MyCANIC-IOT
User Manual

www.eepod.com

Table Of Contents

REVISION HISTORY

Revision	Release Date	Change Descriptions
1.01	March 30, 2022	First draft.
1.02	July 6, 2022	Minor updates.
1.03	August 22, 2022	Added section to debug cloud server connection.
1.04	Oct. 11, 2022	Added wireless network signal level feature.
1.05	July 2, 2024	Updated electrical specs for minimum voltage, average and maximum current.
1.06	Sept. 26, 2024	Added TRRS jack picture for analog connections.

1 INTRODUCTION

The MyCANIC-IOT is the latest generation of our popular MyCANIC vehicle interface. It is designed to be an all-in-one tool for vehicle engineers and technicians with a wireless IoT (Internet of Things) cloud interface to support enterprise-wide updates and file management capabilities. 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 these features below at a very competitive price.

1.1 FEATURES

1.1.1 Hardware

The MyCANIC-IOT 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 150mA @ 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).
- Wireless IoT interface to EEPod cloud servers.
- Programmable voltage output (0-5VDC, +/-10mV resolution) with current limiting (10mA 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.
- 15 line by 26 character color backlit LCD display with graphics capability.
- Simple keypad with 6 keys for user control.
- 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-IOT 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 vehicle modules, simulation, vehicle data recorders and other applications.

1.1.3 PC Software

The PC software for the MyCANIC-IoT 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-IoT 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-IOT, be sure to push it in all the way and tighten the thumbscrews completely.

2.2 PERSONALIZATION OPTIONS

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

- Engineering units will be set to English (e.g. lbs, inch, Fahrenheit).
- Menu wraparound feature will be on.

To change the default settings, use the down arrow button on the "MyCANIC-IOT 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.

2.3 ACCESSING THE SD CARD SLOT

To access the SD card slot, remove the vehicle and USB cables from the MyCANIC-IOT 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, simple 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 plastic case.

2.3.1 Access the SD Card Slot on MyCANIC-IOT Heavy Duty Version

If you ordered the heavy duty (rubber boot with dust covers) option with your MyCANIC-IOT, 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.

2.4 MYCANIC-IOT OPERATION IN SAE J2534 PASSTHRU MODE

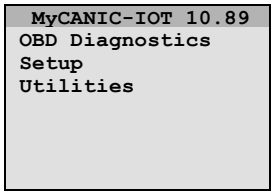
When the MyCANIC-IOT is attached to a PC via USB cable or connected to the cloud server via a wireless network and functioning in Pass-Thru mode, the LCD screen will display "J2534". As long as the PC is connected via USB with the virtual COM port open, the user will not be able to exit this screen. When the COM port is closed or the USB cable is disconnected, it will return to the MyCANIC-IOT Main Menu.

2.5 MYCANIC-IOT OPERATION IN STANDALONE MODE

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

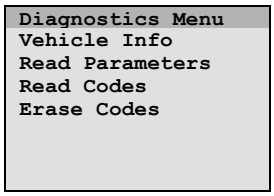
2.5.1 Main Menu

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-IOT such as the LCD contrast setting. Utilities contains many simple tools for testing individual hardware features of the MyCANIC-IOT and is mainly used for troubleshooting problems.



2.5.2 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.



2.5.2.1 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.

2.5.2.2 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.

2.5.2.3 Read Codes

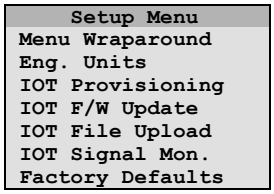
Read Codes allows the user to read the OBDII diagnostic trouble codes (DTCs) from the vehicle. If DTCs are present, they will be listed on the screen. To get the full English description of the DTC, select it on the screen and press the Enter key.

2.5.2.4 Erase Codes

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

2.5.3 Setup

The setup menu allows the user to control the preference settings of the MyCANIC-IOT 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.



2.5.3.1 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.

2.5.3.2 Engineering Units

Engineering Units allows the user to pick SAE (default) or Metric engineering units.

2.5.3.3 IOT Provisioning

IOT Provisioning allows the user to securely connect the MyCANIC-IOT to their local wireless network so it can communicate with the EEPod cloud server. Reference the section below on the steps to connect to your local network.

2.5.3.4 IOT F/W Update

IOT F/W Update allows the user to perform a forced update of the IoT processor firmware using the IOT.LDR file on the SD-Card.

2.5.3.5 IOT File Upload

IOT File Upload is for units that are enabled via the EEPod cloud server to request uploading of data files.

2.5.3.6 IOT Signal Monitor

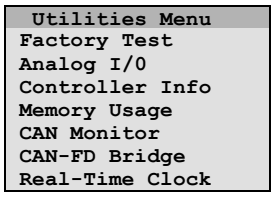
IOT Signal Monitor shows the signal strength of the local wireless network connection. This can be used for determining the best location for the MyCANIC-IOT when using the cloud server features.

2.5.3.7 Factory Defaults

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

2.5.4 Utilities

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



2.5.4.1 Factory Test

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

2.5.4.2 Analog I/O

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

2.5.4.3 Controller Info

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

2.5.4.4 Memory Usage

Displays the amount of stack and other memory space remaining.

2.5.4.5 CAN Monitor

Allows the user to monitor a CAN network for specified messages and log them.

2.5.4.6 CAN-FD Bridge

Feature to use the MyCANIC-IOT as a bridging/gateway interface between two CAN networks.

2.5.4.7 Real-Time Clock

Allows the user to set the real-time clock when it is not available from the cloud server.

