

Improvements to NanoStar® Firmware

INTRODUCTION

This document highlights the most important enhancements, changes, and bug fixes made to the Wyatt Firmware. Please contact us at support@wyatt.com if you have any questions or suggestions.

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VERSION HISTORY

2.3.7.3

Improvements

- Added a security update to further ensure that your instrument is not susceptible to network-based malware. (#19698)

2.3.7.2

Fixes

- DLS only mode auto attenuation no longer fails while collecting data for small particles such as water. (#19550, 18833, 18268)
- Maximum attenuation voltages can now be set to any voltage between 0 and 10 volts. (#18420, 18381)

2.3.7.1

Improvements

- Added support for constant current mode. (#18787)

2.3.6.4

Improvements

- Added a new auto attenuation algorithm optimized for DLS only measurements. (#18233)

2.3.6.3

Fix

- Improved detection of avalanche photodiode detector (APD) errors. They were being over reported. This error can only occur when the laser is off. If present, these errors are visible in the Alarms tab in the log on the front panel. (#14703)

2.3.6.1

Improvements

- Added support for a new operating system. (#15208)

2.3.5.5

Fix

- Sometimes when the user sets the Laser Power it would appear to update but the actual Laser Power would remain at the initial value. (#14753)

2.3.5.4

Fixes

- Deviation from set temperature: In cases where the instrument had equilibrated at a previously set temperature, and a new experiment began with the same set temperature, the temperature sometimes wandered to 25° C. (#12251)
- The following issues regarding Ethernet configuration have been fixed.

- In some cases, the static IP address was not persisting after a reboot. (#11918)
 - Changes to the Ethernet configuration are now allowed without an active Ethernet connection. (#11932)
- The temperature ramp rate was being ignored at temperatures below 20° C. (#11305)

Improvements

- Implemented improvements to Firmware Updater (#10711, #12328)
 - For newer instruments, the updater will automatically restart the instrument to complete the firmware upgrade process. **Important:** if the instrument doesn't restart the user still must manually restart via the front panel.
 - Not all recent instrument models are compatible with older firmware. If you attempt to install older firmware, the installer will warn that you are downgrading.
- The overheat alarm, triggered at temperatures above 170° C now remains on once it's been triggered, even if the temperature returns to below the threshold; a reboot is required to reset the alarm. This is to prevent instability of temperature control, and because the source of the problem could be a significant failure. If you experience this more than once, you should contact Wyatt Technology® support. (#11611)
- The Disposable Cuvette indicator has moved from the Alarm panel to the Main panel. When the quartz cuvette is loaded, the indicator is green. When the disposable cuvette is loaded, it will be yellow, with the text "Disposable" (#3482)
- Added Cold Room feature (#12362)
 - For customers using the instrument below 20.0 °C in a cold room, where there is a lower risk of condensation from ambient warmer air, there is now an option to disable the gas checks by enabling the Cold Room configuration parameter. This permits measurements below 20.0 °C when N₂ Pressure is below 20 psi.
 - **Important:** DO NOT operate the instrument at low temperature in cold room mode outside of a room that is controlled for ambient moisture. This could permanently damage the electronics.
 - A full screen message will appear on bootup when operating in cold room mode.
 - Contact Wyatt Technology customer support for assistance with enabling this feature.
- Users can now manually control the nitrogen purge settings in the System

panel. (#3128)

- When the NanoStar instrument is operating at low temperatures, the nitrogen purge has been extended to 30 seconds after closing the door in order to better prevent condensation on the optics. (#5324)
- More consistent terminology: QELS and DLS are synonymous. For clarification, all instances of "QELS" in the front panel now read "DLS". (#12684)
- The Restart ISI button on the System panel is obsolete and has been removed (#11813)
- The Language button was not functional and has been removed. (#11811)
- The NanoStar instrument automatically zeroes dark offsets when the door is closed, so the Zero Dark Offsets button in the System panel has been removed. (#11812)

2.3.4.6

- Fixed an issue with laser dither correction not being set correctly following Auto Attenuation if the attenuator ended up at 0% or 100% during Auto Attenuation and laser dither was set to off before Auto Attenuation started (#10575).

