

User Manual



AGL1
Analog Genlock Module
070-9050-00



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City, State, Postal code	Calibration Services (1,2,3,4, or 5 years)
Country	Instrument model and serial number
Phone	Instrument purchase date

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

Only qualified personnel should perform service procedures.

To avoid potential hazards, use this product only as specified.

- | | |
|-----------------------------------|---|
| Injury Precautions | Avoid Electric Overload. To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal. |
| Product Damage Precautions | Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel. |

Symbols and Terms Terms in this Manual. These terms may appear in this manual:



WARNING. Warning statements identify conditions or practices that could result in injury or loss of life.



CAUTION. Caution statements identify conditions or practices that could result in damage to this product or other property.

Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



DANGER
High Voltage



Protective Ground
(Earth) Terminal



ATTENTION
Refer to Manual



Double
Insulated

**Certifications and
Compliances**

Refer to the specifications section for a listing of certifications and compliances that apply to this product.

Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, disconnect the main power by means of the power cord or, if provided, the power switch.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Preface

This manual describes the capabilities of the AGL1 Analog Genlock module and the features and specifications for the module. This manual also provides instructions on how to control and install the module.

About This Manual

This manual is composed of the following sections:

- *Getting Started* provides a product description, incoming inspection procedure, and a standard and optional accessories list.
- *Operating Basics* describes the windowed menu interface and how to control the AGL1 through the interface in conjunction with the front panel.
- *Syntax and Commands* defines the syntax used in command descriptions, presents a list of all command subsystems, and presents detailed descriptions of all programming commands.
- *Appendices* provides additional information including the Specifications and hardware installation procedures.

Related Manuals

The following documents are also available.

- The *AGL1 Analog Genlock Service Manual* (Tektronix part number 070-9301-XX) describes how to service the AGL1 module. This optional manual must be ordered separately.
- The *TG 2000 Signal Generation Platform User Manual* (Tektronix part number 070-9108-XX) describes how to use the TG 2000 generator. This manual is a standard accessory for the TG 2000 Signal Generation Platform.
- The *TG 2000 Signal Generation Platform Service Manual* (Tektronix part number 070-9677-XX) describes how to service the TG 2000 mainframe and all available generator modules to the module level (circuit boards, fuses, etc.). This optional manual must be ordered separately.
- Various module User manuals. You should receive a User manual for each optional module you ordered in your system. Contact your Tektronix Representative for list of the available generator and special function modules.



Getting Started

Getting Started

This section contains the following information:

- Product Description
- Accessories. Optional and standard
- Incoming Inspection

Product Description

The AGL1 Analog Genlock module enables the TG 2000 to lock to various analog video references. The AGL1 provides two loop through inputs and one terminating input on the rear panel. The AGL1 can lock to the following:

- NTSC. The AGL1 can be configured to lock to burst or sync.
- PAL. The AGL1 can be configured to lock to burst or sync.
- CW subcarrier at 3.58 or 4.43 MHz as well as 1, 5 and 10 MHz.

Selections are made from the front panel. Refer to the *Operating Basics* section for instructions on how to make the selection.

Accessories

Table 1–1 lists the standard and optional accessories for the AGL1 module.

Table 1–1: Standard and Optional Accessories

Standard	Part Number	Optional	Part Number
This user manual	070-9050-XX	AGL1 Service Manual	070-9301-XX
T-10 Torx Tip	003-1604-XX		
Screws (2 ea.)	211-0725-XX		

Installation

If the AGL1 module was ordered with the TG 2000, the module comes already installed. If the module was ordered after receiving the TG 2000, a qualified service technician is required to install the module. Installation procedures are in *Appendix B: Hardware Installation*.

Incoming Inspection

Perform the following procedure to determine if the module is operating correctly.

1. Install the module into the TG 2000 using the installation procedures in *Appendix B: Hardware Installation*.
2. Turn on the TG 2000. The TG 2000 runs a self test on all modules.
3. Wait 20 minutes for the instrument to warm up.
4. Press the **Utilities** key then select the following soft keys:
 - a. **Module Self Cal**
 - b. Self Cal soft key of the module you are testing
 - c. **Start Cal**

The Self Cal takes 2 to 5 minutes depending on the module. An error message indicates a failed calibration. If the Self Cal fails, contact your nearest Tektronix Representative for assistance.

5. Connect a signal to the Ref 1 input. Ensure that the Ref 1 output is correctly terminated with a 75 ohm termination.
6. Press **Reference**.
7. Press the **Reference Select** soft key.
8. Select External.
9. Select the appropriate reference to match the incoming signal to the Ref 1 input.
10. Check that the **Locked** light on the front panel is steady and not blinking. A steady light indicates that there is a lock to the incoming signal.

This concludes the incoming inspection.



Operating Basics

Operating Basics

This section provides an overview of the windowed menu structure for the AGL1 Analog Genlock Module and procedures for operating the controls in each window. It is assumed that you are familiar with the basic operation of the TG 2000. If not, refer to the *TG 2000 Mainframe User Manual* before reading this section.

Functional Overview

Control of the AGL1 Analog GenLock Module is through the front panel keys and the windowed menu interface of the TG 2000. Unlike other modules in the TG 2000, a soft key for the AGLI does not appear in the Modules window. Refer to *Operating Procedures* next in this section for instructions on moving through the TG 2000 interface to control the AGL1.

Operating Procedures

You can access the controls for the AGL1 by pressing the **Reference** front panel key. The Reference window appears as shown in Figure 2–1.

