NANOSIGHT NTA SOFTWARE: v3.3 (PSS0235-14)
SOFTWARE UPDATE NOTIFICATION

Introduction

This document details the release of the NanoSight NTA software version 3.3. It covers the upgrade and installation instructions, as well as additions and improvements in this release of the software.

Overview of new features

Below is a summary of the new improvements and features of NTA 3.3 compared to NTA 3.2. More details and instructions on the new features are available in the appendices at the end of this document.

New SOP Pages

- SOP dropdown replaced with tab structure.
- Improved workflow for setting up Quick, Standard, and Zeta measurements.

CFR

- Camera on / off logged in audit trail.
- Reason for script abort added to audit trail.

Other

- Script line length restriction removed.
- Improved NS500 fluidics diagrams and instructions.
- Base filename and path limits implemented (total file and path limit = 225 characters, file name limit = 106 characters).
- Updated FTDI drivers.
- Kernel Mode drivers signed for Windows 10 Secure Boot compatibility.

Comparison of features between NTA 2.3, 3.0, 3.1, 3.2, and 3.3

FEATURE	NTA 2.3	NTA 3.0	NTA 3.1	NTA 3.2	NTA 3.3
Interface					
SOPs/Script Generator	No	Yes	Yes		
Quick Load of Recent Scripts	No	Yes	Yes		
Quick Load of Recent Experiments	No	No	Yes		
Pause/Step Frame Processing	Yes	No	Yes		

FEATURE	NTA 2.3	NTA 3.0	NTA 3.1	NTA 3.2	NTA 3.3
Capture					
Automatic Focus	No	No	Yes (monodispersed only)		
Automatic Camera Level	No	No	Yes		
Live Analysis	Yes	No	No		
EDR Capture	Yes	No	No		
Algorithms					
High Resolution Size Algorithm (FTLA)	No	Yes	Yes (speed optimized)		
Vibration Correction	Yes	Yes	Yes		
Graphs					
Graph Overlays	Maximum 10	No	Unlimited, with grouping		
Scatterplot Overlays	Maximum 2	No	Unlimited, with grouping		
Graph Overlay Exports	Bitmaps	No	Bitmaps and PDFs		
Custom Graph Colours	No	No	Yes		
Data Manipulation					
Exclusion Regions	Yes	No	Yes		
Selected Concentration	Yes	No	Yes		
Additional					
Draw 'All Tracks'	Yes	No	Yes		
Optional CFR Feature	No	No	No	Yes	Yes

Recommended System Requirements

Any computer currently running NTA 2.3, NTA 3.0, NTA 3.1, or NTA 3.2 will be able to run NTA 3.3. A minimum of 1GB free hard disk space is recommended for installation.

Feature	Specification
Processor Type	Intel Core i7-7700 Processor (Quad Core, 3.60GHz, 8MB Cache, Intel HD Graphics 630)
Memory (RAM)	16GB (2x8GB)
Hard Disk Storage	2TB Hard Drive
Display Resolution	1680 x 1050 or higher
Connectivity	IEEE 1394 adapter card, Serial port Adapter card
Operating System	Windows 10 64 bit

Supported Languages

- English

Software Installation Procedure

This section will explain how to update your NTA software to the latest version.

Instructions are provided on the next page for upgrades from NTA 2.3 (with a single laser module) and above. For new installs or for upgrades from software versions prior to NTA 2.3, follow instructions in *Appendix II*.

It is assumed that you have authority to install or update software within your company's SOPs. If you do not have this authority please consult with your I.T. support department before proceeding.

It is assumed that you have Administrator rights for the computer. This is required by the installation process. It is not necessary to remove the previous version of software to install and run this software release.

Required or Supplementary Files

The software, manuals and related documentation should be packaged with this document. If you do not have these, you can download them from the Malvern Panalytical website (www.malvernpanalytical.com). Please contact your local distributor or helpdesk@malvernpanalytical.com for information on how to obtain ancillary manuals, specifying the serial number of the instrument and camera information, if available.

Technical Support

For questions regarding the operation of the software consult the latest software quick start guide (included with software).

If you have any questions or problems with this installation, or if the software does not work as expected, please contact in the first instance your local distributor.

As a backup you may contact helpdesk@malvernpanalytical.com or phone on +44 (0) 1684 892456 during UK office hours (9am to 5pm). Please supply the instrument serial number, camera type if known, and details of any peripheral equipment.

Installation Instructions

In order to install the software, you will need the installer file called 'NanoSight NTA 3.3.301 Installer.exe'. Previous versions of software will not need to be removed during this process as multiple software versions are able to coexist on the same computer. Ensure that sufficient space is available on the computer (approximately 1GB of space is recommended for installation).

If the installer is contained in a zipped file, extract to a convenient location and double-click **NanoSight NTA 3.3.301 Installer.exe** to start. The installation Wizard will then run through initial installation of NTA 3.3 presenting the dialog window below.
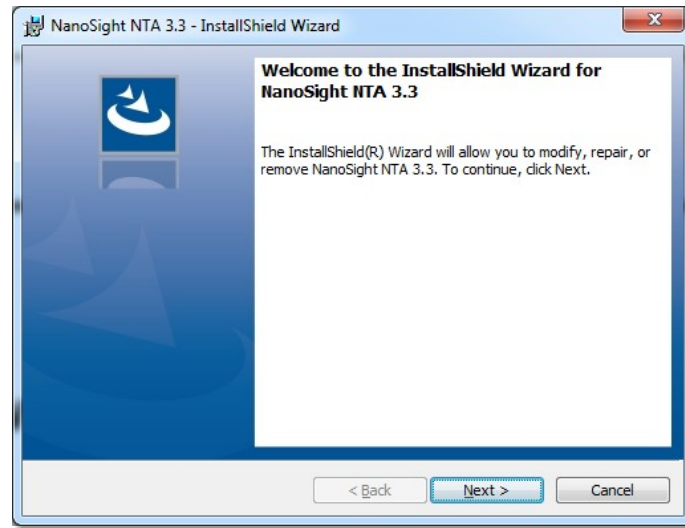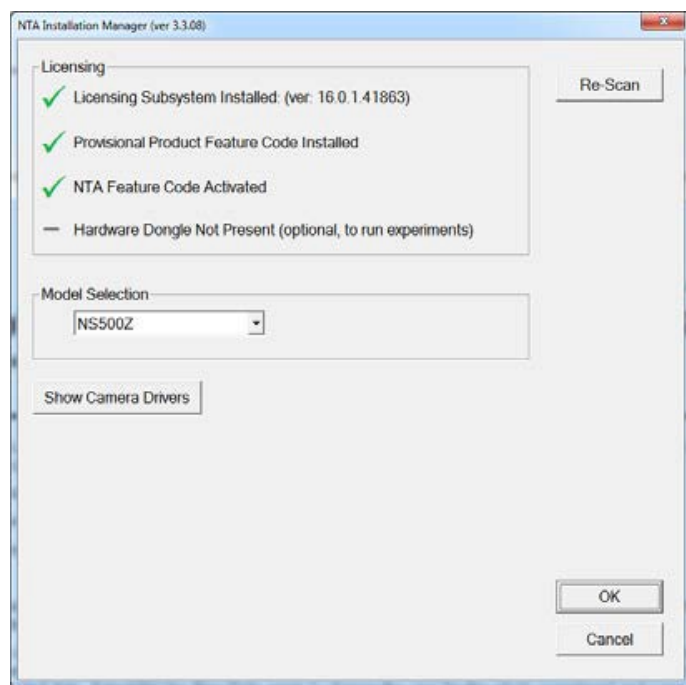
1. Select **Next**, and review the license agreement. To continue you must confirm acceptance by selecting the appropriate option.

