INSTALLATION MANUAL

INPHO SOFTWARE V15

Trimble.

Installation Manual for version 15.0 and higher

Table of Contents

1. Installation instructions

1.1. System requirements

In general, no specific computer hardware is needed to run the software. However, to obtain best performance an up-to-date computer should be used. A fast CPU with 48 cores (depending on the software) could be used for processing and fast disks (SSDs) as well as a adequate RAM and a high-level NVIDIA Quadro graphics board (for stereo systems) will improve the processing times considerably.
For a smooth performance of our software we recommend at least 64 GB RAM or more.

All programs and functions are tested and released for the Windows 64bit platform – WIN10 and WIN 11. Keep your OS up to date.
32 bit platforms are no longer supported!
The support of Windows 7 operating systems is discontinued. The inpho software may still run on WIN7 systems, but is no longer tested on this OS.

We recommend to use a NVIDIA graphics card to use the GPU processing in the SGM workflows in MATCH-3DX. Please keep the driver up to date.
When using TBC Photogrammetry, note that AMD processors are not supported.

Installing our software about 300MB of free disk space is necessary. Provide for the new dense point cloud technology enough disk space for the temporary files (about 10 times the capacity of the imported image data). Administrative rights are only needed to use the task schedulers. Running the software we suggest power user rights.

1.1.1. Stereo systems

DTMaster, the Multi-Photo-Measurement Tool (PMT) of MATCH-AT and UASMaster offer stereo viewing with Open GL stereo graphics or the Anaglyph stereo viewing.

Stereo with Open GL graphics requires:
A valid license for DTMaster (stereo) and/or MATCH-AT and/or UASMaster, high level Open GL graphic cards those are able to run sequential stereo mode in a window. For its applications Trimble Geospatial /Stuttgart is using the Quad Buffered OpenGL technology, that's why only certain of NVIDIA Quadro graphics cards are supported. We recognized that using ATI graphic boards creating security problems running DTMaster so we cannot suggest them. If you use an ATI graphic board it is strongly recommended to keep the driver updated.
Stereo with anaglyph stereo viewing
In case no stereo graphics board and/or no stereo viewing system is available, the stereo presentation will use the anaglyph mode. An OpenGL 3.3 compatible graphics card supporting GL_ARB_fragment_program is required.

1.2. Hardware setup

1.2.1. NVIDIA 3D Vision / Active Stereo

In 2009 a new kind of TFT monitors were launched at the market. These monitors are able to run on 120 Hz. In cooperation with NVIDIA a new stereo system - the NVIDIA 3D Vision system (glasses, emitter and driver) - was offered. The production was stopped in 2017.
Nevertheless there are possibilities to use this system following the instructions provided from our partner DAT/EM.

1.2.2. How to set up NVIDIA 3D Vision and “Three-D Vision” in Windows 10 and 11

News in June 2024, provided from the Technical Support of our partner DAT/EM

How to Updated 3DVision setup instructions

The following description will show how to set up NVIDIA 3DVision and the generic brand called “Three-D Vision” for use with DAT/EM stereo products, such as Summit Evolution, Stereo Viewer and LandScape. Correspondingly this will work also for the stereo applications of Trimble Photogrammetry and UASMaster.

Historical image of 3D Vision from DAT/EM’s 2009 archive. With the right video card, monitor, drivers, and settings, 3D Viision stereo can still be set up in 2023 with Windows10 and 11 Professional and Enterprise operating systems

1.2.2.1. Video Cards and Drivers

NVidia discontinued their name-brand 3DVision 2 Kit hardware several years ago. Currently, there is a generic hardware kit called “Three-D Vision” that is available in 2024. The two kit types contain the same technology and have the same NVidia video card and driver requirements. We will refer to both the brand-name and generic versions as “3DVision” throughout this document, except where specifically named as “Three-D Vision.”
As of the second quarter of 2024, 3DVision is still working with the latest NVidia video card driver updates and the 2019 emitter driver in both Windows 10 and 11.

The following video cards and drivers work with 3DVision:

- Supported cards (as of the second quarter of 2024) are:
  NVIDIA Quadro K-, M-, and P-series (these are the oldest and slowest, but can produce stereo);
  Quadro RTX series, including “RTX Ada” versions.
- DAT/EM recommends dthe “model 4000” or “4xxx”, such as the RTX A4000 or RTX A4500, which offer a good value to performance ratio. For the lower-cost, lower-specifications cards (usually lower numbered), the superimposition in Summit will be slow. For the more expensive, higher specifications cards (usually higher numbered), you may never see enough return on investment, however, although Summit does not need it, a higher-specifications card (for example RTX A5000 or RTX A6000)may be needed for other applications that require CUDA/GPU processing (as MATCH-3DX). Be sure to consider any other brands of software when deciding on a video card model.

- Customers have reported that their K- and M-series video card are too slow to refresh large numbers of superimposition vectors. Consider replacing these cards to reduce wait times and increase productivity.

- In September 2019, NVIDIA released a decoupled 3DVision emitter driver version 390.41. This requires you to install the newest video driver for the video card first, than install the emitter driver. Instaltion oder, options, and rebooting in between are important. Follow the instruction below for best success.

The following video cards and drivers DO NOT work with 3DVision:

- Old Quadro FX series and Fermi-generation cards, such as the Quadro FX3700, Quadro 4000, and Quadro 5000 do not work. There are no Windows 10/11 drivers for them.
- Nvidia “GeForce” cards do not work for 3DVision even if they have “RTX” in the model name. They do not support frame-sequential OpenGL stereo.
- Bundled NVidia video drivers dated 2019 or earlier do not work with the latest Windows 10/11 updates. Even the older decoupled video drivers (~2021 and older) do not work with Windows 10/11. Newer drivers contain important NVidia security updates. Do not install old video drivers. Get the newest driver for the video card model. Instructions below.

1.2.2.2. Monitors

A special monitor must be used for 3DVision. It must be capable of at least a 120Hz refresh rate, but the display refresh rate alone does not guarantee it will work. Most monitors on the market do not work.

We could categorize to monitors that work into three types:

1. Legacy (out-of-production) monitors with DVI-D or DVI-I.
   These were mostly manufactured before 2017. These are often – but not always – labeled “NVidia 3DVision Ready”. They often require a powered DVI-D to DisplayPort (DP) adapter (more information below) when using a modern video card with DisplayPort connectors.
   Important: Do not try to use an old DVI-D or DVI-I monitor whin connecting to a “Full-featured USB-C with DisplayPort alternate mode” port on a new Dell laptop; there is no high-speed DVI-to-USB-C adapter know to DAT/EM that can make this work. If you hae a new Dell laptop, purchase a new high-speed Display-Port-type monitor from DAT/EM’s current list of recommended monitors.

2. Legacy (out-of-production) monitors with a 120-Hz-capable DP, usually with no special “Sync”.
   These were mostly manufactured after 2017 to have a DP that supports 120Hz (the earlier DP standard did not). They may be out of production, but some can still be ound in stock at online stores or at auction

sites.

3. Currently manufactured monitors with 120-Hz capable DP and either G-Sync only or no special “Sync”. There are some exceptions: Some **ASUS** monitors have both Free-Sync and G-Sync, but can properly turn off Free-Sync to get 3DVision to work. No other brand (besides ASUS) of combination Free-/Adaptive-Sync and G-Sync monitors will work.

4. Monitors generally do not work if they have AMD FreeSync, Adaptive Sync, or a combination of FreeSync/Adaptive Sync and G-Sync. There are a few excptions for some ASUS monitors that can correctly turn off FreeSync, listed below.

5. Monitors that have only G-Sync usually work.

Be aware the advertising on the online sales site may list these “Sync” designations incorrectly. We have seen mistakes in web ads on both third-party sales sites and the manufacturer’s own sites. They may list G-SYNC when it is in fact AMD FreeSync, or G-Sync only when it is in fact both G-SYNC and Free/Adaptive Sync. It is best to view the manufacturer’s manual and search for the words *Free*, *Sync*, and *Adaptive*. Be careful that you have the correct manual; some monitors only have one character difference in their model names.

Consider the following monitors that work with a direct DisplayPort cable. Some are discontinued, but you may be able to find them in stock at online stores or auction sites (list updated June 2024):

- **Dell S2716DG or S2716DGR** (27 inch).
  These two model names represent the same monitor; the “R” stands for Resale. This Dell G-SYNC-only monitor has disappeared from the Dell sales site but is often available at Amazon U.S. and Canada in small quantities, with quantities refreshing occasionally. Search for the model name with and without the R and scroll through the search returns to find the exact match. *Do not buy the similar sounding model S2716DGF, since “F” stands for FreeSync and does not work.*

- BenQ Zowie XL2411P (27 inch)

- The following **Acer Predator models**:
  > XB272 (27 inch)
  > XB241H (24 inch)
  > XB1 Gaming Monitor with model XB271HU abmiprz, SKU: UM.HX1AA.**A**01 (27 inch). Also known as XB271HU**A**. It must have the underlined “**a**” and “**A**” in the model name and number.
  The XB271HU (without the A) does not work!

- The following **ASUS models**:
  The models must have the exact numbers and letters shown here. For all these models, turn off FreeSync/Adaptive Sync and turn on ELMB (Extra Low Motion Blur). You may also be able to adjust the Trace Free and Sharpness options on some models.
  > PG278QR (27 inch)
  > VG278QR (27 inch)
  > VG248QG (24 inch)
  > MG248QR (24 inch)
  > VG248QE (24 inch)

DAT/EM also keeps a list of monitors that *might* work based on their specifications, but we do not know for sure, because nobody has reported that they have tried them. Unfortunately, we cannot purchase every

monitor to test. If you are willing to take the risk of trying one of these “maybe” monitors, ask us for the “3DVision Maybe List.”

1.2.2.3. Cables and Plug Adapters

Connect the cable(s) between the stereo monitor, adapter (if used), and the video card (or Dell laptop case).

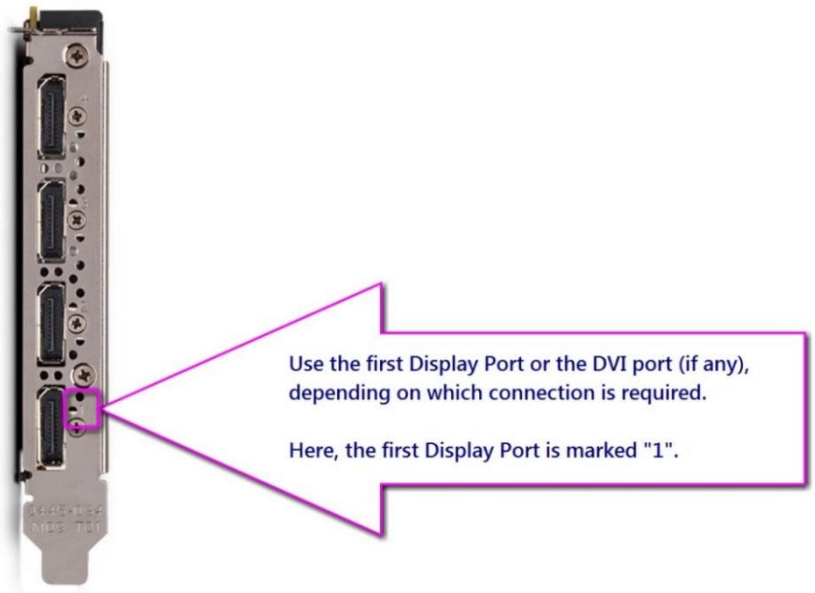
1. **Desktop Computers configuring 3DVision for the first time (Skip 1. for laptops and previously working 3DVision driver updates)**: On a Desktop computer that has never had 3DVision installed before, it is best for Windows 10/11 to configure the stereo monitor alone until stereo is working. Windows 10/11 has some inconsistencies with how it handles multiple monitors, even if they are supposed to be Plug and Play. If you have already plugged in one or more side/desktop monitors:

   - Shut down the desktop computer (power off!).
   - Disconnect the side/desktop monitor(s).
   - Connect the stereo monitor alone using step 2 below.

   Thinking of skipping this step? Think again! This step might prevent hours of troubleshooting. Powering off to unplug/plug in monitors helps Windows to adjust its display settings correctly.

2. Connect the cable and adapter, if used, from the stereo monitor port to the **lowest Port number, 0 or 1,** (they will be numbered if there are multiple of the same type of port) on the desktop video card or laptop case. The cable and adapter type will depend on the video card model, the monitor brand and model, and whether it is a desktop or laptop. See details for each type of connection in the sections below.

   Example of Port 1 on a desktop video card. Numbering may start with 0 or 1, depending on the model:



   For laptops, the connection is made to the miniDP or “full-featured USB-C with DP alternate mode” port located directly on the computer case. See more information in the miniDP and USB-C sections below.

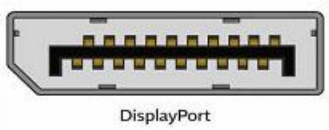
Connecting the cable may sound easy, but the correct cables and plug-end adapters are crucial for 3DVision success. If it is the wrong cable or adapter type, the result could be no stereo, stereo on only part of the monitor, only a single image showing when two are open, or constant flickering from a 60Hz refresh limit.

The standards and specifications for DVI, DisplayPort, and USB-C have changed over time. The connector may look the same – or almost the same – and plug into the port, but it may or may not work for 3DVision. The biggest concern for 3DVision is whether it can support a 120Hz refresh rate.

See the following sections for information regarding each type of cable connector and adapter.

DisplayPort (DP)

If the *video card or laptop case* only has DisplayPorts (DPs) and the *monitor* can supply at least 120Hz by DP, plug a DP cable into DP Port 1 on the video card and the DP port on the monitor.



DisplayPort on the monitor end

For most supported DisplayPort (DP) monitors and a desktop video card, use the DP cable that came in the box with the monitor. Generally, if the cable came with the monitor, it will work for 3DVision.

If you will find or buy a new DP cable, be careful. Cables and cable end connectors must be rated to support 120Hz or higher transfer rate.

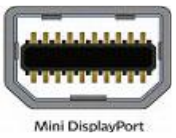
A cable or monitor DP ports may list a DP standard, but sometimes the standard is ambiguous:

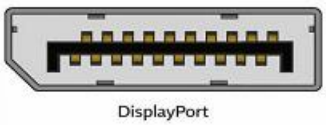
- DP 1.4 always supports at least 120Hz.
- DP 1.2 is inconsistent; DAT/EM believes some cables and DP ports labeled DP 1.2 from approximately 2016-2019 have partial components from the 1.4 specification and support 120Hz. Other (usually older) DP 1.2 cables have a limit of 60Hz and will not work.

While the monitor end of the cable may be a full-size DP, some Dell laptops have a miniDP or a “full-featured USB-C with DP alternate mode” port. See more information in the miniDP and USB-C sections below.

Mini DisplayPort (MiniDP)

Mini DisplayPort (MiniDP) ports work like full-size DisplayPort (DP), except for the obvious size difference of the connector.

MiniDP: 

Compared to DB 

Images not to scale. The shape of the cut-off sides matters.

Your recommended NVidia video card may have full-size DP connectors, and full-size DP cables are supplied with DP monitors. If your Dell laptop has a miniDP port on the case, you have two choices:

- Buy a direct DP-to-miniDP cable. Make sure it is rated to include a 120Hz transfer rate. If the cable does not list a range of Hz values, do not buy it.
-) Or, add a passive DP-to-miniDP adapter that is rated to include 120Hz. (A passive adapter is a cable with different ends, but without its own USB power cable.)

USB-C with DisplayPort Alternate Mode

Newer Dell laptops do not have a min-DP port. Instead, they have a full-featured USB-C port that supports DP alternate mode. This type of port works for 3DVision provided a supported video card is inside the laptop and the correct high-speed cable is used. In most cases, you will need to buy a cable separately from the monitor.

Be careful that the port on the computer is the correct type, labeled with this symbol:

Image attribute: By Giorgio136 - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=71245637

When buying a full-size DP to USB-C cable, be sure the specifications state that it supports a range including 120Hz for your monitor's resolution and/or is labeled DP 1.4 to DP alternate mode USB-C. If the cable also shows the special symbol, it is more likely to work.

Examples:

Examples of the DP symbol with "1.4" or "8K" (or sometimes even "4K") printed on the cable

Do not use USB-C on a **desktop** computer case. If the desktop has a supported video card that has both DP connectors and a USB-C, use a DP connector. As of June 2024, DAT/EM has not tested USB-C ports located on the desktop video card with 3DVision.

Dual-Link DVI-D

The connection for dual-Link DVI-D located on the monitor depends on the video card or laptop case:

- If the *video card or laptop case* has a DVI-D (or rare DVI-I) and the *monitor* is a legacy 3DVision-ready model with DVI port, then connect the monitor to the video card or laptop case by a direct dual-link DVI-D (or DVI-I, in rare cases) cable. More information on DVI-I appears in the DVI-I section below.
  New video cards rarely offer a DVI-D or DVI-I port; however, there are some older video card/laptop case
  models or higher-specifications video cards that have DVI.
  It must be a dual-link DVI-D cable to work with 120Hz. If it is a single-link DVI cable, the maximum refresh rate will be only 60Hz, causing the monitor to flicker. The following is a dual-link DVI-D port pin out. It must have exactly the number of pins shown:

- If the *video card or laptop case* has DP, miniDP, or full-featured USB-C with DP alternate mode, but the *monitor* is an older 3DVision-ready model with DVI port (or has a lower-version DP that cannot deliver 120Hz), then connect the monitor to port 1 on the video card or laptop case using a powered DVI-D to DP or miniDP adapter. DAT/EM recommends StarTech adapters

DP

miniDP

> For full-sized DP: StarTech part number **DP2DVID2**
> For miniDP: StarTech part number **MDP2DVID**

Note: If you already have the model with the full-sized DP, but the laptop has a miniDP (or vice versa), you can add a passive DP to miniDP adapter to the StarTech's DP cable end. The adapter must be rated for 120 Hz.

Note::If using any other brand of DP to DVI adapter, it must be powered (by USB cable) and it must have a DVI-D port that is rated to carry 120 Hz. We will refer to all such adapters as the "StarTech" adapter.

Plug a dual-link DVI-D cable into the monitor on one end and the StarTech adapter's DVI-D port on the other end.
Plug the StarTech adapter's USB power cable into a USB port on the computer case for power*. Do not use a USB hub for the StarTech adapter; USB hubs often do not deliver enough power to the adapter. Symptoms of low power are stereo on only part of the monitor, usually in a horizontal band.*
Alternative: If the computer's power supply is below specifications (such as a desktop with a 350W power supply rather than the recommended 750W or more) and fails to power the StarTech adapter adequately, StarTech Support suggested plugging the adapter's USB cable into a user supplied USB wall power adapter.
Examples:

Examples of USB wall power adapters that may be used for the USB plug on a StarTech DP to DVI-D adapter. These images are meant as generic examples; they are not meant to show a specific brand of adapter.

Dual-Link DVI-D

Some legacy 3DVision monitors may have a Dual-link DVI-I port. This type of port supports everything that DVI-D supports, plus power and communication through USB using four additional pins above/below the blade pin.

.

Some monitors (circa 2010) were built with a DVI-I port and an embedded emitter built in to the top center of the monitor face frame. The embedded emitter hardware is the same as an external emitter. It requires a USB connection, just like an external emitter.
In this case, the USB connection is made with the extra four pins in the monitor's DVI-I connection.

The emitters in these monitors are not compatible with video cards that only have Display Ports (DPs), such as the NVidia RTX A4000. There is no way to adapt the monitor's DVI-I to DP, because there is no powered DVI-I to DP adapter on the market.
Choices for DVI-I monitors with an embedded emitter:

a) Replace the legacy monitor with a 3DVision-compatible DP monitor and external emitter.
b) Or, add an external emitter plugged into a USB port on the computer, then plug in a powered dual-link DVI-D to DP adapter to connect to a video card that has DP connectors. This disables the embedded emitter, because the extra four pins in the DVI-I port are not connected. Treat this as a DVI-D to DP connection, and see the instructions for specific adapters in the DVI-D section above.
c) Or, use with a video card that is Windows 10/11 compatible and has a DVI-I port on it, such as the NVidia Quadro M5000 and Quadro M6000.

HDMI and Thunderbolt connections do not work.

HDMI, mini-HDMI, and Thunderbolt connections DO NOT WORK with 3DVision. This prohibition includes any HDMI port adapter and DisplayPort (DP) or USB-C ports on a docking station connected by Thunderbolt.

1.2.2.4. Make Monitor Settings if Necessary

Monitors have settings that can be accessed from switches located on the monitor case. The default settings may need to be changed or reset. DAT/EM recommends you download the monitor's operation manual from the manufacturer's website and review its settings. Every monitor model is different; the following are some examples of settings that some monitors require:

- Some monitors have a switch for DisplayPort (DP) or DVI/DP/HDMI connection. Choose the one that matches the cable connections you are going to make. (Do not use an HDMI connection or set HDMI, as 3DVision does not work with HDMI.)
- Some monitors have a setting for G-SYNC or FreeSync (also known as Adaptive Sync). If it has both and is not an ASUS monitor, it probably will not work with 3DVision. If it has only FreeSync/Adaptive Sync on/off (especially if it is an ASUS model), there is a possibility the monitor could work with FreeSync/Adaptive Sync off. The FreeSync/Adaptive Sync setting is typically dependent on another setting (ELMB) that must be switched first before you can set it; refer to the monitor's operation manual for instructions.
- For most G-SYNC-only monitors, G-SYNC is disabled using the NVidia Control Panel > Monitor Technology > Fixed Refresh setting, not directly from the monitor switches.
- Be aware of how to reset your monitor to factory defaults. Sometimes this helps with troubleshooting. Refer to the monitor's manual for instructions.
- For the ASUS VG248QG (24-inch) and some other ASUS models that have both G-Sync and Free-Sync, first turn on ELMB (Extra Low Motion Blur) and turn off FreeSync from the monitor's settings. Then adjust the Trace Free and Sharpness options. (ASUS offers the only FreeSync monitors that work with 3DVision, provided you disable FreeSync in the monitor. Other brands do not properly disable FreeSync.).

1.2.2.5. Disable On-board Graphics Adapter in the BIOS or UEFI-Compliant BIOS

Most Dell laptops and some desktop workstations (especially custom built) need to have the onboard graphics adapter, also known as integrated graphics, disabled in the BIOS or UEFI-compliant BIOS (the setting is available in both BIOS types on Dell laptops, so it does not matter which type you have set).

For laptops, DAT/EM only recommends the Dell brand and 7000-series models. We know the recommended Dell laptops with the recommended NVidia video cards and recommended external monitors work with 3DVision.

We cannot guarantee that any other brand of laptop will work. Other brands may not have a DisplayPort or full-featured USB-C with DP alternate mode port located directly on the laptop case, or they may not be designed properly to disable the onboard graphics adapter.

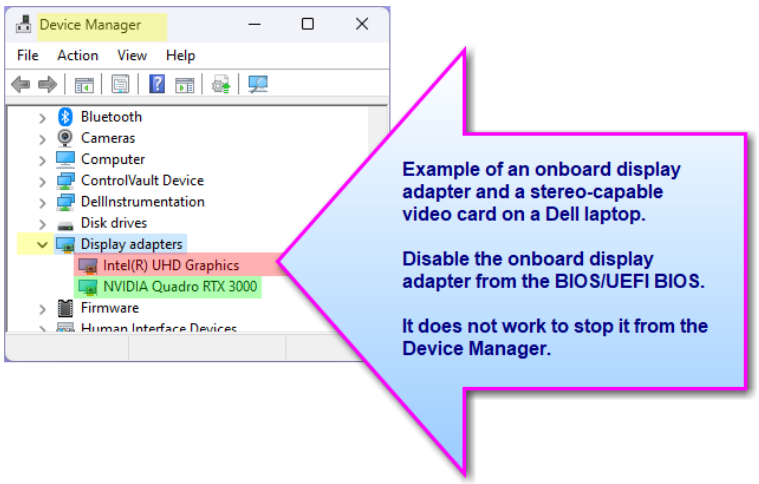
For example, a user attempted to set up 3DVision on a Lenovo P50 laptop. The laptop with its default "Hybrid Graphics" setting showed 3DVision stereo on only half of the 3D monitor. After setting "Discrete Graphics" in the BIOS, the P50 black screened, making any further settings impossible. The laptop had not been designed to operate with the NVidia graphics adapter alone, despite having a setting for it in the BIOS. The cost of troubleshooting and recovering the normal display exceeded the difference between the cost of the Lenovo laptop and the cost of the recommended Dell laptop (example from August 2021).

