

WLC300 Series CPU Module

User Manual

Wolong Electric Group Co.,Ltd

Foreword

Overview

Thank you for purchasing WLC300 series CPU module produced by Wolong Electric Group Co., Ltd.

This manual mainly introduces the basic parameters of the product, mechanical installation, electrical installation .

Who to read

People with electrician expertise (qualified electrical engineers or those with equivalent knowledge).

Meet standards

Certified name	Instruction name		Meet the standard
		2044/20/511	24V DC products:
			EN 61131-2
	EMC directive		220V AC products:
	EINC directive	2014/30/20	EN 61131-2
			EN 61000-3-2
CE accreditation			EN 61000-3-3
	LVD directive	2014/35/EU	EN 61010-1
			EN 61010-2-201
		2011/65/EU	
	RoHS directive	amended by(EU)	EN IEC 63000
		2015/863	
UL/cUL			
accreditation		-	-
KCC			
accreditation		-	-
EAC			
accreditation	-		

Version change log

Number	Summary of revised content	Releases	Revision
			date
1	Creation	V1.0	2024.06

About manual acquisition

This manual does not ship with the product, if you need to obtain an electronic PDF file, you can obtain it by:

- Log in to our official website to obtain product documents and technical support in the following ways:
 Log in to our official website (www.olimc.com) → Service and Support → Download Documents →
 Search for keywords and download.
- <u>Scan the QR code of the product body with your mobile phone to obtain the matching manual of the product.</u>

Warranty statement

Under normal use, the product failure or damage, our company is responsible for 18 months warranty

(from the date of delivery, the bar code on the fuselage shall prevail, there is a contract agreement in

accordance with the agreement). More than 18 months, the maintenance fee will be charged.

Within 18 months, a repair fee will be charged for damage to the product caused by:

- Failure to operate the product as specified in the manual, resulting in damage to the product.
- Product damage caused by fire, flood, abnormal voltage.
- Use of this product for abnormal functions, resulting in product damage.
- Damage to the product caused by use outside the specified scope of the product.
- Secondary damage caused by force majeure (natural disaster, earthquake, lightning strike).

The related service fee shall be calculated according to the unified standard of the manufacturer. If there is a contract, the principle of contract priority shall be dealt with.

Please refer to the Product Warranty Card for detailed warranty description.

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1. Safety precautions

1.1. Safety statement

- 1. Before handling, installation, operation, and maintenance, please read this manual carefully and follow all safety precautions indicated on the product and in the manual. This may result in personal injury, equipment damage, or death if not avoided.
- The "danger" and "warning" in this manual do not represent all safety precautions to be followed.
 They are only supplements to all safety precautions.
- 3. This product shall be used in an environment that meets the requirements of the design specifications, otherwise it may cause failure, and the abnormal function or component damage caused by failure to comply with the relevant regulations are not covered by the product quality guarantee.
- 4. Our company does not assume any legal responsibility for personal safety accidents and property losses caused by illegal operation of the product.

1.2. Definition of safety levels

To ensure personal safety and avoid property damage, you must pay attention to the safety signs

and tips in this manual.

Safety signs	Name	Illustration
	Danger	Failure to comply with the requirements may result in serious injury or even death.
	Warning	Failure to comply with the requirements may result in personal injury or damage to equipment.

Personnel requirements

Trained qualified professionals: Refers to the operation of the equipment staff must go through professional electrical training and safety knowledge training and pass the examination, has been

familiar with the installation, commissioning, operation and maintenance of the equipment steps and

requirements, and can avoid all kinds of emergency.

1.3. Safety guidance

		General principles
	•	Only trained and qualified personnel are allowed to carry out relevant operations.
	•	Do not perform operations such as wiring, checking and replacing devices while the power supply
		is connected. Before connecting cables and checking, ensure that all input power supplies are
		disconnected.
	•	The product is designed for indoor use in electrical environments with overvoltage class II. The
		power supply system should be equipped with lightning protection device to ensure that the
		lightning overvoltage is not
	•	Applied to the power input or signal input and output end of the product, so as to avoid damage to
		the equipment.
	•	Unauthorized modification of the product is prohibited, which may cause fire, electric shock or other
		injuries. Metal debris, copper wire, screws, cables and other conductive objects are prohibited from
		falling into theinside of the product.
	•	Do not touch the product with wet objects or body parts, otherwise there is a risk of electric shock.

Portage				
	• Choose appropriate handling tools and take mechanical protective measures, such as wearing			
	anti-smashing shoes, work clothes, etc., to avoid personal injury.			
	• Ensure that the product does not suffer from physical shock and vibration.			
	During control system design			
	• Be sure to design a safety circuit to ensure that the control system can still work safely when the			
	external power supply fails or the programmable controller fails;			
DANGER	• When the overload current exceeds the rated load or the load short circuit leads to a long time of			
	overcurrent, the module may smoke or catch fire, and the safety device such as fuse or fuse should			
	be set outside.			
	• Be sure to set in the external circuit of the programmable controller emergency brake circuit,			
	protection circuit, positive and negative operation of the interlock circuit and prevent machine			
	damage position upper limit, lower limit interlock switch;			
	• In order to make the equipment operate safely, for the output signal related to major accidents,			
	please design the external protection circuit and safety mechanism;			
	• The programmable controller CPU may turn off all output after detecting its own system anomaly;			
	When part of the controller circuit is faulty, its output may be out of control, in order to ensure			
	normal operation, it is necessary to design a suitable external control circuit;			
	• Programmable controller relay, transistor and other output unit damage, will make its output can not			
	be controlled ON or OFF state;			
	• Programmable controller design applied to indoor, overvoltage level Chuan level of electrical			
	environment, the power system level should have lightning protection device to ensure that			
	lightning overvoltage is not applied to the programmable controller power input or signal input,			
	control output and other ports, to avoid damage to the equipment.			
	Installation			

	• Do not install the product on flammable materials, and avoid close contact or adhesion of the
	product to flammable materials.
	• Do not run damaged or missing components of the product.
DANGER	• Do not use the programmable controller in the following places: dust, soot, conductive dust,
	corrosive gas, flammable gas; Places exposed to high temperature, dew, wind and rain; Occasions
	with vibration and shock. Electric shock, fire, and misoperation can also cause product damage
	and deterioration;
	• In order to prevent equipment damage or electric shock caused by accidental touch by personnel
	who do not have the knowledge of relevant electrical equipment, the product must be installed in a
	locked control cabinet with IP20 or more protection. Only personnel who have received relevant
	electrical knowledge and equipment training are allowed to operate the control cabinet.
WARNING	• During installation, it must be ensured that the modules are tightly connected and fixed to prevent
	communication failure or falling off during use due to poor connection.
	• After installation, please check that there is no shelter above the vent of the product, otherwise it
	may cause excessive heat inside the product, poor heat dissipation, resulting in chip burn and
	system control failure, misoperation, etc.

