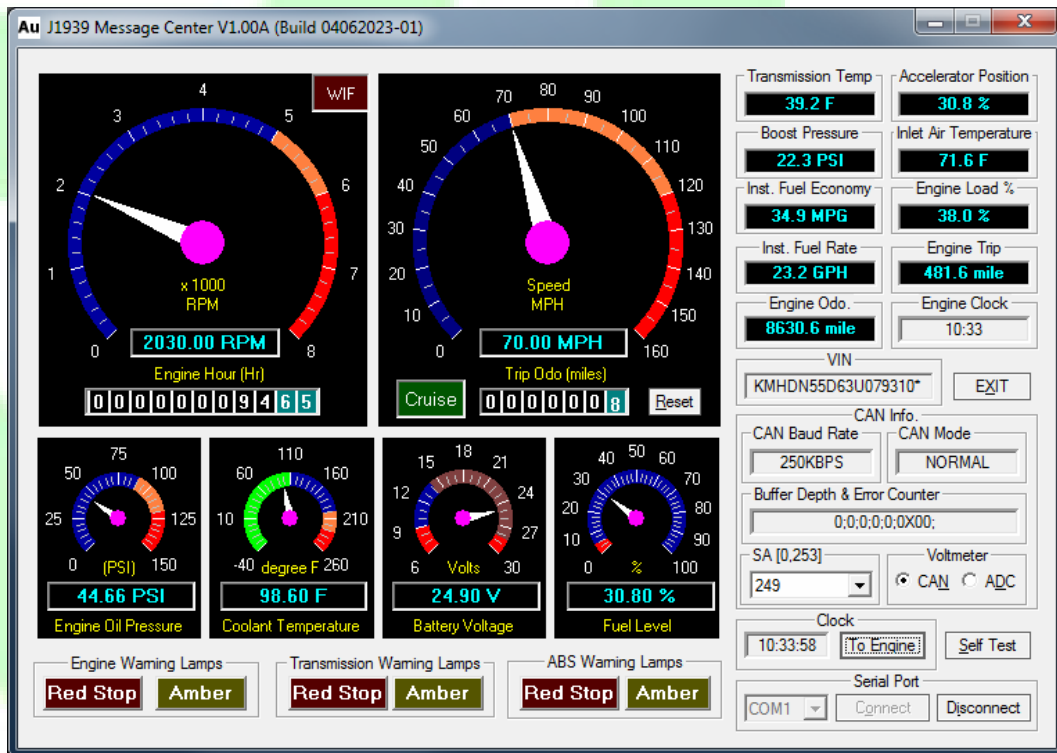




Au J1939 Message Center System User Manual

Rev. E

Au Group Electronics
April 2023



All Copyrights are reserved by Au Group Electronics 2007 - 2023

This document can **NOT** be freely distributed without written approval from Au Groups Electronics

Table of Content

1.	Au J1939 MCS Hardware	3
1.1.	Major Hardware Features	3
1.2.	3 ways of PC connection	3
2.	Au J19393 MCS PC Software with GUI.....	5
2.1	Major Software Features.....	5
2.2	Select serial port number and connect	6
2.3	CAN Baud Rate and CAN Mode.....	6
2.4	Reset Trip odometer.....	7
2.5	Voltmeter Source	7
2.6	Self Test mode	8
2.7	Adjust Engine Clock	8
2.8	Product information	9
2.9	Disconnect.....	10
2.10	Exit program.....	10
Appendix A.	J1939 MCS GUI Installation.....	11
Appendix B.	How to Use Bluetooth Module.....	14
Appendix C.	How to make the Au J1939 MCS GUI display properly	17

Au J1939 Message Center System User Manual (Rev. D)

1. Au J1939 MCS Hardware

Au J1939 Message Center System (MCS) includes a handheld device and computer software with a graphic user interface (GUI). Au J1939 MCS is a turn-key solution that displays about 20 SAE-J1939 parameters on a computer screen. The GUI could serve as a secondary display on trucks, school buses, recreation vehicles (RV), marine vessels, or any vehicles with SAE-J1939 controller area network (CAN).



Figure 1-1

1.1. Major Hardware Features

Au J1939 MCS box (figure 1-1) is a handheld device with one LED and two DB9 connectors (one is a DB9 female connector on the RS232 side, the other is a DB9 male connector on the BUS side). The major features of the device are listed below:

- **Operating voltage:** +10V~+32V DC,
- **Nominal voltage:** +12V DC or +24V DC;
- **Operating electric current:** 65mA typical, 250mA max;
- **Operating temperature:** -40 °F to 185 °F (-40 °C to 85 °C)
- **Transient Voltage Suppressor (TVS) protection** on CAN bus
- **Size:** 3-1/8"L X 1-11/16"W X13/16" H (78mm X 42mm X 21mm)
- **Enclosure:** Translucent Red on top and Black on the bottom
- **1 LED** for communication event indication
- **1 RS232 interface (DB9 female connector):** can connect to a PC or any device with RS232 serial port(default RS232 baud rate: 115.2K). Pin-out illustrated in Figure 1-2.
- **1 BUS interface (DB9 male connector):** can connect to J1939/CAN and a power supply (+12V / 24V DC). Pin-out of the DB9 male "BUS" interface is illustrated in Figure 1-3.



Figure 1-2 RS232 Interface



Figure 1-3 Bus Interface

1.2. 3 ways of PC connection

Au J1939 MCS device has an RS232 interface. It can be connected to a PC in one of three ways, as shown in Figure 1 – 4:

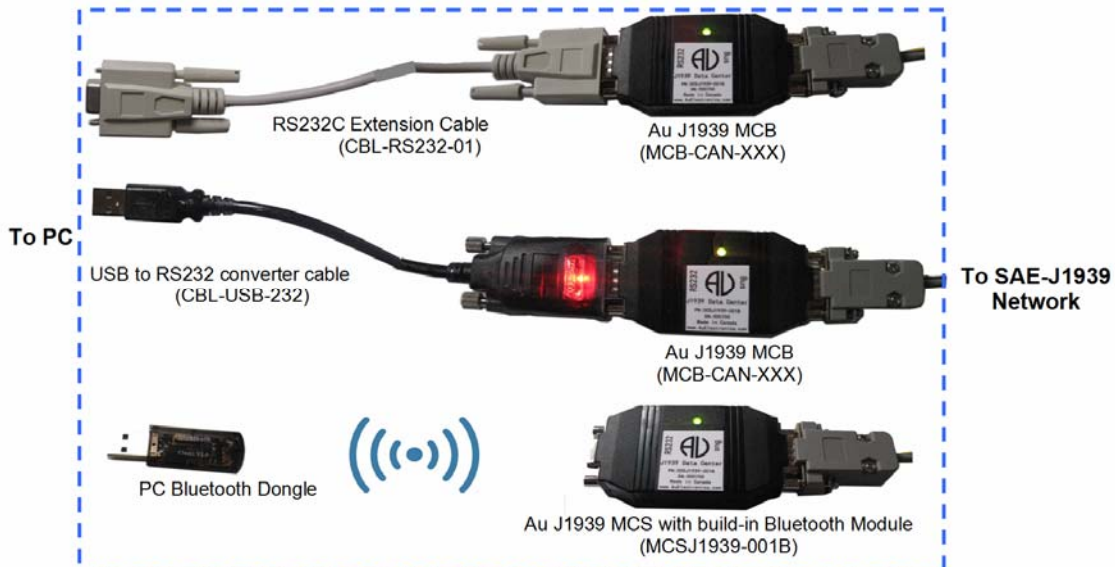


Figure 1 – 4

- 1.2.1. It can be connected to the RS232 (serial) port of a PC through an RS232 serial extension cable (part#: CBL-RS232-01, order separately)
- 1.2.2. It can be connected to the USB port of a PC through a USB to RS232 converter cable (part#: CBL-USB-232, order separately).
- 1.2.3. With an optional built-in Bluetooth module, the J1939 MCS device can communicate with a computer through a Bluetooth dongle (order separately).

Note: Default Bluetooth pairing code is 1234. Please refer to Appendix B for detailed information on how to pair the Bluetooth module with other Bluetooth devices.

A typical application of Au J1939 MCS in the SAE J1939-15 network is illustrated in Figure 1- 4.

