

RB Series IO Module

User Manual

DECOWELL Industrial Intelligence makes reliable partners



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Preface

■ Profile

Thank you for purchasing DECOWELL RB series card-type I/O modules!

RB series card-type I/O modules are distributed expansion modules developed by DECOWELL. This series of modules consists of adapters, I/O modules, power modules, and terminal modules. The adapter can support a variety of communication buses, such as PROFINET, EtherCAT, DeviceNet, Modbus RTU, PROFIBUS-DP, etc. I/O modules can be divided into digital input modules, digital output modules, analog input modules, analog output modules, and functional modules. Users can match them according to actual applications.

RB- 6002 is a 2-channel single-ended encoder signal acquisition module.

This manual mainly describes the specifications, features and usage of the module. Please read it carefully before use so that you can use this product more clearly and safely.

Due to continuous product and technical updates and improvements, the content in this document may not fully correspond to the actual product. Please understand. In case of any discrepancies, the actual product shall prevail. Content changes resulting from product upgrades are subject to change without prior notice.

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Safety Precautions

■ Security Statement

1. Before installing, operating, or maintaining the product, please read and comply with these safety precautions.
2. To ensure personal and equipment safety, follow all safety labels on the product and all safety instructions contained in this manual during installation, operation, and maintenance.
3. The “Note”, “Caution”, “Warning”, and “Danger” statements in this manual do not represent all safety precautions that should be observed; they are supplementary to the overall safety requirements.
4. This product must be used under conditions that meet the specified design requirements. Failure to meet these conditions may result in malfunction. Functional abnormalities or component damage caused by non-compliance are not covered by the product warranty.
5. DECOWELL assumes no legal liability for personal injury, property damage, or other losses caused by improper or unauthorized operation of the product.

■ Security level definition

Note

Indicates additional information or explanations that supplement the operating instructions.

Caution

Indicates a hazardous situation that may result in minor to moderate personal injury or equipment damage if not operated as instructed.

Warning

Indicates a hazardous situation that may result in serious personal injury or death if not operated as instructed.

 Warning — During Control System Design

01. When applying this system, please be sure to design a safety circuit to ensure that the control system can still operate safely when the external power supply fails or the expansion module malfunctions.
02. If the output circuit experiences prolonged overcurrent due to exceeding the rated load current or a load short circuit, the module may smoke or catch fire. External safety devices such as fuses or circuit breakers should be installed.

 Caution — During Control System Design

01. It is essential to install an emergency braking circuit, a protection circuit, an interlock circuit for forward and reverse operation, and upper and lower limit interlock switches to prevent machine damage in the external circuit of the expansion module;
02. To ensure the safe operation of the equipment, please design external protection circuits and safety mechanisms for output signals related to major accidents;
03. When the output units of the expansion module, such as relays and transistors, are damaged, their outputs cannot be controlled to be in the ON or OFF state;

 Caution — During Installation

01. During installation, prevent metal shavings and wire ends from falling into the module's ventilation holes, as this may cause fire, malfunction, or misoperation;
02. After installation, ensure that there are no foreign objects on its ventilation surface, otherwise it may cause poor heat dissipation, resulting in fire, malfunction, or misoperation;
03. During installation, ensure that the module is securely connected to its respective connector and that the module connection hooks are firmly locked. Improper module installation may lead to malfunctions, failures, or detachment.

 Warning — During Installation

01. Only professional maintenance personnel who have received relevant electrical equipment training and possess sufficient electrical knowledge can install this product;

02. When installing or removing modules, all external power supplies to the system must be completely disconnected before proceeding. Failure to disconnect the power supply may result in electric shock, module malfunction, or accidental operation.

03. Do not use the module in the following locations: places with dust, fumes, conductive dust, corrosive gases, or flammable gases; places exposed to high temperatures, condensation, or wind and rain; places subject to vibration or impact. Electric shock, fire, or misoperation may also cause product damage and deterioration.

1.2 Component Description

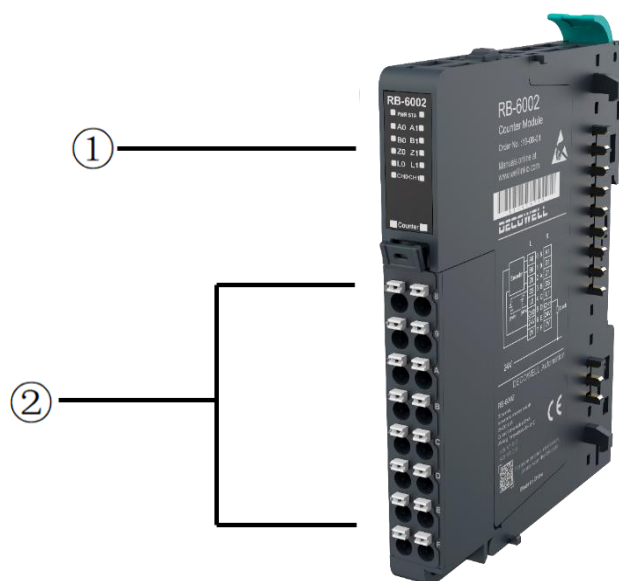


Figure 1-2-1 Component Description Diagram

Parts Description Table

NO.	Name	Function Definition		
1	Signal indicator	A0	A0 phase pulse input	A0 phase has pulse input (green light flashes) A0 phase has no pulse input (green light off)
		B0	B0 phase pulse input	B0 phase Pulse input (green light flashes) B0 phase No pulse input (green light off)
		Z0	Z0 phase pulse input	Z0 phase Pulse input (green light flashes) Z0 phase No pulse input (green light off)
		L0	Latch signal input	Has latch signal input (green light on)
		CH0	Comparison Output	High level output (green light on)
		A1	A1 phase pulse input	A1 phase has pulse input (green light flashes) A1 phase has no pulse input (green light off)
		B1	B1 phase pulse input	B1 phase has pulse input (green light flashes) B1 phase has no pulse input (green light off)
		Z1	Z1 phase pulse input	Z 1 phase has pulse input (green light on) Z 1 phase no pulse input (green light off)
		L1	Latch signal input	There is latch signal input (green light on)
		CH1	Comparison Output	High level output (green light on)

Wiring port description

NO.	Channel	Describe	NO.	Channel	Describe
0	A0	Encoder input A0	8	A1	Encoder input A1
1	B0	Encoder input B0	9	B1	Encoder input B1
2	Z0	Encoder input Z0	A	Z1	Encoder input Z1
3	SS	NPN output encoder, this terminal is connected to 24V; PNP output encoder, this terminal is connected to 0V	B	SS	NPN output encoder, this terminal is connected to 24V; PNP output encoder, this terminal is connected to 0V
4	Latch0	Latch input 0	C	Latch1	Latch input 1
5	CH0	Comparison output out0	D	CH1	Comparison output out1
6	twenty four	+24V ((internal connected to E terminal and positive power contact)	E	24V	+24V ((internal connection to terminal 6 and positive power contact)
7	0V	0V ((internal connection to F terminal and negative power contact)	F	0V	0V ((internal connection to terminal 7 and negative power contact)

1.3 Technical specifications

Basic parameters	
Dimensions	100 mm×77 mm×12 mm
Protection level	IP20
Wiring specifications	0.2~1.5mm ²
Wiring method	Straight-through spring terminal connection
Technical Parameters	
model	RB-6002
Product Name	Dual-channel encoder module
Current consumption	Max 78mA
Number of input channels	2
Input method	Single-ended encoder input, PNP/NPN compatible
Encoder power supply	24 V
Trigger signal	Determined by NPN/PNP wiring configuration.
Counting mode	Linear counter form, ring counter form

Counting range	0 ~4294967296 or -2147483648~2147483647
Counting function selection	Z phase clear function, preset function, comparison function, latch function
	Power-off save count value, frequency measurement function, counting function
Maximum input frequency	1 MHz
Pulse input mode	Single-phase pulse (1x/2x) CW/CCW (1x) AB quadrature (1x/2x/4x) Default single-phase pulse 1x mode
Input Impedance	> 500KΩ
Electrical isolation	Optocoupler isolation
Maximum connection distance of signal line	2 meters

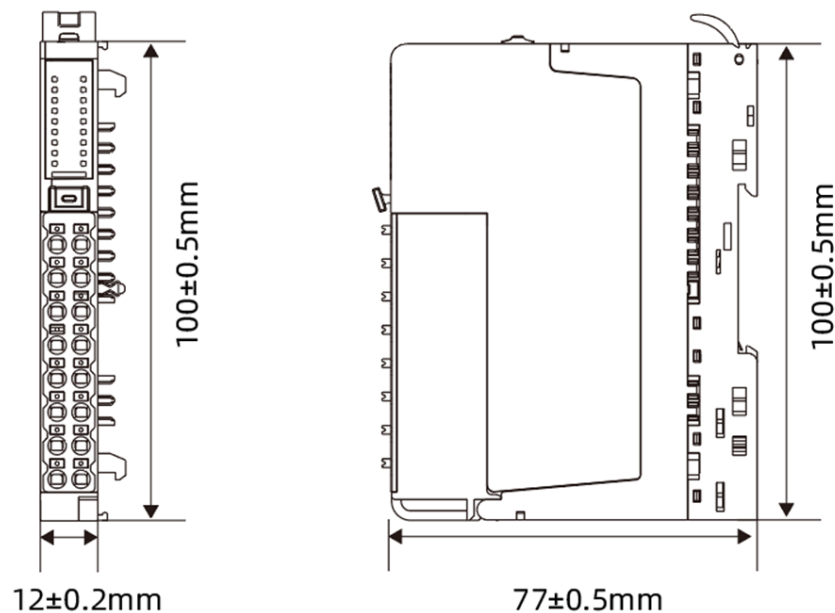
1.4 Environmental Specifications

Environmental parameters	
Operating temperature	-25~60℃
Operating humidity	95% non-condensing
Atmosphere	≥ 795 hPa (altitude ≤ 2000 m) as per IEC 61131-2
Storage temperature	-40~85 °C
Overvoltage category	I

2. Mechanical installation

2.1 Installation dimensions

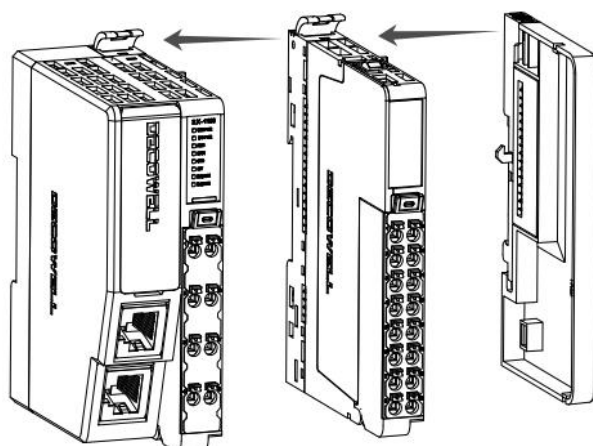
The installation dimension information is shown in the figure below, the unit is (mm) .



