AVENUE

Avenue™ signal integration system

Model 5140 Analog EQ Video DA Data Pack

ENSEMBLE DESIGNS

Revision 1.1 SW v1.0

This data pack provides detailed installation, configuration and operation information for the **5140 Analog EQ Video Distribution Amplifier (DA)** 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 5140 provides analog distribution of composite video signals, NTSC and PAL. It can equalize up to 1000 feet (300 meters) of coaxial cable. The purpose of equalization is to compensate for the losses that occur when a video signal travels through a length of coaxial cable. Due to their differing characteristics, different types of cable will require different equalization networks on the 5140. Cable type must be specified when the module is ordered.

Input signal validity is displayed locally and can be monitored through the Avenue remote control options. Gain and EQ parameters can be adjusted locally as well as remotely. Remote control is accessed via the optional Avenue Touch Screen Control Panel and Avenue PC Control Applications.

As shown in the block diagram below, the signal passes through the Humblocker™ circuit then goes on to the equalization circuitry. After that, the signal goes through the gain adjustment circuitry. Nine outputs are provided.

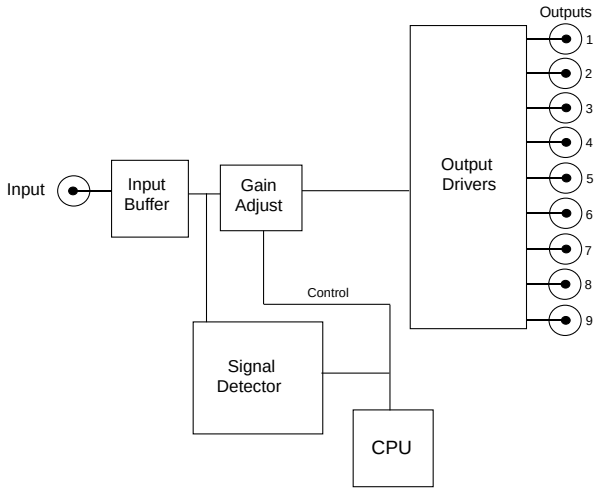
Power is derived from the ± 12 volt frame power. It is regulated to the required +5 volts for the module by the on-board regulator. The module is fused with a resettable fuse device. If the fuse opens due to an overcurrent condition, the module will lose power. After pulling the module, the fuse will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

The on-board CPU can monitor and report the module ID information (slot location, software version and board revision) and signal presence detection which can be reported by the optional frame System Control module to the optional interfaces available.

HumBlocker™

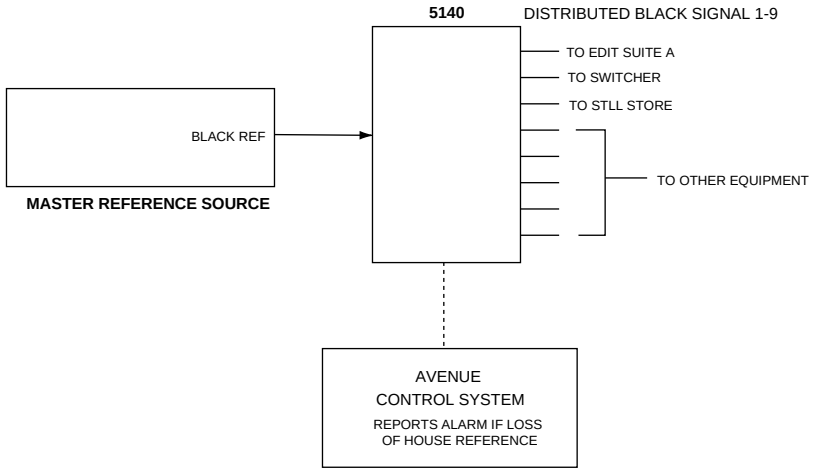
HumBlocker™ technology on the 5140 will automatically process the analog signal to remove power line hum and other types of interference. This is a superior solution to the problem of recovering analog signals in noisy environments or in the presence of ground-loops. Differential inputs can only provide their full benefit if the shield of the input signal is never connected to local ground. A simple patchbay or cable demarcation box can render differential inputs useless. The HumBlocker feature on the 5140 will actually identify and cancel power line interference within the video waveform itself.

Because the HumBlocker system is designed specifically for analog composite video, it must be turned off if the module is being used to distribute other signals (AES, TriLevel Sync, etc.)