The following instructions are only known to work on Dell laptops.

Note: It does not work to disable the onboard graphics from the **Device Manager > Display Adapters** after startup.
It *must be disabled in the BIOS if there is a setting to do so*.

Do you need to do this for your laptop or desktop? Here is how to check:

1. Start Windows Device Manager. Click the arrow to expand Display Adapters:



The nVidia video card should be the only display adapter listed. If it is the only one, you may skip this section of the instructions.

If you see anything in addition to your nVidia card, it is probably an on-board graphics adapter. It probably needs to be disabled. On some Dell desktop computers, there is no way to disable it, but on those computers, 3DVistion works. For a laptop, you will need to check whether you can disable it. If you see any onboard graphics adapter, continue.

2. If you have an onboard graphics adapter that needs to be disabled, close all applications. Reboot the computer in ”Advanced Startup Mode” (also known as ”Safe Mode”) so that it activates the BIOS or UEFIcompliant BIOS settings as it starts. How to do this depends on the model of computer and whether the UEFI-compliant BIOS has been set on. Both types of BIOS access offer the display adapter setting, so it does not matter which type is currently set.

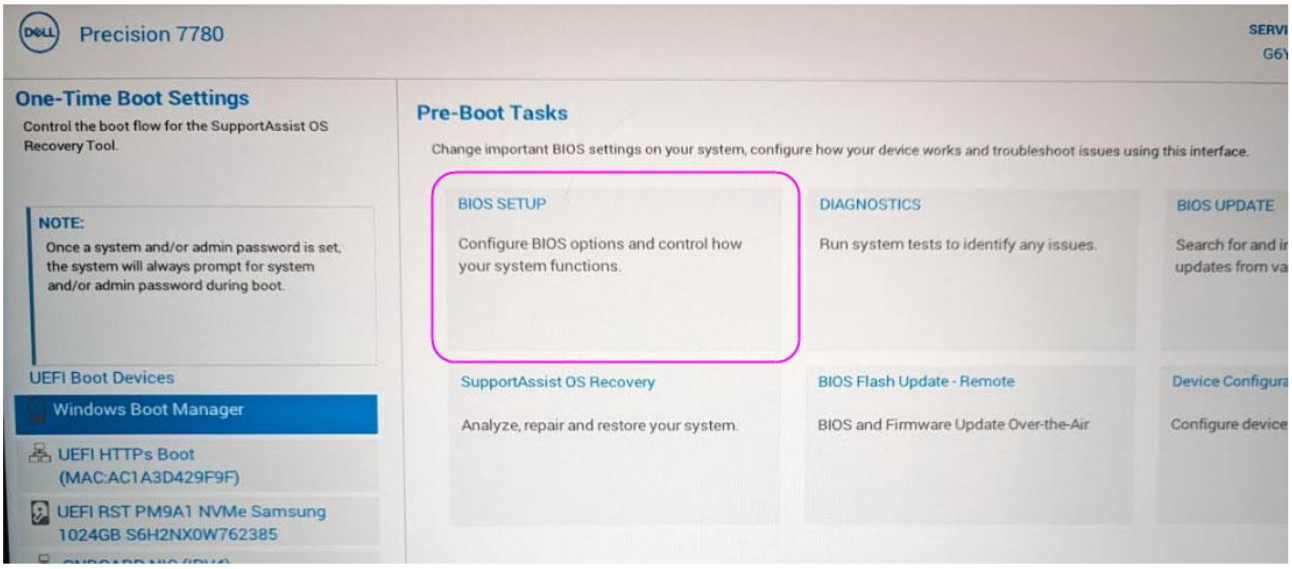
   • Windows 10 or 11: Press the F2 or F12 key (or whichever is indicated) as it begins to start up.

   • Windows 11: Search Windows 11 for “Change Advanced Startup Options.” This will take you to the Windows system setting that lets you start in that mode

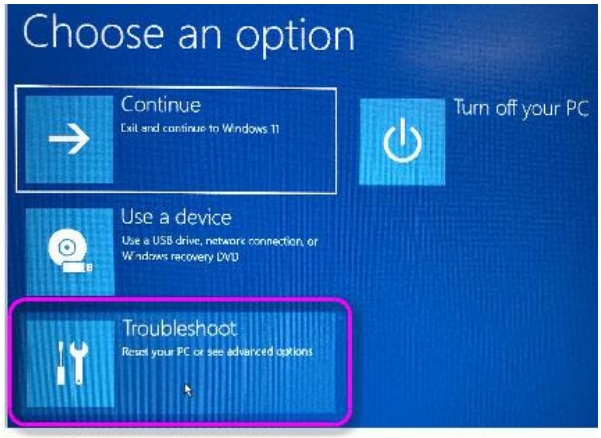
   • Windows 11: Click the Start button from the Windows 11 Taskbar. Click on the On/Off button at the lower right corner of the resulting options display. Hold down the <Shift> keyboard key and select Restart from the menu. <Shift>Restart then activates the BIOS or UEFI-compliant BIOS settings as the computer restarts.

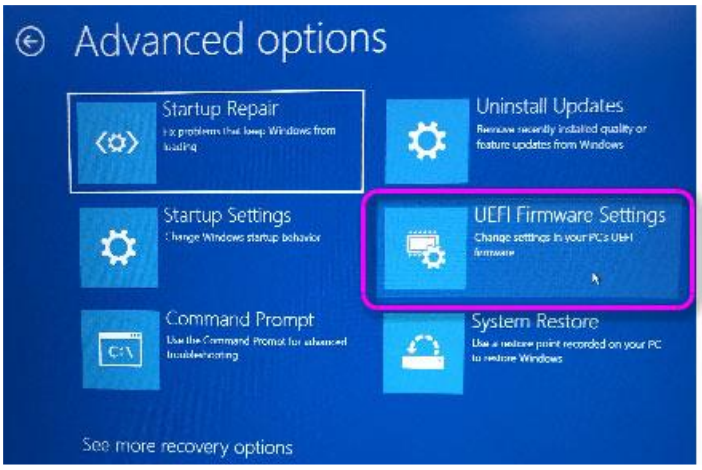
   The following are examples of activating the BIOS on various Dell laptops:

   • The following appeared for a Dell Precision 7780 after using F12 to go to one-time boot settings:



   • The following appeared for a Dell Precision 7750 laptop with UEFI-compliant BIOS set on and booted in “Advanced Startup” mode. Choose the magenta-circled options:





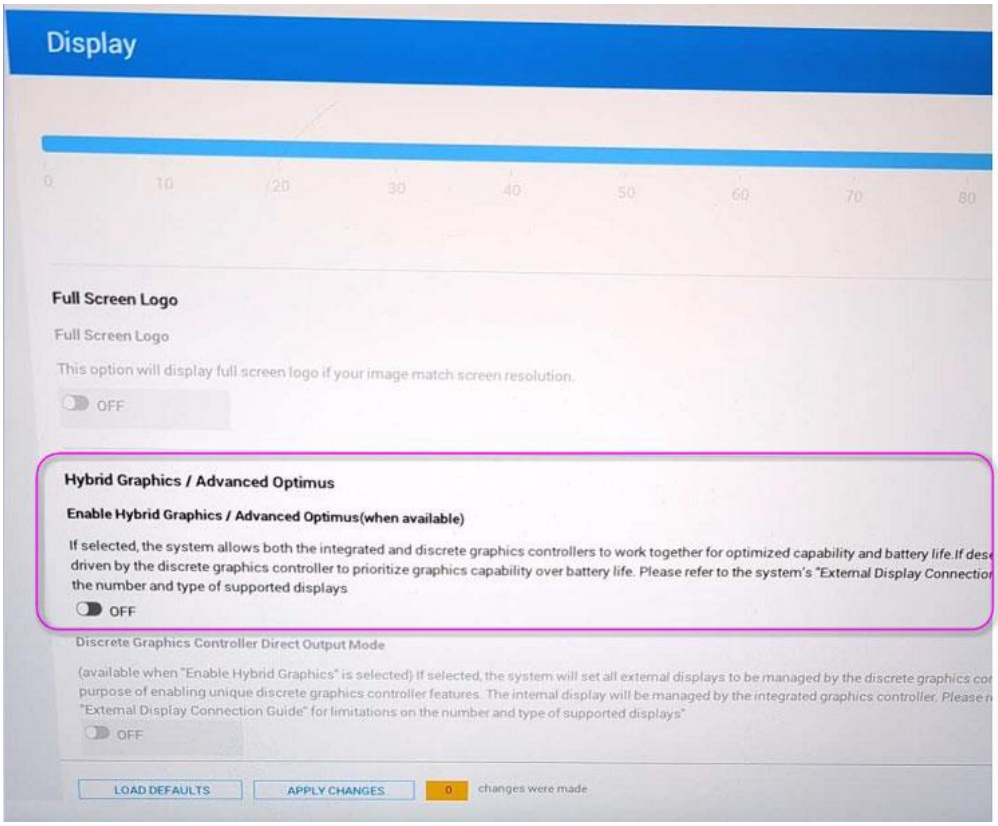
This option required an intermediate restart, then the BIOS Setup returned.

Now uncheck the on-board graphics adapter if possible.

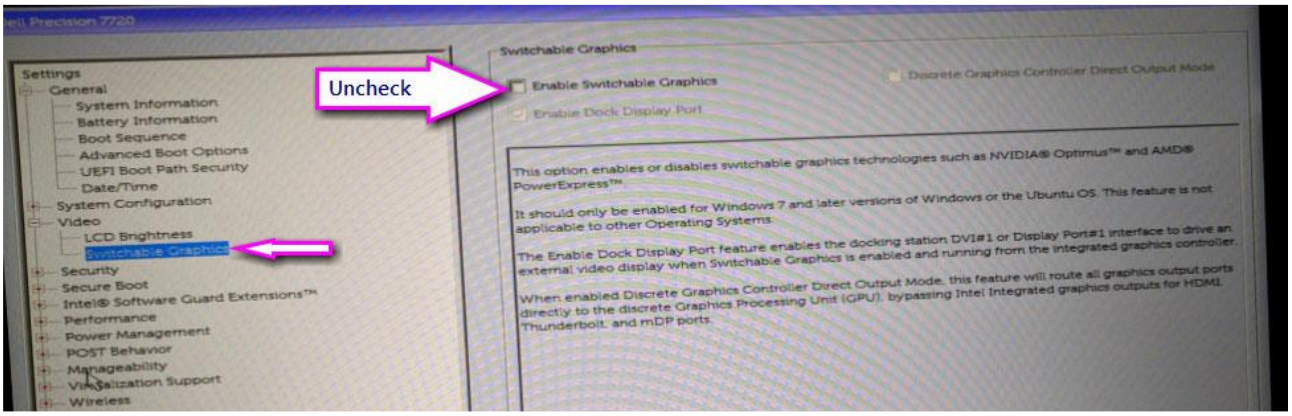
• Different Dell laptops have different settings. The setting may be called “Hybrid Graphics / Advanced Optimus,” "Switchable Graphics,” and there may be an additional “Discrete Graphics Controller Output Mode” setting that may or may not need to be active.

• Other desktop brands and other Dell laptop models may look different. If you have a different brand and the setting looks different, please take a picture (usually a cell phone picture, as screen captures are not possible while BIOS settings are shown). Send the picture along with the brand and model of your computer to support@datem.com.

Example 1: The setting may be called “Hybrid Graphics / Advanced Optimus.” Turn this off.

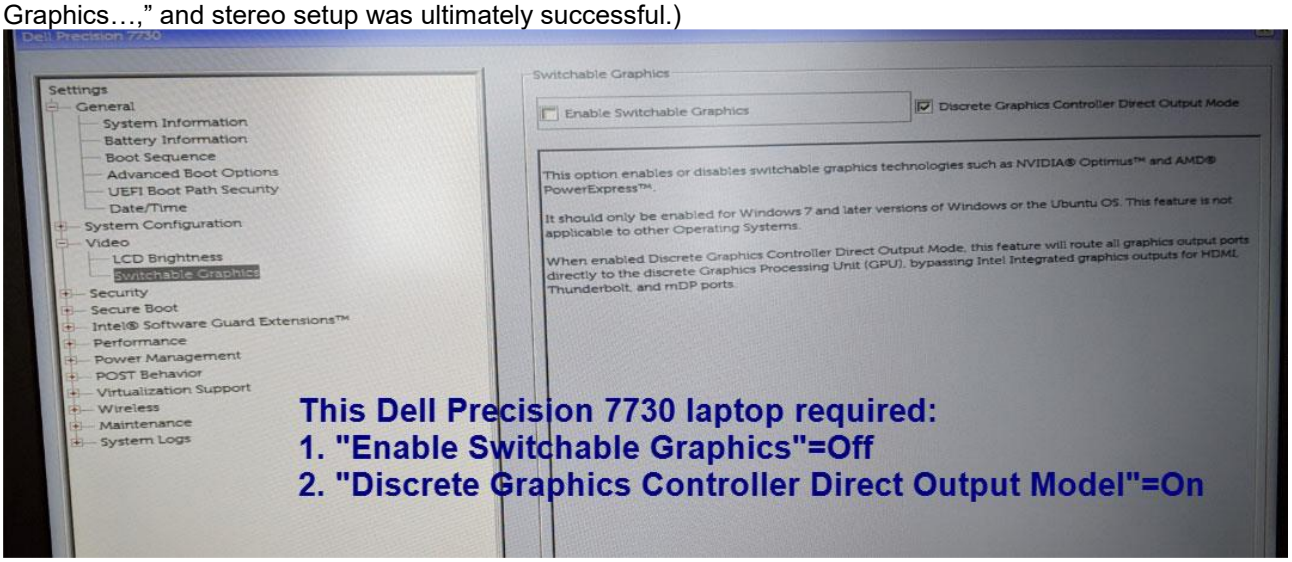


Example 2: The setting may be called “Enable Switchable Graphics.” When this is unchecked, the “Discrete…” setting becomes inactive on some laptop models. Ignore it if it becomes inactive. (Please also see Example 3 below, where it was still active and needed to be checked on.)



Example 2: Uncheck “Enable Switchable Graphics” and ignore “Discrete...” if it becomes active.

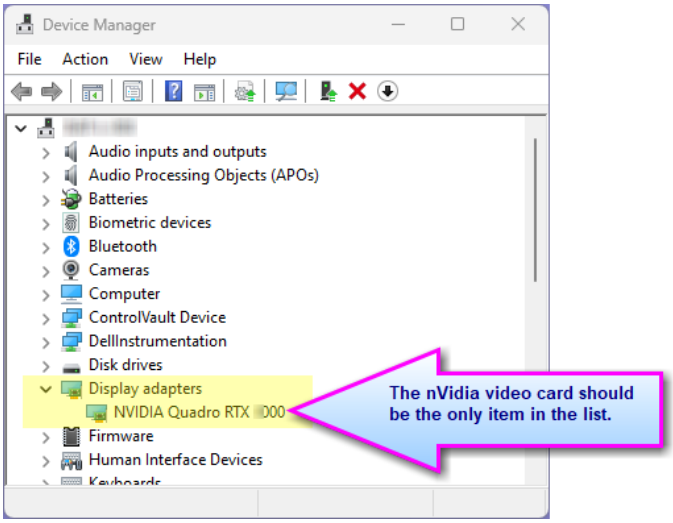
Example 3: Always uncheck “Enable Switchable Graphics” if it is offered. If “Discrete Graphics…” is still active, check it on. (This laptop’s user was advised by NVidia Support to check on “Discrete Graphics…,” and stereo setup was ultimately successful.)



Example 3: Turn off “Enable Switchable Graphics” and turn on “Discrete Graphics...” if that setting is active.

Apply any BIOS changes, then boot up the computer.

Verify that the BIOS setting was successful. Open Windows Device Manager and expand Display Adapters. The NVidia video card should be the only item in the list. Example



1.2.2.6. Connect the 3DVision Emitter

The 3DVision 2 Kit and Three-D Vision kit include an emitter. It must be plugged in to a USB port on the computer before the NVidia driver is installed.

1. Plug in the emitter to a USB port directly on the computer case. Do not use a USB hub for the emitter. The typical setup is only the USB cable. There are other ports on the back of the emitter, but you can usually leave them empty.

Only the USB connected is typical. Leave the round port empty

Note: There may be exceptional cases where a K-series card needs a stereo bracket card and a 3-pin DIN cable between the bracket and the emitter. This is not very common, but is sometimes attempted when stereo will not work any other way. Before ordering this part, discuss your hardware configuration with DAT/EM Support. The K-series card is very old and slow, and it may not be worth the effort or the additional purchase to get it working

NVidia Stereo Bracket Card – usually not needed.

Even the newer cards have a connector for this bracket cable, but again, it is usually not needed.

Note: The only exception to having an external emitter is the older (ca. 2010) monitors that have an embedded emitter and are connected by dual-link DVI-I cable to a video card that has a DVI-I port. This is quite rare. If you are bypassing the DVI-I connection using a dual-link DVI-D cable to a DVI-D to DP adapter, you will need to plug in an external emitter

On Windows 10/11, when no stereo application is running, sometimes there is a dull green light on the 3DVision emitter or a dull red light on the “Three-D Vision” emitter, or sometimes the light is off. At this time, there may not be any emitter driver installed, so the light may even be yellow, orange, or red. Do not worry about the light until after the driver installation.

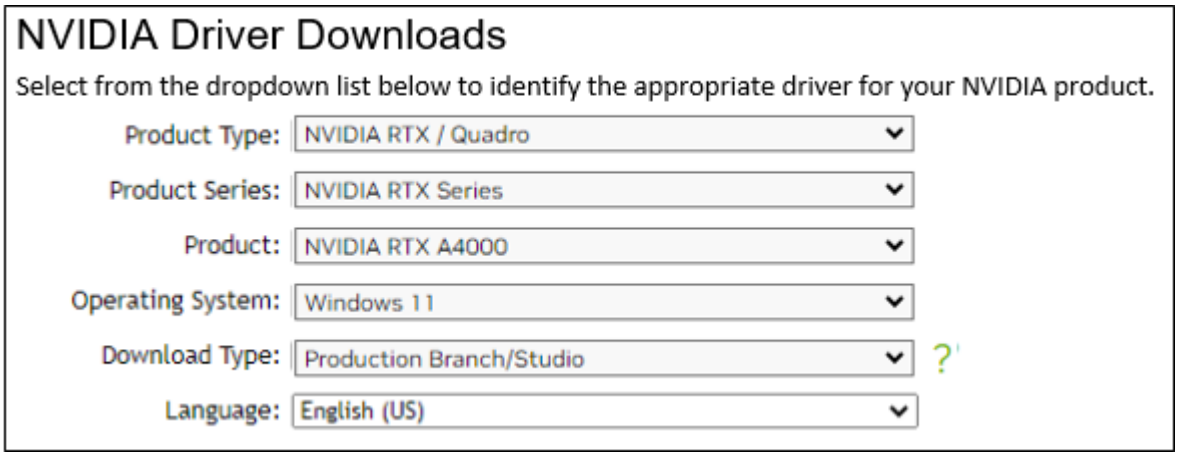
The light at this time may be green, yellow, red, orange, or off.
Do not worry about the color of the light until after the driver installation a stereo application is started.

2. Place the emitter so the front (opposite the USB connector side) is directed toward the user. The emitter should have an unobstructed line of sight to the user's stereo glasses. (Do not put on the glasses yet.)

1.2.2.7. Download the Newest Video Driver and Decoupled Emitter Driver

Now install the newest driver for the video card model and the separate, decoupled emitter driver:

1. Download the newest video driver for your video card model by searching www.nvidia.com (or your localized NVidia site) > **Drivers** > **All Video Drivers**. Search for the **Production Branch/Studio** driver (not the **New Feature Branch (beta)** driver type). Be sure to get a **Quadro** or **RTX** driver, *not a **GeForce** driver*. If you can't find the specific model name to match the video card, try selecting a different **Product Series**.
   Example search criteria for Quadro RTX A-series at www.nvidia.com:



   *Example search criteria for RTX A-series for desktops. Choose the **Product Type** and **Product Series** that give your exact model of video card in the **Product** list.*
   *Only download **Production Branch/Studio** drivers.*

2. Download the decoupled emitter driver v.390.41 at www.nvidia.com > **Drivers** > **All Video Drivers** > **Quadro Advanced Options (Quadro View, NVWMI, etc.)** > **NV3DVisionUSB Driver**. Most localized language versions have the same links to this driver, but some of their sites are redesigned or have broken menu links. The table below shows those localized drivers that DAT/EM Support could find.
   The following is a list of localized versions of the nVidia decoupled emitter driver v.390.41. If a link does not work from this PDF, copy and paste the link text into your Internet browser or try browsing to your localized NVidia site.
   Note: Each of these links downloads a file called **3dvisioncontrollerdriver.exe.**

Language	Link
English (US)	English (US) 390.41 3DVision emitter driver: https://www.nvidia.com/en-us/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
English (UK)	English (UK) 390.41 3DVision emitter driver: https://www.nvidia.com/en-gb/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
English (India)	English (India) 390.41 3DVision emitter driver: NVidia in site links to the English (US) version.
Chinese (Simplified)	Chinese (Simplified) 390.41 3DVision emitter driver: https://www.nvidia.cn/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/

Chinese (Traditional)	Chinese (Traditional) 390.41 3DVision emitter driver: https://www.nvidia.com/zh-tw/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Japanese	Japanese 390.41 3DVision emitter driver: https://www.nvidia.com/ja-jp/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Korean	Korean 390.41 3DVision emitter driver: https://www.nvidia.com/ko-kr/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Deutsch	German 390.41 3DVision emitter driver: https://www.nvidia.com/de-de/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Español (España)	Español (España)390.41 3DVision emitter driver: https://www.nvidia.com/es-es/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Español (América Latina)	Español (América Latina) 390.41 3DVision emitter driver: DAT/EM Support could not locate it. See https://la.nvidia.com/ to search.
Français	Français 390.41 3DVision emitter driver: https://www.nvidia.com/fr-fr/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Italiano	Italiano 390.41 3DVision emitter driver: https://www.nvidia.com/it-it/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Polski	Polski 390.41 3DVision emitter driver: https://www.nvidia.com/pl-pl/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Português (Brazil)	Português (Brazil) 390.41 3DVision emitter driver: DAT/EM Support could not locate it. See https://www.nvidia.com.br/ to search.
Русский	Русский 390.41 3DVision emitter driver https://www.nvidia.com/ru-ru/drivers/nv3dvisionusb/390_41/nv3dvisionusb-driver/
Turkish	Turkish 390.41 3DVision emitter driver: DAT/EM Support could not locate it. See https://www.nvidia.com.tr/ to search.

1.2.2.8. Install the drivers with "Custom" and "Clean" settings on

To install the drivers, perform the following steps:

1) The number of monitors that should be connected during driver installation depends on whether it is a desktop or laptop computer.

a) For a new desktop computer or for a new video card installation on an existing workstation, connect only the stereo monitor. If you already have one or more side desktop monitors connected, shut down the computer, disconnect the side monitor(s), leaving only the stereo monitor connected to the first port on the video card, and finally boot up the computer. Do not skip shutting down the computer when you add or remove monitors!

b) For a laptop, connect the external stereo monitor to the laptop. Right click on the Windows10/11 desktop and select Display Settings. Press the Identify button and then select the monitor diagram to match the stereo (external) monitor. Under Multiple Displays in these settings, check on the setting called "Make this my main display" or leave it checked with the text light gray if it is already set. Note that you ay need to repeat this setting later when installing drivers, rebooting, or any time you

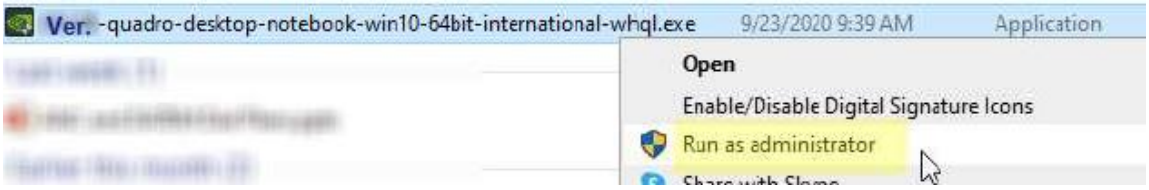
disconnect and reconnect the external stereo monitor**.** It is very important to have the external stereo monitor as the main display or 3DVision will not work

2) Log on locally as Administrator. The login must have enough permissions to install drivers.

