# Integrated EtherCAT bus remote IO module

## MODEL：CK-EC5016


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# Switching output module

## Overview

The CK-EC series module is a new generation of modular data collector based on embedded system. It adopts standard DIN35 rail installation method, which is simple to install on site and flexible to use; it can cope with various field applications. The module is equipped with EtherCAT communication, which can communicate with devices supporting EtherCAT protocol such as PC, PLC, touch screen, etc.

CK-EC5016 switch output data collector can collect and output up to 16 digital signals (NPN type). It is suitable for collecting and controlling various IO signals in industrial sites.

CK-EC5016 adopts photoelectric isolation technology to effectively ensure reliable and safe data collection.

## Technical Parameters

◆Embedded real-time operating system
◆Input and output channels: 16 outputs
◆Output type: NPN type
◆Wide power supply range: DC 10-30V
◆Nominal power supply voltage: DC 12/24V
◆Module power consumption: 2W
◆Support EtherCAT protocol
◆ESD protection: ±15KV
◆Isolation withstand voltage: DC 2500V
◆Operating temperature range: -35℃ ～75℃
◆Industrial grade plastic housing, standard DIN35 rail installation

## Application

Automation equipment
Remote monitoring and data collection
Intelligent manufacturing/smart factory
Industrial site control
Smart warehousing and monitoring
Medical and industrial control product development
Packaging and material transfer
Electronic product manufacturing

## Function Configuration

| Model | DI (Optocoupler) | DO (NPN) | DO (Relay) | ETH cascade |
|---|---|---|---|---|
| CK-EC5162 | 16 | 16 | | support |
| CK-EC5163 | 16 | | 12 | support |
| CK-EC5161 | 16 | | | support |
| CK-EC5016 | | 16 | | support |
| CK-EC5321 | 32 | | | support |
| CK-EC5032 | | 32 | | support |

# CONTENTS

# CK-EC5016 16DO(NPN)
# CK-EC5032 32DO(NPN)

Input: EtherCAT
Output Type: NPN


CK-ECseriesmodulesareanewgenerationof modulardataloggersbasedonembeddedsystems.They areinstalledusingstandardDIN35rails,areeasytoinstall onsite,andareflexibletouse.Theycanhandleavarietyof on-siteapplications.Themodulesareequippedwith EtherCATcommunicationandcancommunicatewith devicesthatsupporttheEtherCATprotocol,suchasPCs, PLCs,andtouchscreens.

## Switching data acquisition

CK-EC5016 adopts advanced data processing technology to collect various active and passive switch/digital signals in industrial sites. It can meet the industrial sites with high measurement requirements and security, smart buildings, smart homes, power monitoring, process control and other occasions.

## Surge protection

The module is equipped with a transient suppression circuit, which can effectively suppress various surge pulses and protect the module to work reliably in harsh environments.

## Input and output isolation

The product is designed for industrial applications: through photoelectric isolation technology, the measurement circuit and the main control circuit power supply are isolated; at the same time, the control unit and the signal acquisition unit are electrically isolated by photoelectric isolation technology, which effectively ensures the reliability and safety of data acquisition.

# Technical indicators

## Switching output

◆Outputtype:NPN

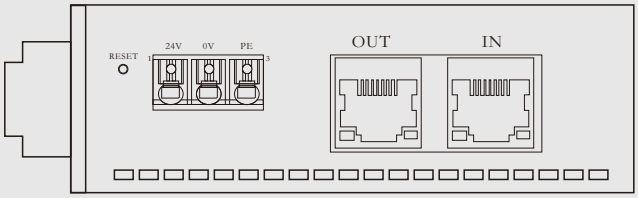
◆LoadCapacity:

