

# Improvements to Optilab<sup>®</sup> T-rEX<sup>™</sup> / Optilab<sup>®</sup> UT-rEX<sup>™</sup> Firmware

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## INTRODUCTION

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

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## VERSION HISTORY

### 6.1.5.14

#### Improvements and Bug Fixes

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

#### Known Deficiencies

- Improvements from version 6.1.5.13 were reverted because of occasional installer failure. The installer may now prompt false positive virus identification on some systems.

### 6.1.5.13

#### Improvements and Bug Fixes

- Modified firmware updater so that antivirus scanners do not report false positives when scanning our updater. (#18550)

### 6.1.5.12

#### Improvements and Bug Fixes

- Added support for automatic error recovery (#17746)
- Corrected an issue where static IP address may not persist upon reboot on some instrument configurations (#17910)

### 6.1.5.10

#### Improvements and Bug Fixes

- Added support for new Single Board Computer (SBC) (#16994, #17149)

### 6.1.5.6

#### Improvements and Bug Fixes

- An issue was fixed in the aRI tab in which the Purge button was unresponsive. (#14792)
- Added support for a new operating system. (#14855)

### 6.1.5.1

#### Improvements and Bug Fixes

- Added support for a new computer. (#13053)

## 6.1.4.7

### Improvements and Bug Fixes

- The Differential Refractive Index Analog Output settings were incorrect for certain models. As a consequence, verify your custom settings after installing this firmware as they may have been reset. (#13044)
- A photodiode array data processing parameter was not persisting across reboots, causing inconsistent results. (#13491, 13671)
- The firmware could report incorrect LED and Recycle/Waste valve states at boot up. (#13884, 13885)
- The Recycle/Waste valve state now persists across reboots. (#13492)
- Made data collection more precise and robust, with better time resolution. (#13662, 3552, 13639, 13593, 13494, 13415)

## 6.1.4.4

### Improvements and Bug Fixes

- In the Set Scale dialog for the axes on the main tab, the decimal places have been reduced to 5 to make it more readable. (#11539)
- If you attempt to install older firmware, the installer will warn that you are downgrading. (#12329)
- The following issues regarding ethernet configuration have been fixed.
  - After hitting Escape, then No, to discard changes when entering a manual IP address, the keypad controls became disabled. (#11388)
  - In some cases, the static IP address was not persisting after a reboot. (#11920)
  - Changes to the ethernet configuration are now allowed without an active ethernet connection. (#11934)
- Previously, optimizing LED intensity could spuriously alter the aRI value by ~1%. (#11712)
- Previously, when calibrating the LED monitor, the alarm was triggered. (#12139)

## 6.1.3.8

### Improvements and Bug Fixes

- The overheat alarm, triggered at temperatures above 50°C – or 65°C for model WTREX-08 and newer – 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 support. (#11608, 11468)
- An issue was fixed in the Alarm tab in which the Alarm OUT checkbox was unresponsive unless the Alarm IN checkbox was toggled. (#11528)
- Added LED switch on the Main tab. This has the same function as that on the System tab. (#11687)

- Added new Forward Monitor and LED Power to the live display in the Main tab. (#11972)
- Added support for new instrument hardware configurations. (#11637, 11725, 11719, 10746)
- Improvements and changes specific to model WTREX-08 or newer
  - The maximum allowed temperature has been increased from 50°C to 65°C (#11572)
  - Added new LED Monitor feature (#11570)
    - Added “LED Monitor” to the live display in the Main tab, with a range of 0-100%.
    - An “LED Monitor” alarm will be triggered if the ratio between the LED Monitor and LED Power drops below 70%. The alarm will remain on until the quotient rises above 75%. (#11640)
  - The LED field “Intensity” in the System tab has been renamed to “Monitor” and is reported as a percentage. (#11507)
  - The LED status indicator indicates whether the LED is on or off, and its color indicates the alarm states of Forward Monitor and LED Monitor. It may be green (no alarms active), yellow (Forward Monitor alarm active), or red (LED Monitor alarm active). (#11507)
  - There is a new service button in the System tab, with three actions (#11507, 11823)
    - Calibrate LED Monitor
    - Calibrate Forward Monitor
    - Zero Pressure
  - If the instrument Model Number is available, it is now displayed on the System tab. (#11507, 11515)
  - The Low Light alarm is now more accurately named the Forward Monitor alarm. (#11506)
- Changes specific to model WTREX-07 or older
  - In the LED section of the System tab “Intensity” is now “Forward Monitor,” and it is displayed as a percentage. (#11823)

### 6.1.2.6

#### Improvements and Bug Fixes

- Added support for new photodiode array hardware. (#11728)

### 6.1.2.4

#### Improvements and Bug Fixes

- Made data collection more robust with better buffer management, preventing some spurious reboots. (#11496)
- Repaired a memory leak that could cause the front panel to become unresponsive. (#11386)
- Added support for new instrument hardware configurations.
  - New embedded computer (#11494)

- New touch screen hardware (#11510)