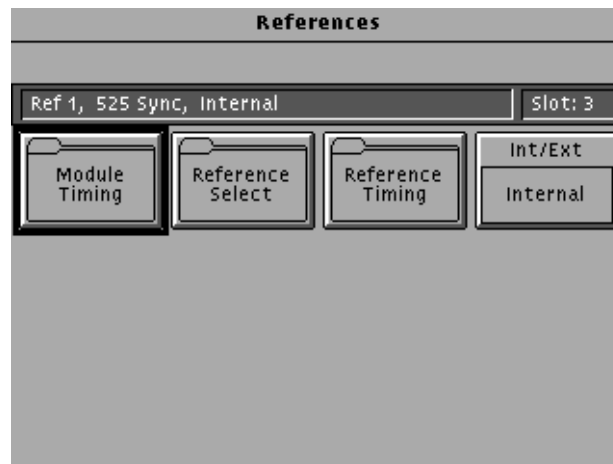


Figure 2–1: References window

Press the **Int/Ext** soft key to select the internal reference or reference to an external signal.

Press the **Reference Timing** soft key to display the Reference Timing window. Refer to *Reference Timing* on page 2–3 for instructions on using the controls in this window.

Press the **Reference Select** soft key to display the Reference Select window. Refer to *Reference Select* on this page for instructions on using the controls in this window.

Module Timing

The Module Timing soft key provides access to the timing window for individual modules. This soft key appears whether the AGL1 is installed or not. For information on setting the timing for the module, refer to that module’s user manual.

Reference Select

You can select which reference input and signal type you want to lock to from the Reference window. Each reference soft key is related to the rear panel connections of the AGL1. Note that Ref 3 is used for CW signals only. To select a reference input see Figure 2–2 and perform the following procedure.

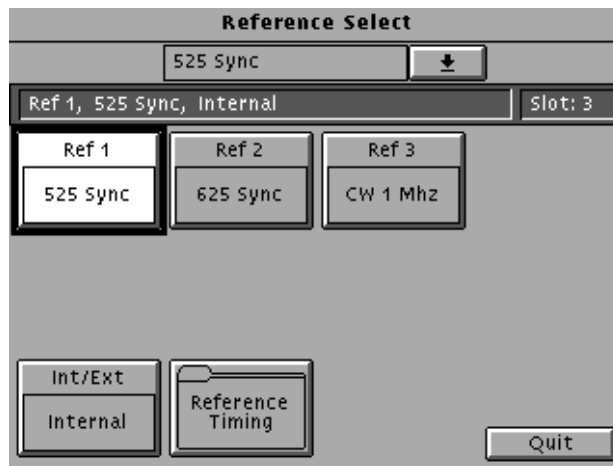


Figure 2–2: Reference select window

1. Move to the appropriate soft key using the front panel cursor keys.
2. Press the list box (below the window title) or rotate the knob to display the list of valid signals for a given group.
3. Select your choice by press the **Select** key on the front panel.

From this window you can also select internal or external reference. This is the same selection you can make in the References window. Press the **Reference Timing** soft key to display the Reference Timing window.

Reference Timing

From this window you can adjust the timing offset of the TG 2000 relative to the external reference signal. For example, Figure 2–3 shows the AGL1 module locked to an external black burst signal with a 5 μ s delay. The AVG1 module is delayed an additional 15 μ s for a total of 20 μ s. To adjust the timing see Figure 2–4 and perform the following procedure.

