

# 2000A and 3000A X Series Oscilloscopes

## (Latest) Version Information

Released Date:	11 Nov 2014
Instrument software version:	Revision 2.38
File Name:	<b>2000XSeries.02.38.2014110300.cab, 3000XSeries.02.38.2014110300.cab</b>

**Do not “unpack” or “unzip” the .cab upgrade file; you could potentially only load a portion of the required files in the package, and this could result in your oscilloscope becoming non-operational, requiring it to be sent to an Agilent service center to be repaired.**

## New Features for 2000A and 3000A

This software revision include the following new capabilities

- Software is now Keysight Technologies branded.
- Trigger Rate SCPI query has been added - TRIGger:FREQuency? <gate time in sec>
- New bit rate measurement has been added.

## New Features for 3000A

This software revision include the following new capabilities

- N2804A/N2805A 100MHz/300MHz differential probe support has been added.
- N7020A Power Rail probe support has been added.

## Enhancements

## Bug Fixes

- AER/TER behavior is improved.
- \*STB behavior is improved

## (Earlier) Version Information

### **Oscilloscope Firmware Version 02.37.2014052002**

**Release Date: May 21, 2014**

#### **File Names:**

**2000XSeries.02.37.2014052002.cab**

**3000XSeries.02.37. 2014052002.cab**

### **Enhancements**

For both the 2000X and 3000X families:

- Java application security enhancement to track Java engine security improvements
- Waveform Generator accuracy is now improved in a number of situations.
- V average measurement resolution is much improved for small measurements

For the 3000X family:

- N2820A/ N2821A high sensitivity current probes – Range for the user defined resistance has been expanded to now include 10 microOhms to 1 MegaOhms
- Power application improvements
  - Switching loss measurement now behave better around 0 amps
  - Inrush current measurement is now more reliable
  - Efficiency measurement
    - Scaling of waveforms is now optimized, less clipping in some situations
    - Added DC to DC, DC to AC, AC, to AC efficiency measurement.
    - Absolute current is used to give correct result, even if probe is hooked up backwards
  - Current Harmonic measurement
    - Now uses BH window as default, just like the U1881A
  - Transient response – triggering is made more flexible

### **Defects Addressed**

- :MEAS:DEF THR, PERCent,95,10,5 no longer given an out of range error
- Current Harmonic measurement now correct scales grid at decibels to Vrms setting's change.

### **Oscilloscope Firmware Version 02.36.2013091300**

**Release Date: Sept 21, 2013**

**File Names:**

**2000XSeries.02. 36.2013091300.cab**

**3000XSeries.02. 36.2013091300.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope.

**Do not “unpack” or “unzip” the .cab upgrade file; you could potentially only load a portion of the required files in the package, and this could result in your oscilloscope becoming non-operational, requiring it to be sent to an Agilent service center to be repaired.**

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000X and 3000X families:

- More flexible FPGA programming for the LAN/VGA module.

### **Oscilloscope Firmware Version 02.35.2013061800**

**Release Date: June 24, 2013**

**File Names:**

**2000XSeries.02.35.2013061800.cab**

**3000XSeries.02.35.2013061800.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope.

**Do not “unpack” or “unzip” the .cab upgrade file; you could potentially only load a portion of the required files in the package, and this could result in your oscilloscope becoming non-operational, requiring it to be sent to an Agilent service center to be repaired.**

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000X and 3000X families:

- Default cursors placement will no longer overlay cursors on the same value.

For the 3000X family:

- N2820A high sensitivity 2 channel current probe support has been expanded to allow for a greater range of user defined resistance.
- LIN error triggering has been added.
- WaveGen modulation frequency now has more granularity for user adjustment.

### **Defects Addressed**

For the 2000X and 3000X family:

- Mask “save on Error” capability now works for SINGLE acquisitions
- Scope will behave better in higher activity LAN networks
- A number of bitmaps behaviors have been improved for some tablets

For the 3000X family:

- LIN 2.0 decoding now better handles the Checksum field.
- An Arb file import error has been addressed; it no longer skips some time column data.
- For I2C decoder search: previously, read packets sometimes erroneously found during write searches.

### **Oscilloscope Firmware Version 02.31.2013040901**

**Release Date: April 12, 2013**

**File Names:**

**2000XSeries. 02.31.2013040901.cab**

**3000XSeries. 02.31.2013040901.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. **Do not “unzip” the file.**

This version of the oscilloscope firmware includes the items below:

### **Defects Addressed**

For the 2000X and 3000X family:

- SW upgrade process has been improved to more consistently allow auto reboot without cycling power on the oscilloscope. In previous software revisions, some small set of USB thumb drives used to upgrade the system software prevented the automatic rebooting when the transfer process finished, requiring the users to remove the thumb drive and cycle power.

