XINJE

XD series PLC

Users' manual［Hardware］(XD3/XD5/XDM)

WUXI XINJE ELECTRIC CO., LTD.

No.PC01 20160323 3.3

XINJE

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Users' manual［hardware］

(XD3/XD5/XDM)

General descriptions

- Thank you for purchasing Xinje XD series PLC.
- This manual mainly introduces XD series PLC hardware features etc.
- Please read this manual carefully before using and wire after understanding the content.
- About software and programming instructions, please refer to related manuals.
- Please hand this manual over to operation users.

Notices for users

- Only experienced operator can wire the plc. If any problem, please contact our technical department.
- The listed examples are used to help users to understand, so it may not act.
- Please conform that PLC specifications and principles are suitable when connect PLC to other products.
- Please conform safety of PLC and machines by yourself when use the PLC. Machines may be damaged by PLC errors.

Responsibility state

- The manual content has been checked carefully, however, mistakes may happen.
- We often check the manual and will correct the problems in subsequent version. Welcome to offer advices to us.
- Excuse us that we will not inform you if manual is changed.

Contact information

If you have any problem about products, please contact the agent or Xinje company.

- Tel: 0086 510-85134136 85123803
- Fax: 0086 510-85111290
- Address: Building 7 fourth floor, No.100, Dicui Rd, Wuxi, China.
- Code : 214072

Safety notes

Please read this part carefully before using and operate after understanding the usage, safety and notices. Pay attention to safety and wire correctly.

We have summarized possible problems that may happen and classify them by warning and caution. About other matters, please operate in basic working order.

 Caution	Incorrect use may lead to danger, such as moderate and slight injury, property loss.
 Warning	Critical miss may lead to serious danger, such as death or serious injury, serious loss of property.

- **Conform about products**

 Caution
Do not install the controller which is damaged, lack parts or type unfit. Otherwise, injury may occur.

- **Product design**

 Warning
Please make safety circuit outside controller to make sure the system can run in safety when controller errors. Otherwise, incorrect action or fault may occur.

 Caution
Do not put control wiring or power wiring together, separate them at least 10cm in principle. Otherwise, incorrect action or damage may occur.

- **Product installation**

 Warning
Cut off all external power before installing controller. Otherwise, an electric shock may occur.

Caution
1. Please install and use the PLC in the environment condition that specified in general specifications in this manual. Do not use in wet, high temperature, smog, conductive dust, corrosive gas, combustible gas, vibration, shock occasion. Otherwise, electric shock, fire disaster, incorrect action, damage etc. 2. Do not touch conductive parts of PLC. Otherwise, incorrect action or fault may occur. 3. Please install the product by DIN46277 or M3screw and install them on flat surface. Otherwise, incorrect action or damage may occur. 4. Avoid ablation powder or clastic wires into product shell when processing screw holes. Otherwise, incorrect action or fault may occur. 5. Make sure connection compact and good when using expansion cables to connect expansion modules. Otherwise, bad communication or incorrect action may occur. 6. Cut off power when connecting external devices, expansion devices and battery etc. Otherwise, incorrect action or default may occur.

- **Product wiring**

Warning
1. Cut off external power before wiring. Otherwise, an electric shock may occur. 2. Connect AC or DC power to special power terminal correctly. Otherwise, may burn the controller. 3. Close the panel cover plate before controller powering on and running. Otherwise, an electric shock may occur.

Caution
1. Do not connect external 24V power to controllers' or expansion modules' 24V and 0V terminals , products damage may occur. 2. Use $2mm^2$ cable to ground the ground terminals of expansion modules and controllers, never common ground to high voltage system. Otherwise, products fault or damage may occur. 3. Do not wiring between idle terminals. Otherwise, incorrect action or damage may occur. 4. Avoid ablation powder or clastic wires into product shell when processing screw holes. Otherwise, incorrect action or fault may occur.

5. Tighten up wiring terminals and separate conductive parts. Otherwise, incorrect action or product damage may occur.

- **Run and maintenance**

 Warning

1. Do not touch terminals after power on.
   Otherwise, an electric shock may occur.
2. Do not connect or move the wires when power on.
   Otherwise, an electric shock may occur.
3. Make sure to stop the PLC before changing the controller program.
   Otherwise, malfunction may occur.

 Caution

1. Do not disassemble and assemble product arbitrarily.
   Damage to product may occur.
2. Plug and connect cables on the condition of power off.
   Otherwise, cable damage or malfunction may occur.
3. Do not wire the idle terminals.
   Otherwise, malfunction or damage may occur.
4. Cut off the power when disassemble expansion modules, external devices and batteries.
   Otherwise, malfunction and fault may occur.
5. Dispose them as industrial waste when out of use.

Catalog

Preface

We will introduce constitution of content, application, convention, relevant manuals and how to get data in this part.

Content Components

This manual includes XD series PLC types and system constitutions. It mainly introduces XD series PLC basic units' specification, I/O wiring, run and maintenance, and XD series PLC expansion modules' parameters, appearance and features etc.
This manual has 9 chapters, an overview of each chapter are as follows:

1. Summary

This chapter mainly introduces XD series PLC specifications, types and descriptions.

2. Specifications

This chapter mainly introduces XD series PLC basic units' common specifications, performance specifications, terminal placement, product dimensions, interface descriptions etc.

3. System constitutions

This chapter mainly introduces XD series PLC system constitutions, peripheral devices, expansion devices, CPU and expansion devices connection principles, products installation, I/O point calculation, I/O address number distribution etc.

4. Power specifications and wiring

This chapter mainly introduces XD series PLC power specifications, wiring methods.

5. Input specifications and wiring

This chapter mainly introduces XD series PLC input specifications, input wiring, high speed counting etc.

6. Output specifications and wiring

This chapter mainly introduces XD series PLC output specifications, relay output and transistor output etc.

7. Run, debug, maintenance

This chapter mainly introduces XD series PLC run, debug steps, daily maintenance etc.

8. Expansion devices

This chapter mainly introduces I/O expansion modules, analog temperature modules' specifications, dimensions and terminal placements.

9. Switch between soft elements

This chapter mainly introduces XD series PLC special function that free switch between input and output points.

Appendix 1. Special soft elements schedule

This chapter mainly introduces XD series PLC special function soft elements, registers and expansion module address distribution etc.

Appendix 2. Instruction schedule

This chapter mainly introduces basic instructions, application instructions and special instructions that XD series PLC support.

Appendix 3. PLC function configuration schedule

This chapter mainly introduces XD series PLC main function of each type for lectotype.

Appendix 4. Common questions A&Q

This chapter mainly introduces XD series PLC problems and solutions that may occur when using.

Manual scope of application

This manual is hardware manual of XD3 series PLC, contents are as follows:

1. XD series PLC basic units

XD3-16T-E/C, XD3-16PT-E/C
XD3-24T-E/C, XD3-24PT-E/C
XD3-32T-E/C, XD3-32PT-E/C
XD3-48T-E/C, XD3-48PT-E/C
XD3-60T-E/C, XD3-60PT-E/C

XD5-24T-E/C, XD5-24PT-E/C
XD5-32T-E/C, XD5-32PT-E/C
XD5-48T-E/C, XD5-48PT-E/C
XD5-60T-E/C, XD5-60PT-E/C

XDM-24T4-E/C, XDM-24PT4-E/C
XDM-32T4-E/C, XDM-32PT4-E/C
XDM-60T4-E/C, XDM-60PT4-E/C
XDM-60T10-E/C, XDM-60PT10-E/C

2. XD series PLC modules

- I/O expansion

XD-E8X8YR, XD-E8PX8YR, XD-E8X8YT, XD-E8PX8YT, XD-E16X, XD-E16PX, XD-E16YR, XD-E16YT, XD-E16X16YR, XD-E16PX16YR, XD-E16X16YT, XD-E16PX16YT, XD-E32X, XD-E32PX, XD-E32YR, XD-E32YT

- Analog expansion modules

AD: XD-E4AD, XD-E8AD
DA: XD-E2DA, XD-E4DA
AD/DA: XD-E4AD2DA, XD-E4AD2DA-B

- Temperature measurement

XD-E6PT-P, XD-E6TC-P

- Pressure meansurement

XD-E1WT-A, XD-E2WT-A, XD-E4WT-A

3. XD series expansion board

- XD series expansion BD board

XD-NE-BD, XD-NO-BD, XD-NS-BD

- XD series left expansion ED board

XD-WBOX-ED, XD-S-BOX-T-ED

Manual conventions

We use some short names to replace the original names in the manual. The possible names have been listed in the table below to compare.

Short name	Explanation
XC series PLC	General name of XC series programmable logic controllers
XD series PLC	General name of XD series programmable logic controllers
Basic units or noumenon	Short name of XD series PLC basic units
Expansion devices or expansion units	General name of XD series PLC expansion modules and BD cards
Expansion modules	General name of XD series PLC all expansion modules.
Input and output expansion or I/O expansion	Short name of XD series PLC all input and output expansion modules
Analog expansions	Short name of XD series PLC all analog expansion modules
Peripheral units	General name of programming software, HMI and network modules
Programming software	General name of XD series PLC programming software XDPPro
HMI	General name of TG, TH, TP, OP, MP series products
TG series	General name of TG series touch screen
TH series	General name of TH series touch screen
TP series	General name of TP series touch screen
OP series	General name of OP series text panel
MP series	General name of MP series touch display

Relevant manual

This manual includes XD series PLC hardware, about more application such as programming and instructions, please refer to relevant manuals.

Manual name	Manual introduction	Notes
Installation manual		
XD series PLC installation manual	Descript XD series basic units' specification, dimensions, installation, wiring etc.	Paper version, Attached with devices
Programming software		
XD series PLC users' manual【software】	Introduce XD series PLC software XDPPro usage and skill etc.	Electronic version Need additional request
Instruction programming manual		
XD series PLC users' manual【instructions】	Introduce XD series PLC basic instructions, application instructions, communication, PID, C language, BLOCK etc.	Electronic version Need additional request
Expansion manual		
XD series analog temperature expansion manual	Introduce XD series analog, temperature expansion module feature, parameters, ID, dimension, terminals and wiring etc.	Paper version, Electronic version need additional request
X-NET manual		
X-NET fieldbus communication manual	Introduce X-NET fieldbus using method	Electronic version need additional request

Manual Acquisition

Users can get manual above in the following ways:

1. Paper manual
   Please ask product vendor, agent or agency to supply.

2. Electronic version
   Please ask product vendor, agent or agency to supply CD.

1 Summary of XD Series PLC

XD series PLC have diverse CPU units and expansions with powerful functions. In this chapter, we mainly introduce the XD series PLC performance, program summary and product different parts.

1-1. Product Specifications

1-1-1. CPU units

1 Diverse

XD series PLC CPU unit have rich product types.

- I/O Points 16, 24, 32, 48, 60 points
- Output Type transistor, relay, transistor and relay mixed.
- Input Type PNP, NPN
- Power Type AC220V, DC24V

Series	Description
XD3(standard)	Include 16, 24, 32, 48, 60 points. Rich function to meet users' demand
XD5(enhanced)	Include 16, 24, 32, 48, 60 points. With all the XD3 functions, the speed is 12 times of XC series, larger capacity.
XDM(motion control)	Include 24, 32, 60 points. With all the functions of XD3. Support 4~10 axes pulse output, two axes linkage motion, interpolation, rolling-cutting, following, can connect 16 expansion modules.

※1: About non-cpu function of products, please refer to appendix 3.

2 Powerful

XD series PLC have rich basic functions and many special functions. Different type is fit for different application.

Abundant basic function

- **High speed operation**
  Basic processing instruction: 0.02～0.05us. Scanning time: 10,000 per 1ms. Program capacity is up to 256KB.
- **Abundant expansions**

The CPU units support 10~16 different expansion modules and 1~2 expansion boards.

- **Multiple communication ports**
  CPU units have 1～4 communication ports, support RS232, RS485, and can work with many external devices, such as frequency inverters, instruments, printers.
- **Abundant software capacity**
  Up to 1024 processes S, 128 retention processes HS, 8000 intermediate relays M, 960 retention relays HM, 8383 input relays X, 8383 output relays Y, 276 retention timers HT, 576 counters C, 96 retention counters HC, 8000 data registers D, 1000 retention data registers HD, 6144 registers FD.
- **Two programming types**
  XD series PLC support two programming types, instruction list and ladder chart which can switch to each other.
- **Rich instructions**
  Include order control, data move and compare, arithmetic, data circulate and shift, pulse output, HSC, interruption, PID etc.
- **Real time clock**
  XD series PLC has built-in clock to control time.
- **Compact size, convenient to install**
  XD series PLC has DIN and screw two installation modes.

Enhanced special function

- **High-speed pulse counter, frequency up to 80KHz**
  XD series PLC CPU units have 2~10 channels two-phase high-speed counter and high-speed counting comparer, can realize single-phase and AB-phase counting, frequency up to 80 KHz.
- **High-speed pulse output, frequency up to 200 KHz.**
  XD series PLC※1 usually have 2~10 pulse output terminals, pulse frequency up to 200KHz.
- **Interruption function**
  XD series PLC interruption functions include external interruption, timing interruption and high-speed counting interruption to meet different interruption demands.
- **I/O points switch freely**
  XD series PLC unique function. Do not need to change program when terminals are damaged.
- **C language function block**
  C language block makes the program more secured. C language rich operation function can realize many functions, which saves internal space and improves programming efficiency.
- **PID function on CPU units**
  XD series PLC※1 CPU units have PID control function and auto-setting control function.

- **Sequence BLOCK**
  Sequence block makes instructions carry out in sequence, especially suitable for pulse output, motion control, module read and write etc, and largely simplifys the program writing.
- **24 segments high speed counting interruption**
  XD series PLC※1 high speed counter have 100 segments 32 bit prevalue. Each segment can generate interruption with good real time and can realize electronic CAM function.
- **PWM(pulse width modulation)**
  XD series PLC※1 PWM function can be used to control DC motor.
- **Frequency measure**
  XD series PLC※1 can measure frequency.
- **Precise time**
  XD series PLC※1can realize 1ms and 32bit precise timing.

※1：Here XD3 series PLC means the PLC that can realize the related function, not all XD3 series can realize the all above functions. Please refer to appendix 3 about PLC specific functions.

3	**Easy to program**

XD series also use XDPPro program software. Improved aspects:

- Ladder and instruction can be switched at any time.
- Add Software annotation, ladder annotation, instruction hints etc.
- Offer many editing panel of special instructions.
- Perfect monitor modes: ladder monitor, free monitor, data monitor.
- Mutely-windows display, convenient to manage.

※1: More about XDP-Pro application, please refer to XD series PLC users' manual (software).

1-1-2. Expansions

1 Expansion Modules

To meet control requirement better, XD series PLC can work with expansions, and XD3 can link 10 expansion modules, XD5 and XDM can connect 16 modules.

- Diverse types: I/O module, analog module.
- Compact size
- DC24V power

I/O module
Power : DC24V Input points: M Output points: N Output type: Transistor Relay

Analog module
Power: DC24V Type: DA, AD AD/DA DA channel No.: M AD channel No.: N

Temperature control
Power: DC24V Input: PT100 thermocouple Channel: 6 PID control: built-in

2 Expansion BD

XD series can connect expansion BD board, the type below 32 points can connect 1 BD, 48~60 points type can connect 2 BD boards.

- RS485 communication BD: X-NET interface, filedbus communication function, XD-NE-BD
- Optical fiber BD: X-NET optical fiber interface, filedbus communication function, XD-NO-BD
- RS232 communication BD: XD-NS-BD

3 Expansion ED

XD series left expansion ED board is for wireless communication. It can connect 1 ED board.

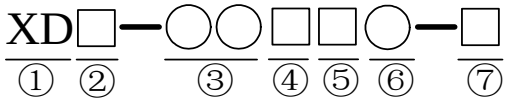
- Wireless communication ED: XD-WBOX-ED, support PLC program upload and download, remote monitoring
- Wireless transparent transmission ED: XD-S-BOX-T-ED, support communication between PLC, HMI, PC.

1-2. Type constitute and type table

1-2-1. CPU type name and type table

1 CPU type name

XD series PLC CPU type constitute:



1	Series name	XD
2	Series type	3: XD3 sereis standard type 5: XD5 series enhanced type M: XDM series motion control type C: XDC series motion X-NET control type
3	I/O points	16 points: 8 input/ 8 output 24: 14 input/ 10 output 32: 18 input/ 14 output 48: 28 input/ 20 output 60: 36 input/ 24 output
4	Input point type	Nothing: NPN type P: PNP type
5	Output point type	R: Relay output T: Transistor output RT: Relay/Transistor mixed
6	Pulse channels	Nothing: item 5 is T/RT means 2 pulse channels 4: 4 channels 10: 10 channels
7	Power supply	E： AC power supply (220V) C： DC power supply (24V)

2 CPU Type List

XD3 series List

Type							Input points（DC24V）	Output points（R, T）
	AC power			DC power				
	Relay output	Transistor output	Relay/transistor mixed	Relay output	Transistor output	Relay/transistor mixed		
NPN	XD3-16R-E	XD3-16T-E	XD3-16RT-E	XD3-16R-C	XD3-16T-C	XD3-16RT-C	8	8
	XD3-24R-E	XD3-24T-E	XD3-24RT-E	XD3-24R-C	XD3-24T-C	XD3-24RT-C	14	10
	XD3-32R-E	XD3-32T-E	XD3-32RT-E	XD3-32R-C	XD3-32T-C	XD3-32RT-C	18	14
	XD3-48R-E	XD3-48T-E	XD3-48RT-E	XD3-48R-C	XD3-48T-C	XD3-48RT-C	28	20
	XD3-60R-E	XD3-60T-E	XD3-60RT-E	XD3-60R-C	XD3-60T-C	XD3-60RT-C	36	24
PNP	-	XD3-16PT-E	-	-	XD3-16PT-C	-	8	8
	XD3-24PR-E	XD3-24PT-E	XD3-24PRT-E	XD3-24PR-C	XD3-24PT-C	XD3-24PRT-C	14	10
	XD3-32PR-E	XD3-32PT-E	XD3-32PRT-E	XD3-32PR-C	XD3-32PT-C	XD3-32PRT-C	18	14
	-	-	-	-	-	-		
	-	-	-	-	-	-		

XD5 series list

Type							Input points (DC24V)	Output points (R, T)
	AC power supply			DC power supply				
	Relay output	Transistor output	Relay/transistor mixed	Relay output	Transistor output	Relay/transistor mixed		
NPN	XD5-24R-E	XD5-24T-E	XD5-24RT-E	XD5-24R-C	XD5-24T-C	XD5-24RT-C	14	10
	XD5-32R-E	XD5-32T-E	XD5-32RT-E	XD5-32R-C	XD5-32T-C	XD5-32RT-C	18	14
	XD5-48R-E	XD5-48T-E	XD5-48RT-E	XD5-48R-C	XD5-48T-C	XD5-48RT-C	28	20
	-	XD5-48T6-E	-	-	XD5-48T6-C	-	28	20
	XD5-60R-E	XD5-60T-E	XD5-60RT-E	XD5-60R-C	XD5-60T-C	XD5-60RT-C	36	24
	-	XD5-60T6-E	-	-	XD5-60T6-C	-	36	24
PNP	XD5-24PR-E	XD5-24PT-E	XD5-24PRT-E	XD5-24PR-C	XD5-24PT-C	XD5-24PRT-C	14	10
	XD5-32PR-E	XD5-32PT-E	XD5-32PRT-E	XD5-32PR-C	XD5-32PT-C	XD5-32PRT-C	18	14
	XD5-48PR-E	XD5-48PT-E	XD5-48PRT-E	XD5-48PR-C	XD5-48PT-C	XD5-48PRT-C	28	20
	-	XD5-48PT6-E	-	-	XD5-48PT6-C	-	28	20
	XD5-60PR-E	XD5-60PT-E	XD5-60PRT-E	XD5-60PR-C	XD5-60PT-C	XD5-60PRT-C	36	24
	-	XD5-60PT6-E	-	-	XD5-60PT6-C	-	36	24

XDM series list

	Type						Input points (DC24V)	Output points (R, T)
	AC power supply			DC power supply				
	Relay output	Transistor output	Relay/transistor mixed	Relay output	Transistor output	Relay/transistor mixed		
NPN	-	XDM-24T4-E	-	-	XDM-24T4-C	-	14	10
	-	XDM-32T4-E	-	-	XDM-32T4-C	-	18	14
	-	XDM-60T4-E	-	-	XDM-60T4-C	-	36	24
	-	XDM-60T10-E	-	-	XDM-60T10-C	-	36	24

1-2-2. Expansion type name and type table

1 I/O expansion

I/O expansion modules name constitute:

XD－E ○ □ ○ □ －□

1 2 3 4 5 6 7

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

- I/O expansion module type schedule

Type				I/O total points	Input points（DC24V）	Output points（R, T）
	Input	Output				
		Relay output	Transistor output			
NPN		XD-E8X8YR	XD-E8X8YT	16	8	8
PNP	-	XD-E8PX8YR	XD-E8PX8YT	16	8	8

Model				I/O total points	Input points (DC24V)	Output points (R, T)
	Input	Output				
		Relay output	Transistor output			
NPN	-	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
PNP	-	XD-E8PX8YR	XD-E8PX8YT	16	8	8
	XD-E16PX	-	-	16	16	-
	-	XD-E16PX16YR-E	XD-E16PX16YT-E	32	16	16
	-	XD-E16PX16YR-C	XD-E16PX16YT-C	32	16	16
	XD-E32PX-E	-	-	32	32	-
	XD-E32PX-C	-	-	32	32	-

2 Analog temperature modules

Analog, temperature model constitute:

XD－E 4AD 2DA 6PT 6TC 1WT－P

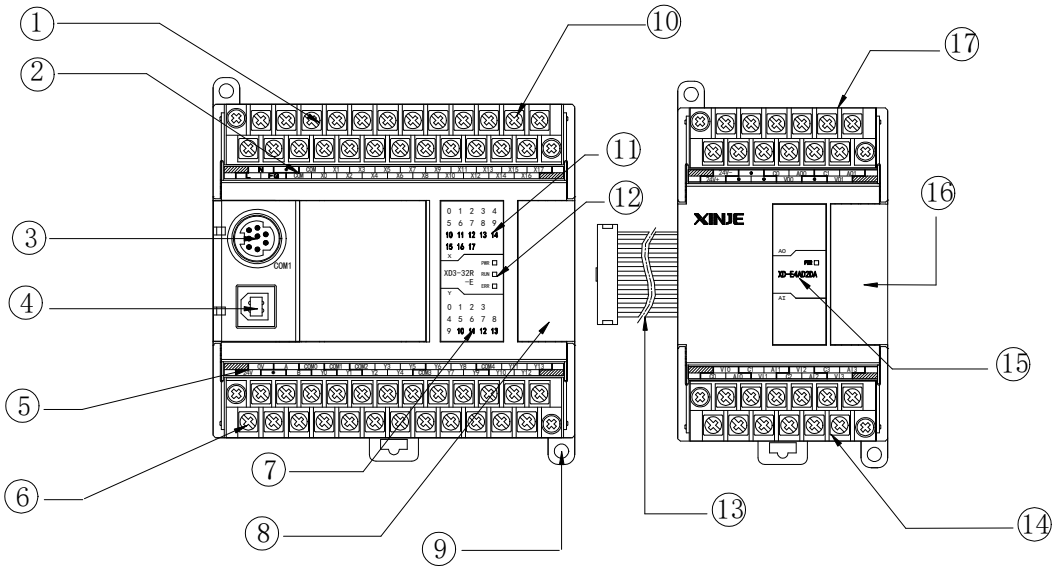
① ② ③ ④ ⑤ ⑥ ⑦

1	Expansion module	E
2	Analog input	4AD: 4 channels analog input 8AD: 8 channels analog input
3	Analog output	2DA: 2 channels analog output
4, 5	Temperature input	6PT: 6 channels PT100 sensor input 6TC: 6 channels thermocouple sensor input
6	Pressure measurement	1WT: 1 channel pressure measurement 2WT: 2 channels pressure measurement 4WT: 4 channels pressure measurement
7	Type	P: PID control A: hardware is new version B: analog voltage output -5~5V or -10~10V

Analog, temperature expansion module type schedule

Type		Function
Analog input	XD-E4AD	4 channels analog input
	XD-E8AD	8 channels analog input
	XD-E4AD2DA	4 channels analog input, 2 channels analog output
	XD-E4AD2DA-B	4 channels analog input, 2 channels analog output
Analog output	XD-E2DA	2 channels analog output
	XD-E4DA	4 channels analog output
Temperature measurement	XD-E6PT-P	6 channels PT100 temperature measurement, with PID control
	XD-E6TC-P	6 channels K-type thermocouple temperature measurement, with PID control
Pressure measurement	XD-E1WT-A	1 channel pressure measurement
	XD-E2WT-A	2 channels pressure measurement
	XD-E4WT-A	4 channels pressure measurement

1-3. Each Part's Description



CPU unit **Expansion**

Each part's name is listed below:

① :Input & power supply terminals
② :Input terminal label
③ :COM1
④ :COM2
⑤ :Output terminal label
⑥ :Output & 24V power terminals
⑦ :Output indicator
⑧ :Port to connect Expansion
⑨ :Installation holes (2)
⑩ :screws to install/remove terminals

⑪: Input indicators
⑫: Action indicators
PWR: LED is on when power on
RUN: run
ERR: error
⑬ : Expansion cable
⑭ : Output terminals
⑮ : Action indicators
PWR: power
⑯: Port to connect Expansion
⑰: Input & power supply terminals

Note: for the PLC hardware version below 3.2, position 4 is RS232 port.

