

Tektronix, Inc.
13725 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

Software Release Notes and Installation Instructions

Important information

These release notes contain important information about version 1.6.5 of the AFG31000 software.

Introduction

This document provides supplemental information regarding the behavior of the AFG31000 software. This information is grouped into six categories:

Revision history	A list identifying the software version, document version, and software release date.
New features/enhancements	Summary of each significant new feature included.
Problem fixes	Summary of each significant software/firmware bug fix
Known problems	Description of each significant known problem and suggestions for a workaround.
Installation instructions	Detailed instructions describing how to install the software.
Appendix A – Previous versions	Information about previous versions of the software.

Revision history

This document is periodically updated and distributed with releases and service packs to provide the most up-to-date information. This revision history is included below.

Date	Software version	Document number	Version
6/15/2025	V1.6.5	0771639	06
3/10/2025	V1.6.4	0771639	05
11/29/2024	V1.6.3	0771639	04
3/7/2024	V1.6.2	0771639	03
3/23/2021	V1.6.1	0771639	02
12/3/2020	V1.6.0	0771639	01
9/30/2019	V1.5.2	0771639	00
11/15/2018	V1.4.6	-	-

Version 1.6.5

New features/enhancements

Issue number	SK-3424
Models affected	AFG31XXX
Enhancement	A new SCPI command has been added that enables waveform file transfer to the AFG31000 instrument over the SCPI interface. This enhancement simplifies automated waveform uploading and improves integration with external test automation systems. (See command details below)

Problem fixes

Issue number	SK-3456
Models affected	AFG31XXX
Symptom	A <code>MMEMory:CATalog?</code> query did not return information on newly saved files.
Resolution	This issue has been corrected.
Issue number	SK-3509
Models affected	AFG31XXX
Symptom	A <code>MMEMory:CATalog?</code> query was reporting incorrect amounts of free memory.
Resolution	This issue has been corrected, enhancing accuracy and reliability for applications relying on memory availability checks.
Issue number	SK-3576
Models affected	AFG31XXX
Symptom	Device serial numbers of length 10 were truncated to length 9 after reboot.
Resolution	This issue has been corrected.

TRACe | DATA : FILE (no query form)

This command enables the transfer of waveform files over the SCPI interface.

Group: Trace

Syntax: `TRACe|DATA:FILE <filename to save>, <total length of file>, <binary_block_data>`

Arguments: `<filename to save>::=<string>`

Specifies the filename to use when saving the transmitted file to the internal mass storage system memory. Include the `.tfwx` extension with the filename (see Example below).

`<total length of file>::=<NR1>`

Ranges from 516 to 33,554,944 bytes without memory extension license and 516 to 268,435,968 bytes with memory extension license.

`<binary_block_data>` where

`<binary_block_data>`

is the waveform data in binary format. Supported byte count in binary block data ranges from 1 to 1,048,575 bytes.

Example: DATA:FILE "wfm.tfwx",1600000,#6100000<DAB><DAB>...<DAB>

Transmits a waveform to the internal mass storage system memory of the AFG31000. Block data element #6100000 indicates that 6 is the number of digits in 100,000 (byte count) and the 100,000 bytes of binary data are to be transmitted. The command must be sent 16 times with each subsequent command sending the next 100,000 bytes in the .tfwx file to transmit the binary for the entire file when the total file length is 1,600,000 bytes and a byte count of 100,000 is used.

Version 1.6.4

Problem fixes

Issue number	SK-3284
Models affected	AFG31XXX
Symptom	Double Pulse App: App is deleted during factory reset.
Resolution	Fixed an error in which the Double Pulse App was deleted after a factory reset. This issue has been corrected.

Version 1.6.3

New features/enhancements

Issue number	SK-2650
Models affected	AFG31XXX
Enhancement	The firmware has been updated so that the serial number format consists of 10 digits (four alpha and six numeric) with no character restrictions. Additionally, a 0 after the B or C prefixes is no longer required.

