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## Frequently Asked Questions

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Safe practices should always be employed to ensure the Health and Safety of yourself, employees and customers (if applicable) Refer to product manuals, exploded drawings and our website if further assistance is required, or contact us on [service@teknatool.com](mailto:service@teknatool.com)

## How to Upgrade HMI Firmware for DVR

One of the advantages of the DVR smart motor is the ability to upgrade the Human Machine Interface (HMI) software via USB. Upgrading to the latest firmware provides a number of benefits including new features and fixing software bugs which may have been present in the previous firmware.

All DVR machines can receive firmware update with the exception of some XP 3000 models. For a full list of DVR Firmware updates, please visit <https://www.teknatool.com/upgrade-your-firmware/>

There are two methods of upgrading firmware for your HMI: via USB or via ST-Link. Upgrading via USB upload is advisable if it is available however sometimes it may not be feasible due to software incompatibilities.

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# Upgrading Firmware using USB Uploader

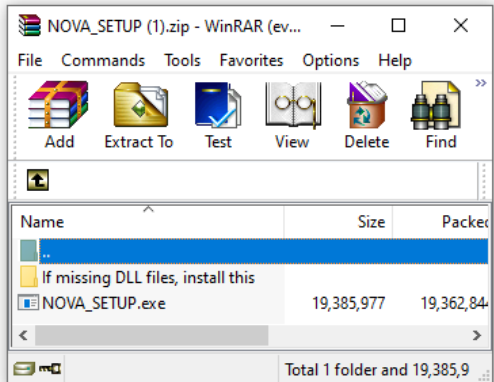
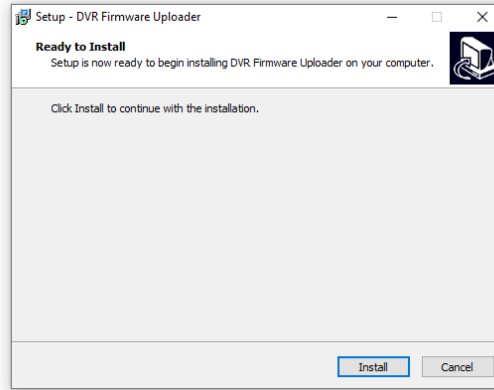
The *Nova Firmware Upgrade* program was created as a simple tool to allow customers and technicians to upgrade the firmware using a standard USB cable or a modified USB cable (depending on the product). The firmware update program should be **installed before plugging** the DVR HMI panel into the computer.

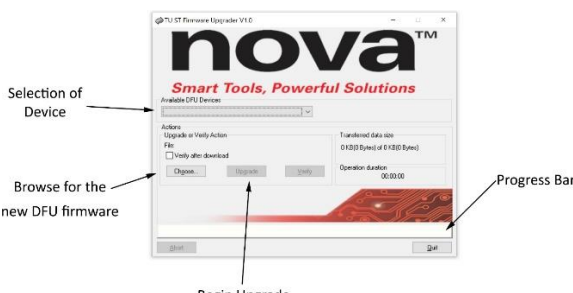
Tools required:

- **A Windows computer**
  - **USB male to USB male cable** (if your HMI has a USB port – Type A-to-A OR A-to-B depending on the port type)
- Or**
- **4-pin female to Male USB cable** (for HMI boards with no USB port)


Software required:


- **Nova Firmware Upgrader** program (download from: [https://www.teknatool.com/wp-content/uploads/2019/08/NOVA\\_SETUP.zip](https://www.teknatool.com/wp-content/uploads/2019/08/NOVA_SETUP.zip))
- **New firmware update .DFU file** downloaded from the Teknatool website: <https://www.teknatool.com/upgrade-your-firmware/>

1	<p>Download the Nova Firmware Upgrader program and open the .zip file</p>	
2	<p>Open the “<i>Nova_SETUP.exe</i>” and follow the instructions to install the software.</p> <p>Some older computers may have issues opening the program and have a “missing DLL” warning, to solve this, please install the drivers provided in the folder inside the zip file:</p> <p>For <b>32-bit based</b> operation systems, please install the “<i>vcredist_x86.exe</i>” file</p> <p>For <b>64-bit based</b> operation systems, please install the “<i>vcredist_x64.exe</i>” file</p>	