2 Specifications and parameters of CPU

This chapter mainly introduces CPU's general specifications, performance, dimensions, terminals arrangement and communication interfaces.
The Expansions' description, please refer to XD series expansion module manual.

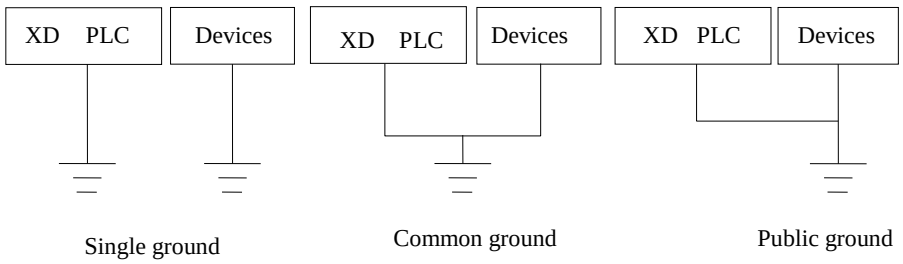
2-1. Specifications and Parameters

2-1-1. General Specifications

Items	Specifications
Isolation voltage	Above DC 500V 2MΩ
Anti-noise	Noise voltage 1000Vp-p 1us pulse per 1minute
Atmosphere	No corrosive, flammable gas
Ambient temperature	0℃~60℃
Ambient humidity	5%~95% (NO condensation)
COM1※1	RS-232, to connect upper computer, HMI for program or debug.
COM2※2	RS-485, to connect intelligent instruments or inverters.
Installation	Use M3screws or DIN to fix※1
Grounding	The third type grounding (do not grounding with strong power system)※2

※1: The DIN type should be DIN46277, with width 35 mm.

※2: The grounding should use type1 and 2, not 3.



2-1-2. Performance and Specifications

Items		Specifications				
Program execution mode		Loop scan mode				
Program mode		Instructions and ladder				
Processing speed		0.05us				
Power off retentive		FlashROM and Li-battery				
Users' program capacity※1		XD3: 256KB, XD5/XDM/XDC: 384KB				
I/O	Total I/O	16	24	32	48	60

points ※2	Input	8	14	18	28	36
	Output	8	10	14	20	24
Internal Coils(X)※3		1280 points: X0~X77, X10000~X11777, X20000~X20277				
Internal Coils(Y)※4		1280 points: Y0~Y77, Y10000~Y11777, Y20000~Y20277				
Internal Coils(M, HM)		11008/92000	XD3: M0~M7999【HM0~HM959】※5 XD5/XDM/XDC: M0~M74999【HM0~HM11999】			
			For Special Use※6 XD3: SM0~SM2047 XD5/XDM/XDC: SM0~SM4999			
Procedure(S)		1152/9000	XD3: S0~S1023【HS0~HS127】 XD5/XDM/XDC: S0~S7999【HS0~HS999】			
Timer(T)	points	672/7000	XD3: T0~T575 【HT0~HT95】 XD5/XDM/XDC: T0~T4999 【HT0~HT1999】			
	Spec.	100mS timer: set time 0.1~3276.7sec. 10mS timer: set time 0.01~327.67sec. 1mS timer: set time 0.001~32.767sec.				
Counter(C)	points	672/7000	XD3: C0~C575【HC0~HC95】 XD5/XDM/XDC: C0~C4999【HC0~HC1999】			
	Spec.	16 bits counter: set value K0~32,767 32 bits counter: set value -2147483648~＋2147483647				
Data Register(D)		11048words/100000 words	XD5/XDM/XDC: D0~D69999【HD0~HD24999】 XD3: D0~D7999【HD0~HD999】※5			
			For Special Use※6 XD3: SD0~SD2047 XD5/XDM/XDC: SD0~SD4999			
FlashROM Register (FD)		8144 words/14192words	XD3: FD0~FD6143 XD5/XDM/XDC: FD0~FD8191			
			For Special Use※6 XD3: SFD0~SFD1999 XD5/XDM/XDC: SFD0~SFD5999			
High Speed Dispose Ability		High speed counter, pulse output, external interruption				
Password Protection		6 bits ASCII				
Self-diagnose Function		Power on self-check, monitor timer, grammar check				

note:

※1: The users' program capacity means the maximum program capacity when download in secret.

※2: I/O points mean terminal number that users can connect from outside.

※3: X stands for the internal input relays and can be used as middle relay when input points are exceeded.

※4: Y stands for the internal output relays and can be used as middle relay when output points are exceeded.

※5:【】marks the default power off retentive area, this area can't be changed.

※6: For special use means special usage registers that are occupied by system, can't be applied for other usage. For details, please refer to Appendix 1.

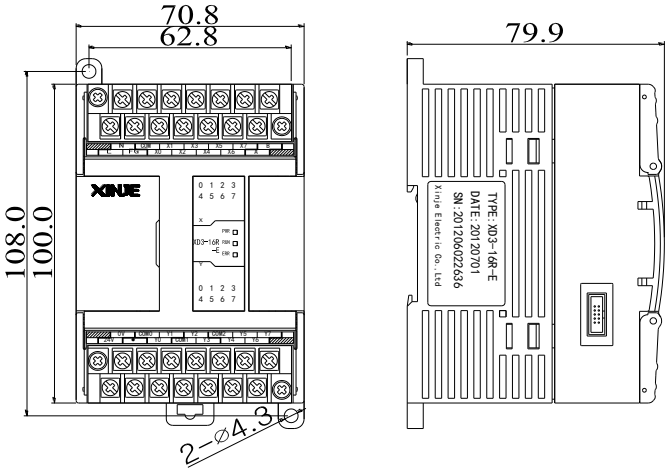
※7: Input and output coils no. is octal, other coils and registers are decimal.

※8: The I/O which is not connected to other device can be used to internal coil.

2-2. Shape Dimensions

1 Picture 1

(Unit: mm)

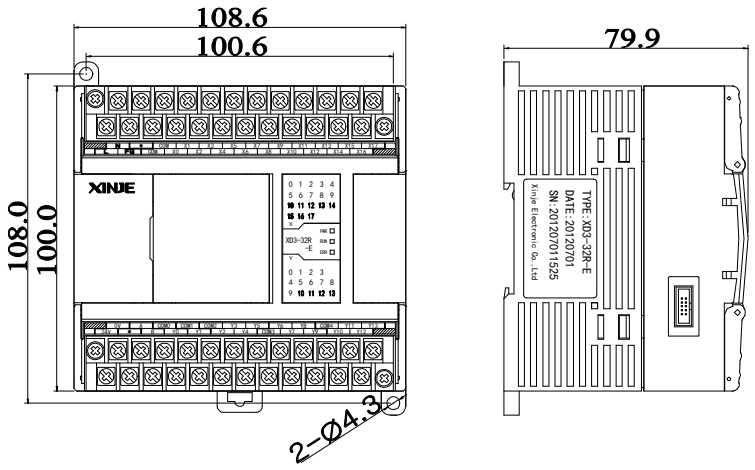


Suitable Model:

Series	Points
XD3	16

2 Picture 2

(Unit: mm)

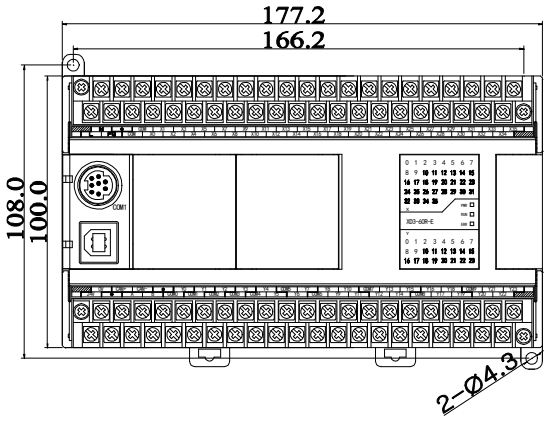


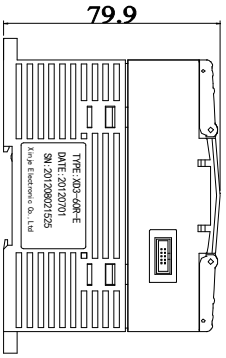
Suitable Model:

Series	Points
XD3	24/32
XD5	
XDM	
XDC	

3	**Picture 3**

(Unit: mm)



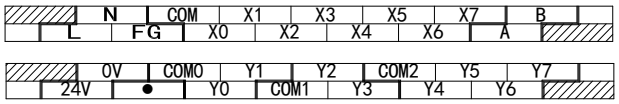


Suitable Model:

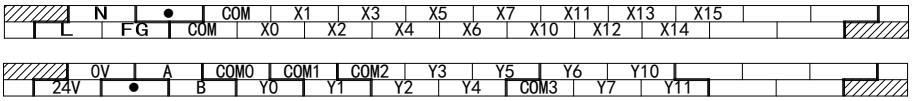
Series	Points
XD3	48/60
XD5	
XDM	
XDC	

2-3. Terminal arrangement

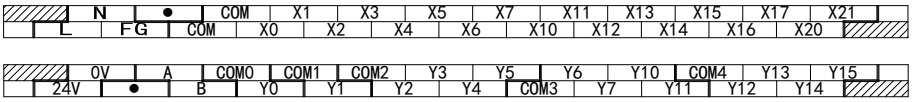
- Graph A



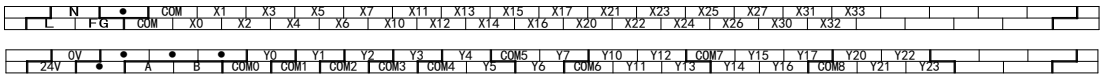
- Graph B



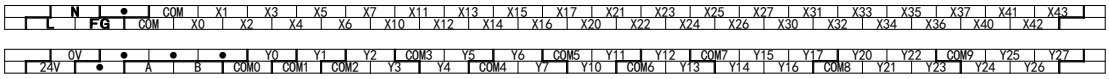
- Graph C



- Graph D



- Graph E



The graph to the model:

Graph	Model	Note
A	XD3-16	8/8
B	XD3-24, XD5-24, XDM-24	14/10
C	XD3-32, XD5-32, XDM-32	18/14
D	XD3-48, XD5-48, XDM-48	28/20
E	XD3-60, XD5-60, XDM-60	36/24

Note:

1. Transistor and relay mixed type, only the first two channels are transistor output, others are relay output.
2. E type PLC power supply terminal is L, N; C type PLC power supply terminal is 24V+, 24V-.
3. The 24V, 0V terminal is external output terminal, it can supply power for module and sensor. Do not over the max output current when using, please refer to chapter 4-1.

4. FG ground terminal can shield the interference, it can single connect to the ground.
5. The com terminal of input corresponding to all the input points; the com terminal of output corresponding to different output points. Please connect the wire as the division on the terminal label.

2-4. Communication Ports

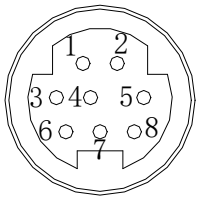
XD series PLC have USB port, port1 (RS232), port2 (RS485), USB port can high-speed download program, port1 and port2 can communicate and download program.

1	USB port

USB port only can download program but cannot communicate.
Please use printer USB cable or XINJE USB cable to download.

2	COM1

Pins of COM1:



Mini Din 8-core plug-in（holes

4: RxD
5: TxD
8: GND

3	COM2

Port2 is terminal A and B. A is RS485+, B is RS485-.

4 Program Cable

download program via port1 must use XINJE XVP cable.

Program cables are as below:

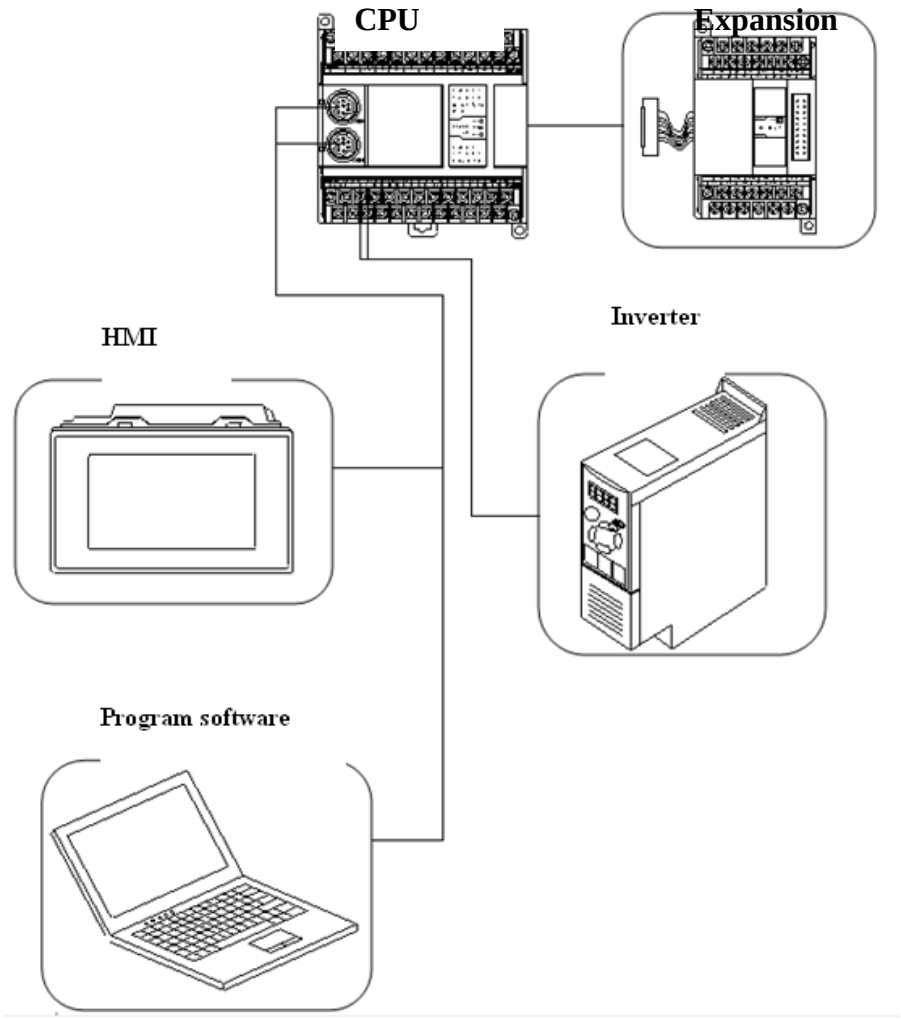
Mini Din 8-pin (needles) DB9-pin (holes)

3 System Structure

As the controllers, XD series PLC can connect with many kinds of peripheral devices, expansion devices. In this chapter, we mainly introduce PLC basic units, peripheral devices and expansion devices connection. And also introduce the connection principle of PLC with expansions, products installation, points calculation, address number distribution etc.
For the introduction of expansions, please refer to chapter 8.

3-1. System Structure

According to XD series PLC basic configuration, we build the system structure chart as below. We can know the general connection among PLC, peripheral equipments and expansions from the chart; also classic applications of PLC's each COM port, connection and expansions etc.



※1: In the above chart, the communication devices connected to the COM port are only samples for your reference. Each COM port can connect with many devices in real applications.

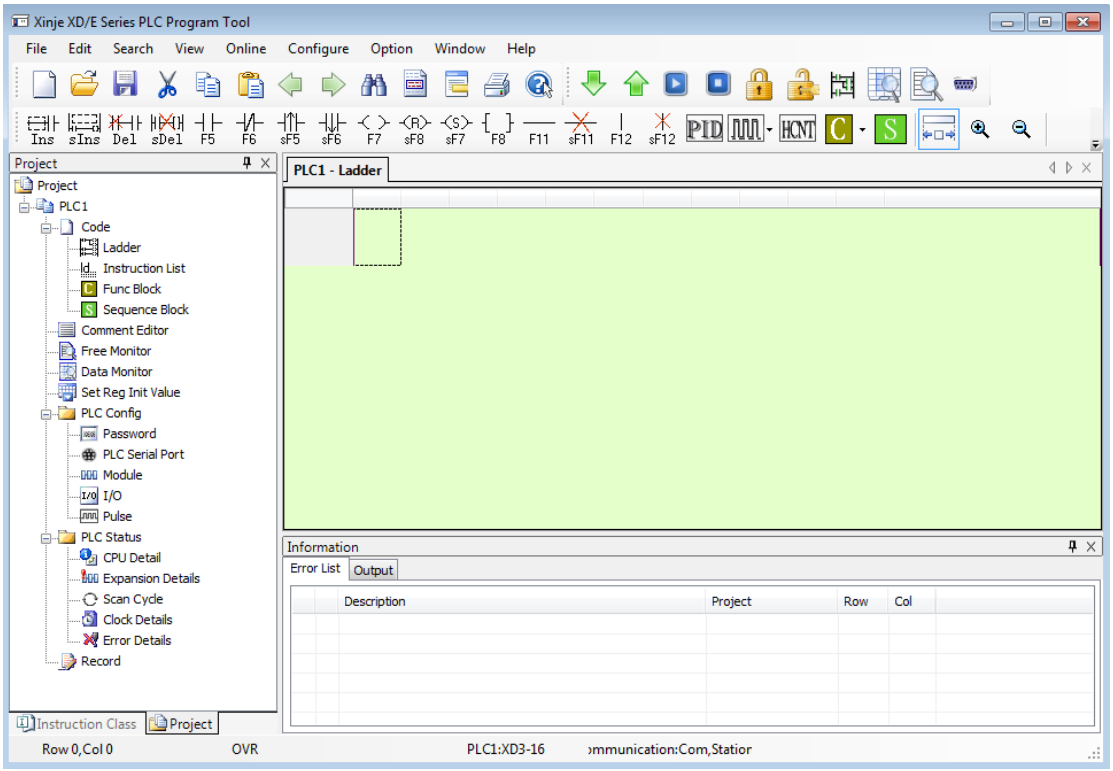
3-2. Peripheral Devices

XD series PLC basic units can work with many kinds of peripheral devices.

3-2-1. Program Software

Users can write to or upload program from PLC, real time monitor PLC, configure PLC etc; After installing XDPPro on your PC, use the program cable, via COM1 or COM2 on PLC(CPU Units), to link PLC with XDPPro.

- Program Interface



※1: Please use the download cable offered by XINJE Company or make the cable by yourself. Connecting method, please refer to chapter 2-4.

3-2-2 Human Machine Interface (HMI)

The HMI link PLC to the operators. The HMI can send the commands from operators to PLC, and then PLC executes the commands.

XD series PLC support diverse brands of HMI; the connection is based on the communication protocol. Generally communicate via Modbus protocol, the detailed parameters setting depends on the HMI.
The Xinje HMI can work with PLC directly (the communication parameters are set in accordance already). Presently Xinje HMI has TG, TH, TP, OP, MP series.

1	**TG,TH, TP**

- Size 4.3”, 4.7”, 5.7”, 7”, 8”, 10.1”, 10.4”
- Display 16 million color,65536 color, 256 true color, blue LCD
- Operation touch screen
- Interface RS232, RS422, RS485, USB, Internet
- Communication Work with many PLC brands, inverters, instruments etc.
  Drive panel printer directly, support multiple printer.
  Dual COM ports make it possible that work with 2 different devices at the same time.
  Support free format protocol, users can write the driver program freely
- Recipe
- Picture Rich stereoscopic 3D gallery, font effects, data collect, data backup etc.
- Password nine-level setting
- Advanced function

2	**OP Series**

- Size 3.7’’, 5.7”
- Display Blue LCD, 256 true color
- Buttons Nr. 7, 20, 42, not touch screen
- Interface RS232、RS485
- Communication work with many PLC brands.
  Communicate with Xinje Inverters
- RTC Built-in

3	**MP Series**

- Size 3.7”、7”
- Display 256 true color、blue LCD
- Buttons Nr.: 26, 42, the LCD is touch screen
- Interface RS232、RS485
- Communication work with many PLC brands.
  Communicate with Xinje Inverters
- RTC: Built-in

3-3. Configuration Principle

COM port

- XD series PLC (CPU units) are usually equipped with port1 and port2.
- In principle, both ports can be used to program, download, communication; but please make sure not change the parameters of two ports at one time, otherwise the ports can't be used to program and download any more.
- Port1 is equipped with RS232. Port2 is RS485. The two ports are independent.

About Expansion Devices

- Generally, one CPU unit can work with different types of expansions, can expand digital I/O, analog I/O, temperature control etc.
- XD3 can work with 10 expansions and XD5/XDM can connect 16 modules.
- After connecting the CPU unit with the expansion, if the "PWR" LED of expansion ON, then the expansion can work properly; after installing the BD card to CPU unit, users need to configure it before using;

How to calculate the I/O

- I/O points include actual input and output points.
- After connect with the expansions, the total I/O points=I/O on basic unit + I/O on expansions.
- Digital I/O is octal.
- Analog I/O is decimal.
- After expansion, the total I/O can up to 572 points.

