



# Hardware IFU-TP1018

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tosunai.com

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Shanghai TOSUN Technology LTD

6 / 8,4801, Jiading District, Shanghai

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**

TP 1018 is a 12-way CANFD bus PCIe interface device launched by The Star Intelligence, the highest rate of 8 Mbps, Windows system drive-free 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 all kinds of development environments, such as C + +, C #, LabView, Python, etc., can monitor multiple bus network in real time, small size, convenient to be embedded in the vehicle industrial control machine, single board machine (SBC), portable industrial control host, industrial notebook. Easy integration into a variety of test systems, efficient and easy to use.

#### **1.2 Typical applications**

- ✓ Vehicle multichannel CAN / CAN FD bus data acquisition
- ✓ 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
- $\checkmark$  Easy to install type assembly hole design.
- ✓ Mini PCIe 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- -1Mbps 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
- ✓ Loadable TSMaster all charge License

#### **1.3.2 Technical parameters**

channel	12 *CAN FD
PC terminal interface	Mini PCIe Interface
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 for protocol CAN2.0A and B, comply with ISO11898-1 specification, and baud rate of 125 Kbps-1Mbps
CAN FD	Supporting the CAN FD with ISO and non-ISO standards, with a baud rate of 125 Kbps-8Mbps
Time stamp accuracy	lus, the hardware message timestamp, to meet the high-order requirements
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 power supply + an additional 7-18V power supply
Case material	aluminium product
size	100mm*80mm*30mm
working temperature	-40°C~75°C
Working humidity	10% ~ 90% (no condensation)
work environment	Stay away from the corrosive gases

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

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# **1.4 Shipping list**

- ✓ TP1018 Host machine
- ✓ DB 37 turn 12 head signal line
- ✓ Screwdriver, baffle plate fixing screw



# 2. Hardware interface description

- Mini PCIe 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	CANFD 10_HIGH	PIN15	CANFD10_LOW
PIN35	CANFD 11_HIGH	PIN16	CANFD11_LOW
PIN36	CANFD_SHIELD	PIN17	CANFD_GND
PIN37	CANFD 12_HIGH	PIN18	CANFD 12_LOW
		PIN19	CANFD_GND

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# 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.



Step 1:				
	选择安排	<b>凌语言</b>	×	
		选择安装期间要使用的语言:		
		English	~	
		确定	取消	
Step 2:				
Setup - TSMaste	er 2023.6.2	25.906	- 6	1
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# 7TSMASTER

### Step 3:

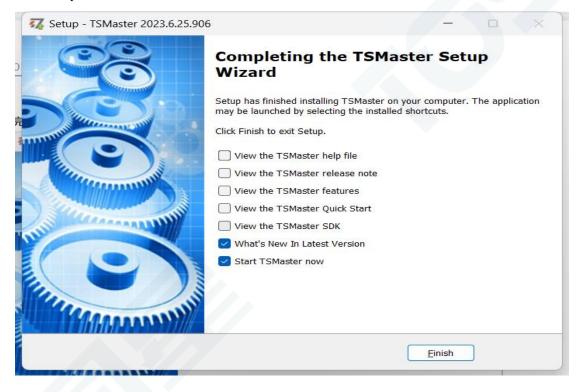
🌠 Setup - TSMaster 2023.6.25.906	_	
Select Destination Location		
Where should TSMaster be installed?		-/
Setup will install TSMaster into the following fold	ler.	
To continue, click Next. If you would like to select a different	rent folder, click Browse.	
C:\ydd\TSMaster		Browse
At least 347.3 MB of free disk space is required.		
Copyright (c) 2017-2023 TOSUN, All rights reserved		
	<u>B</u> ack <u>N</u> ext	Cancel

# Step 4:

Ready to Install		-
Setup is now ready to begin installing TSMaster on your con	mputer.	-
Click Install to continue with the installation, or click Back if y	you want to review or change any	settings.
Destination location: C:\ydd\TSMaster		
4		₽
right (c) 2017-2023 TOSUN. All rights reserved. —————		



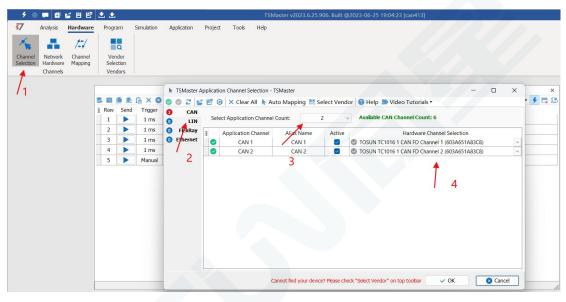
#### Complete installation:



### **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



# **7**TSMASTER

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.

