

Ethernet to CAN USR-CAN115



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Product Feature

- CAN and Ethernet bidirectional conversion
- CAN2.0A and CAN2.0B standard protocols
- Support transparent conversion, transparent band ID conversion, standard protocol conversion
- TCP server, TCP client, UDP server, UDP client
- Support extended frame only, standard frame only, custom frame ID reception
- Support 14 groups of custom frame ID filtering to avoid data interference
- Wide baud rate range, CAN baud rate: 5K~1Mbps
- Support custom baud rate
- Heartbeat packet support: network heartbeat packet, CAN port heartbeat packet
- Support registration package: connection sending, data carrying, full registration
- Support normal, listen only, loop three working modes
- SupportPC parameter configuration
- Support network AT command configuration
- Support PC firmware upgrade, firmware update is more convenient
- High and low temperature resistance,-40°C~85°C stable operation
- With 120 ohm termination resistor
- Support 5-24V wide voltage input, with anti-reverse connection protection
- Reliable hardware protection, electrostatic protection, surge, burst protection
- Hardware watchdog function, crash automatic restart, module more stable and reliable



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1. Product Overview

1.1. Product Introduction

USR-CAN115 is an ultra-small rail-type CAN to Ethernet device independently developed by the Internet of Things. This series of products features high speed, low latency, small size and simple use. TCP server, TCP client, UDP server and UDP client are supported. It supports three data conversion modes: transparent conversion, transparent band ID conversion and standard protocol conversion. It can easily realize the interconnection between CAN equipment and network port equipment.

This series of products adopt industrial design standard,-40 $^{\circ}$ C -85 $^{\circ}$ C stable operation. Support 5~24V wide voltage terminal power supply. Wide baud rate range, CAN baud rate support 5K~1Mbps, support custom baud rate. Support AT commands and PC software configuration parameters, easy to use. The product comes with 120 Ω resistor, which can be quickly connected to CAN-bus. The product comes with guide rail (C45 GB) buckle, easy and fast installation.

In order to meet the needs of more customers, the lipstick CAN converter series is mainly available in the following three specifications.

Model	Versions	Specifically described
	Ethernet	CAN to Ethernet equipment, puch type terminal wiring
USK-CANTIS	version	CAN to Ethemet equipment, pash-type terminat wining.
	DC405 vorcion	Serial port uses RS485 mode for communication,
USR-CANTI4	R5465 VEISION	press-type terminal wiring.
		Serial port uses RS232 mode for communication,
USK-CANTIZ RS232 VEISION		press-type terminal wiring.

Table 1 Lipstick CAN Converter Specifications Selection Table

1.2. Technical Parameters

Table 2 Product basic parameters

Classify	Parameter	Numerical value			
	Working voltage	DC5~24V,recommended 12V 1A			
Basic	Size	74*24*22mm (L * W * H, excluding terminals)			
Parameters	Installation	Rail mounting			
	method				

	Reload key	Press and hold to restore factory settings		
	Indicator light	POWER、WORK、NET、CAN		
	CAN port	1-way CAN port, support standard CAN2.0A/B, press		
	Specification	terminal wiring		
	CAN port	5kbps ~ 1000kbps_support custom		
	Baud rate			
Interface	Terminal	Built-in CAN bus 1200, termination resistor		
parameter	Resistance			
	Ethernet port	RI45, 10/100Mbps, Cross-Direct Adaptive		
	Specification			
	Operating	-40~85°C		
	temperature			
	Storage	-40~105℃		
Work	temperature			
Environment	Operating	5%~95% RH(no condensation)		
	humidity			
	Storage humidity	5%~95% RH(no condensation)		
	Networking	TCP server、TCP client、UDP server、UDP client		
	protocol			
	Conversion	Transparent conversion, Transparent band ID conversion,		
	of mode	Standard conversion		
Software	CAN ID	Support standard frame, extended frame		
Function	Frame ID filtering	Support standard frames only, remote frames only, custom		
		input frame ID (up to 14 groups)		
	Packet Frame	Support custom packaging frame rate ;		

	Time	custom packaging time		
	Switch direction	Support bi-directional conversion,		
	Switch direction	only network port to CAN, only CAN to network port		
	Work pattern	Normal, Loop, Hear Only		
	Firmware	Support firmware upgrade on DC		
	upgrade			
	Parameter	AT command PC software configuration		
	configuration			
	Heartbeat packet	Support network heartbeat packet,		
		CAN port heartbeat packet		
	Registration	Support custom, MAC registration package;		
	packet	optional connection sending, data carrying, full registration		
	Electrostatic	Air discharge 8kV. Contact discharge 6kV		
	protection			
	Electrical	Power supply circuit 2kV;		
Protection	Fast Transient	Ethernet port/CAN port circuit 1kV		
Parameter	Surge	Differential mode of power supply circuit 1kV, common		
	Interference test	mode 2kV;CAN port circuit common mode 2kV;		
		Ethernet port circuit 1kV		

2. Hardware Parameters

2.1. Size Description

Standardsize: 74*24*22mm (L * W * H,excluding terminals)



1.USR-DR115 Standard size diagram

2.2. Interface Description

USR-CAN115 has one CAN-bus interface and one network interface. CAN-bus interface adopts push-type terminal wiring, which is convenient and fast. The connector pinsare defined as follows.



2.API description

Table 3 Terminal wiring definition

Pin	Functiondescription
DC 5-24V +	DC 5-24V power supply positive
DC 5-24V -	DC 5-24V power supply cathode
Н	CAN_H signal line connection terminal

L	CAN_L signal line connection terminal
RS	CAN 120 Ω termination resistor, RS and L connection,
	then the module internal 120Ω resistor into the CAN bus

<Description>

When USR-CAN115and CAN bus are connected, CAN_H needs to be connected to CAN_H, CAN_L needs to be connected to CAN_L.

RS is the terminal resistance selection, RS and L are connected with wires, and the 120Ω resistor inside the module is incorporated into the CAN bus; otherwise, the 120Ω resistor is not connected to the bus.

According toISO 11898 specification, in order to enhance the reliability of CAN-buscommunication, the two terminals of CAN-busnetwork are usually added with terminal matching resistance (120 Ω), as shown in the following figure. The size of the terminal matching resistance is determined by the characteristic impedance of the transmission cable. For example, if the characteristic impedance of twisted pair is120 Ω , the two terminals on the bus should also integrate120 Ω terminal resistance.



3.CAN bus connection

2.3. Indicator Description

The USR-CAN115 has 4 indicators: POWER, WORK, NET, CAN. The user can easily observe the status of the equipment through the indicator lights, which aredefined as follows.

Indicator lamp	Colour	Function description		
	Ded	Always on when powered on,		
POWER	Rea	off when powered off		
MORK	Croop	Flashing: normal operation of equipment,		
WURK	Green	frequency 1s;		

Table 4 Indicator light rule

		Strobe: Enter CAN bus passive error state;
		Constant light: CAN bus operation abnormal
	-	Flashing: indicates that data is being received
NET	Green	at the network port
CAN	Crear	Flashing: indicates that CAN port has data
CAN	Green	being received

3. Product Features

3.1. Description of Function Configuration

CAN 115 supports host computer configuration parameters and network AT command configuration.

Parameters can be configured and queried through AT commands. For specific AT commands, see Lipstick CAN Protocol Converter Standard AT Command Set CAN115.

PC configuration operation is simple, convenient and easy to use. The following describes the configuration parameters of the host computer. Please read the description in detail.

(1) Download the host computer from the official website. After opening it, first select the model, CAN115.

SelectProductModel				
语言 (Language)			*	
Product Model:	CAN115		~	
		☑ Select this	s model by default	
Close			OK	

4.select the model

(2) Parameter configuration:

- Start with a web search, searching for devices.
- Select the device and click Read Parameters.
- After reading all the current parameters, configure the parameters.

