TAKEMIND
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EC2001

Ethernet Converter 100/1000Mbps

Product Manual V1.1

manual

products

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100/1000Base-T1 Ethernet Converter Introduction

The EC2001 Ethernet Converter converts 100/1000Base-T1 automotive Ethernet into Ethernet with an RJ45 100Base-TX / 1000Base-T interface. Data can be transmitted bidirectionally in full-duplex mode, enabling communication between conventional computers and vehicle controllers based on 100/1000Base-T1.

Key Features

- TE MATENET 2304372-1 automotive Ethernet interface
- 4.5–50 V ultra-wide operating voltage, maximum withstand voltage –40 to 60 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

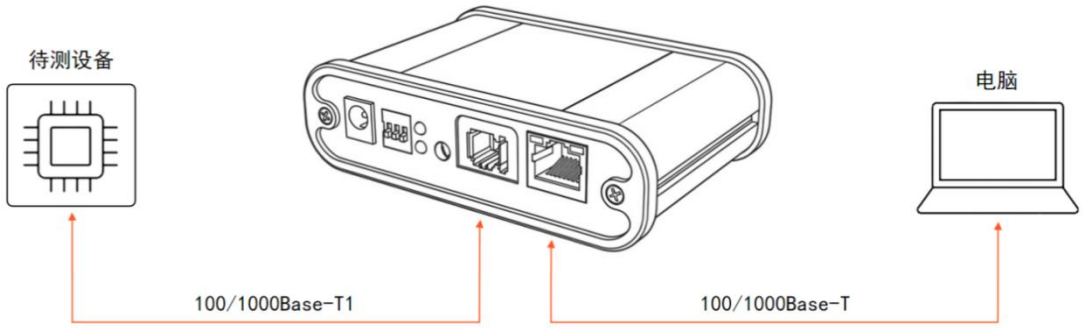
Product Information

Parameter	Description
Input Voltage:	4.5~50VDC
Withstand Voltage Range:	-40~60VDC
Power Consumption:	<2W
Dimensions:	69x104x30mm
Net Weight:	175g
Operating Temperature:	-40℃~+80℃
Protection Rating:	IP20

Package Contents

- 1 × 100/1000Base-T1 Ethernet Converter
- 1 × 1 m USB power cable
- 1 × 30 cm banana-plug power cable

Standard Use Case



The DIP switch configuration of the EC2001 depends on the device under test.If the device under test is a master, the EC2001 must be configured as a slave.Refer to the DIP Switch section for details.

DIP Switch

DIP Switch	State	Description
1	ON (up)	Auto-negotiation mode (DIP switches 2 and 3 are disabled)
	OFF (down)	Forced mode
2	ON (up)	100/1000Base-T1 port set to Master mode
	OFF (down)	100/1000Base-T1 port set to Slave mode
3	ON (up)	Set to 100 Mbps
	OFF (down)	Set to 1000 Mbps

Notes:

1、In a 100/1000Base-T1 link operating in forced mode, one device must be configured as the master and the other as the slave.

2、In a 100/1000Base-T1 link, if one device is set to auto-negotiation mode, the other device must also be set to auto-negotiation mode; otherwise, the link cannot be established.

3、The 100Base-TX / 1000Base-T link always remains in auto-negotiation mode and is not modified.

LED Information

Functional Domain	Indicator	State	Color	Description
100/1000Base-T1	ON	Steady on	Red	Power connected
		Off	—	Power not connected
	LN	Steady on	Red	100/1000 Base-T1link established
		Blinking	Red	100/1000 Base-T1 communication
		Off	—	100/1000 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
100Base-TX /1000Base-T	RJ45 右	Steady on	Red	100Base-TX link established
		Off	—	100Base-TX link not established
		Blinking	Red	100Base-TX communication
	RJ45 左	Steady on	Red	1000Base-T link established
		Off	—	1000Base-T link not established
		Blinking	Red	1000Base-T communication

Note:In auto-negotiation mode, the final auto-negotiation result of the 100/1000Base-T1 link can be referenced from the 100Base-TX / 1000Base-T RJ45 LED indicators.

