

**TOSUN**



# GW2112 Product Manual

[tosunai.com](http://tosunai.com)



## Why Need CAN (FD) Relay and Message Conversion

### What Can the GW2112 Offline Gateway Do

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## **1. About this User Manual**

### **1.1 Warranty**

### **1.2 Copyright**

## 2. GW2112

### 2.1 Overview



## 2.2 Features

- ✓
- ✓
- ✓
- ✓ - -

	-
	10% 90% (non-condensing)

## 2.4 Electrical Data

Parameter		Test Condition	Minimum Value	Typical Value	Maximum Value	
	USB power supply	CAN forwarding	--		--	V
	External DC power supply	CAN forwarding				V
	USB power supply	CAN forwarding	--		--	A
	External DC power supply	CAN forwarding	--		--	A
	External DC power supply	CAN forwarding	--		--	W
CAN Interface	Bus pin voltage resistance	CANH CAHL	-	--		V
		Leakage current less than 1mA		--	--	VDC

## 2.5 Mechanical Data



## 2.6 Scope of Delivery

✓



✓



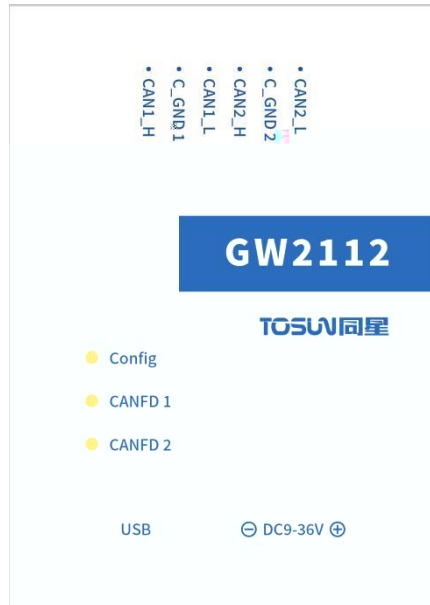
## 2.7 Hardware Interface



▼  
 ▼  
 ▼

6PIN Phoenix Terminal Interface	PIN Number	Definition


## 2.8 LED



Indicator	Definition

Color	Description

## 2.9 Optional Accessories

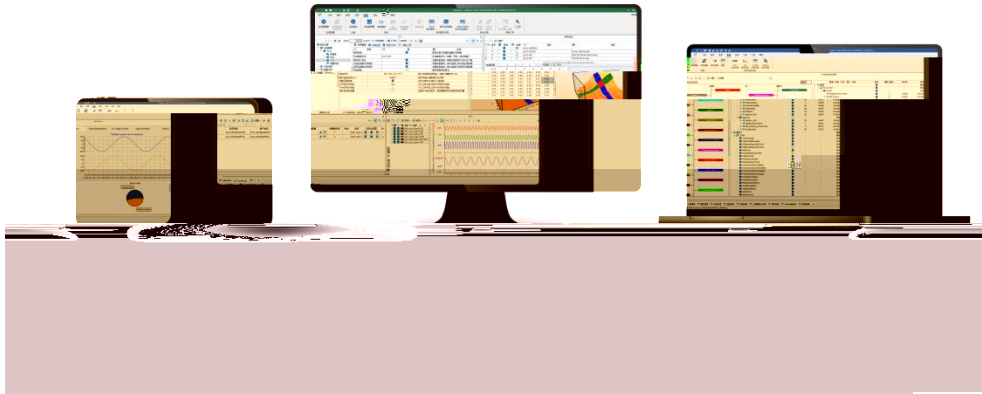
## **3. Quick Start**

### **3.1 System Connection**



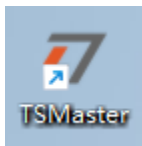
### **3.2 Driver Installation**

### 3.3 Software Overview



### 3.4 Software Installation

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### 3.5 GW2112 Toolbox

Analysis **Hardware** Design Simulation Code Generation Test Application Project Tools Help

Channel Selection Network Hardware Mapping

GW2112

ration

Scan Devices No Device Detected at the Moment

Open Device Close Device Read Device DownloadCfg

Channel Filtration Route Customization

**Channel1**

Controller Type: CAN Controller Mode: 正常模式

Arbitrate Field SJW: 15 Data Field SJW: 3

Arbitrate seg1, seg2: 63 16 Data seg1, seg2: 15 4

Encryption Algorithm: ARC4 Algorithm Key: FF FF FF FF

Receive Decryption:  Encrypt Initialized Vector: FF

Resistance Activate:  Encryption Fill: FF

Basic Router:  Send Encryption:

**Channel2**

Controller Type: CAN Controller Mode: 正常模式

Arbitrate Band (Kbps): 500 Data Rate (Kbps): 2000

Arbitrate seg1, seg2: 63 16

Encryption Algorithm: ARC4 Algorithm Key: FF FF FF FF

Receive Decryption:  Encrypt Initialized Vector: FF

Resistance Activate:  Encryption Fill: FF

Basic Router:

