XINJE

XF series PLC extension module

User manual

Wuxi XINJE Electric Co., Ltd.

Data No. PF 02 20230906 1.0

Basic description

Thank you for purchasing the XINJE XF series programmable controller and extension module.
This manual mainly introduces the hardware features of XF series extension module.
Before using the product, please read this manual carefully and conduct wiring on the premise of fully understanding the contents of the manual.
For software and programming, please refer to the relevant manuals.
Please deliver this manual to the end user.

Notes to users

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

Statement of responsibility

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

Contact us

If you have any questions about the use of this product, please contact the agent and office who purchased the product, or you can directly contact the company.
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September 2023

Safety precautions

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

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

- Confirmation upon receiving the product

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

- Product system design

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

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

- Product installation

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

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

- Product wiring

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

Attention
1. Do not use external 24V power supply to connect to 24V and 0V terminals of the controller or expansion module. It may cause damage to the product. 2. Please use 2mm2 wire to carry out the third kind of grounding for the grounding terminal of the controller and expansion equipment, and do not share the grounding with the strong current system. It may cause failure, product damage, etc.

3. Do not make external wiring to the empty terminal.
It may cause malfunction and product damage.
4. When processing the screw hole, please do not let the cutting powder and wire debris fall into the product cover.
May cause malfunction, fault, etc.
5. When using wires to connect terminals, be sure to tighten them, and do not make conductive parts contact other wires or terminals.
It may cause malfunction and product damage.

- Operation and maintenance of products

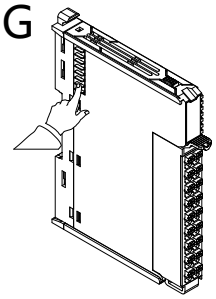
Danger

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

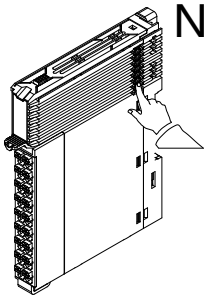
Attention

1. Do not disassemble or assemble this product without authorization.
It may cause damage to the product.
2. Please plug and unplug the connecting cable in case of power failure.
It may cause cable damage and malfunction.
3. Do not make external wiring to the empty terminal.
It may cause malfunction and product damage.
4. Please cut off the power before removing the expansion device, peripheral device and battery.
It may cause malfunction, fault, etc.
5. When the product is discarded, please treat it as industrial waste.
6. Before installing the device, be sure to turn off the power supply. If the power supply is not turned off, the device may malfunction or be damaged. Do not turn off the CPU unit or intermediate power supply when disassembling the XF-I/O unit.
It may cause malfunctions, product damage, etc.
7. Do not stick tape or labels on both sides of the device or at the golden finger. Tape or labels can affect the normal vertical sliding installation of the module unit. The residue of the label or tape, adhesive or debris, may adhere to the pins of the XF-I/O bus connector.
May cause malfunctions, malfunctions, etc.
8. Do not touch the XF-I/O bus connector on the device, as sweat and dust may adhere to the connector or golden fingers.
This may cause a malfunction.

NG



NG



9. Do not use ink to write on the device in the area shown in the picture.
This may cause a malfunction.

Preface

Sincerely thank you for purchasing the XINJE Programmable Controller XF-IO series products.

This manual is convenient for users to understand and use the necessary precautions, specifications, functions, and other contents of XF-IO units.

Before use, one should thoroughly read this manual and related manuals, and correctly use this product based on a thorough understanding of the functions/performance of the XF-IO series extension module.

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1. Document Guide

1-1. Related manual

(1) CPU unit

Manual name	Main content
XSF series hardware user manual	It mainly records the hardware specifications and hardware maintenance information of XSF series CPU units.
XS series PLCopen controller instruction manual (XS Studio)	It mainly records XS series instruction section.

(2) I/O unit

Manual name	Main content
XF Series expansion module user manual	It mainly records the product specifications and maintenance information of the XF series IO unit.

2. Terminology

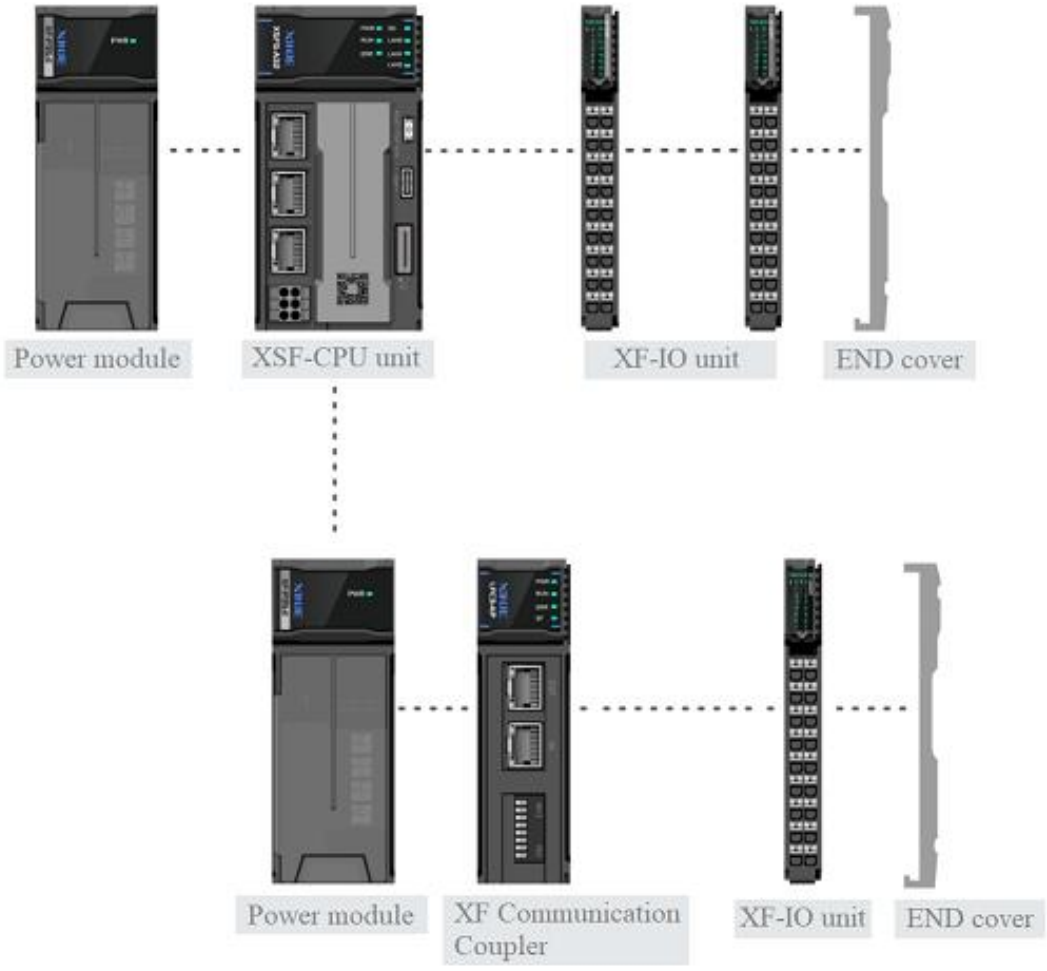
In this manual, unless otherwise specified, the following terms will be used for explanation.

Terminology	Instructions
CPU unit	General term for XF/XSF series CPU units
Power module unit	General term for XF series power modules
IP20	Protection level according to DIN 40050: protection against finger contact and intrusion of particles with a diameter greater than 12mm
Backplane bus	The backplane bus is a serial data bus used by various modules to communicate with each other. The backplane bus is also used to provide some necessary power supply for each module. Each module is connected through a bus connector.

3. Product System Configuration

In this chapter, the overall configuration, precautions during configuration, and peripheral device related content are explained.

3-1. Overall configuration



3-2. Major event

- Different CPU units are used, and the corresponding expandable IO units are also different.
- The I/O units that can be powered through the backplane bus vary according to the power supply units used.

The types and quantities of CPU units, power units, and expandable IO units are as follows:

Power unit model	CPU unit model	Scalable basic I/O unit
XF-P35-E	XSF5-A32	32
	XSF5-A64	

4. Power module unit XF-P35-E

4-1. Product overview

The XF-P35-E series CPU power module provides power for the CPU unit, coupler unit, and system unit for the expansion unit, suitable for XF and XSF series CPU unit products and XF series communication coupler unit.

- AC Input
- Double ground
- Overload protection

Module version:

Hardware version	Function
H2.0	Basic functions for the first official production

4-2. Naming rules

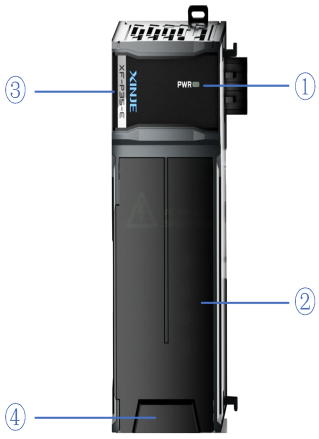
XF－E P □ － ○

① ② ③ ④ ⑤

①	Series Name	XF:	XF series extension module
②	Extension module	E:	Right extension module
③	Module Type	P:	Power module
④	Output power	35:	Output power 35W
⑤	Input Type	E:	AC Input
		C:	DC Input

4-3. Module view

(1) Description of each section



Number	Name
①	System LED indicator light
②	Input terminal block
③	Signal indication
④	Protective cover plate

(2) System indicator light

System indicator light	Meaning	
PWR	Extinguish	No input power supply
	Normally ON (green)	The input power of the power module is normal and provides power to the CPU unit normally
	Normally ON (red)	The input power of the power module is normal, but the power supply to the CPU unit is abnormal

4-4. General specifications

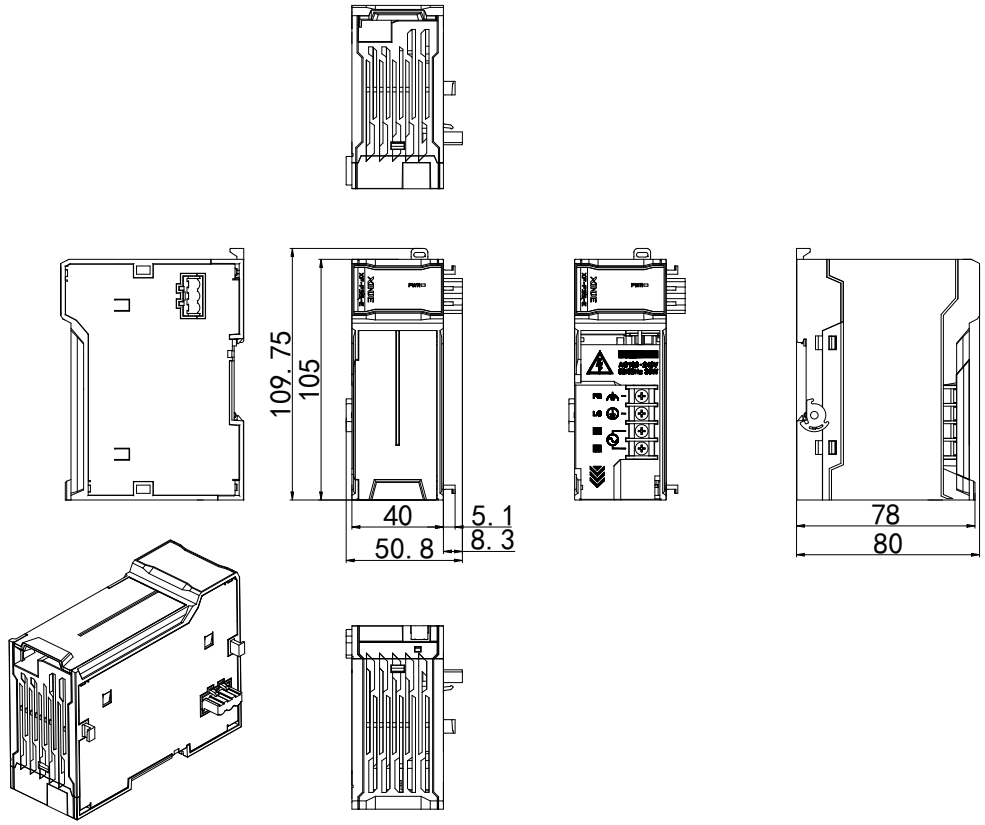
General specifications		
Project		Content
Operating temperature	Max temperature	55℃
	Min temperature	-20℃
Transportation/storage temperature	Max temperature	70℃
	Min temperature	-40℃
Environmental humidity (including operation/storage)	Upper limit	95%
	lower limit	10%
Protection grade		IP20
Anti vibration		Accord with IEC61131-2 Under intermittent vibration (frequency 5-9Hz, constant amplitude 3.5mm peak displacement) and (frequency 9-150Hz, constant acceleration 1.0g peak acceleration) Under continuous vibration (frequency 5-9Hz, half amplitude 1.75mm displacement) and (frequency 9-150Hz, constant acceleration 0.5g, constant frame amplitude) Scan 10 times in X, Y, and Z directions
Impact resistance		Accord with IEC61131-2 Impact strength of 15G (peak) with a duration of 11ms is applied to three mutually perpendicular axes, with 3 impacts per axis (a total of 18 impacts)
Use environment		Non corrosive gas
Use altitude		0-2000 meters
Over voltage level		II: Accord with IEC61131-2
Pollution level		2: Accord with IEC61131-2
Anti interference EMC		Accord with IEC 61131-2 IEC61000-6-4 B type
Related certifications		CE

4-5. Technical specification

Project		Specification
Type		XF-P35-E
Power		35W
Input power	L	Input AC100~240V 50/60Hz
	N	
LG - Protective grounding		Protective grounding for equipment and operators (in accordance with the functional protection part of IEC 61131-2 and GB/T 15969.2 standards)
FG - Functional grounding		Functional grounding terminals, i.e. grounding functions used for non safety purposes, such as improving anti-interference. (In accordance with the functional grounding part of IEC 61131-2 and GB/T 15969.2 standards)
Allow instant power outage time		20ms and below
Dash current		20A 8ms and below
Module weight		199g

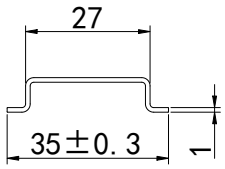
4-6. Installation&Wiring

4-6-1. Apparent dimension



4-6-2. Installation method

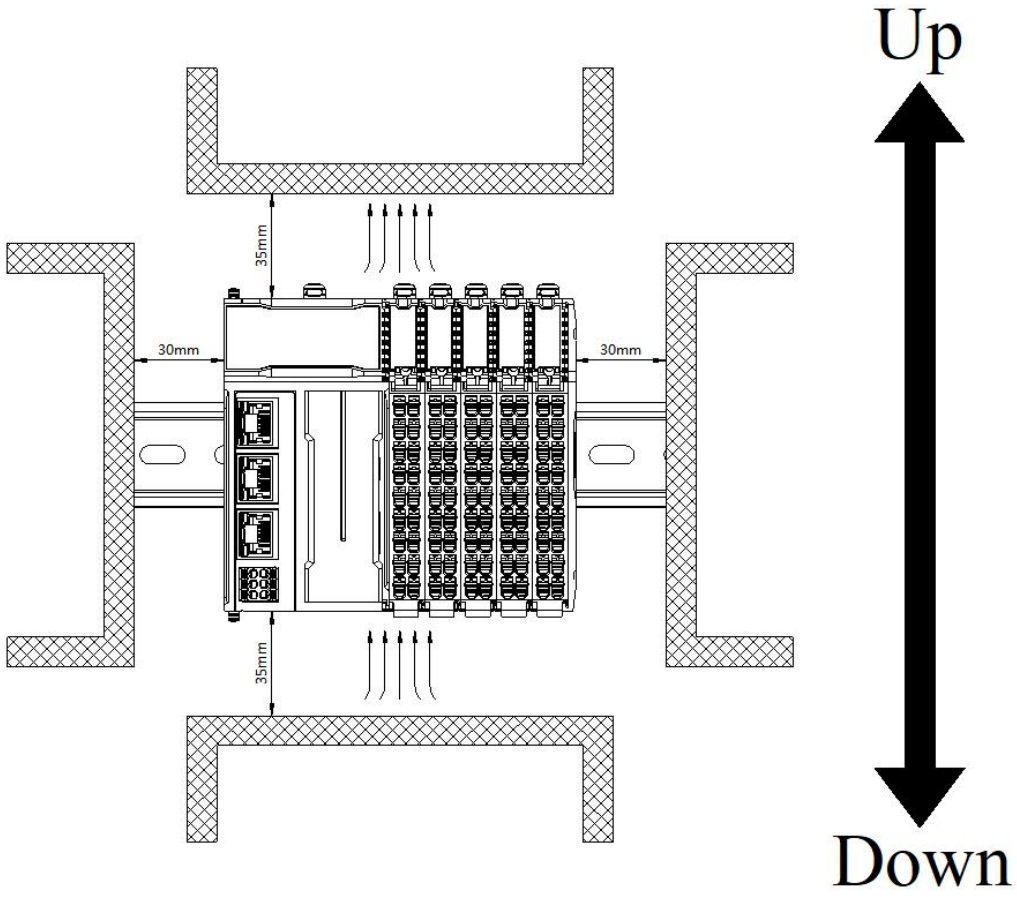
The module is installed using DIN rails, which must comply with the IEC 60715 standard (35mm wide and 1mm thick). The size information is shown in the following figure, in millimeters (mm).



⚠	Attention	When the module is installed on a non recommended DIN rail as mentioned above, the DIN rail latch may not lock properly.