### **Oscilloscope Firmware Version 02.30.20130405**

**Release Date: April 5, 2013**

**File Names:**

**2000XSeries. 02.30.2013040502.cab**

**3000XSeries. 02.30.2013040502.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000X and 3000X families:

- A multichannel HDF5 file format has been added for export, allowing direct waveform data input into Agilent's InfiniiView N8900A offline viewer application.
- The dutycycle measurement resolution is improved beyond 0.1%, if measurement data can support more.
- When stopped, roll mode waveforms now expand about the trigger reference point, instead of just the right side of the display.
- Added :TRIGger:LEVel:AUTOsetup – This will set the trigger level to the 50% voltage for all displayed analog channels.

For the 2000X family:

- SW option DSOX2MEMUP has been added to allow all channels up to 1 Megabyte of MegaZoom acquisition memory.
- The standard memory has been upgraded to 100 Kilobytes of MegaZoom acquisition memory per channel.
- SW option DSOX2EMBD has been added to support hardware accelerated I<sup>2</sup>C and SPI serial triggering and analysis, including decode, lister, and search capabilities.
- SW option DSOX2AUTO has been added to support hardware accelerated CAN and LIN serial triggering and analysis, including decode, lister, and search capabilities.
- SW option DSOX2COMP has been added to support hardware accelerated RS232/UART serial triggering and analysis, including decode, lister, and search capabilities.

#### For the 3000X family:

- N2820A high sensitivity 2 channel current probe support has been added. This allows current measurements down to micro amp range while simultaneously viewing the large signal behavior on the second channel of the probe.
- When the WaveGen powers down in arbitrary waveform mode, the arbitrary waveform will persist through the power cycle.
- The ability to reset the measurement statistics from the Quick Action key has been added.

### **Defects Addressed**

#### For the 2000X and 3000X family:

- Scope labels on the tablet interface now display the correct scope information.
- Overshoot measurement now more consistently chooses the edge closest to the trigger reference.
- Scope no longer erroneously indicates that it will not work with Java 7 ( it does work)
- AutoIP is disabled before user network settings are applied during power-up. It was enabled on previous releases. DHCP has always been disabled before network settings were applied.

#### For the 3000X family:

- The N2750A family will operate properly when the button is pressed during a probe calibration operation.

### **Oscilloscope Firmware Version 02.20.2012110802**

**Release Date: Nov 12, 2012**

#### **File Names:**

**2000XSeries. 02.20.2012110802.cab**

**3000XSeries. 02.20.2012110802.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000 and 3000 families:

- A tablet compatible version of the Remote Front Panel operation is now available from the Oscilloscopes Web page, This includes iPad™ and many Android based tablets.
- Modulation capability has been added to the WaveGen option. This include AM, FM, FSK
- Measurements are now allowed when in XY mode, except for “X at Min Y” and “X at Max Y”.
- The user probe ratio setting of 2000, 5000, and 10000 have been added.
- The resolution of the Phase measurement is improved if in Averaging or High Resolution acquisition modes.
- Added WMemory<N> as a valid source for the BLANK, VIEW, and STATus commands.

For the 3000X family:

- The N2750A family of InfiniiMode probes support has been added. These provide three different types of probe tip accessories standard – browser, solder-in and socketed. Both solder-in and socketed tip with the probe provide three measurement modes – differential, single-ended and common mode.
- UART baud rate support for 10 Mbaud has been added.
- For ARINC 429 serial trigger and decode User defined Baud Rate support has been added.
- When adjusting the frequency of Arbitrary waveforms, the resulting waveform output is now more continuous.
- Power App improvements
- Measurements are now grouped by category for ease of use (Input, Switching & Output).
- For Auto De-skew, BW Limit is turned on to help reduce false triggering on noise.
- After executing an Auto Setup, on successful operation, the application now returned to the previous menu.
- Added new power loss\cycle measurement for switching loss.
- Slew rate analysis now uses differentiate math function for better results.
- Now allows negative output level for turn on, turn off and transient response test setting.
- PSRR horizontal grid now labels for both ends of grid if it doesn't overlap.

### **Defects Addressed**

For the 2000X and 3000X family:

- The SCPI status byte register will now update immediately whenever a new telnet or socket connection is made.
- Saving of XY data is now improved, it was saving only half of the data previously.

