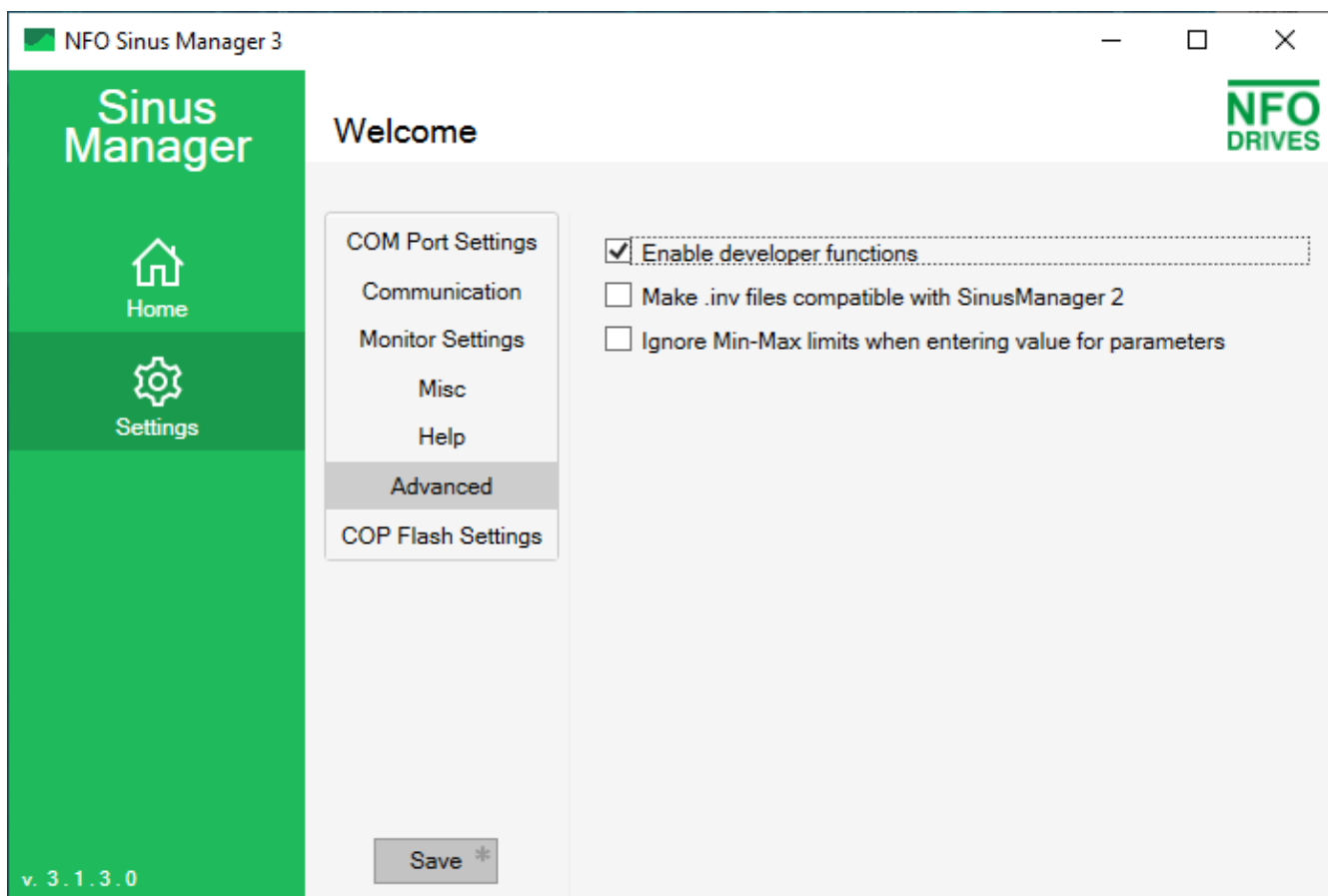## Important information

When performing firmware update on a NFO Sinus Optimal unit, the NFO Sinus Manager program communicates with the built-in CPU bootloader functionality that handles erasing and programming, which is supplied by the manufacturer of the CPU.

For some reason unknown to NFO Drives, CPU's of a certain manufacturing period show a small probability to get stuck during erase, and after that the unit may become temporarily inoperable. NFO Drives can not mitigate the root cause of this problem (CPU manufacturer) but there is a workaround, see section 3.

1   Preparations for firmware update of NFO Sinus Optimal

- Uninstall any previous version of NFO Sinus Manager 3.x.x. before installing a new version.
- Download and install latest version of NFO Sinus Manager from https://www.nfodrives.se/products
- At end of installation you may launch the program, or start it by clicking the desktop icon.
- When NFO Sinus Manager has started, select *Settings* and then *Advanced*.
- Check the option *Enable developer functions* and then click *Save* button (see picture below).
- Go back to start screen by clicking the *Home* symbol.