4-6-3. Installation environment

This product can be installed in four positions (i.e. installation direction): horizontal direction, vertical direction, top of the cabinet, and bottom of the cabinet. It is recommended to install in the horizontal direction. The heat dissipation design is through natural convection, to ensure normal ventilation and heat dissipation, and to reserve sufficient wiring space, the minimum gap must be left around this product, as shown in the following figure:



If there are high-temperature heat source equipment (heaters, transformers, high resistors, etc.) around this product, a minimum gap of 100mm should be left between the equipment and the high-temperature heat source.

5. Digital quantity module unit

5-1. Naming convention

XF－E ○ □ X □ ○ Y □

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	Series Name	XF:	XF series extension module
②	Extension module	E:	Right extension module
③	Input channel	4:	4 channels
		8:	8 channels
		16:	16 channels
		32:	32 channels
		64:	64 channels
④	Input point type	Empty:	Digital input PNP and NPN type
		N:	Digital input NPN type
		P:	Digital input PNP type
⑤	Type	X:	Digital input
⑥	Output channel	4:	4 channels
		8:	8 channels
		16:	16 channels
		32:	32 channels
		64:	64 channels
⑦	Output type	Empty:	Digital output NPN type
		P:	Digital output PNP type
⑧	Type	Y:	Digital output
⑨	Output point type	T:	Digital output transistor type
		R:	Digital output relay type

5-2. Digital input unit XF-16X

5-2-1. Product overview

XF-E16X series digital input expansion module, which has 16 channels of digital input. Supports NPN and PNP inputs, and is compatible with XF, XSF series CPU unit products and XF series communication coupler units.

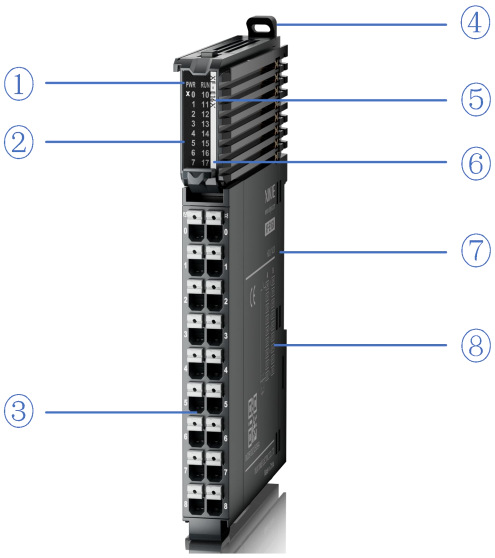
- 16 channel digital input;
- Accord with IEC61131-2 input standard type 3;
- NPN and PNP input;
- 12mm width design

Module version:

Hardware version	Software version	Function
H2.0	V2.0	Basic functions for the first official production

5-2-2. Module view

(1) Description of each section



Number	Name
①	System LED indicator light
②	Channel LED indicator light
③	Detachable terminal block
④	Clasp
⑤	Signal indication
⑥	Color identification indicating module type
⑦	Module hardware and software versions
⑧	Wiring diagram

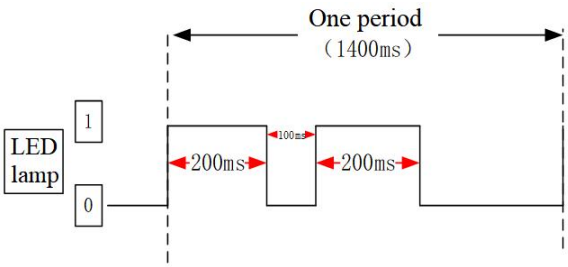
(2) System indicator light

System indicator light	Meaning	
PWR(green)	Extinguish	Module not powered on
	Normally ON	All external power supplies of the module are normal (backplane bus power supply&external input 24V)
RUN(green)	Normally ON	The module is operating normally
	Flashing 1Hz*1	General errors in module logs
	Extinguish	Important errors in the module log
	Flashing 10Hz*2	Module establishing communication
	Double flashing*3	Module firmware update

*1: A square wave with a duty cycle of 50% and a frequency of 1Hz.

*2: A square wave with a duty cycle of 50% and a frequency of 10Hz.

*3: The following figure:



(3) Channel indicator light

Model	Channel indicator light		
XF-E16X	X0~X17	Normally ON(green)	Corresponding input channel has input ON signal
		Extinguish	Corresponding input channel has no input ON signal

(4) Color identification

Number	Color		Module Type
1		White	Digital input
2		Gray	Digital output and digital mixing module
3		Light blue	Analog input
4		Dark Blue	Analog Output

5-2-3. General specifications

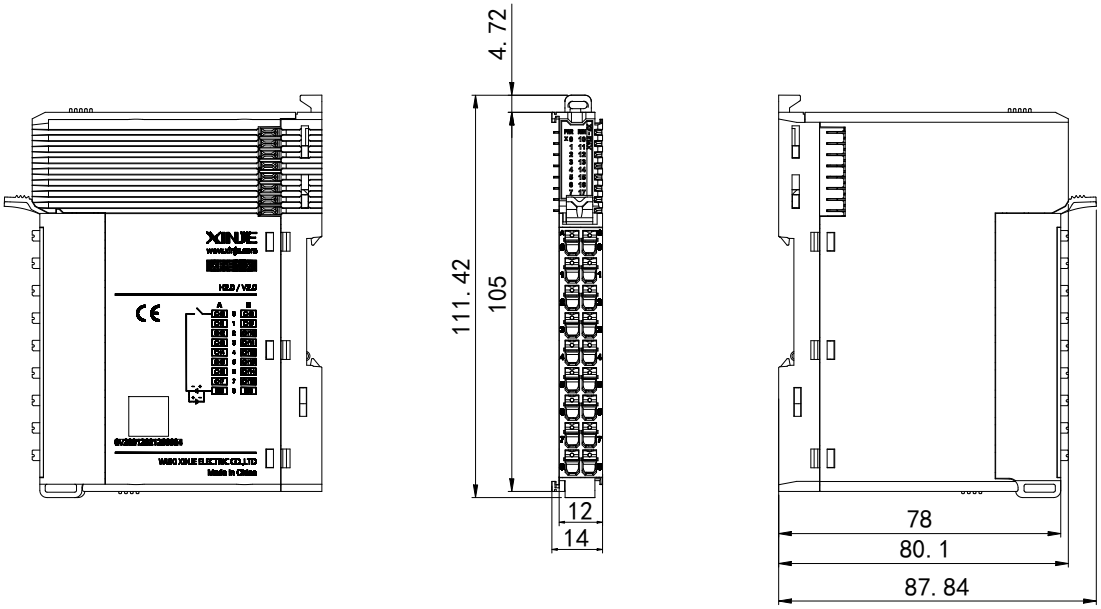
General specifications		
Project		Content
Operating temperature	Max temperature	55℃
	Min temperature	-20℃
Transportation/storage temperature	Max temperature	70℃
	Min temperature	-40℃
Environmental humidity (including operation/storage)	Upper limit	95%
	lower limit	10%
Protection grade		IP20
Anti vibration		Accord with IEC61131-2 Under intermittent vibration (frequency 5-9Hz, constant amplitude 3.5mm peak displacement) and (frequency 9-150Hz, constant acceleration 1.0g peak acceleration) Under continuous vibration (frequency 5-9Hz, half amplitude 1.75mm displacement) and (frequency 9-150Hz, constant acceleration 0.5g, constant frame amplitude) Scan 10 times in X, Y, and Z directions
Impact resistance		Accord with IEC61131-2 Impact strength of 15G (peak) with a duration of 11ms is applied to three mutually perpendicular axes, with 3 impacts per axis (a total of 18 impacts)
Use environment		Non corrosive gas
Use altitude		0-2000 meters
Over voltage level		II: Accord with IEC61131-2
Pollution level		2: Accord with IEC61131-2
Anti interference EMC		Accord with IEC 61131-2 IEC61000-6-4 B type
Related certifications		CE

5-2-4. Technical specification

Project	Specification
Input points	16
Rated input voltage	DC24V
Rated input current	6mA
Input ON voltage	11V
Input ON current	2.5mA
Input OFF voltage	5V
Input OFF current	1mA
Input resistance ON → OFF response time (hardware)	20us
Input resistance OFF → ON response time (hardware)	100us
Input derating	Derate by 75% when operating at 60 ℃ (with no more than 12 ON input points), or by 10 ℃ when all input points are ON
Public end method	1 common terminal of 8 points
Connection mode	For example, external terminal connection diagram
Module power consumption	1.3W
Module weight	80g

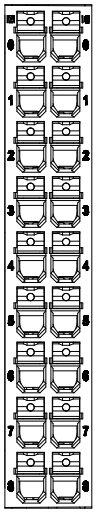
5-2-5. Installation&Wiring

5-2-5-1 Apparent dimension

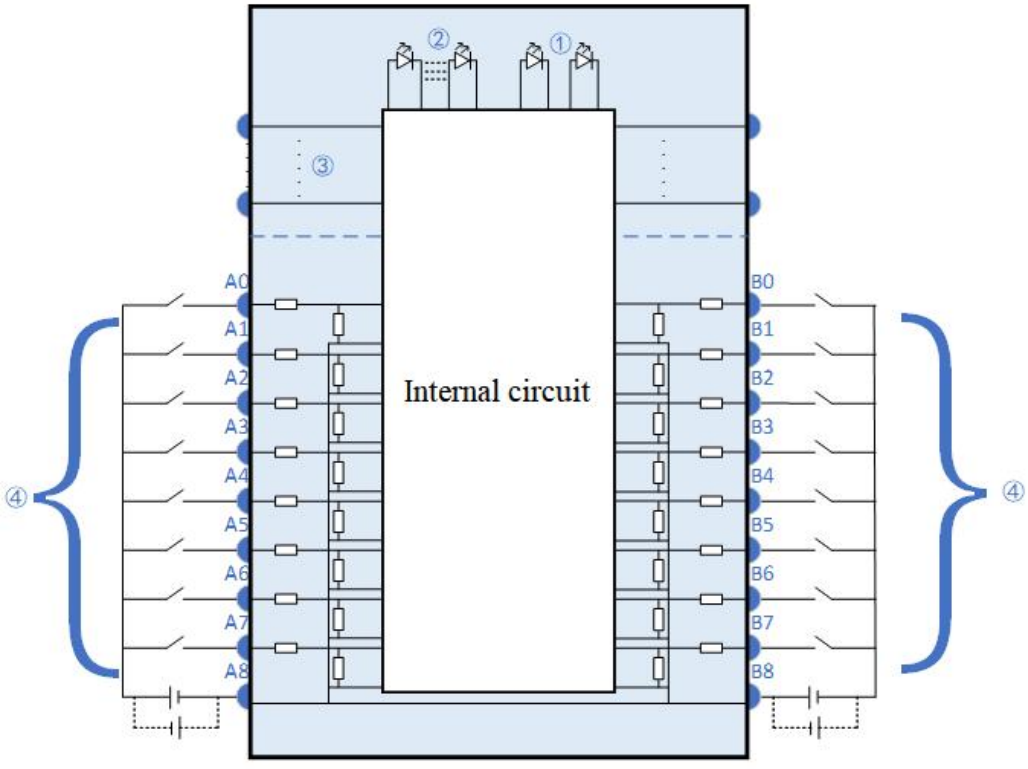


5-2-5-2 Terminal Definition&Wiring

■ Terminal Definition

XF-E16X				
Meaning	A-list terminal	Terminal layout	B-list terminal	Meaning
CH0	0		0	CH8
CH1	1		1	CH9
CH2	2		2	CH10
CH3	3		3	CH11
CH4	4		4	CH12
CH5	5		5	CH13
CH6	6		6	CH14
CH7	7		7	CH15
SS	8		8	SS

■ External wiring

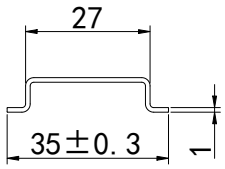


Number	Name
①	System indicator light
②	Channel indicator light
③	Backplane bus
④	Input Channel&Wiring

5-2-5-3 Installation method

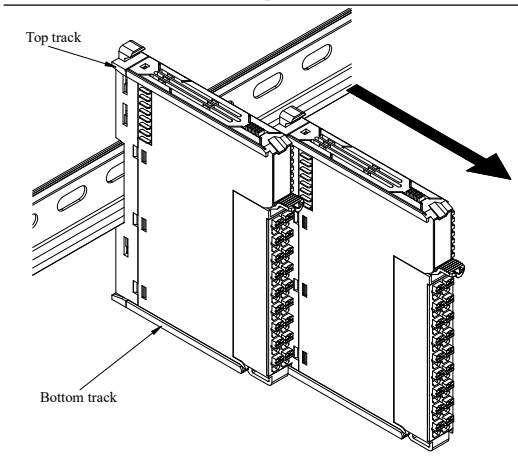
(1) Installation demand

The module is installed using DIN rails, which must comply with the IEC 60715 standard (35mm wide and 1mm thick). The size information is shown in the following figure, in millimeters (mm).



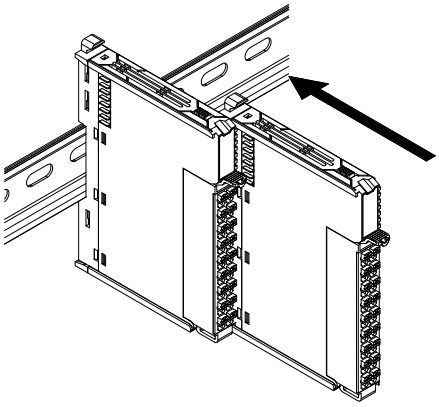
Attention	When the module is installed on a non recommended DIN rail as mentioned above, the DIN rail latch may not lock properly.

(2) Installation steps



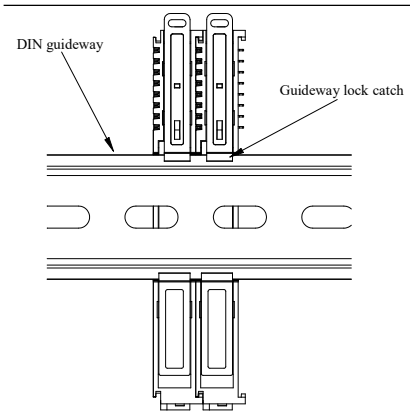
The assembly between IO modules is installed by sliding through the top and bottom rails of the modules.

As shown in the left figure:



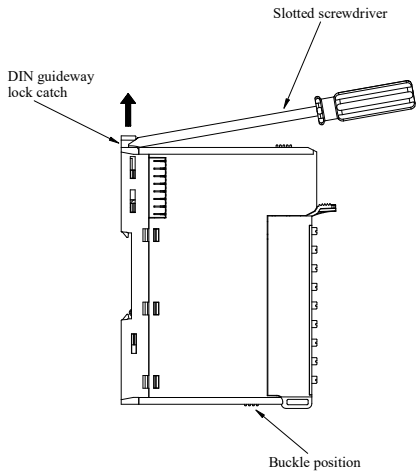
The module is installed on the guide rail. When installing, align the module with the DIN guide rail and press the module in the direction indicated by the arrow. After installation, there is a noticeable clicking sound

As shown in the left figure:



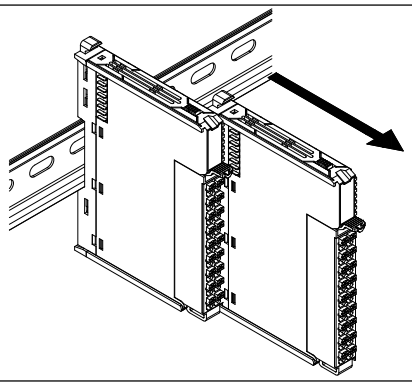
Explanation: After the module installation is completed, the latch will automatically move downwards to lock. If the latch does not move downwards, press down on the top of the latch to ensure proper installation.

(3) Disassemble steps



Use a slotted screwdriver or similar tool to pry the rail latch upwards.

As shown in the left figure:

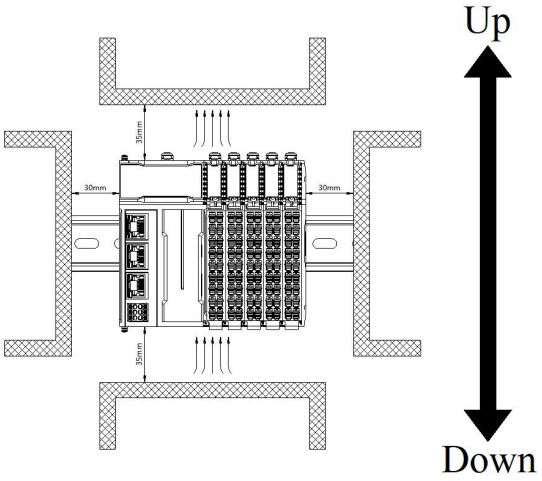


Pull the module straight forward at the buckle position (raised part), and press down on the top of the latch after completion.

As shown in the left figure:

5-2-5-4 Installation environment

This product can be installed in four positions (installation direction): horizontal direction, vertical direction, top of the cabinet, and bottom of the cabinet. It is recommended to install in the horizontal direction. The heat dissipation design is through natural convection, to ensure normal ventilation and heat dissipation, and to reserve sufficient wiring space, the minimum gap must be left around this product, as shown in the following figure:



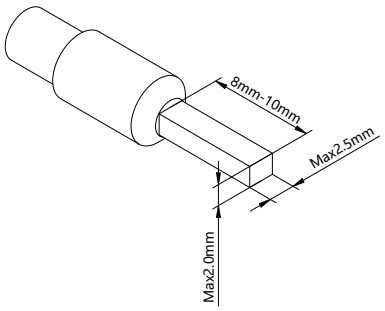
If there are high-temperature heat source equipment (heaters, transformers, high resistors, etc.) around this product, a minimum gap of 100mm should be left between the equipment and the high-temperature heat source.

