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Date - 20<sup>th</sup> August 2022

Article applies to - iKonvert, GPS160 and ST-NMEA Converter

## ISSUE: Updating Firmware on STM32F based Products

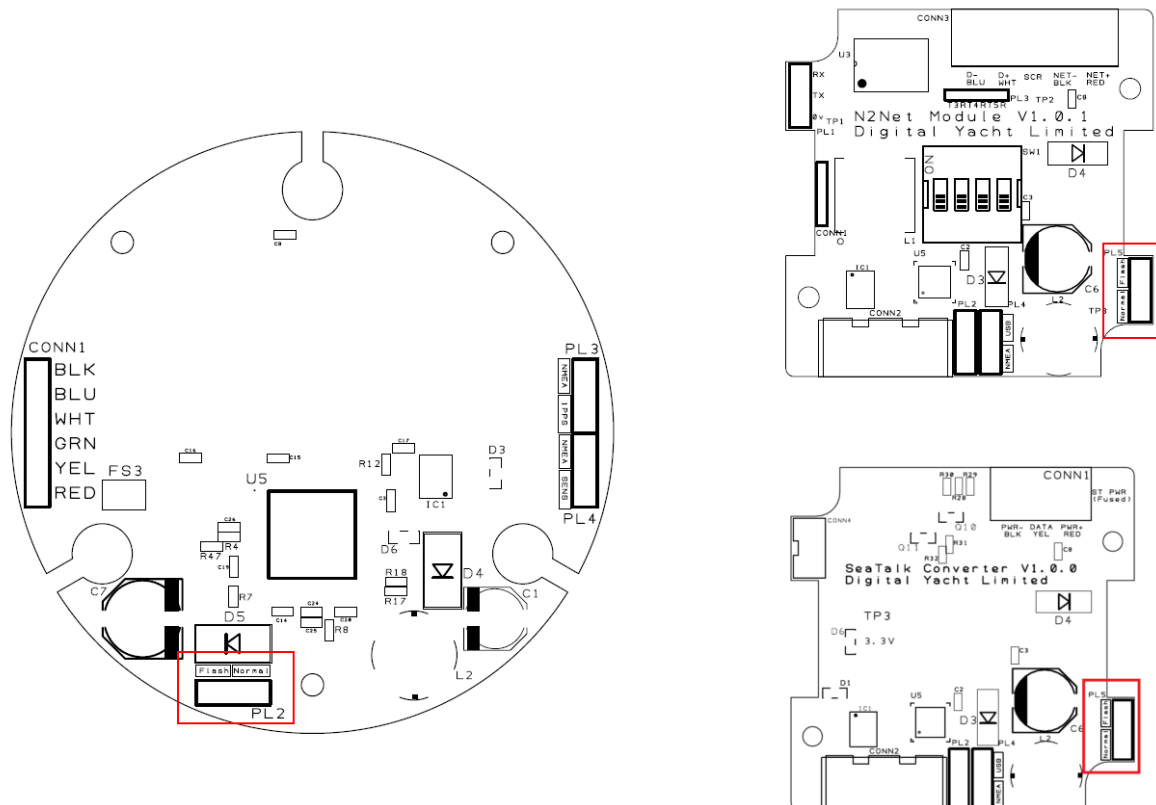
Some Digital Yacht products feature an STM32F microprocessor that can be firmware updated, by running a simple STM32 Flash Loader program on any Windows PC, which can be downloaded from here...

<https://digitalyachtamerica.com/download/stump-updater-program/>

If you have a USB version, of one of these products, then you can update the firmware through the USB connection, if you have an ISO/NMEA0183 version then you will need one of Digital Yacht's USB to NMEA Adaptor cables or similar 3<sup>rd</sup> party cable.

## Update Procedure:

To update the firmware, first remove power from the product to be updated. Next gain access to the PCB and locate the Boot Mode "Jumper" that is located on each of the products as shown below...