NOTE:

The firmware for the inverter is distributed as a part of the Sinus Manager application. The NFO Sinus Optimal inverter consists internally of three CPU's:
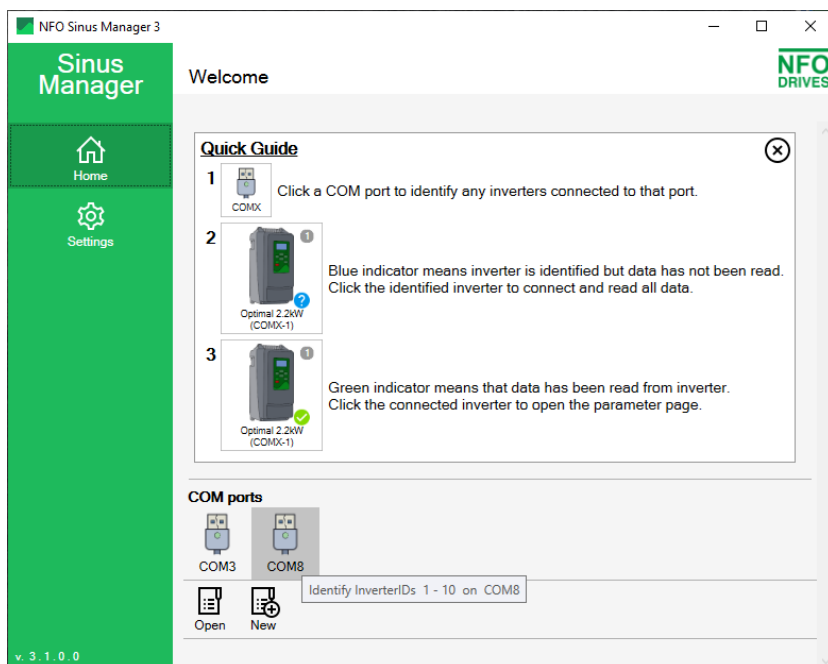
1. The COP (Co-Processor) for communication and control of terminals,
2. the GUI (Graphical User Interface) for handling of the display and keypad, and
3. the DSP (Digital Signal Processor) for motor control.

When the firmware is distributed, all three CPU's firmwares are packed together into the Co-Processor firmware file. Therefore, it's essential to start the update procedure by updating the Co-Processor before any of the other two.
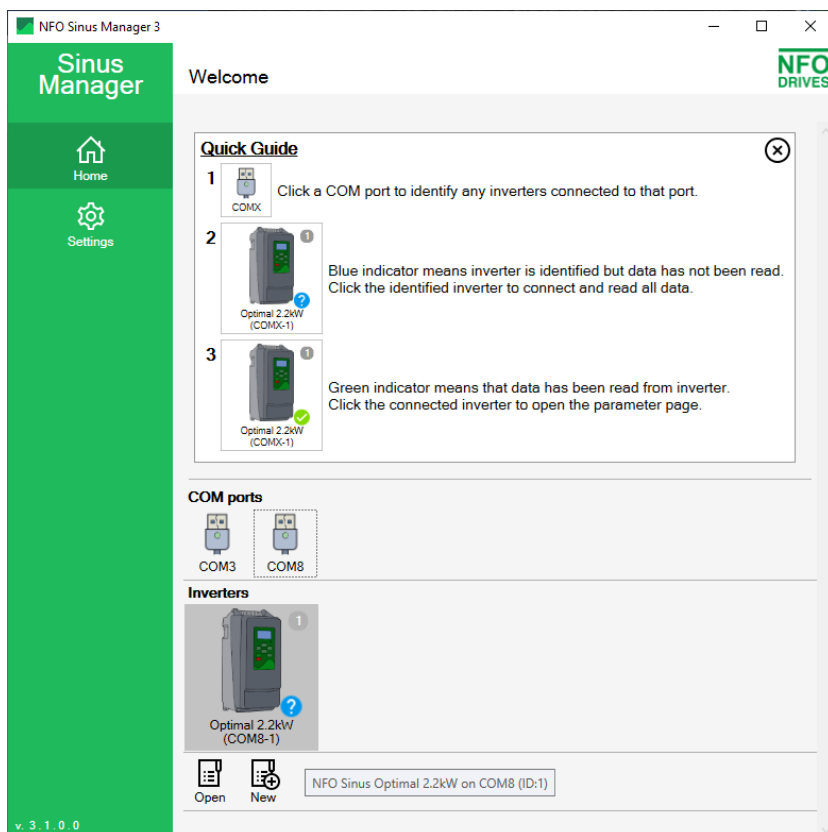
After the firmware has been updated, the unit will keep all previous settings including the motor parameters. However, sometimes the intention of the update is to be able to use new parameters or functions. Therefore, a factory reset may be required after the new firmware has been installed.
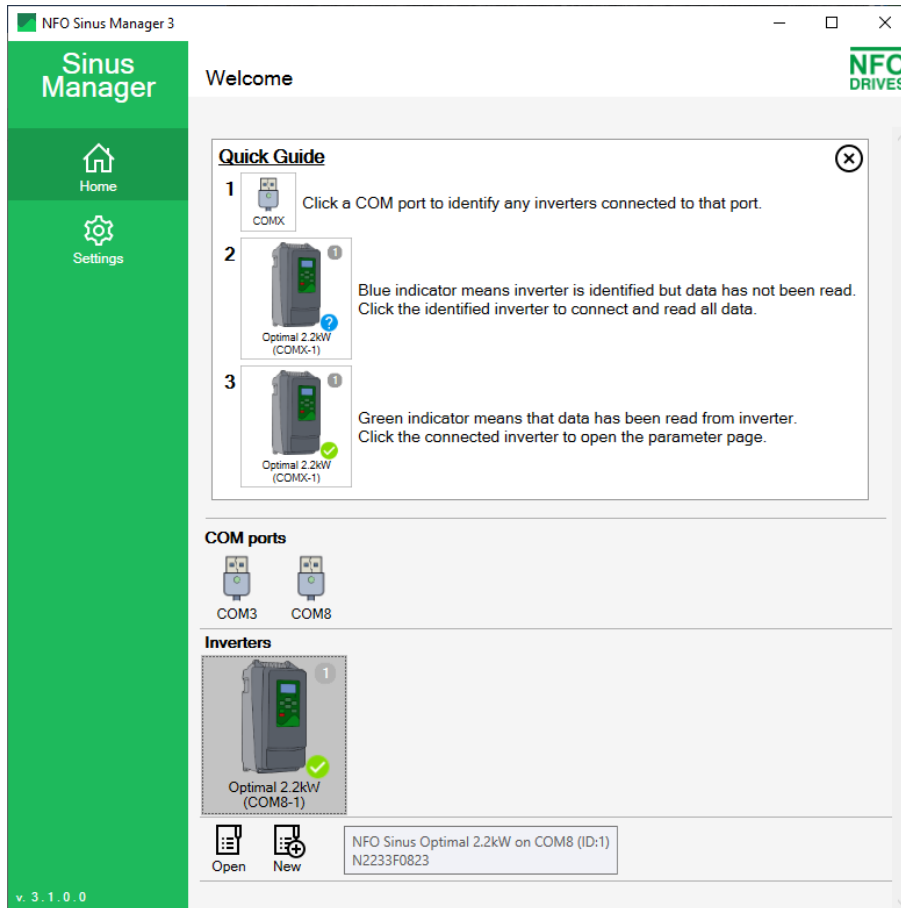
2 Firmware update procedure

