

TREK SDK Demo Program User Manual

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V0.1

2014-05-29

- Document created

V0.2

2015-05-29

- Modify GSensor Sample

About This Manual

This manual is a guide which dedicated to users how to use the TREK-SDK sample code.

Overview

TREK SDK provide many types of sample code such as DIO, Control Panel Control, VPM, VCIL etc.

These manual include:

- DIO Control Demonstration
- GSensor Demonstration
- Control Panel Demonstration
- Watch Dog Demonstration
- Peripheral Power Control Demonstration
- VCIL Demonstration
- VPM Demonstration

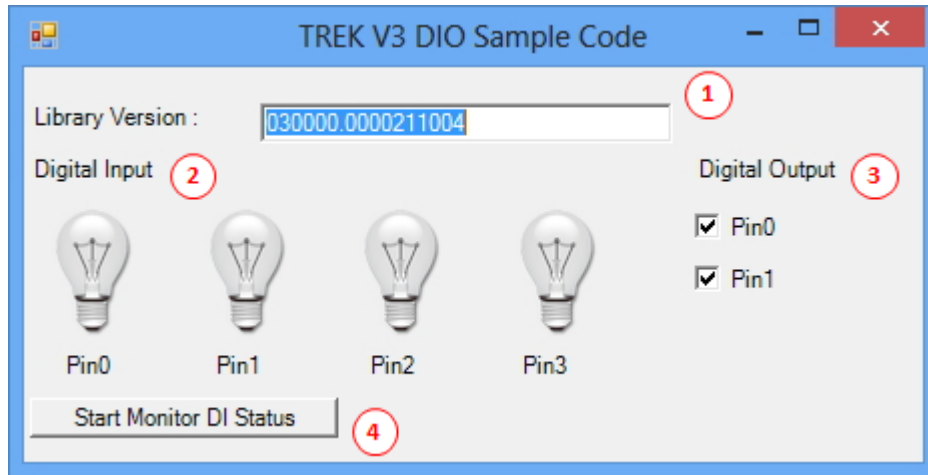
Getting Started

TREK V3 DIO Sample Code

TREK V3 DIO Sample Code is demonstration of Digital input and output. It can read the digital input status and control digital output by user self.

System Menu

- TREK V3 DIO Sample Code as below figure



1. Library Version
2. Digital Input Status
3. Control Digital Output
4. Start Monitor Button

Digital Input Status

- Digital Input **HIGH/1** as below figure



- Digital Input **LOW/0** as below figure



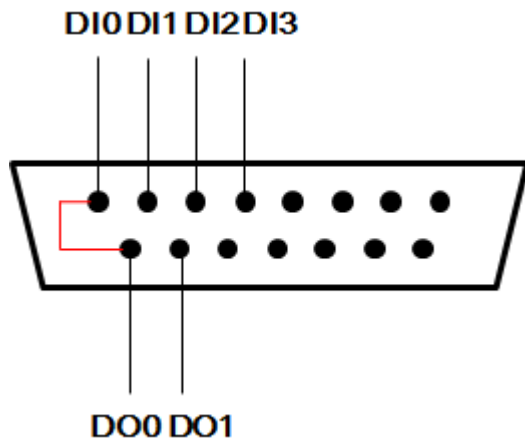
Note: If your Digital Input is floating , it value should be HIGH since the port is pull High by default

Digital Output Status

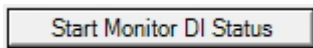
- If Digital Output Pin is checked , the Digital Output should be HIGH/1 otherwise be LOW/0

Testing DIO

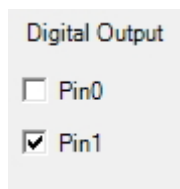
1. Connecting DO to DI as below figure



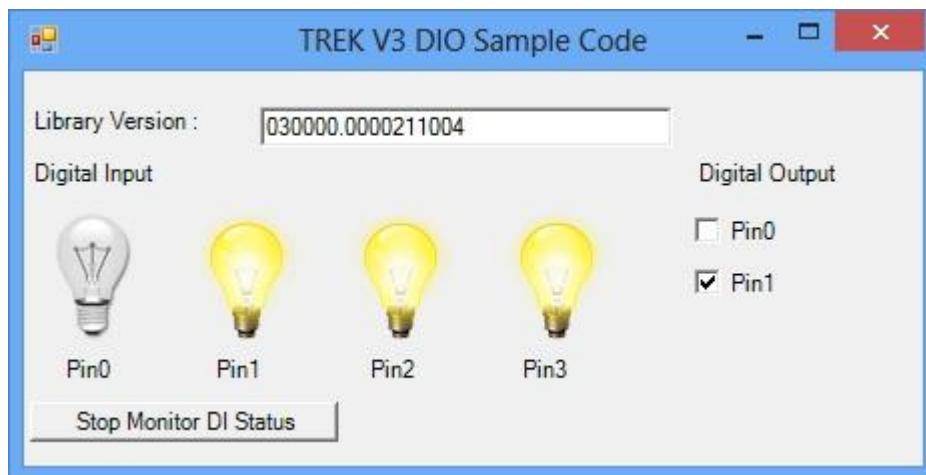
2. Opening "TREK_V3_Sample_Code_DIO.exe"
3. Press "Start Monitor DI Stats" Button to enable monitoring DI Status as below figure



4. Control the Digital Output Pin as below figure



5. You should see the "Digital Input" Pin control affected by "Digital Output" Pin as below figure



TREK V3 GSensor Sample Code

TREK V3 GSensor Sample Code is demonstration of reading GSensor status.

System Menu

- TREK V3 GSensor Sample Code as below figure

TREK V3 Sample Code GSensor

Library Version : 030001.2015052900

GSensor Status: OFF ☐ ON

X-Axis: 625 unit: mg

Y-Axis: -327

Z-Axis: -12038

Resolution: +16G

Wakeup Threshold: 1000

Alarm Threshold: 8000

Alarm: ☒ Active

Clear

X	Y	Z
625	-327	-12038
-312	875	-6663
-3280	1117	-4968
-4437	-93	-9288
836	805	-11780

- Library Version
- ON/OFF Monitor GSenor status
- GSenor Polling Data Value
- Get/Set GSensor Resolution
- Get/Set GSensor Wakeup Threshold Value
- Get/Set GSensor Alarm Threshold Value
- Enable/Disable Alarm Mode
- Clear Alarm Value
- GSensor Alarm Value

Testing GSensor

- Opening "TREK_V3_Sample_Code_GSensor.exe"
- Pushing monitor GSenor status to ON as below figure

GSensor Status: OFF ☒ ON

- Moving target machine

4. You should see the X,Y,Z value affected by motion

TREK V3 Sample Code GSensor

Library Version : 030001.2015052900

Alarm ☒ Active Clear

GSensor Status OFF ☐ ON

X-Axis 625 unit: mg

Y-Axis -327

Z-Axis -12038

Resolution +16G Get Set

Wakeup Threshold 1000 Get Set

Alarm Threshold 8000 Get Set

X	Y	Z
625	-327	-12038
-312	875	-6663
-3280	1117	-4968
-4437	-93	-9288
836	805	-11780

5. Testing Alarm trigger receive
6. Check the Active Alarm

TREK V3 Sample Code GSensor

Library Version : 030001.2015052900

Alarm ☒ Active Clear

GSensor Status OFF ☐ ON

X-Axis 625 unit: mg

Y-Axis -327

Z-Axis -12038

Resolution +16G Get Set

Wakeup Threshold 1000 Get Set

Alarm Threshold 8000 Get Set

X	Y	Z
625	-327	-12038
-312	875	-6663
-3280	1117	-4968
-4437	-93	-9288
836	805	-11780

7. To shock target machine bigger the Alarm threshold

8. You should see the Alarm value push in view

TREK V3 Sample Code GSensor

Library Version : 030001.2015052900

Alarm ☒ Active Clear

GSensor Status OFF ☐ ON ☐

X-Axis 625 unit: mg

Y-Axis -327

Z-Axis -12038

Resolution +16G Get Set

Wakeup Threshold 1000 Get Set

Alarm Threshold 8000 Get Set

X	Y	Z
625	-327	-12038
-312	875	-6663
-3280	1117	-4968
-4437	-93	-9288
836	805	-11780

TREK V3 ControlPanel Sample Code

TREK V3 ControlPanel Sample Code is demonstration of controlling panel like LCD brightness, Hot key status and light sensor status.

System Menu

- TREK V3 Control Panel Sample Code as below figure

Hot Key Test

Library Version : 1

Firmware Version : 2

Firmware Model Name : FW-306D

Brightness

Level 3

Apply ☒ Set ☐ Get

Min : 0 Max : 10 Cur : 10

Duty Cycle 4

Apply ☒ Set ☐ Get

Level : 10 Duty Cycle : 100

Hot Key 5

Set LED Duty Cycle 100

Get LED Duty Cycle 100 6

Read Data Mode : Not Using Callback Select Mode

Key Status

1 : 0 2 : 0 3 : 0 4 : 0

5 : 0 6 : 0 7 : 0 7

Light Sensor 8

Sensor Value : 51

Temperature Sensor 9

Sensor Value : 34

Load Default 10

1. Library Version
2. Firmware Version and Model Name from panel
3. Set/Get the variety Level of LCD Brightness
4. Set/Get the Duty Cycle of various levels with Brightness

5. Set/Get the Duty Cycle of Hot Key LED Light
6. Select Read Data Mode of Hot Key
7. Hot key Status
8. Light Sensor Status
9. Temperature Sensor Status
10. Reset Firmware

LCD Brightness Control

- Specifies the maximum/minimum/current level as below figure

Level

Apply ☒ Set ☐ Get

Min : 0 Max : 10 Cur : 9

Note: Level Range is limited to 0-30 and Current level can't out of range.

- Specifies the duty cycle of level as below figure

Duty Cycle

Apply ☒ Set ☐ Get

Level : 9 Duty Cycle : 100

Note: Duty Cycle Range is limited to 1-100. 100 represents the brightest.

Hot Key Control

- Specifies the duty cycle of Hot key LED light as below figure

Hot Key

Set LED Duty Cycle 100

Get LED Duty Cycle 100

Note: Duty Cycle Range is limited to 1-100. 100 represents the brightest.

- Hot key status.

Key Status							
1:	<input type="text" value="0"/>	2:	<input type="text" value="0"/>	3:	<input type="text" value="0"/>	4:	<input type="text" value="0"/>
5:	<input type="text" value="0"/>	6:	<input type="text" value="0"/>	7:	<input type="text" value="0"/>		

"1" indicate hot key press. On the other hand "0" indicate hot key no press

Testing Control Panel

- Connecting display panel to target machine
- Opening "TREK_V3_Sample_Code_ControlPanel.exe"
- You should see the panel firmware version on the screen without any error message as below figure

Hot Key Test

Library Version : 020000.2013080900

Firmware Version : 3.1.0

Firmware Model Name : FW-306D

Brightness

Level

Apply Set Get

Min : 0 Max : 10 Cur : 10

Duty Cycle

Apply Set Get

Level : 10 Duty Cycle : 100

Hot Key

Set LED Duty Cycle 100

Get LED Duty Cycle 100

Read Data Mode : Not Using Callback Select Mode

Key Status

1: 0 2: 0 3: 0 4: 0

5: 0 6: 0 7: 0

Light Sensor

Sensor Value : 51

Temperature Sensor

Sensor Value : 34

Load Default

Testing Brightness Control

- Selecting "Get" radio and press "Apply" button as below figure

Brightness

Level

Apply Set Get

Min : 0 Max : 10 Cur : 10

2. You can see current brightness level on screen as below figure

Brightness

Level

Apply ☐ Set ☒ Get

Min: 0 Max: 10 Cur: 10

3. Selecting "Set" radio button
4. Input level which you want. For example, set Current level to 5
5. Press "Apply" button to apply brightness setting
6. You should see the brightness changed. If you following step 4's example, the brightness becomes dark
7. You can adjust the range of level like step 3-5

If you want change the duty cycle of level, following the instruction:

1. Input level which you want to configure. For example, select level 10

Duty Cycle

Apply ☒ Set ☐ Get

Level: 10 Duty Cycle: 50

Select level

2. Input the Duty cycle which you want. For example, set duty cycle to 50
3. Press "Apply" button to apply duty cycle to level
4. You should see the brightness changed. If you following step 1-2, the brightness becomes dark at level 10

Testing Hot key

1. Press display panel hot key
2. You should see the Key Status changed 1 as below figure

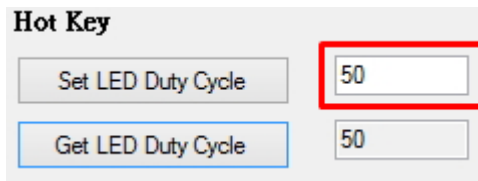
Key Status

1: 1 2: 0 3: 0 4: 0

5: 0 6: 0 7: 0

If you want change the duty cycle of key LED light, following the instruction:

1. Input the duty cycle of LED. For example set duty cycle to 50
2. Press "Set LED Duty Cycle" Button as below figure



3. You should see the LED light changed. If you following step 1-2, the LED light becomes dark

Testing Light Sensor

1. Covering the light sensor on display panel
2. You should see the light sensor value changed as below figure



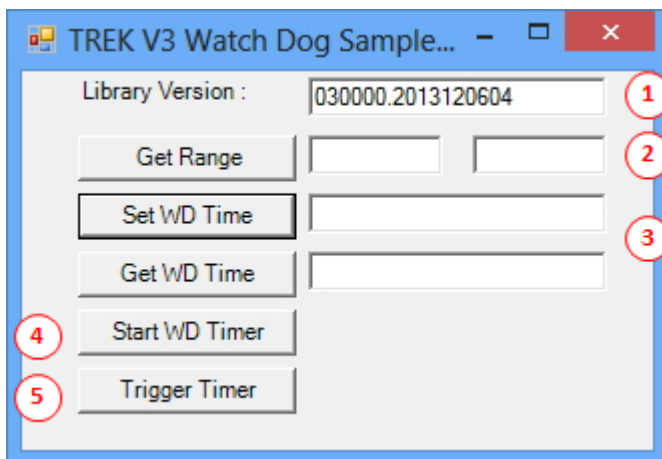
3. Remove the cover, you should see the sensor value return to original value

TREK V3 WatchDog Sample Code

TREK V3 Watch Dog Sample Code is demonstration of controlling Watch Dog.

