



TSG490Y SPG & Pattern Generator

OPERATOR'S MANUAL



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This Manual

Scope

This manual provides all the information you will need to effectively operate and maintain your Sigma TSG490Y SPG & Test Pattern Generator. It describes installation, operation, maintenance and troubleshooting.

Locating Information

Following this introduction is a Table of Contents that indicates on which page in this manual a topic can be found. Additionally, there is a section entitled *How to...?*; this lists a series of operational and maintenance questions and provides answers.

Organization

The manual is divided into two parts : *Installation & Planning* and *Operation & Maintenance*. The first part describes the product from a technical standpoint and provides important specifications and connectivity information. The second part describes how to use and maintain the TSG490Y.

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Installation and Planning

1. Introduction

This section provides a general introduction to the TSG490Y, briefly explaining its principal components.

The Sigma Electronics TSG490Y is a broadcast quality SPG & test pattern generator, with analog and SD and HD digital (optional) video and analog and digital (optional) audio outputs.

System

The system consists of a 1U rack mounting unit.

Control Panel

The control panel provides facilities for selection of patterns, audio settings, display of current settings, timing controls and user ID programming.

Remote Control

The system may be controlled digitally from a remote source. An RS232 serial interface is provided for this purpose.

2. System Integration

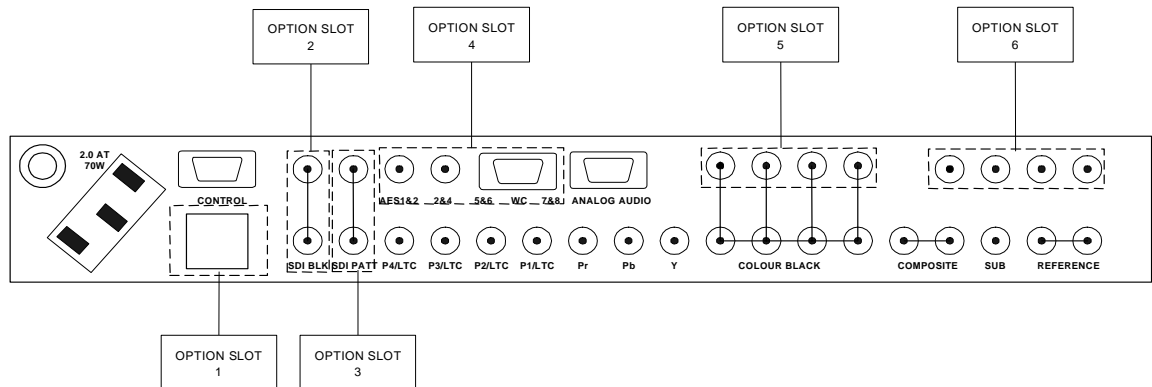
This section gives mechanical and electrical details about installing the TSG490Y.

2.1 Rack Mounting

The 1U chassis is designed to be mounted in a standard horizontal format 19" rack. The unit should sit on a horizontal bracket in the rack and be affixed using four bolts through the rack ears. Cooling vents are placed at the sides of the chassis, so adequate space should be available at the sides to permit air flow.

2.2 Rear Panel Connections

The following descriptions of the rear panel assume that you are looking at the rear panel from the back of the 1U rack. Refer to the diagram that follows. The fused AC mains inlet is housed on the left-hand side of the panel; to its right are the connectors for the remote control, video and audio connectors.



Option Slot 1: 10/100 base T (available soon)

Option Slot 2: SD411B - SDI Black

Option Slot 3: SD411C- SDI Test Pattern

Option Slot 4: OM404 - AES Tone, Silence & WordClock

Option Slot 5: 4x main colour black OR

HD402 - Timeable reference/ Tri-level Sync option OR

HD408 - HD Test Patterns & Black

Option Slot 6: HD402 - Timeable Reference/ Tri-level Sync option OR

HD408 - HD Test Patterns and Black

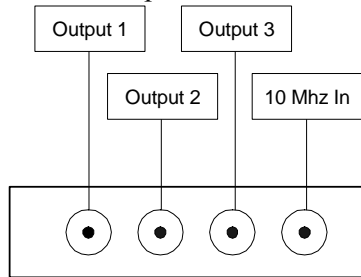
Sigma TSG490Y
Option Slots

2.3 Options

Up to six option cards can be installed within the TSG490Y. It is necessary to remove the top cover to install any option card. Full installation instructions are supplied with the option.

HD402 *NTSC/PAL Color black and Tri-level sync option*

Timeable reference outputs configured as NTSC or PAL, or Tri-level sync + 10MHz ref input.



Note:

This option is normally located in Option Slot # 5, but can also be located in Option Slot #6 (when 2 of these are installed for example).

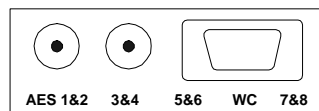
When located in Option Slot # 5, outputs are designated 1,2,3.

When located in Option Slot # 6, outputs are designated 4,5,6.

The TSG490Y software recognizes in which slot the card is located and identifies the outputs as noted above.

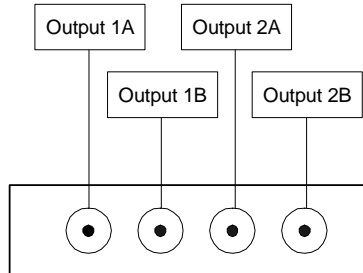
OM404 *AES digital audio option.*

2 Stereo Channels (tone & silence) available as: electronically balanced outputs and 75 ohm output. Word clock 48kHz AND 44.1 kHz.



This option is located in Option Slot # 4.

