AVENUE

Avenue™ signal integration system

Model 3710IS

HD/SD/ASI Electrical to Optical Converter

Model 3720IS

HD/SD/ASI Optical to Electrical Converter

Data Pack

ENSEMBLE DESIGNS

Revision 2.1 SW v1.0.0

This data pack provides detailed installation, configuration and operation information for the **3710IS HD/SD/ASI Electrical to Optical Converter** and the **3720IS HD/SD/ASI Optical to Electrical Converter** modules used in the **Avenue Intersection Frame** as part of the Avenue Signal Integration System.

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

- Module Overviews
- Applications
- Installation
- Cabling
- Module Configuration and Control
  - Front Panel Indicators
  - Avenue PC Remote Control
  - Avenue Touch Screen Remote Control
- Troubleshooting
- Software Updating
- Warranty and Factory Service
- Specifications

MODULE OVERVIEWS

3710IS HD/SD/ASI Electrical to Optical Converter

The Avenue 3710IS module is an electrical to optical converter that can be used with high definition, standard definition or ASI signals. The video input is converted to an optical signal and presented on an optical SC connector. This optical output can drive single mode fiber to a distance of 20 kilometers. With an optical launch power attenuator, multi-mode fiber can also be used.

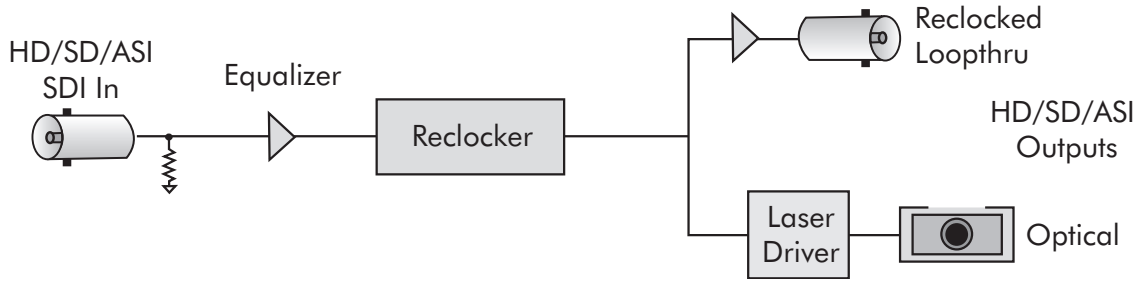
The 3710IS electrical to optical module is installed in the 1RU Intersection frame. The Avenue Intersection Frame has a standard, built-in System Control Module that enables the frame to tie into the Avenue Control System, just like any other frame or control surface. The Avenue Intersection frame can be used in conjunction with any Avenue remote control device or application or it can be controlled as an independent fiber optic I/O unit.

The 3710IS can be monitored locally or remotely with Avenue Touch Screens or Avenue PC Software. Alarm generators, configurable user levels, module lock out, and customizable menus are just some of the tools included in the Avenue Control System. There are no configurable parameters on the module.

Power is derived from the ± 12 volt frame power. It is regulated to the required +5 volts for the module by an 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.

All Avenue modules at software version 2.2.0 or later support SNMP (Simple Network Management Protocol) monitoring. For each applicable signal processing module, the module, signal, and reference status are reported. For complete details on using SNMP monitoring, refer to the **Avenue System Overview** in the manual that accompanies each frame.

Information for configuring the unit in networked frame and as a standalone unit controlled by the Control Module in the Intersection Frame is given in the **Intersection Frame Data Pack** that accompanies the frame.



3710 Electrical to Optical Converter Functional Block Diagram

3720IS HD/SD/ASI Optical to Electrical Converter

The Avenue 3720IS module is an optical to electrical converter that can be used with high definition, standard definition or ASI signals. The optical input is converted to electrical form and the resulting serial digital signal is reclocked and delivered to two BNC outputs.

