AVENUE

Avenue™ signal integration system

Model 5300 Analog to Digital Video Converter

and 5310/5315 TBC

Data Pack

ENSEMBLE DESIGNS

Revision 7.1 SW v2.0.0

This data pack provides detailed installation, configuration and operation information for the **5300 Analog to Digital Video Converter (ADC)** with the **5310/5315 TBC/Frame Synchronizer** options as part of the Avenue Signal Integration System.

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

- Module 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

MODULE OVERVIEW

The 5300 Analog to Digital Converter (ADC) Module converts NTSC or PAL composite video or RGB or Y,Cr,Cb analog component video into serial digital outputs conforming to CCIR656 format. As shown in the block diagram on the following page, the composite and component inputs are independent of each other.

The composite input has a dedicated BNC for the following NTSC or PAL formats:

- NTSC composite with or without setup
- PAL composite

(Note that Secam and Y/C video cannot be converted.)

Three dedicated BNCs are available for converting the following analog component formats:

- 714 mV RGB without setup, with sync: none, green or all
- SMPTE Y,Cr,Cb
- Beta Y,Cr,Cb with setup

Both signal types are buffered, clamped and filtered before entering analog to digital conversion circuitry. This video is processed through a color space converter where component video is transcoded and composite video is passed through. The signal then enters a decoder circuit where the composite video is converted to component using a decoder that provides a number of user selectable Y/C separation filters.

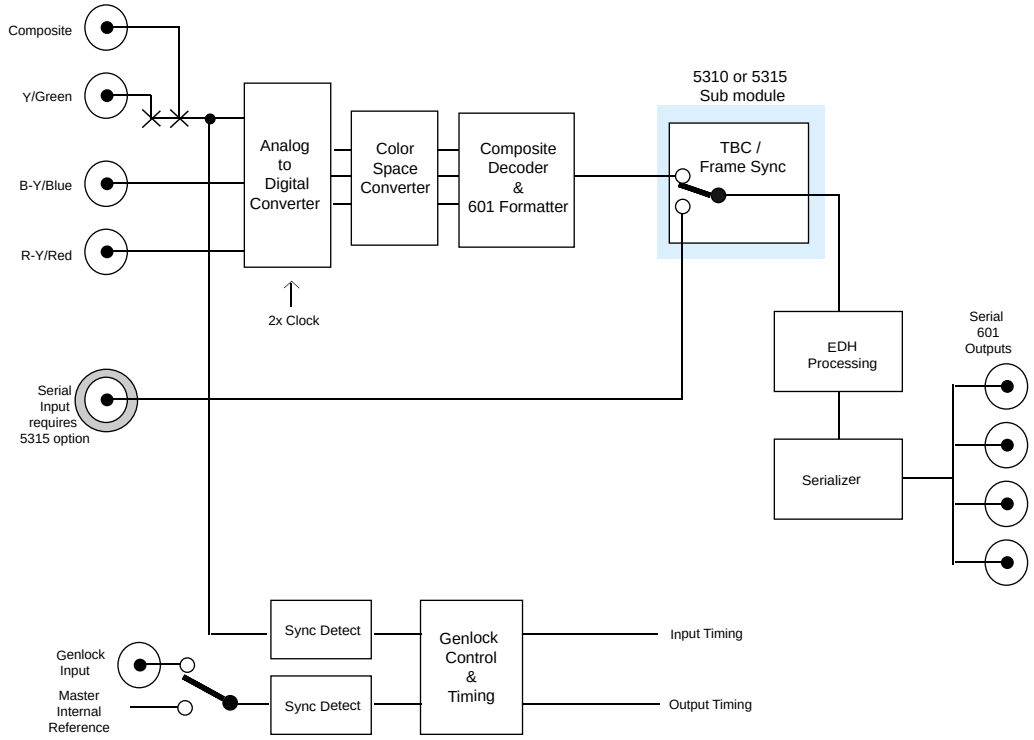
If the optional 5310 or 5315 submodule is installed on the 5300, time base correction (TBC) and frame synchronization allows for removal of time base error on the composite input. The reference input for the TBC functionality can be derived from a number of inputs to the module, including a reference BNC to the 5300, the System Control module in the frame or the incoming composite or component video. The 5315 submodule provides increased flexibility by offering a serial digital video input. The options also allow the module to accept asynchronous inputs and deliver serial outputs locked and time to the house reference. When using the 5310 and 5315 options, the System Control module is recommended. With the System Control module installed in the frame, Touch Screen and Avenue PC can be used to adjust module parameters such as output timing. Without the System Control module the output video is in time with the external reference video feeding the module.

The component video from this output is then multiplexed in the decoder and sent to EDH insertion processing and serializing circuitry before going to the four serial digital outputs.

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 (slot location, software version and board revision), and power status (+5 volts or ±8 volts) 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.

Because the 5300 is an Avenue module, every function and parameter 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.

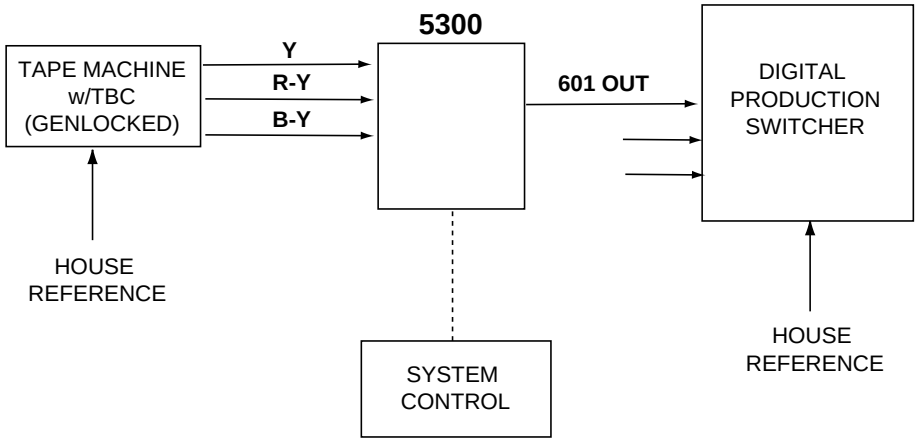


5300 Analog to Digital Video Converter Functional Block Diagram

APPLICATIONS

Analog Betacam to Digital Switcher

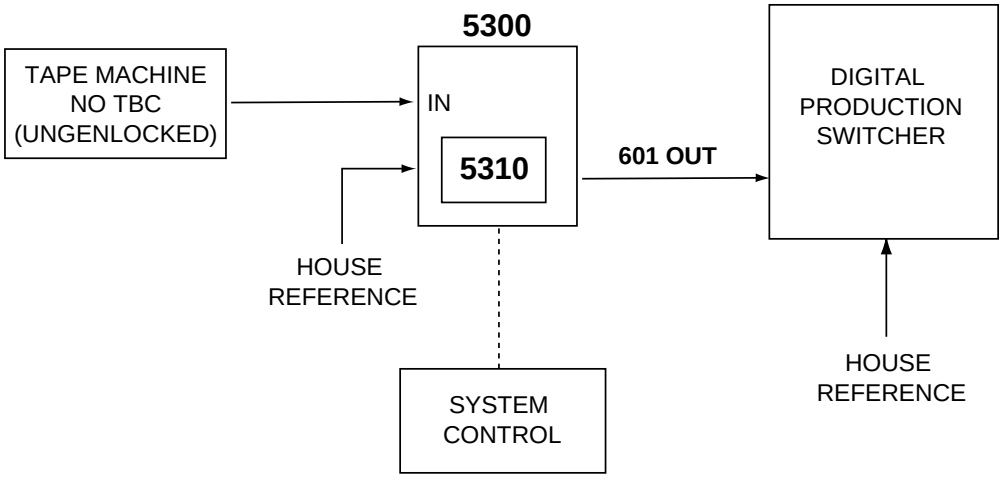
The application below illustrates utilizing the 5300 module to convert a component analog output signal from a Betacam machine to a digital signal for feeding a digital switcher.