- After configuration, click Set Parameters
- Click Restart and all parameter configurations take effect.

arams Set Params Exit Cfg Mode Fw Update	Select Product Help	2025-01-23,10:26:29:317: [Info]:Please conduct a network search first
Basic Set Interface Set Conversion Set M CAN Params Protocol CAN Frame Type Standard Frame ~ CAN BaudRate 100K ~ Custom BaudRate k	CAN ID(Hex): 0 BaudRate=60M/((1+BS1+i	and select a device. 2025-01-23,10:26:34:419: [TX]:AT+MODEL? 2025-01-23,10:26:40:426: [TX]:AT+MODEL? 2025-01-23,10:26:46:427: [TX]:AT+MODEL?
Network Params IP address acquisition DHCP/Dynamic IF ~ Static IP Address 192.168.1.123 Gateway Address 192.168.1.1	Subnet mask 255.255. DNS Address 208.67.2	Scroll to the latest news
	arams Set Params Exit Cfg Mode Fw Update Basic Set Interface Set Conversion Set N CAN Params Protocol CAN Frame Type Standard Frame CAN BaudRate Custom BaudRate A Ocustom BaudRate IP address acquisition DHCP/Dynamic IF Static IP Address 192.168.1.123 Gateway Address 192.168.1.1	arams Set Params Exit Cfg Mode Fw Update Basic Set Interface Set CAN Params Protocol CAN Params Protocol CAN BaudRate 100K CAN BaudRate 100K Can BaudRate Can BaudRate Can Custom BaudRate IP address acquisition DHCP/Dynamic IF Static IP Address 192.168.1.123 Subnet mask 255.255. Gateway Address 192.168.1.1 DNS Address 208.67.2

5.Connection Network Configuration

3.2. CAN Parameters

Frame type:The frame type of CAN message during conversion, with standard frame and extended frame optional.

CAN ID:Hex adecimal, Hex format. Range: 0~7FF(standard frame), 0~ 1FFFFF (extended frame)

CAN Baud Rate:

Range 5K~1000K, default 100kbps. Common baud rates can be selected directly: 5K,10K,20K,50K,100K,

120K,125K,150K,200K,250K, 400K, 500K, 600K, 750K, 1000K. Baud rate calculation method: Baud rate =60M/[(1+ BS1 + BS2)*BRP]

```
BS1: Phase buffer section 1, Range 1~16
```

BS2: Phase Buffer 2, Range 1~8

BRP: Frequency division value, Range 1~1024

BS1\BS2\BRP is configurable and the device automatically calculates the current baud rate based on these three values.

USR-CAN115	F0F 17P 400070				
	505470466679				
		CAN Params			
		Protocol	CAN		
		Frame Type	Extended Frame \lor	CAN ID(Hex):	0
		CAN BaudRate	100К ~		
		○ Custom BaudRate	k	BaudRate=60M/	(<mark>1+</mark> BS1+B
		Network Params			
		IP address acquisition	DHCP/Dynamic IF \vee		
		Static IP Address	192.168.1.123	Subnet mask	255.255.2
		Gateway Address	192.168.1.1	DNS Address	208.67.22
			CAN Params Protocol Frame Type © CAN BaudRate © Custom BaudRate Network Params IP address acquisition Static IP Address Gateway Address	CAN Params Protocol CAN Frame Type Extended Frame CAN BaudRate D0K Custom BaudRate k Network Params IP address acquisition DHCP/Dynamic IF Static IP Address 192.168.1.123 Gateway Address 192.168.1.1	CAN Params Protocol CAN Frame Type Extended Frame v CAN ID(Hex): CAN BaudRate D0K Custom BaudRate Custom BaudRate k BaudRate=60M/I Network Params IP address acquisition DHCP/Dynamic IF v Static IP Address 192.168.1.123 Subnet mask Gateway Address 192.168.1.1 DNS Address

6.CAN parameter configuration

3.3. Ethernet Port Parameters

(1) **IP address acquisition**:

IP address is the identity representation of module in local area network, unique in local area network, so it cannot be duplicated with other devices in the same local area network. The IP address of CAN 115 can be obtained in two ways: static IP and DHCP.

Static IP

Static IP is manually set by the user. Note that IP, subnet mask and gateway are written at the same time during the setting process. Static IP is suitable for scenarios where statistics on IP and devices are required and one-to-one correspondence is required.

Advantages: Access devices that cannot be assigned IP addressescan be searchedthrough thefull segment broadcast mode.

Disadvantages:Normal TCP/UDP communication cannot be performed dueto differentnetwork segments in different local area network

DHCP

DHCP is mainly used to dynamically obtain IP address, Gateway address, DNS server address and other information from the gateway host, thus eliminating the cumbersome steps of setting IP address. It is

applicable to scenarios where there is no requirement for IP, and there is no requirement for IP to correspond to modules one by one.

Advantages:Access routers and other devices with DHCP Server can communicate directly, reducing the trouble of setting IP address, gateway address and subnet mask;

Disadvantages:Access to a networkwithout DHCP Server, such asdirect connection to a computer, CAN115will not work properly.

(2) Subnet mask:

A subnet mask is a 32-bit address that masks a portion of an IP address to distinguish network identity from host identity and to indicate whether the IP address is on a local area network or a remote network. Subnet masks cannot exist alone; they must be used in conjunction with IP addresses. We commonly use the C subnet mask: 255.255.255.0, the number of IP addresses in the subnet is 2 to the 8th power minus 2, that is, 256- 2 = 254, the general host address is 0 or 1 (binary) has its special role.

(3) Gateway Address:

Gateway address refers to the network number of the network where the module's current IP address is located. If the router is connected to the external network, the gateway is the IP address of the router. If the setting is wrong, the external network cannot be connected correctly. If the router is not connected to the external network, there is no need to set it. The default is OK.

)evice IP Device name 192.168.1.106 USR-CAN115	MAC address 50547B466679	Basic Set Interface Set Conversion Set Network Set
		CAN Params Protocol CAN Frame Type Extended Frame CAN ID(Hex): CAN BaudRate CAN BaudRate Custom BaudRate k BaudRate=60M/((1+BS1+BS2)*BRP)
		Network Params
		IP address acquisition STATIC/Static IP ~ Static IP Address 192.168.1.123 Gateway Address 192.168.1.1 DNS Address 208.67.222.222
Factory reset R	estart	<

7.Network port parameter configuration

3.4. Transformation Function

3.4.1. Conversion Parameter

Conversion mode:Support transparent conversion, transparent band ID conversion, standard protocol conversion. Each mode conversion rule is different, and can realize the conversion between network port data information and CAN frame information. See Chapter 4 for a detailed description of conversion patterns.

Direction of conversion:By selecting the direction of conversion, data interference on the bus side that does not require conversion can be excluded. There are three conversion directions:

- Bidirectional: The converter converts data from the network to the CAN bus and also converts CAN bus data to the network.
- Network port to CAN only: Only data from the network is converted to the CAN bus, and data from the CAN bus is not converted to the network.
- CAN-to-network only port: Only data from the CAN bus is converted to the network, and data from the network is not converted to the CAN bus.

Enable Frame Info:Takes effect only in transparent transitions. When this option is selected, the converter will add the frame information of CAN message to the first byte of converted data when it works. CAN frame information is not converted when unchecked.

Enable Frame ID:Takes effect only under transparent transitions. When this option is selected, the converter will add the frame ID of the CAN message before the frame data of the converted data and after the frame information (such as enabling frame information). Frame ID of CAN is not converted when unchecked.

