USB-CAN-B

From Waveshare Wiki
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Overview

USB-CAN-B



(http://www.waveshare.com/USB-CAN-B.htm)

USB To CAN Converter

Introduction

USB-CAN-B is an industrial high-performance USB-to-CAN adapter, CAN-bus communication interface card, and CAN protocol data analyzer. Integrating dual independent channels with electrical isolation and multiple protection circuits. Supports Windows and Linux systems, and comes with drivers, CANTools-related software, secondary development examples, and tutorials. It can be connected to the PC or industrial control host via a USB port to realize transceiver control, data analysis, collection, and monitoring of the CAN bus network.

Compact in size and easy to use, it can be used for learning and debugging of CAN bus, and secondary development and integration into various industrial, power communication, and intelligent control applications that require CAN bus communication.

Specification

Model		USB-CAN-B	USB-CAN-FD
Product Type	Industrial Grade	USB to CAN Interface Converter / CAN-bus Communication Card/ CAN Protocol Data Analyer	Industrial Grade: USB to CAN FD interface converter, CAN/CAN FD serial bus communication interface card, CAN/CAN FD protocol data analyzer
USB Port	Working Voltage	5V (Directly powered via USB port, no additional power supply required.)	
	Interface Form	USB-B Port	
CAN/CAN FD Interface	CAN/CAN FD Channels	Dual channels: CAN1 and CAN2 (Independent of each other, do not affect each other, full isolation, isolation voltage 3000V DC.)	
	Interface Form	Screw Terminal (OPEN6 5.08mm pitch)	
	Matching Resistor	Each CAN/CAN FD channel has two built-in 120Ω terminal resistors, which can be enabled by switch	
	Baudrate	10Kbps~1Mbps (Configurable via software)	100Kbps~5Mbps (Configurable via software)
	Protocol Support	CAN2.0A and 2.0B, CANOpen, SAE J1939, DeviceNet, iCAN, ISO 15765 protocol	CAN2.0A and 2.0B, ISO 11898-1 CAN FD Protocol V.1.0
	Transfer Speed	The receiving and sending speed of each CAN/CAN FD channel can reach 8500 frames/s	The receiving and sending speed of each CAN/CAN FD channel can reach 20000 frames/s and 5000 frames/s
	Transmit Buffer	2000 frames receiving buffer and 1000 frames sending buffer per channel (automatically retransmit when the transmission fails.)	1500 frames receiving buffer and 64 frames sending buffer per channel (automatically retransmit when the transmission fails.)
Indicator	PWR	Power Indicator	
	SYS	System status indicator, normally off; keeps on when there is a bus error	
	CAN1	CAN1 channel indicator (blinking when sending and receiving data.)	
	CAN2	CAN2 channel indicator (blinking when sending and receiving data.)	
System Support	Windows	Windows XP/7/8/10/11 (32 bits and 64 bits)	
	Linux	Linux systems such as Raspberry Pi OS, Ubuntu (Jetson Nano), VMware virtual machines, etc.	Does Not support the Linux system now, and the related drivers are under development.
Operating Temperature		-40～85℃	

Case Material	Aluminum alloy case + 3D flame-retardant insulating sheets on both sides (This design can provide better protection against metal tip discharge, improve product safety, and extend service life.)
Dimensions	104 × 70 × 25 mm

Working with Windows PC

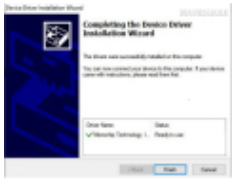
Driver Installation

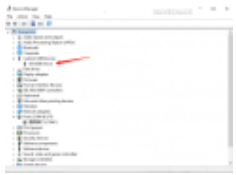
Download the USB-CAN-B/FD Windows driver (https://files.waveshare.com/wiki/USB-CAN-B/driver/USB-CAN-B-Driver-Setup(V1.40).exe.zip). Connect USB-CAN-B intelligent interface module to the PC with a USB cable correctly. The Windows will then auto-run an installation wizard called "new hardware is found" after the hardware is detected. Select "Install the software automatically (Recommended)".
Click "Next" to continue;


(/wiki/File:Image4-USB-CAN-B-Driver_(1).png)


(/wiki/File:Image4-USB-CAN-B-Driver_(2).png)


(/wiki/File:Image4-USB-CAN-B-Driver_(3).png)


(/wiki/File:Image4-USB-CAN-B-Driver_(4).png)


(/wiki/File:USB-CNA-B-driver.png)

USB-CAN-B Tool Software

Download and Install

Download and unpack USB-CAN-B TOOL_EN (https://files.waveshare.com/upload/3/32/USB_CAN_TOOL.zip), then run and install USB_CAN_Tool.exe.