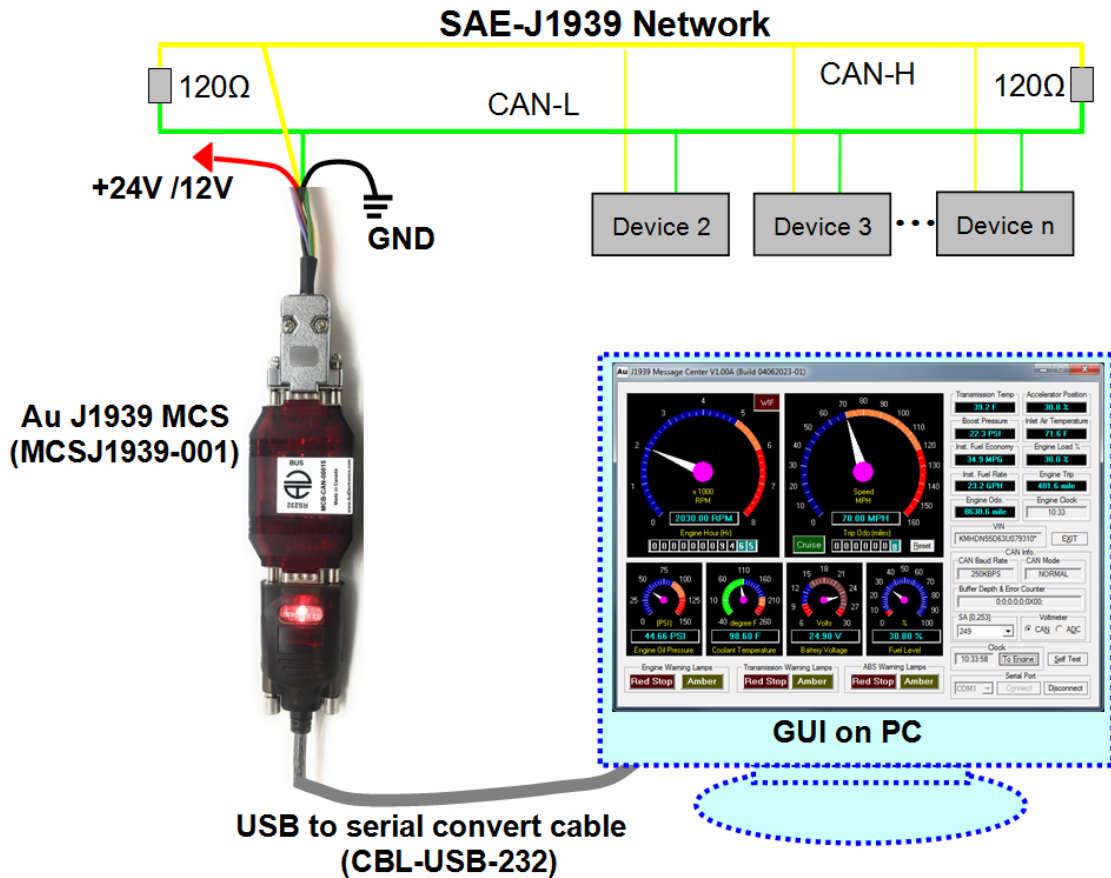


Figure 1-4 A typical SAE J1939 -15 network topology with Au J1939 MCS

All items for the MCS hardware connection and their Au Part# are listed in table 1-2.

Table 1-2 Hardware list and part # for Data Center system

Au Part#	Accessories
MCSJ1939-001	Au SAE J1939 Message Center System without Bluetooth module
MCSJ1939-001B	Au SAE J1939 Message Center System with Bluetooth module
CBL-RS232-01	RS232 serial extension cable
CBL-USB-232	USB to RS232 serial convert cable
CBL-CAN-485-01	6-wire CAN/J1708 cable with a DB9 female connector
CBL-CAN-06G-DB9	Au Y cable with two 9-way green connectors and a DB9 female connector, typical length: 48 inch. (customized length available per request)
CBL-CAN-03-G18	Au J1939/CAN cable with a DB9 female connector and 9-way green round threaded plug, 18 inch length

2. Au J19393 MCS PC Software with GUI

Au J1939 MCS GUI is shown in figure 2-1.

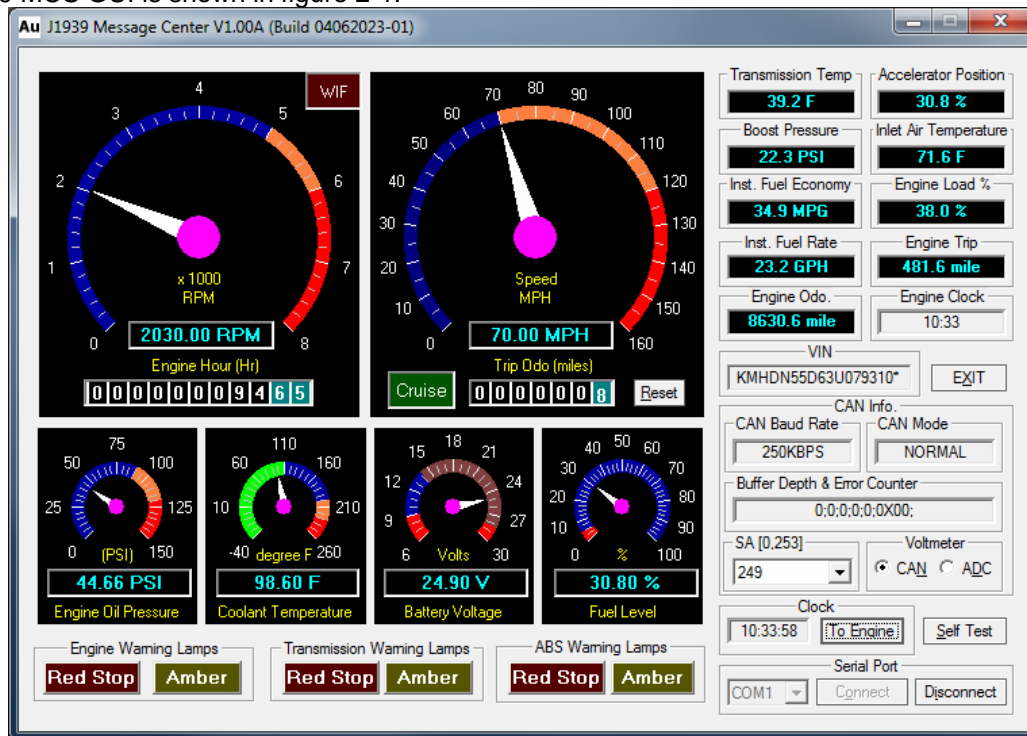


Figure 2-1 – Au J1939 Message Center System GUI

2.1 Major Software Features

- **Automatic CAN baud rate detection**
- **Ease of Use:** Displays SAE-J1939 messages from CAN network without the requirement of decent J1939 knowledge/experience or very complicated configuration settings.
- **6 parameters displayed in both analog Gauges and digital display:**
 - Engine Revolution per Minute (RPM)
 - Vehicle/vessel Speed
 - Engine Oil Pressure
 - Engine Coolant Temperature
 - Battery Voltage (from CAN bus or from power supply for the device)
 - J1939 Fuel Level (when available)
- **11 parameters displayed in digital outputs and computer clock**
 - Engine Hour
 - Trip Odometer Accumulation and Reset Capability
 - Transmission Temperature
 - Engine Boost Pressure
 - Instantaneous Fuel Economy
 - Instantaneous Fuel Rate
 - Accelerator Position
 - Inlet Air Temperature
 - Engine Load Percentage
 - Engine Trip
 - Total vehicle distance
 - Vehicle Identification Number (VIN)
- **8 message/warning lamps**
 - Cruise Lamp
 - Water In Fuel Warning Lamp
 - Engine Warning Lamp - Red Stop and Amber
 - Transmission Warning Lamp - Red Stop and Amber

- ABS Warning Lamp - Red Stop and Amber
- **Two sources for Voltmeter to select:** CAN or ADC
- **Clock display and one-button to adjust Engine clock.**
- **Self test function (up to 60 seconds)**
- **Display CAN Information:**
 - CAN Baud Rate: Detects the bus' CAN baud rate automatically
 - CAN Mode: Normal or Listen-only mode
 - Buffer Depth and Error Counter
 - CAN Source Address
- **Display Product Information:**
 - Product ID
 - Serial Number
 - ASIC ID
 - Firmware Version

After installation (please refer to Appendix A for steps on installing the J1939 MCS GUI), the software will function accordingly with J1939 inputs. There is no special tune-up required.

2.2 Select serial port number and connect

First, find out which serial port is connecting to the J1939 MCS. Then select the serial port number from the drop-down list, then click "connect" button (Figure 2-2) to set up a serial connection between the J1939 MCS and the PC. The device will save the selection automatically.

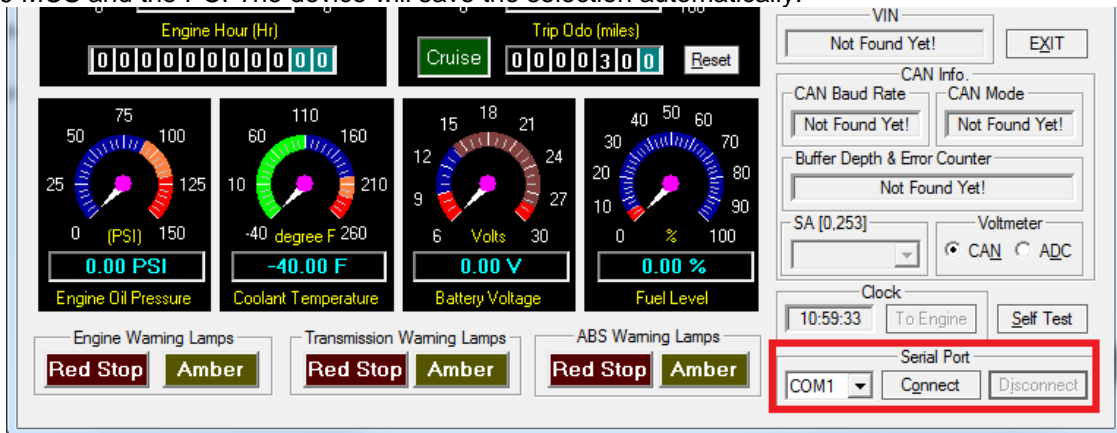


Figure 2-2 Click "Connect" button will connect the GUI to the selected serial port.