		Wiring
	•	Before wiring, you must be clear about the types and specifications of the interfaces and power
		supplies, and meet the relevant standards and requirements to ensure the correct wiring of the
		system.
	•	To ensure the safety of personnel and equipment, cables with sufficient diameters and
		specifications must be grounded reliably.
	•	Control signal and communication signal cables should be routed separately from power cables
		and power cables with strong interference.
	•	Secure cables with long distances or high quality.
	•	All power supplies connected to this product must be cut off when performing wiring operations.
	•	After installation and wiring, check whether the terminal cover of the module is properly installed
		before powering on the device to avoid personal injury, equipment system failure or misoperation
		caused by touching live terminals.
	•	When the external power supply is input to the product, it is necessary to install protection devices
		or devices with appropriate specifications to prevent the product from being damaged due to
		external power failure or overvoltage and overcurrent

Commissioning and operation				
	•	Before powering on and running, be sure to check whether the working environment of the product		
		system meets the requirements, and confirm whether the corresponding protection circuit is		
		designed to protect the product in the case of external equipment failure can still work safely.		
	•	Do not damage the relay, transistor and other output units of the product, otherwise its output can		
		not be controlled to ON or OFF state.		
	•	For modules or terminals that require external power supply, safety devices such as fuses or circuit		
		breakers should be set outside to avoid damage to product modules due to external power supply		

	or equipment failure.
•	Be sure to set an emergency brake circuit, a protection circuit, an interlock circuit for forward and
	reverse operation and a position upper limit and lower limit interlock switch to prevent machine
	damage in the external circuit of the product.
•	In order to ensure the safe operation of the equipment, design external protection circuits and
	safety mechanisms for output signals related to major accidents.
•	When the controller system fails, the output may be out of control. In order to ensure the normal
	operation of the equipment, it is necessary to design an appropriate external control circuit.

Warranty, maintenance and component replacement				
DANGER	•	Do not allow products and components to touch or have flammable materials attached to them.		
	•	Before product care, maintenance and component operation, all power supplies connected to the		
		product must be cut off.		
	•	Metal debris, copper wire, screws, cables, and other conductive objects are prohibited from		
		entering the product during the process of service, maintenance, and component replacement.		
	•	During the process of service, maintenance, and component replacement, ESD measures must be		
		taken for the product and internal components.		
Note	•	Tighten the screws with the appropriate torque.		

	When scrapped
WARNING	• The components in the product contain heavy metals, and the product must be disposed of as industrial waste after scrapping.
X	• This product should not be disposed of at will. It should be collected separately for special treatment.

2. Product specifications

2.1. Product information

Naming rules



Number	Name	Illustration
	Product range	WLCxxx:Wolong-PLC series
	(WLC321)	WACxxx: Wolong-PAC series
	P 145 connecto	Numbers: 1, 2, and 3 indicates that the CPU has 1, 2, and 3 RJ45 ports
2	(3S)	Letters: A: All RJ45 ports are independent network ports; S: The first two RJ45's (LAN A,
		LAN B) are switches
0	Serial interface	3:3 serial ports (including RS232 and RS485)
(3)	(3)	
4)	Backplane type	N: No backplane
	(G)	G: Universal backplane bus for GL200 series I/OS
5	Input IO (16)	16:16 channel source and drain inputs (high-speed interrupts supported)
6	Output IO (16)	16:16 channel drain or source output (support clear, hold, preset functions when the
		application stops)
	Output IO type	D: leaky output
\bigcirc	(D)	S: source output

Note : In CPUs without IO on the body, numbers (5), (6), and (7) are ignored as empty.

List of products

Model number	Machine codes	Description
WLC311-2A3G1616D	-	WLC311 dual network port 16 input 16 output (drain type) programmable logic controller
WLC311-2A3G1616S	-	WLC311 dual network port 16 input 16 output (source type) programmable logic controller

Note : The product marked with an asterisk (*) is planned but not released. The product parameters in this part are for reference only

Nameplate identification





Number	Name		Functional description
	CPU ontology IO		Output signal indicator
Û	output indicator		
0	CPU ontology I/O		Input signal indicator
(2)	input indication		
	CPU display	Digital	Display the current CPU operating status, refer to "Appendix A fault code mapping
3		tube	table"
	ране	PWR	Steady on - power supply normal, off - no power supply

		ERR	Steady on - error, off - no error
		RUN	Steady on - the program is running normally, off - the program stops running
(4)	MFK function k	æy	Complete the restore factory Settings function
5	Type-C interfac	ce	External USB flash drive updates user programs
	LAN A network	(According to the model, some LAN A and LAN B are internal switches. Refer to the
0	interface		naming specification and technical parameters for details
	I AN B notwork	•	According to the model, some models of LAN A and LAN B have internal switches,
7	intorface	L	while some models do not have LAN B ports. Refer to the naming specification and
	menace		technical specifications of each product for details
Q	LAN C network	K	According to the model, some models do not have LAN C interface, refer to the
	interface		naming specification and technical specifications of each product for details
0	Power supply		Refer to the "Electrical Installation" section for a detailed definition
3	interface		
10	Communication		Supports 3-channel serial communication and 1-channel CAN communication. For
	interface		details, refer to the description in the "Electrical Installation" section
	The CPU body	,	16 channel drain or source output (support zero clear, hold, preset functions when the
1	outputs the I/O		application stops)
	terminal		
(12)	The CPU body input		16 channel source and drain input (supports high-speed interrupts)
	IO terminals		
(13)	RUN/STOP sw	vitch	Toggle the dip switch to control the running and stopping of user programs
	MicroSD card		Used to store user programs and user data, upgrade firmware
(14)	interface		

Note : The detailed description of each IO module component refer to the description of each module.

2.2. Technical specifications

Basic specifications

Items		规格		
		WLC311-2A3G1616D	WLC311-2A3G1616S	
	Programs	16M		
Storage	Data	32M		
	Hold	1M		
	Bit arithmetic	0.004us		
Porformana	Word			
e	arithmetic	0.020us		
	Floating-point arithmetic	0.150us		
Programming language		LD、ST、IL、FBD、SFC、CFC		
Registers	l zone	512K		
	Q zone	512K		

M zone		512K (Power off hold)
Body input IO		16-channel source and drain inputs (supports high-speed interrupts)
Body output IC	2	16 channel drain or source output (support zero reset, hold, preset functions when the
		application stops)
	Remote IO	64
Expansion	sites	
capability	Number of I/O modules	1024
	Dual power	Support
Hot spare	supply	
capability	Hot swapping	Support
	of modules	
	Net interface	2 way (10/100Mbps)
	Switch	There is no
	Serial	2xRS485+ 1xRS232
	communication	
	CAN	
Interfaces	communication s	1way
	Backplane bus	Expandable 16 GL200 IO modules
		Up to 32GB for storing user programs and data, data updates, user program updates,
	SD card	firmware updates
	USB	Type-C port
	RTC	Built-in rechargeable RTC clock battery
	Ethernet	TCP/IP、UDP、OPC UA Server、MQTT、
	EtherCAT	CoE (PDO, SDO) supports a maximum of 64 slave stations
	Ethernet/IP	EtherNet/IP Scanner、EtherNet/IP Adapter
	Profinet/IO	Master/Slave
	CANopen	The main
Bus protocol	Modbus TCP	Master/Slave
Bus protocor	Modbus RTU	Master/Slave
	Free	Carial part free protocol
	Agreement	
	Network	
	transparent	Serial network transparent transmission
	transmission	
Visualization		Webvisu (Web visualization)
IP rating		IP20
Dimensions (V	V x H x D)	60x105x85mm
Weight		256g

Power supply specifications

Items	Specifications
Rated input voltage	24V DC±10%(19.2V DC ~ 33V DC)
Rated input current	1A (maximum at 24V DC)
	Support short circuit, reverse connection, overcurrent (1.1A), overvoltage (33V DC)
24V input power protection	protection
Power supply redundancy	Support for redundancy of two 24V DC power supplies
Module hot swap function	Support

