Integrated EtherCAT bus remote IO module

MODEL：CK-EC5162/CK-EC5163

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Switching input and output modules

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-EC516X switch input and output data collector can collect up to 16 switch signals (optical coupler input); output 16 digital signals (NPN type). It is suitable for collecting and controlling various IO signals in industrial sites.

CK-EC516X adopts photoelectric isolation technology to effectively ensure reliable and safe data collection.

Technical Parameters

◆Embedded real-time operating system
◆Input and output channels: 16 inputs/16 outputs
◆Input type: compatible with NPN, PNP and dry nodes
◆Output type: NPN type, relay type
◆Wide power supply range: DC 10-30V
◆Nominal power supply voltage: DC 12/24V
◆Module power consumption: 2W
◆Support EtherCAT protocol
◆ ±15KV ESD protection
◆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	CK-EC5162	CK-EC5163
DI (Optocoupler)	16	16
DO (NPN)	16	
DO (Relay)		12

contents

CK-EC5162 16-way DI+16-way DO(NPN)
CK-EC5163 16-way DI+12-way DO(Relay)

Input type: Optocoupler compatible with NPN and PNP types
Output type: NPN/Relay

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

Switching data acquisition

CK-EC5162/EC5163 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

Switch input

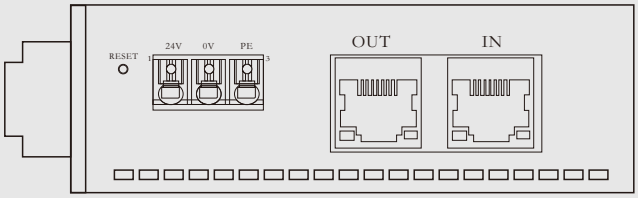
◆Number of input channels: up to 16
◆Input type: Optocoupler compatible with NPN and PNP types

EC5162/EC5163 inputs share a common COM terminal for every 8 channels. When the COM terminal is connected to 12/24V, the DI in the group can be connected to an NPN sensor. When the COM terminal is connected to 0V, the DI in the group can be connected to a PNP sensor. Regardless of whether the COM terminal is connected to 0V or 12/24V, the DI in the group can be connected to a dry node (passive contact, button, etc.).

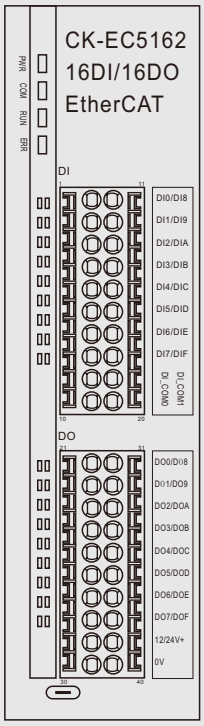
Switching output

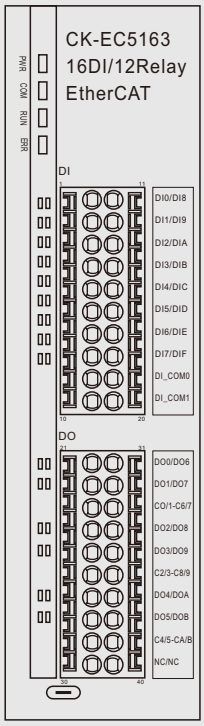
◆Output channels: EC5162 16 channels;
EC5163 12 channels
◆Output type: NPN/Relay
◆Load Capacity:
EC5162 NPN output: 0.5A per channel
EC5163 relay output: maximum 3A@resistive load, 2A@inductive load
◆Load switching voltage:
EC5162: DC10-30V is equivalent to DO power supply voltage
EC5163: 30V max