◆Load capacity: 0.5A per channel

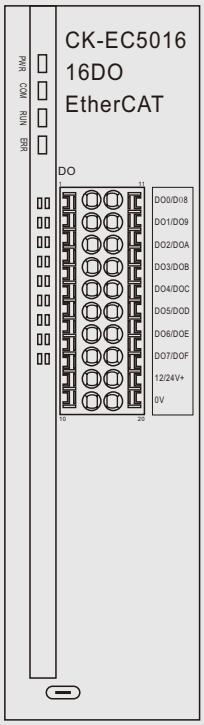
◆Load switching voltage:

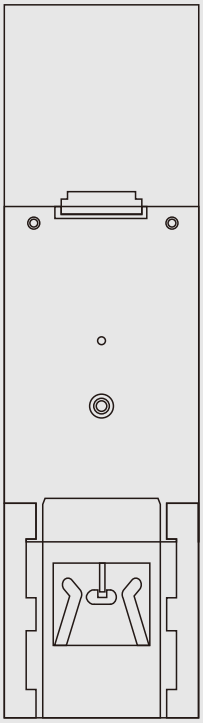
DC10-30V equivalent to DO power supply voltage

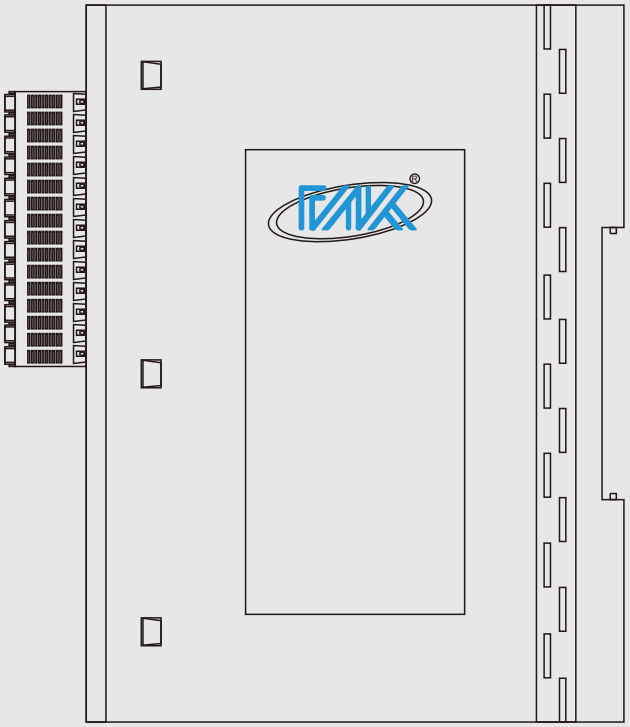
# Port Information




| Serial Number | Mark | Definition |
|---|---|---|
| 1 | 24V | Power input positive |
| 2 | 0V | Power input negative |
| 3 | PE | Ground terminal |





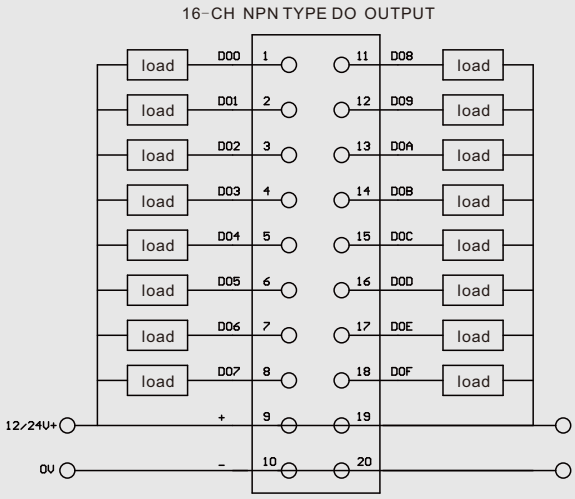
## CK-EC5016 Port Description

| Description | Serial number | Mark | Mark | Serial number | Description |
|---|---|---|---|---|---|
| DO output terminal | 1 | DO0 | DO8 | 11 | DO output terminal |
| | 2 | DO1 | DO9 | 12 | |
| | 3 | DO2 | DO10 | 13 | |
| | 4 | DO3 | DO11 | 14 | |
| | 5 | DO4 | DO12 | 15 | |
| | 6 | DO5 | DO13 | 16 | |
| | 7 | DO6 | DO14 | 17 | |
| | 8 | DO7 | DO15 | 18 | |
| Power input 24V | 9 | + | | 19 | Power input 24V |
| Power input 0V | 10 | - | | 20 | Power input 0V |

*:module needs to be connected to a set of power supplies on9,19 and 10,20.

