

## **SmartMotor™ USB to Serial Adapter Windows Driver Tutorial**

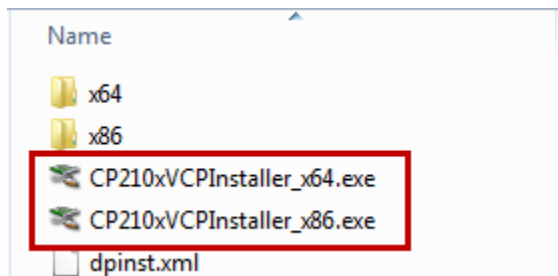
This document describes the procedure for installing the SmartMotor USB to UART (Universal Asynchronous Receiver/Transmitter), more commonly referred to as the “USB to serial adapter”, driver on a Windows-based PC.

### Download the Driver

1. Go to <http://www.animatics.com>
2. From the Support menu, click Download Center
3. Locate the SMI Software And Drivers > USB Driver folder, and then select and download the file:  
CP210x\_VCP\_Windows.zip
4. Extract the contents of the ZIP file to a folder on your hard drive. For example:  
C:\CP210x\_VCP\_Windows

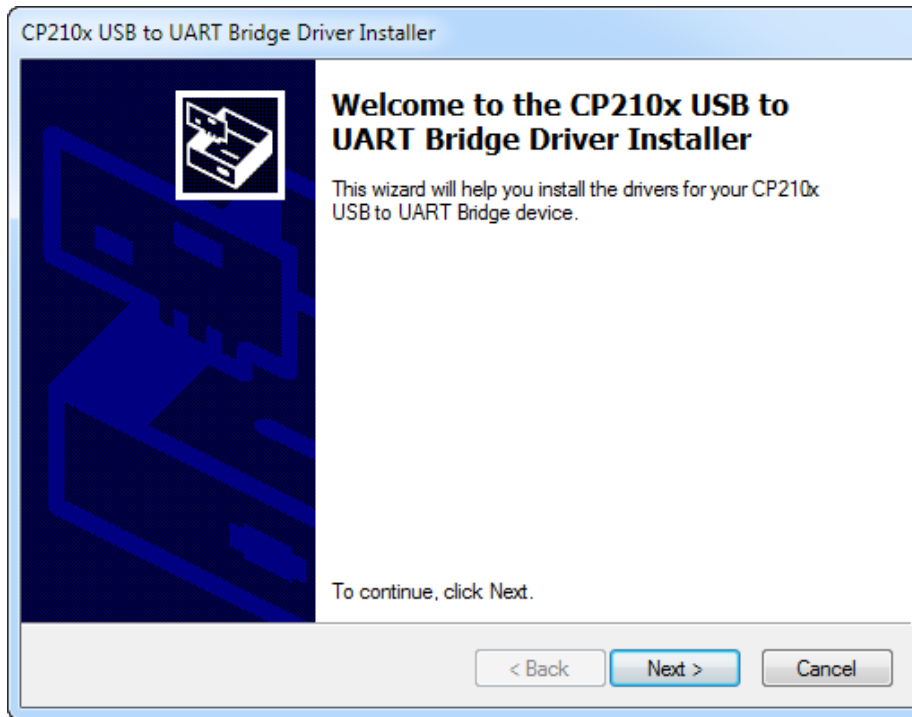
### Install the Driver

5. Unplug the USB-232 USB to serial adapter from the PC.
6. Locate the folder that was extracted in Step 4 and open it to view the installation files. There are two files to choose from: one is for standard Windows (x86) systems, the other is for 64-bit Windows (x64) systems.