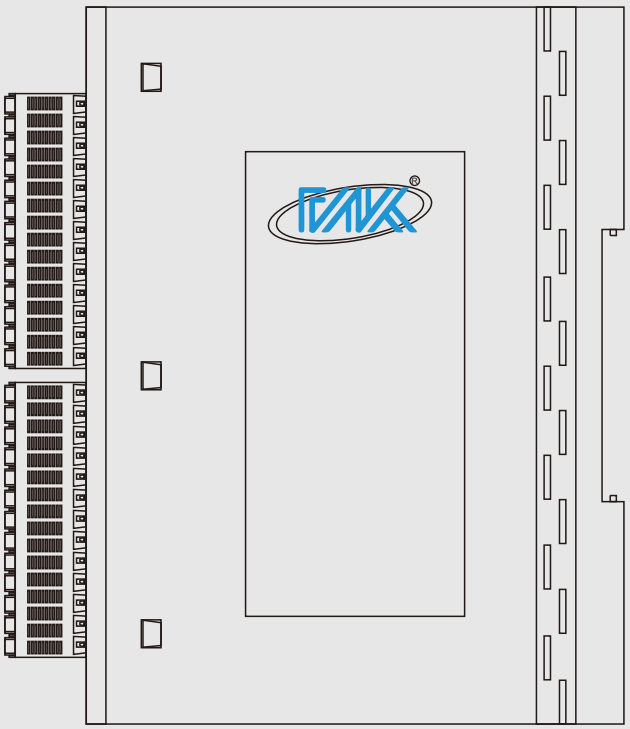
Port Information



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







CK-EC5162 Port Description

Description	Serial number	Mark	Mark	Serial number	Description
DI signal Input	1	DI0	DI8	11	DI signal Input
	2	DI1	DI9	12	
	3	DI2	DI10	13	
	4	DI3	DI11	14	
	5	DI4	DI12	15	
	6	DI5	DI13	16	
	7	DI6	DI14	17	
	8	DI7	DI15	18	
Common port0	9	0V or 24V	0V or 24V	19	Common port1
	10			20	
DO output terminal	21	DO0	DO8	31	DO output terminal
	22	DO1	DO9	32	
	23	DO2	DO10	33	
	24	DO3	DO11	34	
	25	DO4	DO12	35	
	26	DO5	DO13	36	
	27	DO6	DO14	37	
	28	DO7	DO15	38	
Power input 24V	29	+		39	Power input 24V
Power input 0V	30	-		40	Power input 0V

*:Terminals 29 and 39 are connected internally.Terminals 30 and 40 are connected internally.
The EC5162 module needs to be connected to a set of power supplies on 29,30 and 39,40.

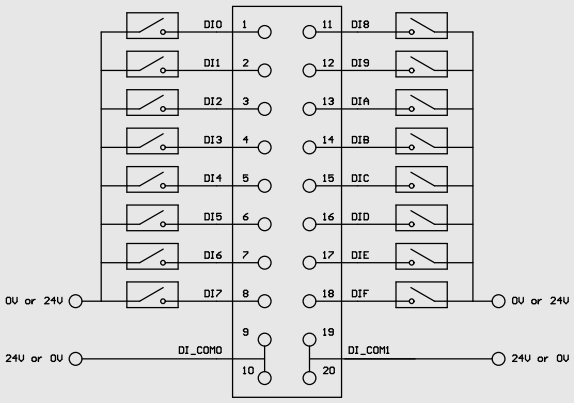
CK-EC5163 Port Description

Description	Serial number	Mark	Mark	Serial number	Description
DI signal Input	1	DI0	DI8	11	DI signal Input
	2	DI1	DI9	12	
	3	DI2	DI10	13	
	4	DI3	DI11	14	
	5	DI4	DI12	15	
	6	DI5	DI13	16	
	7	DI6	DI14	17	
	8	DI7	DI15	18	
Common port0	9	0V或24V	0V或24V	19	Common port1
	10			20	
Relay signal output	21	DO0	DO6	31	Relay signal output
	22	DO1	DO7	32	
Output common0/1	23	C0/1	C6/7	33	Output common6/7
Relay signal output	24	DO2	DO8	34	Relay signal output
	25	DO3	DO9	35	
Output common2/3	26	C2/3	C8/9	36	Output common8/9
Relay signal output	27	DO4	DOA	37	Relay signal output
	28	DO5	DOB	38	
Output common4/5	29	C4/5	CA/B	39	Output commonA/B
Empty terminal	30	NC	NC	40	Empty terminal