5-2-5-5 Installation environment

When wiring a module, its terminal must meet the following requirements:

Suitable cable diameter	
Chinese standard/mm^2	American Standard/AWG
0.3	22
0.5	20
0.75	18
1.0	18
1.5	16

If using other tube type wire lugs, please crimp them to the stranded wire, and the shape and size requirements are shown in the following figure:



5-2-6. Parameters and mapping addresses

Name	Type	Description
XF_E16X	Stuct	16 channels input module
CH0	BOOL	Channel 0 input value
CH1	BOOL	Channel 1 input value
CH2	BOOL	Channel 2 input value
CH3	BOOL	Channel 3 input value
CH4	BOOL	Channel 4 input value
CH5	BOOL	Channel 5 input value
CH6	BOOL	Channel 6 input value
CH7	BOOL	Channel 7 input value
CH8	BOOL	Channel 8 input value
CH9	BOOL	Channel 9 input value

Name	Type	Description
XF_E16X	Stuct	16 channels input module
CH10	BOOL	Channel 10 input value
CH11	BOOL	Channel 11 input value
CH12	BOOL	Channel 12 input value
CH13	BOOL	Channel 13 input value
CH14	BOOL	Channel 14 input value
CH15	BOOL	Channel 15 input value
ErrCode_module	WORD	Module level error codes
ErrCode_CH	DWORD	Channel level error codes

Error code parameters:

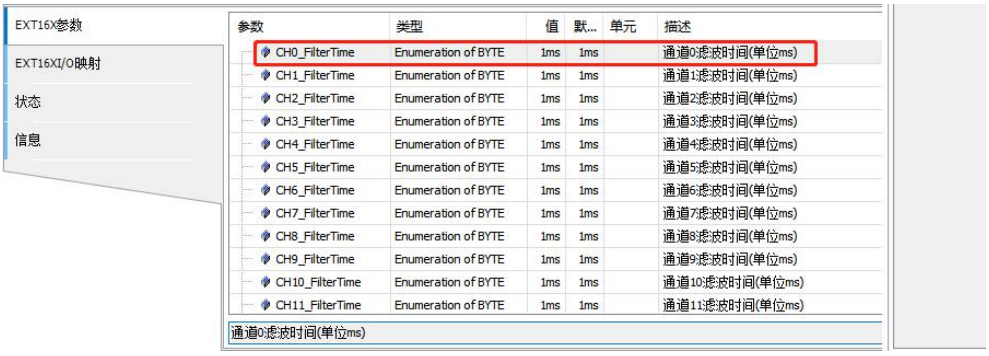
Module level error codes(ErrCode_module)		
Bit	Meaning	Error level
2	Internal module error occurred and cannot be repaired by the user layer.	Important

5-2-7. Functions and Settings

■ Channel input filtering time

Each channel of "filtering time" corresponds to a separate filtering parameter, and the setting method is to select the parameter from the drop-down menu.

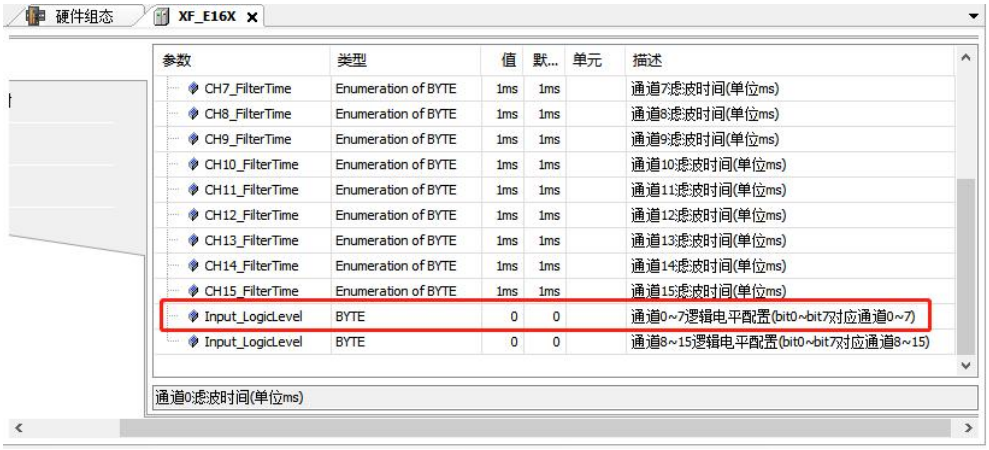
Parameter definition	When there is a signal at the input terminal and the signal duration exceeds the filtering time, it is considered a valid signal.
Settable parameters	0ms, 0.25ms, 0.5ms, 1ms, 2ms, 3ms, 4ms, 5ms, 6ms, 7ms, 8ms, 9ms, 10ms, 11ms, 12ms, 13ms, 14ms, 15ms, 20ms, 30ms, 64ms, 128ms
Default parameters	1ms



■ Channel logic level

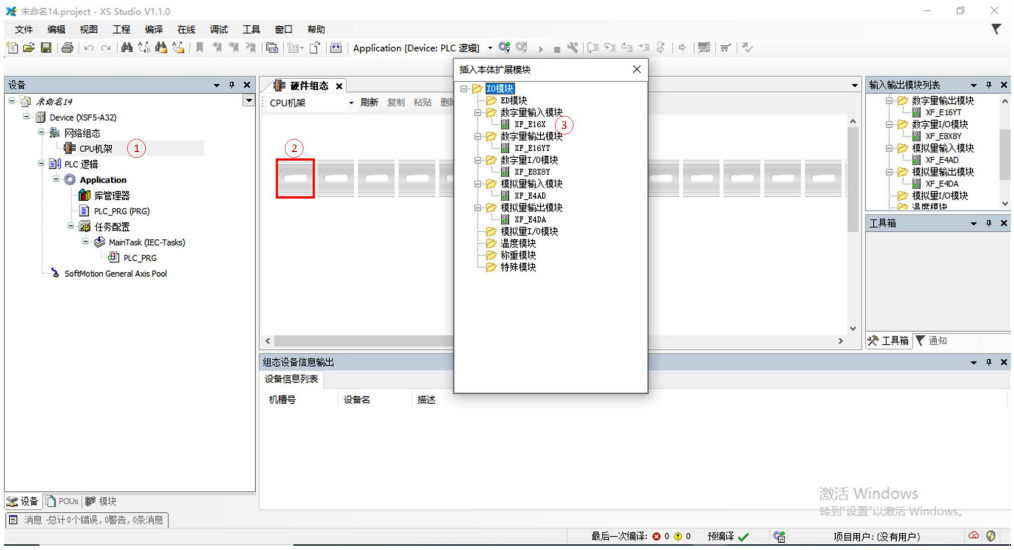
The "Logic Level Configuration" corresponds to a separate logic level configuration for each channel. The setting method is to select parameters from the drop-down menu.

<table>
<tr><td>Parameter definition</td><td>The program execution logic after external signal input.
<table>
<tr><th>External input signal</th><th>Logic level configuration</th><th>Run program</th><th>Operation result</th></tr>
<tr><td>X0=1</td><td>Positive logic</td><td rowspan="4">LD X0;
OUT Y0;</td><td>Y0=1</td></tr>
<tr><td>X0=1</td><td>Negative logic</td><td>Y0=0</td></tr>
<tr><td>X0=0</td><td>Positive logic</td><td>Y0=0</td></tr>
<tr><td>X0=0</td><td>Negative logic</td><td>Y0=1</td></tr>
</table></td></tr>
<tr><td>Settable parameters</td><td>The following table pulling method reflects the parameters that can be set: positive logic, negative logic</td></tr>
</table>



5-2-8. Programming examples

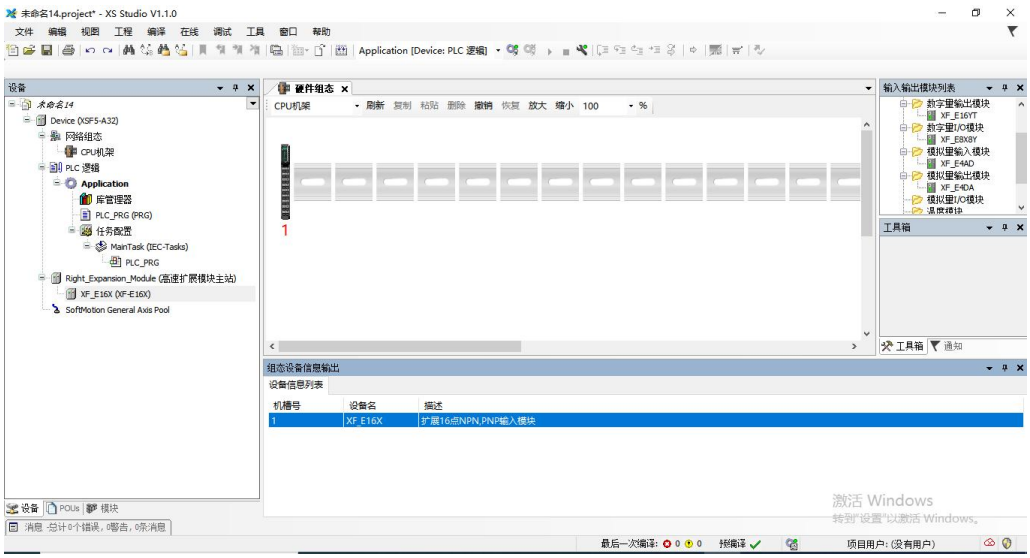
■ Module add



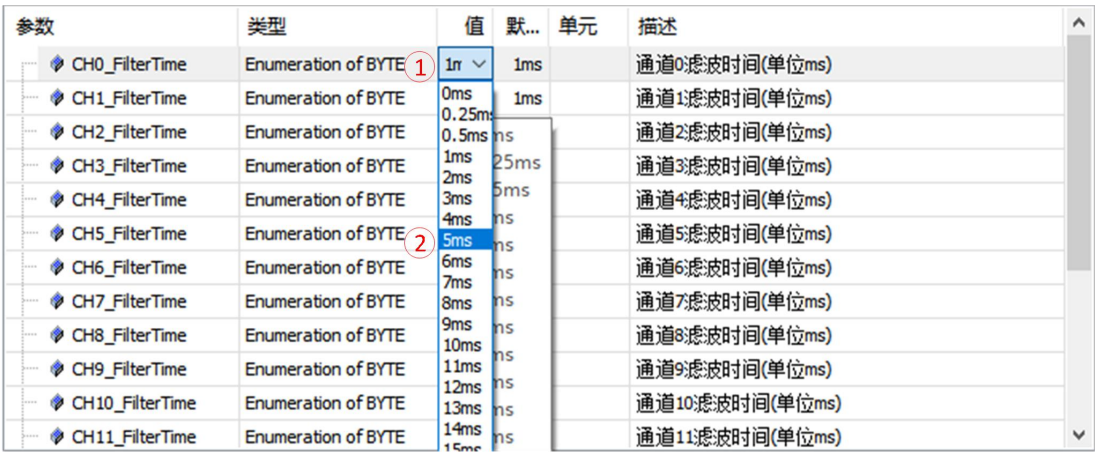
① Select "CPU Rack";

② Double click rack;

③ Select XF-E16X module.



■ Input filtering time setting 5ms



① Select the filtering time for channel 0;

② Select 5ms.

5-3. Digital output unit XF-16YT

5-3-1. Product overview

XF-E16YT series digital output expansion module, which has 16 channels of digital output and supports NPN output, and is suitable for XF, XSF series CPU unit products and XF series communication coupler units.

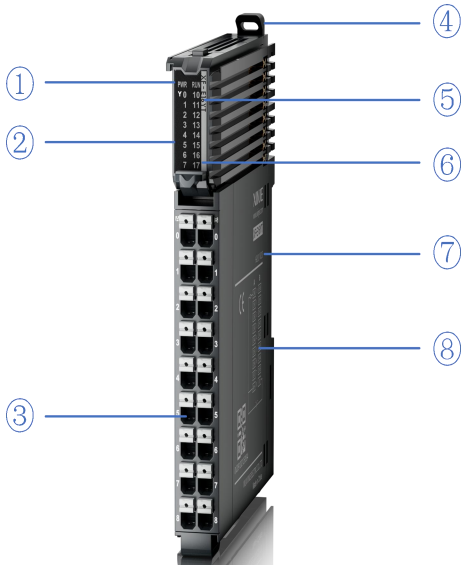
- 16 channels digital output;
- NPN output;
- 12mm width design.

■ Module version

Hardware version	Software version	Function
H2.0	V2.0	Basic functions for the first official production

5-3-2. Module view

(1) Description of each section



Number	Name
①	System LED indicator light
②	Channel LED indicator light
③	Detachable terminal block
④	Clasp
⑤	Signal indication
⑥	Color identification indicating module type
⑦	Module hardware and software versions
⑧	Wiring diagram

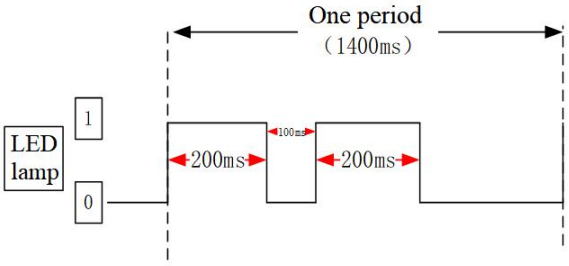
(2) System indicator light

System indicator light	Meaning	
PWR(green)	Extinguish	Module not powered on
	Normally ON	All external power supplies of the module are normal (backplane bus power supply&external input 24V)
	Flashing 1Hz*1	Module power supply is abnormal and cannot operate normally
RUN(green)	Normally ON	The module is operating normally
	Flashing 1Hz*1	General errors in module logs
	Extinguish	Important errors in the module log
	Flashing 10Hz*2	Module establishing communication
	Double flashing*3	Module firmware update

*1: A square wave with a duty cycle of 50% and a frequency of 1Hz.

*2: A square wave with a duty cycle of 50% and a frequency of 10Hz.

*3: The following figure:



(3) Channel indicator light

Model	Channel indicator light		
XF-E16YT	Y0~Y17	Normally ON(green)	Corresponding input channel has input ON signal
		Extinguish	Corresponding input channel has no input ON signal

(4) Color identification

Number	Color		Module Type
1		White	Digital input
2		Gray	Digital output and digital mixing module
3		Light blue	Analog input
4		Dark Blue	Analog Output

5-3-3. General specifications

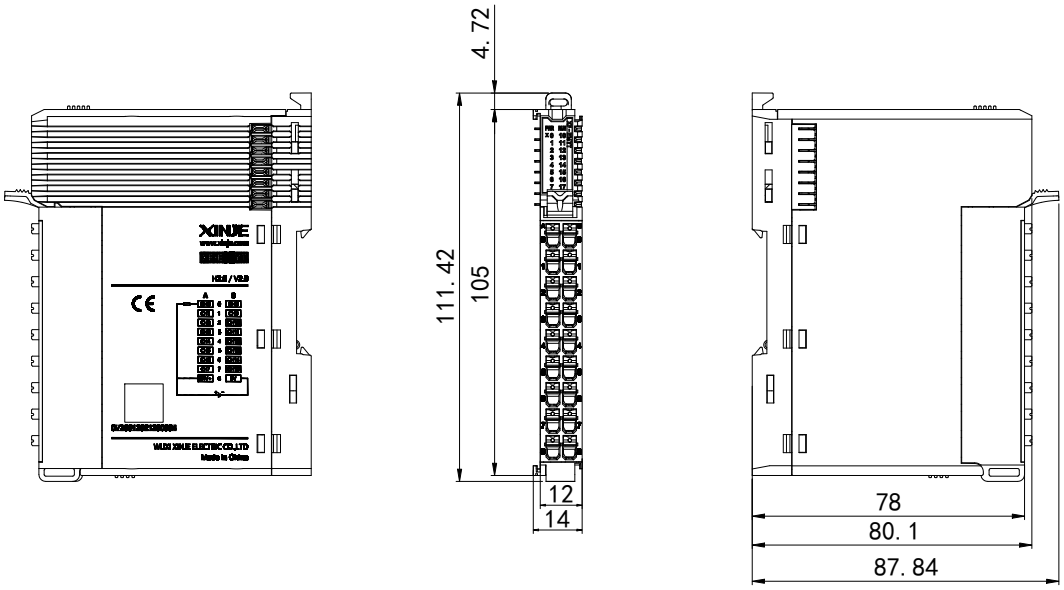
General specifications		
Project		Content
Operating temperature	Max temperature	55℃
	Min temperature	-20℃
Transportation/storage temperature	Max temperature	70℃
	Min temperature	-40℃
Environmental humidity (including operation/storage)	Upper limit	95%
	lower limit	10%
Protection grade		IP20
Anti vibration		Accord with IEC61131-2 Under intermittent vibration (frequency 5-9Hz, constant amplitude 3.5mm peak displacement) and (frequency 9-150Hz, constant acceleration 1.0g peak acceleration) Under continuous vibration (frequency 5-9Hz, half amplitude 1.75mm displacement) and (frequency 9-150Hz, constant acceleration 0.5g, constant frame amplitude) Scan 10 times in X, Y, and Z directions
Impact resistance		Accord with IEC61131-2 Impact strength of 15G (peak) with a duration of 11ms is applied to three mutually perpendicular axes, with 3 impacts per axis (a total of 18 impacts)
Use environment		Non corrosive gas
Use altitude		0-2000 meters
Over voltage level		II: Accord with IEC61131-2
Pollution level		2: Accord with IEC61131-2
Anti interference EMC		Accord with IEC 61131-2 IEC61000-6-4 B type
Related certifications		CE

