

Motion Controller



G Series and S Series



Better Life with Robots



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Guangzhou Auctech Automation Technology Limited

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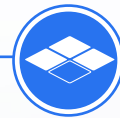
V2.2



CODESYS

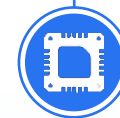
Based on CODESYS environment

Soft PLC Functions
IEC 61131-3 programming language standard
Support PLCopen standard
Integration of universal motion control, robotics,
CNC and vision solutions



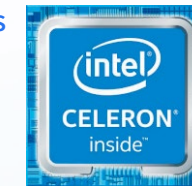
Powerful Motion Control

Supports up to 256 servo axes at
2ms scanning cycle
Supports up to
10 robot axesets at 4ms scan
cycle



Industrial processor platforms

Intel processor
Celeron and Core processors
available



Product Advantage



Supports a wide range of manipulator models

Parallel type robots
Tandem robots
XYZ Modular Robot
Tool hand free switching



High-speed bus control

EtherCAT protocol
Minimum 500 μ s for refresh time
Jitter less than 25 μ s

EtherCAT



Embedded Compact Design

Sealed and dustproof



System Architecture Diagram



OPC UA

• Control layer

EtherNet/IP

• Driver Layer

EtherCAT

EtherNet

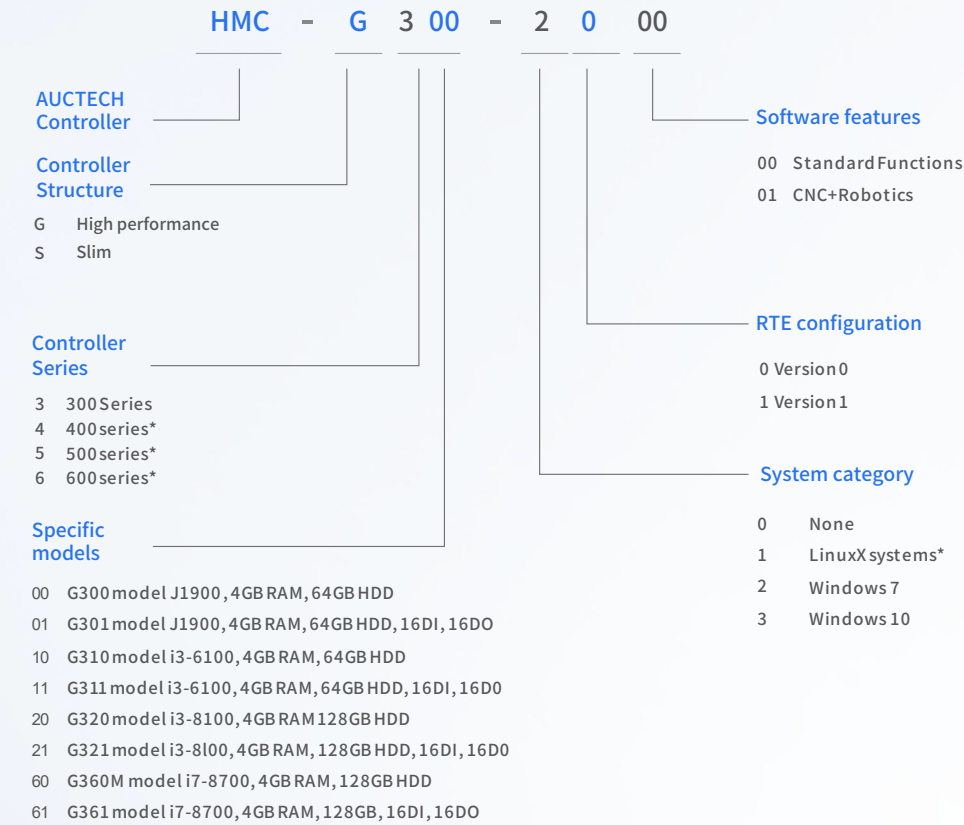


• Information layer



• Site level





Note: 1) Naming rules are only used for model resolution, and cannot be used for ordering.