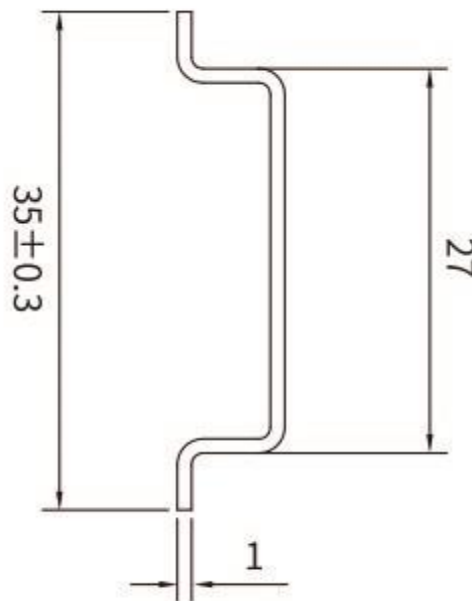
2.2 Installation method

2.2.1 Inter-module installation

Before installation, push the lock and release lever on the top of the module backward. After all the module levers are open, insert the modules horizontally. After installation, push the lever back to its original position.



The module is installed on a DIN rail. The DIN rail must comply with the IEC 60715 standard (35 mm wide and 1 mm thick). The dimensions are as follows:



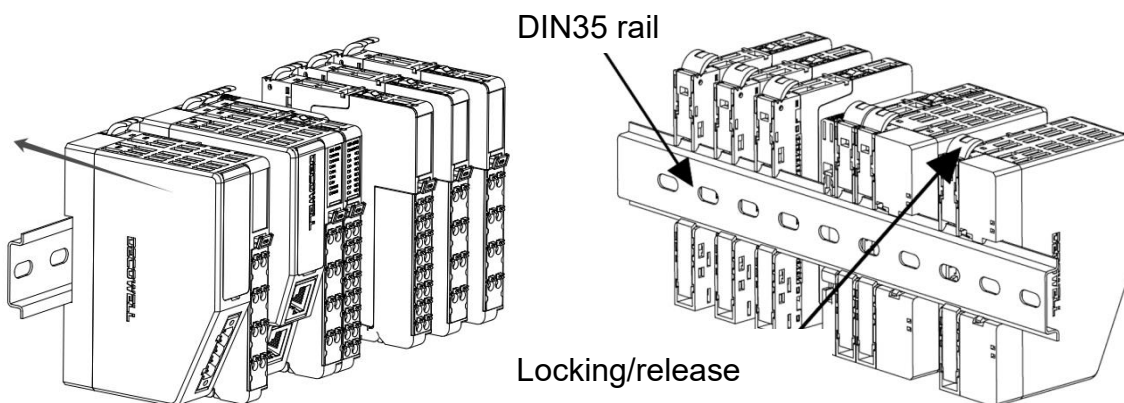
Note: When the module is installed on a DIN35 rail other than the one recommended above, the DIN rail lock may not lock properly. Before installing the module, open the lock lever on the top of the module before proceeding to the next step of installation.

 Notice

- When this product is installed on a DIN rail other than the one recommended above (especially when the thickness of the DIN rail is $\leq 1.0\text{mm}$), the DIN rail lock will fail and the product will not be installed properly, causing the product to not work properly.

2.2.2 Installation on the rail

During installation, align the module with the DIN35 rail and press the module in the direction indicated by the arrow, as shown in the figure below.

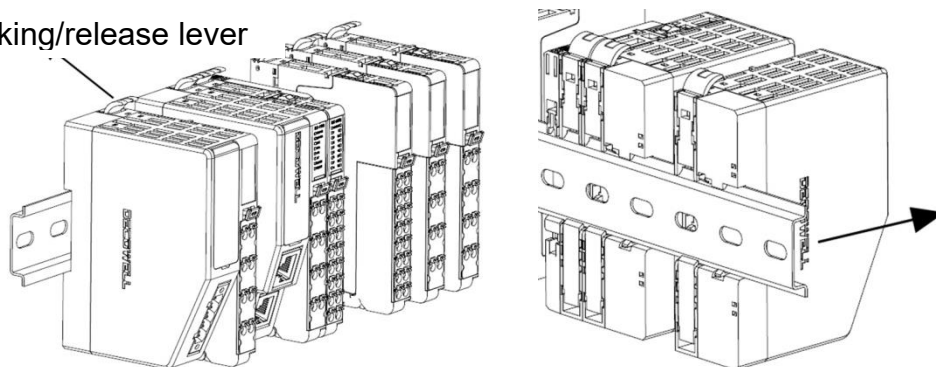


Note: After installing the module, press the lock-release lever downward by hand to secure the module onto the guide rail, ensuring it is properly installed.

Disassembly:

Push the lock lever upwards by hand, and then pull the module away from the DIN35 rail.

lifting the locking/release lever



3. Electrical installation

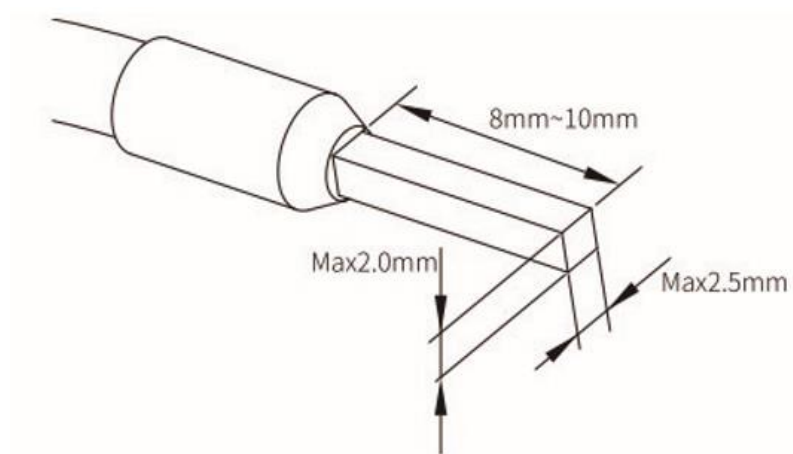
3.1 Cable selection

Signal related cables. The wire lug diameters in the following table are for reference only and can be reasonably calculated and adjusted based on actual use.

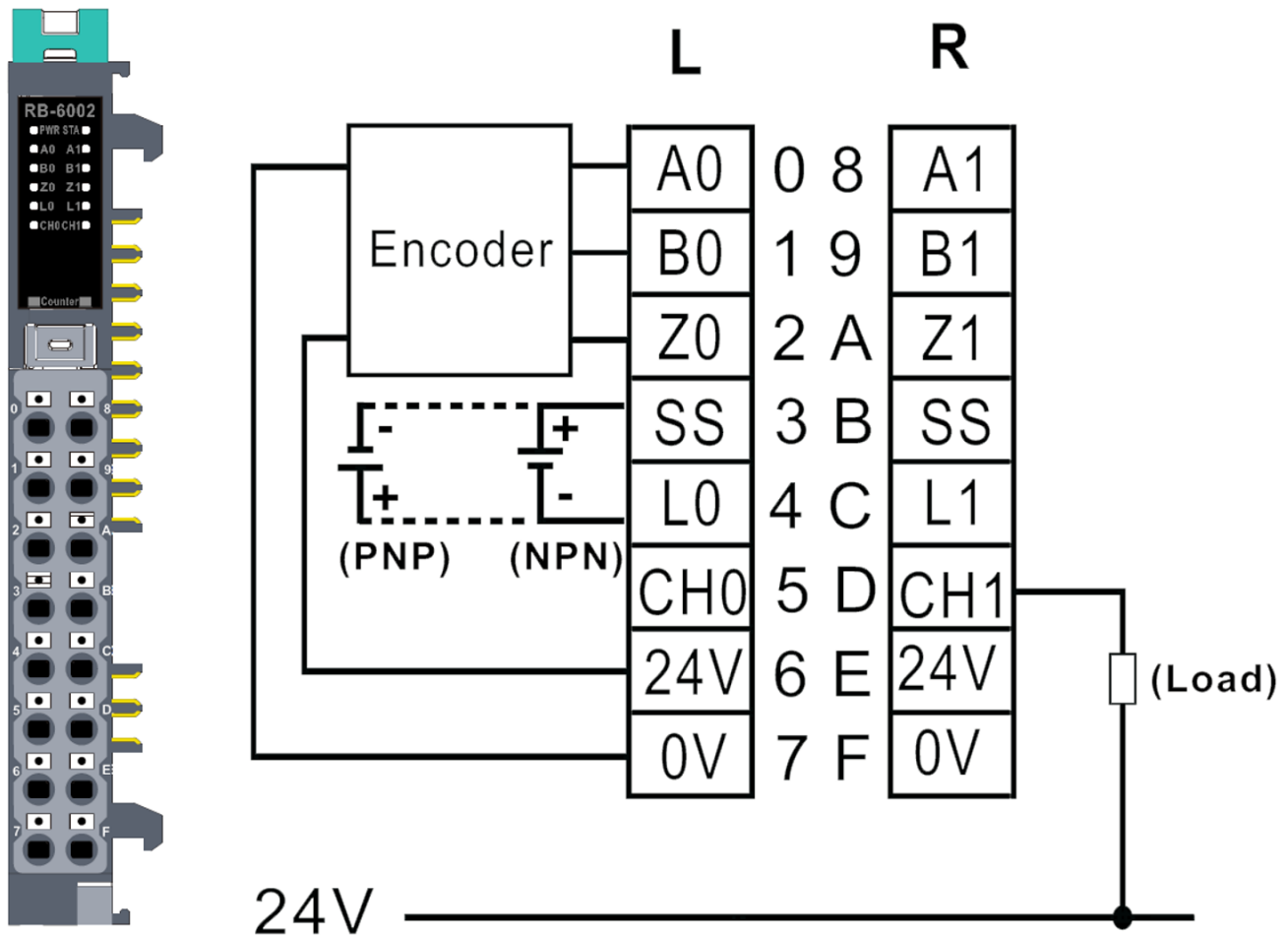
Name	Compatible Wire Gauge		KST	
Ferrule Type	Standard (mm ²)	AWG	Model	Crimping Tool
	0.25	24	E0208	KST2000L
	0.5	20	E0510	
	0.75	18	E7510	
	1.0	18	E1010	
	1.5	16	E1510	

Stripping length: 8–10 mm

The shape and size requirements of the riveted terminals are shown in the figure below.



3.2 Terminal wiring



Notice

- When routing extension cables, avoid bundling them together with power lines (high voltage, high current) and other cables that transmit strong interference signals. Route them separately and avoid parallel routing.
- Use recommended cables and adapter plates for connection. It is recommended to use shielded cables for extension cables to improve anti-interference capabilities.

