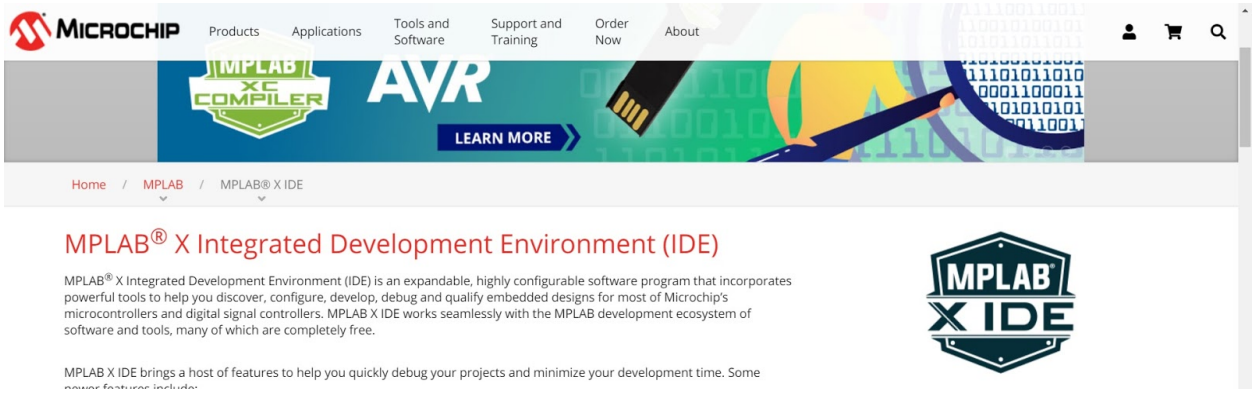
How to Update a Common Sense 3 Controller

With the PICkit4

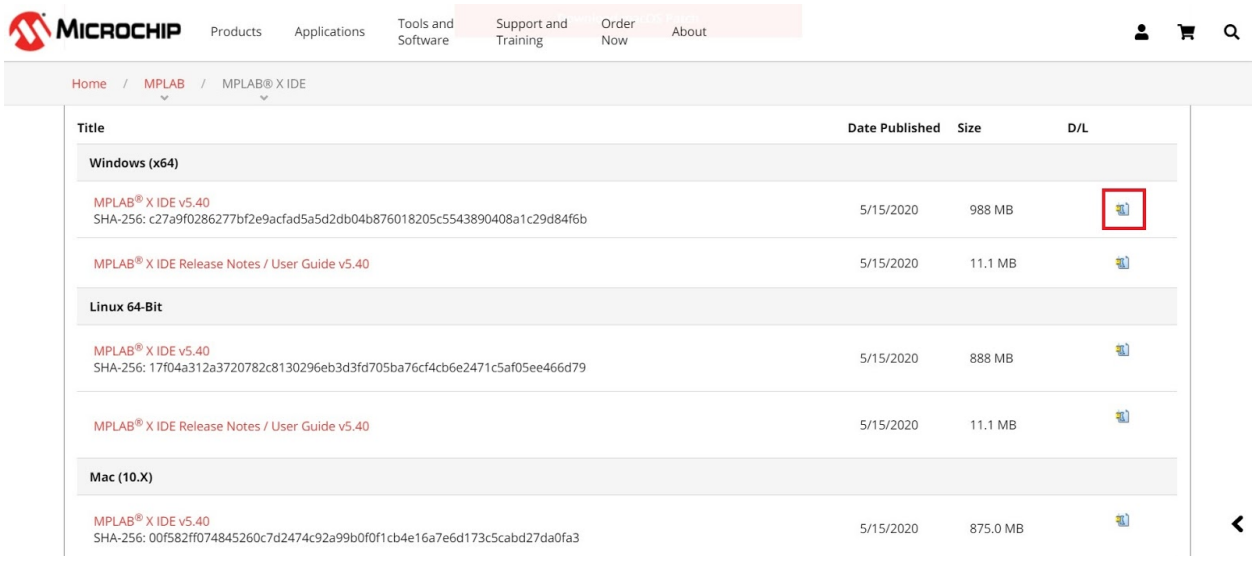
1. Download the Update Application

Download the MPLAB X IDE from the microchip website (the MPLAB X IPE is packaged with it):

Click, copy and paste, or google https://www.microchip.com/mplab/mplab-x-ide



Scroll down to the download section, and click on the little zip icon for the version which matches your computer's operating system *(for this manual, Windows 10 64-bit - but yours might be different)*



Then navigate to wherever you downloaded it to, extract the file, and click the installer file.

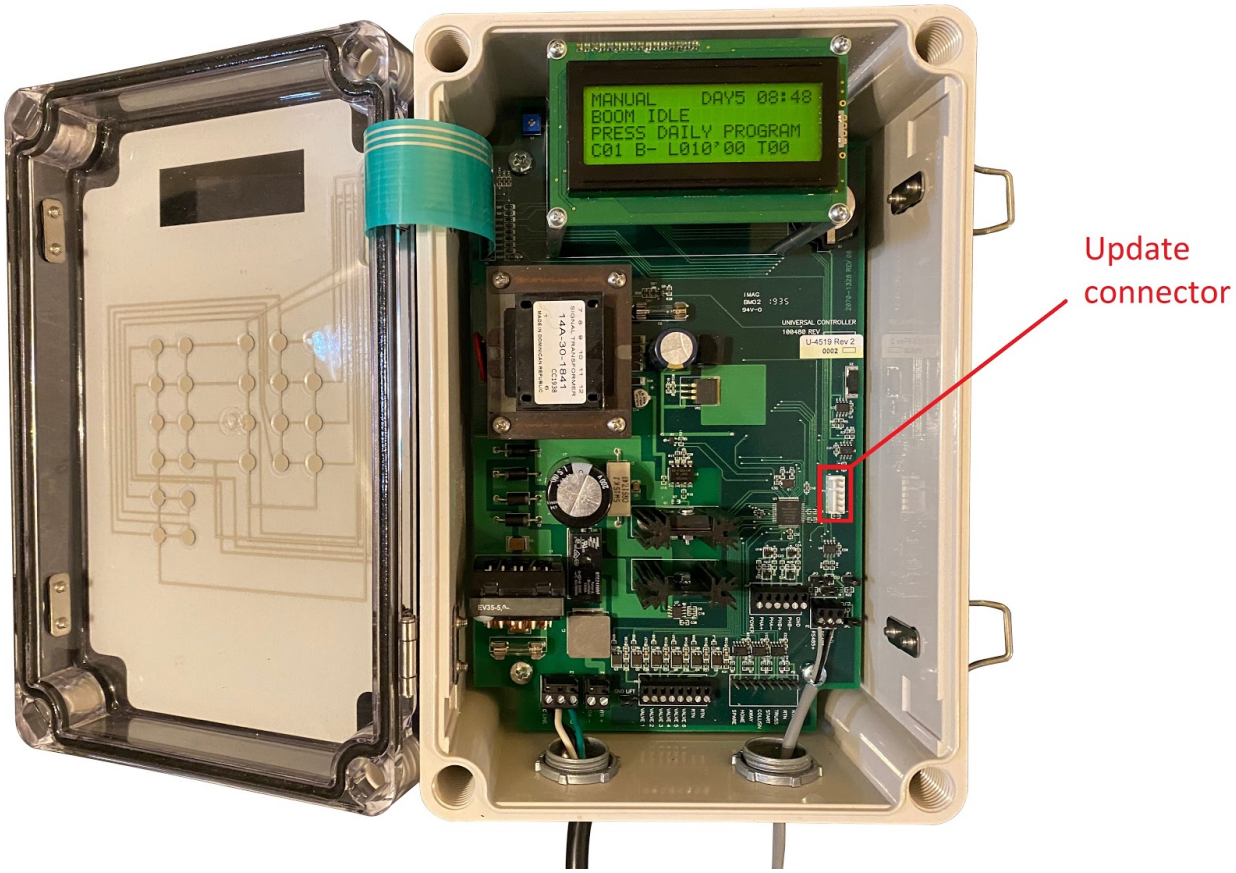
2. Download the New CS3 Software Version

You should have an email from Greenhouse Technology Inc. (greenhousetechnology.com) with a “.HEX” file. This is your new CS3 software! Download it, and maybe save a copy somewhere.

