COMPANY PROFILE

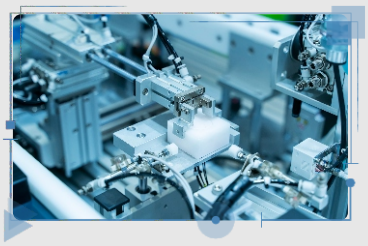
Chengkong Electronics,
Professional data collection product supplier。

More than ten years of ingenious quality assurance
and first-class data collection services

Product Categories

Ⅰ	Analog input module	Ⅱ	Analog output module
Ⅲ	AC input module	Ⅳ	Weighing module
Ⅴ	TC/RTD temperature acquisition module	Ⅵ	Analog input and output module
Ⅶ	Switching/digital module	Ⅷ	Develop custom modules
Ⅸ	signal isolator	Ⅹ	Interface conversion module

Application areas

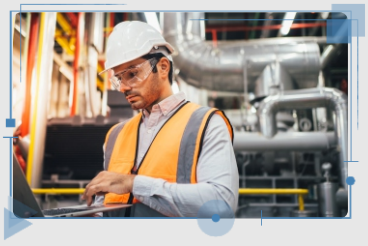


Automation equipment

Medical electronics

Smart manufacturing

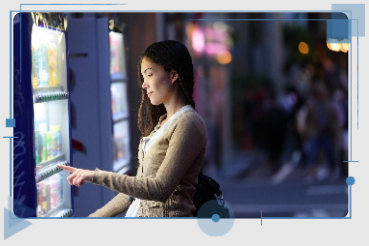
Remote monitoring



industrial control

Smart warehousing

Instruments anemometer



new retail

Switching input and output modules

Overview

CK module is a new generation of modular data logger based on embedded system. It adopts standard DIN35 rail installation method, which is easy to install and flexible to use. It can cope with various field applications. The module is equipped with Ethernet communication and isolated RS485. It can communicate with PC or PLC alone, or communicate with PC or PLC with multiple 485 interfaces at the same time, or form a network with multiple 485 modules.

CK-5162E switch quantity/digital quantity/relay input/output data collector can collect 16 switch quantity signals (optical coupler input); output 16 digital quantity signals (NPN MOS). Suitable for collecting various IO signals in industrial sites. Suitable for collecting various IO signals in industrial sites.

CK-5162E adopts optoelectronic isolation technology, which effectively guarantees data collection reliable and safe.

Technical Parameters

- ◆Embedded Real-Time Operating System
- ◆Input and output channels: 16 inputs/16 outputs
- ◆Input Type: Optocoupler
- ◆Output type: NPN mos/relay
- ◆Communication: Ethernet RS485 communication
- ◆Wide power range: DC 9~30V
- ◆Scope of supply: DC 12Vor+24V
- ◆Address / baud rate configurable by user
- ◆Protocol:Modbus-TCP/Modbus-RTU
- ◆ESD protection: ±15KV
- ◆Power consumption: <1W
- ◆Isolated Withstand Voltage: DC 2500V
- ◆Operating Temperature Range: -30℃ ~70℃
- ◆Industrial-grade plastic housing, standard DIN35 rail mounting

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

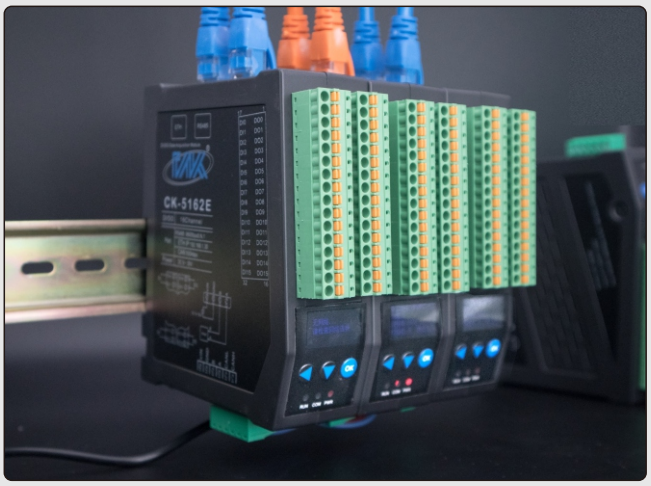
model	CK-5161E	CK-5009E	CK-5162E	CK-5162R
DI (光耦)	16		16	16
DO (NPN)			16	16
DO (MOSFET)		8		
Ethernet	support	support	support	unsupport
RS485	support	support	support	support