5-3-4. Technical specification

Project	Specification
Output points	16
Rated load voltage	DC24V(DC10.2V~28.8V)
Maximum load current	0.5A/1 port, 4A/module
Surge current protection	support
Leakage current at OFF	Below 0.1mA
Maximum voltage drop at ON	0.5V~1V
Output ON → OFF response time (hardware)	0.1ms
Output OFF → ON response time (hardware)	0.1ms
Output derating	Derate by 50% when operating at 55 ℃(while the output current of ON doesn't exceed 2A), or by 10 ℃ when the output point is fully ON
Public end method	1 common terminal of 16 points
Output Protection	Support short circuit and overload protection functions
Module power consumption	1.3W(Backplane bus)+0.4W(external input)
Module weight	80g

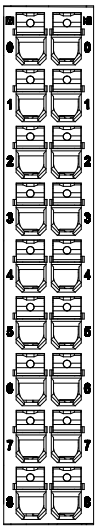
5-3-5. Installation&Wiring

5-3-5-1 Apparent dimension

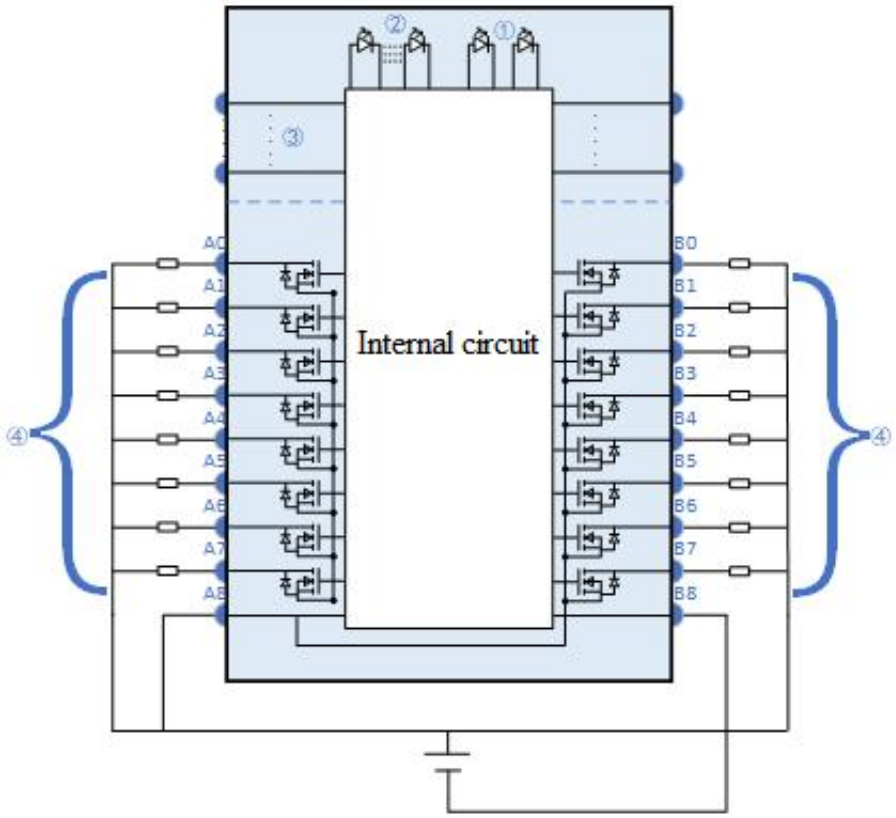


5-3-5-2 Terminal Definition&Wiring

■ Terminal Definition

XF-E16YT				
Meaning	A-list terminal	Terminal layout	B-list terminal	Meaning
CH0	0		0	CH8
CH1	1		1	CH9
CH2	2		2	CH10
CH3	3		3	CH11
CH4	4		4	CH12
CH5	5		5	CH13
CH6	6		6	CH14
CH7	7		7	CH15
24V+	8		8	0V

■ External wiring

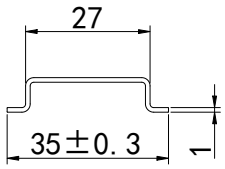


Number	Name
①	System indicator light
②	Channel indicator light
③	Backplane bus
④	Input Channel&Wiring

5-2-5-3 Installation method

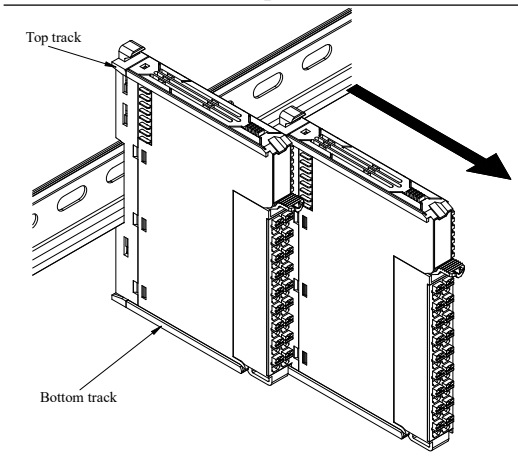
(1) Installation demand

The module is installed using DIN rails, which must comply with the IEC 60715 standard (35mm wide and 1mm thick). The size information is shown in the following figure, in millimeters (mm).



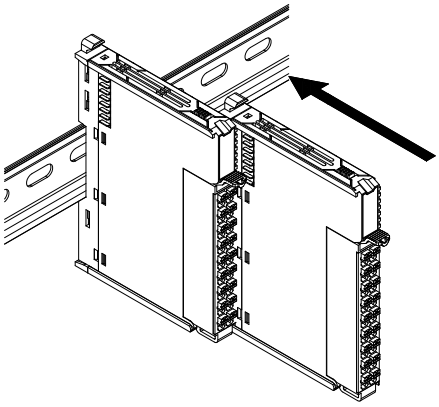
Attention	When the module is installed on a non recommended DIN rail as mentioned above, the DIN rail latch may not lock properly.

(2) Installation steps



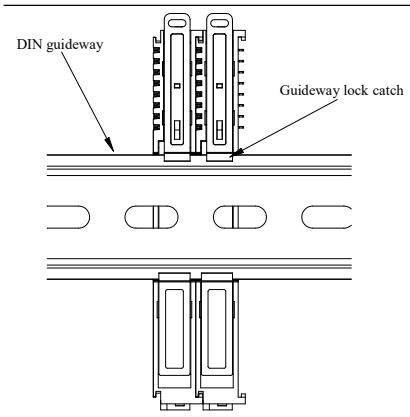
The assembly between IO modules is installed by sliding through the top and bottom rails of the modules.

As shown in the left figure:



The module is installed on the guide rail. When installing, align the module with the DIN guide rail and press the module in the direction indicated by the arrow. After installation, there is a noticeable clicking sound

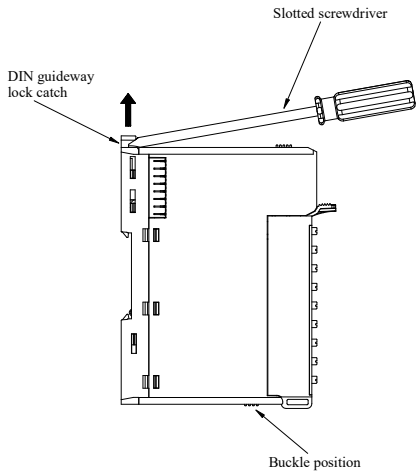
As shown in the left figure:



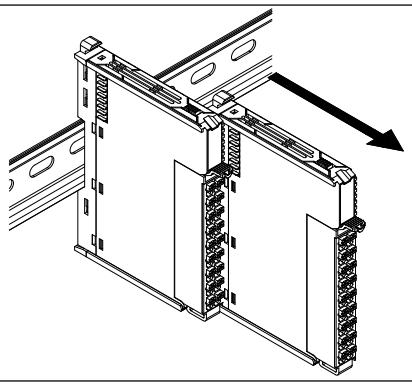
Explanation: After the module installation is completed, the latch will automatically move downwards to lock. If the latch does not move downwards, press down on the top of the latch to ensure proper installation

.

(3) Disassemble steps



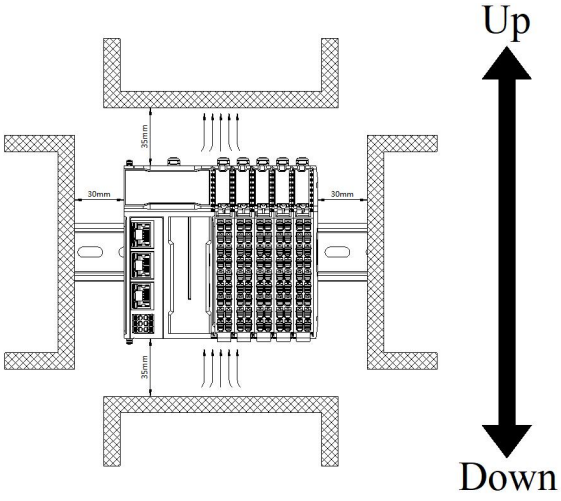
Use a slotted screwdriver or similar tool to pry the rail latch upwards.
As shown in the left figure:



Pull the module straight forward at the buckle position (raised part), and press down on the top of the latch after completion.
As shown in the left figure:

5-3-5-4 Installation environment

This product can be installed in four positions (installation direction): horizontal direction, vertical direction, top of the cabinet, and bottom of the cabinet. It is recommended to install in the horizontal direction. The heat dissipation design is through natural convection, to ensure normal ventilation and heat dissipation, and to reserve sufficient wiring space, the minimum gap must be left around this product, as shown in the following figure:



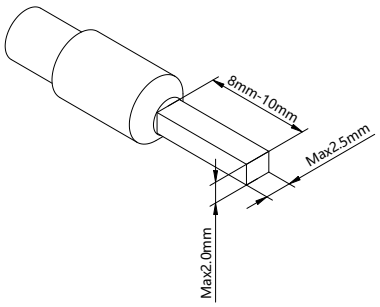
If there are high-temperature heat source equipment (heaters, transformers, high resistors, etc.) around this product, a minimum gap of 100mm should be left between the equipment and the high-temperature heat source.

5-3-5-5 Installation environment

When wiring a module, its terminal must meet the following requirements:

Suitable cable diameter	
Chinese standard/mm2	American Standard/AWG
0.3	22
0.5	20
0.75	18
1.0	18
1.5	16

If using other tube type wire lugs, please crimp them to the stranded wire, and the shape and size requirements are shown in the following figure:



5-3-6. Parameters and mapping addresses

Name	Type	Description
XF_E16YT	Stuct	16 channels output module
CH0	BOOL	Channel 0 output value
CH1	BOOL	Channel 1 output value
CH2	BOOL	Channel 2 output value
CH3	BOOL	Channel 3 output value
CH4	BOOL	Channel 4output value
CH5	BOOL	Channel 5 output value
CH6	BOOL	Channel 6 output value
CH7	BOOL	Channel 7 output value
CH8	BOOL	Channel 8 output value
CH9	BOOL	Channel 9 output value

Name	Type	Description
XF_E16YT	Stuct	16 channels output module
CH10	BOOL	Channel 10 output value
CH11	BOOL	Channel 11 output value
CH12	BOOL	Channel 12 output value
CH13	BOOL	Channel 13 output value
CH14	BOOL	Channel 14 output value
CH15	BOOL	Channel 15 output value
ErrCode_module	WORD	Module level error codes
ErrCode_CH	DWORD	Channel level error codes

Error code parameters:

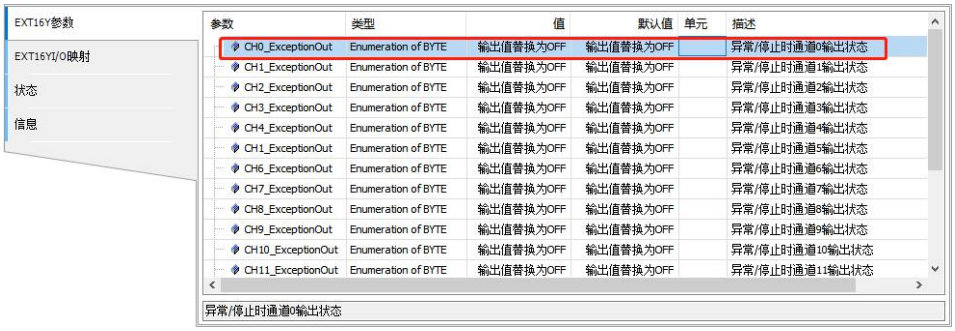
Module level error codes(ErrCode_module)		
Bit	Meaning	Error level
2	Internal module error occurred and cannot be repaired by the user layer.	Important

5-3-7. Functions and Settings

■ Abnormal/STOP output status

Each channel corresponds to a separate parameter for "Abnormal/STOP Output Status", which can be set by selecting a parameter from the drop-down menu.

Parameter definition	The following table pulling method reflects the parameters that can be set: "Output replacement value OFF", "Keep previous value", "Output replacement value ON	
Parameter definition	Output replacement value OFF	When the PLC is in STOP mode, the output terminal is in a reset state (physical terminal, regardless of channel logic level)
	Keep previous value	When the PLC is in abnormal/STOP mode, the output terminal outputs the last state of the PLC from RUN to STOP (physical terminal, regardless of channel logic level).
	Output replacement value ON	When the PLC is in abnormal/STOP mode, the output terminal is in a set state (physical terminal, regardless of channel logic level).
Default parameters	Output replacement value OFF	

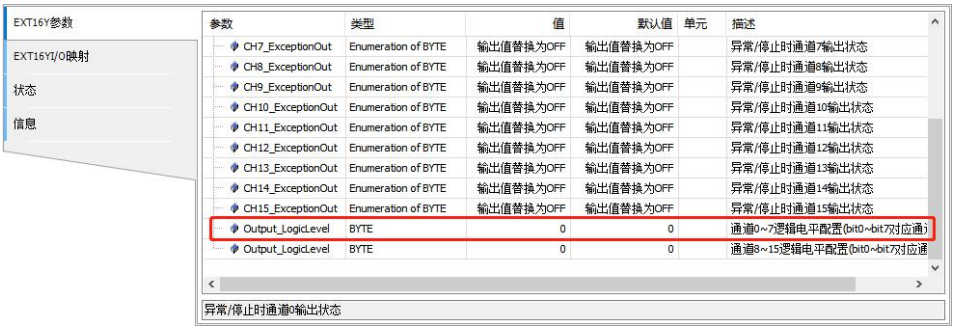


■ Channel logic level

The "Logic Level Configuration" corresponds to a separate logic level configuration for each channel. The setting method is to select parameters from the drop-down menu.

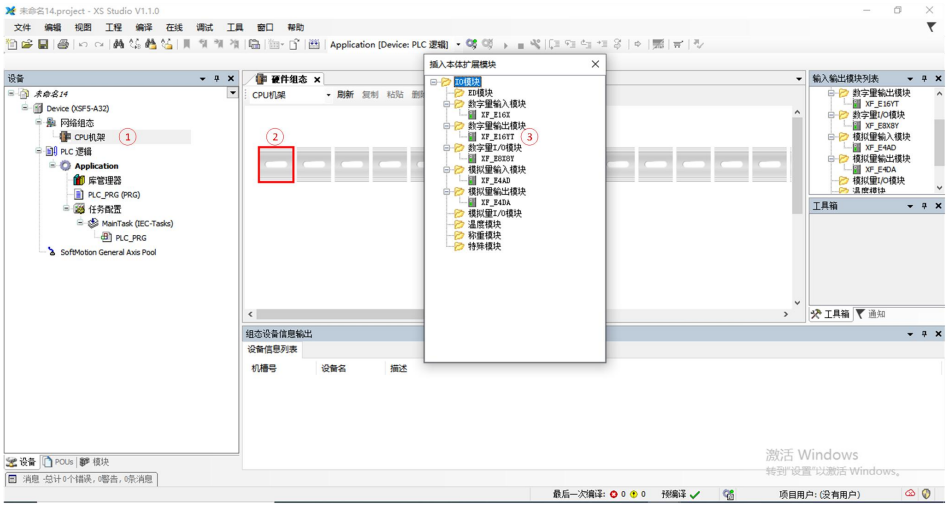
Settable parameters	The following table pulling method reflects the parameters that can be set: positive logic, negative logic
Parameter definition	The program execution logic after external signal input.

