Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

ECAN-U01S



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Contents

1. Introduction 3
1.1. Brief Introduction 3
1.2. Features 3
2. Quick Start 4
3. Installation size 7
4. Interface definition & LED 8
5. Technical indicators 9
General Specifications 9
6. Equipment usage 10
6.1. Connect with PC 10
6.2. Connectwith CAN-bus 10
6.3. CAN bus terminating resistor 11
7. Function details 11
7.1. Save data and real-time save function 11
7.2. Pause display function 12
7.3. Display Mode 13
7.4. Clear function 13
7.5. Filter settings 14
7. 6. Bus diagnostic function 14
8. Data transmission mode 15
8.1. Normal sending mode 15
8.2. Send error frame count function 16
9. Important Statement 16
10. Revision History 16
About us 17

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1. Introduction

1.1. Brief Introduction

ECAN-U01S is a high-performance CAN-bus communication analyzer with integrated 2 - way CAN interface . The analyzer is compatible with the USB2.0 bus full-speed specification, and the PC terminal can be quickly connected to the CAN-bus network through the USB interface to form data processing in the field of fieldbus laboratories, industrial control, intelligent communities, automotive electronic networks and other CAN-bus network fields. CAN-bus network control node for data acquisition .



ECAN-U01S is a powerful tool for CAN-bus product development and CAN-bus data analysis. At the same time, it has the characteristics of small size, plug and play, etc. It is also the best choice for portable system users.

ECAN-U01S is powered by DC socket and has its own B -type USB interface; each channel has a built-in 120 ohm optional resistance, which is controlled by a DIP switch, which is convenient to use; integrated CAN interface electrical isolation protection module to avoid instantaneous overcurrent / Overvoltage will cause damage to the equipment and enhance the reliability of the system in harsh environments.

ECAN-U01S can use the general test software independently developed by our company, and can perform functions such as sending, receiving and monitoring CAN-bus messages.

1.2. Features

- PC interface conforms to the USB2.0 full-speed specification and is compatible with USB1.1;
- 2 - way CAN-bus interface , use plug-in terminal wiring method;
- CAN2.0A and CAN2.0B frame format, in line with ISO /DIS 11898 specification;
- The baud rate of CAN-bus communication can be freely programmable between 5Kbps~1Mbps;
- Use USB bus power supply, or use external power supply (DC8-28V);
- received data flow: 17000fps;
- The time stamp accuracy of the received message at the CAN end can reach 1us;
- Support remote upgrade;
- Support testing software;
- Operating temperature range: -40 ℃ ~+85 ℃.

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2. Quick Start

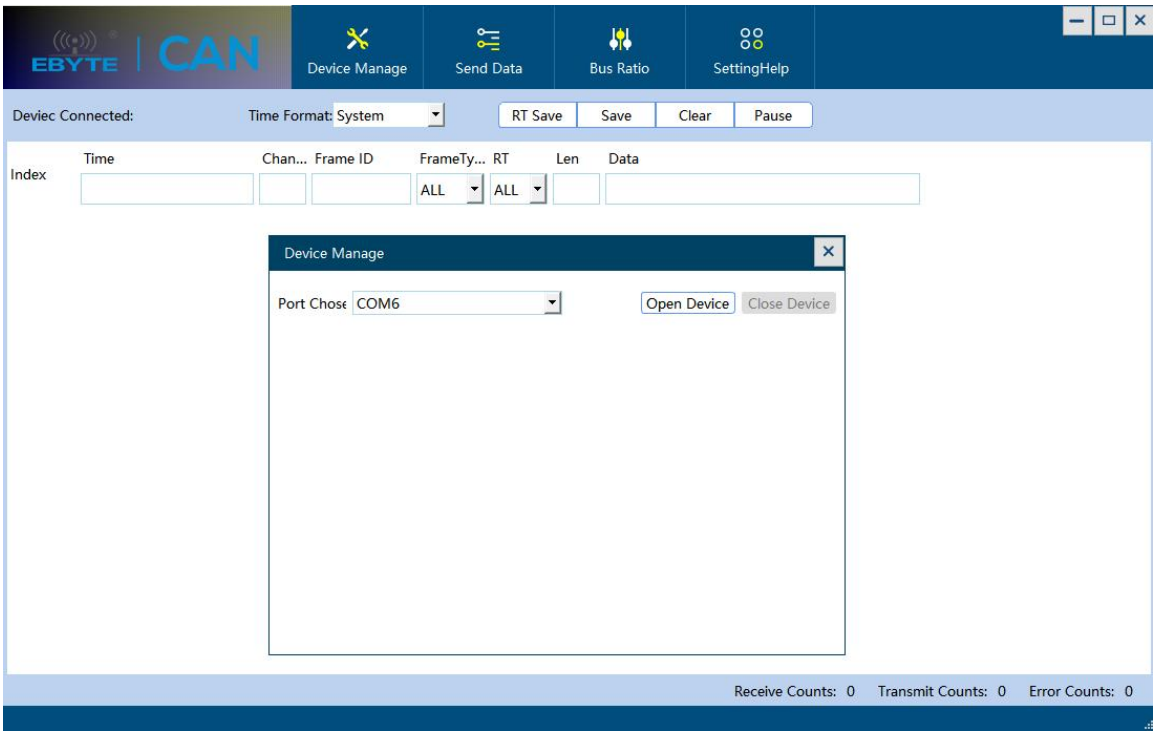
1. You need to prepare ECAN-U01S analyzer power adapter type B USB data cable.

First, the analyzer is installed with a power supply, and the user can choose USB bus power supply or power adapter power supply according to their needs.



