Model 9531
VITS Inserter

Instruction Manual

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INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original Version	Sept 99

The following document describes the operational changes to the 9531SDI VITS Inserter related to custom changes made for Foxtel. References to the 9531 manual are to version 1.0 printed September 1999.

1. OVERVIEW

The Foxtel 9531 VITS Inserters is a special version of the 9531 VITS Inserter consisting of 2 channels in a 1RU frame. In addition to the features described in the 9531 manual, there is a GPI control port for each channel to permit easy loading of four additional user presets per channel.

2. INSTALLATION

The special version of the 9531 is fitted with two high density 15 pin connectors that have the GPI inputs for each of the two VITS inserter channels. Table 1 shows the pinout of the high density DB-15 connector.

Pin #	Name	Description
1	GND	Ground
2	---	---
3	GPO	General Purpose Output – future use
4	---	---
5	GPI C	General Purpose Input C – Load GPI C preset
6	---	---
7	---	---
8	GPI A	General Purpose Input A – Load GPI A preset
9	GPI D	General Purpose Input D – Load GPI D preset
10	+5V	5 Volts GPIO Power
11	---	---
12	GND	Ground
13	---	---
14	GPI B	General Purpose Input B – Load GPI B preset
15	---	---

Table 1: GPI/O Connector Pinout

2.1.1. Connecting the General Purpose Inputs

The GPI's are active low with internal pull up resistors (4.7k Ohms) to 5 volts. The user can activate GPIs simply by connecting the GPI input pins to Ground. This can be done with a button, switch, relay or an open collector transistor.

Figure 1 below shows the input circuit for the General purpose inputs.