2. Selecting **Next** in this window will install NTA 3.3. Administration rights may be required.

3. After installation is complete select **Finish**.

The NTA 3.3 software has now been installed on the computer. This will open the NTA Installation Manager to check further details of your individual system.

The NTA Installation Manager controls security, model selection and camera drivers. When upgrading from NTA 2.3, NTA 3.0, NTA 3.1, or NTA 3.2, all license features should show a green tick with the correct instrument model selected.

Some users may see a message instructing you to uninstall and reinstall the Scientific CMOS drivers. If so, click **Show Camera Drivers** and click **Install/Remove** next to Scientific CMOS, follow instructions on screen, restart the computer, and then open the installation manager from the start menu and install the Scientific CMOS drivers again.

Selecting **OK** will close the dialog box and complete the installation of NTA 3.3.

Uninstall Procedure

The software can be uninstalled using the standard Add/Remove feature in the Windows Control Panel.

Known Issues
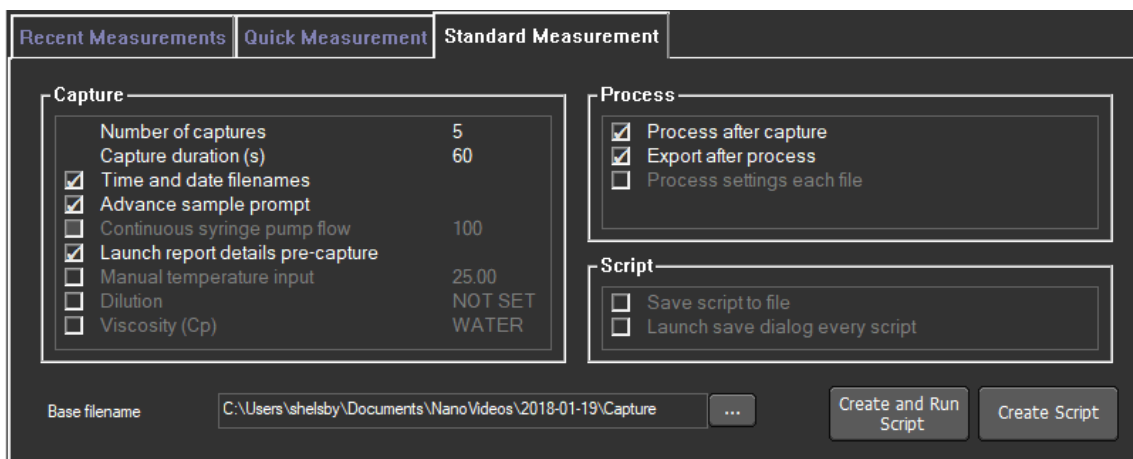
- If the computer sleeps during camera recording, measurements will not be completed and upon waking the camera driver and further recordings will have issues. A PC restart is required. Switching off automatic sleep/hibernate is strongly recommended when running NTA.

- The user interface does not fully support scaling on high DPI displays in Windows 10. It is recommended to set display scaling to 100% in the display settings for your monitor, and sign out or restart the PC before running NTA. Using scaling greater than 100% may result in some user interface elements overflowing the available screen space.

Appendix I: NTA 3.3 Supplementary Software Guide

Document Summary

This guide gives an overview of the additional functionality, and assumes prior knowledge of NTA 3.2. We would recommend using this guide alongside the NTA Software Guides for a full overview of the software.

Updated Experiment Set-up

In NTA 3.3 we have streamlined experiment set-up, removing the Advanced dialog, and changing the controls to give a cleaner more efficient set-up.

Appendix II: Non-standard software update

Installing the software on a blank computer to run with the NanoSight instrument, you will need to:

1. Ensure the PC specifications match those given in the **Recommended System Requirements** section of this document.

2. Ensure system settings are copied across. Follow the instructions below for a basic install and then follow directions for backing up and transferring settings below.

If you are running NTA 2.2 or earlier or for installations on a blank computer, you should first check that the PC you are upgrading meets the current PC specifications. You can install the new software as above, however additionally:

1. It is likely you will need to update or install camera drivers (the installation manager will inform you of this during the process). For details of driver upgrades/installation, see below.

2. If you have multiple laser modules, you will have been given different calibration values to put in the nano.ini file. This file is no longer used in NTA 3.3. In this case refer to the *Backing up and restoring System settings* section at the end of this document and enter the correct values relating to the relevant laser module and camera.

3. If the upgrade appears to all work, but the camera just shows a black screen when you click on **start** it is likely that your graphics card is unsuitable or the drivers are out-of-date.

4. If the upgrade appears to work, but there is an error when a **capture** command called from **Sentinel** then it is likely the firmware of the system is out of date. In this case contact helpdesk@malvernpanalytical.com for the Hasp firmware upgrade software tool.
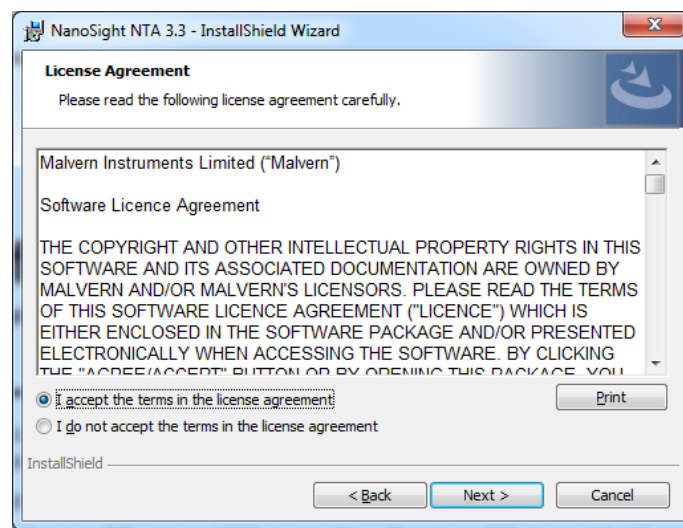
Basic Installation

In order to install the software, you will need the installer file called *NanoSight NTA 3.3 Installer.exe.*

Ensure that sufficient space is available on the computer (at least 1GB of space is recommended for installation).