Configure Password: 00 00 00 00 00 00 00 00



2024.10.26.14 GW2112

**Device Operation**

Scan Devices: No Device Detected At The Moment

Open Device Close Device Read Device DownloadCfg

Channel Filtration Route Customization

**Channel1**

Controller Type:	CAN	Controller Mode:	正常模式
Arbitrate Baud(Kbps):	500	Data Baud(Kbps):	2000
Arbitrate Field SJW:	15	Data Field SJW:	3
Arbitrate seg1,seg2:	63 16	Data seg1,seg2:	15 4
Encryption Algorithm:	ARC4	Algorithm Key:	FF FF FF FF FF
Receive Decryption:	<input type="checkbox"/>	Encrypt Initialized Vector:	FF
Resistance Activate:	<input type="checkbox"/>	Encryption Fill:	FF
Basic Route:	<input type="checkbox"/>	Send Encryption:	<input type="checkbox"/>

**Channel2**

Controller Type:	CAN	Controller Mode:	正常模式
Arbitrate Baud(Kbps):	500	Data Baud(Kbps):	2000
Arbitrate Field SJW:	15	Data Field SJW:	3
Arbitrate seg1,seg2:	63 16	Data seg1,seg2:	15 4
Encryption Algorithm:	ARC4	Algorithm Key:	FF FF FF FF FF
Receive Decryption:	<input type="checkbox"/>	Encrypt Initialized Vector:	FF
Resistance Activate:	<input type="checkbox"/>	Encryption Fill:	FF
Basic Route:	<input type="checkbox"/>		



2024.10.26.14 GW2112

### Device Operation

Scan Devices No Device Detected At The Moment

Open Device Close Device Read Device DownloadCfg

Channel Filtration Route Customization

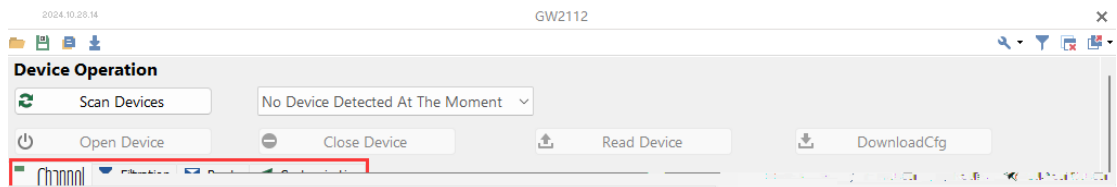
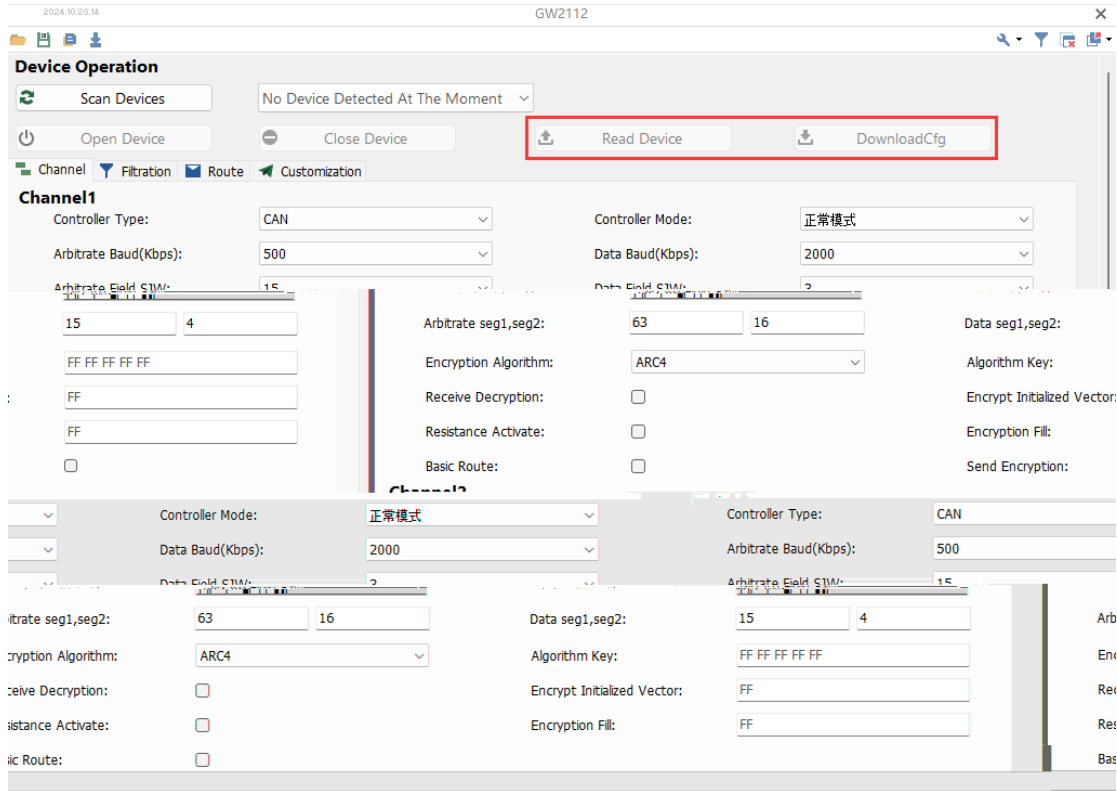
#### Channel1