2.3 CAN Baud Rate and CAN Mode

If CAN networking connection is set up properly, MCSJ1939 will detect the CAN baud rate automatically from CAN network, CAN baud rate will show up in the CAN info area, Au MCSJ1939 is able to detect 62.5K, 125K, 250K, 500K, and 1MHz CAN baud rate. When CAN baud rate is determined, it will run at "NORMAL" mode.

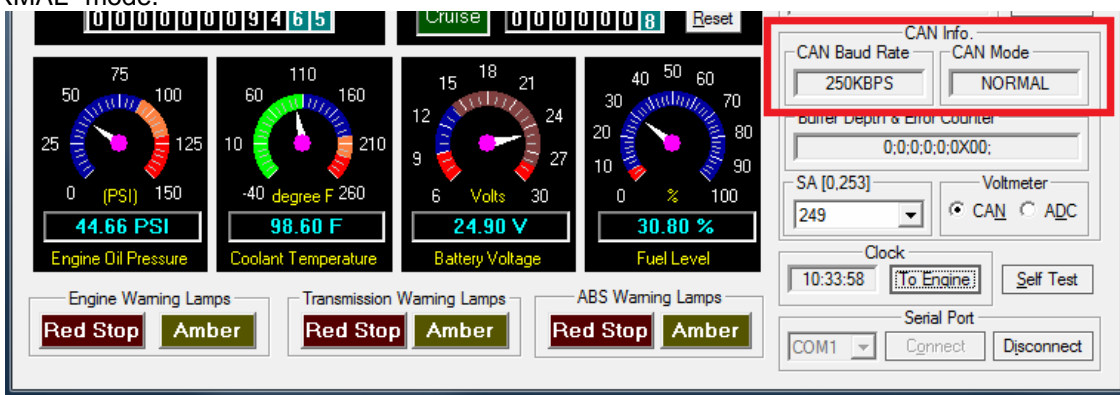


Figure 2-3 Normal Mode

If CAN networking connection is not setup properly, the MCSJ1939 will be in "LISTEN ONLY" mode.

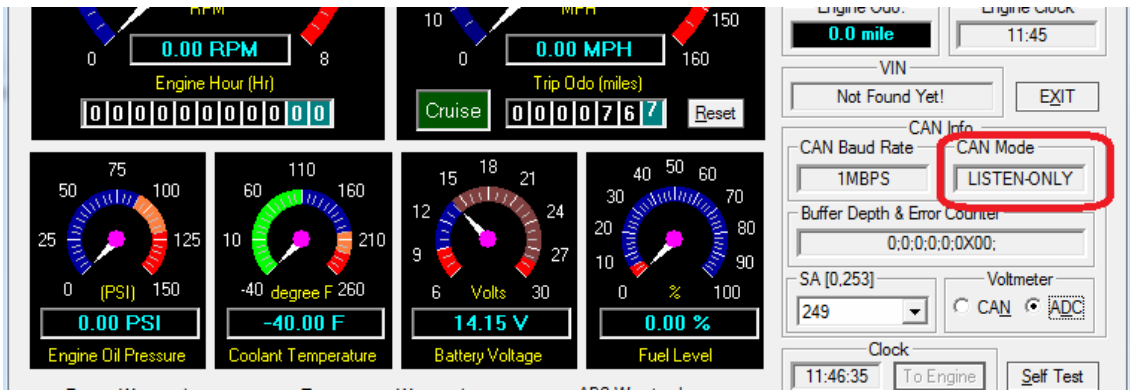


Figure 2-4 Listen-only mode

2.4 Reset Trip odometer

Click the "Reset" button will reset the value of the trip odometer to 0 (Figure 2-5). Whenever the program restarts, the trip odometer value will reset. It is only a "Trip" odometer.

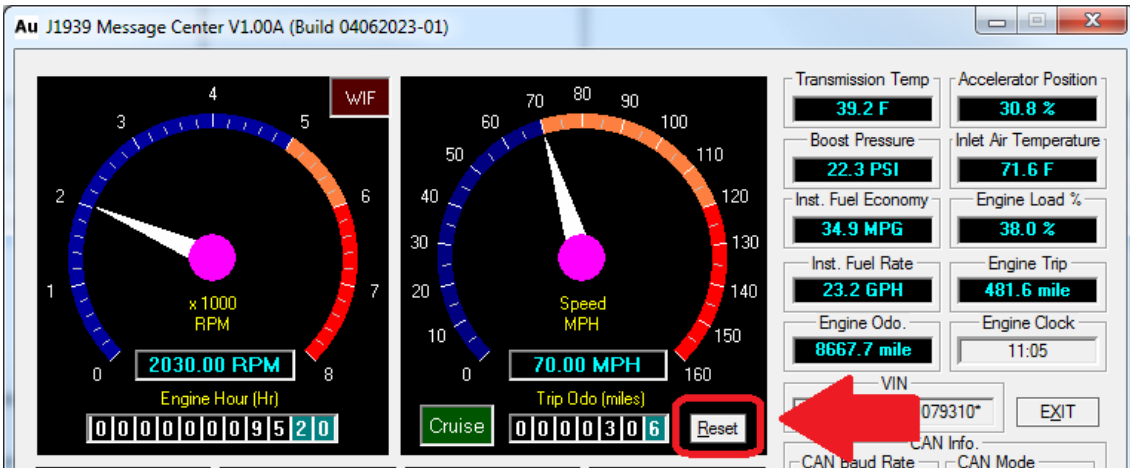


Figure 2-5 – Before reset

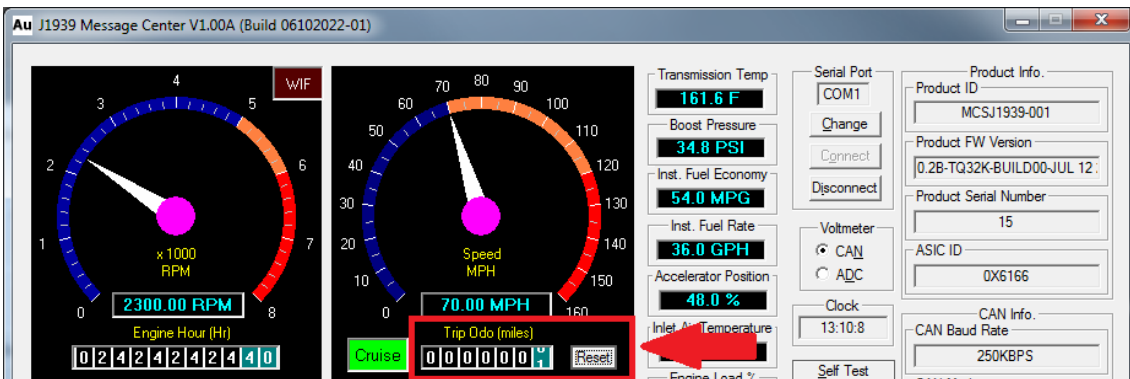


Figure 2-6 after reset

2.5 Voltmeter Source

The battery voltage value can come from any of the two sources: CAN network or Au J1939 MCS device.

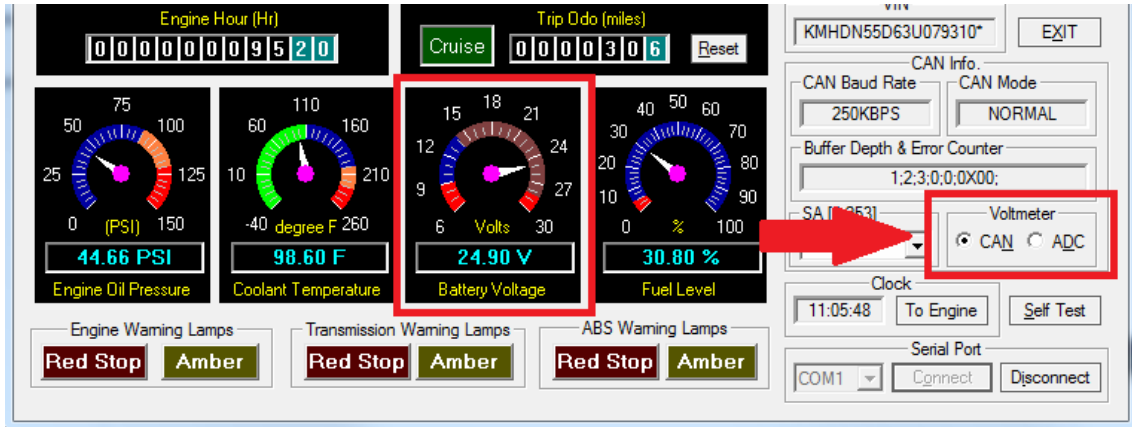


Figure 2-7 Battery voltage is 24.9V when the voltmeter source is selected from CAN network.

