

# CONDENSATION PARTICLE COUNTERS

## MODELS: 3771, 3772, 3775 AND 3776

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### FIRMWARE UPDATE INSTRUCTIONS

The Condensation Particle Counter (CPC) Firmware Update application loads firmware onto a TSI® CPC instrument through a USB connection. The CPC Firmware Update runs on a computer with Microsoft Windows® 7, Windows® 8, or Windows® 10 (32-bit or 64-bit) operating systems. This application is to be used with TSI CPC instruments only.

This document contains three parts:

- [Quick Installation Guide](#)
- [Detailed Installation Guide](#)
- [USB Firmware Update Guide](#)

These guides describe how to update the firmware on your CPC instrument. If needed, the [Detailed Installation Guide](#) and [USB Firmware Update Guide](#) sections provide additional information useful when uploading the firmware from your computer to the CPC instrument.

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## Quick Installation Guide

This quick installation guide describes the process of obtaining the latest CPC firmware and loading this firmware onto your CPC. The best method of obtaining CPC firmware updates is to download them from the TSI website. In this way, you are assured of obtaining the latest firmware version. If you are unable to successfully download the firmware from the TSI website, please email [particle@tsi.com](mailto:particle@tsi.com).

### Obtaining and Installing the Latest CPC Firmware Update Program from the TSI Website

1. From your computer, access the TSI web site <http://www.tsi.com/SoftwareDownloads> and follow the instructions on the web page to locate firmware for your CPC.
2. Click on the resulting Firmware Update link to download the file to your computer.
3. Once the download is complete, double-click on the downloaded file. This installs the CPC Firmware Update program needed to load the new firmware onto your CPC instrument.
4. Complete the installation process by following the prompts as required.



## Updating your CPC to the Latest Firmware

1. Once the firmware update utility application is on your computer (see previous sections), the firmware can be transferred to your CPC.
2. Using a USB cable, connect to the Series B receptacle (square shape) on your CPC and a USB receptacle on your computer.
3. Turn on the CPC and allow it to complete its initialization sequence. If the New Hardware Wizard appears on your computer, simply follow the prompts to install the TSI USB driver. Continue past any warnings and press **Finish**.
4. Double-click the new "**CPC 377x Firmware Upload Utility**" icon on your computer's desktop to run the USB firmware update application.
5. Click the green button in the upper left corner of the first program screen to begin the firmware update.
6. Once started, the firmware update process should take approximately 2 minutes. During this time, observe the warnings regarding interrupting the program.
7. After the update is completed successfully, power down your CPC. Wait 10 seconds and power up the instrument.
8. Verify that the Firmware Version reported by the CPC corresponds with the version you just uploaded to the instrument.

A [Detailed Installation Guide](#) is presented in the section which follows. Refer to this section if you had difficulty installing the firmware using the simplified [Quick Installation Guide](#), or if errors were encountered.

# Detailed Installation Guide

## Installation Instructions

1. Before updating the firmware on your TSI instrument you must first install the firmware update utility onto your computer. To start this process, run the firmware update utility installer that you have downloaded from the TSI web site.
2. A “Preparing to Install...” screen will be displayed (Figure 1).

