VEICHI



Manual

VH300 Series PLC

Preface

Brief

The new generation of bus type PLC, independently developed by VEICHI, can realize production process encapsulation and reuse through FB/FC and multi-level network communication through RS485, Ethernet, or CAN, with up to 16 extension modules for functions like RS485, DI, DO, AD, DA, and RTC clock.

This manual will introduce this PLC about its basic information, mechanical installation, electrical installation, etc.

Version Change Log

Date	Version	Content
202503	V1.0	First version issued

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.com), "Services and Support > Manual Download", and search it with keywords.

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 the service will be charged if it is not within the period any more. And maintenance fees will still be charged for product damages caused by the following conditions even when it is during the warranty period:

- Failure to operate this product according 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.

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Safety 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 "Caution" items in the manual do not cover all of the safety precautions to be observed, but only supplement to 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.

Safety Precautions

● The illustrations in this manual may show product with exterior housing or covering removed to reveal details. But please always ensure all housings or coverings are properly installed and operate strictly according to the instructions.

● 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
 ● Do not install them if any damages, rust or clues of use on the products and accessories. ● Do not install them if any clues of water ingress are found inside the product, or there are missing or damaged parts.

● Check the packing list carefully, and do not install them if they don't match the packing list.



● Check whether the outer packaging of the equipment is in good condition, whether it is damaged, soaked, damp or deformed before unpacking.

● Open the package from outside to inside. Do not pound on it.

● Check the surface of equipment and accessories for damage, corrosion, bruise, etc.

● Carefully check quantity and names of the products against the list and check if any files or manuals are missing.

Storage & Transportation



● Lift products 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.

● Hold on to the product housing when handling products with bare hands to avoid falling, otherwise it may cause personal injuries.

● Strictly follow the required storage and transportation requirements, 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.

● 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, and keep non-professional personnel away from this product!



● Read the product manual and safety precautions carefully before installation.

● Do not install this product in places with strong electric field or strong electromagnetic wave

interference.

● Ensure that the installation position is firm to support the weight of the equipment before installation.

● Do not wear loose clothes or accessories when installing, otherwise you may get an electric shock.

● Add cooling devices (such as fan or air conditioner) in the closed environment (such as cabinet or case), otherwise it may cause product overheat or fire.

● Do not refit this product.

● Take protective measures on the cabinet or terminal equipment such as adding fire-proof and electricity-proof casing and mechanical protective devices, and their protection level should meet the relevant IEC standards and local laws and regulations.

● When equipment with strong electromagnetic interference such as transformers are necessary, install shielding devices to avoid misoperation of this product.

● Install the product on flame retardant objects such as metal and keep any flammable materials away, otherwise it may cause fire.



● 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. Remove the covering to avoid blocking the ventilation hole and impair the heat dissipation after installation, 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



● It is forbidden to carry out equipment installation, wiring, maintenance, inspection or component replacement by non-professional personnel.

● 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.

● Cut off the power to carry out wiring, and remove the product cover or touch the circuit

board, otherwise it may cause electric shock.

● 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.



● Do not connect the input power supply to the output end of equipment or products, otherwise it may cause equipment damages or even fire.

● Confirm the phase sequence of the product to the motor, otherwise the motor will run in reverse.

● Ensue cables used in wiring meet the requirements in diameter and shielding, with the shielding layer of cables 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.



● 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.

● Use twisted pair shielding cables for control loop wiring and connect the shielding layer to the grounding terminal of the product, otherwise it will cause abnormal operation.

Power



● Confirm that the product is installed in good condition, the wiring is firm, and the motor is ready for operation before power-on.

● Confirm that the power supply meets the requirements before power-on to avoid product damages or fire.

● Never 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.



● Run the motor to see if it can run normally after wiring and parameter setting, otherwise it may cause personal injuries or equipment damage.

● Confirm that the rated voltage of the product is consistent with the power supply voltage before power-on. If the power supply or voltage is incorrect, it may cause fire.

● 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 personnel, otherwise it may cause casualties.

● Do not 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.

● Prevent other items or metal objects falling into the equipment during operation, 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 personnel.

● Do not 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 it is a PM, 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.



● 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 personnel.

● Do not 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.



● 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 personnel according to the maintenance manual, and make maintenance records.

● 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.

● Re-check the wiring and parameter setting after replacing the equipment.

Disposal

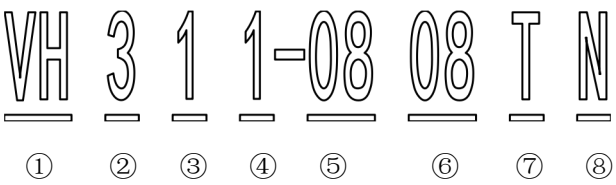


● Process the equipment and products according to relevant national regulations and standards, otherwise it may cause casualties or property loss.

● Treat and recycle scrapped equipment and products according to industrial waste treatment standards to avoid environmental pollution.

