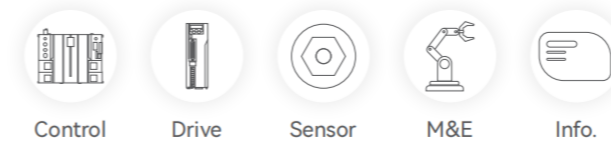


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BETTER WORK, BETTER LIFE 

Selection Guide for Control Products



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All information in this document is subject to change without notice. Manual No.: June, 2023 Issue No. 1

Due to the delay in updating the paper version, please refer to the official website for the latest product information

Be dedicated to creating values in automation industry



Stock code: 688320.SH

R&D Centers

5

Set up nationally

Sales Office

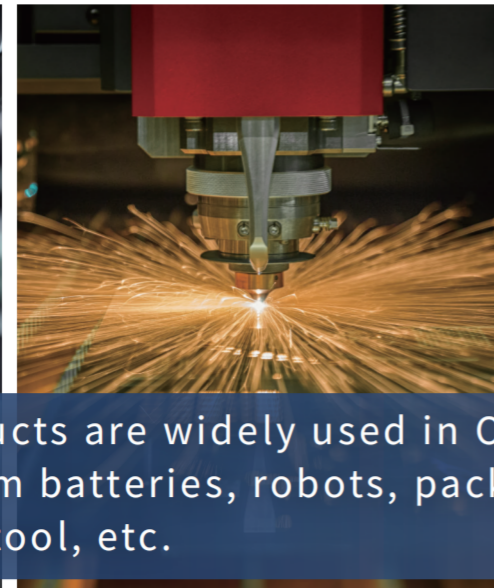
40+

Sales elites gathering

Global Distributor

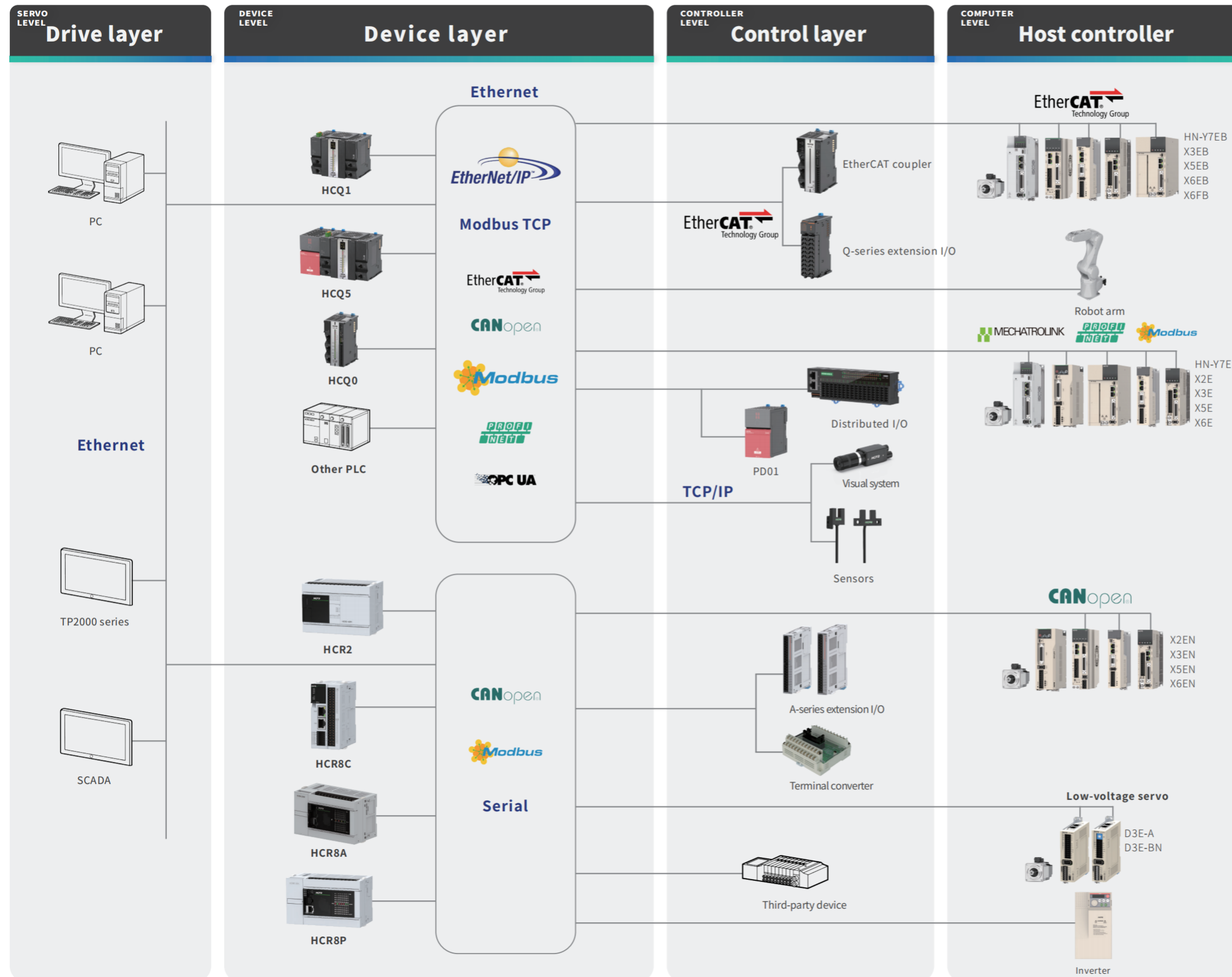
400+

Products sold worldwide



The products are widely used in OEM fields such as photovoltaic, 3C, lithium batteries, robots, packaging, textiles, logistics, lasers, machine tool, etc.

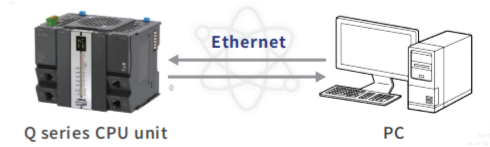
CONTROL SYSTEM TOPOLOGY



COMPUTER LEVEL

Ethernet cable / USB to achieve program download

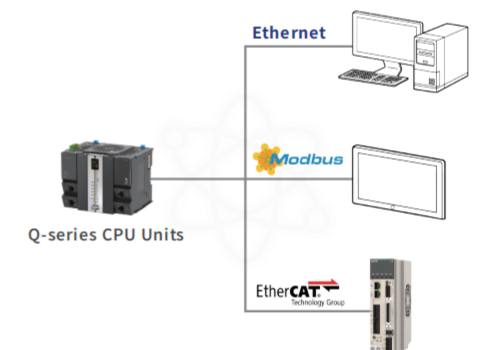
The upper controller transmits the internal data of the program through the Ethernet cable, and the user can also upload and download the program through the USB port.



COMPUTER LEVEL

Multiple communication protocol supported:

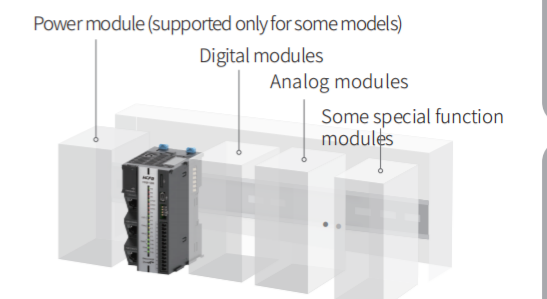
Various communication protocol: Modbus TCP
Modbus RTU EtherNet/IP OPC UA
EtherCAT CANopen RS232/RS485



COMPUTER LEVEL

Up to 16 local extension modules

Q series CPU unit supports power modules on the left side, and supports digital, analog, temperature measurement, high-speed counting extension modules, etc. on the right side.



*The number of local extension modules needs to be calculated based on the current consumption of the module

Control topology

Q-series PAC

IQ8000-series IPC

Q-series I/O

Distributed I/O

A-series PLC

R-series PLC

A-series I/O

Product list

Overall solutions

Q1 standard PACs are the solution to a control device that integrates logical operations, motion control, visualized interfaces, and multiple communications in a single control device.

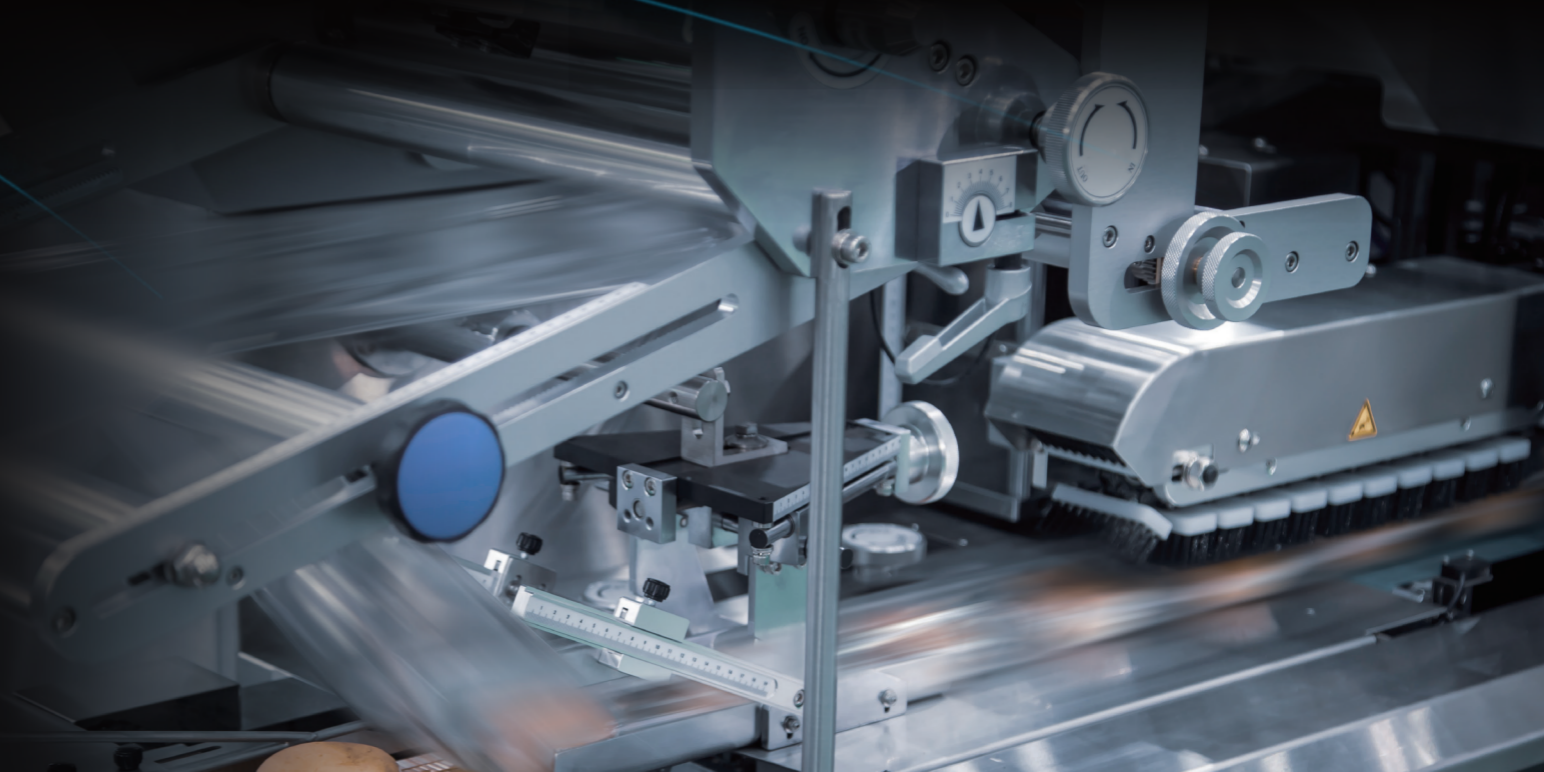


Up to 128 axes in 4ms

Help improve production accuracy and efficiency

Customer-centric

The brain of the control system, rich communication interfaces make information interaction more easier, software motion control enrich the hardware options, and graphical data collection makes the variable monitoring more intuitive.



Q-SERIES LINEUP

Naming rule for Q-series PACs

HCQ1□-1300-D2

Product name

HC HC: HCFA controller

Series name

Q1
Q0: Basic bus motion controller
Q1: Standard bus motion controller
Q3: High-end bus motion controller
Q5: Basic intelligent mechanical controller
Q7: Standard intelligent mechanical controller
Q9: High-end intelligent mechanical controller

Series models

□
N/A: Standard type
S: Basic type
J: Modular type

Operating system

1
1: Linux
2: Windows10
3: Windows7
4: QNX

Number of motion control axis

3 n(0~8): 2ⁿ⁺²
 Note: Number of axes recommended by the controller.

Control software module

0
0: CODESYS
1: HCPACS
2: ROBOT
3: CNC
4: MC
9: N/A

Additional function software module

0
0: Standard software
1: Machine vision
2: Edge computing

Power type

D
D: DC power
A: AC power

Product iteration serial number

2

Recommended number of axes

| Series name | Classification | Recommended number of axes | Max. number of axes |
|-------------|----------------|----------------------------|---------------------|
| HCQ0S* | 1200 | CANOpen: 16 axes | Unlimited |
| HCQ0 | 1100 | EtherCAT: 8 axes | Up to 8 axes |
| | 1200 | EtherCAT: 16 axes | Unlimited |
| HCQ1 | 1200 | EtherCAT: 16 axes | Up to 16 axes |
| | 1300 | EtherCAT: 32 axes | Unlimited |
| HCQ5 | 1400 | EtherCAT: 64 axes | Up to 64 axes |
| | 1500 | EtherCAT: 128 axes | Unlimited |
| HCQ7* | 1500 | EtherCAT: 128 axes | Up to 128 axes |
| | 1600 | EtherCAT: 256 axes | Unlimited |
| HCQ9* | 1600 | EtherCAT: 256 axes | Up to 256 axes |
| | 1700 | EtherCAT: 256*2 axes | Unlimited |

* Under development

HCQ0-1□00-D

Basic bus motion controller



- Basic performance**
 - Program capacity 16MB
 - Recommend number of axes: 16^{*1}
 - Output power 16W
 - 16 local extension modules supported
- Functions**
 - Number of IO points for main unit
 - Single-axis positioning and fixed-speed
 - Electric cam/flying shear/rotary shear
 - Electronic gear
 - CNC G-code control/Robot control
 - Linear interpolation/circular interpolation/helical interpolation
- Supported protocol**
 - EtherCAT
 - CANOpen
 - Modbus TCP
 - Modbus RTU

HCQ1-1□00-D2

Standard bus motion controller



- Basic performance**
 - Program capacity 16MB
 - Recommend number of axes: 32^{*1}
 - Output power 16W
 - 16 local extension modules supported
- Functions**
 - Number of IO points for main unit
 - Single-axis positioning and fixed-speed
 - High-speed pulse input/output
 - Electric cam/flying shear/rotary shear
 - Electronic gear
 - CNC G-code control/Robot control
 - Linear interpolation/circular interpolation/helical interpolation
- Supported protocol**
 - EtherCAT
 - CANOpen
 - OPC/UA
 - EtherNet / IP
 - Modbus TCP
 - Modbus RTU

HCQ5-1□00-A

Basic intelligent mechanical controller



- Basic performance**
 - Program capacity 16MB
 - Recommend number of axes: 128^{*1}
 - Output power 16W
 - 16 local extension modules supported
- Functions**
 - Single-axis positioning and fixed-speed
 - Electronic gear
 - Electric cam/flying shear/rotary shear
 - Linear interpolation/circular interpolation/helical interpolation
 - CNC G-code control/Robot control
- Supported protocol**
 - EtherCAT
 - CANOpen^{*2}
 - OPC/UA
 - EtherNet / IP
 - Modbus TCP
 - Modbus RTU

*1 Recommended axis number for high-configuration models 4ms. For specific models, please refer to product naming rules.

*2 Will be supported.



> Electrical specifications

| Items | Technical specifications | | | |
|---|---|-----------------|----------------------------------|-----------------------|
| Dielectric withstand voltage | AC1000V for 1 min, between power terminal and I/O terminal, between external terminal and shell | | | |
| Noise resistance | 1500Vp-p or more, Noise width 1μs, 50ns (based on noise simulator), comply with (IEC61000-4-2/3/4/6) | | | |
| Vibration resistance | Installation | Frequency (Hz) | Acceleration (m/s ²) | Single amplitude (mm) |
| | DIN rail mounting | 10-57 57-150 | - 4.9 | 0.035 - |
| 10 times of testing in each direction (X-, Y-, and Z-axis directions) (Total: 80 min, each) | | | | |
| Insulation resistance | 50 MΩ or more using 500 V DC insulation resistance meter (Between all terminals and ground terminal) | | | |
| IP protection level | IP20 | | | |
| Working atmosphere | Max. 50°C, free from excessive dust and corrosive gas | | | |
| Working altitude | 2000m (80kPa) | | | |
| Degree of pollution | 2, Normally there is only non-conductive pollution, but temporary conductivity caused by condensation should also be expected | | | |

> Environment specifications

| Classifications | Items | Working environment | Transport environment | Storage environment |
|------------------------------------|---------------------|---|-----------------------|---------------------|
| Environment parameter (IEC60721-3) | Temperature | 0~50°C (No freezing) | -40~75°C | -25~75°C |
| | Humidity | 5-95%RH (No condensation) | | |
| | Impact (collision) | Acceleration 150m2, action time 11ms, twice in each direction (X-, Y-, and Z-axis directions) | | |
| | Altitude/Atmosphere | Max.2000m | Max.3000m (>70kPa) | |

> Input specifications*

| Items | Specifications |
|----------------------|---|
| Signal name | Transistor input (I0-I2) |
| Rated input voltage | DC 24V (+20%~-15%, pulse ripple within 10%) |
| Input type | NPN |
| Rated input current | 3.65mA |
| ON current | >4.14mA |
| OFF current | <3.88mA |
| Input impedance | 1.5KΩ |
| Max. input frequency | 1kHz |
| Common method | Shared with power supply 0V, short-circuited internally |

> Output specifications*

| Items | Specifications |
|-------------------------------|---|
| Signal name | Transistor output (Q0-Q1) |
| Output polarity | NPN |
| Control circuit voltage | DC 5~24V |
| Rated load current | 50mA |
| Max. voltage drop at power-ON | 0.05V |
| Leakage current at power-OFF | <0.1mA |
| Output frequency | Max. 1kHz |
| Common method | Shared with power supply 0V, short-circuited internally |

*Will be supported.