Contents

CK-5161E 16ch Switch input
CK-5009E 8ch Switch output
CK-5162E 16ch Switch input/output

Input Type: Optocoupler, active low
Output: RS485 modbus-RTU/modbus-TCP

The CK-5162E is a switching/digital/relay input/output data collector configured with up to 16 switching/digital inputs and outputs. Hybrid modules are also available, see selection for details. It is suitable for collecting various switching signals and outputting switching control signals from industrial sites.



Switching Data Acquisition

CK-5162E adopts advanced data processing technology, which can collect various active and passive switch/digital signals in industrial sites. It can meet the high measurement requirements of industrial sites, security, smart buildings, smart homes, power monitoring, process control and other occasions.

Input/Output Isolation

The product is designed for industrial applications: through DC-DC conversion, the measurement circuit and the main control circuit power supply are isolated; at the same time, the control unit and signal acquisition are electrically isolated using photoelectric isolation technology, effectively ensuring reliable and safe data acquisition.

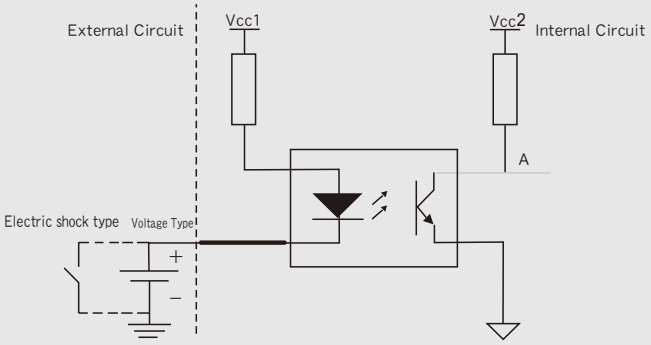
surge protection

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

Technical indicators

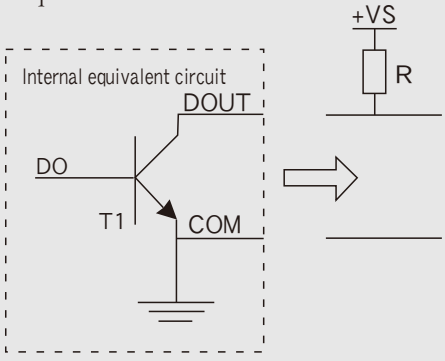
Switch input

◆Number of input channels: up to 16
◆Input type: optocoupler, low level effective
◆Input equivalent circuit:

