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## REVISION HISTORY

| REVISION | DESCRIPTION | DATE |
|---|---|---|
| 1.0 | Original Version | May 00 |

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# 1. OVERVIEW

The model 7700SID-CM is an analog VITC reader and multi-function character inserter that display decodes Source ID/status information that has been encoded into VITC by source ID Encoders such as the model 5010-SIE. The VTR time is encoded in the usual way for sources that have timecode associated with them. For non-timecoded sources such as cameras, the 7700SID-CM senses codes in the user bits to automatically blank the time display on the character inserter. A 5 character source ID message and a 3 digit source number are encoded into the user bits. For VTR sources, VTR status is also encoded into the user bits. For sources that do not have encoded status information, the 7700SID-CM automatically blanks the status display.

The high resolution character inserter provides two independently positionable windows to show time and source ID/status (decoded from the user bits) simultaneously. Three character sizes and the choice of white or black characters with or without contrasting background mask are selected from the front panel. The character inserter provides an on screen programming menu system, which is used to configure the various operating modes.

The VITC reader's line range can be easily programmed using the card edge controls, thus permitting recovery of specific VITC data where multiple sets have been recorded. The 7700SID-CM automatically detects whether incoming VITC with source ID is encoded in one of two formats, and appropriately displays either one. The first format consists of 5 alphanumeric characters followed by a number from 000 to 999. The source message and number are separated by a dash (-) in the Source ID display. The second format consists of 9 alphanumeric characters. VITC with source ID encoded in either format receives the highest priority in the 7700SID-CM and is always displayed if present.

When VITC with source ID is not present, the 7700SID-CM will decode any incoming PESA format source ID. The Time and Status VCG windows will be automatically turned off if they are visible, and the PESA source ID message will be shown in the Source ID window. When a video input that contains VITC with encoded source ID returns, the character windows will be restored to the last state they were in.

**Features:**

- VITC Source ID decoder displays Time, Source ID and machine status
- PESA Source ID decoder displays Source ID
- Independently positionable windows
- Three character sizes, white or black char with optional background
- On screen programming menu
- VITC Reader Lines selectable
- Front panel LEDs indicate video signal presence, and module fault

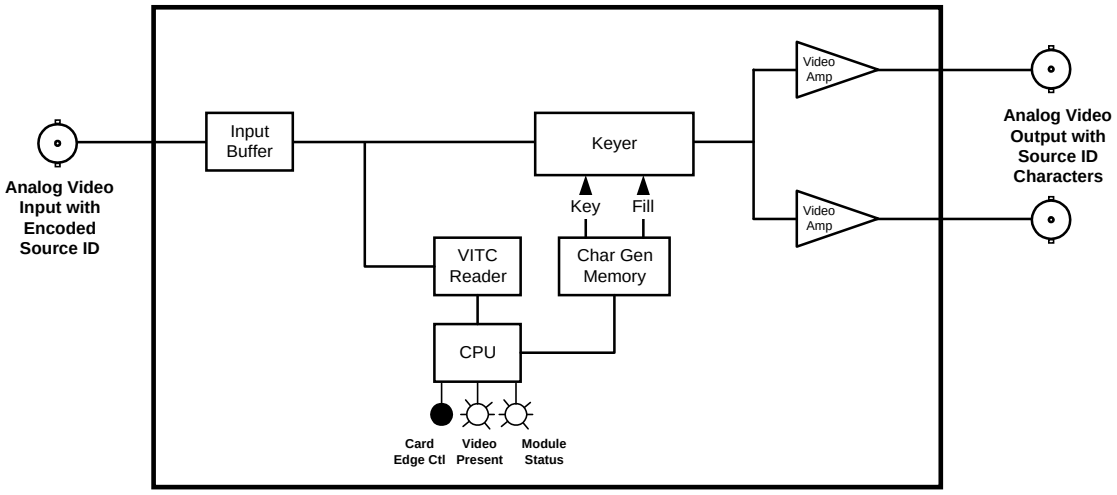


**Figure 1: 7700SID-CM Block Diagram**

# 2. INSTALLATION

The 7700SID-CM modules each come with a companion rear plate that has 3 BNC connectors. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