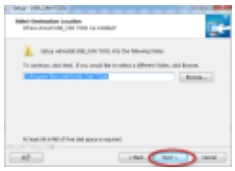
(/wiki/File:USB-CAN-B-TOOL_(1).png)



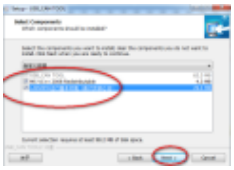
(/wiki/File:USB-CAN-B-TOOL_(1).jpeg)



(/wiki/File:USB-CAN-B-TOOL_(2).png)



(/wiki/File:USB-CAN-B-TOOL_(3).png)

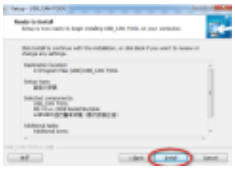


(/wiki/File:USB-CAN-B-TOOL_(4).png)

The first time to install the USB-CAN-B please make sure to check "run Engine".this installation package is needed for the application developed from the LABVIEW environment. The first time to install the USB-CAN-B please make sure to check "run Engine".this installation package is needed for the application developed from the LABVIEW environment.



(/wiki/File:USB-CAN-B-TOOL_(5).png)



(/wiki/File:USB-CAN-B-TOOL_(6).png)



(/wiki/File:USB-CAN-B-TOOL_(7).png)



(/wiki/File:USB-CAN-B-TOOL_(8).png)



(/wiki/File:USB-CAN-B-TOOL_(9).png)



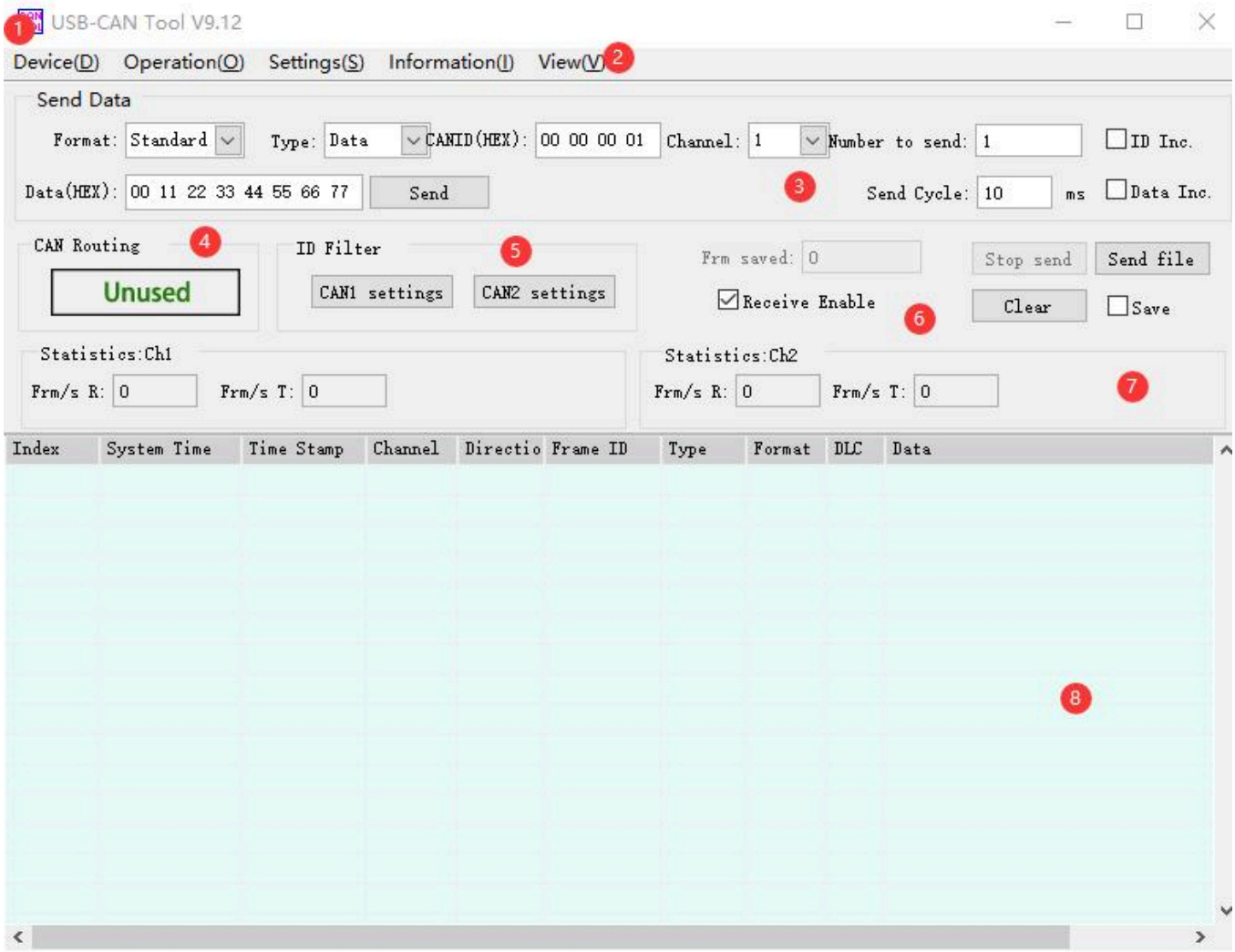
(/wiki/File:USB-CAN-B-TOOL_(10).png)

