CAN, Recorder CANrec-

order Instructions

for use

Version: V4.3

Date: 2023,10

Revise the history

Edition	Date	Explain
V1.2	2020.01.09	Parameter adjustment
V1.3	2020.03.31	Parameter adjustment
V1.4	2020.04.25	Parameter adjustment
V1.5	2020.04.29	Sw7Sw8, Function switch adjustment
V1.6	2020.06.16	Perfect the format
V1.7	2020.06.22	LED display adjustment
V1.8	2020.07.02	Parameter adjustment
V1.9	2020.07.12	Program upgrade instructi-ons are adjusted
V2.0	2020.07.13	Parameter adjustment
V2.1	2020.07.28	Increase the appearance
V2.2	2020.08.14	Parameter adjustment
V2.3	2020.09.10	Parameter adjustment
V2.4	2021.01.01	Parameter adjustment
V2.5	2021.03.12	Parameter adjustment
V3.0	2021.06.28	The indicator light turns to a red and blue dual color
V3.2	2021.09.16	Perfect the format
V4.0	2021.09.16	Change the switch function
V4.1	2021.09.17	Add a profile option desc-ription
V4.2	2022.09.07	Add a time configuration software description
V4.3	2023.10.13	Content adjustment

catalogue

1 Equipment introduction

1.1 functional description

CAN, recorder CANrecorder (hereinafter referred to as this device) is a device specialized for real-time recording, playback, and intelligent relay of CAN bus data. The equipment can use external 9V~35V DC power supply, USB power supply and battery power supply methods. The battery life lasts as long as 15 hours, and the other two power supply modes can run continuously continuously.

The device integrates two CAN bus interfaces, in which the first one is high speed CAN interface and the second CAN can be configured as high speed CAN or low speed fault tolerant CAN bus interface.2 CAN bus data can be simultaneously received and recorded and stored. The storage media uses a TF card to support up to 512G capacity. CAN baud rate can be set by dial switch, file profile, and automatically detected. After the record, the data can be taken out directly through the own USB interface, or the TF card can be pulled out and the data can be taken out through the TF card reader. The data storage format supports TXT, CSV, ASC, CAN (support Zhou Ligong CANpro software) format, and the storage format is set by dial switch and configuration file.

This device can be used as a CAN bus intelligent repeater. The relay filtering conditions can be set through the configuration file in the TF card. See Section 3.2.3.2 for the specific setting methods.

This device can support the recording of data playback function. Put the data file to be played back into the TF, enable the playback function (dial switch or configuration file enabled), power up the device, and send the data to the corresponding port according to the file content. See Section 3.2.3.3 for details.

This device supports the data filtering function. By filtering the recorded data, the amount of data can be greatly reduced and the storage space can be saved. See CAN recorder Filch configuration method for details.

1.2 Performance characteristics

32-bit industrial-grade MCU with up to 180 MHz, up to 512KB FLASH, 256KB SRAM;

Standard with 16650 type 2500 mAh 3.7 V battery, battery independent power supply can be up to 15 hours;

DC power supply (DC + 9V~35V/0.5A); USB line 5V.

Two CAN loads receive storage at full load without frame loss.

Operating temperature: -40 ~ + 105 ;

The CAN bus supports CAN2.0A and CAN2.0B, in line with the ISO11898-1 / 2 / 3 standard;

The CAN bus port rate supports configurable conditions between 10 Kbps and 1000 Kbps;

Support port rate automatic detection; support car VIN code acquisition;

Recording speed: 10000 + frame / s; 20000 + frame / s;

Relay performance: unconditional relay up to 9000 + frame / s;

1.3 functional characteristics

Offline recording: no computer connection, direct power supply can record all the data of CAN bus.

TF card storage: standard 32G SanDisk class 10 high-speed TF card, can hold 350 million frames of CAN data.

TF card storage capacity limit: unlimited, self-optional.The measured 512G can save 5.6 billion frames of CAN data.

Offline playback: the saved data can be sent back to the CAN bus, simulating the equipment signal.

Offline relay: between CAN 1 and CAN 2, can be intelligent relay, directly forward, or rewrite forwarding.

Full kinds of CAN line: support high speed / low speed / fault tolerant / single line CAN / comfort / entertainment CAN line.

Built-in clock: you can save the received Beijing time for each frame of data.

Data saving format: txt, csv, asc, can.

1.4 apply

Automotive CAN data sample collection
CAN data fault playback analysis
CAN network bridge and relay
Industrial control for data storage
Intelligent building
Experimental teaching

1.5 account sales

Table 1. Sales list of CAN recorder

Order number	Name	Quantity	Unit	Remarks
1	CAN, grapher	1	Short for Taizhou	CANrecorder
2	TF block	1	Fix	Complimentary 32GB, Sanandi U1 card
3	A TF card reader	1	Individual	Giving away support for USB2.0
4	SD Card adapter	1	Individual	Free extension for SD card, convenient notebook use
5	USB, data wire	1	Twig	Free to connect to the computer configuration clock, or read the TF card data
6	3 One inch one word screwdriver	1	Single	Giveaway wiring

1.6 Technical support and service

7 Days without reason to return, 5 years of free maintenance, lifetime maintenance and upgrade service. Please consult the technical support and purchase information

