates both field 1 and field 2
`LV`	ATC packet type L=RP188LTC, V=RP188 VITC
`BOTH`	output where ATC is being inserted. BOTH= Camera HDSDI and Fiber output LOCAL= Camera HDSDI output, FIBER= Fiber output to base station

5.4.17. Config Status Window

`USER CONFIG WRITE PENDING - 20`

This message only appears when there is a change of one of the memory settings. It indicates the number of seconds till the memory variables will be written to the non-volatile memory. If power is removed from the unit before this message disappears, the changes to the memory variable swill not be saved.

5.4.18. Time Code Compare Window

TC IN: AL: +00 RL: +00 ATC: +00
This debug window shows the relative times of the Adapter LTC In, Return LTC in and HDSDI in ATC relative to the time code source set in the *Video Time Code Source* menu.

AL: +00 Number of frames of difference for Adapter LTC in to *Video Time code Source*
RL: +00 Number of frames of difference for Return LTC in to *Video Time code Source*
ATC: +00 Number of frames of difference for HDSDI in ATC to *Video Time code Source*

5.4.19. Summary Status Window

This window gives a quick summary of status information

5.4.19.1. Camera Adapter Summary Status Window

ID:ERR A1 A2 A3 A4 HH:MM:SS STATUS TMP
ID System Ident of the Camera adapter/Base Station Pair
ERR Total TDM receive/transmit errors from since last reset
A1, A2, A3, A4 Audio levels (dB) of Audio channel 1, 2, 3 & 4 respectively
HH;MM;SS Total elapsed Record time (since last Cassette Eject or Rec Time reset)
STATUS Camera Status

For Sony Camera
When Video input set to *Camera* - shows most important status info from CAM STS display
When Video input set to *HDSDI In* - shows SDI IN when video present
- shows NO SDI when video not present
When Video input set to *Test Gen* - shows CAMSDI when video present

For Varicam Camera
When Video input set to *HDSDI In* - shows CAMSDI when video present
- shows CAMBAR when colour bars present

TMP Peak temperature from Camera Adapter Temperature window

5.4.19.2. Base Station Summary Status Window

ID:ERR A1 A2 A3 A4 HH:MM:SS STATUS
ID System Ident of the Camera adapter/Base Station Pair
ERR Total TDM receive/transmit errors from since last reset
A1, A2, A3, A4 Audio levels (dB) of Audio channel 1, 2, 3 & 4 respectively
HH;MM;SS Total elapsed Record time (since last Cassette Eject or Rec Time reset)
STATUS Camera Status

For Sony Camera
When Video input set to *Camera* - shows most important status info from CAM STS display
When Video input set to *HDSDI In* - shows SDI IN when video present
- shows NO SDI when video not present
When Video input set to *Test Gen* - shows CAMSDI when video present

For Varicam Camera
When Video input set to *HDSDI In* - shows CAMSDI when video present
- shows CAMBAR when colour bars present

5.5. SERVICING INSTRUCTIONS

These servicing instructions are for use by qualified service personnel.

5.5.1. Changing the Base Station Fuses

The Base Station fuse holder is located inside the power entry module. To change the fuses, pull out the fuse holder from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place. Use slo blo (time delay) 5 x 20 mm fuses rated for 250 Volts with the current rating shown in Table 5-1. Carefully reinsert the fuse holder into the power entry module.

Model	Description	Fuse Rating
ECB ECB-HD	Standard Base Station	1 amp
ECB-CP ECB-CP-HD	Base Stations with Camera power output on Hybrid Fiber	3.15 amp

Table 5-1: Base Station Fuse Ratings

Never replace with a fuse of greater value.