9 🔍		4 B B	2 2				TSMaster v2023.6.25.906. Built @20	023-06-25 19:04:23 [can413]		
\$7	Analysis	Hardware	Progra	am	Simulation	Application Project Tools	Help			
*	<b>.</b>	1-1		a						
Channel Selection	Network Hardware Channels	Channel Mapping	Ver Seler Ven	ction			硬件配置	×		
	channes		V VCII	2013		Application Channels	TSMaster CAN FD C	Channel 1 - TOSUN TC1016 1 CAN FD Channel 1	-	
						Configuration		🔁 Default 💿 Apply		
			S. 🛤	<b>1</b>	1 × 8	CAN 1	Parameter	Value	2 -	4 0
			E Row	Send	Trigger	CAN 2	CAN Controller Type	ISO CAN FD		
			1		1 ms		Arbitration Phase Baud-rate [Kbps]	500		
			2	•	1 ms		Data Phase Baud-rate [Kbps]	2000		
			-				Arbitration Phase Bit Timing	TSEG1=63,TSEG2=16		
			3		1 ms		Data Phase Bit Timing	TSEG1=15,TSEG2=4		
			4		1 ms		Arbitration Phase SJW	15		
			5		Manual		Data Phase SJW	3		
			5		Pidiludi		Controler Mode	Normal		
							Filter Type	Allow All		
							Filter ID	X000000000X		
							Termination Resistor			

### 3.3 Message sending

Row         End         Trigger         Message Name         Id         Ch         Type         DLC         BR         D <thd< th="">         D         <thd< th="">         D         <thd< th="">         D&lt;</thd<></thd<></thd<>	Channel         Wetwork         Channel         Wendors           Selection         Hardware         Mapping         Selection	🗲 🔵	- 🕀 🖉	4 B B	12	Ł 📤						TSP	Master v	2023.6	5.25.906. BL	uilt @2	2023	06-2	25 19	:04:2	3 [ca	n413			
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Channel Selection Hardware         Vendors Mapping         Vendors           Channels         Vendors           Image: Selection Vendors         Vendors           Image: Selection Vendors         Image: Selection Vendors           Image: New Selection Vendors         Image: Selection Vendors           Image: NewMsg         001           Image: NewMsg         003           Image: NewMsg         004	Channels         Vendors Selection Vendors         Vendors Selection Vendors         Vendors           Image: Selection Vendors         Image: Selection Ve	1	- <b>A</b> (	1-1			a																		
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4 <b>b</b> 1 ms NewMsg 004 2 Std. Data 8 0 00 00 00 00 00 00 00 00	4 <b>b</b> 1 ms NewMsg 004 2 Std. Data 8 <b>b</b> 00 00 00 00 00 00 00 00 00 00					2		1 ms		NewMsg			002	1	Std. Data	8		00	00	00	00	00 0	0 00	00	
						3		1 ms		NewMsg			003	2	Std. Data	8		00	00	00	00	00 00	0 00	00	
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					-			-1 1																	

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

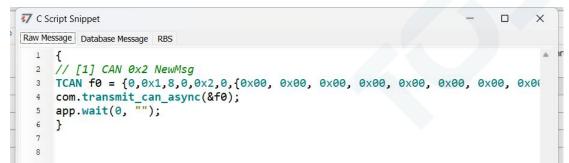
b. Right mouse button to create a new original message / add a message from the database, and set the message name / identifier / channel, etc

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

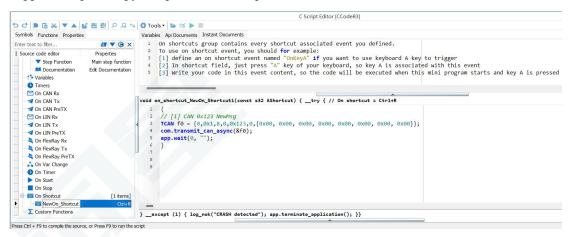
d. Message information right click can generate a C script to quickly add to the C small program for programming

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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.