Input specifications

Items	Specifications
Type of input	Numeric quantity input
Input method	Source/drain type
Input channel	16 channels
Input voltage level	24V DC±10% (21.6V DC to 26.4V DC)
Input current	8mA (typical for 24V DC)
ON voltage	≥15V DC
OFF voltage	≤5V DC
Hardware response time	
ON/OFF	100us/100us
Software filter time	10ms~60ms
Input impedance	2.73 k.
Isolation or not	Digital isolation
Common end mode	16 o 'clock/public end
Enter action display	When the input is in drive state, the input indicator lights up
Input derating	Derating 75% while operating at 55 °C

Output specifications

Items	Specifications
Output type	Digital quantity output
Output mode	Drain type
Output channel	16 channels
Terminal input power supply	24V DC (20.4V DC~28.8V DC)
rated voltage	
Terminal input power supply	10mA(24V DC typical value at time)
rated current	
Output voltage rating	24V DC±10%(21.6V DC~26.4V DC)
Output load (resistive load)	0.5A/point, 4A/16 points,
Output load (inductive load)	7.2W/point, 50W/16 points

Output load (lamp load)	5W/point, 40W/16 points
Hardware response time	<1µs (OFF→ON) , <2µs (ON→OFF)
ON/OFF	
Drain current at OFF	30µA or less at 24V DC rated voltage
Maximum voltage drop when	0.05V DC or less
ON	
Isolation or not	Digital isolation
Common terminal method	16 points/common
Protection	Short-circuit, over-temperature, over-current, under-voltage and reverse connection
	protection.
External inductive load	When external inductive load is connected, user needs to connect the diode.
protection	
Output action display	Output indicator light when the output is driving state
Output derating	75% derating when working at 55° C

2.3. Environmental specifications

Items	Specifications			
Operating temperature	-20℃~70℃			
Humidity	10%~90%RH, no condensation			
Use environment	No corrosive, combustible gas, conductive dust (dust) is not serious occasions			
Storage temperature and	● -40°C~85°C			
humidity range	• Relative humidity < 90%RH, no condensation			
Transportation temperature	● -40°C~85°C			
and humidity range	• Relative humidity < 95%RH, no condensation			
Altitude	≤3000m			
Pollution level	Level 2			
Immunity	Power cord 2kV (IEC 61000-4-4)			
Overvoltage rating	II			
EMC immunity class	Zone B, IEC61131-2			
Vibratian registered	IEC60068-2-6			
VIDIATION resistance	5Hz~8.4Hz, 3.5mmp, 8.4Hz~150Hz, 1g, X/Y/Z triaxial, 10 cycles/axial			
Shook registered	IEC60068-2-27			
Shock resistance	150m/s2,11ms, ±X/Y/Z six directions, 3 times/direction, a total of 18 times			

3. Mechanical mounting

3.1. Preparation for installation

3.1.1. Installation precautions

		Before installation
	•	Check and make sure all products are powered off before installation.
	•	Before installation, check the overall system size planned to ensure that there is enough space for
		the module. The module should be installed in the control box with a space of >50m to ensure good
		heat dissipation of the hardware system.

		Installing
	•	When installing, please use parts that meet the requirements, such as screws, gaskets, etc.
	•	During installation, do not drop metal wire ends, chips, screws and other objects into the product,
		so as to avoid short circuit or poor heat dissipation.

After installation					
	• After the installation is complete, ensure that the terminals of the connected communication cables				
	are securely connected.				
	• After installation, ensure that the guide rail where the module is located is securely secured.				
	• After the installation is complete, separate strong and weak cables in the chassis and plan them				
	neatly to prevent disorganization and heat dissipation.				
	• After the installation is complete, remove the stickers affixed to the heat dissipation holes of the				
	module to smooth heat dissipation.				
	• After installation, check for air circulation around the module.				

3.1.2. Installation environment and location

Before safety, please check, evaluate and confirm that the installation environment meets the working

conditions of all components, including temperature, humidity, dust and corrosion protection.

Enviror	nmental requirements
Environment	Requirements
	• -20°C~55°C
Temperature	No sharp change in temperature
	• Install it in a closed space such as a cabinet and use a fan for ventilation and heat dissipation when
	necessary
Humidity	• The relative humidity of the air is 5% to 95%, without condensation

Place requirements

Place	Requirements

Indoors, over	•	No strong electric field, strong magnetic field and direct sunlight
electricity	•	No dust, iron powder and other conductive powder, oil mist, salt, organic solvent
pressure level	•	No corrosive, combustible gas
II	•	Will not cause the body to produce direct vibration and subjected to conductive shock

3.1.3. Installation space

The best installation position of this product is horizontal installation, heat dissipation design is through the natural wind convection mode, in order to ensure normal ventilation and heat dissipation and reserve enough wiring space, the product should be reserved around the gap.



Instruction: If there is a high temperature heat source equipment (heater, transformer, large resistance, etc.) around this product, at least 100mm gap should be reserved between it and the high temperature heat source equipment.

Note : When the product is installed in a vertical installation method other than the above figure, please use a cable slot to hold the cable during wiring, so that the weight of the cable will not be imposed on the rail clamp and terminal, resulting in the product falling off the DIN rail or terminal due to the weight of the cable, resulting in misoperation.

3.1.4. Product dimensions

CPU (Unit: mm)







Dimension of the product after connecting the cable (Unit:mm)



3.2. Installation and disassembly

3.2.1. Installation

The module is mounted with DIN rails which comply with IEC60715 standards(35mm wide, 1mm thick), size information is shown on the right, unit is mm.

Note : The module is mounted to a DIN rail not recommended above(especially DIN When the rail thickness is not 1.0mm), it will cause the DIN rail latch to fail , The product can not be installed in place, resulting in the product can notwork normally.





Note : In order to ensure the strength of the DN rail, the DIN rail mounting bolts (provided by the user) must be installed within 30mm of the DIN rail end, and the spacing between 2 adjacent bolts must be within 200mm.

Install the I/O module on the CPU

Step 1 Slide the tail plate out of the module connection guide rail (the factory default CPU already has the tail plate installed)



Step 2 Align the I/O module with the module connection guide rail of the CPU, and push the I/O module down until the I/O module is completely aligned with the CPU module.



Note : Do not leave the module and base latches unlocked for a long period of time; otherwise, the latches will fail.

Step 3 Install the tailboard to the tail of the last I/O module as described in Step 1 (The tailboard must be installed, otherwise the module may not be recognized).



Mount the module to the DIN rail

Step 1 Align the IO module DIN slot with the DIN rail, press down on the module until the module DIN slot snaps into the DIN rail, and press down on the DIN latch to keep the module latch locked.



Step 2 Install rail clamps at both ends of the rail to prevent the product from sliding on the DIN rail.



Note:

- When the module is not installed on the rail, please keep the rail lock in the locked state, if the unlocked state for a long time will cause the lock to fail.
- Before installing a module, if there is a right cover, remove the right cover first. The right cover is installed on the rightmost module. The module may not work properly without the right cover.
- After the module is installed, ensure that the module is locked with the base latch and the base lock with the DIN rail latch. Otherwise, the module may fall off.
- After the module is installed, you need to install guide rail fastening clips on both ends. Users need to purchase guide rail fastening clips by themselves.

3.2.2. Disassembling

Remove the module from the base

Step 1 Turn the blue lock between the module and the base on the I/O module towards the LED indicator of the module to unlock the lock.



Step 2 Hold the latch on the module and pull the module outward until the module is separated from



the base.