- The \*TST? Now returns 0|1, to represent failing and passing, instead of -0|+0.
- When doing a Single, TRG bit (bit0 in the Status Byte Register) is now updated appropriately.

#### For the 3000X family:

- Users can now load Arb Waveform .csv files with 3, 4, and 5 columns.
- Autoscale now more reliably scales on signals with lowest frequency in the range from 25 Hz to 50Hz.
- Waveform data save to thumbdrive – digital channel data is now correct at end of waveform data record range.
- I2C trigger/decode now handles slow edges as correctly.
- The Math trend function will now better track the end of the waveform.
- Power
- Switching loss math waveform conduction calculation for Rds or Vce(sat) now plots correctly in zoom mode.
- When using Rds or Vce(sat), and moving math vertical offset beyond screen, values now clips.
- Crest factor now calculates from modulus of negative or positive peak as opposed to only positive peaks.
- Power App demo for current harmonics, setting for frequency is now 50Hz, previously 60Hz.
- Stats are now reset when changing measurement type for Modulation power measurement.

### **Oscilloscope Firmware Version 02.11.2012040400**

**Release Date: April 11, 2012**

#### **File Names:**

**2000XSeries.02.11.2012040400.cab**

**3000XSeries.02.11.2012040400.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

#### **Enhancements**

For both the 2000 and 3000 families:

- DSOXASV option has been added
- This allows the oscilloscope to be used with the 64997A, Agilent Spectrum Visualizer software. The 64997A software runs on a PC and uses data acquired by the oscilloscope to provide frequency domain views.

For the 3000X family:



- CAN eye-diagram mask testing has been added to the DSOX3AUTO, Automotive Serial Triggering and Analysis option. The eye-diagram testing also requires the DSOX3MASK option.

### **Defects Addressed**

For the 3000X family:

- The CAN serial Lister, which is part of the DSOX3AUTO option, now will display eight bytes of data in the Data column, where previously only seven bytes would be displayed.

### **Oscilloscope Firmware Version 02.10.2012022200**

**Release Date: Feb 28, 2012**

**File Names:**

**2000XSeries.02.10.2012022200.cab**

**3000XSeries.02.10.2012022200.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000 and 3000 families:

- DSOXDVM option has been added
- This allows DVM measurements directly from your standard oscilloscope probe, or any probe. Readout is displayed in a large, easy to read DMM format. It runs continuously, independent of the oscilloscope waveform acquisitions and triggering system.
- Improved Network Printer support has been added. Supported protocols now include LPD, IPP, and HP JetDirect™ print protocols.
- USB Keyboard support has been added for filenames, labels, and similar string entry fields.
- Annotation capability has been added. This is accessible via the UTILITY menu, and can also use the new USB Keyboard as an input method.
- The waveform Math Divide operator is now standard on all oscilloscopes.

For the 3000X family:

- The measurement statistics are no longer reset at Main to Zoom timebase window changes.

### **Defects Addressed**

For both the 2000 and 3000 families:

- FFT amplitude accuracy has been improved when using Vrms scaling.

### **Oscilloscope Firmware Version 02.01.2011111500**

**Release Date: Nov 15, 2011**

**File Names:**

**2000XSeries.02. 01.2011111500.cab**

**3000XSeries.02. 01.2011111500.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

#### **Enhancements**

For both the 2000 and 3000 families:

- Added a remote command to turn the menu off line
- :SYSTem:MENU OFF
- For network printing, the allowed character set has been expand to a number of non – alphanumeric characters.

#### **Defects Addressed**

For both the 2000 and 3000 families:

- Russian help is now fully updated for new SW Rev 2.00 capabilities

### **Oscilloscope Firmware Version 02.00.2011101301**

**Release Date: Oct 17, 2011**

**File Names:**

**2000XSeries.02.00. 2011101301.cab**

**3000XSeries.02.00. 2011101301.cab**

To upgrade your oscilloscope, download the appropriate .cab file, and load this complete file into the oscilloscope. Do not “unzip” the file.

This version of the oscilloscope firmware includes the items below:

#### **Enhancements**

For both the 2000 and 3000 families:

- For web server 'Get Image' functionality, users can now specify whether a white background or a black background is desired, via a new Invert Graticule check box on the web page.
- Waveform generator frequency accuracy boosted for frequencies below 6kHz.
- In Segmented acquisition mode, memory depth is now better matched to screen width for vernier timebase setting. This allows for reduced holdoff time between segments when at vernier settings.
- **:MARKer:X1Position? and :MARKer:X2Position? now will return the sign (instead of absolute value) when the unit is Hz. Users will be able to know the real location of the marker.**
- Entry knob assignment now more consistently remembers the softkey it was assigned when switching back into a menu.

