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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original Version	Jul 05
1.1	Operation of Output Mode LED corrected	Aug 05

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1. OVERVIEW

The 7700VMDA series Reclocking Distribution Amplifier provides inexpensive distribution and monitoring of your SMPTE 259M serial digital video signal at rates of 270 Mb/s. The 7700VMDA features an auto-equalized input with seven outputs that can be selected as either reclocked SDI or composite analog. The 7700VMDA2Q version features two auto-equalized inputs, and selectable single 1x6 or dual 1x3 output mode.

The 7700VMDA occupies one card slot and can be housed in either a 1RU frame, which will hold up to three modules, or a 3 RU frame, which will hold up to 15 modules.

Features:
- Supports SMPTE 259M (270 Mb/s) video
- Model 7700VMDA has 7 outputs selectable as SDI or composite analog (NTSC/PAL)
- Model 7700VMDA2Q is configurable as 1 DA with 6 outputs or 2 DAs with 3 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)
- Reclocker lock, power supply fault, and video standard LEDs
- Tally output on Frame Status bus upon loss of input signal
- VistaLINK™ control capabilities for module configuration. VistaLINK™ capabilities are available when modules are used with the 3RU 7700FR-C frame and a 7700FC VistaLINK™ Frame Controller module in slot 1 of the frame.
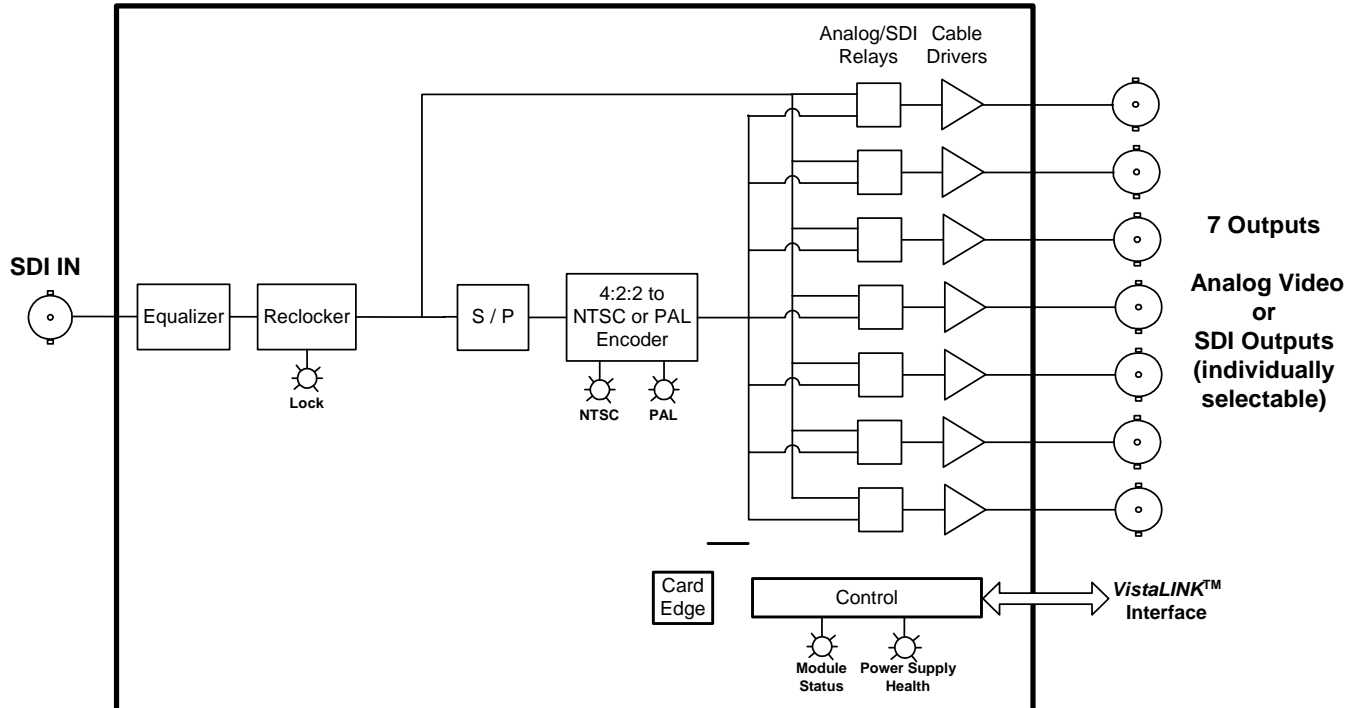
Figure 1: 7700VMDA Block Diagram
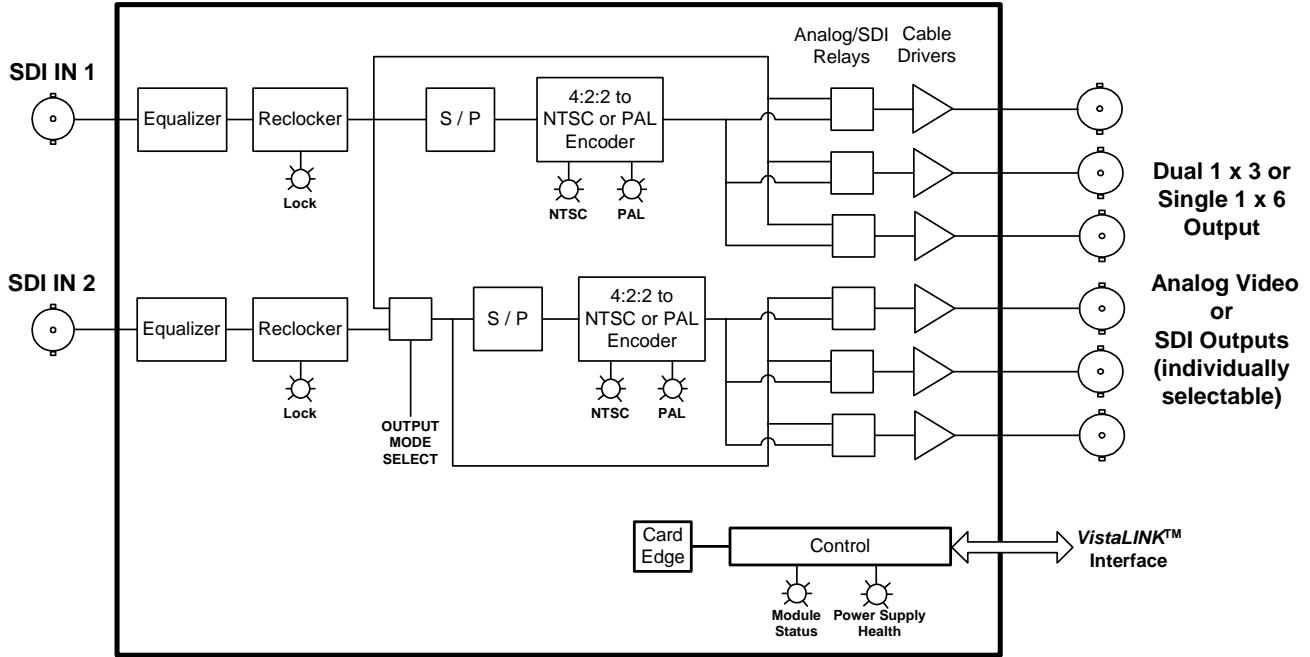
Figure 2: 7700VMDA2Q Block Diagram

