# AK840M CPU Module

Kinco

## FEATURES

- EtherCAT Bus CoDeSys Based Motion Controller
- Arm Cortex-A53, 1.4GHz Quad-Core Processor
- 1 EtherCAT: Up to 32 Axis Synchronization
- 2 Ethernet / 1 RS485 / Modbus RTU
- Rated Input voltage DC 24V
- 8 Digital Inputs, Sourcing/Sinking, Supports 2-Channel of High-Speed Counters
- 8 Digital Outputs, NPN or PNP
- Supports 16 Expansion Modules (Backplane Bus)


## DESCRIPTION

The AK840M Programmable Logic Controller (PLC) is a new generation of medium size motion controllers designed to support a diverse range of industrial control needs. Programmed with the CoDe Sys IDE and complying with the IEC61131-3 International Standards, this EtherCAT bus motion controller supports up to 32 axes of synchronized motion control. This controller is modular and compact with built-in 8 digital inputs and 8 digital outputs with either NPN or PNP topology. The AK840M series integrates advanced functions and performance, including EtherCAT bus motion control and high-speed backplane bus advantages. These PLCs synchronize with multiple workstations and robots in the industrial manufacturing industry, complete complex process control and regulation for food processing, and are capable of centralized control and monitoring of multiple areas or equipment through dual network ports in the logistics and warehousing industry. The AK840M series products are capable of easily adapting to complex control scenarios in multiple industries with superior design and performance.

## SPECIFICATIONS

| Parameter | AK840M-0808DTN |
|---|---|
| **Digital Input Specifications** | |
| Input Points | 8 |
| Input Type | Sinking or Sourcing |
| Input Voltage | Rated: 24 Vdc; Maximum: 30 VDC |
| Input Impedance | 5.4K |
| Max Input Voltage of Logic “0” | 5V @ 0.8mA |
| Minimum Input Voltage of Logic “1” | Common Channel: 11 VDC @ 2.0 mA |
| Input Delay<br>• Off-to-On<br>• On-to-Off | <br><2.5μs<br><2.5μs |
| Isolation | Mode: Optoelectronic Isolation Voltage: 500 VAC / 1 Min |
| **Digital Output Specifications** | |
| Output Points | 8 |
| Output Type | Transistor Output, NPN |
| Output Current / Channel | Maximum 500mA (24VDC ±10%) |
| Output Leakage Current | Maximum: 10μA |
| Output Impedance | Maximum: 0.3Ω |
| Output Delay | <5uS |
| Protection | Inductive Load Output Protection. Short Circuit Protection. |
| Output Load | Resistive Load: 12W/channel, 48W/channel |
| | Inductive Load: 6W/channel, 24W/module |
| | Lamp Load: 5W/channel, 20W/module |
| Isolation | Digital Isolation, 500VAC/minute |



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| Parameter | AK840M-0808DTP |
|---|---|
| **Digital Input Specifications** | |
| Input Points | 8 |
| Input Type | Sinking or Sourcing |
| Input Voltage | Rated: 24 Vdc; Maximum: 30 VDC |
| Input Impedance | 5.4K |
| Max Input Voltage of Logic “0” | 5V @ 0.8mA |
| Minimum Input Voltage of Logic “1” | Common Channel: 11 VDC @ 2.0 mA |
| Input Delay<br>• Off-to-On<br>• On-to-Off | <br><2.5μs<br><2.5μs |
| Isolation | Mode: Optoelectronic Isolation Voltage: 500 VAC / 1 Min |
| **Digital Output Specifications** | |
| Output Points | 8 |
| Output Type | Transistor Output, PNP |
| Output Current / Channel | Maximum 300mA (24VDC ±10%) |
| Output Leakage Current | Maximum: 10μA |
| Output Impedance | Maximum: 0.3Ω |
| Output Delay | <20uS |
| Protection | Inductive Load Output Protection. Short Circuit Protection. |
| Output Load | Resistive Load: 7.2W/channel, 48W/channel |
| | Inductive Load: 3.6W/channel, 24W/module |
| | Lamp Load: 3W/channel, 20W/module |
| Isolation | Digital Isolation, 500VAC/minute |



