

DC-Air™ Software Setup Guide

Introduction

The DC-Air™ *TWAIN* Software is required to use and capture intraoral x-ray images.

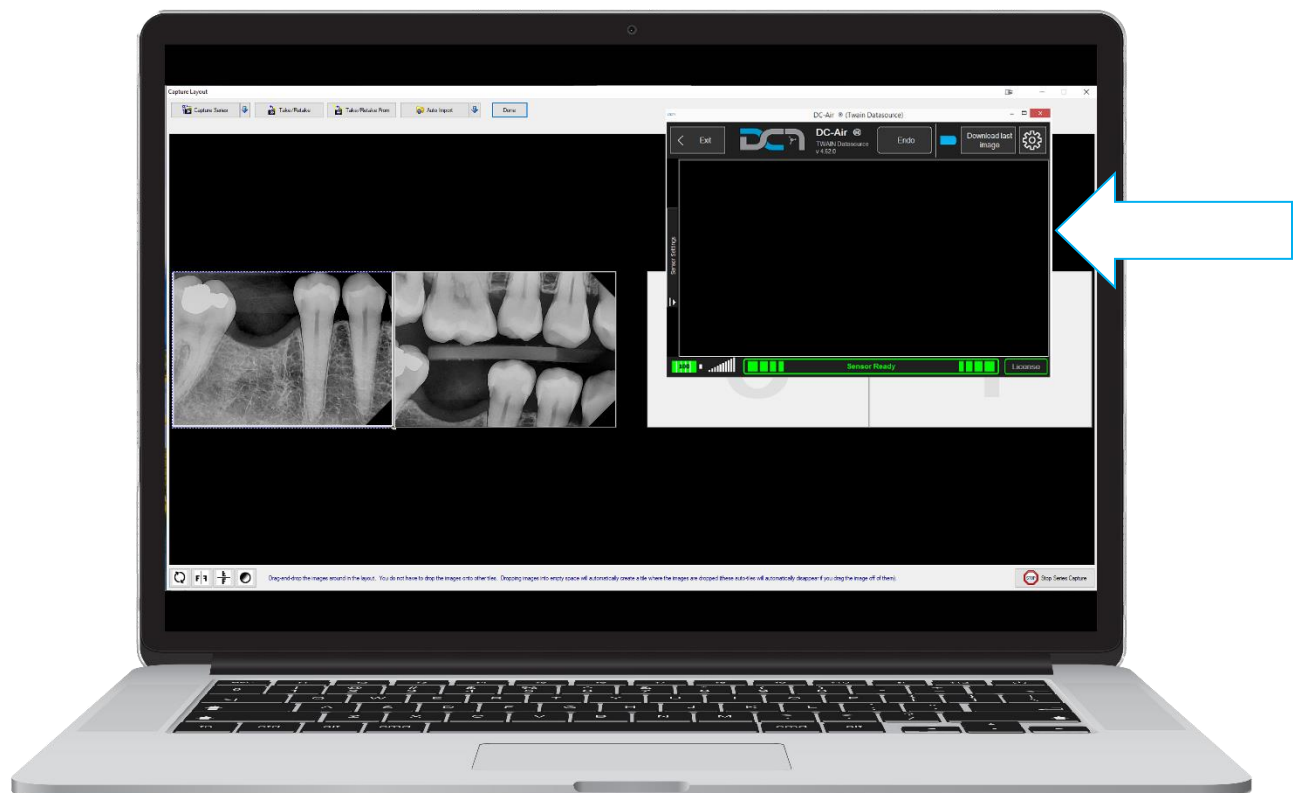
It will interface with the existing Image Management Software (IMS). For some Image Management Software, additional modules or components may be required to allow the Image Management Software to link with *TWAIN* applications. Please ensure your IMS is configured to interface with a *TWAIN* source.

Expanded instructions for use of the *TWAIN* interface can be found at:

<https://www.ftgimaging.com/support>

In this guide we will discuss all steps for installing the DC-Air™ Sensor & software on an acquisition PC.

(PC not included)



Streamlined 1-page Install

Hook up docking stations, attach sensor, they should show up in the device manager

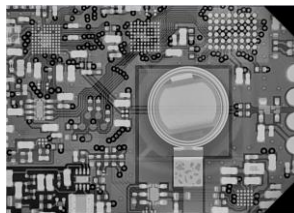
If they don't show up, unplug and replug, or try other USB ports

Install Twain from website or installer download.

Open twain to download calibration files and license (+15 seconds on first launch)

Configure default orientation for twain handover and use as single or series use

Verify or make changes within Imaging Software by taking selfie test images



If using wall mount x-ray source (70 kVp), use 0.20-0.25 seconds exposure time.

If using handheld x-ray source (60 kVp), use 0.40-0.70 seconds exposure time.

Use the highest setting of kVp if the settings are adjustable, 70kvp preferred.

The higher the kVp, the less exposure time will be needed

If the mA is adjustable, use the mA highest possible setting while keeping to the highest kVp as a priority. Sometimes raising the kVp from 65 to 70 will force the mA to drop, this is ok.

Train staff on use of Holders and software workflow, software button navigation.

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Verify Computer Requirements

The required client PC specifications should meet or exceed:

- An Activated license of Microsoft Windows 10 Professional or newer (32-bit or 64-bit)
- Intel i5 processor, 6th Generation or newer
- 4 GB of RAM
- 10 GB hard drive space
- 1 (one) USB 2.0 port or faster
- An active Internet connection (for initial setup only)
- Image Management Software
 - The respective Office software must be installed to be able to bridge via *TWAIN* with

It is Recommended to use a computer no older than 5 years of age, and is rebooted daily, weekly, or at regular intervals.

Assembly of the DC-Air™ Docking Station

Locate the DC-Air™ Docking Station, antenna, and the USB-A to USB-C cable provided. Plug in the USB-C connector on the backside of the dock, and screw in the antenna firmly. Then plug in the DC-Air™ Docking Station into the computer. It is recommended to plug in to the back of the computer, similar to the use of a mouse or keyboard. Using the “Set it, and forget it” concept; if plugged into the front of the PC, it is more likely considered to be accidentally unplugged with other devices.

[Important] Each DC-Air™ Docking Station should not move around and should stay with its respective computer. Shuffling them between different computers could cause software connection issues.



The DC-Air™ Docking Station when plugged in will flash blue two or three times before going dark. When a DC-Air™ Wireless Sensor is docked, it will then start to **pulse blue** indicating a charging status.

[Note] If a DC-Air™ Wireless Sensor is placed onto the DC-Air™ Docking Station before getting plugged into the computer, it will not start to **pulse** until the sensor is removed and then placed back on.



[Recommended] The DC-Air™ Wireless Sensor should be docked for a continuous 1-hour to allow charging before first use.

