

McS1 USER MANUAL



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REVISION HISTORY

Revision	Release Date	Change Descriptions
1.00	June 7, 2004	First draft.
1.01	July 29, 2004	Added comment for pre-existing USB drivers.
1.02	August 4, 2004	Added comment for un-installing USB drivers to handle error conditions. Added comment to “Specify Location” on Windows 98 machines. Added comment about no Windows NT support.
1.03	March 11, 2005	Minor updates.
1.04	April 6, 2005	Added minimum PC requirements and warning for wall mount power supplies.
1.05	July 21, 2005	Fixed pin numbers in DB25 Vehicle Connector Table.
1.06	Nov. 18, 2005	Added mechanical data.
1.07	Nov. 22, 2005	Added notes about multiple units.
1.08	Feb. 20, 2006	Added electronic serial number section.
1.09	Mar. 29, 2007	Changes for new CDM02.00.00 release of the FTDI driver.
1.10	Aug. 16, 2007	Added USB Driver Troubleshooting section and a comment about “PDA Hot Sync” devices.

1 INTRODUCTION

Thank you for purchasing the McS1 pass-thru vehicle network interface. The McS1 has been specifically designed to offer the best price, features and performance combination available for communicating with all model year 1996 and beyond on-board diagnostic (OBD) systems.

1.1 FEATURES

1.1.1 Hardware

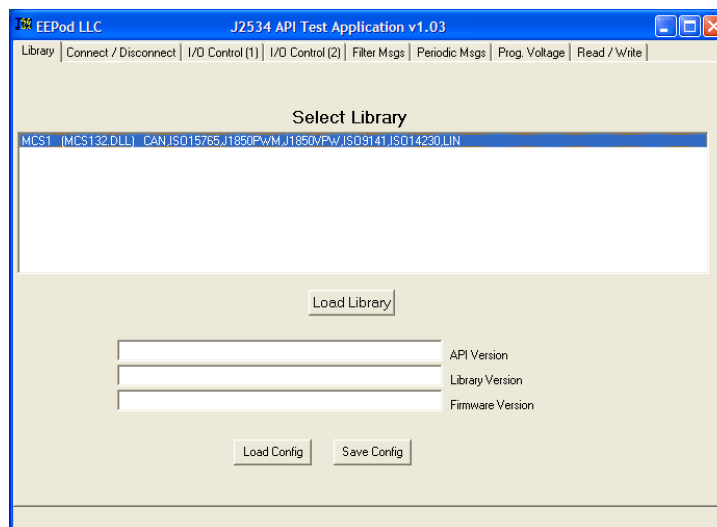
The McS1 is a high-performance, pass-thru vehicle network interface with the following features:

- High-speed microprocessor.
- Low current consumption (100mA @ 12VDC).
- Electrically isolated USB version 1.1 (and 2.0 compatible) interface to the host PC. Capable of handling a continuous throughput of over 3000 messages per second to/from the vehicle.
- Support for all OBD protocols, including CAN/ISO15765, MSCAN, J1850PWM, J1850VPW, ISO9141, ISO14230 and KWP2000.
- Programmable voltage (5-20VDC, +/-100mV resolution) output with current limiting (150mA maximum).
- Six analog inputs (0-20VDC, +/-20mV resolution). Two dedicated to vehicle battery and programmable output monitoring.
- Two protected digital input/outputs (5VDC logic level).
- LED for real-time error indications.

1.1.2 Software

The base software for the McS1 consists of a USB driver, SAE J2534 dynamic link libraries (DLLs) and a software installation program. Please reference the Quick Start Guide section for installation details. Once the driver and library are installed on a PC, any J2534-compliant application (e.g. Ford Module Reprogramming web-based software) can use the McS1 interface.

In addition to the base software, the J2534 Test Application is provided to assist in the development of J2534-compliant applications by allowing the user to exercise individual API calls. This software assumes the user is familiar with the J2534 API standard from SAE. Additionally, this tool may be used as a bus logging tool for vehicle/module development.



The McS1 software is compatible with all WIN32 platforms (i.e. Windows 98/Me/2K/XP).

2 QUICK START GUIDE

2.1 MINIMUM PC REQUIREMENTS

- WIN 98/ME/2K/XP
- 500MHz Pentium III or higher processor speed
- USB 1.1 Compliant Interface (most USB 2.0 interfaces are compliant with version 1.1)
- 128MB RAM
- 5MB Hard Disk Space (may need more depending on bus logging usage)

2.2 BENCHTOP USAGE

If you are using the McS1 on a bench-top setup with a power supply, please make sure that the power supply is capable of at least 12VDC and 3 amperes. While the McS1 normally only draws a few hundred milliamps of current, turning on the programmable voltage output as well as other operations will require larger amounts of inrush current that smaller supplies cannot handle. Wall-mount supplies are NOT recommended.

