

CT-5212 8-channel digital input &2-channel digital output &2-channel pulse output

1 Module features

- ◆ The module supports 8-channel digital input, the input high level is valid, it could support PNP sensor.
- ◆ The module supports 2-channel digital output, the output high level is valid.
- ◆ The module supports 2-channel pulse output.
- ◆ The module supports short circuit protection and overcurrent protection.
- ◆ Module support single pulse mode (pulse + direction), double pulse mode (CW/CCW)
- ◆ Module motion control mode supports relative position mode, absolute position mode, speed mode and point mode
- ◆ Module supports trapezoidal acceleration and deceleration, S-type acceleration and deceleration
- ◆ Module supports positive origin return to zero, negative origin return to zero, positive limit return to zero, negative limit return to zero
- ◆ Module input channel function supports positive limit, negative limit, origin signal, scram signal, driver ready signal

2 Technical parameters

General parameter	
Field Power	Supply: 19.2~28.8VDC (Nominal: 24VDC) Protection: Anti-reverse connection protection
Power	Max.132mA@5.0VDC
Isolation	The isolation voltage between field power and system power is AC500V The isolation voltage between I/O channel and system power is AC500V The isolation voltage between I/O channel and PE is AC500V
Wiring	Max.: AWG 18 Min.: AWG 24
Mounting Type	35mm DIN-Rail
Size	115*14*75mm
Weight	65g
Environment parameter	
Operating Temperature of Vertical Installation	-35°C~60°C
Operating Temperature of Horizontal Installation	-35°C~70°C
Relative Humidity	5~ 95%RH (No Condensation)
Storage Temperature	-40°C~85°C
Storage Humidity	5~ 95%RH (No Condensation)
Manufacturing Test Temperature	-40°C~75°C
Ingress Protection Rating	IP20
Vibration Resistance	Comply with IEC 61131-2 and EC 60068-2-6
Impact resistance	Comply with IEC 61131-2 and IEC 60068-2-27
EMC Performance	Comply with IEC 61131-2 and IEC 61000-4
DI Parameter	
Channel Number	8-channel input
Indicator	8-channel input indicator
Input Type	IEC61131-2 type3
Turn-on Voltage	Sink: 11~30VDC (compared with COM terminal)
Turn-off Voltage	Sink: -3~5VDC (compared with COM terminal)
Turn-on Current	2.5mA@DC11V, Comply with IEC61131, type 3
Input Impedance	>1KΩ@DC24V
Output Delay	OFF to ON:<1ms ON to OFF<1ms
Filter Time	Default: 8us
Sample Frequency	500 Hz
DO Parameter	
Channel Number	2-channel output
Indicator	2-channel output indicator
Rated Current	Max.0.5A
Leakage Current	<350uA
On-resistance	Typical value: 540mΩ
Output Delay	OFF to ON:<5us ON to OFF<10us

Output Type	Source output/high level output
Load Type	General use and Resistive
Protection Function	Short-circuit protection Overcurrent protection: 1.6A Over-temperature protection: thermal protection temperature of the channel: 167°C Thermal protection temperature of the chip: 150°C
Pulse output parameter	
Channel Number	2-channel output
Rated Current	Max.0.5A
Leakage Current	<350uA
On-resistance	Typical: 540mΩ
Output Delay	OFF to ON:<1us ON to OFF<1us
Pulse Duration Accuracy	±0.5us
Pulse duration resolution	4ns
Minimum Pulse Duration	2.5us
Maximum Switching Frequency	200KHz
Pulse Rise Rime	<300ns
Pulse Decay Time	<100ns
Protection Function	Short-circuit protection Overcurrent protection: 1.6A Over-temperature protection: thermal protection temperature of the channel: 167°C Chip thermal protection temperature: 150°C

WARNING

UNEXPECTED EQUIPMENT OPERATION

Do not exceed any of the ratings specified in the environmental and electrical characteristics table.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

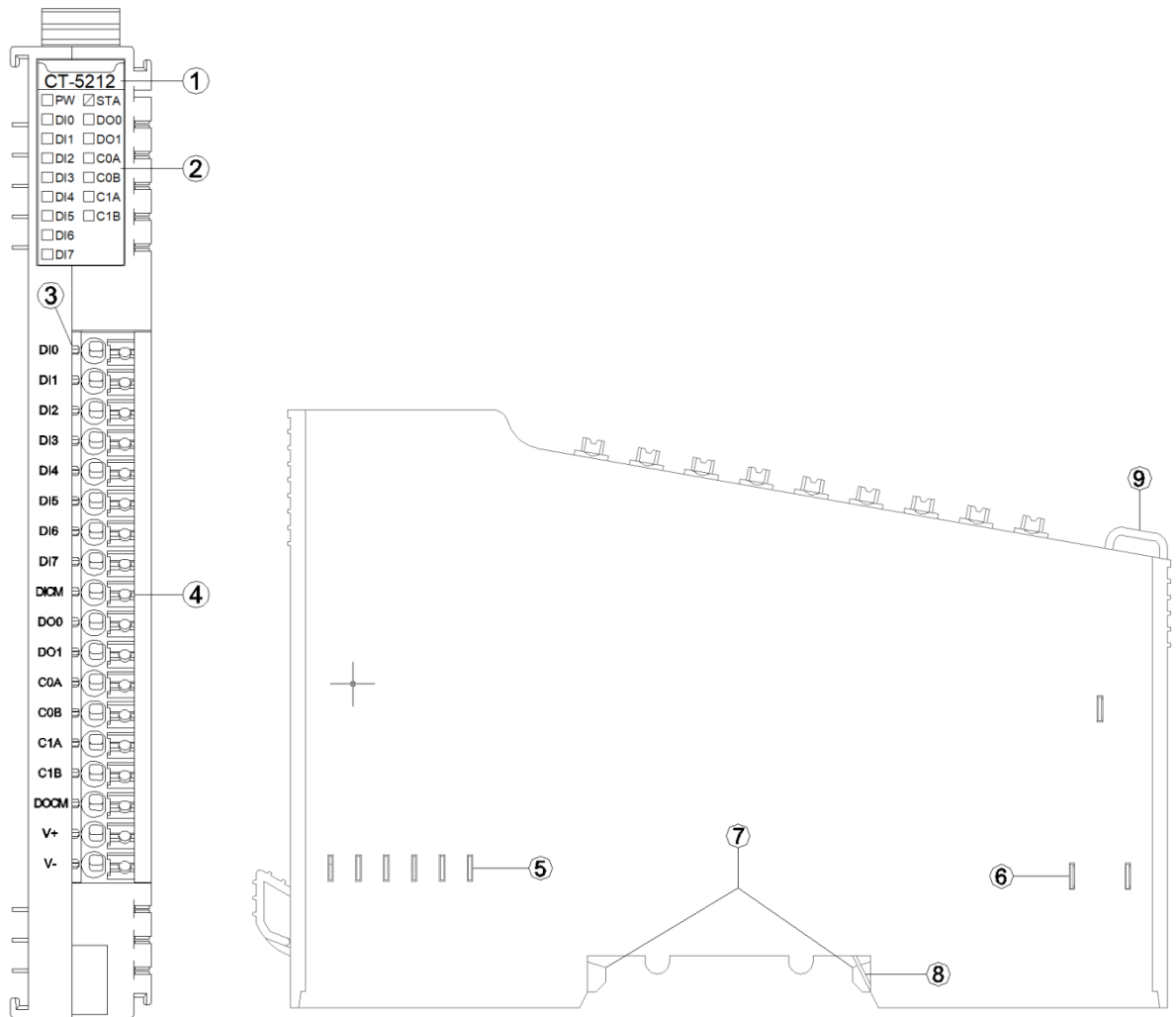
AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Ne dépassez aucune évaluation spécifiée dans le tableau de caractéristiques environnementales et électriques..

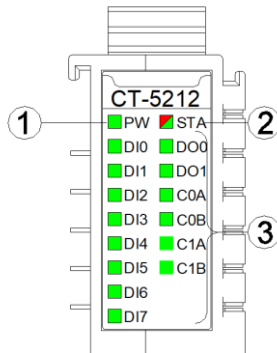
Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

3 Hardware interfaces



- ① Module type
- ② State indicator
- ③ Field channel indicator
- ④ Wiring Terminal and identification
- ⑤ Internal bus
- ⑥ Field power
- ⑦ Buckle
- ⑧ Grounding Spring Sheet
- ⑨ Fixed Wiring Harness

3.1 LED indicator definition



- ① Power indicator (GREEN)
- ② Module state indicator (RED/GREEN)
- ③ Output channel indicator (GREEN)

PW Power indicator (GREEN)	Definition
ON	Internal bus supply normal
OFF	Internal bus supply abnormal
STA module state indicator (RED/GREEN)	Definition
Slow flash (GREEN) (2.5Hz)	Module internal bus is not started
Slow flash (RED) (2.5Hz)	Module internal bus offline
ON (GREEN)	Operation normal
Flash (RED/GREEN) (2.5Hz)	Updating mode
Flash (RED/GREEN) (10Hz)	Firmware update
Double flash (RED)	Module exception has been soft-restarted
DI0~7 Input channel indicator (GREEN)	Definition
ON	The digital input signal is valid
OFF	The digital input signal is invalid
DO0~1 output channel indicator (GREEN)	Definition
ON	The digital output signal is valid
OFF	The digital output signal is valid
C0A~C1A output channel indicator (GREEN) C0B~C1B output channel indicator (GREEN)	Definition
ON	The pulse output signal valid
OFF	The pulse output signal invalid

WARNING

UNEXPECTED EQUIPMENT OPERATION

Strip the length of the conductor insulation layer is greater than 10mm to ensure reliable signal connection.

The wire needs to use copper wire and the wire core is greater than or equal to 0.2mm² and less than or equal to 1mm² to ensure reliable signal connection.

When connecting a cold-press terminal, connect the cold-press terminal strictly in accordance with the corresponding termination specifications or requirements, and connect the cold-press terminal according to the corresponding node serial number.

Do not power on cold-press terminals until they are properly connected or fully locked.

Failure to follow instructions specified by the manufacturer may result in serious consequences such as death, personal injury, or damage to equipment since the protection provided by the equipment may be impaired.

AVERTISSEMENT

FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Dépouillez la longueur de la couche isolante du fil plus de 10mm pour assurer la connexion fiable du signal.

Le conducteur doit utiliser le fil de cuivre et le noyau de fil est supérieur ou égal à 0,2 mm², inférieur ou égal à 1mm², afin d'assurer la connexion fiable du signal.

Lorsque les terminaux de presse à froid sont terminés, ils doivent être terminés et visualisés en stricte conformité avec les spécifications ou les exigences correspondantes et terminés selon le numéro de série de noeud correspondant.

Il est interdit d'activer les bornes à froid avant qu'elles ne soient correctement articulées ou complètement verrouillées.

Le fait de ne pas suivre les instructions peut entraîner une défaillance de la protection fournie par l'équipement, ce qui peut entraîner des conséquences graves, comme des blessures ou des dommages à l'équipement.

3.2 Terminal definition

No.	Definition	Instruction	
1	DI0	Digital input	
2	DI1		
3	DI2		
4	DI3		
5	DI4		
6	DI5		
7	DI6		
8	DI7		
9	DICM	Digital input common terminal	
10	DO0	Digital output	
11	DO1		
12	C0A	PUL+/CW+	Channel 0
13	C0B	DIR+/CCW+	
14	C1A	PUL+/CW+	Channel 1
15	C1B	DIR+/CCW+	
16	DOCM	Output common terminal	
17	V+	Power input (note 1)	
18	V-		

Note 1: The power supply of the DI circuit may or may not be the same origin as the power supply of V+ and V-.

WARNING

UNEXPECTED EQUIPMENT OPERATION

Calculate the maximum field power current consumption of a single module based on the actual field load. If the total field power current consumption of all I/O modules exceeds the power supply capacity of the field power supply, you must add an extra power expansion module. Otherwise, an output channel exception may occur.

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AVERTISSEMENT

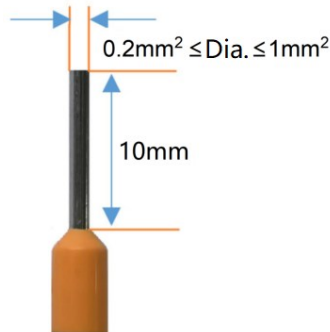
FONCTIONNEMENT INATTENDU DE L'EQUIPEMENT

Calculez la consommation maximale de courant de champ d'un seul module en fonction de la charge de champ réelle. Si la consommation totale de courant de champ de tous les modules d'E/S dépasse

la capacité d'alimentation de l'alimentation de champ, vous devez ajouter un module d'extension de puissance supplémentaire. Dans le cas contraire, une exception de canal de sortie peut se produire.

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When connecting a cold-pressed terminal, the terminal must be terminated and checked in strict accordance with the corresponding termination specifications or requirements, and connect the cold-pressed terminal according to the corresponding node serial number. The conductor should use copper conductor and the conductor core should be larger than 0.2mm^2 and smaller than 1mm^2 (AWG18~AWG24). Cold-pressed terminal parameters are as follows:



! WARNING

UNEXPECTED EQUIPMENT OPERATION

Strip the length of the conductor insulation layer is greater than 10mm to ensure reliable signal connection.

The wire needs to use copper wire and the wire core is greater than or equal to 0.2mm^2 and less than or equal to 1mm^2 to ensure reliable signal connection.

When connecting a cold-press terminal, connect the cold-press terminal strictly in accordance with the corresponding termination specifications or requirements, and connect the cold-press terminal according to the corresponding node serial number.

Do not power on cold-press terminals until they are properly connected or fully locked.

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! AVERTISSEMENT

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du signal.

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DANGER

FIRE DANGER

Use the correct wiring rules only for the maximum current capacity of the I/O channel and power supply.

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WARNING

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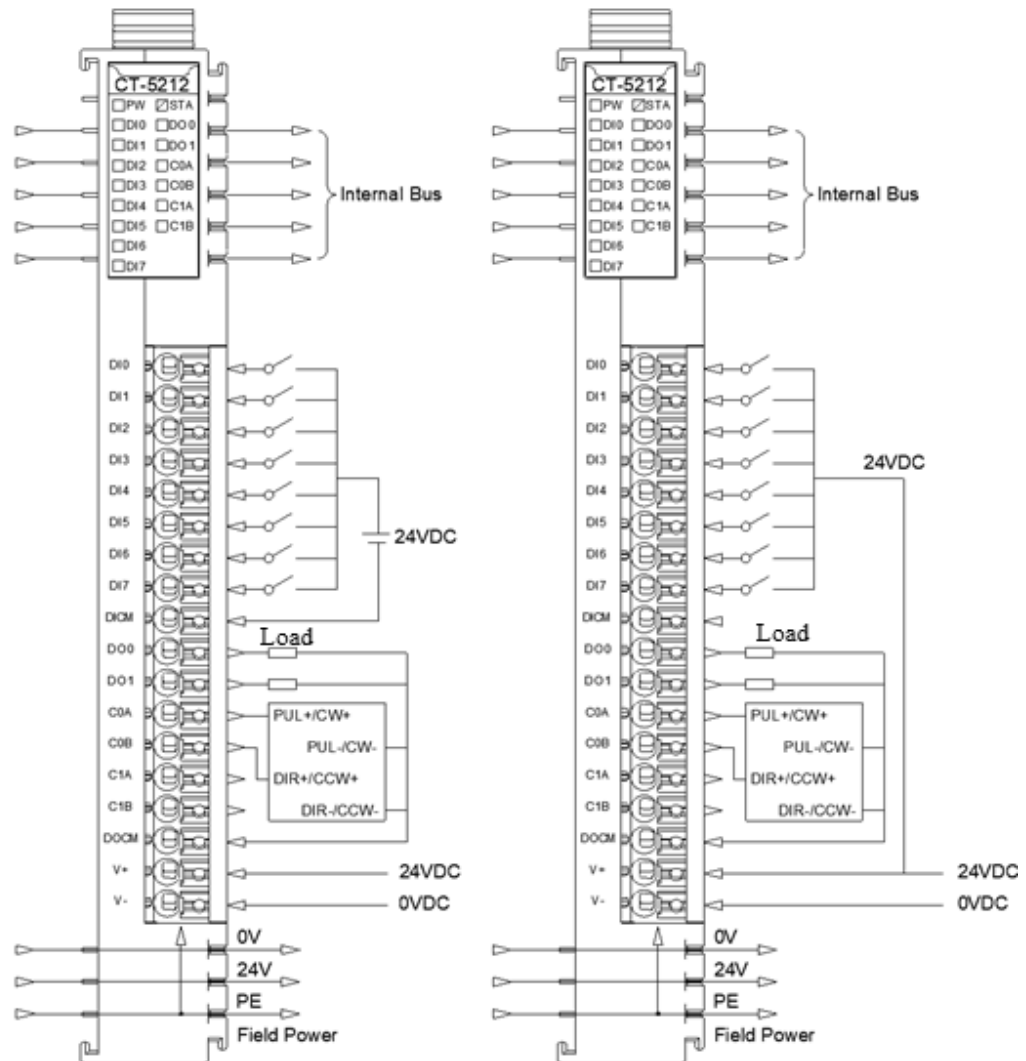
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4 Wiring



NOTICE

EQUIPMENT INOPERABLE

Do not crimp the spring terminal with more than the maximum pressure specified for the terminal. Otherwise, the resilience of the spring terminal may be damaged and the terminal rebound may be affected.

Do not press the spring terminal with a sharp tool when removing cable from the channel. Otherwise, the spring terminal will be damaged.

Failure to follow these instructions may result in equipment damage.