Wiring Diagram

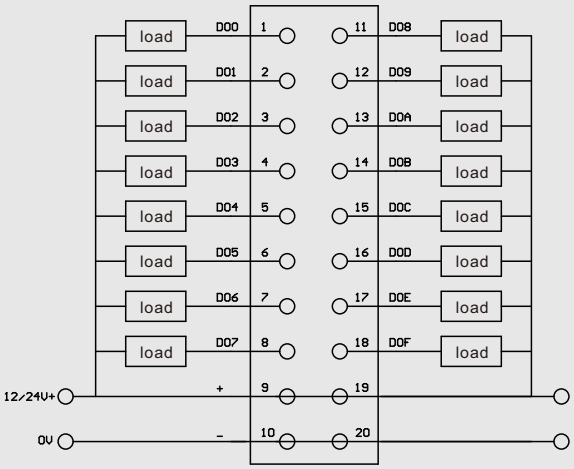
CK-EC5162 Wiring Diagram

16-CH DI INPUT



Terminals 9 and 10 are internally connected
Terminals 19 and 20 are internally connected
DI_COM0 and DI_COM1 can be connected to the same or different signals.

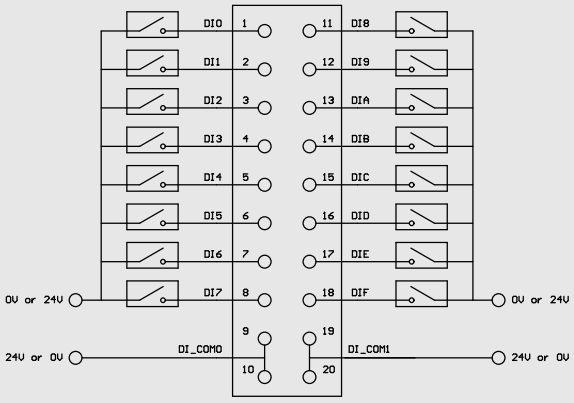
16-CH NPN TYPE DO OUTPUT



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

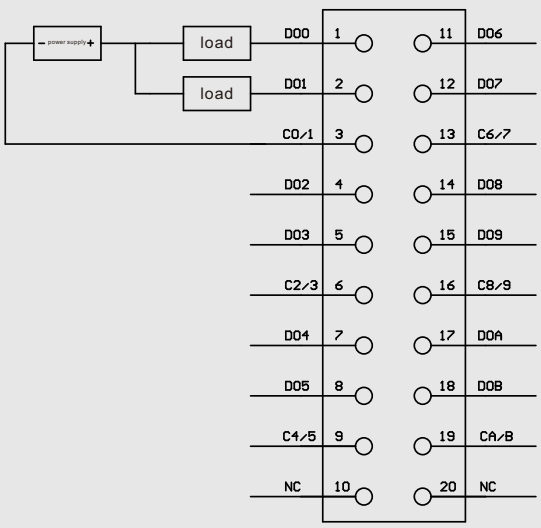
CK-EC5163 Wiring Diagram

16-CH DI INPUT



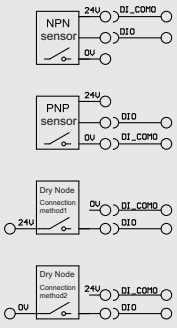
Terminals 9 and 10 are internally connected
Terminals 19 and 20 are internally connected
DI_COM0 and DI_COM1 can be connected to the same or different signals.

12-CH Relay OUTPUT



DI inputsensoraccessexampledi agram

DI input sensor connection example



It is recommended to use cables with a core diameter less than 1mm². The cold terminal

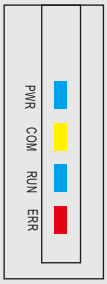
Indicator Lights

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

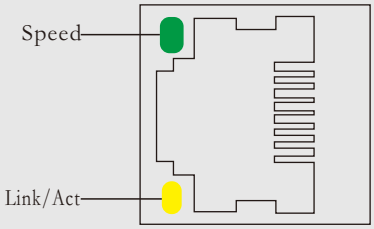
Light logo	Color	Explanation
PWR	Blue	On: The module is powered on.
COM	Yellow	On:The module EtherCAT has entered the OP state Off:The module EtherCAT is not connected to the upper-level device Flashing:The module is hand shaking with theupper-level device
RUN	Blue	Flashing:Thedeviceprogramisrunning
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: On: 100M Off: 10M
Link/Act	Yellow	Link status indicator Steady on:Physical link connected,no communication Blinking:Communicating Off:Link not connected



Electrical parameters

Unless otherwise specified, the electrical parameters of the CK-EC5162/5163 data acquisition module are the values when Tamb=25℃.