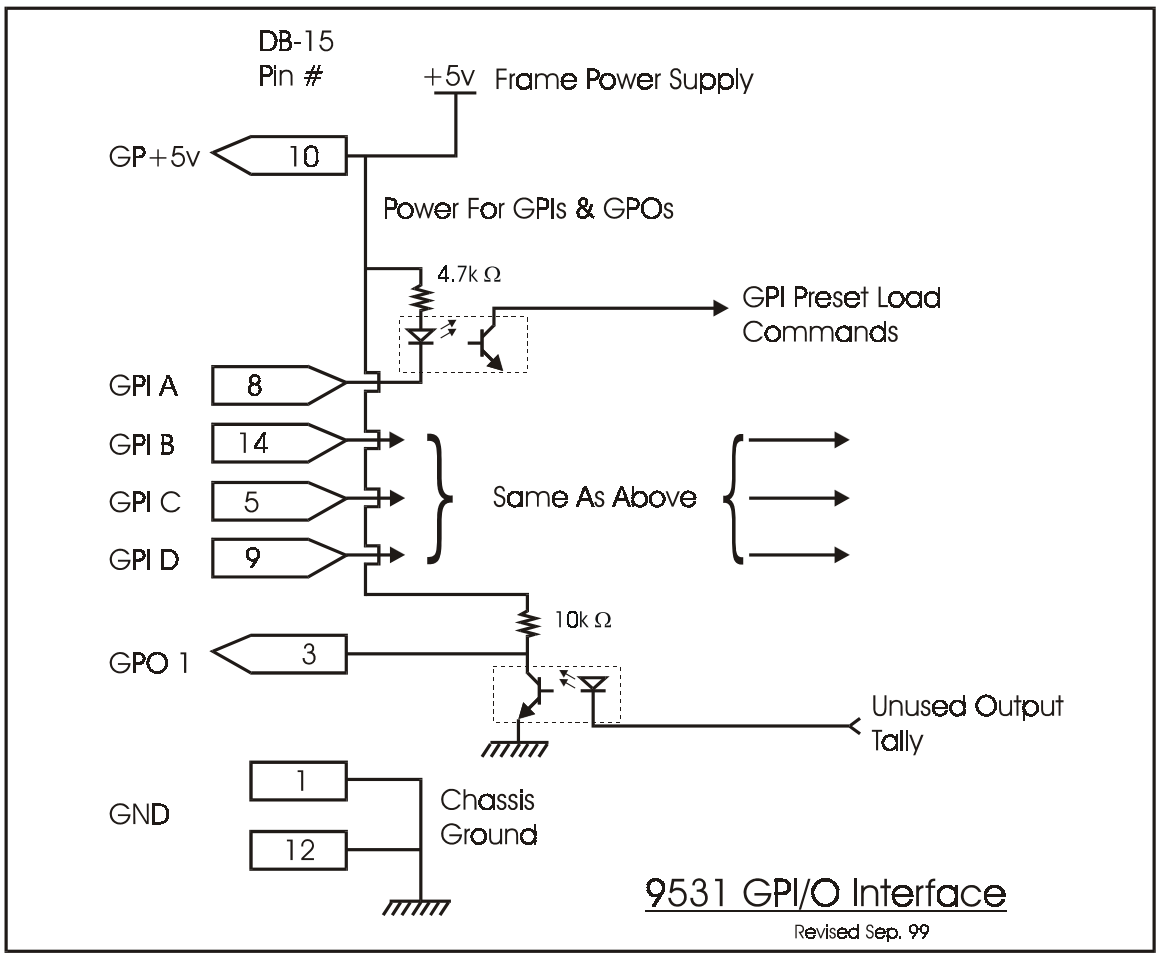


Figure 1: General Purpose I/O Schematic

3. WORKING WITH THE USER PRESETS

The Foxtel VITS Inserter has six memory locations to store user defined presets for each channel. Each preset contains a complete set of VBI line signal settings for the processing unit. Two of the user presets are accessible from the front panel while the remaining four are accessible from the GPI control port.

3.1. Saving User Presets

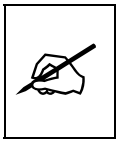
To save the current settings into one of the *user preset* memory locations you must use the SETUP menu. To enter the front panel programming menu, press the **SETUP** key. Press the ↓ key until you see the menu item `Save Preset` and press the **SELECT** key. The display will show `Save Preset #1`. This menu item allows the current configuration to be saved to one of two User Presets. Use the ↑ **&** ↓ buttons to cycle through the available presets. When you have selected the preset you wish to store the configuration into, press the **SELECT** button. To save the current configuration into this preset press the **SELECT** button again.

User Presets **cannot be deleted directly from memory they can only be overwritten by another configuration saved to the same memory location.**

3.2. Recalling User Presets

To load the current VITS Inserter settings from *user preset 1 or 2* memory locations; press the **USER PRESET** button corresponding to the location you wish to restore the settings from.

To load the current VITS Inserter settings from *user preset A, B, C or D* memory locationsconnect the respective GPI input to ground.



Recalling one of the user presets will overwrite the current settings and can not be undone. Make sure you want to overwrite your current settings before you recall one of the user presets

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1. OVERVIEW

The Evertz 9531 VITS Inserter is a full function vertical interval test signal inserter for standard definition digital video. The VITS Inserter has the ability to overwrite any three lines of program source in the vertical blanking interval of each video field. Lines can be programmed independently in field 1 and field 2.

Features:

- Extensive library of Factory preset test signals.
- Up to 64 user line patterns may be captured from any VBI line for later insertion on any VBI line.
- Any number of VBI lines can be independently blanked out in one or both fields.
- Line selection is fully dynamic and controllable from the front panel.
- Dual standard (525 line and 625 line) capability.
- Video input relay bypass for power failure bypass protection.
- Non-volatile memory protects current configuration in case of power loss.
- Optional dual power supply configuration.

The VITS Inserter is available as a single channel or triple channel inserter. The functions of each channel are identical, and can be programmed independently from each other.

1.1. HOW TO USE THIS MANUAL

This manual is organized into 4 chapters: Overview, Installation, Operation and Technical Description. Chapter 1 contains a short overview of the features of the unit. Chapter 2 gives a detailed description of the rear panel connectors and how the VITS Inserter should be connected into your system. Chapter 3 gives a detailed description of the operation. Chapter 4 gives an overview of how to update the firmware in the unit and other technical issues.

Items of special note are indicated with a double box like this.

2. INSTALLATION

2.1. REAR PANEL

The following sections describe the purpose of the rear panel connectors of the 9531. Sections 2.1.1 to 2.1.3 describe the specific signals that should be connected to the units.

