

NANOSIGHT NTA SOFTWARE: v3.4.4 SOFTWARE UPDATE NOTIFICATION

Introduction

This document details the release of the NanoSight NTA (Non-Sample Assistant): version 3.4.4 software for the LM10, NS300 and NS500 particle tracking analysis systems. It covers software issues fixed and new features introduced. This information is required to perform a risk analysis to determine if the software should be installed. Installation and upgrade instructions are provided.

Please note, this software release contains important security and compliance updates. As such, we strongly recommend that you upgrade to this version of the software at your earliest convenience.

Overview of new features

Below is a summary of the new improvements and features of NTA 3.4.4 compared to NTA 3.4. More details and instructions on the new features are available in the appendices at the end of this document.

Capture

- USB camera support.

Other

- Improved logging. Instrument log files will no longer be overwritten at the start of each day.
- Improved handling of corrupt/unreadable video files.
- New script command for automated/unattended data export.
- Resolved HASP compatibility issues in Windows 10 (Version 2004) and later.

Comparison of features between NTA versions

Feature	NTA 2.3	NTA 3.0	NTA 3.1	NTA 3.2	NTA 3.3	NTA 3.4	NTA 3.4.4
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				
Capture							
Automatic Focus	No	No	Yes (monodispersed only)				
Automatic Camera Level	No	No	Yes				
Live Analysis	Yes	No	No				
EDR Capture	Yes	No	No				
USB Camera Support	No	No	No			Yes	
Algorithms							
High Resolution Size Algorithm (FTLA)	No	Yes	Yes (speed optimised)				
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	Yes	
Windows 10 Compatible	No	No	No	No	No	Yes	

Recommended System Requirements

The recommended computer system requirements for running NTA 3.4.4 software are highlighted in table 1 below. The software can be operated using Windows 10 (Pro and Enterprise). It has been fully tested using Windows 10 Pro (64 bit) (v2004). Any computer currently running a previous version of NTA 3.0 or later will be able to run NTA 3.4.4. A minimum of 1GB free hard disk space is recommended for installation.

Table 1: Recommended system requirements for the NanoSight software.

Feature	Specification
Processor Type	Intel Core i7 Processor (Quad Core, 4th generation or higher) or AMD Ryzen 5 (Quad Core, 1 st generation or higher)
Graphics Processor	Integrated or PCIe graphics card – supporting Open GL Version 1.5 and DX11 (Minimum)
Memory (RAM)	16GB
Hard Disk Storage (OS)	1GB of free space recommended, solid state storage preferential
Storage (Data)	2TB of Internal, external, NAS or cloud storage recommended
Display Resolution	1680 x 1050 or higher
Connectivity ¹	Up to 3x USB 2.0 ports, wired or wireless LAN
Camera Connectivity ²	1x USB 3.0 port (sCMOS USB) or 1x IEEE 1394b port (sCMOS Firewire)
Operating System	Microsoft Windows 10 (Pro or Enterprise) 64 bit – build 2004

¹ List is not exhaustive

² NS300 Rev.I onwards is shipped with Hamamatsu sCMOS USB 3.0 camera and does **NOT** require a firewire port
Most older instruments use a Hamamatsu Firewire or Marlin Firewire camera and require 1x IEEE1394b port

Supported Languages

- English

Software Installation Procedure

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

Instructions are provided for new installations, or upgrades from NTA 3.0 and above.

It is assumed that you have authority to install or update software within your facility. It is also assumed that you have Administrator rights for the system upon which the software is installed, as this is a requirement of the installation process. If you do not have this authority, please consult with your I.T. support department before proceeding.

Required or Supplementary Files

The software, manuals and related documentation should be packaged with this document. All supplementary files can be also downloaded 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).

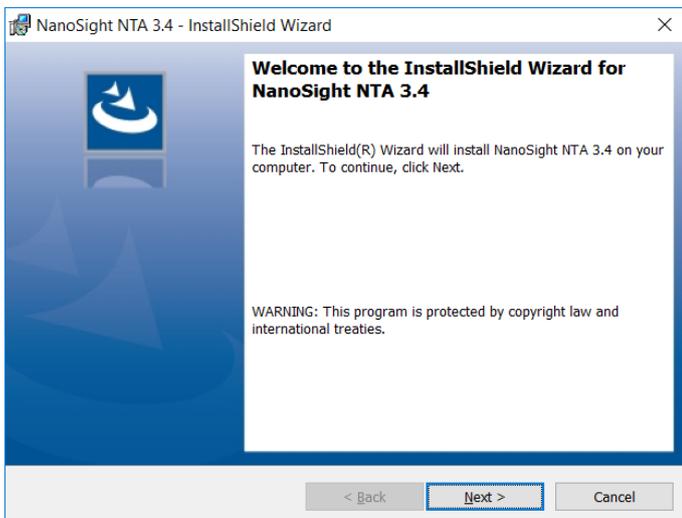
If you have any questions or problems with this installation, or if the software does not work as expected, please contact in the first instance your local representative.

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.

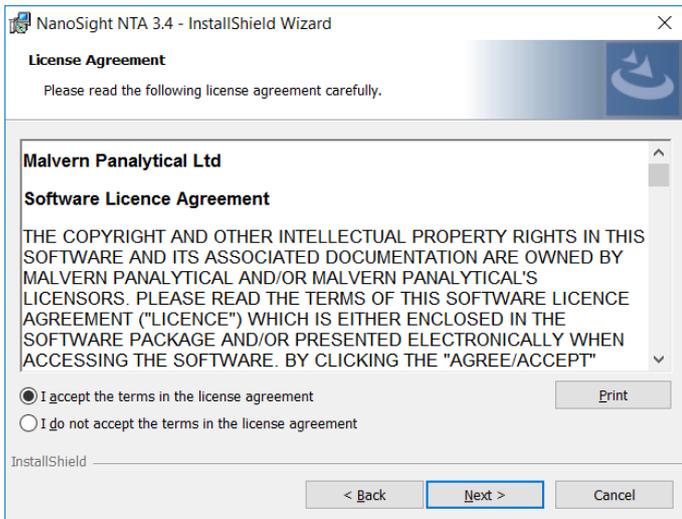
Installation Instructions

In order to install the latest NTA software version, you will need the installer file called 'NanoSight NTA 3.4.4 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 3.4.4 Installer.exe** to start. The installation Wizard will then run through initial installation of NTA 3.4.4 presenting the dialog window below.