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Controllers

G300 Series

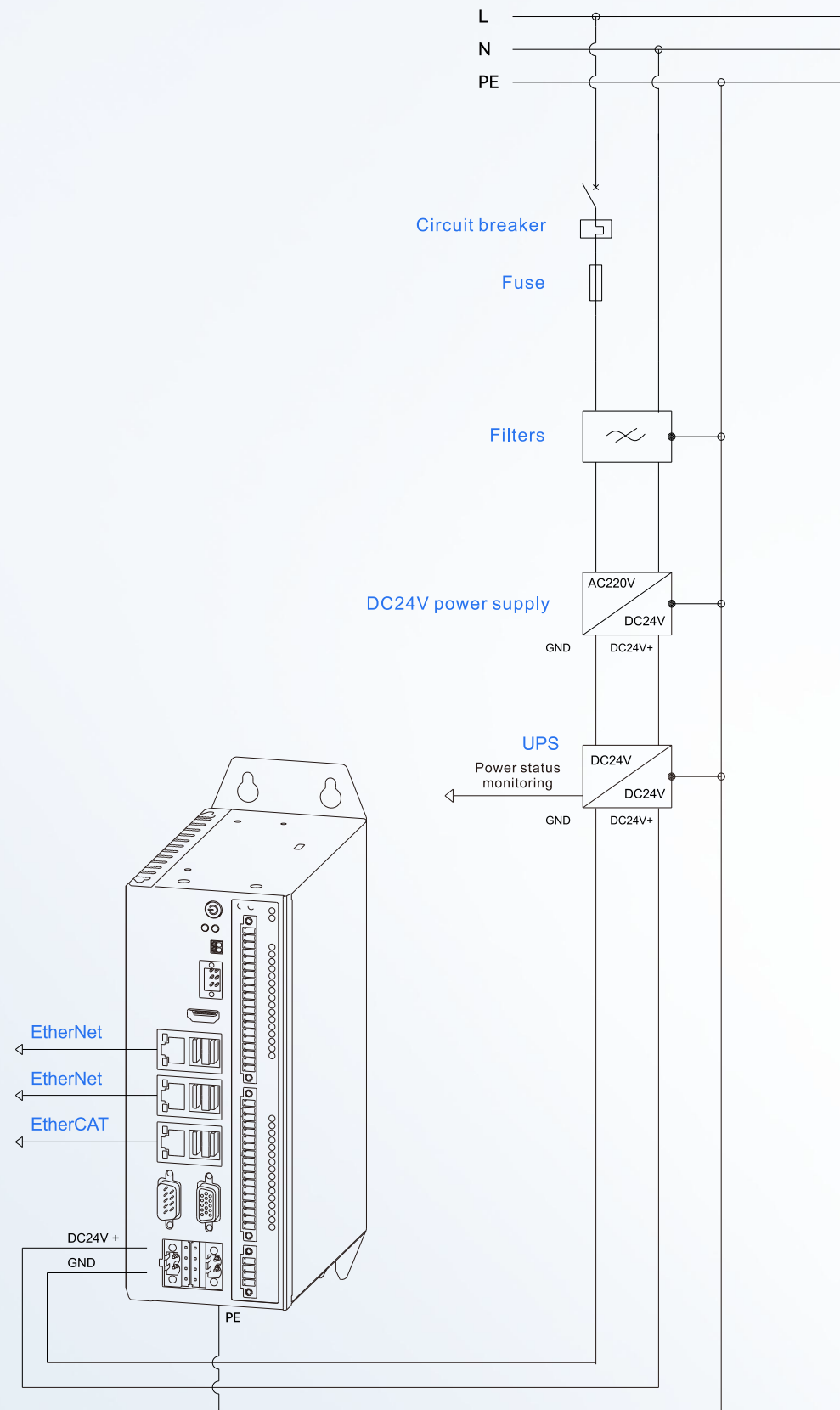


Technical Specification

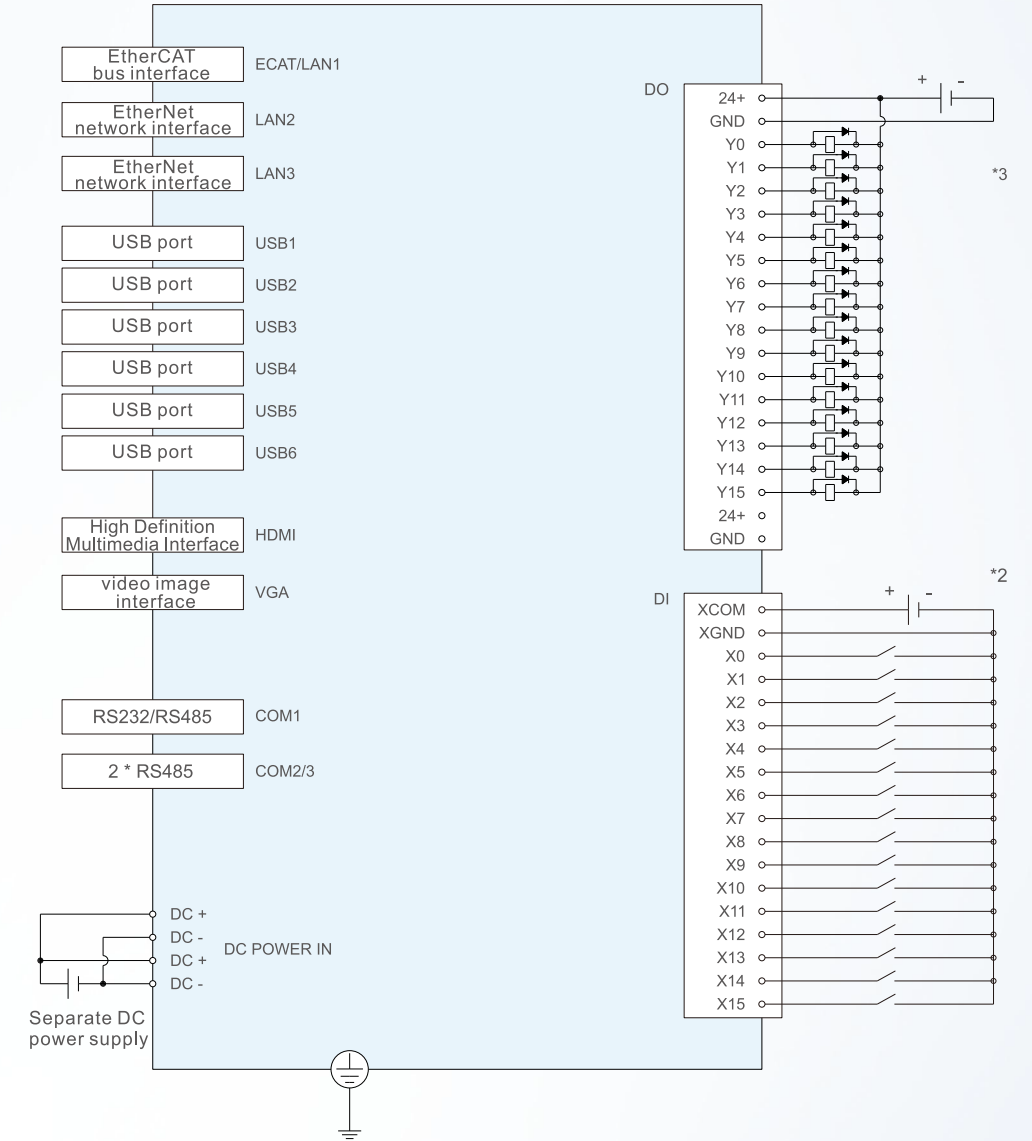
| Model | HMC-G300-2000 (HMC-G301-2000) | HMC-G310-3100 (HMC-G311-3100) | HMC-G320-3100 (HMC-G321-3100) | HMC-G360-3100 (HMC-G361-3100) |
|--|--|---|---|---|
| Operating system | Windows 7 (standard) | Windows 10 (standard) | | |
| CPU | Intel Celeron 2.0GHz | Core i3 6100 3.7GHz | Core i3 8100 3.6GHz | Core i7 8700 3.2GHz |
| Rated power consumption | 42W(45W) | 120W(125W) | 120W(125W) | 120W(125W) |
| Rated current | 1.75A(1.875A) | 5.0A(5.2A) | 5.0A(5.2A) | 5.0A(5.2A) |
| random access memory (RAM) | DDR3L-1333MHz, 4GB | DDR4-2400MHz, 4GB | DDR4-2400MHz, 4GB | DDR4-2400MHz, 4GB |
| hard drive | 64GB | 64GB | 128GB | 128GB |
| programme memory | 128M Byte | | | |
| Variable Memory | 128M Byte | | | |
| Power Down Hold Variable Memory | Variable value change save and hold data 128K; Periodic save and hold data unlimited | | | |
| At bus period 2ms. Number of servo control axes supported | 32 | 64 | 128 | 128+128 |
| Minimum Task Cycle | 500µs | | | |
| CNC Applications | Support | Support | Support | Support |
| Robot control | Support | Support | Support | Support |
| Power supply | 24VDC(-10%~10%) | 24VDC(-10%~10%) | 24VDC(-10%~10%) | 24VDC(-10%~10%) |
| I/O of the principal device | None (16DI, 16DO) | None (16DI, 16DO) | None (16DI, 16DO) | None (16DI, 16DO) |
| I/O Extended Form | Remote I/O Expansion with Coupler | | | |
| USB port | 1×USB3.0、5×USB2.0 (Built-in, USB hardware dog can be installed) | 4×USB3.0 (Built-in, USB hardware dog can be installed) | 4×USB3.0 (Built-in, USB hardware dog can be installed) | 4×USB3.0 (Built-in, USB hardware dog can be installed) |
| COM port | 1×RS232/RS485 + 2×RS485 | | | |
| Fan | None | Embedded | Embedded | Embedded |
| Working altitude | 2000m | | | |
| Electromagnetic interference | Class A | | | |
| Vibration during operation | 1.5 Grms, IEC 6006 x -2-64, random, 5 ~ 500 Hz, 1 hr/axis | | | |