5 Process data definition

Input data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Reserved							Voltage State Check Warn
Byte 1	Pulse_Status_Flag (CH0)							
Byte 2	Pulse_Status_Flag (CH1)							
Byte 3	Speed_ Reached Ch#0	Position_ Reach Ch#0	Zero_re urn_co mpleted Ch#0	Inching_ mode_ status Ch#0	Speed_ mode_st atus Ch#0	Locatio n_mode _status Ch#0	Return_ to_zero _state Ch#0	Pulse_O utput_di rection Ch#0
Byte 4	UNUS ED Ch#0	UNUS ED Ch#0	UNUS ED Ch#0	UNUS ED Ch#0	DI3_sig nal Ch#0	DI2_sig nal Ch#0	DI1_sig nal Ch#0	DI0_sig nal Ch#0
Byte 5	Speed_ Reached Ch#1	Position_ Reach Ch#1	Zero_re urn_co mpleted Ch#1	Inching_ mode_ status Ch#1	Speed_ mode_st atus Ch#1	Locatio n_mode _status Ch#1	Return_ to_zero _state Ch#1	Pulse_O utput_di rection Ch#1
Byte 6	UNUS ED Ch#1	UNUS ED Ch#1	UNUS ED Ch#1	UNUS ED Ch#1	DI3_sig nal Ch#1	DI2_sig nal Ch#1	DI1_sig nal Ch#1	DI0_sig nal Ch#1
Byte 7	Error_Status Ch#0							
Byte 8								
Byte 9	Error_Status Ch#1							
Byte 10								
Byte 11	Current_location Ch#0							
Byte 12								
Byte 13								
Byte 14								
Byte 15	Current_speed Ch#0							
Byte 16								
Byte 17								
Byte 18								
Byte 19	Current_location Ch#1							
Byte 20								
Byte 21								
Byte 22								
Byte 23	Current_speed Ch#1							

Byte 24	
Byte 25	
Byte 26	

Data description:

Voltage State Check Warn: Reacts to the voltage status of the external power supply

0: No problem

1: The voltage is too low

Pulse_Status_Flag Ch# (0-1): Reflects the current pulse status flag

0b00: Pulseless output

0b01: Accelerating

0b10: Decelerating

0b11: Constant speed

Pulse_Output_direction Ch# (0-1): Pulse actual output direction

0: Forward

1: Reverse

Return_to_zero_state Ch# (0-1): Return to zero state

0: Out of the return to zero state

1: In return to zero state

Location_Mode_status Ch# (0-1): Location mode running status.

0: Out of the location mode status

1: In location mode status

Speed_mode_status Ch# (0-1): Speed mode running status

0: Out of the speed mode status

1: In speed mode status

Inching_mode_status Ch# (0-1): Inching mode status running status

0: Out of the inching mode status

1: In inching mode status

Zero_return_completed Ch# (0-1): Return to zero completed

0: Return to zero not completed

1: Return to zero completed

Position_Reach Ch# (0-1): Position reached

0: Position unreached

1: Position reached

Speed_reached Ch# (0-1): Speed reached

0: Speed unreached

1: Speed reached

DI(n)_signal Ch# (0-1): Channel input signal

0: No signal input

1: Signal input

Error_Status Ch# (0-1): Error code

Error Status								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	The deceleration time is incorrect (20~5000ms)	Acceleration error (20~5000ms)	The jog running speed is incorrect (Velocity × number of pulses per unit >20000)	Running at the wrong speed (Velocity × number of pulses per unit >20000)	Zeroing approach speed error (Velocity × number of pulses per unit >20000)	Error back to zero speed (Velocity × number of pulses per unit >20000)	Run the wrong number of steps (Position×number of pulses per unit >2 ³²)	Return to zero approach velocity > Return to zero speed
Byte 1			During acceleration or deceleration operation, motion merging actions are not supported	There is a fault in the output channel	The drive is not ready	An emergency stop signal is present	Negative limit is triggered, and it is not allowed to continue to move in the negative direction	Positive limit triggering, no further movement in the forward direction is allowed

0x0001 (0b00000000 00000001): Starting speed > Return to zero approach velocity

0x0002 (0b00000000 00000010): The number of run steps is incorrect (Position×Unit pulse number >2³²)

0x0004 (0b00000000 00000100): Zero return speed error (Speed×Unit pulse number >200000)

0x0008 (0b00000000 00001000): Return to zero approach speed error (Speed×Unit pulse number >200000)

0x0010 (0b00000000 00010000): Running speed error (Speed×Unit pulse number >200000)

0x0020 (0b00000000 00100000): The point running speed is incorrect (Speed×Unit pulse number >200000)

0x0040 (0b00000000 01000000): Acceleration time error (20~5000ms)

0x0800 (0b00000000 10000000): Slow down time error (20~5000ms)

0x0100 (0b00000001 00000000): Positive limit trigger, no further forward movement allowed

0x0200 (0b00000010 00000000): Negative limit trigger, no further negative movement allowed

0x0400 (0b00000100 00000000): An emergency stop signal is present

0x0800 (0b00001000 00000000): The drive is not ready

0x1000 (0b00010000 00000000): The pulse output channel is faulty

0x2000 (0b00100000 00000000): During acceleration or deceleration operation, motion merging actions are not supported

If there are multiple errors at the same time: If there is a Acceleration Time Error and a Degradation Time Error at the same time, the error code is 0x00C0 (0b000000000 11000000).

Current_location Ch# (0-1): current location (signed32). The current position represents the number of offset pulses relative to zero, that is, the instruction position (coordinate). If the sent coordinate is cleared when the channel has no pulse output, the value is directly set to 0.

Current_speed Ch#(0-1): current speed (signed32)

Output data								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Sports_mode Ch#0							
Byte 1	Clear_Limit_sign Ch#0							
Byte 2	Reverse_jog Ch#0	Forward_jog Ch#0	Starting_to_return_to_zero Ch#0	Emergency_stop_command Ch#0	Start_movement Ch#0	Current_coordinates Ch#0	Direction_movement Ch#0	DO_output Ch#0
Byte 3	Sports_mode Ch#1							
Byte 4	Clear_Limit_sign Ch#1							
Byte 5	Reverse_jog Ch#1	Forward_jog Ch#1	Starting_to_return_to_zero Ch#1	Emergency_stop_command Ch#1	Start_movement Ch#1	Current_coordinates Ch#1	Direction_movement Ch#1	DO_output Ch#1
Byte 6	Acceleration_time Ch#0							
Byte 7								
Byte 8								
Byte 9	Deceleration_time Ch#0							
Byte 10								
Byte 11								
Byte 12	Deceleration_time Ch#1							
Byte 13								
Byte 14								
Byte 15	Running_speed Ch#0							
Byte 16								
Byte 17								
Byte 18	Running_steps Ch#0							
Byte 19								
Byte 20								
Byte 21	Jog_speed Ch#0							
Byte 22								
Byte 23								
Byte 24	Running_speed Ch#1							
Byte 25								
Byte 26								
Byte 27	Running_steps Ch#1							
Byte 28								
Byte 29								
Byte 30	Jog_speed Ch#1							
Byte 31								
Byte 32								
Byte 33	Jog_speed Ch#1							
Byte 34								
Byte 35								
Byte 36								
Byte 37								

Data description:

Sports_mode Ch# (0-1): sports mode

0b00: absolute position

0b01: relative position

0b10: speed mode

0b11: Inching mode

Clear_Limit_sign Ch# (0-1): When the data bit changes from 0 to 1 (rising edge), the limit trigger is cleared

DO_output Ch# (0-1):DO output

0: no digital output

1: digital output

Direction_of_movement Ch# (0-1): direction of movement

0: Forward

1: Reverse

Current_coordinates Ch# (0-1): When the data bit changes from 0 to 1 (rising edge), zeroing current coordinates

Start_movement Ch# (0-1): When the data bit changes from 0 to 1 (rising edge), start movement

Emergency_stop_command Ch# (0-1): Emergency stop command. It has the highest priority in the entire system, takes effect immediately at any time, and is level controlled.

When the SCram command is 1, not only the current motion is immediately shut down, but the next motion is not allowed to start.

0: no emergency stop command

1: Emergency stop command triggered

Starting_to_return_to_zero Ch# (0-1): return to zero command. When the data bit changes from 0 to 1 (rising edge), return to zero

Forward_jog Ch# (0-1):forward jog

0: stop

1: start

Reverse_jog Ch# (0-1): reverse jog

0: stop

1: start

Acceleration_time Ch# (0-1): Acceleration time configuration

20~65535ms

Deceleration_time Ch# (0-1): Deceleration time configuration

20~65535ms

Running_speed Ch# (0-1): running speed

0~200kHz

Running_steps Ch#(0-1):running steps (signed32)

0-2³²

Jog_speed Ch# (0-1): jog speed

0~200kHz

6 Configuration parameter definition

Configuration parameter								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved					32Bit_Data_For mat		16Bit_D ata_For mat
Byte 1	Filtering_Time							
Byte 2								
Byte 3	Reserved							

Data description:

16Bit_Data_Format: 16 Bit data format. Default: A_B

0: A_B

1: B_A

32Bit_Data_Format: 32 Bit data format. Default: AB_CD

0: AB_CD

1: BA_DC

2: CD_AB

3: DC_BA

Filtering_Time: DI Filtering time. Default: 10ms

0...65535ms

Configuration parameter CH0								
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Reserved							Pulse_O utput_M ode
Byte 1	Emergency_stop_time							
Byte 2								
Byte 3	Reserved						Zero_return_mode	
Byte 4	Return_to_zero_speed							
Byte 5								
Byte 6								
Byte 7								
Byte 8	Return_to_zero_approach_speed							
Byte 9								

Byte 10						
Byte 11						
Byte 12	Reserved	DI2_Mode	DI1_Mode		DI0_Mode	
Byte 13	Reserved			DI3_Mode		
Byte 14	Reserved	DO_mode	Logical_selecti on(DI3)	Logical_selecti on(DI2)	Logical_selecti on(DI1)	Logical_selecti on(DI0)
Byte 15	Unit_pulse_count					
Byte 16						
Byte 17	Reserved			Acceler ation_a nd_dece leration _mode	Digital_ output_f ault_ha ndling	Reverse _Enable
Byte 18	Reserved					
Byte 19	Reserved					
Byte 20	Reserved					
Byte 21	Reserved					

Configuration parameter CH1									
Bit No	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Byte 0	Reserved							Pulse_O utput_M ode	
Byte 1	Emergency_stop_time								
Byte 2									
Byte 3	Reserved						Zero_return_mode		
Byte 4	Return_to_zero_speed								
Byte 5									
Byte 6									
Byte 7									
Byte 8	Return_to_zero_approach_speed								
Byte 9									
Byte 10									
Byte 11									
Byte 12	Reserved		DI6_Mode		DI5_Mode		DI4_Mode		
Byte 13	Reserved					DI7_Mode			
Byte 14	Reserved			D1_mo de	Logical _selecti on(DI7)	Logical _selecti on(DI6)	Logical _selecti on(DI5)	Logical _selecti on(DI4)	
Byte 15	Unit pulse count								

Byte 16				
Byte 17	Reserved	Acceleration_and_deceleration_mode	Digital_output_fault_handling	Reverse_Enable
Byte 18	Reserved			
Byte 19	Reserved			
Byte 20	Reserved			
Byte 21	Reserved			

Data description:

Pulse_Output_Mode Ch# (0-1): Pulse output mode. Default: 0

- 0: Pulse + direction
- 1: Dual pluses CW/CCW

Emergency_stop_time Ch# (0-1): Emergency stop time. Default: 200

20~5000ms

Zero_return_mode Ch# (0-1): Zero return mode. Default: 2

- 0: Mode 1 (Forward origin return to zero)
- 1: Mode 2 (Negative origin back to zero)
- 2: Mode 3 (Positive limit back to zero)
- 3: Mode 4 (Negative limit back to zero)

Return_to_zero_speed Ch# (0-1): Return to zero speed. Default: 1000

1~200Khz

Return_to_zero_approach_speed Ch# (0-1): Return to zero approach velocity. Default:

500

1~200Khz

DI0_Mode Ch#0: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI1_Mode Ch#0: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI2_Mode Ch#0: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI3_Mode Ch#0: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Negative limit
- 3: Origin signal
- 4: Driver ready signal
- 5: scram signal

DI4_Mode Ch#1: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI5_Mode Ch#1: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI6_Mode Ch#1: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Driver ready signal
- 3: Scram signal

DI7_Mode Ch#1: DI Function selection. Default: 0

- 0: Non-function
- 1: Positive limit
- 2: Negative limit
- 3: Origin signal
- 4: Driver ready signal
- 5: scram signal

Logical_selection (DIn) Ch#(0-1): DI logical choice. Default: 0

- 0: normal open
- 1: normal close

Unit_pulse_count Ch# (0-1): Unit pulse count. Default: 1

1~60000

Reverse_Enable Ch# (0-1): reverse enable. Default: 0

- 0: disabled
- 1: enabled

Digital_output_fault_handling Ch# (0-1): Digital output troubleshooting. Default: 1

- 0: hold the output value
- 1: zeroing the output value

Acceleration_and_deceleration_mode Ch# (0-1): Acceleration and deceleration mode
Default: 1

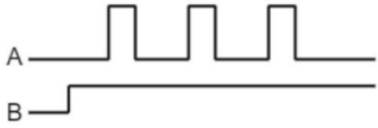
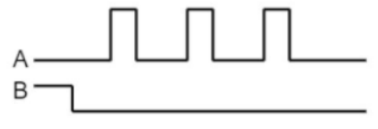
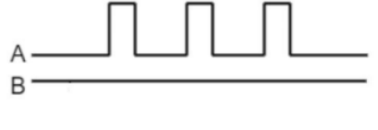
- 0: Trapezoidal acceleration and deceleration
- 1: S-shaped acceleration and deceleration

7 Parameter description and module configuration

7.1 Parameter description

Pulse mode configuration

The module supports two pulse output modes: Pulse + Direction and Double Pulse (CW/CCW), the default is Pulse + Direction mode, and each channel can be configured individually.

Pulse output mode	Direction	Forward/reverse pulse waveform
Pulse+Direction	Forward	
	Reverse	
CW/CCW	Forward	
	Reverse	

Emergency stop time

Once the emergency stop command is triggered, the device will enter the braking phase, regardless of the speed, it will stop within the set time, and the emergency stop time is 200ms by default.

Zero return mode

The module supports four zero return modes: positive limit return to zero, negative limit return to zero, zero return to positive origin, and zero return to negative origin. Zero-returning, that is, finding the origin signal through the combination of positive limit, negative limit and origin signal, there are three configuration parameters related to zero-return: zero return mode, zero return speed, and zero return approach speed. Each

channel can be individually configured with zero return parameters, and a coordinate zeroing command is automatically executed after the zero return is successful.

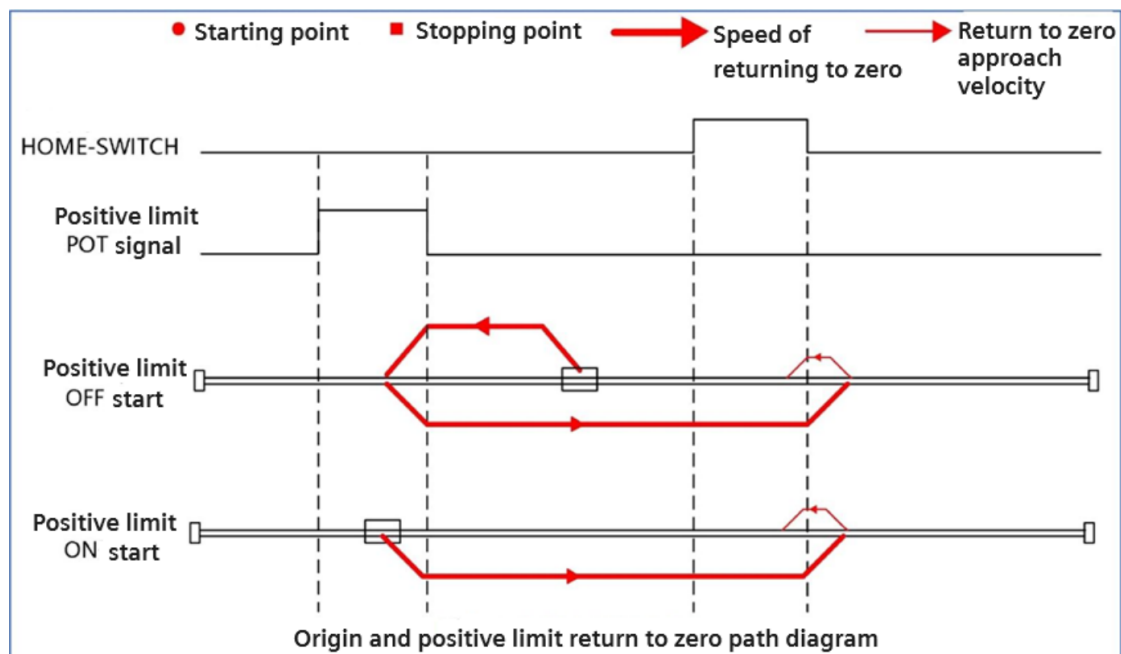
Zero return model1: positive limit return to zero

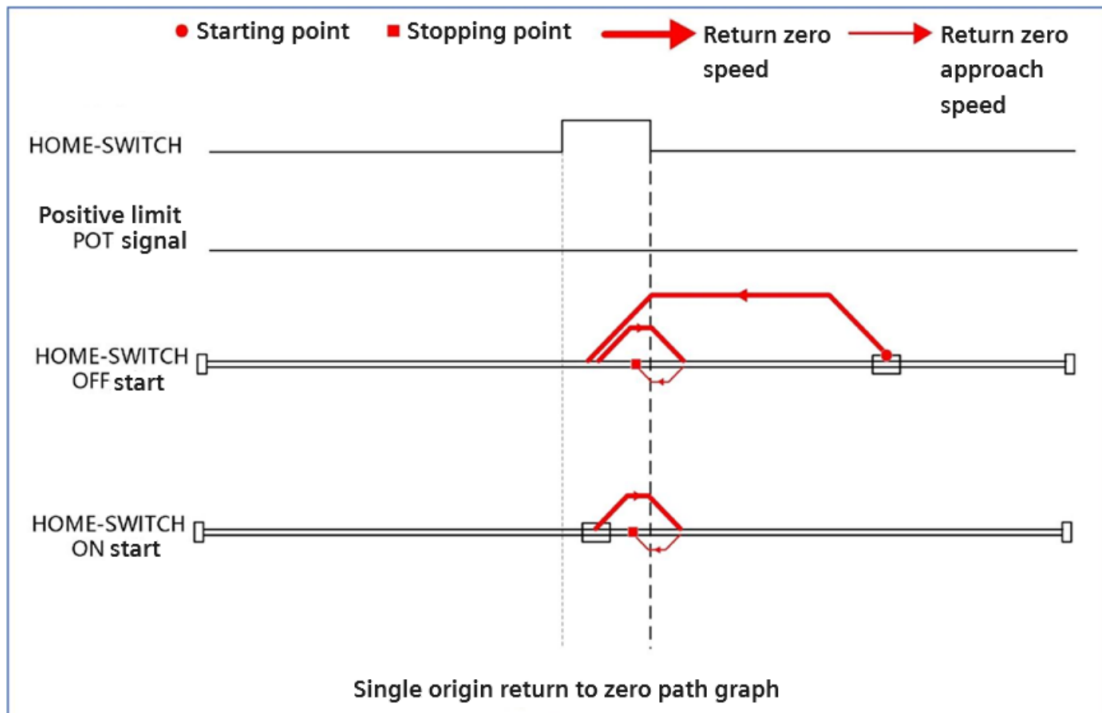
1) When the current position is between the positive limit and the origin:

- a. Move in the positive direction at the zero velocity, and start the reverse movement after touching the positive limit;
- b. When there is an origin signal input and disappears, decelerate to 0;
- c. Move again in the positive direction at the near-zero velocity until the origin signal reappears and stop moving.

