HMC G300 Series User Manual

Thank you very much for purchasing our controller

Please read this instruction manual carefully before installing, wiring, using, maintaining, and inspecting the product.

Please keep this manual in a safe place and deliver it to the end user.

Statement

The contents of this user manual are subject to change without prior notice.

If you find any suspicion, error, or omission in the content of this user manual, please contact us to change it.

If there are any wrong or missing pages in this user manual, we will replace them for you.

HMC-G300 Series Controller User's Manual

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Change Log

Reversion	Description	Originator	Date
V1.3	Modify output IO description unclear problem.	mxh	2022-06
V1.4	New naming rules, nameplate instructions, programming tools download. Change IO definition wiring diagram, interface menu	czm	2022-07
V1.5	Changing power parameters.	czm	2022-08
V1.6	New HMC series controller related manual information sheet.	czm	2022-09
V1.7	Delete the closing statement, change the name of the wiring introduction.	czm	2022-11
V1.8	Change the unit's name and naming rules, precautions.	czm	2023-02
V1.9	Change the font of the entire manual.	czm	2023-03
V2.0	Change the rated power consumption and rated current parameters in the specifications	czm	2023-04

HMC Series Controller Related Manuals

The following table shows the information, please select the manual according to your needs

Serial number	Manual Name	Description
1	HMC Series Controller and IO Module Selection Manual	About the basic functions of controller products.
2	HMC Series Controller Software Getting Started Manual	Software acquisition, installation, getting started tutorial
3	HMC S3 Series Controller User Manual	Explanation on the basic use of S3 series controller, etc.
4	HMC G300 Series Controller User's Manual (This book)	About the basic use and functions of the G300 series controllers and other operating instructions
5	HMC series controller programming basic instruction manual	Understanding of the concept and function of basic controller programming instructions
6	HMC series controller motion control command manual	Understanding of basic concepts and functions of motion control commands

*Note: All of the above information can be found on the official website: http://www.auctech.com.cn/下载.

Table of Contents

Section 1 Preface

Thank you very much for using the products of Guangzhou AUCTECH Automation Technology Limited.
This product is a high-performance book-style embedded industrial control machine for automation, machine vision and other industries. The product adopts a sturdy aluminum alloy profile structure to ensure excellent heat dissipation and sturdiness, while also taking full account of the ergonomic structure design.

The controller adopts EtherCAT bus communication protocol, which can communicate with servo system, IO module, etc. at high speed, and can also expand mechanical vision application and interconnect with remote monitoring terminal and demonstrator. It supports right angle Robot, SCARA, DELTA, six-joint robot and other mainstream robot models in the market. Products are widely used in handling, assembly, processing, welding, spraying, food and drug packaging, 3C consumer electronics, new energy, lithium-ion, entertainment and stage control, and other lines.

Section 2 Safety Precautions

■ Safety instructions

- Please read and follow these safety precautions when installing, operating, or maintaining the product.
- For personal and equipment safety, please follow all safety precautions described in the markings and manuals on the product when installing, operating, and maintaining the product.
- The "Caution", "Warning" and "Danger" items in the manual do not represent all safety precautions to be observed, but only in addition to all other safety precautions.
- This product should be used in an environment that meets design specifications, otherwise it may cause a malfunction due to failure to comply with the relevant safety precautions.
- The product quality warranty does not cover abnormal function or damage to parts caused by the regulations.
- We will not bear any legal responsibility for personal safety accidents and property damage caused by illegal operation of the product.

Security Level Definition	
Danger	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. Additionally, there may be severe property damage.
Caution	If not used in accordance with the regulations, may cause fires, serious personal injury, or even death!
Warning	Failure to use in accordance with the regulations may result in moderate personal injury or minor injury, as well as the occurrence of equipment damage!

When products arrive and are stored	
Warning	• If the product and product accessories are damaged when opening the box, please do not install them and contact our company or your supplier immediately. • Check carefully whether the arriving product and the ordered product model match, and whether the product and product accessories are included.
Caution	• Do not stack multiple of this product on top of each other as this may cause injury or malfunction. • Do not store in places exposed to direct sunlight, places where the ambient temperature exceeds the temperature conditions for storage, places where the relative humidity exceeds the humidity condition for storage, places where there is a large temperature difference, places where there is high condensation, places near corrosive gases, places where there are flammable gases, places where there is a large amount of dust, dirt, salt or metal dust, places where water, oil or medicine drip, places where vibration or shock can affect the main body of product; otherwise it can lead to fire, Electric shock or machine damage. • Do not hold the cable or motor shaft for weight holding, as this may result in injury or malfunction.

When designing the system	
⚠ **Danger**	• If the rated load of current is exceeded or the load is short-circuited for a long period of time resulting in over-current, the product may start smoking or catch fire. • Safety devices such as fuses, or circuit breakers should be set externally.
⚠ **Warning**	• Be sure to design safety circuits to ensure that the product system will still work safely if the external power supply is lost, or the product fails. • For safe operation of the equipment, please design external protection circuits and safety mechanisms for output signals related to major accidents.
⚠ **Caution**	• Be sure to install emergency brake circuits, protection circuits, interlock circuits for forward and reverse operation, and position upper and lower limit interlock switches to prevent damage to the machine in the external circuit of the product. • The product may shut down all outputs after detecting abnormalities in its own system; when part of the controller circuit fails, it may cause its output to be uncontrolled. To ensure normal operation, a suitable external control circuit needs to be designed. • If the output unit such as relay or transistor of the product is damaged, the output will not be controlled to the ON or OFF state. • The product is designed to be used in indoor, overvoltage class II electrical environments, and its power system level should have lightning protection devices to ensure that lightning overvoltage is not applied to the product's power input or signal input, control output and other ports to avoid damage to equipment.

When the product is installed	
⚠ **Danger**	• Only maintenance professionals with adequate electrical knowledge and training related to electrical equipment should install this product. • For the product with open equipment, please install in the control cabinet with door lock (product cabinet shell protection > IP20), only operators with sufficient electrical knowledge and training related to electrical equipment can open the product cabinet.
⚠ **Warning**	• When disassembling the product, the external power supply used for the system must be completely disconnected before performing the operation. Failure to disconnect all power supplies may result in electric shock or product failure and malfunction. • While dissembling the product, the power and the power indicator must be turned off for at least 5 minutes, before disassembling the driver. Otherwise, the residual voltage may cause electric shock. • Do not use the product in the following places: places with dust, oil fumes, conductive dust, corrosive gases, combustible gases; places exposed to high temperature, condensation, wind, and rain; places with vibration and shock. Electric shock, fire, and misuse can also cause damage and deterioration of the product!
⚠ **Caution**	• Avoid metal shavings and wire tips falling into the ventilation holes of the product during installation, this may cause fire, malfunction, and misoperation. • After installation, ensure that there is no foreign matter on the ventilation surfaces, otherwise it may lead to poor heat dissipation and cause fire, malfunction and misoperation.

