COMPANY PROFILE

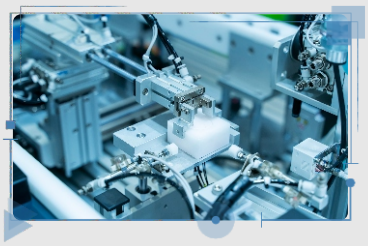
Chengkong Electronics,
Professional data collection product supplier。

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

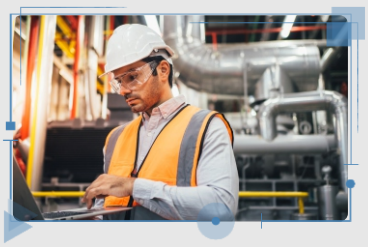


Automation equipment

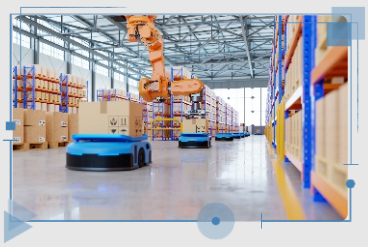
Medical electronics

Smart manufacturing

Remote monitoring

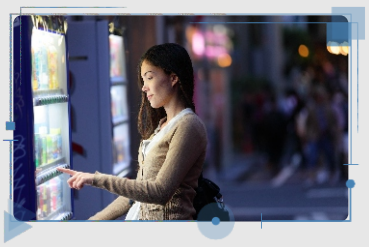


industrial control



Smart warehousing

Instruments anemometer



new retail

12-bit analog output module

Overview

CK-DA08ETH is a new generation of analog output module based on embedded system, which can independently output 8 analog signals; the module adopts high-performance 12-bit DA chip, and the output accuracy can reach ±0.2%. The module is equipped with Ethernet interface and RS485 interface, which is convenient for communication with PC, PLC and other devices.

CK-DA08ETH adopts isolation technology to effectively ensure the module output speed, reliability and safety; it is suitable for various industrial control sites.

Technical Parameters

◆Embedded real-time operating system
◆Number of analog output channels: 8
◆DA conversion resolution: 12 bits
◆DA output accuracy: ±0.2%
◆Output range: 0-20mA,4-20mA,0-5V,0-10V ±10V, ±5V, ±20mA
◆Response time: <3mS
◆Wide power supply range: DC +10～+30V (with reverse connection protection)
◆RS485, Ethernet isolated communication
◆Address/baud rate can be configured by the user
◆Support MODBUS-RTU, MODBUS-TCP protocol
◆ESD protection: ±15KV
◆System power consumption: less than 5W
◆Isolation withstand voltage: DC 2500V
◆Operating temperature range: -30℃～70℃
◆Voltage type output current: ≤10mA (typical value)
◆Current type output load capacity: external impedance ≤400Ω(Io=20mA)
◆Industrial grade plastic housing, standardDIN35 rail installation

Applications

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

Module model	DAM-DA	DAM-DA04	CK-DA08ETH
DA resolution	12bit	12bit	12bit
channel	2	4	8
RS485	support	support	support
Ethernet	unsupport	unsupport	support