2.3 USB DRIVER INSTALLATION

NOTE 1: Some computers have the USB drivers already installed with the operating system. For these systems, you may want to delete the current driver by disconnecting the McS1 and all other serial USB devices and then run the FTCClean.exe utility in the USB Driver directory on the CD-ROM.

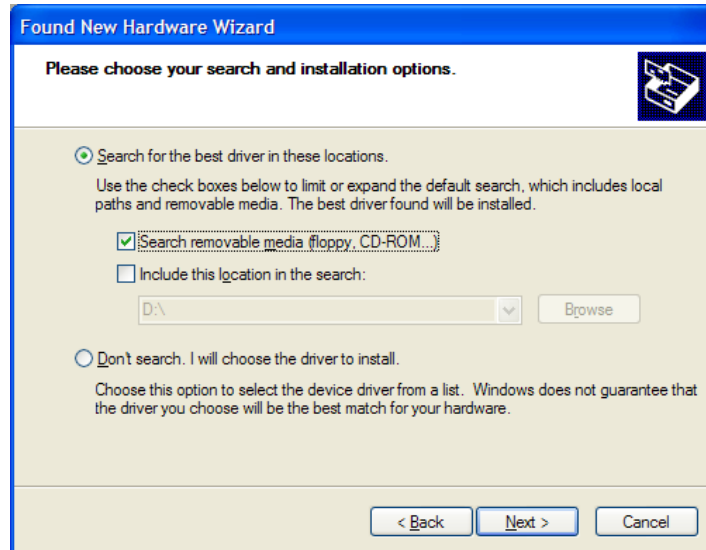
NOTE 2: If an error occurs during the installation of the USB driver, disconnect the McS1 and all other serial USB devices, then run the FTCClean.exe utility in the USB Driver directory on the CD-ROM.. When the un-install is complete, follow the instructions below.

NOTE 3: The Windows NT operating system is not supported since it does not support Plug-and-Play (PNP) drivers or USB.

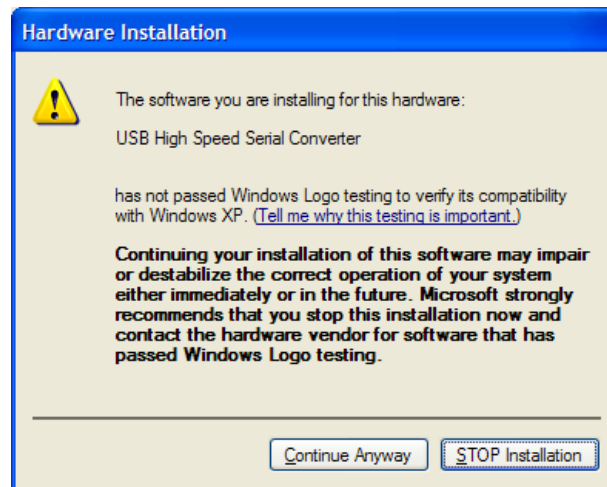
The McS1 drivers for all WIN32 platforms consists of two “plug-and-play” (PNP) USB drivers. Simply connect the McS1 to your computer using the USB cable provided (NOTE: You can install the USB drivers by just connecting the McS1 to the computer, however, you will need to connect it to vehicle power in order to communicate with a vehicle and/or module). You will be prompted by the operating system to determine where to get the USB<->Serial driver first. Select “Install from a list or specific location (Advanced)” and press “Next”.



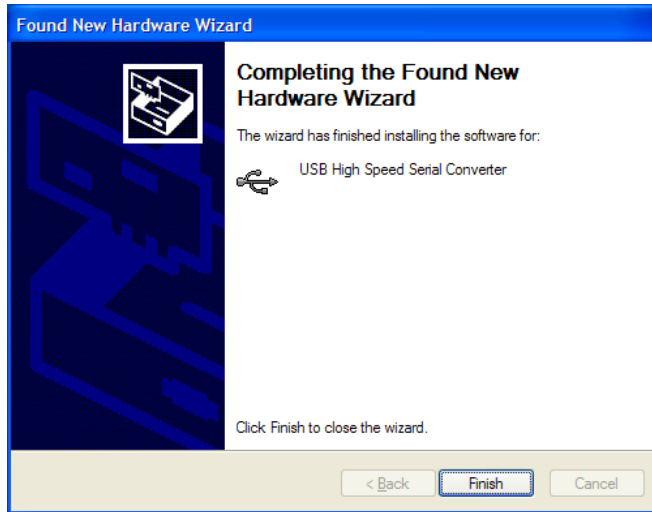
Place the McS1 Installation CD in the drive, check the “Search removable media (floppy, CD-ROM...)” box and press “Next”. For some Windows 98 machines, you will need to select “Include this location in the search:” and browse to the USB Drivers directory on the CD.