	• When installing, make a tight connection to the respective connector and lock the product connection hook firmly. If the products are not installed properly, it may lead to misoperation, malfunction and dislodgement.

When wiring products	
⚠ **Danger**	• Only maintenance professionals with adequate electrical knowledge and training related to electrical equipment should perform the wiring of this product.
⚠ **Warning**	• During wiring operations, the external supply power used by the system must be completely disconnected before operation. Failure to disconnect all of them may result in electric shock or equipment malfunction or misoperation. • When powering up and running after the wiring operation, the terminal cover that comes with the product must be installed. Failure to install the terminal cover may result in electric shock. • Check the type of interface to be connected before connecting the cable correctly. If the wrong interface is connected or the wiring is incorrect, it may cause the product or external equipment to malfunction. • The cable terminals should be well insulated to ensure that the insulation distance between the cables is not reduced after the cables are installed to the terminal block. Otherwise, it will lead to electric shock or equipment damage. • Avoid metal shavings and wire tips falling into the ventilation holes of the controller when wiring, which may cause fire, malfunction, and misoperation! • The bolts on the terminal blocks should be tightened within the specified torque range. Untightened terminal bolts may result in short circuit, fire, or malfunction. Over-tightening the bolts may damage the bolts and the product, resulting in dislodgement, short circuit, fire, or false operation.
⚠ **Caution**	• The specification and installation method of the external wiring of the equipment should meet the requirements of local power distribution regulations. • To ensure the safety of the equipment and the operator, the equipment needs to be reliably grounded using cables of sufficient wire size. • For connections using connectors and external devices, press fit, crimp, or properly solder using the tool specified by the manufacturer. A poor connection may result in a short circuit, fire, or malfunction. • If the product is labeled to prevent foreign objects from entering the product during wiring, such as the wiring head. Do not remove this label during wiring operations. Before starting system operation, be sure to remove the label to facilitate heat dissipation. • Please do not bundle the control and communication cables with the main circuit or power supply cables, etc. The alignment should be more than 100mm apart, otherwise the noise may lead to misoperation. • For applications with serious interference, please use shielded cables for input or output of high frequency signals to improve the system's anti-interference capability.

Before powering on the product	
⚠ **Danger**	• Before powering on, please make sure the product is well installed, wired firmly and the motor unit is allowed to restart. • Before powering on, please confirm that the power supply meets the product requirements to avoid causing damage to the product or starting a fire. • It is strictly forbidden to open the product cabinet door or product protective cover, touch any terminals of the product, disassemble any device or parts of the product in the energized state, otherwise there is a risk of electric shock. • Make sure that no one is around the product, the motor, or the machinery before powering it on, as this may result in injury or death!
⚠ **Warning**	• After the wiring operation and parameter setting are completed, please conduct a test run of the machine to confirm that it can operate safely, otherwise it may lead to injury or equipment damage! • Before powering on, please make sure that the rated voltage of the product is the same as the power supply voltage. If the power supply voltage is used incorrectly, there is a risk of fire!

When operating and maintaining	
⚠ **Danger**	• Only maintenance professionals with adequate electrical knowledge and training on electrical equipment can perform the operation and maintenance of the products. • Do not touch the terminals when the power is on, as this may cause electric shock or malfunction. • When the motor or equipment is running, please never touch its rotating parts, otherwise it may lead to serious personal safety accidents.
⚠ **Warning**	• When cleaning the product or retightening the bolts on the terminal block or the connector mounting bolts, the external supply power used by the system must be completely disconnected. Failure to do so may result in electric shock. • When disassembling the product or connecting or removing the communication cable, the external supply power used by the system must be completely disconnected first. Failure to disconnect all of them may result in electric shock or false operation. • While dissembling the product, the power and the power indicator must be turned off for at least 5 minutes, before disassembling the driver. Otherwise, the residual voltage may cause electric shock.
⚠ **Caution**	• For online modification, forced output, RUN, STOP, etc., you must read the user's manual and confirm its safety before performing the relevant operations. • Be sure to disconnect the power before loading and unloading expansion cards, modules, and other components!

When the product is scrapped	
⚠ **Caution**	• Please dispose of them as industrial waste; when disposing of batteries, do so separately according to the ordinances established by each region to avoid property damage or human injury! • End-of-life products should be treated and recycled in accordance with industrial waste treatment standards to avoid polluting the environment.

Section 3 Product Information

3.1 Naming Rules

HMC - G 300 - 2 0 00

Servo Controller

Controller structure

G Standard

S IO version

P Panel type control

Controller Series

3 300 Series

4 400 Series

5 500 Series

6 600 Series

Specific models

00 G300 model J1900 , 4GB RAM , 64GB HDD

01 G301 model J1900 , 4GB RAM , 64GB HDD, 16DI, 16DO

10 G310 model i3-6100 , 4GB RAM, 64GB HDD

11 G311 model i3-6100 , 4GB RAM, 64GB HDD, 16DI, 16D

20 G320 model i3-8100 , 4GB RAM , 128GB HDD

21 G321 model i3-8100 , 4GB RAM , 128GB HDD, 16DI, 16D

60 G360 model i3-8700 , 4GB RAM , 128GB HDD

61 G361 model i3-8700 , 4GB RAM , 128GB HDD, 16DI, 16D

Software Features

00 Standard functions

01 CNC+Robotics

RET configuration

0 Version 0

1 Version 1

System Category

0 None

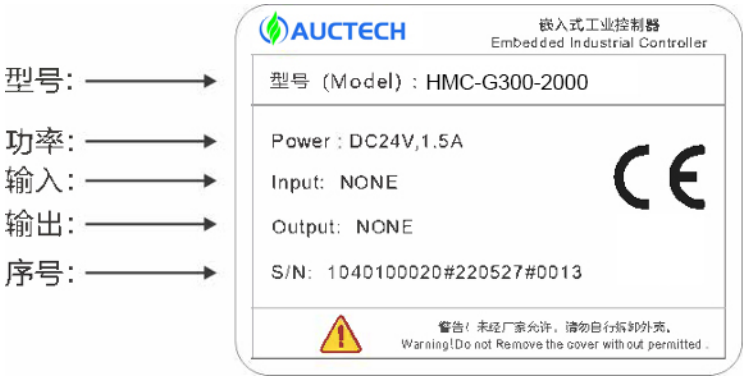
1 Linux system

2 Windows 7 system

3 Windows 10 system

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

3.2 Product nameplate description



3.3 Specification parameters

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	Inter 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)
Memory	DOR3L-1333MHz. 4G	DOR4-24000MHz,4GB	DOR4-24000MHz,8GB	DOR4-24000MHz. 16GB
Hard Disk	64GB	64GB	128GB	128GB
Program Memory	128M Byte			
Variable Memory	128M Byte			
Power-down hold variable memory	Variable value change save hold data 128K, periodical save hold data unlimited.			
Bus cycle 2ms. Number of supported servo-controlled axes	32	64	128	128+128
Minimum task cycle	500us			
CNC Applications	Support			
Robot Control	Support			
Power supply	24VDC (-10%~10%)			
Ontology IO	None (16DI, 16DO)			
IO extension form	Remote expansion of IO using couplers			

USB interface	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)
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)
COM interface	1×RS232/RS485 + 2×RS485			
Fans	None	embedded	embedded	embedded
Working altitude	2000m			
Electromagnetic interference	Class A			
Vibration at work	1.5 Grms, IEC 6006 x -2-64, random, 5 ~ 500 Hz, 1 hr/axis			
Shock at work	10 G, IEC 6006 x -2-64, half sine, 11ms duration			
Working Environment	Operating temperature: 0°C ~ 50°C , working humidity: 5% ~ 95% (no condensation)			
Storage Environment	Storage temperature: -40°C ~ 80°C, storage humidity: 5% ~ 95% (no condensation)			
Protection level	IP20			
Certification	CE certification			

Note: Support CPU and memory customization, please contact AUCTECH for details.

