



User Manual

CAN FD and LIN to USB Interface

TC1015	CAN FD × 2
	LIN × 2

Copyright Information

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- Vehicle-level CAN (FD)/LIN network data acquisition and analysis
- Simulation, testing, and diagnostics of intelligence domain controllers (e.g., cockpit, ADAS)
- Building high-reliability automated test systems and endurance test benches
- Vehicle diagnostics, ECU calibration, and flash programming

- High Precision

Hardware-level timestamp accuracy in the microsecond range, providing precise timing references for advance simulation and diagnostics.

- Plug-and-Play Compatibility

USB driver-free design. Fully plug-and-play under Windows and Linux with excellent system compatibility.

- Safe and Reliable

2500 VDC galvanic isolation per CAN channel. Automotive-grade design ensures stability under harsh conditions.

- Flexible Configuration

Software-configurable 120 Ω CAN termination; LIN channels support software switch between master and slave modes for versatile network topologies.

- Ecosystem Integration

Fully compatible with mainstream formats such as LDF, DBC, and A2L. Seamless integration with all TSMaster licensed features.

- Professional Toolset

Supports BLF data logging and playback, UDS diagnostics, CCP/XCP calibration, and Flash Bootloader operations.

- Open and Extensible

Provides cross-platform APIs for secondary development. LIN channels support flexible configuration of master/slave modes to meet advanced customization needs.

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The TC1015 is a multi-channel CAN FD and LIN interface device.

It supports CAN FD bus speeds up to 8 Mbps and LIN baud rates from 0 to 20 kbps. The device connects to the PC via a USB 2.0 interface, and features a driver-free design for both Windows and Linux, ensuring excellent system compatibility.

Used with the powerful TSMaster software, it supports loading DBC and ARXML database files for convenient monitoring, analysis, and simulating of CAN FD/LIN bus data. It also supports UDS diagnostics, ECU flashing, and CCP/XCP calibration functions.

Included resources:

- CAN FD/LIN monitoring software TSMaster
- Cross-platform secondary development library (with a dedicated programming manual)



This document covers the operation of the device on Windows. For usage on Linux and other operating systems, please refer to the separate user manual.



PC Interface	USB 2.0
Timestamp Precision	Microsecond-level high-precision timestamps
Driver	Cross-platform, driver-free design
Connector	Standard D-Sub, 9-pin
License	Supports all TSMaster paid licenses
Power Supply	USB-powered (LIN also supports external power)
Power Consumption	2 W
ESD Protection	± 4 kV contact discharge, ± 8 kV air charge

Enclosure Material	Metal
Dimensions	Approx. 113 ×

Supported Protocols	LIN 1.3, LIN 2.0, LIN 2.1, LIN J2602
Schedule Table	Supports LDF schedule tables; load, create, and configure directly
External Power Supply	Supported, 12 V ~ 36 V input range



Operating Voltage	USB power supply	4.8	5.0	5.2	V
Power Consumption	USB power supply	1.9	1.9	2	W



Termination	Enabled	--	120	--	Ω
Resistance	Disabled	--	32	--	k Ω
Isolation Voltage	Leakage current < 1mA	2500	--	--	VDC



Bus Pin Tolerance Voltage	LIN to GND	12	--	36	V



ESD	IEC 61000-4-2	Contact discharge	± 4	kV

		Air discharge	± 8	kV
EFT/Burst	IEC 61000-4-4	Electrical fast transient	± 2	kV



Unit: mm

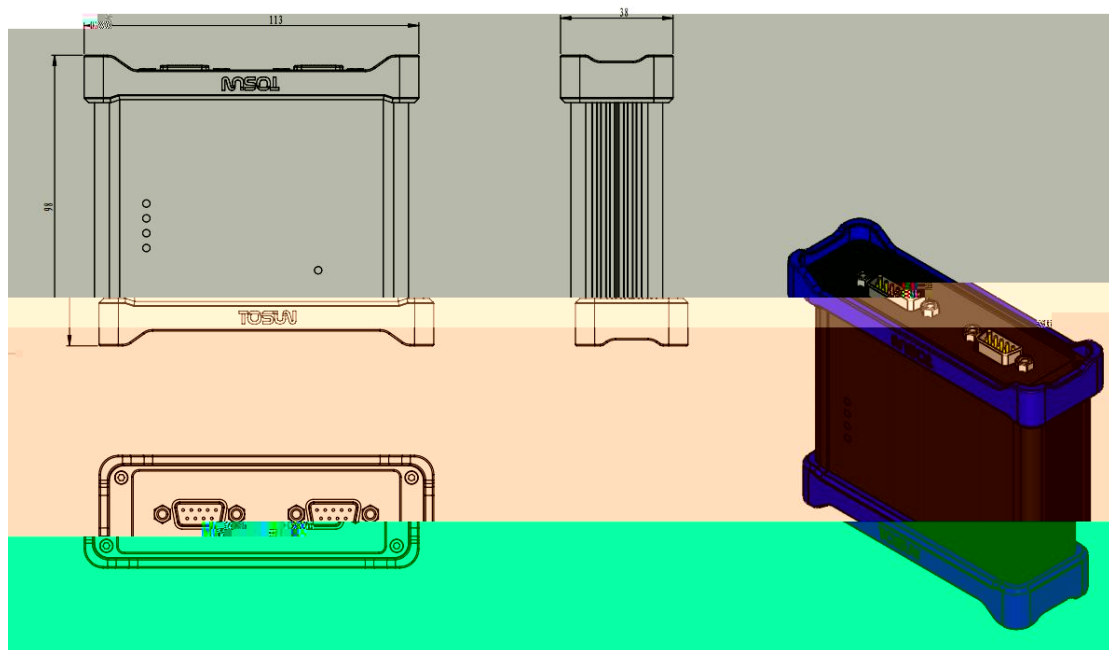


Figure 1-1 Mechanical Dimensions



Figure 1-2 Hardware Interface (I/O)



Figure 1-3 Hardware Interface (CAN FD, LIN)



Figure 1-4 Pin Layout (CAN FD, LIN)



Figure 1-5 Front Panel Layout



CAN FD 1 ~ 2	Status of CAN FD channel 1 ~ 2
LIN 1 ~ 2	Status of LIN channel 1 ~ 2
Link	Hardware connection indicator



CAN FD, LIN	Green	Normal frame transmission/reception
	Red	Frame transmission/reception error — configuration, protocol, or wiring fault

Link	Green	Device connected successfully
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The blinking frequency depends on the bus load rate — the higher the bus load, the faster it blinks.



- Operating System: Windows or Linux
- One available USB port (USB 2.0 or higher), or a powered USB hub



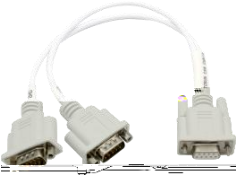
- The TC1015 features a driver-free design, ensuring outstanding system compatibility. It can be used directly on Windows (7/8/10/11) or Linux without manual driver installation.



- TSMaster software
- PDF user manual
- Programming library (for secondary development)



The download link is available on the official website of Shanghai TOSUN Technology Ltd.: <https://www.tosunai.com/>

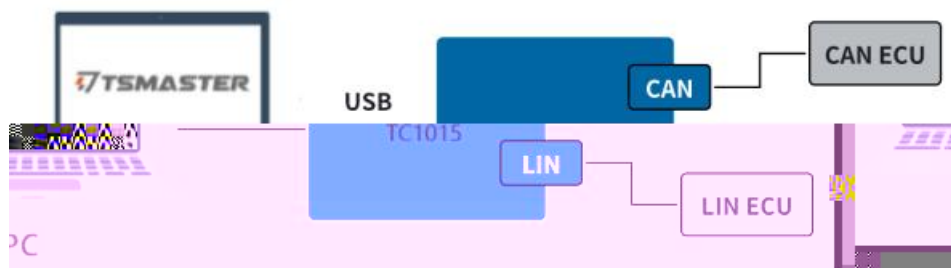


Figure 2-1 Example in Windows



For TSMaster installation instructions, please refer to the appendix.