The 3720IS electrical to optical module is installed in the 1RU Intersection frame. The Avenue Intersection Frame has a standard, built-in System Control Module that enables the frame to tie into the Avenue Control System, just like any other frame or control surface. The Avenue Intersection frame can be used in conjunction with any Avenue remote control device or application or it can be controlled as an independent fiber optic I/O unit.

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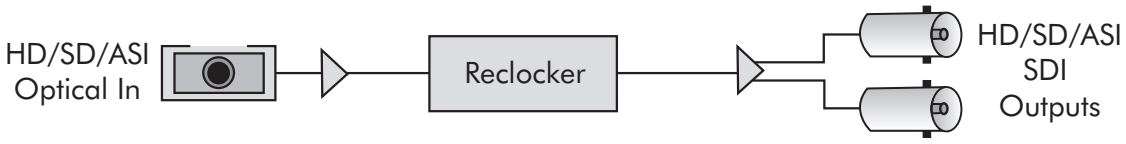


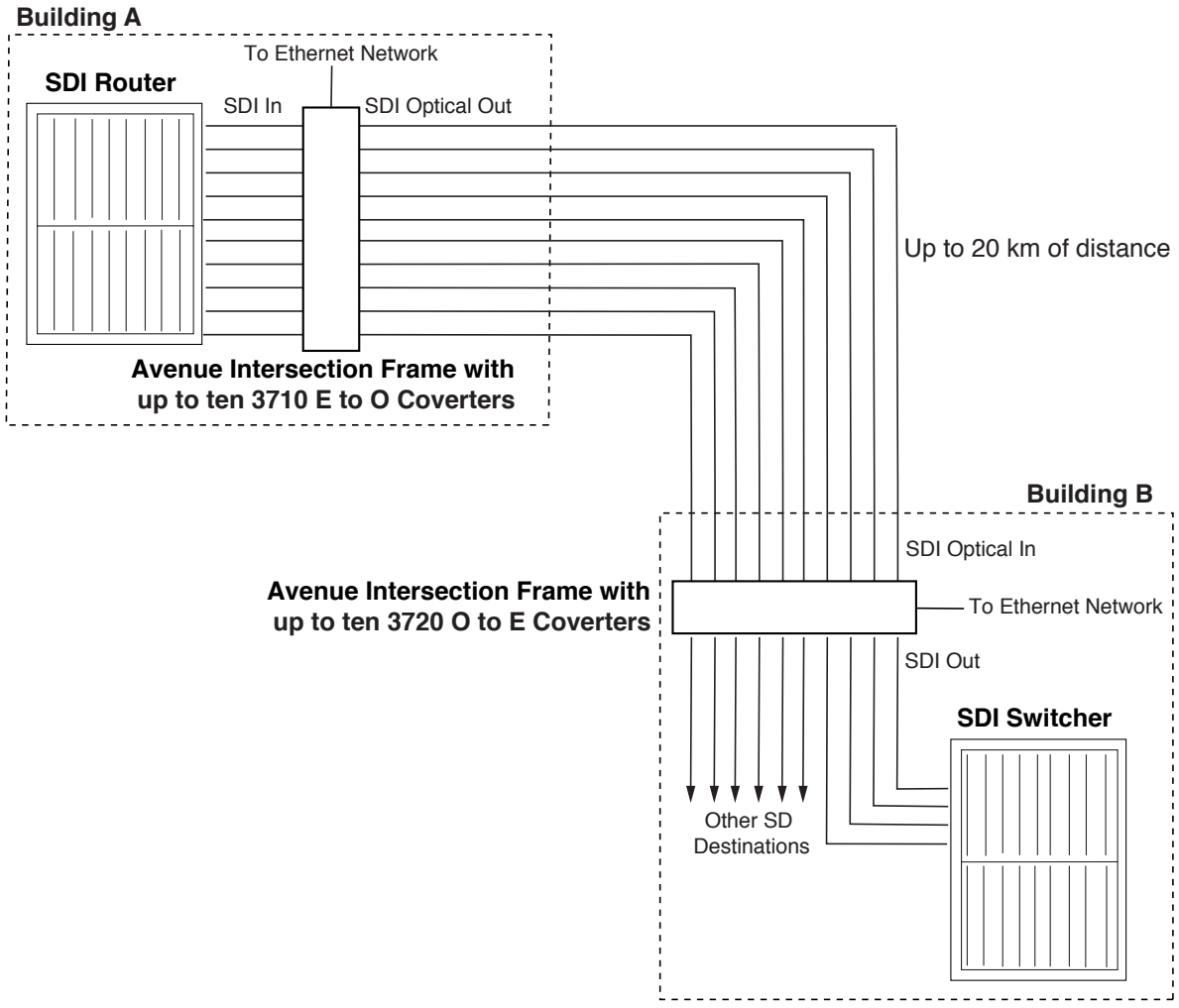
3720IS Optical to Electrical Converter Functional Block Diagram