3	<p>Open the Nova Firmware Upgrader from the Start Menu once it has been installed.</p> <p><b>Important:</b> The Firmware Upgrader <u>must</u> be installed before the HMI is connected to the computer otherwise the incorrect drivers will be installed.</p>	
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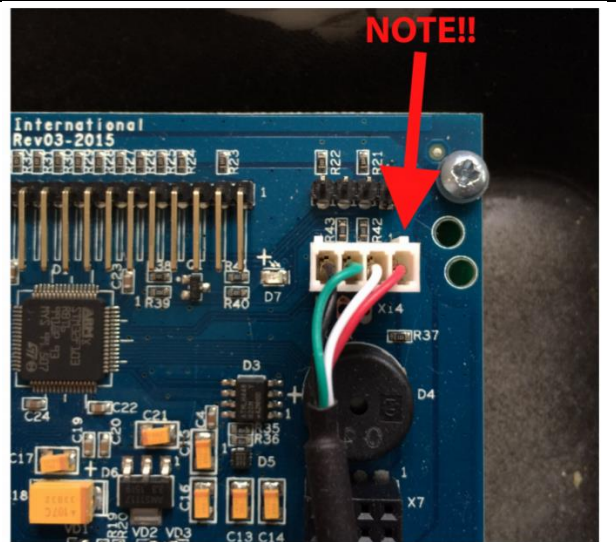
4	<p>Turn off the power on your lathe or drill press headstock and unplug the machine from the power socket. Wait for a minute for the capacitors to fully discharge.</p>
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5	<p>If your HMI panel has an External USB port – plug the USB cable into the HMI. Plug the other end of your USB cable into the computer and continue to step 7.</p> <p>Otherwise skip to step 6a.</p>	
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6a	<p>If your HMI panel does not have an external USB port – loosen the 4 screws on the side of your HMI panel and remove the panel from the headstock.</p> <p>Disconnect the 10-pin HMI ribbon coming from within the headstock.</p>	
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|----|---|
| 6b | Plug in the 4-pin USB cable onto the 4-pins marked as ' <b>X5</b> ' on the HMI circuit board with the red ' <b>pin 1</b> ' cable towards the edge of the circuit board. |
|----|---|

Plug the other end of your USB cable into the computer.

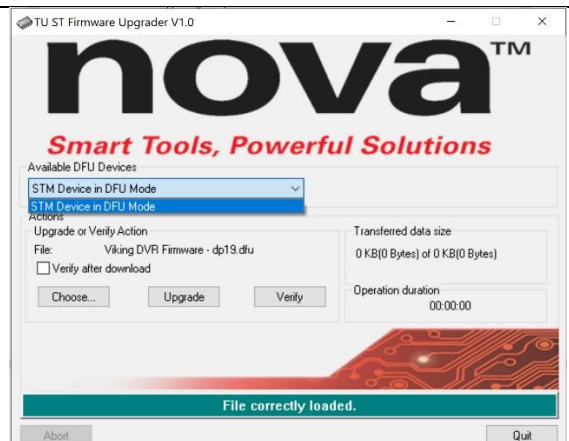


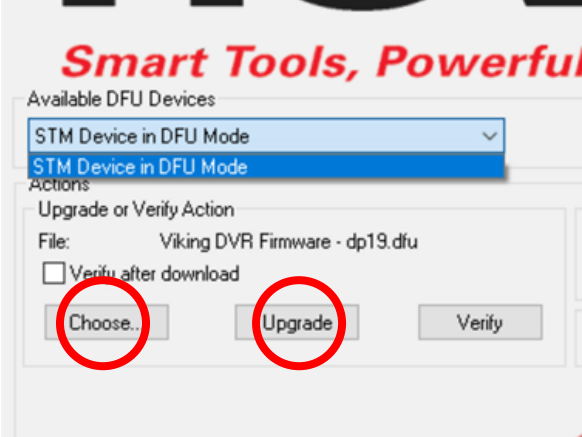
- |   |  |
|---|--|
| 7 | Usually, the HMI board will automatically go into the normal start up procedure and display a <b>“MCB Disconnected”</b> and <b>“USB Mode”</b> on the screen. |
|---|--|

If this does not happen, you can force the HMI into USB mode by holding down **"F1"** or **"Set Depth"** (Viking only), then pressing **"OFF"** momentarily, and finally releasing **"F1"** or **"Set Depth"** after a few seconds.