Use the included DB9 Female–Dual Male Signal Cable (CAN) to access two independent channels via two D-Sub 9-pin connectors.

The following diagram shows the pin mapping of the “DB9 Female–Dual Male Signal Cable (CAN)” harness:

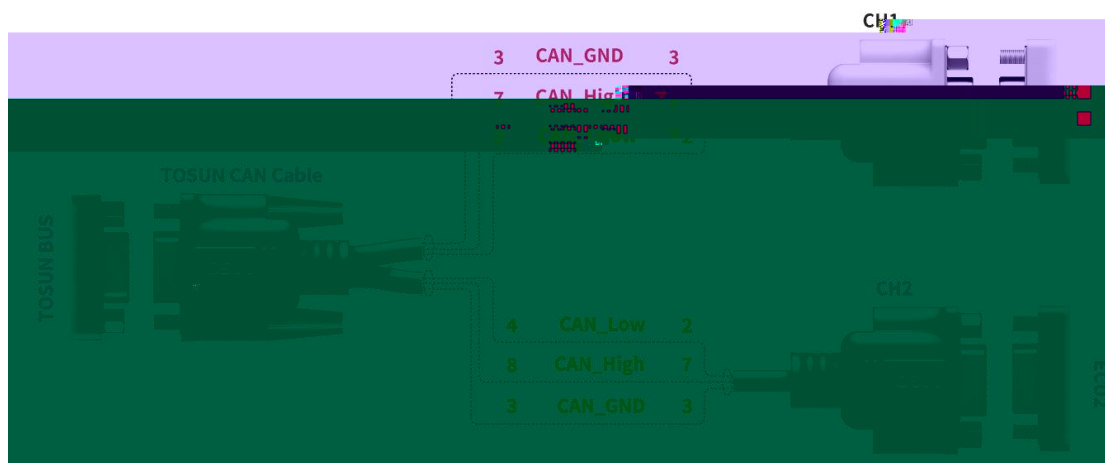


Figure 2-2 DB9 Female–Dual Male Signal Cable (CAN)

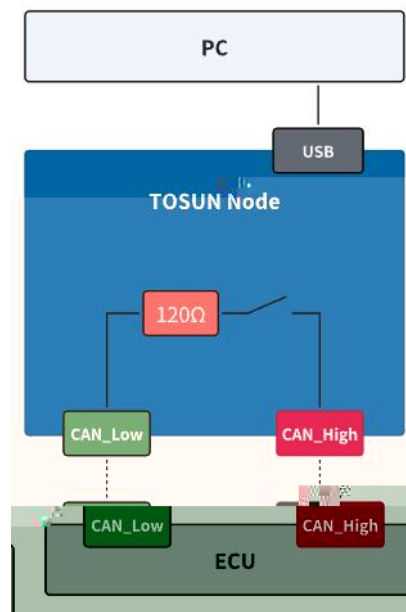


Figure 2-3 Using CAN

Use the DB9-to-5-Banana LIN Cable to supply external power and access the LIN channels conveniently.

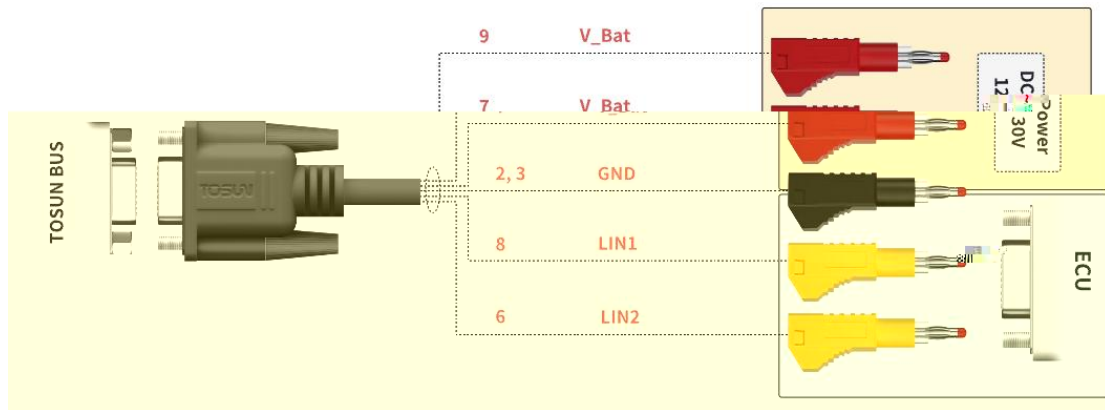


Figure 2-5 DB9-to-5-Banana LIN Cable

The LIN interface includes an internal 12 V power source. Pins 2 and 3 share a common GND; pins 7 and 9 share the same V_Bat line. When external V_Bat exceeds 12 V, the device automatically switches to external power; otherwise, it uses the internal supply.

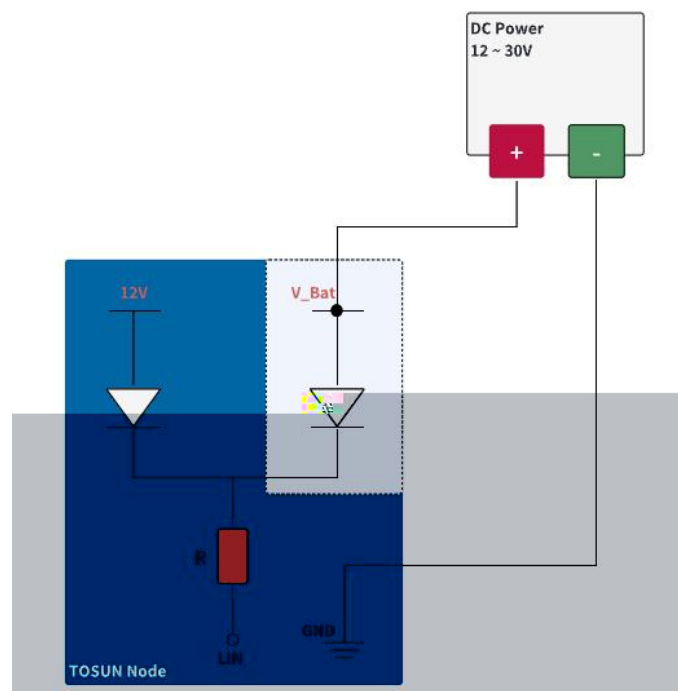


Figure 2-6 Using LIN

The TC1015 can operate as either a Master or Slave node on the LIN bus.

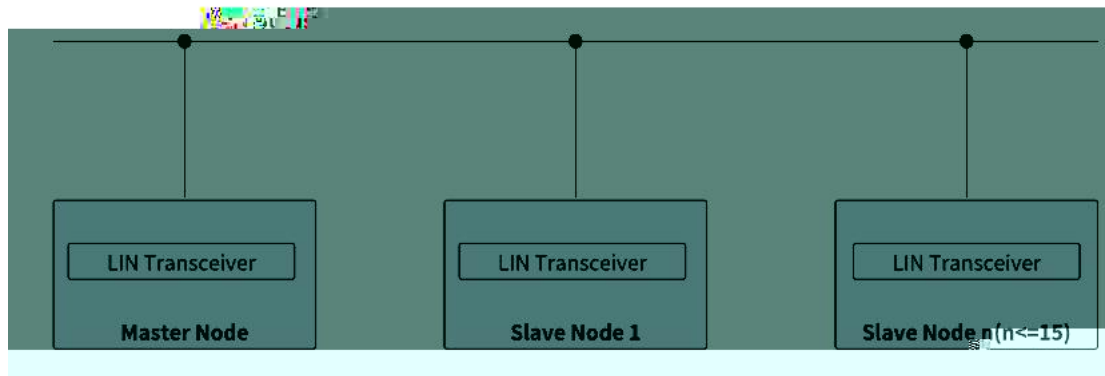


Figure 2-7 LIN Bus

1. Connect the device to the PC via the supplied USB cable.
2. In TSMaster, go to “Hardware” → “Channel Selection” to open the Channel Selector. Choose the desired CAN or LIN channels.

