# Downloading a Sample Program over USB

*This document is a guide for downloading and running programs on the VEX Cortex using the USB A-to-A cable.*

You will need:

- 1 VEX Cortex Microcontroller with one 7.2V Robot Battery
- 2 Motor Modules connected to MOTOR ports 2 and 3 on the VEX Cortex
- A computer with ROBOTC for Cortex and PIC installed
- 1 USB A-to-A Cable

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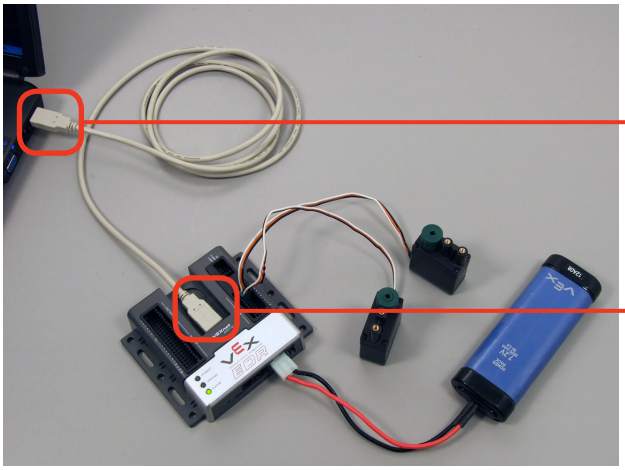
**1.** Leaving the POWER switch in the OFF position, connect your Cortex to the computer using the USB A-to-A cable. Once the cable is attached, move the POWER switch to the ON position.