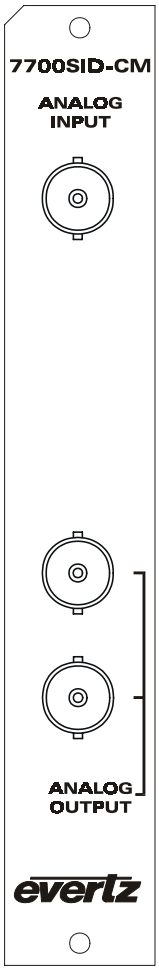


**Figure 2: 7700SID-CM Rear Panel**

**ANALOG INPUT** Input BNC connector for an NTSC or PAL analog video signal with Source ID encoded into vertical interval time code user bits.

**ANALOG OUTPUT** There are two BNC connectors with identical outputs of program video with source ID characters inserted. These outputs are also used to display the On screen programming menu and are normally connected to a video monitor. Size, position, and style of the character displays are controlled from the on screen programming menu.

# 3. SPECIFICATIONS

## 3.1. ANALOG VIDEO INPUT

**Standard:** NTSC or PAL composite analog video.
**Connector:** 1 BNC per IEC 169-8

## 3.2. ANALOG VIDEO OUTPUTS

**Number of Outputs:** 2 Per Card
**Standards:** Analog composite NTSC or PAL
**Connectors:** 2 BNC per IEC 169-8
**Signal Level:** 1 V p-p nominal
**DC Offset:** 0V ±0.1V

## 3.3. ELECTRICAL

**Voltage:** + 12VDC
**Power:** 3 Watts.
**EMI/RFI:** Complies with FCC Part 15, class A and EU EMC directive.

# 4. STATUS LEDS

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

## 4.1. MODULE STATUS LEDS

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

**LOCAL FAULT** This Red LED makes it easy to identify one module in a frame that is missing an essential input or has another fault.

The LED will blink on and off if the microprocessor is not running.

The LED will be on solid when input video is missing or there is a fault in the module power supply.

**SIG** This Green LED will be On when there is a valid video signal present at the module input.

**-5VDC** This Green LED will be On when there is a valid –5 VDC power from the module power supply.

# 5. CARD EDGE CONTROLS

The 7700SID-CM is equipped with an 8 position DIP switch that is used to invoke various diagnostic and calibrations functions. A three position, return to center toggle switch is used in conjunction with a momentary pushbutton to operate the On screen Setup menu. Section 5.1 shows the assigned DIP switch function for switch 6. The remainder of the switches are reserved for future use and should be in the Off position for normal operation. The On position is down, or closest to the printed circuit board.

## 5.1. RESETTING THE 7700SID-CM TO FACTORY DEFAULTS

DIP switches 6 is used to control whether the 7700SID-CM will reset to factory defaults on power up or will recall it's last configuration.

| DIP 6 | Factor Reset |
|---|---|
| Off | Recall last configuration |
| On | Reset to factory defaults on power up |

**Table 1: Factory Reset Switch Settings**

## 5.2. CHARACTER GENERATOR FUNCTIONS

Two separately positionable character windows displaying time or Source ID/Status (user bits) are available. Although the Source ID and Status windows move together, they can be independently turned on and off. The toggle switch in combination with the pushbutton control which windows are displayed and their position on the screen. The VCG menu of the On screen programming menu is used to select character size and style, and whether the symbols or fields will be displayed.

### 5.2.1. Selecting and Positioning the Individual Character Inserter Windows

Hold the toggle switch down and press the pushbutton to enable the *window select mode*. The message **ON OFF MODE** will appear in the center of the screen. Both windows will appear on the character screen with the window for the time highlighted. Press the toggle switch up or down to turn the highlighted window on or off. Press the pushbutton to enter *horizontal position mode*. The message **HORZ MODE** will appear in the center of the screen. Press the toggle switch up to move the highlighted window to the left, or down to move it to the right. Press the pushbutton to enter *vertical position mode*. The message **VERT MODE** will appear in the center of the screen. Press the toggle switch up to move the highlighted window up, or down to move it to down. Press the pushbutton to select the Source ID window the in *window on/off mode*. The Source ID window will be highlighted and the message **ON OFF MODE** will appear in the center of the screen. Follow the procedure outlined above to enable and position the Source ID and Status windows. When you are finished setting up the Status window, the message in the centre of the screen will disappear, indicating that you have exited *window select mode* and have returned to the normal display mode.