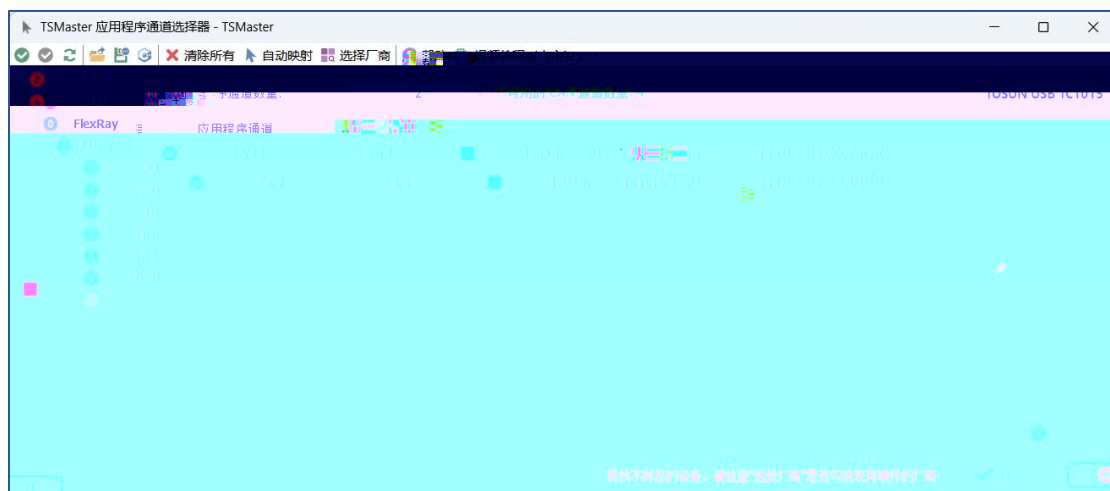


Figure 2-8 Channel Selection

3. Navigate to “Hardware” → “Network Hardware” to open the “Hardware Configuration” window, where you can configure CAN and LIN parameters.

CAN configuration window:



Figure 2-9 Channel Configuration (CAN)

LIN configuration window:

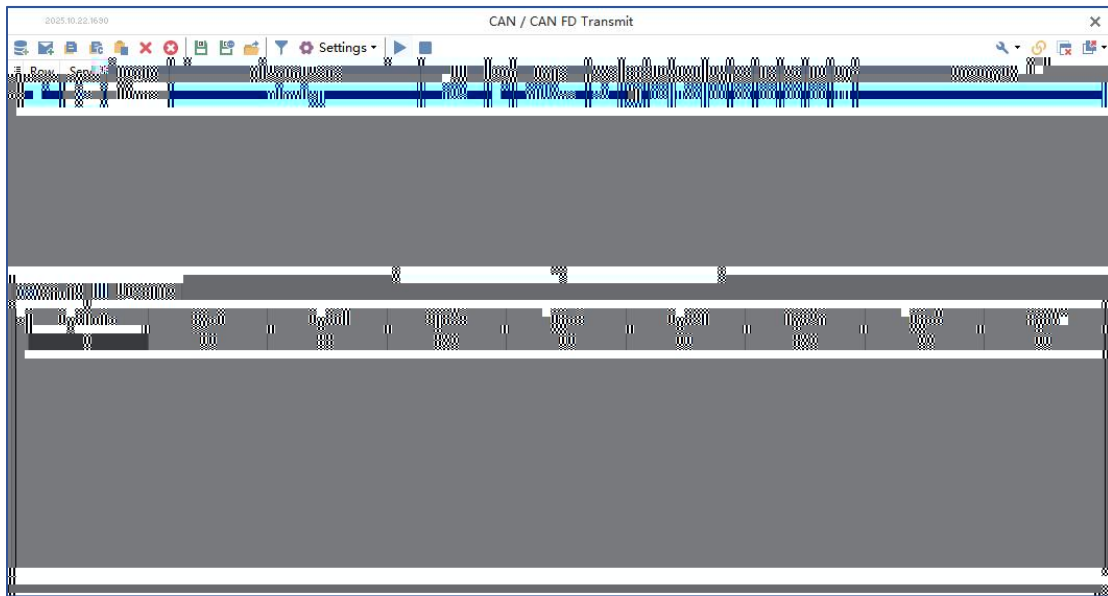


Figure 2-11 Adding CAN Message

2. Message information can be viewed under “Analysis → Data Analysis → Message Analysis → Add CAN/CAN FD Message Information.”

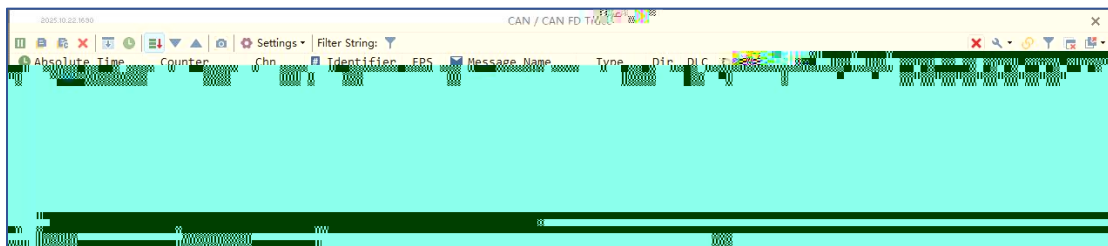


Figure 2-12 CAN Message Information

3. Bus statistics can be viewed under “Analysis → Data Analysis → Statistics → Show CAN Statistics” (example shows one channel).

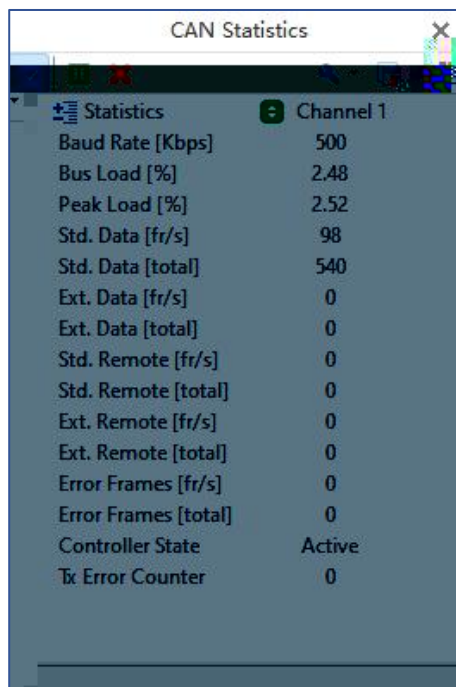


Figure 2-13 CAN Statistics



1. In the “CAN/CAN FD Transmission” window, right-click a message and select “Copy as C Script” to display example code. Copy the generated code.

