

Release Notes

Keysight
M8195A/M8197A
Arbitrary Waveform
Generator and
Synchronization Module

Version 4.2.2.0 Information

Released Date:	March 30, 2023
Operating System:	<ul style="list-style-type: none"> Windows 10 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> M8195_Setup.exe M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- Sequence table error with segments that pass over a 4GSa boundary.
- SCPI: Not all combinations of the commands “:INITiate:CONTinuous[:STATe] <OFF|ON|0|1>;:INITiate:GATE[:STAT] <OFF|ON|0|1>” were handled correctly.
- SCPI: query SYSTem:COMMunicate:HISLip? returned the VXI-11 index instead of the HiSLIP index.
- GUI: CSV file import with markers failed.
- GUI: Could not import waveform to channel four.
- GUI: File import with up-conversion and resampling caused discontinuity at wrap-around.
- GUI: Scaling factor inconsistencies for I and Q in imported files.
- GUI: S-parameters from serial data tab were not embedded in dual-channel-duplicate mode.
- GUI: Corrections as S-parameter or VSA-style file didn’t work for imported waveform.
- GUI: Specifying the start index in file import had no effect.
- GUI: File import of csv file without header caused error.
- GUI: Sometimes, the Start button was disabled after uploading a resampled waveform.
- Resulting waveform differed depending on how it was imported, GUI or SCPI.
- IVI driver: small fixes, added some examples.

Known Issues

Keysight IO Libraries Suite

Starting with version 2021, .NET Framework 3.5/2.0 is not automatically installed anymore. It is, however, required for some VISA.NET drivers and for 32-bit VISA applications to work.

For details refer to <https://www.keysight.com/find/iosuite>.

Should Keysight IO Libraries Suite be installed on a system without .NET Framework 3.5/2.0 and you encounter problems caused by this, the following steps are recommended:

- Open Control Panel, “Programs and Features”, then uninstall
 - o Keysight IO Libraries Suite

- IVI Shared Components
- IVI.NET Shared Components
- VISA Shared Components
- VISA.NET Shared Components
- Keysight M8195, M8197
- Still in “Program and Features”, select “Turn Windows features on or off”, check “.NET Framework 3.5 (includes .NET 2.0 and 3.0)”, and click [OK]
- Install Keysight IO Libraries Suite
- Install Keysight M8195, M8197

M8195

- Waveform data on all channels may be undefined after setting the “Mem. Mode” for any channel, Output “Mode”, or “Sample Rate Divider (Extended Memory)”; i.e., set those before programming waveform data.
- If one or more channels use extended memory, at least one of those must contain waveform data. Otherwise, an error regarding undefined segments is shown when the user tries to start waveform generation.
- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 4.1.0.0 Information

Released Date:	September 17, 2020
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- Some minor GUI improvements.

Bug Fixes

- Fix an interoperability issue: the auto selected indices in the HiSLIP and VXI-11 VISA address can now be different. This avoids conflicts with other software starting SCPI servers (e.g. Keysight Vector Signal Analysis software).
- M8195:
 - Fix an Import Waveform panel issue with multiple waveforms in a CSV file.
 - Fix several issues with encrypted files created with Keysight Signal Studio.
- M8197:

- Fix a problem in the discovery dialog which prevented the start of AWG SFP instances.
- Fix an interoperability issue with Keysight MD2 High-Speed Digitizer Instrument Drivers. After AWG discovery other PXIe/AXIe could end up locked.
- Fix a timeout issue when discovering AWG modules.

Known Issues

The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 4.0.0.0 Information

Released Date:	April 29, 2019
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- Added a Radar Panel to generate a variety of Radar signals.
 - Supports generation of RF and baseband (I/Q) Radar signals.
 - Carrier amplitude and phase can be independently set for each RF channel or IQ pair.
 - Pulse trains can be defined in terms of number of pulses, pulse repetition interval, staggering and initial and final dead times.
 - Pulse envelopes can be defined according to their width, rise and fall times, and edge shape.
 - Supported intra-pulse modulation schemes include Linear FM, Step FM, and polyphase schemes such as Barker and Frank codes.

