Delta Firmware Update

Work Instructions

Izon Science Ltd

1. Connect the USB cables to the accompanying PC and power the Exoid on.
2. Open the Delta Tester app in the following location:

C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Izon\ECS\Exoid Control Suite

3. The device should automatically connect to an assigned COM port number, if this is the case, please proceed to step 4. If the device does NOT automatically connect to a COM port, select the appropriate COM number that corresponds to 'Izon STR' from the 'Port' drop-down list, followed by 'Connect'.
    a. To check which COM port number corresponds to the 'Izon STR', the Device Manager can be used.
    b. Open the Device Manager from the Control Panel and select 'Ports (COM & LPT)'. Right-click on one of the 'USB Serial Device (COMXX)' and select 'Properties'.
    c. Go to the 'Details' tab and from the 'Property' drop-down list, select 'Bus reported device description', as shown in figure 1.
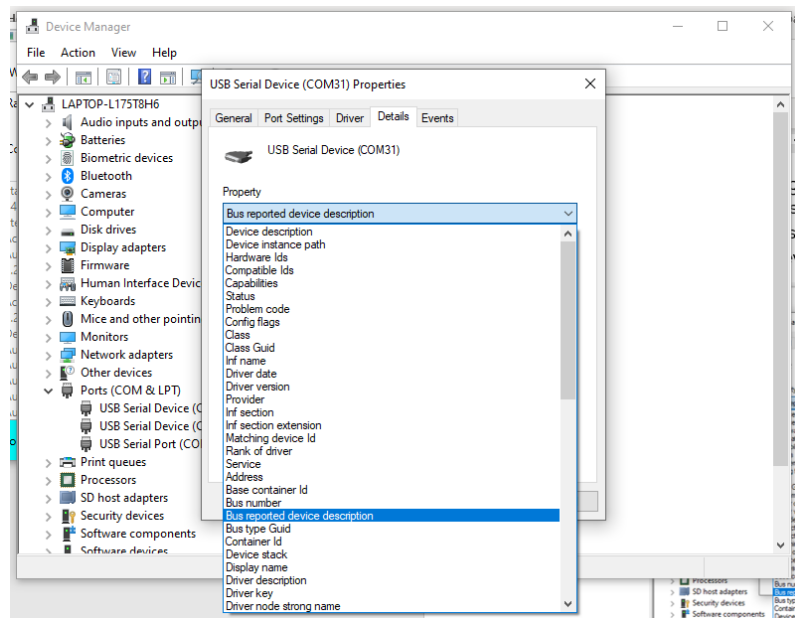

Figure 1: Identifying the 'Bus reported device description' on COM port properties

d. The Value should read 'Izon STR' for the Delta, as shown in figure 2. Make note of the COM number associated with the Delta as you will need it to select from the Port list on the Delta Tester.
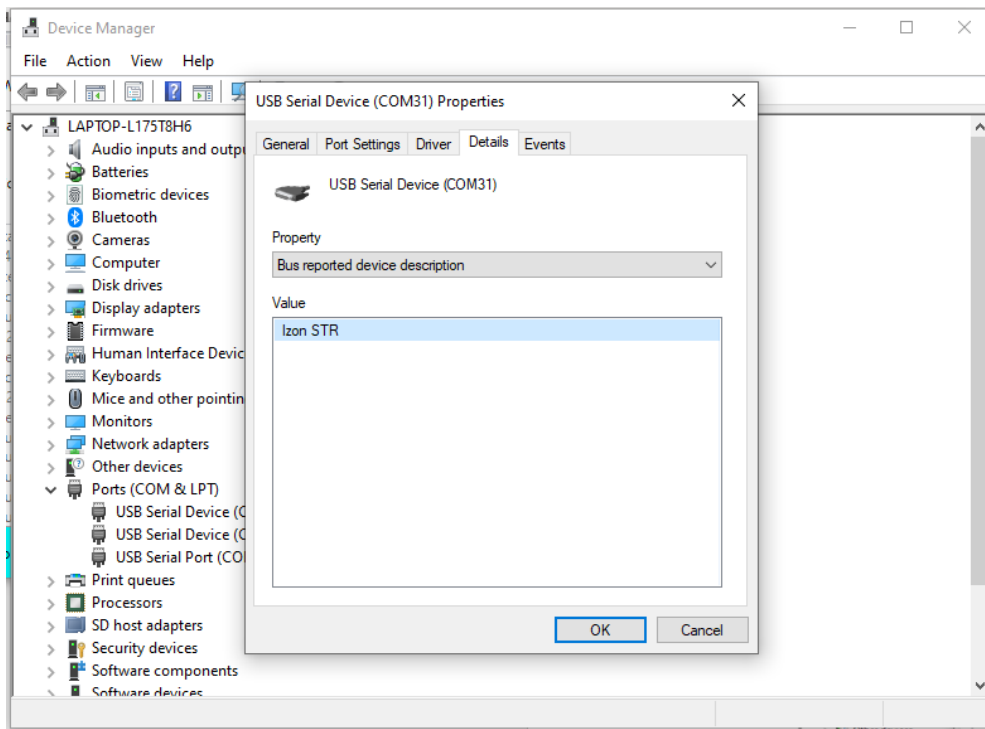