2. INSTALLATION

The 7700VMDA series modules come with a companion rear plate that occupies one slot in the frame. For information on inserting the module into the frame see the 7700FR chapter section 3.
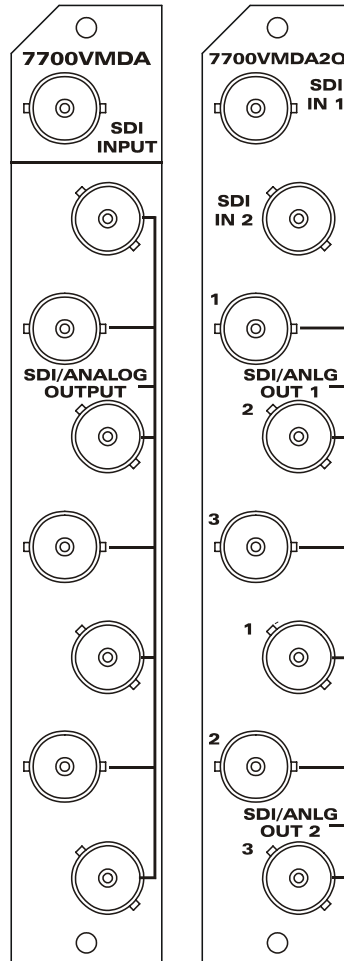
Figure 3: 7700VMDA Rear Panels

2.1. MODEL 7700VMDA CONNECTIONS

SDI IN   Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M-C standard.