> Power specifications

| Items | Power voltage | Voltage fluctuation range | Input power | Undervoltage level | Output voltage | Voltage fluctuation | Output power |
|----------------|---------------|---------------------------|-------------|--------------------|----------------|---------------------|--------------|
| Specifications | DC 24V | -15%~20% | 36W | 19V | 12V | ±5% | 16W |

> Performance specifications

| Items | Specifications | | | |
|------------------------------|---|---|---|--|
| Programming | Program capacity | 16MBytes | | |
| | I-area (%I) | 128KBytes | | |
| | Q-area (%Q) | 128KBytes | | |
| | M-area (%M) | 512KBytes | | |
| | Power-failure retention area | 800KBytes | | |
| Other variables | Not defined | | | |
| Configuration | Number of extension modules | Digital module | Calculated based on current consumption | |
| | | Analog module | | |
| | External power supply | 12V/16W | | |
| EtherCAT | Communication standard | IEC 61158 Type12 | | |
| | Physical layer | 100BASE-TX | | |
| | Transmission speed | 100Mbps (100Base-TX) | | |
| | Duplex mode | Full duplex | | |
| | Topology | Linear, bus and star-type | | |
| | Transmission medium | Cat.5E twisted pair cables | | |
| | Maximum transmission distance between nodes | 100m | | |
| | Max. process data | Input: 5,736 bytes Output: 5,736 bytes (but the max. number of frames of process data is 4) | | |
| | Communication cycle | Mini.1ms | | |
| | CANOpen master | Link layer | CAN2.0A | |
| Terminal resistor | | Built-in 120Ω. Do not support disconnection | | |
| Support baud rate bps | | 20K,50K,100K,125K,250K,500K,800K和1M | | |
| Transmission medium | | Cat.5E twisted pair cables | | |
| Max. communication distance | | 2500 m (20Kbit/s) | | |
| Maximum number of the slaves | | 32 | | |
| Serial ports | Physical layer | COM1 | RS485 | |
| | | COM2 | RS485 only support master station | |
| | | COM3 | RS232 | |
| | Terminal resistor | COM1 | Built-in 120Ω, support DIP switch | |
| | | COM2 | Built-in 120Ω. Do not support disconnection | |
| | Baud rate bps | 4800~115200 | | |
| | Max. communication distance | COM1, COM2 | 500m | |
| | | COM3 | 15m | |
| | Maximum number of the slaves | COM1, COM2 | 32 | |
| | | COM3 | 1 | |
| Transmission medium | Cat.5E twisted pair cables | | | |



> Electrical specifications

| Items | Technical specifications | | | |
|-------------------------------------|---|----------------|----------------------------------|-----------------------|
| Dielectric withstand voltage | AC1000V for 1 min, between power terminal and I/O terminal, between external terminal and shell | | | |
| Noise resistance | 1500Vp-p or more, Noise width 1μs, 50ns (based on noise simulator), comply with (IEC61000-4-2/3/4/6) | | | |
| Vibration resistance | Installation DIN rail mounting | Frequency (Hz) | Acceleration (m/s ²) | Single amplitude (mm) |
| | | 10-57 | - | 0.035 |
| | | 57-150 | 4.9 | - |
| | 10 times of testing in each direction (X-, Y-, and Z-axis directions) (Total: 80 min, each) | | | |
| Insulation resistance | 50 MΩ or more using 500 V DC insulation resistance meter (Between all terminals and ground terminal) | | | |
| IP protection level | IP20 | | | |
| Working atmosphere | Max. 50°C, free from excessive dust and corrosive gas | | | |
| Working altitude | 2000m (80kPa) | | | |
| Degree of pollution | 2, Normally there is only non-conductive pollution, but temporary conductivity caused by condensation should also be expected | | | |

> Environment specifications

| Classifications | Items | Working environment | Transport environment | Storage environment |
|---|---------------------|---|-----------------------|---------------------|
| Environment parameter (IEC60721-3) | Temperature | 0~50°C (No freezing) | -40~75°C | -25~75°C |
| | Humidity | 5-95%RH (No condensation) | | |
| | Impact (collision) | Acceleration 150m2, action time 11ms, twice in each direction (X-, Y-, and Z-axis directions) | | |
| | Altitude/Atmosphere | Max.2000m | Max.3000m (>70kPa) | |

> High-speed input specifications

| Items | Specifications |
|---------------------------------------|---|
| Signal name | High-speed input (DI0-DI15) |
| Rated input voltage | DC 24V (+20%~-15%, pulse ripple within 10%) |
| Input type | NPN, PNP |
| Rated input current | 3.65mA |
| ON current | >4.14mA |
| OFF current | <3.88mA |
| Input impedance | 1.5KΩ |
| Max. input frequency | 100kHz (Version 2.XX.XX) 200kHz (Version 3.XX.XX or more) |
| 2-phase input worst duty ratio | (40% : 60%) ~ (60% : 40%) |
| Common method | Every 8 points share a common terminal. |

> High-speed output specifications

| Items | Specification |
|--------------------------------------|---|
| Signal name | Output (DO0-DO15) |
| Output polarity | NPN |
| Control circuit voltage | DC 5~24V |
| Rated load current | 250mA |
| Max. voltage drop at power-ON | 0.05V |
| Leakage current at power-OFF | <0.1mA |
| Output frequency | 100kHz (Version 2.XX.XX) 200kHz (Version 3.XX.XX or more) |
| Common method | Every 8 points share a common terminal. |

> Power specifications

| Items | Power voltage | Voltage fluctuation range | Input power | Undervoltage level | Output voltage | Voltage fluctuation | Output power |
|-----------------------|---------------|---------------------------|-------------|--------------------|----------------|---------------------|--------------|
| Specifications | DC 24V | -15%~20% | 36W | 19V | 12V | ±5% | 16W |

> Performance specifications

| Items | Specifications | | | |
|-------------------------------------|--|---|---|--|
| Programming | Program capacity | 16MBytes | | |
| | I-area (%I) | 128KBytes | | |
| | Q-area (%Q) | 128KBytes | | |
| | M-area (%M) | 512KBytes | | |
| | Power-failure retention area | 800KBytes | | |
| | Other variables | Not defined | | |
| Configuration | Number of extension modules | Digital module | Calculated based on current consumption | |
| | | Analog module | | |
| | External power supply | 12V/16W | | |
| EtherCAT | Communication standard | IEC 61158 Type12 | | |
| | Physical layer | 100BASE-TX | | |
| | Transmission speed | 100Mbps (100Base-TX) | | |
| | Duplex mode | Full duplex | | |
| | Topology | Linear, bus and star-type | | |
| | Transmission medium | Cat.5E twisted pair cables | | |
| | Maximum transmission distance between nodes | 100m | | |
| | Max. process data | Input: 5,736 bytes Output: 5,736 bytes (but the max. number of frames of process data is 4) | | |
| | Communication cycle | Mini.1ms | | |
| | CANOpen master | Link layer | CAN2.0A | |
| Terminal resistor | | Built-in 120Ω. Do not support disconnection | | |
| Support baud rate bps | | 20K,50K,100K,125K,250K,500K,800K和1M | | |
| Transmission medium | | Cat.5E twisted pair cables | | |
| Max. communication distance | | 2500 m (20Kbit/s) | | |
| Maximum number of the slaves | | 32 | | |
| Communication cycle | | Mini.1ms | | |
| Serial ports | Physical layer | COM1, COM2 | RS485 | |
| | | COM3 | RS232 | |
| | Terminal resistor | COM1, COM2 | Built-in 120Ω, support DIP switch | |
| | Baud rate bps | 4800~115200 | | |
| | Max. communication distance | COM1, COM2 | 500m | |
| | | COM3 | 15m | |
| | Maximum number of the slaves | COM1, COM2 | 32 | |
| COM3 | | 1 | | |
| Transmission medium | Cat.5E twisted pair cables | | | |



> Electrical specifications

| Items | Technical specifications | | | |
|---|---|-----------------|----------------------------------|-----------------------|
| Dielectric withstand voltage | AC1000V for 1 min, between power terminal and I/O terminal, between external terminal and shell | | | |
| Noise resistance | 1500Vp-p or more, Noise width 1μs, 50ns (based on noise simulator), comply with (IEC61000-4-2/3/4/6) | | | |
| Vibration resistance | Installation | Frequency (Hz) | Acceleration (m/s ²) | Single amplitude (mm) |
| | DIN rail mounting | 10-57 57-150 | - 4.9 | 0.035 - |
| 10 times of testing in each direction (X-, Y-, and Z-axis directions) (Total: 80 min, each) | | | | |
| Insulation resistance | 50 MΩ or more using 500 V DC insulation resistance meter (Between all terminals and ground terminal) | | | |
| IP protection level | IP20 | | | |
| Working atmosphere | Max. 50°C, free from excessive dust and corrosive gas | | | |
| Working altitude | 2000m (80kPa) | | | |
| Degree of pollution | 2, Normally there is only non-conductive pollution, but temporary conductivity caused by condensation should also be expected | | | |

> Environment specifications

| Classifications | Items | Working environment | Transport environment | Storage environment |
|------------------------------------|---------------------|---|-----------------------|---------------------|
| Environment parameter (IEC60721-3) | Temperature | 0~50°C (No freezing) | -40~75°C | -25~75°C |
| | Humidity | 5-95%RH (No condensation) | | |
| | Impact (collision) | Acceleration 150m2, action time 11ms, twice in each direction (X-, Y-, and Z-axis directions) | | |
| | Altitude/Atmosphere | Max.2000m | Max.3000m (>70kPa) | |

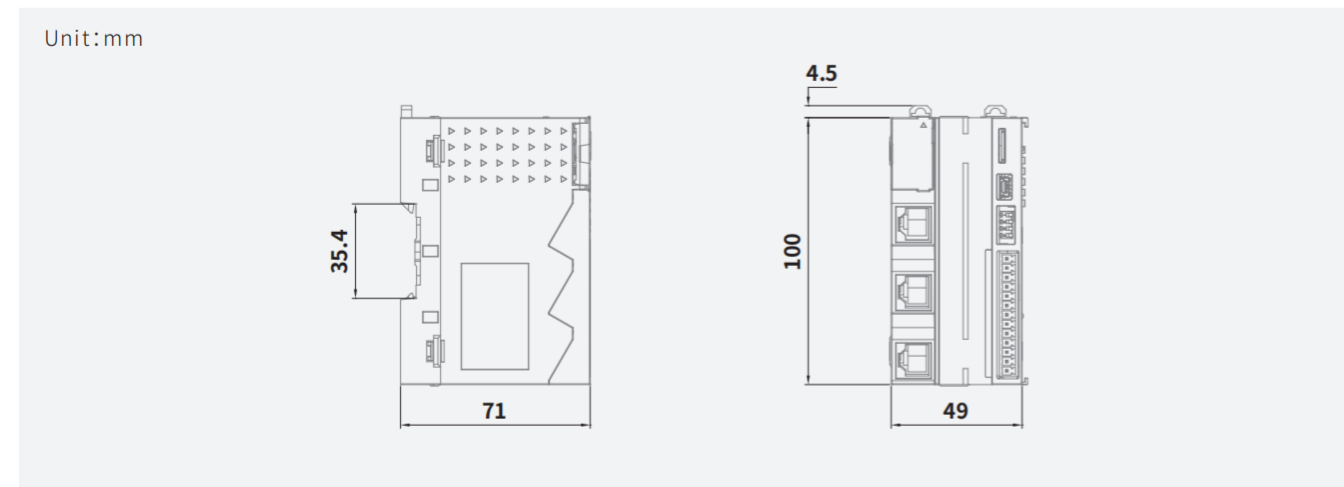
> Power specifications (PD01)

| Items | Power voltage | Voltage fluctuation range | Input power | Undervoltage level | Output voltage | Voltage fluctuation | Output power |
|----------------|---------------|---------------------------|-------------|--------------------|----------------|---------------------|--------------|
| Specifications | AC 100~240V | -15%~20% | 100W | 80V | 12V | ±5% | 60W |

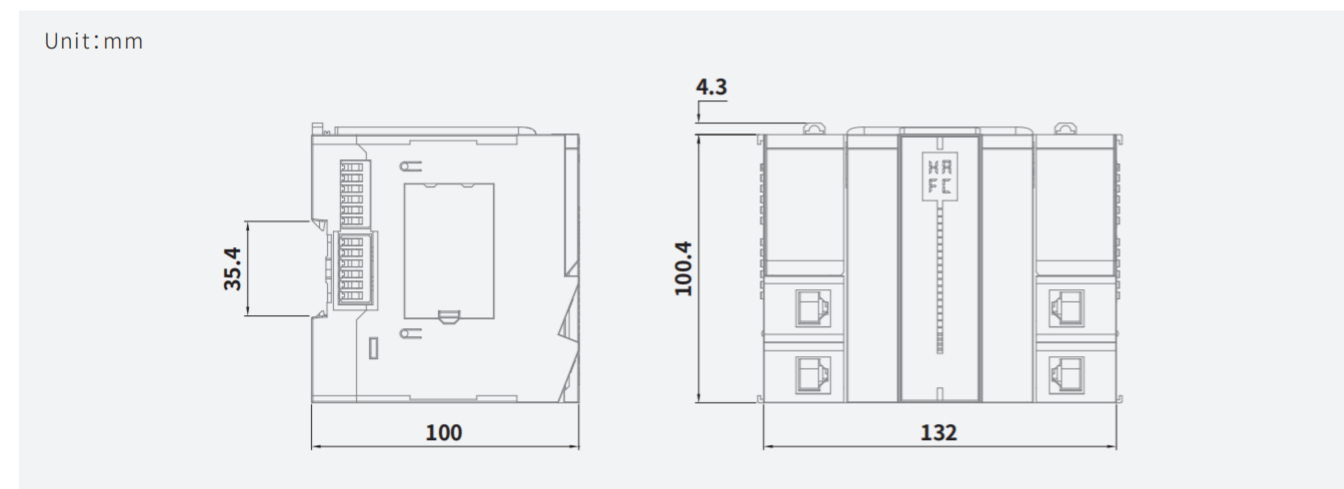
> Performance specifications

| Items | Specifications | | |
|---------------------|---|---|---|
| Programming | Program capacity | 16MBytes | |
| | I-area (%I) | 128KBytes | |
| | Q-area (%Q) | 128KBytes | |
| | M-area (%M) | 512KBytes | |
| | Power-failure retention area | 800KBytes | |
| Other variables | Not defined | | |
| Configuration | Number of extension modules | Digital module | Calculated based on current consumption |
| | | Analog module | |
| | | External power supply | |
| EtherCAT | Communication standard | IEC 61158 Type12 | |
| | Physical layer | 100BASE-TX | |
| | Transmission speed | 100Mbps (100Base-TX) | |
| | Duplex mode | Full duplex | |
| | Topology | Linear, bus and star-type | |
| | Transmission medium | Cat.5E twisted pair cables | |
| | Maximum transmission distance between nodes | 100m | |
| | Max. process data | Input: 5,736 bytes Output: 5,736 bytes (but the max. number of frames of process data is 4) | |
| Communication cycle | Mini.1ms | | |
| Serial ports | Physical layer | COM1, COM2 | RS485 |
| | | COM3 | RS232 |
| | Terminal resistor | COM1, COM2 | Built-in 120Ω, support DIP switch |
| | Baud rate bps | 4800~115200 | |
| | Max. communication distance | COM1, COM2 | 500m |
| | | COM3 | 15m |
| | Maximum number of the slaves | COM1, COM2 | 32 |
| | | COM3 | 1 |
| Transmission medium | Cat.5E twisted pair cables | | |

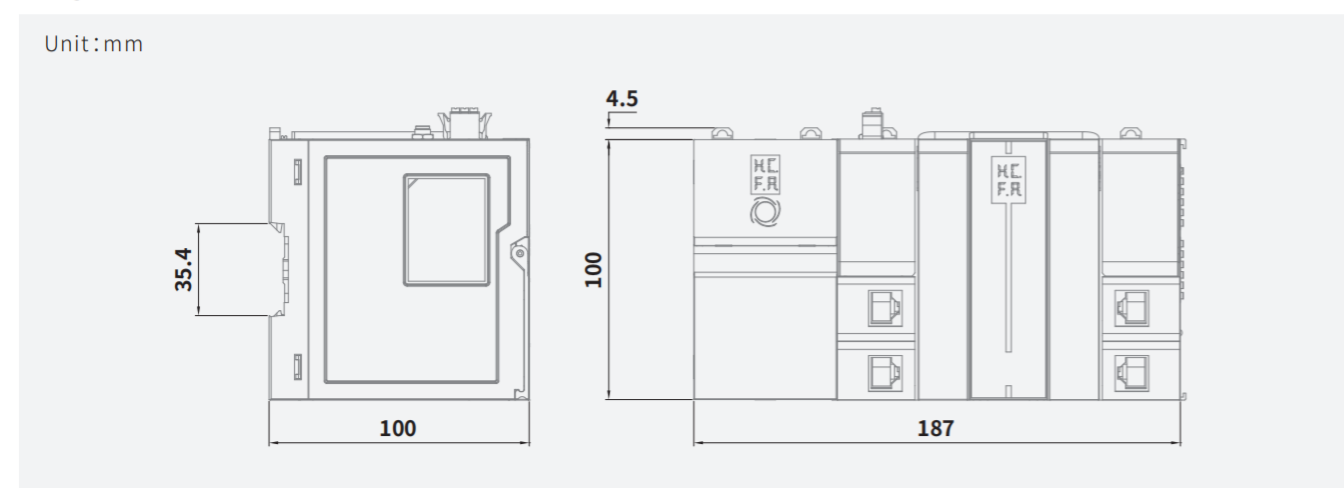
HCQ0-1□00-D



HCQ1-1□00-D



HCQ5-1□00-A



Naming rule for IQ8000 series

HC-IQ8560-1050-D

| | | | |
|--|--|--|--|
| Product name HC HC: HCFA controller | Series name IQ8 IQ8: Industrial PC: 8000 series | Processor 5 5: X86-J1900 6: X86-8145 7: X86-I3 8: X86-I5 9: X86-I7 | Storage specifications 6 5: 2G+64G 6: 4G+128G 7: 8G+256G 8: 16G+512G |
| Displays specifications 0 0: No display screen | Operating system 1 1: Linux(Ubuntu) 2: Windows10 3: Windows7 4: QNX | Reserved 0 0: Reserved | Control software module 5 0: CODESYS 1: HCPACS 2: ROBOT 3: CNC 4: MC 5: N/A |
| Additional function software module 0 0: Standard software 1: Machine vision 2: Edge computing | Power type D D: DC power A: AC power | | |



> Main units

| Model name | Description |
|------------------|---------------------------|
| HC-IQ8560-1050-D | 2G, 64G SSD, Linux system |

> Environment specifications

| Items | Specifications |
|------------------------------|---|
| Working temperature | 0 ~ 55°C |
| Storage temperature | -25 ~ 70°C (No condensation) |
| Relative humidity | 10% ~ 95% (No condensation) |
| Working altitude | 2km or less |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions). |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Forced air cooling |
| Installation method | Screw-fixed installation |

> Power specifications

| Items | Specifications |
|--|-------------------|
| Input voltage | DC 24V±20% |
| Allowable instantaneous power-failure time | Depend on the UPS |
| Power consumption | 48W Max. |

> Performance Specifications

| Items | | Specifications | |
|----------------------|------------------|--|-------------------|
| Host system | CPU | CPU type | J1900 |
| | | No. of cores/threads | 4 cores/4 threads |
| | | Main/Turbo frequency | 2GHz/2.42 GHz |
| | Buffer | 2 MB L2 | |
| Memory | Internal memory | 2G DDR3L | |
| Operating system | Window OS | Window7-32bit Window7-64bit | |
| | Linux OS | Ubuntu16.04 64bit | |
| Storage device | Hard disk | SSD | |
| | SSD | mSATA×1 64GB | |
| Interfaces | SD-card storage | miniSD×1 | |
| | USB | Type A | |
| | Type A | USB2.0 A-type×2, USB3.0 A-type×2 | |
| | LAN | 100/1000M×4 | |
| | CAN | Isolated CAN 2.0 (not supported now) | |
| | Serial ports | Isolated RS232×1, RS485×2 | |
| | VGA | VGA DSUB15×1 | |
| | HDMI | HDMI×1 | |
| | I/O | DI×3, DO×2 | |
| | Power buttons | Power buttons with light×1 | |
| Extension interfaces | Power interfaces | DC 24V/2A | |
| | PCIe extension | Gen2x1 ×1, motion control module can be extended | |
| | IOT extension | 2G/4G/5G | |

> Input specifications

| Items | Specifications | |
|---------------------------|-----------------------------------|----------------|
| Input points | 2points | |
| Input form | NPN/PNP | |
| Input voltage | DC 24V±10% | |
| Input impedance | 4.3kΩ | |
| Input current | 5.3mA/DC24V | |
| Input sensitivity current | ON-current | 2.13mA or more |
| | OFF-current | 1.8mA or less |
| Input response frequency | 5kHz | |
| Input signal form | NPN/PNP open-collector transistor | |
| Circuit isolation | Optocoupler isolation | |
| Input operation display | N/A | |

> Output Specifications

| Items | | Specifications |
|------------------------------|----------------|--|
| Output points | | 2points |
| Output type | | Transistor/NPN |
| External voltage | | DC 5~30V |
| Max. load | Resistive load | 0.5A/1 point |
| | Inductive load | 12W/DC 24V |
| Open-circuit leakage current | | 0.1mA or less/DC 30V |
| Turn-on voltage drop | | 1.5V or less |
| Response tiem | OFF→ON | 0.2ms or less/200mA or more(at 24V DC) |
| | ON→OFF | 0.2ms or less/200mA or more(at 24V DC) |
| Circuit isolation | | Optocoupler isolation |
| Output operation display | | N/A |

