XINJE

XS series PLC

User manual【Hardware】

Wuxi Xinje Electric Co., Ltd.

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XINJE Xinje Electric

XS Series PLCopen Standard Controller User Manual [Hardware Section]	Preface	
	XS series PLC overview	1
	Main body specification parameters	2
	System composition	3
	Power supply specification	4
	Input specification and wiring	5
	Output specification and wiring method	6
	BIOS Setting	7
	virtualization	8
	Operation,commissioning,and maintenance	9
	Appendix	
	Manual Update log	

Basic description

- Thank you for purchasing the Xinje XS series PLCopen programmable controller.
- This manual mainly introduces the hardware features of XS series PLCopen programmable controllers.
- Before using the product, please read this manual carefully and conduct wiring on the premise of fully understanding the contents of the manual.
- Please deliver this manual to the end user.

Notes to users

- Only operators with certain electrical knowledge can conduct wiring and other operations on the product. If there is any unknown place, please consult our technical department.
- The examples listed in the manual and other technical data are only for users' understanding and reference, and do not guarantee certain actions.
- When using this product in combination with other products, please confirm whether it conforms to relevant specifications and principles.
- When using this product, please confirm whether it meets the requirements and is safe.
- Please set up backup and safety functions by yourself to avoid possible machine failure or loss caused by the failure of this product.

Statement of responsibility

- Although the contents of the manual have been carefully checked, errors are inevitable, and we cannot guarantee complete consistency.
- We will often check the contents of the manual and make corrections in subsequent versions. We welcome your valuable comments.
- The contents described in the manual are subject to change without notice.

Link Manual

Regarding the instructions and software applications related to the XS series PLC, please refer to the following manuals. Manual download URL: www.xinje.com。

- "XS Series PLCopen Standard Controller User Manual [Basic Instruction Section]"
- "XS Series PLCopen Standard Controller User Manual [Motion Control Section]"
- "XS Series PLCopen Standard Controller User Manual [Software Section]"

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Safety precautions

Before using this product, please read this part carefully and operate after fully understanding the use, safety, precautions, etc. of the product. Please correctly conduct product wiring under the premise of paying great attention to safety.

The problems that may arise during the use of the product are basically included in the safety precautions, which are indicated in two levels of attention and danger. For other unfinished matters, please follow the basic electrical operation procedures.

	Attension	When used incorrectly, it may cause danger, moderate injury or minor injury, and property damage.
	Danger	When it is used incorrectly, it may cause danger, cause personal injury or serious injury, and may cause serious property damage.

- Confirmation upon receiving the product

	Attension
Do not install damaged controllers, controllers with missing parts, or controllers with unqualified models. Danger of injury.	

- Product system design

	Danger
Please design a safety circuit outside the controller to ensure that the whole system can operate safely when the controller operates abnormally. There is a risk of misoperation and failure.	

	Attension
Do not tie the control wiring and power wiring together. In principle, they should be separated by 10cm. It may cause malfunction and product damage.	

- Product installation

	Danger
Before installing the controller, be sure to disconnect all external power supplies. Danger of electric shock.	

	Attension

1. Please install and use this product under the environmental conditions specified in the general specifications of the manual.
Do not use in damp, high temperature, places with dust, smoke, conductive dust, corrosive gas, flammable gas, vibration and impact.
It may cause electric shock, fire, misoperation, product damage, etc.
2. Do not directly touch the conductive part of the product.
It may cause malfunction and fault.
3. Please use DIN46277 guide rail, M3 screw or Xinje XG-EB to fix the product and install it on a flat surface.
Incorrect installation may cause malfunction and product damage.
4. When processing the screw hole, please do not let the cutting powder and wire debris fall into the product cover.
It may cause malfunction and fault.
5. when connecting the expansion module with the expansion cable, please confirm that the connection is tight and the contact is good.
It may lead to poor communication and misoperation.
6. when connecting peripheral devices, expansion devices, batteries and other devices, be sure to cut off power for operation.
It may cause malfunction and fault.

- Product wiring

	Danger

1. Before wiring the controller, be sure to disconnect all external power supplies.
Danger of electric shock.
2. Please correctly connect the DC power supply to the dedicated power terminal of the controller.
If the power supply is connected incorrectly, the controller may be burned.
3. Before the controller is powered on and operated, please cover the cover plate on the terminal block.
Danger of electric shock.

	Attension

1. Do not use external 24V power supply to connect to 24V and 0V terminals of the controller or expansion module.
It may cause damage to the product.
2. Please use 2mm^2 wire to carry out the third kind of grounding for the grounding terminal of the controller and expansion equipment, and do not share the grounding with the strong current system.
It may cause failure, product damage, etc.
3. Do not make external wiring to the empty terminal.
It may cause malfunction and product damage.
4. When processing the screw hole, please do not let the cutting powder and wire debris fall into the product cover.
May cause malfunction, fault, etc.

5. When using wires to connect terminals, be sure to tighten them, and do not make conductive parts contact other wires or terminals. It may cause malfunction and product damage.

- Operation and maintenance of products

	Danger
1. Do not touch the terminal after the controller is powered on. Danger of electric shock. 2. Do not connect or remove the terminal with electricity. Danger of electric shock. 3. Please stop the program in the controller before changing it. It may cause malfunction.	

	Attension
1. Do not disassemble or assemble this product without authorization. It may cause damage to the product. 2. Please plug and unplug the connecting cable in case of power failure. It may cause cable damage and malfunction. 3. Do not make external wiring to the empty terminal. It may cause malfunction and product damage. 4. Please cut off the power before removing the expansion device, peripheral device and battery. It may cause malfunction, fault, etc. 5. When the product is discarded, please treat it as industrial waste.	

Catalog

SAFETY PRECAUTIONS 3
PREFACE 9
THE CONTENT OF THIS MANUAL 9
MANUAL APPICATION RANGE 10
CONVENTIONS IN THE MANUAL 10
RELATED MANUAL 11
THE METHODS TO OBTAINING THE MANUAL 11
1. XS SERIES PLC OVERVIEW 12
1-1. PRODUCT FEATURES 12
1-1-1. XSDH series basic unit 12
1-1-2. XS3 series basic unit 13
1-1-3. XSLH series basic unit 15
1-1-4. XSA basic unit 16
1-1-5. XSDH series expansion modules 18
1-1-6. XS3 series expansion modules 19
1-1-7. XSLH series expansion modules 19
1-2. MODEL COMPOSITION AND MODEL TABLE 20
1-2-1. XSDH basic unit and models 20
1-2-2. XSDH expansion unit model composition and model table 20
1-2-3. XS3 model composition and model table of basic unit 23
1-2-4. XS3 expansion unit model composition and model table 23
1-2-5. XSLH basic unit model composition and model table 24
1-2-6. XSLH expansion unit model composition and model table 25
1-2-7. XSA model composition and model table of basic unit 27
1-3. PART INTRODUCTION 29
1-3-1. XSDH series structure composition 29
1-3-2. XS3 series structure composition 30
1-3-3. XSLH series structure composition 31
1-3-4. XSA series structure composition 32
2. MAIN BODY SPECIFICATION PARAMETERS 43
2-1. SPECIFICATION PARAMETERS 43
2-1-1. General specification 43
2-1-2. Performance specification 44
2-1-3. Factory specifications 45
2-2. DIMENSION 46
2-2-1. XSDH series PLC dimension 46
2-2-2. XS3 series dimension 46
2-2-3. XSLH series PLC dimension 47
2-2-4. XSA series PLC dimension 48
2-3. TERMINAL ARRANGEMENT 50
2-3-1. XSDH series terminal arrangement 50
2-3-2. XS3 series terminal arrangement 50
2-3-3. XSLH series terminal arrangement 51
2-3-4. XSA series terminal arrangement 51

2-4．COMMUNICATION PORTS 53
3. SYSTEM COMPOSITION 60
3-1．SYSTEM COMPOSITION 60
3-2．PERIPHERALS 61
3-2-1．Programming software 61
3-2-2．HMI 61
3-2-3．Power supply module 62
3-2-4．Terminal block and connection cable 65
3-3．CONSTITUTION PRINCIPLE 67
3-4．PRODUCT INSTALLATION 68
3-4-1．Installation location 68
3-4-2．Installation method 68
3-4-3. Installation environment 72
4. POWER SUPPLY SPECIFICATION 73
4-1. POWER SUPPLY SPECIFICATION 73
4-2. AC POWER SUPPLY DC INPUT 74
5. INPUT SPECIFICATION AND WIRING 76
5-1．INPUT SPECIFICATION 76
5-1-1．XSDH series input specification 76
5-1-2．XS3 series input specification 80
5-1-3．XSLH series input specification 80
5-1-4．XSA series input specification 82
5-2．DC INPUT SIGNAL 89
5-2. HIGH SPEED COUNT INPUT 89
5-2-1．Count mode 89
5-2-2. High-speed counter range 90
5-2-3. High-speed counter input wiring 90
5-2-4. Input terminal assignment 91
6. OUTPUT SPECIFICATION AND WIRING METHOD 95
6-1. OUTPUT SPECIFICATION 95
6-2. TRANSISTOR OUTPUT 98
7. BIOS SETTING 99
7-1. BIOS EXPLANATION 99
7-1-1.CMOS setup 99
7-1-2.Function keys and auxiliary instructions 99
7-2. MAIN MENU 100
7-3. MAIN(STANDARD CMOS SETTING) 101
7-4. ADVANCED BIOS FUNCTION 102
7-5. CHIPSET PERFORMANCE SETTING 103
7-6. SECURITY (ADMINISTRTOR/USER PASSWORD) 104
7-7. BOOT SETTING 105
7-8. SAVE & EXIT 106
7-9. SET COM PORT MODE 107
8.VIRTUALIZATION 109
8-1. XSA230-W 109
8-2. XSA620-W 109

9.OPERATION, COMMISSIONING AND MAINTENANCE 110
9-1. OPERATION AND COMMISSIONING 110
9-2. ROUTINE MAINTENANCE 111
APPENDIX 112
APPENDIX 1. PLC FUNCTION CONFIGURATION LIST 112
APPENDIX 2. Q&A 112
MANUCAL UPDATE LOG 115

Preface

The following describes the content of this manual, the scope of application of this manual, the conventions in this manual, the introduction of related manuals, and the way to obtain manual materials.

The content composition of this manual

This manual covers the model selection and system composition of the XS series programmable controllers, primarily introducing the specifications, input/output wiring, operation, and maintenance of the basic units of the XS series programmable controllers.

The manual is divided into 9 chapters based on different content. An overview of each chapter is as follows:

Chapter Number	Chapter Name	Chapter content
1	Product Overview	Introduce the performance features, model composition, and the overall product range of the XS series programmable controllers, as well as the descriptions of each part of the products.
2	Ontology Specification Parameters	Introduce the general specifications, performance specifications, terminal arrangement, product dimensions, interface descriptions, etc., of the basic unit of the XS series programmable controller.
3	system composition	Introduction to the system composition centered on the XS series programmable controller, peripheral equipment, expansion devices, principles for connecting the main unit with expansion devices, product installation, etc.
4	Power supply specifications and wiring methods	Introduce the power supply specifications, wiring methods, etc., of the XS series programmable controllers.
5	Input specifications and wiring methods	Introduce the input specifications, input wiring, and high-speed counting processing of the XS series programmable controllers.
6	Output Specifications and Wiring Methods	Introduce the output specifications of the XS series programmable controllers and transistor output processing.
7	BIOS Settings	Introduce the BIOS setup function of the XSA330-W controller.
8	Operation, debugging, maintenance	Introduce the operation, debugging procedures, and routine maintenance of the XS series programmable controllers.
-	appendix	Introduce the functional configuration table and frequently asked questions Q&A for the

Chapter Number	Chapter Name	Chapter content
		XS series programmable controllers.
-	Manual Update Log	Document the version and revision history of this manual.

Manual application range

This manual is the hardware manual of XS series programmable controller products. The manual covers the following product information:

product name	product information
XSDH Series Programmable Logic Controller	Including the XSDH series basic units and XD series expansion units.
XS3 Series Programmable Logic Controller	Including the XS3 series basic units, XG series expansion units, accessories, etc.
XSLH Series Programmable Logic Controller	Including the XSLH series basic units and XL series expansion units.
XSA Series Industrial Intelligent Controller	Including the XSA series basic units.

Conventions in the manual

Due to space limitations, some abbreviations may be used in the manual to replace the original names. These names that may be involved are listed in the following table for comparison.

Abbreviation	Explanation
XS series PLC	XS series programmable controller
Basic unit or main body	XS series programmable controller basic unit
Expansion module	XS series programmable controller expansion modules
I/O expansion	XS series programmable controller I/O expansion modules
Analog expansion	XS series programmable controller analog expansion modules
Peripherals	Programming software, HMI, network modules
Programming software	Codesys programming software
HMI	TG, TS,OP series HMI products
TG series	TG series HMI
TS series	TS series HMI
OP series	OP series operate panel

Related manuals

This manual only covers the hardware of XS series PLC. For other applications, please refer to the relevant manuals. Relevant manuals are listed below for users' reference.

Manual	Introduction	Note
Software manual		
XS series PLC user manual [software]	This paper introduces the use methods and skills of Codesys programming tool software	PDF
Instruction manual		

XS Series PLCopen Standard Controller User Manual [Basic Instruction]	Introduction to the usage of basic instructions for the XS series PLC.	PDF
XS series PLC user manual [motion control]	Introduce the usage of XS series PLC advanced motion control instructions	PDF
Expansion module manual		
XD series PLC expansion module user manual	Introduce the specification parameters and terminal wiring of XSDH series expansion module	PDF
XG series PLC expansion module user manual	Introduce the specification parameters and terminal wiring of XS3 series expansion module	PDF
XL series PLC expansion module user manual	Introduce the specification parameters and terminal wiring of XSLH series expansion module	PDF
XF series PLC expansion module user manual	Introduce the specification parameters and terminal wiring of XSF series expansion module	PDF

The method to obtain the manual:

For the electronic version of the manual,

- Log in to the Xinje official website www.xinje.com to search and download.

1. XS series PLC overview

1-1. Product features

1-1-1. XSDH series basic unit

(1) Model explanation

The basic unit of XSDH series medium-sized PLC currently has one product model.

- I/O points 60 points
- Output type Transistor
- Input type NPN
- Power supply AC220V

Series	Description
XSDH	Includes 60 points specifications. Based on Codesys programming platform, it supports PLCopen programming specification, with larger internal resource space. The main processor has a dominant frequency of 1GHz, supports Ethernet communication, EtherCAT bus function, EtherCAT remote IO, 32-channel electronic cam, online download, and supports 16 expansion modules, which can meet most user needs.

(2) Powerful function

XSDH series PLC has substantial basic functions and a variety of special functions.

Enriching basic functions

- **High speed operation**
  The main processor of XSDH series PLC has a main frequency of 1GHz, which can meet the requirements of high-speed operation.
- **Rich expansion modules**
  XSDH series PLC can support 16 XD series expansion modules.
- **Multi-communication ports**
  The basic unit has four communication ports, which support RS232, RS485. It supports LAN port and EtherCAT communication.
- **Large memory**
  XSDH series PLC has 32M user program capacity and 32M data capacity ,6M power-off retention capacity
- **6 kinds of programming method**
  XSDH series PLC support ST, SFC, FBD, CFC, LD and IL.
- **Rich instruction set**
  XSDH series PLC supports PLCopen programming specification, and can reference many standard function libraries to develop proprietary function blocks and instruction libraries.
- **Real-time clock**
  XSDH series PLC has built-in clock to control the time.
- **Easy to install**
  XSDH series PLC is easy to install. It can be installed directly on the guide rail or fixed with M3 screws.

Enhanced special functions

- **EtherCAT bus**
  XSDH series PLC supports EtherCAT bus communication, supports up to 32 stations (32-axis motors can be controlled synchronously), and supports communication with EEPROM slave stations, such as Xinje-DS5C, Inovance servo, Panasonic EtherCAT servo, Kollmorgen servo, etc.
  XSDH series PLC supports 32-channel electronic cam function and connection of EtherCAT remote IO module through EtherCAT bus. Please refer to **XS Series PLCopen Instruction Manual** for specific use.
- **Ethernet communication**
  XSDH series PLC supports Ethernet communication, which can realize faster and more stable program / data download and better real-time performance. It supports PLC access to the Internet, and realizes remote search, online monitoring, uploading and downloading of PLC program.
- **High speed counter, up to 200KHz**
  The basic unit of XSDH series PLC is equipped with 4-channel, 2-phase high-speed counter and high-speed counting comparator, which can count in two modes: single-phase and AB phase. The single-phase frequency can reach 200kHz and AB phase can reach 100kHz.
- **Interrupt function**
  XSDH series PLC has 14-channel external interrupt function.
- **Online download**
  XSDH series PLC supports online download function to truly realize PLC non-stop operation.
- **Simulation**
  In the case of no hardware, it supports simulation, which is helpful for programming.
- **Dial switch**
  It is used to initialize IP, power on without loading the user program, start normally, without special treatment, load the user program, update the product.

(3) Easy programming

XSDH series PLC is programmed in Codesys programming software. Please refer to **XS Series PLCopen Manual [Software]** for specific use.

1-1-2. XS3 series basic unit

(1) Model explanation

At present, the basic unit of XS3 series medium-sized PLC has one product model.

- I/O points 26 points
- Output type Transistor
- Input type NPN
- Power supply DC24V

Series		Description
XS3	XS3-26T4	Includes 26-point specifications. The basic Codesys programming platform supports PLCopen programming specification, with larger internal resource space. The main processor frequency is 800MHz, supports Ethernet communication, EtherCAT bus function, EtherCAT remote IO, 32-channel electronic cam, online download, and supports 16 expansion modules, which can meet most of the user's needs.

XS3 series PLC has substantial basic functions and a variety of special functions.

Enriching basic functions

- **High speed operation**
  The main processor of XS3 series PLC has a main frequency of 800MHz, which can meet the requirements of high-speed operation.
- **Rich expansion modules**
  XS3 series PLC can support 16 XG series expansion modules.
- **Multi-communication ports**
  The basic unit has five communication ports, which support RS232, RS485. It supports LAN port and EtherCAT communication.
- **Large memory**
  The XS3 series PLC has a data capacity of 32MB, program capacity of 32MB, and 6M power outage retention capacity.
- **6 kinds of programming method**
  XS3 series PLC support ST, SFC, FBD, CFC, LD and IL.
- **Rich instruction set**
  XS3 series PLC supports PLCopen programming specification, and can reference many standard function libraries to develop proprietary function blocks and instruction libraries.
- **Real-time clock**
  XS3 series PLC has built-in clock to control the time.
- **Easy to install**
  XS3 series PLC is easy to install. It can be installed directly on the guide rail.

Enhanced special functions

- **EtherCAT bus**
  XS3 series PLC supports EtherCAT bus communication, supports up to 32 stations (32-axis motors can be controlled synchronously), and supports communication with EEPROM slave stations, such as Xinje-DS5C, Inovance servo, Panasonic EtherCAT servo, Kollmorgen servo, etc.
  XS3 series PLC supports 32-channel electronic cam function and connection of EtherCAT remote IO module through EtherCAT bus.
- **Ethernet communication**
  XS3 series PLC supports Ethernet communication, which can realize faster and more stable program / data download and better real-time performance. It supports PLC access to the Internet, and realizes remote search, online monitoring, uploading and downloading of PLC program.
- **High speed counter, up to 200KHz**
  The basic unit of XS3 series PLC is equipped with 4-channel, 2-phase high-speed counter and high-speed counting comparator, which can count in two modes: single-phase and AB phase. The frequency can reach 200kHz.
- **Interrupt function**
  XS3 series PLC has 6-channel external interrupt function.

(2) Easy programming

XS3 series PLC is programmed in Codesys programming software. Please refer to XS series PLC user manual [software] for specific use.

1-1-3. XSLH series basic unit

(1) Model explanation

At present, the basic unit of XSLH series small PLC currently has one product model.

- I/O points 24, 30 points
- Output type Transistor
- Input type NPN, PNP, differential
- Power supply DC24V

Series	Description
XSLH	Include 24, 30 points specifications. Based on CODESYS programming platform, it supports PLCopen programming specification, has larger internal resource space, the main frequency of the main processor is 1GHz, supports Ethernet communication, CANopen communication, EtherCAT bus function, CANopen bus function, EtherCAT remote IO, 8/16/32 channels electronic cam, online download, and supports 16 expansion modules, which can meet most user needs.

(2) Powerful function

XSLH series PLC has substantial basic functions and a variety of special functions.

Enriching basic function

- **High speed operation**
  The main frequency of the main processor of the XSLH series PLC is up to 1GHz, which can meet the requirements of high-speed operation.
- **Rich expansion modules**
  XSLH series PLC can support 16 XL series expansion modules of different types and models
- **Multi-communication ports**
  The basic unit has 6 communication ports, supporting RS232 and RS485 ports to connect multiple external devices, supporting LAN port access to the LAN, and supporting EtherCAT and CANopen communication.
- **Large memory**
  XSLH series PLC has 32M user program capacity, 32M data capacity and 6M power-off retention capacity.
- **6 kinds of programming method**
  XSLH series PLC support ST, SFC, FBD, CFC, LD and IL.
- **Rich instruction set**
  XSLH series PLC supports PLCopen programming specification, can reference many standard function libraries, and develop proprietary function blocks and instruction libraries.
- **Real time clock**
  XSLH series PLC built-in clock for time control
- **Easy to install**
  XSLH series PLC is easy to install, which can be directly installed by guide rail or fixed with M3 screws.

Enhanced special functions

- **EtherCAT bus**
  XSLH series PLC supports EtherCAT bus communication, supports up to 32 stations (32-axis motors can be controlled synchronously), and supports communication with EEPROM slave stations, such as Xinje-DS5C, Inovance servo, Panasonic EtherCAT servo, Kollmorgen servo, etc.
  XSLH series PLC supports 32-channel electronic cam function and connection of EtherCAT remote IO module through EtherCAT bus.
  Please refer to **XS Series PLCopen Instruction Manual** for specific use.
- **CANopen bus**
  The physical layer of CAN bus is very stable. The data link layer is reliable, flexible, highly compatible, and highly interoperable. It supports a maximum of 16 stations (16-axis motors can be controlled synchronously).
- **Ethernet communication**
  XSLH series PLC supports Ethernet communication, which can realize faster and more stable program / data download and better real-time performance. It supports PLC access to the Internet, and realizes remote search, online monitoring, uploading and downloading of PLC program.
- **High speed pulse counter, up to 200KHz**
  The basic unit of XSLH series PLC supports 2-channel OC signal and 2-channel differential signal input, and can count in single-phase and AB phase modes. The differential model can be up to 1MHz, the single-phase can be up to 80KHz, and the AB phase can be up to 50KHz.
- **Interrupt function**
  XSLH series PLC has 10 channels external interrupt function.
- **Online downloading**
  XSLH PLC supports online download function, which truly realizes PLC non-stop operation.
- **Simulation**
  It supports simulation without connecting hardware, which is helpful for programming.
- **Dial switch**
  Used to initialize IP, power on without loading user program, normal startup, no special processing, loading user program, and updating the product.

(3) Easy programming

XSLH series PLC is programmed in Codesys programming software. Please refer to **XS Series PLCopen Software Manual** for specific use.

1-1-4. XSA basic unit

(1) Model explanation

The XSA series industrial intelligent controller currently includes 5 product models.

- I/O points 32 points (XSA330, 500 series), 6 points (XSA230 , XSA620 series)
- Output type Transistor
- Input type NPN&PNP (XSA330, 500 series), NPN (XSA230 series)
- Power supply DC24V

Series	Description
XSA230	Specifications include six key points: Based on the CODESYS programming platform, supports PLCopen programming standards, features larger internal resource space, powered by

	XSA230 main processor J6412 with a frequency of 2GHz. Supports Ethernet communication, EtherCAT bus functionality, supports 128 EtherCAT communication nodes, 64 EtherCAT axes, and online download capability, meeting most user requirements. EtherCAT axes performance: 250us/ axes,500us/16 axes, 1ms/64 axes,
XSA330	Includes 32 points specifications. Based on the CODESYS programming platform, it supports PLCopen programming specifications and has a larger internal resource space. The main processor J3455 has a frequency of 1.5 GHz and supports Ethernet communication and EtherCAT bus functions. It supports 128 EtherCAT communication nodes, 64 EtherCAT axes, and online downloading, which can meet most of the user's usage needs. EtherCAT axes performance:1ms/32 axes,1ms/48 axes,4ms/64 axes
XSA500	Includes 32 points specifications. Based on the CODESYS programming platform, it supports PLCopen programming specifications and has a larger internal resource space. The XSA520 main processor I3-1115G4 has a main frequency of 3GHz, the XSA530 main processor I5-1135G7 has a main frequency of 2.4GHz, and the XSA550 main processor I7-1165G7 has a main frequency of 2.8GHz. It supports Ethernet communication, EtherCAT bus function, and 256 EtherCAT communication nodes EtherCAT axes (XSA500 can support up to 256 EtherCAT axes): XSA520: 250us/8 axes, 500us/32 axes, 1ms/256 axes; XSA530: 500us/32 axes, 1ms/128 axes, 2ms/256 axes; XSA550: 250us/8 axes, 500us/32 axes, 1ms/256 axes.
XSA620	Includes 6 specifications. Based on the CODESYS programming platform, it supports the PLCopen programming standard, with larger internal resources (Utheisa Kong), and features an XSA620 main processor (i3-1215U) with a maximum turbo frequency of 4.4GHz. It supports Ethernet communication, EtherCAT bus functionality, up to 256 EtherCAT axes (no axis limit, recommended maximum of 256 axes), and online downloading, meeting most user requirements. EtherCAT axes: 1ms/256 axes.

(2) Powerful function

XSA series PLC has substantial basic functions and a variety of special functions.

Enriching basic functions

- **High speed operation**
  The main processor of XSA series PLC has a maximum main frequency of up to 4.4GHz, which can meet the requirements of high-speed operation.
- **Rich expansion modules**
  Based on EtherCAT bus IO expansion, it can be connected to DI/DO expansion and analog data acquisition expansion
- **Multi-communication ports**
  The basic unit has six communication ports, which support RS232, RS485. It supports LAN port and

EtherCAT communication.

- **Large memory**
  XSA series PLC has 128M user program capacity, 128M data capacity and 6M power failure holding capacity.
- **6 kinds of programming method**
  XSA series PLC support ST, SFC, FBD, CFC, LD and IL.
- **Rich instruction set**
  XSA series PLC supports PLCopen programming specification, and can reference many standard function libraries to develop proprietary function blocks and instruction libraries.
- **Real-time clock**
  XSA PLC has built-in clock to control the time.
- **Easy to install**
  XSA series PLC is easy to install. It can be installed directly on the guide rail or fixed with M3 screws.

Enhanced special functions

- **EtherCAT bus**
  XSA series supports EtherCAT bus communication, supports up to 256 stations (256-axis motors can be controlled synchronously), and supports communication with EEPROM slave stations, such as Xinje-DS5C, Inovance servo, Panasonic EtherCAT servo, Kollmorgen servo, etc.
  Please refer to **XS Series PLCopen Instruction Manual** for specific use.
- **Ethernet communication**
  XSA series supports Ethernet communication, which can realize faster and more stable program / data download and better real-time performance. It supports PLC access to the Internet, and realizes remote search, online monitoring, uploading and downloading of PLC program.
- **High speed counter (XSA230 ,XSA620 cannot support), encoder differential input up to 1MHz**
  The basic unit of XSA series industrial control computer is equipped with 4-channel, 2-phase high-speed counter and high-speed counting comparator, which can count in single-phase and AB phase modes. The encoder differential type frequency can reach 1MHz, single-phase frequency can reach 200KHz, and AB phase can reach 100KHz.
- **Interrupt function(XSA230 ,XSA620 cannot support)**
  XSA series has 16-channel external interrupt function.
- **Online download**
  XSA series supports online download function to truly realize PLC non-stop operation.
- **Simulation**
  In the case of no hardware, it supports simulation, which is helpful for programming.

(3) Easy programming

XSA series PLC is programmed in XS STUDIO programming software. Please refer to **XS Series PLCopen Software Manual** for specific use.

1-1-5. XSDH series expansion modules

In order to better meet the field control requirements, XSDH series PLC can be extended with 16 XD expansion modules.

- Rich types: including input and output expansion module, analog module and temperature control module.
- I/O expansion module
  Input 8~32 points. Output points: 8~32. Output type: transistor, relay. Power supply: DC24V.
- Analog module
  Type: AD, DA, AD/DA. Channels: AD 4~8, DA 2~4. Power supply: DC24V.
- Temperature control module
  Type: PT100, thermocouple. Channels: 8. PID control: built in, transistor. Power supply: DC24V.

1-1-6. XS3 series expansion modules

In order to better meet the field control requirements, XS3 series PLC can be extended with 16 XD expansion modules.

- Rich types: including input and output expansion module, analog module and temperature control module.
- I/O expansion module
  Input 8~32 points. Output points: 8~32. Output type: transistor, relay. Power supply: DC24V.
- Analog module
  Type: AD, DA, AD/DA. Channels: AD 4~8, DA 2~4. Power supply: DC24V.
- Temperature control module
  Type: PT100, thermocouple. Channels: 8. PID control: built in, transistor. Power supply: DC24V.

1-1-7. XSLH series expansion modules

In order to better meet the field control requirements, XSLH series PLC can be extended with 16 XL expansion modules.

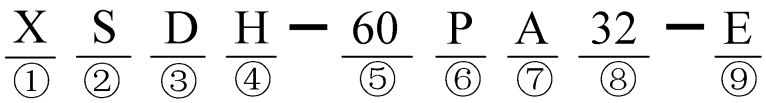
- Rich types: including input and output expansion module, analog module and temperature control module.
- I/O expansion module
  Input 8~32 points. Output points: 8~32. Output type: transistor, relay. Power supply: DC24V.
- Analog module
  Type: AD, DA, AD/DA. Channels: AD 4~8, DA 2~4. Power supply: DC24V.
- Temperature control module
  Type: PT100, thermocouple. Channels: 8. PID control: built in, transistor. Power supply: DC24V.

