TECHNICAL MANUAL

HDFS-550/551/552
High Definition Frame Synchronizers

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Customer Support

Fortel DTV hopes this manual provides answers for nearly all your questions, but if it does not, please call us in Atlanta, Georgia USA.

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Important Safeguards and Regulatory Notices

Information on the following pages provides important safety guidelines for both Operator and Service Personnel. Specific warnings and cautions will be found throughout the manual where they apply, but may not appear here. Please read and follow the important safety information, noting especially those instructions related to risk of fire, electrical shock, or injury to persons.

Danger

- Electrical potential is still applied to some internal components even when power switch/breaker is in the off position. To ***prevent electrical shock*** when working on this equipment, disconnect the AC line cord source before working on any internal components.
- Residual voltage may be present immediately after unplugging the system due to slow discharge of large power supply capacitors. Wait 30 seconds to allow capacitors to discharge before working on the system.

Warnings

- Any instructions in this manual that require opening the equipment cover or enclosure are for use by ***qualified service personnel only***. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.
- Heed all warnings in the unit and in the operating instructions.
- Do not use this equipment in or near water.
- Disconnect AC power before installing any options unless explicitly told to do so in this manual.
- This equipment is grounded through the grounding conductor of the power cord. To avoid electric shock, connect the power cord to the equipment and plug it into a properly grounded receptacle before connecting the equipment inputs and outputs. Receptacle grounding conductor must be connected to earth ground at the service equipment.
- Dangerous voltages exist at several points within this equipment. To avoid personal injury, refer all servicing to qualified personnel.
- During installation, do not use the door handles or front panels to lift the equipment as they may open abruptly and injure you.
- To avoid fire hazard, use only components on the specified type, voltage and current rating as referenced in the appropriate parts list. Always refer fuse replacement to qualified service personnel.
- To avoid explosion, do not operate this equipment in an explosive atmosphere unless it has been specifically certified for such operation.
- Have qualified personnel perform safety checks after any completed service.
- To reduce the risk of electric shock, ensure that the two power supply cords (if so equipped) are each plugged into a separate branch circuit.
- If equipped with a redundant power supply, this unit has two power cords. To reduce the risk of electric shock disconnect both power supply cords before servicing.

Cautions

- This equipment contains static sensitive components. ***Use anti-static grounding equipment*** whenever handling or servicing modules and components. When circuit modules are removed from the frame, place them on a flat static-controlled surface. Failure to follow this precaution can result in component damage due to electrostatic discharge.
- To prevent damage to equipment when replacing fuses, locate and correct the trouble that caused the fuse to blow before applying power.
- Verify that all power supply LEDs are off before removing the power supply or servicing equipment.
- Use only specified replacement parts.
- Follow static precautions at all times when handling this equipment.
- Leave the back of the frame clear for air exhaust cooling and to allow room for cabling. Slots and openings in the cabinet are provided for ventilation. Do not block them.
- The front door is part of the fire enclosure and should be kept closed during normal operation.
- To prevent damage to this equipment read the instructions in this manual for proper input voltage range.
- Circuit boards in this equipment are populated with surface mount and FPGA components. Special tools and techniques are required to safely and effectively troubleshoot and repair modules that use SMT or FPGA components. For this reason, service and repair of Fortel DTV products incorporating surface mount technology are supported only on a module exchange basis. Customers should not attempt to troubleshoot or repair modules that contain SMT components. Fortel DTV assumes no liability for damage caused by unauthorized repairs. This applies to both in-warranty and out-of-warranty products.

Power Cord Notices

North American Power Supply Cords

This equipment is supplied with a molded grounding plug (NEMA 5-15P) at one end and a molded grounding receptacle (IEC 320-C13) at the other end. Conductors are color coded: white (neutral), black (line) and green or green/yellow (ground).

International Power Supply Cords

This equipment is supplied with a molded grounding receptacle (IEC 320-C13) at one end and a molded grounding plug (EU1-16P) at the other end. Conductors are CEE color coded: light blue (neutral), brown (line) and green/yellow (ground). Other IEC 320-C13 type power supply cords can be used if they comply with the safety regulations of the country in which they are to be installed.

Chapter 1 Introduction

1.1 HDFS-55X Cards

Fortel DTV's HDFS-55X High Definition (HD) frame synchronizer cards are designed to support both HD-SDI (SMPTE 292M) and SD-SDI video formats. It accepts an HD SMPTE 292M or 259M input to a local reference tri-level or composite sync signal input. When locked to a local reference, it provides an infinite phasing adjustment window. A video proc-amp provides signal-level adjustments in the component domain (Y, Cb, Cr, Black).

The DAS-441 Audio Synchronizer option provides control of embedded audio with gain, mixing, shuffling, and delay adjustment. This decoder generates a cleaner, more accurate HD signal by eliminating quantizing errors and unwanted comb artifacts.

Its Perfect-Palette™ Legalizer fixes gamma errors better by first analyzing what color it was supposed to be and then correctly adapting each pixel to a legal value without causing a hue shift while minimizing clipping effects. There are independent settings for RGB, Luminance and Composite thresholds.

The following are key features of HDFS-55X cards:

- Any input standard with auto detection (2X1 switch).
- Second input can be used as AES input for HDFS-552 card.
- Output HD-SDI in SMPTE 292M.
- Separate monitoring SDI down-converted output.
- NTSC/PAL output timed to reference (jumper to AES).
- Synchronizer and Legalizer standard.
- Optional color corrector with eight memory settings.
- Four-group de-embed, synchronization and all audio processing including shuffle, phase reversal, summing, soft clip, ALC, Dolby-E, synchronization and embed.
- Works with DAS-441 for parallel audio synchronization (analog or AES) with or without de-embed and embed.

HDFS-550/551/552 Cards: Individual Features

Feature	HDFS-550	HDFS-551	HDFS-552
Synchronizer/Legalizer	✓	✓	✓
Color Corrector (optional)	✓	✓	✓
Embedded Audio		✓	✓
AES I/O			✓
DAS-441	✓	✓	✓
Analog Video Out		✓	✓