2.6 USING THE MYCANIC-IOT WIRELESS / CLOUD SERVER CONNECTION

When the MyCANIC-IOT is communicating with the cloud server via a wireless network and functioning in Pass-Thru mode, the LCD screen will display “J2534”. The user can tell when the cloud server connection is established when the display shows the current time in GMT (Greenwich Mean Time).

2.6.1 Connecting the MyCANIC-IOT To Your Local Wireless Network using the Mobile App

Connecting the MyCANIC-IOT to your local wireless network using your mobile device is simple. First download the EEPod Provisioning app to your mobile device from either Google Play (Android devices) or the Apple Store. You will need to allow the app access to your camera (to scan the QR code) and location services (for your local wireless network), then follow these steps:

1.) On the MyCANIC-IOT, go to the Setup Menu, select “IOT Provisioning”, then press enter after reading the instruction screen and a QR code will appear in a few seconds.
2.) When you run the EEPod Provisioning app, just press the “Provision New Device” button and then scan the QR code.
3.) When prompted on the app, select Join to connect to the MyCANIC-IOT-xxxxxxxx device.
4.) A list of the available local wireless networks will be presented. Select the one you want the MyCANIC-IOT to use and enter the password to join the network.
5.) When successfully completed, power cycle the MyCANIC-IOT and then watch the display for the time to be updated. That will indicate a connection to the local wireless network is established.

2.6.2 Connecting the MyCANIC-IOT To Your Local Wireless Network using the PC

Connecting the MyCANIC-IOT to your local wireless network using the Windows PC application is also simple. First download the EEPod Provisioning application (Prov_IOT.exe) to your PC from our website (www.eepod.com).

1.) Connect the MyCANIC-IOT to the PC with the included USB cable.
2.) Run the Prov_IOT.exe application.
3.) Enter the network name (SSID) and password for the network you want to use with the MyCANIC-IOT.
4.) Press the Provision button to send the data to the MyCANIC-IOT.
5.) When successfully completed, power cycle the MyCANIC-IOT and then watch the display for the time to be updated. That will indicate a connection to the local wireless network is established.

2.6.3 Debugging Your Local Wireless Network Connection

To determine the strength of the connection to your local wireless network for a given location, you can go to the Setup Menu and select IOT Signal Monitor (IOT Signal Mon.). It will show the signal strength in decibles (dB) as well as a user-friendly description (e.g. Excellent, Good, Poor, etc.). You can use this feature to determine best location for the MyCANIC-IOT when using the cloud server features.

2.6.4 Debugging Wireless Network Cloud Server Connection using the PC

To test the network connection to the EEPod cloud server from a PC, go to a web browser and enter the following URLs/addresses:
https://eepodiot1.eepod.com:8883

If using Safari and you see “Can’t connect to server”, the connection is blocked. Talk to your IT department to resolve (ask them to unblock the address/port above on the wireless network you want to use with the MyCANIC-IOT).

If using Safari and you see “Can’t open page”, the connection is okay.

If using Chrome and you see “This site can’t be reached", the connection is blocked. Talk to your IT department to resolve (ask them to unblock the address/port above on the wireless network you want to use with the MyCANIC-IOT).

If using Chrome and you see “This page isn’t working”, the connection is okay.

FYI: Microsoft Edge does not work for this test as it gives the same message.

https://eepodiot1.eepod.com:443

You can use any web browser for this address. If you see the EEPod Login page, it is working. Otherwise your IT department will need to unblock this address/port on the wireless network you want to use with the MyCANIC-IOT.

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-IOT 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-IOT 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-IOT files from the EEPod LLC website (www.eepod.com) at the end of the description on the products page. The file will have the name MyCANICIOTvXXX.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-IOT is the standard Windows USB serial driver (USBSER.SYS), so no special driver needs to be installed. Simply connect the MyCANIC-IOT and the driver will load automatically.

3.5 Software Installation

To install the MyCANIC-IOT software (including the SAE J2534 DLL interface), simply run the MYIOTINSTALL.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-IOT 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-IOT is installed properly.

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

3.6 Normal Firmware Update

The MyCANIC-IOT performs firmware updates from a file (APP.LDR) on the SD-Card. If the MyCANIC-IOT firmware does not match the version in the APP.LDR file, the MyCANIC-IOT will automatically perform the update. Similarly, the wireless IoT processor in the MyCANIC-IOT updates from a file (IOT.LDR) on the SD-Card. Note that these files and can be updated from the EEPod cloud server for automatic updates as well.

3.7 Forced Firmware Update

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

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

3.8 USING MULTIPLE MYCANIC / MYCANIC-FD / MYCANIC-IOT INTERFACES ON USB

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

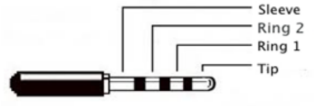
4.1.2 DB15HD Vehicle Connector

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 / 0-20V ADC Input Channel 1
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 (PCB)	Ground (Sleeve)
2 (PCB)	Analog Output (0-5VDC, 100mA) (Tip)
3 (PCB)	Analog Input (0-5VDC ADC Channel 2) (Ring 1) (CH1 in FSCRIPT)
4 (PCB)	Analog Input (0-20VDC ADC Channel 3) (Ring 2) (CH2 in FSCRIPT)

4.2 ELECTRICAL

Item #	Parameter	Minimum	Maximum	Nominal	Units
1	Supply Voltage	6.5	20	12	VDC
2	Supply Current	90	250	150	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

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
IoT	Internet of Things
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