| Shock at work | G10 , IEC 6006 X -2-64, half-sine, duration 11 ms | | | |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%~95% (no condensation) | | | |
| Storage environment | Storage temperature: -40°C~80°C Storage humidity: 5%-95% (no condensation) | | | |
| Protection level | IP20 | | | |
| Accreditation | CE certification | | | |

Note: Support CPU and memory customization, please contact us for details.
()Parameters for Obi I/O models

Wiring Diagram

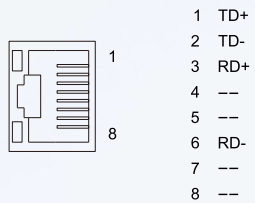


Wiring Diagram

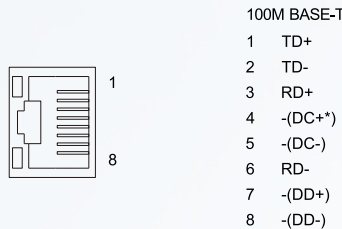


- Note: 1. This example is for HMC-G301-2000 model only, for other models, please consult the user manual for more detailed information.
2. The DI wiring in this example is NPN type wiring, if you need PNP input or passive input, please refer to the user manual for more detailed information. Note that only NPN or PNP can be selected for DI, and cannot be mixed.
3. The DO wiring in this example is NPN type wiring, if you need PNP type output, please refer to the user manual for more detailed information. Please note that only NPN or PNP can be selected for DO, and cannot be mixed.
4. Single-channel DO output, maximum withstand voltage DC30V, output current 0.5 A. Please pay attention to the matching when using external loads, otherwise it will lead to the damage of internal circuits.
5. If the output load of DO is inductive, please use it together with the continuity diode, and pay attention to the direction of current and the polarity of the continuity diode when using it, otherwise it will lead to the damage of the internal circuit.
6. There are two sets of 24V and GND pins in the DO terminal, you can connect any one of them when using. However, the total load capacity and external DC 24V power supply capacity must be matched, otherwise it may cause DO output abnormality.
7. Be sure to keep the controller DC power supply as an independent power supply, and do not share the DC power supply with other devices.
8. Always ensure that the grounding is firm and reliable.