Logic level configuration	Run program	Operation result
Positive logic	SET Y0;	Y0 set to ON
Negative logic		Y0 set to OFF
Positive logic	RST Y0;	Y0 set to OFF
Negative logic		Y0 set to ON



5-3-8. Programming examples

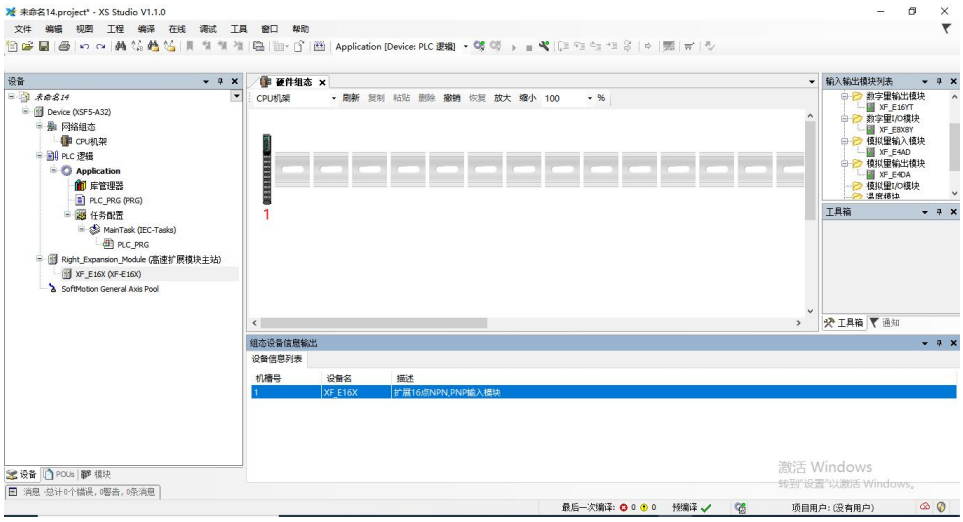
■ Module add



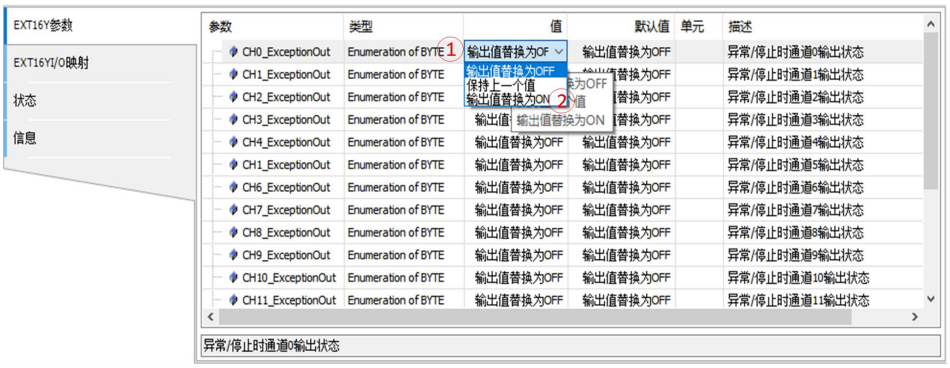
① Select "CPU Rack";

② Double click rack;

③ Select XF-E16YT module.



■ Abnormal/STOP output status output ON



① Select the abnormal/STOP output status for channel 0;

② Select output to replace with ON.

5-4. Digital input output hybrid unit XF-E8NX8YT

5-4-1. Product overview

XF-E8NX8YT series digital input output hybrid expansion module, which has 8 channels of digital input, 8 channels of digital output and supports NPN input and output, and is suitable for XF, XSF series CPU unit products and XF series communication coupler units.

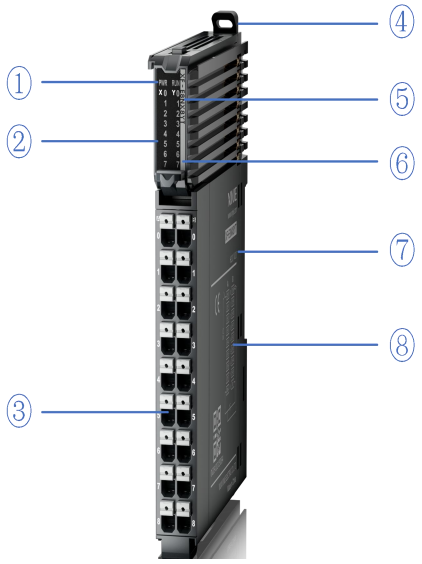
- 8 channels digital input;
- NPN input;
- 8 channels digital output;
- NPN output;
- 12mm width design.

■ Module version

Hardware version	Software version	Function
H2.0	V2.0	Basic functions for the first official production

5-4-2. Module view

(1) Description of each section



Number	Name
①	System LED indicator light
②	Channel LED indicator light
③	Detachable terminal block
④	Clasp
⑤	Signal indication
⑥	Color identification indicating module type
⑦	Module hardware and software versions
⑧	Wiring diagram

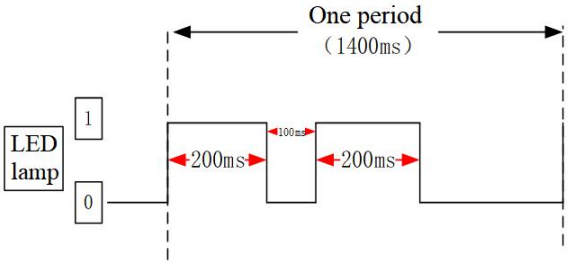
(2) System indicator light

System indicator light	Meaning	
PWR(green)	Extinguish	Module not powered on
	Normally ON	All external power supplies of the module are normal (backplane bus power supply&external input 24V)
	Flashing 1Hz*1	Module power supply is abnormal and cannot operate normally
RUN(green)	Normally ON	The module is operating normally
	Flashing 1Hz*1	General errors in module logs
	Extinguish	Important errors in the module log
	Flashing 10Hz*2	Module establishing communication
	Double flashing*3	Module firmware update

*1: A square wave with a duty cycle of 50% and a frequency of 1Hz.

*2: A square wave with a duty cycle of 50% and a frequency of 10Hz.

*3: The following figure:



(3) Channel indicator light

Model	Channel indicator light		
XF-E8NX8YT	X0-X7 Y0-Y7	Normally ON(green)	Corresponding input channel has input ON signal
		Extinguish	Corresponding input channel has no input ON signal

(4) Color identification

Number	Color		Module Type
1		White	Digital input
2		Gray	Digital output and digital mixing module
3		Light blue	Analog input
4		Dark Blue	Analog Output

5-4-3. General specifications

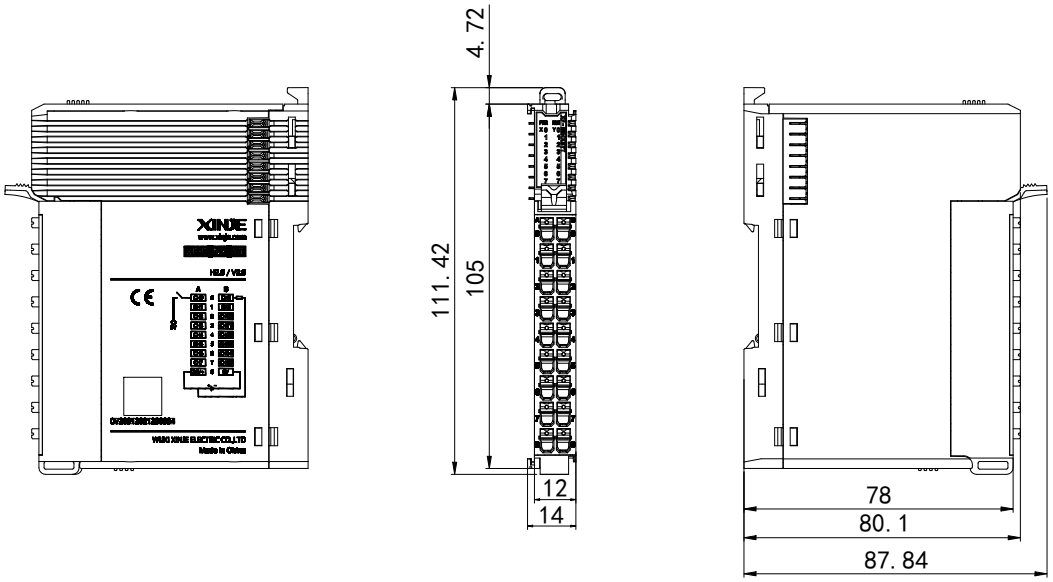
General specifications		
Project		Content
Operating temperature	Max temperature	55℃
	Min temperature	-20℃
Transportation/storage temperature	Max temperature	70℃
	Min temperature	-40℃
Environmental humidity (including operation/storage)	Upper limit	95%
	lower limit	10%
Protection grade		IP20
Anti vibration		Accord with IEC61131-2 Under intermittent vibration (frequency 5-9Hz, constant amplitude 3.5mm peak displacement) and (frequency 9-150Hz, constant acceleration 1.0g peak acceleration) Under continuous vibration (frequency 5-9Hz, half amplitude 1.75mm displacement) and (frequency 9-150Hz, constant acceleration 0.5g, constant frame amplitude) Scan 10 times in X, Y, and Z directions
Impact resistance		Accord with IEC61131-2 Impact strength of 15G (peak) with a duration of 11ms is applied to three mutually perpendicular axes, with 3 impacts per axis (a total of 18 impacts)
Use environment		Non corrosive gas
Use altitude		0-2000 meters
Over voltage level		II: Accord with IEC61131-2
Pollution level		2: Accord with IEC61131-2
Anti interference EMC		Accord with IEC 61131-2 IEC61000-6-4 B type
Related certifications		CE

5-4-4. Technical specification

Project		Specification
Input specifications	Input channel	8
	Input type	NPN
	Rated input voltage	DC24V
	Rated input current	6mA
	Input ON voltage	15V
	Input ON current	3mA
	Input OFF voltage	5V
	Input OFF current	1mA
	Input derating	Derate by 50% when operating at 55 ℃ (with no more than 4 ON input points), or by 10 ℃ when all input points are ON.
	Input resistance ON → OFF response time (hardware)	20us
	Input resistance OFF → ON response time (hardware)	100us
Output specifications	Output channel	8
	Output type	Transistor (NPN)
	Rated load voltage	DC24V(DC10.2V～28.8V)
	Rated load current	0.5A/1 port
	Surge current protection	Support
	Leakage current at OFF	Below 0.1mA
	Maximum voltage drop at ON	0.5V~1V
	Output derating	Derate by 50% when operating at 55 ℃(while the output current of ON doesn't exceed 2A), or by 10 ℃ when the output point is fully ON.
	Input resistance ON → OFF response time (hardware)	100us
	Input resistance OFF → ON response time (hardware)	100us
Module specifications	Module power consumption	1.3W(Backplane bus)+0.4W(external input)
	Module weight	80g

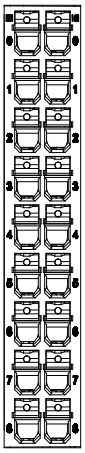
5-4-5. Installation&Wiring

5-4-5-1 Apparent dimension

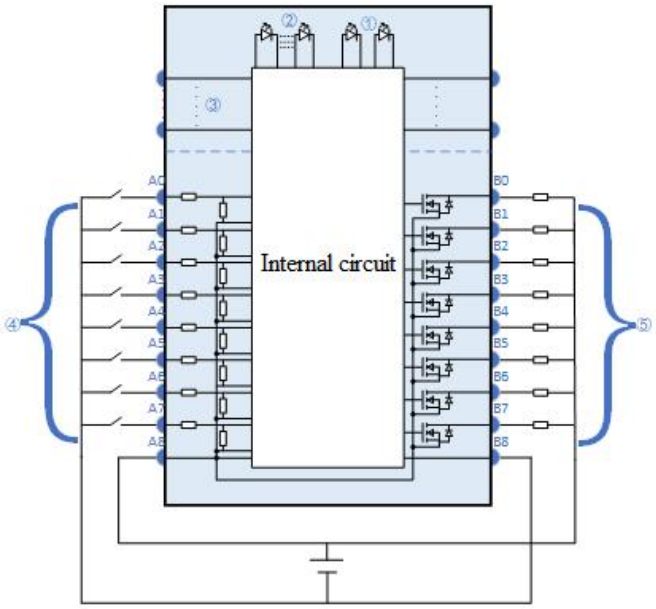


5-4-5-2 Terminal Definition&Wiring

- Terminal Definition

XF-E8NX8YT				
Meaning	A-list terminal	Terminal layout	B-list terminal	Meaning
CH0	0		0	CH8
CH1	1		1	CH9
CH2	2		2	CH10
CH3	3		3	CH11
CH4	4		4	CH12
CH5	5		5	CH13
CH6	6		6	CH14
CH7	7		7	CH15
24V+	8		8	0V

■ External wiring

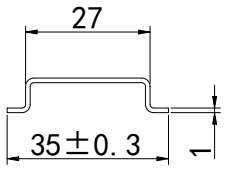


Number	Name
①	System indicator light
②	Channel indicator light
③	Backplane bus
④	Input Channel&Wiring
⑤	Output Channel&Wiring

5-4-5-3 Installation method

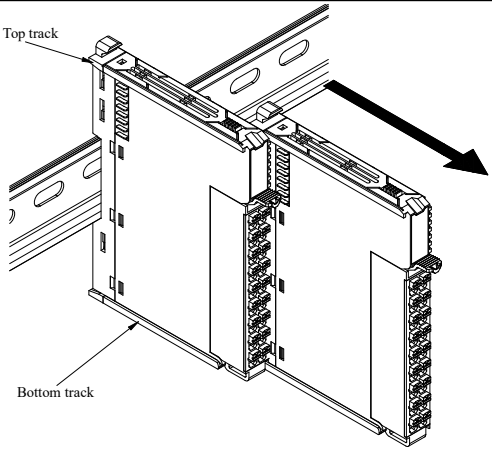
(1) Installation demand

The module is installed using DIN rails, which must comply with the IEC 60715 standard (35mm wide and 1mm thick). The size information is shown in the following figure, in millimeters (mm).



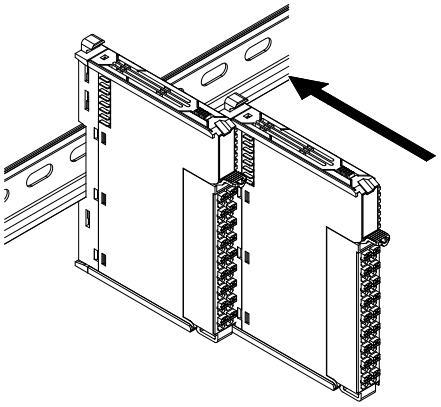
Attention	When the module is installed on a non recommended DIN rail as mentioned above, the DIN rail latch may not lock properly.

(2) Installation steps



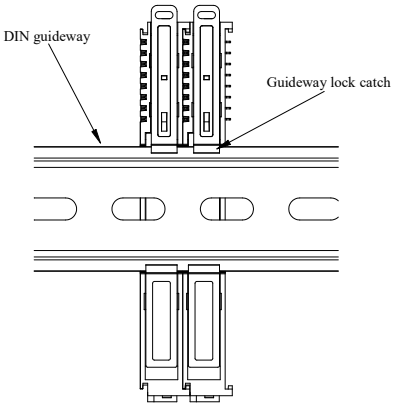
The assembly between IO modules is installed by sliding through the top and bottom rails of the modules.

As shown in the left figure:



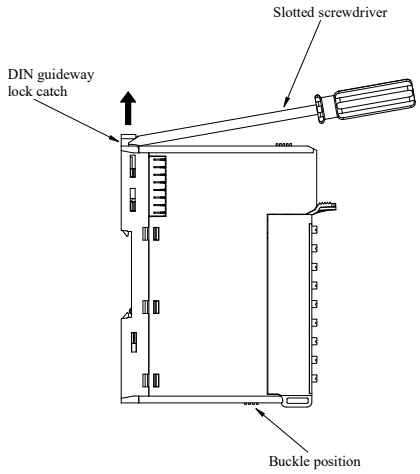
The module is installed on the guide rail. When installing, align the module with the DIN guide rail and press the module in the direction indicated by the arrow. After installation, there is a noticeable clicking sound

As shown in the left figure:



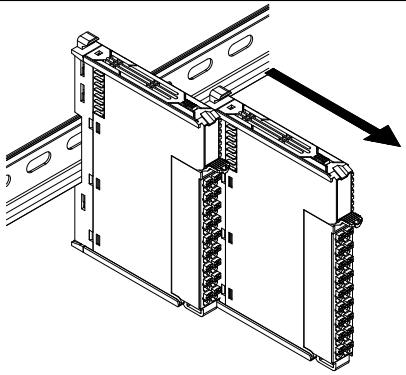
Explanation: After the module installation is completed, the latch will automatically move downwards to lock. If the latch does not move downwards, press down on the top of the latch to ensure proper installation.

(3) Disassemble steps



Use a slotted screwdriver or similar tool to pry the rail latch upwards.

As shown in the left figure:

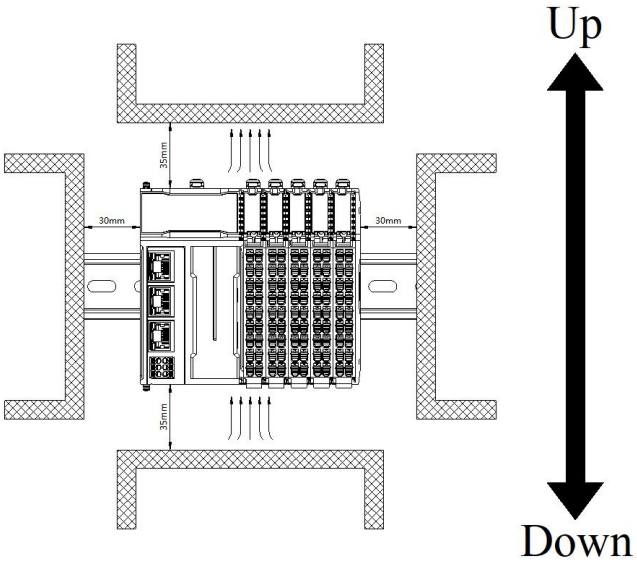


Pull the module straight forward at the buckle position (raised part), and press down on the top of the latch after completion.