Component Analog Output to Digital Input

Asynchronous Tape Machine to Digital Switcher

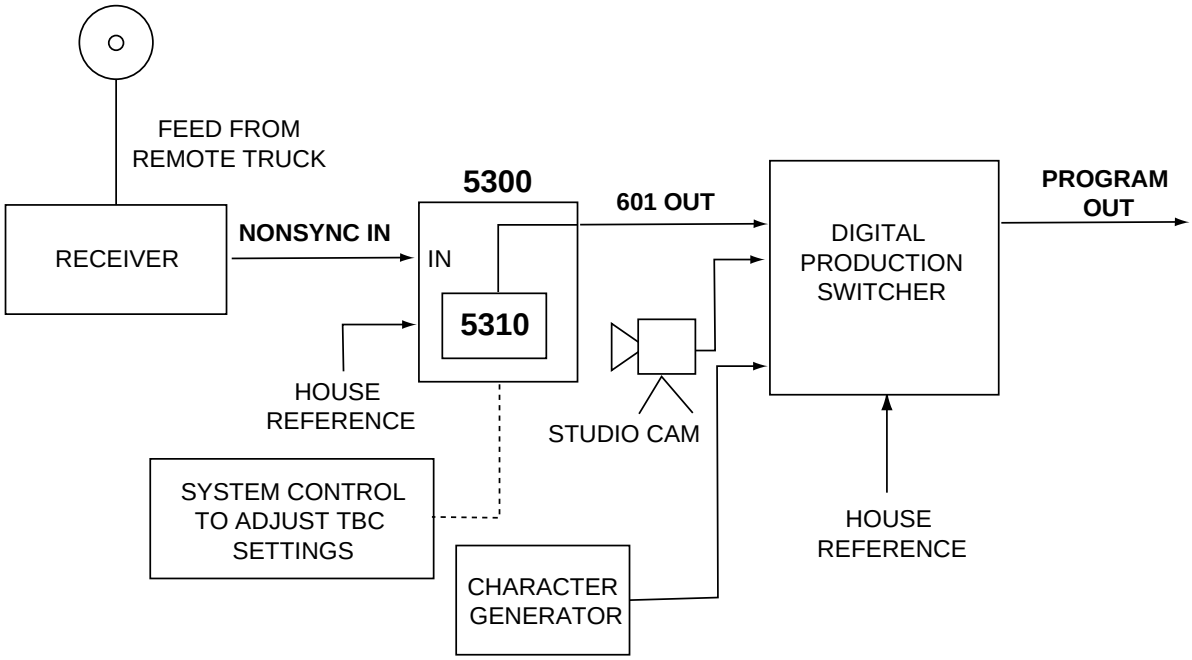
The 5300 with the 5310 TBC/Genlock option installed can allow you to connect any asynchronous external video sources such as a tape machine with no TBC or Genlock into a digital video production environment. Refer to the block diagram below.



Asynchronous Output to Synchronous Input Signal

Remote Feed to Studio TBC/Synchronization

As shown below, the 5300 with 5310 option installed can allow an asynchronous video source such as a microwave feed from a remote truck to be integrated into a synchronized digital production environment.



Remote Feed (Asynchronous) to Synchronous Destination

INSTALLATION

5310 /15 Time Base Corrector/Frame Synchronizer Option

Plug the 5310 or 5315 Time Base Corrector/Frame Synchronizer module onto the two 40-pin connectors on the component side of the 5300 Video ADC module. The connectors are keyed such that the submodule can only be installed to match the connector keying.

5300 ADC Module

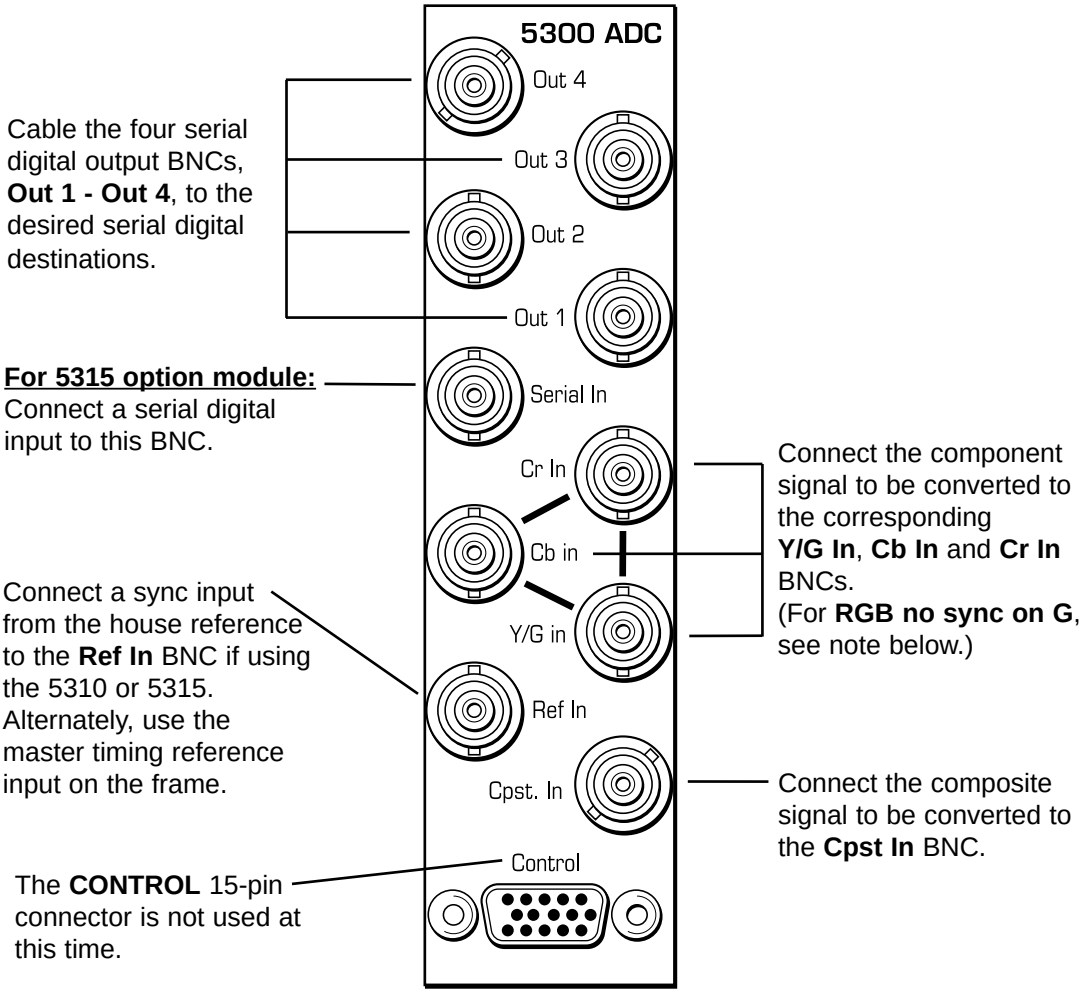
Plug the 5300 module into any slot in the 1 RU or 3 RU frame and install the plastic overlay provided onto the corresponding group of rear BNC connectors associated with the module location. Note that the plastic overlay has an optional adhesive backing for securing it to the frame. Use of the adhesive 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

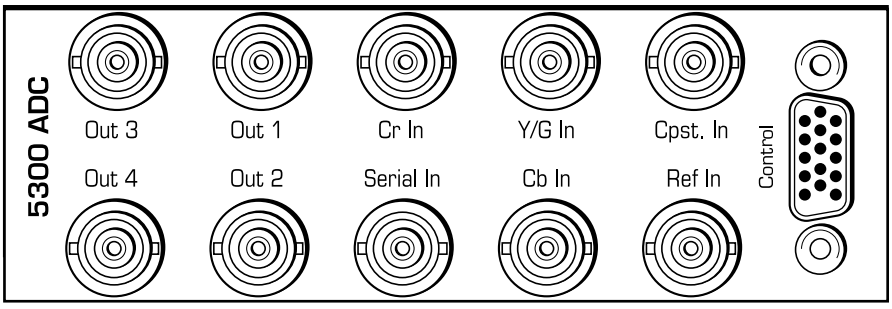
Refer to the 3 RU and 1 RU backplane diagrams of the module on the next page for cabling instructions. Note that unless stated otherwise, the 1 RU cabling explanations are identical to those given in the 3 RU diagram.

3 RU Backplane



NOTE: For applications using an RGB signal with no sync on Y/G, insert a composite sync source into the **Cpst In** BNC and set the format to **RGB no sync**.

1 RU Backplane



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 **5300 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 **5300 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 or Avenue Express Panel, refer to the **Avenue Touch Screen Remote Configuration** section of this document following Avenue PC.