3) Install all Windows10/11 updates. Reboot when requested.

4) Complete the DAT/EM (or Trimble Inpho) software installation if it is not already installed. Summit Evolution, Stereo Viewer, or LandScape (or Trimble Photogrammetry) will be needed to test stereo. You will need a stereo Summit, Stereo Viewer, or LandScape or inpho project for testing. For Stereo Viewer and Lsndscape, please contact DAT/EM Support if you need example data. For Summit, you may use your own project, provided you know it is completely oriented and previously prove to have groun coordianted and good stereo. If you do not have a Summit stereo project of your own, download the “Vexcel UltraCam Digital Camera” demo project for http://www.datem.com/downloads-2/#1446581349898-5673439c-5b31 using the current DAT/EM Support download password. You can use also Trimble Photogrammetry software, MATCH-AT (PMT) or DTMaster to check stereo. Software and sample data can be downloaded from https://geospatial.trimble.com/products-and-solutions/trimble-inpho.

5) To install the video driver, right click on the driver file and select **Run as Administrator** even if you are already logged on as Administrator!

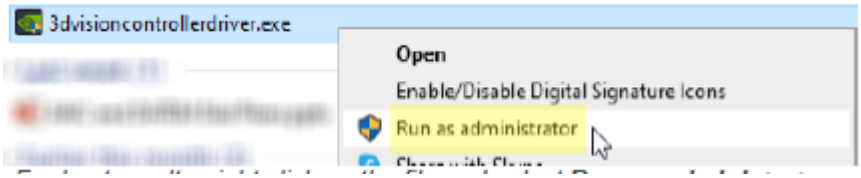


6) **Important!** Run the driver installation with the “Custom (Advanced)” and “Perform a clean installation” settings on. . DAT/EM often refers to these as the “Custom” and “Clean” settings:

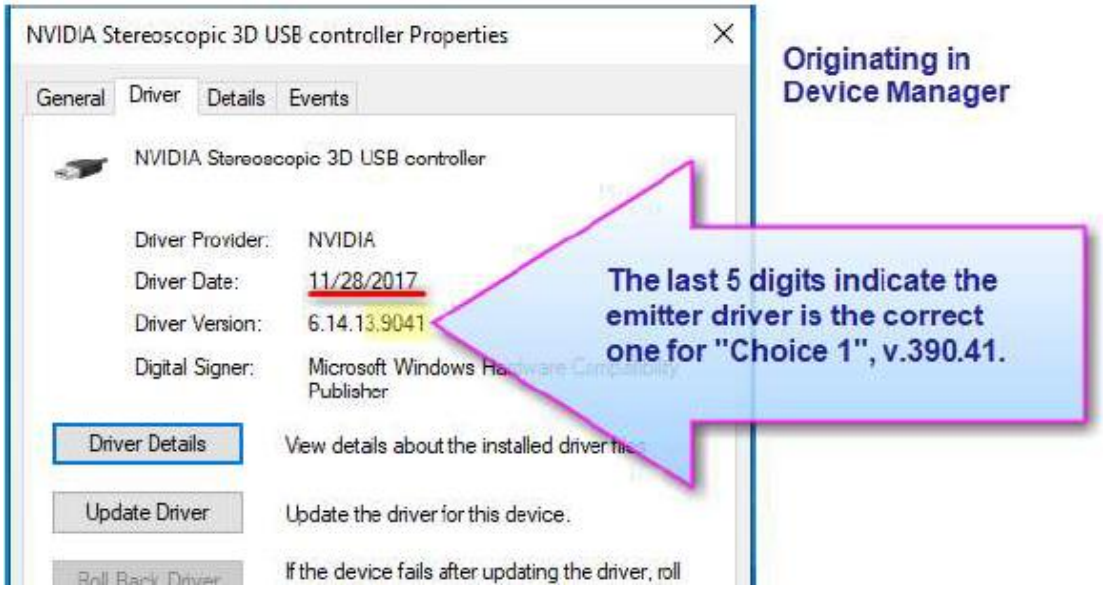
If you forget to select “Custom” and “Clean”, run the installation again with these settings on.

7) Reboot, even if it does not ask to reboot.

8) Right click on emitter driver v.390.41 and select **Run as Admininstrator** even if you are already logged on as Administrator. Select the “Custom” and “Clean” settings again for this driver. Continue with this installation until it reports that it is finished.



9) Reboot after installing the driver even if it does not ask to reboot.
Hint: Emitter driver v.390.41 may show up in the Windows 10/11 Device Manager > Universal Serial Bus Controllers > nVidia Stereoscopic 3D USB Controller > right click and select Properties > Driver tab >Driver Date as either 28 November 2017 or 22 March 2018 (both have been reported on successful installations). Ignore the date and make sure the Driver Version has 3.9041 as the last 5 digits of the version number. Move the decimal and this becomes 390.41.



1.2.2.9. Make stereo settings and try stereo viewing

NVIDIA stereo settings are made in both the Windows 10/11 Display Settings and in the NVIDIA Control Panel as follows:

1) The first step depends on whether it is a desktop or laptop computer and whether one or more monitors are connected. Set whichever of the following are possible at this time:

   a) Right click on a blank area of the desktop and select **Display Settings** from the menu.

   b) If there are two or more monitors at this time, press the **Identify** button and then click on the diagram with the number that matches the stereo monitor. (There will be no diagrams if there is only one monitor).

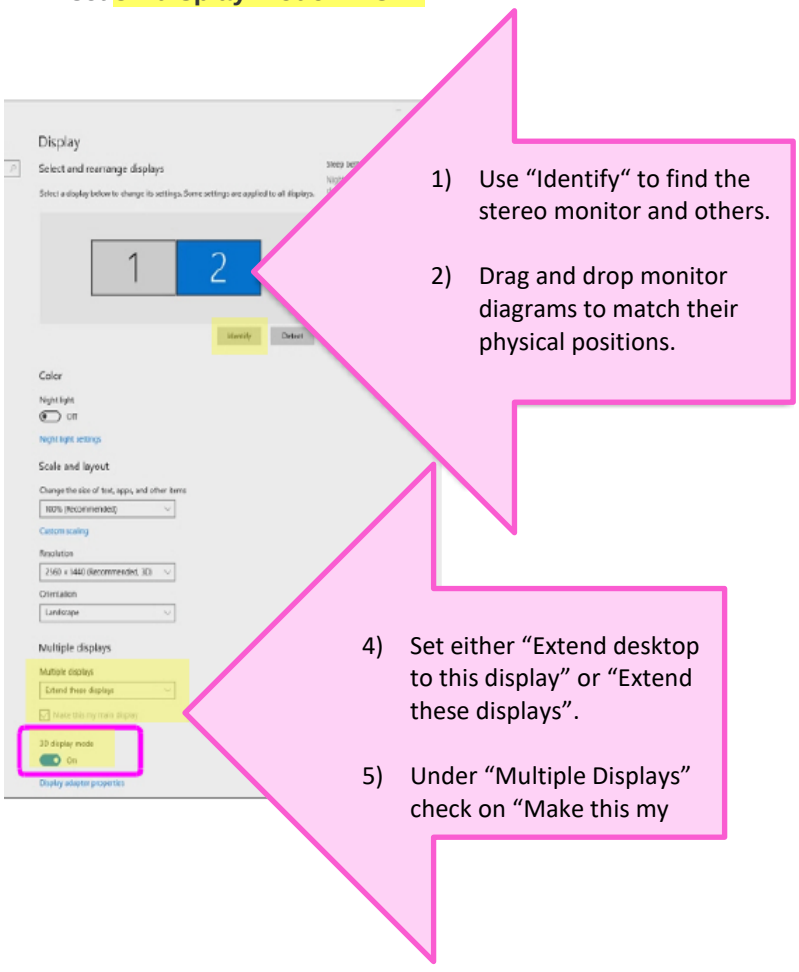
   Note that with desktops, we try our best to make the stereo monitor be Display 1 by connecting it alone during the driver installation and stereo setup. Sometimes Windows resets it to 2 when multiple displays are added later. If good stereo was obtained with the stereo monitor alone, and then it changes to Monitor 2 when more desktop monitors are added, it will still usually work after verifying all the settings again.

c) If multiple monitors are connedcted at this time, and if the monitors in the diagrams are in the wrong left-right-top-bottom order compared to their physical position on the desk, click on a monitor diagram and drag it to the correct physical position. When they are correct (and these settings are applied), the system mouse should travel left to right or up and down along the monitors in logical left-to-right or up-and-down progression; the mouse pointer should not jump to the wrong side of any other monitor when leaving the previous monitor..

d) The next settings exist in both Windows 10 and 11, but they are in different settings dialog positions.

Windows 10: Choose the settings for one or more monitors:

- For only the stereo monitor connected at this time, scoll down and set 3D display mode to “On”.
- For two or more connected displays, drag and drop the monitor diagrams to match their physical positions. Use the **Identify** button to find the number of the stereo monitor. Select the stereo monitor diagram. Set **Multiple displays** to either **Extend desktop to this display** or **Extend these displays** (whichever is offered in the menu). Check on **Make this my main display** (or leave it checked and light gray) and set **3D display mode** to “**On**”.

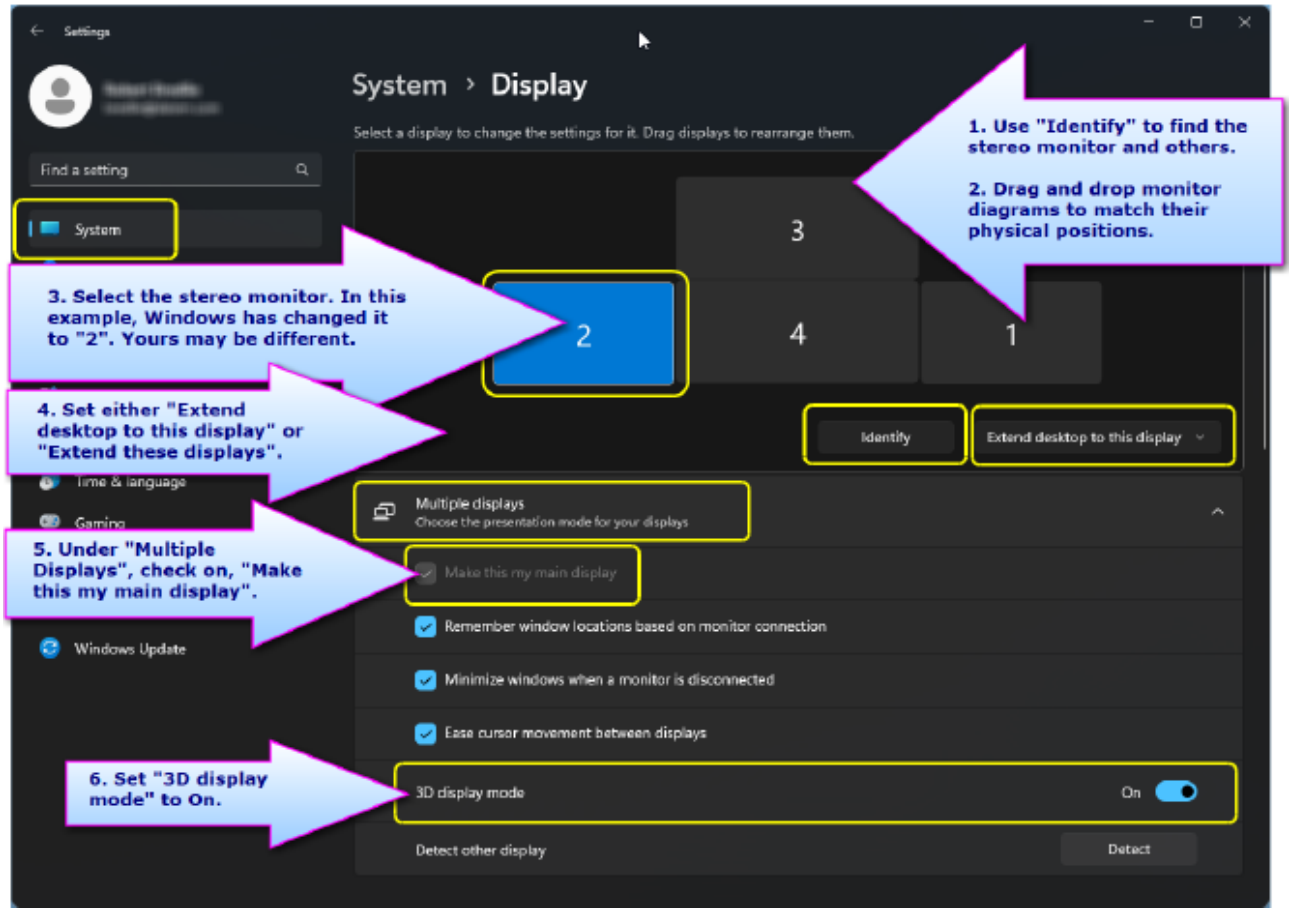


Windows 10 Display Settings

Windows 11: Choose the settings for one or more monitors:

- For only the stereo monitor connected at this time, scoll down and set 3D display mode to “On”.

- For two or more connected displays, drag and drop the monitor diagrams to match their physical positions. Use the **Identify** button to find the number of the stereo monitor. Select the stereo monitor diagram. Set **Extend these displays** or **Extend desktop to this display** (whichever is offered in the menu) under diagrams. If two or more displays are connected, **Expand Multiple displays**, set **Make this may main display** or leave it checked and light gray, and set **3D display mode** to "**On**".



Windows 11 Display Settings

e) Apply the setting. Close Windows 10/11 Display Settings.

2) Right click on a blank area of the desktop and select **NVIDIA Control Panel** from the menu. Make the following stereo settings and apply them.

- Select Display > Change Resolution from the left
- If there are two or more monitors connected, select the stereo monitor diagram in section 1 on the right side
- ● In Choose the Resolution > Resolution in section 2., set it or leave it at the setting that appears with "**native**" listed next to the resolution.
  Note:If this setting does not result in offering 120Hz refresh, do not use "Customize" to try to force it to find a setting with 120Hz. There's something else wrong, such as the wrong cable or

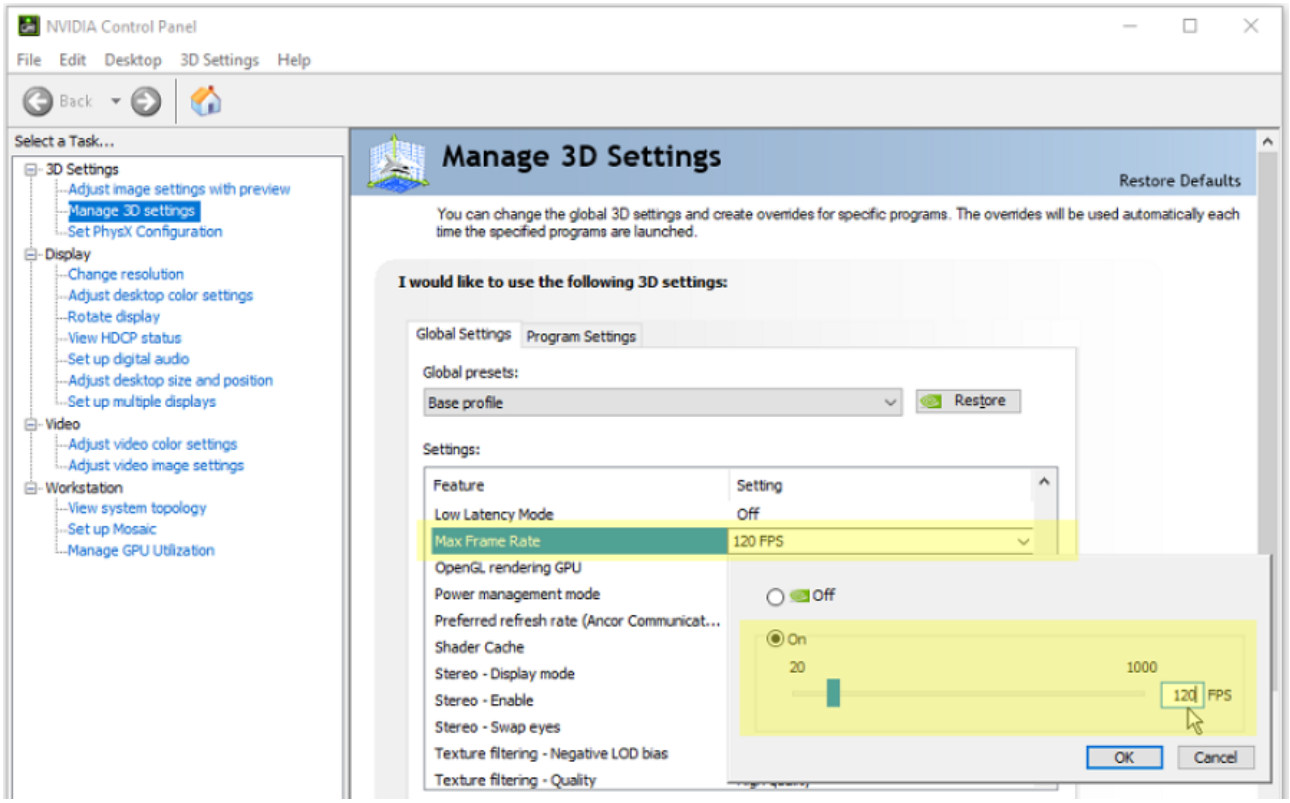
adapter.

- Set Display > Change Resolution > Refresh rate=120Hz for the stereo monitor.
  Note: Do not select 144Hz or any higher setting higher than 120Hz.
  Note: If it only offers 60Hz, there is something wrong in the hardware configuration.

- Select Manage 3D settings from the list on the left. Leave **Global Presets** set to **Base Profile** in the settings on the right.
  Note: For the first attempt at stereo settings, use the Base Profile. In Windows 11, if the first attempt at stereo setting does not work, repeat the setting under the 3D OpenGL Stereo Profile.
  Note: If you think someone has already customized the "Base profile" or "OpenGL Stereo profile" and may have made imcompatible settings, try resetting it using the Restore button to the right of the profile name, than repeat these settings.

- Set Manage 3D settings > Monitor Technology > Fixed Refresh if you have this setting.
  Note: Some high-definition G-SYNC monitors such as the ASUS PG278QR have this setting, but many other monitors do not have it. On the ASUS PG278QR, the "Stereo – Enable" setting (mentioned below) will not be available until Monitor Technology ist set to Fixed Refresh.

- Set Manage 3D settings > Max Frame Rate > On > 120 FPS



This setting is suggested for all nVidia drivers dated December 2020 and later to prevent flashing in the stereo view on tiling (as seen during zooming and panning)

- Set Manage 3D settings > Base profile > Stereo – Enable=On

- Set Manage 3D settings > Base profile > Stereo Display mode to one of the following settings, listed in order that you should try the if they appear in the list:

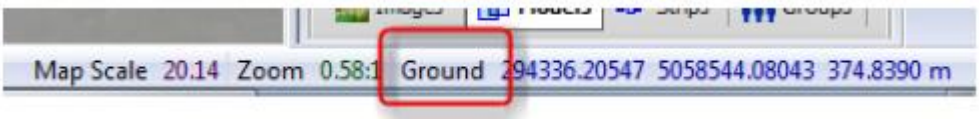
→ First choice (if offered):**On-board DIN connector (with NVIDIA 3D Vision)**
→ Second choice (if offered): **Generic Active Stereo (with NVIDIA 3D Vision)**
→ Third choice (if offered): **On-board DIN connector**
→ Forth choice (if offered): **Generic Active Stereo**
→ Fifth choice: Any other setting that appears above "Clone Mode" in the list. Do not set "Clone Mode" or any settings below "Clone Mode" on the list

If the stereo does not look very good when you test it, try the next choice. One will display better stereo than the others. If you do not notice any difference, reboot between settings.

Note: If none of the first four choices is offered, it's possible the emitter is not plugged in to an operational USB port. Try moving the emitter to a different port on the computer, not on an external hub. Also check the **Device Manager > Universal Serial Bus Controllers > NVIDIA 3D Stereoscopic USB Controller** to make sure it is installed and has the correct version number. Try reinstalling the decoupled emitter driver and rebooting.

3) Put on the fully charged stereo glasses and turn on the power button on the glasses.

4) Test using Summit or inpho Stereo Viewer. To use Summit, start Summit and open an oriented model to make sure stereo is working. Summit must have a stereo model open (two overlapping, oriented images) and "Ground" coordinates showing in the lower right corner of the Summit window. The cursor should be near the ground elevation in order to see good stereo. Continue to the next section only if Summit is ready to display stereo



Summit must show "Ground" in the lower right corner

When Summit opens a stereo model, the light on the brand-name NVIDIA emitter should change from a dull green (or perhaps even off) to a very bright green.

Without Summit running

With Summit running

For the generic "Three-D Vision" emitter, the red light on the back of the emitter should change from a dull red light to a bright red light. There are no lights on the front

Without Summit running

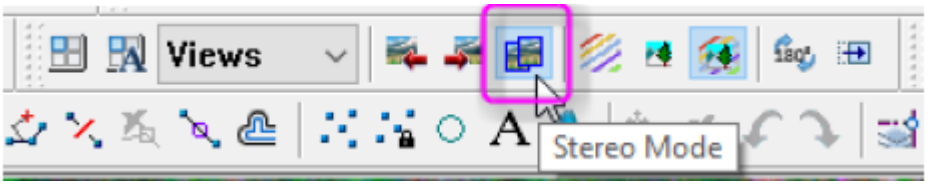
With Summit running

- Make sure the front of the emitter has an unobstructed line of sight to the stereo glasses.
  On both type of emitter, the front is opposite where the cable plugs in.

- Make sure the the stereo glasses are fully charged and powered on.

Good stereo viewing should have the following properties:

- Stereo is visible in the entire Summit Main View. Zoom out. It should seem as if you are looking down at the ground from far up in the air, with full stereo all the way to the deges of the view.
  Note: Summit needs to have Stereo Mode highlighted on it Image View toolbar:



Note: Summit > Tools > Options > Main View > Anaglyph Mode must be off!

- There should be no question whether you see stereo or not. If you have to ask yourself, “Am I seeing stereo?” then something is probably wrong.

1.2.2.10. Plug in one or more additional desktop monitors (Desktops)

(For desktop computers only) Now that the stereo monitor is set in Windows10/11 and stereo is working, add one or more side/desktop monitors.

1) Shut down the computer (power off). Do not skip this step!

2) Plug in the side monitors (while still the power is off). Use the lowest available port numbers for the type of port needed.
   For example, if there are four display ports and the stereo monitor is in port “1”, plug in the second monitor to port “2”, an optional third monitor to port “3”, and so on

3) Boot up the computer.

4) Return to “Make stereo settings and try stereo viewing”. This time follow all the directions, including the ones for having multiple monitors connected. Test stereo again.

1.2.2.11. Turn off Windows automatic driver downloads

If Windows is set to automatically download hardware drivers, it will often replace your video driver with the wrong-numbered driver (sometimes much older, and sometimes it is a driver that is not even for the correct model of video card!). When this happens, you will lose your stereo settings and the bad driver will not be capable of displaying stereo. Then you must repeat the correct driver installation quite often. Nobody wants this to happen! Turn off automatic driver downloads.

