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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original Version	Feb 03
1.1	Changed Cable length specification	Mar 03

1. OVERVIEW

The Evertz 500DA2Q-HD Dual HD Reclocking Distribution Amplifier provides the highest density DA in the industry allowing up to 32 HD or SDI Distribution amplifiers in a 3RU space. It provides inexpensive distribution of your SMPTE 292M (1.5 Gb/s), SMPTE 259M (143 to 360 Mb/s), SMPTE 344M (540 Mb/s), DVB-ASI or SMPTE 310M (19.4 Mb/s) or any other SDI signal within the 143 Mb/s to 1.5 Gb/s range. The 500DA2Q-HD features two auto-equalized inputs and can be configured either as a single DA with eight reclocked outputs or as two separate DAs with four outputs each. In the case of dual operation, each DA can be individually set via jumpers for either reclocking or non-reclocking.

The 500DA2Q-HD is housed in the 500FR *exponent* Frame that will hold up to 16 modules.

Features:
- Normal mode for SMPTE 292M (1.5 Gb/s) SMPTE 259M (143 to 360 Mb/s) or SMPTE 344M (540 Mb/s) signals - autodetects correct bit rate
- Jumper selectable mode for DVB-ASI
- Jumper selectable non-reclock mode for SMPTE 310M (19.4 Mb/s) signals or any other SDI signal within the 143 Mb/s to 1.5 Gb/s range
- Configurable as 1 DA with 8 outputs or 2 DAs with 4 outputs each.
- 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)
- Module health and 2 x 4 Mode Status LEDs
- Reclocker(s) Locked, Carrier Present and Video Standard LEDs for each DA channel
- Tally output on Frame Status bus upon loss of input signal
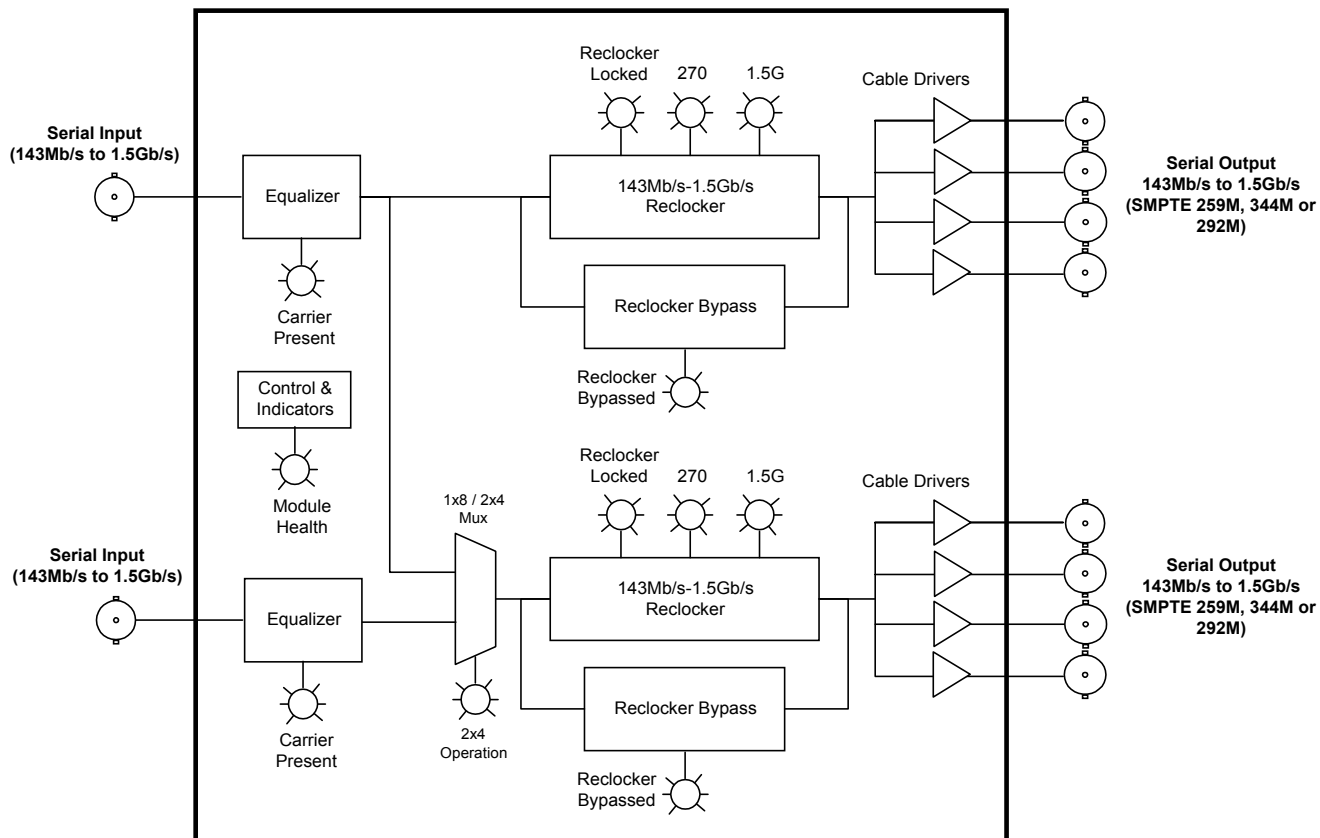
Figure 1: 500DA2Q-HD Block Diagram