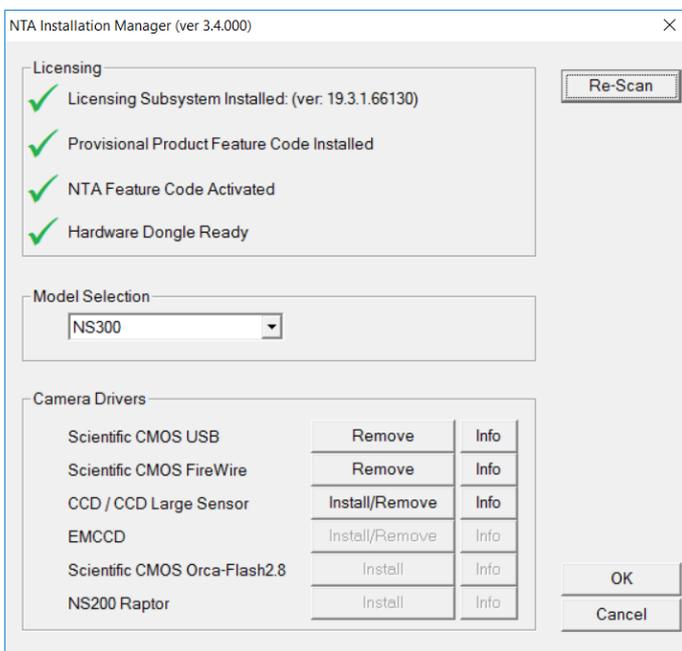


1. Select **Next** and review the license agreement. To continue you must confirm acceptance by selecting the appropriate option.



2. Selecting **Next** in this window will install NTA 3.4.4 Administration rights may be required.
3. After installation is complete select **Finish**.

The NTA 3.4.4 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 3.0, NTA 3.1, NTA 3.2, NTA 3.3 or NTA 3.4, 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 3.4.4.

Uninstall Procedure

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

Known Issues

The following software bugs have been discovered within the software and will be investigated as part of a future release. Please follow the suggested work-around for each issue when operating the software.

Issue	Work Around	Comment
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.	High risk issue
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.	Low risk issue
Windows updates may have an adverse effect on data integrity during overnight and unattended runs.	It is recommended to coordinate with IT administration and/or disconnect from the internet to minimize the risk of Windows updates occurring while the system is in use to prevent critical data loss.	High risk issue
Software may appear to respond slowly to commands.	It is recommended to at least weekly to close the software, reboot Windows and power cycle the NTA instrument, for optimal system performance.	Low risk issue
Installation of antivirus software can affect NTA performance.	It is recommended to coordinate with IT administration to minimize the risk of antivirus scans or updates occurring while the system is in use to prevent critical data loss.	High risk issue
NTA Sample Assistant does not properly install over non-Sample Assistant and visa-versa.	Recommend uninstalling the previous version before switching between Sample Assistant and non-Sample Assistant.	Low risk issue
Software crash during processing when special characters are included in base file name.	Recommend avoiding the use of special characters (% , # , etc.) in the base file name.	Medium risk issue

Prime Fluidics last stage runs forever when using the LVFC with NS500.	Once the priming routine has reached staged three, it will carry on endlessly, displaying stages four, five, six etc. Recommend aborting the priming sequence at this point. The LVFC will be suitably primed.	Low risk issue
Wrong guidance image for NS500 empty fluidics - introduced in NTA 3.3.	Recommend leaving all tubing connected for emptying/flushing the fluidics.	Observation
Selecting too many experiments can lower the displayed camera frame refresh rate	Note. This is a display issue only and does not affect the frame rate of captured video data.	Observation
NTA sometimes freezes when detecting hardware.	Recommend restarting the PC. This issue only occurs when the system has sat idle for long periods of time and Windows disconnects the USB connection.	Intermittent observation
HASP licensing subsystem installation needs installing twice.	When installing the HASP licensing subsystem, the process will end but you will be asked to install the licensing subsystem again. Click OK to repeat the process.	Intermittent observation

Appendix I: New Installation of NTA 3.4.4

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.
3. Obtain the instrument specific configuration file called **Nano.INI** – see appendix IV for more information



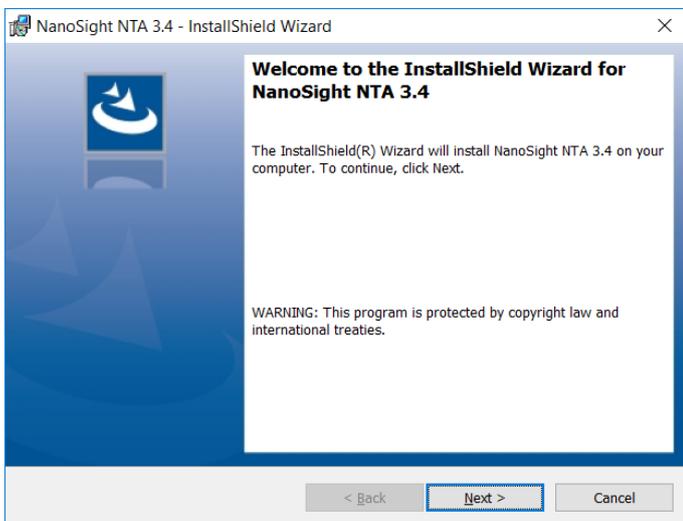
Note:

The Nano.INI can be exported from your old PC. It should also be backed up on the local PC and a copy is retained by Malvern Panalytical

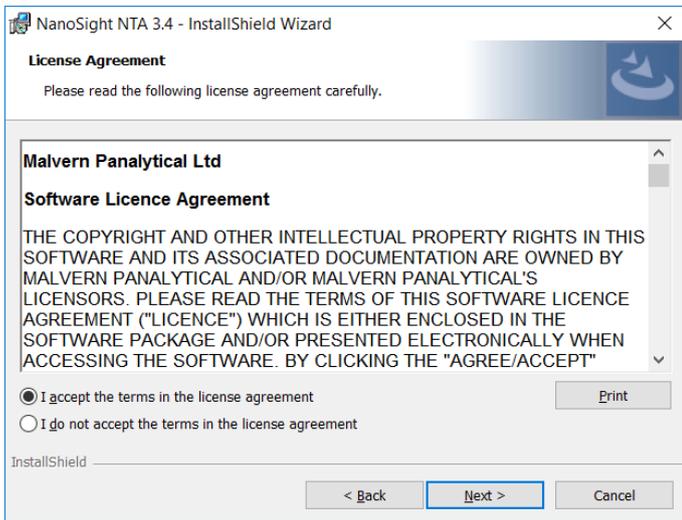
In order to install the software, you will need the installer file called '*NanoSight NTA 3.4.4 Installer.exe*'.