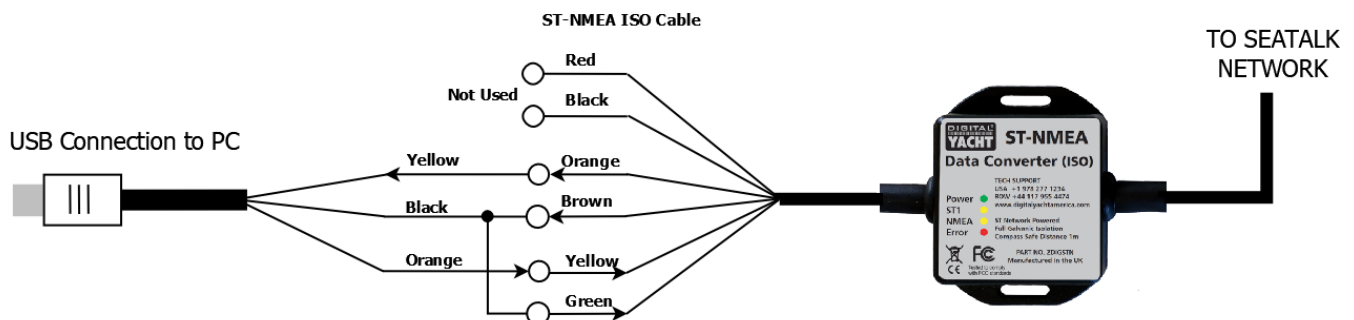
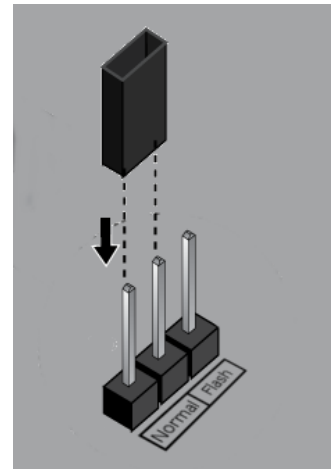
**NOTE – Jumper is on underside of GPS160 PCB**

Move the “Jumper” from the **Normal** to the **Flash** position, as shown.

When the product next powers up, the STM32 microprocessor will be in a special boot loader mode where it is ready to receive the firmware update.

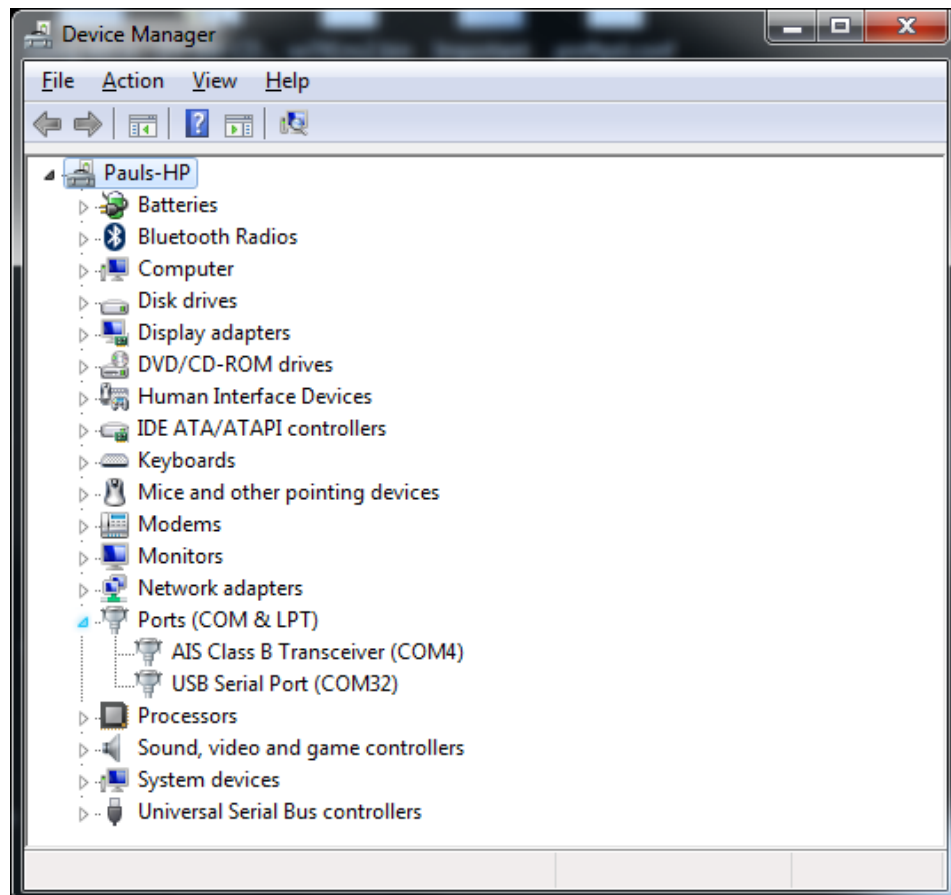
Now connect the product to the Windows PC. If it is a USB product, simply plug the USB cable in to the PC, but if the product is an ISO/NMEA0183 version, then you will need to connect it to a Digital Yacht USB to NMEA Adaptor cable as shown below.