2. INSTALLATION

The 500DA2Q-HD 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 the 500FR chapter section 3.
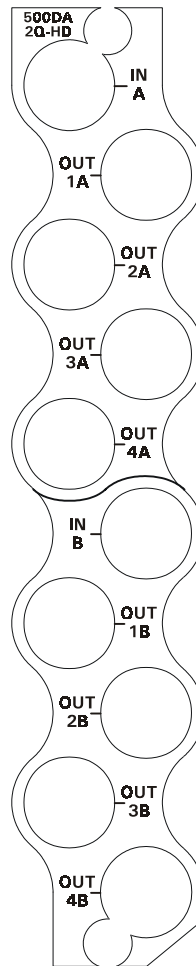
Figure 2: 500DA2Q-HD Rear Panel Overlay

IN A & IN B Input BNC connectors for 10-bit serial digital video signals compatible with the SMPTE 292M, SMPTE 259M, SMPTE 344M and SMPTE 310M (19.4 Mb/s) standards or any SDI signal between the range of 143Mb/s to 1.5 Gb/s.

OUT 1A to 4A These four BNC connectors are used to output reclocked serial component video from IN (A).

OUT 1B to 4B These four BNC connectors can be configured to output reclocked serial component video from IN (A) when jumper J7 is set to SINGLE 1x8 mode. When jumper J7 is set to DUAL 1x4 mode, these connectors output reclocked serial component video from IN (B) See Figure 3 for the location of J7.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

Standards:
Reclocked: SMPTE 292M (1.5 Gb/s).
SMPTE 259M (143 to 360 Mb/s).
SMPTE 344M (540 Mb/s)
DVB-ASI
Non-reclocked: SMPTE 310M (19.4 Mb/s)
Any SDI signal in the143Mb/s to 1.5 Gb/s range
Connectors: 2 BNC per IEC 169-8
Equalization: Automatic to 100m @ 1.5 Gb/s with Belden 1694A or equivalent cable on input A
Automatic to 90m @ 1.5 Gb/s with Belden 1694A or equivalent cable on input B
Return Loss: >10 dB up to 1.5 Gb/s

3.2. SERIAL VIDEO OUTPUTS

Number of Outputs: (mode set by J7)
2 x 4 Mode: 4 reclocked from each input
Reclockers can by bypassed separately for each input
1 x 8 Mode: 8 reclocked from Input A (1)
Reclockers can by bypassed
Connector: BNC per IEC 169-8
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 200ps nominal
Overshoot: <10% of amplitude
Return Loss: >10 dB up to 1.5 Gb/s
Jitter: < 0.2 UI

3.3. ELECTRICAL

Voltage: + 12VDC
Power: 6 Watts
EMI/RFI: Complies with FCC Part 15 Class A, EU EMC Directive

3.4. PHYSICAL

Number of slots: 1

4. STATUS LEDS

The 500DA2Q-HD has thirteen LED Status indicators on the front card edge to show operational status of the card at a glance. **Error! Reference source not found.** shows the location of the LEDs.