Transparency ID Length: Takes effect only under transparency ID conversion. When network data is converted into CAN messages, the length of the frame ID in the converted data in the start byte of the frame ID of CAN messages. The frame ID length can be filled with 1 - 2 bytes in the standard frame, corresponding to ID1 and ID2 of the CAN message respectively, and can be filled with 1 - 4 bytes in the extended frame, corresponding to ID1, ID2, ID3 and ID4 of the CAN message. The ID is 11 bits for standard frames and 29 bits for extended frames.

Transparency ID Position: Takes effect only under Transparency ID conversion. The offset position of the start byte of the frame ID of a CAN message in a serial frame when network data is converted to CAN messages.

USR-CAN11	5 V1.0.4				
Q Net Search	• Enter Cfg	Mode Query Pa	arams Set Params Exit Cfg Mode Fw Update Select Product Help		
Device IP	Device name	MAC address	Basic Set Interface Set Conversion Set Network Set		
192.168.1.106	USR-CAR115	505478486679	Conversion Params Conversion mode Transparent Band ID Conversion Enable Frame Transparent Band ID Conversion Transparent Band ID Conversion Transparent Band ID Conversion Transparent Band ID Length 2 Transparent Band ID Length 2	~	
			Filter Parameters Filter Mode OFF Receive ID: Type ID Data Add Query Write in Data Data		
		14	<		>

8.Schematic diagram of conversion parameter configuration

3.4.2. Filtering Function

CAN115 has the function of filtering ID, which can filter CAN bus data and selectively receive it. This minimizes network load from the network.

There are three filtering methods:

- Receive only extended frames
- Receive only standard frames
- custom

Only the extended frames and standard frames can be received, and only the configuration can be selected. The configuration mode is as follows:

USR-CAN115	V1.0.4									
Q Net Search	Enter Cfg	Mode Query Pa	rams Set Para	ms Exit Cfg N	♦ Iode Fw Updat	e Select Produ	() ct Help			
)evice IP	Device name	MAC address	Basic Set	Interface Set	Conversion Set	Network Set				
192, 168, 1, 106	USR-CAN115	505478466679		Transparent Band	ID Length 2	~		Transparent Band ID 0	~	^
			Filter Pa	rameters						1
				Filter Mode	OFF OFF		~			
				Receive ID:	Only Receive Exte Only Receive Stan Custom	nded Frames dard Frames		Add		
								Write in		
								Clear		
										~
Factory res	et	Restart	<							>

9.Filtering Settings

In custom mode, users can add their own IDs to receive, and up to 14 groups can be set.

The configuration is as follows:

- Network Search Select the device that needs to be set
- Filter Mode Selection Custom
- Click Add Message and enter the ID you want to receive. Each group can select extended frames or standard frames. Standard Frame Range: 0~ 7FF, Extended Frame Range:0~ 1FFFFF
- Click Write to restart and save parameters

Click Query to query all current filter ID

Click Delete to delete the selected ID

Click Clear List to delete all current ID

USR-CAN11	5 V1.0.4			×
Q Net Search	Enter Cfg	∎ Mode Query P	arams Set Params Exit Cfg Mode Fw Update Select Product Help	
Device IP	Device name	MAC address	Basic Set Interface Set Conversion Set Network Set	
192, 168, 1, 106	USR-CAN115	505478466679		^
			Transparent Band ID Length 2 Transparent Band ID 0	
			Filter Parameters	
			Filter Mode Custom ~	
			Receive ID: IV: ID Data 2 Add	
			Standard Frame	
			Delete	
			Clear	
		5	<u> </u>	~
Factory res	set	Restart		

10.Custom Frame ID Configuration

3.5. Socket Function

The socket mode of CAN115 is divided into TCP Client, TCP Server, UDP Client and UDP Server. Details are as follows:

3.5.1. TCP Client Mode

(1) Model description:

TCP Client provides client connections for TCP network services. Initiate a connection request to the server and establish a connection to realize the interaction between serial port data and server data. Usually used for data interaction between devices and servers, it is the most commonly used networking communication method.



11.TCP Client Mode Description

1) TCP Client provides client connections for TCP network services. Initiate the connection and connect to the server actively, which is used to realize the interaction between serial port data and server data. According to the relevant provisions of TCP protocol, TCP Client has the difference between connection and disconnection, thus ensuring reliable exchange of data.

- 2) CAN115 is a TCP Client and requires a TCP Server connection. Parameters that need attention: target IP/domain name and target port number. The target IP can be a device on the same local local area network, or an IP address of a different local area network or an IP across public networks. If a server across public networks is connected, the server is required to have a public network IP or domain name.
- 3) CAN115 as TCP Client will actively connect to the target port of the target IP and will not accept other connection requests.
- 4) CAN115 is TCP Client. It is recommended to setthe local port number of CAN115 to 0, so thatCAN115 can access the server with random port number, which can solve the case of reconnection failure caused by the server judging that the connection state is abnormal and shieldingthe reconnection request sent by 30X.
- 5) This mode has the function of actively identifying abnormal connection. When the connection is established, KeepAlive probe packets will be sent at intervals of about 15s. If there is abnormal interruption of the connection, it will be detected immediately and prompt 30X to disconnect the original connection and reconnect.
- 6) Under the same local area network, if CAN115 is set as static IP, please keepthe IP of CAN115 and gateway in the same network segment, and set the gateway IP correctly, otherwise normal communication will not be possible.

	TCP/UDP Net Assistant	₩ - □ ×	USB-	CAN Tool V9.1	1 - CHUANGX	IN Techno	ology						- ⊔	×
Settings (1) Protocol TCP Client (2) Remote Host Addr 1921681.106 (3) Remote Host Port 2234 (3) Remote Host Port 2334 (3) Remote Host Port (3) Remote Host Port (3) Remote Host Port (4) Remote Host Port (5) Remote Host Por	Datalog [2025-01-23 10:42:21.443]# The server is connected. [2025-01-23 10:43:10.242]# SEND NEX> 01 02 03 04 05 06 07 08 [2025-01-23 10:43:15.601]# SEND NEX> 0 00 00 00 00 00 00 00 00 00 00 00 00 0	NetAssist V5.01	Device(D Send I Form Data(HE CAN Ro Stati: Frm/s 1 Index 00000 000001 000002) Operation(C Data at: Standard X): 01 02 03 04 uting Unused stics:Ch1 3: 0 Fr 10:43:10.246 10:43:15.136 10:43:15.617	2) Settings(S Type: Dat 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	i) Inform a	Directio F Receive 0 Receive 0	ew(V) H	Frm/S R: Type Data Data Data	anguage() 1: 1 saved: 0 Receive 1 cios: Ch2 0 Format Standar Standar	Number to Send inable Frm/s T: DLC Da 0x08 x 0x08 x 0x08 x	 send: 1 Cyole: 300 Stop s Cless 0 02 03 04 0 01 02 03 04 0 01 02 03 04 0 	Data ms Data end Send fii ar Save 5 06 07 08 5 06 07 08 5 06 07 08	o. Ino.
AT CMD auto CRLF Auto Append Bytes Send from File Cycle 5000 ms Shorteut Kistery	J Data Send 01 02 03 04 05 06 07 08	Clear L Clear												
🞯 Ready!	0/3 RX:0	TX:24 Reset	<											>

12.TCP client setup and data transfer diagram

TCP short connections are mainly used to save server resources and are generally applied to multi-point to one point scenarios. Using short connections ensures that all connections that exist are useful connections and that no additional controls are needed to filter them.