The diagram shown is for at ST-NMEA Converter but the wire colour connections are the same for iKonvert. See Note on GPS160 (NMEA/ISO) at end of this article.



Plug the USB connector in to the Windows PC and as long as the PC is connected to the internet or it already has the USB driver loaded, it should allocate a COM port to the USB connection.

To check what COM port it has been allocated, go to the Windows Device Manager and in the **Ports (COM & LPT)** section, you should see an entry “USB Serial Port (COMx)”, as shown below...



Apply power to the product, please note that no LEDs will illuminate in this Boot Loader mode, and run the STM Flash Loader Tool, which should see the window shown in Figure 1.

Now select the COM Port number that the USB cable has been given by Windows, select 38400 baud (most reliable) and ensure that Parity is set to “Even”. Once happy with the settings, click the “Next” button

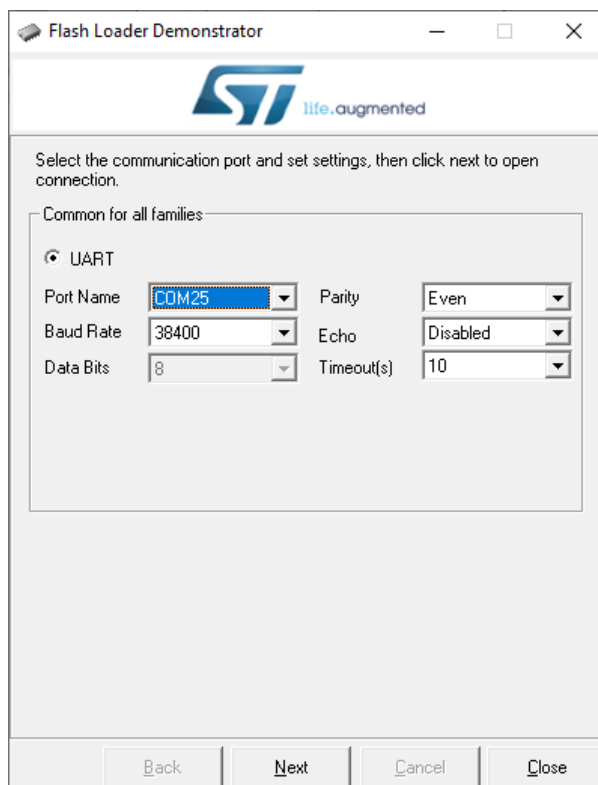


Figure 1

If the program can successfully communicate with the microprocessor, then you will see the window shown in Figure 2, with a “green traffic light” icon shown.