Directions for Use

Here we take the matched USB-CAN Tool as an example. If you need to use other hosts such as CANTest and CANPro, you can refer to this link (https://www.waveshare.com/wiki/ZLG-CAN_Tool_User_Guide).

Connect the USB interface of the device with the PC via USB.

Run "USB-CAN-B Tool.exe" as shown in the following figure:



(/wiki/File:USB-CAN-TOOL_image10.jpg)

1.Title Bar

When the device is turned off, USB-CAN Tool V9.xx will be displayed, where V9.xx represents the current program version number; when a USB-CAN adapter is successfully opened, the model, serial number, firmware version number, and brand name will be appended to the above name.

2.Menu Bar

Most of the functions of this tool are in the menu, and the functions can be realized by clicking the corresponding menu.

3.Sending Setting Section

This section contains the setting information related to CAN information transmission, among which the "ID increment" function is that when sending multi-frame data, the ID value of the next frame of data is 1 greater than the ID value of the previous frame; The sent 8 bytes of data from a 64-bit number according to the byte order from low to high, and each time the data is sent, it is automatically incremented by 1. This function cooperates with the "receive incremental check" function to test the frame loss rate during high-speed

transmission. Note: This function is generally used for internal testing and is not recommended for users. When the data length is set to be less than 8 bytes, it will be automatically filled with 0 and filled to 8 bytes.

4.Can Relay

The CAN relay function is configured in the menu "Device Operation" -> "Relay Mode Options". When configured in relay mode, the relay status will be displayed here. If you want to turn off this function, you can close in the menu "Device Operation" -> "Relay Mode Options". Note: After the relay function is enabled, the baud rate and other parameter settings are invalid, but the sending and receiving, and intelligent filtering functions can be used normally.

5.Intelligent Filtering Function

The two channels can be set separately, and the filter is only for reception. After enabling the filtering function, the ID in the filter list or the ID in the ID segment will be displayed and received, and the data outside the filter list will be masked and discarded. With flexible settings for intelligent filtering, any ID or ID segment can be allowed or blocked from being received.

6.Control Button

"Stop sending" - stop the current sending operation; "Send file" - store the sent frame information in a file in a specific format, and send it in the order of the frames stored in the file; "Open CAN reception" - the CAN receive is enabled, otherwise the CAN receiving function is in the "suspended" state, at this time the host computer will no longer display the CAN bus data received by the USBCAN device, but the USBCAN device is still receiving the data on the CAN bus; "Clear" - clear The contents of the current data list; "Real-time storage" - saves the real-time data to a file.

> Note: Sending a file may be consistent with the file format saved by the real-time storage function, and the saved file can be sent directly in the form of a file.

7.Statistics Area

Includes one-way rate and receives incrementing parity error counters for channel 1 and channel 2. "Frame rate R" - receiving rate, unit: fps (frames per second); "frame rate T" - sending rate, unit: fps (frames per second); "Parity error" (internal functions are hidden by default) - —Receive data increment parity error counter, this value is the total number of dropped frames when receiving increment parity. 8. Data list
The list for displaying the data sent and received.