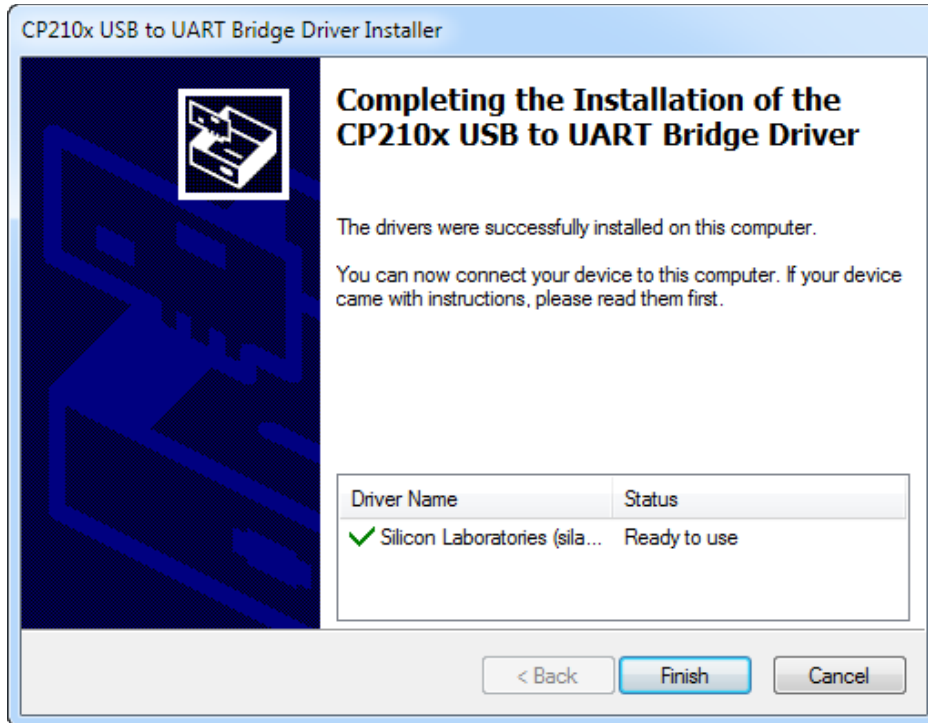
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7. Open the file corresponding to your Windows system to begin the installation.



8. Follow the on-screen instructions to complete the driver installation.
9. At the end of the installation, you will see a message that the drivers were successfully installed. Click Finish to close it.

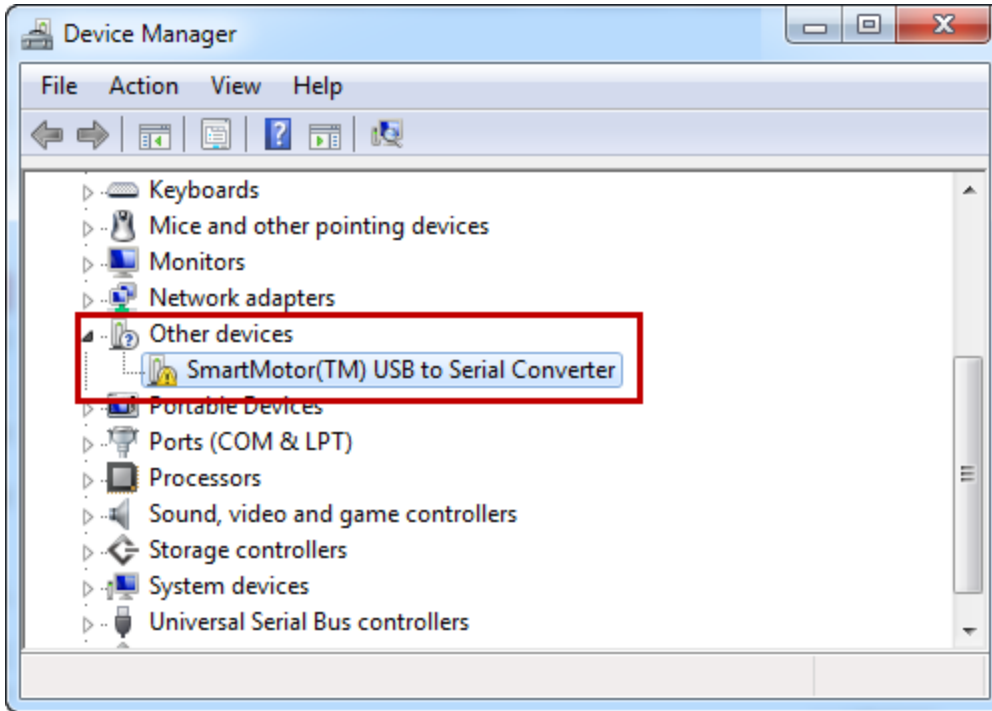
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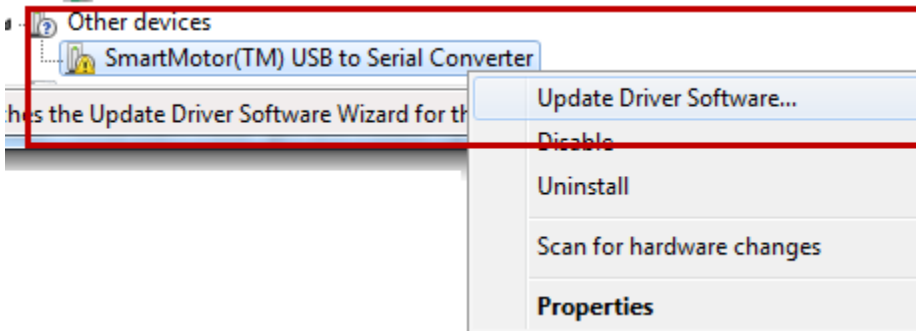
### Configure the Driver