TCP short connection function is applied to TCP Client mode. After the short connection function is enabled, send a message. If there is no data received from the serial port or network port within the set time, the connection will be automatically disconnected. This function is turned off by default. The disconnection time can be set after the function is turned on. The setting range is 2~255s, and the default is 3 s. The setup diagram is as follows:

USR-CAN115 V1.0.4		
Q > Ed Net Search Enter Cfg Mode Ouery Pa	arams Set Params Exit Cfg Mode Fw Update Select Product Help	
Device IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set	
192.168.1.106 USR-CAN115 50547B466679 V1.0		
	SOCKET:	
	TCP Client O TCP Server O UDP Client O UDP Server	
	Server IP/Domain Name 192.168.1.201 Local Port 8234	Remote port:
	Short Link Enable: ON v Short Link Timeout: 30	UDP data filterin;
	Number of client connections: 2 (1-4) Client over limit mechanism: KEEP 🗸	UDP multicast
	Heartbeat package:	
	Registration package:	
	Registration package type: Close ~	
	Sending Direction: Connect with Registration data:	Registration data forma
	<	>

13.Short Connection Settings Illustration

3.5.2. TCP Server Mode

(1) Model description:

TCP Server stands for TCP Server. In TCP Server mode, CAN115 monitors the local port, accepts and establishes a connection for data communication when a connection request is sent. When CAN115 CAN port receives data, it will send data to all client devices connected to CAN115 at the same time. Similarly, TCP Server mode also has KeepAlive function for real-time monitoring of connection integrity.



14.TCP Server Mode Description

Typically used for communication with TCP clients within a local area network. Suitable for scenarios where there is no server in the local area network and multiple computers or mobile phones request data from the server. As with TCP Client, there is a difference between connection and disconnection to ensure reliable exchange of data.

<u>∎</u> • / (TCP/UDP Net Assistant	₩ - □ ×	USB-CAN Tool V9.11 - CHUANGXIN Technology – 🗆 X
Settings	Data log	501 @ (1	Device(D) Operation(Q) Settings(S) Information(I) View(V) Help(H) Language(L)
(1) Protocol			Send Data
TCP Client 🗾	[2025-01-23 10:45:50.643]# RECV HEX>	S	Format: Standard V Type: Data VCANID(HEX): 00 00 00 23 Channel: 1 VNumber to send: 1 ID Inc.
(2) Remote Host Addr 192.168.1.106	01 02 03 04		Data(HEX): 01 02 03 04 Send Cycle: 300 ms Data Inc.
(3) Remote Host Port 8234			CAN Routing ID Filter Frm saved: 0 Stop send Send file Unused CAN settings CAN settings
· Disconnect			Statistics:Ch1 Statistics:Ch2
Recv Options			Frm/s R: 0 Frm/s T: 0
C ASCII C HEX			Index System Time Time Stamp Channel Directic Frame ID Type Format DLC Data
Cog Display Mode	<		🛑 00000 10:45:50.629 - chi Send 0x0023 Data Standar 0x04 x 01 02 03 04
Hide Received Data			
Save Recv to File			
AutoScroll Clear			
Send Options			
C ASCII @ HEX			
Use Escape Chars		. M.	
AT CMD auto CRLF	Data Send 🗸 🗸	ear 🗶 Clear	
Send from File	01 02 03 04 05 06 07 08	1	
Cycle 5000 ms Shortcut History		Send	
🞯 Ready!	1/3 RX:4 TX:24	Reset //	< >

15.TCP Server Settings and Data TransferIllustration

(2)Customizing the number of Client connections

When CAN115 is used as a TCP Server, the maximum number of clients that can be connected is4. The maximum value can be set according to customer needs, convenient for customers to use.

When the number of Client connections is greater than the maximum set by the user, the new connection replaces the old connection by default, or it can be set so that the new connection cannot kick the old connection.

Processing for excess connections:

KICK: Kick off old connections and plug in new ones.

KEEP: Keep existing connections and kick out new connections.

The setup diagram is as follows:

Registration package: Registration package: Registration package type: Cose	🕴 USR-CAN115 V1.0.4		- 0
Paries IN Nories and NUC oldress Ver Basic Set Interface Set Conversion Set Network Set SOCKET: IN IN IN IN IN IN IN IN IN SOCKET: IN IN IN IN IN IN IN IN IN Sock Faceon (No. 100) IN IN IN IN IN IN IN IN IN IN IN IN IN <	Q > Image: Big Net Search Net Search Enter Cfg Mode Query Pa	rams Set Params Exit Cfg Mode Fw Update Select Product Help	
USE-LOAD 11 00 DESE-CAD110 OESETRAGOR 70 V1.0 SOCKET: TCP Client TCP Server UDP Client UDP Server Short Link Enable: ON Short Link Timeout: 00 UDP data filtering Number of client connections: 2 (1-4) Client over limit mechanisme (KICK) UDP multicast Timeout reconnection time: 0 (0-99999s) Image: Image: Image: Registration package: Image: Image: Image: Image: Image: Image: Registration package type: Close Image: Sending Direction: Connect with Registration data Registration data forma	Device IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set	
Timeout reconnection time: 0 Heartbeat package: Heartbeat packet type: Close Registration package: Registration package: Sending Direction: Connect with Registration data:	192 168 1.106 USR-CAN115 505478466679 VI.O	SOCKET: O TCP Client O UDP Client O UDP Server Server IP/Domain Name 192.168.1.201 Local Port 8234 Short Link Enable: ON Short Link Timeout: 30 Number of client connections: 2 (1-4) Client over limit mechanism: KICK v	Remote port: UDP data filterinț UDP multicast
Registration package: Registration package type: Close Sending Direction: Connect with Registration data:		Heartbeat package: Heartbeat packet type: Close v	
		Registration package: Registration package type: Close Sending Direction: Connect with Registration data: Connect with	Registration data forma

16.Setup Schematic

3.5.3. UDP Client Mode

This mode of operation is subordinate to UDP protocol. UDP Client is a connectionless transmission protocol that provides simple, unreliable, transaction-oriented messaging services. There is no connection to establish and disconnect, and only IP and ports are required to send data to each other. It is usually used in data transmission scenarios where there is no requirement for packet loss rate, data packets are small and sent frequently, and data is transmitted to a specified IP.



17.UDP Client Mode Description

- 1) In UDP Client mode, the CAN port to network direction only communicates with the destination port of the destination IP.
- 2) In this mode, the target address is set to 255.255.255.255, which can achieve the effect of UDP full network segment broadcast; at the same time, it can also receive broadcast data; it supports

broadcast within the network segment, such as xxx.xxx.255 broadcast mode.

- 3) Support UDP multicast function. Multicast can realize one-to-multipoint connection mode between data sender and receiver. Many receivers join the same multicast group and share the same IP address. At the same time, the members in the multicast group are dynamic, and the joining and exiting of a member does not affect the original multicast group. The valid address range for multicast groups is 224.0.0.2 - 239.255.255.255.
- 4) UDP data filtering function is supported, which can be enabled by PC configuration or AT command. After being enabled, it can select to receive data transmitted transparently from all network segments(e.g.255.255.255.255),intra-segment(e.g.192.168.0.255),specified IP(e.g.192.168.0.201)according to configuration.
 - The network segment broadcast does not determine the source IP of the data, but only determines whether the source port is the same as the target port. When the source port is the same, the network data is output. When the source port is different, the network data is discarded.
 - The intra-segment broadcast judges whether the data source port is the same as the target port, and judges whether the IP is an intra-segment IP, and outputs the data meeting the conditions, otherwise, the data is discarded.
 - Regular UDP communication, determine the source port and IP, and output the same data as the destination port and IP, otherwise discard.