Please refer to the USB-CAN TOOL Debugging Software User Manual (https://files.waveshare.com/upload/7/78/USB-CAN-TOOL-EN.pdf) documentation for details.

Working with Linux

ARM-Linxu-32bit

c

Support access to mainstream Linux system motherboards, take Raspberry Pi 4B as an example:



(/wiki/File:USB-CAN-B-USB-RPI.png)

```
cd ~
wget https://files.waveshare.com/upload/1/1c/USB-CAN-B_Code.zip
unzip USB-CAN-B_Code.zip
sudo chmod 777 -R USB-CAN-B_Code
cd USB-CAN-B_Code/Raspberry/c/
sudo make clean
sudo make
sudo ./hello_cpp
```

(/wiki/File:USB-CAN-B-RPI.png)

python

```
cd ~
cd USB-CAN-B_Code/Raspberry/python/
sudo python3 python3-32bit.py
```

```
./ControlCAN.dll
Call VCI_OpenDevice successfully

Call VCI_InitCAN1 successfully

Call VCI_StartCAN1 successfully

Call VCI_InitCAN2 successfully

Call VCI_StartCAN2 successfully

CAN1 channel sent successfully

CAN2 channel received successfully

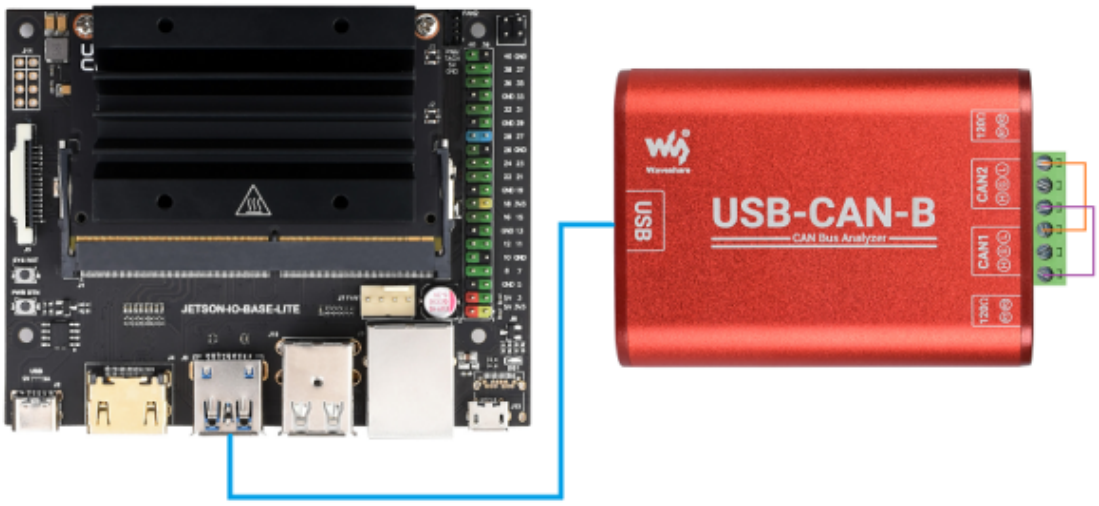
ID:
1
DataLen:
8
Data:
[1, 2, 3, 4, 5, 6, 7, 8]
```

(/wiki/File:USB-CAN-A-linuxlite.png)

ARM-Linxu-64bit

c

Support access to mainstream Linux system motherboards, take JETSON-IO-BASE-A as an example:



(/wiki/File:USB-CAN-B-Jetson.png)

```
wget https://files.waveshare.com/upload/1/1c/USB-CAN-B_Code.zip
unzip USB-CAN-B_Code.zip
sudo chmod 777 -R USB-CAN-B_Code
cd USB-CAN-B_Code/Jetson/c
sudo make clean
sudo make
sudo ./hello_cpp
```

(/wiki/File:USB-CAN-A-demo-Jetson.png)

python

```
cd ~
cd USB-CAN-B_Code/Jetson/python/
sudo python3 python3-64bit.py
```

```
./ControlCAN.dll
Call VCI_OpenDevice successfully

Call VCI_InitCAN1 successfully

Call VCI_StartCAN1 successfully

Call VCI_InitCAN2 successfully

Call VCI_StartCAN2 successfully

CAN1 channel sent successfully

CAN2 channel received successfully

ID:
1
DataLen:
8
Data:
[1, 2, 3, 4, 5, 6, 7, 8]
```