2.3.4.5

- Added support for thermal modeling for fast temperature ramping during data collection. The lag time between sample temperature and measured temperature is now corrected for ramp rates up to the instrument maximum of 15 °C/min for the quartz cuvette. (#9411)
- Corrected a touchscreen issue that prevented navigation with the keypad. (#9699)
- Firmware updater no longer requires administrative privileges. (#10218)

2.3.4.1

- Added firmware support for touchscreen instruments. (#8298, #8407)
- Improved Auto Attenuation algorithm for large particles. (#8127)
- Added the option to display one minute of data in the main graph. (#9381)
- Added a four-digit PIN value to control remote access from the Wyatt Technology Aurora® iPad application. (#8619)
- Added a button to the Auto Attenuation Parameters dialog that sets the target and threshold values back to their factory defaults. (#4881)
- The Front Panel's "Comm" page no longer prevents the user from navigating away when there is no network connectivity. (#5412)

- Corrected a bug that could cause the right-hand chart axis to not display at startup. (#4828)
- Fixed a bug that could cause laser power to get stuck at 10% at startup. (#8449)
- The "Attenuation (%)" input field was expanded to accept two digits of precision. (#4459)
- Changed the maximum temperature for the disposable cuvette to 80 C. (#8542)

2.3.2.4

- Fixed an issue where the "Zero Dark Offsets" calculation could run forever.

2.3.2.3

- The Vapor alarm now appears on the instrument's Front Panel.

2.3.2.2

- Fixed issues with the restart integration flag.

2.3.2.1

- Fixed issue where a programming interface for the newer QELS modules could return an incorrect error code.
- Improved the data acquisition routine for the newer QELS modules.

2.3.2.0

- Fixed issue which caused the "ComputeQELSCorrection" command to fail.
- Improved the Auto Attenuation algorithm to better handle concentrated samples.

2.3.1.5

- Updated the programming interface for the newer QELS modules.
- Corrected an issue which caused the "Main" page to take a couple of seconds to draw when the user tabs into the "Main" page.

2.3.1.4

- Improved instrument boot time through interprocess communication.
- Synchronized COM Interface from the firmware of the HELEOS®/TREOS® instrument.

2.3.1.3

- A runtime component is no longer required to communicate with newer QELS modules.
- Lower Tau Cutoff parameter is recorded in the configuration file if the parameter has not been defined.
- Implemented "SetNVRAMEx" and "GetNVRAMEx" commands.
- Implemented commands to retrieve information from the correlator board.

2.3.1.2

- The "Overcount Intensity" parameter no longer overrides the "Attenuation Upper Threshold" parameter at start up.
- The Front Panel QELS tab correctly draws the "Count Rate" data on the graph when parameters are updated.

2.3.1.1

- The user can now set the Auto Attenuation thresholds and targets from the Front Panel.
- The Front Panel no longer accepts temperature set points that are higher than the maximum allowable temperature set point, which depends on the type of cuvette.
- Corrected an issue where certain Front Panel controls could cause the instrument to crash.

2.3.1.0

- Corrected issue where the Auto Attenuation state can lose synchronization with the hardware state.
- The QELS module gets explicitly powered on at boot up.
- Fixed issue where the Zero Dark Offsets algorithm would never terminate.
- Corrected the automatic Nitrogen Purge valve controls to allow the temperature to lock at the temperature threshold (20C).
- The "Laser Monitor Alarm" does not get triggered after zeroing the dark offsets.
- The user will not be able to toggle the Laser state during zero dark offset calculations.
- If Auto Attenuation is enabled and the Laser is activated, the auto attenuation algorithm will trigger.
- When the door closes the dark offsets are zeroed.

2.2.1.18

- Improved the Auto Attenuation algorithm to better handle concentrated samples.

2.2.1.17

- The Auto Attenuation algorithm will never set the Laser Power below 10%.

2.2.1.16

- When the NanoStar instrument boots, the Laser defaults to disabled, and Auto Attenuation defaults to enabled.
- Implemented "RecordRawData" command.
- Corrected behavior of certain commands.

2.2.1.15

- Corrected the Front Panel automatic scaling parameter for the "Static Light Scattering" signal.
- Implemented Instrument Startup diagnostic features.

2.2.1.14

- The NanoStar boots up with Laser Dither enabled.
- Laser Power, Attenuator Voltage, and Attenuation Level are stored in the configuration file.
- Modified automatic scaling parameters for plotting certain data traces.
- Improved the Firmware Installer system.