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

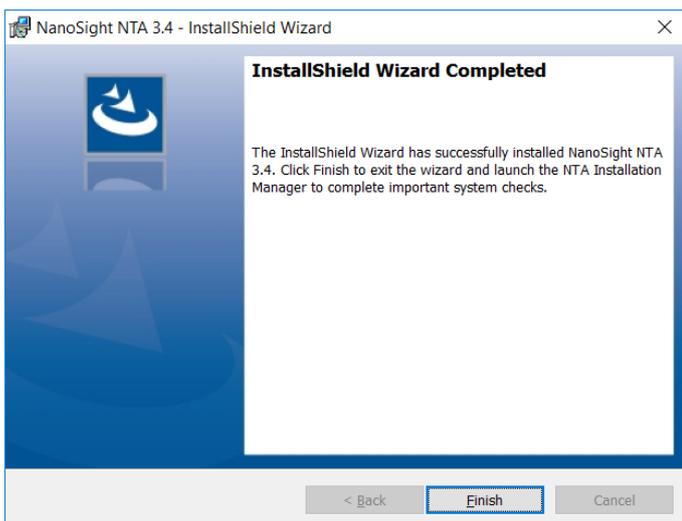
If the installer is contained in a zipped file, extract to a convenient location and double-click **NanoSight NTA 3.4.4 Installer.exe** to start. The installation Wizard will then run through initial installation of NTA 3.4.4 presenting the dialog window below.



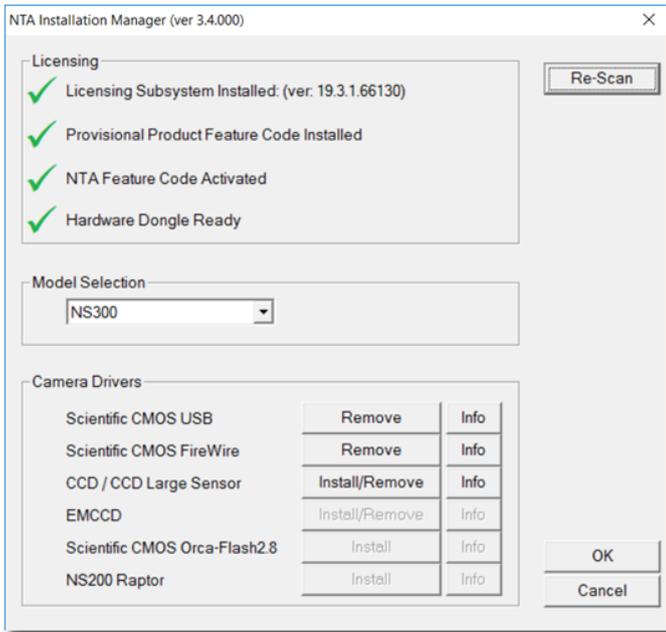
1. Select **Next**, and review and accept the terms of the license agreement



2. Selecting **Next** in this window will install NTA 3.4.4. Administration rights may be required.
3. After installation is complete select **Finish**



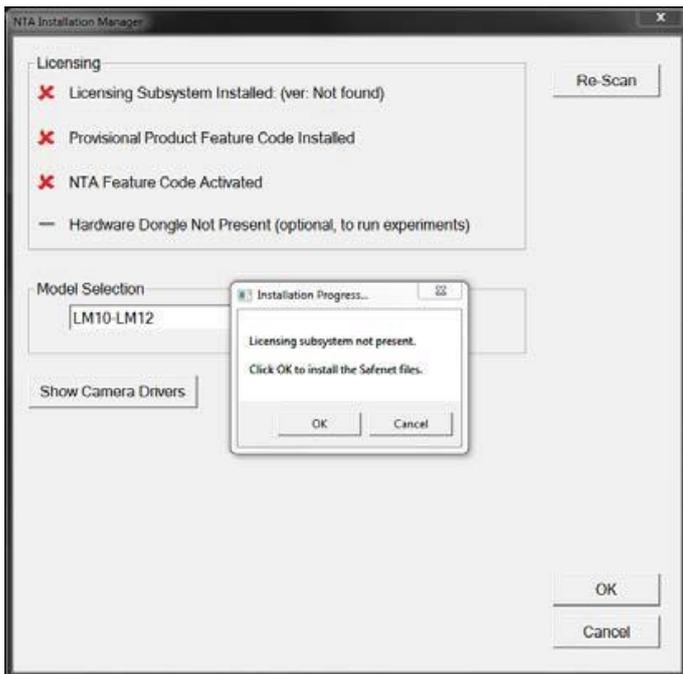
The NTA 3.4.4 software has now been installed on the computer. This will open the NTA Installation Manager to check further details of your individual system.



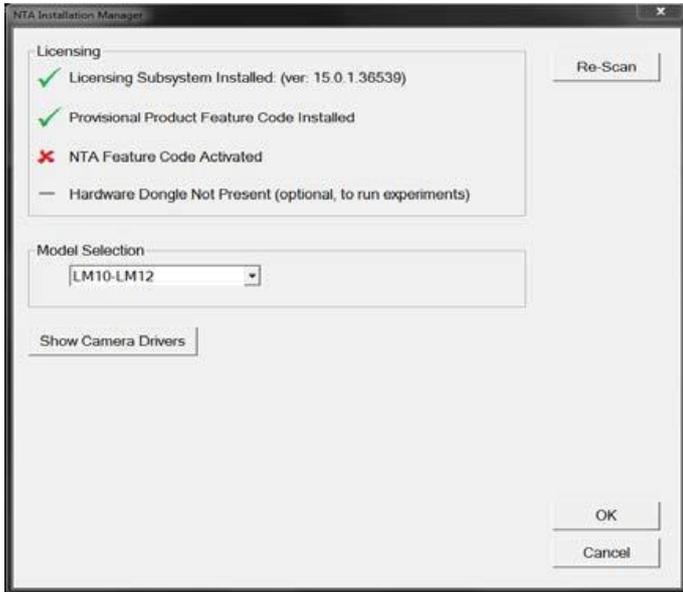
The NTA Installation Manager controls security, model selection and camera drivers.

