Kinco®

Kinco

Kinco PLC
K5/F1 Series

Kinco PLC

K5 Series
F1 Series

Kinco®Automation
http://www.kinco.cn   Email:sales@kinco.cn

Kinco® Automation

Corporate Profile

Kinco Automation is a leading supplier of industrial automation products and solutions from China with full line of automation products including industrial human machine interfaces (HMI), AC servo systems, stepper systems, PLC, VFD and field bus products. Kinco aims to help you achieve a leading position in your market.

Reliable partner of your success
☐ Gain the competitive edge
☐ Support your business
☐ Serve your needs

High standard of quality management
☐ 100% function and reliability test before delivery
☐ Quality control and tracking go through the full product life cycle
☐ Certificated process control and quality management capability

Proven performance
☐ Customers in over 40 countries and in diverse markets and sectors

Perpetual innovation
☐ 8% of annual turnover invested in R&D
☐ Experienced international R&D teams
☐ Patent applications continue to rise every year
☐ Market-driven R&D: we organize our R&D activities around the voice from the customers

Provide Chinese Automation Solutions for Global Customers

Overview of Kinco-K5 Series PLC

Overview of Kinco-K5 Series PLC

K5 series, as upgraded products of K3 series, close to market, provide diverse functions and higher performance, is a kind of cost-effective micro integrated PLC (Programmable Logic Controller). Kinco-K5 CPU provides special I/O functions (high-speed counter, PTO/PWM output), CANopen master, multiple RS485 ports, integrated analog input and output channels and so on. Equiped with diverse extension modules, Kinco-K5 PLC is applicable to fully meet requirements of small devices and process control.
Kinco-K5 combines with MT4000 HMI, CD/FD/JD servo driver and inverter to provider users with easy automation solutions.
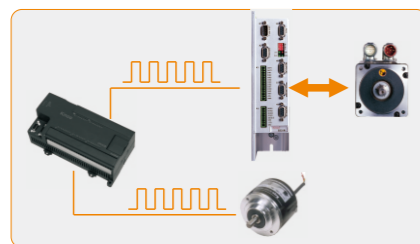
High-speed Counter

Kinco-K5 PLC provides two high-speed counters with 12 different operation modes, supports single phase frequency up to 60KHz and dual-phase (A/B phase) frequency up to 20KHz.
In different modes, each counter has its own inputs for clock, direction control, start and reset, and has a 32-bit current value and preset value.

High-speed pulse Output

Kinco-K5 CPU has two built-in pulse generators with frequency up to 200KHz, which support PTO (Pulse Train Output) or PWM (Pulse-Width Modulation).
KincoBuilder software provides absolute position, relative position, homing, jog and quick stop instructions and so on. Kinco-K5, combining with stepper or servo system, can realize position control conveniently.

CAN bus Communication Function

CPU module can provide CANopen master and free protocol function by connecting with CAN bus module

K541. CANopen master function complies with Standard DS301. It supports baud rate up to 1Mbps, 72 CANopen slave stations, up to 256 TPDOs and 256 RPDOs.
Connect K5 with CD/FD/JD/ED series servo via CANopen bus can realize multi-axis motion control easily with simple wiring and high reliability.

Serial Communication Function

Kinco-K5 CPU provides 1 RS232 port and at most 2 RS485 ports, provides Modbus RTU master/slave and free protocol. Via RS485 ports, Kinco-K5 can work as Modbus RTU slave to connect with HMI, configuration software or other master station devices, as well as work as Modbus RTU master to connect with PLC, inverter, instrument, actuator. Each RS485 port support at most 32 devices to be interconnected into a network.

Edge Interrupt Function

Kinco-K5 provides edge interrupt, communication port interrupt, time interrupt, high-speed counter interrupt and so on. Interrupt routine run in real time, not affected by PLC cycle.
DI points I0.0-I0.3 on CPU body support edge interrupt function. Kinco-K5 can capture rising/falling edge of DI signal quickly.
Time base of the two ways time interrupts is 0.1mS, Kinco-K5 can meet applications of precise timing.
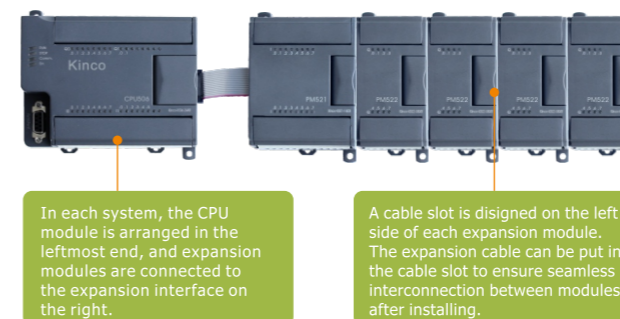
Soft-PID Function

Kinco-K5 provides soft-PID control function by function block(default). User can call at most 4 PID function blocks in program.
The PID function block can take AI signal value as the PV value for PID, meanwhile, send PID output value directly to AO module for output.

Various module types

Kinco-K5 series PLCs comprise of CPU modules and expansion modules. Kinco-K5 provides about 20 kinds of models to meet various applications. CPU modules integrate with a certain number of I/O points on body. If I/O points are not enough for application, user could connect up to 9 expansion modules with up to 184 points to meet most automation applications.

In each system, the CPU module is arranged in the leftmost end, and expansion modules are connected to the expansion interface on the right.

A cable slot is disigned on the left side of each expansion module. The expansion cable can be put in the cable slot to ensure seamless interconnection between modules after installing.

Integrated DC24V Sensor Supply

CPU modules provides DC24V power supply (Terminal name: VO+, VO-), with maximum current 300mA or 500mA. It can supply DC24V for the connected text dispaly panel, HMI, as well as DI points.

Requirement on Application Environment

Climatic conditions, electrical service conditions, mechanical service conditions and so on comply with IEC61131-2 standard.

Transport and storage		
Climatic conditions	Temperature	Temperature −40℃ ~ +70℃
	Relative humidity	10% ~ 95%, non−condesing
	Atmospheric Pressure	Correspond to altitude 0~3000m
Mechanical conditions	Free drop	Away from 1m height drop to cement floor for 5 times with transportation package
Operation		
Climatic conditions	Temperature	Opening device with natural ventilation, ambient temperature: 0 ~ 55℃
	Relative humidity	10% ~ 95%, non−condensing
	Atmospheric pressure	Altitude below 2000m
	Pollution degree	Applicable to pollution degree 2
Mechanical service conditions	Vibrations	5 < f < 8.4Hz, random amplitude: 3.5mm displacement, constant amplitude: 1.75mm displacement 8.4 < f < 150, random amplitude: 1.0g acceleration, constant amplitude: 0.5g acceleration
	Shock	Half−sine, 15g peak, 11ms duration, three shocks in each direction per axis.
Electromagnetic compatibility (EMC)	Electrostatic discharge	Air: 8kV, Contact: 4kV, Performance criteria B
	Surge	AC supply: 2KV CM, 1KV DM DC supply: 0.5KV CM, 0.5KV DM I/O and communication port: 1KV CM Performance criteria B
	Fast transient bursts	Power coupling: 2KV, 5KHz I/O and communication port: 1KV, 5KHz Performance criteria B
	Voltage Dips and interruptions	AC supply, @50Hz 0%voltage for 1 period, 40%voltage for 10 periods, 70%voltage for 20 periods. Performance criteria A
	Radiofrequency electromagnetic field	80~1000 MHz，l0V/m, modulate by 1KHz sine wave. Performance criteria A
Protection class	Dust and water proof	IP20
CE Certification		
LVD		Test Standard: Safety requirements of EN 61131−2:2007
EMC		Test Standard: Clause 8,9 &10 of EN61131−2:2007

Product List of Kinco-K5 Series PLC

CE

Upgraded Version of **K3**

Kinco-K5 series PLCs are upgraded products of K3 series. Specially, K506EA-30AT CPU module, integrated with analog I/O on body, pulse output, high-speed counter, is a kind of versatile micro integrated PLC (Programmable Logic Controller), and can fully meet requirements of small devices and process control.