If the installer is contained in a zipped file, extract to a convenient location and double-click **NanoSight NTA 3.3 Installer.exe** to start. The installation Wizard will then run through initial installation of NTA 3.3 presenting the dialog window below.
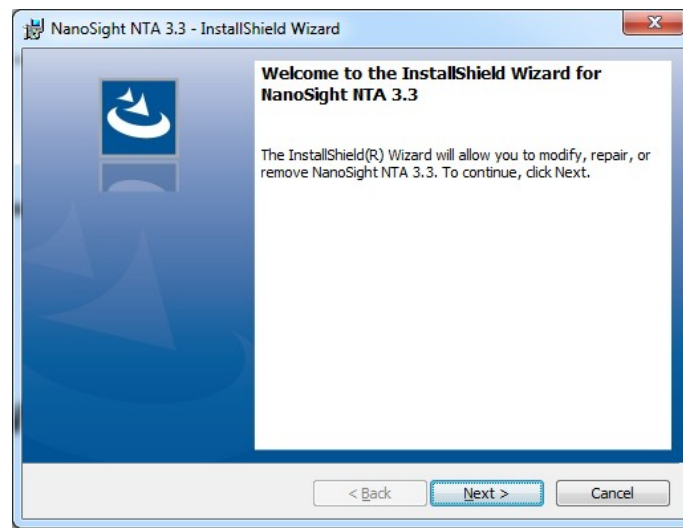
1. Select **Next**, and review and accept the terms of the license agreement

2. Selecting **Next** in this window will install NTA 3.3. Administration rights may be required.

3. After installation is complete select **Finish**

The NTA 3.3 software has now been installed on the computer. This will open the NTA Installation Manager to check further details of your individual system.

The NTA Installation Manager controls security, model selection and camera drivers. When upgrading from NTA 2.3, NTA 3.0, NTA 3.1, or NTA 3.2, all license features should show a green tick with the correct instrument model selected.

Some users may see a message instructing you to uninstall and reinstall the Scientific CMOS drivers. If so, click 'Show Camera Drivers' and click 'Install/Remove' next to Scientific CMOS, follow instructions on screen, restart the computer, and then open the installation manager from the start menu and install the Scientific CMOS drivers again.

Selecting **OK** will close the dialog box and complete the installation of NTA 3.3.

Activation process

If installing NTA 3.3 software on a new computer, when the NTA Installation Manager begins, the Licensing features will not be ticked, and will have a red cross next to them as shown below. Follow the instructions below to activate NTA.
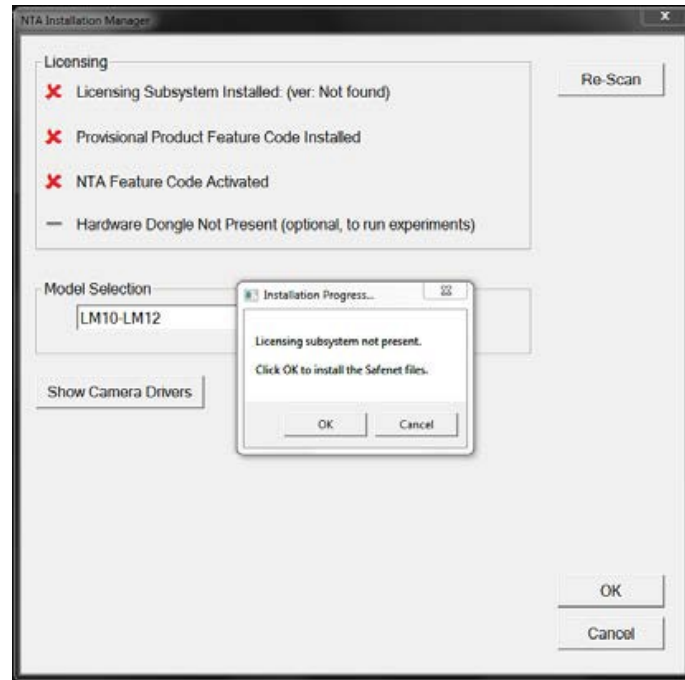
1. Selecting **OK** will run the NTA license installer *Sentinel Run-time Environment Installer*. After completion the *Licensing Subsystem* and *Provisional Product Feature Code* will be installed.
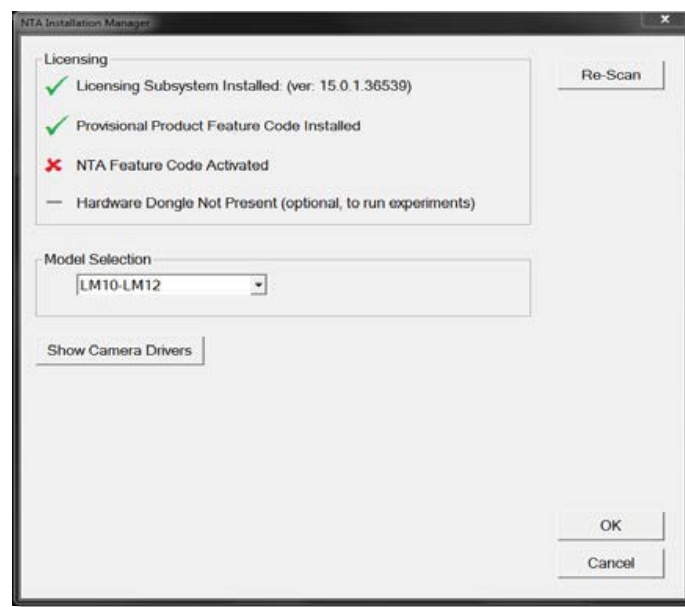
2. Selecting **Re-Scan** again will begin the activation process for the *NTA Feature Code*. If the computer is connected to the internet select **Yes** for online activation. If the computer is not connected to the internet, select **No** and offline activation will be started.
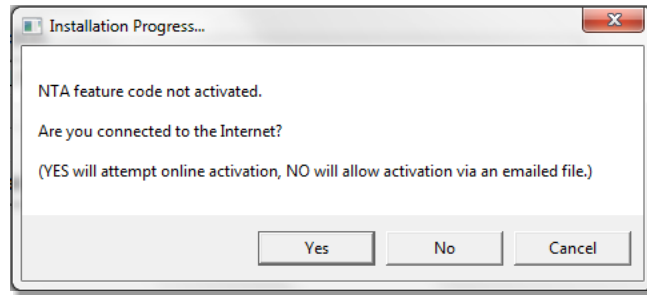
Online Activation