Controller Type:	CAN	Controller Mode:	正常模式	
Arbitrate Baud(Kbps):	500	Data Baud(Kbps):	2000	
Arbitrate Field SJW:	4	Data Field SJW:	15	
Arbitrate seg1,seg2:	63	16	Data seg1,seg2:	15
Encryption Algorithm:	ARC4	Algorithm Key:	FF	
Receive Decryption:	<input type="checkbox"/>	Encrypt Initialized Vector:	FF	
Resistance Activate:	<input type="checkbox"/>	Encryption Fill:	FF	
Basic Route:	<input type="checkbox"/>	Send Encryption:	<input type="checkbox"/>	

#### Channel2

Controller Type:	CAN	Controller Mode:	正常	
Arbitrate Baud(Kbps):	500	Data Baud(Kbps):	2000	
Arbitrate Field SJW:	15	Data Field SJW:	3	
Arbitrate seg1,seg2:	63	16	Data seg1,seg2:	15
Encryption Algorithm:	ARC4	Algorithm Key:	FF FF FF FF FF	
Receive Decryption:	<input type="checkbox"/>	Encrypt Initialized Vector:	FF	
Resistance Activate:	<input type="checkbox"/>	Encryption Fill:	FF	
Basic Route:	<input type="checkbox"/>	Send Encryption:	<input type="checkbox"/>	





### 3.6 Function Configuration

**3.6.1 Device Connection**

**3.6.2 Read Configuration and Download Configuration**

**3.6.3 Channel Configuration**

Configure PassWord:	<input type="text" value="00 00 00 00 00 00 00 00"/>
---------------------	--

2024.10.26.14 GW2112

Read Device DownloadCfg

Controller Mode: 正常模式  
Data Baud(Kbps): 2000  
Data Field SJW: 3  
Data seg1,seg2: 15 4  
Algorithm Key: FF FF FF FF FF  
Encrypt Initialized Vector: FF  
Encryption Fill: FF  
Send Encryption:

Controller Mode: 正常模式  
Data Baud(Kbps): 2000  
Data Field SJW: 3  
Data seg1,seg2: 15 4

Encrypt Initialized Vector: FF  
Encryption Fill: FF

**Device Operation**

Scan Devices No Device Detected At The Moment  
Open Device Close Device

Channel Filtration Route Customization

**Channel1**

Controller Type: CAN  
Arbitrate Baud(Kbps): 500  
Arbitrate Field SJW: 15  
Arbitrate seg1,seg2: 63 16  
Encryption Algorithm: ARC4  
Receive Decryption:   
Resistance Activate:   
Basic Route:

**Channel2**

Controller Type: CAN  
Arbitrate Baud(Kbps): 500  
Arbitrate Field SJW: 15  
Arbitrate seg1,seg2: 63 16  
Receive Decryption:   
Resistance Activate:   
Basic Route:



Controller Type: CAN



Controller Mode: 正常模式  
Data Baud(Kbps): 正常模式  
限制监听模式  
总线监听模式



Arbitrate Baud(Kbps): 500  
Arbitrate Field SJW: 15  
Arbitrate seg1,seg2: 63 16

Data Baud(Kbps): 2000  
Data Field SJW: 3  
Data seg1,seg2: 15 4

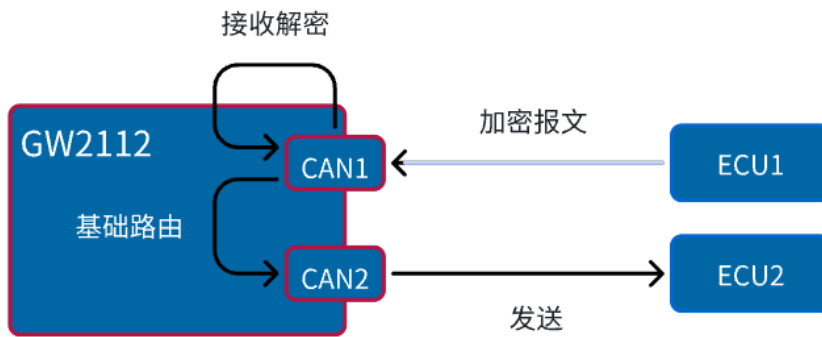
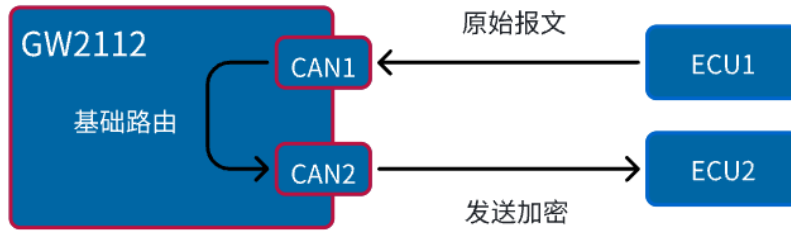


Resistance Activate:



Encryption Algorithm: ARC4  
Receive Decryption: ARC4  
Resistance Activate: DES\_ECB  
Basic Route: AES\_ECB  
3DES\_ECB  
3DES\_CBC  
AES\_CTR  
Arbitrate seg1,seg2: 63 16  
Encryption Algorithm: ARC4





Configure PassWord:

00 00 00 00 00 00 00 00

### 3.6.4 Configuration Filtering

Channel Filtration Route Customization

Channel: CAN1 Filter Format: 标准帧ID FilterID: 0x FF MaskID: 0x FF

+ Add - Delete ✖ Clear

Mask ID	Channel	Filter Format	Filter ID
---------	---------	---------------	-----------