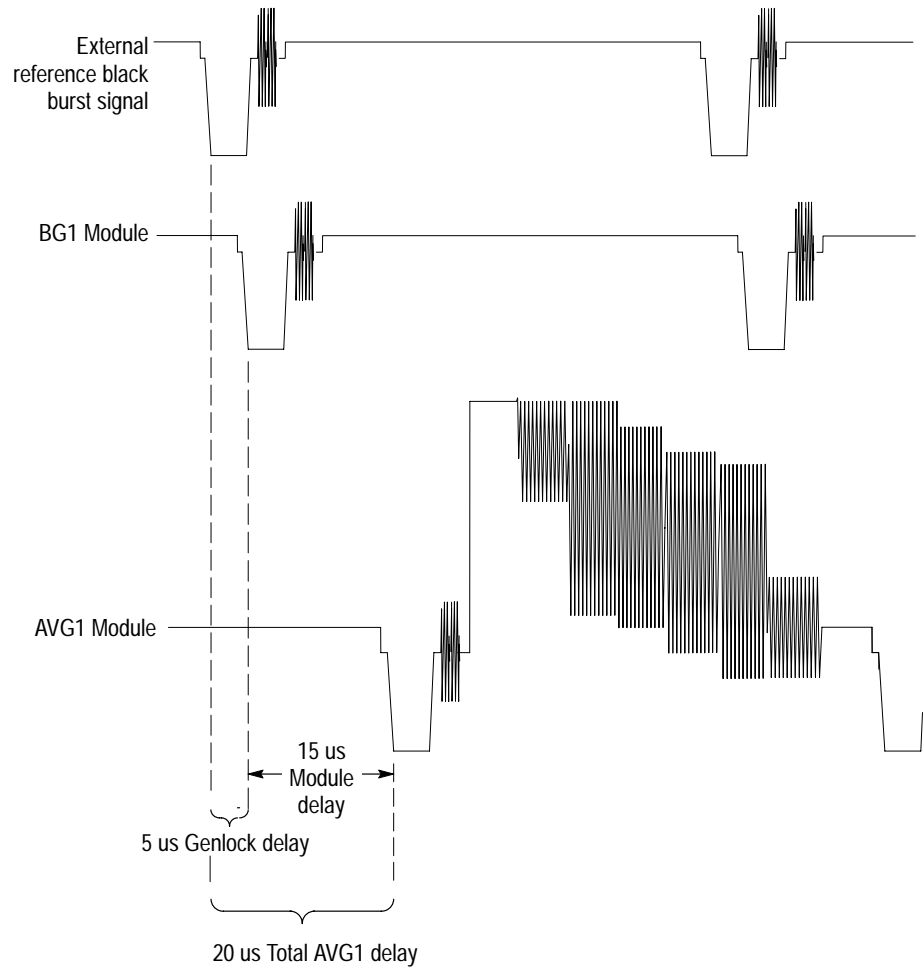


Figure 2–3: Reference timing example



Figure 2-4: Reference timing window

1. Select **Vertical** either by pressing the soft key or moving the browse ring to it and pressing **Select** on the front panel.
2. Rotate the navigation knob. Default is 0 lines. Rotating the knob counter-clockwise advances the timing. Rotating clockwise delays the timing.
3. Select **H Feel**.
4. Select either **Fine** or **Coarse** resolutions. Fine resolution is in nano seconds. Coarse increments are equal to a full cycle of the clock.
5. Select **Horizontal** and perform the same function until the desired time is reached. Default is 0.0000 μ sec.
6. Press **Quit** to exit the window. Pressing **Reset All** sets horizontal and vertical to zero.



Syntax and Commands

Syntax

This section contains information on the Standard Commands for Programmable Instruments (SCPI) and the programming structure you can use to program your TG 2000.

Programming Model

Specific conditions must exist before programming commands will affect the test signal generated by a module.

Addressing Module Test Signals

The following two steps must be performed before the test module will respond to signal parameter commands.

1. Select the module to be addressed before executing any commands. Many of the commands used by the AGL1 genlock are shared by several modules and will be accepted without a reported error.
2. Enable the module using the `:OUTPut:STATE ON` command. The output state of the module must be enabled before test signal parameters can be changed.

Command Arguments

Many commands will accept either string or numeric arguments. For example: a boolean argument can either be "1" or "ON".

Signal parameter commands that have a `:STEP` node can accept either a numeric value or they can accept a string argument that refers to the `:STEP` increment.

Signal parameter commands with a `:STEP` node will accept the following strings in addition to a numeric value:

UP. Use this argument to increase the parameter value one increment as defined by the `:STEP` value.

DOWN. Use this argument to decrease the parameter value one increment as defined by the `:STEP` value.

MINimum. Use this argument to set the parameter value to the minimum acceptable value.

MAXimum. Use this argument to set the parameter value to the maximum acceptable value.

DEFault. Use this argument to set the parameter value to the default value.

Argument Example

The following example demonstrates the effect of each of the arguments when used with a step value.

1. `:INSTRument:SElect "AVG1:#"` selects the analog video generator module located in the slot number indicated by the “#” symbol.
2. `:OUTPut:STATe ON` enables the module and displays the loaded test signal.
3. `:OUTPut:CIRClE:STATe ON` displays a circle on the video display.

NOTE. `:OUTPut:CIRClE:DIAMeter` uses an argument that is the percent of picture height.

4. `:OUTPut:CIRClE:DIAMeter DEFault` sets the circle diameter to 90 percent of the screen height.
5. `:OUTPut:CIRClE:DIAMeter:STEP 10` sets the step increment to 10 percent.
6. `:OUTPut:CIRClE:DIAMeter DOWN` changes the circle diameter to 80 percent of the screen height.
7. `:OUTPut:CIRClE:DIAMeter 50` changes the circle diameter to 50 percent of the screen height.
8. `:OUTPut:CIRClE:DIAMeter MAXimum` changes the circle diameter to 100 percent of the screen height.
9. `:OUTPut:CIRClE:DIAMeter MINimum` changes the circle diameter to 0 percent of the screen height.
10. `:OUTPut:CIRClE:DIAMeter UP` changes the circle diameter to 10 percent of the screen height.

SCPI Commands and Queries

SCPI is a standard created by a consortium that provides guidelines for remote programming of instruments. These guidelines provide a consistent programming environment for instrument control and data transfer. This environment uses defined programming messages, instrument responses, and data format across all SCPI instruments, regardless of manufacturer. The TG 2000 uses a command language based on the SCPI standard.

The SCPI language is based on a hierarchical or tree structure (see Figure 3–1) that represents a subsystem. The top level of the tree is the root node; it is followed by one or more lower-level nodes.

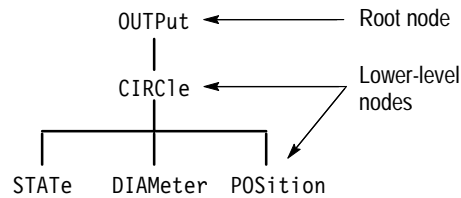


Figure 3–1: Example of SCPI Subsystem Hierarchy Tree

You can create commands and queries from these subsystem hierarchy trees. Commands specify actions for the instrument to perform. Queries return measurement data and information about parameter settings.

For more information on SCPI commands, programming structure, and TG 2000 status and events, refer to the *TG 2000 User Manual*.

Functional Command Groups

This section describes the commands in general categories. Commands to the module are divided into the following groups:

- INPut
- SENSE

Items followed by question marks are queries; items without question marks are commands. Some items in this section have a question mark in parentheses (?) in the command header section; this indicates that the item can be both a command and a query.

