



TOSUN-TC1015

User Manual

Product Features & Interface Overview

CAN FD and LIN to USB Interface

Product Name	Channel
TC1015	CAN FD × 2
	LIN × 2

Copyright Information

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In an effort to provide users with the best possible service, Shanghai TOSUN Technology Ltd. (hereinafter referred to as “TOSUN Technology”) has made every attempt to present accurate and detailed product information as possible in this manual. However, due to the time-sensitive nature of the content, TOSUN Technology cannot guarantee the timeliness and applicability of the information at all times.

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Typical Application

- 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

Product Highlights

- 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.

Contents

Product Features & Interface Overview	2
Typical Application	3
Product Highlights	3
1. Introduction	6
1.1. Technical Specifications	6
1.2. Electrical Specifications	8
1.3. Hardware Interface	10
1.4. LED Indicators	12
1.5. System Requirements	13
1.6. Packing List	14
2. Application Example in Windows	15
2.1. Hardware Connection	15
2.1.1. CAN	15
2.1.2. LIN	17
2.2. Software Connection	18
2.3. Usage Example	20
2.3.1. Sending a CAN Frame	20
2.3.2. Sending a LIN Frame	25
3. Appendix	29
3.1. Software Installation	29
4. Inspection and Maintenance	34

1. Introduction

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.

1.1. Technical Specifications

➤ Device Specifications

Parameter	Description
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 × 98 × 38 mm
Weight	Approx. 248 g
Operating Temperature	-40°C to +80°C
Operating Humidity	10% ~ 90% RH (no condensing)

➤ CAN Specifications

Parameter	Description
Connection Standard	High-speed CAN (ISO 11898-2 compliant)
Supported Protocols	Full support for CAN and CAN FD (ISO 11898-1 compliant)
CAN Baud Rate	125 kbps ~ 1 Mbps
CAN Frame Data Length	Up to 8 bytes
CAN FD Baud Rate	125 kbps ~ 8 Mbps
CAN FD Frame Data Length	Up to 64 bytes; supports BRS frames
Max Frame Rate	Transmit: 20,000 frames/s; Receive: 20,000 frames/s (single channel, 1Mbps, remote frame, 0 data bytes)
Termination Resistor	120 Ω per CAN channel
Relay Type	Magnetic latching relay

➤ LIN Specifications

Parameter	Description
Connection Mode	Master/Slave
Baud Rate	4.8 kbps ~ 20.0 kbp

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

1.2. Electrical Specifications

➤ Power Characteristics

Parameter	Condition	Min	Typ.	Max	Unit
Operating Voltage	USB power supply	4.8	5.0	5.2	V
Power Consumption	USB power supply	1.9	1.9	2	W

➤ CAN Interface Characteristics

Parameter	Condition	Min	Typ.	Max	Unit
Termination Resistance	Enabled	--	120	--	Ω
	Disabled	--	32	--	k Ω
Isolation Voltage	Leakage current < 1mA	2500	--	--	VDC

➤ LIN Interface Characteristics

Parameter	Condition	Min	Typ.	Max	Unit
Bus Pin Tolerance Voltage	LIN to GND	12	--	36	V

➤ EMC Performance

Test Item	Standard	Condition	Level	Unit
ESD	IEC 61000-4-2	Contact discharge	± 4	kV

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

➤ Mechanical Dimensions

Unit: mm

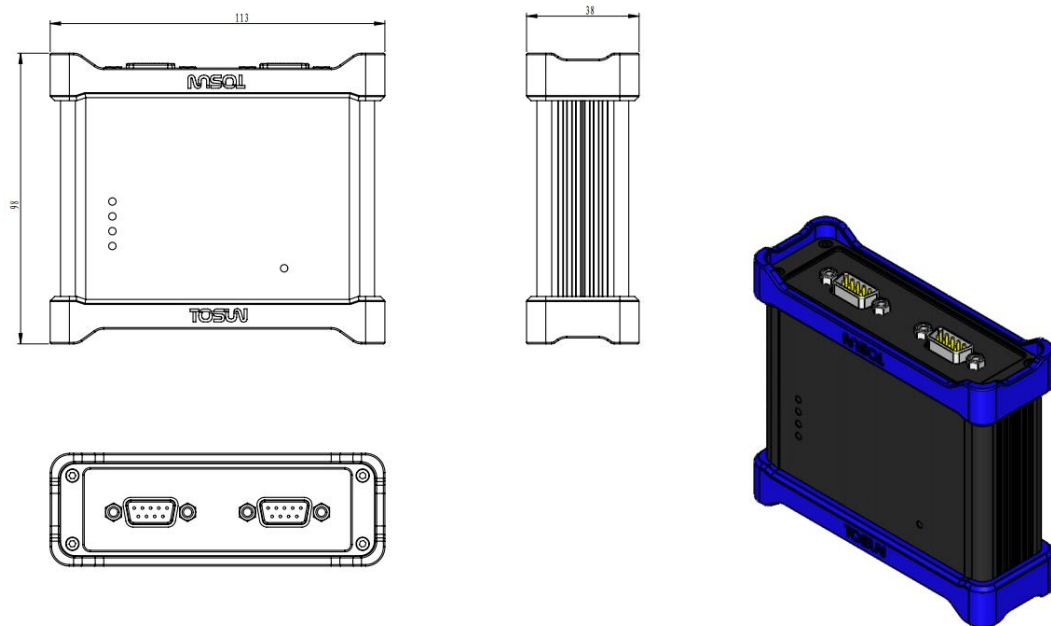


Figure 1-1 Mechanical Dimensions

1.3. Hardware Interface

➤ Hardware Interface



Figure 1-2 Hardware Interface (I/O)



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

➤ Pin Definition



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

1.4. LED Indicators



Figure 1-5 Front Panel Layout

➤ LED Definitions

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

➤ LED Color Description

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

Link	Green	Device connected successfully
------	-------	-------------------------------



The blinking frequency depends on the bus load rate — the higher the bus load, the faster it blinks.

1.5. System Requirements

➤ PC Requirements

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

➤ Driver Installation

- 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.

➤ Downloads

- 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/>

1.6. Packing List

Item	Qty.	Illustration	Standard/Optional
TC1015 Main Device	1		Standard
USB Cable	1		Standard
DB9 Female-Dual Male Signal Cable (CAN)	1		Standard
DB9-to-5-Banana LIN Cable	1		Standard
TSKT02 Mounting Bracket	--		Optional

2. Application Example in Windows

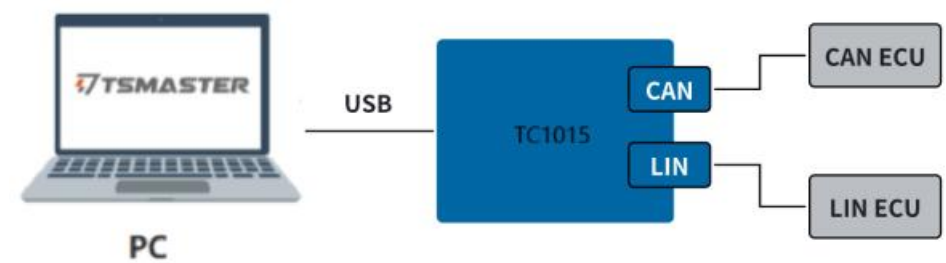


Figure 2-1 Example in Windows



For TSMaster installation instructions, please refer to the appendix.

2.1. Hardware Connection

2.1.1. CAN

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:

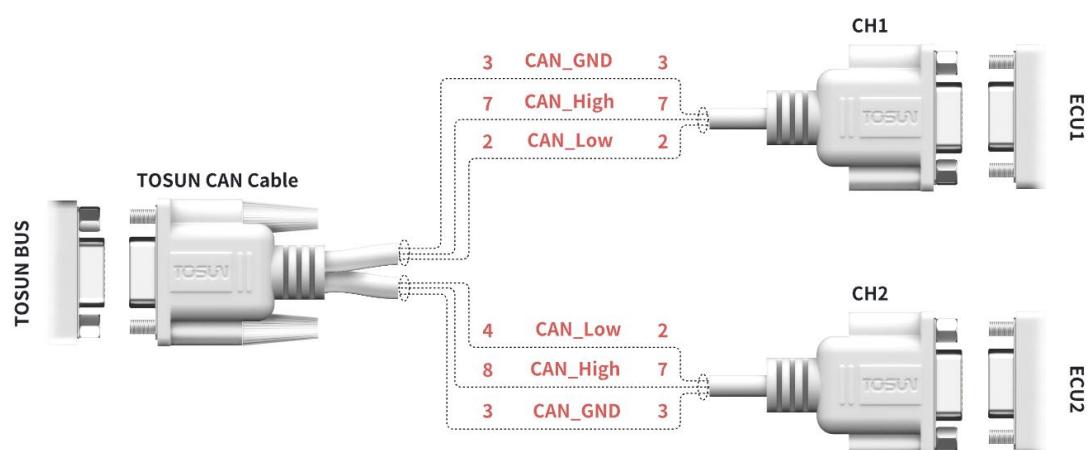


Figure 2-2 DB9 Female–Dual Male Signal Cable (CAN)

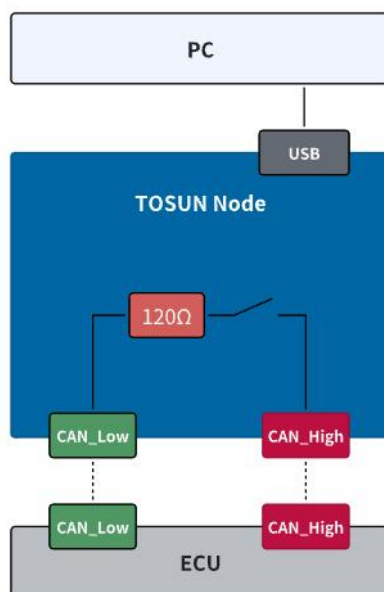


Figure 2-3 Using CAN



Pay attention to the termination-resistor enable settings. The TC1015 comes with built-in termination resistors, which can be enabled or disabled via the software or API. The recommended configuration is to enable one $120\ \Omega$ termination resistor at each end of the CAN bus, ensuring that the total bus resistance stays at $60\ \Omega$.