Problem fixes

Issue number	SK-2493
Models affected	AFG31XXX
Symptom	Double Pulse App: Amplitude controls were non-functional.
Resolution	Fixed a bug where amplitude controls in the Double Pulse App were non-functional. This issue has been corrected.
Issue number	SK-2544
Models affected	AFG31XXX
Symptom	Double Pulse App: Timing settings are not automatically saved.
Resolution	Resolved an issue where timing settings were not automatically saved after entering a time followed by a unit. This issue has been corrected.
Issue number	SK-2573
Models affected	AFG31XXX
Symptom	In Basic mode, Interchannel, Ch1, and Ch2 settings that use check boxes did not retain the settings after restart if the Power On setting was set to Last.
Resolution	Corrected the behavior where the check box settings did not retain their settings after restart.

Issue number	SK-2574
Models affected	AFG31XXX
Symptom	ArbBuilder stops responding when set to 0.5 cycles (fractional cycles).
Resolution	Resolved an issue where setting 0.5 cycles in ArbBuilder caused the AFG31K to stop responding. ArbBuilder now handles fractional cycles correctly. This issue has been corrected.
Issue number	SK-2642
Models affected	AFG31XXX
Symptom	Double Pulse App: The translation file displayed in the Help pane was incorrect.
Resolution	Replaced the incorrect translation file used in the help pane. This ensures accurate and user-friendly language support. This issue has been corrected.
Issue number	SK-2816
Models affected	AFG31XXX
Symptom	Double Pulse App. The AFG31K outputs a continuous 1 V peak-to-peak, 1 Mhz sine wave when the physical channel 1 output on button is used as the first ON state.
Resolution	This issue has been corrected.

Known problems

Issue number	SK-1674
Models affected	AFG31XXX
Symptom	After sending the *RST command while the AFG31K is on the Home screen, the device does not switch to Basic mode, as expected. This issue is under investigation.
Issue number	SK-2706
Models affected	AFG31XXX
Symptom	When restarting the AFG31k with the Power On setting set to Last, Basic mode reverts ARB amplitude and offset to the default values from the waveform file rather than applying the last-used settings. This issue is under investigation.
Issue number	SK-2943
Models affected	AFG31XXX
Symptom	Double Pulse App. 2-channel model AFG31k intermittently produced a 1 V peak-to-peak, 1 Mhz sine wave when the physical channel 1 output on button is used as the first ON state. This issue is under investigation.

Version 1.6.2

New features/enhancements

Issue number	SK-1601
Models affected	AFG31XXX
Enhancement	Users can now use <code>DISPlay:TOUCH[? ON OFF]</code> command to enable, disable, and query the touch screen functionality.
Issue number	SK-1602
Models affected	AFG31XXX
Enhancement	Amplitude values in ARB mode are now correctly applied when restoring the AFG setup from a <code>.TFS</code> file.
Issue number	SK-1603
Models affected	AFG31XXX
Enhancement	Users can now change Idle state settings when operating in Burst mode.
Issue number	SK-1607
Models affected	AFG31XXX
Enhancement	The default dampening factor of the exponential waveforms is now set to 0.1 to generate a more typical exponential waveform.
Issue number	SK-1719
Models affected	AFG31XXX
Enhancement	Double Pulse Test will now be provided with firmware releases for the AFG31K. Firmware upgrades will check to see if the installed version of the double pulse app is newer or older than the one packaged with the firmware. The app version bundled with the firmware will always be installed but, if it is older than the previously installed version, a downgrading warning will appear.

Problem fixes

Issue number	SK-1548
Models affected	AFG31XXX
Symptom	Certain text strings in buttons were cut off in languages other than English.
Resolution	This issue has been corrected.
Issue number	SK-1549
Models affected	AFG31XXX
Symptom	When a waveform created in the Arb builder app, using the equation editor, was loaded into the sequence mode, the sample rate setting was not correctly applied.
Resolution	This issue has been corrected.
Issue number	SK-1593
Models affected	AFG31XXX
Symptom	After boot-up, the first touch to set the AFG settings was ignored, which resulted in users needing to touch the input box 2 times.
Resolution	This issue has been corrected.

