

Schick AE USB Support for CDR User Guide

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1. Introduction

1.1. Purpose

Schick AE USB Support for CDR is software designed to support customers whose current imaging programs would be otherwise incompatible with the AE sensor and the AE USB interface. Schick AE USB Support for CDR can be used with applications based on the CDR Dicom SDK, including, for example, CDR Dicom itself.

A list of compatible imaging programs, operating systems, and sensors can be found on the next page.

Schick AE USB Support for CDR works with the most popular Windows operating systems and imposes no additional requirements on the customer's current system configuration. The software is easy to install and integrates seamlessly with any compatible imaging program.

Important! *If you have installed the Sidexis 4 Sensor Plugin on your system, please do not install Schick AE USB Support for CDR. When both programs are installed, each will attempt to communicate with the sensor and the USB Interface, creating a conflict and affecting normal operation.*

2. Compatibility

2.1. Operating Systems

- Windows 10 Pro 64-bit
- Windows 8.1 Pro 64-bit

2.2. Imaging Programs

- CDR Dicom v5.14
- CDR TWAIN driver
- Other CDR SDK-based applications

2.3. Sensors

2.3.1. Compatible Sensors

- Schick AE
- Schick 33

2.3.2. Sensors Not Supported

- Schick Elite

3. Installation

3.1. ***What You Will Need to Complete this Section***

To expedite installation, please have the following items available:

- Schick AE USB Support for CDR CD (or the download link from the Dentsply Sirona support website)
- AE Sensor USB Interface
- Compatible USB cable to connect the AE Sensor USB Interface to your PC workstation (*cable supplied separately*).

You should also have CDR Dicom 5.14 software installed (or other compatible imaging program).

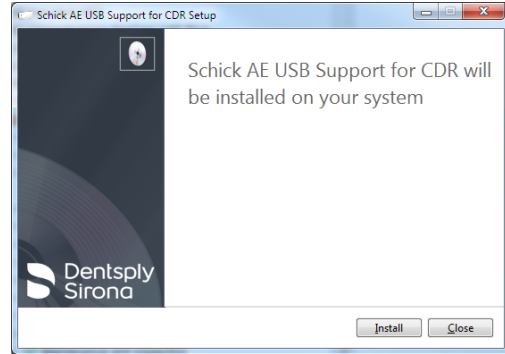
3.2. ***Before You Install Schick AE Support for CDR***

Important! Please do not connect the AE Sensor USB Interface and USB cable to your computer until after you have installed Schick AE Support for CDR. The installation procedure can be found on the following page.

3.3. Installing Schick AE Support for CDR

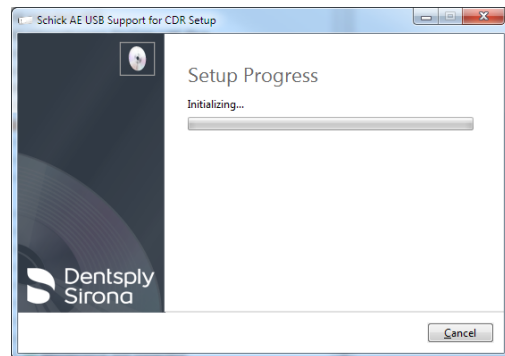
STEP 1

- A. Insert the Schick AE Support for CDR disk into your CD or DVD drive, or download the appropriate link from the Dentsply Sirona support website.
- B. Click **Install**.



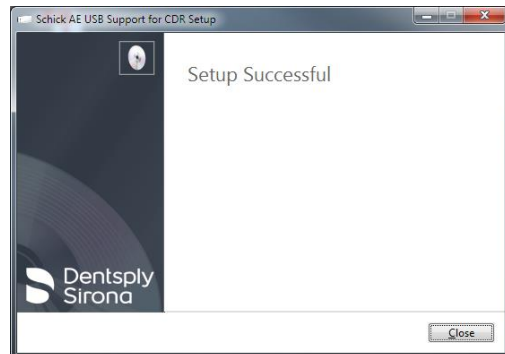
STEP 2

The setup process starts and continues until finished.



STEP 3

If prompted, click **Restart** to complete the installation.



3.4. Connecting the AE Sensor USB Interface

Important! Do not connect the USB Interface and cable to your computer until after you have successfully installed the Schick AE Support for CDR program. The installation procedure may be found on the previous page.