As shown in the left figure:

5-4-5-4 Installation environment

This product can be installed in four positions (installation direction): horizontal direction, vertical direction, top of the cabinet, and bottom of the cabinet. It is recommended to install in the horizontal direction. The heat dissipation design is through natural convection, to ensure normal ventilation and heat dissipation, and to reserve sufficient wiring space, the minimum gap must be left around this product, as shown in the following figure:



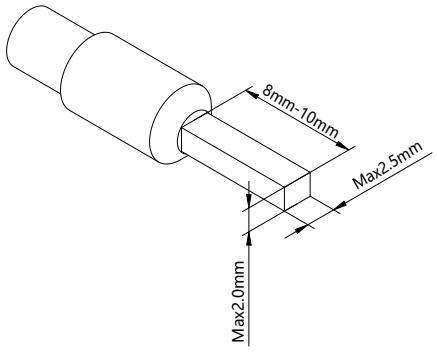
If there are high-temperature heat source equipment (heaters, transformers, high resistors, etc.) around this product, a minimum gap of 100mm should be left between the equipment and the high-temperature heat source.

5-4-5-5 Installation environment

When wiring a module, its terminal must meet the following requirements:

Suitable cable diameter	
Chinese standard/mm2	American Standard/AWG
0.3	22
0.5	20
0.75	18
1.0	18
1.5	16

If using other tube type wire lugs, please crimp them to the stranded wire, and the shape and size requirements are shown in the following figure:



5-4-6. Parameters and mapping addresses

Name	Type	Description
XF_E8X8Y	Stuct	8 channels input and 8 channels output module
CH0	BOOL	Channel 0 input value
CH1	BOOL	Channel 1 input value
CH2	BOOL	Channel 2 input value
CH3	BOOL	Channel 3 input value
CH4	BOOL	Channel 4 input value
CH5	BOOL	Channel 5 input value
CH6	BOOL	Channel 6 input value
CH7	BOOL	Channel 7 input value
CH8	BOOL	Channel 8 output value
CH9	BOOL	Channel 9 output value
CH10	BOOL	Channel 10 output value
CH11	BOOL	Channel 11 output value
CH12	BOOL	Channel 12 output value
CH13	BOOL	Channel 13 output value
CH14	BOOL	Channel 14 output value
CH15	BOOL	Channel 15 output value
ErrCode_module	WORD	Module level error codes
ErrCode_CH	DWORD	Channel level error codes

Error code parameters:

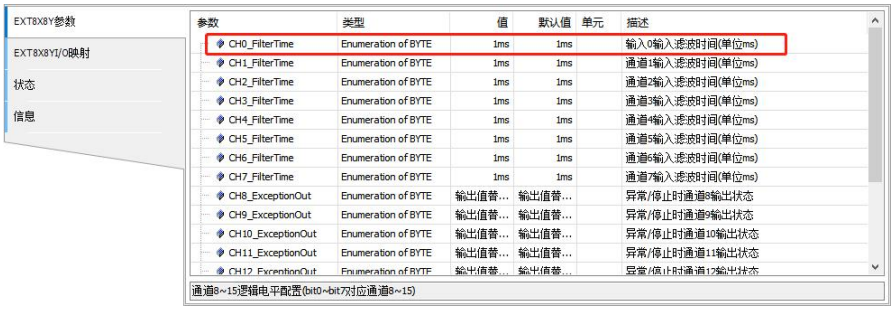
Module level error codes(ErrCode_module)		
Bit	Meaning	Error level
2	Internal module error occurred and cannot be repaired by the user layer.	Important

5-4-7. Functions and Settings

■ Channel input filtering time

Each channel of "filtering time" corresponds to a separate filtering parameter, and the setting method is to select the parameter from the drop-down menu.

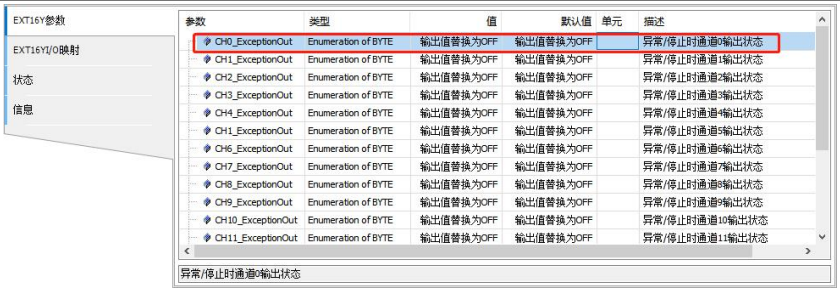
Parameter definition	When there is a signal at the input terminal and the signal duration exceeds the filtering time, it is considered a valid signal.
Settable parameters	0ms, 0.25ms, 0.5ms, 1ms, 2ms, 3ms, 4ms, 5ms, 6ms, 7ms, 8ms, 9ms, 10ms, 11ms, 12ms, 13ms, 14ms, 15ms, 20ms, 30ms, 64ms, 128ms
Default parameters	1ms



■ Abnormal/STOP output status

Each channel corresponds to a separate parameter for "Abnormal/STOP Output Status", which can be set by selecting a parameter from the drop-down menu.

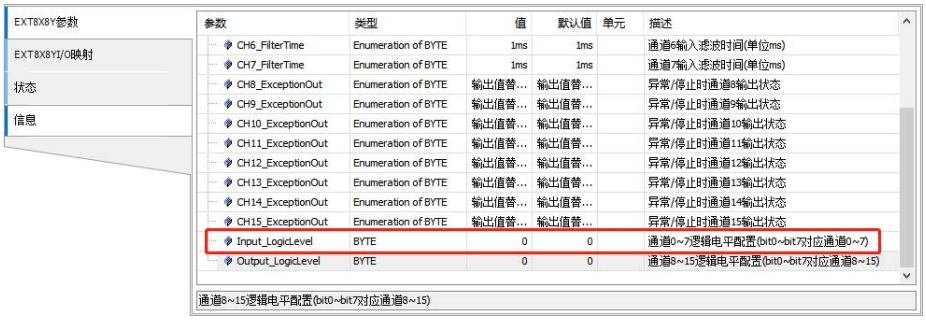
Parameter definition	The following table pulling method reflects the parameters that can be set: "Output replacement value OFF", "Keep previous value", "Output replacement value ON	
Parameter definition	Output replacement value OFF	When the PLC is in STOP mode, the output terminal is in a reset state (physical terminal, regardless of channel logic level)
	Keep previous value	When the PLC is in abnormal/STOP mode, the output terminal outputs the last state of the PLC from RUN to STOP (physical terminal, regardless of channel logic level).
	Output replacement value ON	When the PLC is in abnormal/STOP mode, the output terminal is in a set state (physical terminal, regardless of channel logic level).
Default parameters	Output replacement value OFF	



■ Channel logic level

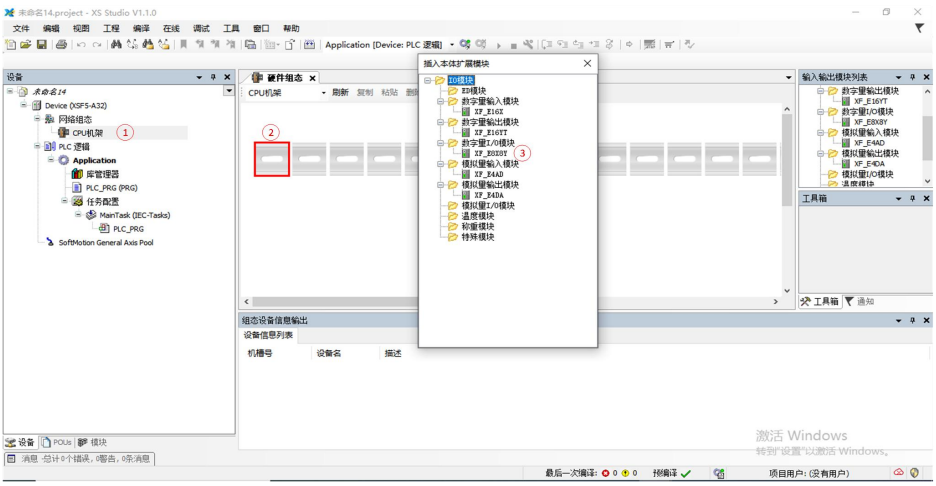
The "Logic Level Configuration" corresponds to a separate logic level configuration for each channel. The setting method is to select parameters from the drop-down menu.

<table>
<tr><td>Settable parameters</td><td>The following table pulling method reflects the parameters that can be set: positive logic, negative logic</td></tr>
<tr><td>Parameter definition</td><td>The program execution logic after external signal input.
<table>
<tr><th>Logic level configuration</th><th>Run program</th><th>Operation result</th></tr>
<tr><td>Positive logic</td><td rowspan="2">SET Y0;</td><td>Y0 set to ON</td></tr>
<tr><td>Negative logic</td><td>Y0 set to OFF</td></tr>
<tr><td>Positive logic</td><td rowspan="2">RST Y0;</td><td>Y0 set to OFF</td></tr>
<tr><td>Negative logic</td><td>Y0 set to ON</td></tr>
</table></td></tr>
</table>



5-4-8. Programming examples

■ Module add



① Select "CPU Rack";

② Double click rack;

③ Select XF-E8NX8YT module.

6. Analog module unit

6-1. Naming rules

XF－E ○ AD □ DA－○－□

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series Name	XF:	XF series extension module
②	Extension module	E:	Right extension module
③	Input channel	1:	1 channel
		2:	2 channels
		4:	4 channels
		6:	6 channels
		8:	8 channels
④	Type	AD:	Analog voltage and current input
⑤	Output channel	1:	1 channel
		2:	2 channels
		4:	4 channels
		6:	6 channels
		8:	8 channels
⑥	Type	DA:	Analog voltage and current input
⑦	Analog type	Empty:	Current&voltage type
		A:	Current type
		V:	Voltage type
⑧	Module type	Empty:	Current&voltage type
		H:	Channel to channel isolation
		S:	High precision
		U:	High speed

6-2. Analog input unit XF-E4AD

6-2-1. Product overview

XF-E4AD series analog input expansion module, which has 4 channels of analog input and supports current and voltage input, and is suitable for XF, XSF series CPU unit products and XF series communication coupler units.

- 4 channel analog input;
- Channel conversion speed 60us/channel;
- Maximum error of 0.2%;
- Voltage and current bipolar input;

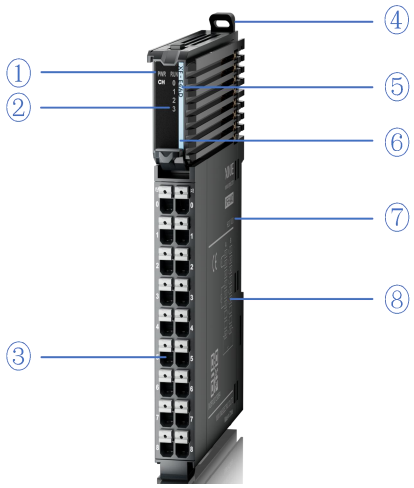
- 12mm width design

Module version:

Hardware version	Software version	Function
H2.0	V2.0	Basic functions for the first official production

6-2-2. Module view

(1) Description of each section



Number	Name
①	System LED indicator light
②	Channel LED indicator light
③	Detachable terminal block
④	Clasp
⑤	Signal indication
⑥	Color identification indicating module type
⑦	Module hardware and software versions
⑧	Wiring diagram

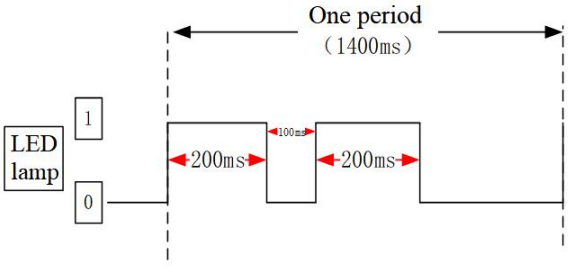
(2) System indicator light

System indicator light	Meaning	
PWR(green)	Extinguish	Module not powered on
	Normally ON	All external power supplies of the module are normal (backplane bus power supply&external input 24V)
	Flashing 1Hz*1	Module power supply is abnormal and cannot operate normally
RUN(green)	Normally ON	The module is operating normally
	Flashing 1Hz*1	General errors in module logs
	Extinguish	Important errors in the module log
	Flashing 10Hz*2	Module establishing communication
	Double flashing*3	Module firmware update

*1: A square wave with a duty cycle of 50% and a frequency of 1Hz.

*2: A square wave with a duty cycle of 50% and a frequency of 10Hz.

*3: The following figure:



(3) Channel indicator light

Model	Channel indicator light		
XF-E4AD	CH0~CH3	Normally ON(green)	Corresponding input channel has input ON signal
		Extinguish	Corresponding input channel has no input ON signal

(4) Color identification

Number	Color		Module Type
1		White	Digital input
2		Gray	Digital output and digital mixing module
3		Light blue	Analog input
4		Dark Blue	Analog Output

6-2-3. General specifications

General specifications		
Project		Content
Operating temperature	Max temperature	55℃
	Min temperature	-20℃
Transportation/storage temperature	Max temperature	70℃
	Min temperature	-40℃
Environmental humidity (including operation/storage)	Upper limit	95%
	lower limit	10%
Protection grade		IP20
Anti vibration		Accord with IEC61131-2 Under intermittent vibration (frequency 5-9Hz, constant amplitude 3.5mm peak displacement) and (frequency 9-150Hz, constant acceleration 1.0g peak acceleration) Under continuous vibration (frequency 5-9Hz, half amplitude 1.75mm displacement) and (frequency 9-150Hz, constant acceleration 0.5g, constant frame amplitude) Scan 10 times in X, Y, and Z directions
Impact resistance		Accord with IEC61131-2 Impact strength of 15G (peak) with a duration of 11ms is applied to three mutually perpendicular axes, with 3 impacts per axis (a total of 18 impacts)
Use environment		Non corrosive gas
Use altitude		0-2000 meters
Over voltage level		II: Accord with IEC61131-2
Pollution level		2: Accord with IEC61131-2
Anti interference EMC		Accord with IEC 61131-2 IEC61000-6-4 B type
Related certifications		CE

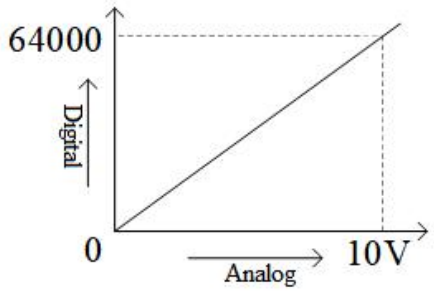
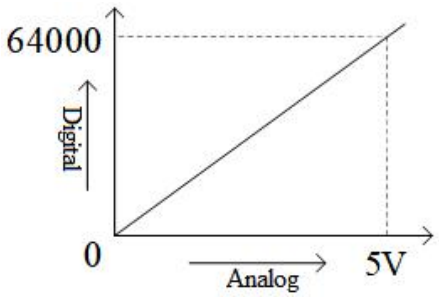
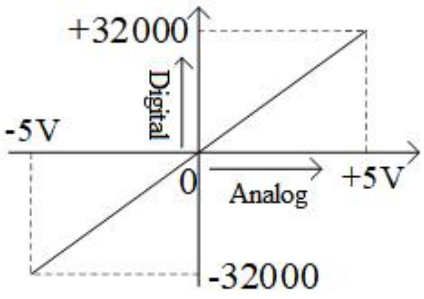
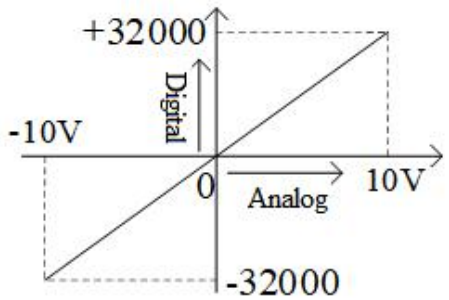
6-2-4. Technical specification

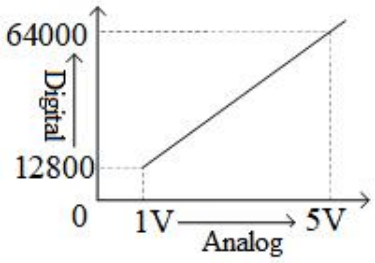
6-2-4-1. Module performance

Project			Specification
Input channel			4
Analog input range (rated)	Voltage	Input range	0V~5V (0~64000) 0V~10V (0~64000) -5V~5V (-32000~32000) -10V~10V (-32000~32000) 1V~5V (12800~64000)
	Current	Input range	0mA~20mA (0~64000) 4mA~20mA (12800~64000) -20mA~20mA (-32000~32000)
Maximum input range	Voltage input		DC±15V
	Current input		-40~40mA
Conversion Speed			60us/CH
Resolution ratio			1/64000（16Bit）
Module power supply	Rated input		DC24V±10%, 150mA
	Protect		Reverse protection
Error	Normal temperature 25 ℃± 5 ℃		±0.1% (25±5 ℃)
	Full temperature end -20~55 ℃		±0.2%
Isolate			Channel non isolated, power isolated
Module power consumption			0.8W(Backplane bus)+0.8W(external input)
Module weight			80g

