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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version	Nov 06
0.2	Fixed Minor Typos	Feb 07
0.3	Fixed formatting	Jul 07

1. OVERVIEW

The 500DA-L is a re-clocking distribution amplifier for use in the Evertz high density digital looping frame (the 500FR-L-D). The 500DA-L supports all data rates included in SMPTE 259M (143 Mb/s - 360 Mb/s) and SMPTE 344M (540 Mb/s), as well as DVB-ASI. The 500DA-L also features auto-equalized inputs with eight serial outputs.

When inserted into the 500FR-L-D exponent Frame (Digital with Loop Through), a passive loop output is available to enable cascading of multiple DA cards. The passive loop is implemented on the 500FR-L-D back-plane. As a result, a failure of any single card or the removal of any single card does not affect any other cards being used for signal distribution. Up to 16 500DA-L cards may be cascaded error free in the 500FR-L-D frame.

The 500DA-L also features a re-clocker bypass to support operation with non-standard data rates, such as SMPTE 310M and others.

Features

- Automatic equalization, rate detection and re-clocking for all SMPTE 259M (143 Mb/s - 360 Mb/s) and SMPTE 344M (540 Mb/s) data rates
- Jumper selectable DVB-ASI mode of operation
- Jumper selectable non re-clocked mode for SMPTE 310M and other non-standard date rates
- Passive loop output when inserted into the 500FR-L-D
- Error free cascading of up to 16 modules within the 500FR-L-D
- Fully hot-swappable from front of frame with no BNC disconnect
- Independent isolated output drivers to ensure no cross channel loading effects (ie. no need to terminate unused outputs)
- Outputs maintain polarity from input to output for DVB-ASI applications
- Tally output on Frame Status bus upon loss of input signal
- VistaLINK® - capable for remote monitoring via SNMP (using VistaLINK® PRO) when installed in 500FR-L-D with 500FC VistaLINK® Frame Controller

Input:

- SMPTE 259M (143 Mb/s - 360 Mb/s), SMPTE 344M (540 Mb/s), DVB-ASI and SMPTE 310M (non-reclocked)
- Return Loss > 15 dB to 540 Mb/s
- Auto equalizing to 400m @ 270 Mb/s (Belden 1694)

Outputs:

- 8 re-clocked outputs
- 1 passive loop out for cascading multiple cards in 500FR-L-D Card Edge LEDs:
  - Reclocker Rate
  - DVB-ASI Enabled
  - Reclocker Enabled
  - Max Equalization Warning
  - Module Health Status

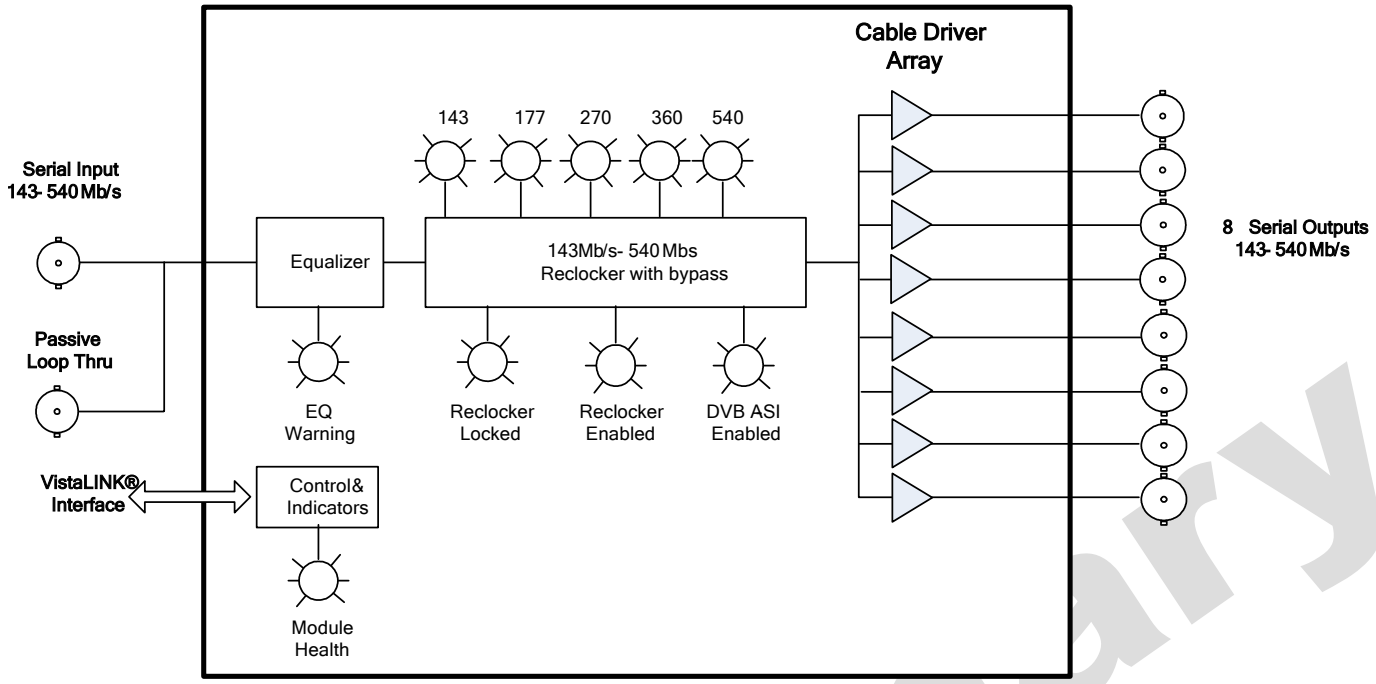

Figure 1-1: 500DA-L Block Diagram

2. INSTALLATION

The 500DA-L comes with a companion rear panel overlay that can be placed over the rear panel BNC connectors to identify their function. For information on inserting the module into the frame see section 3 of the 500FR chapter.

