

Preface

Brief

As a new generation of medium-sized PLC products independently developed by VEICHI, it supports EtherCAT bus control and dual-port network switching functions. It can realize encapsulation and reuse through FB/FC functions and multi-level network communication through RS485, Ethernet, CAN and EtherCAT interfaces, with up to 16 expansion modules and expansion functions like RS485, RS232, DI, DO, AD, DA, RTC clock and T-flash cards through expansion boards.

This manual introduces the installation and wiring of products, including product information, mechanical installation, electrical installation, etc.

Qualification

Certificate	Directive		Standard
CE	EMC	2014/30/EU	EN 61131-2
	LVD	2014/35/EU	EN 61010-1 EN 61010-2-201
	RoHS	2011/65/EU amended by (EU) 2015/863	EN IEC 63000

Version Change Log

Date	Version	Content
11/21/2023	V1.0	First version

Manual Acquisition

This manual is not shipped with products. If you need it, please log on to the official website of VEICHI Electric (www.veichi.cn), "Services and Support-Data Download", search for keywords and download the PDF file.

Warranty Description

If the product breaks down or is damaged under normal use, VEICHI will provide warranty service within the stated period (please refer to the order form for the warranty period of the product). Please note that we will take maintenance fees if it is not within the period any more. While maintenance fees will be charged for product damages caused by the following conditions even when it is during the warranty period:

- Failure to operate this product according to this manual.
- Product damages caused by fire, flood and abnormal voltage.
- Product damages caused by abnormal applications.
- Product damages caused by exceeding the specified scope of use of products.
- Secondary product damages caused by force majeure (natural disasters, earthquakes and

lightning strikes).

The relevant service fee shall be calculated by the unified standard of the manufacturer. If there is a contract, terms in it will be of the highest priority. Please refer to "Product Warranty Card" for details.

Precautions

Safety Statement

- This chapter explains the safety precautions that need to be paid attention for proper product operation. Please read the manual and understand the relevant information of safety precautions before using this product. Failure to comply with the safety precautions may cause serious injuries, deaths or equipment damages.
- The "Danger", "Warning" and "Note" items in the manual do not cover all of the safety precautions to be observed, but only supplement to all safety precautions.
- Please use the product in an environment that meets the requirements of design specifications, otherwise it may cause failure, abnormal function or component damages, which is not within the scope of product quality assurance.
- VEICHI Electric will not bear any legal liability for personal safety accidents and property losses caused when users fail to observe the contents of this manual.

Safety Level



Failure to observe the precautions will cause deaths and serious personal injuries.



Failure to observe the precautions may cause serious personal injuries or deaths.



Failure to observe the precautions may cause slight personal injuries or product damages.

Precautions

- The product illustrations show the details of the product, so exterior housing or covering are removed on the product. But please install the outer housing or covering according to the regulations for proper operation.
- The product illustrations in this manual are only examples, which may be slightly different from the product you ordered. Please see the actual product order.

Unpack & Acceptance



- When unpacking, please do not install them if any damages, rust or clues of use on the products and accessories.
- When unpacking, please do not install them if any clues of water ingress are found inside

the product, or there are missing or damaged parts.

- Please check the packing list carefully. please do not install them if they don't match the packing list.



- Before unpacking, please check whether the outer packaging of the equipment is in good condition, whether it is damaged, soaked, damp or deformed.
- Please open the package from outside to inside. Do not pound on it!
- When unpacking, please check the surface of equipment and accessories for damage, corrosion, bruise, etc.
- After unpacking, please carefully check quantity and names of the products against the list and check if any files or manuals are missing.

Storage & Transportation

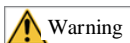


- When handling products, please lift them lightly, and pay attention to the objects under your feet at any time to prevent tripping or falling, otherwise it may cause personal injuries or product damages.
- When handling products with bare hands, please hold on to the product housing to avoid falling, otherwise it may cause personal injuries.
- Please strictly follow the required storage and transportation requirements for storage and transportation, otherwise it may cause product damages.
- Avoid storage and transportation under water splashing and rain, direct sunlight, strong electric field, strong magnetic field and strong vibration.
- Avoid storing products for more than 3 months. And please carry out stricter protection and necessary inspections if it is longer than 3 months.
- Please pack the products carefully before transporting them by vehicles. Sealed boxes must be used for long-distance transportation.
- Do not transport this product together with equipment or articles that may affect or damage this product.

Installation



- Only professionals with relevant training in electrical equipment and electrical knowledge can carry out operation on this product. Please keep non-professional personnels away from this product.



- Please read the product manual and safety precautions carefully before installation!
- Please do not install this product in places with strong electric field or strong electromagnetic wave interference.
- Before carrying out installation, ensure that the installation position is sufficient to support the weight of the equipment.
- Do not wear loose clothes or accessories when installing, otherwise you may get an electric

shock.

- When installing the product in a closed environment (such as cabinet or case), please use a cooling device (such as fan or air conditioner), otherwise it may cause product overheat or fire.
- Do not refit this product.
- When this product is installed in the cabinet or terminal equipment, the cabinet or terminal equipment needs to provide corresponding protective devices such as fire-proof casing, electricity-proof casing and mechanical protective devices, and the protection level should meet the relevant IEC standards and local laws and regulations.
- When it is necessary to install strong electromagnetic interference equipment such as transformers, please install shielding devices to avoid misoperation of this product.
- Please install the product on flame retardant objects such as metal. Keep flammable materials away from the product, otherwise it may cause fire.



Note

- During installation, please cover the top of the product with cloth or paper to prevent metal chips, oil, water and other foreign bodies from entering the product during drilling, otherwise it may cause product failure. After the operation, please remove the covering to avoid blocking the ventilation hole and impair the heat dissipation, otherwise it may cause abnormal heating of the product.
- Resonance may occur when regulate the speed of the motor which is running at a constant speed. Please install anti-vibration rubber under the motor base or use vibration suppression function to reduce vibration effectively.

Wiring



Danger

- It is forbidden to carry out equipment installation, wiring, maintenance, inspection or component replacement by non-professional personals.
- Please cut off the power supply of all equipment before wiring. There is residual voltage in the internal capacitor of the equipment after the power supply is cut off. Please wait at least for the time specified on the warning label on the product before wiring and other operations. Measure the DC voltage of the main circuit and make sure it is below the safe voltage, otherwise there is risk of electric shock.
- Please cut off the power to carry out wiring, remove the product cover or touch the circuit board, otherwise it may cause electric shock.
- Please confirm that the equipment and products are well grounded, otherwise it may cause electric shock. Separate grounding or single-point grounding should be adopted, and public grounding is not acceptable.



Warning

- It is forbidden to connect the input power supply to the output end of equipment or products, otherwise it may cause equipment damages or even fire.
- When the driving equipment is connected with the motor, please confirm that the phase sequence of the product and the motor terminal is accurate and consistent, otherwise the

motor will run in reverse.

