Release Notes

Tektronix

WFM700HD, WFM700A, & WFM700M Waveform Monitors

061-4247-06

This document applies to firmware version 2.1.X.

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Release Notes

CAUTION. *When you download new firmware from the www.tektronix.com web site, you will receive an updated Release Notes document and WFM700 user manual in PDF file format. Be sure to use the firmware upgrade procedure in the updated WFM700 user manual to avoid firmware installation problems.*

These release notes provide the following information:

- Descriptions of the new features released with the firmware version covered by this document (firmware version is listed on the title page).
- Descriptions of problems or behaviors that you might encounter while using the waveform monitor and explanations of how you can minimize or eliminate the impact on instrument operation.

New Features with Firmware Version 2.1.x

With the introduction of the "B" version of the Real Time Display board, the instrument firmware is changing to version 2.1.x. The following new feature enhancements were implemented with firmware version 2.1.x:

Installed Options Display

The Installed Options display, accessed using the Help menu, lists which version of the Real Time Display board is installed in the instrument. RTD v.A is displayed when the "A" version of the board is installed and RTD v.B is displayed when the "B" version is installed.

The only time you need to know the version of the Real Time Display board is when you are upgrading the instrument firmware as described below.

Firmware Upgrade Procedure

The firmware upgrade package that you download from the Tektronix, Inc. Web site, contains two versions of the firmware file: *a.fmw or *b.fmw. You must use the *a.fmw file if your instrument contains the "A" version of the Real Time Display board, or you must use the *b.fmw file if your instrument contains the "B" version of the board.

NOTE*. If you attempt to upgrade your instrument using the wrong version (A or B) of the firmware image file, the instrument reports an error message and continues operation using the previously installed firmware.*

New Features with Firmware Version 2.0.x

The following new feature enhancements were implemented with firmware version 2.0.x:

Audio Monitoring (Option DG)

Instruments with the new Option DG audio module installed can perform the following measurement tasks on embedded or AES/EBU audio signals:

- Monitor up to eight channels of embedded AES/EBU digital audio from either groups 1 & 2 or groups 3 & 4 of the selected video input. The instrument supports multi-channel digital audio for surround and stereo pair signal formats.
- Use the four AES/EBU connectors either to monitor the input of up to eight channels of non-embedded AES/EBU digital audio or to output up to eight channels of de-embedded, digital audio from one of the video inputs.
- Adjust the Level Bar display for either true peak, PPM, or extended VU meter ballistics, and for standard or custom meter scaling.
- Adjust the Lissajous display, which shows the phase relationships of the two signals on the selected channel pair, for X/Y or soundstage (L/R) axis orientation and for automatic gain control (AGC).
- Specify which audio alarms are triggered, and if so, what actions are performed.

Figure 1 shows the Level Meter + Lissajous display with channel pairs C & LFE selected.

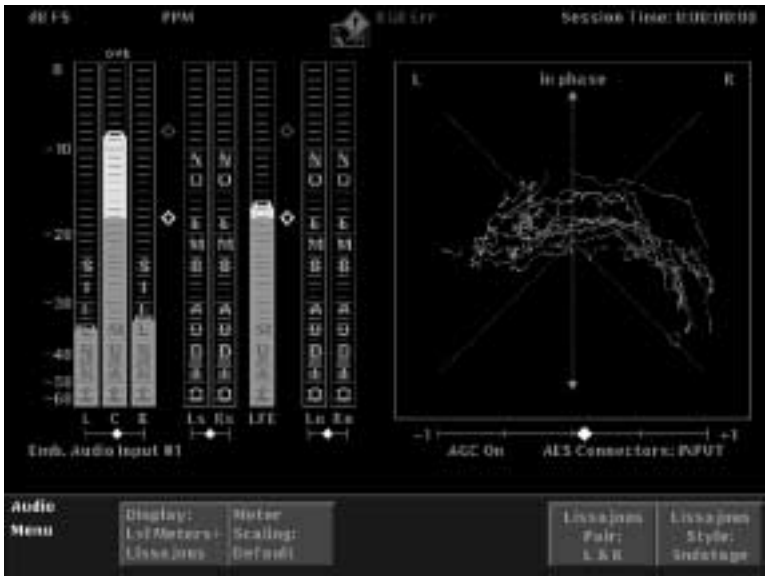

Figure 1: Audio Lissajous display (Option DG only)

