

TG700
TV Signal Generator Platform
Release Notes

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Contacting Tektronix

Tektronix, Inc.
14200 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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Release Notes

This document describes new features, improvements, and limitations of firmware version 5.45 for the TG700 TV Signal Generator Platform.

New Features

This release adds the following features to the GPS7 GPS Synchronization and Timecode Module.

NOTE. *The GPS7 module must have hardware version 1.3 to support the video genlock feature and the new features listed below. Modules with this hardware version will have a BLACK 1 / REF IN connector on the rear panel. Earlier GPS7 modules do not have the reference input capability. On these modules, the connector is labeled BLACK 1.*

LTC Input

This module now supports an optional LTC input for time reference. This input replaces the LTC 1 output when in use.

The LTC Timing Status screen shows the relationship between the LTC frame and either the genlock video or the internal frame pulse used to latch the LTC time-code into the system.

If the LTC input rate and the genlock video input rate are compatible, then the LTC Timing Status screen will show the timing relationship between the LTC frame and the video.

If the LTC input rate and genlock video input rate are not compatible, then the LTC Timing Status screen will show the timing between the LTC input and the internal frame pulse used to register the incoming time. Depending on which internal frame rate has been allocated, the LTC Timing readout may be stable, or may cycle through several possible values. Regardless, if the display is stable or cycling, this number has limited utility, since it is not related to the normal LTC-to-video relationship. If the instrument is in internal reference mode, then the LTC Timing Status readout and messages are disabled.

The LTC Timing Status screen shows the time between the reference datums and one of the following three messages:

- **12M OK:** means the timing is within the window described in SMPTE 12M
- **OK:** means that the timing is within the window that the GPS7 is able to consistently assign the time-code to the correct video frame
- **Warning:** means the timing is near the threshold between frames so time-code may be assigned to the adjacent video frame, or may shift one frame if the timing changes slightly

If the LTC timing is slewing, then it indicates the LTC and the selected reference (Internal, GPS, or Video Genlock) are not synchronous. In this case, the time-code will shift when it crosses the threshold from one frame to another. This can be avoided by not using the “follow” mode for the time synchronization. Instead use the “Synchronize Once” or “Synchronize now” modes.

720p50 Tri-Level Sync

This module now supports 720p50 tri-level sync as a recognized reference input signal when the module is in genlock mode.

If you are using the 50, 59.94 or 60 Hz progressive sync as a genlock source, as well as LTC as a time-code source, there are two possible alignments for the resulting system. Alignment can be checked by looking at the LTC timing status screen. If the timing is near zero, then it is aligned. If the timing is near a frame of offset, then it is not aligned.

You will need to unlock and re-lock the reference to achieve the desired alignment if this is important to the application you are using. Alternatively, you can use a lower frame rate video reference like NTSC, PAL, or 1080i tri-level.

Menu Changes

The following menus have changed as shown to accommodate the new features. Menu items labeled *REF IN only* are only available in modules with the BLACK 1 / REF IN connector on the rear panel.

