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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original Version	Nov 08

WARNING

Never look directly into an optical fiber. Non-reversible damage to the eye can occur in a matter of milliseconds.

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1. OVERVIEW

The 7705EO-3-HD offers three independent channels of electrical to optical conversion, economically, in a single module. Each independent channel accepts one serial video input, complying with SMPTE 292M (1.485Gb/s), SMPTE 259M (143-360Mb/s), SMPTE 310M (19.4Mb/s), SMPTE 344M (540Mb/s), M2S or DVB-ASI (270Mb/s), and provides one fiber output, with an optical wavelength of 1310nm or 1550nm.

The 7705EO-3-HD is designed as a companion to the 7705OE-3-HD optical to electrical converter. The 7705EO-3-HD can be housed in either a 1RU frame, that will hold up to three modules, or a 3RU frame, that will hold up to fifteen modules, providing 45 channels of optical conversion in a single 3RU frame.

Features:

- Three independent channels of electrical to optical conversion that support all SMPTE 292M standards at 1.485Gb/s
- Supports all SMPTE 259M standards with operation from 143Mb/s-360Mb/s
- Supports additional standards of SMPTE 305M (SDTi), SMPTE 310M (19.4Mb/s), SMPTE 344M (540Mb/s), M2S and DVB-ASI (270Mb/s)
- Automatic cable equalization to 300m @ 270Mb/s and 75m @ 1.485Gb/s with Belden 1694A (or equivalent) cable
- Fully hot-swappable from front of frame, with no fiber or BNC disconnect/reconnect required
- High density - accommodates up to 45 independent channels of optical conversion, in a single 3RU frame
- Supports single-mode and multi-mode fiber optic cable
- SC/PC, ST/PC or FC/PC connector options
- Tally output on Frame Status bus upon loss of input signal
- Can be housed in either a 1RU frame which will hold up to 3 modules, a 3RU frame which will hold up to 15 modules, 350FR portable frame that holds up to 7 modules or a standalone frame which will hold 1 module