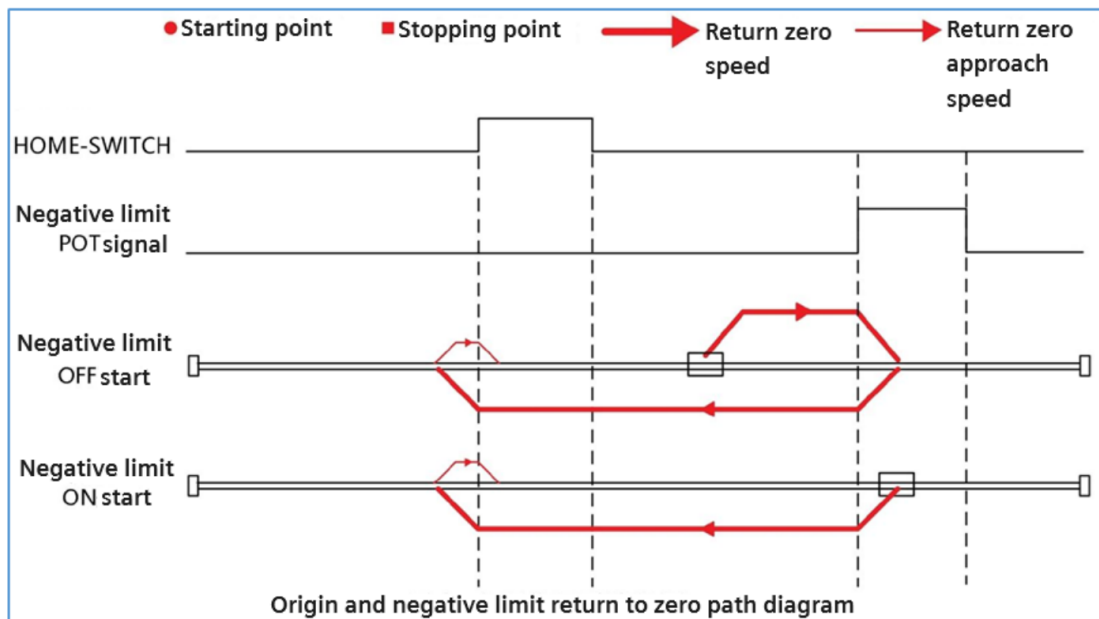
2) The current position is on the right side of the origin signal:

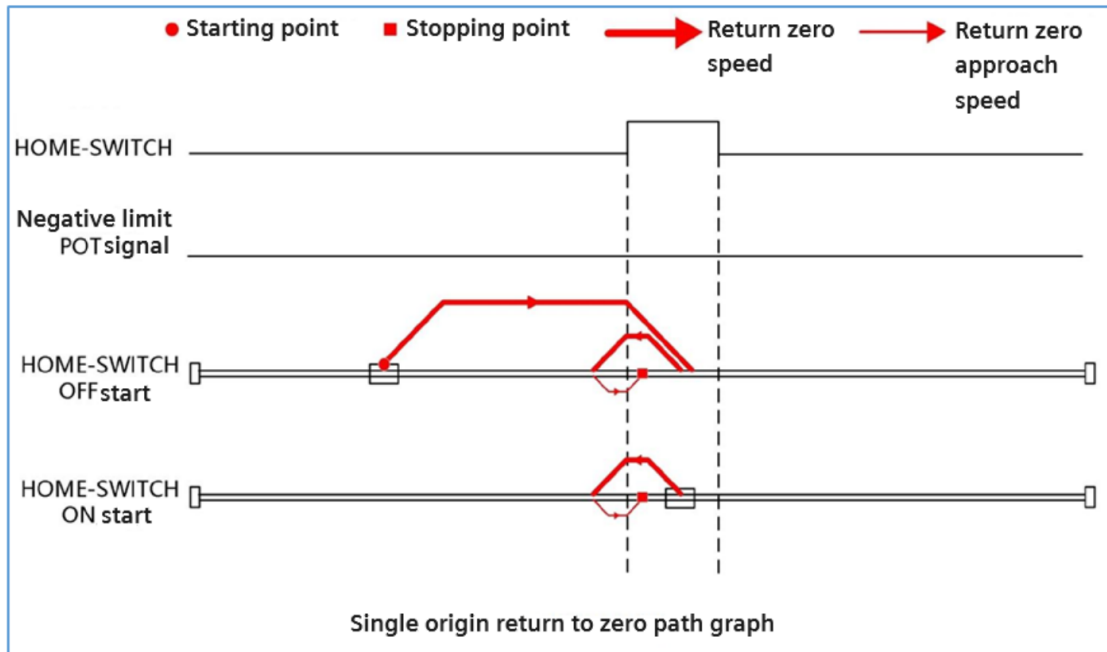
- a. Move in the positive direction at return to zero approach velocity, and when the origin signal appears, move in the opposite direction until the origin signal disappears.
- b. Move in the positive direction again at return to zero approach velocity until the origin signal reappears and stop moving.



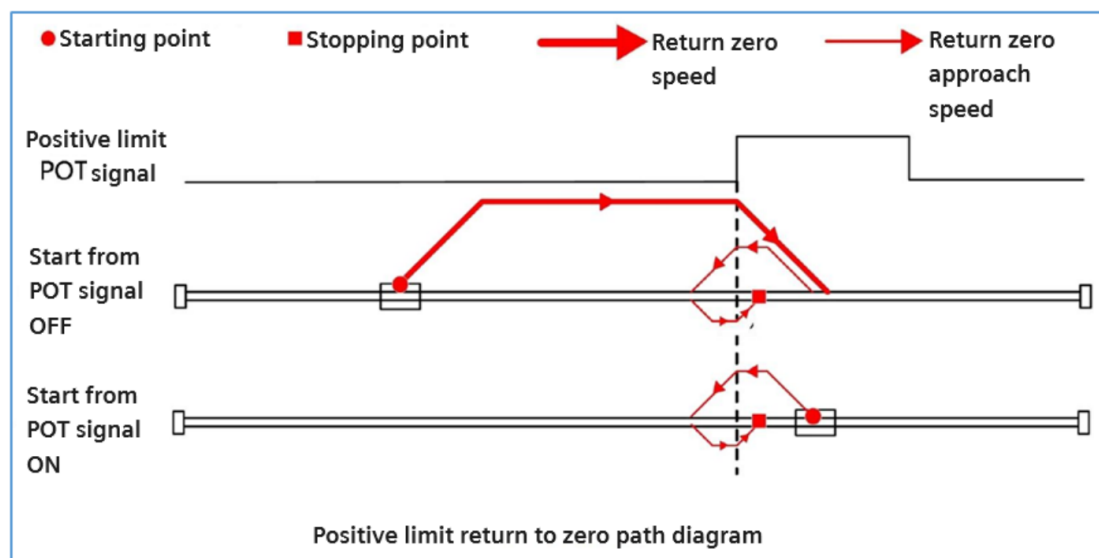


Zero return model1: negative limit return to zero

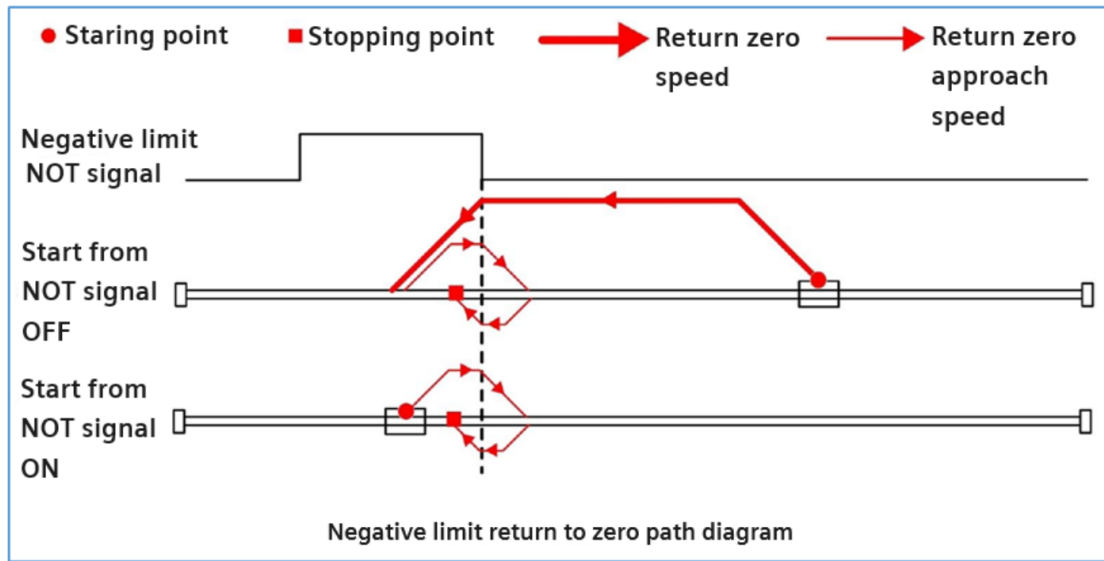




Zero return model: zero return to positive origin



Zero return model: zero return to negative origin



DI function selection

If select the function of the input signal and set it to no function, the DI is a normal DI input signal.

Positive Limit: The limit position of the forward movement.

Negative limit: The limit position of the reverse movement.

Origin Signal: Indicates that the position of the signal is at the zero position.

Drive ready signal: If the driver is ready to start performing motion after receiving the enable signal from the module's output, it sends a "Drive ready" signal to the module.

Without this signal input, the module cannot perform motion control. If the drive does not contain this type of parameter, you do not need to select the feature.

Emergency stop signal: The emergency stop function is the same as the emergency stop function in software control.

DI logic selection

When the function of the DI signal is configured, the input type of the signal can be configured normally open or normally closed. If no function is selected for DI, the DI logic selection parameter configuration is invalid.

DO function selection

If DO is selected as the enable signal, the module cannot control the motion when the DO is not output, and the enable signal is at least 10ms ahead of the pulse output signal.

Unit pulse count

Set the unit of speed and position according to needs.

Example 1: When 1000 pulses are 1 revolution in the actual field, it can set the number of pulses per unit to 1000, then the running speed, the number of running steps, the starting speed, the zeroing speed, and the zeroing approach speed will all be multiplied by 1000. It can also be understood that the number of steps and speed parameters issued at this time will be turned into circles.

Example 2: If the actual field 2000 pulses are 1mm moving distance, it can set the number of pulses per unit to 2000, then the running speed, the number of running steps, the starting speed, the zero return speed, and the zero return approach speed will all be multiplied by 2000. At this time, the number of steps and speed parameters will be issued in mm.

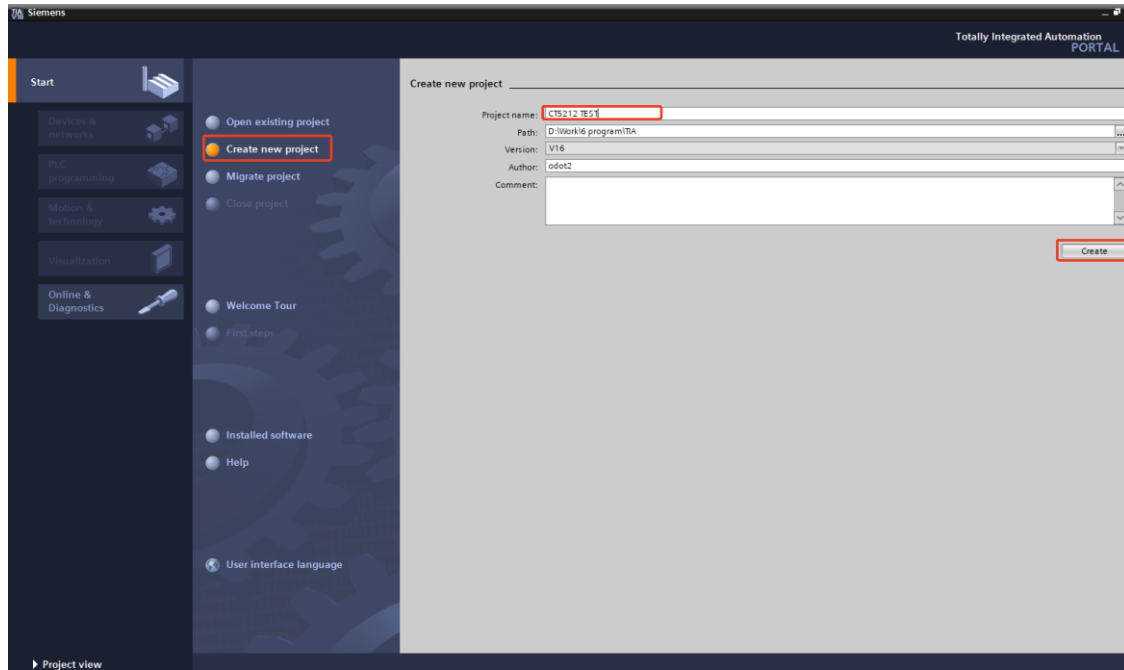
Reverse enabled

If the reverse signal is enabled, the effect is that when the PLC is forward controlling the motor, the motor actually rotates in the opposite direction.

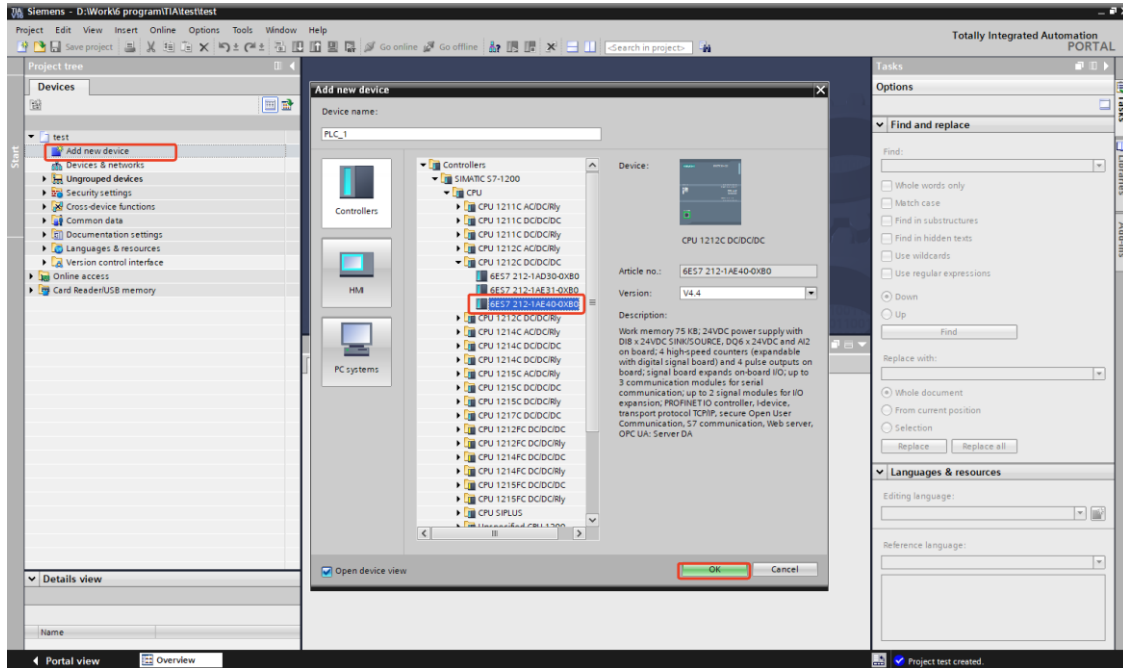
7.2 Use in the TIA Portal V16 software

Hardware Composition: Siemens S7-1200 CPU 1212DC/DC/DC, CN8032-L+CT-5212, equipment such as motor drivers and stepper motors.

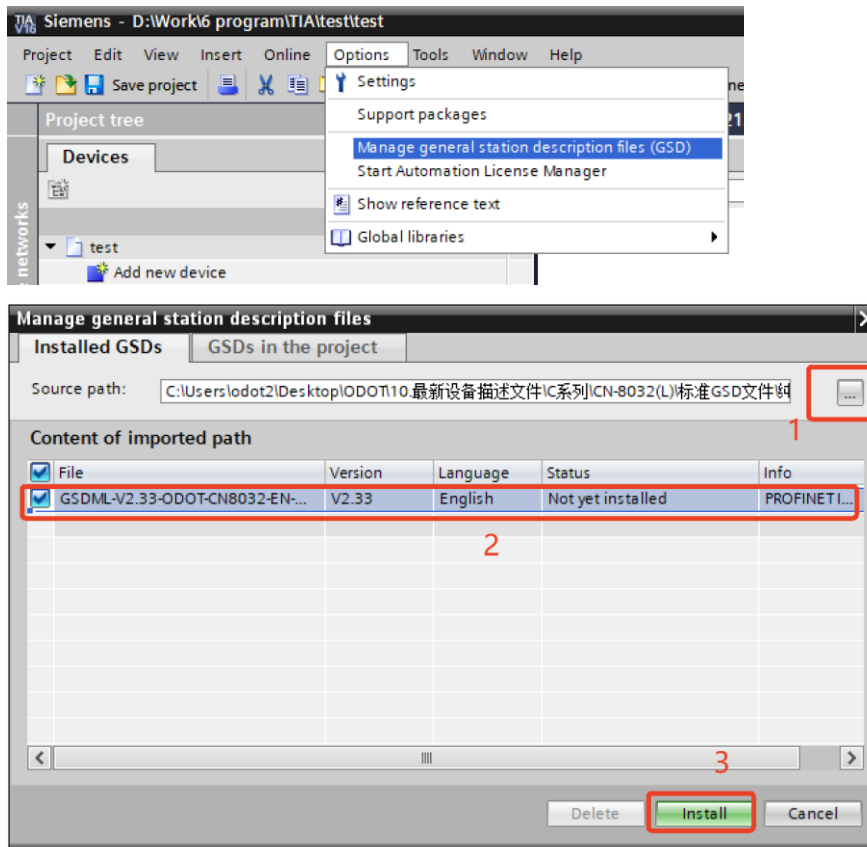
1. Open the TIA Portal V16 software, click Create New Project, set the project name, and click Create.