APPLICATIONS

Electrical/Optical Conversion

The 3710 and 3720 modules can be integrated into an Avenue video network to allow conversion of video signals to and from fiber to for transmission of signals between long distances.

In the example shown below, an Avenue Intersection Frame with ten 3710 electrical to optical converters is used to convert electrical signals to optical from a router in Building A. The optical outputs from this building are routed to Building B (up to 20 km away) and are then fed to a 3720 Optical to Electrical converter. The signals are converted back to electrical and fed to a number of destinations needing the router feeds in Building B. The Avenue Intersection Frames can communicate with the entire network over Ethernet for monitoring of the inputs for each device in both buildings.



3710/3720 Electrical/Optical Converter Application

INSTALLATION

Plug the fiber optic module into any one of the slots in the Avenue Intersection Frame. The frame will hold up to ten modules in any combination. Refer to the **Avenue Intersection Frame Data Pack** that accompanies the frame for networking and other frame configuration and power information.

CABLING

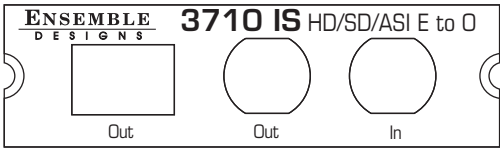
Refer to backplane diagrams of the modules below for cabling instructions.

CAUTION: This is a Class A Laser Product. The optical output emits invisible radiation. Do not stare directly into the optical output beam or view directly with optical instruments.

3710IS Electrical to Optical Converter

Connect an electrical input to the **In** BNC as shown below. The output signal is available as a reclocked electrical output on the **Out** BNC for looping through to other equipment and as an optical output from the **Out** optical connector.

The optical output is an SC type connector that carries the same ITU-R 601 component digital television signal as a directly modulated optical carrier in accordance with SMPTE 297M. It is capable of accepting both single mode (SM) and multimode (MM) optical fibers. Refer to the Specifications section for information on optical requirements.

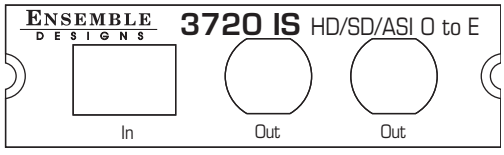


3710IS Electrical to Optical Converter Cabling

3720IS Electrical to Optical Converter

Connect an optical input to the **In** BNC as shown below. The output signal is available as an electrical output on the **Out** BNC and as an optical output from the **Out** optical connector.

The optical input is an SC type connector that carries the same ITU-R 601 component digital television signal as a directly modulated optical carrier in accordance with SMPTE 297M. It is capable of accepting both single mode (SM) and multimode (MM) optical fibers. Refer to the Specifications section for information on optical requirements.



