



AVENUE

Avenue® signal integration system

Model 5230 D-A Video Converter with 6230 Audio Option Data Pack

ENSEMBLE
DESIGNS

Revision 4.1 SW v2.0.2

This data pack provides detailed installation, configuration and operation information for the **5230 Digital to Analog Video Converter** module along with the **6230 Audio Processing** submodule option as part of the Avenue Signal Integration System.

The module information in this data pack is organized into the following sections:

- 5230/6230 Overview
- Applications
- Installation
- Cabling
- Module Configuration and Control
 - Front Panel Controls and Indicators
 - Avenue PC Remote Control
 - Avenue Touch Screen Remote Control
- Troubleshooting
- Software Updating
- Warranty and Factory Service
- Specifications

5230 and 6230 OVERVIEW

The 5230 takes serial digital component and converts the signal into either composite or component analog video outputs. 8x oversampling and 12 bit processing ensure high quality conversion for use in the most demanding applications.

The 5230 has a full-featured Proc Amp for adjustment of every signal parameter. Proc controls include video and chroma gain, NTSC style hue rotation, black balance, and pedestal.

Selective (toothed) vertical blanking lets you choose to pass or strip content in the vertical interval on a line by line and field by field basis.

The output timing of the 5230 is fully adjustable relative to the reference input signal. Composite outputs can be precisely color-timed and will also track color framing of the reference signal. Incorporating a full frame synchronizer, the 5230 accepts serial inputs that are asynchronous to the reference.

The 6230 is an optional audio submodule for disembedding or converting. This audio processor option has AES audio inputs and analog outputs, and the ability to disembed audio from the serial digital video stream. Disembedded audio or signals from any of the inputs may be mixed, shuffled or level controlled and any of the channels re-embedded and/or sent to the analog output connectors.

Full audio delay tracking is included as well as the provision to add fixed delay to correct incoming lip sync errors. There is built-in sample rate conversion allowing use of asynchronous AES inputs, while synchronous AC-3 or Dolby-E audio signals may also be used. As always, the comprehensive Avenue control system allows for monitoring and adjustment of all parameters through networked Touch Screen or PC control.

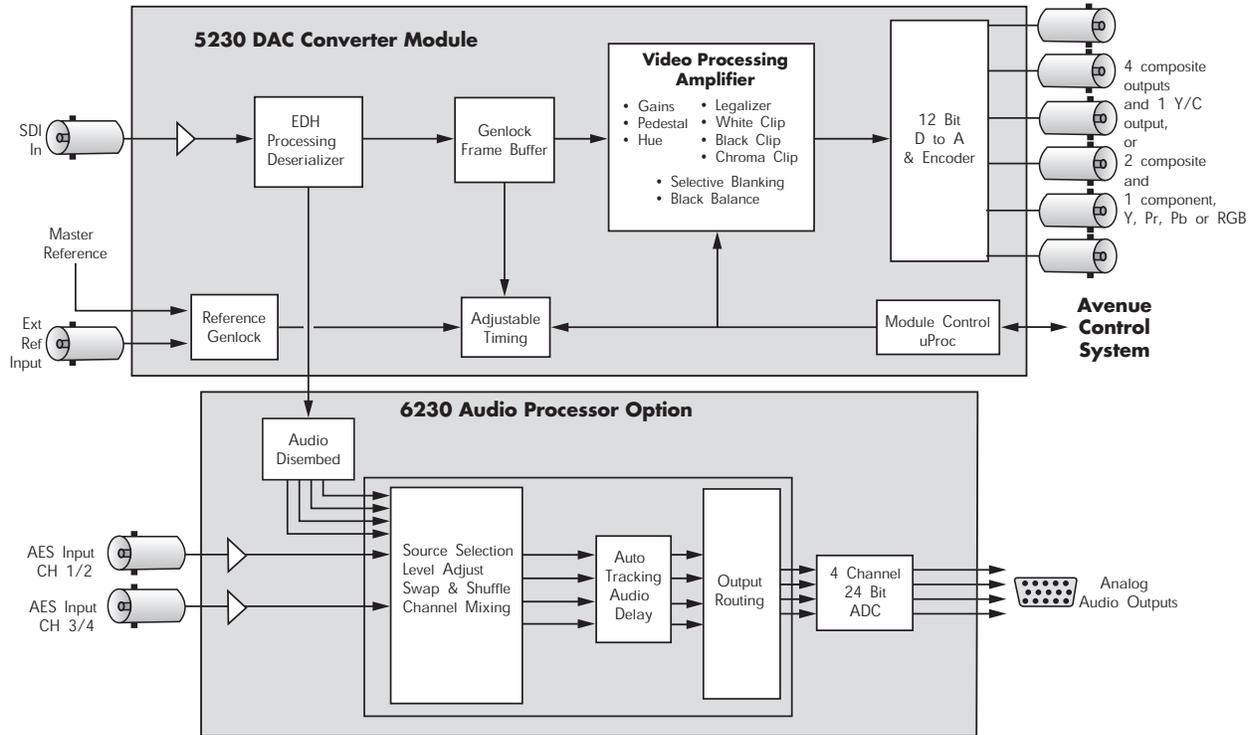
Other features include the following:

- Clips and chroma limiting
- Composite legalizer
- Internal color bars test generator

Power is derived from the ± 12 volt frame power. It is regulated to the required + 5 volts for the digital circuitry and ± 8 volts for the analog circuitry by on-board regulators. The module is fused with a resettable fuse device. If the fuse opens due to an overcurrent condition, the module will lose power. After pulling the module, the fuse will reset automatically requiring no replacement fuse.

The on-board CPU can monitor and report module ID information including slot location, software version and board revision and other data to the optional frame System Control module. This information can be accessed by the user or set to register an alarm if desired using the remote control options available.

Every function and parameter on the 5230 module can be controlled from an Avenue Touch Screen Control Panel, or the Avenue PC Control Application. Memory registers can be used to save the complete configuration of the module, making it easy to change instantly between different configurations.



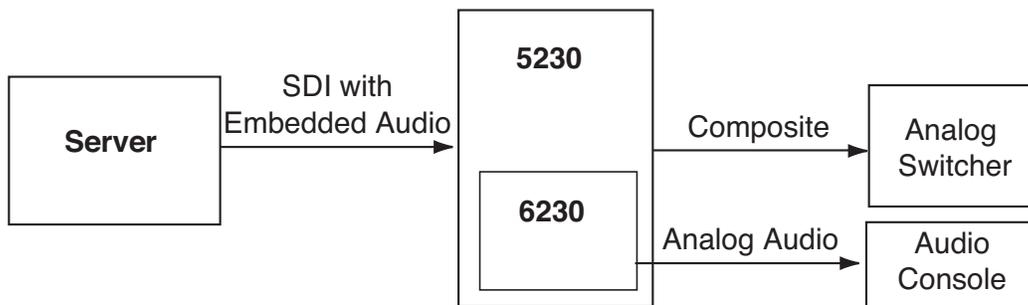
5230/6230 Functional Block Diagram

APPLICATIONS

This section provides some typical applications for utilizing the full versatility of the 5230 Video Processor module and the optional submodule, the 6230 Audio Processor.

Video Server Feeding an Analog Switcher

As illustrated in the block diagram below, the 5230 accepts a serial digital video input with embedded audio from a video server. The digital video will be converted to composite analog and fed to an analog switcher. The embedded audio in the serial digital stream will be disembedded and converted to analog audio outputs in the 6230 submodule.

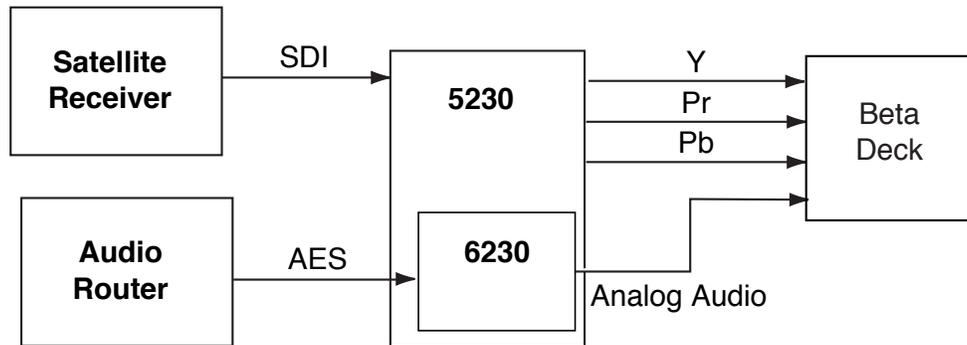


Video Server Feeding an Analog Switcher

Proper audio/video timing can be assured when the tracking audio delay of the 6230 Audio Processor is employed. Any timing or delay modifications to the video are tracked by the 6230 whether you wish to use disembedded audio or audio input from an AES source. Properly timed audio from any of these sources is available directly when routed to the analog audio outputs. A fixed delay of up to 1000 mS can be inserted by the 6230 to correct for signals which have previously passed through frame stores without audio delay compensation.

Satellite Receiver and Audio Router Feeding a Beta Deck

Another application for the module is shown below. In this application, a digital satellite feed enters the 5230 and is converted to component analog video feeding a Beta deck. AES audio from an audio router feeds the 6230 submodule inputs and converts the digital audio to analog which is also fed to the Beta deck.



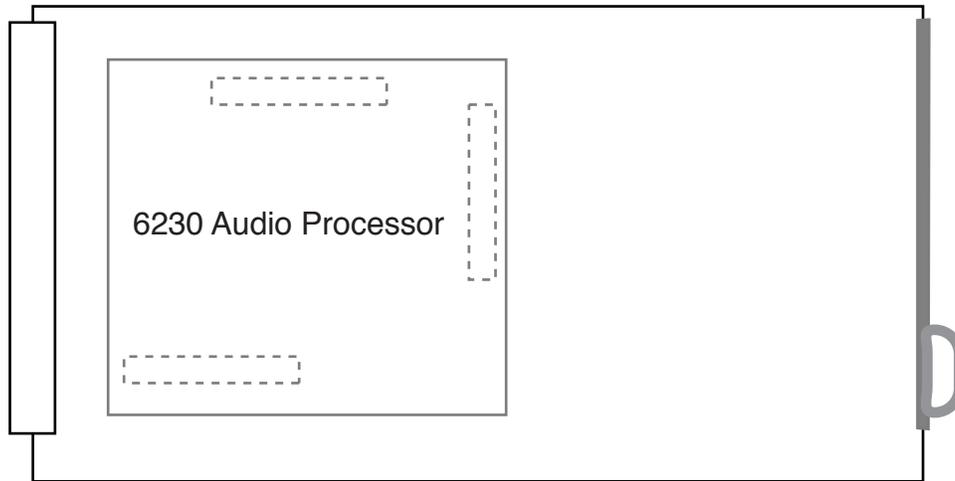
Satellite Receiver and Audio Router Feeding a Beta Deck

INSTALLATION

6230 Submodule Installation

The optional 6230 Audio Processing submodule installs on the component side of the 5230 Video Processing module circuit board. If the option is ordered with the 5230 module, it will come already installed.

