



# Hardware IFU—TC1018

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Copyright information

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In line with the principle of providing better service to users, Shanghai TOSUN Technology LTD (hereinafter referred to as "TOSUN Technology") will present detailed and accurate product information to users as much as possible in this manual. However, since the content of this manual has a certain timeliness, the TOSUN Technology can not fully guarantee the timeliness and applicability of the document at any time period.

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# 1. Product profile

### **1.1 Product Overview**

TC1018 is a 12-way CANFD bus to USB interface device launched by same Star Intelligence, the highest rate of 8 Mbps, the product uses high-speed USB2.0 interface and PC connection, Windows system drive design makes the device have excellent system compatibility.

With the powerful TSMaster software, support loading DBC and ARXML database files, can easily monitor, analyze, simulate CAN FD bus data, can also support UDS diagnosis, ECU brush, CCP / XCP calibration and other functions.

Can be used for the secondary development API of Windows and Linux, can support various development environments, such as C + +, C #, LabView, Python, etc., convenient integration into various test systems, efficient and easy to use.

# **1.2 Typical applications**

- ✓ Vehicle multi-channel CAN / CAN FD bus data collection
- ✓ Domain Controller Test
- ✓ Various automated test systems

### **1.3 Functions and parameters**

#### **1.3.1 Functional characteristics**

- ✓ us (microsecond) level hardware message timestamp to meet higher order requirements
- ✓ High-speed USB2.0 interface, Windows, Linux system drive-free design, with excellent system compatibility
- ✓ CAN channel DC2500V sequestration
- ✓ Automotive grade design, support for dbc file, a2l file, blf file, asc file, arxml file
- ✓ CAN channel port rate 125 Kbps- -8Mbps tunable
- ✓ Support for blf, asc format data recording and offline / online playback
- ✓ UDS diagnosis and CCP and XCP calibration can be supported
- ✓ Support for the UDS-based Flash Bootloader
- $\checkmark$  Support for information security testing
- ✓ Support Windows, Linux system secondary development interface
- ✓ Built-in 120 euro terminal resistance can be used in software configuration
- ✓ Loadable TSMaster all charge License

### **1.3.2 Technical parameters**

channel	12 *CAN FD
PC terminal interface	High-speed of USB2.0
CAN terminal interface	DB 37
drive	Windows, Linux system free drive design, with excellent system compatibility
cache	Hardware cache, each channel sends buffer support to 1000 frames CAN / CANFD
CAN	Support CAN2.0A, B protocol, comply with ISO11898-1 specification, port rate 125 Kbps1Mbps
CAN FD	Support for ISO and non-ISO standard CAN FD, port rate 125 Kbps-8Mbps
Time stamp accuracy	lus, the hardware message timestamp, to meet the high-order requirements
terminal resistance	Built-in 120 euro terminal resistance can be used in software configuration
Send a message per second *	Maximum of 20,000 frames / s
Receiptofmessagemessagesmessagespersecond *	Maximum of 20,000 frames / s
insulate	CAN channel DC 2500V isolation, electrostatic grade contact discharge $\pm$ 8KV
supply electricity	USB supply electricity
Case material	aluminium product
size	100mm*80mm*30mm
working temperature	-40°C~80°C
Working humidity	$10\% \sim 90\%$ (no condensation)
work environment	Stay away from the corrosive gases

\* Single-channel 1Mbps, 0-byte data domain case

			least	represent	crest	
	parameter	test condition	value	ative value	value	unit
working	USB supply					
voltage	electricity	CAN receive and dispatch	5.07	5.08	5.10	V
working	USB supply					
current	electricity	CAN receive and dispatch	0.40	0.40	0.41	А
	USB supply					
power	electricity	CAN receive and dispatch	2.03	2.03	2.08	W
	Bus pin pressure					
	resistance	CANH, CAHL	-42		42	V
	terminal					
	resistance	Enable terminal resistance		120		Ω
CAN	Isolation and	The leakage current is less				
joggle	pressure resistance	than 1 mA	2500			VDC

### **1.3.3 Electrical parameters**

# **1.4 Shipping list**

- ✓ TC1018 Host machine
- ✓ USB cable
- ✓ The DB 37 signal line



# 2. Hardware interface description

# 2.1 Description of the hardware interface



- ➢ USB high-speed 2.0 interface;
- ➢ DB 37 Male:

pin	definition	pin	definition
PIN 20	CANFD1_HIGH	PIN1	CANFD1_LOW
PIN 21	CANFD_SHIELD	PIN2	CANFD_GND
PI N22	CANFD 2_HIGH	PIN3	CANFD 2_LOW
PIN 23	CANFD 3_HIGH	PIN4	CANFD 3_LOW
PIN 24	CANFD_SHIELD	PIN5	CANFD_GND
PIN 25	CANFD 4_HIGH	PIN6	CANFD 4_LOW
PIN26	CANFD 5_HIGH	PIN7	CANFD 5_LOW
PIN27	CANFD_SHIELD	PIN8	CANFD_GND
PIN28	CANFD 6_HIGH	PIN9	CANFD 6_LOW
PIN29	CANFD 7_HIGH	PIN10	CANFD 7_LOW
PIN30	CANFD_SHIELD	PIN11	CANFD_GND
PIN31	CANFD 8_HIGH	PIN12	CANFD 8_LOW
PIN32	CANFD 9_HIGH	PIN13	CANFD 9_LOW
PIN33	CANFD_SHIELD	PIN14	CANFD_GND
PIN34	CANFD10_HIGH	PIN15	CANFD10_LOW
PIN35	CANFD11_HIGH	PIN16	CANFD11_LOW
PIN36	CANFD_SHIELD	PIN17	CANFD_GND
PIN37	CANFD12_HIGH	PIN18	CANFD12_LOW
		PIN19	CANFD_GND

