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## Software Release Notes and Installation Instructions

### Important information

These release notes contain important information about version 1.6.4 of the AFG31000 software.

### Introduction

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

<a href="#">Revision history</a>	A list identifying the software version, document version, and software release date.
<a href="#">New features/enhancements</a>	Summary of each significant new feature included.
<a href="#">Problem fixes</a>	Summary of each significant software/firmware bug fix
<a href="#">Known problems</a>	Description of each significant known problem and suggestions for a workaround.
<a href="#">Installation instructions</a>	Detailed instructions describing how to install the software.
<a href="#">Appendix A – Previous versions</a>	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
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 1.6.4

### Problem fixes

<b>Issue number</b>	SK-3284
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App:</b> App is deleted during factory reset.
<b>Resolution</b>	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

<b>Issue number</b>	SK-2650
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	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

<b>Issue number</b>	SK-2493
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App:</b> Amplitude controls were non-functional.
<b>Resolution</b>	Fixed a bug where amplitude controls in the Double Pulse App were non-functional. This issue has been corrected.
<b>Issue number</b>	SK-2544
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App:</b> Timing settings are not automatically saved.
<b>Resolution</b>	Resolved an issue where timing settings were not automatically saved after entering a time followed by a unit. This issue has been corrected.
<b>Issue number</b>	SK-2573
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	Corrected the behavior where the check box settings did not retain their settings after restart.
<b>Issue number</b>	SK-2574
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	ArbBuilder stops responding when set to 0.5 cycles (fractional cycles).
<b>Resolution</b>	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.

<b>Issue number</b>	SK-2642
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App:</b> The translation file displayed in the Help pane was incorrect.
<b>Resolution</b>	Replaced the incorrect translation file used in the help pane. This ensures accurate and user-friendly language support. This issue has been corrected.
<b>Issue number</b>	SK-2816
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App.</b> 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.
<b>Resolution</b>	This issue has been corrected.

### Known problems

<b>Issue number</b>	SK-1674
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Issue number</b>	SK-2706
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Issue number</b>	SK-2943
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App.</b> 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

<b>Issue number</b>	SK-1601
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	Users can now use <code>DISPlay:TOUCH[? ON OFF]</code> command to enable, disable, and query the touch screen functionality.
<b>Issue number</b>	SK-1602
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	Amplitude values in ARB mode are now correctly applied when restoring the AFG setup from a <code>.TFS</code> file.
<b>Issue number</b>	SK-1603
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	Users can now change Idle state settings when operating in Burst mode.

<b>Issue number</b>	SK-1607
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	The default dampening factor of the exponential waveforms is now set to 0.1 to generate a more typical exponential waveform.
<b>Issue number</b>	SK-1719
<b>Models affected</b>	AFG31XXX
<b>Enhancement</b>	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

<b>Issue number</b>	SK-1548
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Certain text strings in buttons were cut off in languages other than English.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	SK-1549
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	SK-1593
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	SK-1606
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	<b>Double Pulse App:</b> The width and gap values in the double pulse app table did not update the waveform in real-time until the focus was lost.
<b>Resolution</b>	This issue has been corrected. The waveform is now updated in real-time as the width and gap values are adjusted.

### Known problems

<b>Issue number</b>	SK-1605
<b>Models affected</b>	AFG31XX2
<b>Symptom</b>	When creating a sequence with both channels using SCPI commands, channel 1 and channel 2 will not trigger at the same time.
<b>Workaround</b>	Enter Basic Mode and align phase as well as set CH2 phase equal to CH1 before returning to advanced mode

<b>Issue number</b>	SK-1675
<b>Models affected</b>	AFG31XX2
<b>Symptom</b>	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.
<b>Workaround</b>	Reduce cycle count of channel 2 or decrease channel 2's trigger interval.
<b>Issue number</b>	SK-1707
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	When using a burst with square/pulse the idle state will not behave as expected at end idle state.
<b>Issue number</b>	SK-1708
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	When using burst mode with ramp waveform, endpoint idle state does not behave as expected.
<b>Issue number</b>	SK-1790
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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

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

## Version 1.6.0

### New features/enhancements

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

### Problem fixes

<b>Issue number</b>	AFG-471
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	System could crash when running Instaview and then immediately changing the system language setting.
<b>Resolution</b>	This issue has been corrected.

<b>Issue number</b>	AFG-474
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Step 9 of the firmware installation section of the User's manual is incorrect.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-484 / AR63489
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-497 / AR63922
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-505
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-506 / AR63853
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Incorrect PM Output formula in the "Modulate a waveform" topic in the User's manual.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-508 / AR64101
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Two-channel waveforms' phases are not aligned in modulation and sweep modes. The Align Phase button does not function correctly in these modes.
<b>Resolution</b>	This issue has been corrected. When pressed in continuous, modulation, and sweep modes, the Align Phase button will re-align two-channel waveforms' phases.
<b>Issue number</b>	AFG-588 / AR64270
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	The displayed string length update routine was limited to filenames less than 18 characters in length.
<b>Resolution</b>	The filename string length has been increased to 255 characters.
<b>Issue number</b>	AFG-598
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	The word "Frequency" is not translated into Chinese correctly.
<b>Resolution</b>	This issue has been corrected.