1-2. Model composition and model table

1-2-1. XSDH basic unit and models

(1) Model composition of basic unit

The basic unit model composition of XSDH series PLC is generally as follows:



① Product type	X: Controller
② Use platform	S: CODESYS
③ Appearance structure	D: Same to XDH
④ Performance level	H: Motion control enhanced type
⑤ I/O points	60: 36 inputs/24 outputs
⑥ Input type	None:NPN P:PNP
⑦ Connection denotation	3A: Axis
⑧ Control axis	32: can control 32 EtherCAT axes
⑨ Power supply	E: AC220V C:DC24V

(2) Basic unit model list

- XSDH model list

Model							Input points (DC24V)	Output points (R, T)
AC power supply				DC power supply				
	Relay output	Transistor output	Relay&transistor mixed output	Relay output	Transistor output	Relay&transistor mixed output		
NPN model	-	XSDH-60A32-E	-	-	XSDH-60A32-C	-	36	24
PNP Model	-	XSDH-60PA32-E	-	-	-	-	36	24

1-2-2. XSDH expansion unit model composition and model table

(1) I/O expansion model

I/O model composition of the expansion module is as follows:

XD－E ○ □ ○ □ －□
① ② ③ ④ ⑤ ⑥ ⑦

①：	Series name	XD
②：	Expansion module	E
③：	Input points	8/16/32
④：	Special for input	NPN input: X
		PNP input: PX
⑤：	Output points	8/16/32
⑥：	Output mode	YR: relay output
		YT: transistor output
⑦：	Power supply	E: AC220V
		C: DC24V

- I/O expansion module model list

Model				I/O points	Input points (DC24V)	Output points (R, T)
	Input	Output				
		Relay output	Transistor output			
NPN type	XD-E8X	-	-	8	8	-
	-	XD-E8YR	XD-E8YT	8	-	8
	-	XD-E8X8YR	XD-E8X8YT	16	8	8
	XD-E16X	-	-	16	16	-
	-	XD-E16YR	XD-E16YT	16	-	16
	-	XD-E16X16YR-E	XD-E16X16YT-E	32	16	16
	-	XD-E16X16YR-C	XD-E16X16YT-C	32	16	16
	XD-E32X-E	-	-	32	32	-
	XD-E32X-C	-	-	32	32	-
	-	XD-E32YR-E	XD-E32YT-E	32	-	32
	-	XD-E32YR-C	XD-E32YT-C	32	-	32

(2) Analog and temperature control modules

The model composition of analog quantity and temperature expansion module is as follows:

XD－E 4AD 2DA 6PT 6TC 1WT 4SSI－P－H
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①：	Expansion	E: Expansion module
②：	Analog input	4AD：4 channels analog input
		8AD：8 channels analog input
		12AD：12 channels analog input
③：	Analog output	2DA：2 channels analog output
		4DA：4 channels analog output
④：	Temperature meansurement	6PT：6 channels platinum thermistor input
		4PT3：4 channels platinum thermistor input (3-wire)

		6TC：6 channels thermocouple input
⑤：	Pressure measurement	1WT：1 channel pressure measurement
		2WT：2 channels pressure measurement
		4WT：4 channels pressure measurement
⑥：	Encoder detection	4SSI：4 channels encoder detection
⑦：	Model difference	P：PID control
		A：Hardware is new version (only for WT module) Input is current (only for 8AD module)
		B： analog voltage output -5V~5V or -10V~10V (only for 4AD2DA module) Hardware version difference (only for WT module)
		C：Hardware version difference (only for WT module)
		D：Hardware version difference (only for WT module)
		V：Input is voltage type (for 8AD, 12AD module)
⑧：	Isolation	None：standard H：Each channel is isolated from each other (only for 6TC-P-H module)

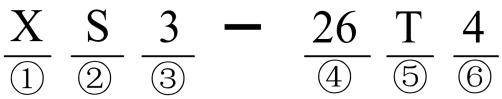
- Analog, temperature expansion module list

Model		Description
Analog input	XD-E4AD	4 channels analog input
	XD-E8AD	8 channels analog input, 4 channels voltage, 4 channels current
	XD-E8AD-A	8 channels analog input, current type
	XD-E8AD-V	8 channels analog input, voltage type
	XD-E12AD-V	12 channels analog input, voltage type
Analog I/O	XD-E4AD2DA	4 channels analog input, 2 channels analog output
	XD-E4AD2DA-B	4 channels analog input, 2 channels analog voltage output
Analog output	XD-E2DA	2 channels analog output
	XD-E4DA	4 channels analog output
Temperature measurement	XD-E6PT-P	6 channels PT100 input, built-in PID control
	XD-E4PT3-P	4 channels PT100 input, built-in PID control
	XD-E6TC-P	6 channels K type thermocouple input, built-in PID control
	XD-E6TC-P-H	6 channels K type thermocouple input, built-in PID control, each channel is isolated from each other
	XD-E2TC-P	2 channels K type thermocouple input, built-in PID control
Pressure measurement	XD-E1WT-A	1 channel pressure measurement, -39.06mV～39.06mV
	XD-E2WT-A	2 channels pressure measurement, -39.06mV～39.06mV
	XD-E4WT-A	4 channels pressure measurement, -39.06mV～39.06mV
	XD-E2WT-B	2 channels pressure measurement, 0～10mV
	XD-E1WT-C	1 channel pressure measurement, 0～10mV, 20 bits conversion accuracy
	XD-E2WT-C	2 channels pressure measurement, 0～10mV, 20 bits conversion accuracy
	XD-E4WT-C	4 channels pressure measurement, 0～10mV, 20 bits conversion accuracy
	XD-E1WT-D	1 channel pressure measurement, 0～10mV, 22 bits conversion accuracy
	XD-E2WT-D	2 channels pressure measurement, 0～10mV, 22 bits conversion accuracy
	XD-E4WT-D	4 channels pressure measurement, 0～10mV, 22 bits conversion accuracy

1-2-3. XS3 model composition and model table of basic unit

(1) Model composition of basic unit

XS3 series PLC basic unit model composition is generally as follows:



① Product type	X: Controller
② Use platform	S: CODESYS
③ Appearance structure	3: 3 series
④ I/O points	26: 18 inputs/8 outputs
⑤ Transistor output	T: transistor output
⑥ Pulse channel	4: 4 channels pulse output (currently not supported)

(2) Basic unit model list

- XS3 series model list

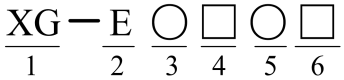
Model							Input points (DC24V)	Output points (R, T)
AC power supply				DC power supply				
	Relay output	Transistor output	Relay&transistor mixed output	Relay output	Transistor output	Relay&transistor mixed output		
NPN type	-	-	-	-	XS3-26T4	-	18	8

Note: XS3-26T4 some input points are in differential input mode.

1-2-4. XS3 expansion unit model composition and model table

(1) I/O expansion module

The model composition of I/O expansion module is as follows:



1：	Series name	XG
2：	Expansion module	E
3：	Input points	8/16/32/64
4：	Special for input	X:Input
5：	Output points	8/16/32/64
6：	Output mode	YR: relay output
		YT: transistor output

- I/O expansion module model list

Model	I/O points	Input points	Output points

Type	Input	Output			(DC24V)	(R, T)
		Relay output	Transistor output			
NPN/PNP	-	XG-E8X8YR	XG-E8X8YT	16	8	8
	XG-E16X	-	-	16	16	-
		XG-E16YR	XG-E16YT	16	-	16
	-	-	XG-E16X16YT	32	16	16
	XG-E32X	-	-	32	32	-
	-	-	XG-E32YT	32	-	32
	XG-E64X	-	-	64	64	-
	-	-	XG-E64YT	64	-	64

Note: XG-E64X is NPN input module.

(2) Analog, temperature expansion module

The model composition of analog and temperature module is as follows:

XG - E 4AD 2DA 8PT3 - A

① ② ③ ④ ⑤

1：	Expansion	E：Expansion module
2：	Analog input	4AD：4 channels analog input
		8AD：8 channels analog input
3：	Analog output	2DA：2 channels analog output
4：	Temperature measurement	8PT3：8 channels 3-wire Platinum thermistor input
		8TC：8 channels thermocouple input
5：	Analog type	A：current type
		V：voltage type

- Analog, temperature expansion model list

Model		Description
Analog I/O	XG-E8AD-A	8 channels analog input, current type
	XG-E8AD-V	8 channels analog input, voltage type
	XG-E4AD2DA	4 channels analog input, 2 channels analog output
	XG-E4DA	4 channels analog output
Temperature measurement	XG-E8PT3-P	8 channels PT100 temperature measurement, built-in PID control
	XG-E8TC-P	8 channels themocouple temperature measurement, built-in PID control

1-2-5. XSLH basic unit model composition and model table

(1) Model composition of basic unit

XSLH series PLC basic unit model composition is generally as follows:

X S L H — 30 A 32
① ② ③ ④ ⑤ ⑥ ⑦

①	Product type	X: Controller
②	Use platform	S: CODESYS
③	Appearance structure	L: Same to XLH appearance
④	Performance level	H: Motion control enhanced model
⑤	I/O points	24: 12 inputs/12 outputs 30: 14 inputs/16 outputs
⑥	Connection symbol	A: Axis
⑦	Control axis number	8: 8 EtherCAT axis 16: 16 EtherCAT axis 32: 32 EtherCAT axis

(2) Basic unit model list

- XSLH series model list

Model							Input points (DC24V)	Output points (R, T)
AC power supply				DC power supply				
	Relay output	Transistor output	Relay&transistor mixed output	Relay output	Transistor output	Relay&transistor mixed output		
NPN & PNP type	-	-	-	-	XSLH-24A8	-	12	12
	-	-	-	-	XSLH-24A16	-	12	12
NPN& differential					XSLH-30A32	-	14	16

1-2-6. XSLH expansion unit model composition and model table

(1) I/O expansion module

The model composition of I/O expansion module is as follows:

XL—E ○ □ ○ □—○
① ②③④⑤ ⑥ ⑦

①	Series name	XL
②	Expansion module	E
③	Input points	8 / 16 / 32
④	Special for input	NPN input: X PNP input: PX
⑤	Output points	8 / 16 / 32

⑥ Output mode	YR: relay output YT: transistor output
⑦ Wiring terminal type	A: horn wiring terminal

- I/O expansion module model list

Model		Function
NPN input	PNP input	
XL-E8X8YR	XL-E8PX8YR	8 channels digital input, 8 channels relay output
XL-E8X8YT	XL-E8PX8YT	8 channels digital input, 8 channels transistor output
XL-E16X	XL-E16PX	16 channels digital input
XL-E16YR	-	16 channels relay output
XL-E16YT	-	16 channels transistor output
XL-E16YT-A	-	16 channels transistor output (horn terminals)
XL-E16X16YT	XL-E16PX16YT	16 channels digital input, 16 channels transistor output
XL-E16X16YT-A	XL-E16PX16YT-A	16 channels digital input, 16 channels transistor output (horn terminals)
XL-E32X	XL-E32PX	32 channels digital input
XL-E32YT	-	32 channels transistor output

(2) Analog, temperature expansion modules

The model composition of analog quantity and temperature expansion module is as follows:

XL - E 4AD 2DA 4PT3 1WT - P - S

① ② ③ ④ ⑤ ⑥ ⑦

①:	Expansion	E: expansion module
②:	Analog input	4AD: 4 channels analog input
		8AD: 8 channels analog input
③:	Analog output	2DA: 2 channels analog output
		4DA: 4 channels analog output
④:	Temperature measurement	4PT3: 4 channels platinum thermistor input (3-wire)
		4TC: 4 channels thermocouple Input
⑤:	Pressure measurement	1WT: 1 channel pressure measurement
		2WT: 2 channels pressure measurement
		4WT: 4 channels pressure measurement
⑥:	Model differences	P: with PID control
		A: new hardware version (for WT module) Input is current (for 8AD module)
		D: hardware version differences (for WT module)
		V: input is voltage (for 8AD module)
⑦:	Accuracy	S:16-Bit

- List of analog quantity and temperature expansion module models

Model		Description
Analog input	XL-E4AD	12-Bit, 4 channels analog input
	XL-E8AD-A	14-Bit, 8 channels analog input, current type
	XL-E8AD-V	14-Bit, 8 channels analog input, voltage type
	XL-E8AD-A-S	16-Bit, 8 channels analog input, current type
	XL-E8AD-V-S	16-Bit, 8 channels analog input, voltage type
Analog I/O	XL-E4AD2DA	4 channels analog input, 2 channels analog output
Analog output	XL-E2DA	2 channels analog output
	XL-E4DA	4 channels analog output
Temperature measurement	XL-E4TC-P	4 channels PT100 temperature measurement, built-in PID control
	XL-E4PT3-P	4 channels PT100 (3-wire) temperature measurement, built-in PID control
Pressure measurement	XL-E1WT-D	1 channel pressure measurement, 0~10mV, 22-bit conversion precision
	XL-E2WT-D	2 channels pressure measurement, 0~10mV, 22-bit conversion precision
	XL-E4WT-D	4 channels pressure measurement, 0~10mV, 22-bit conversion precision

1-2-7. XSA model composition and model table of basic unit

(1) Model composition of basic unit

XS3 series PLC basic unit model composition is generally as follows:

X ① S ② A ③ 3 ④ 3 ⑤ 0 ⑥ — W ⑦

① Product type	X: Controller
② Use platform	S: CODESYS
③ AXIS	A: AXIS
④ Appearance structure code	2: 200 series 3: 300 series 5: 500 series
⑤ Performance level	2: Economic type 3: Standard type 5: Enhancement type
⑥ Product ID	0: Product ID
⑦ System	W: Windows system L: Linux system

(2) Basic unit model list

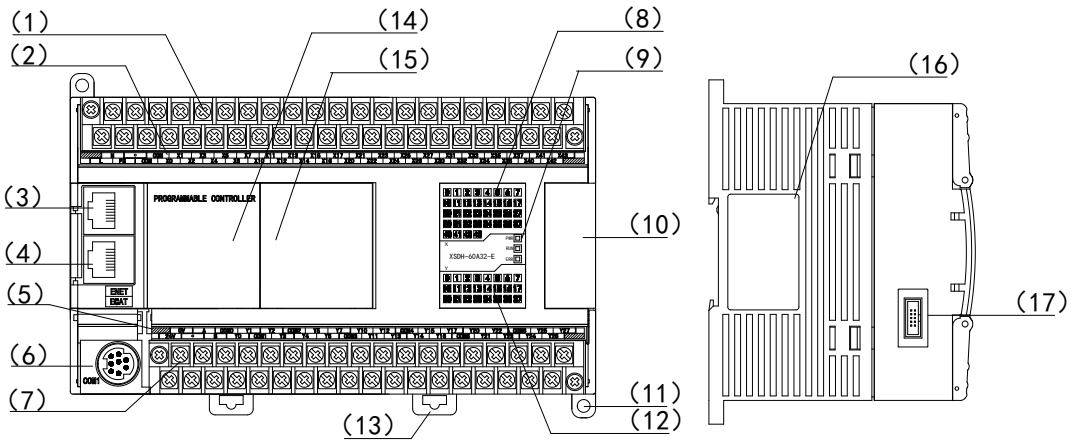
- XSA series model list

Model		Input points	Output points
AC power supply	DC power supply		

	Relay output	Transistor output	Relay&transistor mixed output	Relay output	Transistor output	Relay&transistor mixed output	(DC24V)	(R, T)
NPN	-	-	-	-	XSA230	-	3	3
NPN&PNP	-	-	-	-	XSA330	-	16	16
	-	-	-	-	XSA520	-	16	16
	-	-	-	-	XSA530	-	16	16
	-	-	-	-	XSA550	-	16	16

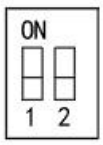
1-3. Part introduction

1-3-1. XSDH series structure composition



The names of each part are as follows:

(1): Input terminal, power supply input
(2): Input label
(3): RJ45 port 1
(4): RJ45 port 2
(5): Output label
(6): RS232 port (COM1)
(7): Output terminal, RS485 port (COM2)
(8): Input action indicator
(9): System indicator
PWR: Power supply indicator
RUN: Run indicator
ERR: Error indicator
(10): Expansion module interface
(11): Installation hole (2 holes)
(12): Output action indicator
(13): Guide rail mounting hook (2 hooks)
(14): Vacant
(15): Dial switch

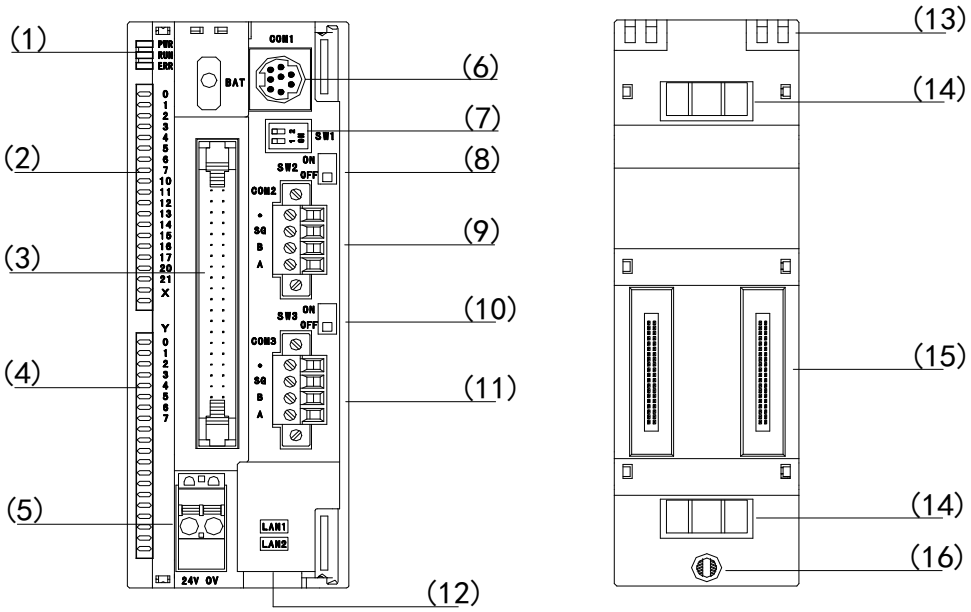


(16): Product label
(17): Vacant

Note: the dial switch at location (15):

DIP1	DIP2	Function
OFF	OFF	Start PLC normally and use it normally
OFF	ON	The user program is not loaded when the power is on. After the user downloads the empty program, turn the DIP2 to the OFF state and then power on the PLC again
ON	OFF	Initialize the IP to 192.168.6.6 (it takes effect after the PLC is powered on again)

1-3-2．XS3 series structure composition

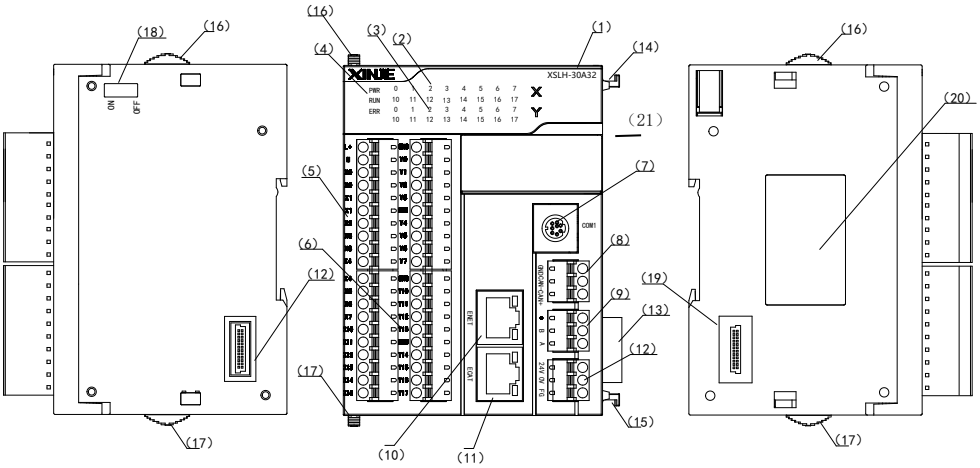


The names of each part are as follows:

(1): System indicator
PWR: power supply indicator
RUN: run indicator
ERR: error indicator
(2): Input label and indicator
(3): I/O wiring terminals
(4): Output label and indicator
(5): Power supply input terminal
(6): RS232 port (COM1)
(7): PLC self updating dial switch
(8): RS485 port (COM2) dial switch
(9): RS485 port (COM2)
(10): RS485 port (COM3) dial switch
(11): RS485 port (COM3)
(12): RJ45 port (LAN1, LAN2)
(13): Installation hook
(14): Grounding metal sheet
(15): Expansion module interface
(16): Mounting screw hole

Note:
※ 1: when the dial switches SW2 and SW3 are used for RS485 communication, whether the PLC is a terminal. When the PLC is at the beginning or end of the bus, please turn the dial switch to on.
※ 2: Input and output wiring shall be used in conjunction with external terminal blocks and adaptive connecting cables. Refer to section 3-2-4 for details.

1-3-3．XSLH series structure composition



(1): PLC model
(2): Input label and indicator
(3): Output label and indicator
(4): System indicator
PWR: power indicator
RUN: run indicator
ERR: error indicator
(5): Input terminals
(6): Output terminals
(7): RS232 port (COM1)
(8): RS485 port (COM2)
(9): CAN port
(10): RJ45 port (ENET)
(11): RJ45 port (ECAT)
(12): 24V power supply input
(13): Right expansion module interface
(14): Fixing module hook (up)
(15): Fixing module hook (down)
(16): Sliding latch (up)
(17): Sliding latch (down)
(18): Vacant
(19): Left expansion module interface (COM3)
(20): Product label
(21): SD card slot, dial switch

Note:

Location (21) SD card under the cover plate is temporarily invalid for users.

The purpose of the dial switch under the cover plate location (21) is as follows:

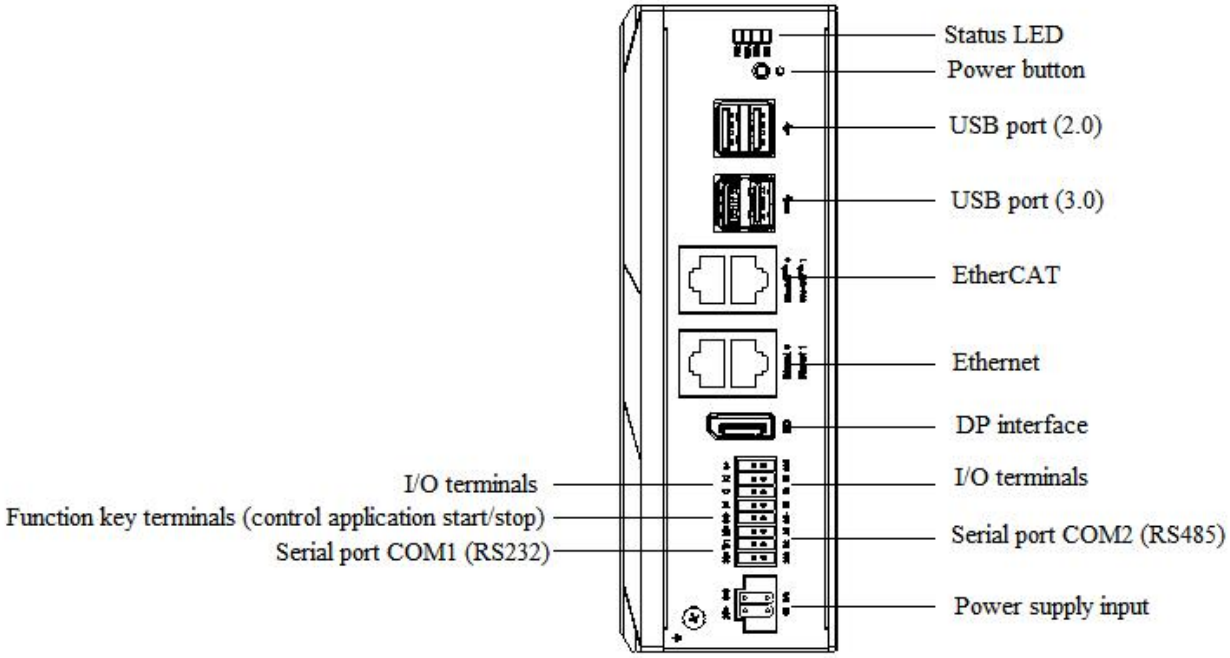
DIP1	DIP2	Function
OFF	OFF	Start the PLC normally and use it normally
OFF	ON	The user program is not loaded after power on. After the user downloads the empty program, turn DIP2 to OFF and power on the PLC again
ON	OFF	The initialization IP is 192.168.6.6 (it takes effect after the PLC is powered on again)

DIP3	DIP4	Function
OFF	OFF	Start the PLC normally and use it normally
ON	ON	Terminal resistance of CAN OPEN

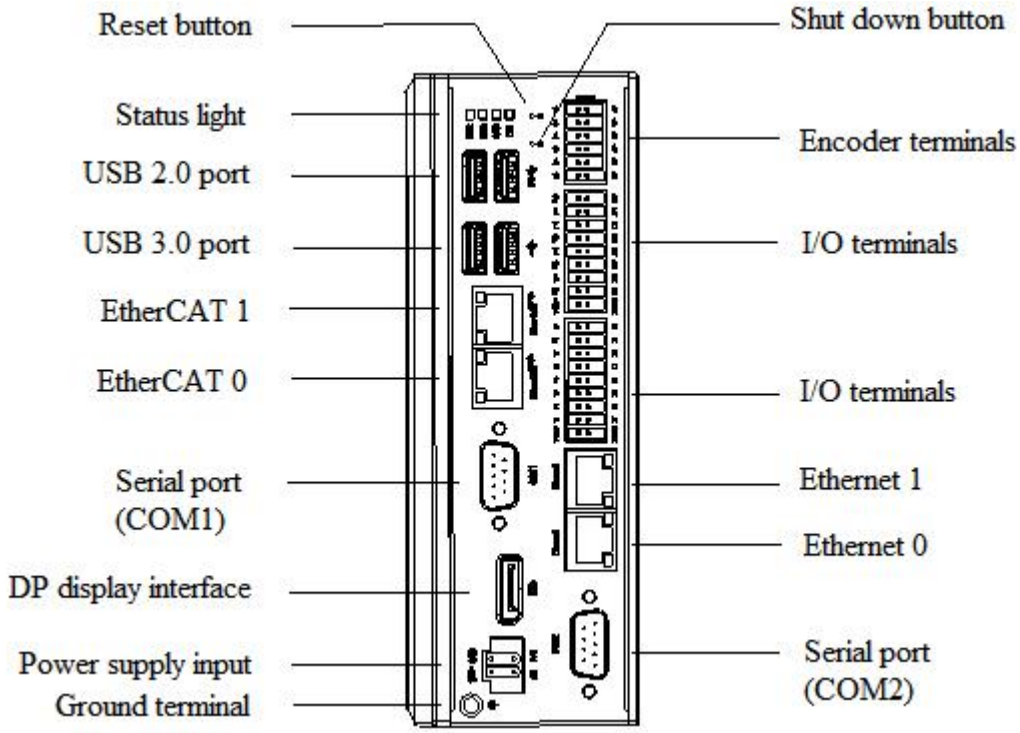
1-3-4. XSA series structure composition

1-3-4-1. XSA series interface structure composition

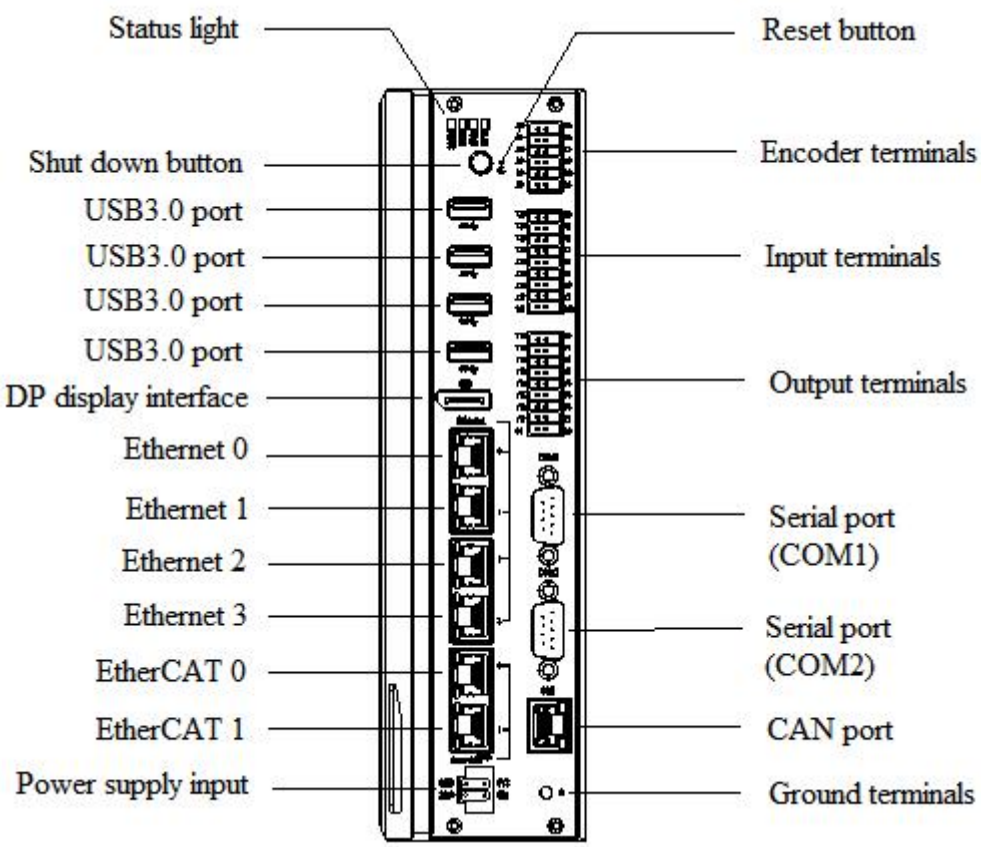
(1) XSA230



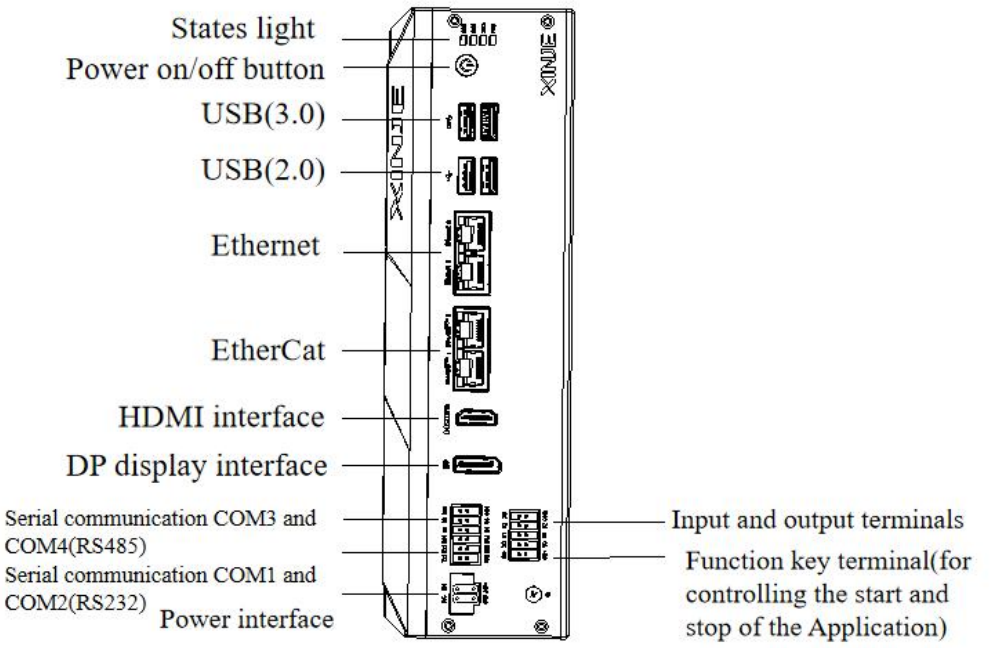
(2) XSA330



(3) XSA500



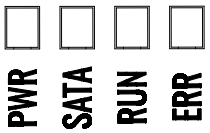
(4) XSA620



1-3-4-2. LED indicator light

XSA series has 4 LED status indicators, as shown below.

