Integrated EtherCAT bus remote IO module

MODEL：CK-EC5161

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Switch input 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-EC5161 switch input data collector can collect up to 16 switch signals (optical coupler input); it is suitable for collecting and controlling various IO signals in industrial sites.

CK-EC5161 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
- ◆Input type: compatible with NPN, PNP and dry nodes
- ◆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-EC5161 16DI
CK-EC5321 32DI

Input Type: Optocoupler compatible with NPN and PNP types

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.

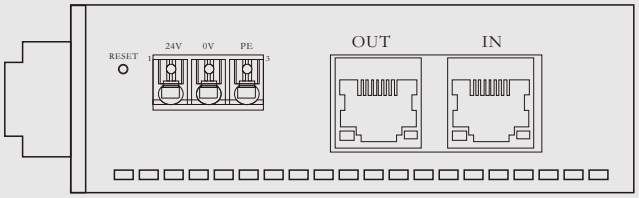
Technical indicators

Switch input

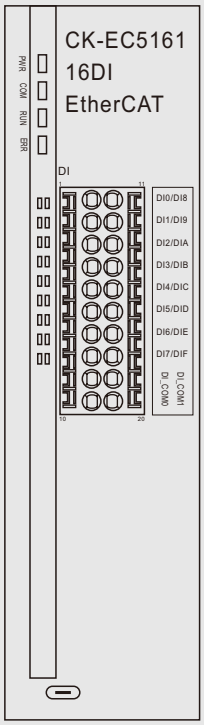
◆Number of input channels: up to 16
◆Input type: Optocoupler compatible with NPN and PNP types

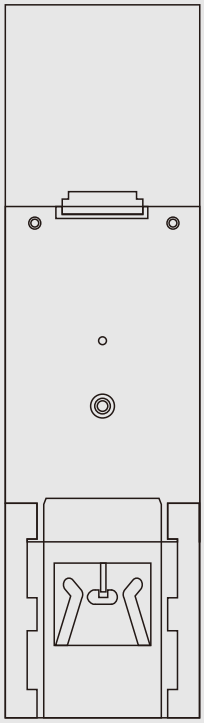
Ec5161 inputs share a common COM terminal for every 8 channels. When the COM terminal is connected to 12/24V, the DI in the group can be connected to an NPN sensor. When the COM terminal is connected to 0V, the DI in the group can be connected to a PNP sensor. Regardless of whether the COM terminal is connected to 0V or 12/24V, the DI in the group can be connected to a dry node (passive contact, button, etc.).

