TABLE OF CONTENTS

Preliminary

Figures

Tables

Preliminary

REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version	Dec 02
0.2	Updated menu Structure	Sep 03
0.3	General format clean up	May 09

Preliminary

Information contained in this manual is believed to be accurate and reliable. However, Evertz assumes no responsibility for the use thereof nor for the rights of third parties, which may be affected in any way by the use thereof. Any representations in this document concerning performance of Evertz products are for informational use only and are not warranties of future performance, either expressed or implied. The only warranty offered by Evertz in relation to this product is the Evertz standard limited warranty, stated in the sales contract or order confirmation form.

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.

This page left intentionally blank

Preliminary

1. OVERVIEW

The 7750TG-TS Test Signal Generator provides a cost-effective method of generating SMPTE 310M and ASI test signals. The 7750TG-TS is ideal for checking signal path integrity, or to determine system performance over varying cable lengths. The 7750TG-TS generates test signals in either SMPTE 310M DVB-ASI transport stream formats.

The 7750TG-TS provides an analog genlock input that allows you to synchronize the test signals to your plant horizontal and vertical timing.

Features:

- SMPTE 310M and ASI outputs
- ATSC and MPEG-2 Main Level Main Profile structures
- multiple bit rates in ASI output mode
- multiple video test signals, motion and non-motion, each is a fixed loop of a Group of Pictures (GOP)
- all appropriate tables for ATSC and DVB supported
- Gen locks to bi-level or colour black – clock or phase lock possible
- Card edge toggle switch selects test signal
- On screen setup menu
- Composite analog output with On Screen Menu Display on gray
- 8 position DIP switch selects output format
- 2 output drivers
- Tally output upon loss of gen lock
- Front panel LEDs indicate gen lock presence, and module status

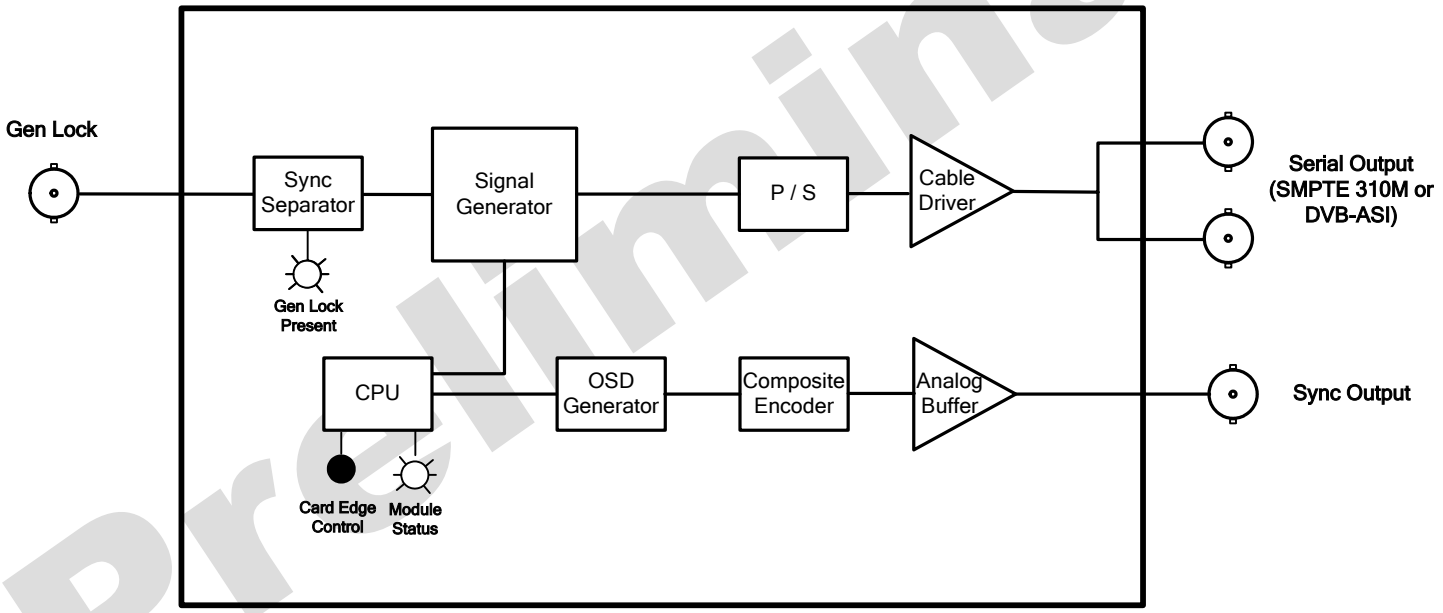

Figure 1-1: 7750TG-TS Block Diagram

Preliminary

2. INSTALLATION

The 7750TG-TS module comes with a companion rear plate that has 5 BNC connectors. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.