# 2.2 LED indicator light instructions

Physical picture of the indicator light:



Instructions for indicator light:

pilot lamp	definition
CANFD 1	The CANFD channel 1 indicator lamp
CANFD 2	The CANFD channel 2 indicator lamp
CANFD 3	The CANFD channel 3 indicator lamp
CANFD 4	The CANFD channel 4 indicator lamp
CANFD 5	The CANFD channel 5 indicator lamp
CANFD 6	The CANFD channel 6 indicator lamp
CANFD 7	The CANFD channel 7 indicator lamp
CANFD 8	The CANFD channel 8 indicator lamp
CANFD 9	The CANFD channel 9 indicator lamp
CANFD 10	The CANFD channel 10 indicator lamp
CANFD 11	The CANFD channel 11 indicator lamp
CANFD 12	The CANFD channel 12 indicator lamp
LINK	Hardware connection indicator light

Description of the color of the indicator light:

pigment	description
LINK green light	The device hardware is connected
CAN FD Green	CAN FD Channel data frames are sent or received correctly
light	
CAN FDred	CAN FD The channel sends or receives incorrect frames,
lantern	configuration, protocol, or wiring errors

Note: The flicker frequency depends on the bus load.

# 3. Quick use

### 3.1 Download and install the TSMaster host computer

TSMaster Software download link:

http://www.tosun.tech/TOSUNSoftware/TSMaster\_Setup\_beta.exe

If not accessible, you can contact the corresponding sales staff or log in to the official website of the same star to get the upper machine, and you can also scan the code to follow the public account to get the download link.



	选择安排	装语言	×	
	5%	选择安装期间要使用的语言:		
		English	~	
		确定	取消	
Step 2:				
Setup - TSMast	er 2023.6.	25.906	- 0	;
		DLOGY LTD. & TSMASTER SOFTWARE LICENSE AGRE		
SOFTWARE AN PROCESS, OR TO BE BOUND TO THIS AGRE	ND/OR CLICK BY OTHERW BY THE TER EMENT AND RE, AND RET	FTWARE LICENSE AGREEMENT ("AGREEMENT"). BY L ING THE APPLICABLE BUTTON TO COMPLETE THE IN VISE EXECUTING THE APPLICABLE QUOTE (DEFINED B MS OF THIS AGREEMENT. IF YOU DO NOT WISH TO I BE BOUND BY ITS TERMS AND CONDITIONS, DO NOT URN THE SOFTWARE (WITH ALL ACCOMPANYING WI WITHIN THIRTY (30) DAYS OF RECEIPT. ALL RETURN	STALLATION ELOW), YOU AGREE BECOME A PARTY F INSTALL OR USE RITTEN MATERIALS	
BE SUBJECT TO AGREEMENT O TO BIND THE E	N BEHALF O	THEN-CURRENT RETURN POLICY. IF YOU ARE ACCEPT F AN ENTITY, YOU AGREE AND REPRESENT THAT YO HIS AGREEMENT, AND REFERENCES HEREIN TO "YOU	FING THIS U HAVE AUTHORITY J" AND "YOUR"	
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### Step 3:

🏅 Setup - TSMaster 2023.6.25.906		-		×
Select Destination Location				_
Where should TSMaster be installed?				-/
Setup will install TSMaster into the following folder.				
To continue, click Next. If you would like to select a different folder, click	Browse.			
C:\ydd\TSMaster		Br	owse	1
At least 347.3 MB of free disk space is required.				
At least 347.3 MB of free disk space is required. ayright (c) 2017-2023 TOSUN. All rights reserved.				
At least 347.3 MB of free disk space is required. pyright (c) 2017-2023 TOSUN. All rights reserved.	< Ne	vt-)	Can	cel

### Step 4:

Ready to Install		-
Setup is now ready to begin installing TSMaster on your co	mputer.	-
Click Install to continue with the installation, or click Back if	you want to review or change any sett	ings.
Destination location: C:\ydd\TSMaster		*
4		v
night (c) 2017-2023 TOSUN. All rights reserved.		1.15-2

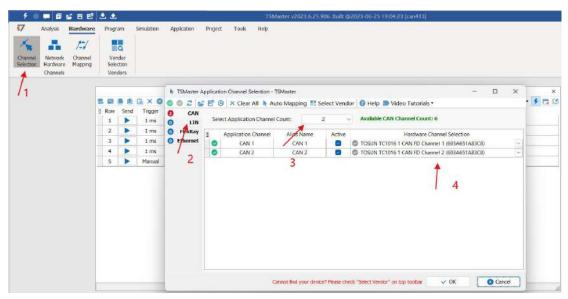
#### Complete installation:



### **3.2 Connect devices and configure channels**

All TOSUN devices are drive-free, and can connect directly without download driver.