(1) XSA230 indicator light



LED	Status indicator	Description
PWR	Power supply	Green normally ON: External power supply is normal, or when the UPS power supply is active during shutdown. OFF: External power/UPS is not supplying power, or there is a power supply anomaly.
SATA	SATA hard disk detection	Green flashing: data exchange, hard drive working normally; OFF: Hard drive abnormal or no data interaction
RUN	Run indicator	OFF: Application not started or in error state; Green normally on: Application in the controller is running normally
ERR	Error indicator	OFF: Normal; Red normally on: Application running abnormally

(2) XSA330 indicator light

LED	Status indicator	Description
PWR	Power supply	Green normally on: Shutdown. After the shutdown is completed, the light goes out. Green normally on: System work normally Red normally on: Not enter the system or the system is abnormal
SATA	SATA hard disk detection	Green flashing: Data interaction OFF: No data
RUN	Run indicator	Green normally on: Run normally OFF: Error (Program exception Stop)
ERR	Error indicator	Red normally on: Error OFF: No error

(3) XSA500 indicator light

LED	Status indicator	Description
SATA	SATA hard disk detection	Data interaction: flashing; No data: Off
RUN	Run indicator	Standby: off; Normal operation: Always on
ERR	Error indicator	Normal: off; Error: Always on
UPS	Power supply status	UPS ready: always on; UPS power supply: flashing

(4) XSA500 indicator light

LED	Status indicator	Description
ERR	Error indicator	Extinguished: Normal; Red steady light: abnormal (When the Application in the controller is running abnormally, the ERR indicator light remains constantly red; otherwise, it goes off)
RUN	Run indicator	Off: Standby; Work normally on green: normal (normal operation of Application in the controller, the RUN light is normally on; the Application did not start or in error state ERR lamp, normally on the RUN light is put out)
SATA	SATA hard disk detection	Green flashing: Data interaction; Out: no data (hard disk data interaction, SATA indicator light flashing, hard work, hard disk or numerous according to interact, SATA lights go out)
UPS	Power supply status	Green constant light: Normal power supply; Out: abnormal shutdown or power supply (including external power supply and UPS, when one of both for power supply, PWRS indicator light green normally on state; when the external power supply or UPS power supply or abnormal power supply, PWRS lights).

1-3-4-3. Reset button

XSA330, XSA500 ,XSA620 series are equipped with a Reset key (pinhole structure). Short press can restart the system. Long press can reset the BIOS (clear CMOS) in power off status, as shown below:

CMOS is powered by the button battery on the motherboard. Clearing CMOS will permanently erase the previous system settings and set them to the original (factory setting) system settings. The steps are as follows:

①Turn off the controller and disconnect the power.

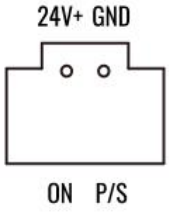
②Press the Clear CMOS key for 3-5 seconds with a slender pin, and then release it.

③Start the controller, press the [Del] key to enter BIOS settings during startup, and reload the optimal default value.

④Save and exit settings.

1-3-4-4. Power supply input

XSA series is equipped with a 24V 4 PIN phoenix terminal,as shown below.



Please use the adapter or switch power supply provided with the device, and do not connect the power supply with a voltage exceeding 25.2V, otherwise the motherboard will be burnt due to overvoltage.

Signal	Description
24V+	Power Supply
GND	0V
ON	PC_ON 3V output
P/S	XSA230:24V 500mA output XSA330, XSA500: 24V 1A output

Terminal description:

① 24V and GND: IPC power supply

② ON and GND: IPC ON/OFF, the same effect as pressing the button

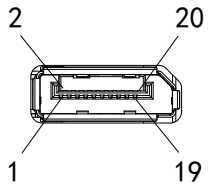
③ P/S and GND: P/S provides 24V power supply, and P/S connects the load to form a circuit with GND, with a maximum current of 500mA.

1-3-4-5. video interface

(1) DP++ interface

The XSA industrial computer is equipped with one DP++ display interface. The DP++ interface is a multi in one interface that can be converted to HDMI or VGA interfaces through an adapter, making it easy to connect

displays with different types of interfaces. It can achieve high-definition transmission of signals at high speed, while also having good anti-interference ability. The interface is shown in the following figure:



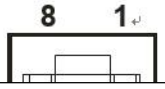
Pin	Signal name	Function	Pin	Signal	Function
1	ML_Lane 0(p)	True signal of channel 0	11	GND	Ground
2	GND	Ground	12	ML_Lane 3(n)	Auxiliary signal of channel 3
3	ML_Lane 0(n)	Auxiliary signal of channel 0	13	GND	Ground
4	ML_Lane 1(p)	True signal of channel 1	14	GND	Ground
5	GND	Ground	15	AUX_CH(p)	Real signal of auxiliary channel
6	ML_Lane 1(n)	Auxiliary signal of channel 1	16	GND	Ground
7	ML_Lane 2(p)	True signal of channel 2	17	AUX_CH(n)	Auxiliary signal of auxiliary channel
8	GND	Ground	18	Hot Plug	Hot plug detection
9	ML_Lane 2(n)	Auxiliary signal of channel 2	19	DP_PWR Return	Interface power return
10	ML_Lane 3(p)	True signal of channel 3	20	DP_PWR	Connector power supply

(2) HDMI interface

In addition to being equipped with one DP++ display interface, the XSA620 also comes with one HDMI interface. That is, the XSA620 is equipped with a total of two high-definition display interfaces, supporting high resolution and high refresh rate. HDMI interface maximum support resolution 4096 x 2160 @ 30 hz.

1-3-4-6. Ethernet interface (LAN)

XSA230 and XSA330,XSA620 are equipped with 4 Ethernet interfaces (2*Ethernet+2*EtherCAT), while XSA500 series is equipped with 6 Ethernet interfaces (4*Ethernet+2*EtherCAT), as shown in the following figure, supporting 10/100/1000Mbps and complying with IEEE 802.3az. The port adopts a standard RJ45 jack with LED indicator lights to indicate connection and transmission status.



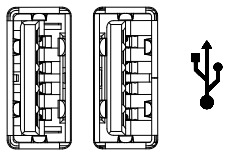
	LED indicator	
	Left LED	Right LED

	Orange	Green
	10 /100/1000 Link	Transmission

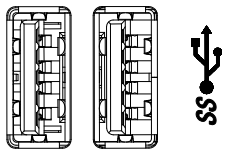
<table>
<tr><th>RJ45 port</th><th>Function</th></tr>
<tr><td>Ethernet</td><td>Support Modbus-TCP, UDP and other communication protocols. It can be used to upload and download programs, online monitoring, remote monitoring, etc.,and can communicate with other TCP IP devices in the LAN.
<table>
<tr><th>Item</th><th>Parameter</th></tr>
<tr><td>Communication protocol</td><td>STP (Shielded Twisted Pair) cables of Ethernet category 5, 5E or above</td></tr>
<tr><td>Communication speed</td><td>1000Mbps</td></tr>
<tr><td>Max network nodes</td><td>64</td></tr>
<tr><td>Max station spacing</td><td>100m</td></tr>
<tr><td>Network topology</td><td>Linear, star, Daisy chain, branch, ring</td></tr>
</table></td></tr>
<tr><td>EtherCAT</td><td>EtherCAT bus control, control cycle ≤ 1ms
<table>
<tr><th>Item</th><th>Specification</th></tr>
<tr><td>communication standard</td><td>IEC61158 Type12</td></tr>
<tr><td>Physical layer</td><td>100BASE-TX (IEEE802.3)</td></tr>
<tr><td>Baud rate</td><td>1000[Mbps] (full duplex)</td></tr>
<tr><td>Topology</td><td>Line,star, Daisy chain, branch, ring</td></tr>
<tr><td>Cable</td><td>JC-CB twisted pair (shielded twisted pair)</td></tr>
<tr><td>Cable length</td><td>Up to 100m between nodes</td></tr>
<tr><td>Com port</td><td>2 Port (RJ45)</td></tr>
<tr><td>EtherCAT Indicators（LED）</td><td>[Run] RUN Indicator
[L/A IN] Port0 Link/Activity Indicator（Green）
[L/A OUT] Port1 Link/Activity Indicator（Green）</td></tr>
<tr><td>Station Alias（ID）</td><td>Range: 0~65535
Address: 2700h</td></tr>
<tr><td>Explicit Device ID</td><td>Not support</td></tr>
<tr><td>SyncManager</td><td>4</td></tr>
<tr><td>FMMU</td><td>3</td></tr>
<tr><td>Touch Probe</td><td>2 channels</td></tr>
<tr><td>Synchronization mode</td><td>DC (SYNCO event synchronization)
SM (SM event synchronization)</td></tr>
<tr><td>Cyclic time（DC communication cycle）</td><td>500, 1000, 2000, 4000[μs]</td></tr>
<tr><td>Communication object</td><td>SDO[Service data object],
PDO[Process data object]</td></tr>
<tr><td>Max allocated number of single station PDO</td><td>TxPDO: 4 [pcs] RxPDO: 4 [pcs]</td></tr>
<tr><td>Mailbox communication interval in PreOP mode</td><td>1ms</td></tr>
<tr><td>E-mail</td><td>SDO request and SDO information</td></tr>
</table></td></tr>
</table>

1-3-4-7. USB interface

XSA230, XSA330, XSA620 is eqiupped with two USB 2.0 and two USB 3.0 interfaces. XSA500 comes with 4 USB 3.0 interfaces. The USB interface supports the plug and play function, allowing users to connect or disconnect the device at any time without shutting down the controller. USB interface conforms to USB EHCI, Rev 2.0 Standards. Pins are defined as follows.



USB2.0		
Pin	Signal	Function
1	VCC	Power supply
2	DATA-	Differential signal
3	DATA+	
4	GND	Ground

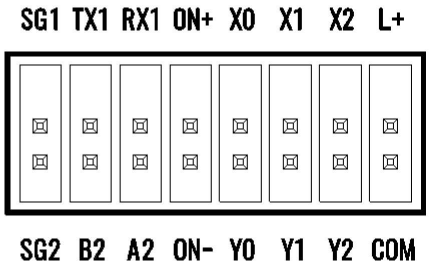


USB3.0		
Pin	Signal	Function
1	VCC	Power supply
2	DATA-	Differential signal
3	DATA+	
4	GND	Ground
5	SSRX-	High speed receiving differential data signal
6	SSRX+	
7	GND	Ground
8	SSTX-	High speed sending differential signal
9	SSTX+	

1-3-4-8. Serial communication port

(1) XSA230

XSA230 is equipped with corresponding RS232 and RS485 communication serial ports, not DB9 interface but serial port terminal pin wiring, as shown in the following figure:



Series	Default value	
	Terminal wiring (RS232)	Terminal wiring (RS485)
XSA230	1	1

The XSA230 series serial port defaults to one 232 (COM1) serial port terminal and one 485 (COM2) serial port terminal. 232 wiring: Connect RX1 to the TX terminal of the other communication device, connect TX1 to the RX terminal of the other communication device, and connect SG1 to the GND terminal of the other communication device. 485 wiring: Connect A2 to the 485+ (A) terminal of the other communication device, B2 to the 485- (B) terminal of the other communication device, and SG2 to the GND terminal of the other communication device.

(2) XSA330, XSA500 series

XSA series is euipped with corresponding RS232 and RS485 communication serial ports. For DB9 serial ports, realize the communication between devices.

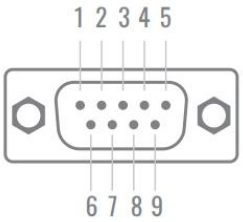
Series	Default	
	DB9 interface(RS232)	DB9 interface(RS485)
XSA330, XSA500 series	1	1

The two DB9 interfaces of XSA330 and XSA500 series are both RS232 serial ports by default when they leave the factory. If RS485 serial ports are required, please modify them in the BIOS path under Advanced>Super IO Configuration>Serial Port 1 Configuration>COM Mode>RS485 Mode. Please refer to Chapter 7-1 for details.

DB9 communication port (RS232/RS485)

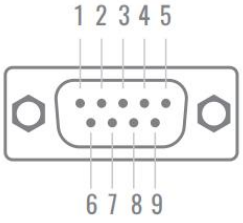
The pin definitions are as follows:

XSA330 series:



Pin	RS232(DB9)	Description	RS485(DB9)	Description
1	DCD	Carrier detection	DATA-	B：RS485-
2	RXD	Receive data	DATA+	A：RS485+
3	TXD	Send data	NC	/
4	DTR	Data terminal ready	NC	/
5	GND	Signal ground	GND	Signal ground
6	DSR	Data ready	NC	/
7	RTS	Send request	NC	/
8	CTS	Clear send	NC	/
9	RI	Ringing prompt	NC	/

XSA500 series:

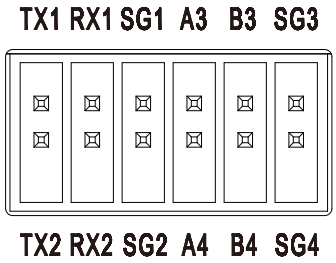


Pin	RS232(DB9)	Description	RS485(DB9)	Description
1	NC	/	NC	/
2	RXD	Receive data	NC	/
3	TXD	Send data	NC	/
4	NC	/	A	RS485+
5	GND	Signal ground	GND	Signal ground
6	NC	/	NC	/
7	NC	/	B	RS485-
8	NC	/	NC	/
9	NC	/	NC	/

【Note】: NC means no connection.

(3) XSA620 series

The XSA620 is equipped with one 12-pin Phoenix terminal COM interface. The serial port is isolated by an optocoupler, and there are a total of 4 communication serial ports (2 232+2 485).



Series	Serial port types and pin correspondence			
	COM1 (RS232)	COM2 (RS232)	COM3 (RS485)	COM4 (RS485)
XSA620	TX1、RX1、SG1	TX2、RX2、SG2	A3、B3、SG3	A4、B4、SG4

Notes:

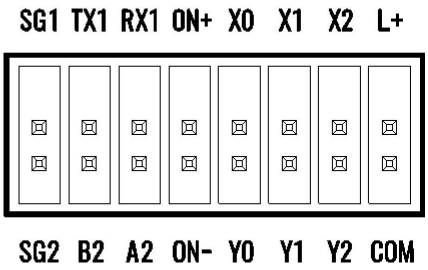
232 wiring: Connect the TX terminal of RX to the other party's communication device, connect the RX terminal of TX to the other party's communication device, and connect the GND terminal of SG to the other party's communication device. 485 connection: A communication equipment from the other 485 + B (A) terminal, receive, and the other 485 - (B) terminal communications equipment, receive, SG to the GND terminal of the other communications equipment.

1-3-4-9. Function key terminals

The XSA230,XSA620 is equipped with ON+ and ON- function key terminals, which detect its status during power on and can stop/start the Application running on the controller. In the event of program failure, CPU full load, uncontrolled program, or inability to connect to the upper computer normally,Directly short-circuiting the function key is ineffective. You need to power off the industrial control computer, then short-circuit the function key and power it on again for it to be effective.

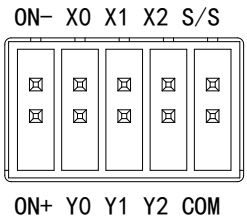
Wiring	Function
Short-circuit the ON+ and ON- terminals	Stop the Application, the indicator light RUN is off, and the Application cannot be started in a short circuit state.
Disconnect ON+ and ON-	Start the Application, the indicator light RUN is constantly on.

(1)XSA230



(2)XSA620

The terminals of the ON+ and ON- function keys are as shown in the following figure:



1-3-4-10. Power on/off button

The XSA230 and XSA500，XSA620 series are equipped with one power on/off button to enable manual power on/off of the controller.

The XSA330 is equipped with a shutdown button (pinhole structure), which can be pressed and held for 4 seconds to forcibly shut down.

2. Main body specification parameters

2-1. Specification parameters

2-1-1. General specification

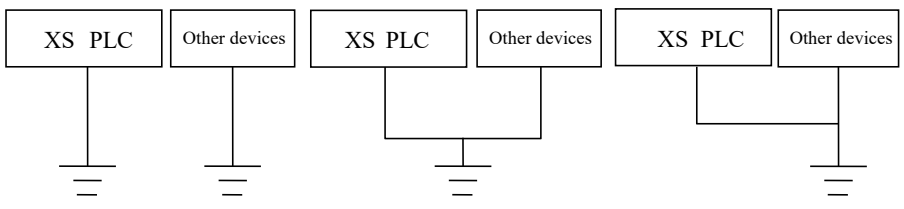
This specification parameter table is also applicable to XSDH, XSLH and XS3 series PLC.

	Specification
	XS3/XSDH/XSLH
Anti-noise	Noise voltage 1000Vp-p 1us pulse 1 minute
Air	No corrosive and combustible gas
Working temperature	0℃~55℃
Storage temperature	-40℃~80℃
Ambient humidity	5%~95% (no condensation)
Installation	Fix with M3~M4 screws
Grounding (FG)	The third type of grounding (It shall not be grounded in common with strong current system)※

This specification parameter table is applicable to XSA230, XSA330, and XSA500 series PLCs.

	Specification			
	XSA230	XSA330	XSA500	XSA620
Anti-noise	Noise voltage 1000Vp-p 1us pulse 1 minute			
Air	No corrosive and combustible gas			
Working temperature	-20℃~55℃	-25℃~60℃		-20℃~55℃
Storage temperature	-40℃~70℃	-40~+80℃		-40~+70℃
Ambient humidity	10%~95% (no condensation)	5%~95% (no condensation)		10%~95%(no condensation)
Installation	DIN-Rail Mounting		Ear hanging installation	Back panel installation, ear hanging installation
Grounding (FG)	The third type of grounding (It shall not be grounded in common with strong current system)※			

Note: Separate grounding or common grounding shall be adopted for grounding, and public grounding shall not be adopted.



Separate grounding Common grounding Public grounding

2-1-2. Performance specification

This specification parameter table is applicable to XSDH, XS3, XSLH series PLCs.

Item		XSDH-60A32-E	XS3-26T4	XSLH-24	XSLH-30A32
Programming method		ST, SFC, FBD, CFC, LD, IL			
Main processor		1GHz	800MHz	800MHz	1GHz
User program capacity※1		32MB			
Data capacity		32MB			
Power-off holding capacity		6MB			
I/O ※2	Total	60 points	26 points	24 points	30 points
	Input	36 points X0~X43	18 points X0~X21	12 points X0~X13	14 points X0~X15
	Output	24 points Y0~Y27	8 points Y0~Y7	12 points Y0~Y13	16 points Y0~Y17
EtherCAT slave stations		32	32	24A8: 8 24A16: 16	32
High speed processing function		High speed counting, external interruption	High speed counting, external interruption	High speed counting, pulse output, external interruption	High speed counting, external interruption
External interrupt point		X2~X7, X10~X13, X16, X21, X24, X27	X2, X5, X10, X13, X16, X21,	X2~X7, X10~X13	

This specification parameter table is applicable to XSA230, XSA330, XSA500 、XSA620series industrial control computers.

Item		XSA230	XSA330	XSA520	XSA530	XSA550	XSA620
Programming method		ST, SFC, FBD, CFC, LD, IL					
Main processor		2.0GHz	1.5GHz	3GHz	2.4GHz	2.8GHz	4.4GHz
User program capacity※1		128MB					
Data capacity		128MB					
Power-off holding capacity		6MB					
I/O points	Total	6 points	32 points				6 points
	Input	3 points X0~X2	16 points X0~X17				3 points X0~X2
	Output	3 points Y0~Y2	16 points Y0~Y17				3 points Y0~Y2
EtherCAT slave stations		250 us 500 us / 16/8 shaft axis 1 ms / 64 axis	1 ms / 32 axis 2 48 axis 4 ms/ms / 64 axis	250 us 500 us / 32/8 shaft axis 1 ms / 256 axis	500 us / 32 axis 1 ms / 128 axis 2 ms / 256 axis	250 us 500 us / 32/8 shaft axis 1 ms / 256 axis	1ms/256 axes

Item	XSA230	XSA330	XSA520	XSA530	XSA550	XSA620
High speed processing function	Not support	High speed counting, external interruption				Not support
External interrupt point	Not support	X0~X7, X10~X17				Not support

Note: I/O points refer to the number of terminals that users can access and output signals from outside.

The number of EtherCAT slave stations refers to the situation where only the EtherCAT axes are configured in the program.

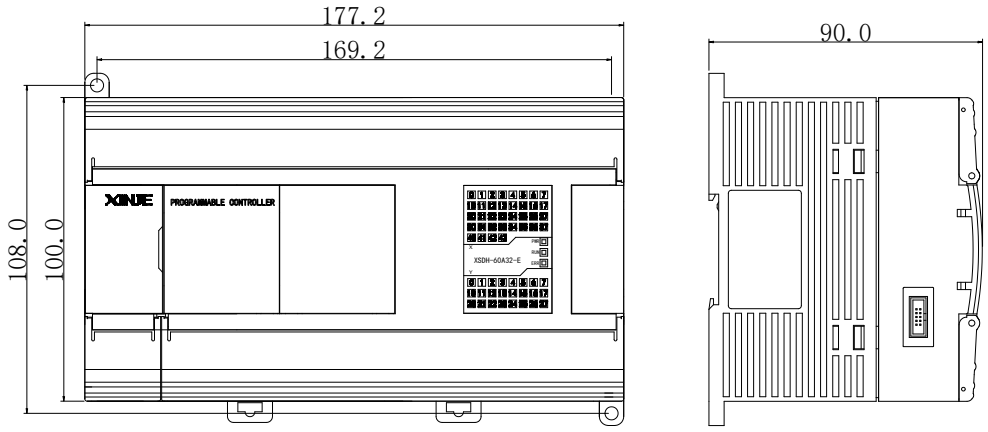
2-1-3. Factory specifications

Item		XSA specification					
		XSA230	XSA330	XSA520	XSA530	XSA550	XSA620
CPU	Model	J6412	J3455	I3-1115G4	I5-1135G7	I7-1165G7	I3-1215U
	Main processor	2.0GHz	1.5GHz	3.0GHz	2.4GHz	2.8GHz	4.4GHz
	Core	4	4	2	4	4	6 核
Memory	DDR4	8GB	4 GB	8 GB	8 GB	8 GB	8 GB
Hard disk	M.22280	128GB	128 GB	256 GB	256 GB	256 GB	256GB

2-2. Dimension

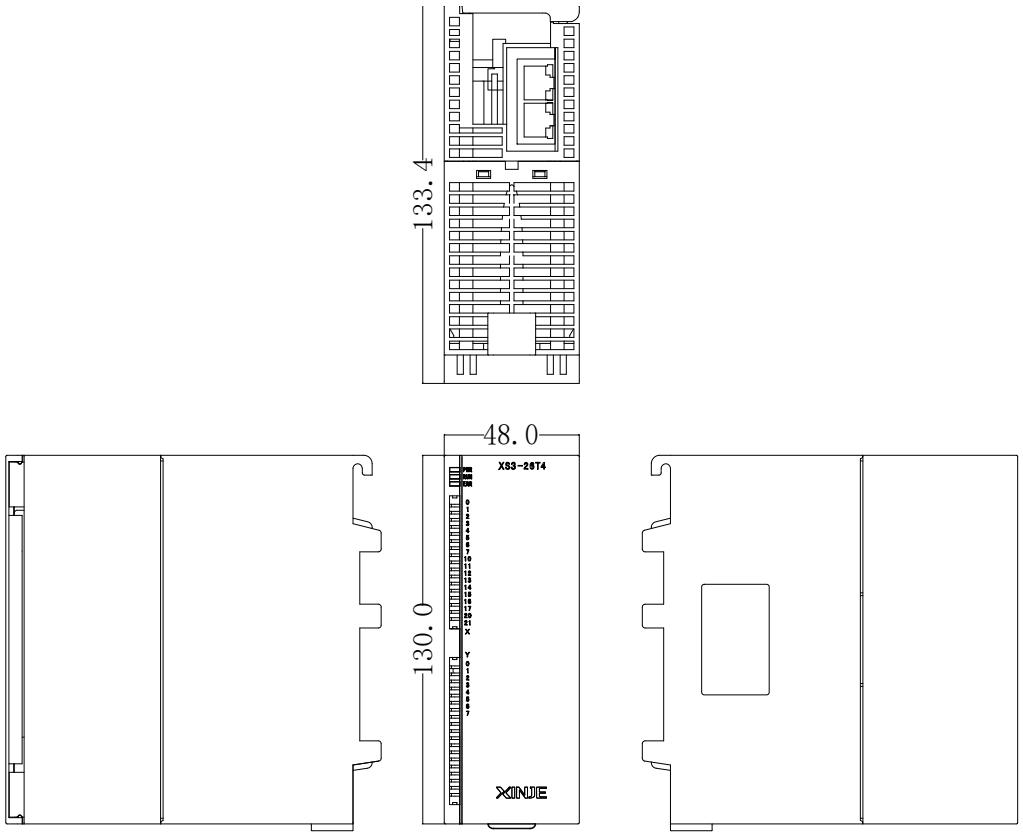
2-2-1. XSDH series PLC dimension

(Unit: mm)



2-2-2. XS3 series dimension

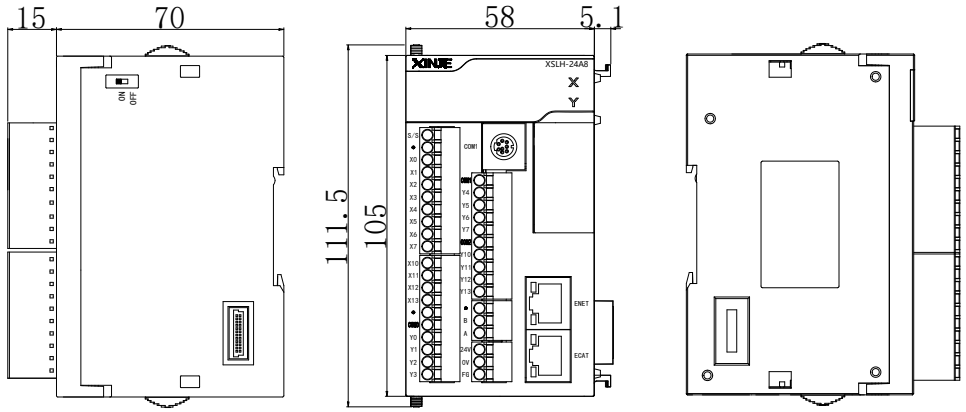
(Unit: mm)



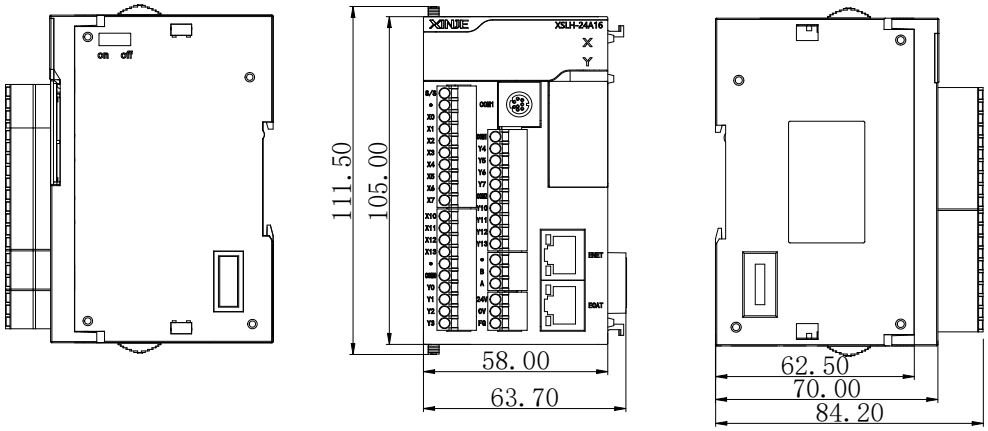
2-2-3．XSLH series PLC dimension

(Unit: mm)

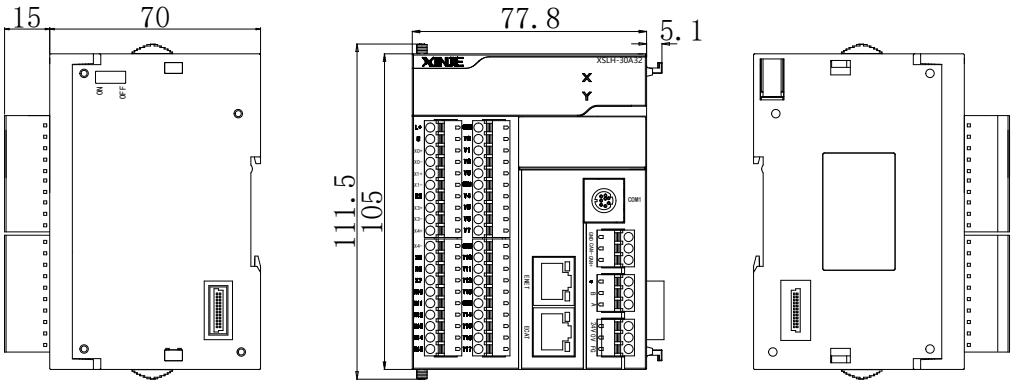
- XSLH-24A8



- XSLH-24A16



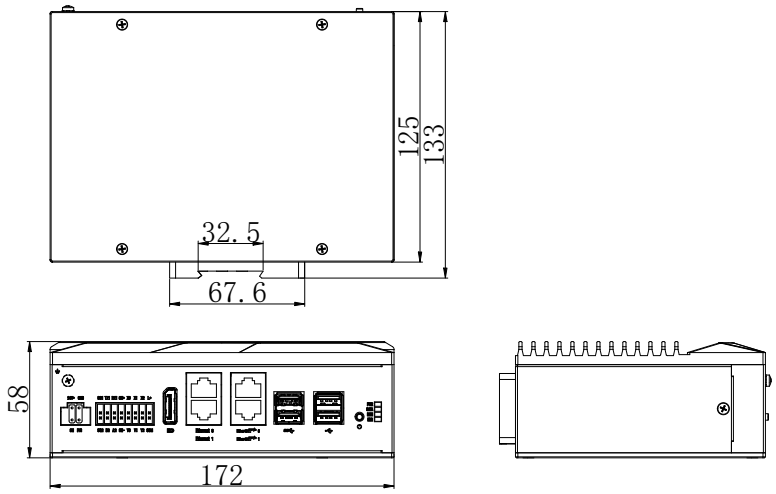
- XSLH-30A32



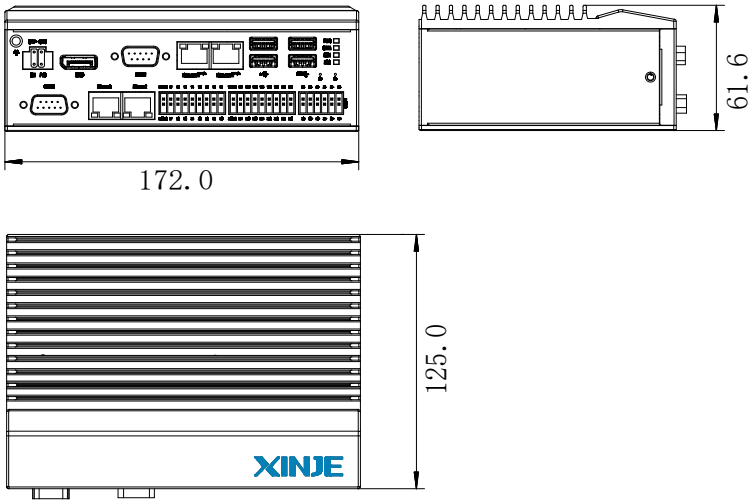
2-2-4. XSA series PLC dimension

(Unit: mm)

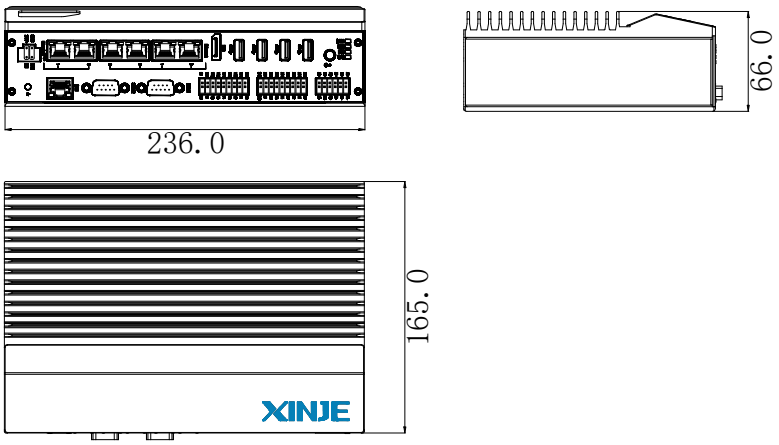
- XSA230



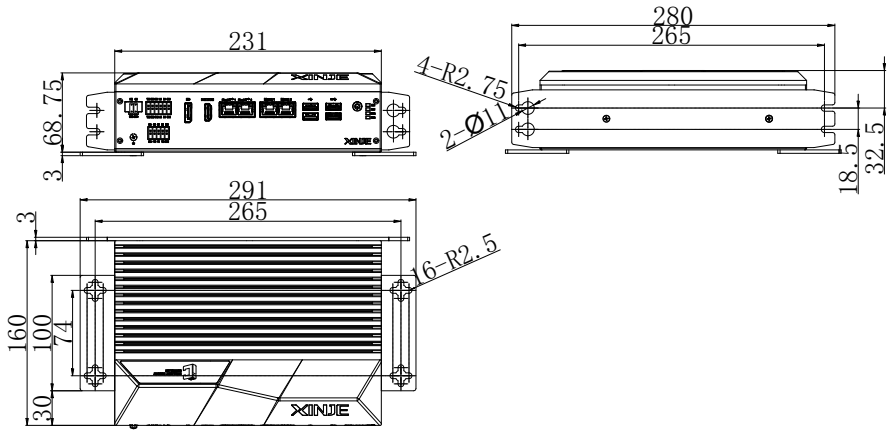
- XSA330



- XSA500

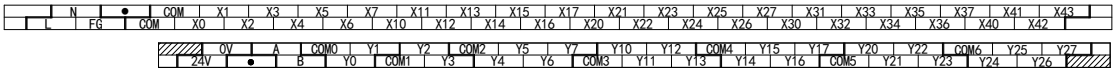


- XSA620



2-3．Terminal arrangement

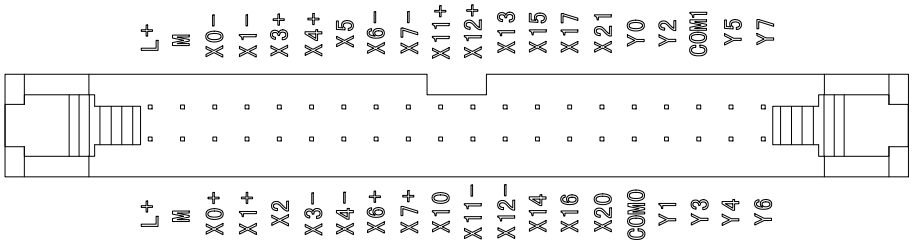
2-3-1．XSDH series terminal arrangement



Note: refer to chapter 5-1 for details.