- |   |  |
|---|--|
| 8 | Once the HMI panel has been connected to the PC, the Nova Firmware Upgrade program should show the device as a “STM Device in DFU” mode as shown in the picture. |
|---|--|



9	<p>To begin upgrading, click “<b>Choose...</b>” and select the correct .DFU file for your machine (which you have downloaded earlier from the Teknatool website), then click “<b>Upgrade</b>” to upload the firmware into the HMI panel.</p>	
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Congratulations, your HMI has now been updated!

### **Troubleshooting:**

[Can't open the Nova Firmware Updater because of "Missing DLL"](#)

Some older computers may have issues opening the program and have a “missing DLL” warning, to solve this, please install the drivers provided in the folder inside the zip file.

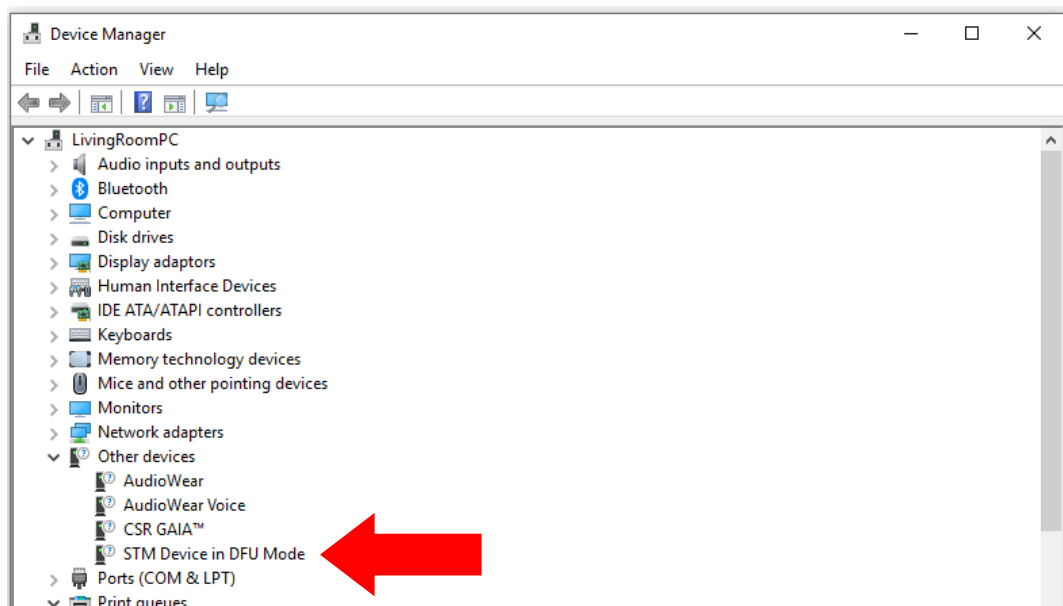
For **32-bit based** operation systems, please install the “*vcredist\_x86.exe*” file

For **64-bit based** operation systems, please install the “*vcredist\_x64.exe*” file

### [Unrecognized Device / Incorrect Drivers](#)

If the computer does not recognize the device, or if the HMI panel has been connected to the PC before installing the proper driver, it will display that a device is unrecognized. This is caused by the incorrect drivers being identified and installed by Windows.

To fix this, go to **Windows > Settings > Device Manager** and right click on the “*STM Device in DFU Mode*” and select “**Uninstall drivers**”. Next download the Nova Firmware Upgrade program from the website and install it before plugging the HMI panel in again.



The HMI panel is plugged in but does not enter USB mode

Please see Step 7 for forcing the HMI into USB mode.

The HMI panel is in USB Mode but nothing appears on the PC

In some instances, the HMI panel could be plugged in but does not show up as a device on the PC. There are several causes which might lead to this happening.

If the LCD screen does not light up

- Check that the USB port/pins are correctly plugged into the HMI board
- Check if the USB port is providing power, try different USB ports or different PC

If the LCD lights up, but the device cannot be found

- Occasionally the Data + / - pins on the USB cable may have been broken or damaged, check that the cables are still making proper contact or use a different cable
- If you are using a USB hub to connect to the HMI panel, the USB hub might not provide enough power to the panel. Try connecting directly to the PC
- For some models of the Viking Drill Press: Due to the spacing of the connector, some bits of plastic might need to cut away to allow the connector to reach deeper into the USB port and make proper contact.