Kinco-K5 combines with MT4000 HMI, CD/FD/JD servo driver and inverter to provider users with easy automation solutions.

Name	Order no.	Description
CPU module		
CPU504	K504–14AT	AC85–265V power supply, DI 8*DC24V, DO 6*DC24V. 1 serial communication ports (1*RS232), without expansion.
	K504–14AR	AC85–265V power supply, DI 8*DC24V, DO 6*Relay. 1 serial communication ports (1*RS232), without expansion.
	K504–14DT	DC21.6–28.8V power supply, DI8*DC24V, DO6*DC24V. 1 serial communication ports (1*RS232), without expansion.
	K504–14DR	DC21.6–28.8V power supply, DI8*DC24V, DO6*Relay. 1 serial communication ports (1*RS232), without expansion.
CPU504EX	K504EX–14AT	AC85–265V power supply, DI 8*DC24V, DO 6*DC24V. 2 serial communication ports (1*RS232, 1*RS485), up to 4 expansion modules connectable.
	K504EX–14AR	AC85–265V power supply, DI 8*DC24V, DO 6*Relay. 2 serial communication ports (1*RS232, 1*RS485), up to 4 expansion modules connectable.
	K504EX–14DT	DC21.6–28.8V power supply, DI8*DC24V, DO6*DC24V, 2 serial communication ports (1*RS232, 1*RS485), up to 4 expansion modules connectable.
	K504EX–14DR	DC21.6–28.8V power supply, DI8*DC24V, DO6*Relay. 2 serial communication ports (1*RS232, 1*RS485), up to 4 expansion modules connectable.
CPU506	K506–24AT	AC85–265V power supply, DI 14*DC24V, DO 10*DC24V. 3 serial communication ports (1*RS232, 2*RS485), up to 9 expansion modules connectable.
	K506–24AR	AC85–265V power supply, DI 14*DC24V, DO 10* Relay. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K506–24DT	DC21.6–28.8V power supply, DI 14*DC24V, DO 10*DC24V. 3 serial communication ports（1*RS232, 2*RS485）. , up to 9 expansion modules connectable.
	K506–24DR	DC21.6–28.8V power supply, DI 14*DC24V, DO 10*Relay. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
CPU506EA	K506EA–30AT	AC85–265V power supply, DI 14*DC24V, DO 10*DC24V, AI 4*IV, AO 2*IV. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K506EA–30DT	DC21.6–28.8V power supply, DI 14*DC24V, DO 10*DC24V, AI 4*IV, AO 2*IV. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
CPU508	K508–40AT	AC85–265V power supply, DI 24*DC24V, DO 16*DC24V. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K508–40AX	AC85–265V power supply, DI 24*DC24V, DO 4*DC24V+12*Relay. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K508–40AR	AC85–265V power supply, DI 24*DC24V, DO 16*Relay. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K508–40DT	DC21.6–28.8V power supply, DI 24*DC24V, DO 16*DC24V. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.
	K508–40DR	DC21.6–28.8V power supply, DI 24*DC24V, DO 16*Relay. 3 serial communication ports（1*RS232, 2*RS485）, up to 9 expansion modules connectable.

Note: CPU modules with relay output (The last letter of order No. is "R", for example K506–24AR) do not support pulse output.

Name	Order no.	Description
Expension I/O module		
PM521	K521–08DX	DI 8*DC24V
	K521–16DX	DI 16*DC24V
PM522	K522–08XR	DO 8*relay
	K522–16XR	DO 16*relay
	K522–08DT	DO 8*DC24V
	K522–16DT	DO 16*DC24V
PM523	K523–16DR	DI 8*DC24V，DO 8*relay
	K523–08DR	DI 4*DC24V，DO 4*relay
	K523–16DT	DI 8*DC24V，DO 8*DC24V
	K523–08DT	DI 4*DC24V，DO 4*DC24V
PM531	K531–04IV	4 analog input channels，4–20mA/1–5V/0–20mA/0–10V
	K531–04RD	PT100, PT1000, Cu50, Resistor
	K531–04TC	4 thermocouple input channels, internal/external compensation selectable, J type, K type, E type, S type
PM532	K532–02IV	2 analog output channels，4–20mA/1–5V/0–20mA/0–10V
PM533	K533–04IV	2 analog input channels，4–20mA/1–5V/0–20mA/0–10V 2 analog output channels，4–20mA/1–5V/0–20mA/0–10V
Expension function module		
SM541	K541	CAN communication expansion module, supports CANopen master and CAN free protocol.

I/O Channel Technical Parameter

I/O Channel Technical Parameter

Kinco-K5 provides common I/O types, main parameters of each I/O type are shown in the following tables.

DI channel parameter

Input type	Source/Sink optional
Input voltage	Rated DC24V, allowable maximum DC30V
Rated input current	3.5mA@24VDC
Minimum input voltage of logic 1	Normal channel: 11V@2.0mA; High–speed channel: 18V@2.5mA
Maximum input voltage of logic 0	5V@0.7mA
Input delay	
·off–to–on	Common channel 12μs; High–speed channel 8μs
·on–to–off	Common channel 40μs; High–speed channel 12μs
Isolation between input and internal circuit	
·Mode	Opto–electrical isolation
·Voltage	500VAC/1minute

DO channel parameter (Transistor Type)

Output type	Source
Output voltage	Rated DC24V. Allowable range: DC20.4V—DC28.8V (Consistent with power supply)
Output current per channel	Maximum 500mA @24VDC
Parallel connection of output channels	Yes
Protection function:	
·Power supply access polarity protection	Yes
·Inductive load protection	Yes
·Short–circuit protection	Yes
·Output reverse polarity protection	Yes, allow applying reverse polarity signal at the output end no more than 10s
Isolation between output and internal circuit	
·Mode	Opto–electrical isolation
·Voltage	500VAC/1minute

DO channel parameter (Relay Type)

Output type	Relay
Maximum load voltage	DC 30V/AC250V
Maximum allowable load current	2A (DC 30V/AC250V)
Output off–to–on delay	Max. 10ms
Output on–to–off delay	Max. 5ms
Expected life of the contacts	
·Mechanical life (no–load)	12,000 times/min
·Electrical life (rated load)	100 times/min
Expected life of the contacts	
·Mechanical life (no–load)	20,000,000 times (12,000 times/min)
·Electrical life (rated load)	100,000 times (6 times/min)
Output isolation	
·Mode	Relay
·Between coil and contact	2000Vrms
·Between contacts	1000Vrms

AI channel parameter(Current/Voltage Type)

Resolution	12 bits
Measurement accuracy	0.3% F.S.
Signal form	4~20mA、1~5V、0~20mA、0~10V. Bearable maximum input voltage is DC15V
Conversion rate	About 30 times/min.
Input impedance	Current mode: <250Ω
	Voltage mode: >4MΩ
Anti common–mode voltage	(Signal voltage + common–mode voltage)≤12V. Exceed this range, the channel will be in protection state
Status indication	The red LED of each channel indicates 4~20mA or 1~5V input signal exceeds measurement range

AO channel parameter(Current/Voltage Type)

Resolution	12 bits
Output signal accuracy	0.5% F.S
Signal form	4~20mA、1~5V、0~20mA、0~10V
Conversion rate	About 30 times/min.
External load	Current mode: <500Ω
	Voltage mode: >1KΩ
Status indication	No

RTD channel parameter

Signal form	Pt100、Pt1000、Cu50、Resistor
Connection	2–wire or 3–wire
Resolution	16 bits
Measurement accuracy	Temperature ±0.5℃, Resistance ±1Ω
Input impedance	>1MΩ
Status indication	The red LED of each channel indicates input signal exceeds measurement range.

