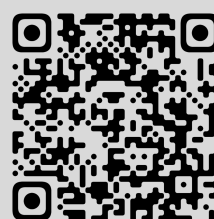


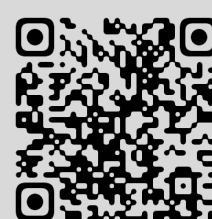
**EC4001**

# Ethernet Converter 2.5G/5G/10Gbps

Product Manua v1.1



manual



products

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## 2.5G/5G/10G Base-T1 Ethernet Converter Introduction

The EC4001 Ethernet Converter converts 2.5G / 5G / 10G Base-T1 automotive Ethernet into optical Ethernet. Data can be transmitted bidirectionally in full-duplex mode. It enables communication between conventional computers and vehicle controllers based on 2.5G / 5G / 10G Base-T1.



## Key Features

- Rosenberger E6S201-40MT5-Y automotive Ethernet interface
- 4.5-36 V ultra-wide operating voltage, maximum withstand voltage – 30 to 40 V, suitable for 12/24 V systems
- Complies with 12/24 V vehicle ISO 16750-2 and ISO 7637-2 test standards, suitable for in-vehicle use
- Supports multiple power supply interfaces: USB, banana plug, DC 5.0
- Link LED displays real-time connection status; rainbow LED indicates communication quality

- DIP switch for simple configuration; real-time configuration without reboot
- Zero data modification, lossless transparent transmission

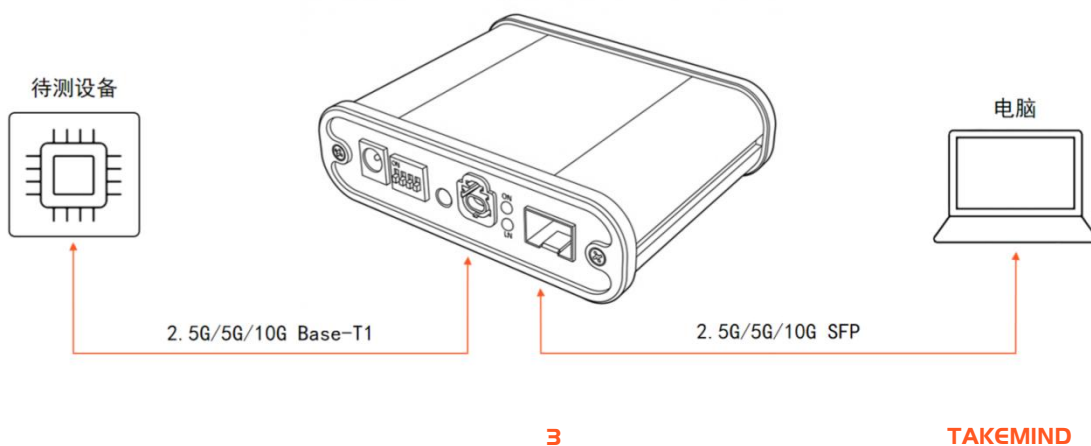
## Product Information

Parameter	Description
Input Voltage:	4.5~36VDC
Withstand Voltage Range:	-30~40VDC
Power Consumption:	<5W
Dimensions:	80x104x30mm
Net Weight:	<220g
Operating Temperature:	-20°C~+40°C
Protection Rating:	IP20

## Package Contents

- 1 × 2.5G / 5G / 10G Base-T1 Ethernet Converter
- 1 × 30 cm banana-plug power cable

## Standard Use Case



The DIP switch configuration of the EC4001 depends on the device under test. If the device under test is a master, the EC4001 must be configured as a slave. Refer to the DIP Switch section for details.

## DIP Switch

DIP Switch	State	Description
1	ON (up)	2.5G / 5G / 10G Base-T1 port set to Slave mode
	OFF (down)	2.5G / 5G / 10G Base-T1 port set to Master mode
2~3	2: OFF (down) 3: OFF (down)	10G
	2: OFF (down) 3: ON (up)	5G
	2: ON (up) 3: OFF (down)	2.5G
4	ON (up)	Reserved
	OFF (down)	Reserved

## LED Information

Functional Domain	Indicator	State	Color	Description
2.5G/5G/10Base-T1	ON	Steady on	Red	Power connected
		Off	–	Power not connected
	LN	Steady on	Red	2.5G / 5G / 10G Base-T1 link established
		Blinking	Red	2.5G / 5G / 10G Base-T1 communication
		Off	–	2.5G / 5G / 10G Base-T1 link not established
	SQI	Steady on	Multicolor	Signal quality; lower value indicates poorer signal (Red, Orange, Yellow, Green, Cyan, Blue, Purple: 1-7)
		Off	–	No signal
		Blinking	Red	Functional error