SDI / ANLG OUTPUT These seven BNC connectors can be individually configured either as reclocked serial component video outputs, compatible with the SMPTE 259M-C standard, or as composite analog (NTSC/PAL) video outputs.

2.2. MODEL 7700VMDA2Q CONNECTIONS

SDI IN 1 & SDI IN 2   Input BNC connectors for 10-bit serial digital video signals compatible with the SMPTE 259M-C, standard.

SDI / ANLG OUT 1   These 3 BNC connectors can be individually configured either as reclocked serial component video outputs from SDI IN 1, compatible with the SMPTE 259M-C standard, or as composite analog (NTSC/PAL) video outputs.

SDI / ANLG OUT 2   These 3 BNC connectors can be individually configured either as reclocked serial component video outputs, compatible with the SMPTE 259M-C standard, or as composite analog (NTSC/PAL) video outputs. When jumper J2 is set to SINGLE 1x6 mode they provide three additional outputs for SDI IN 1. When jumper J2 is set to DUAL 1x3 mode, they provide 3 outputs from SDI IN 2. See Figure 8 for the location of J2.

3.   SPECIFICATIONS

3.1.   SERIAL VIDEO INPUT

Standards: SMPTE 259M-C (270 Mb/s) 525 or 625 line.
Connector: BNC per IEC 60169-8 Amendment 2
Number of Inputs:
  7700VMDA: 1
  7700VMDA2Q   2
Equalization: Automatic to 340m @ 270 Mb/s with Belden 1694A or equivalent cable
Return Loss: > 15 dB up to 270 Mb/s

3.2.   SERIAL VIDEO OUTPUTS

Number of Outputs:
  7700VMDA: Up to 7 (jumper selectable)
  7700VMDA2Q   Up to 3 per input or 6 from input 1 (jumper selectable)
Connector: BNC per IEC 60169-8 Amendment 2
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 470ps nominal
Overshoot: < 10% of amplitude
Return Loss: > 15 dB up to 270 Mb/s
Wide Band Jitter: < 0.2 UI

3.3.   ANALOG VIDEO OUTPUTS

Number of Outputs:
    7700VMDA: Up to 7 (selectable)
    7700VMDA2Q   Up to 3 per input or 6 from input 1 (selectable)
Standards: NTSC, SMPTE 170M if input is 525i/59.94
                             PAL-B. ITU 624-4 if input is 625i/50
Connectors: BNC per IEC 60169-8 Amendment 2
Signal Level: 1 V p-p nominal
DC Offset: 0V ±0.1V
Return Loss: > 35 dB up to 5 MHz

3.4.   ELECTRICAL

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

3.5.   PHYSICAL

Number of slots: 1

4.   STATUS LEDS

The 7700VMDA series modules have seven LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 4 to Figure 6 show the location of the LEDs on the various versions.
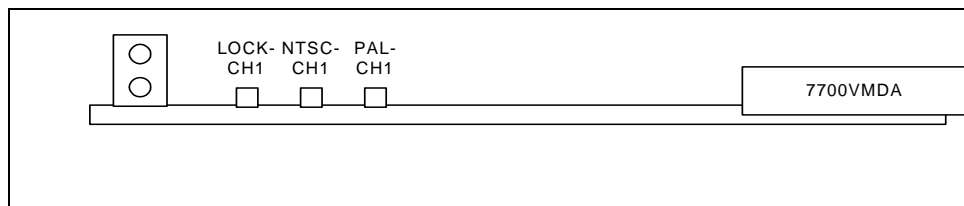
Figure 4: 7700VMDA Rev A LEDs
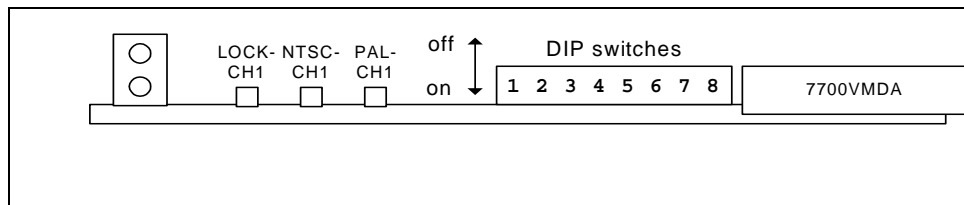
Figure 5: 7700VMDA Rev B LEDs
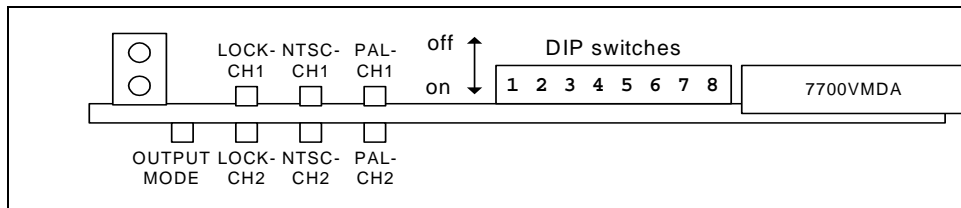
Figure 6: 7700VMDA2Q Rev B LEDs