Placement of the DC-Air™ Docking Station

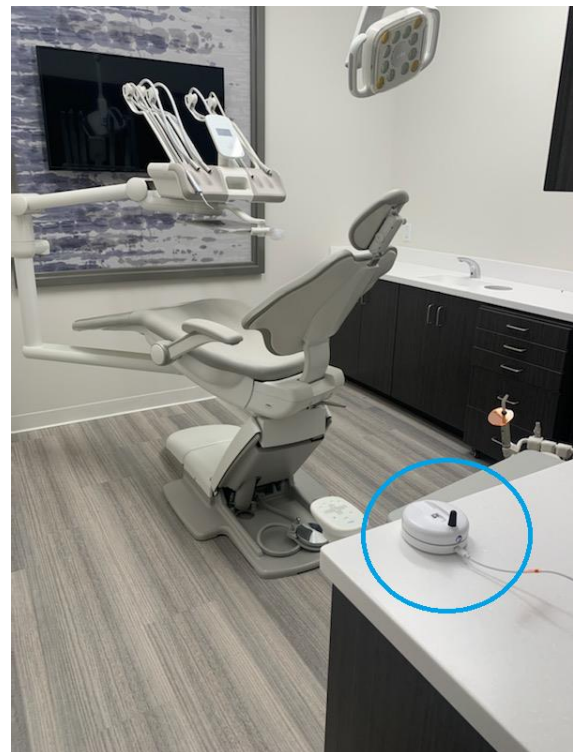
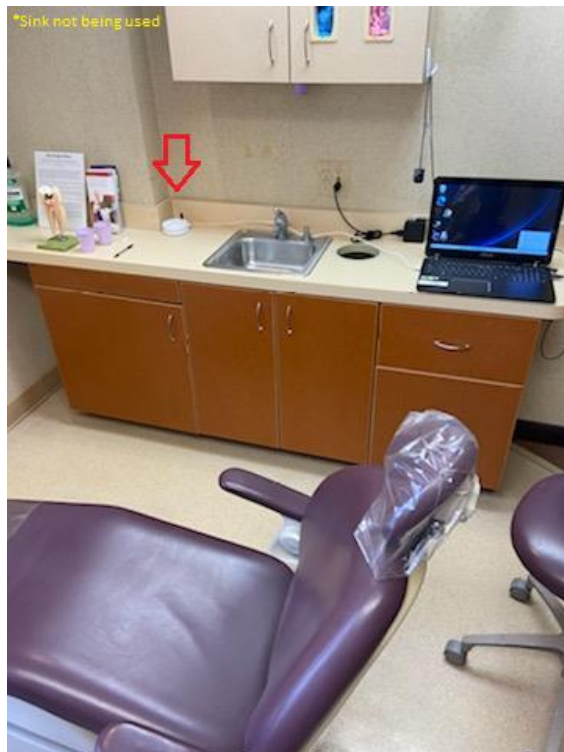
The signal strength between the DC-Air™ Wireless Sensor and the DC-Air™ Docking Station uses Bluetooth. It does not use the Wi-Fi network; however, it does use the same frequency (2.4 GHz). There are variables that can be controlled (or avoided) to reduce interference and help maintain the signal strength.

The Docking station should be placed on the countertop (if at all possible) in front of or to the side of the patient chair within 6-9 feet of the patient's head. The strength of the connection will be taxed if the Docking station is directly behind the patient's head. If behind is the only position available, entertain placement on the outmost part of the countertop furthest from directly behind the patient's head.

Having other wireless devices can also deter the signal. In the event there are other devices (wireless keyboards, mouse, etc.), it is encouraged that the respective receivers are placed on the opposite side of the desk whenever possible.

The docking station should also not be placed next to a sink or where it could get splashed or a trash bin where it can be fumbled and fall in.

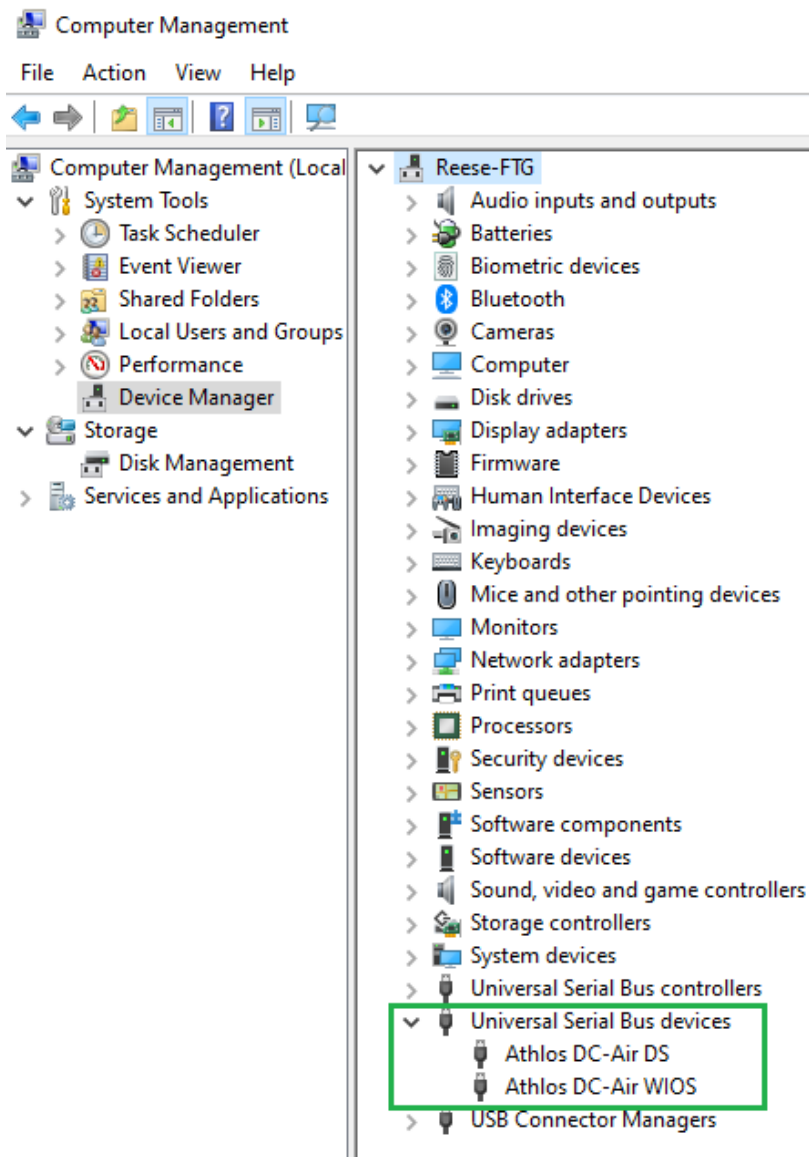
Examples of placement:



Install DC-Air™ TWAIN Software

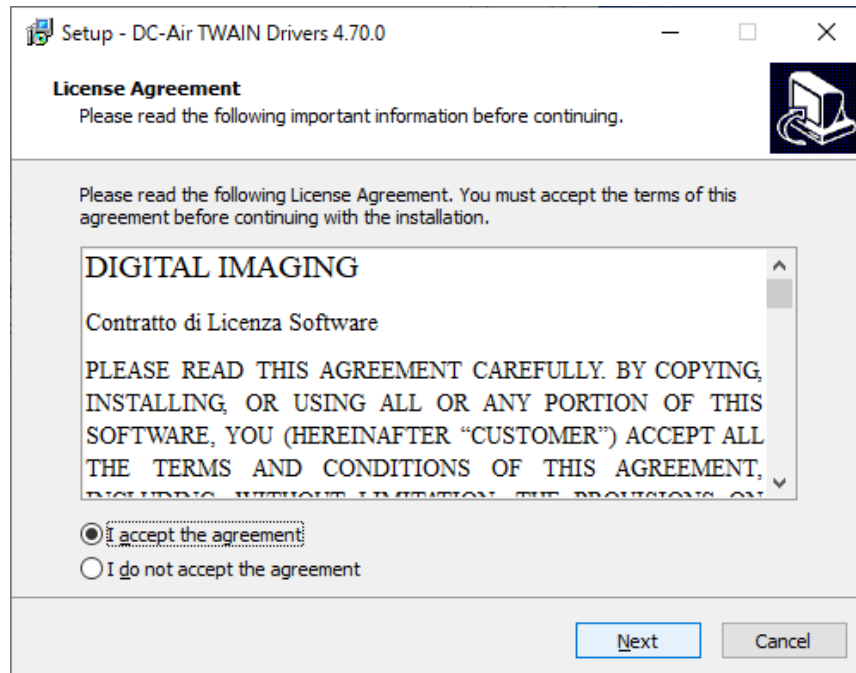
The DC-Air™ Docking Station, and the DC-Air™ Wireless Sensor (when docked) can both be seen in the Local Device Manager under the category, Universal Serial Bus devices. It is not required to have the DC-Air™ Docking Station plugged in before the software installation, but it is required to use the software. The screenshot below is how the devices will show up in the device manager. If the devices are not seen in the Device Manager list, follow the Troubleshooting Guide at the end of this document.