(/wiki/File:USB-CAN-A-linuxlite.png)

Resource

Documentation

- USB-CAN-B Manual (https://files.waveshare.com/upload/f/f3/USB-CAN-B_Manual.pdf)
- Interface Function Library User Instruction (https://files.waveshare.com/upload/7/7d/Interface_Function_Library_User_Instruction.pdf)
- USB-CAN TOOL Debugging Software User Manual (https://files.waveshare.com/upload/7/78/USB-CAN-TOOL-EN.pdf)
- Windows Library Files (https://files.waveshare.com/wiki/USB-CAN-B/Demo/lib/Secondary-lib-dll.zip)
- Linux Library Files (https://files.waveshare.com/wiki/USB-CAN-B/Demo/lib/second-library.zip)

Software

- USB-CAN-B TOOL_EN(V9.15) (https://files.waveshare.com/wiki/USB-CAN-B/USB_CAN-TOOL Setup(V9.14).zip)
- USB-CAN-B Driver_installation_(Tool_SetupV1.40) (https://files.waveshare.com/wiki/USB-CAN-B/driver/USB-CAN-B-Driver-Setup(V1.40).exe.zip)
- USB-CAN-B Usb_Drivers(Manual installation) (https://www.waveshare.com/wiki/File:Usb_Drivers(Manual_installation).zip)
- ControlCAN.DLL file (https://files.waveshare.com/upload/b/b7/ControlCAN.zip%7C)

- CANPro (https://www.waveshare.com/w/A6Y79bcq/Kdy80nYY.php?f=USB-CAN-B-ZLG-image12_%281%29.png&width=900)

Demo

- USB-CAN-B_Code (https://files.waveshare.com/upload/1/1c/USB-CAN-B_Code.zip)
- Linux_ARM_X86_32/64_demo (https://files.waveshare.com/wiki/USB-CAN-B/Demo/Secondary_development_example.zip)

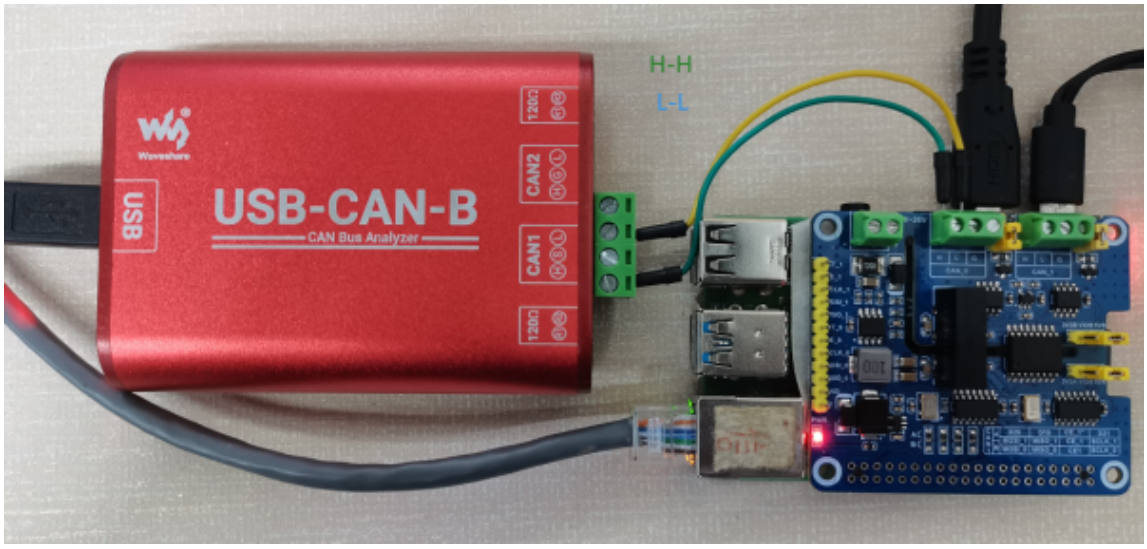
FAQ

Question: How to communicate with other CAN devices?