() Parameters for models with io version.

Controller IO Description:

Expansion Boards		**IO1**
IO Control	DI	16 x isolated DI, support wet and dry node, with signal status light, effective level 10V~30V, input impedance 10kΩ, isolation voltage 3000Vdc.
	DO	16 x isolated DO, support NPN/PNP optional, with signal status light, voltage range 3.5~30V, maximum current 500mA.

3.4 Product Structure

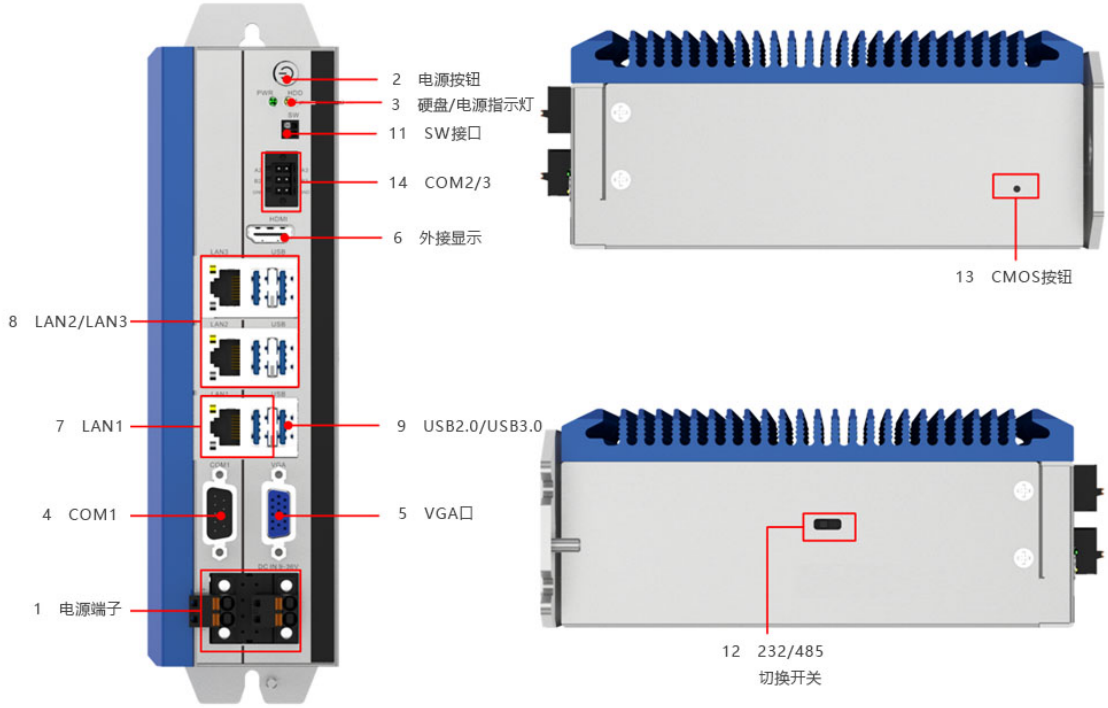


Figure 3-1 HMC-G300-2000 controller appearance

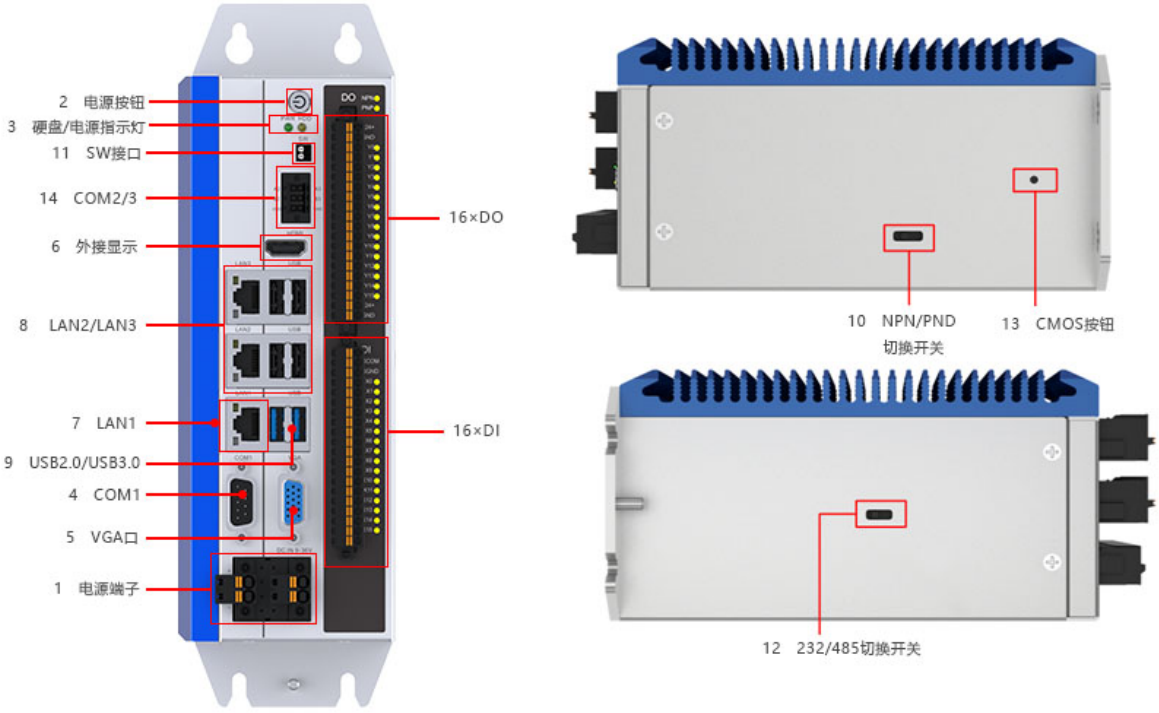


Figure 3-2 HMC-G301-2000 controller appearance

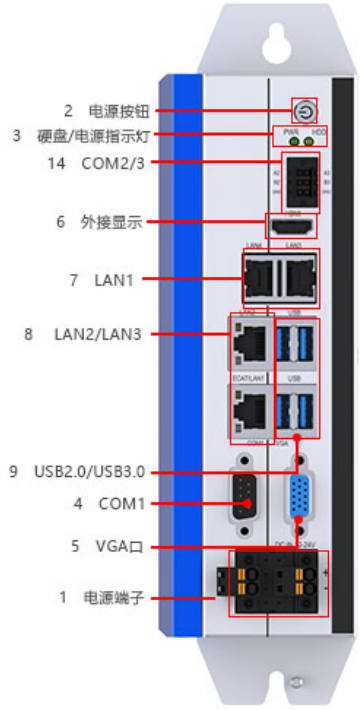


Figure 3-3 HMC-G310/G320/G360 controller appearance

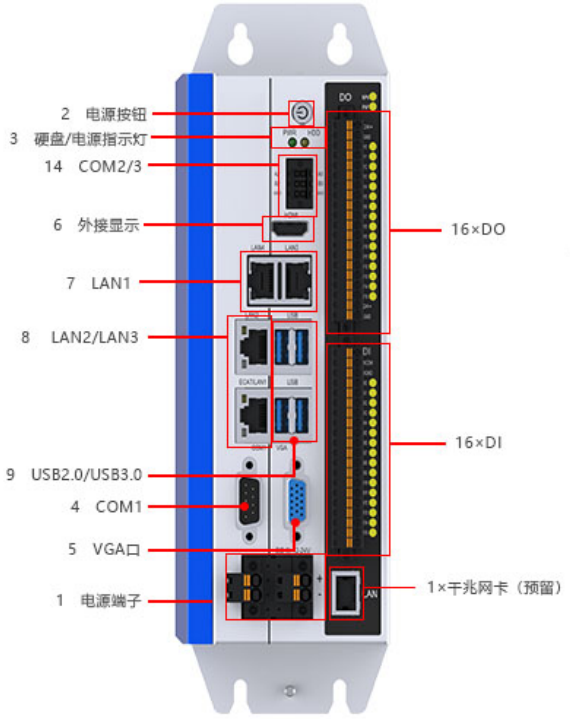
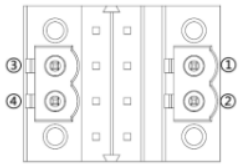


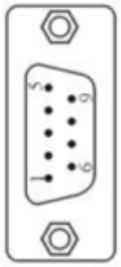
Figure 3-4 HMC-G311/G321/G361 controller appearance

3.5 Interface Introduction

3.5.1 Interface Function

The G300 series controllers have a rich set of interfaces, and the functions and descriptions of each interface customized for use in the industrial control field are shown in Table 3-3:

<table>
<tr><th>Number</th><th>Interface Name</th><th>Function</th><th>Instructions for use</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Power terminals</td><td>DC12~24V, usually connected to 24V power supply for the controller, overcurrent, overvoltage and anti-reverse connection, protection power consumption is 10W, maximum 45W</td><td>Two power terminals, plug into either end</td></tr>
<tr><td colspan="2">Table 1: The signals of the power input
 
<table><tr><th>Pin No.</th><th>Signal</th></tr><tr><td>1</td><td>DC 12V-24V</td></tr><tr><td>2</td><td>GND</td></tr><tr><td>3</td><td>DC 12V-24V</td></tr><tr><td>4</td><td>GND</td></tr></table>When turning on the power, make sure that the output voltage of the power supply matches the supply voltage of the PC.
Pay attention to the positive and negative markings on the case, please do not reverse the connection, otherwise it may lead to hardware damage or electric shock.
Do not use mains power (220V) to connect directly to this terminal</td></tr>
<tr><td>2</td><td>Power button</td><td>Controller power switch</td><td>Controller power on/off</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Hard drive/power indicator</td><td>Hard drive/power indicator</td><td>PWR controller power indicator;
HDD hard drive indicator</td></tr>
<tr><td colspan="2">Table 2: Indicators