Issue number	SK-1606
Models affected	AFG31XXX
Symptom	Double Pulse App: The width and gap values in the double pulse app table did not update the waveform in real-time until the focus was lost.
Resolution	This issue has been corrected. The waveform is now updated in real-time as the width and gap values are adjusted.

Known problems

Issue number	SK-1605
Models affected	AFG31XX2
Symptom	When creating a sequence with both channels using SCPI commands, channel 1 and channel 2 will not trigger at the same time.
Workaround	Enter Basic Mode and align phase as well as set CH2 phase equal to CH1 before returning to advanced mode
Issue number	SK-1675
Models affected	AFG31XX2
Symptom	When setting a burst on both channels with channel 2 set to output immediately following channel 1, i.e. CH2 trigger delay = CH1 trigger interval, and with the waveform is set to last exactly as long as the trigger interval, according to the cycle count and frequency, The AFG will miss every second burst of channel 2.
Workaround	Reduce cycle count of channel 2 or decrease channel 2's trigger interval.
Issue number	SK-1707
Models affected	AFG31XXX
Symptom	When using a burst with square/pulse the idle state will not behave as expected at end idle state.
Issue number	SK-1708
Models affected	AFG31XXX
Symptom	When using burst mode with ramp waveform, endpoint idle state does not behave as expected.
Issue number	SK-1790
Models affected	AFG31XXX
Symptom	When using a burst with square/pulse and idle state at end point, spikes can be seen at voltage transitions.

Version 1.6.1

Problem fixes

Issue number	AFG-676
Models affected	AFG31XXX
Symptom	Modulation issues on single-channel units.
Resolution	This issue has been corrected.

Version 1.6.0

New features/enhancements

Issue number	AFG-648
Models affected	AFG31XXX
Enhancement	Added a new SCPI command to get the MAC address of an AFG31XXX instrument: SYSTem:MACADDDress?.

Problem fixes

Issue number	AFG-471
Models affected	AFG31XXX
Symptom	System could crash when running Instaview and then immediately changing the system language setting.
Resolution	This issue has been corrected.
Issue number	AFG-474
Models affected	AFG31XXX
Symptom	Step 9 of the firmware installation section of the User's manual is incorrect.
Resolution	This issue has been corrected.
Issue number	AFG-484 / AR63489
Models affected	AFG31XXX
Symptom	A previously-installed feature license will disappear if the system time zone setting is changed to more than two of hours difference than originally set.
Resolution	This issue has been corrected.
Issue number	AFG-497 / AR63922
Models affected	AFG31XXX
Symptom	When two channels are both in Pulse mode, the pulse width setting of one channel might affect the other channel when an irrelevant pulse parameter is changed.
Resolution	This issue has been corrected.
Issue number	AFG-505
Models affected	AFG31XXX
Symptom	When using Burst mode with an external delay, the Trigger delay value does not affect the displacement of the waveform. This issue was introduced in the v1.5.2 release.
Resolution	This issue has been corrected.

