

AVENUE

Avenue™ signal integration system

Model 5380 Analog Composite to Digital Video Converter Data Pack

ENSEMBLE

D E S I G N S

Revision 2.1 SW v2.0

This data pack provides detailed installation, configuration and operation information for the **5380 Analog Composite to Digital Video Converter (ADC)** with the **5310/5315 TBC/Frame Synchronizer** option 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 5380 Analog Composite to Digital Converter (ADC) Module converts NTSC or PAL composite video into serial digital outputs conforming to CCIR656 format.

The composite input can accept the following NTSC or PAL formats:

- NTSC composite with or without setup
- PAL composite

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

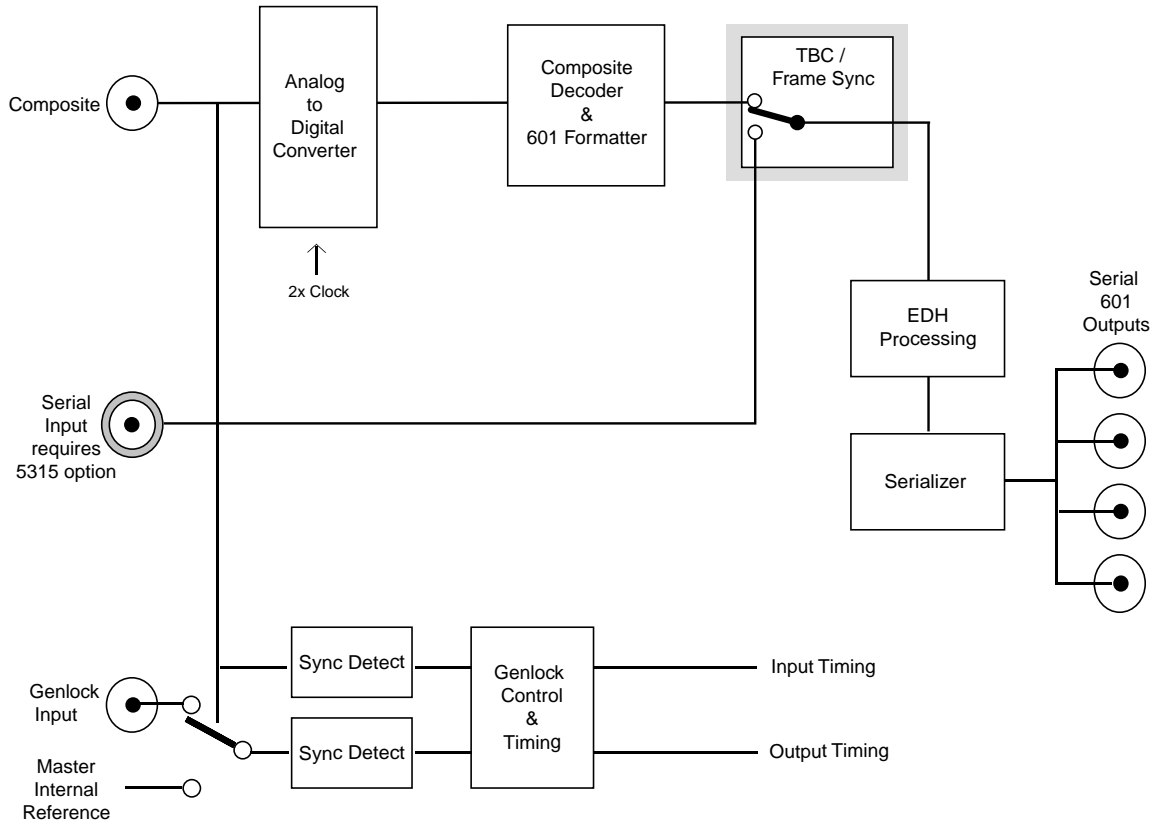
As shown in the block diagram on the following page, the composite input signal is buffered, clamped and filtered before entering analog to digital conversion circuitry. The signal enters a decoder circuit where the composite video is converted to component using a decoder that provides a number of user selectable Y/C separation filters. 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.

If the optional 5310 or 5315 submodule is installed, 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 5380, 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 reference input. The options also allow the module to accept asynchronous inputs and deliver serial outputs locked and time to the house reference. Both the 5310 and 5315 options require the System Control module to be present in the frame.

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.

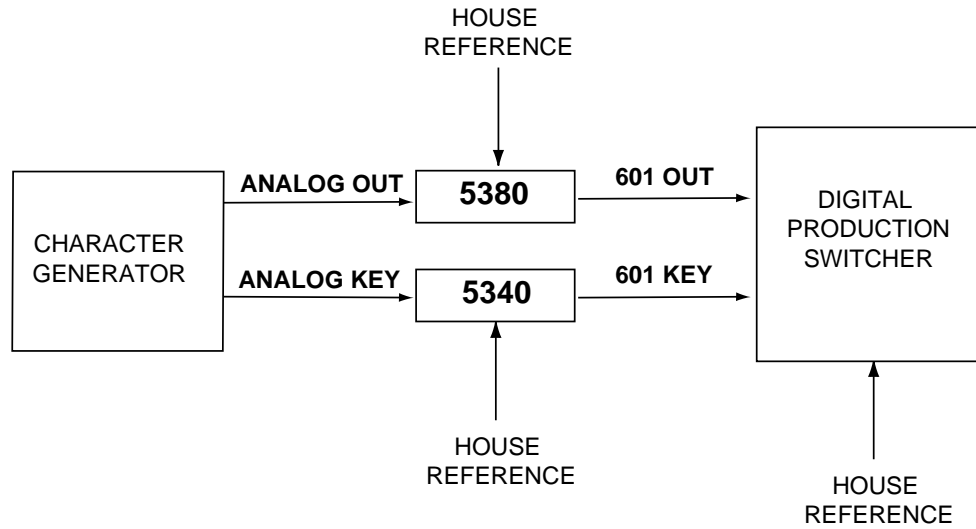
Because the 5380 is an Avenue module, every function and parameter can be controlled from an Avenue Touch Screen Control Panel, or the Avenue PC Control Application. Memory registers can be used to save the complete configuration of the module, making it easy to change instantly between different configurations.