# Wiring Diagram

## CK-EC5016 Wiring Diagram




Terminals 9 and 19 are internally connected
Terminals 10 and 20 are internally connected
Terminals 9, 19, 10, and 20 need to be connected to power supply

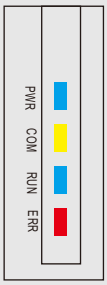
# Indicator Lights

Users can use the LED status indicator to determine the module's operating and communication status, as well as the status of the DIO channel.

The module can communicate normally only after entering the OP state.

## Module status indicator

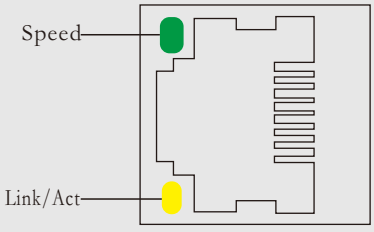
| Light logo | Color | Explanation |
|---|---|---|
| PWR | Blue | On: The module is powered on. |
| COM | Yellow | On:The module EtherCAT has entered the OP state<br>Off:The module EtherCAT is not connected to the upper-level device<br>Flashing:The module is hand shaking with theupper-level device |
| RUN | Blue | Flashing:Thedeviceprogramisrunning |
| ERR | Red | On:Themoduledetectsanerror |




## EtherCAT network port indicator

The module contains 2 network ports, IN is the EtherCAT input port, which is used to connect to a computer, PLC or the upper level module. OUT is the EtherCAT output port, which is used to connect to the lower level module.

| Light logo | color | Explanation |
|---|---|---|
| Speed | Green | Link speed indicator light:<br>On: 100M Off: 10M |
| Link/Act | Yellow | Link status indicator<br>Steady on:Physical link connected,no communication<br>Blinking:Communicating Off:Link not connected |



# Electrical parameters

Unless otherwise specified, the electrical parameters of the CK-EC5016 data acquisition module are the values when Tamb=25℃.

## Module parameters

| Entry | Parameter | Entry | Parameter |
|---|---|---|---|
| Power supply | 10-30VDC (nominal 24VDC) | Rated output current | Single channel maximum 500mA |
| Power consumption | 2W | DO output protection | Over temperature, over current, short circuit |
| Communication Protocol | EtherCAT | Turn off leakage current | Max 50uA |
| Network Interface | 2*RJ45 | On-resistance | Typical value: 0.5Ω |
| Connection rate | 10/100Mbps | Output Type | NPN type/leakage type<br>Open output 0V,<br>Close output high impedance |
| Number of DO input channels | 16 | | |
| Operating temperature | -35-75℃ | wiring | I/Owiring:Maximum 1mm$^2$ |
| Protection level | IP20 | Ambient humidity | 5%-95% (no condensation) |