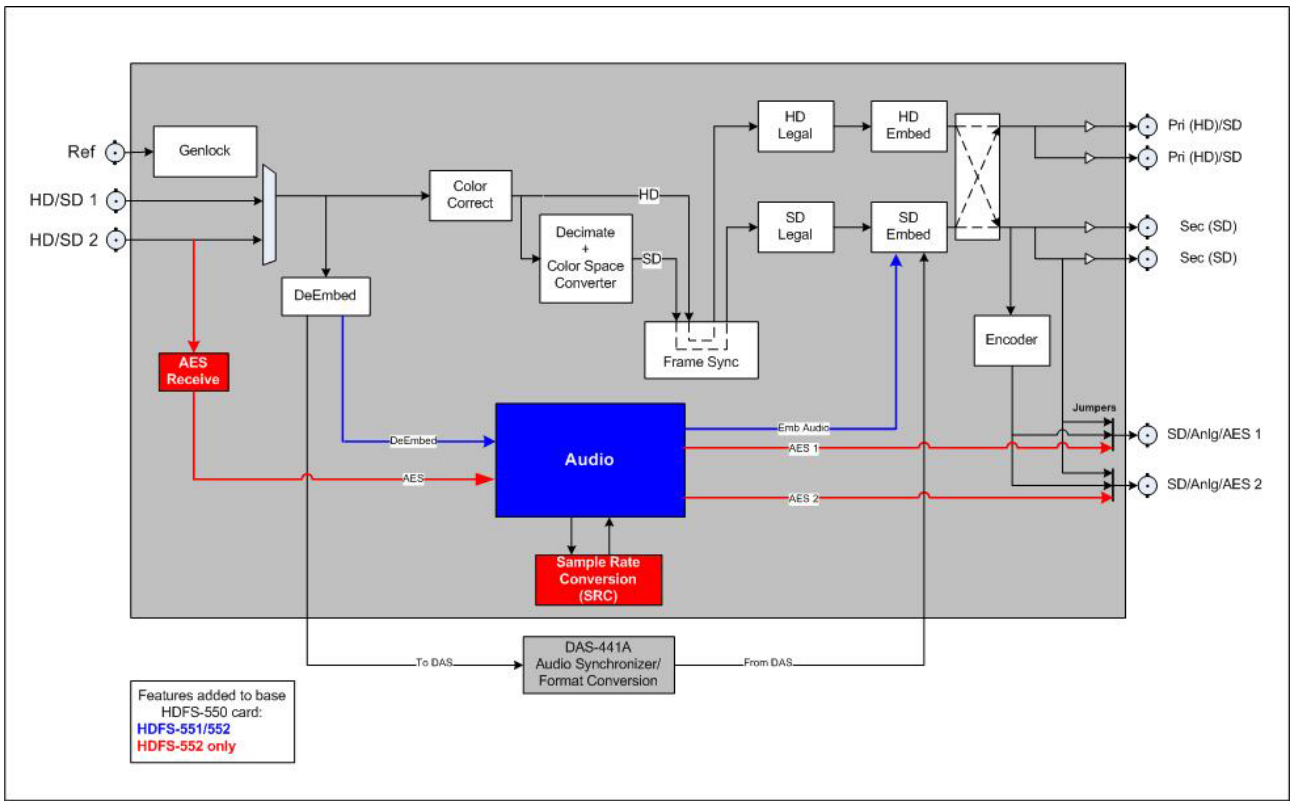

Figure 1: HDFS-550/551/552 High Definition Frame Synchronizer Cards

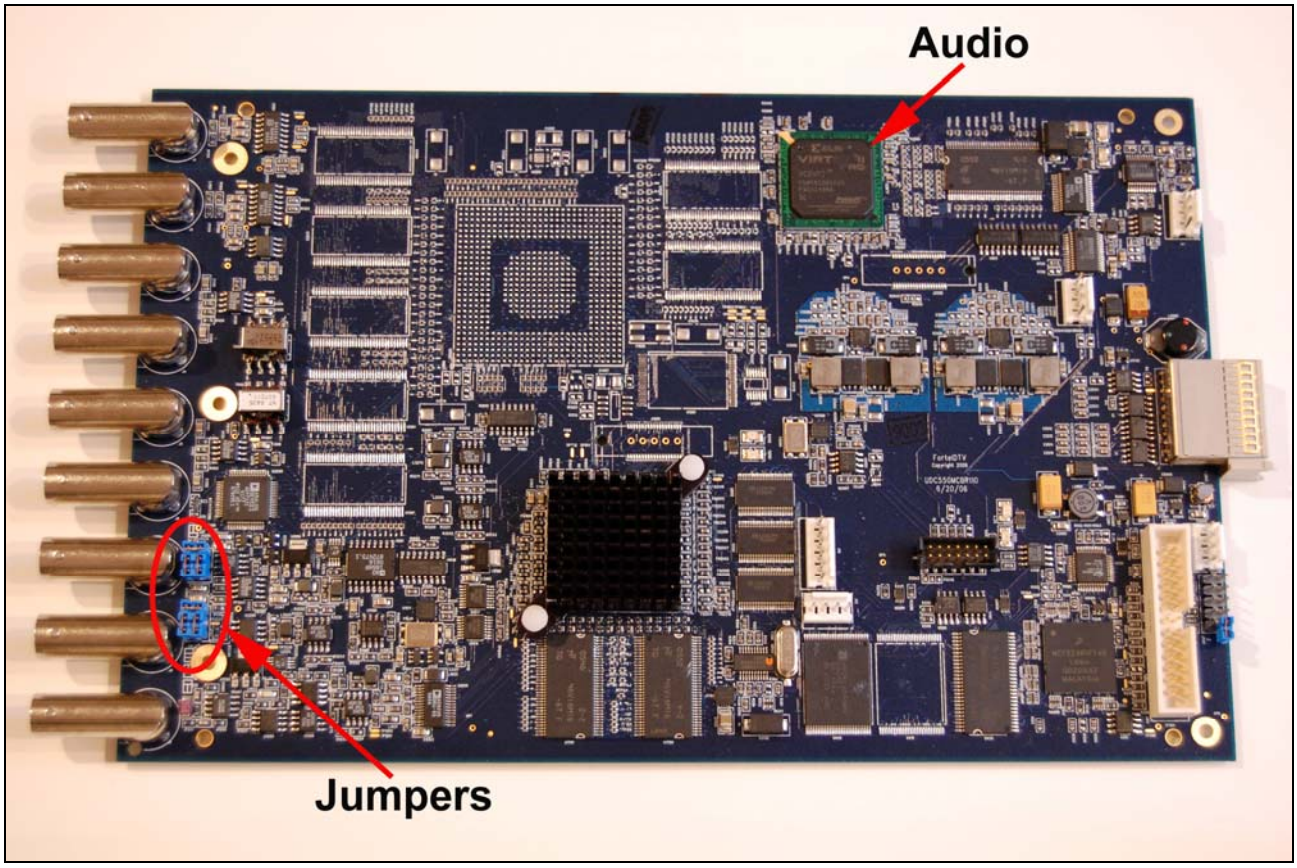

Figure 2: HDFS-552 High Definition Frame Synchronizer Card

Note: See Appendix B for information on installing jumpers on an HDFS-55X card.

1.2 Frame

An HDFS-550/551/552 High Definition Frame Synchronizer card can be mounted in either a FRM-504 high-density frame (4RU) or a FRM-501 frame (1RU). Although a FRM-504 frame can hold up to 18 cards, it is recommended that no more than 16 cards be inserted in the frame. The FRM-504 frame is especially useful when many cards are needed in a single location using a minimal amount of space. For the FRM-501, it is recommended that no more than two cards be inserted in this frame.

Figure 3: FRM-504 (4RU) High Density System Frame

1.3 Control Panels

FRM-504 and FRM-501 frames require the use of a remote control panel for operating the cards. The control panels compatible with these frames are the RCP-502 and RCP-503.

Figure 4: RCP-502 Compact Remote Control Panel

Figure 5: RCP-503 Remote Control Panel

One of these remote control panels can be used to control cards in other frames by changing a selection on the front panel. One control panel can access up to 299 separate Fortel DTV cards. The control panel can be placed anywhere in the facility to control cards in multiple frames over a local area network (LAN). Control panels are connected to frames using LAN hardware:

- Category-5 patch cables
- 100-base-T Ethernet switch

Although the hardware may be the same type you use for other LAN components in your facility, Fortel DTV recommends you isolate their hardware on a separate LAN. This is important because other LAN traffic overhead is unpredictable and could task available bandwidth at a time when communications to the synchronizers is critical.

For more detailed information on the RCP-502 and RCP-503 Control Panels, see Fortel DTV's *RCP-502 Compact Remote Control Panel User Manual, January 2005*; and *RCP-503 Remote Control Panel User Manual, Revision No. 1.01, June 2004.*

Chapter 2 Installing Cards in a Frame

2.1 Installing cards in the FRM-504 Integrity™ System Frame

The FRM-504 Integrity System Frame can hold a maximum of 18 cards, but it is recommended that no more than 16 cards be inserted in the frame.

1. Carefully load cards through the rear of the frame.
   - Card slot number 1 is nearest to the power supply side.
   - Card slot number 18 is farthest from the power supplies.
2. Card guides at the top and bottom of each slot are used to align the card with the mating connector on the mid-plane card as the card is inserted fully into the frame.
3. After cards are gently seated into the mating connector, secure them to the top and bottom rail of the frame using the two captive screws attached to each card.

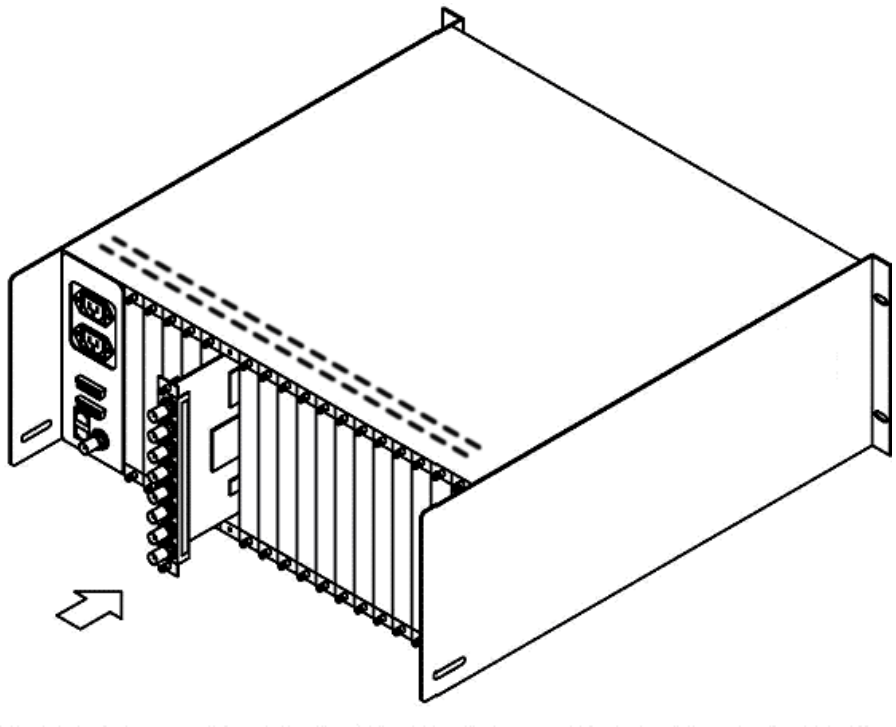

Figure 6: FRM-504 Integrity System Frame

2.2 Installing cards in the FRM-501 Integrity™ System Frame

The FRM-501 Integrity System Frame can hold a maximum of four cards, but it is recommended that no more than two cards be inserted in the frame.

1. Carefully load cards through the rear of the frame (see diagram below for slot numbers for placing the card in the frame).
2. Card guides at the sides of each slot are used to align the card with the mating connector on the mid-plane card as the card is inserted fully into the frame.
3. After the card is seated into the mating connector, secure the card using the two captive screws.