5300 Parameter Table

CONTROL	LOCAL	REMOTE	DEFAULT	DEFAULT USER LEVEL
Format	Switch 1: Comp/Cpst Switch 2: RGB/YCrCb Switch 3: Beta/SMPTE (Refer to Input Table on page 12)	Composite Compst No Setup Beta SMPTE RGB RGB No Sync MII Key Component Key Composite PAL-M Serial	Composite	Admin
Setup	Switch 4: On/Off	Composite	On	Admin
Comb Filter	3 Line Optimum	Simple Lowpass 3 Line Optimum 3 line Sharp Field Comb	3 Line Optimum	Level 1
H Picture Pos	0 clocks	± 15 clocks	0 clocks	Level 1
H Timing	0 clocks	± 1700 clocks	0 clocks	Admin
V Timing	0 lines	– 624 to + 625 lines	0 lines	Admin
Y/G In Gain	100%	95 to 105	100%	Admin
Cr/R Gain In	100%	95 to 105	100%	Admin
Cb/B Gain In	100%	95 to 105	100%	Admin
Y DC Bias	0	± 10 mV	0	Admin
R DC Offset	0	± 10 mV	0	Admin
B DC Offset	0	± 10 mV	0	Admin
Video Gain	100%	0 to 150%	100%	Level 1
Chroma Gain	100%	0 to 150%	100%	Level 1
Hue	0 degrees	± 180 degrees	0 degrees	Level 1
Pedestal	0 IRE	– 2 to + 10 IRE	0 IRE	Level 1
Y Gain	100%	0 to 150%	100%	Level 1
Cr Gain	100%	0 to 150%	100%	Level 1
Cb Gain	100%	0 to 150%	100%	Level 1

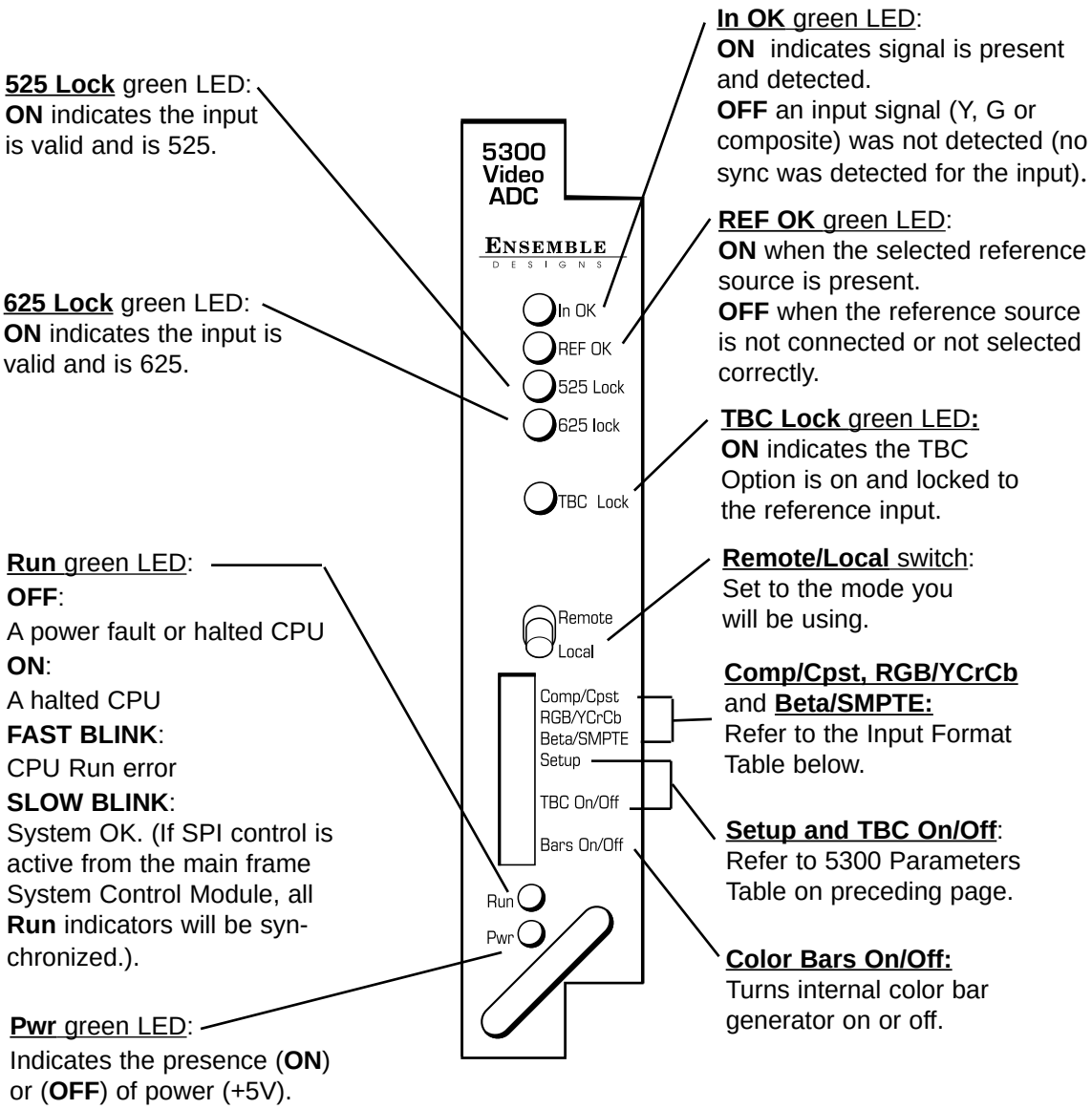
5300 Parameter Table (Con't)

CONTROL	LOCAL	REMOTE	DEFAULT	DEFAULT USER LEVEL
Color Bar Gen	Switch 7: On/Off	On Off	Off	Admin
Vert Blanking	Wide	Narrow (PAL Lines 1-6< NTSC Lines 1-9) Wide (PAL Lines 1-22< NTSC Lines 1-20)	Wide	Admin
If a 5310 or 5315 submodule option is installed and turned on, the following parameters are active:				
Ref Source	Ext Ref	Ext Ref Master	Ext Ref	Admin
TBC Enable	Switch 6: TBC On/Off	On Off	Enable Checkbox	Admin
TBC Mode	TBC Slow	TBC V Slow TBC Slow TBC Fast TBC V Fast FrmSync Only	TBC Slow	Level 1
Signal Mute	No Muting	Mutes on Noise No Muting	No Muting	Level 1

Note: If the TBC/FrameSync is turned off and video input is present, the module locks to the incoming video. Otherwise, the module locks to the selected reference, external module reference or master timing reference on the frame.

Front Panel Controls and Indicators

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



Input Format Table

FORMAT	SWITCH 1: Comp/Cpst	SWITCH 2: RGB/YCrCb	SWITCH 3: Beta/SMPTE
NTSC	Cpst	N/A	N/A
PAL	Cpst	N/A	N/A
RGB	Comp	RGB	N/A
Beta YCrCb	Comp	YCrCb	Beta
SMPTE YCrCb	Comp	YCrCb	SMPTE

Avenue PC Remote Configuration

The Avenue PC remote control menus for this module are illustrated and explained below. Refer to the **5300 Parameter Table** shown earlier for a summary of available parameters that can be set remotely through the menus illustrated. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack that came with the option.

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.

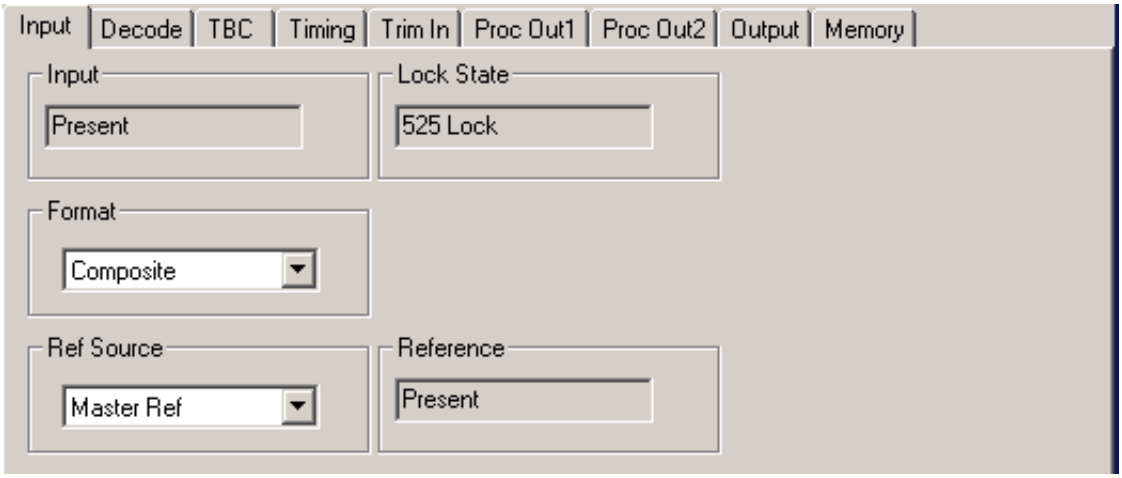
5300 Avenue PC Menus

The **Input** menu below allows you to set the following parameters:

- **Format** – set the analog video input format for the module.
- **Ref Source** – select the reference source for the module.