TC Channel parameter

Signal form	J type, K type, E type, S type
Compensation	Internal/ external compensation selectable by software
Resolution	16 bits
Measurement accuracy	±1℃
Input impedance	>20KΩ
Status indication	The red LED of each channels indicates input signal exceeds measurement range.

CPU Module Specification

CPU Model Description & Wiring Diagram

SUMMARY: CPU module is the core of Kinco-K5 series PLCs, which combines a MCU, I/O unit, power supply and kinds of communication interfaces. K5 provides different CPU models to meet varied applications.
The following table describes the main specifications of each type of CPU.

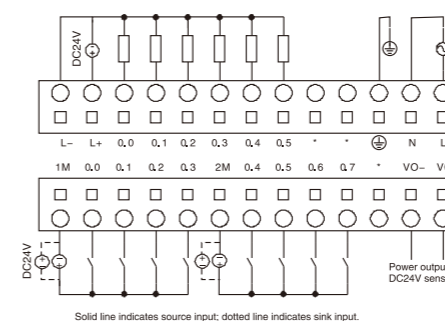| Parameter	CPU504	CPU504EX	CPU506	CPU506EA	CPU508
I/O and communication port					
Built–in digital points	8*DI / 6*DO	8*DI / 6*DO	14*DI / 10*DO	14*DI / 10*DO	24*DI / 16*DO
Built–in analog points	––	––	––	4*AI / 2*AO	––
Number of connectable expansion modules	––	4	9	9	9
Communication ports	1 RS232	2, PORT0:RS232, PORT1: RS485	3, PORT0: RS232, PORT1、PORT2: RS485		
	PORT0 supports programming protocol, Modbus RTU slave, free protocol PORT1/PORT2 support RTU master and slave, free protocal				
High–speed counter Single–phase Dual–phase	2 2, Max. 30KHz 2, Max. 10KHz	2 2, Max. 60KHz 2, Max. 20KHz			
Pulse output	2, Max. 20KHz	2, Max. 200KHz			
Memory area					
User program memory	Max. 1K steps	Max. 4K steps			
user data memory	M area 1KB; V area 4KB				
DI mapping area	1 bytes (8*DI)	5 bytes (40*DI)	32 bytes (256*DI)		
DO mapping area	1 bytes (8*DO)	5 bytes (40*DO)	32 bytes (256*DO)		
AI mapping area	––	16 bytes (4*AO)	64 bytes (32*AI)		
AO mapping area	––	8 bytes (4*DO)	64 bytes (32*AO)		
Data backup characteristic	FRAM, 448 bytes				
Data retention characteristic	––	4K bytes. Lithium battery, 3 years at normal temperature			
Others					
Timer	256 1ms time base：4 10ms time base：16 100ms time base：236				
Timer interruption	2, time base：0.1ms				
Counter	256				
Real–time clock	––	Yes, with an error not greater than 2 minutes/month under temperature of 25℃			
DC24V Output supply	300mA，short circuit protection	500mA，short circuit protection			

CPU504

K504–14AT
Power supply: AC85–265V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*DC24V, transistor output
Communication port: 1 RS232. Support programming, Modbus RTU(slave), free protocol
Connectable expansion modules: No. Cannot connect with expansion modules
Real–time clock: None
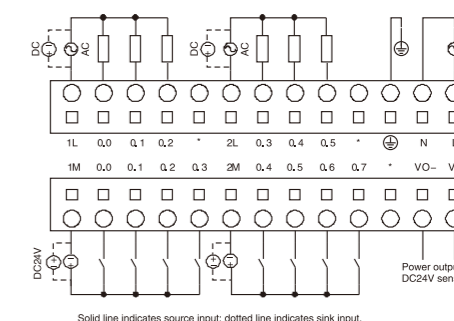Installation size(mm): 97 × 114 × 70 (L × W × H)

K504–14AR
Power supply: AC85–265V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*Relay, relay output
Communication port: 1 RS232
Connectable expansion modules: No. Cannot connect with expansion modules
Real–time clock: None
Installation size(mm): 97 × 114 × 70 (L × W × H)

K504-14AT

Solid line indicates source input; dotted line indicates sink input.

K504-14AR

Solid line indicates source input; dotted line indicates sink input.

CPU Model Description & Wiring Diagram

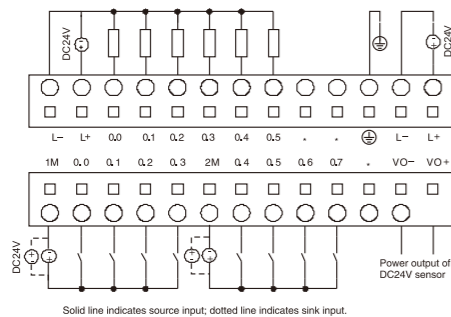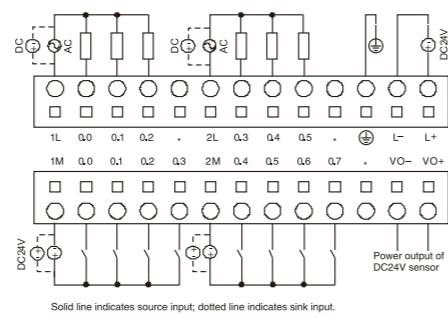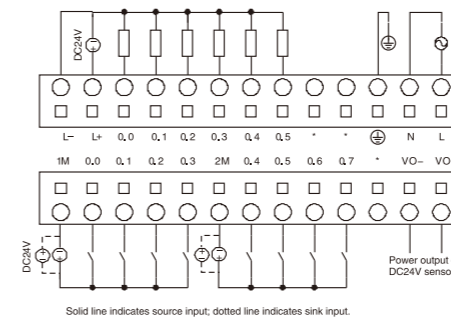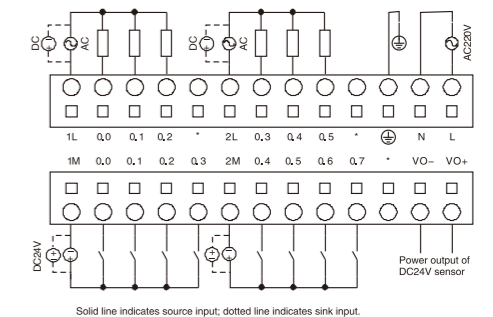# CPU Model Description & Wiring Diagram

CPU504

K504–14DT

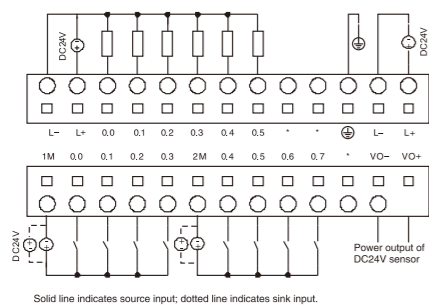Power supply: DC 21.6–28.8V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*DC24V, transistor output
Communication port: 1 RS232, support programming, Modbus RTU(slave), free protocol
Connectable expansion modules: Cannot connect with expansion modules
Real–time clock: None
Installation size(mm): 97 × 114 × 70 (L × W × H)

K504–14DR

Power supply: DC 21.6–28.8V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*Relay, relay output
Communication port: 1 RS232, support programming, Modbus RTU(slave), free protocol
Connectable expansion modules: Cannot connect with expansion modules
Real–time clock: None
Installation size(mm): 97 × 114 × 70 (L × W × H)