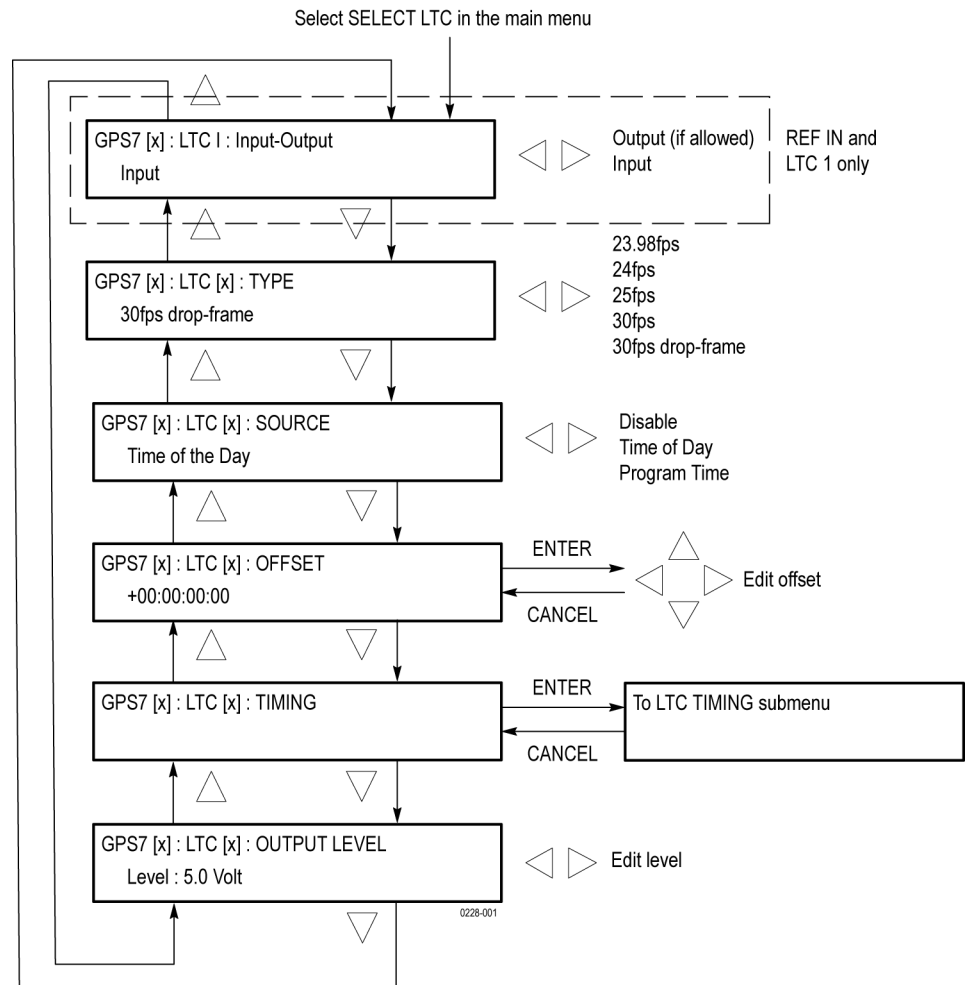


Figure 1: GPS7 LTC menu

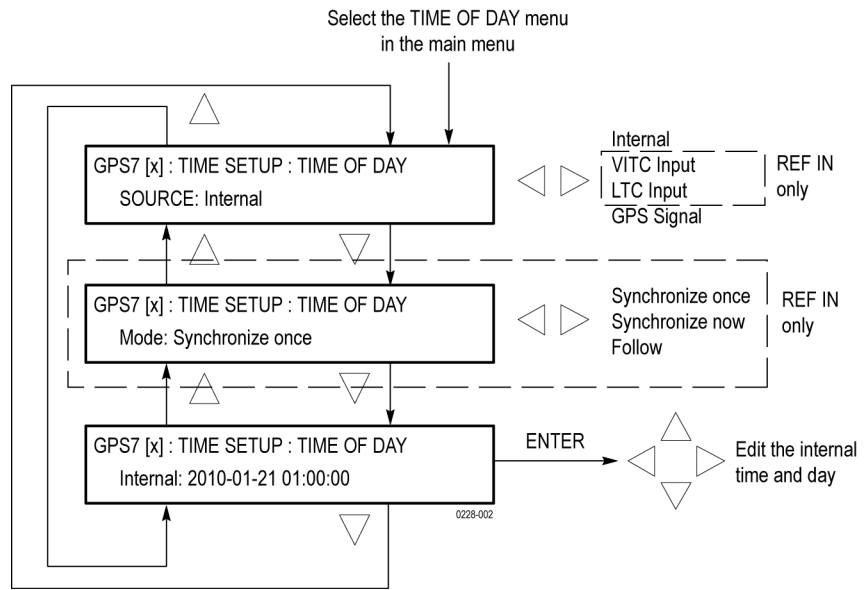


Figure 2: GPS7 module Time of Day submenu

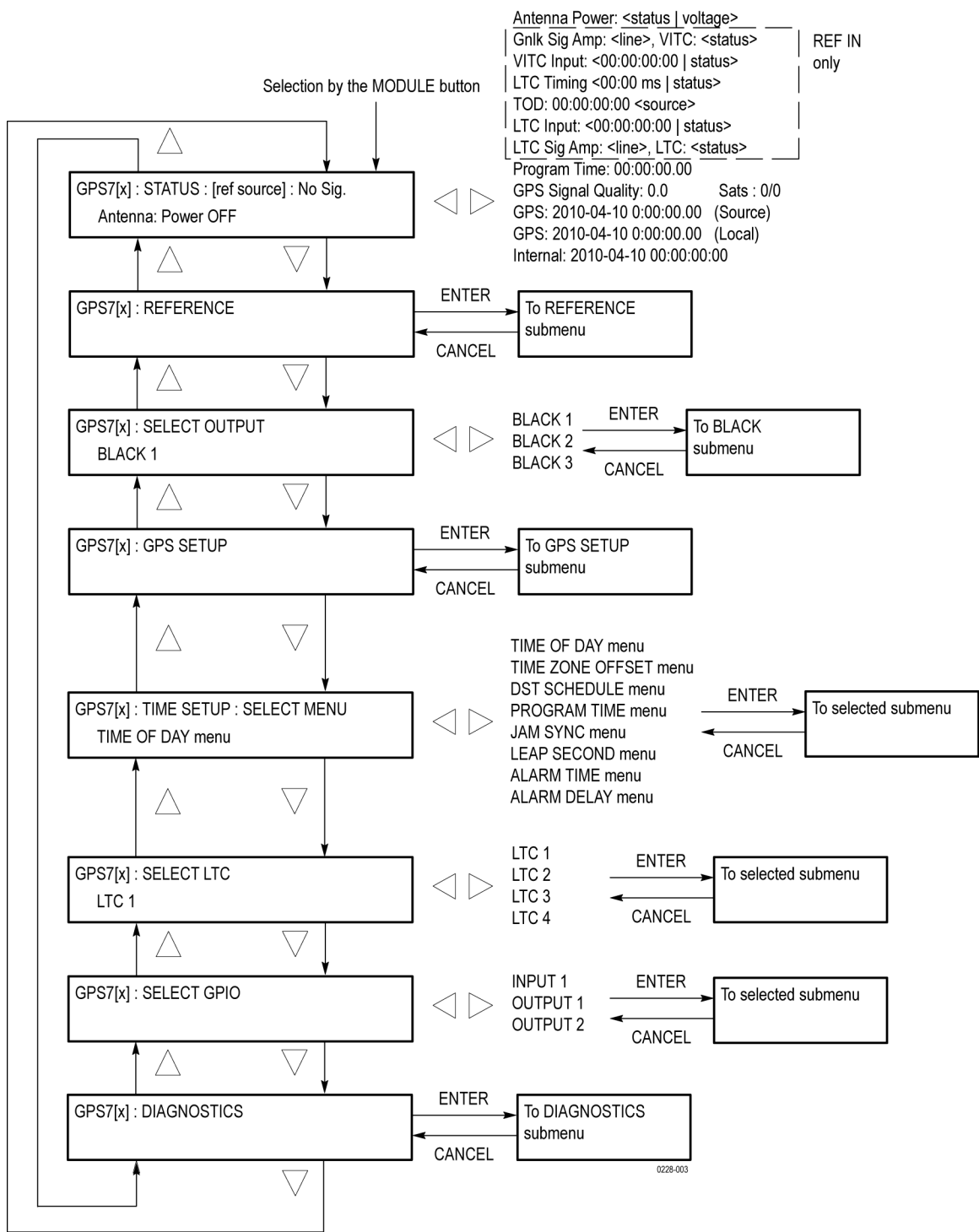


Figure 3: GPS7 main menu

Issues Resolved

The following issue was resolved in this release.

Projector Test Patterns using XYZ Color Space

The HDLG7 Dual Link HD-SDI Generator Module and HD3G7 3G-SGI Generator Module no longer produce incorrect sample data when using projector test patterns with the 4:4:4 XYZ sampling structures.

General Limitations

This release has the following general limitations:

TG700 Mainframe Requirements for This Release

Firmware release version 5.45 must be installed on a TG700 mainframe with at least 32 MB of memory. A 16 MB system can be upgraded to 64 MB by ordering the FP (Frame Picture) upgrade kit. (Tektronix part number 040-1698-xx).

TG7 Setup Software

In setting signal formats for the Black 2 and Black 3 outputs of the AGL7 module, do not select Black 2 = HD sync (same as Black 3) and Black 3 = BB (same as Black 2) simultaneously, while Frame Reset 1 is set to 2.997 Hz. This operation makes the Frame Reset 1 unstable. If this is the case, reset the system by recalling the Power On Default setting or a preset.

TG7 Comm Software

Do not change or delete any file names or folder names other than those downloaded by users (signal files, sequence files, and preset files). Doing so can cause the instrument to operate in an unexpected manner.

You can change the names of user files (signal files, sequence files, and preset files) after you have downloaded them into the TG700 mainframe. Remove and reapply power to see the updated names on the mainframe.

Resetting an Output Signal

When the instrument rereads or resets signal data, such as format changing, preset recall, or signal-button assignment, a signal output interruption or synchronization shock may occur.

Setting the Genlock Source

If you change the frame reset period in the AGL7 module after the genlock source is set to CW, the frame reset may not be selected properly. If this is the case, set the frame reset to CW.