> Ethernet specifications

| Items | Specifications |
|---|----------------------------|
| Interface type | RJ45 connector |
| Data transmission speed | 100/1000Mbps |
| Communication mode | Full duplex/Half duplex |
| Interfaces | RJ45 connector |
| Max. transmission distance between stations | 100m |
| Supported protocol | Self-defined |
| Transmission medium | Cat.5E twisted pair cables |

> RS485 specifications

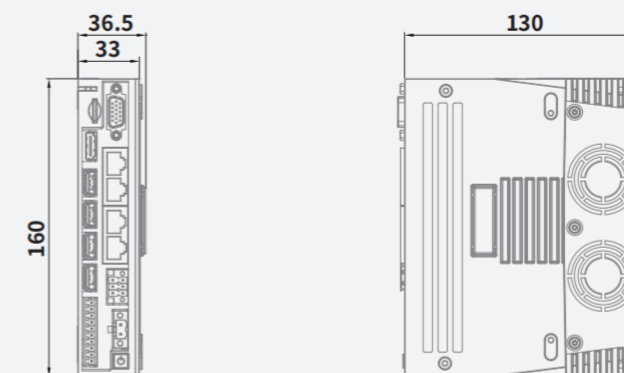
| Items | Specifications |
|----------------------------|--------------------------------|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Self-defined |
| Isolation status | Digital isolation |
| Terminal resistor | Not built-in |

> RS232 specifications

| Items | Specifications |
|----------------------------|-------------------|
| Interface type | RS232 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half duplex |
| Max. transmission distance | 5m |
| Supported protocol | Self-defined |
| Isolation status | Digital isolation |

HC-IQ8560-1050-D

Unit:mm



Modular Compact Easy-to-use

Digital module

High-density compact design, up to 16 I/O points on the module with a thickness of only 12mm

Analog module

Support a variety of voltage and current input and output

Temperature measurement module

Support a variety of thermocouples, thermal resistance etc., and can get the temperature data through the host controller easily

High-speed pulse I/O module

Support encoder input and high-speed pulse output, up to 200kHz pulse I/O



Coupler module

- Support EtherCAT input/output

Coupler module

- Support EtherCAT input/output

Digital input module

- 16/32-point digital input module

Digital output module

- 16/32-point digital output module

Digital I/O module

- 8-point input/8-point output
- 16-point input/16-point output

Analog input module

- 4-ch analog input
- Voltage input:
 - 0~10V
 - 10~10V
 - 5~5V
 - 0~5V
 - 1~5V
- Current input:
 - 0~20mA
 - 4~20mA

Analog output module

- 4-ch analog input
- Voltage input:
 - 0~10V
 - 10~10V
 - 5~5V
 - 0~5V
 - 1~5V
- Current input:
 - 0~20mA
 - 4~20mA

Temperature measurement module

- Support thermocouple: K, J, E, T, N, B, R, S (Default: K-type)
- Support thermal resistance: PT100, PT1000, Ni100, Ni1000 (Default: PT100) three-wire system

High-speed counter

- 4-ch high-speed counter (encoder) module, input signal supports pulse + direction, up to 200kHz

Pulse output Step drive module

- 20-50V DC single-axis, support PPV CSP and other motor control modules

Terminal module

Note: The -D2 models are the upgraded version of the corresponding -D, and there is no difference in their functions. It is recommended to purchase the D2 models.

HCQX-SERIES UNIT LINEUP

Naming rule for HCQX-series extension modules

HCQX-ID16-D2

Product name

HC HC: HCFA controller

Series name

QX QX: Q-series modules

Function modules

ID EC: Coupler DA: Analog output
 ID: Digital input PD: Power extension
 OD: Digital output TS: Temperature measurement
 MD: Digital I/O HC: High-speed counter
 AD: Analog input

Number of channels

16 16: Number of channels

Power type

D D: DC power
 A: AC power

Product iteration serial number

2

HCQX-ST1505-D2

Product name

HC HC: HCFA controller

Series name

QX QX: Q-series modules

Function modules

ST ST: Step drive

Number of channels

1 1: Single-axis
 2: Two-axis

Working voltage

5 5: 50V (×10)

Peak current

05 05: 5A



Power type

D D: DC power
 A: AC power


Product iteration serial number

2




Coupler module

| Models | Output power | Max. distance between stations | Max. number of local extension modules | External dimension WxDxH(mm) |
|---|--------------|--------------------------------|--|------------------------------|
|  HCQX-EC01-D | 16W | 100m* | 16 | 49x71.2x100 |
|  HCQX-EC02-D | 16W | 100m* | 16 | 49x71.2x100 |

Power module




| Models | Output power | Max. distance between stations | Max. number of local extension modules | External dimension WxDxH(mm) |
|---|-----------------------|--------------------------------|--|------------------------------|
|  HCQX-PD01-A | AC100~240V 50/60Hz | 12V 60W | 5 years, Based on working 20 hours a day at an ambient temperature of 30°C | 50x100x100 |

Digital input module




| Models | Number of channels | Input/output type | | | External dimension WxDxH(mm) | |
|--|--------------------|-------------------|-----------------|---|------------------------------|---------------|
| | | Input | Output | | | |
|  HCQX-ID16-D2 | 16 | 16 | DC24V (NPN/PNP) | - | - | 15.2x71.2x100 |
|  HCQX-ID16-D | 16 | 16 | DC24V (NPN/PNP) | - | - | 14.7x100x100 |
|  HCQX-ID32-D2 | 32 | 32 | DC24V (NPN/PNP) | - | - | 28.2x71.2x100 |

*The transmission medium between the two stations is Ethernet cable;


Digital output module

| Models | Number of channels | Input/output type | | | | External dimension WxDxH(mm) |
|---|--------------------|-------------------|---|--------|-----|------------------------------|
| | | Input | | Output | | |
|  HCQX-OD16-D2* | 16 | - | - | 16 | NPN | 15.2x71.2x100 |
|  HCQX-OD16-D | 16 | - | - | 16 | NPN | 14.7x100x100 |
|  HCQX-OD32-D2* | 32 | - | - | 32 | NPN | 28.2x71.2x100 |

Digital I/O module


| Models | Number of channels | Input/output type | | | | External dimension WxDxH(mm) |
|---|--------------------|-------------------|------------------|--------|-----|------------------------------|
| | | Input | | Output | | |
|  HCQX-MD16-D2* | 16 | 8 | DC 24V (NPN/PNP) | 8 | NPN | 15.2x71.2x100 |
|  HCQX-MD16-D | 16 | 8 | DC 24V (NPN/PNP) | 8 | NPN | 14.7x100x100 |
|  HCQX-MD32-D2* | 32 | 16 | DC 24V (NPN/PNP) | 16 | NPN | 28.2x71.2x100 |

Analog input module


| Models | Number of channels | Input type | | Channel data update time | External dimension WxDxH(mm) |
|---|--------------------|---|------------------|--------------------------|------------------------------|
| | | Voltage | Current | | |
|  HCQX-AD04-D | 4 | 0~10V -10~10V -5~5V 0~5V 1~5V | 0~20mA 4~20mA | 1ms | 14.7x100x100 |

*PNP output needs to be customized, the model name is: HCQX-□□□□, if needed, please contact HCFA sales or distributors.


Analog output module

| Models | Number of channel | Output type | | Channel data update time | External dimension WxDxH(mm) |
|---|-------------------|---|------------------|--------------------------|------------------------------|
| | | Voltage | Current | | |
|  HCQX-DA04-D | 4 | 0~10V -10~10V -5~5V 0~5V 1~5V | 0~20mA 4~20mA | 1ms | 14.7x100x100 |


Temperature measurement module

| Models | Number of channels | Corresponding sensor | Input type | | External dimension WxDxH(mm) |
|---|--------------------|---|---------------------------|---------------------------------------|------------------------------|
| | | | Items | Input temperature* | |
|  HCQX-TS04-D | 4 | Thermocouple: K, J, E, T, N, B, R, S (Default: K-type) Thermal resistance: PT100, PT1000, Ni100, Ni1000(Default: PT100) 3-wire | Input range Resolution | -200~1370°C <±0.3%(For full scale) | 14.7x100x100 |
| | | | Input range Resolution | -200~850°C <±0.5°C | |


High-speed counter module

| Models | Number of channel | Pulse input method | Max. response frequency (A/B-phase) | External dimension WxDxH(mm) |
|---|-------------------|--|-------------------------------------|------------------------------|
|  HCQX-HC04-D2 | 4 | Phase difference pulse(x1/2/4), Pulse + direction input, up/down pulse input | Single-phase 200kHz | 15.2x71.2x100 |

Step drive module

| Models | Number of channel | Motor control mode | Max. output current | Input voltage | External dimension WxDxH(mm) |
|--|-------------------|---------------------|------------------------|---------------|------------------------------|
|  HCQX-ST1505-D2 | Single-axis | PP, PV, CSP, Homing | Max. 5A (peak current) | 20/50V | 15.2x71.2x100 |

End unit

| Models | Functions | External dimension WxDxH(mm) |
|--|---|------------------------------|
|  End unit | Attached to the end of the CPU units or extension modules | 1x90x100 |

*The specific temperature range may vary depending on the sensor type.

General Specifications for HCQX-series Extension Modules

Electrical specifications

| Items | Specifications | |
|-----------------------|----------------|------------------------|
| Insulation voltage | Electrostatic | AC 500V60s |
| Insulation resistance | Electrostatic | 1MΩ |
| EMC requirements | Discharge | Contact ±4kV, air ±8kV |
| | EFT | ±2kV |
| | Surge | DC500V |

Environment specifications

| Items | Specifications |
|----------------------|---|
| Working temperature | 0~55°C |
| Storage temperature | -25~75°C |
| Relative humidity | 95%no condensation |
| Altitude | 2km or less |
| Atmosphere | 108kPa~66kPa |
| Noise resistance | ±2kV 5~100kHz |
| Sinusoidal vibration | 9Hz<f<100Hz, 1.0 acceleration, constant amplitude |
| Drop | 1m, 10 times, for packaging transportation |

Power specification for IO special modules

| Items | Specifications |
|-----------------------------|----------------|
| Rated power for control end | DC 12V |
| Input voltage range | DC 10.8~13.2V |
| Max. current consumption | 100mA/12V |
| Rated power for signal end | DC 24V |
| Input voltage range | DC 20.4~28.8V |

Coupler/power/terminal modules
HCQX SERIES

ETHERCAT COUPLER



- HCQX-EC01-D
- EtherCAT
- Fast Ethernet

ETHERCAT COUPLER



- HCQX-EC02-D
- EtherCAT
- Fast Ethernet
- Support SLOT nodes

AC POWER



- HCQX-PD01-A
- AC 110V~220V

END UNIT



- HCQX-END
- Attached to the end of the modules

Coupler module— Performance specifications

| Items | Specifications | |
|---|--|--|
| Models | HCQX-EC01-D | HCQX-EC02-D |
| Functions | Connect the terminal module and the 100BASE-TX EtherCAT network | Connect terminal module and 100BASE-TX EtherCAT network, support SLOT node |
| Number of local extension | Up to 16 | Up to 16 |
| Data transmission medium | EtherNet/EtherCAT (Cat.5E twisted pair cables at least) Shielded | EtherNet/EtherCAT (Cat.5E twisted pair cables at least) Shielded |
| Distance between station | Ethernet transmission, max.100m | Ethernet transmission, max.100m |
| Transmission protocol / transmission rate | EtherCAT/100Mbaud | EtherCAT/100Mbaud |
| Delay | about 1μs | About 1μs |
| Bus interface | 2 × RJ45 | 2 × RJ45 |
| Power supply | DC 24V (-15%~+20%) | DC 24V (-15%~+20%) |
| Current consumption | 70mA+ (Σ QBUS current/4) | 70mA+ (Σ QBUS current/4) |
| QBUS Load power | Max.1750mA (21W) (-25°C~+55°C) | Max.1750mA (21W) (-25°C~+55°C) |
| | Max.1333mA (16W) (>+55°C) | Max.1333mA (16W) (>+55°C) |
| Electrical isolation | Isolated power supply | Isolated power supply |

AC power module - Power specifications

| Items | Specifications |
|----------------|---------------------|
| Models | HCQX-PD01-A |
| Input voltage | AC 100~240V 50/60Hz |
| Output voltage | 12V |
| Load power | 60W |

DIGITAL INPUT



HCQX-ID16-D2
16-point digital input
Support NPN/PNP input



HCQX-ID16-D
16-point digital input
Support NPN/PNP input



HCQX-ID32-D2
32-point digital input
Support NPN/PNP input

DIGITAL OUTPUT



HCQX-OD16-D2*
16-point digital output
Support NPN output



HCQX-OD16-D
16-point digital output
Support NPN output



HCQX-OD32-D2*
32-point digital output
Support NPN output

DIGITAL IN/OUT



HCQX-MD16-D2*
16-point digital I/O
Support NPN/PNP input
Support NPN output



HCQX-MD16-D
16-point digital I/O
Support NPN/PNP input
Support NPN output



HCQX-MD32-D2*
32-point digital I/O
Support NPN/PNP input
Support NPN output

*PNP output needs to be customized, the model name is: HCQX-□□□□, if needed, please contact HCFA sales or distributors.

Digital input modules — Performance Specifications

| Items | Specifications | |
|-------------------------------|--|--|
| Models | HCQX-ID16-D / HCQX-ID16-D2 | HCQX-ID32-D2 |
| Input points | 16 | 32 |
| Input form | NPN/PNP | NPN/PNP |
| Input voltage range | DC 24V (+20%~-15%) | DC 24V (+20%~-15%) |
| Input signal current | 7mA / DC 24V | 7mA / DC 24V |
| Input resistance | 4.86kΩ | 4.86kΩ |
| Input sensitivity ON-current | 5.35mA or more | 5.35mA or more |
| Input sensitivity OFF-current | 2.1mA or less | 2.1mA or less |
| Input voltage threshold | VIH_Min:15V VIL_Max:5V | VIH_Min:15V VIL_Max:5V |
| Input frequency response | 5kHz | 5kHz |
| Input response time | 0.1ms or less | 0.1ms or less |
| Pulse shape | Pulse width:100us or more Rising/falling edge:50us or less | Pulse width:100us or more Rising/falling edge:50us or less |
| Wiring method | 2-wire, Shared by common terminal | 2-wire, Shared by common terminal |
| Common method | Every 8 points share a common terminal | Every 8 points share a common terminal |
| Isolation voltage level | 1.5kVrms | 1.5kVrms |

Digital output modules — Performance Specifications

| Items | Specifications | |
|--------------------------|---|---|
| Models | HCQX-OD16-D / HCQX-OD16-D2 | HCQX-OD32-D2 |
| Output points | 16 | 32 |
| External power range | DC 5V~30V | DC 5V~30V |
| Output form | The standard models support NPN; PNP needs to be customized | The standard models support NPN; PNP needs to be customized |
| Max. load current | 0.25A/point 2A/8point | 0.25A/point 2A/8point |
| Voltage drop at power-ON | 1V or less | 1V以下 |
| Leakage current at -OFF | 0.1mA/DC 24V | 0.1mA/DC 24V |
| Output response | 5kHz | 5kHz |
| Output response time | 0.1ms point | 0.1ms or less |
| Wiring method | 2-wire, Shared by common terminal | 2-wire, Shared by common terminal |
| Common method | Every 8 points share a common terminal | Every 8 points share a common terminal |
| Isolation voltage level | 1.5kVrms | 1.5kVrms |

Digital I/O module — Performance Specifications

| Items | Specifications | |
|-------------------------------|---|---|
| Models | HCQX-MD16-D / HCQX-MD16-D2 | HCQX-MD32-D2 |
| I/O points | 8, 8 | 16, 16 |
| Input form | NPN/PNP | NPN/PNP |
| Output form | The standard models support NPN; PNP needs to be customized | The standard models support NPN; PNP needs to be customized |
| Input voltage range | DC 24V (+20%~-15%) | DC 24V (+20%~-15%) |
| Input signal current | 7mA / DC 24V | 7mA / DC 24V |
| Input resistance | 4.86kΩ | 4.86kΩ |
| Input sensitivity ON-current | 5.35mA or more | 5.35mA or more |
| Input sensitivity OFF-current | 2.1mA or less | 2.1mA or less |
| Input voltage threshold | VIH_Min:15V VIL_Max:5V | VIH_Min:15V VIL_Max:5V |
| Input frequency response | 5kHz | 5kHz |
| Input response time | 0.1ms or less | 0.1ms or less |
| Input pulse waveform | Pulse width:100us or more Rising/falling edge:50us or less | Pulse width:100us or more Rising/falling edge:50us or less |
| External power range | DC 5V~30V | DC 5V~30V |
| Max. load current | 0.25A/point 2A/8point | 0.25A/point 2A/8point |
| Voltage drop at power-ON | 1V or less | 1V or less |
| Leakage current at power-OFF | 0.1mA/DC 24V | 0.1mA/DC 24V |
| Output response frequency | 5kHz | 5kHz |
| Output response time | 0.1ms or less | 0.1ms or less |
| Wiring method | 2-wire, Shared by common terminal | 2-wire, Shared by common terminal |
| Common method | Every 8 points share a common terminal | Every 8 points share a common terminal |
| Isolation voltage level | 1.5kVrms | 1.5kVrms |

ANALOG INPUT



- HCQX-AD04-D**
- 4-ch analog input
- Differential/single-ended input
- Input voltage range: 0~10V, -10~10V, -5~5V, 0~5V, 1~5V
- Input current range: 0~20mA, 4~20mA

ANALOG OUTPUT



- HCQX-DA04-D**
- 4-ch analog output
- Single-ended output
- Input voltage range: 0~10V, -10~10V, -5~5V, 0~5V, 1~5V
- Input current range: 0~20mA, 4~20mA

TEMPERATURE MEASUREMENT



- HCQX-TS04-D**
- 4-ch temperature measurement
- Thermocouple type: K, J, E, T, N, B, R, S
- Thermal resistance: PT100, PT1000, Ni100, Ni1000

Analog input module — Performance Specifications

| Items | Specifications |
|--|---------------------------------------|
| Models | HCQX-AD04-D |
| Analog current consumption | Type: 80mA |
| Voltage sampling input | 0~10V, -10~10V, -5~5V, 0~5V, 1~5V |
| Max. voltage input | -50V~+50V |
| Current sampling input | 0~20mA, 4~20mA |
| Max. current sampling input | -50mA~+50mA |
| Voltage input type | Differential input/single-ended input |
| Current input type | Single-ended input |
| Sampling rate | 4ksps |
| Accuracy | ±0.3%FSR(Full scale range) |
| Voltage channel temperature drift | ±7uV/°C (0.003%FSR) |
| Current channel temperature drift | ±3nA/°C |

Analog output module — Performance Specifications

| Items | Specifications |
|--|-----------------------------------|
| Models | HCQX-DA04-D |
| Analog current consumption | Type: 160mA |
| Voltage conversion output | 0~10V, -10~10V, -5~5V, 0~5V, 1~5V |
| Current conversion output | 0~20mA, 4~20mA |
| Voltage output type | Single-ended output |
| Current output type | Single-ended output |
| Conversion rate | 4ksps |
| Accuracy | ±0.3%FSR |
| Voltage channel temperature drift | ±0.03%FSR |
| Current channel temperature drift | ±0.05%FSR |
| Voltage output load | Min: 1kΩ |
| Current output load | Max: 0.625 kΩ |

Temperature measurement module — Performance Specifications

| Items | Specifications |
|--|---|
| Models | HCQX-TS04-D |
| Signal voltage | Thermocouple: K, J, E, T, N, B, R, S (Default K-type) Thermal resistance: PT100, PT1000, Ni100, Ni1000 (Default PT100) 3-wire system |
| Settings | No need to set the address in the software, codesys will make the configuration automatically; Functions include overrun detection / disconnection detection / sampling cycle setting / sensor-type setting / Input filter setting and temperature unit conversion setting Typical 1Khz; Depends on sensor-type, conversion time and length |
| Input filter limit frequency | Typical 1Khz; Depends on sensor type, conversion time and length |
| Resolution | 0.1 °C per digit , 0.1°F per digit |
| Warm-up time during TC test | 30 mins |
| Absolute max. ratings | ±150mV |
| Conversion time | About 100ms~1.3s, according to the configuration and filter settings and provide disconnection detection. (Turned on by default) and takes 460ms. TC time: 100ms* number of open channels*filtering times of this channel PT time: 200ms* number of open channels*filtering times of this channel |
| Temperature range | Determined by the corresponding sensor type; For TC, default setting K: -200~1370 °C, -7~55mV; For PT, default setting PT100: -200~850°C, 18~391Ω. |
| Measurement error (total error range) | TC: <±0.3% (For full scale) PT: <±0.5°C |