3720IS Optical to Electrical Converter Cabling

MODULE CONFIGURATION AND CONTROL

The configuration parameters for each Avenue module (if required) must be set after installation. This can be done remotely using one of the Avenue remote control options or locally using the module front panel controls.

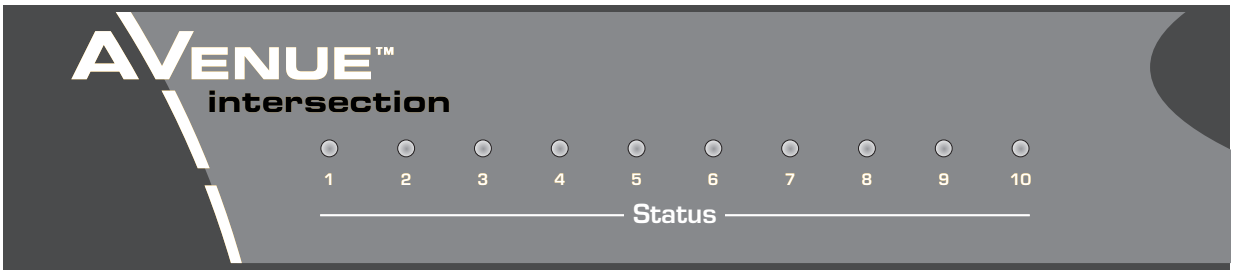
The 3710IS and 3720IS have no adjustments but input status of each module in the frame can be monitored from the frame front panel or using the remote control application Avenue PC or a control surface such as an Avenue Touch Screen.

For monitoring input status remotely using the Avenue PC option, refer to the **Avenue PC Remote Configuration** section of this document.

For monitoring input status remotely using the Avenue Touch Screen, refer to the **Avenue Touch Screen Configuration** section of this document.

Front Panel Controls and Indicators

The Status indicators on the front of the Avenue Intersection Frame are shown in the diagram below.



Avenue Intersection Frame Status Indicators

The status of the video input to each of the modules in the frame is reported with the ten Status LEDs as follows:

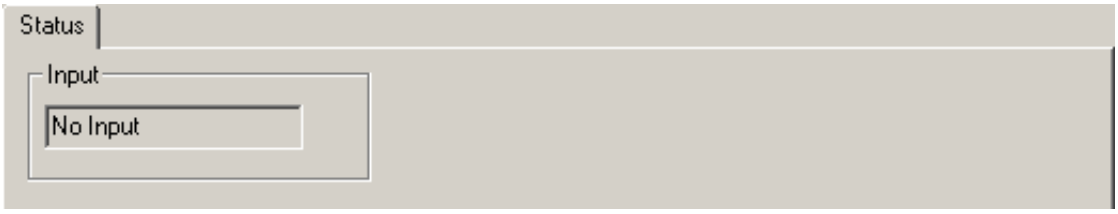
- **Green** – indicates the input is present and valid
- **Red** – the input is missing present but not valid
- **Off** – there is no module in this position

3710IS Avenue PC Remote Configuration

The Avenue PC remote control menu for this module is illustrated and explained below. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack.

3710IS Avenue PC Menu

The **Status** menu shown below allows you to monitor the Input status of the 3710IS module. The input status will be reported as **Present**, **Not Present**, or **No Input**.