Figure 2: 'Bus reported device description' noted as 'Izon STR'.

4. Ensure the instrument has finished calibrating before you upload the new firmware. This is indicated by a value being present in the 'Reported Stretch' section indicated in figure 3.
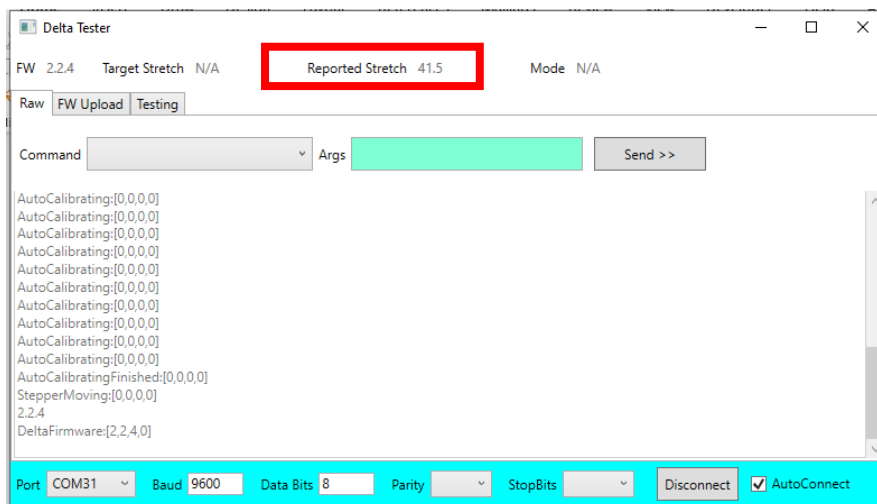

Figure 3: Reported Stretch value indicated on the Delta Tester.

5. Set the stretch to 42 mm, by selecting 'GoTo' from the Command drop-down list and entering 42 into the Args box, and press Send. The stretch has been reached when the Reported Stretch says 42.0.