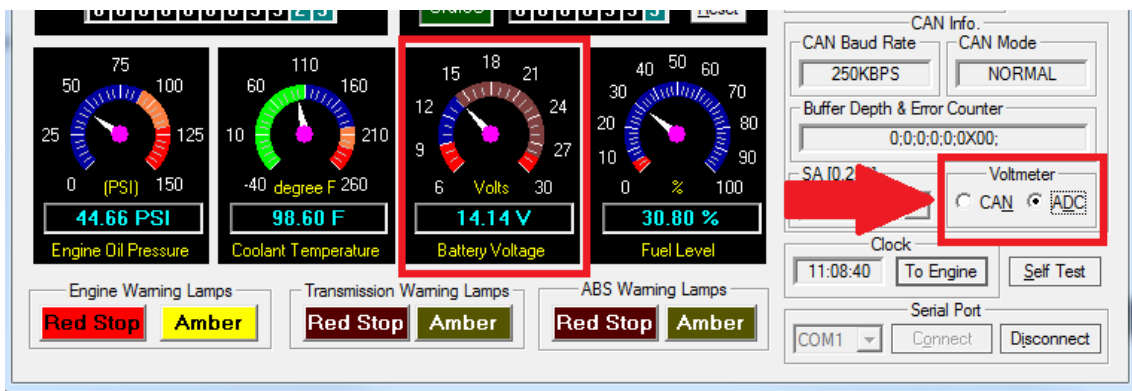


Figure 2-8 Battery voltage is 14.14V when the voltmeter source is selected from ADC.

2.6 Self Test mode

The Self-Test button is a toggle switch: clicking "Self Test" once will start a self-test mode while clicking "Self Test" again will exit Self Test mode (Figure 2-9).

The device will exit from self-test mode automatically 60 seconds later.

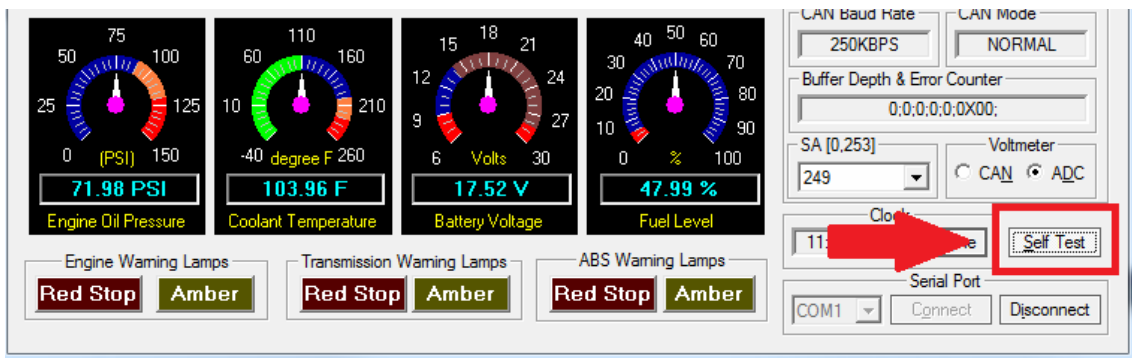


Figure 2-9 Self-test is on

2.7 Adjust Engine Clock

MCSJ1939 GUI provide an easy way to adjust engine clock.

The current time (showing on clock is 11:23:58), while Engine clock is 11:20.

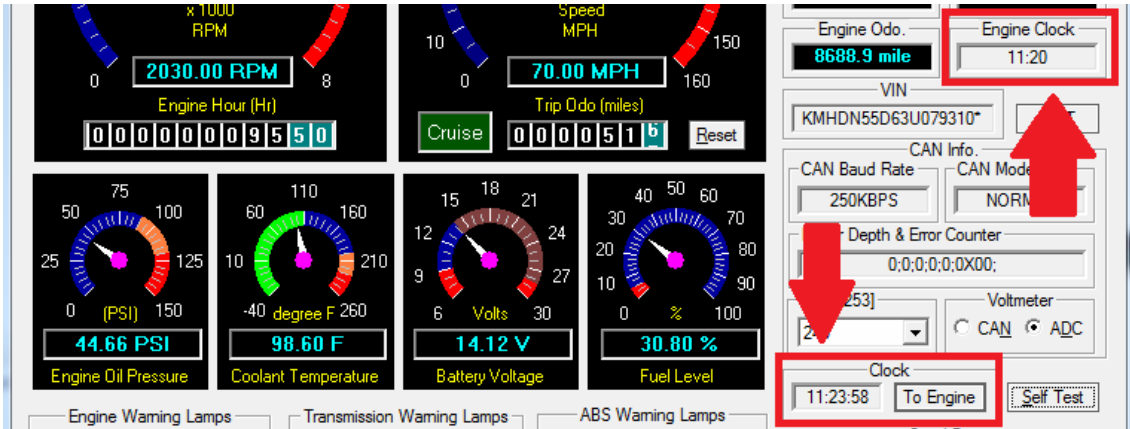


Figure 2-10 Before adjust Engine Clock

To change the Engine Clock, simply click the "To Engine" button, then Engine Clock will be adjusted according to the same as showing on clock.

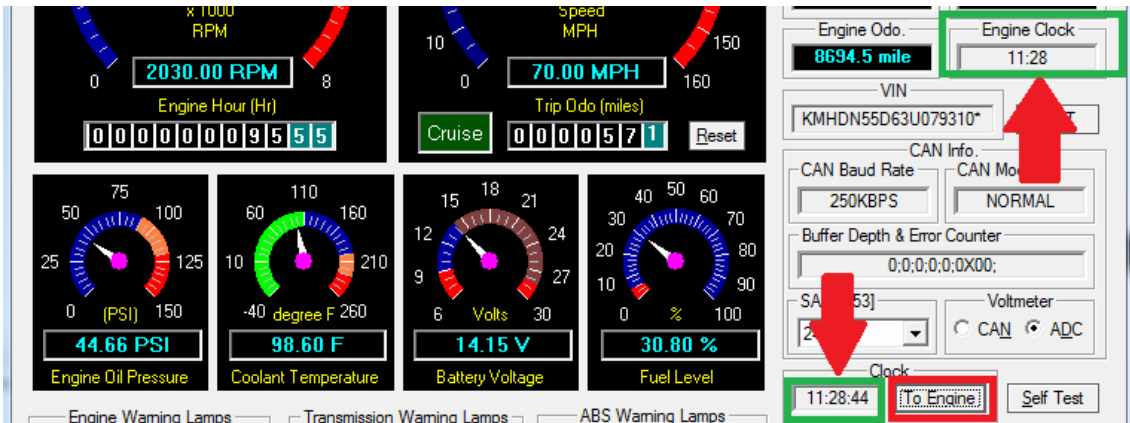


Figure 2-11 After adjusting Engine Clock using "To Engine" Button

2.8 Product information

Click "Au" icon on the top-right corner of the GUI, then select "About J1939 MessageCenter..." will open up a dialog showing J1939 Message Center Product Information.

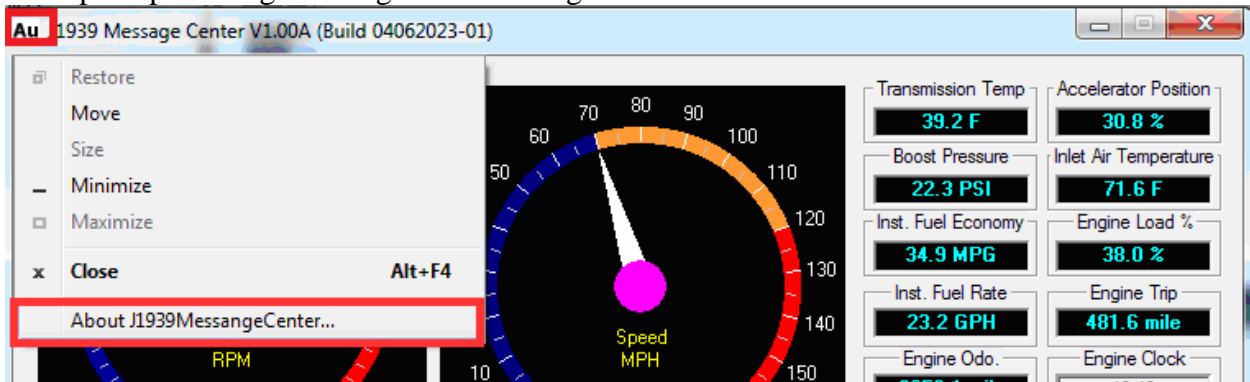


Figure 2-12

Au J1939 Message Center Product ID, Serial Number, ASIC ID, and Firmware version will display.