To install the 6230 Audio submodule, locate the three connectors on the left side of the circuit board as shown below and line the connectors up, checking the alignment. Press carefully into place to seat the submodule.



6230 Submodule Installation

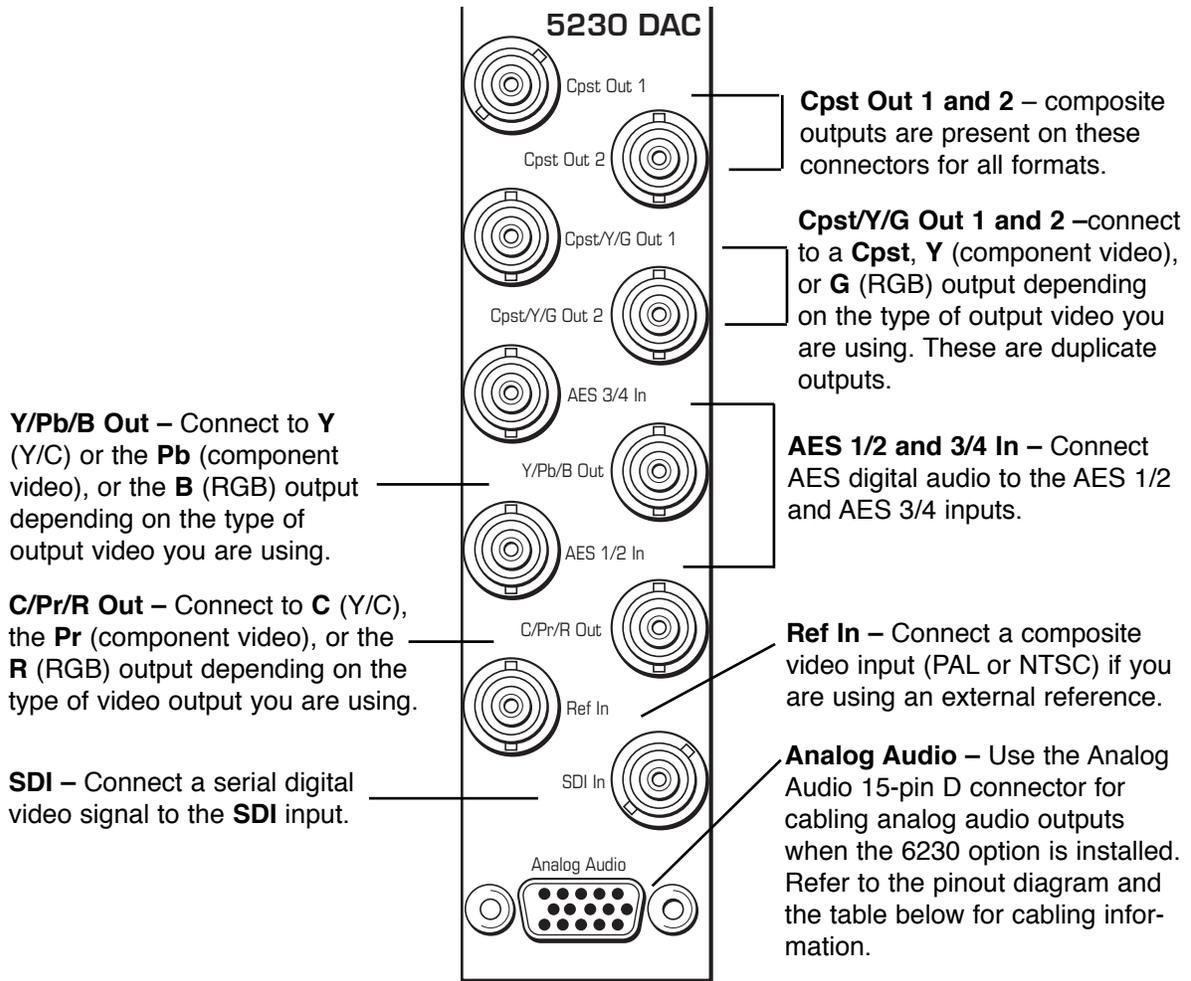
5230 Video Processing Module

Plug the 5230 module into any one of the slots in the 1 RU or 3 RU frame and install the plastic overlay provided onto the corresponding group of rear BNC connectors associated with the module location. Note that the plastic overlay has an optional adhesive backing for securing it to the frame. Use of the adhesive backing is only necessary if you would like the location to be permanent and is not recommended if you need to change module locations. This module may be hot-swapped (inserted or removed) without powering down or disturbing performance of the other modules in the system.

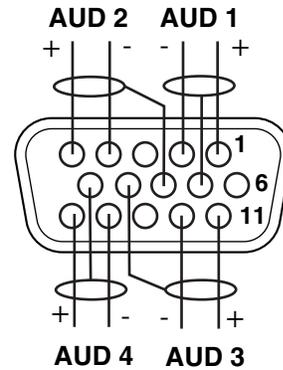
CABLING

Refer to the 3 RU and 1 RU backplane diagrams of the module on the following page for cabling instructions. Note that unless stated otherwise, the 1 RU cabling explanations are identical to those given in the 3 RU diagram.

3 RU Backplane



Analog Audio Pinouts		
Signal	Pins	Output
Aud 1 +, -, G	1, 2, 7	Output 1
Aud 2 +, -, G	5, 4, 8	Output 2
Aud 3 +, -, G	11, 12, 9	Output 3
Aud 4 +, -, G	15, 14, 10	Output 4



MODULE CONFIGURATION AND CONTROL

The configuration parameters for each Avenue module must be selected after installation. This can be done remotely using one of the Avenue remote control options or locally using the module front panel controls. Each module has a **REMOTE/LOCAL** switch on the front edge of the circuit board which must first be set to the desired control mode.

The configuration parameter choices for the module will differ between **Remote** and **Local** modes. In **Remote** mode, the choices are made through software and allow more selections. The **5230/6230 Parameter Table** later in this section summarizes and compares the various configuration parameters that can be set remotely or locally and the default/factory settings. It also provides the default User Levels for each control. These levels can be changed using the Avenue PC application.

If you are not using a remote control option, the module parameters must be configured from the front panel switches. Parameters that have no front panel control will be set to a default value. The **Local** switches are illustrated in the **Front Panel Controls and Indicators** section following the **5230/6230 Parameter Table**.

Avenue module parameters can be configured and controlled remotely from one or both of the remote control options, the Avenue Touch Screen or the Avenue PC Application. Once the module parameters have been set remotely, the information is stored on the module CPU. This allows the module to be moved to a different cell in the frame at your discretion without losing the stored information. Remote configuration will override whatever the switch settings are on the front edge of the module.

For setting the parameters remotely using the Avenue PC option, refer to the **Avenue PC Remote Configuration** section of this document.

For setting the parameters remotely using the Avenue Touch Screen option, refer to the **Avenue Touch Screen Remote Configuration** section of this document following Avenue PC.

Configuration Summary

This section provides a general overview of the configuration for the 5230 module. The controls available for configuration with remote control are summarized and tips and examples are given for using particular controls to achieve the best results.

Video Processing

The 5230 has a full-featured Proc Amp for adjustment of every signal parameter. Proc controls include video and chroma gain, NTSC style hue rotation, black balance, and pedestal. Black and white clips can be set to prevent excessive signal excursions.

Certain values represented in serial digital component may be illegal in the NTSC or PAL composite domains. The Predictive Composite Clipper mode identifies picture elements that would be illegal in analog composite, and limits color saturation and luminance excursions. You can be confident that the work you're doing in digital component will look its best in composite.

Selective (toothed) vertical blanking lets you choose to pass or strip content in the vertical interval on a line by line and field by field basis.

The 5230 has analog composite or analog component outputs. They are fully timed to your house reference, including the subcarrier and ScH phase of the composite output. The analog output is constructed at 8x oversampling with 12 bits of quantizing resolution.

The available video processing remote control menus are summarized below:

- **Proc Menu:** Gain, Chroma, Pedestal and Hue are standard Proc Amp controls. Even though the input is SDI, the Hue control gives phase rotation of the color vectors in the manner of an NTSC composite Proc Amp.
- **Clip:** The Legalizer is a predictive clipper which insures signal levels will not exceed those permitted in the composite domain. Thus its use can insure a television transmitter will not be presented illegal video input. If Off or Legal are selected other adjustments are grayed and may not be changed. While Legal automatically puts in values to insure signals will not exceed composite legal limits, selecting Custom allows the operator to insert a range of clip values.
- **Timing:** The 5230's comprehensive range of timing allows complete flexibility in placement of the output picture relative to the applied reference input. Fine Phase and Hor Timing take the horizontal timing across the entire line with nanosecond accuracy. A Vert Timing adjustment completes the range in allowing any output timing desired by the operator.
- **Status:** This dynamic monitoring display provides indicators of video and audio inputs and EDH error status. The 6230 will show in the Option window when present.
- **Trim:** Cb and Cr offsets allow black balance to be corrected while Cb and Cr gains permit trimming of levels on these two axes. Y/C delay allows the operator to correct inaccuracy of timing of color information relative to luminance. These trims are functional regardless of the input or output formats in use.
- **Blanking:** There are Wide, Narrow or Custom blanking choices. Wide gives blanking through line 20 (NTSC) or line 22 (PAL), while narrow produces blanking through line 9 (NTSC) or Line 6 (PAL) of both fields. In the Custom mode any individual lines from 9 through 23 may be selectively blanked, with different choices allowed for each field. Some systems recognize position of the V-bit to control end of blanking. In the 525 standard V-bit position can be set to line 10, line 20 or line 23. In 625 mode V-bit is fixed at line 23 as this is the only position permitted by the 625 Standard.
- **Memory:** Up to five configurations of the 5230 may be saved into memory registers for later recall. All parameters – gains, input format, filters, blanking, etc. - are saved in each memory. The 5230 can be used with component analog outputs in a particular application. In another application it is used with composite input, noise reduction and embedding of audio from an analog audio input source. These two setups could be stored in memory registers and one or the other recalled for instant restoration of the required configuration.

6230 Audio Processor Configuration

The 6230 Audio Processor will accept audio from the AES input connectors and can disembed audio from the incoming SDI video stream. Between the input and output is a 4x4 audio mixer with tracking audio delay. Any incoming audio can be mixed, level controlled and/or shuffled to another output channel by means of the integrated audio router. The tracking audio delay allows synchronization and timing to be maintained with time base corrected video passing through the video frame synchronizer of the 5230.

A built in sample rate converter allows use of asynchronous AES input signals. The 6230 also supports encoded audio formats such as AC-3 and Dolby-E. All audio processing is performed at the full 24 bit resolution of the system. At the output side of the 6230 submodule the four audio channels are routed to analog output connectors. An adapter is also available to allow the AES I/O to be converted from BNC to 110 ohm balanced.