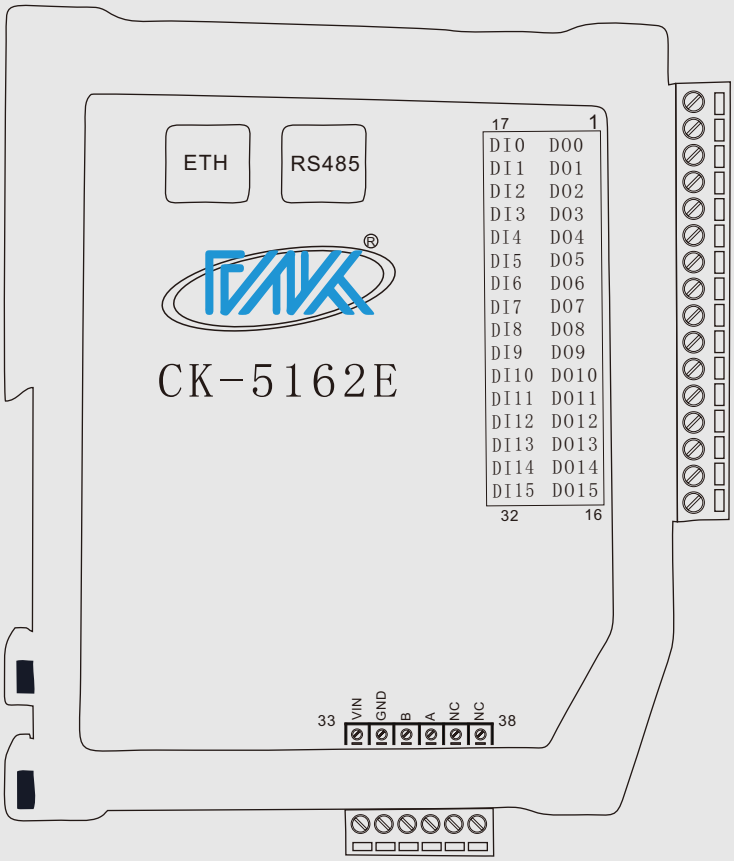


Switching output

◆Output channels: up to 16 channels
◆Output type: NPN/MOSFET (load capacity: 5088:100mA;5162E:200mA; 5009E:1.25A)
◆Output equivalent circuit:



Port Information



CK-5162E Port Description

Port	Port ID	Port Function
1	D00	Switching/digital output channel 0
2	D01	Switching/digital output channel 1
3	D02	Switching/digital output channel 2
4	D03	Switching/digital output channel 3
5	D04	Switching/digital output channel 4
6	D05	Switching/digital output channel 5
7	D06	Switching/digital output channel 6
8	D07	Switching/digital output channel 7
9	D08	Switching/digital output channel 8
10	D09	Switching/digital output channel 9
11	D010	Switching/digital output channel 10
12	DO11	Switching/digital output channel 11
13	DO12	Switching/digital output channel 12
14	DO13	Switching/digital output channel 13
15	DO14	Switching/digital output channel 14
16	DO15	Switching/digital output channel 15

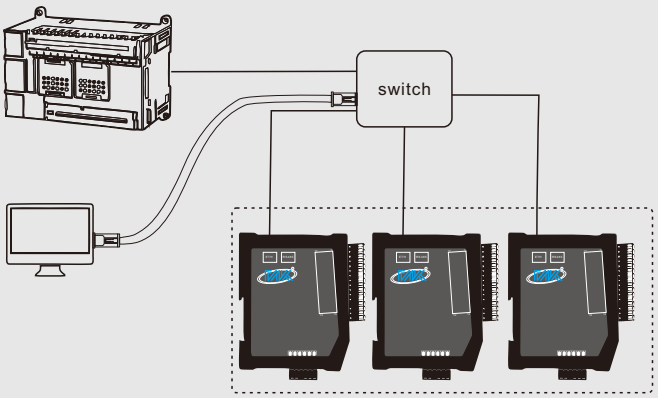
Port	Port ID	Port Function
17	DI0	Switching/digital input channel 0
18	DI1	Switching/digital input channel 1
19	DI2	Switching/digital input channel 2
20	DI3	Switching/digital input channel 3
21	DI4	Switching/digital input channel 4
22	DI5	Switching/digital input channel 5
23	DI6	Switching/digital input channel 6
24	DI7	Switching/digital input channel 7
25	DI8	Switching/digital input channel 8
26	DI9	Switching/digital input channel 9
27	DI10	Switching/digital input channel 10
28	DI11	Switching/digital input channel 11
29	DI12	Switching/digital input channel 12
30	DI13	Switching/digital input channel 13
31	DI14	Switching/digital input channel 14
32	DI15	Switching/digital input channel 15
33	VIN	Power input positive terminal
34	GND	Power Ground
35	B	485 signal negative input terminal
36	A	485 signal positive input terminal
37	NC	Null Port
38		

Communication interface

Ethernet Connection

Some modules of the CK series support 100M/10M standard Ethernet interface. Support Modbus TCP protocol and support automatic polarity identification (AUTO MDIX) of the network port.

