# McLANE®
## RESEARCH LABORATORIES, INC.

| Technical Support Bulletin 2017-02.1 | Troubleshooting Instrument Communication: MotoCross | September 27, 2017 |
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**Alert Level:  INFORMATIONAL**

**Instruments:** All instruments

**Software Versions:** N/A

**Hardware Version:** N/A

**Subject:** Troubleshooting Instrument Communication Problems for MotoCross

**Summary:** This bulletin provides troubleshooting tips and recommended procedures for serial communications problems when using MotoCross.

Common communication problems:

- Incorrect MotoCross communication settings.
- MotoCross needs to be restarted.
- Batteries are dead, unplugged, or installed incorrectly.
- USB adapter drivers are not installed.
- Control characters are not being transmitted by MotoCross.
- Electrical connection problems.

Continue to the sections that follow for detailed information about each of these scenarios. If you have followed all of these troubleshooting tips and still cannot communicate with your McLane instrument, contact mclane@mclanelabs.com for technical support.

## Incorrect MotoCross Communication Settings

Incorrect MotoCross communication settings are the most common cause of communication problems.  Make sure MotoCross is configured with the following communication settings:

| Port | Communication Port # |
|---|---|
| **Baud Rate** | 9600 |
| **Mx Download Baud** | 115200 |
| **Parity** | None |
| **Data Bits** | 8 |
| **Stop Bits** | 1 |
| **Flow Control** | None |

## MotoCross Needs to be Restarted

If the USB to RS-232 adapter has been unplugged and plugged back in while a MotoCross window is open, MotoCross usually needs to be restarted. This is not always true, but if you are unable to communicate with a McLane instrument, restarting MotoCross ensures that the correct communication settings are being used.

## Batteries are Dead, not Plugged In, or Installed Incorrectly

Check the voltage of the main battery pack, and make sure that the batteries were installed in the correct direction. If batteries are installed incorrectly the output voltage could be too low for the instrument to power up.  Be careful while measuring the voltage on the battery connector. Do not push too hard, and do not short the two conductors together by touching the meter probes together while measuring the voltage.



*Figure 1: Measuring Battery Connector Voltage*

Before plugging the battery back into the electronics, inspect the battery conductors for possible damage such as pinches or compromised insulation that could cause a short circuit. After plugging the battery back into the electronics, make sure the black plastic MTE connector is securely connected to the electronics by giving it a light tug.

## USB Adapter Drivers are not Installed

Typically USB adapter drivers will install automatically when the USB adapter is inserted into a computer.  There are two LEDs on the adapter that light up when you are communicating through them in MotoCross.  If these LEDs are not lighting up while typing into MotoCross you may have the wrong communication port selected.  If the USB adapter drivers are not installed, there will be no communication port listed for the adapter.  To find the correct communication port:

- Open Windows Device Manager and take note of the available communication ports in the "Ports (COM & LPT)" section.

- Unplug the USB to RS232 adapter, if a communication port disappears, then drivers are installed and port that disappeared is the communication port that you should be using to communicate with your instrument.

- If you notice no difference in the listed communication ports, the device drivers are probably not installed. The drivers are usually automatically installed by Windows, If for some reason the device drivers are not installed, contact McLane for manual driver installation instructions.

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## Control Characters are not Being Transmitted by MotoCross

If your McLane instrument will not wake up, follow the instructions in the 'Getting Started' chapter of your instrument's user manual to make sure you are using the correct MotoCross settings to transmit control characters.

## Electrical Connection Problems

A bad connection or electronic failure somewhere between the computer and your McLane instrument could cause communication problems.  As of Spring 2017, McLane ships a loopback tester in the instrument toolkits in order to troubleshoot such problems. The loopback tester connects the serial communication transmit and receive lines together in order to test the electrical connections and communication port functionality.

If you need a loopback tester, contact mclane@mclanelabs.com.



*Figure 2: Loopback Tester*

The procedures that follow explain how to use the loopback tester.

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1. Close any existing MotoCross sessions in order to start fresh.

2. Connect the loopback tester to the DB9 RS-232 port of the computer or the RS-232 adapter.



*Figure 2: Connect Loopback Tester*

3. After making sure the correct communication settings are being used, type anything into the MotoCross window. If characters are printed in MotoCross your communication port is functioning properly.

   If no characters print to the screen:

   • The Communication settings could be incorrect.
   • The USB adapter drivers may not be installed.
   • The USB adapter could be broken.

4. Open up the controller housing and find the communication conductors that plug into the electronics.



*Figure 3: MTE Connector*

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5.  Unplug the MTE connector from the electronics and plug them into the loopback tester.



*Figure 4: Plug MTE Connector into Loopback Tester*

6.  Type anything into MotoCross.  If characters print to the MotoCross screen then everything up to your electronics is working properly.

    If no characters print to the MotoCross window:

    •   Check the connections between the computer and the bulkhead connector.  Make sure all of the connections are plugged in all of the way.

    •   Inspect the cable and the individual communication conductors inside of the electronics housing for damage.

    •   Check that the individual conductors are securely seated in the black communication MTE connector by giving each conductor a light tug.