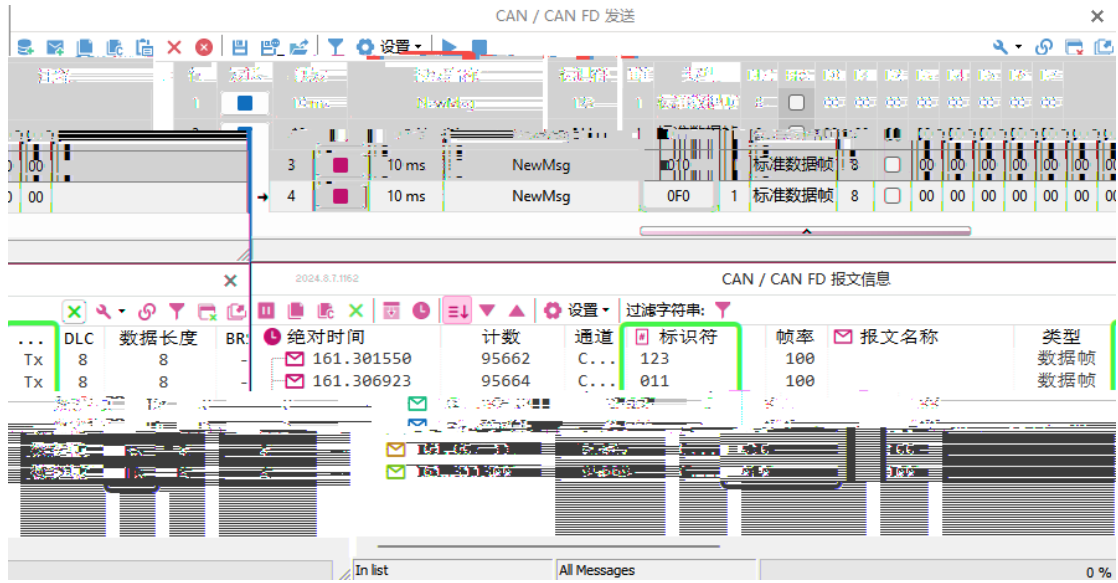


Channel Filtration Route Customization

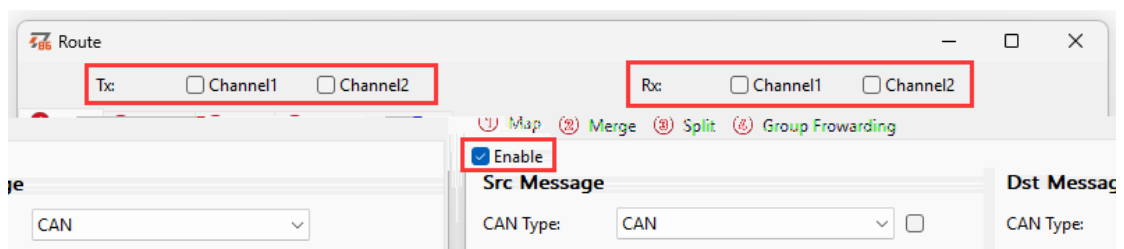
Channel: CAN1 Filter Format: 标准帧ID FilterID: 0x 11 MaskID: 0x F0