4. Module Function

4.1 Module Configuration Parameters Description

4.1.1 Count mode

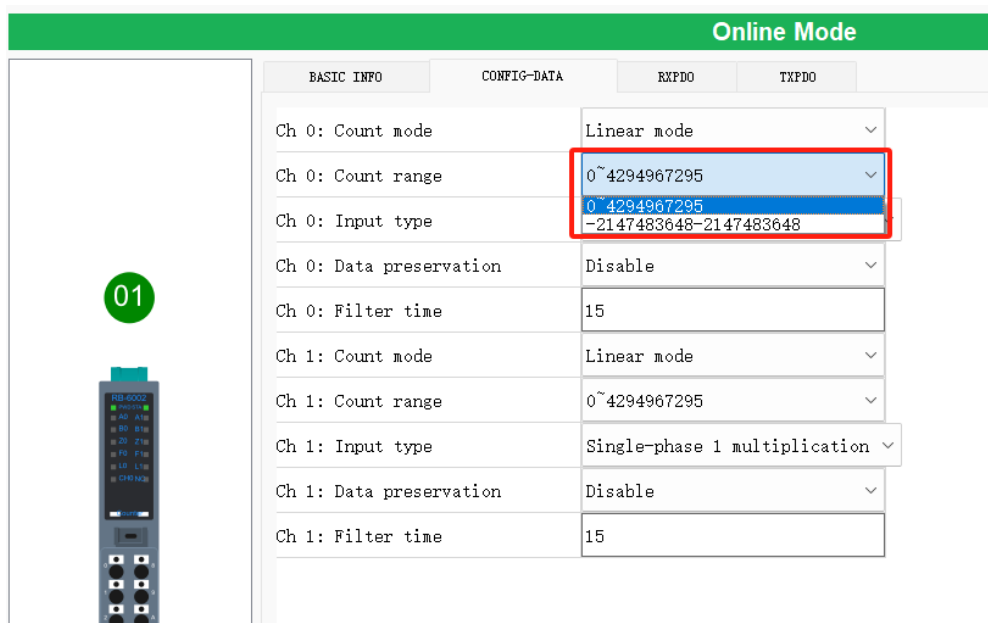
CONFIG-DATA	
Ch 0: Count mode	Linear mode ▾
Ch 0: Count range	Linear mode
	Ring mode
Ch 0: Input type	Single-phase 1 multiplication ▾
Ch 0: Data preservation	Disable ▾
Ch 0: Filter time	15
Ch 1: Count mode	Linear mode ▾
Ch 1: Count range	0~4294967295 ▾
Ch 1: Input type	Single-phase 1 multiplication ▾
Ch 1: Data preservation	Disable ▾
Ch 1: Filter time	15

When setting the counting mode in TwinCAT3, Codesys programming software:

0: Linear mode (default): The count value will stop counting when it reaches the limit value, and an overflow flag will be displayed when it reaches the limit value

1: Ring mode: After the count value reaches the limit, it will roll over and continue counting. There is no overflow mark when the limit value is reached.

4.1.2 Count range

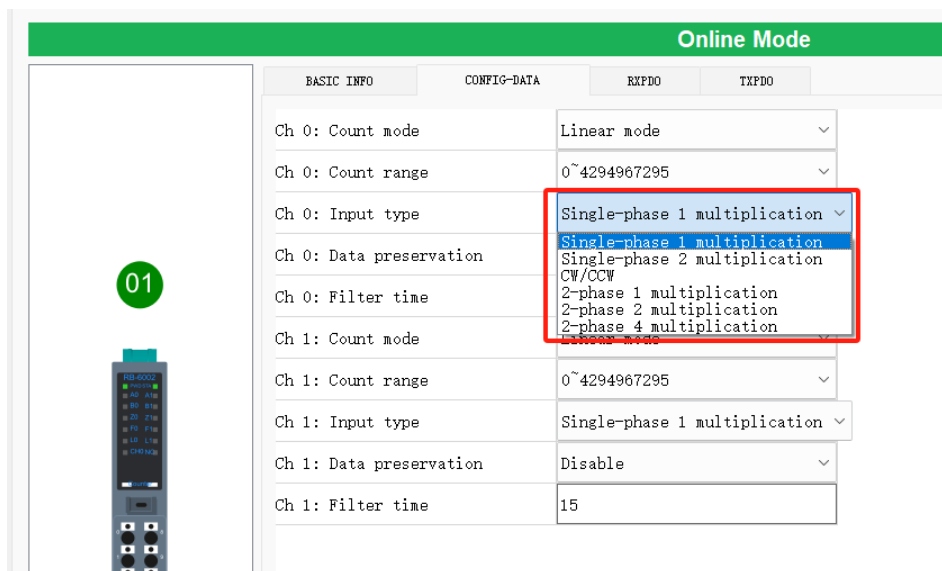


When setting the counting range in the twincat3 programming software:

0: default, only positive values, the limits are 0 and 4294967295

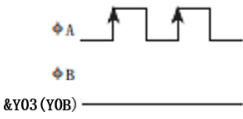
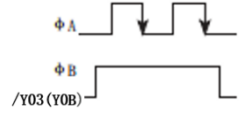
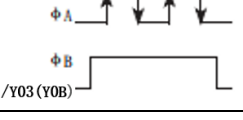
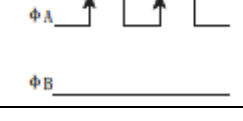
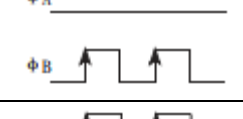
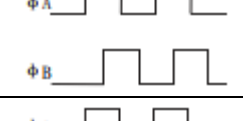
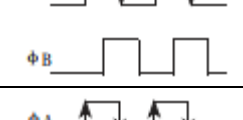
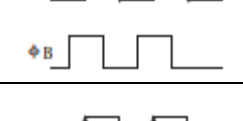
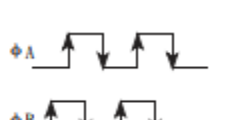
1: has positive and negative values, the limit values are -2147483648 and 2147483647

4.1.3 Input type

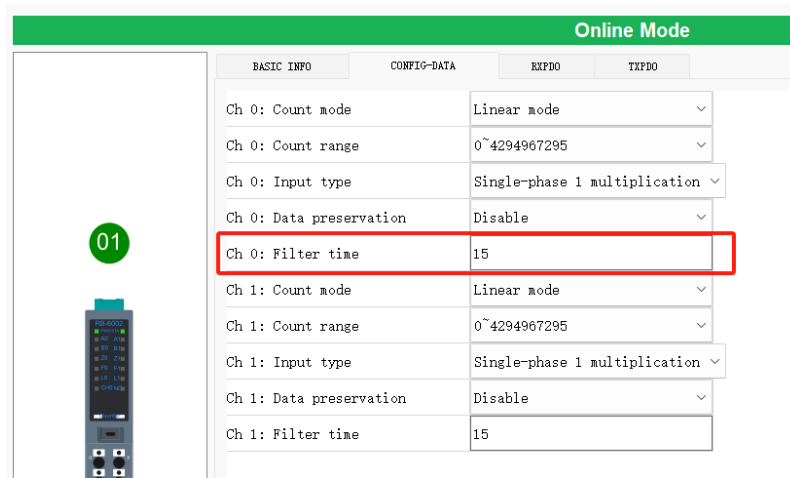


See the figure below for details

Pulse input mode	Counting timing
------------------	-----------------

Single - phase 1 multiplication	Addition counting		Count on the rising edge (↑) of Φ A Φ B and Y03(Y0B) is OFF
	Subtraction counting		Count on the falling edge (↓) of Φ A Φ B or Y03(Y0B) is ON
Single - phase 2 multiplication	Addition counting		Count on the rising edge(↑) and falling edge (↓) of Φ A Φ B and Y03(Y0B) is OFF
	Subtraction counting		Count on the rising edge(↑) and falling edge (↓) of Φ A Φ B or Y03(Y0B) is ON
CW/CCW	Addition counting		Count on the rising edge (↑) of Φ A Φ B is OFF
	Subtraction counting		Φ A is OFF Count on the rising edge (↑) of Φ B
2- phase 1 multiplication	Addition counting		When Φ B is OFF, count on the rising edge (↑) of Φ A
	Subtraction counting		When Φ B is OFF, count on the falling edge (↓) of Φ A
2- phase 2 multiplication	Addition counting		When Φ B is OFF, count on the rising edge (↑) of Φ A When Φ B is ON, count on the falling edge (↓) of Φ A
	Subtraction counting		When Φ B is ON, count on the rising edge (↑) of Φ A When Φ B is OFF, count on the falling edge (↓) of Φ A
2- phase 4 multiplication	Addition counting		When Φ B is OFF, count on the rising edge (↑) of Φ A When Φ B is ON, count on the falling edge (↓) of Φ A When Φ A is ON, count on the rising edge (↑) of Φ B When Φ A is OFF, count on the falling edge (↓) of Φ B
	Subtraction counting		When Φ B is ON, count on the rising edge (↑) of Φ A When Φ B is OFF, count on the falling edge (↓) of Φ A When Φ A is OFF, count on the rising edge (↑) of Φ B When Φ A is ON, count on the falling edge (↓) of Φ B

4.1.4 Filter time

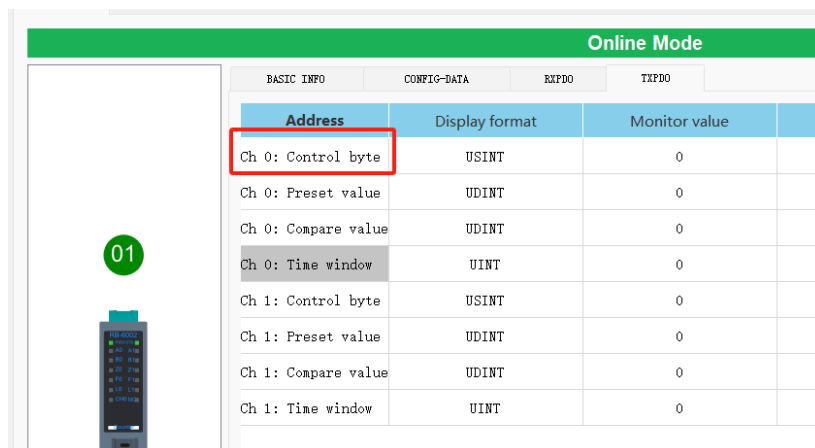


0-65535 configurable, unit 20ns, default filter 15.

Note: The high frequency filter value is low, the low frequency filter value is high, and the filter parameter cannot exceed the frequency value, otherwise the correct value will not be sampled.

4.2 Downlink data settings

4.2.1 Control byte (1 byte)



- Bit0 (counting enable bit): 1: on 0: off

This bit must be on to count

- Bit1 (counting direction bit): 1: reverse 0: forward

After reversal, the input signal direction is reversed, which is only useful for 2-phase mode and invalid for single-phase mode.

- Bit2 (Z phase clear bit): 1: open 0: close

After it is turned on, the count value will be cleared when encountering the rising edge of phase Z until it is turned off.

- Bit3 (latch status clear bit): 1: open 0: close

After turning it on, the latch value and latch flag are cleared, and latching takes effect only after turning it off.