The available audio processing remote control menus are summarized below:

- **Audio In:** Status indicators show presence of AES and embedded (SDI) audio inputs. The In 1/2 Sel and In 3/4 Sel controls provide for selection of inputs to the 4x4 audio mixer. The choices for each are AES 1/2, SDI 1/2, AES 3/4, and SDI 3/4. Thus any pair of input audio signals can be routed to either pair of input buses of the 4 input 4 output audio mixer. This allows full flexibility of audio routing.
- **Audio Mix:** This menu gives full access to the 4x4 audio mixer controls. Any input channel can be routed to any or all output busses. Sliders or Touch Screen rotary knobs permit levels to be adjusted from -70dB to +12dB. Alternatively a value can be put in the numeric window, followed by the **Enter** key, and this will become the new gain setting. Default buttons are provided for return to zero level.
The Tie function is used for stereo operation where gain of a pair of channels is usually desired to be the same. An invert selection allows inversion of a channel to permit phase correction.
- **Audio Delay:** With the Auto Track switched **On**, audio will be delayed the same amount as the video passing through the 5230 frame synchronizer thus preserving lip sync. If incoming audio is early due to signals passing through an upstream frame sync without a compensating audio delay, Bulk Delay can be used to correct the problem. Up to 1000 mS of fixed delay can be added to compensate for upstream timing errors.

5230/6230 Parameter Table

CONTROL	LOCAL	REMOTE	DEFAULT/ FACTORY	USER LEVEL
Reference Source	Switch 4: Genlock On (ext ref) or Off (self ref)	Ext Ref Master Ref Video In Ref	Ext Ref	Admin
Gain	100%	0 – 150%	100%	Admin
Chroma	100%	0 – 150%	100%	Admin
Pedestal	0 IRE	+/- 30 IRE	0 IRE	Admin
Hue	0 IRE	+/- 180 degrees	0 degrees	Admin
Legalizer	Switch 4: Legalizer On or Off	Off Legal Custom	Off	Admin
B/W Clip	Off	Off On	Off	Admin
Black Clip	- 8 IRE	- 8 to 6.2 IRE	- 8 IRE	Admin
White Clip	110 IRE	95 to 110 IRE	110 IRE	Admin
Chr Clip Mode	Off	Off Chroma Cpst	Off	Admin
Chr Lo Clip	- 40 IRE	- 40 to 7.5 IRE	- 40 IRE	Admin
Chr Hi Clip	100 IRE	100 to 140 IRE	140 IRE	Admin
Out2 Format	Composite Y/C	Composite Y/C SMPTE Beta RGB	Composite Y/C	Level 1
Color Lock	Normal	2 Field Normal Field 3 Field 5 Field 7	Normal	Admin
Setup	Off	Off On	Off	Admin
Test Pattern	Off	Off Bars Black	Off	Admin
Signal Mute	No Muting	No Muting Mutes on Noise Freeze on Noise	No Muting	Admin
Bypass	Normal	Normal Bypass Split	Normal	Admin

5230/6230 Parameter Table (Continued)

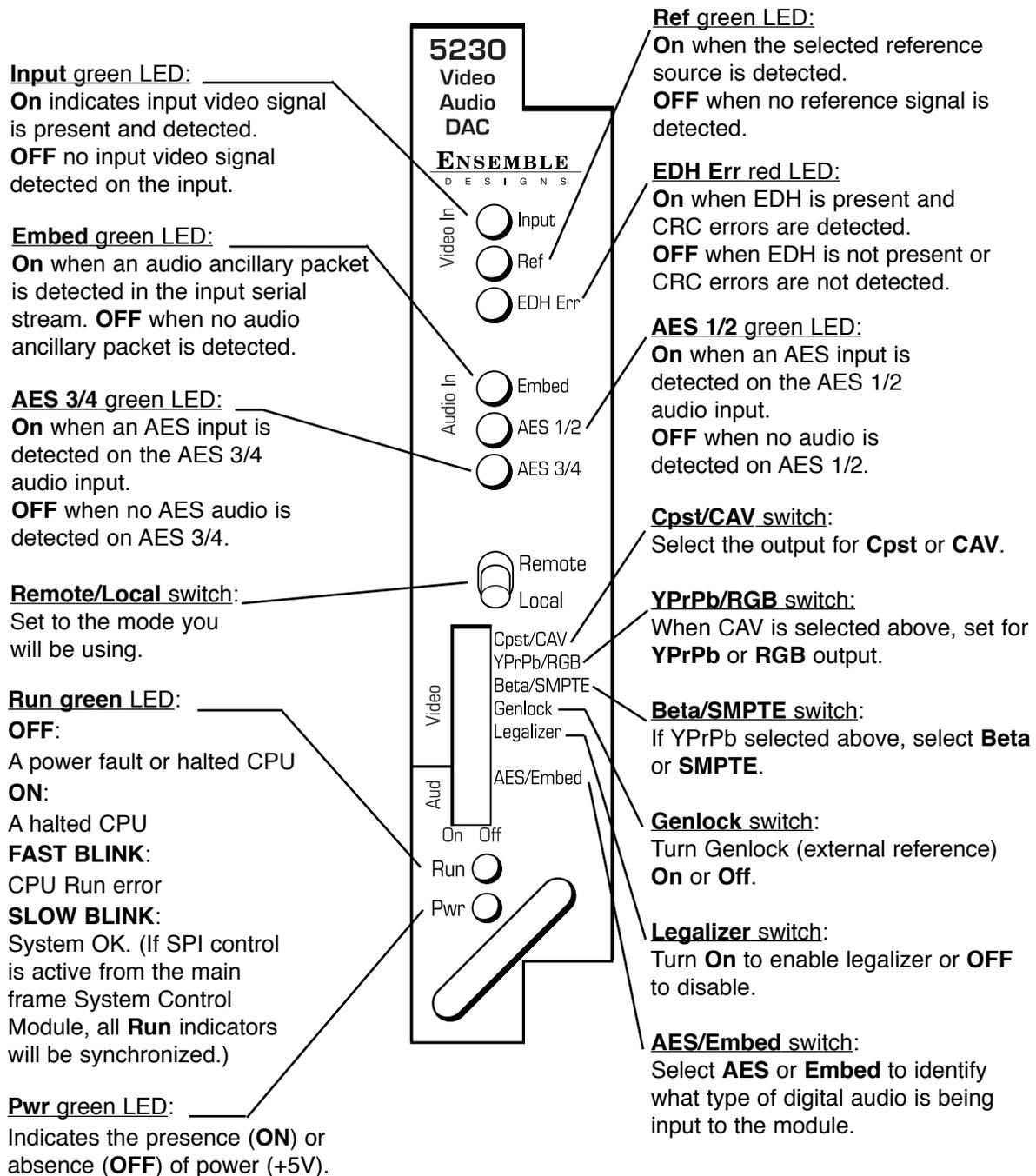
CONTROL	LOCAL	REMOTE	DEFAULT/ FACTORY	USER LEVEL
Fine Phase	0 ns	+/- 40 ns	0 ns	Admin
Horizontal Timing	0 clocks	+/- 1716 clocks	0 clocks	Admin
Vertical Timing	0 lines	+/- 525 lines	0 lines	Admin
Mode	Narrow	Narrow (PAL Lines 1-6, NTSC Lines 1-9) Wide (PAL Lines 1-22, NTSC Lines 1-20) Custom	Wide	Admin
V Bit Position	Line 20	Line 10 Line 20 Line 23	Line 20	Admin
Field 1/2 Toothed Blanking	N/A	< 9, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23		Admin
Cb Offset	0 IRE	+/- 300 IRE	0 IRE	Admin
Cr Offset	0 IRE	+/- 300 IRE	0 IRE	Admin
Cb Gain	0 IRE	+/- 20 IRE	0 IRE	Admin
Cr Gain	0 IRE	+/- 20 IRE	0 IRE	Admin

5230/6230 Parameter Table (Continued)

CONTROL	LOCAL	REMOTE	DEFAULT/ FACTORY	USER LEVEL
AUDIO CONTROLS (6230 Audio Submodule Installed)				
Ch 1-4 Output Bus	Ch 1 – Output 1 Ch 2 – Output 2 Ch 3 – Output 3 Ch 4 – Output 4	Output Bus 1 – 4	Ch 1 – Output 1 Ch 2 – Output 2 Ch 3 – Output 3 Ch 4 – Output 4 Tie	Level 1
1/2 Input	Switch 6: AES or Embed	AES 1/2 AES 3/4 SDI 1/2 SDI 3/4	Anlg 1/2	Level 1
3/4 Input		AES 1/2 AES 3/4 SDI 1/2 SDI 3/4	Anlg 3/4	Level 1
1/2 Mode	Auto	Audio Auto	Auto	Level 1
3/4 Mode	Auto	Audio Auto	Auto	Level 1
DeMux Group	Group 1	Group 1 Group 2 Group 3 Group 4	Group 1	Level 1
Auto Track	Off	Off On	Off	Level 1
Bulk Delay	0 msec	0 – 1000 msec	0 msec	Level 1
Anlg Out Level	+4 dB	- 10 dB - 6 dB - 4 dB 0 dB + 4 dB	+4 dB	Level 1

Front Panel Controls and Indicators

Each front edge indicator and switch setting is shown in the diagram below:



Avenue PC Remote Configuration

The Avenue PC remote control menus for this module are illustrated and explained below. Refer to the **5230/6230 Parameter Table** for a summary of available parameters that can be set remotely through the menus illustrated. The **Configuration Summary** gives tips and general background information on setting the parameters. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack.

Parameter fields that are grayed out can indicate one of the following conditions:

- An option is not installed.
- The function is not active.
- The module is locked.
- The User Level set with Avenue PC is not accessible from the current User Level.

5230/6230 Avenue PC Menus

The **Vid In** menu shown below allows you to configure the following input sources:

- **Ref Source** – use this control to set the reference input source.

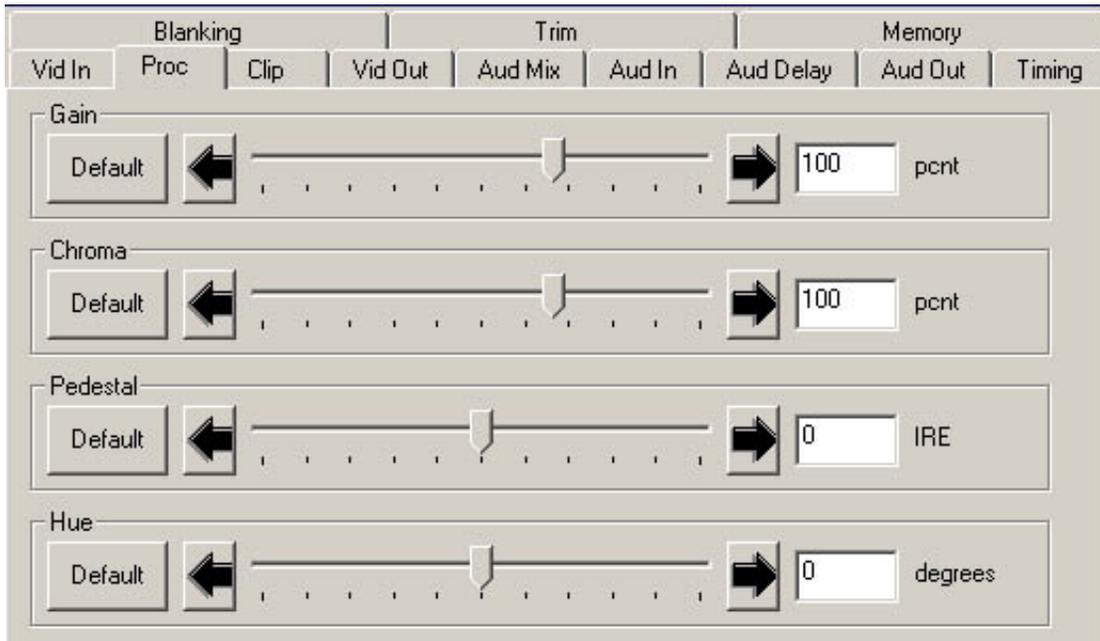
Status reporting is provided for the following conditions:

- **Input** – reports the input status as **No Input**, **525 Lock**, or **625 Lock**.
- **EDH Error** – reports the presence of EDH, EDA, and IDA errors.
- **Error Seconds** – displays the number of seconds that a detected EDH error has been present in the serial data stream.
- **Reference** – reports the status of the reference input as either **No Reference**, **Ref Mismatch**, **Ref Unlocked**, **Ref 525 Lock**, or **Ref 625 Lock**.