EtherCAT network port definition

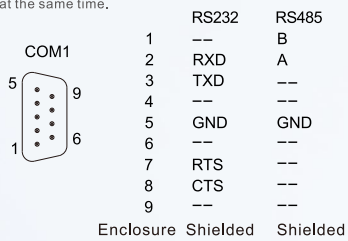


EtherCAT network port definition

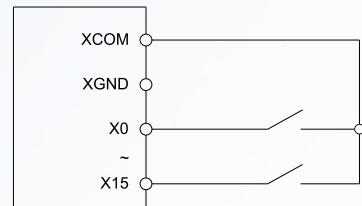


COM1 RS232 or RS485 serial communication pin definition

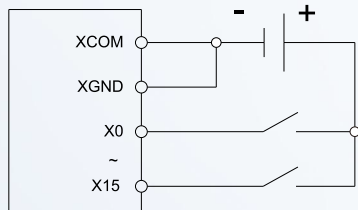
In the event of a power failure, use the dipswitch to even level select 232 or 485 communication, both protocols cannot be used at the same time.



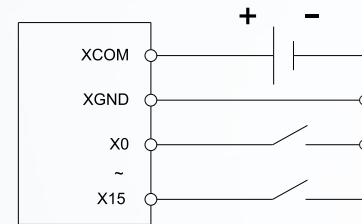
Passive input wiring



DI active input NPN type wiring

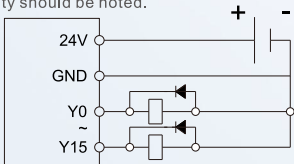


DI active input NPN type wiring



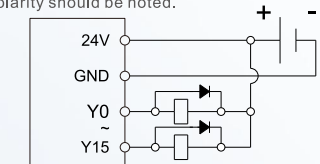
For DO output PNP type wiring, DO output PNP type wiring, in case of power outage, turn the DO output pull-out switch to the NPN terminal.

DO single channel maximum withstand voltage DC30V, although the large output current A0.5, please pay attention to load matching when using. If the load is an inductive load, it should be used in conjunction with a continuous current diode and its polarity should be noted.



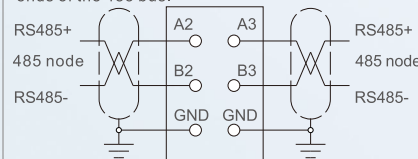
For DO output NPN type wiring, DO output NPN type wiring, in case of power outage, turn the DO output pull-out switch to the NPN terminal.

DO single channel maximum withstand voltage DC30V, although the large output current A0.5, please pay attention to load matching when using. If the load is an inductive load, it should be used in conjunction with a continuous current diode and its polarity should be noted.

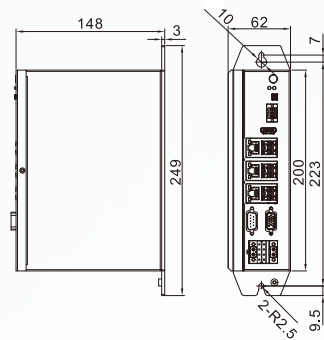


COM2/3 RS485 Communication Pin Definition

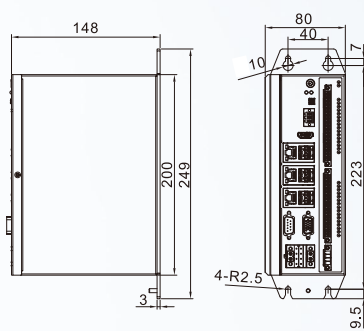
Always use twisted shielded wire and ground the shield at both ends." Note that terminating resistors are required at both ends of the 485 bus.



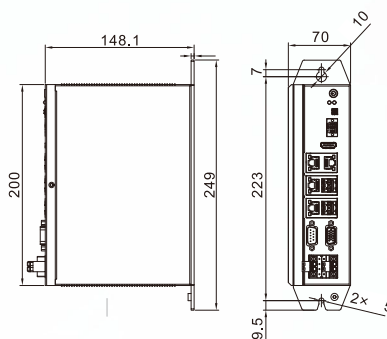
G300 Series



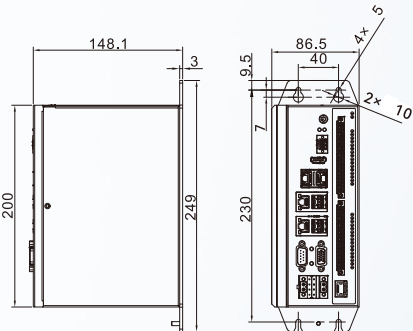
| Model | Dimensions LxWxH (mm) |
|---------------|-----------------------|
| HMC-G300-2000 | 62×200×148 |



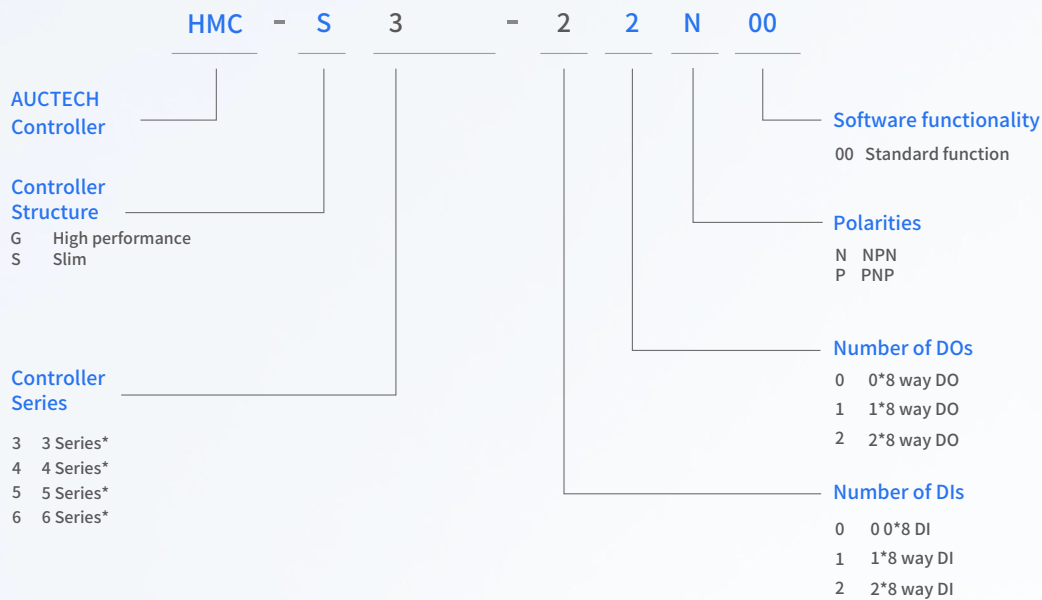
| Model | Dimensions LxWxH (mm) |
|---------------|-----------------------|
| HMC-G301-2000 | 80×200×148 |