System Menu

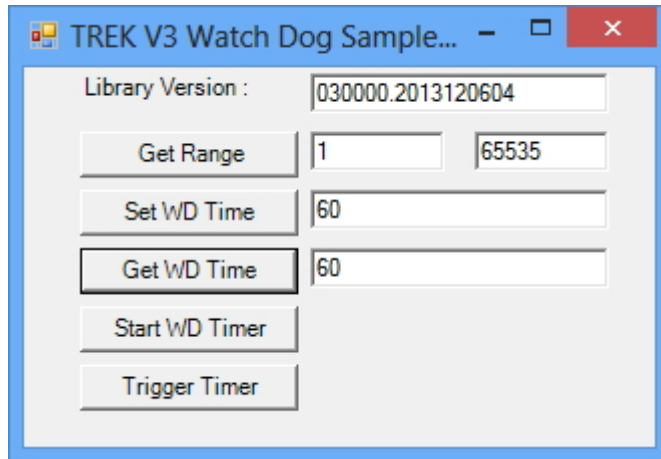
- TREK V3 Watch Dog Sample Code as below figure



1. Library Version
2. Range of Watch Dog timer
3. Set/Get Watch Dog time
4. Enable Watch Dog timer
5. Reload the watchdog timer to prevent the system from rebooting

Testing Watch Dog

1. Opening "TREK_V3_Sample_Code_Watch_Dog.exe"
2. Press "Get Range" button to check the range of watch dog timer
3. Input the time which you want system keep alive. For example 1 minute as below figure



4. Press "Start WD Timer" to enable watch dog timer
5. Press "Trigger timer" to tell the watch dog system still alive
6. If system not trigger watch dog in the setting time, you should see the system automotive reboot

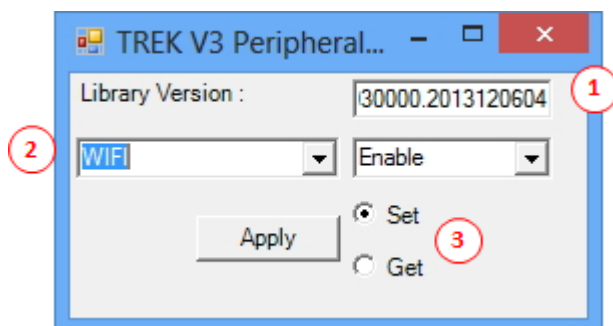
CAUTION: This demonstration may reboot your system, if you enable watch dog timer and not trigger watch dog timer in time.

TREK V3 Peripheral Control Sample Code

TREK V3 Peripheral Control Sample Code is demonstration of controlling peripheral power.

System Menu

- TREK V3 Peripheral Control Sample Code as below figure

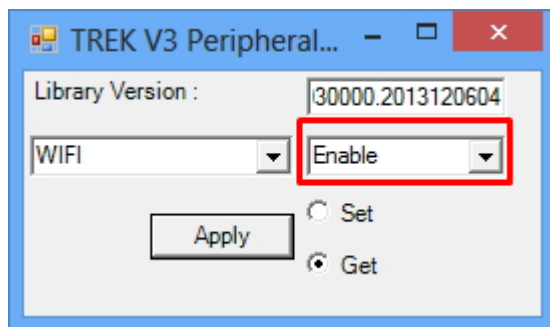


1. Library Version
2. Select Peripheral
3. Select Set or Get function

Testing Peripheral Control

Getting Peripheral Power Status

1. Opening "TREK_V3_Sample_Code_PeripheralCtrl.exe"
2. Selecting module, For example "WIFI".
3. Selecting "Get" radio button
4. Press "Apply" button
5. You should see the peripheral power status as below figure



For example. Selecting WIFI module. I can see the WIFI module is enable.

Opening Peripheral Power

If you want close the specified peripheral power, following the instruction:

1. Opening "TREK_V3_Sample_Code_PeripheralCtrl.exe"
2. Selecting module, For example "WIFI"
3. Selecting "Set" radio button
4. Press "Enable/Disable" combo box and selecting "Enable"
5. Press "Apply" button
6. You should see the peripheral power is on

Note: System need a little time to enable peripheral.

Closing Peripheral Power

If you want close the specified peripheral power, following the instruction:

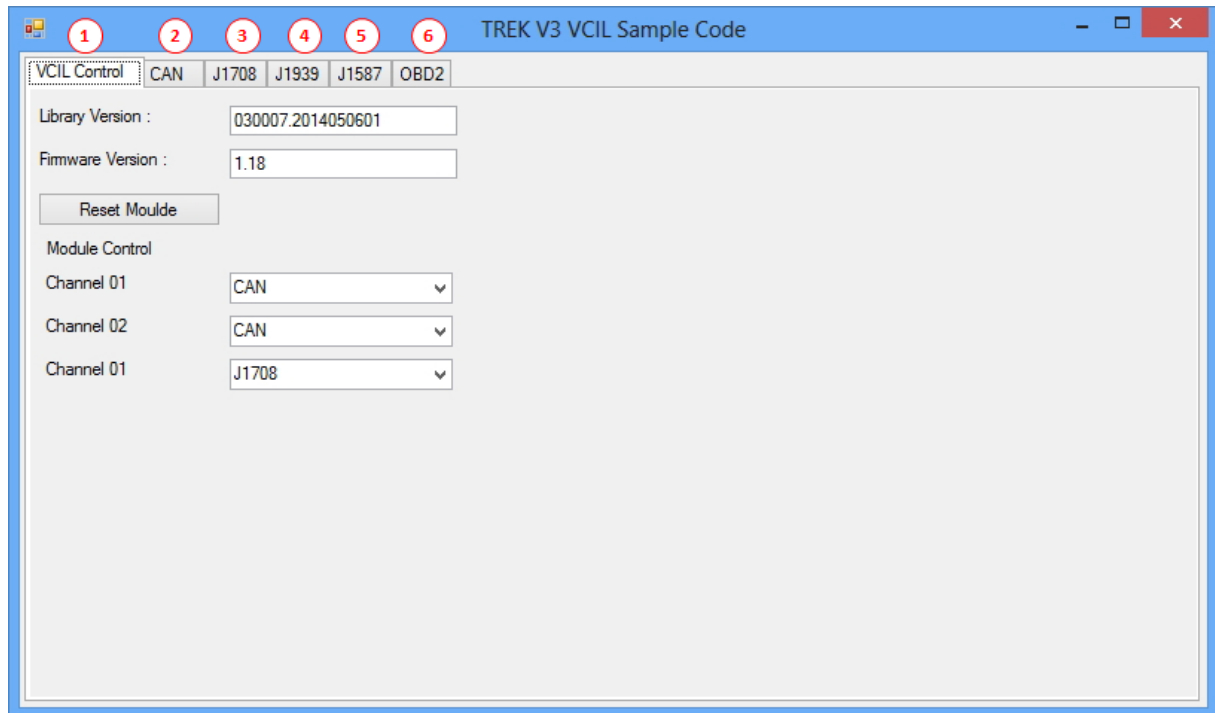
1. Opening "TREK_V3_Sample_Code_PeripheralCtrl.exe"
2. Selecting module, For example "WIFI"
3. Selecting "Set" radio button
4. Press "Enable/Disable" combo box and selecting "Disable"
5. Press "Apply" button
6. You should see the peripheral power is closed

TREK V3 VCIL Sample Code

TREK V3 VCIL Sample Code is demonstration of Vehicle Communication Interface Layer(VCIL) which let user easily to use vehicle protocol.

System Menu

- TREK V3 VCIL Sample Code as below figure



1. VCIL Control page
2. CAN page
3. J1708 page
4. J1939 page
5. J1587 page
6. OBD2 page

VCIL Control Page

- VCIL Control page as below figure

TREK V3 VCIL Sample Code

VCIL Control | CAN | J1708 | J1939 | J1587 | OBD2

Library Version : 030007.2014050601 (1)

Firmware Version : 1.18 (2)

Reset Module (3)

Module Control

Channel 01 CAN (4)

Channel 02 CAN (5)

Channel 01 J1708 (6)

1. Library Version
2. Firmware Version
3. Reset firmware to default
4. (CAN/J1939/OBD2) Channel 1 bus type control
5. (CAN/J1939/OBD2) Channel 2 bus type control
6. (J1708/J1587) Channel 1 bus type control

Note: Each channel only can select one bus type at same time.

CAN Page

- CAN page as below figure

TREK V3 VCIL Sample Code

VCIL Control | CAN | J1708 | J1939 | J1587 | OBD2

Set Can Bus Speed: 250 K

Read Data: Start [Show Data] Polling Mode [Event Mode]

Channel	Message ID (HEX)	Buffer (HEX)	Buffer Size
4			

Channel Number: 1 Message Type: 2.0B Message ID (Hex): 18FEF600 Buffer (Hex): FF86FFFFFFFFFFFF Buffer Size: 8 Write Data: Write

Message Mask: Channel number: 1 Message Type: 2.0A Mask ID: 0 ID : (Hex): 123 Mask : (Hex): ffff Set Mask Get Mask Remove Mask Clean all mask

1. Bus Speed
2. Read Data control (Press "Start" to monitor bus to read)
3. Read Data method
4. Read Data list
5. Write Data control
6. CAN bus message mask control

J1708 Page

- J1708 page as below figure

TREK V3 VCIL Sample Code

VCIL Control | CAN | J1708 | J1939 | J1587 | OBD2

Read Data Start **1**

☒ Polling Mode ☐ Event Mode ☐ Show Data

MID (HEX)	Buffer (HEX)	Buffer Size
2		

Write Data **3** Write

MID (Hex) : 80

PID (Hex) : 01

Priority (Hex) : 1

Buffer (Hex) : 1122

Buffer Size : 2

Message Filter **4**

Add Mid (Hex) 80

Remove All

Remove select

Read Filter list

5		
----------	--	--

1. Read Data control (Press "Start" to monitor bus to read)
2. Read Data list
3. Write Data control
4. J1708 bus message filter control
5. Message filter list

J1939 Page

- J1939 page as below figure

TREK V3 VCIL Sample Code

VCIL Control | CAN | J1708 | J1939 | J1587 | OBD2

Read Data ON Start **1**

☒ Polling Mode ☐ Event Mode ☐ Show Data

Channel	PGN	DST	SRC	PRI	Buffer Size
2					

Write Data **3** Write

Channel : 1

PGN (Hex) : FEF6

DST (Hex) : 0

SRC (Hex) : 0

PRI (Hex) : 6

Buffer (Hex) : FF86FFFFFFFFFFFF

Buffer Size : 8

Message Filter (PGN - Hex) **4**

Add Channel, PGN 1

Remove select

Remove All

Get Filters

J1939 Address / Name **5**

Channel 1

Address 254

Name (Hex)

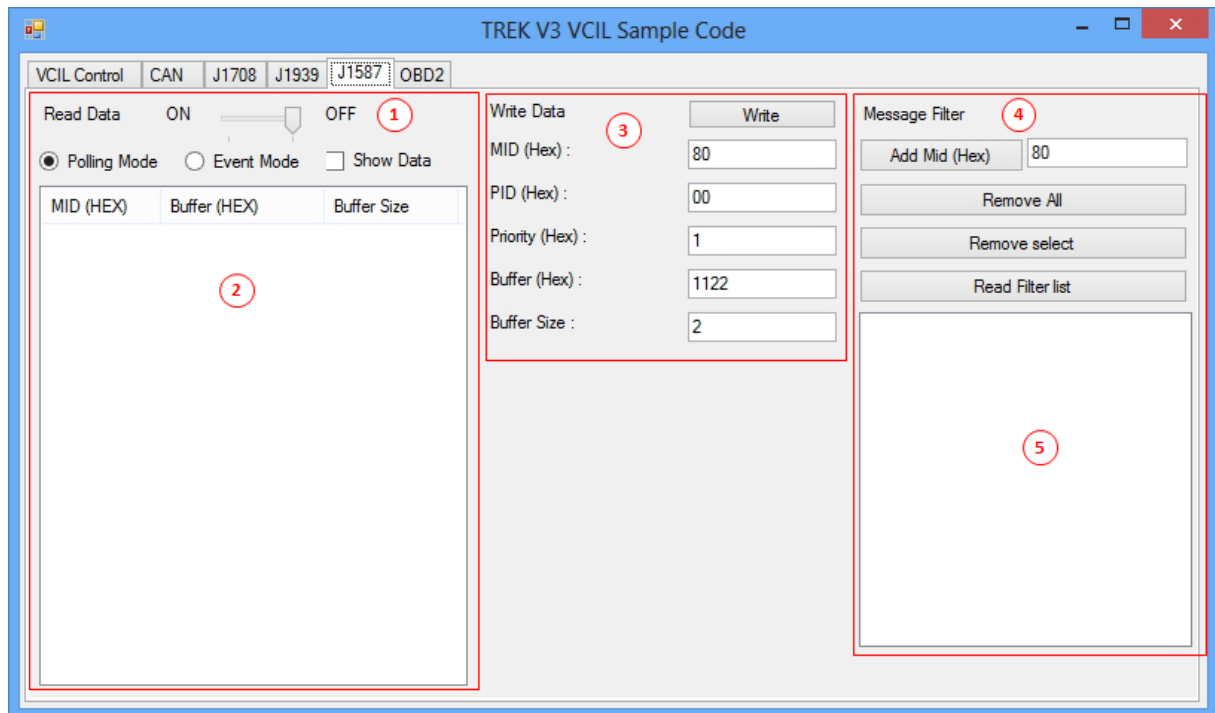
Set Address/Name

Get Address/Name

1. Read Data control (Press "Start" to monitor bus to read)
2. Read Data list
3. Write Data control
4. J1939 bus message filter control
5. J1939 Address mapping