- Bit4 (compare function bit): 1: enable 0: disable

After turning it on, the comparison value is valid. When the count value is equal to the comparison value, the comparison flag is pulled high.

- Bit 5 (frequency measurement function bit): 1: enable 0: disable

It is necessary to set the time window for frequency measurement. When it is turned on, the frequency measurement will be carried out in real time. If the frequency measurement is not needed, turn it off. When the time window is 0, the frequency measurement is also turned off. The minimum frequency is 1KHz, and the frequency below 1KHz cannot be measured. The time window cannot be changed when the enable is turned on. If you want to change it, turn off the enable first.

- Bit6 (preset function bit): 1: on 0: off

You need to set a preset value. Each time you turn it on, the count value will be equal to the preset value. You need to turn it off and then back on again for the next use. This can be used to clear the count value.

- Bit7 (clear bit): 1: open 0: close

The count value is reset after it is turned on, and will not be reset until it is turned off.

4.2.2 Preset value (4 bytes)

Online Mode		
BASIC INFO	CONFIG-DATA	RXPDO
TXPDO		
Address	Display format	Monitor value
Ch 0: Control byte	USINT	0
Ch 0: Preset value	UDINT	0
Ch 0: Compare value	UDINT	0
Ch 0: Time window	UINT	0
Ch 1: Control byte	USINT	0
Ch 1: Preset value	UDINT	0
Ch 1: Compare value	UDINT	0
Ch 1: Time window	UINT	0

The count value to be preset is used in conjunction with bit6 of the control byte:

The control byte is set to H40 (or bit6 is set to "1"), and the downlink preset value is set to any value, and the count value in the uplink data will become the set preset value.

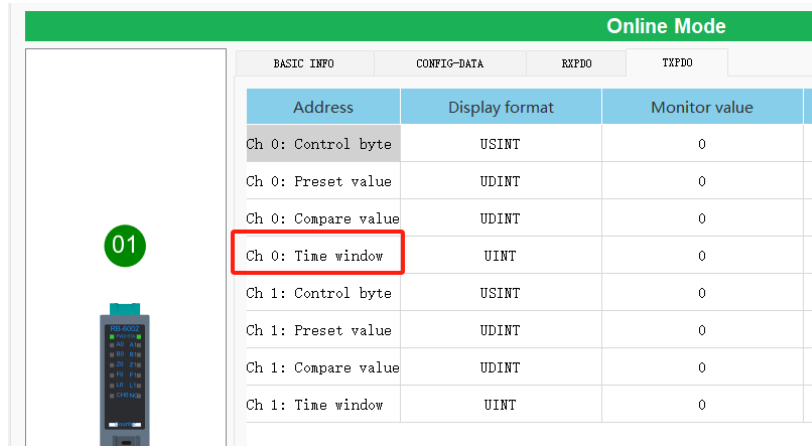
4.2.3 Compare Value (4 bytes)

Online Mode		
BASIC INFO	CONFIG-DATA	RXPDO
TXPDO		
Address	Display format	Monitor value
Ch 0: Control byte	USINT	0
Ch 0: Preset value	UDINT	0
Ch 0: Compare value	UDINT	0
Ch 0: Time window	UINT	0
Ch 1: Control byte	USINT	0
Ch 1: Preset value	UDINT	0
Ch 1: Compare value	UDINT	0
Ch 1: Time window	UINT	0

The count value to be compared is used in conjunction with bit 4 of the control byte:

The control byte is given to H11, and the downstream comparison value is given an arbitrary value, which turns on bit 0 and bit 4 of the downstream data control byte. When the upstream count value is equal to the comparison value, bit 2 of the upstream status byte will become 1, and the comparison output port will also be pulled high until the function is turned off.

4.2.4 Time window (2 bytes)



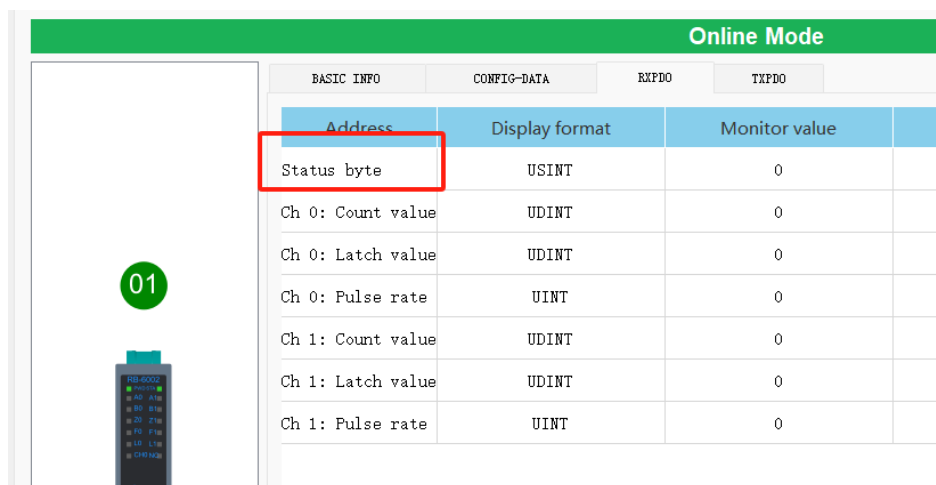
Online Mode		
BASIC INFO		
CONFIG-DATA		
RXPDO		
TXPDO		
Address	Display format	Monitor value
Ch 0: Control byte	USINT	0
Ch 0: Preset value	UDINT	0
Ch 0: Compare value	UDINT	0
Ch 0: Time window	UINT	0
Ch 1: Control byte	USINT	0
Ch 1: Preset value	UDINT	0
Ch 1: Compare value	UDINT	0
Ch 1: Time window	UINT	0

The duration required for frequency measurement, in ms, is used in conjunction with bit 5 of the control byte:

When bit5 of the downlink control byte is set to 1 and the time window is given a corresponding value, the module will measure the frequency in real time, and the frequency value will be displayed in the frequency value of the uplink data. Until bit5 of the control byte is set to 0 or the time window is given to 0. The time window cannot be changed when the enable is turned on. If you want to change it, turn off the enable first.

4.3 Uplink data description

4.3.1 Status byte (1 byte)



Online Mode		
BASIC INFO		
CONFIG-DATA		
RXPDO		
TXPDO		
Address	Display format	Monitor value
Status byte	USINT	0
Ch 0: Count value	UDINT	0
Ch 0: Latch value	UDINT	0
Ch 0: Pulse rate	UINT	0
Ch 1: Count value	UDINT	0
Ch 1: Latch value	UDINT	0
Ch 1: Pulse rate	UINT	0

- Bit0 (channel 0 count bit):

1: channel 1 count value overflows

0: channel 1 count value does not overflow

- Bit1 (Channel 1 count bit):
1: Channel 2 count value overflows 0: Channel 2 count value does not overflow
- Bit2 (channel 0 comparison bit):
1: channel 1 count value matches the comparison value
0: channel 1 count value does not match the comparison value
- Bit3 (channel 1 comparison bit):
1: channel 2 count value matches the comparison value
0: channel 2 count value does not match the comparison value
- Bit 4 (Channel 0 latch bit):
1: Channel 1 latched successfully 0: Channel 1 not latched
- Bit 5 (Channel latch bit):
1: Channel 2 latched successfully 0: Channel 2 not latched
- Bit6: Reserved
- Bit7: Reserved

4.3.2 Count value (4 bytes)

Online Mode		
BASIC INFO	CONFIG-DATA	RXPDO
Address	Display format	Monitor value
Status byte	USINT	0
Ch 0: Count value	UDINT	0
Ch 0: Latch value	UDINT	0
Ch 0: Pulse rate	UINT	0
Ch 1: Count value	UDINT	0
Ch 1: Latch value	UDINT	0
Ch 1: Pulse rate	UINT	0

4.3.3 Latch value (4 bytes)

Online Mode			
BASIC INFO		CONFIG-DATA	RXPDO
Address	Display format	Monitor value	
Status byte	USINT	0	
Ch 0: Count value	UDINT	0	
Ch 0: Latch value	UDINT	0	
Ch 0: Pulse rate	UINT	0	
Ch 1: Count value	UDINT	0	
Ch 1: Latch value	UDINT	0	
Ch 1: Pulse rate	UINT	0	

4.3.4 Frequency Measure Value (pulse rate) frequency value

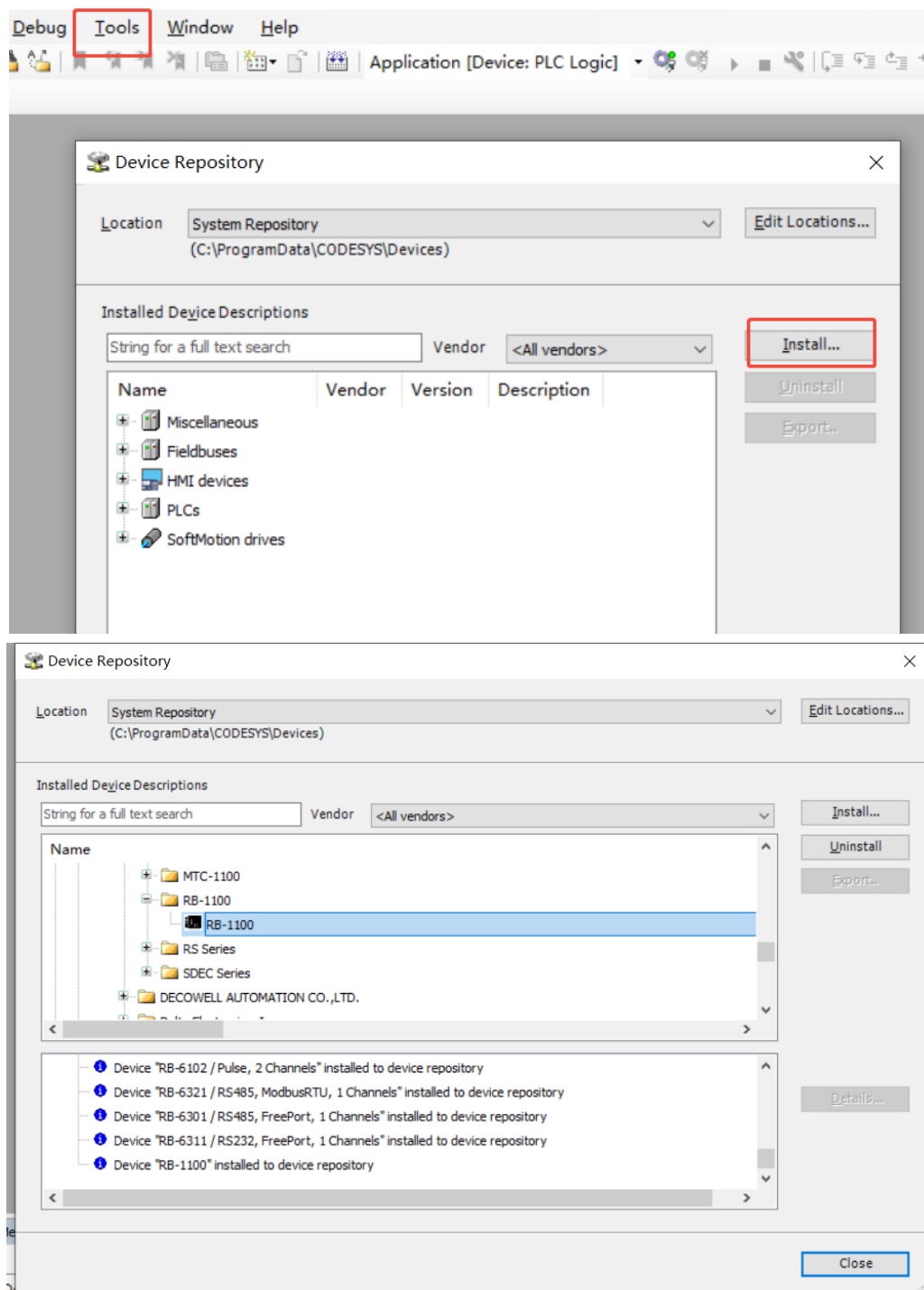
Online Mode			
BASIC INFO		CONFIG-DATA	RXPDO
Address	Display format	Monitor value	
Status byte	USINT	0	
Ch 0: Count value	UDINT	0	
Ch 0: Latch value	UDINT	0	
Ch 0: Pulse rate	UINT	0	
Ch 1: Count value	UDINT	0	
Ch 1: Latch value	UDINT	0	
Ch 1: Pulse rate	UINT	0	