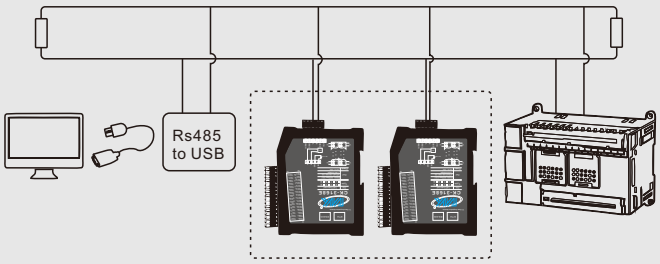
CK series modules support standard RS485 interface (see the figure below)



CK module network connection diagram through Ethernet interface device

RS485 Connection

The RS485 interface of the CK series module is a standard RS485 interface, which adopts differential signal logic. The logic "1" is represented by a voltage difference of +(2~6)V between the two lines; the logic "0" is represented by a voltage difference of -(2~6)V between the two lines. The network connection of RS485 devices is very simple. You only need to connect the positive and negative ends of the device to the bus. When the communication distance is long, you should pay special attention to the network topology. The RS485 network topology generally adopts a terminal matching bus structure, and does not support ring or star networks. The lead-out length from the bus to each node should be as short as possible to minimize the impact of the reflected signal in the lead-out line on the bus signal. For more detailed information, please refer to the relevant information

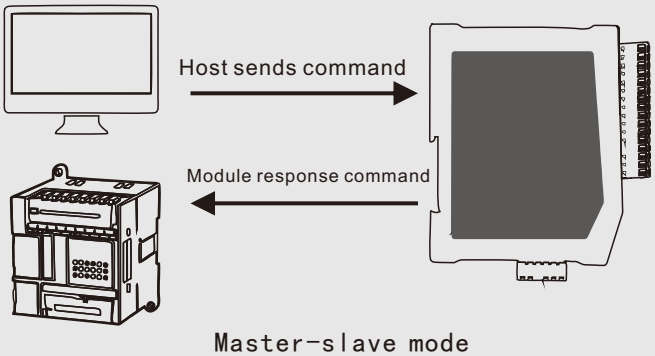


Schematic diagram of the module connecting to other devices via RS485 interface

Module communication mode

Master-slave mode

The communication mode of CK-5162E module is usually master-slave mode (one question and one answer mode); the host sends commands to the module through the communication interface, and the module responds accordingly after receiving the correct command.



Master-slave mode

Serial communication parameters (default 9600 8,N,1 address 01)

Mailing address

The communication address range of the CK-5162E module is 01~F7 (1~247), and the module address is factory set to 01; the module communication address can be modified by the user through commands according to site needs. For specific methods, please refer to the corresponding commands.

Communication Protocol

MODBUS-TCP/MODBUS-RTU protocol

Modbus protocol is a universal communication protocol that has been widely used in today's industrial control field. Through this protocol, controllers can communicate with each other or with other devices via a network (such as Ethernet).

The MODBUS address allocation of CK module is as follows: (CK-5162E)

Bit operation register description:

Bit operation function code: 01H (read multi-channel output switch status), 02H (read multi-channel input switch status), 05H (set single-channel switch output status), 0FH (set multi-channel switch output status)

Order (HEX)	Register address (HEX)	Data Description
02	0	Read digital input 0 status
02	1	Read digital input 1 status
02	2	Read digital input 2 status
02	3	Read digital input 3 status
02	4	Read digital input 4 status
02	5	Read digital input 5 status
02	6	Read digital input 6 status
02	7	Read digital input 7 status
02	8	Read digital input 8 status
02	9	Read digital input 9 status
02	A	Read digital input 10 status
02	B	Read digital input 11 status
02	C	Read digital input 12 status
02	D	Read digital input 13 status
02	E	Read digital input 14 status
02	F	Read digital input 15 status
01/05/0F	0	Read and write DO output 0 output status (write 1 load to get power)

Communication rate

CK-5162E module RS485 supports baud rates: 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps; the module communication rate can be modified by the user through commands according to site needs, and the specific method is to refer to the corresponding command.