J1587 Page

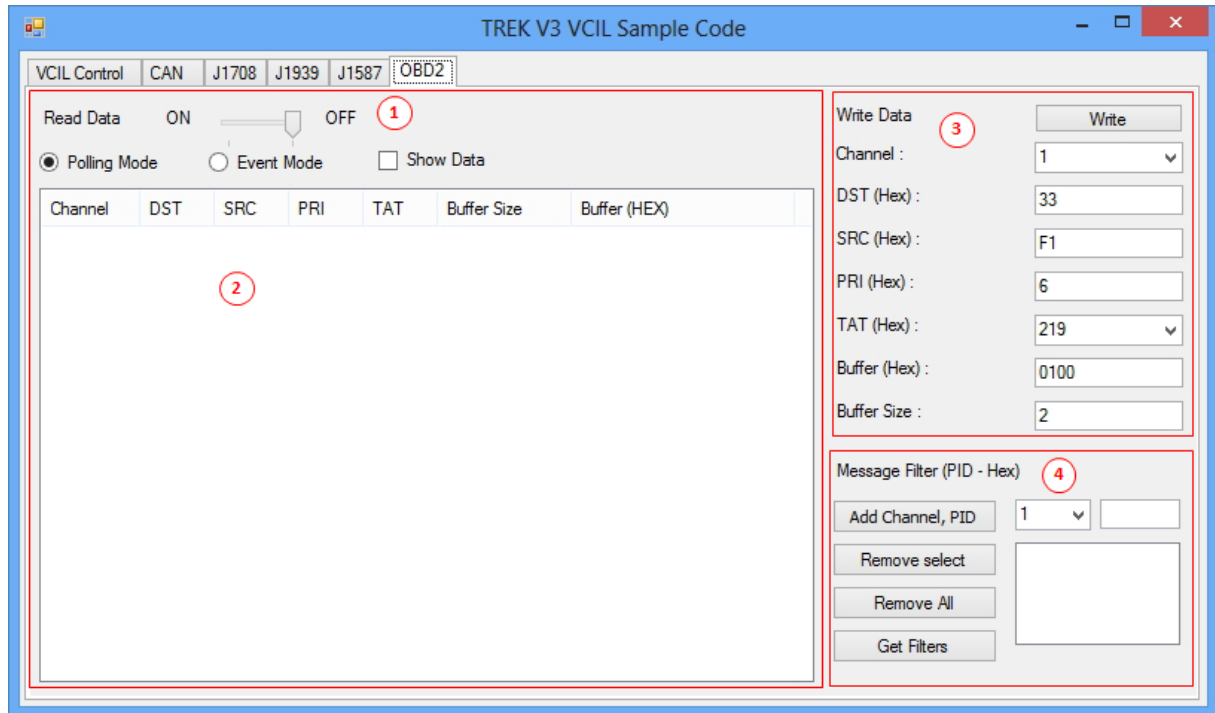
- J1587 page as below figure



1. Read Data control (Press "Start" to monitor bus to read)
2. Read Data list
3. Write Data control
4. J1587 bus message filter control
5. Message filter list

ODB2 Page

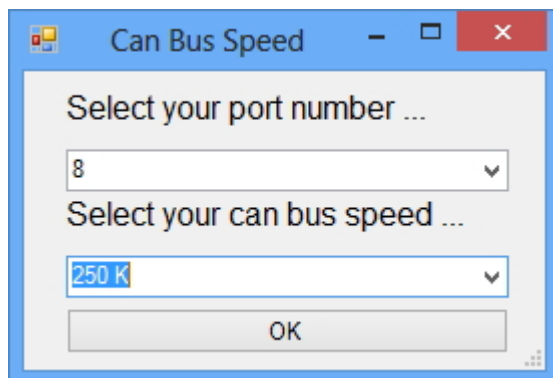
- ODB2 page as below figure



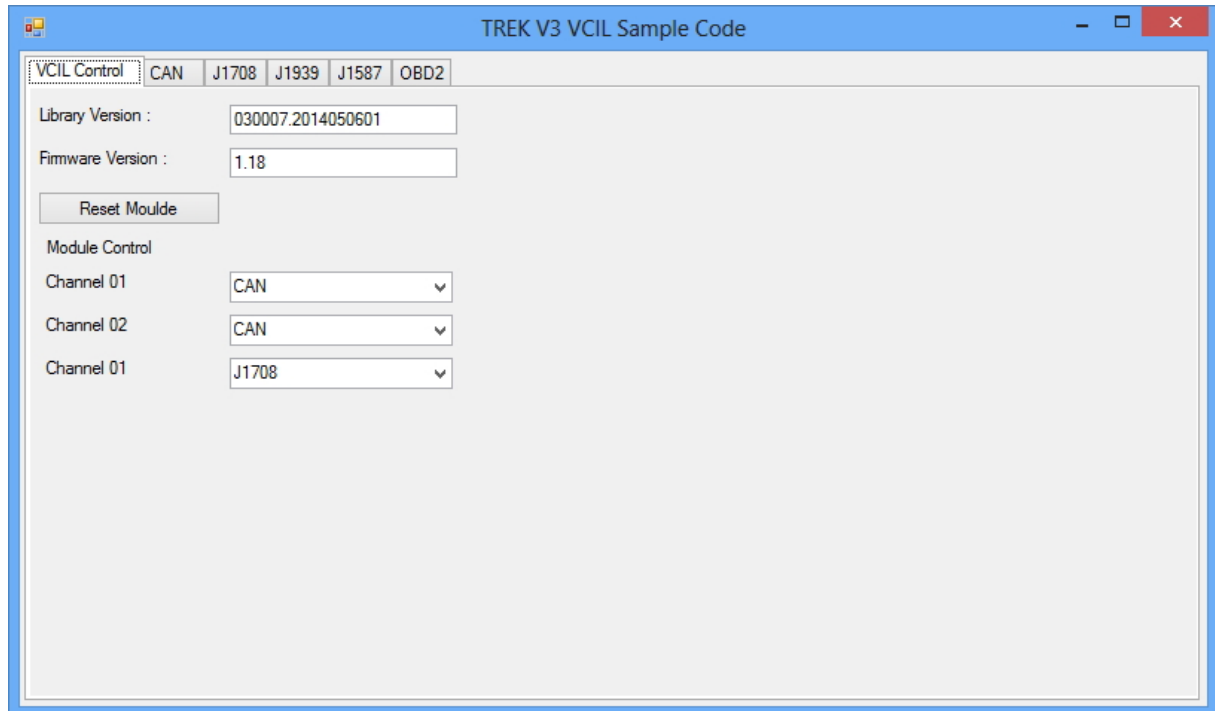
1. Read Data control (Press "Start" to monitor bus to read)
2. Read Data list
3. Write Data control
4. OBD2 bus message filter control

Testing VCIL

1. Opening "TREK_V3_Sample_Code_VCIL.exe"
2. Select VCIL port and speed for your platform. For example, select the port number 8 on TREK-674



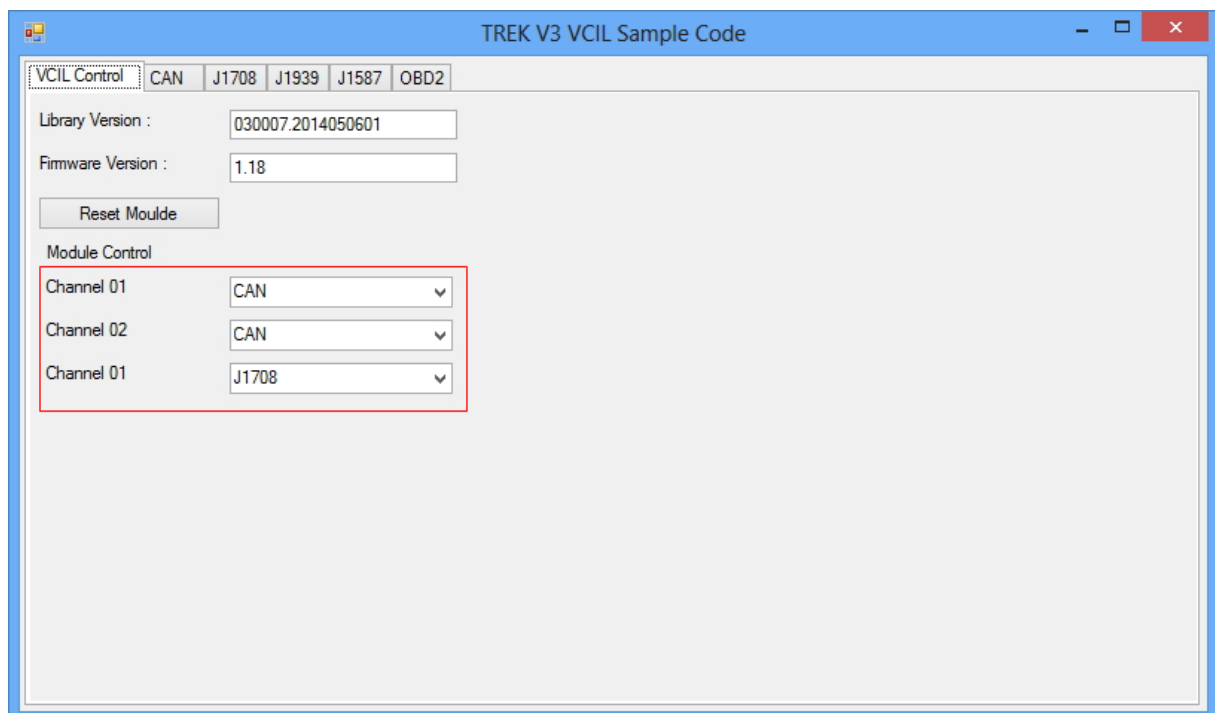
3. Selecting "VCIL Control" page as below figure



4. You should see the firmware version on this page when success opening VCIL.

Bus Type Control

1. Selecting "VCIL Control" page
2. Press combo box on the channel which you want to configure as below figure

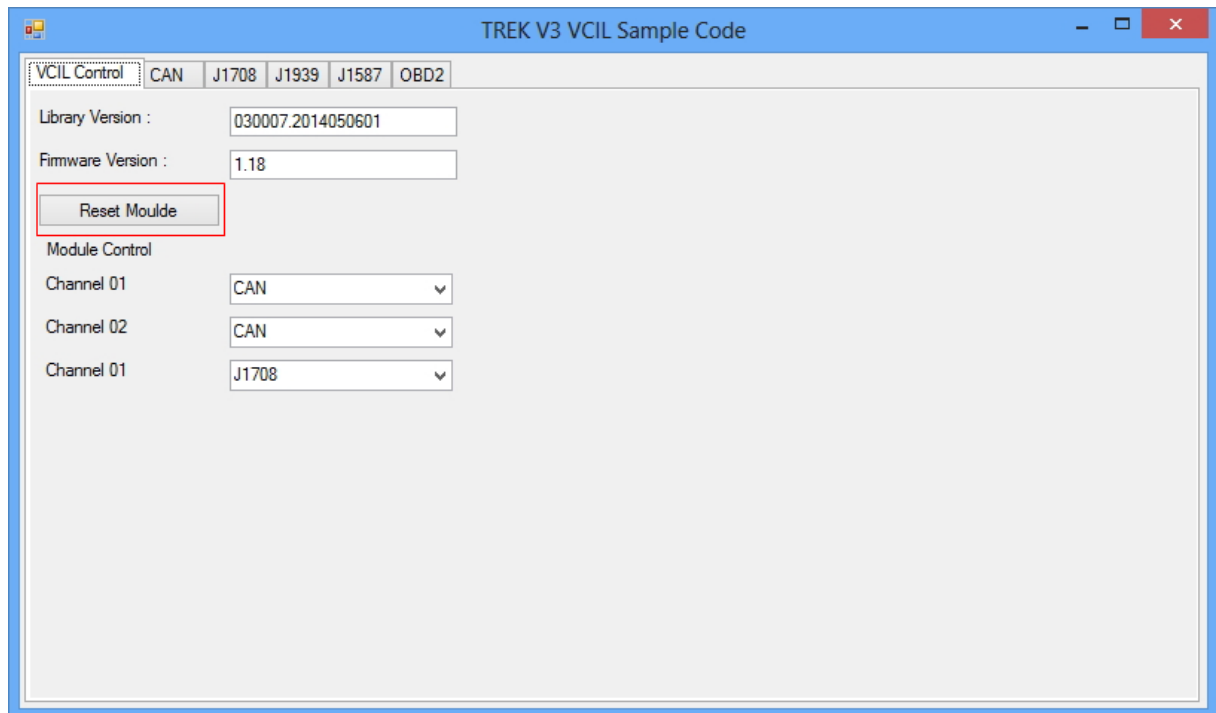


3. Selecting Bus type

Note: Each channel only can select one bus type at same time.

Reset Module

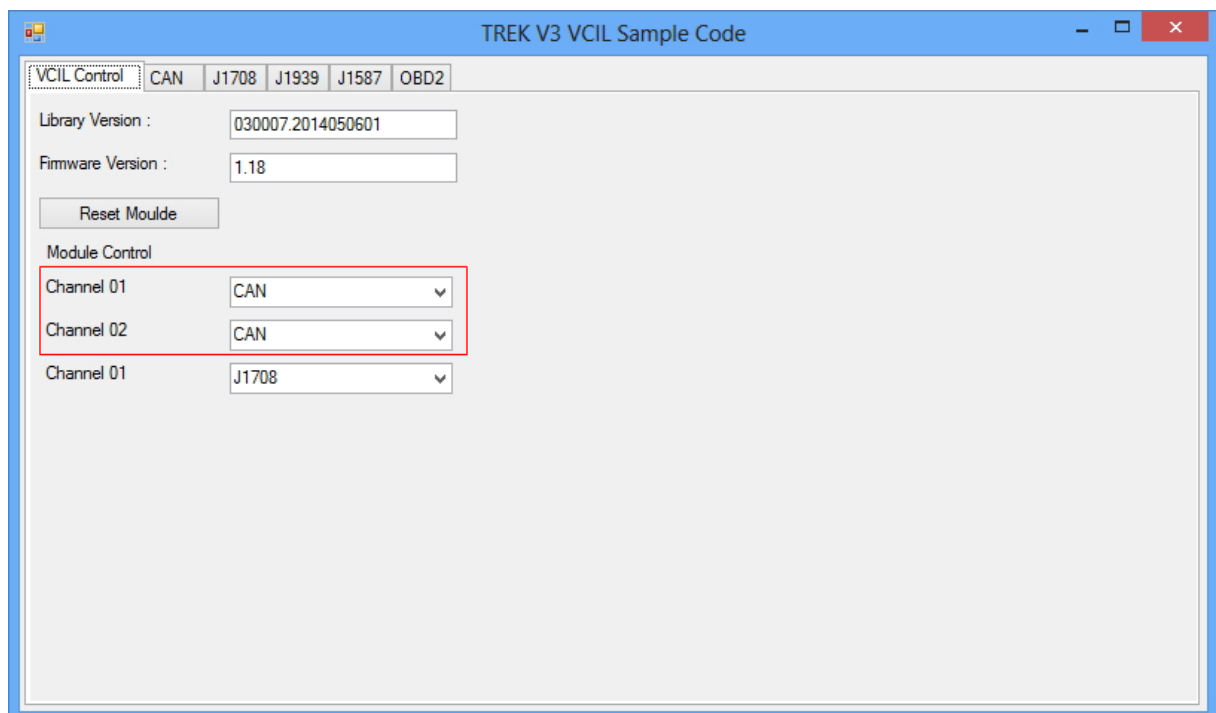
1. Selecting "VCIL Control" page
2. Press "Reset Module" button as below figure



CAUTION: When reset module, all configure for each bus reset to default value.

