CANalyst-II Analyzer (Top Version Pro)

Product Manual

Instruction Manual Version: V2.02

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Chapter 1 Product Introduction

1.1 Overview

CANalyst-II Analyzer (Top Version Pro) is a CAN analyser with full-speed USB2.0 interface and two CAN interfaces, of which CAN1 channel is high-speed CAN and CAN2 channel can be configured as high-speed CAN or low-speed fault-tolerant CAN by software. It is equipped with CAN bus protocol analysis function and supports SAE J1939, DeviceNet, CANopen, iCAN and custom high-level protocol analysis function, and is compatible with Chou-Li-gong CANPro software.

CANalyst-II Analyzer (Top Version Pro) can be used as a standard CAN node and is a powerful tool for CAN bus product development, CAN bus device testing and data analysis. With this interface adapter, PC can be connected to a standard CAN network via USB interface, and it is used to build field of bus test labs, industrial control, intelligent building, automotive electronics and other fields for data processing, data acquisition and data communication. Meanwhile, CANalyst-II Analyzer (Top Version Pro) is the best choice for portable system users due to its small size and easy installation.

CANalyst-II analyzer (top version Pro), CAN bus circuit with independent isolation DC-DC power supply module, high-speed magnetic coupling isolation module for electrical isolation, so that the interface adapter has a strong anti-jamming ability, greatly improving the reliability of the system used in harsh environments. The three ends of the USB, CAN1, CAN2, are completely isolated.

The product can use the manufacturer's USB_CAN TOOL software to directly send and receive CAN bus configurations. Users can also refer to the provided DLL dynamic link library, C++Builder, C#, VC, VB, VB.NET, Delphi, LABVIEW, LabWindows/CVI, Matlab routines to compile their own applications to conveniently develop CAN system application software products.

There is no need to use complex USB protocols for secondary development with the CANalyst-II analyser (Top Version Pro).

1.2 Performance and Technical Specifications

● Protocol conversion between USB and CAN bus;

● Equipped with 2-channel CAN interface;

Among them: CAN1 channel is high-speed CAN, and CAN2 channel can be configured as high-speed CAN or low-speed fault-tolerant CAN through software.

● USB interface supports USB3.0, USB2.0, compatible with USB1.1 and OTG specifications;

●Support CAN2.0A and CAN2.0B protocols, supporting standard frame and extended frame;

●Support bidirectional transmission, CAN transmit, CAN receive;

●Support data frame, remote frame format;

●CAN controller baud rate is optional between 10Kbps-1Mbps and can be configured by software;

Among them: CAN1 channel is high-speed CAN, the baud rate can be configured to 10Kbps-1Mbps through software.

CAN2 channel when configured as high speed CAN through software, the baud rate configuration range is 10Kbps-1Mbps.

When the CAN2 channel is configured as low-speed fault-tolerant CAN through software, the baud rate configuration range is 10Kbps-125Kbps.

●CAN bus interface adopts high-speed magnetic coupling isolation and isolated DC-DC power supply; USB, CAN1 and CAN2 are completely isolated among them;

●Maximum flow: receive 8500 frames/s/channel or more and send 8500 frames/s/channel or more, the two channels can run independently at the same time, without affecting each other;

● Internal CAN transmit buffer capacity: 20 frames/channel (automatic retransmission when transmission fails), CAN receive buffer capacity: 2000 frames/channel;

●Direct power supply from USB bus, no external power supply required;

●Isolation module insulation voltage: 3000V;

●CAN1 channel built-in GDT components; CAN1 and CAN2 channels built-in TVS tube and common mode inductor.

●Operating temperature: -20～85℃;

●Shell size: 104*70*25mm;

●Product compatibility: function library compatible with Zhou Ligong USBCAN-II/USBCAN-2E-U interface adapter.

1.3 Typical Applications

● Transmission and reception of CAN bus network via USB interface of PC or laptop;

● Fast CAN network data acquisition and data analysis;

● CAN bus-USB gateway;

● USB interface to CAN network interface;

●Extending the network communication length of CAN bus;

● Industrial actual situation of CAN network data monitoring.