+ Add - Delete ✖ Clear

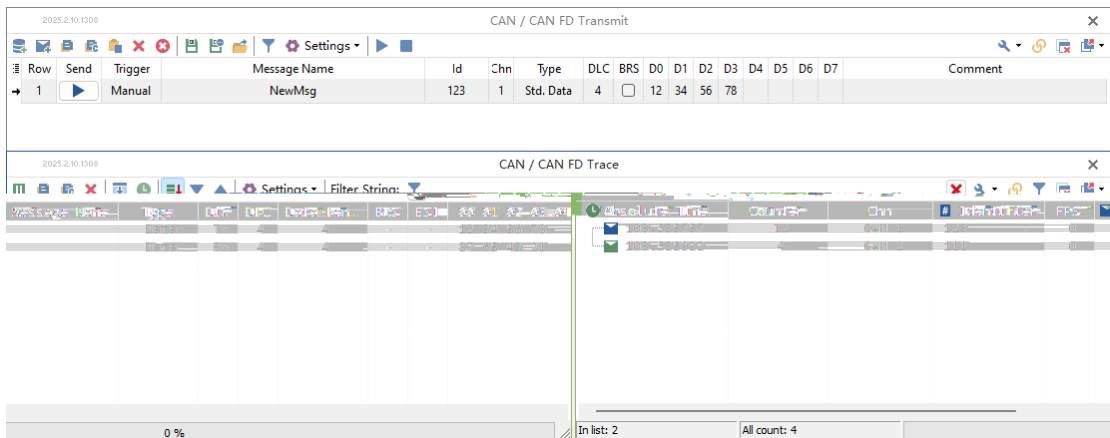
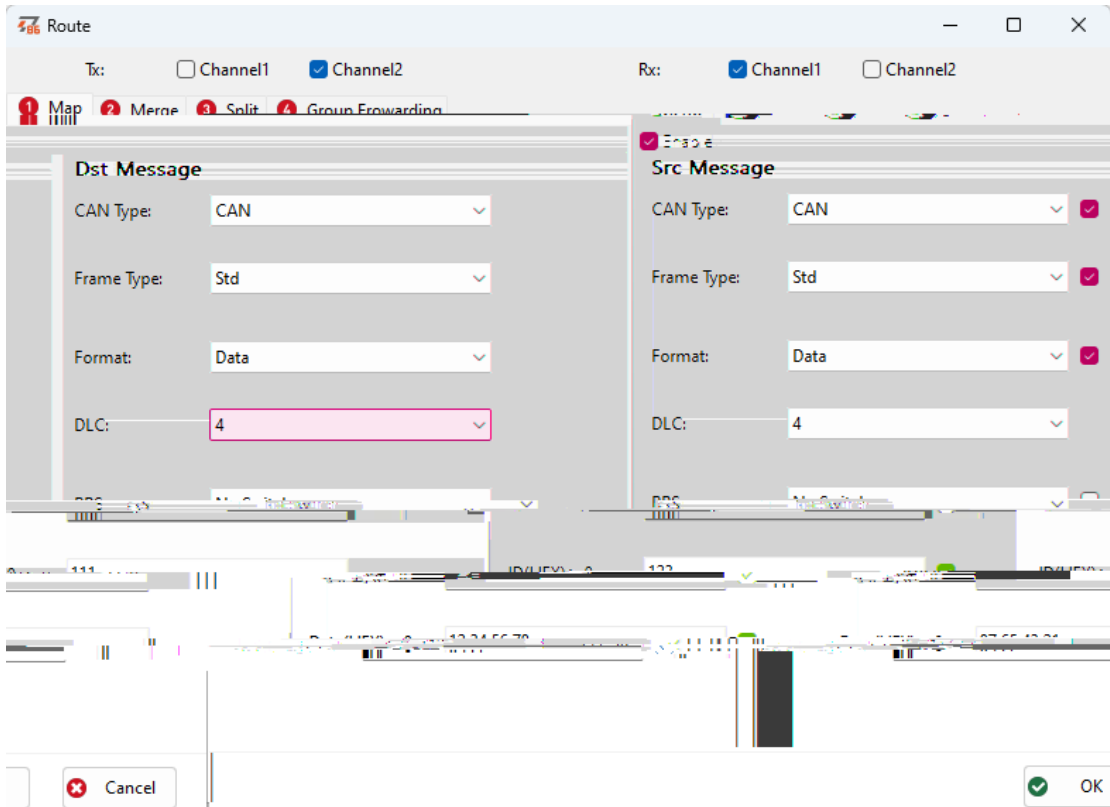
Channel	Filter Format	Filter ID	Mask ID
CAN1	标准帧ID	11	F0



### 3.6.5 Routing Configuration









Route

Tx:  Channel1  Channel2 Rx:  Channel1  Channel2

1 Map 2 Merge 3 Split 4 Group Forwarding

Enable

**Src Message**

ID(HEX): 0x  CAN Type:

Format:  Frame Type:

DLC:  BRS:

ID	CAN Type	Format	Frame Type	DLC	BRS	SignalStrea
123	CAN	Data	Std	8	0	Byte
111	CAN	Data	Std	8	0	Byte

**Dst Message**

ID(HEX): 0x

CAN Type:

Format:

Frame Type:

DLC:

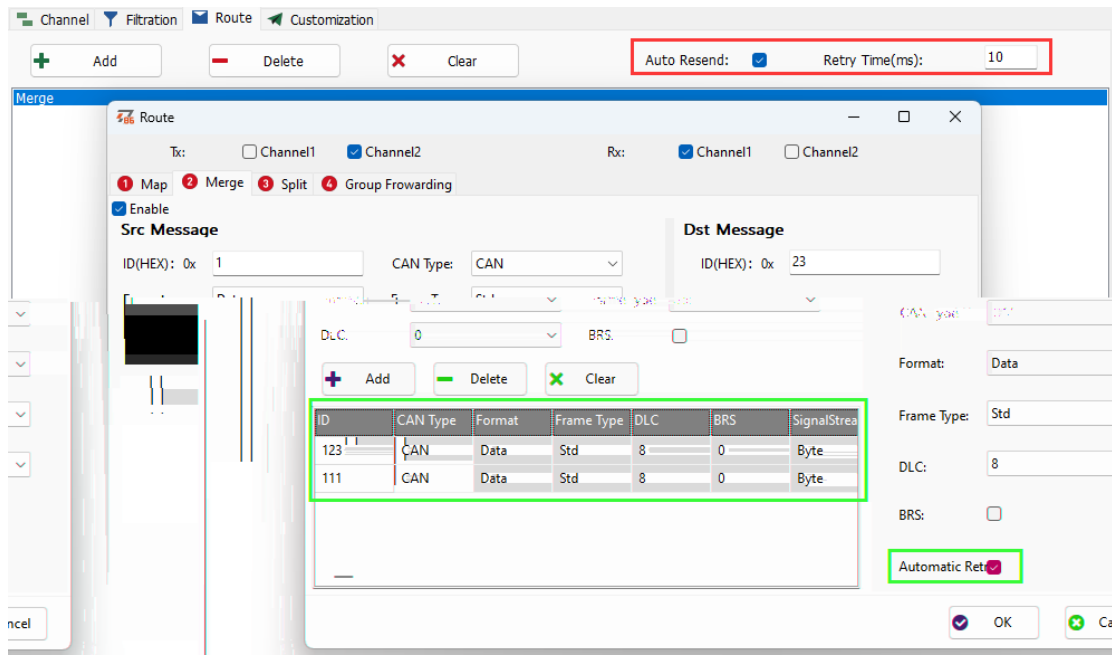
BRS:

Automatic Retr







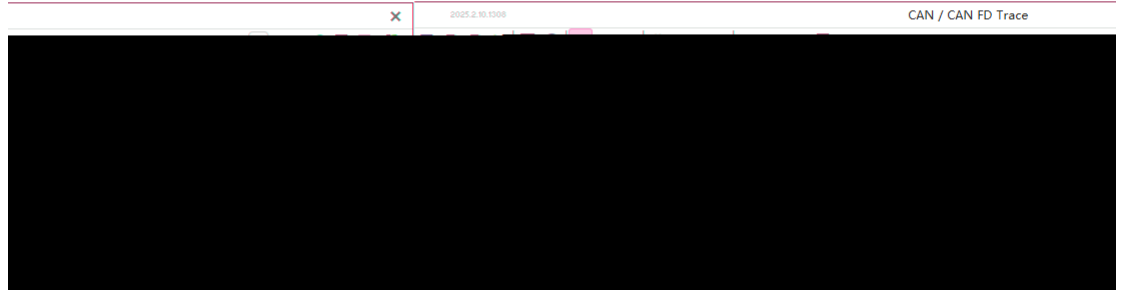


Dst Start Endian: 1 DLC: 1 Src Start Endian 1

Dst Start Endian: 3 DLC: 1 Src Start Endian 3

2025.2.10.13:08 CAN / CAN FD Transmit

3	44	55	66	77	88	1	▶	Manual	NewMsg	123	1	Std. Data	8	<input type="checkbox"/>	11	22	3
B	CC	DD	EE	FF	00	2	▶	Manual	NewMsg	111	1	Std. Data	8	<input type="checkbox"/>	99	AA	B



Route

Tx:  Channel1  Channel2 Rx:  Channel1  Channel2

1 Map 2 Merge 3 Split 4 Group Forwarding

Enable

**Src Message**

ID(HEX): 0x

CAN Type:

Format:

Frame Type:

DLC:

BRS:

**Dst Message**

ID(HEX): 0x  CAN Type:

Format:  Frame Type:

DLC:  BRS:

ID	CAN Type	Format	Frame Type	DLC	BRS	SignalStrea
123	CAN	Data	Std	8	0	Byte
111	CAN	Data	Std	8	0	Byte



2025.2.10.19:08 CAN / CAN FD Transmit

Row	Send	Trigger	Message Name	Id	Chn	Type	DI	C	RRS	D0	D1	D2	D3	D4	D5	D6	D7	Comment	
33	44	55	66	77	88														
				1		Manual													NewMsg

---

2025.2.10.19:08 CAN / CAN FD Trace

Type	Id	Chn	Length	Time	Filter String

In list: 3 All count: 3 0 %



Route

Tx:  Channel1  Channel2 Rx:  Channel1  Channel2

1 Map 2 Merge 3 Split 4 Group Forwarding

Enable

SrcMsgID(HEX):

DstMsgID(HEX):

ID Offset Length(DEC):

OK Cancel

The image shows two windows from a CAN software interface. The top window, titled "CAN / CAN FD Transmit", contains a table with the following data:

Row	Send	Trigger	Message Name	Id	Chn	Type	DLC	BRS	D0	D1	D2	D3	D4	D5	D6	D7	Comment
1	[Send]	Manual	NewMsg	001	1	Std. Data	8	<input type="checkbox"/>	11	22	33	44	55	66	77	88	
2	[Send]	Manual	NewMsg	002	1	Std. Data	8	<input type="checkbox"/>	00	00	00	00	00	00	00	00	
3	[Send]	Manual	NewMsg	003	1	Std. Data	8	<input type="checkbox"/>	00	00	00	00	00	00	00	00	
4	[Send]	Manual	NewMsg	004	1	Std. Data	8	<input type="checkbox"/>	00	00	00	00	00	00	00	00	
5	[Send]	Manual	NewMsg	005	1	Std. Data	8	<input type="checkbox"/>	00	00	00	00	00	00	00	00	
6	[Send]	Manual	NewMsg	006	1	Std. Data	8	<input type="checkbox"/>	00	00	00	00	00	00	00	00	

The bottom window, titled "CAN / CAN FD Trace", shows a detailed view of a message with the following parameters:

- Id: 2814.534279
- Chn: CAN 2
- Type: CAN 2
- DLC: 7
- BRS:
- Data: 00 00 00 00 00 00 00
- Direction: Tx

### 3.6.6 Custom configuration



The image shows the "Customization" configuration panel with the following settings:

- Channel: [Dropdown menu]
- Filtration: [Dropdown menu]
- Route: [Dropdown menu]
- CAN Message Enable:
- Timer Enable:
- Run Idle Enable:
- Timer trigger time:



名称	修改日期	类型	大小
 extern_api_without_buildtools	2023/9/11 11:16	文件夹	

extern\_api\_without\_buildtools > build > 在 build 中搜索

排序 查看

名称	修改日期	类型	大小
src	2024/12/10 14:47	文件夹	
extern_api.bin	2024/12/10 14:47	BIN 文件	2 KB
extern_api.elf	2024/12/10 14:47	ELF 文件	71 KB
extern_api.hex	2024/12/10 14:47	HEX 文件	4 KB
extern_api.list	2024/12/10 14:47	LIST 文件	28 KB
extern_api.map	2024/12/10 14:47	Linker Address ...	23 KB
extern_api_build.bat	2023/6/1 13:22	Windows 批处理...	1 KB
extern_api_clean.bat	2023/6/1 13:21	Windows 批处理...	1 KB
makefile	2023/6/1 9:46	文件	4 KB
objects.list	2023/5/31 18:59	LIST 文件	1 KB
objects.mk	2023/5/31 17:27	MK 文件	1 KB
sources.mk	2023/5/31 18:59	MK 文件	1 KB



extern\_api\_without\_buildtools > build > 在 build 中搜索

排序 查看

名称	修改日期	类型	大小
src	2024/12/10 14:47	文件夹	
extern_api.bin	2024/12/10 14:47	BIN 文件	2 KB
extern_api.elf	2024/12/10 14:47	ELF 文件	71 KB
extern_api.hex	2024/12/10 14:47	HEX 文件	4 KB
extern_api.list	2024/12/10 14:47	LIST 文件	28 KB
extern_api.map	2024/12/10 14:47	Linker Address ...	23 KB
extern_api_build.bat	2023/6/1 13:22	Windows 批处理...	1 KB
extern_api_clean.bat	2023/6/1 13:21	Windows 批处理...	1 KB
makefile	2023/6/1 9:46	文件	4 KB
objects.list	2023/5/31 18:59	LIST 文件	1 KB
objects.mk	2023/5/31 17:27	MK 文件	1 KB
sources.mk	2023/5/31 18:59	MK 文件	1 KB



```
uint32_t Event_Handle(const Event *Event_p, const Action_Source* Action_p);  
void Event_Runtime(const Action_Source* Action_p);
```



```
typedef struct {  
    Event_Type Event_Sources;  
    Event_Argument Argument;  
} Event;
```

```
// Trigger event, trigger reason, interface for operating peripherals, whether the command  
needs to be reported to the upper layer, user space
```

```
typedef struct {  
    uint32_t Id;  
    uint8_t SourcePort; // From which channel: 0 for channel 1, 1 for channel 2  
    uint8_t FrameType; // 0 for remote frame, 1 for data frame  
    uint8_t IdType; // 0 for standard frame, 1 for extended frame  
    uint8_t CanType; // 0 for classic CAN, 1 for FDCAN  
    uint8_t BRS; // 0 for off, 1 for on  
    uint8_t DataLength;  
    uint8_t Free[2];  
    uint8_t Data[64];  
} Can_Receive_Event;
```

```
typedef struct {  
    uint32_t Time; //Timer timing, accumulation, unit is ms  
} Timer_Irq_Event;
```



```
typedef struct {  
    void (*Can_Transmit)(Transmit_CanTypedef SendCan);  
    uint8_t* user_array;  
} Action_Source;
```

```
typedef struct {
    uint32_t Id;
    uint8_t TargetPort; // 1 for channel 1, 2 for channel 2
    uint8_t FrameType; // 0 for remote frame, 1 for data frame
    uint8_t IdType; // 0 for standard frame, 1 for extended frame
    uint8_t CanType; // 0 for classic CAN, 1 for CAN FD
    uint8_t BRS; // 0 for off, 1 for on
    uint8_t DataLength;
    uint8_t Free[2];
    uint8_t Data[64];
} Transmit_CanTypedef;
```

```
➤
/*
Example: user-defined function
*/
__attribute__((section(".EXTERN_FUNC")))
void Event_Runtime(const Action_Source* Action_p)
{
}
```