Report any problems to FTG's support team by phone (855) 664-1953 or by emailing support@ftgimaging.com

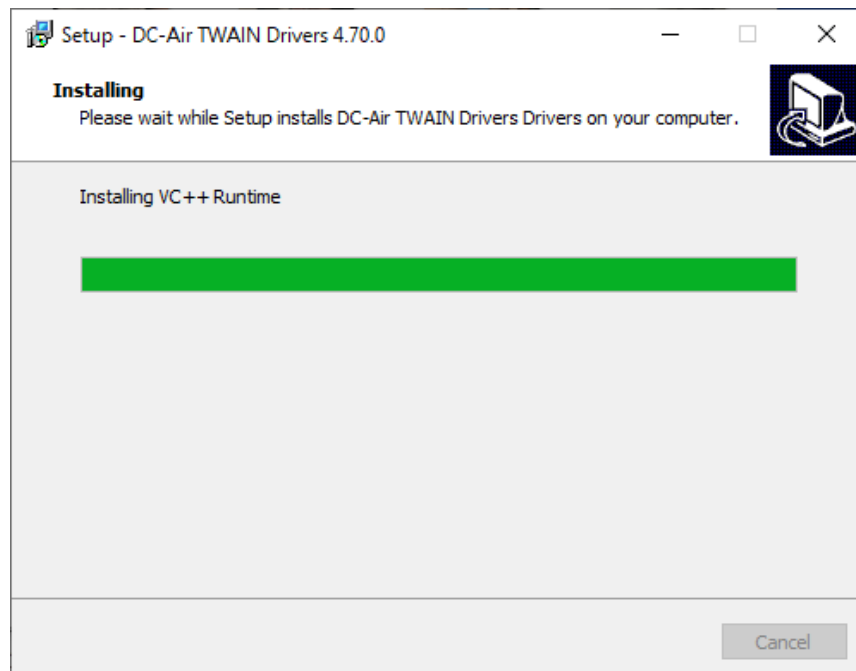


Next run the Application Installation for the *DC-Air™ TWAIN*. The software download can be found on the FTG website. <https://www.ftgimaging.com/support>

After reading the License Agreement, click the accept radio button, and then click Next



Allow the software to finish installing the files. The install progress might pause briefly.



Click Finish to complete the software installation Wizard.



Advanced Info:

Folders to exclude from Anti-Virus protection or monitoring software:

C:\ProgramData\DC-Air\ (ProgramData is a hidden directory)

C:\Users\[user]\AppData\Local\Temp\ (not common, but possible)

Processes or Services to exclude:

C:\ProgramData\DC-Air\Service\ServiceApp.exe

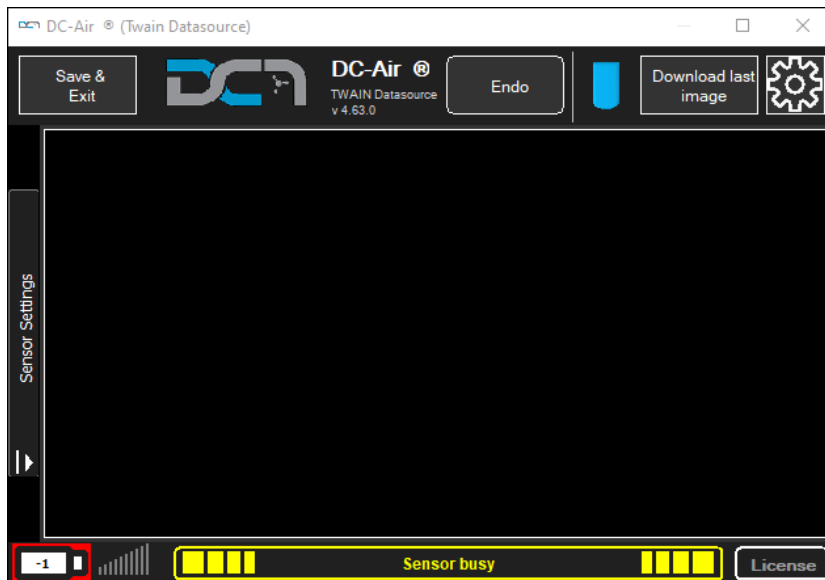
[Note] To bridge the DC-Air™ TWAIN with your Image Management Software, refer to their directions. As an alternative source, instructions and tutorial videos might be available under the FTG Imaging Support website.

<https://www.ftgimaging.com/support>

Opening the Software for the First Time

When the *TWAIN* software is opened for the first time it will start an automatic process of downloading a software license and calibration files for the sensor that is currently docked (estimated 60 seconds depending on Internet download speed). When changing to a different wireless sensor, allow 60 seconds docked with the *TWAIN* software opened to allow the program to download calibration files associated for the different sensor before undocking to use. This will need to be done on each computer workstation used with the DC-Air™ docking station. Here are screenshots of that process.

When first opened:

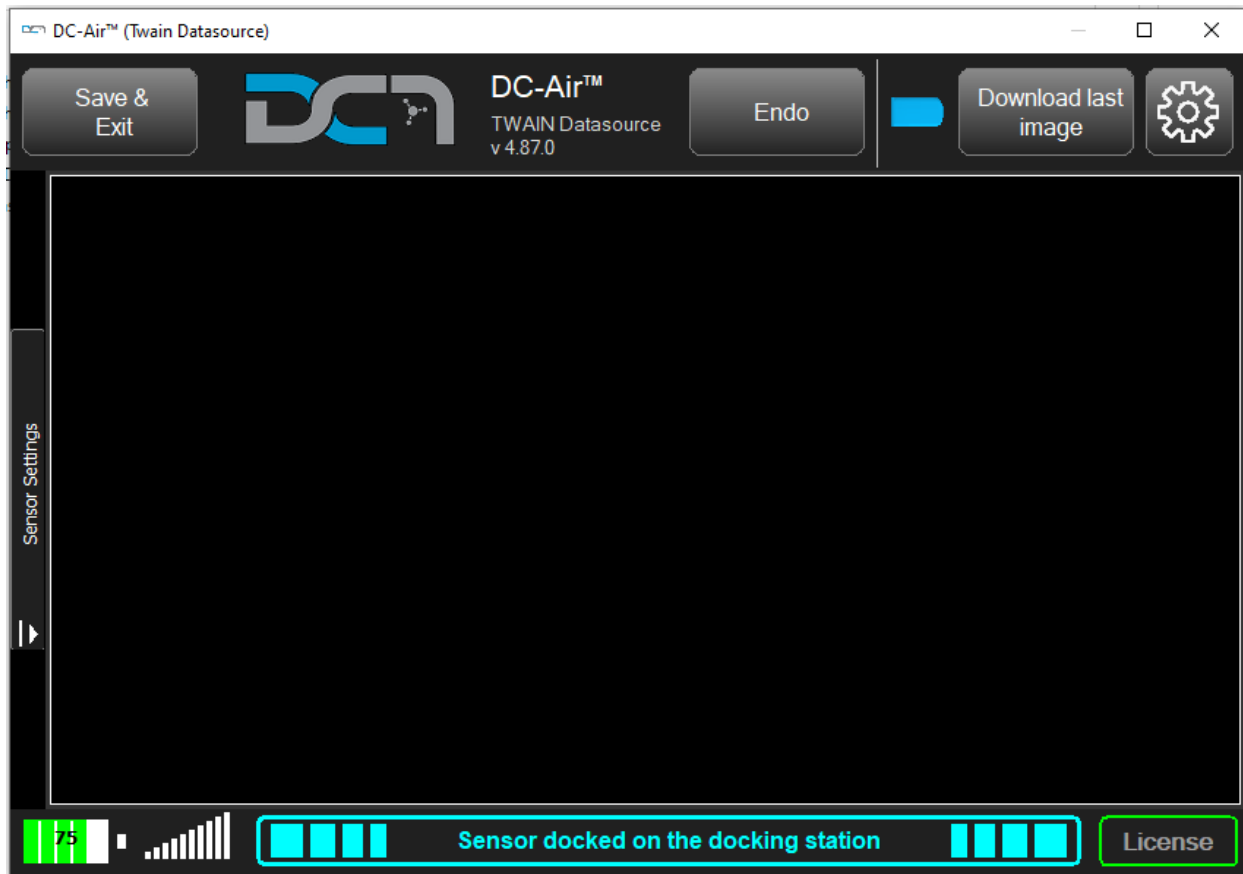


After a few seconds then...



[Note] If this process fails, it is possible that the Sensor has not yet been activated.

Finally...



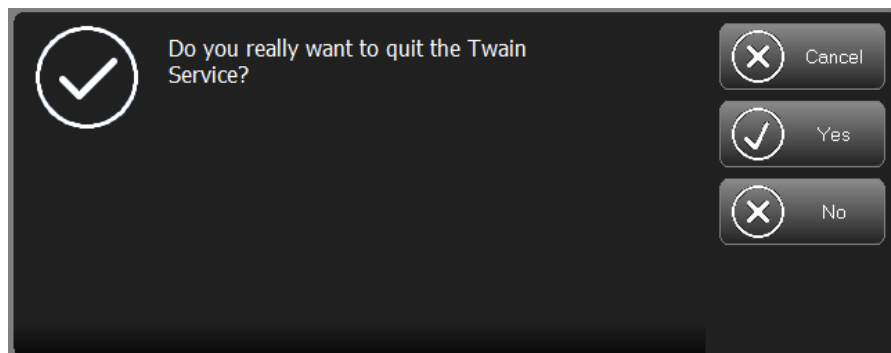
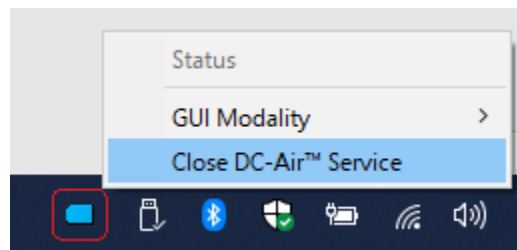
Additional Step for a Multiple Sensors

It is common for larger offices to have more than one wireless sensor. Each sensor requires a license file and calibrations to be downloaded on each computer before it can be used on the respective computer. This process will be automatic the next time a different sensor is used, however it is nice to perform these steps earlier to avoid having to wait when switching sensors.

After the first sensor's files have been downloaded, close the DC-Air™ background Service running in from the taskbar tray icon. Right-click the tray icon for the DC-Air™ *TWAIN* software, choose Close DC-Air™ Service. Then **Yes** on the confirmation. Then remove the sensor and place another on the docking station. Next restart the acquisition process. Allow time for the sensor to connect to the software and download its respective license and calibration files.

Repeat this process for additional sensors.

If ignored, these files will automatically download as needed.



Optional Setup for Multiple Computers

For offices that are using multiple computers it might take some time to download sensor files to each computer, so there is an optional way to setup multiple computers to best streamline this process.

Preparation:

Verify that another workstation is completely setup, including twain software settings to ensure images are returned in the correct rotation and multiple sensor files downloaded if applicable. Then take a copy of these folders.

C:\ProgramData\DC-Air\TWAINSetting

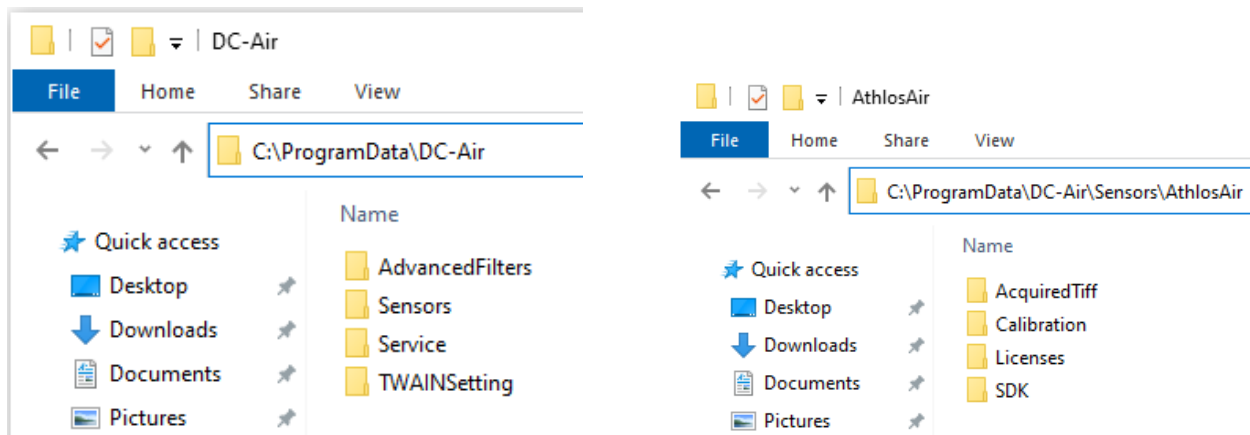
C:\ProgramData\DC-Air\Sensors\AthlosAir\Licenses

C:\ProgramData\DC-Air\Sensors\AthlosAir\Calibration

Execution:

After the twain software has been installed on the new computer, then copy over these 3 folders to their respective correct folder locations.

Only do this for new computers at the SAME TIME as the installation. A warning for keeping these files archived for new computers introduced at another time. If any sensor has been recalibrated, then it will need the new calibration files, and will not work correctly with old calibration files.



Determine Exposure Settings (RECOMMENDED)

Usually...

If using a wall mount x-ray source (70 kVp, 8mA), use 0.20-0.25 seconds exposure time. (12-15 pulses)

If using a handheld x-ray source (60 kVp, 2mA), use 0.40-0.70 seconds exposure time.

However...

The strength and performance X-ray Tubes will vary depending on brand, manufacture date, kVp, mA, exposure time, cone length, source to image distance (SID), and whether the tube is wall mounted with dedicated power (AC/DC) or mobile as a handheld unit. Follow these steps to determine the correct exposure time for each X-ray Source to be used with the DC-Air™ Sensor.

Use the highest setting of kVp if the settings are adjustable, 70kvp preferred. With higher kVp, less exposure time will be needed.