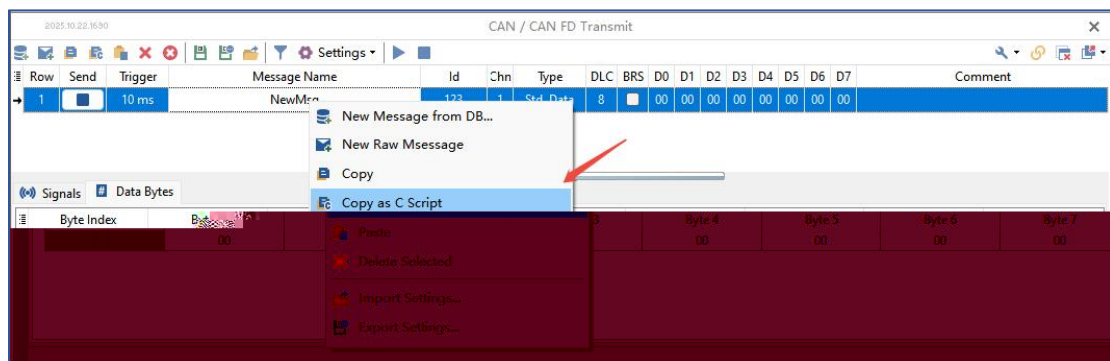


Figure 2-14 Quick Access to C Code

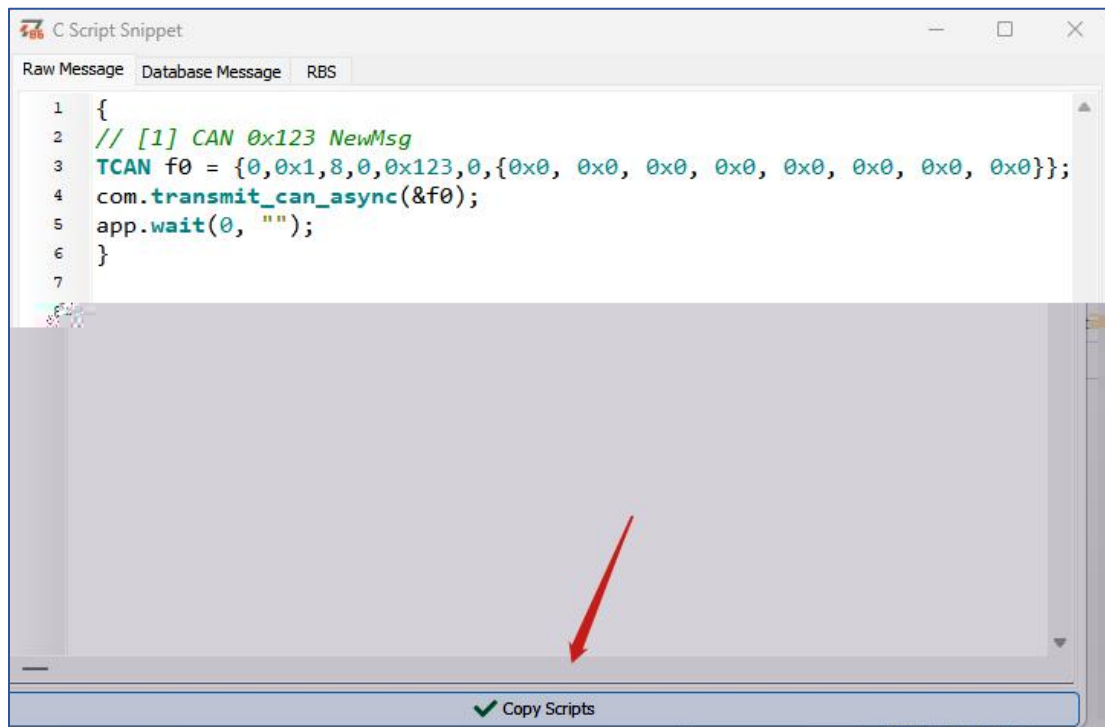


Figure 2-15 Copying the C Code

2. In the mini-program module, click “Design → Mini-program → Add C Mini-Program Editor” to open the C code editor.

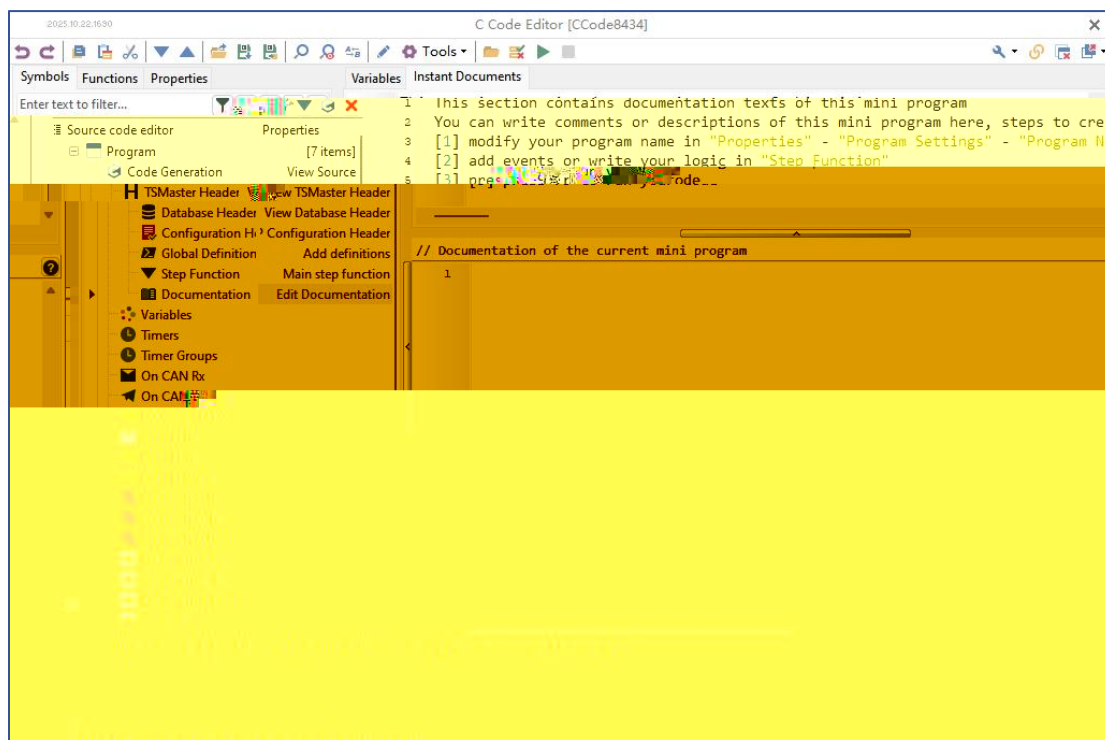


Figure 2-16 Adding a C Mini-Program Editor

3. In the C Code Editor, add a key event (e.g., Key A), paste the copied code into the event handler, then click Compile and Run.

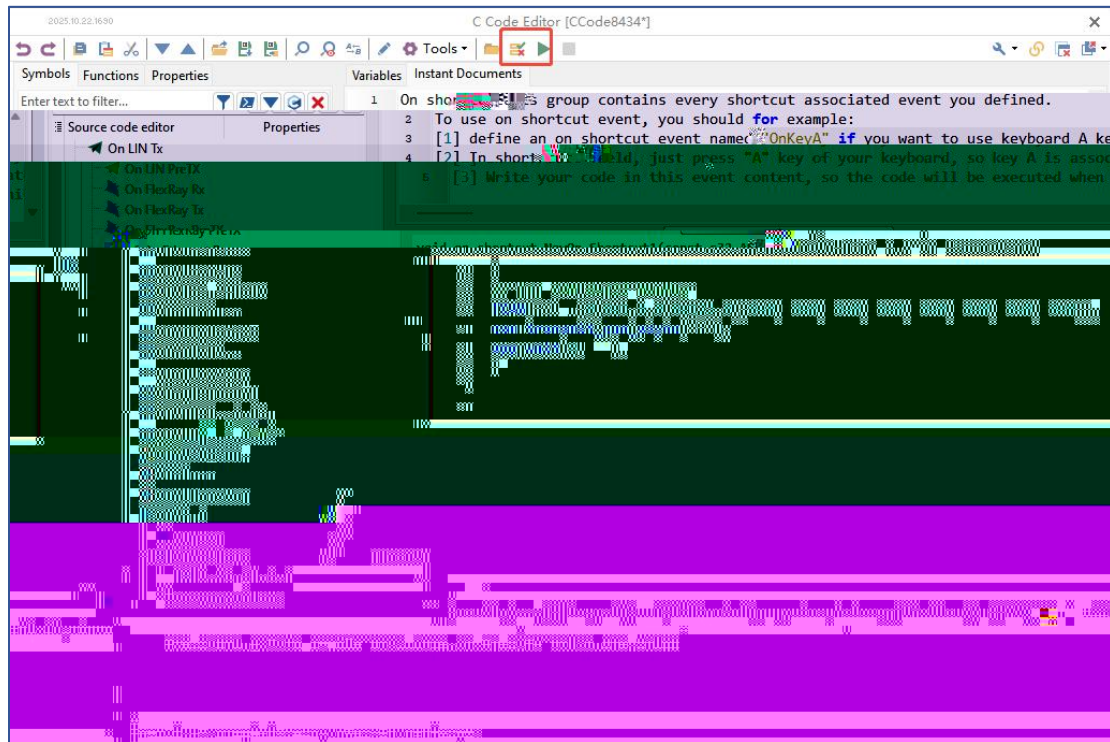


Figure 2-17 Building a C Mini-Program (CAN)