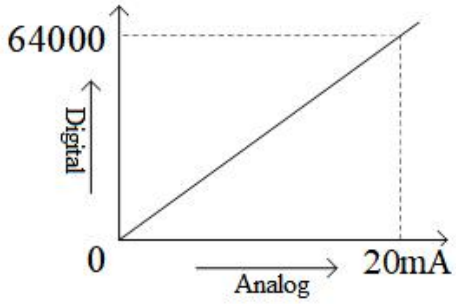
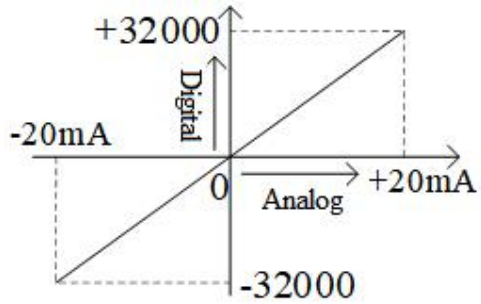
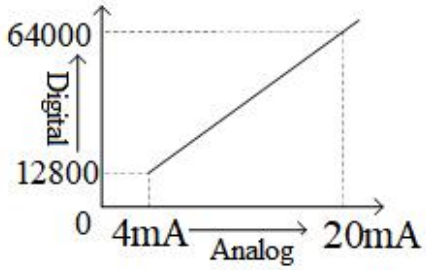
6-2-4-2. Module Conversion Diagram

■ Voltage

0V~10V analog input	0V~5V analog input
	
-5V~5V analog input	-10V~10V analog input
	

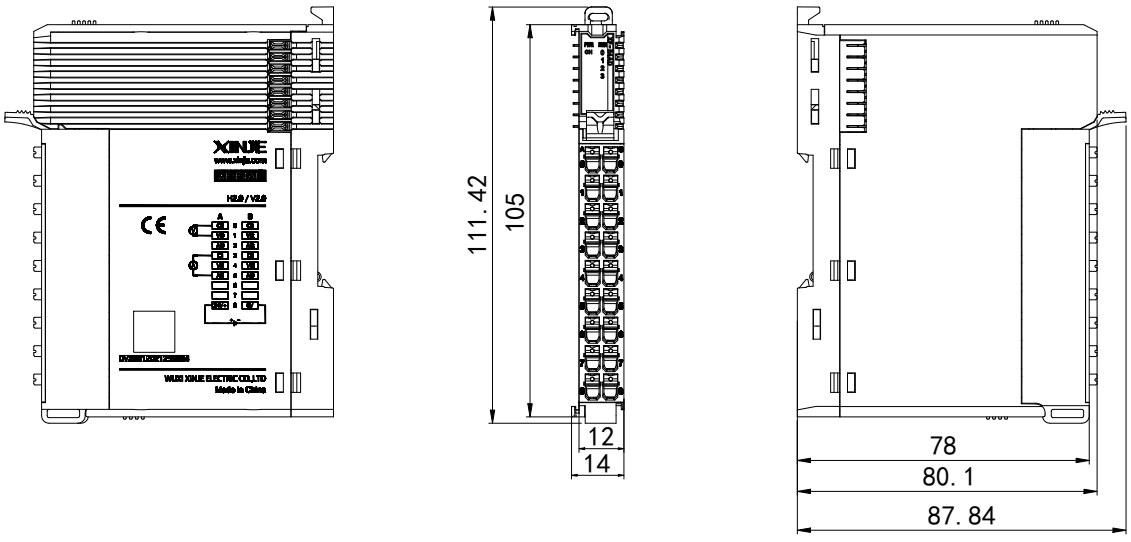
1V~5V analog input	
	

■ Current

0mA~20mA analog input	-20mA~20mA analog input
	
4mA~20mA analog input	
	

6-2-5. Installation&Wiring

6-2-5-1 Apparent dimension

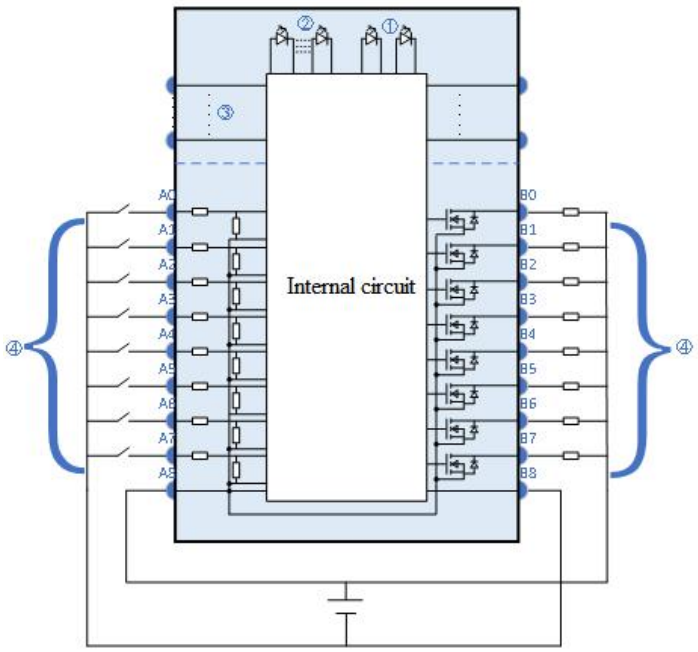


6-2-5-2 Terminal Definition&Wiring

■ Terminal Definition

XF-E4AD						
Meaning		A-list terminal	Terminal layout	B-list terminal	Meaning	
CH0	Input grounding	0		0	CH2	Input grounding
VI0	Analog voltage input terminal	1		1	VI2	Analog voltage input terminal
AI0	Analog current input terminal	2		2	AI2	Analog current input terminal
CH1	Input grounding	3		3	CH3	Input grounding
VI1	Analog voltage input terminal	4		4	VI3	Analog voltage input terminal
AI1	Analog current input terminal	5		5	AI3	Analog current input terminal
Empty		6		6	Empty	
Empty		7		7	Empty	
24V +	External power supply terminal	8		8	0V	External power supply terminal

■ External wiring

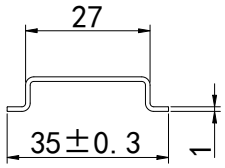


Number	Name
①	System indicator light
②	Channel indicator light
③	Backplane bus
④	Input Channel&Wiring

6-2-5-3 Installation method

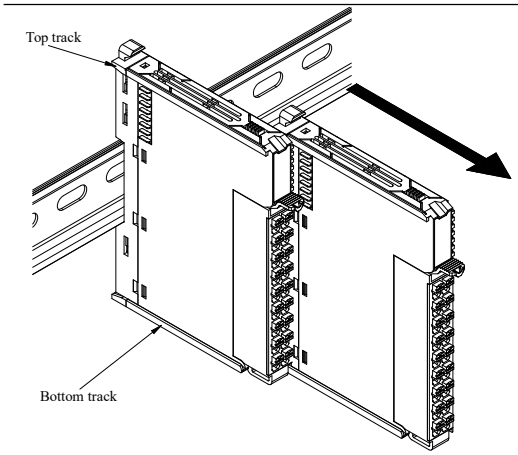
(1) Installation demand

The module is installed using DIN rails, which must comply with the IEC 60715 standard (35mm wide and 1mm thick). The size information is shown in the following figure, in millimeters (mm).



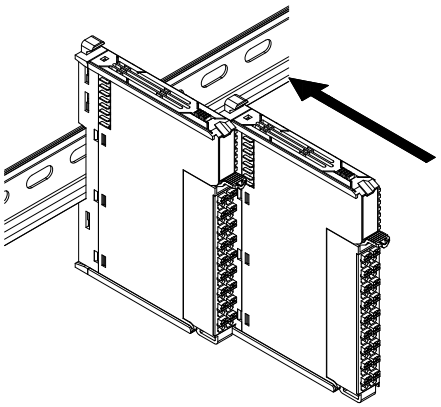
Attention — When the module is installed on a non recommended DIN rail as mentioned above, the DIN rail latch may not lock properly.

(2) Installation steps



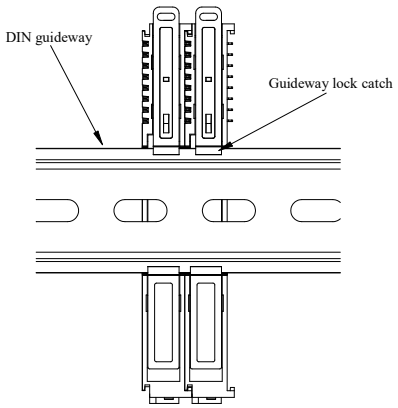
The assembly between IO modules is installed by sliding through the top and bottom rails of the modules.

As shown in the left figure:



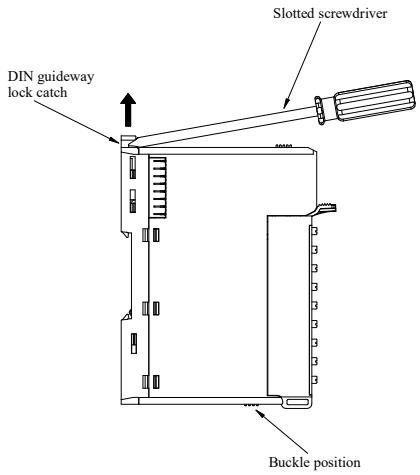
The module is installed on the guide rail. When installing, align the module with the DIN guide rail and press the module in the direction indicated by the arrow. After installation, there is a noticeable clicking sound

As shown in the left figure:

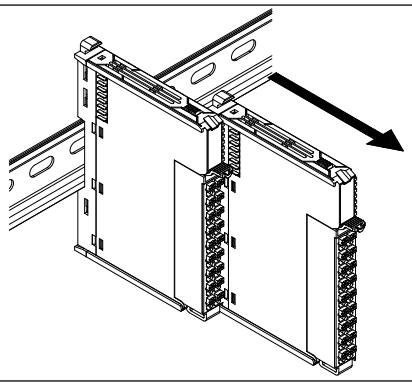


Explanation: After the module installation is completed, the latch will automatically move downwards to lock. If the latch does not move downwards, press down on the top of the latch to ensure proper installation.

(3) Disassemble steps



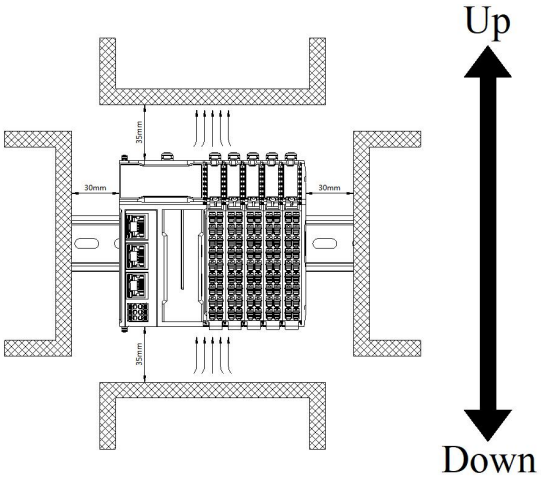
Use a slotted screwdriver or similar tool to pry the rail latch upwards.
As shown in the left figure:



Pull the module straight forward at the buckle position (raised part), and press down on the top of the latch after completion.
As shown in the left figure:

6-2-5-4 Installation environment

This product can be installed in four positions (installation direction): horizontal direction, vertical direction, top of the cabinet, and bottom of the cabinet. It is recommended to install in the horizontal direction. The heat dissipation design is through natural convection, to ensure normal ventilation and heat dissipation, and to reserve sufficient wiring space, the minimum gap must be left around this product, as shown in the following figure:



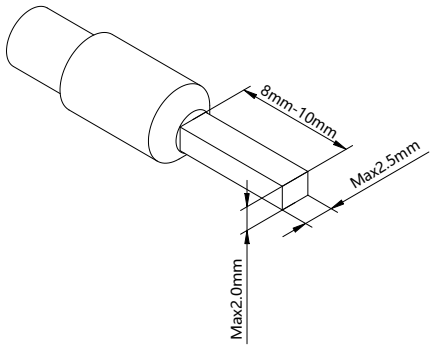
If there are high-temperature heat source equipment (heaters, transformers, high resistors, etc.) around this product, a minimum gap of 100mm should be left between the equipment and the high-temperature heat source.

6-2-5-5 Installation environment

When wiring a module, its terminal must meet the following requirements:

Suitable cable diameter	
Chinese standard/mm2	American Standard/AWG
0.3	22
0.5	20
0.75	18
1.0	18
1.5	16

If using other tube type wire lugs, please crimp them to the stranded wire, and the shape and size requirements are shown in the following figure:



6-2-6. Parameters and mapping addresses

Name	Type	Description
XF_E4AD	Stuct	4 channels input module
CH0	DINT	Channel 0 input value
CH1	DINT	Channel 1 input value
CH2	DINT	Channel 2 input value
CH3	DINT	Channel 3 input value
ErrCode_module	WORD	Module level error codes
ErrCode_CH	DWORD	Channel level error codes

Error code parameters:

Module level error codes(ErrCode_module)		
Bit	Meaning	Error level
0	The 24V input power supply of the module is abnormal.	Important
2	An internal module error occurred and cannot be fixed by the user layer.	Important
3	ADC/DAC read/write failure.	Important

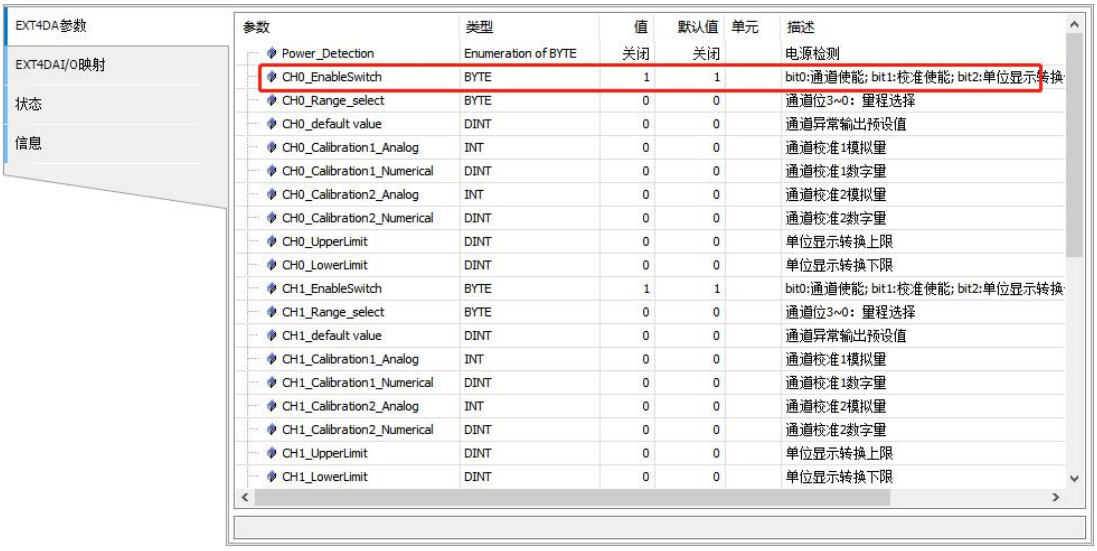
Module level error codes(ErrCode_module)		
Bit	Meaning	Error level
0	Channel 1 upper limit overflow.	Normal
1	Channel 1 low limit overflow.	Normal
2	Channel 1 disconnected.	Important
3	Reserve	-
4	Channel 2 upper limit overflow.	Normal
5	Channel 2 low limit overflow.	Normal
6	Channel 2 disconnected.	Important
7	Reserve	-
8	Channel 3 upper limit overflow.	Normal
9	Channel 3 low limit overflow.	Normal
10	Channel 3 disconnected.	Important
11	Reserve	-
12	Channel 4 upper limit overflow.	Normal
13	Channel 4 low limit overflow.	Normal
14	Channel 4 disconnected.	Important

6-2-7. Functions and Settings

■ Channel enable/disable

Enable or disable AD sampling channels to save module sampling time.

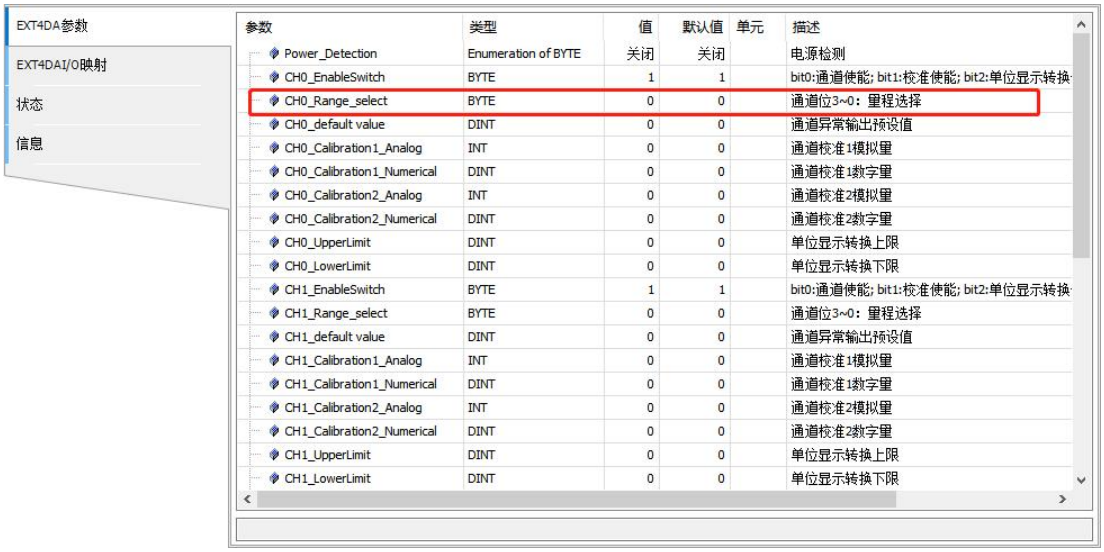
Settable parameters	Enable or disable (in disable mode, subsequent software functions of the corresponding channel cannot be set)
Default parameters	Enable
Note	The conversion time of each channel is 60us, with a total time of on/off conversion speed * the number of enabled channels. If this channel is not used, it can be set to "disable" to reduce the total conversion time of the module.