3. Connect the CS3 Controller to Your Computer

If the controller is assembled inside the plastic enclosure

- Connect the power cable to an outlet
- Open the enclosure lid
- *Be careful not to touch the board while it is powered*



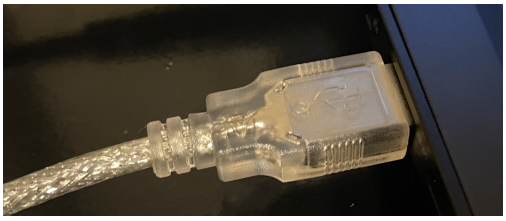
If the board is on its own

- Place it on a clean surface with absolutely no metal pieces or shavings - these might short the board
- Connect a keypad
- Connect a power cable to the board
- *Lastly*, connect the power cable to an outlet
- *Be careful not to touch the board while it is powered*

Connect the PicKit4 to your Computer

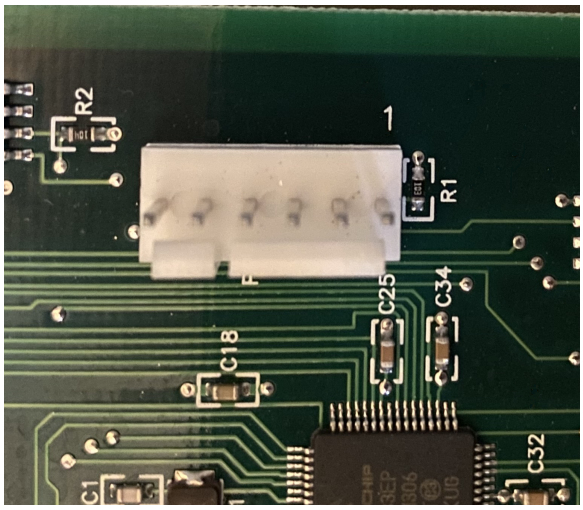
Here's the PICKit4:

It's packaged with a USB-C cable. Connect one end of the cable to the PICkit4, and the other end to a computer.



Connect the PICkit4 to the Common Sense 3 Circuit Board

Pay special care to align the triangle on PICKit4 with the pin marked ‘1’ on the circuit board:



The board only has (6) pins, and the PICKit4 has (8) pin sockets, so the (2) sockets furthest from the triangle are not used.

Once your PICkit4 is connected to the CS3 and your computer, and the light on the PICkit4 is blue, you are ready to program!

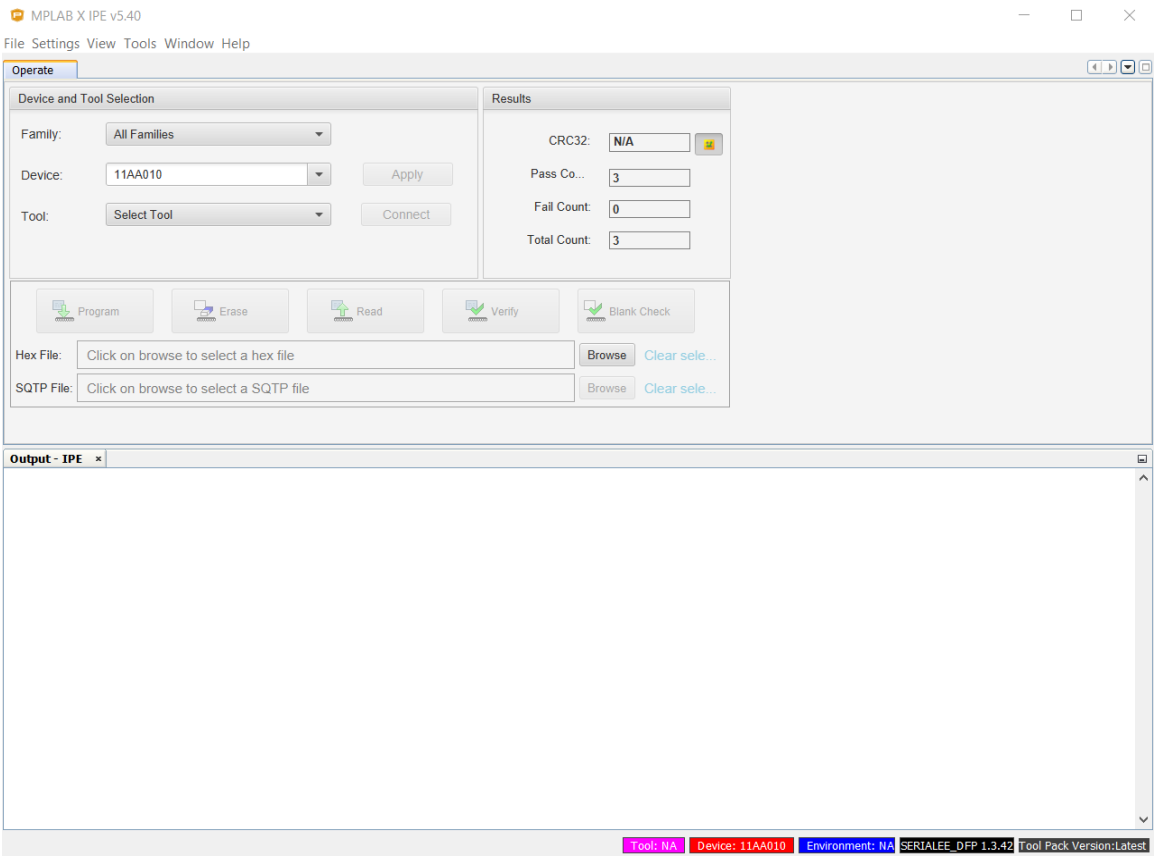
(If the light isn't blue after a few seconds, call GTI Tech support)

4. Update the CS3 Controller

Open the MPLAB X IPE application on your computer.

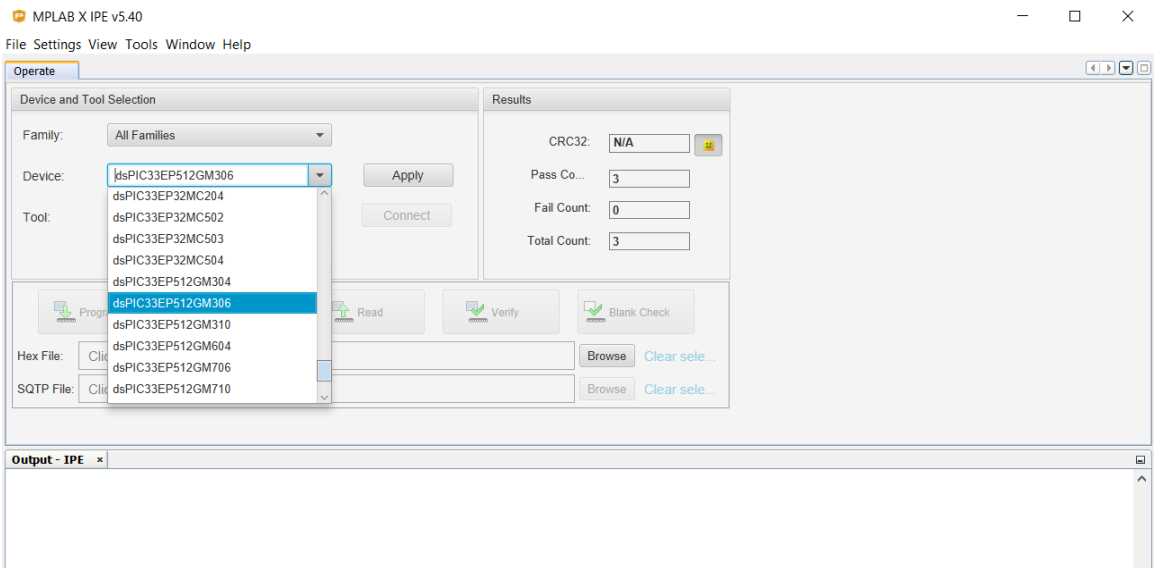
Click the desktop icon for MPLAB X IPE (shown for version 5.40):

This is different from the MPLAB X IDE, which is a development tool.

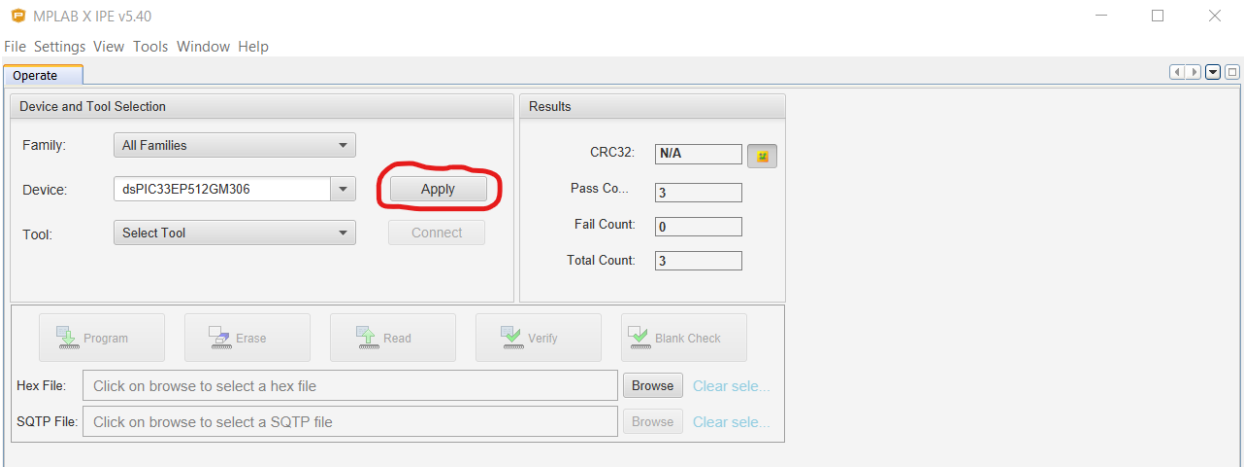


Select the Device

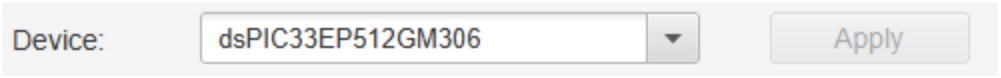
Pick **dsPIC33EP512GM306** in the drop-down (you might have to scroll a bit).