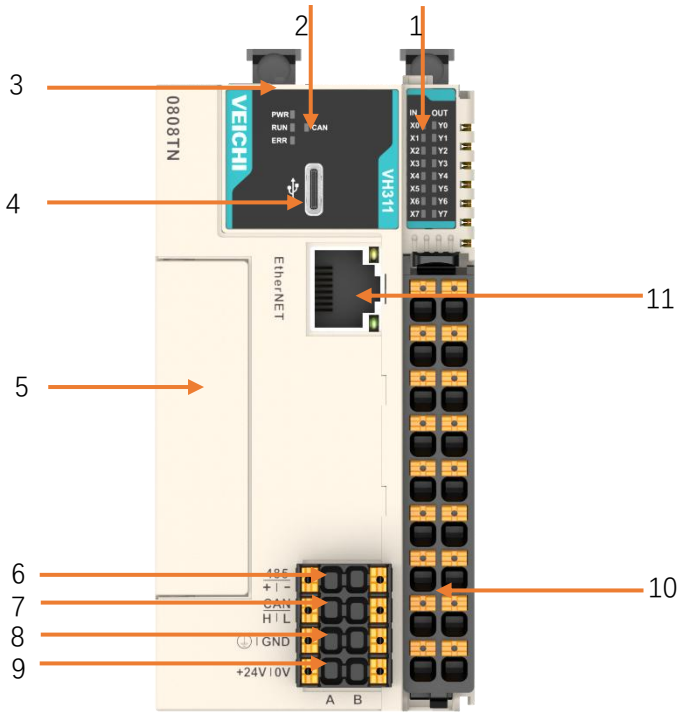
1 Product Information

1.1 Model and Nameplate



No.	Name	Description
①	Model	VH: Slim series PLC
②	Serial number	1=Economy type; 3=High-performance type; 5=Bus type; 6=Medium-size type; 7=Large-size type
③	Ethernet ports	1: 1×port
④	EtherCAT axis	1: 8 axes
⑤	Input	08: 8×input
⑥	Output	08: 8×output
⑦	Output mode	T: Transistor N: No output
⑧	Output type	N: NPN P: PNP

1.2 Component



No.	Name	Mark	Definition	Color	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	Power supply	Green	ON: Power supply is normal OFF: Power supply is abnormal
		RUN	Operation status	Green	ON: User program is running OFF: User program is stopped
		ERR	Operation error	Red	OFF: No serious errors Flash: Serious error has occurred
		CAN	CAN Status	Green	ON: Communication is successful Flash: Communication is setting up OFF: Communication is unsuccessful

3	DIP switch	RUN/STOP	To control master start/stop	/	/
4	Type-C interface		Connect to PC	/	/
5	Extension slot	/	Extension 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×input/ 8×output/ IO power supply	/	See section 3.1 for details
11	Ethernet port	Ethernet	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	200kBytes
	Data capacity	128k bytes for user soft components, and ~ 84K bytes for power-off parameter save 1M bytes for custom variables, 128K bytes for power-off parameter save
	Electronic cam, interpolation	YES
	Local extension	16×local extension modules + 1×left extension module
Programming	Programming software	Auto Studio
	Programming language	LD, FBD, ST, and SFC
	Ethernet	Modbus-TCP master/slave: when act as a master, it supports 16 slaves; when act as a slave, it supports 4 masters
		TCP free protocol for 4 connections
	RS485	3×RS485 channels (1 on the main unit and 2 extendable by the extension card)
		Hardware interface: 2×4 PIN terminal (common terminal with power supply)
		Isolation: Isolated
		Terminal resistor: YES, can be used for master or slave
		Slave qty: Up to 31 Modbus-RTU slaves
		Baud rate: 1.2kbps~115.2kbps
		Short circuit protection: YES
		Serial port free protocol
	CAN	CANopen master: Up to 31 slaves
	USB	For program upload/download
High-speed IO	Pulse input	8×200K high speed input
	Pulse output	8×200K high speed output
User Program Upgrade	Ethernet	Program upload/download
	TF card	For SD card program upgrade

Firmware Upgrade	TF card	For firmware upgrade
Dimension and Weight	Dimension (L× W × H) (mm)	100 × 53 × 80
	Weight	Net: 197g Gross: 241g

1.3.2 Power Specification

Item	Specification
Terminal input power rated voltage	24V DC ± 10% (21.6 V DC ~ 26.4 V DC)
Terminal input power rated current	1.6 A (Max at 24V DC)
Bus output power rated voltage	5V DC (4.75 V DC ~ 5.25 V DC)
Bus output power rated current	2A (Max at 5V)
24V input power protection	Short circuit protection and reverse connection protection
Module hot swap	N/A

1.3.3 Input Specification

Item		Specification
Input type		Digital input
Input channel		8
Input method		Source/Drain
Input voltage level		24V DC (-15%~+20%)
High speed input (X0 ~ X7)	Current when input is ON	≥3mA
	Current when input is OFF	≤1mA
	Hardware response time	5us
	Max input frequency	200kHz
	Input impedance	5k
ON voltage		≥15V
OFF voltage		≤5V
Software filter time		Adjustable from 0ms to 60ms, and the min. unit is 1us
Isolation		IC chip
Common terminal		Common terminal (input power polarity +/- reversible) for 8 input channels

1.3.4 Output Specification

Item		Specification
Output type		TN: NPN output TP: PNP output
Output channel		8
Voltage level		24V DC (-15%~+20%)
High speed output (X0 ~ X7)	Output load	0.5 A/terminal, 2A/8 terminals
	Hardware response time	5us
	Max. output frequency	200kHz
	Load current	≥ 11mA under full frequency
OFF leakage current		< 0.5mA, rated voltage 24V
Max ON residual voltage		< 0.5V DC
Isolation		Digital isolator
Common terminal		TN: COM connected to GND TP: COM connected to DC24V
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 1KΩ resistor should be connected to 24V terminal.