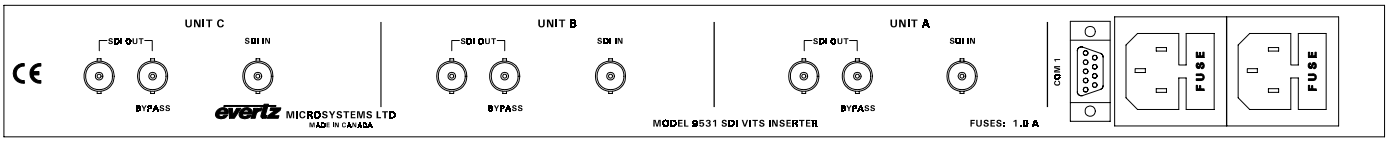


Figure 2-1: Model 9531 Rear Panel Layout

2.1.1. Digital Video Connections

There are separate video inputs and outputs for each VITC inserter channel.

SDI IN Input BNC connector for 10-bit serial digital video signals, compatible with the SMPTE 259M (CCIR601) standard.

SDI OUT Two BNC serial digital video outputs are provided. Output 1 is protected by a bypass relay, which will activate in the event of power loss to the unit, or can be activated from the front panel. The remaining output is not bypass protected.

2.1.2. Remote Control Connections

COM1 A 9 pin female 'D' connector for the RS-232 serial interface used for updating the firmware.

Pin #	Name	Description
1	GND	Chassis ground
2	Tx-/TxD	RS-232 Transmit Output / RS-422 Tx-
3	Rx-/RxD	RS-232 Receive Input / RS-422 Rx-
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	Rx+/RTS	RS-232 RTS Input / RS-422 Rx+
8	Tx+/CTS	RS-232 CTS Output / RS-422 Tx+
9		

Table 2-1: COM 1 Connector Pin Definitions

2.1.3. Power Connections

LINE: The VITS Inserter has one or two universal power supplies that operate on either 115v/60 Hz or 230v/50 Hz AC operation. (Redundant supply is optional)

2.2. MOUNTING

The VITS Inserter is equipped with rack mounting angles and fits into a standard 19 inches by 1.75 inches by 17.75 inches (483 mm x 45 mm x 451mm) rack space. The mounting angles may be removed if rack mounting is not desired.

2.3. POWER REQUIREMENTS

2.3.1. Selecting the Correct Mains Voltage

The VITS Inserter has one or two universal power supplies that automatically sense the input voltage. (Redundant supply is optional) The 9531 operates on either 115 Volt / 60 Hz or 230 Volt / 50 Hz AC. The PSU STATUS LEDs on the front panel indicate if the power supplies are operating normally.

Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry modules on the rear panel. The power cord should be minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length. The power entry module combines a standard power inlet connector, two 5 x 20 mm fuse holders and an EMI line filter.

2.3.2. Changing the Fuse

The fuse holder is located inside the power entry module. To change the fuses, pull out the fuse holder from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place. Use slo blo (time delay) 5 x 20 mm fuses rated for 250 Volts with a current rating of 1 amp. Carefully reinsert the fuseholder into the power entry module.

Never replace with a fuse of greater value.

2.4. CONNECTING THE DIGITAL VIDEO

The 9351 VITS Inserter can have up to 3 independent processing units installed. Each unit operates totally independent from each other. Separate video connections are provided for each processing unit.

2.4.1. Video Input and output

The 9531 requires that a 525 or 625 line digital video source in the component (4:2:2) format be connected to the SDI IN BNC. The 9531 must be set to the correct video standard using the *SETUP* menu. (See Section 3.2.1)

The two SDI OUT BNCs contain the input video with the required VITS signals inserted. VBI blanking may also be applied to these outputs. When the bypass relay is not active, output 1 is identical to the other output. When the bypass relay is active (on power loss to the unit or activated from the front panel) the input video is connected directly to output 1 and does not pass through the unit. Output 2 will not have any video on it when the bypass relay is active.

3. HOW TO OPERATE THE VITS INSERTER

3.1. AN OVERVIEW OF THE KEY AND DISPLAY FUNCTIONS

The display area consists of a 16 digit alphanumeric display, 16 LED status indicators and a 16 pushbutton keypad.