Press “Apply” to finish selecting the processor

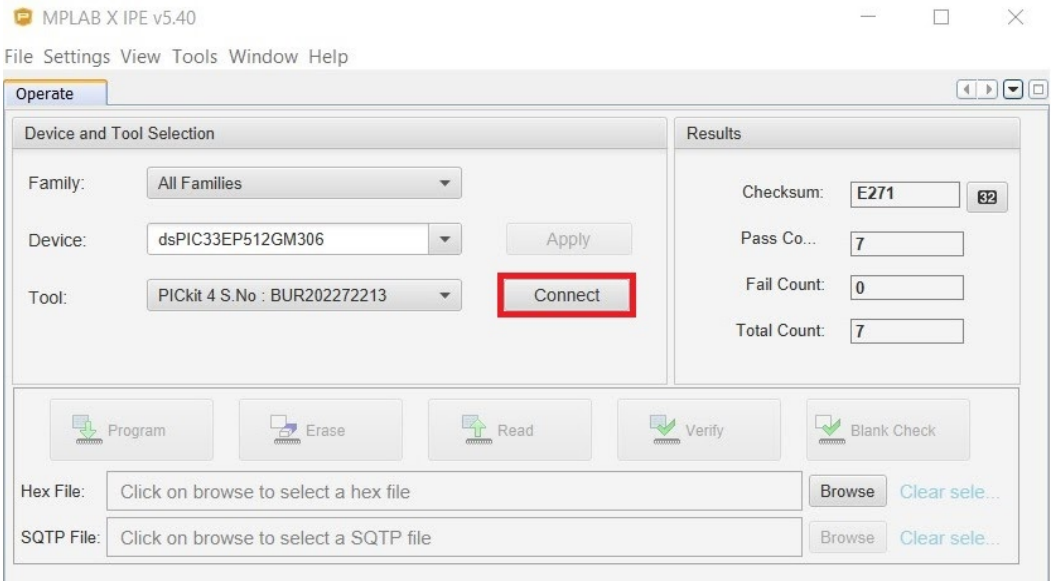


The ‘Apply’ button should be ghosted. This means that the device has been selected!

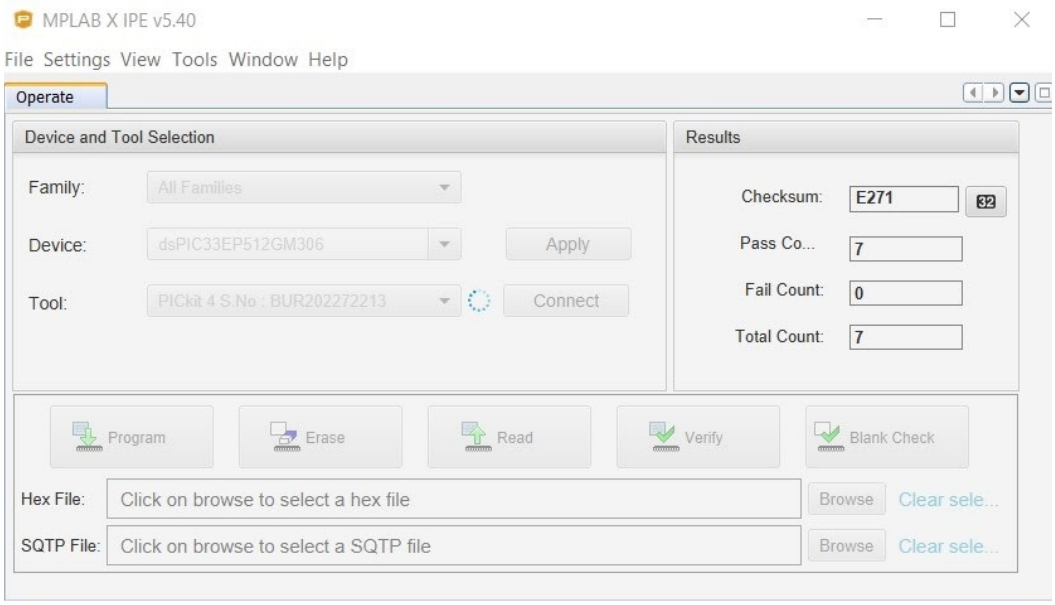


Make the Connection

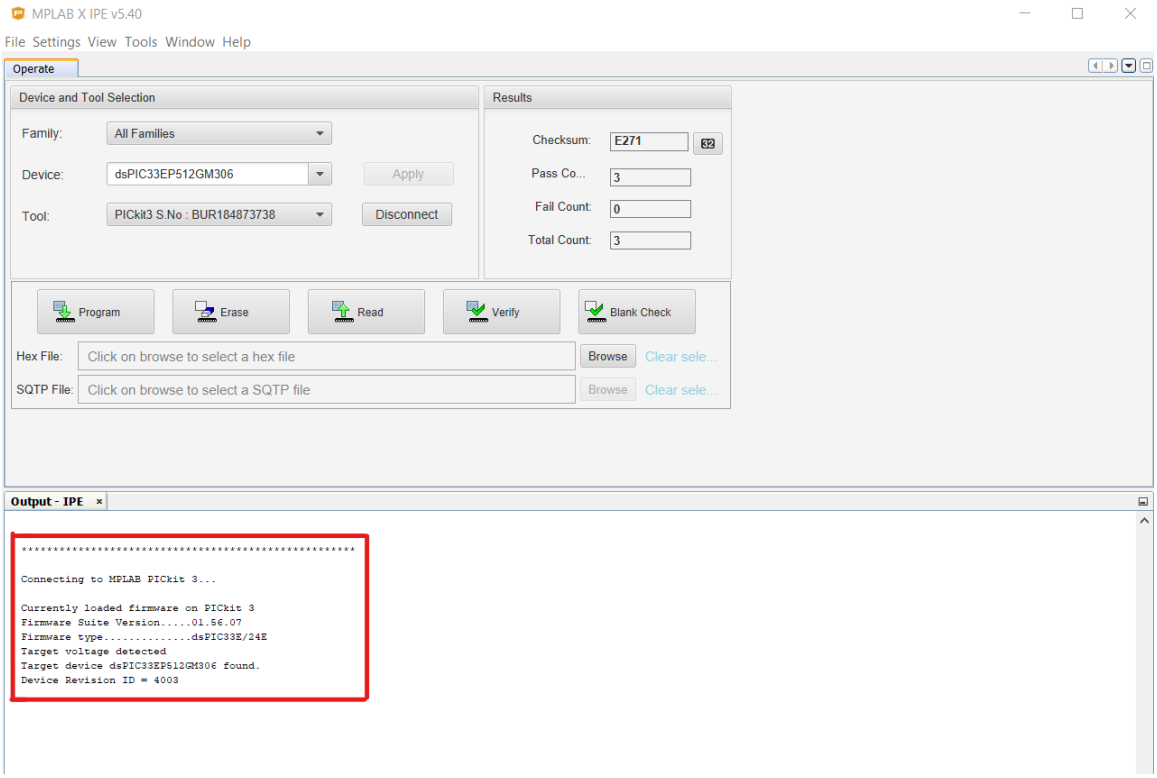
Press the ‘Connect’ button here:



You should see the ‘waiting’ circle - this may take a while



The log tells you if you successfully connect

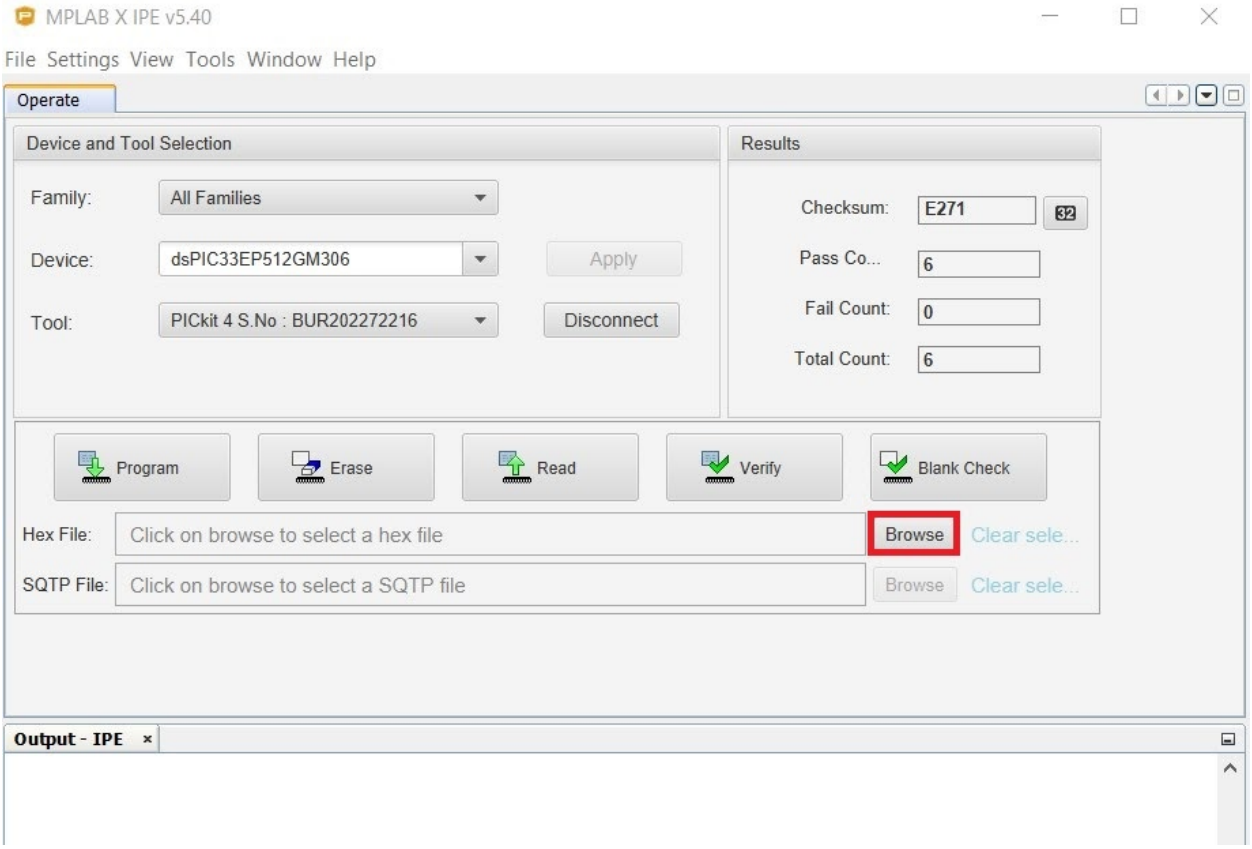


Here’s a typical log entry for a successful connection:

```
**********************************************************

Connecting to MPLAB PICkit 3...

Currently loaded firmware on PICkit 3
Firmware Suite Version.....01.56.07
Firmware type..............dsPIC33E/24E
Target voltage detected
Target device dsPIC33EP512GM306 found.
Device Revision ID = 4003
```

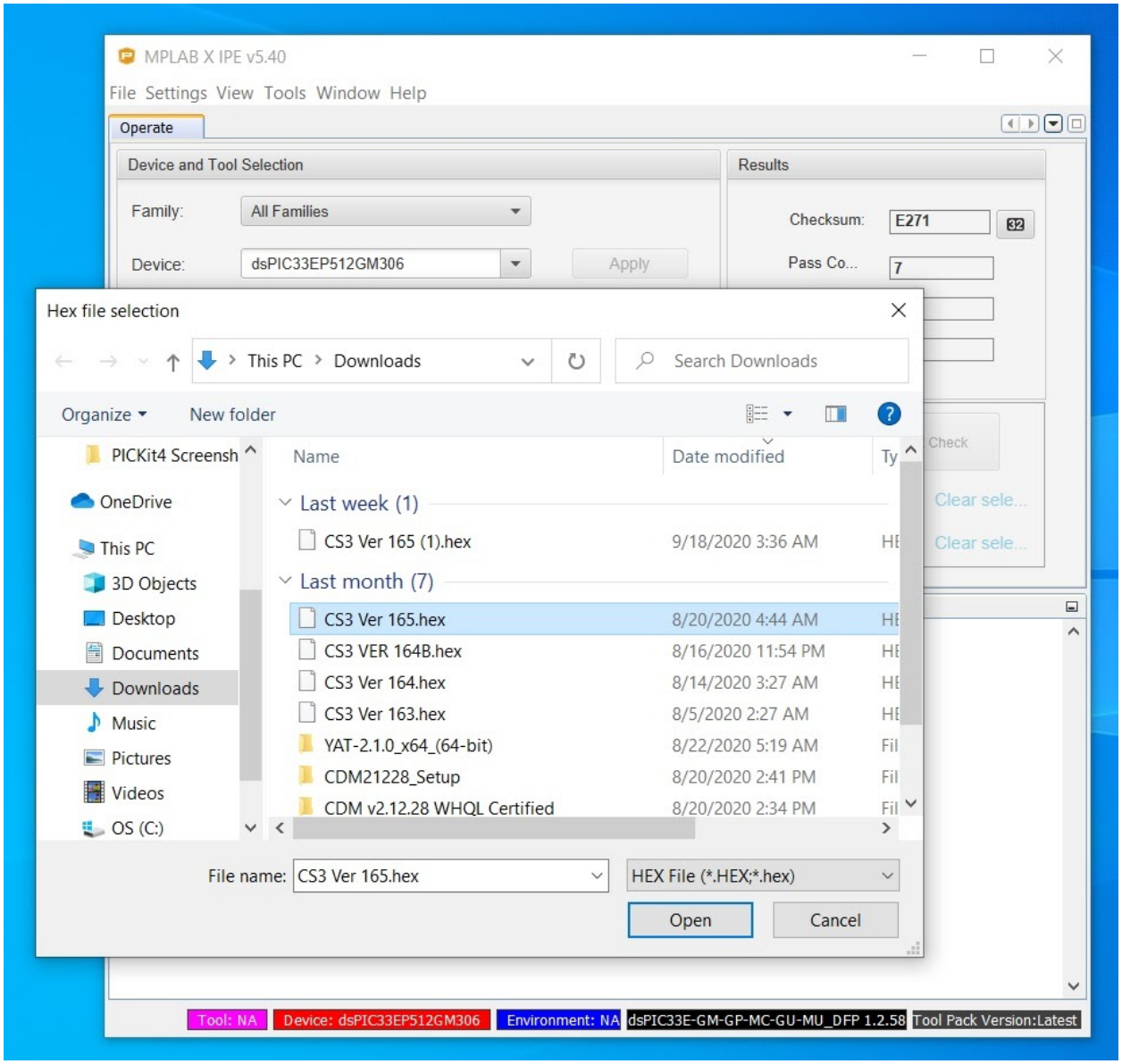
Select the Program File

Press the ‘Browse’ button here:



Browse to the Program File

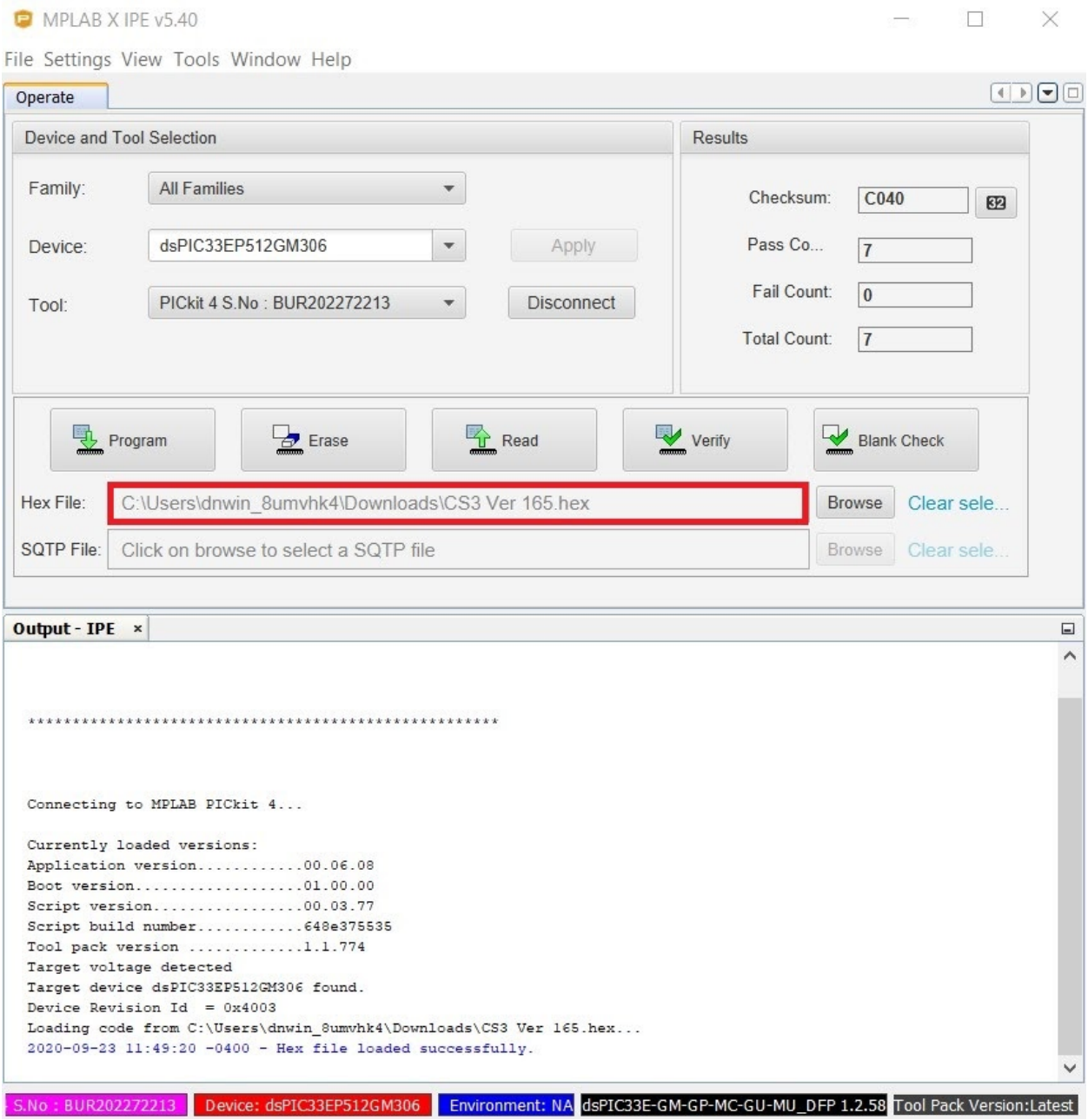
It should end with “.hex” or “.HEX”



then press ‘Open’.