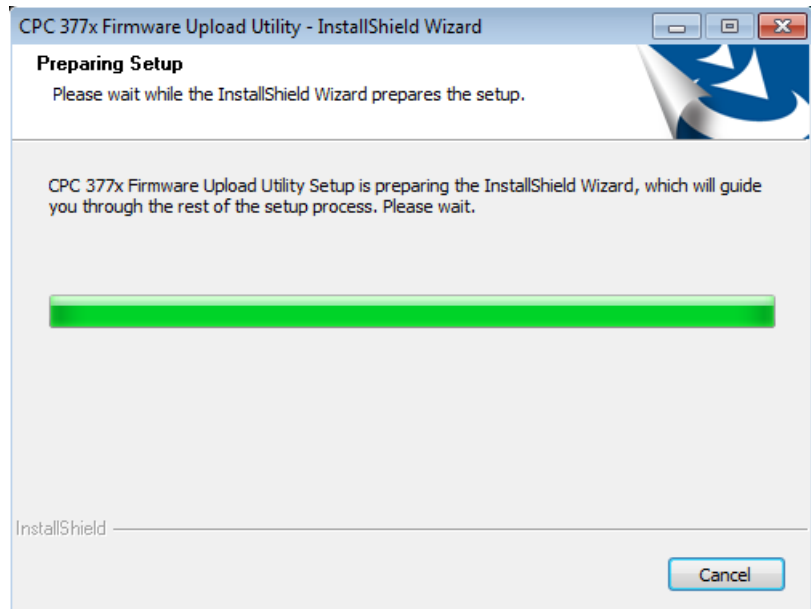


Figure 1

3. Select the **Next >** button to continue the installation (Figure 2).

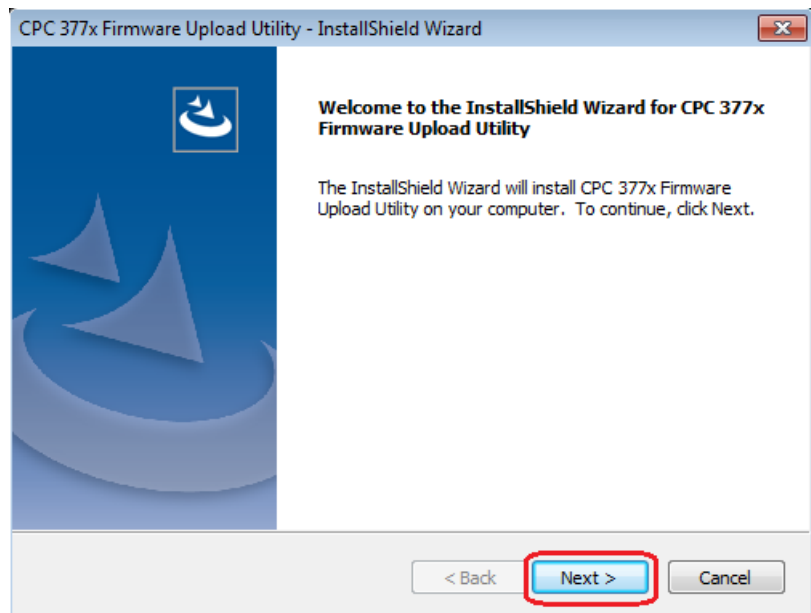
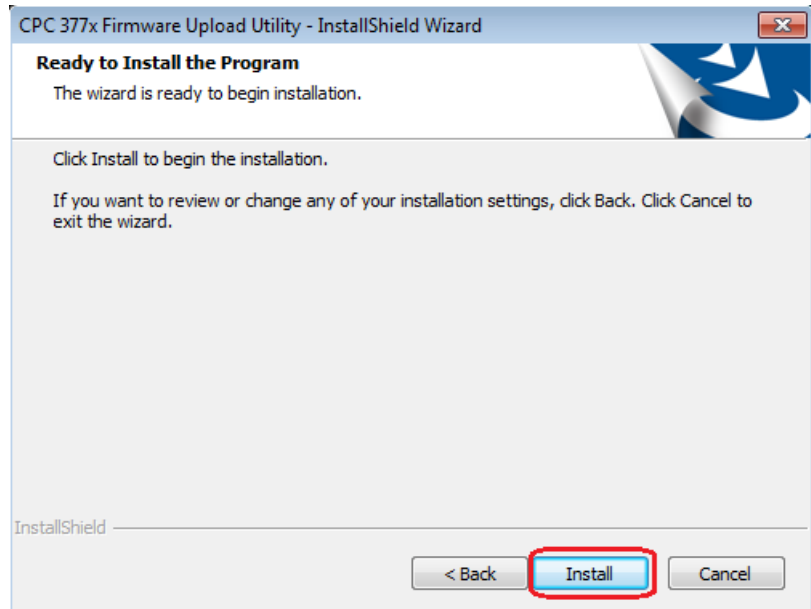


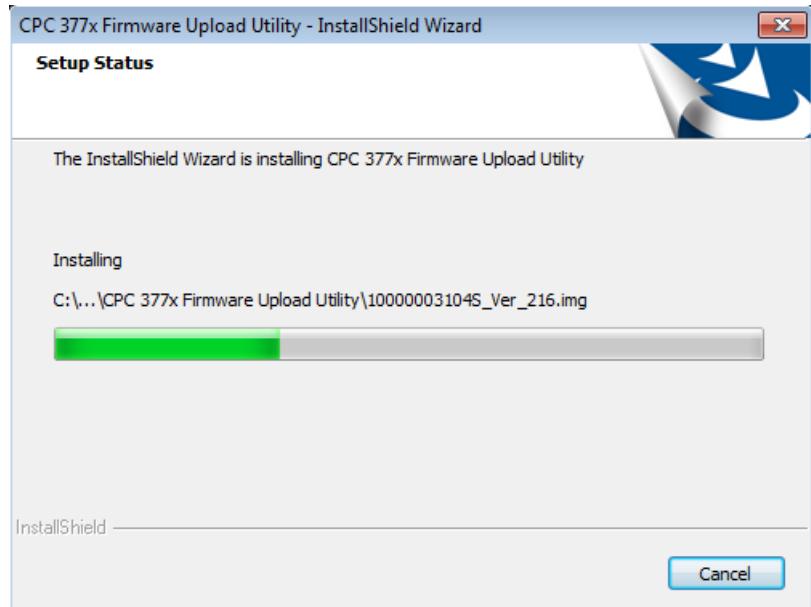
Figure 2

4. The program will install in the Program Files (x86) \ TSI \ CPC 377x Firmware Upload Utility folder.
5. Select the **Install** button to continue the installation (Figure 3).



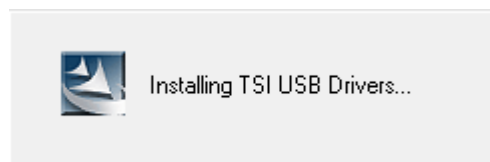
**Figure 3**

6. Wait for the installation to finish (Figure 4).



**Figure 4**

7. Next the TSI USB drivers are installed. Steps 8 through 10 will be displayed if the drivers are not already installed on your computer.



**Figure 5**

- Two Driver install confirmation screens may appear. If so, select the **Install** buttons (Figure 6 and Figure 7).