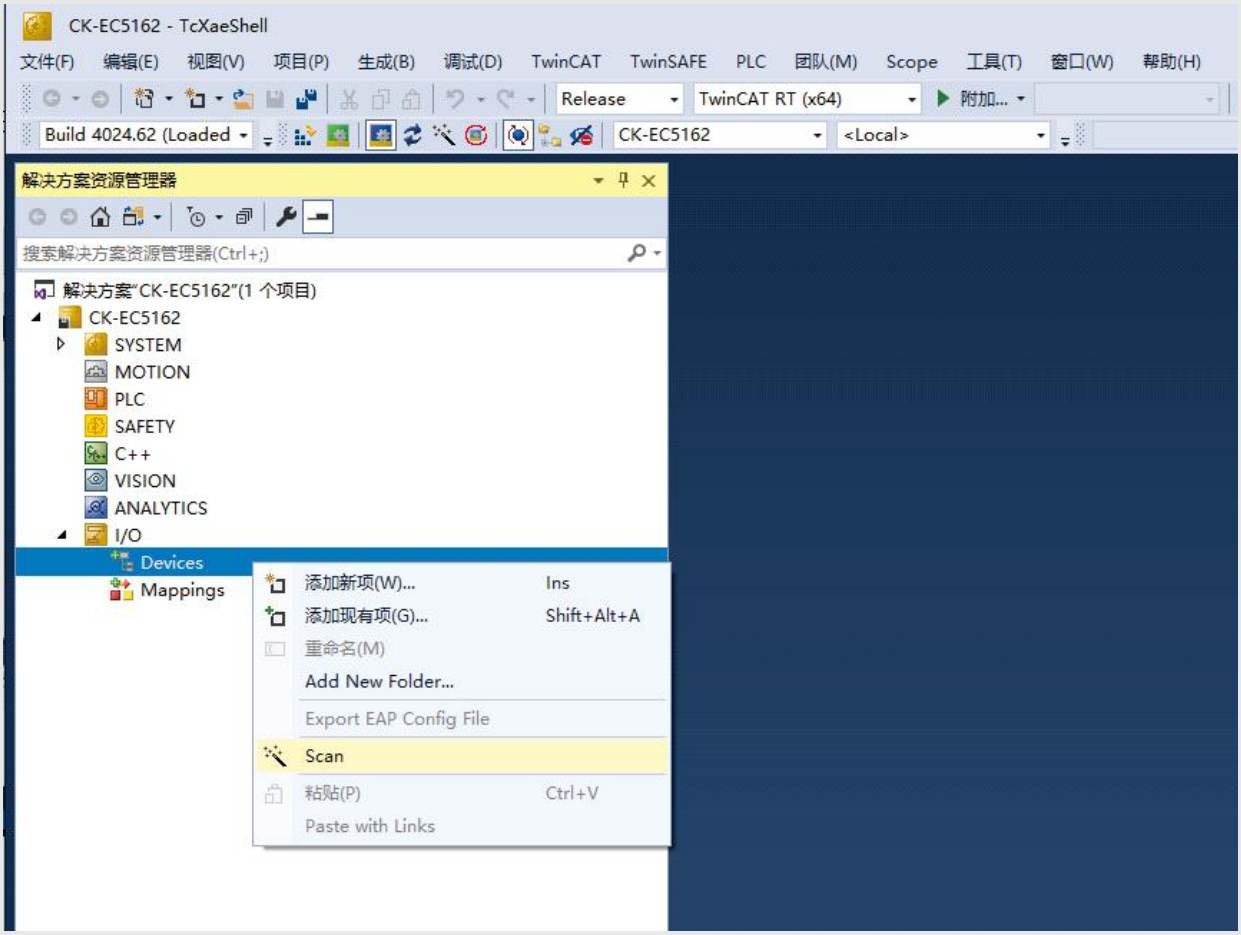
# Communication Example

## CK-EC5016 Tested with TwinCAT

0. Before testing, install the TwinCAT XAE Shell software and the network port driver.
Use a network cable to connect the computer's network port to the CK-EC5016 module IN port, and connect the module to a 24V power supply.