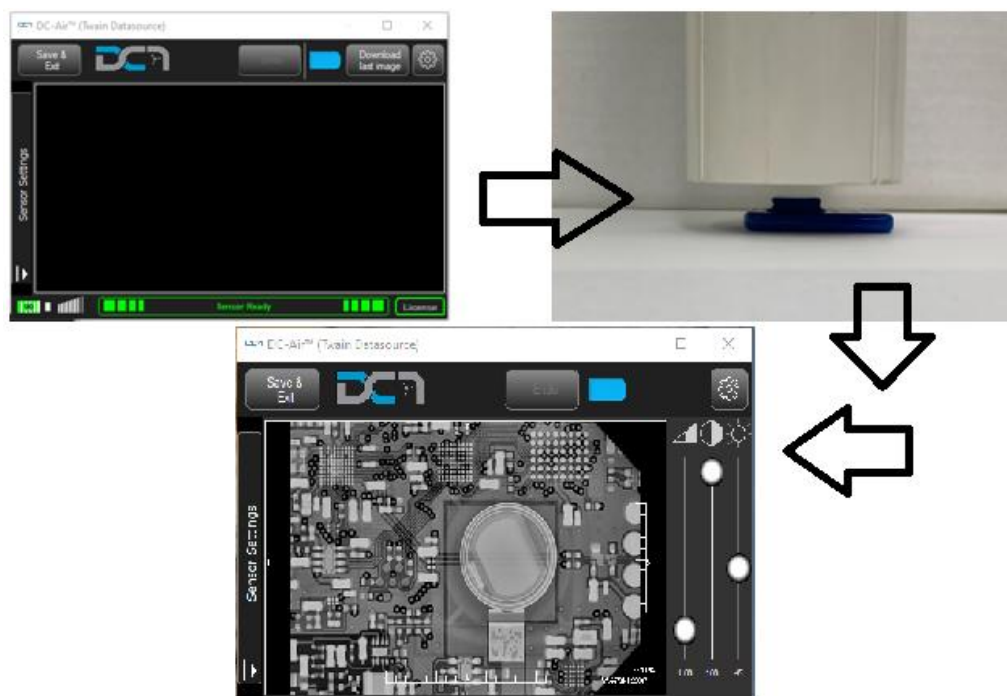
If the mA is adjustable, use the highest setting of mA possible while keeping to the highest kVp as a priority. Sometimes raising the kVp from 65 to 70 will force the mA to drop. (i.e. from 8 to 7)

If there is a setting between a Film or Digital option, use the **FILM** setting.

Most wall mount tubes use an 8 inch cone. Do not use a 12 inch cone and change to an 8. (rare)

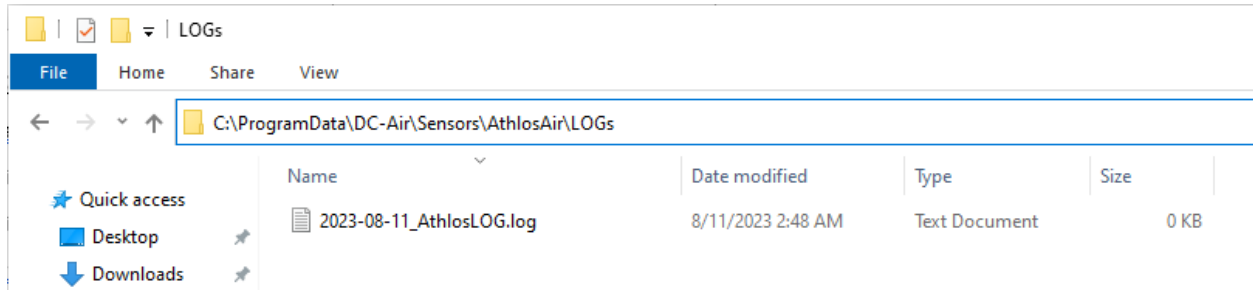
With a **Sensor Ready** connection to the software, place the sensor on a countertop or flat surface with the flat side down, and the battery cap facing up. Direct the X-ray source to shoot straight down on top, as close as possible, less than 1 cm apart. Start with the recommended settings shown above. Expose!

A test x-ray of the sensor from the back is called a Selfie, because it takes a picture of itself.



Next open the program LOG FILE located:

C:\ProgramData\DC-Air\Sensors\AthlosAir\LOGs



The most recent x-ray acquired will be appended to the end of the text file, therefore, start from the **BOTTOM** of the text document. (keyboard shortcut = CTRL+END). Then scroll up (or search with CTRL+F) for the commented line “Poly” to match Polynomial. Look at the **MEDIAN** value.

Polynomial calibration: mean level = 588.577, median = 610, T = 25.5, dM = 1525.18

Close the LOG FILE and reopen for every new exposure.

Raise or lower the exposure time, and reshoot, until the median value is between:

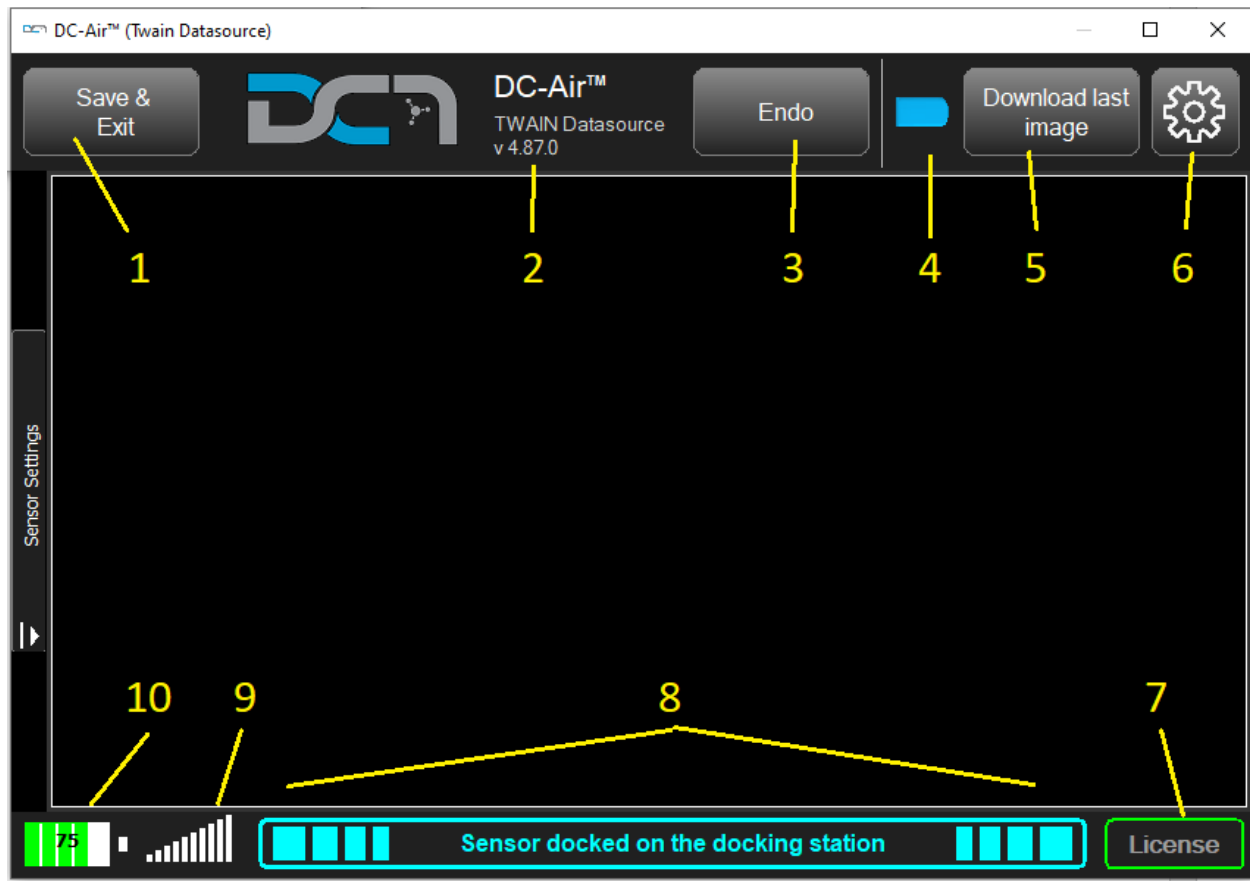
Wall mounted units: 1000-1200 Handheld units: 600-900

Repeat this process to determine the recommended exposure time for each X-ray tube source.