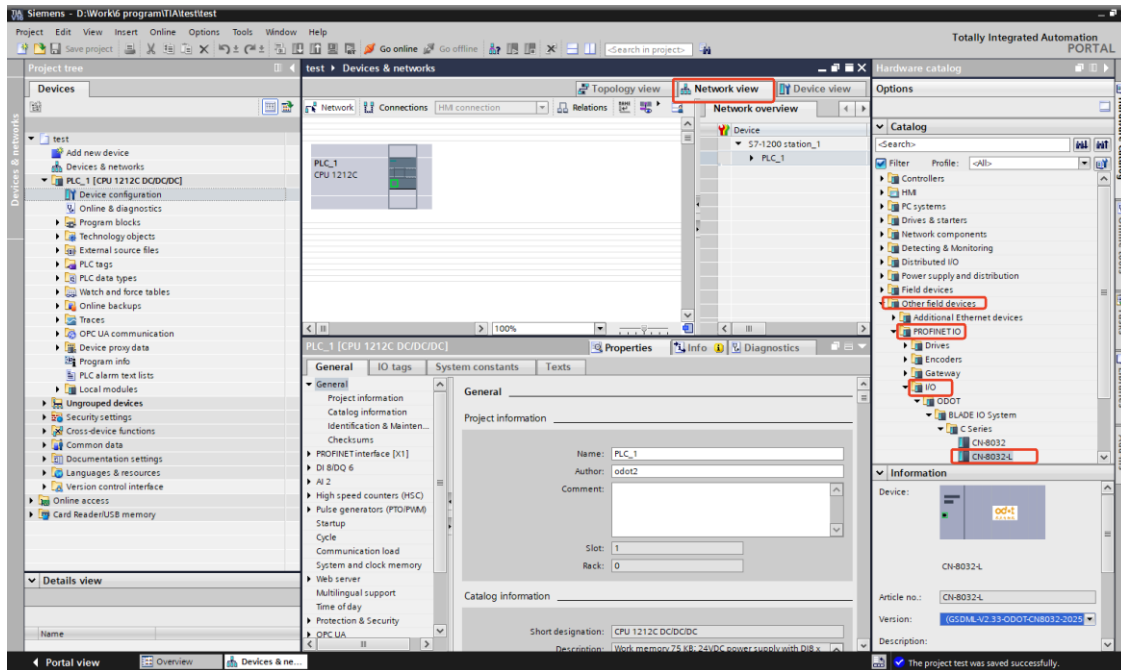


2. Click Add New Device, select the corresponding CPU model, the model used in this case is S7-1200 CPU 1212DC/DC/DC 6ES7 202-1 AE40-0XB0, click OK.

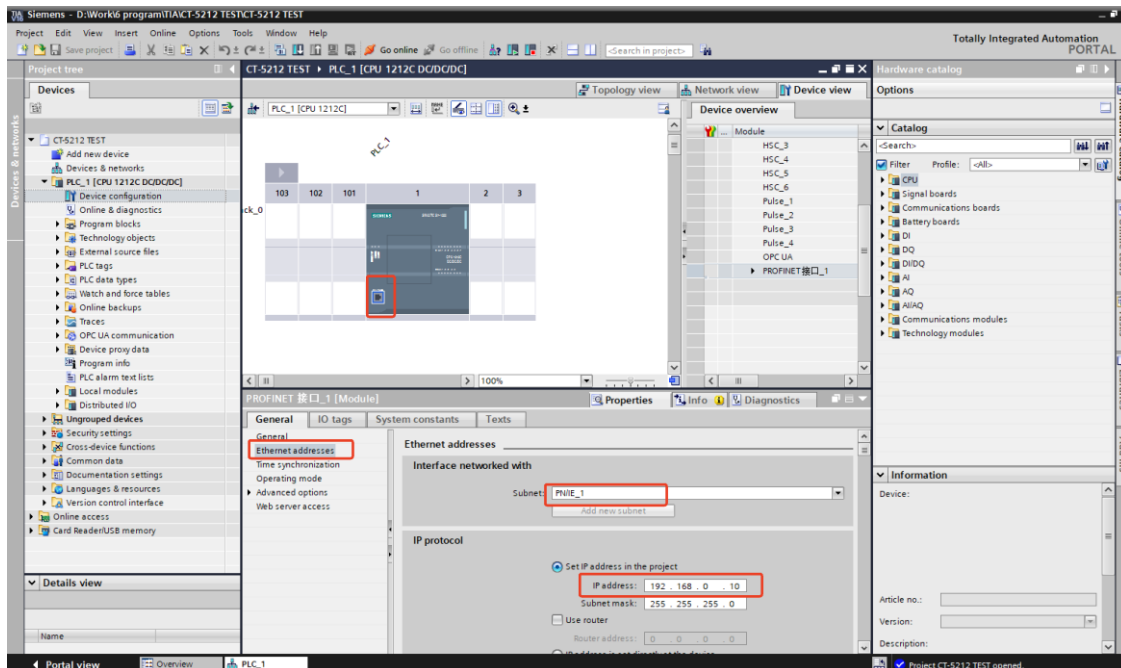


3. Click "Options--Manage general station description files (GSD)", in the pop-up interface, find the location of the GSD file of CN8032-L, select the GSD file, click Install, and the hardware directory will be automatically updated after the installation is completed.

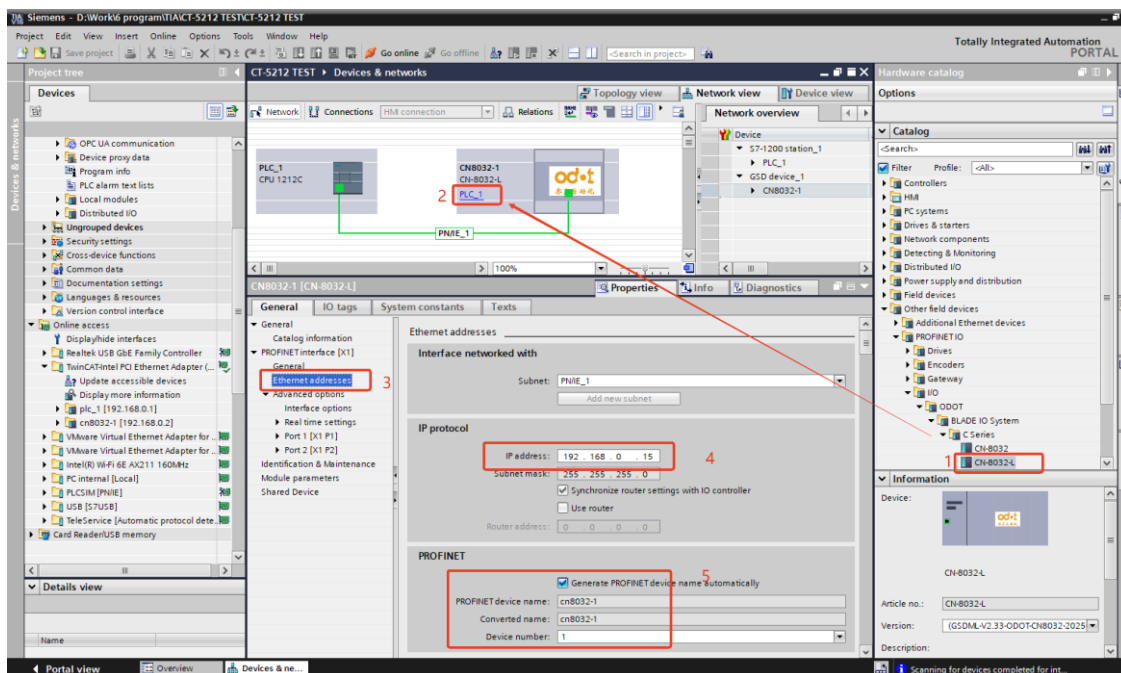
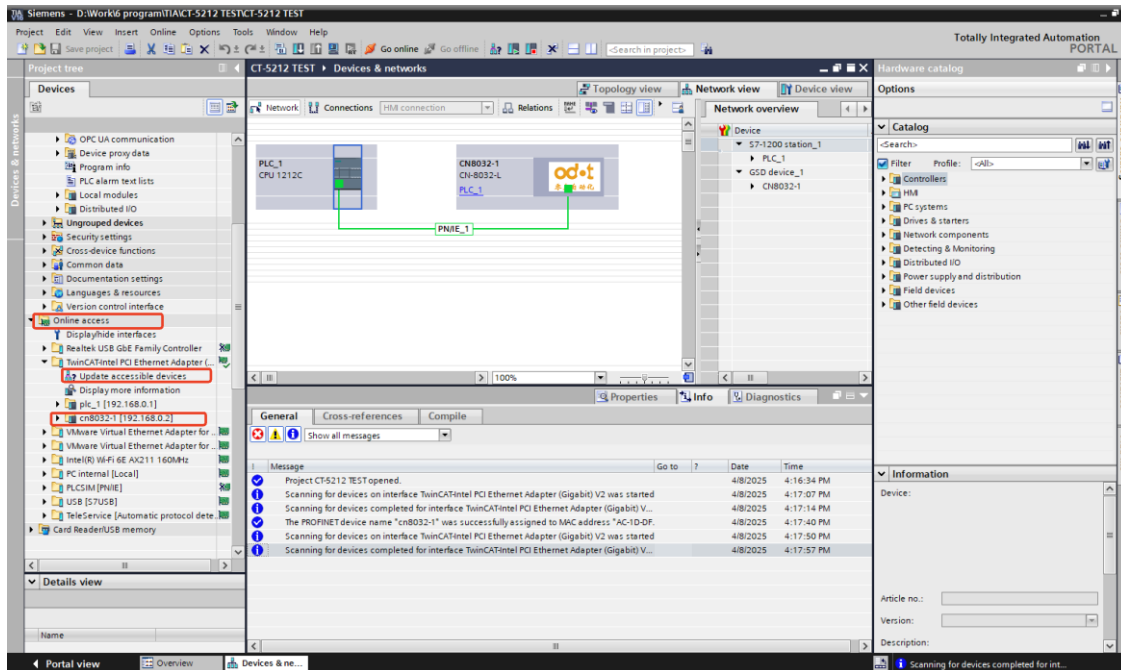




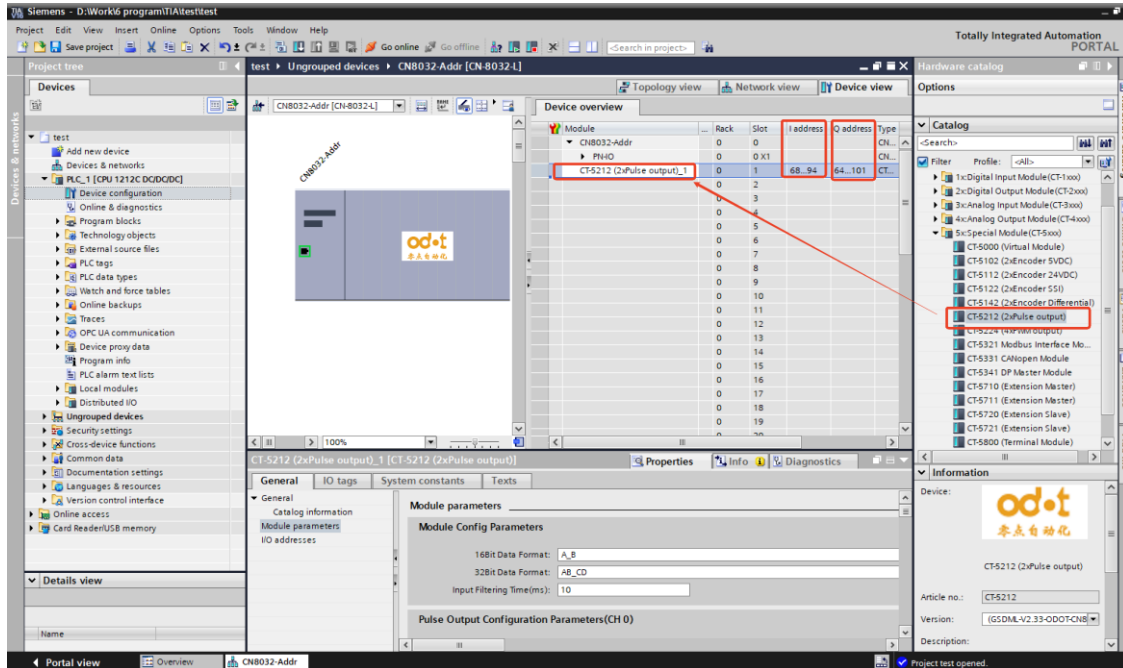
4. In the device view, select the PLC network port and set the network port parameters.



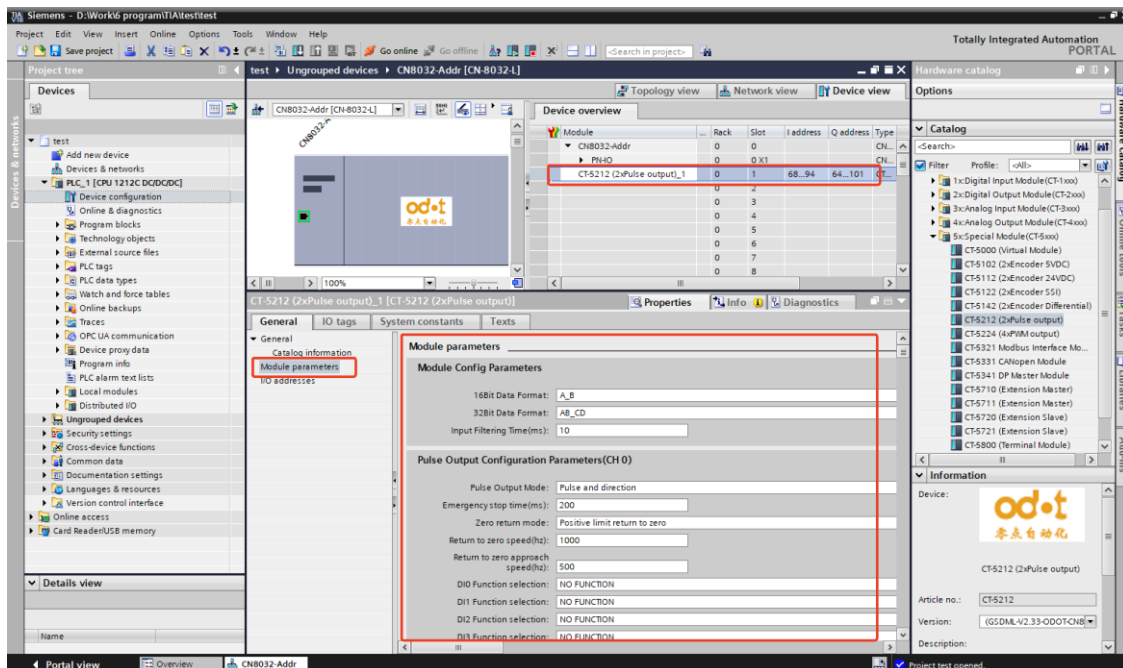
5. In the network view, first drag and drop the CN8032-L module into the network view, and then assign the network interface to the "PLC_1. PROFINET IO-System", click on the network port, modify the Ethernet parameters, and assign the IP address of the module (192.168.0.15). The PROFINET device name of the module is "cn8032-1", and the device name of the module can be viewed online access, note: the configuration name must be the same as the device name.



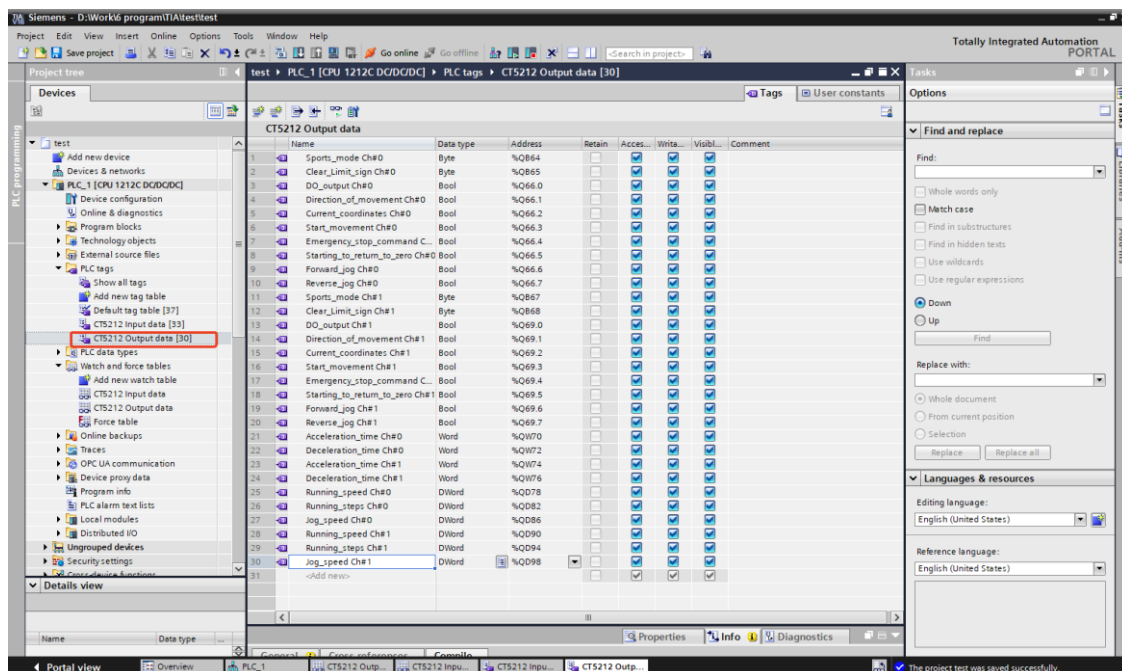
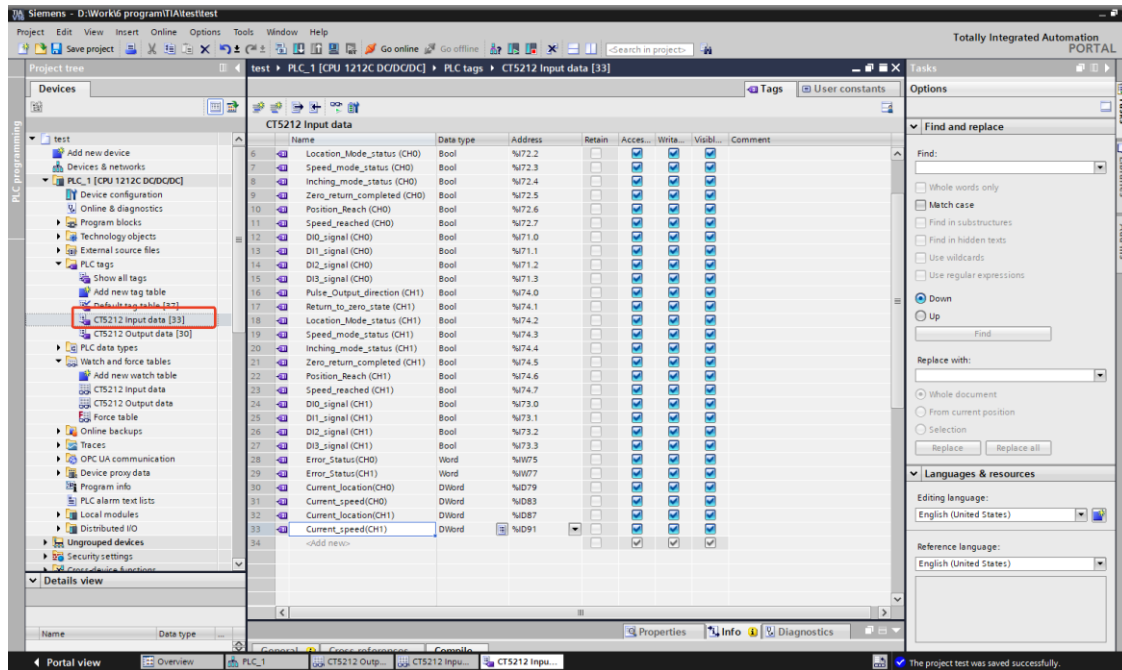
6. Double-click the adapter icon to enter the "Device View", and add the extended IO module: CT-5212 in the "Device Overview".