You may also check the box **Always trust software from "TSI Inc."**

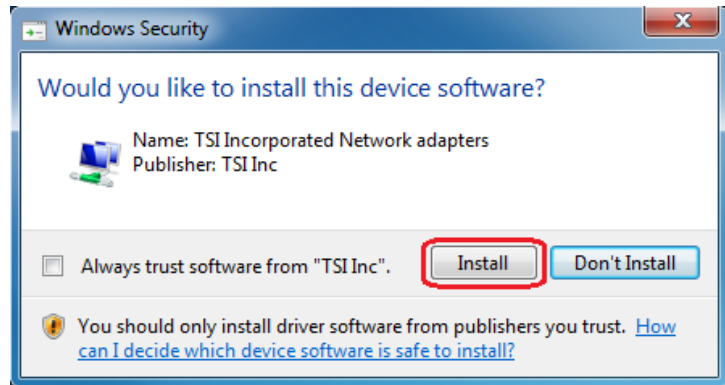


Figure 6

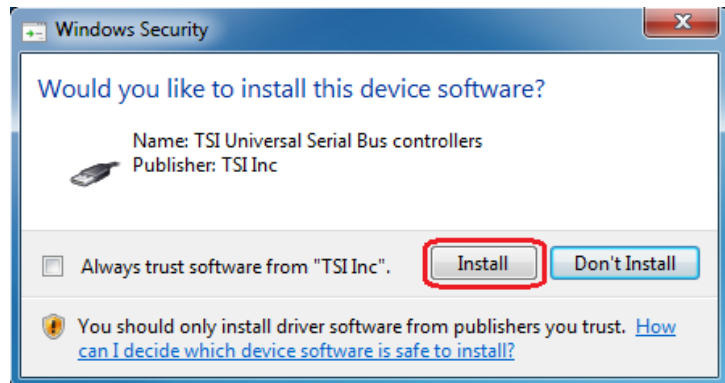


Figure 7

- Select the **Finish** button to complete the installation (Figure 8).

Once this step is complete, an Icon is placed on your Desktop. This is used to update the firmware to your instrument as described in the section [USB Firmware Update Guide](#).

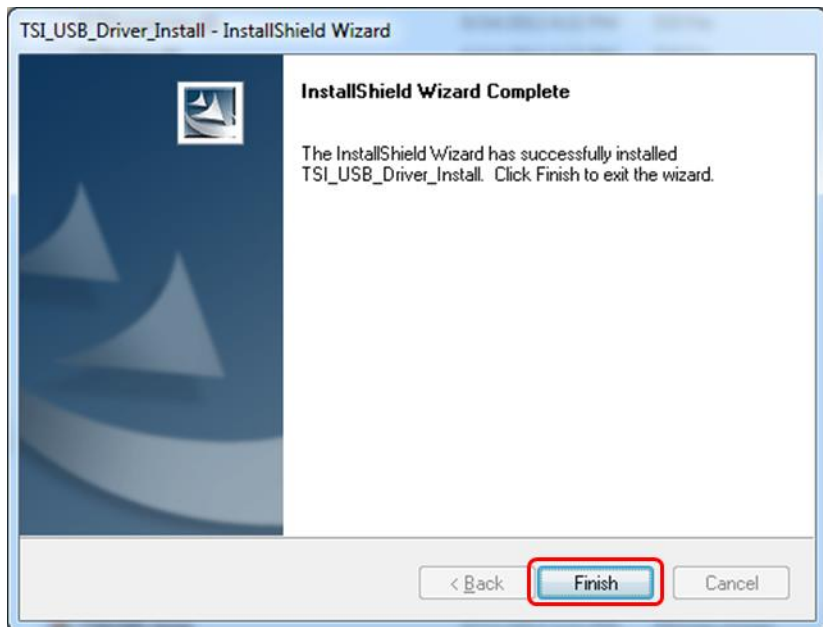


Figure 8

- Attach the powered instrument to the system. If the instrument has not been attached to the system previously, the Found New Hardware Wizard *may* be displayed or you will see the TSI USB driver software initialized.
- Select the **Install the software automatically** action. Then select the **Next >** button.
- Make sure that the device installed without any errors and is ready to use.

13. The CPC instrument is installed on the system and ready to run with the Firmware Upload Utility application.

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## USB Firmware Update Guide

This installation requires a Windows® 7, Windows® 8, or Windows® 10 (32- or 64-bit) operating system. For best results run the USB Firmware Update application with a single TSI CPC instrument attached to your system.

1. Connect your CPC instrument to the computer using a USB cable.
2. Turn the CPC instrument power ON. Wait for approximately one minute for the instrument to connect and become active on the system.
3. To load firmware to the instrument, double-click the new **CPC 377x Firmware Upload Utility** icon on your computer's desktop to run the USB firmware update application. The following screen appears (Figure 9).