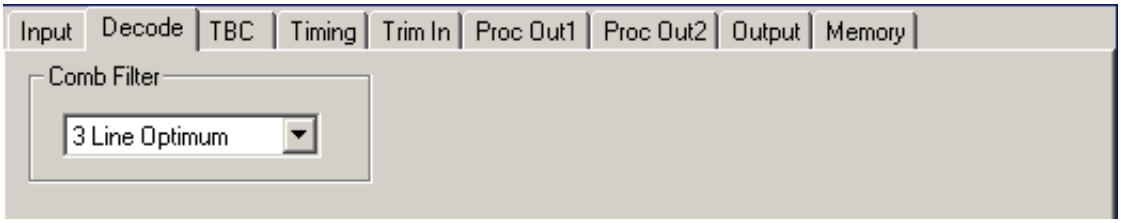
The following status displays are provided:

- **Input** – shows the status of the input signal (**Present** or **No Input**).
- **Lock State** – displays the status of the module lock state (**No Lock**, **525 Lock**, or **625 Lock**).
- **Reference** – shows the status of the reference signal to the module (**No Reference** or **Present**).
- **EDH Status** – (not shown) when the 5315 option is installed, the EDH error status of the serial digital input signal will be reported (**No Error**, **EDH**, **EDA**, **EDH EDA**, **IDA**, **EDH IDA**, **EDA IDA**, **EDH EDA IDA**, **or No EDH**).



The **Decode** menu below allows you to set the following parameter:

- **Comb Filter** - select the desired Y/C separation filter. **NOTE**: The best performance for general input video with motion is usually the **3 Line Optimum**.



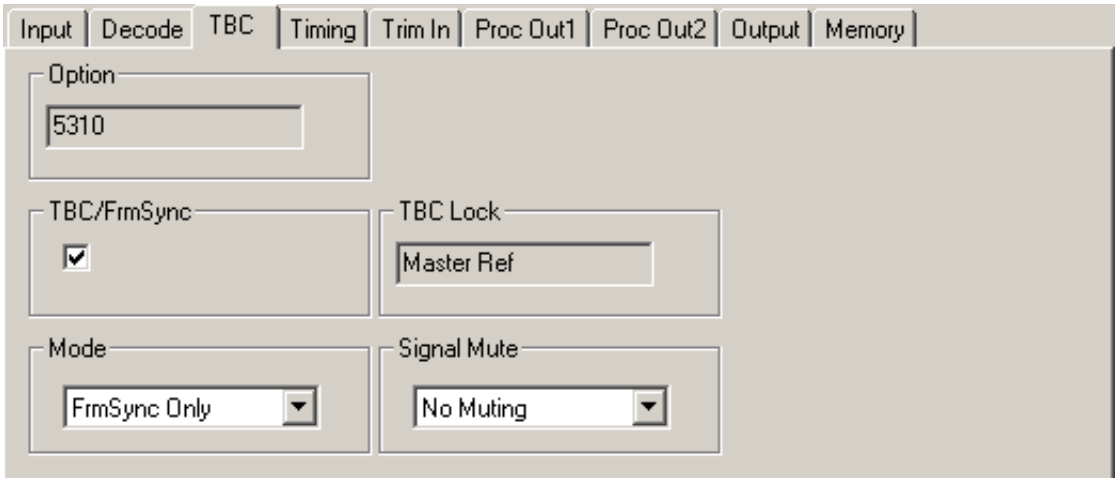
The **TBC** menu is used when the optional 5310 or 5315 Time Base Corrector (TBC)/Frame Synchronizer is installed on the 5300 module. The menu and parameters to be set for each option are shown below.

The **Option** status display will indicate which option is installed, **5310**, **5315**, or **None**.

Set the following parameters when the 5310 or 5315 option is installed:

- **TBC/FrmSync** – click in the box to turn on the TBC/FrameSync.
- **Mode** – determines the speed of error handling. For fast occurring errors, such as from a consumer VCR, use the **TBC V(ery) Fast** mode. Select the mode best for your source; **TBC V(ery) Fast**, **TBC Fast**, **TBC Slow** or **TBC V(ery) Slow**. If you have a retiming application where you don't need the TBC and just want the frame synchronizer, select **FrmSync Only**.
- **Signal Mute** – Choose between **Mutes on Noise** or **No Muting**. Select **No Muting** when you want to see an output signal even if the input is noisy, missing sync, or the signal is fading in and out. This mode is helpful when you are shuttling a VTR or using satellite feeds. If you prefer the output to go to black if the input is not stable, select **Mutes on Noise**.

The **TBC Lock** status display reports which reference source the module is locking to (**No Lock**, **Ext Ref**, **Master Ref**, or **Video In**).

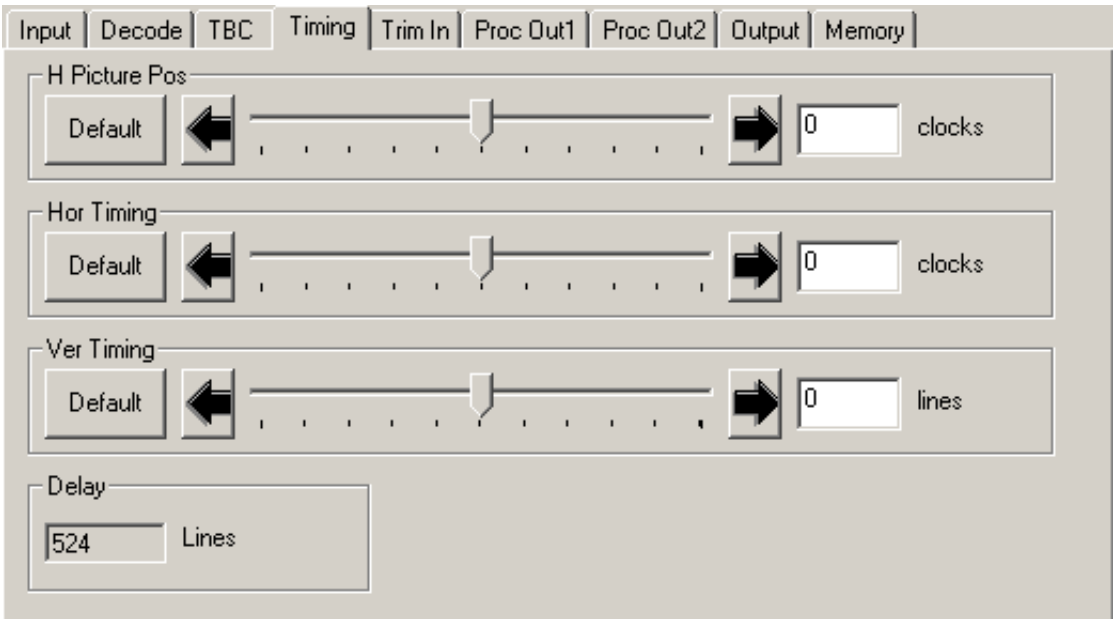


The **Timing** menu sets timing parameters when the optional **5310** or **5315** T**ime Base Corrector/Frame Synchronizer** submodule is installed and turned on.