Sometimes the data cables might disconnect and prevents proper connection



Plastic sleeve might need to be cut to allow proper connection for the Viking drill press



# Upgrading Firmware using ST-LINK

All Nova HMI panels can be updated via a ST-link device. The DVR HMI uses the 4 pin SWIM protocol and can be used to reflash the firmware plus the USB bootloader.

This guide is only applicable for the ST-Link v2, however the in theory any ST-link version or compatible SWIM programmers can be used.

Tools required:

- **ST-LINK/V2-ISOL** (with USB cable)
- **Laptop or computer** with USB ports
- **JTAG to 4P XH-2.54** converting cable (or 4 Female-to-Female pin connectors)

Software required:

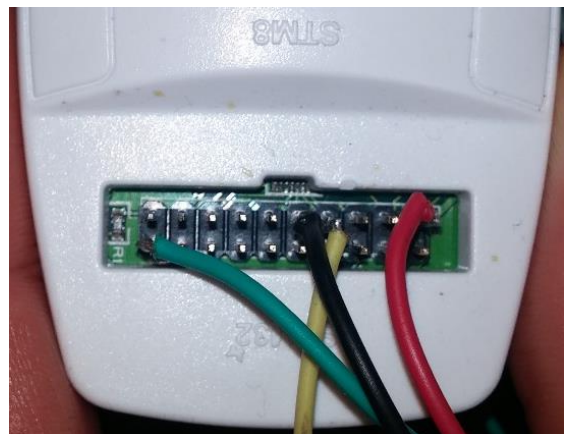
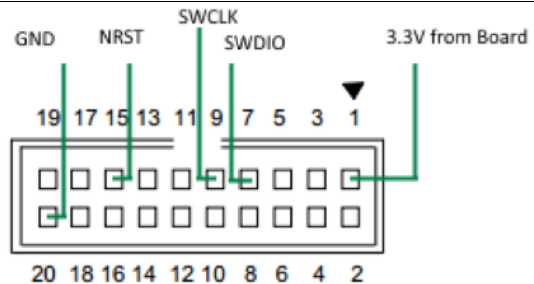
- **Firmware Binary file** (.bin) from Teknatool
- **STM32 ST-Link Utility** v3.4.0 program (downloadable from <https://www.st.com/en/development-tools/stsw-link004.html#get-software>)
- **ST-Link USB drivers** (Downloadable from <https://www.st.com/en/development-tools/stsw-link009.html#get-software>)


- 1 Connect with wide end of your **JTAG to 4P XH-2.54** cable to your ST-Link device.

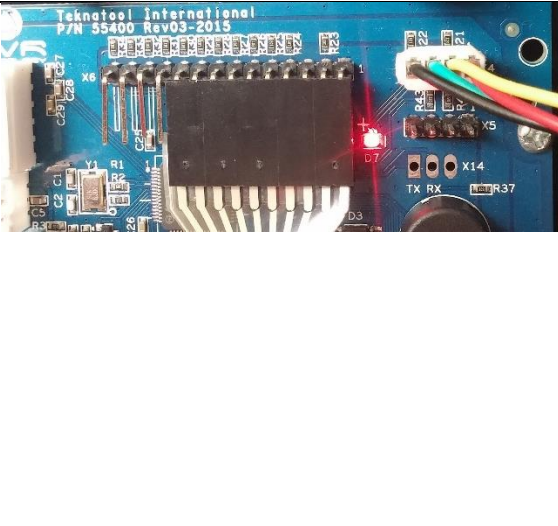
If you only have Female-to-Female pin connectors, connect up four of them as shown in the diagram:

Pin #	Color	Description
1	Red	+3.3v
7	Yellow	SWDIO
20	Green	GND
9	Black	SWCLK

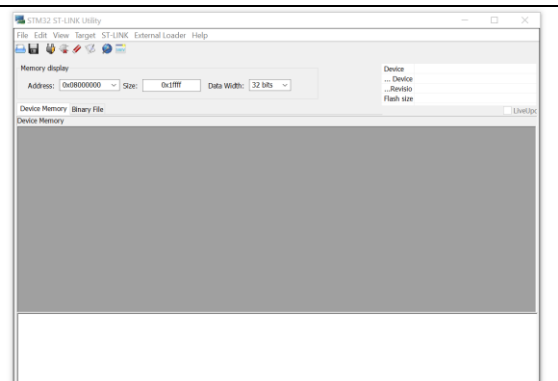
Note that you may be using wires coloured differently from the ones used in this guide.