Unit: 1kHz

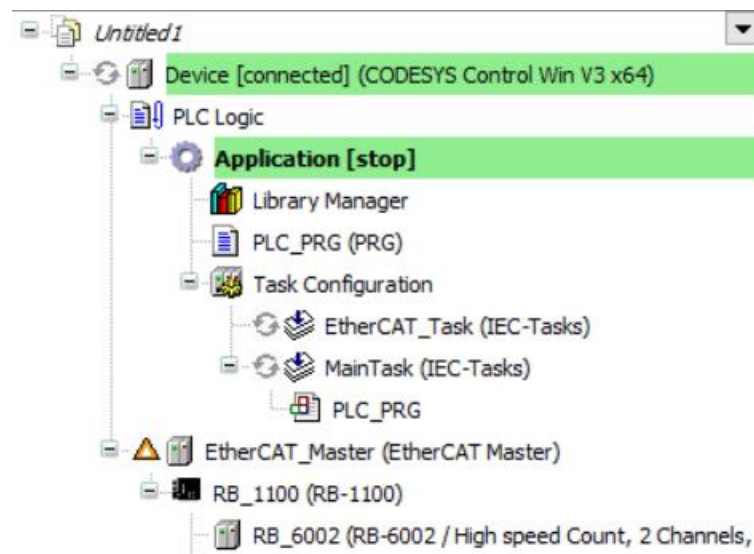
5. Product use cases

5.1 Use and configuration of RB-6002 in Codesys

Install the XML description file into Codesys, click the upper left corner of the tool device repository, and install the RB -1100 description file.

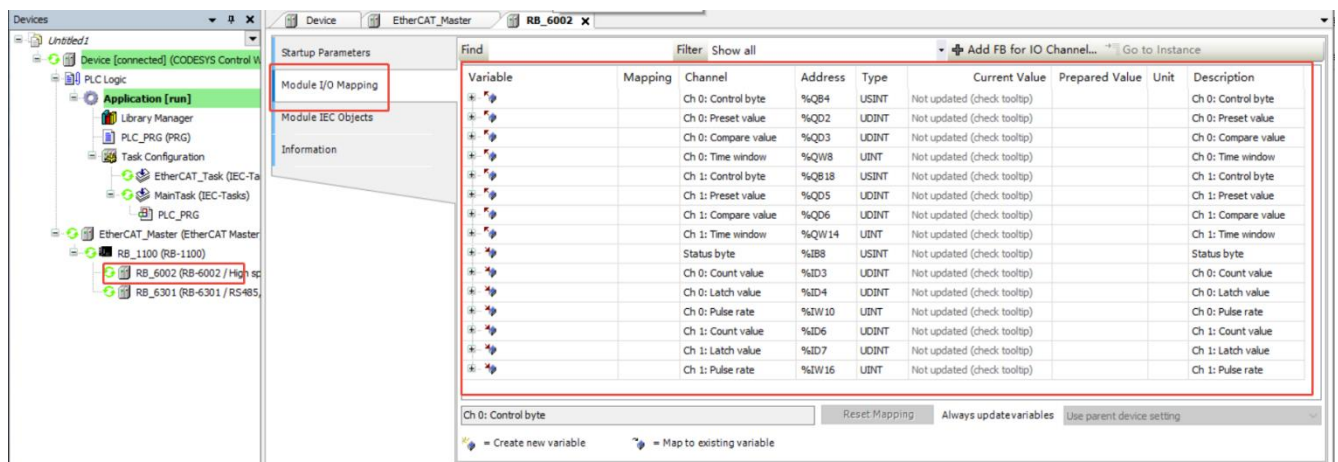


RB -6002 under RB -1100 adapter, open Codesys, and scan the adapter and module, as shown in the figure.



Configuring the RB -6002 Module

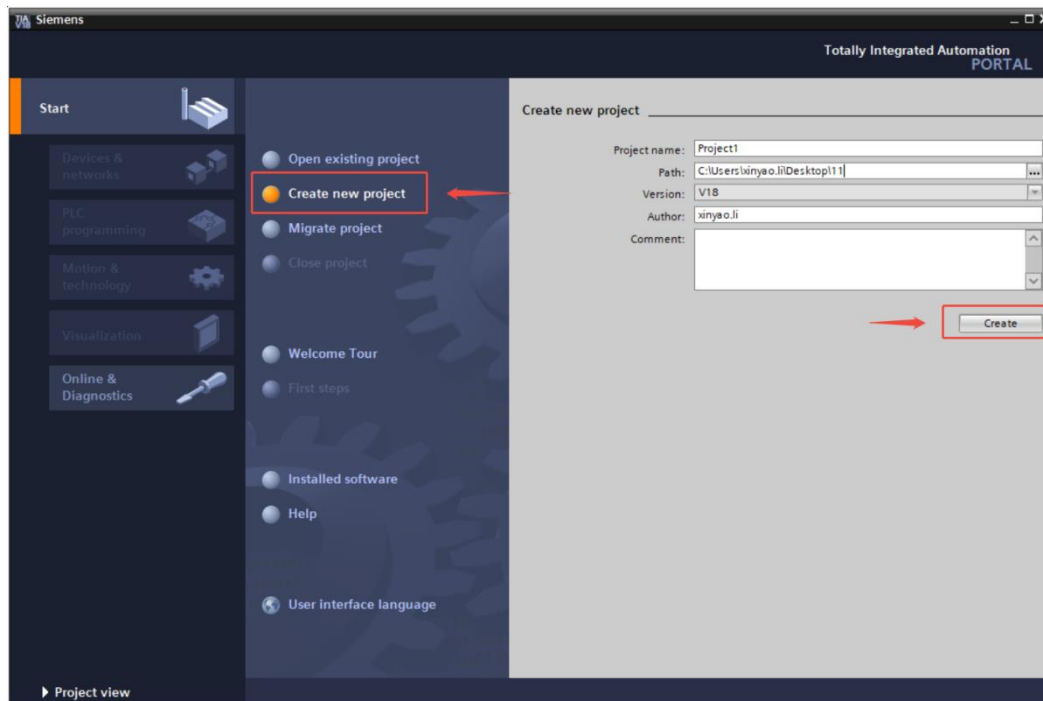
To configure the RB -6002 communication parameters, double-click “RB-6002” > “IO Mapping”, and users can configure the corresponding parameters as shown in the figure.



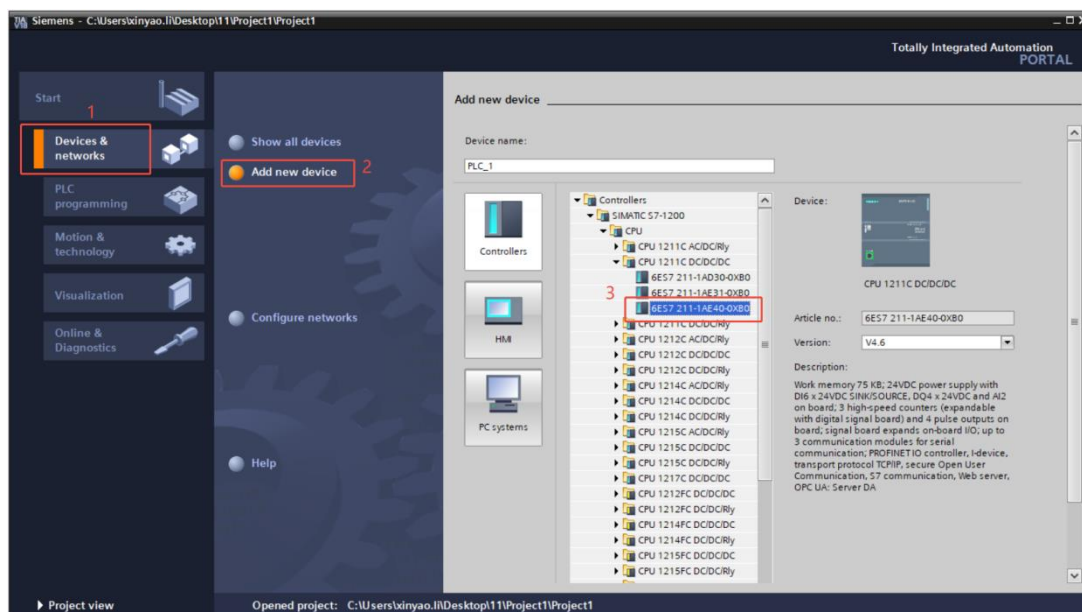
Configure RB -6002 counting parameters

5.2 Use and configuration of RB -6002 in TIA Portal

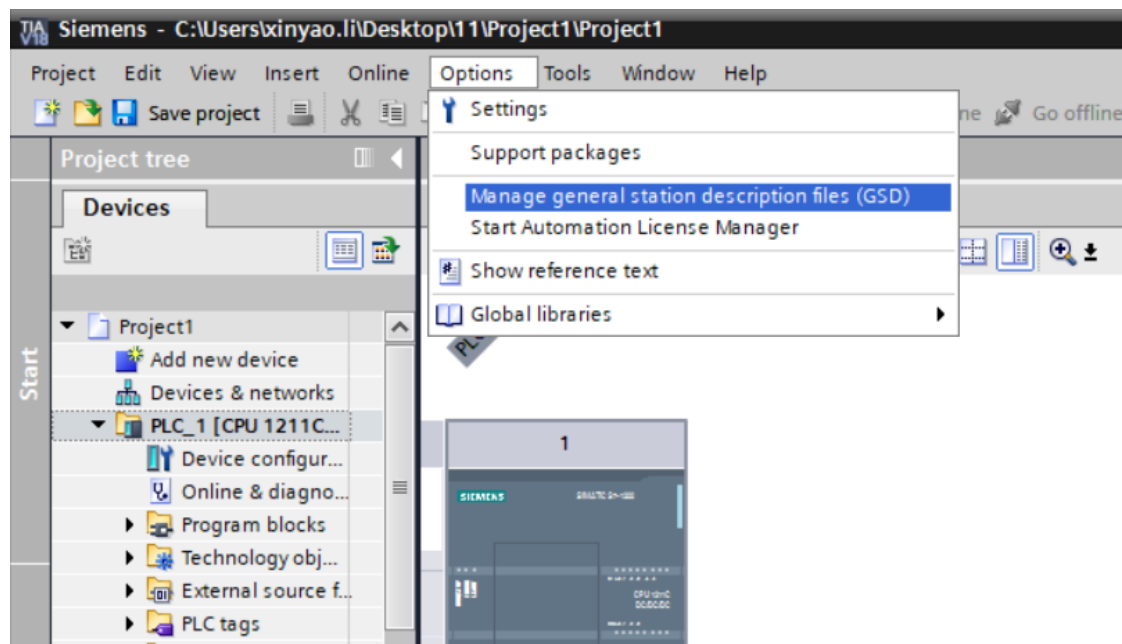
Start the TIA Portal V17 software and select "Create a new project". Select the name and path of the project to be created and click Create.