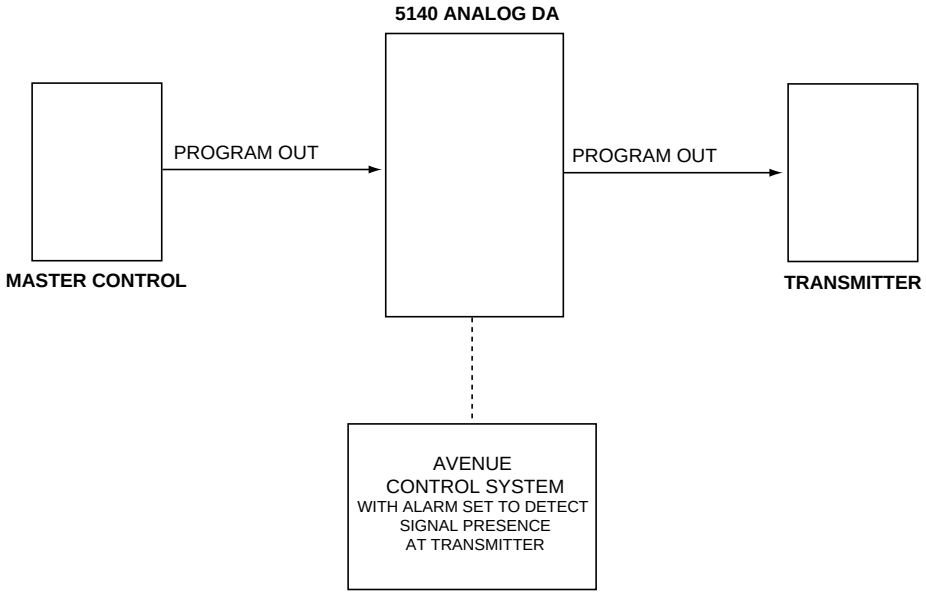
APPLICATIONS

As shown in the example below, the 5140 DA can be utilized to distribute a master reference source throughout a facility. The master reference genlock signal is inserted into the 5140 input then distributed to up to nine destinations. The Avenue remote control system can be set up to report an alarm if there is a loss of house reference.