Testing CAN

1. Selecting "VCIL Control" page
2. Press combo box on the channel and select "CAN" as below figure



Reading Data

1. Selecting "CAN" page as below figure

TREK V3 VCIL Sample Code

VCIL Control CAN J1708 J1939 J1587 OBD2

Set Can Bus Speed 250 K

Read Data Stop Show Data

☒ Polling Mode ☐ Event Mode

Channel	Message ID (HEX)	Buffer (HEX)	Buffer Size
1	01	FFEEDD4455667...	8

Channel Number : 1

Message Type : 2.0B

Message ID (Hex) : 18FEF600

Buffer (Hex) : FF86FFFFFFFFFFFF

Buffer Size : 8

Write Data Write

Message Mask

Channel number : 1

Message Type : 2.0A

Mask ID : 0 Set Mask

Enabled : 1 Get Mask

ID : (Hex) 123 Remove Mask

Mask : (Hex) ffff Clean all mask

Set CAN bus speed. For example 250K

2. Checked "Show Data"
3. Press "Start" button to receive CAN bus data
4. You should see the data came from the CAN bus and show on the list

Writing Data

1. Selecting "CAN" page as below figure

TREK V3 VCIL Sample Code

VCIL Control CAN J1708 J1939 J1587 OBD2

Set Can Bus Speed 250 K

Read Data Stop Show Data

☒ Polling Mode ☐ Event Mode

Channel	Message ID (HEX)	Buffer (HEX)	Buffer Size
1	01	FFEEDD4455667...	8

Channel Number : 1

Message Type : 2.0B

Message ID (Hex) : 18FEF600

Buffer (Hex) : FF86FFFFFFFFFFFF

Buffer Size : 8

Write Data Write

Message Mask

Channel number : 1

Message Type : 2.0A

Mask ID : 0 Set Mask

Enabled : 1 Get Mask

ID : (Hex) 123 Remove Mask

Mask : (Hex) ffff Clean all mask

Set CAN bus speed. For example 250K

2. Filling the CAN bus data prepare to send
3. Press "Write" button to send CAN bus data as above figure
4. You should see the data on the receiver

Testing Message Mask

1. Selecting "VCIL Control" page
2. Press combo box on the channel and select "CAN + Mask" as below figure

TREK V3 VCIL Sample Code

VCIL Control CAN J1708 J1939 J1587 OBD2

Library Version : 030007.2014050601

Firmware Version : 1.18

Reset Module

Module Control

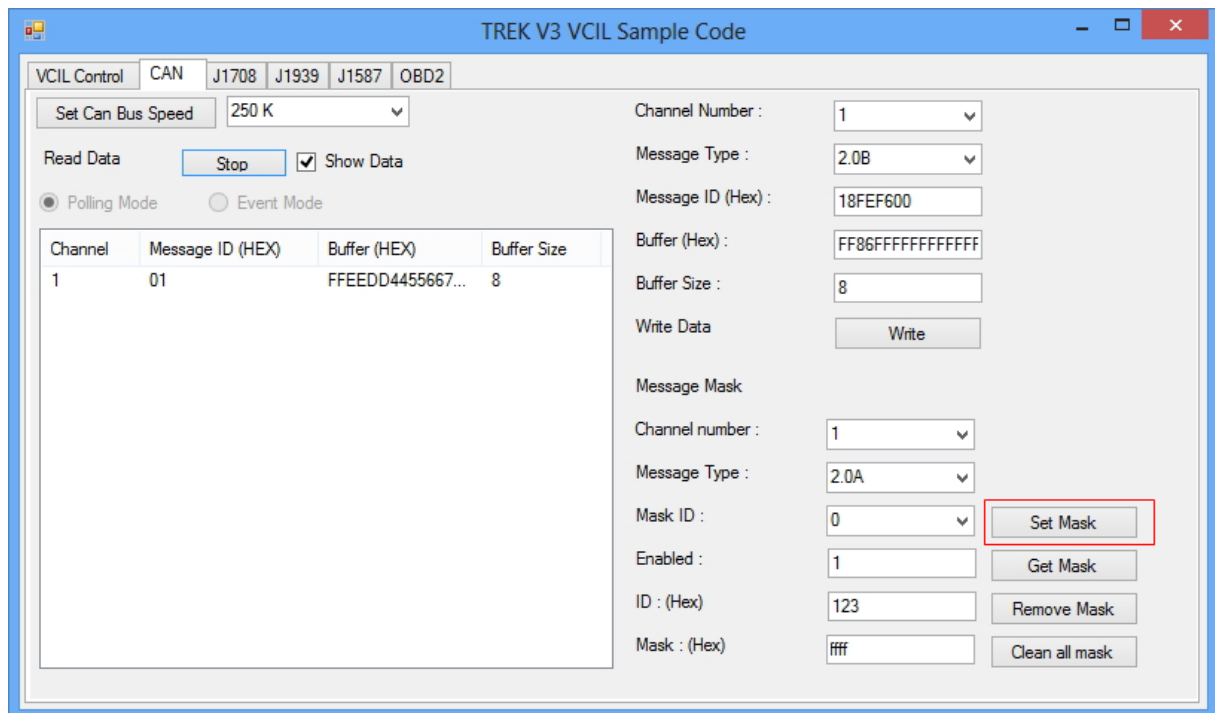
Channel 01 CAN + Mask

Channel 02 CAN + Mask

Channel 01 J1708

Set Mask

1. Selecting "CAN" page as below figure



Set CAN bus speed. For example 250K

2. Configure the Message mask
3. Press "Set Mask" button to apply the mask to bus
4. You should see the mask was applied on the bus.
5. If you set a mask to bus. You should not see the specified CAN ID on the read data list if the ID not passed for the mask

Mask Rule:

- The CAN Message ID & operator "Mask" equal the "ID" & operator "Mask" **PASS**
- The CAN Message ID & operator "Mask" not equal the "ID" & operator "Mask" **NO PASS**

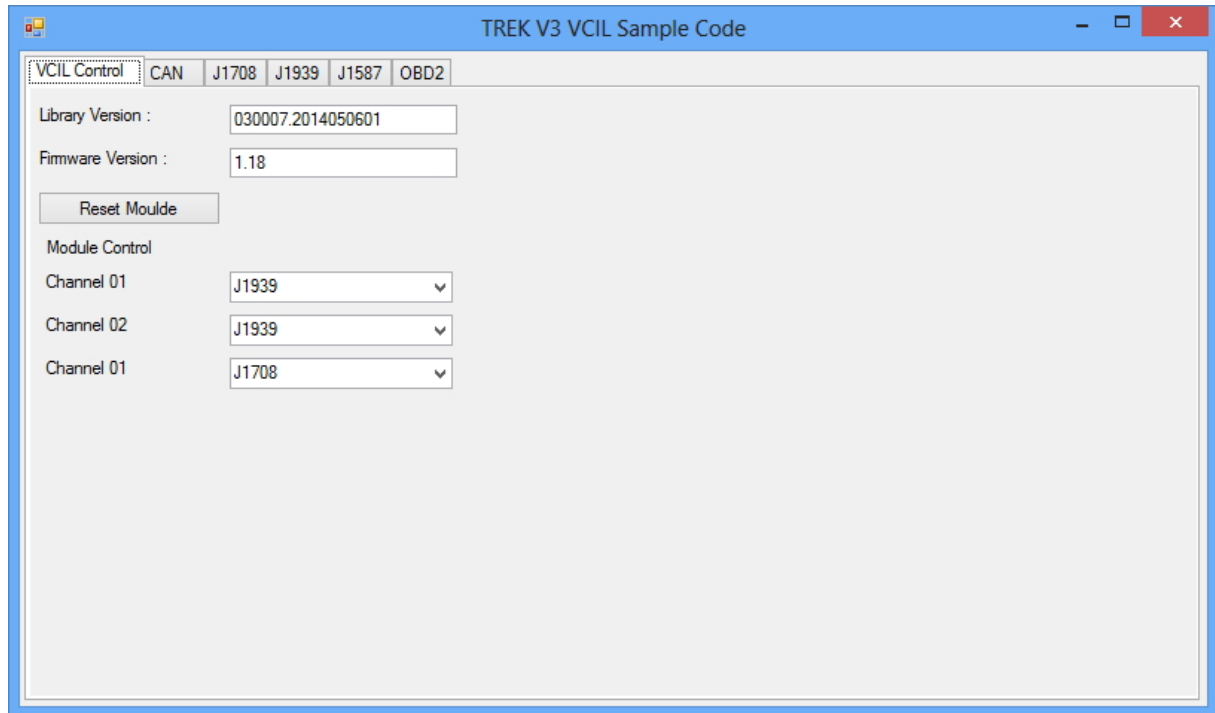
For example, as above figure setting. If the input CAN Message ID is 0x123, the result passed. Since 0x123 & 0xffff equal the ID 0x123 & 0xffff.

If the input CAN data ID is 0x120, the result not passed. Since 0x120 & 0xffff not equal the ID 0x123 & 0xffff.

Testing J1939

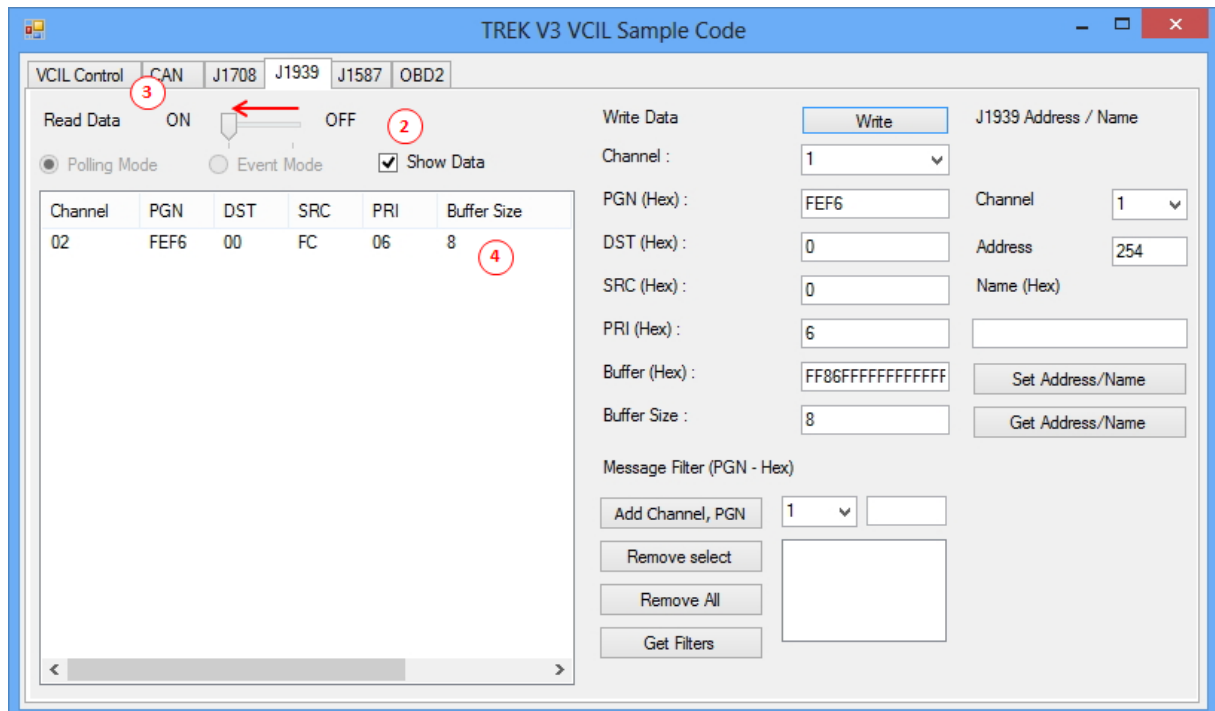
1. Selecting "VCIL Control" page

2. Press combo box on the channel and select "J1939" as below figure



Reading Data

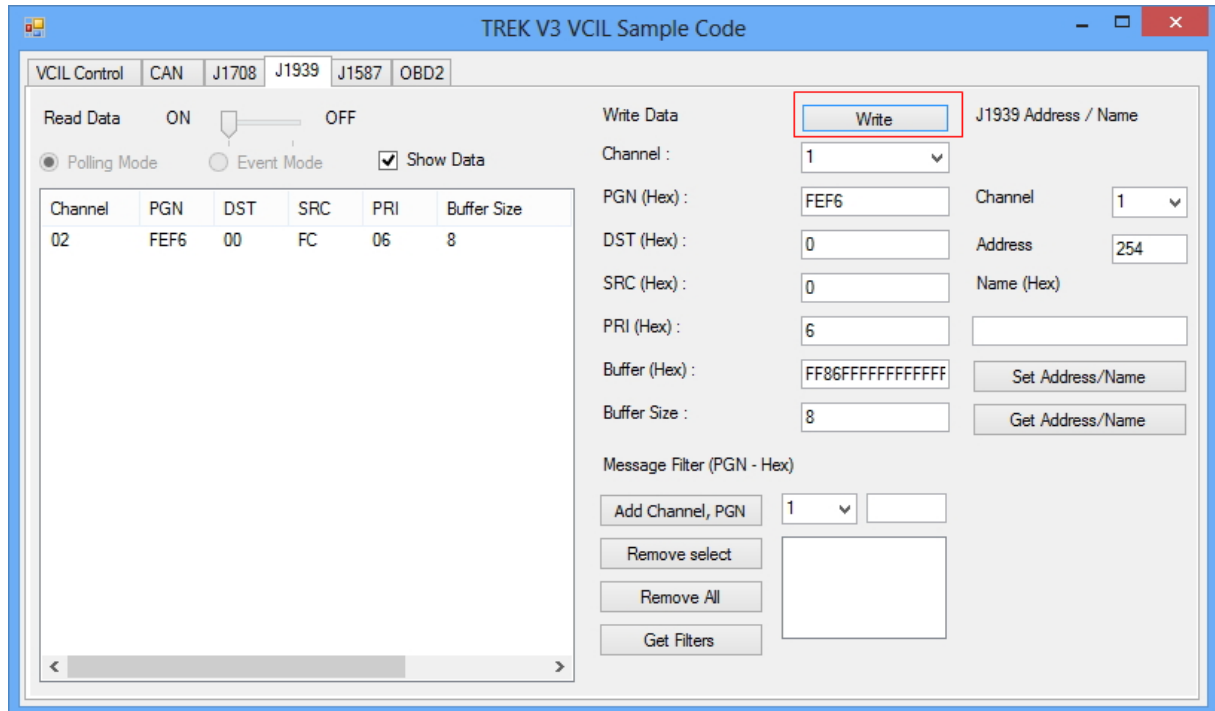
1. Selecting "J1939" page as below figure