contents

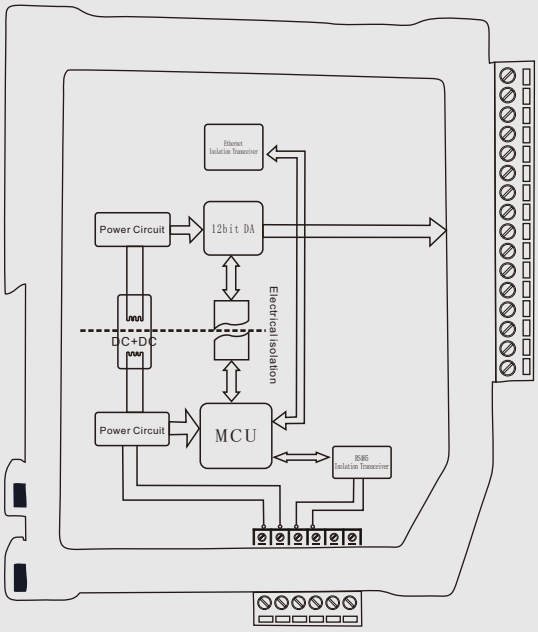
CK-DA08ETH 8-ch ouput

ouput:+20mA、+5V、+10V
Port: Ethernet/Rs485
Modbus-TCP/Modbus-RTU

CK-DA08ETH series products receive commands sent by the host to the module through RS-485 and Ethernet interfaces, and then convert them into analog signals through isolation to control remote devices. DAM series products can be used in RS-485 and Ethernet bus industrial automation control systems, and can output 4~20mA, 0~5V, 0~10V and other standard signal outputs to control the execution equipment on the industrial site.

CK series modules use MODBUS-RTU and MODBUS-TCP communication protocols. Parameters such as communication rate and communication address can be set by the user.

Module working principle diagram



High-precision analog output

CK-DA08ETH analog output module can independently output 8 analog signals; the module uses a high-performance 12-bit DA chip with an output accuracy of up to ±0.2%.

Input and output isolation

The product is designed for industrial applications: through DC-DC conversion, the power supply isolation of the measurement circuit and the main control circuit is achieved; at the same time, the control unit and the signal acquisition unit adopt high-performance photoelectric isolation technology to achieve electrical isolation, effectively ensuring the reliability and safety of the system.

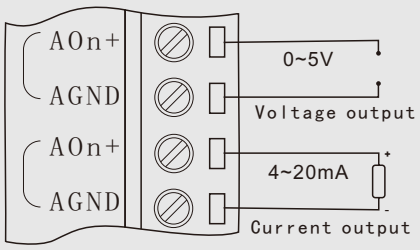
Surge protection

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.

Communication Isolation

The product uses an isolated 485 circuit to isolate the communication from the system and eliminate common-mode interference between communication devices.

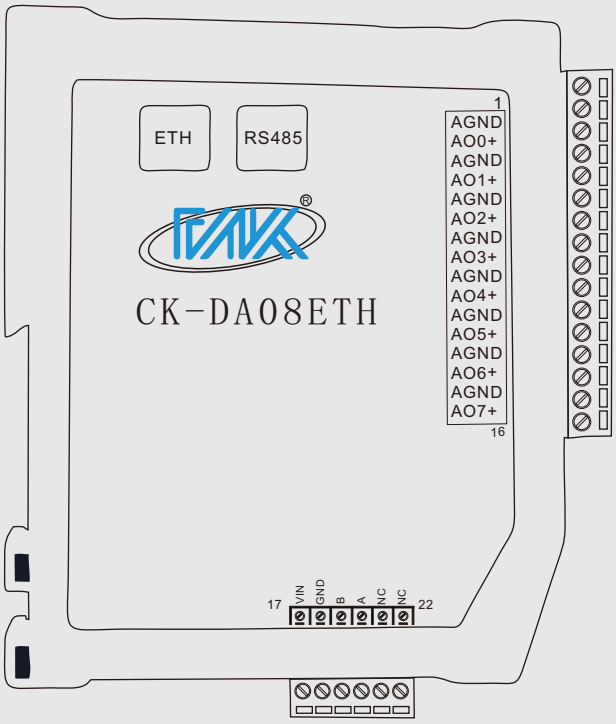
Analog signal output



The CK-DA08ETH module is equipped with 8 analog output channels. Each analog output channel can be configured with an independent range. The conventional ranges are: +20mA, +5V, ±5V, +10V, ±10V, which can be used to control current or voltage type control equipment.

The analog outputs are two-wire and can be directly connected to the controlled device. However, it should be noted that the external impedance of the current type output must not exceed 400Ω, and the voltage type output current must not exceed 10mA.

