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Firmware Release Notes & Installation Instructions

Important information

These release notes contain important information about version 1.4.0 of the AFG1022 software.

Introduction

This document provides supplemental information regarding the behavior of the AFG1022 software. This information is grouped into six categories:

Revision history	Lists the version of software, the document version, and the date of the software release.
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 ways to work around it.
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
9/1/2025	V1.4.0	077187400
5/1/2022	V1.3.0	-
10/29/2019	V1.2.7	-
1/17/2020	V1.2.4	-
4/23/2017	V1.2.3	-
1/3/2017	V1.2.2	-
7/19/2016	V1.2.1	-
	V1.1.2	-
	V1.1.1	-



VERSION 1.4.0

New features / enhancements

Issue number	CAS-255025-Q1G0R5
Models affected	AFG1022
Enhancement	Five new SCPI commands added. Details below.
Issue number	CES2T-100
Models affected	AFG1022
Enhancement	Upon firmware upgrade, acceptance of the End User License Agreement (EULA) on the front panel of the instrument is required before use.

[SOURce[1|2]]:BURSt:PERiod

This command sets or queries the burst period (trigger interval) in burst mode.

Conditions: For the AFG1022, use [SOURce1]. Modulation, sweep, and burst conditions do not apply to channel 2 of the AFG1022.

Group: Source

Syntax: [SOURce[1|2]]:BURSt:PERiod {<seconds> | MINimum | MAXimum}
[SOURce[1|2]]:BURSt:PERiod? {MINimum | MAXimum}

Arguments: <seconds>::=<NRf>[<units>]
where:
<NRf> is the burst period in seconds.
<units>::=[ns | μ s | ms | s]

Returns: <seconds>

Example: SOURce1:BURSt:PERiod 100ms
Sets the CH 1 burst period to 100 ms.

[SOURce[1|2]]:BURSt:PHASe

This command sets or queries the phase of the output waveform in burst mode for the specified channel. Set the value in radians or degrees. If no units are specified, the default is RAD. The query returns the value in RAD.

Conditions: For the AFG1022, use [SOURce1]. Modulation, sweep, and burst conditions do not apply to channel 2 of the AFG1022.

Group: Source

Syntax: [SOURce[1|2]]:BURSt:PHASe {<phase> | MINimum | MAXimum}
[SOURce[1|2]]:BURSt:PHASe? {MINimum | MAXimum}

Arguments: <phase>::=<NR3>[<units>]

where:

<NR3> is the phase of the output waveform.

<units>::=[RAD | DEG]

If units are omitted, RAD is selected. The setting ranges are:

RAD: -2 π to +2 π , relative to phase value.

DEG: -360 to +360, relative to phase value.

Returns: <phase>

Example: SOURce1:BURSt:PHASe MAXimum

Sets the maximum value for the burst mode phase of the output waveform for CH 1.

[SOURce[1|2]]:BURSt:POLarity

This command sets or queries the trigger gate polarity in burst gated mode.

Conditions: For the AFG1022, use [SOURce1]. Modulation, sweep, and burst conditions do not apply to channel 2 of the AFG1022.

Group: Source

Syntax: [SOURce[1|2]]:BURSt:POLarity {POSitive|NEGative}
[SOURce[1|2]]:BURSt:POLarity?

Arguments: POSitive specifies a positive trigger gate polarity.

NEGative specifies a negative trigger gate polarity.

Returns: POS|NEG

Example: [SOURce[1|2]]:BURSt:POLarity POSitive

Sets the trigger gate polarity of CH 1 to positive.

SYSTem:CLKSrc

This command sets or queries the system's clock source.

Group: System

Syntax: SYSTem:CLKSrc {INTernal|EXTernal}
SYSTem:CLKSrc?

Arguments: INTernal specifies the clock source as the internal clock signal.
EXTernal specifies the clock source as an external clock signal.

Returns: INT|EXT

Example: SYSTem:CLKSrc INTernal
Sets the system clock source to the internal clock.

TRIGger:SLOPe

This command sets or queries the slope edge the external trigger event occurs on.

Group: Trigger

Syntax: TRIGger:SLOPe {POSitive|NEGative}
TRIGger:SLOPe?

Arguments: POSitive specifies that the trigger event occurs on the rising edge of the external trigger signal.
NEGative specifies that the trigger event occurs on the falling edge of the external trigger signal.

Returns: POS|NEG, POS|NEG, POS|NEG, POS|NEG

where the first and third return value is the external trigger slope of sweep mode for channel 1 and 2, and the second and fourth return value is the external trigger slope of burst mode for channel 1 and 2.

Example: TRIGger:SLOPe POSitive
Sets the trigger slope to positive, which triggers on the rising edge of the signal.

Problem fixes

Issue number	CAS-362740-R9L3J4
Models affected	AFG1022
Symptom	Ref Clk/Counter could not synchronize to an external reference clock or counter input.
Resolution	This issue has been corrected.
Issue number	CAS-451006-V9D7V8
Models affected	AFG1022
Symptom	When using pulse waveform in burst mode, using the [SOUR[1 2]]:PULSe:DCYCLe command did not apply the new duty cycle immediately.
Resolution	This issue has been corrected.

