

500DA-HD Series HD Serial Digital Reclocking Distribution Amplifier

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REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	Original Version	Aug 02
1.1	Minor Typos fixed, cable length spec changed to 100m	Nov 02
1.2	Add 500DA-HD-L (Loop Thru) to manual.	Jan 06

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Although every attempt has been made to accurately describe the features, installation and operation of this product in this manual, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this manual is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

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1. OVERVIEW

The Evertz 500DA-HD series Reclocking Distribution Amplifiers provide reliable distribution of your HDTV and serial digital video signal at rates of 1.5 Gb/s and 143 Mb/s to 540 Mb/s in applications where a large quantity of outputs are required. The DA features an auto-equalized input with eight reclocked outputs.

The 500DA-HD series has been designed for use as a SMPTE 292M (1.5 Gb/s), DVB-ASI or SMPTE 259M distribution product. There are two versions of the 500DA-HD series distribution amplifiers.

The standard 500DA-HD version has a terminating input and must be housed in the standard 500FR **exponent** Frame that will hold up to 16 modules. The 500DA-HD version may also be used in the S501FR stand alone enclosure.

The 500DA-HD-L version has a passive loop through input and must be housed in the 500FR-L-D **exponent** Digital Loop Thru Frame that will hold up to 16 modules. The 500DA-HD-L allows for a single 259M SDI input signal to be looped through up to 16 modules providing up to 128 SDI serial outputs. The 500DA-HD-L allows for a single 292M HDSDI input signal to be looped through up to 12 modules providing up to 96 serial outputs. One of these HDSDI outputs can be looped through the remaining 4 modules providing a total of 127 HDSDI serial outputs.

Features:

- Normal mode for SMPTE 259M (143 $\Rightarrow$ 540 Mb/s) or SMPTE 292M (1.5 Gb/s) signals - autodetects correct bitrate
- Jumper Selectable mode for DVB-ASI
- Jumper selectable for Non-Reclock mode
- Fully hot-swappable from front of frame with no BNC disconnect required
- Independent isolated output drivers to ensure no cross channel loading effects (i.e. no need to terminate unused outputs)
- Tally output on Frame Status bus upon loss of input signal for quality monitoring
- VistaLINK[®] - capable for remote monitoring via SNMP (using VistaLINK[®] PRO) when installed in 500FR (or 500FR-L-D) frame with 500FC VistaLINK[®] Frame controller.