Module parameters

Entry	Parameter	Entry	Parameter
Power supply	10-30VDC (nominal 24VDC)	Input isolation voltage	2500V rms
Power consumption	2W	Turn-on voltage	8V-30V (relative to the common terminal)
Communication Protocol	EtherCAT	Input Impedance	>8KΩ
Network Interface	2*RJ45	Input Delay	Max. 2mS
Connection rate	10/100Mbps	Input signal type	Both NPN and PNP support common terminal connection of 24V for NPN and 0V for PNP.Every 8 inputs share one common terminal.
Number of DI input channels	16		
CK-EC5162		CK-EC5163	
Number of DO output channels	16	Number of DO output channels	12
Rated output current	Single channel maximum 500mA	Maximum switching voltage	DC30V
Output Type	NPN type/leakage type Open output 0V, Close output high impedance	Rated output current	Single channel maximum 3A@resistive load, 2A@inductive load
On-resistance	Typical value: 0.5Ω	Output Type	Relay
Turn off leakage current	Max 50uA	wiring	I/Owiring:Maximum 1mm^2
DO output protection	Over temperature, over current, short circuit	Operating temperature	-35-75℃
wiring	I/Owiring:Maximum 1mm^2	Ambient humidity	5%-95% (no condensation)
Operating temperature	-35-75℃	Protection level	IP20
Ambient humidity	5%-95% (no condensation)		
Protection level	IP20		