2 Mechanical Installation

2.1 Environment Requirements

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

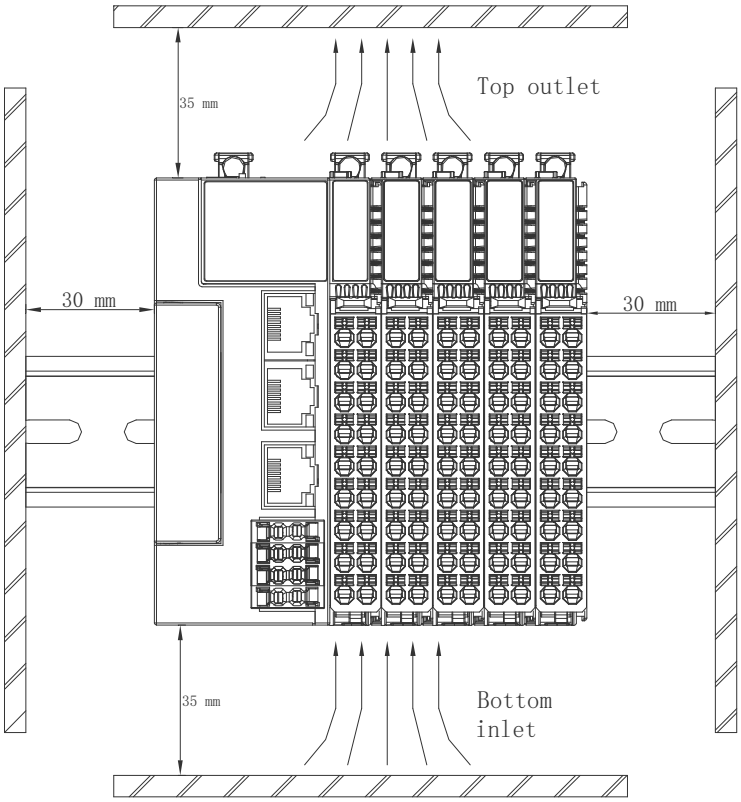
Item	Specification
Use environment	Non-corrosive and combustible gas, slight conductive dust (dust)
Altitude	≤ 2000m (80kPa)
Pollution degree	2
Anti-interference	Power line 2kV (IEC 61000-4-4)
Overvoltage grade	Grade I
EMC	Class B, IEC61131-2
Vibration resistance	IEC 60068-2-6 3.5mm between 5Hz ~ 8.4Hz, and acceleration 1g between 8.4Hz ~ 150Hz during 10 cycles of tests for X/Y/Z respectively
Shock resistance	IEC 60068-2-27 150m/s² for 11ms, 3 times for ±X/Y/Z six directions each, total 18 times
Overcurrent protection	1.5A fuse
Storage temperature and humidity	Storage temperature: -40℃~+70℃ Relative humidity: < 90% RH, no condensation
Transportation temperature and humidity	Storage temperature: -40℃~+70℃ Relative humidity: < 90% RH, no condensation
Operation temperature and humidity	Operation temperature:-20 ℃ ~ + 55 ℃ (horizontal), 20 ℃ ~ + 45 ℃ (non-horizontal) Relative humidity: < 95% RH, no condensation
Installation location and restrictions	It can be installed in 4 directions. Please refer to "2.2 Location Requirements" for details.

2.2 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. Working temperature requirements and limits are different for each installation method. For details, please refer to "2.1 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, and sufficient wiring space, the minimum clearance must be reserved around this product, as shown in the following figure.

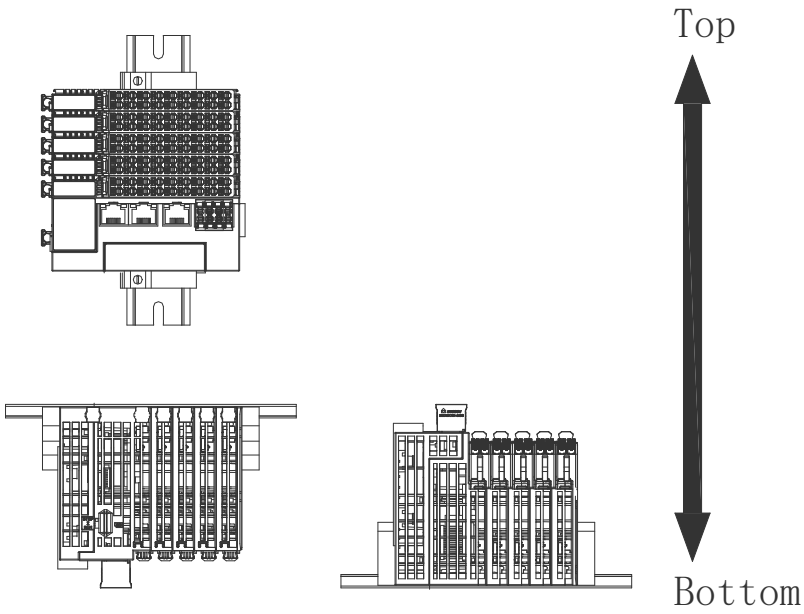


CAUTION

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

- Other Installation Positions

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.