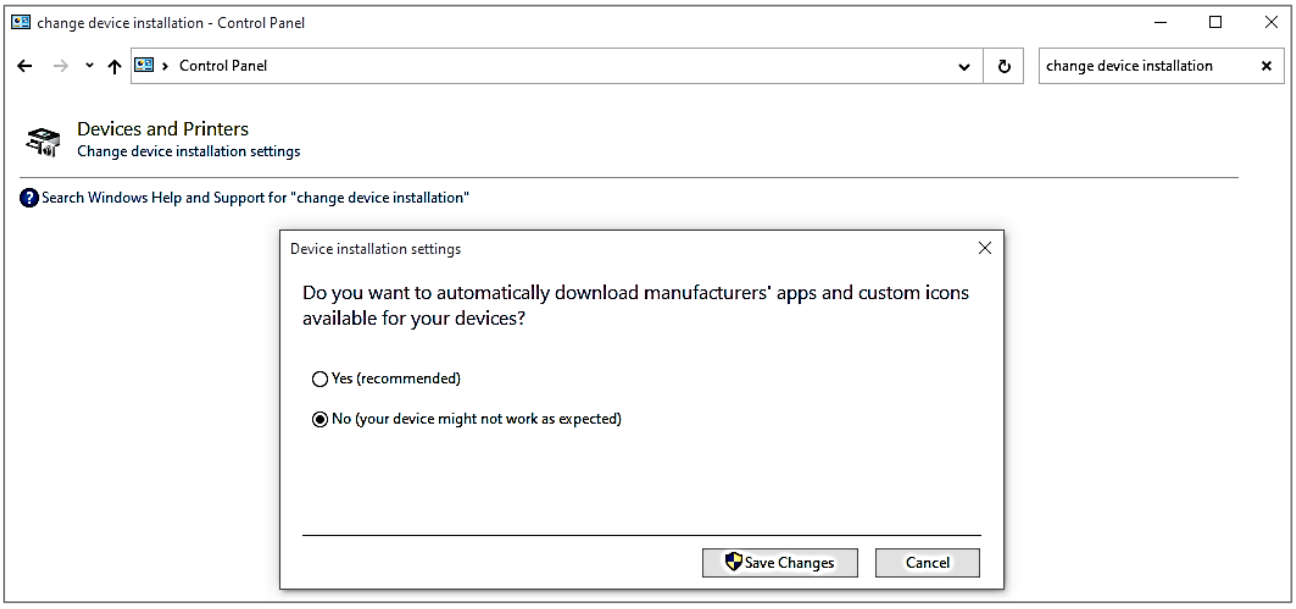
We at DAT/EM and Trimble imaging Support are not Microsoft Windows Experts. We do not know of a way to turn off only the video driver updates. We urge you to discuss this with your IT Department to see if they know of a way to do that. For now, we offer the general Windows 10/11 setting to turn off all automatic driver downloads:

Windows 10 or 11:

1. Start the Windows Control Panel.

2. In the search field at the upper right, enter “change device installation settings” and select “Change device installation settings” from the Devices and Printers result.

3. Set **No** (your device might not work at expected).



This will work for the daily type of Windows Updates. Read the next section for information about Windows Semi-Annual Channel Updates.
Note: Any time you are troubleshooting other hardware devices and want all device to automatically update their drivers, you can turn this back to **Yes** and run Windows Updates; however, be aware the video driver wil be replaced with the wrong driver and the emitter driver will be deactivated. The stereo settings will be lost. After fixing your other device, turn this setting back to **No** and install the newest NVIDIA driver and emitter driver and make the stereo settings again as shown in these instructions.

1.2.2.12. Windows semi-annual channel updates will deactivate your stereo setup!

Although you have already turned off automatic driver downloads in the section above, you may occasionally lose your video driver and stereo settings. This happens when Windows installs a “major” semi-annual (Windows 11) or semi-annual (Windows 10) feature update, such as 23H2. Feature update numbers and release dates appear on these Microsoft web pages:

- Windows 11:
  https://learn.microsoft.com/en-us/windows/release-health/windows11-releaseinformation
- Windows 10:
  https://docs.microsoft.com/en-us/windows/release-health/release-information

Annual feature updates do not respect the setting shown in the section above. They replace the video drivers whether you like or not.

DAT/EM is not suggesting that you delay semi-annual channel updates. They are important Windows operating system updates. Simply be aware of what will happen and plan the time – and possibility IT Department help – for new NVIDIA driver installations and settings. It is actually a good idea to update your video driver at least twice a year, so it can be a good maintenance choice.

Typical symptoms of losing stereo to a feature update are:
You receive Windows updates overnight, you come in the morning to find your stereo is not working, and you can’t find the proper stereo settings in the Windows Display Settings or NVIDIA Control Panel to reset stereo. To fix it, you will have to repeat the video driver installation shown in this document.

- This is a good opportunity to get the most current NVIDIA driver for your video card. It may work better than before.
- You may not need to unplug any side desktop monitors, since the monitor numbers and main monitor typically are not affected by the channel update.
- Install the latest NVIDIA driver followed by the decoupled emitter driver, as shown in these instructions. Always select the “Custom and Clean” installation choices for the two driver installations. Make the stereo settings shown in this document. Test stereo.

1.2.2.13. Troubleshooting

- “*I have done everything right, but I can’t get it to display stereo!*” It is time to clear the stereo monitor’s EDID. What does that mean? It means tho make Windows completely forget all the monitor settings that have been made so far. These settings are stored in the registry.

  Clearing the EDID is something DAT/EM must do very often when setting up 3DVision and other types of stereo displays at trade shows. It is real thing that often works! This is especially true for computers that had a different stereo display of multiple settings attempts in the past.

  Previously, you could clear the EDID from the NVidia Control Panel, but recent drivers have the still-visible option grayed out (inactive). Instead, use Windows Registry Editor. Here are two articles that show how tho clear the EDID values:

> For Windows 11: https://support.databeat.net/en/how-to-delete- monitor-or-display-cache-in-windows-11

> For Windows 10: https://answers.microsoft.com/en-us/windows/forum/all/windows-10-reset-external-monitors-settings/b3a53cef-e54f-4410-b09e-6846fa297a3f

After clearing the EDID from the registry, reboot. Then make the Windows Display Settings and NVidia Control Panel settings again using the instructions in this document.

Hint: If you are setting up a laptop, be sure to set the external stereo monitor as “Make this my main display.” If you set the main display to the built-in laptop screen, 3DVision will not work. If you set this before, the setting will probably be lost after clearing the EDID.

- **All monitors were plugged in during the NVidia Control Panel setting and stereo is not working.** (Desktops only). With Windows 10/11, a common issue is typing to set up stereo with one or more side monitors already plugged in to a desktop computer. Try shutting down, unplugging all but the stereo monitor, booting up, and setting the stereo settings. Move on to the mext section in this document only when stereo is working properly on the single stereo monitor.

- **Emitter light does not turn bright green** (NVIDIA brand on the front of the emitter) or **bright red** (Three-D Vision on the back of the emitter). Close Summit. Unplug the emitter and plug it back in to reload its driver. Try Summit (or Trimble Photogrammetry) again

  If the emitter light still doesn’t turn bright, reboot two or three times. Check the Windows Display Settings and NVIDIA Control Panel settings and start Summit (or Trimble Photogrammetry) after each restart to check if stereo is now working.

  If the emitter light still doesn’t turn bright, verify you are installing the correct driver combination for the correct video card model. **Note**: If you search for drivers on the Internet, be sure to search for Quadro, Quadro RTX, or RTX A-series drivers; do not download or install GeForce drivers, which unfortunately have the same driver version numbers as the Quadro versions. GeForce drivers might install, but they will not set up correctly and they can cause Windows operating system crashes. If you suspect a GeForce driver has been installed by mistake, reboot in safe mode, uninstall the GeForce driver and then install the proper Quadro, Quadro RTX, or RTX A-series driver.

  Note: Do not download any drivers from any website that is not the official www.nvidia.com (or an NVidia-brand localized language site)

  Sometimes when the emitter light will not turn bright when Summit starts, it is because Windows Updates replaced the video driver and deactivated the emitter driver. Check the version numbers again in Device Manager. Before reinstalling drivers, check the section called “1.2.2.11 Turn off Windows Automatic Driver Downloads”.

- There is stereo near the Summit cursor only. There is no stereo at the outside edges of the stereo view. Review this list of possible causes:

  - The most common reason is the wrong “Stereo Display Mode” setting. Return to the
    NVidia Control Panel and check that the correct stereo display mode is set.

- The wrong cable type could be attached from the stereo monitor to the video card.
- A mismatched video and emitter driver pair could be installed, or the video driver was installed after the emitter driver (this will disable the emitter driver). Reinstall the drivers, being sure to use the “Custom” and “Clean” driver settings. Reboot and repeat the stereo settings shown above.
- Having onboard graphics adapter active at startup (not disabled in the BIOS) can give this effect. This usually applies to laptops, but could also happen to custom built desktops.
- 3D Vision stereo is not supported through a Thunderbolt port or a Thinderbolt-connected dock. Plug the monitor directly into a port on the computer chassis. If there is no port on the chassis, it could be the wrong type of laptop.
- Do not use 144Hz or higher settings. The stereo monitor must be set to 120Hz refresh rate in the NVIDIA control panel

- **Large horizontal bands of stereo and no stereo**. Sometimes a horizontal quarter, third, or half screen has stereo and the rest is mono. This is most likely caused by a low power supply on the computer and/or an underpowered or defective DisplayPort–to-DVI adapter, is used. See the following hints:
  - A passive adapter will not work. A passive adapter does not have a USB cable for additional power. See recommended adapter type and model numbers.
  - If the computer is a desktop with a power supply less than 500 Watts, and especially if it is 350 Watts or lower, then low power is almost certain to be a problem. NVIDIA Quadro cards use a range of power from around 50W to 250W, depending on the model. If the power demand of the motherboard and all other devices plus the video card add up to more than the power supply can produce, a good stereo display will not be possible. Consider getting a replacement power supply with at least 750W or 1000W output.
    Note: DAT/EM’s recommended Dell desktop computer has a 1400W power supply.
  - If the computer is a laptop, always plug it in. Its battery alone is not powerful enough to run stereo with a DP-to-DVI adapter
  - To reduce power needs, consider getting a stereo monitor that does not need a DP-to-DVI adapter.
  - Do not plug a DisplayPort-to-DVI adapter’s power cable into an external USB hub. Plug it into a port on the computer chassis for maximum power delivery or plug it in to a USB wall power adapter.
  - To make more power available from the power supply, unplug any unnecessary USB devices such as phone chargers, tablet chargers, or extra USB hard drives to leave more power available for the video hardware.

- **If Summit's (or Inpho's stereo) main view is flashing constantly with glasses on**, check that the Windows Display settings' 3D Display Mode is still on. Check in the NVidia Control Panel that the refresh rate for the stereo monitor is still set to 120Hz. If 120Hz is not offered, it's probably because the wrong cable was used or the monitor is not rated to produce a 120Hz refresh rate. Also do not set 144Hz or higher; it will flash or give poor stereo.

- **If the monitor is flashing on Summit tile drawing during or just after panning and zooming,** check the NVidia Control Panel's Max Frame Rate setting. It should be on and set to 120 Frames Per Second (FPS). All NVidia drivers after December 2020 require this setting. Review all the stereo settings in the "1.2.2.9 Make stereo settings and try stereo viewing" section above.

- **There is crosstalk.** Crosstalk is when a part of the left image leaks over into the right eye's view, and a part of the right image leaks over into the left eye's view. It can make a valley with tree-lined slopes appear as if there are faint trees floating in the air above the valley. This is rare, but not unknown, with 3DVision with some hardware combinations. Some monitor models have a problem with this until they warm up with the power on for 20 or 30 minutes. Discuss any crosstalk problems with DAT/EM or Inpho support. Let us know the brand and model of the monitor and the type of cable and any cable and adapters connecting it to the video card.

1.2.3. Passive stereo systems

In 2016 the German company "Schneider digital" released also their a passive stereo system – 3DPluraView. They emphasizes particularly to high quality and user friendliness.
The mirror card is integrated in the system.

FullHD, UHD and 4K systems are available:

- PluraView 22", Full HD, 1.920 x 1.080 @60Hz
- PluraView Impact 24", Full HD, 1920 x 1080 @ 144HZ
- PluraView 27", WQHD (2,5K), 2560 x 1440 @60Hz
- PluraView 28", UHD (4K), 3.840 x 2.160 @60Hz

Note: For Planar StereoMirror owners – replacements for your mirror/inverter card are now available in an external configuration.

Advantages of the dual-monitor technology are

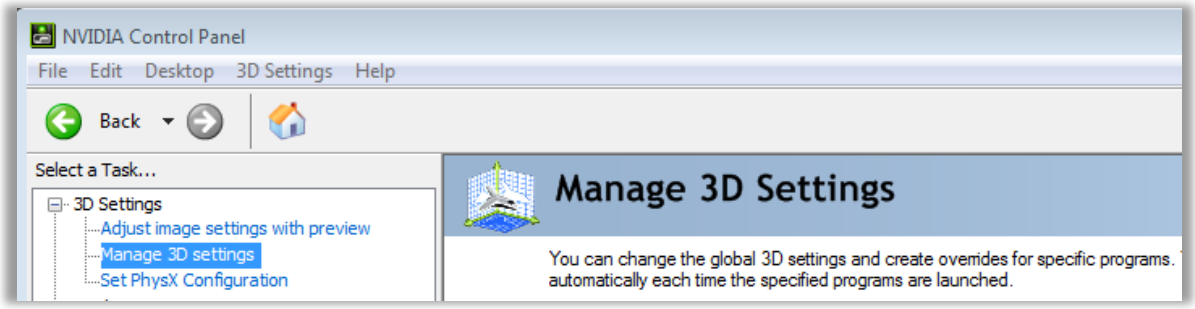
- No flickering, no ghosting
- Wide Visual Angle – Multi-User capability
- Highest Brightness – Daylight suitable
- Passive polarization uses no IR or RF technologies and thus is ideal for work in secure government areas.

1.2.3.1. Graphics board

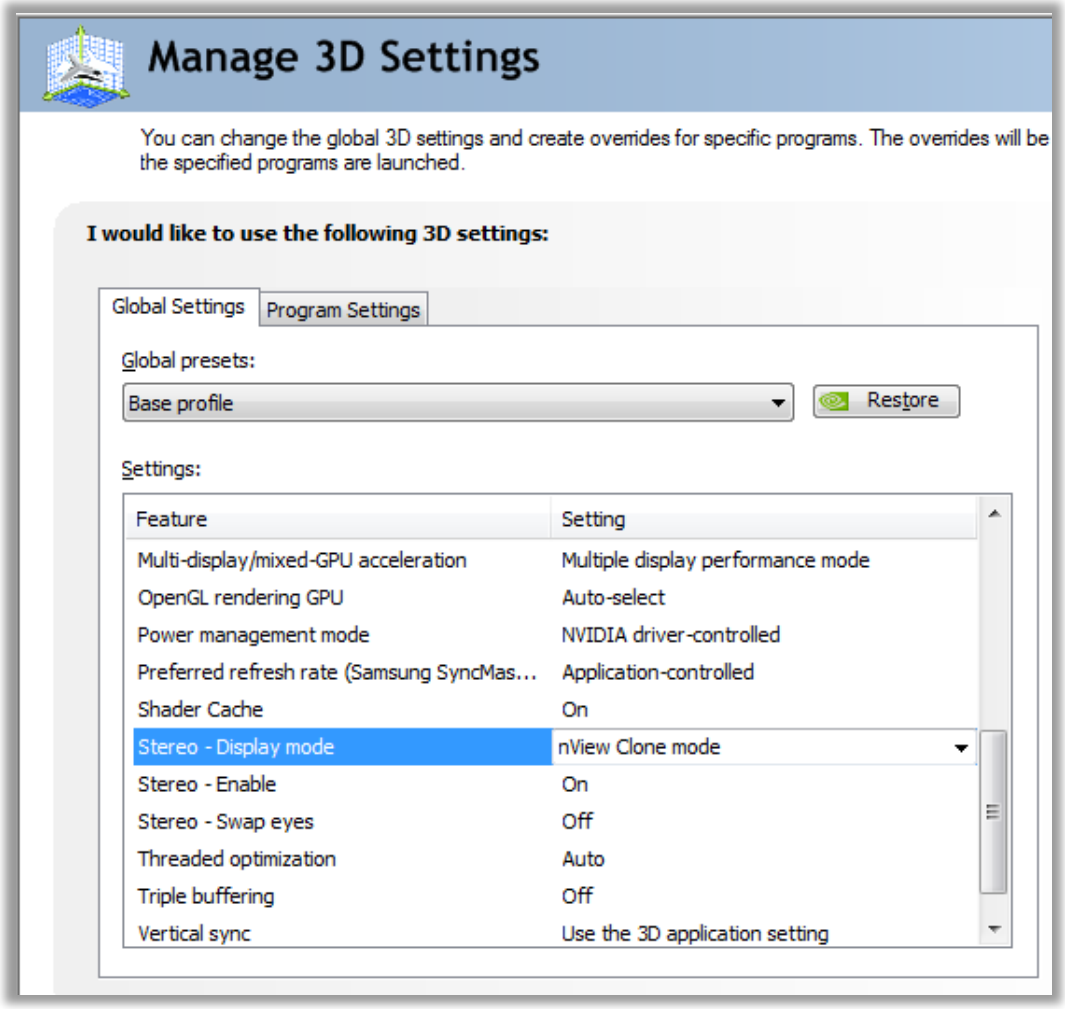
Also for the passive stereo systems we recommend NVIDIA® Quadro® professional graphics boards. For its applications Trimble Geospatial /Stuttgart is using the Quad Buffered OpenGL technology, that's supported by NVIDIA Quadro and AMD graphics cards but using the GPU for MATCH-3DX only NVIDIA Quadro boards are supported. Therefore, we recommend current NVIDIA Quadro graphic boards.

1.2.3.2. Graphics board settings for passive stereo (nView Clone mode)

- Start the NVIDIA Control Panel > Advanced Settings
- 3D Settings > Manage 3D settings

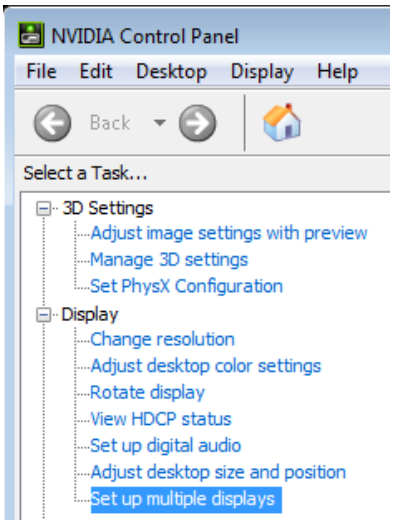


- Global presets: **Base profile**
  > Settings > Stereo-Display mode: **nView Clone mode**
  > Settings > Stereo-Enable: **On**

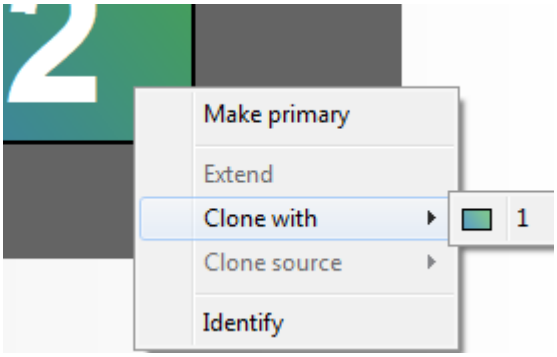


Save the settings with **Apply**.

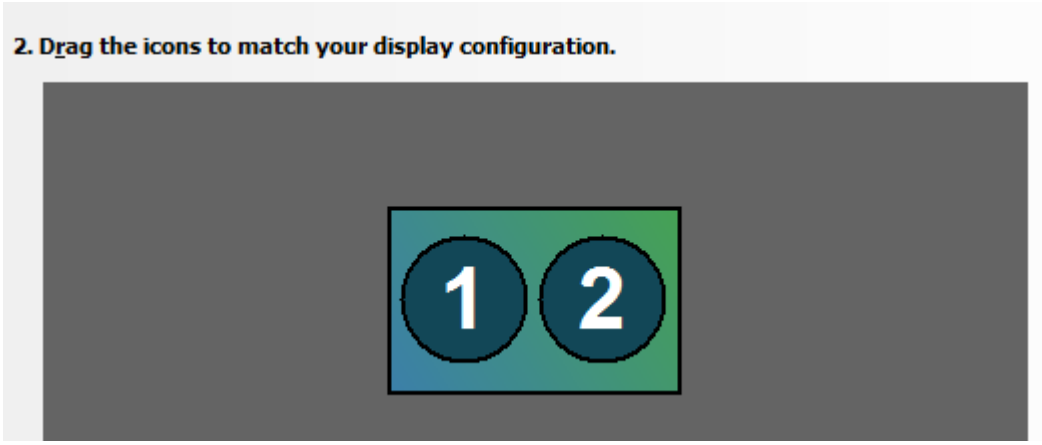
- Check menu : **Set up multiple displays**



A schematic drawing shows the connected monitors. The asterisk * mark the primary monitor. Click with the right mouse button into the monitor which should be cloned, e.g. 2 > Select in the pull-down menu Clone with > 1 (2).



Then you will find in the “Drag the icons to match your display configuration” the following appearance:



Save your settings and exit the NVIDIA Control Panel with File > Exit.

1.2.4. 3D mouse setup

1.2.4.1. Optical 3D mice from Stealth

By now we have good experiences with the optical 3D mice of Stealth. There are currently 4 different shapes available.

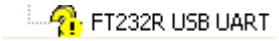
All 4 shapes are available as:

- E - type (serial port)
- Z - type (USB port) or
- V - type (connected to USB port but identified as virtual COM port)

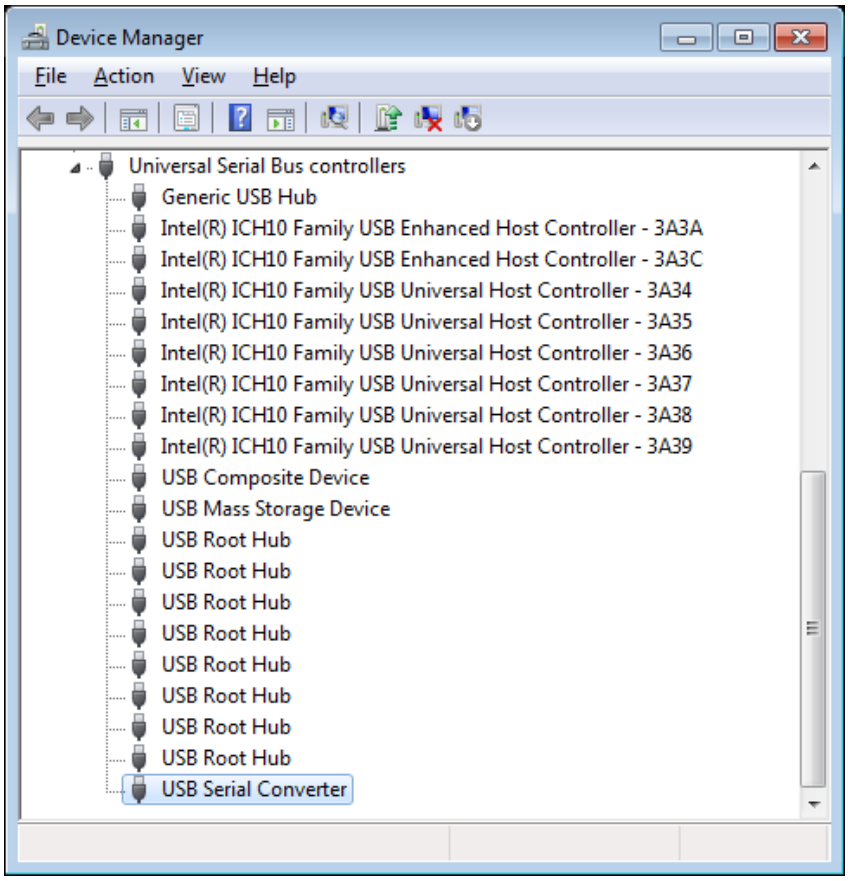
The current driver can be downloaded from the homepage of Stealth International (http://stealth3dmouse.com/), however the driver will be usually downloaded automatically when rebooting the computer after connecting mouse (in case you have an internet connection). A message says that new hardware is found. Allow the system to search for a compatible driver on the internet.

Stealth Z-mouse
Important: We do not recommend using this mouse type with our software, due to coincidentally occurring problems.