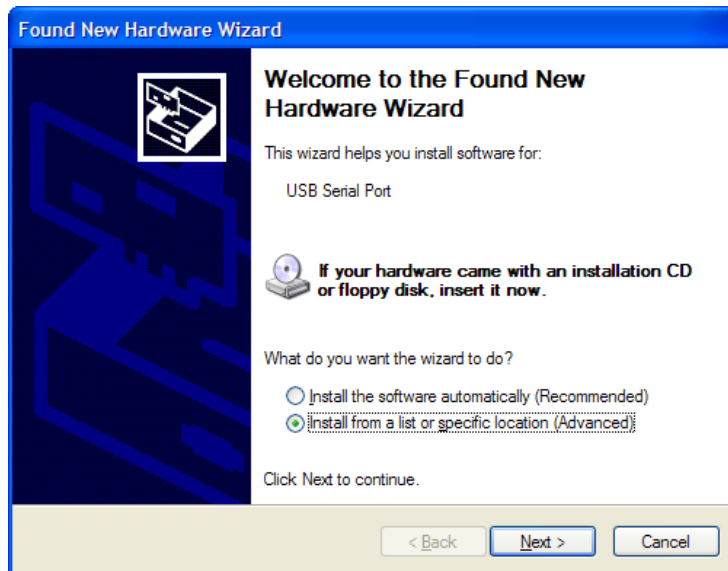
You may be prompted with the following warning screen, depending on the release level of the driver. Just press “Continue Anyway”.



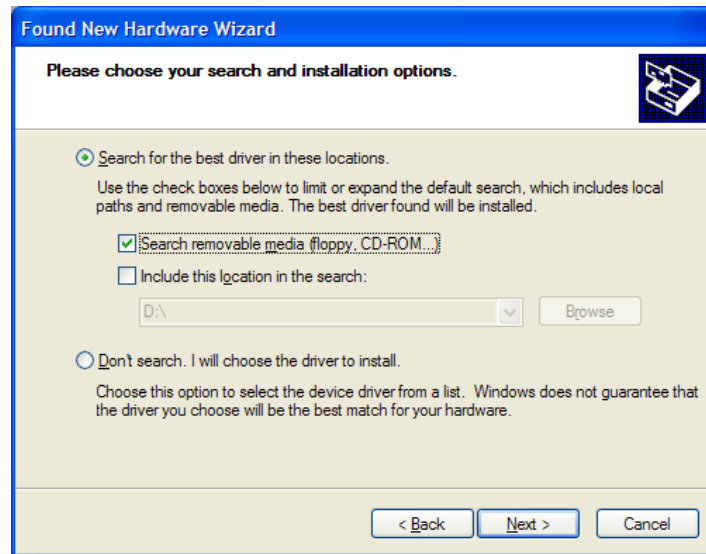
When the driver installation is complete, press “Finish”.



You will then be prompted for the USB Serial Port Driver. Select “Install from a list or specific location (Advanced)” and press “Next”.



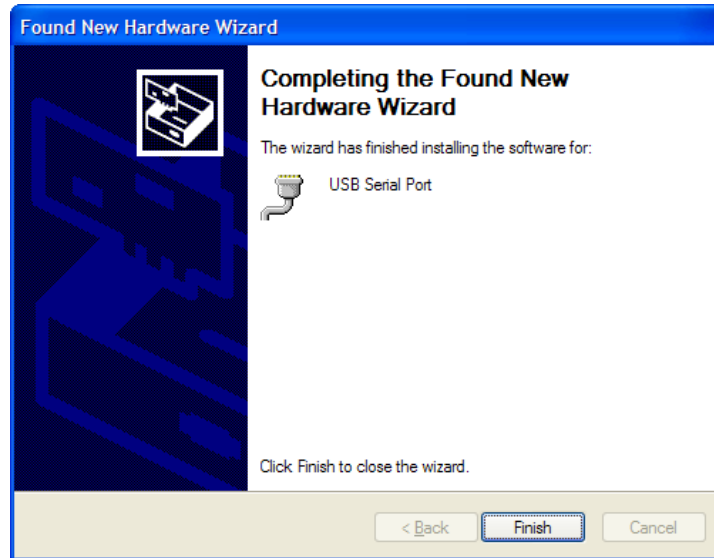
With the McS1 Installation CD in the drive, check the “Search removable media (floppy, CD-ROM...)” box and press “Next”.