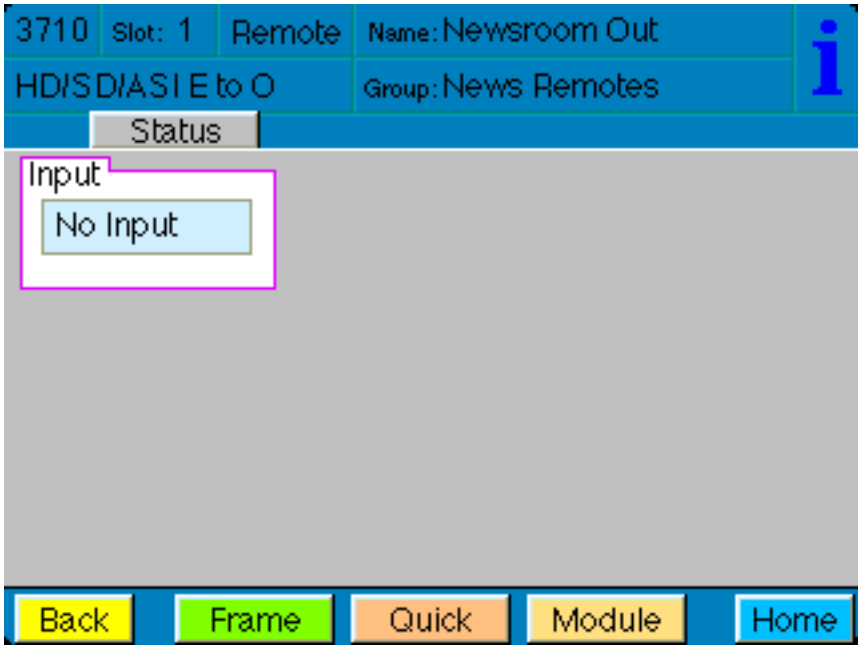


3710IS Avenue Touch Screen Remote Configuration

The Avenue Touch Screen remote control menu for this module is illustrated and explained below. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack.

3710IS Avenue Touch Screen Menu

The **Status** menu shown below allows you to monitor the Input status of the 3710IS module. The input status will be reported as **Present**, **Not Present**, or **No Input**.



3720IS Avenue PC Remote Configuration

The Avenue PC remote control menu for this module is illustrated and explained below. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack.

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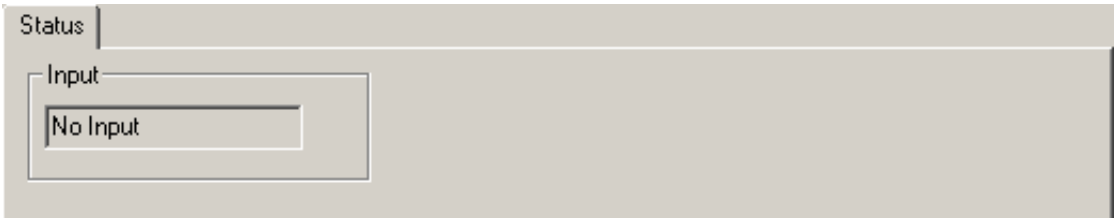
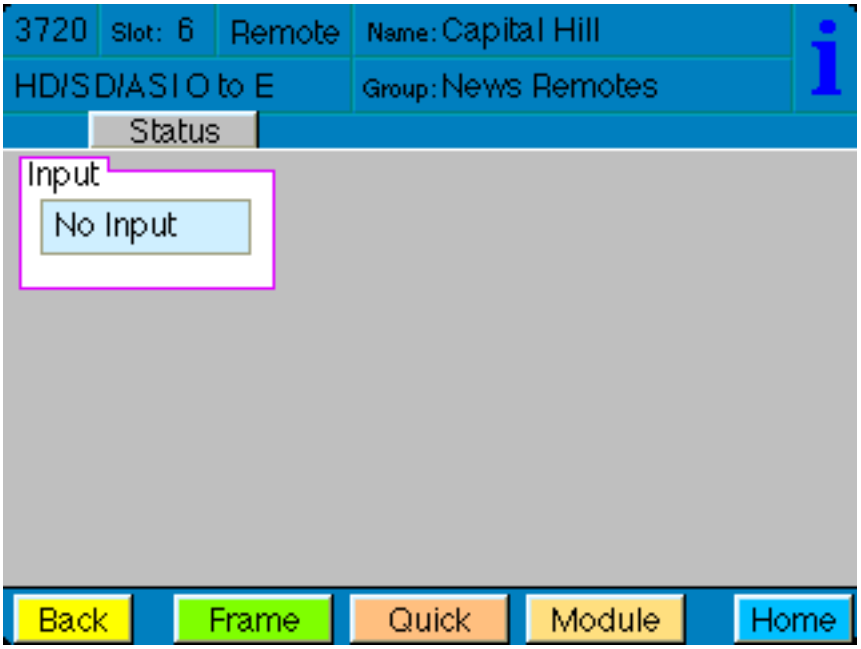