The CK-5162Emodule supports the industrial standard MODBUS-RTU (RS485) protocol. The module works in the MODBUS slave (server) state. It can communicate with PLCs, RTUs or computers of various brands.
The module supports MODBUS commands as shown in the figure:

Serial number	Order(HEX)	Function	Remark
1	01	Read single/multi-channel switch output status (bit)	Output Channel
2	02	Read single/multi-channel switch input status (bit)	Input Channels
3	03	Read switch status (byte)	Input and output channels
4	05	Set the single-channel switch output status (bit)	Output Channel
5	06	Write switch output status (byte)	Output Channel
6	0F	Set the multi-channel switch output status (bit)	Output Channel

01,02,05,0F Bitwise operation allows users to read and write one or more consecutive input and output channels at a time;

03, 06, 10 are byte-based operations. Users can read and write up to 16 input and output channels at a time.

Order (HEX)	Register address (HEX)	Data Description
01/05/0F	1	Read and write DO output 1 output status (write 1 load is powered)
01/05/0F	2	Read and write DO output 2 output status (write 1 load is powered)
01/05/0F	3	Read and write DO output 3 output status (write 1 load is powered)
01/05/0F	4	Read and write DO output 4 output status (write 1 load is powered)
01/05/0F	5	Read and write DO output 5 output status (write 1 load is powered)
01/05/0F	6	Read and write DO output 6 output status (write 1 load is powered)
01/05/0F	7	Read and write DO output 7 output status (write 1 load is powered)
01/05/0F	8	Read and write DO output 8 output status (write 1 load is powered)
01/05/0F	9	Read and write DO output 9 output status (write 1 load is powered)
01/05/0F	A	Read and write DO output 10 output status (write 1 load is powered)
01/05/0F	B	Read and write DO output 11 output status (write 1 load is powered)
01/05/0F	C	Read and write DO output 12 output status (write 1 load is powered)
01/05/0F	D	Read and write DO output 13 output status (write 1 load is powered)
01/05/0F	E	Read and write DO output 14 output status (write 1 load is powered)
01/05/0F	F	Read and write DO output 15 output status (write 1 load is powered)
03/06/10	20	Read and write switch output status 0~15 channels, (bit 0 represents channel 0)
03	22	Read switch input status 0~15 channels, (bit 0 indicates channel 0)

Modbus commands supported by DO output modules:

Serial number	Order(HEX)	Function	Remark
1	01	Read the set DO output status	
1	05	Write the output status of a single DO output channel	
1	0F	Write the output status of one or more DO output channels	Most commonly used

The Modbus address allocation of DO type acquisition modules is as follows:

Order (HEX)	Register address(HEX)	Corresponding PLC address (DEC)	Data Description
01/05/0F	0000	0001	Read and write channel 0 output status (II)
01/05/0F	0001	0002	Read and write channel 1 output status
01/05/0F	0002	0003	Read and write channel 2 output status
01/05/0F	0003	0004	Read and write channel 3 output status

(II) The total number of channels varies depending on the module model.