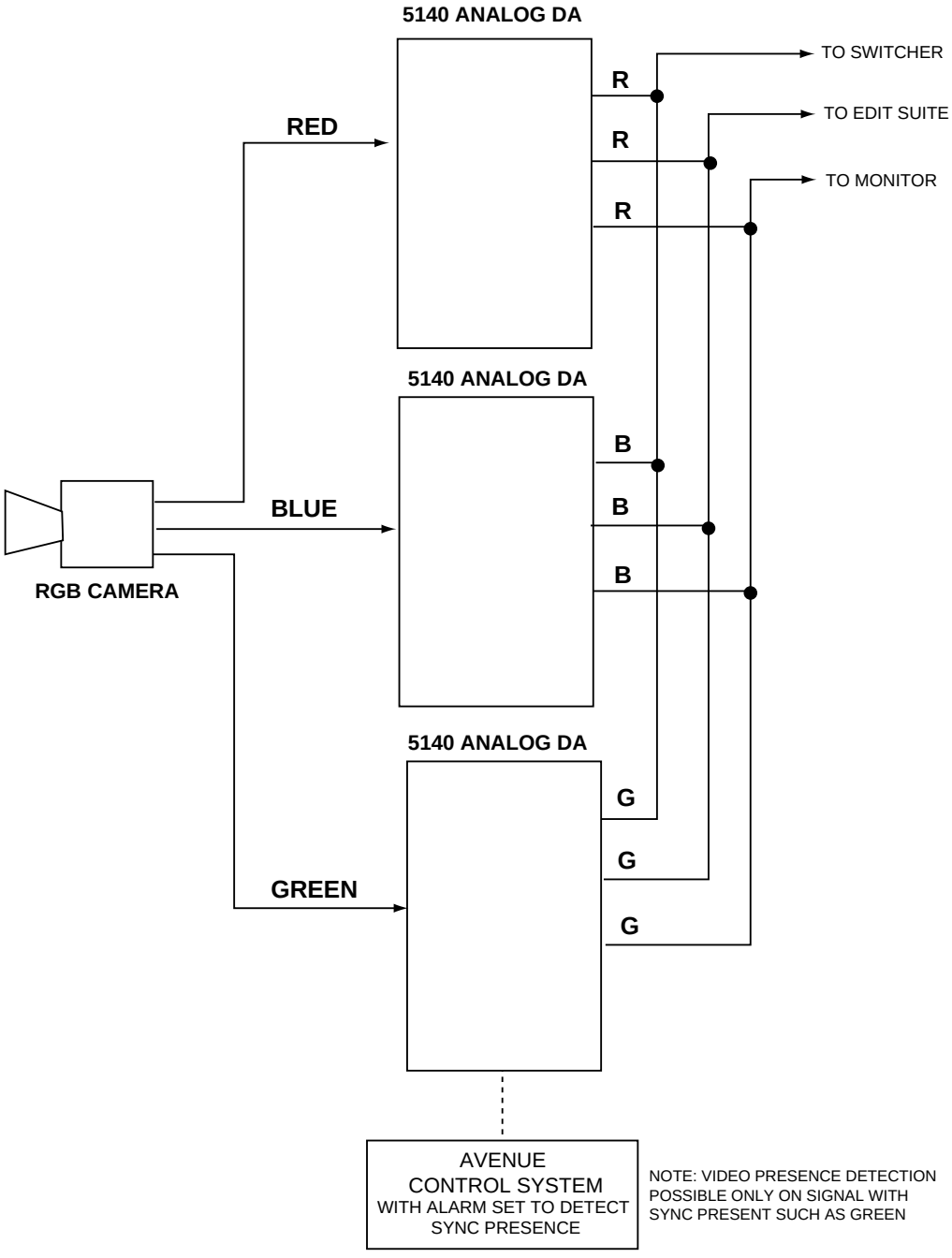
5140 Genlock Distribution Application

The application below shows the 5140 used as a video presence detector. The Program Output signal from a master control device is fed to the 5140 input and then the output of the DA is sent to the transmitter. An alarm can be set in the Avenue control system to send an alert if the sync signal to the transmitter is lost.



5140 as Video Presence Detector

Three 5140 DAs can be utilized as RGB distribution amplifiers as shown in the example below. The RGB signals from a camera can be distributed throughout the facility to a switcher, monitor and other equipment.



