Figures

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary Version	Mar 01
1.1	Original Released Version	Mar 01

1. OVERVIEW

The 7750SSG Slave Sync Generator generates a NTSC synchronizing signal and a colour frame ID pulse for synchronizing various devices in a television facility. The 7750SSG has an analog genlock input that allows you to phase the output sync signal with respect to your plant horizontal and vertical timing. In conjunction with the 7700ADA Analog Distribution Amplifier this module will fulfill all of your slave sync generation requirements.

Features:

- NTSC colour black genlock with colour frame decode
- Free-runs with no genlock reference
- Phase adjustment of outputs with respect to gen lock input
- TTL Color Frame ID signal
- Front panel LEDs indicate gen lock presence, module fault

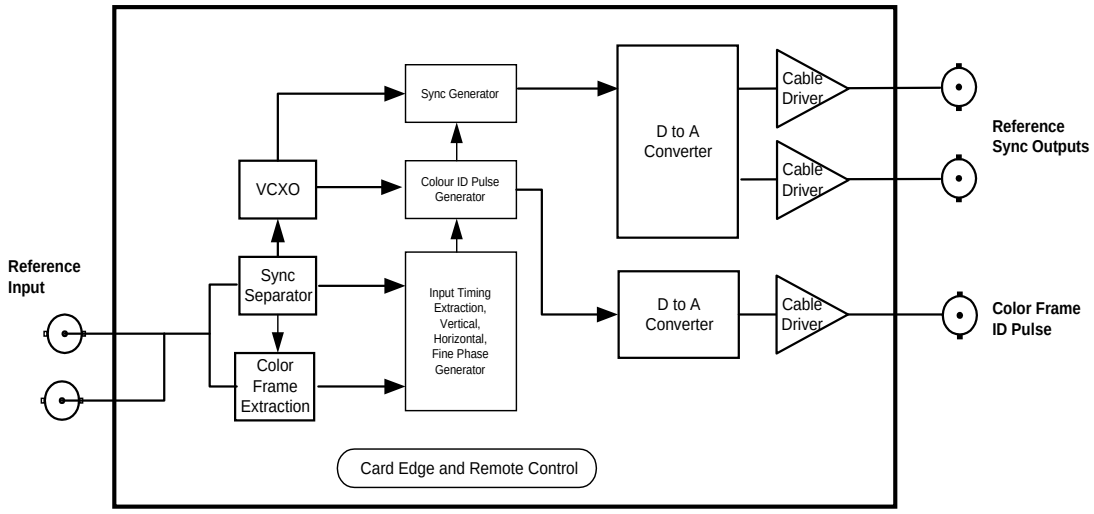

Figure 1: 7750SSG Block Diagram

2. INSTALLATION

The 7750SSG 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.

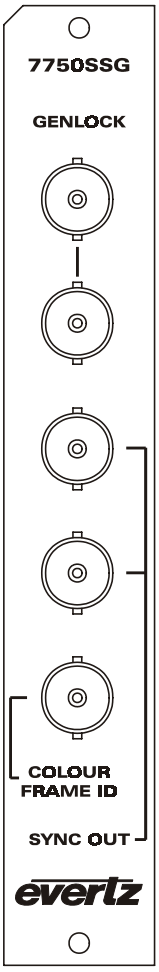

Figure 2: 7750SSG Rear Panel

GENLOCK Input BNC loop for analog NTSC colour black genlock reference. DIP switches 6 and 7 select whether the outputs will be genlocked, and whether the default phasing or user set phasing will be used. The internal sync separator has a high impedance input tapped off the loop through, therefore, the video signal must be properly terminated at the end of the line.

SYNC OUTPUTS There are two BNC connectors with NTSC analog sync outputs.

COLOUR FIELD ID One BNC connector with a TTL pulse identifying frame A of the 2 frame NTSC color sequence. This signal is in phase with the NTSC sync outputs.