Avenue Touch Screen Remote Configuration

The Avenue Touch Screen remote control menu for this module is illustrated and explained below. For more information on using Avenue PC, refer to the Avenue PC Control Application Software data pack.

3720IS Avenue Touch Screen Menu

The **Status** menu shown below allows you to monitor the Input status of the 3710IS module. The input status will be reported as **Present**, **Not Present**, or **No Input**.



TROUBLESHOOTING

As a troubleshooting aid, the input signal presence, power and CPU status can be easily monitored from the front panel of this module using the indicators explained in the **Front Panel Switches and Indicators** section.

The following status items can be monitored using the Avenue Touch Screen Control Panel or PC Application:

- Input 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:

- System module may not be working properly. Refer to the Control section of the Avenue Intersection Frame data pack for CPU information.

No video out of module:

- Check status of **In** green LEDs. If not lit, 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 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@ensembledesigns.com
http://www.ensembledesigns.com

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

SPECIFICATIONS

3710 HD/SD/ASI Electrical to Optical Converter

Serial Digital Input:

Number:	One
Signal Type:	270 Mb/s SD Serial Digital (SMPTE 259M) or 1.485 Gb/s HD Serial Digital (SMPTE 274M or 296M)
Impedance:	75 Ω, BNC
Return Loss:	>15 dB
Max Cable Length:	
270 Mb/s	300 meters (Belden 1694A or equivalent)
1.485 Gb/s	100 meters (Belden 1694A or equivalent)

Serial Digital Output

Number:	One
Type:	HD/SD/ASI Serial Digital (follows input) SMPTE 259M or SMPTE 274M or 296M
Impedance:	75 Ω
Return Loss:	>15 dB
Output DC:	None (AC coupled)

Optical Output

Number:	One
Type:	HD/SD/ASI SMPTE 297M optical equivalent of 259M or HD SMPTE 274M or 296M
Wavelength:	1310 nm
Power:	-7 dBm
Fiber Type:	Single Mode Multi-mode compatible with 8 dB transmit end
Connector:	SC

General Specifications

Power Consumption:	< 5.0 Watts
Temperature Range:	0 to 40° C ambient (all specs met)
Relative Humidity:	0 to 95%, non-condensing
Altitude:	0 to 10,000 ft.
Fiber Type:	Single Mode Multi-mode compatible with 8 dB transmit end
Setup:	User Selectable

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

3720IS HD/SD/ASI Optical to Electrical Converter

Optical Input

Number:	One
Type:	SD and ASI (SMPTE 297M optical equivalent of 259M) or HD (SMPTE 274M or 296M)
Wavelength:	1310 nm
Receiver Sensitivity:	SD and ASI: -18 dB HD: -18 dB
Max Cable Length:	20 km
Fiber Type:	Single Mode Multi-mode compatible with 8 dB transmit end
Connector:	SC

Serial Digital Output

Number:	Two
Type:	270 Mb/s SD Serial Digital (SMPTE 259M) or 1.485 Gb/s HD Serial Digital (SMPTE 274M or 296M)
Impedance:	75 Ω
Return Loss:	>15 dB
Output DC:	None (AC coupled)

General Specifications

Power Consumption:	< 5.0 Watts
Temperature Range:	0 to 40° C ambient (all specs met)
Relative Humidity:	0 to 95%, non-condensing
Altitude:	0 to 10,000 ft.
Fiber Type:	Single Mode Multi-mode compatible with 8 dB transmit end

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