https://www.cxcan.com/

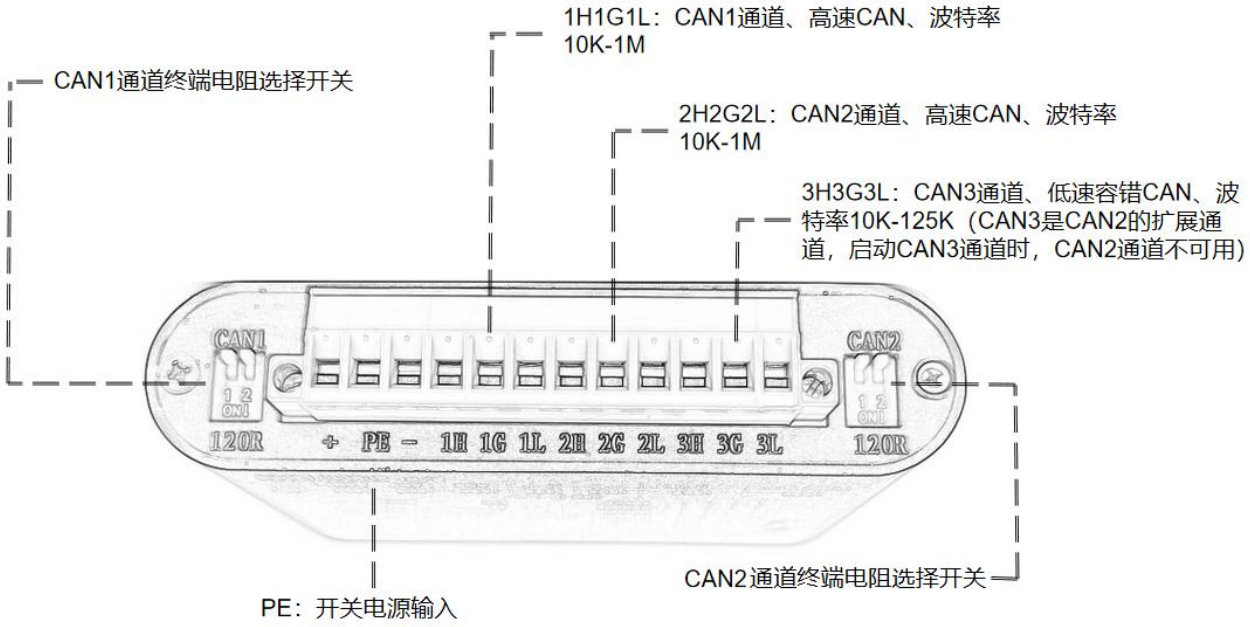
Email: zhcxgd@163.com /

Technical support QQ: 3259558860

2 device interface

2.1 Equipment appearance

Figure 1 Front side of equipment and back side of equipment



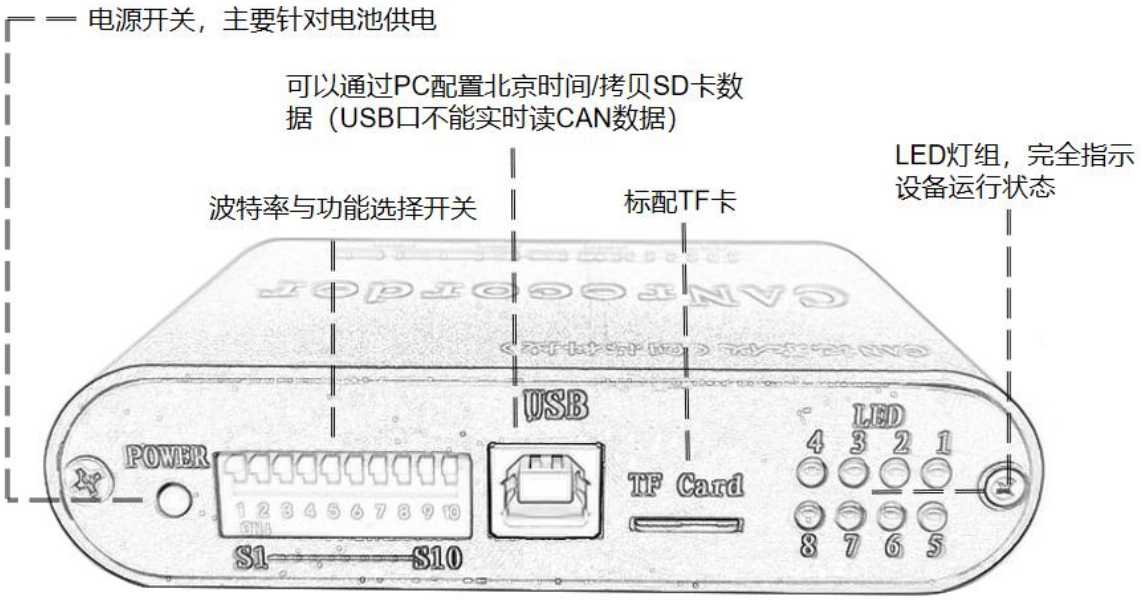


Figure 2. Side side of the equipment

2.2 Interface definition

CAN recorder has 2 sets of external interfaces distributed in the front and back panel.

2.2.1 front panel

The schematic diagram of the front board interface is shown in Figure 3 below, providing the power switch, dial switch, USB interface, TF socket, and LED lamp sets.

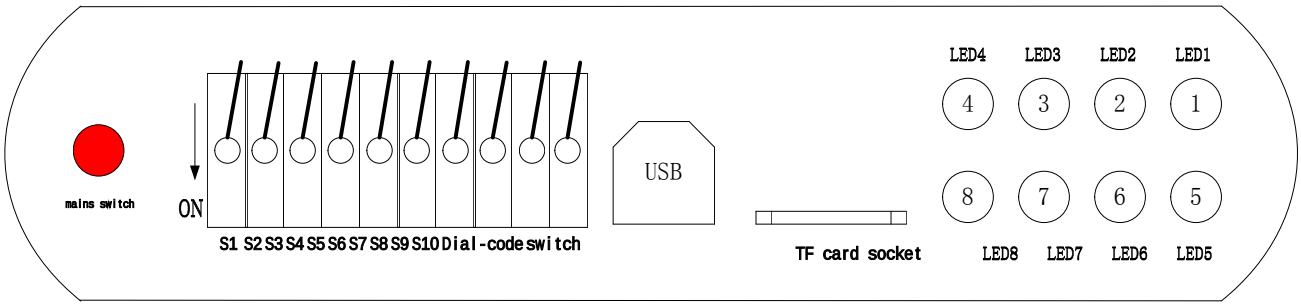


Figure 3 Schematic diagram of the front board interface of the CAN recorder

Power switch: When the battery is supplied, press for 2 seconds to start the device; press for 2 seconds to shutdown the device. Code switch S 1 to S 10: Provide CAN wave rate and function selection as detailed in Table 2.

