

# MyCANIC-FD®

## USER MANUAL



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## REVISION HISTORY

Revision	Release Date	Change Descriptions
1.01	July 25, 2017	First draft.
1.02	May 7, 2018	USB driver updates.
1.03	Aug. 21, 2018	Fixed maximum analog output current.

# 1 INTRODUCTION

The MyCANIC-FD® is the second generation of our popular MyCANIC vehicle interface. It is designed to be an all-in-one tool for vehicle engineers and technicians. It will support standalone programming and diagnostics, pass-thru (SAE J2534) programming and diagnostics, simulation, data acquisition and performance tuning as well as data logging and flight recorder functions. It contains all of the features below at a very competitive price.

## 1.1 FEATURES

### 1.1.1 Hardware

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

- High-speed 300MHz ARM 32-bit microprocessor.
- Low current consumption (less than 120mA @ 12VDC).
- Electrically protected USB version 2.0 interface to the host PC, capable of handling full CAN-FD (flexible data rate) network bandwidth on both channels.
- Two CAN/CAN-FD channels with support for all CAN-based protocols, including ISO15765.
- One LIN/ISO9141/ISO14230 K-Line interface.
- Automotive Ethernet interface, including support for DoIP (Diagnostics over IP).
- Programmable voltage output (0-5VDC, +/-10mV resolution) with current limiting (100mA maximum).
- Three analog inputs (two @ 0-20VDC +/-20mV resolution and one @ 0-5VDC +/-10mV resolution). An additional two dedicated analog inputs for vehicle battery and programmable output voltage monitoring.
- 8 line by 16 character backlit LCD display with graphics capability.
- Simple keypad with 6 keys for user control. Configurable for right or left-handed use.
- Green and red LEDs for quick PASS/FAIL user feedback indications.
- SD/SDHC card support (up to 32GB) for data/calibration storage, log files and firmware updates.
- Internal temperature monitor.
- 7" x 4" x 1.5" handheld enclosure with rubber boot to withstand 1 meter drop without damage.

### 1.1.2 Firmware

The firmware for the MyCANIC-FD® consists of a basic OBD-II application for reading parameters and trouble codes, clearing trouble codes, data logging and J2534 pass-thru. Custom versions can be easily developed to perform any custom task, including reprogramming of OEM modules, vehicle data recorders and other applications.

### 1.1.3 PC Software

The PC software for the MyCANIC-FD® consists of a USB driver, SAE J2534 dynamic link libraries (DLLs) and a software installation program. Once the driver and library are installed on a PC, any J2534-compliant application can use the MyCANIC-FD® interface.

An SAE J2534 Test Application is also 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 log tool for vehicle/module development.

## 2 OPERATING INSTRUCTIONS

### 2.1 ATTACHING THE OBDII CABLE

When attaching the OBDII cable to the MyCANIC-FD®, be sure to push it in all the way and tighten the thumbscrews completely.

### 2.2 USING THE KEYPAD

**NOTE:** *If the protective film cover is still on the keypad, please remove it before operation.*

The keypad is designed for left or right-handed use. The up, down, left and right arrow keys will work according to the orientation of the display (left or right-handed). The enter key is designated by two opposing carriage return arrows and the escape key is designated by the asterisk key. If at any time you are lost in the menus, you can press the escape (\*) key as many times as necessary, until you have returned to the “MyCANIC-FD Menu”.

### 2.3 PERSONALIZATION OPTIONS

A brand new MyCANIC-FD will be set to factory default settings as follows:

- Default LCD contrast setting will be set for normal operating temperature.
- Backlight on the display will be on.
- Right-handed orientation.
- Menu wraparound feature will be on.

To change the default settings, use the down arrow button on the “MyCANIC-FD Menu” and select “Setup”. Press enter to go to the “Setup Menu”. In the “Setup Menu”, select the setting that you would like to change and press enter. The instructions on the screen will tell you how to change the setting.