<table><tr><th>LED Name</th><th>Status</th><th>Description</th></tr><tr><td rowspan="2">Power status light</td><td>extinguish</td><td>Indicates that power is not supplied to the product</td></tr><tr><td>On (green light)</td><td>Indicates that power is supplied to the product</td></tr><tr><td>Hard drive status light</td><td>Flashing light (orange)</td><td>Indicates that the drive is being accessed by reads and writes</td></tr></table></td></tr>
<tr><td>4</td><td>COM1</td><td>Support RS485/RS232 protocol</td><td>The ability to communicate with third-party devices via Modbus protocol;
1 x RS-232/485 (jumpable), 2 x RS485 terminal outputs, RS-485 supports automatic data flow control</td></tr>
</table>

<table>
<tr><th>Number</th><th>Interface Name</th><th>Function</th><th>Instructions for use</th></tr>
<tr><td></td><td></td><td colspan="2">Table 3: The serial signals of the DB9 male terminal of COM1 are
<table>
<tr><td rowspan="2"> 
DB9 公头</td><td rowspan="2">Pin No.</td><td colspan="2">Signal Name</td></tr>
<tr><td>RS232</td><td>RS485</td></tr>
<tr><td></td><td>1</td><td>N.C.</td><td>B</td></tr>
<tr><td></td><td>2</td><td>RXD</td><td>A</td></tr>
<tr><td></td><td>3</td><td>TXD</td><td>N.C.</td></tr>
<tr><td></td><td>4</td><td>N.C.</td><td>N.C.</td></tr>
<tr><td></td><td>5</td><td>GND</td><td>GND</td></tr>
<tr><td></td><td>6</td><td>N.C.</td><td>N.C.</td></tr>
<tr><td></td><td>7</td><td>RTS</td><td>N.C.</td></tr>
<tr><td></td><td>8</td><td>CTS</td><td>N.C.</td></tr>
<tr><td></td><td>9</td><td>N.C.</td><td>N.C.</td></tr>
</table></td></tr>
<tr><td>5</td><td>VGA port</td><td>External display</td><td>Connected to external display via VGA cable to display operation screen</td></tr>
<tr><td>6</td><td>HDMI</td><td>External display</td><td>Connected to external display via HDMI cable to display operation screen</td></tr>
<tr><td>7</td><td>LAN1</td><td>EtherCAT bus interface</td><td>General LAN1 is the EtherCAT bus interface, supporting EtherCAT servo and various expansion units communication</td></tr>
</table>

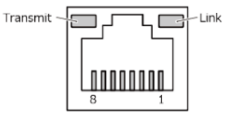
Number	Interface Name	Function	Instructions for use

Table 4: Network Port LAN

Type	Parameters
Network Type	1000BASE-T/100BASE-TX/10BASE-T
Transmission speed*	1000M/100M/10M bps
Maximum cable distance	100m/segment
NIC Type	Inter Ethernet Controller I210

Note: *When the transmission speed is 1000Mbps, a cable of at least CAT 5e and above is required.