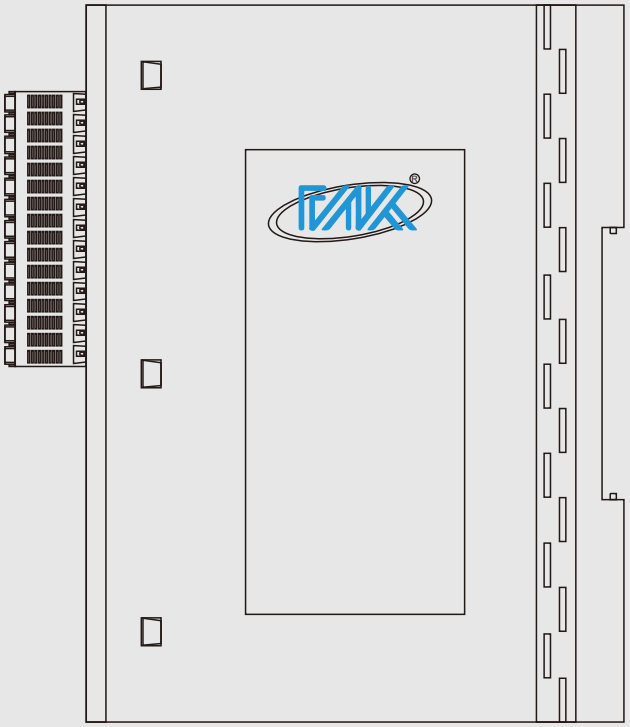
Port Information



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







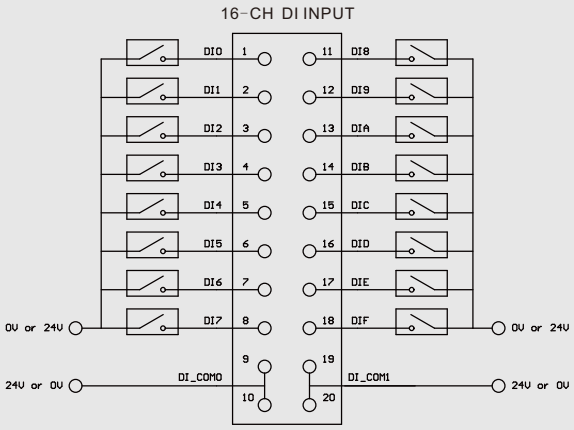
CK-EC5161 Port Description

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	

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

Wiring Diagram

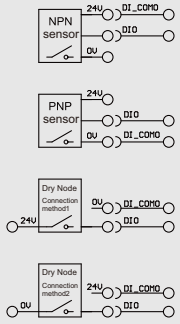
CK-EC5161 Wiring Diagram



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.

DI inputsensoraccessexamplediagram

DI input sensor connection example



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

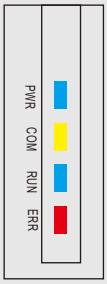
Indicator Lights

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

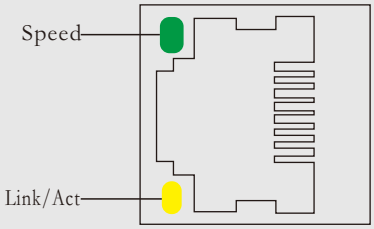
Light logo	Color	Explanation
PWR	Blue	On: The module is powered on.
COM	Yellow	On:The module EtherCAT has entered the OP state Off:The module EtherCAT is not connected to the upper-level device Flashing:The module is hand shaking with theupper-level device
RUN	Blue	Flashing:Thedeviceprogramisrunning
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-EC5161 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		