For online activation an activation code is required. Type the product key into the box and click **Activate**. This can be found on a printed sheet inside the first page of the system manual delivered with the instrument. If you do not have an activation code contact helpdesk@malvernpanalytical.com to request a quotation (*part number NTA0003*).
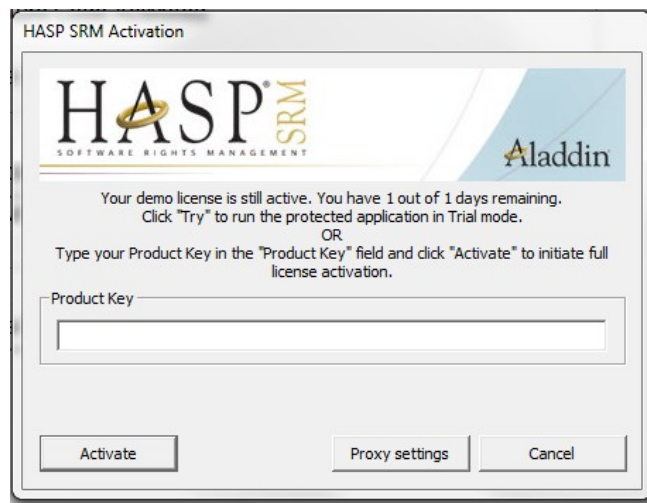
Offline Activation

Select **Collect Information** to generate a c2v file. Save the file to disk using the name of your organization, this is for our reference.

Transfer this file onto an internet enabled computer and email this file (a *.c2v file) along with an activation code to Malvern Panalytical at helpdesk@malvernpanalytical.com. The email should include NanoSight key activation in the subject line and your contact details to allow us to identify you.

A corresponding file will then be generated by Malvern Panalytical (*.v2c file) which should be transferred back to the machine you wish to activate the NanoSight software on.

Select the Apply License Update tab and browse to the *.v2c file sent to you and click **Open**. You will then be informed of a successful activation and be able to start NanoSight NTA 3.3 from the desktop (note the first loading of this may take several minutes).
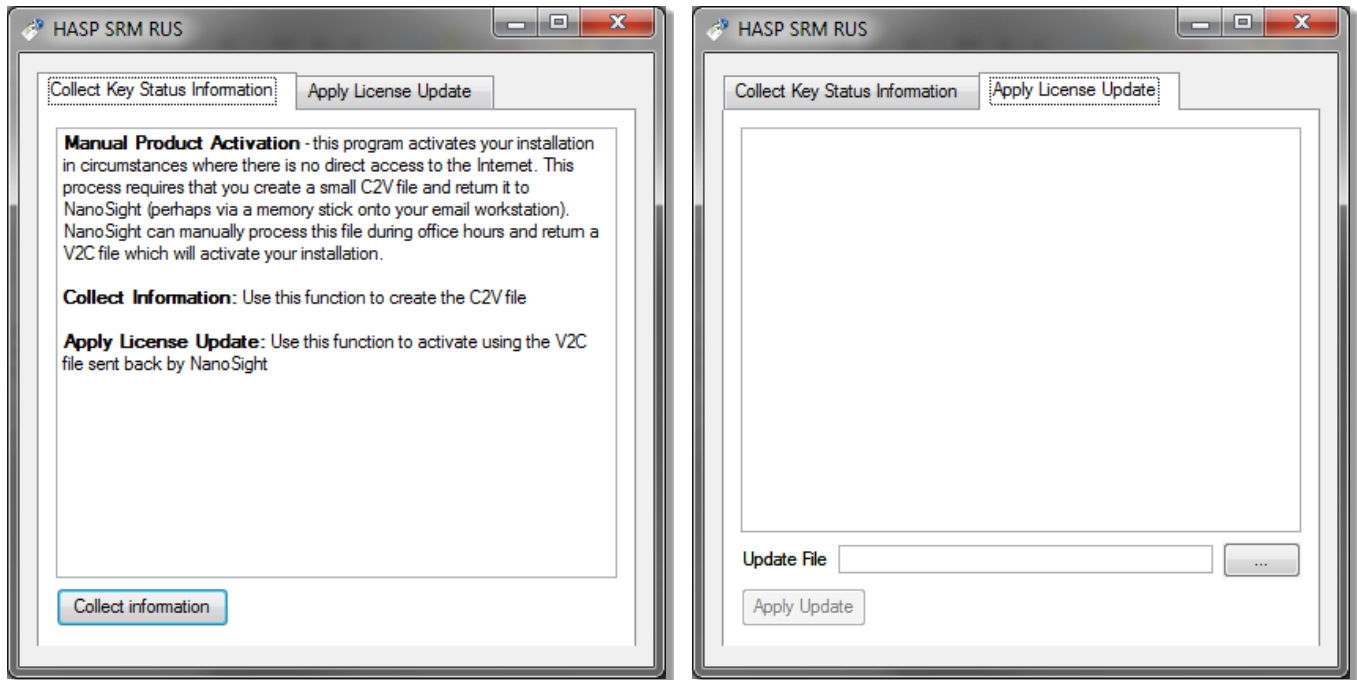
Installing camera drivers:

If running the software with NanoSight hardware, the correct camera driver requires installing. This will be for CCD, EMCCD or Scientific CMOS cameras. This is controlled in the *NTA Installation Manager* window. If you are unsure which camera(s) your system has, please contact the helpdesk, providing the serial number of the instrument.
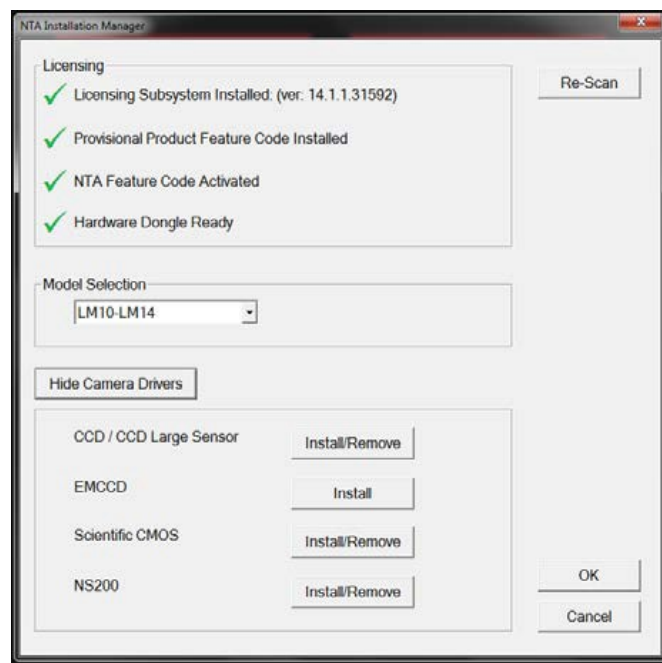
This is not needed if you are using the software for analysis only.