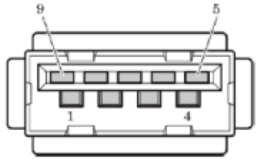
Table 5: Network Port Definitions



Pin No.	Signal Name	
	100BASE-TX	1000BASE-T
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

Number	Interface Name	Function	Instructions for use

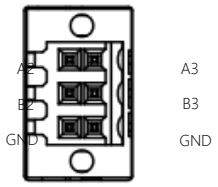
Table 6: USB 3.0 connector pinout definitions:



Pin No.	Signal
1	USB_VCC
2	DATA-
3	DATA+
4	USB_GND
5	SSRX-
6	SSRX+
7	USB_GND
8	SSTX-
9	SSTX+

Number	Interface Name	Function	Instructions for use

Table 7: COM2/3 serial port signal definition



Pin No.	Description
A2	DATA+
B2	DATA-
GND	Interface grounding
A3	DATA+
B3	DATA-
GND	Interface grounding

Table 3-3 G3-6 series controller interface definition

3.5.2 IO Definition

IO definition description, 16 isolated DI/DO available for users.

3.5.2.1 DI Wiring

1、Dry contact wiring schematic:

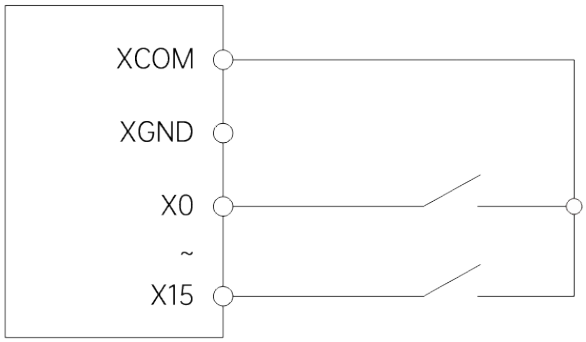


Figure 1 : DI passive input wiring diagram

Note: Interface description

The dry contact signal is a passive signal relative to the local DI interface, and the external device can be considered as a normally open contact. When the external device has action, equivalent to contact closure, at this time the current signal is sampled and the state is returned to the PC.

2、Wet contact wiring schematic:

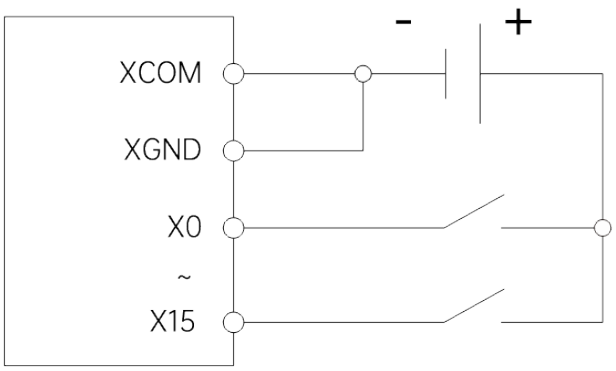


Figure 3-3: DI active input PNP type wiring diagram

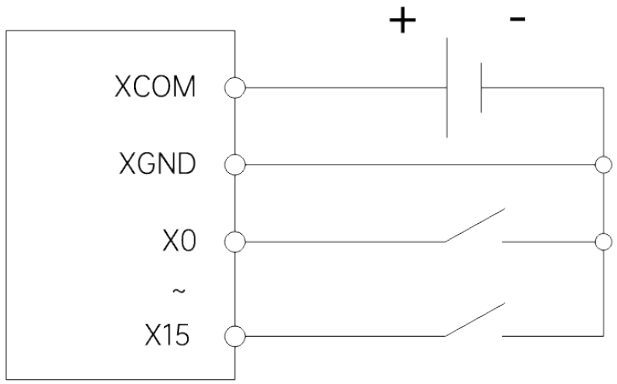


Figure 2 -4: DI active input NPN type wiring diagram

Note: Interface description

1) The wet contact signal is active with respect to the local DI interface and can be divided into NPN type and PNP type signals.
2) When the external device signal is NPN type, the external device can be regarded as a normally open contact connected to the local DI interface at one end and to the negative terminal of the power supply at the other end, so the common terminal of the local interface needs to be connected to the positive terminal of the power supply.
3) When the external device signal is PNP type, the external device can be regarded as a normally open contact connected to the local DI interface at one end and the positive power supply at the other end, so the common terminal of the local interface needs to be connected to the negative power supply terminal.
4) When NPN type and PNP type external device has action, it is equivalent to contact closure, when the current signal is sampled and the status is returned to the PC.

3.5.2.2 DO Wiring

- Wet contact wiring schematic:

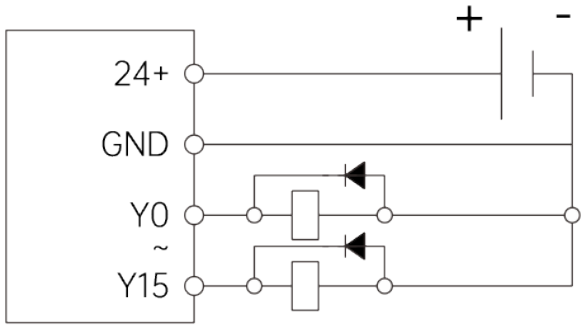


Figure 3-5: DO output PNP type wiring diagram

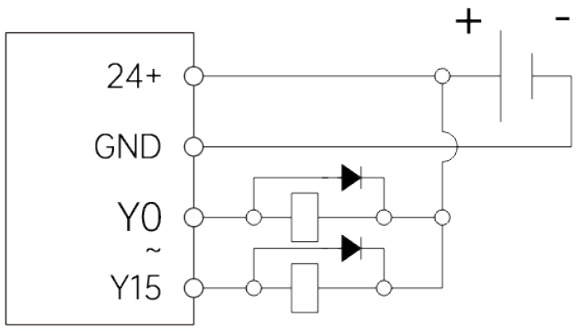


Figure 3-6: DO output NPN type wiring diagram

Note: Interface description

1) The DO output of this machine is compatible with NPN and PNP modes, and the mode needs to be selected by a dip switch in the case of power failure.
2) When the dipswitch is set to PNP output, the DO port is PNP output. At this time, the 24V+ interface of the machine needs to be connected to the positive pole of power supply, the public terminal of peripheral devices needs to be connected to the negative pole of power supply, and the control signal can be connected to the DO output of the machine according to the wiring requirements.
3) When the dipswitch is set to NPN output, the DO port is NPN output. When the peripheral is inductive load, the 24V+ terminal of the machine needs to be connected to the positive pole of power supply, and when the peripheral is resistive load, the 24V+ terminal can be overhung, and GND is connected to the negative pole of power supply.
4) DO single channel maximum withstand voltage DC30V, maximum output current 0.5A, please pay attention to load matching when using. If the load is inductive, it should be used with current-continuing diode, and pay attention to its polarity.
5) After the control signal and power supply are connected, the machine will make output to the corresponding DO port according to the output data sent by the PC.