- The cables used in wiring must meet the requirements in diameter and shielding, and the shielding layer of cables needs be grounded at one end.
- Confirm that all cables are wired correctly and no screws, gaskets or bare cables are left inside the product after wiring, otherwise it may cause electric shock or product damages.



- Please follow the procedures specified in the Electrostatic Preventive Measures (ESD), and wear electrostatic bracelets for wiring and other operations to avoid damaging the internal circuits.
- When wiring the control loop, please use twisted pair shielding cables and connect the shielding layer to the grounding terminal of the product, otherwise it will cause abnormal operation.

Power



- Before power-on, please confirm that the product is installed in good condition, the wiring is firm, and the motor device is allowed to restart.
- Before power-on, please confirm that the power supply meets the requirements to avoid product damages or fire.
- It is forbidden to open the product cabinet door or product protective cover plate to touch any terminal of the product, or disassemble any device or parts of the product when power is on, otherwise it may cause electric shock.

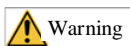


- After wiring and parameter setting, please run the motor to see if it can run normally, otherwise it may cause personal injuries or equipment damage.
- Before power-on, please confirm that the rated voltage of the product is consistent with the power supply voltage. If the power supply or voltage is incorrect, it may cause fire.
- Before power-on, please confirm that there are no people around the products, motors and other machines, otherwise it may cause casualties.

Operation



- It is forbidden to run the products by non-professional personals, otherwise it may cause casualties.
- It is forbidden to touch any terminal of equipment and disassemble any devices or parts of the product when it is in operation, otherwise it may cause electric shock.

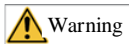


- Do not touch the equipment housing, fan or resistor to test the temperature, otherwise it may cause burns.
- During operation, please prevent other items or metal objects falling into the equipment, otherwise it may cause fire or product damages.

Maintenance



- It is forbidden to carry out equipment installation, wiring, maintenance, inspection or component replacement by non-professional persons.
- It is forbidden to maintain the equipment when power is on, otherwise it may cause electric shock.
- After cutting off the power of all equipment, please wait for at least the time specified on the warning label on the product before performing equipment maintenance and other operations.
- When using a PM motor, even if the power supply of the product is turned off, the induced voltage will be generated on the motor terminal during the rotation of the motor. Do not touch the motor terminal, otherwise it may cause electric shock.

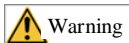


- Please carry out daily and regular inspection and maintenance of equipment and products according to requirements, and keep the records carefully.

Repair

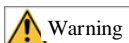


- It is forbidden to carry out equipment installation, wiring, maintenance, inspection or component replacement by non-professional persons.
- It is strictly forbidden to carry out equipment maintenance under the condition of power on, otherwise it may cause electric shock.
- After cutting off the power of all equipment, please wait for at least the time specified on the warning label on the product before carrying out equipment inspection, maintenance and other operations.



- Please report the equipment for repair according to the product warranty agreement.
- When the fuse is blown, the circuit breaker trips or the leakage circuit breaker (ELCB) trips, please wait at least the time specified on the warning label on the product before switching on the power supply or other operations, otherwise it may cause casualties and equipment damages.
- In face of equipment failure or damage, troubleshoot and repair must be carried out by professional persons according to the maintenance manual, and make maintenance records.
- Please follow the manual for replacing worn parts.
- Do not continue to use the damaged machine, otherwise it may cause casualties or greater damage to the product.
- After replacing the equipment, please re-check the wiring and parameter setting.

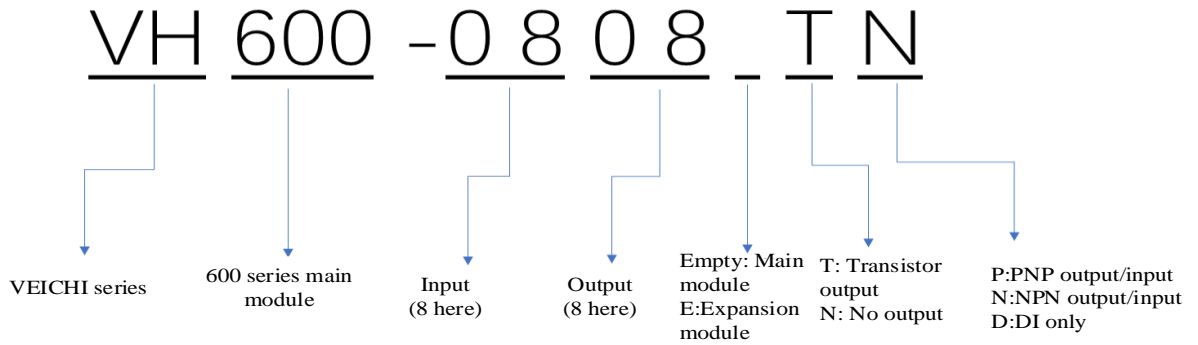
Disposal



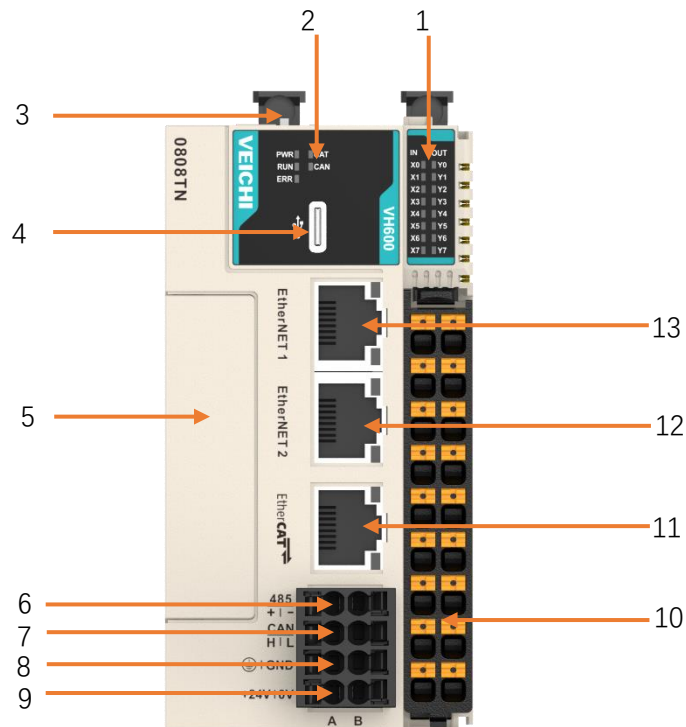
- Please process the equipment and products according to relevant national regulations and standards, otherwise it may cause casualties or property loss.
- Scrapped equipment and products should be treated and recycled according to industrial waste treatment standards to avoid environmental pollution.