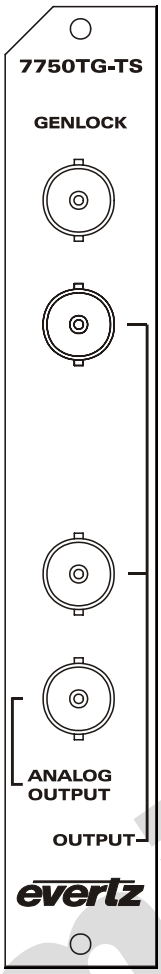

Figure 2-1: 7750TG-TS Rear Panel

GEN LOCK: Input BNC connector for analog Gen Lock reference. The genlock signal may be a standard definition colour black video or 0.3 V bi-level sync. The *Gen Lock Setup* on screen menu is used to enable the Gen-lock reference and set up the timing of the output signal with respect to the reference input. Jumper J2 on the A7700REF sub-module selects whether the reference input is terminated or high impedance. (See section 6.3)

OUTPUT: This pair of BNC connectors has serial transport stream outputs compatible with the SMPTE 310M or DVB-ASI standard. The test signal output is selected using the toggle switch located on the card edge.

ANALOG OUTPUT: This BNC connector contains an analog composite video gray signal and is used to display the On Screen programming menu and for monitoring other on Screen displays.

Preliminary

3. SPECIFICATIONS

3.1. GEN LOCK INPUT

Type: Menu selectable - depends on output video format
NTSC Colour Black 1 V p-p
Composite Bi-level sync (525I) 300 mV
Connector: 1 BNC per IEC 169-8
Termination: 75 ohm (jumper selectable)

3.2. SERIAL TRANSPORT STREAM OUTPUTS

Standards: SMPTE 310M (19.4 Mb/s) or DVB ASI (15 to 60 Mb/s)
Number of Outputs: 2
Connector: 1 BNC per IEC 61169-8 Annex A
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 740ps nominal
Overshoot: <10% of amplitude
Return Loss: > 15 dB up to 270 Mb/s
Wide Band Jitter: < 0.2 UI

3.3. ANALOG VIDEO OUTPUT

Standard: NTSC (SMPTE 170M)
Number of Outputs: 1
Connector: 1 BNC per IEC 61169-8 Annex A
Signal Level: 1V nominal

3.4. ELECTRICAL

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

3.5. PHYSICAL

350FR: 1
7700FR-C: 1
7800FR: 1

Stand Alone Enclosure:
Dimensions: 14 " L x 4.5 " W x 1.9 " H
(355 mm L x 114 mm W x 48 mm H)
Weight: approx. 1.5 lbs. (0.7 Kg)

Preliminary

4. STATUS LEDS

4.1. MODULE STATUS LEDS

The location of the status LEDs is shown in Figure 6-1.

MODULE OK: This Green LED will be On when the module is operating properly.

LOCAL FAULT: This Red LED will blink on and off if the microprocessor is not running. The LED will be on solid when there is a fault in the module power supply**.**

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

This LED does not necessarily indicate that the genlock signal is the correct frame rate for the selected output video format. For example, if a 59.94 Hz signal is required for the selected output video format, but a 60 Hz signal is present at the genlock input, the SIGNAL PRESENT LED will be On. In this case the output video will NOT be properly referenced but will constantly try to resync to the genlock frame reference.

Preliminary

5. CARD EDGE CONTROLS

The 7750TG-TS is equipped with an 8 position DIP switch to allow the user to select various functions. The On position is down, or closest to the printed circuit board.

A three position, return to center toggle switch is used to select the various test signal patterns and is also used in conjunction with a momentary pushbutton to operate the On screen Setup menu. Table 5-1 gives an overview of the DIP switch functions.

DIP Switch	Function
1	DVB and ATSC table selection
2	Not used
3	
4	
5	
6	
7	
8	

Table 5-1: DIP Switch Functions – Overview

5.1. SELECTING THE DVB OR ATSC TABLES

DIP switch 1 is used to select whether the 7750TG-TS will generate according to DVB or ATSC tables.

DIP 1	Table Selection
Off	The 7750TG-TS will use the DVB table
On	The 7750TG-TS will use the ATSC table. When the ATSC table is selected, the PMT-PID is set to 16 and the video PID is set to 17. Closed caption is activated and the output bit rate is set to 19.39 Mb/s.

Table 5-2: Table Selection Switch Settings

5.2. SELECTING THE TEST SIGNAL

When the 7750TG-TS is not in the on screen setup menu, the toggle switch located on the front edge of the module is used to select test signal generated. Each time the toggle switch is pressed down the 7750TG-TS advances to the next test signal. Each time the toggle switch is pressed up the 7750TG-TS changes to the previous test signal. Table 5-3 to Table 5-5 show the test signals that are available for each of the video standards.