	1	4
	2	3

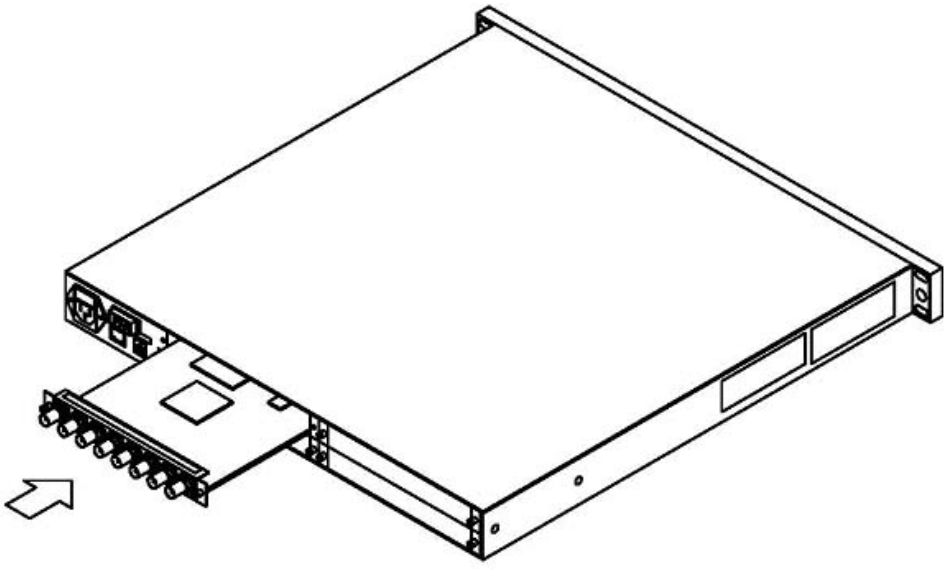

Figure 7: FRM-501 Integrity System Frame

Chapter 3 Connecting a Card to External Systems

3.1 Introduction

This chapter presents details on the following for each HDFS-55X card:

- Number of inputs and outputs on each card.
- Graphic showing the connectors on the card, along with a description of what is attached to each connector.
- Supported input and output formats.

3.2 HDFS-55X Card's Inputs/Outputs

The following table provides a brief description of each of the three HDFS-55X cards, as well as a list of each card's input and output connectors.

Card	Description	Inputs/Outputs
HDFS-550	High Definition Frame Synchronizer Card with outputs: • SDI • PAL	• 2 HD/SDI Inputs • 2 HD Outputs • 3 SDI Outputs • Genlock
HDFS-551	High Definition Frame Synchronizer Card with outputs: • SDI • NTSC • PAL	• 2 HD/SDI Inputs • 2 HD Outputs • 2 SD Outputs + 2 Selectable SD or NTSC • 16 Channels of Internal Audio and Synchronization, ALC • Genlock
HDFS-552	High Definition Frame Synchronizer Card with outputs: • SDI • NTSC • PAL • AES	• 2 HD/SDI Inputs or 1 HD/SDI + 1 AES Input. • 2 HD Outputs • 2 SDI Outputs + 2 Selectable SD/AES/NTSC Outputs • 16 Channels of Internal Audio and Synchronization, ALC • Genlock

3.3 Input and Output Connectors

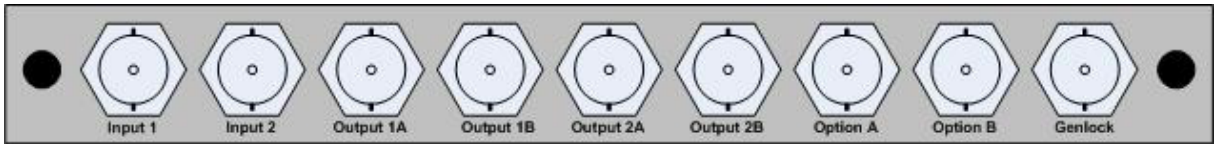

Figure 8: HDFS-55X Input and Output Connectors

The following table presents specifics on the Input/Output connections for HDFS-55X cards:

Input/Output (BNC Connector)	Description
Input 1	Primary Serial Digital Video Input 1.5Gb/s HD input per SMPTE 292M or 270Mb/s SDI input per SMPTE 259M.
Input 2	Secondary Input used as: • User-selectable alternate to primary video input. • Automatic backup video input used in case of failure on main input. • AES audio input.
Output 1A	Primary Video Output – SD or HD depending on input.
Output 1B	Duplicate of Output 1A.
Output 2A	Secondary Video Output – SD version of primary.
Output 2B	Duplicate of Output 2A.
Option A	Optional Output jumper selectable as: • Duplicate of Output 2A. • Composite video output based on a decimation of the primary output. • One AES pair selectable from any embedded audio group.
Option B	Optional Output jumper selectable independently from Option A as: • Duplicate of Output 2A. • Composite video output based on a decimation of the primary output. • One AES pair selectable from any embedded audio group, a separate choice from Option A.
Genlock	An optional source for a Genlock reference that may be used instead of the frame Genlock.

3.4 Input and Output Formats

Input Formats Supported by HDFS-55X Cards

The table below lists the input formats supported by HDFS-55X cards:

Input Formats
525i/59.94
720p/59.94
1035i/59.94
1080i/59.94
625/50
720p/50
1080i/50
1080i/50-295

Output Formats Supported by HDFS-55X Cards

The table below lists the output formats supported by HDFS-55X cards:

Output Formats	
With NTSC Reference	With PAL Reference
SD-525	SD-625
487i/59.94	720p/50
720p/59.94	1080i/50
1080i/59.94	

Chapter 4 Configuring a Card's Video Settings

4.1 Introduction

This chapter presents step-by-step instructions for configuring an HDFS-55X card's ***Video*** settings using Fortel DTV's RCP-502 and RCP-503 remote control panels. Chapter 5 provides instructions for configuring ***Audio*** settings.

4.2 RCP-502 Compact Remote Control Panel (Video)

Figure 9: RCP-502 Compact Remote Control Panel

After powering up the RCP-502 control panel and selecting the HDFS-55X card to be configured, you are prompted to select either *Audio* or *Video* by pressing the appropriate button on the front of the control panel. After pressing the **Video** button, the control panel displays the *Video Config* menu screen. From here, you can step through a series of screens offering options for configuring the card's *Video* settings.

The table below presents an overview of the options you will have an opportunity to set or change.

Screen's Menu	Description / Sub-Menu Items
Status & Alarms	• Temperature • Over Temperature Threshold • Errors • Major or Minor Alarms • HDFS Alarm

Input	• Input Sel (Input 1 or Input 2)
	• OnVidLoss
	  ○ Off
	  ○ Freeze
	  ○ Black
	  ○ Timeout
	  ○ Switch Input
	• Video Format
	• No Timecd (Input 1 or Input 2)

Output	• Primary Output • Sec AspRatio • HD Config • SD Config • Genlock Source • Frame Rate • Test Pattern • Encoder Mode
Proc Controls	• HUE

Screen's Menu	Description / Sub-Menu Items
	• GAIN • BLACK • CHROMA
Color Corrector	• Unity (Press **Preset**) • White Balance • Black Balance • Gamma Balance • Black • CC Memory Save • CC Memory Recall
Vid Processing	Min FRM Delay
User Reset	• Reset User Controls
Change Mode	Not allowed with HDFS
Card Info	Card Type

For more detailed information on the RCP-502 and RCP-503 Control Panels, see Fortel DTV's *RCP-502 Compact Remote Control Panel User Manual, January 2005*; and *RCP-503 Remote Control Panel User Manual, Revision No. 1.01, June 2004.*

Status & Alarms

Choose this option to determine the following about your HDFS-55X card:

- What is the card's *Temperature* and its *Over Temperature Threshold*?
- Is the card getting any *Errors*?
- Does the card have any active *Major* or *Minor Alarms*?
- Is there an *Input Error*?

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate **A1 knob** until *Status & Alarms* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *Status & Alarms*. 40.0C OvrTempThr(knob) 55.0 ErrorSecs(TAKE): 0 Major Alrm: NoVidLock Minor Alrm: AudInErr UDC Alrm: --NA--
2	Rotate **A1 knob** to reset the *OvrTempThr* setting to a higher or lower setting.
3	Press **Take/Enter** to save your settings.

Input (Input Configuration)

Choose this option to select the type of input you want to use—*Input 1* or *Input 2*:

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate **A1 knob** until *Input* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *Input*. Video Input OnVidLoss Off Input Sel Input 1 Input-1 SD525/59.94
2	For OnVidLoss, rotate **A1 knob** to select a preferred option when there is a loss of video to the card. The following options are offered: • Off • Freeze • Black • Timeout • Switch Input
3	Rotate **A2 knob** to switch both displayed settings of *Input 1* to *Input 2*, or vice versa.
4	Press **Take/Enter** to save your settings.

Output (Output Configuration)

Choose this option to configure your HDFS-55X card's various Output settings:

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>With the control panel's main menu screen listing the Video Config options, rotate A1 knob until Output is highlighted on the screen and press Menu.

The following is an example of information displayed upon selecting Output.