Port Information



CK-DA08ETH Port Description

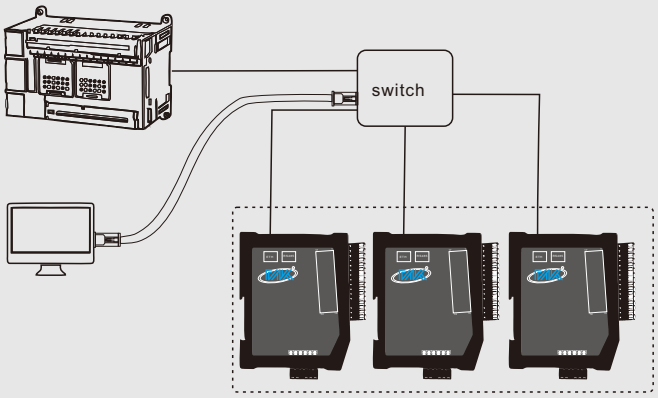
Port	Port ID	Port Function
1	AGND	Analog output ground
2	AO0+	Analog output channel 0 positive terminal
3	AGND	Analog output ground
4	AO1+	Analog output channel 1 positive terminal
5	AGND	Analog output ground
6	AO2+	Analog output channel 2 positive terminal
7	AGND	Analog output ground
8	AO3+	Analog output channel 3 positive terminal
9	AGND	Analog output ground
10	AO4+	Analog output channel 4 positive terminal
11	AGND	Analog output ground
12	AO5+	Analog output channel 5 positive terminal
13	AGND	Analog output ground
14	AO6+	Analog output channel 6 positive terminal
15	AGND	Analog output ground
16	AO7+	Analog output channel 7 positive terminal
17	VIN	Power input positive terminal
18	GND	Power input negative terminal
19	B	RS485 signal negative input terminal
20	A	RS485 signal positive input terminal
21	NC	Null Port
22	NC	Null Port

Communication interface

CK-DA08ETH is equipped with 1 Ethernet interface and 1 RS485 interface; it can be connected to PLC or other hosts individually, or multiple modules can be networked and connected to PLC or other hosts.

Ethernet connection

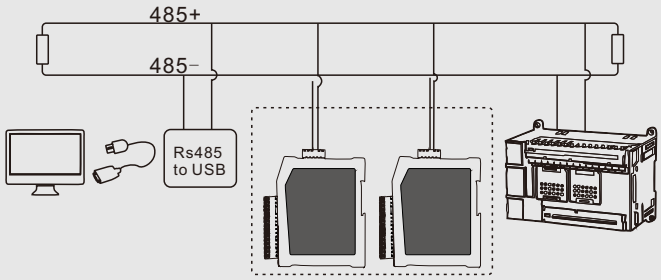
Some modules of the CK Series support cascading of 100M/ 10M standard Ethernet interfaces. Support Modbus TCP protocol and automatic network port polarity identification (AUTO MDIX).



CK module network connection diagram through Ethernet interface device

RS485 Connection

The RS485 interface of the CK system 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 line 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.

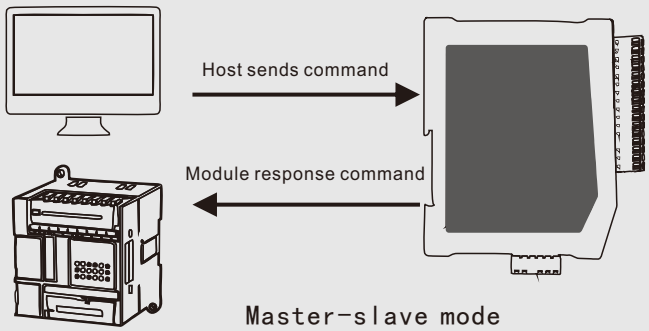


CK module is connected to other devices through RS485 interface

Module communication mode

Master-slave mode

The communication mode of the CK-DA08ETH module is usually the master-slave mode (question -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 address01)

contact address

The communication address range of the CK-DA08ETH module is 01~F7H (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.

communications rate

The module RS485 supports baud rates: 1200, 2400, 4800, 9600, 19200, 38400, 57600,115200; the module communication rate can be modified by the user through commands according to site needs. For specific methods, please refer to the corresponding commands.