Application Scenarios

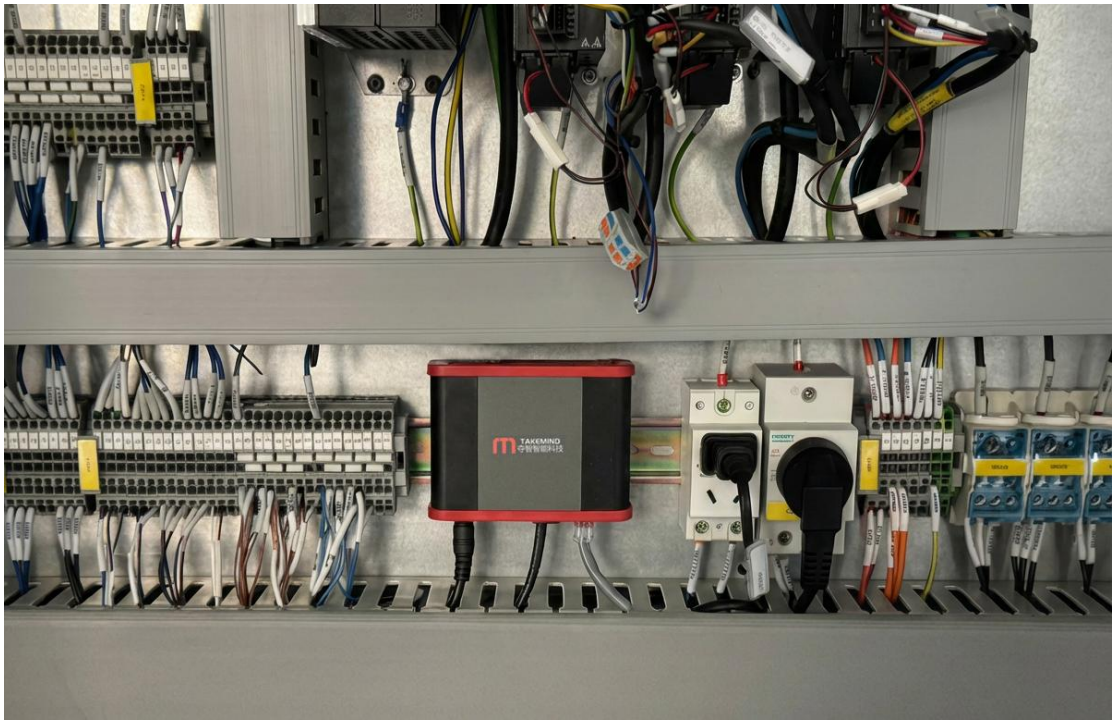
Scenario 1: Laboratory ECU Communication Debugging

This scenario demonstrates a typical connection between a vehicle controller and a host computer in a laboratory setting. The EC series device acts as a communication interface node, establishing a stable data exchange link between the controller and the PC via cables. Engineers can monitor, debug, and verify functions on the computer, ensuring the reliability and consistency of the communication process.

Scenario 2: In-Vehicle Environmental Debugging

This scenario showcases the application in an actual vehicle environment. The EC series interface device connects to the vehicle's ECU through an Automotive Ethernet port, enabling high-speed communication with external test systems. Used directly on the vehicle, it handles data access and transmission, supporting engineers in performing network debugging, data acquisition, and system validation under real driving conditions. This configuration is ideal for R&D road tests, control strategy verification, and

real-time vehicle network diagnostics.



Scenario 3: Industrial Production Environment

In an industrial production control cabinet, the EC series Automotive Ethernet converter serves as a communication bridge for ECU testing. The device provides stable and reliable data conversion between Automotive Ethernet and Standard Ethernet. This configuration is widely utilized in ECU End-of-Line (EOL) testing processes.

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 EC2001 100/1000Base-T1 Ethernet Converter at:

http://www.takemind.com/en/ec200x-en/

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