#### For the 3000 family:

- Arbitrary Waveform Generator capability has been added to the DSOX3WAVEGEN option. This now allows users to create waveforms directly from the scope channel data, edit them, and save and recall arbitrary waveform data.
- DSOX3VID application is now available. This application allows advanced Video triggering.
- DSOX3AERO application is now available. This application allows serial triggering and decode for Mil-Std 1553 and ARINC 429 standards.
- DSOX3FLEX application is now available. This application allows serial triggering and decode for FlexRay™ standard
- DSOX ADVMATH application is now available. This application expands the Waveform Math capability significantly by adding the following operators
  - Divide
  - Base 10 logarithm
  - Natural logarithm
  - Exponential
  - Base 10 Exponential
  - Absolute value
  - Linear equation -  $A*x + B$
  - Magnify
  - Low Pass filtering
  - High Pass filtering
  - Measurement Trend
  - Chart mode for timing channels
  - Chart mode for timing channels with a state clock
- DSOXPWR application is now available. This application allows for Power measurements to be done in the DSO-X 3000 series oscilloscopes, including
  - Harmonics
  - Inrush current
  - Switching loss
  - Modulation
  - Power Quality
  - Turn Off, Turn On

- Transient Response
- Output Ripple
- Power Supply Rejection Ratio
- Slew Rate
- This option also enables U1881-003, Agilent's PC based Power Measurement Application which also includes advanced report generation and SOA measurement capability.
- RS232 user defined baud rate extended down to 100 b/s.
- Serial Lister will now issue a warning if its capacity is reached.
- 113xA Probe offset calibration is now more accurate.
- :MEASure:STATistics:DISPlay {{ON | 1} | {OFF | 0}} has been added to allow remote control and query of the measurement statistics display state.

### **Defects Addressed**

For both the 2000 and 3000 families:

- Auto triggering now starts up more reliably from the stopped state.
- When the X1 and X2 cursors are slaved together, the delta time between them is now constant as they move through the zoom window, and no longer changes at the zoom window boundary.
- The probe attenuation factor no longer increments after power cycles, in certain situations.
- Fixed logic cursor binary and hex values reporting 'don't care' when outside the zoom window.
- Reference memory is now plotted at correct skew in zoom window at non-zero delay settings.
- Certain instances where the first trigger event may have been missed have been corrected.
- An error message is no longer displayed when loading a mask while the trigger source is set to WaveGen.
- The Auto Mask feature will now cancel a previous request if it is still in progress when either the timebase scale or the delay are changed.
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For the 3000 family:

- UART decode and trigger sampling at certain low baud rates have been corrected.
- Edge search indicators now indicate the correct position for roll mode waveforms.
- Search now works on waveforms acquired in High Resolution mode when stopped.
- Certain instances where a CAN serial trigger configured for standard length IDs would trigger on an extended ID have been corrected.
- Cursor placement on zoomed square root waveforms is improved in consistency and accuracy.
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### **Oscilloscope Firmware Version 01.20.2011063000**

**Release Date: June 30, 2011**

**File Names:**

**2000XSeries.01.20.2011063000.cab,  
3000XSeries.01.20.2011063000.cab**

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

For both the 2000 and 3000 families:

- 1 mV/div sensitivity is now supported on all analog channels.
- The web interface now supports an additional type of remote front panel that mimics the physical front panel as well as the scope GUI with live waveforms.
- A QR code has been included in the oscilloscope GUI – find it and check it out.
- Cursor functionality has been extended to allow for manual phase and ratio measurements.
- :MEASure:CLEar remote command now clears the :MEASure:ALL snapshot data from the screen.
- Saving invalid MATH data to Reference Memories is now prevented.
- :TRIGger:FORCE" command has been added.
- :DIGitize performance has been improved.
- 

For the 3000 family:

- Waveform Generator now supports the following additional shapes: Sinc, Exponential Rise, Exponential Fall, Cardiac, and Gaussian Pulse.
- Measurement statistics now allow user selectable finite windowing (up to 2000 measurements) over which to calculate the statistics.
- For measurement statistics, relative standard deviation may be chosen as an alternative to the previous standard deviation result.
- For the integrate Math function, a DC offset adjustment is now included to zero out small DC components.
- For the FFT Math function, the FFT can now be plotted in Vrms as well as dB.
- OR triggering has been added. All channels, both analog and digital, can be included in the specification.
- Edge then Edge triggering has been added – This allows the scope to arm on a specified edge on any channel, then delay by time, and then trigger on the Nth edge on a specified channel.
- For the N2744A probe adapter, the P671X and P670X series of optical to electrical converters are now supported.