• Primary Output
• Sec AspRatio
• HD Config
• SD Config
• Genlock Source
• Frame Rate
• Test Pattern
• Encoder Mode</td></tr>
<tr><td>2</td><td>Rotate A1 knob to switch between any of the eight (8) options listed in step 1.</td></tr>
<tr><td>3</td><td>To check or set any of the options noted in step 1, refer to the table below:

<table>
<tr><td>Primary Output</td><td>Freeze Mode Field 1
Note: Rotate A2 knob to change setting between Field 1, Field 2, or Frame.</td></tr>
<tr><td>Sec AspRatio</td><td>16X9-Lbox (Rotate A1 knob to change setting.)</td></tr>
<tr><td>HD Config

(Outputs 1A & 1B)</td><td>--HD Config--
• HD CloCap
• HD Timecode
• HD Legalizer
--HD Timing—
• HD H Phase
• HD V Phase
• HD H Video Pos
• HD V Video Pos
Note: For each of these above options, press Menu to view additional options and make selections.</td></tr>
<tr><td>SD Config</td><td>--SD Config—
• SD CloCap
• SD Timecode
• SD Legalizer
--SD Timing—
• H Phase
• V Phase
• H Pos
• V Pos
Note: For each of these above options, press Menu to view</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>additional options and make selections.</td></tr>
<tr><td>Genlock Source</td><td>• Frame Connector
• Board Connector
Note: Rotate A1 knob to switch between these two options.</td></tr>
<tr><td>Frame Rate</td><td>59.9 Hz
Note: Rotate A1 knob to switch between 50 Hz and 59.9 Hz.</td></tr>
<tr><td>Test Pattern</td><td>• 75% Bars
• Multiburst
• Sweep
• NTC7 Composite
• Luma Ramp
• YC Ramp
• YUV Ramp
• Blanking
Note: Rotate A1 knob to switch between these options.</td></tr>
<tr><td>Encoder Mode</td><td>• On
• Test-Bars
• Off
Note: Rotate A1 knob to switch between these options.</td></tr>
</table>
</td></tr>
<tr><td>4</td><td>After setting or changing any settings, press Take/Enter to save your selections.</td></tr>
</table>

Proc Controls

Choose this option to set or change your HDFS-55X card's video processing control settings:

- HUE
- GAIN
- BLACK
- CHROMA

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate the **A1 knob** until *Proc Controls* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *Proc Controls*. Video Proc Controls HUE 0.0 deg GAIN 100.0% BLACK 0 m V CHROMA 100.0%
2	Depending on which control you wish to set or change, rotate one of the following knobs to make your selection: • **A1** (HUE) • **A2** (GAIN) • **A3** (BLACK) • **A4** (CHROMA)
3	Press **Take/Enter** to save your settings.
4	Press **Preset** to return to default settings.

Color Corrector

Choose this option to set or change your HDFS-55X card's color settings:

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate **A1 knob** until *Color Corrector* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *Color Corrector*. Color Corrector (Rotate SEL knob) **Preset** button for Unity **Note**: The **SEL knob** is also referred to as the **A1 knob**.
2	Each time you rotate **A1 knob**, one of the following screens appears. Use the **A2, A3,** and **A4 knobs** to change the settings on each screen. Color Corrector **White Balance** RED 1.000 GRN 1.000 BLU 1.000 Color Corrector **Black Balance** RED 1.000 GRN 1.000 BLU 1.000 Color Corrector **Gamma Balance** RED 1.00 GRN 1.00 BLU 1.00 Color Corrector **Black** Blk Stretch 1.00 Blk Lvl 0.0 IRE Color Corrector **CC Memory Save** Mem Bank (knob F1) 1 TAKE to save to Mem Color Corrector **CC Memory Recall** Mem Bank (knob F1) 1 TAKE to recall from Mem **Note**: The word TAKE on a screen refers to the **Take/Enter** button.
3	Press **Take/Enter** to save your settings.

Vid Processing

Choose this option to set or change your HDFS-55X card's Frame Delay setting.

Step	Action
1	Min Frame Delay 0 Rotate the **A1 knob** to change this setting to 0, 1, or 2 frames of delay.

User Reset

Choose this option to reset your HDFS-55X card's current settings to the factory default settings:

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate **A1 knob** until *User Reset* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *User Reset*. Reset User Controls (Press TAKE) Ready **Note**: The word TAKE on a screen refers to the **Take/Enter** button.
2	Press **Take/Enter** to save your settings.

Change Mode

Note: This option is not available with the HDFS-55X card.

Card Info

Choose this option to view the *Card Info* for your HDFS-55X card:

Step	Action
1	With the control panel's main menu screen listing the *Video Config* options, rotate **A1 knob** until *Card Info* is highlighted on the screen and press **Menu**. The following is an example of information displayed upon selecting *Card Info*. --CARD INFO-- Card Type c:0.1.4.6 2006/11/28 udc: error vid1:2006/11/01 vid2:2006/11/22 vid3:2006/12/18 aud:2006/08/04
2	Press **Back** to return to the main menu screen and rotate **A1 knob** to select another option.

4.3 RCP-503 Remote Control Panel (Video)

After powering up the RCP-503 control panel and selecting the HDFS-55X card to be configured, the control panel displays eight options on its main menu screen related to ***Video*** settings. Eight small square buttons to the left and right of the main menu screen—four on one side of the screen and four on the opposite side of the screen—are used for selecting an option to be checked or changed.

Figure 10: RCP-503 Express Remote Control Panel

Screen's Main Menu	Sub-Menu Items
Status & Alarms	• Minor or Major Alarms • Errors • Temperature and Over Temperature Threshold
Input Cfg	Input 1 or Input 2
Card Info	• Model • CPU and FPGA Loads • Alias Name • Mode
Reset Procs	Reset Video Processing Amplifier
VidProcess	• Color Corrector • Full YUV Gamut • Noise Reduce • Legalizers • Detail Enhance • De-Interlace Mode
Output Cfg	• Test Patterns • Pri Out Config • Sec Out Config • Genlock Source • Frame Rate • Format • Encoder Mode
Card Reset	Reset to Factory Defaults
Freeze	• Turn ON Option • Turn OFF Option

For more detailed information on the RCP-502 and RCP-503 Control Panels, see Fortel DTV's *RCP-502 Compact Remote Control Panel User Manual, January 2005*; and *RCP-503 Remote Control Panel User Manual, Revision No. 1.01, June 2004.*

Status & Alarms

Choose this option to determine the following about your HDFS-55X card:

- Does the card have any active *Major* or *Minor Alarms*?
- Is the card getting any *Errors*?
- What is the card's *Temperature* and its *Over Temperature Threshold*?

Step	Action
1	From the control panel's main menu screen, press the small button next to **Status & Alarms** (top, left-hand side of screen). The following is an example of information displayed upon selecting **Status & Alarms**. **For major or minor alarms:** MajAlm NoVidLock MajLat NoVidLock MinAlm AudInErr MinLat AudInErr **For errors:** DataErr: OK ErrSecs: 0 **For temperature and Over Temperature Threshold:** 40.0 deg C OvrTempThresh 55.5 deg C
2	Rotate blue knob immediately below the **OvrTempThresh** setting at the bottom of the screen to increase or decrease that setting.

See this document's *Appendix A: SNMP Error Reporting* for a list of items related to the HDFS-55X card's Status Alarms capability via Simple Network Management Protocol (SNMP) information and error reporting.

Input Cfg (Input Configuration)

Choose this option to select the input you want to use—*Input 1* or *Input 2*:

Step	Action
1	From the control panel's main menu screen, press the small button next to **Input Cfg** (second button down from top on left-hand side of screen).
2	Press the small button next to **InputSel** (top button on left-hand side of screen) to switch between *Input-1* and *Input-2*.
3	Rotate blue knob immediately below **VidLossAction** at the bottom of the screen to select a preferred option when there is a loss of video to the card. The following options are offered: • Off • Freeze • Black • Timeout • Switch Input

Card Info

Choose this option to determine the following about your HDFS-55X card or change its settings:

- What is the specific *Model* of your HDFS-55X card?
- What are the release dates for your card's *CPU and FPGA Loads*?
- Change your card's *Alias Name*.
- Reset The Card's alias

Note: Each HDFS-55X card has a default name assigned at the factory. You can assign an alias name to a card and that name is stored on the card in non-volatile flash memory. If a card is moved to a new slot or frame, the card retains the selected alias name.

Step	Action
	Verifying Model and Loads
1	From the control panel's main menu screen, press the small button next to **Card Info** (third button down from top on left-hand side of screen). The following is an example of information pertaining to *Model* and *Loads* displayed in the center of the screen upon selecting **Card Info**. CARD INFO (Model FS-552) c1:0.1.4.6 2006/11/28 u1:v103006_1649 a1:2006/08/04 v1:2006/11/01 v2:2006/11/22 v3:2006/12/18

Step	Action
	Changing Alias Name
2	To change your card's *Alias Name*, press the small button next to **Name Card** (top button right-hand side of the screen). • The name of the card appears in the middle of the screen in big letters/digits (Example: FS-552). • Two options used in setting a new *Alias Name* appear in the lower, left-hand corner of the screen—**Change Position** and **Change Letter**. **Note**: A card name can contain up to eight (8) letters/digits.
3	Rotate blue knob immediately below **Change Position** to move left or right through the letters/digits of the card's current name. **Note**: The letter that will be changed is displayed in white. The other letters are blue.
4	After selecting a letter/digit of the current name that you wish to change, rotate blue knob immediately below **Change Letter** until a selected letter/digit is displayed.
5	Repeat steps 3 and 4 until a new name has been selected.
6	Press the small button next to reset(top button on the right hand side of the screen) to reset the alias back to the factory default

Reset Procs (Reset the Proc-Amp)

Choose this option to reset your HDFS-55X card's Video Processing Amplifier (Proc-Amp) Control settings.