	TCP/UDP Net Assistant 🛛 🙀 – 🗖	🗙 🛗 USB-CAN Tool V9.11 - CHUANGXIN Technology — 🗆
Settings	Data log	Device(D) Operation(O) Settings(S) Information(I) View(V) Help(H) Language(L)
(1) Protocol		Send Data
UDP 🔄	[2025-01-23 10:48:38.883]# SEND HEX TO 192.168.1.106 :8234>	Format: Standard V Type: Data VCANID(HEX): 00 00 00 23 Channel: 1 VNumber to send: 1
(2) Local Host Addr 192.168.1.135	01 02 03 04 05 06 07 08	Data(NEX): 01 02 03 04 Send Send Cycle: 300 as Data In
(3) Local Host Port		CAN Routing ID Filter Frm saved: 0 Stop send Send file
0234		Unused CAN1 settings CAN2 settings Receive Enable Clear Save
· Close		Statistics:Ch1 Statistics:Ch2
Recv Options		Frm/s R: 0.3 Frm/s T: 0 Frm/s R: 0 Frm/s T: 0
C ASCIL @ HEX		
🔽 Log Display Mode		Index System Time Time Stamp Channel Directio Frame ID Type Format DLC Data
Auto Linefeed	<	00000 10:48:38.896 0x4BE3483 ch1 Receive 0x0000 Data Standar 0x08 x 01 02 03 04 05 06 07 08
🔲 Hide Received Data		
Save Recv to File		
AutoScroll Clear		
Send Options		
C ASCIL @ HEX		
🔽 Use Escape Chars		
AT CMD auto CRLF	Data Send Remote: 192.168.1.106:8234 ← Clean ↓ Clear Clear	
Auto Append Bytes	01 02 03 04 05 06 07 08	
Cucle 5000 mo	Sand	
Shortcut History	Sea	
🥳 Ready!	1/4 RX:4 TX:32 Reset	

18.UDP client settings and data transferdiagrams

3.5.4. UDP Server Mode

UDP Server means that the source IP address is not verified on the basis of ordinary UDP. After receiving

a UDP packet, the destination IP is changed to the data source IP and port number. When sending data, the

IP and port number sent to the most recent communication. This mode is usually used in data transmission scenarios where multiple network devices need to communicate with modules and do not want to use TCP due to its high speed and frequency.



19.UDP Server mode



20.UDP server setup and data transferdiagram

3.6. Characteristic Function

3.6.1. Heartbeat Packet

In network pass-through mode, users can choose to have CAN115 send heartbeat packets. Heartbeat packet is divided into network heartbeat packet and CAN port heartbeat packet, only one kind takes effect at the same time. It can also be sent to CAN port equipment.

Heartbeat packet:

When there is no data on the network side, it issent to the network server side regularly, mainly for the purpose of maintaining connection with the server. Works onlyin TCP Client and UDP Client mode. It supports both HEX and ASCII formats.

USR-CAN	1115 V1.0.4				
Q Net Sear	ch Enter (> Cfg Mode (ूरि Query Par	ams Set Params Exit Cfg Mode Fw Update Select Product Help	
Device IP	Device name	MAC address	Ver	Basic Set Interface Set Conversion Set Network Set	
192.168.1.10	6 USR-CAN115	505478466679	V1.0		
				SOCKET:	
				○ TCP Client	
				Server IP/Domain Name 192.168.1.201 Local Port 8234	Remote port: 82
				Short Link Enable: ON Short Link Timeout: 30	UDP data filtering: Of
				Number of client connections: 2 (1-4) Client over limit mechanism: KICK \checkmark	UDP multicast: OI
				Timeout reconnection time: 0 (0-99999s)	
				Heartbeat package:	
				Heartbeat packet type: Network heartbe ~	
				Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn	Heartbeat data format: AS
				Registration package:	
				Registration package type: Close V	
				Sending Direction: Connect with V Registration data:	Registration data format:
				<	,

21.Heartbeat packet setup and data transferdiagram

CAN Port Heartbeat Package:

It can be sent to CAN as a fixed query command by heartbeat packet. Content must conform to CAN format. CAN frame format, frame type and frame ID can be configured.

3.6.2. Registration Packet

In network pass-through mode, users can configure the registration package function. The registration package can be used as an identifier for the server to identify the data source device, or as a password to obtain authorization for server functions.

Registration package can be configured to send registration package or carry registration package, or it can take effect at the same time. Connection sending refers to sending when TCP establishes a connection or UDP is established, and carrying sending refers to splicing registration packet data into the front end of each data packet as a data packet. The data of the registration package can be MAC address or custom registration data, wherein the maximum length of the custom registration package setting content is 40 bytes.

The registration package is only available for TCP client and UDP client mode, and there is no registration package for TCP server and UDP server.

The connectionsending registration packageis mainly used to connect to the server that needs to be registered. The application diagramis as follows:



22. Schematic diagram of connecting to send registration package

Data carryingregistration packet: sending datain the front of the data access registration packet, mainly used for protocol transmission, application diagram is as follows:



23. Schematic diagram of carrying and sending registration package

USR-CAN115 V1.0.4			- 🗆 🗙
Q >	Iode Query Pa	rams Sat Params Evit Cfr Mode Ew Undate Select Product Help	
ce IP Device name MAC a	iddress Ver	Basic Set Interface Set Conversion Set Network Set	
168.1.106 USR-CAN115 5054	47B466679 V1.0	Timeout reconnection time: 0 (0-99999s)	^
		Heartbeat package: Heartbeat packet type: Network heartbr ~	
		Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn	Heartbeat data format: AS
		Registration package: Registration package type: MAC ~	
		Sending Direction: Data with v Registration data:	Registration data format: AS
		Work mode:	
		Packing setup: Packing time: 10 ms (1-254) Package frame rate: 100 (1-100)	0)
		System set:	~

24. Registration package setup and data transferdiagram

3.6.3. CAN Operating Mode

•

N)ev 92

CAN supports three modes of operation: normal, listen only and loopback.

In normal mode, it canreceive and send data normally;

In listen only mode, CAN port works in monitor mode and does not respond;

In loopback mode, the data sent will be received by itself and transmitted to the CAN bus, but the data

cannot be sent to the module. This mode is mainly used for testing.

🕺 USR-CAN115 V1.0.4	
Q Image: Constraint of the second secon	arams Set Params Exit Cfg Mode Fw Update Select Product Help
Device IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set
192 168 1 106 USR-CAR115 505478466679 VI.O	Heartbeat packet type: Network heartbe v Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn Heartbeat data format:
	Registration package: Registration package type: MAC Sending Direction: Data with V Registration data: Registration data Registration data format:
	Work mode:
	Packing setup: Packing time: 10 ms (1-254) Package frame rate: 100 (1-100)
	System set: Clear CAN cache: O Yes No No data restart: 3600 (0,60~65535s) Network AT Command Word: www.usr.cn port: 48899

25.Operation mode settingdiagram

3.6.4. CAN Packaging Mechanism

Since the data on the network side is transmitted in data frames, it is necessary to send CAN data to the network side in frames, which can transmit data more efficiently and quickly. CAN115 can pack data received by CAN according to packing time and packing frame number.



26.CAN package description

CAN packaging mechanism is based on packaging time and packaging length, and when either of them meets, it is packaged and sent.

Packing time: default 10ms, settable, range: 1~254.

USR-CAN1	115 V1.0.4									
Q	- Testan (>	<u>[</u>]	E.	<	Acada Euroland	🛧	· · · · · · · · · · · · · · · · · · ·		
vet Searc	n Enter C	NAC address	Ver Ver	Radic Set Para	Interface Set	Conversion Set	Network Select P	roduct Help		
2.168.1.106	USR-CAN115	505478466679	V1.0	Heartb	eat packet type:	Network heartbe ~				
		Sec. 2			1 71					
					Heartbeat time:	30	s (1-65535)	Heartbeat data:	www.usr.cn	Heartbeat d
				Pagistation	nadragas					
				Registration	раскаде:		1			
				Registration	n package type:	MAC ~				
				Set	nding Direction:	Data with \sim		Registration data:		Registration d
				Work mode	: Normal	🔿 Only L	isten	🔿 Loopback		
				Packing set	up: Packing time:	10	ms (1-254)	Package frame rate:	100] (1-100)
				System set:						
				C	lear CAN cache:	⊖ Yes (● f	No			
				1	No <mark>data res</mark> tart:	3600	(0,60~65535s)			
				Network AT Co	ommand Word:	www.usr.cn		port:	48899]

Packing length: default is 100frames, can be set, range: 1~10 0.