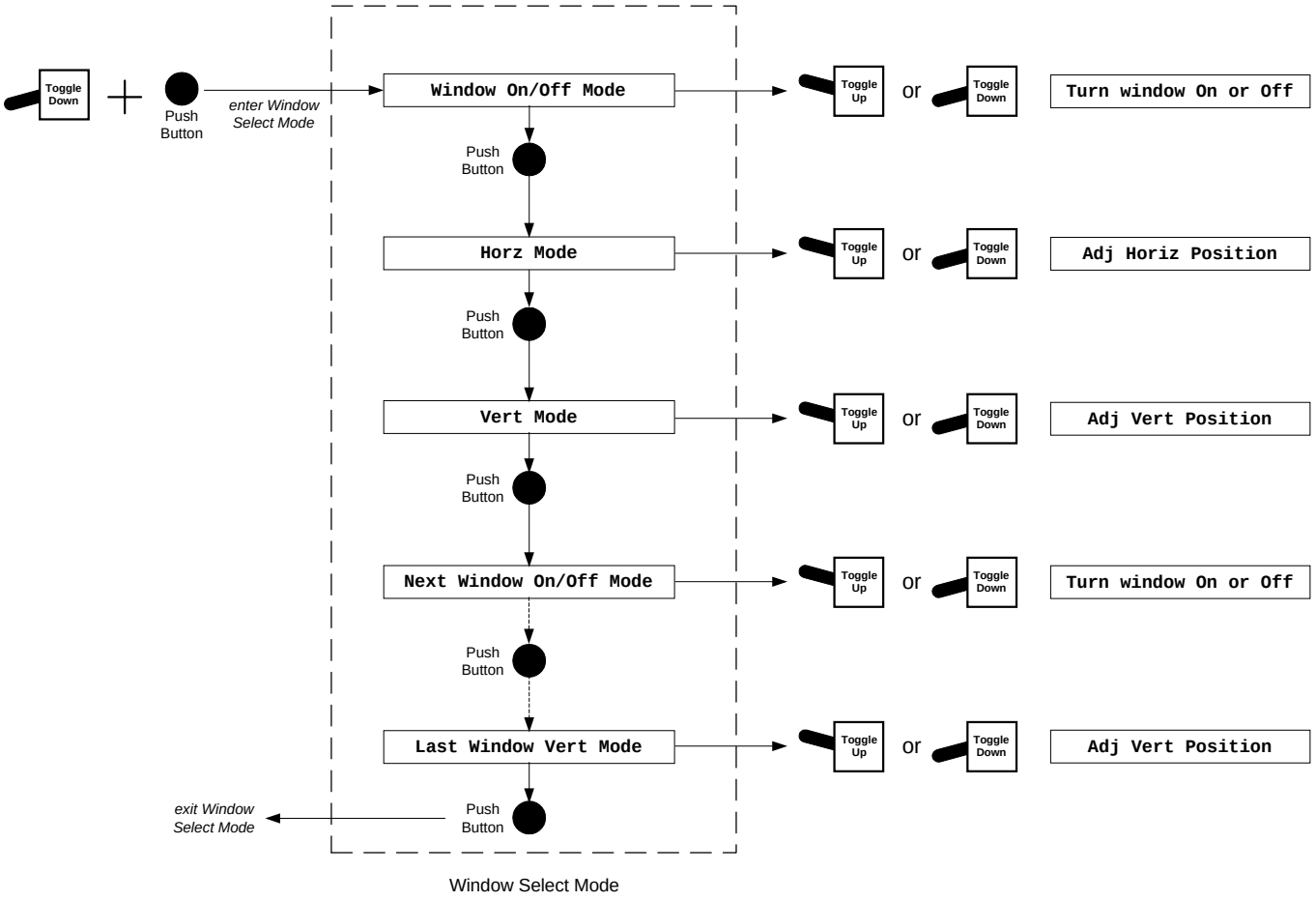


**Figure 3: Navigating Window Select Mode**

### 5.2.2. Character Generator On/ Off Controls

There are several factors that control whether the character generator windows will be turned on or off. In order of priority these are:

1. All the windows can be turned on and off by pressing the pushbutton when the 7700SID-CM is in the normal operating mode.