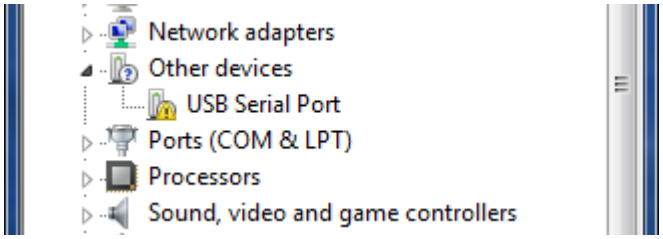
Manual installation of the Stealth V-type driver:

- Copy the corresponding driver and extract the zip file from the installation DVD to your computer or download it from http://stealth3dmouse.com/
- Connect the 3D mouse
- Start the “Control Panel > System > Device Manager”
- It could be found an unknown device 

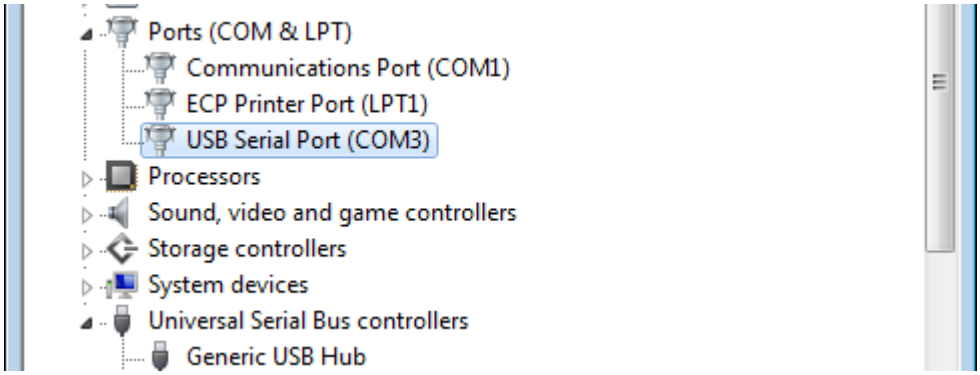
- Press the right mouse button and choose “update driver”
- Browse for the driver
- the “Device Manager” shows now in the “Universal Serial Bus controllers” a device “USB Serial Converter”



- Still it could be identified a unknown “USB Serial Port” device



- Start the installation of the mouse driver a second time
- Now in Ports (COM & LPT) the Stealth mouse with an assigned COM port is listed. e.g. COM3



- Finally the number of the (virtual) COM port has to be assigned in the software applications the 3D mouse should be used, e.g. for COM3
  DTMaster > Options > Preferences > Input Device > COM 3
  and/or
  MATCH-AT - Multi-Photo-Measurement > Options > Preferences > Input Device > COM 3
  and/or
  SummitEV > Tools > Options > Input Device > Immersion or Stealth V/E > 3

1.2.4.2. Softmouse 3D form Global GeoSupplies Inc. (GGS)

INCLUDED IN THE PACKAGE

- Softmouse 3D – USB device
- Teflon® treated mouse pad
- CD with software and user manual
- Quick installation guide

CONTROLS

- One thumbwheel for Z-axis positioning
- Four side buttons (two front and two back)
- Six color-coded top buttons

RESOLUTION

- X,Y movement – adjustable from 400 to 1600 counts per inch
- Z control thumbwheel – 1200 counts per revolution

CERTIFICATIONS

USB-IF certified, FCC Part 15B & EN 55022:2006 + A1 :2007, and Class B

USB

- High-precision X,Y laser navigation with a user selectable resolution from 400 to 1600 counts per inch for smooth and accurate position control
- High-resolution Z control at 1200 counts per revolution
- Soft-acting force, high-reliability buttons
- Smooth silicone top and rear button caps
- 6 feet of USB cable with strain relief
- Virtual serial port emulation for legacy software support
- New direct USB data interface available

WARRANTY: One-year limited to parts and labor, excluding normal wear and tear.
The shape of the softmouse is very similar to the former Immersion mouse but the technical specification is up-to-date. The driver of this digital 3D mouse creates a virtual COM port.

The number of the (virtual) COM port (announcement in the Device Manager) has to be assigned directly in the software applications applications the 3D mouse should be used, e.g. for COM3
DTMaster > Options > Preferences > Input Device > COM 3
and / or
Multi-Photo-Measurement > Options > Preferences > Input Device > COM 3
and / or
SummitEV > Tools > Options > Input Device > Immersion or Stealth V/E > 3

1.2.5. DAT/EM periphery

1.2.5.1. Keypad

The DAT/EM Keypad includes a convenient user interface for easily setting button functions

- There are 252 easily programmable keys
- Durable tactile touch character keys are rated for 5 million button hits.
- A changeable 8 ½" by 11" overlay/menu is easily customized and prints on any system printer
- An infinite number of keypad layers are supported through the user-friendly programming interface
- Connection to the computer via USB, no power supply is necessary
- Existing Polytel *.KDS and *.KDT files open into the user interface for quick and efficient updating of older menu/overlay files

The DAT/EM Keypad can be used with DAT/EM Systems mapping and editing interfaces for AutoCAD, MicroStation, and ArcGIS
Easy installation executing delivered keypad driver

1.2.5.2. Touchscreen

The TouchScreen' from DAT/EM Systems International is a stand-alone LCD monitor with an integrated tactile interface. With a single touch, the TouchScreen allows operators to quickly and efficiently change command sequences during map compilation. Existing DAT/EM Keypad overlay files may be used or customized as required. The DAT/EM TouchScreen can also be used as an additional system monitor.

Installation:

- Before installing the Touchscreen, install the DAT/EM hardware lock and the Summit software.
- Choose either a landscape or portrait position of the Touchscreen. Changing the position you need a screwdriver to remove (and fix again) the 4 screws at the back of the monitor.

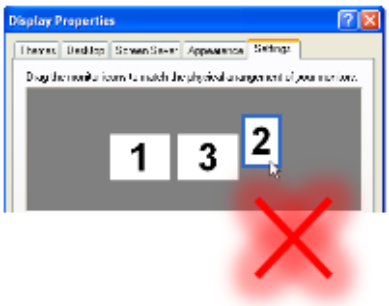
- Connect the VGA cable with the graphics board, if necessary use a VGA-DVI adapter

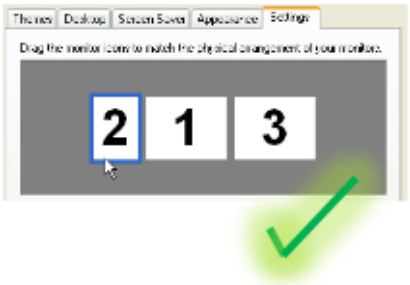
- For workstations with only one graphics board a Gefen USB-DVI adapter is necessary to emulate a second graphics board

- Additionally connect the Touchscreen with the computer via a USB standard cable.

Graphics board driver settings:
This will exemplary explain the settings for NVIDIA Quadro board. Start the NVIDIA control center by right mouse button click on the display.

- Extent the desktop about the touchscreen and define the resolution of 1024 x 768
- Move the screen diagrams to the physically correct position. Pay attention that the horizontal position of the screen sketches is on the same level
- In case the position of the touchscreen didn't match the diagram sketch (landscape/portrait) change the rotation of the screen

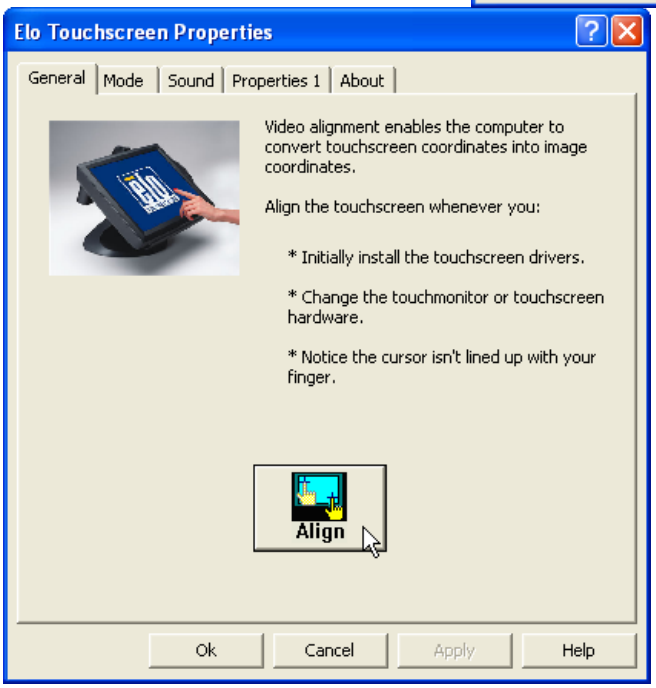




Installation of the elo driver:

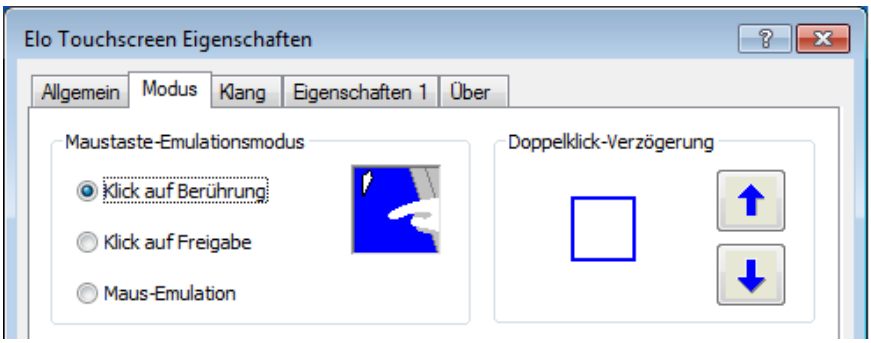
- Double-click on the elo driver exe-file, "Install USB Touchscreen Drivers" and follow the instructions of the setup

- Alignment of the Touchscreen
  Either you align the Touchscreen directly after the installation of the driver or you restart this later on by pressing on the elo icon at the taskbar.
  At one of the connected monitors 2 calibration marks appear, in case it is not the Touchscreen press ESC. Now the marks move to the next monitor. If the calibration mark appears on the Touchscreen press with the finger in the center of it. Do this also for the next one. Then you will be asked if the cursor follows your moving finger. In case this is correct press ok, the monitor aligned now.



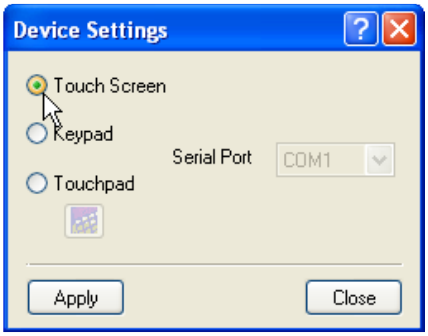
- Decide if you want to use Touchscreen by

  > Click by touch or
  > Mouse emulation

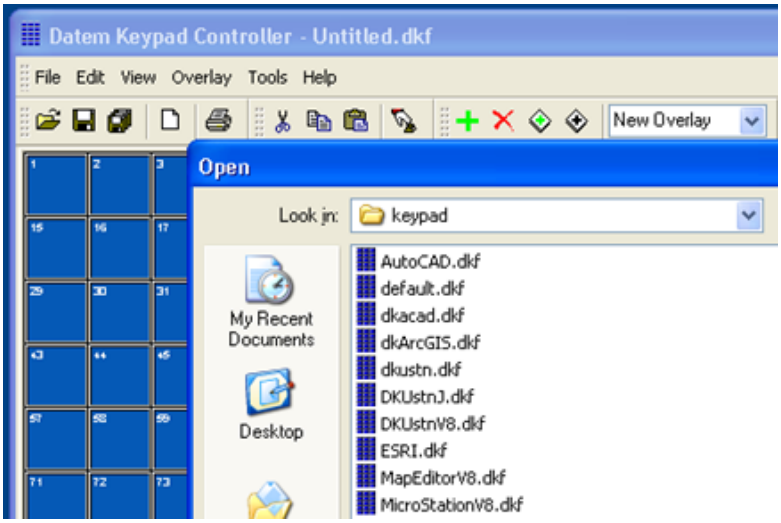


Settings in SummitEV

- Start SummitEV and select “Tools > Device Settings”
- Activate the check box Touch Screen
- Move the keypad overlay on the touchscreen
  Click on the DAT/EM Keypad button at the taskbar and move the Keypad Controller window on the Touchscreen. Adapt the size of the keypad menu to the size of the Touchscreen by changing the size of the button (e.g. 50)



- Load now the corresponding dkf overlay



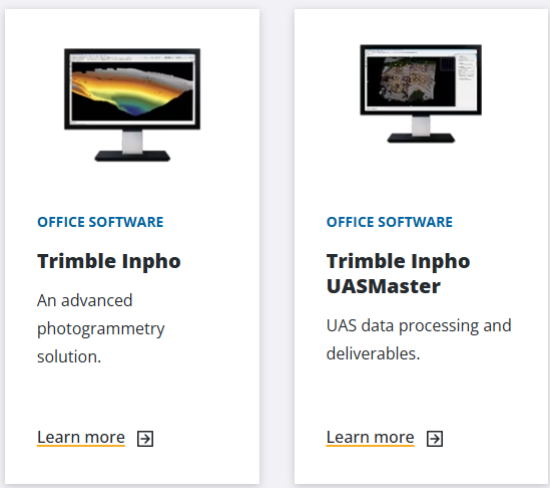
1.2.5.3. Android tablet

As third possibility DAT/EM offers the use of Android tablets. They are connected via Bluetooth. We recommend a tablet size of at least 13” to 15” to be able to read the texts in the buttons. The keypad overlay will be moved on the tablet. The assignment of the tablet has to be done every time when switching on the system

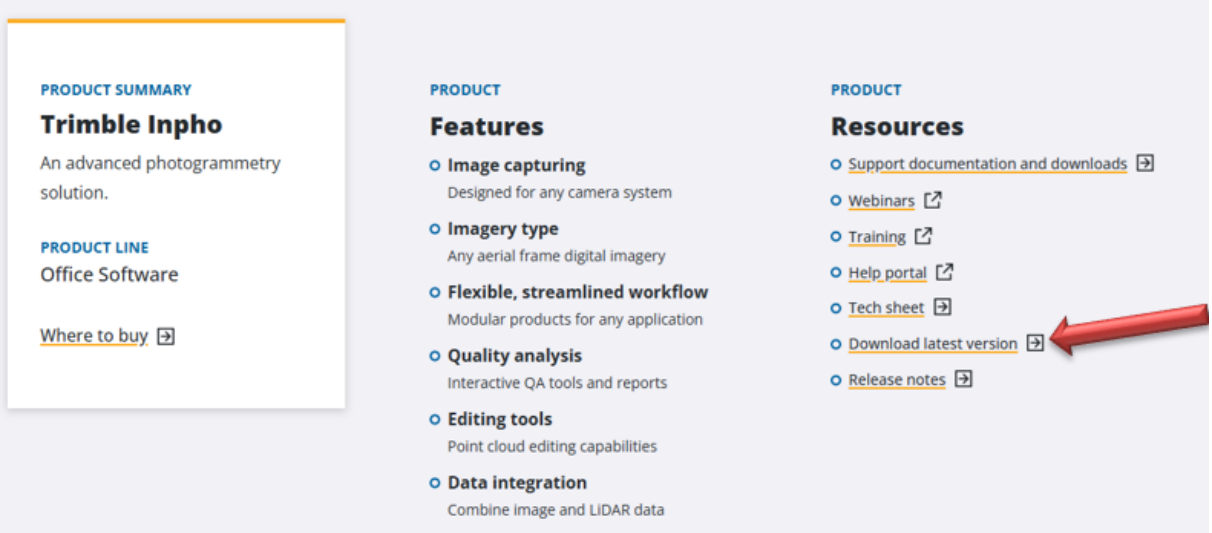
1.3. Installation of Inpho software

1.3.1. New download organization from Trimble homepage

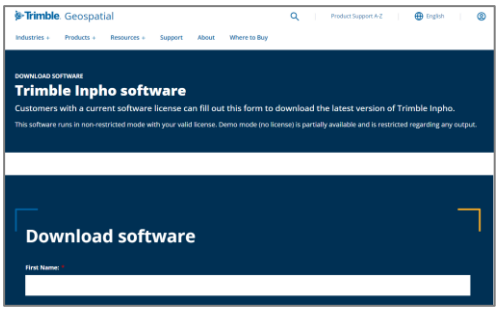
In March 2020 we reorganized our download area. The download page can be reached via https://geospatial.trimble.com. Then select “Products” and “Office software”. Scroll down until you find “Trimble Inpho” and “Trimble Inpho UASMaster”.



Click on “Learn more” and scroll down on the appearing page.
Select “Download latest version.



Please fill out the Download Inpho form and submit it. Then you will get an email with the download links.



1.3.1.1. Download of Trimble Photogrammetry (corresponding UASMaster software)

The received e-mail provides the links to download the corresponding software.

- Trimble Photogrammetry
- SCOP++
- TopDM
- Building Generator
- Summit Evolution
- 3rd Party Products

Our Sample Data will help you understand the workflow from project

Download your required software package:

- Trimble UASMaster
- 3rd Party Products

Our Sample Data will help you understand the workflow from project setup to final products.

Selecting e.g. Trimble Photogrammetry will lead you to the download page.
There can be selected the current and previous version with will run with the current license, too.

Trimble Photogrammetry

Including ApplicationsMaster, MATCH-AT, MATCH-ATpushbroom, inBLOCK, MATCH-T DSM, MATCH-3DX, DTMaster, DTMaster BuildingAddOn, DPMaster, OrthoMaster and OrthoVista

ReleaseNotes_TrimblePhotogrammetry_(English)_15.pdf (1459 KB)

TrimblePhotogrammetry 15.0.2 Bundle Installation (1814060 KB)
November 2024, release version 15.0.2. A new license is required. Maintenance customers receive update files for their licenses. The version 15 license applies to all versions up to 11.0.5. The bundle installs TrimblePhotogrammetry, TrimblePhotogrammetry-AddOn, GeospatialGeoids, TCS coordinate systems, WIBU Codemeter driver and Microsoft VCRedists simultaneously. NOTE: A BUNDLE OF IDENTICAL VERSION CANNOT BE INSTALLED TWICE! Please install in this case TrimblePhotogrammetryr-15.0.2.msi, TrimblePhotogrammetry-AddOn-15.0.2.msi, GeospatialGeoids-15.0.2.msi, the Trimble CoordinateSystemManager_3.10.3.0.msi and the current WIBU CodeMeter driver. The CoordinateSystemManager_3.10.3.0 and the WIBU CodeMeter driver can be found in 3rd Party Products. Note: If you do not want to install the bundle, it is important to install the "Microsoft VC Redistributables 2015-2022 version 14.40.x". Older versions of this redistributable will not work. You can find these under "3rd Party Products".

TrimblePhotogrammetry-15.0.2.msi (508884 KB)
November 2024, release of version 15.0.2. A new license is required. Maintenance customers receive update files for their licenses. The version 15 license applies to all versions up to 11.0.5. Note: If you do not want to install the bundle, it is important to install the "Microsoft VC Redistributables 2015-2022 version 14.40.x". Older versions of this redistributable will not work. You can find these under "3rd Party Products".

TrimblePhotogrammetry-AddOn-15.0.2.msi (204888 KB)
Installs documentations and language files which allow an additional language selection for the user interface.

GeoSpatialGeoids-15.0.2.msi (300840 KB)

ReleaseNotes_TrimblePhotogrammetry_(English)_14.pdf (2074 KB)

TrimblePhotogrammetry 14.1.3 Bundle Installation (1795056 KB)
October 2024, release of patch version 14.1.3. A new license is not required if version 14 is already running. The version 14 license applies to all versions up to 11.0.5. The bundle installs TrimblePhotogrammetry, TrimblePhotogrammetry-AddOn, GeospatialGeoids, TCS coordinate systems, WIBU Codemeter driver and Microsoft VCRedists simultaneously. NOTE: A BUNDLE OF IDENTICAL VERSION CANNOT BE INSTALLED TWICE! Please install in this case TrimblePhotogrammetryr-14.1.3.msi, TrimblePhotogrammetry-AddOn-14.1.3.msi, GeospatialGeoids-14.1.3.msi, the Trimble CoordinateSystemManager_3.10.3.0.msi and the current WIBU CodeMeter driver. The CoordinateSystemManager_3.10.3.0 and the WIBU CodeMeter driver 7.60d can be found in 3rd Party Products. Note: If you do not want to install the bundle, it is important to install the "Microsoft VC Redistributables 2015-2022 version 14.40.x". Older versions of this redistributable will not work. You can find these under "3rd Party Products".

TrimblePhotogrammetry-14.1.3.msi (504752 KB)
October 2024, release of patch version 14.1.3. A new license is not required if version 14 is already running. The version 14 license applies to all versions up to 11.0.5. Note: If you do not want to install the bundle, it is important to install the "Microsoft VC Redistributables 2015-2022" version 14.40.x. Older versions of this redistributable will not work. You can find these under "3rd Party Products".

TrimblePhotogrammetry-AddOn-14.1.3.msi (205024 KB)
Installs documentations and language files which allow an additional language selection for the user interface.

GeoSpatialGeoids-14.1.3.msi (300832 KB)

How-to-set-up-3DVision-for-DATEM-Stereo(4June2024).pdf (2188 KB)
The document describes the possibilities to use the active stereo system NVIDIA 3DVision on Windows 10 and Windows 11. The document was kindly made available to us by our partner DAT/EM.

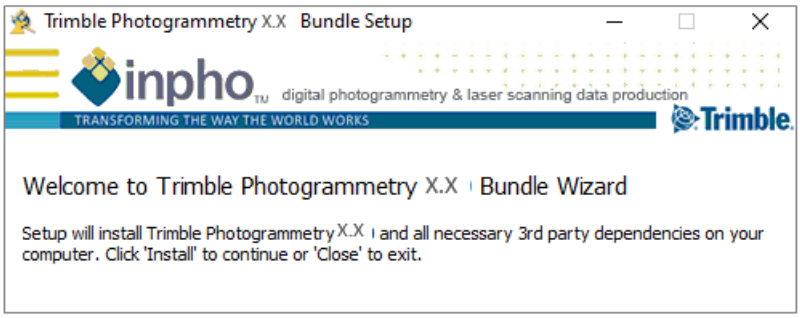
In case you need further products like SCOP++, TopDM or the Sample Data click on the corresponding link.

If older versions are needed contact our support team (imaging_support@trimble.com).

1.3.1.2. Installation of the downloaded software

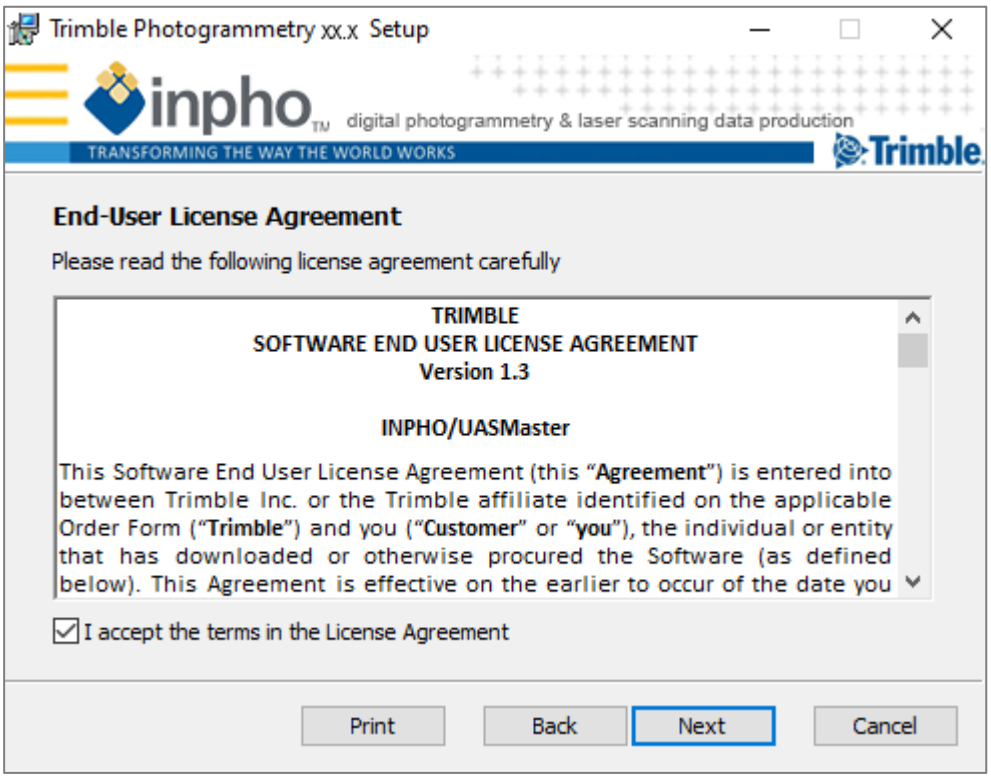
Start the installation by double clicking on the corresonding .exe, resp. msi installer. We recommend to use the bundle installer which will install at once the software, the coordinate system manager, the geoid data base, the WIBU Codemeter driver and the necessary MS redistributable files. Nevertheless the installations can be executed separately and is necessary if a bundle installation of the same version should be replaced. Following workflow show exemplarily the installation of the bundle installation.

1) Double-click on the downloaded “TrimblePhotogrammetry-Bundle-<version>.exe installer.