HIGH SPEED COUNTER

STEP DRIVER



HCQX-HC04-D2

4-ch high-speed counting

Single-ended input

Single-phase / dual-phase pulse input



HCQX-ST1505-D2

Single-axis control

Supported mode: PP PV CSP HM

High-speed counter module — Line drive specifications

| Items | specifications |
|--|----------------------------|
| Models | HCQX-HC04-D2 |
| Collector input | DC 24V/8.4mA |
| ON-voltage/ON-current | DC 15V or more/5mA or more |
| Single-phase max. response frequency (A/B-phase) | 200kHz |
| ON/OFF response time | Less than 2μs |

High-speed counter module — Input specifications

| Items | specifications |
|------------------------------------|--|
| Models | HCQX-HC04-D2 |
| Number of channel | 4 |
| Number of input points per channel | 4 |
| Rated input voltage | DC 24V (DC 20.4~28.8V) |
| Input resistance | 3kΩ |
| Input type | NPN /PNP |
| Wiring method | Three-wire encoder |
| Pulse input method | Orthogonal phase pulse(x2/4)/Pulse + direction/Up/down pulse |
| Counting unit | Pulse |
| Counting range | - 2,147,483,648~2,147,483,647 |

High-speed counter module — Counting functions

| Items | specifications |
|--------------------|---|
| Models | HCQX-HC04-D2 |
| Counter type | Ring counter or linear counter |
| Counter control | Gate control, counter reset and counter preset |
| Lock function | 1 external input lock and 1 internal lock |
| Measurement method | Pulse rate measurement and pulse period measurement |

Step drive module — Power Specifications

| Items | Specifications |
|--------------------------|--|
| Models | HCQX-ST1505-D2 |
| QBUS rated voltage | DC 12V |
| QBUS current consumption | Type: 100mA (without encoder) Max: 300mA (with encoder) |
| Input voltage range | DC 20~50V |
| Max. input current | 5A |

Step drive module — Control Specifications

| Items | Specifications |
|---------------------------------|--|
| Models | HCQX-ST1505-D2 |
| Control protocol | CiA402 |
| Communication scan cycle | 250μs, 500μs, 1ms, 2ms, 4ms, 8ms |
| Subdivision level | 32~256 step |
| Power supply to the encoder | 4.5~5V, 200mA (Max) |
| Encoder input type | Differential input |
| Encoder max. response frequency | 200kHz |
| Motor control mode | PP, PV, CSP, Homing |
| Digital input | I0~I4, single-ended DC 24V, max. pulse frequency 5kHz |
| Digital output | Q0~Q1, open-drain collector, max. 30V/250mA, max. pulse frequency 2kHz |
| Motor parameters | The motor parameters can be detected by servo drive automatically |

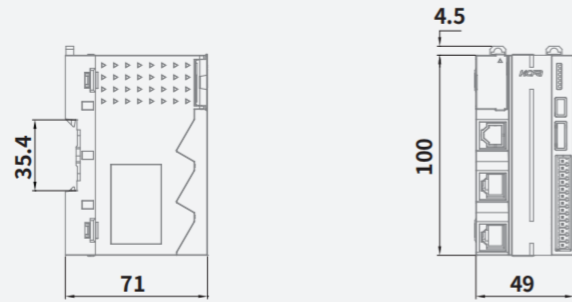
Step drive module — Drive Specifications

| Items | Specifications |
|----------------------|--|
| Models | HCQX-ST1505-D2 |
| Power output type | Dual H-bridge |
| Current control | PWM frequency 25kHz |
| Output current | Continuous max. peak current 5A |
| Protection functions | Overcurrent protection, undervoltage protection, overvoltage protection, over-temperature protection |

HCQX-SERIES UNIT DIMENSION DRAWING

Coupler modules

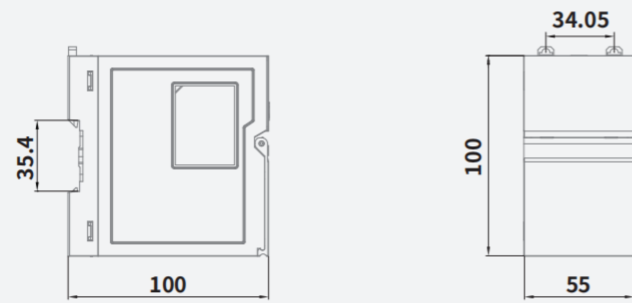
Unit:mm



| Model | |
|-------------|-------------|
| HCQX-EC01-D | HCQX-EC02-D |

Power modules

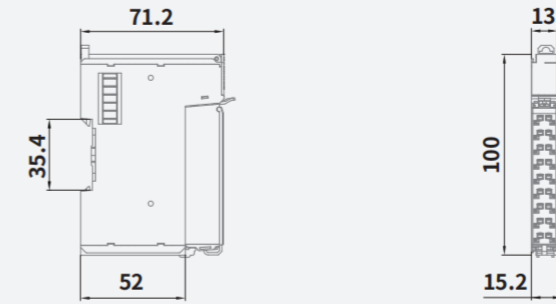
Unit:mm



| Model | |
|-------------|--|
| HCQX-PD01-A | |

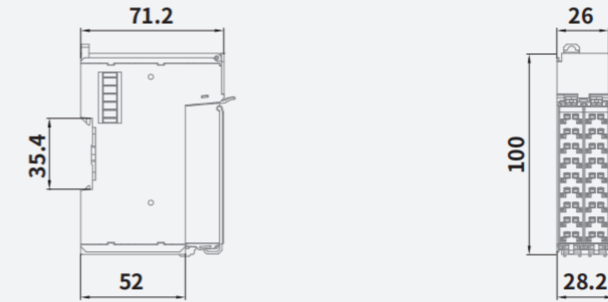
Extension modules

Unit:mm



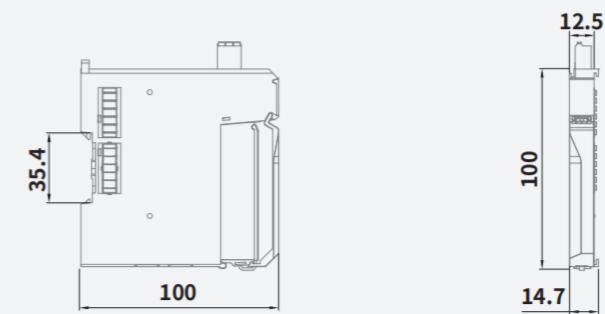
| Model | | | |
|--------------|--------------|--------------|--------------|
| HCQX-ID16-D2 | HCQX-OD16-D2 | HCQX-MD16-D2 | HCQX-HC04-D2 |

Unit:mm



| Model | | | |
|--------------|--------------|--------------|----------------|
| HCQX-ID32-D2 | HCQX-OD32-D2 | HCQX-MD32-D2 | HCQX-ST1505-D2 |

Unit:mm



| Model | | | |
|-------------|-------------|-------------|-------------|
| HCQX-ID16-D | HCQX-OD16-D | HCQX-MD16-D | HCQX-AD04-D |
| HCQX-DA04-D | HCQX-TS04-D | | |

Q SERIES DISTRIBUTED I/O SYSTEM

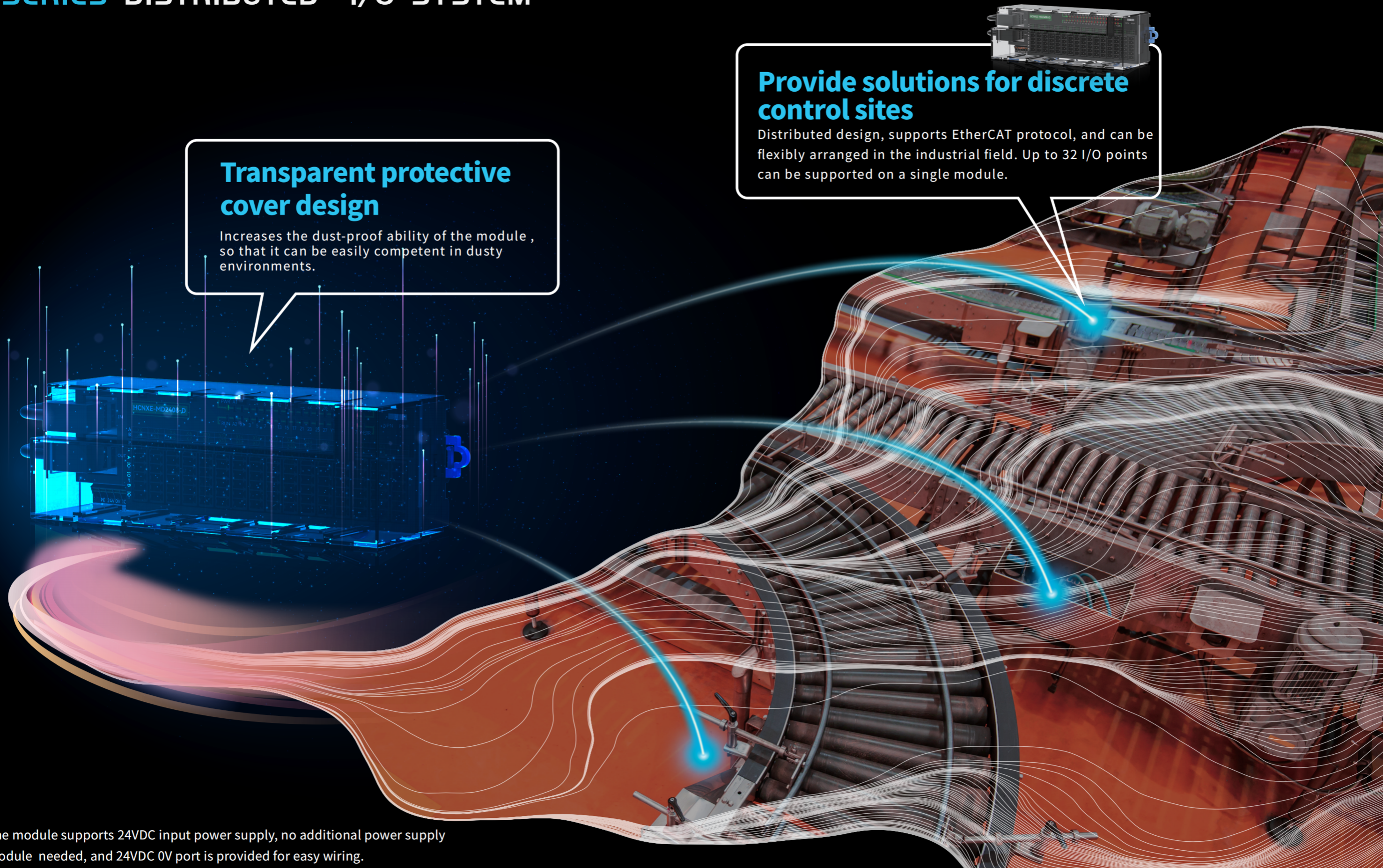
Transparent protective cover design

Increases the dust-proof ability of the module, so that it can be easily competent in dusty environments.

Provide solutions for discrete control sites

Distributed design, supports EtherCAT protocol, and can be flexibly arranged in the industrial field. Up to 32 I/O points can be supported on a single module.

The module supports 24VDC input power supply, no additional power supply module needed, and 24VDC 0V port is provided for easy wiring.



HCNxE-SERIES UNIT LINEUP

Naming rule for HCNxE-series extension modules

HCNxE-ID32-D

Product name

HC HC: HCFA controller

Distributed modules

NXE NXE: EtherCAT module
 NXP: ProfiNet module
 NXM: Modbus TCP module
 NXC: CANOpen module

Function modules

ID ID: Digital input
 OD: Digital output
 MD: Digital I/O


Number of channels

32 32: Number of channels
Note: For digital I/O, represented by 4-digit, for example: 2408, indicating 24 input points and 8 output points


Power type

D D: DC power
 A: AC power



Distributed digital input modules

| Models | Number of channel | Input/output type | | | | External dimension WxDxH(mm) |
|--|-------------------|-------------------|------------------|--------|---|------------------------------|
| | | Input | | Output | | |
|  HCNxE-ID32-D | 32 | 32 | DC 24V (NPN/PNP) | - | - | 160x28x50 |

Distributed digital output modules

| Models | Number of channel | Input/output type | | | | External dimension WxDxH(mm) |
|--|-------------------|-------------------|---|--------|-----|------------------------------|
| | | Input | | Output | | |
|  HCNxE-OD32-D | 32 | - | - | 32 | NPN | 160x28x50 |

Distributed digital I/O modules

| Models | Number of channel | Input/output type | | | | External dimension WxDxH(mm) |
|--|-------------------|-------------------|------------------|--------|-----|------------------------------|
| | | Input | | Output | | |
|  HCNxE-MD1616-D | 32 | 16 | DC 24V (NPN/PNP) | 16 | NPN | 160x28x50 |
|  HCNxE-MD2408-D | 32 | 24 | DC 24V (NPN/PNP) | 8 | NPN | 160x28x50 |

Environment specifications

| Items | Specifications |
|-------------------------------------|---|
| Ambient temperature | For operation: 0~55°C (32~131°F) For storage: -25~75°C (-13~167°F) |
| Relative humidity | For operation: 5~95%RH (No condensation) |
| Vibration resistance | Installation |
| | When installed on DIN rail |
| | When installed directly |
| | 10 times of testing in each direction (X-, Y-, and Z-axis directions) (Total: 80 min, each) |
| Shock resistance | 147m/s ² , Action time: 11ms, 3 times by half-sine pulse in each direction X, Y, and Z |
| Noise resistance | By noise simulator at noise voltage of 10,000Vp-p, noise width of 1μs, rise time of 1ns and period of 30 to 100Hz |
| Dielectric withstand voltage | AC 500V one minute |
| Insulation resistance | 5MΩ or more by 500V DC megger |
| Grounding | Class D grounding (grounding resistance: 100Ω or less) *Common grounding with a heavy electrical system is not allowed. |
| Working atmosphere | Free from corrosive or flammable gas and excessive conductive dusts |
| Working altitude | 2000m or less |

Power specifications

| Items | Rated power of control side | Input voltage range of control side | Max. current consumption of control side | Rated power of IO side | Input voltage range of IO side | Max. current of IO side |
|-----------------------|-----------------------------|-------------------------------------|--|------------------------|--------------------------------|-------------------------|
| Specifications | DC 24V | DC 20.4~28.8V | 50mA/24V | DC 24V | DC 20.4~28.8V | 5A |

REMOTE DIGITAL INPUT



- HCNxE-ID32-D**
- 32-point digital input
- Support NPN/PNP input

REMOTE DIGITAL OUTPUT



- HCNxE-OD32-D**
- 32-point digital output
- Support NPN output

REMOTE DIGITAL IN/OUT



- HCNxE-MD1616-D**
- 32-point digital I/O
- Support NPN/PNP input
- Support NPN output



- HCNxE-MD2408-D**
- 32-point digital I/O
- Support NPN/PNP input
- Support NPN output

Digital input module

| Items | Specifications |
|------------------------------|--|
| Models | HCNxE-ID32-D |
| Input points | 32 |
| Rated input voltage | DC 24V (DC 20.4~28.8V) |
| Rated input current | 8.4mA/24V |
| ON-voltage/ON-current | DC 15V or more/5mA or more |
| ON/OFF response time | 125μs or more |
| Input resistance | 3kΩ |
| Input type | Compatible with NPN and PNP (switched by the Switch) |
| Wiring method | 2-wire sensor, 3-wire sensor |

Digital output module

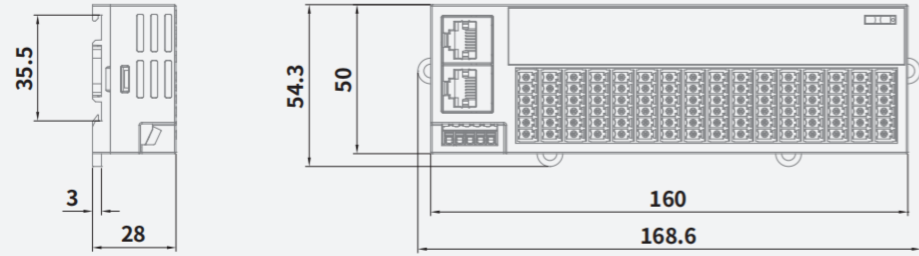
| Items | Specifications |
|-------------------------------------|---|
| Models | HCNxE-OD32-D |
| Output points | 32 |
| Rated load voltage | DC 24V (DC 20.4~28.8V) |
| Rated load current | 0.5A/ch, 2A/8ch |
| Leakage current at power-OFF | 0.1mA or less |
| Residual voltage at power-ON | 0.3V or less |
| ON/OFF response time | 125μs or more |
| Output type | NPN, built-in common terminal |
| Wiring method | 2-wire |
| Protection functions | Overcurrent protection, overvoltage protection, over-temperature protection |

Digital I/O module

| Items | Specifications | |
|-------------------------------------|---|---|
| Models | HCNxE-MD1616-D | HCNxE-MD2408-D |
| Input points | 16 | 24 |
| Output points | 16 | 8 |
| Rated input voltage | DC 24V (DC 20.4~28.8V) | DC 24V (DC 20.4~28.8V) |
| Rated input current | 8.4mA/24V | 8.4mA/24V |
| ON-voltage/ON-current | DC 15V or more/5mA or more | DC 15V or more/5mA or more |
| ON/OFF response time | 125μs or more | 125μs or more |
| Input resistance | 3kΩ | 3kΩ |
| Input type | Compatible with NPN and PNP (switched by the Switch) | Compatible with NPN and PNP (switched by the Switch) |
| Wiring method | 2-wire sensor, 3-wire sensor | 2-wire sensor, 3-wire sensor |
| Rated load voltage | DC 24V (DC 20.4~28.8V) | DC 24V (DC 20.4~28.8V) |
| Rated load current | 0.5A/ch, 2A/8ch | 0.5A/ch, 2A/8ch |
| Leakage current at power-OFF | 0.1mA or less | 0.1mA or less |
| Residual voltage at power-ON | 0.3V or less | 0.3V or less |
| Output type | NPN, built-in common terminal | NPN, built-in common terminal |
| Wiring method | 2-wire | 2-wire |
| Protection functions | Overcurrent protection, overvoltage protection, over-temperature protection | Overcurrent protection, overvoltage protection, over-temperature protection |

HCNxE-series

Unit:mm

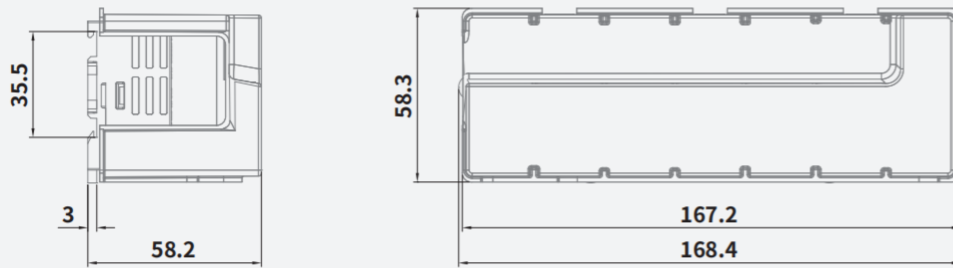


Models

- | | | | |
|--------------|--------------|----------------|----------------|
| HCNxE-ID32-D | HCNxE-OD32-D | HCNxE-MD1616-D | HCNxE-MD2408-D |
|--------------|--------------|----------------|----------------|

HCNxE-series(with protective cover)

Unit:mm



Models

- | | | | |
|--------------|--------------|----------------|----------------|
| HCNxE-ID32-D | HCNxE-OD32-D | HCNxE-MD1616-D | HCNxE-MD2408-D |
|--------------|--------------|----------------|----------------|

Rich PLC products

From the early A1P / A2P- series to the newly-launched R8P-series, HCFA has accumulated many years of PLC research and development experience, and constantly improves various PLC product lines according to customer needs.