27.Diagram of subcontracting time setting

3.6.5. Clear CAN Cache Data

When the TCP connection is not established, the data received by the CAN port will be placed in the buffer area, and the CAN port will receive abufferof up to 200 frames. When TCP connection is established, CAN portcache data can be setaccording to customer requirements. This function defaults to no cleanup. When the short connection function is enabled in TCP C lient mode, the function of clearing cache data fails. The setup diagramis as follows:

Net Search Enter Cfg Mode Query Params Set Params Exit Cfg Mode Fw Update Select Product Help levice IF Device name MAC address Ver Basic Set Interface Set Conversion Set Network Set 92 160 1.106 NSR-CANI15 505478466679 VI.0. Heartbeat type: Network heartbox Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn Heartbeat data: www.usr.cn Registration package: Registration package type: MAC Sending Direction: Data with Registration data: Registration	-
Net search Enter Cig Mode Query Parans Set Parans Ext Cig Mode Pw Opdate Select Product Heip Levice IF Device name MAC & ddress Ver Basic Set Interface Set Conversion Set Network Set 22.166.1.106 USR-CANLIS 5054774406679 VI.0. Heartbeat packet type: Network heartbeild Heartbeat data: www.usr.cn Heartbeat data: www.usr.cn Heartbeat data: www.usr.cn Heartbeat data: www.usr.cn Heartbeat data: MAC Registration package: Registration package type: MAC MAC Sending Direction: Data with Registration data: Registration data: <th></th>	
92 168.1.106 1038-CAN115 505478466679 11.0 Heartbeat packet type: Network heartbe Heartbeat time: 30 s (1-655335) Registration package: Registration package type: MAC Sending Direction: Data with Registration data: Registration data:	
Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn Registration package: Registration package type: MAC Sending Direction: Data with Registration data: Registration data:	
Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn Registration package: Registration package type: MAC MAC Sending Direction: Data with Registration data: Registration data:	
Registration package: Registration package type: MAC Sending Direction: Data with V Registration data:	leartbeat data
Registration package: Registration package type: MAC Sending Direction: Data with V Registration data:	
Registration package: Registration package type: Sending Direction: Data with V Registration data:	
Registration package type: MAC ~ Sending Direction: Data with ~ Registration data: Ref	
Sending Direction: Data with V Registration data: Re	
	gistration date
Work mode:	
Normal Only Listen Loopback	
Packing setup:	
Packing time: 10 ms (1-254) Package frame rate: 100 (1-100)	
System set:	
Clear CAN cache: 🔿 Yes 💿 No	
No data restart: 3600 (0,60~65535s)	
Network AT Command Word: www.usr.cn port: 48899	

28.Clear Cache Data Settings Illustration

3.6.6. No Data Restart

The function of no data restart (timeout restart) is mainly used to ensure the long-term stable operation of CAN115. When the network port does not receive data for a long time, or the network does not receive data for a long time, CAN115 will restart after exceeding theset time, so as to avoid abnormal conditions affecting communication. Thenormal working time of this function is set to60~65535s, and the default value is3600s. When the settingtime is less than60s, it is set to zero by default, that is, the function is turned off.

The setupdiagram is as follows:

Net Search Enter Cfg Mode Query Pa	rams Set Params Exit Cfg Mode Fw Update Select Product Help
wice IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set
2.168.1.106 USB-CAN115 505478466679 V1.0	Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn
	Registration package: Registration package type: MAC ~ Sending Direction: Data with ~ Registration data:
	Work mode:
	Packing setup: ms (1-254) Package frame rate: 100 (1-254)
	System set:
	Clear CAN cache: 🔿 Yes 💿 No

29.No data restart function

3.7. Firmware Upgrade

Support easy firmware upgrade of equipment through host computer. The specific operation methods are as follows:

Click Firmware Upgrade--> Device automatically fills in target IP address, target MAC address, local IP address--> Click "..." in the Firmware Selection Bar, Select the firmware to be upgraded--> Click Firmware Upgrade--> The device enters the upgrade status, wait for the progress bar to reach 100%, and prompt that the firmware transmission is successful and the firmware upgrade is complete.

Note:

• When upgrading with configuration software, it is recommended to turn off the firewall and antivirus software of the computer (usually in the control panel)

😤 USR-CAN115 V1.0.4		
Q Enter Cfg Mode Query Pa	arams Set Params Exit Cfg Mode Fw Update Select Product Help	
Device IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set	
192.168.1.106 USR-CAN115 605478466679 VI.O	Heartbeat packet type: Network heartbr > Heartbeat time: 30 s (1-65535) Heartbeat data: www.	usr.cn Hear
	Registration Please turn off antivirus software and firewall afore upgradin Registration Destination IP: 100 Se Destination IMAC: 505478466679 Iocal IP 192.168.1.135 Iocal Fireware selection Fireware selection Iocal	Registr
	Packing set	(1-100)
	System set: Clear CAN cache: O Yes O No No data restart: 3600 (0,60~65535s) Network AT Command Word: www.usr.cn port: 4889	9

30.Firmware Upgrade Diagram

3.8. Factory Data Reset

Hardware factory reset: The module can restore the factory settings through hardware. After power-on, press the Reload button, keep the Reload pressed and release it after 3-15s. The hardware factory settings can be restored.

Software factory reset: By setting software, you can restore software factory settings.

AT command to restore factory settings: AT command mode, send command AT+CLEAR, plus Enter, receive correct reply+OK, that is, restore factory settings.

Set software settings:

USR-CAN115 V1.0.4	
Q > हिंदे Net Search Enter Cfg Mode Query Pa	arams Set Params Exit Cfg Mode Fw Update Select Product Help
Device IP Device name MAC address Ver	Basic Set Interface Set Conversion Set Network Set
192.168.1.106 USR-CAN115 50547B466679 V1.0	Heartbeat packet type: Network heartbe V
	Heartbeat time: 30 s (1-65535) Heartbeat data: www.usr.cn Heartbeat data form
	Registration package:
	Registration package type: MAC V
	Sending Direction: Data with V Registration data: Registration data form
	Work mode:
	Normal Only Listen Loopback
	Packing setup:
	Packing time: 10 ms (1-254) Package frame rate: 100 (1-100)
	System set:
	Clear CAN cache: 🔿 Yes 💿 No
	No data restart: 3600 (0,60~65535s)
	Network AT Command Word: www.usr.cn port: 48899
↓	<
Factory reset Restart	

31.Setup Software Schematic

4. Examples of Conversion Patterns

The device supports three conversion modes: transparent conversion, transparent band ID conversion and standard protocol conversion. TCP server, TCP client, UDP server, UDP client protocol under the three modes are applicable, data conversion is more flexible. The following are detailed examples of three conversion modes.

4.1. Transparent Conversion

In the transparent conversion mode, CAN115 receives data from one bus and immediately converts it to the other bus side without adding data or modifying the data. This enables the exchange of data formats without changing the data content, and the converter is transparent to both ends of the bus.

CAN message frame information (frame type part) and frame ID come from user configuration in advance, and frame type and frame ID remain unchanged during conversion. The user can choose whether to convert the frame information and frame ID.

In this way, the communication burden of users will not be increased, but the data can be converted in real time, and the transmission of large traffic data can be undertaken.