Answer:

Take 2-CH CAN FD HAT (https://www.waveshare.com/2-ch-can-fd-hat.htm) as an example, the test steps are as follows:

- Hardware connection:



(/wiki/File:USB-CAB-B-raspberry.png)

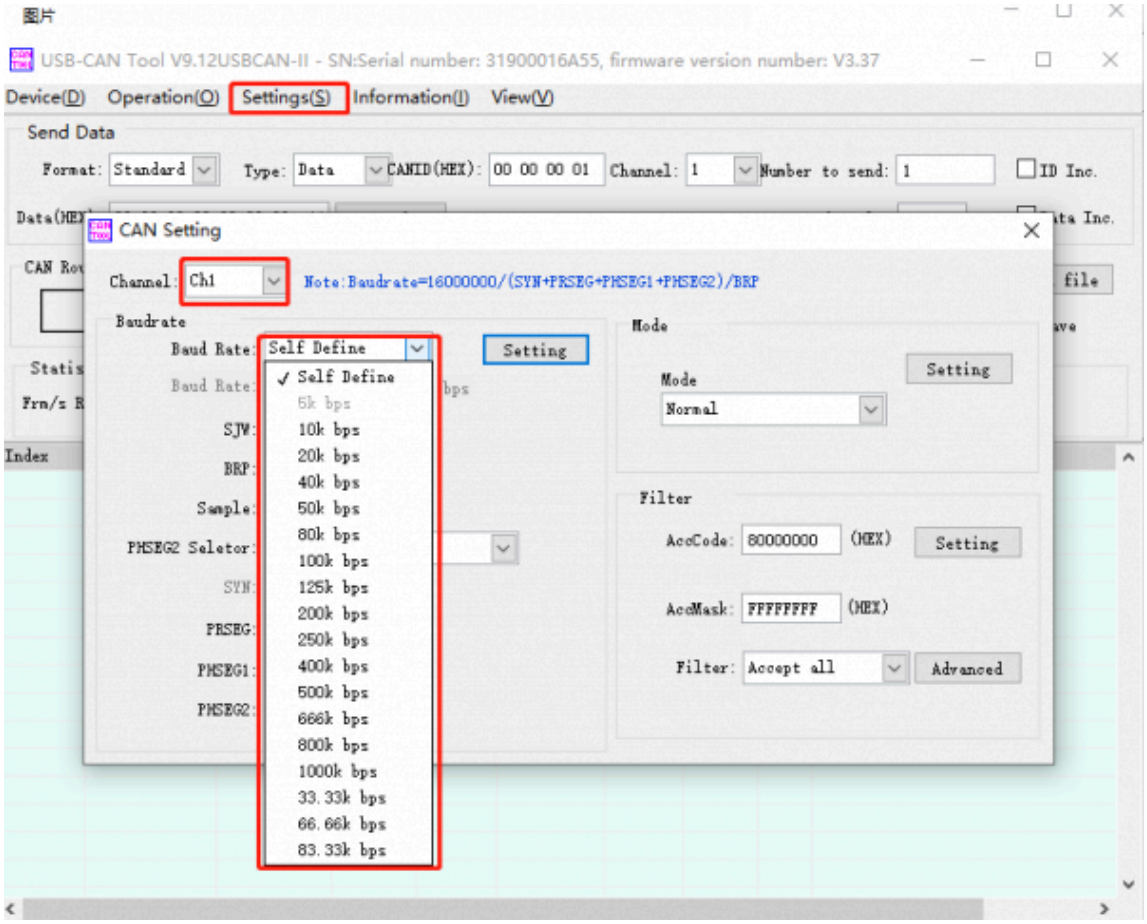
- Software setup

```
sudo apt-get install can-utils
sudo ip link set can0 up type can bitrate 1000000
candump can0
cansend can0 000#11.22.33.44
```

(/wiki/File:USB-CAN-B-TX-RX.png)

Question: How can I change the CAN baud rate?

Answer:



(/wiki/File:USB-CAN-B-FAQ.png)

Question: Can you Share LABview code for USB-CAN-B (CAN Bus Analyzer)

Answer:

This is the complete sample program network disk sharing link of LabView, please click the link to download the relevant program:

```
https://drive.google.com/file/d/1W5TsWudOJrbuw6Dfxm8bihMjm-bUQAAU/view?usp=sharing
```

Question: Does it support j1939 protocol?

Answer:

The USB-CAN-B module supports the SAE J1939 protocol.

Question: Does it support ZLG?

Answer:

Yes, it supports.

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.
Working Time: 9 AM - 6 PM GMT+8 (Monday to Friday)

Submit Now (https://service.waveshare.com/)

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