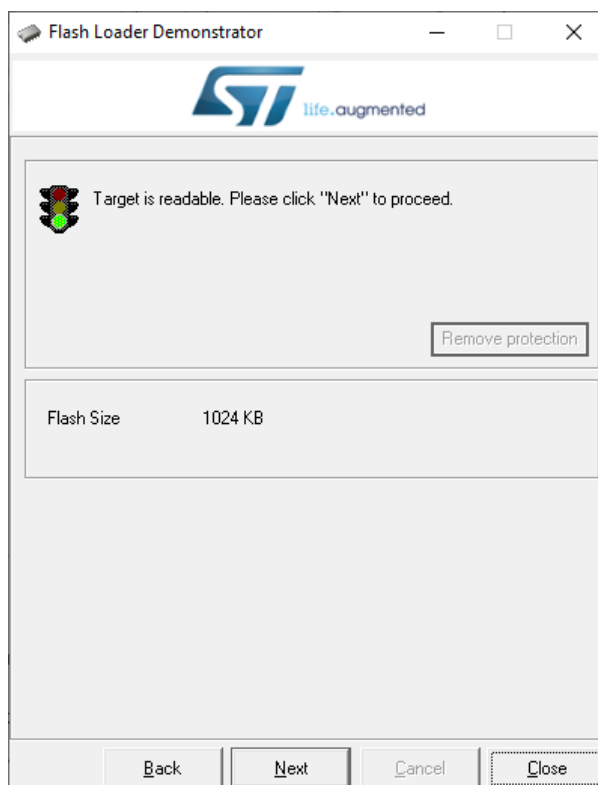


Figure 2

If you get an error message saying that the target could not be reached, close the program, unplug the USB cable, power off the Digital Yacht device, ensure the jumper is definitely set to the “Flash” position, plug the USB cable back in and power back on the Digital Yacht product.

Once communication is established and you have the “green traffic light”, click the “Next2 button and you should see the screen in Figure 3.

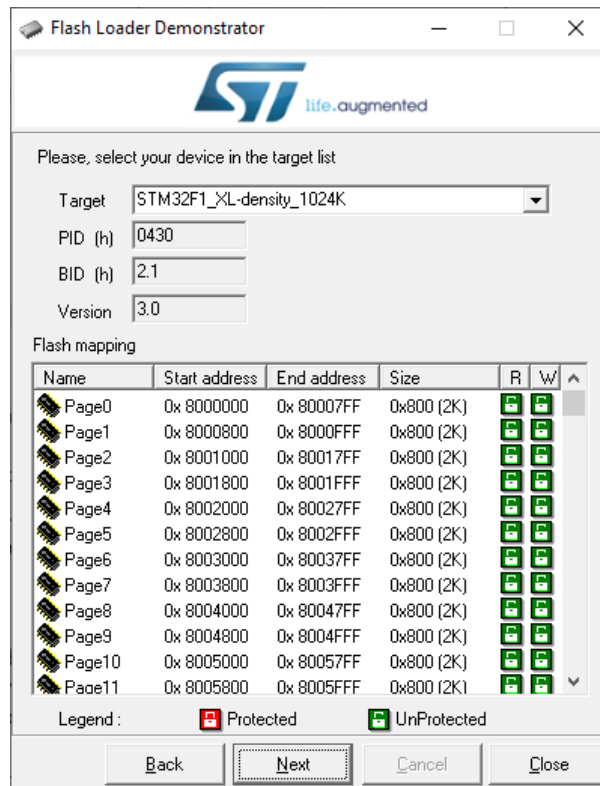


Figure 3

This screen is purely informative, showing the microprocessor device type and the memory pages that will be programmed, so just click the “Next” button and the screen in Figure 4 will be displayed.



Figure 4

Select the “Download to Device” option and then select “Global Erase” which will clear all existing settings. Then click on the square button with the three dots ... in it and browse to and select the latest firmware update BIN file. It is important that you have unzipped the update firmware file and you must remember to select BIN as the file type in the browse window – see Figure 5.