| Model | Dimensions LxWxH (mm) |
|---------------|-----------------------|
| HMC-G310-3100 | |
| HMC-G320-3100 | 70×200×148 |
| HMC-G360-3100 | |



| Model | Dimensions LxWxH (mm) |
|---------------|-----------------------|
| HMC-G311-3100 | |
| HMC-G321-3100 | 87×200×148 |
| HMC-G361-3100 | |



Note: 1. The naming rules are only used for model resolution, and cannot be used for ordering, please consult with AUCTECH Company before ordering.
2.*Products under planning, for more information, please contact AUCTECH.



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Controllers

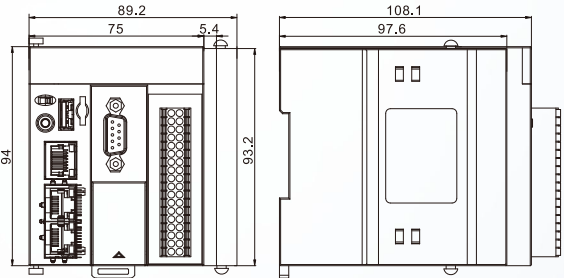
S3 Series



Technical Specification

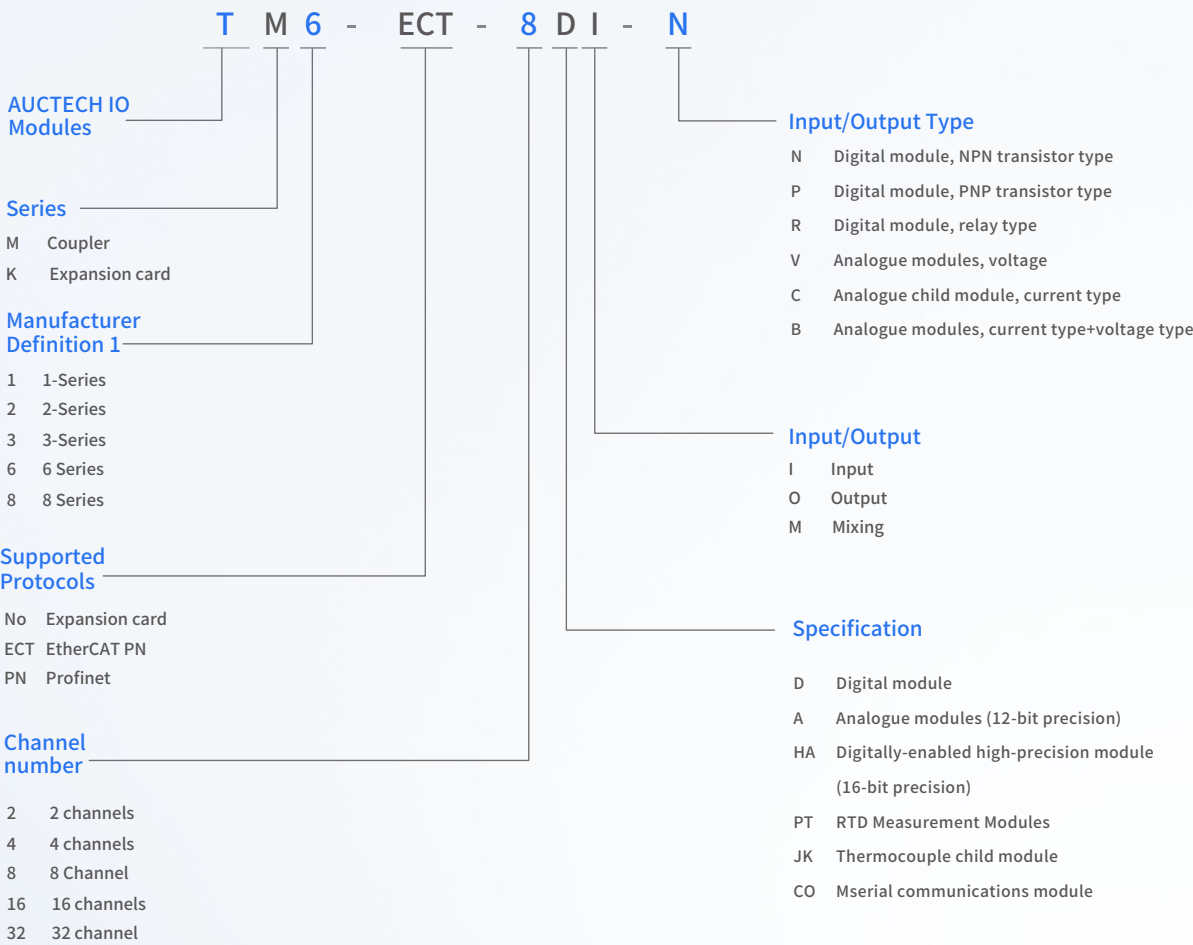
| | |
|--|---|
| Model | HMC-S3-22N00 |
| Power supply | Two sets of 24VDC (-15%-20%) |
| Rated input current (not counting I/O current) | 500mA |
| Rated power (not counting I/O) | 12W |
| Random access memory (RAM) | 1GB |
| Programme memory | 256M Byte |
| Variable memory | (Q, I, M) 512K Byte each |
| Power down hold variable memory | 2MB + 512KB (M Zone) |
| Minimum task cycle time | 1ms |
| I/O of the principal device | 16DI/16DO |
| I/O expansion form | LSB extension |
| USB port | 1×USB2.0 |
| COM interface | 3×RS485, 1×CAN |
| Working altitude | 2000m |
| EMC | Class B |
| Network port | 1×1000Mbps+2×100Mbps |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5% - 95%(no condensation) |
| Storage environment | Storage temperature: -40°C~80°C Storage humidity: 5% - 95%(no condensation) |
| Protection class | IP20 |