### 2.4 ACCESSING THE SD CARD SLOT

To access the SD card slot, remove the vehicle and USB cables from the MyCANIC-FD and then push up on the face of the rubber boot to remove it. The SD card slot is at the bottom of the unit and you can remove the card by pushing it in with your fingernail (do not use a screwdriver or any other tool to remove the card as you may damage the socket). To install another card in the slot, simply push it in with your fingernail until you hear it click. When the card is properly inserted, the edge of the card should be flush with the edge of the case.

#### 2.4.1 Access the SD Card Slot on MyCANIC-FD Heavy Duty Version

If you ordered the heavy duty (rubber boot with dust covers) option with your MyCANIC-FD®, it will have an access slot for the SD card. You do not need to disconnect cables or remove the boot, simply remove the dust cover and access the SD card.

### 2.5 MyCANIC-FD® OPERATION IN SAE J2534 PASSTHRU MODE

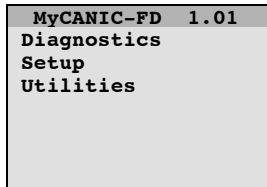
When the MyCANIC-FD® is attached to a PC via USB and functioning in Pass-Thru mode, the LCD screen will display “J2534 PASSTHRU”. As long as the PC is connected, the user will not be able to exit this screen. When the USB cable is disconnected, it will return to the MyCANIC-FD Main Menu.

### 2.6 MyCANIC-FD® OPERATION IN STANDALONE MODE

The following sections describe the basic features of the MyCANIC-FD® in standalone mode. Please note that there are several customer-specific versions of the MyCANIC-FD® that have different features than the ones listed below.

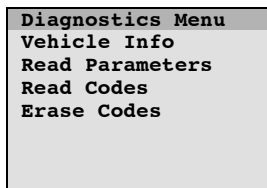
## 2.6.1 Main Menu

There are three selections in the main menu. Diagnostics allows the user to access vehicle OBDII information just like a basic scan tool. You must be connected to a CAN/ISO15765 OBDII vehicle (model year 2007 or newer) to use this function. Setup allows the user to configure certain features of the MyCANIC-FD® such as the LCD contrast setting. Utilities contains many simple tools for testing individual hardware features of the MyCANIC-FD® and is mainly used for troubleshooting problems.



## 2.6.2 Diagnostics

The diagnostics menu provides access to basic OBDII functions, such as vehicle information (Mode \$09), data parameters (Mode \$01), reading DTCs (Mode \$03) and clearing DTCs (Mode \$04). These functions are similar to what you would see with a simple OBDII scan tool.



### 2.6.2.1 Vehicle Info

Vehicle Info allows the user to read the OBDII Mode \$09 information that is supported by the vehicle. This includes information such as the VIN and calibration IDs.

### 2.6.2.2 Read Parameters (Logging Data)

Read Parameters allows the user to read the OBDII Mode \$01 information that is supported by the vehicle. This can include many values such as engine RPM, vehicle speed, throttle position, MAF sensor values, etc. When you enter this function, you will enter the scan rate. This is the rate at which the data will be updated on the display and the default is 250 milliseconds (four times per second). After entering the scan rate, the next screen will allow the user to select the parameters to display. Up to six (6) parameters can be displayed at a time. After selecting the parameters, the user can press '\*' to view the live data (if the user selects the full six parameters, it will immediately proceed to the live view screen upon selecting the sixth parameter). While the live data is being displayed, the user can press the left arrow key to log the data to a file on the SD card. The file on the SD card will be named OBDLOGxx.CSV (where xx will be the next available filename in a sequence from 01 to 99). As indicated by the filename extension, the log file will be in comma separated variable format. Once all 99 available log file names have been stored on the SD card, the user will see an error if more logs are attempted. The log files must be removed and deleted from the SD card to continue.

### 2.6.2.3 Read Codes

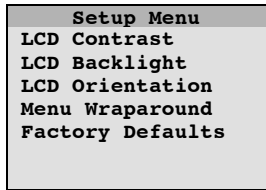
Read Codes allows the user to read the OBDII diagnostic trouble codes (DTCs) from the vehicle. If DTCs are present, they will be listed on the screen. To get the full English description of the DTC, select it on the screen and press the Enter key.