Input

Use these commands to select the input characteristics of the module.

Table 3–1: :INPut Commands

Command	Description
:INPut:REFEreNce2:STANdard(?)	Set or query input standard
:INPut:REFEreNce:STATus?	Query genlock lock status
:INPut:CWAVE:FREQuency(?)	Set or query synchronizing frequency
:INPut:SELEct(?)	Set or query synchronizing input
:INPut:SOURce(?)	Set or query synchronizing source

Sense

Table 3–2: :SENSe Commands

Command	Description
:SENSe:CORREction:MDELay:HORizontal(?)	Set or query horizontal time delay
:SENSe:CORREction:MDELay:HORizontal:STEP(?)	Set or query horizontal step size
:SENSe:CORREction:MDELay:VERTical(?)	Set or query vertical time delay
:SENSe:CORREction:MDELay:VERTical:STEP(?)	Set or query vertical step size

:INPut Commands

Use these commands to control the Genlock module and select the source and method for generator lock. Use the :INSTrument:SElect command to direct the command to the Genlock module. The TG 2000 supports two Genlock modules.

Command Tree

```
:INPut
  :REFerence2
    :STANdard
    :STATus
  :CWAVE
    :FREQuency
  :SElect
  :SOURce
```

:INPut:REFErence<n>:STANdard(?)

Use this command to set or query one of the two video standard inputs. This setting is saved through power cycles.

Syntax :INPut:REFErence2:STANdard <standard>
:INPut:REFErence:STANdard?

Parameters	Command	Query Response
	<n> = 1, 2	NSYN
	<standard> = NSYNc (NTSC)	NBUR
	NBURst (NTSC)	PSYN
	PSYNc (PAL)	PBUR
	PBURst (PAL)	SNEG

Reset Value NSYNC

Errors and Events -255 Reference not currently selected

Dependencies :INPut:SELEct

Examples
Command: :INP:REF:STAN PSYN
Query: :INP:REF:STAN?
Response: PSYN

Related Commands None

:INPut:REFErence:STATus?

Use this query to determine the lock state of the Genlock module. The REFEr-
ence suffix is ignored. The ABSent response indicates that there is no signal
present. The UNLocked response indicates that a signal is present but the
Genlock is unable to lock onto it.

Syntax :INPut:REFErence:STATus?

Parameters

Command	Query Response
-----	INTernal ABSent UNLocked LOCKed

Reset Value Not Applicable

Errors and Events None

Dependencies None

Examples Query: :INP:REF:STAT?

Response: UNL

Related Commands

:INPut:CWAVe:FREQuency(?)

Use this command to set or query the synchronizing frequency expected by the Genlock while in REF3 mode. This setting is retained through power cycles.

The Genlock accepts one of five values:

- 1 MHz
- ~3.58 MHz
- 4.43 MHz
- 5 MHz
- 10 MHz

The argument is adjusted for best fit to the five specific values. The argument unit is MHz.

Syntax :INPut:CWAVe:FREQuency <numeric_value>
:INPut:CWAVe:FREQuency?

Parameters	Command	Query Response
	numeric_value = <NRf>	<NR2>
	<numeric_value> <=1	1.000
	1 < <numeric_value> <= 3.58	3.5800
	3.58 < <numeric_value> <= 4.43	4.4300
	4.43 < <numeric_value> <= 5	5.0000
	5 < <numeric_value> <= 10	10.0000

Reset Value 1.0000

Errors and Events None

Dependencies None

Examples

Command: :INP:CWAV:FREQ 5

Query: :INP:CWAV:FREQ?

Response: 5.0000

Related Commands None

:INPut:SElect(?)

Use this command to set or query the input selected for synchronizing the instrument. This setting is retained through power cycles.

Syntax :INPut:SElect <source>
:INPut:SElect?

Parameters	Command	Query Response
	source = REFerence1	REF1
	REFerence2	REF2
	REFerence3	REF3

Reset Value REF1

Errors and Events None

Dependencies None

Examples Command: :INP:SEL REF1
Query: :INP:SEL?
Response: REF1

Related Commands None

:INPut:SOURce(?)

Use this command to set or query the source for synchronizing the instrument to. This setting is retained through power cycles.

Syntax :INPut:SOURce <source>
:INPut:SOURce?

Parameters	Command	Query Response
	source = INTernal EXTernal	INT EXT

Reset Value INT

Errors and Events None

Dependencies None

Examples Command: :INP:SOUR INT
 Query: :INP:SOUR?
 Response: INT

Related Commands None

:SENSe Commands

Use these commands to adjust the timing of the module in relation to the instrument. The commands correct the module delay factors.

Command Tree

```
:SENSe
  :CORRection
    :MDElay
      :VERTical      <numeric_value>
        :STEP        <numeric_value>
      :HORizontal    <numeric_value>
        :STEP        <numeric_value>
```

:SENSe:CORRection:MDELay:HORizontal(?)

Use this command to set or query the horizontal timing delay of the instrument with respect to the external reference signal.

Argument units are in microseconds. If the argument exceeds the horizontal time value, then the vertical delay is adjusted to accommodate the requested delay.

NOTE. *The maximum horizontal time depends on the selected reference standard.*

Settings are saved through power cycles.

Syntax :SENSe:CORRection:MDELay:HORizontal <numeric_value>
:SENSe:CORRection:MDELay:HORizontal?

