

PICARRO

Maintenance Guide

CPU Fan Replacement for Picarro Analyzers



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1. Introduction

1.1 Applicability

This guide provides CPU fan replacement instructions for Picarro analyzers.



CAUTION

Only the mother board CPU fan is user replaceable. All other fans must be replaced by a Picarro-certified technician. Contact Picarro support to service these fans.

1.2 Symptoms of a Defective Fan

Some symptoms of a defective CPU fan are:

- New rattle or hum noise from under the instrument
- Repeat operating system freezing or blue screens/crashes
- Windows CPU Fan error, typically “CPU Fan Error” or “Warning: CPU Fan has Failed”
- Video Card issues or error messages
- Analyzer software shuts down randomly mid-run
- Error messages in the Picarro GUI about archiving issues or long latencies
- Picarro DAS_Temp values increasing from typical values for analyzer
- Computer CPU Temperatures >70 °C

2. Safety

Read the following safety warnings prior to servicing the analyzer.



WARNING

Picarro analyzers weigh 20 kg (44 lbs) or more. Use the technique described below (or follow your local regulations) when lifting the analyzer.

- a. Before lifting, inspect the unit for slippery substances or sharp edges.
- b. Lift with two people, one on each side of the analyzer.
- c. Crouch down and stay close to the unit. Always keep your back as straight as possible.
- d. Position your feet for sturdy balance. Lift with your legs, not your back.
- e. Do not twist the back while carrying the unit. Rotate direction with hip joints.
- f. Lower the unit by bending at the knees.



CAUTION

Follow the Shutdown and Disconnection procedures prior to opening the instrument. Ensure all power is disconnected.



CAUTION

HOT SURFACE: When disconnecting the sample line from the inlet, remember that the area surrounding the inlet may be hot.



CAUTION

A flow of clean, relatively dry gas should always be directed to the instrument for several minutes prior to shutting down. Trapping a high-moisture content gas sample in the cavity can cause condensation damage to the mirrors as the instrument cools from its operating temperature.



CAUTION

Do not turn off the pump or disconnect the vacuum line while the instrument is still operating. Doing so could result in damage to the optics.



CAUTION

If you have trouble turning off the analyzer software, do NOT use the Windows Task Manager to kill the process(es). Instead, double-click on the “*Stop Instrument*” icon in the Diagnostics folder located on your desktop and select the option to “*Turn off analyzer in current state*”. See Section 3.2 and Figure 2.



CAUTION

To avoid static damage to electronic components within the analyzer, use an anti-static wrist strap before touching any exposed components.

3. System Shutdown and Preparation

Complete this section before servicing the analyzer.

3.1 Shutdown Using the GUI

1. With the pump still running, switch to a source of clean, dry gas at the sample inlet and allow it to run until the water channel reading on the GUI falls below 0.2% (2000 ppm). This will prevent any damage from condensation to the cavity surfaces.
2. Click the **Shutdown** button located on the left side of the Data Viewer window.
3. A window will pop-up (Figure 1) asking the user to confirm the shutdown. (Note: If three options are given on an older instrument, choose the “**For Shipment**” option.)

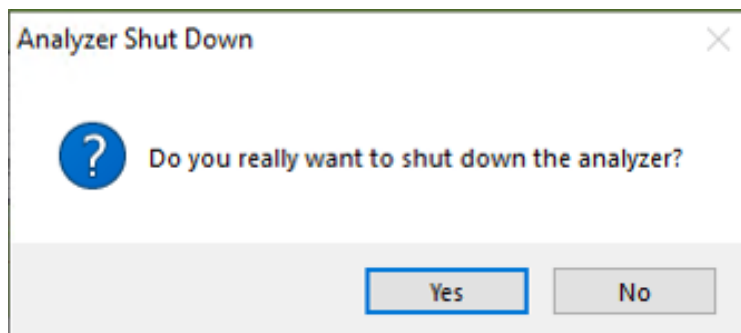


Figure 1: Shutdown Confirmation Pop-Up Dialog

- After clicking **Yes** to confirm shutdown, the analyzer software and then the computer OS will shut off after a few minutes. *Leave any dry gas or desiccant attached to the inlet during this process.*
4. When the instrument fans audibly turn off, and when the green power button light on the front of the instrument turns off, shut off the pumps manually from the rocker switch on the side of the pump.

3.2 Shutdown from *Stop Instrument* in Diagnostics Folder

To shut down instrument if analyzer software does not respond to a normal Shut down attempt from the UI:

1. Open the Diagnostics folder and double-click the *Stop Instrument* icon.
2. Select “Turn of analyzer in current state”.