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SPECIFICATIONS

| Parameter | AK840M |
|---|---|
| Supply Power Rated Voltage | 24VDC ±20% |
| Supply Power Rated Power | 6W(CPU Unit Only) / 20W(Full-Load) |
| Power Protection | Overcurrent Protection<br>Reverse Polarity Protection<br>Surge Absorption |
| Expansion Modules | Supports Up to 16 Expansion Modules |
| Communication Interfaces | 1 X EtherCAT,<br>Minimum Synchronization Cycle: 1ms, Maximum Number of Synchronized Axes: 32 axes. Axis-Control Performance: 1ms, 8 Axes Synchronized Motion Control (Typical MC: Electronic Cam).<br><br>2 X Ethernet,<br>Both Support Modbus TCP Master/Slave, with a Maximum of 31 TCP Slaves Per Channel. Both Support Program Upload and Download.<br><br>1 X RS485,<br>Supporting Modbus RTU Master/Slave Protocol, Supporting Up to 31 Modbus RTU Slaves.<br><br>1 X USB OTG,<br>Supports Firmware Updates Via USB Drive (FAT32 Format). |
| High Speed Inputs | Supports 2-Channel High-Speed Inputs, A/B Phase and Pulse/Direction Signals, with a Maximum of 200KHz. |
| Local Bus (Backplane Bus) | Kinco Dedicated K-Bus Backplane. Supports up to 16 Expansion Modules. |
| Motion Control | Up to 32 Axes, 1ms to 4ms, Supporting Electronic Gearing, Electronic Cam, Interpolation, and Other Motion Control Functions. |
| Program Memory | 32MB |
| Data Memory | 32MB |
| Non-Volatile Storage | 1MB |
| Indicators | PWR: Power Status<br>RUN: Device Operation Status<br>ERR: Device Error<br>BUS: Expansion Bus Error<br>BATT: Low Voltage of Backup Battery |
| Dimensions (W x H x D)mm | 57 x 80 x 108 |
| Weight | 180g |
| Signal Identification | Separate LED Indicators for Each Channel |
| Module Width | 80mm |

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SPECIFICATIONS

| Operating Conditions | | |
|---|---|---|
| Climatic Conditions | Ambient Temperature | Open Device with Natural Ventilation, Ambient Temperature Range: -20°C~55°C |
| | Relative Humidity | 10%~95%, No Condensation |
| | Atmospheric Pressure | Altitude ≤ 2000 Meters |
| | Pollution Level | Suitable for Pollution Level 2 |
| Mechanical Conditions | Sine Vibration | 5 < f, 8.4 Hz, Random: 3.5mm Displacement; Continuous: 1.75mm Displacement |
| | | 8.4 < f < 150 Hz, Random: 1.0g Acceleration; Continuous: 0.5g Acceleration |
| | Shock | Half Sine Wave, 15g, 11ms, 6 Times Per Axis |
| | Free Fall | With Transport Packaging, Allows 5 Drops from 1m Height to the Cement Floor |
| Electromagnetic Compatibility | EMC Immunity Level | Zone B, IEC61131-2 |
| | Electrostatic Discharge | Air Discharge 8kV, Contact Discharge 4kV |
| | | Performance Level A |
| | Surge | DC Power Supply 0.5kV CM, 0.5kV DM |
| | | I/O and Communication Ports: 1kV CM |
| | | Performance Level A |
| | Fast Transient Burst | Power Coupling: 2kV, 5kHz.I/O and Communication Coupling: 1kV, 5kHz |
| | | Performance Level A |
| Protection Level | | IP20 |
| Cooling Type | | Natural Air Cooling |
| Installation Type | | DIN35 Rail Mounting |
| Certification | | CE(ENIEC61000-6-2:2019) |