3.6 Appearance size

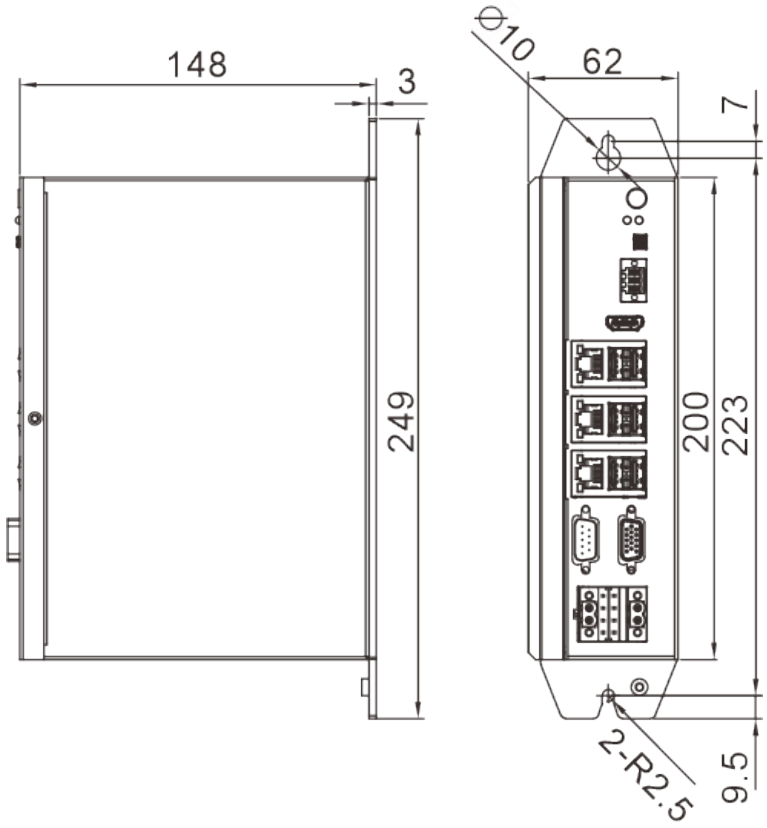


Figure 3-7: HMC-G300-2000 controller exterior dimensions (unit:mm)

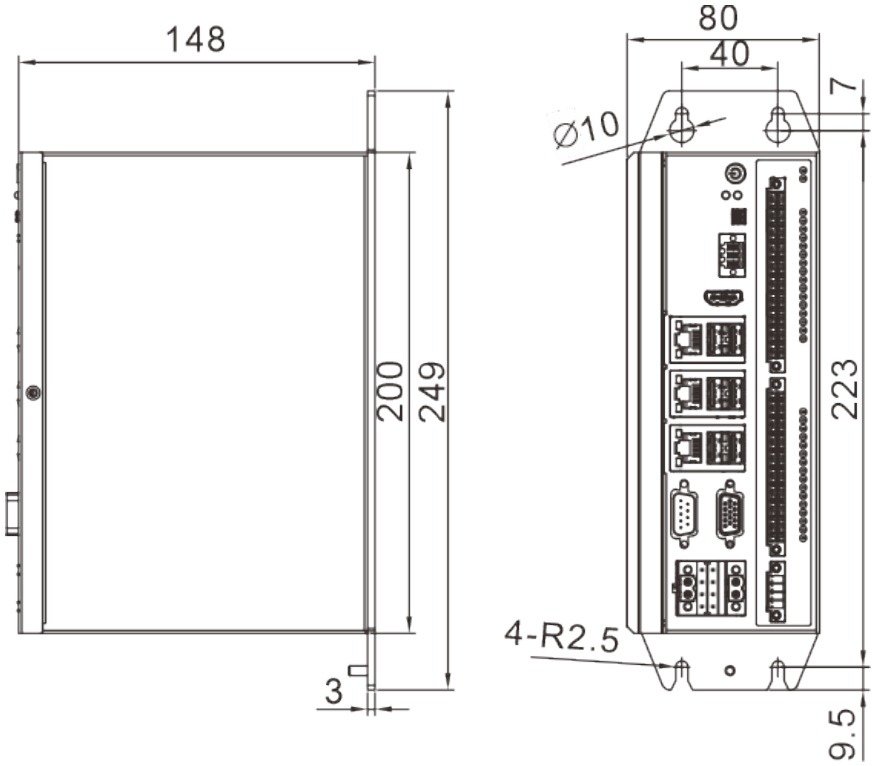


Figure 3-8: HMC-G301-2000 controller exterior dimensions (unit:mm)

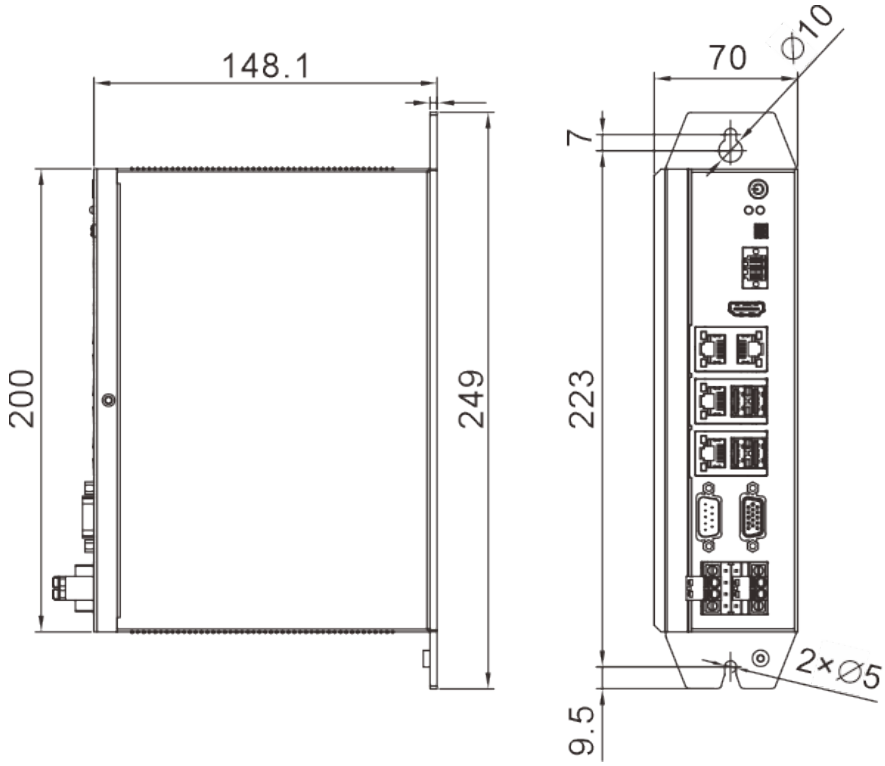


Figure 3-9: HMC-G310/G320/G360 controller exterior dimensions (unit:mm)