2. The individual windows can be turned off using the *Window on/off mode* described in 5.2.1.

3. If the source does not have timecode associated with it, (SRC TIME flag in user bits is off) the time window will be turned off.

   If the source does not have status associated with it, (SRC STATUS flag in user bits is off) the status window will be turned off.

### 5.2.3. Special VCG Indicators

The following special indicators are used between the seconds and frames digits of the time windows in the character inserter to identify non drop frame and drop frame code (NTSC only)

**Non Drop Frame** Colon (:)
**Drop Frame (NTSC)** Period (.)

### 5.2.4. Field Identification

When reading VITC, the field number sequence may be displayed to the right of the reader time frames display. When the data being read was recorded in the non-colour frame mode the field number sequence will be 1, 2, 1, etc. (1, 2, 3, 4, 1, etc. for PAL). When the reader data was recorded in the colour frame mode, the field number sequence will be 1, 2, 3, 4, 1, etc. (1, 2, 3, 4, 5, 6, 7, 8, 1, etc. for PAL) The field number display may be disabled using the VCG FIELDS item in the VCG menu.

## 5.3. ON SCREEN PROGRAMMING MENU - OVERVIEW

The key to the operational flexibility of the model 7700SID-CM lies in the powerful On screen programming menu system that uses the built in character generator. This method of configuring the model 7700SID-CM is quick, and simple, guiding you to the correct setup for your application. The toggle switch and pushbutton on the front card edge are used to cycle through the various items on the programming menu.

The model 7700SID-CM menu system consists of three drop down menus. The titles of each of the drop down menus are shown on the top line of the character display. Selecting an item on one of the drop down menus reveals a sub-menu showing the choices for that item. Figure 4 is an overview of the on screen menu system and shows all the menu choices and where you will find the menu items. Note that some menu choices will be hidden depending on the programmed mode of operation.

To enter the On screen programming menus, hold the toggle switch up and press the pushbutton. The character generator will show the last format screen that was used with the currently selected item highlighted. Pressing the toggle switch up or down allows you to move vertically within the drop down menus. When you get to the bottom or top of one of the menus, you will immediately traverse to the next menu item on the adjacent menu. When you have selected the desired menu item, press the pushbutton to reveal the sub menu choices for that item. Use the toggle switch to move vertically within the sub menu. When you have selected the desired sub menu choice press the pushbutton to save your choice and return to the drop down menu. Figure 5 shows how to navigate the on screen menus.

When you have made all the desired changes, hold the toggle switch up and press the pushbutton to return to the normal display mode. Changes in settings take effect only when you exit the menu system.

The READER drop down menu is used to program various reader modes such as selecting VITC Line numbers, whether user bits contain static numbers or source ID information, etc. The VCG drop down menu is used to program the size and style of the character generator, and whether the time code frames will be displayed or not. The CONFIGURATION drop down menu is used to select the video standard, set the horizontal character width, display brightness, etc. The CONFIGURATION menu items are normally only required during installation. Each of the menu items is described in the following sections with an explanation of what each choice does.

**READER**
- **ASSIGNMENT**
  - FIXED TO LTC/VITC
- **MODE**
  - TIME DATA: USERBITS
  - TIME DATA: SOURCE ID
- **VITC LINES**
  - LINE RANGE:
  - START: 10
  - END: 20
- **DISPLAY**
  - NO DIRECT IN LTC/VITC ASSIGN

**VCG**
- **CHAR SIZE**
  - TINY
  - SMALL
  - LARGE
- **CHAR STYLE**
  - WHITE
  - WHITE ON BLACK
  - BLACK
  - BLACK ON WHITE
- **VCG FRAMES**
  - DISPLAY
  - BLANK
- **VCG FIELDS**
  - DISPLAY
  - BLANK
- **VCG SYMBOLS**
  - DISPLAY
  - BLANK