Blanking		Trim			Memory			
Vid In	Proc	Clip	Vid Out	Aud Mix	Aud In	Aud Delay	Aud Out	Timing
Input		EDH Error						
525 Lock		EDH OK						
Error Seconds								
0 Cnt								
Ref Source		Reference						
Master Ref		Ref 525 Lock						

The **Proc** menu shown below allows you to adjust the following video processing parameters for the signal:

- **Gain** – adjust the percentage of overall gain (luminance and chrominance).
- **Chroma** – adjust the percentage of chroma amplitude.
- **Pedestal** – adjust the pedestal (black) level of the signal in IRE.
- **Hue** – adjust the hue of the signal ± 180 degrees.



Use the **Clip** menu shown below to adjust the following parameters:

- **Legalizer** – set the legalizer function to one of the following:

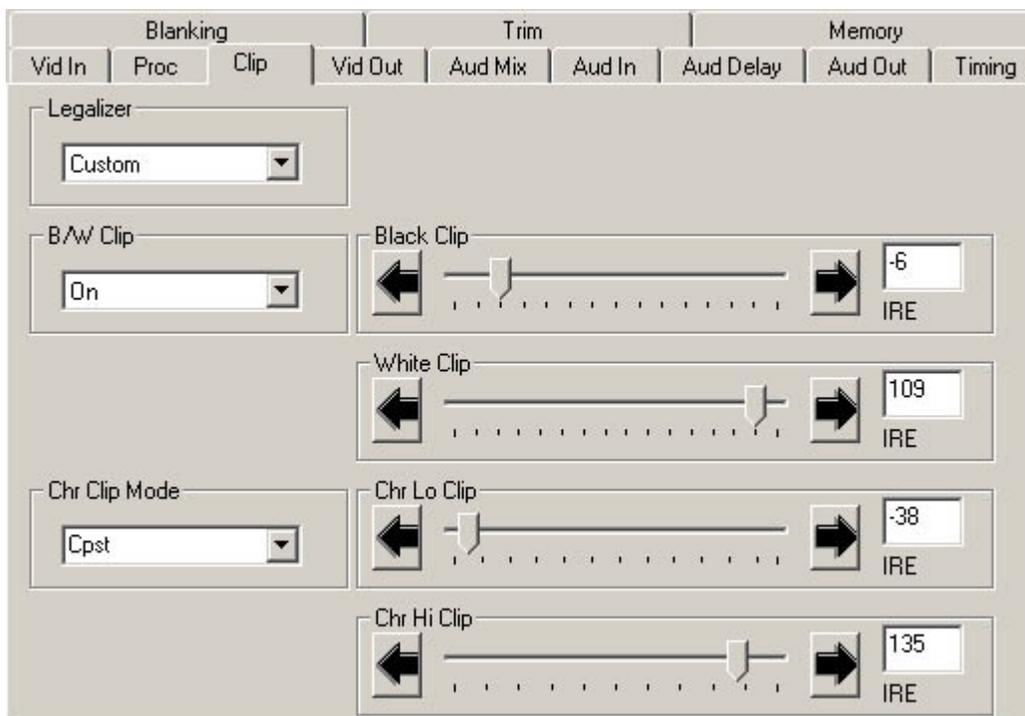
Off – to disable it.

Legal – to apply the following factory default values:

- **B/W Clip** is on.
- **Black Clip** is set to 2.5 IRE.
- **White Clip** is set to + 105 IRE.
- **Chr Clip Mode** is predictive composite.
- **Chr Lo Clip** is set to – 20 IRE.
- **Chr Hi Clip** is set to +120 IRE.

Custom – to enable the **B/W Clip** and **Chr Clip Modes** controls to set custom parameters with the following controls:

- **B/W Clip** – select **On** to enable black and white clip functions or **Off** to disable them.
 - **Black Clip** – set the threshold for the black clip level. (No content will be allowed below the level set.)
 - **White Clip** – set the threshold for the white clip. (No content will be allowed above the level set.)
- **Chr Clip Mode** – select one of the following modes:
 - **Off** for no chroma clip functions.
 - **Chroma** to use the chroma clip controls **Chr Lo Clip/Chr Hi Clip** to set to clip the chroma content (irrespective of the luminance).
 - **Cpst** to enable the Predictive Composite Clipper. This mode allows you to ensure that when the signal is encoded to PAL or NTSC, the minimum and maximum chroma excursions do not exceed preset levels. Because in composite video, the chroma rides on the luminance, this clip mode is based on chroma and luminance values.



Use the **Vid Out** menu shown below to adjust the following parameters:

- **Out2 Format** – select the format for the second analog output. The first output is always composite.
- **Color Lock** – set the ScH/color framing on the composite output with respect to the composite reference input.
- **Setup** – enable or disable setup on the output by selecting **On** or **Off**.
- **Test Pattern** – select a test pattern to be sent to the video output of the module.
- **Bypass** – set to **Normal** for no split screen, **Bypass** to completely bypass any digital processing, or **Split** to enable a split screen comparison between the original input signal (left) and the processed output (right).
- **Signal Mute** – set to either mute the output to black when noise is present or no muting.

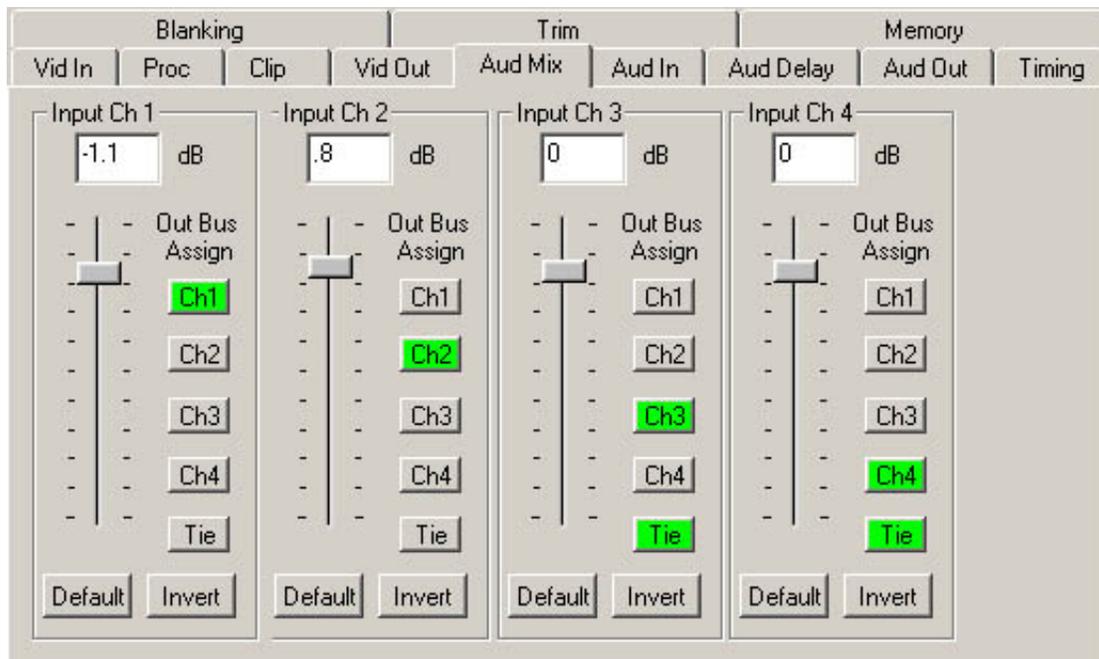
Blanking			Trim			Memory		
Vid In	Proc	Clip	Vid Out	Aud Mix	Aud In	Aud Delay	Aud Out	Timing
Out2 Format			Setup			Bypass		
SMPTE			Off			Normal		
Color Lock			Test Pattern			Signal Mute		
Normal			Off			Mutes on Noise		

The next group of audio menus are used when the 6230 Audio submodule is installed.

Use the **Aud Mix** menu shown below to control the audio mixing and shuffling of the module. Each output bus assignment will be indicated by a green box.

- **Input Ch 1** – assign Input Channel 1 to the desired output bus or tie to Channel 2. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 2** – assign Input Channel 2 to the desired output bus or tie to Channel 1. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 3** – assign Input Channel 3 to the desired output bus or tie to Channel 4. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 4** – assign Input Channel 4 to the desired output bus or tie to Channel 3. Set the input level using the slider control or by entering a number in the window.

Select the **Default** button to return to the default value. Select the **Invert** button to invert the phase of the audio content.



Use the **Aud In** menu shown below to adjust the following parameters:

- **1/2 Input** – select the input audio source for Input 1/2.
- **3/4 Input** – select the input audio source for Input 3/4.
- **1/2 Mode** – for a Serial input with embedded audio, select the type of audio in the stream:
 - **Audio** – the embedded stream is standard audio.
 - **Auto** – the module will detect the type of audio embedded in the stream.
- **3/4 Mode** – select the type of audio in the serial stream as described above.
- **Demux Group** – select the embedded audio group to demultiplex from the selections. The status of embedded audio is shown in the **Embed In** view.

The status of the corresponding audio inputs are shown next to the control. Status is reported as one of the following:

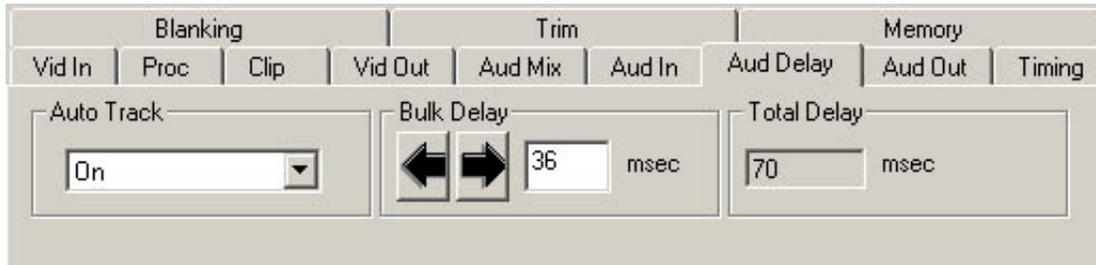
- **No Input** – no serial digital embedded audio is detected.
- **Audio Sync** – the audio embedded in the stream is synchronous with the timing reference.
- **Audio Async** – the audio embedded in the stream is non-synchronous with the timing reference.