The Setup menu provides a means of setting up what test signals will be inserted onto specific lines of the vertical blanking interval, and which lines in the vertical blanking interval will be blanked, allowing you to configure the device to your application. Two user preset buttons allow you to save and recall frequently used collections of settings, to simplify operation of the VITS Inserter.

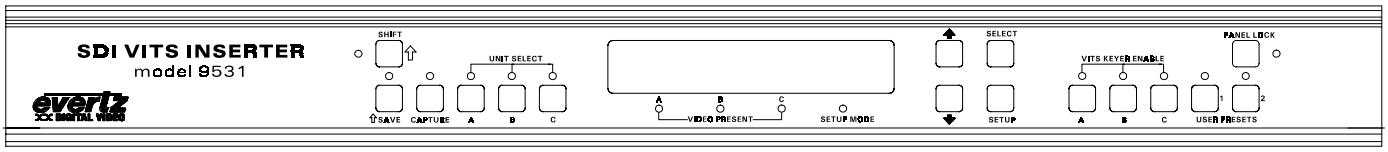


Figure 3-1: Model 9531 Front Panel Layout

The remainder of this section gives an overview of each of the front panel buttons. Sections 3.2 to 3.3 give detailed on the operation of the 9531.

3.1.1. The Setup Button Group

SETUP This button is used to enter *setup* menu which is used to control various setup options to configure the operating modes of the VITS Inserter. (See section 3.2 for a complete description of the *setup* menu.)

SELECT This button is used to save *setup menu* choices settings.

↑ & ↓ The arrow keys are used to navigate through various menu choices in the *setup* menu.

3.1.2. The Unit Select Button Group

The 9351 VITS Inserter can have up to 3 independent processing units installed. Each unit operates totally independent from each other.

A, B, C These buttons are used to select which unit of a multi channel VITS Inserter is being controlled by the front panel. On single channel units, **B** and **C** are not used.

3.1.3. The Preset Button Group

The Preset key group consists of the two **USER PRESET** buttons. These keys are used to save and recall one of two different user setups.

USER PRESETS These two buttons are used to store or recall the non-volatile *USER PRESETS*. To recall a *USER PRESET* press the corresponding button. Press the **SELECT** key to confirm that you want to load the user preset. (See section 3.4 for a complete description of how to use the *user preset*.)

3.1.4. The Auxiliary Control Button Group

The Auxiliary key group consists of the **PANEL LOCK** and three **VITS KEYER ENABLE** buttons.

PANEL LOCK Pressing the **PANEL LOCK** button initiates a **global** panel lock. All front panel controls except the **PANEL LOCK** button are inhibited when *LOCK* is enabled. When the panel is *LOCKED* the *PANEL LOCK* LED illuminates. Pressing the **PANEL LOCK** button will toggle the *LOCK* state *ON* and *OFF*.

VITS KEYER ENABLE Each VITS Inserter processing unit has separate keyer controls. These three buttons are used to select which of the three keyers is being active. Press the **SELECT** key to enable or disable the unit's keyer. The LED above the button will come on when the keyer is active. On single channel units, **B** and **C** are not used.

3.1.5. The Line Capture Button Group

The Line Capture key group consists of the **SHIFT**, **SAVE** and **CAPTURE** buttons. This group is used to capture various lines from the incoming video and store them into one of 64 line capture registers, for later insertion into the video stream.

SHIFT Press the shift button for certain special functions.

SAVE This button (when pressed with the **SHIFT** button) is used to actually capture data to one of the line capture registers when the capture mode has been activated (capture LED on). Once the line has been saved, capture mode is disabled and normal line playback continues.

CAPTURE This button initiates line capture mode. The capture LED will come On. The arrow keys **↑ & ↓** are used to select various capture options. Pressing the **CAPTURE** button again will exit Capture mode without saving any data. See section 3.3 for a complete description of how to capture VBI line data.

3.1.6. Status Indicators

There are 16 status indicators located on the front panel that show operational status of the VITS Inserter at a glance.

SHIFT this LED is currently not used.