The USB cable has a Series "A" USB plug on one side and a Series "micro-B" USB plug on the other. The "A-type" plug connects to any available USB port on the computer. The "micro-B-type" plug connects to the USB Interface.

Important! For normal operation and to ensure compliance with regulatory EMC and EMI standards, use only the USB cables specified for your system by Dentsply Sirona.

An illustration of the Sensor and USB Interface are shown in Figure 1 (below). For a description of cable connections to the device, refer to Table 1 (below).

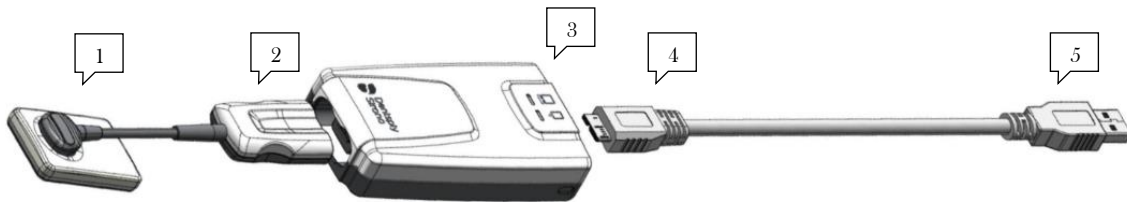


Figure 1. AE Sensor USB Interface Cable Connections

Table 1. AE Sensor USB Interface Cable Connections

NUMBER	DESCRIPTION
1	AE Sensor (<i>Schick AE</i>)
2	AE Sensor cable connection
3	AE Sensor USB Interface
4	USB cable connection (<i>"micro-B" connector of USB cable connects here</i>)
5	USB cable connection (<i>"A" connector of USB cable connects to PC or hub</i>)

4. LED Indicators

4.1. AE Sensor USB Interface

Table 2. AE Sensor USB LED Indications (Connection Status)



INTERFACE	 CONNECTION STATUS	DESCRIPTION
Not Connected	Off	Cable is not connected. Check cable connection to PC.
Connected	Amber	USB Interface is connected and powered, but imaging program (such as CDR Dicom) is not running. This indication may also occur when both CDR Dicom and the AE USB Interface Utility are open at the same time. To resolve, close the utility and restart CDR Dicom.
Connected	Green	USB Interface is connected and powered. Imaging program (such as CDR Dicom) is running.
Connected	Green “breathing”	Ready for acquisition.

Table 3. AE Sensor USB LED Indications (Sensor Status)

SENSOR	 SENSOR STATUS	DESCRIPTION
Not Connected	Off	Sensor is not connected. Connect sensor and start imaging program.
Connected	Amber	Error condition, such as incompatible sensor.
Connected	Green	AE sensor and USB Interface are connected. Start imaging program, if not running already.
Connected	Green “flashing”	USB Interface is transferring image from sensor to PC. LED flashes for duration of the image transfer.

5. Operation

5.1. *AutoDetect*

The CDR AutoDetect feature instantly recognizes when a different Schick USB device or paired Schick WiFi Interface is connected, enabling customers to skip the additional step of manually selecting a different Schick device before using it.

The AutoDetect feature has been updated to recognize AE USB interfaces, in addition to other compatible devices, as listed below:

- AE Sensor USB interfaces
- Schick 33/Elite USB interfaces
- Paired Schick WiFi Interfaces.

With CDR AutoDetect enabled, any new Schick device is recognized when connected or paired and is ready for use. CDR AutoDetect will be most useful for offices that employ a mix of Schick interfaces and use them interchangeably within one or several operatories.

More information about the AutoDetect feature can be found in the Schick USB Module and Sensors User Guide (P/N 100003870).

6. Image Acquisition

6.1. Introduction

Schick AE USB Support for CDR applies a specific type of image enhancement with any compatible, CDR SDK-based imaging software. These enhancements optimize image presentation to a level appropriate for the clinical task being performed and enable users to select a clinical task and a specific degree of sharpness before the image is acquired.

These enhancements are available for images acquired with the following sensors:

- Schick AE
- Schick 33.