4. Each time Key A is pressed, a CAN message will be transmitted.

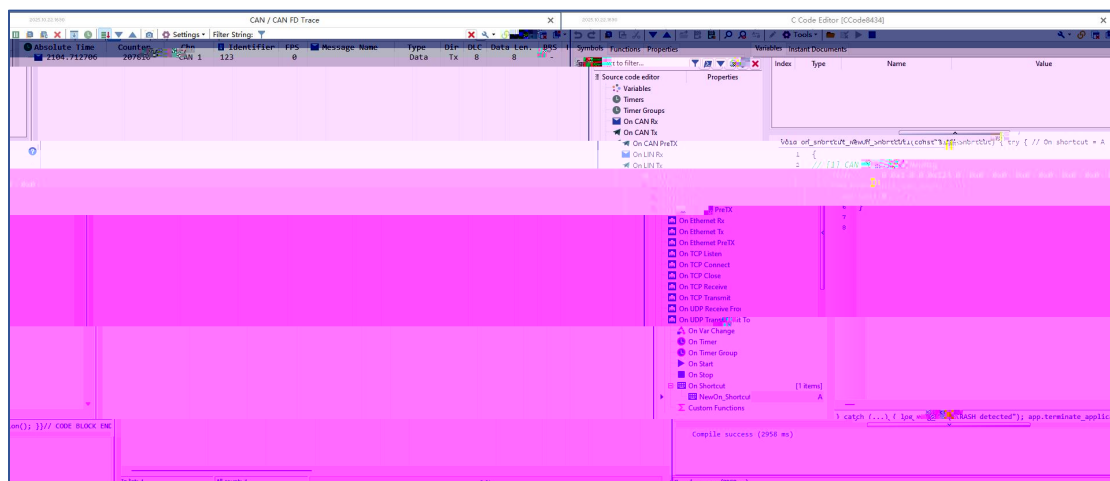


Figure 2-18 Sending CAN Messages via C Mini-Program



1. Click Analysis → Data Analysis → Message Transmission → Add LIN Transmission” to open the LIN Transmission window.

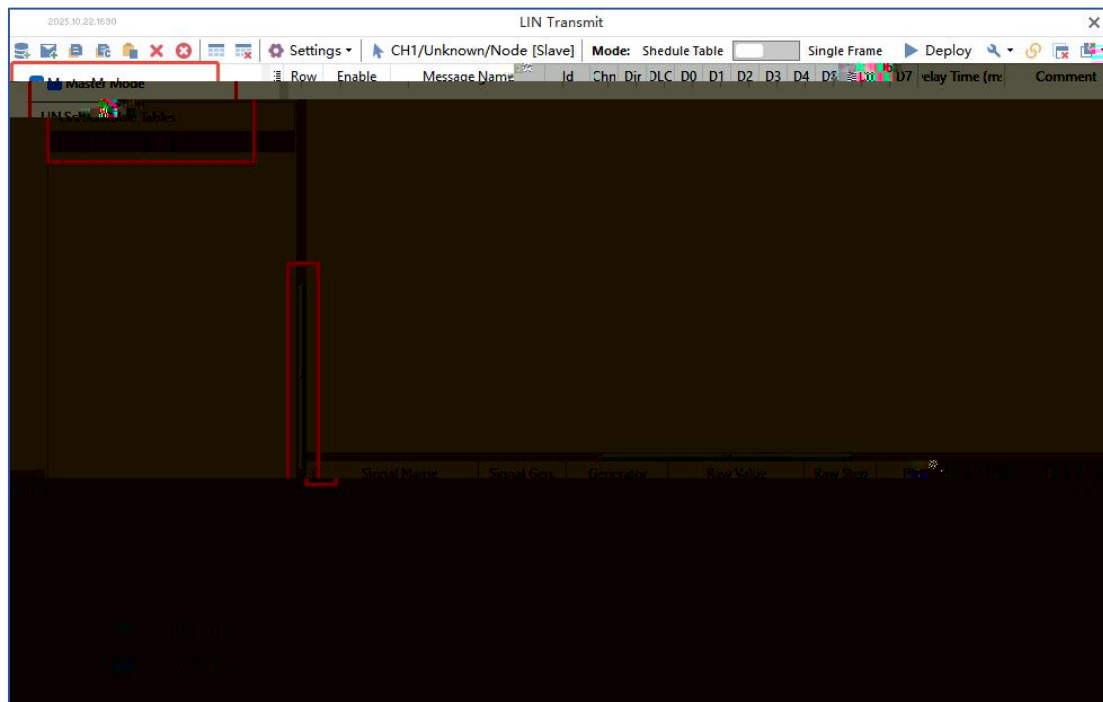


Figure 2-19 LIN Transmission Window

2. Use the buttons on the left side of the window to configure the current channel as either master or slave. Select “Master Mode” to set it as a master node; uncheck it to set it as a slave node.