How to calculate the I/O

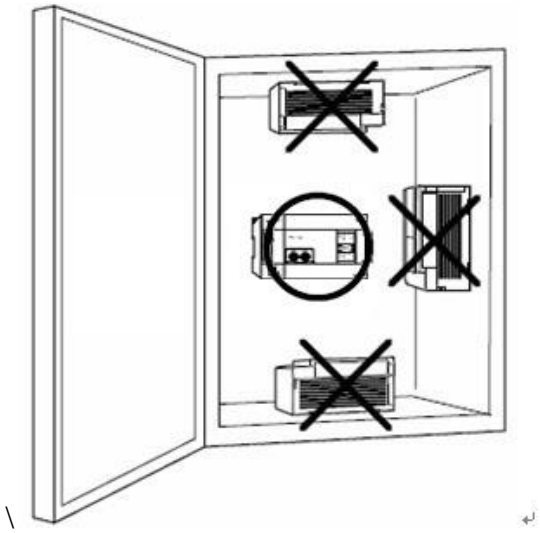
Basic Unit XD3-32R-E (18I/14O) connect with 5 XD-E8X8Y expansions, then the total I/O points should be:
Input Points: 18 + 8 *5 = 58
Output points: 14 + 8 *5= 54
Total points: Input+ Output = 58+54=112

3-4. ID Assignment of Expansions

	Name	Range	Points
X	Input	X10000～X10077(#1 expansion module) …… X11700～X11777(#16 expansion module)	1024
		X20000～X20077(#1 expansion BD) …… X20200～X20277(#3 expansion BD)	192
Y	Output	Y10000～Y10077(#1 expansion module) …… Y11700～Y11777(#16 expansion module)	1024
		Y20000～Y20077(#1 expansion BD) …… Y20200～Y20277(#3 expansion BD)	192
ID	Expansion module	ID10000～10099(#1 expansion module) …… ID11500～11599(#16 expansion module)	1600
	Expansion BD	ID20000～20099(#1 expansion BD)	100
QD	Expansion module	QD10000～10099(#1 expansion module) …… QD11500～11599(#16 expansion module)	1600
	Expansion BD	QD20000～20099(#1 expansion BD)	100

3-5. Install The Products

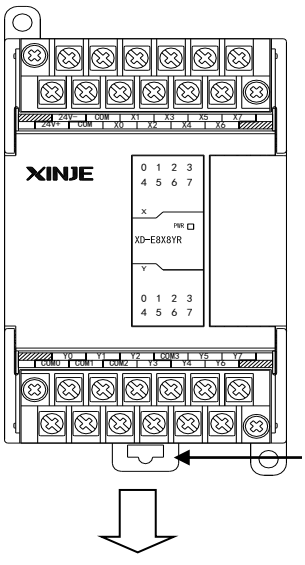
1 Installation Position



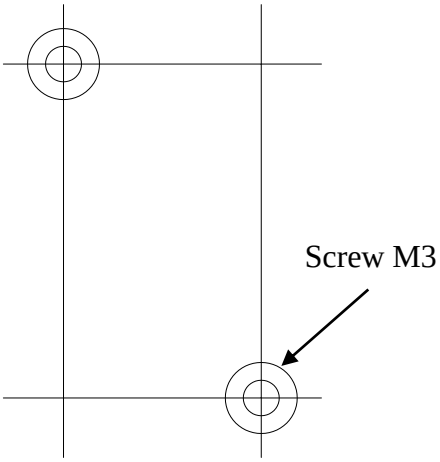
2 Installation

Use DIN or screws to install the CPU units and expansions.

- DIN46277



- Directly install by screws



Basic units or expansion modules install on DIN46277 rail (width 35mm). Pull down the hook on DIN rail and take down the product.

3 Installation

Please install the products according to chapter 2-1-1.

4 Power Supply Specification and Wiring Method

In this chapter, we tell the structure, specification and external wiring of XD series PLC. The wiring method differs due to different models, and the main difference is the terminals' position. About terminals arrangement, please refer to chapter 2-3.

4-1. Power Supply Specifications

The power supply specifications of XD series PLC (Type with '-E' is AC power, type with '-C' is DC power) are as below:

1 AC power

Items	Content
Rated Voltage	AC100V~240V
Allowed Voltage Range	AC100V~240V
Rated Frequency	50/60Hz
Allow momentary power off time	Interruption Time≤0.5 AC cycle, interval≥ 1sec
Impulse Current	Max 40A below 5mS/AC100V max 60A below 5mS/AC200V
Maximum Power Consumption	12W
Power Supply for Sensor	24VDC±10% 16 points max is 200mA ,32 points max is 400mA

※1: Please use the wire cable more than $2mm^2$ to avoid the decrease of voltage.

※2: Even power off in 10ms, the PLC can still keep working. But when power is off for long time or voltage abnormally decrease, the PLC will stop working, output will be OFF. When power is on again, the PLC will run automatically.

※3: The grounding terminals on basic units and expansions connect together, and use the third type grounding.

2 DC Power

Items	Content
Rated Voltage	DC24V
Allowed Voltage Range	DC21.6V~26.4V
Input Current (Only for basic unit)	120mA DC24V
Allow momentary power off time	10ms DC24V
Impulse Current	10A DC26.4V
Maximum Power Consumption	12W
Power Supply for Sensor	24VDC±10% 16 points max is 200 mA, 32 points max is 400mA

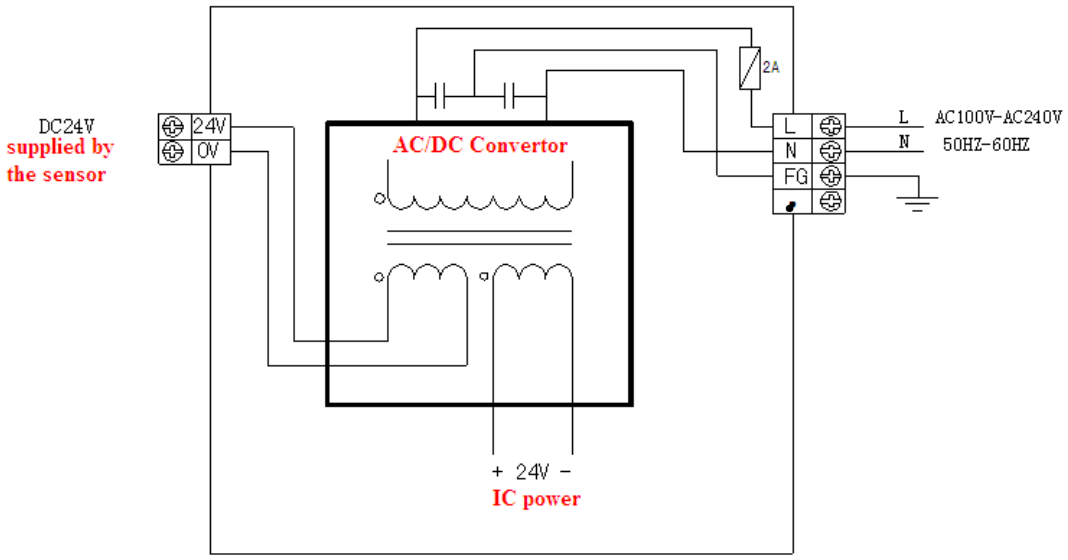
※1: PLC provide DC24V power supply (terminal 24V, 0V), it can be power supply for sensor, 16 points PLC DC24V is 200mA, 24/32/48/60 points PLC DC24V is 400mA. This terminal cannot connect to external power supply.

※2: ● is empty terminal, do not use it.

※3: Please connect the com terminal for basic unit and expansion module.

4-2. AC Power Supply and DC Input

1 Connection



※1: Connect the power supply to L, N terminals.

※2: 24V、0V terminals can supply power 200mA/DC24V for 16 points, and power 400 mA /DC24V for 32 points by sensor. Besides, the terminals power can not be supplied by outside power.

※3: ● terminal is idle, do not wire outside or work as middle relay terminals.

※4: Please connect the COM terminals on basic units and expansions together.

5 Input Specifications and Wiring Methods

In this chapter we will introduce the input specification and external wiring methods of XD series PLC. The connection methods differ due to different models and the main difference is the terminals' arrangement. Each model's terminal arrangement, please refer to chapter 2-3.

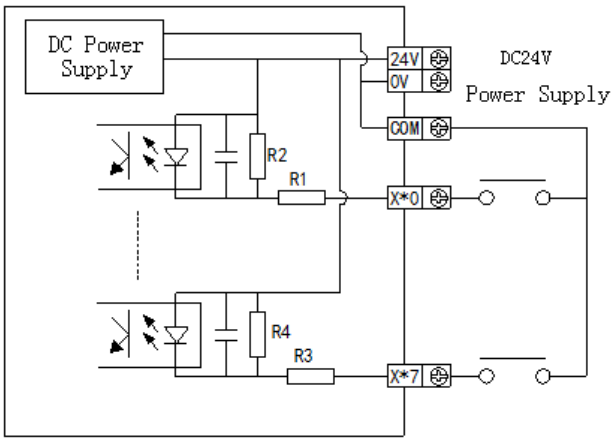
5-1. Input Specification

Input specification has NPN and PNP two modes, we will introduce the internal structure and wiring methods of the two modes as below:

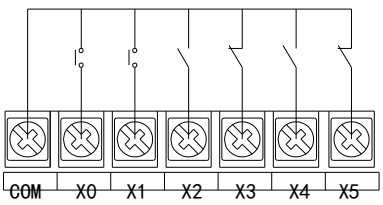
1	Basic Units

- NPN mode

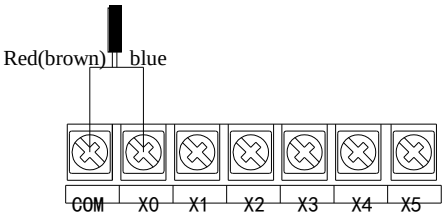
Input signal's voltage	DC24V ±10%
Input signal's current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Under 1.5mA
Input response time	About 10ms
Input signal's form	Contact input or NPN open collector transistor
Circuit insulation	Photo-electricity coupling insulation
Input action's display	LED light when input ON



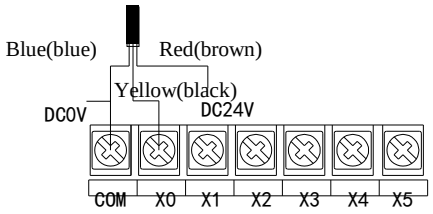
NPN wiring example



Switch



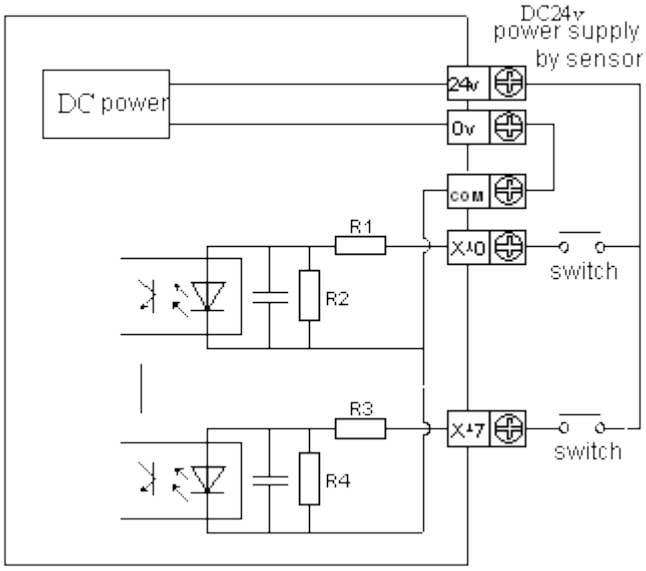
two-wire (NO, NC) proximity switch



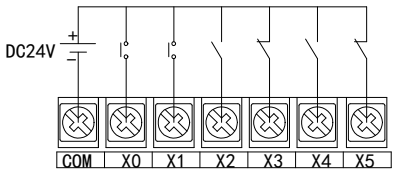
Three-wire(NPN) proximity switch

- PNP mode

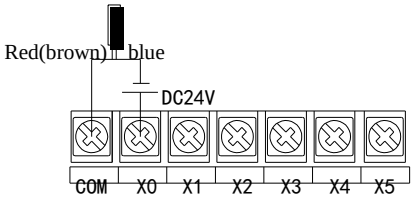
Input signal's voltage	DC24V ±10%
Input signal's current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Under 1.5mA
Input response time	About 10ms
Input signal's form	Contact input or PNP open collector transistor
Circuit insulation	Photo-electricity coupling insulation
Input action's display	LED light when input ON



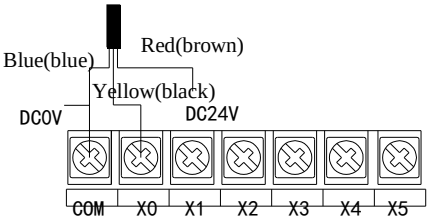
PNP wiring example:



Switch



two-wire (NO, NC) proximity switch



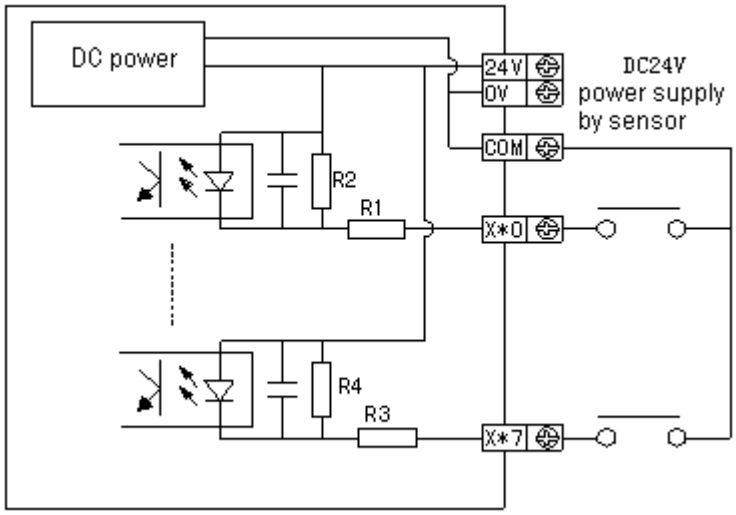
three-wire (PNP) proximity switch

note: the DC24V is provided by the PLC, no need to cnonect DC0V to com of input terminal. If using external power supply, it needs to connect it.

2 Expansion modules

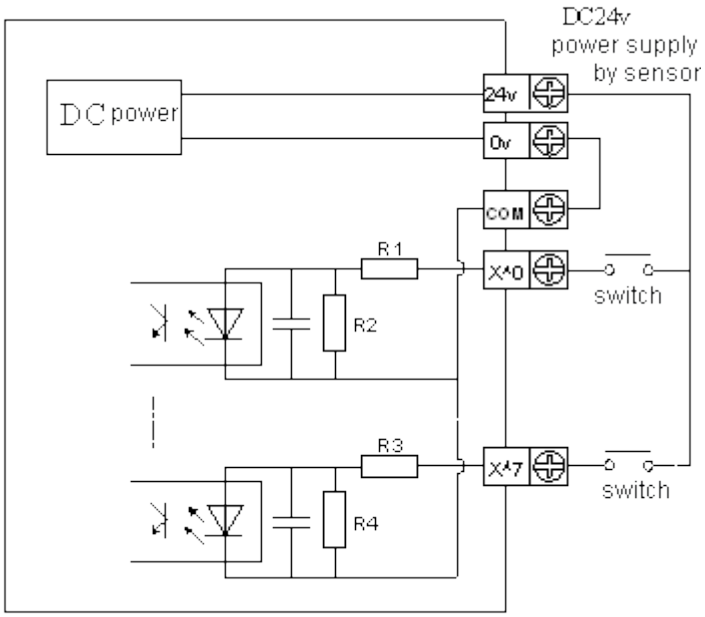
- NPN mode

Input signal's voltage	DC24V ±10%
Input signal's current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Under 1.5mA
Input response time	About 10ms
Input signal's form	Contact input or NPN open collector transistor
Circuit insulation	Photo-electricity coupling insulation
Input action's display	LED light when input ON



- PNP mode

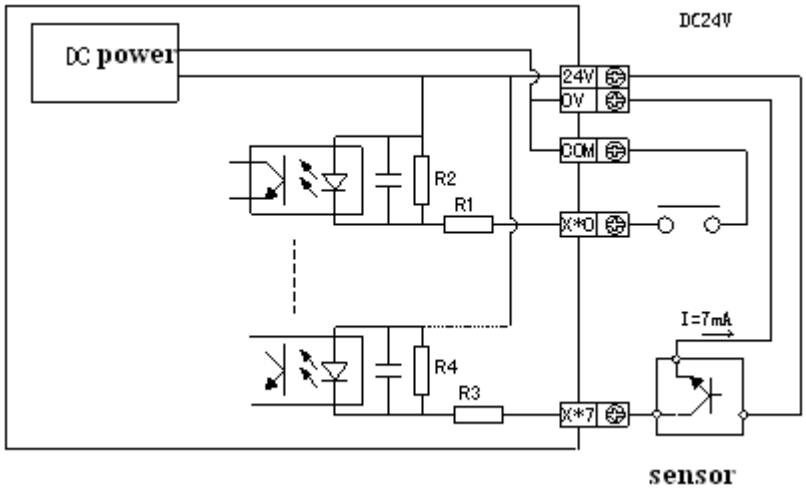
Input signal's voltage	DC24V ±10%
Input signal's current	7mA/DC24V
Input ON current	Above 4.5mA
Input OFF current	Under 1.5mA
Input response time	About 10ms
Input signal's form	Contact input or PNP open collector transistor
Circuit insulation	Photo-electricity coupling insulation
Input action's display	LED light when input ON


DC24v
power supply
by sensor
DC power
24v
0v
COM
R1
X*0
switch
R2
R3
X*7
switch
R4

5-2. DC Input Signal (AC power supply)

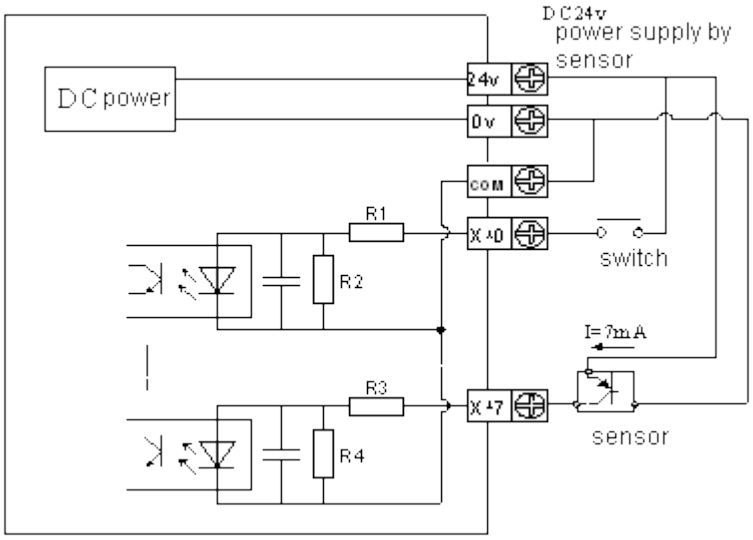
1 DC Input Signal

- NPN mode



- Input terminals
  When connect input terminals and terminal COM with contact without voltage or NPN open collector transistor, if input is ON, LED lamp will light which indicates input is ON. There are many input terminals COM to connect in PLC.
- Input circuits
  Photo-electricity coupling is used to insulate between primary load circuit and secondary circuit. The secondary circuit with C-R filter is to avoid wrong operation caused by vibration of input contacts or noise along with input signal. For above-mentioned reasons, if input ON→OFF， OFF→ON, the response time delays about 6ms in PLC. There is a digital filter inside the input terminal.
- Input sensitivity
  The PLC input current is DC24V 7mA, but to act correctly, the current should be above 4.5mA when input is ON and under 1.5mA when input is OFF.

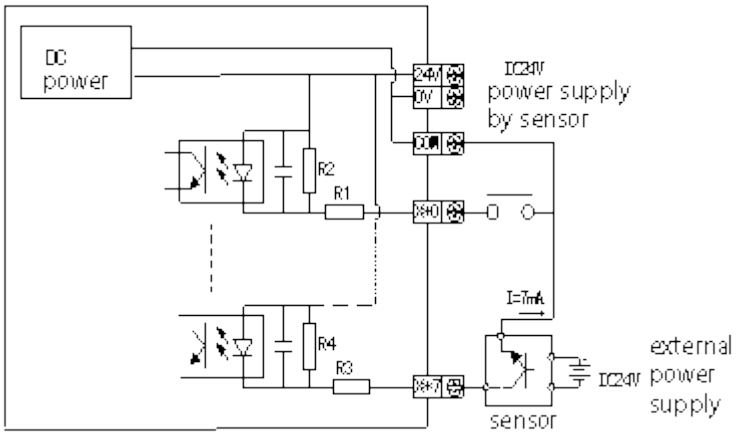
- PNP mode



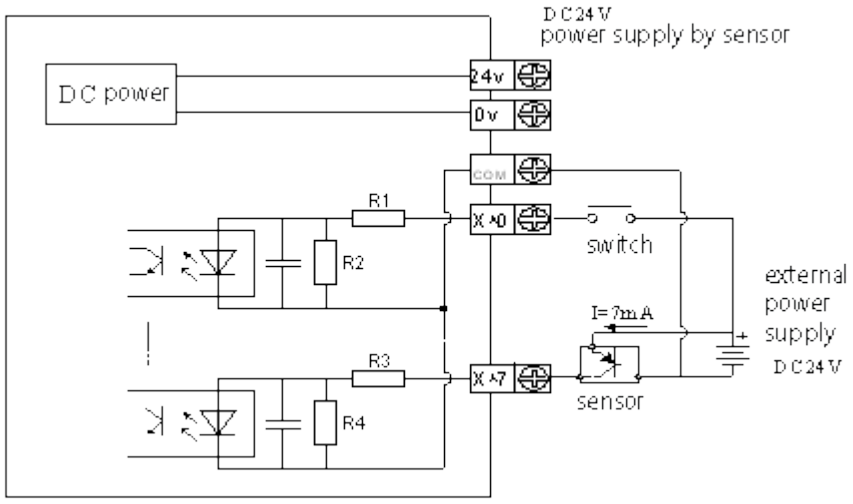
- Input terminals
  When connect input terminals and terminal COM with DC24V contact or NPN open collector transistor, if input is ON, LED lamp will light which indicates input is ON. There are many input terminals COM to connect in PLC.
- Input circuits
  Photo-electricity coupling is used to insulate between primary load circuit and secondary circuit. The secondary circuit with C-R filter is to avoid wrong operation caused by vibration of input contacts or noise along with input signal. For above-mentioned reasons, if input ON→OFF， OFF→ON, the response time delays about 10ms in PLC. There is a digital filter inside the input terminal.
- Input sensitivity
- The PLC input current is DC24V 7mA, but to act correctly, the current should be above 4.5mA when input is ON and under 1.5mA when input is OFF.

2 External circuit used by sensors

- NPN mode
  XD series PLC input current is supplied by its interior 24V power, so if use exterior power to drive sensor like photo electricity switch, the exterior power should be DC24V±4V, please use NPN open collector type for sensor's output transistor.