Parameters	Comamnd	Query Response
	numeric value = <NRf>	<NR2>
	DEF, UP, DOWN	

Reset Value 0.0000

Errors and Events None

Dependencies None

Examples

Command: :SENS:CORR:MDEL:HOR 23.0

Query: :SENS:CORR:MDEL:HOR?

Response: 23.0000

Related Commands :SENSe:CORRection:MDELay:VERTical

:SENSe:CORRection:MDELay:HORizontal:STEP(?)

Use this command to set or query the step increment used by the UP or DOWN commands. The argument unit is microseconds.

Syntax :SENSe:CORRection:MDELay:HORizontal:STEP <numeric_value>
:SENSe:CORRection:MDELay:HORizontal:STEP?

Parameters	Command	Query Response
	numeric_value = <NRf>	<NR2>
	MIN, MAX, DEF	

Reset Value 1.0

Errors and Events None

Dependencies None

Examples
 Command: :SENS:CORR:MDEL:HOR:STEP 5
 Query: :SENS:CORR:MDEL:HOR:STEP?
 Response: 5.0000

Related Commands :SENSe:CORRection:MDELay:HORizontal

:SENSe:CORRection:MDELay:VERTical(?)

Use this command to set or query the vertical time delay of the instrument. The argument can be a floating point value that is translated into integer lines with a horizontal offset.

The query returns an integer value even if the command used a floating point argument. (The fractional parts are used to adjust the HORizontal offset.)

Settings are saved through power cycles.

Syntax :SENSe:CORRection:MDELay:VERTical <numeric_value>
:SENSe:CORRection:MDELay:VERTical?

Parameters	Command	Query Response
	numeric_value = <NRf> DEF, UP, DOWN	<NR1>

Reset Value 0.0000

Errors and Events None

Dependencies None

Examples
 Command: :SENS:CORR:MDEL:VERT 12
 Query: :SENS:CORR:MDEL:VERT?
 Response: 12.0000

Related Commands :SENSe:CORRection:MDELay:HORizontal

:SENSe:CORRection:MDELay:VERTical:STEP(?)

Use this command to set or query the step increment used by the UP or DOWN commands. The argument unit is lines.

Syntax :SENSe:CORRection:MDELay:VERTical:STEP <numeric_value>
:SENSe:CORRection:MDELay:VERTical:STEP?

Parameters	Command	Query Response
	numeric_value = <NRf>	<NR2>
	MIN, MAX, DEF	

Reset Value 1.0

Errors and Events None

Dependencies None

Examples
 Command: :SENS:CORR:MDEL:VERT:STEP 2
 Query: :SENS:CORR:MDEL:VERT:STEP?
 Response: 2.0000

Related Commands :SENSe:CORRection:MDELay:VERTical



Appendices

Appendix A: Specifications

Table A–1 lists the Electrical specifications for the AGL1. Refer to the *TG 2000 Signal Generation Platform User Manual* for a list of Environmental specifications. Table A–2 lists the EMC compliance specifications.

Table A–1: Electrical specifications

Characteristics	Performance Requirement	Reference Information
Loop-through Inputs Return Loss Input Dynamic Range Hum White Noise	 ≥ 40 dB to 5 MHz ± 6 dB range 	Externally terminated into 75Ω Remains locked for valid inputs of -14 dB to $+6$ dB max. ≤ 1.0 V p-p, on 0 dB signal Remains locked Signal/Noise ratio of ≥ 32 dB, 5 MHz bandwidth on black burst, remains locked
Burst Lock Stability (Timing Change) Versus Input Amplitude Versus APL Versus Reference Frequency Change Versus Temperature Jitter	 ≤ 1 ns ≤ 0.5 ns ≤ 0.5 ns ≤ 1 ns	Over ± 3 dB range 10% to 90% APL ± 5 ppm shift ≤ 0.15 ns/ $^{\circ}$ C, 0 to 40° C (measured using BG1 clock) 1 $^{\circ}$ NTSC or PAL, nominal input amplitude, ≥ 50 dB signal/noise ratio, ≤ -10 dB hum, Typical $< .5^{\circ}$
Sync Lock Stability Versus Input Amplitude Versus APL Versus Temperature Jitter	 ≤ 2 ns ≤ 1 ns ≤ 2.5 ns	Over ± 3 dB range 10% to 90% APL ≤ 0.2 ns/ $^{\circ}$ C, 10° C to 40° C 3 $^{\circ}$ NTSC or PAL, nominal input amplitude, ≥ 50 dB signal/noise ratio, ≤ -10 dB hum
CW Input Impedance/Return Loss Input Amplitude Range Input Frequencies	 ≥ 30 dB from 1 MHz to 10 MHz 1 to 2.25 V p-p 3.579545 MHz, 4.43361875 MHz, 1.00 MHz, 5.00 MHz, 10.00 MHz	75 Ω from 1 MHz to 10 MHz; Internal termination, AC coupled Remains locked ± 10 ppm

Table A-1: Electrical specifications (Cont.)