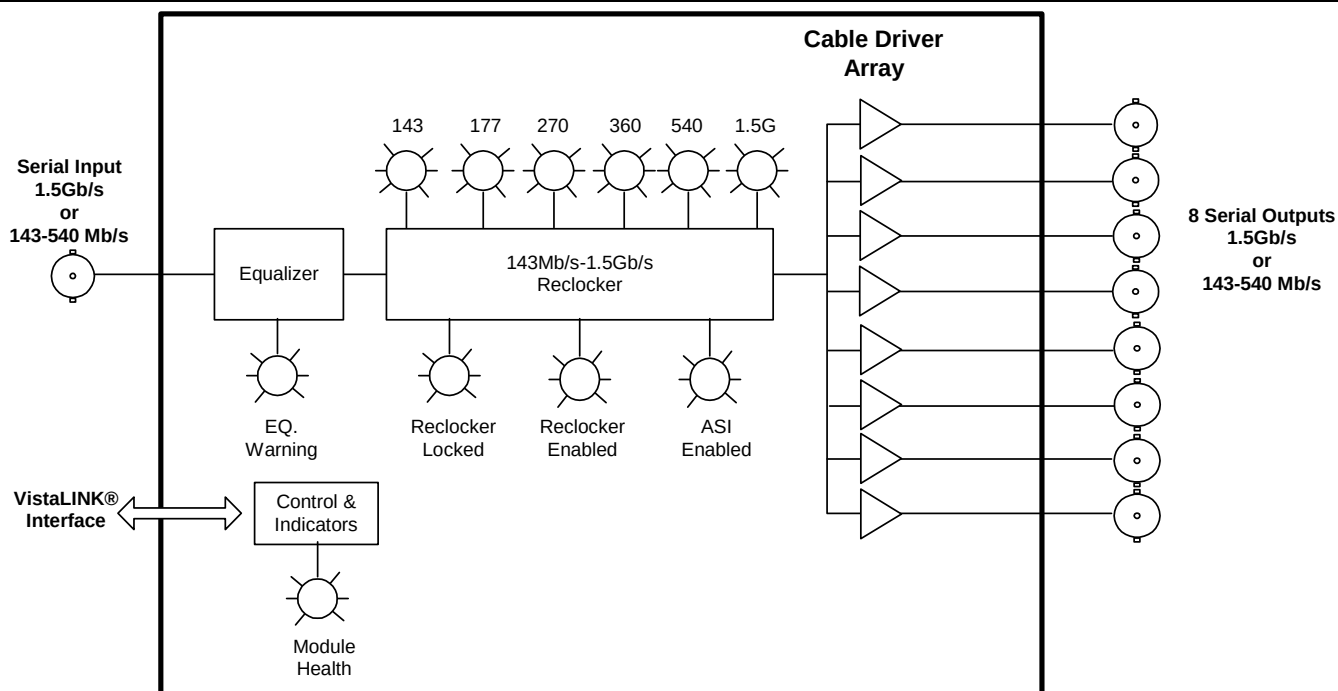


Figure 1: 500DA-HD Block Diagram

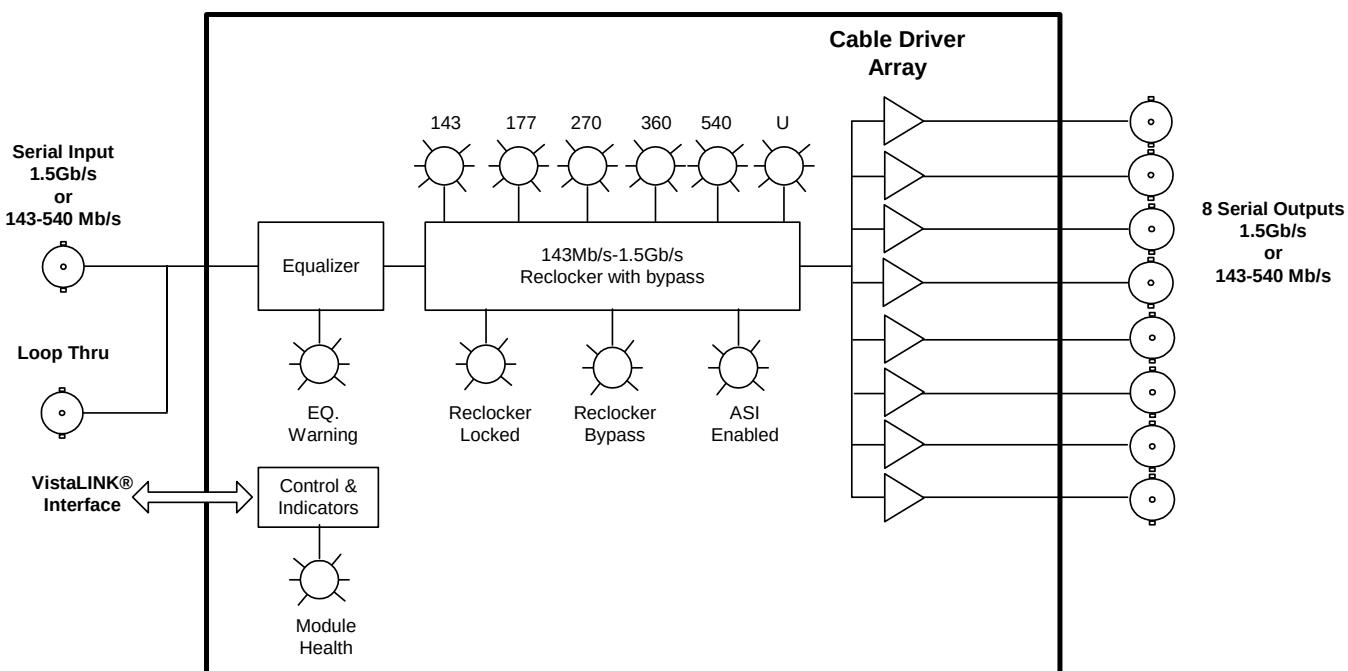


Figure 2: 500DA-HD-L Block Diagram

2. INSTALLATION

The 500DA-HD series modules come 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 the 500FR chapter section 3.