2-3-2．XS3 series terminal arrangement

(1) Main body terminals



(2) External terminal block

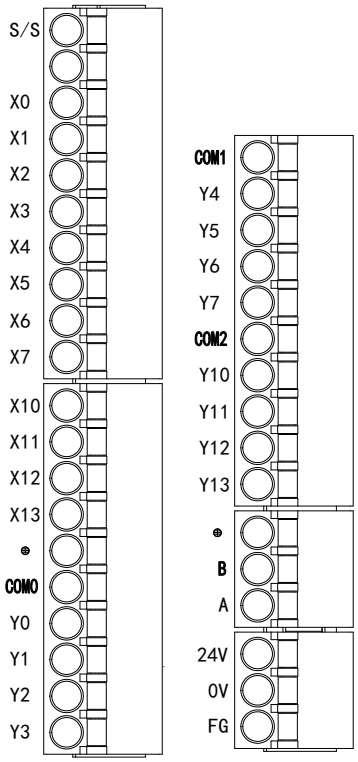
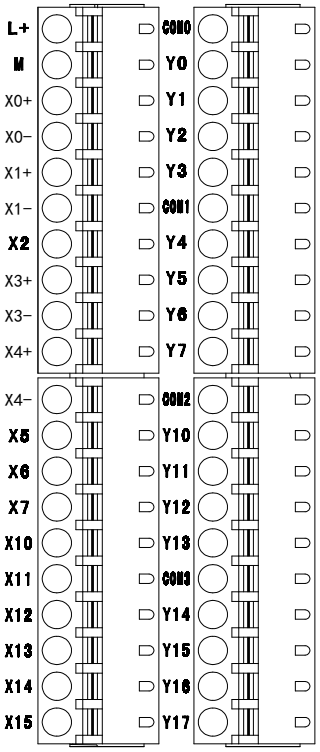
L+	X0+	X1+	X2	X3-	X4-	X6+	X7+	X10	**X11-**	**X12-**	X14	X16	X20	**COM0**	Y1	Y3	**COM1**	Y5	Y7
M	X0-	X1-	X3+	X4+	X5	X6-	X7-	**X11+**	**X12+**	X13	X15	X17	X21	Y0	Y2	•	Y4	Y6	•

Note:

※1: COM0 at the output terminal corresponds to Y0~Y3, and COM1 corresponds to Y4~Y7

※2: Refer to chapter 5-1 for wiring details.

2-3-3. XSLH series terminal arrangement

XSLH-24A8, XSLH-24A16	XSLH-30A32
	

Note: refer to chapter 5-1 for details.

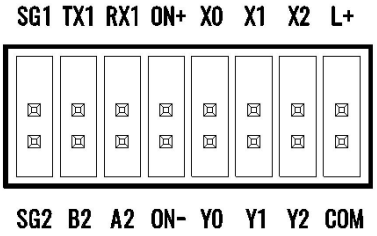
2-3-4. XSA series terminal arrangement

2-3-4-1. I/O terminal

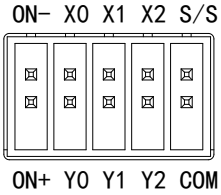
(1) XSA230,XSA620

The XSA230 series is equipped with 3 sets of digital I/O to achieve signal acquisition and triggering functions. The interface is shown in the following table:

- XSA230



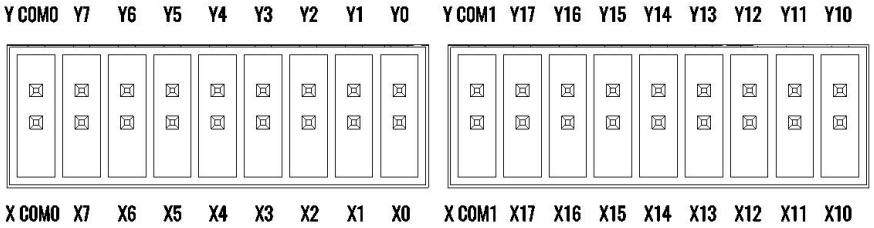
- XSA620



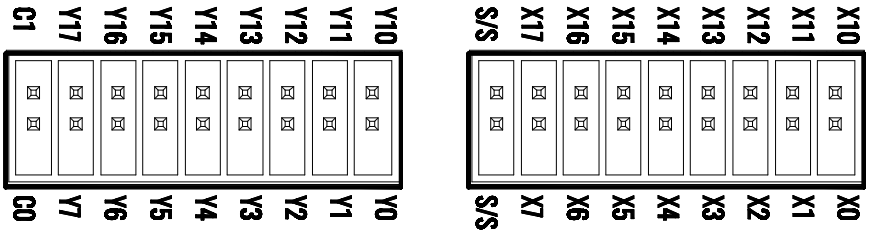
(1) XSA330,XSA500

The XSA330, XSA500 series is equipped with 16 sets of digital I/Os, among which X0~X7 are 200KHz high-speed inputs. The I/O is used to trigger, control, and count for data acquisition functions. The interfaces are shown in the table below:

- XSA330

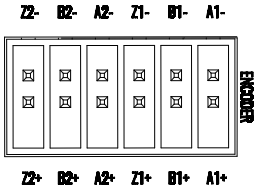


- XSA500 series



2-3-4-2. Encoder

XSA330, XSA500 series is equipped with two sets of three-phase encoders, and through the dual differential encoder interface, closed-loop control of position locking can be achieved. The interfaces are shown in the table below:



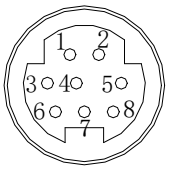
2-4. Communication ports

XS series generally has 2-4 COMS ,COM1 (RS232), COM2 (RS485) and 2~6 LAN ports (RJ45). COM1 and COM2 are mainly used for communication. Ethernet port can connect PLC to LAN or realize EtherCAT communication.

(1) RS232 port

- XS3, XSDH, XSLH series PLC

One RS232 port (COM1)

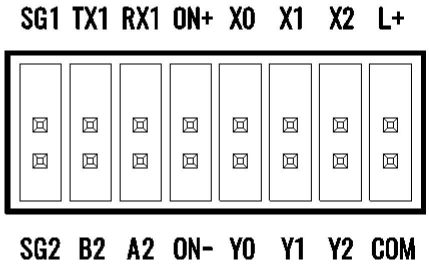


4：RxD
5：TxD
8：GND

Mini Din 9-core plug

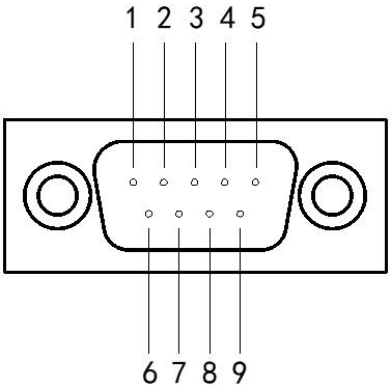
- XSA230 series PLC

One RS232 port (COM1)。232 wiring: Connect RX1 to the TX terminal of the other party's communication device, TX1 to the RX terminal of the other party's communication device, and SG1 to the GND terminal of the other party's communication device.



- XSA330、XSA500 series PLC

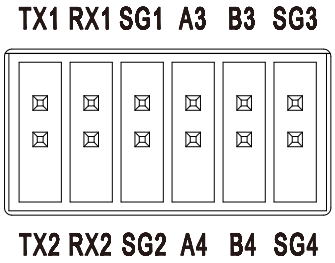
It is equipped with 1 232 port (the factory COM2 defaults to 232. You can refer to Chapter 7 to manually modify the serial port type in BIOS). Pin 2 is RXD, pin 3 is TXD, and pin 5 is GND. 232 connection: RXD communications equipment of TXD terminals connect with each other, TXD RXD terminal communications equipment connect with each other, GND to the GND terminal of the other communications equipment.



- XS620 series PLC

Two RS232 port (COM1、COM2)

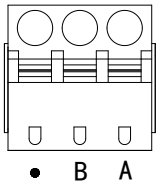
232 wiring: Connect the TX terminal of RX to the other party's communication device, connect the RX terminal of TX to the other party's communication device, and connect the GND terminal of SG to the other party's



communication device.

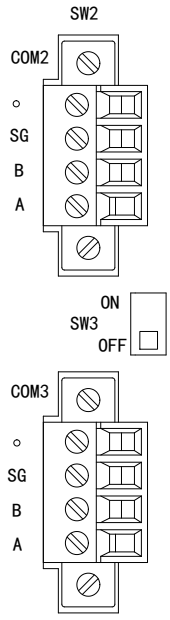
(2) RS485 port

On the output terminal block, terminals are A and B, where A is RS485+, and B is RS485-.



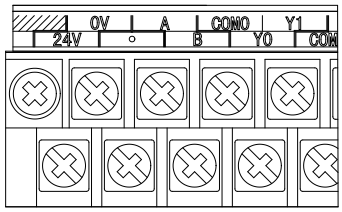
- XS3

It is equipped with two 485s (COM2 and COM3). Terminal A is RS485+ and terminal B is RS485-.



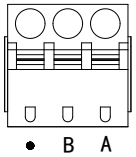
- XSDH

The output terminal block is equipped with one 485 (COM2). Terminal A is RS485+ and terminal B is RS485-.



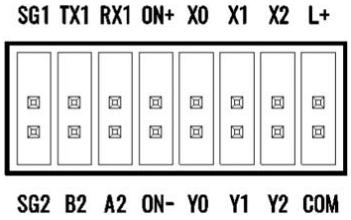
- XSLH

It is equipped with one 485 (COM2). Terminal A is RS485+ and terminal B is RS485-.



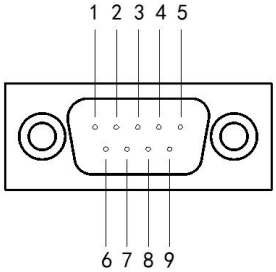
- XSA230

It is equipped with one 485 (COM2). Terminal A2 is 485+ and terminal B2 is RS485-.



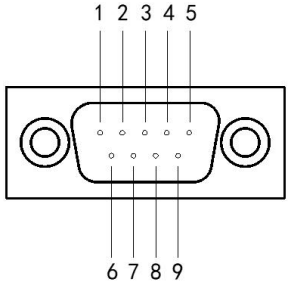
- XSA330

It is equipped with 1 485 serial port (the factory COM1 defaults to 485. You can refer to Chapter 7 to manually modify the serial port type in BIOS). Pin 2 is 485+, and pin 1 is 485-.



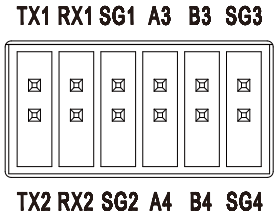
- XSA500

It is equipped with one 485 serial port (the factory COM1 defaults to 485. You can refer to Chapter 7 to manually modify the serial port type in BIOS). Pin 4 is 485+, and pin 7 is 485-.



- XSA620

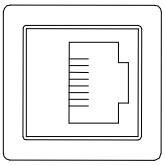
It is equipped with two 485s (COM3 and COM4). A and the other communication equipment of 485 + (A) terminal to connect, and other communications equipment 485 - B (B) terminal receive, SG to the GND terminal of the other communications equipment.



(3) LAN port

Ethernet RJ45 port: the Ethernet port is RJ45 interface, with stable and convenient communication mode. It can be used for uploading and downloading programs, online monitoring, remote monitoring, etc., and can communicate with other TCP IP devices in the LAN.

EtherCAT communication port: the EtherCAT communication port is an RJ45 interface with convenient communication connection mode and can communicate with other equipment supporting EtherCAT communication.



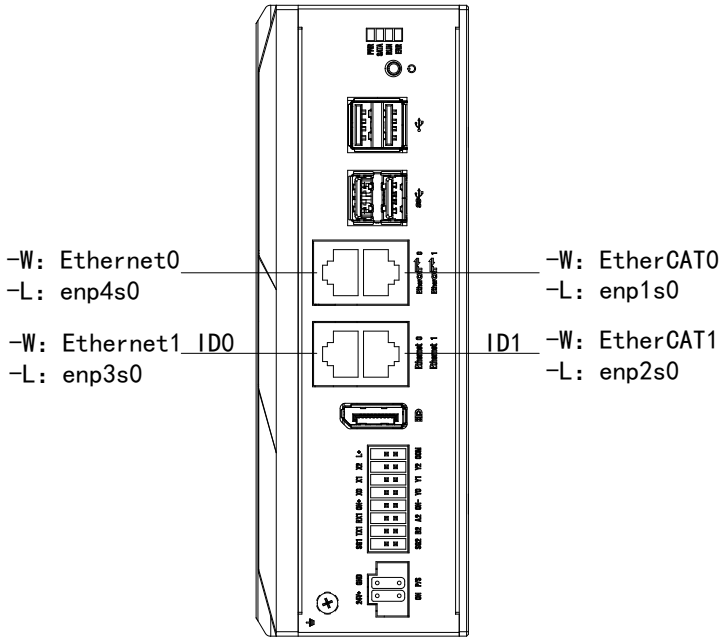
	Comparison Table of XS Hardware Network Port and Software Selection	
	XSDH/XSLH	
Port name	Software selection	Silk screen
Ethernet0	eth0	ENET
Ethernet1		
Ethernet2		
Ethernet3		
EtherCAT0	eth1	ECAT

EtherCAT1		

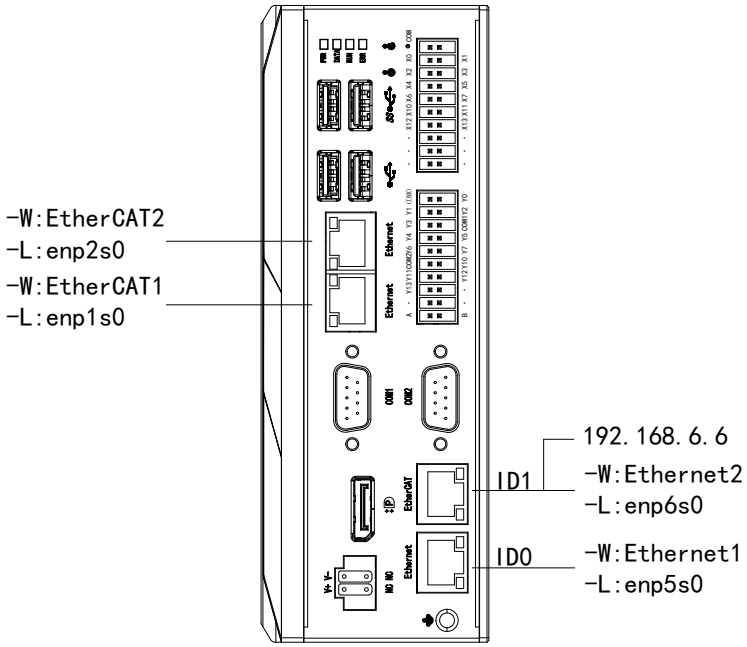
	Comparison Table of XSA Hardware Network Ports and Software Selection								
	XSA230			XSA330			XSA500		
Port name	-W	-L	Silk screen	-W	-L	Silk screen	-W	-L	Silk screen
Ethernet0	Ethernet0	enp4s0	Ethernet0	Ethernet1	enp5s0	Ethernet	ENET0	enp2s0	Ethernet0
Ethernet1	Ethernet1	enp3s0	Ethernet1	Ethernet2	enp6s0	Ethernet	ENET1	enp3s0	Ethernet1
Ethernet2	-	-	-	-	-	-	ENET2	enp4s0	Ethernet2
Ethernet3	-	-	-	-	-	-	ENET3	enp5s0	Ethernet3
EtherCAT0	EtherCAT0	enp1s0	EtherCAT0	EtherCAT1	enp1s0	EtherCAT	ECAT0	enp6s0	EtherCAT0
EtherCAT1	EtherCAT1	enp2s0	EtherCAT1	EtherCAT2	enp2s0	EtherCAT	ECAT1	enp7s0	EtherCAT1

Port name	XSA620 Hardware Network Port and Software Selection Comparison Table		
	-W	-L	silk-screen
Ethernet0	Ethernet0	enp4s0	Ethernet0
Ethernet1	Ethernet1	enp3s0	Ethernet1
Ethernet2		-	-
Ethernet3		-	-
EtherCAT0	EtherCAT0	enp1s0	EtherCAT0
EtherCAT1	EtherCAT1	enp2s0	EtherCAT1

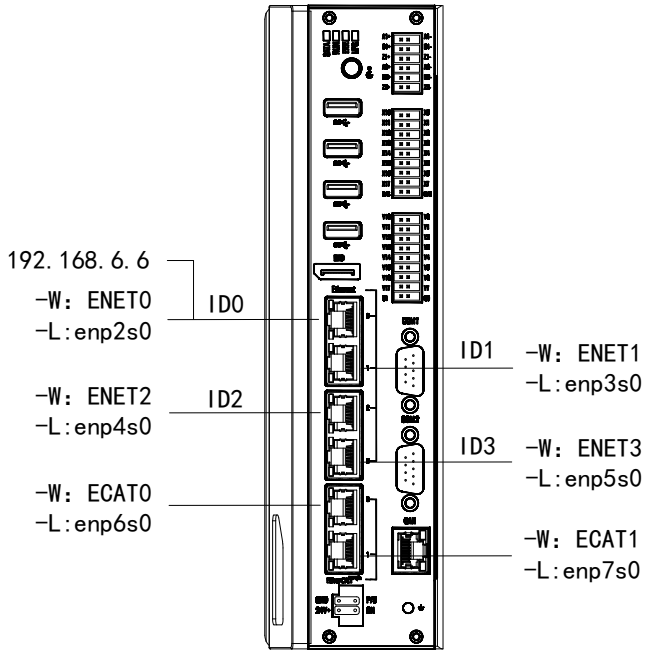
- XSA230



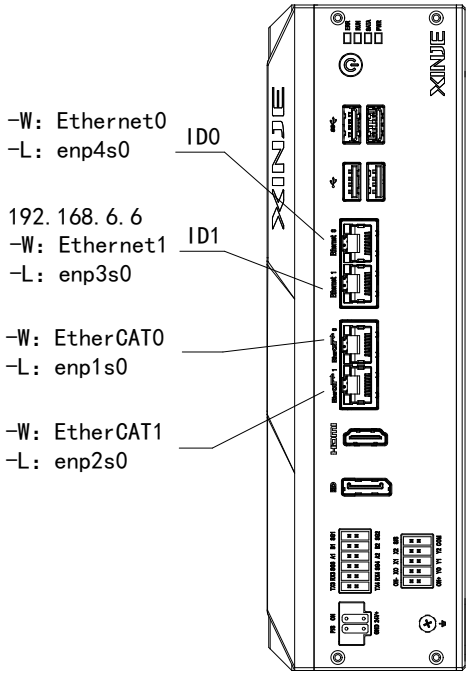
- XSA330



- XSA500 series

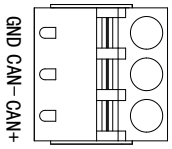


- XSA620 series



(4) CAN port

XSLH-30A32 has a CAN communication port with terminals GND, CAN+, and CAN-, which can communicate with other devices that support CANopen communication .

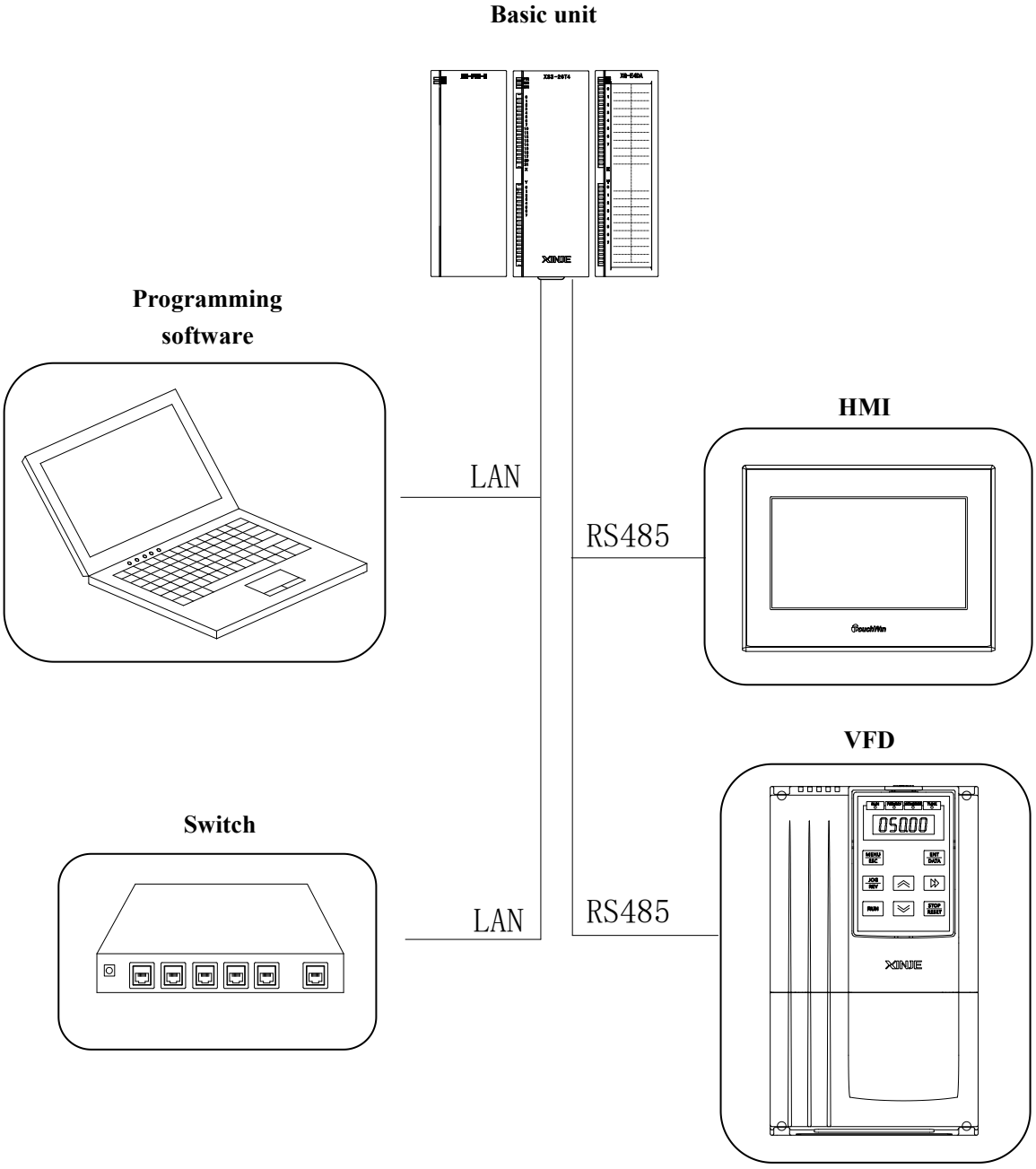


Notes：The CAN port of XSA does not currently support communication.

3. System composition

3-1. System composition

The following figure is the system structure diagram constructed according to the basic configuration of XS3 series PLC. Through this diagram, you can roughly understand the connection between PLC and peripheral equipment, expansion equipment, etc., as well as the typical applications of PLC communication, connection and expansion ports.



Note: The connecting devices of the above communication ports are only used as examples. The actual communication ports can connect a variety of devices.

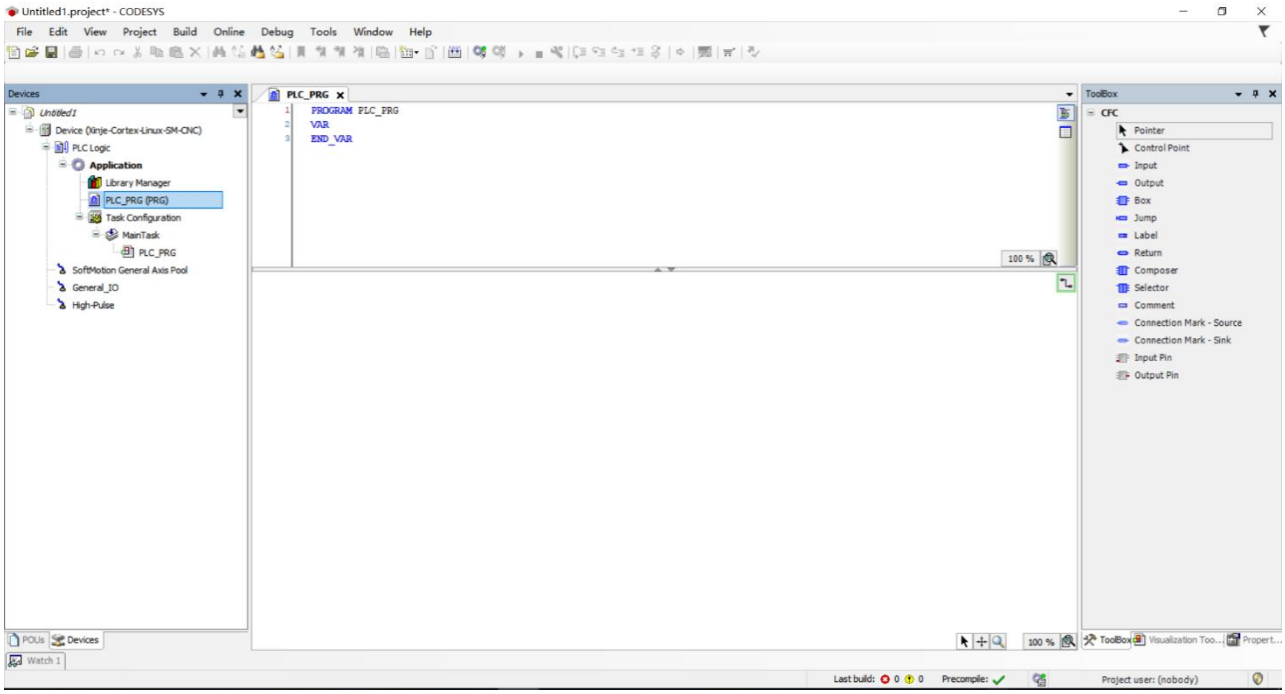
3-2. Peripherals

The use of basic units of XSDH, XSLH, XS3, XSA series PLC involves a variety of peripheral devices.

3-2-1. Programming software

The XS series can be programmed using Xinjie XS Studio software. XS Studio integrates PLC programming, visual HMI, safety PLC, real-time core of the controller, fieldbus and motion control functions, providing a complete software environment including configuration, programming, debugging and monitoring. It can handle powerful IEC languages

- Software interface



3-2-2. HMI

The HMI is an interactive interface between PLC and operators. The HMI can easily and quickly send the operator's instruction to the PLC, and then the PLC executes the action.

The basic unit of XS series PLC supports the connection of various HMI. The connection is established on the basis of consistent communication protocols, generally through Modbus TCP protocol. The specific parameters depend on the HMI connection.

The HMI of Xinje company can be directly connected with the basic unit for communication (the communication parameters have been consistent). At present, Xinje HMI products are divided into touch screen TG, TS series and text display OP series.