Set the following timing parameters:

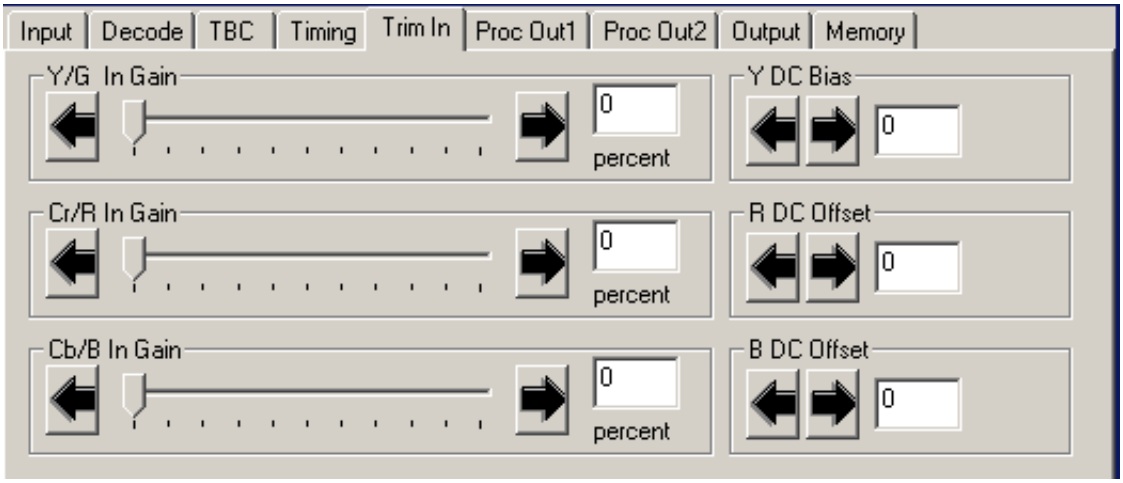
- **H Picture Pos** – sets the horizontal position of the picture in clocks
- **Hor Timing** – sets the horizontal output timing
- **Ver Timing** – set the vertical output timing

The **Delay** display reports the total delay of the module in lines. This value can be used in conjunction with other modules, such as the 6040 Tracking Audio Delay Module.



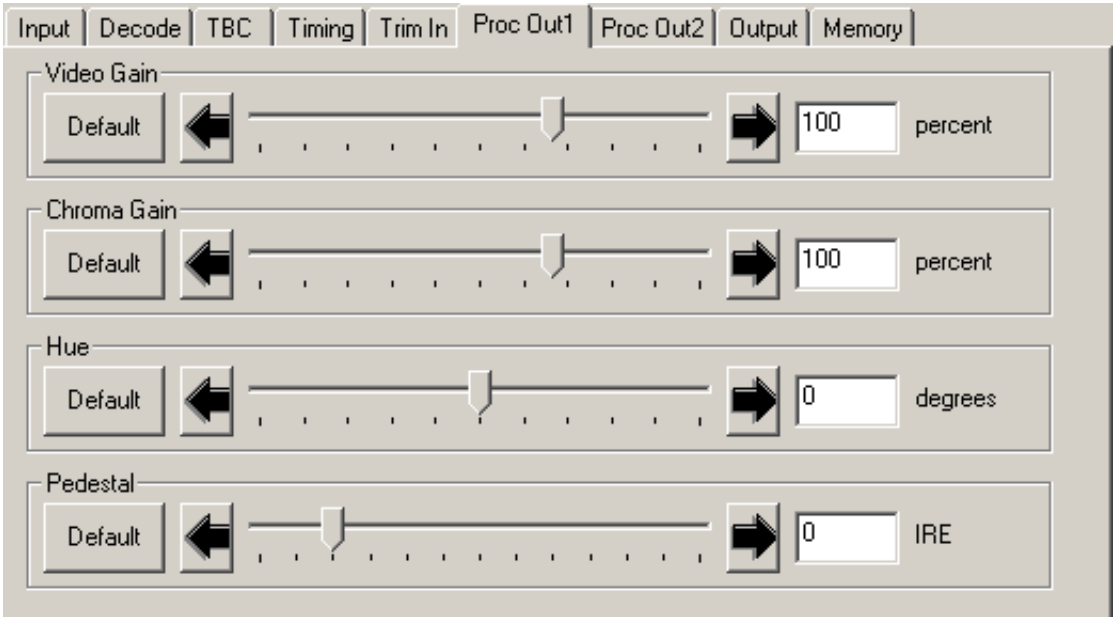
The **Trim In** menu below provides adjustments for the component Y,Cr,Cb and RGB input video input gain and RGB DC offsets to compensate for incorrect levels on the analog input sources. Be sure the output gains in the **Proc Out1** and **Proc Out2** menus are set correctly before making adjustments in this window. The settings in this menu apply to the component input video and do not affect the composite input video.

- **Y/G In Gain** – adjusts the input gain of the Y channel video.
- **Cr/R In Gain** – adjusts the input gain of the Cr channel video.
- **Cb/B In Gain** – adjusts the input gain of the Cb channel video.
- **Y DC Bias** – adjusts the DC bias of the Y channel.
- **R DC Offset** – adjusts the DC offset of the R channel (RGB only).
- **B DC Offset** – adjusts the DC offset of the B channel (RGB only).



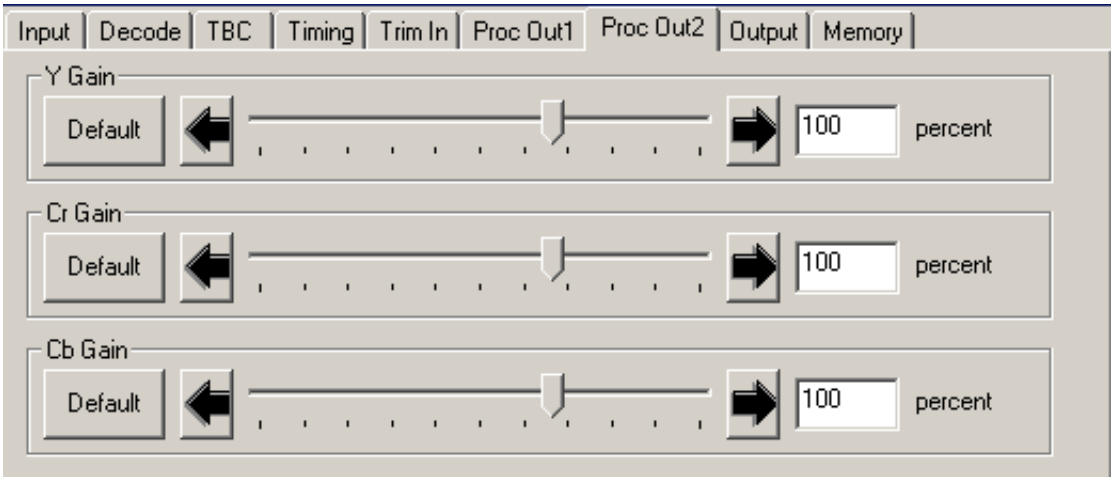
The **Proc Out1** menu below provides adjustments for the serial digital outputs. The settings affect all three channels equally.

- **Video Gain** – sets the gain of the output.
- **Chroma Gain** – sets the chroma gain of the output.
- **Hue** – sets the degree of hue on the output signal for NTSC signals.
- **Pedestal** – sets the amount of pedestal in IRE.



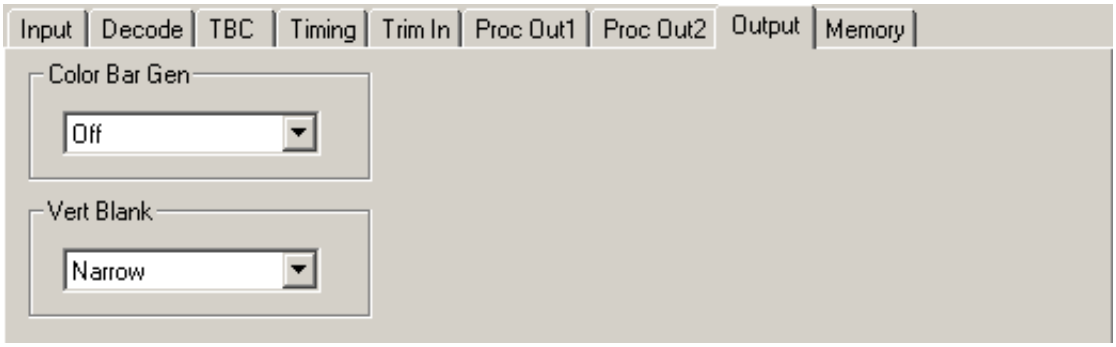
The **Proc Out2** menu below provides adjustments for the serial digital outputs. This menu enables you to make adjustments to the individual component channels.