- Gain
- Black Level
- Chroma Level
- NTSC Hue

Step	Action
1	With the control panel's main menu screen displayed, the Proc-Amp settings appear along the bottom of the screen and the blue knobs below the screen are used for changing the settings. Rotate a blue knob below one of the four settings (GAIN, BLACK, CHROMA, HUE) to change the setting. **Note**: The four Proc-Amp settings are always displayed along the bottom of the main menu screen.
2	If you wish to return the Proc-Amp settings to their default values, press the small button next to **Reset Procs** (bottom left-hand side of the screen).

VidProcess (Video Processing)

Choose this option to check or configure the your cards various Video Processing options:

- Color Corrector
- Legalizers
- Min Frm Delay

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>From the control panel's main menu screen, press the small button next to VidProcess (top button on the right-hand side of the screen).
• The term Video Processing appears in the middle of the screen.
• The following three (3) options / settings are also displayed on the screen.
o Color Correct
o HD and SD Legalizers
o Min Frm Delay</td></tr>
<tr><td>2</td><td>To check or set any of the three (3) options noted in step 1, refer to the table below:

<table>
<tr><td>Color Corrector</td><td>• If this option is not enabled, the menu will be grayed out.
• If this option is enabled, the Color Correct menu will be lit up in yellow and you can change the following color values for the card:
o White Balance
o Black Balance
o Gamma
o Black Level Stretch
• To reset color values to unity, press Set CC to Unity.
• To store up to eight Color Correct preset settings, press CC Memories. You can save the settings to a memory location. Later, you can recall a stored setting from memory.</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Legalizers</td><td>There are separate legalizers for the HD and SD outputs.
• HD legalizer is used to legalize the RGB.
• SD legalizer is used to legalize RGB, Encoded, and Luma.</td></tr>
<tr><td>Min Frm Delay</td><td>Note: Rotate knob under Min Frm Delay to select 0, 1, or 2 frames</td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
</table>

Output Cfg (Output Configuration)

Choose this option to configure your HDFS-55X card's various Output settings:

- Test Patterns
- Pri Out Config
- Sec Out Config
- Genlock Source
- Frame Rate
- Encoder Mode

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>From the control panel's main menu screen, press the small button next to Output Cfg (second button down on the right-hand side of the screen).
• The term Output Config appears in the middle of the screen.
• The following options are displayed on the screen:
o Test Patterns
o Pri Out Config
o Sec Out Config
o Genlock Source (Term Frame Connector in white lettering underneath)
o Frame Rate
o Encoder Mode (Term Test-Bars in white lettering underneath)</td></tr>
<tr><td>2</td><td>To check or set any of the options noted in step 1, refer to the table below:

<table>
<tr><td>Test Patterns</td><td>a) Press Test Patterns to activate the onboard test pattern generator.
b) Press small button next to Enable to turn on feature.
c) Rotate the blue knob below Pattern to select a desired pattern.</td></tr>
<tr><td>Pri Out Config</td><td>Press Pri Out Config to access the following settings:

• Timing—Adjust Horizontal and Vertical Phase and positions of the HD output
• FreezeMode—Change from Field 1 to Field 2, or Frame.
• Freeze—Turn On or Off.
• HD-CloCap – Turn closed captioning on or off
• HD-Timecode – Turn on or off</td></tr>
<tr><td>Sec Out Config</td><td>Press Sec Out Config to access the following settings:

• Timing—Adjust Horizontal and Vertical Phase and positions of the SD output.
• SD-CloCap—Turn closed captioning On or Off.
• SD-Timecode – Turn on or off
• Aspect Ratio
• Note: Rotate knob under Aspect Ratio to switch between the following:
• 16X9 – Lbox
• 4X3- Squeeze
• 4X3 - Crop</td></tr>
</table>
</td></tr>
</table>

Step	Action	
	Genlock Source	Turn the knob below this to change from board connector to frame connector
	Frame Rate	Turn knob below to change from 59.9Hz to 50Hz
	Encoder Mode	Turn knob below to turn encoder on, or off, or test bars on.

Card Reset (Reset to Factory Defaults)

Choose this option to reset your HDFS-55X card's current settings to the factory default settings:

Step	Action
1	From the control panel's main menu screen, press the small button next to **Card Reset** (third button down on the right-hand side of the screen).
2	To reset the card to the factory settings, press the button next to **Reset!**. **Note**: This procedure does not affect timing or calibration settings.

Freeze

Choose this option to turn **On** or **Off** the HDFS-55X card's Freeze feature:

Step	Action
1	From the control panel's main menu screen, press the small button next to **Freeze** (fourth button down on the right-hand side of the screen).
2	If the screen display shows that the option is turned *On* and you wish to turn it *Off*, press the button next to **Freeze** again.

Chapter 5 Configuring a Card's Audio Settings

5.1 Introduction

This chapter presents step-by-step instructions for configuring an HDFS-55X card's ***Audio*** settings using Fortel DTV's RCP-502 and RCP-503 remote control panels.

5.2 RCP-502 Compact Remote Control Panel (Audio)

Figure 11: RCP-502 Compact Remote Control Panel

After powering up the RCP-502 control panel and selecting the HDFS-55X card to be configured, you are prompted to select either *Audio* or *Video* by pressing the appropriate button on the front of the control panel. After pressing the **Audio** button, the control panel displays the *Audio Config* menu screen. From here, you can step through a series of screens offering options for configuring the card's *Audio* settings.

The two tables below present easy-to-use formats for configuring an HDFS-55X card's audio options using a RCP-502 Remote Control Panel. The first table is for the HDFS-550 card and the second table is for the HDFS-551 and 552 cards. The tables provide instructions on what knobs to use to set each option.

Configuring Audio Settings on HDFS-550 Card

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
DeEmbed to DAS	• Rotate **A1 knob** to switch between **DeEmbed to DAS** and **Embed DAS Audio**. • Press **Menu** to select. • Rotate **A1 knob** to change settings between **None**, **Grp 1**, **Grp 2**, **Grp 3**, and **Grp 4**.
Embed DAS Audio	• Rotate **A1 knob** to switch between **DeEmbed to DAS** and **Embed DAS Audio**. • Press **Menu** to select. • Rotate **A1 knob** to change settings between **None**, **Grp 1**, **Grp 2**, **Grp 3**, and **Grp 4**.

Configuring Audio Settings on HDFS-551 and HDFS-552 Cards

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
Output Sources	• Chan 1 • IsSource AES1.1 • SumWith None • SumBalance 0.0 dB To change one of these four settings, do the following: Rotate **A1 knob** to change Channel. Rotate **A2 knob** to change IsSource setting. Rotate **A3 knob** to change SumWith setting. Rotate **A4 knob** to change SumBalance setting.
AES Sources	• AES-1.1 Ch-01 • AES-1.2 Ch-02 • AES-2.1 Ch-03 • AES-2.2 Ch-04 To change one of these four settings, do the following: Rotate **A1 knob** to change channel for AES-1.1. Rotate **A2 knob** to change channel for AES-1.2. Rotate **A3 knob** to change channel for AES-2.1. Rotate **A4 knob** to change channel for AES-2.2.
Chan Lvl-Mute-Ph	--Audio Out Level-- • Chan 1..4 o Ch 1 (1.1) 0.0 dB o Ch 2 (1.2) 0.0 dB o Ch 3 (1.3) 0.0 dB o Ch 4 (1.4) 0.0dB • Chan 5..8 o Ch 5 (2.1) 0.0 dB o Ch 6 (2.2) 0.0 dB o Ch 7 (2.3) 0.0 dB o Ch 8 (2.4) 0.0 dB • Chan 9..12 o Ch 9 (3.1) 0.0 dB o Ch 10 (3.2) 0.0 dB o Ch 11 (3.3) 0.0 dB o Ch 12 (3.4) 0.0 dB • Chan 13..16 o Ch 13 (4.1) 0.0 dB o Ch 14 (4.2) 0.0 dB o Ch 15 (4.3) 0.0 dB o Ch 16 (4.4) 0.0 dB Rotate **A1 knob** to advance through the four first-level selections above: (1) Chan 1..4, (2) Chan 5..8, (3) Chan 9..12, and (4) Ch

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
	13..16. After making a selection, press **Menu** to get additional selections specific to those channels (see above). Rotate **A1 knob** to change the 0.0 dB settings for Chs 1, 5, 9, and 13; **A2 knob** for Chs 2, 6, 10, and 14; **A3 knob** for Chs 3, 7, 11, and 15; and **A4 knob** for Chs 4, 8, 12, and 16. --Audio Out Mute— • Chan 1..4 o Ch 1 (1.1) Off o Ch 2 (1.2) Off o Ch 3 (1.3) Off o Ch 4 (1.4) Off • Chan 5..8 o Ch 5 (2.1) Off o Ch 6 (2.2) Off o Ch 7 (2.3) Off o Ch 8 (2.4) Off • Chan 9..12 o Ch 9 (3.1) Off o Ch 10 (3.2) Off o Ch 11 (3.3) Off o Ch 12 (3.4) Off • Chan 13..16 o Ch 13 (3.1) Off o Ch 14 (3.2) Off o Ch 15 (3.3) Off o Ch 16 (3.4) Off Rotate **A1 knob** to advance through the four first-level selections above: (1) Chan 1..4, (2) Chan 5..8, (3) Chan 9..12, and (4) Ch 13..16. After making a selection, press **Menu** to get additional selections specific to those channels (see above). Rotate **A1 knob** to switch between **OFF** and **ON** for Chs 1, 5, 9, and 13; **A2 knob** for Chs 2, 6, 10, and 14; **A3 knob** for Chs 3, 7, 11, and 15; and **A4 knob** for Chs 4, 8, 12, and 16. --Audio Out Phase-- • Chan 1..4 o Ch 1 (1.1) Normal o Ch 2 (1.2) Normal o Ch 3 (1.3) Normal o Ch 4 (1.4) Normal • Chan 5..8 o Ch 5 (2.1) Normal o Ch 6 (2.2) Normal