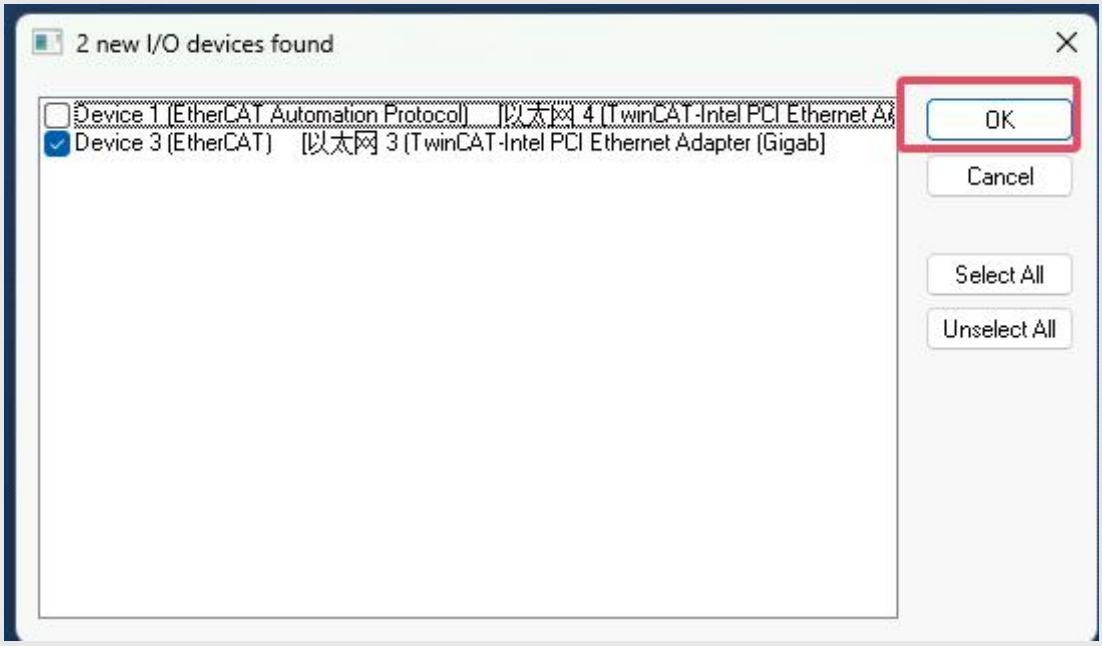
1. Open the TwinCAT XAE Shell software, click "File" - "New" - "Project" in the upper left corner, and create a new TwinCATx project. The project name and save location can be customized.