Characteristics	Performance Requirement	Reference Information
CW Lock Stability Versus Input Amplitude Jitter	≤ 2 ns ≤ 1 ns	1 to 2.25 V p-p ≤ 0.5° NTSC or PAL, 2 V input amplitude, ≥ 50 dB signal/noise ratio, ≤ -10 dB hum
Genlock Timing Offset Adjustment Range		Moves entire box relative to external reference. Adjustable to any point in the video frame for video input signals.
Color Framing		Correct color framing detected for signals having ± 45° SCH Φ error and burst is present. Video signals only
Power Consumption		+5 Volts: 3.5 Watts estimated -5 Volts: 3.25 Watts typical -2 Volts: 0.6 Watts typical +15 Volts: 0.75 Watts typical -15 Volts: 0.75 Watts typical Battery: 50 μA maximum

Table A-2: Certifications and compliances

EC Declaration of Conformity	<p>Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:</p> <p>EN 50081-1 Emissions: EN 55022 Class B Radiated and Conducted Emissions EN 60555-2 AC Power Line Harmonic Emissions</p> <p>EN 50082-1 Immunity: IEC 801-2 Electrostatic Discharge Immunity IEC 801-3 RF Electromagnetic Field Immunity IEC 801-4 Electrical Fast Transient/Burst Immunity IEC 801-5 Power Line Surge Immunity</p>
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Appendix B: SCPI Conformance Information

All commands in the AGL1 genlock are based on SCPI Version 1994.0. Table B-1 lists all commands supported by the genlock. The columns at right show whether a command is defined in the SCPI 1994.0 Standard or not.

Table B-1: SCPI Conformance Information

Command				Defined in SCPI 1994.0	Not Defined In SCPI 1994.0
INPut	REFerence<n>	STANdard(?)			✓
		STATus(?)			✓
	CWAVE	FREQuency(?)			✓
	SElect(?)				✓
	SOURce(?)				✓
SENSe	CORRection	MDELay	HORizontal(?)		✓
			STEP(?)		✓
			VERTical(?)		✓
			STEP(?)		✓

WARNING

The following servicing instructions are for use only by qualified personnel. To avoid injury, do not perform any servicing other than that stated in the operating instructions unless you are qualified to do so. Refer to all Safety Summaries before performing any service.

Appendix C: Hardware Installation

This section provides instructions for installing and removing the module into and from the TG 2000 mainframe. A T-10 torx tip screw driver is the only tool you need to install the module. A T-10 torx tip is supplied with this module.

Installing a Module

To install the module into the mainframe perform the following procedure:

1. Turn off the TG 2000 by pressing the On/Standby front panel button and switching the rear panel power switch to off.
2. Remove the power cord.



WARNING. To avoid a shock hazard always remove the power cord before removing the top cover. Failure to remove the power cord can result in serious injury or death.