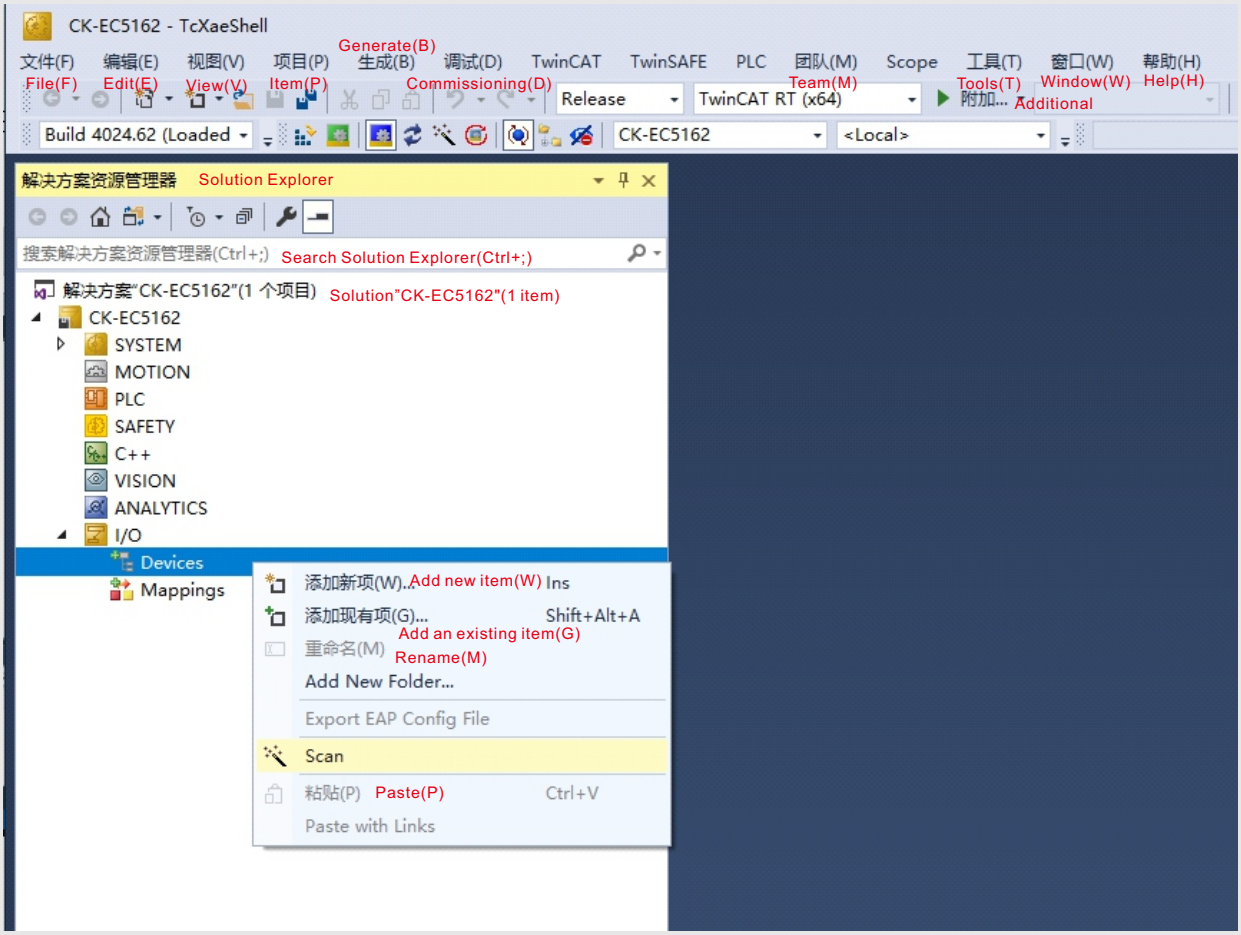
Communication Example

CK-EC5162 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-EC5162 module IN port, and connect the module to a 24V power supply.

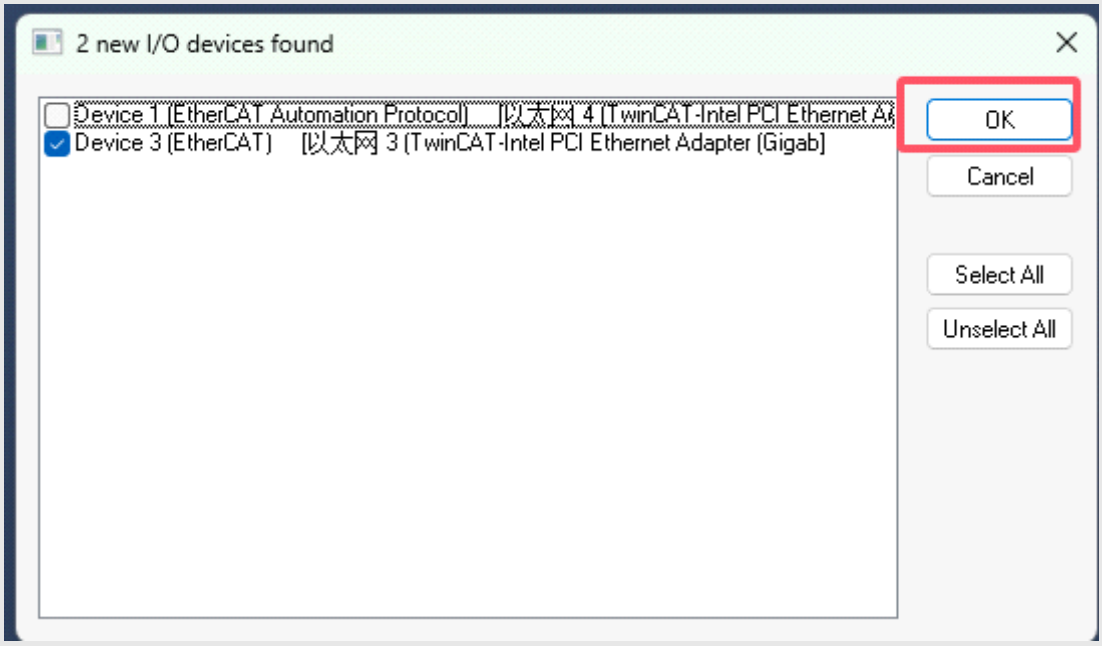
1. Open the TwinCAT XAE Shell software, click "File" - "New" - "Project" in the upper left corner, and create a new TwinCATx project. The project name and save location can be customized.