Assigning a Signal and Frame Picture to a Front-Panel Button

When you assign a downloaded signal to a front-panel button, do not assign different format signals to the same button.

Do not assign a signal set to a signal button of the signal that is currently being output. Also, do not assign a signal set to a signal button while the message “No Signal Set Assigned” is displayed. If you reassign a signal set to the OTHER button, perform the reassignment while a signal that is assigned to a button other than the OTHER button is output.

Embedded Audio Samples for 3G-SDI Formats

When using the HD3G7 module with exactly three groups of embedded audio, audio data from the same sample period may sometimes be split into adjacent lines. This behavior only happens with formats with a field or frame rate of 29.97 or 30 Hz, and not with formats with a field or frame rate of 23.98, 24, 25, 50, 59.94, or 60 Hz. Use one, two, or four groups of embedded audio to force audio sample data for all groups to be located on the same line.

Embedded Audio of the HDVG7 Module

- Embedded audio for 720 23.98p/24p formats are not supported for the HDVG7 module, even though they can be selected in the menus.
- The first user data word in the audio control packet (containing the Audio Frame value) has incorrect parity when the frame count is 1, 2, or 4.

Pulse and Bar Test Signal for 3G-SDI Formats

The pulse and bar test signal for the HD3G7 module is labelled *2T60 Pulse and Bar* for all formats, but the signal is actually a 2T30 Pulse and Bar for formats with field or frame rates of 30 Hz or less. The signal is 2T60 only for 1080p 50/59.94/60 Hz formats.

Y to GBR Converter Mode of the HDLG7 Module

If the output format is 2K and the Converter mode is set to Y to GBR, changing operating mode by selecting a test signal will cause an unexpected black and white signal to be generated. To correct the test signal, press the OTHER button until Normal is selected, and then press the test signal button.

25/29.97/30 Hz Segmented Frame Format for the HDLG7 Module

The HDLG7 module does not have format selections for 1080PsF at 25 Hz, 29.97 Hz, or 30 Hz. These formats are almost identical to 1080i (interlaced) formats at 50 Hz, 59.94 Hz, and 60 Hz respectively; these format settings can be used with progressive segmented signals. However, note that the SMPTE 352M payload identifier for the output signal will show an interlaced signal format, even when the HDLG7 module is converting a single link progressive segmented input signal to dual link.

Multiple Timecode Formats

Frequent changes to output formats can result in instability on those outputs. Disturbances to PAL output signals can be prevented by setting any output to PAL as a power-on preset, and then keeping any output set to PAL at all times.

Converter Mode of the HD3G7 Module

- Infrequently, the module will fail to up-convert the input HD-SDI signal. If no output is seen, the problem can be corrected by selecting a different test signal and then switching back to converter mode.
- The trigger output cannot generate a frame pulse or line pulse when the module is in converter mode.
- The moving picture and video component functions do not apply to up-converted output signals.

Embedded Audio of the HD3G7 Module in Converter Mode

When a Level B format is selected for the up-converted 3 Gb/s output signal, embedded audio from the input HD-SDI signal will be copied into both virtual links. Therefore, up to 32 channels of embedded audio can appear on the 3 Gb/s output.

Time of Day Changes For Timecode Outputs

When the time-of-day changes, such as when scheduled daylight savings adjustments are made or when the internal time is set from the front panel, there can be a delay before that change is reflected on timecode outputs.

This delay may be a small number of frames (fraction of a second) when all timecode output formats are based on the same clock rate (for example, NTSC black burst and 1080i 59.94 HD tri-level on black outputs in addition to 30 fps drop-frame on LTC outputs), or up to several seconds when timecode formats based on different clock rates are used (for example, 29.97 fps and 24 fps on different outputs).

Closed Caption Data with the HD3G7 Module in Converter Mode

- The HD3G7 module does not re-format SMPTE 334 Caption Distribution Packets in converter mode. Therefore, when up-converting from 1080i 59.94 Hz to 1080p 59.94 Hz, for example, the output will contain CDP data in alternate frames, each with 40 bytes of caption data, instead of CDP data in every frame, each with 20 bytes of caption data.
- Up-conversion to a Level B fast progressive format may result in mis-ordered Caption Distribution Packets in the stream of output frames.

SDI Equalizer Test Signal of the HD3G7 Module

Per SMPTE RP198 for HD-SDI, a polarity change word is used to ensure equal probabilities of the dc bias for the equalizer test pattern. However, some 3G SDI formats still exhibit an unequal bias. Enabling a dynamic bit stream in the output signal, such as embedded audio or timecode data, will result in both dc levels appearing in the output signal.