1 Product Information


1.1 Model and Nameplate



1.2 Component



No.	Type	Mark	Definition	Indicator	Description
1	IO indicator	IN/OUT	IO status	Green	ON: Input or output is valid

					OFF: Input or output is invalid
2	Operation indicator	PWR	Normal power supply	Green	ON: Power supply is normal OFF: Power supply is abnormal
		RUN	Normal operation	Green	ON: User program is running OFF: User program is stopped
		ERR	Operation error	Red	OFF: No serious errors Flash: A serious error has occurred
		CAT	EtherCAT status	Green	ON: Communication is successful Flash: Communication is setting up OFF: Communication is unsuccessful
		CAN	CAN status	Green	ON: Communication is successful Flash: Communication is setting up OFF: Communication is unsuccessful
3	Dialing switch	RUN/STOP	To control master start/stop	/	/
4	Type-C interface		Connect to PC	/	/
5	Expansion slot	/	Expansion slot for other functions	/	/
6	RS485	485 +	485 communication signal +	/	/
		485-	485 communication signal -	/	/
7	CAN	CANH	CAN communication signal +	/	/
		CANL	CAN communication	/	/

			signal -		
8	Ground	PE	Power ground	/	/
		GND	Signal ground	/	/
9	Power	24V+	Power +	/	/
		24V -	Power -	/	/
10	IO terminal	/	8 channels of input/ 8 channels of output/ IO power supply	/	See chapter 3.1 for details
11	EtherCAT	EtherCAT	For EtherCAT communication	Yellow	ON: Communication is successful Flash: Communication is setting up
12	Ethernet 2	Ethernet2	RJ45 interface for Ethernet communication	Yellow	ON: Communication is successful Flash: Communication is setting up
13	Ethernet 1	Ethernet1	RJ45 interface for Ethernet communication	Yellow	ON: Communication is successful Flash: Communication is setting up

1.3 Product Specification

1.3.1 Basic Specification

Item		Specification
Key item	Program capacity	10MByte
	Data capacity	20MByte, and 512k inside for power-down holding
	EtherCAT	32 axes max. of both actual and virtual axes, and 125 slaves (including servo axes)
	Axis performance	Synchronization period for 32 axes within 2ms
	Electronic cam, interpolation	YES
	Local expansion	16 local expansion modules with 125 max. EtherCAT slaves(including servo axes)
Programming	Programming platform	Codesys
	Programming language	In conformity to IEC 61131-6 Programming Language (LD, FBD, IL, ST, SFC, CFC)
Communication	EtherCAT	Up to 125 EtherCAT slaves (including servo axes)

		125 max. slaves support disabling and scanning
	Ethernet	Two Ethernet ports share a network board and an IP address, supports network switching
		EtherNet/IP master/slave: when act as a master, it supports 16 slaves; when act as a slave, it supports 16 masters
		Modbus-TCP master/slave: when act as a master, it supports 63 slaves; when act as a slave, it supports 16 masters
		OPC-UA server with 16 clients
		TCP/UDP free protocol for 16 connections
	RS485	Up to 3 channels(1 channel on the main unit and 2 channels can be expanded by the expansion board)
		Hardware interface: 2 × 4 PIN terminal (common terminal with power supply)
		Isolation: Isolated
		Terminal resistance: YES
		Slave qty: Up to 31 Modbus-RTU slaves
		Communication baud rate: 9600bit/s, 19200bit/s, 38400bit/s, 57600bit/s, and 115200bit/s
		Short circuit protection: YES
CAN	Serial port free protocol	
	CANopen master: 1 channel of CANopen master can be expanded with up to 30 slaves	
USB	NO	
High speed IO	Pulse input	8 channels of 200K high speed input
	Pulse output	8 channels of 200K high speed output
User program upgrade	Ethernet	Program upload/download
	TF card	Under way
Firmware upgrade	TF card	For firmware upgrade
Dimension and Weight	Dimension (Length × Width × Height) (mm)	100 × 53 × 80
	Weight	-

1.3.2 Power Specification

Item	Specification
Terminal input power rated voltage	24V DC ± 10% (21.6V DC ~ 26.4V DC)
Terminal input power rated current	1.6A (Max at 24V DC)
Bus output power rated voltage	5V DC (4.75V DC ~ 5.25V DC)

Bus output power rated current	2A (max at 5V)
24V input power protection	Short circuit protection and reverse connection protection
Module hot swap	NO

1.3.3 Input Specification

Item		Specification
Input type		Digital input
Input channel		8
Input method		Leakage
Input voltage level		24V DC \pm 10% (21.6V DC ~ 26.4V DC)
High speed input (X0 ~ X7)	Current when input is ON	> 1mA
	Current when input is OFF	< 0.15mA
	Hardware response time	5us
	Max input frequency	200KHz
	Input impedance: 4.4K Ω	16K
ON voltage		> 18V
OFF voltage		< 4V
Software filter time		Adjustable from 0ms to 60ms, and the min. unit is 1us
Isolation		IC chip
Common terminal		One common terminal(DC 24V +) for 8 input channels

1.3.4 Output Specification

Item		Specification
Output type		NPN output
Output channel		8
Voltage level		24V DC \pm 10% (21.6V DC ~ 26.4V DC)
High speed output (X0 ~ X7)	Output load	0.5 A/terminal, 2A/8 terminals
	Hardware response time	5us
	Max. output	200KHz
	Load current	\geq 11mA under full frequency
OFF leakage current		< 0.5mA, rated voltage 24V
Max ON residual voltage		< 0.5V DC
Isolation		Digital isolator
Common terminal		One common terminal (DC24V-) for 8 output channels
Output display		When it is the driving state, the output indicator is

	ON(controlled by software)
External inductive load protection	When there is inductive load, users need to install freewheel diodes

Note: When the output frequency is greater than or equal to 100KHz, an external 1K Ω resistor should be connected to 24V terminal.

2 Mechanical Installation

2.1 Installation Environmental Requirements

When installing the PLC to the lead rail, please take account of operability, maintainability and the surrounding environmental resistance.

Item	Specification
Use environment	Non-corrosive and combustible gas, slight conductive dust (dust)
Altitude	≤ 2000m (80kPa)
Pollution class	L2
Anti-interference	Power cord 2kV (IEC 61000-4-4)
Overvoltage category	Grade I
EMC	Class B, IEC 61131-2
Vibration	IEC 60068-2-6 5Hz ~ 8.4Hz, 3.5mm, 8.4Hz ~ 150Hz, 1g, X/Y/Z triaxial, 10 cycles/axis direction
Impact resistance	IEC 60068-2-27 150m/s ² , 11ms, ± X/Y/Z six directions, 3 times/direction, 18 times in total
Overcurrent protection	1.5A fuse
Storage temperature and humidity	Storage temperature: -40°C ~ +70°C Relative humidity: < 90% RH, no condensation
Transportation temperature and humidity	Storage temperature: -40°C ~ +70°C Relative humidity: < 90% RH, no condensation
Operation temperature and humidity	Operation temperature: -20 °C ~ + 55 °C (horizontal), 20 °C ~ + 45 °C (non-horizontal) Relative humidity: < 95% RH, no condensation
Installation location and restrictions	Installation location: It can be installed in 4 directions. Please refer to "2.2 Installation Location Requirements" for details.