4.1.1. Ethernet to CAN-transparent conversion

Network data to CAN message: all data from the network end are sequentially filled into the data field of CAN message frame. The frame information (frame type part) and frame ID are configured in advance.

etwork Side		CAN Information			
Data1		Frame Information	Frame Information	Frame Information	
Data2	France 10		User Configuration	User Configuratio	
ata3 ata4		FrameID	User Configuration	User Configuratio	
			Data1	Data9	
ta5 ta6 ta7			Data2	Data10	
			Data3		
		Data Field	Data4		
			Data5		
			Data6		
			Data7		
10			Data8		

32.Transparent transmission-Ethernet data to CAN

Examples:

Under TCP server protocol, the frame ID is configured as standard frame, CAN ID is "0006", and the

conversion example is as follows:

USB-CAN Iool V9.11 - CHUANGXIN Technology - L X	TCP/UDP Net Assistant	
Device(D) Operation(Q) Settings(S) Information(I) View(V) Help(H) Language(L) Send Data Format: Standard Type: Data CANTD(HEX): 00 00 02 Channel: 1 Image: Control of the control of	Settings Data log 11 Protocol [2025-01-23 11:24:00.662]# The server is connected. [21 Remote Host Addr [2025-01-23 11:24:25.011]# SEND HEX> [3] Remote Host Port [3] Remote Host Port [3] Remote Host Port [2025-01-23 11:24:25.011]# SEND HEX> [3] Remote Host Port [2025-01-23 11:24:25.01]# SEND HEX> [3] Remote Host Port [2025-01-23 11:24:25.01]# SEND HEX> [3] Remote Host Port [3] Octoornect	NetAssist V5.0.1 🧇 🤇
Index System Time Time Stamp Channel Directio Frame ID Type Format DLC Data ● 00000 11:24:25.036 0x60245B0 ch1 Receive 0x0006 Data Standar.0x08 x 01 02 03 04 05 06 07 00 ● 00001 11:24:25.036 0x60245B8 ch1 Receive 0x0006 Data Standar.0x03 x 08 09 0A	C ASCII C HEX ↓ Log Display Mode ↓ Auto Linefeed ↓ Hide Received Data Save Recv to File AutoScroll Clear Send Options C ASCII C HEX ↓ Use Escape Chars ↓ Auto Append Bytes ↓ Auto Append Bytes ↓ Send from File Data Send 01 02 03 04 05 06 070 08 09 0A Short out Kit story	√ Clear & Clear Send



4.1.2. CAN to Ethernet--Transparent Conversion

For CAN bus messages, receive a frame of CAN messages immediately forward a frameto the network.

If the configuration enables frame information, the converter operates by adding frame information of

CAN messages to the first byte of the network data frame. CAN frame information is not converted when unchecked.

If the enable frame ID is enabled, the converter will add the frame ID of the CAN message before the frame data of the network data frame and after the frame information (e.g. enable frame information).



34.Transparent transmission--CAN to Ethernet data

Examples:

In TCP server mode, and the conversion is as follows:

USB-CAN Tool V9.11 - CHUANGXIN Technology — 🗆 X	
Device(D) Operation(Q) Settings(S) Information(I) View(V) Help(H) Language(L)	
Send Data Format: Standard V Type: Data VCANID(HEX): 00 00 00 23 Channel: 1 V Number to send: 1 ID Inc.	(11)Protocol [2025-01-23 11:29:04.212]# The server is connected. [2] Remote Host Addr [2025-01-23 11:29:04.212]# The server is connected.
Date(HEX): OI O2 U3 04 Send Send Send Cycle: 300 ms Date Inc. CAM Routing ID Filter Frm saved: 0 Stop send Send file Unused CAMI settings CAME settings CAME settings Came settings Save	Instruction for the instruction of the
Statistics:Chl Frm/s R: 0 Frm/s T: 0.3 Index System Time Time Stamp Channel Directic Frame ID Type Format DLC Data 000000 11:29:07.119 - chl Send 0x0023 Data Standar 0x04 x 01 02 03 04	Recv Options C ASCII C HEX C Log Display Mode Auto Linefeed Hide Received Data Save Recv to File
	AttoSoroll Liter
	I Auto Append Sytes I D1 D2 01 02 03 04 05 06 070 08 09 0A I C cycle 5000 ms Sand
< · · · · · · · · · · · · · · · · · · ·	12/7 RX48 TX58 Reset

35. Transparent Transmission--CAN to Ethernet Data Transmission Example

4.2. Transparent Zone ID Conversion

Transparent band identification transformation is a special use of transparent transformation and has no protocol attached. This method can convert the "address" inEthernet datainto the identification field of CAN message, where the starting position and length of frame ID inEthernet datacan be configured. The converter will extract this frame ID during conversion and fill it in the frame ID field of the CAN message as the ID of the CAN message whenthe Ethernet data isforwarded. Similarly, when CAN messages are converted toEthernet data, the ID of CAN messages is also converted to the corresponding position ofEthernet data.

In this way, the converter adapts to the user's custom protocol to the maximum extent possible.

Note: In this conversion mode, the CAN ID of the CAN parameter setting item of the configuration software is invalid, because the identifier (frame ID) sent is filled with data in the Ethernet data described above.

4.2.1. Ethernet to CAN-Transparent Band ID Conversion

Configure the CAN frame type and the start address and length of the "Frame ID" of the CAN message carried in the Ethernet data. The range of start address is 0~7; the length range is standard frame: 1~2, extended frame: 1~4.

During conversion, CAN message "frame ID" in Ethernet data is converted into CAN frame ID field according to prior configuration. If the configured transparent tape ID length is less than the frameID length of the frame type of the CANmessage,0 is added to the high byte of the frameIDinthe CANmessage.

ldress	Ethernet
	Data
0	Data1
1	Data2
	(ID1)
2	Data3
	(ID2)
3	Data4
4	Data5
5	Data6
-	
6	Data/
7	Data8
	
ND	Data NI 1
IN-2	Data N-T
N-1	Data N

36.Transparent tape ID transmission-serial frame to CAN

Examples:

In TCP server mode, the configuration frame type is extended frame, the starting address is 1, the

length is 2, and the serial frame is converted to CAN as follows:

USB-CAN Tool V9.11 - CHUANGXIN Technology – 🗆 🗙		TCP/UDP Net Assistant	- D 3
Device(D) Operation(D) Settings(S) Information(I) View(D) Help(H) Language(L) Send Data Format: Standard V Type: Data VCANID(NEX): 00 00 00 23 Channel: 1 VMamber to send: 1 IID Inc. Data(NEX): 01 02 03 04 Send Send Send Send Cycle: 300 ms Data Inc. CAM Routing ID Filter CAMI settings CAME settings Frm saved: 0 Stop send Send file CAMI settings CAME settings Statistics:Chl Frm/s R: 0 Frm/s T: 0 Index System Time Stamp Channel Directio Franz ID Index System Time Stamp Channel Directio Franz ID Index System Time Time Stamp Channel Directio Franz ID Index Sys	Settings (1) Protocol TCP Client (2) Remote Host Addr [32:168:1.106 (3) Remote Host Podt (3) Remote Host Podt (3) Remote Host Podt (4) Poissonnect Recv Options C ASCII © HEX (5) Auto Linefeed Hide Received Data Save Recv to File AutoScirol Clear Send Options C ASCII © HEX Use Fasane Obas	Data log [2025-01-23 11:32:57.035]# The server is connected. [2025-01-23 11:32:05.086]# SEND HEX> 01 02 03 04 05 06 07 08 09 0A	NetAssist V5.0.1 🖗
	AT CMD auto CRLF Auto Append Bytes Send from File Cycle 5000 ms Shortcut History	Data Send 01 02 03 04 05 06 07 08 09 0A	Clear & Clear Send
< ×	🚦 🎯 Ready!	12/8 RX:48	TX:68 Reset

37.Transparent tape ID transmission--Network data to CAN example

4.2.2. CAN to Ethernet-Transparent Band ID Conversion

For CAN messages, a frame is immediately forwarded upon receipt of the frame, and the ID in the

received CAN message is converted accordingly according to the position and length of the CAN frame ID configured in advance in Ethernet data during each forwarding. Other data are forwarded sequentially.