- **Y Gain** – adjusts the gain of the Y Channel output video.
- **Cr Gain** – adjusts the gain of the Cr channel output video.
- **Cb Gain** – adjusts the gain of the Cb channel output video.



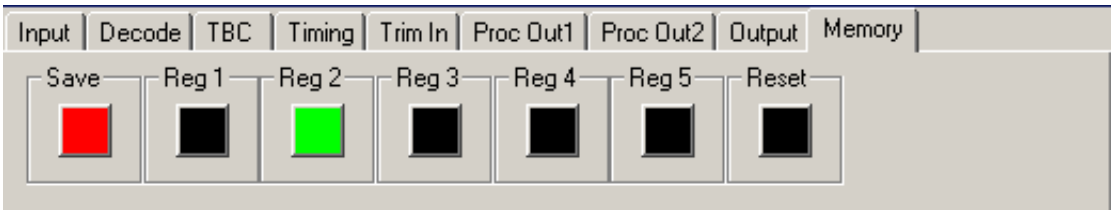
The **Output** menu below provides adjustments for the serial digital outputs. All three channels are affected equally.

- **Color Bar Gen** – enable the internally generated color bars on the output. Select between: **75%**, **100%**, or **Off**.
- **Vert Blank** – set the vertical blanking to **Narrow** or **Wide**.



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

Avenue Touch Screen remote control menus for this module are illustrated and explained below. Refer to the 5300 table earlier in this section for a summary of available parameters that can be set remotely through the menus illustrated. 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.

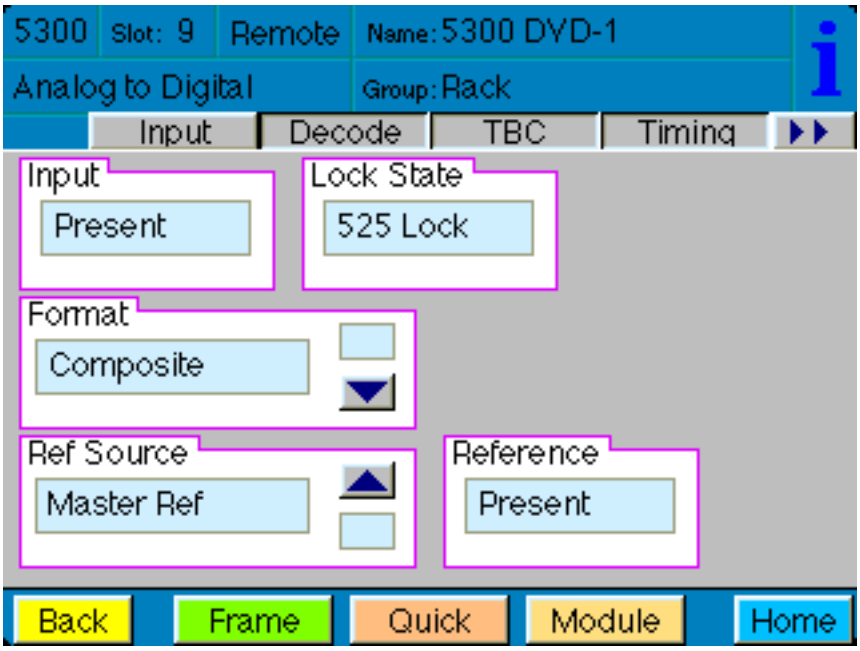
5300 Avenue Touch Screen Menus

The **Input** menu below allows you to set the following parameters:

- **Format** – set the analog video input format for the module.
- **Ref Source** – select the reference source for the module.

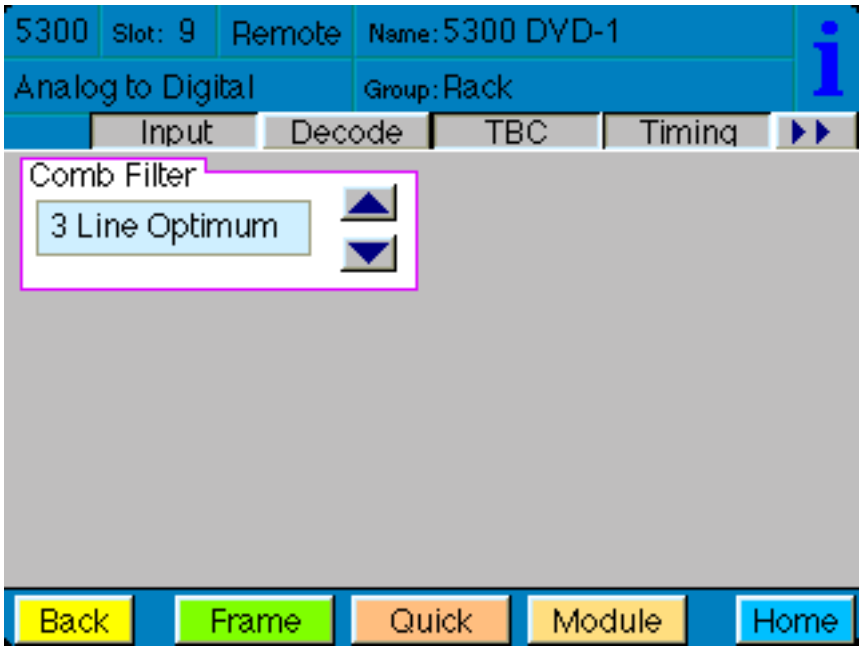
The following status displays are provided:

- **Input** – shows the status of the input signal (**Present** or **No Input**).
- **Lock State** – displays the status of the module lock state (**No Lock**, **525 Lock**, or **625 Lock**).
- **Reference** – shows the status of the reference signal to the module (**No Reference** or **Present**).
- **EDH Status** – (not shown) when the 5315 option is installed, the EDH error status of the serial digital input signal will be reported (**No Error**, **EDH**, **EDA**, **EDH EDA**, **IDA**, **EDH IDA**, **EDA IDA**, **EDH EDA IDA**, or **No EDH**).



The **Decode** menu below allows you to set the following parameters:

- **Comb Filter** – select the desired Y/C separation filter. **NOTE**: The best performance for general input video with motion is usually the **3 Line Optimum**.



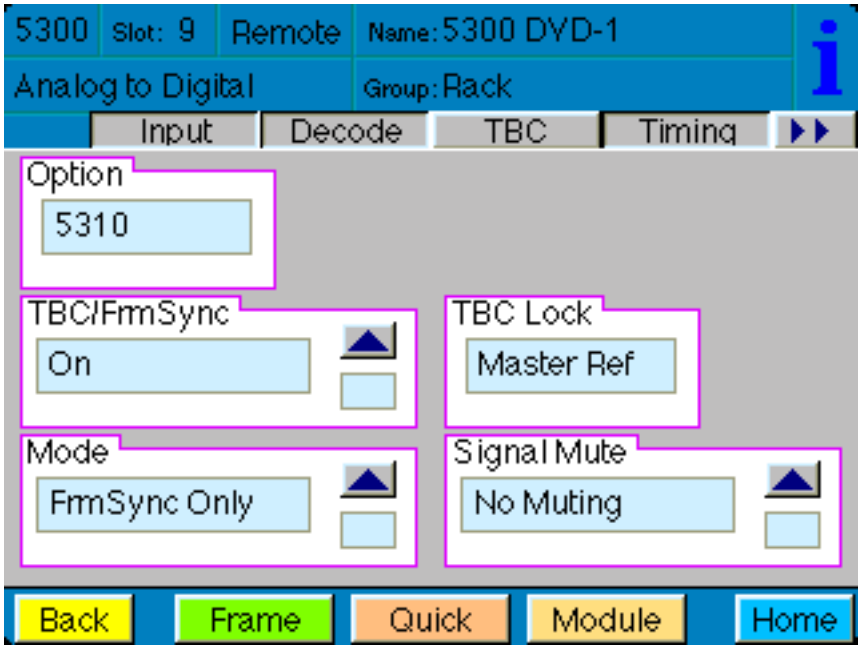
The **TBC** menu is used when the optional 5310 or 5315 Time Base Corrector (TBC)/Frame Synchronizer is installed on the 5300 module. The menu and parameters to be set for each option are shown below.

