



INTELLICHEM[®]

FIRMWARE UPDATE KIT



INSTALLATION GUIDE

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

CUSTOMER SERVICE AND TECHNICAL SUPPORT

Hours: 8:00AM to 7:30PM EST (5:00AM - 4:30PM PST)

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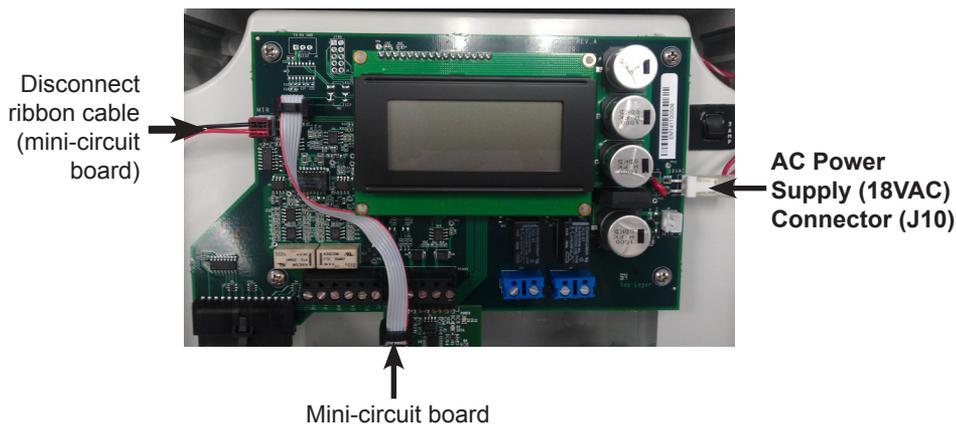
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IntelliChem Controller Firmware Update Instructions

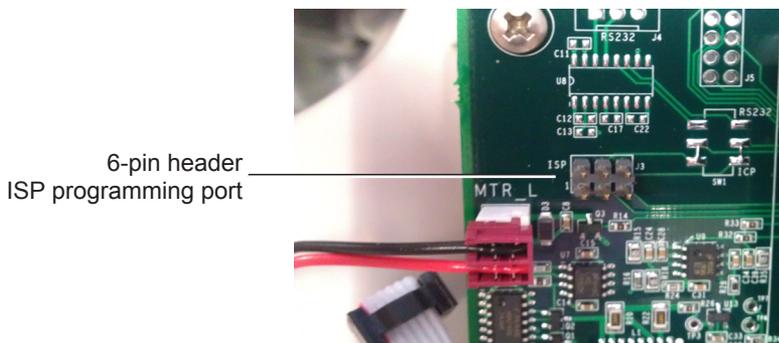
The IntelliChem Controller firmware updates are performed using the update programmer connected to a USB port on a computer running Microsoft® Windows version 10, 8, or 7.

Connect Programmer Cables

1. **Disconnect power to the IntelliChem Controller.** Open the front the cover and disconnect the 18 VAC supply connector J10 on the right side of the IntelliChem Controller circuit board (as shown below).
2. **Note: If there is a mini-circuit board connected to the IntelliChem Controller circuit board, disconnect the ribbon cable from the IntelliChem Controller circuit board.**

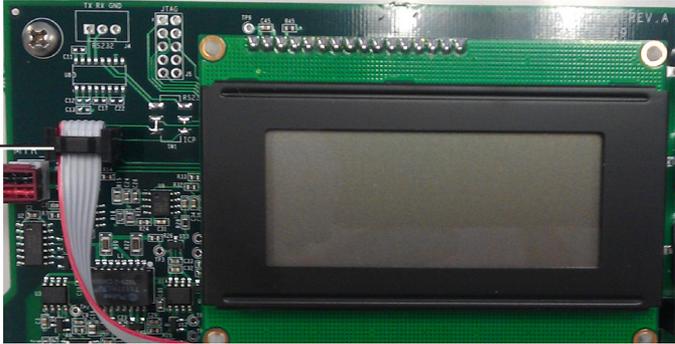


3. Locate the 6-pin header labeled ISP in the upper-left corner of the IntelliChem Controller circuit board (as shown below).



4. Connect the 6-pin ribbon cable connector to the ISP port with the RED stripe toward the left-side as shown below.

Connect the programmer ribbon cable with RED STRIPE on LEFT SIDE



5. Reconnect the power connector (J10) to the controller circuit board (see page 1).
6. **DO NOT** connect the micro USB cable to the computer.

Installing Controller Firmware Upgrade Setup Wizard

1. Download the Pentair software from: https://www.pentair.com/en/products/pool-spa-equipment/pool-automation/intellichem_waterchemistrycontroller.html
2. Navigate to **HOMEOWNER AND PRO RESOURCES -> SOFTWARE**
3. Download and unzip file: **IntelliChem Firmware Upgrade v1-080.zip**
4. If it exists on your computer, delete directory C:\Pentair\IntelliChem\.
5. From folder ICHEM_1060, unzip file: **IntelliChem_Firmware_Upgrade_v1-060.zip**
6. Double-click **IntelliChem_Firmware_Upgrade_v1-060.exe**.
Follow screen message to complete the installation.