**Example:**

```
Transmit_CanTypedef TxCAN = {0};
uint32_t Counter = 0;

if (Event_p->Event_Source == ON_START) {
    TxCAN.Id = 0x1CCAB21;
    TxCAN.FrameType = 1;
    TxCAN.IdType = 1;
    TxCAN.CanType = 1;
    TxCAN.BRS = 1;
    TxCAN.DataLength = 8;
    TxCAN.TargetPort = 0x02;
    for (int i = 0; i < 8; i++) {
        TxCAN.Data[i] = (i + 2);
    }
    Action_p->Can_Transmit(TxCAN);
}

else if (Event_p->Event_Source == CAN_RECEIVE) { //Receive message event
    if (
        ) {
        if (Event_p->Argument.Receive_Can.Id == 0xA1) {
            Action_p->user_array[4] = (Event_p->Argument.Receive_Can.Id >
```



```
-  
  
else if (Event_p->Argument.Receive_Can.Id == 0xA3) {  
    Counter++;  
    Action_p->user_array[0] = (Counter >> 24) & 0xFF;  
    Action_p->user_array[1] = (Counter >> 16) & 0xFF;  
    Action_p->user_array[2] = (Counter >> 8) & 0xFF;  
    Action_p->user_array[3] = Counter & 0xFF;  
}
```

```
-  
  
Counter = ((Action_p->user_array[0] << 24) |  
(Action_p->user_array[1] << 16) |  
(Action_p->user_array[2] << 8) |  
(Action_p->user_array[3]));
```

```
if (Event_p->Event_Source == TIMER_MS) // Timer trigger  
{  
    if (Counter != 0)  
    {  
        TxCAN.Id = (Action_p->user_array[4] << 24) |  
        (Action_p->user_array[5] << 16) |  
        (Action_p->user_array[6] << 8) |  
        (Action_p->user_array[7]);  
        TxCAN.FrameType = Action_p->user_array[8];  
        TxCAN.IdType = Action_p->user_array[9];  
        TxCAN.CanType = Action_p->user_array[10];  
        TxCAN.BRS = Action_p->user_array[11];  
        TxCAN.DataLength = Action_p->user_array[12];  
    }  
}
```

```
TxCAN.TargetPort = 0x02;
for (int i = 0; i < 64; i++)
{
    TxCAN.Data[i] = Action_p->user_array[13 + i];
}
Action_p->Can_Transmit(TxCAN);

if (Counter > 1)
{
    TxCAN.Id = (Action_p->user_array[4 + CAN_OCCUPY] << 24) |
    (Action_p->user_array[5 + CAN_OCCUPY] << 16) |
    (Action_p->user_array[6 + CAN_OCCUPY] << 8) |
    (Action_p->user_array[7 + CAN_OCCUPY]);
    TxCAN.FrameType = Action_p->user_array[8 + CAN_OCCUPY];
    TxCAN.IdType = Action_p->user_array[9 + CAN_OCCUPY];
    TxCAN.CanType = Action_p->user_array[10 + CAN_OCCUPY];
    TxCAN.BRS = Action_p->user_array[11 + CAN_OCCUPY];
    TxCAN.DataLength = Action_p->user_array[12 + CAN_OCCUPY];
    TxCAN.TargetPort = 0x02;
    for (int i = 0; i < 64; i++)
    {
        TxCAN.Data[i] = Action_p->user_array[13 + i + CAN_OCCUPY];
    }
    Action_p->Can_Transmit(TxCAN);
}

TxCAN.Id = 0x1EAC882E;
TxCAN.FrameType = 1;
TxCAN.IdType = 1;
TxCAN.CanType = 1;
TxCAN.BRS = 1;
TxCAN.DataLength = 8;
TxCAN.TargetPort = 0x02;
for (int i = 0; i < 8; i++)
{
    TxCAN.Data[i] = (Action_p->user_array[13 + i] + Action_p->user_array[13 + i +
CAN_OCCUPY]);
}
Action_p->Can_Transmit(TxCAN);
}
}
```

## 4. Inspection and Maintenance

The main electrical components of the GW2112 products are semiconductor components. Although the equipment has a long service life, they may also accelerate aging and significantly reduce their service life under an incorrect environment. Therefore, during the use of the equipment, periodic inspection should be carried out to ensure that the use environment maintains the required conditions.

It is recommended to conduct inspections at least once every 6 months to 1 year. Under improper environmental, more frequent inspections should be conducted. As shown in the table below, if you encounter problems during maintenance, please read the following content to find the possible causes of the problem. If the problem still cannot be solved, please contact Shanghai TOSUN Technology Ltd.

Item		Standard	Action
Power Supply	Inspect for voltage fluctuations at the power supply end	Power supply port +12V DC	Use a voltage meter to check the power input end. Take necessary actions to keep the voltage fluctuations within the acceptable range.
Surrounding Environment	Check the ambient temperature of the surrounding environment. (Including the internal temperature of enclosed	-	Use a thermometer to check the temperature and ensure that the ambient temperature within in the acceptable range.

	environments)		
	Check the ambient humidity. (Including the internal humidity of enclosed environments)	The relative humidity must be within the range of 10% to 90%	Use a hygrometer to check the humidity and ensure that the ambient humidity within the acceptable range.
	Check for the accumulation of dust, powder, salt, and metal shavings	No accumulation	Clean and protect the equipment.
	Check for any contact with water, oil, or chemical sprays on the equipment	No contact	Clean and protect the equipment if necessary.
	Check for the presence of corrosive or flammable gases in the equipment area	No presence	Inspect by the smell, or using a sensor.
	Check for levels of vibration and shock	Vibration and shock are within the acceptable range	Install padding or other shock-absorbing devices if necessary.
	Check for noise sources near the equipment	No significant noise source	

	in the external wiring		if necessary.
--	---------------------------	--	---------------

## Software

## Hardware

- 12/16-channel CAN FD/CAN to USB/PCIe device
- 12/16-channel LIN to USB/PCIe device
- Multi-channel automotive Ethernet/CAN FD to USB/PCIe device
- Automotive Ethernet media conversion device (T1 to T2)
- Multi-channel CAN FD/Ethernet/LIN datalocker
- Automotive Ethernet testing/Automated testing
- Key and fault injection boards
- Digital I/O, Analog I/O boards available

## TSMASTER

## CAN CAN

## Solutions

- Network Automation Testing System
- Motor Performance

## About TOSUN

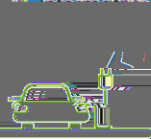
The core product TSMaster is spanning across the whole R&D, testing, production, and after-sales. It integrates functions with hardware support to streamline processes, ensure precision, and bring funded innovation.



International Organization

ISO 9001:2015

CE Certification



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website