1.4 Product Sales Lists

Serial Number	Name	Quantities	Unit	Memo
1	Adapter Host	1	pc	CANalyst-II Analyzer (Top Pro)
2	Information Package (Official Website Download)	1	pc	Includes: manual, USB driver, secondary development library file, secondary development sample program source code, USB_CAN TOOL test software and source code, baud rate detection tool, etc.
3	USB Cable	1	pc	Present as a Gift
4	3 Inch Screwdriver	1	pc	Present as a Gift
5	OBD Adapter Cable	2	pc	Male Head

1.5 Technical Support and Service

For free maintenance, lifetime maintenance and upgrade services, there is no return or exchange policy for 7 days or 5 years.

For technical support and purchase information, please refer to

Email: zhcxgd@163.com

Technical support QQ: 3259558860

Chapter 2 Form Factor and Interface Description

2.1 Form Factor and Interfaces

The CANalyst-II Analyzer (Top Version Pro) Interface Adapter has two sets of external interfaces. One standard USB port; and one 6-pin OPEN6 terminal block terminal that provides the CAN bus interface.

A red highlighted LED-PWR lamp indicates power;

A blue LED-CAN1 lamp indicates CAN1 interface status. The red LED-CAN1 lamp blinks whenever CAN1 bus data is received or sent. (When the CANalyst-II analyzer (Top Version Pro) is plugged into the USB port, the system self-tests and the LED-CAN1 light blinks once.)

The red super bright LED-CAN2 light indicates the CAN2 interface status. The red LED-CAN2 light blinks whenever CAN2 bus data is received or sent. (The LED-CAN2 light blinks 1 time for system self-test when the CANalyst-II analyzer (top-of-the-line Pro) is plugged into the USB port.)

Blue SYS light, when sending data, the data is not received, it will light up blue. 4 seconds or so has not been successfully sent, that is, the sending is canceled and the light goes out. Specifically as shown in the following figure:

Figure 1 Outline drawing of CANalyst-II analyzer (Top Version Pro) (specific to the real thing)

2.2 Signal Definition

CANalyst-II Analyzer (Top Version Pro) Products		
	Name	Description
(High Speed) CAN1	R1	Terminating resistor R1. Dialed down to ON, the internal 120 ohm resistor is tapped into the bus
	R2	Terminating resistor R2. It is connected in parallel with R1 and serves as the same purpose. Two resistors are built-in for each channel.
	H	CAN1 bus H signal.
	S	Shielded line interface, if the communication line is shielded line can be connected to the shield, otherwise it can be grounded or not.
	L	CAN1 bus L signal.
(High Speed) CAN2 When configured as High-speed CAN	R1	Terminating resistor R1. Dialed down to ON, the internal 120 ohm resistor is tapped into the bus
	R2	Terminating resistor R2. It is connected in parallel with R1 and serves as the same purpose. Two resistors are built-in for each channel.
	H	CAN2 bus H signal.
	S	CAN signal ground, if the communication line is shielded can be connected to the shield, otherwise can be grounded or not.
	L	CAN2 bus L signal.
(Fault Tolerant)	R1	When the CAN2 channel is configured as a low speed and Fault

CAN2 When configured as low-speed fault-tolerant CAN	R2	Tolerant) in CAN, both R1 and R2 must be dialed up. Remember: Between H and L, no resistor can be added, otherwise the fault-tolerant CAN will not operate properly.
	H	CAN2 bus H signal.
	G	The signal ground of the fault-tolerant CAN can be left unconnected under normal conditions. Attention: 1. When needing to use the fault tolerance function or use single-wire CAN, then the fault-tolerant CAN or single-wire CAN network ground and G must be connected together. 2. CAN2 is fully compatible with single-wire CAN, when connecting single-wire CAN, CANH of single-wire CAN connects to H of CAN2, and ground of single-wire CAN connects to G of CAN2.
	L	CAN2 bus L signal。
Indicator light	PWR	Power indicator
	SYS	System status indication, normally normally off. When there is an error on the bus, it is normally on.
	CAN1	CAN1 channel indicator (blinks when sending and receiving data)
	CAN2	CAN2 channel indicator (blinks when sending and receiving data)

Working mode:

CAN send: the adapter receives the data packet from the USB interface of the PC, then it immediately parses it and saves it in the T-Buffer buffer. The adapter continuously reads the T-Buffer buffer to form a CAN message frame and sends it to the CAN bus interface.