Video and Audio Status/Session Displays

You can access the video and audio status/session displays by pressing the front-panel Status button. The Video Status display (see Figure 2) shows the current status of the video signal being monitored. The Video Session display shows the cumulative results of the current video monitoring session. The Audio Status/Session display (see Figure 3) shows the current status and cumulative totals of the audio signal being monitored.

The session function allows you to start a monitoring session and to accumulate signal-event totals while the session is running. For both video and audio status/session displays, use the Session Stopped/Running soft key to start or stop the monitoring session, and use the Reset Session soft key to clear the session display.

Figure 2: Video status and session display with SD signal input

Figure 3: Audio status and session display

Enhanced Error Detection, Alarm Reporting, and Event Logging

The instrument now provides enhanced error detection, alarm reporting, and event logging as described below:

Enhanced Error Detection. There are several new signal errors and conditions that can be detected and reported. The instrument now divides alarms into the following categories:

- General alarms. These alarms report general video-signal errors including Composite and RGB gamut errors, input and reference signal format errors, and ancillary data errors.
- Serial alarms. These alarms report errors with the serial data stream including RP165 and SMPTE292M CRC errors, and SDI line and field length errors.
- Audio alarms (Option DG only). These alarms report errors with the embedded audio in the video signal or with the AES audio signal including mute and clip errors, AES parity and CRC errors, and audio silence and over-level errors.

Enhanced Alarm Reporting. For each monitored General, Serial, and Audio Alarm (Option DG only) condition, you can select one or more notification methods:

- On-screen. An icon appears at the top of the current display.
- Beep. The instrument makes an audible alarm.
- Logging. The instrument makes an entry in the Event Log.
- Ground Closure. The instrument sends a signal out the Remote port for a remote notification that an alarm condition occurred.

Event Logging. The instrument maintains an event log in which every entry is time-stamped with the time-of-day when the instrument logged the event. You can enable the instrument to also time stamp events with the timecode (VITC or ATC) embedded in the video signal you are monitoring. The Event Log contains entries for signal events or conditions (alarms) you have enabled for logging. Use the Configure menu to enable or disable any of the available General, Serial, and Audio (Option DG only) alarms.

You can view the Event Log using the Status display, print the log to a postscript printer, or view the log from a remote site using a PC capable of connecting to the instrument over an Ethernet network.

Multi Mode Display

Press the MULTI button to enable the Multi mode display. Using Multi mode, you can show two different views of the same input signal side-by-side (see Figure 4). You can view the current Waveform, Vector/Lightning, Gamut, Audio, Status, or Data Display in either of the two windows.