Appendix II: Activation process

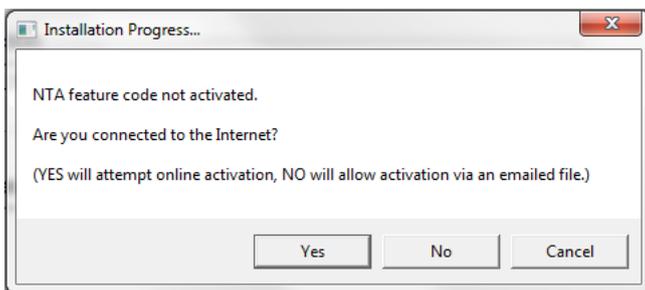
When the NTA Installation Manager begins, the Licensing features will not be ticked, and will have a red cross next to them as shown below. Follow the instructions below to activate NTA.



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.

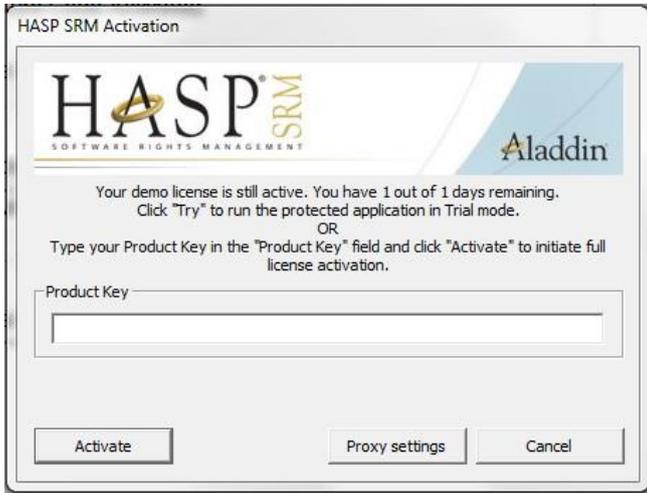


2. Selecting **Re-Scan** again will begin the activation process for the *NTA Feature Code*. If the computer is connected to the internet select **Yes** for online activation. If the computer is not connected to the internet, select **No** and offline activation will be started.



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 and is also stored in a text file on the local PC in the folder **C:\NTA Backup**. If you do not have an activation code contact helpdesk@malvernpanalytical.com to request a quotation (*part number NTA0003*).



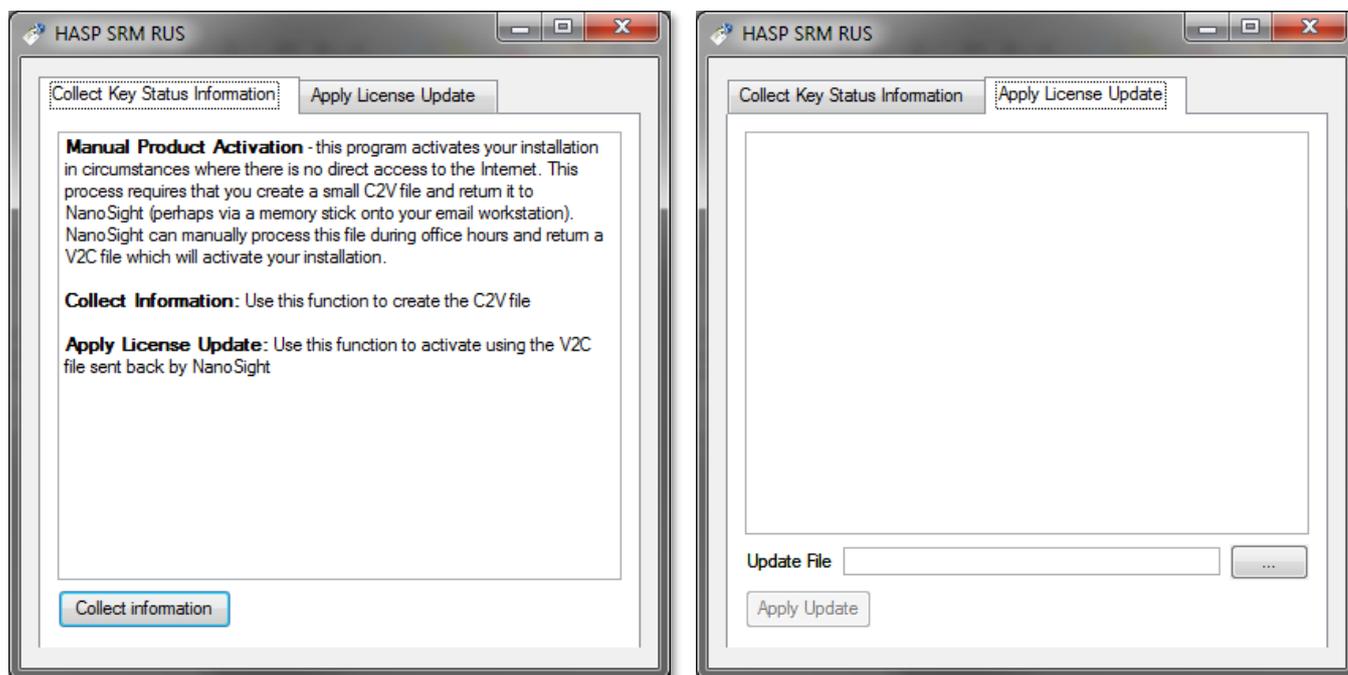
Offline Activation

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 the **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.