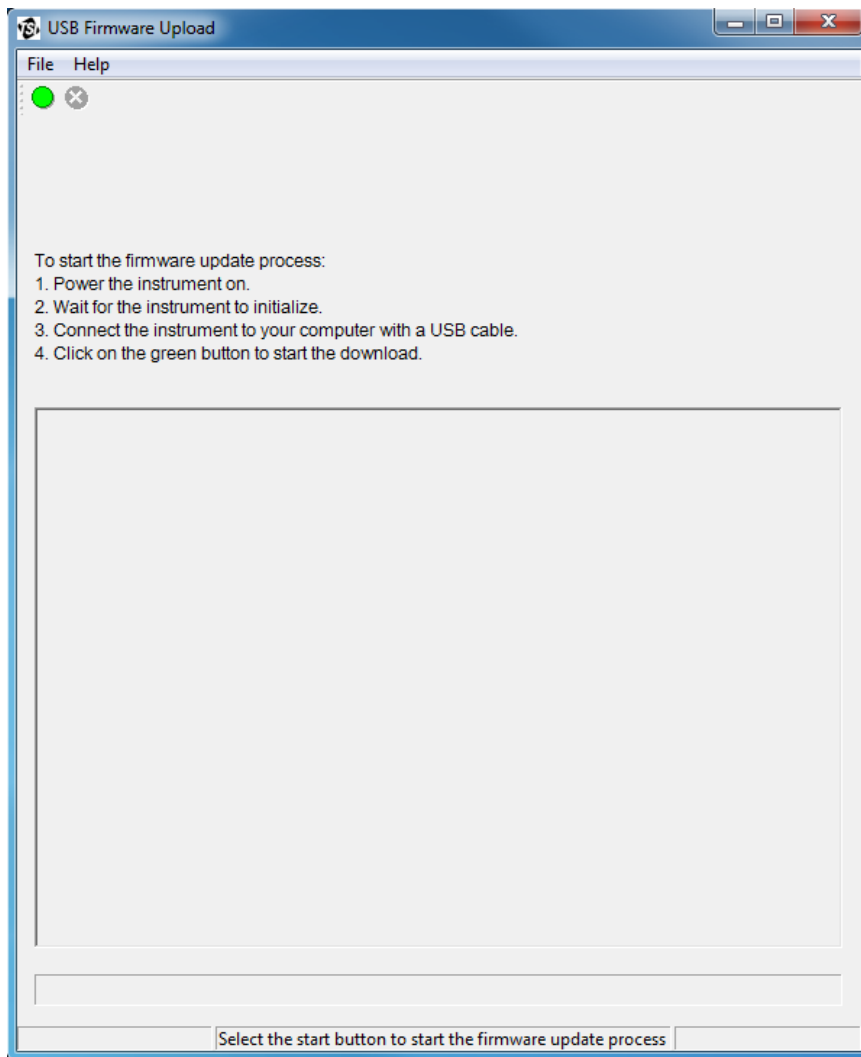




Figure 9

4. Click the green **START**  button to start the firmware update process.

In the event that the instrument is not attached or not powered, the following error will be shown in the status box of the application (Figure 10):

"ERROR: An instrument was not detected"

5. If the Firmware Update application is displaying an error message similar to Figure 10, restart the Firmware Update process by clicking the green **START**  button.

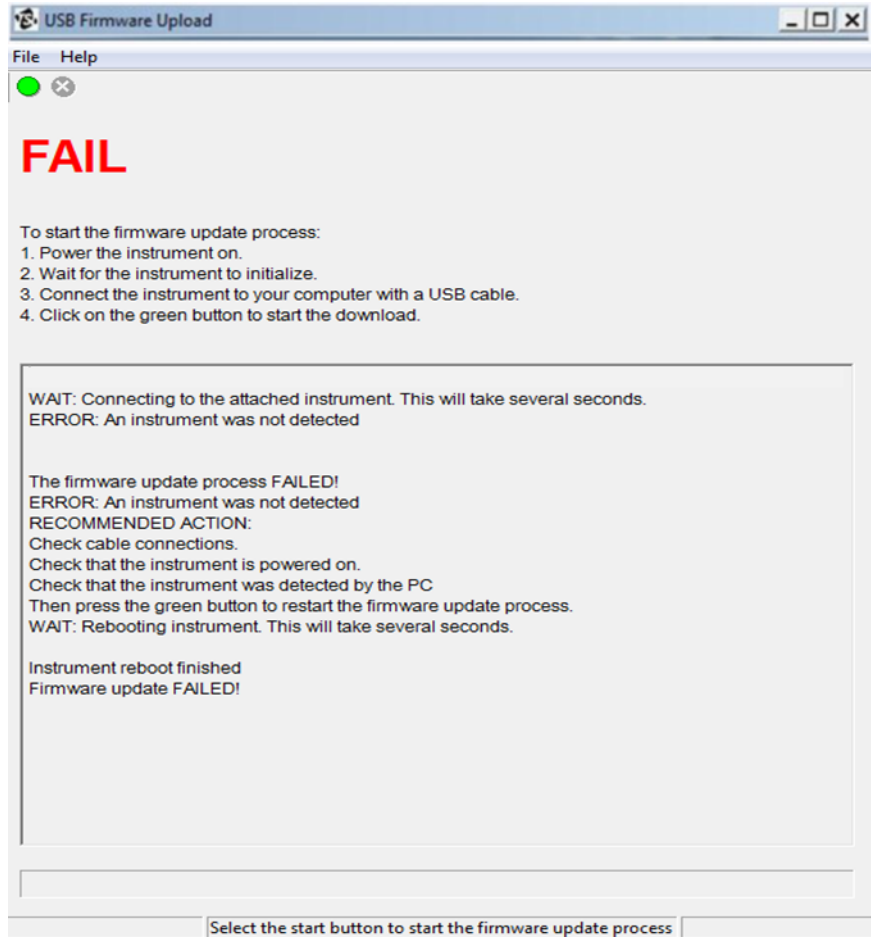


Figure 10

6. If the following message appears in the status box of the application:

"ERROR: The Instrument Model is not supported. Please download the correct firmware update application from the TSI website [www.tsi.com](http://www.tsi.com) for the <XXX> instrument model"

7. Make sure you have the correct firmware upgrade for the model of your instrument. The model of your instrument displays in the <XXX> placeholder of the message. If the problem persists, contact TSI customer service at 1-800-874-2811 or email [particle@tsi.com](mailto:particle@tsi.com) to receive the correct firmware upgrade configuration for your instrument.