5380 Analog Composite to Digital Video Converter Functional Block Diagram

APPLICATIONS

The application below illustrates utilizing the 5380 Composite ADC and the 5340 Key ADC modules to convert composite analog video and key signals from a character generator to a digital signal for feeding a digital switcher. If the optional 5310/5315 TBC/Frame Synchronizer is installed, the signals can be timed to match the house reference if needed.



Composite Analog Video and Key to Digital Switcher

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 5380 Composite ADC module. The connectors are keyed such that the submodule can only be installed to match the connector keying.

5380 ADC Module

Plug the 5380 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

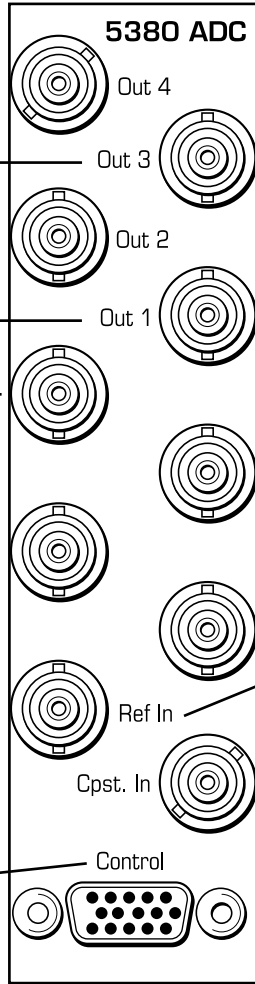
Refer to the 3 RU and 1 RU backplane diagrams of the module on the next page for cabling instructions. Note that unless stated otherwise, the 1 RU cabling explanations are identical to those given in the 3 RU diagram.

3 RU Backplane

Cable the four serial digital output BNCs, **Out 1 - Out 4**, to the desired serial digital destinations.

For 5315 option module: Connect a serial digital input to this BNC.

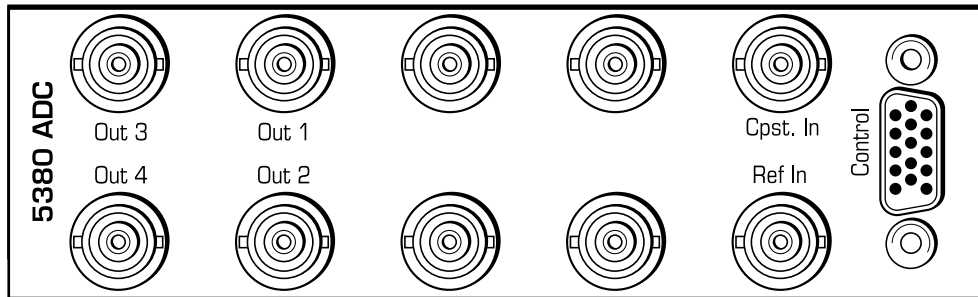
The **CONTROL** 15-pin connector is not used at this time.



Connect a sync input from the house reference to the **Ref In** BNC if using the 5310.

Connect the composite signal to be converted to the **Compst In** BNC.

1 RU Backplane



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 control mode you will be using.

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 **5380 Parameter Table** on the following page 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 an 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 **5380 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 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 data pack following Avenue PC.

5380 Parameter Table

CONTROL	LOCAL	REMOTE	DEFAULT/ FACTORY	DEFAULT USER LEVEL
Format	Switch 4: On (setup) Off (no setup)	Composite Compost No Setup PAL-M Serial (5315 option)	On	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

5380 Parameter Table (Con't)

CONTROL	LOCAL	REMOTE	DEFAULT/ FACTORY	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	Off	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

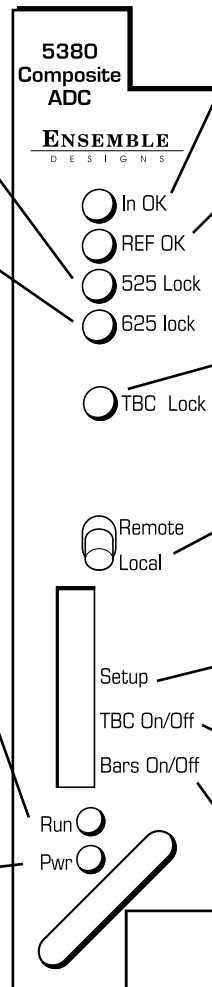
Each front edge indicator and switch setting is shown in the diagram below:

525 Lock green LED:
ON indicates module is locked to the selected reference and has determined the reference is 525.

625 Lock green LED:
ON indicates module is locked to the selected reference and has determined the reference is 625.

Run green LED:
OFF:
A power fault or halted CPU
ON:
A halted CPU
FAST BLINK:
CPU Run error
SLOW BLINK:
System OK. (If SPI control is active from the main frame System Control Module, all **Run** indicators will be synchronized.)