3. Refer to Figure C-1 and remove or loosen all screws to remove the top cover.

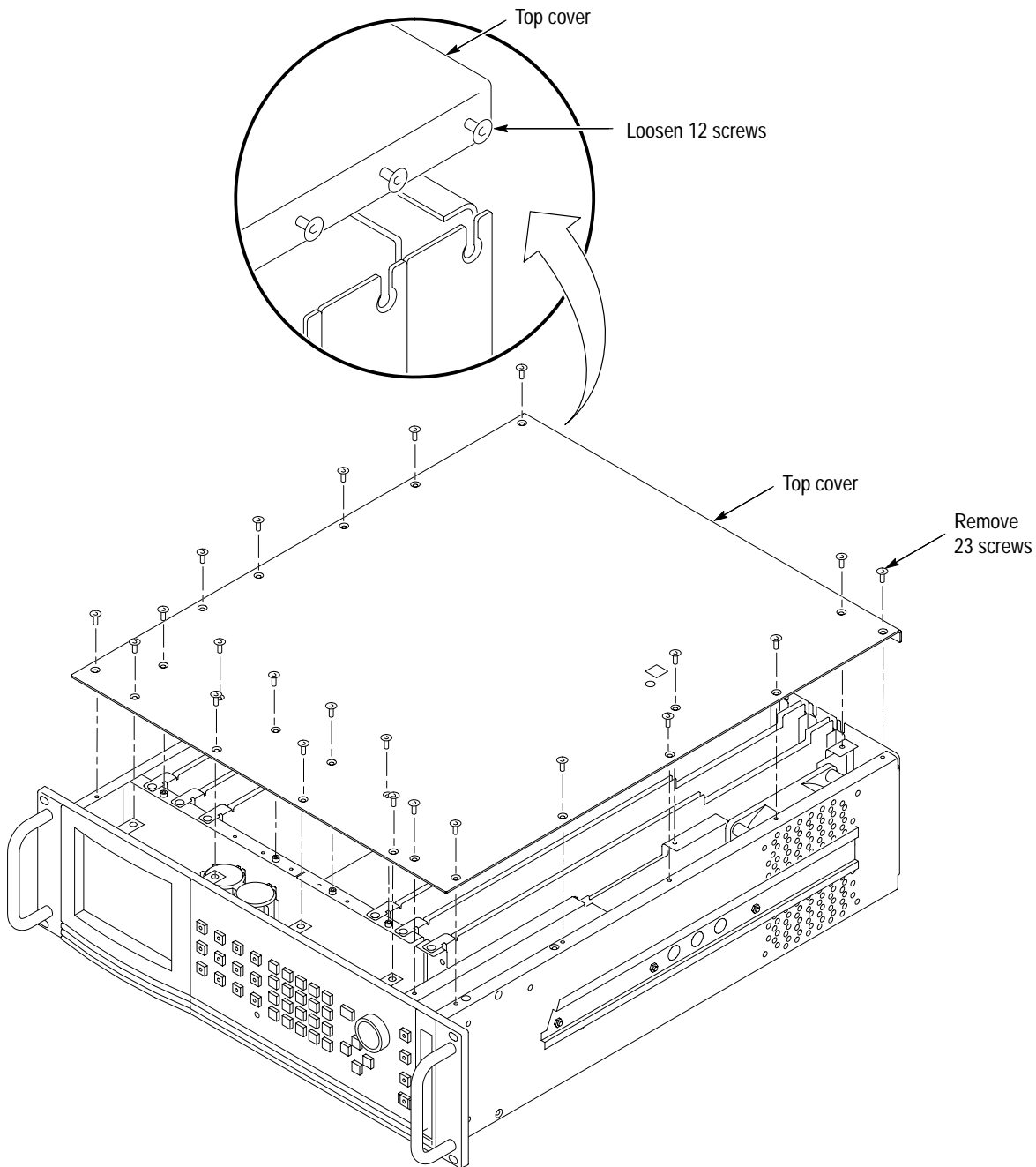


Figure C-1: Top cover removal

4. Select the slot where you want the module installed. The AGL1 Genlock must be installed in either slot 2 or 3.
5. Remove the appropriate rear panel as shown in Figure C-2. Do not remove the bottom screw, just loosen it. You will use it later to secure the module.

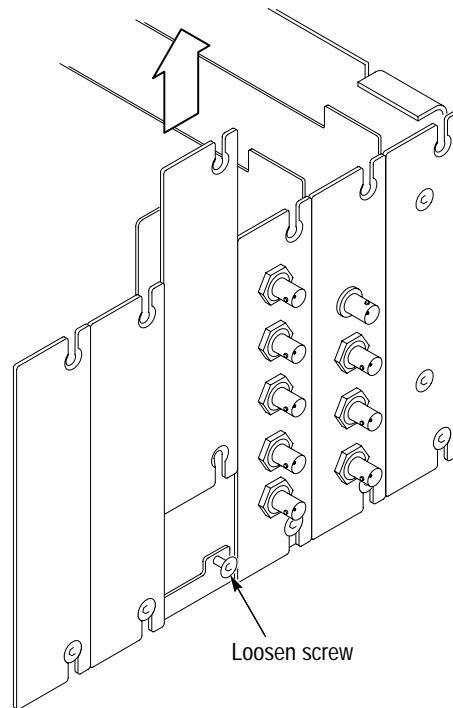


Figure C-2: Removing the rear panel

6. Lower the module into the desired slot as shown in Figure C-3. When you lower the module, ensure correct alignment of the module flange as shown in Figure C-4.