10. Plug in the USB-232 USB to serial adapter.
11. Go to the Windows Device Manager, locate "Other devices" and select the USB-232 device.
  - a. On the Windows Desktop, click the Start icon.
  - b. In the search box, type "Device manager" and press Enter.
  - c. Locate "Other devices" and select the USB-232 device.

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12. Right-click that device and select "Update driver software" from the menu.



13. From the next screen, select

- a. "Browse my computer for driver software"
- b. "Let me pick from a list of device drivers on my computer"
- c. "Show All Devices"

and then click Next.

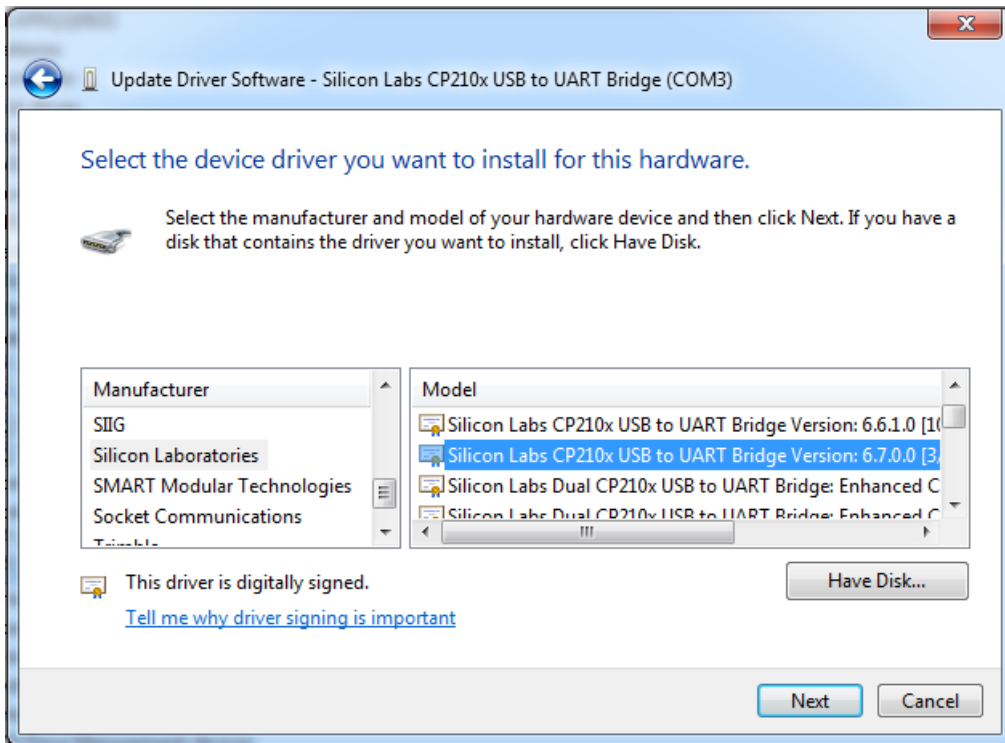
14. Refer to the following figure.

- a. In the Manufacturer list (left pane), scroll to and select: Silicon Laboratories
- b. In Model list (right pane), scroll to and select: Silicon Labs CP210x USB to UART Bridge.

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### NOTES:

- If you have installed the CP210x driver previously, there may be some older versions along with the one that was just installed. Make sure you select the latest version of the driver.
- Select the standard version (as shown in the following figure); you do not need to select the “Enhanced COM Port” version.