Blanking			Trim			Memory		
Vid In	Proc	Clip	Vid Out	Aud Mix	Aud In	Aud Delay	Aud Out	Timing
1/2 Input			1/2 Status			1/2 Mode		
SDI 1/2			No Input			Audio		
3/4 Input			3/4 Status			3/4 Mode		
SDI 3/4			Audio Sync			Audio		
DeMux Group			Embed In					
Group 1			Embed Present					

Use the **Aud Delay** menu shown below to adjust the amount of audio delay on the output:

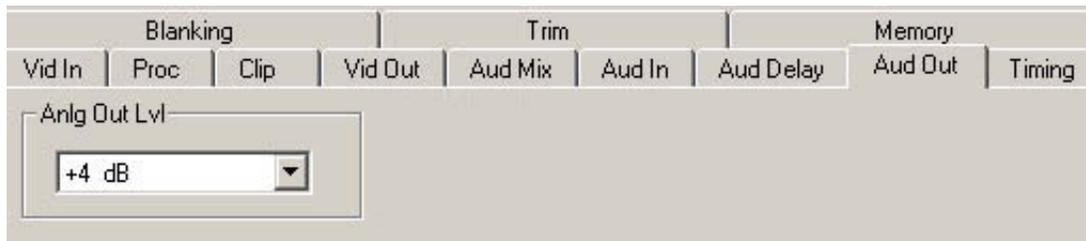
- **Auto Track** – enable auto tracking by selecting **On** or **Off**.
- **Bulk Delay** – set the amount of bulk delay using the left and right arrows.

The amount of total delay will be reported in nsec in the **Total Delay** window.



Use the **Aud Out** menu shown below to adjust the following analog audio output parameter:

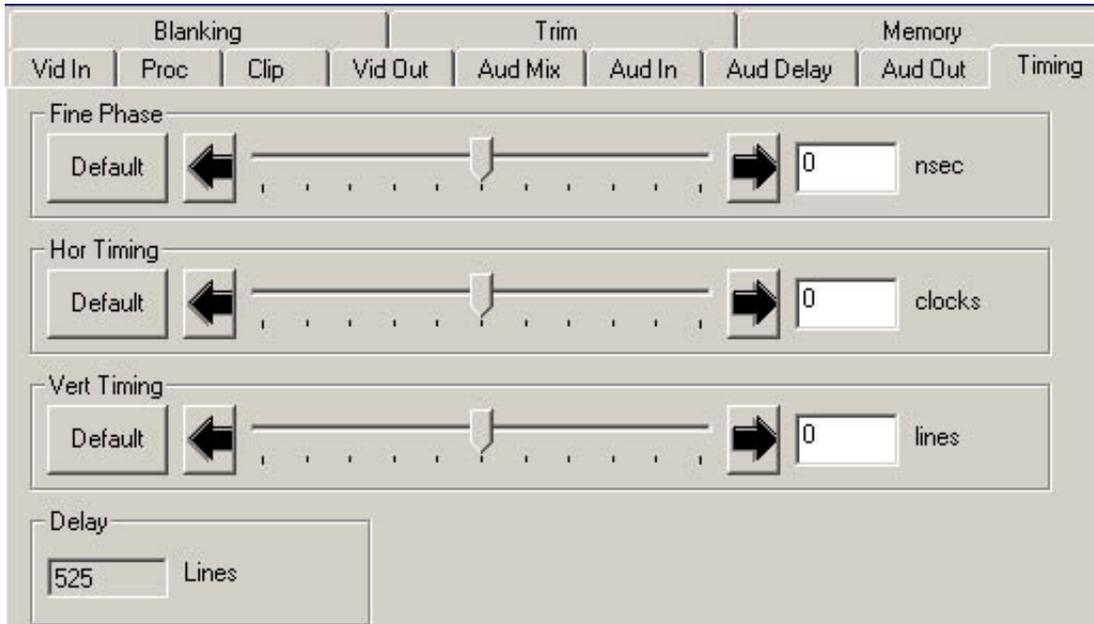
- **Anlg Lvl Out** – set the output level of the analog audio.



Use the **Timing** menu shown below to adjust the following parameters:

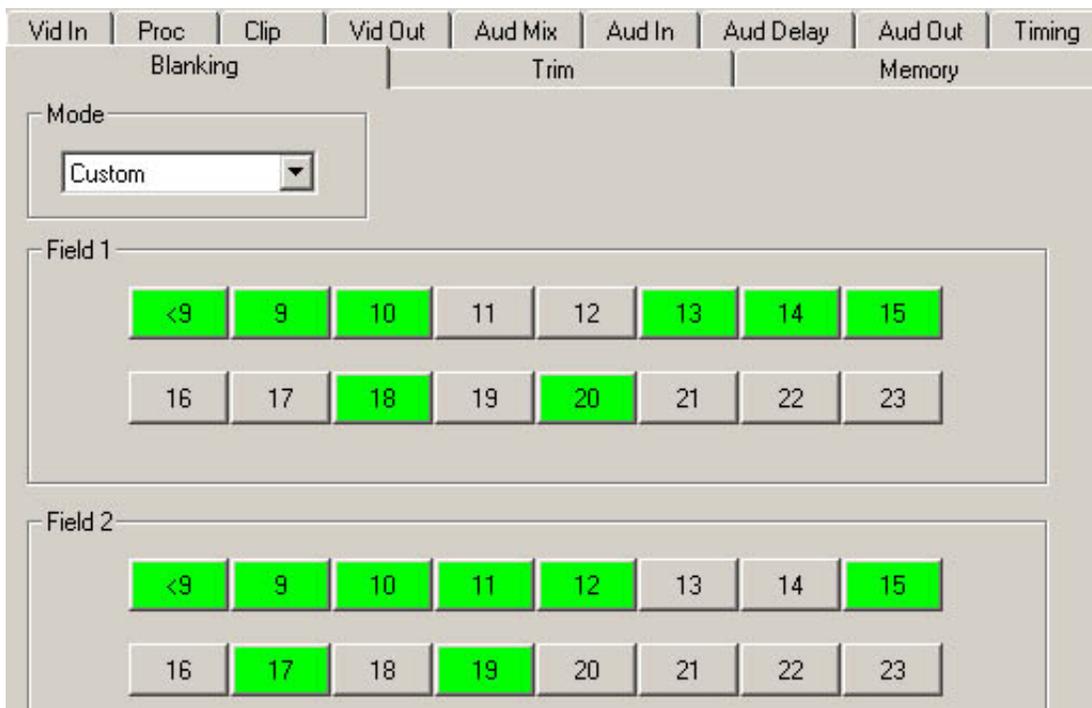
- **Fine Phase** – adjust for proper ScH phase with respect to other sources. If fine phase will not adjust properly, readjust the horizontal phase by up to ± 2 clocks until the fine phase falls into place.
- **Hor Timing** – adjust the horizontal timing of the output signal to place the leading edge of sync coincident with other sources.
- **Vertical Timing** – set the vertical timing to a typical setting of 0 lines.

This menu provides a **Delay** window at the bottom of the screen that will report the total delay in lines of the module.



The **Blanking** menu shown below allows you to adjust the output blanking of the module with the following controls:

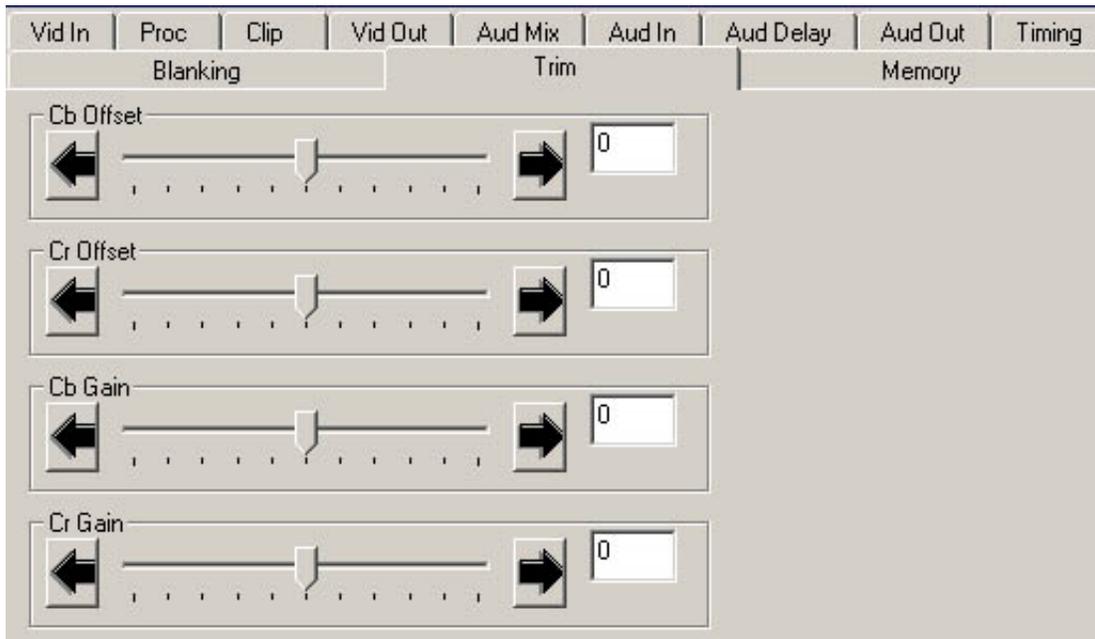
- **Mode** – set the blanking mode to **Narrow** (lines 1-9 are blanked in NTSC, lines 1-6 in PAL), **Wide** (lines 1-20 in NTSC, lines 1-22 in PAL), or **Custom**.
In **Custom** mode you may select which lines are blanked on a line by line basis in Field 1 and Field 2. A green box indicates the line is blanked. In NTSC, there are individual blanking controls for each line starting with 10 ending with 21. In PAL, there are blanking controls for lines 7 and 8 as one group (both passed or both blank) and individual blanking controls for each line starting with 9 ending with 23.
- **V Bit Pos** – in 525 mode only. Set the position of the vertical bit in the SDI output to **Line 10**, **Line 20**, or **Line 23**.



The **Trim** menu allows you to correct subtle issues in the individual color difference channels with offset and gain controls. The offset controls adjust the DC offsets above or below the nominal points. This can be used to correct black balance errors. The gain controls adjust the amplitude of each channel. It is helpful to set the output of the module to **Split Screen** (in the **Vid Out** menu) to allow viewing a comparison of the processed signal to the input while adjusting the controls below.

Use the controls described below to make the offset and gain corrections:

- **Cb Offset** – adjust the DC offset of the Cb channel to between ± 300 .
- **Cr Offset** – adjust the DC offset of the Cr channel to between ± 300 .
- **Cb Gain** – adjust the amplitude of the Cb channel to between ± 20 .
- **Cr Gain** – adjust the amplitude of the Cr channel to between ± 20 .