CAN reception: The adapter receives data from the CAN network and saves it in the R-Buffer buffer. When the host computer software requests a query for reception, the adapter sends the buffer data to the USB interface.

2.3 Factory Configuration

1) When shipped from the factory, CAN2 is configured for high-speed CAN

mode, and the software default CAN bus baud rate for both channels: 1Mbps;

2) The software default acceptance mask register is 0xFFFFFFFF, indicating no filtering, and CAN messages of any ID can be received.

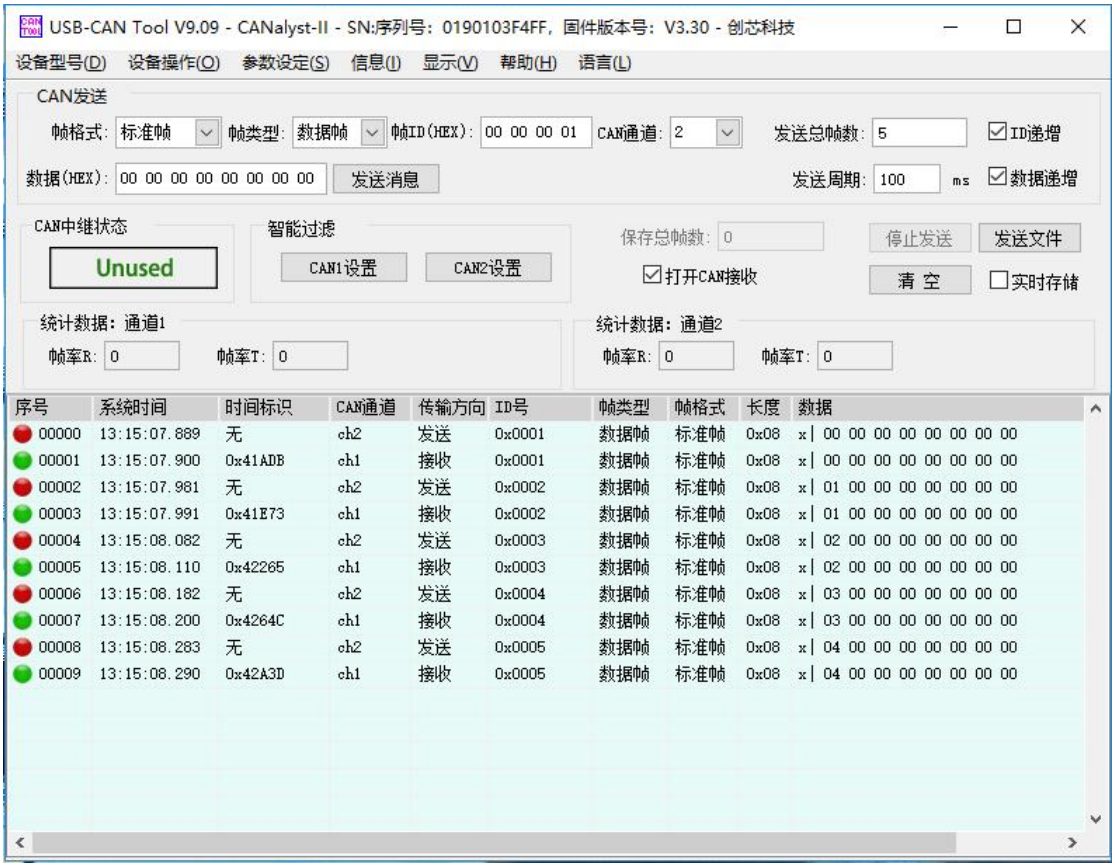
3) You can optionally setting of termination resistor: toggling the corresponding switch, which means using the internal termination resistor of 120 ohms.

Note: Two 120-ohm termination resistors must be guaranteed on a normal high-speed CAN bus, otherwise the CAN bus will be affected. On a normal low-speed fault-tolerant CAN, there must not be any resistor between HLs.

