

Noxturnal 7.0

Release Bulletin



Version: 2.0 – LBL-0482

Release Date: 27th of March

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Overview

This Release Bulletin announces the release of the following Noxturnal softwares and CD's

- Noxturnal – **7.0.0 – 37880**
- Noxturnal US – **7.0.0 – 37880**
- Noxturnal Language Pack – **7.0.0 – 37880**

The software also contains new version of the Nox T3s and Nox A1s firmwares

- Nox T3s Firmware – **3.0.10 - 2605**
- Nox A1s Firmware – **3.0.10 - 2605**

The main aim of this release is to introduce AASM compliance for reporting of 3 and 4% AHI, user authentication, and audit logs in Noxturnal. In addition, this release contains many important bug fixes and enhancements for both Noxturnal and Nox recorder firmwares.

Finally, this software release also contains an updated version of the Noxturnal Language Pack with bug fixes and improvements, supporting the following languages:

- Chinese
- Czech
- Danish
- Dutch
- Finnish
- French
- German
- Italian
- Japanese
- Norwegian
- Polish
- Portuguese
- Spanish
- Swedish

Downloading Software

The software can be downloaded from different download locations and is available on the Nox Support Site.

Noxturnal, Noxturnal US & Noxturnal Language Pack

www.noxmedical.com/download

[Noxturnal - Using Dropbox](#)

[Noxturnal US – Using Dropbox](#)

[Noxturnal Language Pack – Using Dropbox](#)

[Nox T3s Firmware - Using Dropbox](#)

[Nox A1s Firmware - Using Dropbox](#)

List of Features and Bug Fixes

The following features and bug fixes are included as a part of the **Noxturnal software** with this release.

AASM 3.0 Compliance for Reporting 3 and 4% AHI

Noxturnal 7 enhances the ability for users to report the 3 and 4% AHI to maintain compliance with the requirements of the AASM in the latest version of the manual. Previous versions of Noxturnal featured the reporting parameter AHI 4%, on top of all the supported 3% parameters. Noxturnal 7.0 adds the following new parameters that can be added to reports:

- AHI Supine with Desat drop $\geq 4\%$
- AHI Non-Supine with Desat drop $\geq 4\%$
- Apnea + Hypopnea with Desat drop $\geq 4\%$
- Hypopnea Index with Desat drop $\geq 4\%$
- Hypopnea Index Supine with Desat drop $\geq 4\%$
- Hypopnea Index Non-Supine with Desat drop $\geq 4\%$
- Hypopnea Count with Desat drop $\geq 4\%$
- Obstructive Hypopnea Index with Desat drop $\geq 4\%$
- Obstructive Hypopnea Index Supine with Desat drop $\geq 4\%$
- Obstructive Hypopnea Index Non-Supine with Desat drop $\geq 4\%$
- Obstructive Hypopnea Count with Desat drop $\geq 4\%$
- Central Hypopnea Index with Desat drop $\geq 4\%$
- Central Hypopnea Index Supine with Desat drop $\geq 4\%$
- Central Hypopnea Index Non-Supine with Desat drop $\geq 4\%$
- Central Hypopnea Count with Desat drop $\geq 4\%$



Respiratory Parameters 4%

	Total	Supine	Non-Supine	Count
Apneas + Hypopneas (AH):	- /h	- /h	- /h	-
Hypopneas:	- /h	- /h	- /h	-
Obstructive (OH):	- /h	- /h	- /h	-
Central (CH):	- /h	- /h	- /h	-