8. If the application detects that the firmware currently installed on the attached instrument is the same version that you are attempting to upload to it, a message displays (Figure 11).

Select the **Yes** button to rewrite or repair the existing firmware on the instrument. Select **No** if you do not need to rewrite the firmware on the instrument.

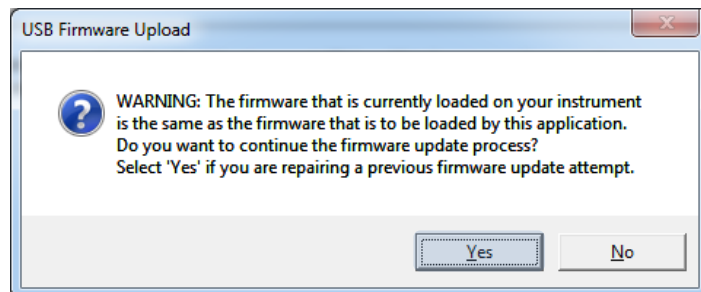


Figure 11

9. Selecting the **Yes** button will continue the installation.
10. The process of updating firmware on an instrument erases and writes a series of firmware images. The number of images depends on the instrument and the released firmware. The status box of the application will list the firmware update tasks as completed. The progress bar of the application will update as the firmware images are written to the device (Figure 12).

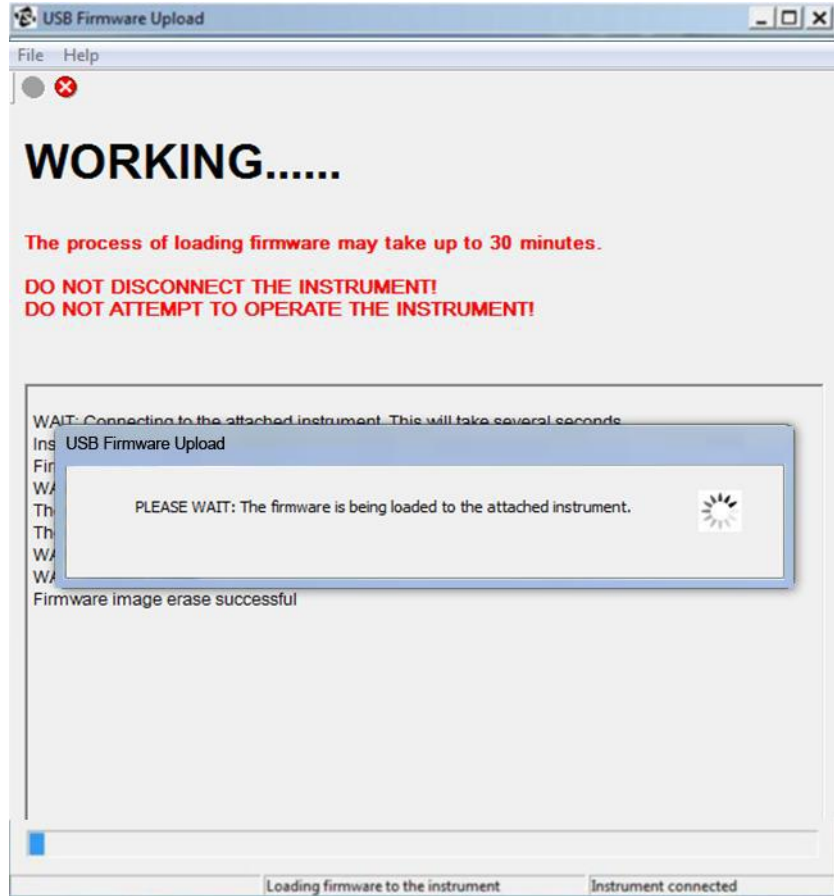


Figure 12



11. When the firmware update process is complete, the **SUCCESS** message displays (Figure 13).
12. After the update is successfully completed, power down your CPC aerosol monitor. Wait 10 seconds and power up the instrument.
13. Verify that the Firmware Version reported by the CPC corresponds with the version you just uploaded to the instrument.

