# CAN-TCMS

# Datasheet

**Email**：yacer@yacer.cn
**Web**：www.yacer.com.cn

yacer 亚册
Building Blocks of Communication

# Foreword

## Notational Conventions

The following categorized signal words with defined meaning might appear in the manual.

| Signal Words | Meaning |
|---|---|
| ⚠ DANGER | Indicates a high potential hazard which, if not avoided, will result in death or serious injury. |
| ⚠ CAUTION | Indicates a potential risk which, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result. |
| ANTISTATIC | Indicates static sensitive equipment. |
| DANGER! ELECTRIC SHOCK | Indicates High voltage danger. |
| TIPS | Provides methods to help you solve a problem or save you time. |
| NOTE | Provides additional information as the emphasis and supplement to the text. |

# Table of Contents

# 1 Overview

## 1.1 Introduction

The Yacer CAN-TCMS train protocol conversion gateway provides one CAN bus interface, one 100M Ethernet interface and one serial port to realize protocol conversion between CAN bus interface, Ethernet port and serial port.

Industrial wide temperature, perfect isolation protection, compact size, suitable for train and locomotive network communication.

## 1.2 Applications

- Protocol conversion between CAN and Ethernet interface
- Protocol conversion between CAN and serial port
- Train Control and Management System (TCMS)
- Train Communication Network (TCN)
- Embedded application and development

## 1.3 Features

- One CAN bus interface with isolation
- One 10/100M Ethernet interface
- One extended serial port: optional RS-232, RS-422 or RS-485 serial port
- Perfect isolation protection, industrial wide temperature

## 1.4 Technical Specifications

| Item | Parameters | Details |
|---|---|---|
| Serial Port | Connector | 1 x male D-Sub 9 (X3) |
| | Interface type (choose one of three) | ● RS-232 full-duplex serial port<br>● RS-422 full-duplex isolated serial port<br>● RS-485 half-duplex isolated serial port |
| | Baud rate | ≤ 921.6 Kbps |
| | Isolation | 2.5 kVrms |
| CAN Interface | Connector | 1 x male D-Sub 9 (X4) |
| | Interface type | CAN bus isolation interface (CAN2.0A, CAN2.0B, ISO 11898) |
| | Baud rate | 50 Kbps ~ 1 Mbps |
| | Isolation | 2.5 kVrms |
| Ethernet Interface | Connector | 1 x M12 with D-coding |
| | Rate | 10/100 Mbps adaptive |
| | Network protocol | TCP/IP |
| | Programming interface | UDP Server, UDP Client Supporting Unicast/Multicast/Broadcast |
| | Isolation | 1.5 kVrms |
| Configuration Management | Configuration tool | yacer-DMS configuration management software |
| | Configuration interface | Ethernet Interface |
| Power Requirements | Power supply | LV: Nominal 24V, tolerance 9 ~ 36VDC<br>MV: Nominal 36V, 48V, tolerance 18 ~ 75VDC<br>HV: Nominal 72V, 96V, 110V, tolerance 40 ~ 160VDC |
| | Isolation protection | >1.5 kV, Anti-reverse protection |
| | Power consumption | < 3 W |
| | Power connector | 3 pin connector with 5mm pitch (Phoenix Contact MSTB 2,5 / 3-GF or equivalent) |
| Mechanical Characteristics | Dimensions | H x W x D: 124 mm x 36 mm x 104 mm |
| | Weight | 500g |

| Item | Parameters | Details |
|---|---|---|
| Operating Environment | Operating temperature | -40 ~ +70℃ |
| | Storage temperature | -40 ~ +85℃ |
| | Operating humidity | 5 ~ 95% RH (no condensation) |

# 2 Hardware and Physical Interface

## 2.1 Appearance



## 2.2 LED Indicators

| LED | Description |
|---|---|
| ALARM | Alarm indicator, on when the device is not ready or fails, and constantly off during normal operation |
| RUN | Running indicator, green light flashes during normal operation |
| HOST TX | Serial port, CAN interface send instructions |
| HOST RX | Serial port, CAN interface receive instructions |
| UDP | UDP transceiver instructions |
| ETH | Link/ACT indication of Ethernet interfaces |

## 2.3 Ethernet Interfaces (X10)

### 2.3.1 Function Description

X10 is a 10/100M Ethernet interface with connector is M12 (D-coding).

| X10 | Description |
|---|---|
| 1 | TD + |
| 2 | RD + |
| 3 | TD - |
| 4 | RD - |

# 2.4 Serial Port (X3)

## 2.4.1 Function Description

X3 is an extended serial port, users can choose one of the following types when ordering:

- RS-232 full-duplex;
- RS-422 full-duplex with isolation;
- RS-485 half-duplex with isolation.