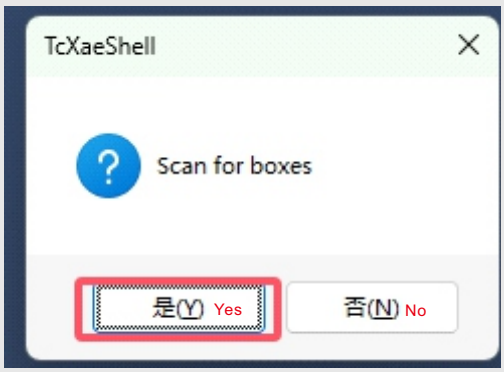
2. In the project solution explorer, expand "I/O", right-click "Devices", and click "Scan" to start scanning the device.

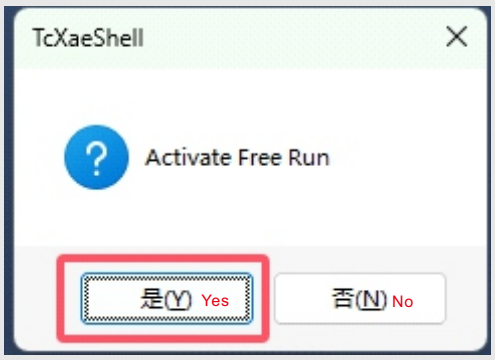


Communication Example

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

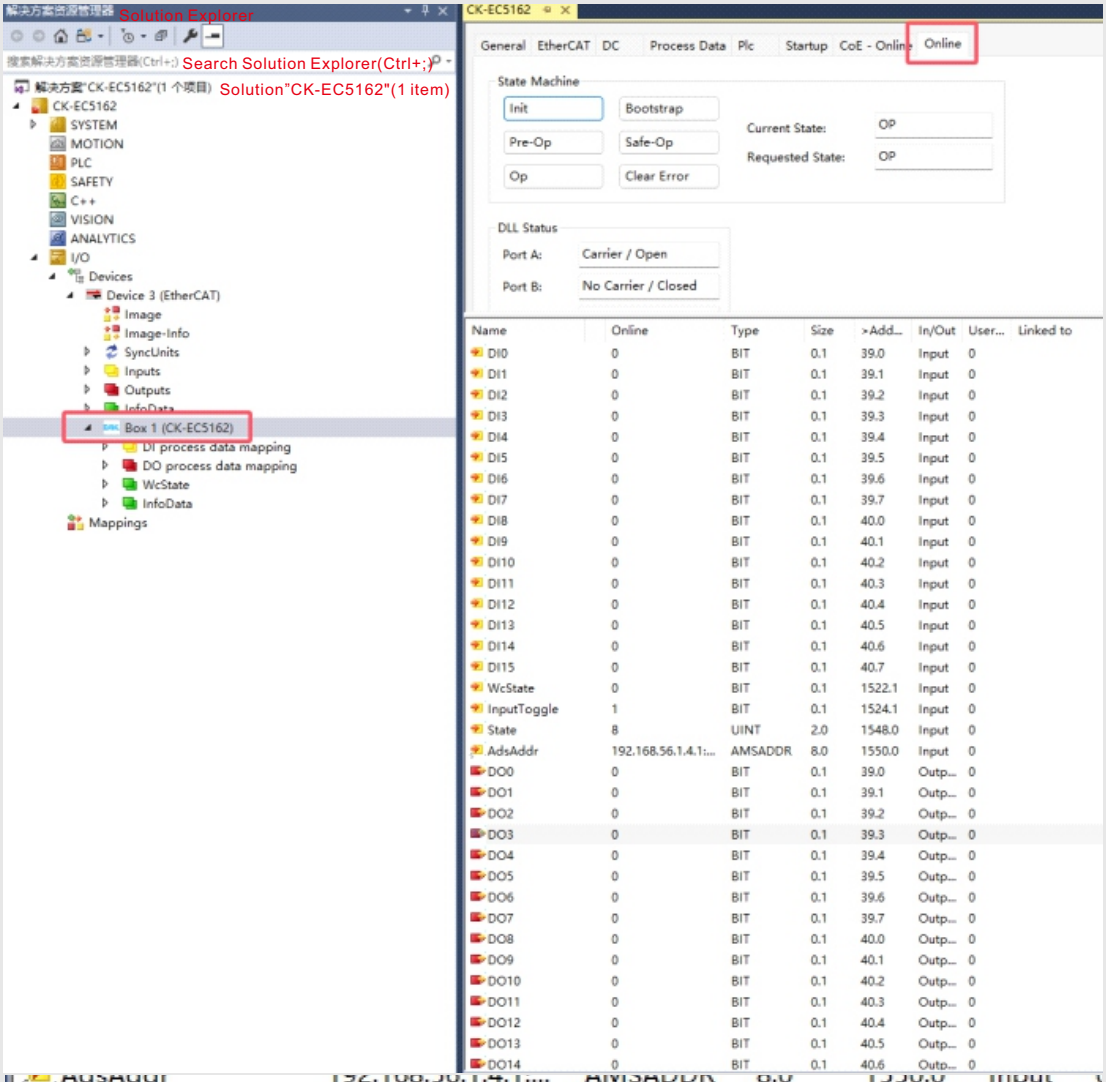


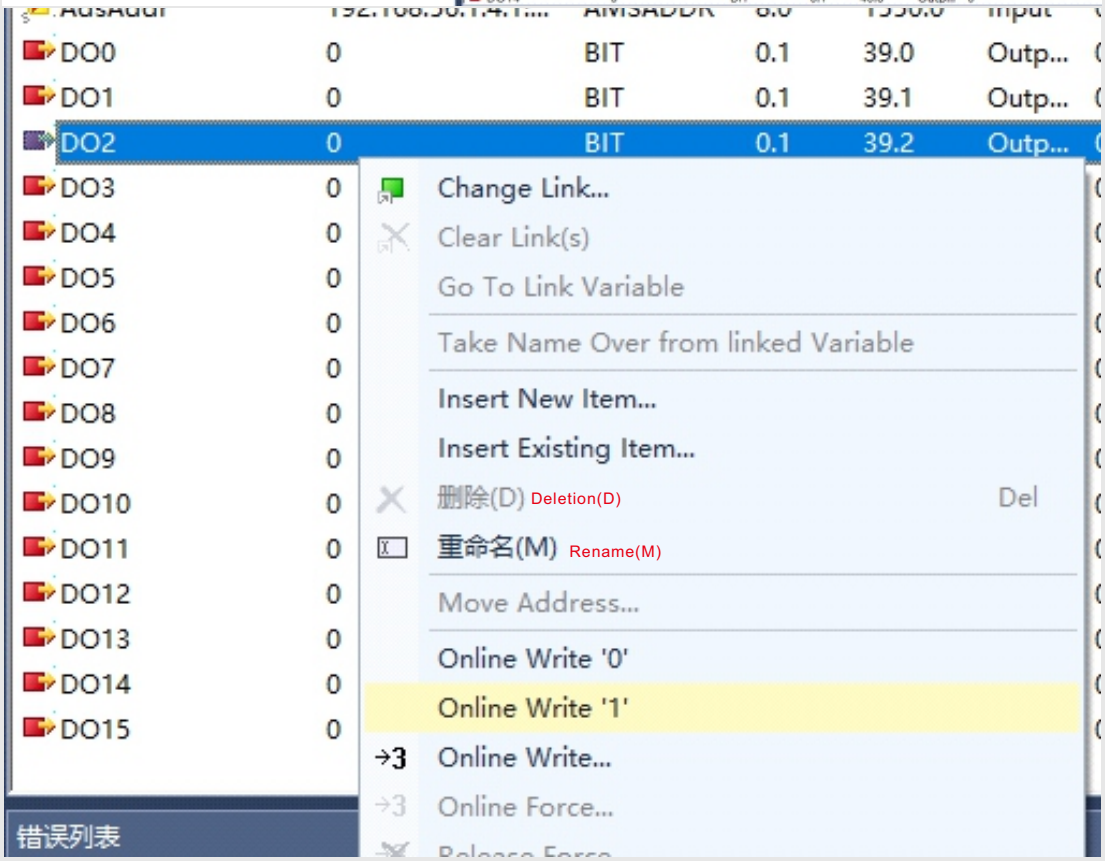