Dimensions



| No. | Controller model | Dimension Wx H xD(mm) |
|-----|------------------|-----------------------|
| 1 | HMC-S3-22N00 | 75×94×108 |

Note: This 1:1 controller comes with a terminal cover plate (TK6-END), please keep it in a safe place. When there is only a controller on the application site, the terminal cover plate should be installed on the right side of the controller; if there is an expansion module installed on the right side of the controller, the terminal cover plate should be installed on the right of the last expansion module, otherwise the system will not operate normally.



Note: The naming rules are only used for model resolution, and cannot be used for ordering, please consult AUCTECH before ordering.



TM6-ECT

EtherCAT Coupler Modules



Product Features

- 2 RJ45 interfaces,100Mbit/s
- Stand-alone as EtherCAT slave, expandable with 16 KCK6 modules
- The body comes with DI points
- Response time is less than 2ms to meet the needs of fast acquisition

Technical Specification

| | |
|--|---|
| Model | TM6-ECT-32DM-N |
| Supply voltage | 24VDC(-15%~20%) |
| Communications interface | 210M/100M adaptive Ethernet interfaces |
| Transmission medium | Network cable |
| Electrical isolation | 500Vrms (supply voltage/field bus) |
| Current consumption | 100mA@24VDC |
| Channel number | 16-channel source/drain inputs, 16-channel drain outputs |
| Input Impedance | 3.3kΩ |
| ON state input voltage | 13-30VDC |
| Maximum load output current | U.5A/channel |
| Voltage output range | 12-32VDC |
| Communication protocols | EtherCAT |
| Support services | CoE(PDO, SDO) |
| Homologation | Servo using DC-distributed clock, IO using inputs and oulpuls in the synchronous way |
| Physical layer | 100BASE-TX |
| Communication rate | 100Mbit/s(100Base-TX) |
| Duplex mode | Full duplex |
| Topological structure | Linear topology |
| Transmission distance | Less than m100 between two nodes(EtherCAT) |
| Number of slave station(s) | Up to 127, sequentially and automatically arranged internal addresses or fixed addresses depending on master configuration and network bus connection |
| Frame length | 44 bytes - 1498 bytes |
| Process data | Maximum 1486 bytes per Ethernet frame |
| Synchronized jitter in both slave stations | <1us |
| Refresh time | Approx, 30μs for 1000 switching inputs and outputs, approx, 100ps for 32 servo axes |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing |

TK6

Digital Input Modules



Product Features

- 32 Channel source/Drain Input (Bidirectional optocoupler) module
- LED indicators: work, fault, channel input indication
- System and field optocoupler isolation
- Supports hot swapping

Technical Specification

| | |
|--------------------------------------|--|
| Model | TK6-32DI |
| Contact type | DC, Source/Drain |
| Number of input channels | 32 channels of voltage inputs (isolated between channels) |
| Input Type | Digital input |
| System measurement power consumption | 5VDC/50mA (internally self-powered) |
| Switch-on current | ≥5mA |
| ON response time | 0.5ms |
| OFF response time | 0.5ms |
| Input motion display | Input indicator light when driven by optocoupler |
| Isolation method | Optical isolation for each channel, isolation withstand voltage ≥22KVrms |
| Input impedance | 7.2KΩ |
| ON state | 17~30VDC |
| OFF state | -3~5VDC |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing |

TK6

Digital Input And Out Modules



Product Features

- TK6-16DM-N is a 16-channel drain/source input, 16-channel drain output.
- Output voltage range 5-32VDC, single channel 500mA current output
- Isolation between the system and the channels in the field
- LED indicators: work, fault, channel output indication
- Support hot-swapping

Technical Specification

| | | |
|-------------------------------|----------------------------------|---|
| Model | TK6-32DM-N | |
| Input | Channel number | 16-channels voltage inputs (source/drain) |
| | Switch-on current | >5mA/channel |
| | (Electrical) impedance | 4.7KQ |
| | ON state | 15~32VDC |
| | OFF state | -3~8VDC |
| Output | Channel number | 16-channel voltage output(drain type) |
| | Output Voltage Range | 5-32VDC |
| | Maximum negative cutting current | 0.5A/channel |
| | overload protection | 500mA overcurrent protection |
| System side power consumption | | 5VDC/30mA(internally self-powered) |
| ON response time | | 0.5ms |
| OFF response time | | 0.5ms |
| Channel indication | | Input indicator light when there is signal input, output indicator light when there is signal output. |
| Isolation method | | Each channel is optically isolated, isolation voltage ≥2KVrms |
| Working environment | | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) |
| Storage environment | | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) |
| Certification and testing | | CE certification, GB/T25119 vehicle specification testing |