CPU504EX

K504EX–14AT

Power supply: AC85–265V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*DC24V, transistor output
Communication port: 1 RS232
Connectable expansion modules: Yes. At most 4 expansion modules
Real–time clock: Yes
Installation size(mm): 97 × 114 × 70 (L × W × H)

K504EX–14AR

Power supply: AC85–265V power supply
Built–in I/O points: 14 I/O, DI 8*DC24V, DO 6*Relay, relay output
Communication port: 1 RS232, 1 RS485
Connectable expansion modules: Yes. At most 4 expansion modules
Real–time clock: Yes
Installation size(mm): 97 × 114 × 70 (L × W × H)

K504-14DT	K504-14DR

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

K504EX-14AT	K504EX-14AR

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

CPU Model Description & Wiring Diagram

CPU504EX

CPU506

K504EX−14DT

Power supply: DC 21.6−28.8V power supply
Built−in I/O points: 14 I/O, DI 8*DC24V, DO 6*DC24V, transistor output
Communication port: 1 RS232, support programming, Modbus RTU(slave), free protocol
Connectable expansion modules: Yes. At most 4 expansion modules
Real−time clock: Yes
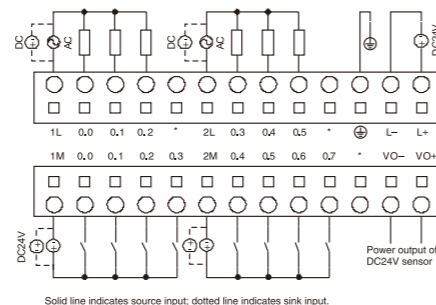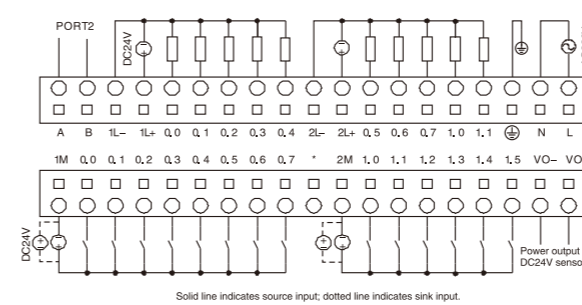Installation size(mm): 97 × 114 × 70 (L × W × H)

K506−24AT

Power supply: AC85−265V power supply
Built−in I/O points: 24 I/O, DI 14*DC24V，DO 10*DC24V, transistor output
Communication ports: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real−time clock: Yes
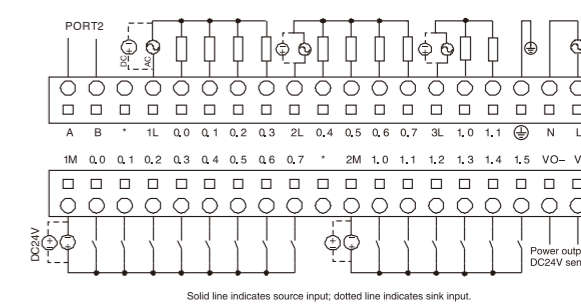Installation size(mm): 125 × 114 × 70 (L × W × H)

K504EX−14DR

Power supply: DC 21.6−28.8V power supply
Built−in I/O points: 14 I/O, DI 8*DC24V, DO 6*Relay, relay output
Communication port: 1 RS232, support programming, Modbus RTU(slave), free protocol
Connectable expansion modules: Yes. At most 4 expansion modules
Real−time clock: Yes
Installation size(mm): 97 × 114 × 70 (L × W × H)

K506−24AR

Power supply: AC85−265V power supply
Built−in I/O points: 24 I/O, DI 14*DC24V, DO 10*Relay, relay output
Communication ports: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real−time clock: Yes
Installation size(mm): 125 × 114 × 70 (L × W × H)

K504EX-14DT

K504EX-14DR

K506-24AT

K506-24AR

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

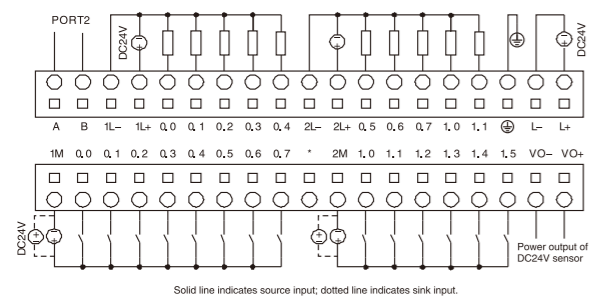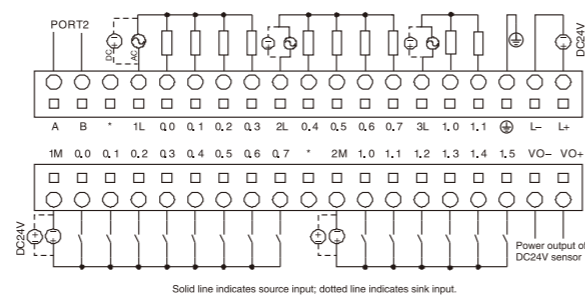# CPU Model Description & Wiring Diagram

CPU506

K506–24DT

Power supply: DC21.6–28.8V power supply
Built–in I/O points: 24 I/O, DI 14*DC24V, DO 10*DC24V, transistor output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
Installation size(mm): 125 × 114 × 70 (L × W × H)

K506–24DR

Power supply: DC21.6–28.8V power supply
Built–in I/O points: 24 I/O, DI 14*DC24V, DO 10*Relay, relay output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
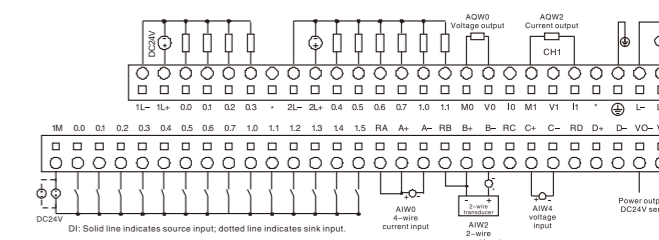Installation size(mm): 125 × 114 × 70 (L × W × H)

CPU506EA

K506EA–30AT

Power supply: AC85–265V power supply
Built–in I/O points: 30 I/O, DI 14*DC24V, DO 10*DC24V, DO is transistor output,
　　　　　AI 4*IV, AO 2*IV,
　　　　　AI/AO support 4–20mA/1–5V/0–20mA/0–10V signal forms
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
Installation size(mm): 200 × 114 × 70 (L × W × H)

K506EA–30DT

Power supply: DC 21.6–28.8V power supply
Built–in I/O points: 30 I/O, DI 14*DC24V, DO 10*DC24V, DO is transistor output,
　　　　　AI 4*IV, AO 2*IV,
　　　　　AI/AO support 4–20mA/1–5V/0–20mA/0–10V signal forms
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
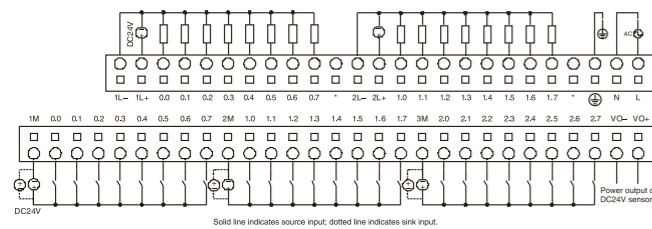Installation size(mm): 200 × 114 × 70 (L × W × H)

K506-24DT

K506-24DR

K506EA-30AT

K506EA-30DT

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

DI: Solid line indicates source input; dotted line indicates sink input.

DI: Solid line indicates source input; dotted line indicates sink input.