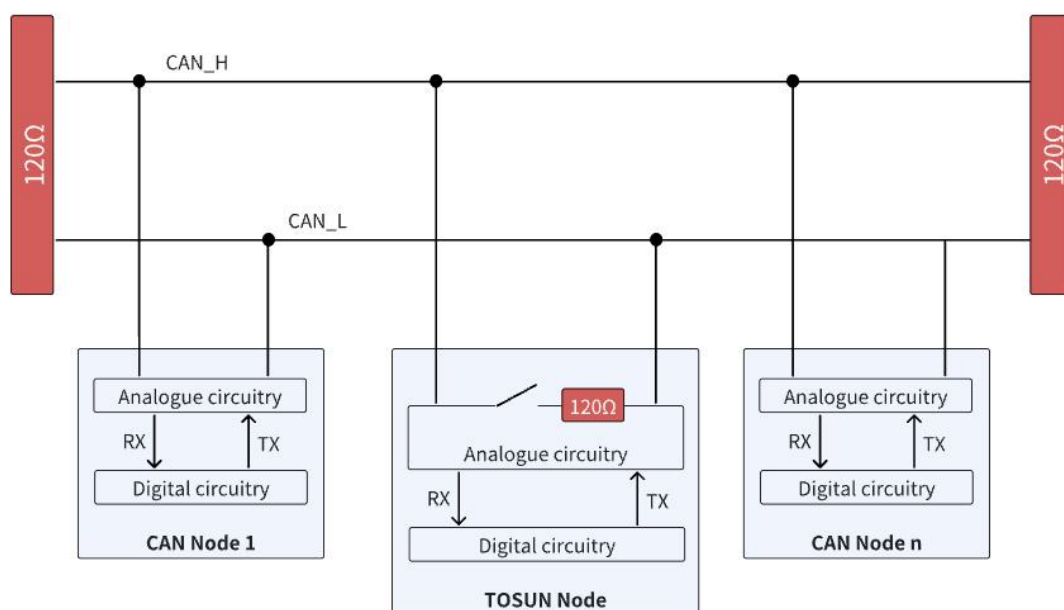


Figure 2-4 Connecting to the CAN Bus

2.1.2. LIN

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

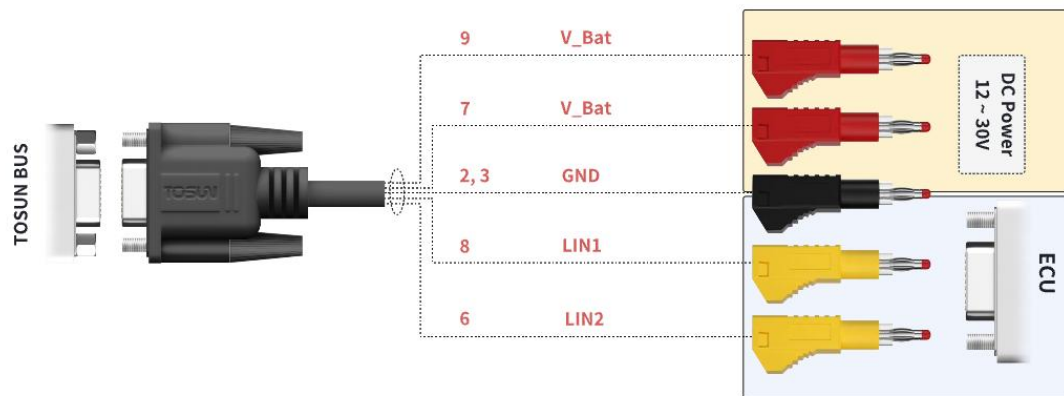


Figure 2-5 DB9-to-5-Banana LIN Cable

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.

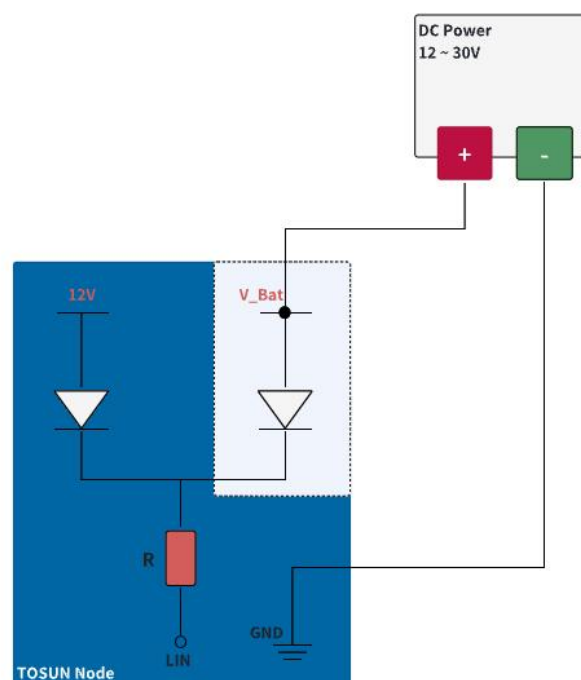


Figure 2-6 Using LIN

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

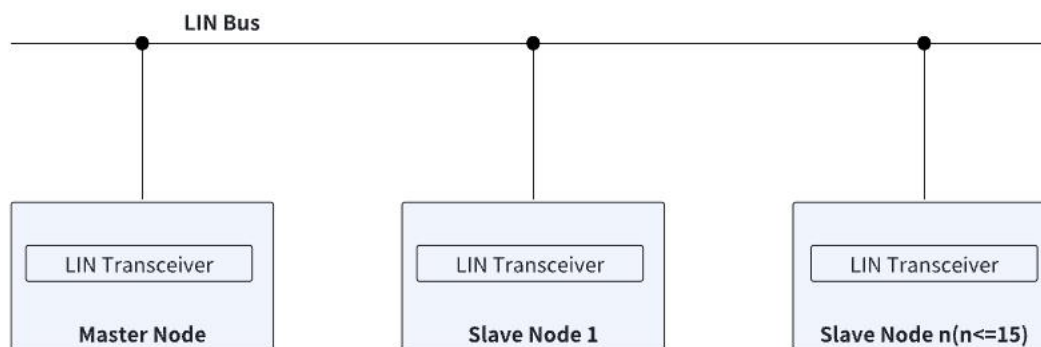


Figure 2-7 LIN Bus

2.2. Software Connection

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.

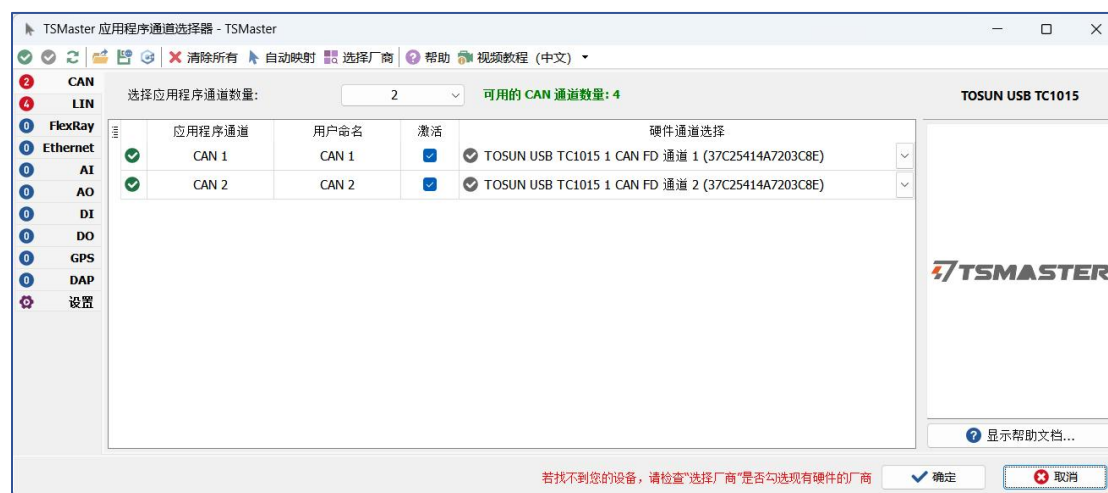


Figure 2-8 Channel Selection

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

CAN configuration window:

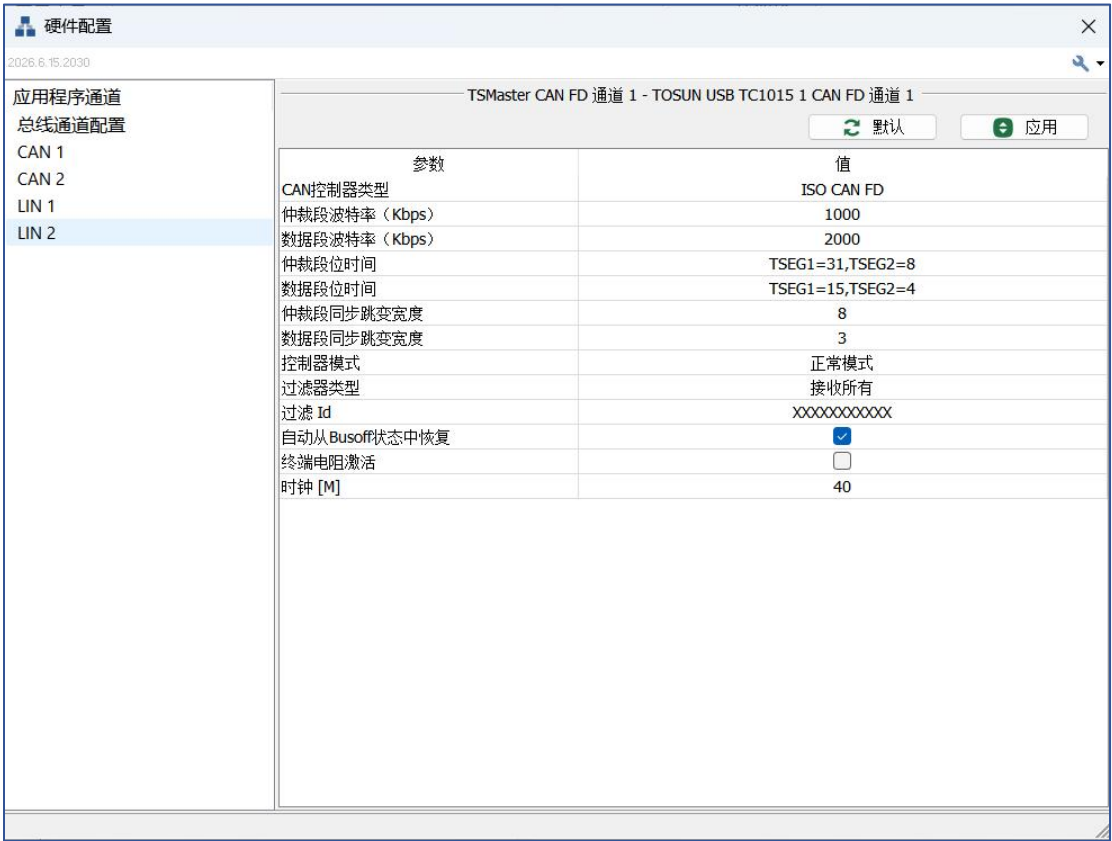


Figure 2-9 Channel Configuration (CAN)

LIN configuration window:

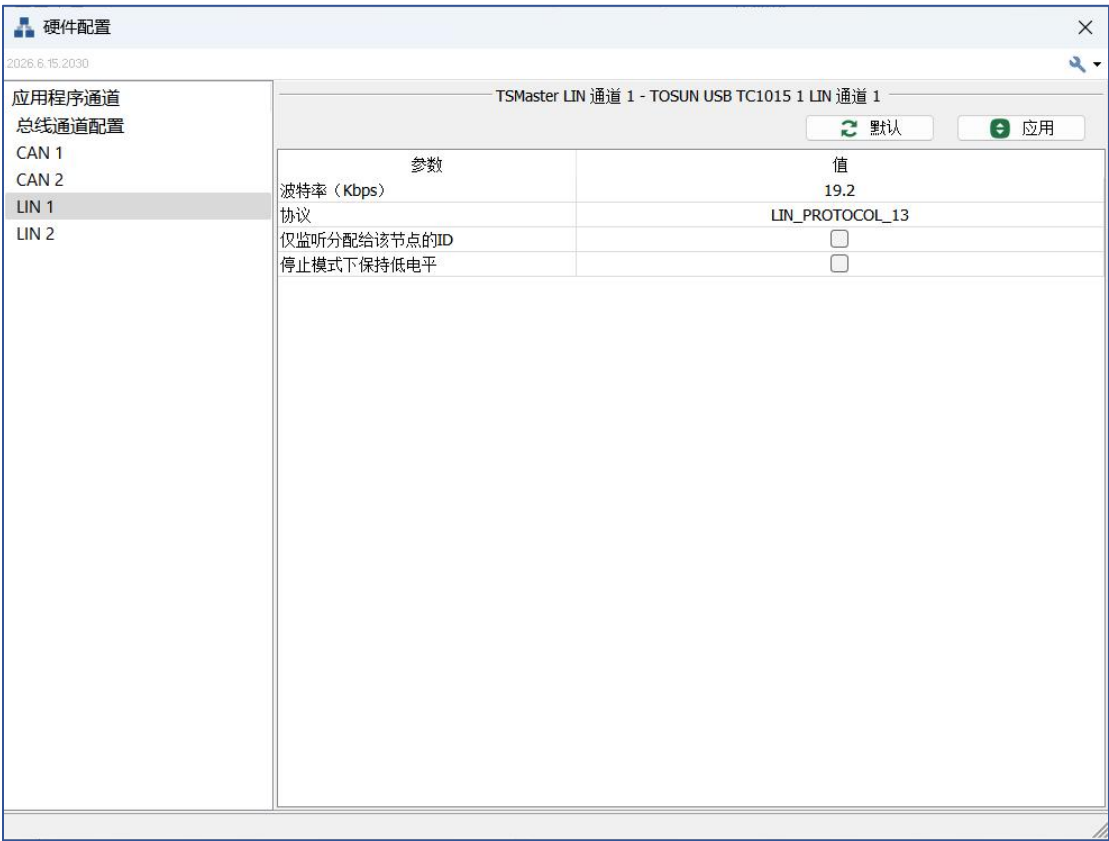


Figure 2-10 Channel Configuration (LIN)

4. Click “Analysis” → “Start” to connect the device.

2.3. Usage Example

2.3.1. Sending a CAN Frame

After configuring and connecting the software and hardware, messages can be sent through the “CAN/CAN FD Message Transmission” window in TSMaster or via a mini-program. Message details can be viewed in the “CAN/CAN FD Message Information” window.

➤ **Via GUI**

- 1. After configuration and connection, click “Analysis → Data Analysis → Message Transmission → Add CAN/CAN FD Transmission” to open the CAN/CAN FD Transmission window. Add a cyclic message as shown below, then click Send.

