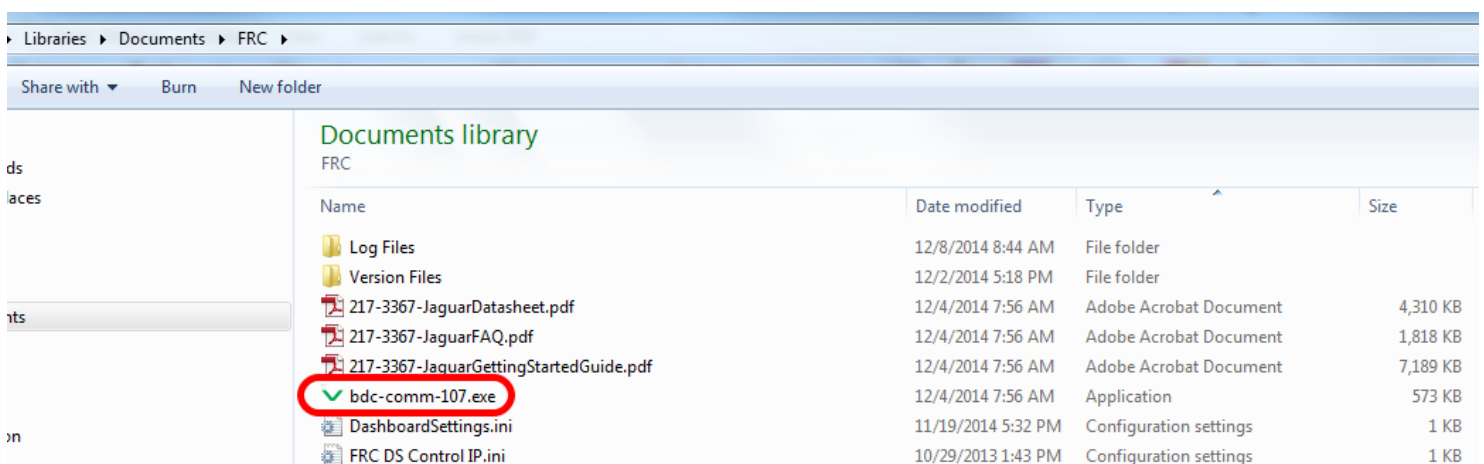# Updating CAN Jaguar Firmware

To use CAN Jaguars with the 2015 Control system, teams will have to update them to the latest version of the firmware. The recommended method to do so is by using the serial interface and the BDC-Comm software tool.

Cable and configuration

Using BDC-Comm requires a serial port (or USB->Serial adapter) on a Windows PC. You will also need a DB-9 to RJ-11 adapter cable. Instructions for building this cable if necessary can be found on page 24 and 25 of the Jaguar Getting Started Guide.