Pwr green LED:
Indicates the presence (**ON**) or absence (**OFF**) of power (+5V).



In OK green LED:
ON indicates signal is present and detected.
OFF an input signal (Y, G or composite) was not detected (no sync was detected for the input).

REF OK green LED:
ON when the reference source is present and valid.
OFF when the reference source is not connected or selected correctly.

TBC Lock green LED:
ON indicates the 5310 or 5315 TBC option is installed and locked to the input video.

Remote/Local switch:
Set to the mode you will be using.

Setup:
Setup **On** (left) or **Off** (right).

TBC On/Off:
Turn 5310 or 5315 TBC **On** (left) or **Off** (right).

Color Bars On/Off:
Turns internal color bar generator **On** (Left) or **Off** (Right).

Avenue PC Remote Configuration

The Avenue PC remote control menus for this module are illustrated and explained below. Refer to the **5380 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.

5380 Avenue PC Menus

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

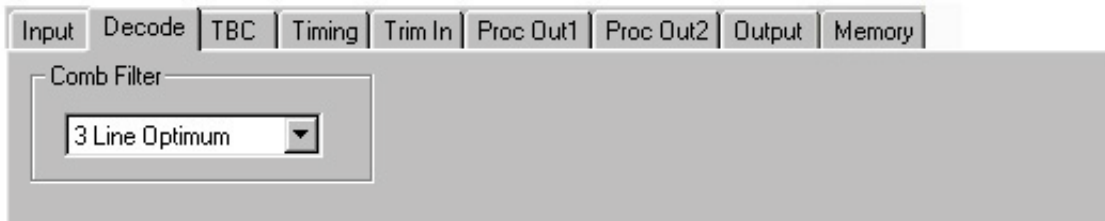
- **Format** – set the analog video input format for composite with or without setup or the serial input if the 5315 submodule option is installed..
- **Ref Source** – select the reference source for the module.

This menu also provides **Input**, **Reference** and **Lock State** status information about the module.

Input	Decode	TBC	Timing	Trim In	Proc Out1	Proc Out2	Output	Memory
Input								
Present								
Lock State								
525 Lock								
Format								
Composite								
Ref Source								
Master Ref								
Reference								
Present								

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** filter.



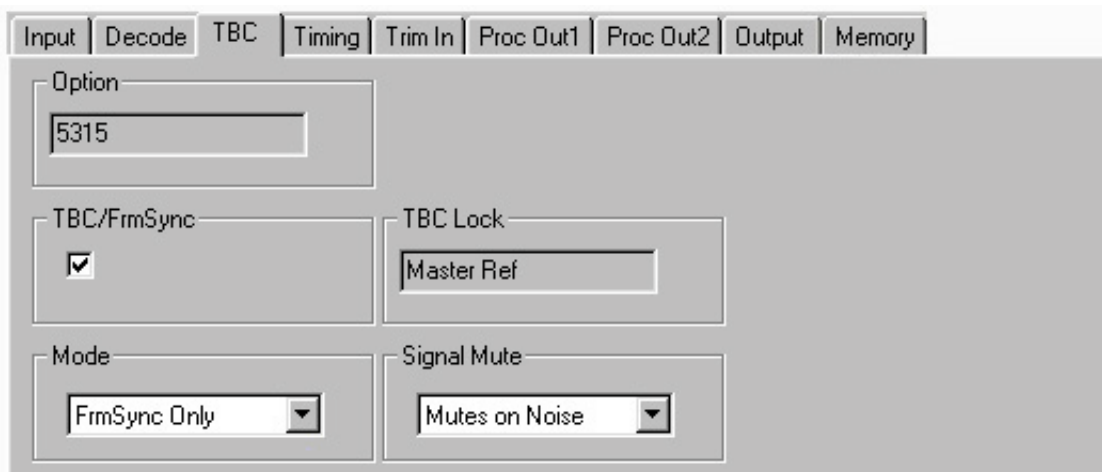
The **TBC** menu is used when the optional 5310 or 5315 Time Base Corrector (TBC)/Frame Synchronizer is installed on the 5380 module. The menu and parameters to be set for each option are shown below.

The **Option** display will indicate which option is installed 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.
- **TBC Mode** – determines the speed of error handling. For fast occurring errors, such as from a consumer VCR, use the **Very Fast** mode. Select the mode best for your source; **Very Fast**, **Fast**, **Slow** or **Very 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 Mute**. Select **No Mute** 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 **Mute on Noise**.