Note:

- If the IO module terminal is connected, remove the IO module terminal before removing the module.
- After a module is removed from the base, the lock between the module and the base must be locked (away from the direction of the I/O indicator). If the lock is unlocked for a long time, the lock may fail.
- The module is removed from the DIN rail

Step 1 Use a tool such as a screwdriver to lift the DIN rail latch of the I/O module to unlock the DIN rail latch, hold the latch of the module to be removed, and pull the module outward to separate the module from the DIN rail.



Note:

- If the IO module terminal is connected, remove the IO module terminal before removing the module.
- Before the module is removed from the DIN rail, ensure that the DIN rail lock is unlocked and the module and the base lock are locked. Otherwise, the module and the base may be separated.
- After the module is removed from the DIN rail, it is necessary to press the DIN rail lock down to keep it locked. If the DIN rail lock is unlocked for a long time, the lock may fail.

4. Electrical installation

4.1. Wiring requirements

- When wiring, you must ensure that all external power supplies are turned off.
- After wiring is complete, when starting the power supply or operating the module, make sure that the top terminal cover of the module is installed correctly. Otherwise, electric shock or working error may result.
- When wiring, check the rated voltage and terminal configuration defined in the product specifications to ensure correct safety wiring. Attaching a power supply that does not match the rated value or an incorrect product safety wiring may cause fire or damage the product.
- Tighten the screws to the specified torque. Loose screws may result in a short circuit, fire, or operation error.

Note : Do not install the terminal screws too tight, too tight may cause screw or module damage, fall, short circuit or fault.

Make sure there are no foreign objects such as metal shavings or wiring residues in each module.
 These foreign objects can cause fire, damage, or operating errors.

4.2. Grounding requirements

Grounding power cables

- A proper independent grounding method must be used.
- Use a ground cable with a cross-sectional area of $\geq 2 \text{mm}^2$ and a length of $\leq 30 \text{cm}$, and ground the grounding terminal of the power module.
- If the ground point is close to the product, ensure that the grounding cable is secure.

Ground the shielded cable

- For analog I/O, RS485, EtherCAT and other cables that transmit sensitive signals, a shielded cable must be used.
- The ground point is as close to the module as possible.

• After the shielded cable is stripped, the exposed shielded part should be grounded to a large area of the conductive backplane to ensure good contact.

4.3. Cable selection

The middle ear diameter in the following table is only for reference, which can be reasonably calculated according to actual use and adjusted separately.

Name of supporting	Fitting wir	e diameter		
materials	National	American standard	Lug model	Crimping tool
	standard/mm ²	/AWG		
	0.3	22	E0308	
	0.5	20	E0508	Select the appropriate
Tubular wire lugs	0.75	18	E7508	crimping pliers for
	1.0	18	E1008	crimping the wire
	1.5	16	E1508	

For other tube type ears, press them to the shape and size requirements are shown in the following figure.



4.4. Terminal definition and wiring

4.4.1. Supply terminal definition

Signal description	Left	Right	Signal description
	terminal	terminal	
Dc 24V power supply	24V	24V	Dc 24V power supply
positive			positive
Dc 24V power supply	0V	0V	Dc 24V power supply
is negative			is negative
PE ground	₽	Ē	PE ground

Note : Internal power supply interface to achieve power redundancy function, can provide 2 independent 24V DC power input to achieve power redundancy function, any group of power failure does not affect the system operation.

4.4.2. Definition of communication terminals

	Left	Signal description	Right	Signal description
A1 📕 🔵 📕 B1	terminal		terminal	
A2 📕 🛛 📕 B2	A1	COM1, RS485 positive	B1	COM1, RS485 negative
TX 📕 🌒 📕 RX	A2	COM2, RS485 positive	B2	COM2, RS485 negative
SG 📕 🌒 📕 SG	TX	COM3, RS232 send	RX	COM3, RS232 receive
CH 📗 🌒 CL	SG	Signal ground	SG	Signal ground
	СН	Network 0, CANH	CL	Network 0, CANL

4.4.3. Definition of the ontology IO terminals

Schematic diagram	Left side signal	Left terminal	Right terminal	Right side signal
	100	A0	В0	110
	101	A1	B1	111
	102	A2	B2	112
	103	A3	В3	113
	104	A4	В4	114
5 5	105	A5	В5	115
	106	A6	B6	116
	107	A7	В7	117
	SS	A8	B8	SS

Schematic diagram	Left side signal	Left terminal	Right terminal	Right side signal
	Q00	A0	B0	Q10
	Q01	A1	B1	Q11
	Q02	A2	B2	Q12
	Q03	A3	В3	Q13
	Q04	A4	B4	Q14
A Contraction of the second seco	Q05	A5	B5	Q15
	Q06	A6	B6	Q16
	Q07	A7	B7	Q17
	24V	A8	B8	0V

Leaky output terminal definition

■Source type output terminal definition

Schematic diagram	Left side signal	Left terminal	Right terminal	Right side signal
	Q00	A0	BO	Q10
	Q01	A1	B1	Q11
	Q02	A2	B2	Q12
	Q03	A3	В3	Q13
	Q04	A4	B4	Q14
5 B 5	Q05	A5	B5	Q15
	Q06	A6	B6	Q16
	Q07	A7	B7	Q17
	24V	A8	B8	0V

4.4.4. Body IO terminal wiring

Input wiring



Leaky output wiring



Source output wiring



5. Communication connection

WLC300 series products provide a relatively perfect product model and series, each model can be seamlessly docking, simplifying the project implementation and use process.

5.1. CPU module connection

The user can easily connect to the computer, HMI, etc. point-to-point through the Ethernet port of the CPU module with one Ethernet cable. When connecting to the CPU module, ensure that the IP address of the PC, HMI and other devices is in the same network segment as the IP address of the CPU module. The default IP address of LAN A for the CPU module of the WLC300 series is 192.168.20.80. After connection, you can quickly complete the PLC parameter configuration through the web configuration tool of the CPU module of WLC300 series products. For details, please refer to the PLC configuration chapter



of this article.

5.2. Communication networking

WLC300 series products integrate rich communication interfaces and support a variety of bus protocols. Users can conveniently communicate with other devices: connect to other sites, ERP, MES and other upper control systems through Ethernet ports; Through EtherCAT interface to connect to other slave stations, such as GR200-ECS remote IO, and other devices that support EtherCAT (CoE) protocol; Using Profinet/IO communication to connect to other Profinet/IO supported devices such as GR200-PNS;

RS485, RS232 or CAN communication to connect to other devices, as shown in the following figure.



5.3. EtherCAT bus connection

The network interface of WLC300 series products supports EtherCAT bus. The network interface can be configured by configuration programming software and EtherCAT slave device can be added to complete EtherCAT network networking.



The WLC300 series can be used in combination with EtherCAT compliant slave stations for device interconnection.

EtherCAT specification

Items	Specification description		
Communication protocol	EtherCAT protocol		
Support service	CoE(PDO, SDO)		
Synchronous mode	Adopt DC-distributed clock		
Physical layer	100BASE-TX		
Communication rate	100Mbit/s(100Base-TX)		
Duplex mode	Full duplex		
Topological structure	Linear topology		
Transmission medium	Shielded network cable, see distribution section		
Transmission distance	Less than 100M between two nodes		
Number of slave stations	64		
EtherCAT frame length	44 bytes to 1498 bytes		
Process data	A single Ethernet frame has a maximum of 1486		
	bytes		

EtherCAT wiring

It is recommended to use a shielded network cable for EtherCAT communication, and the cable length between devices should not exceed 100 meters. The requirements are as follows:



Signal pin distribution

Pin	Code	Signal direction	Signal description
1	TD+	Output	Data transfer +
2	TD-	Output	Data transfer -
3	RD+	Input	Data reception +
4			Not in use
5			Not in use
6	RD-	Input	Data reception -
7			Not in use
8			Not in use

The cables must be 100% tested without short circuit, open circuit, dislocation, or poor contact. The

following specifications are recommended

Items	Specification
Cable type	Elastic crossover cable, S-FTP, Super Category 5
Meet the standard	EIA/TIA568A, EN50173, ISO/IEC11801
	EIA/TI Abulletin TSB, EIA/TIA SB40-A&TSB36
Traverse cross section	AWG26
Wire type	Twisted pair
Wire pairs	4

5.4. Profinet/IO bus connection

The network interface of WLC300 series products supports Profinet/ IO bus, which can be configured by

configuration programming software to add network interface and Profinet/ IO master/slave station

equipment to complete Profinet/ IO network networking.