Communication Protocol

MODBUS-RTU/ MODBUS-TCP 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 module supports the industrial standard MODBUS-RTU (RS485)/MODBUS-TCP (Ethernet) protocol, and the module works in the MODBUS slave (server) state. It can communicate with various brands of PLC, RTU or computer. The module supports the following MODBUS commands:

Serial number	Command (HEX)	Function	Remark
1	03	Read DA analog output setting value	
2	06/10	Write DA analog output setting value	

Encoder address adjustment

The module is equipped with a 2-bit mechanical encoder to configure the serial communication address of the module (this adjustment function is not used for Ethernet), and the configurable range is 1-99; when the encoder is adjusted to 00, the module uses the address stored by the software, and when it is adjusted to non-0, the module uses the address adjusted by the encoder. The address adjustment is latched at each power-on, and the adjustment after power-on will take effect at the next power-on (or restart).

The MODBUS address allocation of CK-DA08ETH module is as follows:

Command (HEX)	Register address (HEX)	Corresponding PLC address (DEC)	the data shows
03/06/10	40	40065	Read and write analog output channel 0
03/06/10	41	40066	Read and write analog output channel 1
03/06/10	42	40067	Read and write analog output channel 2
03/06/10	43	40068	Read and write analog output channel 3
03/06/10	44	40069	Read and write analog output channel 4
03/06/10	45	40070	Read and write analog output channel 5
03/06/10	46	40071	Read and write analog output channel 6
03/06/10	47	40072	Read and write analog output channel 7

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

DA type acquisition module Modbus communication value calculation:

The communication value is a 16-bit signed number and is related to the range.

Communication value = set output result × 1000

for example:

The range is 4-20mA, the set output value is 6.67mA, and the communication value is 6.67×1000 = 6670;

The range is 0-10V, the set output value is 8.65V, and the communication value is 8.65×1000 = 8650;

Modbus-RTU protocol

Chengkong Electronics DA output modules support the industrial standard ModbusRTU protocol. Modbus RTU protocol is the most commonly used protocol in serial communication among various Modbus protocols. After the module is configured as Modbus RTU protocol through corresponding commands, it can work in Modbus slave state. It can communicate with PLCs, configuration screens and computers of various brands.

DA type acquisition module Modbus RTU communication example:

In actual use, due to different module configuration addresses and different output amplitude settings, the data is not completely consistent with the example. When using PLC and other communications, you may not need to

Example	Channel quantity: 4, address: 1, range: 4-20mA
Module Description	Channel number: 0 / 1 / 2 / 3 Settings: 6.892mA / 5.653mA / 11.258mA / 17.539mA
Master sends	01 10 00 40 00 04 08 1A EC 16 15 2B FA 44 83 4F B9
Module Reply	01 10 00 40 00 04 C0 1E
The main station sends analysis	01:Module slave address 10: Modbus RTU Continuous write holding register function code 00 40:0x0040 Register start address 00 04:Number of registers 08:Number of data bytes Channel / Receiving Data / Hexadecimal / Decimal / Parsing results 0 / 1A EC / 0x1AEC / 6892 / 6.892mA 1 / 16 15 / 0x1615 / 5653 / 5.653mA 2 / 2B FA / 0x2BFA / 11258 / 11.258mA 3 / 44 83 / 0x4483 / 17539 / 17.539mA 44 17:CRC Check digit
Module reply analysis	01:Module slave address 10: Modbus RTU Continuous write holding register function code 00 40:0x0040 Register start address 00 04:Number of registers C0 1E:CRC Check digit

Electrical parameters

Unless otherwise specified, the electrical parameters of the CK-DA08ETH data acquisition module are the values when Tamb=25℃.