The file should now be visible in the MPLAB IPE window

Here:

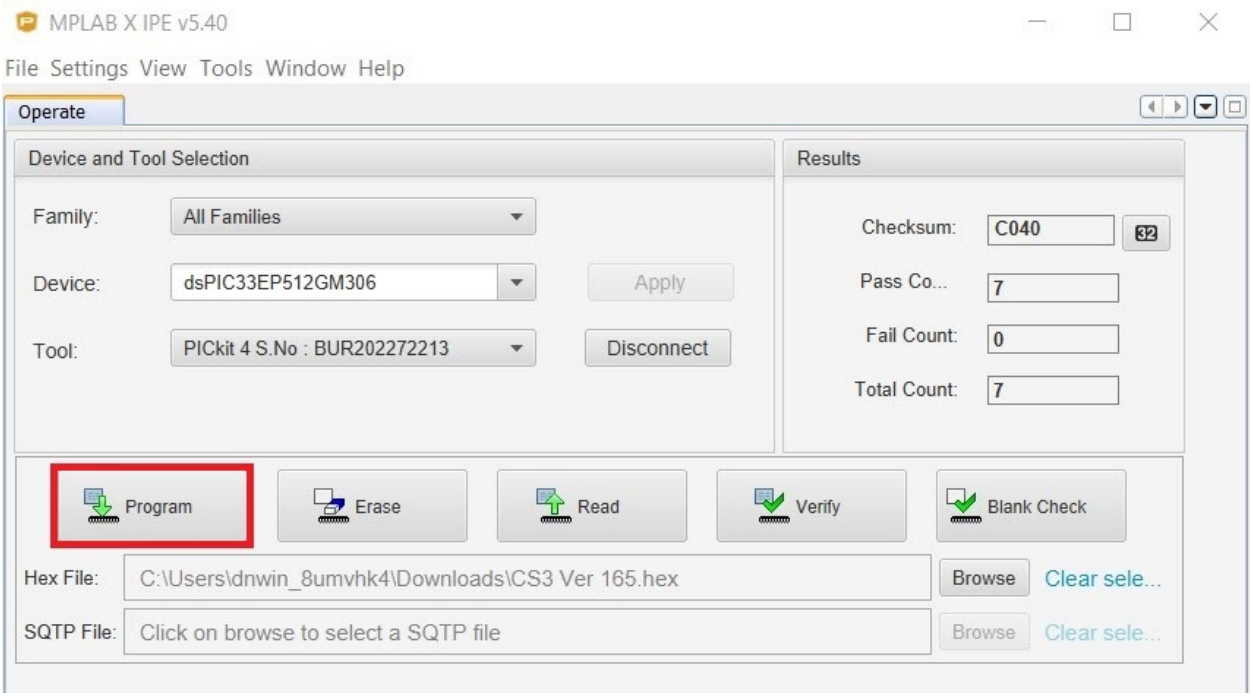


And the log should confirm that the file has been successfully loaded - here's a typical log entry for a successful file load:

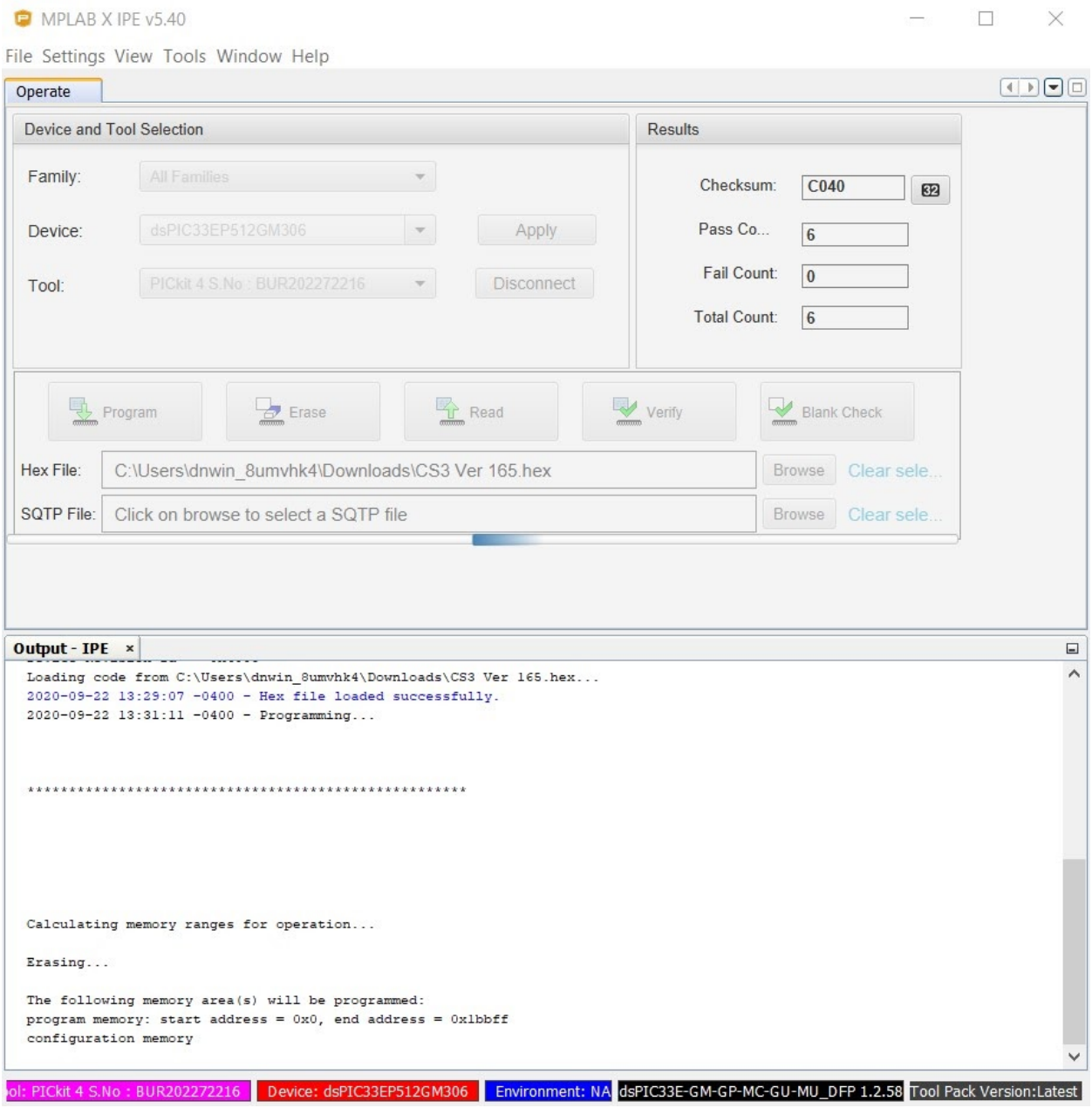
```
**********************************************************


Connecting to MPLAB PICkit 4...

Currently loaded versions:
Application version.............00.06.08
Boot version....................01.00.00
Script version..................00.03.77
Script build number.............648e375535
Tool pack version ..............1.1.774
Target voltage detected
Target device dsPIC33EP512GM306 found.
Device Revision Id  = 0x4003
Loading code from C:\Users\dnwin_8umvhk4\Downloads\CS3 Ver 165.hex...
2020-09-23 11:49:20 -0400 - Hex file loaded successfully.
```

Program

Press the 'Program' Button:



A blue strobe should flash side-to-side:



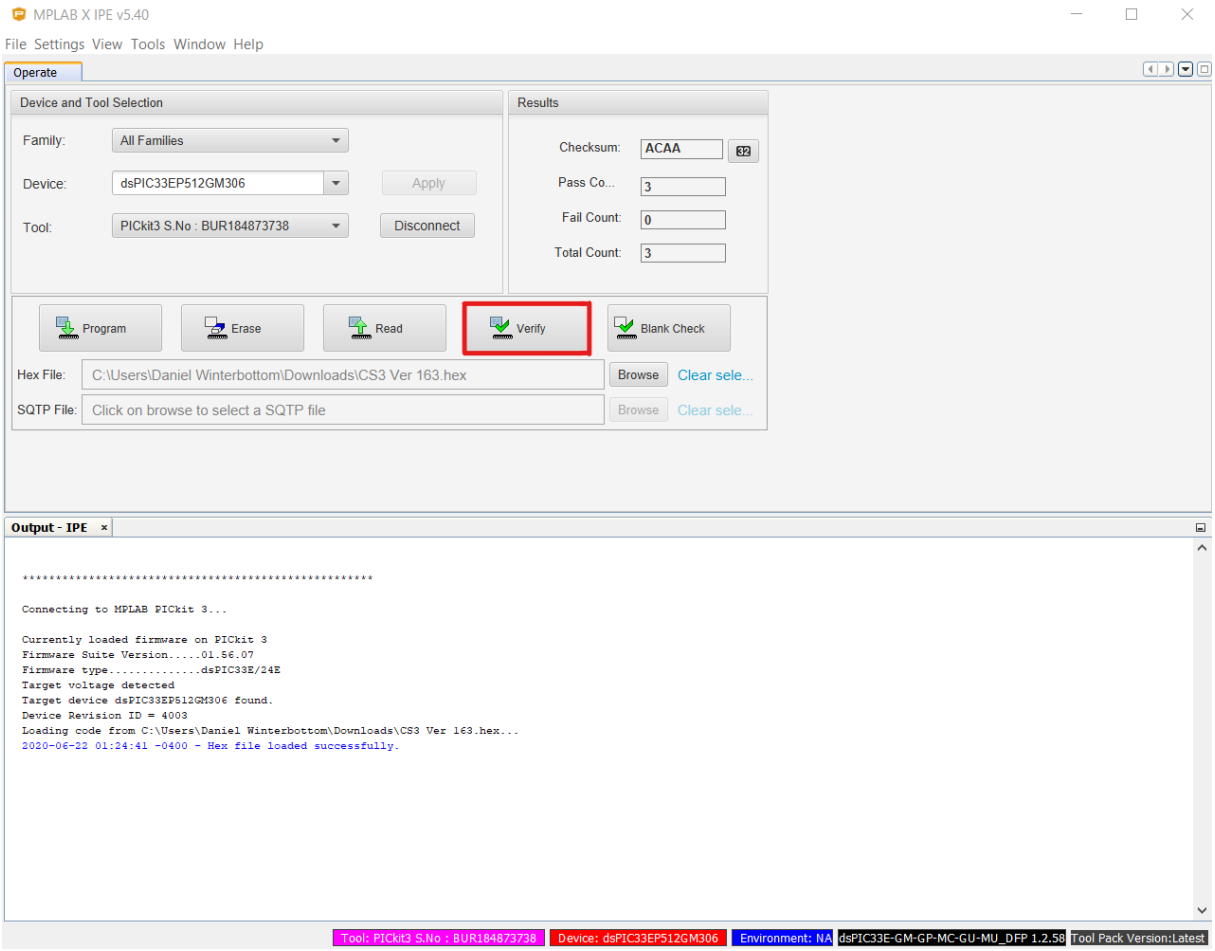
and some new lines should begin appearing in the log.

When you are finished, the log should look something like this:

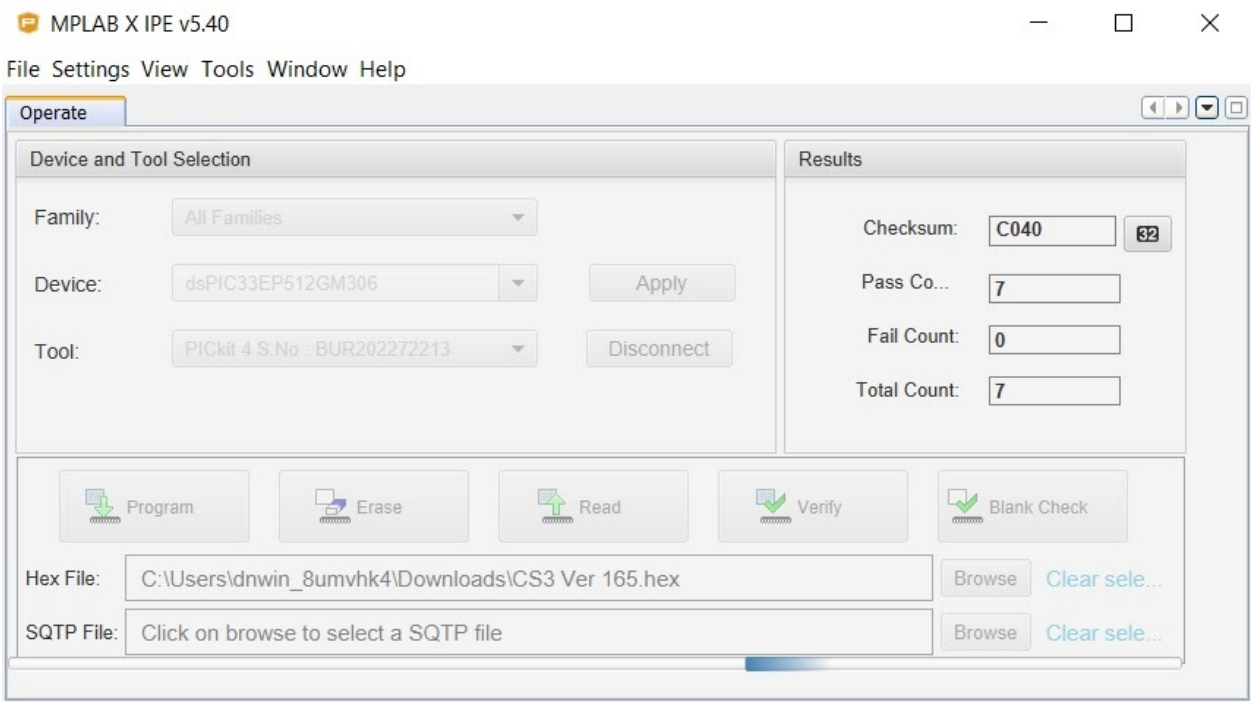
```
Device Erased...

Programming...

The following memory area(s) will be programmed:
program memory: start address = 0x0, end address = 0x1b7ff
configuration memory
Programming/Verify complete
2020-06-22 01:32:31 -0400 - Programming complete
```

Verify

After waiting for Programming to finish, press the ‘Verify’ button:



Once again, you should see a blue strobe:

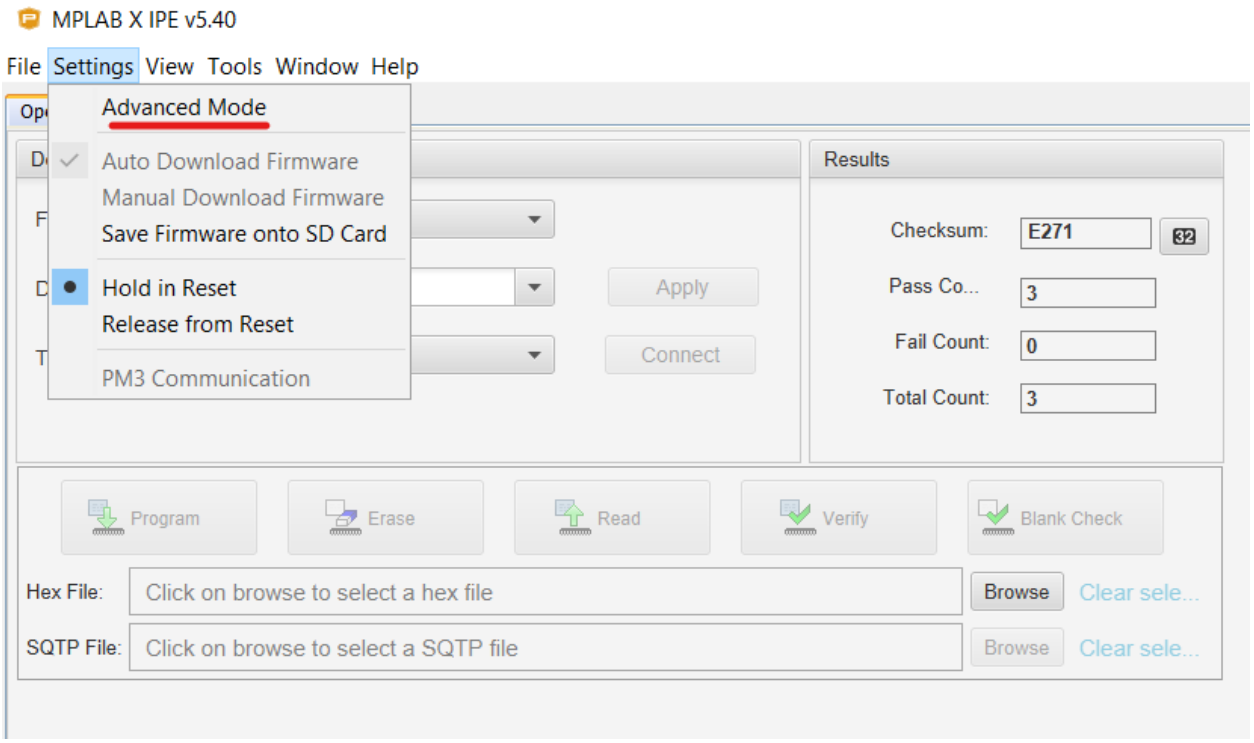


and new lines appearing in the log. After a successful verification, the strobe should disappear, and the log should look something like this:

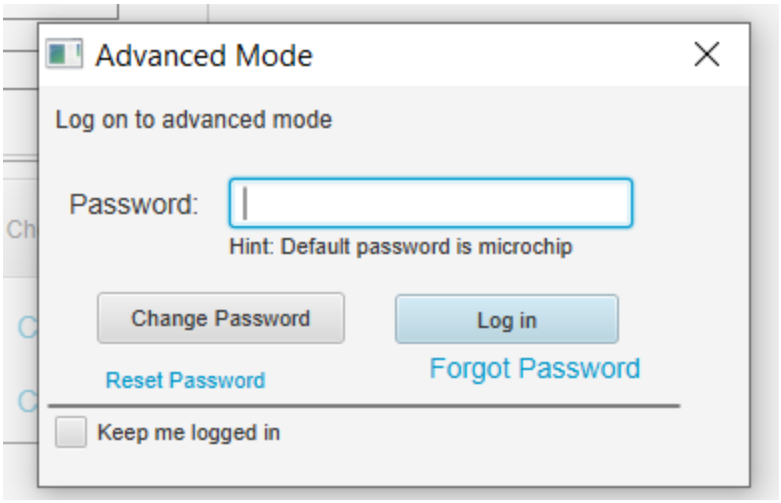
```
Verifying...

The following memory areas(s) will be verified:
program memory: start address = 0x0, end address = 0x557eb
configuration memory
User Id Memory

Verification successful.
```

5. If Verification Fails

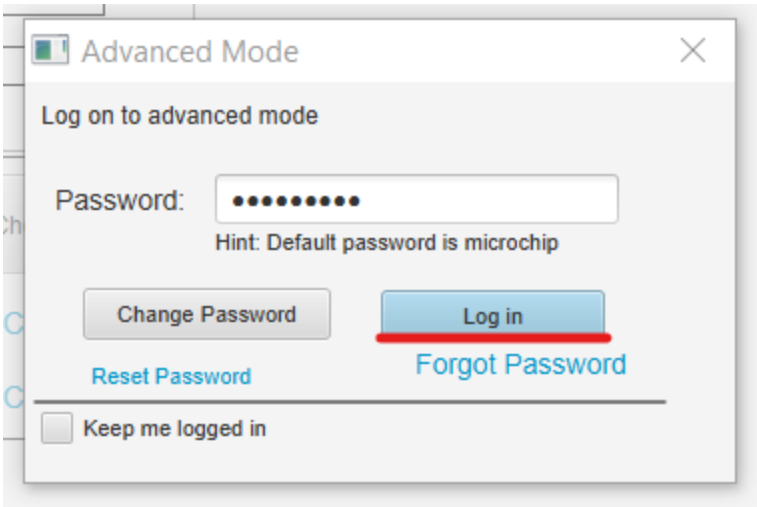
This might mean that MPLabX IPE is writing to the wrong memory regions. From the Support menu, select ‘Advanced Mode’:



A login window pops up:

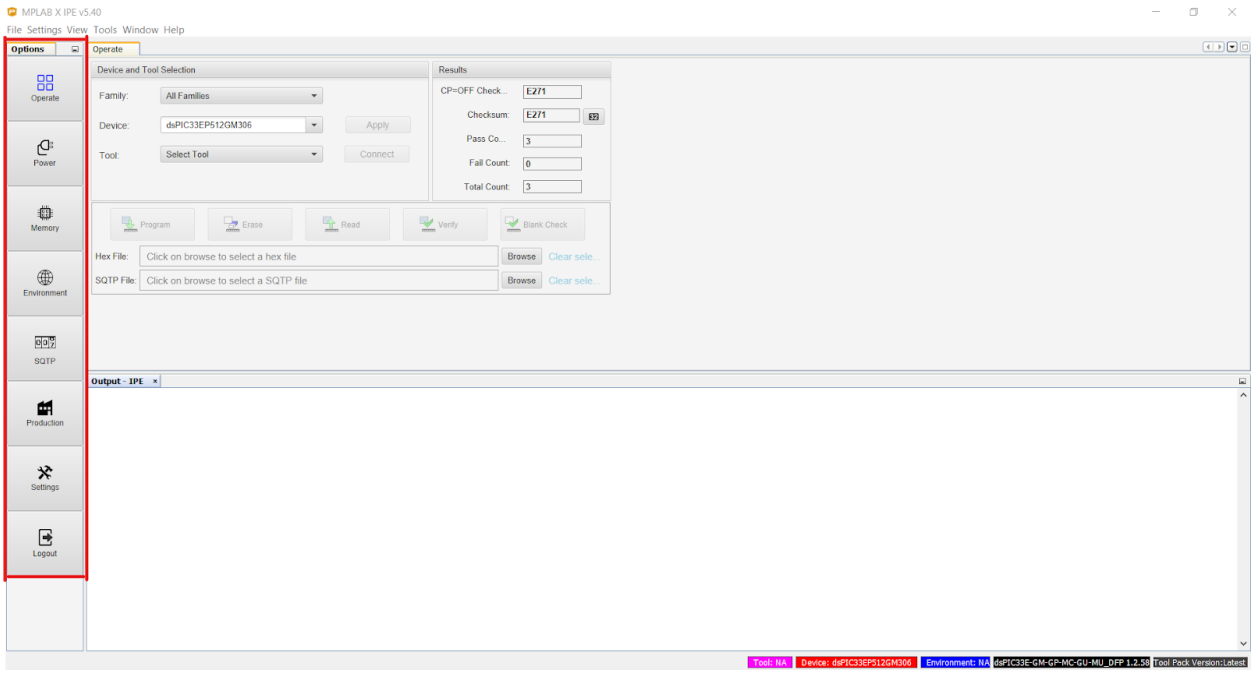


Enter ‘microchip’ as indicated,



And press ‘Log in’.

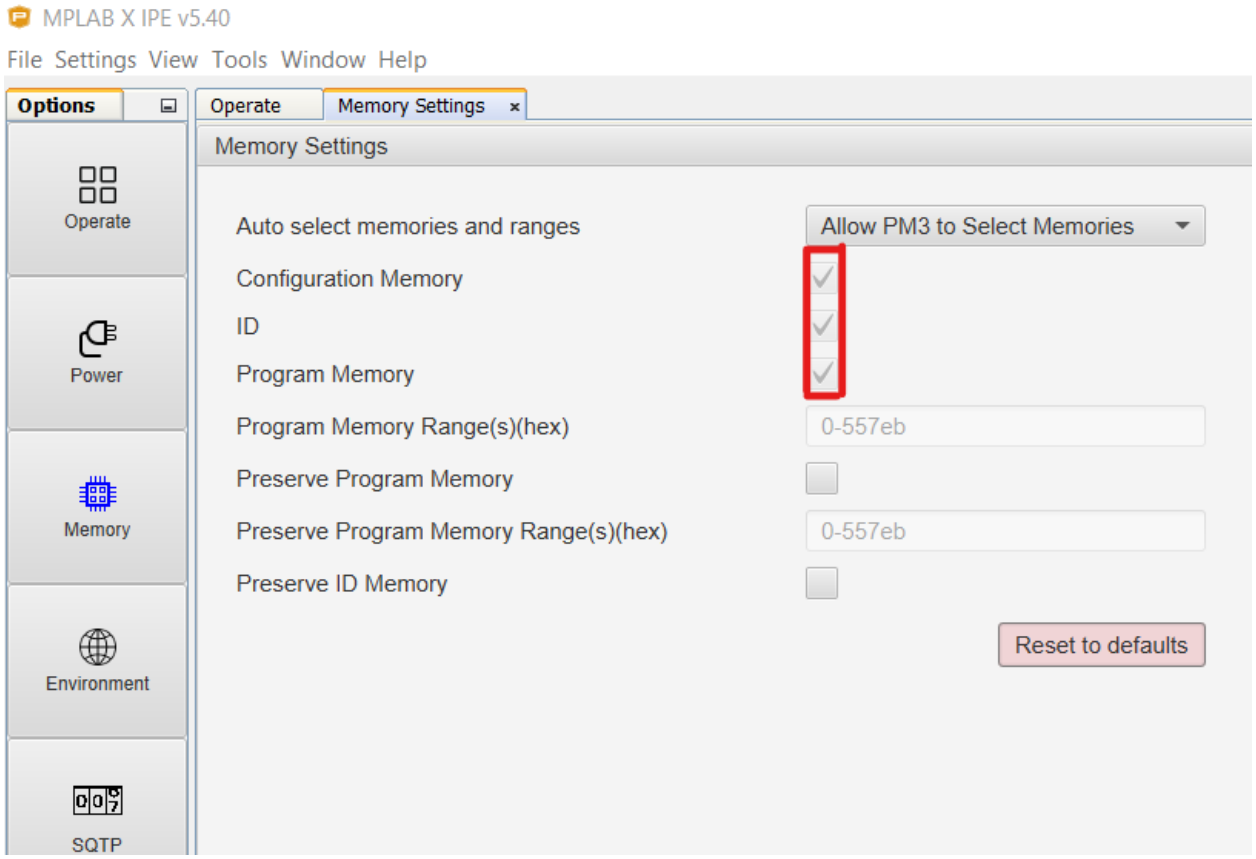
Welcome to Advanced Mode - it looks the same as normal mode, but has an extra sidebar:



From this sidebar, select ‘Memory’, and make sure the:

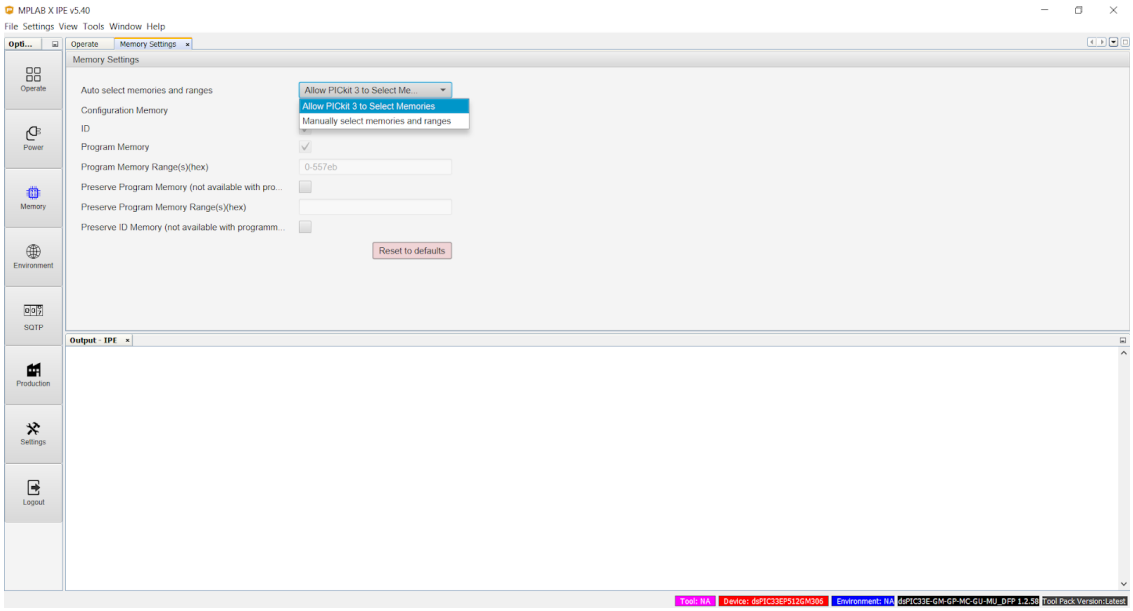
- Configuration Memory
- ID
- Program Memory

Are all selected.

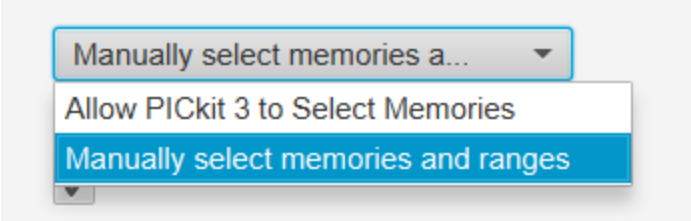


If they are checked as shown, and verification failed, then memory ranges might not be the problem. Call GTI Tech Support: 859.626.3001

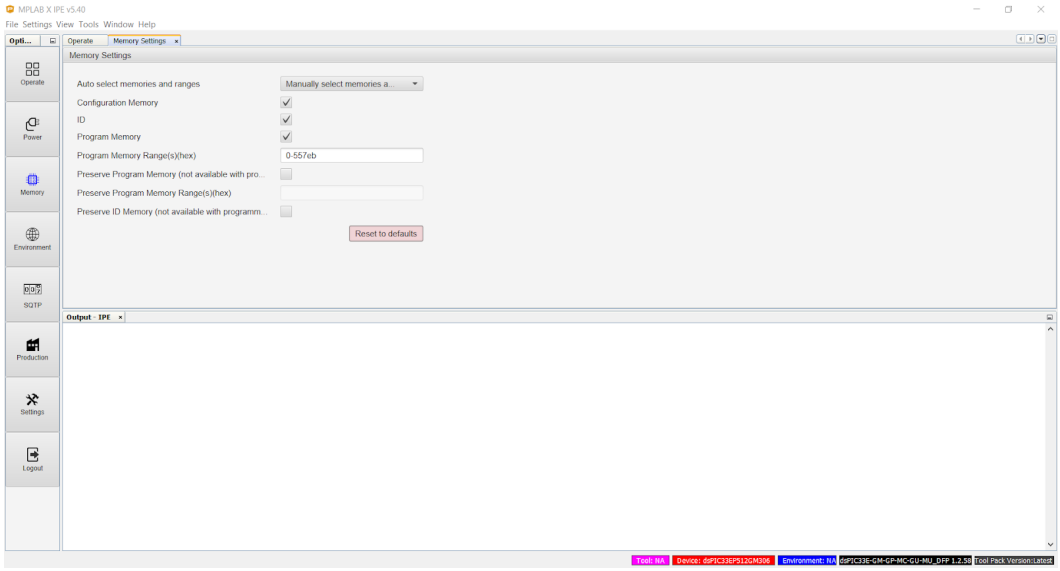
If they aren’t checked, click the drop-down right above the checkmarks,



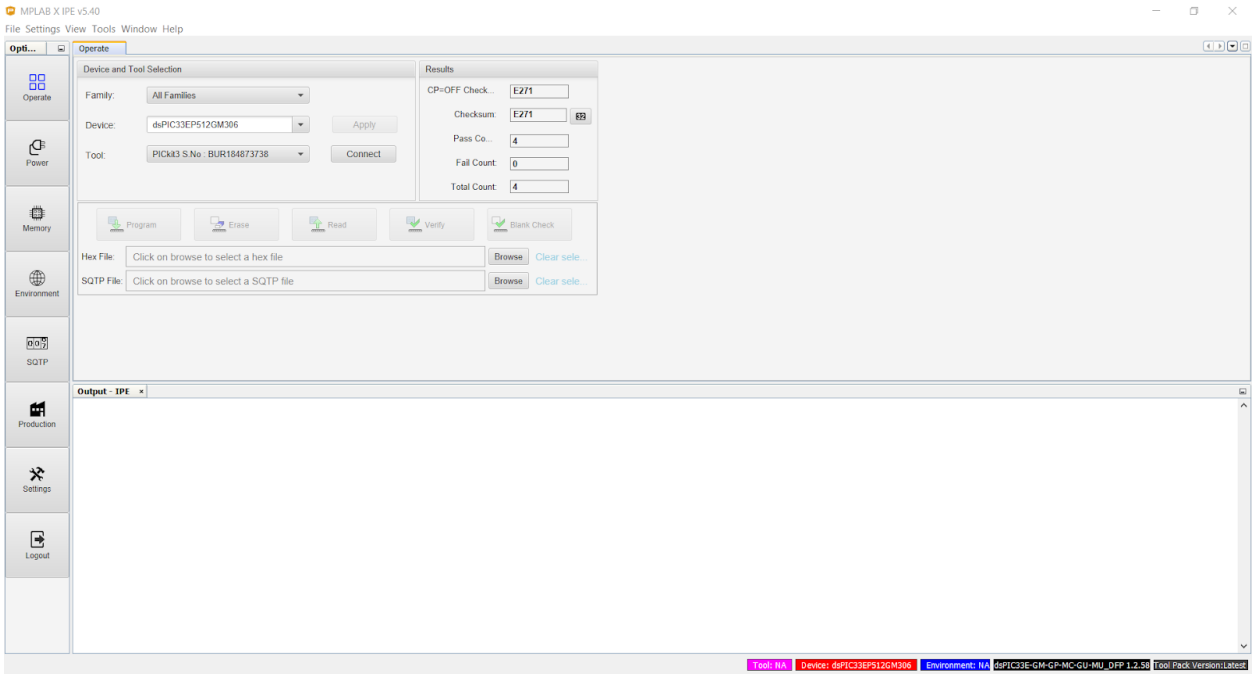
and select the ‘Manually select memories and ranges’ option,



then check all three boxes. *DON’T CHANGE ANYTHING ELSE!*



From here, press the ‘Operations’ button:



Proceed as before.