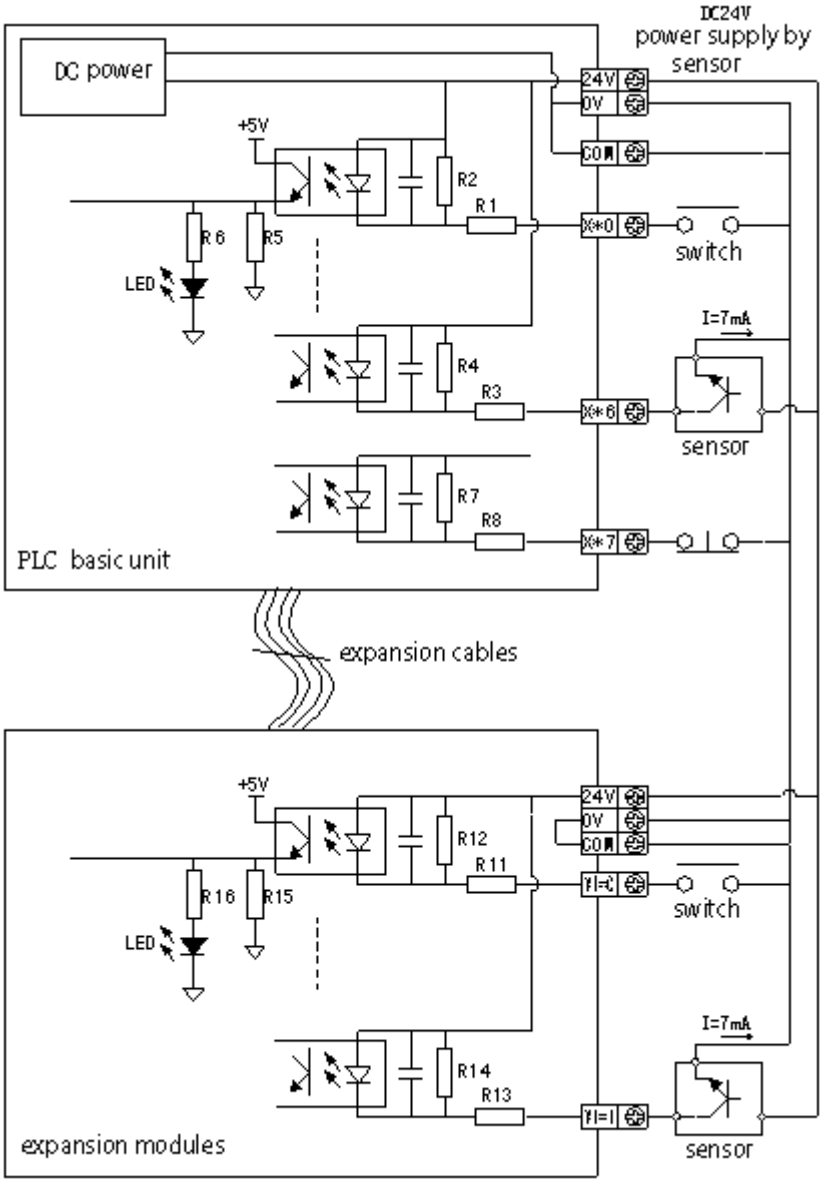


- PNP mode
  XD series PLC input current is supplied by its interior 24V power, so if use exterior power to drive sensor like photo electricity switch, the exterior power should be DC24V ±4V, please use PNP open collector type for sensor's output transistor.

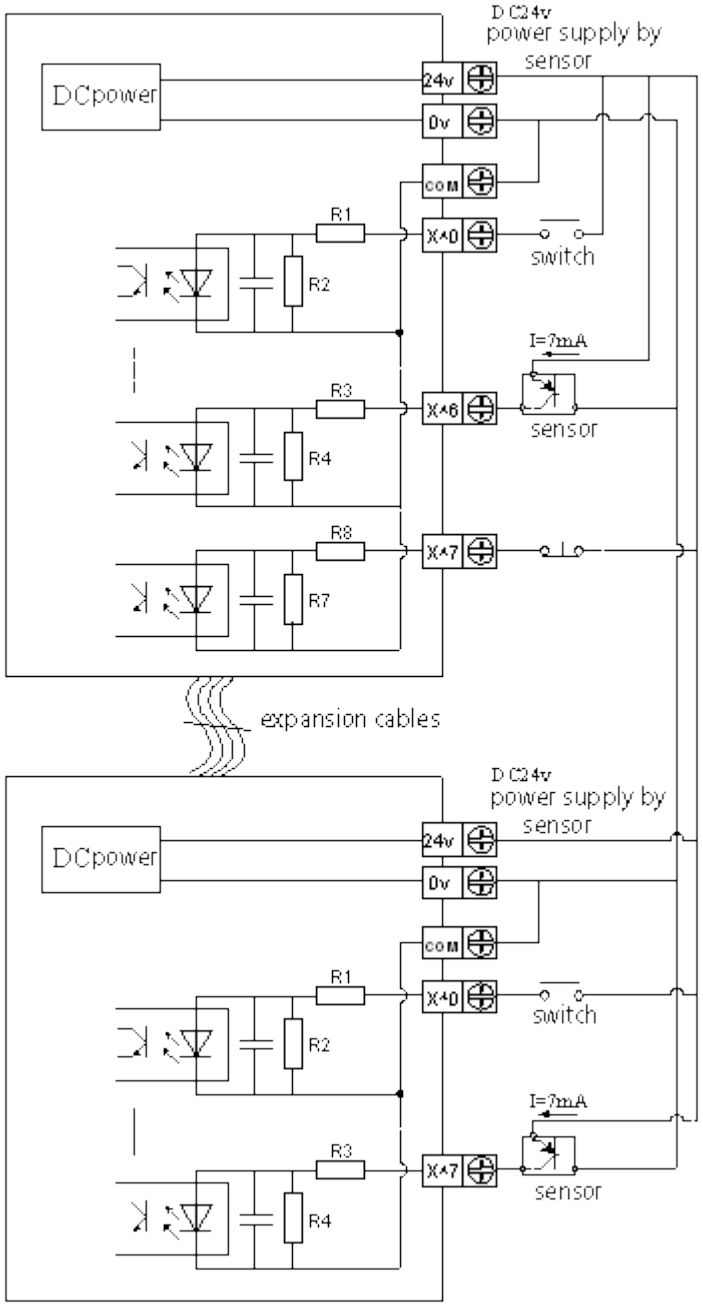


3 Input Wiring

- NPN mode


DC24V
power supply by
sensor
DC power
24V
0V
COM
+5V
R2
R1
X*0
switch
R6
R5
LED
I=7mA
R4
R3
X*6
sensor
R7
R8
X*7
PLC basic unit
expansion cables
+5V
24V
0V
COM
R12
R11
Y*0
switch
R16
R15
LED
I=7mA
R14
R13
Y*1
sensor
expansion modules

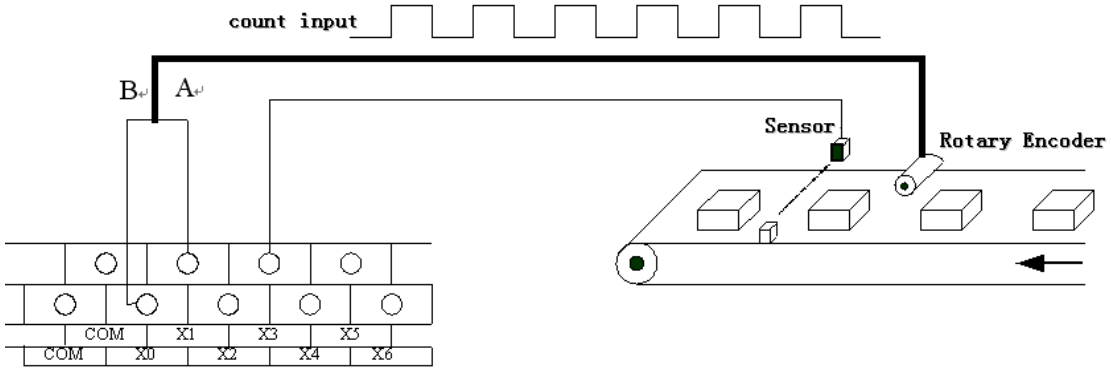
- PNP mode


DC24v
power supply by
sensor
DCpower
24v
0v
com
R1
X^0
switch
R2
I=7mA
R3
X^6
sensor
R4
R8
X^7
R7
expansion cables
DC24v
power supply by
sensor
DCpower
24v
0v
com
R1
X^0
switch
R2
I=7mA
R3
X^7
sensor
R4

5-3. High Speed Counter Input

XD series PLC support high speed count function which is irrelevant with the scan cycle and can test high speed input signal of measuring sensors and rotary encoders etc by selecting different counter, max measuring frequency can be up to 80KHz.

Note: If PLC input is NPN type, please select NPN and DC24V collector open output encoder. If PLC input is PNP type, please select PNP and DC24V collector open output encoder.

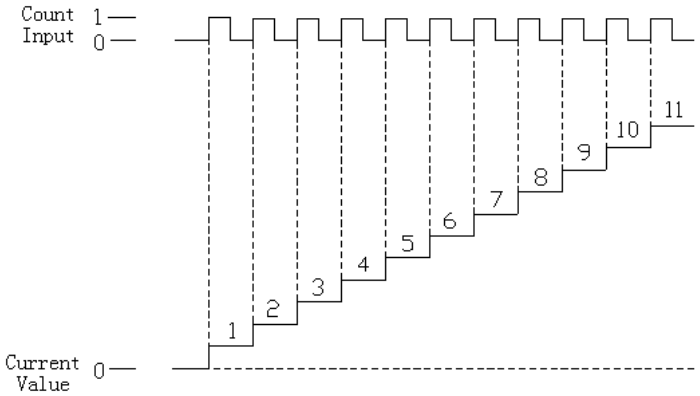


5-3-1. Counting mode

XD series HSC function has two counting modes: Increment mode and AB-phase mode.

1	Increment mode

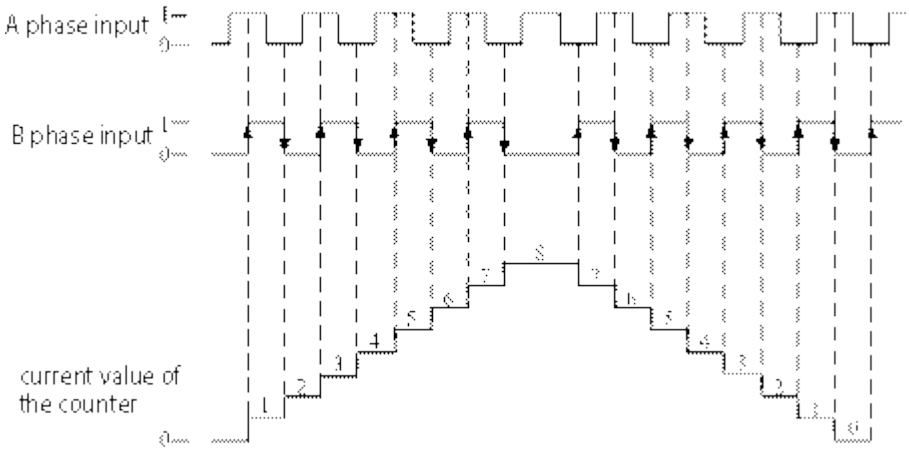
Under this mode, if counting input pulse signal, the counting value will increase one along with the rising edge of every pulse signal.



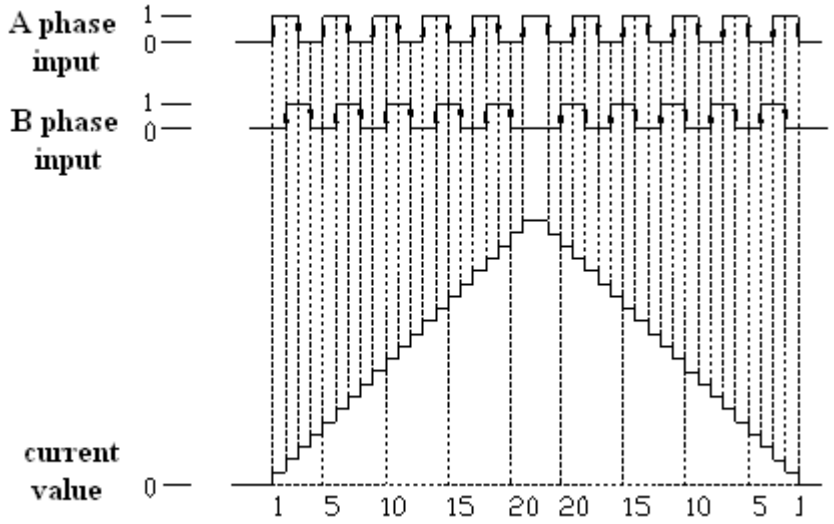
2	AB-phase

Under this mode, the HSC value increase or decrease according to the two differential signal (A phase or B phase). According to the times number, the mode still can be divided to two modes (two-time frequency mode and four-time frequency mode). The default mode is four-time frequency mode.

Two–times Frequency Mode



Four–times Frequency Mode



5-3-2. High Speed Counting Range

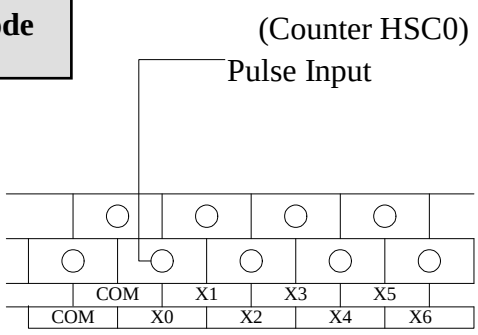
The HSC's counting range is: K-2,147,483,648 ~ K+2,147,483,647. If the counting value exceeds this range, up-flow or down-flow appears.

The up-flow means the counting value jumps from K+2,147,483,647 to K-2,147,483,648 and then continue to count. The down-flow means the counting value jumps from K-2,147,483,648 to K+2,147,483,647 and then continue to count.

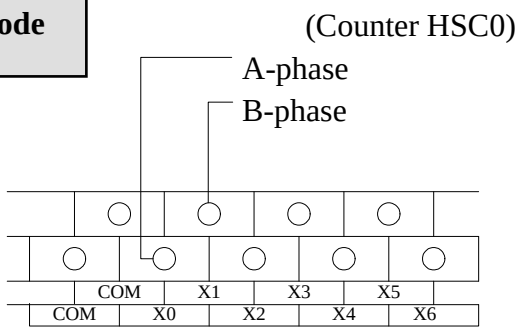
5-3-3. The Input Wiring Of HSC

For input terminal wiring of pulse counting, it differs according to PLC types and counting modes. Some typical wiring methods are as below (take XD3-32 PLC as an example):

1 Increment Mode



2 AB-phase Mode



5-3-4. Input Terminals Assignment

1. High Speed Counters assignment of XD series PLC:

PLC model		High speed counter channels	
		Increment mode	AB-phase mode
XD3	16	2	2
	24/32/48/60	3	3
XD5	24/32/48/60	3	3
XDM	24/32/48/60 4 axes	4	4

	60points 10axes	10	10

2. Input Terminals definition of HSC:

Each letter's description:

U	A	B	Z
Counter's pulse input	A-phase input	B-phase input	Z-phase pulse capture

Normally, the input frequency of terminal X0, X1can reach 80KHz and 50KHz separately under single-phase and AB-phase mode; while other input terminals highest frequency can reach 10KHz under single-phase and 5KHz under AB phase mode. If X input terminals are not used as high speed input port, they can be used as common input terminals. Frequency times in the table: '2' stands for fixed 2 times frequency, '4' stands for fixed 4 times frequency, '2/4' stands for 2 or 4 times frequency adjustable. The detailed port assignment is shown as below:

XD3-16T/R/RT-E												
	Increment Mode							AB phase mode				
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC0	HSC2	HSC4	HSC6	HSC8
Highest frequency	80K	10K						50K	5K			
4 times frequency								2/4	2/4			
Counter interruption	√	√						√	√			
X000	U							A				
X001								B				
X002								Z				
X003			U						A			
X004									B			
X005									Z			
X006												
X007												
X010												
X011												

XD3-24/32/48/60/T/R/RT-E												
	Increment Mode							AB phase mode				
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC0	HSC2	HSC4	HSC6	HSC8
Highest frequency	80K	10K	10K					50K	5K	5K		
4 times frequency								2/4	2/4	2/4		
Counter interruption	√	√	√					√	√	√		
X000	U							A				
X001								B				
X002								Z				
X003		U							A			
X004									B			
X005									Z			
X006			U							A		
X007										B		
X010										Z		
X011												

XD5-24/32/48/60/T/R/RT-E												
	Increment Mode							AB phase mode				
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC0	HSC2	HSC4	HSC6	HSC8
Highest frequency	80K	80K	80K					50K	50K	50K		
4 times frequency								2/4	2/4	2/4		
Counter interruption	√	√	√					√	√	√		
X000	U							A				
X001								B				
X002								Z				
X003		U							A			
X004									B			
X005									Z			
X006			U							A		
X007										B		
X010										Z		
X011												

XDM-24T4/32T4/60T4-E												
	Increment Mode							AB phase mode				
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC0	HSC2	HSC4	HSC6	HSC8
Highest frequency	80K	80K	80K	80K				50K	50K	50K	50K	
4 times frequency								2/4	2/4	2/4	2/4	
Counter interruption	√	√	√	√				√	√	√	√	
X000	U							A				
X001								B				
X002								Z				
X003		U							A			
X004									B			
X005									Z			
X006			U							A		
X007										B		
X010										Z		
X011				U							A	
X012											B	
X013											Z	

XDM-60T10 -E												
	Increment Mode											
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC14	HSC16	HSC18	HSC20	HSC22
Highest frequency	80K	80K	80K	80K	80K	80K	80K	80K	10K	10K		
4 times frequency												
Counter interruption	√	√	√	√	√	√	√	√	√	√		
X000	U											
X001												
X002												
X003		U										
X004												
X005												
X006			U									
X007												
X010												
X011				U								
X012												

X013												
X014					U							
X015												
X016												
X017						U						
X020												
X021												
X022							U					
X023												
X024												
X025								U				
X026												
X027												
X030									U			
X031												
X032												
X033										U		
X034												

XDM-60T10 -E												
	AB phase mode											
	HSC0	HSC2	HSC4	HSC6	HSC8	HSC10	HSC12	HSC14	HSC16	HSC18	HSC20	HSC22
Highest frequency	50K	50K	50K	50K	50K	50K	50K	50K	5K	5K		
4 times frequency	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4		
Counter interruption	√	√	√	√	√	√	√	√	√	√		
X000	A											
X001	B											
X002	Z											
X003		A										
X004		B										
X005		Z										
X006			A									
X007			B									
X010			Z									
X011				A								
X012				B								
X013				Z								
X014					A							
X015					B							
X016					Z							

X017						A						
X020						B						
X021						Z						
X022							A					
X023							B					
X024							Z					
X025								A				
X026								B				
X027								Z				
X030									A			
X031									B			
X032									Z			
X033										A		
X034										B		
X035										Z		

5-3-5. AB Phase Counter's Frequency Multiplication Setting

To AB phase counter, users can modify the value in FLASH data registers SFD321, SFD322, SFD323……SFD330 to set the frequency multiplication value. When the value is 1, it is 1 time frequency; when the value is 4, it is 4 times frequency.

Register	Function	Setting value	Content
SFD320	Frequency Multiplication of HSC0	2	2 times
		4	4 times
SFD321	Frequency Multiplication of HSC2	2	2 times
		2	4 times
SFD322	Frequency Multiplication of HSC4	2	2 times
		2	4 times
SFD323	Frequency Multiplication of HSC6	2	2 times
		4	4 times
SFD324	Frequency Multiplication of HSC8	2	2 times
		4	4 times
SFD325	Frequency Multiplication of HSC10	2	2 times
		4	4 times
SFD326	Frequency Multiplication of HSC12	2	2 times
		4	4 times
SFD327	Frequency Multiplication of HSC14	2	2 times
		4	4 times
SFD328	Frequency Multiplication of	2	2 times

	HSC16	4	4 times
SFD329	Frequency Multiplication of HSC18	2	2 times
		4	4 times

※1: More about high speed counter application, please refer to XD series PLC users' manual【Instruction】.

※2: To some special models, only one axis can be set as 2 times frequency or 4 times frequency, the other two axis are separately 2 times frequency and 4 times frequency.

※3: after setting the SFD register, please restart the high speed counter (cut off the trigger condition and turn on again) to make the setting effective.

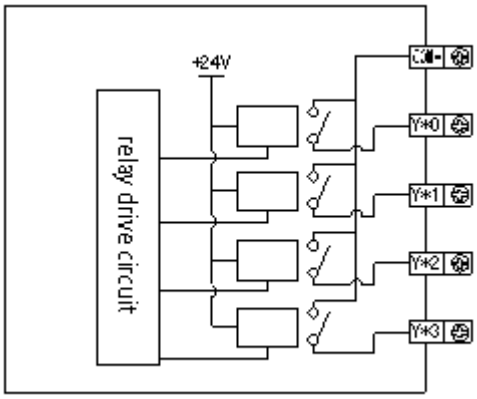
6 Output Specification and Wiring Methods

In this chapter we mainly tell the output specification and external wiring methods of XD series PLC. The connection methods differ due to different models; the main difference is the terminals' arrangement. For each model's terminals arrangement, please refer to chapter 2-3;

6-1. Output Specification

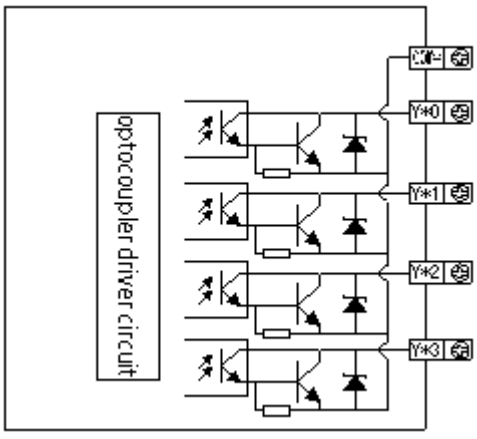
1 Relay Output

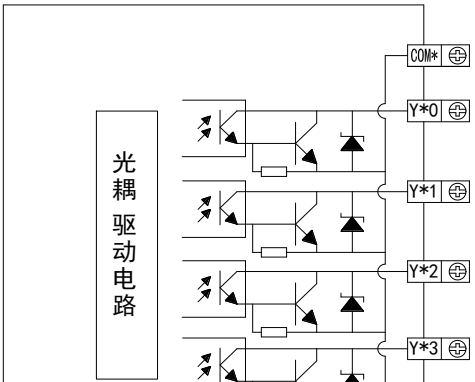
External power		Below AC250V, DC30V
Circuit insulation		Mechanical insulation
Action indicator		LED
Max load	Resistant load	3A
	Inductive load	80VA
	Lamp load	100W
Mini load		DC5V 2mA
Response time	OFF→ ON	10ms
	ON→ OFF	10ms



2 Normal Transistor Output

External power		Below DC5~30V
Circuit insulation		Light coupling insulation
Action indicator		LED
Max load	Resistant load	0.3A
	Inductive load	8W/DC24V
	Lamp load	1.5W/DC24V
Mini load		DC5V 2mA
Respon se time	OFF→ ON	Below 0.2ms
	ON→ OFF	Below 0.2ms





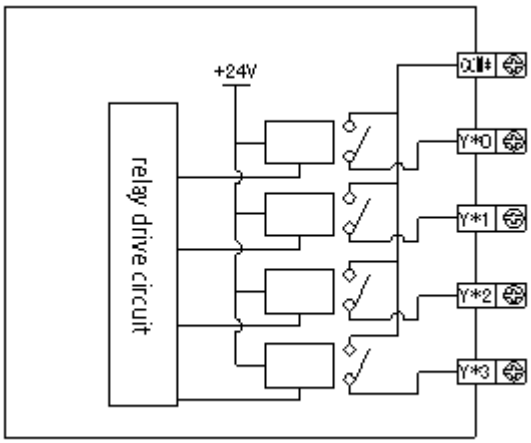
3 High Speed Pulse Output

Model	RT or T Type
High Speed Pulse Output Terminal	Y0, Y1 (XDM-60T4 is Y0~Y3; XDM-60T10 is Y0~Y11)
External Power Supply	Below DC5~30V
Action Indicator	LED
Maximum Current	50mA
Max output frequency of pulse	200KHZ

Note: When use high speed counter function, if the current of external load is too small, you can place a 500Ω resistance between output terminal and 24V power.