The **Memory** menu shown below allows you to save overall module setups to five memory registers as follows:

- Select **Save**, then one of the five memory registers **Reg 1 – 5**. The box will turn green. The entire module setup is now saved in the selected register.
- To recall a register, select the register box. If there is information saved, the box will turn green. The saved setup will now be loaded to the module. Up to five different module setups can be saved and recalled using the individual registers.



Avenue Touch Screen Remote Configuration

The Avenue Touch Screen remote control status menu for this module is illustrated and explained below. Refer to the **5230/62300 Parameter Table** for a summary of available parameters that can be set remotely through the menus illustrated. The **Configuration Summary** gives tips and general background information on setting the parameters. For more information on using Avenue Touch Screen, refer to the Avenue System Overview.

Parameter fields that are grayed out can indicate one of the following conditions:

- An option is not installed.
- The function is not active.
- The module is locked.
- The User Level set with Avenue PC is not accessible from the current User Level.

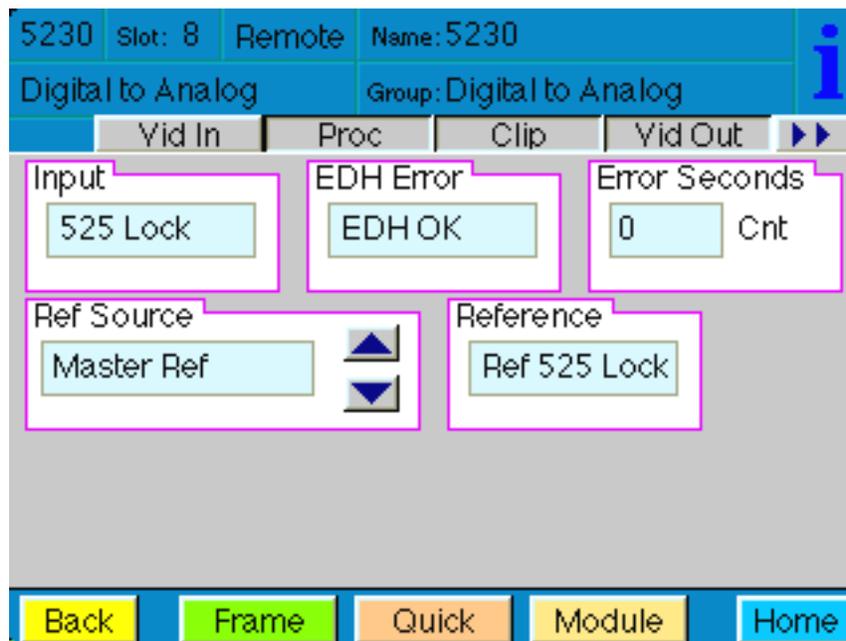
5230/62300 Avenue Touch Screen Menus

The **Vid In** menu shown below allows you to configure the following input sources:

- **Ref Source** – use this control to set the reference input source.

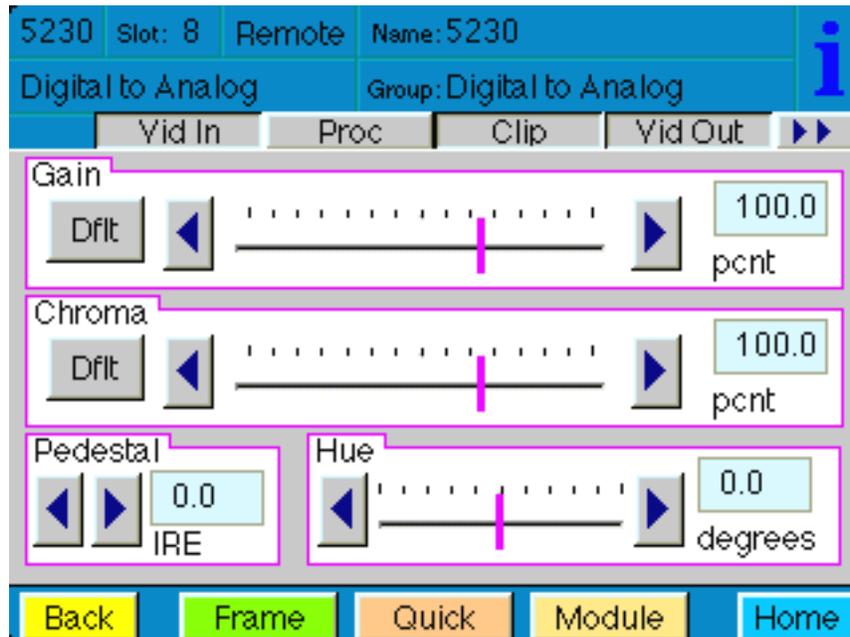
Status reporting is provided for the following conditions:

- **Input** – reports the input status as **No Input**, **525 Lock**, or **625 Lock**.
- **EDH Error** – reports the presence of EDH, EDA, and IDA errors.
- **Error Seconds** – displays the number of seconds that a detected EDH error has been present in the serial data stream.
- **Reference** – reports the status of the reference input as either **No Reference**, **Ref Mismatch**, **Ref Unlocked**, **Ref 525 Lock**, or **Ref 625 Lock**.



The **Proc** menu shown below allows you to adjust the following video processing parameters for the signal:

- **Gain** – adjust the percentage of overall gain (luminance and chrominance).
- **Chroma** – adjust the percentage of chroma amplitude.
- **Pedestal** – adjust the pedestal (black) level of the signal in IRE.
- **Hue** – adjust the hue of the signal ± 180 degrees.



Use the **Clip** menu shown below to adjust the following parameters:

- **Legalizer** – set the legalizer function to one of the following:

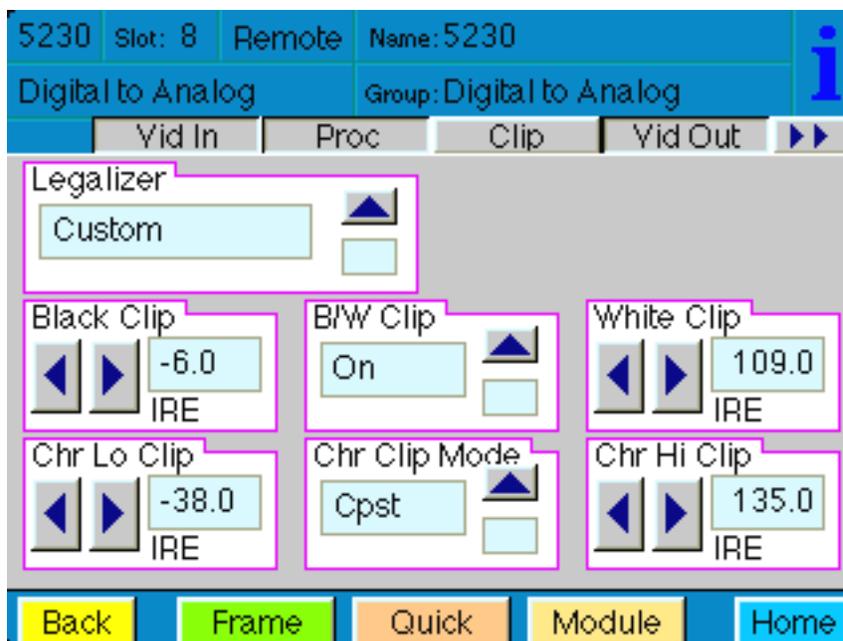
Off – to disable it.

Legal – to apply the following factory default values:

- **B/W Clip** is on.
- **Black Clip** is set to 2.5 IRE.
- **White Clip** is set to +105 IRE.
- **Chr Clip Mode** is predictive composite.
- **Chr Lo Clip** is set to -20 IRE.
- **Chr Hi Clip** is set to +120 IRE.

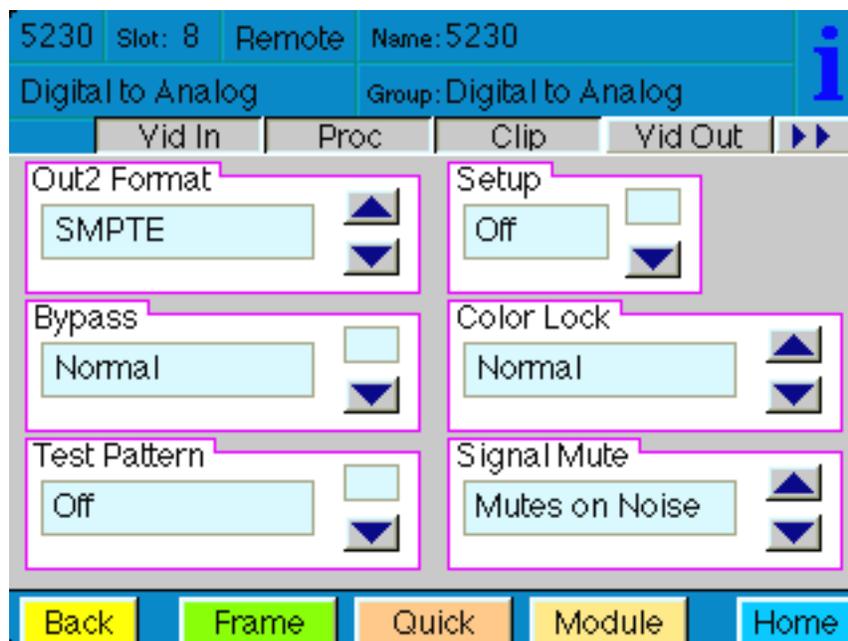
Custom – to enable the **B/W Clip** and **Chr Clip Modes** controls to set custom parameters with the following controls:

- **B/W Clip** – select On to enable black and white clip functions or Off to disable them.
 - **Black Clip** – set the threshold for the black clip level. (No content will be allowed below the level set.)
 - **White Clip** – set the threshold for the white clip. (No content will be allowed above the level set.)
- **Chr Clip Mode** – select one of the following modes:
 - **Off** for no chroma clip functions.
 - **Chroma** to use the chroma clip controls **Chr Lo Clip/Chr Hi Clip** to set to clip the chroma content (irrespective of the luminance).
 - **Cpst** to enable the Predictive Composite Clipper. This mode allows you to ensure that when the signal is encoded to PAL or NTSC, the minimum and maximum chroma excursions do not exceed preset levels. Because in composite video, the chroma rides on the luminance, this clip mode is based on chroma and luminance values.



Use the **Vid Out** menu shown below to adjust the following parameters:

- **Out2 Format** – select the format for the second analog output. The first output is always composite.
- **Color Lock** – set the ScH/color framing on the composite output with respect to the composite reference input.
- **Setup** – enable or disable setup on the output by selecting **On** or **Off**.
- **Test Pattern** – select a test pattern to be sent to the video output of the module.
- **Bypass** – set to **Normal** for no split screen, **Bypass** to completely bypass any digital processing, or **Split** to enable a split screen comparison between the original input signal (left) and the processed output (right).
- **Signal Mute** – set to either mute the output to black when noise is present or no muting.