6. Once the correct COM port number is connected in the Delta Tester, select the 'FW Upload' tab indicated in figure 4a. Use the grey square containing '...' to select the 'ExoidDeltaFirmware_CB1.1_2.2.4.bin' file and press 'Upload', as shown in figure 4b.
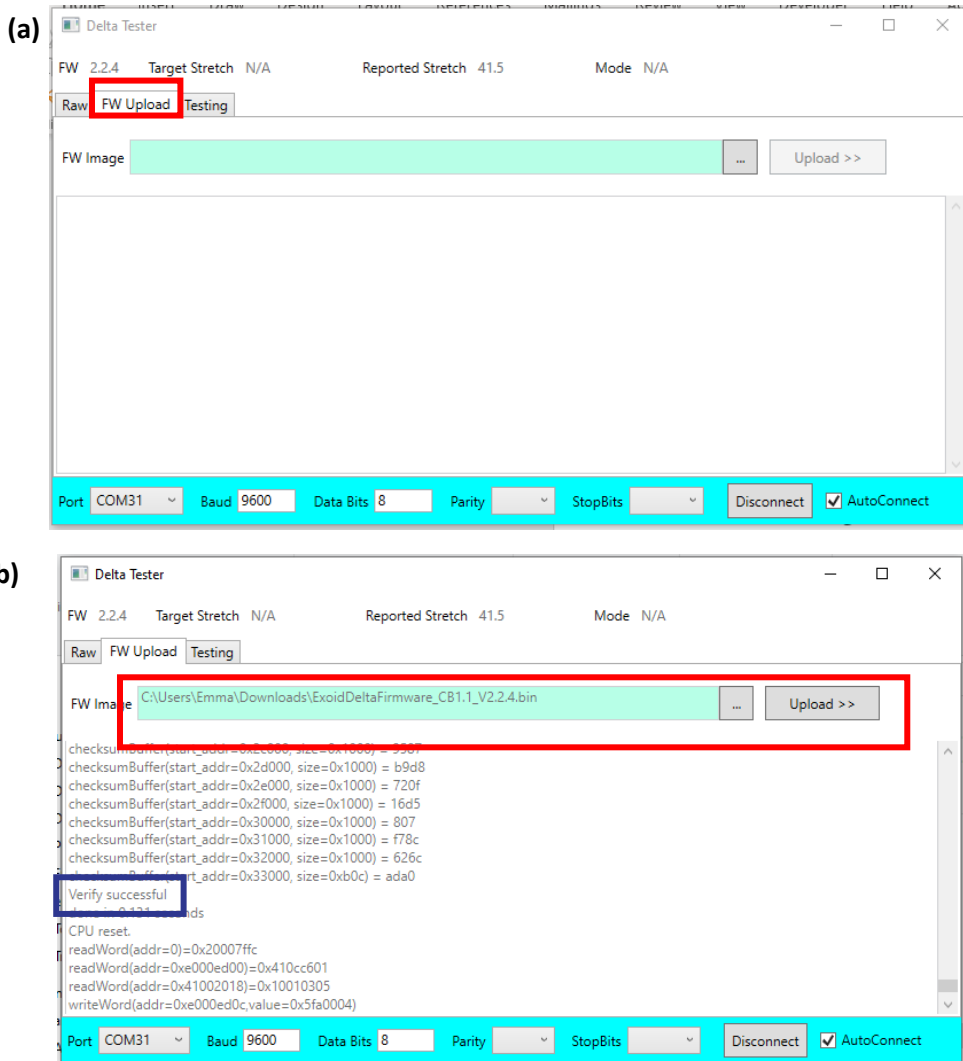

Figure 4: (a) FW Upload tab (b) .bin file selected and uploaded successfully.

7. Once the upload is complete, text will appear in the dialogue box. Scroll down until you can see 'Verify successful', indicated by the blue square in figure 4b. This indicates the .bin file has uploaded correctly. You will thene see the following in the Raw tab, shown in figure 5.
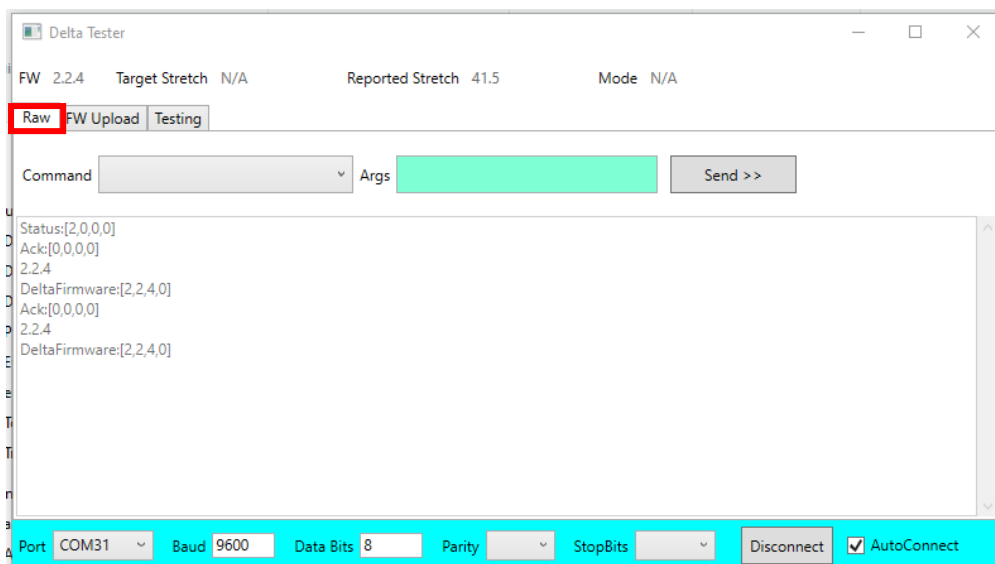
Figure 5: Raw tab displayed information after successfully uploading the .bin file.

8. The Delta then needs to be Factory Calibrated. If there isn't already, attach a nanopore to the jaws of the stretcher unit, as shown in figure 6.

Figure 5: Nanopore securely attached to the stretcher jaws.