Known problems

Issue number	CES2T-101
Models affected	AFG1022
Symptom	Selecting a linear sweep does not output the configured waveform. If a linear sweep is selected, only the configured voltage offset level will be output.
Issue number	CAS-215793-Z6H6W9
Models affected	AFG1022
Symptom	Ref Clk Out cannot output an external reference clock or counter it receives through its Ref Clk/Counter input.
Workaround	When synchronizing the clocks of more than two instruments, place the AFG as either the origin of the clock signal or the last instrument being synchronized.

Installation instructions



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.

1. Visit tek.com and search for the AFG1022 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 flash drive into the instrument front panel.
5. On the front panel, press the Utility button. The **Utility** menu is displayed.
6. From the instrument **Utility** menu, select **System**.
7. Press **Next Page** until the **Update firmware** option is displayed. This option will be disabled if you do not have a USB flash drive inserted or Access Protection is turned on.
8. Select **Update firmware**.
9. With the navigation wheel, select **USBDEVICE**, then select **Enter**.
10. With the navigation wheel, select the .tfb file, then select **Execute**.
11. **Reading file...** will be displayed, followed by **Updating file system...** with a progress bar.



CAUTION. Updating the firmware takes approximately two minutes. Do not remove the USB flash drive during the update process.

If you accidentally remove the USB drive during the update, do not power off the instrument. Restart the upgrade process from the **Utility** menu.

12. When the upgrade is finished, the instrument will display "Firmware upgrade success!"
13. The instrument will automatically reboot.
14. When the instrument has rebooted, the instrument End-User License Agreement (EULA) is displayed. You must accept the EULA before you can use the instrument.
15. Remove the USB drive. You can verify that the firmware has been updated by going to the Utility menu and viewing the version.

Firmware downgrades

If your instrument does not function properly after a firmware upgrade, you can downgrade by following the steps under [Installation instructions](#) with an earlier version of the firmware file. However, please note the following conditions before attempting a downgrade.

- If your instrument serial number is 2206001 or higher, you can only downgrade to Version 1.3.0 or newer
- If your instrument serial number is 2206000 or lower, you can only downgrade to earlier versions of the firmware if you have not already upgraded to Version 1.3.0 or newer

If you attempt a downgrade and it is not successful due to the specified conditions, you will receive an error.

Appendix A – Previous versions

VERSION 1.3.0

Version 1.3.0 is an internal maintenance release of the AFG1022 firmware. This release does not include any critical fixes or enhancements.

VERSION 1.2.7

Problem fixes

Issue number	AR-62266
Models affected	AFG1022
Symptom	Logarithmic Frequency behavior as a function of time remains linear in Sweep mode.
Resolution	This issue has been corrected.
Issue number	AR-62334
Models affected	AFG1022
Symptom	Glitches appear in Burst mode when changing the start phase using the navigation knob.
Resolution	This issue has been corrected.

Issue number	AR-62464
Models affected	AFG1022
Symptom	Cycle counts larger than 65000 in Burst mode is incorrect.
Resolution	This issue has been corrected.

VERSION 1.2.4

Problem fixes

Issue number	Not applicable
Models affected	AFG1022
Symptom	DC offset does not align with other waveform shapes.
Resolution	This issue has been corrected.
Issue number	Not applicable
Models affected	AFG1022
Symptom	Channel 1 amplitude changes when the load impedance is changed on channel 2.
Resolution	This issue has been corrected.
Issue number	Not applicable
Models affected	AFG1022
Symptom	The DC function requires optimization.
Resolution	This issue has been corrected.

VERSION 1.2.3

Problem fixes

Issue number	Not applicable
Models affected	AFG1022
Symptom	The [SOURCE[1 2]]:PHASE[:ADJUST] command does not work in burst mode.
Resolution	This issue has been corrected.
Issue number	Not applicable
Models affected	AFG1022
Symptom	The SOURCE1:FUNCTION USER command supports 8192 points.
Resolution	This issue has been corrected.
Issue number	Not applicable
Models affected	AFG1022
Symptom	The counter function requires optimization.
Resolution	This issue has been corrected.

Issue number	Not applicable
Models affected	AFG1022
Symptom	Additional PI commands require support.
Resolution	This issue has been corrected.

VERSION 1.2.2

New features / enhancements

Issue number	Not applicable
Models affected	AFG1022
Enhancement	Added support for the DATA:DATA? EMEM command.

VERSION 1.2.1

New features / enhancements

Issue number	Not applicable
Models affected	AFG1022
Enhancement	The align phase function has been upgraded.
Issue number	Not applicable
Models affected	AFG1022
Enhancement	User settings can be saved to the instrument (.tfs format).
Issue number	Not applicable
Models affected	AFG1022
Enhancement	User waveforms can be moved from a USB drive to the instrument (.tfw format).
Issue number	Not applicable
Models affected	AFG1022
Enhancement	FAT16 file system has been upgraded to support USB drives.
Issue number	Not applicable
Models affected	AFG1022
Enhancement	Additional SCPI commands added.
Issue number	Not applicable
Models affected	AFG1022
Enhancement	Font style optimized.

VERSION 1.1.2

New features / enhancements

Issue number	Not applicable
Models affected	AFG1022
Enhancement	Calibration method has been enhanced.
Issue number	Not applicable
Models affected	AFG1022
Enhancement	Enhanced PI command capability.

Problem fixes

Issue number	Not applicable
Models affected	AFG1022
Symptom	User interface fixes required.
Resolution	This issue has been corrected.

VERSION 1.1.1

New features / enhancements

Issue number	Not applicable
Models affected	AFG1022
Enhancement	Improved compatibility with Smart Lab.