CCD / CCD Large Sensor (Marlin)

1. In the camera driver box click on the **Install/Remove** box adjacent to *CCD / CCD Large Sensor*.
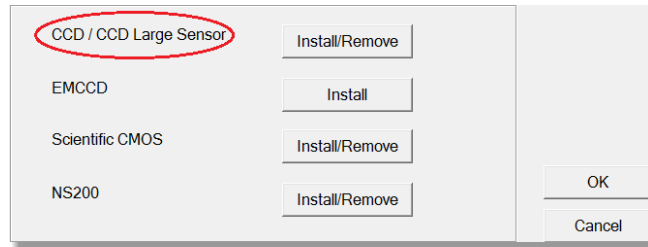
2. This will open the *AVT FirePackage Installation Wizard*.

3. Click **Next** and continue the installation keeping all defaults.

4. In the final window leave the **Run Driver Installer** box ticked before selecting **Finish**.

5. If the **Driver Provider** column is not currently set to **Intek**, set the Switch To column to **Intek** and click **Apply**.

6. If the **Driver Provider** column is currently set to **Intek**, click **ReInstall**.

7. After the driver installation has completed you will need to restart the computer.
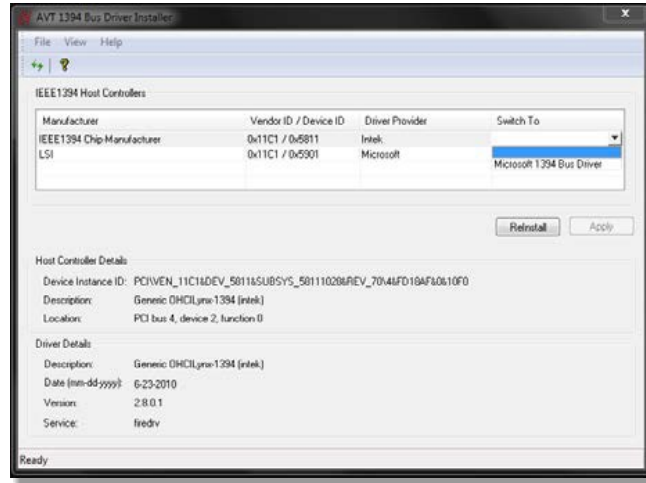
EMCCD (Andor Luca)

1. In the camera driver box click on the **Install** button next to **EMCCD**.
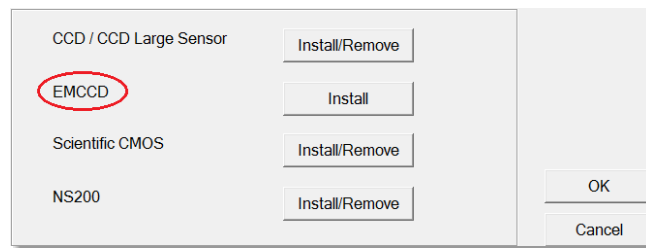
2. This will initiate the *Andor SOLIS setup wizard*. Follow the installation process selecting **Luca** in the camera type's window.
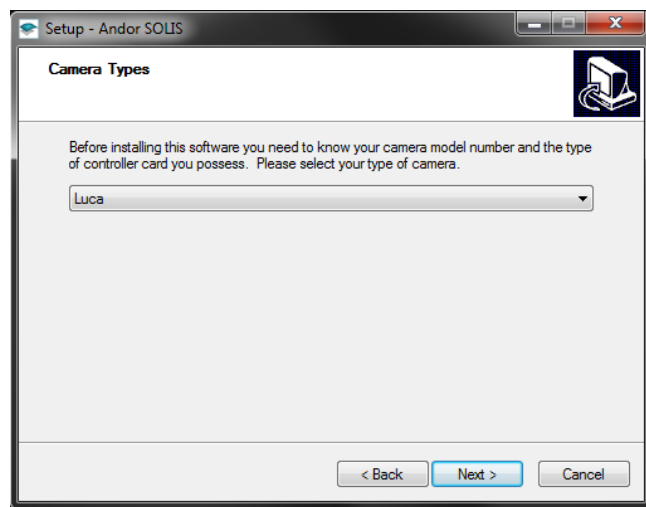
3. Continue the installation process restarting the computer to complete the installation.

Scientific CMOS (Hamamatsu)

1. In the camera driver box click the **Install/Remove** button adjacent to **Scientific CMOS** and select **Yes** if the camera described matches the system in the next window.
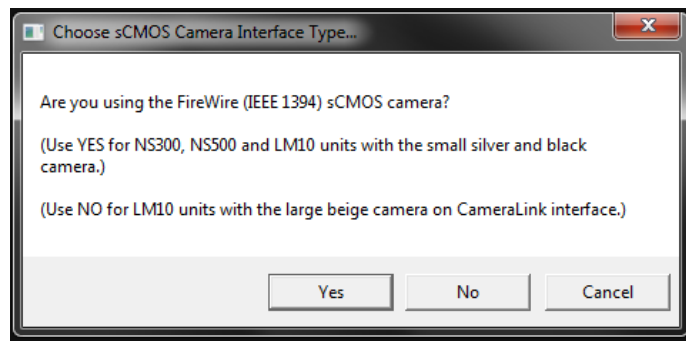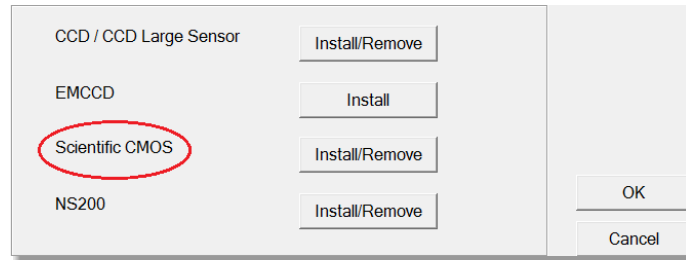
2. This will then run the *InstallShield Wizard for DCAM-API driver*.
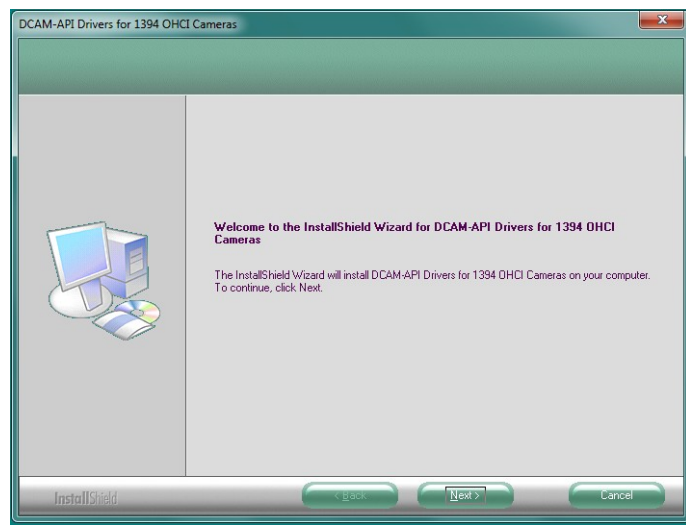
3. Select **Next** and accept the license terms by selecting the appropriate box and clicking **Next**. Finally, select **Install**, it may take a few minutes to install the driver and then select **Finish** at the next dialog window to complete the process.

