4500
ASI and SMPTE 310M Converter and MPEG Transport Processor

The 4500 MPEG Transport Stream Processor works with both DVB-ASI and SMPTE 310M bitstreams. It provides stream content analysis with support for both Priority 1 and Priority 2 test protocols of the ETR 290 DVB measurement guidelines. As a converter, it can translate ASI to 310M or 310M to ASI. Using the reference input, the output bitstream can be synchronized to a video or 10 MHz reference signal.

The 4500 module is useful in broadcast and transmission applications. The built-in transport stream analyzer detects whether the input constitutes a valid signal by checking for PAT, PMT, and PID packets. In addition to the ETR 290 test protocols, analysis and data rate for elemental streams is performed. Alarms can be generated via SNMP, Avenue PC, and contact closure outputs.

The 4500 acts as a Time Base Corrector to remove jitter and adjust transport streams to the precise, desired bit rate. The reference input to the 4500 allows the use of either analog video or a 10 MHz signal to synchronize the output of the module. This is of particular importance in broadcast applications where the quality of the symbol clock – both jitter and accuracy – bears directly on the modulation process.

Reference to the 4500 can be supplied from an Avenue 7400 or 9400 SPG with GPS Option in order to provide the ultimate clock accuracy. In this configuration, the 4500 is an ideal solution to frequency coordination for multi-transmitter systems like Single Frequency Networks (SFN) and mobile/handheld transmission services.

A CRC and Data Checksum packet can be seamlessly inserted into the stream by the 4500 to provide data path integrity testing at downstream points. Monitoring of these special packets can be performed by a second 4500 or an Avenue 4450, 4455, or 7455 ASI/310M Protection Switch. Data Integrity history is carried forward through the system to facilitate fault finding. These CRC packets provide an unequivocal test of data integrity on a transmission link by transmission link basis. This is easier, more accurate, and less expensive than using a complex MPEG analysis tool to troubleshoot a data path problem.

Set the output of the 4500 module to the desired signal type, either ASI or 310M. The module auto senses what type of signal is on the input and converts as needed. Advanced configuration in the Avenue Control System allows choosing which services on the input are passed on to the output.

Controls are easily accessed through an Avenue Control Panel, Avenue PC, GPIs, or front edge module controls.

For critical signals paths, consider using a 4445, 4450, 4455 or 7455 bypass protection switch.

Features

- **Convert SMPTE 310M to ASI or ASI to SMPTE 310M for broadcast and transmission**
- **Built-in signal analyzer detects Signal Presence, Program Packets, PMT, PAT and PIDs**
- **Deliver a pristine signal to your transmitter for optimum transmitter performance**
- **Reference input used to correct the 310M symbol clock and remove jitter**
- **Clock management for Single Frequency Networks (SFN)**
- **CRC and Checksum data integrity testing**
- **ETR 290 Compliant for both Priority 1 and Priority 2**
- **Stream monitor alarms via TCP-IP, SNMP, RS-232 and GPI**
- **Remote control and monitoring**

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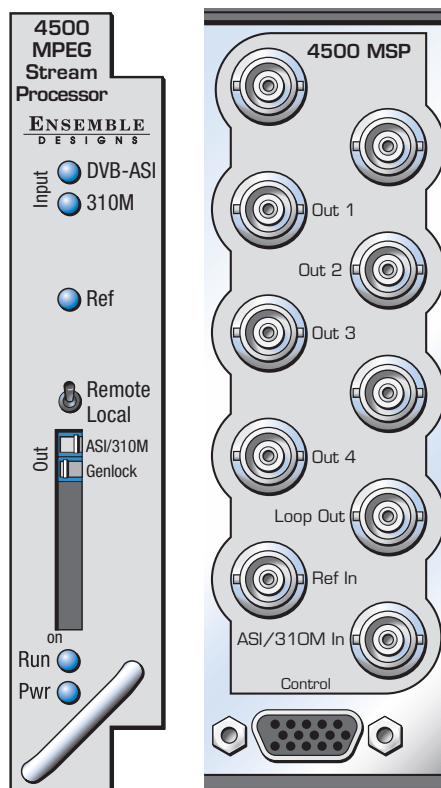
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Input Signal

Number	One
Signal Type	DVB-ASI at 270 Mb/s or SMPTE 310M

Loopback

Number	One
Impedance	75 Ω

Output Signal (processed)

Number	Four
Signal Type	DVB-ASI at 270 Mb/s or SMPTE 310M, selectable
Impedance	75 Ω

Reference Input

Number	Two: External or Frame Master Reference
Signal Type	PAL or NTSC composite video or 10 MHz 1V P-P sine or square
Return Loss	>40 dB (applies to external ref input)

Signal Analysis

ETR 290 Compliant, Priority 1 and Priority 2
Data integrity CRC test

Clock Accuracy

Internal Reference (TCXO)

Freq Error	<0.1 ppm
	$<10^{-7}$

External reference follows Ref Source
10^{-12} possible with GPS grade reference

General Specifications

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

DVB-ASI / SMPTE 310M Input

Reclocked Loopback Output

Input Acquisition

Incoming CRC Analysis

CRC History Forwarding

Stream Analysis

Status and Alarms SNMP, TCP/IP, GPI

Processed Outputs

Master Reference

Clock Time Base Correction

Output Formatting

Outgoing CRC Insertion

Ext Ref Input

Bitstream Clock Generation

Internal Precision Ref