- Added a Corrections Panel to set up waveforms, that are nearly free of linear distortions.
 - Corrections can be defined per channel or IQ pair of channels. They can be applied to all waveforms generated with Standard, Multi-Tone, Complex-Modulation, Radar, Serial Data and Import Waveform Panel.
 - Correction data from following sources can be selected: internal frequency-response tables for each channel, standard responses for high-quality cabling, externally-defined correction files and Touchstone S-Parameter files.
 - IQ impairments like IQ skew, gain imbalance and quadrature error can be corrected independently.
 - Effects of distortions can be compensated for (de-embedding), or distortions can be emulated (embedding).
 - Available correction methods are waveform pre-processing and integrated FIR Filters.

Bug Fixes

- N/A

Known Issues

The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.6.0.0 Information

Released Date:	April 23, 2018
Operating System:	<ul style="list-style-type: none">• Windows 10 (32 bit or 64 bit)• Windows 8.1 (32 bit or 64 bit)• Windows 8 (32 bit or 64 bit)• Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none">• M8195_Setup.exe• M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- Fix for communication issues between M8195 and M8197 instances in systems with Keysight IO Libraries Suite newer than 18.0 (2017 Update 1)
- Fix for issues regarding import of Signal Studio generated files.

Known Issues

The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.5.17.1 Information

Released Date:	October 11, 2017
Operating System:	<ul style="list-style-type: none">• Windows 10 (32 bit or 64 bit)• Windows 8.1 (32 bit or 64 bit)• Windows 8 (32 bit or 64 bit)• Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none">• M8195_Setup.exe• M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- Fix for PCIe communication issue between M8195A and embedded controller or M8195A and external PC

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.5.0.0 Information

Released Date:	March 17, 2017
Operating System:	<ul style="list-style-type: none">• Windows 10 (32 bit or 64 bit)• Windows 8.1 (32 bit or 64 bit)• Windows 8 (32 bit or 64 bit)• Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none">• M8195_Setup.exe• M8197_Setup.exe

New Functionality

- Import of Signal Studio generated encrypted waveform files including up-conversion to a user defined carrier frequency

Bug Fixes

- N/A

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.2.0.0 Information

Released Date:	November 07, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- Sometimes the installer created a file named "REBOOT=ReallySuppress" and in some cases the system automatically re-started.

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.1.30.3 Information

Released Date:	October 14, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- M8195: SFP sometimes crashes when started with command line switch “/auto”.
- M8195: SFP fails to start after some hardware errors caused by an unstable clock. In this case a power cycle of the AXIe chassis is necessary.
- M8195/M8197: after the system was stopped due to a clock loss, hardware is not always initialized correctly when the waveform generation is started again, so the generated waveform is not correct.
- M8195/M8197: when performing a remote controlled “stop / change sample frequency / start”-loop we may get a clock loss warning or the system may switch to configuration mode. Then “start” fails with an error message.
- M8195: when the user logs off or when the PC is re-booted or shutdown, the module hardware is not shutdown correctly. In particular, with an embedded controller a re-boot may fail until a power cycle of the AXIe chassis is done.

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.1.8.2 Information

Released Date:	August 02, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- M8195A LabVIEW driver supporting hardware revision 2
- M8197A IVI-COM, IVI-C, MATLAB and LabVIEW driver
- Enhance SCPI API for file import by a command to enable/disable scaling of imported data.
- Default memory configuration after reset changed to a more useful setting. Channel 1 uses extended memory, channels 2, 3, and 4 use DAC internal memory. Memory Sample Rate Divider is 1.
- Simpler Memory Mode selection in SFP Output Panel.
- Increase maximum possible Crest Factor for noise generation to 16dB in Standard Waveform Panel.
- Improved setup of multi-module group in M8197 SFP
 - Button for switching between configuration and operation mode always visible and next to run/stop button
 - Pressing run button causes automatic switch to operation mode and start of signal generation.