DO type output module Modbus RTU communication example:

Example	Set DO output status
Module Description	Number of channels: 8, address: 1
Master sends	01 0F 00 00 00 08 01 C3 BE C4
Module Reply	01 0F 00 00 00 08 54 0D
The main station sends analysis	01:Module slave address 0F: Modbus RTUContinuously write coil function code 00 00:0x0000Register start address 00 08:Number of registers written 01:Number of data bytes C3:Output status data, 0xC3 corresponds to binary 0B 11000011. Relay output type: Set state 1 to relay energized. 0C output type: Set state 1 to 0C gate open (connected to GND). BE C4:CRC Check digit
Module reply analysis	01:Module slave address 0F: Modbus RTU Continuously write coil function code 00 00:0x0000 Register start address 00 08:Number of registers written 54 0D:CRC Check digit

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Writing Data	1	1	0	0	0	0	1	1
Channel Number	7	6	5	4	3	2	1	0
Set Status	1	1	0	0	0	0	1	1

Modbus commands supported by DI acquisition modules:

Serial number	Order(HEX)	Function	Remark
1	02	Read digital/switch input	

The Modbus address allocation of DI type acquisition module is as follows:

Order (HEX)	Register address(HEX)	Corresponding PLC address (DEC)	Data Description
02	0000	10001	Digital/switch channel 0 input status (III)
02	0001	10002	Digital/switch channel 1 input status
02	0002	10003	Digital/switch channel 2 input status
02	0003	10004	Digital/switch channel 3 input status

(III) The total number of channels varies depending on the module model.

Modbus RTU communication example of DI type acquisition module:

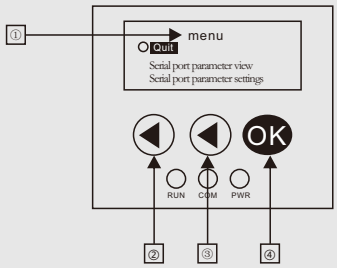
Example	Read DI input status
Module Description	Number of channels: 8, address: 1
Master sends	01 02 00 00 00 08 79 CC
Module Reply	01 02 01 21 61 90
The main station sends analysis	01:Module slave address 02: Modbus RTU Read input discrete quantity function code 00 00:0x0000 Register start address 00 08:Read register quantity 79 CC:CRCCheck digit
Module reply analysis	01:Module slave address 02: Modbus RTU Read input discrete quantity function code 01:Number of data bytes 21:Input status data, the binary corresponding to 0x21 is 0B00100001. 61 90:CRC Check digit

	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
Reading Data	0	0	1	0	0	0	0	1
Channel Number	7	6	5	4	3	2	1	0
Channel Status	Low	Low	high	Low	Low	Low	Low	high

Menu Operation

CK series modules, some models are equipped with OLED menu (see function configuration table for details). Through the OLED menu, you can query and configure serial communication parameters, Ethernet communication parameters, sensor calibration, etc.

Menu Appearance Description



①Menu display area;

②Left button: select the position to move left, move up, or adjust parameters;

③Down key: select position down, parameter adjustment button;

④OK button: enter the menu and confirm the adjustment parameter button;

Menu Operation

Enter and exit menu

In standby mode, press the OK button to enter the menu settings.

Move the selection items up and down in the menu, select the exit item, and press the OK button to exit the menu settings.

Serial port parameter settings

①In standby mode, press the OK button to enter the menu settings,move down to the serial port parameter settings, and press the OK button to enter;

②Move up or down to select the parameter you want to set, and press OK to enter. For example: To set the device station number, move the cursor to the device station number and press OK.

③When setting IP, move the cursor to the left to select the parameter to be adjusted, and press the up key to adjust the parameter. After adjustment, press the OK key to confirm the setting parameter;

④Move the cursor to the Exit option and press OK to exit the settings;

After the network parameters are set, they will not take effect immediately. Exit the network parameter settings, restart the device or power on again to make the settings effective.

If DHCP is turned on in the network parameter settings and the series is set to dynamic IP, the IP set in the menu will be invalid, waiting for the router to assign an IP, and the menu related items will be hidden. DHCP is turned off, the system is set to static IP, and the IP set in the menu will take effect.

The factory default settings are DHCP: Off, IP: 192.168.1.30, Subnet Mask: 255.255.255.0, Gateway: 192.168.1.1.