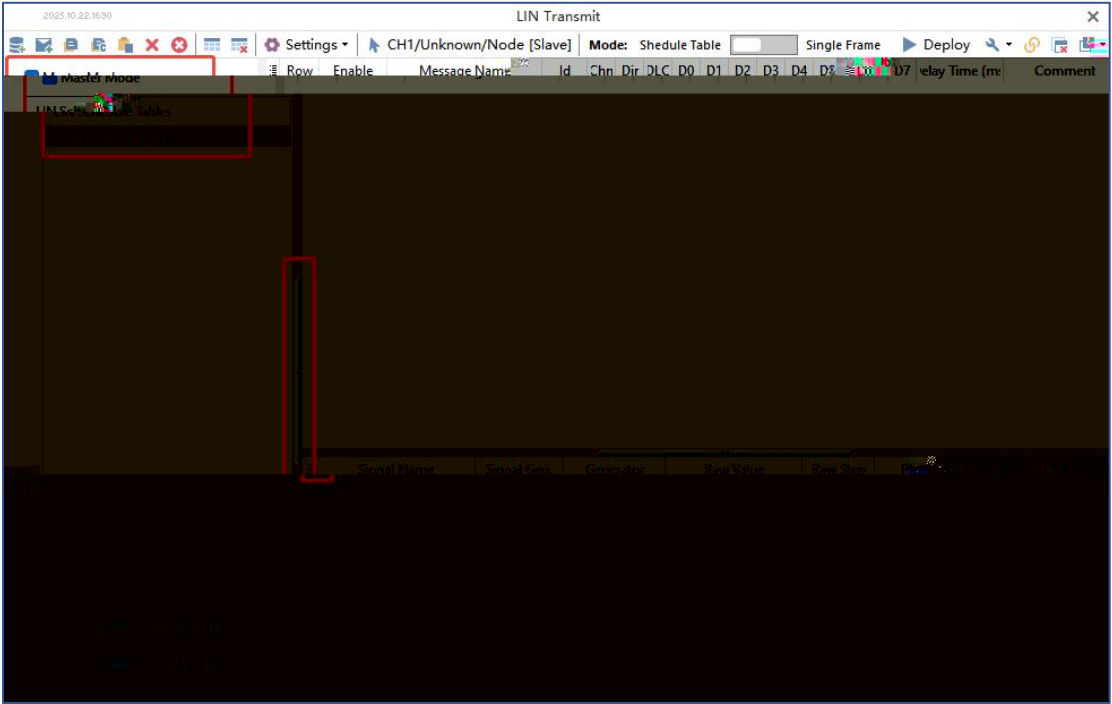


Figure 2-20 Configuring LIN Master/Slave Mode

3. Add a LIN message as shown (example uses master mode), then click Deploy.

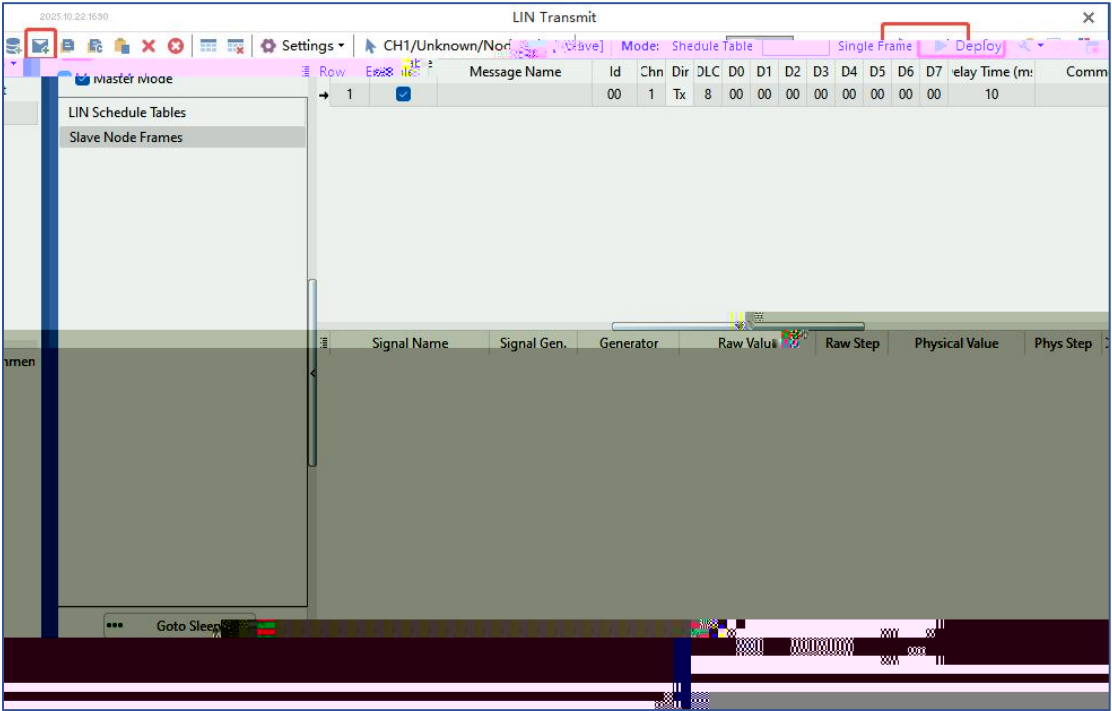


Figure 2-21 Adding a LIN Message



Note that at low baud rates, the delay time may affect message communication.
Increase the delay time as needed based on actual conditions.

4. Click “Analysis → Data Analysis → Message Information → Add LIN Message Information” to view LIN message details.

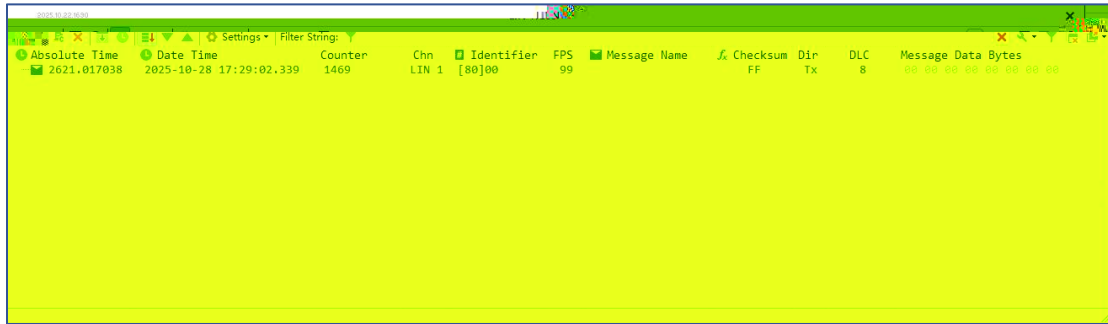


Figure 2-22 LIN Message Information



1. In the C Code Editor, add a key event (e.g., Key A) and enter the code shown below. Then click Compile and Run.

@ F T M ^



The section describes the steps for installing the TSMaster software on a Windows PC.



<https://www.tosunai.com/downloads/>

If the site is unavailable, contact your sales representative or visit the TOSUN official website.

You may also scan the QR code below to follow the official WeChat account and obtain download links.