In TSMaster software interface: Click Hardware-click channel selection-drop-down box Select number of channels-select hardware channel-click OK



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In the hardware configuration, the CAN / CAN FD protocol can be switched, and the baud rate and switch terminal resistance can be adjusted. After the configuration is completed, click application can take effect.

tannel lection	Network Hardware	/::/ Channel Mapping	Ver				×	1		
	Channels		Ven					×		
		[	-			Application Channels	TSMaster CAN FD Chann	el 1 - TOSUN TC1016 1 CAN FD Chennel 1	-	
				● 能	G × O	E INF CAN 1	Parameter	Value	2 - 1	1
			# Rew	Send	Trigger	Cher 2	CAN Controller Type	ISO CAN FD		
			1		t ms		Arbitration Phase Baud-rate [Kbps]	500		
			2	•	1 ms	-	Data Phase Baud-rate [Kbps]	2000	1	
						-	Arbitration Phase Bit Timing	TSEG1=63,TSEG2=16	-	
			3		1 ms		Data Phase Bit Timing	TSEG1=15,TSEG2=4		
			4		1 ms		Arbitration Phase S3W	15		
			5		Manual		Data Phase SJW	3	100	
					A contract of	-	Controller Mode	Normal		
							Fiter Type	Alow Al		<b>f</b> a
							Filter ID	300000000X		
							Termination Resistor			

# 3.3 Message sending

7 An	nalysis	Hardware		Progr	am	Simulation	Application	Project	Tools	Нер														
*		1.1		ł	a																			
election H	Network Hardware Channels	Channel Mapping		Ver Sele	ndor iction idors																			
	an sam saur				4013																			
				_								CAN	/ CAN FD T	ransn	nit									ذ
			8			E × O	말많다	🍸 🖸 Set	tings • 🚺	P													٩.	4 D I
				Raw	Send	Trigger		Message Na	sime		Id	Chn	Туре	DLC	BRS	DO	D1	D2	D3 E	4 D5	D6	D7	Comment	
				1		1 ms		NewMsg	63.		001	1	Std. Data	8		00	00	00	00 0	00 0	00	00		
				2		1 ms		NewMsg	6		002	1	Std. Data	8	D	00	00	00	00 0	0 00	00	00		
				3		1 ms		NewMsg	ES .		003	2	Std. Data	8	D	00	00	00	00 0	0 00	00	00		
				4		1 ms		NewMsg	e		004	2	Std. Data	8	D	00	00	00	00 6	0 00	00	00		
				5	•	Manual		NewMsg	E.		123	1	Std. Data	8	-	00	00	00	00 0	0 00	00	00		

After the hardware connection is completed and the software is configured, the function of message sending can be realized:

operating steps:

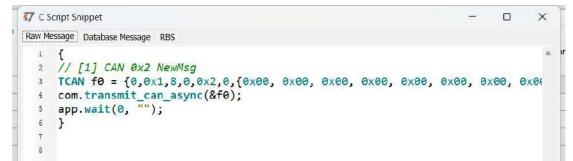
a. Message sending-Add a CAN / CAN FD message for sending

b. Right mouse button to create a new original message / add a message from the database, and set the message name / identifier / channel, etc

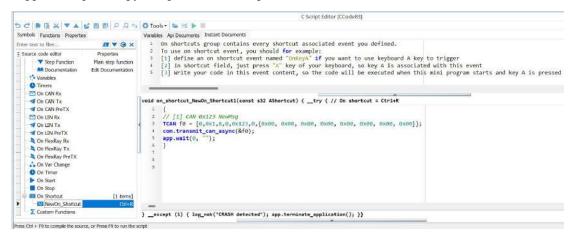
c. Message am trigger setting, manual trigger / cycle trigger, cycle trigger can set the sending cycle

d. Message information right click can generate a C script to quickly add to the C small program for programming

The following is an example of the build-C script:



Support for quick copy and paste to a C script to add send events:



# 3.4 Help with documentation and video teaching

Various instructions and help manuals are provided in the TSMaster help bar.

7 Analysis Hardware	Progra	am Simulati	_	abon Pr	oject Tools	Help		-	11	-		14										
M 🕸 📓	-	0_1	=	API	8		()	Ę		Т		1										
Software Features Application Manual Notes *	Quick Start	Video Tucoriais -	Software 5DK *	API Examples	Automation Examples	Check Update	What is New	Relea		TOSU		Credits	i Ai	out	<pre>k</pre>							
Help content	¢	Graphics			🔝 How to ad	d real-time o	onwent i	n blf					μN									
		S Encrypt P	ublish	,	D TSMaster	Feature: Rea	Hime con	nment	in Graphic	3												
		Q 11939			D T5Master	Feature: How	u to plot E	Bus lba	d in Graph	ice			-								-	-
	5 B	Simulation		.*	D TSMaster	Feature: Hor															• 4	G
	E Row	🔇 Matlah Au	domation		ge Name			Inn			BRS								Com	ment		
	1	App Publis	dη		wMsg				d. Data	8	L	00		16.0								
	3 2	S Vendor In	iterface Com	ectivity +	wMsg		002	1 5	id. Data	8		00	00 (	0 0	00 00	00	00	00				
	3	S Diagnostic	2		wMsg	3	003	Z 5	d. Data	8	L.	00	00 0	0 0	00 00	00	00	00				
	4	S Panel			wMsg	1 3	004	2 5	td. Data	8	۹Ľ.	00	00 (	0 0	00 0	00	00	00				
	5	O Mini Progr	am (C.Code I	iditor) +	wMsg		123	1 5	d. Dete	8	E.	00	00 (	0 0	00 0	00	00	00				
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	(M) Ser	O Toobox I	Tevelopment			_			×		-											
	2 1	System V	ariables Mana	ger +	Byte 1	By	te 2	1	Byte 3	_	U	Rut	te 4			Byt	- 5		Byte 6	, i	3yte 7	1
	1	Graphic P	rogram	+	00		10		00			1000	10			0			00		00	
		Replay																				
		C Test Syst	em																			