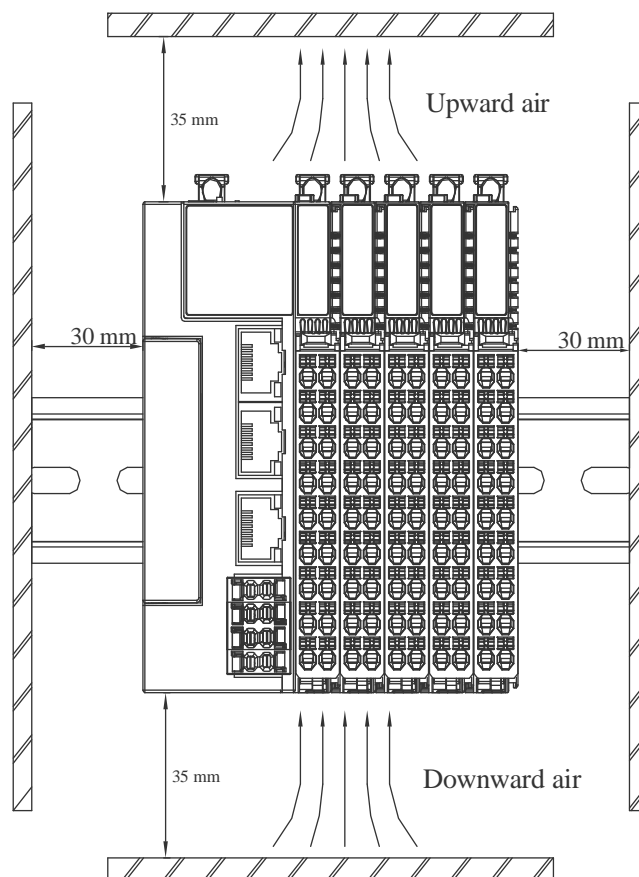
2.2 Installation Location Requirements

This product can be installed in four positions (i.e. installation direction): horizontal, vertical, and top and bottom of electric cabinet and horizontal direction is recommended. Different installation positions have different working temperature requirements and limits. For details, please refer to "2.1 Installation Environment Requirements".

■ Optimal installation position

The best installation position of this product is horizontal, and heat dissipation is designed by natural convection. To ensure normal ventilation and heat dissipation, sufficient wiring space, the

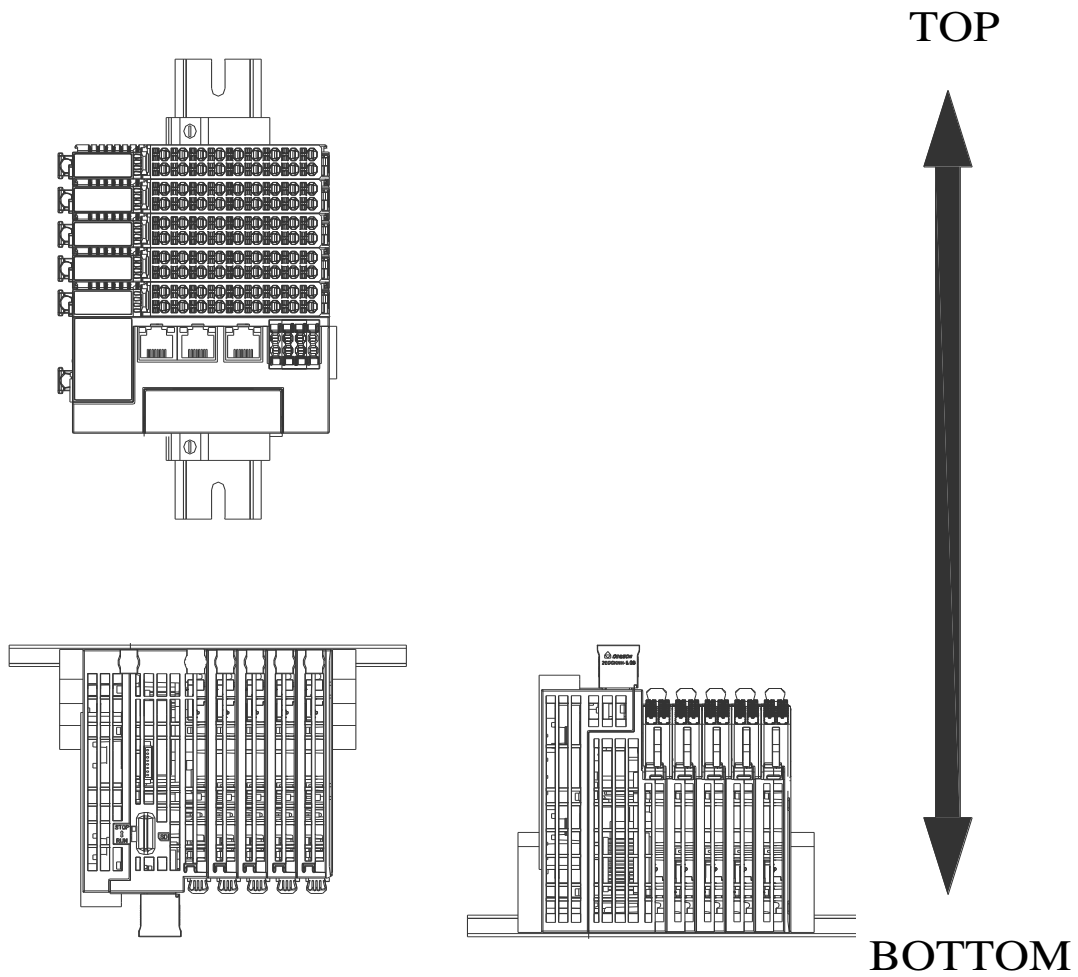
minimum clearance must be reserved around this product, as shown in the following figure.



If there are heat sources(heater, transformer, resistor, etc.) around this product, at least 100mm clearance should be reserved between them.

Other Installation Locations

Peripheral clearance requirements of other installation positions are the same as those of the above optimal installation positions, and other installation positions are shown in the following figure.



 Note

There are two requirements for vertical installation:

- The PLC must be installed below all IO modules.
- Please use trunking to hold the cables during wiring to avoid snap sliding on the lower lead rail. If this product is not to be fixed on the DIN lead rail, misoperation may occur.