Figure 3-1 TOSUN Official WeChat Account



1. Double-click the TSMaster installer and select the installation language.

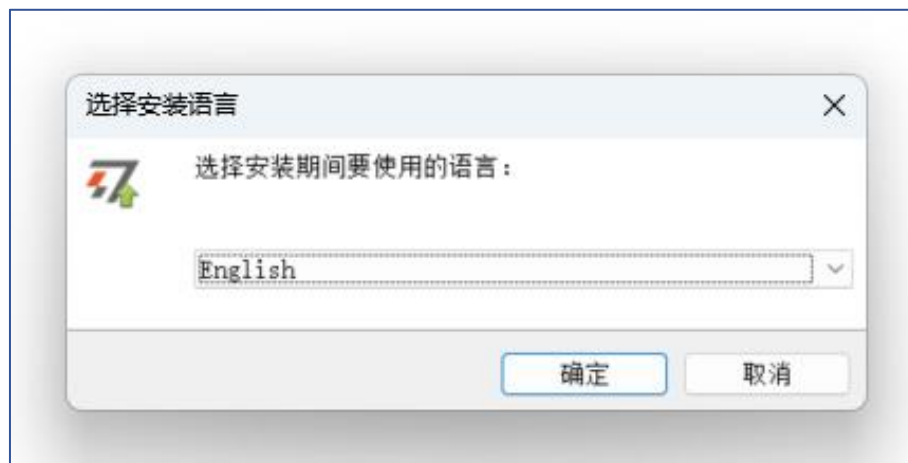


Figure 3-2 TSMaster Installation

2. Accept the license agreement and click “Next”.

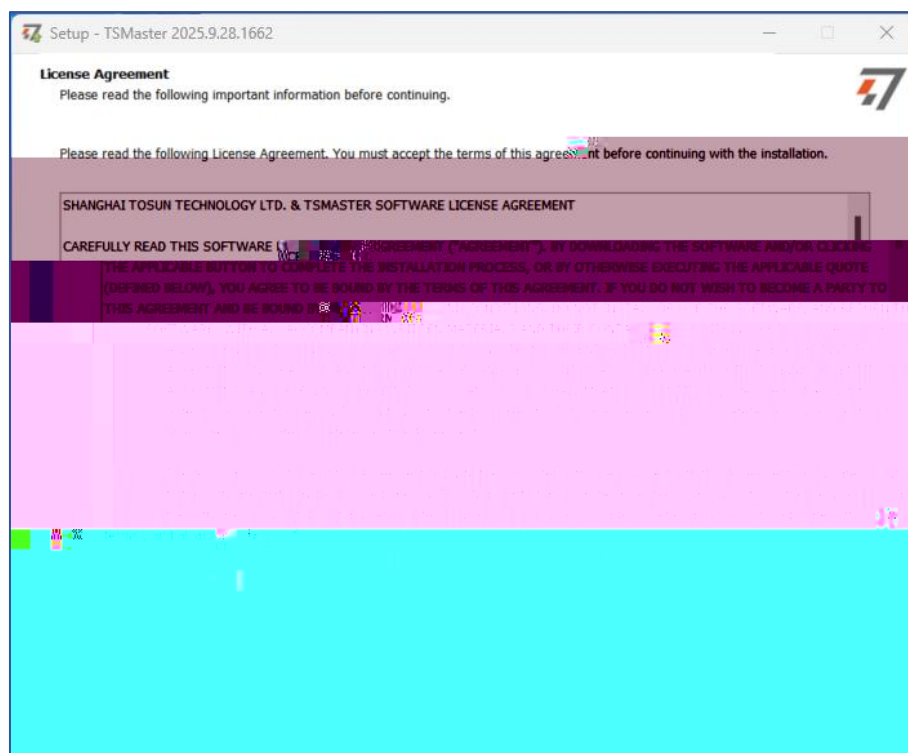


Figure 3-3 TSMaster Installation

3. Choose an installation directory and click “Next “.

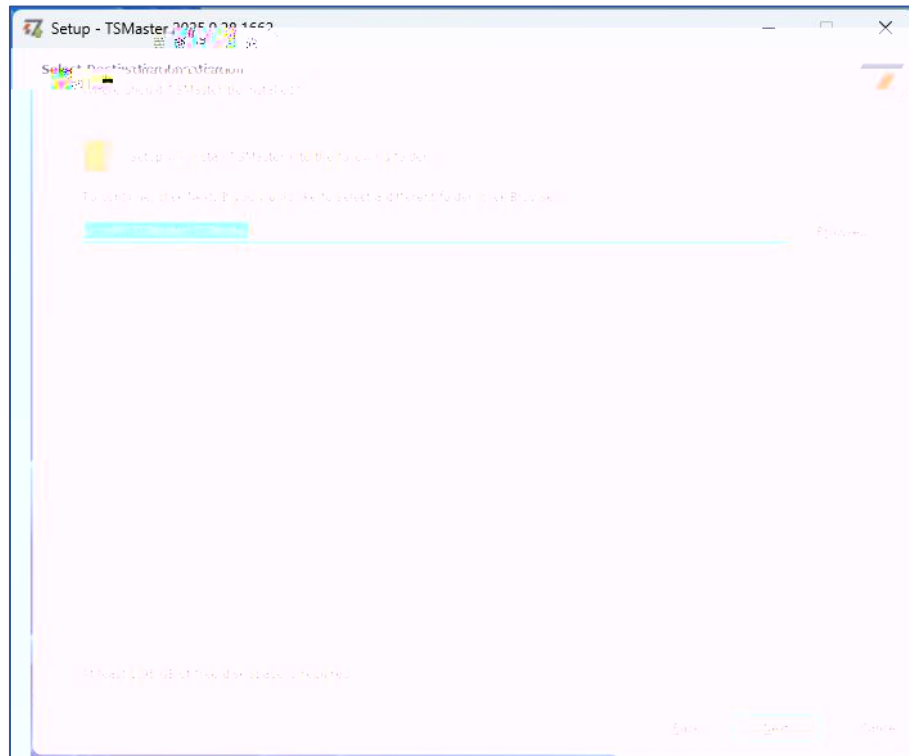


Figure 3-4 TSMaster Installation

4. Select additional tasks as needed and click “Next”.

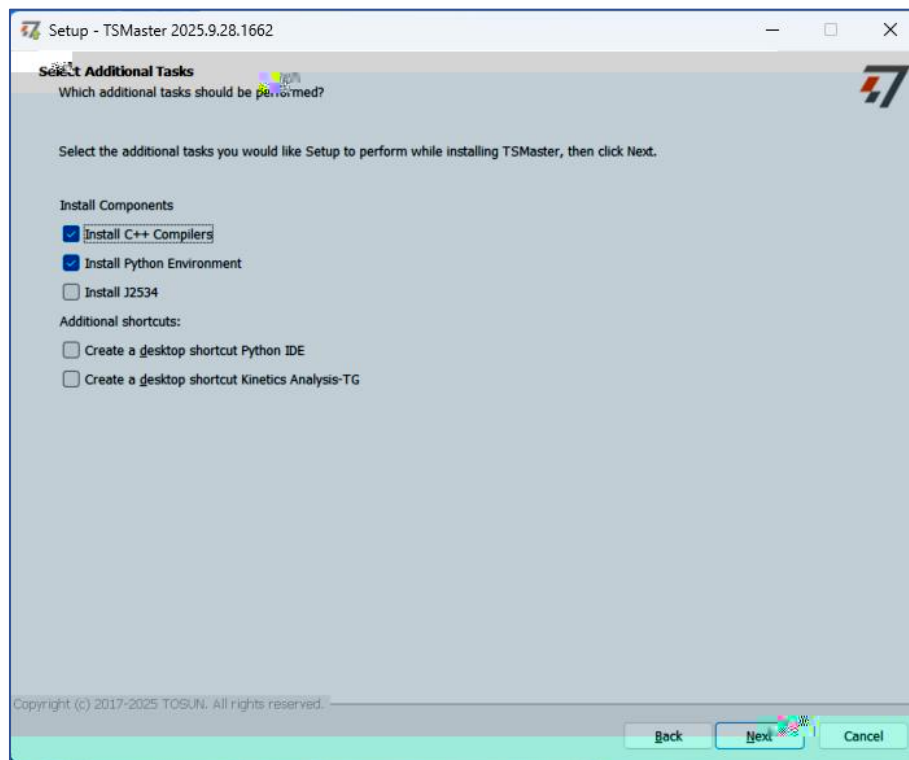


Figure 3-5 TSMaster Installation

5. Click “Install” and wait for completion.

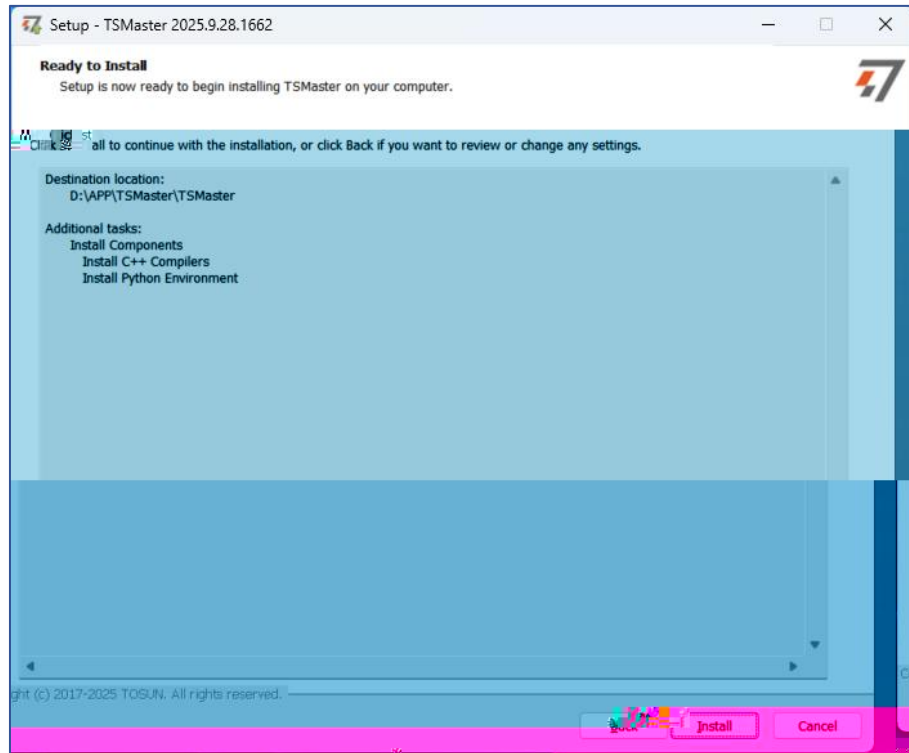


Figure 3-6 TSMaster Installation

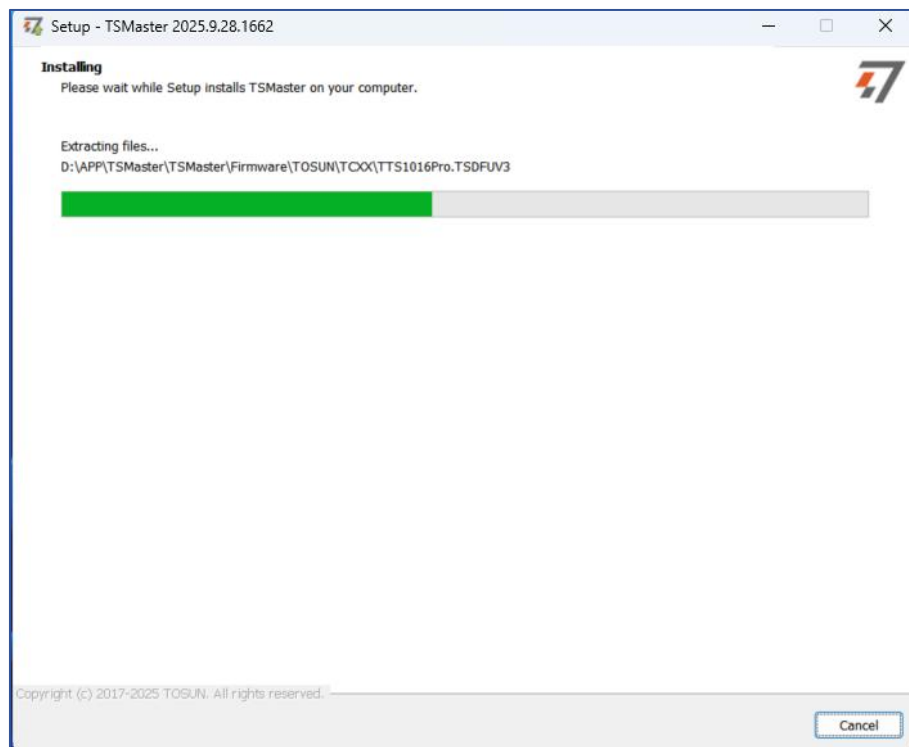


Figure 3-7 TSMaster Installation

6. Click “Finish” to complete installation.

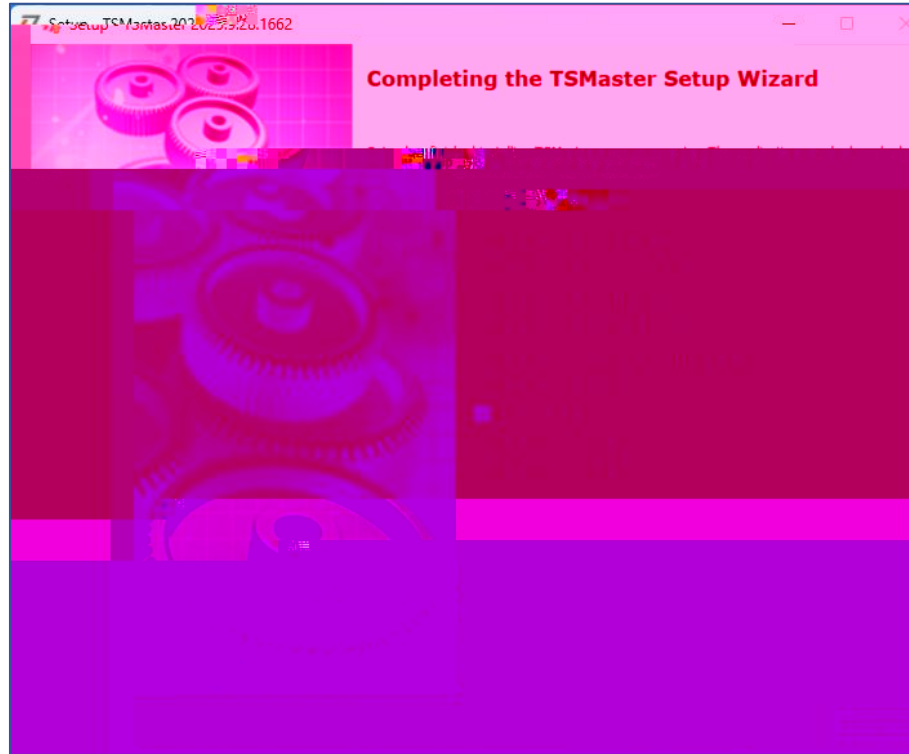


Figure 3-8 TSMaster Installation

The TC1015 primarily contains semiconductor components, which typically have a long service life. However, adverse environmental conditions may accelerate aging and degrade performance. To ensure proper operation, regular inspections are recommended to maintain the required environmental conditions.

It is recommended to inspect the device at least once every 6 to 12 months. In harsher environments, inspections should be performed more frequently. Refer to the table below for inspection criteria and recommended actions. If issues persist, please contact Shanghai TOSUN Technology Ltd.



Power Supply	Check voltage fluctuation at power input	USB port: +5 V DC	Use a power meter or voltmeter at the input; ensure voltage fluctuation is within range
Ambient Conditions	Check ambient temperature (including internal temperature within enclosures)	-40 ~ +80	Use a thermometer to ensure temperature is within specified range
	Check the ambient humidity (including internal humidity within enclosures)	10% ~ 90% RH	Use a hygrometer to ensure humidity is within specified range