4.1. MODULE STATUS 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 board power is good.

4.2. VIDEO STATUS LEDs – 7700VMDA

On the 7700VMDA there are three small LEDs that indicate the status of the equalizer, and reclocker rate.

LOCK- CH1:   This Green LED will be On when the reclocker has locked to a valid input signal.

NTSC-CH1:   This Green LED will be On when there is a valid 525 line SDI signal present at the module input.

PAL-CH1:   This Green LED will be On when there is a valid 625 line SDI signal present at the module input.

4.3. VIDEO STATUS LEDs – 7700VMDA2Q

On the 7700VMDA2Q there are seven small LEDs that indicate the status of the equalizer, and reclocker rate and the operational mode of the distribution amplifier.

LOCK- CH1:   This Green LED will be On when reclocker 1 has locked to a valid input signal at the SDI IN 1 input

NTSC-CH1:   This Green LED will be On when there is a valid 525 line SDI signal present at the SDI IN 1 input.

PAL-CH1:   This Green LED will be On when there is a valid 625 line SDI signal present at the SDI IN 1 input.

LOCK- CH2: This Green LED will be On when the reclocker has locked to a valid input signal at the SDI IN 2 input.

NTSC-CH2: This Green LED will be On when there is a valid 525 line SDI signal present at the SDI IN 2 module input.

PAL-CH2: This Green LED will be On when there is a valid 625 line SDI signal present at the SDI IN 2 module input.

OUTPUT MODE: This Green LED will be On when the module is in the Single 1 x 6 mode and Off when in Dual 1 x 3 mode.

5. DIP SWITCHES (REV B ONLY)

Revision B of the 7700VMDA and 7700VMDA2Q are equipped with an 8 position DIP switch to allow the user to select various functions. The DIP switch allows you to select the output configuration (SDI/Analog for each output), and VistaLINK™ remote control selection. Earlier versions of the 7700VMDA (Rev A PCB) use jumpers to control these functions. See section 6.

> **There are two types of DIP switches possible. For slide switches the On (closed) position is farthest from the front edge of the printed circuit board. For 'piano key' switches the On (closed) position is down or closest to the printed circuit board.**

DIP	Function	
Switch	**7700VMDA**	**7700VMDA2Q**
1	SDI / Analog Select for Output 1	SDI / Analog Out 1 Select for Output 1
2	SDI / Analog Select for Output 2	SDI / Analog Out 1 Select for Output 2
3	SDI / Analog Select for Output 3	SDI / Analog Out 1 Select for Output 3
4	SDI / Analog Select for Output 4	SDI / Analog Out 2 Select for Output 1
5	SDI / Analog Select for Output 5	SDI / Analog Out 2 Select for Output 2
6	SDI / Analog Select for Output 6	SDI / Analog Out 2 Select for Output 3
7	SDI / Analog Select for Output 7	---- not used ----------
8	VistaLINK™ Control Enable	

Table 1: DIP Switch Functions (Rev B boards)

5.1. SELECTING SDI OR NTSC/PAL FOR OUTPUTS 1 TO 7 (REV B BOARDS)

DIP switches 1 to 7 control whether the respective output will be SDI or NTSC/PAL.