Table 2. Functional definition of dial switch of CAN recorder

Order number	Name	Definition
1	S1 S2 S3	CAN 1 baud rate configuration: 000--20kbps; 001--80kbps; 010--100kbps; 011--125kbps; 100--250kbps; 101--500kbps; 110--800kbps; 111--1000kbps。 Among: A. Each switch is 1 up and 0 down. The b. combination mode is S1-S2-S3, for example 101 indicates S1 up, S2 down, and S3 up.
2	S4 S5 S6	CAN 2 Baud rate configuration: 000--20kbps; 001--80kbps; 010--100kbps; 011--125kbps; 100--250kbps; 101--500kbps; 110--800kbps; 111--1000kbps。 Among: A. Each switch is 1 up and 0 down. The b. combination mode is S4-S5-S6, for example 010 means S4 down, S5 up and S6 down.
3	S7 S8	Save the format / combination switch: 00- -Record storage format selection can format 01- -record storage format selection asc format 10- -record storage format selection csv format 11- -record storage format select txt format where: A. Each switch is 1 up and 0 down. The b. combination is S7-S8, for example 10 means S7 up and S8 down.
4	S9	Relay function selection switch. Up to be disabled and down to enable.
5	S10	Replay function selector switch. Up to be disabled and down to enable.

Note: All switches shall be selected before power on.

USB interface: you can configure Beijing time (factory configured) / copy SD card data through PC (USB port cannot read CAN data in real time).

A TF card socket: a standard TF card socket.

LED lamp set: CAN recorder provides eight LED 1 to LED 8 indicating the running status of the equipment. See Table 3 for specific definition.

Table 3. CAN, recorder LED group definition

Order number	Name	Definition
1	Power light	According to the battery power status to indicate the different colors are as follows: 70% <100% blue constant light 50% <70% blue flashing 30% <50% red constant bright 0% <30% red flashing
2	The CAN 1 channel indicator lamp	There is data, flashing blue; error, red light; both data and error, red and blue alternately
3	The CAN 2 channel indicator lamp	There is data, flashing blue; error, red light; both data and error, red and blue alternately
4	The CAN 3 channel indicator lamp	There is data, flashing blue; error, red light; both data and error, red and blue alternately
5	The TF card indicator light	Unrecognized TF card, flash red; recognize TF card, and have read and write TF, flash blue
6	Relay indicator light	CAN 1-> CAN 2 bright blue; CAN 2-> CAN 1 bright red; CAN 1 <-> CAN 2 flashing red blue; relay function is not selected
7	Fault-tolerant CAN, indicator light	Enable fault tolerant CAN function and normal connection is bright blue, if enable fault tolerant CAN but not normal connection, flash red; not selected is extinguished
8	Replay / charge indicator light	Always bright blue during playback, go off after playback; charging flashing blue
Description: Power-on process, LED2~LED8 flash blue once, the device is initialized, LED2~LED4 flash blue 3 times. After playback, TF indicator flashes blue prompt 3 times; if playback is selected, but there is no playback file in TF card, TF card indicator flashes red prompt 3 times.		

2.2.2 back panel

The rear board interface is shown in Figure 4 below, and see Table 4 for a detailed definition.

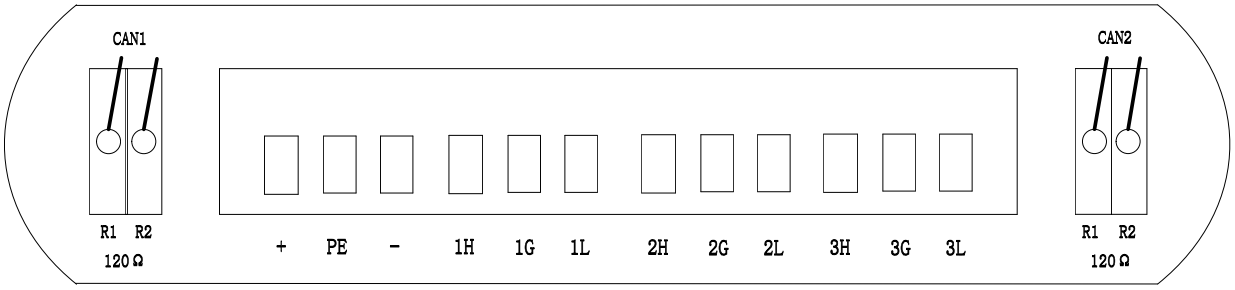


Figure 4 Schematic diagram of the rear plate interface of the CAN recorder

Table 4. Definition of the rear panel interface of the CAN recorder

Order number	Name	Definition
1	CAN1/R1	CAN 1, the terminal resistance, R1. Push down to the ON state, then the internal 120 euro resistance will be connected to the bus
2	CAN1/R2	CAN 1, the terminal resistance, R2. Parallel with R1 with the same effect. Two resistors are built into each channel

3	+	Switch power supply positive electrode input, + 9V~35V.
4	PE	Shided line interface, not connected under normal circumstances.
5	-	Switch the power supply negative electrode input
6	1H	The CAN bus H signal in the CAN 1 channel
7	1G	CAN 1 channel shielding line interface, if the communication line is a shielding line can be connected to the shielding layer, otherwise it can be grounded or not connected
8	1L	The CAN bus L signal in the CAN 1 channel
9	2H	The CAN bus H signal for the CAN 2 channel
10	2G	CAN 2 channel shielding line interface, if the communication line is a shielding line can be connected to the shielding layer, otherwise it can be grounded or not connected
11	2L	The CAN bus L signal for the CAN 2 channel
12	3H	The CAN bus H signal in the CAN 3 channel
13	3G	CAN 3 channel shielding line interface, if the communication line is a shielding line can be connected to the shielding layer, otherwise it can be grounded or not connected
14	3L	The CAN bus L signal in the CAN 3 channel
15	CAN2/R1	CAN 2, the terminal resistance, R1. Push down to the ON state, then the internal 120 euro resistance will be connected to the bus
16	CAN2/R2	CAN 2, the terminal resistance, R2. Parallel with R1 with the same effect. Two resistors are built into each channel
Note: The CAN 3 channel is the extended channel of the CAN 2 channel, and the CAN 2 channel is not available when the CAN 3 channel is enabled. CAN 3 channel is connected to low speed fault tolerant CAN and port rate 10k-125K. CAN 1 / CAN 2 channel can be connected to high-speed CAN and port rate of 10k-1M.		

3 direction for use

3.1 supply electricity

1、The equipment has three power supply modes: external DC power supply (9V~35V), USB power supply and battery power supply.

