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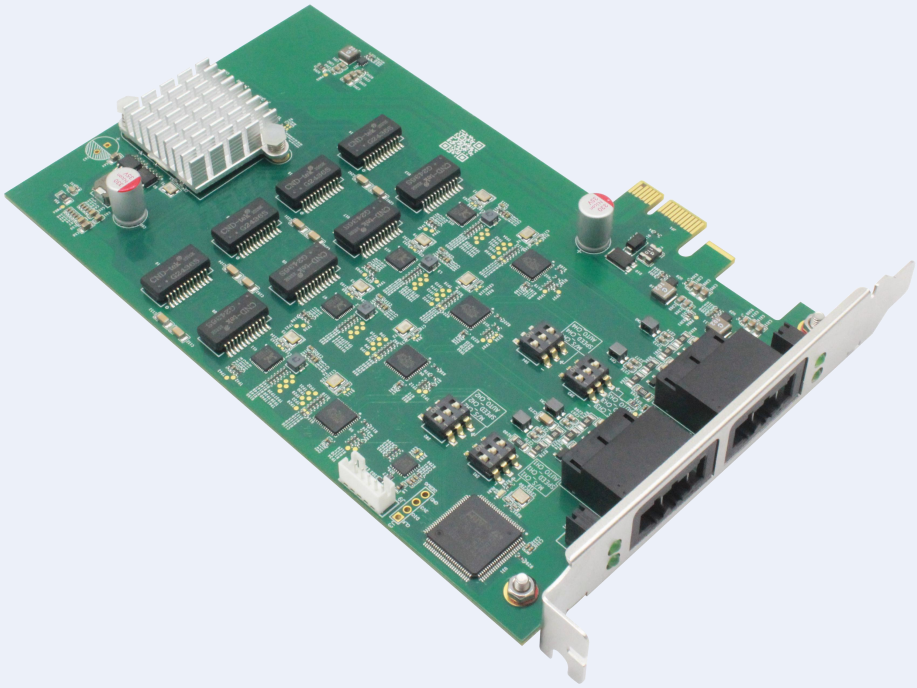

TOSUN-TE1024

User Manual

tosunai.com

Product Features & Interface Overview

Product Name	Channel
TE1024	Automotive Ethernet 100/1000Base-T1 × 4

Contents

1. Introduction

The TE1024 is a 4-channel automotive Ethernet PCIe interface card featuring TE MATEnet connectors. The device connects to a PC via PCIe and supports configuration of master/slave mode, communication speed, and auto-negotiation through DIP switches. The device applies the DIP switch configuration each time it is powered on. Changing the DIP switch settings during operation will not take effect. To modify the configuration during use, users can configure the device through serial commands.

The TE1024 is an ideal low-cost conversion solution between 100/1000Base-T1 automotive Ethernet networks and PC systems. It is suitable for various applications, including R&D debugging, ECU production line testing, laboratory verification, and after-sales maintenance.

1.1. Technical Specifications

➢ Device Specifications

Parameter	Description
PC Interface	PCIe interface
Channels	Automotive Ethernet 100/1000Base-T1 × 4
Ethernet Connector	TE MATEnet
Power Supply	PCIe power supply
Dimensions	124 × 183 × 22 mm
Weight	93 g
Operating Humidity	10% ~ 90% RH (no condensing)
Operating Environment	Keep away from corrosive gases

➢ 100/1000Base-T1

Parameter	Description
Protocol Support	IEEE 802.3

Communication Rate	100 Mbps / 1000 Mbps
Operating Mode	Full-duplex communication (the link partner must also support full duplex; half-duplex mode is not supported)

➢ Mechanical Dimensions

Unit: mm

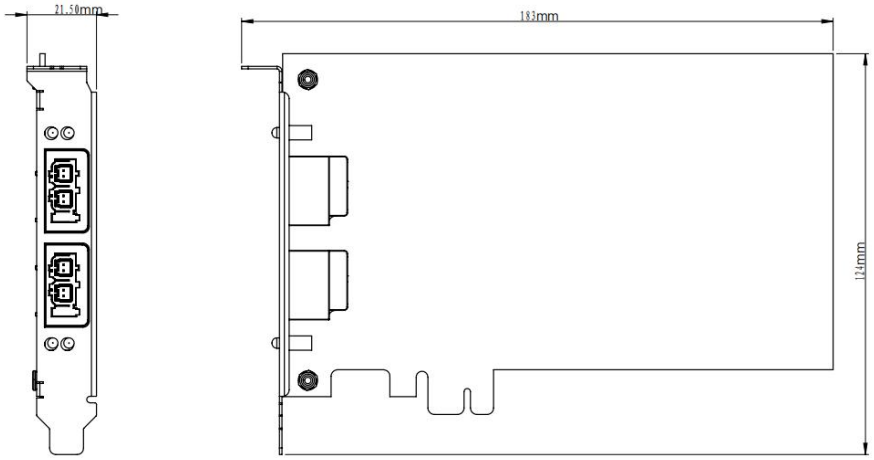

Figure 1-1 Mechanical Dimensions

1.2. Hardware Interface

Figure 1-2 Hardware Interface

- **Automotive Ethernet Interface (TE MATEnet)**
- **DIP Switch**

Figure 1-3 DIP Switch

DIP	Status	Description
1	ON	Master mode
	OFF	Slave mode
2	ON	Gigabit mode
	OFF	100 Mbps mode
3	ON	Auto-negotiation enabled
	OFF	Auto-negotiation disabled