2. Connect the computer to the device through a Type B USB cable;

Open the debugging software, and enter the communication interface after configuring parameters such as the CAN baud rate of the device in the configuration interface;

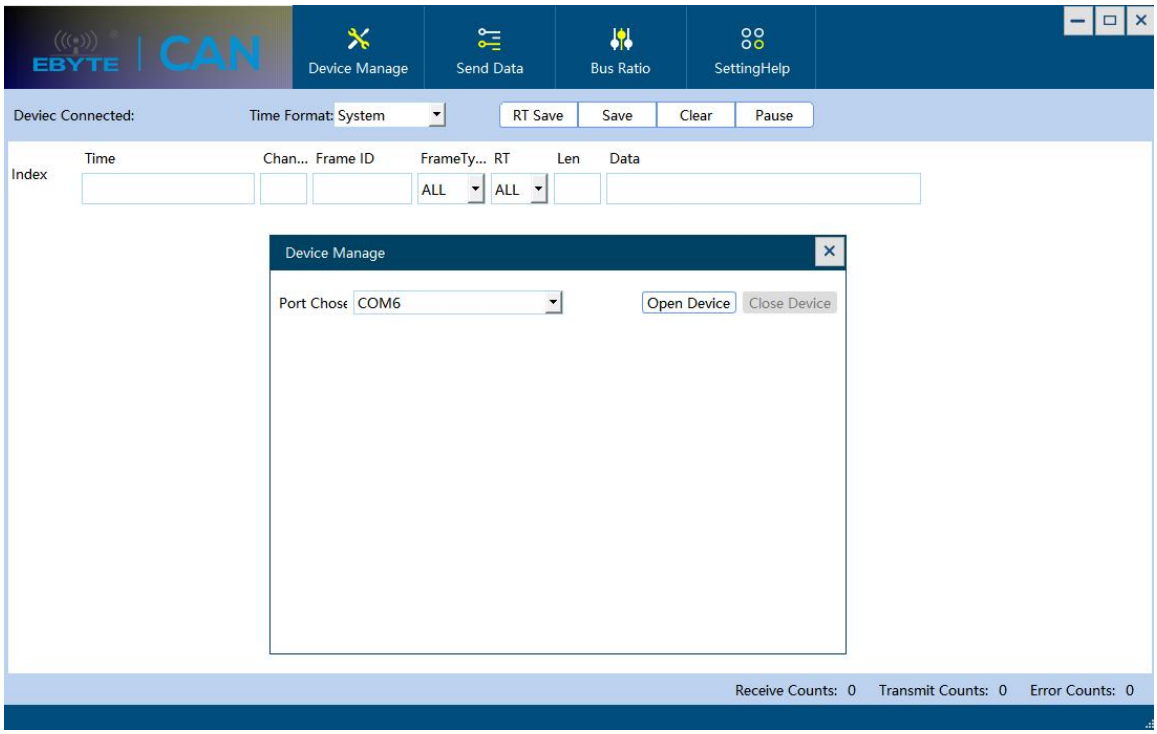


Connect the external CAN device to the analyzer. When ECAN-U01S is connected to the CAN bus, you only need to connect CAN_H to CAN_H and CAN_L to CAN_L to establish communication.

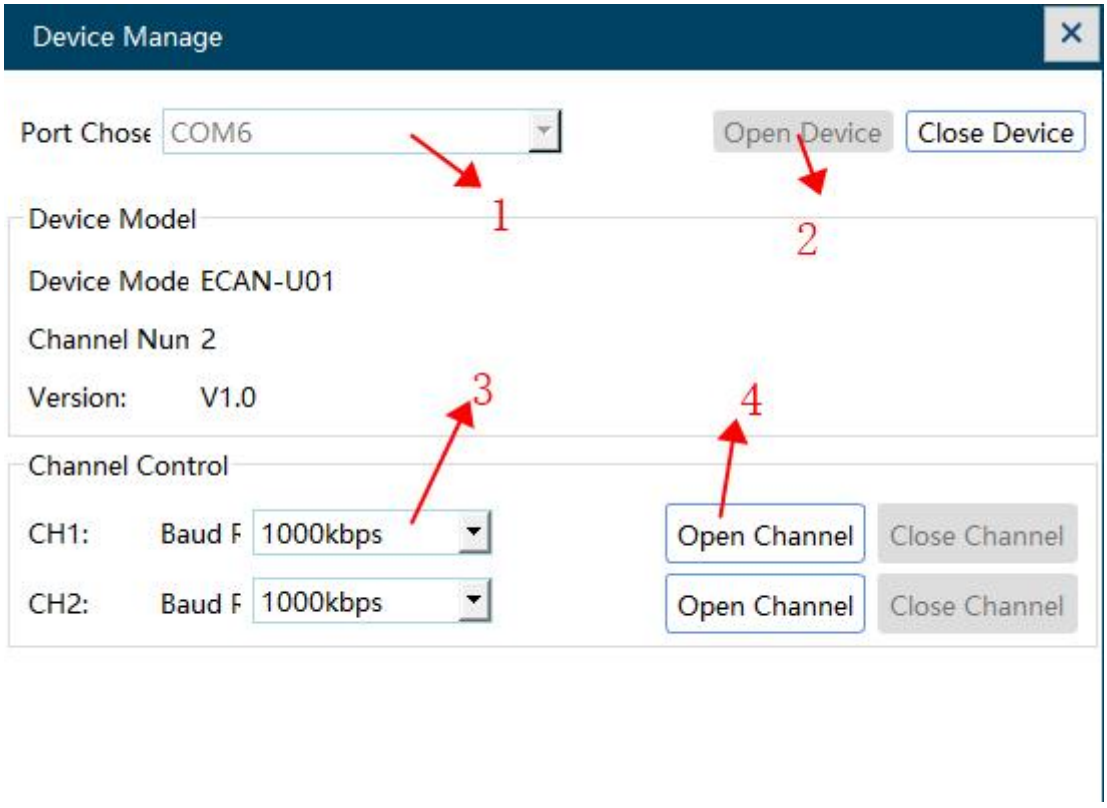
Demonstration: Connect the CAN analyzer hardware, open the software and there will be a setting interface as shown in the figure below.