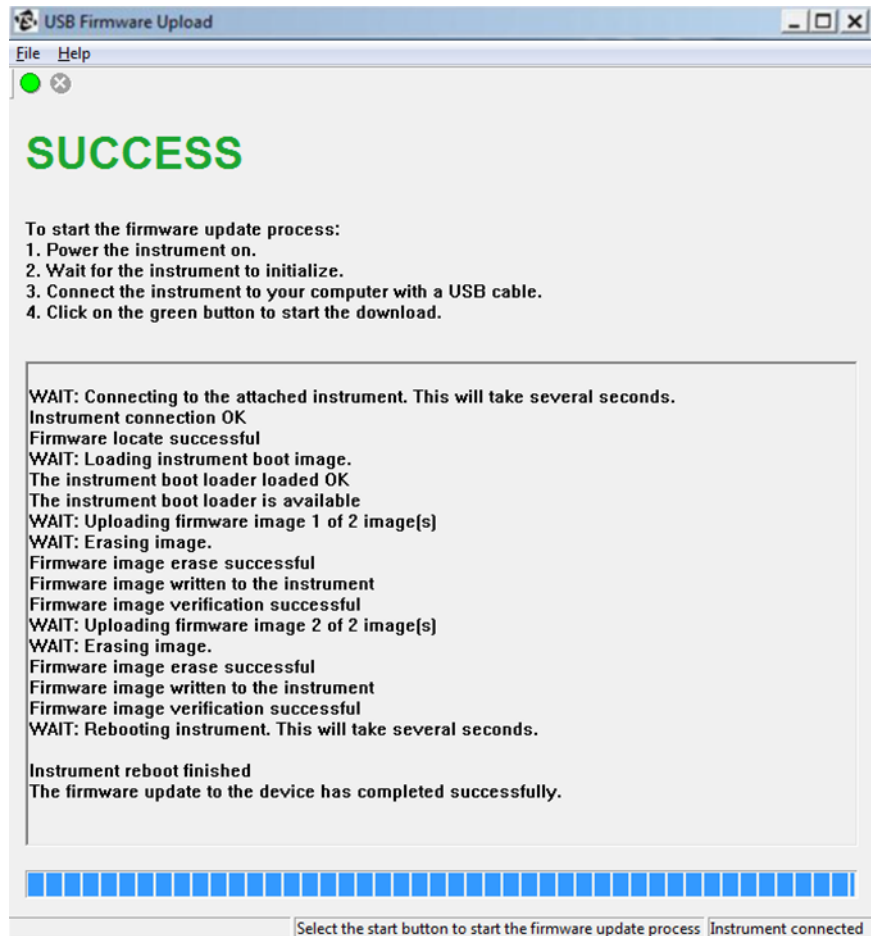



Figure 13

## The STOP Button

Since it is necessary to erase the existing firmware of the instrument to write the new firmware of the device, the instrument maintains an inoperable state until a complete and successful firmware update occurs. **Do not** click the **Stop** button while updating the firmware of an instrument!

If you accidentally click the **Stop**  button, the following warning is displayed (Figure 14).

If the **No** button is clicked, the firmware update will continue to upgrade the firmware of the instrument.

If the **Yes** button is clicked, the Firmware update process will fail and halt.

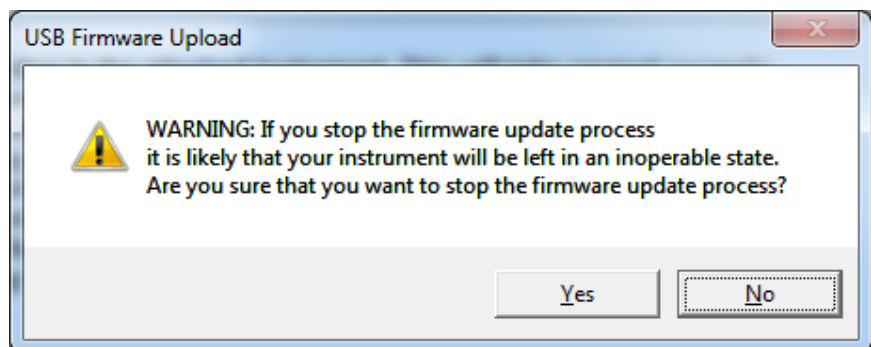


Figure 14

The following messages are displayed.

CANCELLED: The firmware update process has been cancelled.

This may result in an inoperable instrument!

Please update the firmware prior to using the instrument.



### Caution

Stopping the firmware upgrade in the middle of the upgrade process can result in an inoperable instrument. Upgrading the firmware should resolve this issue. If you have trouble upgrading the firmware in the unit, TSI recommends that you contact customer service at <http://www.tsi.com/Support>, 1-800-874-2811 or email [particle@tsi.com](mailto:particle@tsi.com) to resolve the issue before you send the unit back to TSI.