NS200 (Raptor)

> **IMPORTANT**:
> Ensure the camera is not connected to the computer during installation of the Raptor software

1. In the camera driver box click on the **Install/Remove** button adjacent to **NS200**. This will start the *RaptorVison Capture Setup Wizard*.
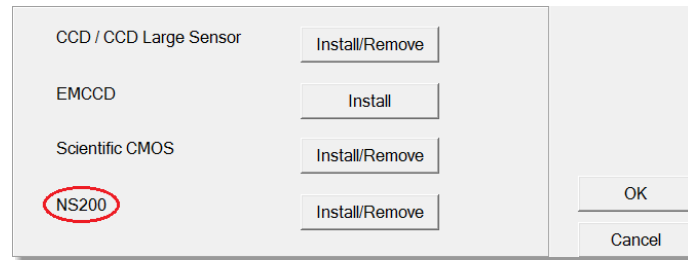
2. Click **Next**, and ensure the **Everyone** option is ticked in the following window. Continue with the installation process.
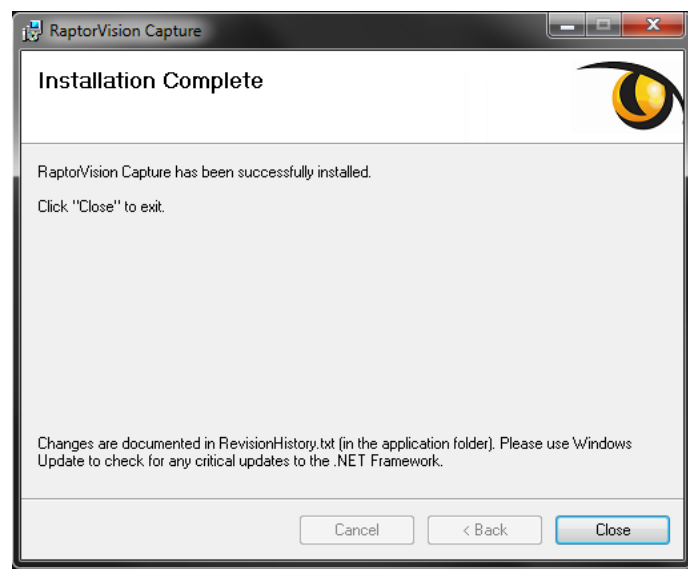
3. The Raptor camera software (but not the drivers) is now installed, click '**Close**'. It is recommended that you check Windows Update at this point. After installing any updates, restart the computer.