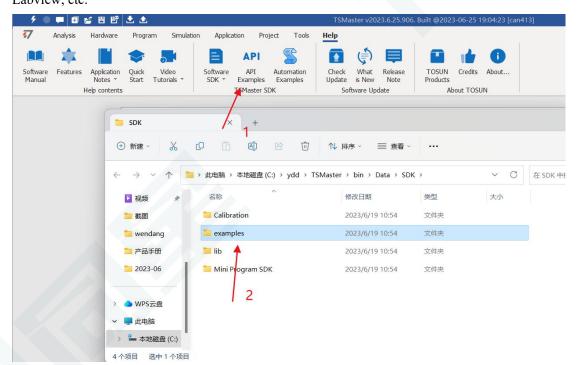
<b>7</b> Analysis Hardware Pro	gram Simulation Application F	Project	Tools Help															
M 🍁 📗 🔹	API	6 /		(f)	I		•	Ì	1		0							
oftware Features Application Quic Manual Notes Star			omation Check amples Update	What is Nev			TOSU Produ		Credit	ts /	About							
Help contents	S Graphics	* 5	How to add real-time of	comment	t in blf					JN								
	S Encrypt Publish	•	TSMaster Feature: Re	al-time o	omme	ent in Graphic	2S											
	3 J1939 .		TSMaster Feature: Ho	w to plot	Bus I	load in Graph	ics											
S. 1	Simulation		TSMaster Feature: Ho	w to mo	nitor r	nessage cyc	le in G	Fraphic	S								۹	4 5
∃ Ro	4 S Matlab Automation	, ge Na	ime	Id	Chn	Туре	DLC	BRS	D0	D1	D2	D3 [	04 D5	5 D6	D7		Comment	
1	App Publish	, wMsg		001	1	Std. Data	8		00	00	00	00	0 00	00	00			
€ 2	S Vendor Interface Connectivity	, wMsg		002	1	Std. Data	8		00	00	00	00	0 00	00	00			
3	Oiagnostics	→ wMsg		003	2	Std. Data	8		00	00	00	00	0 00	00	00			
4	Panel	+ wMsg		004	2	Std. Data	8		00	00	00	00	0 00	00	00			
5	S Mini Program (C Code Editor)	► wMsg		123	1	Std. Data	8		00	00	00	00	0 00	00	00			
	Calibration						1	-							_			
((*))	S Toolbox Development	F		<b>v</b>							-							
	gr System Variables Manager						_	-	-			-						
3	S Graphic Program	(a)		/te 2		Byte 3 00				/te 4				/te 5		Byte 6 00		yte 7 00
	Replay		00	00		00		-	-	00				00		00		00
	Test System	- F																

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.



#### 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.

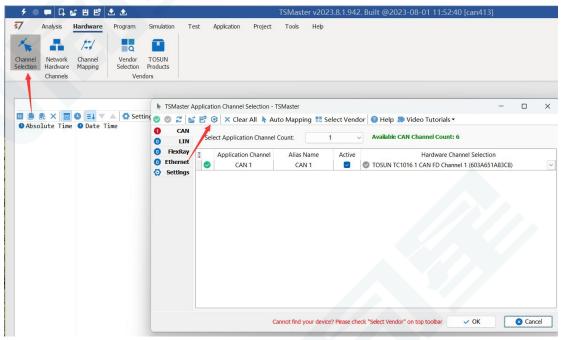
Such as: # include " TSMaster.h"