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

STATUS: 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 STATUS indication can also be reported to the frame by setting the FRAME STATUS jumper J1 to the ON position.

MODULE OK: This Green LED indicates good module health. It will be On when a valid input signal is present at either reclocker (signal present on input 1 in 1x8 mode, signal present on input 1 or input 2 in dual 1x4 mode), and board power is good.

There are three small LEDs at the top of the module that indicate the status of the reclockers and the mode of the DA.

INPUT 1 RECLOCKER LOCKED: This Green LED will be On when reclocker 1 is locked to a valid signal present at the module input 1.

INPUT 2 RECLOCKER LOCKED: This Green LED will be On when reclocker 2 is locked to a valid signal present at the module input 2 when the module is in Dual 1x4 mode. It will be on when reclocker 2 is locked to a valid signal present at the module input 1 when the module is in Dual 1x4 mode.

DUAL 1x4 MODE: This Green LED will be On when the DUAL 1x4 mode is set via J7.

4.1. INPUT 1 INDICATORS

There are three small LEDs in the middle of the module that indicate the status of equalizer for input 1 and the reclocker 1 rate.

CARRIER PRESENT: This Green LED will be On when cable equalizer 1 detects that there is a signal present at input 1.

270 Mb/s: This Green LED will be On when reclocker 1 is locked to a valid SMPTE 259M-C (270 Mb/s) SDI signal.

1.5 Gb/s: This Green LED will be On when reclocker 1 is locked to a valid SMPTE 292M (1.5 Gb/s) HD SDI signal.

RECLOCKER BYPASS: This Green LED will be when reclocker 1 is in the bypass (non-reclock) mode.

4.2. INPUT 2 INDICATORS

There are three small LEDs at the bottom of the module that indicate the status of equalizer for input 2 and the reclocker 2 rate.

CARRIER PRESENT: This Green LED will be On when cable equalizer 2 detects that there is a signal present at input 2.

270 Mb/s: This Green LED will be On when reclocker 2 is locked to a valid SMPTE 259M-C (270 Mb/s) SDI signal.

1.5 Gb/s: This Green LED will be On when reclocker 2 is locked to a valid SMPTE 292M (1.5 Gb/s) HD SDI signal.

RECLOCKER BYPASS: This Green LED will be when reclocker 2 is in the bypass (non-reclock) mode.