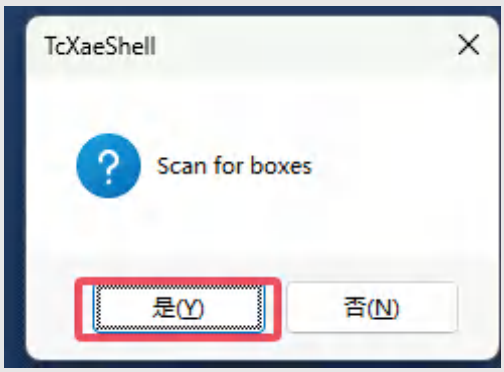

2. In the project solution explorer, expand "I/O", right-click "Devices", and click "Scan" to start scanning the device.

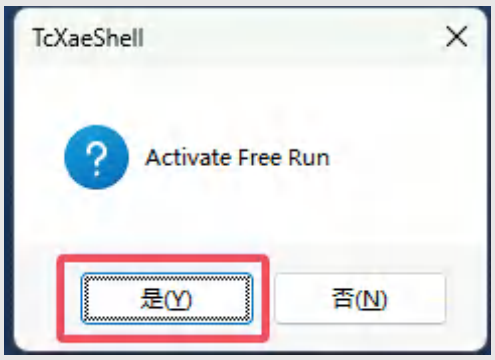


# Communication Example

3. Click on the icons one by one to discover the device.

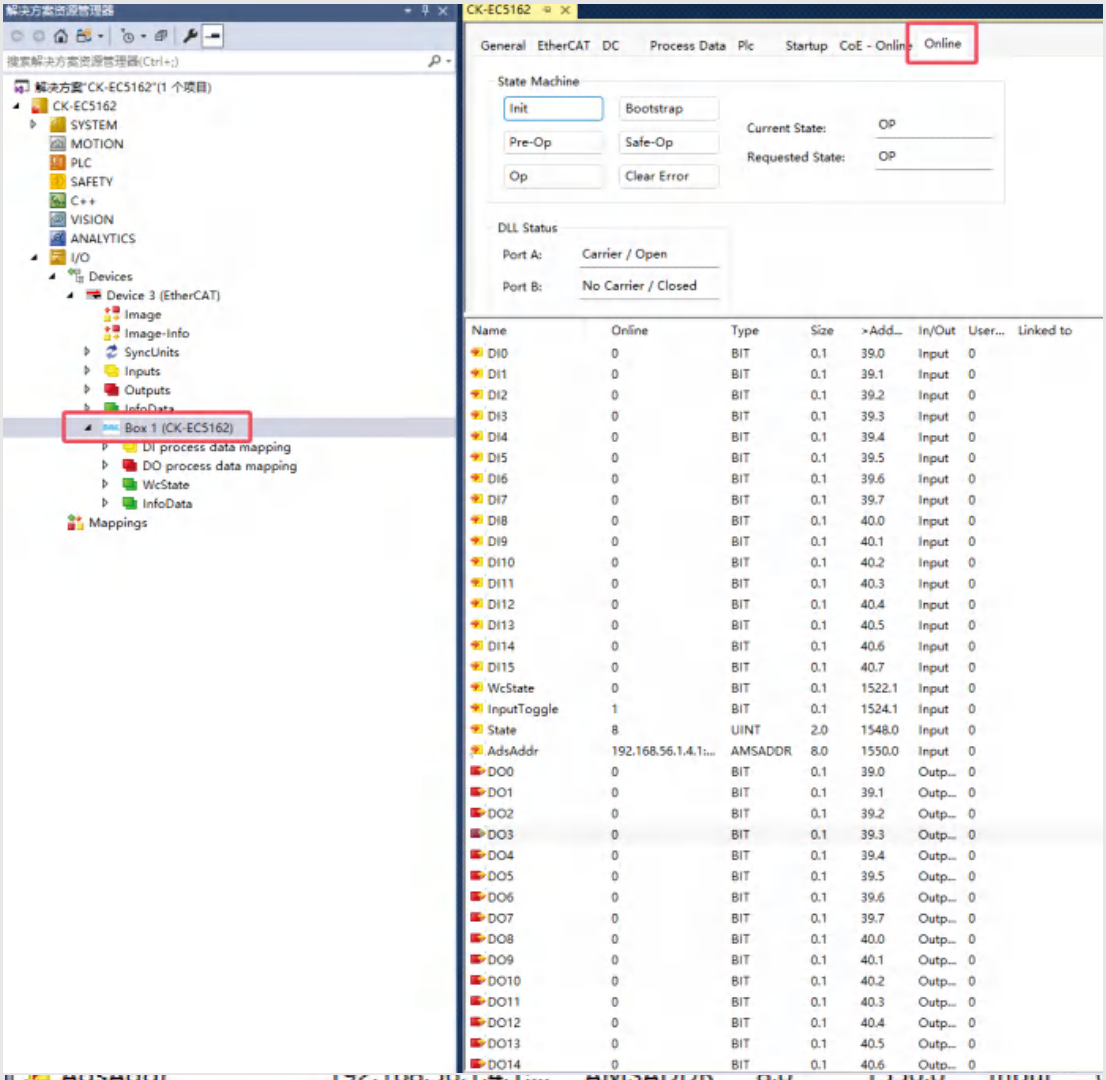



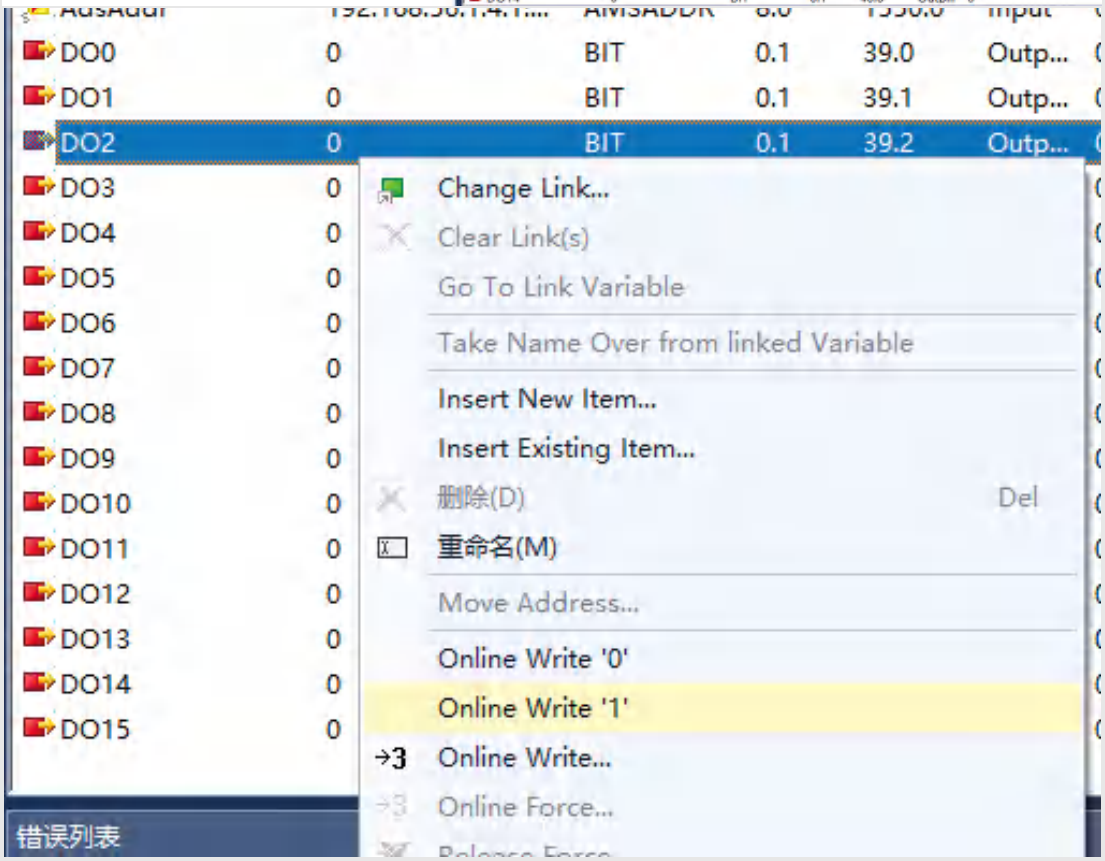



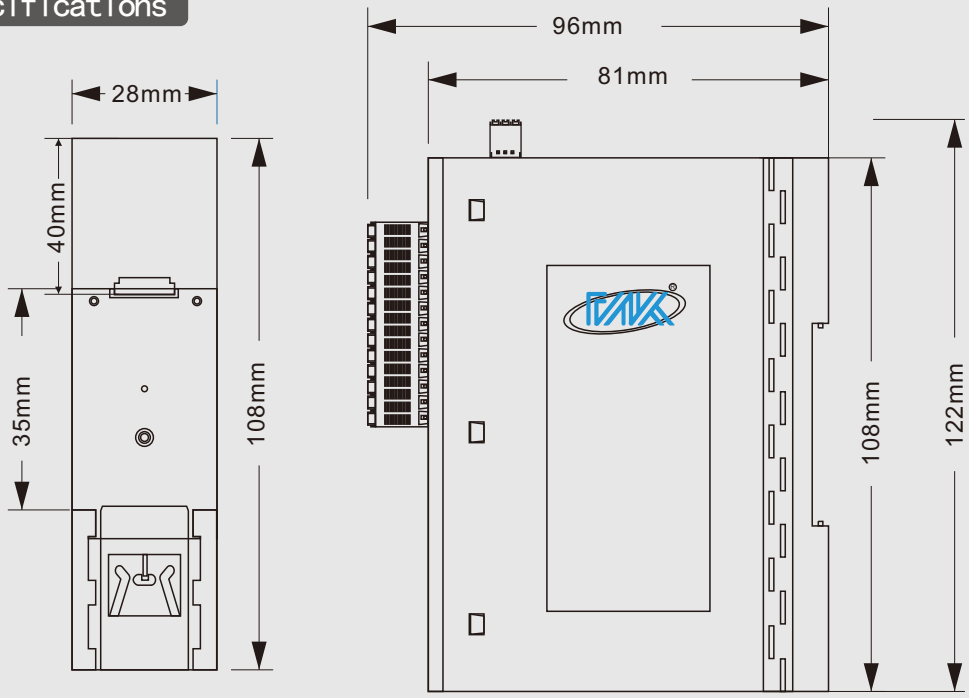

4. Double-click the searched device "Box 1 (CK-EC5016)" to expand the relevant information of this module. Click "Online" to check that "Current State" is OP, which means the device is operating