**CONFIGURATION**
- **VIDEO TYPE**
  - AUTO
  - NTSC
  - PAL
- **HORZ CHAR SIZE**
  - HORIZONTAL
  - CHAR SIZE = 10
  - ← OR → TO ADJUST
- **DISPLAY LEVEL**
  - DISPLAY OPTION
  - NOT INSTALLED
- **FACTORY RESET**
  - ** WARNING **
  - THIS COMPLETELY
    - RESETS UNIT

  - PRESS TOGGLE DOWN + BUTTON
  - PRESS BUTTON KEY TO CANCEL

**Figure 4: On Screen Programming Menu Overview**

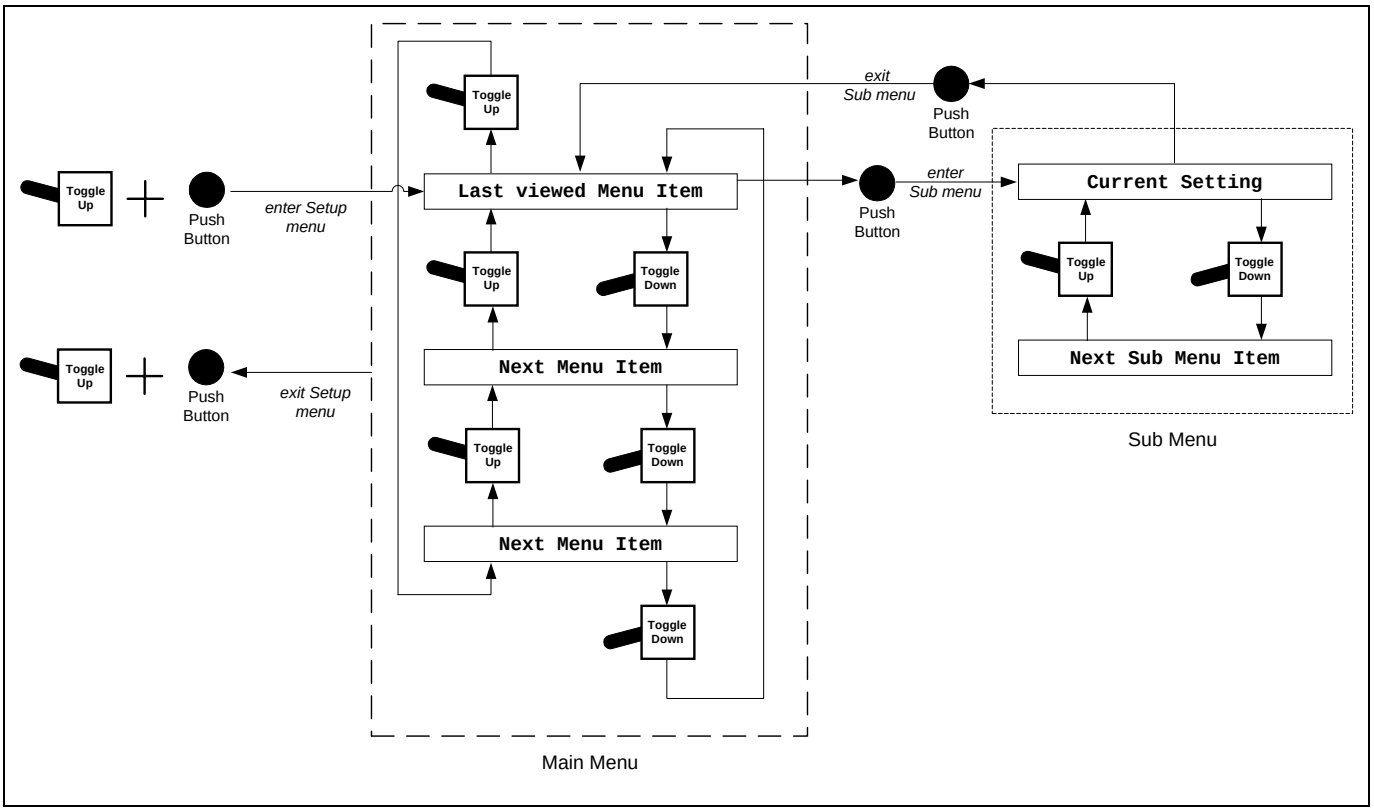


**Figure 5: Navigating the On Screen Programming Menu**

## 5.4. PROGRAMMING THE READER SETUP FUNCTIONS

### 5.4.1. Selecting the Reader hardware Configuration

The **ASSIGNMENT** menu is used to select how the reader hardware is configured. The model 7700SID-CM is configured for Vertical Interval Time Code (VITC) reading only. The reader can be set to recover VITC from different ranges of video lines.

### 5.4.2. Selecting the Format of the Time and User Bit Data

The **MODE** menu item is used to select the type of information that is contained in the time and user bits of the reader.

Select **TIME SOURCE ID** when the time contains normal time information and the user bits contain encoded source ID/status information. This is the normal mode of operation.

Select **DATA DATA** to display the undecoded user bit data. This mode is used for debugging purposes only.

### 5.4.3. Setting the VITC Reader Line Range

The **VITC LINES** menu item is used to select the lines that are enabled for VITC reading. VITC reading is enabled between the lower and higher line numbers shown (inclusive). If the reader is not assigned as a VITC reader then this menu item is not available.

When the **VITC LINES** sub menu is first selected, the START line number will be in reverse video indicating it can be changed. Press the toggle switch up or down to change the starting line. Press the pushbutton to highlight the END line, indicating that it can be changed. Press the toggle switch up or down to change the end line. Press the pushbutton again to return to the **VITC LINES** menu item.

### 5.4.4. Controlling the Reader ‘Look Ahead’ Compensation

The **DISPLAY** menu item is used to select whether the normal 'lookahead' compensation for reader dropouts is active or not. The 7700SID-CM VITC reader will always display in Processed mode.

## 5.5. PROGRAMMING THE CHARACTER GENERATOR FUNCTIONS

### 5.5.1. Selecting the Character Size

The **CHAR SIZE** menu item is used to select one of three sizes for the character generator's display. The on screen menus always use the small character size.