1.3. LED Indicators

➢ LED Definitions

(Refer to Figure 1-2 Hardware Interface)

Indicator	Description
MATEnet 1	Ethernet link indicator 1
MATEnet 2	Ethernet link indicator 2
MATEnet 3	Ethernet link indicator 3
MATEnet 4	Ethernet link indicator 4

➢ LED Status Description

Indicator	Color	Description
MATEnet	Green	The device is connected to the link partner and communication is available

1.4. System Requirements

➢ PC Requirements

- Operating System: Windows or Linux
- PC equipped with a PCIe interface

➢ Driver Installation

- The TE1024 features a driver-free design, ensuring outstanding system compatibility. No driver installation is required before use.

1.5. Packing List

Item	Qty.	Illustration	Standard/Optional
TE1024 Main Device	**1**		**Standard**
MATEnet Ethernet Cable	**2**		**Optional**

2. Application Example in Windows

2.1. Hardware Connection

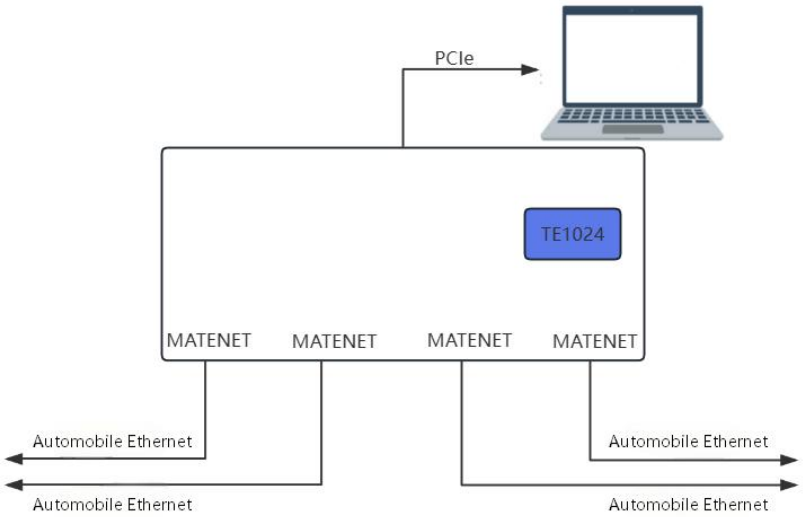

Figure 2-1 Hardware Connection

2.2. Serial Port Configuration

Since the DIP switch configuration takes effect only after power-on, users can configure the device through the serial port during operation.

The serial port communication parameters are:

- Baud rate: 115200 bit/s

The HEX read/write configuration commands are described below.

➢ **Read Serial Configuration (0x83)**

Function	Read Channel information.							
CMD: 0x83	B0	B1	B2	B3	B4	B5	B6	B7
Request	0x5A	0xA5	0x83	Channel(0~3)				

Response	0x5A	0xA5	0x83	Channel	LINK Status	Master/ Slave Mode	Speed	Auto-negotiation
Parameter Description	LINK: (0: Link disconnected, 1: Link available) Master: (0: Slave, 1: Master) 100M/1000M: (0: 100M, 1: 1000M) Auto-negotiation: (0: Auto-negotiation disabled, 1: Auto-negotiation enabled)							

- **Write Serial Configuration (0x82)**

Function	Configure communication parameters.							
CMD: 0x82	Frame Head	Frame Head	R/W Code	Channel Code				
	B0	B1	B2	B3	B4	B5	B6	B7
Request	0x5A	0xA5	0x82	Channel	Master /Slave Mode	Speed	Auto-negotiation	Reserved
Response								
Parameter Description	Master: (0: Slave, 1: Master) 100M/1000M: (0: 100M, 1: 1000M) Auto-negotiation: (0: Auto-negotiation disabled, 1: Auto-negotiation enabled)							

3. Inspection and Maintenance

The TE1024 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
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

➢ 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

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Engineer Everything !

Software

Support CAN(FD)/LIN/FlexRay/SOME/IP and DoIP

UDS diagnostics/ECU flashing/CCP/XCP calibration

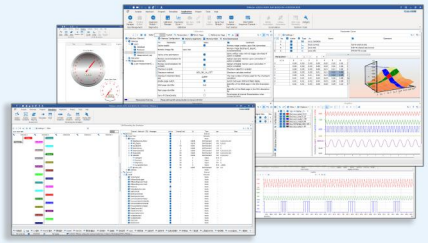
Embedded code generation/Application builder

Encrypted release/Logging and bus replay

Graphical programming/Residual bus simulation

C and Python scripting

Bus monitoring/Transmiting/Automated testing



TSMASTER

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

CAN CAN FD LIN FlexRay OPEN ALLIANCE

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

ASAM CiA

Quality Assurance

ISO9001:2015

CE Certification

CE

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