2、When connected external DC or battery power, the device provides recording, playback and relay functions.

3、In the case of USB power supply, the equipment can provide the TF card reader function and the system time setting function.

4、When DC or USB is charged, the device automatically charges the battery, and the LED8 flashes blue when charging, and when filling, the LED8 goes off.

5、 When USB power supply: insert the USB cable, power on the device; pull out the cable device and lose power;

6、Battery power supply: long press the power button for 2 seconds, the device power; long press for 2 seconds the device power [LED5 will light up 1s prompt power loss];

7、DC power supply: 9~35V terminal connected to the DC power supply, the equipment power on; disconnect the equipment power off [LED5 will light 1s prompt power off];

8、LED2~LED8 flashes blue light once during the power on process, and LED2,3,4 flashes blue light 3 times after the power on.

Note: During the use process, if you need to use the battery bank to power the battery life of the device, you need to press the boot button to start the power on, and then insert the battery bank.

3.2 work pattern

The equipment has three working modes: normal mode, U disk mode and USB configuration mode.

The CAN bus data recording, playback and relay functions can be completed in the normal

mode;

In U disk mode, the equipment can be simulated into U disk equipment recognized by the PC, which facilitates the file data operation in TF;

The USB configuration mode provides device configuration functions such as RTC system time calibration.

The three switching modes are as follows:

Battery power supply or external power supply, enter the normal mode;

When the enable = 0 of the [CFG _ MODE] segment in profile config.ini, insert the computer through USB and enter the U disk mode.

When enable = 1 for the [CFG _ MODE] segment in the profile config.ini, enter the USB configuration mode.

3.2.1 USB configuration mode (factory configured system time, no duplicate configuration)

Change the value of the enable option of the [CFG _ MODE] segment in the profile config. ini of the TF card from 0 to 1, save and exit (it can be changed directly in the U disk mode or pulled out of the TF card separately with the TF card reader). Then insert the USB cable in the shutdown state, and the device enters the USB configuration mode. This mode requires the supplied USB Virtual Serial Drive driver. When this driver is installed, you can view the string message information similar to the device simulation shown in Figure 5 in the "My Computer —— Management —— Device Manager —— port".

Figure 5 finds the USB virtual serial port

Then open [CANrecorder RTC Settings tool], select the string slogan of the device and click "Open the device". After the device is successfully opened, you can click the "Get" button to obtain the current Beijing time of the device. Click the "Set up" button to send the current computer time to the device and complete the RTC time configuration. As shown in Figure Figure 77.

Figure 6. Connecting the equipment

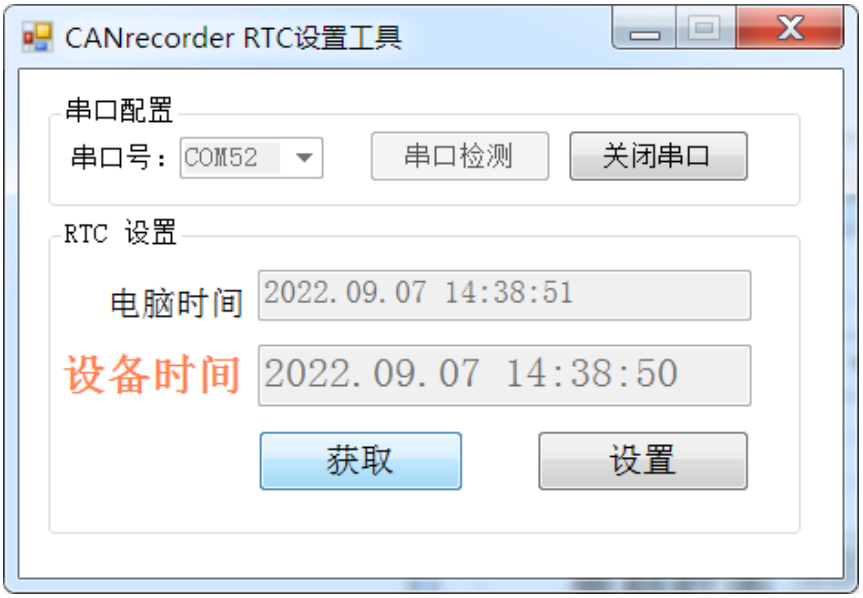


Figure 7. Configuring the equipment RTC time

3.2.2 U-disk mode (read the TF card data)

Under shutdown, insert the USB cable and the device enters U disk mode. This mode simulates the device into a U disk, and is recognized by the PC. This mode requires to insert a TF card. If there is no TF insertion, the TF card indicator LED5 will flash red prompt. After normal USB recognition, the PC prompts the new hardware and starts to install the driver automatically, as shown in Figure 8.

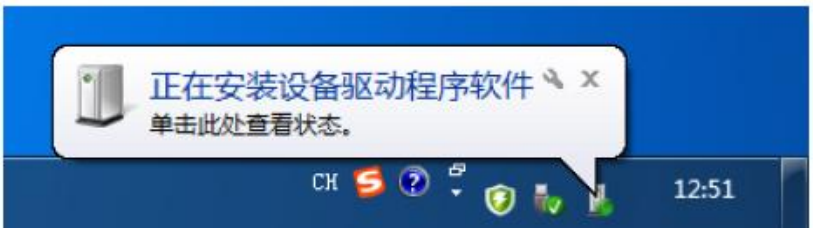


Figure 8 The device is found by the PC

After a successful USB configuration, the disk can be seen in the PC as shown in Figure 9. At the same time, you can view the device information as shown in Figure 10 in the "My Computer —— Management —— Device Manager".