CPU508

K508–40AT

Power supply: AC85–265V power supply
Built–in I/O points: 40 I/O,DI 24*DC24V, DO 16*DC24V, transistor output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
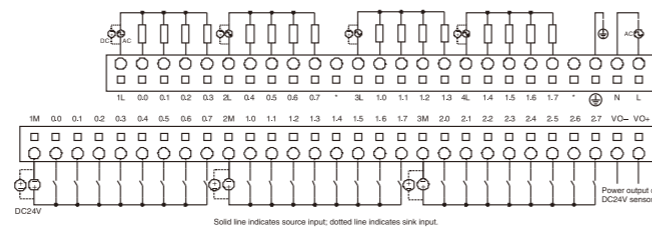Installation size(mm): 200 × 114 × 70 (L × W × H)

K508–40AR

Power supply: AC85–265V power supply
Built–in I/O points: 40 I/O, DI 24*DC24V, DO 16*Relay, relay output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
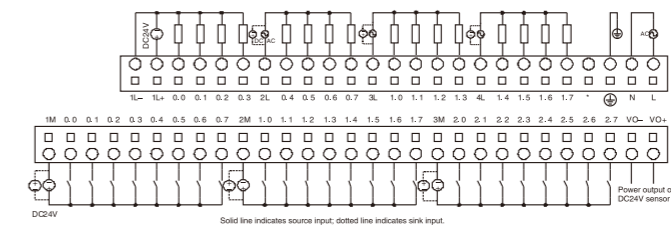Installation size(mm): 200 × 114 × 70 (L × W × H)

CPU508

K508–40AX

Power supply: AC85–265V power supply
Built–in I/O points: 40 I/O, DI 24*DC24V, DO 12*Relay+4*DC24V
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
Installation size(mm): 200 × 114 × 70 (L × W × H)

K508-40AT

Solid line indicates source input; dotted line indicates sink input.

K508-40AR

Solid line indicates source input; dotted line indicates sink input.

K508-40AX

Solid line indicates source input; dotted line indicates sink input.

CPU Model Description & Wiring Diagram

Model Description of Expansion I/O Module & Wiring Diagram

CPU508

K508–40DT
Power supply: DC 21.6–28.8V power supply
Built–in I/O points: 40 I/O, DI 24*DC24V, DO 16*DC24V, transistor output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
Installation size(mm): 200 × 114 × 70 (L × W × H)

K508–40DR
Power supply: DC 21.6–28.8V power supply
Built–in I/O points: 40 I/O, DI 24*DC24V, DO 16*Relay, relay output
Communication port: 1 RS232, 2 RS485
Connectable expansion modules: Yes. At most 9 expansion modules
Real–time clock: Yes
Installation size(mm): 200 × 114 × 70 (L × W × H)
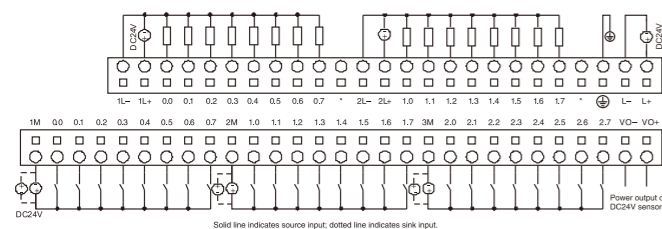
Digital Input Module PM521

K521–08DX
Input points: 8, divided into 2 groups, each group with 4 channels
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Isolation mode: Opto–electrical isolation between input signal and internal circuit, isolation voltage 500VAC/1 min
Signal indication: Separated LED indicates for each channel
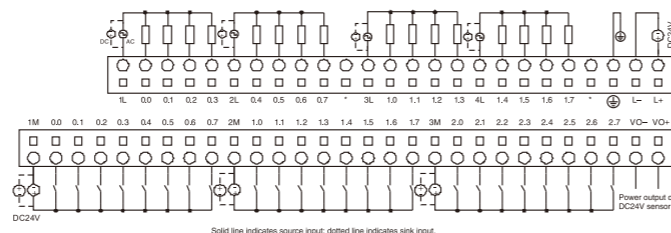Module width: 50mm

K521–16DX
Input points: 16, divided into 2 groups, each group with 8 channels
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Isolation mode: Opto–electrical isolation between input signal and internal circuit, isolation voltage 500VAC/1 min
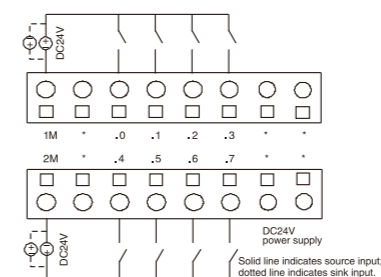Signal indication: Separated LED indicates for each channel
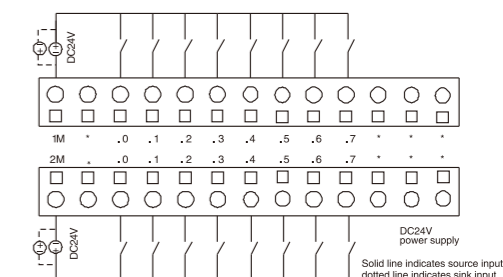Module width: 75mm

K508-40DT

K508-40DR

K521-08DX

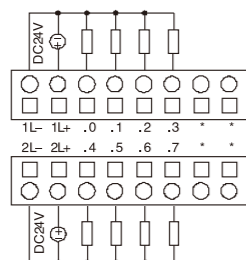**K521-16DX**

Digital Output Module PM522

K522–08DT

Output points: 8, divided into 2 groups, each group with 4 channels
Output type: source (common–cathode)
Output voltage: Rated DC24V, max. output current of each channel is 500mA
Circuit protection: Power supply access polarity protection, output short–circuit
protection, inductive load protection
Isolation mode: Opto–electrical isolation between input signal and internal circuit,
isolation voltage 500VAC/1 min
Signal indication: Separated LED indicates for each channel
Module width: 50mm

K522–16DT

Output points: 16, divided into 4 groups, each group with 4 channels
Output type: source (common–cathode)
Output voltage: Rated DC24V, max. output current of each channel is 500mA
Circuit protection: Power supply access polarity protection, output short–circuit
protection, inductive load protection
Isolation mode: Opto–electrical isolation between input signal and internal circuit,
isolation voltage 500VAC/1 min
Signal indication: Separated LED indicates for each channel
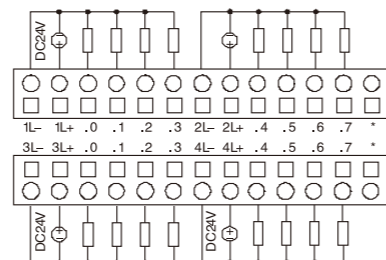Module width: 75mm

Digital Output Module PM522

K522–08XR

Output points: 8, divided into 2 groups, each group with 4 channels.
Output type: source (common–cathode).
Load voltage: Max. DC30V/AC250V, max. load current of each channel is 2A.
Isolation mode: Opto–electrical isolation between coil and contact,
isolation voltage 1500VAC/1 min.
Signal indication: LED indicates for each separated channel.
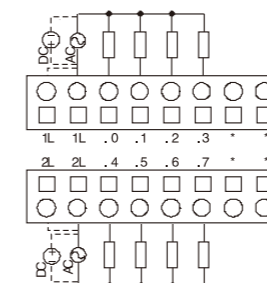Module width: 50mm.

