

DUSTIQ FIRMWARE VERSION 22000 – UPDATE INSTRUCTIONS

1 EQUIPMENT NEEDED

- Windows PC, Windows 10 or newer
- Serial to USB converter:
 - o Option 1 – RS-485 to USB (Type A) converter with internal power supply:
 - [PMU485 Smart Setup Hub](#)
 - o Option 2 – RS-485 to USB (typically Type A) converter; examples:
 - [B&B USOPTL4 RS-232/485 to USB Converter, set in 2-wire RS-485 mode](#)
 - [Moxa UPORT 1130](#)
- Power Supply (if SCADA/DAS or PMU485 are not used):
 - o [110 AC to 12 V DC power supply w/ terminal block](#) (example linked 31-Mar-2022)
- DustIQ sensor
- DustIQ cable

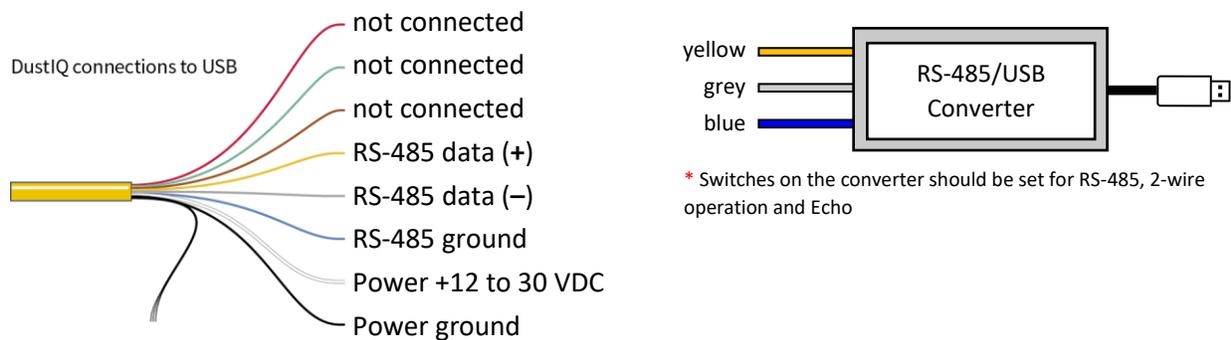
2 SETUP CONNECTION WITH THE DUSTIQ

The firmware update requires a direct connection from a PC to the DustIQ using a serial (2-wire RS-485) to USB converter.

Take a quick photo of the sensor wiring to the data logger, then disconnect only wires required for your setup scenario.

CONNECTION SCENARIO 1: DUSTIQ IS CURRENTLY INSTALLED, ONLY DISCONNECT MODBUS®

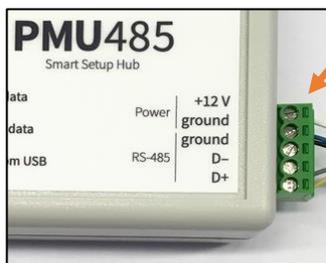
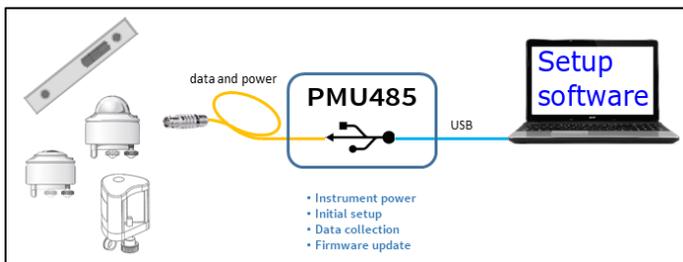
Connect to the USB converter using the yellow (+), grey (-), and blue (ground) wires as pictured below.



NOTE: The minimum power supply voltage is met by the existing connection.