Each PROFINET device in the network is uniquely identified by its PROFINET interface. Each PROFINET interface has the following three key attributes:

- A MAC address (factory default)
- An IP address
- PROFINET device name

WLC300 series products can be used in combination with PROFINET equipment to achieve equipment interconnection.

Profinet/IO specification

Items	Specification			
Communication mode	Profinet/IO			
Duplex mode	Full duplex			
Topology	Bus, star, ring, tree, mixed topology			
Physical Layer	100BASE-TX			
Communication rate	100Mbit/s(100Base-TX)			
Transmission medium	Shielded network cable, see distribution section			
Transmission distance	Less than 100M between two nodes			
Number of slave stations	127			

Profinet/IO wiring

It is recommended to use shielded network cables for Profinet/IO communication, and the length of cables between devices should not exceed 100 meters, as follows:



Signal pin assignment

Pin	Code	Signal direction	Signal description
1	TD+	Output	Data transfer +
2	TD-	Output	Data transfer -
3	RD+	Input	Data reception +
4			Not in use
5			Not in use
6	RD-	Input	Data reception -
7			Not in use
8			Not in use

The cables must be 100% tested without short circuit, open circuit, dislocation, or poor contact.

The following specifications are recommended

Items	Specification
Cable type	Elastic crossover cable, S-FTP, Super Category 5
Meet the standard	EIA/TIA568A, EN50173, ISO/IEC11801
	EIA/TI Abulletin TSB, EIA/TIA SB40-A&TSB36
Traverse cross section	AWG26
Wire type	Twisted pair
Wire pairs	4

5.5. RS232, RS485, CANbus bus connection

RS232 communication instructions

WLC300 series products support RS232 bus, using three signal lines (receiving line, sending line and

signal ground) fast to achieve full duplex communication process.

• Communication specifications

Items	Instructions
Support path number	1 way
Hardware interface	2x5PIN terminal TX- send data RX- receive data, SG- signal ground
Programming interface	COM3
Isolation mode	Digital isolation
Number of pick up and	
slave stations	1
Baud rate	1200~115200bps
Protection	Enhanced ESD protection

• Connection method



RS485 communication instructions

WLC300 series products support RS485 bus and adopt three-wire system to complete communication.

• Communication specifications

Items	Instructions
Support path number	2-way
Hardware interface	2x5PIN terminal TX- send data RX- receive data, SG- signal ground
Programming interface	COM1、COM2
Isolation mode	Digital isolation
Terminal resistance	120Ω
Number of pick up and	31
slave stations	
Baud rate	1200~115200bps
Protection	Short circuit protection

RS485 bus is recommended to use a shielded twisted pair cable connection, both ends of the bus are connected to a 120Ω terminal matching resistor to prevent signal reflection (WLC300 series CPU has a built-in 120Ω terminal resistor); The reference ground of all nodes 485 signals is connected together, a maximum of 31 nodes are connected, and the distance of each node branch is less than 3m.



• Connection mode

Take the first RS485 communication port as an example



CAN communication description

Specification WLC300 series products support CANbus bus, using three-wire system to complete communication.

• Communication specifications

Items	Instructions				
Support path number	1way				
Hardware interface	2x5PIN terminals CH, CL, SG- signal ground				
Programming interface	Network 0				
Isolation mode	Digital isolation				
Terminal resistance	120Ω				
Number of pick up and slave	63				
stations					
Baud rate	10Kbps、20Kbps、50Kbps、125Kbps、250Kbps、500Kbps、800Kbps、1Mbps				
	Current limiting, overvoltage and ground loss protection (-40 V to 40 V) and thermal				
Protection	shut-off function to prevent short circuit of output				

The CANbus bus connection topology is shown below. The CANbus bus is recommended to be connected with shielded twisted pair cables. Two 120Ω terminal matching resistors are connected to each end of the bus to prevent signal reflection (the WLC300 series cpus have built-in 120Ω terminal resistors). The shielding layer generally uses a single point of reliable grounding.



6. PLC configuration

WLC300 series PLC can quickly complete the PLC parameter configuration through the web

configuration tool, which greatly improves the ease of use of PLC.

6.1. Log in to the web configuration tool

After confirming that the PC end is properly connected to the PLC network, on the PC end, open A

browser and enter the IP (192.168.20.80) + port number (8090) of the factory default LAN A of the CPU.



Enter the default user name/password "admin/admin" to access the web configuration tool.



6.2. CPU model

Configurable application data redirection to SD card, CPU cold start self-test time, view CPU model.

	至 首页 / 系统设置 / CPU型号
企 首页	首 页 ● CPU型号 ×
⑤ 系统设置	□ 应用数据重定向到SD卡 篇定 当前CPU型号 ₩LC321
● 网络设置	CPU冷启自检闭(S) 5 ⁽
■ CPU型号	
ゆ CPU冗余	
③ 时间设置	
回 设备信息	
會 固件升级	
回 应用更新	

1. Application data redirection to SD card: This function can be enabled when the user's applications and data are too large. After this function is enabled, the applications and data will be migrated to the SD card,

and the PLC will read and update the applications and data from the SD card. Do not insert or remove the SD card during the operation of the PLC, so as to avoid the loss of application data.

When enabled, check the selection box, click "OK" and then restart the PLC; When cancelling the function,

remove the check box and restart the PLC.

2、Current CPU model: Specifies the model of the current CPU.

3、CPU cold start self-test time: When the PLC starts, the self-test of various states is completed within this time.

6.3. Monitoring function

1. On the home page of the web configuration tool, you can view the error code, CPU usage, memory usage, running time, and real-time status of each module channel. Red indicates TRUE, and blue indicates FALSE. If there is any Error in the module, the current error will be displayed in real time. Configuration Error indicates the configuration error. Poerr Exception indicates power supply exception; Over Current; Channel Error Indicates a channel error. Tailboard Exception indicates a tailboard exception.