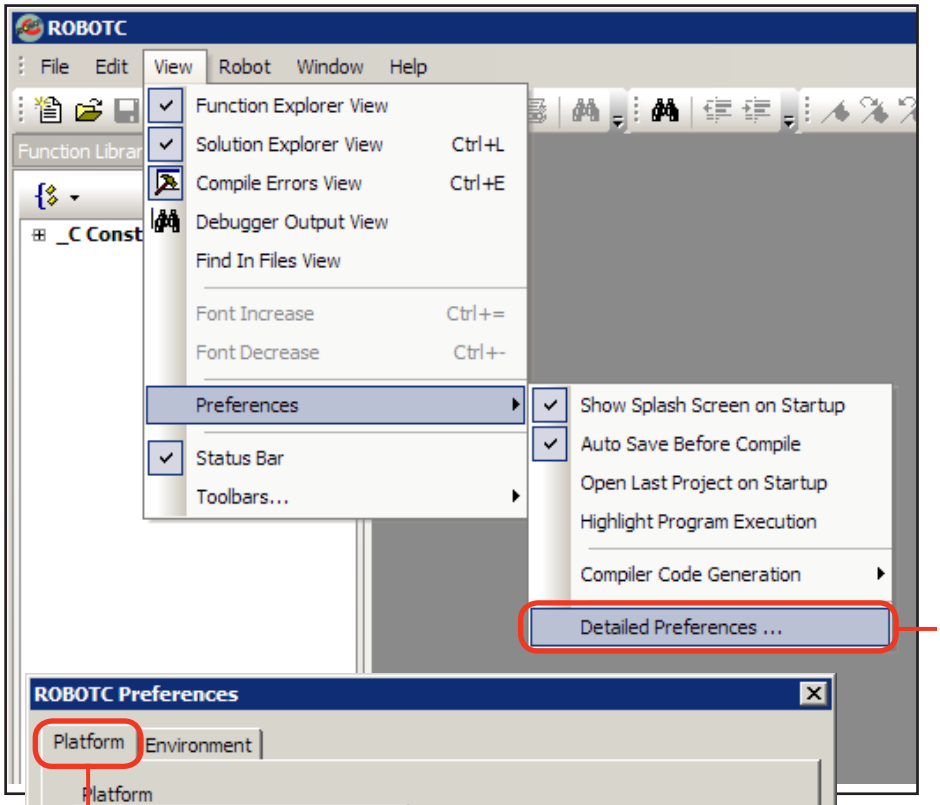


***1a. Connect the Cortex to your PC***
Use the USB A-to-A cable to connect your Cortex to your PC.

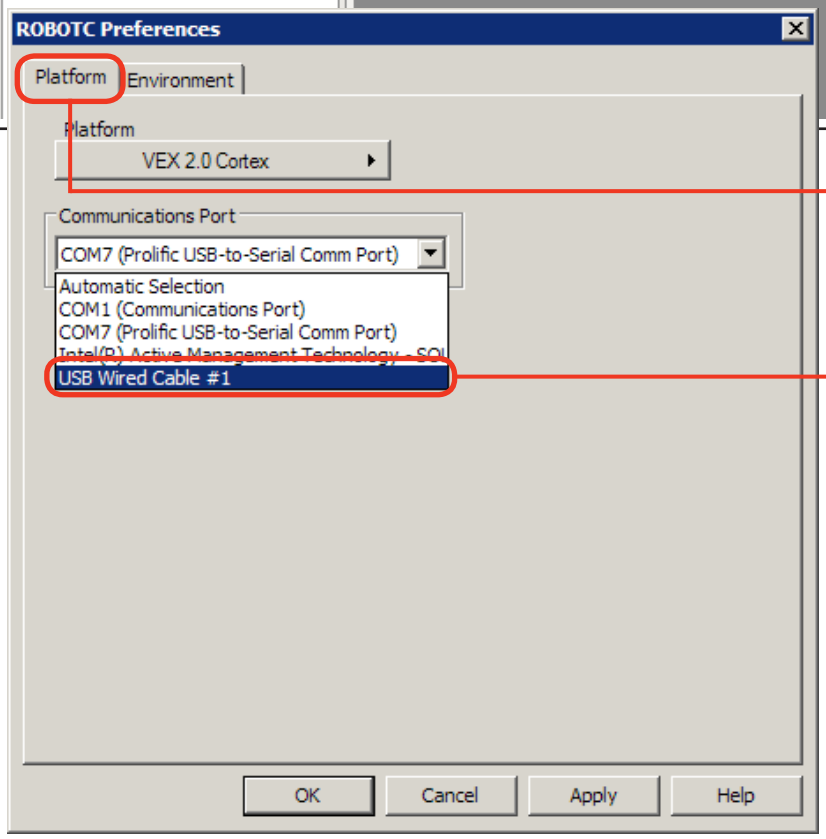

***1b. Turn the Cortex ON***
Make sure a 7.2V Robot battery is connected and move the POWER switch on the Cortex to ON.

# Downloading a Sample Program over USB *(cont.)*

**2.** Specify how your Cortex is connected to the computer in the ROBOTC Preferences.




**2a.** ***Detailed Preferences...***
Go to *View* > *Preferences* and select *Detailed Preferences...*

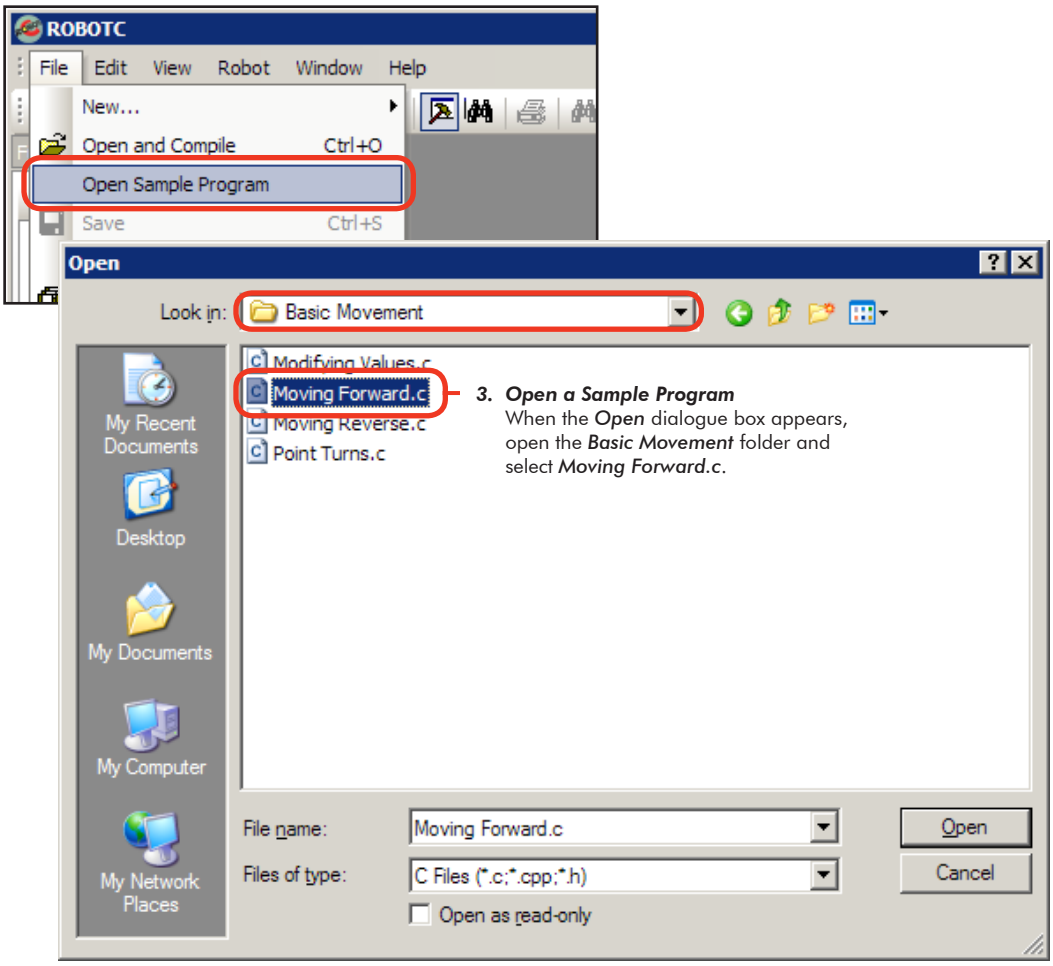