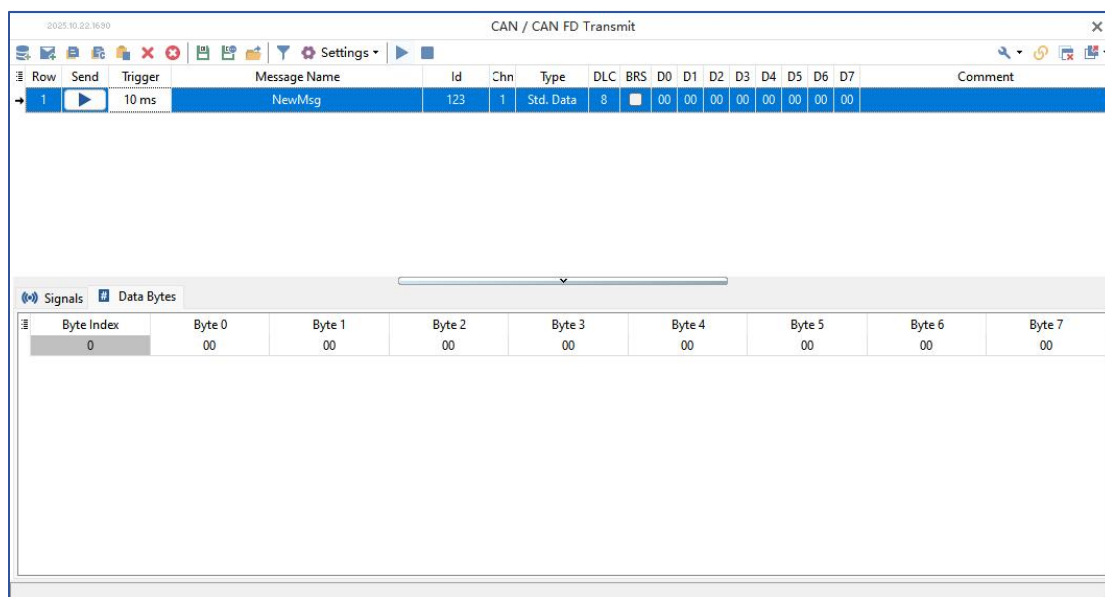


Figure 2-11 Adding CAN Message

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

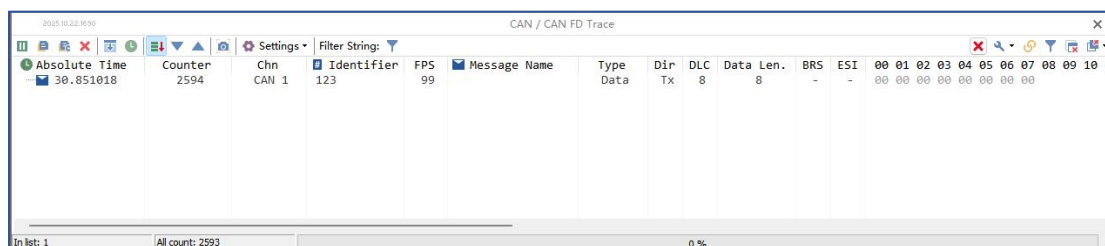


Figure 2-12 CAN Message Information

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

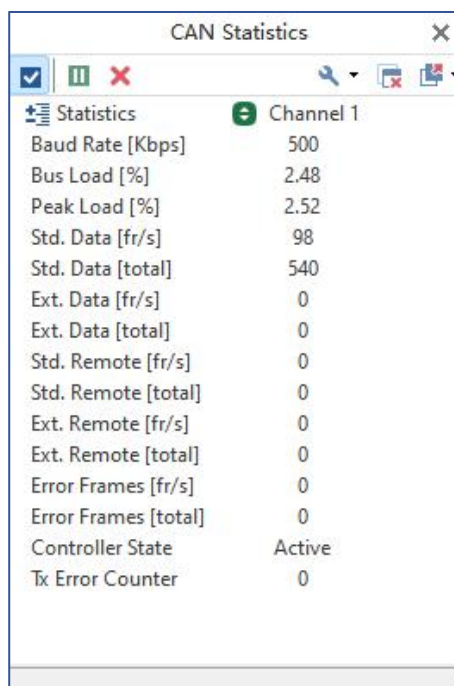


Figure 2-13 CAN Statistics

➤ Via C Script

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.

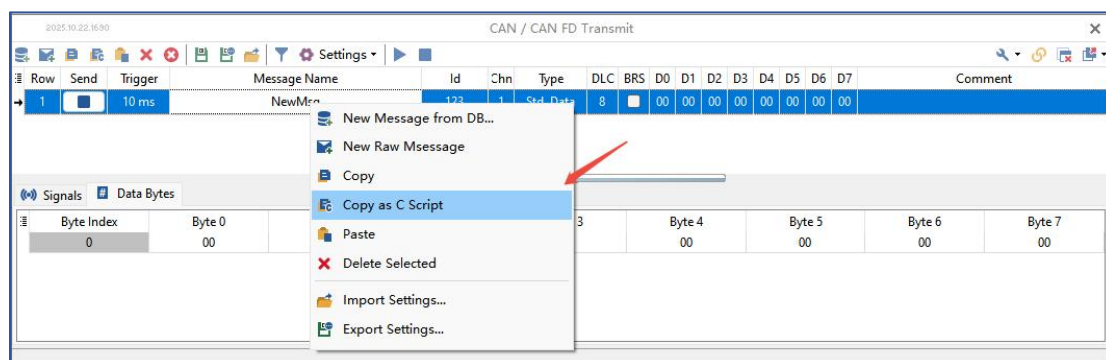


Figure 2-14 Quick Access to C Code

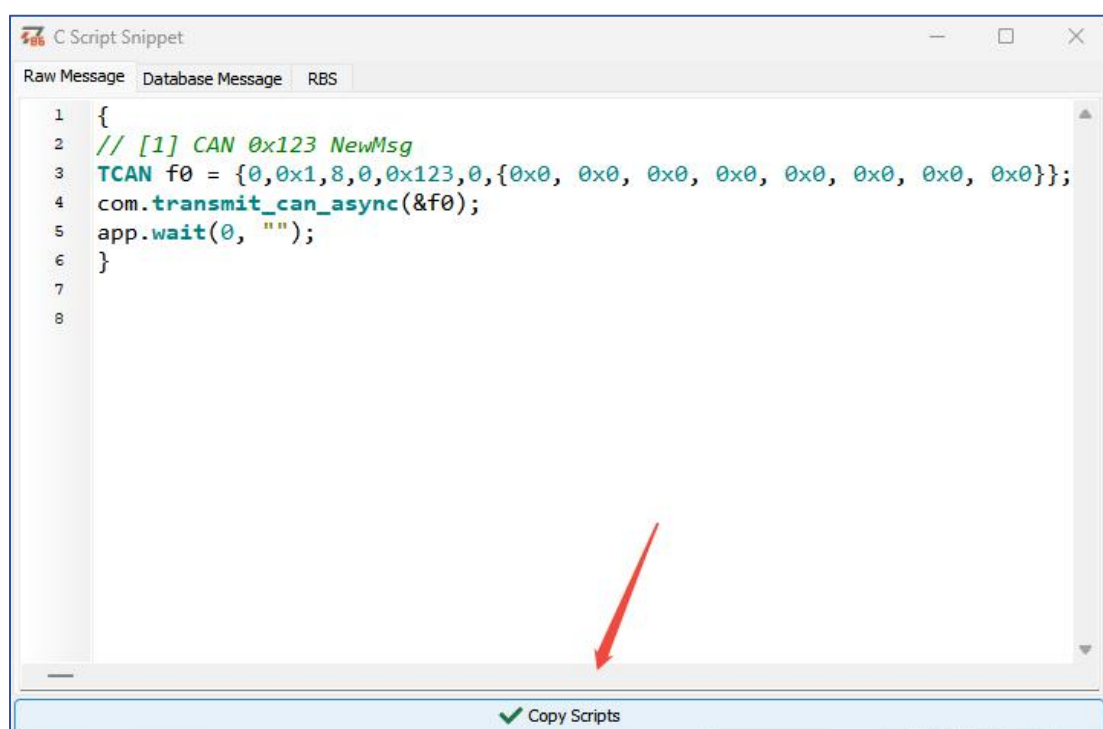


Figure 2-15 Copying the C Code

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

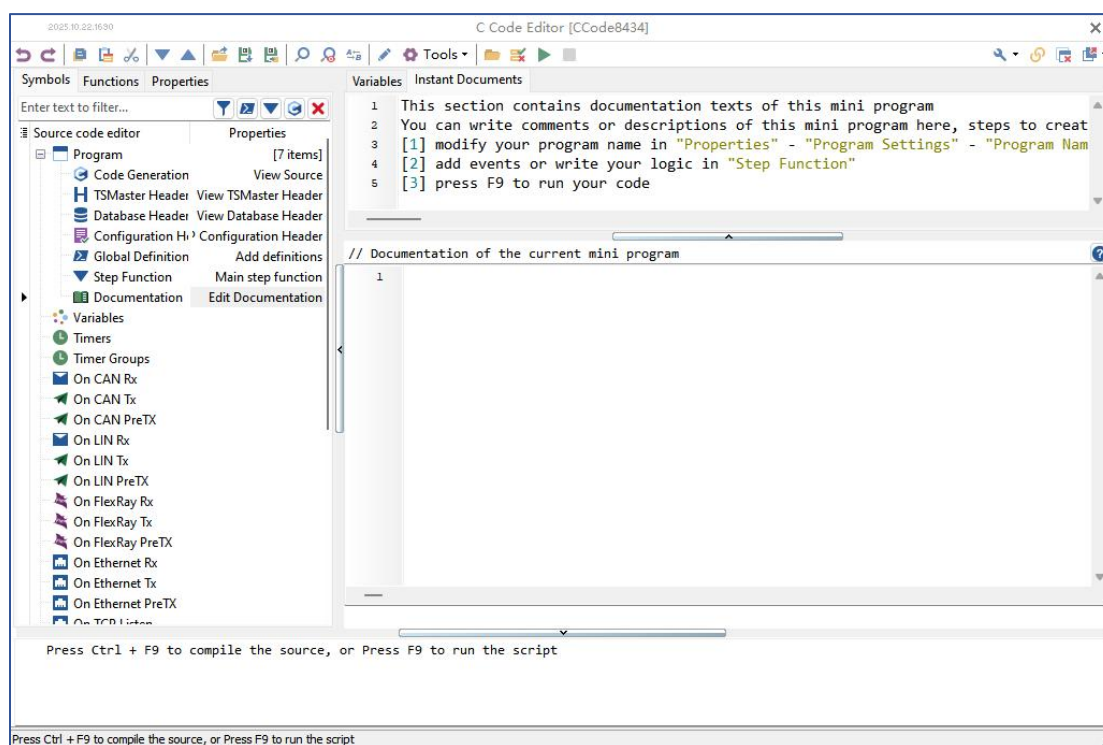


Figure 2-16 Adding a C Mini-Program Editor

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.