### 2.6.2.4 Erase Codes

Erase Codes allows the user to clear/erase the stored codes (DTCs) in the OBDII powertrain control modules of the vehicle.

## 2.6.3 Setup

The setup menu allows the user to control the preference settings of the MyCANIC-FD®, including the LCD contrast, turning on/off the LCD backlight, changing the LCD orientation for left or right-handed use, turning on/off the menu wraparound feature and returning all settings to the factory default values.



### 2.6.3.1 LCD Contrast

LCD Contrast allows the user to choose the contrast level of the screen. Note that the range of contrast levels can result in a screen that is not viewable (too dark or too light). Typically, the only times that you will need to adjust the contrast level is while working in very cold or hot environments.

### 2.6.3.2 LCD Backlight

LCD Contrast allows the user to turn the backlight on or off. Turning the backlight off can be helpful in very sunny environments or when power conservation is important.

### 2.6.3.3 LCD Orientation

LCD Orientation allows the user to configure the screen for left or right-handed use. Note that for left-handed use, the notification icons are at the bottom of the screen and upside-down.

### 2.6.3.4 Menu Wraparound

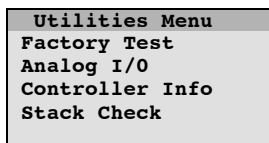
Menu Wraparound allows the user enable or disable the feature where the menu selection will return to the top/bottom when scrolling past the last/first menu list selection.

### 2.6.3.5 Factory Defaults

Factory defaults will return all of the settings above to the factory default value.

## 2.6.4 Utilities

The utilities menu gives the user access to many of the low-level hardware functions in the MyCANIC-FD®. These functions can be used to diagnose/troubleshoot problems with either the MyCANIC-FD® or a vehicle to determine the source of a problem.



### 2.6.4.1 Factory Test

Runs a series of tests to verify the functionality of the MyCANIC®. Note that this function requires a custom factory test harness and external equipment to work properly.

### 2.6.4.2 Analog I/O

Displays the values of all analog inputs and outputs (including the internal temperature).

### 2.6.4.3 Controller Info

Displays low-level microcontroller information for troubleshooting any internal electronics related issues.

### 2.6.4.4 Stack Check

Displays the amount of stack space remaining.



## 3 PC SOFTWARE INSTALLATION INSTRUCTIONS

### 3.1 MINIMUM PC REQUIREMENTS

- Any modern version of Windows
- USB 2.0 Compliant Interface

### 3.2 BENCHTOP USAGE

If you are using the MyCANIC-FD 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 MyCANIC-FD normally draws about 120 milliamps of current, turning on the programmable voltage output as well as other operations will require larger amounts of in-rush current that smaller supplies cannot handle. Wall-mount supplies are NOT recommended.

### 3.3 DOWNLOAD LATEST SOFTWARE AND MANUAL

Download the latest MyCANIC-FD® files from the EEPod LLC FTP server (<ftp://eepod.com/eepod.com>). The file will have the name MyCANICFDvXXX.zip (where XXX is the version number). Extract the files from the ZIP archive to your local hard drive on your PC and you will have two directories (User Manual and Software). Use these directories in the instructions below.

### 3.4 USB DRIVER INSTALLATION

The USB driver for the MyCANIC-FD is the standard Windows USB serial driver (USBSER.SYS), so no special driver needs to be installed. Simply connect the MyCANIC-FD and the driver will load automatically.

### 3.5 SOFTWARE INSTALLATION

To install the MyCANIC-FD software (including the SAE J2534 DLL interface), simply run the MYCANICFDINSTALL.EXE application under the Software directory that you extracted in the section above. The MyCANIC-FD 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 MyCANIC-FD with any SAE J2534 application (e.g. DET, PCMScan, PTDiag, ScanXL, etc.). A test application (J2534TST.EXE) is also provided in the Software directory and may be used to verify that the MyCANIC-FD is installed properly.