***Important!** For Schick AE sensors only, the effects of clinical task selections and their sharpness settings for an acquired image cannot be changed after the image is presented in the imaging software.*

Customers with Schick 33 sensors can continue to apply different clinical enhancements after acquisition and to use the dynamic sharpening available in CDR Dicom (and other compatible imaging programs).

6.2. Clinical Tasks

The different clinical task selections optimize the contrast and brightness of the displayed image to improve visibility of the anatomical structures important for that clinical task.

In addition to contrast optimization, the visibility of some anatomical structures benefit from additional image sharpening. The degree of sharpening, applied at the time of image presentation, can be selected for any clinical task **prior** to image acquisition, using the AE Image property page.

NOTE: Refer to Section 6.3 on page 10 for the procedure.

Users can also use the slider to change the default sharpen level to their personal viewing preferences for each clinical task **prior** to image acquisition, also using the AE Image property page.

NOTE: Refer to Section 6.4 on page 11 for the procedure.

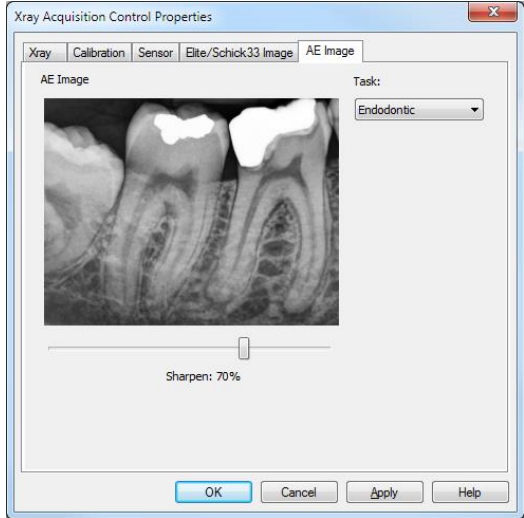
Table 4. Clinical Task Descriptions and Default Values

CLINICAL TASK	OPTIMIZED ANATOMY
General Dentistry	Balanced for general tooth and bone display
Endodontic	Root apices, pulp chamber, lamina dura, periodontal ligament, cementum
Restorative	Enamel, Dentin, DEJ, CEJ
Periodontic	Alveolar and crestal bone, calculus

6.3. Selecting Clinical Tasks

Clinical tasks for images acquired with AE sensors are selectable from a new tab named “AE Image” on the property page for X-ray acquisition options. By default, the General Dentistry task with a Sharpen value of 70% is selected.

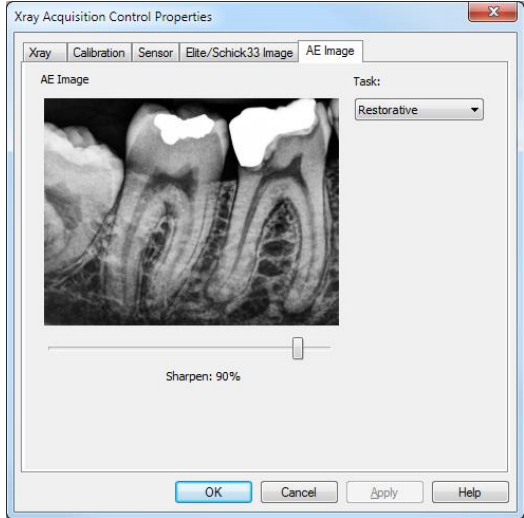
Perform the following steps to select a clinical task.

STEP	ACTION
<i>Note: In this example, CDR Dicom is used to demonstrate the procedure.</i>	
1	Open CDR Dicom.
2	Click on the System menu.
3	Click on Xray Settings.
4	Click on the AE Image tab.
5	<p>Select a clinical task from the Task menu (Endodontic in this example.).</p> 
6	Click Apply.
7	Click OK to close the X-ray acquisition options.

6.4. Setting Sharpness Default Values

Clinical tasks for images acquired with AE sensors are selectable from a new tab named “AE Image” on the property page for X-ray acquisition options. Although by default, a Sharpen value of 70% is selected for the default General Dentistry task, this can be changed to any Sharpen setting for any Task.

Perform the following steps to set the default sharpness of a clinical task.