HD408 **HD/SD Pattern & Black generator with embedders option**



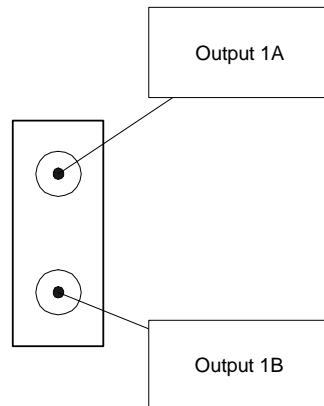
This option can be located in Option Slot # 5 OR Option Slot # 6. It is normally installed into Option Slot # 6.

SD411 **SD SDI Pattern or Black generator with embedders option**

There are two model numbers for SD411 options installed in a TSG490Y. The model number designates the position in which it is to be installed and for which mode of operation it is to be enabled.

The SD411B is located in Option Slot #2 and is enabled for the SDI Black mode as indicated on the rear silkscreen (see diagram above).

The SD411C is located in Option Slot #3 and is enabled for the SDI Pattern mode as indicated on the rear silkscreen (see diagram above)



2.4 Remote Control Connections

The 9-pin D-SUB connector marked CONTROL, located on the left side of the rear panel, is used to connect to an RS232 serial remote control source. Additional connections provide for installation with a second SPG and changeover unit and connection to a GPS system for time and date information.

9-pin D-SUB Connector Pin-outs (CONTROL)		
<i>Pin</i>	<i>Description</i>	<i>Notes</i>
1	GPI	General purpose input
2	RX-zero	RS232 RX from a PC or similar
3	TX-zero	RS232 TX to a PC or similar
4	GPS-10	GPS 10KHz / 10MHz signal
5	Ground	
6	RX-one	RS232 auxiliary RX from ????
7	TX-one	RS232 auxiliary TX to ????
8	GPS-1	GPS 1Hz signal
9	On Air	Used with changeover unit
	Shell	The connector shell is properly grounded to the chassis

2.5 Mains Power Input

The IEC mains connector requires a supply of 90V to 264V AC. The unit draws between 40mA and 85mA, depending on the version, and the number of option modules fitted.

WARNING : THIS EQUIPMENT MUST BE PROPERLY GROUNDED.

3. Technical Specifications

3.1 Physical Dimensions

The system is mounted in a standard horizontal format 1U 19 inch rack.

1U Rack Enclosure

Overall Dimensions 19 x 15 X 1.74 in. (483 x 380 x 44mm)
System Weight 14lbs. (6.3kg)

Shipping

Packaging Dimensions 21.5 x 19.5 x 6.5 in. (630 x 520 x 140mm)
Boxed Weight 17.6 lbs. (8kg)

3.2 Connectors

All connectors are mounted on the rear panel of the 1U rack Enclosure.

Power Connector	Filtered 3-pin IEC mains inlet
Video Connectors	BNC
Input	Looping reference (qty - 1).
Outputs	Analog Color Black (qty – 4 min., 8 max.) Analog Timeable Color Black (qty - 4) - OPTION Analog Pattern : Coded, Y, P _b , P _r , SD SDI Color Black (2) – OPTION SD SDI Test Pattern (2)– OPTION HD SDI Color Black (2) – OPTION HD SDI Test Pattern (2) – OPTION Subcarrier Pulses : MS, MB, + 2 of BG, PAL SQ, LD, FD, FIL7.
Audio Connectors	9-pin D-Sub socket
Outputs	Analog Stereo Tone (balanced) AES Audio (balanced) - OPTION AES Audio/Silence & Word Clock on BNCs - OPTION
Remote Control Connector	9-pin D-Sub socket

3.3 Electrical Requirements

THIS EQUIPMENT MUST BE PROPERLY GROUNDED.

Source	90 to 264 volts
Frequency	50/60Hz
Power Consumption	configuration dependent : 8 watts (min.), 18 watts (max.)
Mains Input Fuse Rating	T2A (Anti-Surge).

4. Service Requirements

4.1 Service Access

Access is provided to most of the electronics (the main module, and control panel electronics, option modules, etc) via the removable top cover.

To remove the top cover, first disconnect the mains lead, then remove the screws.

When reconnecting the control panel to the rack enclosure, ensure that the mains power lead is disconnected before proceeding, i.e. the control panel MUST NOT be connected to a “hot” system.

Should it be necessary to access the power supply or main board, or to perform measurements while the system is powered, the frame top cover must be removed. This is done by first removing the unit from the rack, then by removing all the screws in the top cover; note that it is not necessary to remove the control panel in this case.

Note : ALL top cover screws must be refitted in order that the frame continues to conform to current CE Emission Regulations.

Operation & Maintenance

1. Introduction

The TSG490Y SPG & Test Pattern Generator from Sigma Electronics is a high performance broadcast quality product. It offers an impressive range of test patterns simultaneously in analog and SD and HD serial digital, an easy to use control panel, and flexible remote control facilities. This makes it ideally suited to a variety of applications.

The TSG490Y system consists of a 1U rack unit with a control panel affixed to the front.

WARNING : THIS EQUIPMENT MUST BE PROPERLY GROUNDED.

2. Controls and indicators

Control Types

The control panel uses a single type of control: push buttons.

Indicator types

The control panel uses green LED's to provide operational status information. The brightness of the LED's may be adjusted to suit the environment. This can be achieved by adjusting the potentiometer located behind the Front Panel with a small screwdriver. This potentiometer is accessed through the hole that is directly above the “ – “ button on the right end of the panel.

2.1 Pattern Select

This group of controls encompasses the groups of four buttons and indicators on the left of the panel marked *Patterns*.

Patterns

To select a pattern press the button associated with the group of patterns and toggle thru the patterns to select the one needed.

Red

This button toggles $\frac{1}{3}$ -red-field on/off when any color bar pattern is selected.

Bounce

This button toggles the pattern bounce facility when certain monochrome patterns are selected.

