

## **Important Full-Size Robot Controller Upgrade Information**

Please read the following very carefully to determine if you wish to upgrade your 2004 Full-size Robot Controller before competition.

There are two issues involved, and two updates to perform if you wish to correct the problems.

### **ISSUE ONE:**

In our current Default Code we do not initialize the PWM and Relay outputs at the beginning of Autonomous Mode. Therefore stale PWM and Relay values can be output for the entire Autonomous period. This could cause your robot to be stuck with the last output values calculated from OI joystick or switch inputs during the Disabled period before a match (i.e. a bumped trim tab). Therefore, if your joysticks were not centered, for example, your robot could be stuck with active PWMs, causing it to drive forward continuously, even if you wrote no Autonomous code.

### **FIX ONE:**

1. If you wrote your own code, to avoid issue one you must initialize all of your PWM and Relay outputs at the beginning of the User\_Autonomous\_Code function in user\_routines\_fast.c. New FRC Default Code has been put online which has an example of this initialization.
2. Even if you have never modified the Default Code and you are still running the original code that came in your RC, you should obtain the newest Default Code from our website and load FRC\_default.hex into your RC to fix this issue.

### **ISSUE TWO:**

During the switch from Disabled to Autonomous Mode at the beginning of a match, there is a brief instant when the PWM and Relay outputs are enabled before your User processor knows it is in Autonomous mode. Even if you fix issue one, this could still cause your robot to be stuck with the last output values calculated from OI joystick or switch inputs for approximately 75ms. This second issue involves the Master processor's firmware.

### **FIX TWO:**

The solution to the second issue is to download the FRC\_MasterV6\_Upgrade.zip package from Innovation First. Following the instructions inside, you will be able to upgrade the firmware inside the Master processor. After the upgrade there will no longer be an in-between period when switching from Disabled to Autonomous. You will also be required to re-load your User code after performing the upgrade.

### **CONCLUSION:**

Performing these two upgrades is not required, and will have no negative impact on the operation of your User code. They will, however, improve the predictability of your

robot at the beginning of a match. Even if you have made no changes to your Robot Controller's Default Code, you are encouraged to perform these upgrades.

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These instructions will tell you how to upgrade the firmware inside the Master processor of your 2004 Full-size Robot Controller from Innovation First. Bear in mind that after the upgrade you will have to re-load any code you had inside your User processor.

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You must use IFI Loader version 1.0.7 or later to perform this process. It is similar to downloading your User code.

Here are the steps, in two parts:

PART A (Download the new Master code):

- 1) First, your RC and OI MUST be linked via Tether.
- 2) In IFI Loader, click "Browse".
- 3) Change the "Files of type:" drop-down box to "Master Files (\*.BIN)"
- 4) Browse for, select, and Open the file "FRC\_MASTER\_V6.BIN"
- 5) With your RC powered on and connected to your computer's serial port, click "DOWNLOAD".
- 6) Wait for the messages in the Terminal window to tell you the process is complete.

PART B (Download your latest User code or Default code):

- 7) In IFI Loader, click "Browse".
- 8) Change the "Files of type:" drop-down box to "INHEX32 Files (\*.HEX)"
- 9) Browse for, select, and Open your User code .hex file, or you can use "FRC\_default.hex"
- 10) Click "DOWNLOAD".
- 11) When the process is complete, you are back up and running.
- 12) You can Verify the Master Version is 6 using Dashboard Viewer.

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Innovation First, Inc.