Because Posterior Images have greater distance and more dense tissue, IT IS SAFE if desired to increase the exposure time 1-3 intervals for those exams. This will help ensure QUALITY images.

Caution: With handheld exposure times greater than 0.5 there is more risk of motion blur.

Software Navigation



1. Save & Exit – Saves the current image, if not closed automatically
2. Software version
3. Endo mode – Enable while the sensor is docked to ignore the sleep timer of the sensor. Click again while the sensor is docked to turn off.
4. Orientation/Rotation – Orientation the image is saved as when handed over to be saved. Changing this will force a specific rotation for 1 image and then will revert back. Typically only used on single captures. Layout/Template rotations are applied afterwards.
5. Download last image – Never retake an X-ray! Use the Download last image button to retrieve the last image taken from the sensor. Use this option to replace the last image received if it was incomplete or corrupt.
6. Settings button
7. License indicator – to see if the sensor connected has been activated
8. Sensor Status bar – indicates where the sensor is or the status
9. Bluetooth signal – a visual indicator of the BLE signal strength
10. Battery level indicator – changes between 100%, 75%, 50%, 25%, and 0%

Cleaning and Disinfection

When cleaning the DC-Air™ sensor or the docking station, follow the cleaning and disinfection protocol described in this section.

Cleaning and Disinfection of DC-Air™ Sensor

Only use the approved disinfectants with DC-Air™ sensors. Using unapproved disinfectants may produce issues with the physical appearance of the product and potentially its operation.

The DC-Air™ sensor should be thoroughly cleaned after each use. The following cleaning and disinfection recommendations are intended to accomplish intermediate-level disinfection and will prepare the product to be safely used and reused during its life.

Approved Disinfectants

The following surface disinfectants have been found to be effective in achieving an appropriate level of disinfection and are available from dental product dealers:

Trade name:	Manufacturer:
CaviWipes™ (original)	Metrex Research (distributed by Kerr Dental)
ADVANTACLEAR Surface Disinfectant Wipes	Hu-Friedy Manufacturing Co Inc
OPTIM® 1 Wipes	COLTENE SciCan
Opti-Cide3® Surface Wipes	Micro-Scientific
Isopropyl (70%)	Multiple

Cleaning and Disinfection Protocol



DC-Air™ sensor must be cleaned and disinfected after each patient.



Always follow the instructions of the manufacturer of the cleaning and disinfecting wipe when disinfecting the DC-Air™ sensor.



Do not submerge the DC-Air™ sensor in any liquid at any time.
Do not autoclave the DC-Air™ sensor. Autoclave sterilizers will permanently damage the device.



The following procedure is recommended before using the sensor for the first time and after each patient:

1. Remove and discard all protective hygienic barriers and/or sheaths from the sensor prior to removing disposable gloves.
2. Place the sensor on a tray covered by a disposable liner, or in a receptacle that can be thoroughly disinfected.
3. Remove and discard gloves.
4. Wash hands and put on a new pair of disposable gloves.
5. If the sensor is visibly soiled (e.g., with blood or saliva), clean the sensor with a soapy cloth or paper towel or using a recommended disinfectant wipe and dry it with a clean lint-free cloth or paper towel.
6. Thoroughly wipe the sensor (min. 30 seconds) with one of the disinfecting products recommended above. Make sure that all impurities are removed, and the sensor is thoroughly disinfected. Use multiple wipes, if needed.
7. Repeat step 6.
8. Place the sensor on the docking station to allow charging.
9. Store the sensor and/or the docking station in a clean environment for the next use.

Cleaning of DC-Air™ Docking Station

The DC-Air™ docking station is not intended to be moved or to come in contact with a patient during clinical use. Accordingly, it does not require routine cleaning. If the DC-Air™ docking station becomes soiled or comes into contact with a patient, it should be cleaned using the cleaning agents recommended for the DC- Air™ sensor recommended above.

Do not wipe or press against the clips that hold the sensor onto the Docking Station. Avoid cleaning the center of the dock to avoid damage to the clips and to avoid cleaning liquid to leak into the electronics causing damage.



Do not submerge the DC-Air™ docking station in any liquid at any time.
Do not autoclave the DC-Air™ docking station. Autoclave sterilizers will permanently damage the device.

Cleaning and Disinfection of Holders

Sensor holders and related other items are to be cleaned and disinfected according to the instructions provided by the manufacturer of the holder and/or related items.

Sensor Barriers and Sleeves

Sensor barriers and sleeves (sensor covers) are disposable, and they must not be reused in any circumstances. Remove and dispose of the cover after each patient.



Understanding Sensor/Software Behavior

Docking/Pairing - When placing a sensor on the docking station, wait 3-5 seconds for the status to change to **light blue**, Sensor docked, and let sit for 1 full second before picking up the sensor to use. When taking ownership of a sensor from another room/computer, place it on the docking station in the new room that it will be used. Allow 5 seconds for the system to turn off the Bluetooth to unpair the previous sensor, and then show 'docked' status. Picking the sensor up will then pair it to the new docking station.

If the sensor is off the dock, and not asleep, will automatically connect the last docking station it used, and the same for the docking station pairing to the last sensor that was docked. If they match, then the twain software will connect and change the status to **Sensor Ready**.

Acquiring/Trigger an X-ray - After taking an x-ray, the status bar at the bottom will change to dark **blue**, retrieving image/download image. This process takes roughly 6 seconds based on signal strength. If the progress bar is slow or stopped, remove the sensor from the patient's mouth to allow the sensor line-of-sight to reconnect, and finish downloading the image taken. If still slow, walk closer to the docking station so that the sensor is within 4 feet. If a connection cannot be established after 60 seconds, the software will display whatever information it has received thus far. Use the Download last image button to redownload if image received was incomplete.

Do not place the sensor onto the docking station during an image transfer. Wait for the transfer to finish. If incomplete then use the download button, or place the sensor onto the dock before using the download button. The software can download the last image taken over wireless or docked, not interchangeable during the transfer.

Processing the X-ray - After the image is received over Bluetooth, the status bar at the bottom will change to **yellow**, processing of the image. This process takes roughly 6-8 seconds based on computer hardware speed. The software takes the image and will apply preset filters and then saves the image to the IMS. Feel free to take test x-rays of objects or of nothing except the sensor to watch this process. Repeat this process or by using the Download last image button.

Sleep Timer - If the Sensor goes to sleep from inactivity, the only way to wake the sensor is to place it back onto the docking station for 5 seconds. Take mention of the battery life to be aware if the sensor needs more time to charge. The inactivity timer restarts from when it last connected over Bluetooth or sent an image to the PC.

Battery Life - The battery life of the sensor when used in Endo mode can last roughly 3-5 hours. Every battery's potential is a little different.

If the battery of the sensor is depleted, it requires a minimum 20-25 minutes charge to be able to be used for a full 18-21 x-rays for an FMX series. To charge the battery to full from depletion takes roughly 2 hours.

If **proper workflow is followed**, docking the sensor to recharge in between exam sessions, then the **battery life should never be a needed concern**. Additionally, there is commonly a lunch period in which the sensor has time to recharge as well.