## Application Scenarios



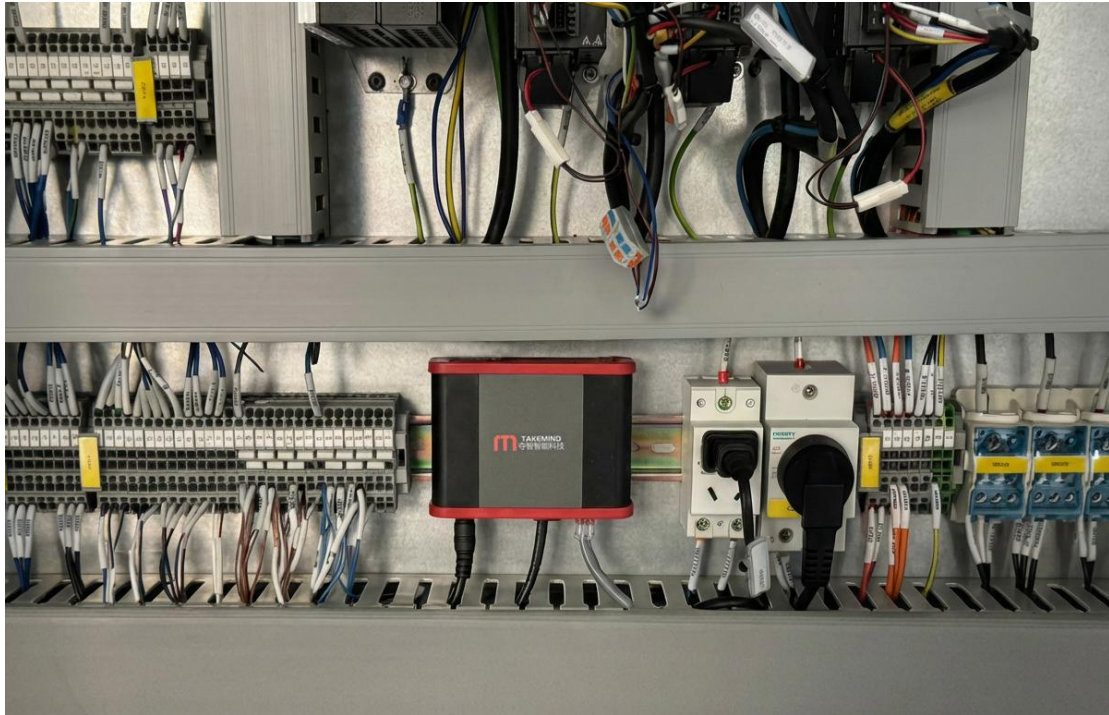
### Scenario 1: Laboratory Controller Communication and Debugging

This figure illustrates a typical connection between a vehicle controller and a host computer in a laboratory environment. The EC series device serves as a communication interface node, establishing a stable data exchange link between the controller and the computer via cables. Engineers can monitor, debug, and verify controller functions on the computer side to ensure the reliability and consistency of the communication process.



### Scenario 2: In-Vehicle Debugging Environment

This scenario demonstrates an in-vehicle debugging application. The EC series communication interface device connects to the vehicle electronic control unit via the automotive Ethernet port, enabling high-speed communication with external test systems. The device is used directly in a real vehicle to handle Ethernet data access and transmission, supporting engineers in performing network debugging, data acquisition, and system validation under actual vehicle conditions. This configuration is suitable for engineering applications such as R&D road testing, vehicle control strategy verification, and real-time diagnostics of in-vehicle networks.



### Scenario 3: Industrial Production Environment

In an industrial production environment, the EC series automotive Ethernet converters are installed in control cabinets as communication bridging nodes for electronic controller testing. The devices provide stable and reliable data conversion between automotive Ethernet and standard Ethernet. This configuration is widely used in end-of-line (EOL) testing processes for controllers.

## Warranty Information

Please use this product under the conditions described in this manual. The warranty period is limited to one year. Do not disassemble the enclosure; otherwise, the warranty will be void.

## Revision History

Version	Section	Description	Date
1.0	All	Initial release	2022/09/09
1.1	Application Scenarios	Added application scenario descriptions	2025/10/21

Users can download the latest documentation for the EC4001 2.5G/5G/10G

Base-T1 Ethernet Converter at:

<http://www.takemind.com/ec4001/>

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