4. Connect the NS200 to the computer via the USB lead; automatic driver installation will begin and fail. Navigate to device manager, right-click on **USB camera** and click **Update driver software...**
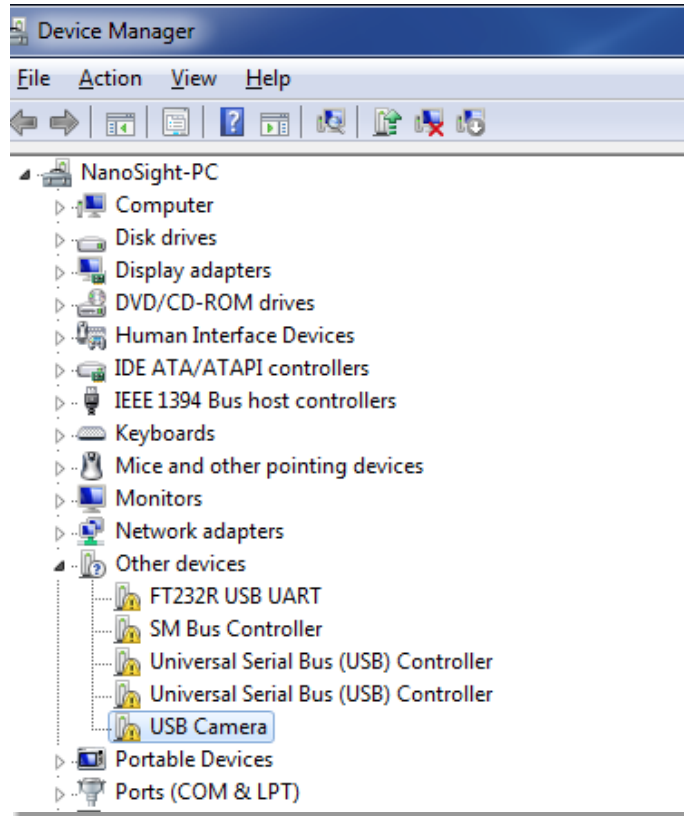
5. Select **Browse my computer for driver software**.
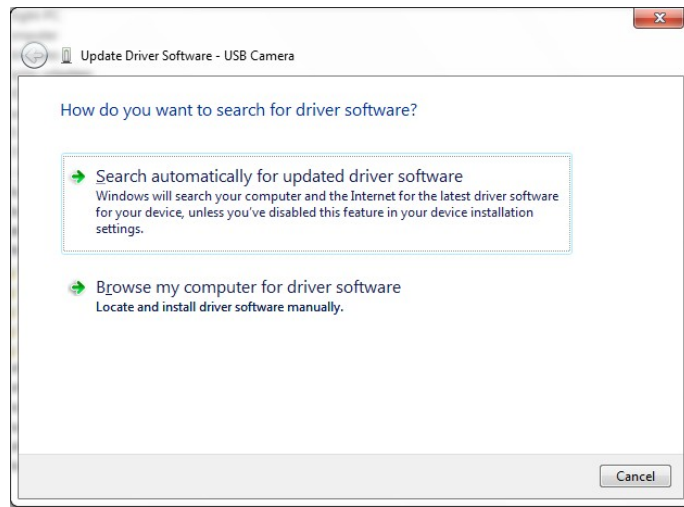
6. Navigate to *C:\Program Files\Raptor Photonics\Bin\Merlin247USB Drivers* to search for drivers and click **Next** to begin installation.
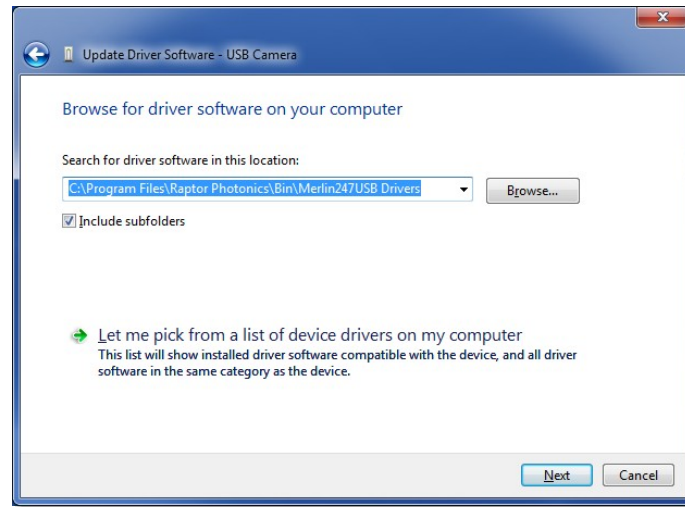
7. If you see a Windows Security window appear, click **Install this driver software anyway**.
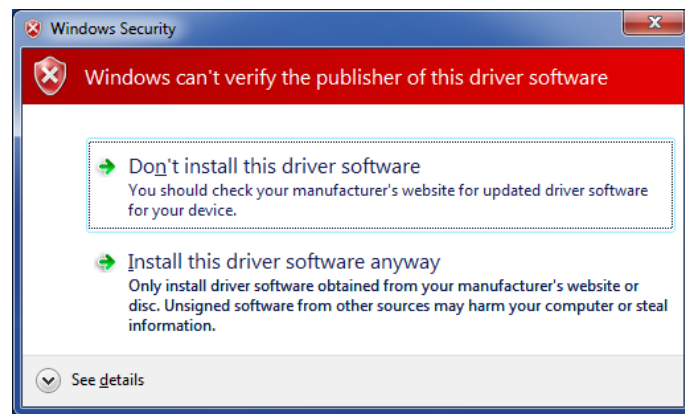
8. Driver installation is complete, click **Close** to exit. <u>Do not</u> run the NTA software yet.
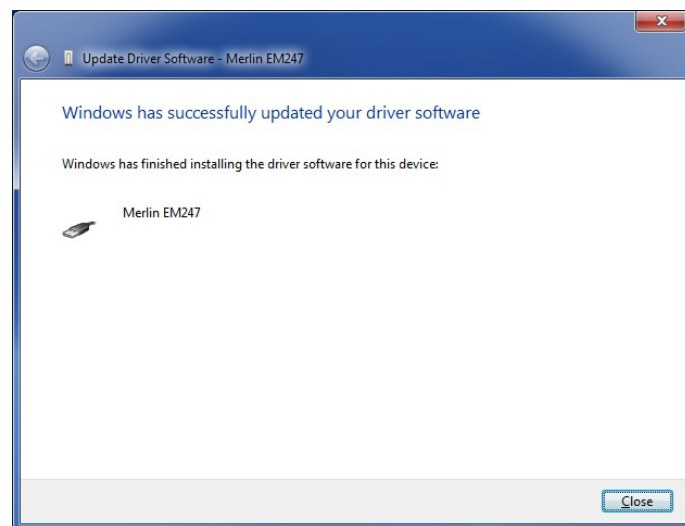
9. Go to **Start–programs–Raptor Photonics–Raptor Vision Capture**, the following message should appear:
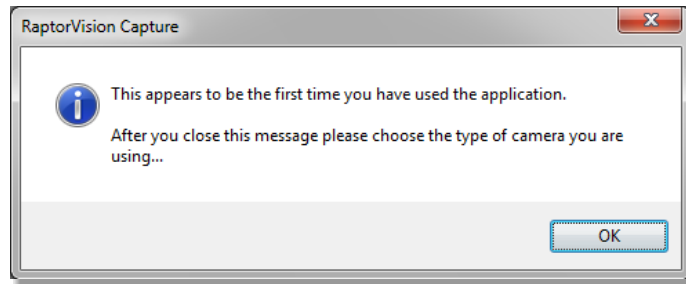
10. Click **OK**