CANalyst-II analyzer (Top Version Pro) Please turn the dip switch to ON.

Connect the unit to the USB port of the PC via the USB connection cable;

Run the tool software USB-CAN Tool.exe test program as shown in Figure 4 below.



2.4 Software Operation and Function Introduction

1、Select Model

Menu "Device Model"->USB-CAN2.0, check (system default).

2、Device Open/Close

Open the menu "Device Operation" -> "Start Device" to start the specified channel of the CAN analyzer, USB-CAN Tool to force the start of all channels of the device.

Open the menu "Device Operation"->"Shutdown Device", will shut down all the channels in the running CAN analyzer.

3、CAN Parameter Configuration

Open the menu "Device Operation" -> "Start Device", the "Parameter Confirmation" dialog box will pop up. In the dialog box, configure the baud rate, filter settings, operating mode. Generally, you only need to select the corresponding baud rate through the drop-down list, and the other parameters can be used by default. The CAN parameters of two channels need to be configured separately.

Note: It is recommended to set the CAN parameters before connecting the USB-CAN device to the bus. For detailed instructions on parameter setting, please refer to *"4. USB-CAN Tool Debugging Software Installation and User's Manual.pdf".*

4、CAN Channel Selection

The CAN analyzer has two CAN channels with index numbers 0 and 1 (i.e., CAN channel 1 and CAN channel 2).

When setting CAN parameters, please select the channel number.

5、CAN Baud Rate Setting

Modify it to the value required by the user. If communicating with external devices, the baud rate must be set to the same as that of the external CAN device.

6、Setting Message Filter

Users can set the filtering method and the values of message acceptance filter (ACR) and message mask filter (AMR) to filter the received CAN messages.

7、Operating Mode Settings

Normal operation mode, listen-only mode, self-test (loopback) mode.

Normal operation mode: The CAN module will appear on the CAN bus and can send and receive CAN messages.

Listen Only Mode: The module will appear on the CAN bus, but in a passive

state. It will receive messages, but will not send messages or answer signals. This mode can be used as a bus monitor as it will not affect the CAN bus data communication.

Self-test (loopback) mode: Used for the adapter to perform a self-test, allowing the CAN module to receive its own messages. In this mode, the CAN module transmit path is internally connected to the receive path. In this mode, a "false" answer is provided so that another node is not required to provide the answer bit and the CAN message is not actually sent to the CAN bus. CAN messages sent by the adapter will be received back by the adapter. (All of our products are dual-channel, so we can directly test the data sending and receiving between the two channels.)

8、Send CAN Message

When sending data, you need to select extended frame/standard frame, remote frame/data frame, frame ID, data length, data and other information. Please input the values in hexadecimal format in the ID edit box and data edit box in the CAN test software, and there should be a space between each value. When sending, the ID will take up to the first 4 values and the data will take up to the first 8 values.

Note: In order to ensure that the sent data will not be lost, the USB-CAN device has the function of automatic retransmission, i.e., when the USB-CAN device is not connected to the CAN bus or the baud rate does not match the CAN bus, the USB-CAN device cannot receive the answer signal, then the USB-CAN device will automatically retransmit the data until the data is received by other nodes of CAN bus or the USB-CAN device is powered down and restarted. Reboot. Each channel has a data buffer capacity of about 20 frames, when the transmission is unsuccessful (automatic retransmission), the host computer will call the transmit function to return 0, indicating that the transmission has failed until the buffer data is sent normally. Send with a timeout function, 1S unsuccessful frames will be automatically cleared, and will not be retransmitted.

9、Send and Receive **ID** Format

Direct ID number format: the lowest bit (Bit0) of ID is aligned with Bit0 of ID byte. If ID=2, fill in 00 00 00 02 directly in the ID edit box. This format is intuitive

and simple.

2.5 Self-Sending and Self-Receiving Test

Each CAN channel supports the self-test function.