For updating firmware it is recommended to have the minimum number of devices on the bus. For Black Jaguars this means that you should connect the DB-9 to RJ-11 cable directly to the left RJ-11 port (when looking at the Jaguar with the fan housing at the back) on the Jaguar being updated and nothing should be connected to the right port. For Grey Jaguars, you will need to have one Black Jaguar serve as the RS232 to CAN bridge; connect the DB-9 to RJ-11 cable to the left port of a Black Jaguar and a RJ-11 to RJ-11 "reverse" cable between the right port of the Black Jaguar and either port of the Grey Jaguar (for details on this cable, see the CAN cable section on Page 23 of the Jaguar Getting Started Guide.)
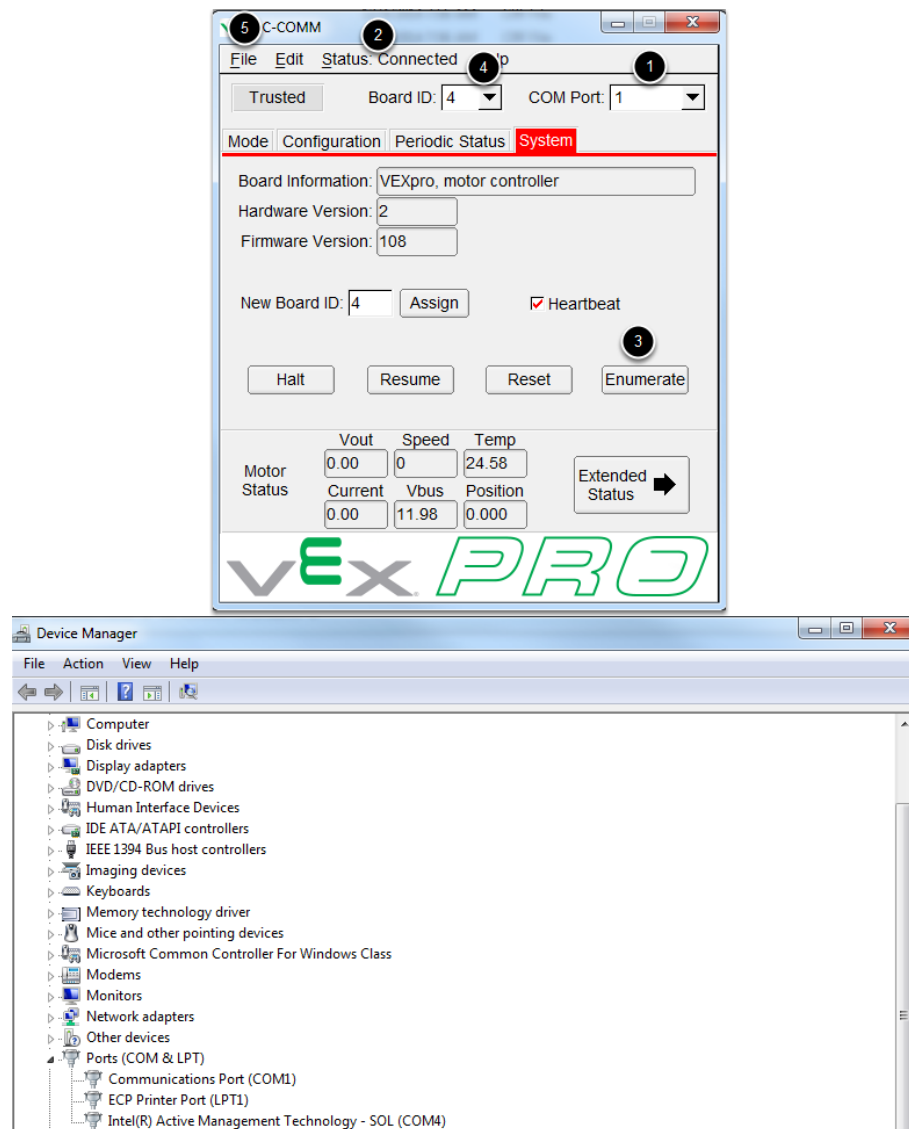
Running BDC-Comm