2. Checked "Show Data"
3. Pull TrackBar "ON" to receive J1939 data
4. You should see the data came from the J1939 and show on the list

Writing Data

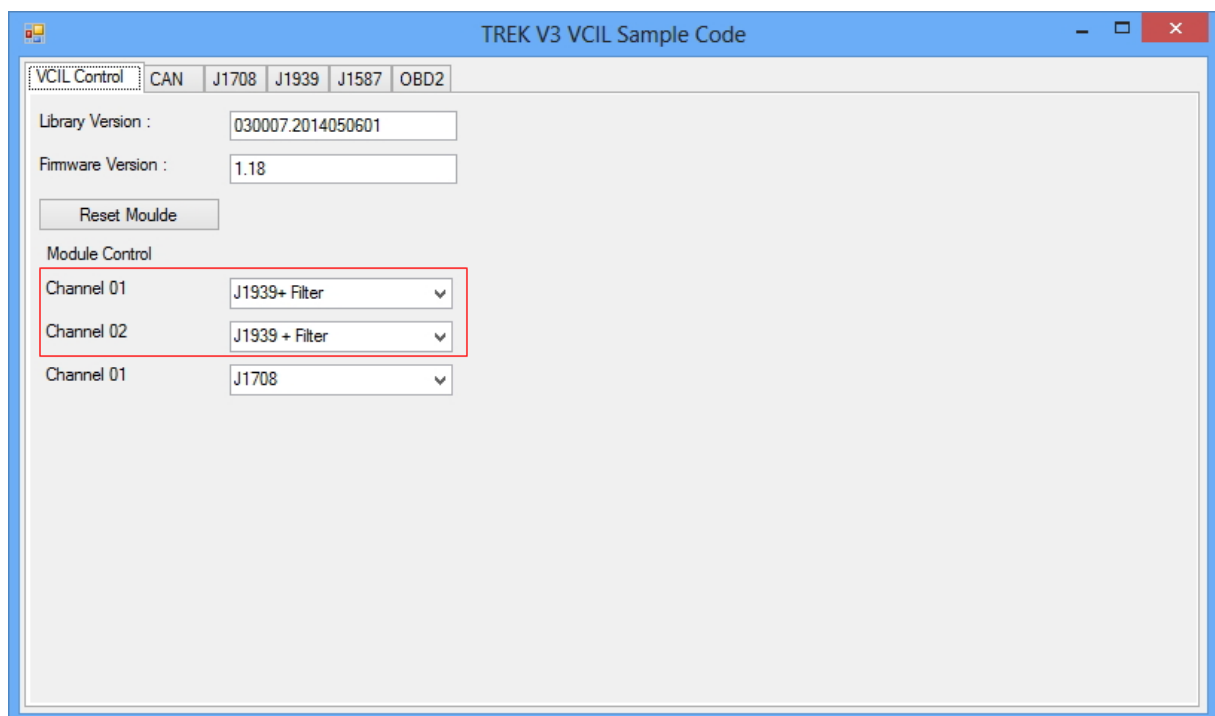
1. Selecting "J1939" page as below figure



2. Filling the J1939 data prepare to send
3. Press "Write" button to send J1939 data as above figure
4. You should see the data on the receiver

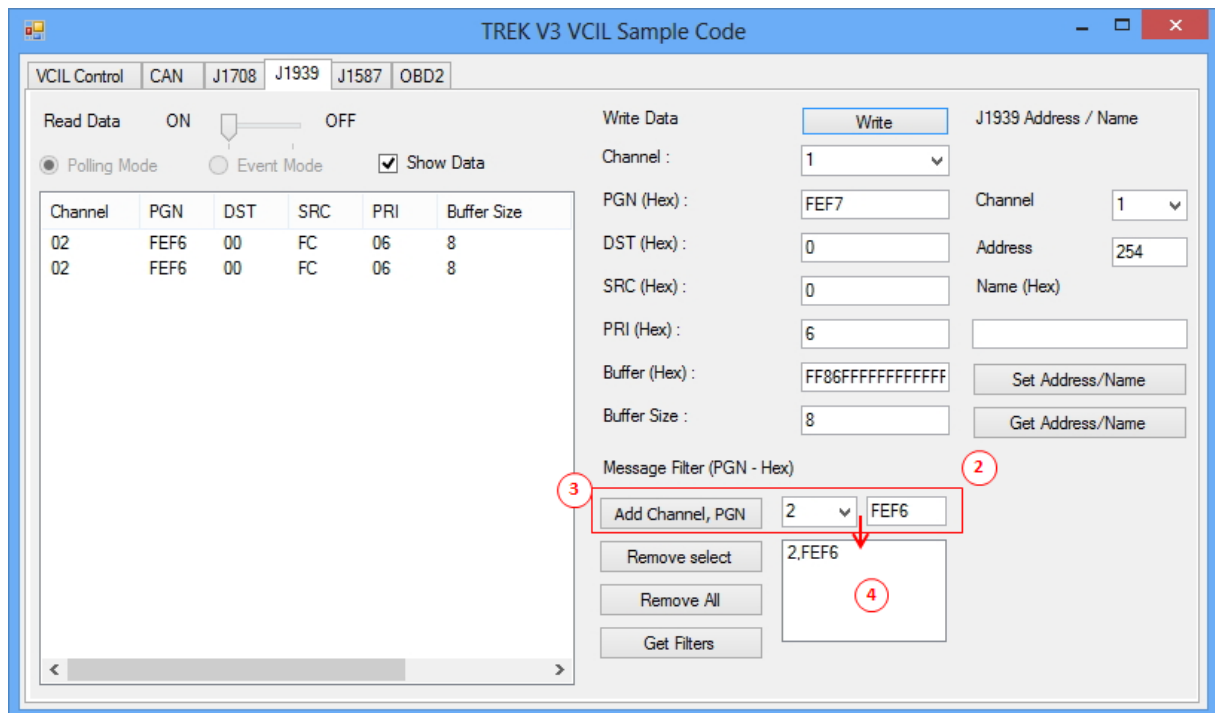
Testing Message Filter

1. Selecting "VCIL Control" page
2. Press combo box on the channel and select "J1939 + Mask" as below figure



Set Message Filter

1. Selecting "J1939" page as below figure



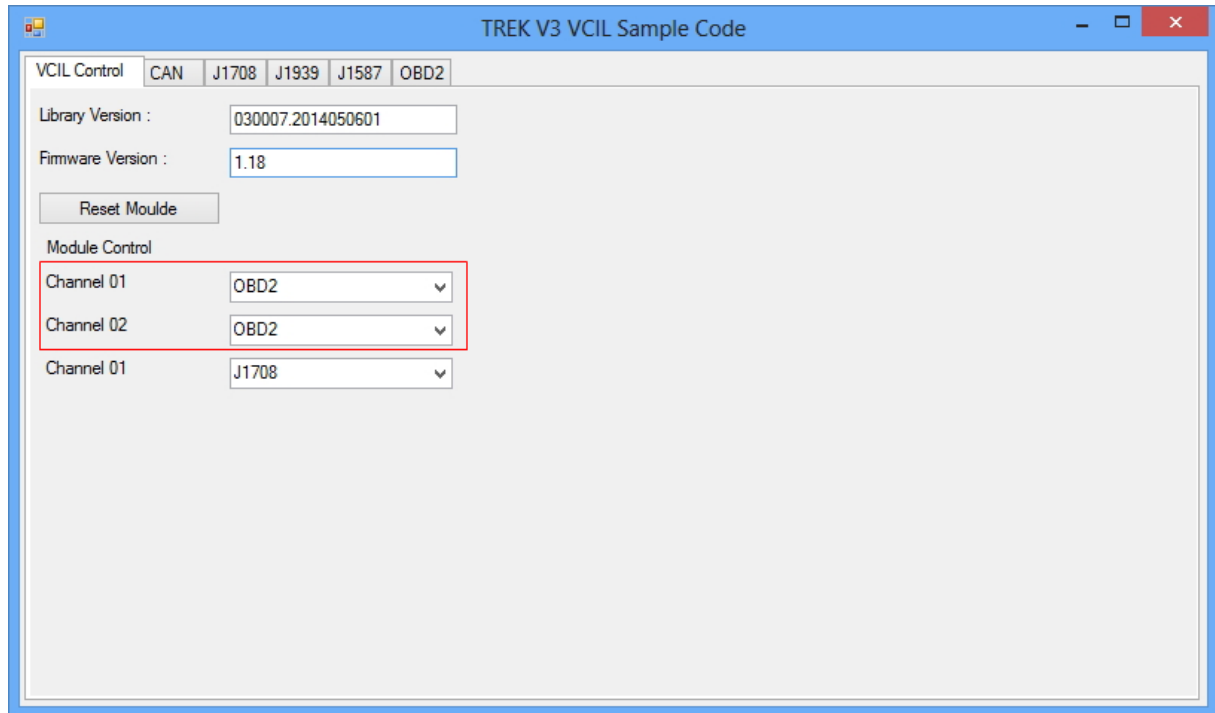
2. Select Channel and specified PGN to filter
3. Press "Add Channel, PGN" button to add the rule to filter
4. You should see the filter was applied on the bus
5. The system ignores all PGN is not on the list

For example, as above figure setting. The system can receive the PGN equal to 0xFE6, otherwise no.

Testing ODB2

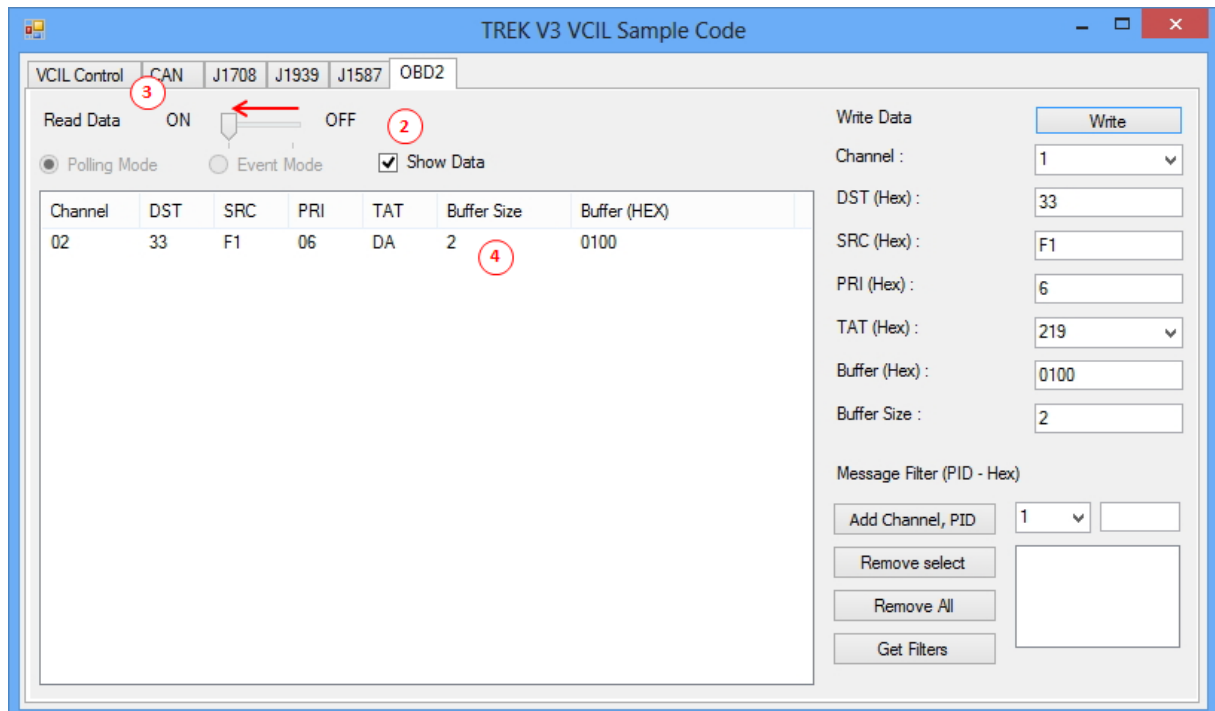
1. Selecting "VCIL Control" page

2. Press combo box on the channel and select "ODB2" as below figure



Reading Data

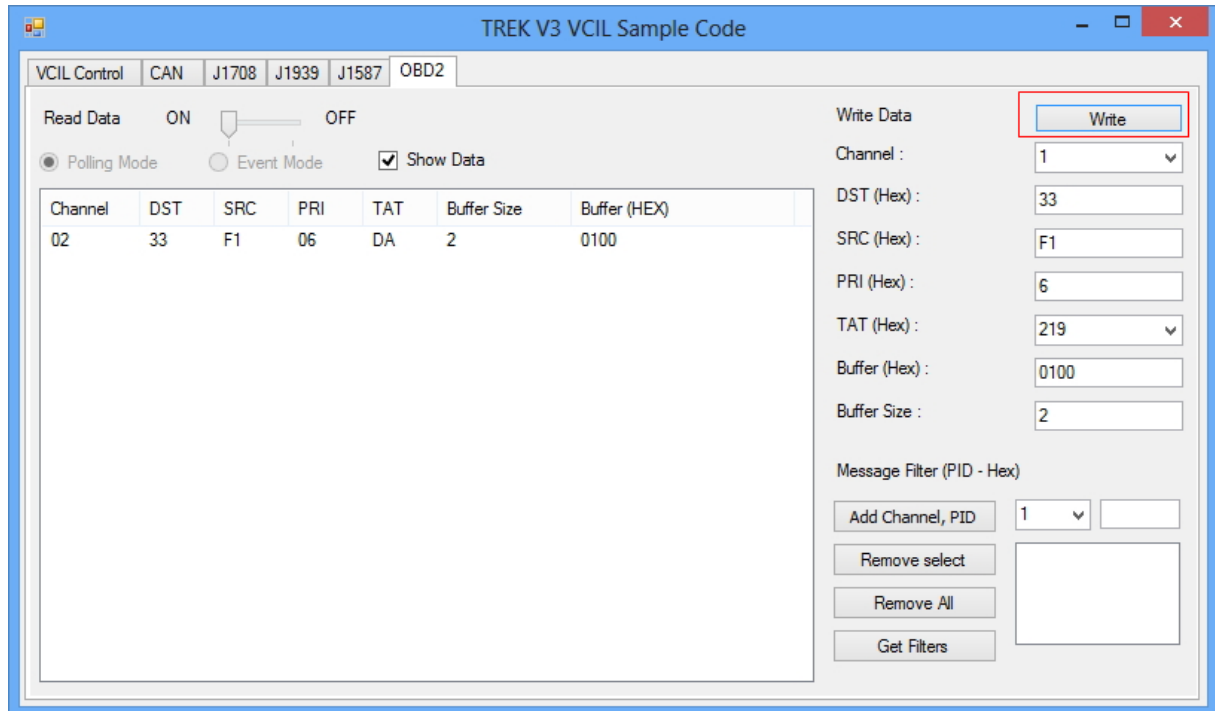
1. Selecting "ODB2" page as below figure