(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:

```
7 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
  5
     tsapp_set_ethernet_channel_count(0);
  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
  13
     m.FAppChannelIndex = 0;
     m.FAppChannelType = (TLIBApplicationChannelType)0;
  14
     m.FHWDeviceType = (TLIBBusToolDeviceType)3;
  15
     m.FHWDeviceSubType = 16;
  16
     m.FHWIndex = 0;
  17
     m.FHWChannelIndex = 0;
  18
  19
     if (0 != tsapp set mapping(&m)) { /* handle error */ };
  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

# TOSい同星

- 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

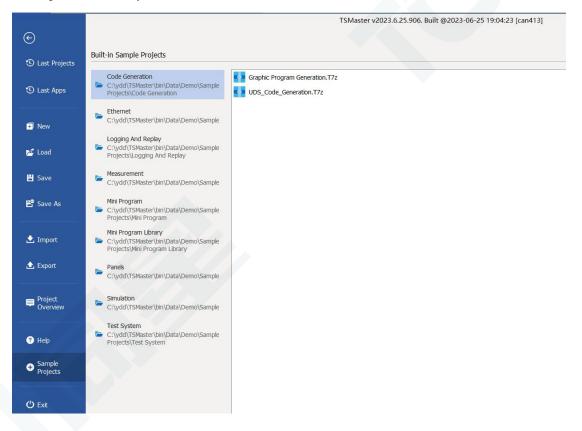
\* Note: The corresponding parameters of the hardware equipment can be found in the TSMaster-Help-Software Development Package :

TSMasterAPI\_Hardware\_Map.pdf



### 3.6 Sample Works

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



#### Sample project panel:

チ 🔍 💭 📾 😖 🗄 🕾 🕭	1	TSMaster v2023.6.25.906. Built @2023-06-25 19:04:23 [Panel Basi	cs]
🐬 Analysis Hardware Program Sim	ulation Application Project Tools He	elp	
Software Manual Software Manual		Check What Release Update is New Note Software Update	
	Panel Basics		×
1			۹ - 🛱 🖸
Text Containers Buttor	ns Graphics Data Manipulation	UI Trigger Events Signal Relation Page 8	Page 9
Check to set Gear to 1, uncheck to set Gear to 0	GroupBox for Gear	Data Selector for Gear	
Check to set Gear to 2, uncheck to set Gear to 0 Check to set Gear to 3, uncheck to set Gear to 0	Check to set Gear to 1 Check to set Gear to 2 Check to set Gear to 3	Gear n.a.	~
Trackbar to set EngSpeed Scrollbar to set EngSpeed Progressbar to reflect EngSpeed 0		Switch left to set EngTemp to -20 deg. switch right to set EngTemp to 120 deg. If EngTemp is 120 deg, this LED will become RED	- EngSpeed Gear
0	o		

# 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

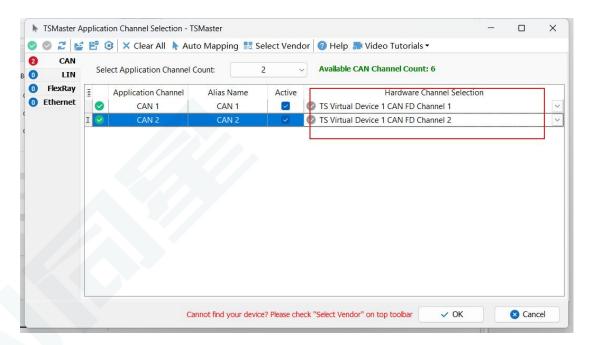
# 7TSMASTER

	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:

0	CAN		-			or 📀 Help 🔝 Video Tutorials 🕶	
0	LIN	Sel	ect Application Channel C	Col Automatic Maj	pping of ur	mapped channels channel Count: 6	
0	FlexRay	3	Application Channel	Alias Name	Active	Hardware Channel Selection	5
0	Ethernet		CAN 1	CAN 1		TOSUN TC1016 1 CAN FD Channel 1 (603A651A83C8)	~
		I 🕗	CAN 2	CAN 2	-	TOSUN TC1016 1 CAN FD Channel 2 (603A651A83C8)	~

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

9 🔍 📮 🗄 🔮	;86 🕹 🕹					TSMaster v2023.6.25.906. Built @2023	-06-25 19:04:23 [Panel Basics]	
🖅 Analysis I	Hardware Program	Simulation	Application	Project	Tools	Help		
* .	/**/ Q							
Selection Hardware	Channel Vendo Mapping Selectio	n				Hardware Config	uration	
Channels	Vendor	s						3
			🚠 App	lication Chan	nels	TSMaster CAN FD C	hannel 1 - TOSUN TC1016 1 CAN FD Channel 1	
F			🗘 Conf	figuration			🛃 Default 💿	Apply
			CAN CAN	1				
Text	Containers	Buttons	CRN CAN	2		Parameter	Value	
TEAL	Containers	buttons	_			CAN Controller Type	ISO CAN FD	
		GroupBo	. fr			Arbitration Phase Baud-rate [Kbps]	500	