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Select Device Management to enter the configuration interface, as shown below:



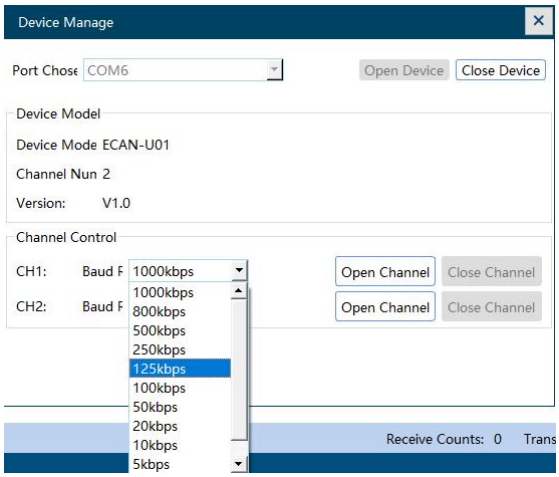
① " Select port number " : You need to select the serial port number corresponding to the device.

② " Open Device " button: Click this button to access the USBCAN device. If "USB device open error! " is displayed , please check whether the device selected in ① is correct, and whether the driver in the device manager is installed correctly.

③ ③the channel baud rate: This drop-down box can select the device CAN baud rate. The baud rate is very important

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for the communication of the CAN bus. Before communication, you need to determine the baud rate of the target device or the target bus. Support 5k-1000k , support custom baud rate.



If you are using a special baud rate, please click the Customize button. At this time, you need to enter a decimal baud rate. The following table lists the values of some special baud rates. Select a suitable configuration.



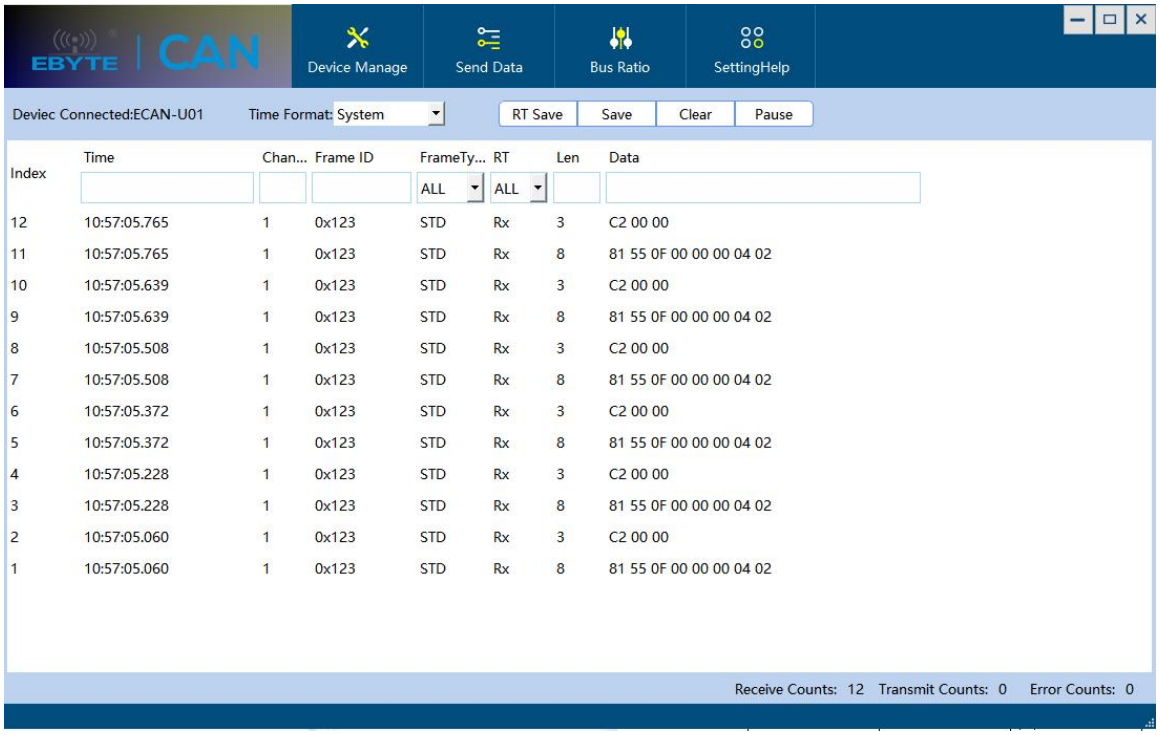
Please note that it is especially important to set the baud rate. Many customers report that there is no data after the device is connected, or the bus is wrong. In fact, the baud rate is not set, so click OK to open the device. Here to remind you, whether you use our device as a master or a slave device, as long as you connect the device to the CAN bus, you must set the baud rate of the device to be consistent with the baud rate of the target device before it can work normally.

④ Open channel button: You can open the CAN channel here.

After the device parameters are set, the software will enter the working state. If there is data on the bus, the data will be displayed in the receive data window. The receiving window is shown in the following figure:

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3. Installation size

Equipment dimensions: (length, including terminals) mm * (width) mm * (height) mm , the schematic diagram is shown in Figure 2.1.