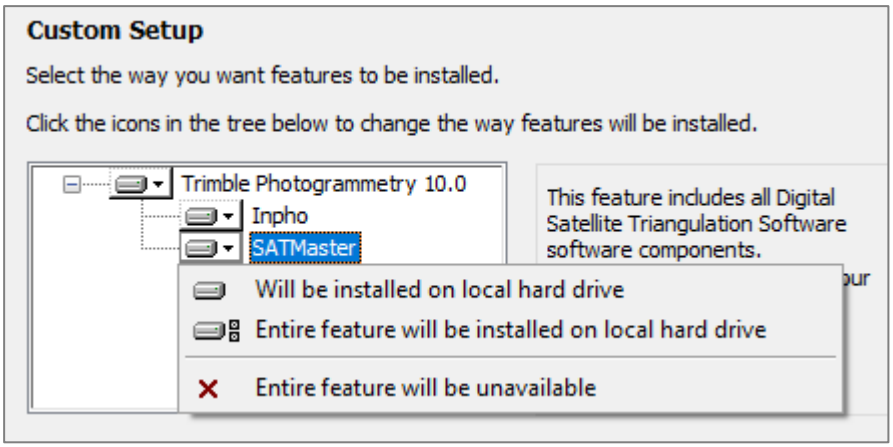


2) Continue with “Install”. Answer to the Windows security query “Do you want to allow this app to make changes to your device” with YES. After that the “Welcome Trimble Photogrammety <version> Setup Wizard” will be opened.

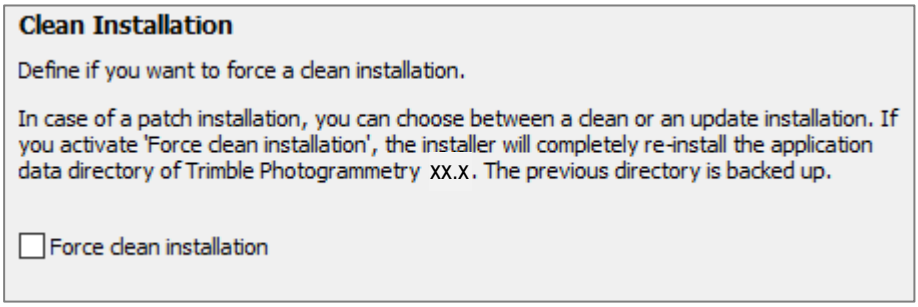
3) Continue with “Next” and accept the “End-User License Agreement”.



4) Continue with “Next”
The custom setup allow to deactive software installations. The following screenshot shows exemlarily to deactivate the installation of SATMaster. If no modification are done both packages will be installed and you will see after the installation an ApplicationsMaster and a SATMaster icon on your desktop.
Note: All workflows, also the satellite workflow can be executed with Trimble Photogrammetry. Using SATMaster will unplug all other options beside the satellite workflow. SATMaster will easify working with satellite data offering no option which are not necessary.



5) Continue with “Next”



Note: Activating “Force clean installtion” will remove the adaptions e.g. 3D mouse configurations, shortcut definitions, etc..

6) Continue with “Next”
The appearing dialog let you know that the installer is now ready to install the software.

7) Continue with “Install”
The status bar displays the process of installation. Continuously the Trimble Photogrammetry software, the Trimble Photogrammetry Add-Ons (documentation and language settings), the Geospatial Geoids, the necessary MicroSoft Visual C++ redistributables, the Coordinate System Manager and the WIBU Codemeter driver will be installed.

8) Continue with „OK“. The installation is completed. Exit the dialog with “Finish”.

Note: Having problem starting the software, check if the current windows installation is up-to-date. In case of missing MicroSoft VC redistributables check the “3rd Party Products” folder at the Inpho download area.

1.3.2. WIBU Codemeter

For program protection we use the WIBU Codemeter licensing. It is necessary to install the current driver on your computer. You can download the current version from the WIBU homepage
https://www.wibu.com/downloads-user-software.html
or from our download area, Inpho or UASMaster > 3rd Party Products.

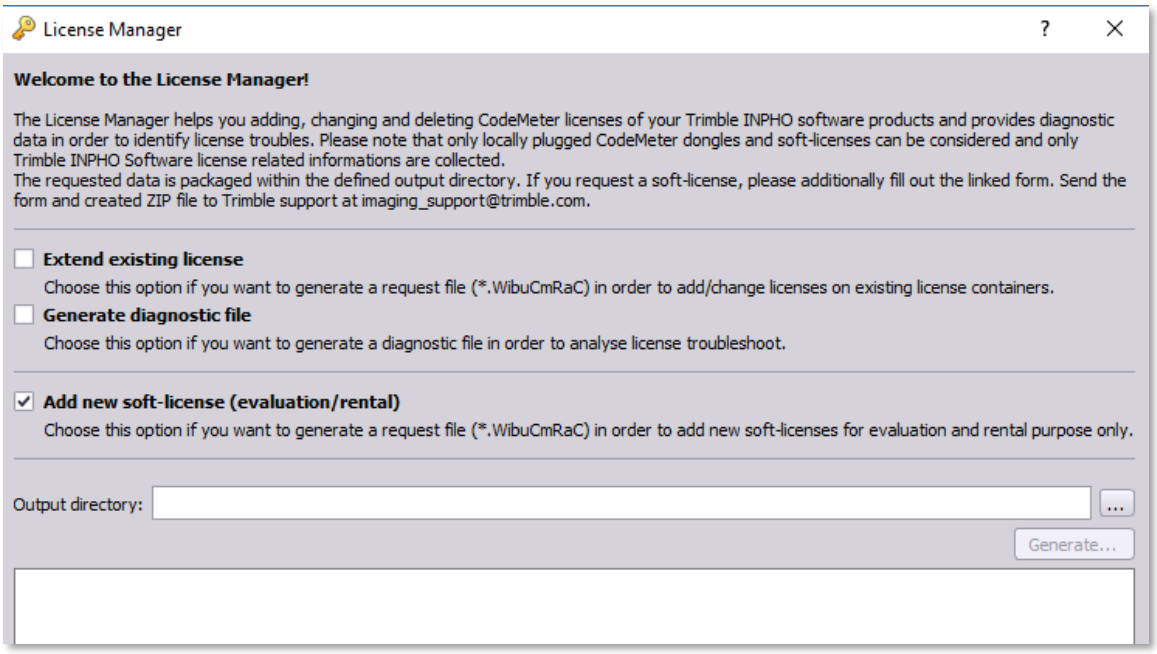
For DEMO and time limited licenses we create soft-licenses without dongle. The behavior of the soft-license correspond to this of the dongle. Dongle and soft-licenses can be used locally or as network license.

1.3.2.1. Soft-licenses

If you are interested in our software ask your responsible Trimble dealer for an evaluation license in case you know him. If you do not have already installed the software use our download area to install the software (see chapter 1.3.1).

Workflow:

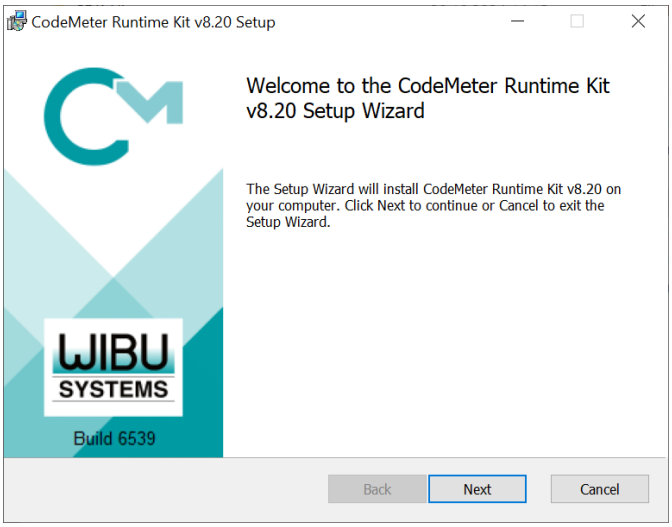
- Install the TrimblePhotogrammetry or UASMaster bundle executable
- Start ApplicationsMaster (UAS ApplicationsMaster), select “License Manager” and “Add new soft-license (evalutation/rental)”



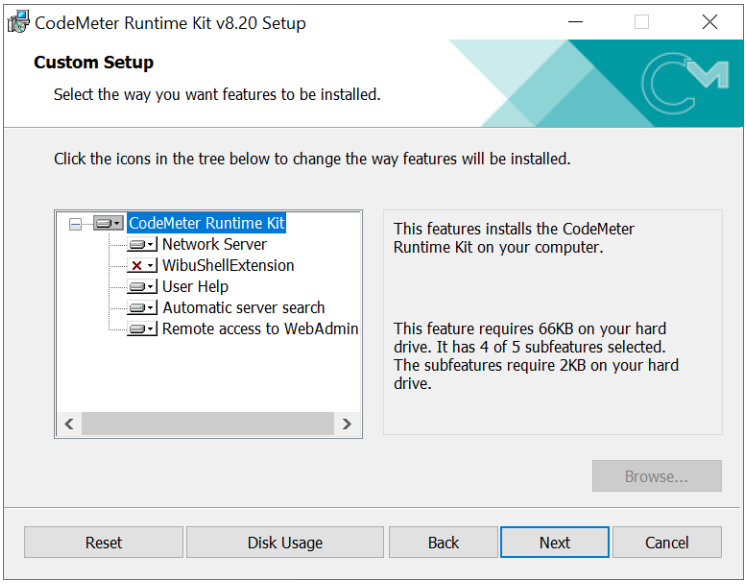
- Send the generated Zip file to imaging_license@trimble.com
- Then we will send a RaU file to update the license.The process is explained in chapter 1.3.6.2 Apply license update file - RaU

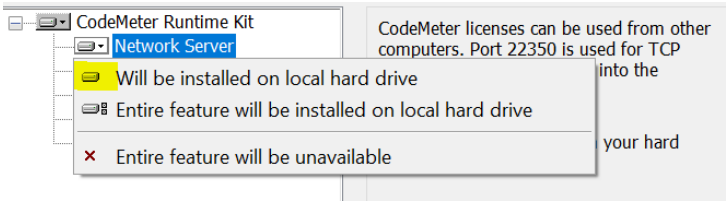
CodeMeter driver installation

- Double click on the driver exe file will open the setup



- Continue with Next and accept the “End User License Agreement”
- Accept the access for all user of this machine.
- In case you want to use the license as network license, please change the default settings for Network Server and Automatic server search while installation:





Please select “Will be installed on local hard drive”. A firewall rule is created automatically (Port

22350 for the use as Network server, 22352 (http) and 22353 (https) to allow a Client the access to the Server WebAdmin).

- Select Install to start the process.
- Exit the installer with Finish.

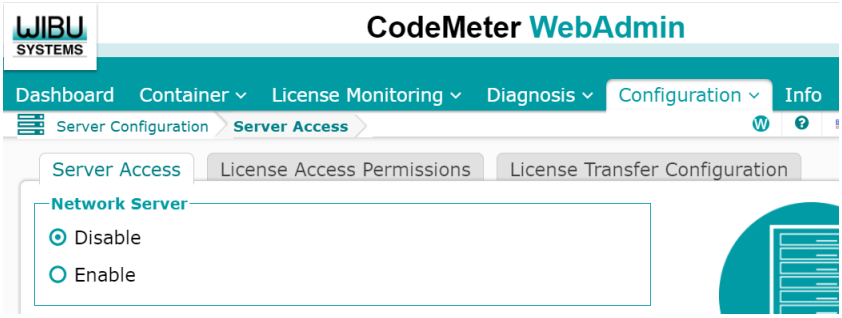
Detailed information can be found in the WIBU Help documentation (e.g. WebAdmin – Help).

1.3.3. Setup WIBU Codemeter

The CodeMeter driver has to be installed at all computers the inpho software should run or should serve as dongle server. The dongle can be used locally or as network dongle. After installing the CodeMeter driver, the CodeMeter icon will appear in the Windows taskbar.

Possible constellations:

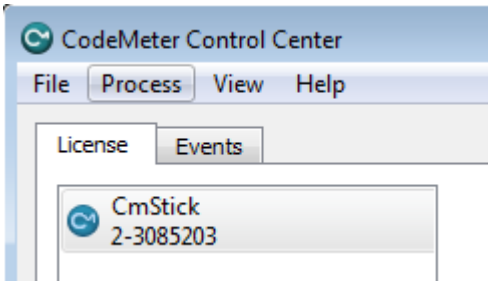
a) <u>The dongle runs only locally</u>
After the installation of the Codemeter driver the dongle will be detected automatically. Please check the setting for the dongle accessibility (local only or as server) in the WebAdmin.



b) <u>The dongle runs as network dongle</u>
In case the dongle should be used as network dongle with high access on it (several licenses and users) we recommend to connect the dongle at a computer with a server operation system.

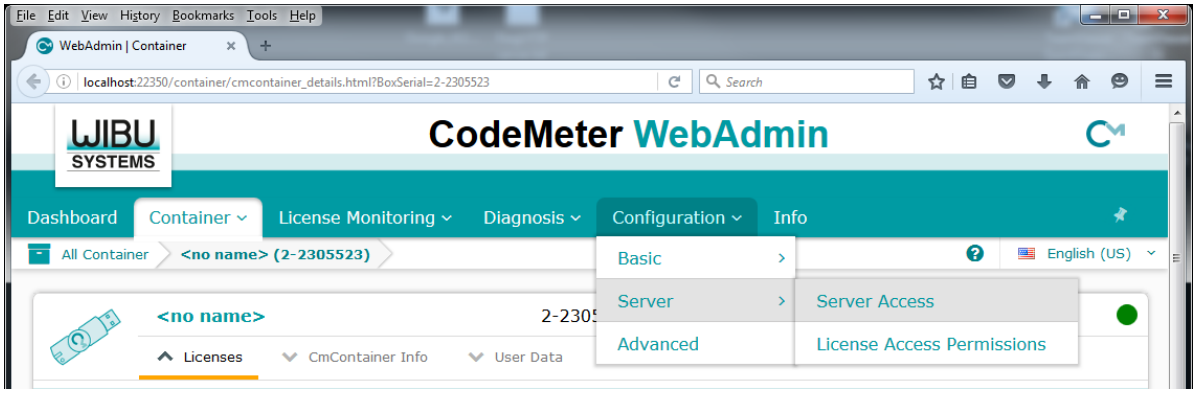
1.3.3.1. Settings at the "Server" computer (the computer where the dongle is connected)

Open the CodeMeter Control Center by clicking on the CodeMeter icon in the Windows taskbar.
The "CodeMeter Control Center" window appear.

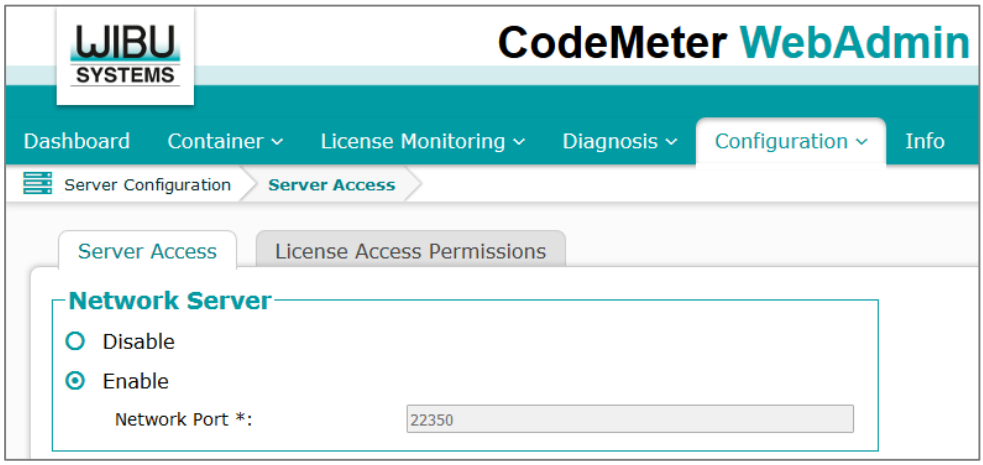


Select WebAdmin

To run the local dongle as network server select the Configuration tab and from its pulldown menu Server and Server Access.

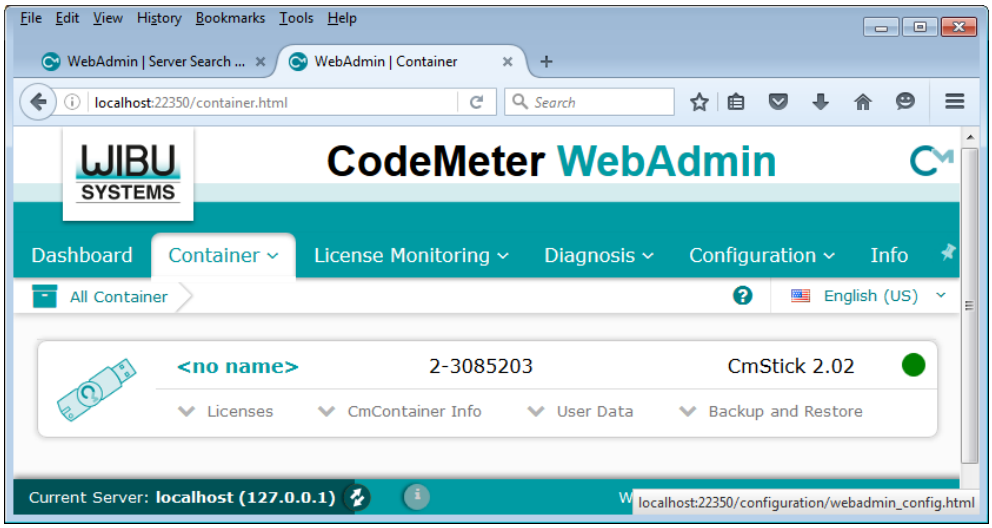


The "Enable" check box should be activated. This allows the access to the dongle from other computers (clients) in the network.

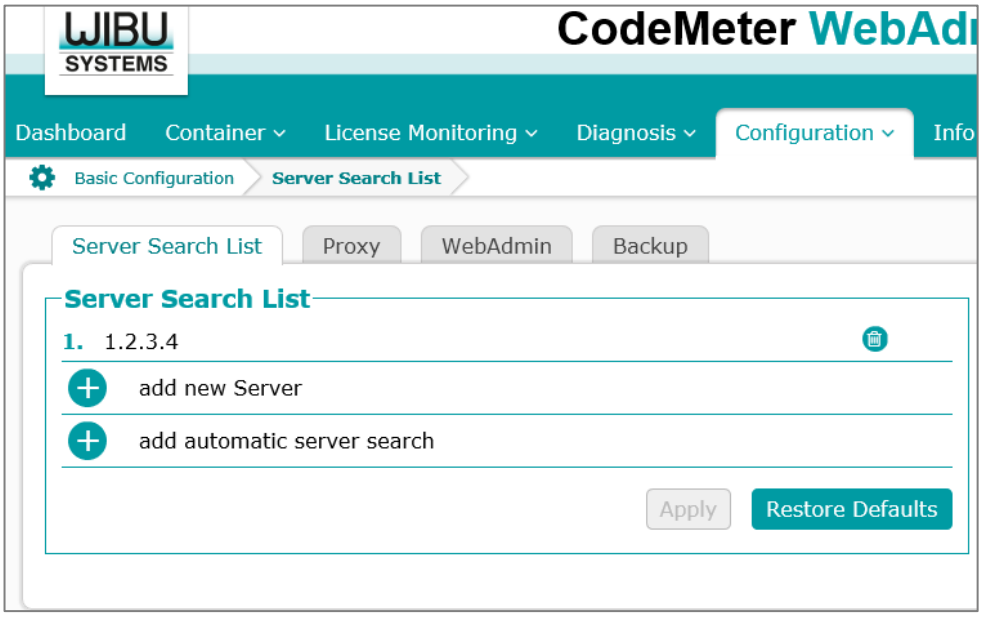


1.3.3.2. Settings at the "Client" computer(s)

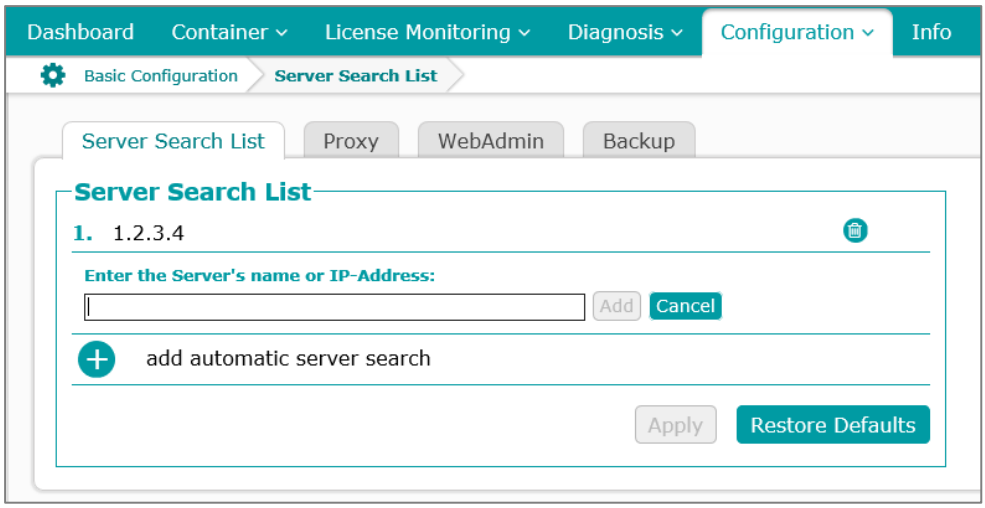
Open the "CodeMeter Control Center" and "WebAdmin"



Select tab Configuration and "add new Server"



Enter the server's name or its IP address

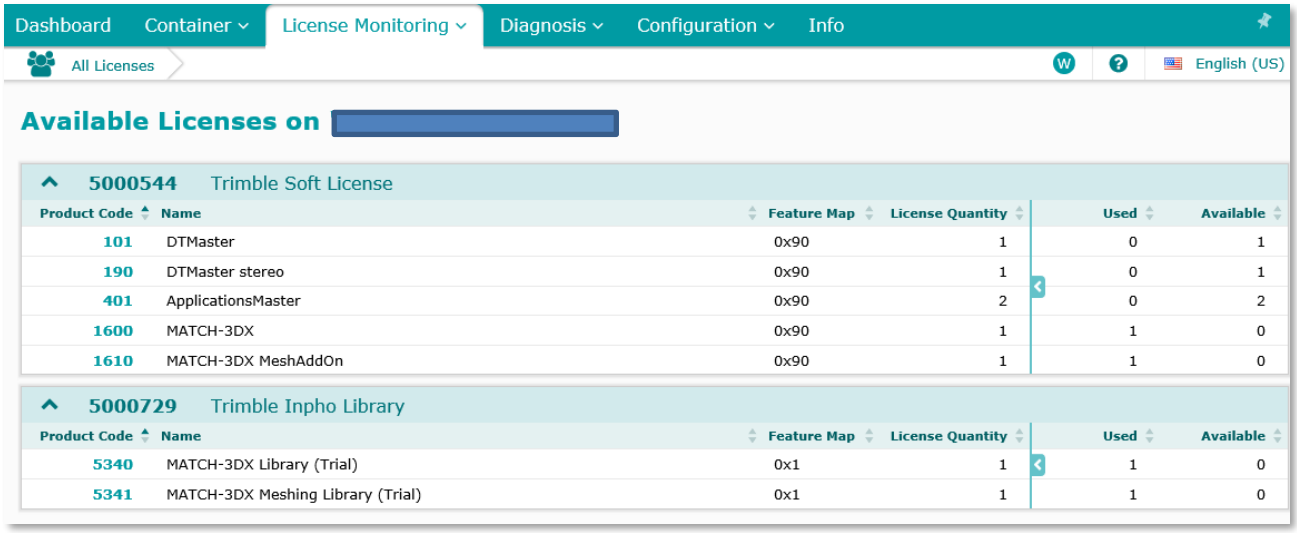


If not necessary please do not use “add automatic server search”. If defined the complete network will be checked for CodeMeter licenses.

Select Apply to make the changes permanent.

The WebAdmin lower taskbar shows now the current server:

In the tab License Monitoring the available licenses on the current server are listed.