Check to set Gear to	o 1, uncheck to set Gear to	0				Data Phase Baud-rate [Kbps]	2000	
		O ch	nec			Arbitration Phase Bit Timing	TSEG1=63,TSEG2=16	
Check to set Gear to	o 2, uncheck to set Gear to	0				Data Phase Bit Timing	TSEG1=15,TSEG2=4	
	o z, uncheck to set deal to	0 Cł	nec			Arbitration Phase SJW	15	
_		. O cł	her			Data Phase SJW	3	
Check to set Gear to	o 3, uncheck to set Gear to	0 0 0				Controller Mode	Normal	
			-			Fiter Type	Allow All	
						Fiter ID	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
Trackbar to set EngSp	eed					Termination Resistor		
Scrollbar to set EngSp	eed <							

# **5.2 Inconvenient message observation and signal filtering:**

	Setting	s - Filter String:			×												2-	4 8	×
Absolute Time Counter	Chn	Identifier	FPS	Message Name	Type	Dir	DLC	Data	BRS	ESI	00	01 0	2 03	04	05	06	07 0	3 09	10
☑ 0.016474 18	CAN 2	51A	0	NM_Gateway_P		Rx	4	4	1	0	00	00 0	0 00						
40.651222 318587	CAN 1	064	10	EngineData	FD	Tx	15	64	1	0	00	00 0	0 00	00	00	00	00 00	00	0 6
(••) IdleRunning		Running		0															
(•) EngTemp		-50 degC		0															
() PetrolLevel		0 1		00															
(••) EcoMode		0		0															
-(•) Gear		Idle		0															
- (••) EngPower		0 kW		0000															
-(••) EngForce		0 N		0000000															
-(••) EngSpeed		0 rpm		0000															
- (••) EngTorque		0		00000000	0000000														
- (••) ShiftRequest		Shift_Request_Off		0															
(••) SleepInd		0		0															
() EngTubePressure		0		000000000	0000000														
(••) EngValvePos		0		00000000	0000000														
-(•) EngStates		0		000000000	0000000														
EngIgnitionAngle		0		00000000	0000000														
(.) EngKnocking		0		000000000	000														

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:

		A c ut	City Chains		CAN / CAN FD									
and the second	D =1 🔺 🔻	Settings •	-			(100) (MA								4 🗖
Absolute Fime	Counter		Identifier	FPS	🖾 Message Name	Type			Data	BRS	ESI	00 01 02 03 04 05 06		3 09 1
☑ 91.841186	719904	CAN 2	003			Data	Tx	8	8	5	50	00 00 00 00 00 00 00	00	
91.843474	719921	CAN 1	004			Data	Rx	8	8	-	-	00 00 00 00 00 00 00		
91.844999	719934		004			Data	Tx	8	8			00 00 00 00 00 00 00	00	
91.846778	719951	CAN 1	003			Data	Rx	8	8	-	-	00 00 00 00 00 00 00	00	
91.751739	719201	CAN 1	064	9	EngineData	FD	Tx	15	64	1	0	00 00 00 00 00 00 00	00 00	00 6
91.851486	719984	CAN 2	064	9	EngineData	FD	Rx	15	64	1	0	00 00 00 00 00 00 00	00 00	0 00 0
91.855829	720021	CAN 1	001	957		Data	Tx	8	8	-	-	00 00 00 00 00 00 00	00	
91.857871	720034	CAN 2	001	957		Data	Rx	8	8	-	-	00 00 00 00 00 00 00	00	
91.860169	720051	CAN 1	002	950		Data	Tx	8	8	-	-	00 00 00 00 00 00 00	00	
91.861701	720064	CAN 2	002	950		Data	Rx	8	8	-	-	00 00 00 00 00 00 00	00	
	12803			_										
ist	All Messi	ages						0 %	5					

### 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.

🖉 💭 🖬 🔮 🗄 🖆 🕭 🏝	TSMaster v2023.6.25.906. Built @2023-06-25 19:04:23 [can413*]	? • _ • ×
77 Analysis Hardware Program Simulation Application Project	Tools Help	TOSUNAR