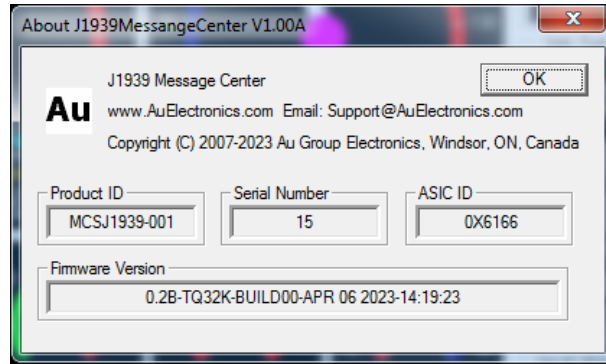


Figure 2-13 Product Information

2.9 Disconnect

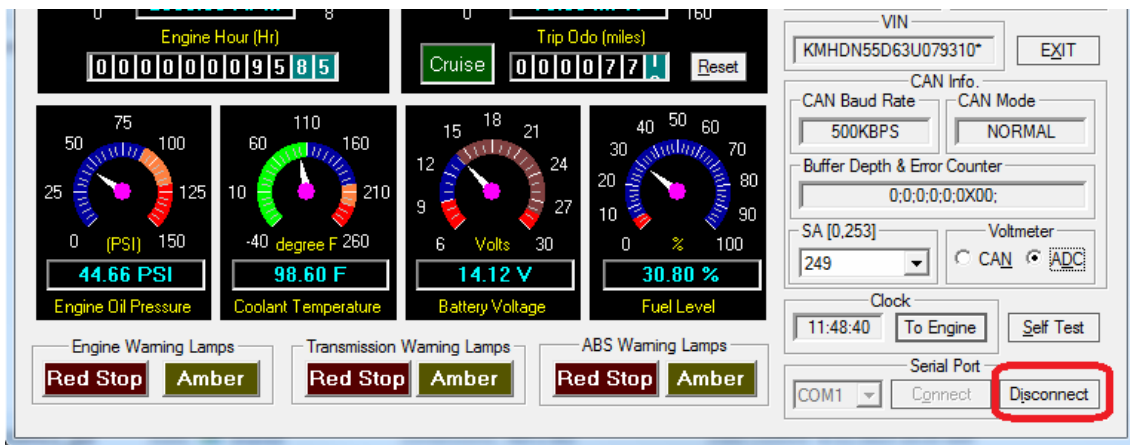


Figure 2 - 14 Disconnect MCSJ1939 from PC serial port

Click the “Disconnect” button would disconnect the serial connection between the J1939 MCS and the PC. After disconnection, all the parameters except for Trip Odometer and Clock will go to 0 as long as the power supply to the device is still connected.

2.10 Exit program

There are 2 ways to exit the program (Figure 2-10)

1. Click the "Exit" button.
2. Click the "cross" sign on the top-right corner of the Au J1939 MSC GUI

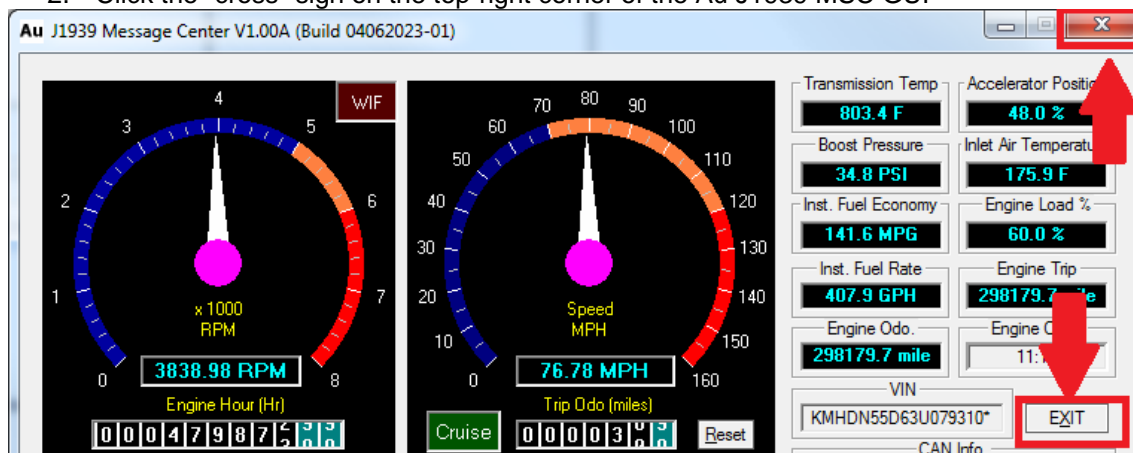
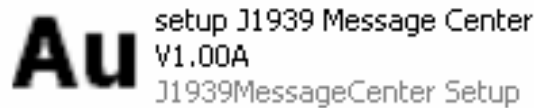


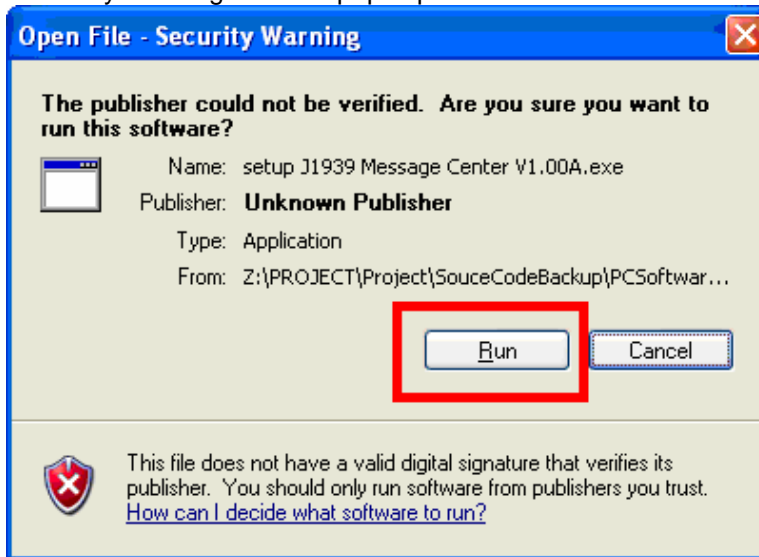
Figure 2-15 Exit MCSJ1939 GUI

Appendix A. J1939 MCS GUI Installation

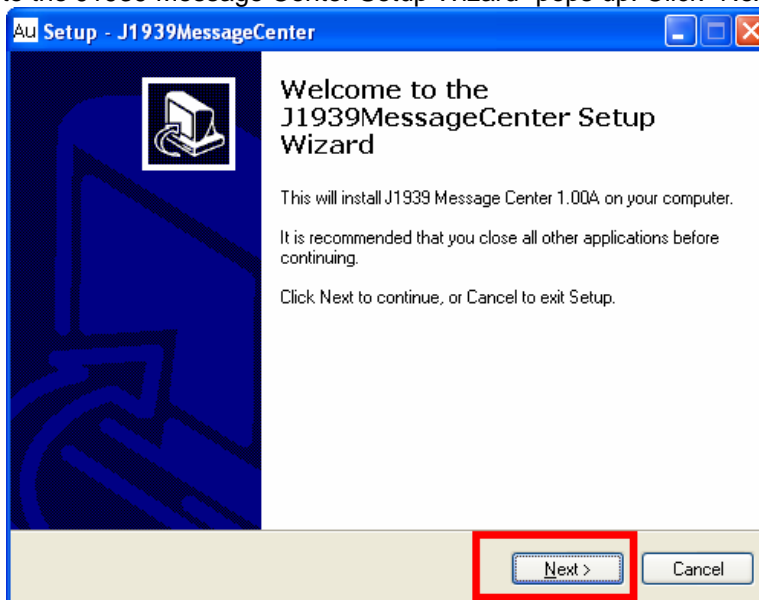
- A-1. Au J1939 Message Center PC Software can be downloaded directly from Au Group Electronics' website at: https://auelectronics.com/downloads/software_mcsj1939.zip
- A-2. Unzip the file, and double click the file "setup J1939 Message Center V1.00A" to start installation.