Circle

This button toggles the Circle on/off facility.

2.2 ID Select

This group encompasses the two buttons in the middle of the panel marked *ID*.

ID (Off, Roll, Flash)

This button (used together with the - or + buttons on the right of the panel) determines which of the five display modes is selected : on and steady, roll, flash, multi-roll or multi-flash. All ID's OFF is also selectable.

ID (Mem 1, Mem 2, Mem 3)

This button (used together with the - or + buttons on the right of the panel) determines which of the three possible ID's is to be displayed.

2.3 Locking

This control encompasses the button to the right of the ID group and the associated group of LEDs.

Locking

Allows the user to select the SPG mode of operation (free run or one of three genlock modes).

2.4 Status

This group of LEDs indicates the current status of the TSG490Y.

2.5 Set-Up

The buttons marked Menu and Select together with the - or + buttons at the right-hand end of the control panel provide the means to customise the TSG490Y to suit user requirements.

2.6 Phase

The button marked Phase together with the - or + buttons at the right-hand end of the control panel provides the means to adjust the genlock V, H and Subcarrier phase of the TSG490Y to suit the user requirements.

3. How to... ?

3.1 Front Panel Selections

Select Pattern On Pattern Output

To select a pattern press the button associated with the group of patterns and toggle thru the patterns to select the one needed.

Note: Since the patterns are read from memory there will be a delay when the patterns are accessed, length of delay is dependant on complexity of the pattern.

Special Cases :

The patterns listed below have several variants. When the appropriate pattern LED is illuminated (as detailed above), press and hold the button associated with the group of patterns, and simultaneously toggle either of the - or + buttons at the right most end of the control panel.

- Ramp & Step : 10 Staircase &/or Ramp patterns.
- Sweep : 2 Line-rate Sweep patterns.
- APL's : Ramp, 5- & 10-step, modulated and un-modulated.
- Multitest 2 : 9 full field VITS and 1 Analog/Digital Discriminator patterns.
- Pulse & Bar : 4 Pulse & Bar patterns.
- Grille : 4x3 and 16x9 versions available.
- Square : 50Hz, 15kHz, 250kHz (on pedestal) available.
- Full Field : All 8 100% Full-Field Colors available.
- Safe Area : 5 Safe Area patterns for anamorphic pictures.
- Bowtie : 2 Bowtie patterns.

Select ID On Pattern Outputs And Its Display Mode

To select an ID, toggle the right of the two *ID* buttons. Select one of the three possible ID's (Mem 1,2 or 3) is chosen (adjacent green LED is lit).

To select the required display mode, toggle the left of the two *ID* buttons. Select one of the five possible display modes (On and steady, Roll, Flash, multi-roll, multi-flash).

Note : if none of the Mode LED's is lit, the ID is OFF.

Select Free Run Or Genlock Mode

To select Free Run or Genlock mode, press the button marked *Locking*. When the required mode (Free Run, Genlock Mem 1, Genlock Mem 2, Genlock Mem 3) is chosen (adjacent green LEDs are lit), release the button.

Set Genlock Subcarrier, H and V Phases

First set the TSG490Y into one of the three genlock mode settings. Ensure that a reference of color black is present. The following should be completed in sequence.

Set Subcarrier Phase (1st press of Phase button)

Depress the inset button marked Phase at the right most end of the panel once using a pointed device. The green LED marked SC will light. Now toggle either of the - or + buttons until the subcarrier phase is set as required.

Set fine H Phase (2nd press of Phase button)

Depress the inset button marked Phase at the right most end of the panel a second time using a pointed device. The green LED marked H will light. Now toggle either of the - or + buttons until the H-phase is set as required.

Set V Phase (3rd press of Phase button)

Depress the inset button marked Phase at the right most end of the panel a third time using a pointed device. The green LEDs marked H and SC will light. Now toggle either of the - or + buttons until the V-phase is set as required. **Note: a single push of either of the + or - buttons will advance or retard the signal by 1 line. If you keep the button depressed, the phase will change increasingly fast. The range is ± 4 fields - BEWARE.**

Store And Exit Phase Adjustment Mode (4th press of Phase button)

Depress the inset button marked Phase at the right most end of the panel a fourth time using a pointed device. The green LEDs marked SC and H will extinguish and the settings will be stored to memory.

3.2 Menu System Selections

Use System Menu To Set User Preferences

Press the button marked Menu once. The Menu is displayed on the pattern output and can be viewed on a monitor. Use the - or + button to highlight the required option and press the button marked Select. This will move you to the next level or change the option depending on where you are in the menu. To leave the menu system, select and confirm Exit each time until the Main Menu is displayed, then press Menu to exit.

Set Required Video Parameters

To set your Video parameters, using the method described above, enter the menu system and select Video, select Options, select SD (Standard Definitions), select either SDI or Coded (Analog), now set the video parameters you need. In addition, there are further levels of options that are only operational when particular option modules are installed, e.g. Timeable Color Black Settings, Auxiliary SDI Black/Video/AuxPattern.

Program ID's To Memory

First select one of the three possible ID's using the method described above. Enter the menu system, select Video, then select ID. Then using the - or + buttons, select a character position, then press Select to enter programming mode. Use the - or + buttons to select the required character, then press Select again to exit character programming and move to the next position. Continue until all required characters are programmed, up to a maximum of 30. Leave ID programming by moving to and repeatedly selecting Exit from the menu.

To insert characters and/or spaces within or around an existing ID, place the cursor at the insertion/deletion point and press either the ID Display Mode button to insert a blank space, or the ID Memory button to delete the character.

To completely wipe an ID, first select the ID using the method described above. Enter the menu system, select Video, then select ID. Use the - or + buttons to position the cursor under "Clr", then press the Select button, then leave ID programming by moving to and repeatedly selecting Exit from the menu.