● 首页												
● 首页 CPU: 255 RAM: 3% ROM: 15% Stop Debug Run: 0d:0h) Run Release :Smin 13KB/5	D116 0 00 - 0 02 - 0 03 - 0 04 - 0 06 - 0 07 - 0 08 - 0 09 - 0 10 - 0 11 - 0 12 - 0 13 - 0 14 - 0	0 DQ16 00 - 01 02 - 02 03 - 04 04 - 00 06 - 00 07 - 00 08 - 00 09 - 01 10 - 01 11 - 01 12 - 01 13 - 01 14 - 00 14 - 00 14 - 00 15 - 00 10 -	AQ4 2 DQ1 0 3.00 0 0 3.00 0 0 3.00 0 0 0.10V 0 1 3.00 0 1 3.00 0	3 D016 4 - 01 - - 01 - - 03 - - 05 - - 05 - - 07 - - 09 - - 09 - - 11 - - 12 - - 13 - - 14 -	DQ16 5 00 - 01 - 02 - 03 - 04 - 05 - 06 - 07 - 08 - 09 - 10 - 11 - 12 - 13 - 14 -						
	OFFR/S	15 - 🔵	15 - •	0-10V 18	15	15 - 🔵						
WORD	• OKB/ 3	Offset	Power Exception	Exception E	Power ception Exception 备份M区数据	Tailboard Exception	确定					
0 4001	25	1	50 1	75	1 100	1 125	1 150	1 175	1 200	1 225	1 250	1
1 3	26	1	51 1	76	1 101	1 126	1 151	1 176	1 201	1 226	1 251	0
2 515	27	1	52 1	77	1 102	1 127	1 152	1 177	1 202	1 227	1 252	0
3 515	28	1	53 1	78	1 103	1 128	1 153	1 178	1 203	1 228	1 253	0
4 1027	29	1	54 1	79	1 104	1 129	1 154	1 179	1 204	1 229	1 254	0
5 5	30	1	55 1	80	1 105	1 130	1 155	1 180	1 205	1 230	1 255	0
6 1	31	1	56 1	81	1 106	1 131	1 156	1 181	1 206	1 231	1	
7 1	32	1	57 1	82	1 107	1 132	1 157	1 182	1 207	1 232	1	
8 1	33	1	58 1	83	1 108	1 133	1 158	1 183	1 208	1 233	1	
9 1	34	1	59 1	84	1 109	1 134	1 159	1 184	1 209	1 234	1	
10 1	35	1	60 1	85	1 110	1 135	1 160	1 185	1 210	1 235	1	
11 1	36	1	61 1	86	1 111	1 136	1 161	1 186	1 211	1 236	1	
12 1	37	1	62 1	87	1 112	1 137	1 162	1 187	1 212	1 237	1	
13 1	38	1	63 1	88	1 113	1 138	1 163	1 188	1 213	1 238	1	
14 1	39	1	64 1	89	1 114	1 139	1 164	1 189	1 214	1 239	1	
15 1	40		65 1	90	1 115	1 140	1 165	1 190	1 215	1 240		
16 1	41		66 1	91	1 116	1 141	1 166	1 191	1 216	241		
17 1	42	1	67 1	92	1 117	1 142	1 167	1 192	1 217	1 242	1	
18 1	43		68 1	93	118	143	168	193	218	243		
19 1	44		69 1	94	1 119	1 144	1 169	1 194	1 219	1 244		
20 1	45		70 1	95	1 120	1 145	170	195	220	245		
21 1	46	1	/1 1	96	121	146	171	196	221	246		
22	47		72 1	97	122	147	172	197	222	247		
23 1	48	1	73 1	98	1 123	1 148	1 1/3	1 198	1 223	1 248	1	

2. Start/stop user programs.

● 首页			
CPU	00	DIO32	0
	UU	D100 -	D101 -
CPU: 3%		D102 -	D103 -
		D104 -	D105 -
RAM · 0%		D106 -	D107 -
10101. 9 /0		D108 -	D109 -
DOM. COM		DI10 -	DI11 -
ROM: 15%		DI12 -	DI13 -
		DI14 -	DI15 - 🔵
Stop 🧲	Run	DQ00 -	DQ01 - 🔵
		DQ02 -	DQ03 - 🔵
Debug	Release	DQ04 -	DQ05 - 🔵
		DQ06 - 🤇	DQ07 - 🔵
Run: $0d:($)h:1min	DQ08 -	DQ09 - 🔵
		DQ10 -	DQ11 - •
$\uparrow 2 \text{KB/S}$	$\frac{1}{2KB/S}$	DQ12 -	DQ13 -
		DQ14 -	DQ15 -
10KB/S	↓ OKB/S		OK
			UN

Click "Stop" to stop the user program; Click "Run" to run the user program.

3. Debug the function.

Click "Debug" to enter the debugging mode, and the user program stops. At this time, click the channel of the output module to control the opening/closing of the channel.

CPU		DIO32	0
5a	0	DI00 - 🔵	DI01 - 🔵
CDII.		DI02 - 🔵	DI03 - 🔵
CFU. p%		DI04 - 🔵	DI05 - 🔵
RAM · OX		DI06 - 👤	DI07 - 🔵
I.T.M. 970		DI08 - 👤	DI09 - 👤
		DI10 - 🗨	DI11 - 🔵
RUM. 15%		DI12 - 🖊	DI13 -
		DI14 -	DI15 -
Stop	Run	DQ00 -	DQ01 -
	D 1	D002 -	D003 -
Debug	Kelease	DQ04 -	DQ05 -
D 01010		DQ06 -	DQ07 -
Run: Od:Oh:C	omin	DQ08 -	DQ09 -
A OVD /C	OVD /C	DQ10 -	DQ11 = 0
ZKB/S	4 2KB/S	DQ12 = 0014	DQ15 -
	OKB /S	DQ14	DAIO -
OVD\2			OK

Click "Release" to exit the debug mode, and then click "Run" to run the user program.

CPU		DIO32	0
[)()	DI00 - 🔵	DI01 - 🔵
CDU: 40		DI02 - 🔵	DI03 - 🔵
CPU: 4%		DI04 - 🔵	DI05 - 🔵
		DI06 - 🔵	DI07 - 🔵
RAM. 9%		DI08 - 🔵	DI09 - 🔵
		DI10 - 🔵	DI11 - 🔵
ROM: 15%		DI12 - 🔵	DI13 - 🔵
		DI14 - 🗨	DI15 - 🔵
Stop 🤇	Run	DQ00 - 🗨	DQ01 - 🔵
		DQ02 - 🔵	DQ03 - 🗨
Debug	Release	DQ04 - 👤	DQ05 - 🗨
		DQ06 - 👤	DQ07 – 🗨
Run: Od:Oh	:9min	DQ08 - 👤	DQ09 -
		DQ10 -	DQ11 -
T2KB/S	🖊 4KB/S	DQ12 - 📿	DQ13 -
		DQ14 - 💛	DQ15 - 🗨
TOKB/S	♦ OKB/S		OK

4. The implementation of M zone data read, write, backup, restore operations. Click on an address in the M area, fill in the value to be written in the dialog box, and complete the writing operation of an address in the M area.



In the editing area, you can switch the displayed data type into BYTE, WORD, DWORD, FLOAT, and you can switch according to the actual demand. Offset indicates the first start address of the first column. Click any address to modify its address value; Length indicates that the maximum length of the address displayed on the interface is 1024.

The Restore M Area Data operation can be performed only after the Backup M Area Data operation is performed on the web.

6.4. Network settings

PLC network information can be set.

1. Select the network to operate.

88 首页	首页 ● 网卡 ×
	LAN-A/B
● 网络设置	LAN-A/B
📾 网卡	LAN-C
🚢 无线网卡	* 网关地址 192.168.20.254
🐵 DNS服务器	* MACttbth 00.4c-0e-82-dcl-f6
■ CPU型号	
ゆ CPU冗余	提交

2. Set the corresponding network IP, subnet mask, gateway information. When the communication mode of the network port needs to be changed, you need to switch it on the webpage, the first network port is EtherNet by default and does not support EtherCAT mode. Please switch the other ports to the corresponding mode according to the actual use.