TK6

Digital Output Module



Product Features

- 16-channel relay output
- Outputs 3A/250VAC, 3A/30VDC
- Overcurrent protection
- Isolation between the system and the channels in the field
- LED indicators: work, fault, channel output indication

Technical Specification

| Model | TK6-16DO-R |
|-------------------------------|--|
| Contact type | AC(A3/250VAC), DC(3A/30VDC) |
| Number of input channels | 16-channel relay output |
| Onput type | Digital relay |
| System side power consumption | 5VDC/30mA(internal self-powered) |
| Onput current | 3A/250VAC, 3A/30VDC |
| Onput motion display | Input indicator light when driven by optocoupler |
| Isolation method | Optical isolation for each channel, isolation voltage $\geq 2\text{KVrms}$ |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing |

TK6

Digital Output Module



Product Features

- 32 channels of drain/source outputs
- Output voltage range 15-32VDC, single channel 500mA current output
- Overcurrent protection
- Isolation of the system from all channels in the field
- LED indicators: work, fault, channel output indication
- Supports hot-swapping

Technical Specification

| Model | TK6-32DO-N | TK6-32DO-P |
|-------------------------------|--|------------|
| Contact type | DC, Drain type | DC, Source |
| Number of input channels | 32 channels of voltage output (non-isolated between channels) | |
| System side power consumption | 5VDC/30mA(internally self-powered) | |
| Voltage output parameters | 15-32VDC | |
| Maximum load current | 0.5A/channel | |
| ON response time | 0.5ms | |
| OFF response time | 0.5ms | |
| Onput motion display | Output LED on when driven by optocoupler | |
| Isolation method | Optical isolation for each channel, isolation voltage $\geq 2\text{KVrms}$ | |
| Overload protection | 500mA over current protection | |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) | |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) | |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing | |

TK6

Analogue high precision input modules



Product Features

- TK6-8HAI-C, support for holding 8-channel current inputs.
- TK6-8HAI-C for ranges 0-20mA, 16-bit resolution.
- TK6-8HAI-B for ranges of $\pm 10V$, $\pm 5V$, 0-10V, 0-5V, 4-20mA, 0-20mA, 16 bit resolution.
- TK6-8HAI-V: Supports 8 channels of voltage inputs.
- TK6-8HAI-V for ranges 0-10V, 16-bit resolution.
- Filter time configurable
- LED indicators: work, fault, communication indication.
- Supports hot swapping

Technical Specification

| Model | TK6-8HAI-C | TK6-8HAI-B | TK6-8HAI-V |
|-------------------------------|--|---------------------------------|-------------------------|
| Number of input channels | 8-channel current input | 8-channel voltage/current input | 8-channel voltage input |
| Voltage input range | — | +10V, +5V, 0-10V, 0-5V | 0-10V |
| Voltage input impedance | — | 110KΩ | |
| Current input range | 0-20mA | 4-20mA, 0-20mA | — |
| Current input impedance | 250Ω | | — |
| System side power consumption | 5VDC/50mA(internal self-powered) | | |
| Site side power consumption | 24VDC/20mA(internally self-powered) | | |
| Resolution | 16-bit | | |
| Sampling time | 1 ms/channel | | |
| Conversion time | 2ms/channel | | |
| Filtering time | 1 ~255ms, configurable | | |
| Measurement accuracy | <0.1%F.S.@25°C | | |
| Limit input voltage | — | ±11V | |
| Limit input current | ±22mA | | |
| Isolation method | Non-isolated between channels, optically coupled isolation of system and field side, isolation voltage ≥2KVrms | | |
| Input indication | Operation, fault, communication indication, etc. | | |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) | | |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) | | |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing | | |

TK6

Analogue High Precision Output Modules



Product Features

- TK6HA-80-V,supports 8-channel voltage outputs
- TK6HA8-0-V for ranges 0-10V,16-bit resolution
- TK6HA8-0-C,support has channel current outputs
- TK6HA8-0-C for ranges 0-20mA□ 16-bit resolution
- Isolation between system and site
- Filter time configurable
- LED indicators: work, fault, communication indication
- Supports hot swapping

Technical Specification

| Model | TK6-8HAO-V | TK6-8HAO-C |
|---------------------------------|---|--------------------------|
| Number of input channels | 8-channel voltage output | 8-channel current output |
| Current onput range | — | 0-20mA |
| Current output load | — | 650 Ω |
| Voltage output range | 0-10V | — |
| Volage output load | 1K Ω -1M Ω | — |
| System side power consumption | 5VDC/50mA(internal self-powered) | |
| Site side power supply | 24VDC/250mA(internally self-powered) | |
| Resolution | 16-bit | |
| Sampling time | 1 ms/channel | |
| Output accuracy | Voltage $\pm 0.1\%F.S$ | Current $\pm 0.1\%F.S$ |
| Output short circuit protection | Support | |
| Measurement accuracy | <0.1%F.S.@25°C | |
| Isolation method | Non-isolated between channels, optically coupled isolation of system and field side, isolation voltage $\geq 2KV_{rms}$ | |
| Output indication | Operation, fault, communication indication, etc. | |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) | |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) | |
| Certification and Testing | CE certification, GB/T25119 vehicle specification testing | |