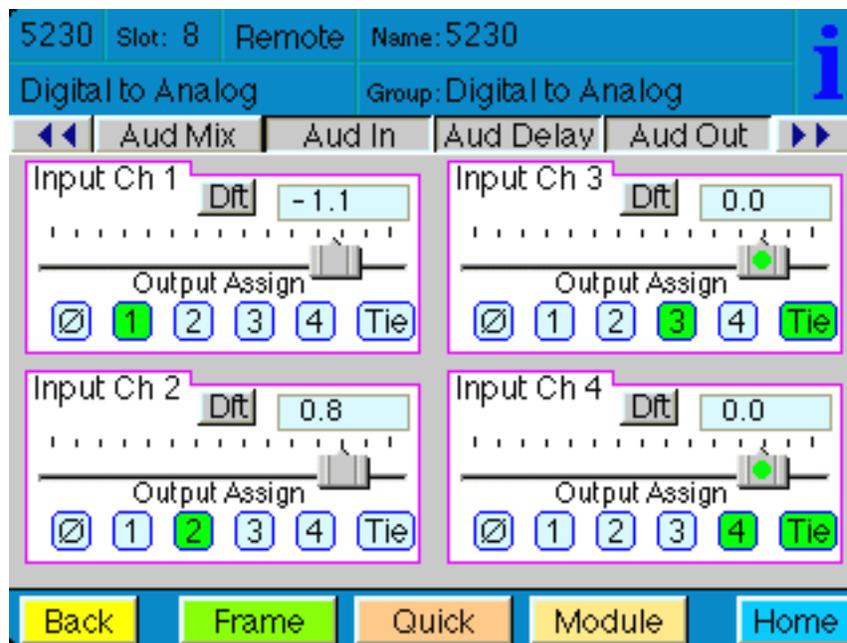


The next group of audio menus are used when the 6230 Audio submodule is installed.

Use the **Aud Mix** menu shown below to control the audio mixing and shuffling of the module. Each output bus assignment will be indicated by a green box.

- **Input Ch 1** – assign Input Channel 1 to the desired output bus or tie to Channel 2. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 2** – assign Input Channel 2 to the desired output bus or tie to Channel 1. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 3** – assign Input Channel 3 to the desired output bus or tie to Channel 4. Set the input level using the slider control or by entering a number in the window.
- **Input Ch 4** – assign Input Channel 4 to the desired output bus or tie to Channel 3. Set the input level using the slider control or by entering a number in the window.

Select the **Default** button to return to the default value. Select the **Invert** button to invert the phase of the audio content.

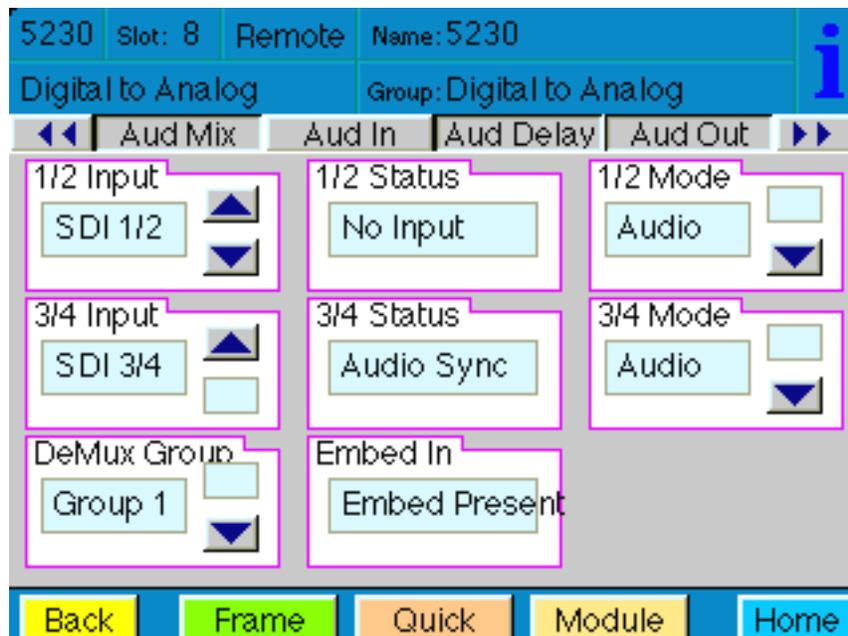


Use the **Aud In** menu shown below to adjust the following parameters:

- **1/2 Input** – select the input audio source for Input 1/2.
- **3/4 Input** – select the input audio source for Input 3/4.
- **1/2 Mode** – for a Serial input with embedded audio, select the type of audio in the stream:
 - **Audio** – the embedded stream is standard audio.
 - **Auto** – the module will detect the type of audio embedded in the stream.
- **3/4 Mode** – select the type of audio in the serial stream as described above.
- **Demux Group** – select the embedded audio group to demultiplex from the selections. The status of embedded audio is shown in the **Embed In** view.

The status of the corresponding audio inputs are shown next to the control. Status is reported as one of the following:

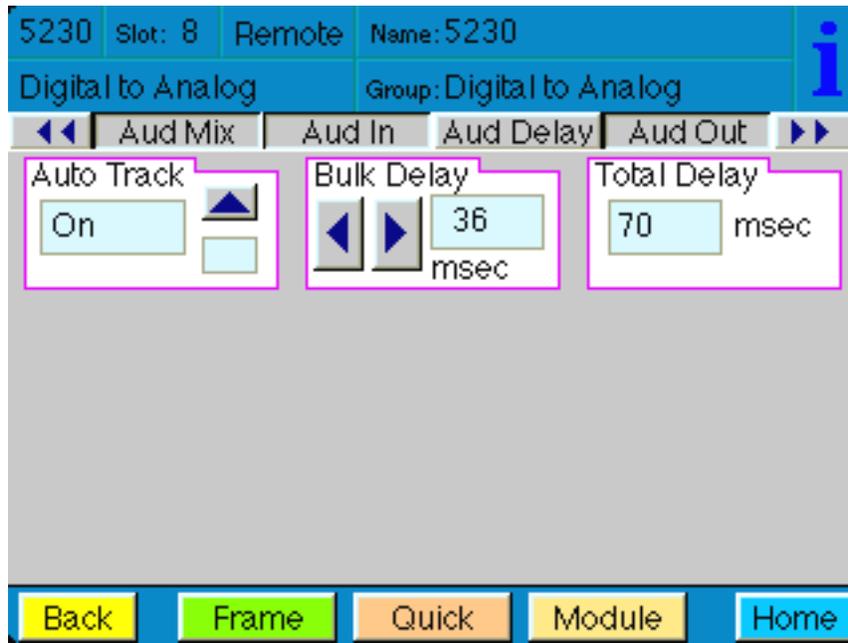
- **No Input** – no serial digital embedded audio is detected.
- **Audio Sync** – the audio embedded in the stream is synchronous with the timing reference.
- **Audio Async** – the audio embedded in the stream is non-synchronous with the timing reference.



Use the **Aud Delay** menu shown below to adjust the amount of audio delay on the output:

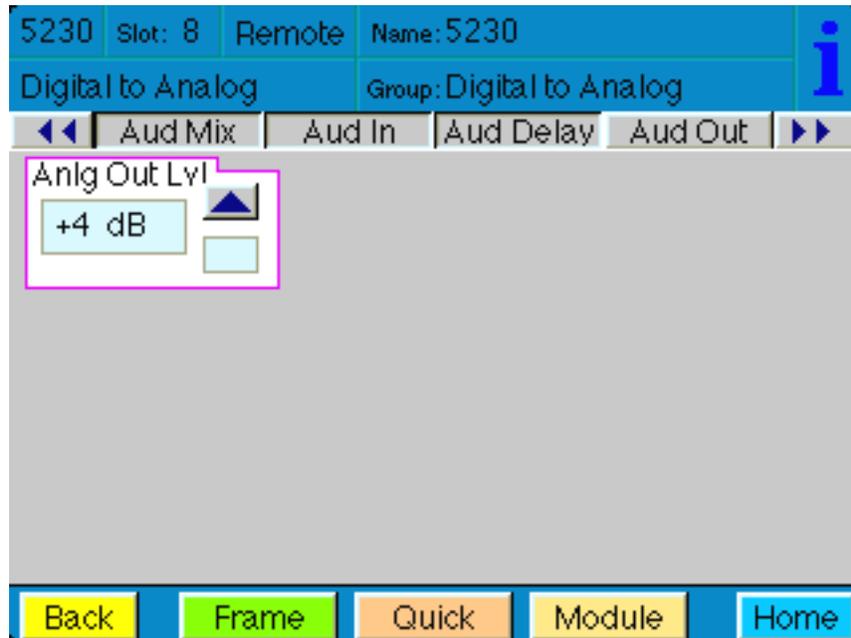
- **Auto Track** – enable auto tracking by selecting **On** or **Off**.
- **Bulk Delay** – set the amount of bulk delay using the left and right arrows.

The amount of total delay will be reported in nsec in the **Total Delay** window.



Use the **Aud Out** menu shown below to adjust the following analog audio output parameter:

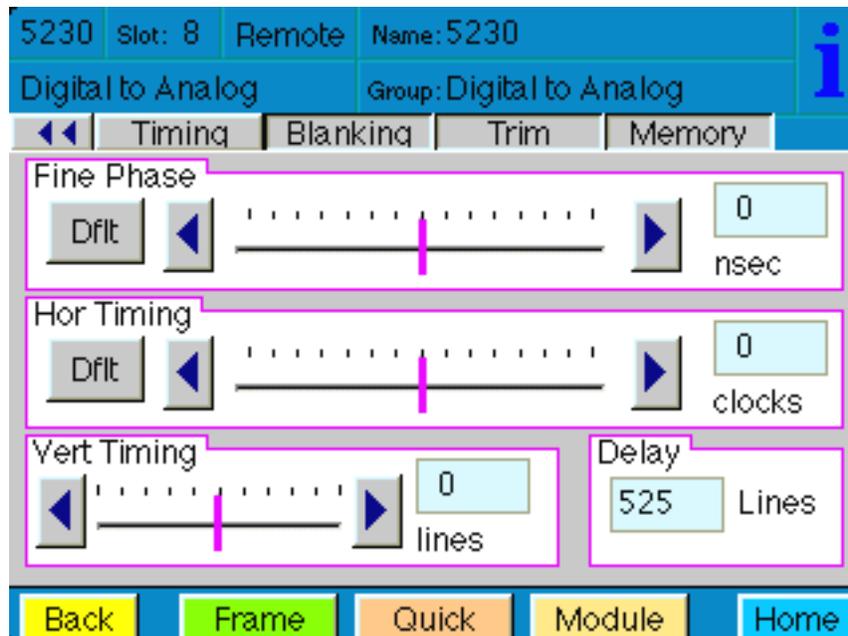
- **Anlg Out Lvl** – set the output level of the analog audio.



Use the **Timing** menu shown below to adjust the following parameters:

- **Fine Phase** – adjust for proper ScH phase with respect to other sources. If fine phase will not adjust properly, readjust the horizontal phase by up to ± 2 clocks until the fine phase falls into place.
- **Hor Timing** – adjust the horizontal timing of the output signal to place the leading edge of sync coincident with other sources.
- **Vertical Timing** – set the vertical timing to a typical setting of 0 lines.