Issue number	AFG-506 / AR63853
Models affected	AFG31XXX
Symptom	Incorrect PM Output formula in the "Modulate a waveform" topic in the User's manual.
Resolution	This issue has been corrected.
Issue number	AFG-508 / AR64101
Models affected	AFG31XXX
Symptom	Two-channel waveforms' phases are not aligned in modulation and sweep modes. The Align Phase button does not function correctly in these modes.
Resolution	This issue has been corrected. When pressed in continuous, modulation, and sweep modes, the Align Phase button will re-align two-channel waveforms' phases.
Issue number	AFG-588 / AR64270
Models affected	AFG31XXX
Symptom	The displayed string length update routine was limited to filenames less than 18 characters in length.
Resolution	The filename string length has been increased to 255 characters.
Issue number	AFG-598
Models affected	AFG31XXX
Symptom	The word "Frequency" is not translated into Chinese correctly.
Resolution	This issue has been corrected.
Issue number	AFG-624
Models affected	AFG31XXX
Symptom	SCPI command: SEquence:ELEM[n]:WAVeform[m] does not default the m parameter to 1 when unspecified.
Resolution	This issue has been corrected.
Issue number	AFG-630
Models affected	AFG31XXX
Symptom	The TRACE:DATA command example shown in the manual is incorrect.
Resolution	This issue has been corrected.
Issue number	AFG-653 / AR64599
Models affected	AFG31XXX
Symptom	Not all settings are recalled when a setup is overwritten.
Resolution	This issue has been corrected.

Known problems

Issue number	AFG-380
Models affected	AFG31XXX
Symptom	The predefined equations in ArbBuilder will not compile with the default settings.
Workaround	Change the range or the number of points for the equation to compile properly.
Issue number	AFG-663
Models affected	AFG31XXX
Symptom	When running the Refresh Relay action using the Utility front panel hard key, the display operations are not locked out, allowing other functions to run.
Workaround	It is recommended that the Refresh Relay action be run using the touch screen menus. If it is run using the Utility front panel hard key, then do not select any other options from the touch screen until the action completes.

Installation instructions

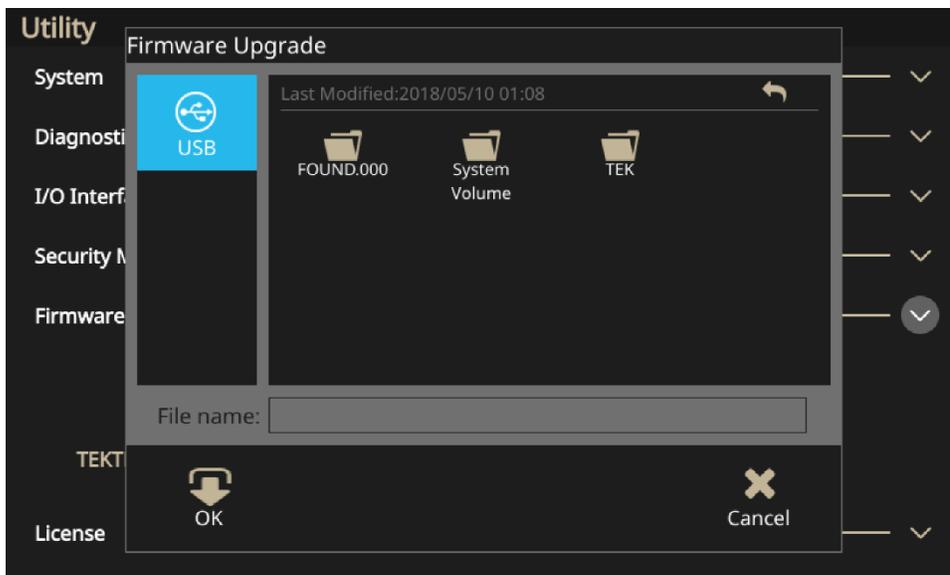
You can use the front-panel USB Type A connector to update your instrument firmware using a USB flash drive. This task is done using the front-panel touchscreen.



CAUTION. Updating your instrument firmware is a sensitive operation; it is critical that you follow the instructions below. If you do not, you may cause damage to your instrument. For example, to prevent damage to the instrument, do not remove the USB flash drive at any time while updating the firmware, and do not power off the instrument during the update process.

To update your instrument firmware:

1. Visit tek.com and search for the Series 31000 firmware.
2. Download the compressed .zip file to your computer.
3. Unzip the downloaded file and copy the .tfb file to the USB flash drive root directory.
4. Insert the USB in the AFG31000 Series instrument front panel.
5. Press the **Utility** button.
6. Select **Firmware > Update**.
7. Select the USB icon.