DIP	DESCRIPTION
Off	Output will be reclocked SDI
On	Output will be analog composite (NTSC/PAL)

Table 2: Output Selection Switch Settings

5.2. SELECTING WHETHER MODULE WILL BE CONTROLLED FROM THE LOCAL CONTROLS OR THROUGH THE *Vista*LINK™ INTERFACE (REV B BOARDS)

The 7700VMDA and 7700VMDA2Q can be controlled using the card edge DIP switches or remotely via SNMP using VistaLINK™ PRO. See section 7 for a full description of the parameters that can be monitored or controlled using VistaLINK™. VistaLINK™ control is only available when the card is installed in the 3RU 7700FR-C frame and a 7700FC VistaLINK™ Frame Controller card is installed in slot 1 of the frame.

DIP switch 8 is used to enable or disable VistaLINK™ control.

DIP 8	CONTROL MODE
Off	Local control mode. The module will be controlled using the DIP switches and jumpers
On	VistaLINK™ control mode. The module will be controlled remotely through SNMP.

Table 3: Control Mode Switch Settings

> ✍ **To operate 7700VMDA2Q modules in *Vista*LINK™ Control mode, position OUTPUT MODE jumper in the DUAL 1X3 mode.**
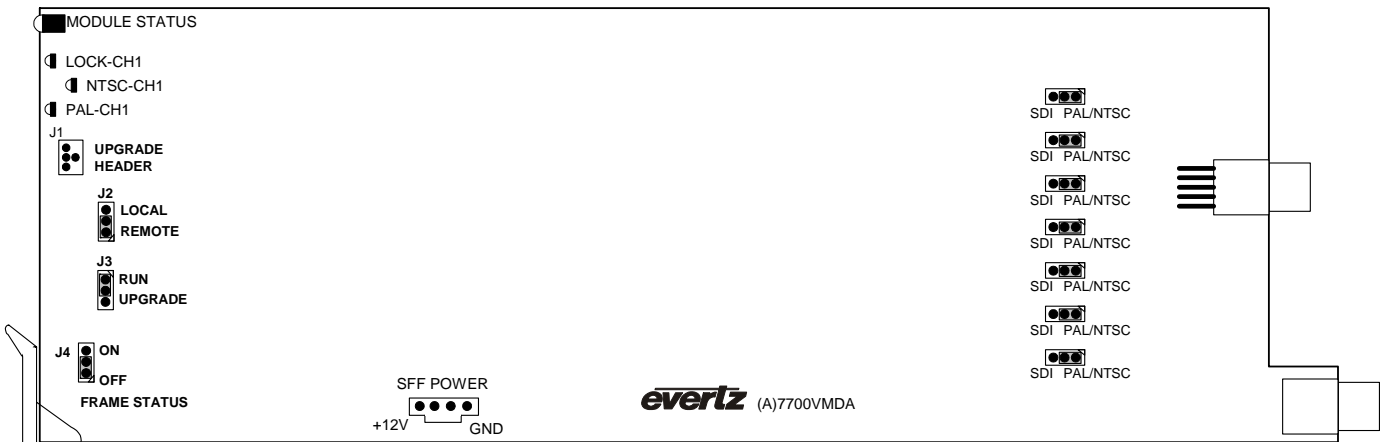
6. JUMPERS

Figure 7: LED and Jumper Locations (Rev A)

Figure 8: LED and Jumper Locations (Rev B)

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

The FRAME STATUS jumper J4, located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR 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.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE   The UPGRADE jumper J3 is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section in the front of the binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move the UPGRADE jumper into the *UPGD* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto the SERIAL header at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section in the front of the binder. Once the upgrade is completed, remove the module from the frame, move the UPGRADE jumper into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

6.3.   SELECTING SDI OR NTSC/PAL FOR OUTPUTS 1 TO 7 (REV A BOARDS)

On revision a boards there are 7 jumpers are used to select whether outputs 1 to 7 will output reclocked SDI video or analog composite (NTSC/PAL) video.

OUTPUT SELECT: To select SDI on the output install the respective jumper in the SDI position.

To select composite analog on the output install the respective jumper in the NTSC/PAL position.

6.4.   SELECTING WHETHER MODULE WILL BE CONTROLLED FROM THE LOCAL CONTROLS OR THROUGH THE *Vista*LINK™ INTERFACE (REV A BOARDS)

On Rev A boards, the MASTER jumper J2 selects whether the module will be controlled from the local user controls or through the *Vista*LINK™ interface. See section 5.2 for selecting *Vista*LINK™ control on Rev B boards.