Review Training Videos on Use of DC-Air™ Holders

To help familiarize yourself with the use of DC-Air™ and the Zero Profile™ holder system, please review the training video(s) we have available on our website:

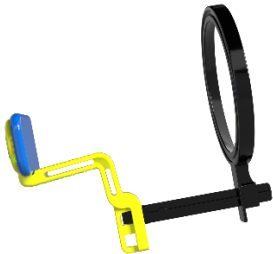
<https://www.ftgimaging.com/support>



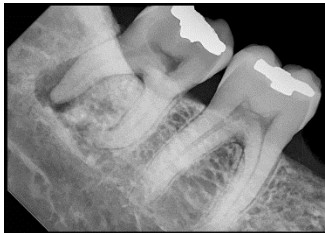
1: DC-Air™ in Bitewing Holder



2: DC-Air™ in Anterior Holder



3: DC-Air™ in Posterior Holder



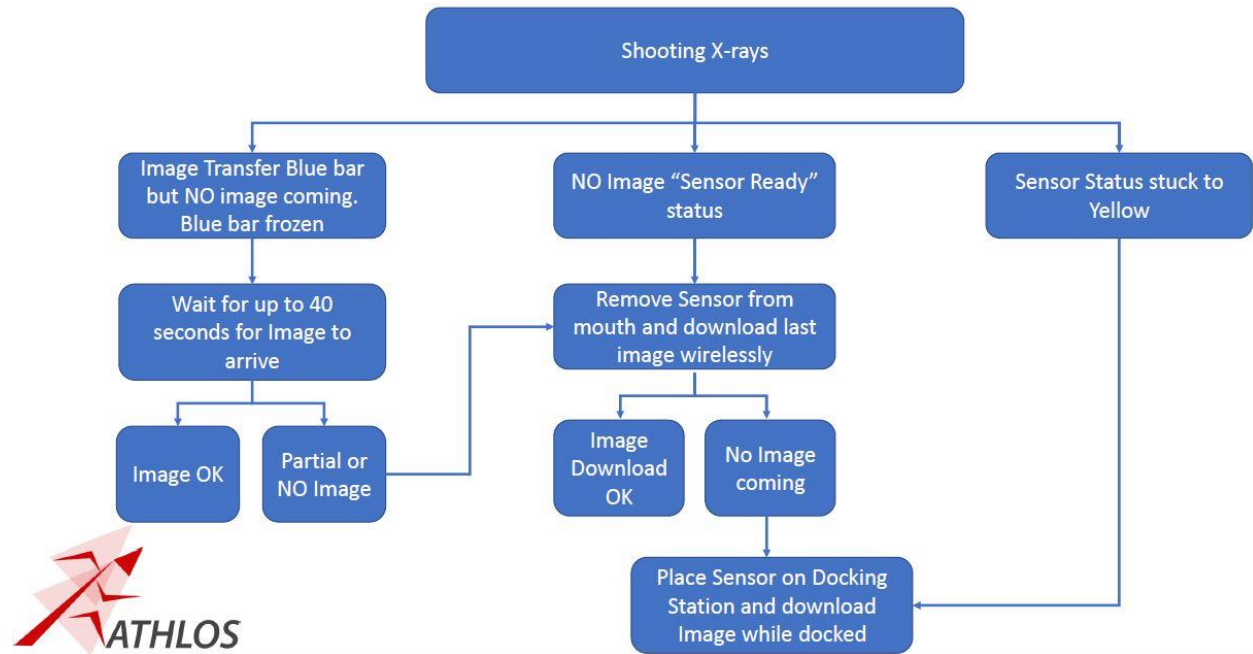
4: DC-Air™ in Endodontic Holder

Troubleshooting

An Image was not returned when x-rays were emitted

- Follow the flow chart on how to retrieve the image that was taken

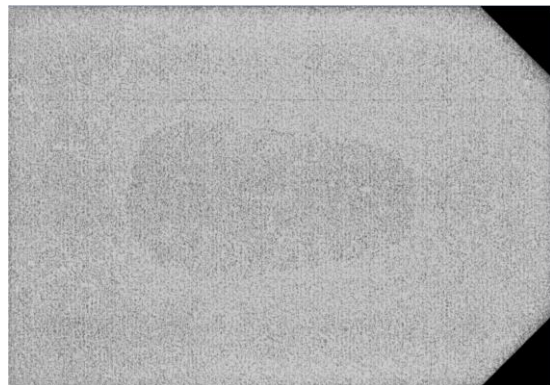
DC-Air™ Workflow Instructions in Scenarios Where an Image is Not Returned



The Sensor/Software acquired an image before x-rays were emitted (image below)

The sensor's sensitivity to light is too high, and should be lowered to be less sensitive.

Call FTG support to make this change.



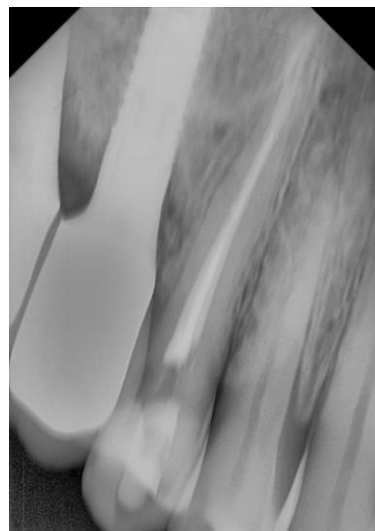
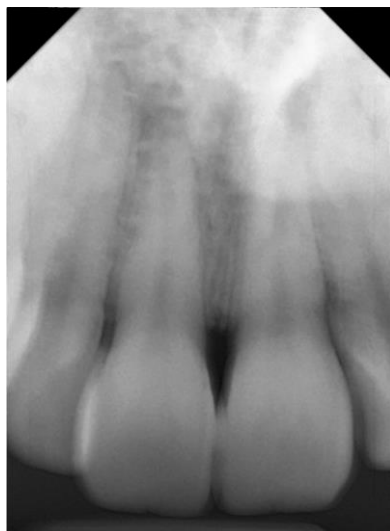
Received a partial or incomplete image (image below)

The image taken and received did not finish transferring to the computer. If the download was interrupted, the status of the twain will be dark blue, Receiving image, and will reattempt download for roughly 40-60 seconds. If the software cannot re-establish a connection to the sensor, then the Twain software will return whatever image information it did receive. Once the Twain connection is good with the sensor, the user can use the Download last image button to retrieve the most recent image taken. The user SHOULD NOT need to re-expose the patient to get the same image again.



Blurry or stretched Image (image below)

A blurry image is usually caused by the angulation between the X-ray source and the sensor was not perpendicular or straight on. Distance between the source and receiver can also lightly affect this. Try to minimize distance and look from a different position in the room to see if the cone of the tube is straight on. Use the positioning ring of the holders to help guide.



Grainy or Fuzzy Image (image below)

A Grainy or Fuzzy image is usually caused by the sensor not receiving enough X-ray information either because there was too much distance between the sensor & the X-ray source or the exposure time was too short. Posterior images are the most susceptible since there is more distance and denser anatomy to penetrate to reach the sensor. The Clinician should do their best to align and place the cone of the X-ray source through the guide ring of the holder piece and move as close to the patient as possible.

This method is the safest for the patient because the closer the X-ray source is to the sensor, there will be less X-ray scatter to the patient and the X-rays will be better focused to the receiver. Similar to shadows of hand puppets on a wall from a light. The closer the hand to the wall, the more accurate the shadow will appear. If image quality is maintained, the shorter distance might allow for a shorter exposure time based on individual tube head performance.