8. Select the file that you are using to update your instrument.
9. Select **OK**. You will see a message asking to confirm this update.
10. Verify that the instrument powered off and powered on to install the update.
11. Remove the USB drive.

NOTE. When using InstaView, each time a cable is changed, the firmware is upgraded, or the instrument is power-cycled, the cable propagation delay must be auto-measured or manually updated to make sure InstaView works properly.

Appendix A – Previous versions

Version V1.5.2

New features/enhancements

Issue number	AFG-131 / AR62531
Models affected	AFG31XXX
Enhancement	The AFG31000-RMK Rack Mount Kit is available for AFG31XXX models. Visit tek.com for details.
Issue number	AFG-336
Models affected	AFG31XXX
Enhancement	Updated language translations for the user interface.
Issue number	AFG-373
Models affected	AFG31XXX
Enhancement	Added <code>SYSTem:REStart</code> SCPI command to reboot the instrument.
Issue number	AFG-430
Models affected	AFG31XXX
Enhancement	Waveform preview images will update immediately after entering new values in Standard waveform view.
Issue number	AFG-442
Models affected	AFG31XXX
Enhancement	Display default brightness is now 100%.

Problem fixes

Issue number	AFG-21 / AR-62242
Models affected	AFG3125X
Symptom	Cannot create DC offset waveform in ArbBuilder for the AFG3125x in Sequence mode
Resolution	This issue has been corrected.
Issue number	AFG-186
Models affected	AFG3125X
Symptom	An application crash can occur when cancelling the Recall Default Setup dialog, after closing the virtual keyboard, and when editing the Point Draw Table of ArbBuilder.
Resolution	This issue has been corrected.
Issue number	AFG-193
Models affected	AFG31XXX
Symptom	Trig out should stay disabled when transitioning to DC waveform.
Resolution	This issue has been corrected.

Issue number	AFG-194
Models affected	AFG31XXX
Symptom	In Burst mode, the graphical green arrow would not display when starting to modify the Interval parameter.
Resolution	This issue has been corrected.
Issue number	AFG-198
Models affected	AFG31XXX
Symptom	On-screen keyboard crashes in some situations.
Resolution	This issue has been corrected.
Issue number	AFG-199
Models affected	AFG31XXX
Symptom	Graph refresh issue when selecting an ARB waveform for Mod Shape using the Modulation function in Basic Mode.
Resolution	This issue has been corrected.
Issue number	AFG-264
Models affected	AFG31XXX
Symptom	You should be prompted with a warning when you try to delete a file that is not empty.
Resolution	This issue has been corrected.
Issue number	AFG-290
Models affected	AFG31XXX
Symptom	Screen capture functionality not working.
Resolution	This issue has been corrected. Press and hold both the left and right keys in either order, then release either key.
Issue number	AFG-291 / AR62720
Models affected	AFG31XXX
Symptom	SCPI license commands not fully implemented.
Resolution	This issue has been corrected. See the <i>AFG31000 Series Arbitrary Function Generator Programmer's Manual</i> , available from tek.com .
Issue number	AFG-300
Models affected	AFG31XXX
Symptom	Dual channel waveform alignment problems under the following conditions: 1. When using the manual trigger in burst mode with a positive slope setting, there is a 40 ns delay between channel 1 and channel 2. 2. When using the manual trigger in burst mode with negative slope setting, there is a one-second delay between channel 1 and channel 2. 3. If booting the unit in burst mode, the channel to channel phase alignment is incorrectly set to 2 ns.
Resolution	These issues have been corrected.