K522–16XR

Output points: 16, divided into 4 groups, each group with 4 channels.
Output type: source (common–cathode).
Load voltage: Max. DC30V/AC250V, max. load current of each channel is 2A.
Isolation mode: Opto–electrical isolation between coil and contact,
isolation voltage 1500VAC/1 min.
Signal indication: Separated LED indicates for each channel.
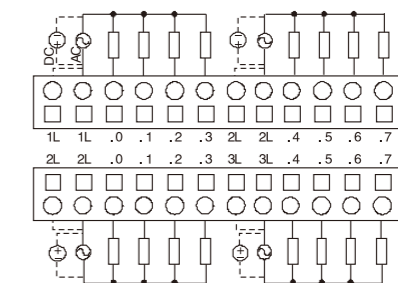Module width: 75mm.

K522-08DT	K522-16DT

K522-08XR	K522-16XR

Digital Input/output Module **PM523**

K523–08DR

Input point: 4, totally classified into 1 group
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Output point: 4, totally classified into 1 group
Output type: Relay
Load voltage: Max. DC30V/AC250V, max. load current of each channel is 2A
Isolation mode: DI channels adopt opto–electrical isolation,
　　　　　　　DO channels adopt relay isolation
Signal indication: Separated LED indicates for each channel
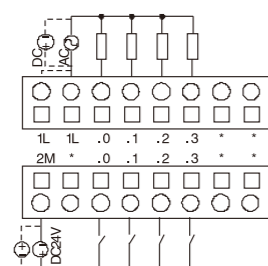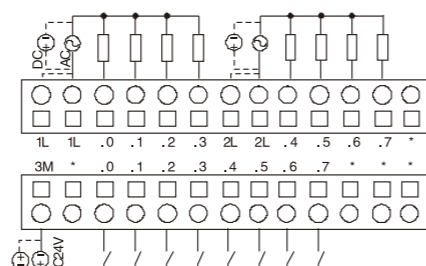Module width: 50mm

K523–16DR

Input point: 8, totally classified into 1 group
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Output point: 8, divided into 2 groups, each group with 4 channels
Output type: Relay
Load voltage: Max. DC30V/AC250V, max. load current of each channel is 2A
Isolation mode: DI channels adopt opto–electrical isolation,
　　　　　　　DO channels adopt relay isolation
Signal indication: Separated LED indicates for each channel
Module width: 75mm

Digital Input/output Module **PM523**

K523–08DT

I/O point: 8, DI 4*DC24V, DO 4*DC24V
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Output type: Transistor
Output voltage: Rated DC24V, max. output current of each channel is 0.5A
Isolation mode: Opto–electrical isolation
Signal indication: Separated LED indicates for each channel
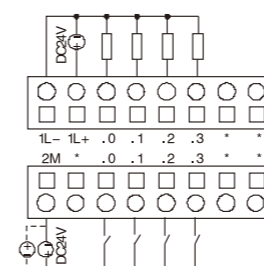Module width: 50mm.

K523–16DT

I/O point: 16, DI 8*DC24V, DO 8*DC24V
Input type: Source (common–cathode)/sink (common–anode)
Input voltage: Rated DC24V, voltage range of logic "1" is DC11 ~ 30V
Output type: Transistor
Output voltage: Rated DC24V, max. output current of each channel is 0.5A
Isolation mode: Opto–electrical isolation
Signal indication: Separated LED indicates for each channel
Module width: 75mm

K523-08DR

K523-16DR

K523-08DT

K523-16DT

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

Solid line indicates source input; dotted line indicates sink input.

Analog Input Module PM531

K531–04IV

Input channel: 4
Input signal: 4–20mA, 1–5V, 0–20mA, 0–10V signals are optional
Measurement accuracy: 0.3% F.S
Parameter configuration: Parameters of each channel can be configured by Kincobuilder software separately
Signal limitation: Signal limitation: Input current of each channel shall not exceed 24mA, input voltage shall not exceed 12V
Error indication: Red LED of each channel indicates input signal exceeds measurement range
Module width: 50mm
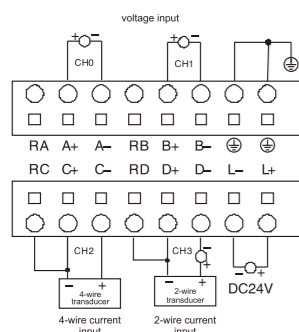
K531–04RD

Input channel: 4
Input signal: Pt100, Cu50, Pt1000, Cu100, Resistor are selectable, 2–wire or 3 wire
Measurement range: Pt 100 –200~850℃, Cu50 –50~150℃, Pt1000 –50~300℃, Resistor 0~700 Ω
Measurement accuracy: Temperature ±0.5℃, Resistance ±1 Ω
Parameter configuration: Independent parameter configuration can be made for each channel by KincoBuilder software
Error indication: Red LED of each channel indicates input signal exceeds measurement range
Module width: 50mm

K531–04TC

Input channel: 4
Input signal: J type, K type, E type, S type, internal/external compensation selectable
Measurement range: J type –210~1200℃, K type –270~1300℃, E type –120~1000℃, S type –50~1600℃
Measurement accuracy: ±1.5℃
Parameter configuration: Independent parameter configuration can be made for each channel by KincoBuilder software
Error indication: Red LED of each channel indicates input signal exceeds measurement range
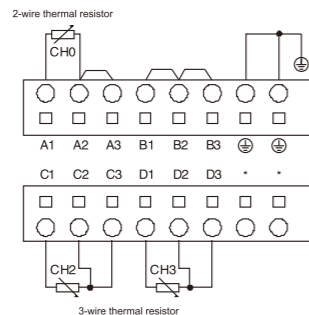Module width: 50mm

Analog Output Module PM532

K532–02IV

Output channel: 2
Signal type: 4–20mA, 1–5V, 0–20mA, 0–10V signals are optional
Output accuracy: 0.5% F.S
Parameter configuration: Parameters of each channel can be configured by Kincobuilder software separately
Signal limitation: The value of output channel is not allowed to exceed chosen range
Module width: 50mm

Analog Input/output Module PM533

K533–04IV

Input channel: 2. 4–20mA, 1–5V, 0–20mA, 0–10V signals are optional
Measurement accuracy: 0.3% F.S
Output channel: 2. 4–20Ma, 1–5V, 0–20mA, 0–10V signals are optional
Output accuracy: 0.5% F.S
Parameter configuration: Parameters of each channel can be configured by Kincobuilder software separately
Signal limitation: Input current of each channel shall not exceed 24mA, input voltage shall not exceed 12V
The value of output channel is not allowed to exceed chosen range
Error indication: Red LED of each channel indicates input signal exceeds measurement range

K531-04IV

K531-04RD

K531-04TC

K532-02IV

K533-04IV

Model Description of Expansion Function Module & Wiring Diagram

Denomination Rules of Kinco-K5 Series PLC

CAN Communication Module SM541

K541

Function: CANopen master station and CAN free protocol communication

Communication baudrate: Support 10K~1Mbps

Electrical isolation: Power supply, communication circuit are separated from external,
Isolation voltage is max. 2500VAC/1 min.

Signal indication:Separated LED indicates power, working status, communication status.

Module width: 50mm

Specification of CANopen master station

– Adopt CAN2.0 standard. Comply with standard CANopen protocol DS301 V4.2.0;

– Support NMT(Network management), and as NMT master;

– support up to 72 CANopen slave stations. Users could configurate boot–up by KincoBuilder;

– Support PDO: each slave station support up to 8 TPDOs and 8 RPTOs; Up to 256
TPDOs and 256 RPDOs in total;

– Support client–end CANopen message, provide SDO read,
write: SDO instructions support standard accelerated transfer mode;

– Support preset emergency message, node protection, heartbeat message;

– With perfect network error handling function.