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
	○ Ch 7 (2.3) Normal ○ Ch 8 (2.4) Normal • Chan 9..12 ○ Ch 9 (3.1) Normal ○ Ch 10 (3.2) Normal ○ Ch 11 (3.3) Normal ○ Ch 12 (3.4) Normal • Chan 13..16 ○ Ch 13 (3.1) Normal ○ Ch 14 (3.2) Normal ○ Ch 15 (3.3) Normal ○ Ch 16 (3.4) Normal Rotate **A1 knob** to advance through the four first-level selections above: (1) Chan 1..4, (2) Chan 5..8, (3) Chan 9..12, and (4) Ch 13..16. After making a selection, press **Menu** to get additional selections specific to those channels (see above). Rotate **A1 knob** to switch between **Normal** and **Invert** for Chs 1, 5, 9, and 13; **A2 knob** for Chs 2, 6, 10, and 14; **A3 knob** for Chs 3, 7, 11, and 15; and **A4 knob** for Chs 4, 8, 12, and 16.
Bank Lvl-ALC-Lim	--Grouped Channels— • Bank Level ○ BANK 1 0.0 dB ○ BANK 2 0.0 dB ○ BANK 3 0.0 dB ○ BANK 4 0.0 dB • ALC ○ Bank Select 1 ○ ALC Enable Off ○ ALC Level 0.0 dBFS ○ ALC Rate 0 • Limiter ○ Bank Select 1 ○ Lim Enable Off ○ Lim Level 0.0 dBFS ○ Lim Rate 0 • Bank Config ○ Ch-01 to Ch-02 ○ Ch-03 to Ch-04 ○ Ch-05 to Ch-08 ○ Ch-09 to Grp4.4 Rotate **A1 knob** to advance through the four first-level selections above: (1) Bank Level, (2) ALC, (3) Limiter, and (4) Bank Config. After making a selection, press **Menu** to get additional selections

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
	specific to those channels (see above). For Bank Level: Rotate **A1 knob** to change the 0.0 dB settings for BANK 1; **A2 knob** for BANK 2; **A3 knob** for BANK 3; and **A4 knob** for BANK 4. For ALC: Rotate **A1 knob** to change Bank Select to select 1 of 4 banks. Rotate **A2 knob** to switch between **Off** and **On** for ALC Enable. Rotate **A3 knob** to change/set the ALC Level 0.0 dBFS setting. Rotate **A4 knob** to change the ALC Rate from between 0-6. For Limiter: Rotate **A1 knob** to change Bank Select to select 1 of 4 banks. Rotate **A2 knob** to switch between **Off** and **On** for Lim Enable. Rotate **A3 knob** to change/set the Lim Level 0.0 dBFS setting. Rotate **A4 knob** to change the Lim Rate from between 0-15. For Bank Config: Rotate **A1 knob** to switch "Ch-01 to" from Ch-01 up to Ch-03. Rotate **A2 knob** to switch "Ch-02 to" from Ch-02 up to Ch-07. Rotate **A3 knob** to switch "Ch-03 to" from Ch-03 up to Ch-15. Rotate **A4 knob** to switch "Ch-04 to" from
Lip-Sync	• Tracking Medium • Add Offset 0.000 sec Rotate **A1 knob** to switch *Tracking* between **Slow**, **Medium**, and **Fast**. Rotate **A2 knob** to increase or decrease the *sec* setting.
Tone Gen Freq	• Tone Gen 1 400 Hz • Tone Gen 2 500 Hz • Tone Gen 3 600 Hz • Tone Gen 4 800 Hz Rotate **A1 knob** to increase or decrease the Tone Gen 1 *frequency*. Rotate **A2 knob** to increase or decrease the Tone Gen 2 *frequency*. Rotate **A3 knob** to increase or decrease the Tone Gen 3 *frequency*. Rotate **A4 knob** to increase or decrease the Tone Gen 4 *frequency*.
Tone Gen Level	• Tone Gen 1 -20.0 dBFS • Tone Gen 2 -20.0 dBFS • Tone Gen 3 -20.0 dBFS • Tone Gen 4 -20.0 dBFS Rotate **A1 knob** to increase or decrease the Tone Gen 1 *dBFS*. Rotate **A2 knob** to increase or decrease the Tone Gen 2 *dBFS*. Rotate **A3 knob** to increase or decrease the Tone Gen 3 *dBFS*.

Main Menu Option	Sub-Menu Option & Instructions for Changing Settings
	Rotate **A4 knob** to increase or decrease the Tone Gen 4 *dBFS*.
Embed Enable	• On • Off Rotate **A1 knob** to switch between *On* and *Off*.

5.3 RCP-503 Remote Control Panel (Audio)

Figure 12: RCP-503 Express Remote Control Panel

After powering up the RCP-503 control panel and selecting the HDFS-55X card to be configured, press the **Audio** button and the control panel displays the *Audio Config* menu screen. From here, you can step through a series of screens offering options for configuring the card's *Audio* settings.

The two tables below present easy-to-use formats for configuring an HDFS-55X card's audio options using a RCP-503 Remote Control Panel. The first table is for the HDFS-550 card and the second table is for the HDFS-551 and HDFS-552 cards. The tables provide instructions on what knobs to use to set each option.

Configuring Audio Settings on HDFS-550 Card

From the Configuration screen, press the small square button next to AdjacentAudBrd and the following screen example appears:

	FS-550	
	Adjacent DAS Audio Board	
DeEmbed to DAS Grp1	Embed DAS Audio None	

- Rotate blue knob immediately below DeEmbed to DAS to switch the setting between None, Grp1, Grp2, Grp3, and Grp4.
- Rotate blue knob immediately below Embed DAS Audio to switch the setting between None, Grp1, Grp2, Grp3, and Grp4.

Note: A message may appear in the middle of the screen indicating that the Embedded DAS Audio will override local Audio.

Configuring Audio Settings on HDFS-551 and HDFS-552 Cards

The following is an example of the RCP-503's main menu screen for audio configuration.

Grp-1<			Phase
Grp-2	**FS-552**		Mute
Grp-3	Audio Output Levels		Bank Gain
Grp-4	Embed Grp-1		Cfg
Ch-01 0.0 dB	Ch-02 0.0 dB	Ch-03 0.0 dB	Ch-04 0.0 dB

Switching between channel groups

Grp-1 (Channels 1-4)
Grp-2 (Channels 5-8)
Grp-3 (Channels 9-12)
Grp-4 (Channels 13-16)

- Press the small square button next to Grp-1, Grp-2, etc. and the corresponding set of channels appears along the bottom of the screen.

Changing 0.0 dB setting

- With Grp-1 selected, rotate blue knobs to change *0.0 dB* for Ch-01, Ch-02, Ch-03, or Ch-04.
- With Grp-2 selected, rotate blue knobs to change *0.0 dB* for Ch-05, Ch-06, Ch-07, or Ch-08.
- With Grp-3 selected, rotate blue knobs to change *0.0 dB* for Ch-09, Ch-10, Ch-11, or Ch-12.
- With Grp-4 selected, rotate blue knobs to change *0.0 dB* for Ch-13, Ch-14, Ch-15, or Ch-16.

Phase

- With Grp-1 selected, press the small square button next to **Phase**.
  - The settings under Ch-01–Ch-04 along the bottom of the screen change from *0.0 dB* to *Normal*.
  - Rotate blue knob below any one of the channels and the channel setting switches back and forth between *Normal* and *Invert*.
- To repeat the process for Grp-2, press the small square button next to Grp-2. Ch-05–Ch-08 now appear on the screen.
- Repeat this process for Grp-3 and Grp-4.

Mute

- With Grp-1 selected, press the small square button next to **Mute**.
  - The settings under Ch-01–Ch-04 along the bottom of the screen change from *0.0 dB* to *Off*.
  - Rotate blue knob below any one of the channels and the channel switches back and forth between *Off* and *On*.

- To repeat this process for Grp-2, press the small square button next to Grp-2. Ch-05–Ch-08 now appear on the screen.
- Repeat process for Grp-3 and Grp-4.

Bank Gain

Bank Gain settings are independent of settings for Grp-1, Grp-2, Grp-3, or Grp-4. From the main menu screen, press the small square button next to **Bank Gain**.

The following is an example of the screen that appears.