- Power up the NFO Sinus Optimal unit

- Connect a USB cable between one of the USB ports of your computer and the USB connector of the control board of the NFO Sinus Optimal. *NOTE*: It may be convenient to look at the com port list while connecting the USB cable, and see which com port number that appears in the list.
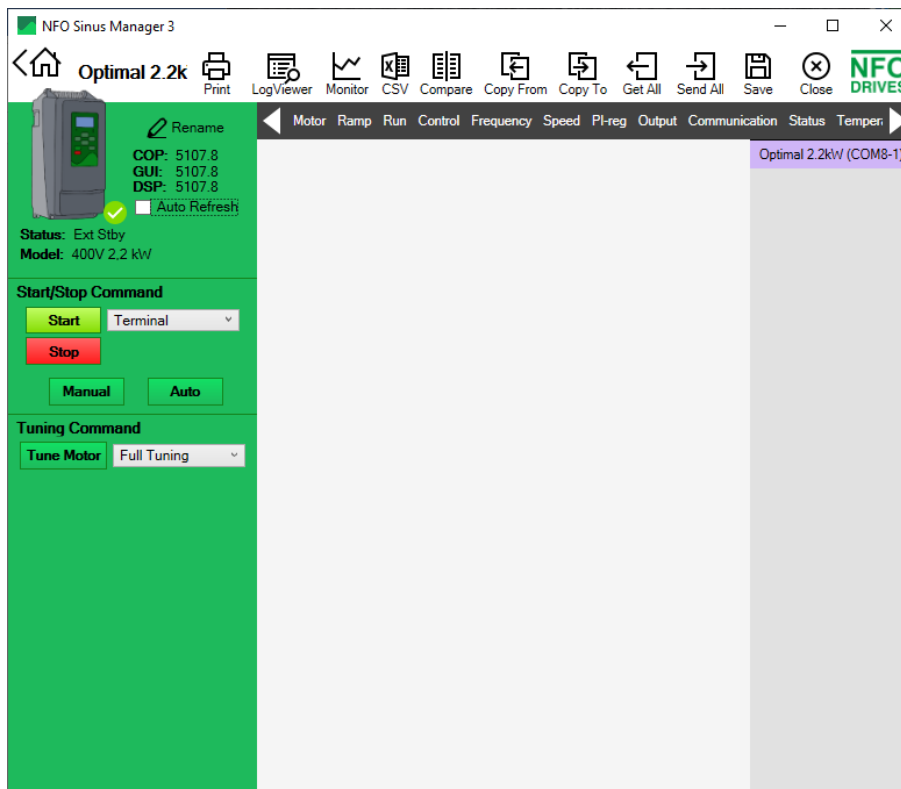