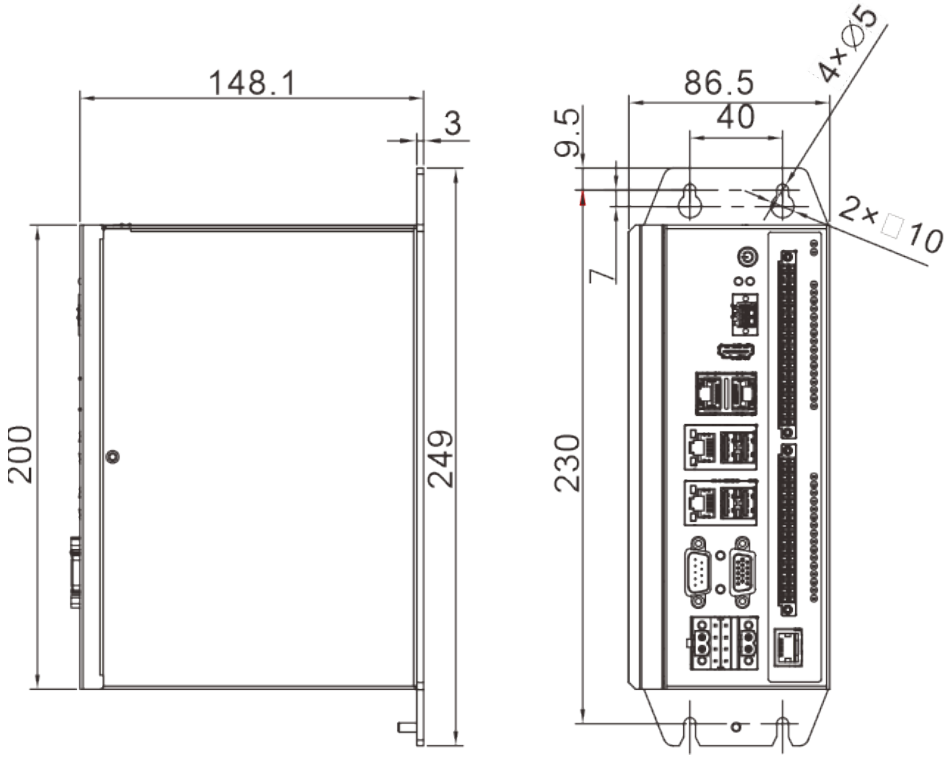


Figure 3-10: HMC-G311/G321/G361 controller exterior dimensions (unit:mm)

Section 4 Programming Tools Download

Codesys is the PLC programming software of Germany 3S company, also used for the development application of HMC series controller products standard software, for HMC series controller to provide a complete configuration, programming, debugging, monitoring environment, use can be flexible and free to deal with the powerful IEC language.

- Software Acquisition
  1) Contact AUCTECH Automtion to provide a Codesys software installation package that is compatible with the controller system version (recommended).
  2) Go to the Codesys official store: https://store.codesys.comto to downland specified version.
  3) Note: Download the appropriate version of 64-bit or 32-bit software according to your computer system version.
- Software installation requirements
  1) PC meet the following requirements:
  2) Window 7/Windows 8/Windows 10 operating systems;
  3) CPU main frequency: more than 2GHZ (recommended);
  4) Memory: 4GB or higher;
  5) Space: 10G or more of hard disk space;
  6) Connection requirements to the controller: 1 free network port on the local network or via USB to network port (with anti-electromagnetic interference)

Note: For more information, please refer to the "HMC Industrial Controller Software Getting Started Manual".

Section 5 Installation Instructions

5.1 Install environment

1) Mount the controller vertically on a flame-retardant object surface inside the mounting cabinet with sufficient space around it to dissipate heat.
2) Please install it in a place where vibration is not easy. The vibration should not be greater than 0.6 G. Take special care to keep it away from equipment such as punching machines.
3) Avoid installation in direct sunlight, humidity, and water droplets.
4) Avoid installing in places where there are corrosive, flammable and explosive gases in the air.
5) Avoid installation in places with oil and dust, and the pollution level of the installation site is PD2.

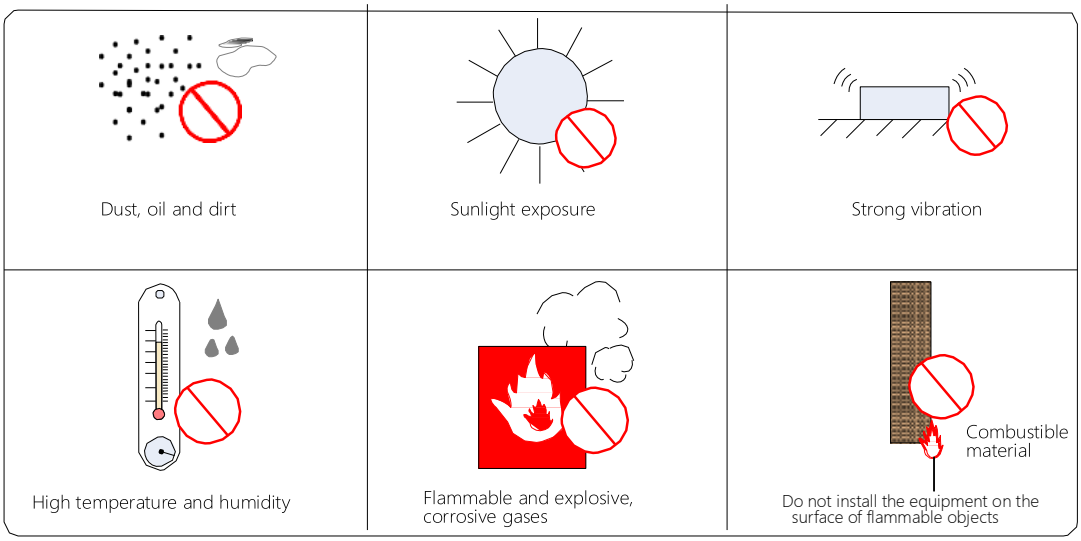


Figure 5-1 Installation environment requirements

5.2 Installation location and space

5.2.1 Installation direction

Secure the controller to the mounting surface using screws through the upper and lower side teardrop type mounting plates. When mounting, please note the mounting position by facing the front of the controller (the operator's actual mounting surface) toward the operator and keeping it perpendicular to the wall, as shown in Figure 5-2 at :