**2b.** ***Platform Tab***
Make sure that the *Platform* tab is selected on the *ROBOTC Preferences* window.

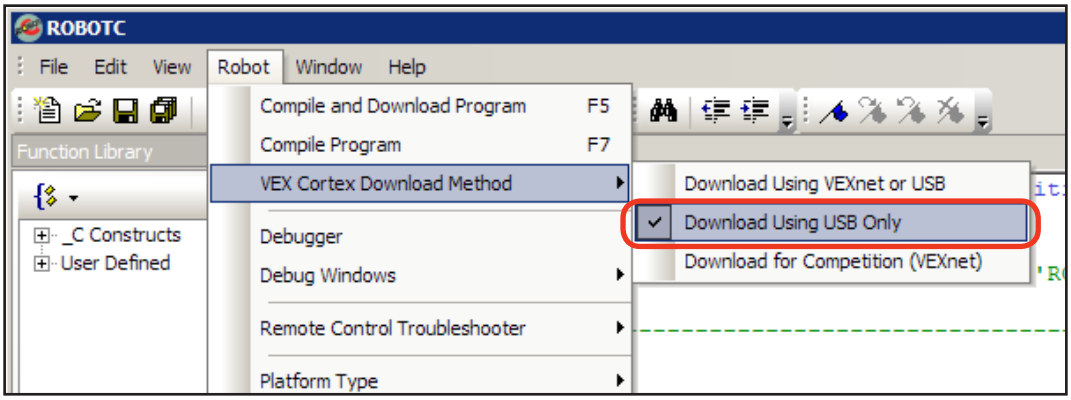
**2c.** ***Communication Port***
To program directly over the USB A-to-A cable, select the option that specifys the *USB Wired Cable*. Press *OK* to finalize your setting.

# Downloading a Sample Program over USB *(cont.)*

**3.** Go to *File* and select *Open Sample Program* to open a ROBOTC sample program.

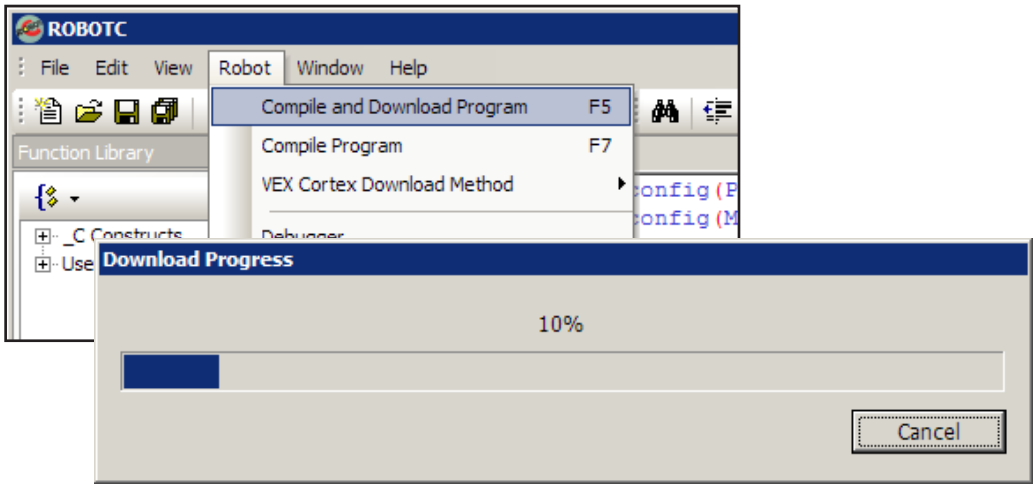



**4.** Specify the *Download Using USB Only* as the *VEX Cortex Download Method*. ROBOTC will remember your choice, so you do not need to select it every time you download a program.