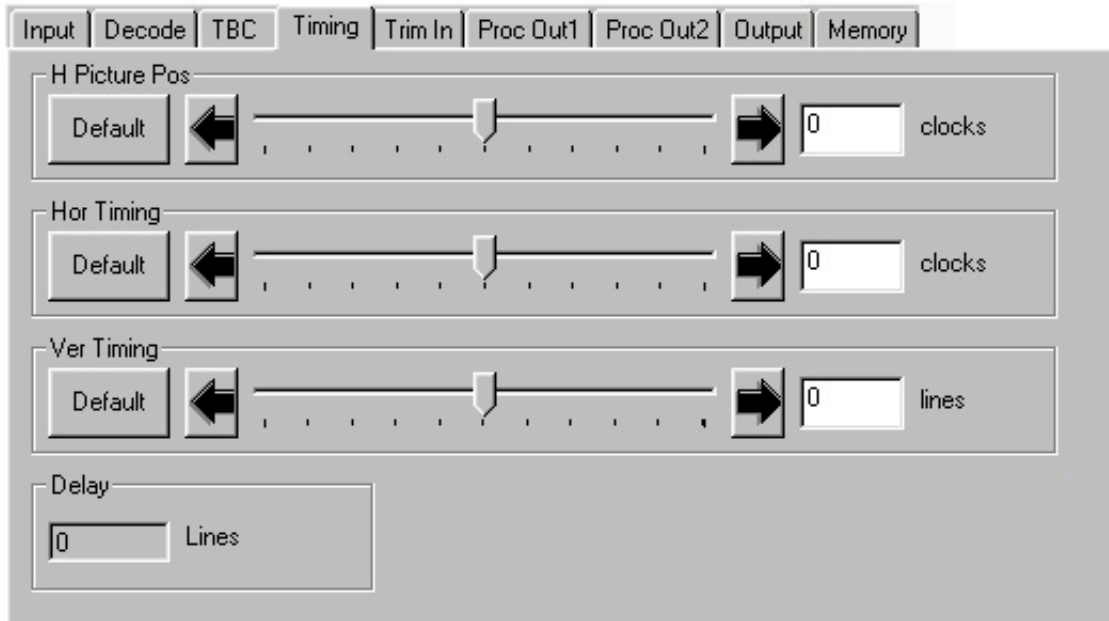
The **TBC Lock** status display reports which reference source the module is locking to.



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

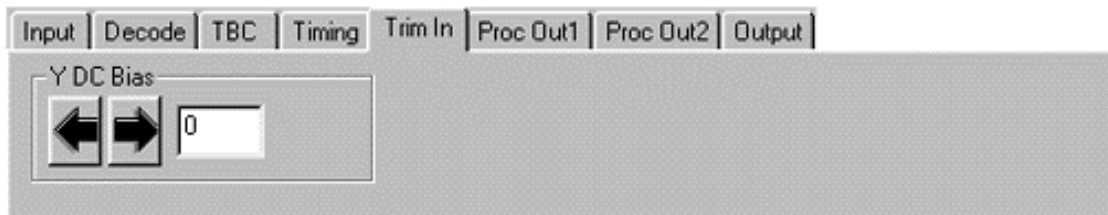
- **H Picture Pos** – sets the horizontal position of the picture in clocks when the TBC option is installed.
- **Hor Timing** – sets the horizontal output timing when the TBC option is enabled.
- **Ver Timing** – set the vertical output timing when the TBC option is enabled.

The **Delay** display reports the total delay of the module in lines. This value can be used in conjunction with other modules.



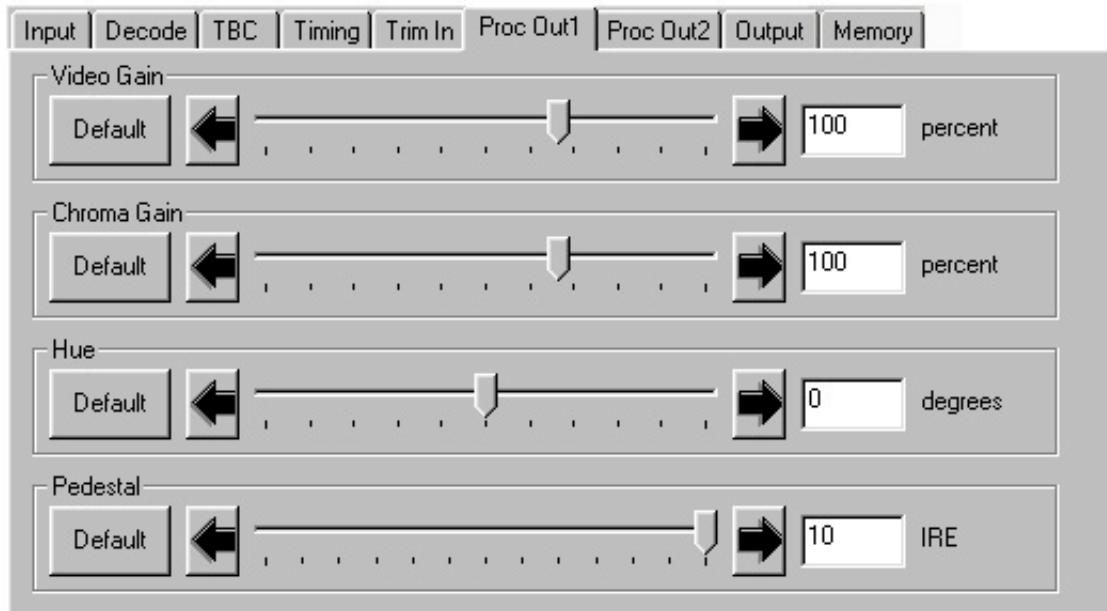
The **Trim In** menu below provides adjustments for the composite Y signal to compensate for incorrect levels on the analog input sources. Be sure the output gains in the **Proc Out1** and **Proc Out2** menus are set correctly before making adjustments in this window.