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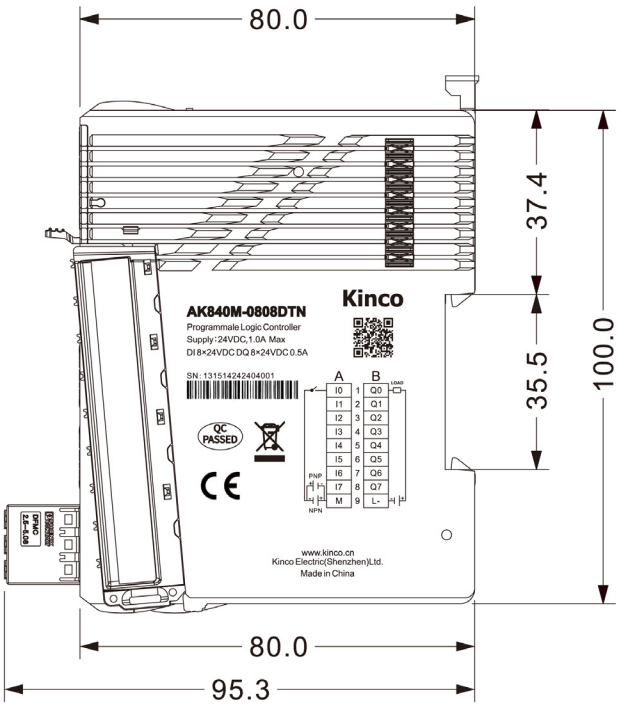
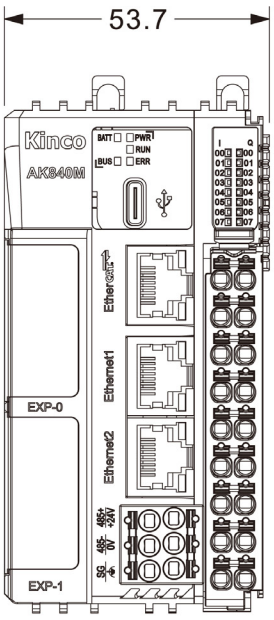
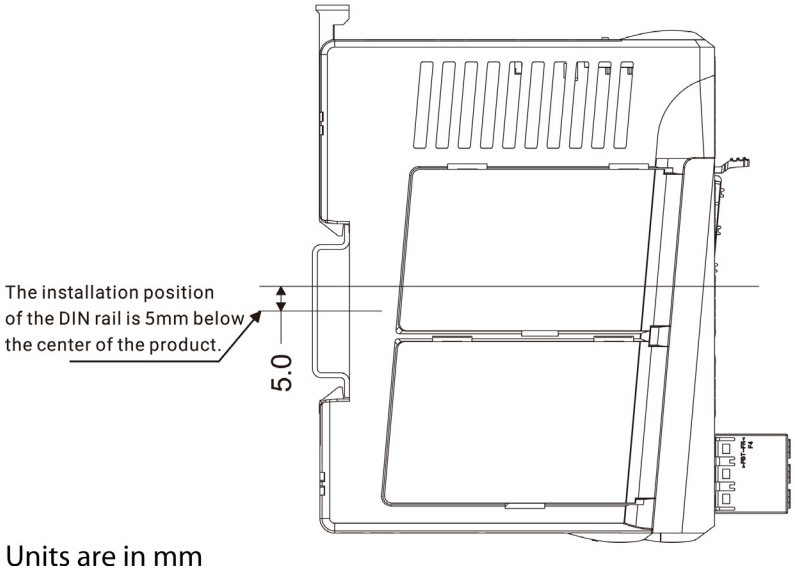
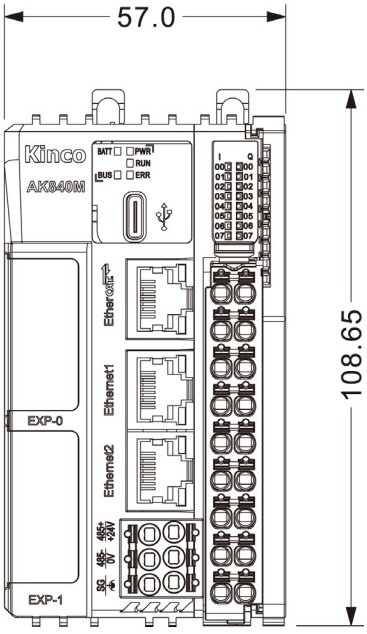
DIMENSIONS