5140 Analog DA Distributing RGB Signals

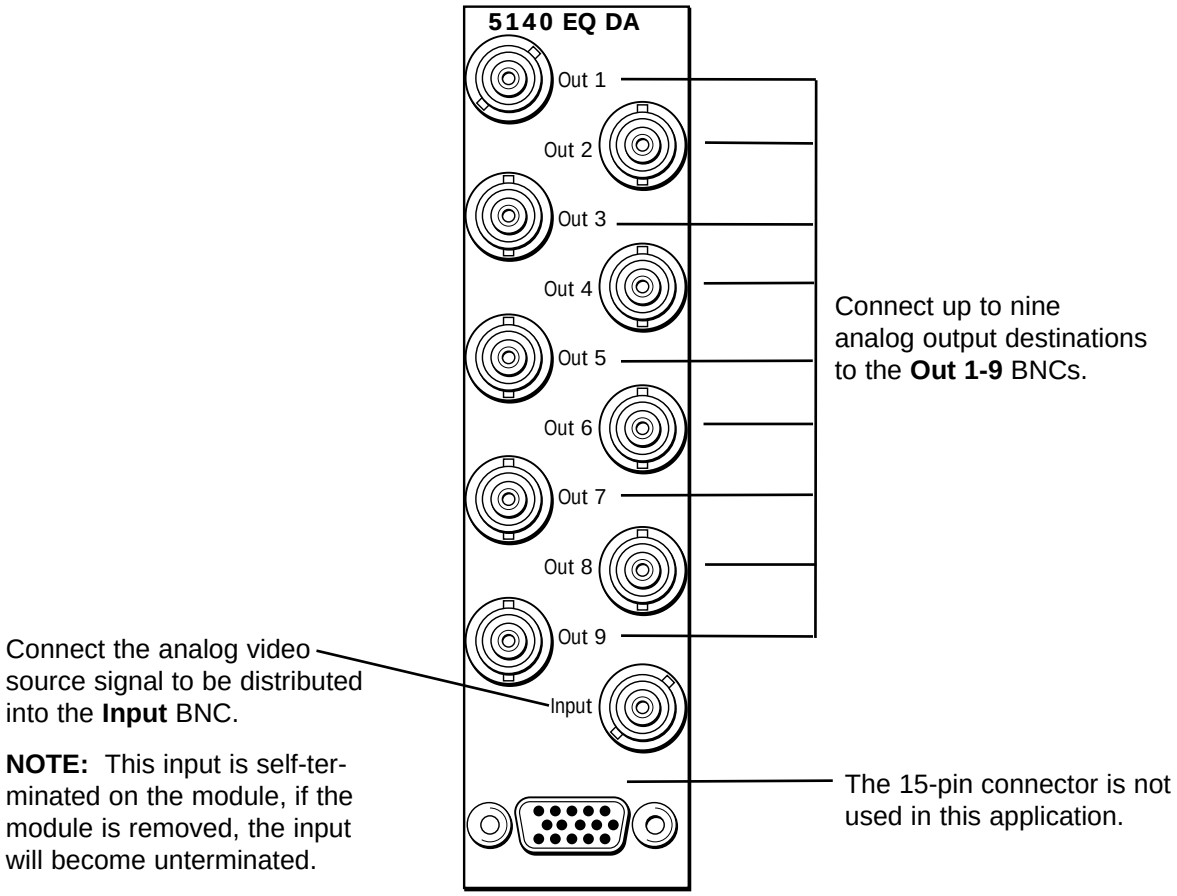
INSTALLATION

Plug the 5140 module into any one of the slots in the 1 RU or 3 RU frames 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.

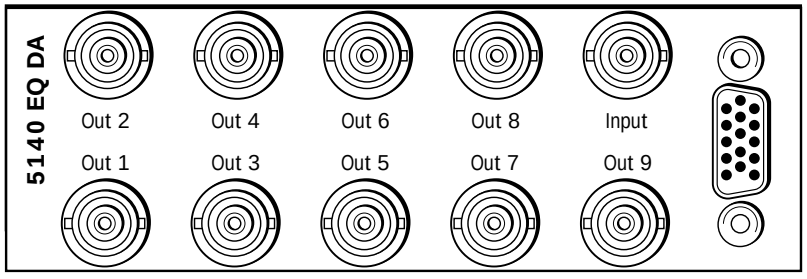
CABLING

Refer to the 3 RU and 1 RU backplane diagrams of the module below 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



1 RU Backplane



MODULE CONFIGURATION AND CONTROL

The parameters for each Avenue module must be configured 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.

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.

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.

The 5140 can equalize up to 1000 feet (300 meters) of coaxial cable. Due to their differing characteristics, different types of cable will require different equalization networks on the 5140. Cable type must be specified when the module is ordered. A label on the module identifies the cable types for which it is appropriate. In addition, the **Cable Type** indicator can be viewed through Avenue PC or the TouchScreen control panel.

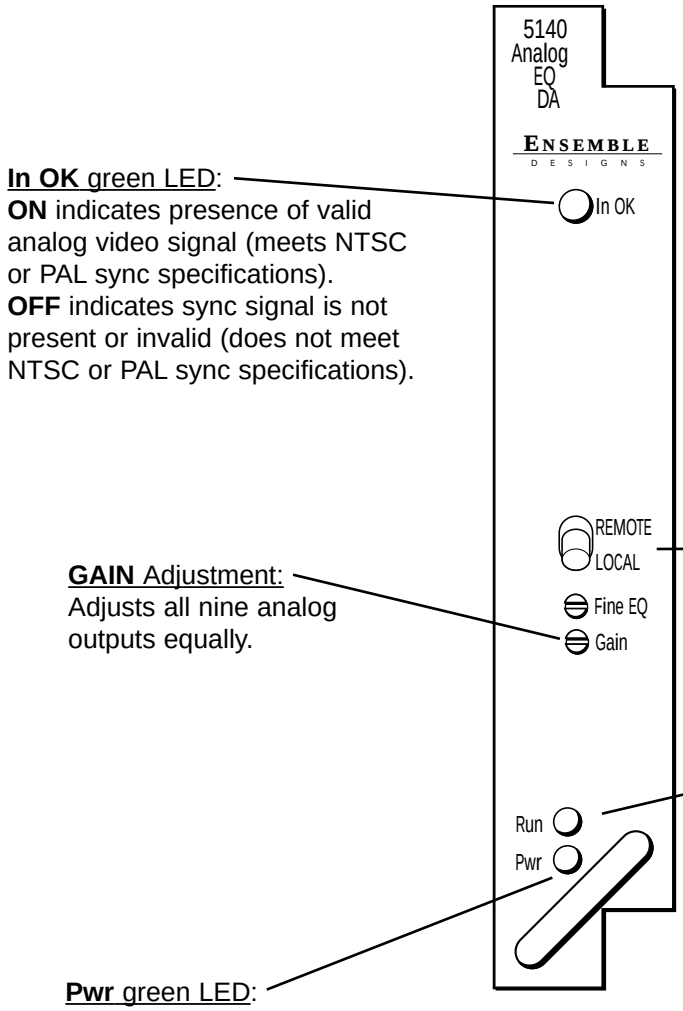
The purpose of equalization is to compensate for the losses that occur when a video signal travels through a length of coaxial cable. For lengths under 100 feet these losses are negligible, but for longer cables loss compensation is needed to preserve signal integrity. Without equalization or compensation, long cables will introduce both gain and frequency response errors.