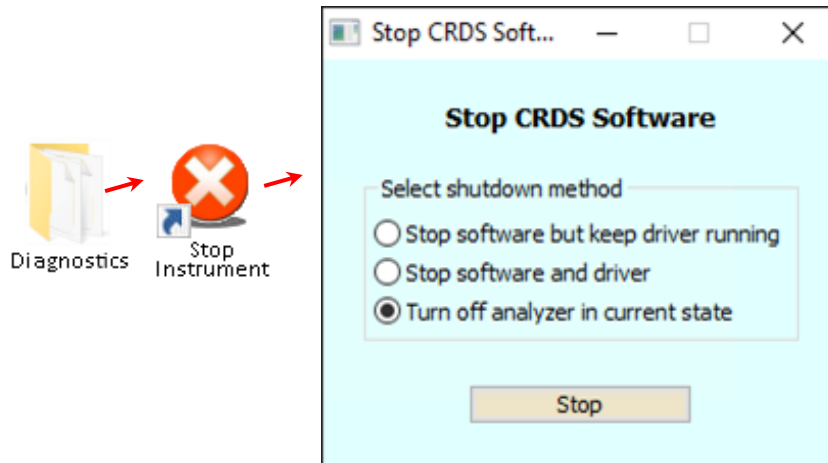


Figure 2: Shutting Down Analyzer from Stop Instrument Icon

3.3 Disconnections Prior to Servicing

1. Disconnect the pump and any input gases.
2. Disconnect the AC power cable from the back of the instrument.
3. Disconnect any monitor, keyboard, or mouse that may be connected.
4. If necessary, move the analyzer to a clean work environment.

4. CPU Fan Replacement

4.1 Items/Tools Required

- Replacement CPU fan: Picarro PN S0060
- 2 mm Allen wrench
- Phillips head screwdriver
- Anti-static wrist strap
- Compressed air

4.2 Replacement Procedure

1. Ensure the instrument has been shutdown and disconnected per the instructions in **Section 3, System Shutdown and Preparation**.
2. Flip the analyzer so that it rests upside-down and the bottom cover is accessible.
3. Remove the 6 cover screws then remove the bottom cover, making note of the cover tab orientation. (Note that the tab orientation may differ from model to model).

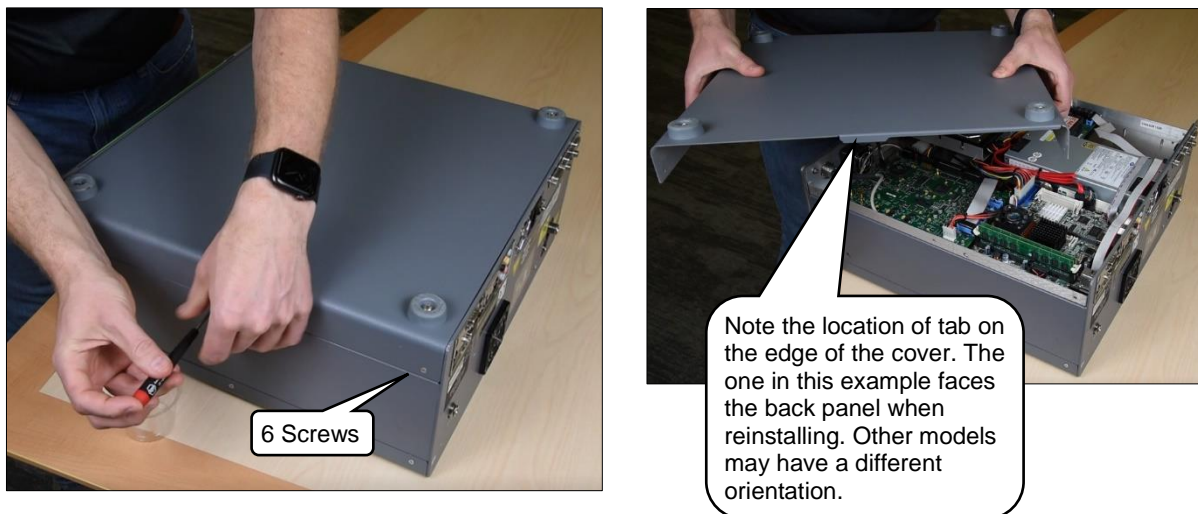


Figure 3: Bottom Cover Removal

5. Attach an anti-static wrist strap to the chassis and to your wrist. If using an adhesive type of strap as shown, ensure the adhesive end is applied to an unpainted area of the analyzer housing. The same rule applies to using a clip-on type of strap.



Figure 4: Anti-Static Wrist Strap Application

6. Locate the CPU fan on the mother board.
7. Use a Phillips head screwdriver to remove the four screws from the CPU fan.