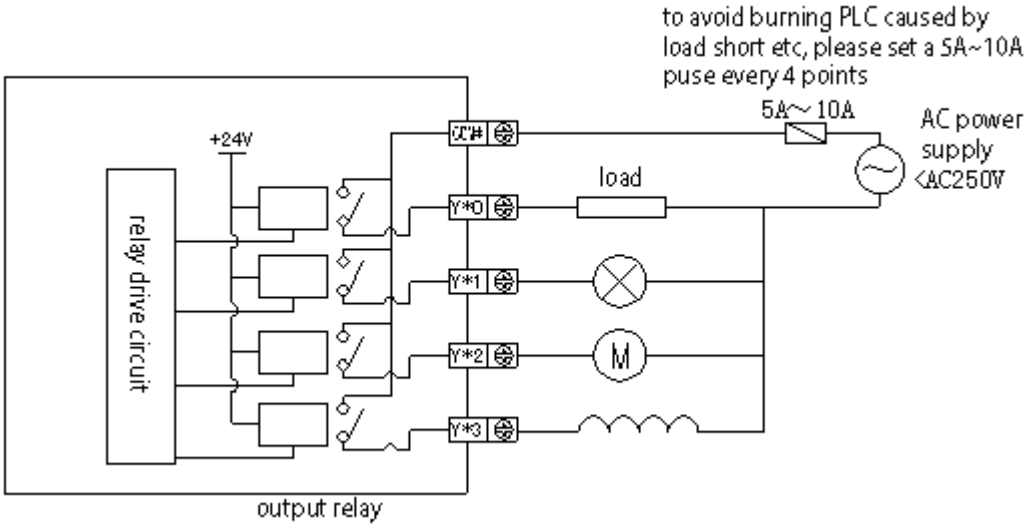
6-2. Relay Output Type

1 Relay Output Circuit



- **Output terminals**
  Relay output type has 2~4 public terminals. So each public-terminal unit can drive power system with different voltages (E.g.: AC200V, AC100V, DC24V etc.) load.
- **Circuit's insulation**
  Between the relay output coils and contacts, PLC's interior circuits and exterior load circuits are electrical insulating. Besides, each public terminal and block are separate from each other.
- **Action display**
  LED lamp lights when output relays' coils energize, output contacts are ON.
- **Response time**
  From the output relay energize (or cut off) to output contact ON (or OFF), the response time is about 10ms.
- **Output current**
  The output current that current and voltage below AC250Vcan drive the load made up of resistance is 3A per point, inductive load below 80VA（AC100V or AC200V） and lamp load below100W（AC100V or AC200V）.
- **Open circuit's leak current**
  When output contact is OFF, there will be no leak current and can directly drive Ne lamp etc.
- **The life of relay output contacts**
  Standard life of AC inductive load such as contactor, electromagnetic valve: according to company's useful life test, about 500 thousand times for 20VA load; about 300 thousand times for 35VA; about 100 thousand for 80VA. But if the load parallel connect with surge absorber, the useful life will greatly improve.

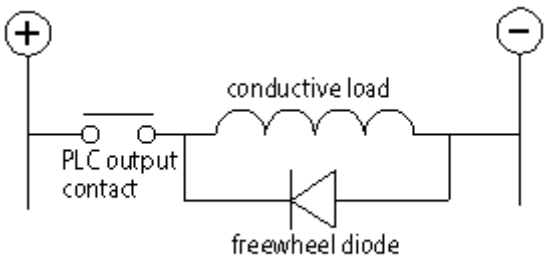
2 Output Connection Example



3 Constitution of output circuit

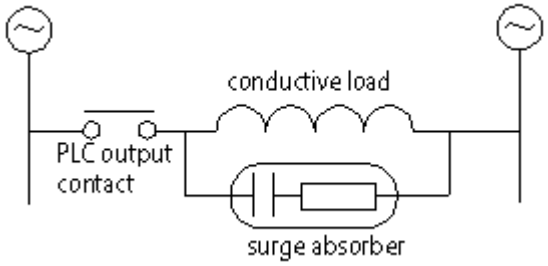
- For DC inductive load, please parallel connect with freewheel diode. Otherwise, contactor useful life will greatly decrease. Please select freewheel diode that can stand inverse voltage over 5~10 times of load voltage and forward current over load current.
- Parallel connection AC inductive load with surge absorber will decrease noise and increase service life of output delay.

4 DC Load



Note: the freewheeling diode is EN4007.

5	AC Load



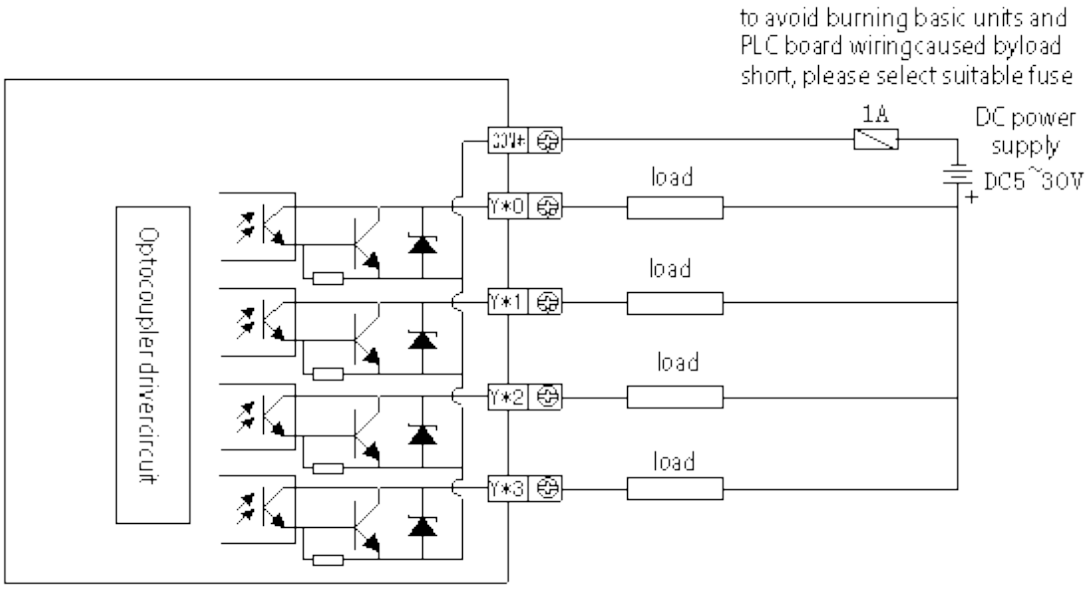
Note: the surge absorber is R=200Ω 2W, C=0.022uF 250VAC.

6-3. Transistor Output Type

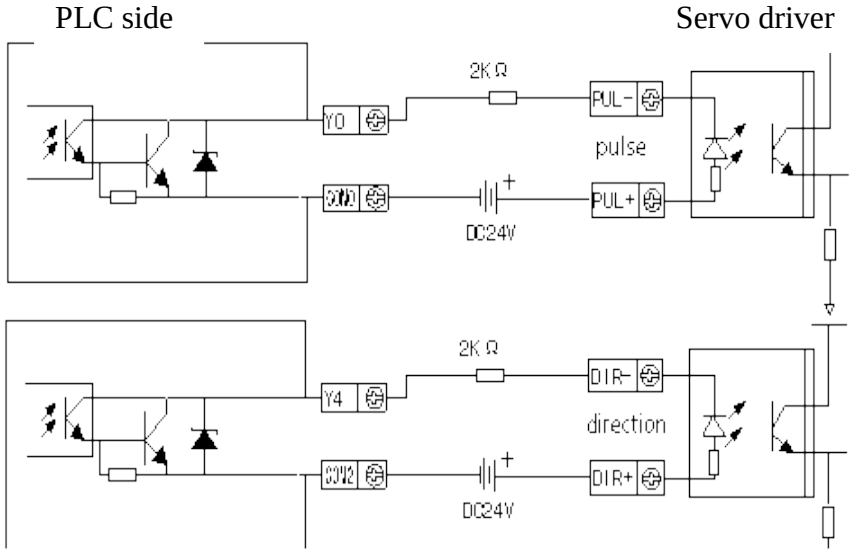
Transistor (NPN) output can support high speed pulse output and normal transistor two types.

1	Normal Transistor Output

- Output Terminals
  There are 1~4 COM outputs of CPU unit transistor outputs.
- 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; besides, the COM terminal blocks are separate from each other.
- 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 0.5A per point. But limited by the temperature rising, every 4 points current add up to 0.8A.
- Open circuit current
  Below 0.1mA



E.g.: Below is the connection of RT/T type PLC and servo driver diagram:



(Make sure the driver's photoelectric coupling input terminal has 8~15mA reliable current)

7 Run, Debug, Maintenance

In this chapter, we tell XD PLC process of programming and using, which includes PLC run, debug and daily maintenance etc.

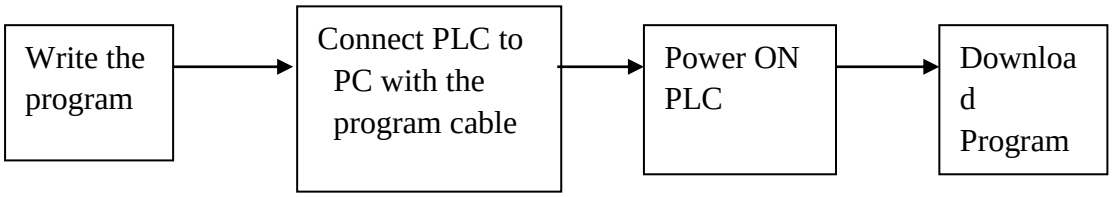
7-1. Run and Debug

1 Check the Products

Please check if the input/output terminals are correct and if there is any component missed when the users get the products. Generally, you can power on the PLC directly at this time and if products are normal, the PWR and RUN indicators will be ON.

2 Write and Download the Program

After confirming the products, write the program for PLC in your PC, and then download the program to PLC. The general operation steps are listed below:



※1: Please link the download cable before you power on the PLC. Otherwise, the COM port may be burned out! BD card and expansion connection is the same operation.

3 Debug the Products

In ideal condition, PLC is in running mode. But if you find some mistakes in the program and need modify, you should write program to the running PLC again.

- Connect PLC to PC with the program cable;
- Upload the program in PLC;
- Modify the uploaded program; and the modified program is suggested to save backup;
- Pause the running of PLC, and download the modified program to PLC;
- Use ladder monitor, free monitor to etc monitor PLC
- If the program still can't fulfill your requirement, you can go on modify it and download to PLC.

4 LED on PLC

- When PLC is running correctly, the **PWR** and **RUN** LED should be ON;
- If **ERR** LED is ON, it indicates that PLC running is in error, please correct the program in time.
- If **PWR** LED is OFF, it indicates that the power supply is in error, please check your wiring.

7-2. Daily Maintenance

1 Regular Check on Products

Even the PLC has certain anti-interference ability and strong stability, you should check the PLC regularly.

The check items include:

- Check if the input/output terminals, power supply terminals are loosen;
- Check if the ports are correct;
- Check if the PWR LED, I/O LED can be ON;
- Clear the dusts on PLC to avoid the dusts falling into PLC
- Manage to make PLC running and storage environment fits the standards described in chapter 2-1-1.

2 About the battery

The PLC can keep working if there is not component that could short its service life. But if the PLC supports clock function, its battery should be changed regularly.

- Battery service life normally is 3~5 years.
- Please change the battery once you find the battery power down.
- Please power the PLC on immediately after changing the battery. Otherwise, the battery power may run out.

3 Abandon

Abandon as industrial wast

8 Switch between Soft Components

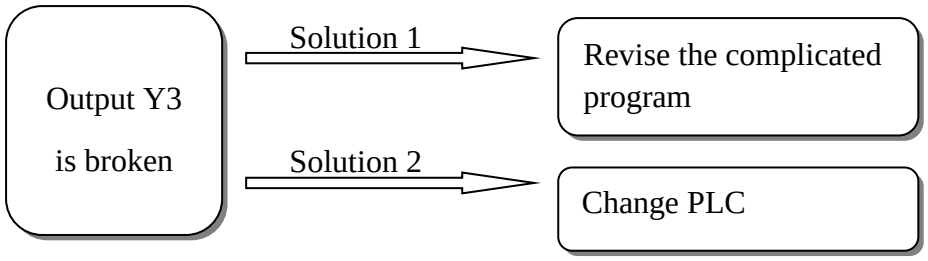
This chapter focuses on a special function of XD series PLC, switch between soft components. This special function simplifies the PLC daily maintenance greatly. To the maintenance person, they will not bother any more if the terminals are damaged.

8-1. Function Summary

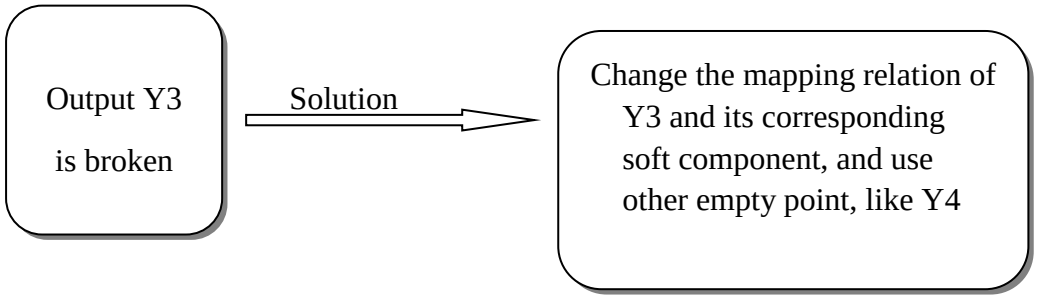
When the internal lighting coupling, relays or transistor are damaged, the corresponding input/output terminals will be out of use. Users either revise the program or ask the manufactures for help, which is very troublesome and affects the users' normal work schedule.

The new type PLC developed independently by Xinje can break the one-to-one correspondence, users only need to change the soft component's value by HMI, then the corresponding terminal will activate.

Before(Complicated and not effective)



Now (Simple, fast and effective)



8-2. Operation Method

It needs not revise the program when we change the damaged input/output point mapping relation and replace the damaged point. In PLC special registers, we allocate certain address section for users to change the mapping relation. Users just need to find and revise the damaged input/output mapping register, and replace the value in this special register with value of replaced input/output.

Below is the table for modifying the input/output points' mapping ID:

Table1 Mapping relation of the input and soft component

ID	Function	Description
SFD10	I00 correspond to	0 of input corresponds to the number
SFD11	I01 correspond to	
SFD12	I02 correspond to	
……	……	
SFD87	I77 correspond to	Default is 77 (octal number)

Table2 mapping relation of the output and soft component

ID	Function	Description
SFD110	O00 correspond to Y**	0 of output corresponds to the number of Y**
SFD111	O01 correspond to Y**	
SFD112	O02 correspond to Y**	
……	……	
SFD187	O77 correspond to Y**	Default is 77 (octal number)

As showed in the table above, the default value in SFD10 is 0. If we replace it with value '7',then all X0 in the program will correspond to external input X7. But meantime you should replace the value in SFD17 with 0, to realize exchange. Then original X0 will correspond to X7， and original X7 will correspond to external input X0.

※1：After changing the mapping relation, please re-up electricity of PLC.

※2：When change the mapping relation, please pay attention, input/output data is octal number while ID is decimal number.

※3：Exchange the mapping relation when change. i.e. if modify X0 ID to be 5, make sure to change X5 ID to be 0;

※4：Mapping relation, one terminal corresponds to one soft component.

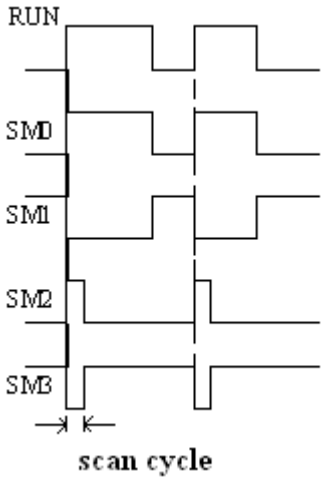
※5：Users can modify the SFD value online.

Appendix 1 Special Soft Element Schedules

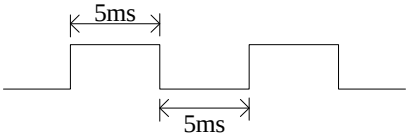
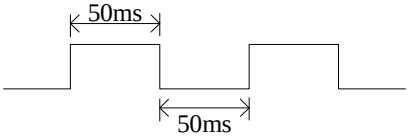
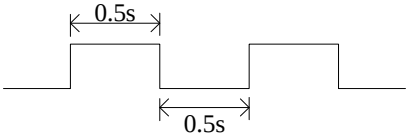
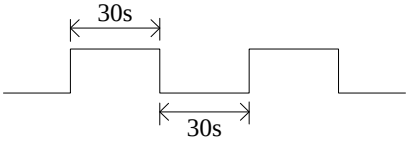
Appendix 1 mainly introduces the functions of XD series PLC special soft element, data register, FlashROM and the address distribution of expansions for users to search.

Appendix 1-1. Special Auxiliary Relay Schedule

Initial Status（SM0-SM3）

ID	Function	Description	
SM000	Coil ON when running		SM000 keeps ON when PLC running
SM001	Coil OFF when running		SM001 keeps OFF when PLC running
SM002	Initial positive pulse coil		SM002 is ON in first scan cycle
SM003	Initial negative pulse coil		SM003 is OFF in first scan cycle

Clock（SM11-SM14）

ID	Function	Description
SM011	10ms frequency cycle	
SM012	100ms frequency cycle	
SM013	1s frequency cycle	
SM014	1min frequency cycle	

Mark（SM20-SM29）

ID	Function	Description
SM020	Zero bit	SM020 is ON when plus/minus operation result is 0
SM021	Borrow bit	SM021 is ON when minus operation overflows
SM022	Carry bit	SM022 is ON when plus operation overflows

PC Mode（SM32-SM34）

ID	Function	Description
SM032	Retentive register reset	When SM032 is ON, ON/OFF mapping memory of HM、HS and current values of HT、HC、HD will be reset.
SM033	Clear user's program	When SM033 is ON, all PLC user's program will be cleared.
SM034	All output forbidden	When SM034 is ON, all PLC external contacts will be set OFF.

Stepping Ladder

ID	Function	Description
SM040	The process is running	Set ON when the process is running

Interruption（SM50-SM80）

ID	Address	Function	Description
SM050	I0000/I0001	Forbid input interruption 0	After executing EI instruction, the input interruption couldn't act independently when M acts, even if the interruption is allowed. E.g.: when SM050 is ON, I0000/I0001 is forbidden.
SM051	I0100/I0101	Forbid input interruption 1	
SM052	I0200/I0201	Forbid input interruption 2	
SM053	I0300/I0301	Forbid input interruption 3	
SM054	I0400/I0401	Forbid input interruption 4	
……	……	……	

SM069	I1900/I1901	Forbid input interruption 19	
SM070	I40**	Forbid timing interruption 0	After executing EI instruction, the timing interruption couldn't act independently when M acts, even if the interruption is allowed.
SM071	I41**	Forbid timing interruption 1	
SM072	I42**	Forbid timing interruption 2	
SM073	I43**	Forbid timing interruption 3	
SM074	I44**	Forbid timing interruption 4	
……	……	……	
SM089	I59**	Forbid timing interruption 19	
SM090		Forbid all interruptions	Forbid all interruptions

High Speed Pulse（SM140-SM199）

ID	Function	Description	
SM1000	'Sending pulse' flag	SM1000 will be ON when sending the pulse	PULSE-_1
SM1001	Direction flag	SM1001 value being 1 stands for positive direction and corresponding port is ON	
SM1002	Overflow flag of accumulated pulse number	SM1002 value will be 1 when accumulated pulse number overflows.	
SM1003	Overflow flag of pulse equivalent	SM1003 value will be 1 when pulse equivalent overflows	
SM1004			
SM1005			
SM1006			
SM1007			
SM1008			
SM1009			
SM1010	Pulse error flag	SM1010 will be ON when pulse errors	
SM1020	'Sending pulse' flag	SM1020 will be ON when sending the pulse	PULSE-_2
SM1021	Direction flag	SM1021 value being 1 stands for positive direction and corresponding port is ON	
SM1022	Overflow flag of accumulated pulse number	SM1022 value will be 1 when accumulated pulse number overflows.	
SM1023	Overflow flag of	SM1023 value will be 1 when pulse	

	pulse equivalent	equivalent overflows	
SM1024			
SM1025			
SM1026			
SM1027			
SM1028			
SM1029			
SM1030	Pulse error flag	SM1030 will be ON when pulse errors	
SM1040	‘Sending pulse’ flag	SM1040 will be ON when sending the pulse	PULSE-_3
SM1041	Direction flag	SM1041 value being 1 stands for positive direction and corresponding port is ON	
SM1042	Overflow flag of accumulated pulse number	SM1042 value will be 1 when accumulated pulse number overflows.	
SM1043	Overflow flag of pulse equivalent	SM1043 value will be 1 when pulse equivalent overflows	
SM1044			
SM1045			
SM1046			
SM1047			
SM1048			
SM1049			
SM1050	Pulse error flag	SM1050 will be ON when pulse errors	
SM1060	‘Sending pulse’ flag	SM1060 will be ON when sending the pulse	PULSE-_4
SM1061	Direction flag	SM1061 value being 1 stands for positive direction and corresponding port is ON	
SM1062	Overflow flag of accumulated pulse number	SM1062 value will be 1 when accumulated pulse number overflows.	
SM1063	Overflow flag of pulse equivalent	SM1063 value will be 1 when pulse equivalent overflows	
SM1064			
SM1065			
SM1066			
SM1067			
SM1068			
SM1069			
SM1070	Pulse error flag	SM1070 will be ON when pulse errors	
SM1080	‘Sending pulse’	SM1080 will be ON when sending the	PULSE-

	flag	pulse	_5
SM1081	Direction flag	SM1081 value being 1 stands for positive direction and corresponding port is ON	
SM1082	Overflow flag of accumulated pulse number	SM1082 value will be 1 when accumulated pulse number overflows.	
SM1083	Overflow flag of pulse equivalent	SM1083 value will be 1 when pulse equivalent overflows	
SM1084			
SM1085			
SM1086			
SM1087			
SM1088			
SM1089			
SM1090	Pulse error flag	SM1090 will be ON when pulse errors	
SM1100	‘Sending pulse’ flag	SM1100 will be ON when sending the pulse	PULSE-_6
SM1101	Direction flag	SM1101 value being 1 stands for positive direction and corresponding port is ON	
SM1102	Overflow flag of accumulated pulse number	SM1102 value will be 1 when accumulated pulse number overflows.	
SM1103	Overflow flag of pulse equivalent	SM1103 value will be 1 when pulse equivalent overflows	
SM1104			
SM1105			
SM1106			
SM1107			
SM1108			
SM1109			
M1110	Pulse error flag	SM1110 will be ON when pulse errors	
SM1120	‘Sending pulse’ flag	SM1120 will be ON when sending the pulse	PULSE-_7
SM1121	Direction flag	SM1121 value being 1 stands for positive direction and corresponding port is ON	
SM1122	Overflow flag of accumulated pulse number	SM1122 value will be 1 when accumulated pulse number overflows.	
SM1123	Overflow flag of pulse equivalent	SM1123 value will be 1 when pulse equivalent overflows	