normally. The DI state in the window displays the current input state of the DI port in real time; to operate the DO port, you can select the DO channel and right-click to call out the menu, select Online Write to write a new DO state. After writing 1, the DO indicator on the corresponding module is on, and writing 0, the DO indicator on the corresponding module is off.

# Communication Example



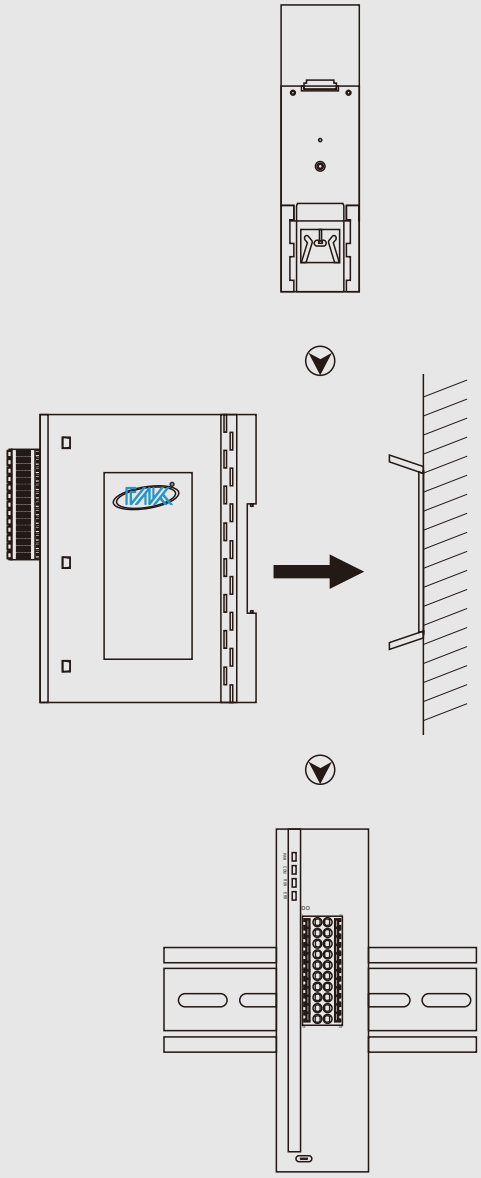



## Mechanical specifications




## Installation Method

CK-EC5016 supports DIN35 rail installation. Users can easily install or remove the module on the rail, providing assistance for industrial site application and installation.



## Three guarantees and maintenance instructions

Within two years from the date of sale, if the product is damaged or the product quality is lower than the technical indicators under the conditions of storage, transportation and use, the user can return it to the factory for free repair. If the damage is caused by violation of operating regulations and requirements, the device fee and repair fee shall be paid.

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# Product display picture


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