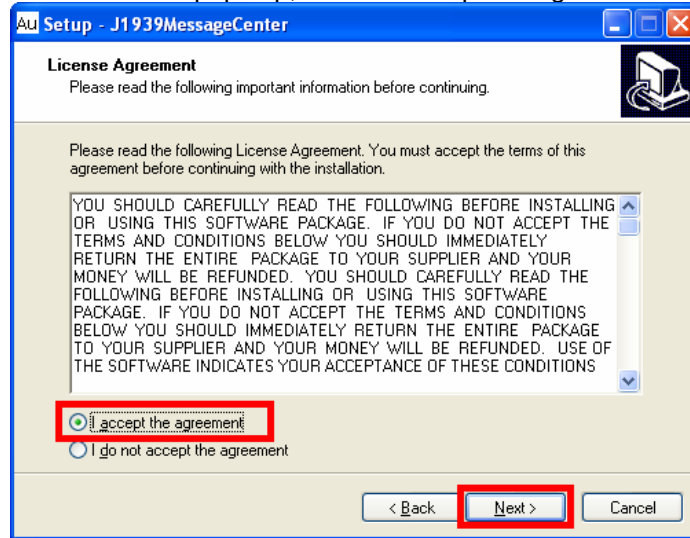
- A-3. "Open File –Security Warning" window pops up. Click "Run"



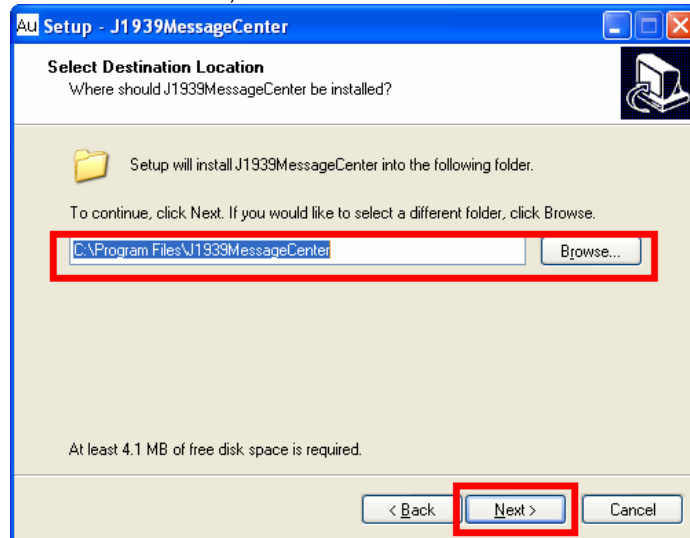
- A-4. "Welcome to the J1939 Message Center Setup Wizard" pops up. Click "Next" to continue.



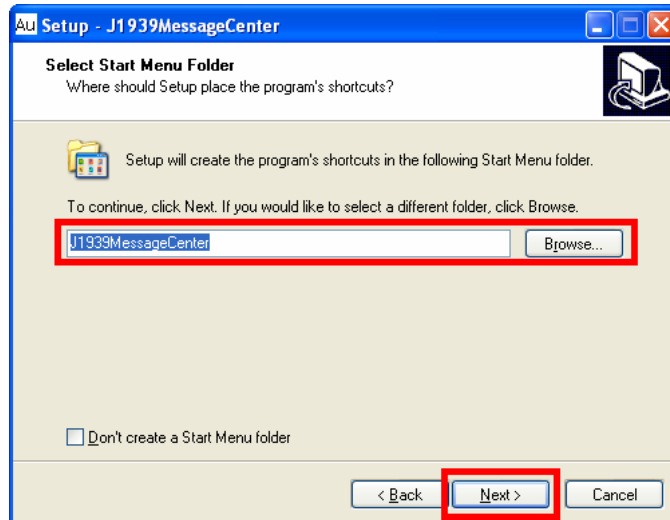
A-5. "License Agreement" window pops up, select "I accept the agreement". Click "Next" to continue



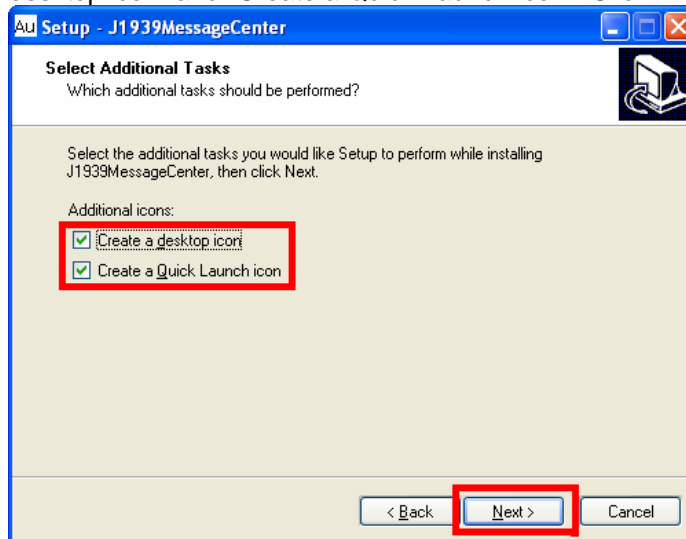
A-6. Select default destination location, and click "Next" to continue.



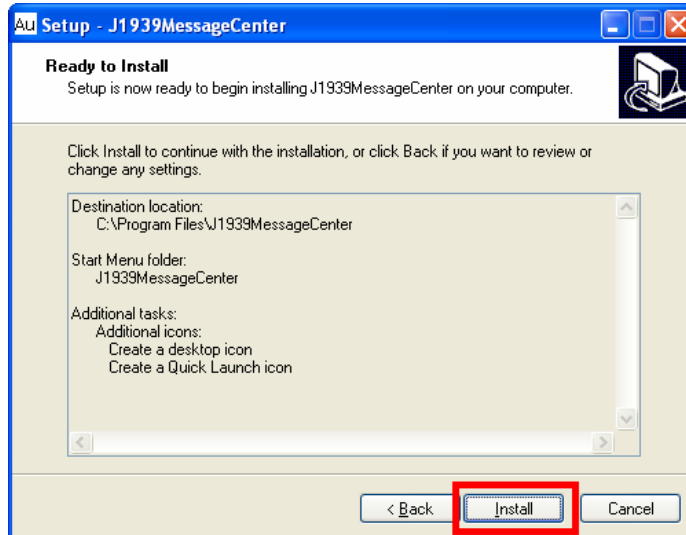
A-7. Name "J1939Message Center" as the Start Menu Folder to place the program's shortcut, and click "Next" to continue.



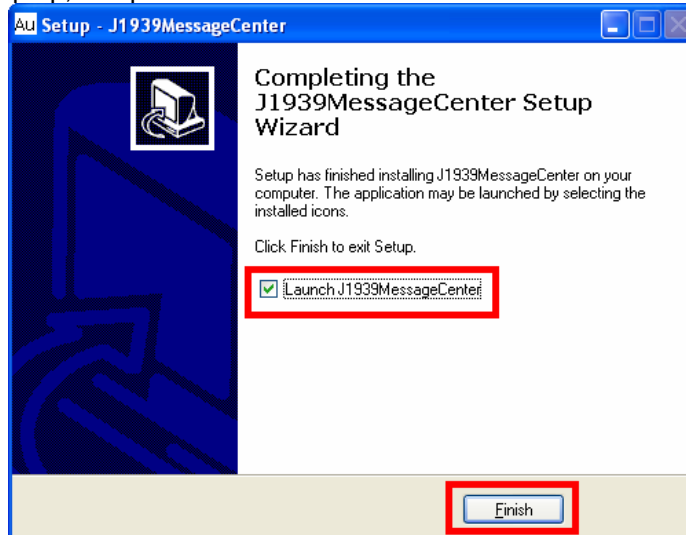
A-8. Check "Create desktop icon" and "Create a Quick Launch icon". Click "Next" to continue.



A-9. Setup is ready. Click "Install" to continue.



A-10. Check "Launch J1939 Message Center" and Click "Finish" to exit setup. J1939 Message Center interface will pop up, setup has finished installation of the Au J1939 MCS GUI on your computer




Appendix B. How to Use Bluetooth Module

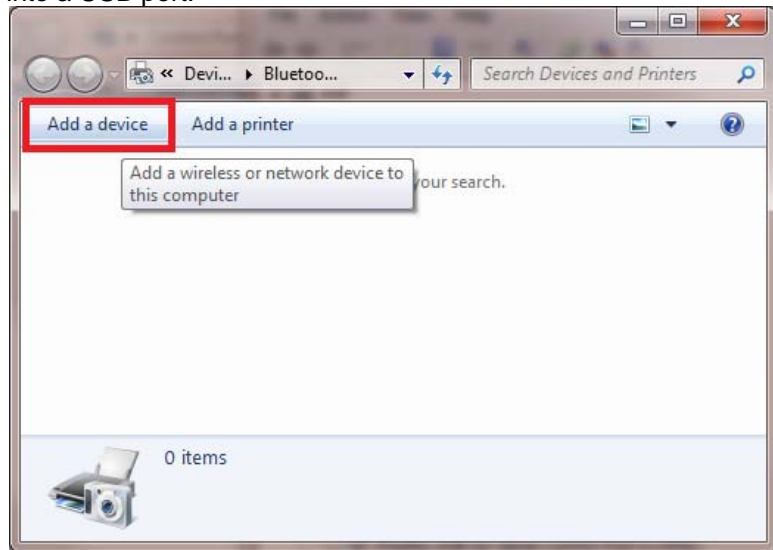
B-1. Plug your PC Bluetooth dongle into a USB port.

B-2.