TK6

Temperature measurement module



Product Features

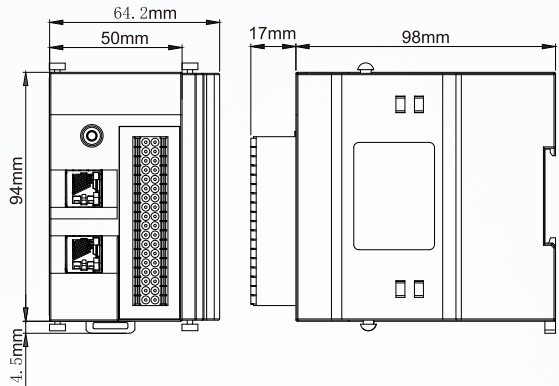
- 4/8 channel thermal resistor or thermocouple input
- 24-bit resolution
- The thermocouple module supports a temperature resolution of 0.0078125°C
- The filtering level of each channel can be configured separately
- The thermocouple module can support multiple types of thermocouple sensors for temperature measurement.
- The thermal resistance module can support multiple types of thermal resistance sensors for temperature measurement
- The thermocouple module is equipped with built-in cold junction compensation, with a cold comp ensation accuracyof +0.7°
- Thermocouple module input end provides ± 45V overvoltage protection
- The thermocouple module has automatic linear compensation function for thermocouples, with a linear error of+ 0.15% F.S
- System is separated from the site
- Support for hot swapping

Technical Specification

| Model | TK6-4PT | TK6-8PT* | TK6-4JK |
|--|--|-----------|---------------------------------|
| Number of input channels | 4-channel | 8-channel | 4-channel |
| Sensor type | Thermal resistance PT100, PT1000 | | Thermocouples K,J,E,B,N, R,S, T |
| Wiring method | Two-wire, three-wire, four-wire | | Two-wire |
| Thermocouple cold junction compensation method | — | | Internal cold end compensation |
| Resolution | 24-bit | | |
| Sensitivity | 0.1°C, 0.1°F | | |
| Filtering time | 0~100s configurable | | |
| Accuracy (at room temperature of 25°C) | (±0.15%F.S) | | (±0.15%F.S)±2°C |
| Accuracy (at ambient temperature 0-55°C) | (±0.3%F.S) | | (±0.3%F.S)±2°C |
| Isolation method | IO terminal powerisolation, non-isolated between channels | | |
| System side power consumption | 5VDC/50mA(internal self powered) | | |
| Power consumption on site side | 24VDC/20mA(internal self powered) | | |
| Working environment | Operating temperature: 0°C~50°C Operating humidity: 5%-90% (no condensation) | | |
| Storage environment | Storage temperature: -40°C~85°C Storage humidity: 5%-90% (no condensation) | | |
| Certification and testing | CE certification, GB/T25119 vehicle specification testing | | |

Note: * is a planned product, For details, please consult AUCTECH Company.

Coupler

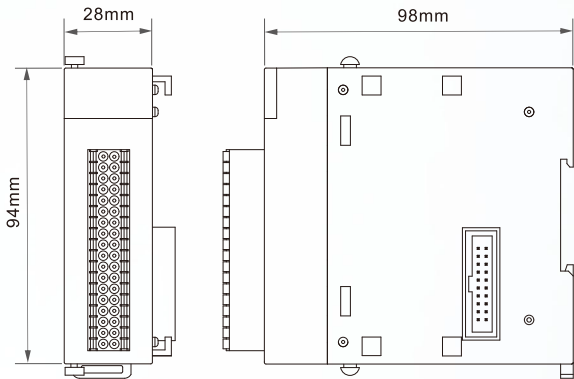


The following models are included:

Unit: mm

- TM6-ECT-32DM-N

Expansion module

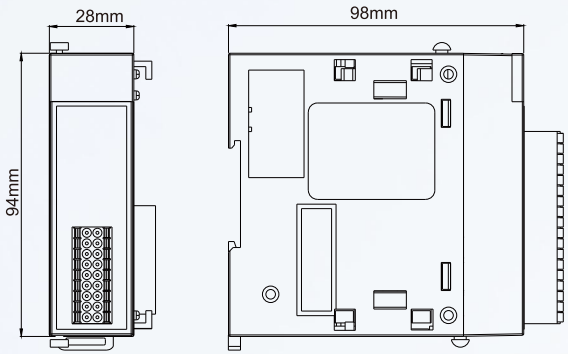


The following models are included:

Unit: mm

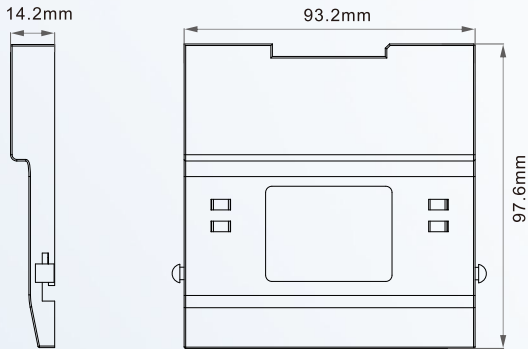
- TK6-16DO-R
- TK6-32DI
- TK6-32DO-N
- TK6-32DO-P
- TK6-32DM-N
- TK6-8HAI-B

Expansion module



- The following models are included: Unit: mm
- TK6-4PT
 - TK6-8HAI-C
 - TK6-8HAO-V
 - TK6-4JK
 - TK6-8HAI-V
 - TK6-8HAO-C

Terminal cover



- The following models are included: Unit: mm
- TM6-END

Note: Delivered with HMC-S3-22N00 and TM6-ECT-32DM-N only, no additional purchase is required, please contact AUCTECH for details.