Bug Fixes

- M8195/M8197: fix potential AXIe backplane timing problems.
- Switch to run mode possible from M8197, when no M8195 modules are added.
- Auto-scale in waveform preview sets limits to +/-1.2 instead of +/-1.0.
- Setting the M8197 GPIO pin state, reset, and set the same pin and state again does not work.
- SCPI commands for dynamic sequence selection and setting the bit width of the Dynamic Control Port don't update the corresponding fields in the M8197 Dynamic Control Panel.
- M8195 IVI driver method ConfigureSingleChannelWithMarkers does not set the Sample Rate Divider correctly.
- Output amplitude can be set beyond limit when termination voltage is used.

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.0.10.4 Information

Released Date:	May 31, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- N/A

Bug Fixes

- Wrong M8195 module list in synchronous system when same module is added twice using different VISA resource names.
- Check boxes for unavailable target channels in DAC modes 'Dual Channel Duplicate' and 'Dual Channel with Markers' not disabled correctly.
- Serial Data Waveform with Bessel-Thomson edge shape and skew not generated correctly for bit rates higher than 10 GBaud.
- Sample clock delay field in clock tab not updated when value is modified using SCPI, or when sample rate is changed using SCPI.
- Sample clock delay not being reapplied to hardware when it was changed while the signal generation was stopped.
- Fixed some minor usability issues.

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 3.0.4.3 Information

Released Date:	May 02, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- M8195A IVI-COM, IVI-C, and MATLAB drivers supporting hardware revision 2
- Serial data waveform generation enhancements with impairments
 - Spread Spectrum Clock (SSC), Periodic and Random Jitter, Duty Cycle Distortion (DCD)
 - Link emulation by addition of bandwidth limited noise, Low-Pass Filter, ISI Filter, S-Parameter Embedding and De-Embedding
 - De-Emphasis with five pre- and five post-cursor taps
- Significantly increased the performance of the waveform calculation algorithms for Serial Data Waveform and Complex Modulated Waveform Panel
- FIR filter configuration per channel
 - Predefined correction filter types for best signal quality: Low-Pass, Nyquist, Linear interpolation, Zero-order hold
 - FIR delay per channel
 - FIR scale per channel
- Sample clock delay per channel
- Instrument Modes 'Dual Channel Duplicate' and 'Dual Channel with Markers' available with channel options 002 and 004.
- Added a command line argument to select the location of temporary files and log files:
/OutputDir <path>
- M8197A: When [Discover] is clicked, all M8195A modules with active Soft Front Panel are added to the module list, even if they were not added in the Keysight Connection Expert before.
A message box is shown, if a module without active Soft Front Panel is found.
- M8197A: If a M8195A module entry in the module list is double-clicked, its Soft Front Panel is brought to the front.
- Show the Wait Cursor when an action takes some time.

Bug Fixes

- Increased the initial window size: On the first start after installation, the Soft Front Panel window was too small.
- Fixed access conflicts: If more than one M8195A Soft Front Panel was started with command line argument `/r auto` at the same time, it could happen that they tried to use the same hardware.
- Fixed corrections from file in Serial Data Panel.

Known Issues

- The default FIR filter type is now Zero-order hold for memory sample rate divider 1 and Nyquist for memory sample rate divider 2 and 4. The setting of the user-defined FIR filter coefficients has only effect after switching to FIR filter type USER.

Version 2.6.7.1 Information

Released Date:	February 22, 2016
Operating System:	<ul style="list-style-type: none"> • Windows 10 (32 bit or 64 bit) • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- Added a compiled version of IQTools in ...\Examples\MATLAB\iqtools_compiled, which doesn't require a MATLAB installation but only the free MATLAB Runtime.
- Allow exchange of sequence table entries during active signal generation.

Bug Fixes

- Sequences consisting of segments with an odd number of memory vectors are not played correctly.
- Data generation works unreliable with more than 64 sequence table entries.
- Waveform transfer using the SCPI API with an 'offset' parameter greater 4G does not work.
- File import using the SCPI API with data length greater 2G does not work.
- Remote control of a multi-module system causes conflicts with SFP control.
- Exchange of waveform segments during active signal generation ("Memory Ping-Pong") not working in a multi-module system.
- Correct names for modulation schemes $\pi/4$ -QPSK and $3\pi/8$ -8PSK (EDGE) in SFP.