<b>Issue number</b>	AFG-624
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	SCPI command: SEQUENCE:ELEM[n]:WAVEform[m] does not default the m parameter to 1 when unspecified.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-630
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	The TRACE:DATA command example shown in the manual is incorrect.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-653 / AR64599
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Not all settings are recalled when a setup is overwritten.
<b>Resolution</b>	This issue has been corrected.

## Known problems

<b>Issue number</b>	AFG-380
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	The predefined equations in ArbBuilder will not compile with the default settings.
<b>Workaround</b>	Change the range or the number of points for the equation to compile properly.
<b>Issue number</b>	AFG-663
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Workaround</b>	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

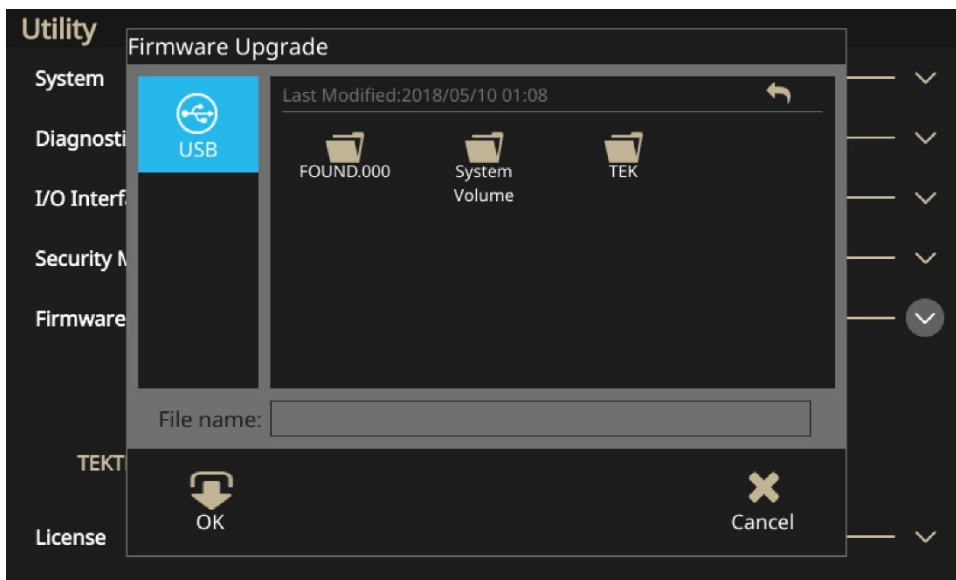
You can use the front-panel USB Type A connector to update your instrument firmware using a USB flash drive. This task is done using the front-panel touchscreen.



**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](http://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

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

#### Problem fixes

<b>Issue number</b>	AFG-21 / AR-62242
<b>Models affected</b>	AFG3125X
<b>Symptom</b>	Cannot create DC offset waveform in ArbBuilder for the AFG3125x in Sequence mode
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-186
<b>Models affected</b>	AFG3125X
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-193
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Trig out should stay disabled when transitioning to DC waveform.
<b>Resolution</b>	This issue has been corrected.

<b>Issue number</b>	AFG-194
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	In Burst mode, the graphical green arrow would not display when starting to modify the Interval parameter.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-198
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	On-screen keyboard crashes in some situations.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-199
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Graph refresh issue when selecting an ARB waveform for Mod Shape using the Modulation function in Basic Mode.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-264
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	You should be prompted with a warning when you try to delete a file that is not empty.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-290
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Screen capture functionality not working.
<b>Resolution</b>	This issue has been corrected. Press and hold both the left and right keys in either order, then release either key.
<b>Issue number</b>	AFG-291 / AR62720
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	SCPI license commands not fully implemented.
<b>Resolution</b>	This issue has been corrected. See the <i>AFG31000 Series Arbitrary Function Generator Programmer's Manual</i> , available from <a href="http://tek.com">tek.com</a> .
<b>Issue number</b>	AFG-300
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Dual channel waveform alignment problems under the following conditions: <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>3. If booting the unit in burst mode, the channel to channel phase alignment is incorrectly set to 2 ns.</li> </ol>
<b>Resolution</b>	These issues have been corrected.

<b>Issue number</b>	AFG-303 / AR62139
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	When using the Japanese language setting in Basic mode, changing from a Sine waveform to another type may cause the unit to hang.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-308 / AR62443
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-310 / AR62352
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	This issue has been corrected. The product datasheet has been updated.
<b>Issue number</b>	AFG-316 / AR62581
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Undesired glitches could occur in burst mode idle state or when turning the output on and off.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-324
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Instrument Ethernet connection using DHCP mode is unstable, repeatedly disconnecting and reconnecting, for a long time with certain network configurations.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-330
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Grammar and typographical errors in the automatic calibration dialog.
<b>Resolution</b>	This issue has been corrected
<b>Issue number</b>	AFG-337
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	Grammar and typographical errors in the self-diagnostics dialog.
<b>Resolution</b>	This issue has been corrected.
<b>Issue number</b>	AFG-352 / AR62937
<b>Models affected</b>	AFG31XXX
<b>Symptom</b>	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.
<b>Resolution</b>	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.

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

## Known problems

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

### V1.4.6

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