- Click on the COM port to identify the connected unit, then click the inverter symbol to read inverter data.
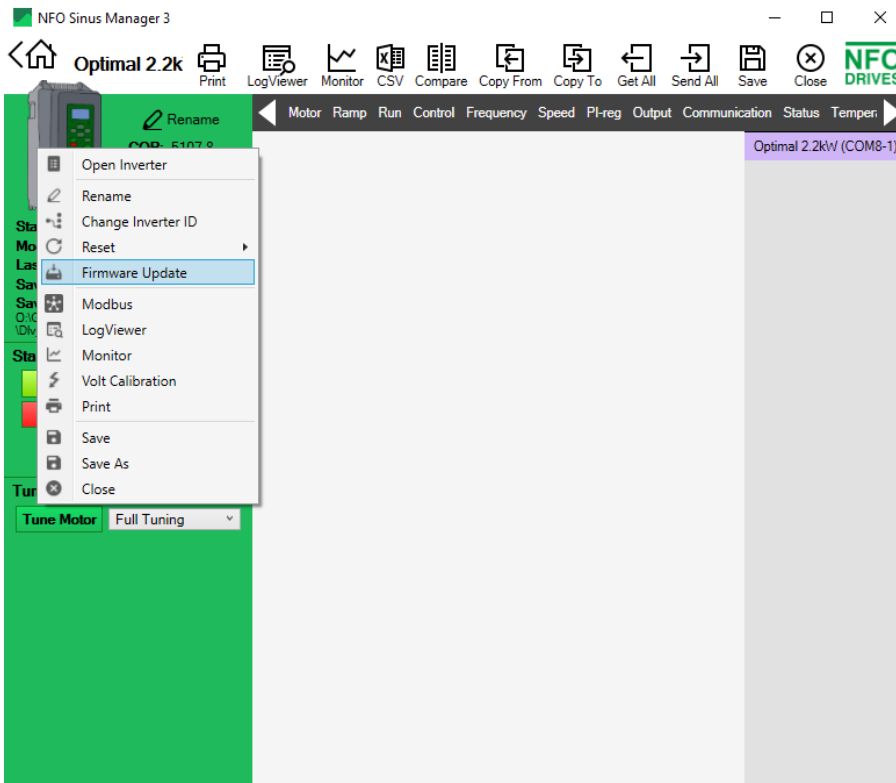
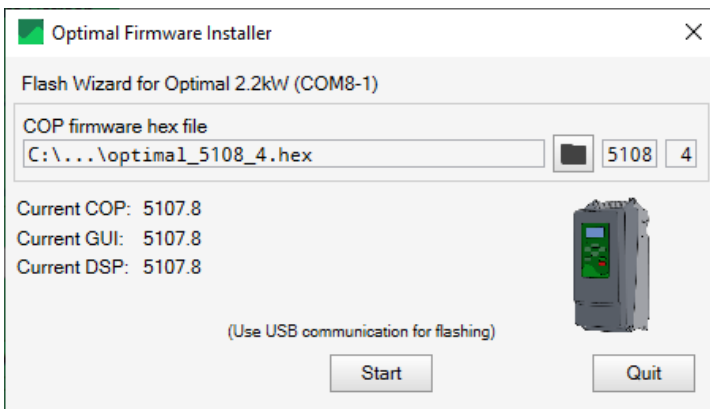- After a moment, the data is read from inverter (the blue question mark turns green)

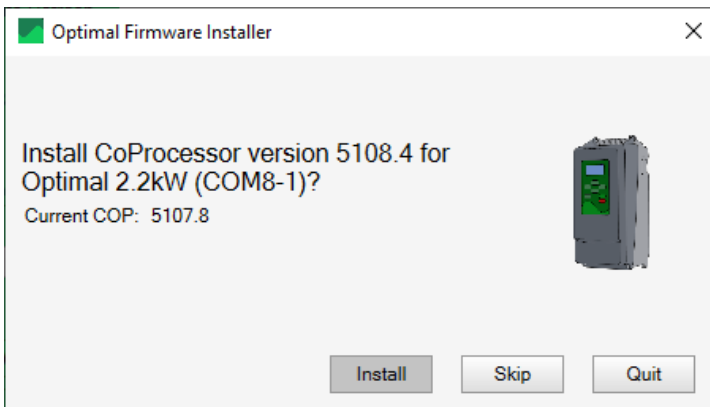- Click the inverter symbol to open the parameter pages.

- Right-click the inverter symbol and select ***Firmware Update*** from the menu.
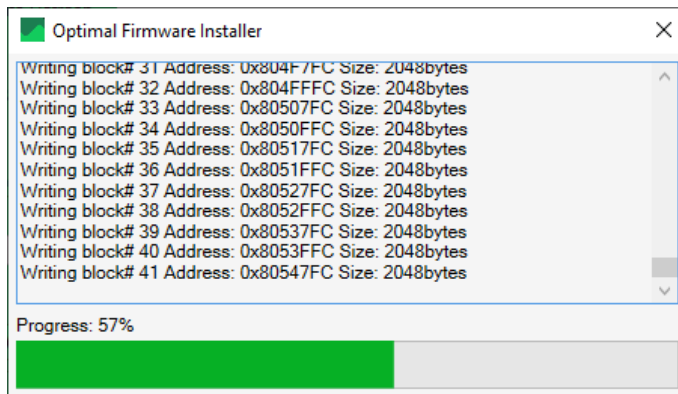

- Sinus Manager suggests the most recent distributed firmware included in the Sinus Manager installation. (If user wants to install another version, it's possible to click the folder button and select another file.)

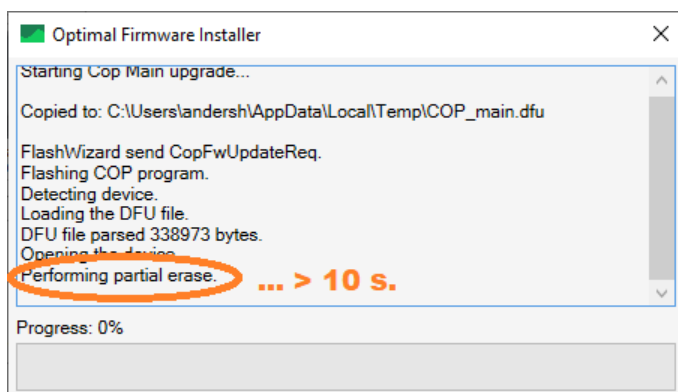- Click ***Start*** and then ***Install*** to start the firmware update.

- The installation program will show a progress bar for a short period of time.