CONNECTION SCENARIO 2: DUSTIQ IS CURRENTLY INSTALLED, COMPLETE DISCONNECT

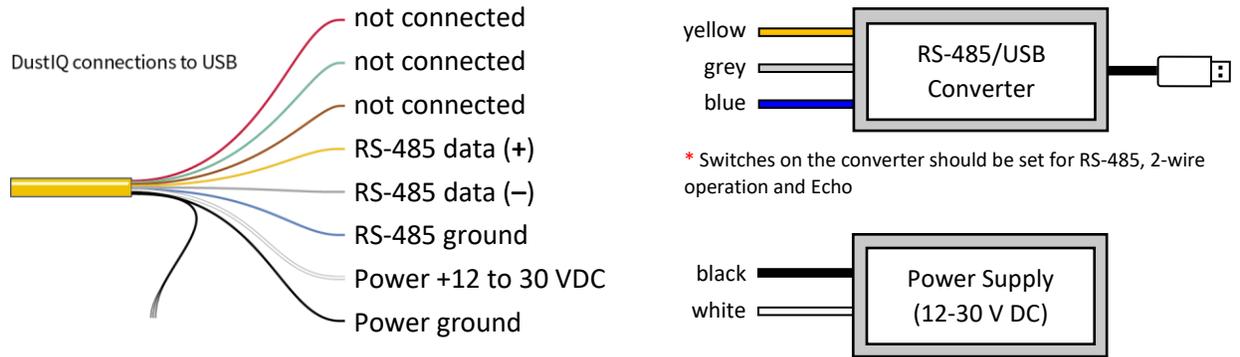
Using the Kipp & Zonen PMU485 USB to Serial converter:



The green terminal block can be unplugged

Connections:
 White (+12V)
 Black (Power Ground)
 Blue (Data Ground)
 Grey (D- signal)
 Yellow (D+ signal)

Using a 3rd party USB to Serial converter (2- wire RS-485) AND power supply



NOTE: The minimum power supply voltage for the DustIQ firmware update is 12 VDC, if this is performed through a cable longer than 10 m, a 24 VDC supply may be required to overcome voltage drop.

CONNECTION SCENARIO 3: DUSTIQ IS NOT CURRENTLY INSTALLED

See section 2.2

3 VERIFYING OR DETERMINING THE COM PORT

The COM port to which the DustIQ is connected can be determined by using the standard Windows Device Manager via Control Panel.



Figure 1. Example of a DustIQ connected to a PC using an RS-485 converter

4 SETTING UP COMMUNICATION THROUGH THE FIRMWARE UPDATE TOOL

OPEN THE 'FIRMWAREUPDATE.EXE' FILE INCLUDED IN THE .ZIP FOLDER.

Note: It is recommended to extract all files from the .zip and run from the extracted folder.

SELECT THE COM PORT FOUND IN SECTION 3.

Using the drop-down menu on the top left of the screen, select the COM port identified in Section 3.

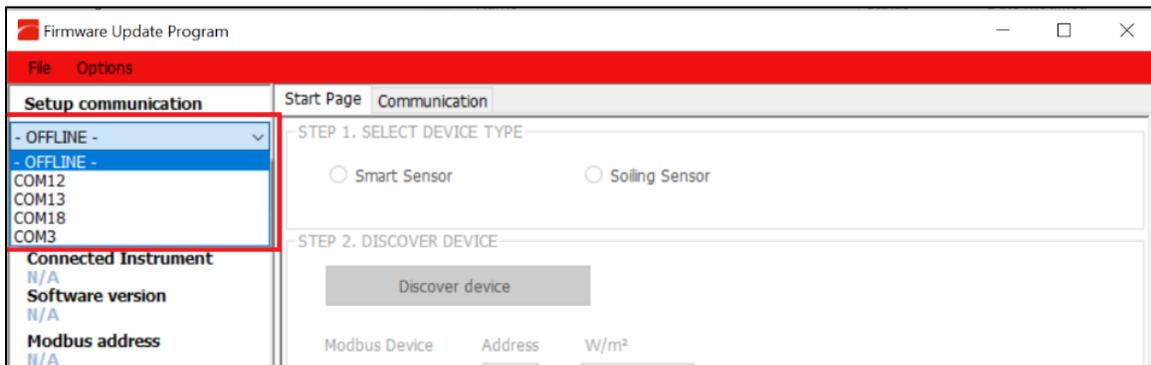


Figure 2. Highlighted in red, the expanded drop-down menu used to select the correct COM port

SELECT COMMUNICATION PARAMETERS

Using the drop-down menus below the COM Port selection, select the communication parameters the DustIQ is configured to. The standard parameters are:

Baud Rate: 19200
Parity: 8 bits - even

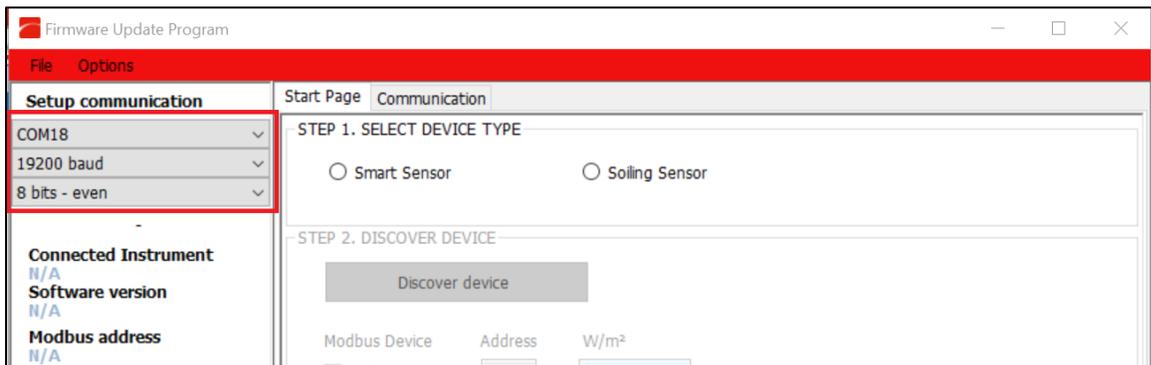


Figure 3. Highlighted in red, the drop-down menus used to set the communication parameters

Note: If you do not know the DustIQ configuration, please see section 5.6.10 "Finding a DustIQ with unknown communication parameters" in the PDF [DustIQ Manual V2 Firmware20220322](#)

SELECT 'SOILING SENSOR' AND SELECT 'DISCOVER DEVICE'

Step 1: Select the sensor type. For the DustIQ firmware update, select 'Soiling Sensor'

Step 2: Click 'Discover Device' and the Modbus® address will be automatically determined.

NOTE: The firmware can only be updated on a single DustIQ. If multiple DustIQs are connected, this will not work.

In the example shown below, a DustIQ is connected to the PC using COM port 18 (COM18) with standard communication settings (Baud rate 19200 and 8 bits even parity) and Modbus® address 3.