To center an ID, simply position the cursor under "Cen" and press select .

Set Required Audio Parameters

Using the method described above, enter the menu system and move to the Audio section to set audio levels, frequency and interrupt settings. In addition, there are further levels of options specifically relating to the AES Audio Option Module; these include Sample Frequency, Embedding of AES information on SDI Pattern and/or SDI Black outputs, and Embedding Group selection. Audio Channels 1 thru 8 are intended for use when Option OM404 is installed. Channels 9 and 10 are the Analog Audio Channels.

The AES audio is delivered set as 0dB = -20dBFS but any other required level can be set

Set Remote Control

Using the method described above, enter the menu system and move to the Control

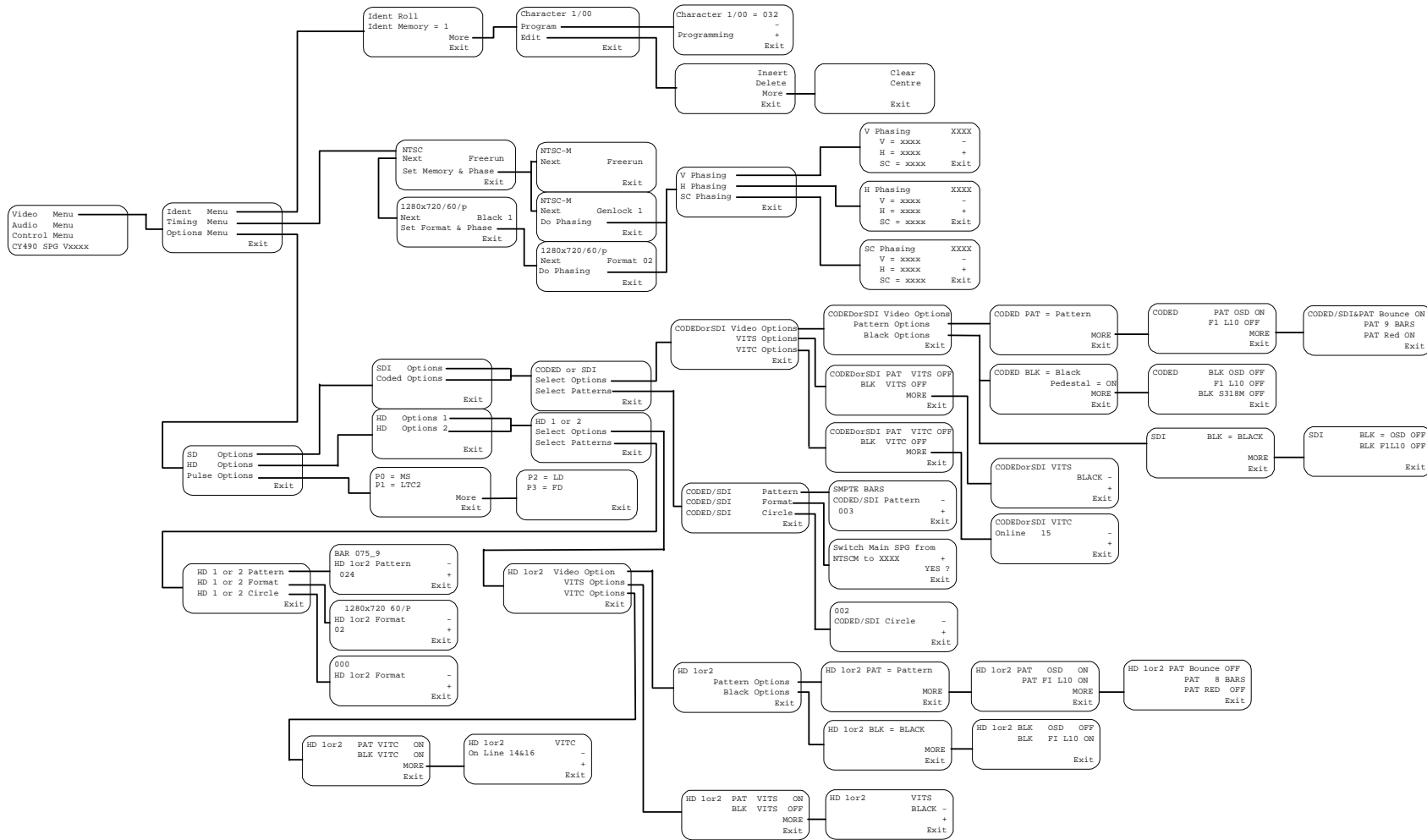
section to enable or disable Remote Control.

Set Primary or Backup

Using the method described above, enter the menu system, and move to the Control section to define whether the unit is the Primary (Master) or the Backup (Slave) unit in an SPG Changeover system. The front panel LED marked ON AIR illuminates when the unit is designated Primary and is off when designated Backup.

The following drawings show the primary levels of the Menu tree; more levels appear with installed options. The best way to find your way around the menu system is to use it.

3.3 Menu Diagram - Video



4. Routine Maintenance

The TSG490Y requires very little maintenance. Routine adjustments are not required and the preset controls should NOT be casually adjusted.

Dust

The unit should be protected from large build-up of dust. If present, this should be removed using a brush or vacuum cleaner when the unit is switched off.

Fuses

The unit has three fuses. The first is integrated into a fuse holder on the rear panel and is connected to the mains input live (brown) connection. The other two fuses are connected to the transformer secondaries and are mounted on the main PCB. They are resettable fuses and are of surface mount construction.

Fuses must always be replaced with ones of the same type and rating.