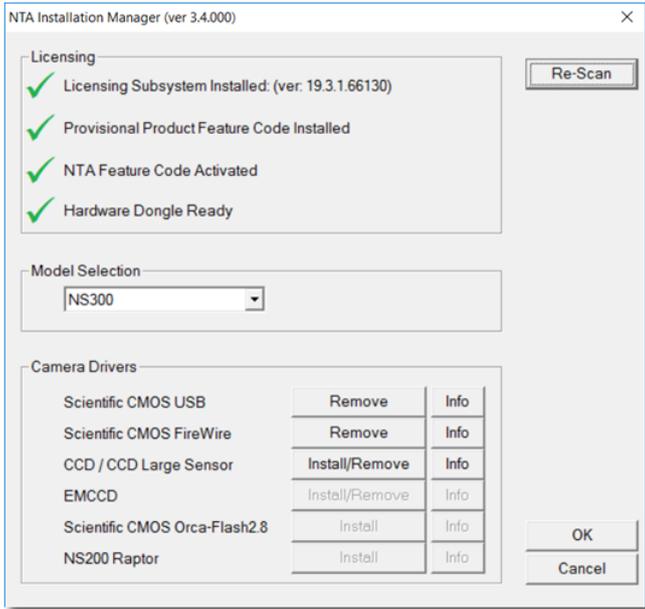
Select the Apply License Update tab and browse to the *.v2c file sent to you and click **Open**. You will then be informed of a successful activation and be able to start NanoSight NTA 3.4.4 from the desktop (note the first loading of this may take several minutes).



Note:
HASP Activation product keys are not transferable between computers.

Appendix III: 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.

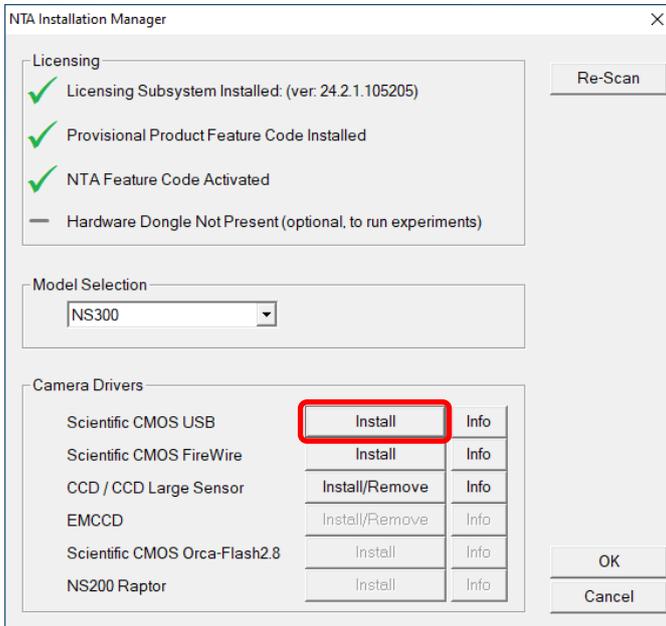


Note:

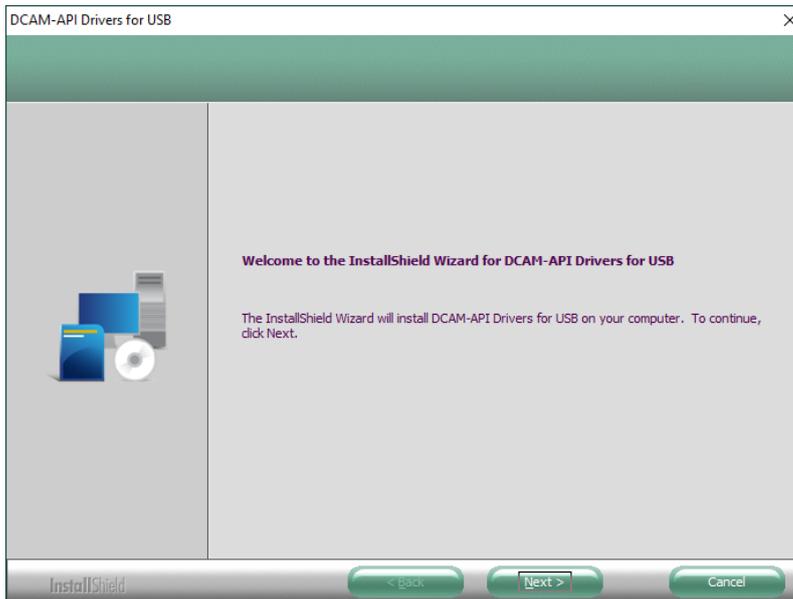
Camera drivers are not required if you are using the software for analysis only

Scientific CMOS (Hamamatsu) USB

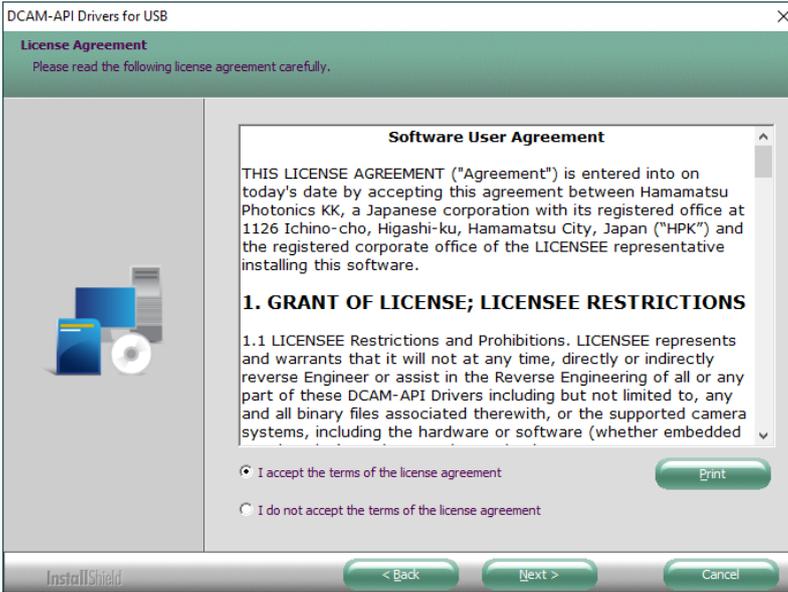
1. In the camera driver box click the **Install/Remove** button adjacent to *Scientific CMOS USB*.