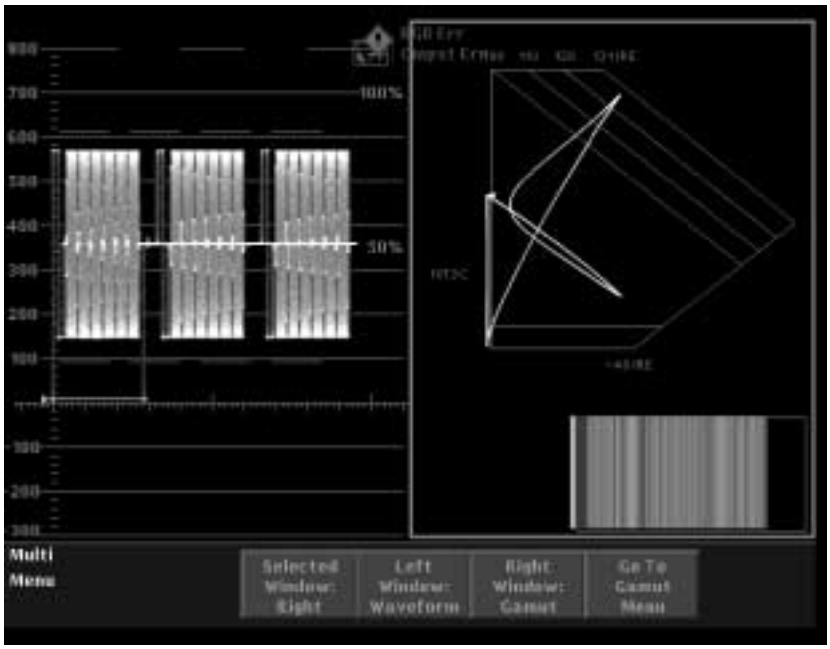

Figure 4: Multi mode showing the Waveform and Gamut displays

Print Function

You can configure the instrument to print the following items to a postscript printer on your local Ethernet network:

***NOTE**. The instrument formats print output in either Postscript color or Postscript black and white formats. The selected network printer must support the LPD protocol.*

- Instrument display. To print the current instrument display (waveforms and text), press the Print button.
- Event Log file. To print the Event Log file, press the Print button when you are viewing the Event Log in the Status display. The complete Event Log file will be printed, not just the portion displayed on the instrument screen.
- Diagnostics Log file. To print the Diagnostic Log file, touch the Print Diagnostics Log soft key in the System submenu of the Configure menu.

Remote Control

The waveform monitor provides the following two methods for remotely controlling the instrument:

Ground Closure Interface. The rear-panel, 9-pin remote connector serves as an interface to allow you to perform the following tasks:

- Send a ground-closure signal to external equipment when a monitored alarm condition has occurred. The connector provides a logic-high output level for pull-up use by external switches, allowing for a passive-only external circuit. Each monitored alarm can be individually configured for ground closure notification using this interface.
- Recall instrument presets 36 to 42 by sending logic high signals to the instrument.

Remote Web Interface. Using a PC with only Web browser software, such as IE (Internet Explorer) and Netscape, you can remotely view the diagnostics logs and view the system events and alarms logs.

If you install the Java Runtime Environment (JRE) on your PC, you can run a Java applet from the Web browser that provides a virtual front-panel you can use to remotely control the instrument and view the instrument display.

Bowtie Mode

The Bowtie display allows you to evaluate the relative amplitude and timing between the three video channels (Y, Pb, and Pr). This display mode requires that you send a special Bowtie test signal from the monitored signal source. The Tektronix TG2000 Signal Generation Platform is one television signal generator that can produce this test signal.

Problems and Behaviors

The following problems and behaviors are organized by the affected operating mode(s) in the instrument:

General Topics

The following items apply to multiple operating modes:

Display Intensity. Display Intensity dims in some modes. Use the Trace Settings in the Display menu to increase the display intensity.

Blank Screen at Power Up. It is normal for the display to be blank for 25 to 40 seconds after you turn on the instrument. If the display is still blank after the normal completion of the power-on sequence, cycle power to achieve normal operation.

Audio Topics

The following topics apply to the Audio operating mode:

Mute Indication During Audio Unlock. Certain error conditions can cause the AES/EBU receiver to generate zero samples to protect internal hardware while the receiver relocks to the signal. The number of samples can exceed the configured threshold for indicating a mute condition. Under these circumstances, the Audio Session screen will indicate that the audio signal is unlocked.

Embedded Audio. If the instrument receives embedded audio at an unsupported rate, or cannot successfully de-embed the audio channels due to unrecoverable errors in the embedded audio data, it will indicate embedded audio presence, but all audio-mode displays will show an unlocked condition.

Cursor Topic

The following item applies to the measurement cursors:

Overlay / 2 Line Mode. The location of the time cursors may shift slightly relative to the waveform when you switch between normal and Mag in Line or 2 Line mode. However, the relationship between the two time cursors is accurate in either mode. Be sure to line up both cursors in the same mode. The Mag setting does not affect the voltage cursors.