- **Y/G DC Bias** – adjusts the DC bias of the Y channel video.



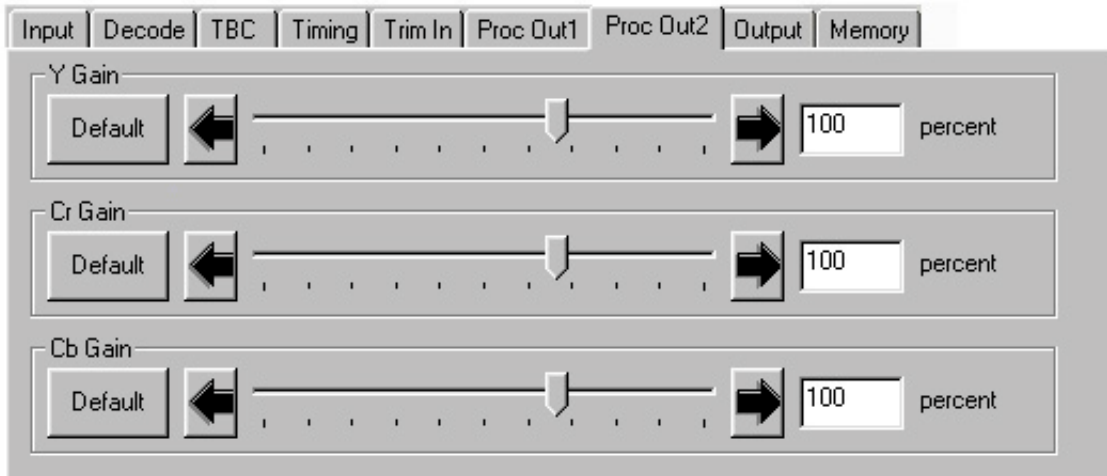
The **Proc Out1** menu below provides adjustments for the serial digital outputs.

- **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 IREs.



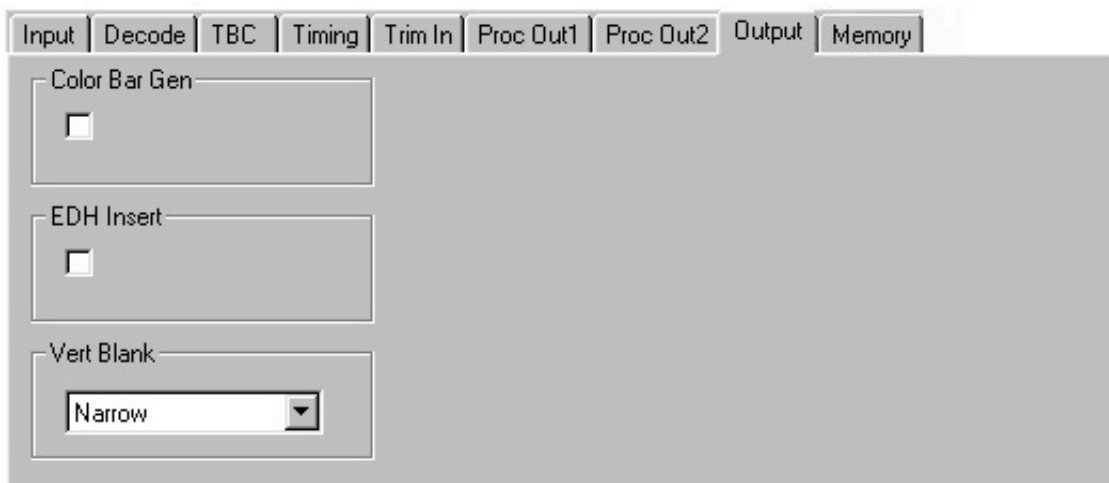
The **Proc Out2** menu below provides adjustments for the serial digital outputs. This menu enables you to make adjustments to the individual component channels.

- **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 the following adjustments for the serial digital outputs:

- **Color Bar Gen** – click the box to enable the internally generated color bars on the output.
- **EDH Insert** – click the box to enable EDH insertion on the output.
- **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 **5380 Parameter 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 Touch Screen operation section in the Avenue System Overview.

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

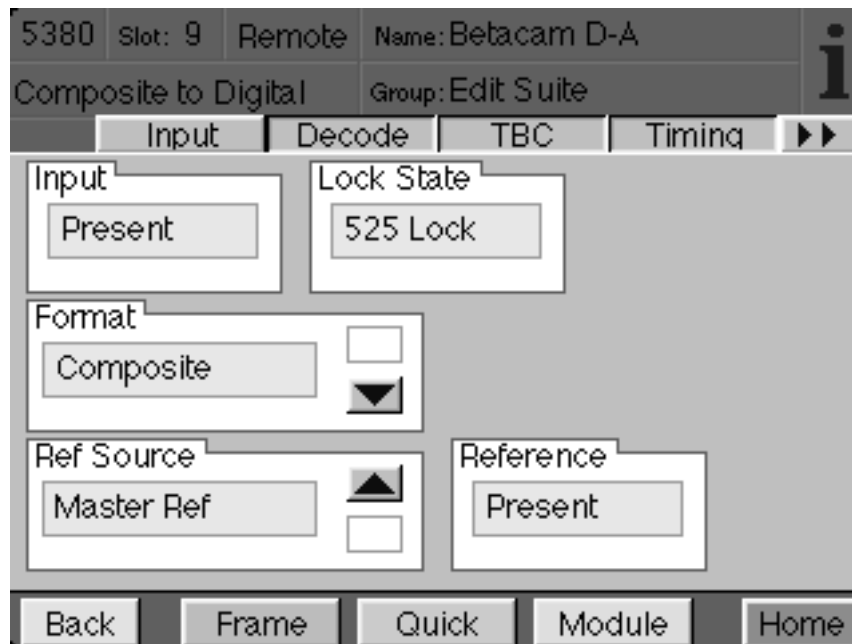
- An option is not installed.
- The function is not active.
- The module is locked.
- The User Level set with Avenue PC is not accessible from the current User Level.