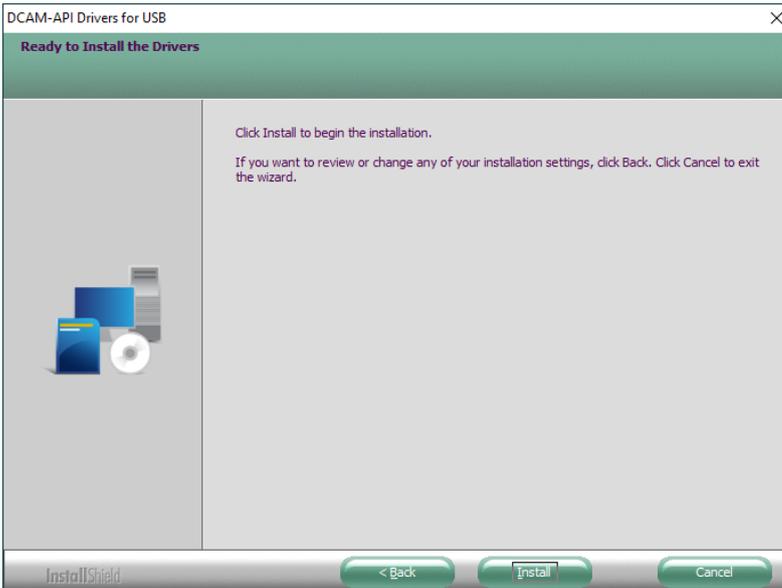
2. This will then run the *InstallShield Wizard for DCAM-API driver*.
3. Click **Next**.



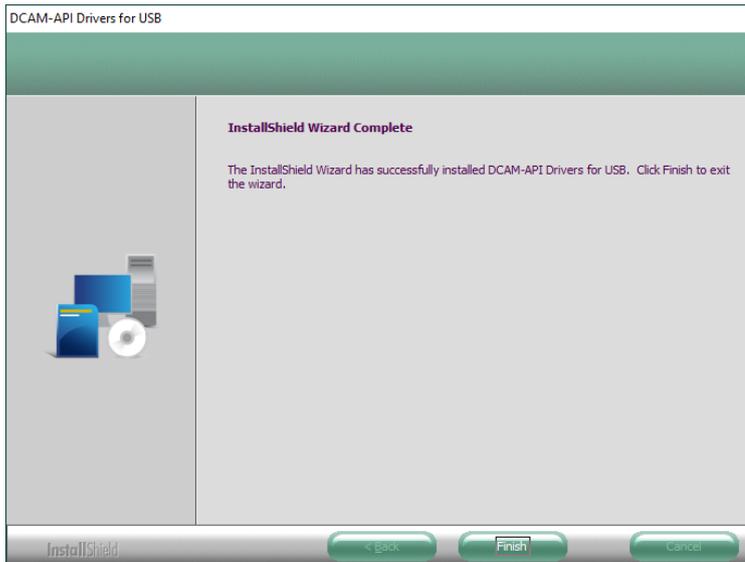
4. Accept the license terms by selecting the appropriate box and click **Next**.



5. Click **Install**, it may take a few minutes to install the driver.

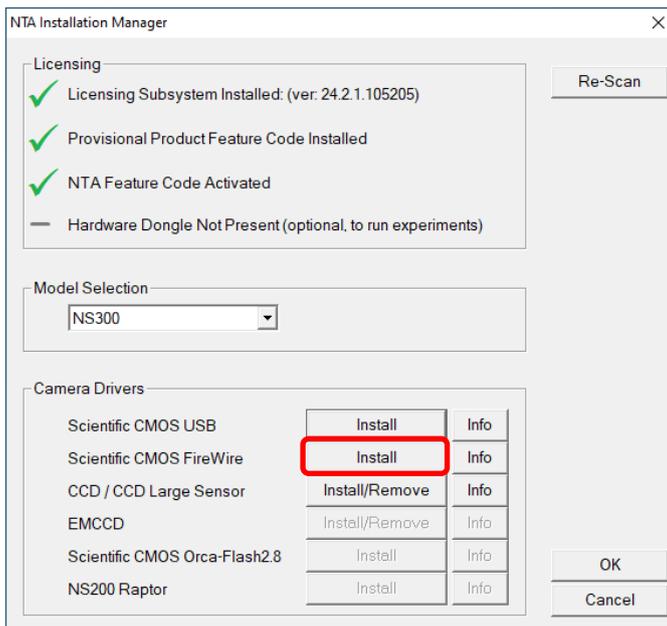


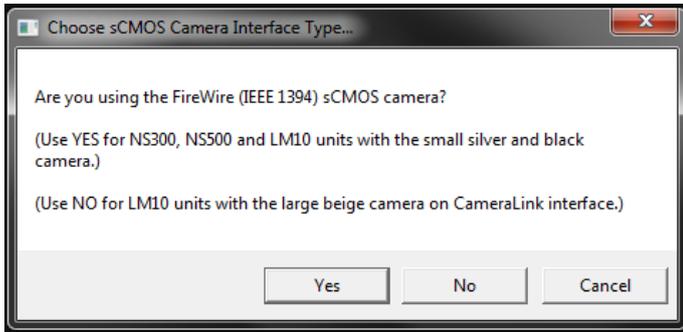
6. Select **Finish** at the next dialog window to complete the process.



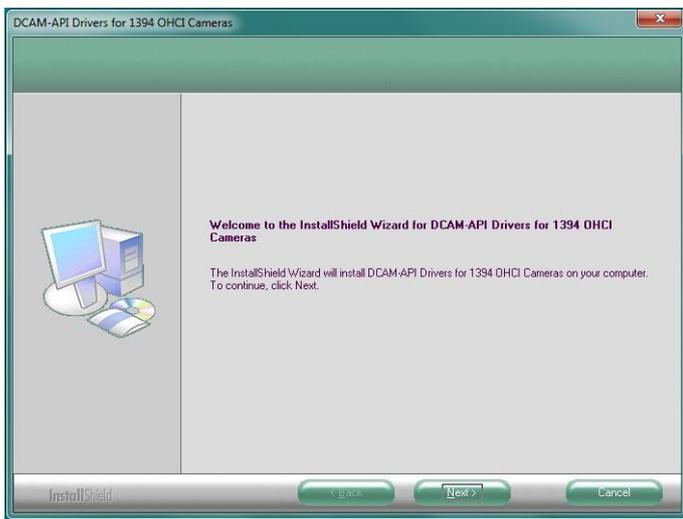
Scientific CMOS (Hamamatsu) FireWire

1. In the camera driver box click the **Install/Remove** button adjacent to *Scientific CMOS Firewire*.
2. Select **Yes** if the camera described matches the system in the next window.





