# EH1 MILANO FIRMWARE UPGRADE INSTRUCTIONS

This document describes the steps necessary to upgrade your EH1 Milano prototype's firmware. Follow them carefully as if you don't you could damage your prototype.

Note: programming your device will erase the whole EEPROM, then before proceeding please open the Prensilia Demo Application and record the current PID and grasp values. Doing so, you'll be able to quickly restore the values in the EEPROM once you complete the programming procedure.

## **1** Requirements

- either MPLAB<sup>®</sup> 8 IDE or MPLAB<sup>®</sup> X IDE bundle (both freely available from the Microchip website) installed<sup>1</sup>
- either the Pickit 3 (available on Farnell/RS online/Digi-Key, code 1771323/687-2750/PG164130-ND) or the ICD3 (available on Farnell/RS online/Digi-Key, code 1771323/660-1264/DV164035-ND) debugger/programmer
- either an EH1-ICD Adaptor board (Fig. 1a) or a EH1-PICkit Adaptor board (Fig. 1b). One of the adaptors is usually shipped with the prototype at purchase time

## 2 Upgrade procedures

Before starting to program your prototype, please be sure to download a firmware version which is compatible with your prototype series (for example, an Azzurra series firmware *will not work* and may cause damage to your device if loaded in a Milano series prototype).

 $<sup>^1\</sup>mathrm{MPLAB}^{\textcircled{R}}$ 8 IDE is available for Windows platforms only while  $\mathrm{MPLAB}^{\textcircled{R}}$ X IDE is available for Windows, Linux, and Mac OS platforms









(b) The EH1-PICkit Adaptor board

Figure 1: Boards used to program EH1 Milano

#### 2.1 Upgrading using MPLAB<sup>®</sup> 8 IDE

- 1. download the latest version of the EH1 Milano firmware (an .hex file) from the Prensilia website support page.
- 2. open MPLAB<sup>®</sup> 8 IDE
- 3. connect the ICD3 or the Pickit 3 debugger/programmer to the PC and to your prototype as depicted, respectively, in Fig. 2 and Fig. 3
- 4. turn on your prototype
- 5. select File Close Workspace from the toolbar to be sure no other project or workspace is open
- 6. select your target device by selecting Configure Select Device. This will bring up a dialog box where you can select the PIC<sup>®</sup> MCU you are going to program. In the case you want to program the High Level Hand Controller (HLHC) you have to select the PIC18F6520. On the contrary, to program one of the Low Level Motion Controllers (LLMC) the right PIC is the PIC18F4431. After selecting the right device you will also see status leds confirming that the debugger/programmer tool you are using is supported for this device
- 7. open the Configure Configuration Bits window from the toolbar. At the very top of this window you will see a checkbox labeled Configuration bits set in code. Make sure this checkbox is set before proceeding
- 8. select the ICD3 or the Pickit 3 debugger/programmer from the Programmer Programming tool menu
- 9. import the previously downloaded .hex file by selecting File Import from the toolbar. This will load the .hex file into MPLAB<sup>®</sup> 8 IDE memory
- 10. program your device by selecting **Programmer Program**



If everything goes well, on the log window you should see a message saying Programming/Verify complete.

### 2.2 Upgrading using MPLAB<sup>®</sup> X IDE

The easiest way to program your device using the MPLAB<sup>®</sup> X IDE bundle is by using the MPLAB<sup>®</sup> X IPE program. Indeed this application provides a stand-alone solution for those who want to program their devices in a production environment. The quick steps to follow are:

- 1. download the latest version of the firmware (an .hex file) from Prensilia website support page.
- 2. open MPLAB<sup>®</sup> X IPE
- 3. connect the ICD3 or the Pickit 3 debugger/programmer to the PC and to your prototype as depicted, respectively, in Fig. 2 and Fig. 3
- 4. turn on your prototype
- 5. select the "Advanced 8-bit MCUs (PIC18)" family
- 6. in the case you want to program the High Level Hand Controller (HLHC) you have to select the PIC18F6520, and to program one of the Low Level Motion Controllers (LLMC) the right PIC is the PIC18F4431. After selecting the right device click Apply
- select the ICD3 or the Pickit 3 debugger/programmer and click the Connect button. The programmer will then connect with the device to program
- 8. click on the first **Browse** button (the one related to "Source") to import the previously downloaded .hex file
- 9. click on the **Program** button to program your prototype

If everything goes well, on the log (lower part of the window) you should see a message saying Programming/Verify complete.





Figure 2: Programming EH1 Milano using an ICD3 programmer and a EH1-ICD Adaptor board



Figure 3: Programming EH1 Milano using a PICkit3 programmer and a EH1-PICkit Adaptor board

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