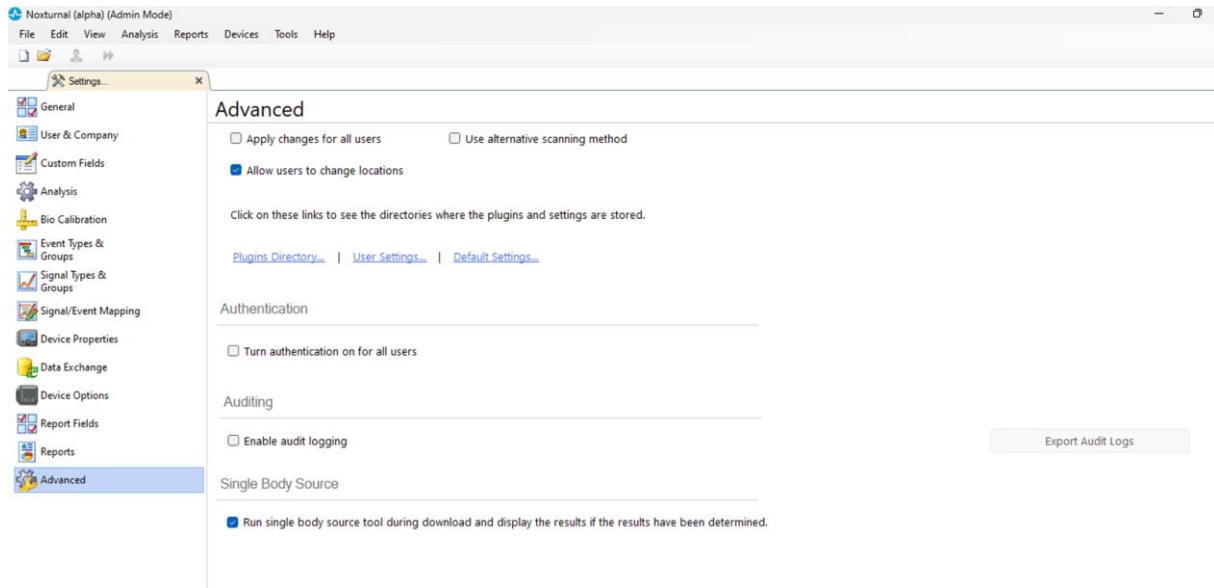
User Authentication and Audit Functionality

This version of the Noxturnal contains enhancements for user authentication and auditing:

- Authentication in local Noxturnal
- Audit logs

Authentication

- Authentication is turned on under Tools>Settings>Advanced. The option can only be turned on in Noxturnal **Admin Mode**.