2	<p>Loosen the screws on your HMI panel and remove the panel from the headstock of your lathe or drill press.</p> <p>You will not need to unplug the HMI cable.</p>	
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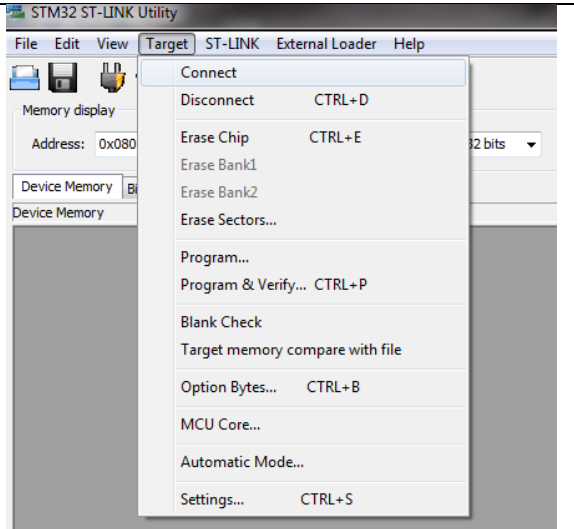
3	<p>Connect the small end of your <b>JTAG to 4P XH-2.54</b> cable to the pins marked as 'X4' on the HMI board.</p> <p>If you are using pin connectors, plug them into the correct pins as shown in the image. Note that you may be using wires coloured differently from the ones used in this guide.</p> <p>Order from the edge of the HMI board:</p> <ol style="list-style-type: none"> <li>1. Red</li> <li>2. Yellow</li> <li>3. Green</li> <li>4. Black</li> </ol>	
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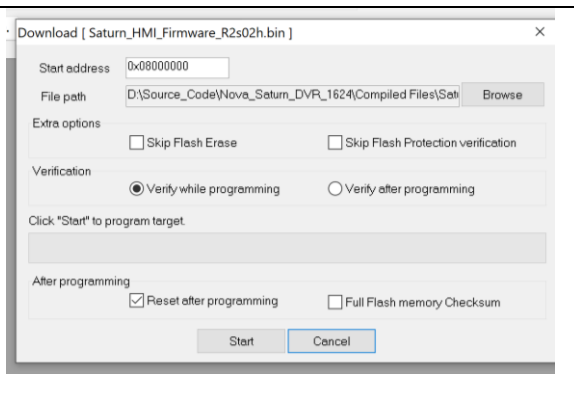
4	<p>Plug the power cable into the headstock and turn the lathe/drill press on - the HMI should power up.</p> <p>Make sure that you have the <b>STM32 ST-Link Utility</b> program and <b>ST-Link USB drivers</b> installed on your computer before plugging the ST-Link USB cable in.</p>
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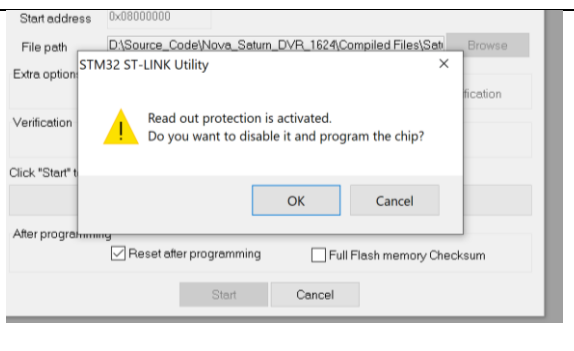
5	<p>Open the <b>STM32 ST-Link Utility</b> program.</p>	
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6	<p>Go to <b>File &gt; Open File...</b> and select the new firmware “.bin” file from where you have saved it.</p> <p>Alternatively, drag the .bin file from your folder into the ST-LINK Utility window.</p>
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7	<p>Verify that you have connected the wires to the HMI board correctly and go to <b>Target &gt; Connect</b>.</p> <p>If everything was done correctly an LED on the HMI board will light up.</p>	
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8	<p>Begin uploading the firmware by going to <b>Target &gt; Program &amp; Verify</b> and have the “<b>Reset after programming</b>” option ticked.</p>	
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9	<p>If the “<b>read out protection</b>” warning is displayed, select “<b>OK</b>” to erase the contents of the chip before programming.</p>	
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Congratulations, your HMI has now been updated!