2.2.1.13

- Enhanced the Firmware Updater software.
- Corrected several issues with the Correlation Correction Reference calculation.
- The Auto Attenuation Algorithm will not enable the Laser if it is off. The algorithm will not attempt to attenuate if the Laser is off.

2.2.1.12

- The graphs on the Front Panel now share time scales with other Wyatt instruments.
- Improved the Auto Attenuation algorithm to handle samples in plastic cuvettes.
- Defined Dither Correlation Correction parameters in the configuration file.

2.2.1.11

- Display "Door Interlock" instead of "Laser Interlock" on the Front Panel's Alarm tab.
- The temperature lock timer resets when the door is closed.
- Implemented commands that calculates and sets the Dither Correlation Correction Reference.

2.2.1.10

- Implemented improved Auto Attenuation algorithm.
- The Count Rate on the QELS tab now updates at the same rate as the data on the graph.
- Fixed issue where the Auto Attenuation marker did not appear on the Main tab's graph if the Main tab was not visible at the start of Auto Attenuation.
- Fixed an issue that could cause the Front Panel to crash if it does not properly detect the QELS module.
- Improved the (in house) "Service" tab's behavior when parameters are updated.
- The NanoStar Front Panel ignores the "Vapor" alarm.

2.2.1.9

- The NanoStar temperature lock duration parameter default is set to 120 seconds.
- Temperature lock duration and temperature lock range parameters are now configurable.
- Laser Dither switch cannot be enabled if the Laser Power is below the threshold.
- The Laser switch does not get toggled when the Laser Dither switch gets toggled on or off.
- The "Laser Dither State" does not get logged on the Alarm tab of the Front Panel.

2.2.1.8

- Implemented QELS Lower Tau Cutoff on the Front Panel.
- Added "ClearParameter" command.
- Password protected configuration files to prevent inadvertent changes.
- "Count Rate" can now be displayed on the Main tab
- Improved the (in house) "Service" tab to allow configuration of multiple daemons.

2.2.1.7

- Fixed an issue that could cause the Front Panel to crash intermittently.

2.2.1.6

- Added "Laser" switch on the Main tab of the Front Panel.
- Labels on the System tab were being truncated.
- "Integration Time" on the QELS tab of the Front Panel was not updating when an external application modifies the value.
- The correlation correction scale factor is always equal to the Laser Power if Laser Dither is on. If Laser Dither is off the correction scale factor is set to zero.

2.2.1.5

- Expanded the "Integration Time" text box to fit longer time values.
- Corrected the formula for calculating the Correlation Correction factors.
- Corrected the behavior for triggering the "Laser Monitor" alarm.
- Added more system logging for diagnostics purposes.

2.2.1.4

- Correlation correction factors can now be subtracted from the auto correlation function.
- Added "SetLowerTauCutoff", "SetCorrectionScale" and "SetCorrelationReference" commands.
- Configuration files with long parameters were being read incorrectly.

2.2.1.3

- Corrected navigation order on the instrument's Front Panel System page.
- Removed the Time Constant control on the instrument's Front Panel System page.
- Informational alarm "Parameters updated" are no longer logged on the instrument's Front Panel Alarm page.
- Fixed issue where a user can repeatedly get prompted to "Take-over control and resubmit the command?"
- Auto Attenuation was not being attempted when intensity is too high and attenuation is already at maximum setting.
- Display "Static Light Scattering" instead of "LS Detector".
- Actuate the N2 High Purge valve only when the door is opened and the temperature is below the threshold.
- The Front Panel Service page makes the configuration parameters editable when the user enters the correct password.

- The NanoStar Front Panel live updates the Attenuation and Laser Power.
- Added the "SetEOSInteval" and "GetEOSInterval" commands.

2.2.1.2

- Allow Laser Dither to be enabled.
- Temperature ramp rate is set to the maximum allowable rate at instrument start up.

2.2.1.1

- Corrected a timing issue that can cause certain instruments to reboot randomly.
- Modified the valid range for setting Attenuator Power.
- Fixed an issue that caused the "Count Rate" trace to be incorrectly plotted on the front panel.

2.2.1.0

- Initial Release. Derived from version 2.2.0.20 of the firmware for the HELEOS/TREOS instrument and DynaPro Plate Reader Plus 1.0.6.8.

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Please contact Wyatt Customer Support if you need more information about changes in earlier versions of the firmware.