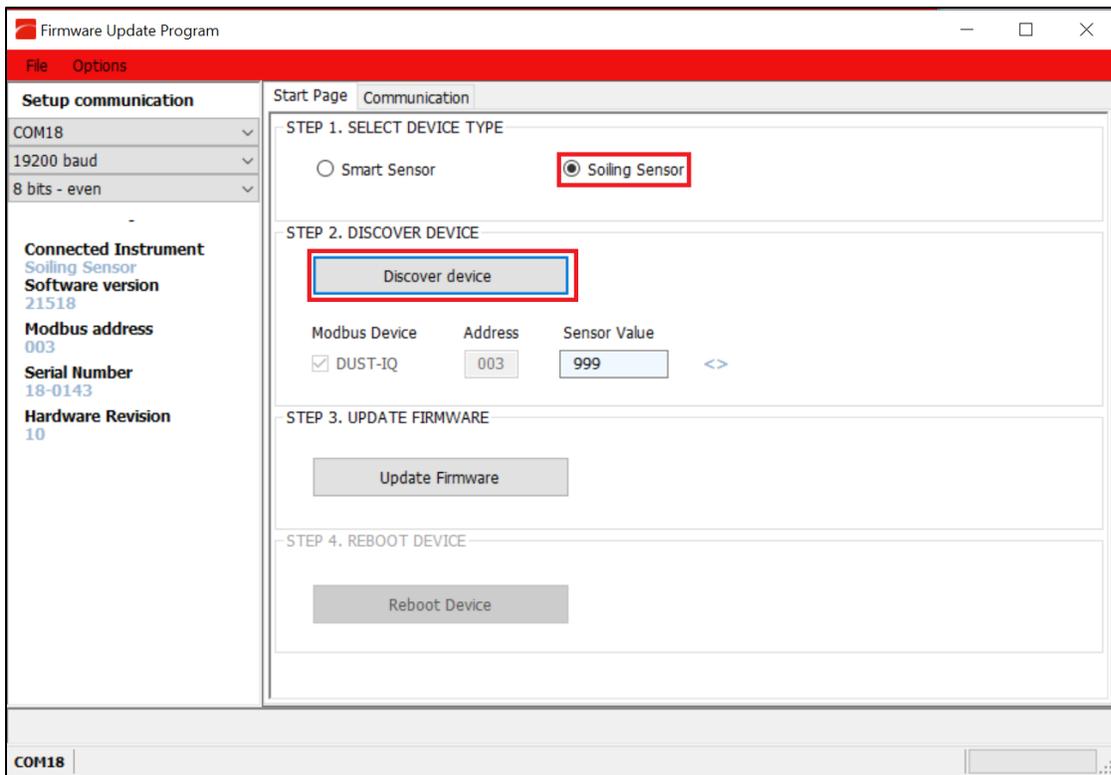


Figure 4. Highlighted in red, selection of 'Soiling Sensor' and 'Discover Device' button

SELECT 'UPDATE FIRMWARE'

Clicking the button 'Update Firmware' opens a pop-up window to select the firmware file. Navigate to the folder that contain the firmware file '**DustIQ2 - V22000.hex**' that was extracted from the .zip. The firmware update will start immediately and take approximately 30 seconds.

Name	Type	Compressed size
DustIQ2 - V22000.hex	HEX File	119 KB
FirmwareUpdate.exe	Application	43 KB

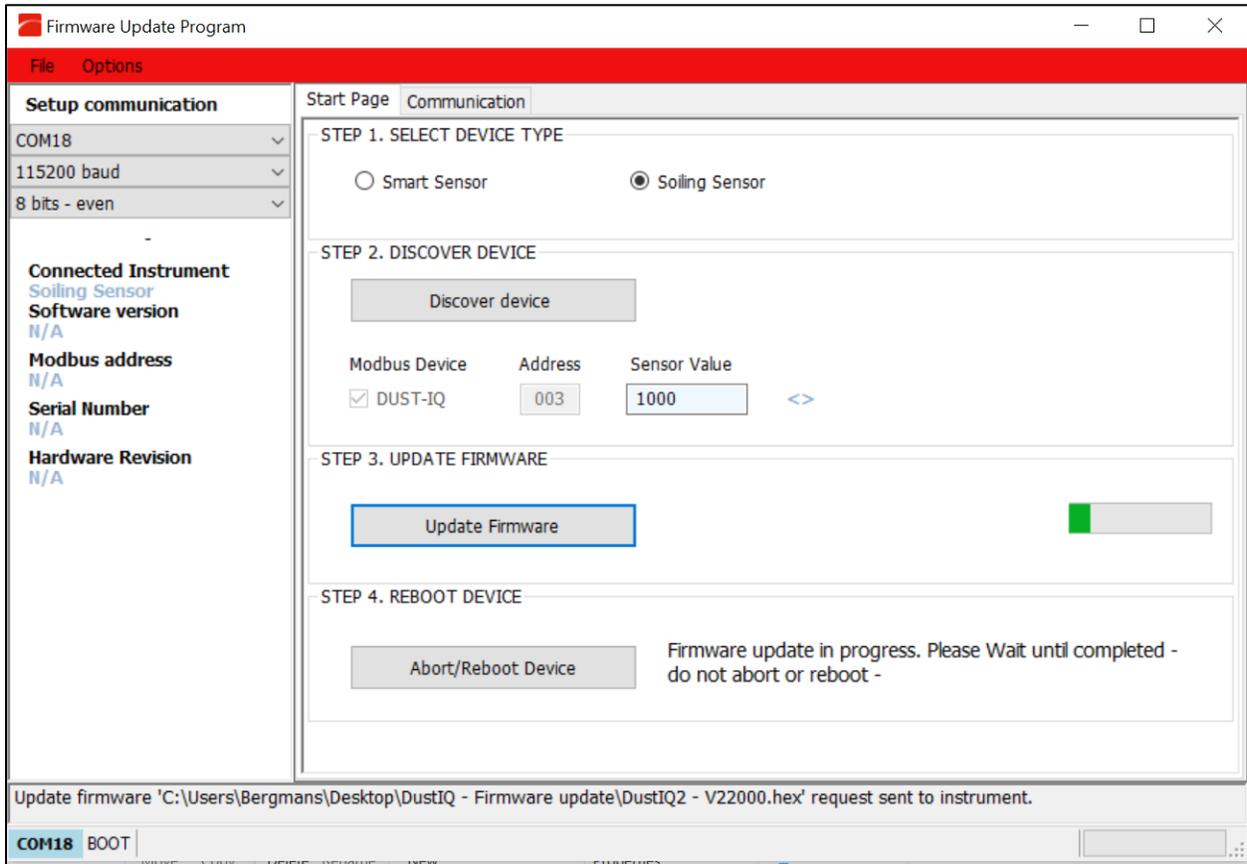


Figure 5 Note that the progress bar will be loading green continuously during the update. **This will take ≈ 30 seconds.**

FIRMWARE UPDATE COMPLETED

When the update is completed the progress bar will disappear and the Program will say 'Update Completed'. The DustIQ can now be rebooted by clicking the 'Reboot Device' button.