Reset All Audio Gains	**FS-552**		Bank Config
	Bank Gain		
Bank-1 0.0 dB	Bank-2 0.0 dB	Bank-3 0.0 dB	Bank-4 0.0 dB

The **Bank Gain** function allows you to divide up the system's 16 audio channels into four banks—Bank 1, Bank 2, Bank 3, and Bank 4. This feature is useful for quickly setting audio levels for multiple channels simultaneously. For example, because of a particular hardware setup, you may want to have Channels 1-6 set up in Bank 1, Channels 7 and 8 set up in Bank 2, Channels 9-11 in Bank 3, and Channels 12-16 in Bank 4.

Complete the steps below to (1) *Reset All Audio Gains* to 0.0 dB and (2) set up *Bank Config* for four *Banks* of audio.

Reset All Audio Gains

- Press the small square button next to Reset All Audio Gains to reset the current dB settings back to 0.0 dB.

Bank Config

To set up channels into the four banks, press the small square button next to **Bank Config** (see screen above). The following screen example appears.

	FS-552		
	Bank Config		
(These groupings are used for Bank-Gain and ALC)			
Ch-01 to Ch-04	Ch-05 to Ch-08	Ch-09 to Ch-12	Ch-13 to Ch-16

- Rotate blue knob immediately below *Ch-01 to Ch-04* (**Bank 1**) to change the Ch-04 setting to a higher or lower channel number.

- You will note that the numbers in the next cell (**Bank 2**) to the right of the one you are working in will change to a higher or lower channel number depending on what you set up for **Bank 1**.
- Repeat this process for Bank 2, Bank 3, and Bank 4.

Cfg (Configuration)

From the main menu screen, press the small square button next to **Cfg** (lower right-hand side of screen). The following is an example of the screen that appears:

Input Status	**FS-552**		Select Sources
Tone Gen	Audio Configuration		
Lip-Sync			ALC
Embed Enab **ON**			AdjacentAudBrd

Input Status

From the Configuration screen, press the small square button next to **Input Status** and the following screen example appears providing *Audio-In* information for specific groups:

	Audio-In Status			
DEmbd Grp1:	No-Input	No-Input	No-Input	No-Input
DEmbd Grp2:	No-Input	No-Input	No-Input	No-Input
DEmbd Grp3:	No-Input	No-Input	No-Input	No-Input
DEmbd Grp 4:	No-Input	No-Input	No-Input	No-Input
AES-in:	No-Input	No-Input		

Tone Gen

From the Configuration screen, press the small square button next to **Tone Gen** and the following screen example appears:

Freq	**FS-552**		
Level	Audio Tone Generators		
	Set Frequencies		
TG-1 400 Hz	TG-2 500 Hz	TG-3 600 Hz	TG-4 800 Hz

The screen default shows the *Freq* (frequency) for each *Tone Generator* (TG).

- Rotate blue knob immediately below TG-1, TG-2, TG-3, or TG-4 to increase or decrease the frequency for that specific *Tone Generator*.

Press the small square button next to **Level** and where there were frequency settings before, there are now dBFS settings under TG-1, TG-2, TG-3, and TG-4. See screen example below.

Freq	**FS-552**		
Level	Audio Tone Generators		
	Set Frequencies		
TG-1 -20.0 dBFS	TG-2 -20.0 dBFS	TG-3 -20.0 dBFS	TG-4 -20.0 dBFS

- Rotate blue knob immediately below TG-1, TG-2, TG-3, or TG-4 to increase or decrease the dBFS settings for that specific *Tone Generator*.

Lip-Sync

From the Configuration screen, press the small square button next to **Lip-Sync** and the following screen example appears:

	FS-552		
	Audio Lip-Sync Adjust		
Tracking Slow	Add Offset 0.000 sec		

- Rotate blue knob immediately below *Tracking* to switch its setting between **Slow**, **Medium**, and **Fast**.
- Rotate blue knob immediately below *Add Offset* to change the number of seconds offset for **Lip-Sync**.

Embed Enab

From the Configuration screen, press the small square button repeatedly next to **Embed Enab** to switch settings between *On* and *Off*.

Select Sources

From the Configuration screen, press the small square button next to **Select Sources** and the following screen example appears:

	FS-552		AES Out Sources
	For each output chan, select a source		
Output Ch Ch-01	is SRC AES1.1	SumWith None	SumBalance 0.0 dB

- Rotate blue knob immediately below *Output Ch* to select a channel number.

The information displayed immediately to the right and under *is SRC, SumWith, and SumBalance* changes simultaneously to display their settings for the channel you have selected. Those settings do not change if there is no change for the channel you have selected.

If you wish to change the settings for *is SRC, SumWith* and *SumBalance* for your selected channel, rotate blue knob immediately below to make those changes. Those changes will now be recorded for your selected channel.

Press the small square button next to **AES Out Sources** and the following screen example appears:

	FS-552		
	Audio AES Output		
	Select output ch for each AES ch		
AES-1.1 Ch-01	AES-1.2 Ch-01	AES-2.1 Ch-01	AES-2.2 Ch-01

- Rotate blue knobs below each of the four settings across the bottom of the screen to change the channel number for each of the four AES channels: *AES-1.1*, *AES-1.2*, *AES-2.1*, and *AES-2.2*.

ALC

From the Configuration screen, press the small square button next to ALC and the following screen example appears:

Bank -1 ALC	**FS-552**	Bank Config
Bank-2 ALC	ALC Config	
Bank-3 ALC		
Bank-4 ALC		

Banks

From the ALC Config screen, press the small square button next to **Bank-1 ALC, Bank-2 ALC, Bank-3 ALC,** or **Bank-4 ALC** and the following screen example appears:

Note: The following instructions are applicable for all four Banks:

ALC Off	**FS-552**		Lim Off
	Audio ALC Bank (#)		
-- ALC --		--Peak Limiter--	
Level 0.0 dBFS	Rate 0	Level 0.0 dBFS	Rate 0

- Press the small square button next to **ALC** to switch its setting between *Off* and *On*.
- Press the small square button next to **Lim** (Limiter) to switch its setting between *Off* and *On*.

- Rotate blue knob immediately below the *ALC Level* setting to increase or decrease its dBFS setting.
- Rotate blue knob immediately below the *ALC Rate* setting to switch its setting between 0-6.
- Rotate blue know immediately below the *Peak Limiter Level* setting to increase or decrease its dBFS setting. Increasing or decreasing this setting may change the setting under ALC Level. This is normal.
- Rotate blue knob immediately below the *Peak Limiter Rate* setting to switch its setting between 0-15.

Bank Config

Bank Config allows you to divide up the system's 16 audio channels into four banks—Bank 1, Bank 2, Bank 3, and Bank 4. This feature allows you to quickly set audio levels for multiple channels simultaneously. For example, because of a particular hardware setup you may want to have Channels 1-6 set up in Bank 1, Channels 7 and 8 set up in Bank 2, Channels 9-11 in Bank 3, and Channels 12-16 in Bank 4.

From the ALC Config screen, press the small square button next to **Bank Config** and the following screen example appears.

	FS-552		
	Bank Config		
(These groupings are used for Bank-Gain and ALC)			
Ch-01 to Ch-04	Ch-05 to Ch-08	Ch-09 to Ch-12	Ch-13 to Ch-16

- Rotate blue knob immediately below *Ch-01 to Ch-04* (**Bank 1**) to change the Ch-04 setting to a higher or lower channel number. You will note that the numbers in the next cell (**Bank 2**) to the right of the one you are working in will change to a higher or lower channel number depending on what you set up for **Bank 1**.
- Repeat this process for Bank 2, Bank 3, and Bank 4.

AdjacentAudBrd

From the Configuration screen, press the small square button next to AdjacentAudBrd and the following screen example appears:

	FS-552	
	Adjacent DAS Audio Board	
DeEmbed to DAS Grp1	Embed DAS Audio None	

- Rotate blue knob immediately below DeEmbed to DAS to switch the setting between None, Grp1, Grp2, Grp3, and Grp4.
- Rotate blue knob immediately below Embed DAS Audio to switch the setting between None, Grp1, Grp2, Grp3, and Grp4.
-

Note: A message may appear in the middle of the screen indicating that the Embedded DAS Audio will override local Audio.

Chapter 6 Troubleshooting

6.1 Network Communication Errors

This chapter was developed to assist you in identifying a control communications problem when using remote control panels with Integrity™ system frames.

Integrity is designed to transmit and receive data between remote control panels (RCPs) and cards via the Ethernet on a Local Area Network (LAN). There are several potential causes of problems identified here with ways to isolate them and render a solution.

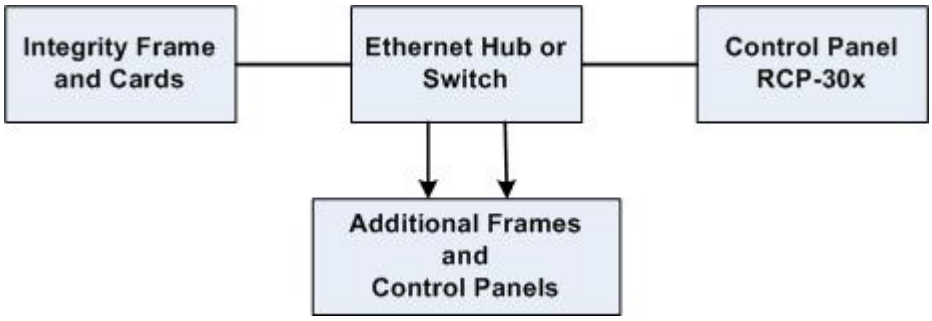

Figure 13: Integrity System Flow Diagram

6.2 Recommended Network Configuration

The recommended configuration for Integrity is to use an off-the-shelf Ethernet switch to connect all frames and RCPs. For large systems, multiple switches may be cascaded. All devices are connected using Ethernet patch cables, such as those used to connect a PC to a switch or patch panel.