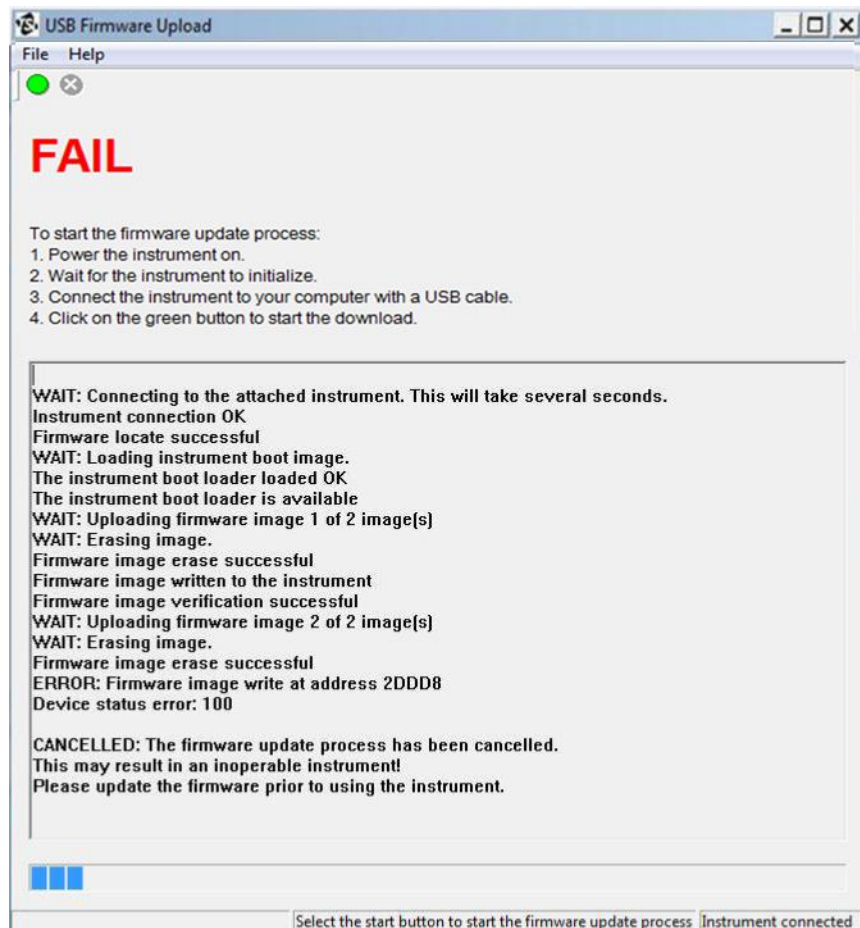


Figure 15

## Instrument Connection and Error Conditions

If the instrument connection is disrupted or any error occurs during the firmware upgrade process, the application automatically tries multiple times to load the firmware to the instrument. Even if multiple attempts are necessary, typically the firmware update will complete with a **SUCCESS** message (Figure 16).

In the case where multiple attempts to load the firmware failed, an error and a recommended action will be reported. It is recommended to:

1. Power down the instrument.
2. Check the instrument cables.
3. Restart the firmware upgrade.

Errors during the firmware update process will be displayed with screens similar to Figure 17, Figure 18, and Figure 19. With each error condition a set of recommended actions will be displayed.

If the problem persists, please contact TSI customer service at <http://www.tsi.com/Support/>, 1-800-874-2811 or email [particle@tsi.com](mailto:particle@tsi.com) to resolve the issue