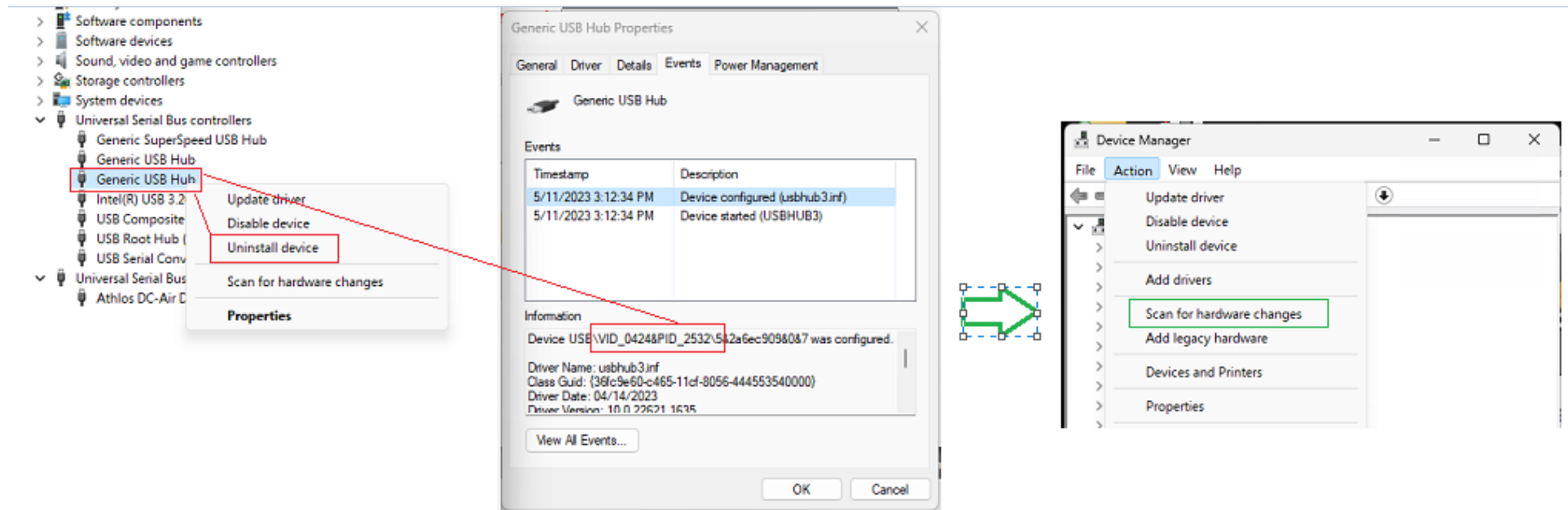


The TWAIN software window closes automatically because it does not detect the docking station or

The DC-Air™ Docking station does not show up in the Device Manager or

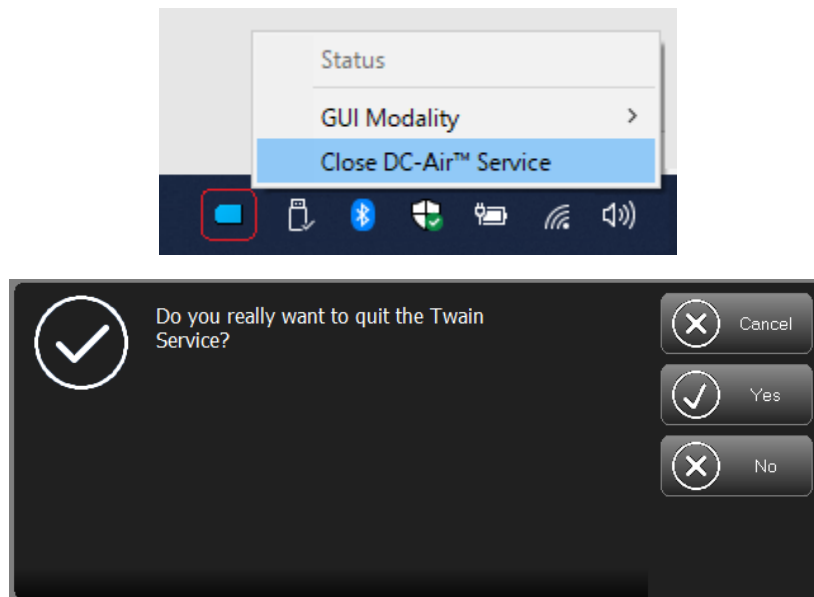
The TWAIN software status shows Sensor not connected even though it is on the docking station

- Unplug and plug back in the device to ensure both ends of the cable are firmly placed.
- Try another USB plug/port, in the event one of them is not functioning.
- If available, replace the USB-A to USB-C cable with another (or from another room) to see if the results change
- **[Advanced]** Have an IT person
 - From the Device Manager list, uninstall the “Generic USB Hub” that is associated with the DC-Air™ by matching the Vendor ID. *Image below*
USB\VID_0424&PID_2532\
 - Scan for hardware changes to refresh/install. Replug the Dock in or reboot the computer if not repopulated into the device list



The Software appears frozen or is inactive and not responding to commands.

Right-click the tray icon for the DC-Air™ TWAIN software, choose Close DC-Air™ Service. Then **Yes** on the confirmation. Next restart the acquisition process. Allow time for the sensor to connect to the docking station. Normally the sensor does not need to be docked to connect if recently done already. If required, the software status will state in [yellow] to place the sensor on the docking station to reconnect.

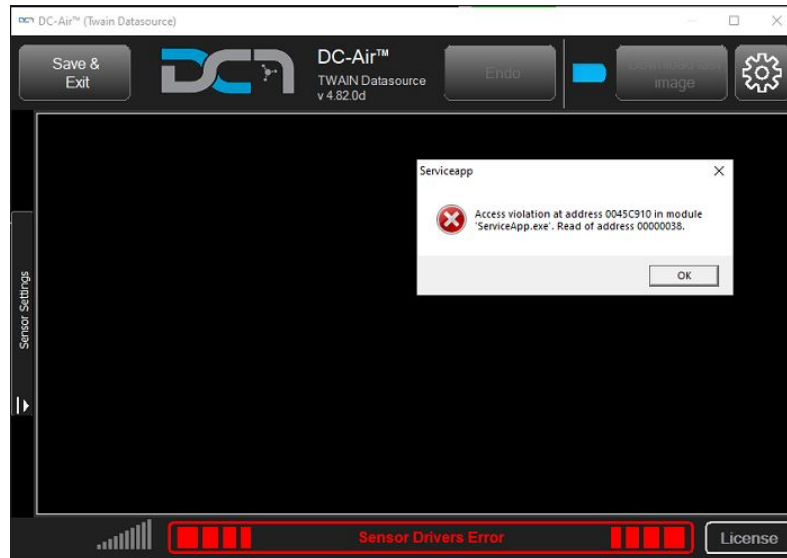


If the problem persists, a more elevated measure of a 'restart' is to unplug the docking station from the computer, typically where the USB-C connector plugs into the docking station.



This will power-reset the docking station, and in doing so, the software will recognize the docking station is not connected and close down. Expect the sensor to be docked again to reconnect to the software.

The DC-Air™ TWAIN software gives a status of “Sensor Drivers Error” or Error “error E06D7363” or Access violation error from the Serviceapp ”



Usually caused by the calling application not having elevated admin privileges. Try the following:

- Run the IMS with elevated privileges (Run as Administrator)
- Open the *TWAIN* from a locally and not from a network program shortcut to compare results

[Advanced] Have an IT person

- Give access to run “C:\ProgramData\DC-Air\Service\ServiceApp.exe” as administrator
- Add the program directory to the system environment variables path.

C:\ProgramData\DC-Air\Sensors\AthlosAir\SDK