Select the CT-5212 module and click Properties—Module Parameters to modify the module configuration parameters and pulse output configuration parameters.



7. According to the mapping relationship of the module in the PLC and the process data definition of the CT-5212 module, a variable table of CT5212 input data and CT5212 output data is established respectively.



8. After the configuration is completed, save, compile and download the project.

Jog mode

Channel 0 is configured as jog mode, and the forward jog speed is 200Hz

- Modify the value of the sport mode to 0x03;
- Confirm that the value of the Emergency_stop_command (CH0) is 0;
- Set the acceleration time and deceleration time and value of channel 0 to 200ms;
- Set the jog speed to 200Hz;
- Set forward jog as TRUE;

Name	Address	Display format	Monitor value	Modify value	Comment
"Sports_mode Ch#0"	%Q64	Hex	16403	16403	
"Clear_Limit_Sign Ch#0"	%Q65	Hex	16400		
"DO_output Ch#0"	%Q66.0	Bool	☐ FALSE		
"Direction_of_movement Ch#0"	%Q66.1	Bool	☐ FALSE		
"Current_coordinates Ch#0"	%Q66.2	Bool	☐ FALSE		
"Start_movement Ch#0"	%Q66.3	Bool	☐ FALSE		
"Emergency_stop_command Ch#0"	%Q66.4	Bool	☐ FALSE		
"Starting_to_return_to_zero Ch#0"	%Q66.5	Bool	☐ FALSE		
"Forward_jog Ch#0"	%Q66.6	Bool	☒ TRUE	TRUE	
"Reverse_jog Ch#0"	%Q66.7	Bool	☐ FALSE		
"Sports_mode Ch#1"	%Q67	Hex	16400		
"Clear_Limit_Sign Ch#1"	%Q68	Hex	16400		
"DO_output Ch#1"	%Q69.0	Bool	☐ FALSE		
"Direction_of_movement Ch#1"	%Q69.1	Bool	☐ FALSE		
"Current_coordinates Ch#1"	%Q69.2	Bool	☐ FALSE		
"Start_movement Ch#1"	%Q69.3	Bool	☐ FALSE		
"Emergency_stop_command Ch#1"	%Q69.4	Bool	☐ FALSE		
"Starting_to_return_to_zero Ch#1"	%Q69.5	Bool	☐ FALSE		
"Forward_jog Ch#1"	%Q69.6	Bool	☐ FALSE		
"Reverse_jog Ch#1"	%Q69.7	Bool	☐ FALSE		
"Acceleration_time Ch#0"	%QW70	DEC	200	200	
"Deceleration_time Ch#0"	%QW72	DEC	200	200	
"Acceleration_time Ch#1"	%QW74	Hex	1640000		
"Deceleration_time Ch#1"	%QW76	Hex	1640000		
"Running_speed Ch#0"	%QD78	Hex	1640000_0000		
"Running_steps Ch#0"	%QD82	Hex	1640000_0000		
"Jog_speed Ch#0"	%QD86	DEC	200	200	
"Running_speed Ch#1"	%QD90	Hex	1640000_0000		
"Running_steps Ch#1"	%QD94	Hex	1640000_0000		
"Jog_speed Ch#1"	%QD98	Hex	1640000_0000		

Double-click the input data of the CT-5212 to view the pulse output of channel 0.

Siemens - D:\Work6 program\TIAtest\test

Project Edit View Insert Online Options Tools Window Help

Save project Go online Go offline Search in project

Project tree

test > PLC_1 [CPU 1212C DC/DC/DC] > Watch and force tables > CT5212 Input data

Devices

PLC_1 [CPU 1212C DC/DC/DC]

Device configuration

Online & diagnostics

Program blocks

Technology objects

External source files

PLC tags

Show all tags

Add new tag table

Default tag table [37]

CT5212 Input data [33]

CT5212 Output data [30]

PLC data types

Watch and force tables

Add new watch table

CT5212 Input data

CT5212 Output data

Force table

Online backups

Traces

OPC UA communication

Device proxy data

Program info

PLC alarm text lists

Local modules

Distributed I/O

Ungrouped devices

Security settings

Cross-device functions

Common data

Documentation settings

Details view

Name

Name	Address	Display format	Monitor value	Modify value	Comment
"Voltage State Check Warn"	%B55	Hex	16#00		
"Pulse_Status_Flag (CH0)"	%B69	Hex	16#03		
"Pulse_Status_Flag (CH1)"	%B70	Hex	16#00		
"Pulse_Output_direction (CH0)"	%I71.0	Bool	FALSE		
"Return_to_zero_state (CH0)"	%I71.1	Bool	FALSE		
"Location_Mode_status (CH0)"	%I71.2	Bool	FALSE		
"Speed_mode_status (CH0)"	%I71.3	Bool	FALSE		
"Inching_mode_status (CH0)"	%I71.4	Bool	FALSE		
"Zero_return_completed (CH0)"	%I71.5	Bool	FALSE		
"Position_Reach (CH0)"	%I71.6	Bool	FALSE		
"Speed_reached (CH0)"	%I71.7	Bool	FALSE		
"DI0_signal (CH0)"	%I72.0	Bool	FALSE		
"DI1_signal (CH0)"	%I72.1	Bool	FALSE		
"DI2_signal (CH0)"	%I72.2	Bool	FALSE		
"DI3_signal (CH0)"	%I72.3	Bool	FALSE		
"Pulse_Output_direction (CH1)"	%I73.0	Bool	FALSE		
"Return_to_zero_state (CH1)"	%I73.1	Bool	FALSE		
"Location_Mode_status (CH1)"	%I73.2	Bool	FALSE		
"Speed_mode_status (CH1)"	%I73.3	Bool	FALSE		
"Inching_mode_status (CH1)"	%I73.4	Bool	FALSE		
"Zero_return_completed (CH1)"	%I73.5	Bool	FALSE		
"Position_Reach (CH1)"	%I73.6	Bool	FALSE		
"Speed_reached (CH1)"	%I73.7	Bool	FALSE		
"DI0_signal (CH1)"	%I74.0	Bool	FALSE		
"DI1_signal (CH1)"	%I74.1	Bool	FALSE		
"DI2_signal (CH1)"	%I74.2	Bool	FALSE		
"DI3_signal (CH1)"	%I74.3	Bool	FALSE		
"Error_Status (CH0)"	%W75	Hex	16#0000		
"Error_Status (CH1)"	%W77	Hex	16#0000		
"Current_Location (CH0)"	%D79	DEC	67693		
"Current_Speed (CH0)"	%D85	DEC	200		
"Current_Location (CH1)"	%D87	Hex	16#0000_0000		
"Current_Location (CH1) (1)"	%D91	Hex	16#0000_0000		

Options

PLC_1 [CPU 1212C DC/DC/DC]

RUN / STOP

ERROR

MAINT

Properties Info Diagnostics

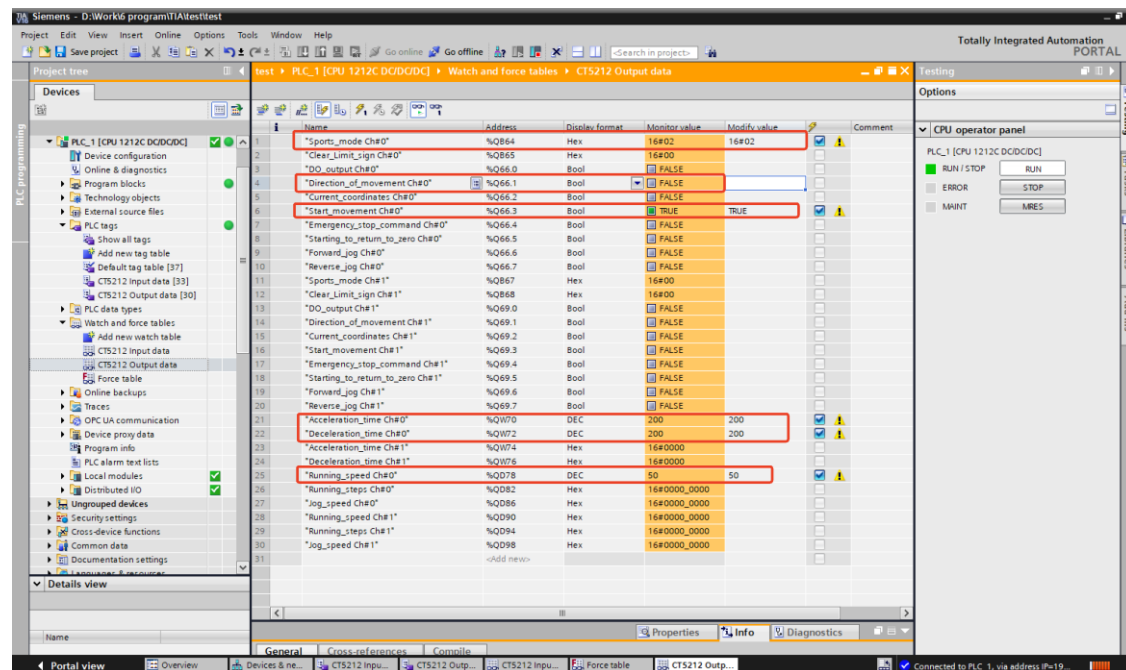
Portal view Overview Devices & net CT5212 Input... CT5212 Outp... CT5212 Inpu... Force table CT5212 Outp

Connected to PLC_1, via address IP=19...

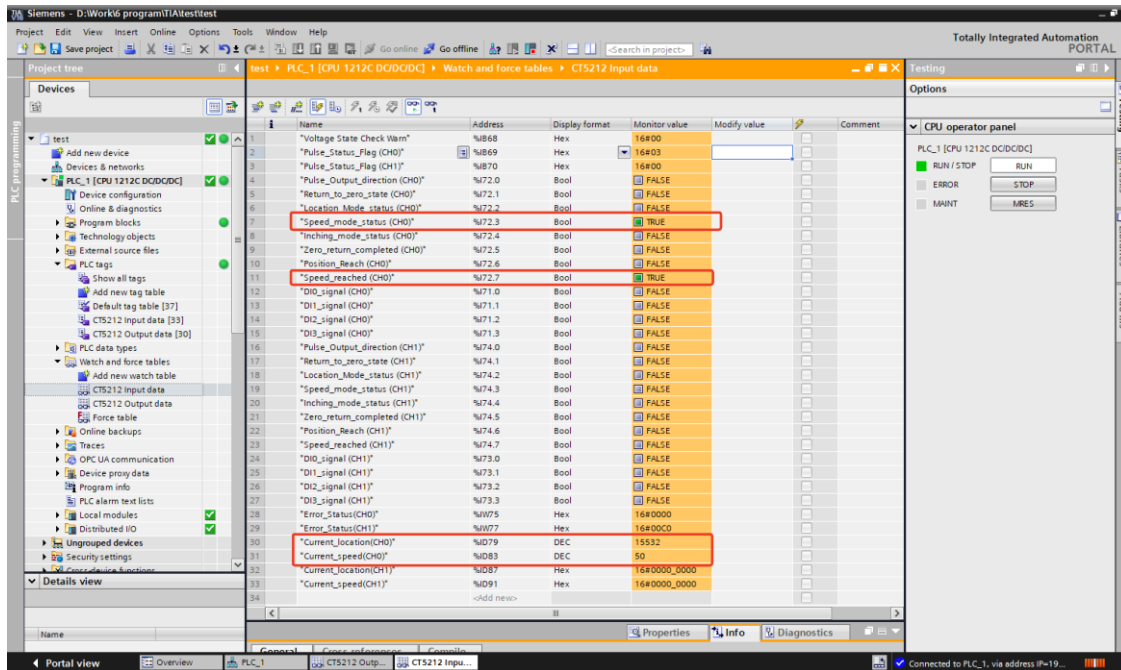
Speed mode

Channel 0 is configured as the speed mode, and the running speed of the forward rotation is 50Hz, and the running speed is modified to 80Hz during operation.

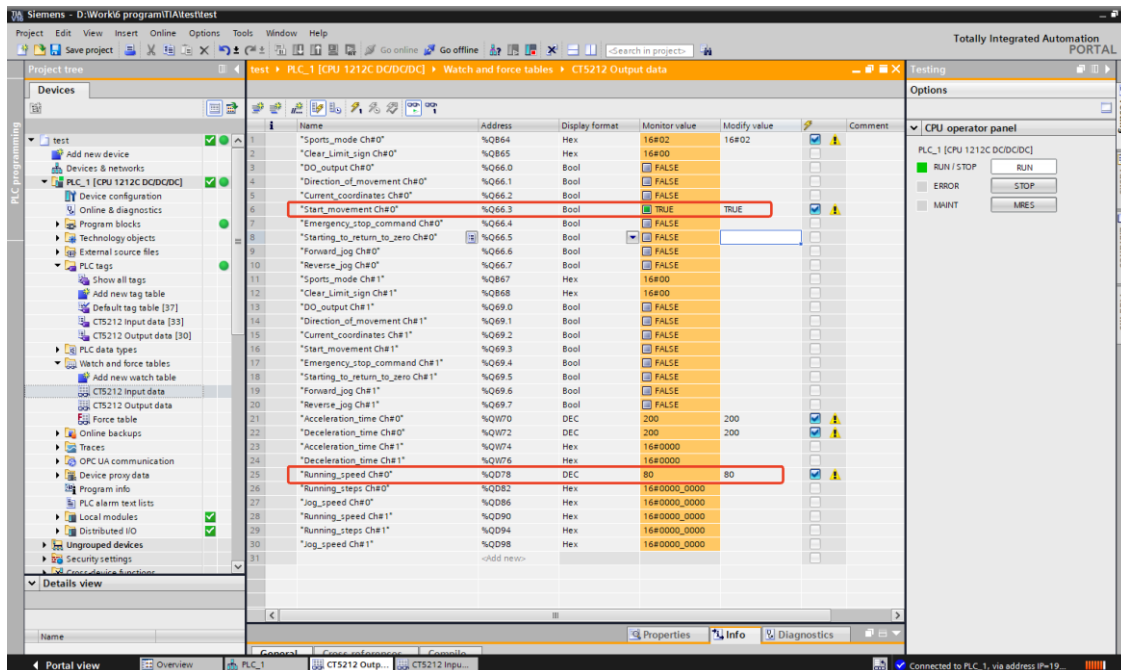
- Change the value of the sport mode to 0x02;
- Confirm that the value of the emergency stop command is 0;
- Set the acceleration time and deceleration time and value of channel 0 to 200ms;
- Set the running speed to 50hz, and the value of the direction of movement is 0 (0: forward rotation, 1: reverse rotation);
- Set the value of the starting motion to TRUE, and the rising edge of the variable is valid;



Double-click the input data of the CT-5212 to view the pulse output of channel 0.



f) During the movement, modify the running speed of channel 0 to 80Hz, reset the value of starting the movement to 0 and then set it to 1, and set the running speed to 80Hz;



The screenshot displays the 'Watch and force tables' for a Siemens PLC. The table contains the following data:

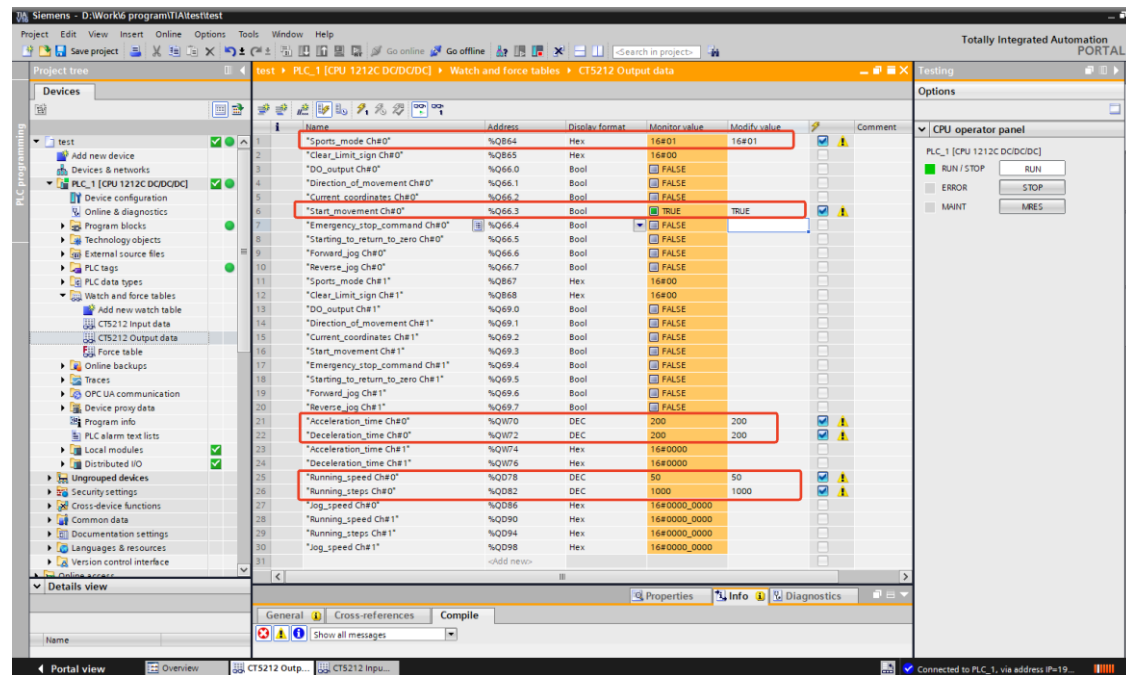
Name	Address	Display format	Monitor value	Modify value	Comments
1	"Voltage State Check Warn"	%I65	Hex	16#00	
2	"Pulse_Status_Flag (CH0)"	%I69	Hex	16#03	
3	"Pulse_Status_Flag (CH1)"	%I870	Hex	16#00	
4	"Pulse_Status_Direction (CH0)"	%I72.0	Bool	FALSE	
5	"Return_to_zero_state (CH0)"	%I72.1	Bool	FALSE	
6	"Location_Mode_Status (CH0)"	%I72.2	Bool	FALSE	
7	"Speed_Mode_Status (CH0)"	%I72.3	Bool	TRUE	
8	"Inching_Mode_Status (CH0)"	%I72.4	Bool	FALSE	
9	"Zero_Return_Completed (CH0)"	%I72.5	Bool	FALSE	
10	"Position_Reach (CH0)"	%I72.6	Bool	FALSE	
11	"Speed_Reached (CH0)"	%I72.7	Bool	TRUE	
12	"DI0_Signal (CH0)"	%I71.0	Bool	FALSE	
13	"DI1_Signal (CH0)"	%I71.1	Bool	FALSE	
14	"DI2_Signal (CH0)"	%I71.2	Bool	FALSE	
15	"DI3_Signal (CH0)"	%I71.3	Bool	FALSE	
16	"Pulse_Output_Direction (CH1)"	%I74.0	Bool	FALSE	
17	"Return_to_zero_state (CH1)"	%I74.1	Bool	FALSE	
18	"Location_Mode_Status (CH1)"	%I74.2	Bool	FALSE	
19	"Speed_Mode_Status (CH1)"	%I74.3	Bool	FALSE	
20	"Inching_Mode_Status (CH1)"	%I74.4	Bool	FALSE	
21	"Zero_Return_Completed (CH1)"	%I74.5	Bool	FALSE	
22	"Position_Reach (CH1)"	%I74.6	Bool	FALSE	
23	"Speed_Reached (CH1)"	%I74.7	Bool	FALSE	
24	"DI0_Signal (CH1)"	%I73.0	Bool	FALSE	
25	"DI1_Signal (CH1)"	%I73.1	Bool	FALSE	
26	"DI2_Signal (CH1)"	%I73.2	Bool	FALSE	
27	"DI3_Signal (CH1)"	%I73.3	Bool	FALSE	
28	"Error_Status (CH0)"	%I705	Hex	16#0000	
29	"Error_Status (CH1)"	%I707	Hex	16#0000	
30	"Current_Location (CH0)"	%I79	DEC	26665	
31	"Current_Speed (CH0)"	%I83	DEC	80	
32	"Current_Location (CH1)"	%I87	Hex	16#0000_0000	
33	"Current_Speed (CH1)"	%I91	Hex	16#0000_0000	

A red box highlights the rows for 'Current_Location' (rows 30 and 32). The 'Details view' on the right shows the 'CPU operator panel' with buttons for RUN, STOP, ERROR, MAINT, and MRES.

Relative position mode

Channel 0 is configured as a relative position mode, the current coordinate position is 500, and 1000 pulses are running in the forward direction, and the running speed is 50Hz.

- Change the value of the sport mode to 0x01;
- Confirm that the value of the emergency stop command is 0;
- Set the acceleration time and deceleration time and value of channel 0 to 200ms;
- Set the running speed to 50Hz;
- Set the value of Running_steps (CH0) to 1000;
- Set the value of the starting motion to TRUE, and the rising edge of the variable is valid;



Double-click the input data of CT-5212 to view the pulse output of channel 0, and the current position is 1500, and the corresponding Position_Reach (CH0) variable will be set to 1 when the position is reached.

Siemens - SIMATIC Manager - D:\Work\program\test\test

Project: test | PLC_1 [CPU 1212C DC/DC/DC] | Watch and force tables | CT5212 Input data

Name	Address	Display format	Monitor value	Modify value	Comment
"Voltage State Check Wam"	%B68	Hex	16#00		
"Pulse_Status_Flag (CH0)"	%B69	Hex	16#00		
"Pulse_Status_Flag (CH1)"	%B70	Hex	16#00		
"Pulse_Output_direction (CH0)"	%I72.0	Bool	FALSE		
"Return_to_zero_state (CH0)"	%I72.1	Bool	FALSE		
"Location_Mode_status (CH0)"	%I72.2	Bool	FALSE		
"Speed_Mode_status (CH0)"	%I72.3	Bool	FALSE		
"Inching_Mode_status (CH0)"	%I72.4	Bool	FALSE		
"Zero_return_completed (CH0)"	%I72.5	Bool	FALSE		
"Position_Reach (CH0)"	%I72.6	Bool	TRUE		
"Speed_reached (CH0)"	%I72.7	Bool	FALSE		
"DI0_signal (CH0)"	%I71.0	Bool	FALSE		
"DI1_signal (CH0)"	%I71.1	Bool	FALSE		
"DI2_signal (CH0)"	%I71.2	Bool	FALSE		
"DI3_signal (CH0)"	%I71.3	Bool	FALSE		
"Pulse_Output_direction (CH1)"	%I74.0	Bool	FALSE		
"Return_to_zero_state (CH1)"	%I74.1	Bool	FALSE		
"Location_Mode_status (CH1)"	%I74.2	Bool	FALSE		
"Speed_Mode_status (CH1)"	%I74.3	Bool	FALSE		
"Inching_Mode_status (CH1)"	%I74.4	Bool	FALSE		
"Zero_return_completed (CH1)"	%I74.5	Bool	FALSE		
"Position_Reach (CH1)"	%I74.6	Bool	FALSE		
"Speed_reached (CH1)"	%I74.7	Bool	FALSE		
"DI0_signal (CH1)"	%I73.0	Bool	FALSE		
"DI1_signal (CH1)"	%I73.1	Bool	FALSE		
"DI2_signal (CH1)"	%I73.2	Bool	FALSE		
"DI3_signal (CH1)"	%I73.3	Bool	FALSE		
"Error_Status (CH0)"	%W05	Hex	16#0000		
"Error_Status (CH1)"	%W07	Hex	16#0000		
"Current_Location (CH0)"	%D79	DEC	1500		
"Current_Speed (CH0)"	%D83	DEC	0		
"Current_Location (CH1)"	%D87	Hex	16#0000_0000		
"Current_Speed (CH1)"	%D91	Hex	16#0000_0000		

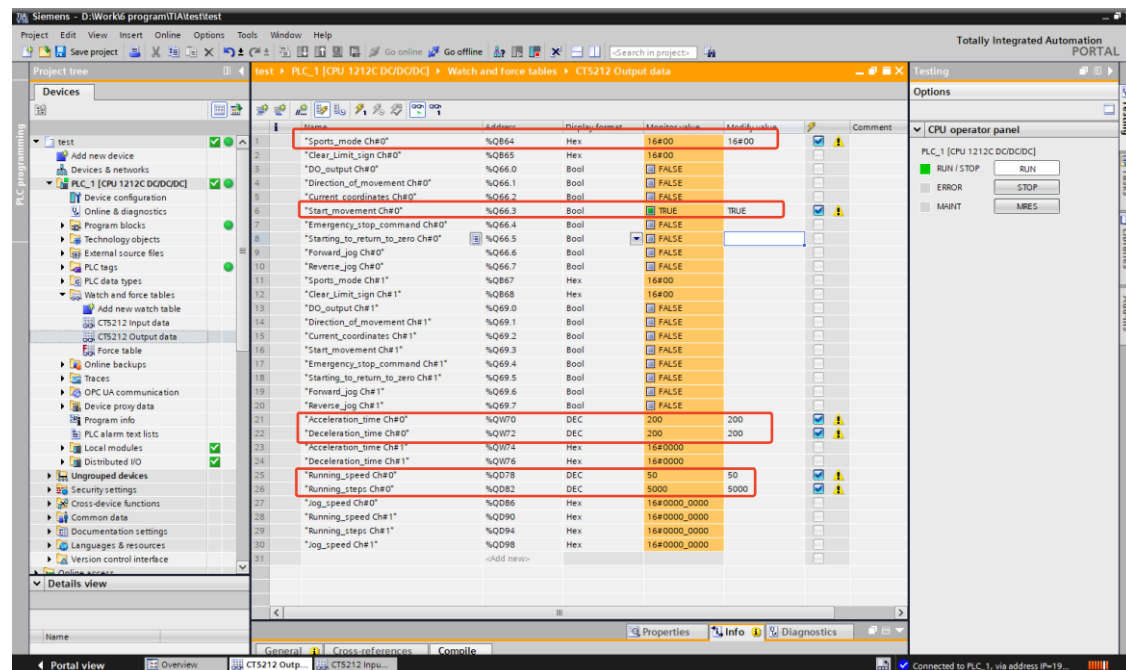
Options: CPU operator panel, PLC_1 [CPU 1212C DC/DC/DC], RUN / STOP, ERROR, MAINT, RUN, STOP, MRES.

Connected to PLC_1, via address IP=19...

Absolute position mode

Channel 0 is configured as an absolute position mode, the current position is 1500, the movement to the 5000, and the running speed is 50Hz.

- Change the value of the sport mode to 0x00;
- Confirm that the value of the emergency stop command is 0;
- Set the acceleration time and deceleration time and value of channel 0 to 200ms;
- Set the running speed to 50Hz;
- Set the value of Running_steps (CH0) to 5000;
- Set the value of the starting motion to TRUE, and the rising edge of the variable is valid;



Double-click the input data of CT-5212 to view the pulse output of channel 0, and the current position is 5000, and the corresponding Position_Reach (CH0) variable will be set to 1 when the position is reached.

The screenshot displays the Siemens SIMATIC Manager interface, specifically the 'Watch and Force tables' for a PLC. The main window shows a table of variables with their addresses, display formats, and current values. Two variables are highlighted with red boxes: 'Position_Reach (CH0)' and 'Current_Location (CH0)'.

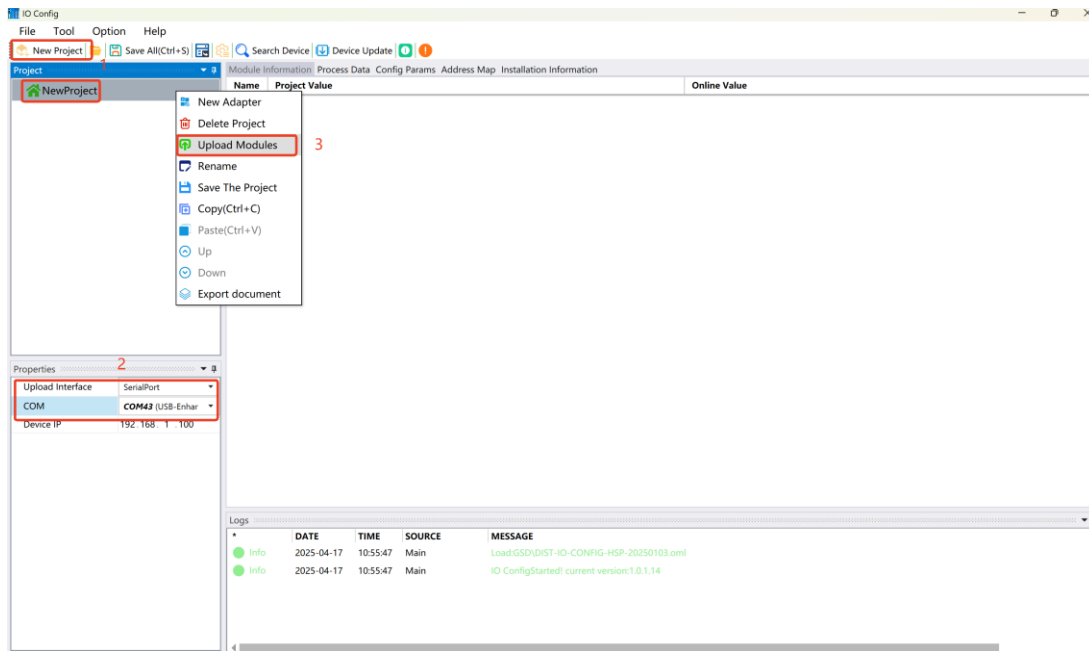
Name	Address	Display format	Monitor value	Modify value	Comment
"Voltage State Check Warn"	%I6.6	Hex	16#00		
"Pulse_Status_Flag (CH0)"	%I6.6	Hex	16#00		
"Pulse_Status_Flag (CH1)"	%I8.7	Hex	16#00		
"Pulse_Output_direction (CH0)"	%I2.0	Bool	FALSE		
"Return_to_zero_state (CH0)"	%I2.1	Bool	FALSE		
"Location_Mode_status (CH0)"	%I2.2	Bool	FALSE		
"Speed_mode_status (CH0)"	%I2.3	Bool	FALSE		
"Inching_mode_status (CH0)"	%I2.4	Bool	FALSE		
"Zero_return_completed (CH0)"	%I2.5	Bool	FALSE		
"Position_Reach (CH0)"	%I2.6	Bool	TRUE		
"Speed_reached (CH0)"	%I2.7	Bool	FALSE		
"DI0_signal (CH0)"	%I1.0	Bool	FALSE		
"DI1_signal (CH0)"	%I1.1	Bool	FALSE		
"DI2_signal (CH0)"	%I1.2	Bool	FALSE		
"DI3_signal (CH0)"	%I1.3	Bool	FALSE		
"Pulse_Output_direction (CH1)"	%I4.0	Bool	FALSE		
"Return_to_zero_state (CH1)"	%I4.1	Bool	FALSE		
"Location_Mode_status (CH1)"	%I4.2	Bool	FALSE		
"Speed_mode_status (CH1)"	%I4.3	Bool	FALSE		
"Inching_mode_status (CH1)"	%I4.4	Bool	FALSE		
"Zero_return_completed (CH1)"	%I4.5	Bool	FALSE		
"Position_Reach (CH1)"	%I4.6	Bool	FALSE		
"Speed_reached (CH1)"	%I4.7	Bool	FALSE		
"DI0_signal (CH1)"	%I3.0	Bool	FALSE		
"DI1_signal (CH1)"	%I3.1	Bool	FALSE		
"DI2_signal (CH1)"	%I3.2	Bool	FALSE		
"DI3_signal (CH1)"	%I3.3	Bool	FALSE		
"Error_Status (CH0)"	%I0.5	Hex	16#0000		
"Error_Status (CH1)"	%I0.7	Hex	16#0000		
"Current_Location (CH0)"	%I0.9	DEC	5000		
"Current_Speed (CH0)"	%I0.8	DEC	9		
"Current_Location (CH1)"	%I0.8	Hex	16#0000_0000		
"Current_Speed (CH1)"	%I0.9	Hex	16#0000_0000		

The right-hand panel shows the 'Options' section for the CPU operator panel, with buttons for RUN, STOP, ERROR, and MAINT.

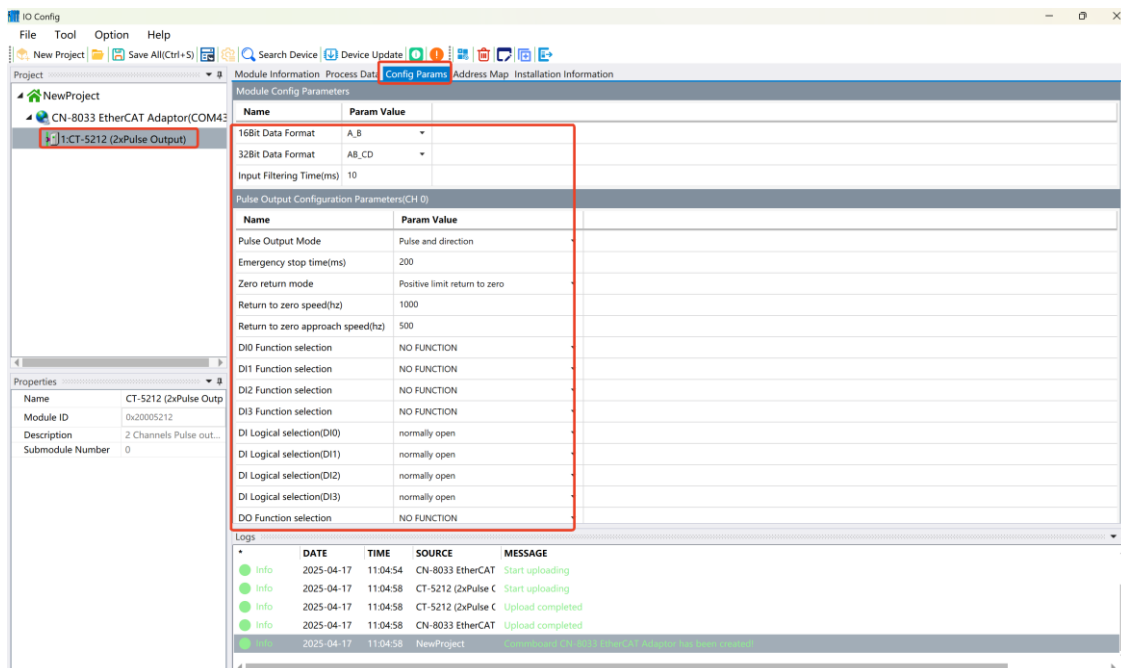
7.3 Use in the TwinCAT3 software

Hardware components: CN8033+CT-5212, TwinCAT3 software, motor driver and stepper motor and other equipment.