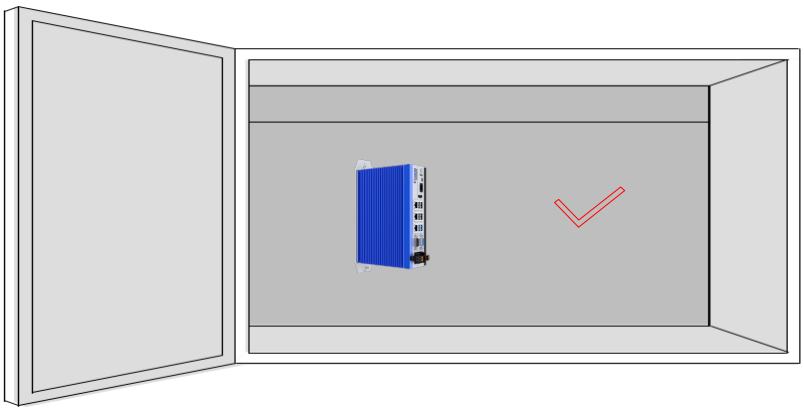


Figure 5-2 Mounting direction

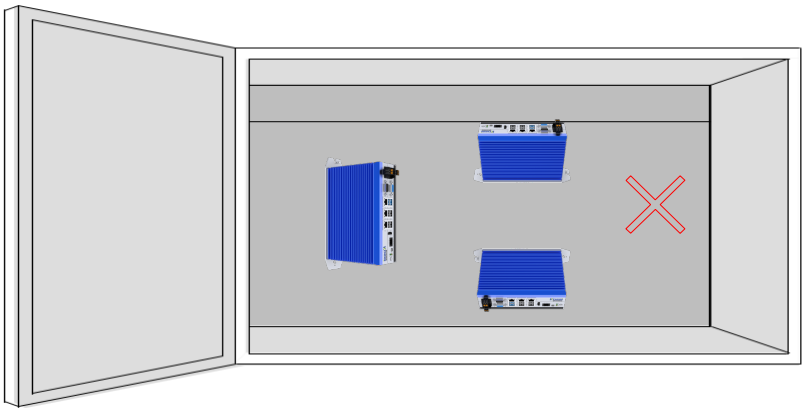


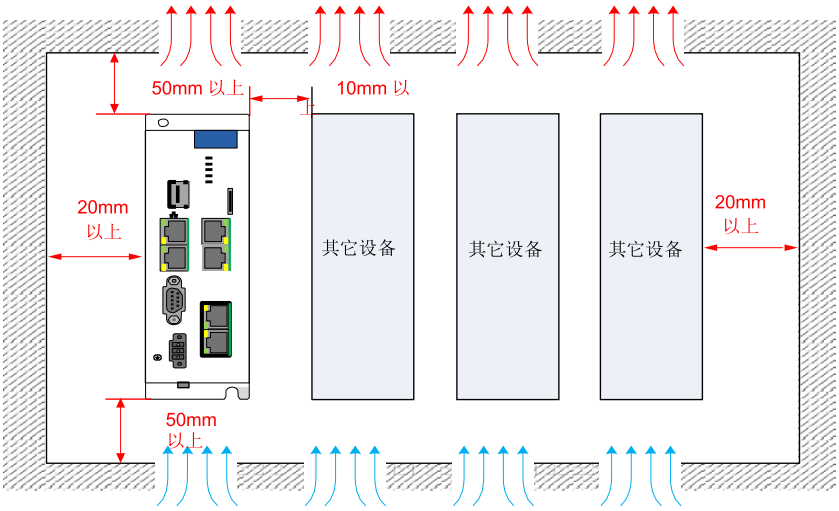
Figure 5-3 Wrong installation direction

5.2.2 Installation space

- The controller cooling by a fan, and the cooling path is shown in Figure 5-3:

Figure 5-4 Controller heat dissipation direction

- Therefore, to facilitate ventilation, a corresponding distance should be left between the upper and lower parts of the controller and the surrounding components, as shown in Figure 5-4:



5.3 Cable and Cabling

5.3.1 Cable Requirements

- Cable classification

  Level 1: sensitive signals (low-voltage analog signals, high-speed encoder signals, high-speed communication signals, positive and negative 10V analog signals, low-speed 422, 485 signals, digital input, and output signals)

  Level 2: Interference signal (low-voltage power supply, contactor control line, motor line with filter high-voltage AC power line, motor line without filter)

- Cable Selection

  Symmetrically shielded cables are recommended for input and output main circuit cables. The use of a symmetrically shielded cable reduces electromagnetic emissions throughout the conduction system compared to a four-core cable.

  1) Recommended power cable types - symmetrically shielded cables:

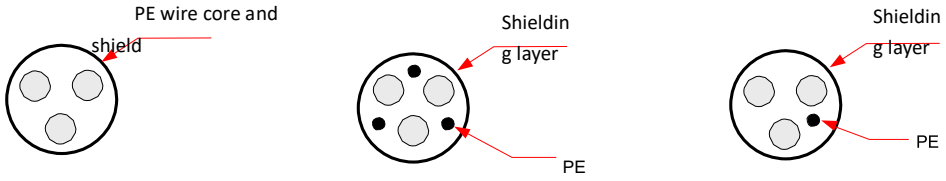


Figure 5-6 Schematic diagram of symmetrical shielded cable

  2) Recommended type of signal cable - twisted shielded cable:

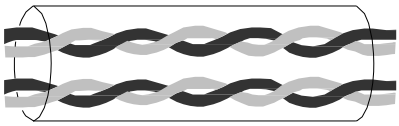


Figure 5-7 Schematic diagram of twisted shielded cable

  3) Recommended types of communication cables - shielded communication cables

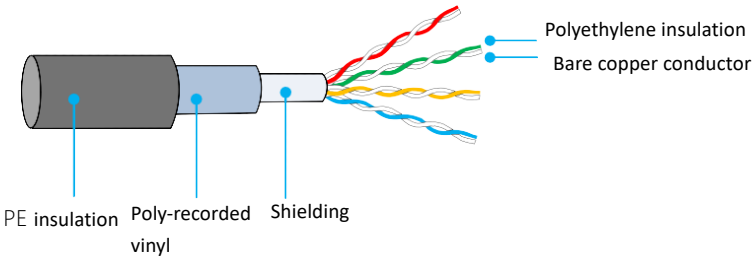


Figure 5-8 Communication cable shield diagram

5.3.2 Wiring requirements

1) Power cables should be laid away from all signal cables.
2) Motor cables, input power cables and control circuit cables should not be routed in the same raceway as much as possible.
3) Avoid long parallel lines between motor cable and control circuit, coupling generated by electromagnetic interference.
4) Keep at least 100mm spacing between different levels of cables in the same raceway.

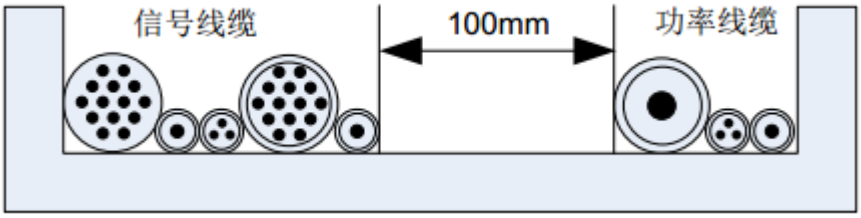


Figure 5-9 Cabling with different levels of cables

Revision: V2.0

HMC

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