STEP	ACTION
<i>Note: In this example, CDR Dicom is used to demonstrate the procedure.</i>	
1	Open CDR Dicom.
2	Click on the System menu.
3	Click on Xray Settings.
4	Click on the AE Image tab.
5	Select a clinical task from the Task menu (Restorative in this example).
6	<p>Adjust the Sharpen slider to customize image sharpness for the selected task. Moving the slider to the right produces a sharper image. Moving the slider to the left produces a smoother image.</p>  <p>The screenshot shows a window titled "Xray Acquisition Control Properties" with several tabs: "Xray", "Calibration", "Sensor", "Elite/Schick33 Image", and "AE Image". The "AE Image" tab is active. It features a "Task:" dropdown menu set to "Restorative". Below this is a grayscale X-ray image of teeth. Underneath the image is a horizontal slider for "Sharpen:" which is currently set to 90%. At the bottom of the dialog are buttons for "OK", "Cancel", "Apply", and "Help".</p>
7	Click Apply if you have changed either the Task or Sharpen value, or click Cancel to disregard any changes made here
9	Click OK to close the page for X-ray acquisition options.

7. Using the AE USB Interface Utility

7.1. Introduction

The AE USB Interface Utility is installed during the setup program and can be used to accomplish the following tasks:

- Perform a USB Interface firmware upgrade (*page 13*)
- Perform a Sensor firmware upgrade (*page 14*)
- Perform the USB Interface test (*page 16*)
- Perform the Sensor test (*page 17*)
- Perform an Update from File (*page 18*)
- Install a Sensor calibration File (*page 19*).

A sample screen of the utility is shown below. (*Please note that the version numbers shown in the picture below are examples only and may differ from those reported for your system.*)

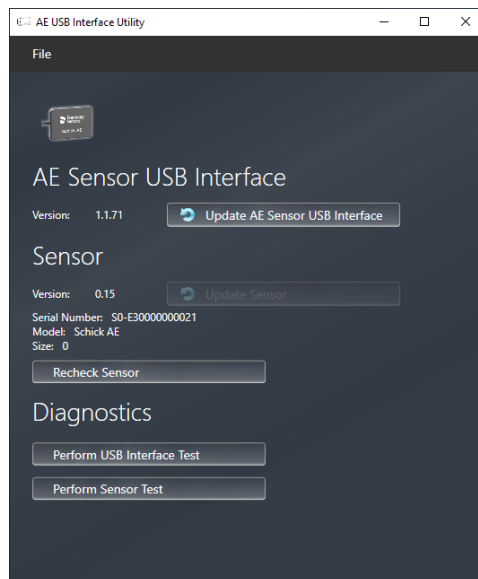



Figure 2. AE USB Interface Utility

7.2. AE Sensor USB Interface Firmware Upgrades

In-office updates to the *AE Sensor USB Interface* can be accomplished by installing new firmware.

When new firmware is available, it is typically provided with a software release and becomes part of the update to your system. If the update button for the AE Sensor USB Interface is active, we recommend that you perform the update, following the procedure below.

Perform the following steps to upgrade USB Interface firmware.


STEP	ACTION
1	Important! Close CDR Dicom or other imaging program (if running).
2	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
3	Start the utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
4	Press the Update AE Sensor USB Interface button, if enabled, as this indicates that new firmware is available.  The upgrade process may require several minutes and the firmware version number will be updated when the upgrade is completed successfully.
5	Click File > Exit to close the utility.

7.3. Sensor Firmware Upgrades

In-office updates to the *AE Sensor* or other compatible sensor can be accomplished by installing new firmware.

When new firmware is available, it is typically provided with a software release and becomes part of the update to your existing system. If the update button for the sensor is active, we recommend that you perform the update, following the procedure below.


Perform the following steps to upgrade Sensor firmware.

STEP	ACTION
1	Important! Close CDR Dicom or other imaging program (if running).
2	Please make sure that a compatible sensor is connected to the AE Sensor USB Interface.
3	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
4	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
5	Press the Update Sensor button, if enabled, as this indicates that new firmware is available.  The upgrade process will require approximately one minute and the firmware version number will be updated when the upgrade is completed successfully.
6	Click File > Exit to close the utility.

7.4. Rechecking Sensors

One of the benefits of the AE USB Interface Utility is its ability to read the firmware version of the USB interface as soon as it is connected. Reading firmware information from sensors, particularly when swapping sensors, requires an additional step.

