



## Explore Scientific PMC-Eight® Application Note PMC8-AN001: How-To Update the PMC-Eight® Control System Firmware



The Explore Scientific PMC-Eight Control System firmware can be updated using the PGMR/SERIAL port. This port uses an industry standard 9-pin female DB-sub style connector for Data Communications Equipment (DCE). Since very few modern computer systems utilize the old style DB9 connectors any more, a USB to DB9 Serial adapter is required to connect a PC to the PMC-Eight controller. These adapters can be purchased online or at your local computer electronics supply store. They can be found online by searching for “USB to DB9 adapter”. It is recommended that you purchase an adapter that utilizes the popular FTDI chipset.

If you do not wish to purchase a USB to DB9 adapter, you can send your PMC-Eight Control System back to Explore Scientific for firmware updates. Please call Customer Service for a Return Merchandise Authorization (RMA) number, and then ship your controller to:

Explore Scientific, LLC.  
1010 S. 48<sup>th</sup> Street  
Springdale, AR 72762  
ATTN: Firmware Update Requested

The procedure to update the firmware on the PMC-Eight Control System is a fairly simple process. Updating the firmware does not overwrite any internally stored firmware parameters set in non-volatile memory. The procedure uses the open source Propellent.exe program developed by Parallax, Inc. and copyrighted by Parallax Semiconductor 2013. It is available at <https://www.parallax.com/downloads/propellent-software> . If you are interested, the source code is also available on the Parallax website. We include the Propellent.exe program in our download .zip package for your convenience.

### REQUIRED ITEMS

**NOTE:** The software items listed below can be downloaded from the PMC-Eight webpage on ExploreScientific.com.

1. PMC-Eight Control System Box and Power Supply.
2. PC System with Internet Access.
3. USB to DB9 Serial Adapter (as needed).
4. Firmware Loading Program.
5. Firmware Image File.

## APPLICABLE PMC-Eight Hardware/Firmware Versions

1. PMC-Eight System Controller version 06B or later
2. PMC-Eight System Controller Firmware version 9T10 or later

## PROCEDURE

1. Download and extract the required firmware update file, i.e., PMC8\_FirmwareUpdate\_9T10.zip, from the ExploreScientific.com website. Extract the files to a known location. You will have the following files (the .eeprom filename will be specific for each version):

ESAN001\_rev0.pdf (This document)  
Propellent.exe  
ES\_MotionController\_9t\_10.eeprom

2. Connect the PMC-Eight Control System PGMR/SERIAL port to the male DB9 connector on the USB to DB9 adapter.
3. Connect the USB connector to your PC. Ensure that your PC recognizes the adapter and prompts you to load the drivers. Your PC may already have the required drivers installed, in that case, it will show that the USB adapter has been connected.

**NOTE:** In the next step, you do not need to connect the motor cables from your mount to the PMC-Eight Control System to power up the controller for firmware updates. It can be near your PC, and away from your mount if necessary.

4. Power up the PMC-Eight Control System.
5. Start a Windows Command Prompt (cmd.exe) session. You will be greeted with a command line prompt, i.e.,

```
"C:\Users\jerry>"
```

6. Set the directory using the CD command to the location that the firmware update file was extracted to, i.e.,

```
"C:\Users\jerry> cd Documents\PMC8_firmware".
```

7. Verify the program "Propellent.exe" is in that directory and issue the following command at the DOS prompt for the version of the firmware you are installing. In this example, you are installing firmware version 9T10 (there is a space between the /eeprom and the filename).

```
"C:\Users\jerry\Documents\PMC8_firmware> propellent /eeprom  
ES_MotionController_9t_10.eeprom".
```

8. The program will connect to the PMC-Eight Control System and update the firmware.
9. Once the program has completed, power down the PMC-Eight Control System and disconnect the USB to DB9 adapter cable.
10. Your PMC-Eight is ready to use on your mount.

If you have any issues performing this procedure, or if you have any suggestions, comments or questions, please contact [support@explorescientific.com](mailto:support@explorescientific.com) or call our customer support number (866)252-3811.