(1) TG series

- Size: 4.3”, 7”, 8”, 10.1”, “15.6”
- Display: 16.77 million colors, 65536 colors
- Operation: touch operation in display area
- Interface: RS232, RS422, RS485, USB, RJ45
- Communication: it can communicate directly with Xinje frequency converter, various PLCs,

frequency converters and instruments. Direct drive panel printer, supporting multiple printers.
Equipped with two ports, which can connect two different devices at the same time.
Support free format protocol, and users can freely write drivers.

- Recipe: multiple groups of recipe data can be input, to find the corresponding recipe group through the index number
- Screen: rich 3D image library, text effects, data collection, data backup, etc
- Password: nine level permission setting
- Advance: advanced functions, animation track design, etc

(2) TS series

- Size 4.3"、7"、10.1"
- Display 16.77 million colors
- Touch operation in the operation display area
- Interface RS232, RS422, RS485, USB-A, USB-B, Ethernet interface
- Communication can directly communicate with Xinje frequency converters, various PLCs, frequency converters, and instruments
  Directly drive panel printers, supporting multiple printers
  Equipped with dual ports, capable of connecting 2 different devices simultaneously
  Support for free format protocol, allowing users to freely write driver programs
  Supports OPCUA and PLChandler protocols, supports label communication
- Recipes are written directly through a recipe table
- 3D library with rich visuals, including text effects, data collection, and data backup
- Password permission list, supporting up to 30 types of permissions
- Advanced Multilingual Library, Address Label Library, Support Function Block

(3) OP series

- Size: 3.7”
- Display: STN-LCD
- Button: 7 or 20, screen cannot be touched
- Interface: RS232, RS485, RS422
- Communication: directly communicate with various PLC and Xinje frequency converter
- Clock: Built-in clock

3-2-3．Power supply module

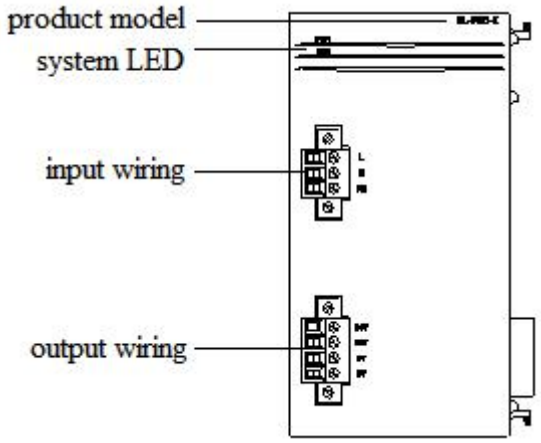
3-2-3-1. XSLH series power supply module

The XSLH series PLC is equipped with a dedicated power module, model XL-P50-E, and its basic specifications are as follows:

Item	Specification
Power supply	AC85-265V
Output voltage	DC24V
Output current	2A
Ambient temperature	Non corrosive and flammable gases
Ambient humidity	0℃~55℃
Installation	5%RH~95%RH (no condensation)
Installation	Directly installed on DIN46277 guide rail (35mm wide)

Ground	The third type of grounding (cannot be connected to a common ground with a strong electrical system)

Structure description:

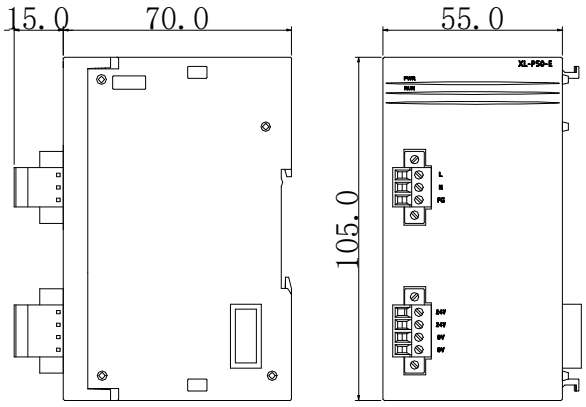


The main parts are explained as follows:

Name	Function
Product model	The specific model of the product
System LED	PWR: Power indicator light, green always on after supplying power to the power module RUN: Running indicator light, green always on when the power module is running normally
Input wiring	L. N: External power supply input terminal of the power module FG: Grounding terminal
Output wiring	Can output 2 sets of 24V and 0V externally, mainly providing power to the XL body

Dimension:

Unit: mm

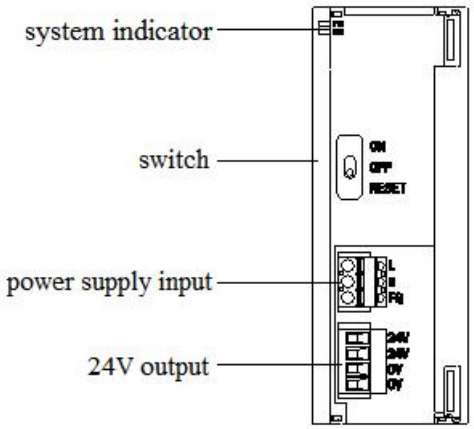


3-2-3-2. XS3 series power supply module

XS3 series medium-sized PLC is equipped with a special power module, the model is XG-P75-E, and its basic specifications are as follows:

Item	Specification
Power supply	AC100~240V
Output voltage	24VDC
Output power	75W
Ambient temperature	0℃~60℃
Ambient humidity	5%RH~95%RH (no condensation)
Installation	Directly installed on Xinje XG-EB series guide rail

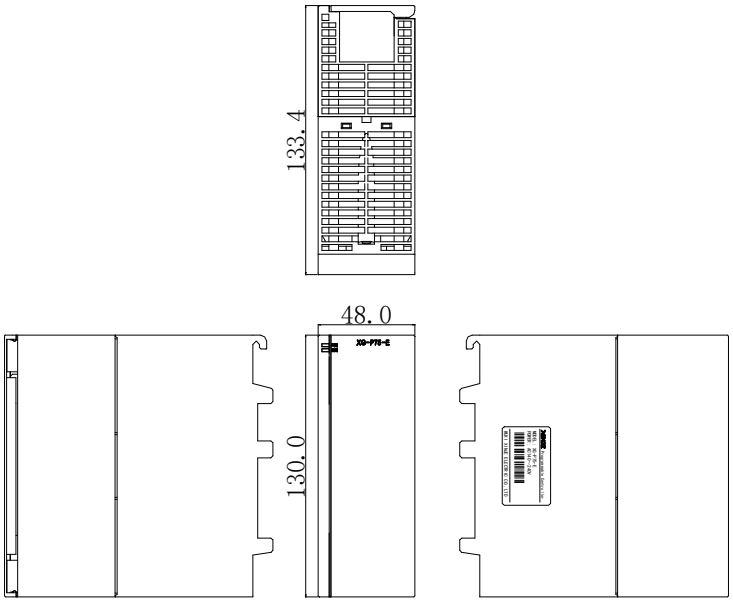
■ Structure description



The main parts are described as follows:

Name	Explanation
System indicator	PWR: the power indicator is always green when AC220V power is connected RUN: the operation indicator light is always green when the power module is in normal operation
Switch	ON: normal output 24V OFF: stop output 24V RESET: undefined
Power supply input	L, N: power supply input terminal FG: grounding terminal
24V output	24V, 0V: a group of 24VDC power supply can be output to supply power to XS3 body

■ Dimension (Unit: mm)



3-2-4. Terminal block and connection cable

External terminal blocks can be selected for XS3 series wiring. Xinje provides terminal blocks and connecting cables required by XS3 for users to choose.

List of terminal blocks and connecting cable models:

Main body	Terminal block	Connection cable
XS3-26T4	JT-G26	JC-G26-NN05 (0.5m) JC-G26-NN10 (1.0m) JC-G26-NN15 (1.5m)

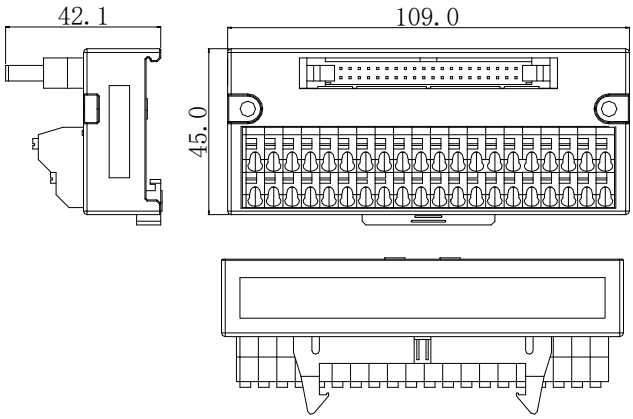
(1) Terminal block

■ Terminal arrangement of terminal block

L+	X0+	X1+	X2	X3-	X4-	X6+	X7+	X10	X11-	X12-	X14	X16	X20	COM0	Y1	Y3	COM1	Y5	Y7
M	X0-	X1-	X3+	X4+	X5	X6-	X7-	X11+	X12+	X13	X15	X17	X21	Y0	Y2	•	Y4	Y6	•

Note: COM0 at the output terminal corresponds to Y0~Y3, and COM1 corresponds to Y4~Y7.

■ Terminal block dimension Unit: mm



■ Wiring method

When wiring, press the spring switch with screw driver, insert the wire into the corresponding hole, and release the spring switch. The terminal block requires that the stripped length of the conductor is 1.5cm.

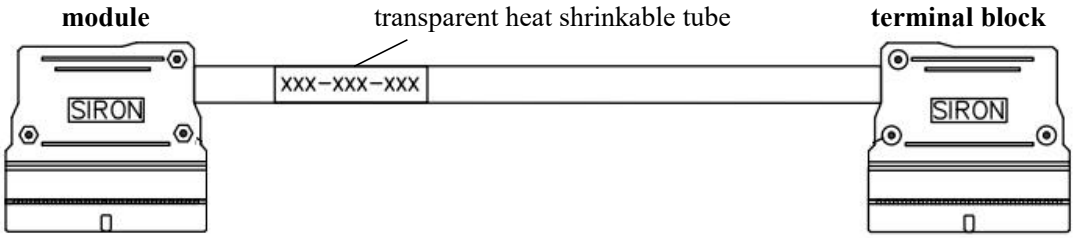
■ Installation

The terminal block shall be installed on a 35mm wide guide rail.

(2) Connection cable

Connecting cables shall be used in conjunction with external terminal blocks. Xinje provides JC-G26-NN05, JC-G26-NN10, JC-G26-NN15 cables of different lengths and specifications for users to choose. Please note that when connecting, one end of the model wrapped by a transparent heat shrinkable tube is connected to XS, and the other end is connected to the terminal block. Do not reverse the connection!!!

The connection diagram is as follows:



Note: When connecting with the terminal block, please pay attention to the slot position of the terminal block, and do not reverse the connection.

3-3. Constitution principle

(1) About communication port

- The basic units of XSDH/XS3/XSLH series are generally equipped with multiple communication ports, including COM1, COM2, COM3, etc.
- Most communication ports can be used for programming download and communication.
- Each port is independent of each other.

(2) About expansion devices

- Generally speaking, the basic unit can be expanded with different types of expansion modules, or mixed expansion, input and output expansion, analog and temperature expansion.
- The XSDH/XS3/XSLH series can expand up to 16 modules.
- After connecting the basic unit and the expansion module with the bus connector, the PWR indicator of the expansion module is on, and the expansion module can be used normally.

(3) About the calculation of points

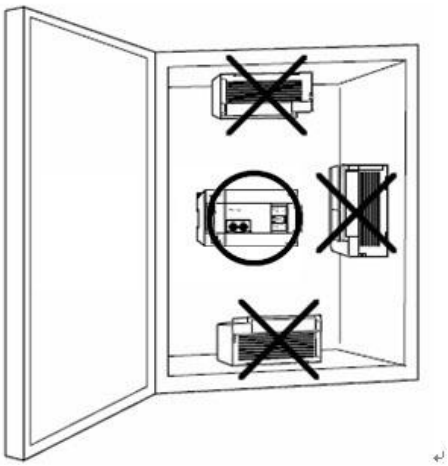
- Points are the actual input and output points.
- When the expansion module is connected, the total number of points = the number of points of the basic unit + the number of points of the expansion module.
- The serial number of input / output digital value is octal.
- The serial number of input and output analog quantity is decimal.

Point calculation example

Basic unit XS3-26T4 (18I/8O) connects 5 XG-E8X8YR modules, the total points will be:
Input points: 18 + 8 *5 = 58
Output points: 8 + 8 *5= 48
Total points: 58+48= 106

3-4. Product installation

3-4-1. Installation location

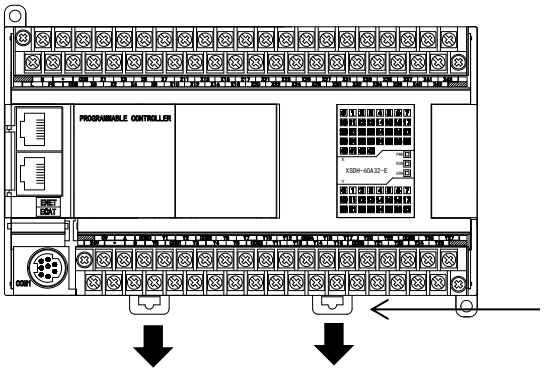


3-4-2. Installation method

(1) XSDH series installation

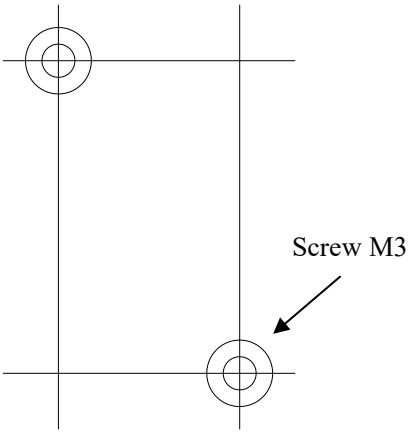
For the installation of XSDH series basic unit and expansion module, guide rail installation or direct screw installation can be selected.

- Install with DIN46277 guide rail



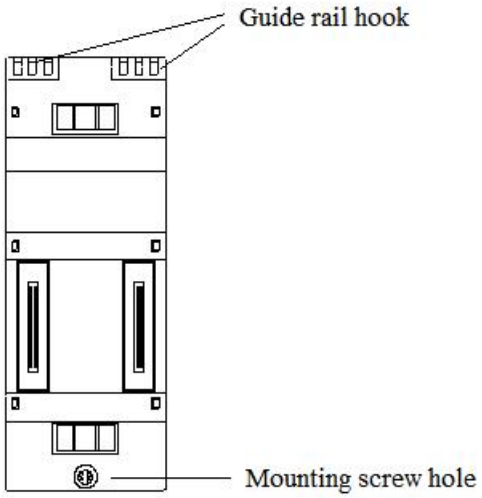
The unit and expansion module are installed on DIN46277 guide rail (35mm wide). To remove, just pull down the assembly hook of the DIN rail and remove the product.

- Screw direct installation

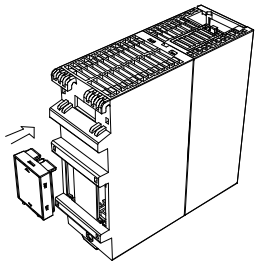
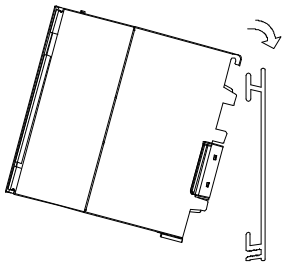
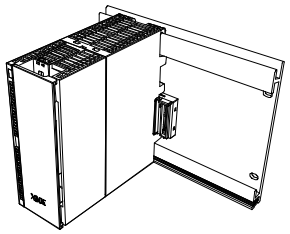
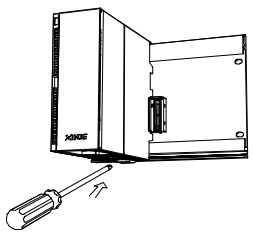


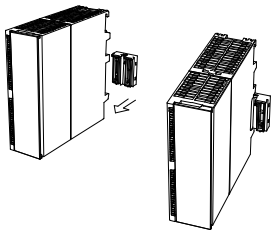
(2) XS3 series installation

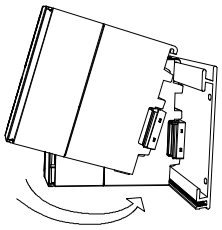
The XS3 series basic unit and expansion module are installed with XG-EB series guide rails.

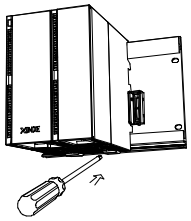
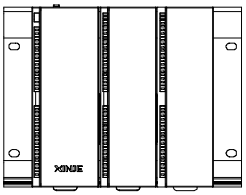


Connect the power module, XS3 body and XG expansion module to the guide rail through the U-connector, and fix them with the bottom screw. The installation steps are as follows:

①Insert the L Port of the U-shaped connector into the left interface on the back of the PLC body. (on the right in front view)	②Hang the installation hook on the upper side of the PLC body to the upper side of the installation guide rail according to the direction shown in the figure
	
③Fix the PLC to the mounting rail as shown in the following figure	④Screw holes under PLC shall be fixed with screws
	
⑤Plug the L Port of the U-connector into the left interface on the back of the #1 expansion module (on the right in front view)	⑥Hang the installation hook on the upper side of the #1 module to the upper side of the installation guide rail according to the direction shown in the figure. The expansion port on the left side of the module is connected with the R port of the U-connector on the body





⑦ Please use screws to fix the screw hole under the module #1	⑧Continue to install the following modules in the same way. The effect is shown in the following figure.
	

Note:

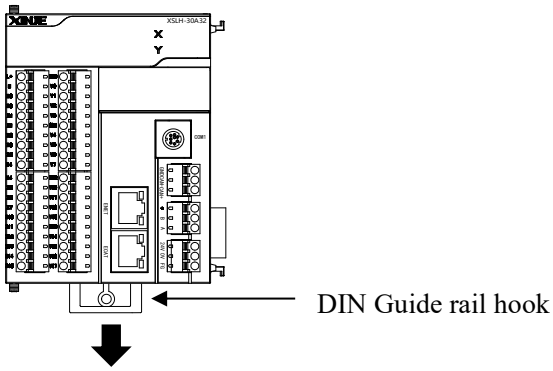
※1: If the power module XG-P75-E is selected, please install the power module to the left side of the PLC body according to the installation steps ① ~ ④.

※2: The R port on the back of the last expansion module does not need to install U-connector.

(3) XSLH series installation

Installation of basic unit and expansion module, rail installation is optional.

- Use DIN46277 rail to install

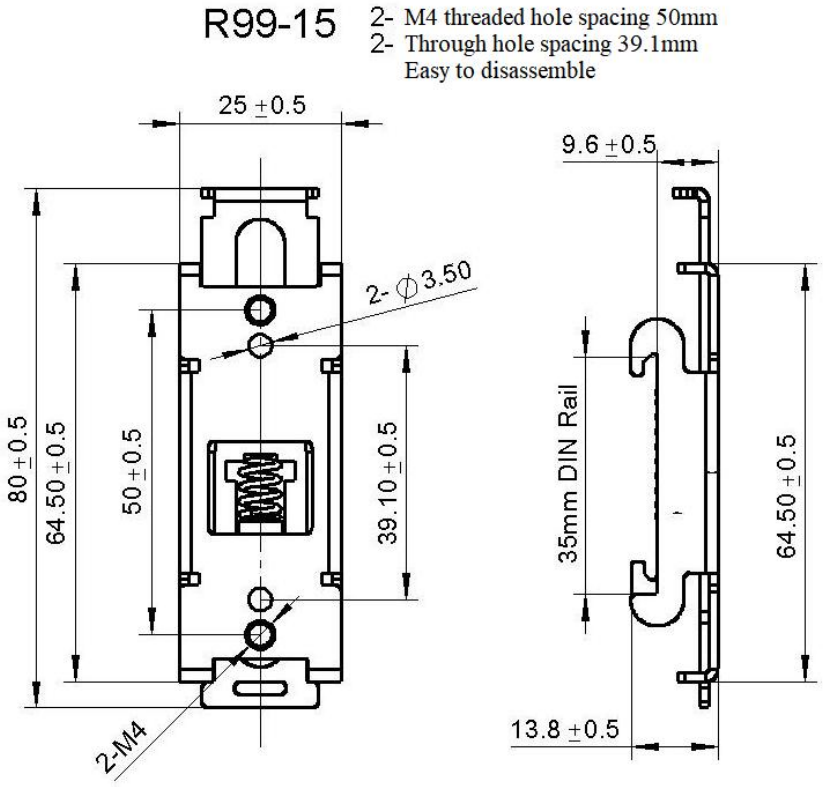


The unit and expansion module are installed on DIN46277 guide rail (35mm wide). To remove, just pull down the assembly hook of the DIN rail and remove the product by translating it to the right.

(4) XSA230, XSA330 installation

The XSA230, XSA330 are installed with using matching guide rails.

Please use the rail R99- 15 DIN to install.

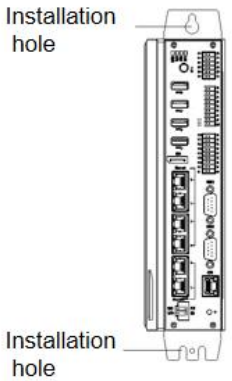


First, install the black rail buckle on the bottom of the controller with two screws, then fix the end with spring on the top of the DIN rail, and then gently push against the side of the spring to fix the entire buckle on the rail. To remove, gently push one end of the spring to remove the product.

(5) XSA500, XSA620 installation

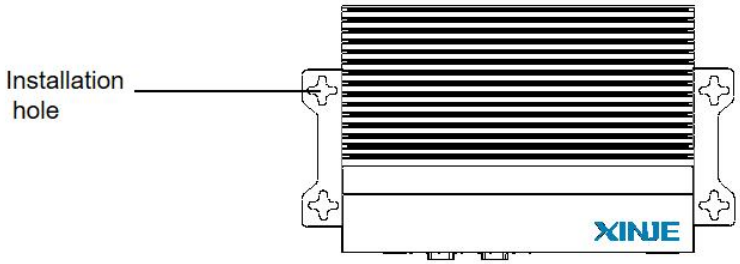
Both the XSA500 and XSA620 can be installed by either the backplate or the side ear hanging method.

- The XSA500 is installed using a backplate



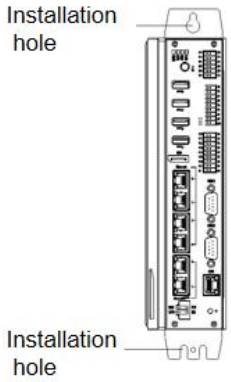
Use three screws for installation. This method is used for vertical installation.

- The XSA500 is installed with side hanging



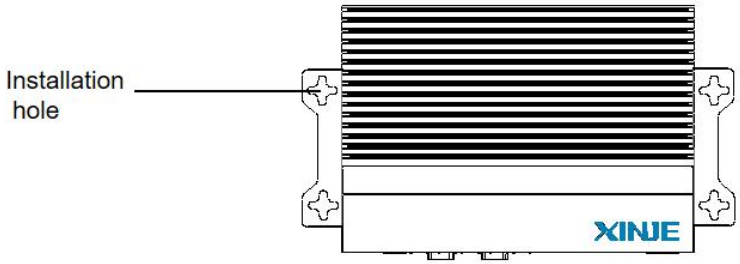
Four screws are used for installation and the installation direction can be adjusted as needed.

- The XSA620 is installed using a backplate



Use four screws for installation. This method is used for vertical installation.

- The XSA620 is installed with side hanging



Use four screws for installation. The installation direction can be adjusted as needed.

3-4-3. Installation environment

Please install the product under the environmental conditions specified in chapter 2-1-1.

4. Power supply specification

4-1. Power supply specification

The power specification of XSDH series PLC only supports AC power type.
The power specification of XS3, XSLH, XSA series PLC only supports DC power type.

(1) AC power type

Item	Content
Rated voltage	AC100V~240V
Voltage allowable range	AC90V~265V
Rated frequency	50/60Hz
Allowable instantaneous power off time	Interrupt time ≤0.5AC cycle, space ≥1s
Impact current	Max below 40A 5ms/AC100V max below 60A 5ms/AC200V
Maximum power consumption	30W
Power supply for sensor	24VDC±10% max 400mA

Note:
※1: Please use more than 2mm^2 wires for power cables to prevent voltage drop.
※2: Even in case of power failure within 10ms, the programmable controller can still continue to work. When the power is cut off for a long time or the abnormal voltage drops, the programmable controller will stop working and the output will also be in off state. When the power supply is restored, the programmable controller will automatically start running.
※3: The grounding terminal FG of basic unit and expansion module can be connected with each other and reliably grounded (the third kind of grounding).

(2) DC power type

- XS3, XSLH series PLC power supply specification:

Item	Content
Rated voltage	DC24V
Voltage allowable range	DC21.6V~26.4V
Input current (basic unit)	120mA DC24V
Allowable instantaneous power off time	10ms DC24V
Impact current	10A DC26.4V
Maximum power consumption	12W

Note：The grounding terminal is an empty terminal. Please do not perform external wiring on it or use it as a relay terminal.

- XSA330，XSA500 series power supply specification:

Item	Content
Rated voltage	DC24V
Input current (only for basic unit)	120mA
Allowable instantaneous power off time	10ms DC24V
Impact current	10A DC26.4V
Maximum power consumption	60W

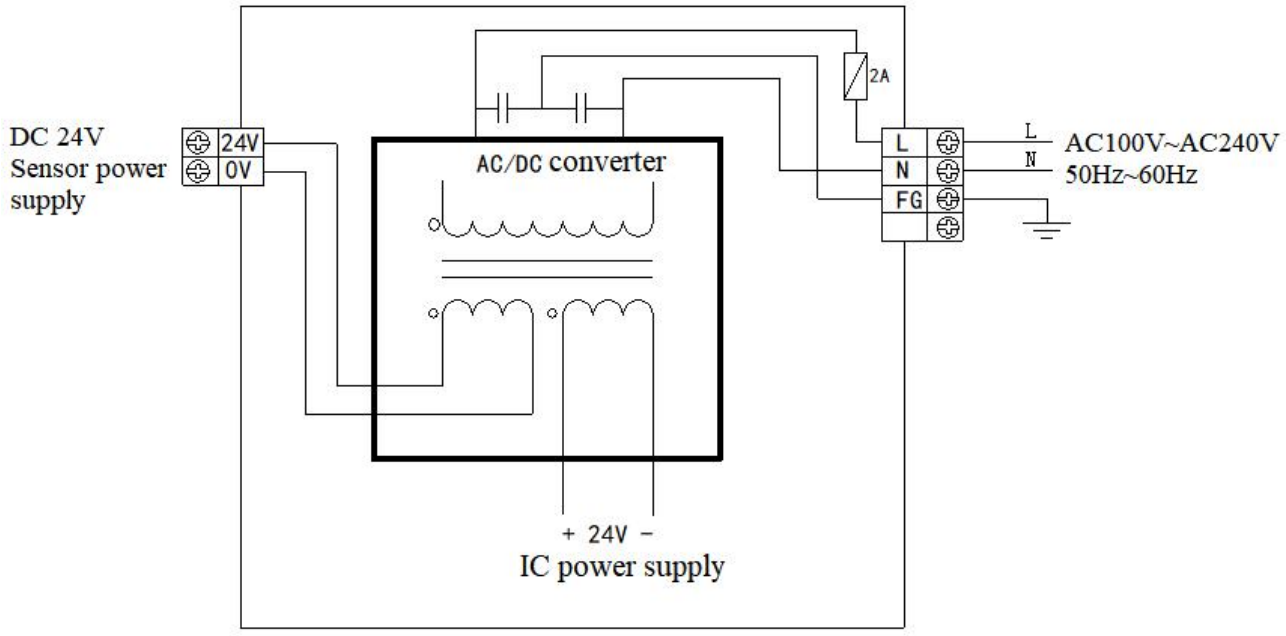
Note: The grounding terminal is empty, please do not use it as external wiring or relay terminal.

- XSA620 series power supply specification:

Item	Content
Rated voltage	DC24V
Voltage allowable range	DC19.2V~28.8V
Input current (basic unit)	120mA
Allowable instantaneous power off time	10ms DC24V
Impact current	10A DC26.4V
Maximum power consumption	120W

4-2. AC Power supply DC input

(1) XSDH series wiring



Note:

※1: Connect the power supply between terminals L and N.

※2: The 24V and 0V terminals can be used as power supply for sensors, with 200mA/DC24V at 10/16 points and 400mA/DC24V at 24 points and above. Additionally, this terminal cannot be powered by external power sources.

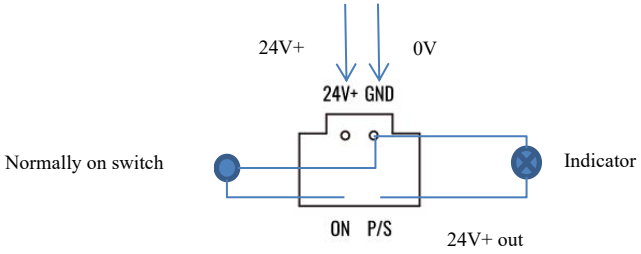
※3： ● termianl is vacant terminal. Please do not connect it externally or use it as a relay terminal.

※4：It is recommended to connect the COM terminals of the basic unit and expansion unit to each other.

(2) XS3, XSLH power supply wiring

The external 24V power supply supplies power to the 24V and 0V terminals of the PLC.

(3) XSA power supply wiring



① 24V+ and GND: IPC power supply. After these two terminals receive a stable external 24V power supply, the industrial computer can start and operate normally.

② ON and GND: Turn ON/OFF IPC, the same effect as pressing the button.

③ P/S and GND: P/S provides 24V power supply. Connect the P/S to the load and form a circuit with GND, with a maximum current of 500mA.

5. Input specification and wiring

5-1. Input specification

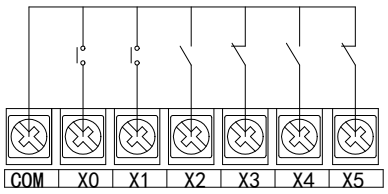
5-1-1. XSDH series input specification

The XSDH series PLC determines whether input X supports NPN or PNP input mode based on the model composition. You can refer to 1-2-1 for specific specifications and wiring methods.