Specification of CAN free protocol communication

– Support CAN2.0A and CAN2.0B standard;

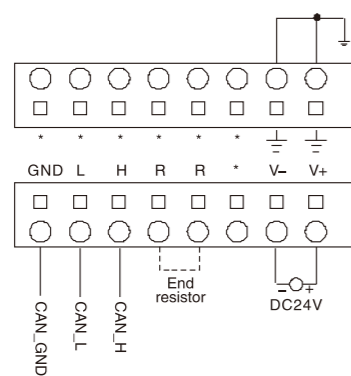– Support standard communication baudrate up to 10K~1Mbps;

– Provide CAN_Write, CAN_Read, CAN_Rx and so on free communication instructions.

K541

GND L H R R * V– V+

CAN_GND CAN_L CAN_H End resistor DC24V

A "Product name" is determined according to the following principle:

Module type + 5 + Sub-type + Serial number

Where:

Module type: expressed in the following English letters:

CPU	main control module
PM	expansion I/O module
SM	expansion function module
SW	software
AS	accessories

5: indicates Kinco-K5 series compact and integrated PLCs.

Sub-type: One of digits 0~9 is used to indicate the sub-type of a module.

0	CPU module
1	Resered
2	Digital data module
3	Analog data module
4	Communication module
6	System software
7	Accessories
8	Power module

Serial number: One of digits 0~9 is used to indicate the serial number of a sub-type. The serial numbers in each sub-type are defined as follows:

CPU module
4 indicates the CPU has 14 I/O channels
6 indicates the CPU has 24 I/O channels
8 indicates the CPU has 40 I/O channels

Digital data module
1 indicates digital input module
2 indicates digital output module
3 indicates mixed digital input/output module

Analog data module
1 indicates analog input data
2 indicates analog output data
3 indicates mixed analog input/output module

Communication module
0 indicates serial communication module
1 indicates CAN bus communication module

System software
0 indicates programming software

Software and accessories
0 indicates programming cable

Based on the above principle, **CPU506** indicates a CPU module with 24 I/O channels; **PM521** indicates an expansion digital input module; **AS360** indicates the KincoBuilder programming software, and so on.

Order Number

Different from the "product name", each product(module) has a unique"order number". To order, a user only needs to tell us the order number for the necessary product. The "order number" of a product is defined according to the following principles:

Order numder: **Kinco-K + Module ID + Feature Code**

Fixed prefix

CPU and PM must have this option, but other modules may omit it.

Kinco-K ☐☐☐ ☐☐ - ☐☐☐☐ ☐

Number same as the module name

Total number of channels

Optional: Sub-item of function ID, represented with the letters X, Y, Z or numbers 0~9

CPU module function ID (optional)
EC: Communication enhanced CPU module
EA: Analog enhanced CPU module
EM: Motion control enhanced CPU module
EX: Other enhanced CPU module

The first character indicates:
power supply voltage of the module
D: DC24V
A: AC85~265V

The second character indicates:
Type of the output channel
T: Transistor
R: Relay

CPU and digital data PM

Fill in X where not applicable

Function ID

IV: Current/voltage

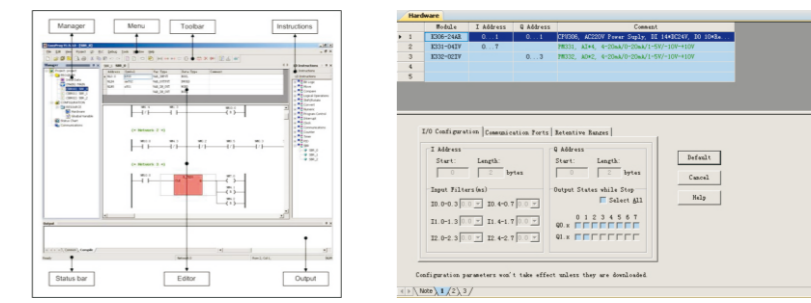RD: Thermal Resistor

Analog data PM

Based on the above principles, **Kinco-K506-24DT** indicates a CPU module with DC24V power supply and 24 I/O channels (where the output channel type is a transistor), and **Kinco-K521-08DX** indicates an expansion module with 8*DC24V digital input channels.
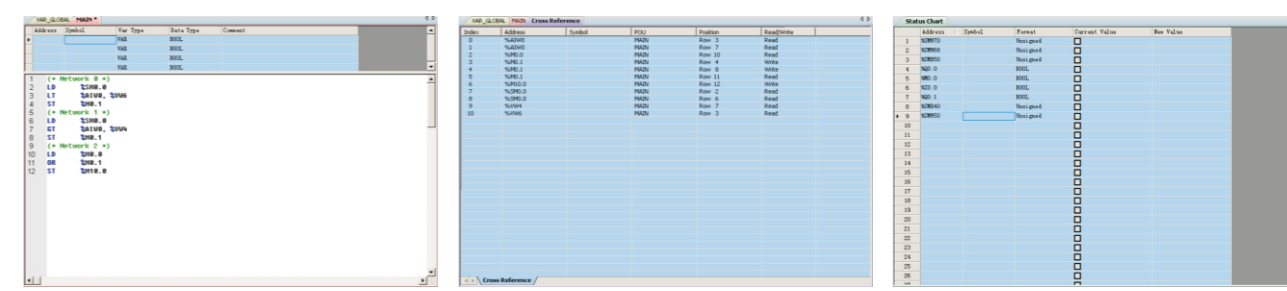

Kinco Builder

KincoBuilder is the programming software for the Kinco-K5. It complies with IEC61131-3 standard and is also compatible with PLC tradition, and its project architecture complies with the IEC61131-3 software model. It supports IL(instruction list) and LD(ladder diagram) languages, including 114 basic instructions and 420 expansion instructions. Meanwhile, it supports a number of special functions, such as interrupt (I/O interrupt, communication interrupt and time interrupt), and special I/O functions (high-speed counter, PTO/PWM output, etc.) Therefore, it is application to control applications in a diversity of fields.

By KincoBuilder, users could monitor online, force variable, program update(3-level password protection), check diagnosis information and so on. The windows style interface facilitate users to manage program, and by workplace and tool bar to realize quick operation, for example add, delete, debugging, cross reference, print and backup.

LD Editor and Online Monitoring   Hardware Configuration

IL Editor   Cross Reference Table   Variable Status Table

Data Type Supported by KincoBuilder

Category	Keyword	Description	Size in bits	Default Value
BOOL/bit string type	Bool	Boolean	1	false
	Byte	Bit string of length 8	8	0
	Word	16-bit string	16	0
	Dword	32-bit string	32	0
Numeric type	Int	Integer, signed	16	0
	Dint	Double integer, signed	32	0
	Real	Real	32	0.0

(KincoBuilder software is free, users could download the newest version from company website **www.kinco.cn**)

Installation

Kinco F1 Controller & RP2 Remote I/O Module

Installation Mode

Two modes can be used to install a Kinco-K5 into a control cabinet:

1.DIN rail clamping

2.M4 screw installation

Upon installation, the module can either be horizontally or vertically arranged, or even a lengthened extension cable can be used for connection if the CPU module and extension module needs distributed installation in the case of nocentralized space in the control cabinet.

Two installation modes

DIN rail installation
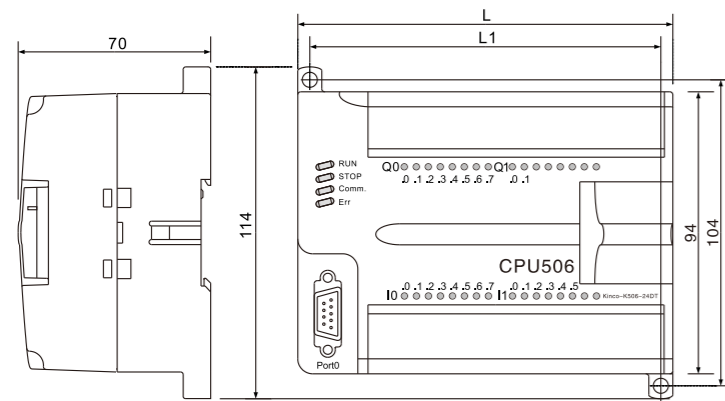
Installation with diagonal M4 screws

Wiring Connecting Terminal

The K5 series PLC is designed with pluggable terminal blocks to facilitate wiring.