AK840M-0808DTN & AK840M-0808DTP




Units are in mm

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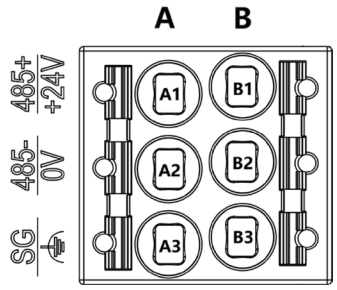
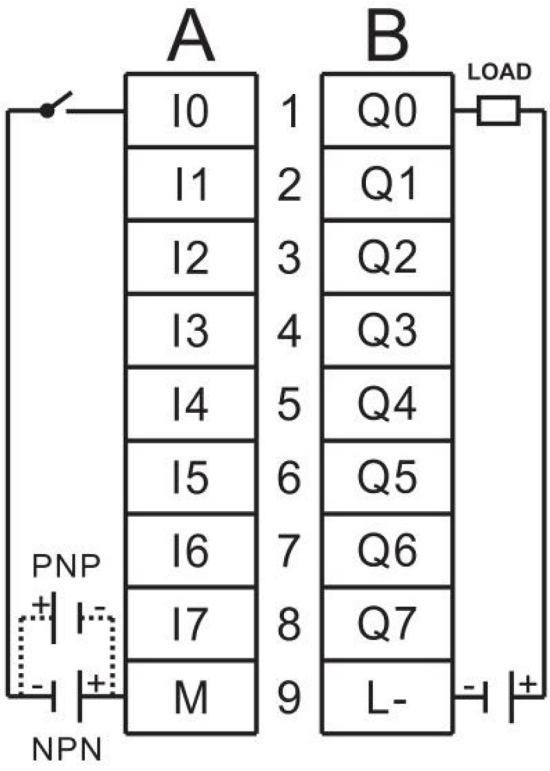
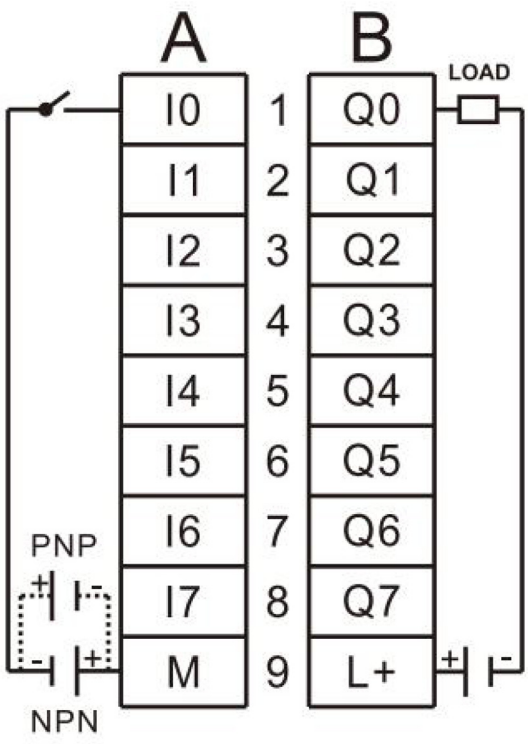



| Pin | Symbol | Description | Pin | Symbol | Description |
|---|---|---|---|---|---|
| A1 | 485+ | RS485+ | B1 | +24V | Power Supply+ |
| A2 | 485- | RS485- | B2 | 0V | Power Supply- |
| A3 | SG | RS485 Ground | B3 | ⏚ | Power Supply Ground |




Local I/O Wiring Diagram (Output NPN)




Local I/O Wiring Diagram (Output PNP)



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