9. In the 'Raw' tab, select 'FactoryCalibrate' from the 'Command' drop-down list, as shown in figure 6 and press 'Send'.
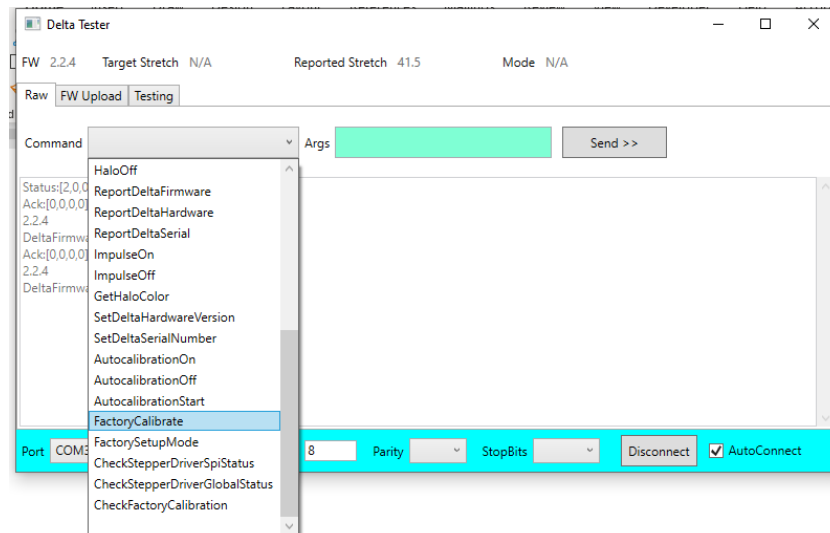
Figure 6: 'FactoryCalibrate' function from the 'Command' drop-down list.

10. Measure the stretch using callipers as shown in figure 7.
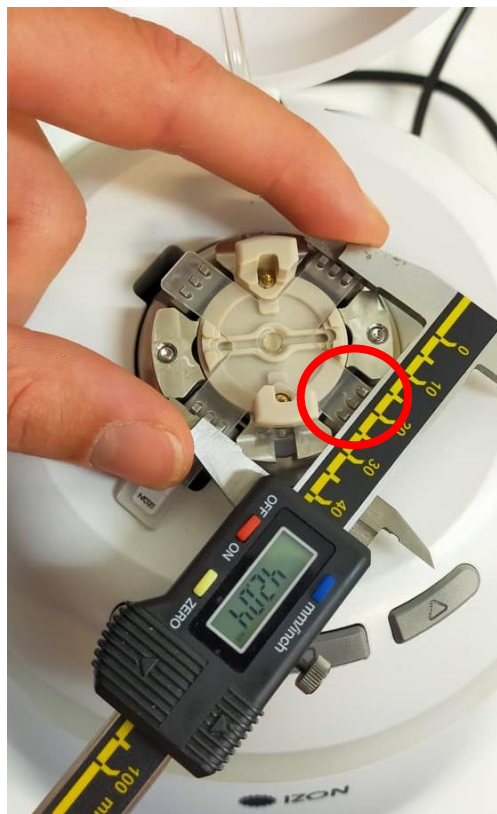

Figure 7: How to measure the stretch using callipers. Ensure the main scale (ruler) is pressed firmly against the appropriate jaw, indicated by the red circle.

11. Input the stretch value into the 'Args' box as shown in figure 8, and press 'Send'.
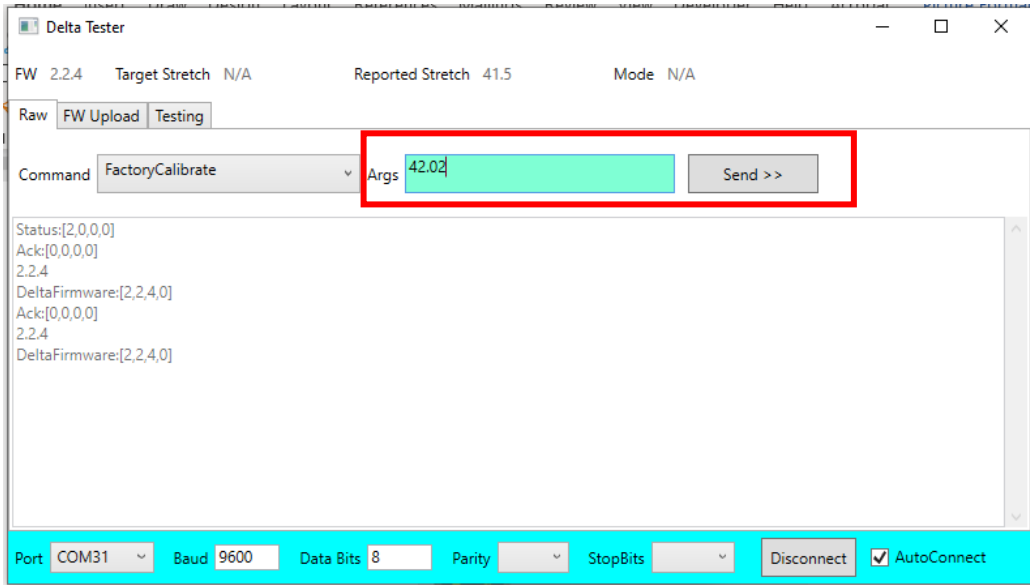
Figure 8: Entering the stretch value in the Args box.