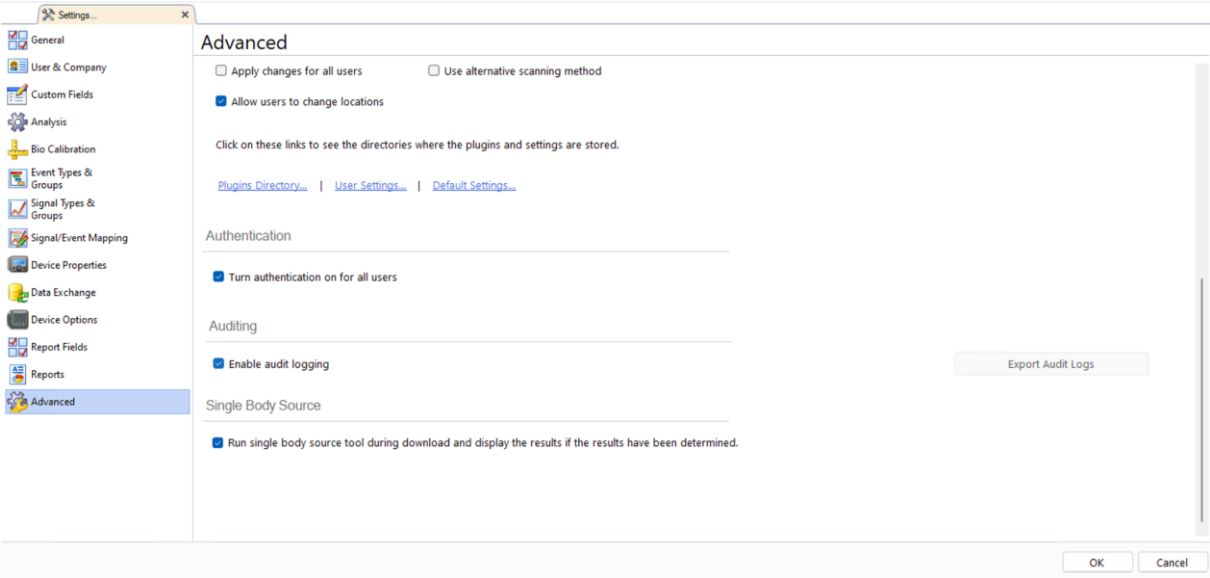


- In user mode, the option is visible but greyed out
- After authentication has been turned on, a normal user must log in when opening Noxturnal
- The username will be prefilled with the domain and username
- The user logged into the computer is the only user that can log into Noxturnal – see FAQs below for more details
- The user logs in when opening Noxturnal and is automatically logged out when the application is closed
- The user is not requested to log in when opening the application in admin mode. This is to prevent the user from being locked out of the application. Access to Noxturnal Admin requires Windows User Administration Access



Audit Logging:

- Auditing is also turned on under Tools>Settings>Advanced in Admin Mode
- The option is only visible in admin mode
- An audit log can be exported via the “Export Audit Logs” button in Admin Mode



- The following **parameters** are logged:
 - Date and Time
 - Username
 - RecordingId
 - User action
- The following **user actions** are logged:
 - Viewing a recording
 - Saving a scoring
 - Clearing/deleting scoring
 - Changing Patient Information
- Audit Log can only be exported in Admin Mode
- The database is encrypted by default; the only way to view it is by exporting it from Noxturnal
- Clicking the “Export Audit Log” option in Tools>Settings>Advanced exports the audit log in a .csv format

	A	B	C	D	E
1	id	date	username	recordingid	message
2	1	09:47.1	USERNAME	6a6156cf-8b39-4eba-affa-204d22efd808	Recording opened
3					

FAQs

Q: If a colleague is logged into the computer running Noxturnal, how do I log in e.g. during an overnight shift change?

To use Noxturnal V7 with user authentication enabled, users will need to be logged into their Windows User account and then login to Noxturnal with their account username and password.

Q: Can I login with my user account from a generic shared Windows account e.g. a shared account of a recording PC for overnight studies?

Users with a generic login for recording PCs will not be able to login with their windows account from the generic account. The users would need to use the generic account to login into Noxturnal if user authentication is enabled.

Q: Are audit logs kept when data is shared across network locations?

No, audit logs are maintained and encrypted on an individual local PC, and do not track interactions across a network. While all user interactions on the individual machine are logged, these logs pertain only to that specific PC and cannot provide cross-network interaction data.

Enhancements:**Improved handling of locked recordings to reduce user frustration.**

In our continuous effort to enhance user experience, we have implemented improved handling of locked recordings. This update should reduce user frustration by ensuring more reliable access to and manipulation of recordings, even when locked. This should reduce the incidence of lost scoring in the field.

One of the bugs fixed was the database locking after repeated Ctrl+S clicks.

Noxturnal Database performance issues when opening Noxturnal and switching between data locations.

Issue: The application experienced slow startup times due to database deadlocks. This was caused by the application processing multiple data locations concurrently without appropriate thread safety, leading to database locking issues.

Solution: The application has been updated to fix the database locking problem. By preventing multiple processes from accessing the database simultaneously, the update significantly reduces database deadlocks. Preliminary testing of these updates has shown that they effectively prevent database locking, improving the startup speed of the application.

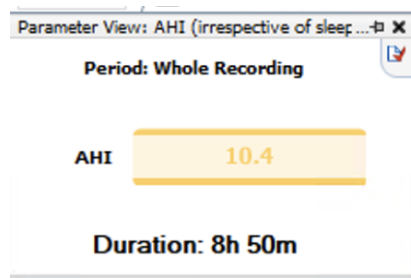
Issue: Performance degradation was observed in Noxturnal at sites with large Recording Databases, especially when containing over 30 custom fields per recording. The issue became prominent when switching between data locations, as the application looked up each recording in the new data location. This was attributed to the suboptimal structure of the database and the inefficient queries executed against it, leading to slow application performance.

Solution: To address this issue, the patient field table within the RecordingDB database has been optimized by adding an index, significantly improving the speed of the querying process. Internal testing showed a dramatic reduction in switch time for a location with 3,600 recordings, each containing 30 patient fields, from approximately 32 seconds to about 2 seconds. Furthermore,

improvements have been made to storing patient fields, enhancing the overall table structure, and maintaining better database integrity.