5380 Avenue Touch Screen Menus

The **Input** menu below displays **Input**, **Reference** and **Lock State** status for the module.

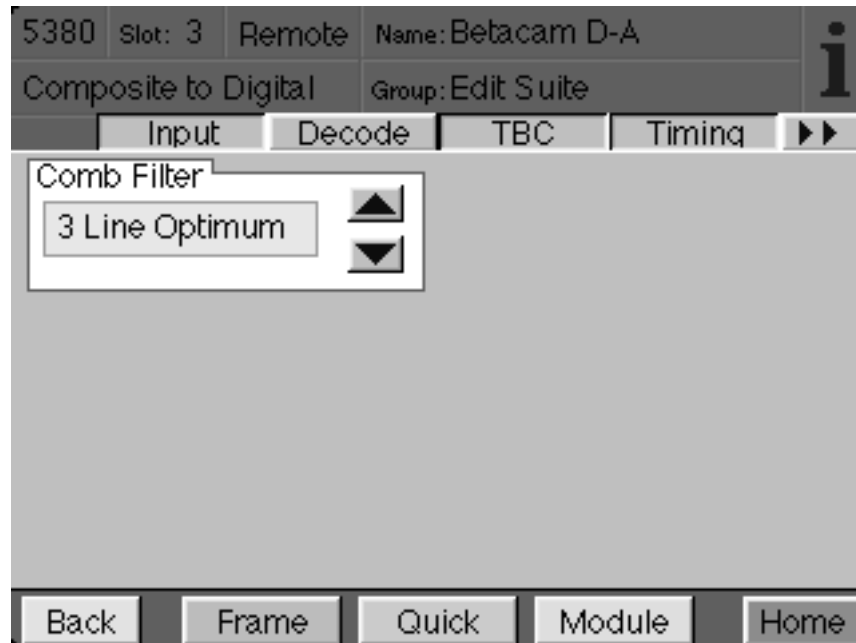
Set the following parameters from this menu:

- **Format** - set the analog video input format for composite with or without setup or serial if the 5315 submodule is installed.
- **Ref Source** - select the reference source for the module.



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** filter.



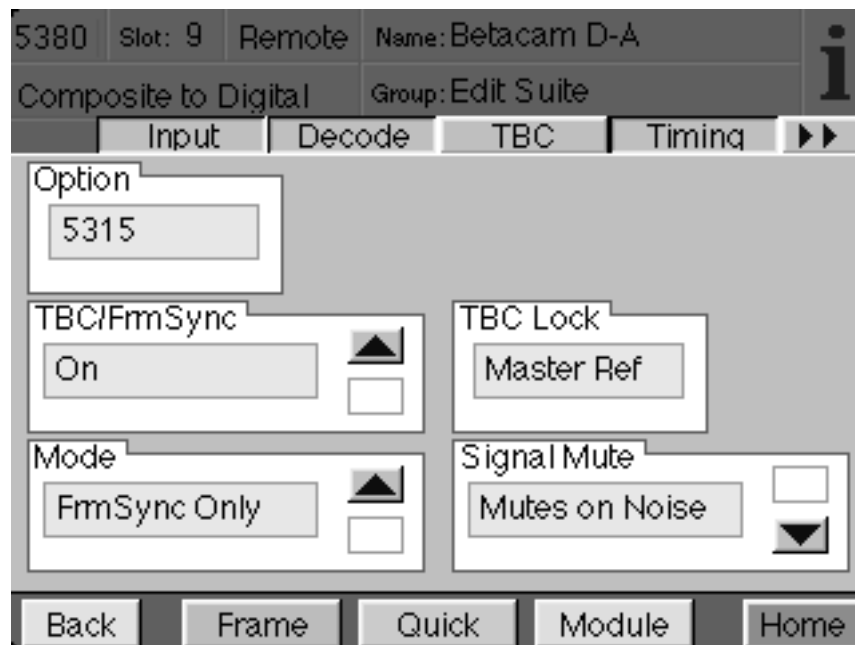
The **TBC** menu is used when the optional 5310 or 5315 Time Base Corrector (TBC)/Frame Synchronizer is installed on the 5380 module. The menu and parameters to be set for each option are shown below.

The **Option** display will indicate which option is installed or **None**.