The test steps are as follows:

1) Connect the device to the USB port of the PC and run the USB-CAN Tool software;

2) In the software menu "Device Operation", select "Start Device", then in the "Parameter Confirmation" dialog box, change the working mode to "Self-test (Loopback) Mode", and change the other parameters to "Self-test (Loopback) Mode". （In the "Parameter Confirmation" dialog box, change the operating mode to "Self-test (Loopback) Mode", and use the default values for other parameters.

3) Click the "Send" button to send. See if you can receive back the CAN messages sent out, and these messages will be displayed in the data area.

The single-channel self-send and receive test cannot detect CAN transceiver errors. For the dual-channel CAN debugger, it is recommended to perform the transmit and receive test directly between CAN1 and CAN2 channels, which can fully detect all errors of the CAN debugger.

CANalyst-II analyser (top version Pro) and other two-channel CAN interface, you can connect the two channels of CANH, CANL corresponding to the two-channel data send and receive test. This is a more comprehensive test that can directly respond to the failure of the CAN transceiver, see the "5. Plug-in 1: USB-CAN bus adapter test.pdf" instruction document.

Tip:

If the above operation does not work, please double-check whether the steps are correct. If it still does not work, please contact and consult manufacturer.

After the USBCAN adapter is rebooted, if no data is received, try restarting the USB-CAN Tool test software or restoring the factory settings.

When using the adapter for commissioning external CAN devices, connect the CANH and CANL of the USBCAN to the corresponding CANH and CANL of the

external CAN device, and leave the other wires unconnected.

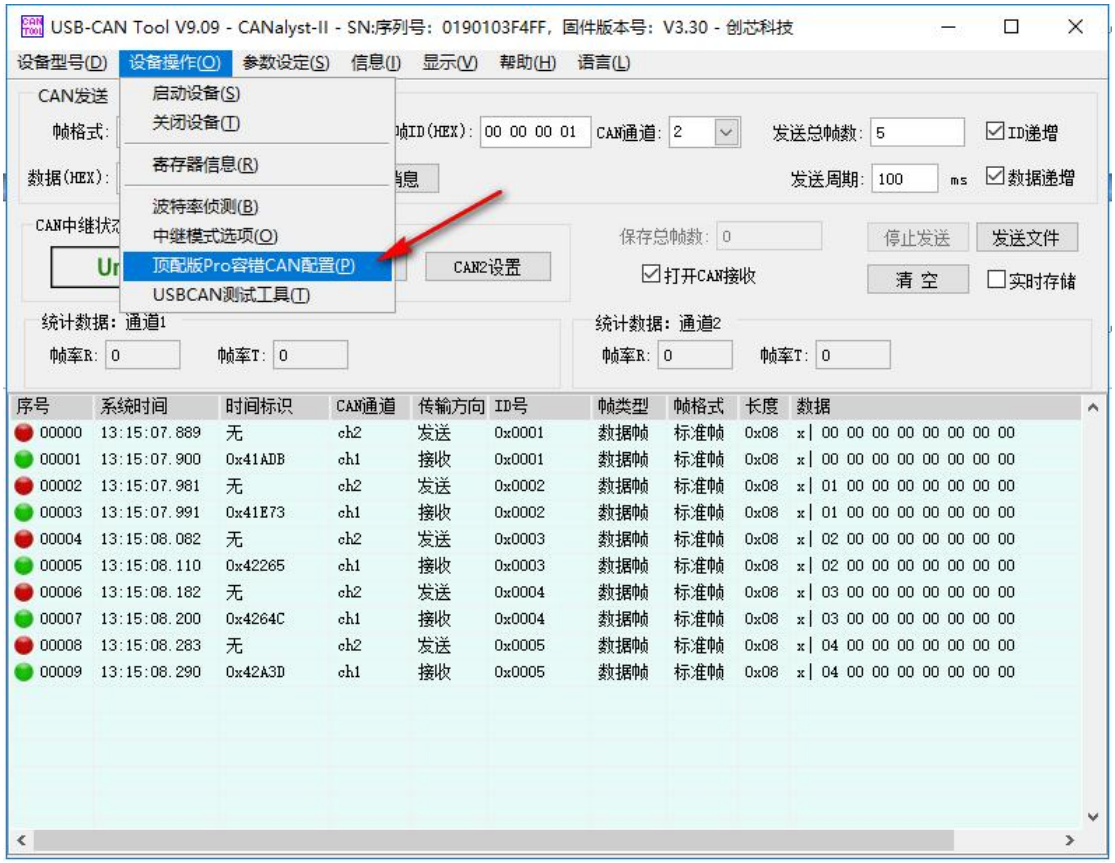
2.6 Multiple USB-CAN Devices at the Same Time