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

### 3.6 NORMAL FIRMWARE UPDATE

The MyCANIC-FD is different from the original MyCANIC in that it performs the firmware update from a file (APP.LDR) on the SD-Card. If the MyCANIC-FD firmware does not match the version in the APP.LDR file, the MyCANIC-FD will automatically perform the update.

### 3.7 FORCED FIRMWARE UPDATE

If the MyCANIC-FD firmware update is interrupted for any reason or if the user wants to update one of the special firmware versions (e.g. DPF Tool), they can use the following steps:

- 1.) Hold down the enter key on the keypad while plugging the MyCANIC-FD into the power (either USB or OBDII/vehicle). The MyCANIC-FD will reprogram using the APP.LDR file on the SD-Card if it is present.

### **3.8 USING MULTIPLE MYCANIC / MYCANIC-FD INTERFACES**

When an MyCANIC-FD 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 MyCANIC-FD is connected to that particular PC. Since the MyCANIC-FD interface library searches from the highest COM port number to the lowest, the connection order when using multiple MyCANIC-FD units will always be the same. For instance, if there are MyCANIC-FD 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.

## 4 SPECIFICATIONS

### 4.1 CONNECTORS

#### 4.1.1 USB Connector

The PC interface is a standard USB Type B connector. This connection is electrically protected to prevent damage to the MyCANIC-FD® and/or the host PC.

#### 4.1.2 DB15HD Vehicle Connector

The DB15HD 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	DoIP RX+
2	
3	Medium Speed CAN High (J1962 pin 3)
4	Vehicle Ground (J1962 pin 4)
5	
6	High Speed CAN High (J1962 pin 6)
7	LIN / ISO9141 K-Line (J1962 pin 7)
8	DoIP ACT
9	DoIP RX-
10	
11	Medium Speed CAN Low (J1962 pin 11)
12	DoIP TX+
13	DoIP TX-
14	High Speed CAN Low (J1962 pin 14)
15	Vehicle Battery Voltage (J1962 pin 16) (AIN1) (0 – 20VDC)

#### 4.1.3 Analog I/O Connector

The four position audio-style connector contains all of the analog functions. The pin description is as follows:

PIN #	DESCRIPTION
1	Ground (Sleeve)
2	Analog Output (0-5VDC, 100mA) (Tip)
3	Analog Input (0-5VDC) (Ring 1)
4	Analog Input (0-20VDC) (Ring 2)

## 4.2 ELECTRICAL

Item #	Parameter	Minimum	Maximum	Nominal	Units
1	Supply Voltage	6	20	12	VDC
2	Supply Current	90	200	120	Milliampere
3	Analog Output Voltage	0	5	N/A	VDC
4	Analog Output Current	N/A	10	N/A	Milliampere
5	Analog Input Voltage	0	20 (5)	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	-20	70	23	Degrees Celcius
3	Relative Humidity	0	70%	N/A	Relative Humidity
4	Shock / Vibration	N/A	1	N/A	One meter drop to concrete (when in rubber boot)

## 4.4 MECHANICAL

Item #	Parameter	Nominal	Units
1	Length	5.9	Inches (including rubber boot)
2	Width	3.9	Inches (including rubber boot)
3	Height	1.7	Inches (including rubber boot)
4	Weight	9.0	Ounces (including rubber boot)

## 5 REFERENCES AND ACRONYMS

### 5.1.1 References

SAE J2534	Recommended Practice For Pass Thru Vehicle Reprogramming
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### 5.1.2 Acronyms

API	Application Programming Interface
CAN	Controller Area Network
CSV	Comma Separated Variable
DLL	Dynamic Link Library
DTC	Diagnostic Trouble Code
ESD	Electro-Static Discharge
FD	Flexible Data
ISO	International Standards Organization
LCD	Liquid Crystal Display
LIN	Local Interconnect Network
MAF	Mass Air Flow
OBD	On-Board Diagnostic
OEM	Original Equipment Manufacturer
RPM	Revolutions Per Minute
SAE	Society of Automotive Engineers
SD	Secure Digital
USB	Universal Serial Bus
VDC	Voltage, Direct Current
VIN	Vehicle Identification Number