SAVE This LED will flash in *capture* mode when the capture control is ready.

CAPTURE This LED will be on in capture mode; it will be off in normal and setup modes.

UNIT SELECT These LED's indicate which of the three independent processing units the front panel is currently controlling.

VIDEO PRESENT These three LEDs indicates video is present at the input of each of the VITS Inserter channels.

SETUP MODE Indicates that the 9531 is operating in SETUP mode.

VITS KEYER ENABLE These LED's indicate when the VITS keyer of each processing unit (A, B, or C) is enabled. When the keyer is enabled the selected lines will be blanked or overwritten with the line memory data.

USER PRESET These LEDs indicates that the selected *preset* is active. If the VITS insertion or VBI blanking settings are modified this LED will extinguish.

PANEL LOCK Indicates that VITS Inserter front panel controls are locked against accidental changes.

3.1.7. Front Panel Displays

The front panel can be used to show the VBI status for the selected unit when it is not in *SETUP* mode. This display is accessible by pressing the ↑ **&** ↓ buttons. Use the ↑ **&** ↓ buttons to view the status of all the VBI lines for the selected channel. On multi channel VITC processors, you can view the lines in the other channels by pressing one of the **UNIT SELECT** buttons.

3.2. FRONT PANEL SETUP MENU

The *SETUP* menu system uses the 16 digit alphanumeric display and provides a quick, intuitive method of configuring the VITS Inserter.

The four keys in the Setup key group (**SETUP**, **SELECT,** ↑**,** ↓) are used to cycle through the various items on the *SETUP* menu. The *SETUP* menu consists of a main menu with two or more choices for each menu item. Figure 3-2 is an overview of the *SETUP* menu for the VITS Inserter. The menu items are shown on the left with grey shading and the various choices are shown on the right with no background shading.

Video Standard	525	625		
VBI Line Setup	LN 10 BYPASS	LN 10 BLANK	LN 10 FACT SIG	LN 10 USER SIG
Save Preset	1	2		
Software Upgrade	Select = Upgrade			
Blank all VBI	Select = Blank VBI			
Bypass All Lines	Select=BypassAll			

Figure 3-2: Overview of the 9531 Setup Menu

To enter the front panel programming menu, press the **SETUP** key. Pressing the ↑ **&** ↓ keys allows you to move vertically within the menu tree. To view the possible values for that item, press the **SELECT** key. Pressing the ↑ **&** ↓ keys allows you to show the possible values for the selected menu item. When you have selected the desired menu value press the **SELECT** key to save your choice and return to the main

menu tree. If you do not want to change the value for the selected menu item then press the **SETUP** button to return to the main menu tree.

When you have made all the desired changes, press the **SETUP** key to return to the normal display mode.

When you make a change to one of the *SETUP* parameters you will need to press the *SELECT* button to save the change.

3.2.1. Selecting the Video Standard

Video Standard	525	625

This menu item allows the user to select the video format of the incoming SDI signal.

Select **525** when using 525 line video at 29.97 frames per second. (Specified by SMPTE/ANSI 125M)

Select **625** when using 625 line video at 25 frames per second. (Specified by EBU Tech 3267)

3.2.2. Setting Up What Signals Will Be Inserted On The VBI Lines

VBI Line Setup	LN 10 BYPASS	LN 10 BLANK	LN 10 FACT SIG	LN 10 USER SIG

This menu item is used to configure what signals will be inserted on each line of the VBI. Press the **SELECT** button to access this menu item. The front panel display will show the VBI line number that is being configured, and the current signal programmed for that line. E.g.: `LN 10 BLANK`. Use the ↑ **&** ↓ buttons to cycle through the available lines. Press the **SELECT** button to configure the currently displayed line. There are 4 choices for VBI line processing. Use the ↑ **&** ↓ buttons to cycle through the choices. Press the **SELECT** button to choose the currently displayed signal for the current line. You can proceed to set up other VBI lines by using the ↑ **&** ↓ buttons.