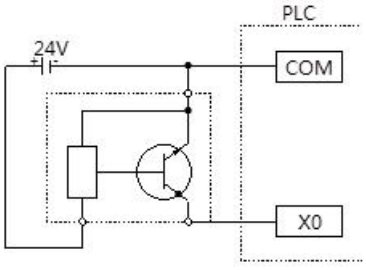
(1) NPN input

Item	Content
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response time	About 10ms
Input signal mode	Contact input or NPN open collector transistor
Circuit insulation	Optoelectronic coupling insulation
Input action display	LED is on when input is on

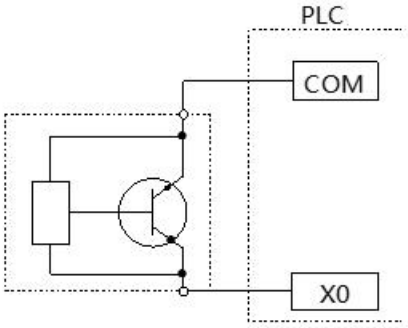
NPN wiring example:



Switch button wiring diagram example



3-wire (NPN type) proximity switch wiring diagram



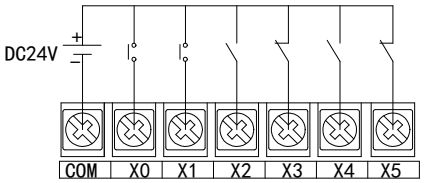
2-wire (NPN type) proximity switch wiring diagram

(2) PNP input

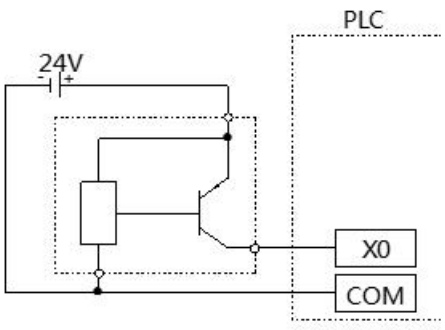
Item	Content
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response time	About 10ms

Input signal mode	Contact input or PNP open collector transistor
Circuit insulation	Optoelectronic coupling insulation
Input action display	LED is on when input is on

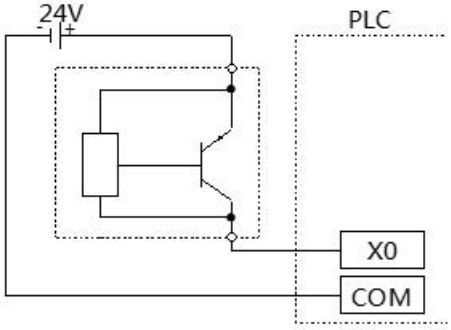
PNP wiring example:



Switch button wiring diagram example



3-wire (PNP type) proximity switch wiring diagram



2-wire (PNP type) proximity switch wiring diagram

5-1-2. XSLH series input specification

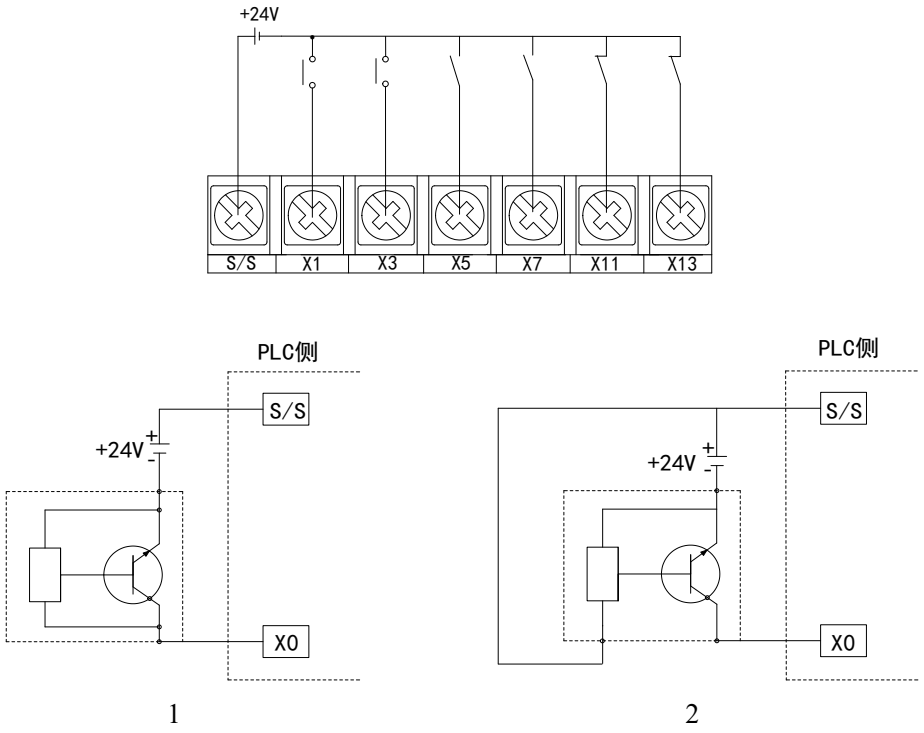
The XSLH-24A8 and XSLH-24A16 support both NPN and PNP input modes, while the XSLH-30A32 supports both NPN and differential input modes. The following introduces the specific specifications and wiring methods:

(1) NPN mode

project	XSLH-24A8、XSLH-24A16	XSLH-30A32
NPN input point	12（X0~ X13）	12（X2、X5~X15）
High-speed counter input point	8（X0、X1、X3、X4、X6、X7、X11、X12）；Single Phase 80KHz、AB50KHz	4（X6、X7、X11、X12）；Single Phase 80KHz、AB 50KHz
Input signal voltage	DC24V±10%	
Input signal current	7mA/DC24V	
Input ON current	Above 4.5mA	
Input OFF current	Below 1.5mA	
Response time of input	About 10ms	
Input signal form	Collector NPN input	
circuit insulation	Optoelectronic coupling insulation	
Input action display	The LED light turns on when the input is ON	

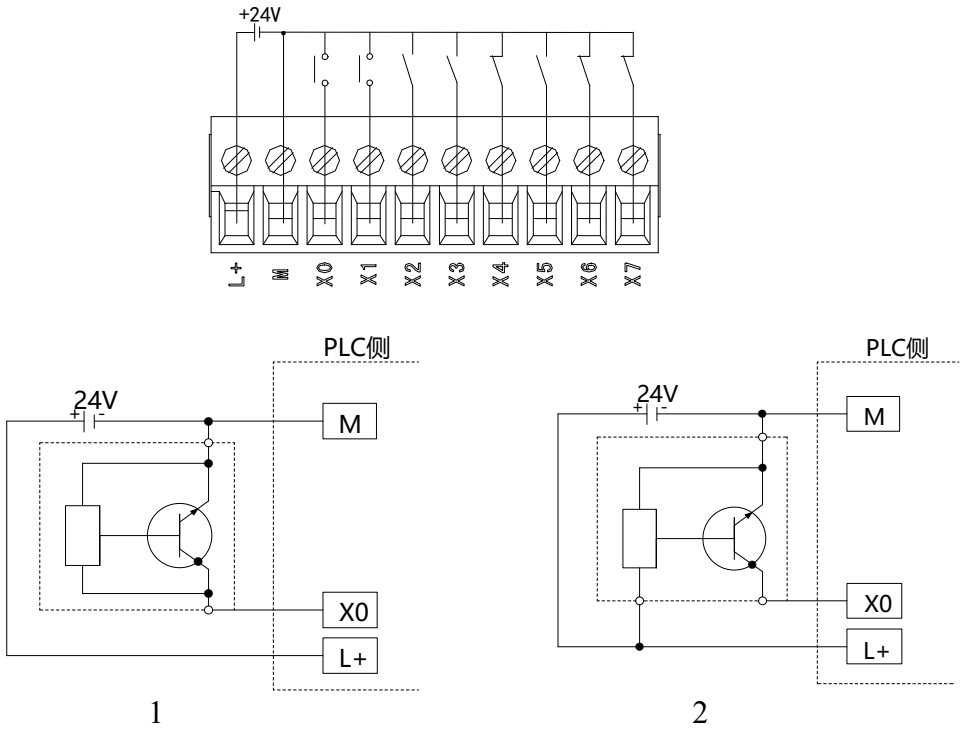
NPN wiring example

- XSLH-24A8、XSLH-24A16



1: Two-wire system (normally open or normally closed) proximity switch wiring diagram example
2 :Three-wire system (NPN type) proximity switch wiring diagram example

- XSLH-30A32

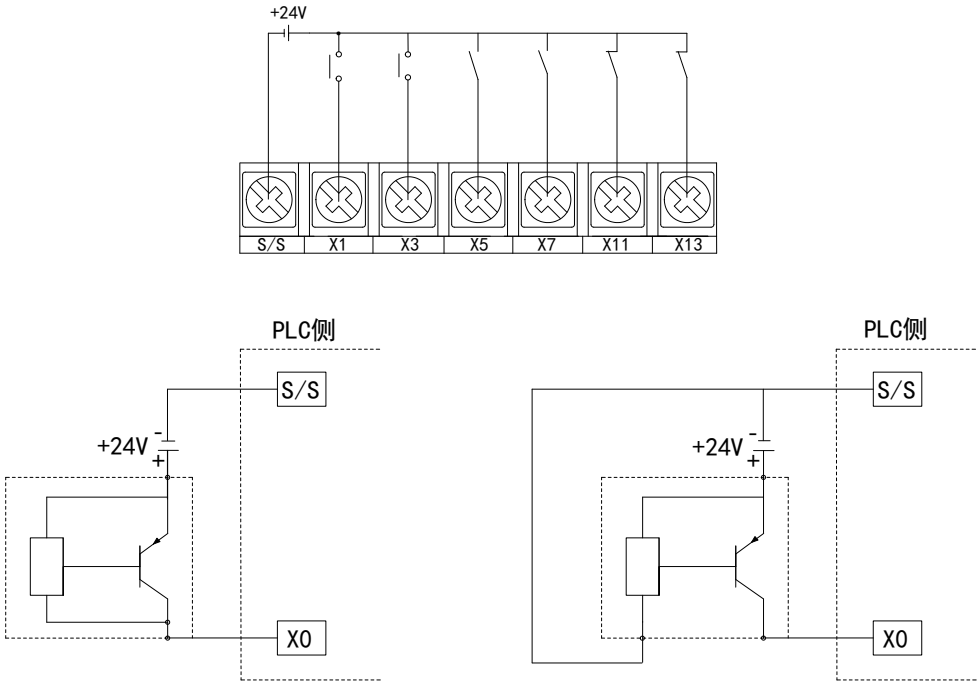


1: Two-wire system (normally open or normally closed) proximity switch wiring diagram example
2 :Three-wire system (NPN type) proximity switch wiring diagram example

(2) PNP mode

project	XSLH-24A8、XSLH-24A16
NPN input point	12（X0~ X13）
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Response time of input	About 10ms
Input signal form	Collector NPN input
circuit insulation	Optoelectronic coupling insulation
Input action display	The LED light turns on when the input is ON

PNP wiring example:



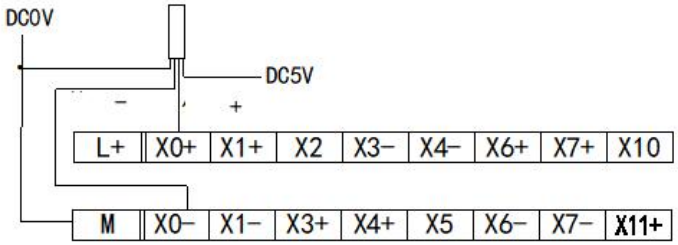
1 2

1: Two-wire system (normally open or normally closed) proximity switch wiring diagram example
2 :Three-wire system (NPN type) proximity switch wiring diagram example

(3) Difference modes

Project	XSLH-30A32
Differential input point	4（X0、X1、X3、X4）
Input signal	5Vdifferential signal
Maximum input frequency	1MHz
circuit insulation	Optoelectronic coupled insulation
Input action display	When the input is ON, the LED light turns on.
Differential input point	4（X0、X1、X3、X4）
Input signal	5V differential signal

Example of differential input wiring:



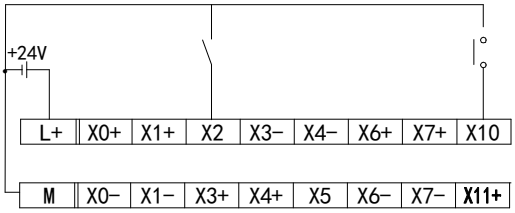
5-1-3．XS3 series input specification

XS3 series PLC supports NPN and differential input modes. The specific specifications and wiring mode are described below:

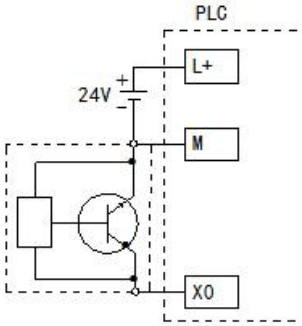
(1) NPN mode

Item	Content
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response time	About 10ms
Input signal mode	Contact input or NPN open collector transistor
Circuit insulation	Optoelectronic coupling insulation
Input action display	LED lights when input is ON

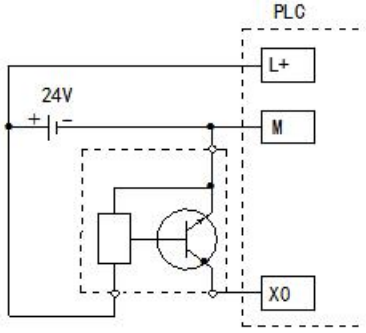
NPN wiring example:



switch button wiring diagram example



2-wire (NO or NC) proximity switch wiring diagram

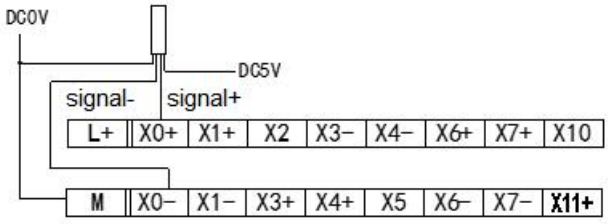


3-wire (NPN type) proximity switch wiring diagram

(2) Differential mode

Item	Content
Input signal voltage	DC5V±10%
Input signal current	12mA/DC5V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response features	Max 200KHz
Input signal mode	Differential input
Circuit insulation	Optoelectronic coupling insulation
Input action display	LED lights when input is ON

Differential input wiring example:



Differential wiring diagram example

5-1-4．XSA series input specification

The XSA230 supports NPN input mode, the XSA330, XSA500 series support NPN and PNP input modes. Below are the specifications and wiring methods.

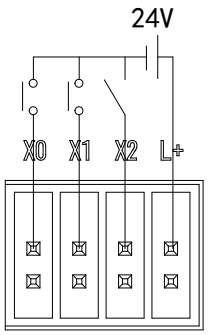
5-1-4-1. XSA230 input specification

(1) Input specification

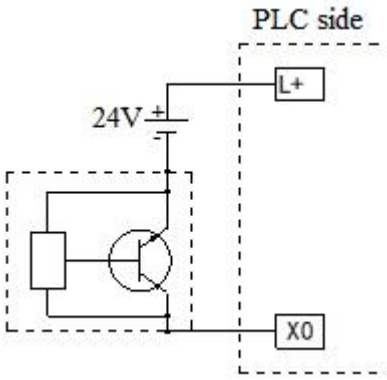
Item	Content
Input signal voltage	DC24V±10%
Input signal current	6mA/DC24V
Input ON current	2.5mA
Input OFF current	1mA
Input ON voltage	11V
Input OFF voltage	5V
Input response time	ON->OFF: within 2ms
	OFF->ON: within 2ms
Input signal format	Open collector NPN input
Circuit insulation	Optoelectronic coupling insulation

(2) Wiring example

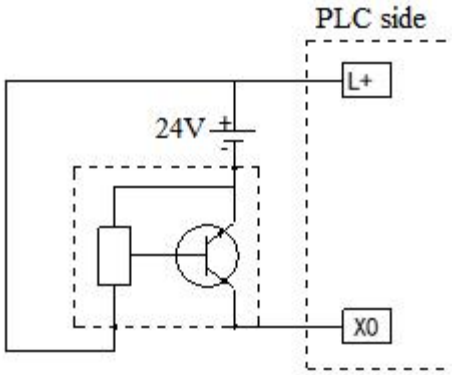
- NPN mode



Example of switch button wiring diagram



Example of two-wire (NPN type) proximity switch



Example of 3-wire (NPN type) proximity switch

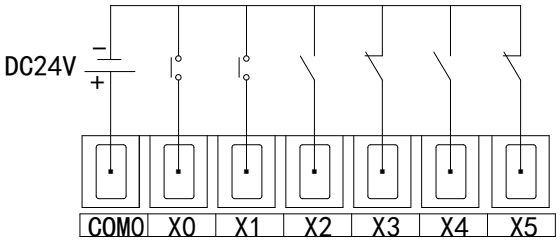
5-1-4-2. XSA330 input specification

(1) Input specification

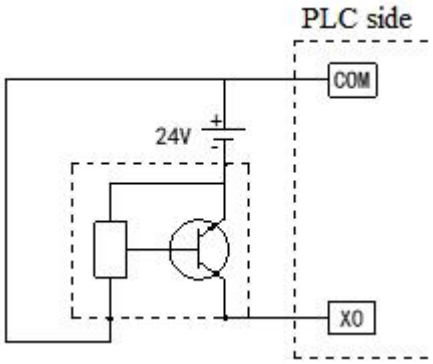
Item	Content
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response time	Low speed 0.1ms, high speed 5us
Input signal mode	Bidirectional optocoupler
Circuit insulation	Optoelectronic coupling insulation

(2) Wiring example

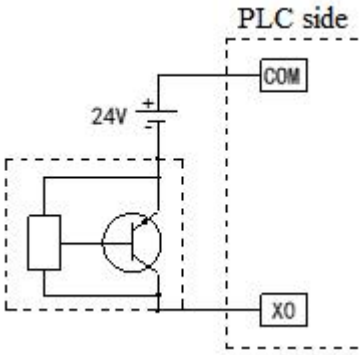
- NPN wiring example:



Switch button wiring diagram example

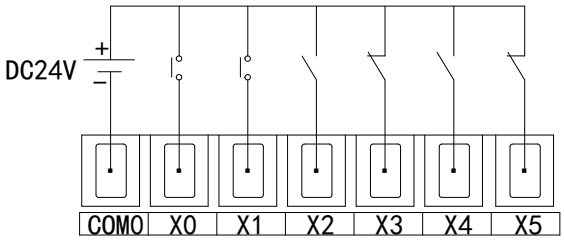


3-wire (NPN type) proximity switch wiring diagram

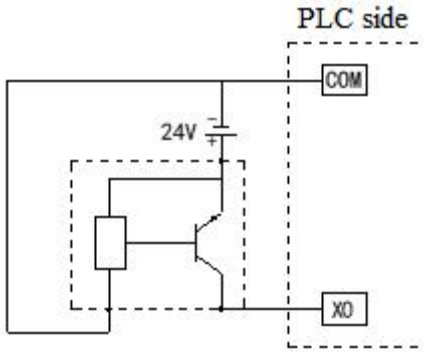


2-wire (NPN type) proximity switch wiring diagram

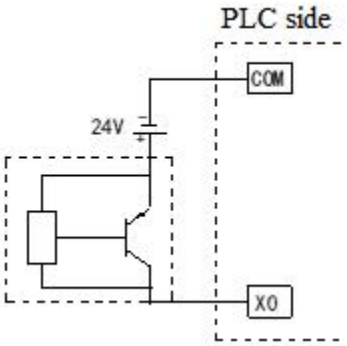
- PNP wiring example:



Switch button wiring diagram example



2-wire (NO or NC) proximity switch wiring diagram



3-wire (PNP type) proximity switch wiring diagram

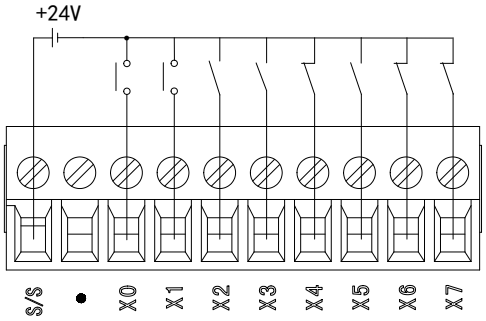
5-1-4-3. XSA500 input specification

(1) Input specification

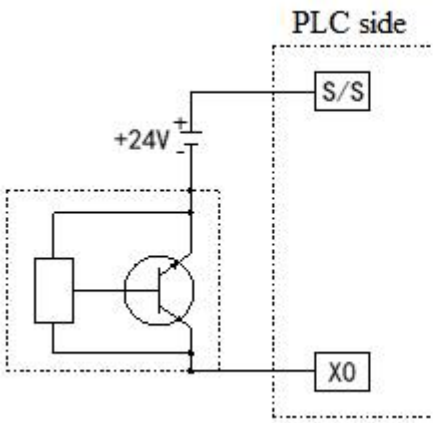
Item	Content
Input signal voltage	DC24V±10%
Input signal current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Below 1.5mA
Input response time	Low speed 0.1ms, high speed 5us
Input signal mode	Bidirectional optocoupler
Circuit insulation	Optoelectronic coupling insulation

(2) Wiring example

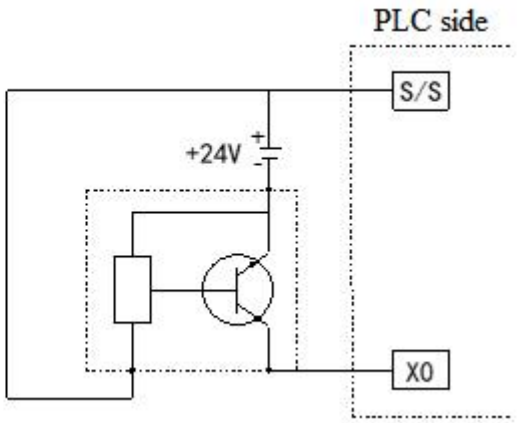
- NPN wiring example



Switch button wiring diagram example

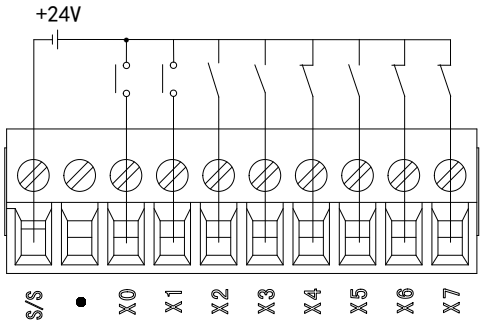


2-wire (NPN type) proximity switch wiring diagram

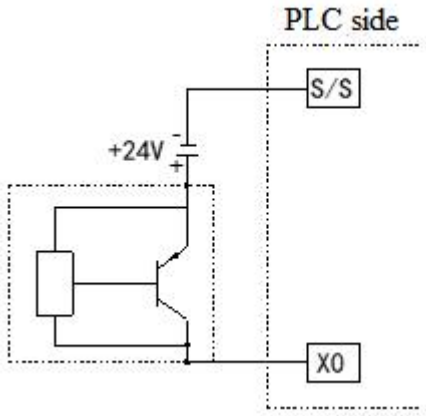


3-wire (NPN type) proximity switch wiring diagram

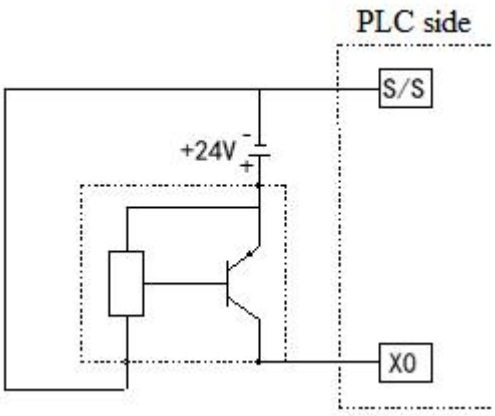
- PNP wiring example



Switch button wiring diagram example



2-wire (PNP type) proximity switch wiring diagram



3-wire (PNP type) proximity switch wiring diagram

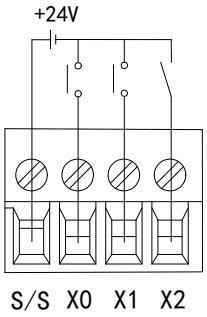
5-1-4-4. XSA620 input specification

(1) Input Specifications

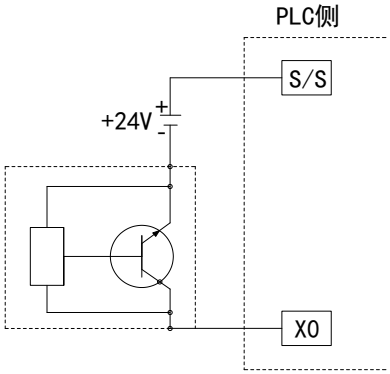
project	content
Input signal voltage	DC24V±10%
Input signal current	6mA/DC24V
Input ON current	2.5mA
Input OFF current	1mA
Input ON voltage	11V
Input OFF voltage	5V
Response time for input	ON->OFF：Within 2ms
	OFF->ON：Within 2ms
Input signal form	Collector NPN or PNP input
circuit insulation	Optoelectronic coupling insulation

(2) Wiring example

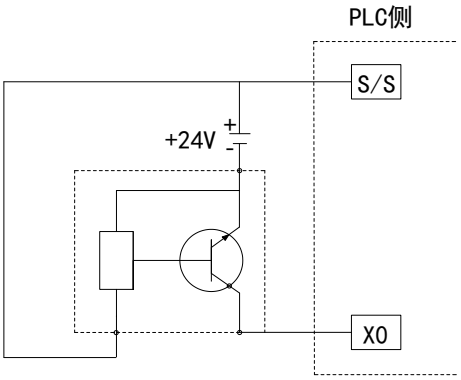
- NPN mode



Switch button wiring diagram example

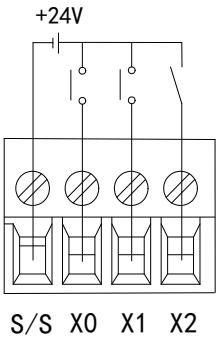


2-wire (PNP type) proximity switch wiring diagram

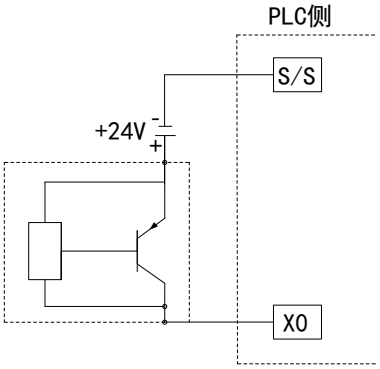


3-wire (PNP type) proximity switch wiring diagram

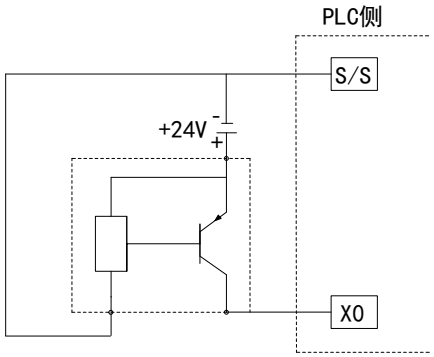
- NPN mode



Switch button wiring diagram example



2-wire (PNP type) proximity switch wiring diagram

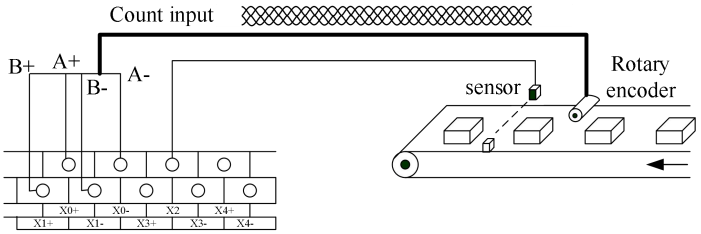


3-wire (PNP type) proximity switch wiring diagram

5-2. High speed count input

XSDH/XS3/XSLH/XSA330/XSA500 series PLC has a high-speed counting function independent of the scanning cycle of the programmable controller. By selecting different counters, it can measure the high-speed input signals such as the measurement sensor and rotary encoder. The maximum measurement frequency of XS3 can reach 200kHz.

The high-speed counting input of XS3 series PLC can only receive differential signal (DIFF) and cannot receive open collector signal. Please be sure to select the encoder of differential signal (DIFF).



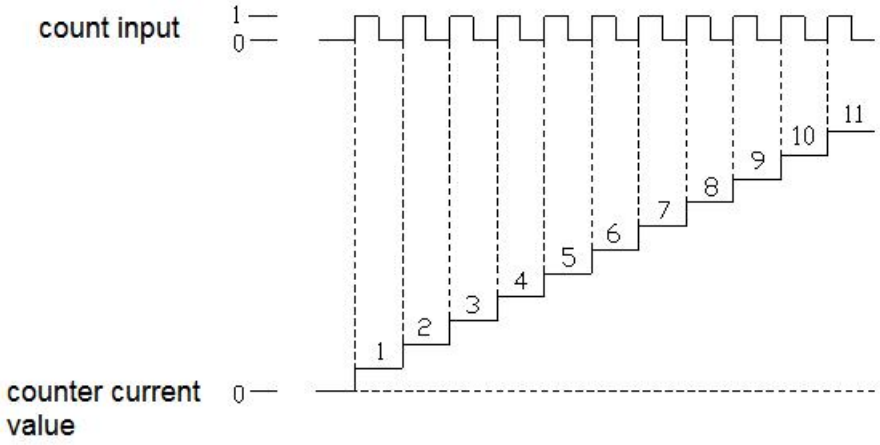
When the counting frequency is higher than 25Hz, please select the high-speed counter.

5-2-1. Count mode

XSDH/XS3/XSLH/XSA330/XSA500 series high-speed counting function has two counting modes, namely, incremental mode and AB phase mode.

(1) Incremental mode

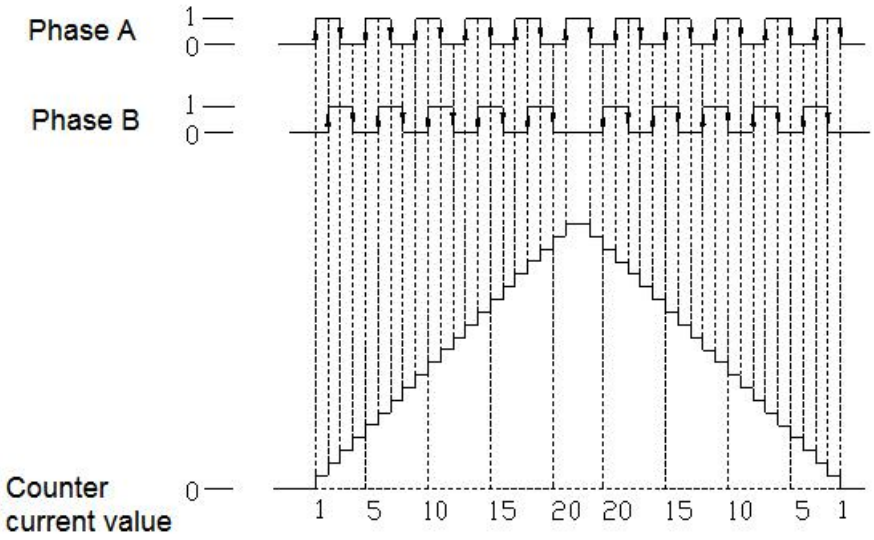
In this mode, the input pulse signal is counted, and the count value increases with the rising edge of each pulse signal.



(2) AB phase mode

In this mode, the high-speed count value is incremented or decremented according to two differential signals (phase A and phase B), and the counting mode is quadruple frequency mode.