2.3 Installation Precaution

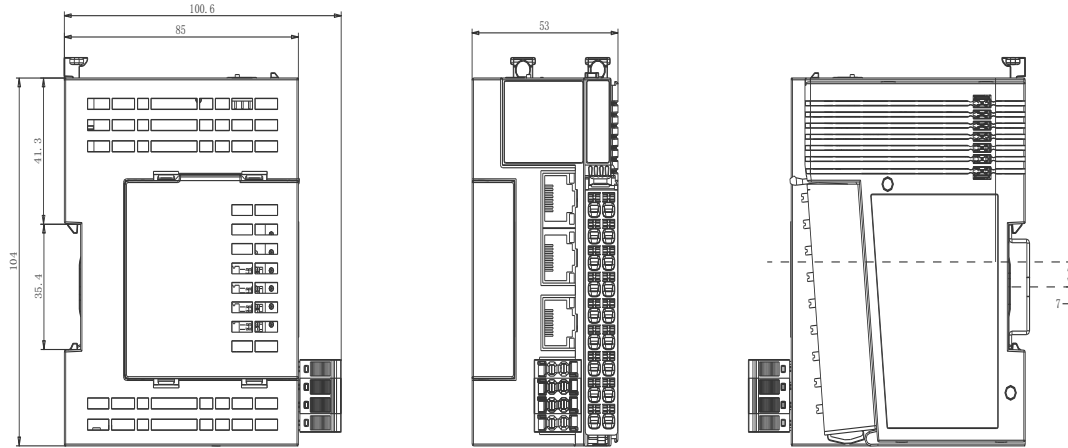
- Make sure the master and modules are powered down before installing or removing them.

 Note

- Do not hot-plug modules, which may cause the master to restart, user data loss or damage, etc.
- Please do not drop or impact the master and module to avoid damage to the master and modules.

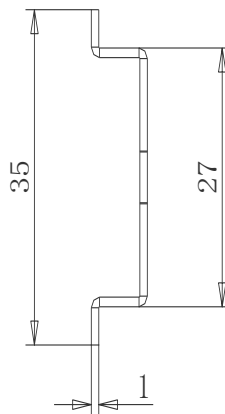
2.4 Installation Dimension

Installation dimension information is shown in the following figure, and the unit is millimeter (mm).



2.5 Installation Method

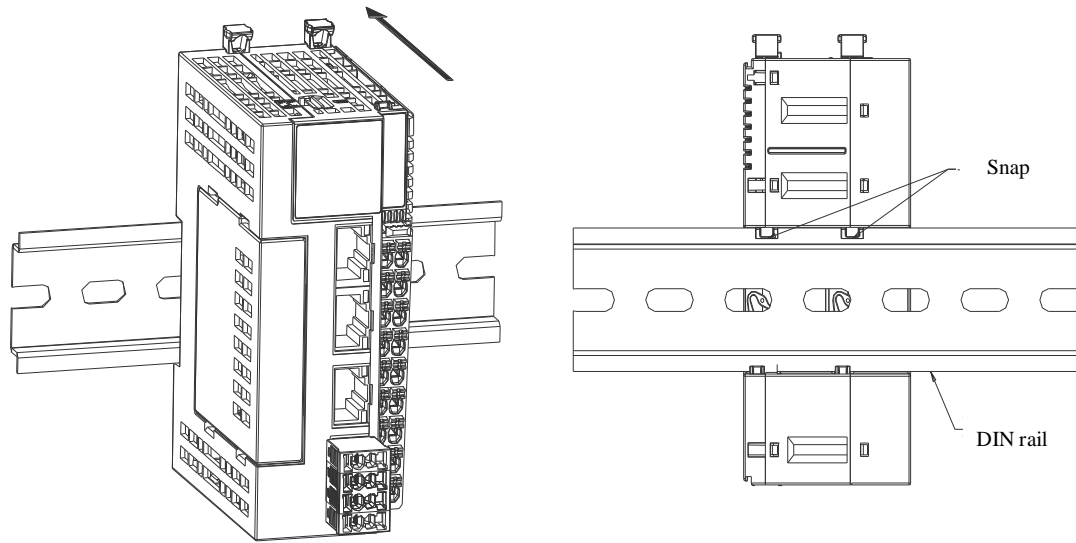
The master shall be installed to the DIN lead rail, which shall conform to IEC 60715 standard (35mm wide and 1mm thick). The dimensional information is shown in the following figure, and the unit is millimeter (mm).



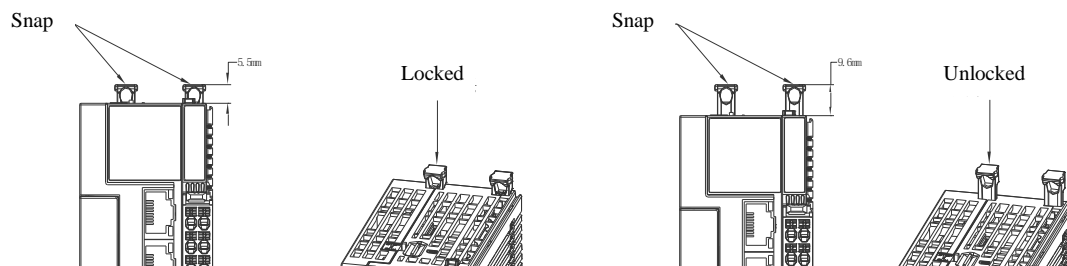
Installation of the product to a non-recommended DIN lead rail (especially if the thickness is not 1.0 mm) will cause snap failure and the product cannot be installed in place, and lead to further misoperation.

■ Master installation

1. When installing, align the master to the DIN lead rail, press the module in the direction indicated by the arrow, and there will be obvious clipping sound if it is in place, as shown in the following figure.



2. Confirm that the DIN rail snaps are in place, and the locked and unlocked state are shown in the following figure.



- If the snap is lower, it is locked.
- If the snap is higher, it is unlocked.

When unlocked, press the snap down to make it locked.