At the same time, a large number of teaching videos can enter B station

<u>http s: / /space.bilibili.com / 2042371333</u>, follow the tosun intelligent official number, watch all the teaching videos.

# 3.5 TSMaster API Secondary development

In the TSMaster help bar API routine, a variety of common language API is provided to facilitate users' secondary development. Efficient and easy-to-use secondary development functions that can support all kinds of development environments, such as C, Python, C #, Labview, etc.

	8 🕹 🏝		TSMaster v2023.6.25.906	5. Built @2023-06-	25 19:04:23 [can4]	13]
7 Analysis Hardwar	re Program Simulat	tion Application Project Tools	Help			
aa 🚖 🖬			💽 🌔 📮		6 8	
Software Features Applicati	ion Quick Video	Software API Automation	Check What Release	TOSUN Cre	dits About	
Manual Notes	* Start Tutorials *	SDK * Examples Examples	Update is New Note	Products		
Help conte	ents	Master SDK	Software Update	About 1	FOSUN	
	🚞 SDK	× +				
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					1923	
	$\leftrightarrow \rightarrow \times \uparrow$	→ 此电脑 → 本地磁盘 (C:) → ydd →	TSMaster > bin > Data > SD	<	~ C	在SDK
	🔀 視颏 🔹 🖈	名称	修改日期	类型	大小	
	1 截图	Calibration	2023/6/19 10:54	文件夹		
	📒 wendang	📜 examples	2023/6/19 10:54	文件夹		
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#### 3.5.1 Python calls the dynamic library

#### Windows32-Position Python:

- (1) pip install TSMasterAPI
- (2) Using the TSMasterAPI form TSMasterAPI import \* for
- (3) Example synchronous upload github, address: https://

github.com/sy950915/TSMasterAPI.git

#### Windows64 bit Python / Li nux:

- (1) pip install libTSCANAPI
- (2) Using the TSMasterAPI form libTSCANAPIimport \* for
- (3) Example synchronous upload github, address: https://github.com/sy950915/

libTSCANAPI.git

#### 3.5.2 C calls the dynamic library

(1) Include TSMaster in a file with a path of TSMaster  $\ bin \ Data \ SDK \ lib \ x86.h$  header file.

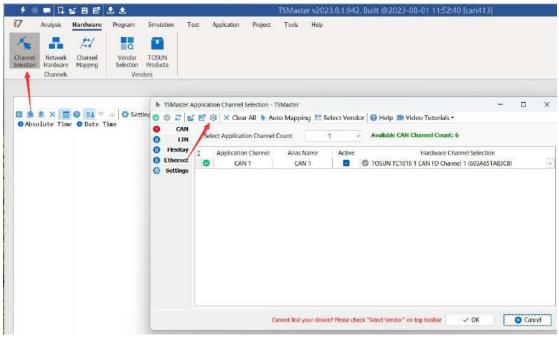
Such as: # include " TSMaster.h"

(2) Include TSMaster in a file with a path of TSMaster  $\ bin \ Data \ SDK \ lib \ x86$ . The lib file is connected to TSMaster.lib document.

In the C environment, add TSMaster to the Configuration Property connector input additional dependencies in the project property page.lib document.

#### 3.5.3 Example of the calling of the interface

Windows, The Linux system provides the secondary development interface, easy to connect and use the equipment. The operation step are: select channel-generate C code-use C code / python code to call the interface. Take the code C as an example:



C Script Fragments:

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```
77 C脚本片段
```

```
initialize lib tsmaster("TSMaster");
1
   tsapp set can channel count(1);
2
   tsapp_set_lin_channel_count(0);
3
   tsapp_set_flexray_channel_count(0);
4
   tsapp set ethernet channel count(0);
5
6
7
   TLIBTSMapping m;
8
   // TSMaster CAN FD 通道 1 - TOSUN TC1018 1 CAN FD 通道 1
9
   m.init();
10
   sprintf_s(m.FAppName, "%s", "TSMaster");
11
   sprintf_s(m.FHWDeviceName, "%s", "TOSUN TC1018");
12
   m.FAppChannelIndex = 0;
13
   m.FAppChannelType = (TLIBApplicationChannelType)0;
14
   m.FHWDeviceType = (TLIBBusToolDeviceType)3;
15
   m.FHWDeviceSubType = 16;
16
   m.FHWIndex = 0;
17
   m.FHWChannelIndex = 0;
18
   if (0 != tsapp_set_mapping(&m)) { /* handle error */ };
19
20
   if (0 != tsapp_connect()){ /* handle error */ };
21
22
   /* do your work here */
23
24
   tsapp disconnect();
25
   finalize lib tsmaster();
26
27
```

#### C script call function description:

initialize \_ lib \_ tsmaster ("TSMaster"); // TSMaster initialization function
Tsapp \_ set \_ can \_ channel \_ count (1); // Set the number of can channels
Ttsapp \_ set \_ lin \_ channel \_ count (0); // Set the number of lin channels
The tsapp \_ set \_ flexray \_ channel \_ count (0); // Set the number of flexray channels
The tsapp \_ set \_ ethernet \_ channel \_ count (0); // Set the number of ethernet channels

TLIBTSMapping m; / / Initialize the construct

/ / Set the TSMaster CAN FD channel 1-TOSUN TC1018 1 CAN FD channel 1 channel mapping

m. The init (); / / initial construct m

sprintf s(m. FAppName, "%s", "TSMaster"); // Print the application name "TSMaster"

sprintf\_s(m. FHWDeviceName, "%s", "TOSUN TC1014"); / / Print the hardware device

name

m. FAppChannelIndex = 0; / / Application channel index

- m. FAppChannelType = (TLIBApplicationChannelType) 0; // Application channel type
- m. FHWDeviceType = (TLIBBusToolDeviceType) 3; // Hardware device type
- m. FHWDeviceSubType = 16; / / corresponding parameters of hardware equipment \*

m. FHWIndex = 0; / / Hardware index

m. FHWChannelIndex = 0; / / Hardware channel index

if (0 != Tsapp \_ set \_ mapping (& m)) {/ \* handle error \* /}; / / If the return value is not equal to the 0 mapping failure

The tsapp disconnect(); / / Disconnect the device finalize lib tsmaster(); / / Release the C script module

\* Note: The corresponding parameters of the hardware equipment can be found in the TSMaster-Help-Software Development Package

TSMasterAPI Hardware Map.pdf

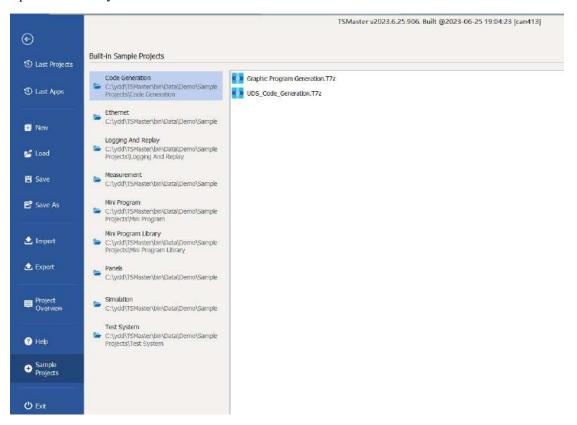


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# 3. 6 Sample Works

The example project provides a lot of Demo for user reference, greatly improving the user development efficiency.



#### Sample project panel:

9 🗢 📮 🖬 🖬	6 8 8 ± ±	<b>a</b>			TSMaster va	023.6.25.906	5. Built @2023-0	6-25 19:04:23 [Panel	Basics]
5oftware Manual	Hardware Prog Application Notes - Quick Start ep contents	ram Simulation Video Tutoriais +	n Application Pro Software API SDK * Examples TSMaster S	Automation Examples	telp Check Wł Update is N Software	nat Release lew Note	Products	Credits About	
				Lanci Dasies					۹ 🖬
Text	Containers	Buttons	Graphics	Data Manipulation	UI Trigge	er Events	Signal Relation	Page 8	Page 9
Check to set Gear t Check to set Gear t Check to set Gear t Check to set Engsp Scrollbar to set Engsp Orogressbar to set Engsp Engsg	to 2, uncheck to set Ge to 3, uncheck to set Ge seed	arto0 arto0	uppBox for Greer Check to set Gear to 1 Check to set Gear to 2 Check to set Gear to 3 Check to set Gear to 3			Data Selector fo	earear	ngTamp to 120 deg.	×
0				0					- EngSpeed Gear

# 4. Inspection and maintenance

TC1018 The main electrical component is the semiconductor component, although it has a long life, it may accelerate aging in the incorrect environment, greatly reducing the life. Therefore, regular inspections should be conducted during the use of the equipment to ensure that the use environment maintains the required conditions. It is recommended to check it up at least once every 6 months to a year. Under adverse environmental conditions, more frequent examinations should be performed. In the table below, if you encounter problems during maintenance, read below to find the possible cause of the problem. If the problem still cannot be solved, please contact Shanghai TOSUN Intelligent Technology Co., LTD.

project	check up	standard	move about
			Use the voltmeter to check
			the source at the power
	Check the voltage		supply input end. Take the