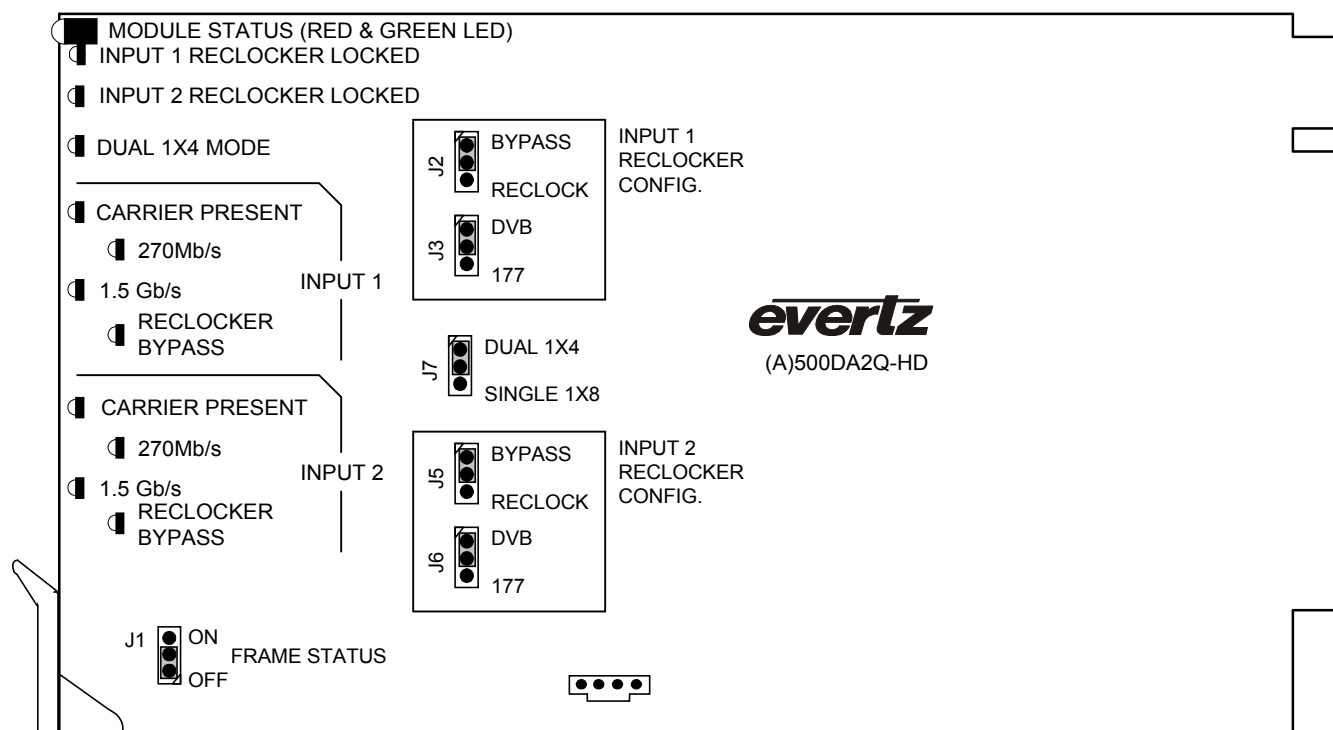## 5. LOCATION OF LEDs AND JUMPERS

Figure 3: 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 OPERATING MODE

DA CONFIG: To configure the 500DA2Q-HD for four outputs from Input 1 and four outputs from Input 2, move the jumper J7 to the DUAL 1x4 position. The DUAL 1x4 LED will be On.

To configure the 500DA2Q-HD for eight outputs from Input 1, move the jumper J7 to the SINGLE 1x8 position. The DUAL 1x4 LED will be Off.

> **When the module is operated in the single 1 x 8 mode, both of the reclocker mode jumpers (J2 and J5) should be set the same. If these jumpers are set to reclock mode then both of the reclocker rate jumpers (J3 and J6) should be set to the same rate.**

5.3. SELECTING NON-RECLOCK MODE

Two jumpers located near the front of the module, determine whether the each half of the module will operate as a reclocking amplifier for SMPTE 292M (1.5 Gb/s), SMPTE 259M (143 to 360 Mb/s), SMPTE 344M (540 Mb/s) or DVB-ASI video signals or as a non-reclocking distribution amplifier with other data rates. J2 controls the bypass for reclocker 1 and J5 controls the bypass for reclocker 2.

> **When the module is operated in the single 1 x 8 mode, both of these jumpers should be set the same.**

BYPASS SELECT: To operate the module in reclocking mode install the jumper in the RECLOCK position. The RATE jumper associated with the respective reclocker must be set to match the signal being reclocked. (See section 5.4)

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

5.4. SELECTING THE RECLOCKING RATE

Two jumpers located near the front of the module, determine whether the each half of the module will operate as a reclocking distribution amplifier SMPTE 292M (1.5 Gb/s), SMPTE 259M (143 to 360 Mb/s) or SMPTE 344M (540 Mb/s) or DVB-ASI video signals. J3 controls the rate for reclocker 1 and J6 controls the rate for reclocker 2. These jumpers have no effect if the associated reclocker is operating in non-reclock mode.

> **When the module is operated in the single 1 x 8 mode, and the reclocker jumpers are set to reclock mode, then both of these jumpers should be set to the same rate.**

RATE: To set the reclocker to operate with SMPTE 292M (1.5 Gb/s), SMPTE 259M (143 to 360 Mb/s) or SMPTE 344M (540 Mb/s) signals install the jumper in the 177 position. The reclocker will automatically detect the correct rate in the range of 143 Mb/s to 1.5 Gb/s.

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