SM1124			
SM1125			
SM1126			
SM1127			
SM1128			
SM1129			
SM1130	Pulse error flag	SM1130 will be ON when pulse errors	
SM1140	‘Sending pulse’ flag	SM1140 will be ON when sending the pulse	PULSE-_8
SM1141	Direction flag	SM1141 value being 1 stands for positive direction and corresponding port is ON	
SM1142	Overflow flag of accumulated pulse number	SM1142 value will be 1 when accumulated pulse number overflows.	
SM1143	Overflow flag of pulse equivalent	SM1143 value will be 1 when pulse equivalent overflows	
SM1144			
SM1145			
SM1146			
SM1147			
SM1148			
SM1149			
SM1150	Pulse error flag	SM1150 will be ON when pulse errors	
SM1160	‘Sending pulse’ flag	SM1160 will be ON when sending the pulse	PULSE-_9
SM1161	Direction flag	SM1161 value being 1 stands for positive direction and corresponding port is ON	
SM1162	Overflow flag of accumulated pulse number	SM1162 value will be 1 when accumulated pulse number overflows.	
SM1163	Overflow flag of pulse equivalent	SM1163 value will be 1 when pulse equivalent overflows	
SM1164			
SM1165			
SM1166			
SM1167			
SM1168			
SM1169			
SM1170	Pulse error flag	SM1170 will be ON when pulse errors	
SM1180	‘Sending pulse’ flag	SM1180 will be ON when sending the pulse	PULSE-_10

SM1181	Direction flag	SM1181 value being 1 stands for positive direction and corresponding port is ON	
SM1182	Overflow flag of accumulated pulse number	SM1182 value will be 1 when accumulated pulse number overflows.	
SM1183	Overflow flag of pulse equivalent	SM1183 value will be 1 when pulse equivalent overflows	
SM1184			
SM1185			
SM1186			
SM1187			
SM1188			
SM1189			
SM1190	Pulse error flag	SM1190 will be ON when pulse errors	

Sequence Function BLOCK（SM240-SM339）

ID	Function	Description
SM300	BLOCK1 running flag	SM300 will be ON when block1 is running
SM301	BLOCK2 running flag	SM301 will be ON when block2 is running
SM302	BLOCK3 running flag	SM302 will be ON when block3 is running
SM303	BLOCK4 running flag	SM303 will be ON when block4 is running
SM304	BLOCK5 running flag	SM304 will be ON when block5 is running
SM305	BLOCK6 running flag	SM305 will be ON when block6 is running
……	……	
SM396	BLOCK97 running flag	SM396 will be ON when block97is running
SM397	BLOCK98 running flag	SM397 will be ON when block98 is running
SM398	BLOCK99 running flag	SM398 will be ON when block99 is running
SM399	BLOCK100 running flag	SM399 will be ON when block100 is running

Error check（SM400-SM413）

ID	Function	Description
SM400	I/O error	ERR LED keeps ON, PLC don not run and output, check when power on
SM401	Expansion module communication error	
SM402	BD communication error	
……		
SM405	No user program	Internal code check wrong
SM406	User program error	Implement code or configuration table check wrong
SM407	SSFD check error	ERR LED keeps ON, PLC don not run and output, check when power on
SM408	Memory error	Can not erase or write Flash
SM409	Calculation error	
SM410	Offset overflow	Offset exceeds soft element range
SM411	FOR-NEXT overflow	Reset when power on or users can also reset by hand.
SM412	Invalid data fill	When offset of register overflows, the return value will be SM372 value
SM413		

Error Message（SM450-SM452）

ID	Function	Description
SM450	System error check	
SM451		
SM452		

Expansion Modules, BD Status（SM500）

ID	Function	Description
SM500	Module status read is finished	

Communication（SM130-SM1319）

	No.	Function	Explanation
Serial port1	SM150	Modbus read write instruction working flag	Instruction working, set on Instruction complete, set off
	SM151		
	SM152	Free format communication sending flag	Instruction working, set on sending complete, set off
	SM153	Free format communication receiving flag	Receive one frame data, set on Set off by user program
	SM154		
	……		
	SM159		
Serial port2	SM160	Modbus read write instruction working flag	Instruction working, set on Instruction complete, set off
	SM161		
	SM162	Free format communication sending flag	Instruction working, set on sending complete, set off
	SM163	Free format communication receiving flag	Receive one frame data, set on Set off by user program
	SM164		
	……		
	SM169		
Serial port3	SM170~SM179		
Serial port4	SM180~SM189		
Serial port5	SM190~SM199		

Appendix 1-2. Special Data Register Schedule

Clock（SD010-SD019）

ID	Function	Description
SD010	Current scan cycle	100us，us is the unit
SD011	Min scan time	100us，us is the unit
SD012	Max scan time	100us，us is the unit
SD013	Second （clock）	0~59（BCD code）
SD014	Minute （clock）	0~59（BCD code）
SD015	Hour （clock）	0~23（BCD code）
SD016	Day （clock）	0~31（BCD code）
SD017	Month （clock）	0~12（BCD code）
SD018	Year （clock）	2000~2099（BCD code）
SD019	Week （clock）	0（Sunday ）~6（Saturday）（BCD code ）

Flag （SD020-SD031）

ID	Function	Description
SD020	Information of type	
SD021	Information of type	
:		
SD030	Information of type	
SD031	Information of type	

Step ladder（SD040）

ID	Function	Description
SD40	Flag of the executing process S	

High Speed Counting（SD100-SD109）

ID	Function	Description	
SD100	Current segment (No. n segment)		HSC00
SD101	Current segment (No. n segment)		HSC02

SD102	Current segment (No. n segment)		HSC04
SD103	Current segment (No. n segment)		HSC06
SD104	Current segment (No. n segment)		HSC08
SD105	Current segment (No. n segment)		HSC10
SD106	Current segment (No. n segment)		HSC12
SD107	Current segment (No. n segment)		HSC14
SD108	Current segment (No. n segment)		HSC16
SD109	Current segment (No. n segment)		HSC18

High Speed Pulse（SD1000-SD1099）

ID	Function	Description	
SD1000	Current segment (No. n segment)		PULSE_1
SD1001			
SD1002	Low 16 bits of accumulated pulse number (the unit is the pulse number)		
SD1003	High 16 bits of accumulated pulse number		
SD1004	The low 16 bits of accumulated pulse number		
SD1005	High 16 bits of accumulated pulse number		
SD1006	Low 16 bits of current output frequency		
SD1007	high 16 bits of current output frequency		
SD1008	Low 16 bits of current output frequency(The unit is pulse equivalent)		
SD1009	High 16 bits of current output frequency		

SD1010	Wrong Pulse message	1：Pulse data block error 2：Equivalent mode：pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11：Speed of zero return is 0 12：Crawling speed of zero return is 0 13：Directions of zero return speed and zero auxiliary speed differ	
SD1011	Pulse data block error		
SD1020	Current segment(No. n segment)		PULSE_2
SD1021			
SD1022	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1023	High 16 bits of accumulated pulse number		
SD1024	Low 16 bits of accumulated pulse number		
SD1025	High 16 bits of accumulated pulse number		
SD1026	Low 16 bits of current output frequency(the unit is pulse number)		
SD1027	High 16 bits of current output frequency(the unit is pulse number)		
SD1028	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1029	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1030	Wrong Pulse message	1：Pulse data block error 2：Equivalent mode: pulse amount/turn、 amount/ turn of movement is 0 3:Code of system parameters block error 4: Pulse data block exceeds max limit 10: Zero return do not set near point signal 11：Speed of zero return is 0 12：Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1031	Code of error pulse block		
SD1040	Current segment(No. n segment)		PULSE_3
SD1041			
SD1042	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1043	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1044	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1045	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1046	Low 16 bits of current output frequency(the unit is pulse number)		
SD1047	High 16 bits of current output frequency(the unit is pulse number)		
SD1048	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1049	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1050	Wrong Pulse message	1： Pulse data block error 2：Equivalent mode: pulse amount/turn、 amount/ turn of movement is 0 3:Code of system parameters block error 4：Pulse data block exceeds max limit 10：Zero return do not set near point signal 11：Speed of zero return is 0 12：Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1051	Code of error pulse block		
SD1060	Current segment(No. n segment)		PULSE_4
SD1061			
SD1062	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1063	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1064	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1065	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1066	Low 16 bits of current output frequency(the unit is pulse number)		
SD1067	High 16 bits of current output frequency(the unit is pulse number)		
SD1068	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1069	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1070	Wrong Pulse message	1： Pulse data block error 2：Equivalent mode: pulse amount/turn、 amount/ turn of movement is 0 3:Code of system parameters block error 4：Pulse data block exceeds max limit 10：Zero return do not set near point signal 11：Speed of zero return is 0 12：Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1071	Code of error pulse block		
SD1080	Current segment(No. n segment)		PULSE_5
SD1082	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1083	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1084	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1085	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1086	Low 16 bits of current output frequency(the unit is pulse number)		
SD1087	High 16 bits of current output frequency(the unit is pulse number)		
SD1088	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1089	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1090	Wrong Pulse message	1： Pulse data block error 2：Equivalent mode: pulse amount/turn、 amount/ turn of movement is 0 3:Code of system parameters block error 4：Pulse data block exceeds max limit 10：Zero return do not set near point signal 11：Speed of zero return is 0 12：Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1091	Code of error pulse block		
SD1100	Current segment(No. n segment)		PULSE_6
SD1102	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1103	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1104	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1105	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1106	Low 16 bits of current output frequency(the unit is pulse number)		
SD1107	High 16 bits of current output frequency(the unit is pulse number)		
SD1108	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1109	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1110	Wrong Pulse message	1: Pulse data block error 2:Equivalent mode: pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11:Speed of zero return is 0 12:Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1111	Code of error pulse block		
SD1120	Current segment(No. n segment)		PULSE_7
SD1122	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1123	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1124	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1125	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1126	Low 16 bits of current output frequency(the unit is pulse number)		
SD1127	High 16 bits of current output frequency(the unit is pulse number)		
SD1128	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1129	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1130	Wrong Pulse message	1: Pulse data block error 2:Equivalent mode: pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11:Speed of zero return is 0 12:Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1131	Code of error pulse block		
SD1140	Current segment(No. n segment)		PULSE_8
SD1142	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1143	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1144	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1145	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1146	Low 16 bits of current output frequency(the unit is pulse number)		
SD1147	High 16 bits of current output frequency(the unit is pulse number)		
SD1148	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1149	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1150	Wrong Pulse message	1: Pulse data block error 2:Equivalent mode: pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11:Speed of zero return is 0 12:Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1151	Code of error pulse block		
SD1160	Current segment(No. n segment)		PULSE_9
SD1162	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1163	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1164	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1165	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1166	Low 16 bits of current output frequency(the unit is pulse number)		
SD1167	High 16 bits of current output frequency(the unit is pulse number)		
SD1168	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1169	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1170	Wrong Pulse message	1: Pulse data block error 2:Equivalent mode: pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11:Speed of zero return is 0 12:Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1171	Code of error pulse block		
SD1180	Current segment(No. n segment)		PULSE_10
SD1182	Low 16 bits of accumulated pulse number (the unit is pulse number)		
SD1183	High 16 bits of accumulated pulse number (the unit is pulse number)		
SD1184	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1185	High 16 bits of accumulated pulse number(the unit is pulse equivalent)		
SD1186	Low 16 bits of current output frequency(the unit is pulse number)		
SD1187	High 16 bits of current output frequency(the unit is pulse number)		
SD1188	Low 16 bits of current output frequency(the unit is pulse equivalent)		
SD1189	High 16 bits of current output frequency(the unit is pulse equivalent)		

SD1190	Wrong Pulse message	1: Pulse data block error 2:Equivalent mode: pulse amount/turn, amount/ turn of movement is 0 3:Code of system parameters block error 4:Pulse data block exceeds max limit 10:Zero return do not set near point signal 11:Speed of zero return is 0 12:Crawling speed of zero return is 0 13 Direction of zero return speed and zero auxiliary speed	
SD1191	Code of error pulse block		

Sequence Function Block（SD300-SD399）

ID	Function	Description
SD300	Executing instruction of BLOCK1	The value will be used when BLOCK monitors
SD301	Executing instruction of BLOCK2	The value will be used when BLOCK monitors
SD302	Executing instruction of BLOCK3	The value will be used when BLOCK monitors
SD303	Executing instruction of BLOCK4	The value will be used when BLOCK monitors
SD304	Executing instruction of BLOCK5	The value will be used when BLOCK monitors
SD305	Executing instruction of BLOCK6	The value will be used when BLOCK monitors
……	……	……
SD396	Executing instruction of BLOCK97	The value will be used when BLOCK monitors
SD397	Executing instruction of BLOCK98	The value will be used when BLOCK monitors
SD398	Executing instruction of BLOCK99	The value will be used when BLOCK monitors
SD399	Executing instruction of	The value will be used when BLOCK

	BLOCK100	monitors

Error Check（SD400-SD413）

ID	Function	Description
SD400		
SD401	Number of communication error expansion module	
SD402	Number of communication error BD	
……		
SD405		
SD406		
SD407		
SD408		
SD409	Operation error code number	1：Divided by zero error 2：Former operand's address less that the latter one's of MRST,MSET 3：ENCO,DECO encoding, decoding instruction data bit overruns. 4：BDC code error 7：Square root error
SD410	Numbers of shift register D when migration overruns	
SD411		
SD412		
SD413		

Error Check（SD450-SD452）

ID	Function	Description
SD450	1：Watchdog act (Default 200ms) 2：Control block application fail 3：Visit illegal address	
SD451	Hardware error type: 1：Register error 2：Bus error	

	3：Usage error	
SD452	Hardware error	

Expansion Modules, BD Status（SD500-SD516）

ID	Function	Description	
SD500	Module number Expansion modules：#1～16 BD：#10001～10005		
SD501~516	Expansion module, BD status		16 registers

Modules Information（SD520-SD855）

ID	Function	Description	
SD520		Expansion module 1	Each expansion module occupies 16 registers
……			
SD535			
……	……	……	
SD760		Expansion module 16	
……			
SD775			
SD776		BD module 1	Each BD module occupies 16 registers
……			
SD791			
……	……	……	
SD840		BD module 5	
……			
SD855			

Expansion Module Error Information

ID	Function	Description	
SD860	Error times of module read		Expansion module 1
SD861	Error types of module	1. Expansion’s CRC parity error	

	read	2. Expansion's address error 3. Expansion accepted data length error 1. Expansion's accept buffer zone overflows 2. Expansion timeout error 3. CRC parity error when PLC is accepting data 4. Unknown error	
SD862	Error times of module write		
SD863	Error types of module write		
SD864	Error times of module read		Expansion module 2
SD865	Error types of module read	5. Expansion's CRC parity error 6. Expansion's address error 7. Expansion accepted data length error 8. Expansion's accept buffer zone overflows 9. Expansion timeout error 10. CRC parity error when PLC is accepting data 11. Unknown error	
SD866	Error times of module write		
SD867	Error types of module write		
……			
SD920	Error times of module read		Expansion module 16
SD921	Error types of module read	12. Expansion's CRC parity error 13. Expansion's address error 14. Expansion accepted data length error 15. Expansion's accept buffer zone overflows 16. Expansion timeout error 17. CRC parity error when PLC is accepting data 18. Unknown error	
SD922	Error times of module write		

SD923	Error types of module write		
SD924	Error times of module read		
SD925	Error types of module read		BD module 1
SD926	Error times of module write		
SD927	Error types of module write		
……			
SD940			BD module 5
SD941			
SD942			
SD943			

Communication

	No.	Function	Notes
Serial port1	SD150	Modbus read write instruction working result	0: correct 100: receive error 101: receive overtime 180: CRC error 181: LRC error 182: station no. error 183: sending buffer overflow 400: function code error 401: address error 402: length error 403: data error 404: slave station busy 405: RAM error (erase FLASH)
	SD151	X-Net communication result	0: correct 1: communication overtime 2: RAM error 3: receive CRC error
	SD152	Free format communication sending result	0: correct 410: free format sending buffer overflow

	SD153	Free format communication receive result	0: correct 100: receive error 101: receive overtime 415: no start symbol 416: no end symbol
	SD154	Free format communication receive data numbers	Count as byte, not include start and end symbol
	……		
	SD159		
Serial port2	SD160	Modbus read write instruction working result	0: correct 100: receive error 101: receive overtime 180: CRC error 181: LRC error 182: station no. error 183: sending buffer overflow 400: function code error 401: address error 402: length error 403: data error 404: slave station busy 405: RAM error (erase FLASH)
	SD161	X-Net communication result	0: correct 1: communication overtime 2: RAM error 3: receive CRC error
	SD162	Free format communication sending result	0: correct 410: free format sending buffer overflow
	SD163	Free format communication receive result	0: correct 100: receive error 101: receive overtime 415: no start symbol 416: no end symbol
	SD164	Free format communication receive data numbers	Count as byte, not include start and end symbol
	……		
	SD169		
Serial port3	SD170~SD179		
Serial	SD180~SD189		

port4			
Serial port5	SD190~SD199		

Special Data Register HSD（Power Down Memory）

ID	Function	Description
HSD0	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD1	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD2	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD3	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_1
HSD4	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD5	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD6	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD7	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_2
HSD8	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD9	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD10	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD11	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_3
HSD12	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD13	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD14	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD15	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_4

HSD16	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD17	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD18	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD19	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_5
HSD20	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD21	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD22	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD23	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_6
HSD24	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD25	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD26	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD27	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_7
HSD28	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD29	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD30	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD31	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_8
HSD32	Low 16 bits of accumulated pulse number (the unit is pulse number)	
HSD33	High 16 bits of accumulated pulse number (the unit is pulse number)	
HSD34	Low 16 bits of accumulated pulse number(the unit is pulse equivalent)	
HSD35	High 16 bits of accumulated pulse number(the unit is pulse equivalent)	PULSE_9
HSD36	Low 16 bits of accumulated pulse number (the unit is pulse number)	PULSE_10

HSD37	High 16 bits of accumulated pulse number (the unit is pulse number)
HSD38	Low 16 bits of accumulated pulse number (the unit is pulse equivalent)
HSD39	High 16 bits of accumulated pulse number (the unit is pulse equivalent)

Appendix1-3. Expansion module address schedule

Take the first expansion as example (2~7 expansion module address number add 100 in turn):

XD-E2DA

Channel	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
0CH	QD10000	QD10100	QD10200	QD10300	QD10400	QD10500	QD10600
1CH	QD10001	QD10101	QD10201	QD10301	QD10401	QD10501	QD10601
Channel	**Exp. 8**	**Exp. 9**	**Exp. 10**				
0CH	QD10700	QD10800	QD10900				
1CH	QD10701	QD10801	QD10901				

XD-E4AD

Channel	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
0CH	ID10000	ID10100	ID10200	ID10300	ID10400	ID10500	ID10600
1CH	ID10001	ID10101	ID10201	ID10301	ID10401	ID10501	ID10601
2CH	ID10002	ID10102	ID10202	ID10302	ID10402	ID10502	ID10602
3CH	ID10003	ID10103	ID10203	ID10303	ID10403	ID10503	ID10603
Channel	**Exp. 8**	**Exp. 9**	**Exp. 10**				
0CH	ID10700	ID10800	ID10900				
1CH	ID10701	ID10801	ID10901				
2CH	ID10702	ID10802	ID10902				
3CH	ID10703	ID10803	ID10903				

XD-E4AD2DA

Channel	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
0CH	ID10000	ID10100	ID10200	ID10300	ID10400	ID10500	ID10600
1CH	ID10001	ID10101	ID10201	ID10301	ID10401	ID10501	ID10601
2CH	ID10002	ID10102	ID10202	ID10302	ID10402	ID10502	ID10602
3CH	ID10003	ID10103	ID10203	ID10303	ID10403	ID10503	ID10603
4CH	QD10000	QD10100	QD10200	QD10300	QD10400	QD10500	QD10600
5CH	QD10001	QD10101	QD10201	QD10301	QD10401	QD10501	QD10601
Channel	**Exp. 8**	**Exp. 9**	**Exp. 10**				
0CH	ID10700	ID10800	ID10900				
1CH	ID10701	ID10801	ID10901				
2CH	ID10702	ID10802	ID10902				
3CH	ID10703	ID10803	ID10903				
4CH	QD10700	QD10800	QD10900				
5CH	QD10701	QD10801	QD10901				

XD-E8AD

Channel	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
0CH	ID10000	ID10100	ID10200	ID10300	ID10400	ID10500	ID10600
1CH	ID10001	ID10101	ID10201	ID10301	ID10401	ID10501	ID10601
2CH	ID10002	ID10102	ID10202	ID10302	ID10402	ID10502	ID10602
3CH	ID10003	ID10103	ID10203	ID10303	ID10403	ID10503	ID10603
4CH	ID10004	ID10104	ID10204	ID10304	ID10404	ID10504	ID10604
5CH	ID10005	ID10105	ID10205	ID10305	ID10405	ID10505	ID10605
6CH	ID10006	ID10106	ID10206	ID10306	ID10406	ID10506	ID10606
7CH	ID10007	ID10107	ID10207	ID10307	ID10407	ID10507	ID10607
Channel	**Exp. 8**	**Exp. 9**	**Exp. 10**				
0CH	ID10700	ID10800	ID10900				
1CH	ID10701	ID10801	ID10901				
2CH	ID10702	ID10802	ID10902				
3CH	ID10703	ID10803	ID10903				
4CH	ID10704	ID10804	ID10904				
5CH	ID10705	ID10805	ID10905				
6CH	ID10706	ID10806	ID10906				
7CH	ID10707	ID10807	ID10907				

XD-E6PT-P, XD-E6TC-P

channel	Present temperature	Set temperature	PID control bit	First three channels PID value	Last three channels PID value
0CH	ID10000	QD10000	Y10000	Kp-----QD10006 Ki-----QD10007 Kd-----QD10008 Diff---QD10009	Kp-----QD10010 Ki-----QD10011 Kd-----QD10012 Diff---QD10013
1CH	ID10001	QD10001	Y10001		
2CH	ID10002	QD10002	Y10002		
3CH	ID10003	QD10003	Y10003		
4CH	ID10004	QD10004	Y10004		
5CH	ID10005	QD10005	Y10005		

XD-E1WT

Module no.	address	Explanations	Note
#1	Y10000	Fast sampling enable, ON is fast sampling, OFF is slow sampling	
	Y10001	Internal full scale calibration, set write in the calibration parameter when power on	
	Y10002	Set to zero	
	Y10003	Calibration	
	Y10010	first level filter enable	
	Y10011	Second level filter enable	
	Y10012	Resonance frequency measurement enable	
	X10000	Internal full scale calibration complete flag	
	X10001	Resonance frequency measurement complete flag	
	ID10000	Present digital value	dword
	ID10002	Present weight	dword
	ID10004	Resonance frequency	word

Appendix 1-4. Special Flash Register schedule

Special FLASH data register SFD

*** means it works only after repower on the PLC**

I filtering

ID	Function	Description
SFD0*	Input filter time	
SFD2*	Watchdog run-up time, default value is 200ms	

I Mapping

ID	Function	Description	
SFD10*	I00 corresponds to X**	Input terminal 0 corresponds to X** number	0xFF means terminal bad，0xFE means terminal idle
SFD11*	I01 corresponds to X**		
SFD12*	I02 corresponds to X**		
……	……		
SFD73*	I77 corresponds to X**	Default value is 77（Octonary）	

O Mapping

ID	Function	Description	
SFD74*	O00 corresponds to Y**	Output terminal 0 correspond to Y** number	0xFF means terminal bad，0xFE means terminal idle
		Default value is 0	
……	……		
SFD134*	O77 corresponds to Y**	Default value is 77（Octonary）	

I Attribute

ID	Function	Description	
SFD138*	I00 attribute	Attribute of input terminal 0	0：positive logic others：negative logic
SFD139*	I01 attribute		

……	……		
SFD201*	I77 attribute		

High Speed Counting

ID	Function	Description
SFD320	HSC0 frequency times	2：2 times frequency；4: 4 times frequency(effective at AB phase counting mode)
SFD321	HSC2 frequency times	Ditto
SFD322	HSC4 frequency times	Ditto
SFD323	HSC6 frequency times	Ditto
SFD324	HSC8 frequency times	Ditto
SFD325	HSC10 frequency times	Ditto
SFD326	HSC12 frequency times	Ditto
SFD327	HSC14 frequency times	Ditto
SFD328	HSC16 frequency times	Ditto
SFD329	HSC18 frequency times	Ditto
SFD330	Bit selection of HSC absolute and relative（24 segment）	bit0 corresponds to HSC0，bit1corresponds to HSC2，and so on, bit9 corresponds to HSC18 0：relative 1：absolute
SFD331	Interrupt circulating of 24 segments high speed counting	bit0 corresponds to HSC0，bit1corresponds to HSC2，and so on, bit9 corresponds to HSC18 0：single 1：loop
SFD332	CAM function	bit0 corresponds to HSC0，bit1corresponds to HSC2，and so on, bit9 corresponds to HSC18 0：do not support CAM function 1：support CAM function

Expansion Module Configuration

ID	Function	Description	
SFD350			Configuration of the first expansion module
:			
SFD359			
SFD360			Configuration of the second expansion module
:			
SFD369			
:	:	:	
SFD500			Configuration of the 16th

:			expansion module
SFD509			
SFD510			Configuration 1 of BD module
:			
SFD519			
:	:	:	
SFD550			Configuration 5 of BD module
:			
SFD559			

Note: XD series PLC can work with 10 expansion modules and 3 BD cards at most.