11. Select **Merlin 247, USB** from the list, click **OK**
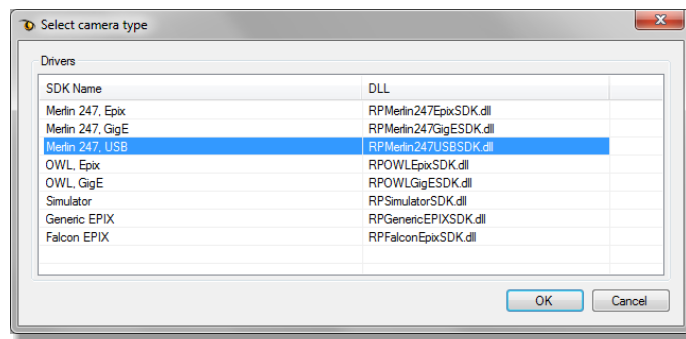
12. Click the **Start** button in the top left corner. The following screen should appear.
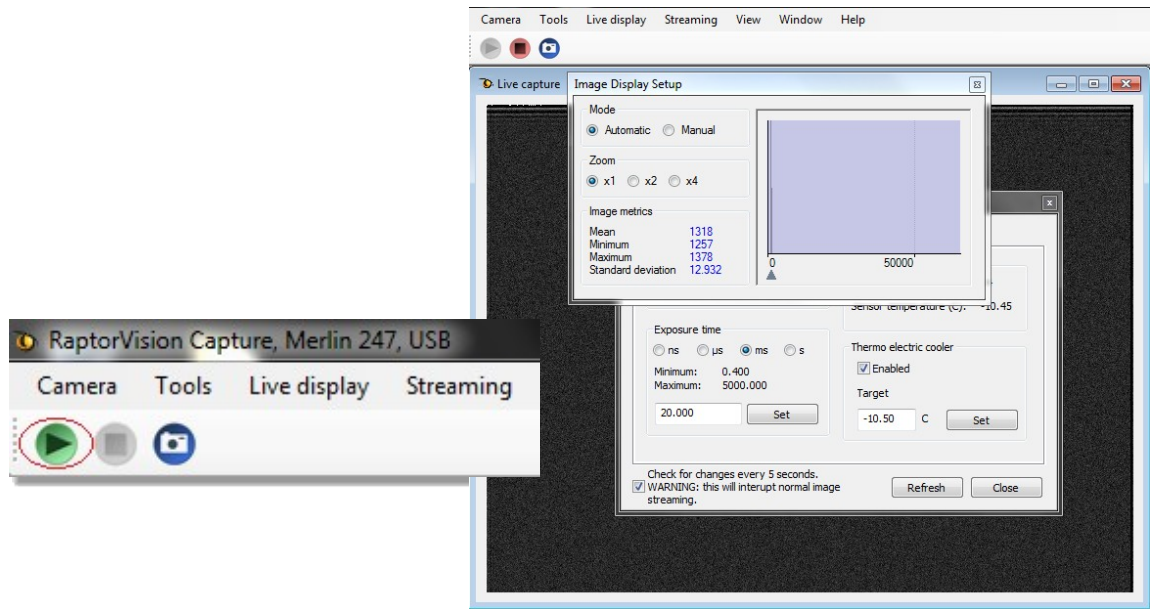
This confirms the driver installation. The Raptor Vision Capture program <u>must</u> then be closed before running NTA.
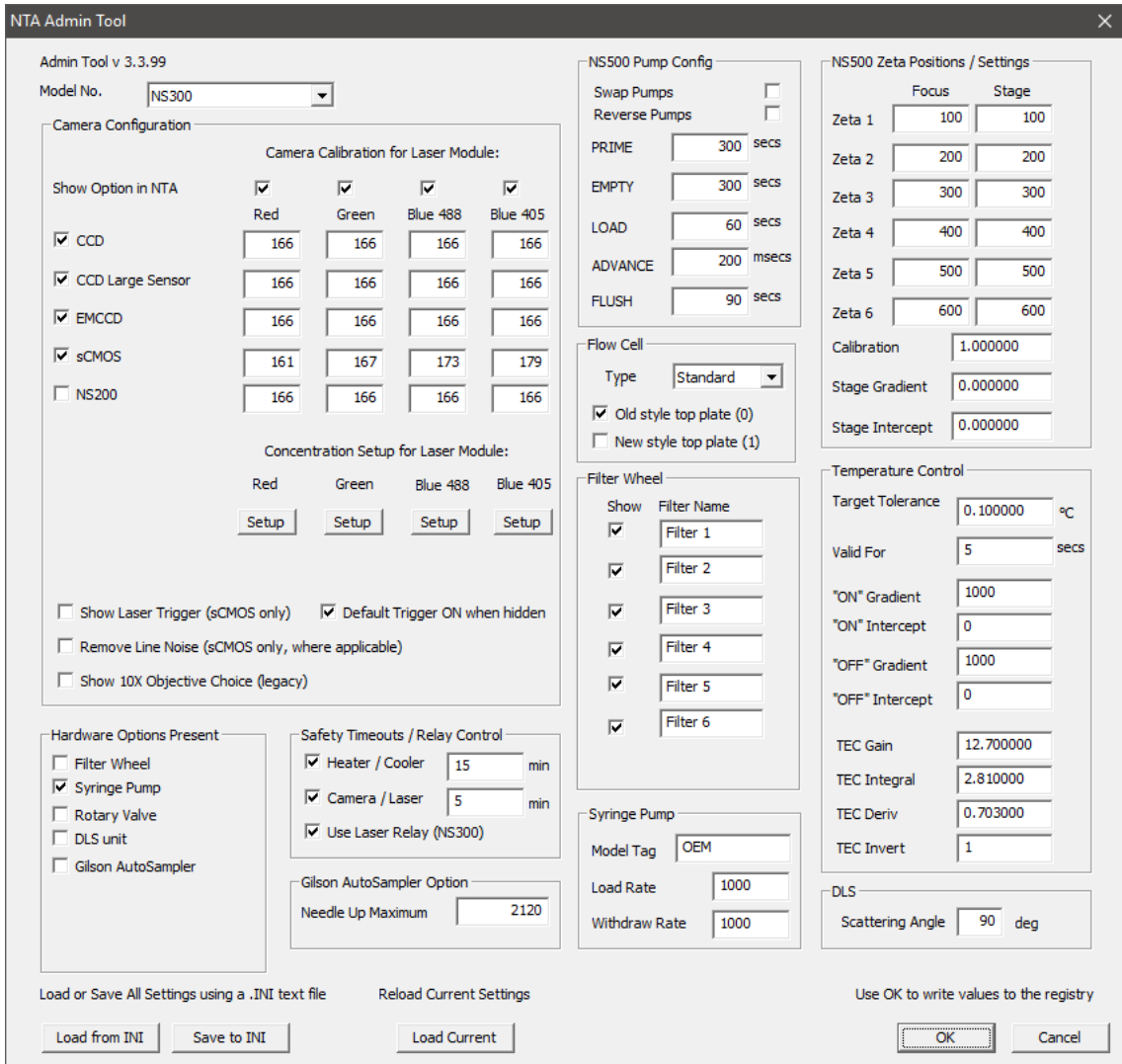
Backing up and transferring system settings

In versions NTA 2.3 and before there exists a configuration file nano.ini which will be located in 'my documents'. This text file can be viewed in a suitable text editor e.g. Notepad. Within this nano.ini file there are system settings that will be updated into the configuration of NTA 3.3. Specifically, lines starting PixelSize=xxx and PixelSizeEM=yyy (where xxx would refer to the CCD camera calibration value and yyy would refer to either CCD large sensor, EMCCD or sCMOS, dependent on the camera in the instrument).

NTA 3.3 stores and accesses important system settings for the NanoSight instrument using the Windows registry. If the registry becomes corrupt or is deleted, the operating system is reinstalled, or the software is transferred to a new computer, these settings will need to be replaced before using the software with the instrument.

If new hardware is purchased, or your instrument is recalibrated, modifications to these settings may be required.

The NTA 3.3 installation includes a user interface to manage these settings. It is called **NTA Admin Tool** and can be accessed from the start menu or via **Preferences–Configuration Settings...** within the NTA 3.3 software. The tool requires administrator rights to run.

If upgrading from NTA 2.3 or earlier, or installing on a new system you should either enter or confirm values xxx and yyy identified in the nano.ini file discussed above are entered in the relevant fields above under camera configuration.

To back-up the current settings click **Save to INI** (bottom left) and save the file in a convenient location on disk.

To reload settings from a back-up (e.g. on a new computer or re-installed operating system) click **Load from INI** and locate the backed-up file on disk.

After loading or changing any settings, click **OK** to save the settings. Clicking **Cancel** will not save any changes to current settings.

Should changes be required after new hardware is purchased or recalibration has taken place, Malvern Panalytical will provide information on the changes required.

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