A pop-up will ask to change the communication settings of the PC. Select 'Yes'.

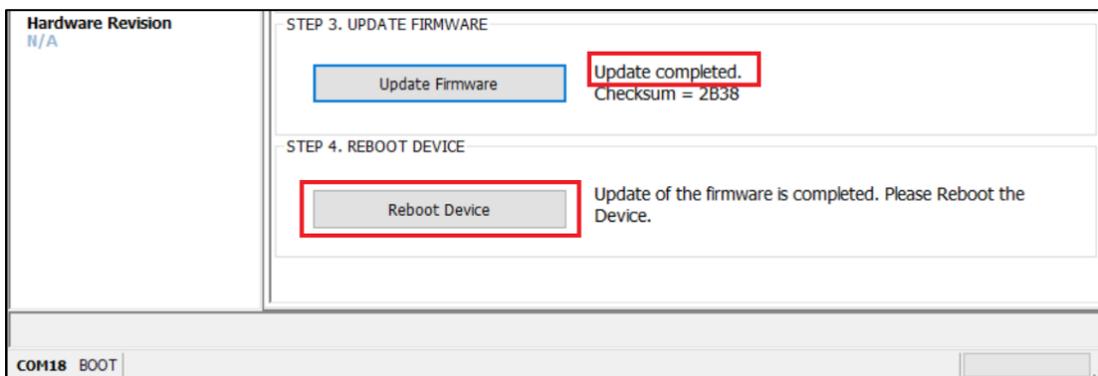


Figure 6. The update is complete and the DustIQ can now be rebooted to complete the firmware update. Highlighted in red, the 'Update completed' notification and the 'Reboot Device' button

The firmware update is now complete and can be validated by looking at the software version in the left-hand pane of the firmware update tool.

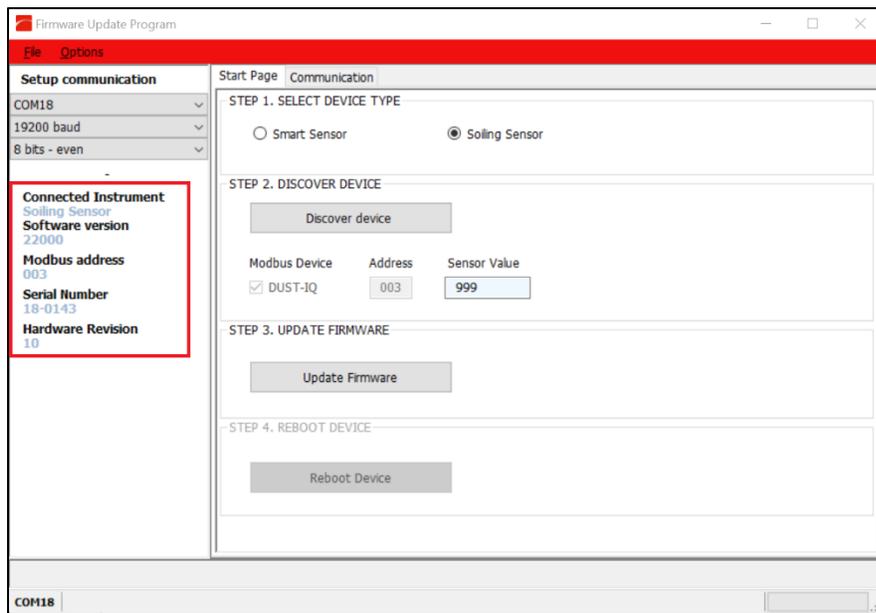


Figure 7. The update is complete and can be seen on the left-hand side. A summary is given of the software version, Modbus® address, serial number, and the hardware version.

The Firmware Update software can now be closed.



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