Signals can be inserted on up to 3 VBI lines in each field. If all three line buffers are full, you will see the message `LN 10 BUFS FULL` if you attempted to insert a signal on more than 3 lines in a field. To clear out one of the buffer memories, scroll through the lines and set the line status to *blank* or *bypass.* Alternately, you can clear all the line buffers for the selected channel by selecting the *Blank all VBI* or *Bypass all lines* menu items. (See sections 3.2.5 and 3.2.6)

BYPASS The VITS Inserter does not modify the line.

BLANK Any signal on this line will be removed and replaced with black.

FACT SIG One of the built in (factory) line memories is written to the line. Press the **SELECT** button to configure which factory signal to use. Use the ↑ **&** ↓ buttons to cycle through the available factory signals. Press the **SELECT** button to select the signal and save the change. The name of the selected signal will be shown on the front panel. See Chapter 4 for a list of the factory programmed test signals available.

USER SIG One of the user captured line memories is written to the line. Press the **SELECT** button to configure which user signal to use. Use the ↑ **&** ↓ buttons to cycle through the available factory signals. Only user memories which have data stored from a user capture can be selected for output. Press the **SELECT** button to select the signal and save the change.

3.2.3. Saving User Presets

Save Preset	1	2

This menu item allows the current configuration to be saved to one of two User Presets. Press the **SELECT** button then use the ↑ **&** ↓ buttons to cycle through the available presets. When you have selected the preset you wish to store the configuration into, press the **SELECT** button. To save the current configuration into this preset press the **SELECT** button again. Once a preset is saved, it can be recalled by pressing the appropriate **USER PRESET** button.

3.2.4. Upgrading the 9531 Firmware

Software Upgrade	Select = Upgrade

This menu item is used to initiate upgrades to the 9531 VITS installed software. Press the **SELECT** button to choose this menu option and then press the **SELECT** button a second time. The unit will wait for a connection through the RS-232 port to receive the software upgrade. On completion of the upgrade the 9531 will reboot; if no upgrade is received within one minute the unit will reboot. See Chapter 4 for complete information about performing firmware upgrades.

3.2.5. Blanking All VBI lines

Blank all VBI	Select = Blank VBI

This menu item allows the user to quickly set all VBI lines to Blank, and programmable active video lines to Bypass. This will cause a solid black line to be keyed to lines 6 to 22 in 625 mode, or 10 to 21 in 525 mode. Corresponding lines in field 2 are also blanked. Remaining lines are all set to Bypass. Press the **SELECT** button to confirm the line blanking. Use the **SETUP** button to return to the main menu without blanking the VBI lines.

3.2.6. Bypassing All Lines

Bypass All Lines	Select=BypassAll

This menu item allows the user to set all lines to Bypass. The VITS Inserter will not write or blank any lines in either field. Press the **SELECT** button to confirm the line bypass. Use the **SETUP** button to return to the main menu without blanking the VBI lines.

3.3. WORKING WITH THE USER SIGNAL MEMORIES

The VITS Inserter has the ability to capture up to 64 user line patterns from any VBI line for later insertion on any VBI line. On multi channel VITS processors, there are 64 user memories for each channel.

3.3.1. Capturing Lines to the User Line Memories

The **SHIFT, SAVE** and **CAPTURE** buttons are used to capture signals from the VBI into the user memories. To initiate line capture mode press the **CAPTURE** button. The Capture LED will come On, the Save LED will blink and the front panel will show `Capture User Sel`. Pressing the **CAPTURE** button again will exit Capture mode without saving any data. Press the **SELECT** button to choose one of the user memories to capture the VBI line to. The front panel will show `Capture=>User x` where x is the next available user memory number. Use the arrow keys ↑ **&** ↓ to select the user memory that you wish to save the captured line into and press the **SELECT** button to choose the memory location. The front panel will show `Capture User Sel.`

Next you need to choose the VBI line that you wish to capture. Use the ↓ key until the front panel shows `Capture Line Sel.` Press the **SELECT** button to choose which VBI line will be captured. The front panel will show `Capture Line= y` where y is the desired VBI line. Use the arrow keys ↑ **&** ↓ to select the VBI line that you wish to capture and press the **SELECT** button. The front panel will show `Capture Line Sel.`

To capture the selected VBI line to the selected user memory location press and hold the **SHIFT** button and then press the **SAVE** button. The SAVE and CAPTURE LEDs will go off when the line has been successfully captured to the user line memory.