Each RCP must be assigned a unique IP and MAC address. Assignments may be changed via a menu in the RCP. There is a specific range of addresses that are considered valid. Invalid values will cause a system communication failure.

6.3 When Things Do Not Work

Isolating the fault is the key step in locating a network communications problem. Integrity RCPs are designed to communicate over a network using patch cables, or directly connected to an Integrity system frame using an Ethernet crossover cable (not a patch cable). This allows you to determine if the fault is either the frame or a particular control panel.

To troubleshoot a problem, complete the following steps:

Step	Action
1	Connect one RCP (via the Remote 1 port on the back panel) to one end of the crossover cable.
2	Connect the frame (via the Remote 1 port on the back panel) to the other end of the same crossover cable.
3	Apply power to both the frame and RCP.
4	Observe the two LED indicators on the front of the frame marked “Remote 1”. • The first LED should flicker rapidly indicating traffic over the remote port. • The second LED should illuminate steady indicating a correctly connected cable.

No frames or cards found.

When an RCP cannot find a frame via a crossover cable, it means one of several things may have happened. Complete the following steps to troubleshoot the problem:

Step	Action
1	Make sure the controller card (ZFCB) in the frame is seated in its card socket properly or completely. • If the card is not seated properly, it will result in a frame’s inability to receive communications. • If the Remote 1 status LEDs are both extinguished, this is possibly the cause of the communication failure. Remove the pop-off front cover, turn the power supplies off, then remove the inner center cover to access the ZFCB card. Using the card ejectors, gently re-seat the card in its socket and lock the card ejectors to secure the card. Replace the inner cover (required for proper ventilation and RF shielding), turn the power supplies on, then replace the pop-off front cover. The Remote 1 LEDs on the front cover should now illuminate. If not, call the factory for further assistance.
2	Change the cable. There is always a chance you have a defective crossover cable. Try a second cable to be sure you do not have a defective one.
3	Try another RCP. If you have more than one RCP, try each one in turn connected via the same crossover cable directly to the frame. If other RCPs work, then the problem has been isolated to a faulty control panel. If no RCP works, try another crossover cable again.
4	After you have determined that an RCP is at fault, set it aside and continue the tests with one or more good RCPs. Now that an RCP communicates successfully over a crossover cable, it is time to reconnect and test the rest of the network hardware.

Step	Action
5	• Remove the crossover cable and connect one, and only one, RCP via an Ethernet patch cable to an Ethernet switch. • Use a second Ethernet patch cable to connect the Ethernet switch to the Integrity frame. Do not connect any other devices to the Ethernet switch at this time. • Verify that the RCP is able to re-establish communications with the frame over the Ethernet. If not, and we have verified that the frame and RCP communicate successfully via a crossover cable, then the problem must be either a bad patch cable, Ethernet switch, or hub. • Change cables and hubs to see if this corrects the problem. The best way to verify the cable is correct–substitute it for another "known good" patch cable in active use elsewhere in the facility. If that device still communicates with its network, then the cable must be good. If both cables are good, try another switch or hub. Network traffic is best handled over a switch, not a hub, when multiple control panels and frames are to be installed. • If you are using a hub, try using a switch instead.
6	• After a single RCP is able to communicate over the network, substitute remaining RCPs for the first one, one at a time, using the same cable and switch path. This will verify that each panel works with the frame. • After ALL RCPs have been tested this way, one at a time, you are ready to connect multiple panels for the first time in this fault isolation process.
7	Connect a second RCP in the same manner as the first to the Ethernet switch. Verify that it communicates correctly with the Integrity system frame over the Ethernet. Continue to add one RCP at a time, verifying each before adding the next. If adding an RCP causes the network to lockup so that other panels cannot continue to operate normally, disconnect that panel and set it aside, continuing with the next panel until all panels have either been successfully added or set aside.
8	Those panels set aside in Step 7 may in fact be working panels, but have an address conflict with another panel on the network. This step provides the means for checking the address of each panel and how to change an address if it is causing a conflict.
9	Each Integrity RCP has an IP address and MAC address that must be unique on that network. Make sure each of the selected IP addresses are unique on the network. The MAC addresses are factory programmed and cannot be changed.

Selecting Ethernet cables

There are varieties of cables with RJ-45 connectors on the ends in the marketplace. Integrity system products use Ethernet patch cables when connected through a switch or hub, and crossover cables when connected one-to-one without a switch or hub. Cables should be compliant with IEEE 802.3 specifications.

Appendix A: SNMP Error Reporting

This appendix presents a list of items related to the HDFS-55X card that are available for Simple Network Management Protocol (SNMP) information and error reporting.

Item	Description
cardType	One of nine card types: FS; UDC; UCP x 550, 551, 552, etc.
cardAlias	User-assigned name string.
cardRev	Software version.
cardTemp	Card temperature in degrees Celsius
overTempAlarm	Card temperature greater than the threshold. User-defined setting that defaults to 55 degrees Celsius.
refAlarm	Loss of Genlock.
vidAlarm	Loss of input video.
vidInSel	• 0=Input 1 • 1=Input 2
majorAlarm	• 0=OK • 1=OverTemp • 2=NoVidLock • 3=NoRefLock • 4=UDC-Error
minorAlarm	• 0=OK • 2=AudioError=BadCSB or BadRxLock

Appendix B: Installing Jumpers on HDFS-55X Cards

In nearly all cases, jumpers will have been installed on your HDFS-55X card at the factory before the card was delivered and ready for installation. However, in the event that procedure needs to be corrected or repeated onsite, this appendix provides information for installing the jumpers.

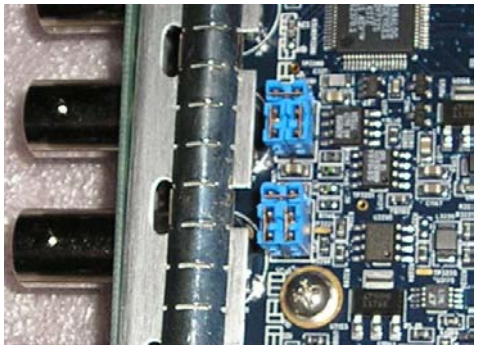

Figure 14: Jumpers on a Typical HDFS-55X Card

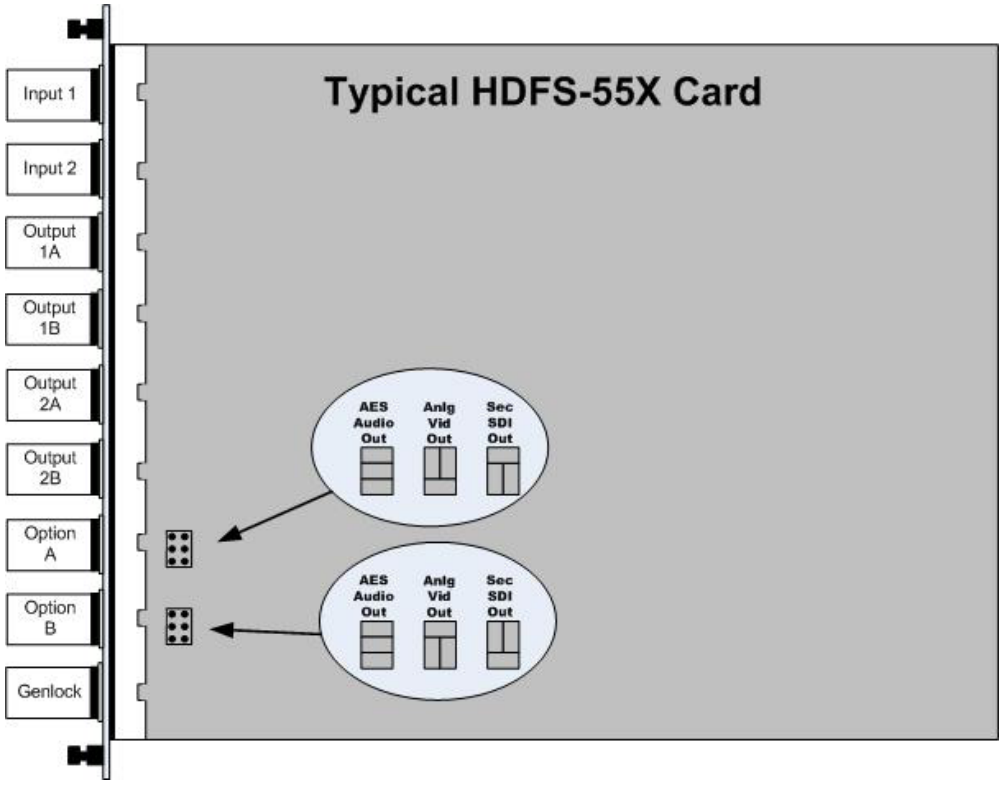

Figure 15: User-Selected Jumper Settings