Gain Adjustment

The gain errors are easy to correct at either the sending or receiving end of the cable by simply boosting the overall signal. The frequency response errors are a more complex problem. Although a long cable will attenuate the entire signal, the higher frequencies are more significantly affected than the lower frequencies. With composite video, this means that the chroma information carried in the subcarrier is rolled off with respect to the luminance content. Adjusting the gain of the path will not correct the frequency response.

Front Panel Controls and Indicators

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



In OK green LED:
ON indicates presence of valid analog video signal (meets NTSC or PAL sync specifications).
OFF indicates sync signal is not present or invalid (does not meet NTSC or PAL sync specifications).

GAIN Adjustment:
Adjusts all nine analog outputs equally.

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

CPU 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).

EQ Adjustment

The 5140 has two controls for cable equalization. The **Coarse Eq** control selects the approximate length of the cable to be equalized, while the **Fine Eq** control is used to precisely adjust the exact amount of equalization. The total equalization will be the sum of the **Coarse** and **Fine Eq** settings.

The **Coarse Eq** setting is made through Avenue PC or the TouchScreen when the module is in Remote. When the module is in Local, the **Coarse** setting is made with a rotary switch located in the center of the module. It will most likely be necessary to remove the module from the frame in order to adjust this switch. The Coarse ranges are:

0 - 200 feet	0 - 60 meters
200-400 feet	60 - 120 meters
400-600 feet	120 - 180 meters
600-800 feet	180 - 240 meters
800-1000 feet	240 - 300 meters

Once the **Coarse Eq** setting is made, the **Fine Eq** control is used to bring the total equalization up to the proper amount. The **Fine Eq** control has an adjustment range of 0 to 250 feet (0 - 75 meters).

The final results should be verified by passing a known, reference signal through the path. If using color bars, the **Fine Eq** would then be used to fine-tune the chroma amplitude setting. A Sweep or Multiburst signal can also be used to verify (and adjust if needed) for flat frequency response.

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.

Avenue PC Remote Configuration

The Avenue PC remote control menus for this module are illustrated and explained in this section. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack that came with the option.

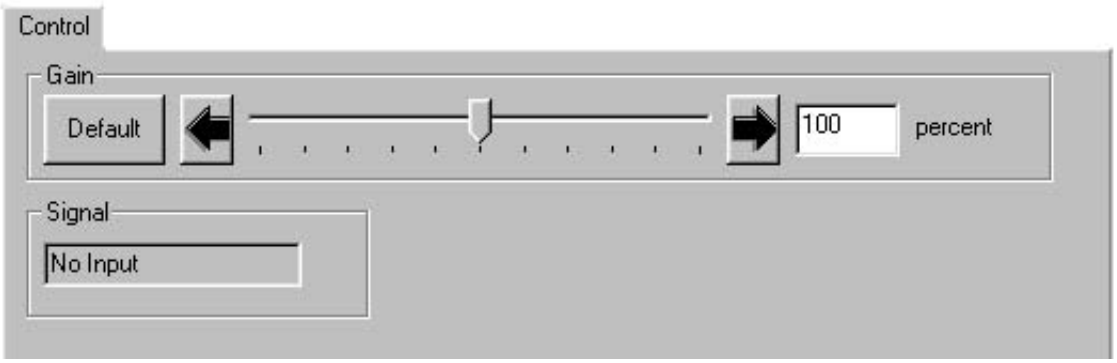
5140 Avenue PC Menus

In the **Control Menu** shown below, set the following parameters:

- **Gain** - set the gain of the analog output video to the desired setting (90-110 percent).