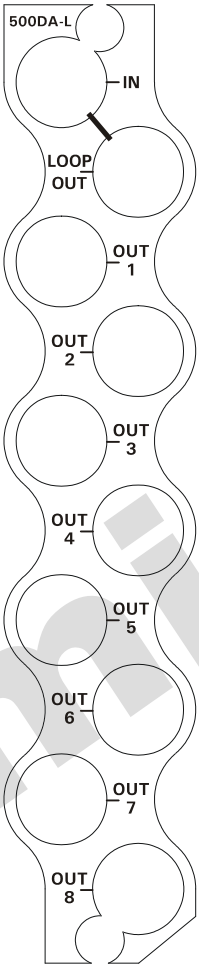

Figure 2-1: 500DA-L Rear Panel Overlay

IN The input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M or DVB-ASI standards. Refer to section 5.3 for information on selecting the correct video standard.

LOOP The loop through BNC connector for 10-bit serial digital video signals is compatible with the SMPTE 259M or DVB-ASI standard. The output signal is the same as the input video signal (without any reclocking). Refer to section 5.1 for information regarding loop through connections.

OUT 1 to 8 There are eight BNC connectors with reclocked serial component video outputs, compatible with the SMPTE 259M or DVB-ASI standards.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

Standards:	SMPTE 259M (143 Mb/s – 360 Mb/s) SMPTE 344M (540 Mb/s) SMPTE 310M (19.4 Mb/s) – non-reclocked DVB-ASI
Connector:	BNC per IEC 60169-8 Amendment 2
Equalization:	400m @ 270 Mb/s
Return Loss:	> 15dB up to 540 Mb/s

3.2. SERIAL VIDEO OUTPUTS

Number of Outputs:	8
Passive Loop Outputs:	1
Connector:	BNC per IEC 60169-8 Amendment 2
DC Offset:	0V ±0.5V
Rise and Fall Time:	200ps nominal
Return Loss:	> 15 dB up to 540 Mb/s
Wide Band Jitter:	< 0.2 UI

3.3. ELECTRICAL

Voltage:	+ 12VDC
Power:	5 Watts
EMI/RFI:	Complies with FCC Part 15 Class A, EU EMC Directive

3.4. PHYSICAL

Number of slots:	1

4. STATUS LEDS

The 500DA-L has twelve LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 5-1 shows the location of the LEDs.

Two large LEDs on the front of the board indicate the general health of the module.

LOCAL FAULT: This Red LED indicates poor module health and will be On during the absence of a valid input signal, or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be On when a valid input signal is present and the board power is good.

There are eight small LEDs that indicate the status of the equalizer and reclocker.

LOCK: This Green LED will be On when there is a valid signal present at the module input.

CABLE LENGTH WARNING: This Yellow LED will be On when the cable equalizer detects that the cable length is greater than a preset threshold (factory set for 100 meters of Belden 1694 or equivalent cable).

RECLOCKER BYPASS: This Green LED will be On when the reclocker rate is disabled by jumper J2.

RECLOCKER RATE: There are 7 LEDs that indicate the rate (143, 177, 270, 360 or 540 Mb/s or DVB-ASI) that the reclocker is currently using.

5. JUMPERS AND USER ADJUSTMENTS

Figure 5-1: LED and Jumper Locations

5.1. CONNECTING LOOP THRU

The LOOP BNC connector is used to connect multiple 500DA-L modules to the same input video signal. This is accomplished by connecting the LOOP connector of the source module to the IN connector on the next module. This is repeated for the desired number of modules. The last module in the looped chain **MUST HAVE** the LOOP connector terminated with 75Ω.

The last module in the looped chain MUST BE terminated with 75Ω.

5.2. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

The FRAME STATUS jumper J1, located at the front of the module, determines whether local faults (as shown by the Local Fault indicator) will be connected to the 500FR-L-D frame's global status bus.

FRAME STATUS: To monitor faults on this module with the frame status indicators (on the power supply's FRAME STATUS LED's and on the Frame's Fault Tally output), install this jumper in the On position.

When this jumper is installed in the Off position local faults on this module will not be monitored.

5.3. SELECTING THE RECLOCKING RATE

The SUPPORT jumper J3, located at the front of the module, determines whether the module will operate as a reclocking distribution amplifier with SMPTE 292M (1.5 Gb/s), SMPTE 259M or 344M (143 Mb/s - 540 Mb/s) or DVB-ASI video signals.

SUPPORT: To set the module to operate with SMPTE 259M or SMPTE 292M signals, install the jumper in the 177 position.

To set the module to operate with DVB-ASI signals, install the jumper in the DVB position.

5.4. SELECTING NON-RECLOCK MODE

The BYPASS SELECT jumper J2, located at the front of the module, determines whether the module will operate as a reclocking amplifier with SMPTE 259M or 344M (143 Mb/s - 540 Mb/s) or DVB-ASI video signals, or as a non-reclocking distribution amplifier with other data rates.

BYPASS SELECT: To operate the module in reclocking mode, install the jumper in the RECLOCK position.

To operate the module in non-reclocking mode, install the jumper in the BYPASS position.

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