Start Stop Messagement Messages Real-time Connect Disconnect Star Setup Messages Real-time Connect Disconnect Star Messages Real-time Consumert COUS Measurement Messages Control Cont		es Start Stop Bus Bus Logging Logging Logger * Replay SVideo Replay *
	Show LIN Da	
	CAN Database	
	Show All 🕑 🛛 🗙 Channel: All 🗹 🔍 🥆 🕞	C
Channel Assomment           • Channel (SAN PD)           • CALTO, Sovertion           • Time (SAN PD)	■ Database Objects (∞ Signal Communication Matrix ) Message Communication Matrix ■ CANLPD-Devention (CAN PD) = CANLPD-Deventi	×

# 5.4 How to automatically record the message messages:

•		۵			TSMaster v	2023.6.25.906. Built	@2023-06								? 🗊	
Ana	lysis Hardware Pr	rogram Simulation	Application Pr	oject Tools	Неф											тозилав
t Stop	Measurement Messa Setup	ages Real-time (	Connect Disconnect ECUs ECUs	Start Measurement	Stop Measurement	Trace Transmit	Graphics	12 Numeric Display * Data Analysis	Statistics	Database	Gauges	Start Logging	Bus Logger *	Bus Replay	Converter Log Directory Video Replay	
			1			Bus Loggi	ng					×	1			
			Enable Module		Settings + Loc	File: can4132023 0	6 27 17 5	1 41.blf				- C .				
						-		-		Carlot I						
			Data File Folder	C:\ydd\gc\can4	13\Logging\Bus\					Default						
			Data File Name	[Configuration I	ame][System Tir	ne]				Name	Rule -					
										4		_			×	
		- 🔻 🗭 🙆 🔺 🤇	名称		小项目类型	修改日期				1		1.1		2.	9 🛱 🖸	
		Message	can4132023_04		KB BLF文件 1B BLF文件	2023/4/20 13:2 2023/4/20 17:5				/						
	09:31:26.173	CAN 2 bit rate			1B BLF文件 KB BLF文件	2023/9/20 17:5 2023/5/4 15:27										
	09:31:26.182	Bus Statistics			KB BLF文件	2023/5/5 9:34										
	09:31:26.185	Application con														
	09:31:26.185 09:31:26.185	TC1016 1 31939 TC1016 1 31939			KB BLF 文件	2023/5/23 15:5										
	09:31:26.185	Trace is in ch	can4132023_05_		CB BLF 文件	2023/5/23 15:5										
	09:32:47.430	Trace is in fi			1B BLF 文件	2023/5/23 16:3										
	09:32:51.605	Trace is in rel	CallH152025_05		1B BLF 文件	2023/5/26 11:2										
	09:32:53.786	Trace is in ch	CalH132025_03		1B BLF 文件	2023/5/30 12:4										
	09:32:54.674	Trace is in fin	can4132023_05		1B BLF 文件	2023/5/30 13:0										
	09:32:55.143	Trace is in rea	a can4132023_05		KB BLF 文件	2023/5/30 13:4										
	09:33:31.635	Application dis	can4132023_06		1B BLF 文件	2023/6/5 16:06										
	09:33:31.635	Bus Statistics	can4132023_06		KB BLF 文件	2023/6/6 11:05										
	09:33:59.004	CAN Database po	can4132023_06	07 17.1	(B BLF 文件	2023/6/7 17:00										
			can4132023_06	07 284	KB BLF 文件	2023/6/7 17:04										
			Can4132023 06	17 20.7	KB BLF 文件	2023/6/12 9:46										

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:	
------------------	--

🗲 💿 🗰 😰 🖺 📅 📩 🏝 TSMaster v2023.6.25.906. Built @2023 06-25 19:04:23 [can413*]	? 🗉 🗕 🗆 🗙
77 Analysis Hardware Program Simulation Application Project Tools Help	TOSUV同星
	Log Converter Log Directory Video Replay *
Bus Playback X	
Come Reday	
Contract regard (Contract regard)     Final Annual (Contract regard)	
carrl132023_05_23_15_50_51.blf 0.199	×
Image: Description of the second s	
No.      Finable <i>f_a</i> Post Process Functions	
0 %	
Payback Range Selecton:	
Log creation time: 2023-05-23 15:52:15 (3970.389977s)	