3   Possible workaround for bug in the built-in CPU erase function
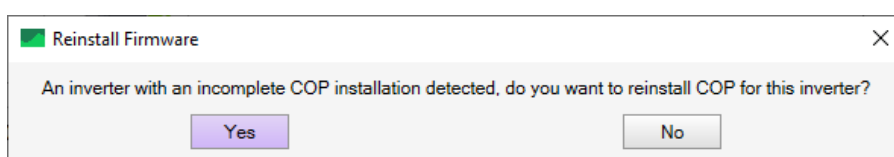
- One of the first parts of the firmware update procedure is to erase the flash memory of the Co-Processor. As mentioned at the beginning of this document, CPU's of a certain manufacturing period show a small chance to get stuck during erase. Normally the erase shall finish in about 5 seconds or less. If the CPU automatically moves on to Writing block# sequence, there is no problem. Then just continue to to section 4.

- If the text in the information box doesn't move on after 10 seconds or more, the erase function is stuck.
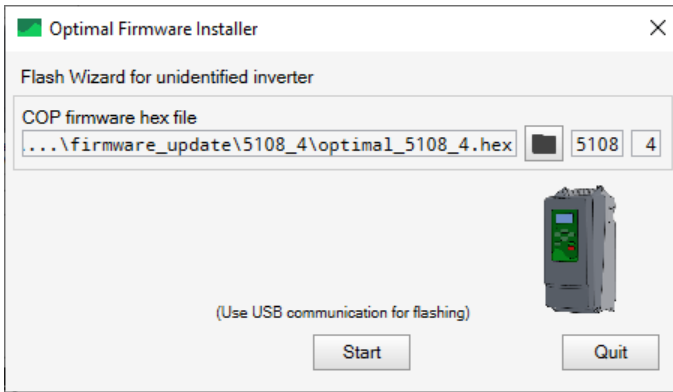

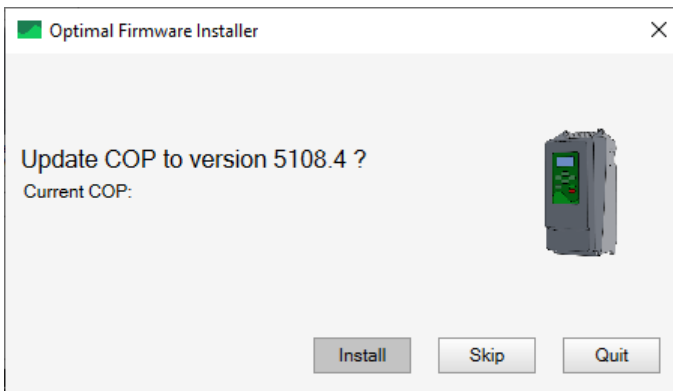- Pull out the USB cable from computer, click **OK** if any error message appears.

- Close the Sinus Manager program (if it doesn't automatically close).

- Power off the inverter an let it black out.

- Start the Sinus Manager program again.

- Plug in the USB cable.

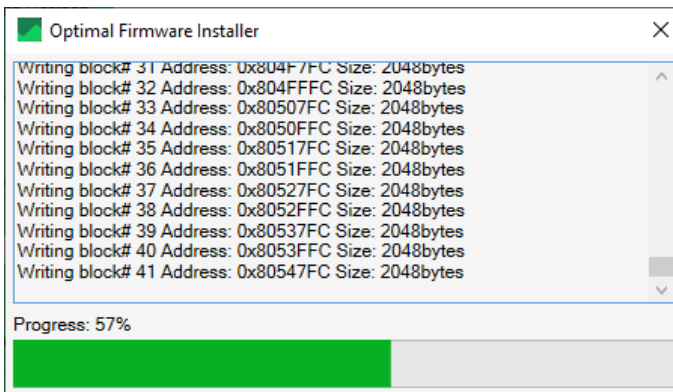- Sinus Manager will now detect an inverter with incomplete installation. Click **Yes** to continue.

- Select the firmware file you intend to install and click **Start.**
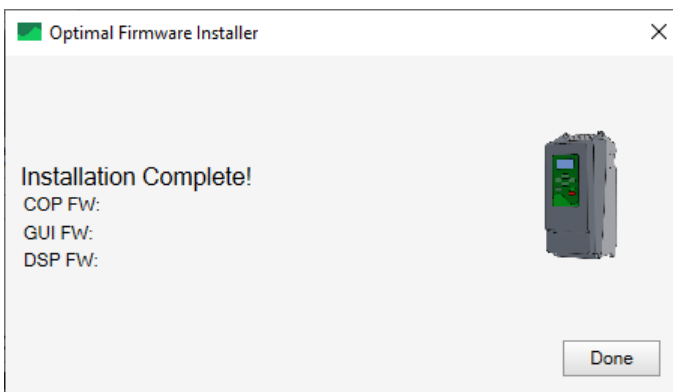

- Confirm that you want to install the selected firmware by clicking **Install.**
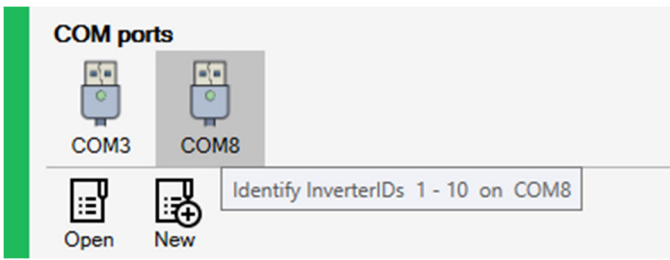