The following indicator is available in this menu:

- **Signal** - will indicate the input signal status of the module and will display **No Input** or **Input OK**.



In the **EQ Menu**, set the following parameters:

- **Cable Type** - 1694A or 8281, or other selection

- **Coarse EQ** - there are five choices:

  0 - 200 feet 0 - 60 meters

  200-400 feet 60 - 120 meters

  400-600 feet 120 - 180 meters

  600-800 feet 180 - 240 meters

  800-1000 feet 240 - 300 meters

- **Fine EQ** - set from 0 to 250 feet

Avenue Touch Screen Remote Configuration

Avenue Touch Screen remote control menus for this module are illustrated and explained below. For more information on using Avenue Touch Screen, refer to the Avenue Touch Screen data pack that came with the option.

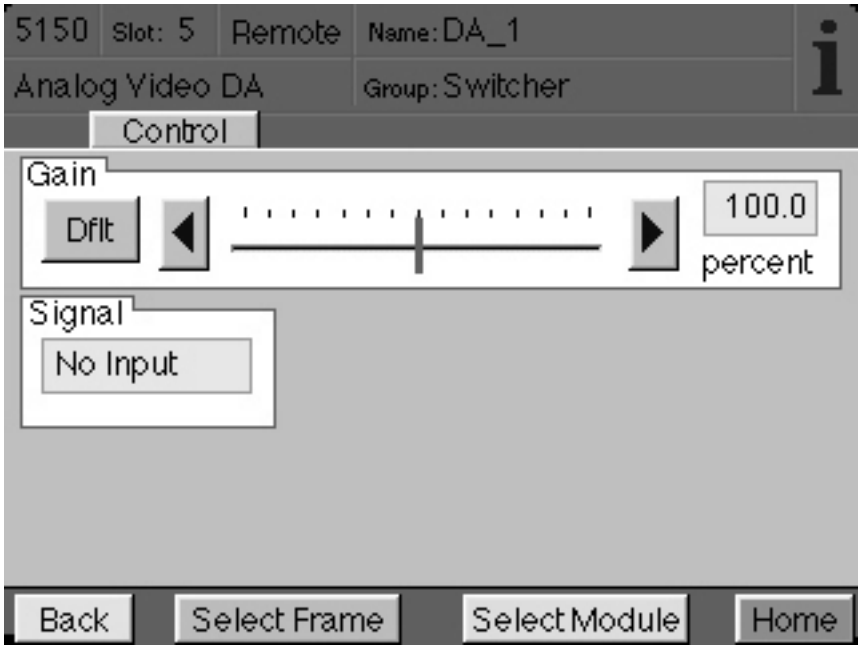
5140 Avenue Touch Screen Menus

In the **Control Menu** shown below, set the following parameters:

- **Gain** - set the gain of the analog output video to the desired setting (90-110 percent).

The following indicator is available in this menu:

- **Signal** - will indicate the input signal status of the module and will display **No Input** or **Input OK**.



In the **EQ Menu**, set the following parameters:

- **Cable Type** - 1694A or 8281, or other selection

- **Coarse EQ** - there are five choices:

  0 - 200 feet 0 - 60 meters

  200-400 feet 60 - 120 meters

  400-600 feet 120 - 180 meters

  600-800 feet 180 - 240 meters

  800-1000 feet 240 - 300 meters

- **Fine EQ** - set from 0 to 250 feet

TROUBLESHOOTING

To aid in troubleshooting, signal reference levels and presence, power and CPU status can be easily monitored from the front panel of this module using the indicators explained in the previous section.

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

- Signal presence and validity
- Power status
- Slot ID, Software Version and Board Revision

Refer to the overall troubleshooting tips given below for the **5140** 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 Control module is present. If not, try removing it and plugging it in again.
- System Control module may not be working properly if installed.

No analog signal out of module:

- Check cabling to input of module and presence of valid signal.

No In OK indication:

- Check for presence and validity of sync on input signal.

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.