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

								I SIVIA:	iter v20	25.0.2	5.900. Buill	@2025-06	-25 19:04:2	s (cane i s.								^
\$7	Anal	ysis Hardware	Program	m Simulatio	n Appl	ication Pr	roject Tools	Help													1	เวรเงเตะ
4		E:		<b>P</b>	P	8×				≣	1	~	12	di		Ø			2		Converter	
Start	Stop	Measurement Setup	Messages	Real-time Comment	Connect ECUs	Disconnect ECUs	Start Measurement	Stop Measureme	nt	Trace	Transmit	Graphics	Numeric Display *	Statistics	Database	Gauges	Start Logging	Stop Logging	Bus Logger *	Due	Video Replay *	
				Measure	ment								Data Analys	is					Logging an	nd Replay		^
	Bus Playback X C Office Replay (C Other Replay)																					
				Row		Na	me		Star	t		Progre	ss (%)				File Nam	e				
				1	can413	2023_05_23	_15_50_51				0		)	C:\ydd	\gc\can413\	Logging\Bus	can4132023	_05_23_15	_50_51.blf		×	
			0 - 🔻																		<b>C</b> C	
		© Time 09:31:26.		essa s St																		

d. Bus playback-online playback-add recording files

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

tl	ne	pl	lay	bac	k d	lata
----	----	----	-----	-----	-----	------

Display Name	can4132023	_05_23_15_50	51			
Source File	C:\ydd\gc\can413\Logging\Bus\can4132023_05_23_15_50_51					
Replay Settings						
Auto start on measurement start	Do not auto start					
Output times	Output only once					
Output mode	Default: Timestamp as log file					
Start timing conditions	Immediately: Direct send the first message					
Start / Stop shortcut	Press a key					
Pause / Resume shortcut	Press a key					
Force Replay	Stop playback even if an error occurs					
CAN Options						
Tx messages in log file	Send Tx messages					
Rx messages in log file	Send Rx messages					
Replay Filter	Set No Filte	r Set As Pass	Filter Set As Block Filter Filter D Edit Fil	ter		
	Source Channe Destination Channel (ignore = 0, use comma to ser					
	1	1				
CAN Channel Mapping	2	2				
	3	3 4				
	4	4				
			V OK - Cance	4		

# TOSい同星

# 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	х	х	Length)					
	(Message identification code)									
Bytes 2	ID.10-ID.3									
Bytes 3	ID.2-ID.0			x	х	x	х	х		
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.

TSMASTER

	7	6	5	4	3	2	1	0		
					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					х	х	x		
Bytes 6	Data 1									
Bytes 7	Data 2									
Bytes 8	Data 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.

<sup>(2)</sup> 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!



OSING

# 汽车电子工具链,国产领导品牌

同星智能成立于2017年,一直专注于研发国产自主可控的汽车电子基础工具链产品, 也是该领域国产领导品牌。

同星智能的核心软件TSMaster及配套硬件设备,具备嵌入式代码生成、汽车总线分析、 仿真、测试及诊断、标定等核心功能,覆盖了汽车整车及零部件研发、测试、生产、试验、 售后全流程。

全球企业用户超4000家,用户覆盖:汽车整车厂、零部件供应商、芯片厂商、设备/服务 供应商、工程机械、航空航天及舰船军工等领域。

软件

- ・UDS诊断
- ・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

# 硬件

- ・1/2/4/8/12通道CAN FD/CAN转USB工具
- ・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



# 解决方案

- ・EOL测试设备
- ·FCT测试设备
- ·汽车"四门两盖"试验解决方案
- ·线控底盘测试解决方案
- ·电机性能/耐久试验解决方案
- ·新能源产线设备解决方案
- ·总线一致性测试解决方案
- ·信息安全解决方案

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