2. Checked "Show Data"
3. Pull TrackBar "ON" to receive ODB2 data
4. You should see the data came from the ODB2 and show on the list

Writing Data

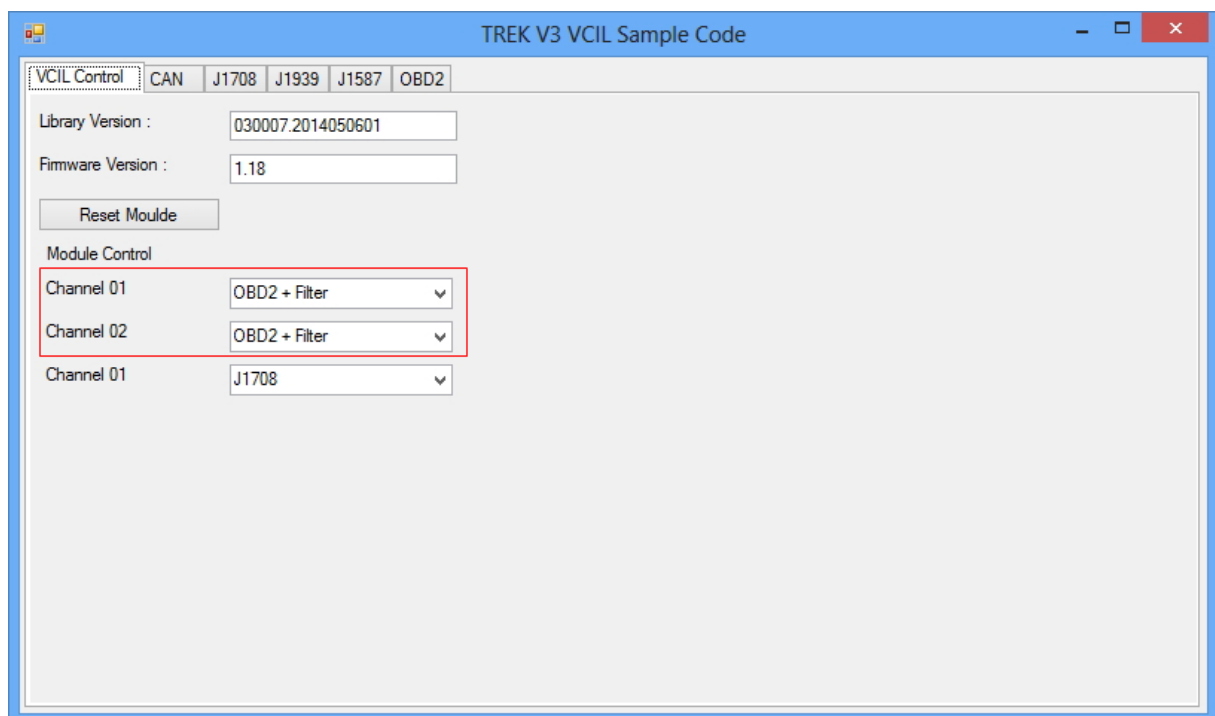
1. Selecting "ODB2" page as below figure



2. Filling the ODB2 data prepare to send
3. Press "Write" button to send ODB2 data as above figure
4. You should see the data on the receiver

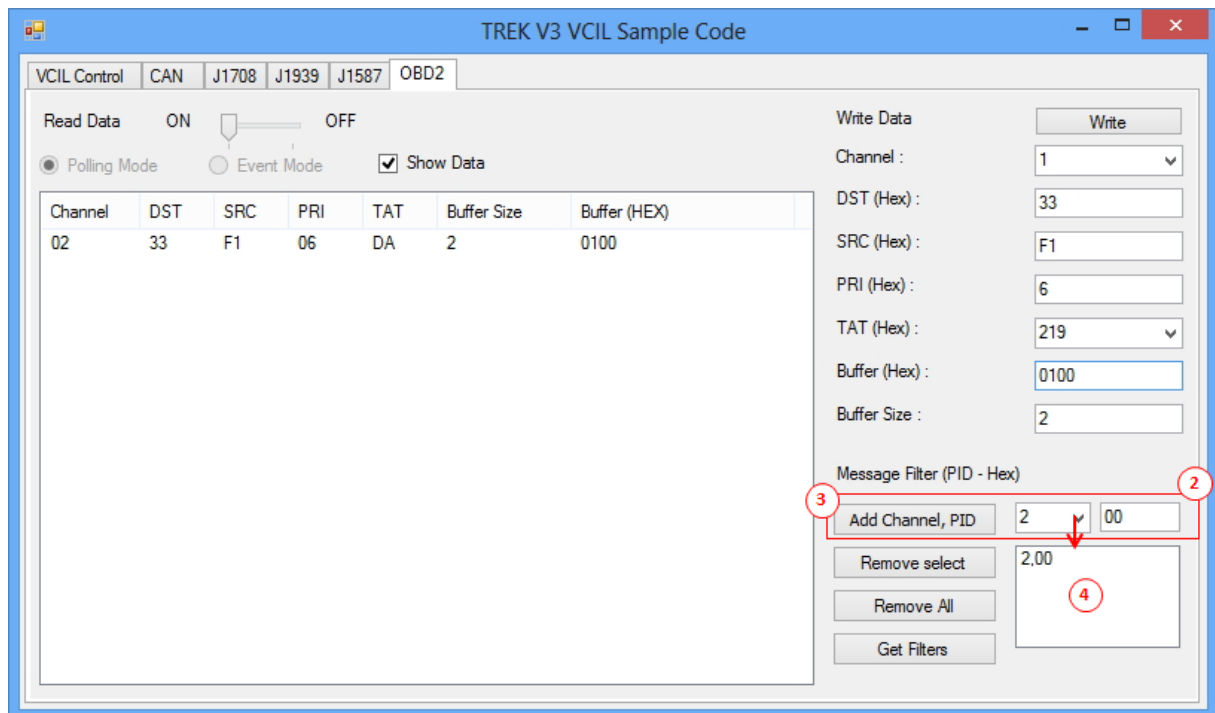
Testing Message Filter

1. Selecting "VCIL Control" page
2. Press combo box on the channel and select "ODB2 + Mask" as below figure



Set Message Filter

1. Selecting "ODB2" page as below figure



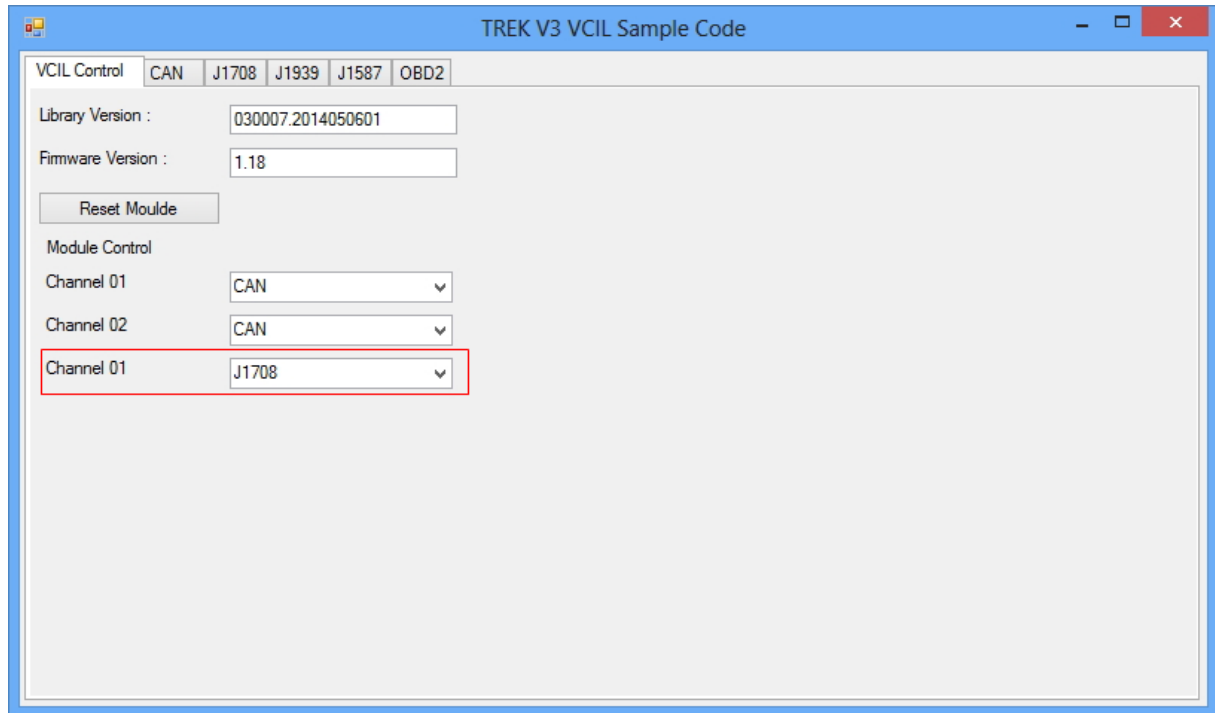
2. Select Channel and specified PID to filter
3. Press "Add Channel, PID" button to add the rule to filter
4. You should see the filter was applied on the bus
5. The system ignores all PID is not on the list

For example, as above figure setting. The system can receive the PID equal to 0x00, otherwise no.

Testing J1708

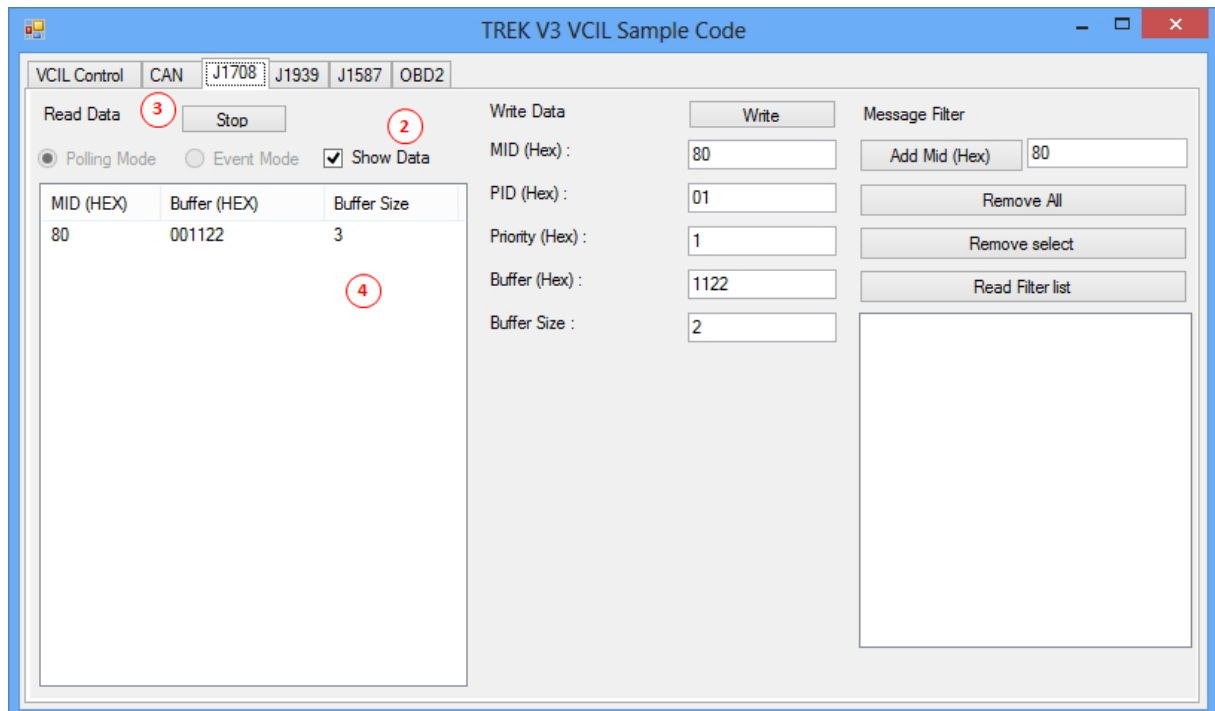
1. Selecting "VCIL Control" page

2. Press combo box on the channel and select "J1708" as below figure



Reading Data

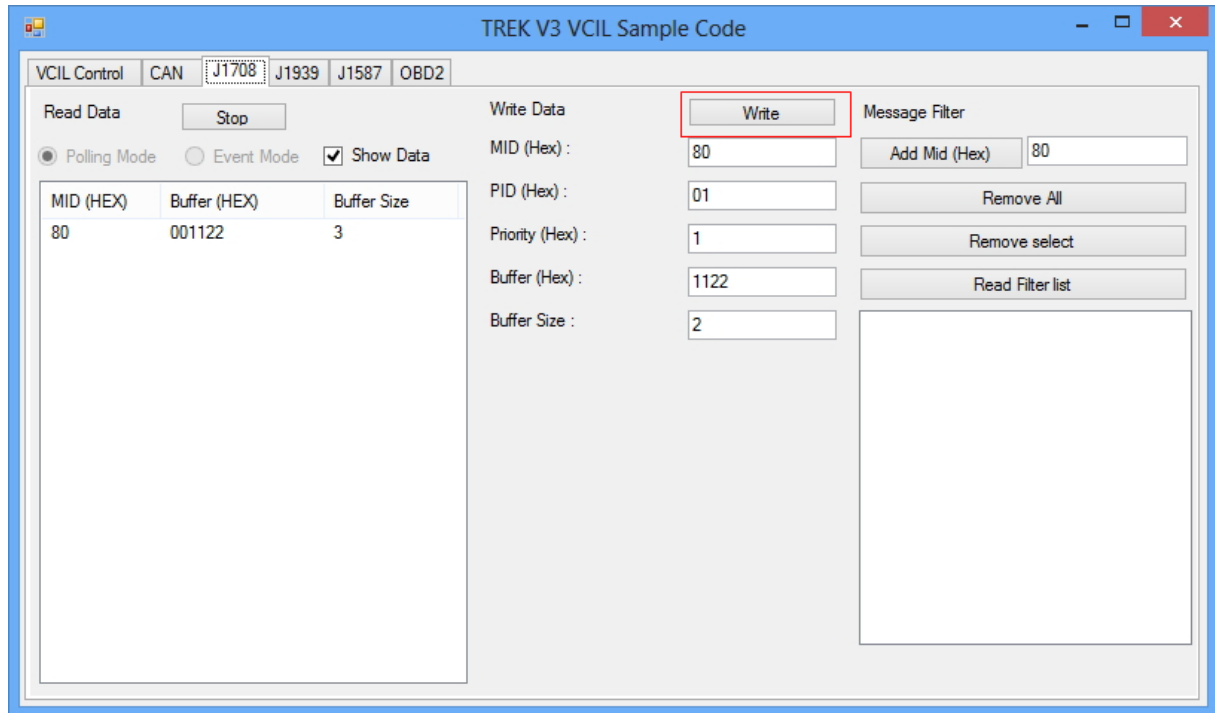
1. Selecting "J1708" page as below figure