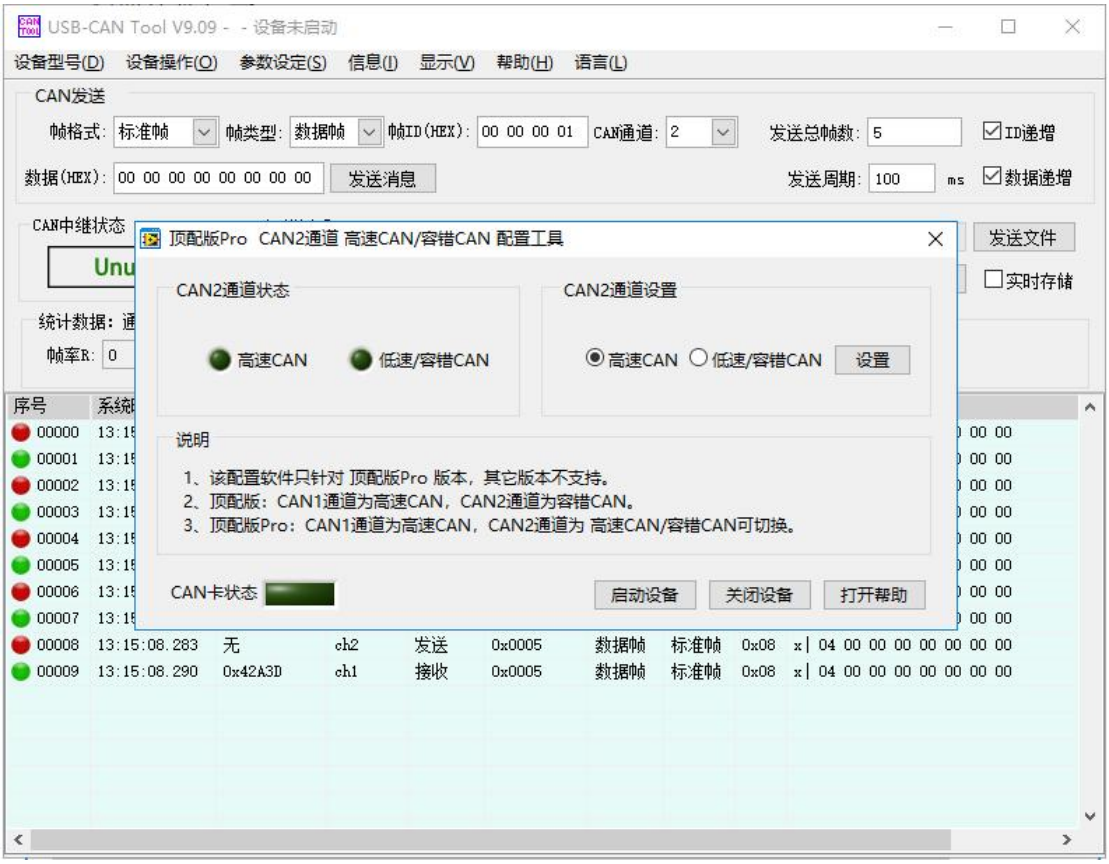
USB-CAN Tool supports the connection of more than 10 USB-CAN bus adapters to the same computer at the same time. For detailed instructions on this part, please refer to *"12.Appendix 5: Multiple Cards in the Same Computer Operation Manual.pdf"*.

Note: For more detailed instructions on how to use the USB-CAN Tool, please refer to: *"4. USB-CAN Tool Debugging Software Installation and User Manual.pdf".*

2.7 About CANalyst-II Analyzer (top version Pro) CAN2Channel Configuration Issues

1、Configuration: The CAN2 channel of CANalyst-II analyzer (Top Version Pro) can be configured as high-speed CAN or low-speed fault-tolerant CAN by the following software.