Version 2.5.7.1 Information

Released Date:	November 27, 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none"> • M8195_Setup.exe • M8197_Setup.exe

New Functionality

- Exchange of waveform segments during active signal generation (“Memory Ping-Pong”) supported by the SFP.

Bug Fixes

- Import of BIN8 file format fails.
- Setting offset and termination voltage using SCPI in one transaction not working.
- Synthesizer PLL sporadically does not lock to required frequency.
- Temporary files used for file import not always deleted correctly.
- Waveform downloads not working reliably when multiple M8195 SFP instances send data at the same time.
- “Waveform cannot be imported with current settings” message is shown sometimes although settings are valid.

Version 2.5.0.0 Information

Released Date:	November 19, 2015
Operating System:	<ul style="list-style-type: none">• Windows 8.1 (32 bit or 64 bit)• Windows 8 (32 bit or 64 bit)• Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Names:	<ul style="list-style-type: none">• M8195_Setup.exe• M8197_Setup.exe

New Functionality

- Support for M8197A synchronization module.
- Support for synchronization of multiple M8195A modules.
- Dynamic sequencing
- Marker support from SFP

Version 2.0.20.2 Information

Released Date:	November 04, 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Name:	M8195_Setup.exe

New Functionality

- User's Guide: Added several abstracts and block diagrams.

Bug Fixes

- Sporadic failure to restore saved configuration.
- The SFP sporadically failed to fully initialize. As a result, e.g. the Run button and error pane was not fully functional.
- Marker generation in combination with complex sequencing.
- Stopping signal generation fails, when currently used external clock is disconnected during signal generation.

Version 2.0.3.0 Information

Released Date:	October 09, 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0 and 2.0
File Name:	M8195_Setup.exe

New Functionality

- The M8195A is available in two different hardware revisions. Refer to the data sheet of the M8195A for the differences between Revision 1 and Revision 2. This is the initial software version for Revision 2 instruments. This software also supports Revision 1 instruments.

Version 1.3.1.1 Information

Released Date:	31 July 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0
File Name:	M8195_Setup.exe

New Functionality

- Added optional parameters for output amplitude and sample rate to the SCPI query for the frequency and phase response data.

Version 1.3.0.0 Information

Released Date:	11 May 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0
File Name:	M8195_Setup.exe

New Functionality

- M8195A IVI-COM, IVI-C, MATLAB, and LabVIEW driver.

Bug Fixes

- CSV and MAT89600 files with data for multiple channels are not imported correctly.
- Sometimes the Soft Front Panel was not displayed after an instrument was selected and the Splash Screen was closed, even though the process AgM8195SFP.exe was visible in the Task Manger.

Version 1.2.0.0 Information

Released Date:	05 February 2015
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0
File Name:	M8195_Setup.exe

New Functionality

- Serial data waveform generation (NRZ, RZ, and PAM) including built-in and user-defined amplitude and phase corrections.

Version 1.1.0.0 Information

Released Date:	03 November 2014
Operating System:	<ul style="list-style-type: none"> • Windows 8.1 (32 bit or 64 bit) • Windows 8 (32 bit or 64 bit) • Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0
File Name:	M8195_Setup.exe

New Functionality

- Multi-tone waveform generation (equally and arbitrary spaced tones) including notches and user-defined amplitude and phase corrections.
- Complex modulated waveform generation (ASK, PSK, QAM, MSK, APSK, STAR, VSB, FSK, and user-defined modulation schemes) including user-defined amplitude and phase corrections.

Version 1.0.0.0 Information

Released Date:	24 September 2014
Operating System:	<ul style="list-style-type: none">• Windows 8.1 (32 bit or 64 bit)• Windows 8 (32 bit or 64 bit)• Windows 7 (32 bit or 64 bit)
Hardware Revision:	1.0
File Name:	M8195_Setup.exe

Initial Release

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