3. SPECIFICATIONS

3.1. GENLOCK INPUT

Type: NTSC (SMPTE 170M) Colour Black
Connector: 2 BNC per IEC 169-8
Termination: high impedance loop through
Return loss: >35 dB up to 10 MHz
SNR: > 50dB
Levels: min: 0.5Vp-p, max: 1.5Vp-p
Max Subcarrier Jitter: < 3degrees

3.2. ANALOG SYNC OUTPUTS

Number of Outputs: 2.
Composite Sync: 1V p-p
Connector: BNC per IEC 169-8
SYNC Level: 40IRE nominal
Burst Level: 40IRE nominal
DC Offset: Back porch at 0V +/- 100mV
Return Loss: >35 dB up to 5 MHz
SC/H Phase: < 1 degree
Sync rise/fall time: 140 +/- 20ns
V Phasing: Infinite lines
H Phasing: Infinite samples (37ns/sample)
Fine Phasing: +/- 24 degrees, with 0.12 degrees of granularity

3.3. COLOR FRAME ID PULSE OUTPUT

Signal: TTL amplitude active pulse high during field 1 of colour field sequence
Connector: BNC per IEC169-8
Impedance: 75 ohms
DC Offset: 0V +/- 100mV

3.4. ELECTRICAL

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

3.5. PHYSICAL

Number of slots: 1

4. STATUS LEDS

4.1. MODULE STATUS LEDS

The location of the status LEDs is shown in Figure 3.

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.

5. CARD EDGE CONTROLS

The 7750SSG is equipped with an 8 position DIP switch to allow the user to configure the module. The On position is down, or closest to the printed circuit board. A three position, return to center toggle switch is used in conjunction with a momentary pushbutton to adjust the phase of the outputs with respect to the genlock reference. Table 1 gives an overview of the DIP switch functions.

DIP Switch	Function
1	Future Use
2	
3	
4	
5	
6	Genlock/ Free Run Selection
7	Genlock phasing
8	Future Use

Table 1: DIP Switch Functions

5.1. SELECTING THE GENLOCK REFERENCE

The 7750SSG will free run on its internal crystal oscillator or be referenced to a genlock signal applied to the GENLOCK input loop. DIP switch 6 selects if the 7750SSG will free run or be referenced to the genlock reference video as shown in Table 2.

DIP 6	FUNCTION	DESCRIPTION
Off	Free Run (default)	The 7750SSG will free run on its internal crystal oscillator. (See section 5.1.1 for information on adjusting the oscillator frequency.)
On	Genlock	The 7750SSG sync outputs will be phase locked to a Standard Definition colour black video

Table 2: Gen Lock Reference Switch Settings

5.1.1. Adjusting The Timing Of The Free Run Oscillator

Turn the multi-turn VCXO ADJUST control potentiometer located beside the push button switch at the front of the board to adjust the frequency of the oscillator when there is no genlock provided. When a genlock is provided and DIP switch 6 is in the On position the VCXO will lock to the incoming genlock signal.

5.2. SELECTING FACTORY PRESET OR USER ADJUSTABLE TIMING OF THE OUTPUTS WITH RESPECT TO THE GEN LOCK INPUT

DIP switch 7 selects if the 7750SSG-HD will use the factory default phasing of its outputs to the reference genlock, or the user defined phase adjustments. The phase of the two sync outputs is adjusted together.

DIP 7	FUNCTION	DESCRIPTION
Off	Factory Phase (default)	The phase of the outputs is aligned to the Genlock video.
On	User Preset Phase	The phase of the outputs is determined by user settings.

Table 3: Gen Lock Phase Adjust Switch Settings

5.2.1. Adjusting the Timing of the Output Video with Respect to the Gen Lock Input

The toggle switch and push button are used to set the timing of the output signals with respect to the input Genlock Reference. Individual V, H, Fine Phase, and Color Frame phase adjustments allow you to precisely control the timing of the outputs.