Click to start the device, and in the upper left corner of the plug-in interface, you can see the current status of the CAN2 channel.

On the right side, CAN2 channel setting area, you can choose to configure it as high-speed CAN or low-speed fault-tolerant CAN. After clicking on the setting, the system will restart automatically, and after restarting, it will take effect immediately. Just click to shut down the device. The configuration status will be saved until the next manual configuration.

2、LED status indication: When the CAN2 channel is configured for low-speed fault-tolerant CAN mode, there is an internal LED indication.

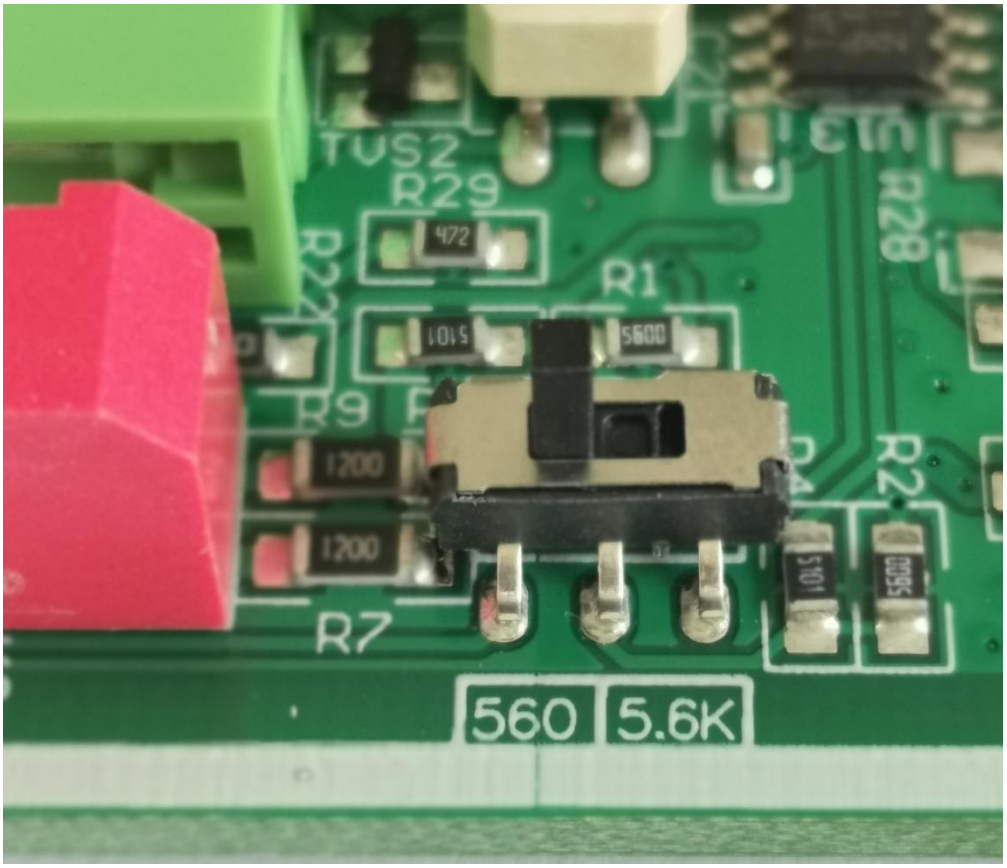
① Internal Non-Light ② Pure Green Light ③ Orange Light

①、No internal light: CAN2 channel is configured as high-speed CAN.

②、Solid green light: CAN2 channel is configured as low-speed fault-tolerant CAN.

③、Orange light: CAN2 channel hardware error, such as: the introduction of resistance between the HL, fault-tolerant CAN common 9 failure modes.

3, Fault-tolerant CAN resistance selection: the device has a fault-tolerant CAN internal special resistance selection switch, 560 ohms/5.6K ohms, factory default 560 ohms gear. The gear, can meet all common applications, the user does not need to configure.


TVS2
R29
472
R1
5600
R9
1200
1200
R7
560
5.6K