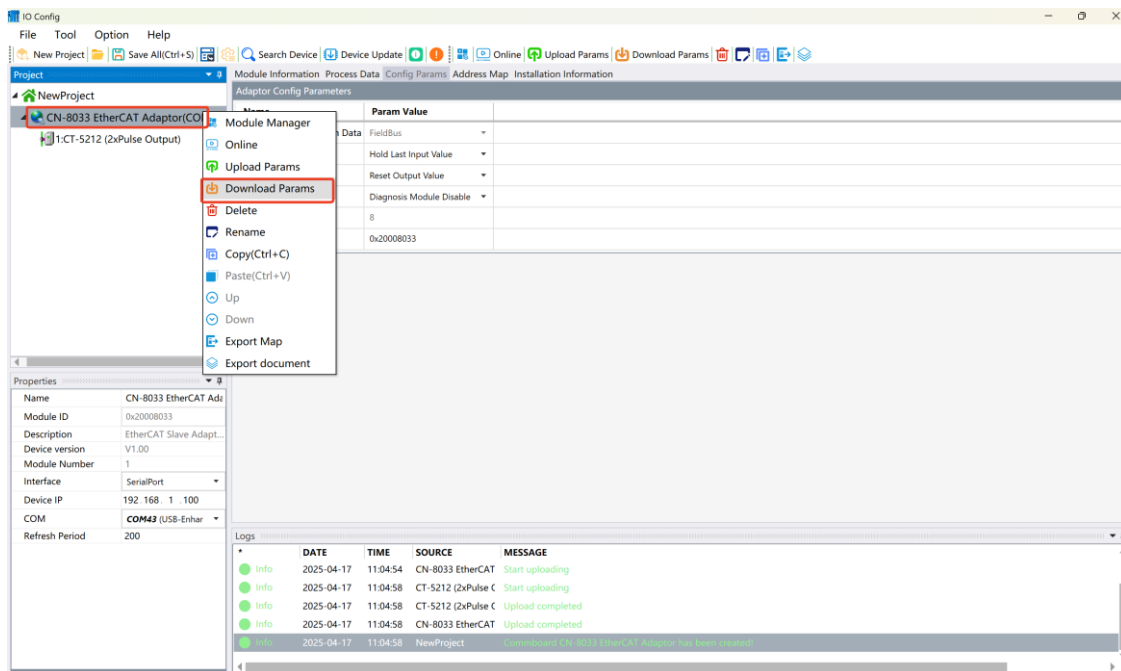
1. Open the IO Config software, click New Project, select the corresponding string slogan, and right-click the project to select the upload module.



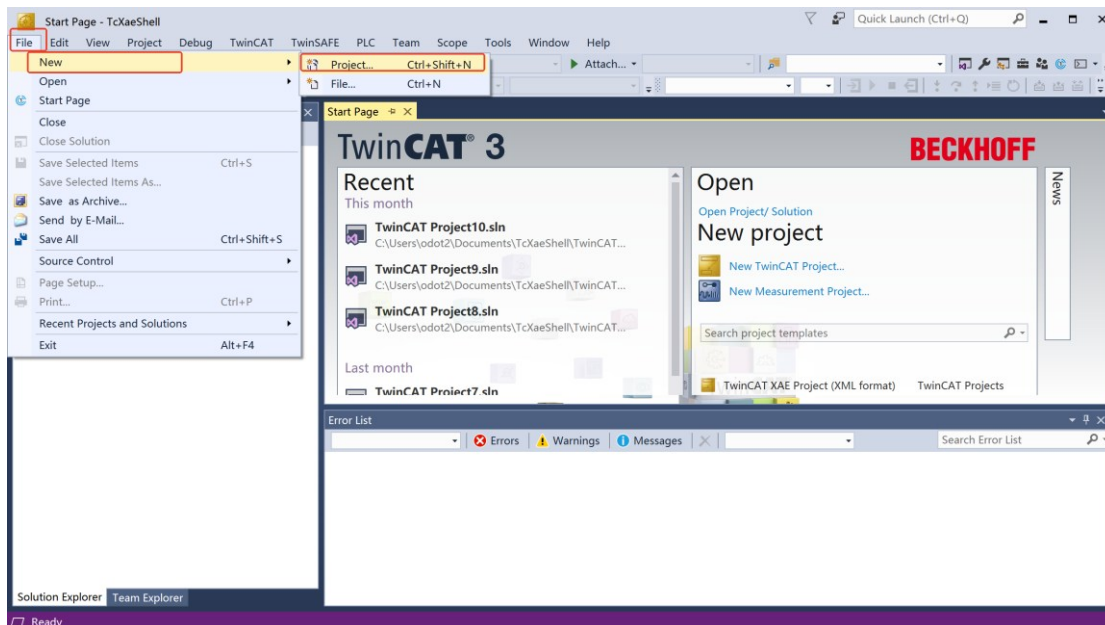
Select the CT-5212 module and click Configuration Parameters to view and modify the configuration parameters and pulse output parameters of the module.



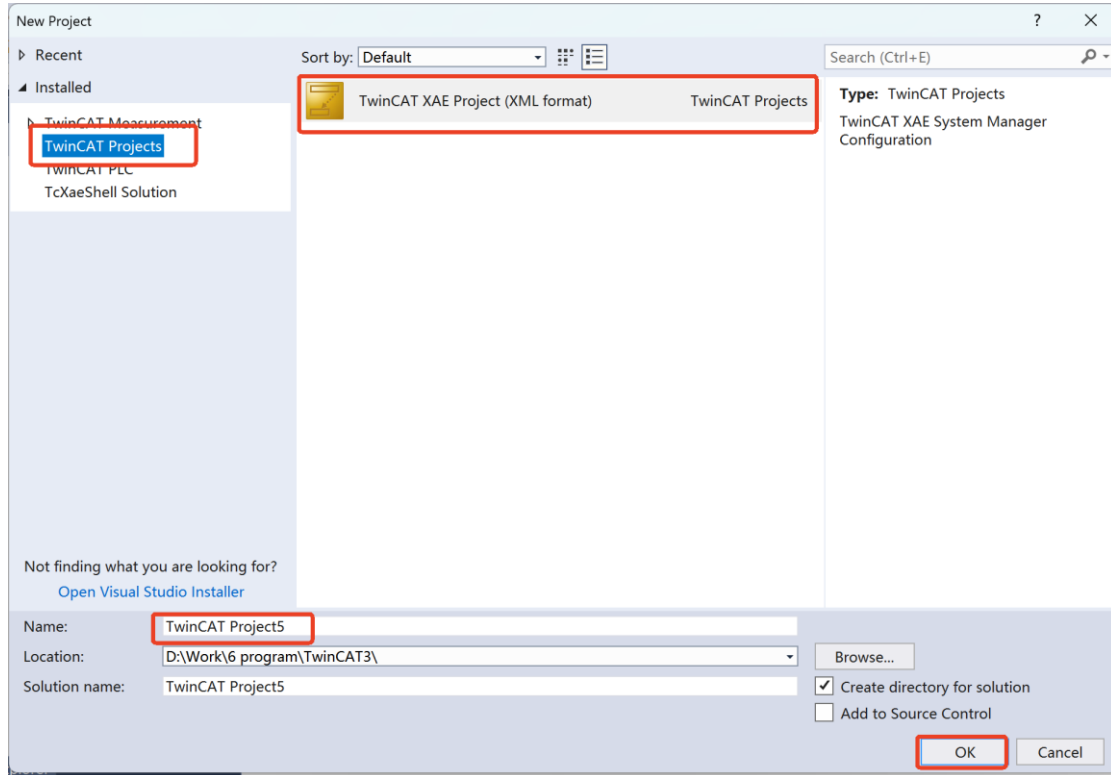
After the configuration parameters are modified, right-click CN-8033 and select Download Params.



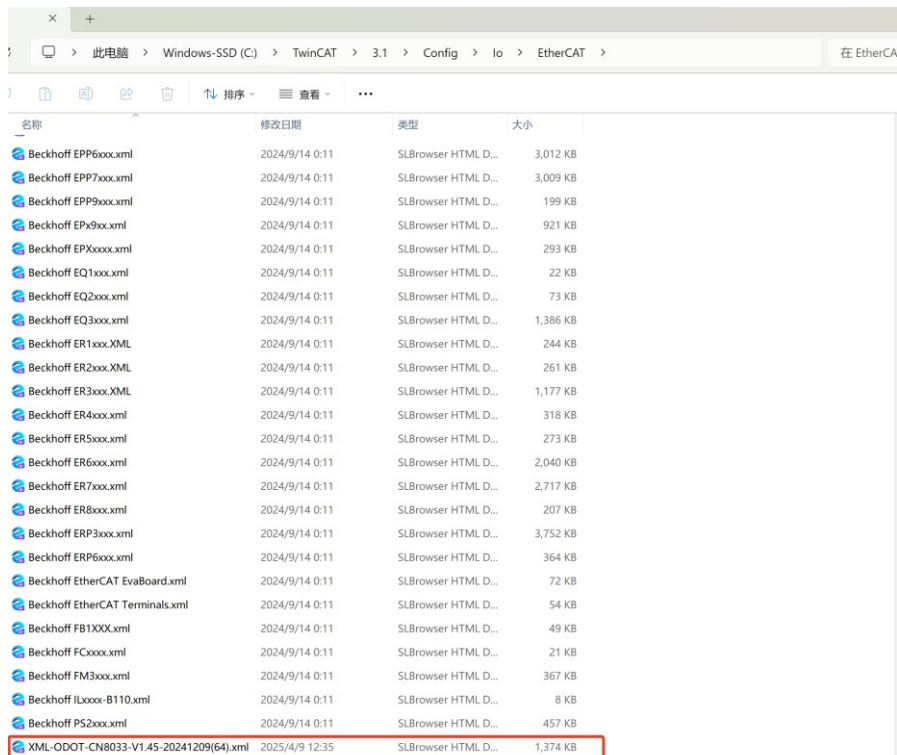
Open TwinCAT XAE and click File-New--Project to create a new project.



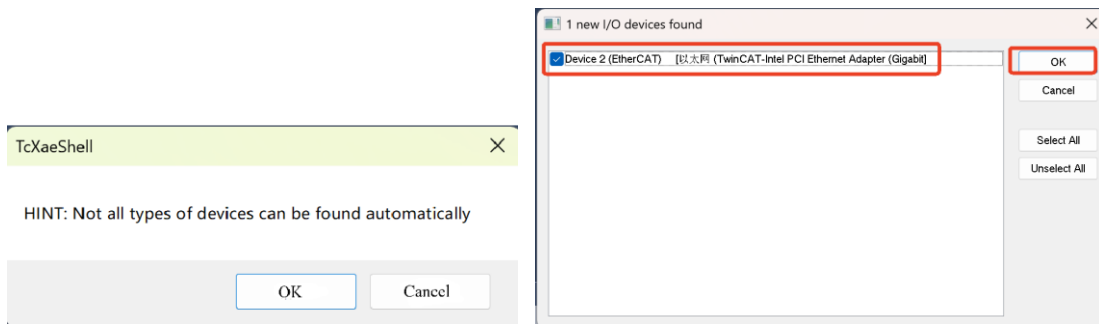
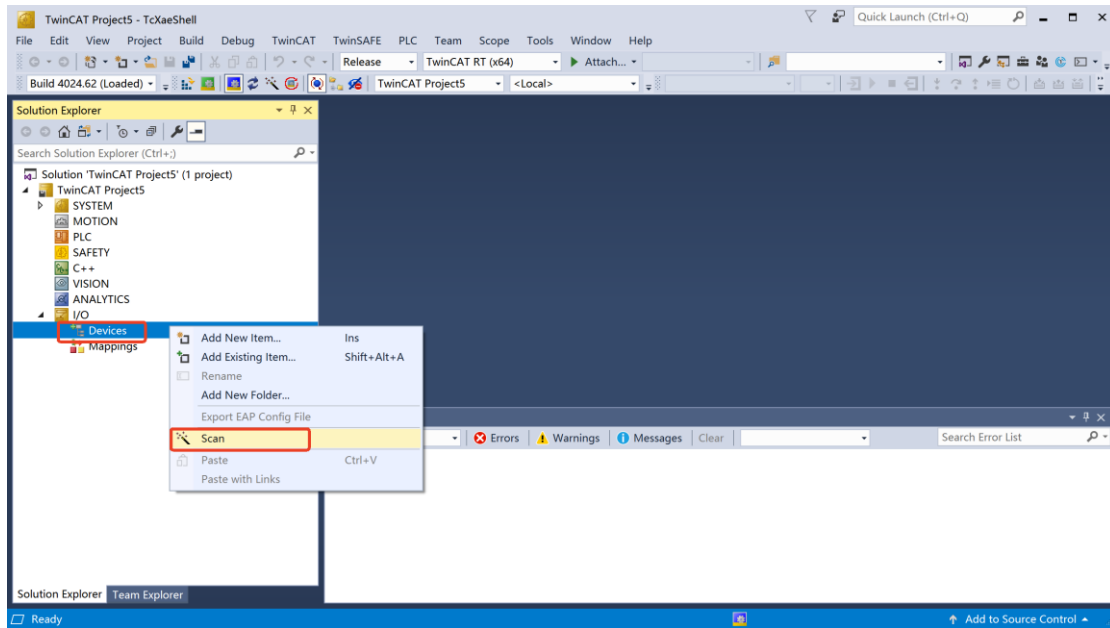
Select TwinCAT Projects in the following interface, select TwinCAT XAE Project, and change the project name and location as needed, click OK.



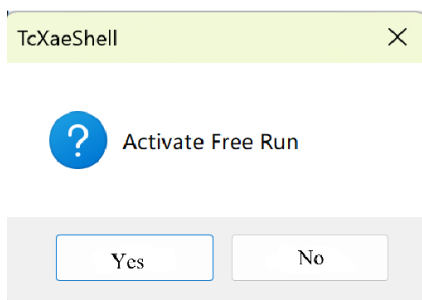
Copy the device description file of CN-8033 to the TwinCAT 3 software installation directory C:\TwinCAT\3.1\Config\Io\EtherCAT file.



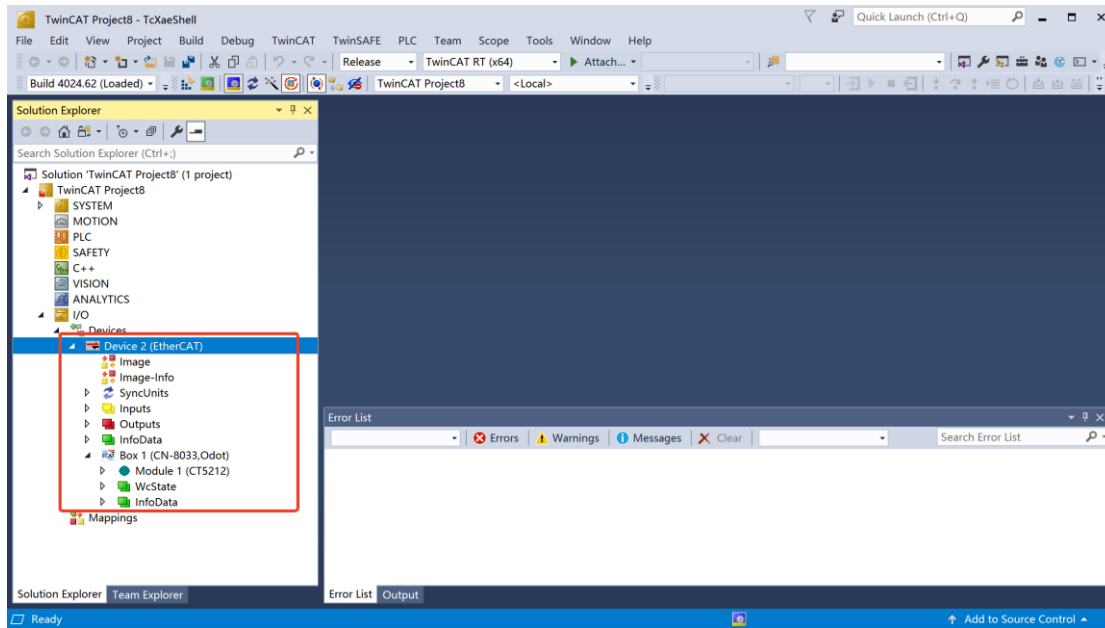
Click I/O -> Device -> Scan, and click OK-OK-Yes-Yes on the pop-up interface.



The Activate Free Run Mode screen pops up, click Yes.



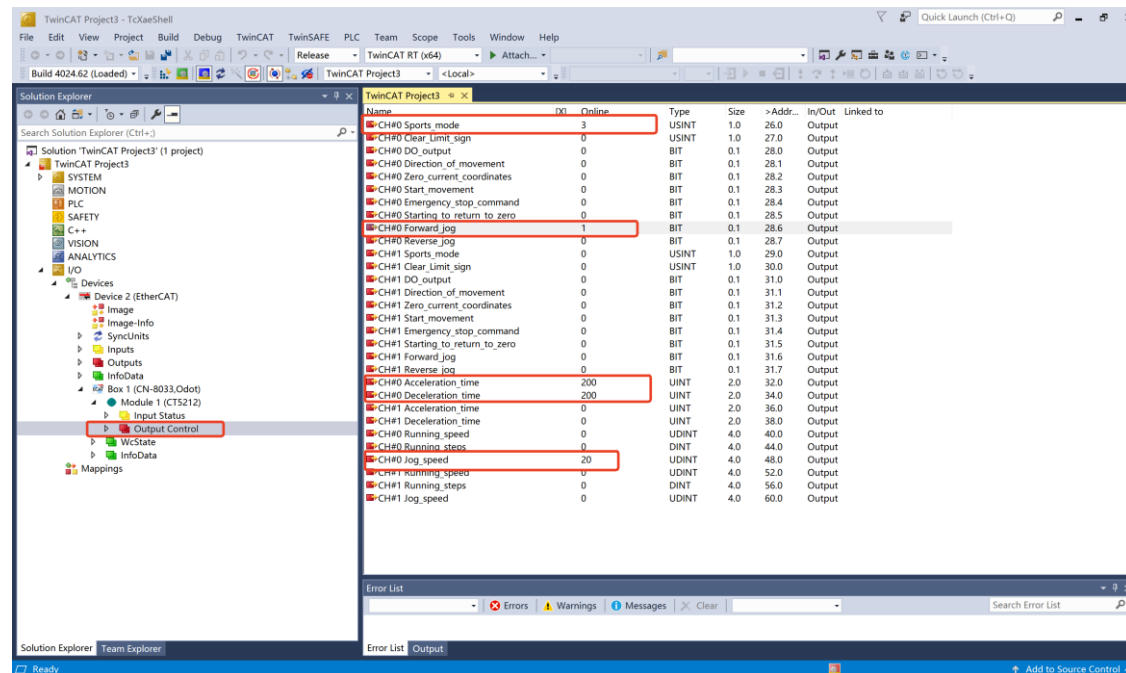
When the CN-8033 communicates with TwinCAT, the screen on the left displays information about the scanned modules.