1.3.3.3. Interference of WIBU CodeMeter licensing

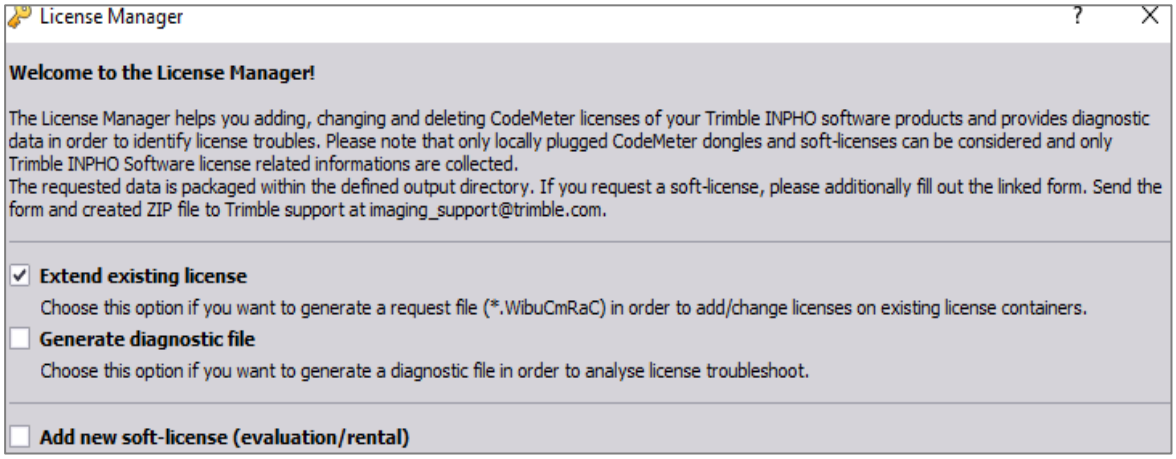
In case a USB accelerator software is running on the workstation, the WIBU licensing will be interrupted. Known problem with software XFASTUSB which boots up the USB speed. Please stop this service.

1.3.4. Update license

In case an update or reconfiguration of an existing Inpho software installation is necessary, the license written on the dongle has to be changed. If you need a license update or reconfiguration of your dongles, please contact the Trimble License Team in Stuttgart (imaging_license@trimble.com). We will create an update file for your WIBU dongle (*.WibuCmRaU). In some cases the update will not work because the stored situation in the inpho database does not coincide with the content of the dongle. In those cases, we ask for a .WibuCmRaC file to check the actual configuration on your dongle.

1.3.4.1. Create a license request file - RaC

Since version 9 we offer a one click solution to gather all necessary information required for license updates. In the main view of ApplicationsMaster you find under Tools: License Manager.



For updates of an existing dongle or soft-license please select “Extend existing license”
We collect all necessary license information from the existing licenses on the machine you start the license manager. All data are zipped and can be send to imaging_license@trimble.com.

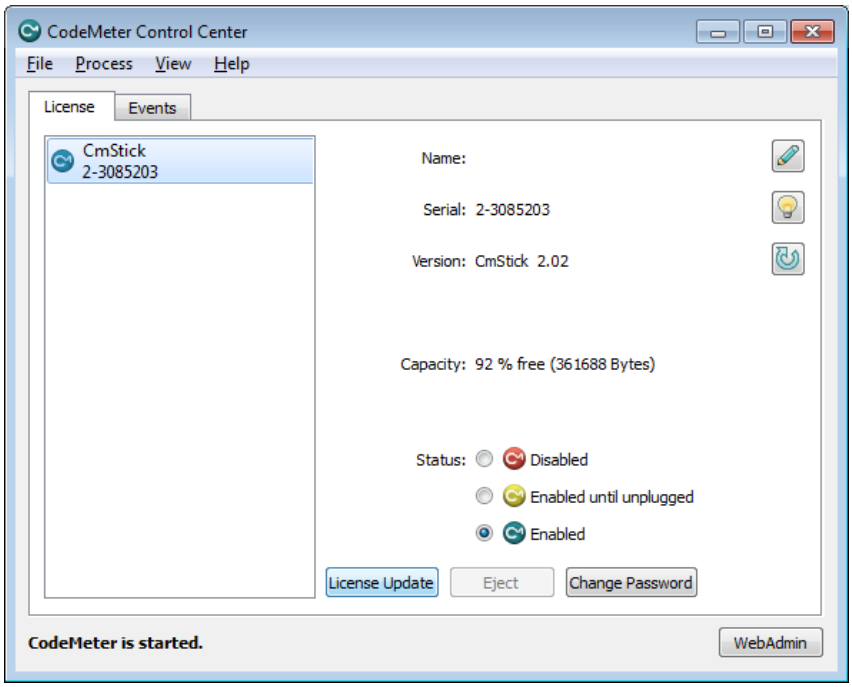
For new soft-license requests please use the selection “Add new soft-license (evaluation/rental)”. Please fill out the form we copied in the defined output directory and send it together with the generated zip file to imaging_license@trimble.com.

In case you have problems with the usage of the license please send us the diagnostic report file: select “Generate diagnostic file”. It is an ASCII file and you can check the gatherd information before sending it to imaging_support@trimble.com.

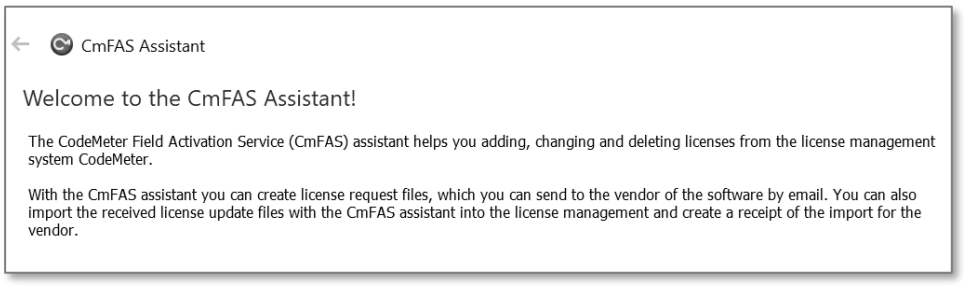
There is a second option to create dongle/soft-license request files (RaC):
It cannot be used for the new product MATCH-3DX. For all other modules it is valid.

Start the Codemeter Control Center at the computer the dongle is connected by clicking at the icon at the Windows taskbar.

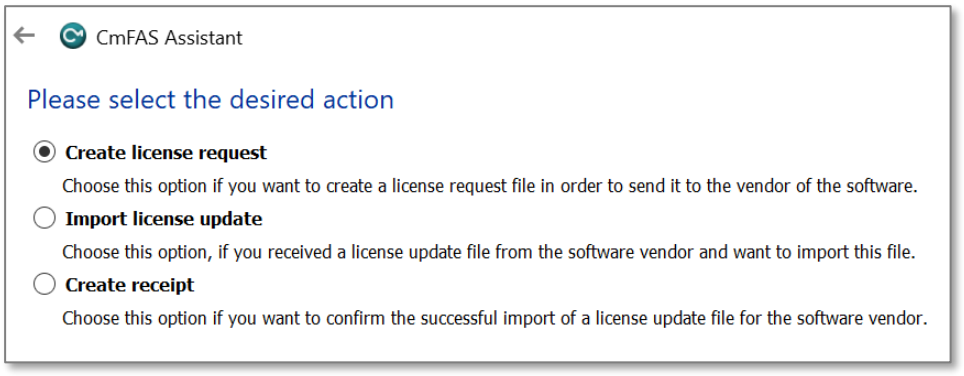
The “CodeMeter Control Center” dialog will be opened, select License Update



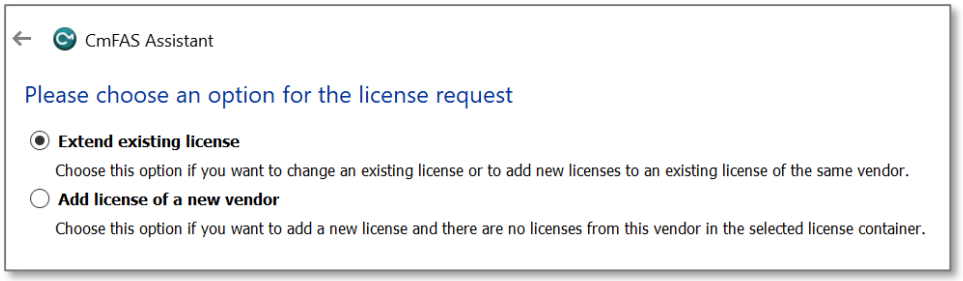
The “CmFAS Assistant” dialog will appear, continue with Next



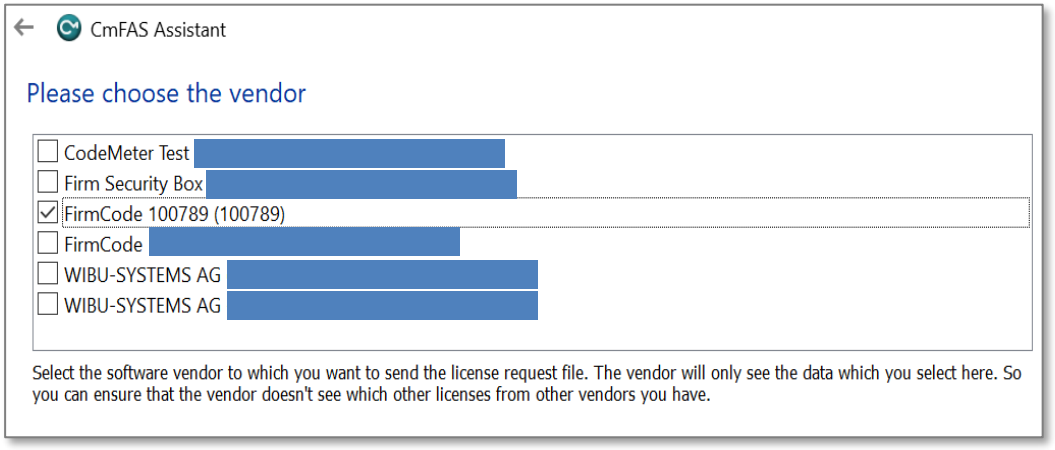
Activate the checkbox “Create license request” and continue with Next



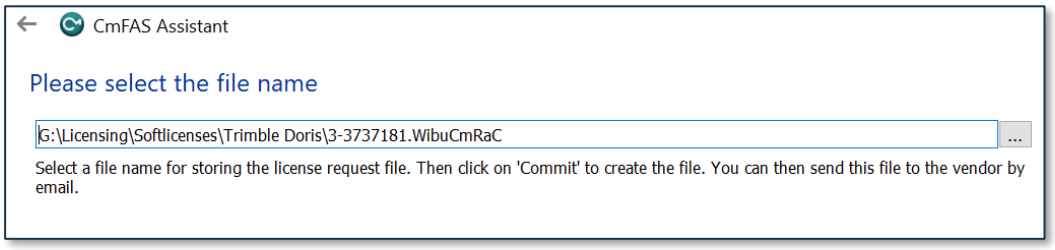
Keep the setting Extend existing license and select Next



In case several producers are listed in the dialog, select **FirmCode 100789** and continue with Next



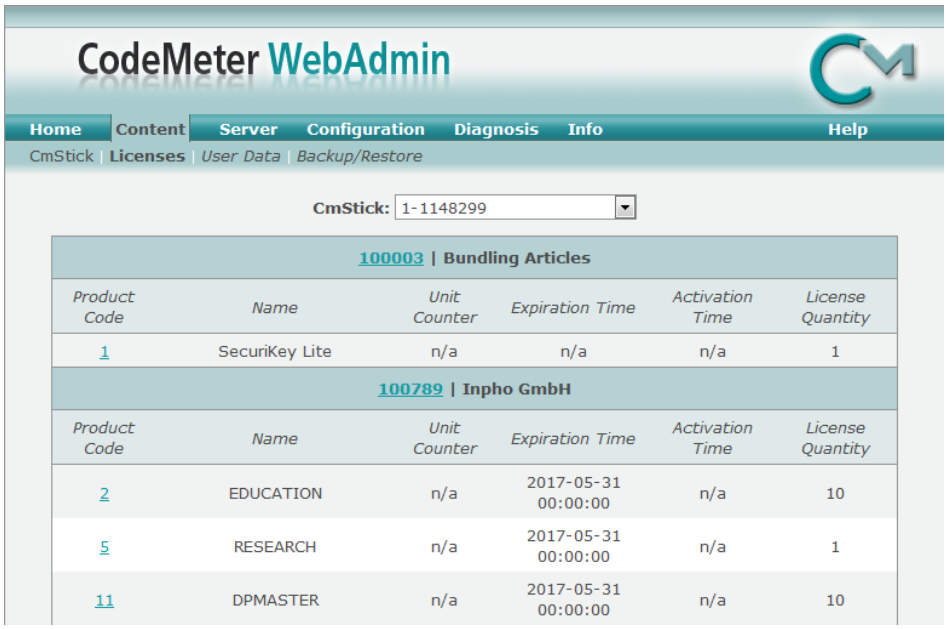
Define the path, where the RaC file should be stored and select Commit



Send the created RaC file to **imaging_support@trimble.com.**

1.3.4.2. Apply license update file - RaU

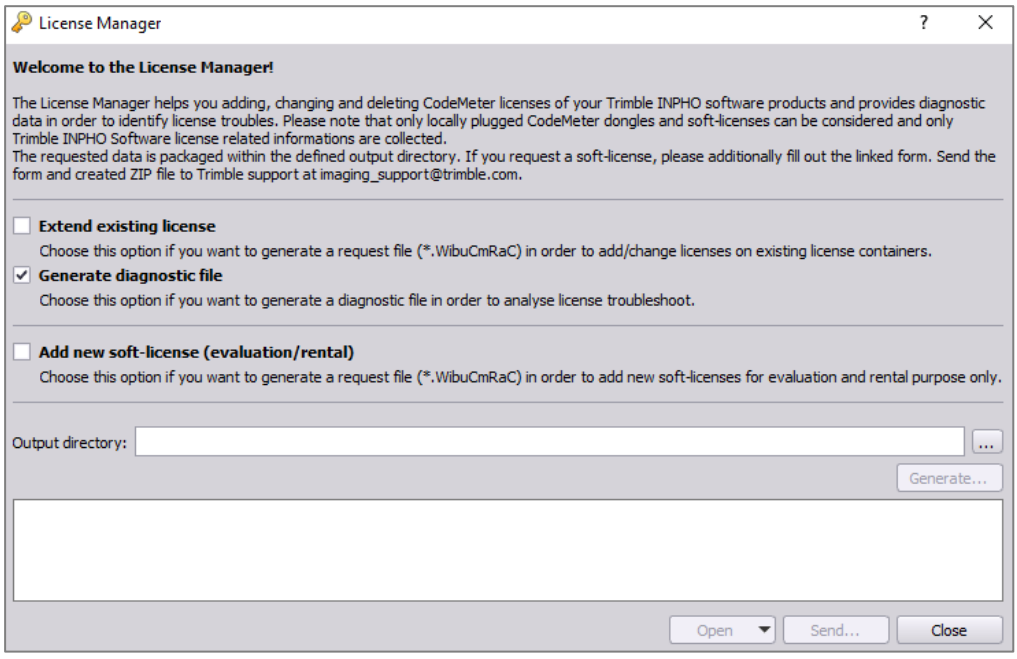
A simple double click on the <donglename>-RaU file will update the license on the corresponding dongle. This action should take place at the computer the dongle is connected. A message will appear when the update was successful.
To check if the update was correctly done start the “CodeMeter Control Center” and select WebAdmin > Content > Licenses.



1.3.5. Create CodeMeter Log File - CmDust

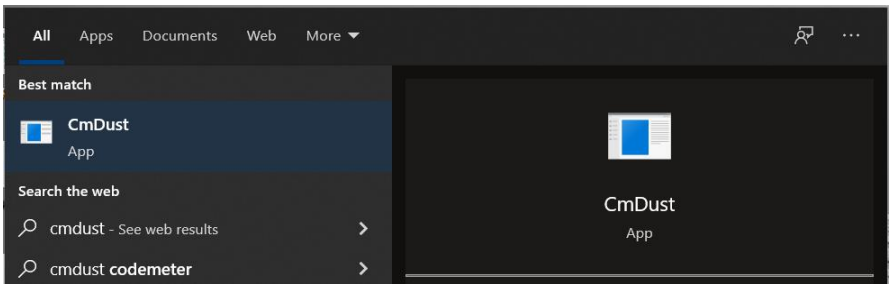
If problems concerning licensing occur the Trimble support team will ask for a **CmDust-Result.log** file. With this information all CodeMeter settings and events can be checked to locate the problem.
If the CodeMeter dongle is used as server dongle, generate a report file CmDust-Result.log on the server and on the client machine. In case the dongle is used locally create the CmDust-Result.log there. Send the CmDust-Result.log file(s) to imaging_support@trimble.com.

Workflow:
There are two possiblities to generate the CmDust file.
The one click solution with the **License Manager**:



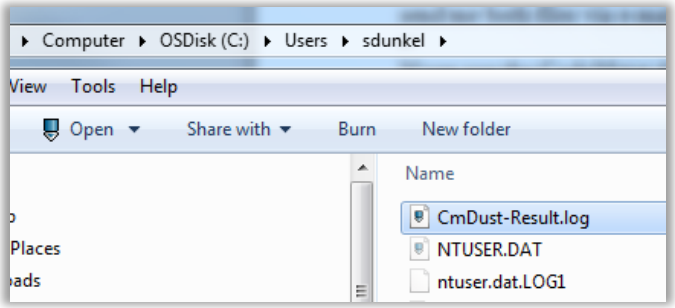
Use WIBU CodeMeter functionality:

- Select Start (from Windows taskbar) and use the magnifier and type in CMDust



- Start CmDust.

- A console window will be opened and closed after a few seconds. The file CmDust-Result.log will be created and stored in your user directory, which will be opened automatically in a explorer window. The format of the file is ASCII and could be opened with a usual text editor.



1.3.6. Virus scanners

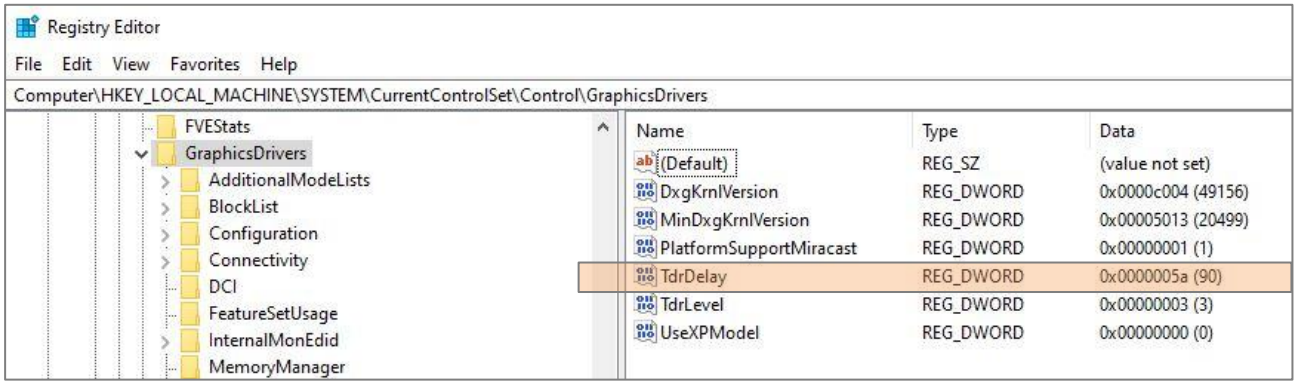
Some virus scanner access our executables which leads to unexpected behavior of our software like e.g.

- Showing demo mode although license is available
- Software does not start
- No point cloud generation in MATCH-3DX using SGM mode
- Uncorrect results in MATCH-AT showing 0 residuals for the GNSS positions, no residuals for the IMU angles and a huge sigma naught value.
- OrthoVista crashes when writing image tiles
- Export is greyed out in DTMaster

In these cases, the virus scanner must be configurated that it is not allowed to access the executable files in the Trimble Photogrammetry or UASMaster installation directory.
When installing a new Trimble Photogrammetry or UASMaster version, the exclusion settings for the virus scanner can also be adapted.

1.3.7. Watch Dog Timer

The "Watch Dog Timer" is a tool that ensures the operating system doesn't lose contact with the GPU. If the GPU does not report back to the operating system within a specified time, the OS will automatically restart the GPU driver. In this case, the running processes on the graphics card are interrupted and the entire process is stopped.
GPU processing is used in the surface generation of Trimble Photogrammetry and UASMaster in the SGM (semi-global matching) method.
As of version 13.2.1, we have therefore implemented a delayed restart of the graphics board driver by updating the registry entries, which is carried out automatically when the new software version is installed. A restart is necessary for the graphics card driver to use the new setting.
After the installation, the registry editor shows a "TdrDelay" of 90 seconds instead of 2 seconds.



If the update was not successful or was changed by a new graphics card driver, the registry can be updated again by double-clicking on the "GPUDelay.reg" file, which can be found in
C:\Program Files\Trimble\Trimble Photogrammetry<version>\registry
resp.
C:\Program Files\Trimble\UASMaster<version>\registry

1.4. Important hints installing DAT/EM SummitEV

The CAD has to be licensed and installed before the SummitEV installation will be started. With every new version of SummitEV a new license key is necessary and will send automatically if a valid maintenance contract is available.
It is important that the current ElevationModels will be installed, too.

SummitEV uses for licensing Sentinel dongles. Pay attention during the driver installation that YES is selected to allow the access to the dongle. The current firewall settings will be modified. In case you do not allow it, it could happen, that the dongle could not be detected.

2. General remarks to Inpho software

2.1. Release cycle

The photogrammetric main software releases are offered in a 1 year cycle. The releases are structured as follows:

- Major release with driving new features > once a year (autumn); requires new license
- Intermediate release including smaller features and customer requests (spring); does not require a license update.
- Maintenance patches including bug fixes (1-2 times per release); does not require a license update.
- Hotfixes are delivered for critical issues being not solvable with a workaround. No license update is necessary.

2.2. Available versions, limitations

The inpho photogrammetric software is available in a Full, Lite, Research and Education version. The Lite version is considered being a small business solution for small companies dealing with smaller projects.

Limitations of Lite and Education version:

- Up to 250 images or 12 pushbroom/satellite images can be processed in one project
- Sub-block or sub-area computations are not supported
- Merging inpho project files is not possible
- Restricted performance > no multi-threading
- No batch processing

Limitations of multi-head projects

- A project merge is not available
- Only one multi-head system can be defined for a project.

2.2.1. Demo version

In case no or no valid license is available some of the inpho products can be used in Demo mode. The following text describes the ability of a demo version and their restrictions.

ApplicationsMaster:
A missing license for ApplicationsMaster will influence the function of DTMToolkit, DPMaster and the transformation tools. In case of no ApplicationsMaster license these products cannot be opened because a demo mode is not available.
Exterior Orientation:
Does not allow saving results and corrupts slightly the display of the EO parameters.

MATCH-AT:
No demo mode available.

inBLOCK
The demo version is limited to 40 images and random errors are added to all exported and listed coordinates.

MATCH-T DSM
Resulting digital terrain model with missing points in checkerboard pattern.

MATCH-3DX
No demo mode for SGM method.

DTMaster
In the demo mode maximum 5 images are active. The software closes after 30 minutes and the project cannot be saved. An exort of data is not possible.
Please note: for viewing only the DTMaster Viewer can be used (no license necessary).

OrthoMaster
Full functionality is available for testing and examining, but the resulting orthophotos include artifacts.

OrthoVista
Output images include artifacts, meta data is marked as being processed in demo mode and could therefore not used in a licensed version.

SCOP++
A demo mode is only available for SCOP++ Kernel. In demo mode the full functionality is available but the digital terrain model includes artifacts (height modifications, the resulting views contain the text “demo”).

TopDM
No demo mode available.

2.3. Different versions on one computer

Newer software versions can be installed together with older versions on one computer. It is however important to know that newer project file formats are NOT ALWAYS compatible with the older versions, please check the ReleaseNotes!

2.3.1. Project file formats

In order to guarantee compatibility with older software versions the ApplicationsMaster provides NOT anymore the possibility to save a project in an older file format
When opening a project file created with an older software version you will be informed, that the selected project file has an old file format. You have then the possibility to convert the format in the current one.