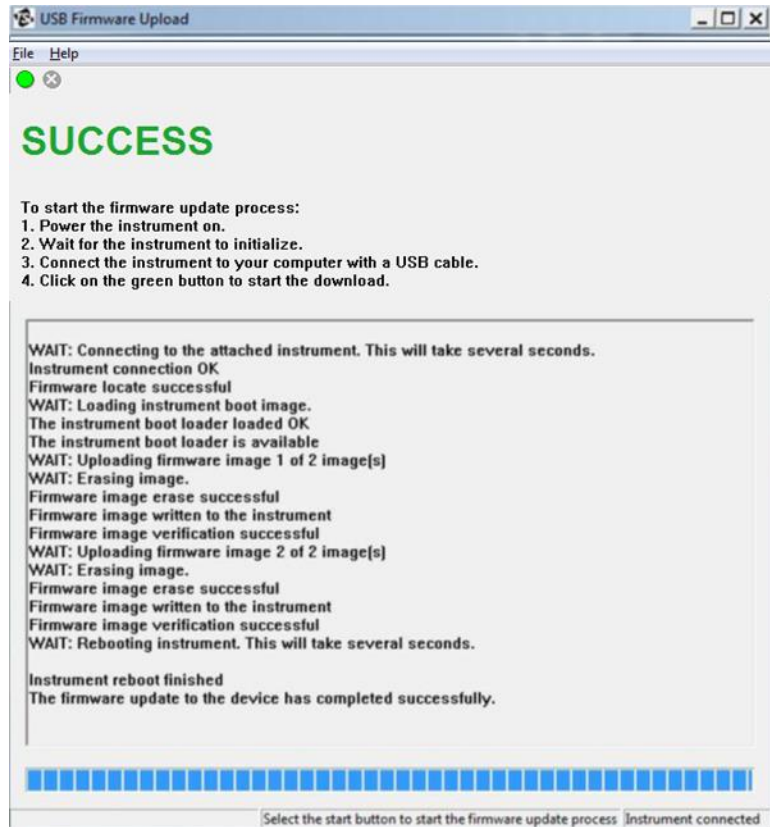


Figure 16

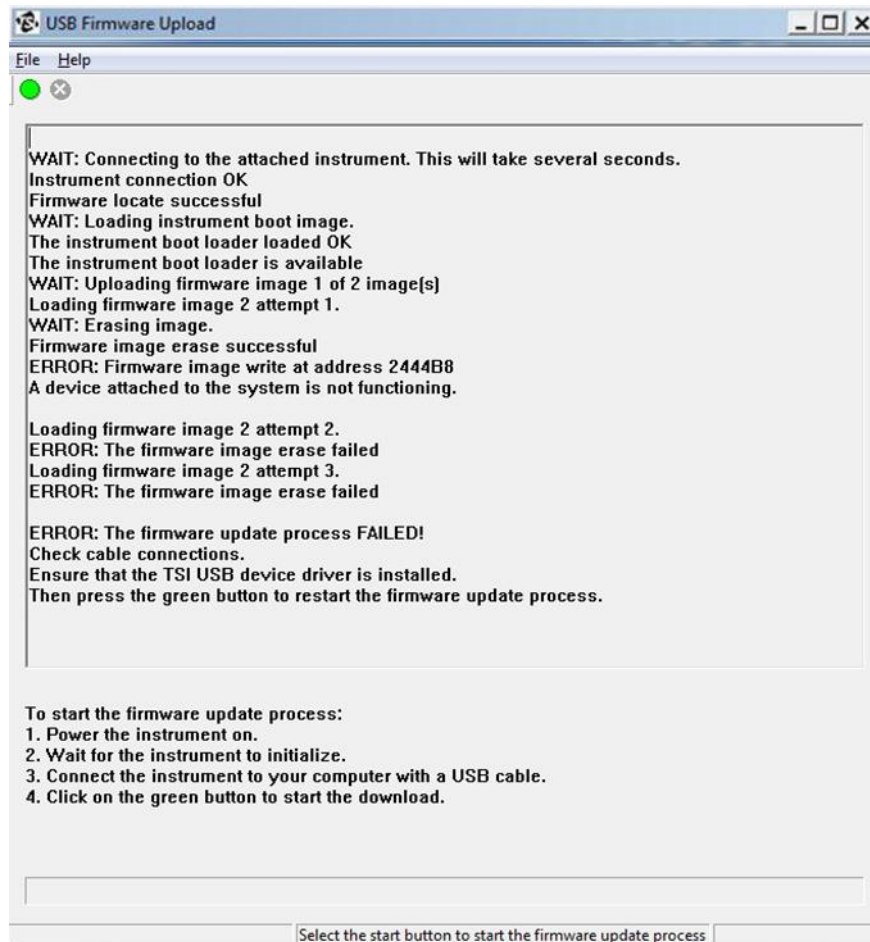


Figure 17

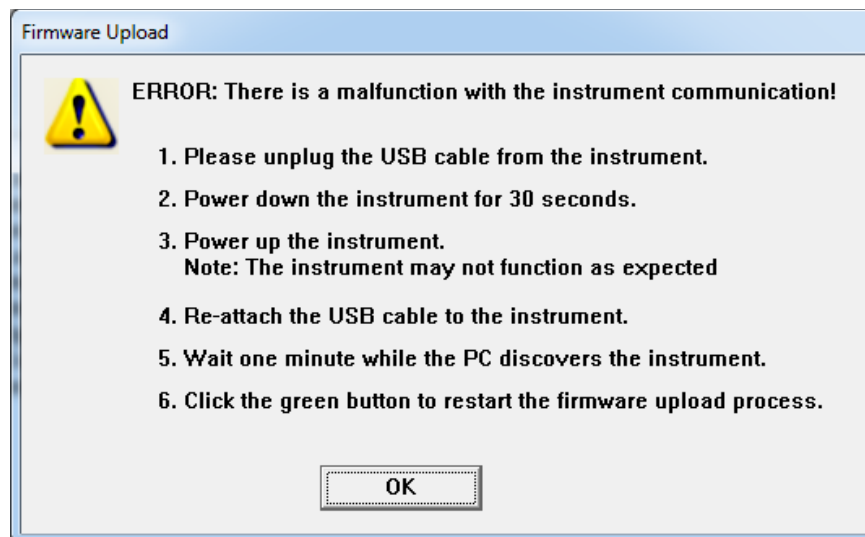


Figure 18

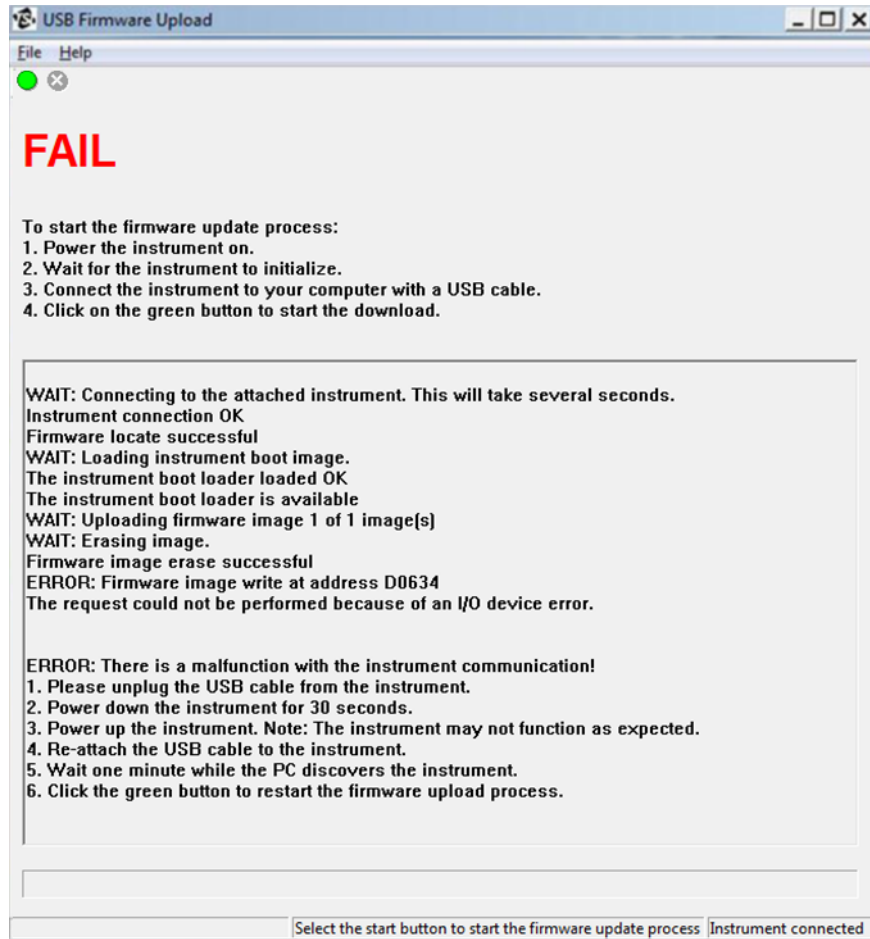


Figure 19



UNDERSTANDING, ACCELERATED

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