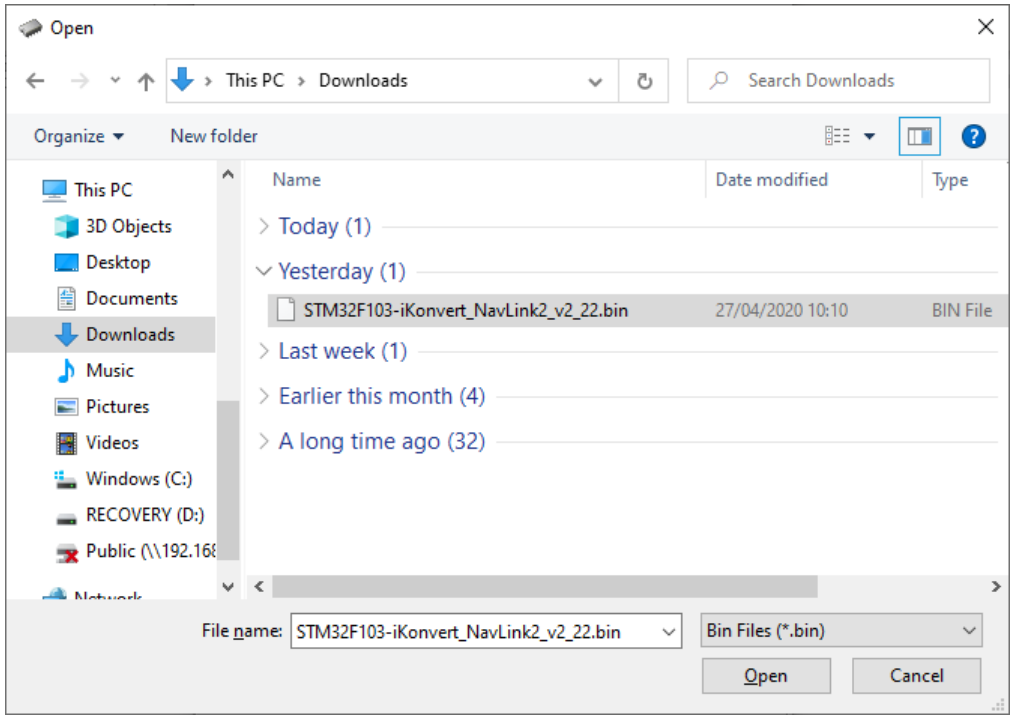


Figure 5

Once the correct firmware update file is selected click the “Open” button and you will be returned to the screen in Figure 4, which the file name in the “Download from file” box.

Now click the “Next” button and the programming will start. A status bar will show progress (Figure 6) and once complete the bar will turn green if everything was successful (Figure 7).