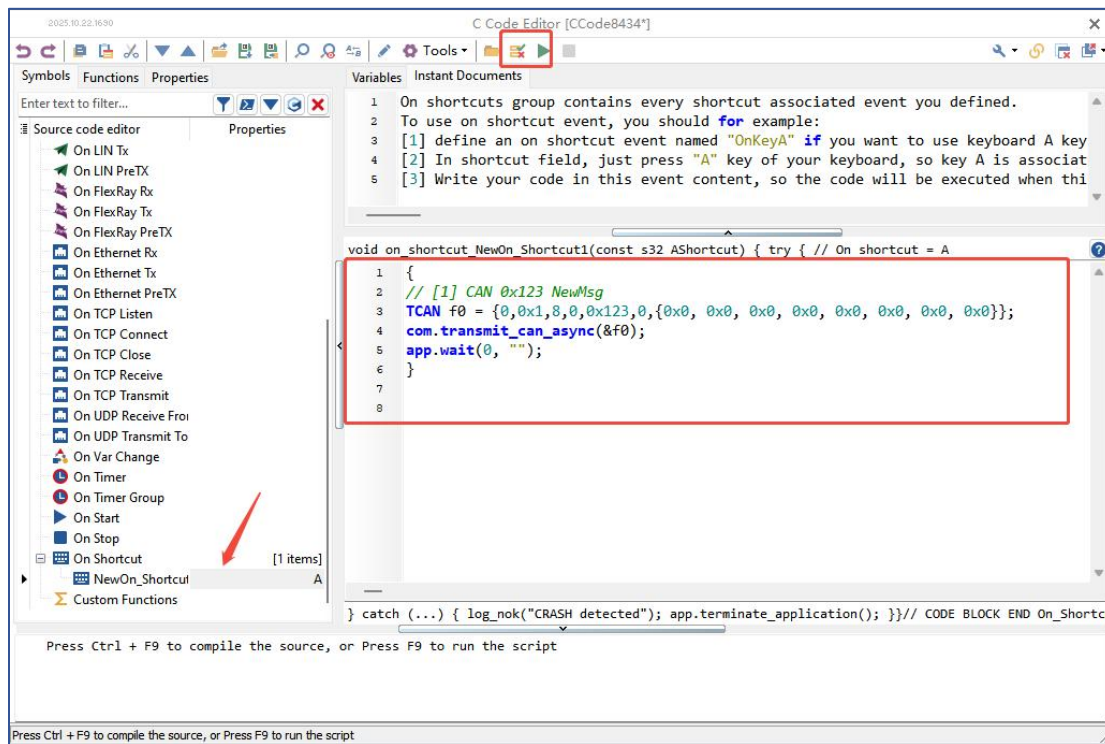


Figure 2-17 Building a C Mini-Program (CAN)

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

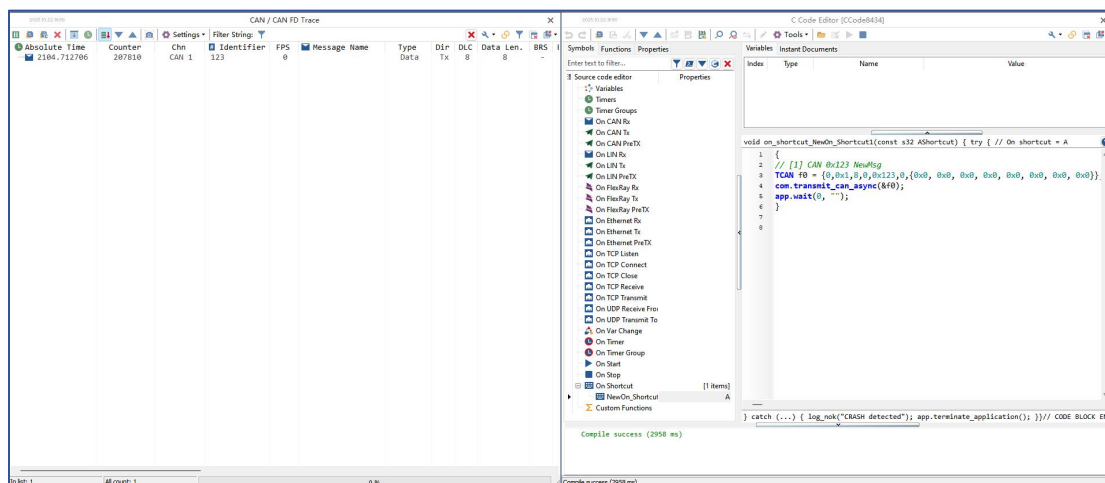


Figure 2-18 Sending CAN Messages via C Mini-Program

2.3.2. Sending a LIN Frame

➤ Via GUI

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

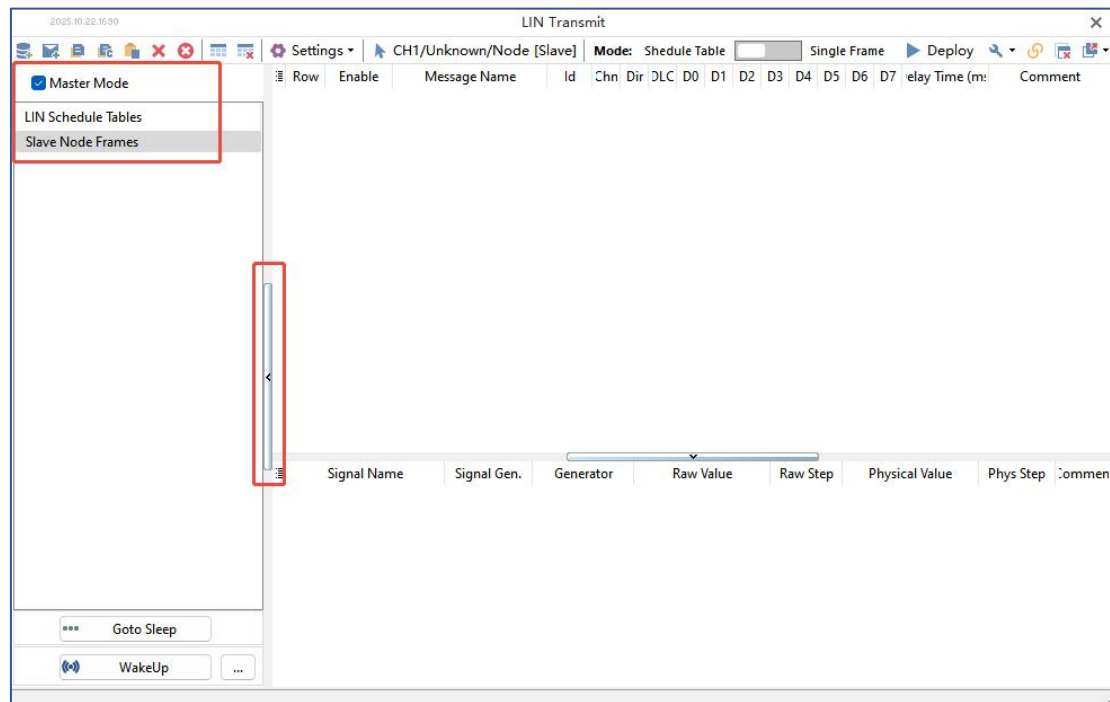


Figure 2-19 LIN Transmission Window

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.