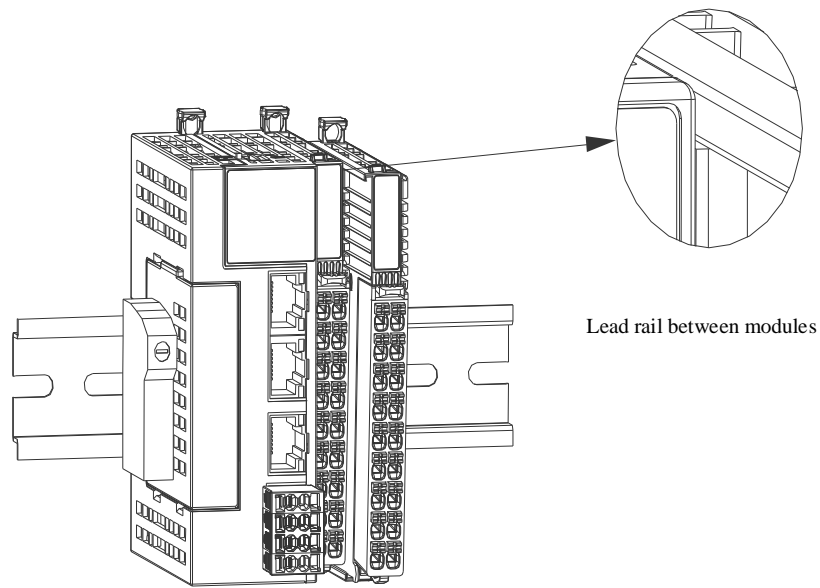


Note

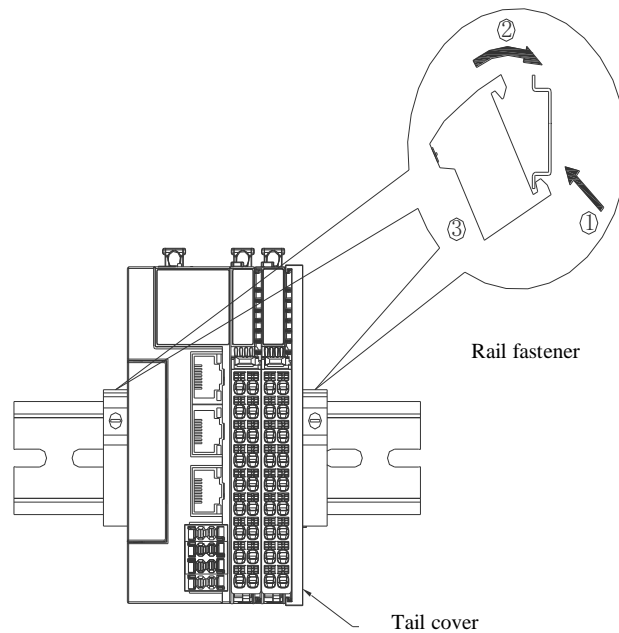
When the master is not installed on the lead rail, please still keep the snap locked or it may fail if it remains unlocked for a long time.

■ Master and module Installation

Master and the modules are mounted by sliding to the correct positions by the top and bottom lead rails, as shown in the following figure.

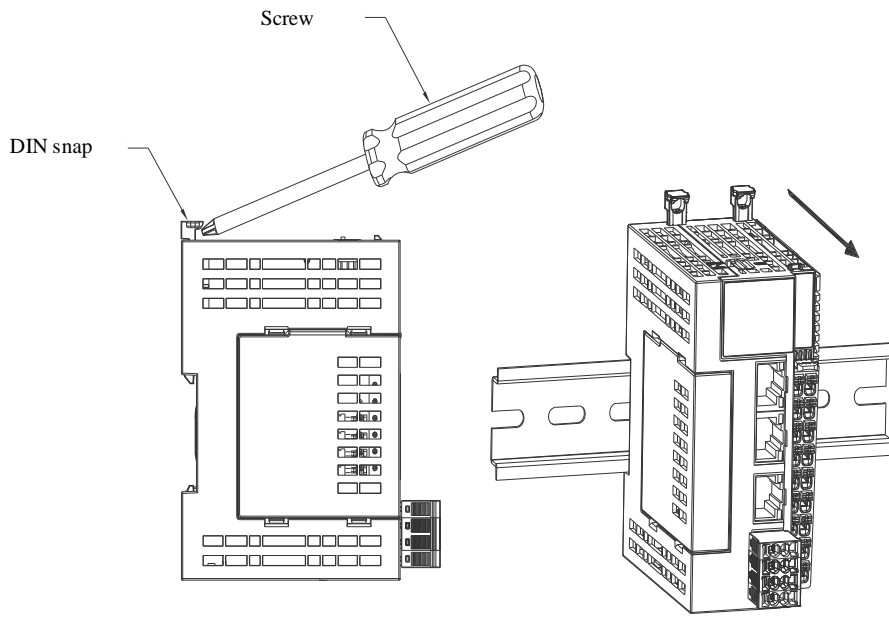


Install a DIN snap on both the master and modules. When installing the rail snap, hook the bottom of it to the bottom of the rail and then rotate the snap so that the top end of it is hooked to the top end of the rail, and finally tighten the screws to lock the rail snap as shown in the following figure.



■ Disassemble

Use a straight screwdriver or similar tool to pry the rail lock up, pull the module output, and press the snap down when finished.



3 Electrical Installation

3.1 Terminal Arrangement



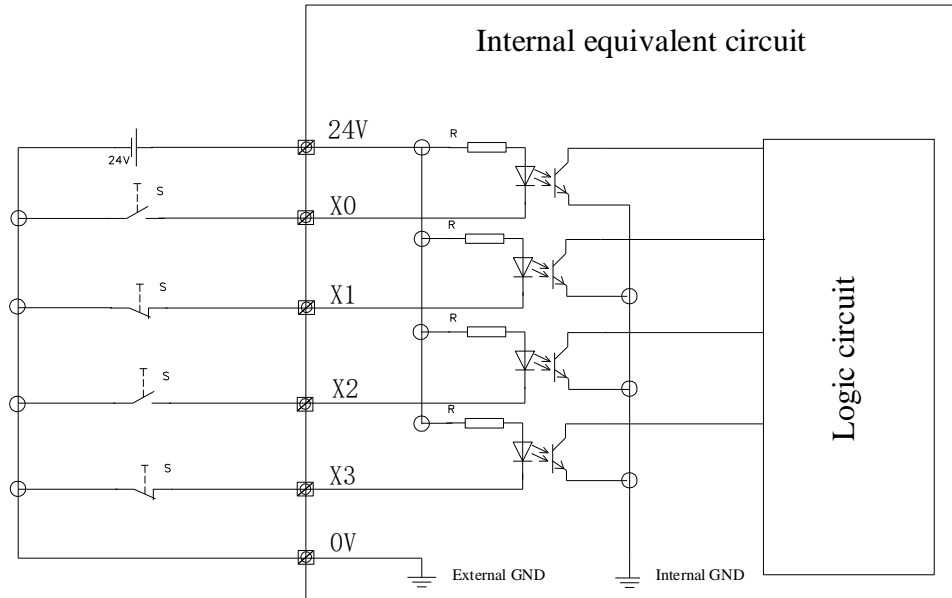
Left signal	Left terminal	Right terminal	Right signal
X0 input	1A	1B	Y0
X1 input	2A	2B	Y1
X2 input	3A	3B	Y2
X3 input	4A	4B	Y3
X4 input	5A	5B	Y4
X5 input	6A	6B	Y5
X6 input	7A	7B	Y6
X7 input	8A	8B	Y7
24V	9A	9B	0V

 Note

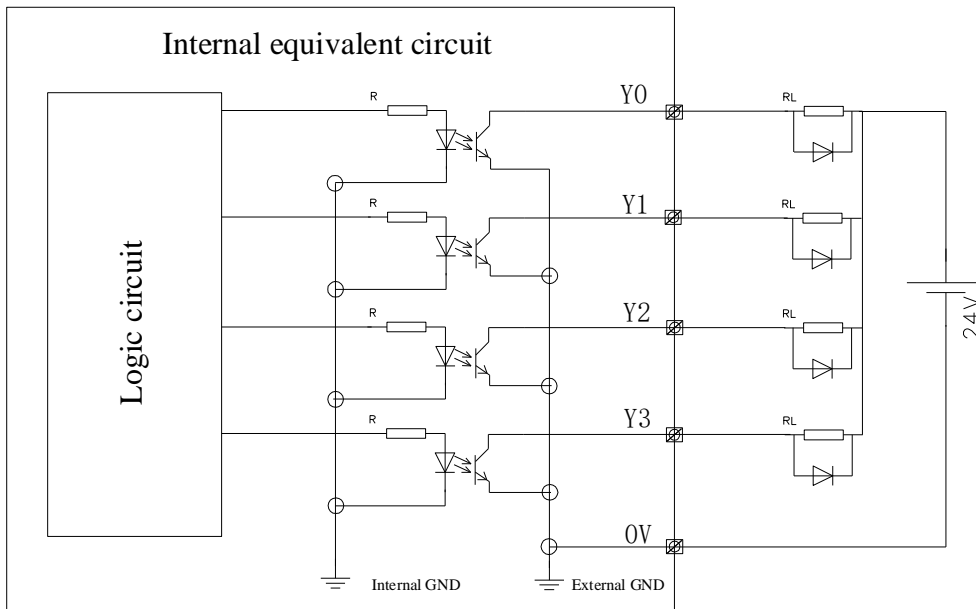
The total extension distance of high-speed IO interface expansion cable should be shorter than 3m.