Reserved Motion Control Usage

ID	Function	Description		
SFD900	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic； 1：negative logic, default value is 0 Bit 1：logic of pulse direction 0：positive logic； 1：negative logic, default value is 0 Bit 8：unit of pulse 0：pulse number； 1：pulse equivalent, default value is 0	Common parameters	PULSE_1
SFD901	Reserved			
SFD902	Pulse number/1turn of low 16 bits			
SFD903	Pulse number/1turn of high 16 bits			
SFD904	Amount of movement/1turn of low 16 bits			
SFD905	Amount of movement/1turn of high 16 bits			
SFD906	Pulse direction terminal	Set number of terminal Y，0xFF means no terminal		
SFD907	Direction delay time	Default value is 20，unit：ms		

SFD908	Positive compensation of gear clearance			
SFD909	Negative compensation of gear clearance			
SFD910	Low 16 bits of Electrical origin position			
SFD911	High 16 bits of Electrical origin position			
SFD912	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD913	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD914	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD915	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD916	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD917	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD918	Low 16 bits of return speed VH			
SFD919	High 16 bits of return speed VH			
SFD920	Low 16 bits of return speed VL			
SFD921	High 16 bits of return speed VL			
SFD922	Low 16 bits of crawling speed			
SFD923	High 16 bits of crawling speed			

SFD924	Low 16 bits of mechanical origin			
SFD925	High 16 bits of mechanical origin			
SFD926	Z phase number			
SFD927	CLR signal delay time	Default value is 20, unit: ms		
…				
SFD950	Low 16 bits of pulse default speed	Only when speed= 0, default speed is used to transmit pulse.	The first set of parameters	
SFD951	High 16 bits of pulse default speed			
SFD952	Accelerating time of pulse default speed			
SFD953	Decelerating time of pulse default speed			
SFD954	Acc and dec time of tween			
SFD955	Reserved			
SFD956	Low 16 bits of max speed limiting			
SFD957	High 16 bits of max speed limiting			
SFD958	Low 16 bits of starting speed			
SFD959	High 16 bits of starting speed			
SFD960	Low 16 bits of ending speed			
SFD961	High 16 bits of ending speed			
…				
SFD970	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of parameters	
SFD971	High 16 bits of pulse default speed			
SFD972	Accelerating time of pulse default speed			
SFD973	Decelerating time of pulse default speed			
SFD974	Acc and Dec time of tween			
SFD975	Reserved			
SFD976	Low 16 bits of max speed limiting			
SFD977	High 16 bits of max speed limiting			
SFD978	Low 16 bits of starting speed			
SFD979	High 16 bits of starting speed			

SFD980	Low 16 bits of ending speed			
SFD981	High 16 bits of ending speed			
…				
SFD990	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.		
SFD991	High 16 bits of pulse default speed			
SFD992	Accelerating time of pulse default speed			
SFD993	Decelerating time of pulse default speed			
SFD994	Acc and Dec time of tween			
SFD995	Reserved			
SFD996	Low 16 bits of max speed limiting			
SFD997	High 16 bits of max speed limiting			
SFD998	Low 16 bits of starting speed			
SFD999	High 16 bits of starting speed			
SFD1000	Low 16 bits of ending speed			
SFD1001	High 16 bits of ending speed			
…				
SFD1010	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.		
SFD1011	High 16 bits of pulse default speed			
SFD1012	Accelerating time of pulse default speed			
SFD1013	Decelerating time of pulse default speed			
SFD1014	Acc and Dec time of tween			
SFD1015	Reserved			
SFD1016	Low 16 bits of max speed limiting			
SFD1017	High 16 bits of max speed limiting			
SFD1018	Low 16 bits of starting speed			
SFD1019	High 16 bits of starting speed			
SFD1020	Low 16 bits of ending speed			
SFD1021	High 16 bits of ending speed			
…				

SFD1030	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_2
SFD1031				
SFD1032	Low 16 bits of pulse number per circle			
SFD1033	High 16 bits of pulse number per circle			
SFD1034	Low 16 bits of pulse equivalent per circle			
SFD1035	High 16 bits of pulse equivalent per circle			
SFD1036	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1037	Direction delay time	Default 20，unit：ms		
SFD1038	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1039	Negative compensation of gear gap			
SFD1040	Low 16 bits of Electrical origin position			
SFD1041	High 16 bits of Electrical origin position			
SFD1042	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		

SFD1043	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1044	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1045	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1046	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1047	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1048	Low 16 bits of return speed VH			
SFD1049	High 16 bits of return speed VH			
SFD1050	Low 16 bits of return speed VL			
SFD1051	High 16 bits of return speed VL			
SFD1052	Low 16 bits of crawling speed			
SFD1053	High 16 bits of crawling speed			
SFD1054	Low 16 bits of mechanical origin			
SFD1055	High 16 bits of mechanical origin			
SFD1056	Z phase number			
SFD1057	CLR signal delay time	Default 20，unit：ms		
…				
SFD1080	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of parameters	
SFD1081	High 16 bits of pulse default speed			
SFD1082	Accelerating time of pulse default speed			

SFD1083	Decelerating time of pulse default speed			
SFD1084	Acc and Dec time of tween			
SFD1085	Reserved			
SFD1086	Low 16 bits of max speed limiting			
SFD1087	High 16 bits of max speed limiting			
SFD1088	Low 16 bits of starting speed			
SFD1089	High 16 bits of starting speed			
SFD1090	Low 16 bits of ending speed			
SFD1091	High 16 bits of ending speed			
…				
SFD1100	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of paramet ers	
SFD1101	High 16 bits of pulse default speed			
SFD1102	Accelerating time of pulse default speed			
SFD1103	Decelerating time of pulse default speed			
SFD1104	Acc and Dec time of tween			
SFD1105	Reserved			
SFD1106	Low 16 bits of max speed limiting			
SFD1107	High 16 bits of max speed limiting			
SFD1108	Low 16 bits of starting speed			
SFD1109	High 16 bits of starting speed			
SFD1110	Low 16 bits of ending speed			
SFD1111	High 16 bits of ending speed			
…				
SFD1120	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of paramet ers	
SFD1121	High 16 bits of pulse default speed			
SFD1122	Accelerating time of pulse default speed			
SFD1123	Decelerating time of pulse default speed			
SFD1124	Acc and Dec time of tween			
SFD1125	Reserved			

SFD1126	Low 16 bits of max speed limiting			
SFD1127	High 16 bits of max speed limiting			
SFD1128	Low 16 bits of starting speed			
SFD1129	High 16 bits of starting speed			
SFD1130	Low 16 bits of ending speed			
SFD1131	High 16 bits of ending speed			
…				
SFD1140	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of paramet ers	
SFD1141	High 16 bits of pulse default speed			
SFD1142	Accelerating time of pulse default speed			
SFD1143	Decelerating time of pulse default speed			
SFD1144	Acc and Dec time of tween			
SFD1145	Reserved			
SFD1146	Low 16 bits of max speed limiting			
SFD1147	High 16 bits of max speed limiting			
SFD1148	Low 16 bits of starting speed			
SFD1149	High 16 bits of starting speed			
SFD1150	Low 16 bits of ending speed			
SFD1151	High 16 bits of ending speed			
…				
SFD1160	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public paramet ers	PULS E_3
SFD1161				

SFD1162	Low 16 bits of pulse number per circle			
SFD1163	High 16 bits of pulse number per circle			
SFD1164	Low 16 bits of pulse equivalent per circle			
SFD1165	High 16 bits of pulse equivalent per circle			
SFD1166	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1167	Direction delay time	Default 20，unit：ms		
SFD1168	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1169	Negative compensation of gear gap			
SFD1170	Low 16 bits of Electrical origin position			
SFD1171	High 16 bits of Electrical origin position			
SFD1172	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD1173	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1174	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1175	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1176	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		

SFD1177	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1178	Low 16 bits of return speed VH			
SFD1179	High 16 bits of return speed VH			
SFD1180	Low 16 bits of return speed VL			
SFD1181	High 16 bits of return speed VL			
SFD1182	Low 16 bits of crawling speed			
SFD1183	High 16 bits of crawling speed			
SFD1184	Low 16 bits of mechanical origin			
SFD1185	High 16 bits of mechanical origin			
SFD1186	Z phase number			
SFD1187	CLR signal delay time	Default 20，unit：ms		
…				
SFD1210	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of paramet ers	
SFD1211	High 16 bits of pulse default speed			
SFD1212	Accelerating time of pulse default speed			
SFD1213	Decelerating time of pulse default speed			
SFD1214	Acc and Dec time of tween			
SFD1215	Reserved			
SFD1216	Low 16 bits of max speed limiting			
SFD1217	High 16 bits of max speed limiting			
SFD1218	Low 16 bits of starting speed			
SFD1219	High 16 bits of starting speed			
SFD1220	Low 16 bits of ending speed			
SFD1221	High 16 bits of ending speed			
…				
SFD1230	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to	Second set of	

SFD1231	High 16 bits of pulse default speed	transmit pulse.	paramet ers	
SFD1232	Accelerating time of pulse default speed			
SFD1233	Decelerating time of pulse default speed			
SFD1234	Acc and Dec time of tween			
SFD1235	Reserved			
SFD1236	Low 16 bits of max speed limiting			
SFD1237	High 16 bits of max speed limiting			
SFD1238	Low 16 bits of starting speed			
SFD1239	High 16 bits of starting speed			
SFD1240	Low 16 bits of ending speed			
SFD1241	High 16 bits of ending speed			
…				
SFD1250	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of paramet ers	
SFD1251	High 16 bits of pulse default speed			
SFD1252	Accelerating time of pulse default speed			
SFD1253	Decelerating time of pulse default speed			
SFD1254	Acc and Dec time of tween			
SFD1255	Reserved			
SFD1256	Low 16 bits of max speed limiting			
SFD1257	High 16 bits of max speed limiting			
SFD1258	Low 16 bits of starting speed			
SFD1259	High 16 bits of starting speed			
SFD1260	Low 16 bits of ending speed			
SFD1261	High 16 bits of ending speed			
…				
SFD1270	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of paramet ers	
SFD1271	High 16 bits of pulse default speed			
SFD1272	Accelerating time of pulse default speed			

SFD1273	Decelerating time of pulse default speed			
SFD1274	Acc and Dec time of tween			
SFD1275	Reserved			
SFD1276	Low 16 bits of max speed limiting			
SFD1277	High 16 bits of max speed limiting			
SFD1278	Low 16 bits of starting speed			
SFD1279	High 16 bits of starting speed			
SFD1280	Low 16 bits of ending speed			
SFD1281	High 16 bits of ending speed			
…				
SFD1290	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_4
SFD1291				
SFD1292	Low 16 bits of pulse number per circle			
SFD1293	High 16 bits of pulse number per circle			
SFD1294	Low 16 bits of pulse equivalent per circle			
SFD1295	High 16 bits of pulse equivalent per circle			
SFD1296	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1297	Direction delay time	Default 20，unit：ms		

SFD1298	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1299	Negative compensation of gear gap			
SFD1300	Low 16 bits of Electrical origin position			
SFD1301	High 16 bits of Electrical origin position			
SFD1302	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD1303	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1304	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1305	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1306	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1307	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1308	Low 16 bits of return speed VH			
SFD1309	High 16 bits of return speed VH			
SFD1310	Low 16 bits of return speed VL			
SFD1311	High 16 bits of return speed VL			
SFD1312	Low 16 bits of crawling speed			

SFD1313	High 16 bits of crawling speed			
SFD1314	Low 16 bits of mechanical origin			
SFD1315	High 16 bits of mechanical origin			
SFD1316	Z phase number			
SFD1317	CLR signal delay time	Default 20，unit：ms		
…				
SFD1340	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of parameters	
SFD1341	High 16 bits of pulse default speed			
SFD1342	Accelerating time of pulse default speed			
SFD1343	Decelerating time of pulse default speed			
SFD1344	Acc and Dec time of tween			
SFD1345	Reserved			
SFD1346	Low 16 bits of max speed limiting			
SFD1347	High 16 bits of max speed limiting			
SFD1348	Low 16 bits of starting speed			
SFD1349	High 16 bits of starting speed			
SFD1350	Low 16 bits of ending speed			
SFD1351	High 16 bits of ending speed			
…				
SFD1360	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of parameters	
SFD1361	High 16 bits of pulse default speed			
SFD1362	Accelerating time of pulse default speed			
SFD1363	Decelerating time of pulse default speed			
SFD1364	Acc and Dec time of tween			
SFD1365	Reserved			
SFD1366	Low 16 bits of max speed limiting			
SFD1367	High 16 bits of max speed limiting			
SFD1368	Low 16 bits of starting speed			

SFD1369	High 16 bits of starting speed			
SFD1370	Low 16 bits of ending speed			
SFD1371	High 16 bits of ending speed			
…				
SFD1380	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of parameters	
SFD1381	High 16 bits of pulse default speed			
SFD1382	Accelerating time of pulse default speed			
SFD1383	Decelerating time of pulse default speed			
SFD1384	Acc and Dec time of tween			
SFD1385	Reserved			
SFD1386	Low 16 bits of max speed limiting			
SFD1387	High 16 bits of max speed limiting			
SFD1388	Low 16 bits of starting speed			
SFD1389	High 16 bits of starting speed			
SFD1390	Low 16 bits of ending speed			
SFD1391	High 16 bits of ending speed			
…				
SFD1400	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of parameters	
SFD1401	High 16 bits of pulse default speed			
SFD1402	Accelerating time of pulse default speed			
SFD1403	Decelerating time of pulse default speed			
SFD1404	Acc and Dec time of tween			
SFD1405	Reserved			
SFD1406	Low 16 bits of max speed limiting			
SFD1407	High 16 bits of max speed limiting			
SFD1408	Low 16 bits of starting speed			
SFD1409	High 16 bits of starting speed			
SFD1410	Low 16 bits of ending speed			
SFD1411	High 16 bits of ending speed			
…				

SFD1420	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_5
SFD1421				
SFD1422	Low 16 bits of pulse number per circle			
SFD1423	High 16 bits of pulse number per circle			
SFD1424	Low 16 bits of pulse equivalent per circle			
SFD1425	High 16 bits of pulse equivalent per circle			
SFD1426	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1427	Direction delay time	Default 20，unit：ms		
SFD1428	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1429	Negative compensation of gear gap			
SFD1430	Low 16 bits of Electrical origin position			
SFD1431	High 16 bits of Electrical origin position			
SFD1432	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		

SFD1433	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1434	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1435	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1436	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1437	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1438	Low 16 bits of return speed VH			
SFD1439	High 16 bits of return speed VH			
SFD1440	Low 16 bits of return speed VL			
SFD1441	High 16 bits of return speed VL			
SFD1442	Low 16 bits of crawling speed			
SFD1443	High 16 bits of crawling speed			
SFD1444	Low 16 bits of mechanical origin			
SFD1445	High 16 bits of mechanical origin			
SFD1446	Z phase number			
SFD1447	CLR signal delay time	Default 20，unit：ms		
…				
SFD1470	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of parameters	
SFD1471	High 16 bits of pulse default speed			
SFD1472	Accelerating time of pulse default speed			

SFD1473	Decelerating time of pulse default speed			
SFD1474	Acc and Dec time of tween			
SFD1475	Reserved			
SFD1476	Low 16 bits of max speed limiting			
SFD1477	High 16 bits of max speed limiting			
SFD1478	Low 16 bits of starting speed			
SFD1479	High 16 bits of starting speed			
SFD1480	Low 16 bits of ending speed			
SFD1481	High 16 bits of ending speed			
…				
SFD1490	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of paramet ers	
SFD1491	High 16 bits of pulse default speed			
SFD1492	Accelerating time of pulse default speed			
SFD1493	Decelerating time of pulse default speed			
SFD1494	Acc and Dec time of tween			
SFD1495	Reserved			
SFD1496	Low 16 bits of max speed limiting			
SFD1497	High 16 bits of max speed limiting			
SFD1498	Low 16 bits of starting speed			
SFD1499	High 16 bits of starting speed			
SFD1500	Low 16 bits of ending speed			
SFD1501	High 16 bits of ending speed			
…				
SFD1510	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of paramet ers	
SFD1511	High 16 bits of pulse default speed			
SFD1512	Accelerating time of pulse default speed			
SFD1513	Decelerating time of pulse default speed			
SFD1514	Acc and Dec time of tween			
SFD1515	Reserved			

SFD1516	Low 16 bits of max speed limiting			
SFD1517	High 16 bits of max speed limiting			
SFD1518	Low 16 bits of starting speed			
SFD1519	High 16 bits of starting speed			
SFD1520	Low 16 bits of ending speed			
SFD1521	High 16 bits of ending speed			
…				
SFD1530	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of parameters	
SFD1531	High 16 bits of pulse default speed			
SFD1532	Accelerating time of pulse default speed			
SFD1533	Decelerating time of pulse default speed			
SFD1534	Acc and Dec time of tween			
SFD1535	Reserved			
SFD1536	Low 16 bits of max speed limiting			
SFD1537	High 16 bits of max speed limiting			
SFD1538	Low 16 bits of starting speed			
SFD1539	High 16 bits of starting speed			
SFD1540	Low 16 bits of ending speed			
SFD1541	High 16 bits of ending speed			
…				
SFD1550	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_6
SFD1551				

SFD1552	Low 16 bits of pulse number per circle			
SFD1553	High 16 bits of pulse number per circle			
SFD1554	Low 16 bits of pulse equivalent per circle			
SFD1555	High 16 bits of pulse equivalent per circle			
SFD1556	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1557	Direction delay time	Default 20，unit：ms		
SFD1558	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1559	Negative compensation of gear gap			
SFD1560	Low 16 bits of Electrical origin position			
SFD1561	High 16 bits of Electrical origin position			
SFD1562	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD1563	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1564	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1565	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1566	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		

SFD1567	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1568	Low 16 bits of return speed VH			
SFD1569	High 16 bits of return speed VH			
SFD1570	Low 16 bits of return speed VL			
SFD1571	High 16 bits of return speed VL			
SFD1572	Low 16 bits of crawling speed			
SFD1573	High 16 bits of crawling speed			
SFD1574	Low 16 bits of mechanical origin			
SFD1575	High 16 bits of mechanical origin			
SFD1576	Z phase number			
SFD1577	CLR signal delay time	Default 20, unit: ms		
…				
SFD1600	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of parameters	
SFD1601	High 16 bits of pulse default speed			
SFD1602	Accelerating time of pulse default speed			
SFD1603	Decelerating time of pulse default speed			
SFD1604	Acc and Dec time of tween			
SFD1605	Reserved			
SFD1606	Low 16 bits of max speed limiting			
SFD1607	High 16 bits of max speed limiting			
SFD1608	Low 16 bits of starting speed			
SFD1609	High 16 bits of starting speed			
SFD1610	Low 16 bits of ending speed			
SFD1611	High 16 bits of ending speed			
…				
SFD1620	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to	Second set of	

SFD1621	High 16 bits of pulse default speed	transmit pulse.	paramet ers	
SFD1622	Accelerating time of pulse default speed			
SFD1623	Decelerating time of pulse default speed			
SFD1624	Acc and Dec time of tween			
SFD1625	Reserved			
SFD1626	Low 16 bits of max speed limiting			
SFD1627	High 16 bits of max speed limiting			
SFD1628	Low 16 bits of starting speed			
SFD1629	High 16 bits of starting speed			
SFD1630	Low 16 bits of ending speed			
SFD1631	High 16 bits of ending speed			
…				
SFD1640	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of paramet ers	
SFD1641	High 16 bits of pulse default speed			
SFD1642	Accelerating time of pulse default speed			
SFD1643	Decelerating time of pulse default speed			
SFD1644	Acc and Dec time of tween			
SFD1645	Reserved			
SFD1646	Low 16 bits of max speed limiting			
SFD1647	High 16 bits of max speed limiting			
SFD1648	Low 16 bits of starting speed			
SFD1649	High 16 bits of starting speed			
SFD1650	Low 16 bits of ending speed			
SFD1651	High 16 bits of ending speed			
…				
SFD1660	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of paramet ers	
SFD1661	High 16 bits of pulse default speed			
SFD1662	Accelerating time of pulse default speed			

SFD1663	Decelerating time of pulse default speed			
SFD1664	Acc and Dec time of tween			
SFD1665	Reserved			
SFD1666	Low 16 bits of max speed limiting			
SFD1667	High 16 bits of max speed limiting			
SFD1668	Low 16 bits of starting speed			
SFD1669	High 16 bits of starting speed			
SFD1670	Low 16 bits of ending speed			
SFD1671	High 16 bits of ending speed			
…				
SFD1680	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_7
SFD1681				
SFD1682	Low 16 bits of pulse number per circle			
SFD1683	High 16 bits of pulse number per circle			
SFD1684	Low 16 bits of pulse equivalent per circle			
SFD1685	High 16 bits of pulse equivalent per circle			
SFD1686	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1687	Direction delay time	Default 20，unit：ms		

SFD1688	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1689	Negative compensation of gear gap			
SFD1690	Low 16 bits of Electrical origin position			
SFD1691	High 16 bits of Electrical origin position			
SFD1692	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD1693	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1694	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1695	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1696	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1697	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1698	Low 16 bits of return speed VH			
SFD1699	High 16 bits of return speed VH			
SFD1700	Low 16 bits of return speed VL			
SFD1701	High 16 bits of return speed VL			
SFD1702	Low 16 bits of crawling speed			