- After a few seconds the progress bar shall begin to indicate that the Co-Processor is being programmed.
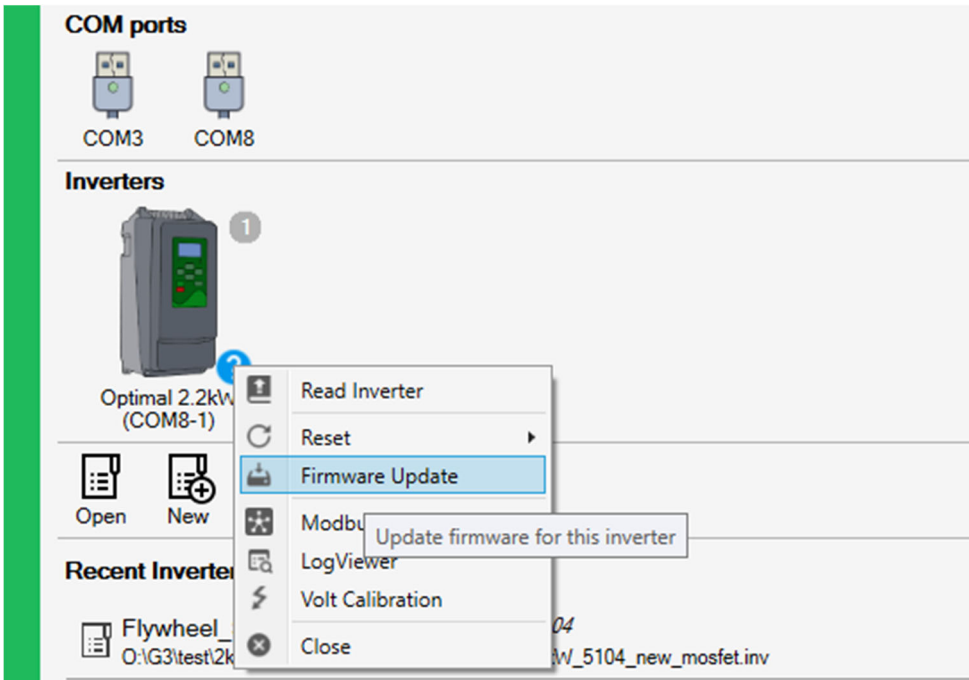

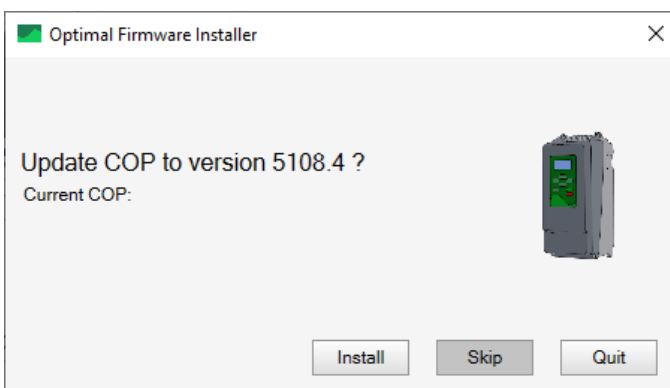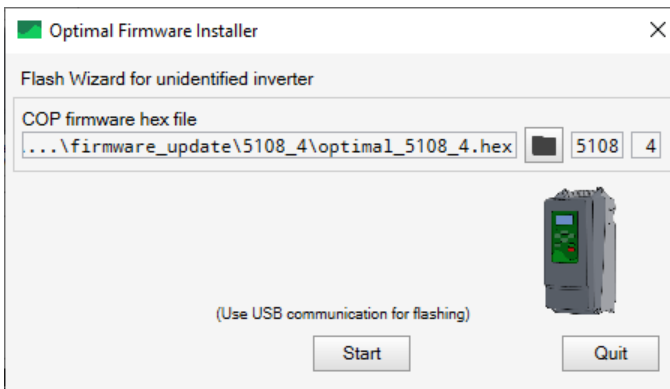- When programming is completed, click **Done** and pull out the USB cable.

- Power up the inverter
- Insert the USB cable and click the port number. (Same procedure as when we started the update, before the error occurred)

- Right click the inverter symbol and select Firmware Update
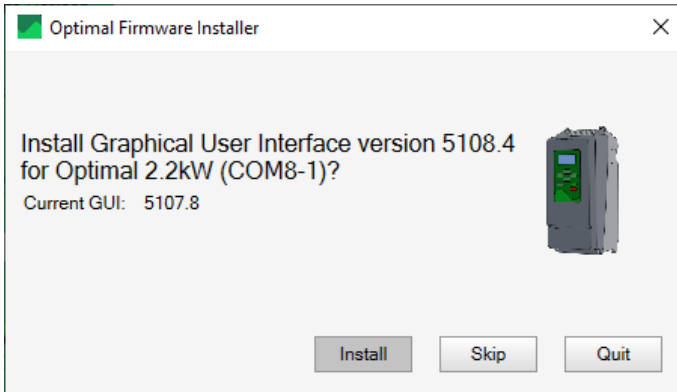

- Click **Start** to begin firmware update but click **Skip** in the next pop up box to skip the update of Co-Processor.
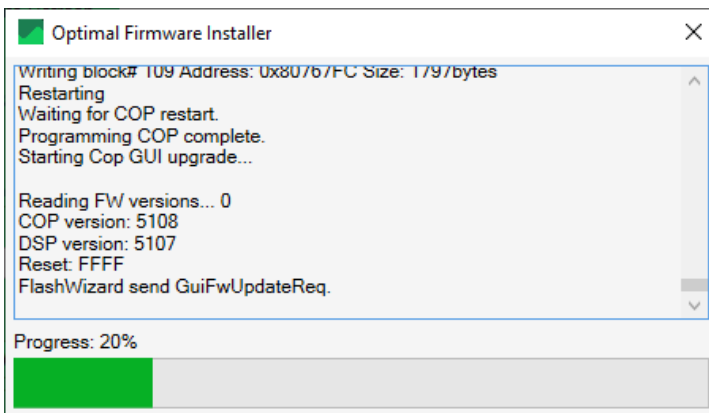

- The Sinus Manager will now move on to update of the GUI (and then DSP) which is the same as if the erase fault has never happened. Move on to next section.