2. Checked "Show Data"
3. Press "Start" button to receive J1708 data
4. You should see the data came from the J1708 and show on the list

Writing Data

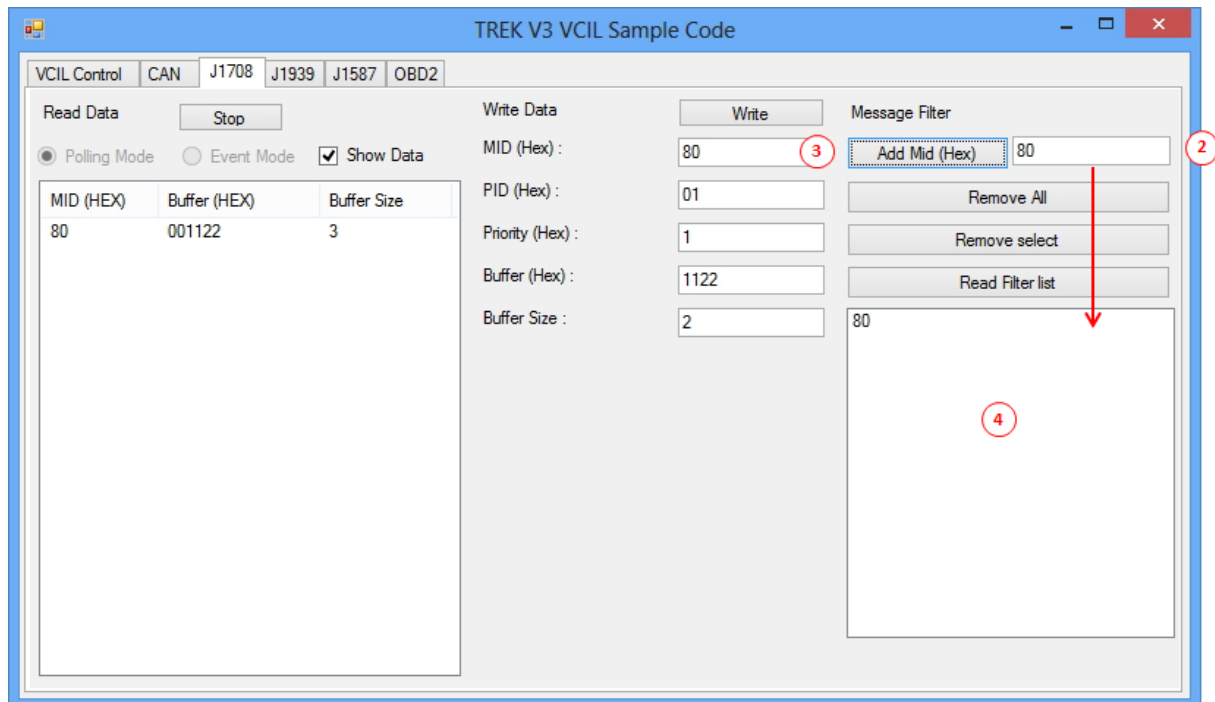
1. Selecting "J1708" page as below figure



2. Filling the J1708 data prepare to send
3. Press "Write" button to send J1708 data as above figure
4. You should see the data on the receiver

Testing Message Filter

1. Selecting "J1708" page as below figure

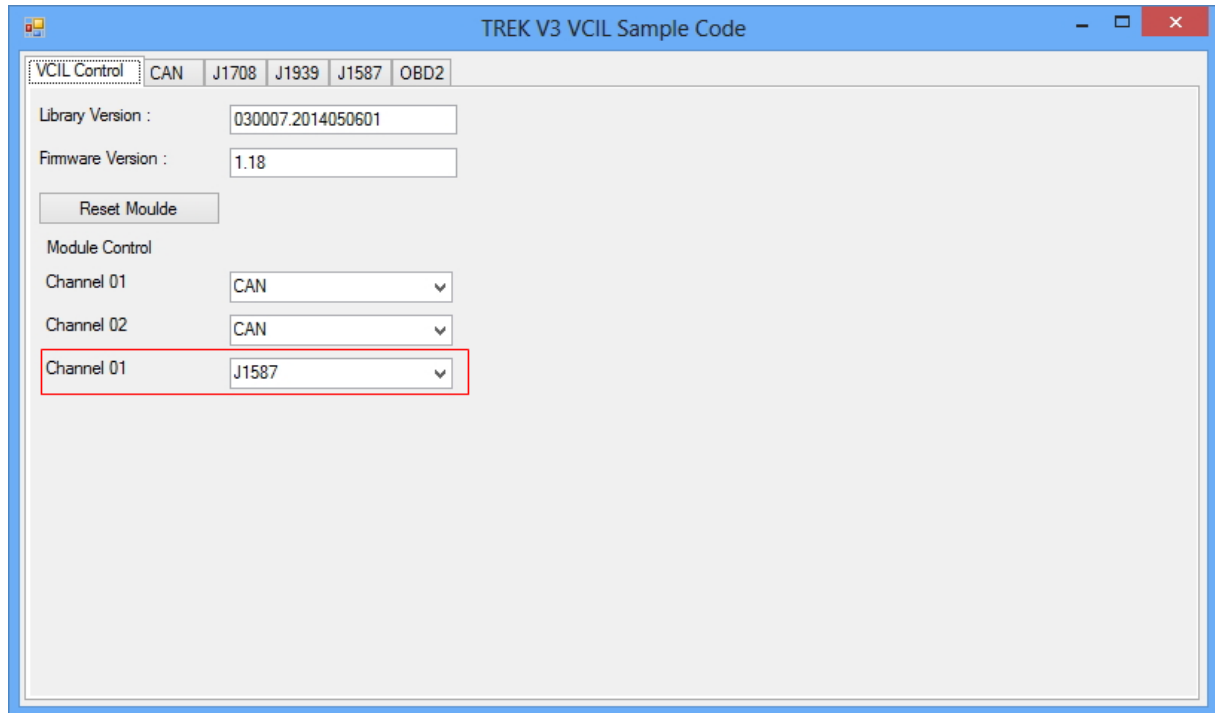


2. Enter specified MID to filter
3. Press "Add MID" button to add the rule to filter

4. You should see the filter was applied on the bus
5. The system ignores all MID is not on the list

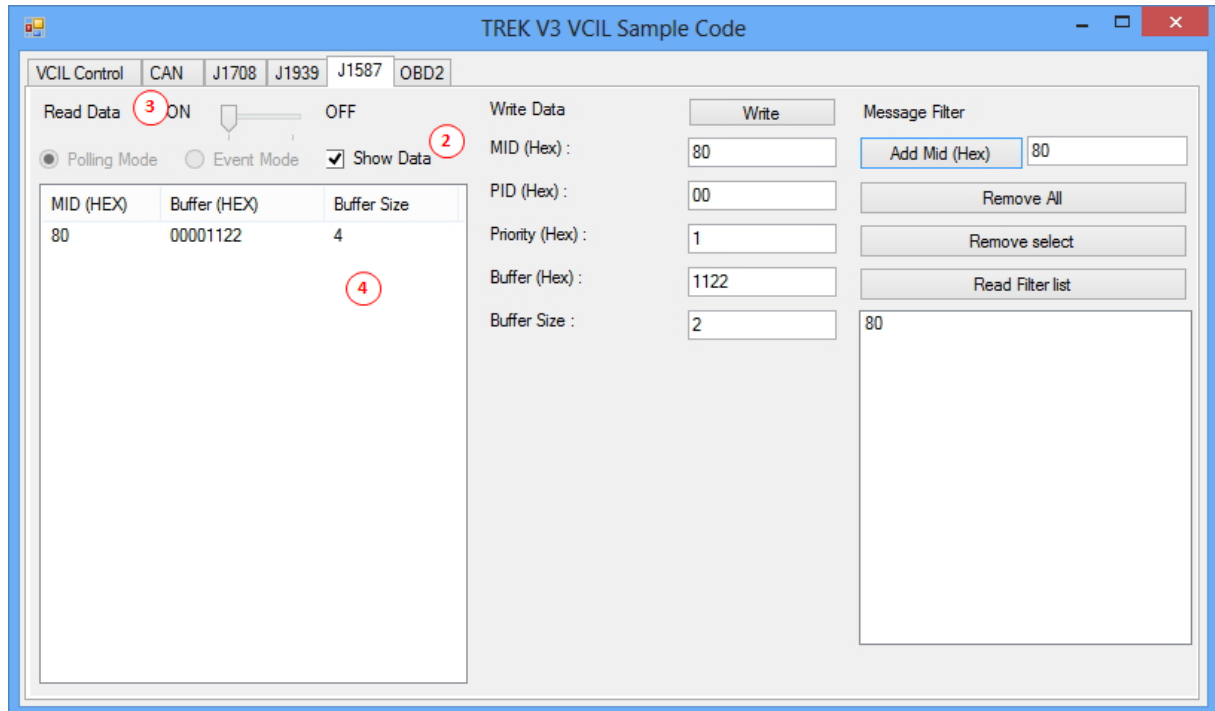
Testing J1587

1. Selecting "VCIL Control" page
2. Press combo box on the channel and select "J1587" as below figure



Reading Data

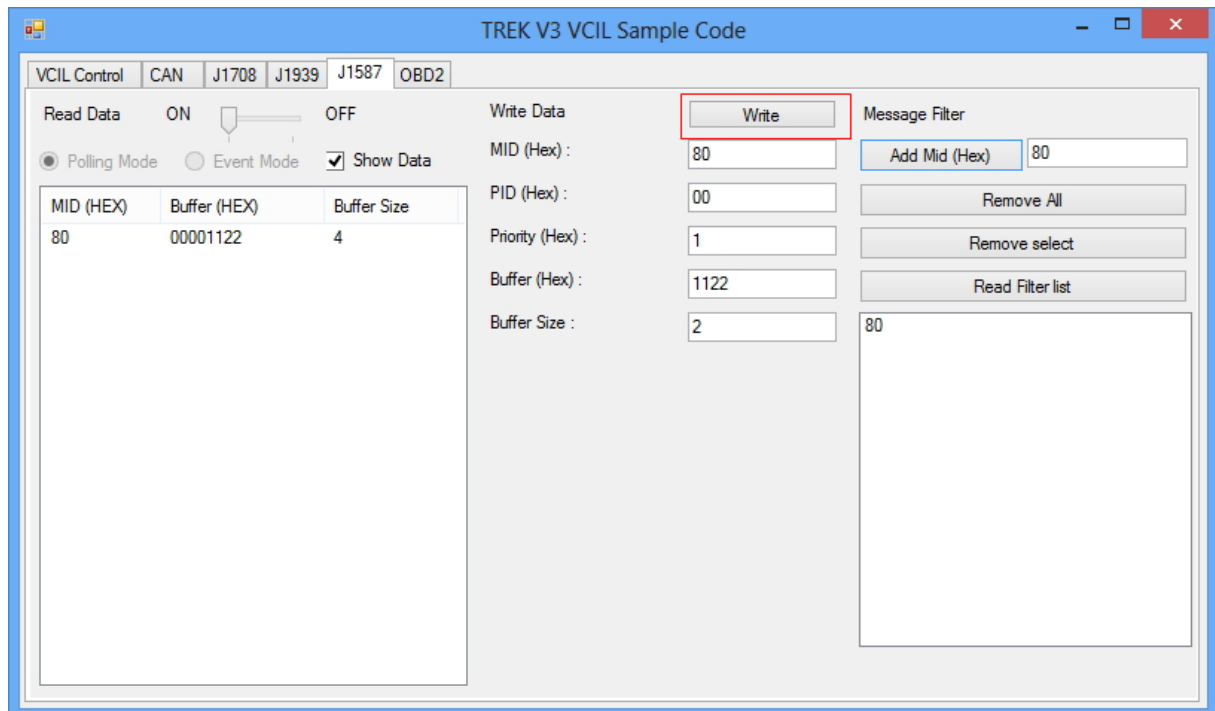
1. Selecting "J1587" page as below figure



2. Checked "Show Data"
3. Press "Start" button to receive J1587 data
4. You should see the data came from the J1587 and show on the list