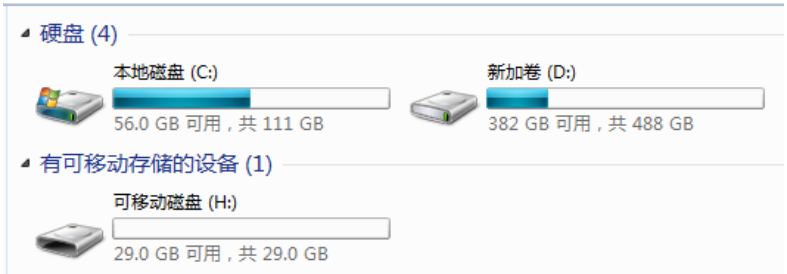


Figure 9 is found by the PC

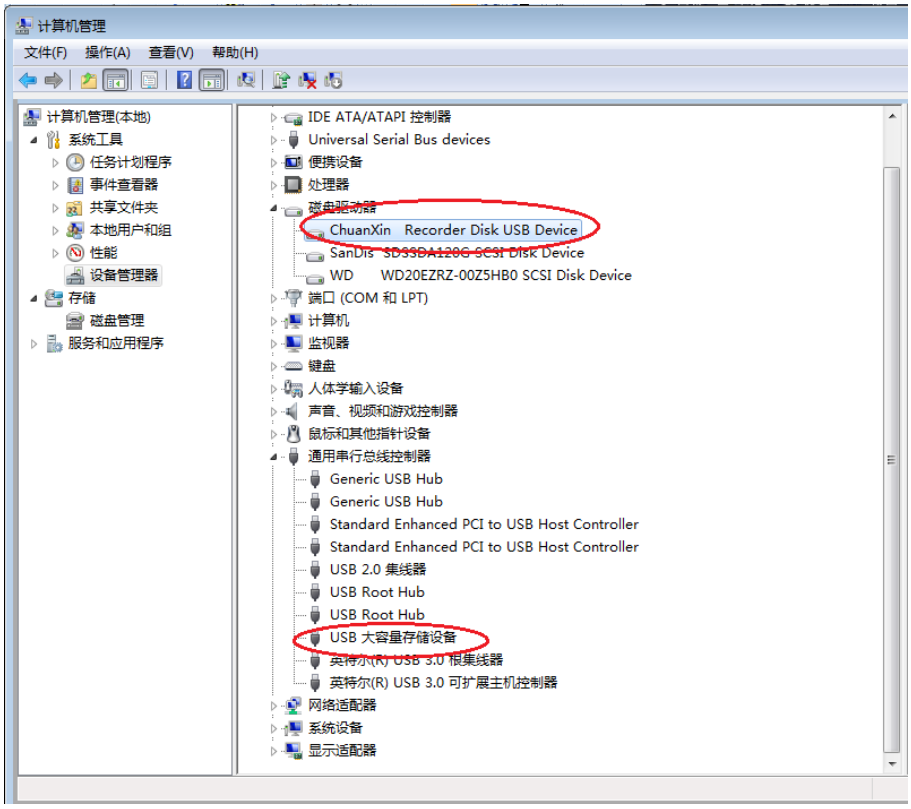


FIG. 10 The device is identified as the U-disk device information

3.2.3 Normal mode (CAN recording, playback, and relay function)

Under shutdown, connect external 12V DC power supply or / and open the battery power supply switch, and the equipment into normal mode. This mode requires to insert a TF card. If there is no TF insertion, the TF card indicator will flash red. In this mode, the device provides recording, playback, and relay capabilities. The recording and relay functions need to read the configuration file named "config.ini" in the TF card. Examples of the profile contents are shown in Figure Figure 11 below.

config.ini - 记事本

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

```
[SYS]
#注释：珠海创芯科技
#注释必须单独一行,不能加到配置行
#注意：本配置文件最大只支持8KB，请注意大小！！！
#cfg = yes时使用本配置文件,cfg为其他值时使用上一次配置的值
#配置成功，stat=OK!!! 配置失败则使用上一次配置,并将上一次配置信息覆盖本文件,这时stat=back!
#若使用上一次失败则使用默认配置,这时stat=fail!
cfg  = yes
stat = OK!!!
```

配置文件 使能选项

```
[DEV]
SN = 20230924001
VERSION = V3.25[20230926] - V2.30[20230925] - V2.17
GENTIME = 2023.09.26-01:08:25
```

设备返回的 序列号及版本信息

```
[CAN1]
#ExtCan : 0-标准帧滤波,1-扩展帧滤波
#Id :接收滤波ID(必须十六进制,以0x开头)
#Mask:接收屏蔽码(必须十六进制,以0x开头)
#工作模式:Mode=Normal/RxOnly
#波特率配置:Rate=key/auto/数值 (key-通过拨码开关设置,auto-自动侦测波特率,数值-设置的波特率值如13.3,单位kbps)
#FilterGrpNum : 0-智能滤波禁止;  N-设置N组智能滤波,N最大为64
#  智能滤波格式设置 :S_GRP0=( 起始ID -> 结束ID ) 起始ID 和 结束ID 必须十六进制,不加0x,如 S_GRP0 = (A3 -> AA)
#  S_GRP0-标准帧滤波组;  E_GRP0-扩展帧滤波组
ExtCan = 0
Id     = 0x0
Mask   = 0x0
Mode   = Normal
Rate   = key
FilterGrpNum = 0
#S_GRP0 = (12->15)
#E_GRP1 = (11A0->11B5)
```

CAN1滤波、工作模式及波特率设置

```
[CAN2]
#ExtCan : 0-标准帧滤波,1-扩展帧滤波
#Id :接收滤波ID(必须十六进制,以0x开头)
#Mask:接收屏蔽码(必须十六进制,以0x开头)
#工作模式:Mode=Normal/RxOnly
#波特率配置:Rate=key/auto/数值 (key-通过拨码开关设置，auto-自动侦测波特率,数值-设置的波特率值如13.3,单位kbps)
#FilterGrpNum : 0-智能滤波禁止;  N-设置N组智能滤波,N最大为64
#  智能滤波格式设置 :S_GRP0=( 起始ID -> 结束ID ) 起始ID 和 结束ID 必须十六进制,不加0x,如 S_GRP0 = (A3 -> AA)
#  S_GRP0-标准帧滤波组;  E_GRP0-扩展帧滤波组
ExtCan = 0
Id     = 0x0
Mask   = 0x0
Mode   = Normal
Rate   = key
FilterGrpNum = 0
#S_GRP0 = (12->15)
#E_GRP1 = (11A0->11B5)
```

CAN2滤波、工作模式及波特率设置

```
[RECORD]
#enable :1-打开记录功能 0-关闭
#channel:can1/can2/all -设置记录数据源
#MaxSize:文件分割阈值(十进制,单位MB),超出此阈值时生成新文件
#FileID:设备标识(6位长度字符串),在记录文件中标识设备ID
#FileType:存储文件格式选择:key/txt/csv/asc/can (key-拨码开关设置,其他-直接格式设置)
#ErrFrame:1--记录错误帧  0--不记录错误帧
#Language: ch--简体中文  en--English
#OverWrite: 1--覆盖写  0--写满停止
enable = 1
channel=all
MaxSize = 100
FileID  = ID0001
FileType= key
ErrFrame= 0
Language= ch
OverWrite= 1
```

记录相关配置

Figure 11 Example of the CAN recorder profile information

As shown in the figure, the file consists of several parts: [SYS], [DEV], [CAN 1], [CAN 2], [RECORD], [PLAYBACK], [TURN], [VIN], [WorkTime], [ERR _ CAN], and [CFG _ MODE]. Note that the behavior comment line begins with "#" and the comment line cannot be added behind the configuration line. The configuration options for each section are illustrated with detailed notes.