OLI Motion Control PLC	三 首页 / 系统设置 / 网络设置 / 网卡	
松 首页	首页 ● 网卡 ×	
◎ 系统设置 ^	LAN-C V	
● 网络设置 ^	* IP地址 192.168.21.80	
🖾 网卡	* 子网掩码 255.255.255.0	
🚢 无线网卡	* 网关地址 192.168.21.254	
◎ DNS服务器	* MAC地址 00:4c:0e:bc:a4:88	
■ CPU至号 ゆ CPU冗余	提交	
① 时间设置		
回设备信息	请选择当前网口的通信方式 ◯ EtherCAT ● EtherNet 确定	
金 固件升级		

6.5. Time setting

	三 首页 / 系统设置 / 时间设置	
逊 首页	首页 ● 时间设置 ×	
· 系统设置 · · · · · · · · · · · · · · · · · · ·	设备时间 ③ 2024-01-11 14:54:26	设置
● 网络设置 ∨	NTP主机 time.windows.com	设置
篇 CPU型号	* E12-1500	
© CPU冗余	[I]22/孙(李 60	分钟/次
③ 时间设置		
回设备信息		

PLC time and NTP time can be set. Synchronization frequency indicates how often to synchronize.

6.6. Maintenance of equipment information

If multiple cpus exist at the same time, you can change the device name and view the software and

hardware versions of the device to better distinguish them.



6.7. Firmware upgrade

You can upgrade the firmware. The format and size of the upgrade package must meet the requirements.



Upload the update package as instructed

船 首页	首页 ● 固件升级 ×
④ 系统设置	
● 网络设置 ~	
■ CPU型号	將文件拖到此处,或 <mark>包击上传</mark>
岛 CPU冗余	口能上传 zin / tar nz / tar vz / orlos / des文件 日天報时20MB
① 时间设置	C 打开 X
回设备信息	← → × ↑ → 此电脑 → 桌面 → UPDATE v ひ 搜索"UPDATE" P
會 固件升级	组织 ▼ 新建文件夹 III ▼ III ? ■ 图片 ^ 28
魯 应用更新	図 文档 ↓ 下載 ↓ 下載 ↓ 上 ↓ 「大都」 ↓ 上 ↓ 二 ↓ 二 ↓ 二 ↓ 二 ↓ 二 ↓ 二 ↓ 二 ↓ 二
系统重启	
合 密码设置	文件名(N): CPU_KEY_f5a9a5b8_#LC321-updato > 自定义文件 (*.tar;*.gz,*.xz;*.zir > 打开(2) 取消
ひ 恢复出厂设置	

After uploading the firmware upgrade pack, click to confirm the upgrade.



Obtain the upgrade key from the upgrade package to verify the upgrade operation. The upgrade key is the field after CPU_KEY in the upgrade package name, for example the upgrade package name is "CPU_KEY_f5a9a5b8_EC321-update-1.0.0.0-all" and the upgrade key is "f5a9a5b8."

请输入校验码(校验码由厂家提供升级包时—并提供)

f5a9a5b8		
	确定	取消
Wait for the upgrade to complete.		
升级过程中请勿断电…! 37% 職认升级		
The upgrade is complete, and the PLC restarts automatically.		
升级过程中请勿断电…! 職认升级		100%
6.8. Application update		

User programs can be downloaded and updated. First of all, write the application on Smart Control, compile and correct, click "online", select "Create startup application", select the file storage path, save the program file.

Compress the exported application file into.zip file. Return to the "Apply Updates" section of the web



configuration tool to upload the update package.

	€ 打开
	← → ▽ ↑ 《 桌面 > UPDATE > ✓ Ō 搜索"UPDATE"
	组织 ▼ 新建文件夹 ■□ ▼ □
将文件拖到此处,或 <mark>点击上传</mark>	→ ■
清将Application.app、Application.crc压缩为.zip文 件、日本投行30MB 压缩时不能有一级日录	
	文件名(N): UPDATE.zip
原上一次应用程序	打开(Q) 取消

Click "Confirm Upgrade" and wait for the upgrade to complete.

	三 首页 / 系统设置 / 应用更新	请确认是否需要更新应用程序,更新完毕后系统将会重启!
28 首页	首 页 ● 应用更新 ×	瀬定取消
④ 系统设置 ~		
● 网络设置 🛛 👋	6	
圖 CPU型号	将文件拖到此处,或点击上传	
命 CPU冗余		
③时间设置	请将Application.app、Application.crc压缩为.zip文件,且不超过30MB,压缩时不能有二级目录。	
回设备信息	update.zip matu 升级	
金 固件升级		
■ 应用更新		
❸ 系统重启	□ 删除应用程序 确定	
- 密码设置		
ひ 恢复出厂设置		

Restore the last application: You can only do this after you have done "Apply Update" on the web.

Delete the application: Delete the application in your PLC.

6.9. Password maintenance

Can complete the maintenance operation of PLC password.



6.10. Factory data reset

PLC can be restored to factory Settings operation, after restoring factory Settings PLC will lose user set data, program, restore factory data, please be careful operation.

OLI Motion Control PLC	I 首页 / 系统设置 / 恢复出厂设置	恢复出厂设置数据将丢失,是否继续
怨 首页	首页 ● 恢复出厂设置 ×	
系统设置	恢复出厂设置	
● 网络设置 ~		
IIII CPU型号		
命 CPU冗余		
③时间设置		
回设备信息		
金 固件升级		
會 应用更新		
● 系统重启		
ひ恢复出厂设置		

6.11. System restart

Users can restart the PLC system on the web page.



6.12. System maintenance

You can view the error codes and corresponding solutions.

88 首	页		首页 ● 第	系统维护 ×	
⑤ 系	充设置	~	错误码	含义	处理方法
	网络设置	~	22	系统启动失败	检查系统供电无误后,重新启动
			23	系统初始化失败	检查系统供电无误后,重新启动
	CPU型号		25	CPU温度过高	请检查系统散热条件
\$	CPU冗余 时间设置		32	EtherCAT主站错误	检查 EtherCAT主站及其各子节点硬件连接、主站源地址(MAC)等参数设置是否正确,例如:网 线断路、网口与实际使用是否一致、从站异常
m	沿各信自		35	Ethernet节点异常	检查Ethernet及其各子节点硬件连接、参数设置是否正确
쇼	固件升级		36	Profinet主站异常	检查Profinet主站及各其子节点硬件连接、参数设置是否正确,例如:Ethernet网络接口及网络信息 与实际不一致
8	应用更新		37	Profinet从站异常	检查Profinet从站与主站设备硬件连接、参数设置是否正确,例如:与主站网络是否正常、网络设置是否同一个网段
88	系统维护		39	Ethernet/IP scanner异常	检查Ethernet/IP scanner及其各子节点硬件连接、参数设置是否正确,例如:与从站网络是否正
•	系统重启		3a	Ethernet/IP adapter	常、网络设置是否同一个网段 检查Ethernet/IP adapter及其所属模块硬件连接、参数配置是否正确

Click "Reference details" to quickly obtain the PLC related documentation manual.

7. Care and upkeep

7.1. Running and shutdown operation

When the user program is written to the CPU module, you can perform the following steps to start/stop the program operation.

1. At the bottom of the CPU module there is a program RUN/stop dip switch, need to run the program when the switch to the run position, at this time if there is no fault then the CPU nixie tube

display EE; Need to STOP the program, switch to the stop position, the program to stop, at this time the CPU module of the nixie tube will poll display PLC network information (in hexadecimal display IP address, subnet mask, gateway information: nixie tube display, that followed by the

display of 4 hexadecimal number is IP; Display, that followed by the display of 4 hexadecimal

numbers is the mask; Display, indicating that the four hexadecimal numbers displayed

immediately after are gateways. Show numeric symbols and numeric values as shown in Appendix B).