Make upgrading much easier!

The extension modules are compatible with the upgrade version of most CPU units, making system

2023

The same setup programming software HCPWORK2, allows customers to use only one software for project development, reducing learning costs and improving production efficiency.

2013

A1P A2P

R8A

R2

R8C

HCR8P-32MR

R8P



A/R-SERIES LINEUP

Naming rule for A-series PLC

HCA8C-16X16YT-A

| | | | |
|---|---|--|--|
| Product name HC HC: HCFA controller | Series name A8 A1: Simple-type controller A2: General-purpose controller A8: High-performance controller | Series models C N/A: Standard-type P: Upgraded-type C: Compact type | Input points 16 16: 16 points |
| Input type X X: Digital input for main units EX: Digital input for extension modules AD: Analog input PT: Thermal resistance input TC: Thermocouple input HC: High-speed input LC: Load cell | Output points 16 16: 16 points | Output type Y Y: Digital output for main units EY: Digital output for extension modules DA: Analog output PG: Pulse output GM: Motion control | Output method T R: Relay output T: Transistor output |
| Power type A D: DC power A: AC power N/A: For modules | | | |

Naming rule for R-series PLC

HCR8C-32MT-D

| | | | |
|---|--|---|--|
| Product name HC HC: HCFA controller | Series name R8 R1: Simple-type controller R2: General-purpose R8: High-performance controller | Series models C N/A: Standard-type A: A-series P: Upgraded-type C: Compact-type | |
| Total points 32 10: 10 points 14: 14 points ...: ... 80: 80 points 128: 128 points | Function module M M: Standard control | Output type T R: Relay output T: Transistor output | Power type D D: DC power A: AC power |



HCA1P

A-series simple-type PLC

- Basic function** Up to 2 axes, 30 control points, Program capacity 2k steps
- Function** Positioning function, Clock function, Board extension, High-speed input/output
- Interfaces** RS422, RS485



HCA2P

A-series general-purpose PLC

- Basic function** Up to 2 axes, 256 control points, Program capacity 8k steps
- Function** Positioning function, Clock function, Board extension, High-speed input/output, Support right-extension modules
- Interfaces** RS422, RS485



HCR2

R-series general-purpose PLC

- Basic function** Up to 4 axes, 256 control points, Program capacity 64k steps
- Function** Positioning function, Clock function, Board extension, High-speed input/output, Support right-extension modules
- Protocol** Modbus RTU, Modbus TCP
- Interfaces** RS422, RS485, RS232, Ethernet x1



HCR8A

R-series high-performance PLC

- Basic function** Up to 4 axes, 256 control points, Program capacity 64k steps
- Function** Positioning function, SD memory card, Board extension, High-speed input/output, Support right-extension modules
- Protocol** Modbus RTU, Modbus TCP
- Interfaces** RS485 x2, RS232 x2, Ethernet x1



HCR8C

R-series high-performance PLC

- Basic function** Up to 8 axes, 256 control points, Program capacity 64k steps
- Function** Positioning function, SD memory card, High-speed input/output, Support right-extension modules
- Protocol** Modbus RTU, Modbus TCP, CANOpen*
- Interfaces** RS485 x2, RS232 x2, Ethernet x1



HCR8P

R-series high-performance PLC

- Basic function** Up to 8 axes, 256 control points, Program capacity 64k steps
- Function** Positioning function, SD memory card, Board extension, High-speed input/output, Support right-extension modules
- Protocol** Modbus RTU, Modbus TCP, CANOpen*
- Interfaces** RS485 x2, RS232 x2, Ethernet x1

*Will be supported.



> Main units

| Models | Description |
|---------------------|--|
| HCA1P-8X6YT/R-A/D | 8 input points, 6 output points, transistor/relay output |
| HCA1P-12X8YT/R-A/D | 12 input points, 8 output points, transistor/relay output |
| HCA1P-16X14YT/R-A/D | 16 input points, 14 output points, transistor/relay output |

> Environment specifications

| Items | Specifications |
|------------------------------|---|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power specifications

| Items | Specifications |
|----------------------------------|--|
| Power specifications | AC power: AC 100~240V DC power: DC 24V±20% |
| Power consumption | AC power : 19W (6X4Y, 8X6Y), 20W (12X8Y), 21W (16X14Y) DC power: 6W (6X4Y), 6.5W (8X6Y), 7W (12X8Y), 8W (16X14Y) |
| Rush current | AC power: Max. 15A 5ms or less/AC 100V, max. 25A 5ms or less/AC 200V DC power: Max. 10A 100µs/DC 24V |
| Input specifications | DC 24V 7mA/5mA No voltage contact or NPN open-collector transistor input |
| Output specifications | Relay output: 2A/1 point, 8A/4 points COM AC 250V, DC 30V or less Transistor output: 0.5A/1 point, 0.8A/4 points COM DC 5~30V |
| I/O extension, special extension | Some inputs/outputs and analog inputs/outputs can be extended by installing function extension boards |

> Performance specifications

| Items | Specifications | |
|-------------|--|---|
| Performance | Program capacity | Built-in 2,000 steps,(EEPROM without battery), comment input, write during RUN Memory Box with program transfer function can be installed (max. 2,000 steps) |
| | Clock function | Built-in real-time clock (with time setting and time comparison instructions) |
| | Instructions | Basic instruction: 27, Step ladder instruction: 2, Applied instruction: 85 |
| | Operation processing time | Basic instruction: 0.5~0.7µs/instruction, Applied instruction: 3.7~100µs/instruction |
| | High-speed processing | I/O refresh instruction, input filter adjustment command, input interrupt function, pulse catch function |
| | Max. I/O points | 30 points (4 input points and 2 output points can be extended by function extension boards) |
| | Auxiliary relay, timer | Auxiliary relay: 512 points, Timer: 64 points |
| Counter | For general use, 16-bit up counter: 32 points | |
| | For high-speed use, 32-bit up/down counter: [1-phase] 60kHz/2 points, 10kHz/4 points [2-phase] 30kHz/1 point, 5kHz/1 point | |
| | Data registers | For general use: 256 points, for index use: 16 points, for file use: Up to 1,500 points |
| Others | COM port | Built-in communication port, RS422/RS485 |
| | Corresponding data communication | N:N network, parallel link, PC link, programming communication |

> Input specifications

| Items | Specifications | |
|--|-----------------------|---------------|
| Input points | HCA1P-8X6Y □ | 8 points |
| | HCA1P-12X8Y □ | 12 points |
| | HCA1P-16X14Y □ | 16 points |
| Input form | NPN/PNP | |
| Input voltage | DC 24V±10% | |
| Input resistance | X000~X007 | 3.3kΩ |
| | X010 or more | 4.3kΩ |
| Input current | X000~X007 | 7mA/DC 24V |
| | X010 or more | 5mA/DC 24V |
| Input sensitivity current at power-ON | X000~X007 | 4.5mA or more |
| | X010 or more | 3.5mA or more |
| Input sensitivity current at power-OFF | All inputs | 1.5mA or less |
| Input response time | X000~X001 | About 10µs |
| | X002~X007 | About 50µs |
| | X010 or more | About 10µs |
| Input circuit isolation | Optocoupler isolation | |
| Input operation display | LED lit when driving | |

> Output specifications

| Items | | Transistor output specifications |
|------------------------------|----------------|--|
| External voltage | | DC 5~30V |
| Max. load | Resistive load | Make sure that the total load current of resistance load per common terminal not exceed the following value: 1 output point: 0.5A 4 output points: 0.8A 8 output points: 1.6A |
| | Inductive load | 12W/DC 24V |
| Mini. load | | - |
| Open circuit leakage current | | 0.1mA or less/DC 30V |
| ON voltage | | 1.5V or less |

| Items | | | Relay output specifications |
|------------------------------|----------------|------------|--|
| External voltage | | | DC 30V or less AC 240V or less (AC 250V or less when not compatible with CE, UL, cUL standards) |
| Max. load | Resistive load | 2A/1 point | Make sure that the total load current of resistance load per common terminal not exceed the following value: 1 output point: 2A 4 output points: 8A 8 output points: 8A |
| | Inductive load | 80VA | - |
| Mini. load | | | DC 5V 2mA (Reference) |
| Open circuit leakage current | | | - |
| Response time | OFF→ON | | About 10ms |
| | ON→OFF | | About 10ms |
| Circuit insulation | | | Mechanical insulation |
| Operation display | | | LED lit when the relay coil is energized |

> RS485 specifications

| Items | Specifications |
|----------------------------|-------------------------------------|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 50m (At a specific baud rate) |
| Supported protocol | N:N network, parallel link, PC link |
| Isolation status | Non-isolated |
| Terminating resistor | Not built-in |

> RS422 specifications

| Items | Specifications |
|----------------------------|-------------------------------|
| Interface type | RS422 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 50m (At a specific baud rate) |
| Supported protocol | Programming port protocol |
| Isolation status | Non-isolated |



> Main units

| Models | Description |
|---------------------|--|
| HCA2P-14X10YT/R-A/D | 14 input points, 10 output points, transistor/relay output |
| HCA2P-24X16YT/R-A/D | 24 input points, 16 output points, transistor/relay output |
| HCA2P-36X24YT/R-A/D | 36 input points, 24 output points, transistor/relay output |

> Environment specifications

| Items | Specifications |
|------------------------------|--|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power specifications

| Items | Specifications |
|----------------------------------|--|
| Power specifications | AC power: AC 100~240V DC power: DC 24V±20% |
| Power consumption | AC power: 30W (14X10Y), 32W (24X16Y), 35W (36X24Y) DC power: 15W (14X10Y), 18W (24X16Y), 20W (36X24Y) |
| Rush current | AC power: Max.30A 5ms or less/AC 100V, max.50A 5ms or less/AC 200V DC power: Max.25A 1ms or less/DC 24V, max.22A 0.3ms or less/DC 12V |
| Input specifications | DC 24V 7mA/5mA, No voltage contact or NPN open-collector transistor input |
| Output specifications | Relay output: 2A/1 point, 8A/4 points COM AC 250V, DC 30V or less Transistor output: 0.5A/1 point, 0.8A/4 points COM DC 5~30V |
| I/O extension, special extension | Can be connected to HCA8C series I/O extension modules; Some inputs/outputs and analog inputs/outputs can be extended by installing function extension boards |

> Performance specifications

| Items | Specifications | |
|-------------|----------------------------------|--|
| Performance | Program capacity | Built-in 8,000 steps,(EEPROM without battery), comment input, write during RUN Memory Box with program transfer function can be installed (max. 8,000 steps) |
| | Clock function | Built-in real-time clock (with time setting, time comparison instructions, with correction for leap year) |
| | Instructions | Basic instruction: 27, Step ladder instruction: 2, Applied instruction: 89 |
| | Operation processing time | Basic instruction: 0.5~0.7μs/instruction, Applied instruction: 3.7~100μs/instruction |
| | High-speed processing | I/O refresh instruction, input filter adjustment command, input interrupt function, pulse catch function |
| | Max. I/O points | 256 points |
| | Auxiliary relay, timer | Auxiliary relay: 1,536 points, Timer: 256 points |
| Others | Counter | For general use, 16-bit up counter: 200 points; For general use, 32-bit up/down counter: 35 points For high-speed use, 32-bit up/down counter: [1-phase]60kHz/2 points, 10kHz/4 points [2-phase]30kHz/1 point, 5kHz/1 point |
| | Data registers | For general use: 8000 points, for index use: 16 points, for file use: Up to 7,000 points |
| | COM port | Built-in communication port, RS422/RS485 |
| | Special extension | Analog, positioning modules |
| | Corresponding data communication | N:N network, parallel link, PC link, programming communication |

> Input Specifications

| Items | Specifications | |
|--|-----------------------|---------------|
| Input points | HCA2P-14X10Y□ | 14points |
| | HCA2P-24X16Y□ | 24points |
| | HCA2P-36X24Y□ | 36points |
| Input form | NPN/PNP | |
| Input voltage | DC 24V±10% | |
| Input resistance | X000~X007 | 3.3kΩ |
| | X010 or more | 4.3kΩ |
| Input current | X000~X007 | 7mA/DC 24V |
| | X010 or more | 5mA/DC 24V |
| Input sensitivity current at power-ON | X000~X007 | 4.5mA or more |
| | X010 or more | 3.5mA or more |
| Input sensitivity current at power-OFF | All inputs | 1.5mA or less |
| Input response time | X000~X001 | About 10μs |
| | X002~X007 | About 50μs |
| | X010 or more | About 10μs |
| Input circuit isolation | Optocoupler isolation | |
| Input operation display | LED lit when driving | |

> Output specifications

| Items | | Transistor output specifications |
|------------------------------|----------------|--|
| External voltage | | DC 5~30V |
| Max. load | Resistive load | Make sure that the total load current of resistance load per common terminal not exceed the following value: 1 output point: 0.5A 4 output points: 0.8A 8 output points: 1.6A |
| | Inductive load | 12W/DC 24V |
| Mini. load | | - |
| Open circuit leakage current | | 0.1mA or less /DC 30V |
| ON voltage | | 1.5V or less |

| Items | | | Relay output specifications |
|------------------------------|----------------|------------|--|
| External voltage | | | DC 30V or less AC 240V or less (AC 250V or less when not compatible with CE, UL, cUL standards) |
| Max. load | Resistive load | 2A/1 point | Make sure that the total load current of resistance load per common terminal not exceed the following value: 1 output point: 2A 4 output points: 8A 8 output points: 8A |
| | Inductive load | 80VA | - |
| Mini. load | | | DC 5V 2mA (Reference) |
| Open circuit leakage current | | | - |
| Response time | OFF→ON | | About 10ms |
| | ON→OFF | | About 10ms |
| Circuit insulation | | | Mechanical insulation |
| Operation display | | | LED lit when the relay coil is energized |

> RS485 Specifications

| Items | Specifications |
|----------------------------|-------------------------------------|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 50m (At a specific baud rate) |
| Supported protocol | N:N network, parallel link, PC link |
| Isolation status | Non-isolated |
| Terminating resistor | Not built-in |

> RS422 Specifications

| Items | Specifications |
|----------------------------|-------------------------------|
| Interface type | RS422 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 50m (At a specific baud rate) |
| Supported protocol | Programming port protocol |
| Isolation status | Non-isolated |



> Main units

| Models | Description |
|---------------|--|
| HCR2-24MT/R-A | 14 input points, 10 output points, transistor/relay output |
| HCR2-40MT/R-A | 24 input points, 16 output points, transistor/relay output |
| HCR2-60MT/R-A | 36 input points, 24 output points, transistor/relay output |

> Environment Specifications

| Items | Specifications |
|------------------------------|--|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power Specifications

| Items | Specifications |
|--|--|
| Input voltage | AC 100~240V 50/60Hz |
| Max. input current | 220V/320mA |
| Power efficiency | 80% |
| Allowable instantaneous power-failure time | Continue to operate for instantaneous power failures below 10ms When the power supply voltage is 200VAC, it can be changed to 10~100ms by user program |
| Protection functions | Overload protection (110%-150% of rated output power); Protection mode: hiccup mode, Can restore automatically after the abnormal load condition is removed |
| Output voltage | External 24VDC power: 24V/0.8A |
| Power consumption | 45W Max. |
| Output power right-extension modules | 5V/2A 24V/0.8A |
| Number of right extension modules | Up to 8 (without extension power supply) |

> Performance specifications

| Items | | Specifications | |
|--------------------------------------|---------------------------------------|------------------------|-------------------------|
| Number of control axes | | 4 axes | |
| Pulse output form | | Transistor | |
| Max. frequency | | Pulse 200kHz | |
| Positioning | Pulse output mode | PULSE/SIGN mode | |
| | Positioning range | Control unit | Motor Unit System |
| | | Positioning range | -2147483648~+2147483647 |
| | Speed instruction | Speed instruction unit | pps |
| | | Base speed | 0~200Kpps |
| | | Max. speed | 1pps~200Kpps |
| | | Homing return speed | 1pps~200Kpps |
| | | Creeping speed | 1pps~200Kpps |
| | | Acceleration time | 0~32767ms |
| | | Deceleration time | 0~32767ms |
| Acceleration/deceleration processing | Trapezoidal acceleration/deceleration | | |
| Interpolation function | N/A | | |

> Input specifications

| high-speed input | | Specifications | |
|---------------------------|-------------|-----------------------------------|---------|
| Input points | | 8点 (X000~X007) | |
| Input form | | NPN/PNP | |
| Input voltage | All inputs | DC 24V±10% | |
| Input resistance | All inputs | 2.7kΩ | |
| Input current | All inputs | 8.5mA/DC 24V | |
| Input sensitivity current | On-current | All inputs | 5.3mA以上 |
| | OFF-current | All inputs | 1mA以下 |
| Input response frequency | All inputs | 200kHz | |
| Input signal form | All inputs | NPN/PNP Open collector transistor | |
| Circuit isolation | All inputs | Digital isolation | |
| Input operation display | - | LED lit at power-ON | |

| Low-speed input | | Specifications | |
|---------------------------|-------------|-----------------------------------|----------------|
| Input points | | X010 or more | |
| Input form | | NPN/PNP | |
| Input voltage | All inputs | DC 24V±10% | |
| Input resistance | All inputs | 4.3kΩ | |
| Input current | All inputs | 5.3mA/DC 24V | |
| Input sensitivity current | On-current | All inputs | 2.13mA or more |
| | OFF-current | All inputs | 1.8mA or less |
| Input response frequency | All inputs | 5kHz | |
| Input signal form | All inputs | NPN/PNP Open collector transistor | |
| Circuit isolation | All inputs | Optocoupler isolation | |
| Input operation display | - | LED lit at power-ON | |

> Output specifications

| Items | | Transistor output specifications | |
|------------------------------|----------------|---|--|
| Output points | | 10 points/16 points/24 points | |
| Output type | | Transistor/NPN (PNP needs to be customized) | |
| External voltage | | All outputs | DC 5~30V |
| Max. load | Resistive load | All outputs | 0.5A/1点 Make sure that the total load current per common terminal should be the following: - 1 output point:0.5A - 4 output points:0.8A - 8 output points:1.6A |
| | Inductive load | All outputs | 12W/DC 24V |
| Open circuit leakage current | | All outputs | 0.1mA or less /DC 30V |
| ON-voltage drop | | All outputs | 1.5V or less |
| Response time | OFF→ON | Y000~Y007 | 2.5μs or less/10mA or more(DC 5~24V) |
| | | Y010 or more | 0.2ms or less/200mA or more(DC 24V時) |
| | ON→OFF | Y000~Y007 | 2.5μs or less/10mA or more(DC 5~24V) |
| | | Y010 or more | 0.2ms or less/200mA or more(DC 24V時) |
| Circuit isolation | | All outputs | Optocoupler isolation |
| Output operation display | | - | LED lit when driving |

| Items | | Relay output specifications | |
|------------------------------|--------------------|--|--|
| Output points | | 10 points/16 points/24 points | |
| Output type | | Relay | |
| External voltage | | DC 30V or less AC 240V or less | |
| Max. load | | 2A/1 point Make sure that the total load current per common terminal should be the following: ·4 output points/common terminal:8A or less ·8 output points/common terminal:8A or less | |
| Open circuit leakage current | | - | |
| Response time | OFF→ON | About 10ms | |
| | ON→OFF | About 10ms | |
| Circuit isolation | All outputs | Mechanical isolation | |
| Output operation display | | LED lit when output is ON | |

> Ethernet specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RJ45 connector |
| Data transmission speed | 100/10Mbps |
| Communication mode | Full/half-duplex |
| Max. transmission distance | 100m |
| Supported protocol | Download monitoring protocol Modbus TCP/IP slave |
| Transmission medium | Cat.5E twisted pair cables |

> RS485 specifications

| Items | Specifications |
|----------------------------|--|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Modbus RTU master/slave station Download monitoring protocol Free communication protocol |
| Isolation status | Non-isolated |
| Terminating resistor | Not built-in |

> RS232 specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RS232 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 5m |
| Supported protocol | Download monitoring protocol Free communication protocol |
| Isolation status | Non-isolated |

> RS422 specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RS422 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Download monitoring protocol Free communication protocol |
| Isolation status | Non-isolated |