Note: If the CAN frame ID length is greater than the set transparent tape ID length, only the lower byte is converted to the corresponding position of the serial frame. For example: CAN frame ID is 01020304, the set transparent band ID length is 2, then only 0304 will be converted to the corresponding position in the serial frame.

Ethernet		CAN Information				
Data Data1		Frame Information	Frame Information			
EramolD2			FrameID1			
FidilieiDS	ata2 Data2 Data3 Data4 Data5 Data6 Data7 Data8	Eramo ID	FrameID2			
FrameID4		Flame iD	FrameID3			
Data2			FrameID4			
Data3		Data Field	Data1			
Deted			Data2			
Data4			Data3			
Data5			Data4			
Data6			Data5			
D at a 7			Data6			
Data/			Data7			
Data8			Data8			

38.Transparent tape ID transmission--CAN to serial frame

Examples:

Configuration frame type is extended frame, starting address is 4, length is 2, CAN frame transfer serial is as follows:

USB-CAN Tool V9.11 - CHUANGXIN Technology		— 🗆 🗙	-			TT sta
Device(D) Operation(O) Setting(S) Information(I) View(M)	Help(H) Language(L)			TCP/UDP Net /	Assistant	·□ - □ >
USB-CAN Tool V9.11 - CHUANGXIN Technology Device() Operation() Settings() Information() View(V) Send Data Format: Extended Type: Data CANID (HEX): 01 02 03 Data(HEX): 10 11 12 13 14 15 16 Send CAN Routing ID Filter CAN Routing ID Filter CAN settings CAN2 settings Statistics:Ch1 Frm/s R: 0 Frm/s T: 0 Index System Time Time Stamp Channel Directio Frame II 000000 11:34:47.524 - ch1 Send 0x010205	Help(H) Language(L) 04 Channel: 1 V Number to send: Send Cycle: Prm saved: 0 Receive Enable Statistics: Ch2 Frm/s R: 0 Frm/s T: 0 1 Type Format DLC Data 04 Data Extende: 0x07 x 10 11	1 ID Inc. 300 ns Date Inc. Stop send Send file Clear Save 12 13 14 15 16	Settings (1) Protocol TCP Client [2] Remote Host Addr [32] TCP Client [3] Remote Host Port [3] Remote Host Port [3] Remote Host Port [3] Case (2) Second (2) Second	Data log [2005-01-23 11:34:96.977]# The : [2005-01-23 11:34:47.596]# EECV [0 11 12 13 03 04 14 15 16 [0 11 12 13 03 04 14 15 16 [0 10 20 3 04 05 06 07 08 09 0A	verver is connected. HEX>	NetAssiet V5.0.1 @ C
			Cycle 5000 ms Shortout History	13/8	BX 57	Send

39. Transparent tape ID transmission--CAN to serial frame example

4.3. Standard Protocol Conversion

Standard CAN frame format, each CAN frame contains 13 bytes, 13 bytes of content includes CAN frame information + frame ID + data frame.

By configuring the frame information correctly (the first byte of data), you can flexibly send out standard frames, extended frames, and even remote frames. The details of standard frames, extended frames and even remote frames can be obtained by correctly parsing the 13-byte frame data.

Note:

(1) In this conversion mode, the CAN parameter items "CAN ID" and "Frame Type" of the configuration software are invalid, because the frame ID sent at this time is filled with the frame ID data in the 13-byte serial frame described above, and the frame type is determined by the frame information in the 13-byte serial frame.

(2) In this mode, the conversion must be performed in strict accordance with the 13-byte serial data format. First of all, we must ensure that the frame information is correct, the reserved bit must be zero, and the data length cannot be greater than 8, otherwise it will not be converted. Each frame is fixed to be 13 bytes, if insufficient must be filled with 0. Serial data satisfying the format of 13 bytes in the same serial data frame corresponds to a CAN message, and serial data frames less than 13 bytes are not converted.

(3) The converted serial data frames are aligned with 13 bytes.

The standard CAN frame format is as follows:

CAN Fixed Format (1 CAN frame contains 13 bytes)								
Frame	Frame ID	Frame data						
Information								
1Byte	4Byte	8Byte						

Frame information: length 1 byte, used to identify frame information: frame type, frame length.

Bit7							Bit0
FF	RTR	retain	retain	B3	B2	B1	BO

FF: Identification bit of standard frame and extension frame, 1 is extension frame, 0 is standard frame

RTR: identification bit of remote frame and data frame, 1 is remote frame, 0 is data frame

Reserved: reserved bit must be filled in 0, not 1.

B3-B0: data length bits, identifying the data length of the CAN frame.

Frame ID:Length 4 bytes; high order first, low order last. The standard frame significance bit is 11 bits and the extended frame significance bit is 29 bits.

12h	34h	56h	78h	00h	00h	01h	23h			
Extended Fi	rame ID: 0	x12345678	3	This ID can represent either an						
				extended frame ID or a standard						
				frame ID.						
				Extended Frame ID: 0x0000123						
				Standard Frame ID: 0x0123						
				Extended frames and standard fran						
				IDs are d	istinguishe	ed by fram	ie			
				informati	ion					

Frame data: length 8 bytes, insufficient must be filled with 00.

Examples:

CAN LICS	CANLT	1 CLILIANICS	INI Taskas									2						王六
Device(CAN TOOL 9.1	CHUANG		siogy	View00	Halp(H)	anguage(1		_				τ	CP/UDP Net A	ssistant		×
Send Forn Data(H) CAN R. Stati Frm/s Index 000001	Data at: Standard (x): 01 02 03 0- vating Unused stics: Ch1 R: 0 F System Time 11:37:58.696	Type: Da Type: Da Type: Da Type: Da CAN Time Stamp Ox67E46E5	ta CA Send ter settings Channel ch1 ch1	NID (HEX):	00 00 00 2 ettings Frame ID 0x0023 0x0001	Frm/S Statis: Frm/S R: Type Data Data	I: 1 V saved: 0 Receive E sios: Ch2 0 Format Standar,	Number to s Send Cy nable Frm/s T: 0 DLC Data 0x04 x 0	rele: 3 S 1 1 1 02 03	00 send Clear 04 05 06	☐ ID Inc. □ Date Inc Send file □ Save 07 08		Settings (1) Protocol TCP Client (2) Remote Host Addr [32] Remote Host Addr [32] Remote Host Port [32] (3) Remote Host Port [32] (4) Port [3] Remote Host Por	Data log [2025-01-23 11:37 [2025-01-23 11:37 [2025-01-23 11:37 04 00 00 00 23 01 [2025-01-23 11:37 08 00 00 00 01 01 [2025-01-23 11:37 08 00 00 00 01 01 [2025-01-23 11:37 [208 00 00 00 01 01 [208 00 00 00 01 [208 00 00 00 01 [208 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 01 [208 00 00 00 00 00 00 [208 00 00 00 00 00 00 [208 00 00 00 00 00 00 00 [208 00 00 00 00 00 00 [208 00 00 00 00 00 00 [208 00 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 00 [208 00 00 00 00 [208 00 00 00 00 [208 00 00 00 [208 00 00 00 00 [208 00 00 00 [208	:50.643]# The s 54.257]# REC 02 03 04 00 00 :58.692]# SEND 02 03 04 05 06	erver is connecte HEX> 07 08	NetAss 2d.	<u>iet V5.01</u>
												1	AT CMD auto CRLF Auto Append Bytes Send from File Cycle 5000 ms Shorteut Kistory	Data Send	02 03 04 05 06	07.08	TV.01	Clear Clear

40.Standard Protocol Transmission Examples

5. Contact Information

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7. Update History

File version	Update content	Turnover time
V1.0	first edition	2025-02-11





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