You may be prompted with the following warning screen, depending on the release level of the driver. Just press “Continue Anyway”.



When the driver installation is complete, press “Finish”.



The driver installation is now complete.

When the McS1 is connected to the vehicle (or any other power source), the LED will flash once to indicate it has powered up correctly. After power-up, the LED is only used to indicate error conditions (usually a buffer overflow).

2.4 SOFTWARE INSTALLATION

To install the McS1 software (including the SAE J2534 DLL interface), simply run the MCS1INSTALL.EXE application on the McS1 Installation CD under the Software directory. The McS1 will be setup as a J2534 interface in the Windows registry and the library will be copied to the appropriate directory. You are now ready to use the McS1 with any SAE J2534 application (e.g. Ford Module Reprogramming). A test application (J2534TST.EXE) is also provided on the Installation CD and may be used to verify that the McS1 is installed properly.

For future software updates, simply re-run the MCS1INSTALL.EXE. There is no need to perform an un-install.

2.5 FIRMWARE UPDATE

If the McS1 firmware does not match the DLL (library) version when PassThruVersion is called, the user will be prompted with a popup to update the firmware. The update process only takes about 10 seconds, so it is recommended that the user always select the OK button to perform the update.

2.6 USING MULTIPLE McS1 INTERFACES

Each McS1 has a unique electronic serial number in the USB interface chip. When an McS1 is connected to the PC for the first time, it will be assigned a virtual COM port number. This COM port number should be the same each time the McS1 is connected to that particular PC. Since the McS1 interface library searches from the highest COM port number to the lowest, the connection order when using multiple McS1 units will always be the same. For instance, if there are McS1 devices connected to virtual COM port numbers 5, 6 and 7, then the first one connected will be the one on COM port 7. The second one connected will be the one on COM port 6 and the last on COM port 5. Note that you can tell which one connects by watching the LED flash when the connect call is made.

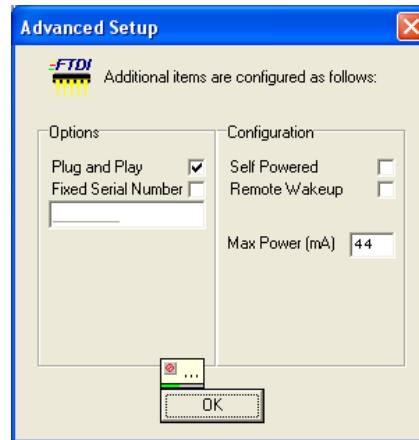
2.7 USB DRIVER TROUBLESHOOTING

If you get an “McS1 Not Detected” popup when trying to connect, please check the following items:

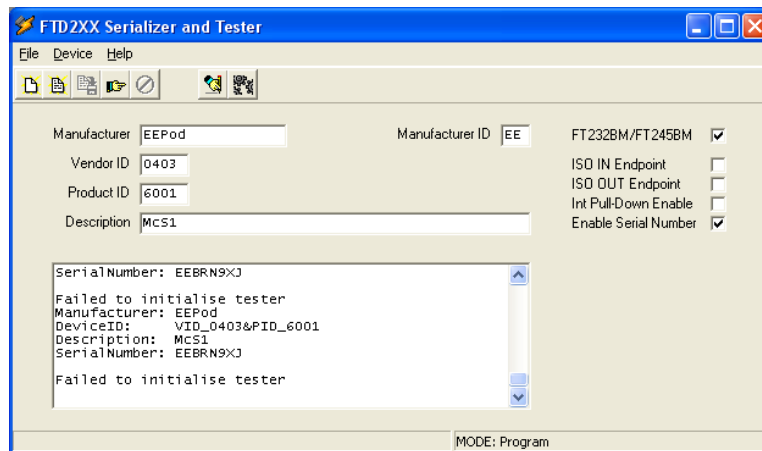
- 1.) Make sure the McS1 is powered from the vehicle (you should see the LED flash once as it is connected).
- 2.) Make sure there are no “PDA Hot Sync” applications running on your PC. These applications continuously scan all of the COM ports on the PC while looking for the PDA and prevent other applications from using them.