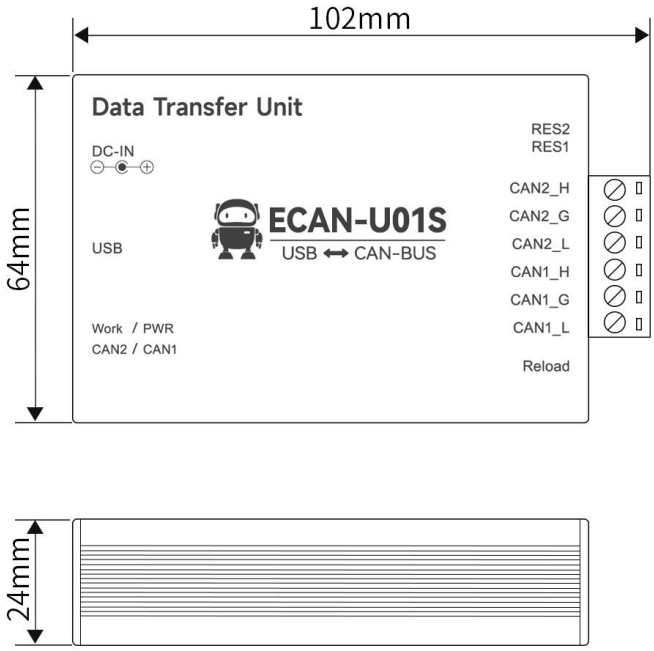


Figure 2.1 Dimensions of ECAN-U01S

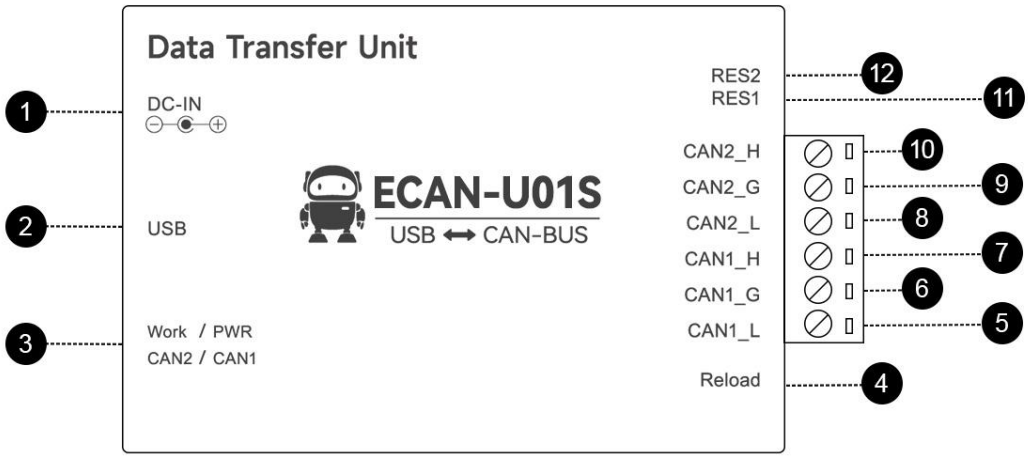
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4. Interface definition & LED

ECAN-U01S integrates 1 - way USB interface, one-way DC8-28V auxiliary power interface, one reset button, 2 - way standard CAN-bus interface and 2 - way 120 Ω matching resistance dial code. The CAN-bus interface is derived from a 6 - pin plug-in terminal, which can be used to connect two CAN - bus networks or devices with CAN-bus interfaces.

The position and definition of each interface of ECAN-U01S are shown in the figure.



Pins (from left to right)	Port	Name	Function
1	DC 8-28V	DC8-28V	USBCAN auxiliary power supply, generally do not need to be connected
2	USB	USB	USBCAN power supply, connect with computer
3	Indicator light	Indicator light	Device indicators, see below for details
4	Reload	Factory reset button	Press and hold for more than 5s to restore factory settings
5	CAN1	CAN1_L	CAN1_L signal line (CAN low)
6		CAN1_P	Shield
7		CAN1_H	CAN1_H signal line (CAN high)
8	CAN2	CAN2_L	CAN2_L signal line (CAN low)
9		CAN2_G	CAN-GND ground
10		CAN2_H	CAN2_H signal line (CAN high)
11	RES1	RES1	CAN1 channel 120 ohm matched resistance switch

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12	RES2	RES2	CAN2 channel 120 ohm matched resistance switch

ECAN - U01S has 1 PWR indicator, 1 Work indicator, 1 CAN1 indicator, and 1 CAN2 indicator to indicate the running state of the device.

The specific indication functions of these 4 indicator lights and the status of the CAN bus when these 4 indicator lights are in various states are shown in the following table.

Indicator light	Color	State	Indicate status
PWR	Red	Bright	Power supply is normal
		Not bright	Power supply failure
Work	Blue	Always bright	Device initialization passed, standby state
		Not bright	Device initialization failed
		Flicker	There is a software calling device on the PC side
CAN1、CAN2	Green	Not bright	CAN channel no data transmission
		Flashing green	Corresponding CAN channel has data transmission
		Steady green	Corresponding to CAN channel bus error

After the ECAN-U01S is powered on, the four indicators light up at the same time, and then the PWR and Work lights are always on , but the CAN1 and CAN2 lights are off, indicating that the device has been powered and the system has completed initialization; otherwise, it indicates that there is a system power failure or other failures.

After the USB interface is connected normally, when the PC software calls the USBCAN device, the USB signal indicator Work will flash. At this time, when CAN1 or CAN2 has data to send and receive, the corresponding CAN1 and CAN2 indicator lights will flash. If Work is flashing but the CAN1 or CAN2 indicator is off, it means that there is no data in the CAN channel, please check whether the wiring, communication baud rate, matching resistance, etc. are correct.

5. Technical indicators

General Specifications

No.	Name	Specification	Illustrate
1	Size	102*64*24mm	See installation dimensions for details
2	weight	115g	Weight tolerance 5g
3	Operating temperature	-40℃～85℃	Meet the needs of industrial use
4	Voltage	8～28v DC	12V or 24V recommended

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5	Communication Interface	USB	Type B USB interface
6	CAN baud rate	Factory default 100K	——

6. Equipment usage

6.1. Connect with PC

The USB interface of ECAN-U01S conforms to the USB2.0 full-speed protocol specification, and can communicate with PCs with USB1.1 and USB2.0 standards.

6.1.1. USB Bus Power Mode

The USB bus powered mode is suitable for most applications, for example, when the ECAN-U01S is the only device connected to the USB port. Connect the PC and ECAN-U01S directly through the supplied USB cable, and supply +5V power to ECAN-U01S from the USB cable . At this time, the indicators PWR and Work are on, indicating that the device is working normally and is in the state to be connected.

6. 1. 2. External power supply mode

The external power supply mode is suitable for the occasions where the PC uses a USB bus hub (HUB), or has connected multiple USB terminal devices, so that the USB port cannot provide enough current to the ECAN-U01S .