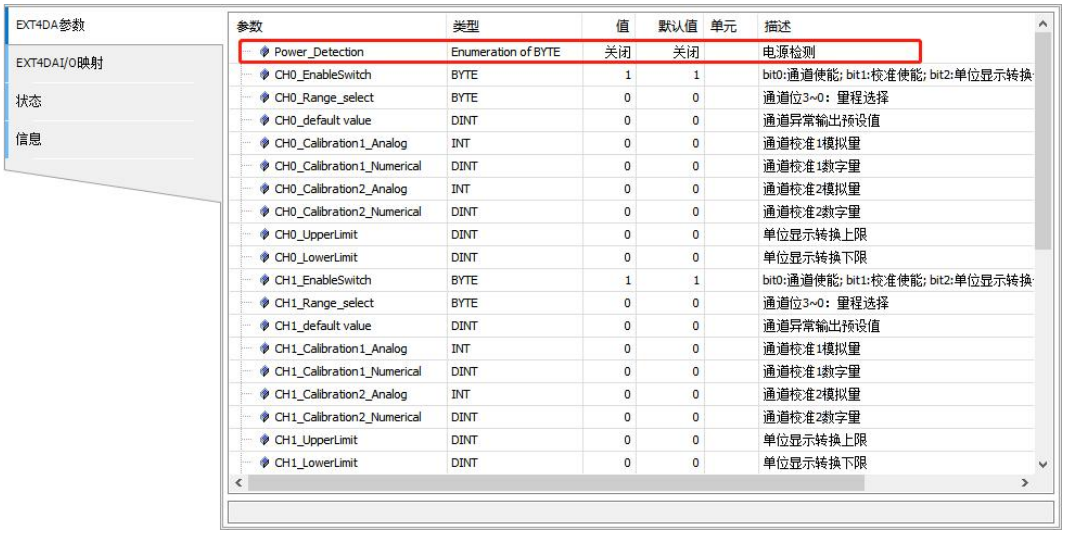
■ Output type/range

Users can choose different output types and output ranges.

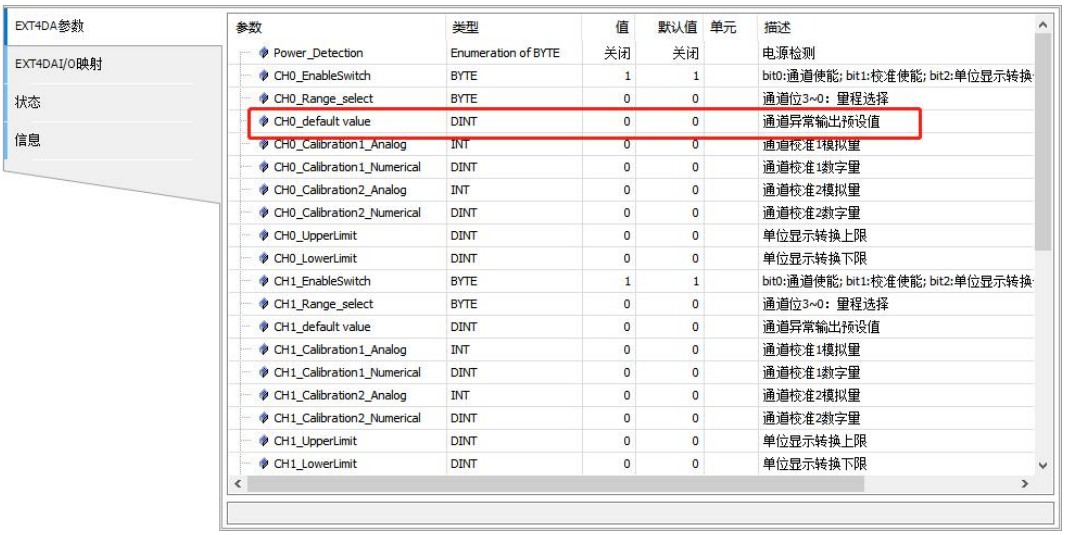
Settable parameters	The following table pulling method reflects the parameters that can be set: voltage, current
Default parameters	Voltage
Voltage measurement range	0V~5V, 0V~10V, -5V~5V, -10V~10V, 1V~5V Default: 0V~10V
Current measurement range	0mA~20mA, 4mA~20mA, -20mA~20mA



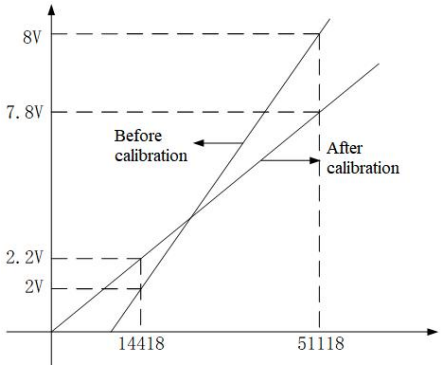
- Module power detection
- Check whether the external power supply 24V of the module is normal:
  - Normal: The module is operating normally;
  - Abnormal: The module channel cannot be used but can be configured, configured, and scanned normally.
- Settable parameters: Enable/disable (default to disabled).



- STOP output
- When the CPU unit is in STOP mode or abnormal error mode, the corresponding DA channel of the module outputs according to the set parameters.
- Settable parameters: Maintain the previous value, set value (default to maintain the previous value).

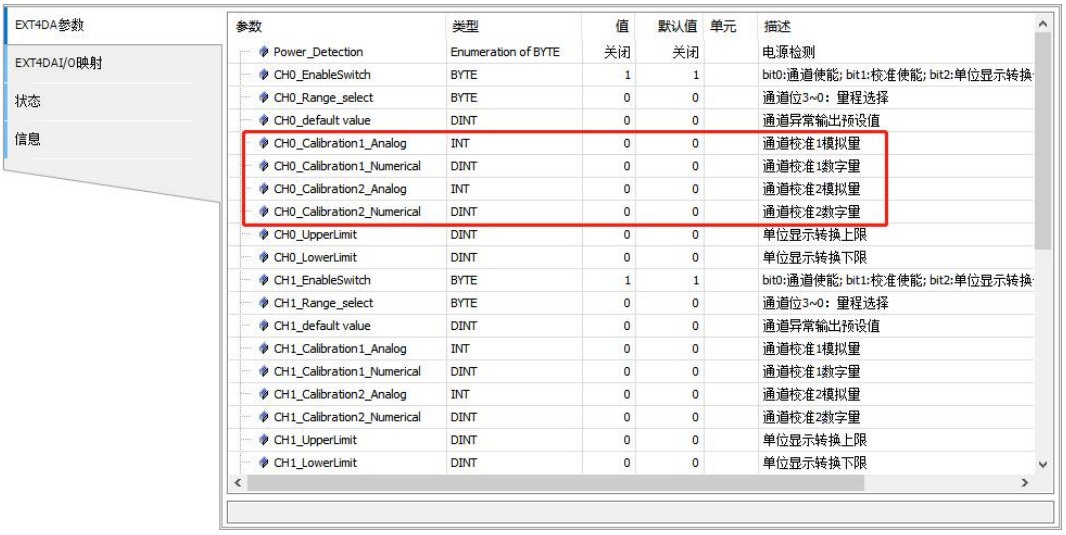


■ Calibration function



Due to the possibility of drift between the analog output converted from DA and the set digital output after the product leaves the factory or has been in use for a period of time, customers can immediately reflect it to the proportional scaling value (digital operation value) by setting the DA offset calibration function, and can easily complete the calibration at system startup on their own.

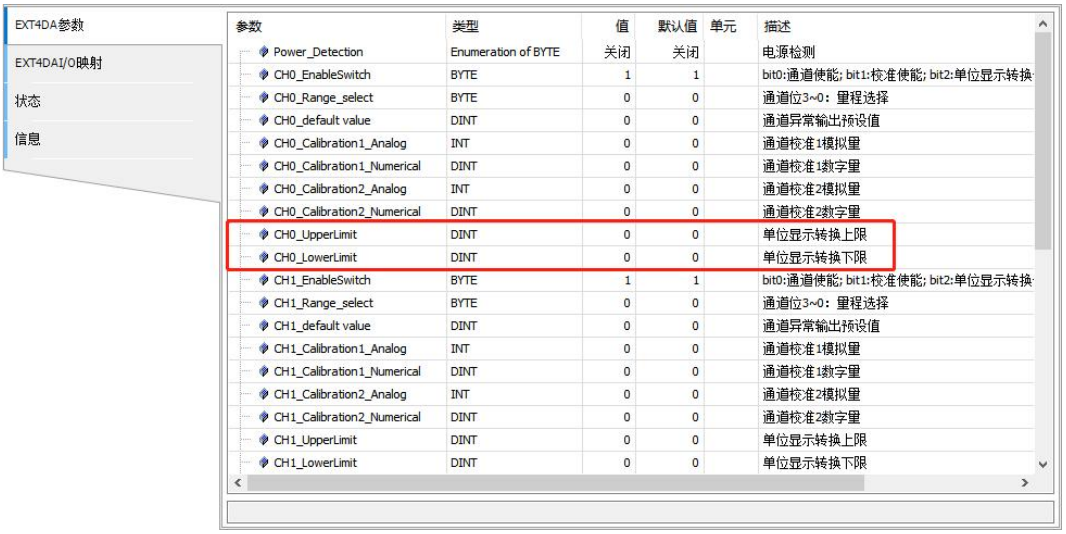
For example, if the DA1 analog output is set to 0-10V output, and a value of 51118 is assigned to the output channel, the output voltage is 8V; When a value of 14418 is assigned to the output channel, the output voltage is 2V; At this point, set 8000mV in the DA1 calibration 1 analog setting, 51118 in the DA1 calibration 1 digital setting, 2000mV in the DA1 calibration 2 analog setting, and 14418 in the DA1 calibration 2 digital setting to achieve the calibration function.



■ Unit display conversion

This function can directly display the output analog data as the actual output unit required by the customer.

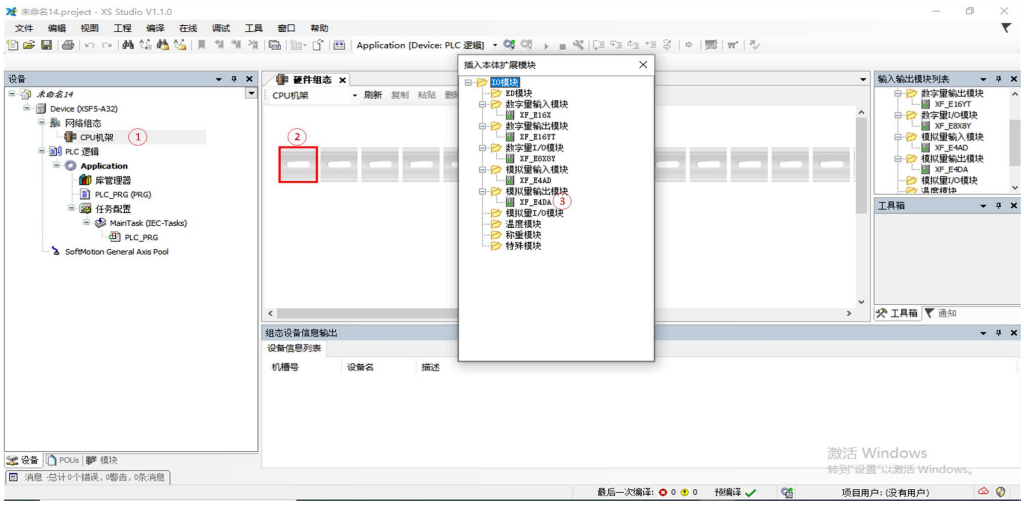
Due to the customer's use of analog expansion module DA, the basic output is to provide analog quantities corresponding to the outputs of some instruments or sensors; For example, controlling a frequency output range of 0~50Hz for a frequency converter and controlling an analog signal of 4~20mA for frequency control. The existing DA module will output an analog signal of 4~20mA to the analog acquisition terminal of the frequency converter, and the customer needs to convert the digital signal of 0~65535 to 0~50Hz for the actual output frequency of the frequency converter. You can automatically convert the analog output of module DA into the actual output frequency value of the frequency converter by setting the conversion value range.



参数	类型	值	默认值	单元	描述
Power_Detection	Enumeration of BYTE	关闭	关闭		电源检测
CH0_EnableSwitch	BYTE	1	1		bit0:通道使能; bit1:校准使能; bit2:单位显示转换
CH0_Range_select	BYTE	0	0		通道位3~0：里程选择
CH0_default value	DINT	0	0		通道异常输出预设值
CH0_Calibration1_Analog	INT	0	0		通道校准1模拟量
CH0_Calibration1_Numerical	DINT	0	0		通道校准1数字量
CH0_Calibration2_Analog	INT	0	0		通道校准2模拟量
CH0_Calibration2_Numerical	DINT	0	0		通道校准2数字量
CH0_UpperLimit	DINT	0	0		单位显示转换上限
CH0_LowerLimit	DINT	0	0		单位显示转换下限
CH1_EnableSwitch	BYTE	1	1		bit0:通道使能; bit1:校准使能; bit2:单位显示转换
CH1_Range_select	BYTE	0	0		通道位3~0：里程选择
CH1_default value	DINT	0	0		通道异常输出预设值
CH1_Calibration1_Analog	INT	0	0		通道校准1模拟量
CH1_Calibration1_Numerical	DINT	0	0		通道校准1数字量
CH1_Calibration2_Analog	INT	0	0		通道校准2模拟量
CH1_Calibration2_Numerical	DINT	0	0		通道校准2数字量
CH1_UpperLimit	DINT	0	0		单位显示转换上限
CH1_LowerLimit	DINT	0	0		单位显示转换下限

6-2-8. Program example

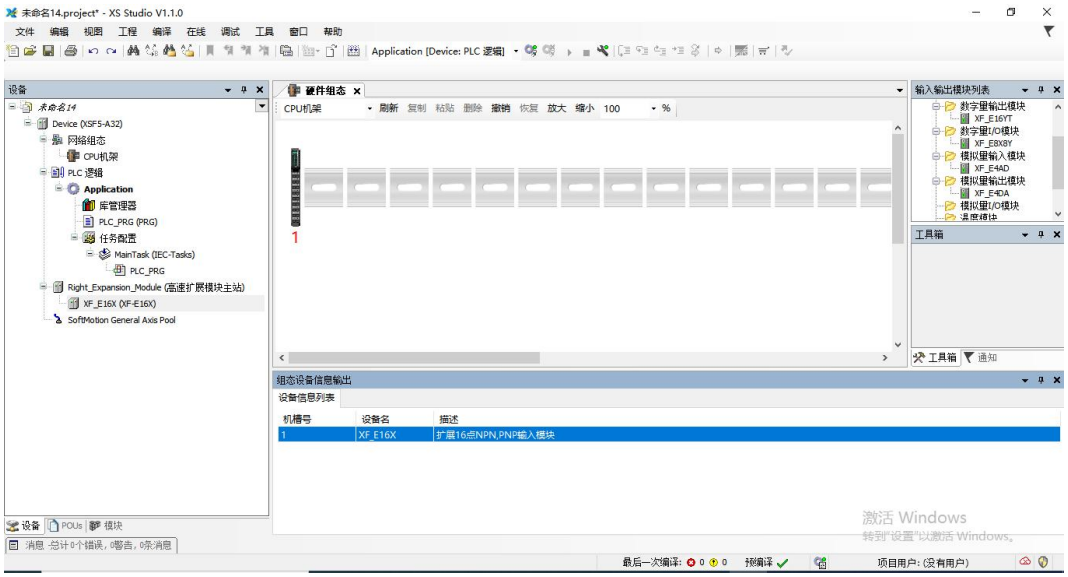
■ Module add



① Select "CPU Rack";

② Double click rack;

③ Select XF-E4AD module



■ Input filtering time setting 5ms

参数	类型	值	默...	单元	描述
CH0_FilterTime	Enumeration of BYTE	① 1m	1ms		通道0滤波时间(单位ms)
CH1_FilterTime	Enumeration of BYTE		1ms		通道1滤波时间(单位ms)
CH2_FilterTime	Enumeration of BYTE				通道2滤波时间(单位ms)
CH3_FilterTime	Enumeration of BYTE				通道3滤波时间(单位ms)
CH4_FilterTime	Enumeration of BYTE				通道4滤波时间(单位ms)
CH5_FilterTime	Enumeration of BYTE	② 5ms			通道5滤波时间(单位ms)
CH6_FilterTime	Enumeration of BYTE				通道6滤波时间(单位ms)
CH7_FilterTime	Enumeration of BYTE				通道7滤波时间(单位ms)
CH8_FilterTime	Enumeration of BYTE				通道8滤波时间(单位ms)
CH9_FilterTime	Enumeration of BYTE				通道9滤波时间(单位ms)
CH10_FilterTime	Enumeration of BYTE				通道10滤波时间(单位ms)
CH11_FilterTime	Enumeration of BYTE				通道11滤波时间(单位ms)

0ms
0.25ms
0.5ms
1ms
2ms
3ms
4ms
5ms
6ms
7ms
8ms
9ms
10ms
11ms
12ms
13ms
14ms

① Select the filtering time for channel 0;

② Select 5ms.

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