Quadruple mode



5-2-2. High-speed counter range

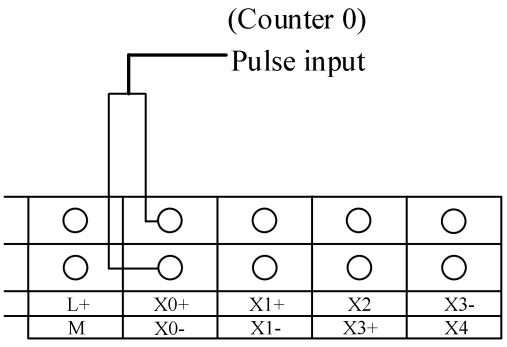
The counting range of high-speed counter is: -2147483648 ~ +2147483647. When the count value exceeds this range, overflow or underflow occurs.

The overflow means that the count value jumps from +2147483647 to -2147483648 and continues counting. When underflow occurs, the count value jumps from -2147483648 to +2147483647 and continues counting.

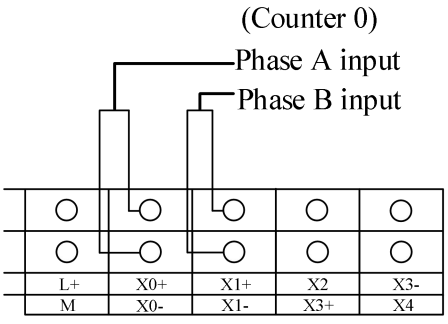
5-2-3. High-speed counter input wiring

For the counting pulse input terminal wiring, it is slightly different according to the programmable controller type and counter model. Several typical input terminal wiring methods are shown in the following figure:

(1) Incremental mode



(2) AB phase mode



5-2-4. Input terminal assignment

(1) The high speed counter channels:

PLC model		High speed counter channel	
		Incremental mode	AB phase mode
XSDH	60 points	4	4
XS3	26 points	4	4
XSLH	24 points	4	4
	30 points	4	4
XSA330, XSA500	32 points	4	4

(2) High speed counter input terminal definition:

U	A	B
Counting pulse input	Phase A input	Phase B input

Under normal circumstances, the maximum frequency of XSDH and XS3 series high-speed counting terminals can reach 200KHz in single-phase mode, 100kHz in AB phase mode for XSDH and 200kHz for XS3. XSLH can up to 1MHz in differential mode, 80KHz in single phase mode and 50Khz in AB phase mode. When the X input terminal is not used as a high-speed input port, it can be used as a common input terminal. The specific port allocation and functions are shown in the following table:

XS3-26T4								
	Single phase incremental mode				AB PHASE MODE			
CounterID	0	1	2	3	0	1	2	3
Max frequency	200k	200k	200k	200k	200k	200k	200k	200k
X0+	U+				A+			
X0-	U-				A-			
X1+					B+			
X1-					B-			
X2								
X3+		U+				A+		
X3-		U-				A-		
X4+						B+		
X4-						B-		
X5								
X6+			U+				A+	
X6-			U-				A-	
X7+							B+	
X7-							B-	
X10								
X11+				U+				A+
X11-				U-				A-
X12+								B+
X12-								B-
X13								

XSDH-60A32-E								
	Single phase incremental mode				AB PHASE MODE			
CounterID	0	1	2	3	0	1	2	3
Max frequency	200k	200k	200k	200k	100k	100k	100k	100k
X0	U				A			
X1					B			
X2								
X3		U				A		
X4						B		
X5								
X6			U				A	
X7							B	
X10								
X11				U				A
X12								B
X13								

XSLH-24A8, XSLH-24A16								
	Single phase incremental mode				AB PHASE MODE			
CounterID	0	1	2	3	0	1	2	3
Max frequency	80K	80K	80K	80K	50K	50K	50K	50K
Frequency doubling					2/4	2/4	2/4	2/4
Counter interrupt	√	√	√	√	√	√	√	√
X0	U				A			
X1					B			
X2								
X3		U				A		
X4						B		
X5								
X6			U				A	
X7							B	
X10								
X11				U				A
X12								B

XSLH-30A32								
	Single phase incremental mode				AB PHASE MODE			
CounterID	0	1	2	3	0	1	2	3
Max frequency	1M	1M	80k	80k	1M	1M	50k	50k
X0+	U+				A+			
X0-	U-				A-			
X1+					B+			
X1-					B-			
X2								
X3+		U+				A+		
X3-		U-				A-		
X4+						B+		
X4-						B-		
X5								
X6			U				A	
X7							B	
X10								
X11				U				A
X12								B
X13								
X14								
X15								

XSA330, XSA500 series								
	Single phase incremental mode				AB PHASE MODE			
CounterID	0	1	2	3	0	1	2	3
Max frequency	1M	1M	200k	200k	1M	1M	100k	100k
A0+	U+				A+			
A0-	U-				A-			
B0+					B+			
B0-					B-			
Z0+								
Z0-						A+		
A1+		U+				A-		
A1-		U-				B+		
B1+						B-		
B1-								
Z1+								
Z1-								
X0			U				A	
X1							B	

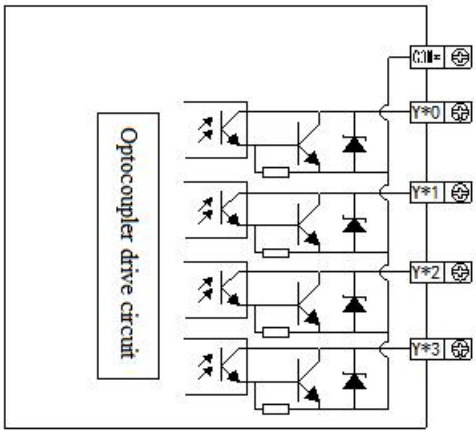
XSA330, XSA500 series								
	Single phase incremental mode				AB PHASE MODE			
X2								
X3				U				
X4								A
X5								B
X6								
X7								

6. Output specification and wiring method

6-1. Output specification

(1) XSDH、XSLH、XSA330、XSA500 Normal transistor output

Project		Specifications
External power supply		Below DC5~30V
Circuit insulation		Optocoupler insulation
Action indicator		LED light
Max load	Resistive load	0.3A
	inductive load	7.2W/DC24V
	Light load	1.5W/DC24V
Min load		DC5V 2mA
Open circuit leakage current		< 0.1mA
Response time	OFF→ON	< 0.2ms
	ON→OFF	< 0.2ms



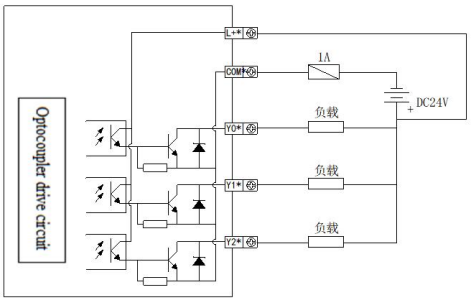
Note:

The PLC is generally equipped with a plug-in spring connector to facilitate wiring when it leaves the factory. The connector requires that the stripped length of the wire shall be at least 1.5cm. When wiring, press the yellow spring switch with a small screw drive, insert the wire into the corresponding socket, and release the spring switch.

(2) XSA230 Normal transistor output

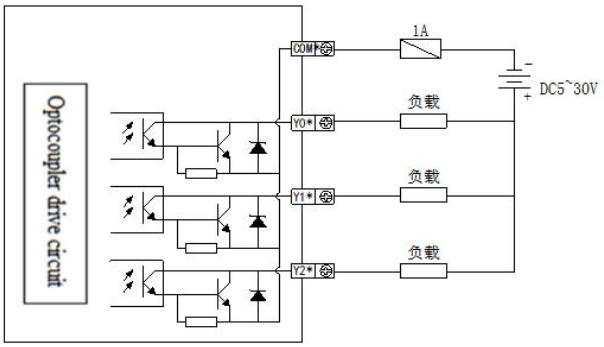
Project	Specifications
Output Point	Y0-Y2
Maximum output load voltage	DV24V±10%
Rated load maximum	100mA/DC24V

current		
Short-circuit protection current		200mA
Response time	ON->OFF	Within 0.2ms
	OFF->ON	Within 0.2ms
Output signal form		NPN collector
circuit insulation		Optoelectronic Coupling Insulation
output protection OFF→ON		Supports short-circuit and overload protection functions



(3) XSA620 Normal transistor output

Project		Specifications
Output Point		Y0-Y2
Maximum output load voltage		DV24V±10%
Rated load maximum current		100mA/DC24V
Short-circuit protection current		200mA
Response time	ON->OFF	Within 0.2ms
	OFF->ON	Within 0.2ms
Output signal form		drain electrode
circuit insulation		Optoelectronic Coupling Insulation
output protection OFF→ON		Supports short-circuit and overload protection functions



(4) Transistor high speed pulse output

Model	XSLH-24A8, XSLH-24A16
High speed pulse output terminals	Y0~Y3
External power supply	Below DC5~30V
Action display	LED light
Max current	50mA
Max output frequency	100kHz

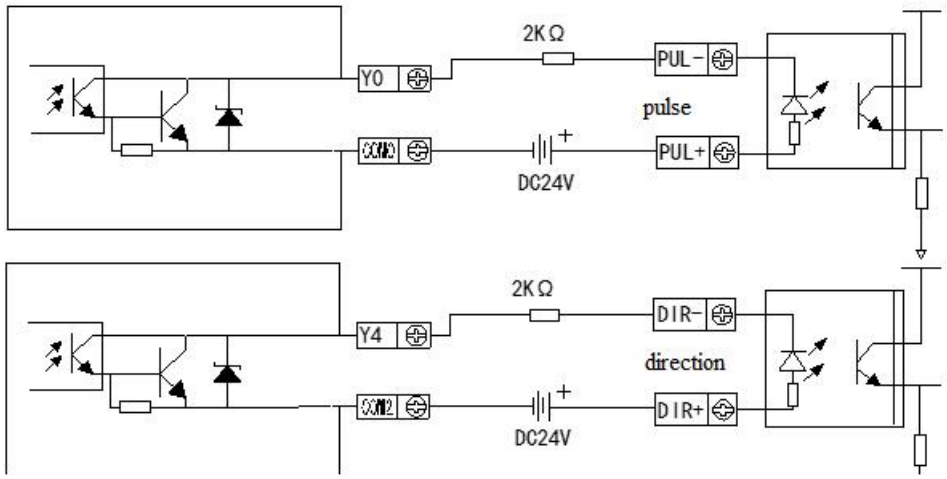
[Note]: When using the high-speed pulse output function, the PLC can output 100KHz~200KHz pulses, but it cannot guarantee that all servos operate normally. Please connect a resistor of about 500 ohms between the output end and the 24V power supply. The high-speed pulse output terminals of PNP type and NPN type are the same.

6-2. Transistor output

(1) General transistor output

- External Power Supply
  Please use DC5~30V power supply to drive the load.
- Circuit Isolation
  Inside PLC, we use photoelectric couplers to isolate between internal circuits and output transistors
- Action Display
  When photoelectric couplers drive, LED will be ON and the output transistors will be ON.
- Response Time
  The time interval that PLC from photoelectric couplers energizing (or cutting) to transistor ON (or OFF) is below 0.2ms.
- Output current
  The current it outputs is 0.3A per point. But limited by the temperature rising, every 4 points current add up to 0.5A.

  Example: The following is the wiring diagram of the T-type PLC and the stepper motor driver.

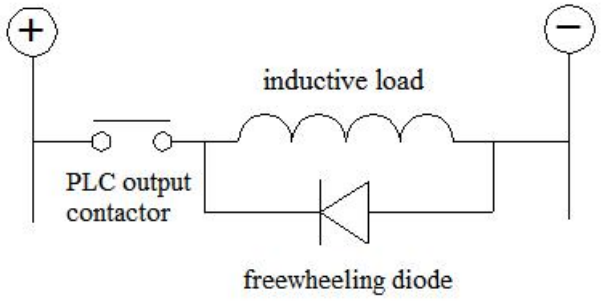


(Ensure the reliable operating current of 8~15mA at the input end of the drive optocoupler)

(2) Output circuit protection

For inductive load of DC circuit, freewheeling diode shall be added, as shown in the following figure:

- DC load



Note: freewheeling diode is 1N4007.

7. BIOS setting

7-1. BIOS explanation

BIOS is a basic input/output control program stored in Flash Memory. This program is a bridge between the motherboard and the operating system, responsible for managing the relevant parameter settings between the motherboard and the expansion card. When the controller is activated, it will be controlled by the BIOS program. First, it will execute a POST self-test, which will detect all hardware devices and confirm the synchronization of hardware parameters. When all tests are completed, it transfers control of the system to the operating system (OS). Since BIOS is the only channel between hardware and software, how to properly set the parameters in BIOS will determine whether your computer runs stably and works in the best state. Therefore, the correct setting of BIOS is a key factor for system stability, thus ensuring that the system performance can reach the best state.

CMOS Setup will store the set data in the CMOS SRAM built in the motherboard. When the power is off, the lithium battery on the motherboard continues to power the CMOS SRAM. The BIOS setup utility allows you to configure.

(1) Hard disk drives and peripherals

(2) Video display types and display options

(3) Password protection

(4) Power management function

Note	As the BIOS version of the motherboard is constantly upgraded, the BIOS description in this manual is for reference only. We can not guarantee that the relevant contents in this manual are consistent with the information you have obtained.

7-1-1.CMOS setup

When the controller starts, the BIOS enters the power on self-test (Post) program. The self-test program is a series of diagnostic programs fixed in the BIOS. When the self-test program is completed, no errors are encountered. If you want to enter the BIOS, press DEL or ESC until you enter the BIOS interface. If this information disappears before you respond, you can shut down and restart your computer, or press<Ctrl>+<Alt>+<Delete>at the same time to restart the computer

7-1-2.Function keys and auxiliary instructions

↑ (Up button)	Move to the previous item
↓ (Down button)	Move to the next item
← (Left button)	Move to the left item
→ (Right button)	Move to the right item
ESC	Exit the present interface
Enter	To confirm
+	Change the setting state or increase the value
−	Change the setting state or decrease the value
F1	To show the help document
F2	To load the last setting value
F3	To load the optimized value
F4	Store the set value and leave the CMOS SETUP program

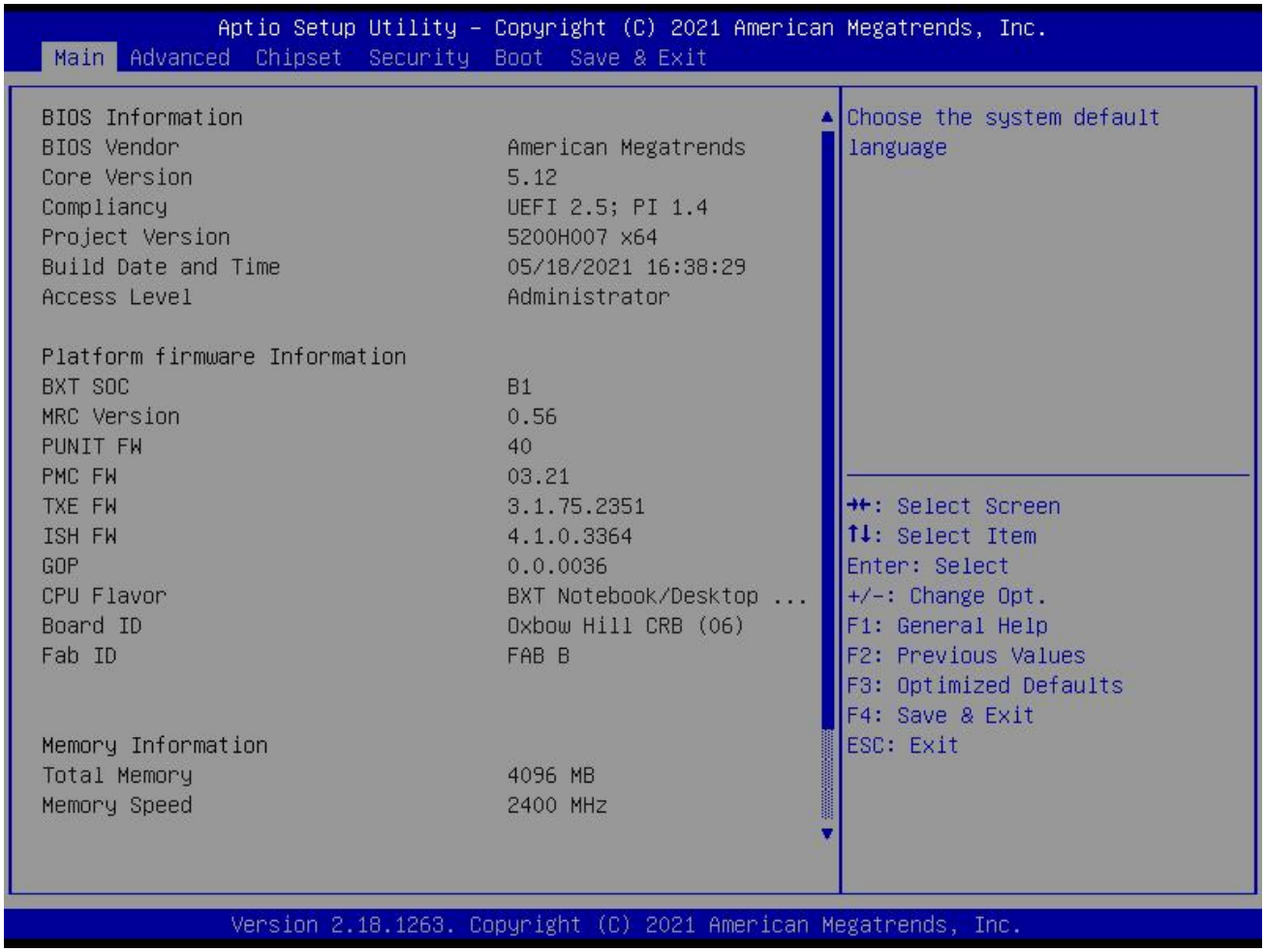
Auxiliary description of the main screen:

When you are in the Setup main screen, the main settings of the corresponding options are displayed below as the options move.

If you want to leave the auxiliary description window, just press the [ESC] key.

7-2. Main menu

When you enter the CMOS setup setting menu, you can see the main menu shown at the top of the screen. In the main menu, you can select different setting options by pressing the left and right direction keys. After selecting the submenu, detailed setting options will be displayed below.



Main menu

(1) Main (standard CMOS function setting)

Set the date, time, etc.

(2) Advanced (Advanced BIOS function settings)

Set the special functions provided by BIOS, such as CPU, USB, PCI, network port, etc.

(3) Chipset(Chipset Performance Settings)

Set device options such as North Bridge and South Bridge.

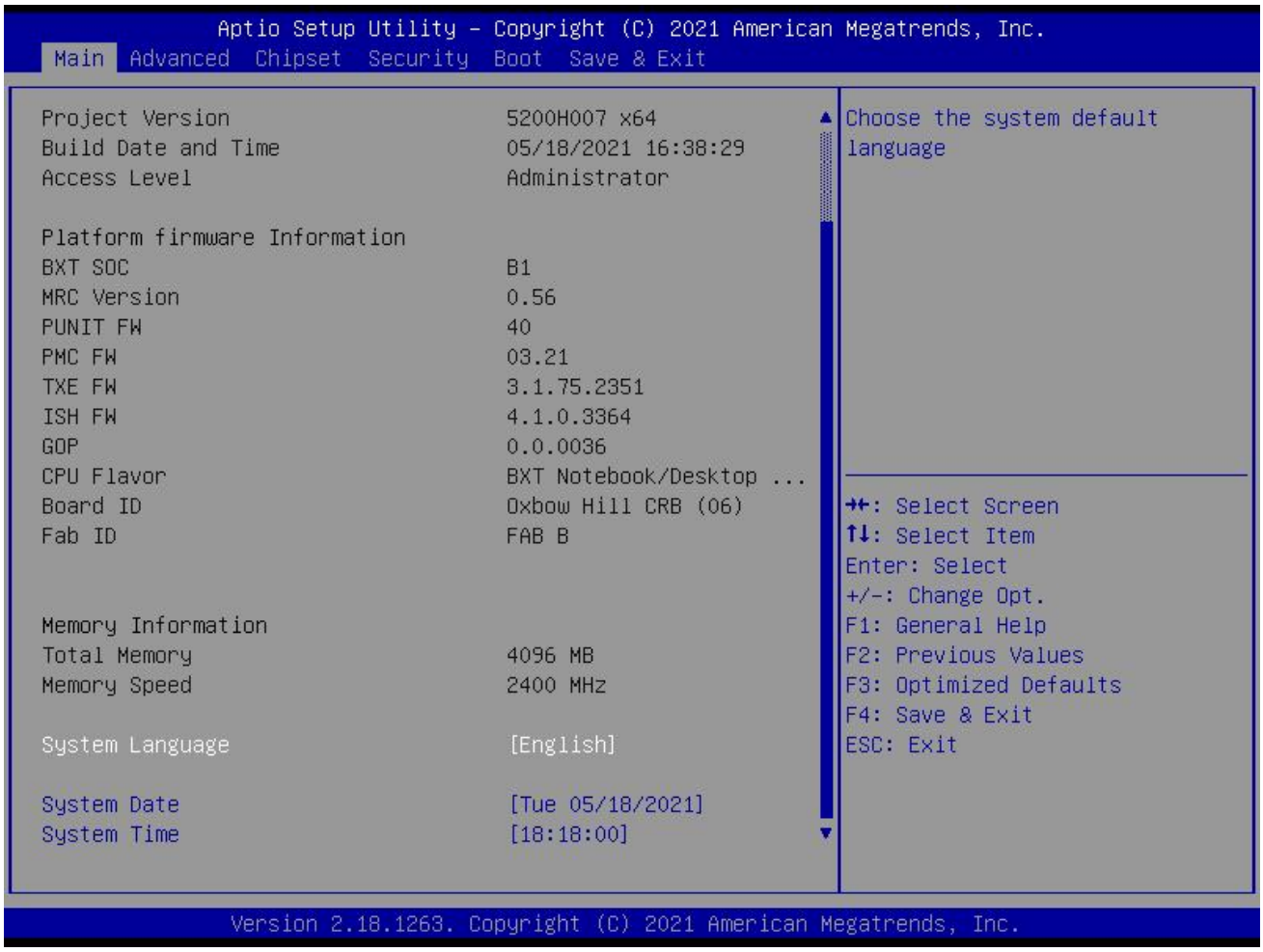
(4) Security (set Administrator/User password)

(5) Boot(Boot item configuration feature)

(6) Save & Exit:

This option includes discarding changes, exiting without saving, and exiting without saving.

7-3. Main(Standard CMOS setting)



Main menu

1)System Language

Set the language

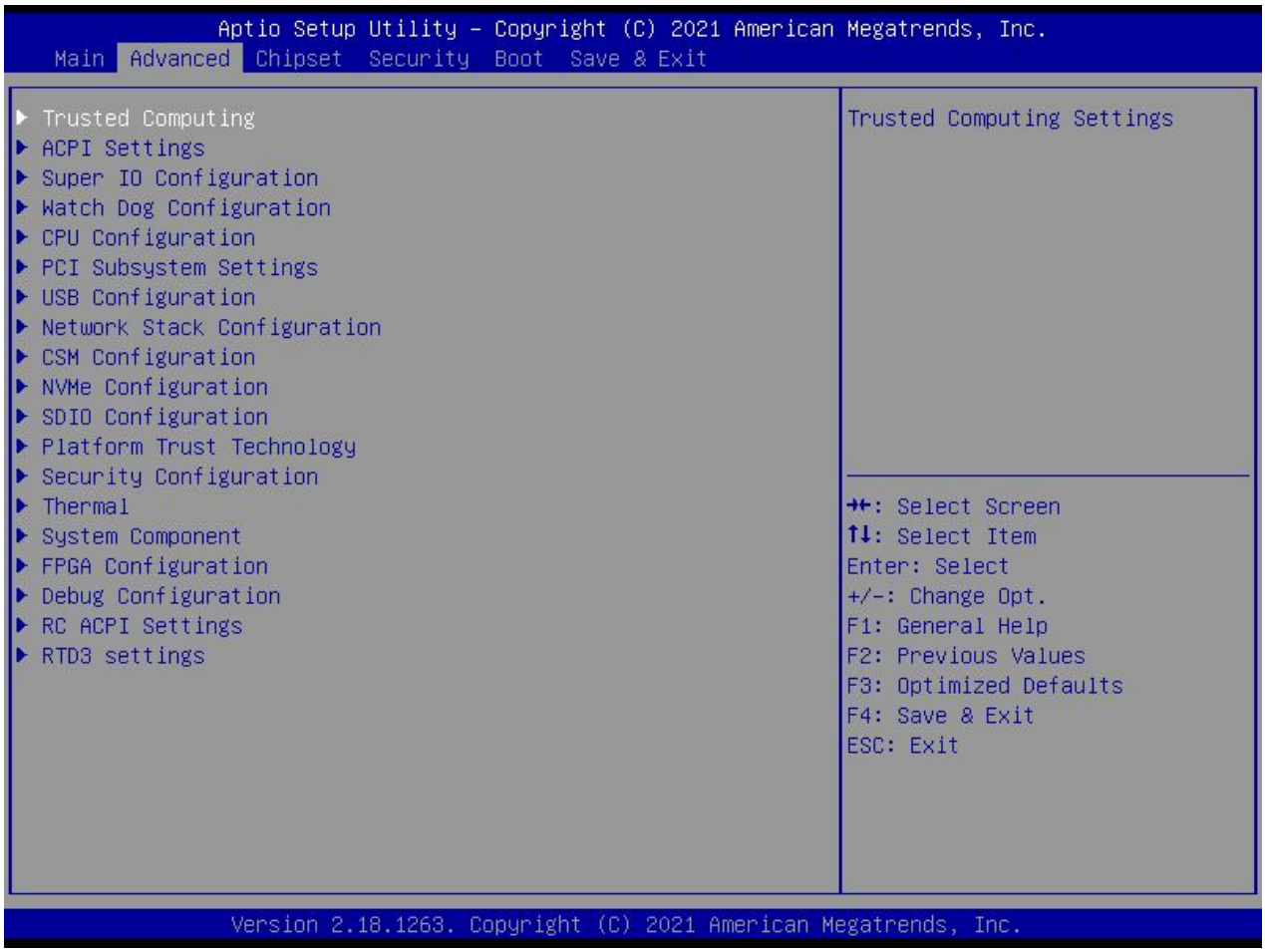
2)System Date(mm:dd:yy)

Set the date in the computer in the format of "Week/Month/Day/Year"

3)System Time(hh:mm:ss)

Set the time in the computer in the format of "hour/minute/second"

7-4. Advanced BIOS function



1) Trusted Computing：
2) ACPI Settings：
3) SMART Settings：
4) Super IO Configuration：
5) Watch Dog Configuration：
6) CPU Configuration：
7) PCI Subsystem Settings：
8) USB Configuration：
9) Network Stack Configuration：
10) CSM Configuration：
11) NVMe Configuration：
12) SDIO Configuration：
13) Platform Trust Technology：
14) Security Configuration：
15) Thermal：
16) System Component：

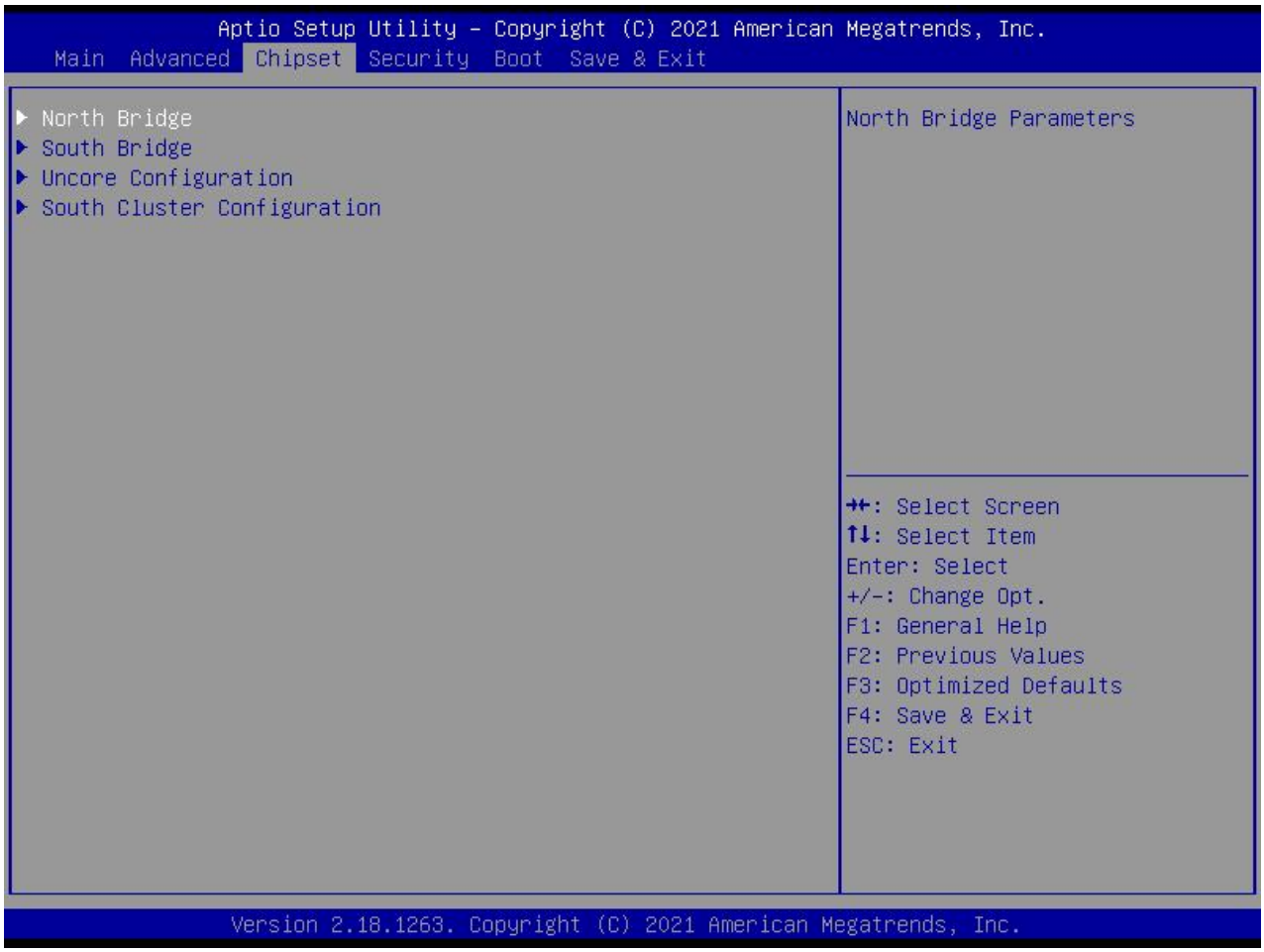
17) FPGA Configuration：

18) Debug Configuration：

19) RC ACPI Settings：

20) RTD3 Settings：

7-5. Chipset performance setting



Chipset menu

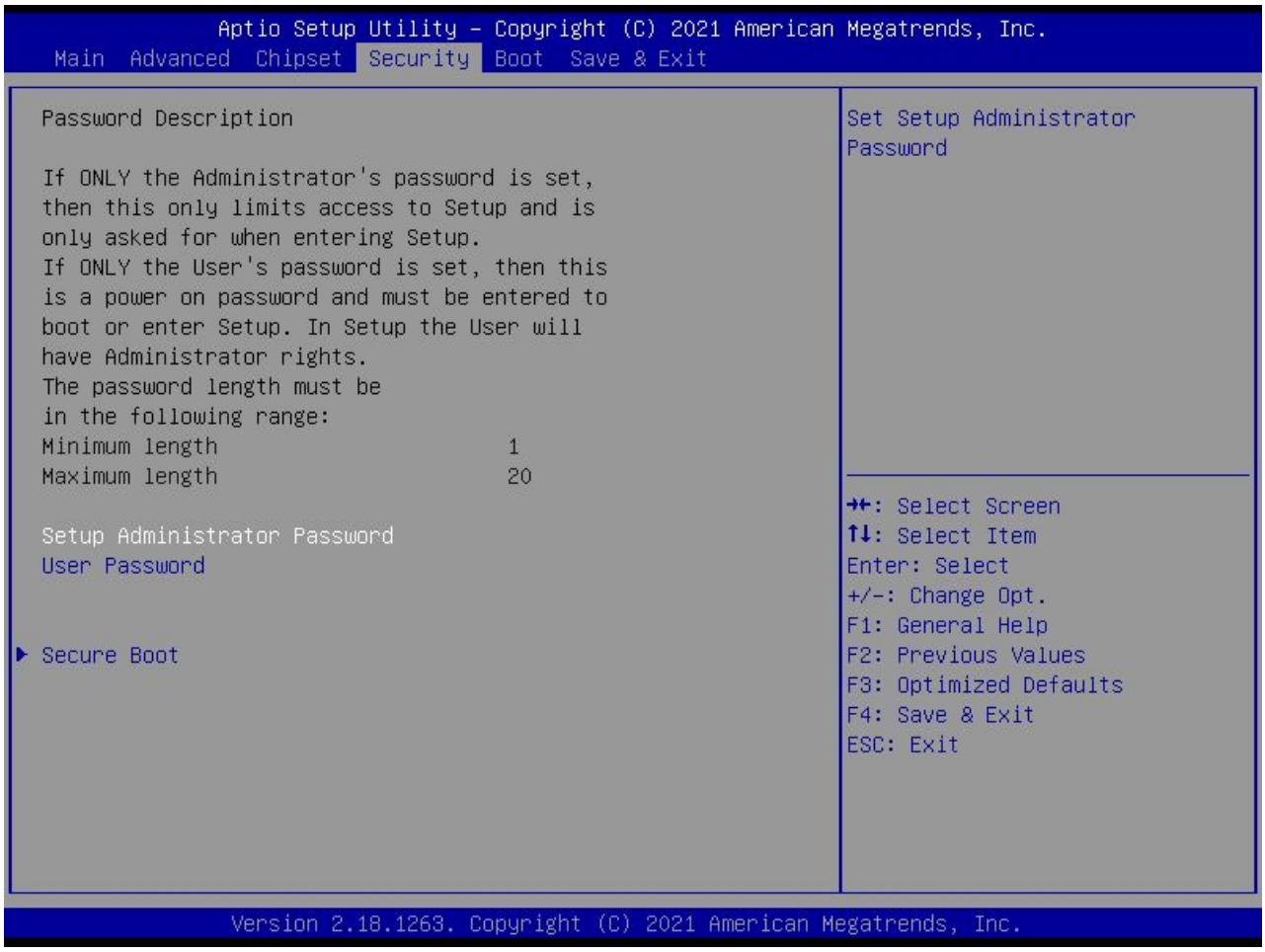
1) North Bridge：

2) South Bridge：

3) Uncore Configuration：

4) South Cluster Configuration：

7-6. Security (Administrtor/User password)



Security menu

1)Setup Administrator Password:

Set the super user password option, which has the highest permissions.