The device only supports profiles up to 8 KB, out of range causing unforeseen errors. If the profile is corrupt or misformed or does not exist, the device uses the last correct backup configuration file. If the backup profile still fails, use the following default configuration:

CAN 1, CAN 2 is not filtered, and operates in normal mode. When the recording function is turned on, 2 channels of CAN can be recorded. After the recording file reaches 200MB, a new file is formed. FileID is ID1111, and the error frame is not recorded, enabling to overwrite and write. The VIN code function is turned off. WorkTime For 360,000 seconds.

The device profile config.ini Main configuration options and function description are shown in the following table:

Table 5. Profile options description

Order number	Configuration paragraph	Option	Explain
1	[DEV]	SN	Device serial number
		VERSION	Device firmware program version number, you can follow the first one.
		GENTIME	RTC time for each device

2	[CAN1]/[CAN2]	ExtCan	Set parameters of shielding code filtering mode, see CAN Recorder Filter Configuration Method.
		Id	
		Mask	
		Mode	Working mode: =Normal Normal mode; =RxOnly listen-only mode
		Rate	Baud rate configuration: =key represents setting through the dial switch; =auto represents automatically detected wave rate; = value represents direct setting baud rate
		FilterGrpNum	For intelligent filter settings, see CAN Recorder Filter Configuration Method.
3	[RECORD]	enable	Whether to enable record function: = 1 enable, form record file; = 0 prohibit, do not generate record file, but allow relay function
		channel	Select recording data source: =can1, record data of channel 1; =can2, record data of channel 2; =all, record data of 2 channels
		MaxSize	Set the file segmentation threshold (decimal, unit MB, range 2~4000) to generate a new file when this threshold is exceeded. Default 100
		FileID	A 6-bit length string used to identify the device number, reflected in the stored file name
		FileType	Record file format configuration: = key for the format with the dial-up switch S7-S8; = txt for configuration in TXT; = csv in CSV format; = asc in ASC; =can in CAN format (a binary format for ZLG-compliant).
		ErrFrame	Function: = 0 does not enable; = 1 enables
		Language	Record file language selection: = ch Select simplified Chinese; = en Select English
		OverWrite	TF overwrite function selection: = 1 enable overwrite function, when the TF is full, automatically delete the earliest generated file in the card, and then continue to record data; = 0 prohibit overwrite function, when the TF card is full, stop recording data, LED2-LED8 all flashing prompt
4	[PLAYBACK]	enable	Replay feature enabling configuration: =key indicates the enable or disabled playback feature through the dial switch S10; =1 indicates the enabling playback feature (the dial switch setting is invalid); =0 indicates the disabled playback feature (the dial switch setting is invalid at this time).
		timestamp	Playback timestamp selection: = 1 means sending by the time identity in the playback file; = 0 indicates direct sequential order regardless of the time identity
		isDelete	Whether to delete the playback file: =1 removes the playback file after playback; =0 does not delete the file after playback
		cont	Number of loop playback: decimal, if =10 is 10 playback
		autoname	Indicates whether the data file name stored in the TF card: =1 without modifying the data file name; =0 means the data file to be played (TXT format or CSV format) must be changed to playback000.txt,playback001.txt... before playback.
5	[TURN]	enable	Relay function enable configuration: =key indicates the enable or disabled relay function through the dial switch S9; =1 indicates the enable relay function (the dial switch setting is invalid); =0 indicates the disabled relay function (the dial switch setting is invalid at this time).

		num	Number of relay configuration bars, with a maximum of 99. If num=N, (N> =1, <=99), the num should have set 0 to set N-1.
6	[VIN]	enable	VIN code acquisition: = 1 enable; =0 prohibit
		channel	Channel to obtain VIN code: =can1 from channel 1; =can2 from channel 2; =auto, automatically select channel acquisition
7	[WorkTime]	timeout	Working time setting for battery power supply: decimal, unit seconds, beyond this time, equipment

			Automatic shutdown, default 360000 seconds
8	[ERR_CAN]	enable	Select the fault-tolerant CAN channel CAN 3: =1 enable; = 0 disabled
9	[CFG_MODE]	enable	Enabling configuration mode: =1 Enabled (restart valid); =0 prohibited

3.2.3.1 Recording function

This device can be used through the [RECORD] segment channel in the configuration file, option configured to record single CAN bus or 2 CAN bus records: channel=can 1 —— record CAN 1, channel data

channel=can2 —— records the CAN 2 channel / CAN 3, channel (through fault-tolerant CAN function selection) data

channel = All —— records records CAN 1 channel and CAN 2 channel / CAN 3, channel (through fault-tolerant CAN function selection) data.

In use, the user can number the different devices through the [RECORD] segment FileID option in the configuration file. This number is shown in the first line of the file name and content to distinguish data. FileID Number range: ID0001~ID9999.

Users can set the file split size through the [RECORD] segment MaxSize option in the configuration file. That is, the device will judge the size of the generated data file during the recording process, and when the file is greater than the value set by MaxSize, a new file will be generated. MaxSize Units of MB, decimal representation, minimum value of 2 MB, maximum value of 4000MB, and default value of 100MB. It is not recommended to set it up too small, when using it.

The user can screen and filter the frames of the CAN 1 channel through the [CAN 1] segment in the configuration file: where

ExtCan —— Represents the configuration of standard frame screen code or extended frame screen code, 0-standard frame, 1-extended frame.