## Troubleshooting:

### “Can not connect to target!” error

One of the most common errors that can occur when programming the ST-Link device is the “Can not connect to target” error.

There are a number of reasons for the computer not being able to connect to the microcontroller of the HMI including:

- No power to the HMI panel
  - Connect the HMI panel to the powered-up headstock via the 10-pin ribbon cable
  - OR connect the HMI to the USB port / X5 USB pins
- Incorrect wiring from the ST-link to the HMI board
  - Check the wiring
  - Make sure the pins are making proper contact
- Incorrect ST-Link settings
  1. Go to **Target > Settings**
  2. Make sure the Connection port settings is “**SWD**”, the frequency can be set as “Auto” or a medium to low frequency
  3. Set the mode to “**Normal**”
  4. Set the reset mode to “**Hardware Reset**”
- ST-link device is not up to date
  1. Go to **ST-link > Firmware Update**
  2. Connect to the ST-link device and upgrade the firmware

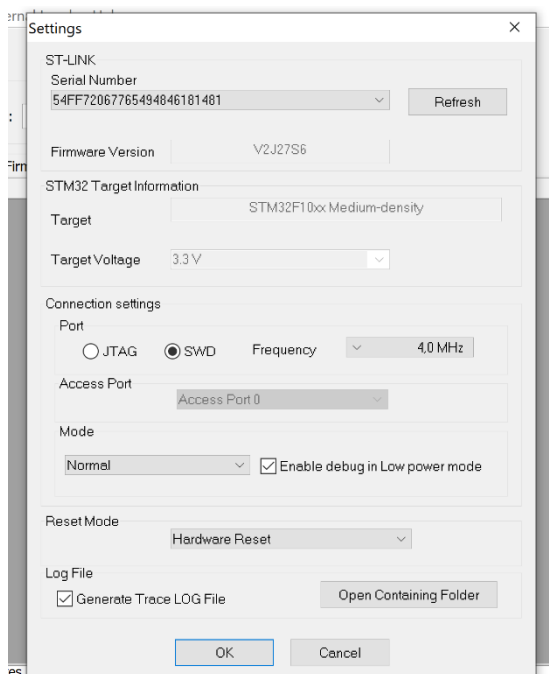
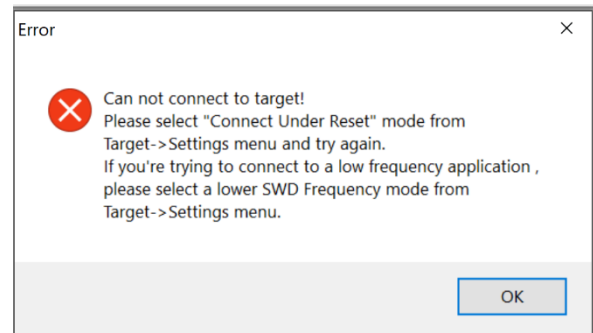


Figure 1.0: Target > Settings > Make sure port is set to "SWD"

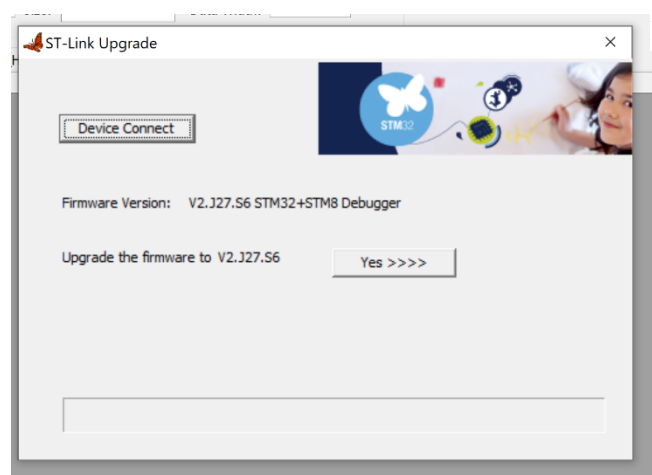


Figure 1.1: ST-Link > Firmware Update

### Cannot read memory

The DVR HMI panel has automatic software protection, and therefore once the firmware has been programmed, the chip is automatically locked. During the firmware upgrade process, the old chip memory is automatically erased when the “disable read out” bit has been cleared. Press OK and try again.