> Main units

| Models | Description |
|-----------------|--|
| HCR8A-32MT/R-A | 16 input points, 16 output points, transistor/relay output |
| HCR8A-48MT/R-A | 24 input points, 24 output points, transistor/relay output |
| HCR8A-64MT/R-A | 32 input points, 32 output points, transistor/relay output |
| HCR8A-80MT/R-A | 40 input points, 40 output points, transistor/relay output |
| HCR8A-128MT/R-A | 64 input points, 64 output points, transistor/relay output |

> Environment specifications

| Items | Specifications |
|------------------------------|--|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (No condensation) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power specifications

| Items | AC power specifications |
|-----------------------------------|---|
| Power voltage | AC 100~240V |
| Freeze frequency | 50/60Hz |
| Instantaneous power-failure range | The operation of the main units will not be affected When the instantaneous power failure occurs within 10ms. |
| Power fuse | 250V 3.15A |
| Inrush current | Main units Max.30A 5ms or less/AC 100V Max.65A 5ms or less/AC 200V |

| | | |
|--------------------|-----------------|---------------|
| Power | HCR8A-32M□-A | 60W |
| | HCR8A-48M□-A | 60W |
| | HCR8A-64M□-A | 60W |
| | HCR8A-80M□-A | 60W |
| | HCR8A-128M□-A | 60W |
| 24VDC power supply | HCR8A-48MT~80MT | 600mA or less |

> Performance specifications

| Items | Specifications | |
|--|-----------------------------|-----------------------------|
| Control points | 256 points in total | |
| Operation speed | LD:20ns | |
| Program capacity | 64k steps | |
| Number of subprogram (tasks) | Unlimited | |
| Programming port (HCP Woks2) | Ethernet | Supported |
| | USB(Mini-B) | Supported |
| | RS485 | - |
| | RS232 | Supported |
| Positioning (Transistor output) | 200kpps×4 axes | |
| High-speed counter (1-phase 1-input) | 200kHz×3 ch 10kHz×1 ch | |
| SD memory card slot | Supported | |
| Network (Ethernet) | Simple communication | Will be supported |
| | Modbus/TCP master | Will be supported |
| | Modbus/TCP slave | Supported |
| | Socket communication | Will be supported |
| | FTP server function | Will be supported |
| Hold during power-failure | Data size 64KB | |
| Extension | Board extension | Supported |
| | Left extension modules | Will be supported |
| | Right extension modules | Supported |
| Serial communication (protocol or instruction) | Modbus RTU | 32 slave stations supported |
| | Modbus RTU slave | Supported |
| | Free communication protocol | Supported |

> Input specifications

| Items | | Specifications | |
|-------------------------------|-----------------------------|--|----------------------|
| Input points | | 16/24/32/40/64 points | |
| Input resistance | Main units | X000~X005 | 3.9kΩ |
| | | X006,X007 | 3.3kΩ |
| | X010 or more | 4.3kΩ | |
| I/O extension units/modules | | 4.3kΩ | |
| Input current | Main units | X000~X005 | 6mA/DC 24V |
| | | X006,X007 | 7mA/DC 24V |
| | | X010 or more | 5mA/DC 24V |
| | I/O extension units/modules | | 5mA/DC 24V |
| Input sensitivity ON-current | Main units | X000~X005 | 3.5mA or more |
| | | X006,X007 | 4.5mA or more |
| | | X010 or more | 3.5mA or more |
| | I/O extension units/modules | | 3.5mA or more/DC 24V |
| Input sensitivity OFF-current | | 1.5mA or less | |
| Input response frequency | X000~X005 | 200kHz | |
| | X005 or more | 10kHz | |
| Input signal form | | No-voltage contact input Sink NPN open-collector transistor Source PNP open-collector transistor | |
| Input circuit isolation | | Optocoupler isolation | |
| Operation display | | LCD dot matrix lit when input is ON | |

> Output specifications

| Items | | Transistor output specifications | |
|------------------------------|-----------------------------|--|-------------------------------------|
| Output points | | 16/24/32/40/64 points | |
| Output type | | NPN by default(PNP needs to be customized) | |
| External voltage | | DC 5~30V | |
| Max. load | | 1 output point: 0.5A 4 output points: 0.8A 8 output points: 1.6A | |
| Open-circuit leakage current | | 0.1mA or less/DC 30V | |
| ON-voltage drop | Y0~Y3 | 1.0V or less | |
| | Y3 or more | 1.5V or less | |
| Response time | Main units | Y0~Y3 | 5μs or less/10mA or more(DC 5~24V) |
| | | Y3 or more | 0.2ms or less/200mA or more(DC 24V) |
| | I/O extension units/modules | | 0.2ms or less/200mA or more(DC 24V) |
| Input circuit isolation | | Optocoupler isolation | |
| Input operation display | | LCD dot matrix lit when output is ON | |

| Items | | Relay output specifications |
|------------------------------|----------------|--|
| Output points | | 16/24/32/40/64 points |
| Output type | | Relay |
| External voltage | | DC 30V or less 240VAC or less(250VAC or less when not compatible with CE, UL, CUL standards) |
| Max. load | Resistive load | 1 output point : 2A 4 output points: 8A 8 output points: 8A |
| | Inductive load | 80VA |
| Mini. load | | DC 5V 2mA(Reference) |
| Open-circuit leakage current | | - |
| Response time | OFF→ON | About10ms |
| | ON→OFF | About10ms |
| Circuit isolation | | Mechanical isolation |
| Operation display | | LCD dot matrix lit when output is ON |

> Ethernet specifications

| Items | Specifications |
|----------------------------|--|
| Interface type | RJ45 connector |
| Data transmission speed | 100Mbps |
| Communication mode | Full/half-duplex |
| Max. transmission distance | 100m |
| Supported protocol | HCP Works 2 connection, Socket communication, simple communication, FTP server |
| Transmission medium | Cat.5E twisted pair cables |

> RS485 specifications

| Items | Specifications |
|----------------------------|--|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Modbus RTU master/slave Download monitoring protocol Free communication protocol |
| Isolation status | Digital isolation |
| Terminating resistor | Not built-in |

> RS232 specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RS232 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 5m |
| Supported protocol | Download monitoring protocol Free communication protocol |
| Isolation status | Non-isolated |



> Main units

| Models | Description |
|--------------|--|
| HCR8C-32MT-D | 16 input points, 16 output points, transistor output |

> Environment specifications

| Items | Specifications |
|------------------------------|--|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) or less |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power specifications

| Items | Specifications |
|--|--|
| Rated voltage | DC 24V |
| Voltage fluctuation range | -15%, +20% |
| Allowable instantaneous power-failure time | The operation of the main units will not be affected when the instantaneous power failure occurs within 5ms. |
| Output power for right extension modules | 5V/2A |
| Number of right extension modules | Up to 8 (Extension power supply not connected) |

> Performance specifications

| Items | | Specifications | |
|---------------------------------------|--|------------------------|-------------------------|
| Number of control axes | | 8 axes | |
| Pulse output form | | Transistor | |
| Max. frequency | | Pulse 200kHz | |
| Positioning | Pulse output mode | PULSE/SIGN mode | |
| | Positioning range | Control unit | Pulse |
| | | Positioning range | -2147483648~+2147483647 |
| | Speed instruction | Speed instruction unit | pps |
| | | Base speed | 0~200Kpps |
| | | Max. speed | 1pps~200Kpps |
| | | Homing return speed | 1pps~200Kpps |
| | | Creeping speed | 1pps~200Kpps |
| | | Acceleration time | 0~32767ms |
| | | Deceleration time | 0~32767ms |
| Acceleration/ deceleration processing | Trapezoidal acceleration /deceleration | | |
| Interpolation function | N/A | | |

> Input specifications

| Items | | Specifications | |
|---------------------------|-------------|---|----------------|
| Input points | | 16 points (X000~X017) | |
| Input form | | NPN/PNP | |
| Input voltage | All inputs | DC 24V±10% | |
| Input resistance | All inputs | 2.7kΩ | |
| Input current | All inputs | 8.5mA/DC 24V | |
| Input sensitivity current | On-current | All inputs | 4.03mA or more |
| | OFF-current | All inputs | 3.06mA or less |
| Input response time | At ON | All inputs | 2.5μs or less |
| | At OFF | All inputs | 2.5μs or less |
| Input signal form | All inputs | No voltage contact input, NPN/PNP open collector transistor | |
| Circuit isolation | All inputs | Optocoupler isolation | |
| Input operation display | - | LED lit when input is ON | |

> Output specifications

| Items | | Specifications | |
|------------------------------|----------------|--|---|
| Output points | | 16 points | |
| Output type | | Transistor/NPN (PNP type needs to be customized) | |
| External voltage | | All outputs | DC 5~30V |
| Max. load | Resistive load | All outputs | 0.5A/1 point The total load current of resistance load per common terminal should be the following: - 1 output point:0.5A - 4 output points:0.8A - 8 output points:1.6A |
| | Inductive load | All outputs | 12W/DC 24V |
| Open-circuit leakage current | | All outputs | 0.1mA or less/DC 30V |
| On-voltage drop | | All outputs | 1.5V or less |
| Response time | OFF→ON | Y000~Y007 | 2.5μs or less/10mA or less(DC 5~24V) |
| | | Y010 or more | 0.2ms or less/200mA or less(at 24VDC) |
| | ON→OFF | Y000~Y007 | 2.5μs or less/10mA or less(DC 5~24V) |
| | | Y010 or more | 0.2ms or less/200mA or less(at 24VDC) |
| Circuit isolation | | All outputs | Optocoupler isolation |
| Output operation display | | - | LED lit when optocoupler is driven |

> Ethernet specifications

| Items | specifications |
|----------------------------|---|
| Interface type | connector |
| Data transmission speed | 100/10Mbps |
| Communication mode | Full/Half-duplex |
| Max. transmission distance | 100m |
| Supported protocol | Download monitoring protocol Modbus TCP/IP slave |
| Transmission medium | Cat.5E twisted pair cables |

> RS485 specifications

| Items | specifications |
|----------------------------|--|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Modbus RTU master/slave Download monitoring protocol Free communication protocol |
| Isolation status | Digital isolation |
| Terminating resistor | Not built-in |

> RS232 specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RS232 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 5m |
| Supported protocol | Download monitoring protocol Free communication protocol |
| Isolation status | Digital isolation |

> CAN specifications

| Items | Specifications |
|----------------------------|--|
| Data transmission speed | Max.1Mbps |
| Communication mode | Half-duplex |
| Max. transmission distance | 2.5km (The actual transmission distance is related to the baud rate) |
| Supported protocol | CANOpen |
| Isolation status | Digital isolation |



> Main units

| Models | Description |
|-----------------|--|
| HCR8P-32MT/R-A | 16 input points, 16 output points, transistor/relay output |
| HCR8P-48MT/R-A | 24 input points, 24 output points, transistor/relay output |
| HCR8P-64MT/R-A | 32 input points, 32 output points, transistor/relay output |
| HCR8P-80MT/R-A | 40 input points, 40 output points, transistor/relay output |
| HCR8P-128MT/R-A | 60 input points, 60 output points, transistor/relay output |

> Environment specifications

| Items | Specifications |
|------------------------------|--|
| Working temperature | 0~55°C |
| Storage temperature | -25~70°C (No condensation) |
| Relative humidity | 10%~95% (No condensation) |
| Working altitude | 2000m Max. |
| Electromagnetic interference | EFT 2KV (Power cable, signal cable) |
| Vibration | 5~8.4Hz, amplitude 3.5mm, 8.4~150Hz, Acceleration 9.8m/s ² , scan at a rate of one multiplication frequency per minute, ten times in each direction (X-, Y-, and Z-axis directions) |
| Impact (collision) | 147m/s ² , three times in each direction (X-, Y-, and Z-axis directions) |
| Pollution level | Pollution degree 2 |
| Protection level | IP20 |
| Cooling method | Natural air cooling |
| Installation method | DIN rail mounting 35mm |

> Power specifications

| Items | Specifications |
|--|--|
| Input voltage | AC 100~240V 50/60Hz |
| Power fuse | 250V 3.15A time-delay fuse |
| Power efficiency | 80% |
| Allowable instantaneous power-failure time | The operation of the main units will continue when the instantaneous power failure occurs within 10ms. When the voltage is 200VAC, it can be changed to 10-100ms by user program |
| Output voltage | External 24VDC power: 24V/0.8A |
| Output power for right extension modules | 5V/2A 24V/0.8A |
| Number of right extension modules | Up to 8 (Extension power supply not connected) |

> Performance specifications

| Items | | Specifications | |
|---------------------------------------|-------------------|--|-------------------------|
| Number of control axes | | 8 axes | |
| Pulse output form | | Transistor | |
| Max. frequency | | Pulse 200kHz | |
| Positioning | Pulse output mode | | PULSE/SIGN mode |
| | Positioning range | Control unit | Motor unit system |
| | | Positioning range | -2147483648~+2147483647 |
| | Speed instruction | Speed instruction unit | pps |
| | | Base speed | 0~200Kpps |
| | | Max. speed | 1pps~200Kpps |
| | | Homing return speed | 1pps~200Kpps |
| | | Creeping speed | 1pps~200Kpps |
| | | Acceleration time | 0~32767ms |
| | | Deceleration time | 0~32767ms |
| Acceleration/ deceleration processing | | Trapezoidal acceleration /deceleration | |
| Interpolation function | | N/A | |

> Input specifications

| High-speed input | | Specifications | |
|---------------------------|-------------|-----------------------------------|----------------|
| Input points | | 16 points (X000~X017) | |
| Input form | | NPN/PNP | |
| Input voltage | All inputs | DC 24V±10% | |
| Input resistance | All inputs | 2.7kΩ | |
| Input current | All inputs | 8.5mA/DC 24V | |
| Input sensitivity current | ON-current | All inputs | 4.03mA or more |
| | OFF-current | All inputs | 3.06mA or less |
| Input response frequency | All inputs | 200kHz | |
| Input signal form | All inputs | NPN/PNP Open collector transistor | |
| Circuit isolation | All inputs | Optocoupler isolation | |
| Input operation display | - | LEDlit when input is ON | |

| Low-speed input | | Specifications | |
|---------------------------|-------------|-----------------------------------|----------------|
| Input points | | X020 or more | |
| Input form | | NPN/PNP | |
| Input voltage | All inputs | DC 24V±10% | |
| Input resistance | All inputs | 4.3kΩ | |
| Input current | All inputs | 5.3mA/DC 24V | |
| Input sensitivity current | ON-current | All inputs | 2.13mA or more |
| | OFF-current | All inputs | 1.8mA or less |
| Input response frequency | All inputs | 5kHz | |
| Input signal form | All inputs | NPN/PNP Open collector transistor | |
| Circuit isolation | All inputs | Optocoupler isolation | |
| Input operation display | - | LEDlit when input is ON | |

> Output specifications

| Items | | Transistor output specifications | |
|------------------------------|----------------|--|---|
| Output points | | 16/24/32/40/64 points | |
| Output form | | Transistor/NPN (PNP type needs to be customized) | |
| External voltage | | All outputs | DC 5~30V |
| Max. load | Resistive load | All outputs | 0.5A/1 point The total load current of resistance load per common terminal should be the following: - 1 output point:0.5A - 4 output points:0.8A - 8 output points:1.6A |
| | Inductive load | All outputs | 12W/DC 24V |
| Open-circuit leakage current | | All outputs | 0.1mA or less/DC 30V |
| ON-voltage drop | | All outputs | 1.5V or less |
| Response time | OFF→ON | Y000~Y007 | 2.5μs or less/10mA or more(DC 5~24V) |
| | | Y0010 or more | 0.2ms or less/200mA or more(at 24VDC) |
| | ON→OFF | Y000~Y007 | 2.5μs or less/10mA or more(DC 5~24V) |
| | | Y010 or more | 0.2ms or less/200mA or more(at 24VDC) |
| Circuit isolation | | All outputs | Optocoupler isolation |
| Output operation display | | - | LED lit whdn optocoupler is driven |

| Items | | Relay output specifications | |
|------------------------------|--------|--|----------------------|
| Output points | | 16/24/32/40/64 points | |
| Output type | | Relay | |
| External voltage | | DC 30V or less AC 240V or less | |
| Max. load | | 2A/1 point The total load current of resistance load per common terminal should be the following: · 4 output points/common terminal :8A or less · 8 output points/common terminal :8A or less | |
| Open-circuit leakage current | | - | |
| Response time | OFF→ON | About 10ms | |
| | ON→OFF | About 10ms | |
| Circuit isolation | | All outputs | Mechanical isolation |
| Output operation display | | The corresponding LED dots are on when the output is ON | |

> Ethernet specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RJ45 connector |
| Data transmission speed | 100/10Mbps |
| Communication mode | Full/Half-duplex |
| Max. transmission distance | 100m |
| Supported protocol | Download monitoring protocol Modbus TCP/IP slave |
| Transmission medium | Cat.5E twisted pair cables |

> RS485 Specifications

| Items | Specifications |
|----------------------------|--|
| Interface type | RS485 |
| Data transmission speed | Max.115200bps |
| Communication mode | Half-duplex |
| Max. transmission distance | 100m (At a specific baud rate) |
| Supported protocol | Modbus RTU master/slave Download monitoring protocol Free communication protocol |
| Isolation status | Digital isolation |
| Terminating resistor | Not built-in |

> RS232 Specifications

| Items | Specifications |
|----------------------------|---|
| Interface type | RS232 |
| Data transmission speed | Max.115200bps |
| Communication mode | Full-duplex |
| Max. transmission distance | 5m |
| Supported protocol | Download monitoring protocol Free communication protocol |
| Isolation status | Digital isolation |

> CAN Specifications

| Items | Specifications |
|----------------------------|--|
| Data transmission speed | Max.1Mbps |
| Communication mode | Half-duplex |
| Max. transmission distance | 2.5km (The actual transmission distance is related to the baud rate) |
| Supported protocol | CANOpen |
| Isolation status | Digital isolation |

HCA1P-series

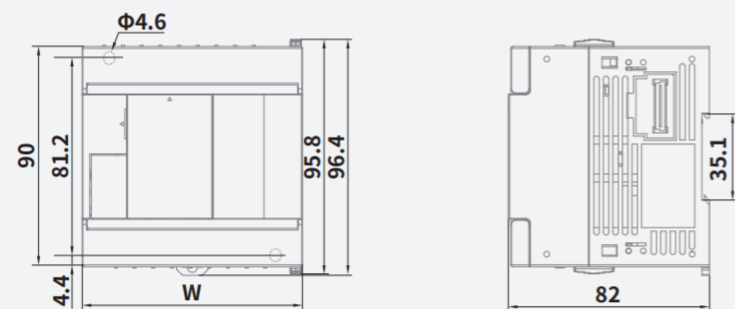
Unit: mm



| Models | Width (W) |
|---------------------|-----------|
| HCA1P-8X6YT/R-A/D | 60.5 |
| HCA1P-12X8YT/R-A/D | 75.5 |
| HCA1P-16X14YT/R-A/D | 100 |

HCA2P/R2-series

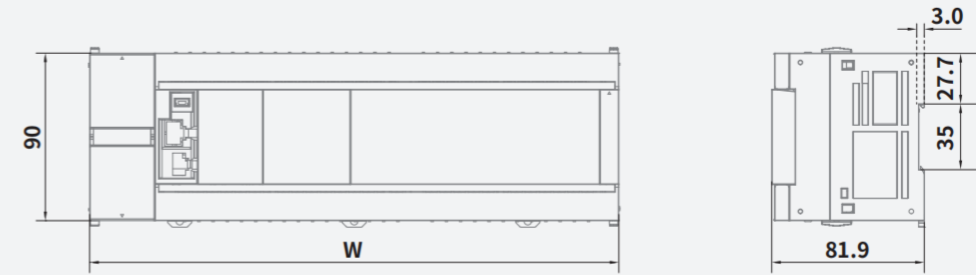
Unit: mm



| Models | Width (W) | Models | Width (W) |
|---------------------|-----------|---------------|-----------|
| HCA2P-14X10YT/R-A/D | 90 | HCR2-40MT/R-A | 130 |
| HCA2P-24X16YT/R-A/D | 130 | HCR2-60MT/R-A | 175 |
| HCA2P-36X24YT/R-A/D | 175 | | |