3 READING / MODIFYING THE ELECTRONIC SERIAL NUMBER

Every McS1 has a unique eight-character serial number. This serial number allows multiple McS1 interfaces to be connected to a single computer. If a user has multiple interfaces and does not want to use more than one at a time on a single computer, you can erase the serial number so that all of their interfaces will look identical to the PC. Erasing the serial number will avoid the loading of a new instance of the USB driver every time a different box is plugged into a PC where the driver has already been installed. In order to read or modify the serial number run the FTD2XXST.EXE program in the USB Driver directory of the CD-ROM. With the FTD2XXST.EXE program running, the user must first setup the advanced options under the Device menu selection as follows:



Once the advanced options are set, the user can enter the manufacturer, manufacturer ID, vendor ID, product ID and description as well as the checkboxes indicated below:



The user can then save this setup under the file menu selection. You are now ready to read or erase the serial number. To read the serial number simply press the test button or select “Test” under the Device menu selection (you can ignore the “Failed to initialize tester” message). To erase the serial number, select “Erase” under the Device menu selection. To program a new serial number, select “Program” under the Device menu selection.

Note that all of the above operations can be performed without vehicle side power to the McS1.

4 SPECIFICATIONS

4.1 CONNECTORS

4.1.1 USB Connector

The PC interface is a standard USB Type B connector. This connection is electrically isolated from the vehicle to prevent damage to the McS1 and/or the host PC.

4.1.2 DB25 Vehicle Connector

The DB25 vehicle connector contains all of the vehicle interface signals. All of the signals have reverse battery, overvoltage and ESD protection. The pin description is as follows:

PIN #	DESCRIPTION
1	No Connect
2	J1850PWM+ or J1850VPW (J1962 pin 2)
3	J1850PWM- (J1962 pin 10)
4	No Connect
5	High Speed CAN Low (J1962 pin 14)
6	High Speed CAN High (J1962 pin 6)
7	ISO9141 K-line (J1962 pin 7)
8	ISO9141 L-line (J1962 pin 15)
9	Analog (0-20VDC) Output (J1962 pin 13)
10	Medium Speed CAN Low (J1962 pin 11)
11	Medium Speed CAN High (J1962 pin 3)
12	Vehicle Battery Voltage (J1962 pin 16)
13	Vehicle Ground (J1962 pin 4)
14	Analog Input 1 (0-20VDC +/-20mV resolution)
15	Analog Input 2 (0-20VDC +/-20mV resolution)
16	Analog Input 3 (0-20VDC +/-20mV resolution)
17	Analog Input 4 (0-20VDC +/-20mV resolution)
18	No Connect
19	No Connect
20	No Connect
21	No Connect
22	Digital I/O 1 (0-5VDC)
23	Digital I/O 2 (0-5VDC)
24	Vehicle Battery Voltage (J1962 pin 16)
25	Vehicle Ground (J1962 pin 4)

4.2 ELECTRICAL

Item #	Parameter	Minimum	Maximum	Nominal	Units
1	Supply Voltage	6	20	12	VDC
2	Supply Current	90	250	100	Milliampere
3	Analog Output Voltage	5	20	N/A	VDC
4	Analog Output Current	N/A	150	N/A	Milliampere
5	Analog Input Voltage	0	20	N/A	VDC
6	Analog Input Current	0	0.5	N/A	Milliampere
7	Digital I/O Logic Threshold	2.3	2.7	2.5	VDC
8	Digital I/O Current	0	0.1	N/A	Milliampere

4.3 ENVIRONMENTAL

Item #	Parameter	Minimum	Maximum	Nominal	Units
1	Storage Temperature	-50	90	N/A	Degrees Celcius
2	Operating Temperature	0	70	23	Degrees Celcius
3	Relative Humidity	TBD	TBD	TBD	
4	Vibration	TBD	TBD	TBD	

4.4 MECHANICAL

Item #	Parameter	Nominal	Units
1	Length	5.1	Inches (130mm)
2	Width	3.1	Inches (80mm)
3	Height	1.2	Inches (30mm)
4	Weight	6.8	Ounces (192g)

5 REFERENCES AND ACRONYMS

5.1.1 References

SAE J2534 Recommended Practice For Pass Thru Vehicle Reprogramming

5.1.2 Acronyms

DLL	Dynamic Link Library
ISO	International Standards Organization
KWP	Keyword Protocol
OBD	On-Board Diagnostic
PWM	Pulse Width Modulation
SAE	Society of Automotive Engineers
USB	Universal Serial Bus
VPW	Variable Pulse Width