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

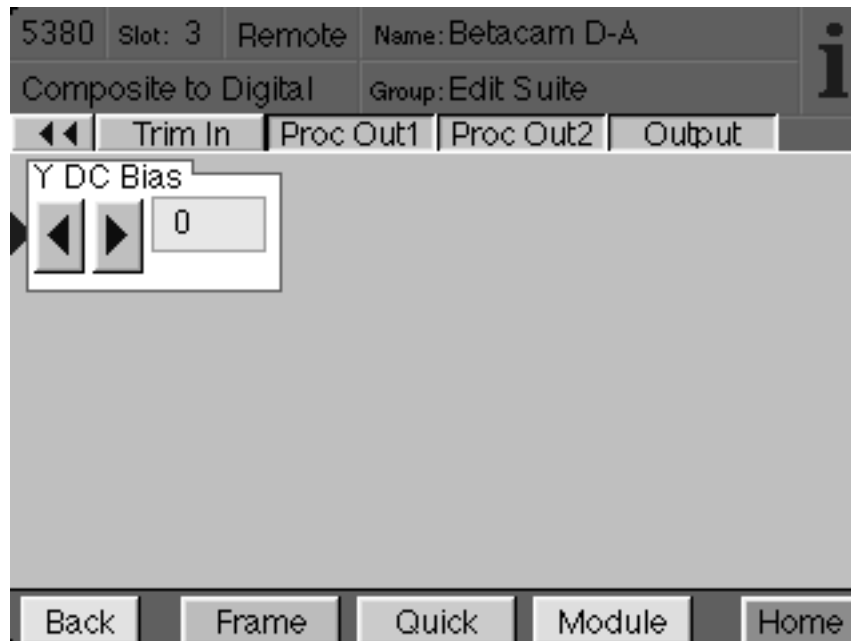
- **TBC/FrmSync** – click in the box to turn on the TBC/FrameSync.
- **TBC Mode** – determines the speed of error handling. For fast occurring errors, such as from a consumer VCR, use the **Very Fast** mode. Select the mode best for your source; **Very Fast**, **Fast**, **Slow** or **Very Slow**. If 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 Mute**. Select **No Mute** 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 **Mute on Noise**.

The **TBC Lock** status display reports which reference source the module is locking to.



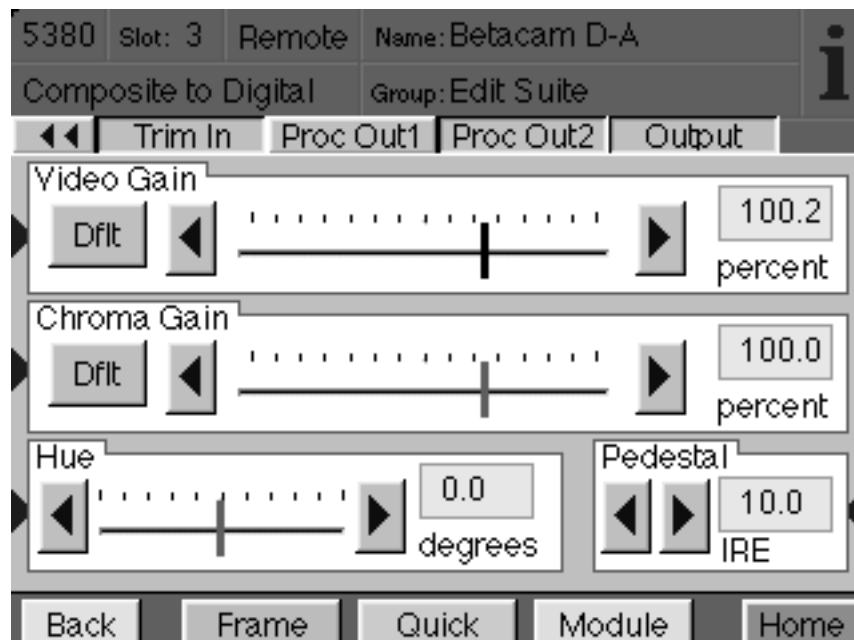
The **Trim In** menu below provides adjustments for the composite Y signal to compensate for incorrect levels on the analog input sources. Be sure the output gains in the **Proc Out1** and **Proc Out2** menus are set correctly before making adjustments in this window.

- **Y/G DC Bias** - adjusts the input gain of the Y channel video.



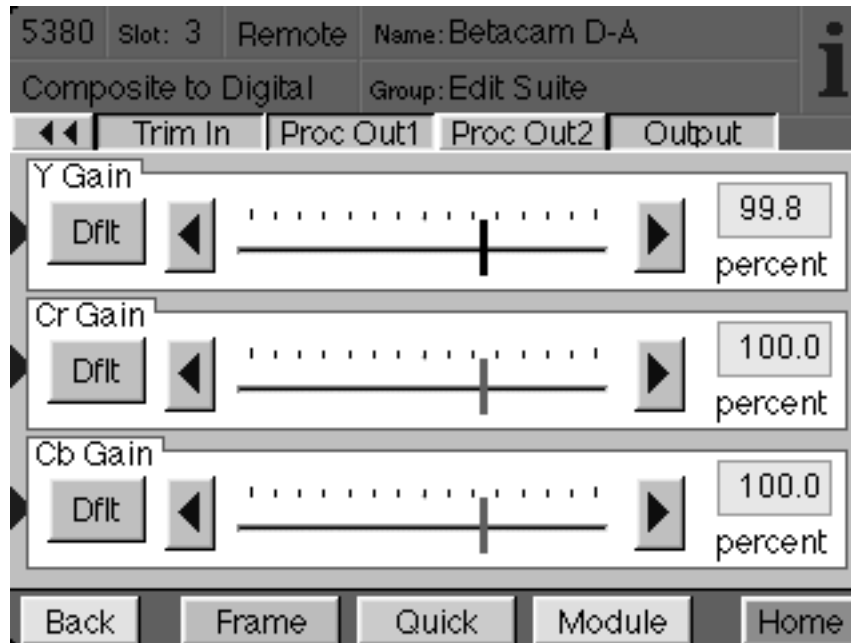
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- **Video Gain** - sets the gain of the output.
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- **Pedestal** - sets the amount of pedestal in IREs.