HCR8A/R8P- series

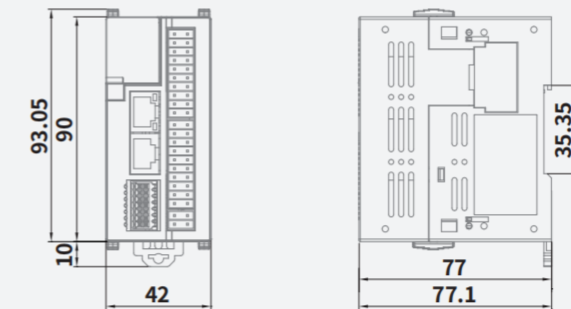
Unit: mm



| Models | HCR8P-32MT/R-A | HCR8P-48MT/R-A | HCR8P-64MT/R-A | HCR8P-80MT/R-A | HCR8P-128MT/R-A |
|------------|----------------|----------------|----------------|----------------|-----------------|
| Dimensions | HCR8A-32MT/R-A | HCR8A-48MT/R-A | HCR8A-64MT/R-A | HCR8A-80MT/R-A | HCR8A-128MT/R-A |
| W | 151.2 | 180.7 | 218.9 | 284.1 | 352.7 |

HCR8C - series

Unit: mm



| Models |
|--------------|
| HCR8C-32MT-D |

A-SERIES UNIT LINEUP

Naming rule for HCA8C-series extension modules

HCA8C-16X16YT-A

Product name

HC HC: HCFA controller

Series name

A8 A1: Simple-type controller
A2: General purpose
A8: High-performance controller

Series models

C 空: Standard-type
P: Upgraded-type
C: Compact-type

Input points

16 16: 16 points

Input type

X X: Digital input for main units
EX: Digital input for extension modules
AD: Analog input
PT: Thermal resistance input
TC: Thermocouple input
HC: High-speed input
LC: Load cell

Output points

16 16: 16 points

Output type

Y Y: Digital output for main units
EY: Digital output for extension modules
DA: Analog output
PG: Pulse output
GM: Motion control

Output method

T R: Relay output
T: Transistor output

Power type

A D: DC power
A: AC power
N/A: None for modules

Naming rule for HCA8P-series extension modules

HCA8P-ADxx-D

Product name

HC HC: HCFA controller

Extension series name

A8P M: Standard control

Series models

AD AD: Analog input PG: Pulse output
DA: Analog output




Number of channel

xx xx: Number of channels






Power type

D D: DC power
A: AC power






Right-extension input modules

| Models | Number of channels | Input/output type | | | Connector type | External dimension WxDxH(mm) |
|--|--------------------|-------------------|--------|---|----------------|---------------------------------------|
| | | Input | Output | | | |
|  HCA8C-8EX | 8 | 8 | DC 24V | - | - | Screw terminal type 29x74.5x94.6 |
|  HCA8C-16EX | 16 | 16 | DC 24V | - | - | Screw terminal type 28.9x74.5x94.6 |
|  HCA8C-16EX-C | 16 | 16 | DC 24V | - | - | Screw terminal type 19.4x86.8x94.6 |



Right-extension output modules

| Models | Number of channels | Input/output type | | | Connector type | External dimension WxDxH(mm) |
|---|--------------------|-------------------|--------|----|----------------|---------------------------------------|
| | | Input | Output | | | |
|  HCA8C-8EYR | 8 | - | - | 8 | Relay | Screw terminal type 29x74.5x94.6 |
|  HCA8C-8EYT | 8 | - | - | 8 | Transistor | Screw terminal type 29x74.5x94.6 |
|  HCA8C-16EYR | 16 | - | - | 16 | Relay | Screw terminal type 28.9x74.5x94.6 |
|  HCA8C-16EYT | 16 | - | - | 16 | Transistor | Screw terminal type 28.9x74.5x94.6 |
|  HCA8C-16EYT-C | 16 | - | - | 16 | Transistor | Horn connector 19.4x86.8x94.6 |


Right-extension I/O modules

| Models | Total points | Input/output type | | | Connector type | External dimension WxDxH(mm) |
|--|--------------|-------------------|--------|--------------|---------------------|------------------------------|
| | | Input | Output | | | |
|  HCA8C-4EX4EYR | 8 | 4 | DC 24V | 4 Relay | Screw terminal type | 29x74.5x94.6 |
|  HCA8C-4EX4EYT | 8 | 4 | DC 24V | 4 Transistor | Screw terminal type | 29x74.5x94.6 |
|  HCA8C-8EX8EYR | 16 | 8 | DC 24V | 8 Relay | Screw terminal type | 28.9x74.5x94.6 |
|  HCA8C-8EX8EYT | 16 | 8 | DC 24V | 8 Transistor | Screw terminal type | 28.9x74.5x94.6 |
|  HCA8C-8EX8EYT-C | 16 | 8 | DC 24V | 8 Transistor | Horn connector | 19.4x86.8x94.6 |



Analog modules

| Models | Number of channels | Input specifications | | Channel data update time | External dimension WxDxH(mm) |
|--|--------------------|----------------------|------------------|--|------------------------------|
| | | Signal voltage | Signal current | | |
|  HCA8P-AD04-D | 4 | -10V~10V | 0~20mA 4~20mA | 500μs × Number of channels used × Average times | 19.4x74.8x97.8 |
|  HCA8P-DA04-D | 4 | -10V~10V | 0~20mA 4~20mA | 1ms (Regardless of the number of channels used) | 19.4x74.8x97.8 |


Pulse positioning modules

| Models | Number of channels | Input signal | Output signal | External dimension WxDxH(mm) |
|---|--------------------|--------------|---------------|------------------------------|
| | | | Pulse output | |
|  HCA8P-1PG | 1 | DC 24V ±10% | DC 5~24V | 19.4x74.9x95.7 |

Terminal conversion modules

| Models | Type | Functions | External dimension WxDxH(mm) |
|---|-------------------|---|------------------------------|
|  HCA8C-CBR | Relay output | Realize the conversion between Horn terminal and conventional terminal for IO modules, which is convenient for users to make wiring | 100x90x40.7 |
|  HCA8C-CBT | Transistor output | | 100x90x40.7 |

Extension conversion modules

| Models | Functions | Power signal | | External dimension |
|--|--|--------------|--------|--------------------|
| | | Input | Output | |
|  HCA8C-CNV5V-TX2N | Interface conversion and power extension | DC 24V | DC 5V | 19.5x74.9x96 |

HCA8 SERIES UNIT

DIGITAL INPUT



HCA8C-8EX
8 points digital input



HCA8C-16EX
16 points digital input



HCA8C-16EX-C
8 points digital input

DIGITAL OUTPUT



HCA8C-8EYR
8 points digital output
Relay output



HCA8C-8EYT
8 points digital output
Transistor output



HCA8C-16EYR
16 points digital output
Relay output



HCA8C-16EYT
16 points digital output
Transistor output



HCA8C-16EYT-C
16 points digital output
Transistor output

DIGITAL IN/OUT



HCA8C-4EX4EYR
4 points digital input/output
Transistor output



HCA8C-4EX4EYT
4 points digital input/output
Transistor output



HCA8C-8EX8EYR
8 points digital input/output
Transistor output



HCA8C-8EX8EYT
8 points digital input/output
Transistor output



HCA8C-8EX8EYT-C
8 points digital input/output
Transistor output

> HCA8-series Modules | Specifications

| Models | Input points | Type | Output points | Type | Connector type | I/O occupied points | DC5V power supply capacity(mA) |
|-----------------|--------------|--------|---------------|------------|---------------------|---------------------|--------------------------------|
| HCA8C-4EX4EYR | 4 | DC 24V | 4 | Relay | Hom connector | 16* | 40 |
| HCA8C-4EX4EYT | 4 | DC 24V | 4 | Transistor | Hom connector | 16* | 40 |
| HCA8C-8EX | 8 | DC 24V | - | - | Hom connector | 8 | 25 |
| HCA8C-8EYR | - | - | 8 | Relay | Hom connector | 8 | 30 |
| HCA8C-8EYT | - | - | 8 | Transistor | Hom connector | 8 | 30 |
| HCA8C-8EX8EYR | 8 | DC 24V | 8 | Relay | Hom connector | 16 | 60 |
| HCA8C-8EX8EYT | 8 | DC 24V | 8 | Transistor | Hom connector | 16 | 60 |
| HCA8C-8EX8EYT-C | 8 | DC 24V | 8 | Transistor | Screw terminal type | 16 | 60 |
| HCA8C-16EX | 16 | DC 24V | - | - | Hom connector | 16 | 30 |
| HCA8C-16EYR | - | - | 16 | Relay | Hom connector | 16 | 50 |
| HCA8C-16EYT | - | - | 16 | Transistor | Hom connector | 16 | 50 |
| HCA8C-16EX-C | 16 | DC 24V | - | - | Screw terminal type | 16 | 30 |
| HCA8C-16EYT-C | - | - | 16 | Transistor | Screw terminal type | 16 | 50 |

*Note: HCA8C-4EX4EYT; HCA8C-4EX4EYR has four input points and four output points, but it occupies eight input points and eight output points in the PLC; So pay attention to the use of input and output points when needs to connect other extension modules.

> Input specifications

| Items | Specifications |
|---------------------------|---|
| Signal voltage | DC 24V+20%-15% ,fluctuation (P-P) within 5% |
| Input resistance | 4.3kΩ |
| Signal current | 5mA / DC 24V |
| Input sensitivity current | NO 3.5mA or more |
| | OFF 1.5mA or less |
| Response time | About 10ms |
| Signal type | NPN/ PNP input |
| Circuit isolation | Optocoupler isolation |
| Operation display | LED lit when the input is ON |

> Transistor output specifications

| Items | Transistor output specifications | | |
|-----------------------|----------------------------------|--|--|
| External power supply | DC 5~30V | | |
| Max. load | Resistance load | HCA8C-16EYT | 0.1A/1 point |
| | | HCA8C-16EYT-C | 0.3A/1 point Make sure that the total load current of resistance load per common terminal (16 points) is 1.6A or less |
| | | HCA8C-8EYT, HCA8C-16EYT, HCA8C-16EYR | 0.5A/1 point The total load current of resistance load per common terminal (16 points) should be the following: 4 points/common: 0.8A; 8 points: 1.6A |
| | Inductive load | HCA8C-8EYR | 1A/1 point Make sure that the total load current of resistance load per common terminal (4 points) is 2A or less |
| | | HCA8C-16EYT | 2.4W/1 point (DC 24V) |
| | | HCA8C-16EYT-C | 7.2W/1 point (DC 24V) |
| | Lamp load | HCA8C-8EYT, HCA8C-16EYT, HCA8C-16EYR | 12W/1 point (DC 24V) |
| | | HCA8C-16EYT | 0.3W/1 point (DC 24V) |
| | | HCA8C-16EYT-C | 1W/1 point (DC 24V) |
| | | HCA8C-8EYT, HCA8C-16EYT, HCA8C-16EYR | 1.5W/1 point (DC 24V) |
| | HCA8C-8EYR | 3W/1 point (DC 24V) | |
| | Open-circuit leakage current | 0.1WmA or less/DC 30V | |
| ON-voltage | 1.5V | | |
| Response time | OFF-ON | Extension modules | 0.2ms or less/100mA(DC 24V) |
| | ON-OFF | Extension modules | 0.2ms or less/100mA(DC 24V) |
| Circuit isolation | Optocoupler isolation | | |
| Operation display | Extension modules | LED lit when the optocoupler is driven | |

> Relay output specifications

| Items | Specifications | | |
|------------------------------|-------------------------------------|-------------|---|
| External power supply | DC 30V or less, AC 250V or less | | |
| Max. load | Resistance load | HCA8C-16EYT | 2A/1 point Make sure that the total load current of resistance load per common terminal (16 points) is 8A or less |
| | | HCA8C-16EYR | |
| | Inductive load | HCA8C-16EYT | 80VA Please refer to the user manual (item 622) for the life-expectancy standard when inductive load is connected In addition, please refer to the user manual (item 624) for theprecaution on external wiring |
| | | HCA8C-16EYR | |
| Mini. load | DC 5V 2mA (Reference) | | |
| Open-circuit leakage current | - | | |
| Response time | OFF-ON | About10ms | |
| | ON-OFF | About10ms | |
| Circuit isolation | Mechanical isolation | | |
| Operation display | LED lit when the relay is energized | | |

ANALOG INPUT



HCA8P-AD04-D

4-ch analog input

Differential/single-ended input

Input voltage range: -10~10V

Input current range: 0~20mA, 4~20mA

ANALOG OUTPUT



HCA8P-DA04-D

4-ch analog output

Single-ended output

Output voltage range: -10~10V

Output current range: 0~20mA, 4~20mA

PULSE POSITIONING MODULE



HCA8P-1PG

Single channel pulse output

Built-in T-shaped acceleration and deceleration function

Multiple positioning control methods

TERMINAL CONVERSION



HCA8C-CBR/CBT

Transistor/relay output

Conversion of horn and conventional terminal

EXTENSION CONVERSION



HCA8C-CNV5V-TX2N

Extension for IO module connector

24VDC power supply extension

Power specifications

| Items | Specifications |
|--------------------------------------|---|
| A/D conversion circuit driving power | DC 24V±10% 100mA (24VDC needs to be supplied from the terminal block) |
| CPU driving power | DC 5V 100mA (Supplied from the main unit) |

Analog input module — Performance specifications

| Items | Voltage input | Current input |
|---------------------|---|--|
| Analog input range | DC -10V~+10V | DC 0~20mA, 4~20mA |
| Max. absolute input | ±15V | 0~30mA |
| Digital output | Decimal | Decimal |
| Resolution | 0.32mV (20Vx1/64000) 2.5mV (20Vx1/8000) | 1.25µA (40mAx1/32000) 5.00µA (40mAx1/8000) |
| Overall accuracy | Ambient temperature 25°C±5°C Full scale 20V±0.3% (±60mV) Ambient temperature 0°C~55°C Full scale 20V±0.3% (±100mV) | Ambient temperature 25°C±5°C Full scale 20mA±0.3% (±100µA) Ambient temperature 0°C~55°C Full scale 20mA±0.3% (±200µA) |
| AD conversion time | 500µs×Number of channels used×Average times | |

Analog output module — Performance specifications

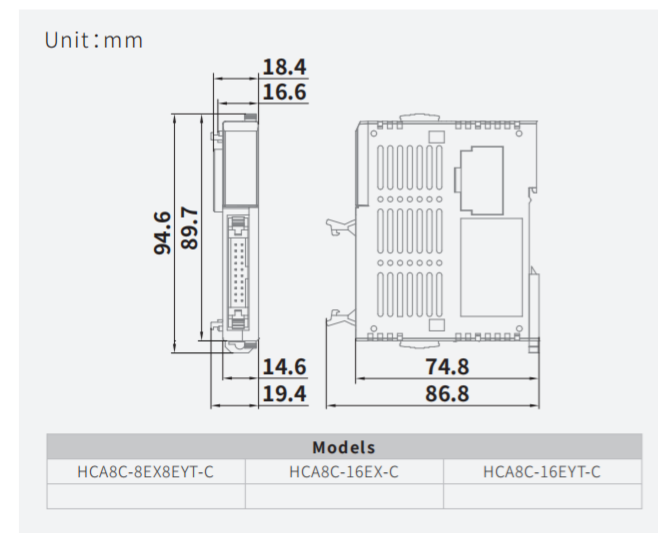
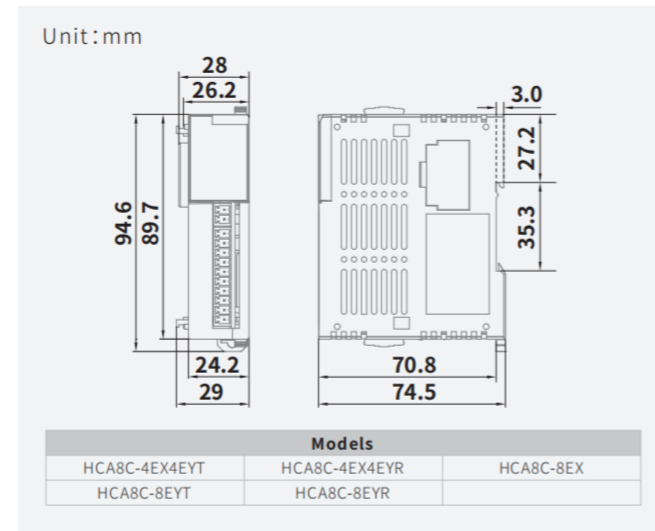
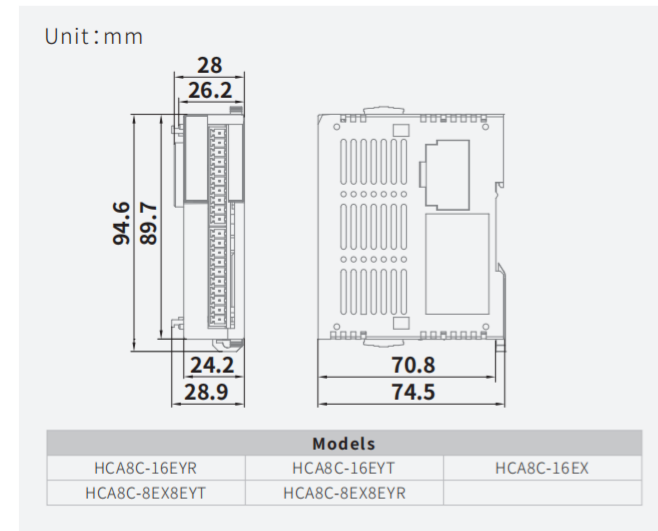
| Items | Voltage output | Current output |
|---------------------|--|--|
| Analog output range | DC -10~+10V | DC 0~20mA, 4~20mA |
| Offset value | -10~+9V | 0~17mA |
| Gain value | -9~+10V | 3~30mA |
| Digital input | 16 bits, binary, with sign | 15 bits, binary |
| Resolution | 0.32mV (20Vx1/64000) | 0.63µA (20mA/32000) |
| Overall accuracy | Ambient temperature 25°C±5°C Full scale 20V±0.3% (±60mV) Ambient temperature 0°C~55°C Full scale 20V±0.3% (±100mV) | Ambient temperature 25°C±5°C Full scale 20mA±0.3% (±100µA) Ambient temperature 0°C~55°C Full scale 20mA±0.3% (±200µA) |
| D/A conversion time | 1ms (Not related to the number of selected channels) | |
| Insulation method | The photocoupler is used to insulate the analog input area from the PLC. • The DC/DC converter is used to insulate the power supply line from the analog input area. • Channels are not insulated from each other. | |
| Occupied points | 8 points (can be either inputs or outputs) | |

Pulse positioning module — Performance Specifications

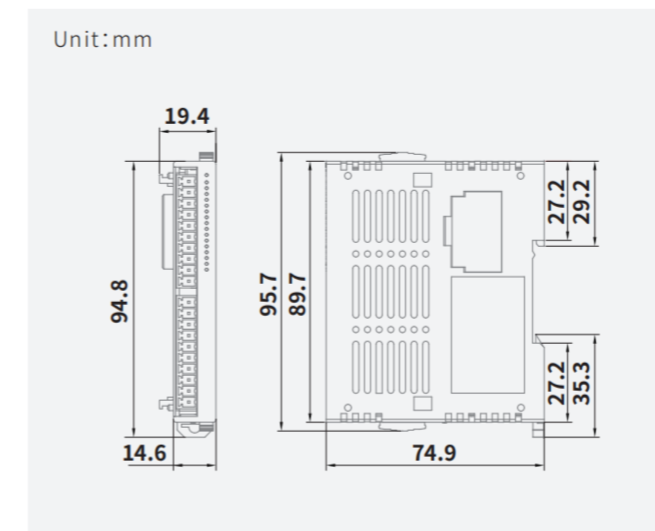
| Items | Specifications | |
|------------------------|--|--|
| Power supply | Input signal | DC 24V±10%, Current consumption 40mA or less |
| | Output signal | Pulse output: DC 5~24V, current consumption 35mA or less CLR output: DC 5~24V, current consumption 20mA or less |
| Number of control axes | 1 | |
| Positioning operation | Method | Incremental/absolute value |
| | Unit | PLS, µm, 10 ⁻⁴ inch, mdeg |
| | Unit magnification | 1x, 10x, 100x, 300x |
| | Range | -2,147,483,648 to 2,147,483,647 PLS |
| | Operation speed unit | Hz, cm/min, inch/min, 10deg/min |
| Occupied points | Output frequency | 1Hz~200kHz |
| | Acceleration and deceleration settings | Trapezoidal acceleration/ deceleration: 1~32767 ms |
| Occupied points | 8 points (can be either inputs or outputs) | |