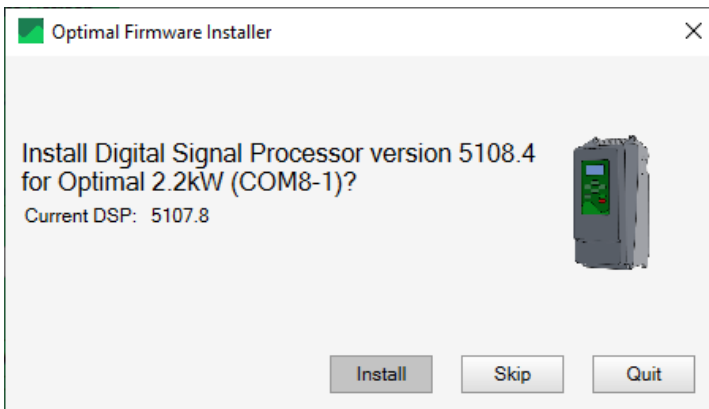# 4   Continue programming in normal sequence

- When finished with Co-Processor, the installer will prompt to continue with GUI. Click ***Install*** to continue.
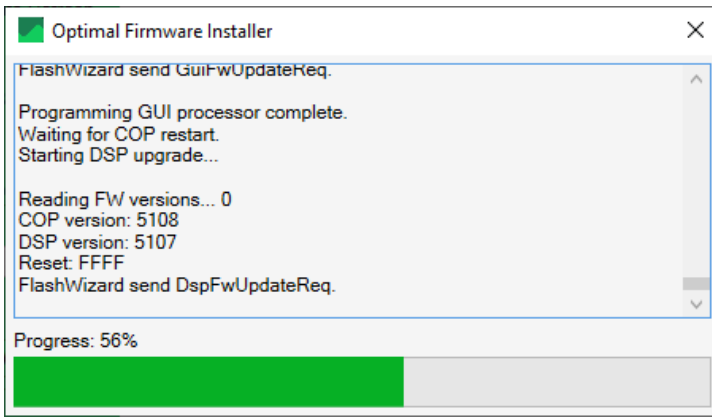

- Again, the installation program will show a progress bar. Wait for installation of GUI to finish.
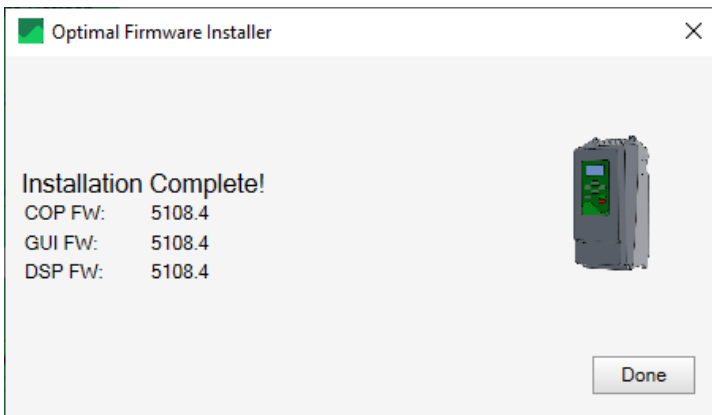

- When GUI is finished, the installer will prompt to continue with DSP. Click ***Install*** to update the DSP.
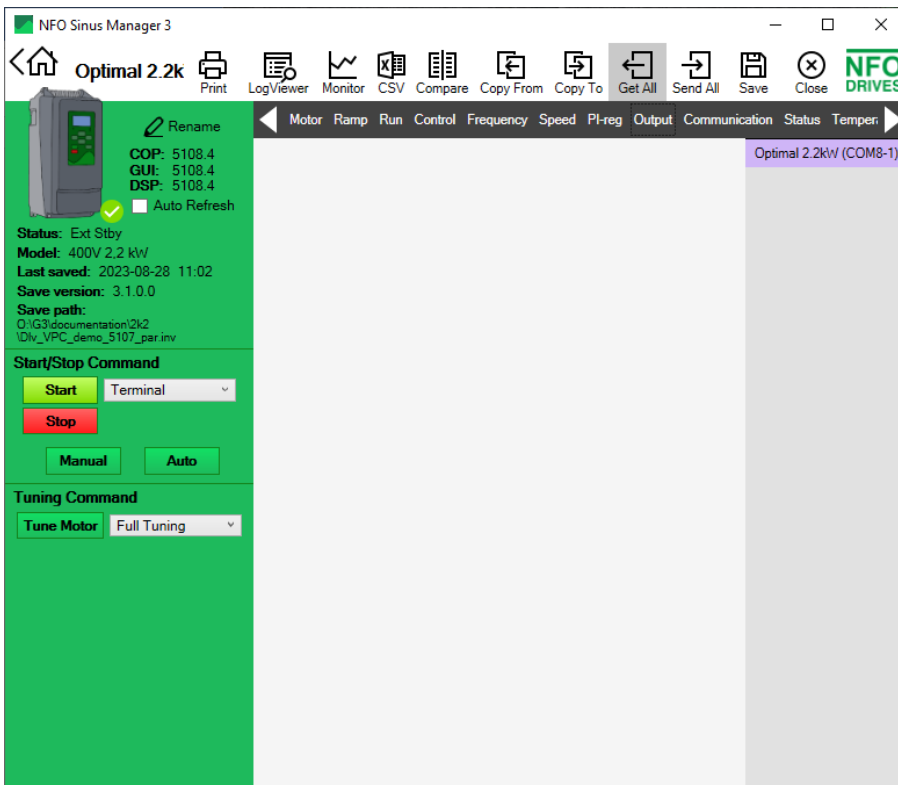