## 2.4.2 Pin Definition

X3 uses male D-Sub 9 male connector, pin defined as follows:

| Pin | RS-232 Full-duplex | RS-422 Full-duplex | RS-485 Half-duplex |
|---|---|---|---|
| 1 | | | |
| 2 | RxD | | |
| 3 | TxD | ISO_GND | ISO_GND |
| 4 | | TxD + | Data + |
| 5 | GND | TxD - | Data - |
| 6 | | | |
| 7 | | | |
| 8 | | RxD + | Term + |
| 9 | | RxD - | Term - |

## 2.4.3 RS-485 Terminal Matching

In RS-485 mode, 8-9 short connection enable terminal matching, matching resistance is 120 ohms.

## 2.5 CAN Interface (X4)

### 2.5.1 Function Description

X4 is an extended interface.

### 2.5.2 Pin Definition

| Pin | CAN |
|-----|---------|
| 1 | Term + |
| 2 | CAN_L |
| 3 | ISO_GND |
| 4 | |
| 5 | |
| 6 | Term - |
| 7 | CAN_H |
| 8 | |
| 9 | |

### 2.5.3 CAN bus Terminal Matching

In CAN working mode, 1-6 short connection enable terminal matching of CAN bus, matching resistance is 120 ohms.

## 2.6 Power Interface (X5)

### 2.6.1 Function Description

CAN-TCMS is powered by DC power supply, supports isolation protection and surge protection, and provides anti-inverse protection.

Depending on the factory configuration, the power input range is as follows:

| Model | Nominal value | Minimum value | Maximum value |
|-------|---------------|---------------|---------------|
| LV | 24V | 9V | 36V |
| MV | 36V、48V | 18V | 75V |
| HV | 72V、96V、110V | 40V | 160V |

## 2.6.2  Pin Definition

The X5 uses a 3-pos 5mm terminal connector (Phoenix Contact MSTB 2,5 / 3-GF compatible).

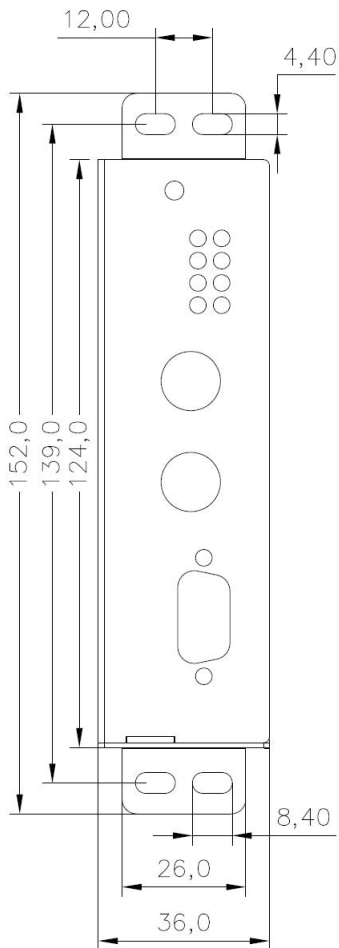| Pin | Signal name | Description |
|-----|-------------|-------------|
| 1 | V + | Voltage + |
| 2 | CASE | Protection ground |
| 3 | V - | Voltage - |

# 3 Mechanical Characteristics & Installation

The material of the housing shell is stainless steel. The thickness of the sheet metal is 1mm.

Dimensions (Height x Width x Depth) = 124 x 36 x 104mm.

CAN-TCMS can be mounted directly using four M4 Screws.

Mounting hole diameter = 4.4mm.

# About the Manual

- The manual is for reference only. If there is inconsistency between the manual and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the manual.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the manual. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- Please visit our website, contact the supplier or customer service if there is any problem occurring when using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.