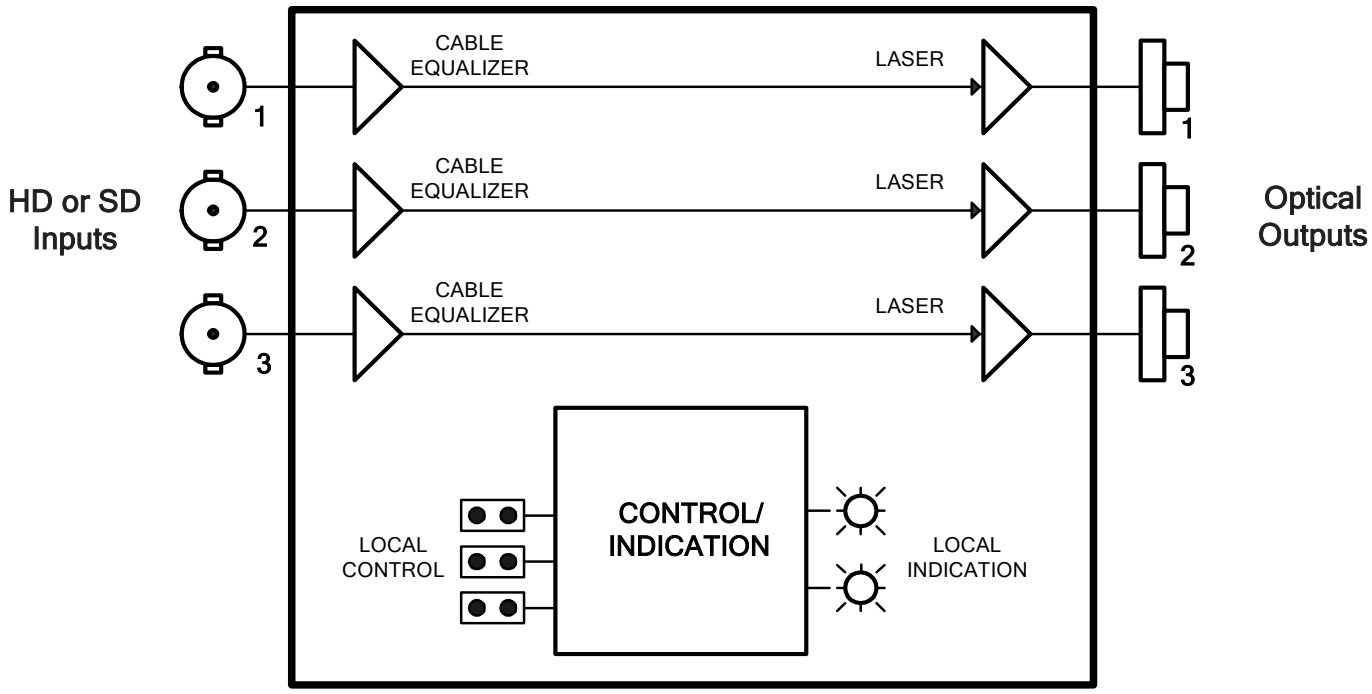

Figure 1-1: 7705EO-3-HD Block Diagram

2. INSTALLATION

The 7705EO-3-HD comes with a companion rear plate that has three BNC connectors and three SC/PC (shown), ST/PC or FC/PC optical connectors. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.

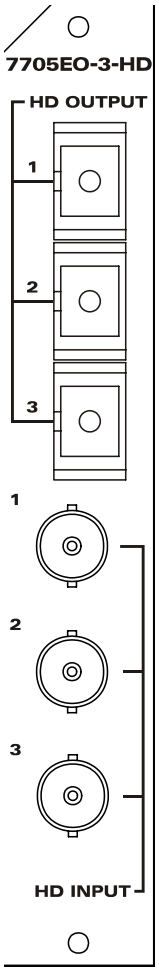

Figure 2-1: 7705EO-3-HD Rear Panel

SDI INPUT: Input BNC connectors for 10-bit serial digital video signals compatible with the SMPTE 292M (1.485Gb/s), SMPTE 259M, SMPTE 305M, SMPTE 344M, DVB-ASI or SMPTE 310M standards. These inputs provide adaptive compensation for up to 300m of industry standard Belden 1694 cable, at 270Mb/s, or up to 100m of Belden 1694 cable at 1.485Gb/s.

SDI OUTPUT: There are three SC/PC (shown), ST/PC or FC/PC female optical connectors with the video output converted to an optical signal as specified in section 3.2.

2.1. CARE AND HANDLING OF OPTICAL FIBER

2.1.1. Safety

CLASS 1 LASER PRODUCT

Background colour: yellow
Triangular band: black
Symbol: black

2.1.2. Assembly

Assembly or repair of the laser sub-module is done only at Evertz facility and performed only by qualified Evertz technical personnel.

2.1.3. Labeling

Certification and Identification labels are combined into one label. As there is not enough room on the product to place the label it is reproduced here in the manuals.

- There is no date of manufacture on this label as it can be traced by bar code label placed on the Printed circuit board of each Evertz plug-in module
- The Model number is: 7705EO13-3-HD or 7705EO15-3-HD

Figure 2-2: Reproduction of Laser Certification and Identification Label

2.1.4. Handling and Connecting Fibers

Never touch the end face of an optical fiber. Always keep dust caps on optical fiber connectors when not connected and always remember to properly clean the optical end face of a connector before making a connection.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 5 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable. The Evertz fiber optic modules come with cable lockout devices, to prevent the user from damaging the fiber by installing a module into a slot in the frame that does not have a suitable I/O module. For further information about care and handling of fiber optic cable see section 3 of the Fiber Optics System Design section of this manual binder.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUTS

Standards:	SMPTE 292M, SMPTE 259M A, B, C, D, SMPTE 297M, SMPTE 305M, SMPTE 310M, SMPTE 344M, M2S, DVB-ASI
Number of Inputs:	3 (independent channels)
Connector:	3 BNC per IEC 61169-8 Annex A
Equalization:	Automatic to 75m @ HD (1.485Gb/s) and 300m @ SD (270Mb/s) with Belden 1694A (or equivalent)
Return Loss:	> 14 dB up to 1.5 Gb/s

3.2. OPTICAL OUTPUTS

Standard:	SMPTE 297M
Number of Outputs:	3 (independent channels)
Connector:	SC/PC, ST/PC, FC/PC female housing
Return Loss:	> 14 dB
Rise/Fall Time:	270ps nominal
Jitter:	< 0.2 UI
Nominal Wavelength:	1310nm 1550nm
Optical Power:	-7dBm ±1dBm @ 1310nm 0dBm ±1dBm @ 1550nm

3.3. ELECTRICAL

Voltage:	+12V DC
Power:	6 Watts

3.4. PHYSICAL

7700 or 7701 frame mounting:

Number of slots:	1

3.5. COMPLIANCE

Electrical Safety:	CSA Listed to UL 60065-03, IEC 60065 Complies with CE Low voltage Directive
Laser Safety:	Class 1 laser product Complies with 24 CFR 1040.10 and 1040.11 IEC 60825-1
EMI/RFI:	Complies with FCC Part 15, Class A EU EMC directive

4. STATUS INDICATORS AND DISPLAYS

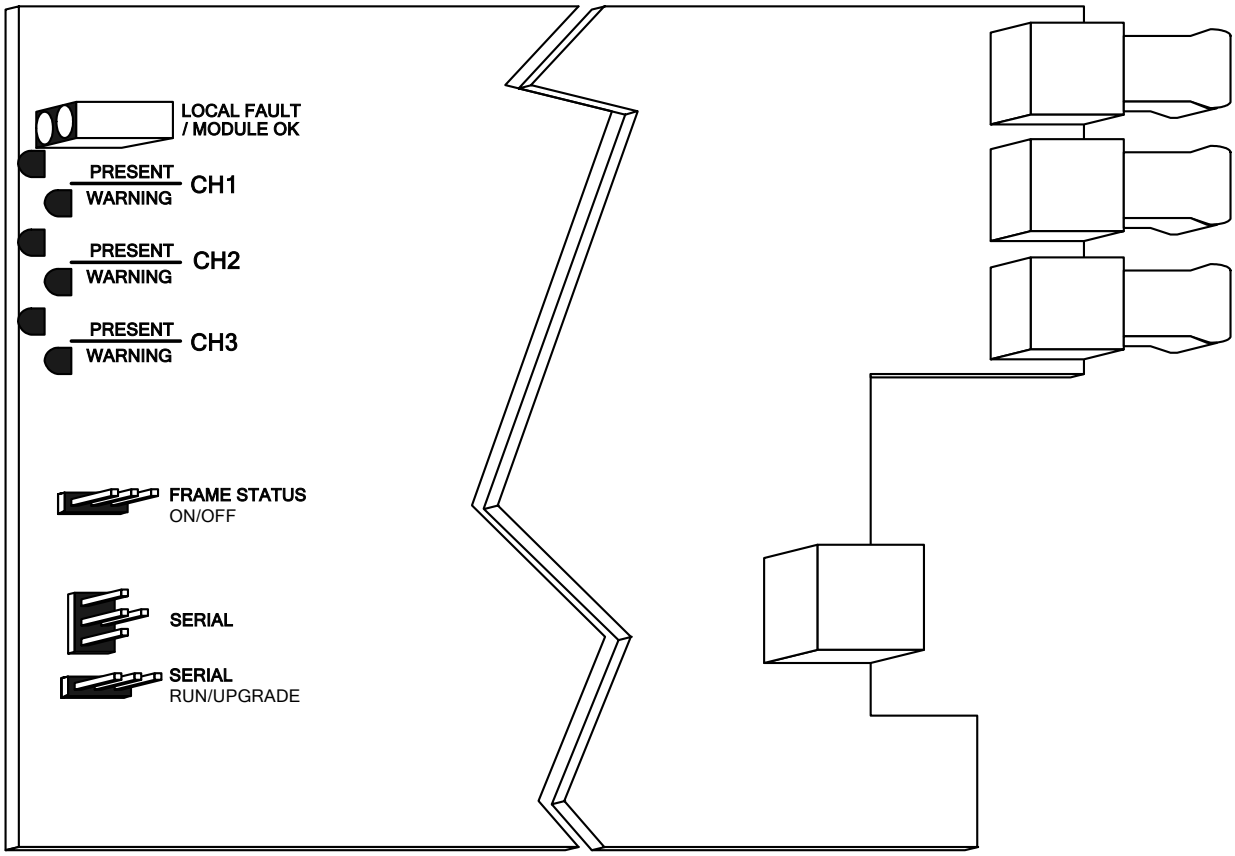

Figure 4-1: Location of Status Indicators and Jumpers

4.1. STATUS INDICATOR 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 if there is no valid input signal on all 3 inputs, if a laser fault exists on any channel, 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 on at least one of the input channels, and all the lasers and board power are good.

There are three pairs of small LEDs that indicate the status for each channel.

PRESENT: This Green LED indicates the presence of a valid input signal.

WARNING: This Red LED indicates poor operation of the optical output laser.

5. JUMPERS AND LOCAL CONTROLS

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

The FRAME STATUS jumper 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 FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

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

5.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper 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* chapter 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 RUN/UPGRADE jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of the binder) onto SERIAL header J27 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* chapter in the front of the binder. Once the upgrade is completed, remove the module from the frame, move J16 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.