5. Troubleshooting

6. Warranty

Sigma Electronics, Inc. warrants that its products are free from defects in material and workmanship at the time of shipment from Sigma Electronics. The products will possess the electrical characteristics as set forth in the applicable data sheet for the warranty period as indicated. This warranty does not apply to any Sigma Electronics product or parts thereof, which have been subjected to misuse, neglect, improper installation, use in violation of furnished instructions, or accident. It does not extend to products that have been modified from original design outside the factory. Nor does it extend to units from which the serial number has been removed, defaced, or changed. Nor does it extend to accessories not of Sigma Electronics, Inc. manufacture.

Sigma Electronics, Inc. will remedy any defect or replace any defective part within TWO (2) YEARS of the date of purchase by the original user. Any such claim must be presented within 27 months (2.25 years) of the date of shipment by Sigma Electronics, Inc., and is returned to Sigma Electronics, Inc.

RETURN for CREDIT

Requests for return of products because of “ordered in error” or “cancellation of order”, after shipment has been made by Sigma Electronics, must be made within 30 days of shipment. If approval is given by Sigma Electronics to return the product, a restocking charge will be deducted from the amount of credit issued by Sigma Electronics. No unauthorized returns will be accepted. A return authorization number issued by Sigma Electronics must accompany all returns.

Return for Service Return Authorization

A Return Authorization number is required for return of product. For approval of the return, issuance of an RA number, and shipping details call Customer Service at Sigma Electronics, Inc. (717) 569-2681 between the hours of 8 AM and 5 PM EST weekdays.

Warranty replacement equipment may be provided if a failure occurs within the first 60 days of operation. Sigma Electronics will ship warranty replacement equipment via UPS ground or equivalent service. Return of the original equipment in question is the responsibility of the customer. Sigma Electronics will determine the cause of failure upon return of the original equipment. If the failure is not covered by the standard warranty, the customer will be billed for the repair cost. The customer shall return the original equipment within 30 days after receipt of the warranty replacement or be billed for the warranty replacement.

Loaner Equipment may be provided as a courtesy to the customer based on availability. Loaner equipment shall be provided (when available) for customer applications when original equipment failure occurs after the first 60 days of operation. Loaners are shipped at the customer’s expense. If equipment failure is covered under the standard warranty, Sigma will pay for the shipment of the original equipment back to the customer site from which it was received. Loaner equipment must be returned within 30 days after the repaired original equipment is returned to the customer.

Always use original packing materials when shipping equipment.

Mark the RA number on the outside of the carton to expedite service upon receipt at Sigma Electronics.

Appendix A

Pinout Data

TSG490Y PINOUT DATA

Analog Audio

Connector Type : 9-pin D-SUB socket

Pin No:	Signal
1	Right -
2	Right +
3	0V
4	Left -
5	Left +
6 & 7	0V

Digital Audio (OM404 option)

Connector Type : 9-pin D-SUB socket

Pin No:	Signal
1	Ch 5 & 6
2	Ch 5 & 6
3	0V
4	Ch 7 & 8
5	Ch 7 & 8
6 & 7	Word Clock 48kHz
8 & 9	Word Clock 44.1kHz

Appendix B TSG490Y SPG Option Modules

There are five option modules available for the TSG490Y, designated HD402, HD408, OM404 and SD411 (SD411B and SD411C).

The HD402 module provides three independently timeable Color Black or Tri-level sync channels.

The HD408 module provides pattern and black outputs in SD or HD serial digital formats.

The OM404 module provides AES audio outputs.

The SD411 module provides 2 SD SDI outputs that can be configured for SD color black (SD411B) or SD patterns (SD411C).

User-selectable parameters for all option modules are available within the Menu System. For more information on how to use the Menu System, see section 3 within this manual.

Appendix B TSG490Y SPG Option Modules (cont.)

HD402 Timeable Color Black & HD Tri-level Sync Option Module

TSG490Y Option #
HD402 Timeable Color Black PAL/NTSC Timeable Color Black & Tri-level Syncs

This module has three timeable Color Black or Tri-level sync channels, each independently adjustable in SC, H and V phase with respect to the main SPG output. Channels 1, 2 and 3 are all single output. Any or all of these outputs can be set to produce NTSC, PAL, or one of a selection of HDTV Tri-level Sync formats, regardless of the format of the main unit. In addition to the three Color Black outputs, this option has a fourth BNC configured as an input for a 10MHz reference signal that is utilized by the GP201 GPS Reference Input option.

Installation

Up to two (2) of these modules can be installed in a TSG490Y frame (in option slots 5&6).

When installed, this module normally occupies the 4 BNC's above the Reference Black inputs and subcarrier outputs. This is the position referred to as Black 4,5,6 in the on-screen menus. It can also be installed above the main Color Black outputs thereby reducing the number of Black outputs to four. This position is referred to as Black 1,2,3 in the on-screen menus.

Location of option module when installed is marked on the back panel with channel # info.

With reference to the rear panel layout diagram in "Installation and Planning" the signals are found in the following positions:

Timeable Col. Blk. o/p	Rear Panel Position
Ch 1 or 4	Left
Ch 2 or 5	Left-Middle
Ch 3 or 6	Right-Middle
	Right 10MHz reference input.

Appendix B TSG490Y SPG Option Modules (cont.)

HD402 Timeable Color Black & HD Tri-level Sync Option Module (cont.)

Format Selection

Menu Navigation

To change a channel's Format, enter the Menu system, select "Video Menu" then "Timing Menu", and use the + or - buttons to position the cursor over the letter N in next and use the select button to choose the channel number you would like to change. The channels are labelled black 1,2,3 for the HD-402 installed in the option slot 5 and black 4, 5, 6 for the HD-402 installed in the option slot 6. After selecting the channel number position the cursor over the S in set format and phase using the + or - buttons and press select. Move the cursor over the N in next and use the select button to step through the available formats.