Issue number	AFG-303 / AR62139
Models affected	AFG31XXX
Symptom	When using the Japanese language setting in Basic mode, changing from a Sine waveform to another type may cause the unit to hang.
Resolution	This issue has been corrected.
Issue number	AFG-308 / AR62443
Models affected	AFG31XXX
Symptom	This update fixes an issue setting the generated waveform using the Recall feature in Basic mode. The pulse width was not always set properly, causing unexpected results.
Resolution	This issue has been corrected.
Issue number	AFG-310 / AR62352
Models affected	AFG31XXX
Symptom	The user will not get the expected waveform when they attempt an AM modulation with an Arb file greater than 4,096 points. The max points for AM modulation using an Arb waveform is 4,096 points.
Resolution	This issue has been corrected. The product datasheet has been updated.
Issue number	AFG-316 / AR62581
Models affected	AFG31XXX
Symptom	Undesired glitches could occur in burst mode idle state or when turning the output on and off.
Resolution	This issue has been corrected.
Issue number	AFG-324
Models affected	AFG31XXX
Symptom	Instrument Ethernet connection using DHCP mode is unstable, repeatedly disconnecting and reconnecting, for a long time with certain network configurations.
Resolution	This issue has been corrected.
Issue number	AFG-330
Models affected	AFG31XXX
Symptom	Grammar and typographical errors in the automatic calibration dialog.
Resolution	This issue has been corrected
Issue number	AFG-337
Models affected	AFG31XXX
Symptom	Grammar and typographical errors in the self-diagnostics dialog.
Resolution	This issue has been corrected.
Issue number	AFG-352 / AR62937
Models affected	AFG31XXX
Symptom	In Sequence mode, the idle value of the signal is always the offset of the waveform (or example, 2.5 V of a 0 to 5 Vpp waveform), This will ultimately distort the customer's desired waveform shape.
Resolution	Changed the default sequence mode from idle value to be 0 V if the waveform can reach 0 V. Otherwise the idle value will be the offset.

Issue number	AFG-356
Models affected	AFG31XXX
Symptom	The ArbBuilder equation editor allows equation lines up to 256 characters in length to be entered, but it is limited to 80 characters per line in the compiler.
Resolution	This issue has been corrected. The compiler now supports up to the full 256 characters per line.
Issue number	AFG-374
Models affected	AFG31XXX
Symptom	Keyboard can appear partially off-screen.
Resolution	This issue has been corrected. This fix limits keyboard positioning so that the keyboard is always displayed within the screen boundaries.
Issue number	AFG-376
Models affected	AFG31XXX
Symptom	Advanced Sequence view incorrectly allowed selection of <code>.tfw</code> files
Resolution	This issue has been corrected. <code>.tfw</code> files are not supported in the Advanced sequence view.
Issue number	AFG-391
Models affected	AFG31XXX
Symptom	Advanced Sequence menu sometimes left the New and Save buttons selected.
Resolution	This issue has been corrected.
Issue number	AFG-411
Models affected	AFG31XXX
Symptom	Scrolling the sequence table is too sensitive.
Resolution	This issue has been corrected.
Issue number	AFG-422
Models affected	AFG31XXX
Symptom	Running the Refresh Relay operation is too lengthy.
Resolution	The issue has been corrected. The Refresh Relay operation has been reduced to 250 cycles.
Issue number	AFG-427
Models affected	AFG31XXX
Symptom	The 123 button of the soft alpha-numeric keyboard does not work with some plugins.
Resolution	This issue has been corrected.
Issue number	AFG-437
Models affected	AFG31XXX
Symptom	Selecting <code>x</code> on the small numeric virtual keyboard should issue a cancel request and close the dialog.
Resolution	This issue has been corrected.

Known problems

Issue number	AFG-380
Models affected	AFG31XXX
Symptom	The predefined equations in ArbBuilder will not compile with the default settings.
Workaround	Change the range or the number of points for the equation to compile properly.

V1.4.6

Issue number	1
Models affected	AFG31151, AFG31152, AFG31251, and AFG31252
Enhancement	Support the AFG31151, AFG31152, AFG31251, and AFG31252 models.
Issue number	2
Models affected	AFG31151, AFG31152, AFG31251, and AFG31252
Enhancement	Optimized user interface.