8. Disconnect the fan power connector from the board, remove the fan, and dispose of it by following local regulations.

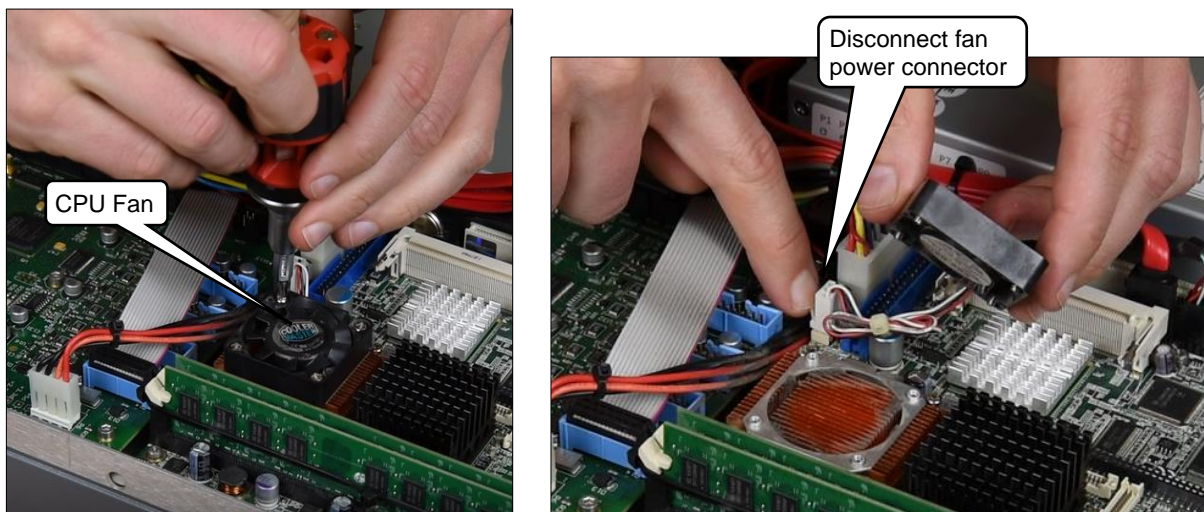


Figure 5: Remove 4 Fan Screws and Disconnect Power Connector

9. Using compressed air, clean the exposed CPU heat sink to remove accumulated dust and debris (Figure 6).

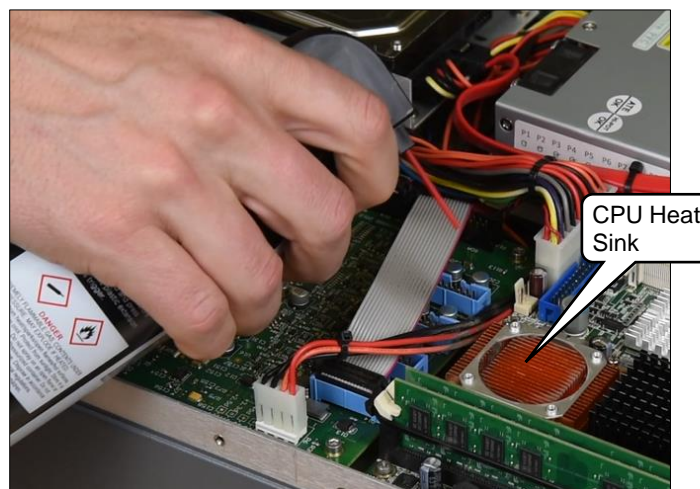


Figure 6: Use Compressed Air to Clean CPU Heat Sink

10. Install the new fan and connect the fan power connector to the board.

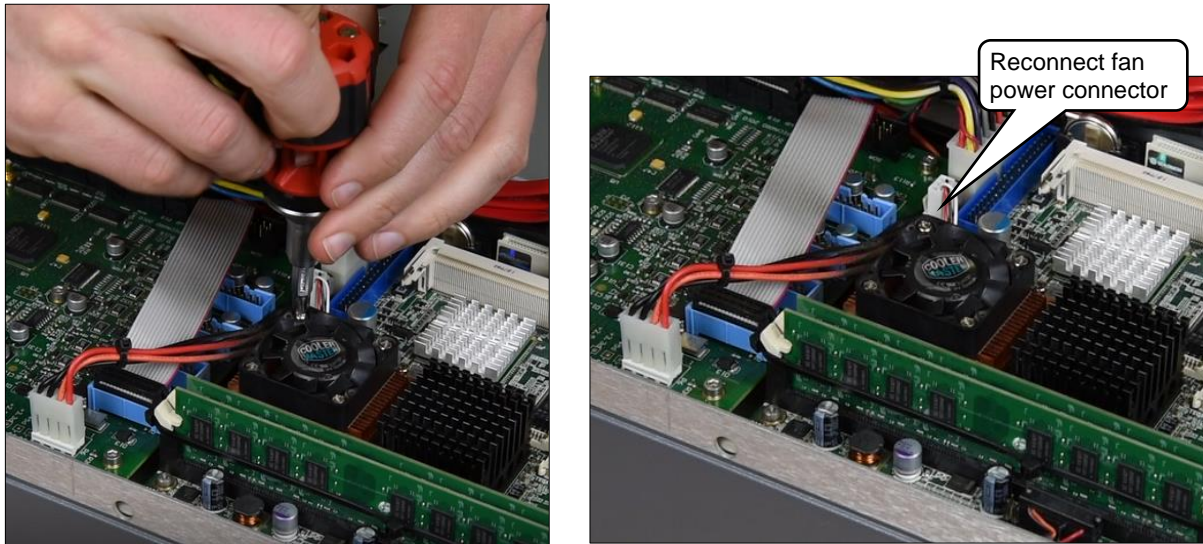


Figure 7: Install New Fan and Connect Fan Power to Board

11. Remove the anti-static strap from the chassis and install the cover and 6 screws. Ensure the tab on the cover is oriented as noted when the cover was removed.