When DIP switch 6 is On and DIP switches 7 is Off, the output signal will have the same timing as the input signal. When DIP switch 6 and 7 is On the user can adjust the V, H, Fine Phase, and Colour Frame phasing of the outputs.

The three position, return to center toggle switch is used in conjunction with a momentary pushbutton to adjust the phasing of the outputs. One LED is located on the lower end of the module (opposite the DIP switch) and is used to indicate when the module is in phase adjust mode.

The LED will be either On, flashing quickly, flashing slowly or flashing very slowly, indicating that you are adjusting the V, H, Fine phase or Color Frame reset. In the current firmware version the phase of output 1 and 2 are both the same.

To enter the phase adjust mode, press the pushbutton. The Output 1 Phase adjust LED will come on solid, indicating that the toggle switch can be used to adjust the V phase of output 1. Pressing the toggle switch up will advance the phase by 1 line and pressing the toggle switch down will delay the phase by one line.

Press the pushbutton again to adjust the horizontal phase of output 1. The Output 1 Phase adjust LED will come on flashing quickly, indicating that the toggle switch can be used to adjust the H phase of output 1. Pressing the toggle switch up will advance the phase by one sample and pressing the toggle switch down will delay the phase by one sample.

Press the pushbutton again to adjust the fine phase of output 1. The Output 1 Phase adjust LED will come on flashing slowly, indicating that the toggle switch can be used to fine adjust the phase of output 1.

Pressing the toggle switch up will advance the phase by 1/200th of a sample (0.18 nsec) and pressing the toggle switch down will delay the phase by the same size increments.

Press the pushbutton again to adjust the Colour Frame phase. Pressing the toggle switch up/down will cause the output color frame phase to increment/decrement by one color frame with respect to the input.

6. JUMPERS

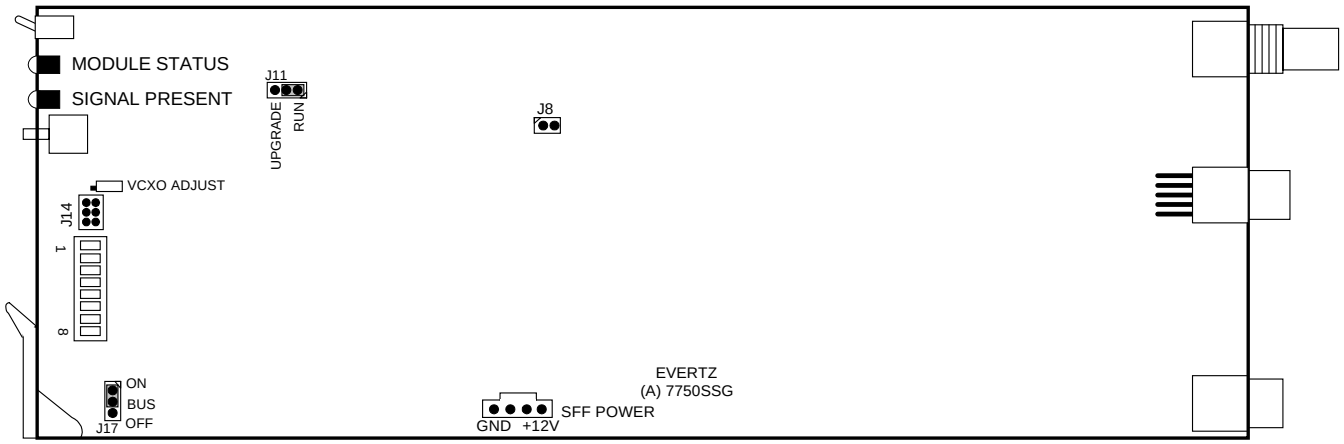

Figure 3: Location of Jumpers

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

BUS

The BUS jumper J17 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 in the On position. (Default)

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 J11 located at near the top of the module near the MODE jumper block, 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 of this manual for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J11 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J24 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* section of this manual. Once the upgrade is completed, remove the module from the frame, move J11 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

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