	fluctuation at the power		necessary measures to make
power supply	supply side	7-18V DC	the voltage fluctuation
			within the range
	Check the ambient		Use a thermometer to check
	temperature		the temperature and ensure
	(Including the internal		that the ambient temperature
	temperature of the	-40°C~+80°C	remains within the allowable
	enclosed environment)		range
		Without air	Use a humidity meter to
	Check ambient humidity	conditioning, the	check the humidity and
surrounding	(Including the internal	relative humidity	ensure that the ambient
environment	humidity in the closed	must be at	humidity remains within the
	environment)	10%~90%	allowable range
	Check for the		
	accumulation of dust,		
	powder, salt, and metal		Clean and protect the
	debris	No accumulation	equipment
	Check water, oil, or		If the cleaning and
	chemical spray collision	No spray touched	protection equipment is
	into the device	the device	required

# Domestic leading brand of automotive electronic tool chain

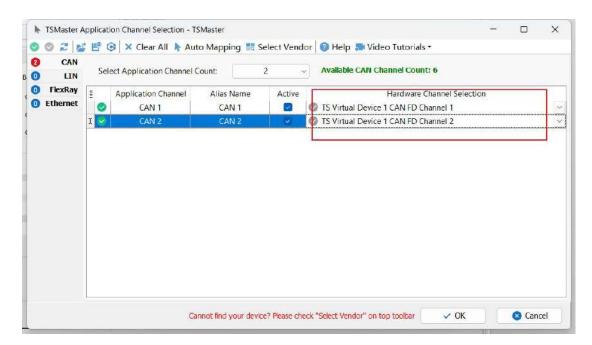


	Check for easily corrosive	No easily	
	or flammable gases in the	corrosive or	Check by smelling or using
	equipment area	flammable gases	a sensor
		The vibration and	
		shock are within	
	Check the vibration and	the specified	Install the liner or other
	shock levels	limits	shock absorber, if required
		There are no	Isolation equipment and
	Check the noise sources	significant noise	noise sources or protection
	near the equipment	signal source	equipment
	Check the compression	There is sufficient	
	connector in the external	space between the	Visual scopic inspection
	wiring	connectors	adjust if necessary
Install wiring	Check for the damage to		Visual inspection and
	the external wiring	No damage	replace wiring if necessary

# 5. Common questions and answers

### 5.1 The line is connected correctly but cannot communicate properly:

Solution: Check if the number of channels is set. If CAN Channel Count = 0, of course no online hardware cannot display. And the software is configured by default virtual channel, you need to select the hardware real channel.



Automatically map or manually click to select the hardware real channel:

02	e 🖻 1	😔 🛛 🗙 Clear All 🖒 Aut	o Mapping 🔣 Select 🕅	Vendor 🛛 🕜 H	Help 🔝 Video Tutoria	ls <del>-</del>		
CAN	C.al	lect Application Channel C	o Automatic Mapping	ofunmappe	d channels channel Cou	nt: 6		
FlexRay Etherne	- E	Application Channel CAN 1		ctive	Hardware UN TC1016 1 CAN FD C	Channel Selection hannel 1 (603A651A	83C8)	
	I	CAN 2	CAN 2	🗸 💽 TOS	UN TC1016 1 CAN FD C	nannel 2 (603A651A	83C8)	 

If the channel is selected correctly, it is necessary to ensure consistent port communication between the two channels, as shown in the figure below:

Application Project Tools	Нер	
	Hardware Configurati	ion ×
Application Channels	TSMaster CAN FD Channe	el 1 - TOSUN TC1016 1 CAN FD Channel 1
O Configuration		🛃 Default 🔅 Apply
CAN 1		
unin CAN 2		Value
		ISO CAN FD
ion to		500
		2000
Chec	Arbitration Phase Bit Timing	TSEG1=63,TSEG2=16
-	Data Phase Bit Timing	TSEG1=15,TSEG2=4
Chec	Arbitration Phase SJW	15
Chec	Data Phase SJW	3
	Controler Mode	Normai
	Filter Type	Alow Al
	Filter ID	X0000000000X
	Termination Resistor	
	Configuration	Configuration     Imm CAN 1     Parameter     CAN 1     Parameter     CAN 2     Controller Type     Arbtration Phase Baud-rate [ktips]     Data Phase [ktips]     Data Phase [ktips]     Data Phase [ktips]     Data Phase [ktips]

# 5.2 Inconvenient message observation and signal filtering:

	Setting	s * Filter String:		3	< 7												2 -	4	
Absolute Time Counter	Chn	I Identifier	FPS	Message Name	Туре	Dir	DLC	Data	BRS	ESI	00	01 0	2 03	04	05	06	07 0		
C1 0.016474       18         C2 40.651222       318587         G4 14ERunning       518587         G4 14ERunning       518587         G4 14ERunning       52000         G5 1517       18000         G5 1517 <td>CAN 2 CAN 1</td> <td>51A 964 Running -50 degC 0 1 0 4 0 kW 0 rpm 0 rpm 0 5hift_Request_Off 0 0 0 0 0 0</td> <td>0 10</td> <td>M/_Gateway_P EngineData 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>398869 398869 398869 398869</td> <td>Rx Tx</td> <td>4</td> <td>4 64</td> <td>1</td> <td>0</td> <td>00</td> <td>80 0 00 0</td> <td>0 00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	CAN 2 CAN 1	51A 964 Running -50 degC 0 1 0 4 0 kW 0 rpm 0 rpm 0 5hift_Request_Off 0 0 0 0 0 0	0 10	M/_Gateway_P EngineData 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	398869 398869 398869 398869	Rx Tx	4	4 64	1	0	00	80 0 00 0	0 00						