CAUTION

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 Precautions

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

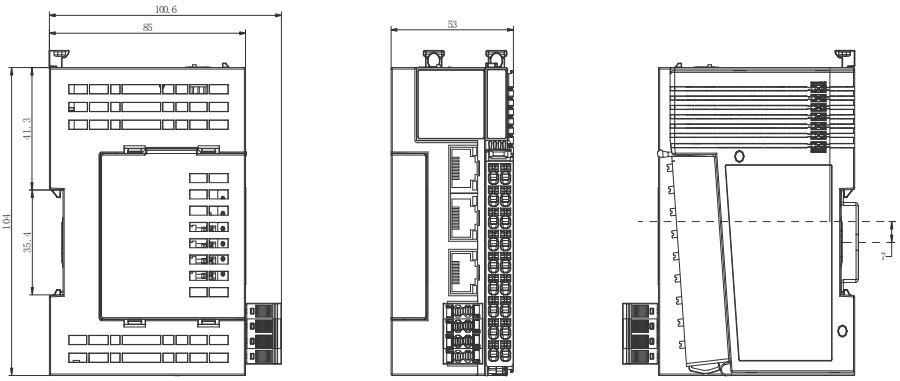
CAUTION

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 them.

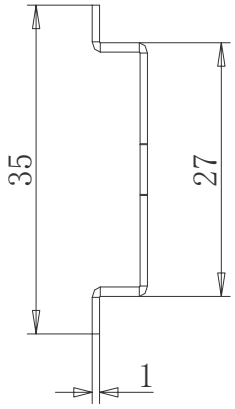
2.4 Installation Dimension

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).

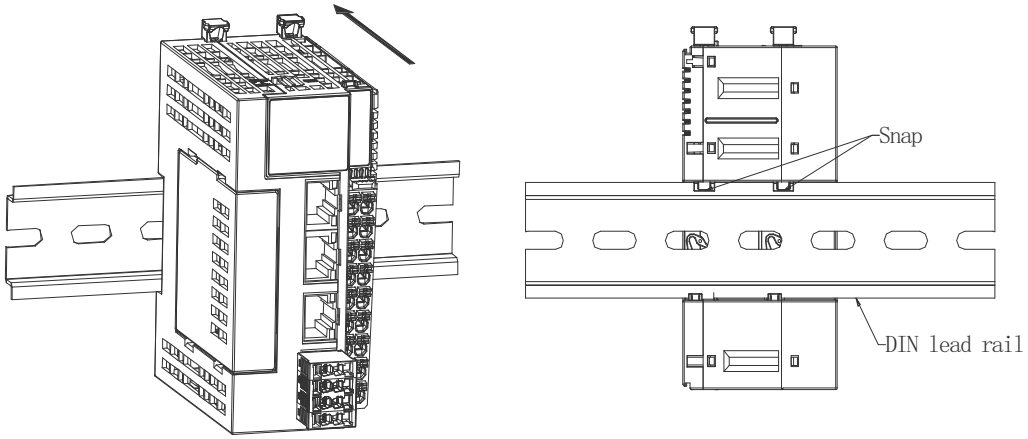


CAUTION

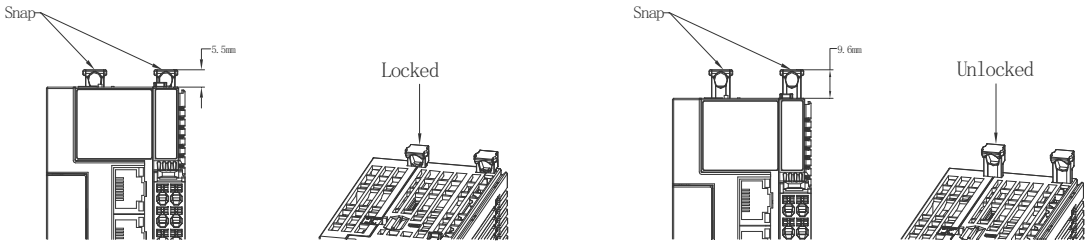
Installation of the product to a non-recommended DIN lead rail (especially if the thickness is not 1.0 mm) will cause snap failure and the product cannot be installed in place, and lead to further misoperation.

- 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.



i. If the snap is lower, it is locked.

ii. If the snap is higher, it is unlocked.

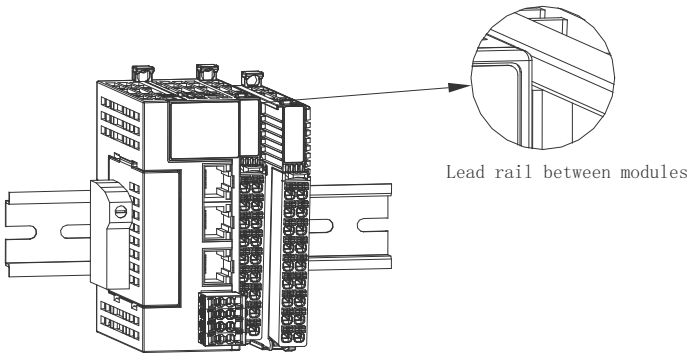
When unlocked, press the snap down to make it locked.