The **TINY** character size occupies 8 lines per field for each character row. This permits 28 vertical positions on the raster in NTSC or 32 in PAL.

The **SMALL** character size occupies 16 lines per field for each character row. This permits 14 vertical positions on the raster in NTSC or 16 in PAL.

The **LARGE** character size occupies 32 lines per field for each character row. This permits 7 vertical positions on the raster in NTSC or 8 in PAL.

### 5.5.2. Selecting the Character Style

The **CHAR STYLE** menu item is used to select whether the background mask will be used and whether the characters will be white or black. The on screen format menus are always keyed into a black background mask.

Select **WHITE** to disable the background and key white characters directly into the picture.

Select **WHITE ON BLACK** to key white characters on a black background mask into the picture.

Select **BLACK** to disable the background and key black characters directly into the picture.

Select **BLACK ON WHITE** to key black characters on a white background mask into the picture.

### 5.5.3. Controlling what the VCG displays

The **FRAMES** menu item is used to select whether the frames will be shown when the time is displayed.

Select **DISPLAY** to display the frames of the time displays
Select **BLANK** to blank the frames of the time displays

The **FIELDS** menu item is used to select whether the fields will be shown when the time is displayed.

Select **DISPLAY** to display the fields of the time displays
Select **BLANK** to blank the fields of the time displays

The **SYMBOLS** menu item is used to select whether the **^** symbol will be shown in front of the time and user bit displays of the VCG.

Select **DISPLAY** to display the VCG symbols.
Select **BLANK** to blank the VCG symbols.

## 5.6. PROGRAMMING THE OVERALL CONFIGURATION FUNCTIONS

The CONFIGURATION drop down menu is used to select the video standard, set the horizontal size of the characters, and reset the module to its factory defaults. The CONFIGURATION menu items are normally required only during installation.

### 5.6.1. Selecting the Video Standard

The **VIDEO TYPE** menu item is used to select the video standard of the program video. Changing the video standard will affect the settings of the VITC LINE RANGE menu setting. Make sure that you re-check this setting when you change the video standard.