Version 15.0 – Release 2024 (October)
The project file format was updated.
Project file version 15.0.0

Version 14.0 – Release 2023 (October)
No project file update, current format 13.1.0

Version 13.2 – Release 2023 (February)
No project file update, current format 13.1.0

Version 13.1 – Release 2022 (autumn)
The project file format was updated.
Project file version 13.1.0

Version 13.0 – Release 2022 (June)
The project file format was not updated, current version 9.2.0

Version 12.1 – Release 2021 (December)
The project file format was not updated, current version 9.2.0

Version 12.0 – Release 2021 (September)
The project file format was not updated, current version 9.2.0

Version 11.0 – Release 2020 (November)
The project file format was not updated, current version 9.2.0

Version 10.0 – Release 2019 (December)
The project file format was not updated, current version 9.2.0

Version 9.2 – Release 2019 (September)
The project file format is updated to store additional information. New version 9.2.0

Version 9.1 -Release 2018 (autumn)
The project file format is updated to store additional information. New version 9.1.0

Version 8.x -Release 2016 (spring)
The project file format was not updated, current version 7.1.0

Version 7.1 -Intermediate release 2016 (spring)
The project file format is updated to set-up new sensors – multi-head and A3-SLF; a platform definition is implemented. New version 7.1.0

Version 7.0 - Main release 2015 (autumn)
The project file format is updated to support different project types (adapt user interface to project types). New 7.0.0

Version 6.1 -Intermediate release 2015 (spring)
It was necessary to change the project file format because Inpho project files from now on store pixel coordinates instead of image coordinates. New version 6.1.0

Version 6.0 - Main release 2014 (autumn)
An update of the project file format was necessary because of a refinement of the used earth curvature correction model. New version 5.2.0

Version 5.7 – Release 2014 (spring)
Project file version 5.0.0

2.3.2. Version history since 2008 (major and intermediate only)

Version 5.1 major release 2008, 32bit version
Version 5.2 major release 2009, 32bit version
Version 5.3 major release 2010, last 32bit version and 64 bit version
Version 5.4 major release 2011
Version 5.5 major release 2012
Version 5.6 major release 2013
Version 5.7 major release2014 (spring)
Version 6.0 major release 2014 (autumn)
Version 6.1 intermediate release 2015 (spring)
Version 7.0 major release 2015 (autumn)
Version 7.1 intermediate release 2016 (spring)
Version 8.0 major release 2016 (autumn)
Version 9.1 major release 2018 (autumn)
Version 9.2 intermediate release 2019 (September)
Version 10.0 main release 2019 (December)
Version 10.1 intermediate release 2020 (July)
Version 11.0 major release 2020 (November)
Version 12.0 major release 2021 (September)
Version 12.1 intermediate release 2021 (December)
Version 13.0 major release 2022 (June)
Version 13.1 intermediate release 2022 (autumn)
Version 13.2 intermediate release 2023 (February)
Version 14.0 major release 2023 (October)
Version 15.0 major release 2024 (October)

Licensing
Every main version does need a new license. If a valid maintenance contract is available this will be free of costs. Patches and intermediate versions does not require a new license.
Up to version 11, the current license was also valid for all versions of the previous version. Version 12 and all future versions will support all versions from 11.0.5 to the current one.
Examples:
A valid license for version 15.0 will work for versions 11.0.5 and higher
A valid license for version 14.0 will work for versions 11.0.5 and higher
A valid license for version 13.0 will work for versions 11.0.5 and higher
A valid license for version 12.0 will work for versions 11.0.5 and higher
---
A valid license for version 11.0 will work for versions 10.x and 11.x
A valid license for version 10.0 will work for versions 9.x and 10.x
A valid license for version 9.0 will work for version 8.x and 9.x
A valid license for version 8.0 will work for version 7.x and 8.x
A valid license for version 7.0 will work for version 6.0(.2), 6.1, 7.0 and 7.1
A valid license for version 6.0 will work for version 5.6(.4), 5.7,6.0 and 6.1.
A valid license for version 5.6 will work for version 5.5, 5.6 and 5.7

3. Worth to know

3.1. Workstation requirements

CPU: The faster the CPU the faster the processing. One license supports up to 48 threads. Therefore, a CPU with 48 cores (single threads) or 24 cores (hyper-threading) will increase the speed.. So it would be preferable that the processor is featuring the corresponding cores so that they can be used for computationally intensive steps

RAM: 64 GB or higher.

Discs: Fast disks, possibly SSDs. A fast network is recommended in case your data is not stored locally. Of course you will get the best solutions with very fast RAID systems which allow a large amount of parallel threads to run read/write processes

Stereo system: Passive stereo systems > PluraView solution

3.2. Graphics card requirements

3.2.1. What graphics board should I buy for perfect use with MATCH-3DX?

To get the best performance with MATCH-3DX, we strongly recommend using an NVIDIA graphics card. The graphics processing unit (GPU) of an NVIDIA graphics card is used in the MATCH-3DX calculation. This enables you to achieve faster processing times.

3.2.2. What graphics board should I buy for perfect stereo view in Inpho software?

DTMaster, MATCH-AT s Multi-Photo-Measurement Tool, UASMaster and DAT/EM Summit EV primarily supports quad-buffer stereo (sometimes referred to as "stereo-in-a-window") and offers an anaglyph mode

as a low-cost alternative. Unfortunately, this limits the range of available graphics boards to a few expensive high-end cards. A quality OpenGL driver is also important, so we recommend the workstation product lines NVIDIA Quadro series.
If you plan to use the software in anaglyph mode, a much simpler (and much cheaper) graphics card may be sufficient. In general, most modern consumer products work well in anaglyph mode. There is one additional requirement for anaglyph stereo, however: The card needs programmable vertex and fragment processors. Manufacturers often omit this information in their advertisement, and as a result, it is often not obvious if a card fulfills this requirement. As a rule of thumb, one can use the DirectX version supported by the card as an indicator: it is safe to say that if the card supports DirectX 9.0 or greater, anaglyph mode will work.

3.2.3. Compatibility with AMD graphics boards

DTMaster and the MATCH-AT Mult-Photo-Measurement tool as well as UASMaster work well with graphics cards from AMD in general. However, a problem has been identified, where DTMaster does not save a project correctly and the "Export" functionality is deactivated when running on AMD graphics hardware. This can be traced back to some AMD drivers actually modifying the Inpho executables. In all known cases, the driver came from the vendor of the PC manufacturer, rather than from AMD directly. And in all cases, the problem was resolved by installing the latest Catalyst driver from http://support.amd.com/. If you experience this behavior on your AMD system, you should therefore try installing the latest drivers directly from AMD.
Important: MATCH-3DX users cannot profit from GPU processing with an AMD graphics board. Only newer NVIDIA Quadro boards are supported.

3.2.4. What is OpenGL?

OpenGL is an industry-standard, platform-independent, vendor-neutral application programming interface (API) for rendering 2D and 3D graphics. It provides an application programmer with a simple way to write programs that run on many different systems without having to adapt the software to the specifics of every single graphics card. There are thousands of applications using OpenGL, ranging from relatively simple computer games and computer-aided design (CAD) applications to visualization of scientific data and professional flight simulators. The inpho software is one of these applications.

3.2.5. OpenGL and Remote Desktop

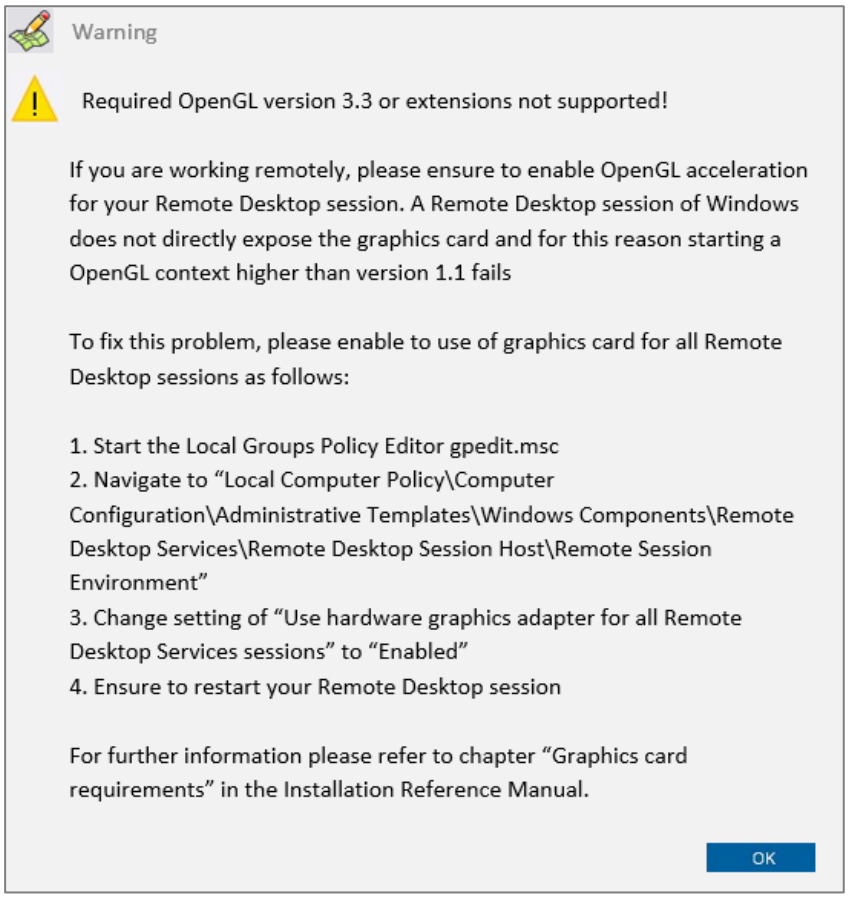
By default the graphics card configuration of remote computer is not available, if you want to work with Remote Desktop on a computer in the network. With that only OpenGL Version 1.1 is available. Some graphic displays in our software only work with Version 3.2 or higher.
Therefore, the default setting in the Windows Group Policies can and must be changed.
Workaround:
The problem could be solved by changing the Group Policy (Administrator).

- Run ***gpedit.msc*** then navigate to
- Local Computer Policy\Computer Configuration\Administrative Templates\Windows Components\Remote Desktop Services\Remote Desktop Session Host\Remote Session Environment
  and “enable” the value
- Use hardware graphics adapters for all Remote Desktop Services sessions

See also: https://stackoverflow.com/questions/51705471/current-state-and-solutions-for-opengl-over-windows-remote

Behavior of the inpho software:

To inform the user about this problem our software checks which OpenGL version is installed on the remote computer when using Remote Desktop to work on a network computer. A warning appears if the OpenGL version is not at least version 3.2.



3.2.6. What is quad-buffer stereo?

Sometimes referred to as "stereo-in-a-window", quad-buffer stereo is a way to allow stereo vision on a flat computer screen. Stereo vision works, because each of our eyes sees the world from a slightly different angle. By exploiting these perspective differences, our brain is able to estimate how far away an observed object is. To achieve depth perception on a flat computer screen, it is therefore necessary to present a different image to each eye to simulate the missing perspective. There are many ways to do this, for example the widely-known anaglyph glasses, which separates the two images by looking through colored filters. Quad-buffer stereo works by frequently switching between the two images while simultaneously blinding the eye which should not see the current image. If this happens fast enough, our eyes are too sluggish to recognize the blinding and we see a stable stereo image instead.
Although the basic way how quad-buffer stereo works is always the same, there are many different approaches on how to actually blind one eye. Popular examples are shutter glasses or semitransparent mirrors.
The name "quad-buffered" comes from the four frame buffers necessary to implement this technique. The application renders each frame twice, once for the left and once for the right eye, writing the results into two separate buffers (the so-called "back" buffers). Since it takes time to render the two images, the display meanwhile shows the last stereo pair, which resides in another pair of buffers (the "front" buffers). When the next frame is ready, the front and back buffers are simply swapped and the display hardware starts showing the new image.

3.2.7. What refresh rate is necessary for quad-buffered stereo?

To see a flicker-free image on a computer screen, the refresh rate (or "vertical sync rate") has to be at least 60 Hz. In order to get a flicker free image for each eye, your monitor must be capable of refreshing at least with 120 Hz. Note that maximum refresh rate is resolution-dependent: the higher your desktop resolution, the lower your maximum refresh rate.

3.2.8. What is anaglyph stereo?

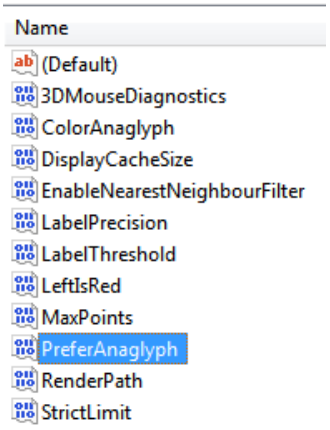
Anaglyph stereo is one of the oldest ways of making 3D images. The separation of the two images is done by color-coding. For example, the image for the right eye might be rendered in red, while the other image is rendered in blue or green. When the viewer watches both images through accordingly colored filters in front of his eyes, each eye can only see one image, since the other one is hidden by the filter.
In contrast to quad-buffer stereo, there is no need to blindfold one eye, thus removing a possible source for eye strain. However, since both images are monochromatic, there is no way to include color in the image.

3.2.9. What kind of anaglyph glasses do I need?

Anaglyph stereo for inpho software was written for glasses with a red filter on the left eye and a cyan filter on the right eye. But since cyan is a mix of blue and green, glasses which substitute cyan with a filter of one of these colors work equally well, as long as the red filter is on the left eye. If your glasses happen to be just the other way round, you can still use them by switching the stereo display from ortho to pseudo mode.

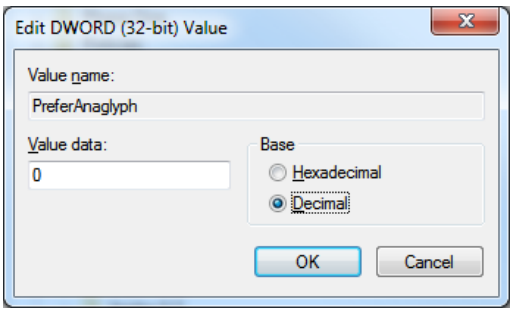
3.2.10. My graphics board is capable of quad-buffer stereo but I would like to use anaglyph stereo instead. Is that possible?

This is possible by editing the corresponding tuning options in the registry.
For MATCH-ATs Multi-Photo-Measurement:
HKEY_CURRENT_USER\Software\Trimble\Inpho<version>\mb\pmt\Preferences\Tuning Options
For DTMaster:
HKEY_CURRENT_USER\Software\Trimble\Inpho<version>\dtm \DTMaster\Preferences\Tuning Options



By double clicking on Prefer Anaglyph the “Edit DWORD (32bit) Value” dialog will be opened. Activate the Decimal and enter

uses quad-buffer stereo if the graphics board supports it.
Uses anaglyph stereo although the graphics board support quad-buffer stereo



3.2.11. I am using 16-bit colors on my desktop. Why do images look ugly in Inpho?

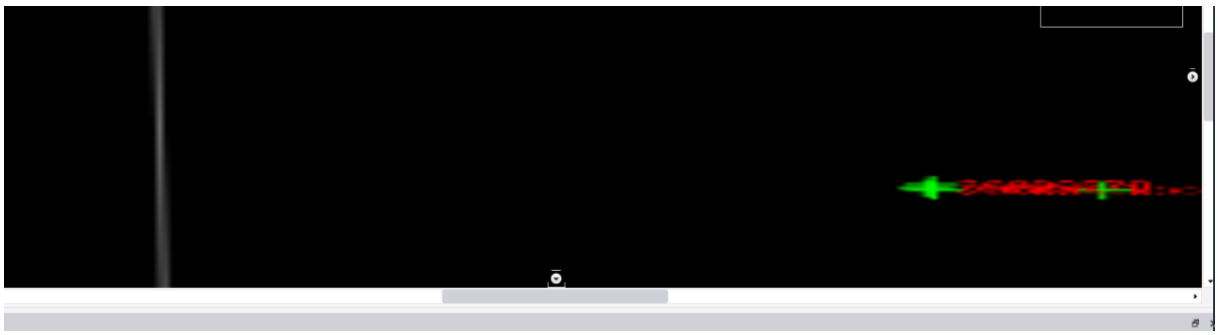
When the desktop is switched to 16 bit color depth, most OpenGL drivers switch maximum color depth for textures to 16 bit, too. Since OpenGL still operates in TrueColor mode, it distributes the available 16 bits on the three color channels in a 5-6-5- fashion, meaning 5 bit for the red channel, 6 bit for the green channel and 5 bit for the blue channel. This results in visible step-like color artifacts, especially in bluish water areas. To avoid this, switch your display to 24 bit or 32 bit color depth and restart the software.

3.2.12. GPU processing

It is possible to use GPU processing for the new MATCH-3DX software if the computer is equipped with a newer NVIDIA Quadro graphics board.

3.2.13. Configuration of graphic boards in Laptops

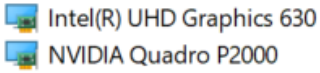
For laptops that have a better built-in graphics card in addition to the onboard graphics card, the better one is not always used for the graphics applications.
This can lead to strange effects when displaying the graphics.
The following figure shows such an effect in the display of the project data in the Multi-Photo Measurement Tool of MATCH-AT.



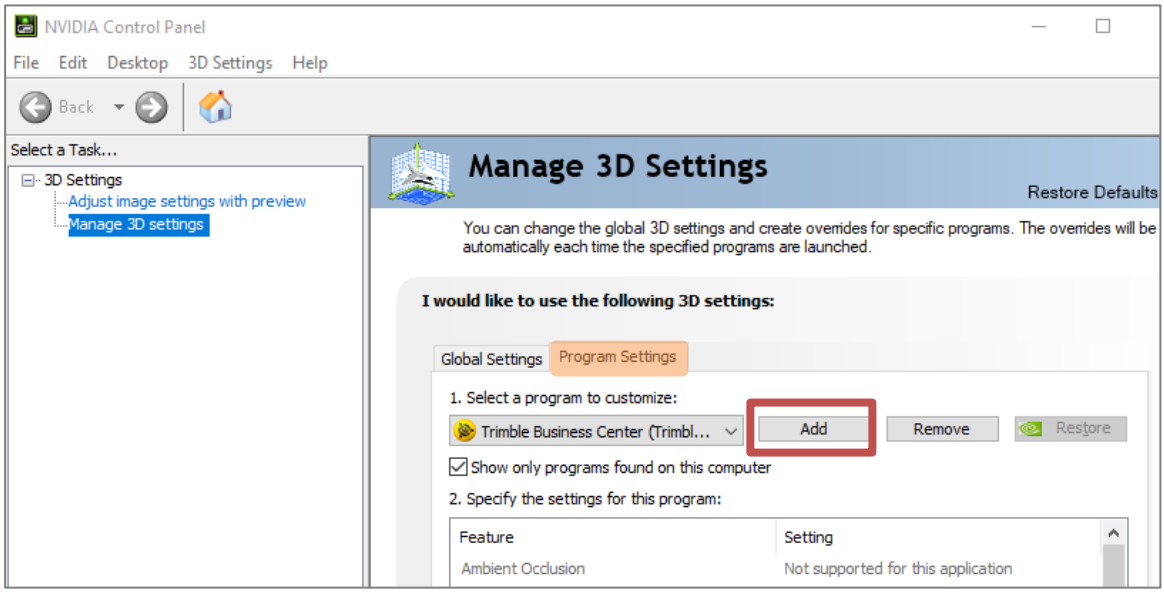
But it can have an effect in all program parts of the inpho software where ambitious graphics should be displayed. In this case it must be forced that not the onboard graphics card but the better one is used.

Example:
Problem - Distorted display in the Multi-Photo-Measurement Tool
Solution – Assignment of the to be used graphics board to the corresponding executable

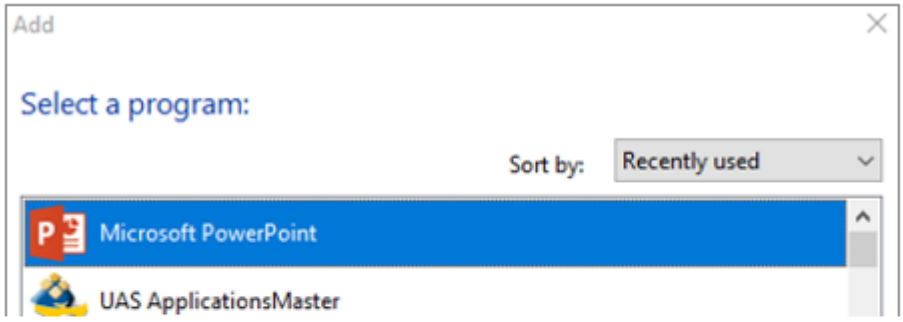
The executable of the Multi-Photo-Measurement Tool > pmt.exe is organized in the folder
C:\Program Files\Trimble\Trimble Photogrammetry <Version>\bin
Assuming we have a configuration of an onboard graphic card and an addional NVIDIA board.



Open the NVIDIA control panel and select “Manage 3D settings”; then open the tab “Program settings” and select “Add”

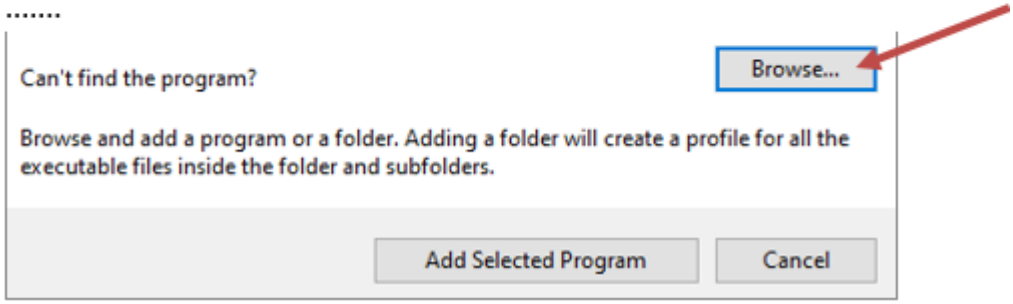


The “Add” dialog opens, “Browse” for “pmt.exe”

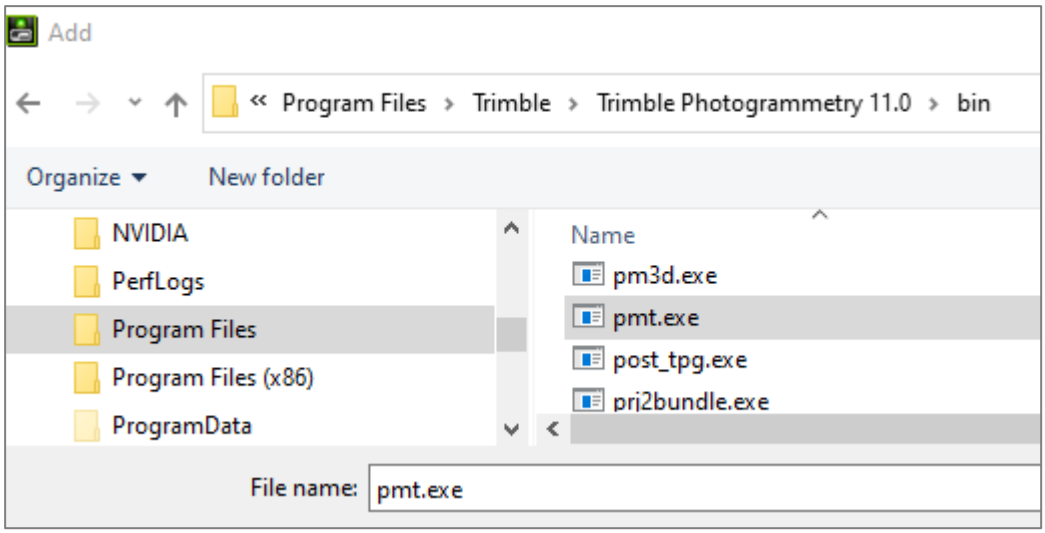


.....

.....



Location for the pmt.exe:
C:\Program Files\Trimble\Trimble Photogrammetry <Version>\bin



Select the executable “pmt.exe and add the software to NVIDIA 3D settings.
Save and Exit the NVIDIA control center.

In case of an onboard and additional AMD graphic card configuration use the AMD control panel to do the assignment.

3.3. Trimble knowledge center

Visit "learn.trimble.com" to register for offered trainings.

3.4. Trimble inpho support

Contact our support team with any questions, problems etc. for the products:

- ApplicationsMaster
- MATCH-AT
- MATCH-T DSM
- MATCH-3DX
- DTMaster
- OrthoMaster
- OrthoVista
- UASMaster
- TBC APM

imaging_support@trimble.com