CAUTION

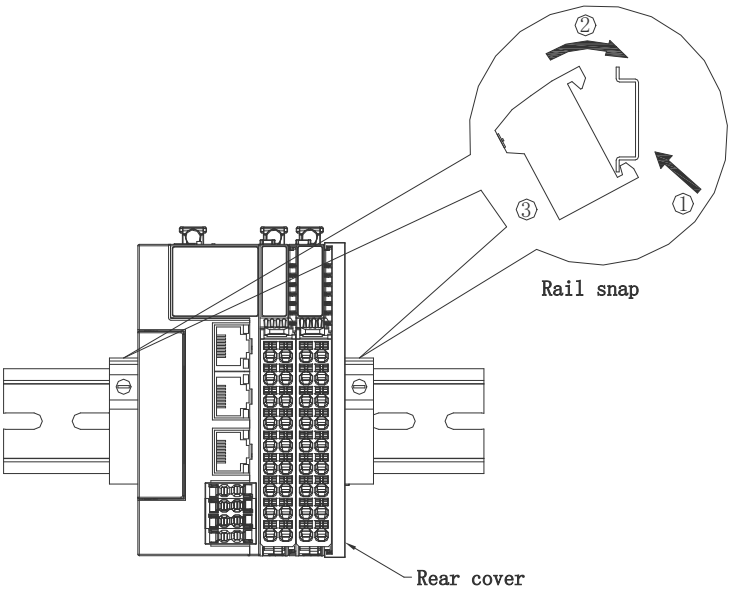
When the master is not installed on the lead rail, please still keep the snap locked or it may fail if it remains unlocked for a long time.

- 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.

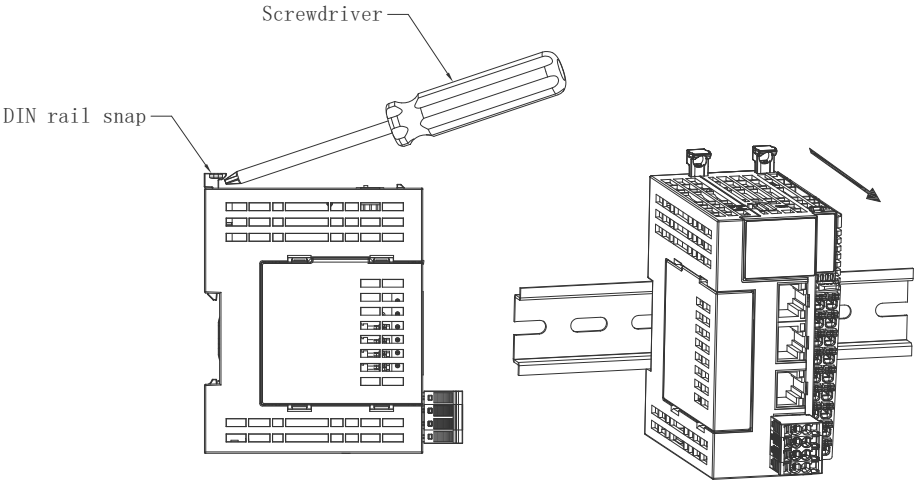


Install a DIN snap at both ends of the main unit or module. When installing the rail snap, hook the bottom of it to the bottom of the rail and then rotate the snap so that the top end of it is hooked to the top end of the rail, and finally tighten the screws to lock the rail snap, as shown in the following 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.


Screwdriver
DIN rail snap

3 Electrical Installation

3.1 Terminal Arrangement

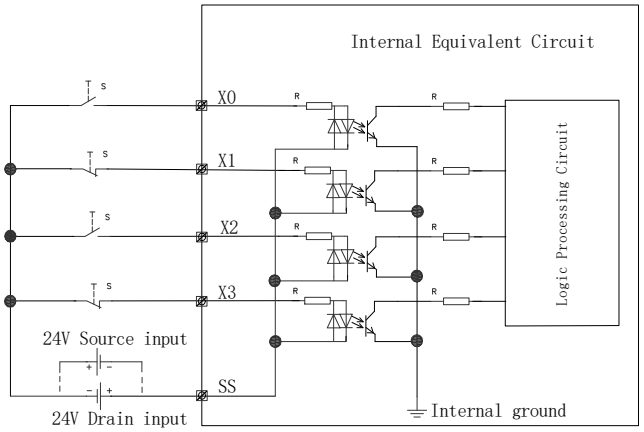


Left Signal	Left Terminal	Right Terminal	Right Signal
X0	A1	B1	Y0
X1	A2	B2	Y1
X2	A3	B3	Y2
X3	A4	B4	Y3
X4	A5	B5	Y4
X5	A6	B6	Y5
X6	A7	B7	Y6
X7	A8	B8	Y7
SS	A9	B9	COM

CAUTION

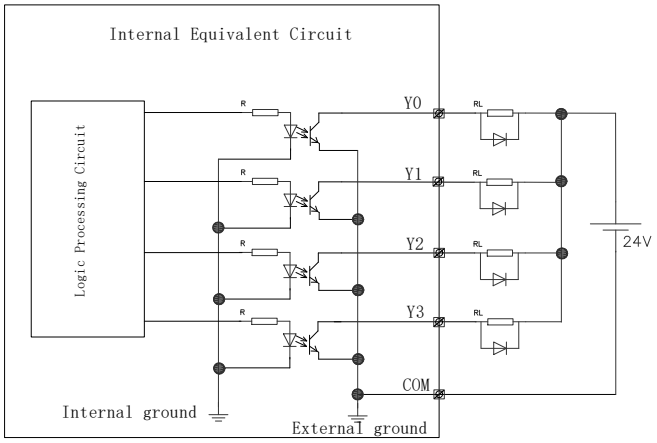
- The total distance of high-speed IO interface extension cable should be shorter than 3m.
- When wiring, avoid bundling with power lines (high voltage, high current) and other cables that transmit strong interference signals. They should be separated and not be paralleled.