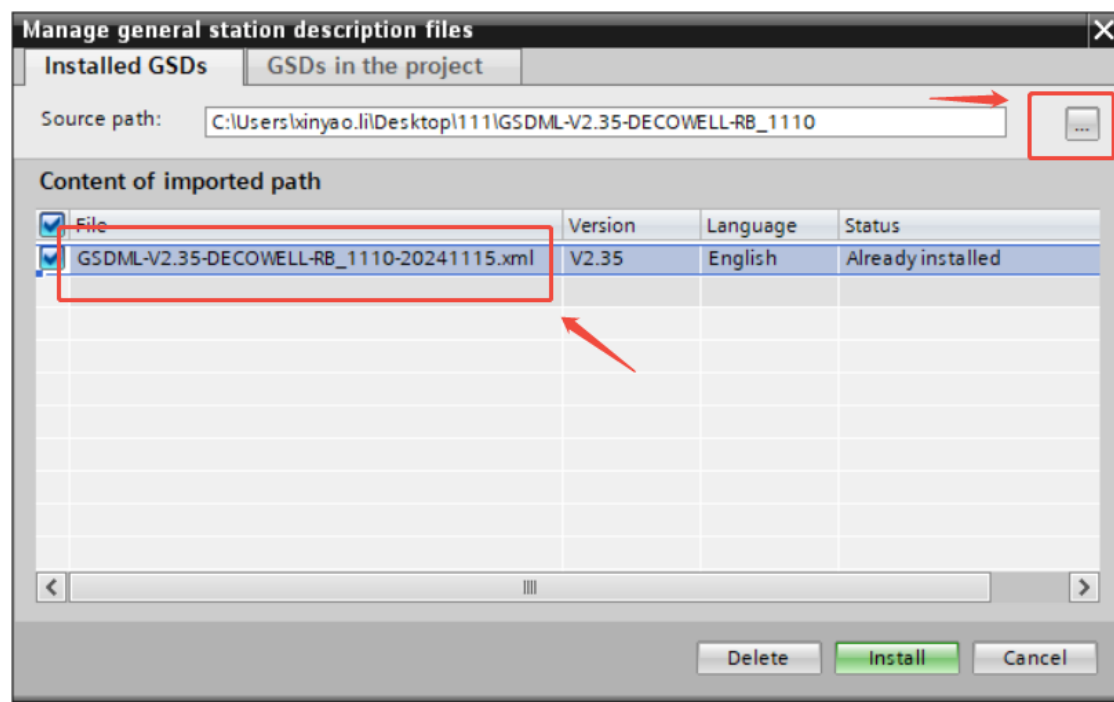
1. Select Devices and Networks, and click Add Device;
2. Select the PLC model (the PLC model used in the case is S7-1200)
3. Click Add.



Add GSD file

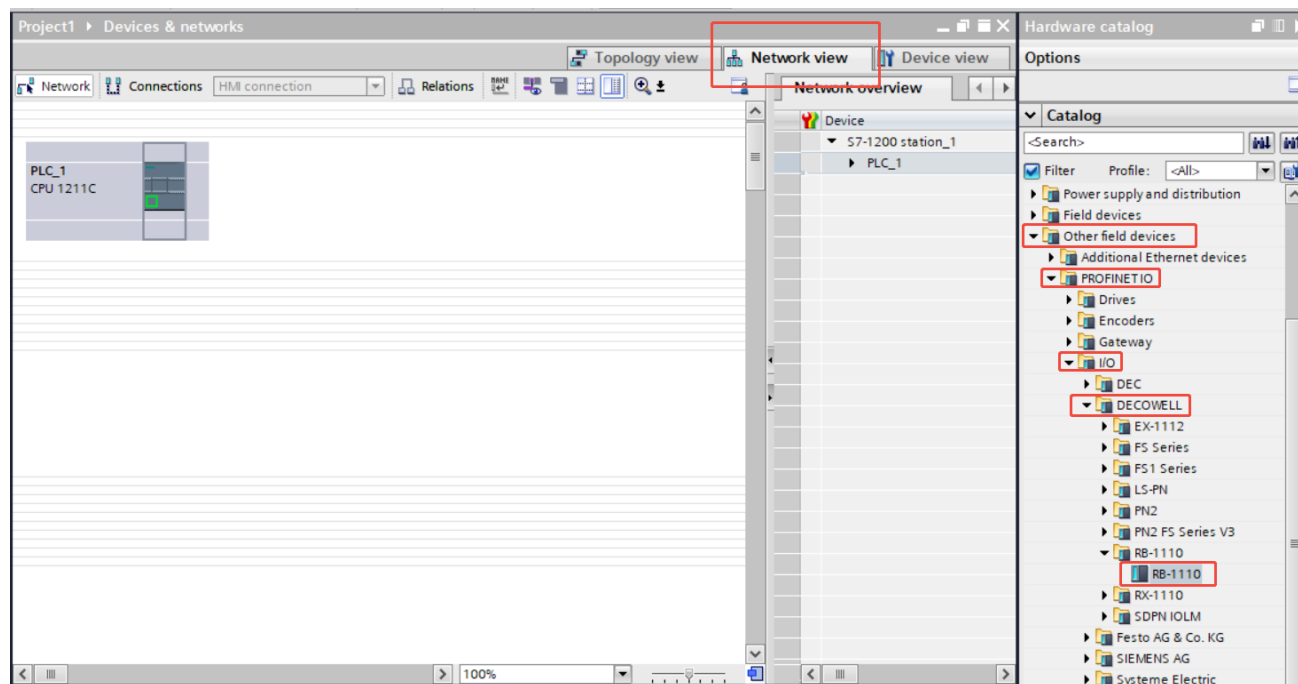


1. Select the path where the GSD is stored;
2. Select the corresponding GSD file;
3. Click Install (the configuration example uses the RB -1110)

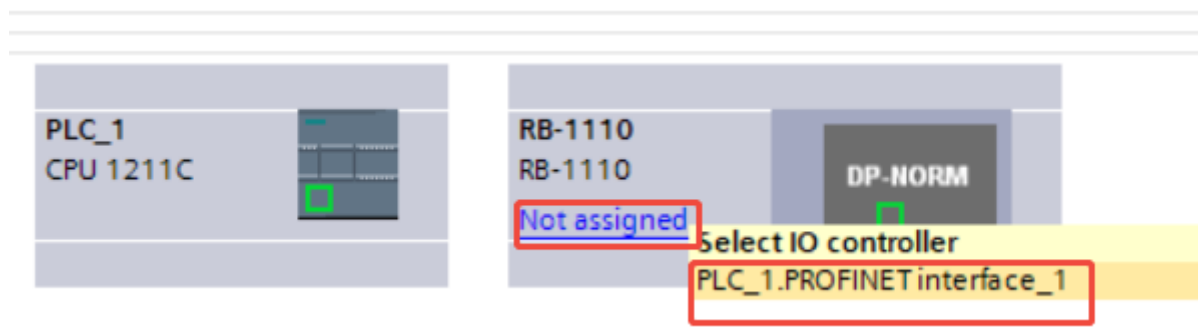


Add PROFINET slave device:

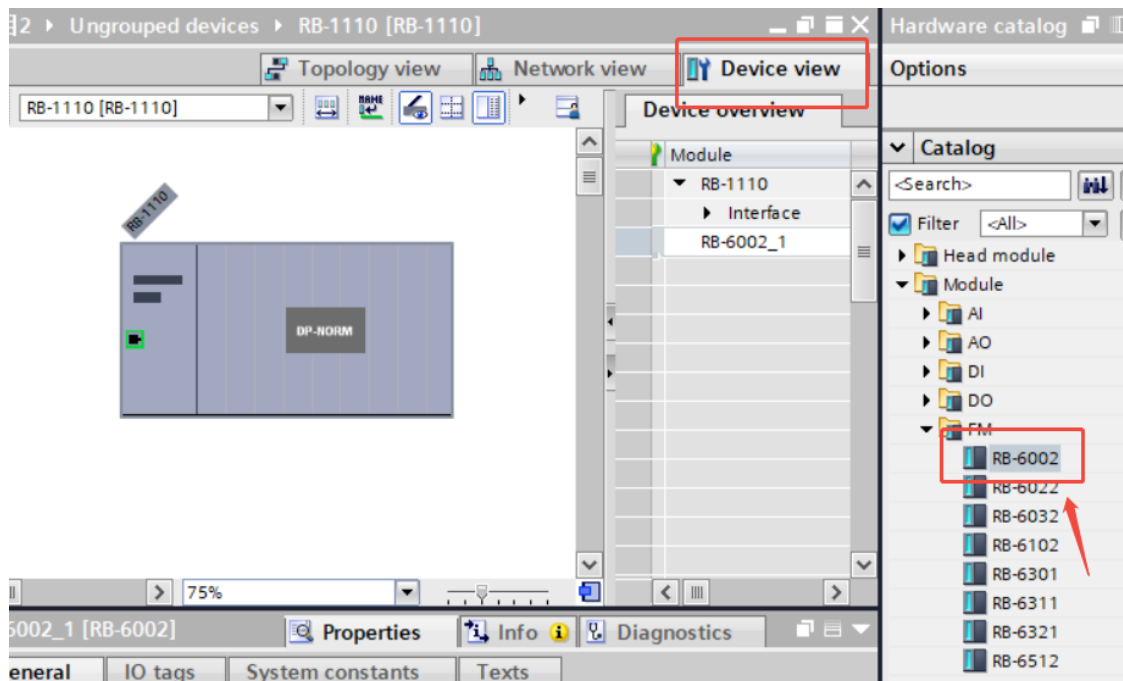
1. Click Network View;
2. Click Other Field Devices;
3. Click PROFINET IO;
4. Click DECOWELL and select the RB -1110 module.