→ Double click Bluetooth device icon

 to open an "Add a device" window

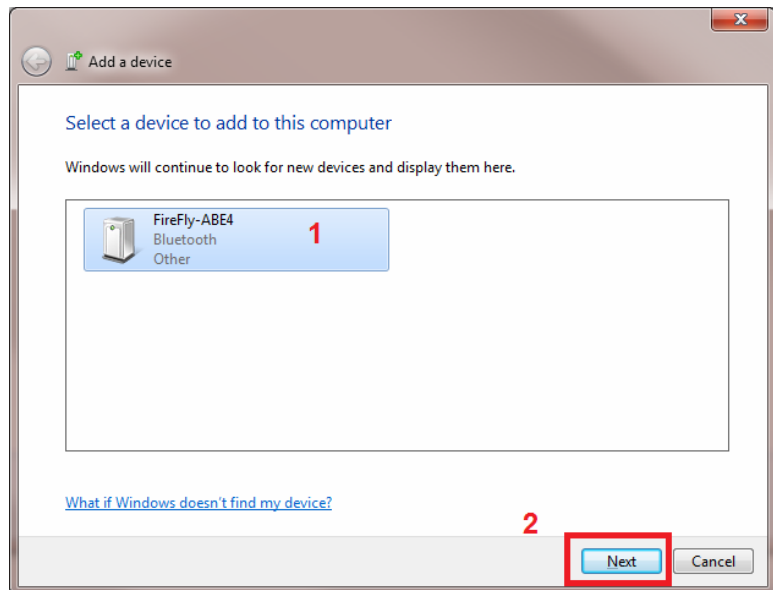
→ Click the "Add a device" tab to add a wireless device to this computer.



B-3.

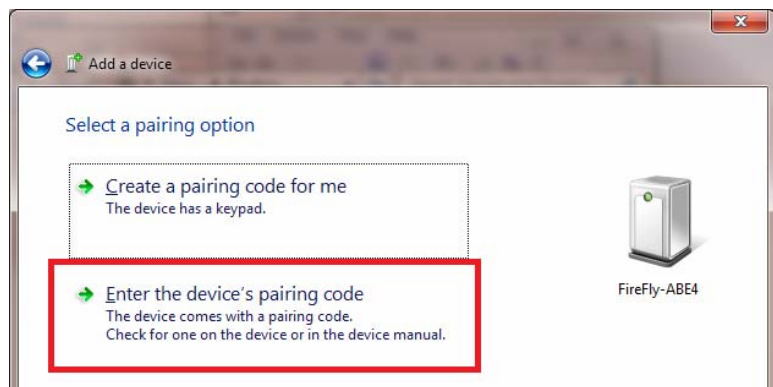
Windows will look for a new device and display it.

→ Select the device and click "Next"



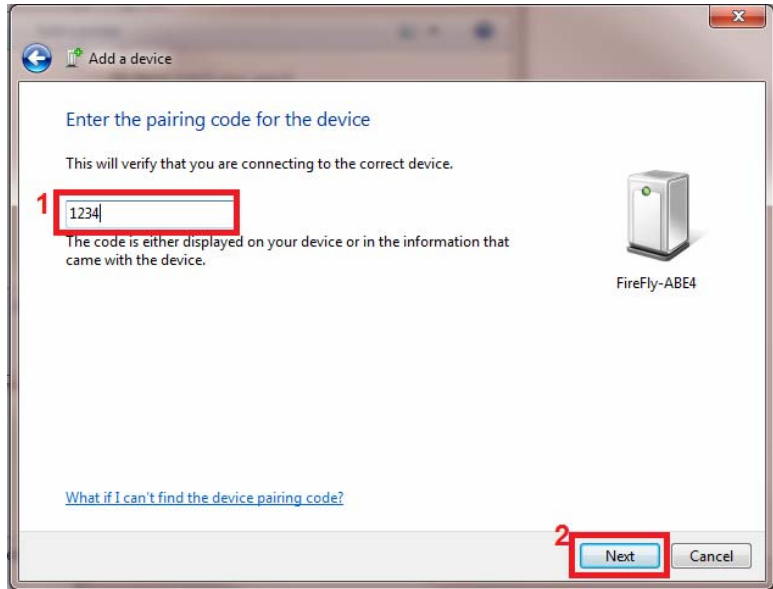
B-4.

→ Select the 2nd pairing option: "Enter the device's pairing code"



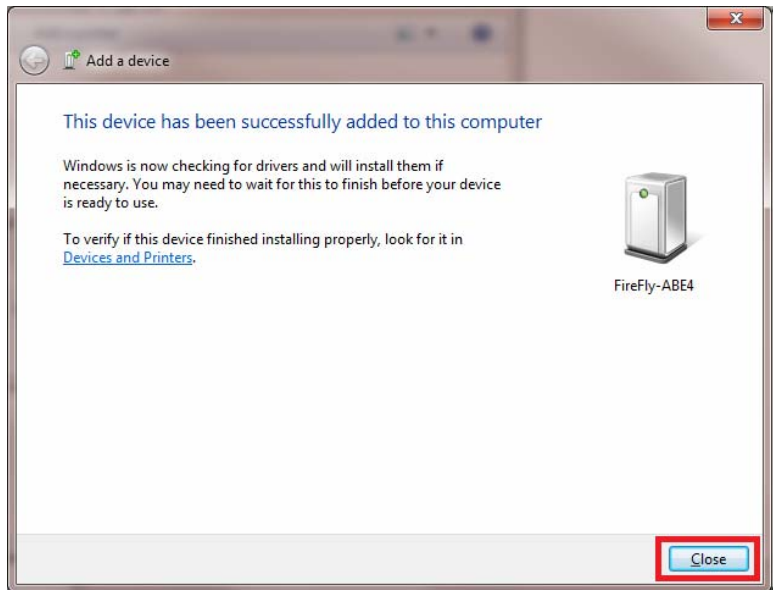
B-5.

→ Enter the default pairing code “1234”, and click “Next”.



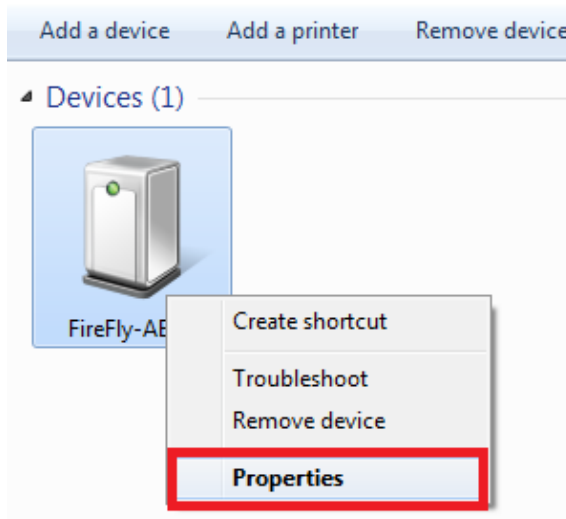
B-6.

Close the window and wait for the installation to finish before the device is ready to use.



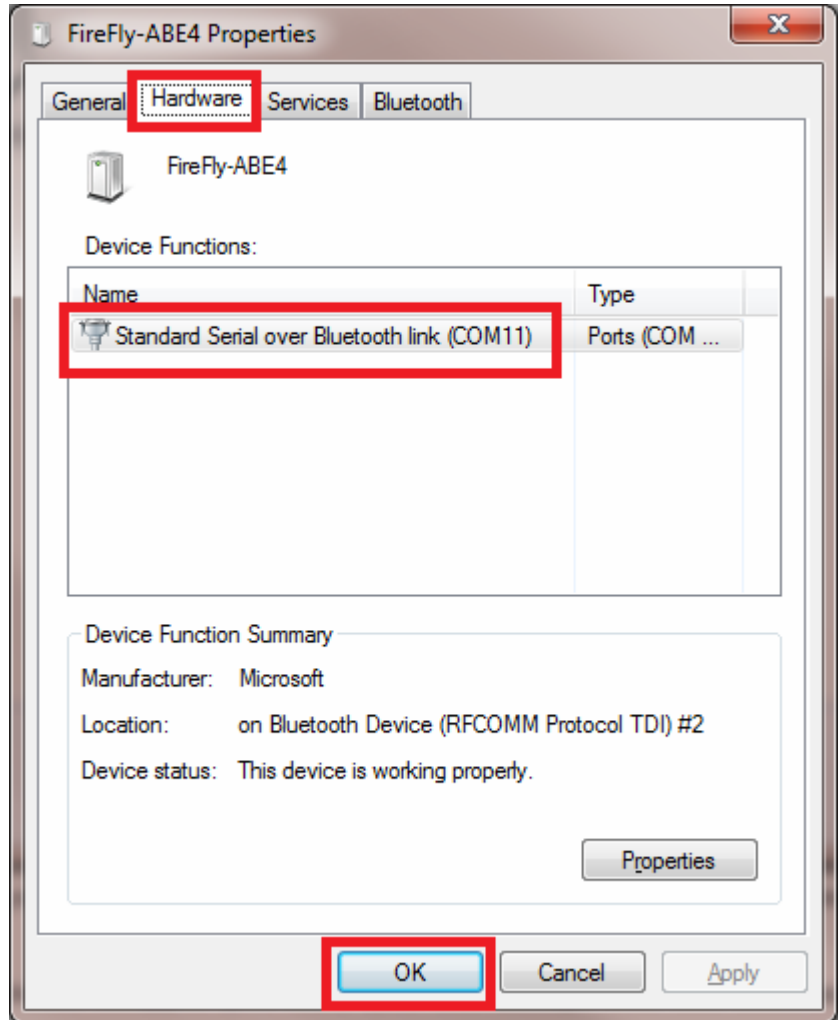
B-7.