2. You can use the relevant buttons on the web configuration tool to complete the PLC program start/stop operation, the detailed operation process, please refer to the PLC configuration chapter of the home page function.

7.2. MFK key restore factory settings



Press the multi-function button to display , keep pressing until it shows , release the button within 5s, it will display , then press the multi-function button again until it appears , release the button, complete the restoration of

display, indicating that the firmware is being

display after successfully running the user

the firmware upgrade is successful.

factory Settings, CPU module will automatically restart.

7.3. SD card firmware upgrade

1. Insert the SD card containing firmware information (maximum capacity is 32GB, file format is FAT32) into the SD card slot of the CPU module.

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Power it on again, and the CPU nixie tube will

upgraded. When the nixie tube is displayed

2. Power off the product after firmware upgrade and pull out the SD card.

3. Power on the product again.

7.4. SD card, U disk update the user program

1. The update file generated by Smart Control compilation is stored in the

"Application/Application_new" directory of the SD card and USB flash drive.

2. Insert the SD card and USB flash drive into the corresponding card slots of the CPU module.

3. Update successfully RUN indicator flashes 6 times, the digital tube will display, at this time

PLC re-run the user program, the nixie tube will program.

4. If the ERR indicator blinks 3 times, it indicates that the update failed. Please check whether the update file and the path stored in the SD card and USB flash drive are correct. If both are correct, the burning still fails, please contact technical support.

7.5. Routine maintenance

7.5.1. Routine inspection item

Check the installation and connection status

Check items	Check method	Treatment methods		
Appearance check	Visually inspect for defacement	Clean up the dirt dust		
	DIN guide is securely connected to the			
DIN rail installation is stable	fixed plane	Secure the DIN guide		
Whether the module is securely	Whether the modules are securely	Verify that the installation is		
installed	connected to DIN rail	secure		
Check for loose terminals	The screws on the module terminals are	Fasten the screws		

	not loose	
Check the cable and	The connecting cables and terminals of	
connection terminals	each module are loose	Install the cables and terminals

7.5.2. Regular inspection

The items that should be inspected once or twice within 6 months to 1 year are as follows:

Check item	Check method	Treatment methods		
Appearance check	Visually inspect for defacement	Clean up the dirt dust		
Dower ourply veltage	Measure whether the system input DC power	Verify the reliability of the power		
Power supply voltage	supply meets product specifications	supply system		
	Use thermometer and hygrometer to measure			
Ambient temperature,	the ambient temperature and humidity of the	Belay ring the loop meets		
humidity	system to confirm the cause of environmental	specifications		
	change and timely treatment			
		Eliminate the source to ensure that		
Air	Test for corrosive gases	the system is operating in a reliable		
		environment		
Appearance cleanliness	Check for any buildup of dirt	Remove the dirt buildup		

In addition, inspection should also be carried out in the case of equipment relocation and

transformation, wiring changes, etc.

Appendix A Fault code comparison table

Failure codes (Hexadecima I)	Digital tube display status	Meaning	Countermeasure			
0x22	8 8	System boot failure	After checking that the system power supply is correct, restart it			
0x23	23	System initialization failed	After checking that the system power supply is correct, restart			
0x32	88	EtherCAT master error	Check whether the hardware connection of the EtherCAT master and its child nodes and the source address (MAC) of the master are correct, such as the network cable isdisconnected, the network port is consistent with the actual use, and the slave station is abnormal			
0x35	35	Ethernet node exception	Check whether the hardware connection and parameter Settings of the main Profinet station and its child nodes are correct. For example, the Ethernet network interface and network information are inconsistent with the actual Settings			
0x36	38	Profinet master abnormal	Check the Profinet master and its sub-nodes hardware connections, parameter settings are correct, for example: Ethernet network interface and network information and the actual inconsistent			
0x37	87	The Profinet slave station is abnormal procedure	Check whether the hardware connection and parameter settings of Profinet slave and master are correct, e.g. whether the network with the master is normal and whether the network settings are the same network segment.			
0x39	39	The Ethernet/IP scanner is abnormal	Check whether the hardware connection and parameter settings of Ethernet/IP scanner and its subnodes are correct, e.g. whether the network with the slave is normal and whether the network settings are in the same network segment.			
0x3a	33	Ethernet/IP adapter	Check whether the hardware connection and parameter configuration of Ethernet/IP adapter and its subordinate modules are correct.			
0x3c	Эс	CAN node exception	Check whether the CAN node communication network and baud rate are correct.			
0x3d	38	CAN master exception	Check whether the hardware connection and parameter settings of the CAN master and its sub-nodes are correct, e.g. the wiring of the CAN communication is wrong, or the slave station ID is not consistent with the physical station number.			
0x3e	36	CAN slave device exception	Check whether the hardware connection and parameter settings of CAN slave devices are correct.			
0x3f	36	Modbus_tcp master exception	Check whether the hardware connection and parameter settings of Modbus_tcp master and its			

			sub-nodes are correct, e.g. whether the IP and positings of the slave are correct.		
0x40	48	Modbus_tcp slave device exception	Check whether the hardware connection and parameter settings of Modbus_tcp slave devices are correct.		
0x42	42	Modbus_rtu node exception	Check whether the hardware connection and parameter settings of Modbus_rtu node and its sub-nodes are correct, for example, COM port selection is wrong.		
0x43	43	Modbus_rtu master Error	Check whether the hardware connection and parameter settings of Modbus_rtu master and its sub-nodes are correct, e.g. the slave address does not match the actual one, and the physical connection between master and slave is disconnected.		
0x44	닉닉	Modbus_rtu slave device exception	Check whether the hardware connection and parameter setting of Modbus_rtu slave device are correct.		
0x5a	58	Application stop	Check whether the RUN/STOP switch is in STOP state, if it is in RUN state, check whether the application program is closed on the web page, and the initial reset device also shows 5a.		
0x5b	56	Application program exception	Check whether there is any error in the application program implementation logic, such as: division by 0, null pointer, array out of bounds.		
0x72	75	Native IO module power supply abnormality	Check whether the power input of the body IO module is normal and whether the output module channel is short-circuited.		
0x73	33	Configuration mismatch	After the 73 error code appears, the digital pipe immediately displays the slot number of the abnormal module. Check the software and hardware configuration according to the display and correct the error, for example, 73 02 means that the hardware configuration of the second module is not consistent with the software configuration.		
0x74	74	Extended IO module power abnormal	After the 74 error code appears, the digital tube immediately shows the slot number of the abnormal module. For example, 74 02 means that the power supply of the second module is abnormal, please check whether the wiring of the corresponding module is correct, for example, check whether the power input of the corresponding extended IO module is normal and whether the output module channel is short-circuited.		
0x75	75	Extended IO module overcurrent/over temperature	After 75 error code appears, the digital pipe immediately displays the slot number of the abnormal module. Check the corresponding module according to the display		
0x76	76	Tailboard abnormal	Check whether the tail plate is firmly installed.		

0x77	77	Extended IO module channel abnormality	When error code 77 appears, the digital pipe immediately shows the slot number of the abnormal module. Check the corresponding expansion IO module according to the display.
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Appendix B Digital tube display numerical comparison

table

Show the diagram	8	}	2	n)	4	5	6	[^ -
Hexadecimal	0	1	2	3	4	5	6	7
Decimal system	0	1	2	3	4	5	6	7
Show the diagram	8	9	9	Ь	C	d	E	F
Hexadecimal	8	9	А	В	С	D	E	F
Decimal system	8	9	10	11	12	13	14	15