Use an external power supply (DC8-28V) to connect to the power socket of ECAN-U01S , at this time the indicators PWR and Work are on ; then connect the PC and ECAN-U01S through the supplied USB cable, ECAN-U01S can work normally.

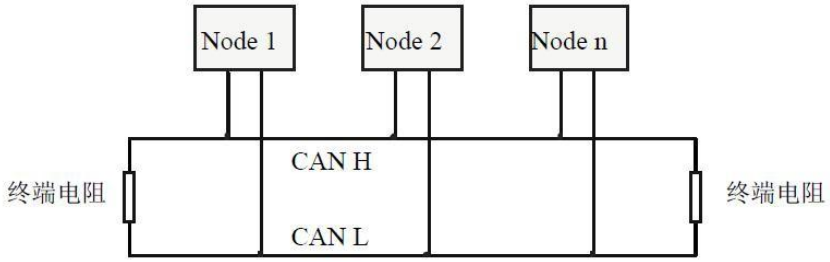
6.2. Connectwith CAN-bus

When ECAN-U01S is connected to the CAN bus, you only need to connect CAN_H to CAN_H and CAN_L to CAN_L to establish communication.

The CAN-bus network adopts a linear topology, and the two farthest terminals of the bus need to be installed with 120 Ω terminal resistance; if the number of nodes is greater than 2 , the intermediate node does not need to be installed with a 120 Ω terminal resistance. For branch connections, its length should not exceed 3 meters. The connection of CAN-bus is shown in the figure.

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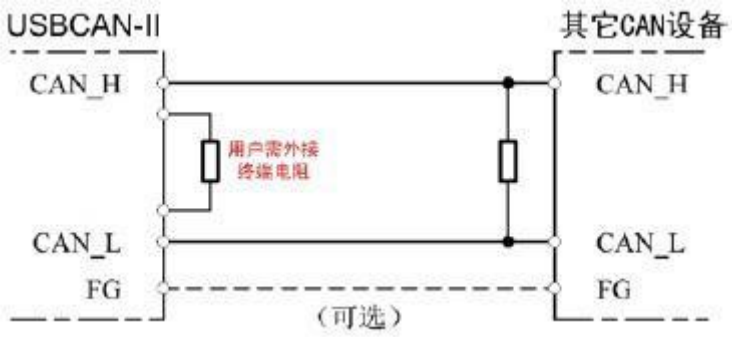
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6.3. CAN bus terminating resistor

In order to enhance the reliability of CAN communication and eliminate the reflection interference of the CAN bus terminal signal, the two farthest end points of the CAN bus network are usually added with a terminal matching resistor, and the value of the terminal matching resistor is determined by the characteristic impedance of the transmission cable. For example, the characteristic impedance of the twisted pair is 120Ω , then the two endpoints on the bus should also integrate 120Ω termination resistors.

Note: ECAN-U01S has integrated 120Ω terminal resistance, you can choose whether to connect the resistance to the bus through the DIP switch, the DIP switch is next to the 6pin terminal, R1 , R2 correspond to the terminal resistance of CAN1 , CAN2 , dial to ON position to enable the resistor.



7. Function details

7.1. Save data and real-time save function

The user can save all the data in the current send / receive list to the local. The save format is shown in the following table:

file type	file format	editor
Text file	.txt	notepad

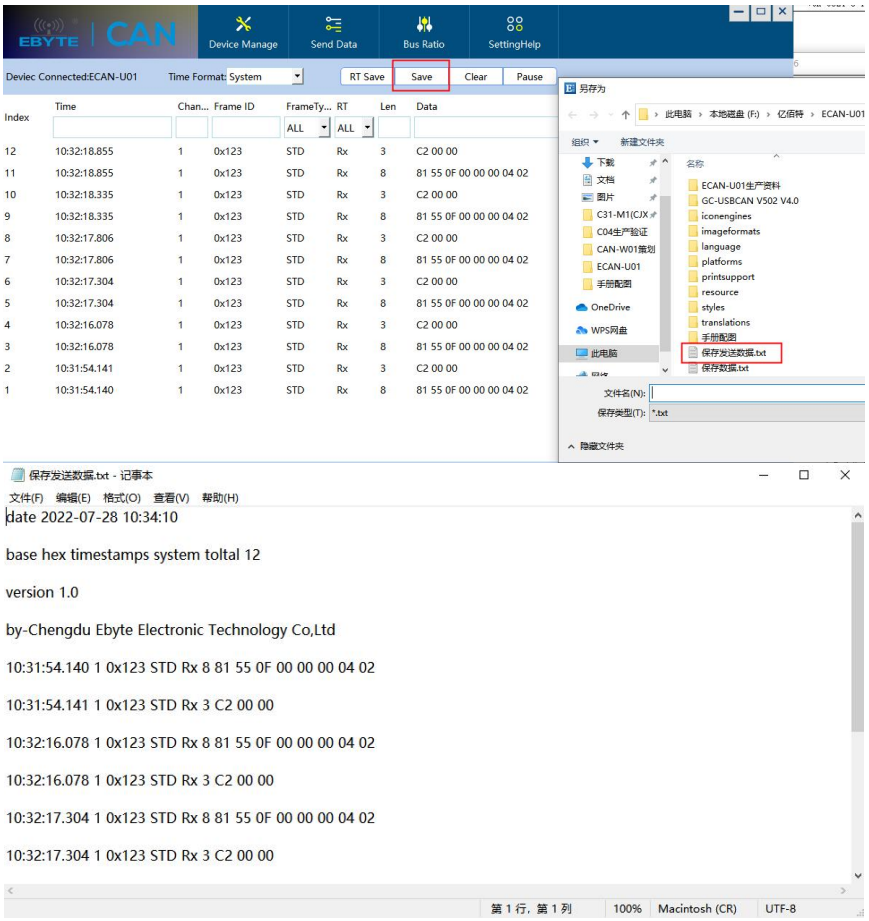
The text file is convenient for data preservation, and can be formatted and imported into excel for later analysis.