When wiring, avoid bundling with power lines (high voltage, high current) and other cables that transmit strong interference signals. They should be separated and not be paralleled.

3.2 Input Terminal Wiring



3.3 Output terminal wiring

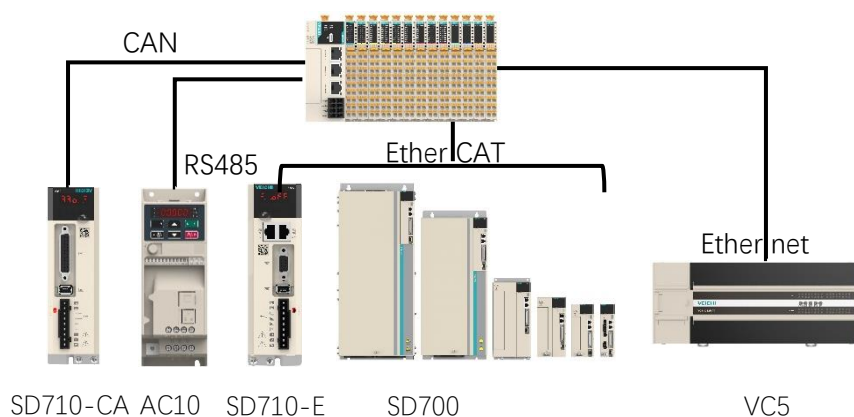


Description

When there is inductive load, it is necessary to connect freewheeling diodes externally, and the diodes can be 1N4001 or similar ones.

4 Communication

4.1 Networking

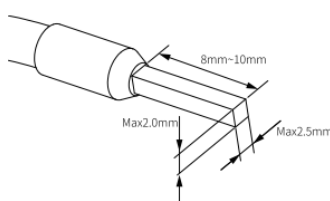


4.2 Cable Selection

In the following table, the lug diameter is for reference only, which can be calculated reasonably according to actual use and adjusted separately.

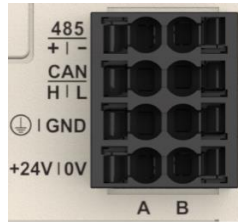
	Diameter	
	GB/mm ²	ANSI/AWG
Tubular lug	0.3	22
	0.5	20
	0.75	18
	1.0	18
	1.5	16

If other tubular lugs are used, press them to the twisted cables. The shape and size requirements are as shown in the following figure.



4.3 Cable Connection

The CAN communication terminal, the RS485 communication port and the power port share one terminal base, and the interface distribution is shown in the following figure



Terminal definition

Signal	Left	Right	Signal
RS485 differential pair positive	485 +	485 -	RS485 differential pair negative
CAN differential pair positive	CAN-H	CAN-L	CAN differential pair negative
PE	\perp	GND	Communication ground
DC 24V power supply positive	+24V	0V	DC 24V power supply negative

- Cables
 - Please refer to "4.2 Cable Selection" to select tubular cable and insert it into the communication port.
- Ethernet communication
 - To improve communication, the Ethernet line requires CAT-5 shielded twisted pair and molding cables with iron shell.
 - Connection: Hold the crystal head on the cable and plug it into the Ethernet port (RJ45 interface) until it makes a "click" sound.
 - Disassembly: Press and hold the crystal head and tail to pull out the connector horizontally with this product.

4.4 EtherCAT Communication

■ EtherCAT specification

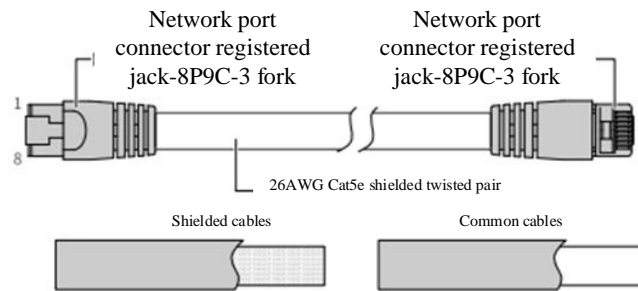
Item	Description
Communication protocol	EtherCAT protocol
Service	CoE (PDO, SDO)
Sync method	DC-distributed clock is used for servo and input-output synchronization is used for IO module
Physical layer	100BASE-TX
Baud Rate	100 Mbit/s (100Base-TX)
Duplex mode	Full duplex
Topology	Linear topological structure
Transmission medium	Network cables, see wiring section
Transmission	The distance between two nodes shorter than 100m

distance	
Slave qty	Up to 127
Frame length	44 bytes ~ 1498 bytes
Process data	Single Ethernet frame with up to 1486 bytes

■ **Wiring**

PLC can realize EtherCAT bus communication through CN3 port, and the requirements for communication network cable are as follows:

Communication network cable requirements



Signal lead distribution

Pin	Signal	Direction	Description
1	TD +	Output	Data transmission +
2	TD -	Output	Data transmission -
3	RD +	Input	Data reception +
4	-	-	NULL
5	-	-	NULL
6	RD -	Input	Data reception -
7	-	-	NULL
8	-	-	NULL

Length requirement

When using EtherCAT bus, the cable length between devices should not exceed 100 meters, which will attenuate the signal and the normal communication.

Technical requirements

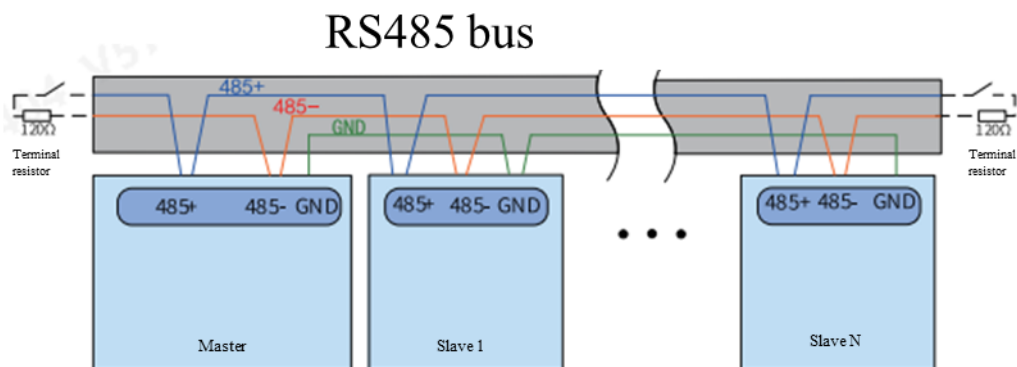
100% conduction test, no short circuit, open circuit, dislocation and poor contact. It is recommended to use the following specifications of the cables.