External Reference Topics

The following items apply to using an external reference signal:

No Valid Signal Present. False Vector Display. If external reference is selected and there is no valid external reference signal, the wrong waveform is displayed when you switch between Vector and Lightning modes. This can also affect performance in other operating modes. Be sure to supply a valid external reference signal when the input is externally referenced.

Timing Offset. Some standards may not have zero timing shift when switching between internal and a correctly timed external reference.

Freeze Topics

The following items apply to using the Freeze function:

Ghost Images. In Picture and Thumbnail mode, some Freeze operations leave ghost images. To clear these images, select Delete Capture from the Freeze menu or restore the factory preset from Preset menu.

Vector Mode. In Vector mode, Freeze offsets the image to the left by several pixels.

Display Color. If the waveform trace color is white when a capture is completed, the live waveform color turns to green and remains green until you press a major mode button.

Measure Topics

The following items apply to the Measure operating mode:

Momentary Red Values in Data Display. Rapidly scrolling horizontally through video samples in the Data display can cause some legal data values to momentarily appear in red. Reducing the scrolling speed will eliminate this problem.

Color Coding Illegal Values. In the Data display, reserved data values 0x000–0x003 and 0x3FC–0x3FF in the active video will appear in red. Illegal timing reference signal (TRS) values will also appear in red. Values in the horizontal and vertical blanking intervals will appear in gray including reserved data values or other illegal values.

Multi Mode Topic

The following item applies to the Multi operating mode:

Line Select Mode. Entering Multi mode when the instrument is already in Line Select mode will cause the front-panel Line Select indicator to turn off, although the instrument remains in Line Select mode. Exiting Multi mode or pressing the Go to <*Mode*> Menu soft key in the Multi menu will turn on the Line Select front-panel indicator when the instrument is in Line Select mode.

Disabling the Line Select mode when either Multi-mode window contains the Data display will cause the Line Select mode to be disabled in the Data display. In this situation, press the Line Select button to enable the Line Select mode and allow the General Purpose knob to change line and sample values in the Data display window in Multi mode.

Print Topics

The following items apply to the Print operating mode:

Print and Freeze mode. Pressing Print removes the contents of the capture buffer previously stored in Freeze mode.

Network Printing Using an LPD Server. The instrument does not support printing to a network printer through an LPD Server that manages several print queues. Further, the instrument does not supply print queue names to the printer. The instrument must have a direct connection to a network printer supporting LPD protocol that does not require a print queue identifier.

Remote Interface Topic

The following item applies to the Remote Control Interface:

Vector Display. The Vector display on the remote interface is a captured display and is offset by several pixels (see *Vector Mode* in *Freeze Topics* on page 9).

Vector Topic

The following item applies to the Vector operating mode:

Gain. In Vector mode, when switching between X1 and X5 gain with a variable gain above 2.8, the signal or graticule magnification may be incorrect. This problem does not occur with variable gain settings under 2.8 or with X10 gain. To correct this problem, select X10 gain and then switch to X1 or X5 gain.

Waveform Topic

The following item applies to the Waveform operating mode:

Parade Mode Display with MAG On (720p, 24 Hz / 23.98 Hz Signals Only). In the Waveform (Parade mode) display with MAG turned on, when horizontally scrolling between the displayed components of a 720p 24 Hz / 23.98 Hz signal, the waveform will shift horizontally as you scroll through the horizontal blanking interval. This shift will appear in the following two cases:

- When the color space display mode is set to YRGB.
- When EAV/SAV stripping is turned off and 2 or more paraded components are selected (Y-Pb, R-B, etc.).

For example, with the YRGB components displayed, as you scroll from the Y component to the R component, the leading edge of the R display will suddenly appear (about 1/4 of the screen width from the right edge of the display). Scrolling from the R component to the Y component will produce the same effect on the left side of the screen.