

Process Control Firmware Update Instructions.

Process control firmware version 2 is now available which provides an ability to save a working demo set of scaler and coefficient values into the firmware. This means that when the various applications are started the values are automatically updated with the firmware values to get a nice working demo. The values in the software can then be altered and played with but the values in the firmware remain unaltered.

We recommend updating your firmware **only** if the following criteria apply.

- 1) You have a known good set of scalars and PID values that allow your system to work reliably.
- 2) You specifically require the new features of the updated firmware.
- 3) You acknowledge that any settings for Networking, Bluetooth and WIFI will be lost and will need to be reapplied.

Determining your current firmware version

Connect the USB cable and 24V DC power supply to your process control system, run one of the process control applications and click the play button at the top left hand side of the screen. On the properties at the top left hand side of the screen the API version is displayed.



The screenshot shows a 'Properties' window with a dotted border. It contains a table with two rows. The first row has a purple 'S' icon in the first column, 'API Version' in the second column, and 'API Version: 1' in the third column. The second row has a purple document icon in the first column, 'Comms Method' in the second column, and 'USB (COM)' in the third column.

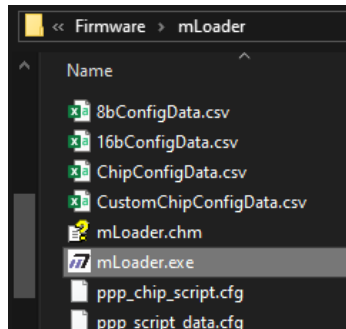
Properties		
	API Version	API Version: 1
	Comms Method	USB (COM)

If you are on firmware API Version: 1 then you can update your unit with new firmware by following the procedure below.

Updating the firmware

The latest version of the firmware can be found in the software firmware folder. It's contained in a hex file named ControlFW_V2.hex. Also inside the firmware folder is a folder named mLoader.

- 1) Inside the mLoader folder open the file named mLoader.exe.



- 2) Unplug the USB cable from the process control hardware.
- 3) Unplug the DC power cable from the process control hardware.
- 4) Reinsert the DC power cable into the process control hardware.
- 5) Wait for the process control hardware to say Ready on the LCD
- 6) Reinsert the USB cable into the process control hardware.
- 7) The screen should change to BOOTLOADER and mLoader should see the device as a Formula Allcode (1)



- 8) In the mLoader software click on the ... button. (2)
- 9) Select the "ControlFW_V2.hex" from the Firmware folder. **Ensure you have selected the correct file selecting an incorrect file can cause your hardware to become software locked.**
- 10) Click the Send button and wait for it to complete (3)
- 11) Click the Execute button (4)
- 12) Close the mLoader software

Applying the stored default values

Open the PID Control application

Click the play button at the top left hand side of the screen.



On the properties at the top left hand side of the screen the API version is displayed. Check this now says API Version: 2.

Properties	
 API Version	API Version: 2
 Comm Method	USB (COM)

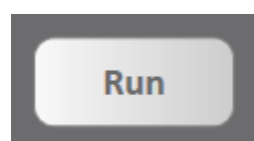
Change the Application type to suit your hardware, dependent on the product purchased and in use

Click the load properties button to load the local saved properties for that application, click Yes to the pop up window.

Check that the Control Frequency, In/Out Scalers, Kp, Ki, Kd etc match your good known working settings

Settings	
 Application	Pressure
 Control Channel	Pump
 Control Frequency	5Hz
 Input Scaler	0.000003
 Input Calibration	1
 Output Scaler	4.400000
PID Settings	
 Kp	7.200000
 Ki	0.800000
 Kd	16.20000
 Integral Clamping	Yes
 Derivative Filter	Yes
 Derivative Coefficient	10
 Cutoff Frequency	0.250 Hz

Run the system and check that the values are good and correct, tweak if necessary. **Do not skip this step.**

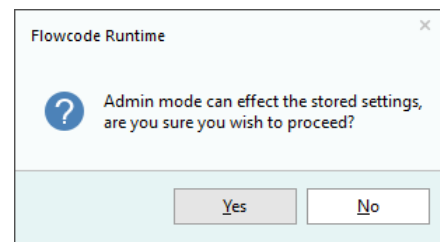


Once you're happy PID is working ok, stop the system

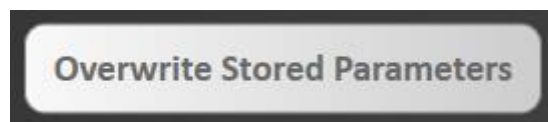


To save the values into the firmware as the demo values change the Admin Mode property to Yes, Click Yes to the pop up window.

Comms Method	USB (COM)
Admin Mode	Yes
Stop On Close	Yes



Click the Overwrite Stored Parameters button



Confirm your settings have been stored by stopping the app using the stop button at the top left.



Then restart the app using the play button.



Please note that the firmware stored Input Scaler becomes a combination of the old input scaler multiplied by the old calibration value.

 Input Scaler	0.5	→	 Input Scaler	0.25
 Input Calibration	0.5		 Input Calibration	1