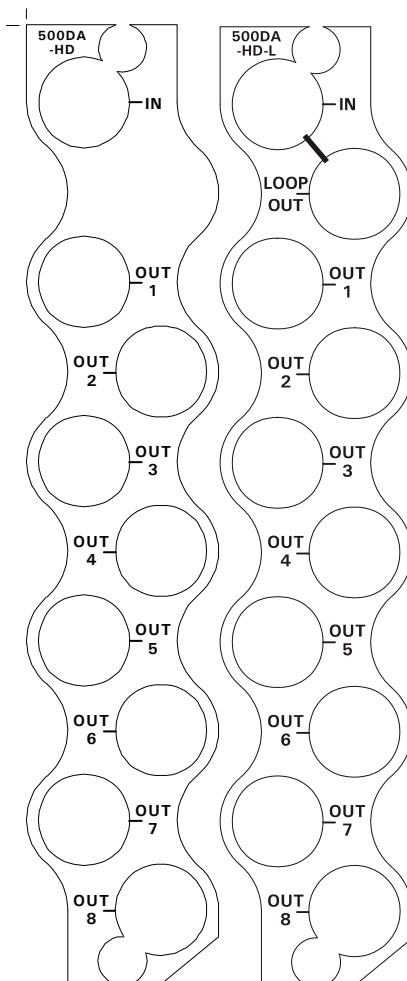


Figure 3: 500DA-HD and 500DA-HD-L Rear Panel Overlay

2.1. 500DA-HD CONNECTIONS

IN Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M, DVB-ASI or SMPTE 292M standard. See section 5.2 for information on choosing the correct video standard. This input is terminated with 75 ohms.

OUT 1 to 8 There are eight BNC connectors with reclocked serial component video outputs, compatible with the SMPTE 259M / DVB-ASI, or SMPTE 292M standard.

2.2. 500DA-HD-L CONNECTIONS

IN Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M, DVB-ASI or SMPTE 292M standard. See section 5.2 for information on choosing the correct video standard. This input is connected internally to the LOOP out connector and is NOT terminated.

LOOP OUT Loop thru BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M, DVB-ASI or SMPTE 292M standard. The **LOOP OUT** BNC connector is used to connect multiple 500DA-HD-L modules to the same input video signal. This is accomplished by connecting the **LOOP OUT** connector of source module to the **IN** connector the next module. This is repeated for the desired number of modules. Up to 16 modules may be looped for SMPTE 259M or DVB-ASI signals or up to 12 modules may be looped for SMPTE 292M signals.



The **LOOP OUT** connector on the last module in the looped chain **MUST BE** terminated with 75 ohms (a high quality terminator is recommended).

OUT 1 to 8 There are eight BNC connectors with reclocked serial component video outputs, compatible with the SMPTE 259M / DVB-ASI, or SMPTE 292M standard.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

3.1.1. 500DA-HD version

Standards:	SMPTE 292M, SMPTE 259M A, B, C, D (143 to 540 Mb/s) or DVB-ASI
Connector:	1 BNC per IEC 60169-8 Amendment 2
Equalization:	Automatic to 350m @ 270Mb/s, 100m @1.5Gb/s with Belden 1694 (or equivalent)
Return Loss:	> 15 dB up to 1.0 Gb/s > 10 dB up to 1.5 Gb/s

3.1.2. 500DA-HD-L version

Standards:	SMPTE 292M, SMPTE 259M A, B, C, D (143 to 540 Mb/s) or DVB-ASI
Connector:	BNC loop per IEC 60169-8 Amendment 2
Return Loss:	>12 dB up to 1.5 Gb/s (single module) >7 dB (16 modules)
Cable Length:	90m (single module) 50m (up to 6 modules) 5m (up to 12 modules)

3.2. SERIAL VIDEO OUTPUTS

Number of Outputs: 8 Reclocked
Connector: BNC per IEC 60169-8 Amendment 2
Signal Level: 800mV nominal
DC Offset: 0V $\pm$ 0.5V
Rise and Fall Time: 200ps nominal
Overshoot: < 10% of amplitude
Return Loss: > 15 dB up to 1.5 Gb/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-HD series DA has twelve LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 4 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, 1.5 Gb/s or DVB-ASI) that the reclocker is currently using.