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Contamination	Check for accumulation of dust, powder, salt, and metal debris	None	Clean the device and prevent future contamination
	Check for exposure to water, oil, or chemicals	None	Clean and shield if necessary
Hazardous Gases	Check for corrosive or flammable gases	None	Use sensors or odor detection to verify



Mechanical Stress	Check vibration and shock levels	Within specified limits	Install padding or vibration isolation measures if necessary
Electromagnetic Environment	Check for noise sources near the device	No significant noise sources	Isolate or shield the device from noise sources

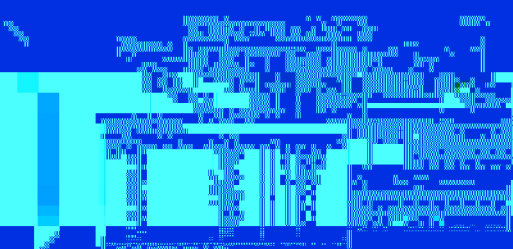


Wiring	Check crimped connectors in external wiring	Adequate clearance between connectors	Visually inspect and adjust as needed
	Check for damage to external wiring	No damage	Visually inspect and replace damaged cables if necessary

Software

Embedded code-generation / Application builder

- Embedded code-generation / Application builder
- Embedded code-generation / Application builder
- Embedded code-generation / Application builder



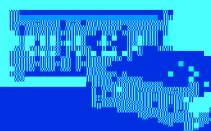
Hardware

Multi-channel FlexRay/CAN FD to USB/PC interface

- Multi-channel FlexRay/CAN FD to USB/PC interface
- Multi-channel FlexRay/CAN FD to USB/PC interface
- Multi-channel FlexRay/CAN FD to USB/PC interface

Applications

- Multi-channel FlexRay/CAN FD to USB/PC interface
- Multi-channel FlexRay/CAN FD to USB/PC interface
- Multi-channel FlexRay/CAN FD to USB/PC interface



CAN FD to USB/PC interface

CAN FD to USB/PC interface

CAN FD to USB/PC interface

Solutions

- Embedded code-generation / Application builder
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About TOSAI

TOSAI is a leading provider of embedded software and hardware solutions for automotive and industrial applications. We provide a complete range of services from system architecture to hardware and software development, testing and deployment.