The **Option** status display will indicate which option is installed, **5310**, **5315**, or **None**.

Set the following parameters when the 5310 or 5315 option is installed:

- **TBC/FrmSync** – click in the box to turn on the TBC/FrameSync.
- **Mode** – determines the speed of error handling. For fast occurring errors, such as from a consumer VCR, use the **TBC V(ery) Fast** mode. Select the mode best for your source; **TBC V(ery) Fast**, **TBC Fast**, **TBC Slow** or **TBC V(ery) Slow**. If you have a retiming application where you don't need the TBC and just want the frame synchronizer, select **FrmSync Only**.
- **Signal Mute** – Choose between **Mutes on Noise** or **No Muting**. Select **No Muting** when you want to see an output signal even if the input is noisy, missing sync, or the signal is fading in and out. This mode is helpful when you are shuttling a VTR or using satellite feeds. If you prefer the output to go to black if the input is not stable, select **Mutes on Noise**.

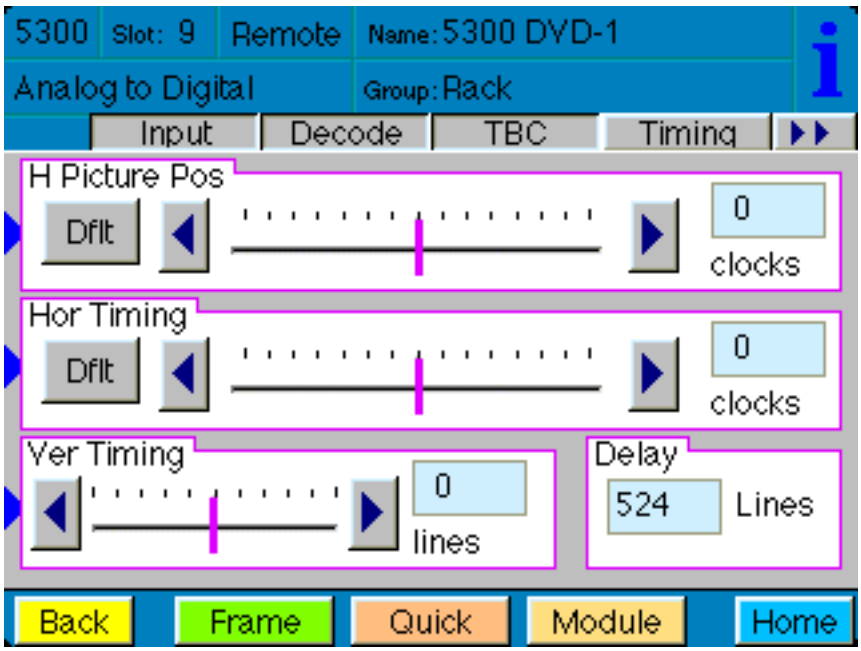
The **TBC Lock** status display reports which reference source the module is locking to (**No Lock**, **Ext Ref**, **Master Ref**, or **Video In**).



The **Timing** menu sets timing parameters when the optional 5310 or 5315 Time Base Corrector option is installed on the 5300 module. Set the following timing parameters:

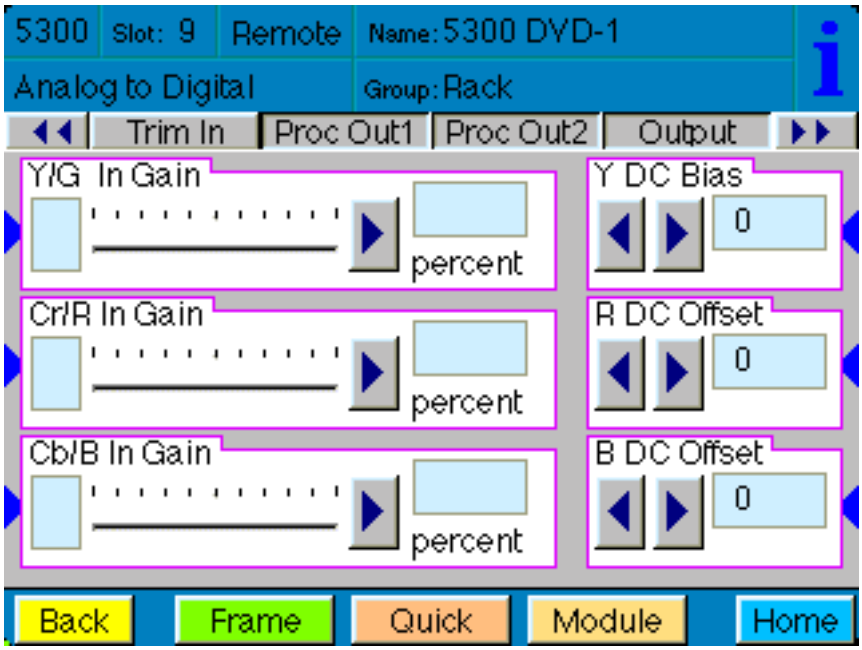
- **H Picture Pos** – sets the horizontal position of the picture in clocks when the TBC option is installed.
- **Hor Timing** – sets the horizontal output timing when the TBC option is enabled.
- **Ver Timing** – set the vertical output timing when the TBC option is enabled.

The **Delay** display reports the total delay of the module in lines. This value can be used in conjunction with other modules, such as the 6040 Tracking Audio Delay Module.



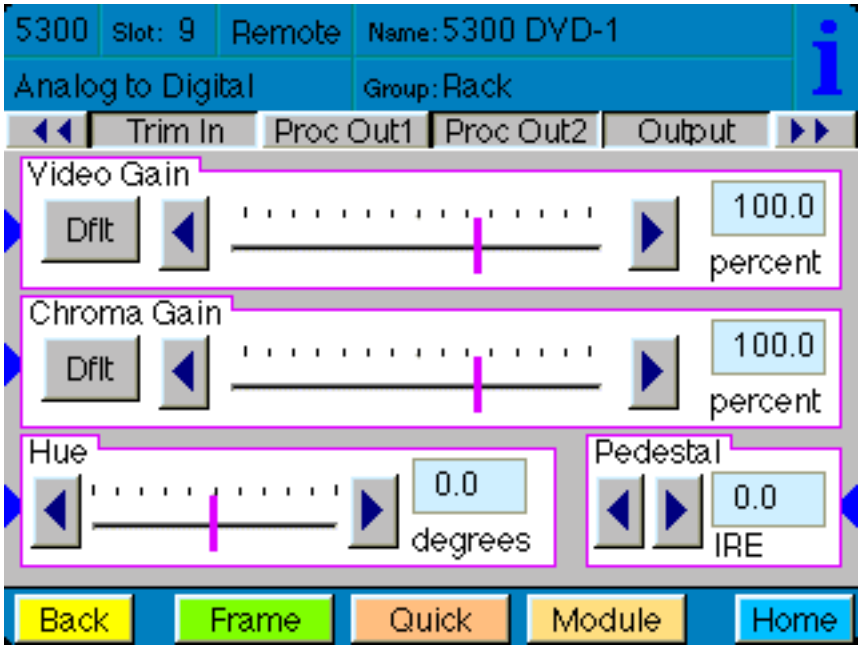
The **Trim In** menu below provides adjustments for the component Y,Cr,Cb and RGB input video input gain and RGB DC offsets to compensate for incorrect levels on the analog input sources. Be sure the output gains in the **Proc Out1**and **Proc Out2** menus are set correctly before making adjustments in this window The settings in this menu apply to the component input video and does not affect the composite input video.

- **Y/G In Gain** – adjusts the input gain of the Y channel video.
- **Cr/R In Gain** – adjusts the input gain of the Cr channel video.
- **Cb/B In Gain** – adjusts the input gain of the Cb channel video.
- **Y DC Bias** – adjusts the DC bias of the Y channel.
- **R DC Offset** – adjusts the DC offset of the R channel (RGB).
- **B DC Offset** – adjusts the DC offset of the B channel (RGB only).