Item	Specification
Cable Type	Resilient Crossover Cable, S-FTP, Cat5e
Standard	EIA/TIA568A, EN 50173, ISO/IEC 11801 EIA/TI Abulletin TSB EIA/TIA SB40-A & TSB36
Section	AWG26
Type	Twisted pair
Line pair	4

4.5 RS485 Communication

We recommend to use shielded twisted pairs on RS485 bus, and twisted pair on 485 +, 485-; The two ends of the bus are respectively connected with 120Ω terminal resistors to prevent signal reflection; The reference ground of all Node 485 signals is connected together, 31 nodes max, and the distance between branches of each node should be within 3m.

The RS485 bus connection topology is shown in the following figure.

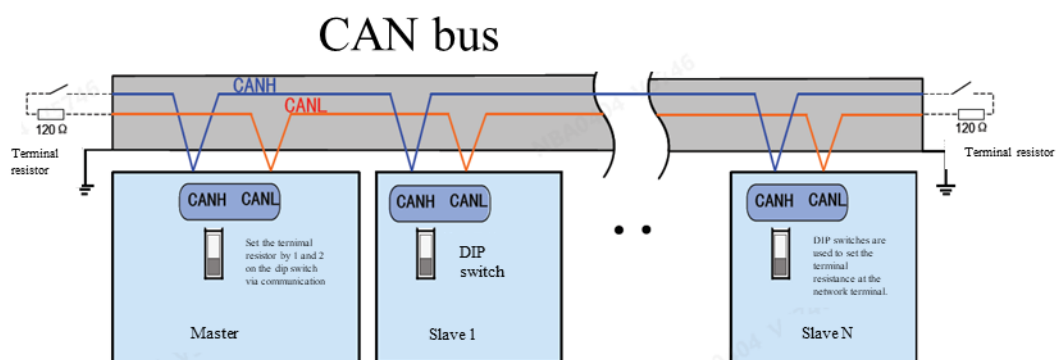


When fixing cables, do not bundle them with AC power lines and high-voltage cables to avoid interference among the communication signals.

4.6 CAN Communication

The CAN bus connection topology is as follows. It is recommended to use shielded twisted pair for CAN bus, and the two ends of the bus are respectively

connected to two 120Ω terminal resistors to prevent signal reflection. Generally, the shielding layer is grounded at a single point.

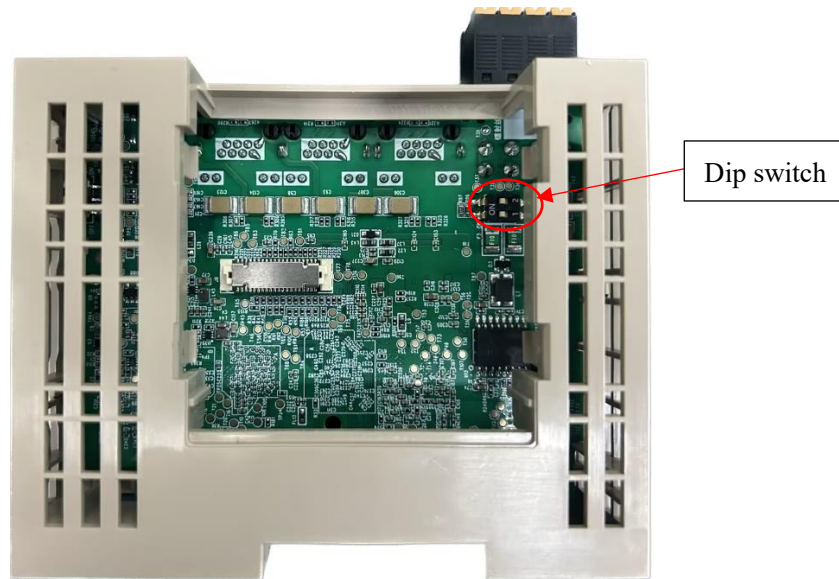


When fixing cables, do not bundle them with AC power lines and high-voltage cables to avoid interference among the communication signals.

4.7 Terminal Resistor

Terminal resistor dip switch for CAN and RS485 is located on the left side of VH600 controller,

and the left expansion cover plate needs to be opened. Its position is shown in the following figure.



See the following table for the corresponding relationship between terminal resistor and dip switch.

Position	Resistance	Comment
1	120Ω	RS485 terminal resistor
2	120Ω	CAN terminal resistor

5 Operation and Maintenance

5.1 Start/Stop

After the program is written into PLC, please follow the following steps to switch on and off.

When the PLC is in STOP state and the program is written, please

1. Set the system to RUN.
2. Make sure that the RUN indicator is always on and yellow-green.
3. Set the system to STOP state when you want it to stop, or stop it through the upper computer.

5.2 User Program Burning with SD Card

We will upgrade this function in the future.

5.3 Firmware Upgrade with SD Card

1. Put the SD card for firmware upgrade (max. capacity 32GB, file format FAT32) onto the TF expansion board and install it to theIn this product.



TF installation needs to be carried out when the power is cut off.

-
2. Repower the product.

The RUN indicator and ERR indicator on this product flash, indicating that the firmware is being upgraded; The slow flashing of RUN indicator and the extinction of ERR indicator indicate that the firmware upgrade is successful; The RUN indicator goes out and the ERR indicator flashes slowly, indicating that the firmware upgrade failed.

3. After firmware upgrade is finished, power down the product and take out the SD card.
4. Repower the product.

Appendix: Expansion Selection

Type	Model	Specification
Left expansion module	VH600-RS485	1-channel RS485
	VH600-4DI	4-channel DI
	VH600-4DO (TN)	4-channel leakage DO
	VH600-2AD1DA-I	2-channel AI, 1-channel AO, current mode.
	VH600-2AD1DA-V	2-channel AI, 1-channel AO, voltage mode.
	VH600-RTC	Real-time clock
Right extension module	VH-1600END	16-channel DI module
	VH-0800END	8-channel DI module
	VH-0016ETN	16-channel NPN DO module
	VH-0016ETP	16-channel PNP DO module
	VH-0808ETN	8-channel DI module and 8-channel NPN DO module
	VH-0808ETP	8-channel DI module and 8-channel PNP DO module
	VH-0008ETN	8-channel NPN DO module
	VH-0008ETP	8-channel PNP DO module
	VH-4AD	4-channel AI
	VH-4DA	4-channel AO
	VH-4PT	4-channel thermal resistance temperature detection input module
	VH-4TC	4-channel thermocouple temperature detection input module