The available format codes are as follows –

Number	Description	SMPTE Number	
0	525/3.58MHz/59.94/I		NTSC SMPTE S170M-1999
1	625/4.43MHz/50/I		PAL
2	1280x720/60/p	1	As per SMPTE S296M-2001
3	1280x720/59.94/p	2	
4	1280x720/50/p	3	
5	1280x720/30/p	4	
6	1280x720/29.97/p	5	
7	1280x720/25/p	6	
8	1280x720/24/p	7	
9	1280x720/23.98/p	8	
10	1920x1035/60/i	1	
11	1920x1035/59.94/i	2	
12	1920x1080/60/p	1	As per SMPTE S274M-2003
13	1920x1080/59.94/p	2	
14	1920x1080/50/p	3	
15	1920x1080/48/p		
16	1920x1080/47.95/p		

17	1920x1080/30/p	7	As per SMPTE S274M-2003
18	1920x1080/29.97/p	8	
19	1920x1080/25/p	9	
20	1920x1080/24/p	10	
21	1920x1080/23.98/p	11	
22	1920x1080/60/i	4	As per SMPTE S274M-2003
23	1920x1080/59.94/i	5	
24	1920x1080/50/i	6	
25	1920x1080/48/i		
26	1920x1080/47.95/i		
27	1920x1080/30/sF	12	As per SMPTE S274M-2003 and As per SMPTE RP211-2000
28	1920x1080/29.97/sF	13	
29	1920x1080/25/sF	14	
30	1920x1080/24/sF	15	
31	1920x1080/23.98/sF	16	

Phase Settings

To change a channel's phase settings, enter the Menu system and select "Video Menu". Select "Timing Menu", select a channel number to change. Use the "+" or "-" to move the cursor to *DO PHASING* and then press SELECT. This activates the phasing menu. Select the phasing parameter to be adjusted by using the "+" and "-" buttons and then the SELECT button. The front panel LED will illuminate when its phase parameter is being adjusted. The phase parameter being adjusted will also be indicated at the top of the on-screen menu.

The numbers present on the Phase parameter adjustment line are only a representation of the actual phase settings :

V-phase - each increment/decrement is +/- 1 video line (range = 8 fields).
default for co-timed = 2493 (PAL).

H-phase - each increment/decrement is +/- 37ns (1/2 pixel width).
default for co-timed = 1709 (PAL).

SC-phase - each increment/decrement is +/- 0.228ns (i.e. +/- 0.36°).
default for co-timed = 0010-022 (PAL).

Note : the settings made in the "ColBlack Menu" are effectively an offset that occurs

between the main SPG output timing and the Timeable Color Black outputs; if the main output timing is altered, the Timeable Color Black outputs each move by the same amount, i.e. inter-output timings do not change.

Position the cursor over the “+” or “-“ on the on-screen menu to respectively increase or decrease the selected parameter. When adjustments have been completed EXIT to the previous menu to select a different parameter to adjust.

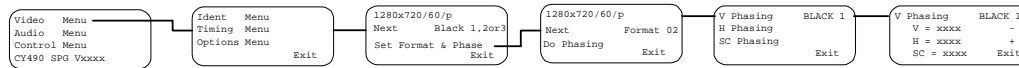
When all phasing parameters have been adjusted, return to the main *TIMING* menu to select a different output to configure or EXIT from the Timing menu completely. All outputs are independent and may be configured for any format without regard to the format selected for any other output.

When all outputs have had their format selected and phase settings adjusted, if necessary, move the cursor to Exit and press the SELECT button to return to the main video menu.

Note: If the channel format is set for NTSC or HDTV (#) when the main unit is PAL (or vice-versa), the phase settings are meaningless/superfluous.

HD402 Menu Structure

Note: HD402 outputs will be designated 1,2,3 or 4,5,6 depending on which option slot the HD402 is installed. See Section 2.2 & 2.3



Appendix B TSG490Y SPG Option Modules (cont.)

HD408 HD/SD Test Pattern & Color Black Output Option module

TSG490Y Option #

HD408 HD/SD TPG HD/SD Pattern & Black generator with Embedders

Installation

The HD408 module is a retrofit module that can be installed at the factory by Sigma technicians. Consult the factory for details.