15. Click Next to install the driver.

**NOTE:** Microsoft Windows may show a warning that the driver is not digitally signed, or may not be compatible, and ask you if you want to proceed with the installation. You should ignore the warning and continue with the installation.

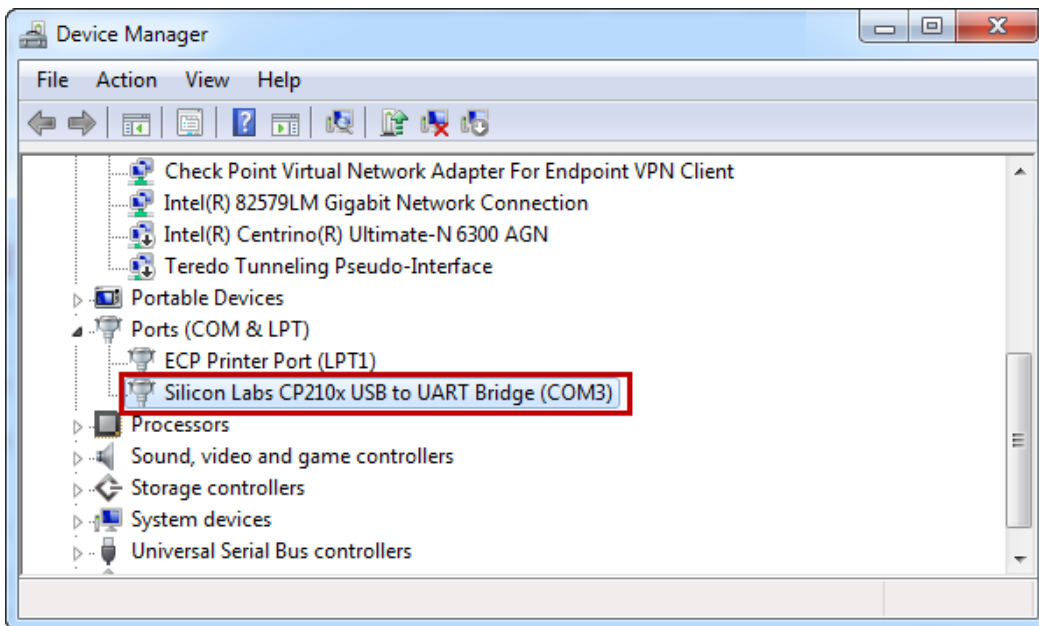
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16. When the installation has completed, click Close. The Device Manager list will refresh and show the USB to UART bridge listed in the Ports section as:

Silicon Labs CP210x USB to UART Bridge (COMn)

where "n" is the serial port that has been assigned to the device. For example, this device has been assigned to "COM 3".



## Troubleshooting

If you are experiencing communications issues between SMI and your SmartMotor, please check the following items.

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### 1. Check that the correct Device Driver is installed.

Go back through this Windows Driver Install tutorial to confirm that you installed the correct device driver for the USB to serial adapter.

### 2. Check for PC, Power Supply and Windows COM Port issues.

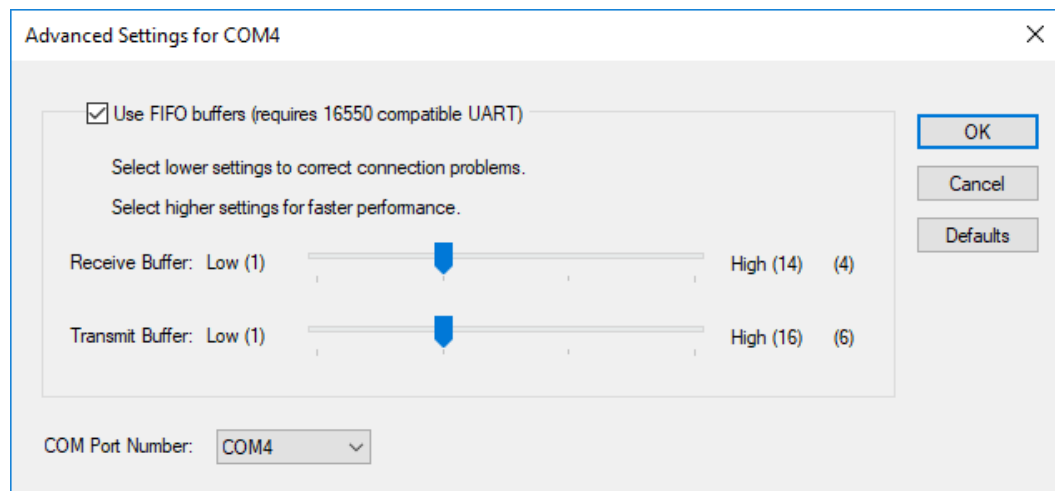
With the right combination of PC, power supply and COM port, when plugging the motors in, the Device Manager will refresh and reset detection of the COM port's USB to serial adapter. This can be caused under certain conditions (typically, due to floating ground power supplies). It depends on the timing of plugging in and clicking to detect or address the motors.