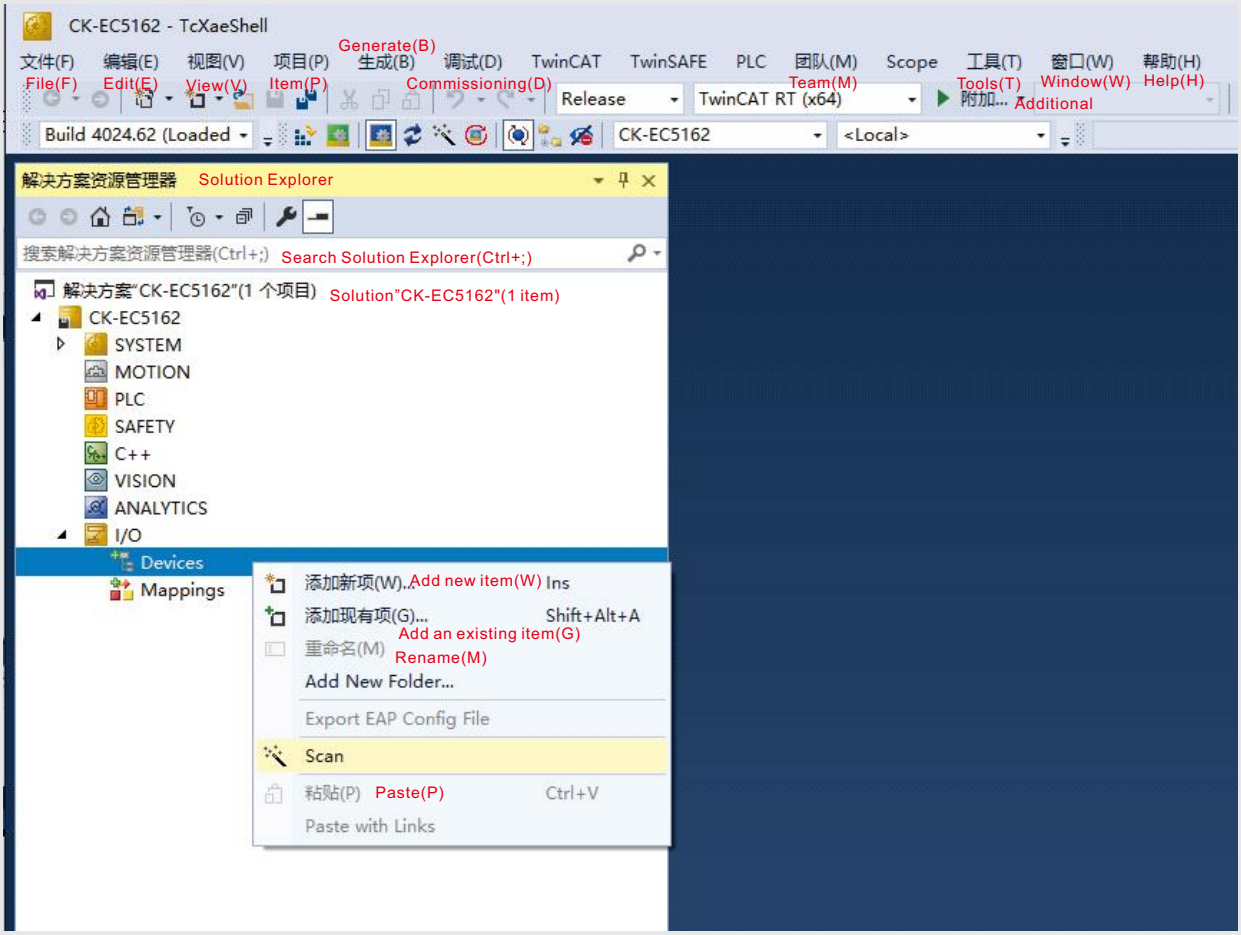
Communication Example

CK-EC5161 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-EC5161 module IN port, and connect the module to a 24V power supply.

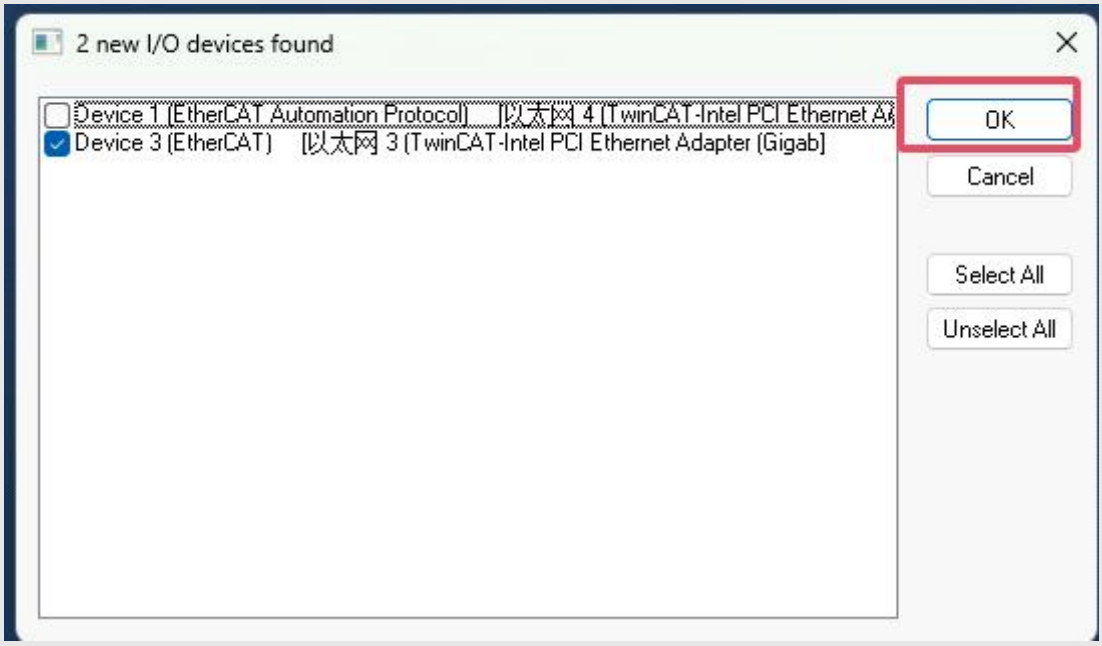
1. Open the TwinCAT XAE Shell software, click "File" - "New" - "Project" in the upper left corner, and create a new TwinCATx project. The project name and save location can be customized.

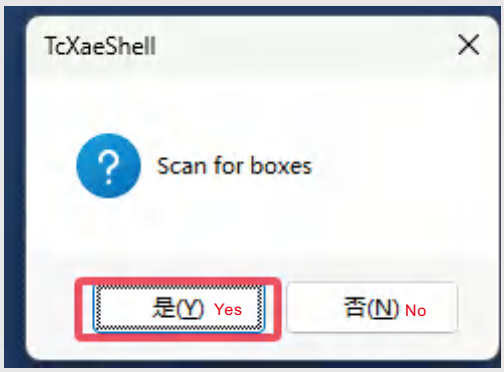
2. In the project solution explorer, expand "I/O", right-click "Devices", and click "Scan" to start scanning the device.