MASTER   When this jumper is installed in the LOCAL position, the card functions are controlled through the local controls.

When this jumper is installed in the REMOTE position, the card functions are controlled through the *Vista*LINK™ interface.

> ✏️   **To operate Rev A 7700VMDA modules in *Vista*LINK™ Control mode, position all OUTPUT SELECT jumpers into SDI mode (closest to the front of the board).**

6.5.   SELECTING THE OUTPUT MODE FOR 7700VMDA2Q

Using the Jumper or *Vista*LINK™ you can select between the following modes.

OUTPUT MODE: To operate the DA in the single 1 x 6 mode install the jumper in the SINGLE 1X6 position. All six outputs are driven from the SDI IN 1 input. The MODE LED will be On.

To operate the DA in the dual 1 x 3 mode install the jumper in the DUAL 1X3 position. The signal on the SDI IN 1 input is outputted on three SDI/ANLG 1 BNCs and The signal on the SDI IN 2 input is outputted on three SDI/ANLG 2 BNCs. The MODE LED will be Off.

> ✏️   **To operate in *Vista*LINK™ Control mode, position this jumper in the DUAL 1X3 mode.**

7.   *Vista*LINK™ REMOTE MONITORING/CONTROL

7.1.   What is *Vista*LINK™?

*Vista*LINK™ 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 *Vista*LINK™ Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK™ enabled products.

2. Managed devices (such as 7700VMDA), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK™ enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC 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 *Vista*LINK™ network, see the 7700FC Frame Controller chapter.

7.2. *Vista*LINK^{TM} MONITORED PARAMETERS

The following parameters can be remotely monitored through the *Vista*LINK™ interface.

Parameter	Description
Channel 1 Video Presence	Indicates if Channel 1 video is present
Channel 1 Video Standard	Indicates channel 1 input SDI video standard

Table 4: *Vista*LINK™ Monitored Parameters - 7700VMDA

Parameter	Description
Channel 1 Video Presence	Indicates if Channel 1 video is present
Channel 2 Video Presence	Indicates if Channel 2 video is present
Channel 1 Video Standard	Indicates channel 1 input SDI video standard
Channel 2 Video Standard	Indicates channel 2 input SDI video standard

Table 5: *Vista*LINK™ Monitored Parameters - 7700VMDA2Q

7.3. *Vista*LINK^{TM} CONTROLLED PARAMETERS

The following parameters can be remotely monitored or set through the *Vista*LINK™ interface.

Parameter	Description
SDI / Analog Select Output 1	Selects between analog or SDI video signal for output 1
SDI / Analog Select Output 2	Selects between analog or SDI video signal for output 2
SDI / Analog Select Output 3	Selects between analog or SDI video signal for output 3
SDI / Analog Select Output 4	Selects between analog or SDI video signal for output 4
SDI / Analog Select Output 5	Selects between analog or SDI video signal for output 5
SDI / Analog Select Output 6	Selects between analog or SDI video signal for output 6
SDI / Analog Select Output 7	Selects between analog or SDI video signal for output 7

Table 6: *Vista*LINK™ Controlled Parameters - 7700VMDA

Parameter	Description
Output Mode	Selects between Single 1x6 or Dual 1x3 output mode
SDI / Analog Out 1, Output 1	Selects between analog or SDI video signal for channel 1 output 1
SDI / Analog Out 1, Output 2	Selects between analog or SDI video signal for channel 1 output 2
SDI / Analog Out 1, Output 3	Selects between analog or SDI video signal for channel 1 output 3
SDI / Analog Out 2, Output 1	Selects between analog or SDI video signal for channel 2 output 1
SDI / Analog Out 2, Output 2	Selects between analog or SDI video signal for channel 2 output 2
SDI / Analog Out 2, Output 3	Selects between analog or SDI video signal for channel 2 output 3

Table 7: *Vista*LINK™ Controlled Parameters - 7700VMDA2Q

7.4. *Vista*LINK^{TM} TRAPS

The following traps can be enabled controlled through the *Vista*LINK™ interface. Each trap will indicate a fault condition when its value is True.

Trap	Description for True Condition
Channel Video 1 Locked	Channel one locked to valid SDI video
Channel Video 2 Locked	Channel two locked to valid SDI video (7700VMDA2Q only)

Table 8: *Vista*LINK™ Traps