HCA8-SERIES UNIT DIMENSION DRAWING

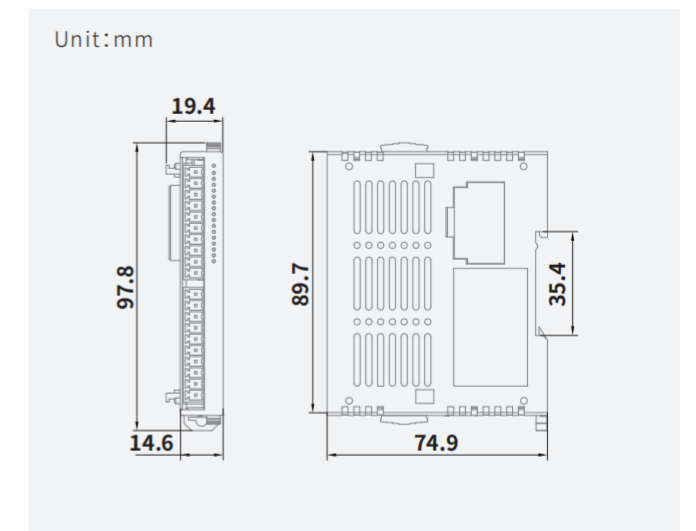
HCA8C-series I/O extension modules



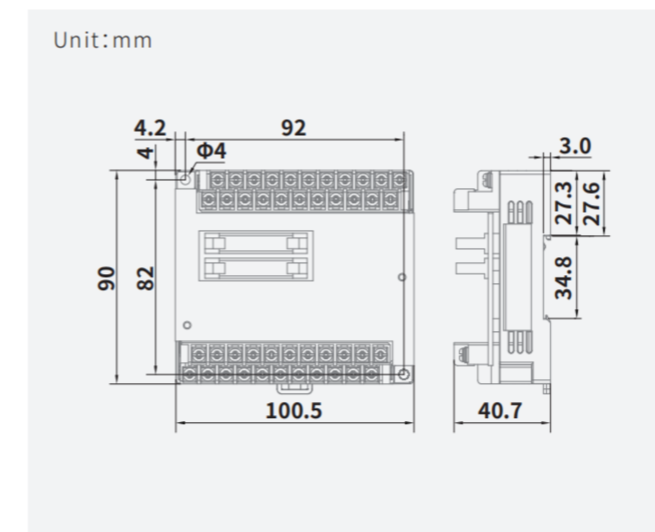
HCA8P-1PG



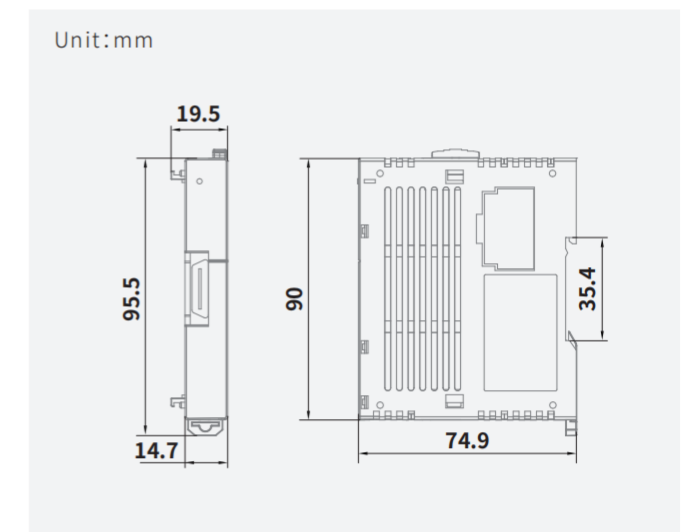
HCA8P-AD/DA04-D

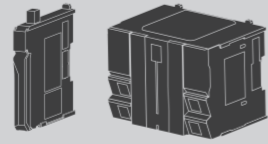


HCA8C-CBR/CBT



HCA8C-CNV5V-TX2N





Selection Guide for HCFA Control Products

CPU module / I/O module / HCNXE-series digital module EtherCAT
 coupler module / Matching table for CPU units and modules
 Power module / special module / terminal conversion module / extension conversion module



CPU units

| Models | Recommended number of axes | Specifications | | | | Communication protocol | | | | | | Page | |
|------------------|----------------------------|------------------------|-----------|-----------|------------------|------------------------|------------|------------|---------|----------|--------|------|------------|
| | | Rated voltage | Input | Output | High-speed input | High-speed output | Modbus TCP | Modbus RTU | CANOpen | EtherCAT | OPC UA | | EtherNetIP |
| HCQ0-1100-D | 8 | DC 24V | - | - | - | - | ✓ | ✓ | ✓ | ✓ | | | 7 |
| HCQ0-1200-D | 16 | | - | - | - | - | ✓ | ✓ | ✓ | ✓ | | | 7 |
| HCQ1-1200-D | 16 | | 16 points | 16 points | 16 points | 16 points | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 9 |
| HCQ1-1300-D | 32 | | 16 points | 16 points | 16 points | 16 points | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 9 |
| HCQ5-1400-A*1 | 64 | AC 110~220V 50/60Hz | - | - | - | - | ✓ | ✓ | | ✓ | ✓ | ✓ | 11 |
| HCQ5-1500-A*1 | 128 | | - | - | - | - | ✓ | ✓ | | ✓ | ✓ | ✓ | 11 |
| HC-IQ8560-1050-D | - | DC 24V | 2 points | 2 points | - | - | ✓ | ✓ | | | | | 15 |

EtherCAT coupler module

| Models | Specifications | Page |
|-------------|---|------|
| HCQX-EC01-D | The coupler module connects the EtherCAT master/slave to the EtherCAT terminal | 26 |
| HCQX-EC02-D | The coupler module connects the EtherCAT master/slave to the EtherCAT terminal, support SLOT node | 26 |

Power module

| Models | Specifications | Page |
|-------------|--|------|
| HCQX-PD01-A | AC 100~240V, AC power module, 50/60Hz, Can connect on the left side of Q5-series | 26 |

I/O module*2

| Models | Specifications | | | | | Page | |
|-----------------------|----------------|-----------|---------|-----------|-----|-----------|----|
| | Rated voltage | Input | | Output | | | |
| Digital input module | DC 24V | 16 points | NPN/PNP | - | NPN | 27 | |
| | DC 24V | 16 points | | | | 27 | |
| | DC 24V | 32 points | | | | 27 | |
| Digital output module | DC 24V | - | NPN/PNP | 16 points | NPN | 27 | |
| | DC 24V | - | | | | 16 points | 27 |
| | DC 24V | - | | | | 32 points | 27 |
| Digital I/O module | DC 24V | 8 points | NPN/PNP | 8 points | NPN | 27 | |
| | DC 24V | 8 points | | | | 8 points | 27 |
| | DC 24V | 16 points | | | | 16 points | 27 |

Special module

| Models | Specifications | Page |
|--------------------------------|---|------|
| Analog input module | HCQX-AD04-D 4-channel analog input module, support 0~10V, -10~10V, -5~5V, 0~5V 1~5V 0~20mA, 4~20mA | 29 |
| Analog output module | HCQX-DA04-D 4-channel analog output module, support 0~10V, -10~10V, -5~5V, 0~5V 1~5V 0~20mA, 4~20mA | 29 |
| Temperature measurement module | HCQX-TS04-D 4-channel temperature acquisition, support common thermocouple and thermal resistance sensors on the market, temperature range Two-wire sensor*3: -200~1370°C Three-wire sensor*3: -200~850°C | 29 |
| High-speed counter module | HCQX-HC04-D2 4-channel high-speed counter module, support pulse + direction, up to 200kHz | 31 |
| Stepping drive module | HCQX-ST1505-D2 20-50VDC single-axis stepping drive module, supporting control modes such as PP, PV, CSP, HM, etc | 31 |

*1The power supply module needs to be connected to the left-side of Q5-series main units, otherwise it will not work normally;
 *2-D2 models is an upgraded version of the corresponding -D models, there is no difference in function, so it is recommended to buy the D2 models;
 *3The specific temperature range may vary depending on the sensor type.

Control topology

Q-series PAC

IQ8000-series IPC

Q-series I/O

Distributed I/O

A-series PLC

R-series PLC

A-series I/O

Product list

HCNXE-series digital module

| Models | Specifications | | | | Page | |
|----------------|----------------|-----------|---------|-----------|------------------------------|----|
| | Rated voltage | Input | Output | | | |
| HCNXE-ID32-D | DC 24V | 32 points | NPN/PNP | - | 39 | |
| HCNXE-OD32-D | | - | | 32 points | NPN/built-in common terminal | 39 |
| HCNXE-MD1616-D | | 16 points | | 16 points | | 39 |
| HCNXE-MD2408-D | | 24 points | | 8 points | | 39 |

Accessories

| Type | Model name | Specifications | Page |
|----------------------|-------------|--|------|
| HCQ1 button battery | HCQ1-BAT | HCQ1/HCQ5 button battery, the life expectancy in normal use is 5 years | - |
| HCQ0 button battery | HCQ0-BAT | HCQ0 button battery, the life expectancy in normal use is 5 years | - |
| Terminal module | HCQX-END | Connected to the end of the modules | 26 |
| | HCQX-END02 | | 26 |
| 18PIN terminal block | HCQXT-18P | Removable terminal block | - |
| Cables | SV-ECAT-xxM | EtherCAT cables | - |

CPU units

| Models | Specifications | | | | Page | |
|------------------------|----------------|-------|----------------|-------|------------------|----|
| | Rated voltage | Input | Output | | | |
| HCA1P CPU units | | | | | | |
| HCA1P-8X6YT-A | AC 100~240V | 8 | DC 24V NPN/PNP | 6 | Transistor (NPN) | 47 |
| HCA1P-8X6YR-A | | | | Relay | 47 | |
| HCA1P-12X8YT-A | | | | 8 | Transistor (NPN) | 47 |
| HCA1P-12X8YR-A | | | | Relay | 47 | |
| HCA1P-16X14YT-A | | | | 14 | Transistor (NPN) | 47 |
| HCA1P-16X14YR-A | | | | Relay | 47 | |
| HCA1P-8X6YT-D | DC 24V | 8 | DC 24V NPN/PNP | 6 | Transistor (NPN) | 47 |
| HCA1P-8X6YR-D | | | | Relay | 47 | |
| HCA1P-12X8YT-D | | | | 8 | Transistor (NPN) | 47 |
| HCA1P-12X8YR-D | | | | Relay | 47 | |
| HCA1P-16X14YT-D | | | | 14 | Transistor (NPN) | 47 |
| HCA1P-16X14YR-D | | | | Relay | 47 | |
| HCA2P CPU Units | | | | | | |
| HCA2P-14X10YT-A | AC 100~240V | 14 | DC 24V NPN/PNP | 10 | Transistor (NPN) | 51 |
| HCA2P-14X10YR-A | | | | Relay | 51 | |
| HCA2P-24X16YT-A | | | | 16 | Transistor (NPN) | 51 |
| HCA2P-24X16YR-A | | | | Relay | 51 | |
| HCA2P-36X24YT-A | | | | 24 | Transistor (NPN) | 51 |
| HCA2P-36X24YR-A | | | | Relay | 51 | |
| HCA2P-14X10YT-D | DC 24V | 14 | DC 24V NPN/PNP | 10 | Transistor (NPN) | 51 |
| HCA2P-14X10YR-D | | | | Relay | 51 | |
| HCA2P-24X16YT-D | | | | 16 | Transistor (NPN) | 51 |
| HCA2P-24X16YR-D | | | | Relay | 51 | |
| HCA2P-36X24YT-D | | | | 24 | Transistor (NPN) | 51 |
| HCA2P-36X24YR-D | | | | Relay | 51 | |

*Will be supported.

CPU units

| Models | Specifications | | | | Communication protocol | | | Page | | |
|------------------------|----------------|--------|----------------|------------|------------------------|---------|------------------|------|----|----|
| | Rated voltage | Input | Output | Modbus TCP | Modbus RTU | CANOpen | | | | |
| HCR2 CPU units | | | | | | | | | | |
| HCR2-40MT-A | AC 100~240V | 24 | DC 24V NPN/PNP | 16 | Transistor (NPN) | ✓ | ✓ | 55 | | |
| HCR2-40MR-A | | | | Relay | ✓ | ✓ | 55 | | | |
| HCR2-60MT-A | | 36 | | 24 | Transistor (NPN) | ✓ | ✓ | 55 | | |
| HCR2-60MR-A | | | | Relay | ✓ | ✓ | 55 | | | |
| HCR8A CPU units | | | | | | | | | | |
| HCR8A-32MT-A | AC 100~240V | 16 | DC 24V NPN/PNP | 16 | Transistor (NPN) | ✓ | ✓ | 59 | | |
| HCR8A-32MR-A | | | | Relay | ✓ | ✓ | 59 | | | |
| HCR8A-48MT-A | | 24 | | 24 | Transistor (NPN) | ✓ | ✓ | 59 | | |
| HCR8A-48MR-A | | | | Relay | ✓ | ✓ | 59 | | | |
| HCR8A-64MT-A | | 32 | | 32 | Transistor (NPN) | ✓ | ✓ | 59 | | |
| HCR8A-64MR-A | | | | | Relay | ✓ | ✓ | 59 | | |
| HCR8A-80MT-A | | 40 | | 40 | Transistor (NPN) | ✓ | ✓ | 59 | | |
| HCR8A-80MR-A | | | | | Relay | ✓ | ✓ | 59 | | |
| HCR8A-128MT-A | | 64 | | 64 | Transistor (NPN) | ✓ | ✓ | 59 | | |
| HCR8A-128MR-A | | | | | Relay | ✓ | ✓ | 59 | | |
| HCR8C CPU units | | | | | | | | | | |
| HCR8C-32MT-D | | DC 24V | | 16 | DC 24V NPN/PNP | 16 | Transistor (NPN) | ✓ | ✓ | ✓* |
| HCR8P CPU units | | | | | | | | | | |
| HCR8P-32MT-A | AC 100~240V | 16 | DC 24V NPN/PNP | 16 | Transistor (NPN) | ✓ | ✓ | ✓* | 67 | |
| HCR8P-32MR-A | | | | Relay | ✓ | ✓ | ✓* | 67 | | |
| HCR8P-48MT-A | | 24 | | 24 | Transistor (NPN) | ✓ | ✓ | ✓* | 67 | |
| HCR8P-48MR-A | | | | | Relay | ✓ | ✓ | ✓* | 67 | |
| HCR8P-64MT-A | | 32 | | 32 | Transistor (NPN) | ✓ | ✓ | ✓* | 67 | |
| HCR8P-64MR-A | | | | | Relay | ✓ | ✓ | ✓* | 67 | |
| HCR8P-80MT-A | | 40 | | 40 | Transistor (NPN) | ✓ | ✓ | ✓* | 67 | |
| HCR8P-80MR-A | | | | | Relay | ✓ | ✓ | ✓* | 67 | |
| HCR8P-128MT-A | | 64 | | 64 | Transistor (NPN) | ✓ | ✓ | ✓* | 67 | |
| HCR8P-128MR-A | | | | | Relay | ✓ | ✓ | ✓* | 67 | |

I/O modules

| Models | Specification | | | | Connector type | Page | |
|--|---------------|-------|----------------|----|------------------|---------------------|----|
| | Rated voltage | Input | Output | | | | |
| Right-side extension input modules | | | | | | | |
| HCA8C-8EX | DC 5~30V | 8 | DC 24V NPN/PNP | - | - | Screw terminal type | 77 |
| HCA8C-16EX | | 16 | | - | - | Screw terminal type | 77 |
| HCA8C-16EX-C | | 16 | | - | - | Horn connector | 77 |
| Right-side extension output modules | | | | | | | |
| HCA8C-8EYR | DC 5~30V | - | - | 8 | Relay | Screw terminal type | 77 |
| HCA8C-8EYT | | - | - | 8 | Transistor (NPN) | Screw terminal type | 77 |
| HCA8C-16EYR | | - | - | 16 | Relay | Screw terminal type | 77 |
| HCA8C-16EYT | | - | - | 16 | Transistor (NPN) | Screw terminal type | 77 |
| HCA8C-16EYT-C | | - | - | 16 | Transistor (NPN) | Horn connector | 77 |
| Right-side extension I/O modules | | | | | | | |
| HCA8C-4EX4EYR | DC 5~30V | 4 | DC 24V NPN/PNP | 4 | Relay | Screw terminal type | 78 |
| HCA8C-4EX4EYT | | 4 | | 4 | Transistor (NPN) | Screw terminal type | 78 |
| HCA8C-8EX8EYR | | 8 | | 8 | Relay | Screw terminal type | 78 |
| HCA8C-8EX8EYT | | 8 | | 8 | Transistor (NPN) | Screw terminal type | 78 |
| HCA8C-8EX8EYT-C | | 8 | | 8 | Transistor (NPN) | Horn connector | 78 |

Special modules

| Models | Specifications | Page |
|--------------|---|------|
| HCA8P-AD04-D | 4-channel analog input module, 12-bit resolution | 81 |
| HCA8P-DA04-D | 4-channel analog output module, 12-bit resolution | 81 |
| HCA8P-1PG | Single-channel incremental/absolute pulse output module | 81 |

Terminal conversion module/extension conversion module

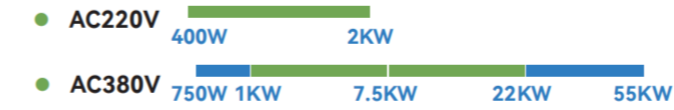
| Models | Specifications | Page |
|------------------|---|------|
| HCA8C-CBR | Relay output type, realize the conversion of horn terminal and conventional terminal of IO modules | 81 |
| HCA8C-CBT | Transistor output type, realize the conversion of horn terminal and conventional terminal of IO modules | 81 |
| HCA8C-CNV5V-TX2N | Extension IO module connector and 24VDC extension power supply | 81 |

Matching table for CPU units and modules

| Models | CPU | HCA1P | HCA2P | HCR1 | HCR2 | HCR8A | HCR8C | HCR8P |
|-----------------|---|-------|-------|------|------|-------|-------|-------|
| HCA8P-AD04-D | | | | | ✓ | ✓ | ✓ | ✓ |
| HCA8P-DA04-D | | | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-4EX4EYR | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-8EX8EYT-C | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-8EX8EYR | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-8EX8EYT | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-16EX | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-8EX | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-4EX4EYT | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-16EX-C | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-16EYT-C | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-16EYT | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-8EYT | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-16EYR | | ✓ | | | ✓ | ✓ | ✓ | ✓ |
| HCA8C-POWER | Independent module, not the extension modules | | | | | | | |
| HCA8C-CBR/CBT | Independent module, not the extension modules | | | | | | | |
| HCA8P-1PG | | | | | ✓ | ✓ | ✓ | ✓ |

Y7 Smart Advanced Servo System

Abundant voltage levels and power specifications Note



Note: 0321 of the green part will be fully launched in 2023, and the blue part will be launched in Q2 of 2024

With **5S** as the design concept
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| | |
|---|--|
| 3.5Hz Speed loop response | |
| 20BIT Magnetic | 23/25BIT light weave |
| 6500 <small>Low power rpm</small> | 4000 <small>High Power rpm</small> |
| 350 <small>MAX %</small> | 300 <small>MAX %</small> |

| | | | | | | |
|-----------------------------|-----------------|-------------------|--------------------------------------|-------------------------------------|---|---------------------------------------|
| Digital quantity | 1VPP | BISS-C | Safety shutdown STO | Dynamic braking DB | Brake control and detection BD | Temperature check TD |
|-----------------------------|-----------------|-------------------|--------------------------------------|-------------------------------------|---|---------------------------------------|