Right-click the icon of the installed device, and select “Properties” from the drop-down list.



B-8.

In the device properties window, select the “Hardware” tab; the name and COM # will be seen. It is COM11 in this example.



B-9.

Click OK to close the window.

B-10. The wireless communication between Au J1939 Message Center and PC is set up and ready to use

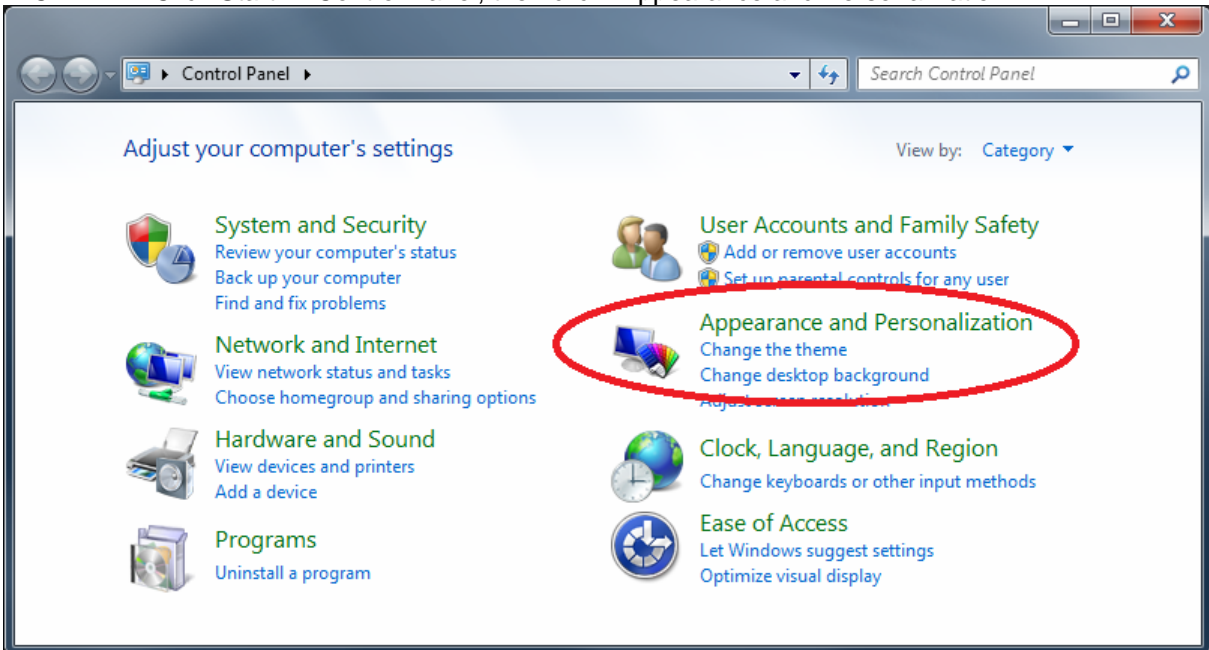
Appendix C. How to make the Au J1939 MCS GUI display properly

To get the best displaying result of Au J1939 Message Center GUI, it is recommended to set your monitor to 96 DPI.

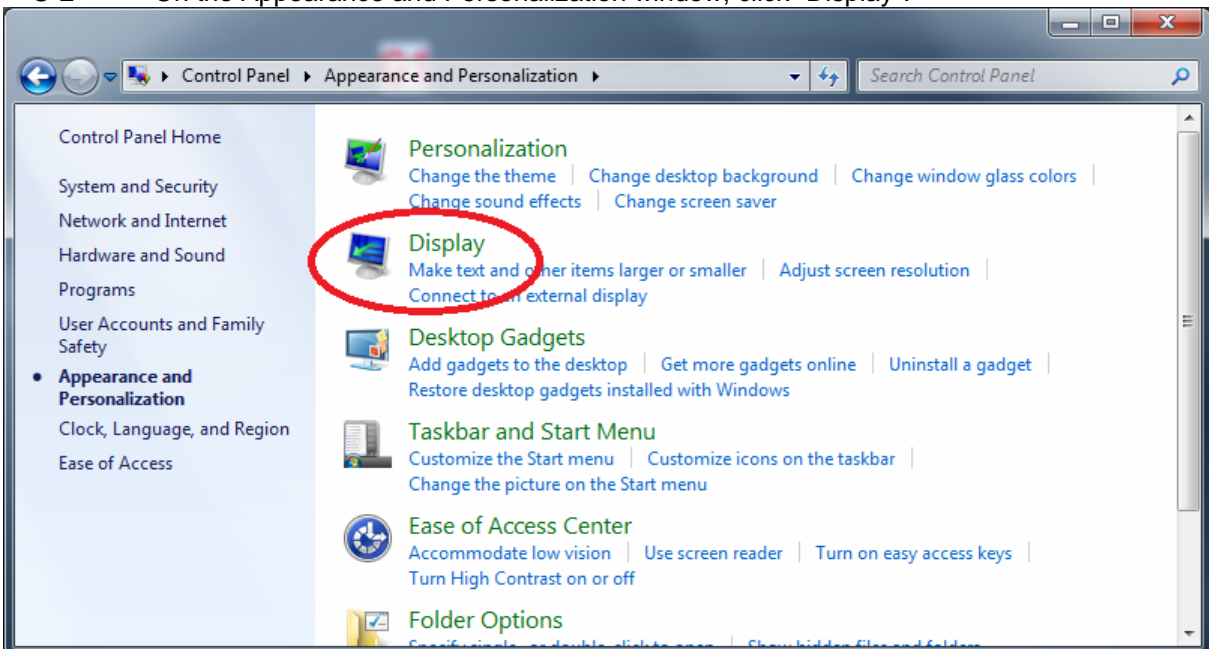
The following steps will illustrate the procedure to change the monitor display setting on PC in Windows 7.

Please note for different operating systems, the procedure to change the monitor display setting will be different.

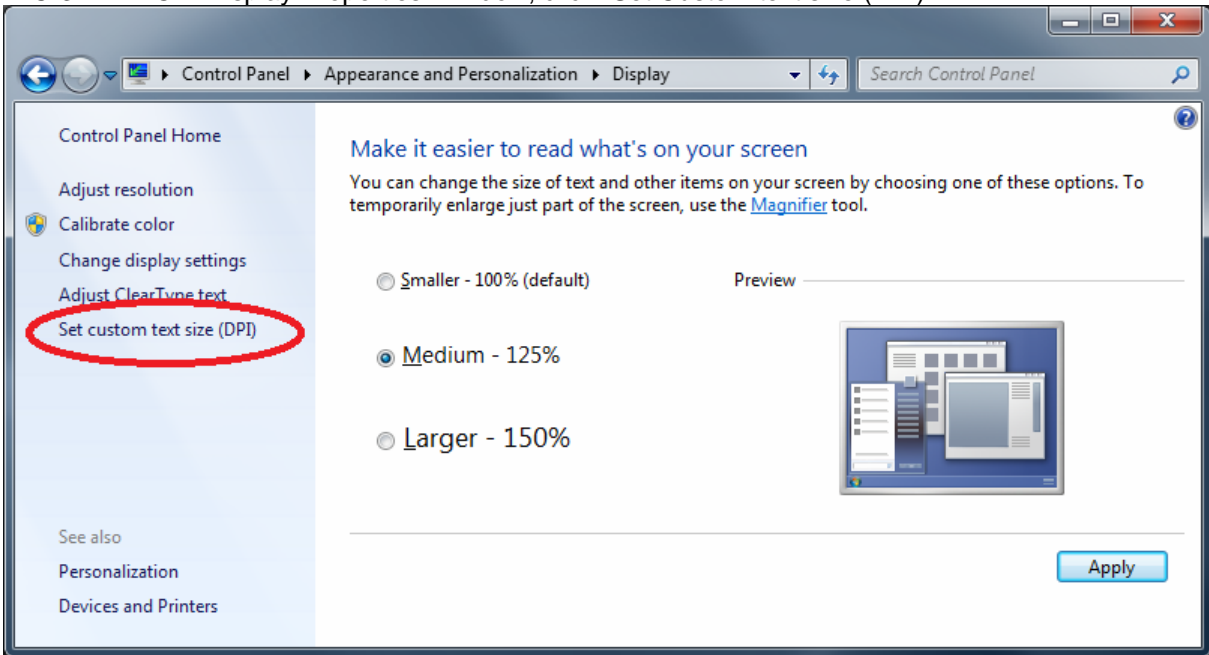
C-1 Click Start → Control Panel, then click "Appearance and Personalization"



C-2 On the Appearance and Personalization window, click "Display".



C-3 On "Display Properties" window, click "Set Custom text size (DPI)".



C-4 On the "Custom DPI Setting" window, click "General", select 100% from the list, and the DPI setting will be set at 96 pixels per inch (DPI)". Click OK to confirm.