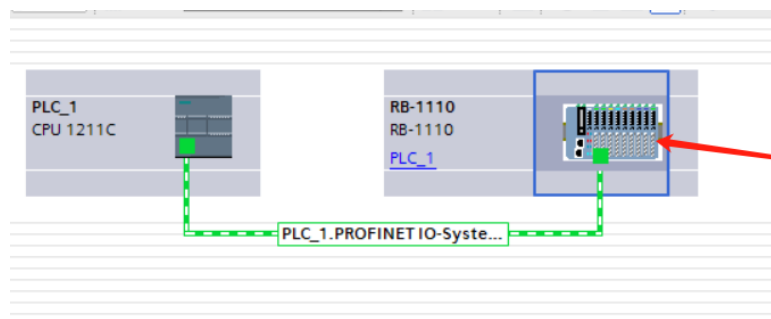
Connect the PLC and PROFINET slave devices. Click the Unassigned of the DEC module and click PLC -1. PROFINET interface.



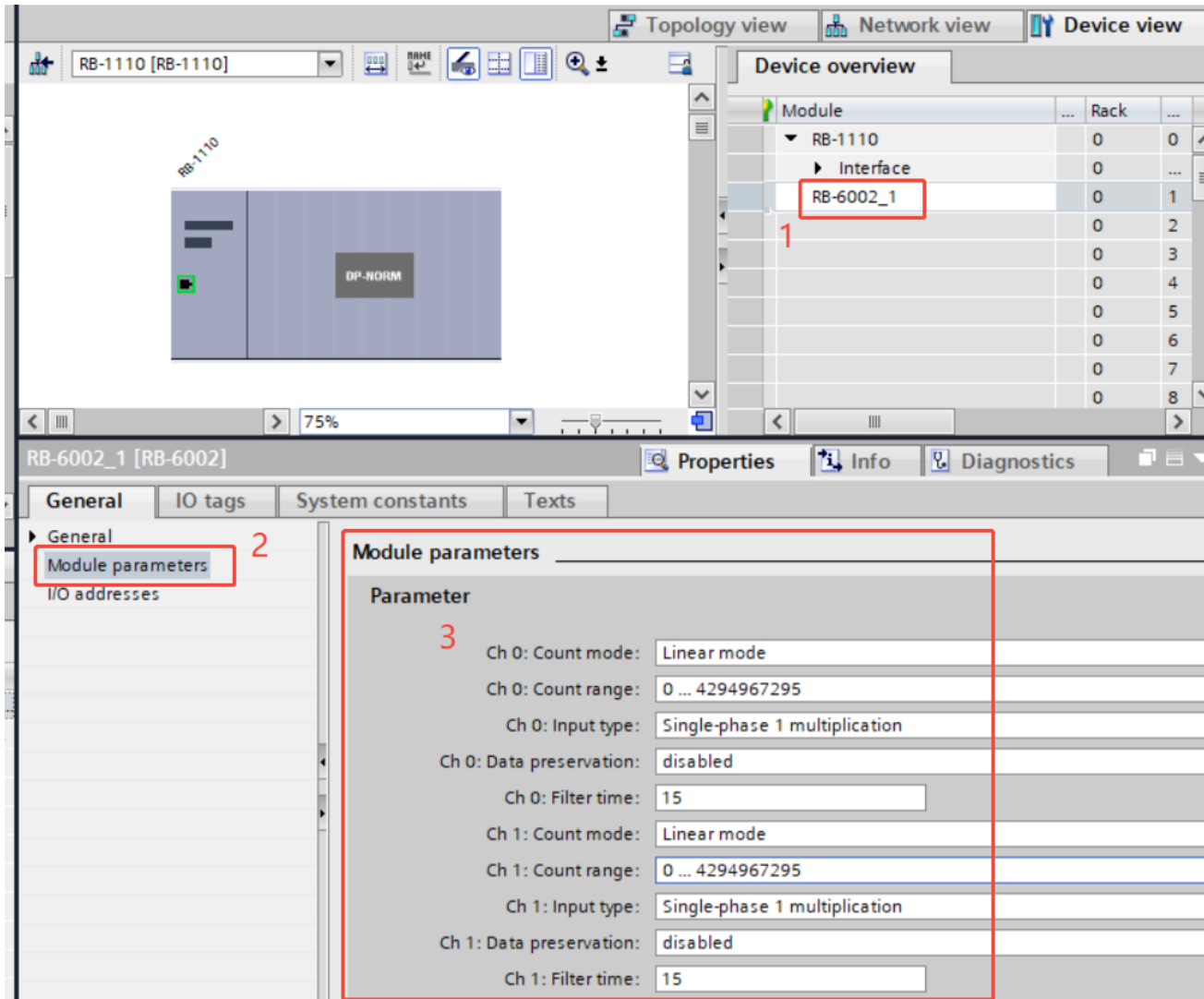
Add a single-channel differential encoder module. Double-click the RB-1110 module added in the Network View, go to the Device View interface, select FM in the module, and double-click to add RB-6002.



Set the counting module configuration information.



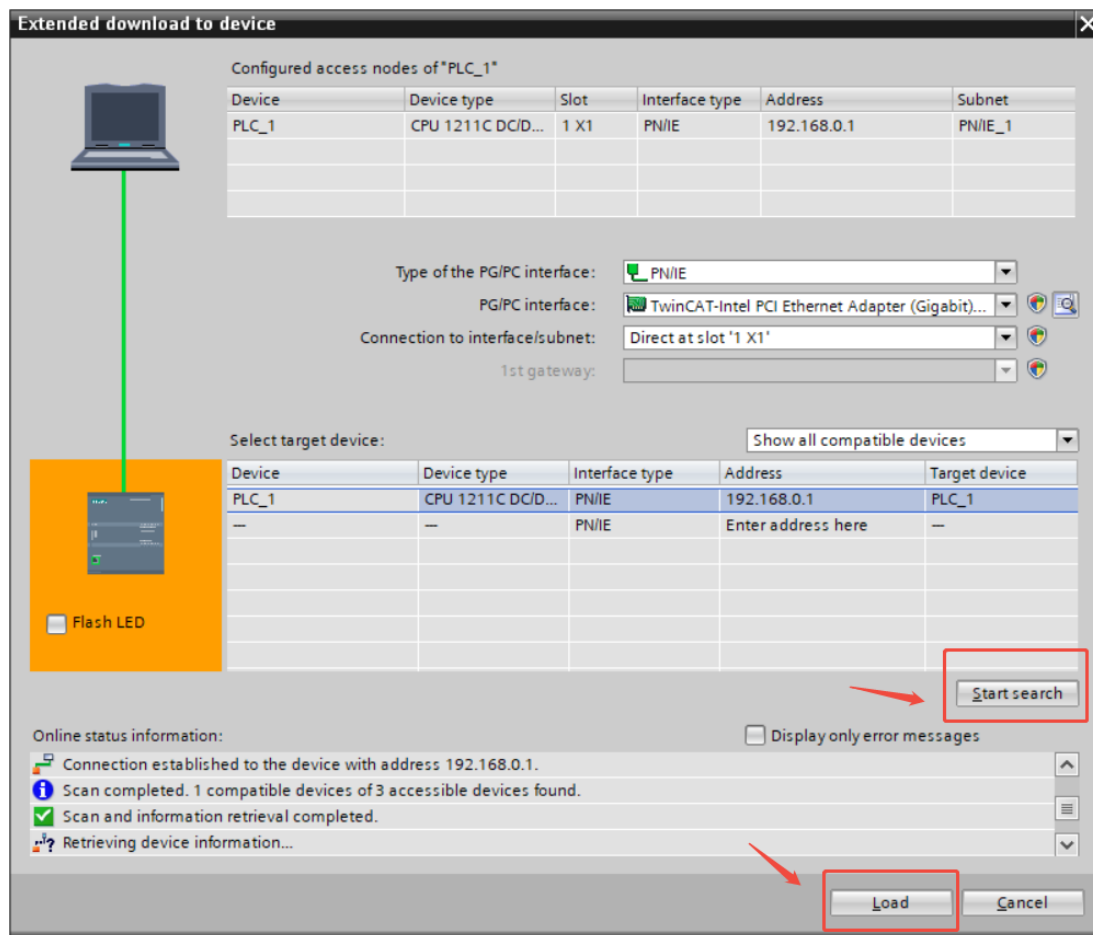
Click RB -1110, open the device view, click RB -6002-1, then click the module properties below, select module parameters, and configure the RB-6002 configuration parameter information in the project box on the right.

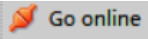


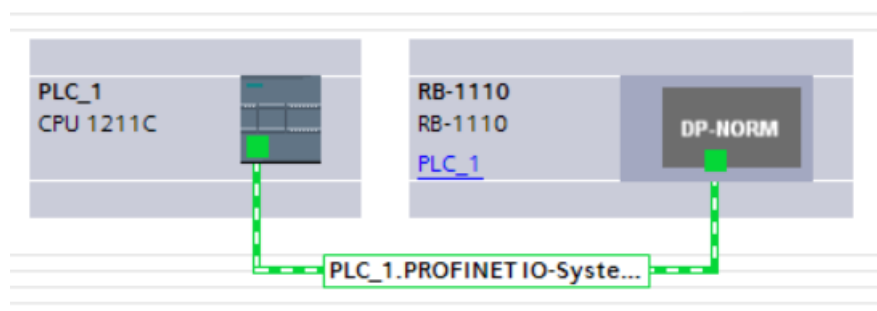
Configuration and program download.

Select all devices in the network view and click Download .

1. Click to start searching;
2. Click Download after the search is successful.



After the program is downloaded, start the CPU and click on the online monitoring button to see if the communication is normal. 