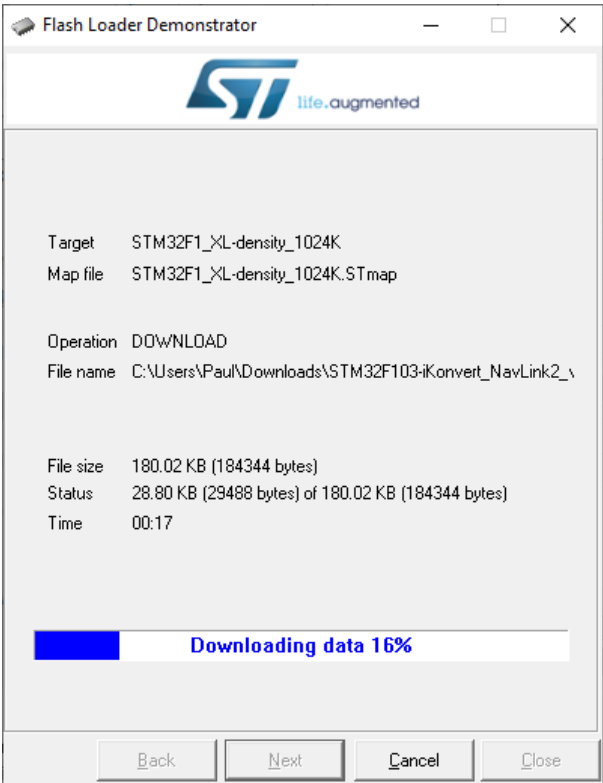


Figure 6



Figure 7

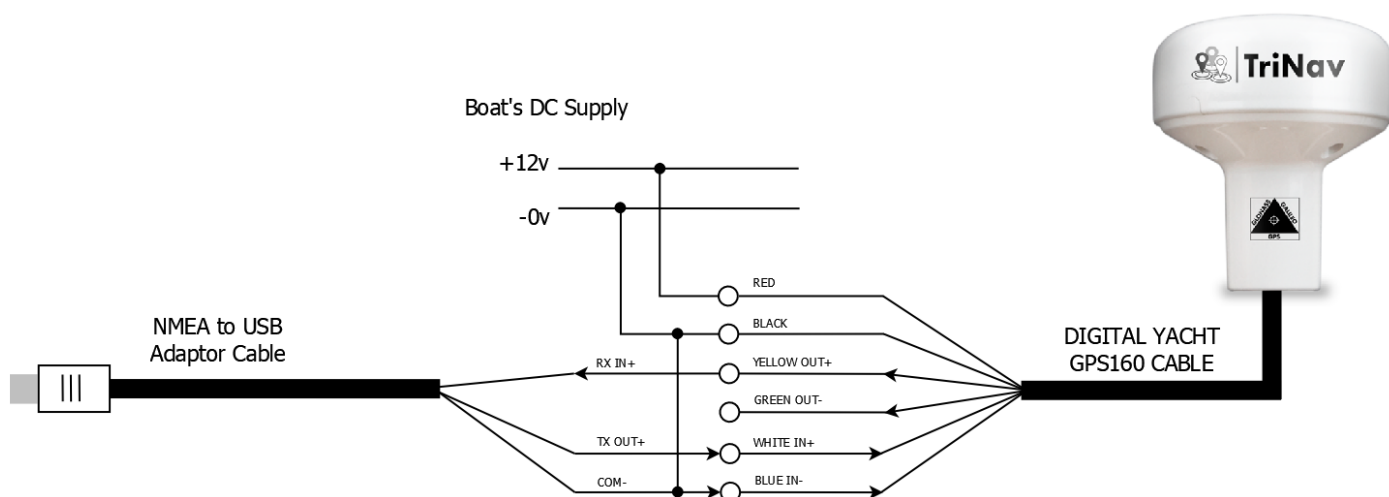
As soon as the programming is successfully finished, you can click the “Close” button. If you are programming an iKonvert, please follow the Additional Note at the end of this article to program the units serial number.

For all other units, remove power from the Digital Yacht product, unplug the USB cable and re-assemble the unit.

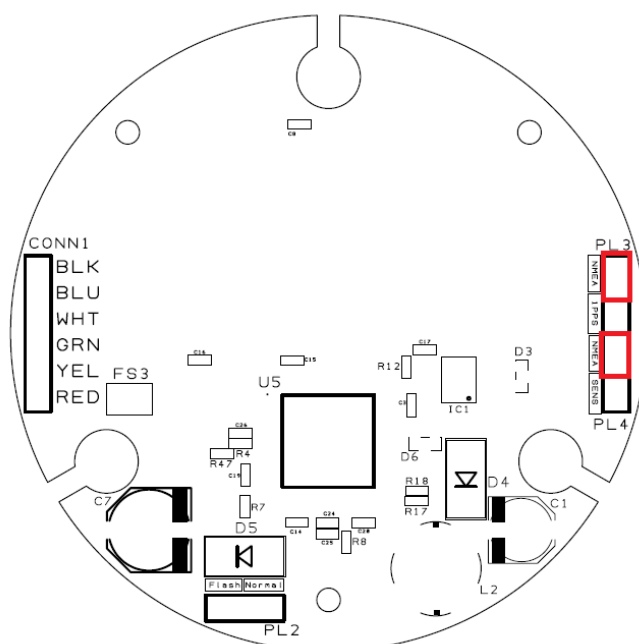
**IMPORTANT** – don’t forget to replace the “Flashing Jumper” back to the “Normal” position, before re-assembling the product.

### Additional Note for GPS160 (ISO):

If you are using updating the firmware on a GPS160 (ISO) version then you need to connect it to one of our NMEA to USB adaptor cables as shown below.