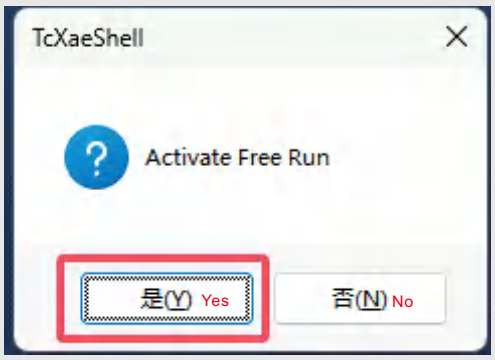


Communication Example

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

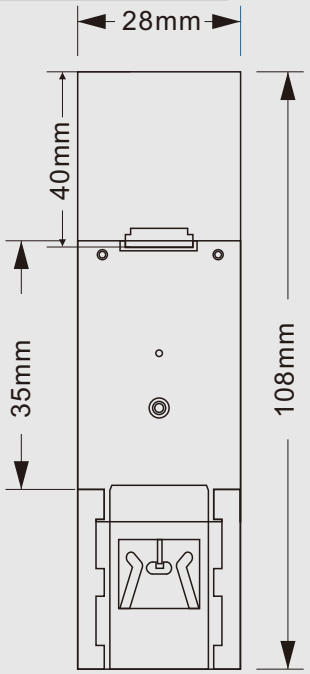


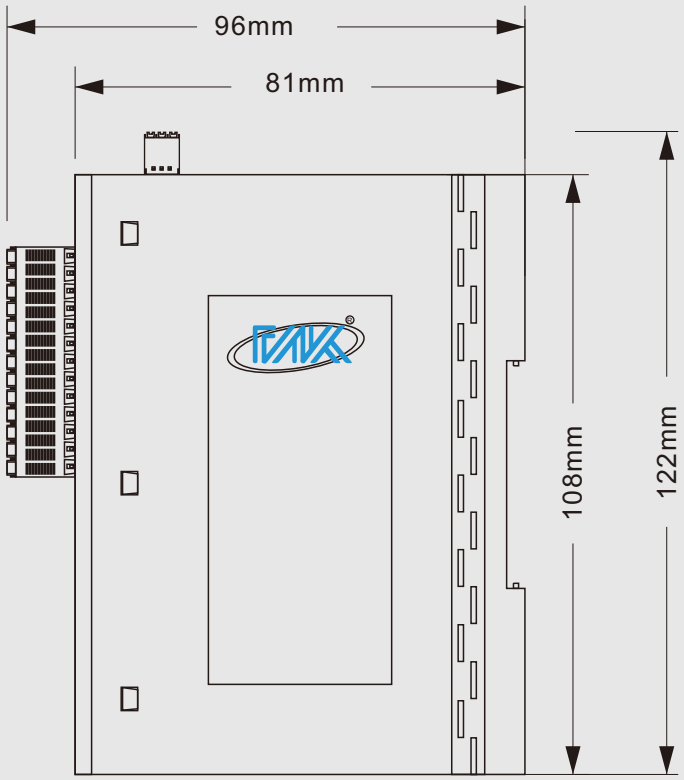




4. Double-click the searched device "Box 1 (CK-EC5161)" to expand the relevant information of this module. Click "Online" to check that "Current State" is OP, which means the device is running normally. The DI status in the window displays the current input status of the DI port in real time.

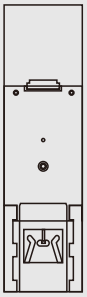
Mechanical specifications





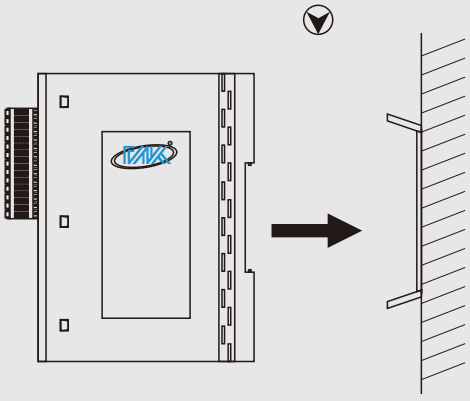
Installation Method

CK-EC5161 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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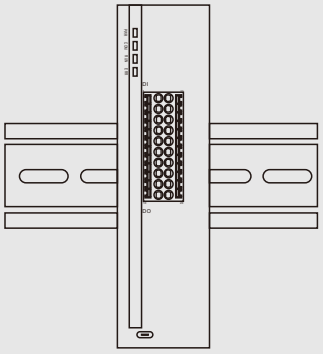

Product display picture

精工品质 独具匠心