3.3.2. Deleting the User Line Memories

To erase one of the user line memories press the **CAPTURE** button. The Capture LED will come On, the Save LED will blink and the front panel will show `Capture User Sel`. Use the ↑ key until the front panel shows `Delete User Sel.` Press the **SELECT** button to choose one of the user memories to erase. The front panel will show `Delete =>User x` where x is the user memory number that you want to erase. Use the arrow keys ↑ **&** ↓ to select the user memory that you wish to erase and press the **SELECT** button to choose the memory location. The front panel will show `Delete User Sel`. To erase another user line memory press the **SELECT** button again and select another user memory. To exit the user memory delete function press the **CAPTURE** button

3.4. WORKING WITH THE USER PRESETS

The VITS Inserter has two memory locations to store user defined presets. Each preset contains a complete set of VBI line signal settings for the processing unit. On multi channel VITS processors, there are two user presets for each channel.

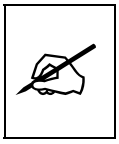
3.4.1. Saving User Presets

To save the current settings into one of the two *user preset* memory locations you must use the SETUP menu. To enter the front panel programming menu, press the **SETUP** key. Press the ↓ key until you see the menu item `Save Preset` and press the **SELECT** key. The display will show `Save Preset #1`. This menu item allows the current configuration to be saved to one of two User Presets. Use the ↑ **&** ↓ buttons to cycle through the available presets. When you have selected the preset you wish to store the configuration into, press the **SELECT** button. To save the current configuration into this preset press the **SELECT** button again.

User Presets **cannot be deleted directly from memory they can only be overwritten by another configuration saved to the same memory location.**

3.4.2. Recalling User Presets

To load the current VITS Inserter settings from one of the two *user preset* memory locations; press the **USER PRESET** button corresponding to the location you wish to restore the settings from.



Recalling one of the user presets will overwrite the current settings and can not be undone. Make sure you want to overwrite your current settings before you recall one of the user presets

4. TECHNICAL DESCRIPTION

4.1. SPECIFICATIONS

4.1.1. Serial Video Input

Standards: SMPTE 259M (270 Mb/s)
Connector: 1 BNC input per IEC 169-8
Equalization: Automatic 300m @ 270 Mb/s with Belden 8281 or equivalent cable
Return Loss: > 15 dB up to 540 Mb/s

4.1.2. Serial Video Outputs

Number of Outputs: 1 with relay bypass, 1 additional outputs.
Connector: BNC per IEC 169-8
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 540 Mb/s
Wide Band Jitter: < 0.2 UI

4.1.3. Electrical

Voltage: 110 - 230 Volts AC, 50/60 Hz – unit autosenses the voltage
Fuse Rating: 250 V, 1amp time delay
Power: 30 VA
Safety: ETL Listed, complies with EU safety directives
EMI/RFI: Complies with FCC Part 15 Class A regulations
Complies with EU EMC directive

4.1.4. Factory Supplied Test Signals

The following signals are available within the 9531 VITS processor.

Name
100% White
50% Gray
75% Colourbars
100% Colourbars
FCC Composite
FCC Multiburst
GCR System C
GCR Waveform
Linear 5 Step Staircase
Multiburst 100% / 4.2 MHz
Multiburst 60% / 4.2 MHz
Modulated 5-Step Staircase
Modulated Ramp
Multipulse 4.2 MHz
NTC7 Combination
NTC7 Composite
Ramp
Red Line
Shallow Ramp
Sin (X)/X 4.75 MHz
Sweep 60% / 4.2 MHz
Sweep 60% / 5.5 MHz
Valid Ramp
VIRS

Table 4-1: Factory programmed Test Signals

4.2. UPDATING THE FIRMWARE IN THE VITS INSERTER

The firmware in the VITS Inserter is contained in a FLASH EPROM device. From time to time firmware updates will be provided to add additional features to the unit. The following procedure will allow you to upload new firmware from your computer.