Perform the following steps to recheck Sensor firmware.

STEP	ACTION
1	<i>Important!</i> Close CDR Dicom or other imaging program (if running).
2	Please make sure that a compatible sensor is connected to the AE Sensor USB Interface.
3	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
4	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
5	If switching sensors, press the Recheck Sensor button.  The re-check process will require several seconds and the firmware version will be updated, if needed, as well as the sensor serial number, model, and type when the process is completed successfully.
6	Click File > Exit to close the utility.

8.

8.1. USB Interface Test


This diagnostic checks the connection between the USB Interface and the host computer (PC workstation).

A "Passed" condition indicates that this test was completed and successful. A "Failed" condition indicates that this test was completed, but a problem exists with the system. Several reasons can cause this issue, but the most common include:

- Problem with the USB Interface or its USB connector
- Problem with the USB cable and / or port
- Corrupt firmware inside the USB Interface.

If another USB Interface is available, connecting it to the USB cable and repeating the USB Interface Test may help to identify the possible cause of the problem.

Perform the following steps for the USB Interface test.

STEP	ACTION
<i>Important!</i> Close CDR Dicom or other imaging program (if running).	
1	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
2	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
3	Press the Perform USB Interface Test button. 
4	If the test passes, continue with the next step and exit the utility. If the test fails, perform troubleshooting for the potential issues listed above, or consult your local support representative for additional instructions.
5	Click File > Exit to close the utility.

8.2. Sensor Test


This diagnostic checks the connection between the USB Interface and a compatible sensor.

A "Passed" condition indicates that this test was completed and successful. A "Failed" condition indicates that this test was completed, but a problem exists with the system. Several reasons can cause this issue, but the most common include:

- Problem with the USB Interface or its sensor connector
- Problem with the sensor cable
- Corrupt firmware inside the sensor.

If another sensor is available, connecting it to the USB cable and repeating the Sensor Test may help to identify the possible cause of the problem.

Perform the following steps for the Sensor Pattern test.

STEP	ACTION
<i>Important!</i> Close CDR Dicom or other imaging program (if running).	
1	Please make sure that a compatible sensor is connected to the AE Sensor USB Interface.
2	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
3	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
4	Press the Perform Sensor Test button. 
5	If the test passes, continue with the next step and exit the utility. If the test fails, perform troubleshooting for the potential issues listed above, or consult your local support representative for additional instructions.
6	Click File > Exit to close the utility.

8.3. Update from File

This is an alternate method for updating sensors and USB Interfaces. In almost all cases the preferred approach to updating firmware will be to follow the procedures described previously.

In specific instances, as directed by support personnel, the following method may be appropriate. This method requires the availability of a special file not normally distributed with CDR Dicom (or other imaging program) software. The update from file process will recognize that special file only. All other files will be ignored.

Perform the following steps to Update firmware from file.

STEP	ACTION
<i>Important!</i> Close CDR Dicom or other imaging program (if running).	
1	Please make sure that a compatible sensor is connected to the AE Sensor USB Interface.
2	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
3	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
4	Click File > Update from file...
5	Browse to the special file containing the appropriate firmware versions for the sensor and / or USB Interface.
6	Click on the Update... button.
<i>Note: A short message will appear as a reminder to keep all hardware connected during the update. When the update is complete, another short message will appear to confirm a successful upgrade.</i>	
7	Click OK to close the message.
<i>Note: Sensor and USB Interface updates are complete and the firmware version is displayed.</i>	
8	Click File > Exit to close the utility.

8.4. Install Calibration File

An appropriate calibration file is installed automatically for each sensor so for most customers the option to install the calibration file as described below will not be needed. If, in rare cases, the calibration file is not installed and the sensor cannot be used for this reason, the calibration can be installed manually by the following method.

Perform the following steps to install a sensor calibration file.

STEP	ACTION
<i>Important! Close CDR Dicom or other imaging program (if running).</i>	
1	Please make sure that a compatible sensor is connected to the AE Sensor USB Interface.
2	Please make sure that the AE Sensor USB Interface is connected to the host computer (PC workstation).
3	Start the AE USB Interface Utility (Start > All Programs > CDR Dicom for Windows > AE USB Interface Utility).
4	Click File > Install Calibration File.
5	When the installation is complete, click File > Exit to close the utility.

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