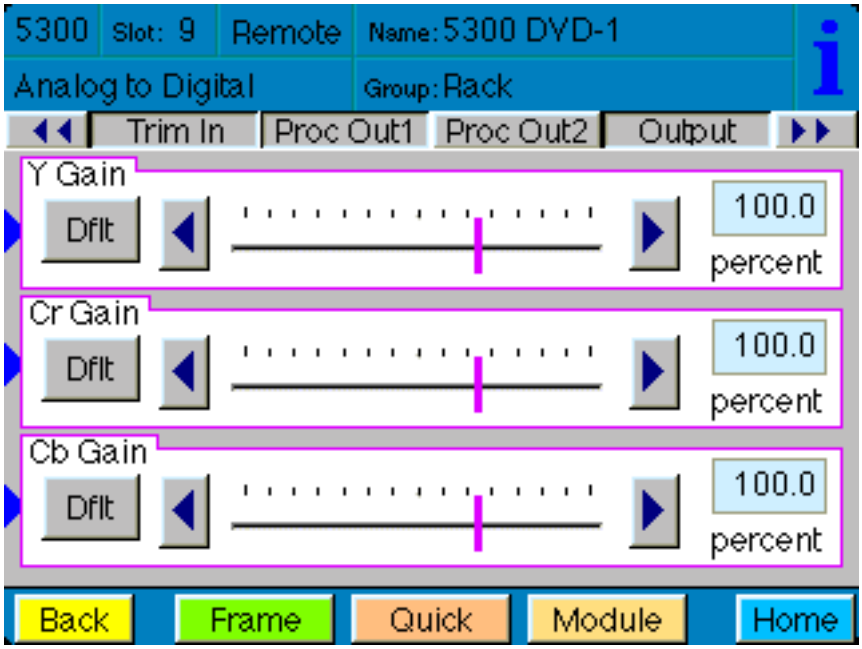
The **Proc Out1** menu below provides adjustments for the serial digital outputs. The settings affect all three channels equally.

- **Video Gain** – sets the gain of the output.
- **Chroma Gain** – sets the chroma gain of the output.
- **Hue** – sets the degree of hue on the output signal.
- **Pedestal** – sets the amount of pedestal in IRE.



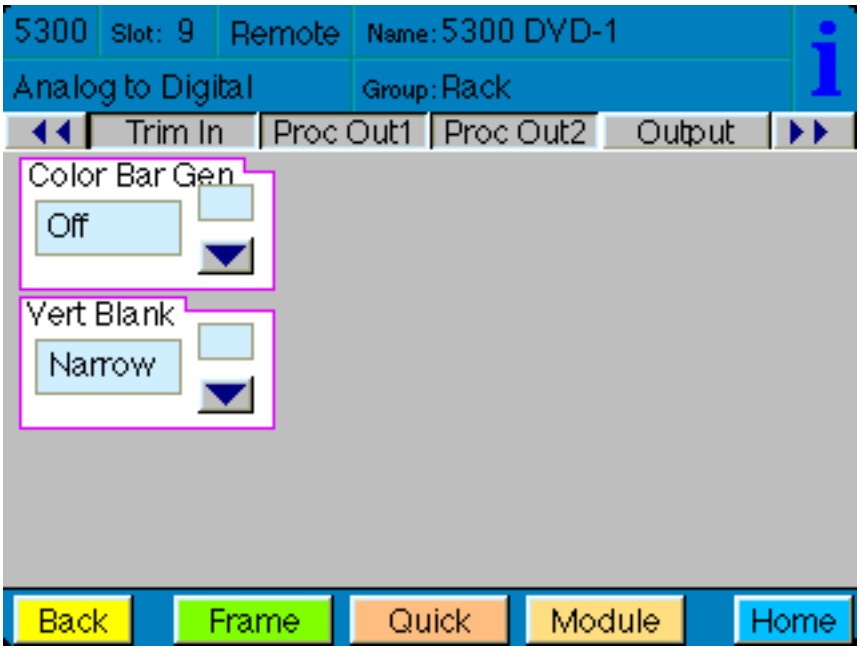
The **Proc Out2** menu below provides gain adjustment for the serial digital outputs. This menu enables you to make adjustments to the individual component channels:

- **Y Gain** – adjusts the gain of the Y Channel output video.
- **Cr Gain** – adjusts the gain of the Cr channel output video.
- **Cb Gain** – adjusts the gain of the Cb channel output video.



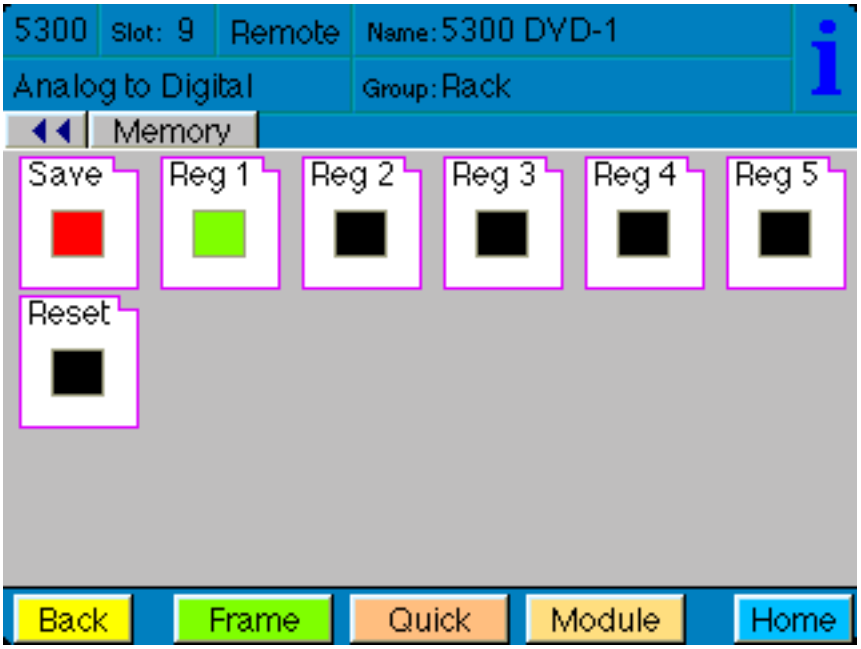
The **Output** menu below provides adjustments for the serial digital outputs.

- **Color Bar Gen** – use to select internally generated color bars on the output. Select between: **75% Bars**, **100% Bars**, or **Off**
- **Vert Blank** – set the vertical blanking to **Narrow** or **Wide** as needed.



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

To aid in troubleshooting, the LED indicators can be easily monitored from the front panel of this module to show status of the module.

If using the **Remote** mode, the following status items can be monitored using the Avenue Touch Screen Control Panel or PC Application:

- In OK
- Reference OK
- 525/625 Lock
- Power status
- Slot ID, Software Version and Board Revision

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

No status lights are lit on front panel:

- Check that frame power is present (green LED{s} on frame power supplies).
- Check that module is firmly seated in frame. Try removing it and plugging it in again.

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.
- 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 signal out of module:

- Check status of In OK green LED. Should be lit. If not, check the input signal for presence and quality.
- Check cabling to input of module.

You may also refer to the technical support section of the Ensemble 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

5300 Video ADC

Analog Input

Number	Y,Cr,Cb or RGB and Composite
Impedance:	75 ohm BNC
Return Loss:	> 40 dB
Input DC:	< ±1 volt DC
Input Hum:	< 100 mV

Composite Input

Signal Type:	NTSC, NTSC No Setup, PAL

Component Input

Signal Type:	RGB/RGBS Beta Y,Cr,Cb SMPTE Y,Cr,Cb

Serial Input

Number:	One - with 5315 Option
Signal Type:	Serial Digital (SMPTE 259M)
Impedance:	75 ohm
Return Loss:	> 15dB
Output DC:	None (AC coupled)
Max Cable Length	300 meters

Reference Input

Number:	One external One internal master timing ref
Signal Type:	1V p-p nominal composite video PAL or NTSC
Return Loss:	> 40dB (applies to ext ref input)

Serial Output

Number:	Four
Signal Type:	Serial Digital (SMPTE 259M)
Impedance:	75 ohm
Return Loss:	> 15 dB
Output DC:	None (AC coupled)

Output Performance

Bit Resolution:	12 bit processing, 10 bit, 2x oversampling
Signal to Noise:	61 dB
Black Offset:	Self-adjusting
Frequency Response:	±0.1 dB, 0 to 5.5 MHz; Y, composite
	±0.1 dB, 0 to 2.75 MHz; Cr, Cb

General Specifications

Power Consumption:	< 7.0 watts
Temperature Range:	0 to 40 degrees C ambient (all specs met)
Relative Humidity:	0 to 95% noncondensing
Altitude:	0 to 10,000 ft

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