12. The system will now auto-calibrate to 41.5 ± 0.2 mm. Auto-calibration is complete once you see 'AutoCalibratingFinished:[0,0,0,0]', as shown in figure 9. Once auto-calibration is complete, measure the stretch using callipers as shown in figure 7 and check it is 41.5 ± 0.2 mm.
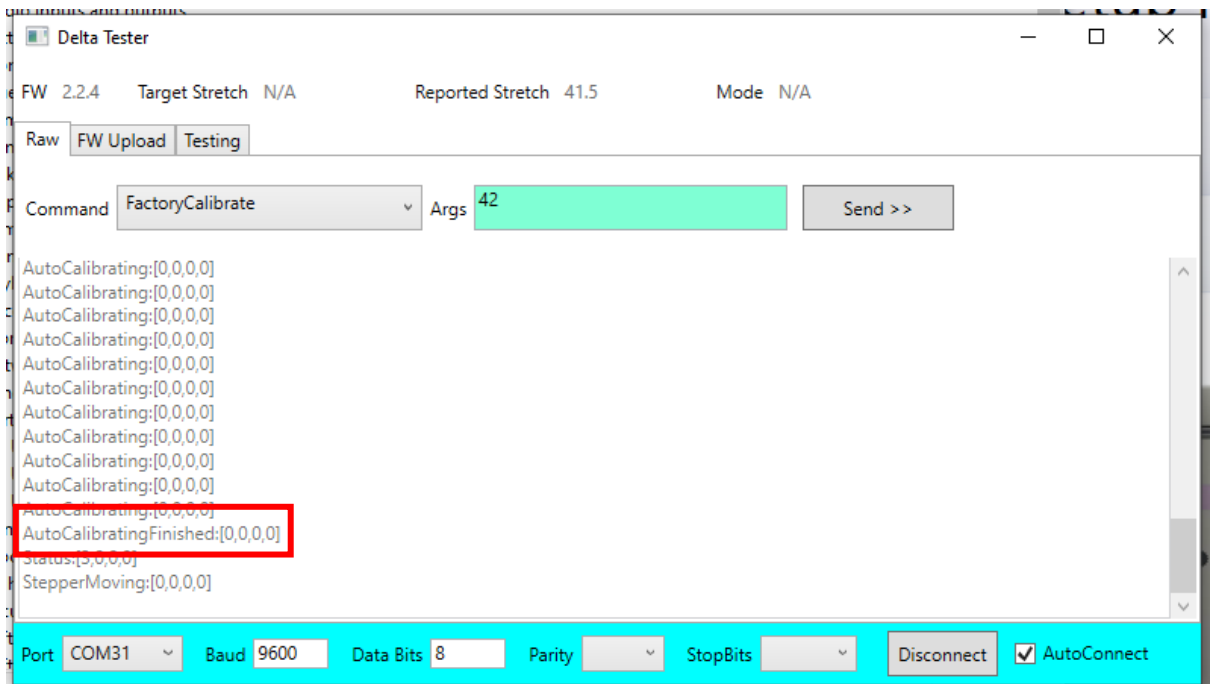

Figure 9: Display when autocalibration of the delta is complete.

13. Power cycle the instrument (Switch off the Exoid, remove USB cable, replace USB cable and power back on).
14. Measure the stretch as shown in figure 7, check the stretch is within the range of 41.5 ± 0.2 mm. If this is not the case, repeat steps 8-11. It is important to factory calibrate the system ~42 mm.

15. The instrument stretch is now calibrated, and the latest firmware has been uploaded successfully.