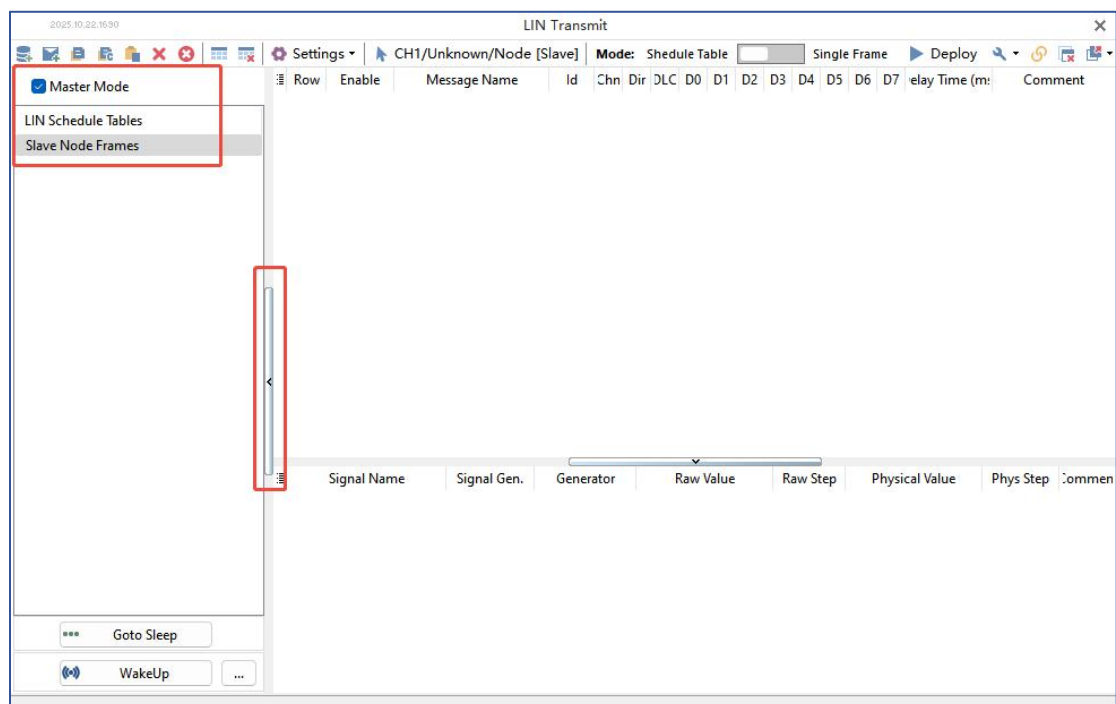


Figure 2-20 Configuring LIN Master/Slave Mode

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

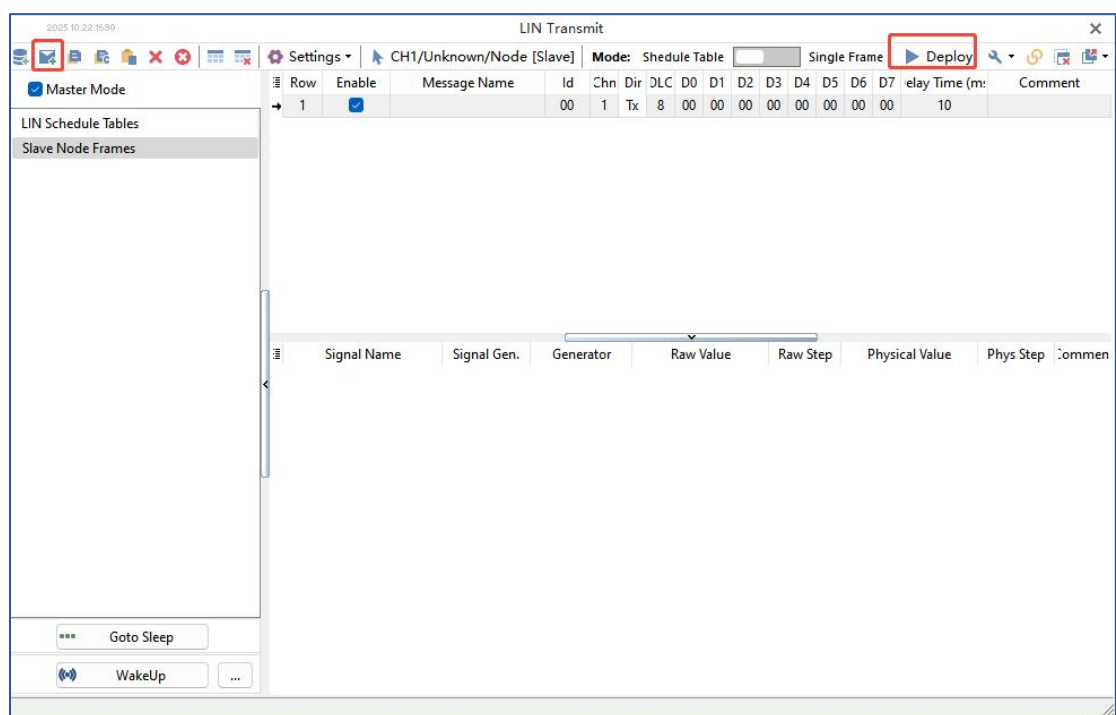
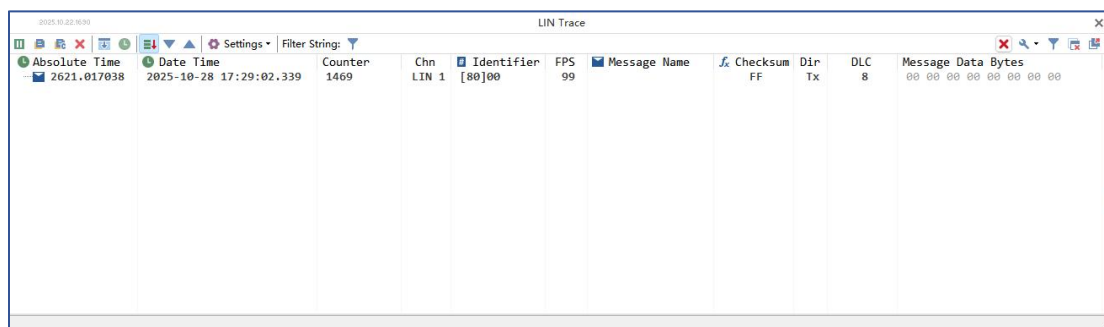


Figure 2-21 Adding a LIN Message



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

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



Absolute Time	Date Time	Counter	Chn	Identifier	FPS	Message Name	Checksum	Dir	DLC	Message Data Bytes
2621.017038	2025-10-28 17:29:02.339	1469	LIN 1	[80]00	99		FF	Tx	8	00 00 00 00 00 00 00 00

Figure 2-22 LIN Message Information

➤ Via C Script

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

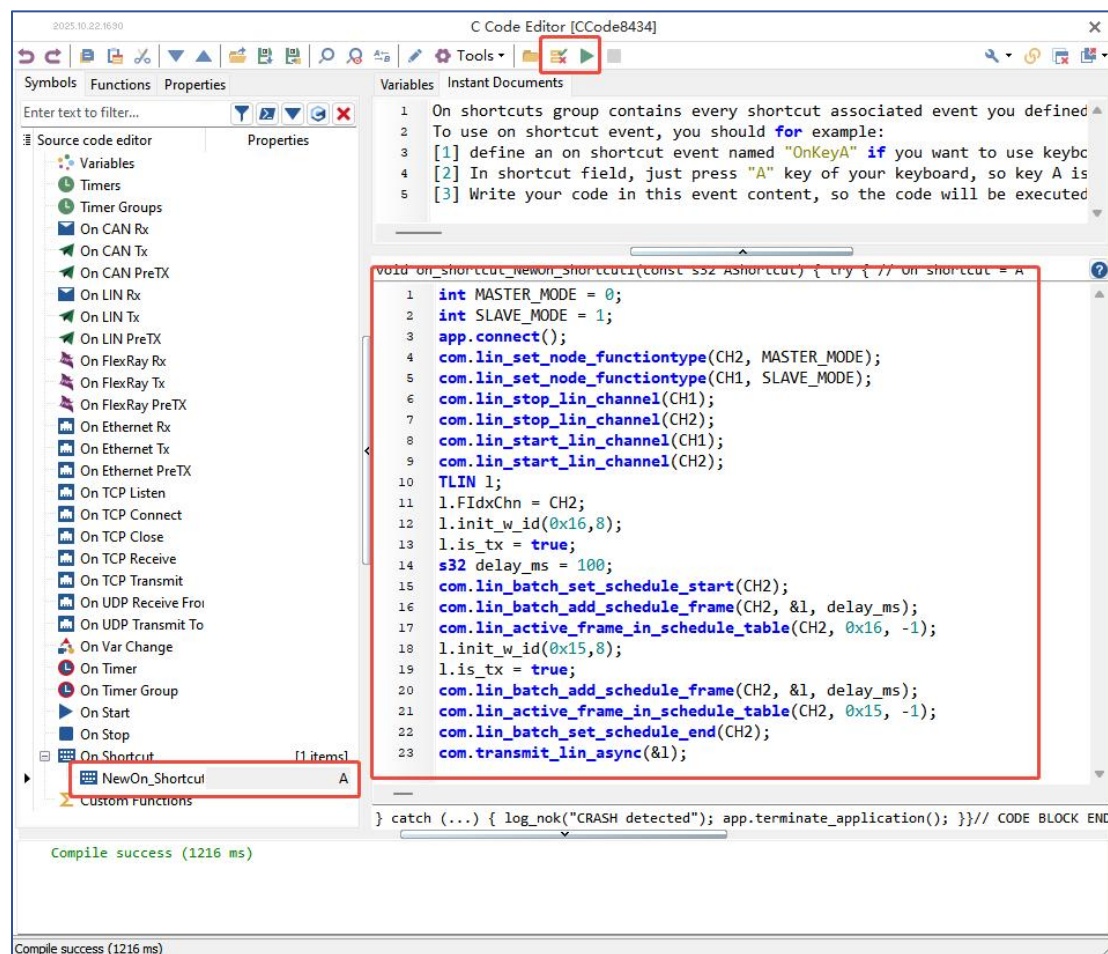
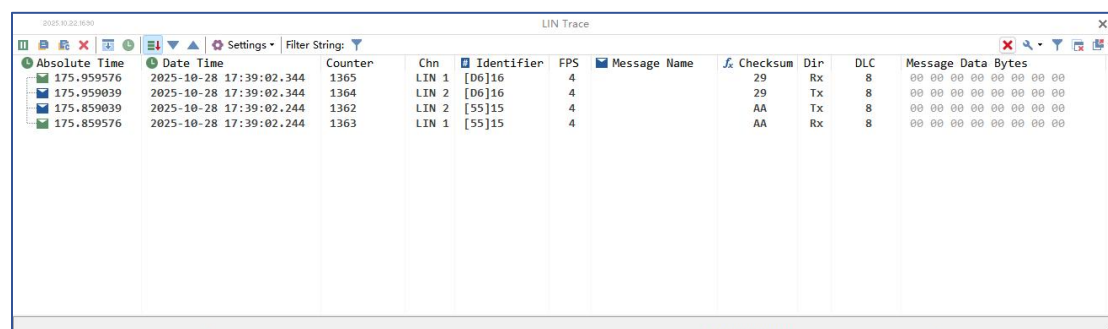


Figure 2-23 Building a C Mini-Program (LIN)