### **Defects Addressed**

- USB termination character issue is resolved allowing program to selectively use this capability when communicating with oscilloscope.
- ASCII XY file data for digital channels is improved when saving analog and digital channels. It now gives valid data for data after the trigger point.
- :WAVEform:DATA header information is corrected for the amount of ASCII data bytes transmitted. It formerly assumed one too few bytes per data point.
- Horizontal plot placement of under sampled digital channels is improved and much more consistent across delay and time/div settings.
- When only logic channels are on, the full memory can now be used.
- The Nth Edge Burst trigger mode's Edge control now works correctly for values > 32767.

## **Oscilloscope Firmware Version 01.10.2011042700**

**Release Date: April 27, 2011**

**File Names:**

**2000XSeries.01.10.2011042700.cab,  
3000XSeries.01.10.2011042700.cab**

### **Defects Addressed**

- Corrected LXI XML identification document

## **Oscilloscope Firmware Version 01.10.2011031600**

**Release Date: Mar 16, 2011**

**File Names:**

**2000XSeries.01.10.2011031600.cab,  
3000XSeries.01.10.2011031600.cab**

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

- Waveform Math functions with two operands (+, \*, -) are now enabled between Ch1 and Ch3 or 4, and also between Ch2 and Ch3 or Ch4.
- For I2S triggering specification, binary trigger patterns may now include 'don't care' states for individual bits in the trigger pattern specification.
- Waveform intensity is much better matched and balanced across a range of operating conditions.
- Measurement threshold range has increased to 0% - 100% from 5% - 95%
- Web interface page for launching the Remote Front Panel functionality has improved graphics.
- Waveform update rate is improved at 1 ms/div.
- Display of waveforms while stopped is improved for pan & zoom when acquired in high resolution mode.
- Improved user interface responsiveness when changing Lister search criteria for deep records.
- Delay readout is now displayed when adjusting delay while in Roll mode.
- Recall setup via the web interface now signals user if an issue is detected during recall.
- Loading of data files (.msk, .h5) is improved for Chrome™ browser.
- Installation of application SW licenses via the web now prompts the user to reboot with a "please cycle power" message.
- For the N2744A probe adapter, the P5205 and P5210 high-voltage differential probes are now supported.
- User defined screen saver text entry now handles spaces.
- Measurement statistics are now reset when turning on the Mask Measure on Error feature.
- Automatic labels assigned to serial sources now indicate which serial bus the source is associated with.
- CAN baud rate now supports up to 5 Mbits/s
- LXI improvements for compliance

### **Defects Addressed**

- Instrument more robustly handles mask file import from mask files created for Infiniium oscilloscopes.
- Temporary delay readout is now erased correctly.
- Scope now displays an advisory during Autoscale if the instrument is un-calibrated.
- Display blinks less during power up sequence.
- When using the N2744A probe adapter, offset is now defaulted to 0.0V for probes without offset control.
- Fixed offset error in waveform data saved in high resolution mode.
- Calibration time (hours field) now no longer changes on subsequent presses of 'Cal Status' key in Utility-> Service menu.
- Progress bar now shows several more steps when saving CSV and ASCII waveforms.
- Zoom mode graticule tick marks are better positioned.
- When attempting to save an 8-bit BMP file from the web browser (Internet Explorer™) the instrument will now save the data.
- The acquisition is no longer reset at save menu format changes.
- Web saving of lister data is now more robust when lister is not on.
- Improved automatic scaling of vertical settings for the square root math function.
- When using cursors, Math units will not stick at 'Hz' after you change operator from FFT.

### **Oscilloscope Firmware Version 01.01.2010010700**

**Release Date: Jan. 10, 2011**

**File Names: 2000XSeries.01.00.0001.cab, 3000XSeries.01.00.0001.cab**

This version of the oscilloscope firmware includes the items below:

### **Enhancements**

- Self test is improved for more efficient manufacturing of product.

## (First) Version Information

Released Date:	September 2012
Requirements category (e.g., instrument software version):	Revision 01.01.00000
File Name:	<b>2000XSeries.01.00.0000.cab, 3000XSeries.01.00.0000.cab</b>

Initial Release

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