## 6.1.2.2

### Improvements and Bug Fixes

- Implemented improvements to Firmware Updater (#10712, #10881, #10904, #11015)
  - For newer instruments, the updater will automatically restart the instrument to complete the firmware upgrade process. Note: if the instrument doesn't restart the user still must manually restart via the front panel.
  - Added protection from installing firmware to wrong instrument
    - In the previous version when an incompatible instrument was specified in the IP address text field, the installation was still permitted, causing a failure. The user is now prevented from entering the wrong instrument name or IP address.
- Added Cold Room feature (#5823)
  - For customers using the instrument below 20.5°C in a cold room, where there is a lower risk of condensation, there is now an option to disable the gas checks by enabling the cold room configuration parameter, enabling measurements below 20.5°C without gas (i.e., minimum of 20 psi N2 Pressure).
  - Important: DO NOT operate the instrument 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 customer support for assistance with enabling this feature.
- Previously, pressing DEL key while the Load Factory Default button in the System tab was in focus rebooted the instrument. This has been fixed in 6.1.1.2. (#11020)
- Instrument performance improvement (#11042)
  - Modified a data collection algorithm addressing signal saturation which overused computational resources resulting in slowing of instrument response.
- Added support for new instrument hardware configurations. (#10712, #10736, #10798, #10799, #10806, #10824, #10850, #10948)

## 6.1.0.3

### Improvements and Bug Fixes

- Added support for Optilab UT-rEX instruments. (#9783)
- Improved Firmware Updater reliability and user interface. (#9881, #10249, #10243, #10367, #10368)
- Improved LED automatic adjustment algorithm. (#9633, #10063)

## 6.0.5.1

### Improvements and Bug Fixes

- Corrected a touchscreen issue that prevented navigation with the keypad (#9632)

## 6.0.5.0

### Improvements and Bug Fixes

- Added a four-digit PIN value to control remote access from the Wyatt Aurora iOS application. (#8620)
- Fixed an issue that caused the Optimize LED Power button to remain disabled after automatic adjustment if LED power was at 100%. (#9120)

## 6.0.4.4

### Improvements and Bug Fixes

- Improved LED automatic adjustment algorithm. (#8950)

## 6.0.4.3

### Improvements and Bug Fixes

- Added firmware support for touchscreen instruments (#8565)

## 6.0.3.6

### Improvements and Bug Fixes

- Improved the "Zero" button feedback to display a more prominent and extended yellow status update when the instrument is zeroed. (#5019)
- Repaired an issue in the firmware to correctly clear memory at shutdown. Previously the improper memory handling at shutdown was generating error messages at the next restart. (#5200)
- Repaired the firmware updater/installer for compatibility with a Windows Vista or Windows 7 host in addition to a Windows XP host. The install now requires admin privilege to run and will request this automatically on startup. (#5251)
- Repaired some minor issues in the Front Panel interface for Recycle/Waste on the System tab. The interfaces now allows canceling of any delay currently in progress, allows "immediate" switching between recycle and waste even when a delay has been entered, and remembers the last entered delay period even after a toggle back to immediate mode. (#5256)

- Added a new feature whereby a standalone T-rEX Front Panel interface application installer is now available, allowing remote Front Panel access across the intranet, e.g. a desktop or laptop. (#5257)
- Repaired a bug in the Front Panel interface where pressing the front panel <ESC> key when the "Alarm" tab was active and in the special case where the advanced "Service" tab was also active, caused the front panel screen to go blank and require the instrument to be rebooted. (#5360)
- Repaired automatic N2 Purge and Temperature management behavior to avoid temperature oscillation at the dry gas low temperature threshold of 20C by adding a 0.5C temperature buffer to the on/off logic. If the T-rEX temperature is set below 20C without Nitrogen gas applied, the temperature will default to 20.5C. (#5372/#3652)
- Resolves a hardware issue involving reversal of the dry gas pressure sensor and solenoid. The flow of Nitrogen is now properly handled for all T-rEX instruments. (#5379)
- The Front Panel's "Comm" tab no longer prevents the user from tabbing out of it when there is no network connectivity. (#5399)
- Added a new selection to the "Differential Refractive Index Analog Output" drop-down menu for High Concentration model T-rEX instruments. The "Extended" selection is now available. This selection is often appropriate for use with a Wyatt Calypso system. (#5692)

### 6.0.1.1

#### Improvements and Bug Fixes

- Added support for High Concentration model instrument.
- When the instrument boots up, the "Recycle/Waste" valve is always in the "Recycle" state.
- The Front Panel's Main tab now displays both left and right axis labels when the user tabs in and out of it.
- The firmware activates the Alarm Output if it senses "Device I/O" (error from the internal data acquisition board), "Liquid Leak", "Overheat", "Vapor Sensor", or "Alarm In" alarms.
- A warning message appears if the user attempts to set the "dRI Calibration Constant" to a negative value. T-rEX instruments should not normally have a negative dRI calibration constant.
- Improved on-board communications when in advanced diagnostics mode.
- Improved on-board alarm handling and reporting.
- Fixed an issue where the Front Panel indicators (e.g. Recycle state) might not reflect the actual state of the hardware.
- The Front Panel's Alarm tab displays the Aux Input and Min Peak Intensity as numeric data when in service mode.
- The PDA data is no longer part of the data slice. This change lowers the demand on normal instrument communications.
- Added "GetRawPDADData" command, which can be used for advanced diagnostics.
- Corrected an issue with the Temperature Control module, where the logging mechanism could be overwhelmed.



- Corrected an issue where the user would not be able to control the Front Panel if the firmware begins to optimize the LED while certain user interface controls are in focus.
- Improved temperature controller internal communications.

### 6.0.0.3

#### Improvements and Bug Fixes

- Adjusted system start up logic to ensure proper initialization. This resolves a periodic problem with temperature control and analog output.

### 6.0.0.2

#### Initial Release

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