**NOTE:** This is a PC, power supply and COM Port issue; it is not a defective motor.

The result is a motor that is either not detected or cannot be polled, or worst case, an "Error Writing To Com Port!" message displays as part of the API call returned from the Windows operating system.

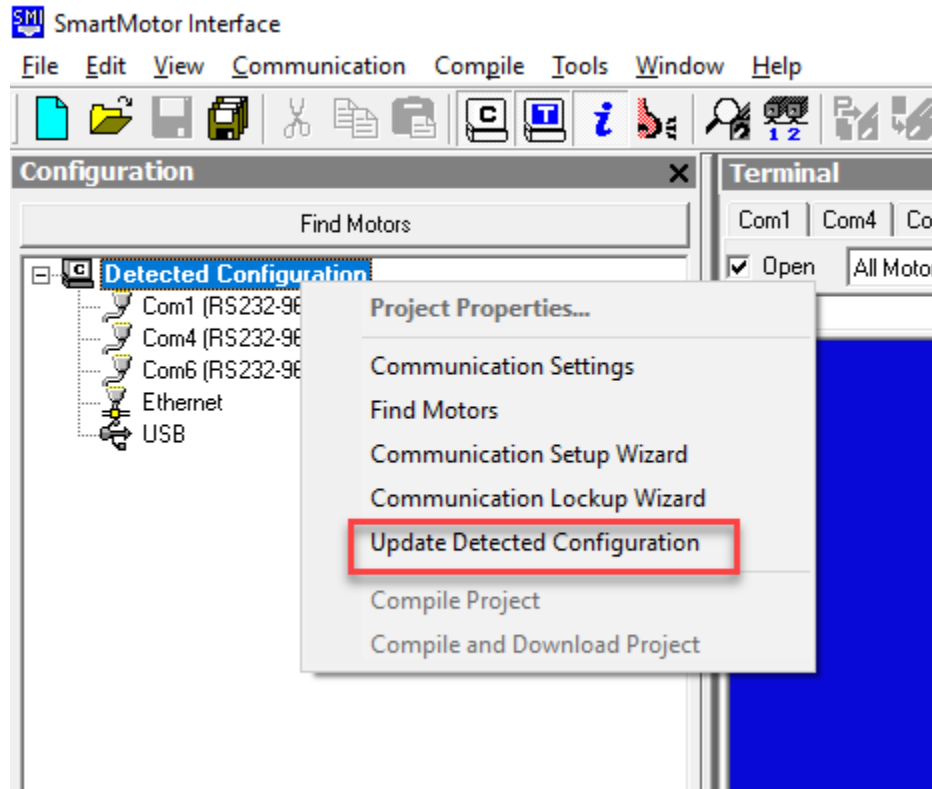
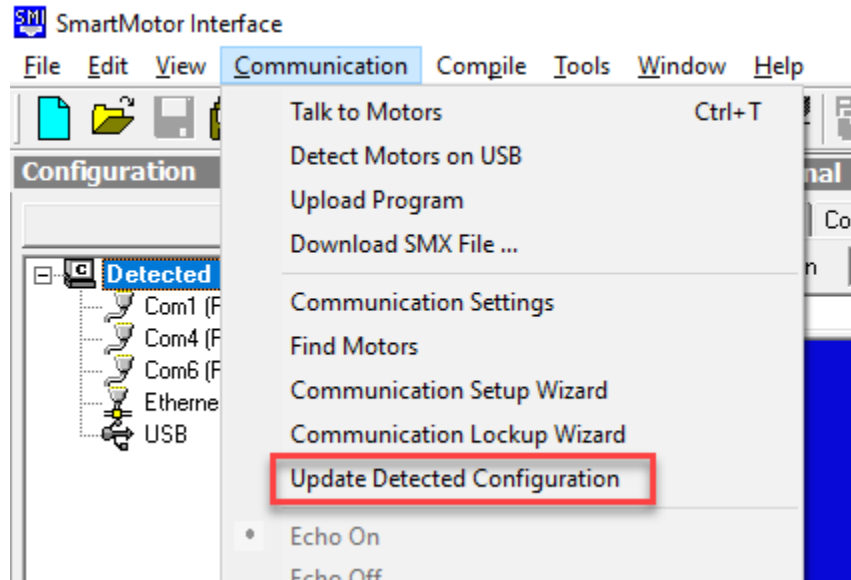
There are several possible solutions:

- Ensure there are no utilities running, like RSLinx, which may conflict with the SMI software.
- In the Windows Device Manager, use the Advanced Settings to reduce the FIFO buffer size for the USB to serial adapter's COM port. It may be necessary to reduce it to the lowest value, Low (1), to solve the problem.



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- Use SMI to update the detected Windows Com Port configuration. Click the Communication menu or right-click the Detected Configuration, and then select Update Detected Configuration, as shown in the following figures.





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- Use a true +/-12V COM port adapter.  
USB to RS-232 devices usually have low voltage signals because of the limited power that a USB port can provide. However, a true RS-232 port on the motherboard of a computer can provide more power (this is an advantage but it is not always available).
  
- Use a power supply that is common grounded to its negative output.  
In a control panel, the decision to use a signal common (negative output) to single point ground (SPG) or to float it depends on the other equipment in the panel and the incoming power:
  - If all of the equipment uses low level or single-phase power, the common tied to SPG may reduce noise.
  - If there is a high-voltage, three-phase drive in the panel, like a vector drive or VFD, the connection to SPG may cause noise on the DC power supply and the serial communications wiring, especially if the incoming power feed is a Delta type versus a Y type where the ground leg is supplied.

Therefore, the method for signal grounding must be decided on a case-by-case basis.

### Important Notes for RS-485 and RS-232 Communications

The following are some important notes for RS-485 and RS-232 communications. For more details, see the *Moog Animatics System Best Practices Application Note*.

#### **For RS-485:**

- The Class 5 motors have the capability to configure the I/O ports 5 and 6 to be an RS-485 port that can be used for programming/troubleshooting with SMI3, operating with an HMI or devices such as laser distance sensors, load cells, etc. The RS-485 setup in the SMI3 software offers options for Channel 0 or Channel 1.
  - Class 5 using ports 5 and 6 must be set up for Channel 1 in the SMI3 software.
  - The Class 5 RS-485 port must be set up using the OCHN command in a downloaded program or sent from a host through the RS-232 port.
  
- Class 6 M-style motors are equipped with an RS-485 port and do not have an RS-232 port.
  - Class 6 M-style using its RS-485 port must be set up for Channel 0 in the SMI3 software. Class 6 also has a mini-USB port, which is usually the preferred method for initial setup.
  
- Class 6 D-style motors are equipped with both an RS-485 and RS-232 port.
  - Class 6 D-style using its RS-485 ports 19 and 20 must be set up for Channel 1 in the SMI3 software.

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- RS-485 requires terminating resistors and possibly a pull down resistor (search the internet for examples). In addition, not all RS-485 and RS-422 devices are the same: some require different value resistors, some are combined and require jumpers to select how the device operates (for details, refer to the manual for your device).

NOTE: Products like Moog Animatics SMNC software will not operate well using an RS-485 connection because RS-485 is a half-duplex connection (not full duplex).

### **For RS-232:**

- Class 5 D- and S-style motors, and Class 6 D-style motors, have an RS-232 port. That port is Channel 0 by default. When using Class 5 D- and S-style motors ports 5 and 6 as RS-485, the SMI3 software must be set for Channel 1.
- The M-style Class 5 and Class 6 motors do not have an RS-232 port, and the RS-485 channel numbers are different. For details, see the Installation and Startup Guide for your SmartMotor.
- The Class 6 D-style motors have both an RS-232 port and an RS-485 port. For those ports, the channel numbers are 0 and 1, respectively.