Address description example (in this case, the I address starts at 68 and the Q address starts at 64)

Topology view Network view Device view								
Device overview								
	Module	...	Rack	Slot	I address	Q address	Type	Artic...
✓	RB-1110		0	0			RB-1110	18-0...
✓	Interface		0	0 X1			RB-1110	
✓	RB-6002_1		0	1	68...88	64...85	RB-6002	18-0...
			0	2				
			0	3				
			0	4				

Uplink data

Address	Format	Note
%I68.0	BOOL	Ch0 Counter Overflow
%I68.1	BOOL	Ch1 Counter Overflow
%I68.2	BOOL	Ch0 Counter value matches/mismatches the compare value
%I68.3	BOOL	Ch1 Counter value matches/mismatches the compare value
%I68.4	BOOL	Ch0 Latch Success Flag Bit
%I68.5	BOOL	Ch1 Latch Success Flag Bit
%I68.6	BOOL	Reserve
%I68.7	BOOL	Reserve
%IB69	Unsigned Decimal	Counter Value
%IB70	Unsigned Decimal	
%IB71	Signed Decimal	
%IB72	Signed Decimal	
%IB73	Hexadecimal	Latched Value
%IB74	Hexadecimal	
%IB75	Hexadecimal	
%IB76	Hexadecimal	
%IW77	Hexadecimal	Frequency Measurement
%IW80	Hexadecimal	
%IW82	Hexadecimal	

Downlink data		
Address	Format	Note
%I64.0	BOOL	Count Enable
%I64.1	BOOL	Counter Direction Bit
%I64.2	BOOL	Z-phase Reset
%I64.3	BOOL	Latch Status Clear Bit
%I64.4	BOOL	Compare Function Bit
%I64.5	BOOL	Frequency Measurement Function Bit
%I64.6	BOOL	Preset Function Bit
%I64.7	BOOL	Clear Bit
%QB65	Hexadecimal	Preset Value
%QB66	Hexadecimal	
%QB67	Hexadecimal	
%QB68	Hexadecimal	
%QB69	Hexadecimal	Compare Value
%QB70	Hexadecimal	
%QB71	Hexadecimal	
%QB72	Hexadecimal	
%QB73	Hexadecimal	Time Window
%QB74	Hexadecimal	

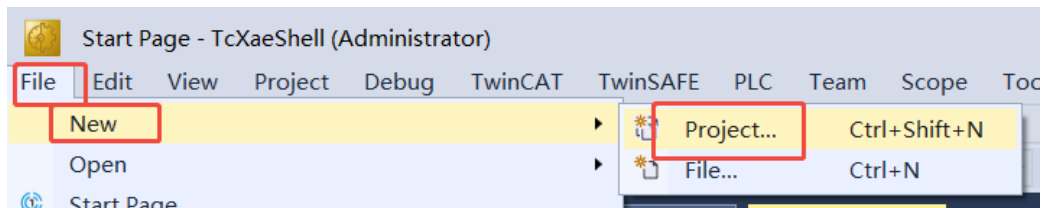
5.3 Usage and configuration of RB-6002 in TwinCAT3

Installing XML description files into TwinCAT3

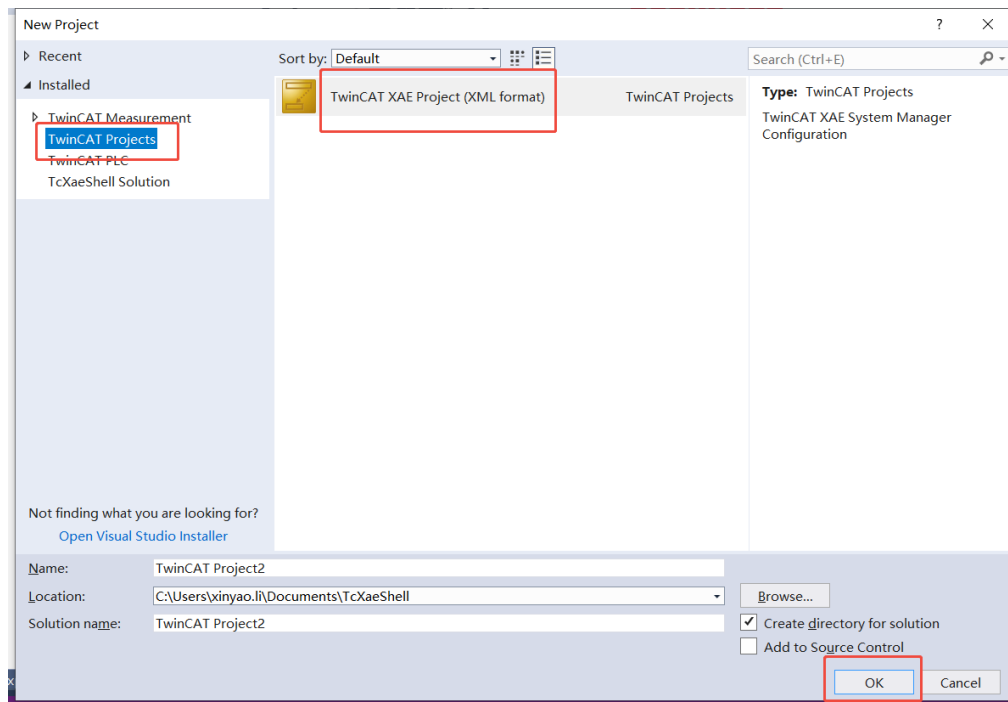
 DECOWELL_RS-EC2(zhonghong)_V1...	2023/9/27 13:12	Microsoft Edge ...
 DECOWELL_RS-EC2_Coupler_V1.0.3	2023/6/20 10:56	Microsoft Edge ...
 DECOWELL_RB-1100_V1.0.7	2023/12/13 14:59	Microsoft Edge ...
 DECOWELL_SDEC-8IOL-M12-00_V1.0.3	2023/5/12 14:31	Microsoft Edge ...
 DECOWELL_ES_V3.0.7	2023/4/27 17:08	Microsoft Edge ...

Installation XML File

Open the TwinCAT3 software, select "File" > "New" > "Project" in the menu bar, and choose "TwinCAT Projects" in the new project window.

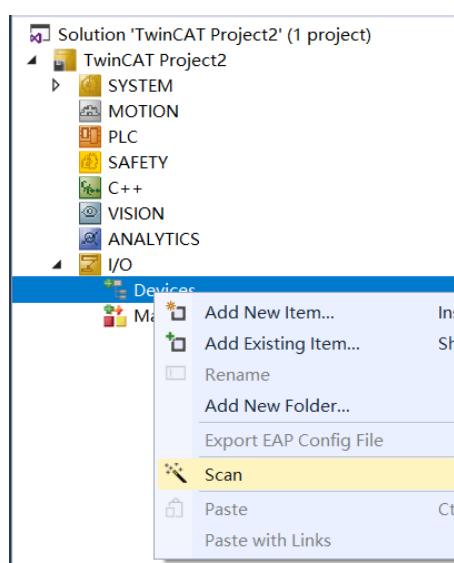


New Project

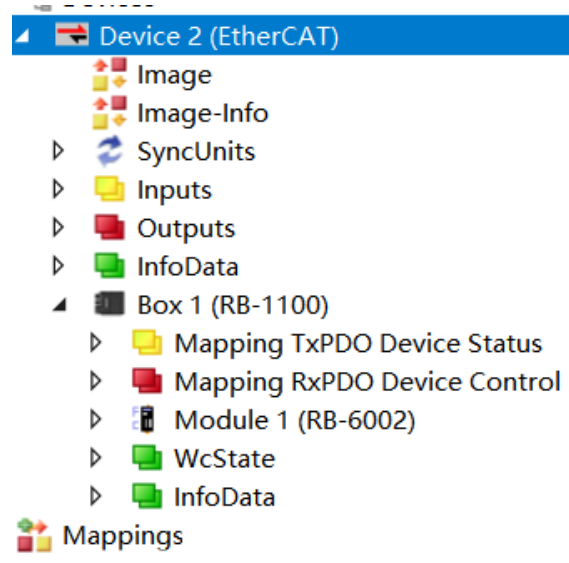


Select TwinCAT Engineering

Scan the IO connected to the programming computer into the project. In the project tree, click "I/O" > "Devices" > "Scan" to scan the hardware configuration.



Add IO module



Hardware Configuration

Click COE Online in the RB-1100 parameter table to change the RB-6002 configuration parameters in 8000

The screenshot shows the TwinCAT Project1 interface. On the left, the 'Solution Explorer' displays the project structure, with 'Box 1 (RB-1100)' selected under 'I/O' > 'Devices'. On the right, the 'CoE - Online' tab is active, showing a table of parameters for 'Parameter RB-6002'. The table has columns: Index, Name, Flags, Value, and Unit. The first row is highlighted, showing Index '8020:0', Name 'Parameter RB-6002', Flags '> 41 <', and Value 'HSC'.

Index	Name	Flags	Value	Unit
8020:0	Parameter RB-6002	> 41 <	HSC	
80...	Type string	RW	RB-6002	
80...	Name string	RW	0x0000A83 (2691)	
80...	Module ident	RW	0x0002 (2)	
80...	Slot	RW	Linear mode (0)	
80...	Ch 0: Count mode	RW	0~4294967295 (0)	
80...	Ch 0: Count range	RW	Single-phase 1 multi...	
80...	Ch 0: Input type	RW	Disable (0)	
80...	Ch 0: Data preservation	RW	0x000F (15)	
80...	Ch 1: Count mode	RW	Linear mode (0)	
80...	Ch 1: Count range	RW	0~4294967295 (0)	
80...	Ch 1: Input type	RW	Single-phase 1 multi...	
80...	Ch 1: Data preservation	RW	Disable (0)	
80...	Ch 1: Filter time	RW	0x000F (15)	
9000:0	Information RB-6301	> 35 <		
9010:0	Information RB-6321	> 35 <		

Changing Configuration Parameters

The module uplink data can be viewed in the input of RB-6002, and the downlink data can be set in the output.

The screenshot shows the TwinCAT Project1 interface. On the left, the 'Solution Explorer' displays the project structure, with 'Box 1 (RB-1100)' selected under 'I/O' > 'Devices'. On the right, the 'Input' tab is active, showing a table of input parameters for 'Module 3 (RB-6002)'. The table has columns: Name, [X], Online, Type, Size, >Addr..., In/Out, and Linked to. The first row is highlighted, showing Name 'Status byte', [X] '0', Online '0', Type 'USINT', Size '1.0', >Addr... '123.0', In/Out 'Input', and Linked to 'Input'.

Name	[X]	Online	Type	Size	>Addr...	In/Out	Linked to
Status byte	0	0	USINT	1.0	123.0	Input	Input
Ch 0: Count val...	0	0	UDINT	4.0	124.0	Input	Input
Ch 0: Latch value	0	0	UDINT	4.0	128.0	Input	Input
Ch 0: Pulse rate	0	0	UINT	2.0	132.0	Input	Input
Ch 1: Count val...	0	0	UDINT	4.0	134.0	Input	Input
Ch 1: Latch value	0	0	UDINT	4.0	138.0	Input	Input
Ch 1: Pulse rate	0	0	UINT	2.0	142.0	Input	Input

Input

The screenshot displays the TwinCAT Project1 interface. On the left, the Solution Explorer shows the project structure, with the 'Output' module under 'Module 3 (RB-6002)' highlighted. On the right, a table lists the I/O modules and their configurations.

Name	[X]	Online	Type	Size	>Addr...	In/Out	Linked to
Ch 0: Control b...		0	USINT	1.0	121.0	Outp...	
Ch 0: Preset val...		0	UDINT	4.0	122.0	Outp...	
Ch 0: Compare...		0	UDINT	4.0	126.0	Outp...	
Ch 0: Time win...		0	UINT	2.0	130.0	Outp...	
Ch 1: Control b...		0	USINT	1.0	132.0	Outp...	
Ch 1: Preset val...		0	UDINT	4.0	133.0	Outp...	
Ch 1: Compare...		0	UDINT	4.0	137.0	Outp...	
Ch 1: Time win...		0	UINT	2.0	141.0	Outp...	

Output



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