Click " Real-time save " on the toolbar , set the text type and file name of the real-time save, and then start the data real-time save function (ie, set the save node A), click again (ie, set the save node B), the system will stop saving, All

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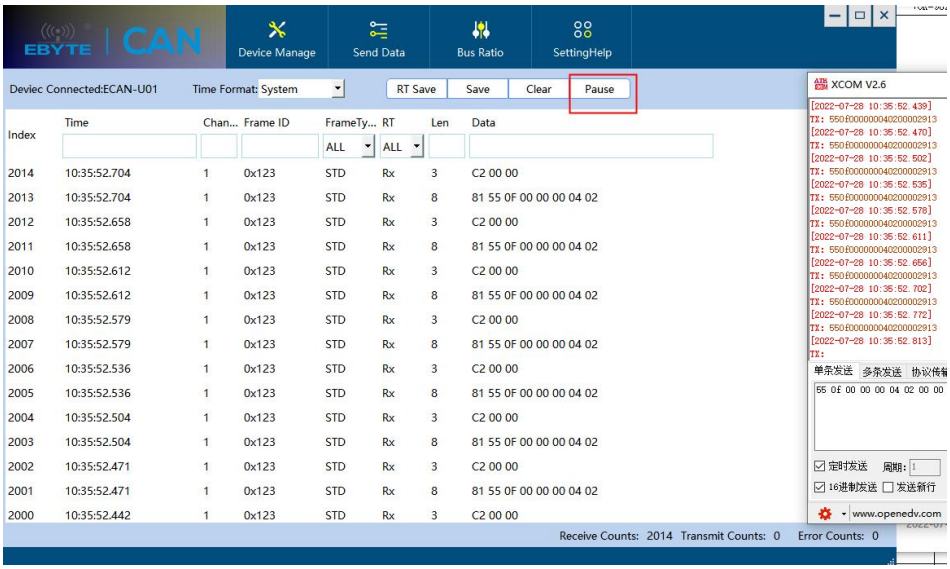
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data from the start (A) to the end (B) are written to the save file.



7.2. Pause display function

Click Pause to pause the currently scrolling data window. The device and software can still receive data normally when paused, but the data window will not be refreshed. Click Continue to resume scrolling.

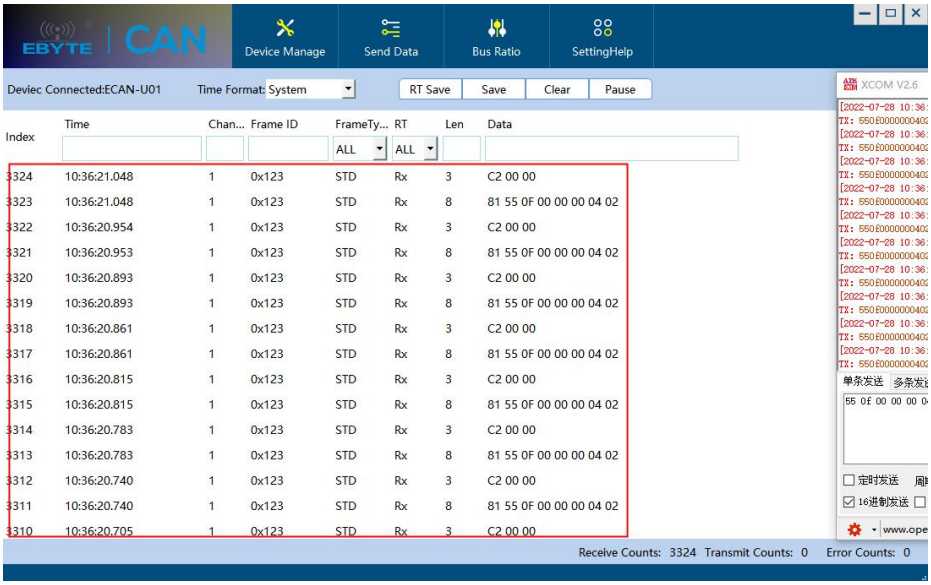


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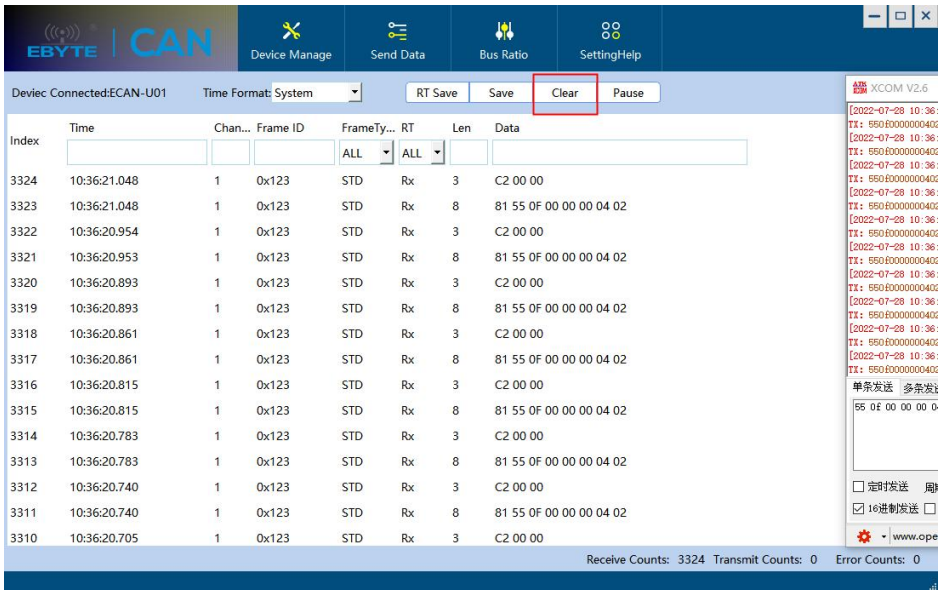
7.3. Display Mode

The display mode supports scrolling mode to display the received or sent data. The scrolling display means that the received data scrolls down continuously in the receiving list, and the current window sees the latest data;



7.4. Clear function

The data in the receive / transmit window and the data in the buffer area can be cleared.