Preliminary

Test Signal Name
SMPTE Color bars
SMPTE Color bars with bouncing ball
Ramp
Ramp with bouncing ball
White
Black

Table 5-3: 525 Line Test Signal Selection

Test Signal Name
Color bars
Color bars with bouncing ball
Ramp
Ramp with bouncing ball
White
Black

Table 5-4: 625 Line Test Signal Selection

Test Signal Name
Color bars
Color bars with bouncing ball
Ramp
Ramp with bouncing ball
White
Black
Black with Circle and center cross

Table 5-5: HD Line Test Signal Selection

5.3. CONFIGURING THE TEST GENERATOR USING THE ON SCREEN MENU

An On screen menu (OSD) is used to configure many of the test generator's parameters. The three position, return to center, **toggle switch** and momentary **pushbutton** located on the front edge of the module are used to navigate the OSD setup menus and configure the cards various controls.

To enter the OSD menu system, press the push button once. This will bring you to the main setup menu where you can use the **toggle switch** to move up and down the list of available sub menus. An arrow (>) moves up and down the left hand side of the menu items to indicate which item you are currently choosing. Once the arrow is on the desired item, press the **pushbutton** to select the next menu.

On all menus, there is a selectable item *Done*. Selecting *Done* will take you to the previous menu (the one that was used to get into the menu). If you are at the top level of the menu tree then selecting *Done* will exit the OSD menu and return the 7750TG-TS to the normal operating mode.

Once you are in a sub menu, there may be another menu level, or there may be a list of parameters to adjust. If there is another set of menu choices, use the toggle switch to select the next choice with the same procedure as in the main menu.

Preliminary

If there is a list of parameters to adjust, use the **toggle switch** to move up or down to the desired parameter and press the **pushbutton**. The arrow will move to the right hand side (<) indicating that you can now adjust the parameter. Using the toggle switch, adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you lift the toggle switch and decrease if you push down on the toggle switch. If the parameter contains a list of choices, you can cycle through the list by pressing the toggle switch in either direction.

When you have stopped at the desired value, depress the **pushbutton**. This will update the parameter with the selected value and move the arrow back to the left side of the parameter list. Continue selecting and adjusting other parameters or use the *Done* commands to return to the next higher menu level.

5.3.1. Top Level Menu Structure

The following is a brief description of the top level of the menu tree that appears when you enter the On screen menu. Selecting one of these items will take you down into the next menu level.

Output Setup	Configure the Gen Lock, transport stream type and bit rate.
PID Setup	Configure the PID for ATSC transport streams
Load Format Stream	Used to load new format streams.
Done	Exit On Screen Menu System

5.3.2. Configuring 7750TG-TS Physical Output

The *Output Setup* menu is used to enable the Gen Lock reference, transport stream physical layer and bit rate.

Genlock	Selects whether the Gen Lock reference is enabled.
TS Type	Selects the transport stream type
Bit Rate	Selects the Transport stream bit rate in ASI mode
Done	Return to main menu

5.3.2.1. Enabling the Gen Lock Input

Output Setup
  Genlock
    Enable
    Disable

The *Genlock* menu selects whether the 7750TG-TS will referenced to the genlock input or not.

When set to *Enable* the Transport stream output is referenced to the NTSC colour black video or 0.3 V bi-level sync connected to the Gen Lock input.

When set to *disable the* Transport stream output is free running.

Preliminary

5.3.2.2. Selecting Transport Stream Physical Layer Type

Output Setup
TS Type
ASI
SMPTE

The *TS Type* menu item selects transport stream physical layer type.

When set to *ASI* the 7750TG-TS generates a transport stream with a physical layer compatible with EN50083-9.

When set to *SMPTE* the 7750TG-TS generates a transport stream with a physical layer compatible with SMPTE 310M.

5.3.2.3. Selecting Transport Stream Bit Rate

Output Setup
Bit Rate
15 to 60 Mbps
19.39 Mbps

The *Bit Rate* menu item selects transport stream bit rate.

When the *TS Type* menu item is set to *ASI* you can adjust the bit rate in the range of 15 to 60 Mb/s.

When the *TS Type* menu item is set to *SMPTE* the bit rate is fixed at 19.39 Mb/s.

5.3.3. Configuring PID

The *PID Setup* menu is used to configure the Transport Stream PID values

PMT PID	Selects the PMT PID value.
Video PID	Selects the Video PID value.
Done	Return to main menu

5.3.3.1. Configuring the PMT PID

PID Setup
PMT PID
65 to 90
16

The *PMT PID* menu item selects transport stream PMT PID.