Id —— represents the received filter ID (must be hexadx, starting with 0x)

Mask —— indicates receiving the shield code (must be hex, starting with 0x)

In the configuration, the bit of Mask corresponding to ID means that it must match the corresponding bit of ID, and 0 does not care.

For example, to configure a standard frame with only ID 0x100, then ExtCan = 0, Id = 0 x 0000100, and Mask = 0x00000fff.

for instance, Required to receive extended frames with ID 0x020df201, Then ExtCan = 1, Id = 0x020df201, When Mask is set to 0xffffffff (care every ID bit), The received extended frame frame ID is only 0x020df201; When Mask is set to 0x0000ffff (concern only the lower 16 bit of this ID, The rest don't care), The received extended frame ID is 0xXXXXf201 (ID can be any of 0 x0000f201 to 0 x1ffff201).

The user can intelligently filter the frames of the CAN 1 channel through the [CAN 1] segment in the configuration file: where

The variable FilterGrpNum indicates how many sets of filters need to be configured, if FilterGrpNum=0, means intelligent filtering is prohibited; when the variable FilterGrpNum is not 0, means how many sets of filters are set, up to 64 groups. For example, FilterGrpNum=3 means that 3 sets of filters are configured. At this time, there should be 3 sets of filtering configurations below the variable FilterGrpNum. The configuration format of each set of filters is:

X _ GRPy = (Start ID-> End ID)

Where x is used to indicate whether standard or extended frame filtering. Where x S the standard frame filter and x E the extended frame filter. The y is used to represent the serial number, starting from 0. Start ID and end ID are expressed in hexadecimal without adding 0x. Start ID End ID, if the start ID is equal to the end ID, then it means that only 1 ID frame is received.

See CAN Recorder filter configuration method.

You can configure the [CAN 1] segment Rate:

Rate = key —— indicates that the CAN 1 baud rate is configured through a dial switch

Rate = auto —— indicates that the CAN 1 wave rate is acquired by automatic detection. Before the port rate is detected, the corresponding LED flashes blue to prompt.

The second CAN filter configuration [CAN 2] is the first one.

The data file format recorded by this device supports four formats: txt, csv, asc and can. Take the txt format as an example:

a. document name

The file name is shaped such as "2020_07_06_201912_ID0001 (94196). txt", in which 94196 is the car VIN and the last 5 digits of the code. If the car does not support VIN code reading, or the user does not select to enable VIN acquisition function, then there is no VIN code, forming a file name such as "2020_07_06_201912_ID0001.txt".2020_07_06_ 201912 is Beijing time, said 20:19:12 seconds on July 6,2020. ID0001 Is the FileID in the configuration file.

b. File content

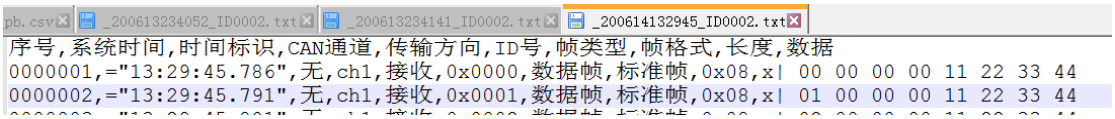


Figure 12 Content of the CAN recorder files

The txt, format and csv format file contents are shown above. The serial number range is 0000000 ~ 999999; CAN channel; the system time is real time; the data content is 16 bases.

3.2.3.2 Relay function

If the device selects the relay function, the [TURN] segment configuration in the configuration file takes effect. LED6 is bright blue when selecting channel 1 to forward to channel 2; LED6 is bright red if you select channel 2 to forward to channel 1. If existing channels 1 and 2 forward each other, LED6 will flash alternately in red and blue. The relay configuration diagram of the device is as follows:

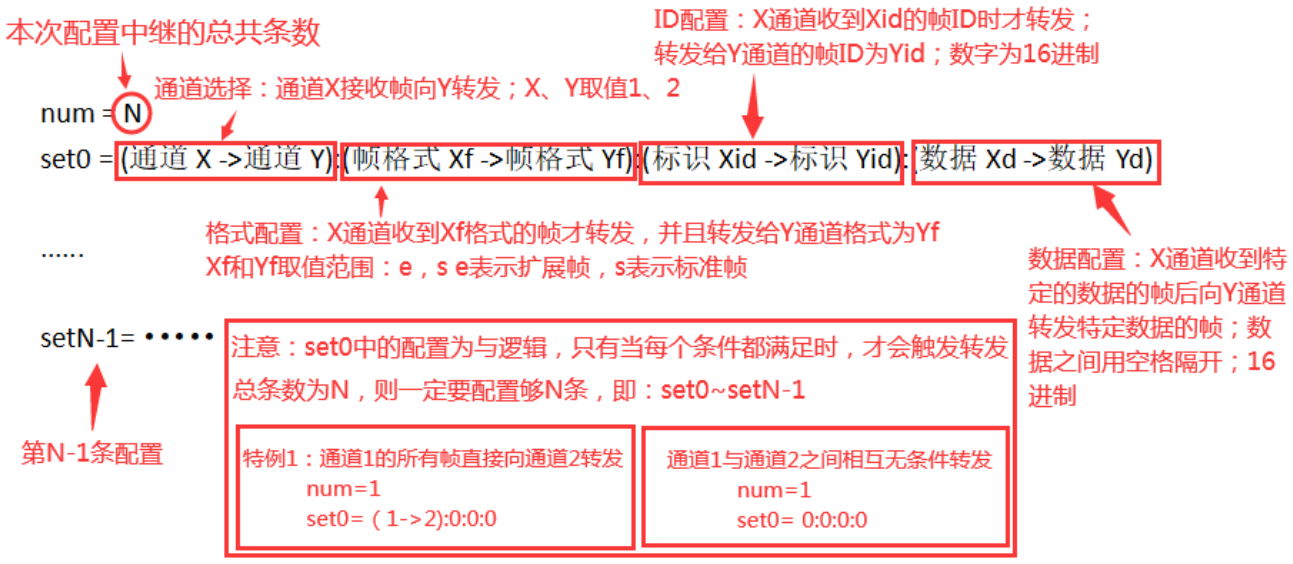


Figure 13. A schematic diagram of the relay function configuration

Set the relay configuration of a profile as follows: [TURN]
Relay function configuration

```
# This item is configured in 16-system
# num: Number of configuration (maximum 99)
# Format: (port): (standard frame / extended frame): (id): (data), port required, other not filled; the content unchanged:
num = 7
set0 = (1->2):(s->e):(d2->123):(12 23 00 41 -> 78 90)
set1 = (1->2):(s->s):(21->221):(12 23    -> 78 90)
set2 = (1->2):(s->e):(22->221):( -> fe fe 00 09)
set3 =(2->1): (e->s):(112233->221):(01 02 03 04 05 06 07 -> fe fe 00 18)
set4 =(1->2): (e->e):(21->f221):(11 22 -> fe fe 00 27)
set5 =(2->2): (s->s):(11->123):( -> fe fe 00 aa)
set6 =(2->2): (s->s):(->13):( -> fe 00 aa)
#set7 =(1->2): (s->s):(110->2FA):()
#set8 =(1->2): ():():()
```

Specifically, num = 7 indicates that seven relay trigger conditions are configured this time, namely set0, set1, set2, set3, set4, set 5 and set6.

Article 1: set0 = (1-> 2): (s-> e): (d2-> 123): (12 23 00 41-> 78 90): CAN 1 port on the CAN 1 port with ID 0 xd 2 and 0x12 0x23 0x00 0x41, CAN 2 with ID 0x123 and data 0x78 0x90.

Article 2: Set 1 = (1-> 2): (s-> s): (21-> 221): (12 23-> 78 90) Forward the CAN 1 port to the CAN 2 on the standard frame of the CAN 1 port and ID 0x21 and data 0x12 0x23, forward a standard frame to the CAN 2 port with ID 0x221 and data 0x78 0x90.

Article 3: set2 = (1-> 2): (s-> e): (22-> 221): (-> fe fe 00 09): CAN 1 port is forwarded to CAN 2. When the CAN 1 port receives a standard frame and ID is 0x22 (data arbitrary), an extended frame is forwarded to CAN 2 port with ID is 0x221 and data is 0xfe 0 xfe 0x00 0x09.

Article 4: set3 = (2-> 1): (e-> s): (112233-> 221): (01 02 03 04 05 06 07-> fe fe 00 18) means: CAN 2 port forward to CAN 1 port, The forwarding condition is: when the CAN 2 port receives an extended frame with ID 0x112233 and data 0x01 0x02 0x03 0x04 0x05 0x06 0x07, Forward a single standard frame to the CAN 1 port, Its ID is 0x221, The data is 0xfe 0xfe 0x 00 0x18.

Article 5: Set 4 = (1-> 2): (e-> e): (21-> f221): (11 22-> fe fe 00 27) indicates that CAN 1 port receives CAN 1 port and ID is 0x21 and data is 0x11 0x22, one extended frame is forwarded to CAN 2 port with ID is 0 xf 221 and data is 0xfe 0xfe 0x00 0x27.

Article 6: set5= (2-> 2): (s-> s): (11-> 123): (-> fe fe 00 aa): CAN 2 port forwards to the CAN 2 port when the CAN 2 port receives a standard frame and ID is 0x11 (any data), a standard frame is forwarded to the CAN 2 port with ID of 0x123 and data of 0xfe 0xfe 0x00 0 xaa.

Article 7: set6= (2-> 2): (s-> s): (-> 13): (-> fe 00 aa) represents: CAN 2 port to the CAN 2 port, forward condition is: when the CAN 2 port receives a standard frame (ID arbitrary, data arbitrary), forward a standard frame to the CAN 2 port, its ID is 0x13, data is 0xfe 0x00 0xaa.

Note 1: When configuration, the input method is English half input.

Note 2: In configuration, when you need to configure the N relay forwarding condition, num=N, the specific entry should be by set0, set1..... 19

Smented entially to setN-1. If this rule is not followed, then the conditions of this configuration may fail!

Note 3: If port 1 to port 2, num = 1, set0 = (1-> 2): (): (): (). If ports 1 and 2 forward each other unconditionally, then num=1, set0= (): (): (): ()

Note 4: The relay function can be recorded with the relay function.

Note 5: If you want to configure unconditional relay (no rewriting, direct forwarding), you only need to select the channel to relay, such as: CAN 1 pass
Forward the channel directly to the CAN 2 channel as follows:

num = 1

set0 =(1->2): ():():()

3.2.3.3 Playback function

This device can realize the function of data playback. The configuration of the playback function is shown in Table 5 of 3.2.3.3 above. The playback function only supports the TXT format and the CSV format in the device record format. After the playback function is enabled, the device will automatically look for the data files in the TF, and send the file content from the corresponding port. If not found, the TF card indicator LED5 flashes 3 times and exits the playback.

When both the recording / relay function and the playback function are turned on, the device prioritizes the playback function and enters the recording / relay function after the file content is played. During playback, the indicator LED8 constant; after playback, the TF card indicator flashes blue for 3 times and exits the playback.

The content format of the file to be replayed is the same as the one recorded in the device (TXT format or CSV format), see the relevant content of "Document Content" in section 3.2.3.1 of this chapter.

config.ini [PLAYBACK] playback function configuration is defined in the file: support: (1) whether to delete the playback file after the playback.(2) The number of file playback times can be set.(3) Whether the playback is marked by the time in the file.(4) Whether to play back in the original file format.(5) enabling playback function.

For detailed playback configuration mode, refer to CAN Recorder Replay Configuration Method.

3.3 Program upgrade

The equipment is upgraded through TF card as follows:

Step 1: Shut the device down and insert the TF card.

Step 2: Insert the USB cable. After the recorder is recognized by the PC, copy the upgrade file RECORDER.bin into the TF card.(The factory has been updated to the latest firmware. If the firmware is updated, the technology will contact you and provide the corresponding upgrade package and upgrade file.)

Step 3: Pull out the USB cable.

Step 4: Insert the USB cable again and start the upgrade. After waiting 30 seconds to complete the upgrade, the device is recognized by the PC as a U disk, and then a text file named "RECORDER_ upgrade result. txt" is generated in the U disk.

kindly reminder:

The upgrade process lasts about 20 seconds.

After the upgrade is complete, you can delete the upgrade result file.