Solution: display in a fixed display or time order, expand or fold the signal display, and filter the string, click the following icon to operate:

		1	-		CAN / CAN FD													×
0 🖻 低 🗙 🖂 🖉	3 ≡1 ▼ ▲	💭 Settings	Filter String:			× 🚡										4 -	4	
Absolute time	Counter		dentifier	FPS	🖾 Message Name	Туре	Dir		Data	BRS	ESI	00 01 0		4 05	06	07	08 (	9 10
- 🖸 91.841186	719904	CAN 2	003			Data	Tx	8 8	8	12		03 03 0			90	00		
91.843474	719921	CAN 1	004			Data	Rx	8	8	24	-	69 69 69	9 88 8	0 00	00	99		
2 91.844999	719934	CAN Z	004			Data	Tx	8	8 8	34	-	00 00 00	0 00 0	0 00	010	60		
91.846778	719951	CAN 1	003			Data	Rx	8	8	13		00 00 00	0.00.0	0 00	00	00		
2 91.751739	719201	CAN 1	064	9	EngineData	FD	Tx	15	64 64	1	Ø	00 00 00	0 00 6	0 00	00	00	00 (	00 00
91.851486	719984	CAN Z	054	9	EngineData	FD	Rx	15	64	1	Ø	88 88 88	000	0 00	0.0	00	00 0	00 00
- 🖾 91.855829	720021	CAN 1	001	957		Data	Tx	8	8			08 08 80	8 88 8	0 00	00	60		
2 91.857871	720034	CAN 2	001	957		Data	Rx	8	8 8 8	2	2	68 66 66	0 00 0	0 00	00	00		
2 91.860169	720051	CAN 1	682	950		Data	Tx	8	8	32	120	02 02 00	0 00 0	0 00	00	00		
- 🖾 91.861701	720864	CAN 2	082	950		Data	Rx	8	8	9		88.88.84	9 00 0	0 00	00	99		
st	AI Messi			_				0 %										

### 5.3 How to load the database:

Select the can / lin / flexray database, click the upper left corner icon to add the database file, or drag the file directly into this window to be automatically loaded, and then click the left channel to associate the database.

• • • • • • • • •	٠.	15Master v2023.6.25.906. III	ilt @2023-06-25 19:040	13 [can413*]	ř.				1 👳	*
47 Analysis Hardware	Program Simulation Application Project	Tools Help								IGSUNITIME
5 O E Measurement		at Sign Trace Trace	nt Graphics Numeric Data Analy	Staratos ss	Database CAN Database	2	Stop Logong	Bus Bus Logger - Nepley Logging and Replay	Canverter Cog Drettory O Video Replay *	·
		CAN Database		_	Show Flexibing Data					1
8	5 = 5 0 + - 15 V A Filtered by:	Show All	X Channel All		4.0B	-				
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Brand Assymmet ← Charnel ([CNF2] ■ CAR (FD Showthan CAR (FD Showthan ■ CAR (FD Showthan)	Dutabase Official We Signit Commun     ACNAP (Devention [CM-FD]     Devention [CM-FD]     Devention [CM-FD]     Devention [CM-FD]     Devention     Communication (Advances	Land root	ile commun				4	*	

# 5.4 How to automatically record the message messages:

チョーロビ目出土土	TSMaster v2023.6.25.906. Built @2023-06-25.19.04.23 [can413*]		
Analysis Hantware Program Struktor	Applantian Project Tools Help	סז	SUNIDIA
Start Thip Measurement Messages Roal-time C	EUIs EUis Measurment Musurment * * * Deplay * *	Database Gauges Start Start Bas Bus Report Velo Reploy - Logger and Reply	
	Bus Logging	* C :	
		Defaut	
	Osta File Name [Configuration Name][System Time]	Name Rule 🔽	
Image: Section 1.1         Image:	キャー     キャー	A- 5 B B	

operating steps:

- a. Analysis- -bus record
- b. Add a name rule to distinguish between different save files
- c. Add the self-start function
- d. Start the record

# 5.5 How to replay messages (offline and online playback):

operating steps:
------------------

7 Analysis Hardware Program	TSMaster (2023:5:25.905; bull: @2023-05-25.19.04(2) (car413*) Servation Application Propert Tank Help	
art 300 Measurement Messages Re	🗏 🖉 🦂 🕨 🔳 😑 🗃 👬 12 💵 😫 🕐 🕨 🖽 🖽	Log Converter Log Diractory Video Repiny *
Image: Non-State         Image: Non-State<	2	× n D
	Ne. Trabe /, Past Process Functions	
	0 %. Pentark Karge Selection	
	Log creeton time: 2023-03-28 13:52:213 (2879-3859776)	

a. Bus playback

b. Offline playback, add the need to be played packets, can drag and drop file add directly

c. Select the range of message playback. Since the number of message display window is limited, you can choose the time period required for the message

\$7	Analysis	Handware Pro	gram Sa	nubbon	Application	Project Tools	Help														TOSUMBLE
4 Start		E Parameter Setup	Comm		P R weet Disconnes Dis Echis t	start Maillermark	Stap	urt	Trace	Tianama	t Graphics	12 Numeric Display * Data Acab	Statistics sis	Database	Gauges	Scart Logging	Stap Logging	Bus Loggin =	Bus Rapby nd Replay	Log Converter Log Directory Video Replay	
			0		teplay P Online	Replay					Bus Pla	dack							4.8	č	1
				Row 1	can41.32023_05_	Name 13_15_50_51	•	9	ne III	0		ess (%) 0	Citydd	Ngcican4131	Logging\/Bv:	File Nam shoen4132023		5_50_51.b¥		×	
			Hessa Bus St																	0.0	

d. Bus playback-online playback-add recording files

e. Online playback can playback the message according to the acquisition time stamp, and set