5. JUMPERS AND USER ADJUSTMENTS

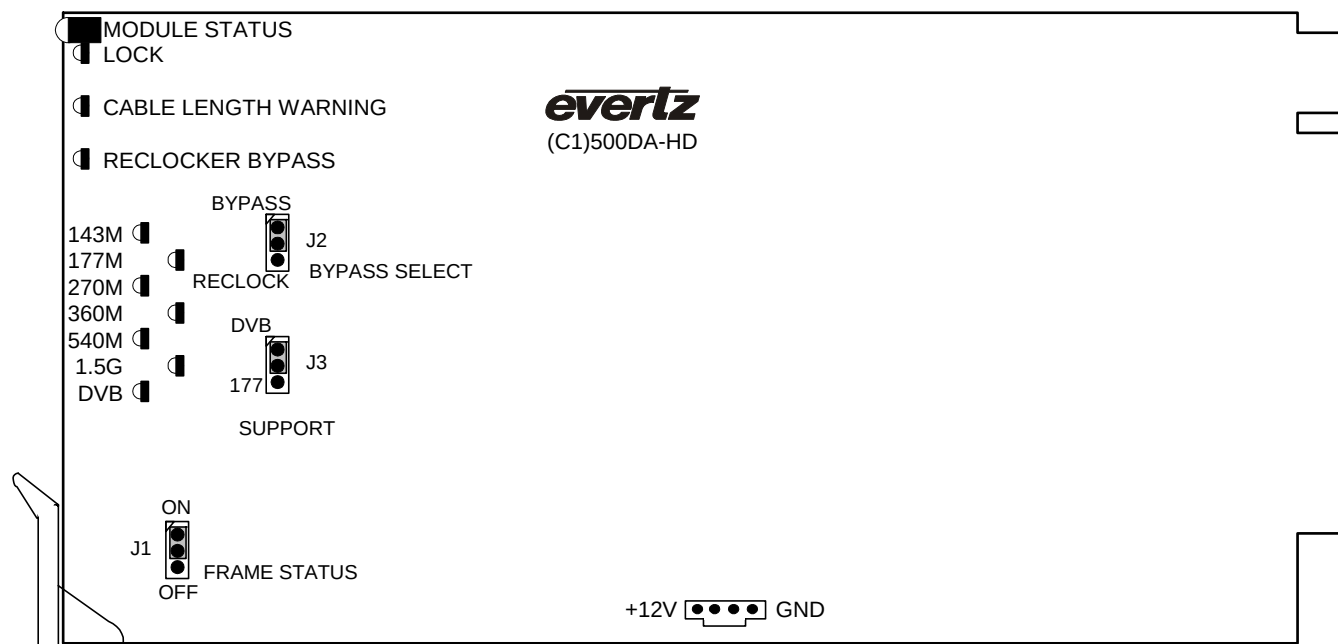


Figure 4: LED and Jumper Locations

5.1. 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 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.

5.2. 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 to 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 module to operate with DVB-ASI signals install the jumper in the DVB position.

5.3. 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 292M (1.5 Gb/s), SMPTE 259M or 344M (143 to 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.

6. VistaLINK[®] REMOTE MONITORING/CONTROL

6.1. WHAT IS VistaLINK[®] ?

VistaLINK[®] is Evertz's remote monitoring and control capability over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. For monitoring there needs to be a detecting device that automatically reports all errors to a central alarm and error logging station. We also need to be able to interrogate individual detector devices from the central station to determine the status of individual channels. Finally, we need to be able to configure devices in the network from the central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager also known as a Network Management System (NMS) is a computer running special software that communicates with the devices in the network. Evertz VistaLINK[™] Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz VistaLINK[®] enabled products.
2. Managed devices (such as 500DA-HD), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK[®] enabled 500 series modules reside in the 3RU 500FR or 500FR-L-D **exponent** Frame and communicate with the manager via the 500FC VistaLINK[®] frame controller module, which serves as the Agent.
3. A virtual database known as the Management Information Base (MIB) lists all the variables being monitored and which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

For more information on connecting and configuring the VistaLINK[®] network, see the 500FC Frame Controller chapter.

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