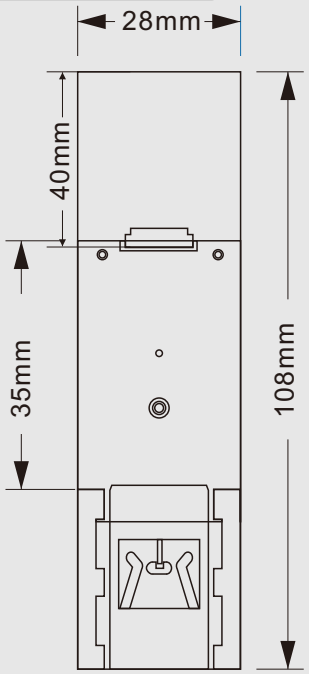
4. Double-click the searched device "Box 1 (CK-5162)" to expand the relevant information of this module. Click "Online" to check that "Current State" is OP, which means the device is operating normally. The DI state in the window displays the current input state of the DI port in real time; to operate 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.

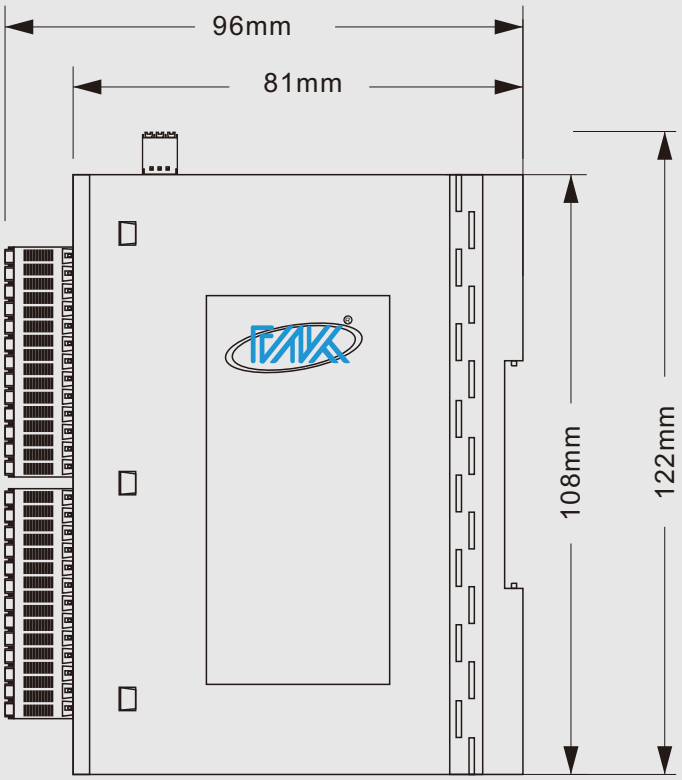
Communication Example





Mechanical specifications



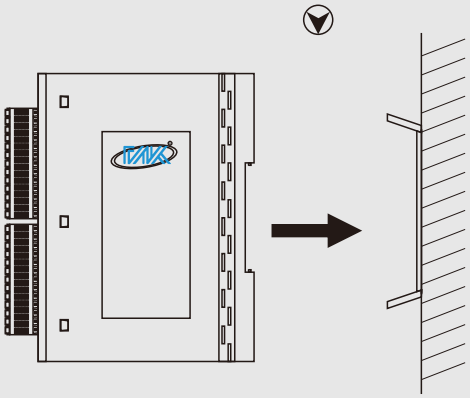


Installation Method

CK-EC5162/5163 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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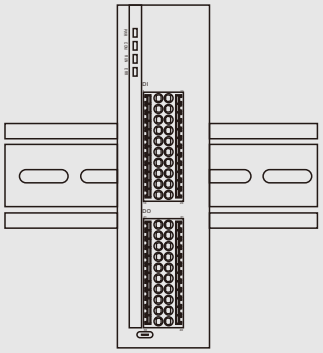

Product display picture

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