3.2 Input Terminal Wiring

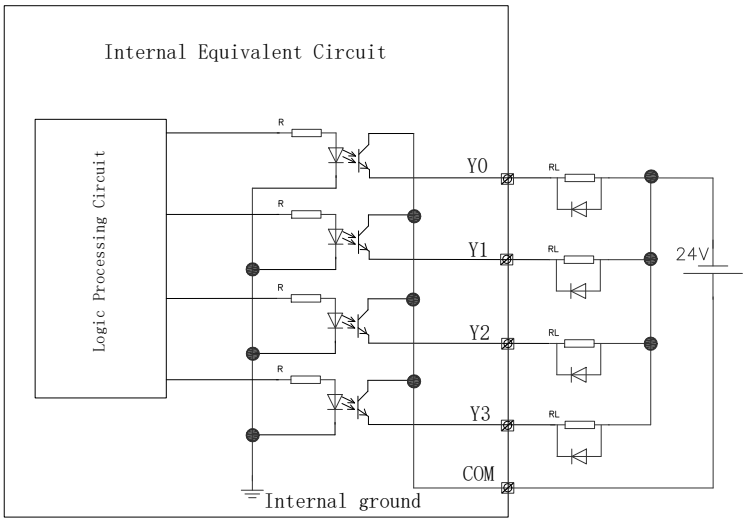


3.3 Output Terminal Wiring

VH3**-0808TN



VH3**-0808TP

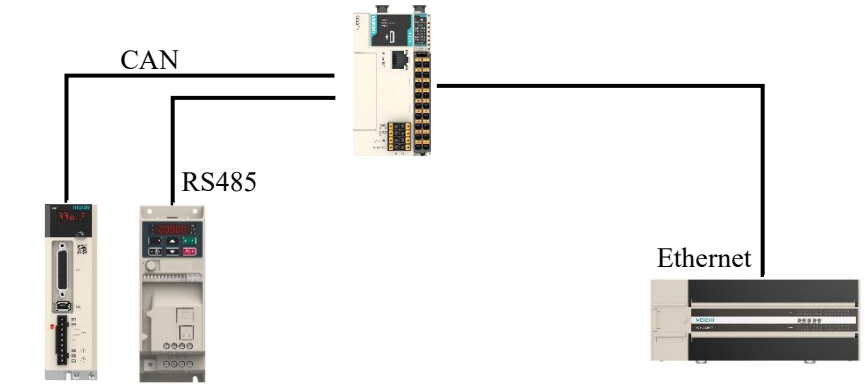


Note

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

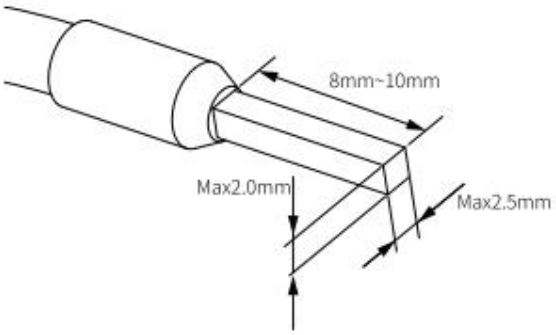


4.2 Cable Selection

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

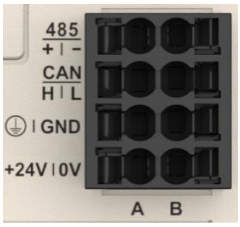
Cable	Diameter	
	GB/mm^2	ANSI/AWG
Tubular lug	0.3	22
	0.5	20
	0.75	18
	1.0	18
	1.5	16

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



- Terminal definition

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

- Wiring

Please refer to "4.2 Cable Selection" to select tubular cable and insert it into the communication port.

- Ethernet communication

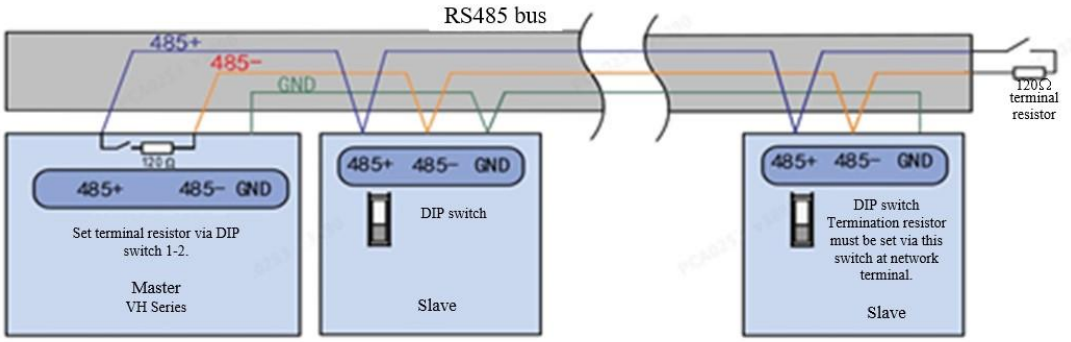
To improve communication, the Ethernet line requires CAT-5 shielded twisted pair and molding cables with iron shell.

- Connection: Hold the registered jack on the cable and plug it into the Ethernet port (RJ45 interface) until it makes a "click" sound.
- Disassembly: Press and hold the registered jack tail to pull out the connector horizontally with this product.

4.4 RS485 Communication

We recommend to use shielded twisted pairs on RS485 bus, and twisted pair cable on 485 + and 485-; The two ends of the bus are respectively connected with a 120 Ω terminal resistor 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.