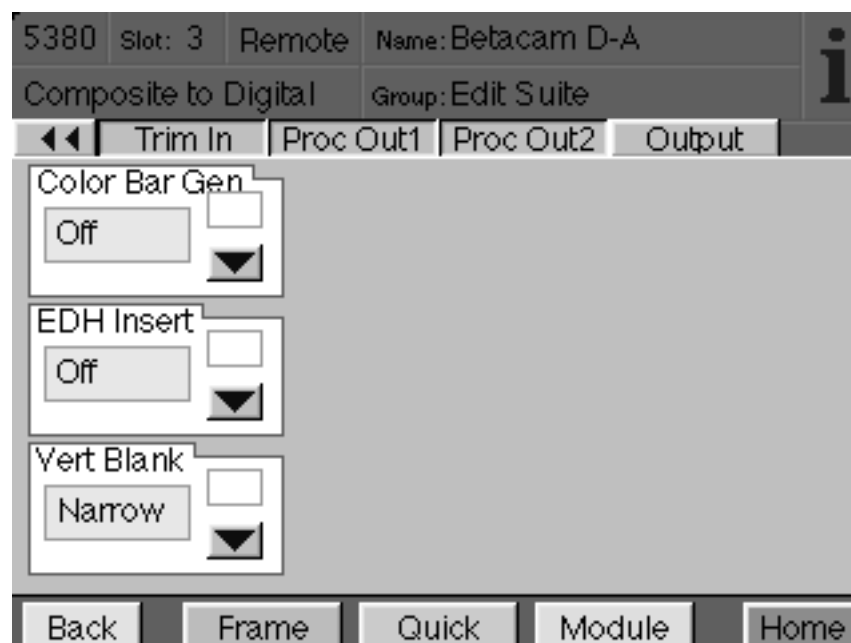
The **Proc Out2** menu below provides gain adjustment for the serial digital outputs. This menu enables you to make adjustments to the individual component channels:

- **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.



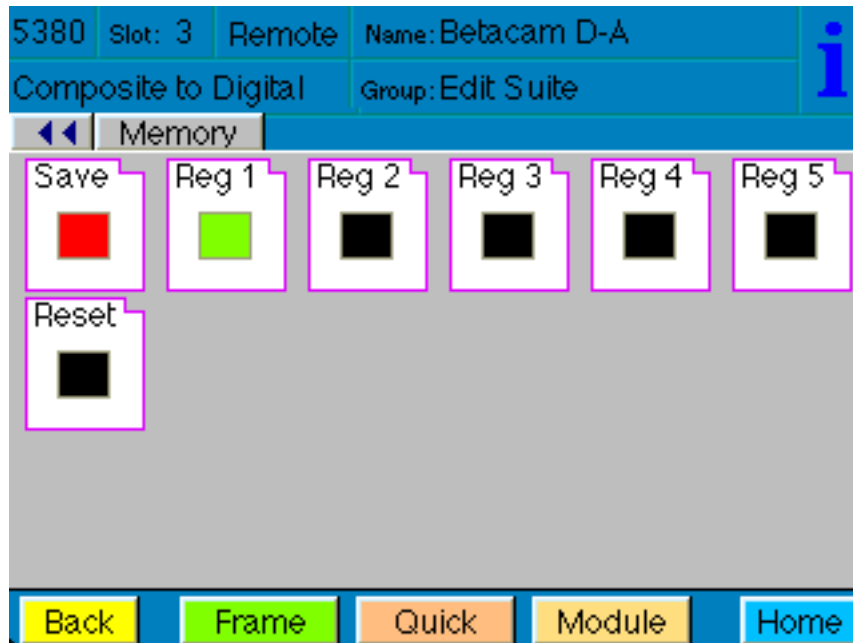
The **Output** menu below provides the following adjustments for the serial digital outputs:

- **Color Bar Gen** – click the box to enable the internally generated color bars on the output.
- **EDH Insert** – click the box to enable EDH insertion on the output.
- **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.



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

5380 Composite ADC

Analog Composite Input

Number	One
Signal Type:	NTSC, PAL
Impedance:	75 ohm BNC
Return Loss:	> 40dB
Input DC:	< ± 1 volt DC
Input Hum:	< 100 mV

Serial Input

Number:	One - with 5315 option
Signal Type:	Serial Digital (SMPTE 259M)
Impedance:	75 ohm
Return Loss:	>15 Db
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 external ref input)

Serial Output

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

Output Performance

Bit Resolution:	10 bit, 12 bit processing, 2x oversampling
Noise:	61 dB
Black Offset:	Self-adjusting
Response:	± 0.1 dB, 0 to 5.5 MHz

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.