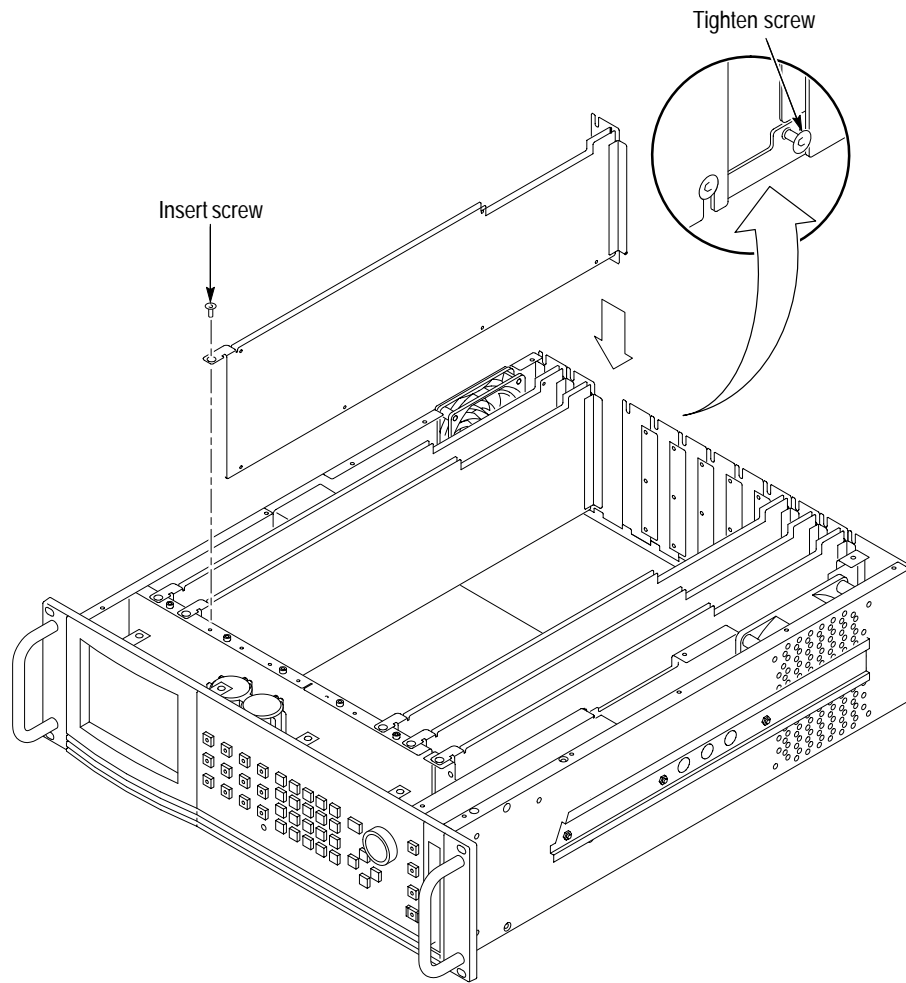


Figure C-3: Installing the module

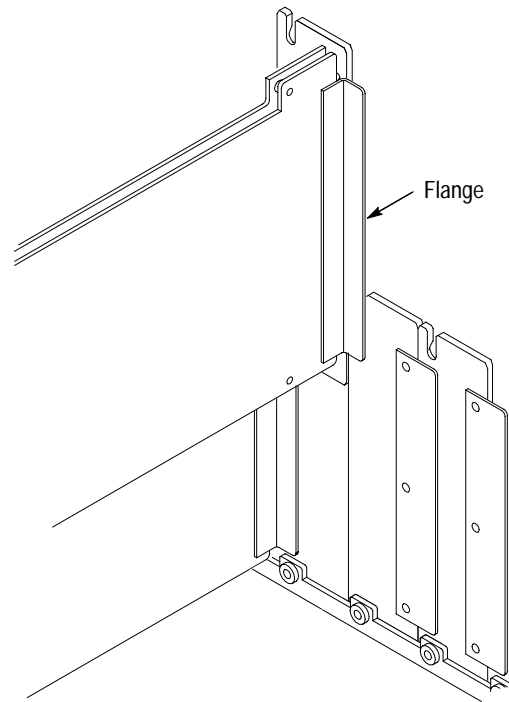


Figure C-4: Module flange

7. Insure that the connectors on the mother board and the module exactly match before seating the module.



CAUTION. *The connectors must exactly match before you attempt to press the module firmly in place. If the connectors do not match you could bend a pin that could damage the module, mainframe, or both when power is applied.*

8. Press down evenly on the module until it is firmly in place.
9. Refer to Figure C-5 and insert and tighten the top screw, which comes with your module, and tighten the rear panel screw.

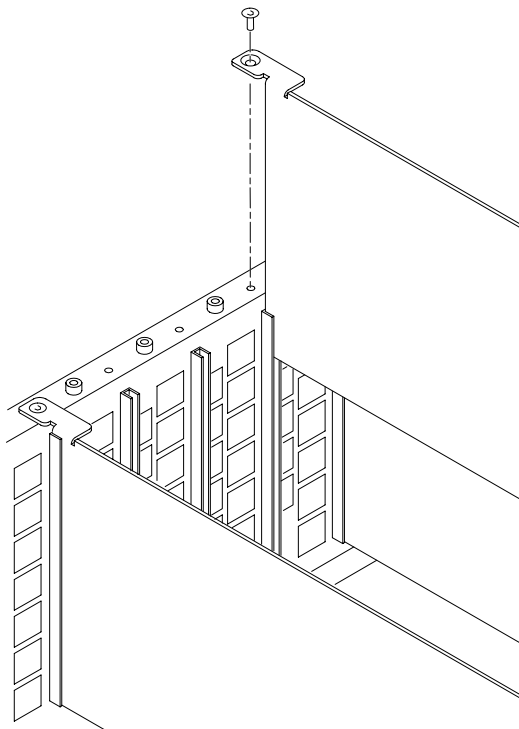


Figure C-5: Top screw

- 10.** Connect the VCO tune cable from the AGL1 circuit board to the clock board as shown in Figure C-6. The connection to the clock board is dependent upon which slot the AGL1 is installed. If the module is in slot 2, connect the cable to **GL SLOT 2 IN**. If the module is in slot 3, connect to **GL SLOT 3 IN**.

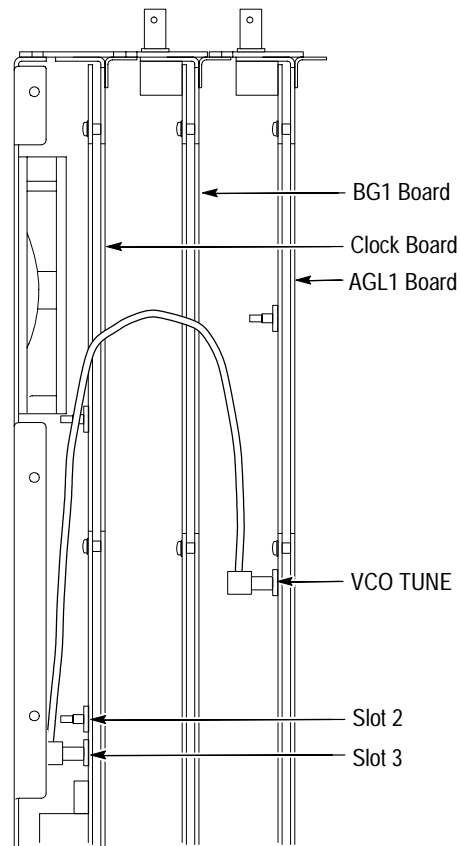


Figure C-6: Cable connections

- 11.** Reinstall the top cover and insert and tighten all top cover screws.

Removing a Module

To remove the module perform the installation steps in the reverse order.



Glossary and Index

Glossary

Black Burst

Also called “color black,” black burst is a composite video signal consisting of all horizontal and vertical synchronization information and burst. Typically used as the house reference synchronization signal in television facilities.

CW

Continuous Wave. Refers to an unmodulated sine wave. A common CW is the separate subcarrier which is modulated with chrominance information.

Genlock

The process of locking the reference output signal to the burst of another signal, making the two signals completely synchronous.

NTSC

National Television System Committee. The organization that developed the television standard currently in use in the United States, Canada and Japan. Now generally used to refer to that standard.

PAL

Phase Alternate Line. Refers to one of the television systems used in Europe and many other parts of the world. The phase of one of the color difference signals alternates from line to line to help cancel out phase errors.

Termination

In order to accurately send a signal through a transmission line, there must be an impedance at the end which matches the impedance of the source and of the line itself. Amplitude errors and reflections will otherwise result. Video is a 75Ω system, so a 75Ω terminator must be put at the end of the signal path.

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