This menu provides a **Delay** window at the bottom of the screen that will report the total delay in lines of the module.

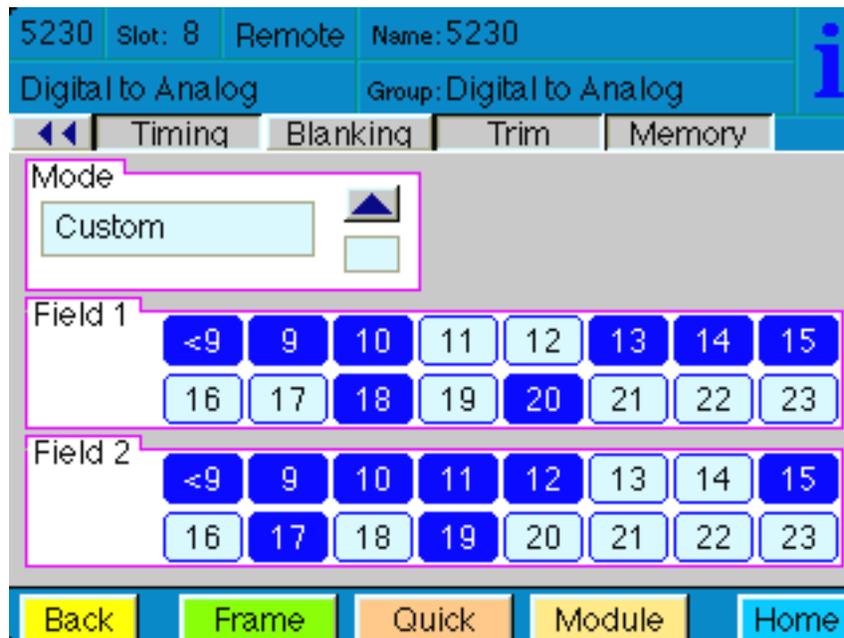


The **Blanking** menu shown below allows you to adjust the output blanking of the module with the following controls:

- **Mode** – set the blanking mode to **Narrow** (lines 1-9 are blanked in NTSC, lines 1-6 in PAL), **Wide** (lines 1-20 in NTSC, lines 1-22 in PAL), or **Custom**.

In **Custom** mode you may select which lines are blanked on a line by line basis in Field 1 and Field 2. A green box indicates the line is blanked. In NTSC, there are individual blanking controls for each line starting with 10 ending with 21. In PAL, there are blanking controls for lines 7 and 8 as one group (both passed or both blank) and individual blanking controls for each line starting with 9 ending with 23.

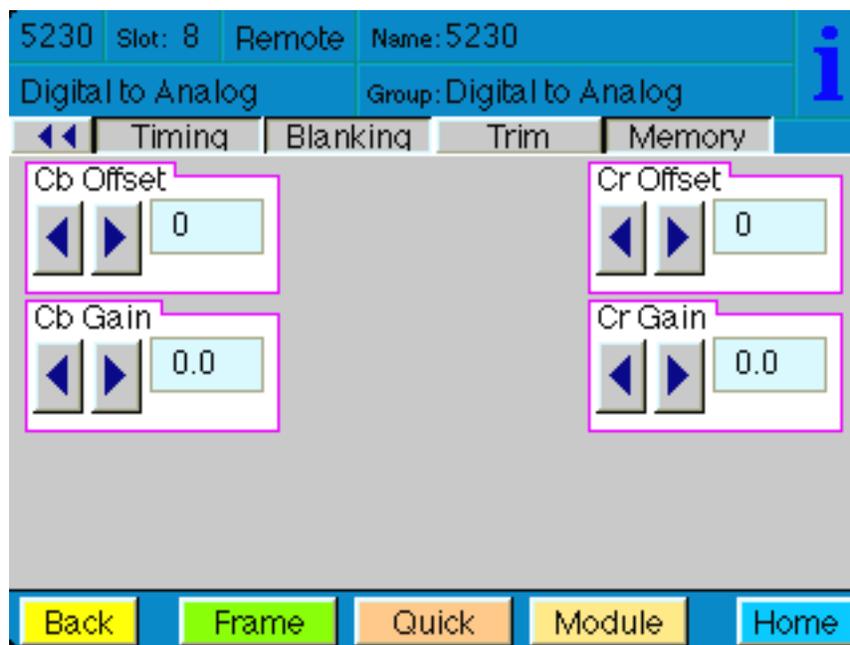
- **V Bit Pos** – in 525 mode only. Set the position of the vertical bit in the SDI output to **Line 10**, **Line 20**, or **Line 23**.



The **Trim** menu allows you to correct subtle issues in the individual color difference channels with offset and gain controls. The offset controls adjust the DC offsets above or below the nominal points. This can be used to correct black balance errors. The gain controls adjust the amplitude of each channel. It is helpful to set the output of the module to **Split Screen** (in the **Vid Out** menu) to allow viewing a comparison of the processed signal to the input while adjusting the controls below.

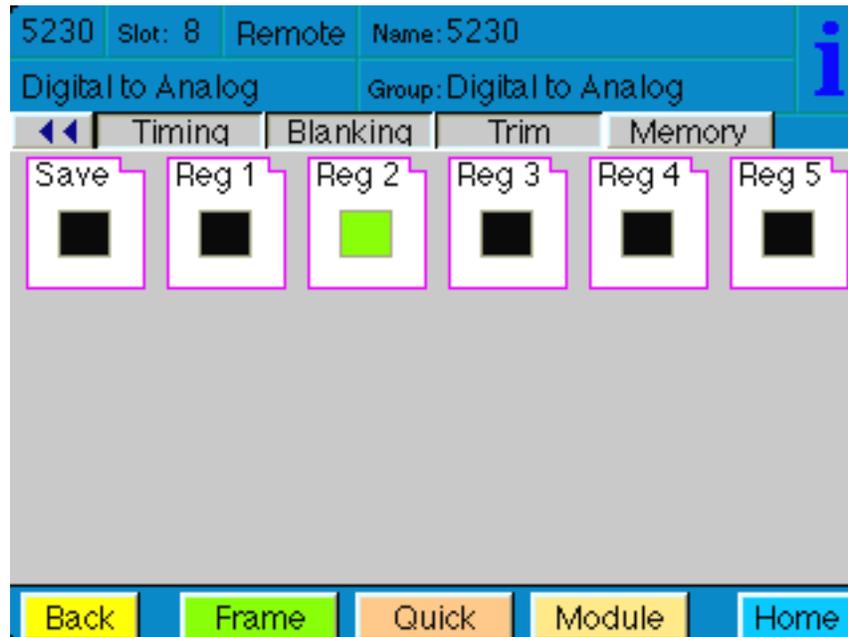
Use the controls described below to make the offset and gain corrections:

- **Cb Offset** – adjust the DC offset of the Cb channel to between ± 300 .
- **Cr Offset** – adjust the DC offset of the Cr channel to between ± 300 .
- **Cb Gain** – adjust the amplitude of the Cb channel to between ± 20 .
- **Cr Gain** – adjust the amplitude of the Cr channel to between ± 20 .



The **Memory** menu shown below allows you to save overall module setups to five memory registers as follows:

- Select Save, then one of the five memory registers Reg 1 – 5. The box will turn green. The entire module setup is now saved in the selected register.
- To recall a register, select the register box. If there is information saved, the box will turn green. The saved setup will now be loaded to the module. Up to five different module setups can be saved and recalled using the individual registers.



TROUBLESHOOTING

As a troubleshooting aid, the input, reference signal status and presence, power and CPU status can be easily monitored from the front panel of this module using the front panel indicators.

Refer to the overall troubleshooting tips given below for the module:

Can't control module:

- Check status of CPU **Run** green LED. Should be blinking slowly and in unison with other modules if System module is present. If not, try removing it and plugging it in again to be sure it is seated properly.
- System module may not be working properly if installed.

Module controls are grayed out:

- Module is locked or access to module controls is restricted by User Level.
- Local/Remote switch on module is in the **Local** position.

No signals out of module:

- Check status of **Input** LED. If not lit, check input for presence and quality.
- Check cabling to inputs of module.
- Check inputs to destinations are terminated properly.

You may also refer to the technical support section of the Ensemble Designs web site for the latest information on your equipment at the URL below:

<http://www.ensembledesigns.com/support>

SOFTWARE UPDATING

Software upgrades for each module can be downloaded remotely if the optional System Control module is installed. These can be downloaded onto your PC and then Avenue PC will distribute the update to the individual module. (Refer to the Avenue PC documentation for more information). Periodically updates will be posted on our web site. If you do not have the required System Control Module and Avenue PC, modules can be sent back to the factory for software upgrades.

WARRANTY AND FACTORY SERVICE

Warranty

This module is covered by a five year limited warranty, as stated in the main Preface of this manual. If you require service (under warranty or not), please contact Ensemble Designs and ask for customer service before you return the unit. This will allow the service technician to provide any other suggestions for identifying the problem and recommend possible solutions.

Factory Service

If you return equipment for repair, please get a Return Material Authorization Number (RMA) from the factory first.

Ship the product and a written description of the problem to:

Ensemble Designs, Inc.

Attention: Customer Service RMA #####

870 Gold Flat Rd.

Nevada City, CA. 95959 USA

(530) 478-1830

Fax: (530) 478-1832

service@endes.com

<http://www.ensembledesigns.com>

Be sure to put your RMA number on the outside of the box.

SPECIFICATIONS

5230 Video Processor

Serial Digital Input

Type	ITU-R601, SMPTE 259M-C
EDH	Fully Compliant
Impedance	75 Ω , BNC
Return Loss	> 15 dB
Max Cable Length	300 meters, Belden 1694A

Reference Input

Number	One external One internal Master Timing Ref
Type	1V p-p Composite Video PAL or NTSC
Impedance	75 Ω , BNC
Return Loss	> 40 dB

Analog Video Output

Type	NTSC or PAL 2 Composite and 2 Y/C or 1 composite and 1 component Y, Pr, Pb or RGB
Impedance	75 Ω , BNC
Return Loss	> 40 dB
Output DC	< 50 mV

SDI to Analog Performance

Bit Resolution	12 bit output reconstruction 8x Oversampling
Signal to Noise	> 65 dB
Frequency Response	\pm 0.1dB 0 to 5.5 MHz
K Factors	< 1%
ScH Phase error	< \pm 2 degrees
Differential Phase	< 1 degree
Differential Gain	< 1%
Color Field Sequence	Locked to selected Ref
Minimum Delay	25 μ Sec

Analog Audio Output (6230 submodule)

Number	Four, Balanced pair
Processing	24 bits
Analog Output Z	30 Ω , balanced, transformerless
Max Output Level	+ 24 dBu
Dynamic Range	> 106 dB

General

Power Consumption	10 watts (with option installed)
Temperature	0 to 40° C ambient (all specifications met)
Relative Humidity	0 to 95%, noncondensing
Size	Standard Avenue Module Occupies one slot in 3RU or 1RU Frame (including 6230)

Due to ongoing product development, all specifications subject to change.