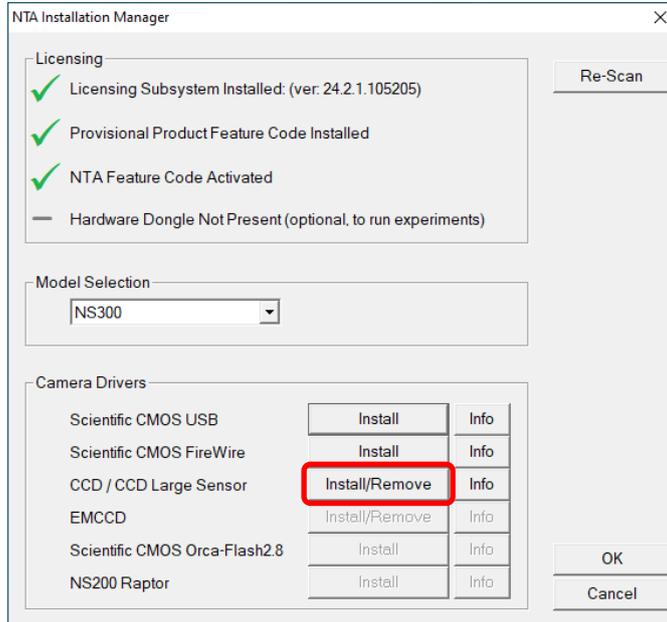
3. This will then run the *InstallShield Wizard for DCAM-API driver*.



4. 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.

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.



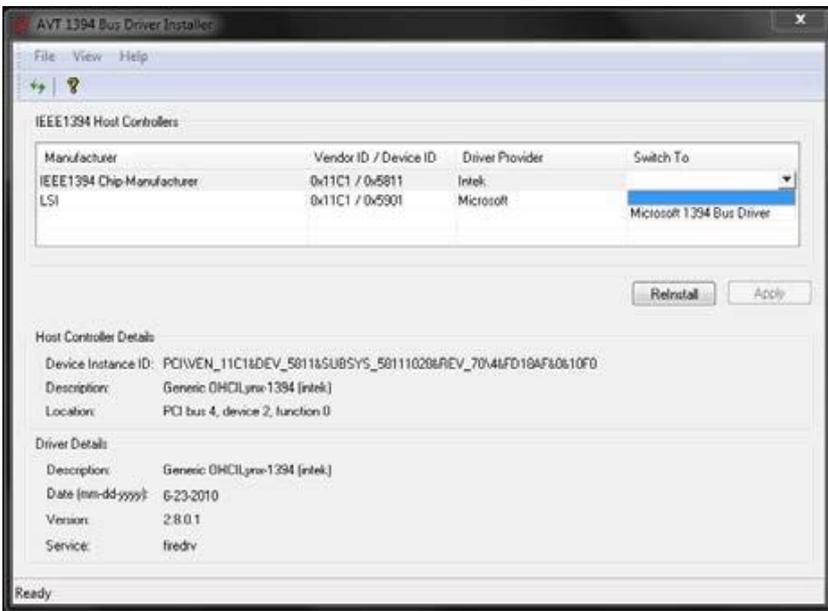
4. In the final window leave the **Run Driver Installer** box ticked before selecting **Finish**.



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

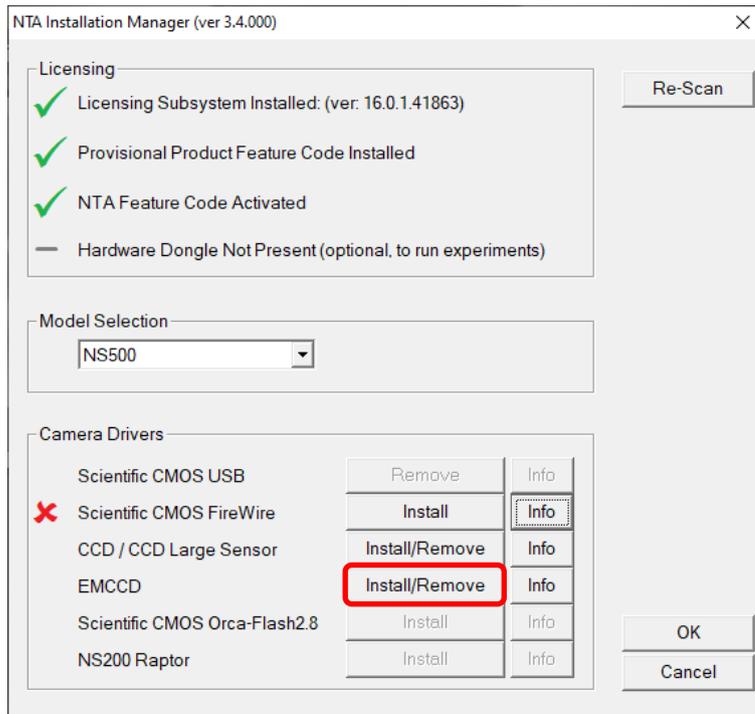
6. If the **Driver Provider** column is currently set to **Intek**, click **Reinstall**.

7. After the driver installation has completed you will need to restart the computer.

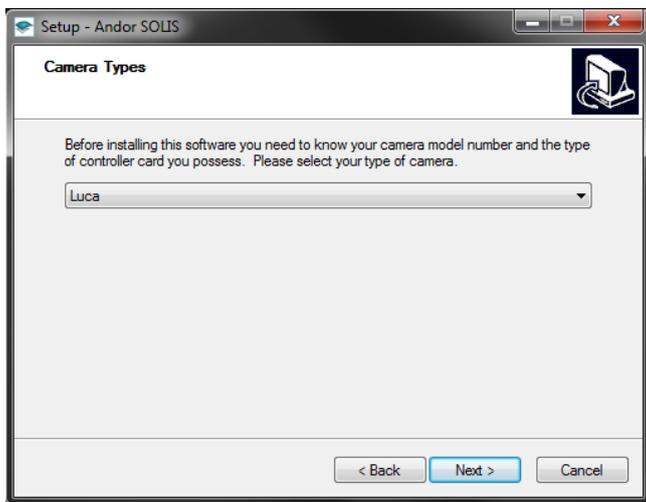


EMCCD (Andor Luca)

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.