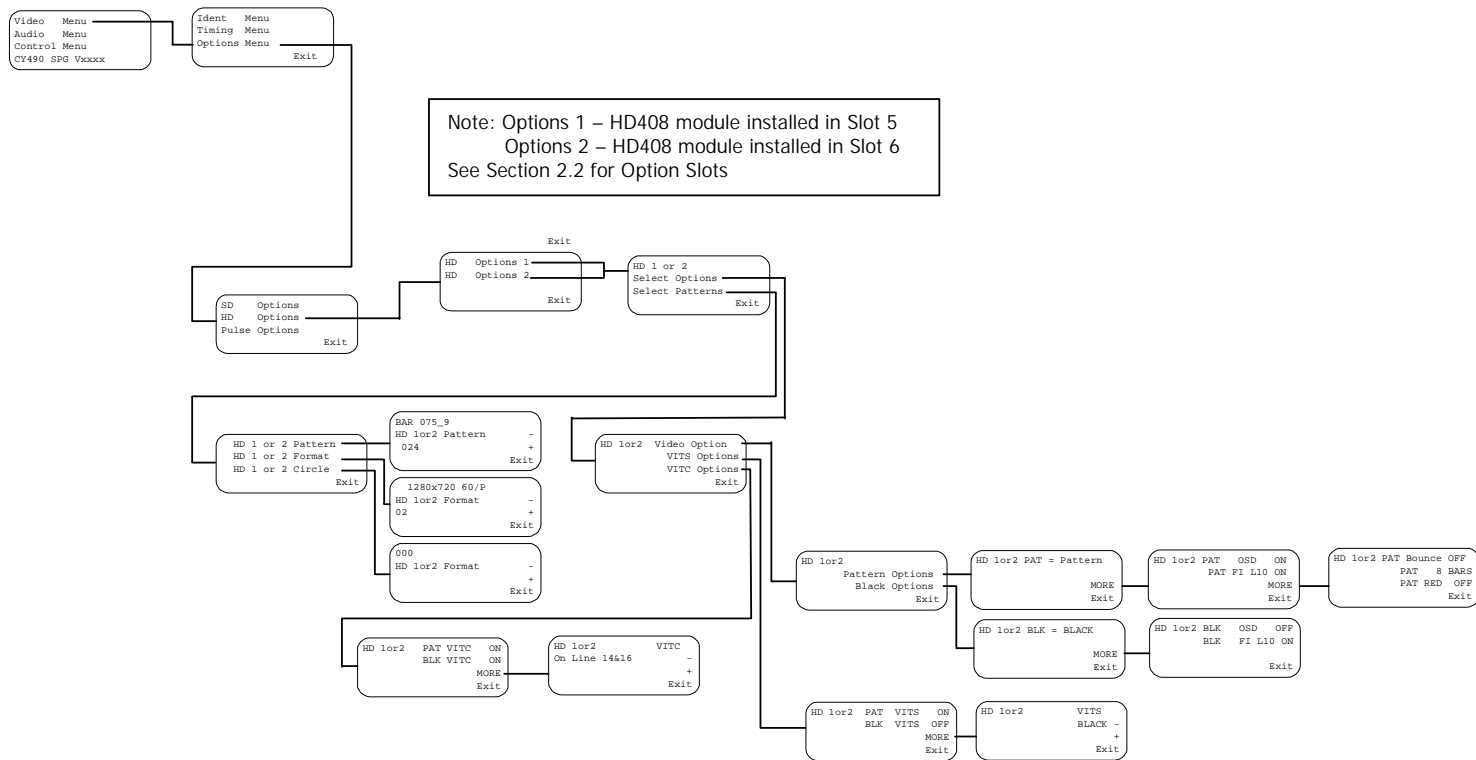
When installed, the available (option dependent) connectors are present at the rear panel. Refer to the rear panel layout in “Installation and Planning” for connector positioning.

Supported Formats:

Number	Description	SMPTE Number	
0	525/59.94/I		NTSC SMPTE S170M-1999
1	625/50/I		PAL
2	1280x720/60/p	1	As per SMPTE S296M-2001
3	1280x720/59.94/p	2	
4	1280x720/50/p	3	
5	1280x720/30/p	4	
6	1280x720/29.97/p	5	
7	1280x720/25/p	6	
8	1280x720/24/p	7	
9	1280x720/23.98/p	8	
10	1920x1035/60/i	1	
11	1920x1035/59.94/i	2	
17	1920x1080/30/p	7	As per SMPTE S274M-2003
18	1920x1080/29.97/p	8	
19	1920x1080/25/p	9	
20	1920x1080/24/p	10	As per SMPTE S274M-2003
21	1920x1080/23.98/p	11	

22	1920x1080/60/i	4	As per SMPTE S274M-2003
23	1920x1080/59.94/i	5	
24	1920x1080/50/i	6	
25	1920x1080/48/i		
26	1920x1080/47.95/i		
27	1920x1080/30/sF	12	As per SMPTE S274M-2003 and As per SMPTE RP211-2000
28	1920x1080/29.97/sF	13	
29	1920x1080/25/sF	14	
30	1920x1080/24/sF	15	
31	1920x1080/23.98/sF	16	

HD408 Menu Structure



Note: Options 1 – HD408 module installed in Slot 5
Options 2 – HD408 module installed in Slot 6
See Section 2.2 for Option Slots

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Appendix B TSG490Y SPG Option Modules (cont.)

OM404 AES Audio Option Module

TSG490Y
Option #

OM404 AES Digital Audio - selectable level, freq., interruption, sample rate. Word Clock and 75Ω outputs available.
Note : analog audio follows AES level, freq. and interrupt settings of selected channels.

Installation

The OM404 module is a retrofit module that can be installed at the factory by Sigma technicians. Consult the factory for details.

When installed, the available (option dependent) connectors are present at the rear panel. Refer to the rear panel layout in “Installation and Planning” for connector positioning.

Audio Option Connector	Function
9-pin Dsub	Balanced, Stereo AES Digital Audio, CH 1&2, 3&4
BNC, AES 1&2	Default = 75 ohm unbalanced AES audio tone
BNC, AES 3&4	Default = 75 ohm unbalanced AES silence
AES 5&6, 7&8, WC	5&6 = balanced AES tone, 7&8 = balanced AES silence and Word Clock at 48K and 44.1K.

Adjustments, Jumpers, Test Points, Switches

There are no user Adjustments, Jumpers, Test Points or Switches on this option module.

Appendix B TSG490Y SPG Option Modules (cont.)

SD411 SD SDI Output Option Module

TSG490Y Option #

SD411 SD SDI Digital Video - SDI Output option with Embedder

Installation

The SD411B and SD411C modules are retrofit modules that can be installed at the factory by Sigma technicians. Consult the factory for details. Up to two (2) of these modules can be installed into a TSG490Y frame.

When installed, the available (option dependent) connectors are present at the rear panel. Refer to the rear panel layout in “Installation and Planning” for connector positioning and module output definition.