Installation Diagram for Modules of Different Dimensions

Size of module installation hole (hole diameter:4.2mm)

If L=200mm, L1=190mm
If L=125mm, L1=115mm
If L=97mm, L1=87mm
If L=75mm, L1=65mm
If L=50mm, L1=40mm

For dimensions of each module, refer to the module performance parameters table.

Kinco F1-Controller

Kinco RP2 I/O

F122-D1608T controller is a new member of Kinco CAN bus solution family, it is integrated with 3S company's software called CoDeSys which has a strong function and stable performance. It uses the standard CANopen communication protocol, so it can connect with the devices that support this protocol freely. Combining with Kinco's other bus products, it can provide customer a low cost system solution.

Kinco RP2 I/O module is a new member of Kinco CAN bus solution family. It adopts standard CANopen communication protocol, then can communicate with most devices that support this protocol. Combining with Kinco other CANopen bus products, it can provide users with a low cost system solution.

Kinco F1-Controller

• **F122-D1608T**

Kinco RP2 I/O

• **RP2D-1608C1**

• **RP2D-0016C1**

• **RP2A-0402C1**

F1 Controller

RP2 Series CAN Bus Remote I/O Module

Features :

1. High performance CPU
- High performance CPU of 32 bits 520MHz RISC;
- Excellent in processing the Boolean data and easy to operate the integer and float data;
- Use the multi-task operation system(Main task, fast task and event task), the processing of millisecond timescale task will be very simple, you can regulate it according to the application, and needn't consider other factors.

2. Strong developing function
- Use the Codesys software of German 3S Company to program. Which is the most famous company for PLC core software development;
- Provide 6 IEC programming languages, graphical programming tool, senior online help and amount of data inputting help guide. You can test the program in the simulator after developing.Users can customize library functions, all the commonly functions are appear in fixed form to reduce the user's programming time and difficulty;
- Support remote downloading/monitoring,it is easy for users to remote debugging.

3. Perfect hardware protection measures
- Short-circuit protection for power supply, the module use resettable fuse, it can reset itself after the module got a short-circuit.
- Short-circuit protection for inputting, digital input module use

resettable fuse, it can break when the input gets a short cut, and when the short-circuit recovers, it can reset itself, so that protect the input circuit from burning out.

4. CANopen bus communication ability
Support CANopen 2.0 protocol that is defined by the CIA organization , so it can communicate with devices which support this protocol, like remote I/O module, servo, inverter, meter and so on. It can apply to various production lines, mechanical equipments, intelligent buildings and so on.

5. Support various communication speed
Satisfy various application situations, support the followings baud rates: 10k/20k/50k/125k/250k/500k/800k/1M

6. Perfect CANopen software function
- Support the NMT message
- Support the Node Protection message
- Support the Heart beat message

7. Perfect PDO communication mode
- Support asynchronous communication mode
- Support synchronous message communication mode, real time of data exchanging is very high.

Features :

1. CANopen bus communication ability
RP2 I/O module is base on CAN bus communication. The application layer adopt CANopen protocol defined by CIA, and complies with DS301(communication subordinate protocol) and DS401(I/O module communication subordinate protocol). These modules can communicate with most controllers, inverters, servo and so on. It is very suitable for applications of various production lines, mechanical devices, building automation and so on.

2. Flexible multiple nodes networking
RP2 I/O module has 7 IP DIP switches, up to 127 RP2 modules can be configurated in CAN network. It is very suitable for wide range of distributed data acquisition system.

3. Support various communication speed
Satisfy various application situations, support the following baudrate:
20K/50K125K/250K/500K/800K/1M.

4. Perfect hardware protection measures
-Short-circuit protection for power supply: the module use resettable fuse, it can reset itself after the module got a short-circuit.
-Short-circuit protection for output, digital output module use resettable fuse, it can break when the output gets a short-circuit, and when the short-circuit recovers, it can reset itself, so that protect output circuit from burning out.

5. Perfect CANopen software function
-Support the NMT message;
-Support the Node protection message/Heart beat message;
-Support master station configurates the boot-up of RP2 module;
-Send message when power up/down.

6. Perfect PDO communication mode
-Support asynchronous communication mode;
-Support sychronous message communication mode, real time of data exchanging is very high;
-Support remote communication request.

Model Parameters

Model	F122-D1608T
Software Technical Data	
Scanning Period	Min.1ms
Program Capacity	2M
Execution Speed	Arithmetic operation time for integers: min 3.4μs/1000AWL
	Arithmetic operation time for floating points: min 0.13ms/1000AWL
	Arithmetic operation time for triangle function: min 6.0ms/1000AWL
Programming Language	According with the IEC61131-3 standard
Com Port	2 CAN ports, 1 Ethernet port, 2 serial ports(RS232, RS485)
Communication Protocol	CANopen 2.0A
Synchro Message	Support
Nmt Message	Support
Pdo Communication	Asynchronous, synchronous and remote requests
Baud Rate(bps)	10K(1,000 m)/20K(800 m)/50K(600 m)/125K(500m)/250K(250m)/500K(100m)/
	800K(50 m)/1M(25 m)
Station Number	1-127
Hardware Technical Data	
Power Supply	Rated: +24V/1A, (<+20V<U<+30V), Reset itself, the longest time for losing electric is 10ms
Can Power Supply	Provide power by internal +5V power supply itself
Digital Input\Output	16DI\8DO
Digital Input Type	Photoelectric isolation, supports both low and high level
Digital Output Type	Photoelectric isolation, Transistor high level output, the maximum output current is 500mA; Over current protection (Recover by itself)
Voltage Range Of Digital Output	±24V (15~36VDC), Input current>3mA
Digital Output Frequency	1KHz@24V500mA
Operating Temperature	-10℃~55℃
Storage Temperature	-20℃~70℃

Model Parameters

Model	RP2D-1608C1	RP2D-0016C1	RP2A-0402C1
Software Technical Data			
Communication Protocol	CANopen 2.0A, comply to DS301 and DS401 protocols		
Synchro Message	Support		
NMT Message	Support		
PDO Communication	Asynchronous, synchronous and remote requests		
Baud Rate(bps)	20K(800m)/ 50K(600m)/ 125K(500m)/ 250K(250m)/ 500K(100m)/		
	800K(50m)/ 1M(25m)		
Station Number	1-127		
Hardware Technical Data			
Power Supply	≥300mA, 20V~28V		
CAN Power Supply	Provide power by internal +5V power supply itself		
Digital Input/output	16DI\8DO	0DI\16DO	—
Analog Input/output	—	—	4AI\2AO
Digital Input Type	Photoelectric isolation, supports both low and high level	—	—
Digital Output Type	Photoelectric isolation, NPN open-collector output	Photoelectric isolation, NPN open-collector output	—
Voltage Range of Digital Output	12~24VDC, input current>4mA	—	—
Digital Output Frequency	＞1KHz	＞1KHz	—
Analog Input Accuracy	—	—	≤0. 3%F.S.
Analog Input Type	—	—	-10~10V, 0~20mA
Analog Output Accuracy	—	—	12bit
Analog Output Type	—	—	-10~10V, 0~20mA
Operating Temperature	-10℃~55℃		
Storage Temperature	-20℃~70℃		