# Downloading a Sample Program over USB *(cont.)*

**5.** Go to ***Robot*** and select ***Compile and Download Program*** to download the sample program to the robot.



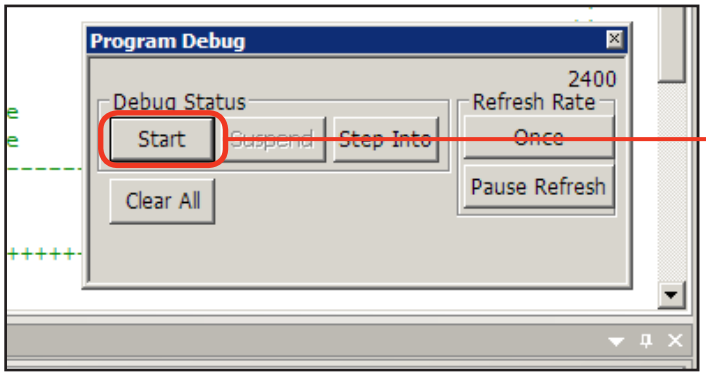

***5. Download Progress***
A ***Download Progress*** window will appear and begin the download process. When the window closes, the program download is complete.

### *Important Information - Power Cycle the VEX Cortex*

In addition to ROBOTC, the VEX Cortex also remembers your Download Method setting. If this is the first time that you have chosen *"Download Using USB Only"*, or if you just switched from *"Download Using VEXnet USB"* or *"Download for Competition (VEXnet)"*, you will need to completely power cycle your Cortex (unplug the USB cable, power the Cortex OFF and then ON) before the updated setting takes effect and the program runs immediately.

The process of power cycling your Cortex is required any time you switch the Download Method setting.

**6.** Run the program on your robot by pressing the Start button on the Program Debug window, or by power cycling the Cortex.




***6a. Program Debug window***
The ***Program Debug*** window appears every time you download a ROBOTC program to your robot. Press the ***Start*** button to run the program.

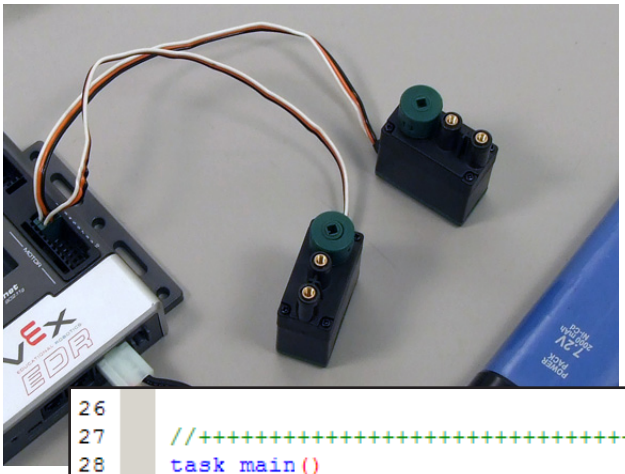
**Note:** Remember that you may need to power cycle your Cortex for the program to immediately run, if you are using ***Download Using USB Only*** the first time, or have just switched from another method.

# Downloading a Sample Program over USB *(cont.)*


***6b. Power Cycle the Cortex***
You can also run the program by turning the Cortex OFF, and then ON.

**Note:** The USB cable provides some power to the Cortex, so it must be unplugged to fully turn the Cortex OFF. Closing the ROBOTC Program Debug window before unplugging the USB cable is recommended.

**7.** Observe the sample program running on the robot. The motors plugged into MOTOR ports 2 and 3 should spin for 3 seconds, according to the ROBOTC program.



```
26
27    //++++++++++++++++++++++++++++++++++++++++++++++| MAIN |++++++++++++++
28    task main()
29    {
30      wait1Msec(2000);            //Robot waits for 2000 milliseconds be
31
32      //Move forward at full power for 3 seconds
33      motor[rightMotor] = 127;    //Motor on port2 is run at full (127)
34      motor[leftMotor]  = 127;    //Motor on port3 is run at full (127)
35      wait1Msec(3000);      //Robot runs previous code for 3000 millisec
36    }                       //Program ends, and the robot stops
37    //++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
38
```

**End of Lesson**
In this lesson you learned how to program your robot directly over the USB A-to-A cable. If you experienced issues with the process, make sure you've follwed every step, and then reference the troubleshooting section below.