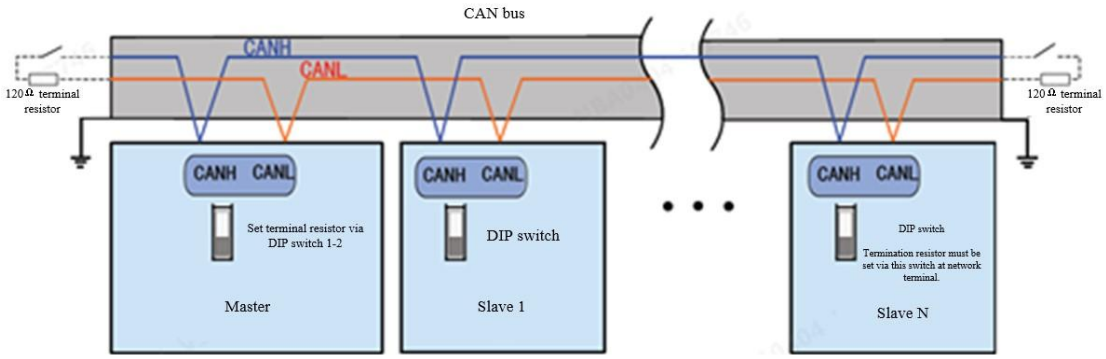
The RS485 bus connection topology is shown in the following figure.



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

4.5 CAN Communication

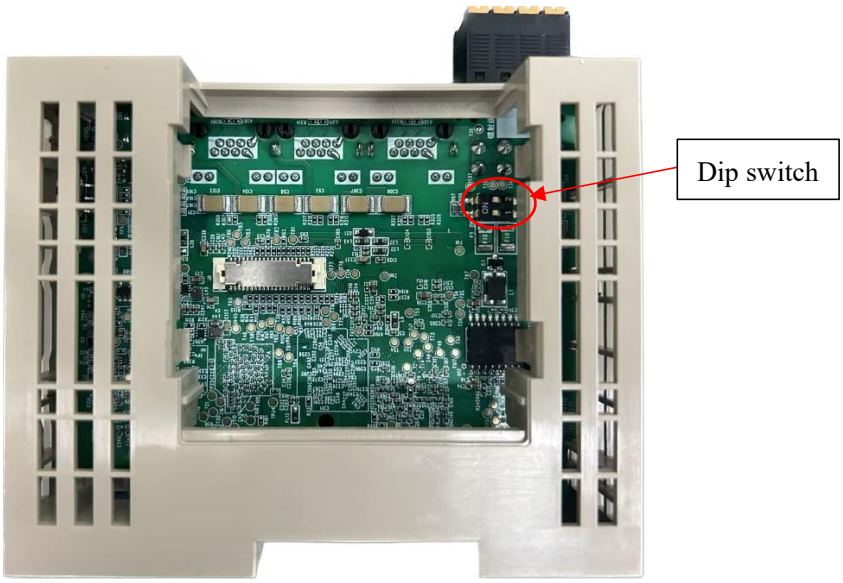
The CAN bus connection topology is as follows. It is recommended to use shielded twisted pair for CAN bus, and the two ends of the bus are respectively connected to two 120 Ω terminal resistors to prevent signal reflection. Generally, the shielding layer is grounded at a single point.



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

4.6 Terminal Resistor

Terminal resistor dip switch for CAN and RS485 is located on the left side of VH controller, and please open the left extension cover plate. 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	120 Ω	RS485 terminal resistor
2	120 Ω	CAN terminal resistor

5 Operation and Maintenance

5.1 Run/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.

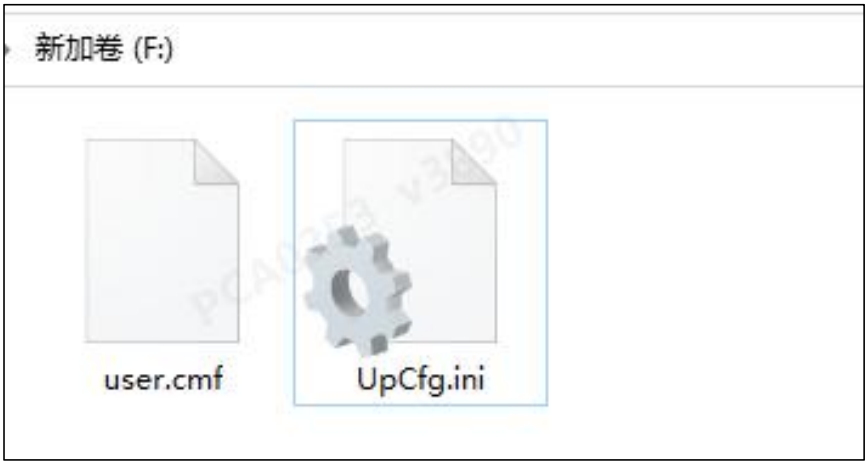
5.2 User Program Burning via SD Card

5.2.1 Application Project Update via SD Card

1. Prepare an SD card formatted as FAT32.
2. Open the UpCfg.ini file in Notepad, enter “user.cmf[SPACE]4”, append “//” on a new line as as the end marker, and then save the modification. Refer to the figure below.



3. Copy both UpCfg.ini and user.cmf file (PLC-generated) to the SD card, as shown below.



4. Safely eject the SD card, insert it into the PLC and power it on. The upgrade progress indicator will display the status.