2. When Key A is pressed, the LIN node sends messages periodically according to the schedule table.



2025.10.22.16:30 LIN Trace

Absolute Time	Date Time	Counter	Chn	Identifier	FPS	Message Name	Checksum	Dir	DLC	Message Data Bytes
175.959576	2025-10-28 17:39:02.344	1365	LIN 1	[D6]16	4		29	Rx	8	00 00 00 00 00 00 00 00
175.959039	2025-10-28 17:39:02.344	1364	LIN 2	[D6]16	4		29	Tx	8	00 00 00 00 00 00 00 00
175.859039	2025-10-28 17:39:02.244	1362	LIN 2	[55]15	4		AA	Tx	8	00 00 00 00 00 00 00 00
175.859576	2025-10-28 17:39:02.244	1363	LIN 1	[55]15	4		AA	Rx	8	00 00 00 00 00 00 00 00

Figure 2-24 Sending LIN Message via C Mini-Program

3. Appendix

3.1. Software Installation

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

➤ TSMaster Software Download

<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

➤ Software Installation

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

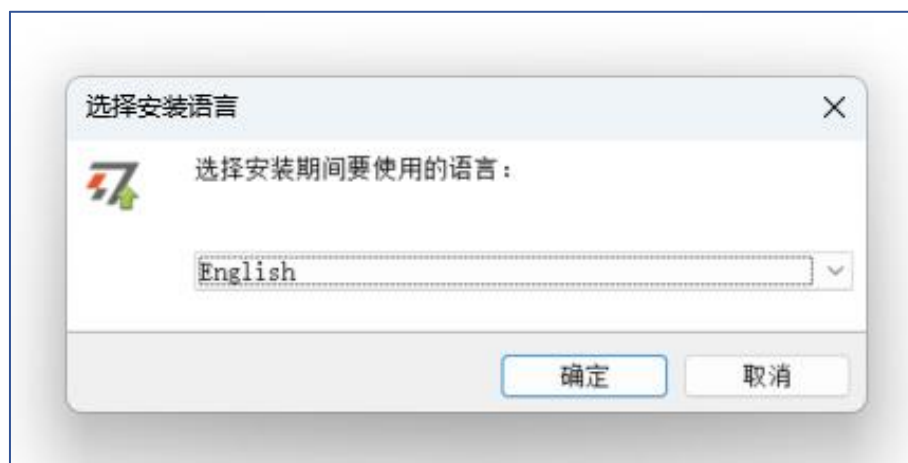


Figure 3-2 TSMaster Installation

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

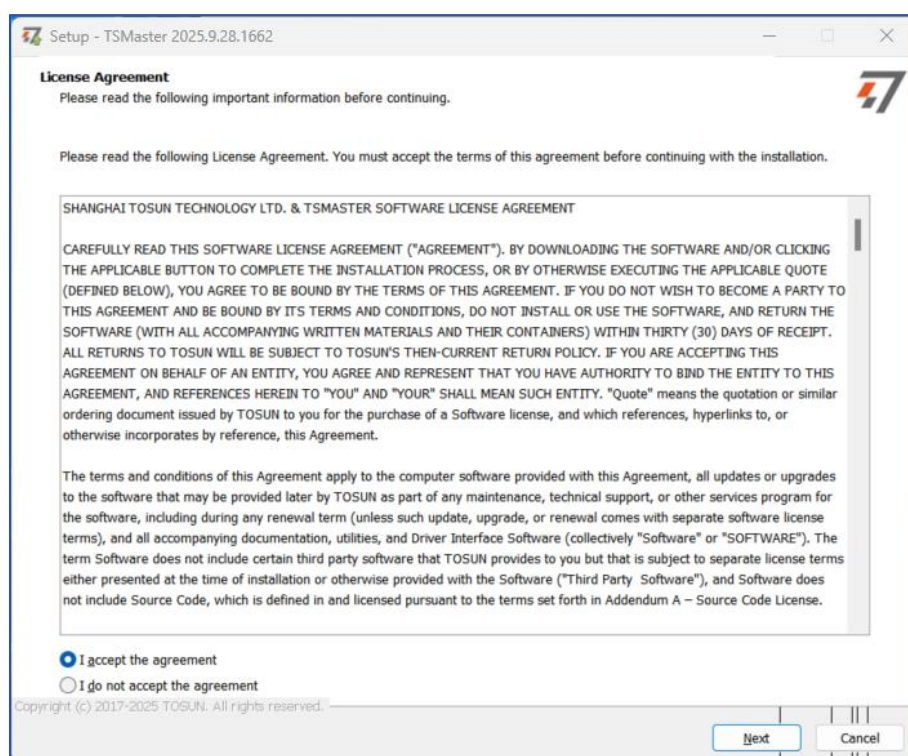


Figure 3-3 TSMaster Installation

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

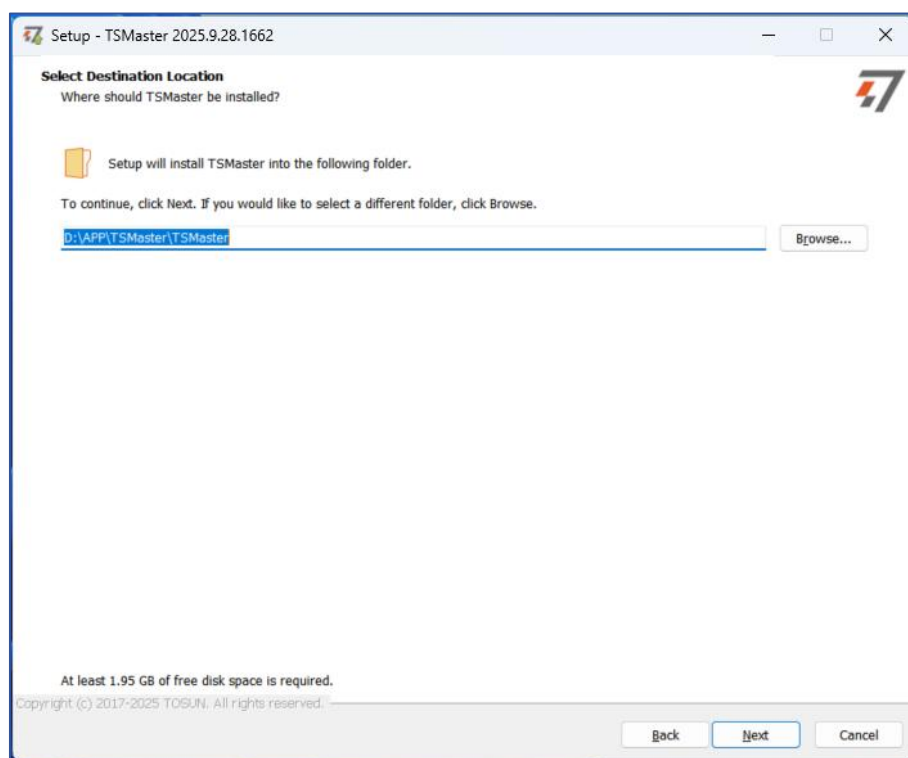


Figure 3-4 TSMaster Installation

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

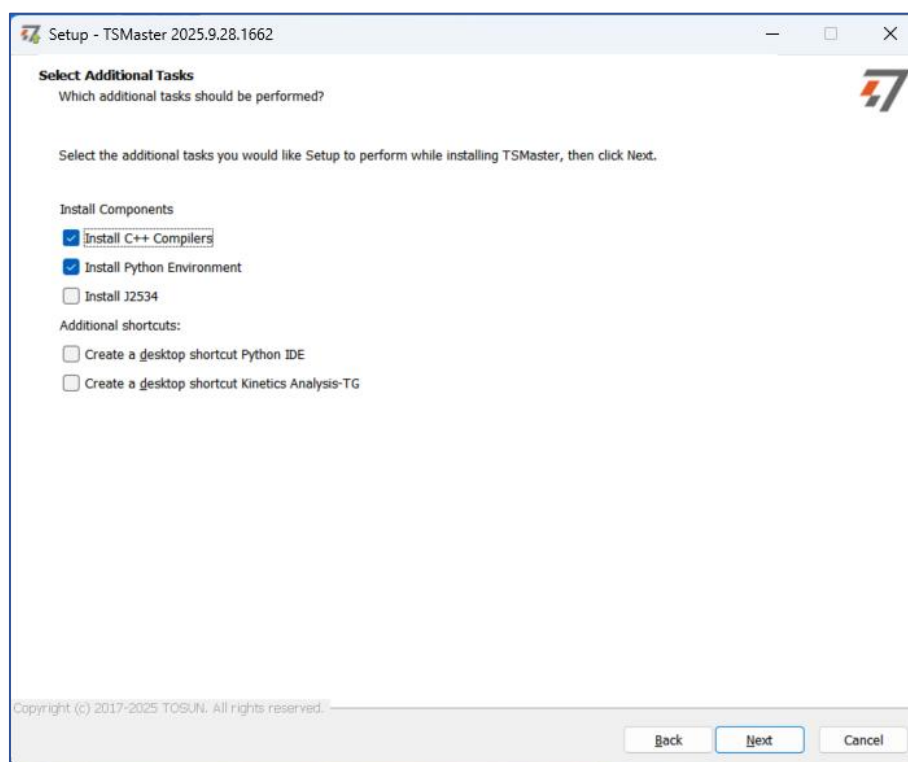


Figure 3-5 TSMaster Installation

5. Click “Install” and wait for completion.

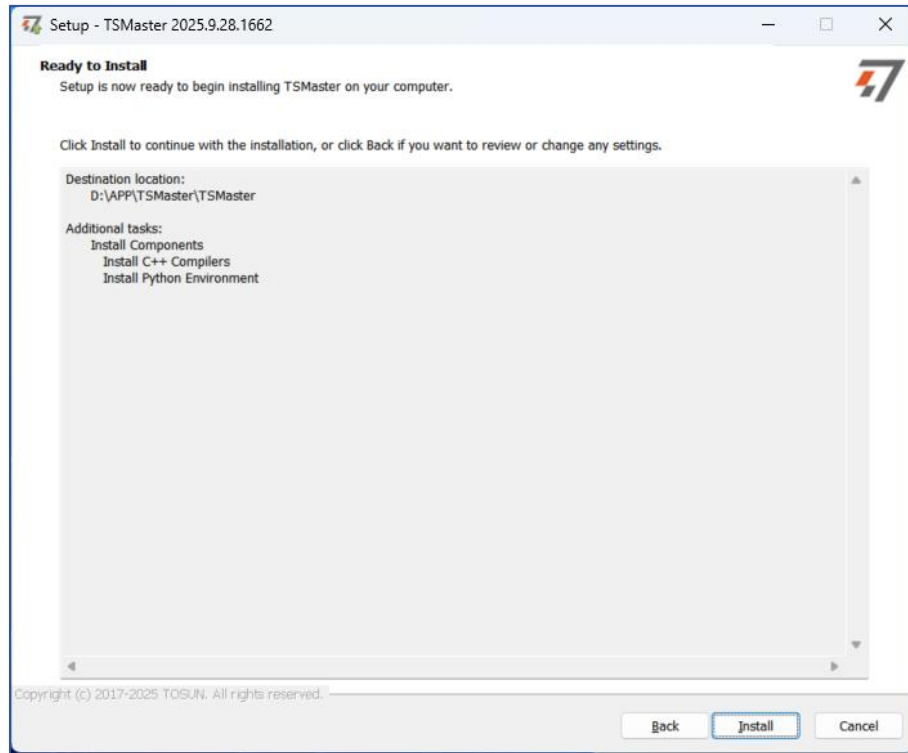


Figure 3-6 TSMaster Installation

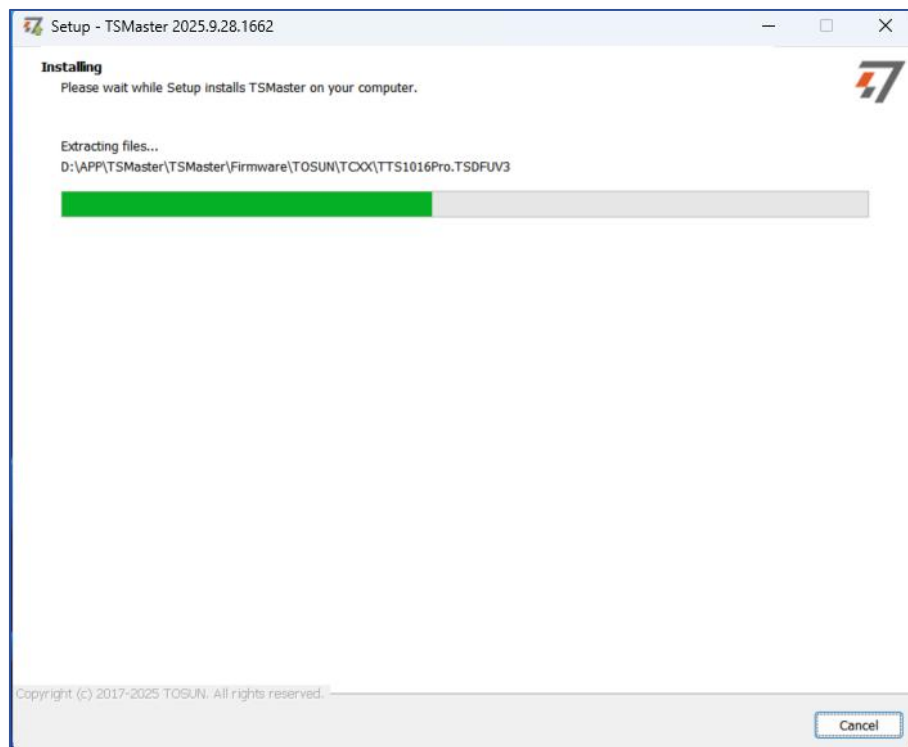


Figure 3-7 TSMaster Installation

6. Click “Finish” to complete installation.

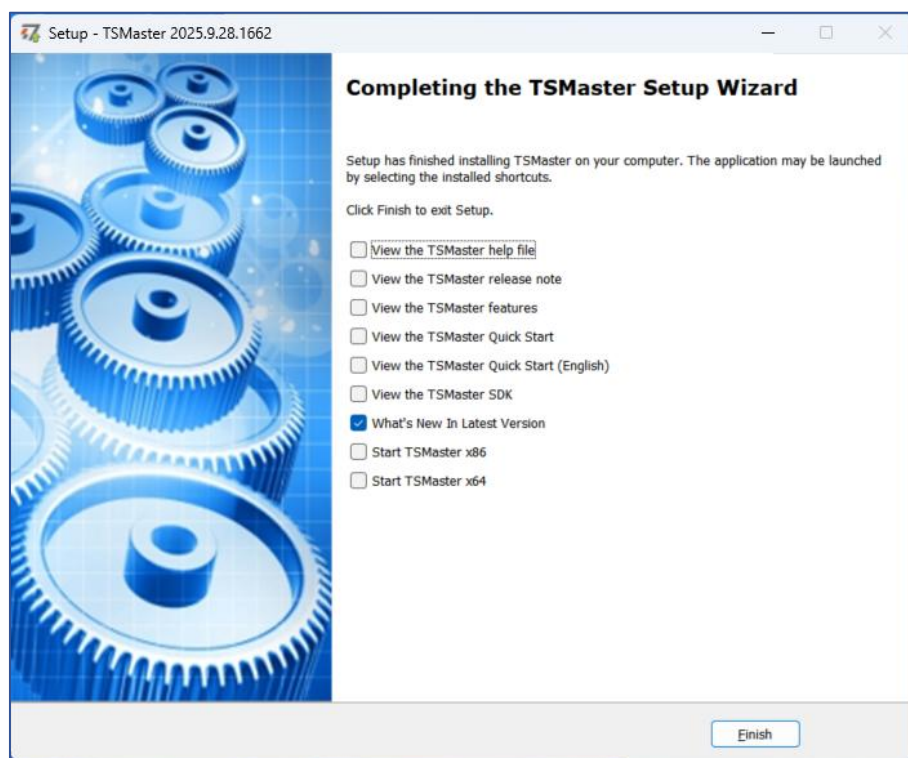


Figure 3-8 TSMaster Installation

4. Inspection and Maintenance

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 Environment Inspection

Item	Check Content	Standard/ Range	Action/Measure
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°C ~ +80°C	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

➤ Contamination & Protection Check

Item	Check Content	Standard/ Range	Action/Measure
------	---------------	--------------------	----------------