When the 7750TG-TS is set to generate DVB streams (DIP switch 1 is Off) you can set the PMT PID in the range of 65 to 90.

When the 7750TG-TS is set to generate ATSC streams (DIP switch 1 is On) the PMT PID is fixed at 16.

Preliminary

5.3.3.2. Configuring the Video PID

PID Setup
Video ES PID
91-300
17

The *Video ES PID* menu item selects transport stream Video PID.

When the 7750TG-TS is set to generate DVB streams (DIP switch 1 is Off) you can set the Video PID in the range of 91 to 300.

When the 7750TG-TS is set to generate ATSC streams (DIP switch 1 is On) the Video PID is fixed at 17.

5.3.4. Changing the Transport Stream Standard

The *Transport Stream* Setup menu is used to configure the Transport Stream Standard.

Current Stream	Starts and Stops the Current stream output
Stream Standard	Selects the Transport Stream Standard
Done	Return to main menu

5.3.4.1. Starting and Stopping the Transport Stream Output

Transport Stream
Current Stream
Stop
Start

The *Current Stream* menu item starts and stops the stream output. In order to change the transport stream format you must first stop the stream, then change the stream standard using the *Stream Standard* menu item, then restart the stream output using this menu.

When set to *Stop* the transport stream output is stopped.

When set to *Start* the transport stream output is running.

5.3.4.2. Selecting the Transport Stream Standard

Transport Stream
Stream Standard
SD 525
SD 625
HD

The *Stream Standard* menu item allows you to select video standard of the transport stream. Each output stream video standard has its own set of test patterns. See section 5.2 for a list of the test patterns available.

When set to *SD 525* the transport stream output is standard definition 525 video.

When set to *SD 625* the transport stream output is standard definition 525 video.

When set to *HD* the transport stream output is high definition video.

Preliminary

6. JUMPERS

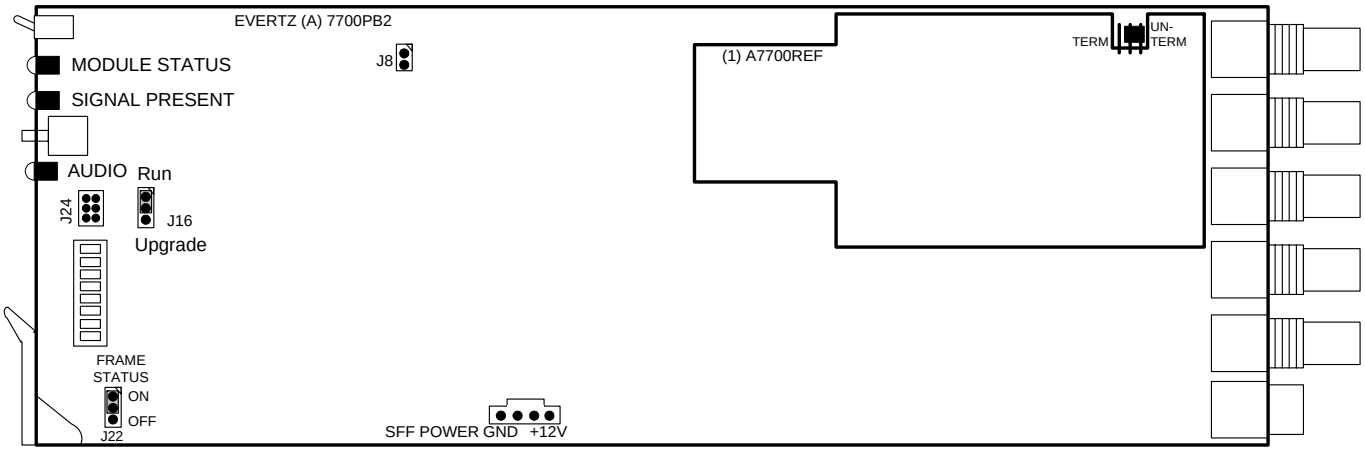

Figure 6-1: Location of Jumpers

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

FRAME STATUS: The FRAME STATUS jumper J22 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.

To monitor faults on this module with the frame status indicators (on the PS FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper. (Default) When this jumper is removed, local faults on this module will not be monitored. For convenience you may re-install the jumper so that only one side is connected.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper J16 located at the front of the module is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. On Rev 1 versions of this board the upgrade jumper is located in another location. See the *Upgrading Firmware* chapter in the front of the manual binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of the manual binder) onto header J24 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 manual 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.

Preliminary

6.3. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

TERM/UNTERM: The TERM/UNTERM jumper J2 located on the A7700REF gen lock submodule is used to terminate the gen lock input. Then it is in the TERM position a 75 ohm terminating resistor will be connect the input to ground. When it is in the UNTERM position the gen lock input will be high impedance.

Preliminary

This page left intentionally blank

Preliminary