the playback data

	10				-
Source File	C:\ydd\g	gc\can413\Log	ging\Bus\can4132023_05_23_	15_50_51	
Roplay Settings					
Auto start on measurement start			Do not auto start		-
Output times			Output only once		2
Output mode		Defa	ault: Timestamp as log fie		3
Start timing conditions		Immediate	ly: Direct send the first messa	ge	
Start / Stop shortcut			Press a key		
Pause / Resume shortcut			Press a key		
Force Replay		Stop pla	yback even if an error occurs	į.	
CAN Options					
Tx messages in log file			Send Tx messages		-
Rx messages in log file			Send Rx messages		
Replay Fiter	Set No F	Fiker Set As Pa	ass Filter   Set As Block Filter F	iter D Edit Fike	e.,
	Source	Channe Destina	tion Channel (ignore – 0, use	comma to se	٤.
	1	1			1
CAN Channel Mapping	2	Z			
	4	3 4			
	1.2				

# 6. Appendix

# 6.1 CAN 2.0 Standard Frame:

The CAN standard frame information is 11 bytes, consisting of two parts: information and data parts. The first 3 bytes are for the information section.

	7	6	5	4	3	2	1	0				
					DLC (Data							
Bytes 1	FF	RTR	x	x	Length)							
	(Message identification code)											
Bytes 2			ID	.10-	-ID.	3						
Bytes 3	ID.	ID.2-ID.0 x x x x x										
Bytes 4		Data 1										
Bytes 5	Data 2											
Bytes 6	Data 3											
Bytes 7		Data 4										
Bytes 8		Data 5										
Bytes 9	Data 6											
Bytes												
10	Data 7											
Bytes												
11	Data 8											

Byte 1 is the frame information. The 7th bit (FF) represents the frame format, in the standard frame, FF=0; the 6th bit (RTR) represents the type of frame, RTR = 0 is a data frame, RTR = 1 is a remote frame; the DLC represents the actual length of data at the data frame.

Bytes 2 and 3 are message identification codes, and 11 bits are valid.

Bytes 4~11 is actual data of data frame, remote frame is invalid.

# 6.2 CAN 2.0 Expansion Frame:

CAN extended frame information for 13 bytes, including two parts, information and data parts. The first 5 bytes are for the information section.

TOSい同星

	7	6	5	4	3	2	1	0			
					Γ	DLC (Data					
Bytes 1	FF	RTR	x	x	Length)						
	(Message identification code)										
Bytes 2			ID.	28-	ID.21	-					
Bytes 3		ID.20-ID.13									
Bytes 4		ID.12-ID.5									
Bytes 5	ID.4-ID.0 x x x										
Bytes 6		Data 1									
Bytes 7		Data 2									
Bytes 8				Data	a 3						
Bytes 9		Data 4									
Bytes 10	Data 5										
Bytes 11	Data 6										
Bytes 12	Data 7										
Bytes 13	Data 8										

Byte 1 is the frame information. The 7th (FF) indicates the frame format, FF = 1; the 6th (RTR)

It represents the type of frame, RTR = 0 as a data frame and RTR = 1 as a remote frame; DLC represents the actual data length at the data frame.

Byte 2~5 is the message identification code, and its high 29 bits is valid.

Bytes 6~13 is actual data of data frame, remote frame is invalid.

### 6.3 matters need attention

① Connect the lines to avoid short circuit.

② Before using the equipment, please carefully check the pin information in the product manual.

③ During the operation of the equipment, be sure to connect the power cord correctly and avoid plugging and unplugging.

④ Attention! Damage caused by electrostatic discharge (ESD).

# 7. Disclaimer

Shanghai TOSUN Technology, LTD. based on the principle of providing better service for users, will present detailed and accurate product information for users as much as possible in this manual. However, since the content of this manual has a certain timeliness, TOSUN Technology cannot fully guarantee the timeliness and applicability of the document in any period of time. TOSUN Technology has the right to update the contents of this manual without notice. In order to get the latest version of the information, please visit the official website of TOSUN Technology regularly or contact the staff of TOSUN Technology regularly. Thank you for your tolerance and support!

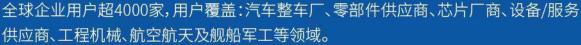


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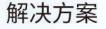
软件

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- ECU刷写
- ・CCP/XCP标定
- ·嵌入式代码生成
- ·应用发布/加密发布
- ・记录与回放
- ·图形化编程
- ·剩余总线仿真
- C/Python脚本
- ·总线监控/发送
- SOMEIP和DoIP

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- ・1/2/6通道LIN转USB工具
- ·10通道CAN FD/CAN转以太网工具
- ·多通道Flexray/CAN FD转USB工具
- ・多通道车载以太网/CAN FD转USB工具
- ・车载以太网介质转换工具(T1转Tx)
- ・多通道CAN FD/Ethernet/LIN记录仪

CAN CAN lin CA



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