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 & EMI Check

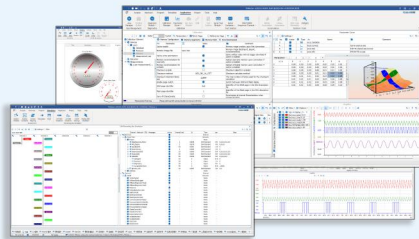
Item	Check Content	Standard/Range	Action/Measure
Mechanical Stress	Check vibration and shock levels	Within specified limits	Install padding or vibration isolation measures if necessary
Electromagnetic Environment	Check for noise sources near the device	No significant noise sources	Isolate or shield the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

➤ Installation & Wiring Check

Item	Check Content	Standard/Range	Action/Measure
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

Support CAN(FD)/LIN/FlexRay/SOME/IP and DoIP
 UDS diagnostics/ECU flashing/CCP/XCP calibration
 Embedded code generation/Application builder
 Encrypted release/Logging and bus replay
 Graphical programming/Residual bus simulation
 C and Python scripting
 Bus monitoring/Transmitting/Automated testing



TSMMASTER

Hardware

1/2/4/8/12-channel CAN FD/CAN to USB/PCIe device
 1/2/6-channel LIN to USB/PCIe device
 Multi channel FlexRay/CAN FD to USB/PCIe device
 Multi channel automotive Ethernet/CAN FD to USB/PCIe device
 Automotive Ethernet media conversion device (T1 to Tx)
 Multi-channel CAN FD/Ethernet/LIN datalogger



TTS test systems

- CAN FD/CAN/FlexRay/LIN communication boards
- Relay and fault injection boards
- Resistors for sensor simulation
- Digital I/O, Analog I/O boards available



Solutions

- Bus Conformance
- Network Automation Testing System
- Charging Testing System
- EMB Calibration Testing Equipment
- Information Security Solutions
- Steer-by-Wire Chassis Testing Solutions
- EOL Testing Equipment
- Motor Performance
- Durability Testing Solutions
- FCT



About TOSUN

The core product, TSMaster, is a comprehensive tool for automotive R&D, testing, production, and after-sales. It integrates essential functions with hardware support to streamline processes and ensure precision, making it ideal for automotive professionals.

International Organization



Quality Assurance
ISO9001:2015

CE Certification



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