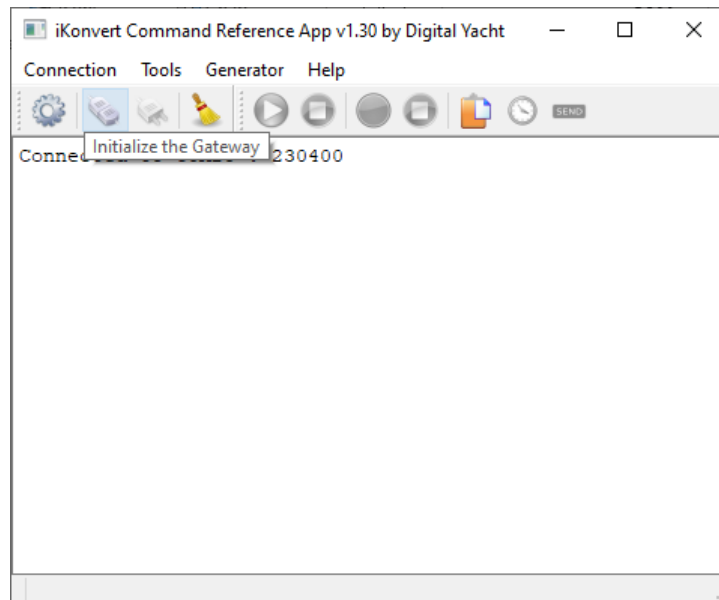
In Addition, you need to move the Jumpers on PL3 and PL4 to the NMEA position as shown by the red rectangles shown below.



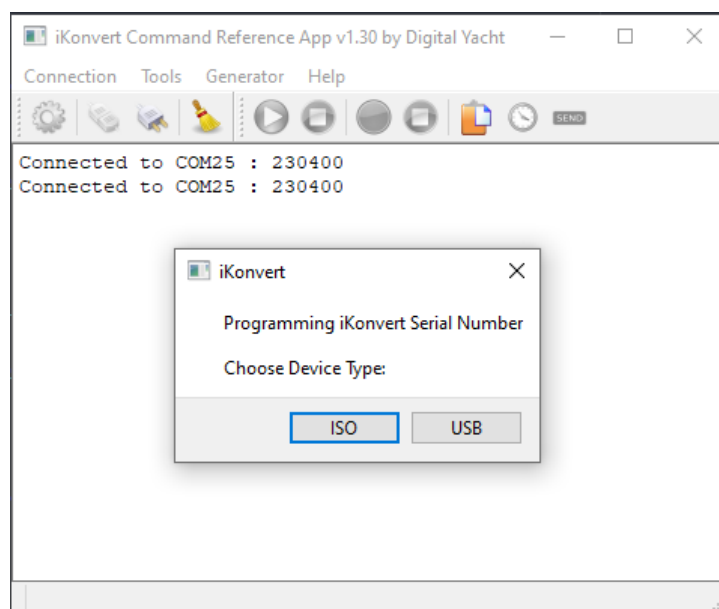
## Additional Note for iKonvert:

The iKonvert has a number of settings stored in the flash memory that are overwritten during the “Global Erase” of the firmware update procedure. The most important one is the serial number which needs to be unique. After a firmware update on an iKonvert, please run the iKonvert Command Reference App, which will automatically detect that the iKonvert has no serial number and give you the option of setting the serial number and version of the iKonvert (ISO or USB).

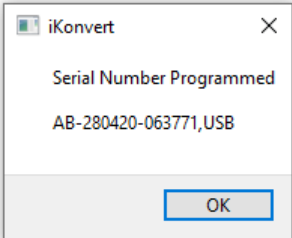
Ensure the STM Flash Loader tool is closed and run the iKonvert Command Reference App...



Now click the second button/icon from the left to initialise the gateway...



Select the relevant device type for the iKonvert you are using but clicking the “ISO” or “USB” button...



Now your iKonvert has been fully updated and re-configured and is ready to be used.