Adjustments, Jumpers, Test Points, Switches

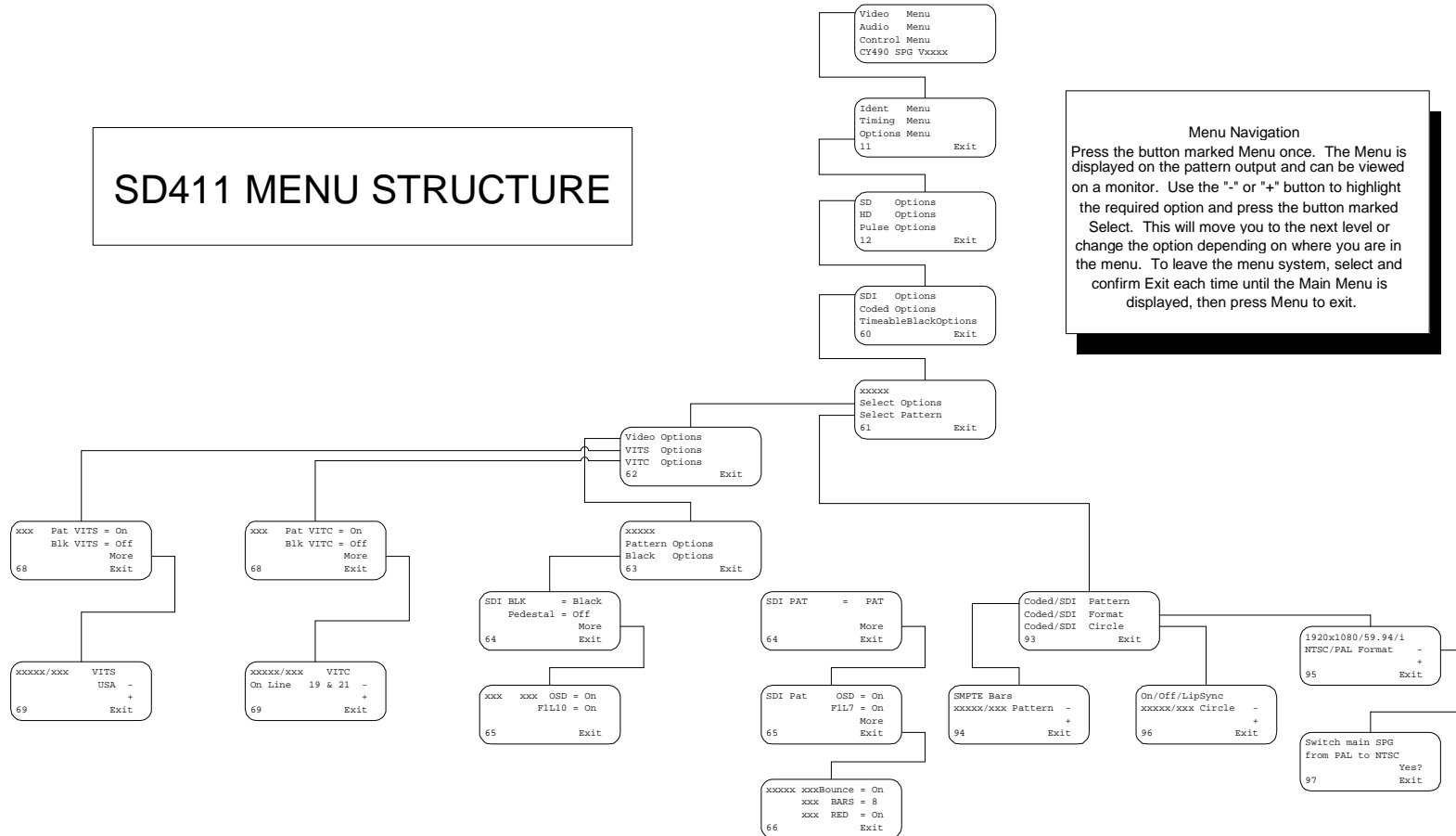
There are no user Adjustments, Jumpers, Test Points or Switches on this option module.

Output Selection Options

Menu Navigation

Press the button marked Menu once. The Menu is displayed on the pattern output and can be viewed on a monitor. Use the “-“ or “+” button to highlight the required option and press the button marked Select. This will move you to the next level or change the option depending on where you are in the menu. To leave the menu system, select and confirm Exit each time until the Main Menu is displayed, then press Menu to exit.

SD411 MENU STRUCTURE



Menu Navigation
 Press the button marked Menu once. The Menu is displayed on the pattern output and can be viewed on a monitor. Use the "-" or "+" button to highlight the required option and press the button marked Select. This will move you to the next level or change the option depending on where you are in the menu. To leave the menu system, select and confirm Exit each time until the Main Menu is displayed, then press Menu to exit.

SD411 Selections

To change the configuration of the signal appearing on the output of the SD411 Option, enter the Menu system, select “Video Menu” to get to the main video menu. Then, select “Options Menu”, “SD Options” and then “SDI Options”. At this point the selections available are “Select Options” and “Select Pattern”. Under Select Options, there are three menu areas in which to make selections – “Video Options”, VITS Options” or VITC Options”.

Video Options

The configurable parameters under the menu selection “Video Options include whether the output is Black or Pattern and which of the following items are added to the output pattern –

- On-screen Display added to Pattern (PAT OSD)
- Field 1Line10 Timing Pulse (PAT F1L10)
- Alternating Bounce pattern (SDI & PAT BOUNCE)
- 8 or 9 Bar Color Bars (CODED PAT then 9 BAR/8 BAR)
- ½ field red overlay (PAT RED).

VITS Option

The configurable parameters under “VITS Option” are –

- 1) whether the VITS signal appears on the Pattern, if selected,
- 2) whether the VITS signal appears on the Black output, if selected, and
- 3) which class of VITS is to be added –

- USA
- Full
- IDENT
- Black
- INT1
- INT2
- EBU
- UK.

VITC Options

The “VITC Options” selections are similar to the VITS Options with the exception that instead of making a class selection, the choice of line(s) on which the code is to be added must be made. The choices are

- 1) any one of lines 9 – line19 or
- 2) any pair of lines 9 & 11 through lines 17 & 19.