4.2.1. Requirements

You will need the following equipment in order to update the VITS Inserter Firmware

- PC with available communications port. The communication speed is 57600 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- “Straight-thru” serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male)
- Terminal program such as Hyper Terminal, Telix, Procomm etc.
- New firmware supplied by Evertz.

4.2.2. Update Procedure

4.2.2.1. Part I – Terminal program Setup

1. Power-down the Video Delay Processor.

2. Connect the "straight-thru" serial cable from the PCs' RS-232 communications port to the **COM1** RS-232 communications port on the back of the Video Delay Processor.

3. Start the terminal program.

4. Configure the port settings of the terminal program as follows:

Baud	**57600**
Parity	**No**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

5. Power-up the Video Delay Processor.

6. After you power up the Video Delay Processor, a banner with the boot code version information should appear in the terminal window.

For example:

```
EVERTZ 9000DP MONITOR 1.0 BETA Aug 20 1998 16:25:33
COPYRIGHT 1997, 1998 EVERTZ MICROSYSTEMS LTD.
9000DP COLD BOOT> |
```

The cursor to the right of the word "**BOOT>**" should be spinning.

7. The following is a list of possible reasons for failed communications:

- Defective RS-232 "straight-thru" serial extension cable.
- Wrong communications port selected in the terminal program.
- Improper port settings in the terminal program. (Refer to step 4 for settings). Note that Hyperterminal will not change port settings while connected. Click on Hyperterminal's "Disconnect" Button then click the "Reconnect" button to activate changes to the port settings.
- VITS Inserter is off.

4.2.2.2. Part II – Invoke upload mode via the front panel

8. To set up the 9531 for firmware upgrade mode you must use the SETUP menu. To enter the front panel programming menu, press the SETUP key. Press the ↓ key until you see the menu item Software Upgrade. Press the SELECT button is choose this menu option.

9. The control panel display should now show the message `Select=Upgrade`

10. Press the **SELECT** button to confirm the *Upgrade* operation.

11. You should now see a prompt on the terminal program screen asking you to upload the file.

For example:

```
UPLOAD FILE FOR $08000 NOW, CONTROL-X TO CANCEL
```

12. Skip to step18.

If you cannot invoke the upload mode via the front panel outlined in Part II then follow the steps in Part III.

4.2.2.3. Part III – Invoke upload mode via the terminal program

13. While the cursor is spinning press the <CTRL> and <X> keys on your computer keyboard at the same time, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.

14. Hit the <**ENTER**> key on your computer once.

15. Type the word "**upgrade**", without quotes, and hit the <**ENTER**> key once.

16. The boot code will ask for confirmation. Type "**y**", without quotes.

17. You should now see a prompt asking you to upload the file.

For example:

```
BOOT> upgrade
UPLOAD FLASH MAIN
ARE YOU SURE YOU WANT TO UPLOAD FLASH? [Y/N] Y

UPLOAD FILE FOR $08000 NOW, CONTROL-X TO CANCEL
```

4.2.2.4. Part IV – Uploading the new firmware

18. Upload the "*.bin" file supplied using the X-Modem transfer protocol of your terminal program. If you do not start the upload within 10 minutes the unit's Boot code will time out. You can restart the upgrade process by power cycling the unit.

19. The boot code will indicate whether the operation was successful upon completion of the upload.

    For Example:

```
UPLOAD OKAY
BOOT>
```

20. The following is a list of possible reasons for a failed upload:

- If you get the message "transfer cancelled by remote" you must restart the terminal program and load the bin file again.
- The supplied "***.bin**" file is corrupt.
- Wrong file specified to be uploaded.
- The PCs' RS-232 communications port can't handle a port speed of **57600**.
- Noise induced into the RS-232 "straight-thru" serial extension cable.

4.2.2.5. Part V – Completing the Upgrade

21. If you invoked the upload mode from the front panel, the VITS Inserter will automatically reboot after a short timeout. If you invoked the upload mode from the terminal program, type the word "**boot**", without quotes, and hit the <**ENTER**> key once. The VITS Inserter should now reboot.

22. If the VITS Inserter fails to reboot after the upgrade, then cycle the power on Video Delay Processor.

23. You can now close the terminal program and disconnect the RS-232 serial cable.

The update procedure is now completed