Memory Leak in Parameter View

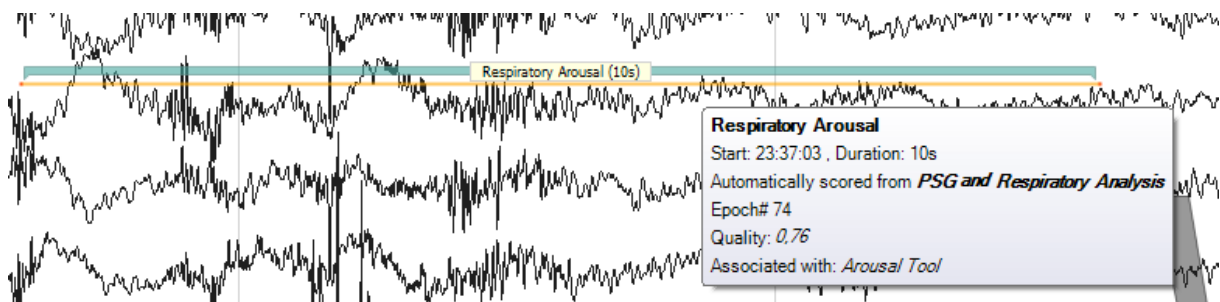
Issue: In earlier versions, users experienced a memory leak issue when using the Parameter View during online acquisition. The RAM usage incrementally increased, leading to system instability over prolonged periods of operation. When the system ran out of RAM, it would freeze, requiring a full closure of Noxturnal to release the memory and resume recording.



Solution: Noxturnal 7.0 addresses this bug. Users should no longer experience this memory leak, leading to enhanced system stability during online recording sessions.

Other Enhancements

- Enlarge technician notes window to improve usability of the feature
- After running the Arousal tool, automatically scored arousals were marked as manually scored when the user hovered over the events. Now, the event will correctly show the automatic status, arousal tool association, and quality indicator.



- Addressed issue that prevents users from downloading a study from a recorder if there is a space in the ID
- Event list is now updated during Online Recording
- Keyboard shortcut bug - (e.g SHIFT +1 was not allowed if 1 had been used)
- Wrong label for Nox C1 sensor if more than one sensor had the same signal type

- Adjusting the Noxturnal firmware to address changes required from a firmware upgrade on TxLink 2

Nox Medical Recorder Firmware Update (T3s and A1s)

Nox A1s Firmware, version 3.0.10

- Fixes issue with file system corruption that could cause the recording devices to come back empty even though device logs indicate the recording was performed successfully
- Improved on-device impedance calculations for Nox SAS
- Fixes crash if the recorder button is held down to start a recording with no SETUP.ini. The firmware now blocks users from using the start recording by pressing the device button if the device is not configured
- Device display browsing is disabled in online recordings
- Starting or stopping the recording via the device button is now disabled in Online Mode
- Added device logging of the following parameters:
 - Configured battery type
 - The oximeter battery level is logged every 10 minutes as reported by the Nonin Oximeter
 - Error replies from the oximeter
- Other firmware and bug fixes to improve operations in the field

Upgrade Recommendation and workarounds for Nox Users

Noxturnal Upgrade Wizard

Noxturnal 7.0.0

Noxturnal 7.0.0 has a built-in upgrade wizard for all users upgrading from 5.X or 6.0 versions of Noxturnal. This upgrade wizard prompts the user with selections on if they want to upgrade with old settings as a part of the install procedure or if they want a fresh install.

Noxturnal US 7.0.0

Upgrading from Noxturnal US 6.x.x

The Upgrade wizard will pop up with information if the user wants to maintain old user settings or if they want to do a fresh install.

Upgrading from version 5.x or older

If upgrading in the US market from a version 5.x or older consider these upgrade instructions [here](#).

Older Noxturnal Versions

If users are working on an older version of Noxturnal (3.X and 4.X) it is recommended to do a fresh install and setup of the software since so many things have changed in recent releases and updating on top will create more problems than it solves.