When you select this function, the following message will appear: Crate New Password******

Enter a password of up to 20 characters, and then press the <Enter> key. The BIOS requires you to enter the same password again. After entering it, the BIOS saves the set password. Once using the password function, you will be asked to enter a password each time before entering the BIOS setup program. This can prevent any unauthorized person from using your controller.

2)User Password:

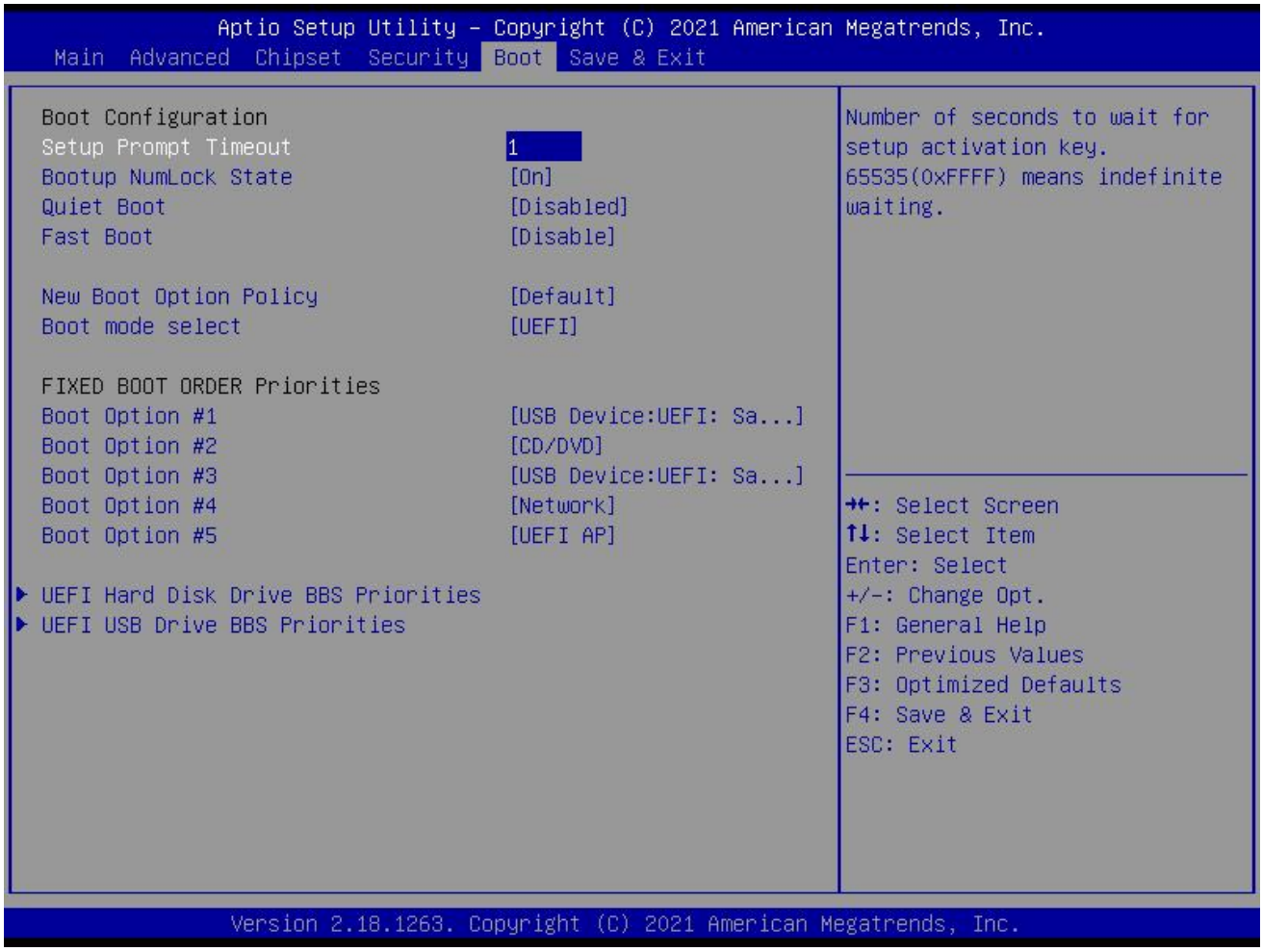
Set the user password option. This password permission will be restricted, and some settings cannot be changed.

When you select this function, the following message will appear: Crate New Password******

Enter the password, up to 20 characters, and press the<Enter>key. The BIOS requires the same password to be input again. After the input is completed, the BIOS saves the set password. Once you use the password function, you will be asked to enter the password before entering the BIOS setup program.

3)Secure Boot

7-7. Boot setting



Boot menu

1)Boot Configuration:

Setup Prompt Timeout

The POST dwell time is displayed at startup. The larger the value, the longer the dwell time.

Bootup NumLock State: Num Lock key state after system startup

Setting value：[On] / [Off]. This option specifies the state of the Num Lock key on the keyboard after the controller is started.

Quiet Boot

Setting value :[Disabled] / [Enabled]. This option specifies whether to display a LOGO when the controller starts.

2)Boot Option Priorities：

Boot Option #1: First boot option. Use this option to choose which disk to start from

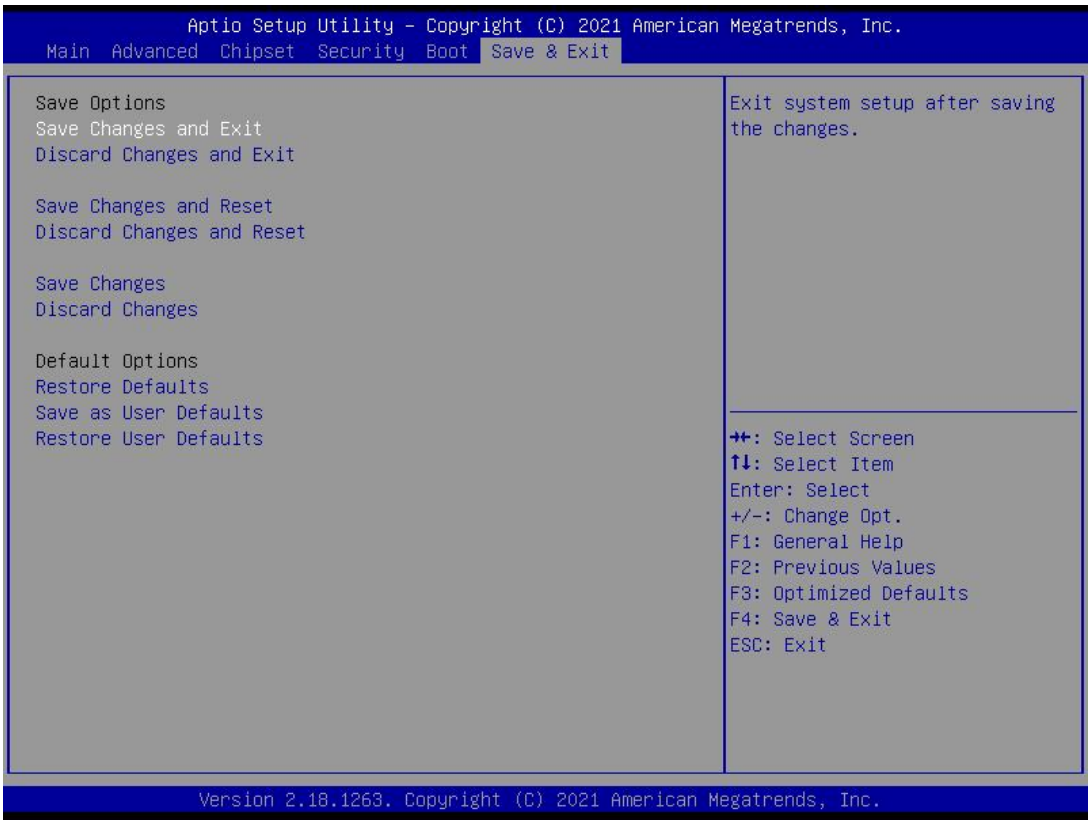
Fast Boot

Setting value :[Disabled]/ [Enabled]

This option specifies whether to perform hardware self testing at startup.

3)New Boot Option Policy

7-8. Save & Exit



Save&Exit menu

1)Save Options

Save Changes and Reset

Discard Changes and Reset

2)Defaults Options

Restore Defaults: Load Optimal Defaults

This option in the main menu allows the user to restore all BIOS options to optimized values. The optimization default value is the default value set to optimize the performance of the motherboard. If you select YES and press Enter, you can save all the settings to CMOS SRAM and leave the BIOS setup program. If you do not want to save, select NO to return to the main menu.

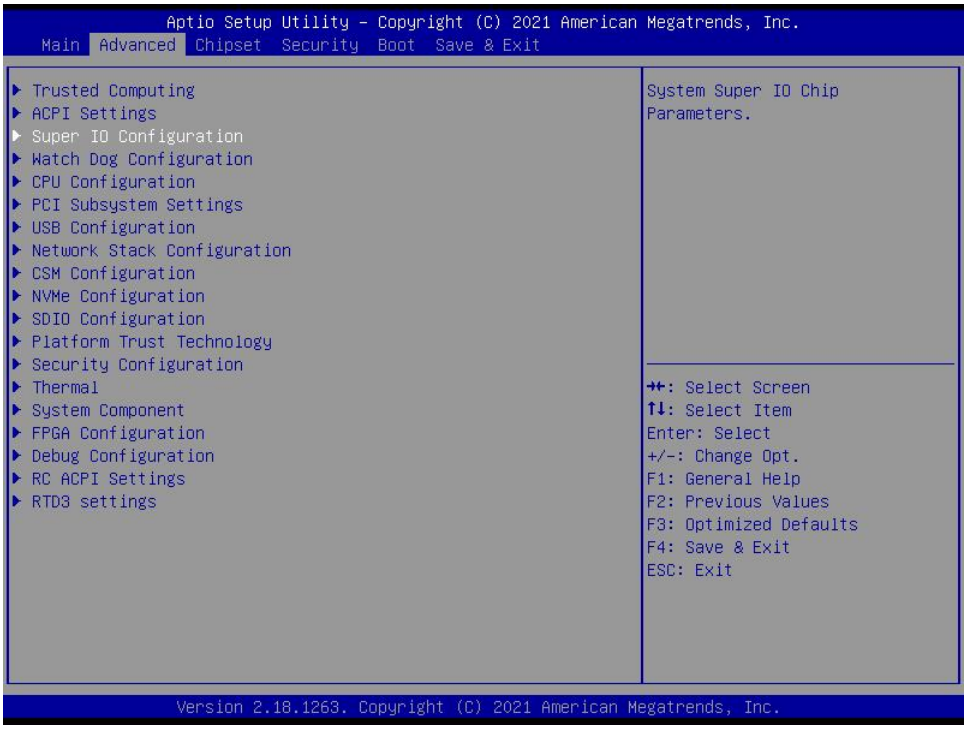
Save as User Defaults

Restore as User Defaults

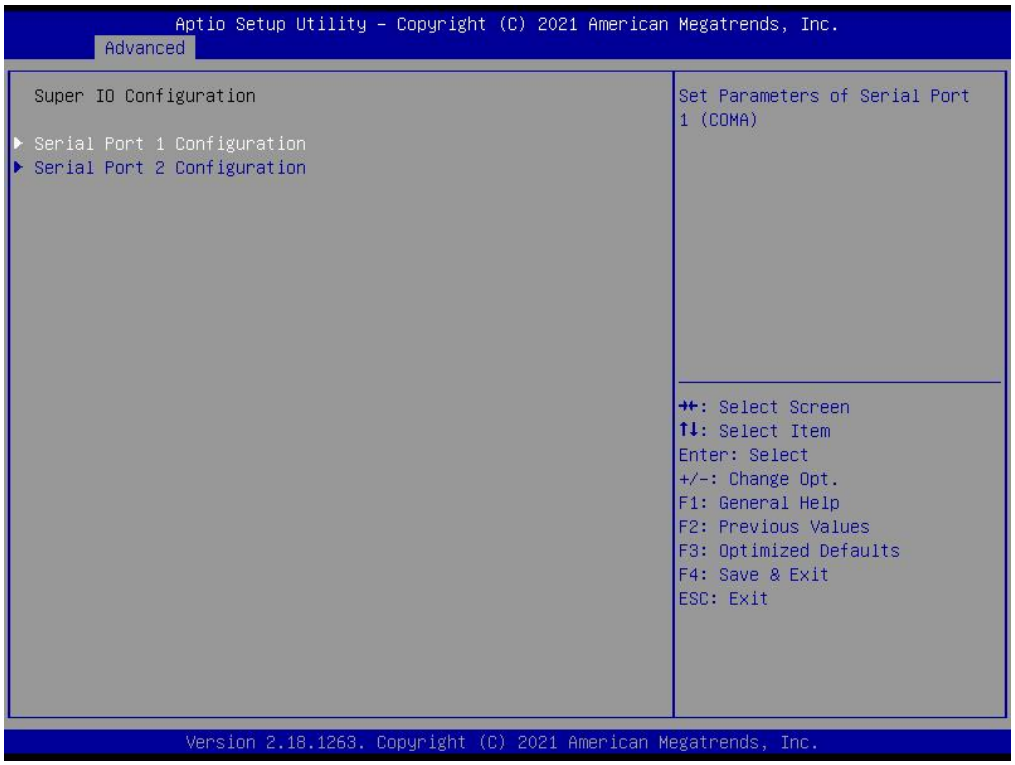
3)Boot Override

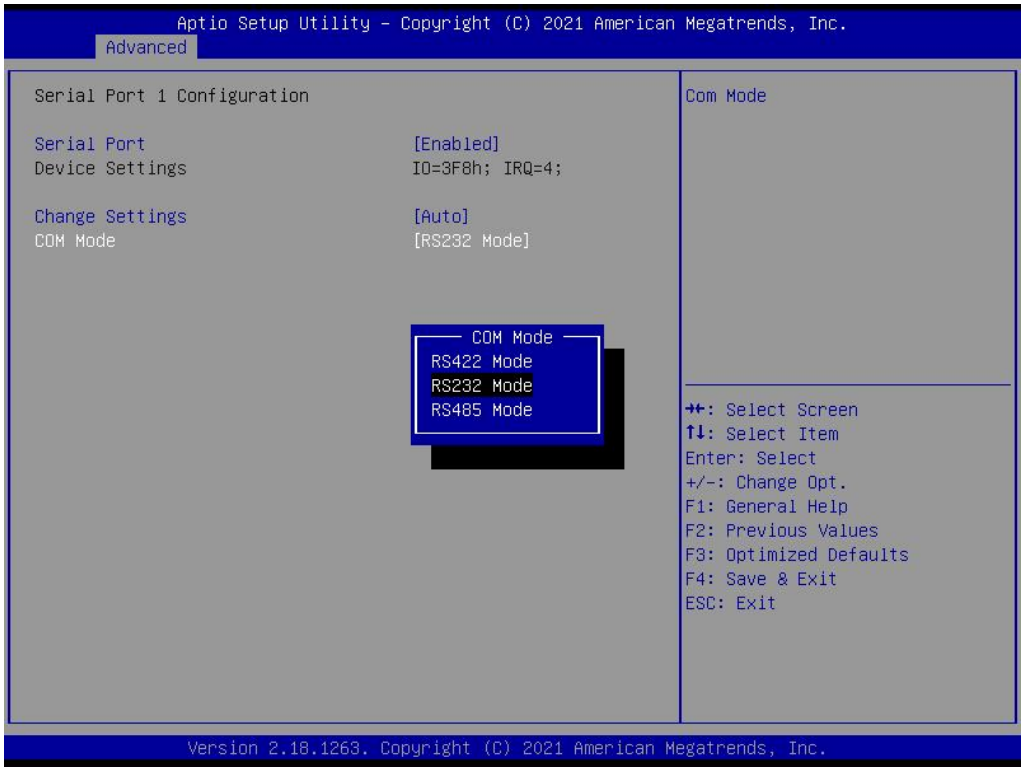
7-9. Set COM port mode

Select Advanced →Super IO configuration



Select the COM port, enter, there is COM mode options, please select RS232, RS485.




Aptio Setup Utility – Copyright (C) 2021 American Megatrends, Inc.
Advanced
Serial Port 1 Configuration
Serial Port [Enabled]
Device Settings IO=3F8h; IRQ=4;
Change Settings [Auto]
COM Mode [RS232 Mode]
COM Mode
RS422 Mode
RS232 Mode
RS485 Mode
Com Mode
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2021 American Megatrends, Inc.

8. Virtualization

8-1. XSA230-W

XSA230-W supports virtualization:

Ethernet0 port, 2 USB2.0 ports, and 1 USB3.0 port are allocated to the Windows system. Ethernet1 port, EtherCAT0 port, EtherCAT1 port, 1 USB3.0 port, IO terminal, RS232 serial port, RS485 serial port, etc., are assigned to the controller.

Windows operating system	Ethernet0 port, 2 USB2.0 ports, 1 USB3.0 port
controller end	Ethernet1 port, EtherCAT0 port, EtherCAT1 port, 1 USB 3.0 port, IO terminal, RS232 and RS485 serial ports

8-2. XSA620-W

XSA230-W supports virtualization:

Ethernet0 port, 2 USB2.0 ports, and 1 USB3.0 port are allocated to the Windows system. Ethernet1 port, EtherCAT0 port, EtherCAT1 port, 1 USB3.0 port, IO terminal, RS232 serial port, RS485 serial port, etc., are assigned to the controller.

Windows operating system	Ethernet0 port, 2 USB2.0 ports, 1 USB3.0 port
controller end	Ethernet1 port, EtherCAT0 port, EtherCAT1 port, 1 USB 3.0 port, IO terminal, RS232 and RS485 serial ports

9. Operation, commissioning and maintenance

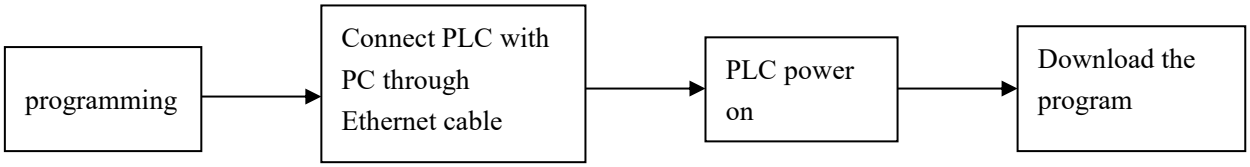
9-1. Operation and commissioning

(1) Product inspection

After receiving the product, please first check whether the input and output terminal blocks of the product are intact and whether there are missing parts. Generally speaking, the PLC at this time can be directly connected to the power cable for power on inspection, and the PWR and RUN indicators should be always on.

(2) Programming and downloading

After confirming that the product is in good condition, the PLC can be programmed. The programming is carried out in the personal computer. The completed program can be downloaded to PLC. The general operation steps are as follows:



(3) Debugging

Ideally, the PLC is in normal operation, but if the program in the PLC is found to be wrong and needs to be modified, it is necessary to rewrite the program to the running PLC.

- Use Ethernet cable to connect PLC and computer
- Upload the program in the PLC
- Modify the uploaded program, and save the modified program
- Pause the operation of PLC and download the modified program to PLC
- Monitor PLC through software debugging function
- If the requirements are still not met, continue to modify the program and download it to PLC until the requirements are met.

(4) PLC indicator light

- When the PLC is in normal operation, the indicator lights PWR and RUN should always be on.
- When the indicator ERR is always on, it indicates that there is a problem with the PLC operation. Please correct the program in time.
- If the indicator PWR is not on, there is a problem with the power supply. Check the power wiring.

9-2. Routine maintenance

(1) Regular inspection of products

Although the programmable controller has certain anti-interference and strong stability, it should also form the habit of regular inspection and maintenance of the controller. The inspection items include:

- Whether the input and output terminals and power supply terminals of PLC are loose
- Whether the communication port is intact
- Whether the power indicator and input / output indicator can be lit
- Remove the accumulated dust outside the PLC to avoid dust and conductive dust falling inside the PLC
- Try to make the PLC operation and storage environment conform to the standards described in section 2-1-1 of this manual.

(2) Discard

If you decide to discard this product, please treat it as industrial waste.

Appendix

Appendix 1. PLC function configuration list

This part is mainly for the convenience of users to check the function configuration of products of various series models. Through this table, it is easy to judge the selection of product models.
For detailed introduction of the following functions, please refer to XS series PLC user manual [motion control] and XS series PLC user manual [software].

○ user select × not support √ support

Series	Clock	USB	RS232	RS485	RJ45	CAN port	Communication		Expansion module	HSC channel		External interrupt
							Ethernet	EtherCAT		Incremental mode	AB phase	
XSDH-60A32-E	√	×	1	1	2	×	√	√	16	4	4	14
XS3-26T4	√	×	1	2	2	×	√	√	16	4	4	6
XSLH-24A8	√	×	1	1	2	×	√	√	16	4	4	10
XSLH-24A16	√	×	1	1	2	×	√	√	16	4	4	10
XSLH-30A32	√	×	1	1	2	1	√	√	16	4	4	10
XSA230	√	√	1	1	4	×	√	√	×	×	×	×
XSA330	√	√	2		4	×	√	√	×	4	4	16
XSA520	√	√	2		6	×	√	√	×	4	4	16
XSA530	√	√	2		6	×	√	√	×	4	4	16
XSA550	√	√	2		6	×	√	√	×	4	4	16
XSA620	√	√	2	2	4	×	√	√	×	×	×	×

- XSA 230、XSA330、XSA500series have two serial ports. XSA230 has one 232 and one 485. XSA330, XSA500 default to 232, which can be changed to RS485 when entering BIOS.
- XSA230, XSA330,XSA620 has 4 Ethernet ports including 2*Ethernet and 2*EtherCAT, while XSA500 series has 6 Ethernet ports including 4*Ethernet and 2*EtherCAT.

Appendix 2. Q&A

When running or debugging PLC, users may encounter some difficult problems due to lack of experience. This part mainly aims at the problems that users are most likely to encounter, and puts forward solutions for users' reference.

Q1: Why can't PLC communicate with peripheral devices?
A1: Communication failure is generally summarized as the following problems:
(1) Communication parameters: the communication parameter settings of PLC communication port and peripheral equipment may be inconsistent.
(2) Communication cable: the connection may be incorrect or the contact may be poor. The user can replace the

communication cable and try again.

(3) If the above are excluded, please contact our company.

Q2: How long can the battery power in the PLC be maintained?

A2: Generally, it can last for 2-3 years.

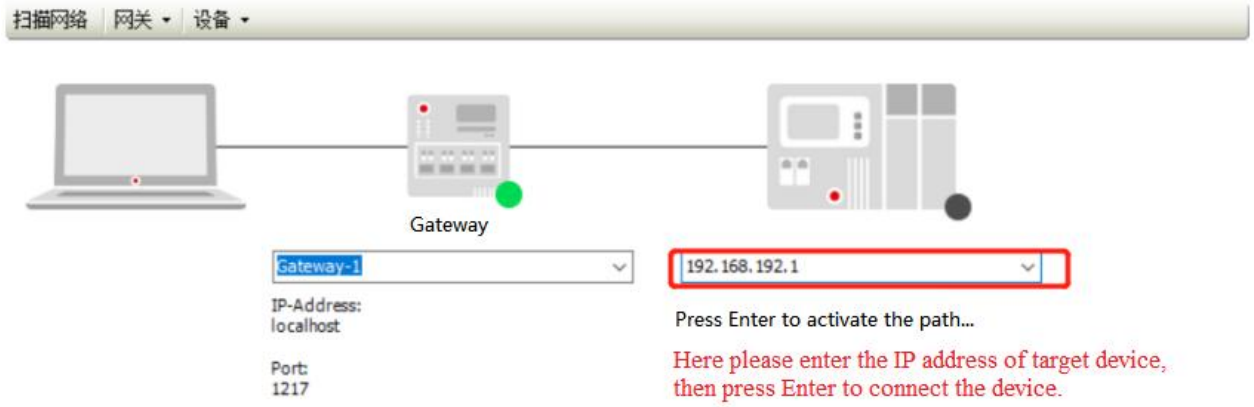
Q3: Why can't connect to the PLC device?

A3: Failure to connect PLC is generally summarized as follows:

1. Confirmed as XS series products (XD and XG series products have been regarded as XS series in many cases).

2. Confirm that the upper computer engineering equipment is consistent with the target equipment, otherwise the equipment will not be scanned.

3. Confirm whether the IP addresses of both parties are the same network segment and can be ping. If the IP address cannot be confirmed, try to set dial 1 to ON and restart the device (the initial IP address is 192.168.6.6 after power on), and then scan and connect again. If the network segment is the same but the subnet mask is different, the device cannot be scanned, but you can directly enter the IP address to connect the device.



4. If the IP is confirmed to be correct or the device cannot be connected, it may be that the PLC program crashes (there is an endless loop in the program or the load capacity of the PLC is exceeded). At this time, set dial 2 to ON (power on does not load the user program), and scan the connected device again. If the connection can be scanned, an empty program will be downloaded at this time. After the abnormal program is erased, the dialing status will be restored. At the same time, check the abnormal program (whether there is an excessively long cycle or the task cycle time is too small).

5. If the above steps still fail to connect the device, please contact us.

Q4: XSDH and XSLH BD and ED module usage conditions.

A4: The left ED expansion of XSDH and XSLH only supports the 485 function in XD-NES-ED, provided that the latest firmware is 3.5.15.40_ 1.0.0_ P2_ 20220530.

XSDH can extend one BD, but only supports XD-NE-BD, provided the latest firmware is 3.5.15.40_ 1.0.0_ P2_ 20220530.

Q5: What is the function of the DIP switch on the PLC?

A5: 1) The XSDH-60A32-E supports DIP switch functionality, with the following specific functions:

00: Normal startup, no special processing, loads the user program;

10: Initializes IP;

01: Powers on without loading the user program.

2) The XSLH series PLC supports DIP switch functionality, with the following specific functions:

00: Normal startup, no special processing, loads the user program;

10: Initializes IP;

01: Powers on without loading the user program.

3) For the XSF system,

setting the DIP switch to RUN switches the PLC to the running state;

setting it to STOP switches the PLC to the stopped state;

holding it at RESET for 11s – 20s immediately restores the default IP and releases the corresponding connections (ENET0: 192.168.6.6, ENET1: Automatically obtains an IP address)

Manual update log

The data number of this manual is recorded in the lower right corner of the cover of the manual. The information about the revision of the manual is summarized as follows:

number	Document ID	Update content
1	PS01 20211201 1.0	The first edition of the hardware manual for XSDH and XS3 series PLC user manuals has been released.The first edition of the hardware manual for XSDH and XS3 series PLC user manuals has been released.
2	PS01 20211214 1.0.1	1-3-1 Add the dial switch description.
3	PS01 20220824 1.0.2	Add model XSLH specifications and implement PNP wiring for the XSDH-60P32 model.
4	PS01 20230114 1.0.3	Add specifications for the XSA330-W model and rename the manual.
5	PS01 20230619 1.1	1. Added relevant explanations for XSLH-24A16; 2. Revised the content of chapters 1-2-6, 3-2-3, and 5-1-4.
6	PS01 20230829 1.2	Add specifications for the XSA500 series and XSLH-24A8.
7	PS01 20240129 1.3	Revise the content of chapters 1-1-4, 1-2-7, 1-3-4, 2-1-2, 2-2-4, 3-4-2, 4-1, 4-2, 5-1-4, and 5-2, as well as Appendix 1.
8	PS01 20240913 1.4	1. Add model description for XSA230; 2. Other error corrections.
9	PS01 20250828 1.5	1. Added model description for XSA620; 2. Other error corrections.

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