Update Progress	Indicator Status
Updating...	PWR/ERR/CAT/CAN/RUN indicators ON (Note: May not activate for small projects.)
Update succeeded	After completion: - Only PWR remains steady on. - RUN flashes during system operation. Remove the SD card after successful program upgrade to prevent automatic re-update on reboot. (ERR may stay on if connected via USB/Ethernet without user program)
Update error	ERR flashes slowly + RUN displays 1 long + 2 short flashes. Host communication via USB/Ethernet is disabled.

Note

- UpCfg.ini format requirements:
  Single-space delimiter only appears between filename and number; No extra spaces or empty lines allowed elsewhere.
- // marks configuration end (subsequent text ignored); Maximum file size: 500 characters.
- Project upload are disabled by default during SD card program updates.

5.3 Firmware Upgrade via SD Card



Put on the TF card when the power is cut off.

5.3.1 MCU Firmware Upgrade

Firmware upgrades can be performed through either host computer connection or SD card. Follow these steps:

1. Prepare an SD card formatted as FAT32, with capacity ≤32GB (as shown in the diagram below).



2. Insert the SD card into a card reader and connect it to a computer via USB port. Verify the file format is FAT32 by Right-click>Properties.



3. Copy UpCfg.ini and System.bin to the SD card, insert the SD card into the PLC device and power it on. Monitor the upgrade status via panel indicators. (Note: Source files available from manufacturer/authorized agents)

Update Progress	Indicator Status
Updating...	PWR/ERR/CAT/CAN/RUN indicators ON (Note: No CAT indicator in VH300 series)
Update succeeded	After completion: - Only PWR remains steady on. - RUN flashes during system operation. Remove the SD card after successful program upgrade to prevent automatic re-update on reboot. (ERR may stay on if connected via USB/Ethernet without user program)
Update error	ERR flashes slowly + RUN displays 1 long + 2 short flashes. Host communication via USB/Ethernet is disabled.

5.3.2 FPGA Upgrade

1. Copy both UpCfg.ini and FPGA.bin to the SD card, insert the SD card into the PLC device and power it on. Monitor the upgrade status via panel indicators. (Note: Source files available from manufacturer/authorized agents)

Update Progress	Indicator Status
Updating...	PWR/ERR/CAT/CAN/RUN indicators ON (Note: No CAT indicator in VH300 series)
Update succeeded	After completion: - Only PWR remains steady on. - RUN flashes during system operation. Remove the SD card after successful program upgrade to prevent automatic re-update on reboot. (ERR may stay on if connected via USB/Ethernet without user program)
Update error	ERR flashes slowly + RUN displays 1 long + 2 short flashes. Host communication via USB/Ethernet is disabled.

5.3.3 Simultaneous MCU&FPGA Upgrade

1. Copy System.bin, FPGA.bin, and UpCfg.ini to the SD card, insert the SD card into the PLC device and power it on. Monitor the upgrade status via panel indicators. (Note: Source files available from manufacturer/authorized agents)

Update Progress	Indicator Status
Updating...	PWR/ERR/CAT/CAN/RUN indicators ON (Note: No CAT indicator in VH300 series)
Update succeeded	After completion: - Only PWR remains steady on. - RUN flashes during system operation. Remove the SD card after successful program upgrade to prevent automatic re-update on reboot. (ERR may stay on if connected via USB/Ethernet without user program)
Update error	ERR flashes slowly + RUN displays 1 long + 2 short flashes. Host communication via USB/Ethernet is disabled.



● Power interruption is strictly prohibited during SD card burning to avoid critical failures such as PLC malfunction.

● Existing application programs remain preserved after firmware burning.

Appendix: Extension

Type	Model	Specification
Left extension module	VH-RS485-1	1-channel RS485
	VH-RS485	2-channel RS485
	VH-4DI	4-channel digital input
	VH-4DO-TN	4-channel drain type digital output
	VH-2AD1DA-I	2-channel analog input, 1-channel analog output, current mode
	VH-2AD1DA-V	2-channel analog input, 1-channel analog output, voltage mode
	VH-RTC	Real-time clock
	VH-RS485-RTC-1	1-channel RS485+real-time clock
	VH-RS485-RTC	2-channel RS485+real-time clock
	VH-4DI-RTC	4-channel digital input+real-time clock
	VH-4DO-TN-RTC	4-channel drain type digital output+real-time clock
	VH-2AD1DA-I-RTC	2-channel analog input, 1-channel analog output (current mode) + real-time clock
	VH-2AD1DA-V-RTC	2-channel analog input, 1-channel analog output (voltage mode) + real-time clock
Right extension module	VH-1600END	16-channel digital input module
	VH-0800END	8-channel digital input module
	VH-0016ETN	16-channel NPN digital output module
	VH-0016ETP	16-channel PNP digital output module
	VH-0808ETN	8-channel digital input module and 8-channel NPN digital output module
	VH-0808ETP	8-channel digital input module and 8-channel PNP digital output module
	VH-0008ETN	8-channel NPN digital output module
	VH-0008ETP	8-channel PNP digital output module
	VH-4AD	4-channel analog input module
	VH-4DA	4-channel analog output module
	VH-4PT	4-channel thermal resistance temperature detection input module
	VH-4TC	4-channel thermocouple temperature detection input module
	VH-2WT	2-channel weighing module

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