Select **AUTO** if you want to have the 7700SID-CM auto detect PAL and NTSC video.

Select **NTSC** if you are using NTSC video.
Select **PAL** if you are using PAL video.

### 5.6.2. Adjusting the Horizontal Character Size

The **HORIZ CHAR SIZE** menu item is used to adjust the character width. Use the toggle switch to adjust the right side of the raster.

### 5.6.3. Resetting the 7700SID-CM to its Factory Defaults

The **FACTORY RESET** menu item is used to reset the 7700SID-CM to the factory default parameters. Hold the toggle switch down while pressing the pushbutton to reset the 7700SID-CM to factory defaults. The 7700SID-CM will perform a power-on configuration before returning to the normal operating mode. Press the pushbutton without holding the toggle switch to return to the menu system without resetting the module.

# 6. JUMPERS AND USER ADJUSTMENTS

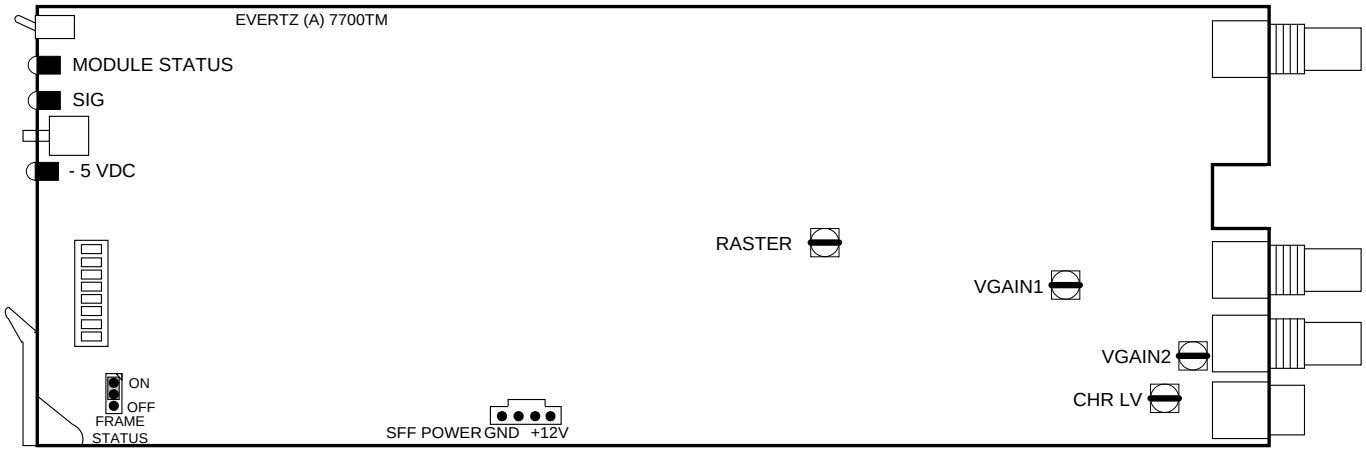


**Figure 6: Location of Jumpers**

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

**FRAME STATUS** The FRAME STATUS jumper 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. SETTING THE VIDEO AMPLIFIER GAIN

The VGAIN 1 trimpot R120 and VGAIN 2 trimpot R173 located near the output BNC connectors are used to set the gain of the video amplifiers. To calibrate the video keyer gain, connect colour bars from your sync generator to the Video input BNC and to channel A of your oscilloscope. Connect one of the video outputs of the model 7700SID-CM to channel B of your scope and terminate it. Adjust the appropriate trimpot so that the output amplitude matches the input.

## 6.3. SETTING THE CHARACTER WHITE LEVEL

The CHR LV trimpot R211 located near the Metral Power connector is used to set the white level of the characters. The character level is factory adjusted to peak white level.

## 6.4. SETTING THE LEFT MARGIN OF THE CHARACTER RASTER

The RASTER trimpot R104 located near U24 is used to set the position of the left side of the character scanning raster. The left side is factory adjusted to start approximately 12 μsec after the leading edge of horizontal sync.