Writing Data

1. Selecting "J1587" page as below figure

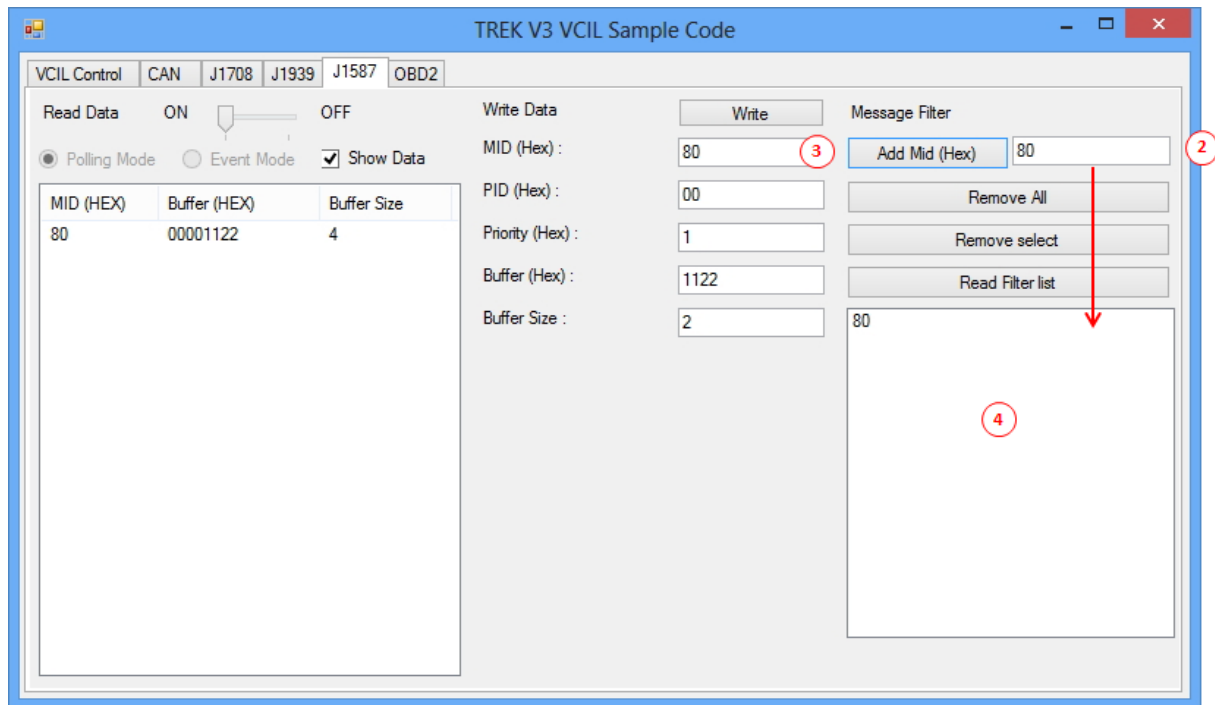


2. Filling the J1587 data prepare to send
3. Press "Write" button to send J1587 data as above figure

4. You should see the data on the receiver

Testing Message Filter

1. Selecting "J1587" page as below figure



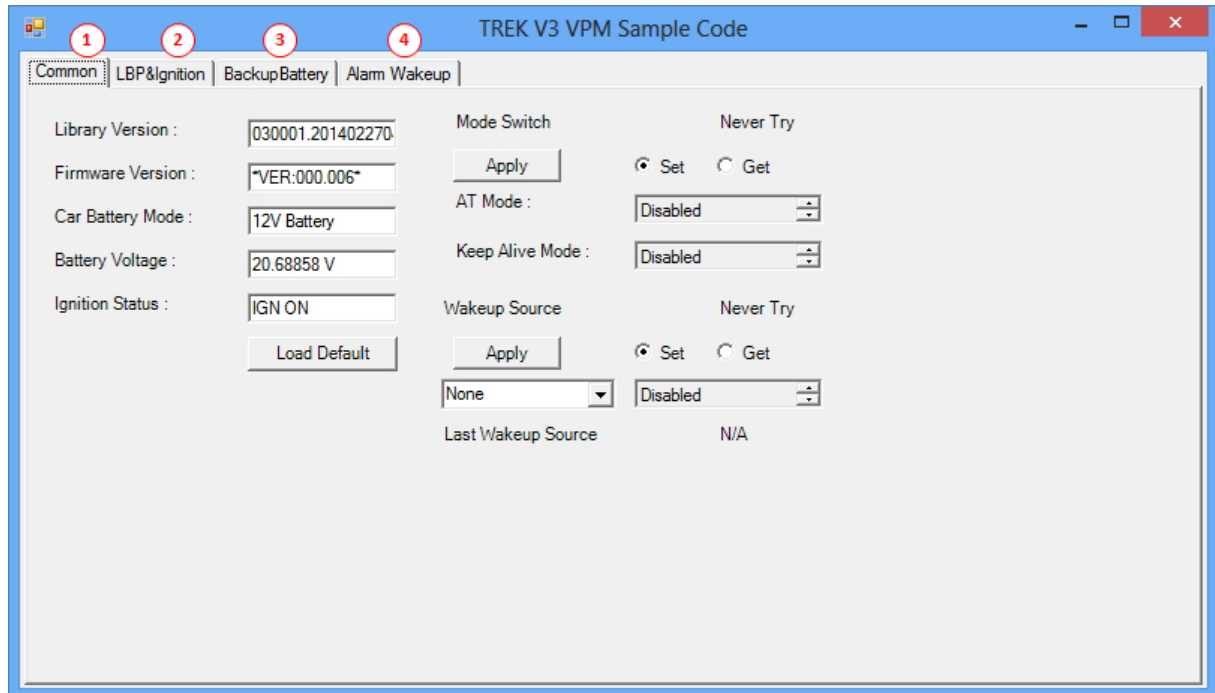
2. Enter specified MID to filter
3. Press "Add MID" button to add the rule to filter
4. You should see the filter was applied on the bus
5. The system ignores all MID is not on the list

TREK V3 VPM Sample Code

TREK V3 VPM Sample Code is demonstration of vehicle power management (VPM).

System Menu

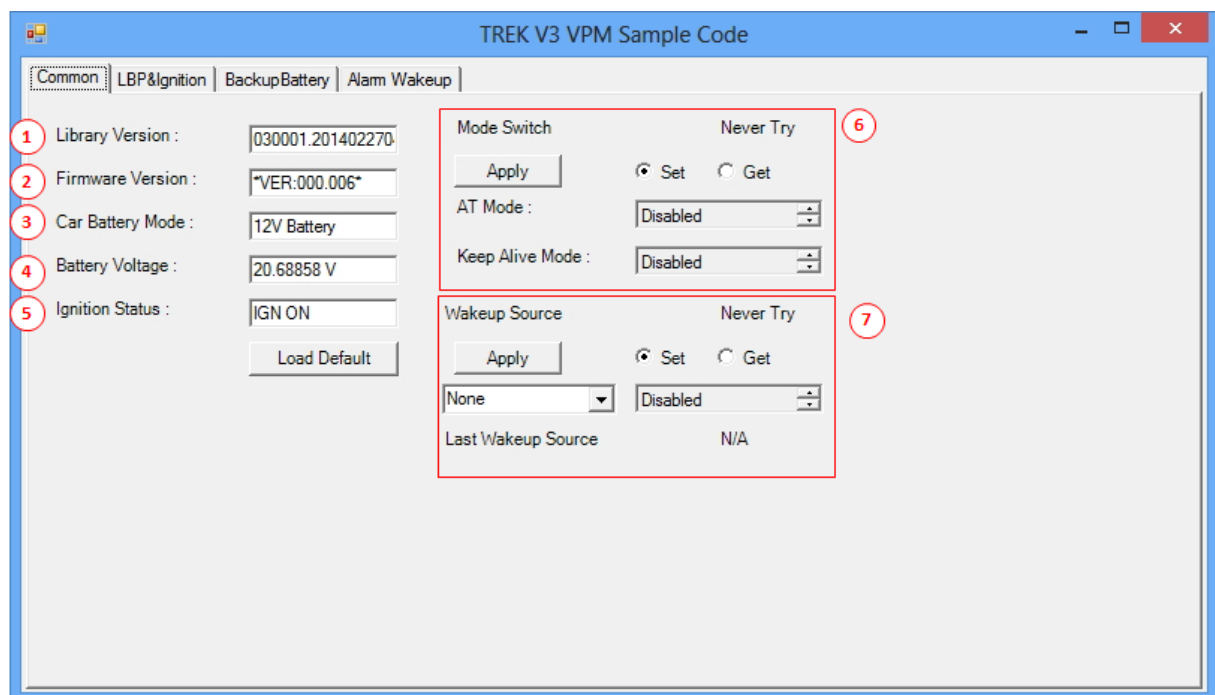
- TREK V3 VPM Sample Code as below figure



- Common page
- Low Battery Protection & Ignition Control page
- Backup Battery Information page
- Alarm Wakeup Control page

Common page

- VPM Common page as below figure



- Library Version
- Firmware Version

3. Car Battery Mode (Decide LBP what voltage mode to use)
4. Current Battery Voltage
5. Ignition Status
6. Mode Control
7. Wakeup Source Control

Low Battery Protection & Ignition Control page

- VPM Low Battery Protection & Ignition Control page as below figure

The screenshot shows the 'TREK V3 VPM Sample Code' application window. The 'LBP&Ignition' tab is selected. The interface is divided into two main sections, each highlighted with a red box and a circled number.

Section 1: Low Battery Protection Control

- Low Battery Protection:** Includes an 'Enable' checkbox (unchecked) and an 'Apply' button.
- Low Delay Threshold:** Set to 'Never Try'.
- Low Delay:** Input field set to 30.
- Low Hard Delay:** Input field set to 60.
- Low Voltage Threshold:** Set to 'Never Try'.
- Low Voltage Default Value:** A table showing values for 12V and 24V modes.

	12V	24V
Max	12.26159	23.292
Default	11.43076	22.419
Min	10.10691	21.087
Preboot	11.43076	22.419
- LBP Threshold:** Input field set to 11.43076 V.
- Preboot Threshold:** Input field set to 11.43076 V.
- 12V Mode:** Input field set to 22.419 V.
- 24V Mode:** Input field set to 22.419 V.

Section 2: Ignition ON/OFF Control

- Ignition ON/OFF:** Includes an 'Apply' button and radio buttons for 'Set' (selected) and 'Get'.
- Ignition Mode:** A switch between 'Off' and 'Suspend'.
- Off Event Delay:** Input field set to 5 sec.
- On Delay:** Input field set to 2 Sec.
- Hard Off Delay:** Input field set to 30 Sec.
- Suspend Delay:** Input field set to 0 Sec.
- Success:** A status indicator.

1. Low Battery Protection Control
2. Ignition Control

Backup Battery Information page

- Backup Battery Information as below figure

The screenshot shows the 'TREK V3 VPM Sample Code' application window with the 'Backup Battery' tab selected. The tab bar at the top includes 'Common', 'LBP&Ignition', 'Backup Battery', and 'Alarm Wakeup'. The main area contains the following fields, all with a value of '0':

Field	Value
Backup Battery	
Voltage	0
Remaining Capacity	0
Max Capacity	0
Battery Charge	0
Temperture	0
Remaining Time	0
Time To Full	0

Alarm Wakeup Control page

- Alarm Wakeup Control as below figure

The screenshot shows the 'TREK V3 VPM Sample Code' application window with the 'Alarm Wakeup' tab selected. The tab bar at the top includes 'Common', 'LBP&Ignition', 'Backup Battery', and 'Alarm Wakeup'. The main area contains the following controls:

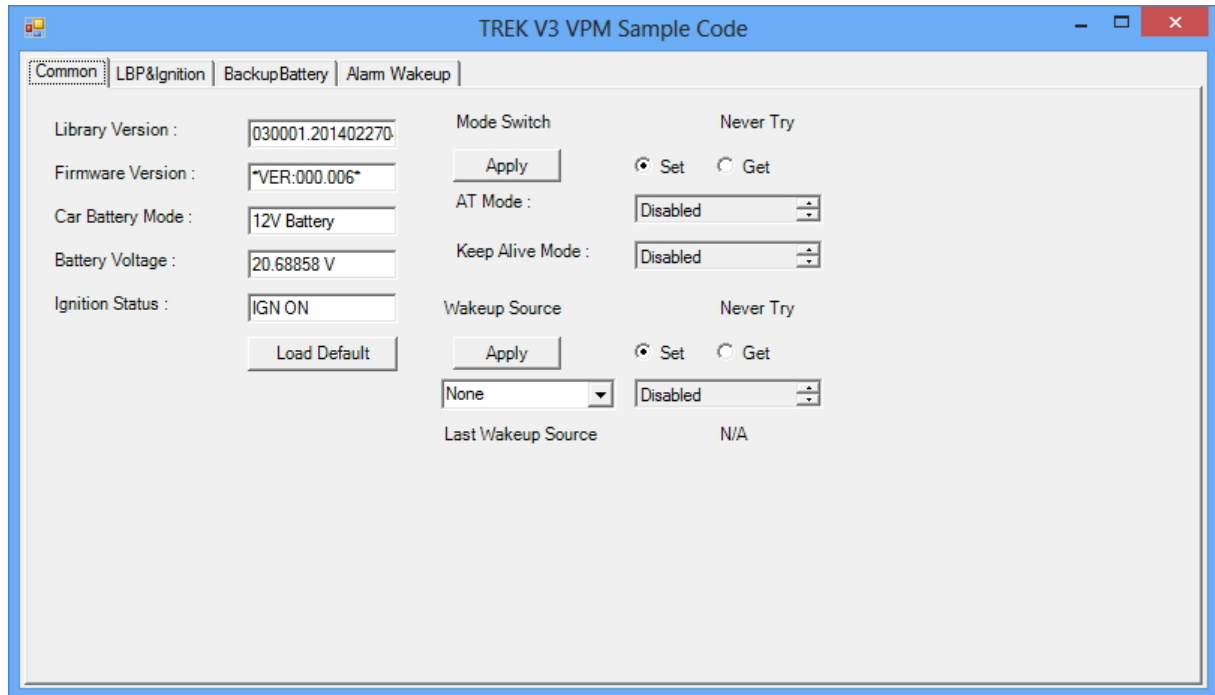
- 1** Alarm Wakeup Status : OFF (with 'Get' and 'Set' buttons)
- 2** RTC Timer Control showing date/time: 2000-04-08 22:41:58 AM (with 'Get' and 'Set' buttons, and a date/time picker below showing 6/ 4/2014 and 3:16:35 PM)
- 3** Alarm Wakeup Time Control showing fields for Day of Week, Hour, Minute, and Alarm Wakeup Mode (with 'Get Alarm Time' and 'Set Alarm Time' buttons)

1. Alarm wakeup Status Control
2. RTC Timer Control
3. Alarm Wakeup Time Control

Testing VPM

1. Opening "TREK_V3_Sample_Code_VPM.exe"

2. You should see the firmware version and voltage below figure



Trouble Shooting

- Coming soon