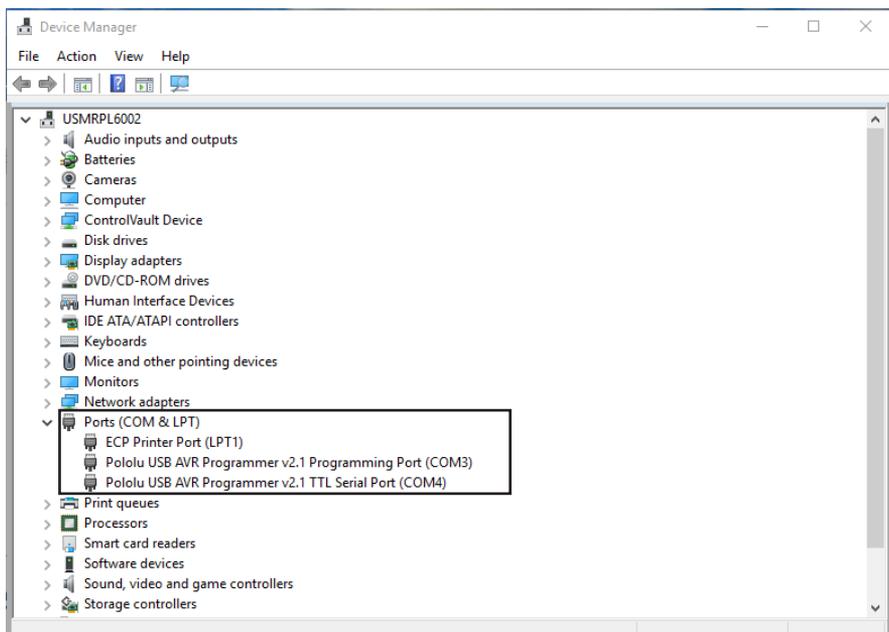
Note: For Windows 10, the INF configuration file is not compatible with this method of installation. Ignore all error messages. Select "OK" or "CLOSE" to continue and complete the installation. The Avrdude Programming utility and Pololu driver will be installed.

7. Follow screen message to complete installation.
8. Copy the following two files to folder C:\pentair\IntelliChem\ICHEM_**Script_1080.bat** and **ICHEM_v1.080.a90**
9. Next, generate a NEW iChem icon pointing to IntelliChem version v1.080. Right click on file **ICHEM_Script_1080.bat**, select **Send to**, then select **Desktop (create short cut)**.

Programming IntelliChem Controller Firmware

10. Apply power to the IntelliChem Controller unit and connect the Pololu ribbon cable to IntelliChem Controller ISP programming **port ISP J3**.
11. Connect a micro USB cable from the Pololu programmer board to the computer USB port.

12. To verify if the Pololu device driver is installed correctly, Windows Device Manager should display as shown below.



13. **For Windows 7, 8 users:** Double-click on the desktop icon "iChem_Script_1080" to begin programming IntelliChem® Controller firmware version 1.080. Wait for programming to complete.

```

C:\Windows\system32\cmd.exe
*****
**IMPORTANT NOTES!
** 1. Please install the USB programmer driver before updating
** the IntelliChem chemical controller firmware
** 2. Support Windows 7, 8, 10
*****
Press any key to continue . . .
Windows 7.
"OTHERWINDOWS"
\\.\USB$ER000

avrdude: AVR device initialized and ready to accept instructions

Reading : ##### : 100% 0.03s

avrdude: Device signature = 0x1e9702
avrdude: current erase-rewrite cycle count is -50462977 (if being tracked)
avrdude: erasing chip
avrdude: reading input file "ICHEM_v1.080.a90"
avrdude: input file ICHEM_v1.080.a90 auto detected as Intel Hex
avrdude: writing flash (89500 bytes):

Writing : ##### : 100% 74.18s

avrdude: 89500 bytes of flash written
avrdude: verifying flash memory against ICHEM_v1.080.a90:
avrdude: load data flash data from input file ICHEM_v1.080.a90:
avrdude: input file ICHEM_v1.080.a90 auto detected as Intel Hex
avrdude: input file ICHEM_v1.080.a90 contains 89500 bytes
avrdude: reading on-chip flash data:

Reading : ##### : 51% 37.01s
  
```

14. For Windows 10 users:

- Double-click on the desktop icon IChem_Script_1080
- Enter the Pololu USB Programming COM port number ONLY from the Device Manager (i.e... 3)

```
C:\WINDOWS\system32\cmd.exe
*****
** PENTAIR **
** INTELLICHEM CHEMICAL CONTROLLER FIRMWARE UPDATE v1.080 **
*****
**IMPORTANT NOTES! **
** 1. Please install the USB programmer driver before updating **
** the IntelliChem chemical controller firmware **
** 2. Support Windows 7, 8, 10 **
*****
Press any key to continue . . .
"WINDOWS 10"
What com port is your USB programmer connected to?
Please enter a number 1-75
COM3

avrdude: AVR device initialized and ready to accept instructions

Reading | ##### | 100% 0.02s

avrdude: Device signature = 0x1e9702
avrdude: current erase-rewrite cycle count is -50462977 (if being tracked)
avrdude: erasing chip
avrdude: reading input file "ICHEM_v1.080.a90"
avrdude: input file ICHEM_v1.080.a90 auto detected as Intel Hex
avrdude: writing flash (89500 bytes):

Writing | ##### | 29% 21.37s
```

Troubleshooting

If the programmer exits without showing a progress bar, there was an error in the setup or installation. Check the following:

- The programmer is installed correctly
- IntelliChem Controller unit is powered on
- Driver is properly installed

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Press any key to continue . . .
avrdude: ser_open(): can't open device "\\.\USBSER000": The system cannot find t
he file specified.

Press any key to continue . . . █

```

No communication with Pololu Programmer, check USB connection.

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Press any key to continue . . .

avrdude: stk500v2_command(): command failed
avrdude: stk500v2_command(): unknown status 0xc9
avrdude: stk500v2_program_enable(): cannot get connection status
avrdude: initialization failed, rc=-1
      Double check connections and try again, or use -F to override
      this check.

```

No communication with IntelliChem Controller, check connection to ISP on the IntelliChem Controller board.



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