- Again, the installation program will show a progress bar. The DSP takes the most amount of time, about two minutes are required.

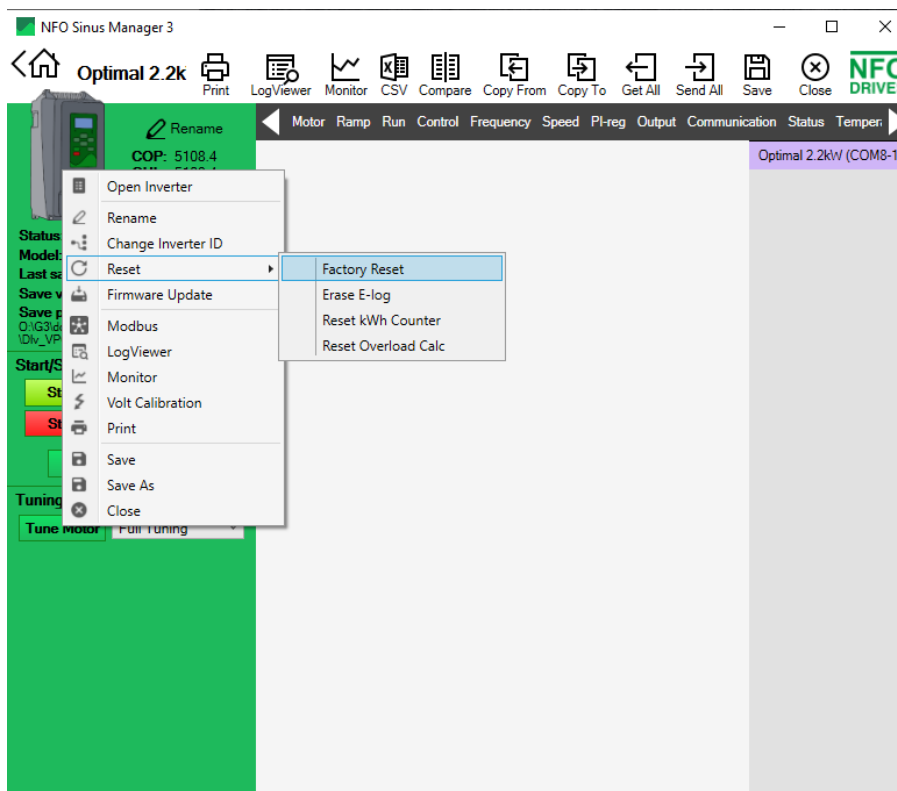- When finished all three CPU's, the installer will show a summary screen. Click **Done** to close it.

- The firmware update is now completed, and user may want to re-read all parameters from the inverter. If so, click the **Get All** option on the tool bar.
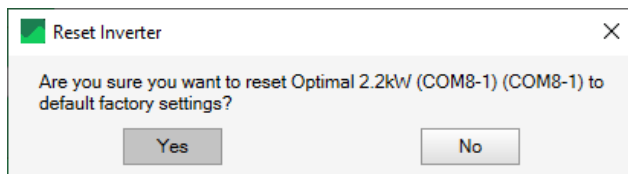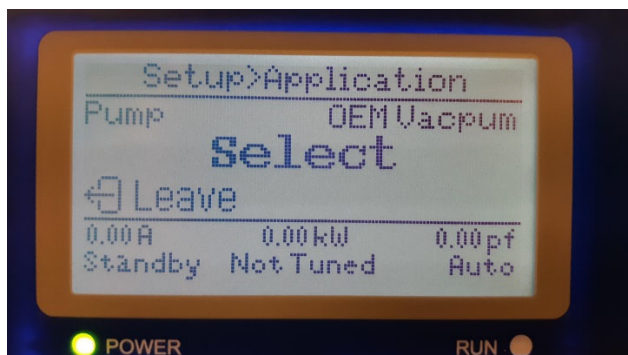
5   Factory reset

- To be sure that the inverter will operate with the default setting of the parameters of the new firmware, it's recommended to perform a factory reset.

- Right-click on the inverter, then select *Reset* and *Factory Reset*

- Click *Yes* to continue

- Go to the inverter. After a factory reset, the user must select application.

- Use arrow up/down buttons to select the application that correspond to, or is the most correct, for the actual installation. Selectable options are *Pump* (e.g. water pump), *Ventilation*, or *OEM Vacuum pump*.

- Press ENTER button to save the selection, then press ESCAPE to return to main screen.

- After a factory reset, user must enter correct motor data and perform an autotuning. Please see manual.