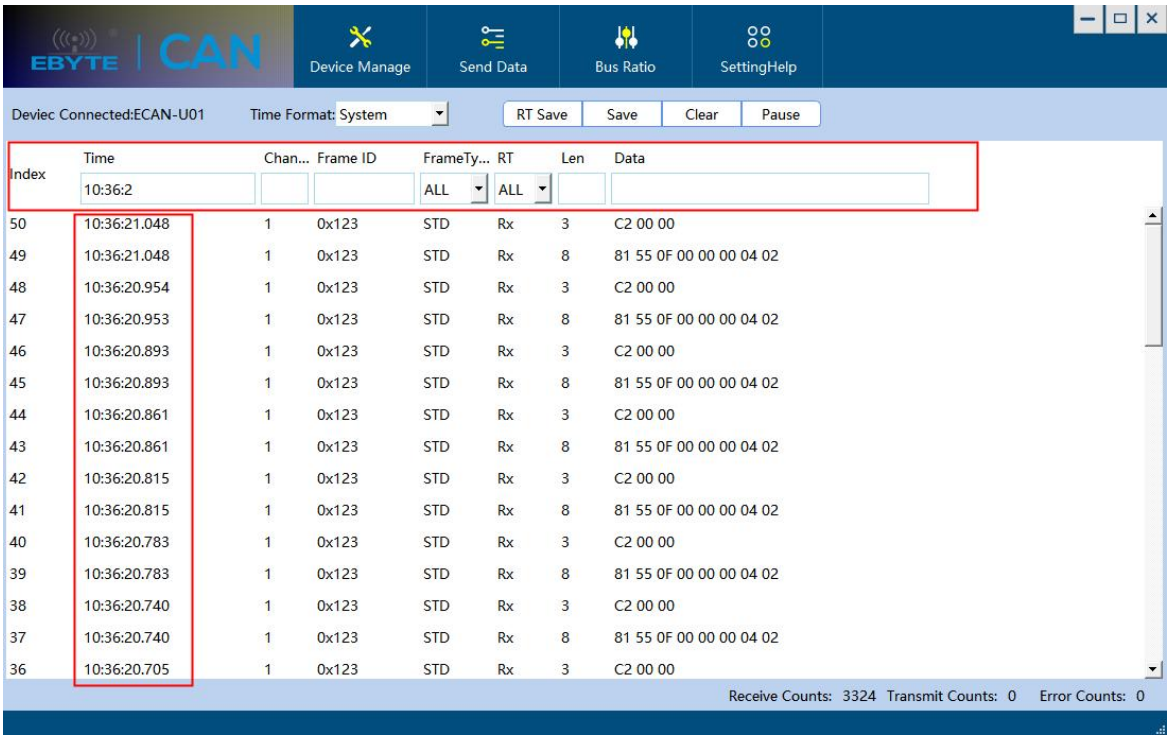
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7.5. Filter settings

Receive filter settings can set filter ID/ time / channel number / length / data, etc. If filter is set, the software will only display the set filter conditions, and frames that are not within the filter range will be filtered out.

The demo is as follows:

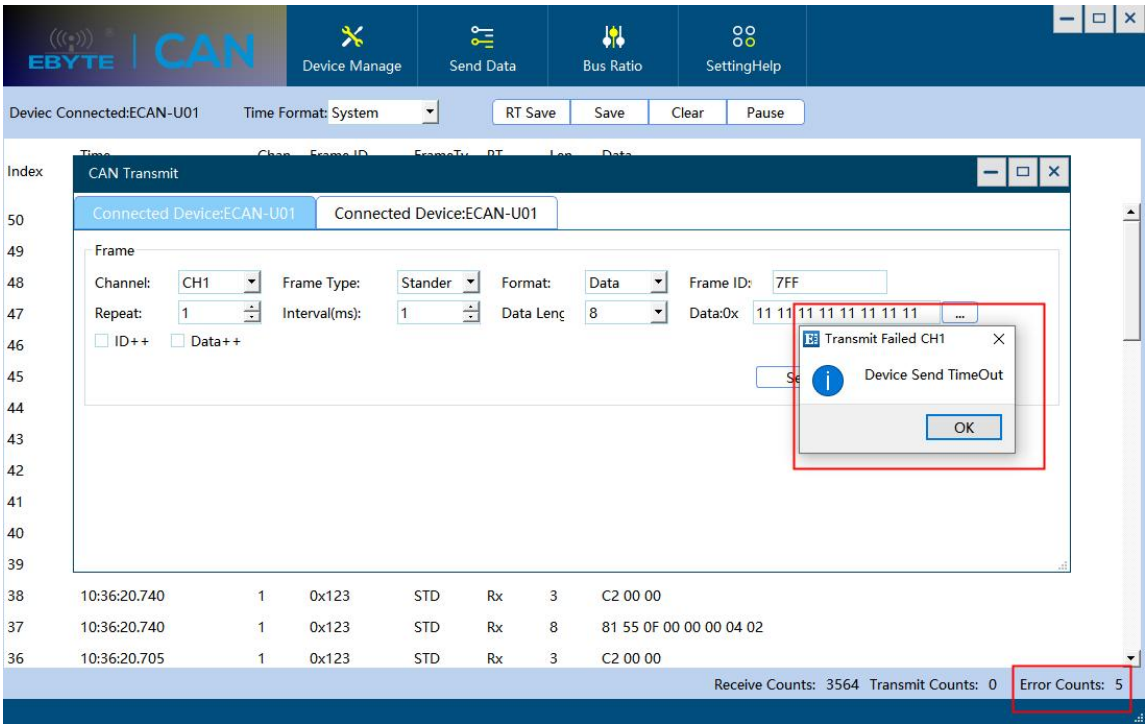


7. 6. Bus diagnostic function

When a bus error occurs during the use of the device, the CAN1/CAN2 data light of the device will display a red constant light display, and the red alarm will not disappear until the bus returns to normal. And the host computer displays the number of error frames, as shown in the figure:

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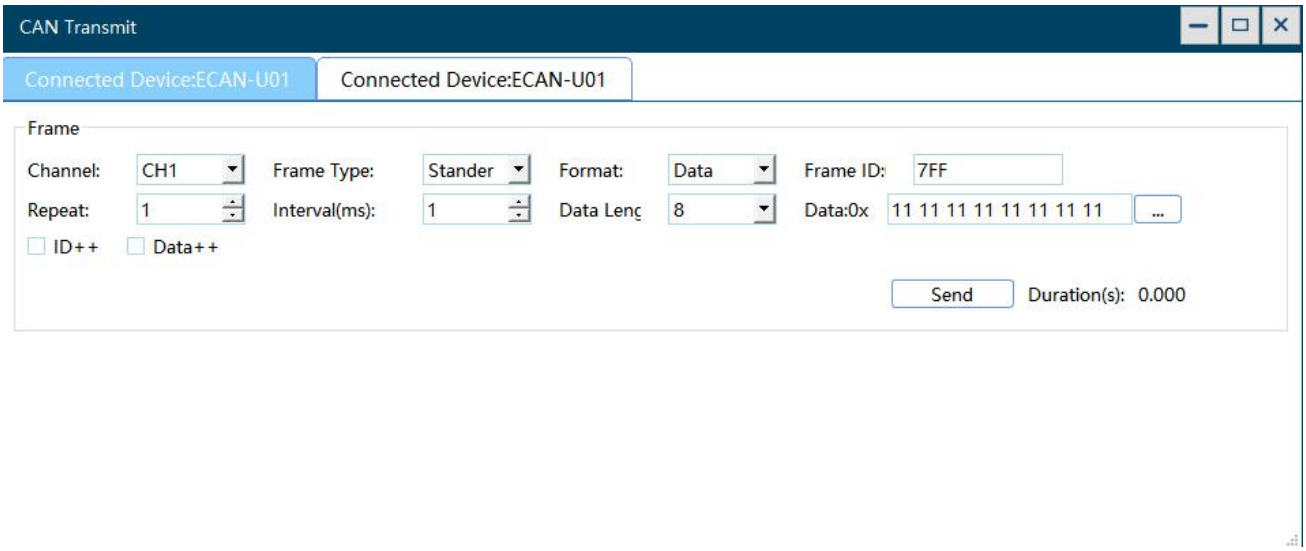
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8. Data transmission mode

8.1. Normal sending mode

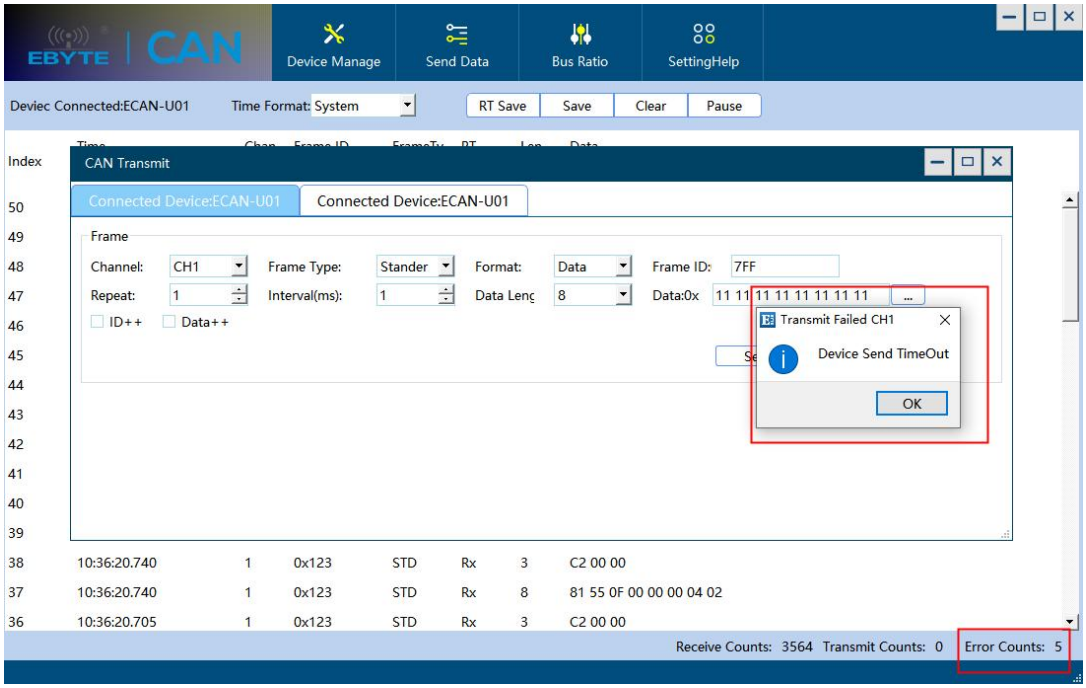
In the normal mode, the frame data to be sent can be edited very intuitively, and special functions such as cyclic sending can be set. Editing frame information is very intuitive, please note that spaces need to be entered between each byte when inputting data, here the host computer automatically spaces.



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8.2. Send error frame count function

The software can catch sending errors on the device, and when sending data fails, the count of error frames will be displayed at the bottom right of the software. As shown



9. Important Statement

Ebyte reserves the right of final interpretation and modification of all contents in this manual.

Due to the continuous improvement of the hardware and software of the product, this manual may be changed without prior notice, and the latest version of the manual shall prevail.

Everyone is responsible for protecting the environment: In order to reduce the use of paper, this manual is only printed in Chinese, and the English manual only provides electronic documents. If necessary, please download it from our official website; We only provide product manuals according to a certain proportion of the order quantity, not every digital radio station is equipped with one by one, please understand.

10. Revision History

Version	Revision date	Revision Notes	Maintenance man
1.0	2022.7.28	original version	LM

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