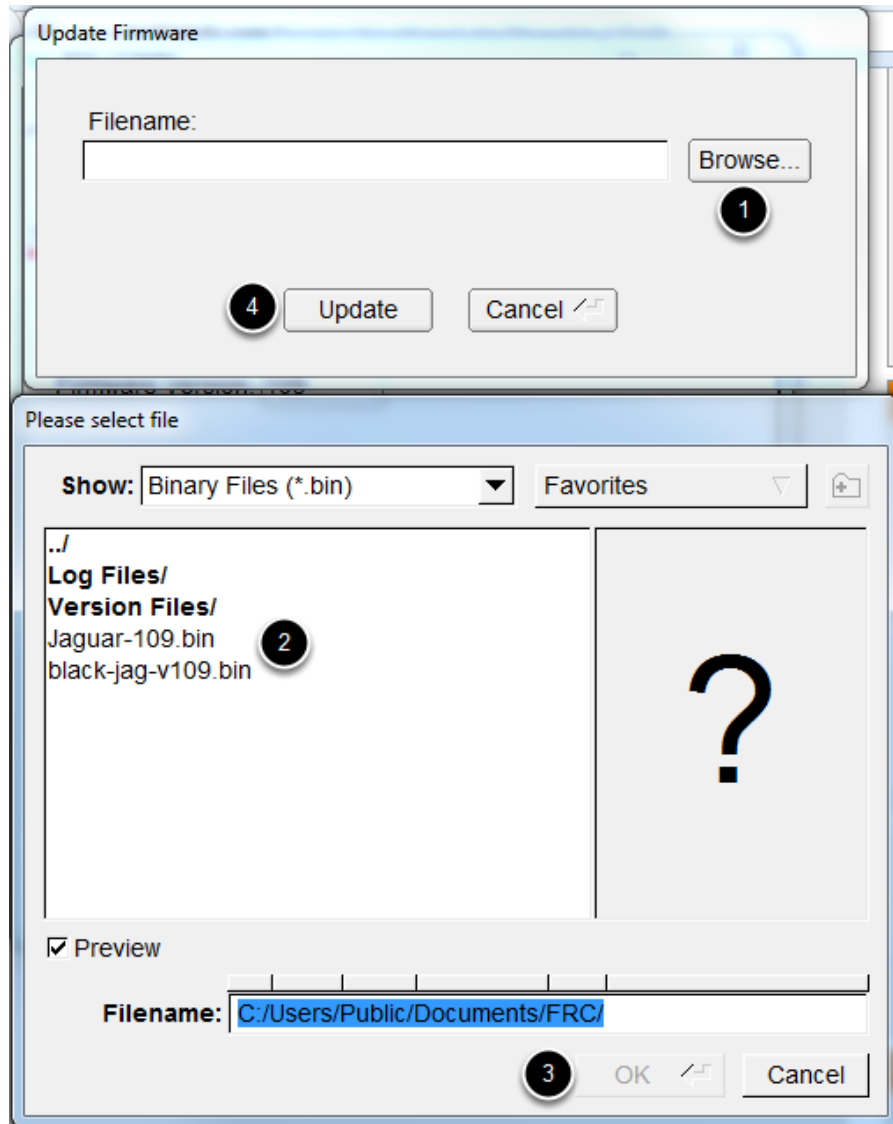Navigate to **C:\Users\Public\Documents\FRC** and double click on the BDC-Comm executable.

Using BDC-Comm

1. Select the correct COM port to match the serial connection you are using. If you're unsure, you can open Control-Panel->Device Manager and expand the "Ports (COM&LPT)" listing to view descriptions of all of the ports. In the second image above, you can see that COM1 is the regular serial port and COM4 is an internal port for some Intel technology that's part of the computer.
2. Verify that this menu title reads "Status: Connected". If not, click on the menu and select the Connect button
3. Click Enumerate

4. Verify that a Board ID shows up in this box. If you are updating a Grey Jag (so you have 2 Jags on the bus), select the Board ID for the Jag you want to update.
5. Select File->Update Firmware

Selecting Firmware

1. Click the browse button
2. Select the correct firmware to upload (Jaguar for Grey Jaguars, black-jag for Black Jaguars)
3. Click OK
4. Click Update

A progress bar should appear indicating the status of the update process. When the update completes, the progress bar dialog will disappear and the Firmware Version field on the BDC-Comm page should update to reflect the new firmware.

Troubleshooting

The section lists troubleshooting steps for some common issues encountered when attempting to update Jaguar firmware.

Unable to Connect to Serial Port

If BDC-Comm is unable to connect to the serial port it may be because the port is already in use by another program, cannot be accessed by the user running the program or it may indicate an issue with the driver for the port or adapter.

1. Restart the computer, then re-open BDC-Comm and try again.
2. Close as many programs as possible, restart BDC-Comm and try again.
3. Re-open BDC-Comm by right clicking on it and selecting Run as Administrator and try again.
4. Follow any vendor instructions to re-install the drivers for your USB to Serial converter and try again.

Board ID does not appear

If the lights on the Jaguar are behaving normally but the device will not enumerate (Board ID does not appear in the box), check that all cables are correctly made and properly secured. Check if you can contact another Jaguar using the same cables and computer, if another Jaguar works properly you need to verify that the spring contacts of the Jaguar CAN port are not bent or pressed in. Carefully pulling these contacts outwards may result in better connection, causing the Jaguar to function properly again.

Jaguar LED off

If the Jaguar is properly powered and the Jaguar LED does not light at all, there are two possible causes:

1. The Jaguar has been damaged to the point it does not properly power on.
2. The Jaguar firmware has been erased or corrupted and the Jaguar is stuck in the bootloader.

Jaguars in the second scenario can be revived by using the Recover Device menu option from inside BDC-comm