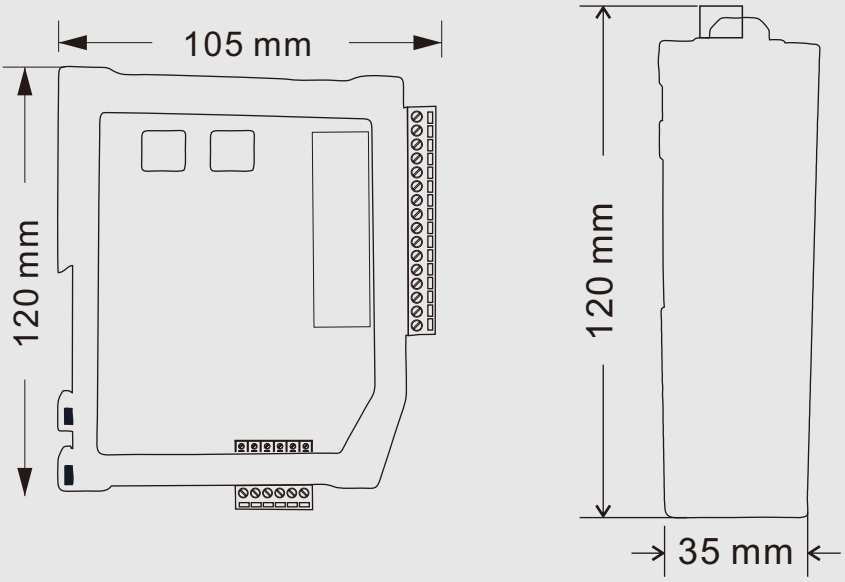
Electrical parameters

Unless otherwise specified, the electrical parameters of the CK-5162E data acquisition module are the values when Tamb=25℃.

Module parameters

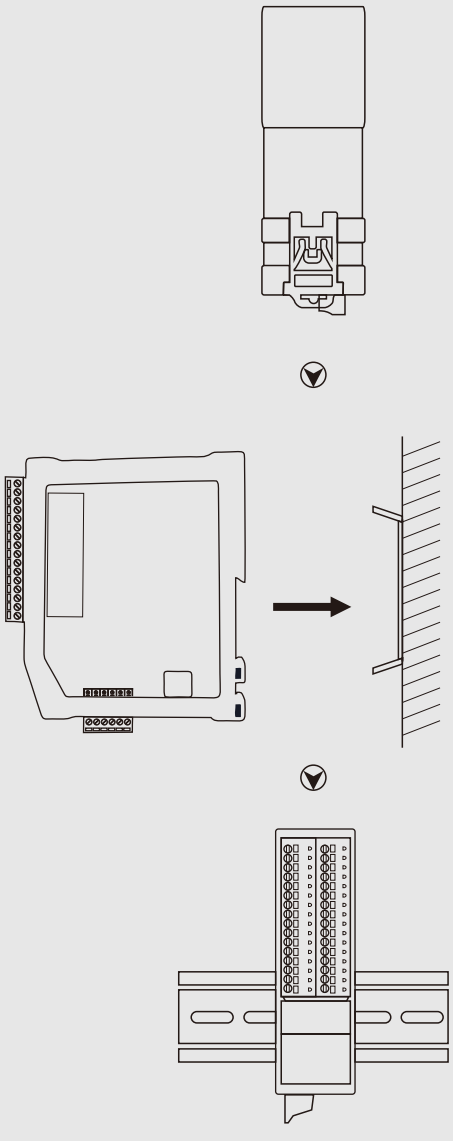
参数	Parameter	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
供电电压	Power Supply	+9	---	+30	V
看门狗复位周期	Watchdog Period		1		S
输入保护	Input Protect		100/60		mA/V

Mechanical Dimensions



Installation method

CK-5162E 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 five 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.

Disclaimer

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Product display picture

精工品质 独具匠心

Wiring Diagram