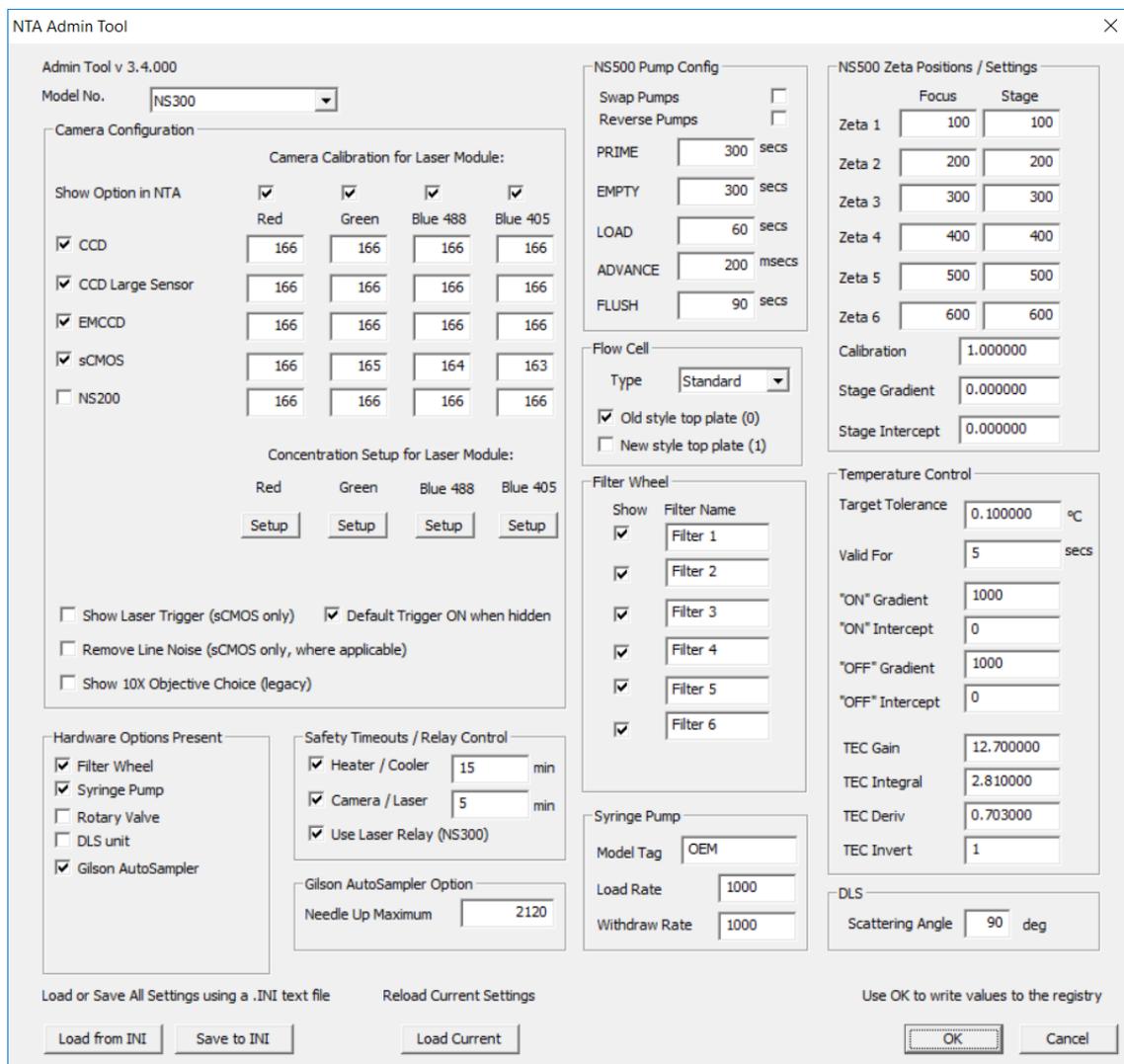
3. Continue the installation process restarting the computer to complete the installation.

Appendix IV: Backing up and transferring system settings

NTA 3.4.4 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 3.4.4 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 3.4.4 software. The tool requires administrator rights to run.



Admin Tool v 3.4.000
Model No. NS300

Camera Configuration

Camera Calibration for Laser Module:

Show Option in NTA	Red	Green	Blue 488	Blue 405
<input checked="" type="checkbox"/> CCD	166	166	166	166
<input checked="" type="checkbox"/> CCD Large Sensor	166	166	166	166
<input checked="" type="checkbox"/> EMCCD	166	166	166	166
<input checked="" type="checkbox"/> sCMOS	166	165	164	163
<input type="checkbox"/> NS200	166	166	166	166

Concentration Setup for Laser Module:

Red	Green	Blue 488	Blue 405
Setup	Setup	Setup	Setup

Show Laser Trigger (sCMOS only) Default Trigger ON when hidden
 Remove Line Noise (sCMOS only, where applicable)
 Show 10X Objective Choice (legacy)

Hardware Options Present

Filter Wheel
 Syringe Pump
 Rotary Valve
 DLS unit
 Gilson AutoSampler

Safety Timeouts / Relay Control

Heater / Cooler 15 min
 Camera / Laser 5 min
 Use Laser Relay (NS300)

Gilson AutoSampler Option

Needle Up Maximum 2120

NS500 Pump Config

Swap Pumps
Reverse Pumps
PRIME 300 secs
EMPTY 300 secs
LOAD 60 secs
ADVANCE 200 msecs
FLUSH 90 secs

Flow Cell

Type Standard
 Old style top plate (0)
 New style top plate (1)

Filter Wheel

Show	Filter Name
<input checked="" type="checkbox"/>	Filter 1
<input checked="" type="checkbox"/>	Filter 2
<input checked="" type="checkbox"/>	Filter 3
<input checked="" type="checkbox"/>	Filter 4
<input checked="" type="checkbox"/>	Filter 5
<input checked="" type="checkbox"/>	Filter 6

Syringe Pump

Model Tag OEM
Load Rate 1000
Withdraw Rate 1000

NS500 Zeta Positions / Settings

	Focus	Stage
Zeta 1	100	100
Zeta 2	200	200
Zeta 3	300	300
Zeta 4	400	400
Zeta 5	500	500
Zeta 6	600	600

Calibration 1.000000
Stage Gradient 0.000000
Stage Intercept 0.000000

Temperature Control

Target Tolerance 0.100000 °C
Valid For 5 secs
"ON" Gradient 1000
"ON" Intercept 0
"OFF" Gradient 1000
"OFF" Intercept 0
TEC Gain 12.700000
TEC Integral 2.810000
TEC Deriv 0.703000
TEC Invert 1

DLS

Scattering Angle 90 deg

Load or Save All Settings using a .INI text file Reload Current Settings Use OK to write values to the registry

Load from INI Save to INI Load Current OK Cancel

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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