SFD1703	High 16 bits of crawling speed			
SFD1704	Low 16 bits of mechanical origin			
SFD1705	High 16 bits of mechanical origin			
SFD1706	Z phase number			
SFD1707	CLR signal delay time	Default 20，unit：ms		
…				
SFD1730	Low 16 bits of pulse default speed	Only when speed is 0, default speed is used to transmit pulse.	First set of parameters	
SFD1731	High 16 bits of pulse default speed			
SFD1732	Accelerating time of pulse default speed			
SFD1733	Decelerating time of pulse default speed			
SFD1734	Acc and Dec time of tween			
SFD1735	Reserved			
SFD1736	Low 16 bits of max speed limiting			
SFD1737	High 16 bits of max speed limiting			
SFD1738	Low 16 bits of starting speed			
SFD1739	High 16 bits of starting speed			
SFD1740	Low 16 bits of ending speed			
SFD1741	High 16 bits of ending speed			
…				
SFD1750	Low 16 bits of pulse default speed	Only when speed is 0, default speed is used to transmit pulse.	Second set of parameters	
SFD1751	High 16 bits of pulse default speed			
SFD1752	Accelerating time of pulse default speed			
SFD1753	Decelerating time of pulse default speed			
SFD1754	Acc and Dec time of tween			
SFD1755	Reserved			
SFD1756	Low 16 bits of max speed limiting			
SFD1757	High 16 bits of max speed limiting			
SFD1758	Low 16 bits of starting speed			

SFD1759	High 16 bits of starting speed			
SFD1760	Low 16 bits of ending speed			
SFD1761	High 16 bits of ending speed			
…				
SFD1770	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of parameters	
SFD1771	High 16 bits of pulse default speed			
SFD1772	Accelerating time of pulse default speed			
SFD1773	Decelerating time of pulse default speed			
SFD1774	Acc and Dec time of tween			
SFD1775	Reserved			
SFD1776	Low 16 bits of max speed limiting			
SFD1777	High 16 bits of max speed limiting			
SFD1778	Low 16 bits of starting speed			
SFD1779	High 16 bits of starting speed			
SFD1780	Low 16 bits of ending speed			
SFD1781	High 16 bits of ending speed			
…				
SFD1790	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of parameters	
SFD1791	High 16 bits of pulse default speed			
SFD1792	Accelerating time of pulse default speed			
SFD1793	Decelerating time of pulse default speed			
SFD1794	Acc and Dec time of tween			
SFD1795	Reserved			
SFD1796	Low 16 bits of max speed limiting			
SFD1797	High 16 bits of max speed limiting			
SFD1798	Low 16 bits of starting speed			
SFD1799	High 16 bits of starting speed			
SFD1800	Low 16 bits of ending speed			
SFD1801	High 16 bits of ending speed			
…				

SFD1810	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_8
SFD1811				
SFD1812	Low 16 bits of pulse number per circle			
SFD1813	High 16 bits of pulse number per circle			
SFD1814	Low 16 bits of pulse equivalent per circle			
SFD1815	High 16 bits of pulse equivalent per circle			
SFD1816	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1817	Direction delay time	Default 20，unit：ms		
SFD1818	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1819	Negative compensation of gear gap			
SFD1820	Low 16 bits of Electrical origin position			
SFD1821	High 16 bits of Electrical origin position			
SFD1822	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		

SFD1823	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1824	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1825	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1826	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1827	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1828	Low 16 bits of return speed VH			
SFD1829	High 16 bits of return speed VH			
SFD1830	Low 16 bits of return speed VL			
SFD1831	High 16 bits of return speed VL			
SFD1832	Low 16 bits of crawling speed			
SFD1833	High 16 bits of crawling speed			
SFD1834	Low 16 bits of mechanical origin			
SFD1835	High 16 bits of mechanical origin			
SFD1836	Z phase number			
SFD1837	CLR signal delay time	Default 20，unit：ms		
…				
SFD1860	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of parameters	
SFD1861	High 16 bits of pulse default speed			
SFD1862	Accelerating time of pulse default speed			

SFD1863	Decelerating time of pulse default speed			
SFD1864	Acc and Dec time of tween			
SFD1865	Reserved			
SFD1866	Low 16 bits of max speed limiting			
SFD1867	High 16 bits of max speed limiting			
SFD1868	Low 16 bits of starting speed			
SFD1869	High 16 bits of starting speed			
SFD1870	Low 16 bits of ending speed			
SFD1871	High 16 bits of ending speed			
…				
SFD1880	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of parameters	
SFD1881	High 16 bits of pulse default speed			
SFD1882	Accelerating time of pulse default speed			
SFD1883	Decelerating time of pulse default speed			
SFD1884	Acc and Dec time of tween			
SFD1885	Reserved			
SFD1886	Low 16 bits of max speed limiting			
SFD1887	High 16 bits of max speed limiting			
SFD1888	Low 16 bits of starting speed			
SFD1889	High 16 bits of starting speed			
SFD1890	Low 16 bits of ending speed			
SFD1891	High 16 bits of ending speed			
…				
SFD1900	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of parameters	
SFD1901	High 16 bits of pulse default speed			
SFD1902	Accelerating time of pulse default speed			
SFD1903	Decelerating time of pulse default speed			
SFD1904	Acc and Dec time of tween			
SFD1905	Reserved			

SFD1906	Low 16 bits of max speed limiting			
SFD1907	High 16 bits of max speed limiting			
SFD1908	Low 16 bits of starting speed			
SFD1909	High 16 bits of starting speed			
SFD1910	Low 16 bits of ending speed			
SFD1911	High 16 bits of ending speed			
…				
SFD1920	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of paramet ers	
SFD1921	High 16 bits of pulse default speed			
SFD1922	Accelerating time of pulse default speed			
SFD1923	Decelerating time of pulse default speed			
SFD1924	Acc and Dec time of tween			
SFD1925	Reserved			
SFD1926	Low 16 bits of max speed limiting			
SFD1927	High 16 bits of max speed limiting			
SFD1928	Low 16 bits of starting speed			
SFD1929	High 16 bits of starting speed			
SFD1930	Low 16 bits of ending speed			
SFD1931	High 16 bits of ending speed			
…				
SFD1940	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public paramet ers	PULS E_9
SFD1941				

SFD1942	Low 16 bits of pulse number per circle			
SFD1943	High 16 bits of pulse number per circle			
SFD1944	Low 16 bits of pulse equivalent per circle			
SFD1945	High 16 bits of pulse equivalent per circle			
SFD1946	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD1947	Direction delay time	Default 20，unit：ms		
SFD1948	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD1949	Negative compensation of gear gap			
SFD1950	Low 16 bits of Electrical origin position			
SFD1951	High 16 bits of Electrical origin position			
SFD1952	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD1953	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1954	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD1955	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD1956	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		

SFD1957	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD1958	Low 16 bits of return speed VH			
SFD1959	High 16 bits of return speed VH			
SFD1960	Low 16 bits of return speed VL			
SFD1961	High 16 bits of return speed VL			
SFD1962	Low 16 bits of crawling speed			
SFD1963	High 16 bits of crawling speed			
SFD1964	Low 16 bits of mechanical origin			
SFD1965	High 16 bits of mechanical origin			
SFD1966	Z phase number			
SFD1967	CLR signal delay time	Default 20，unit：ms		
…				
SFD1990	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	First set of paramet ers	
SFD1991	High 16 bits of pulse default speed			
SFD1992	Accelerating time of pulse default speed			
SFD1993	Decelerating time of pulse default speed			
SFD1994	Acc and Dec time of tween			
SFD1995	Reserved			
SFD1996	Low 16 bits of max speed limiting			
SFD1997	High 16 bits of max speed limiting			
SFD1998	Low 16 bits of starting speed			
SFD1999	High 16 bits of starting speed			
SFD2000	Low 16 bits of ending speed			
SFD2001	High 16 bits of ending speed			
…				
SFD2010	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to	Second set of	

SFD2011	High 16 bits of pulse default speed	transmit pulse.	paramet ers	
SFD2012	Accelerating time of pulse default speed			
SFD2013	Decelerating time of pulse default speed			
SFD2014	Acc and Dec time of tween			
SFD2015	Reserved			
SFD2016	Low 16 bits of max speed limiting			
SFD2017	High 16 bits of max speed limiting			
SFD2018	Low 16 bits of starting speed			
SFD2019	High 16 bits of starting speed			
SFD2020	Low 16 bits of ending speed			
SFD2021	High 16 bits of ending speed			
…				
SFD2030	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of paramet ers	
SFD2031	High 16 bits of pulse default speed			
SFD2032	Accelerating time of pulse default speed			
SFD2033	Decelerating time of pulse default speed			
SFD2034	Acc and Dec time of tween			
SFD2035	Reserved			
SFD2036	Low 16 bits of max speed limiting			
SFD2037	High 16 bits of max speed limiting			
SFD2038	Low 16 bits of starting speed			
SFD2039	High 16 bits of starting speed			
SFD2040	Low 16 bits of ending speed			
SFD2041	High 16 bits of ending speed			
…				
SFD2050	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of paramet ers	
SFD2051	High 16 bits of pulse default speed			
SFD2052	Accelerating time of pulse default speed			

SFD2053	Decelerating time of pulse default speed			
SFD2054	Acc and Dec time of tween			
SFD2055	Reserved			
SFD2056	Low 16 bits of max speed limiting			
SFD2057	High 16 bits of max speed limiting			
SFD2058	Low 16 bits of starting speed			
SFD2059	High 16 bits of starting speed			
SFD2060	Low 16 bits of ending speed			
SFD2061	High 16 bits of ending speed			
…				
SFD2070	Pulse parameters setting	Bit 0：logic of pulse output 0：positive logic; 1：negative logic , default is 0 Bit 1：logic of pulse direction 0：positive logic; 1：negative logic , default is 0 Bit 8：pulse unit 0：pulse number; 1：pulse equivalent, default is 0	Public parameters	PULSE_10
SFD2071				
SFD2072	Low 16 bits of pulse number per circle			
SFD2073	High 16 bits of pulse number per circle			
SFD2074	Low 16 bits of pulse equivalent per circle			
SFD2075	High 16 bits of pulse equivalent per circle			
SFD2076	Pulse direction terminal	Assign the number of terminal Y, 0xFF for no terminal		
SFD2077	Direction delay time	Default 20，unit：ms		

SFD2078	Positive compensation of gear gap	Negative compensation will also use this data when gear gap negative compensation =0		
SFD2079	Negative compensation of gear gap			
SFD2080	Low 16 bits of Electrical origin position			
SFD2081	High 16 bits of Electrical origin position			
SFD2082	Mechanical back to origin parameter setting	Bit0：Switch state setting of near point, 0：Normally ON；1Normally OFF		
SFD2083	Terminal setting of near point signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD2084	Z phase terminal setting	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD2085	Limit terminal setting	Bit7~bit0：Assign limit 1 number of terminal X, 0Xff for not terminal Bit15~bit8：Assign limit 2 number of terminal X, 0Xff for not terminal		
SFD2086	Terminal setting of origin auxiliary signal	Bit0~bit7：Assign the number of terminal X, 0Xff for not terminal		
SFD2087	Terminal setting of zero clear CLR signal output terminal	Bit0~bit7：Assign the number of terminal Y, 0Xff for not terminal		
SFD2088	Low 16 bits of return speed VH			
SFD2089	High 16 bits of return speed VH			
SFD2090	Low 16 bits of return speed VL			
SFD2091	High 16 bits of return speed VL			
SFD2092	Low 16 bits of crawling speed			

SFD2093	High 16 bits of crawling speed			
SFD2094	Low 16 bits of mechanical origin			
SFD2095	High 16 bits of mechanical origin			
SFD2096	Z phase number			
SFD2097	CLR signal delay time	Default 20，unit：ms		
…				
SFD2120	Low 16 bits of pulse default speed	Only when speed is 0, default speed is used to transmit pulse.	First set of parameters	
SFD2121	High 16 bits of pulse default speed			
SFD2122	Accelerating time of pulse default speed			
SFD2123	Decelerating time of pulse default speed			
SFD2124	Acc and Dec time of tween			
SFD2125	Reserved			
SFD2126	Low 16 bits of max speed limiting			
SFD2127	High 16 bits of max speed limiting			
SFD2128	Low 16 bits of starting speed			
SFD2129	High 16 bits of starting speed			
SFD2130	Low 16 bits of ending speed			
SFD2131	High 16 bits of ending speed			
…				
SFD2140	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Second set of parameters	
SFD2141	High 16 bits of pulse default speed			
SFD2142	Accelerating time of pulse default speed			
SFD2143	Decelerating time of pulse default speed			
SFD2144	Acc and Dec time of tween			
SFD2145	Reserved			
SFD2146	Low 16 bits of max speed limiting			
SFD2147	High 16 bits of max speed limiting			
SFD2148	Low 16 bits of starting speed			

SFD2149	High 16 bits of starting speed			
SFD2150	Low 16 bits of ending speed			
SFD2151	High 16 bits of ending speed			
…				
SFD2160	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Third set of parameters	
SFD2161	High 16 bits of pulse default speed			
SFD2162	Accelerating time of pulse default speed			
SFD2163	Decelerating time of pulse default speed			
SFD2164	Acc and Dec time of tween			
SFD2165	Reserved			
SFD2166	Low 16 bits of max speed limiting			
SFD2167	High 16 bits of max speed limiting			
SFD2168	Low 16 bits of starting speed			
SFD2169	High 16 bits of starting speed			
SFD2170	Low 16 bits of ending speed			
SFD2171	High 16 bits of ending speed			
…				
SFD2180	Low 16 bits of pulse default speed	Only when speed=0, default speed is used to transmit pulse.	Forth set of parameters	
SFD2181	High 16 bits of pulse default speed			
SFD2182	Accelerating time of pulse default speed			
SFD2183	Decelerating time of pulse default speed			
SFD2184	Acc and Dec time of tween			
SFD2185	Reserved			
SFD2186	Low 16 bits of max speed limiting			
SFD2187	High 16 bits of max speed limiting			
SFD2188	Low 16 bits of starting speed			
SFD2189	High 16 bits of starting speed			
SFD2190	Low 16 bits of ending speed			
SFD2191	High 16 bits of ending speed			
…				

Appendix 2 Instruction Schedule

In appendix 2 all instructions that XD series PLC support will be listed, including basic instructions, application instructions, special function instructions and motion control instructions and all instructions' corresponding application range will also be listed.

This part helps the users refer to instruction functions quickly. More about instructions application, please refer to XD Series Programmable Controller【 Instruction Part】.

Appendix 2-1. Basic Instruction List

Mnemonic	Function
LD	Initial logical operation contact type: NO(normally open)
LDI	Initial logical operation contact type: NC (normally closed)
OUT	Final logic operation type: coil drive
AND	Serial connection of NO
ANI	Serial connection of NC
OR	Parallel connection of NO
ORI	Parallel connection of NC
LDP	Operation start of pulse rising edge
LDF	Operation start of pulse falling edge
ANDP	Serial connection of pulse rising edge
ANDF	Serial connection of pulse falling edge
ORP	Parallel connection of pulse rising edge
ORF	Parallel connection of pulse rising edge
LDD	Read directly from the contact state
LDDI	Read directly NC
ANDD	Read directly from the contact state and connect serially
ANDDI	Read NC and connect serially
ORD	Read directly from the contact state and parallel connection
ORDI	Read NC and parallel connection
OUTD	Output the point directly
ORB	Parallel connection of serial circuit
ANB	Serial connection of parallel circuit
MCS	New bus line start
MCR	Bus line return
ALT	Alternate coil state
PLS	Connect on a scan cycle of pulse rising edge
PLF	Connect on a scan cycle of pulse falling edge
SET	Set coil on
RST	Set coil off
OUT	Drive counting coil
RST	Set coil off and current value rest to zero
END	I/O process and return to step 0
GROUP	Instruction block fold start
GROUPE	Instruction block fold end
TMR	Timing

Appendix 2-2. Application Instruction List

Sort	Mnemonic	Function
Program flow	CJ	Condition jump
	CALL	Call subroutine
	SRET	Subroutine return
	STL	Flow start
	STLE	Flow end
	SET	Open the assigned flow and close the current flow
	ST	Open the assigned flow and do not close the current flow
	FOR	Start of a FOR-NEXT loop
	NEXT	END of a FOR-NEXT loop
	FEND	End of main program
Data compare	LD=※1	LD activate if （S1）=（S2）
	LD>※1	LD activate if （S1）>（S2）
	LD<※1	LD activate if （S1）<（S2）
	LD<>※1	LD activate if （S1）≠（S2）
	LD>=※1	LD activate if （S1）≥（S2）
	LD<=※1	LD activate if （S1）≤（S2）
	AND=※1	AND activate if （S1）=（S2）
	AND>※1	AND activate if （S1）>（S2）
	AND<※1	AND activate if （S1）<（S2）
	AND<>※1	AND activate if （S1）≠（S2）
	AND>=※1	AND activate if （S1）≥（S2）
	AND<=※1	AND activate if （S1）≤（S2）
	OR=※1	OR activate if （S1）=（S2）
	OR>※1	OR activate if （S1）>（S2）
	OR<※1	OR activate if （S1）<（S2）
	OR<>※1	OR activate if （S1）≠（S2）
	OR>=※1	OR activate if （S1）≥（S2）
	OR<=※1	OR activate if （S1）≤（S2）
Data move	CMP※1	Data compare
	ZCP※1	Data zone compare
	MOV※1	Move
	BMOV	Block move
	PMOV	Block move
	FMOV※1	Multi-bit data move
	EMOV	Float move
	FWRT※1	FlashROM written

	MSET	Multi data set
	ZRST	Zone reset
	SWAP	Switch high bytes and low bytes
	XCH※1	Exchange data
Data operation	ADD※1	Addition
	SUB※1	Subtraction
	MUL※1	Multiplication
	DIV※1	Division
	INC※1	Increase 1
	DEC※1	Decrease 1
	MEAN※1	Mean
	WAND※1	Logic and
	WOR※1	Logic or
	WXOR※1	Logic exclusive or
	CML※1	Complement
	NEG※1	Negative
Data shift	SHL※1	Arithmetic shift left
	SHR※1	Arithmetic shift right
	LSL※1	Logic shift left
	LSR※1	Logic shift right
	ROL※1	Rotation shift left
	ROR※1	Rotation shift right
	SFTL※1	Bit shift left
	SFTR※1	Bit shift right
	WSFL	Word shift left
	WSFR	Word shift right
Data switch	WTD	Single word integer convert to double word integer
	FLT※1	16 bits integer convert to float
	FLTD※1	64 bits integer convert to float
	INT※1	Float convert to integer
	BIN	BCD convert to binary
	BCD	Binary convert to BCD
	ASCI	Hex convert to ASCⅡ
	HEX	ASCⅡ convert to Hex
	DECO	Coding
	ENCO	High bit coding
	ENCOL	Low bit coding

Sort	Mnemonic	Function
Float	ECMP※2	Float compare

Operation	EZCP※2	Float zone compare
	EADD※2	Float addition
	ESUB※2	Float subtraction
	EMUL※2	Float multiplication
	EDIV※2	Float division
	ESQR※2	Float square root
	SIN※2	Sine
	COS※2	Cosine
	TAN※2	tangent
	ASIN※2	Float arcsin
	ACOS※2	Float arccos
	ATAN※2	Float arctan
Clock	TRD	Read RTC data
	TWR	Write RTC data

※1：All the instructions are 16bits except the instructions with ※1 which has 32bits. 32bits instructions are added D in front of its 16bits instruction. Such as ADD(16bits) / DADD(32bits).

※2：These instructions are 32bits, and have no 16bits format.

Appendix 2-3. Special Instructions List

Sort	Mnemonic	Function
Pulse	PLSR※1	Relative position multi-segment pulse output
	PLSF※1	Changeable frequency pulse output
	PLSMV※2	Save the pulse number in the register
	STOP	Pulse stop
	ZRN※1	Mechanical origin return
	DMOV※2	32bits high speed counting read
	DMOV※2	32bits high speed counting write
MODBUS communication	COLR	MODBUS coil read
	INPR	MODBUS input coil read
	COLW	MODBUS single coil write
	MCLW	MODBUS multi coil write
	REGR	MODBUS register read
	INRR	MODBUS input register read
	REGW	MODBUS single register write
	MRGW	MODBUS multi register write
Precision timing	STR	Precision timing
	DMOV	Read precise timing register
	STOP	Stop precise timing
Interrupt	EI	Enable interrupt
	DI	Disable interrupt
	IRET	Interrupt return
BLOCK	SBSTOP	BLOCK stop
	SBGOON	Carry on the suspensive BLOCK
	WAIT	Wait
Others	PWM	Pulse width modulation
	PID	PID operation control

※1：All the instructions are 16bits except the instructions with ※1 which has 32bits. 32bits instructions are added D in front of its 16bits instruction. Such as ADD(16bits) / DADD(32bits).

※2：These instructions are 32bits, and have no 16bits format.

Appendix 3 PLC Configuration List

This part is used to check each model's configurations. Via this table, we can judge products type easily.

○ Selectable × Not support √ Support

Series	RTC	Communication			Expansion module	BD	High speed counter		Pulse output channel (T/RT)	External interruption
		CAN	485	Free			Incremental mode	AB phase		
XD3										
XD3-16	√	×	√	√	10	×	2	2	2	6
XD3-24	√	×	√	√	10	1	3	3	2	10
XD3-32	√	×	√	√	10	1	3	3	2	10
XD3-48	√	×	√	√	10	2	3	3	2	10
XD3-60	√	×	√	√	10	2	3	3	2	10
XD5										
XD5-24	√	×	√	√	16	1	3	3	2	10
XD5-32	√	×	√	√	16	1	3	3	2	10
XD5-48	√	×	√	√	16	2	3	3	2	10
XD5-60	√	×	√	√	16	2	3	3	2	10
XDM										
XDM-24	√	×	√	√	16	1	4	4	4	10
XDM-32	√	×	√	√	16	1	4	4	4	10
XDM-48	√	×	√	√	16	2	4	4	4	10
XDM-60T4	√	×	√	√	16	2	4	4	4	10
XDM-60T10	√	×	√	√	16	2	10	10	10	10

Appendix 4 Common Questions Q&A

The following are the common questions may happen when using the PLC.

Q1：Why the coil is not set when the condition is satisfied?

A1： The possible reasons:

(1) Users may use one coil for many times, which leads to double coils output. And at this time, the later coil has priority.

(2) Coil may be reset, users can find the reset point by monitor function and modify the program.

Q2：What's the difference between COM1 and COM2?

A2： Both COM1 and COM2 support Modbus-RTU and Modbus-RTU/ASCII format. The difference is COM1 parameters can be set to default value by power on and off function of PLC.

Q3：Why PLC can not communicate with other devices?

A3： The possible reasons:

(1) communication parameters: PLC com port and device parameters must be the same.

(2) communication cable: Confirm connection correct and good and change cable to try again.

(3) communication serial port: Check the port by downloading PLC program. Rule out this problem if download successfully.

(4) contact manufacturer if all the above are ruled out.

Q4：How long can the PLC battery be used?

A4： Normally for 3~5 years.

WUXI XINJE ELECTRIC CO., LTD.
4th Floor Building 7,Originality Industry park,
Liyuan Development Zone, Wuxi City, Jiangsu Province
www.xinje.com
Mail: Fiona.xinje@vip.163.com
Tel: (510) 85134136
Fax: (510) 85111290