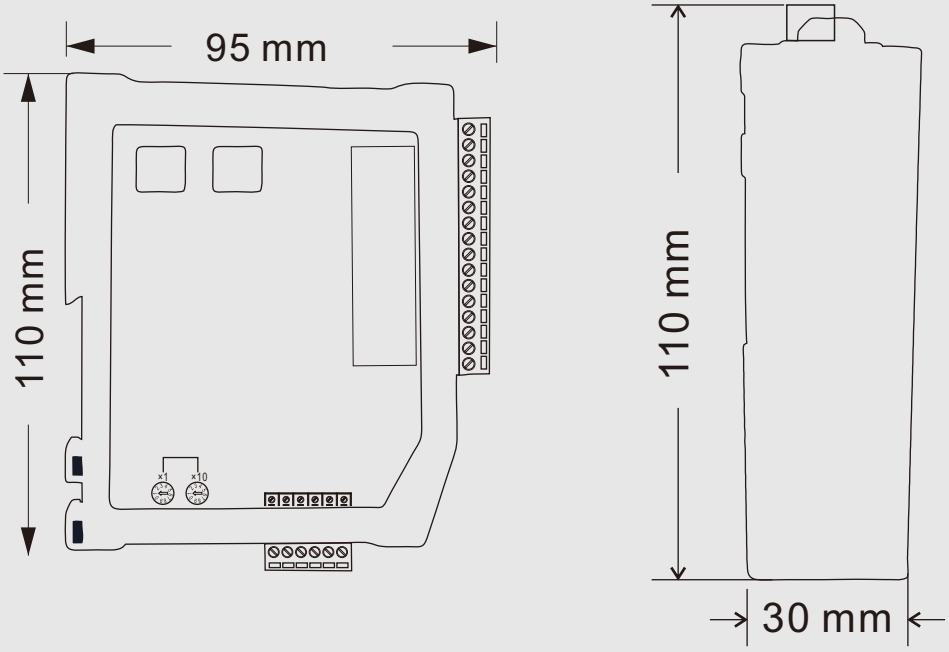
Module parameters

参数	Parameter	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
供电电压	Power Supply	+10	---	+30	V
看门狗复位周期	Watchdog Period		1		S

Analog output parameters

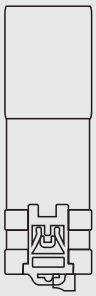
参数	Parameter	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
分辨率	Resolution		12		bit
精度	Accuracy		±0.2		%ofSFR
温度系数	Temperature Coefficient			±100	ppm/℃
电流型负载能力	Load Capacity			400	Ω
电压型负载能力	Load Capacity			10	mA
响应时间	Response Time			3	mS
隔离电压	Isolation Voltage			2500	Vdc

Mechanical Dimensions



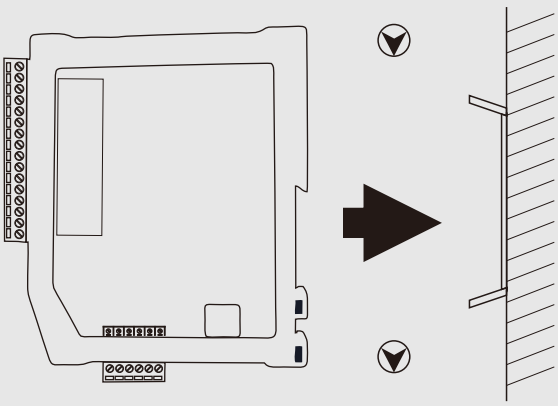
installation method

CK-DA08ETH 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.



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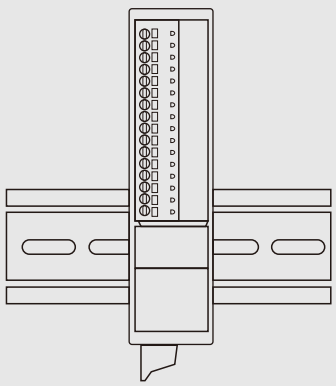

Product display picture

精工品质 独具匠心

Wiring Diagram