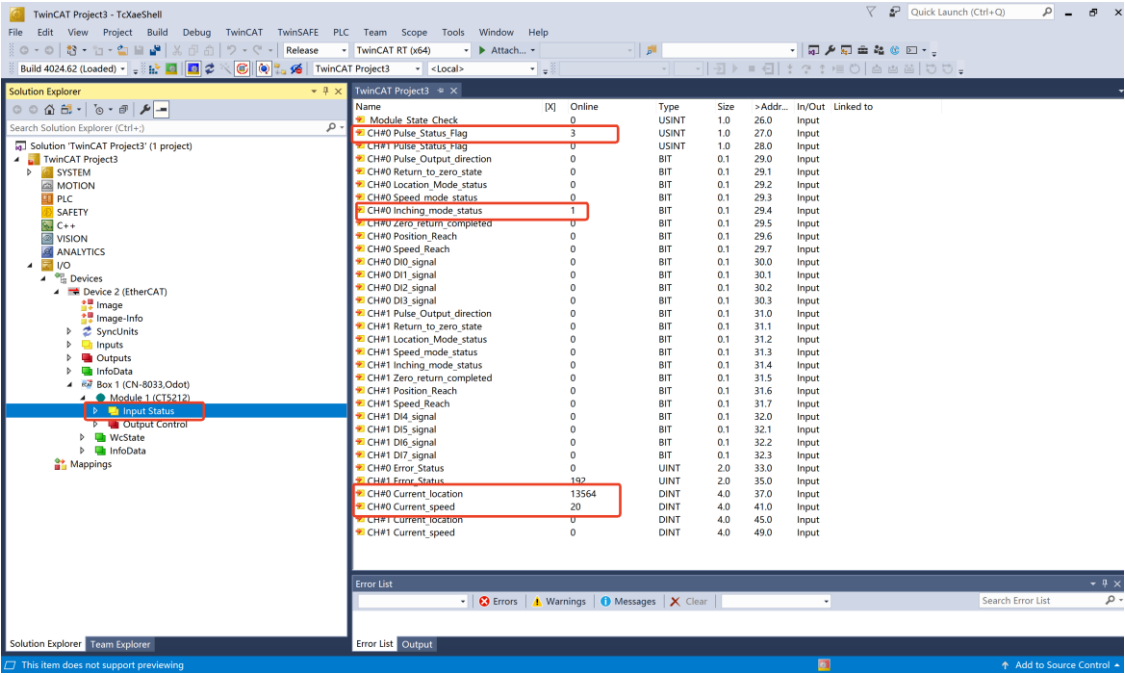
Jog mode

Channel 0 turns on the jog mode, and the forward jog speed is 20Hz

- Modify the value of CH#0 Sports_mode to 3;
- Confirm that the value of CH#0 Emergency_stop_command is 0;
- Set the acceleration time and deceleration time of channel 0 to 200ms;
- Set the CH#0 Jog_speed to 20hz;
- Set the CH#0 Forward_jog to 1;



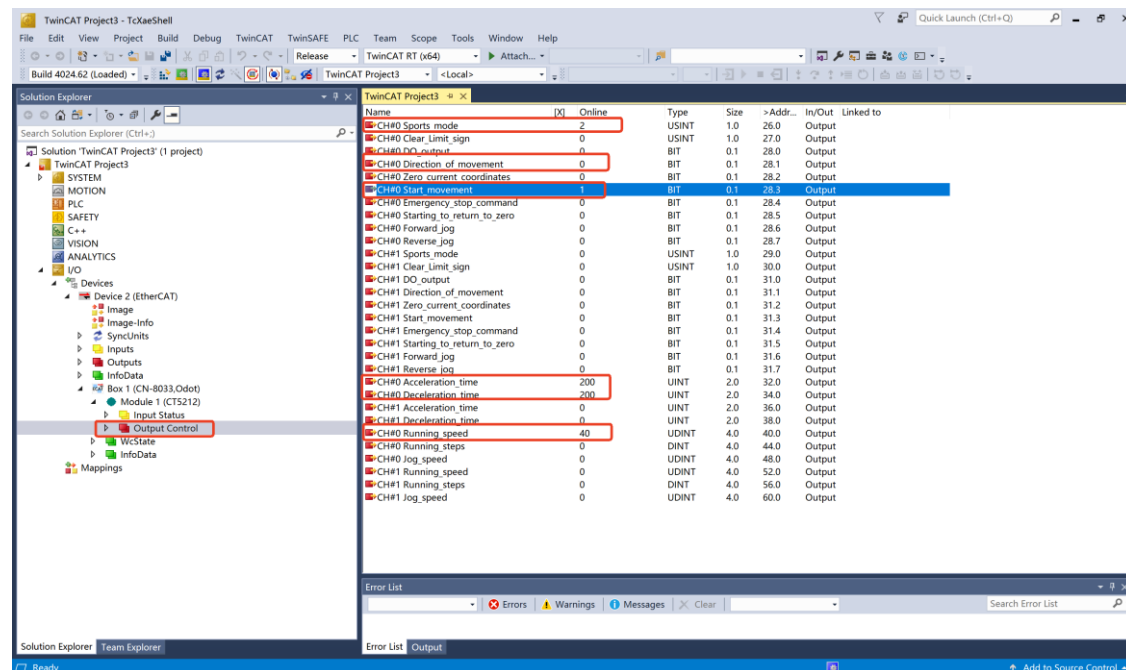
Double-click the input data of the CT-5212 to view the pulse output of channel 0.



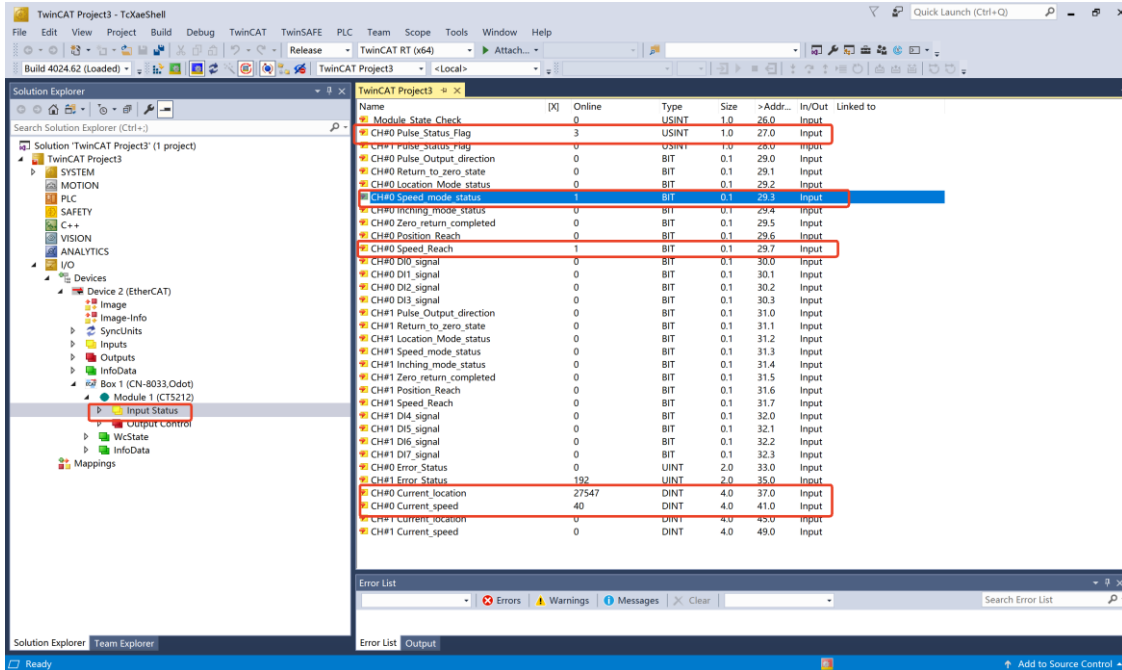
Speed mode

Channel 0 enables the speed mode, and the running speed of the forward rotation is 40Hz, and the running speed is modified to 60Hz during operation

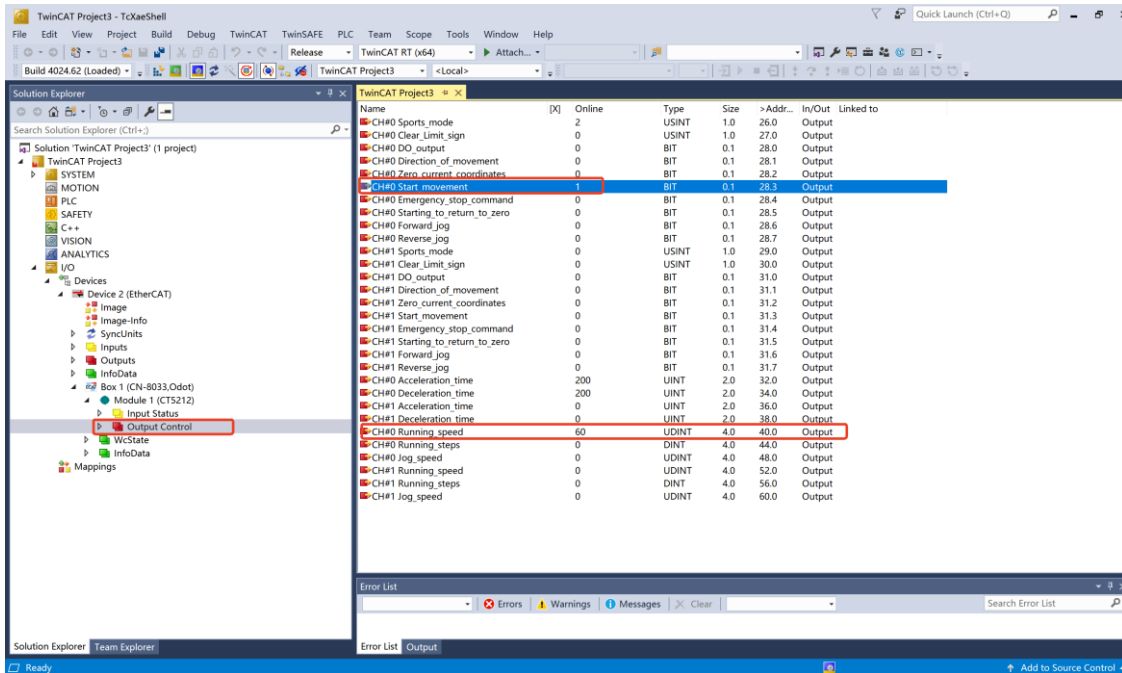
- Modify the value of CH#0 Sports_mode to 2;
- Confirm that the value of the CH#0 Emergency_stop_command is 0;
- Set the acceleration time and deceleration time of channel 0 to 200ms;
- Set the CH#0 Running_speed to 40hz, and the value of the CH#0 Direction_of_movement is 0 (0: forward rotation, 1: reverse rotation);
- Set the value of the CH#0 Start_movement to 1, and the rising edge of the variable is valid;



Double-click the input data of the CT-5212 to view the pulse output of channel 0.



f) During the movement, modify the running speed of channel 0 to 60hz, reset the value of CH#0 Start_movement to 0 and then set 1, and set the CH#0 Running_speed to 60hz;



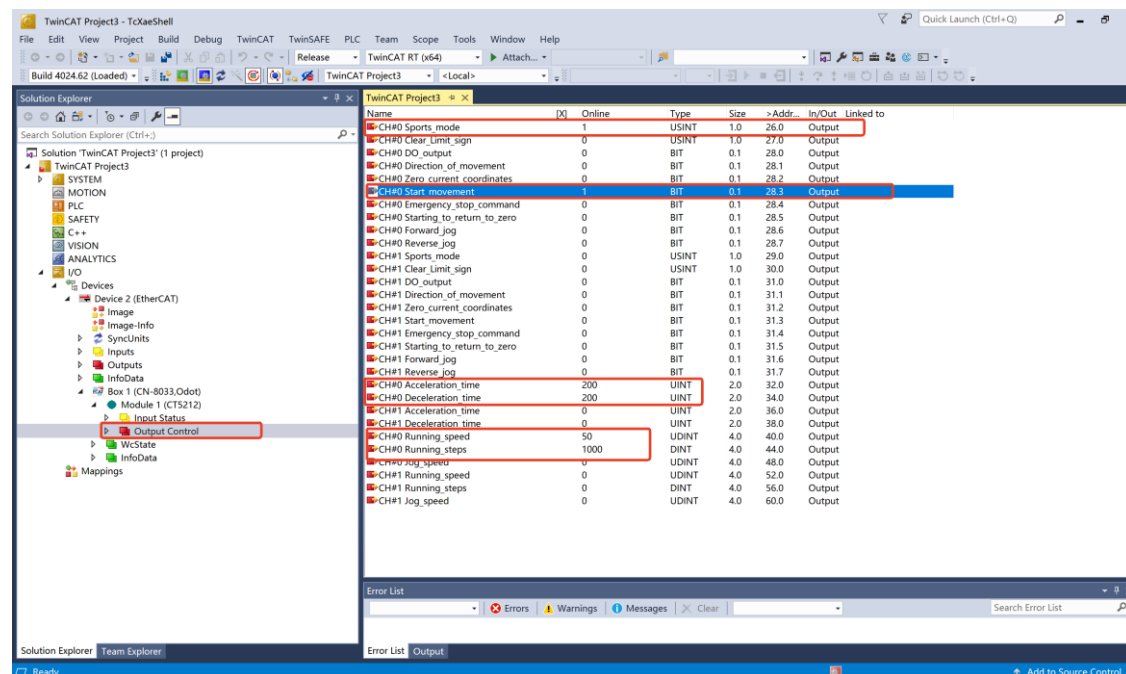
The screenshot displays the TwinCAT Project3 - TcXaeshell interface. The Solution Explorer on the left shows the project structure, with 'Module 1 (C15212)' selected. The Variable Declaration table on the right lists various variables, including 'CH0 Current_location' and 'CH1 Current_location', which are highlighted with red boxes. The Error List at the bottom shows no errors.

Name	Online	Type	Size	Addr...	In/Out	Linked to
Module_State_Check	0	USINT	1.0	26.0	Input	
CH0 Pulse_Status_Flag	3	USINT	1.0	27.0	Input	
CH1 Pulse_Status_Flag	0	USINT	1.0	28.0	Input	
CH0 Pulse_Output_direction	0	BIT	0.1	29.0	Input	
CH0 Return_to_zero_state	0	BIT	0.1	29.1	Input	
CH0 Location_Mode_status	0	BIT	0.1	29.2	Input	
CH0 Speed_mode_status	1	BIT	0.1	29.3	Input	
CH0 Inching_mode_status	0	BIT	0.1	29.4	Input	
CH0 Zero_return_completed	0	BIT	0.1	29.5	Input	
CH0 Position_Reach	0	BIT	0.1	29.6	Input	
CH0 Speed_Reach	1	BIT	0.1	29.7	Input	
CH0 DI0_signal	0	BIT	0.1	30.0	Input	
CH0 DI1_signal	0	BIT	0.1	30.1	Input	
CH0 DI2_signal	0	BIT	0.1	30.2	Input	
CH0 DI3_signal	0	BIT	0.1	30.3	Input	
CH1 Pulse_Output_direction	0	BIT	0.1	31.0	Input	
CH1 Return_to_zero_state	0	BIT	0.1	31.1	Input	
CH1 Location_Mode_status	0	BIT	0.1	31.2	Input	
CH1 Speed_mode_status	0	BIT	0.1	31.3	Input	
CH1 Inching_mode_status	0	BIT	0.1	31.4	Input	
CH1 Zero_return_completed	0	BIT	0.1	31.5	Input	
CH1 Position_Reach	0	BIT	0.1	31.6	Input	
CH1 Speed_Reach	0	BIT	0.1	31.7	Input	
CH1 DI4_signal	0	BIT	0.1	32.0	Input	
CH1 DI5_signal	0	BIT	0.1	32.1	Input	
CH1 DI6_signal	0	BIT	0.1	32.2	Input	
CH1 DI7_signal	0	BIT	0.1	32.3	Input	
CH0 Error_Status	0	UINT	2.0	33.0	Input	
CH1 Error_Status	192	UINT	2.0	35.0	Input	
CH0 Current_location	86094	DINT	4.0	37.0	Input	
CH0 Current_speed	60	DINT	4.0	41.0	Input	
CH1 Current_location	0	DINT	4.0	45.0	Input	
CH1 Current_speed	0	DINT	4.0	49.0	Input	

Relative position mode

The current coordinate position of channel 0 is 500, and it runs 1000 pulses in the forward direction at a speed of 50Hz

- Change the value of the CH#0 Sports_mode to 0x01;
- Confirm that the value of the CH#0 Emergency_stop_command is 0;
- Set the acceleration time and deceleration time of channel 0 to 200ms;
- Set the CH#0 Running_speed to 50hz;
- Set the value of CH#0 Running_steps to 1000;
- Set the value of the CH#0 Start_movement to 1, the rising edge of the variable is valid;



Double-click the input data of CT-5212 to check the pulse output of channel 0, and the current position is 1500, and when the position is reached, the corresponding CH#0 Position_Reach variable will be set to 1.

Variable Declaration Table:

Name	Online	Type	Size	Addr...	In/Out	Linked to
Module_State_Check	0	USINT	1.0	26.0	Input	
CH0 Pulse_Status_Flag	3	USINT	1.0	27.0	Input	
CH1 Pulse_Status_Flag	0	USINT	1.0	28.0	Input	
CH0 Pulse_Output_direction	0	BIT	0.1	29.0	Input	
CH0 Return_to_zero_state	0	BIT	0.1	29.1	Input	
CH0 Location_Mode_status	1	BIT	0.1	29.2	Input	
CH0 Speed_mode_status	0	BIT	0.1	29.3	Input	
CH0 Inching_mode_status	0	BIT	0.1	29.4	Input	
CH0 Zero_return_completed	0	BIT	0.1	29.5	Input	
CH0 Position_Reach	0	BIT	0.1	29.6	Input	
CH0 DI0_signal	0	BIT	0.1	29.7	Input	
CH0 DI1_signal	0	BIT	0.1	30.0	Input	
CH0 DI2_signal	0	BIT	0.1	30.1	Input	
CH0 DI3_signal	0	BIT	0.1	30.2	Input	
CH0 DI4_signal	0	BIT	0.1	30.3	Input	
CH1 Pulse_Output_direction	0	BIT	0.1	31.0	Input	
CH1 Return_to_zero_state	0	BIT	0.1	31.1	Input	
CH1 Location_Mode_status	0	BIT	0.1	31.2	Input	
CH1 Speed_mode_status	0	BIT	0.1	31.3	Input	
CH1 Inching_mode_status	0	BIT	0.1	31.4	Input	
CH1 Zero_return_completed	0	BIT	0.1	31.5	Input	
CH1 Position_Reach	0	BIT	0.1	31.6	Input	
CH1 Speed_Reach	0	BIT	0.1	31.7	Input	
CH1 DI4_signal	0	BIT	0.1	32.0	Input	
CH1 DI5_signal	0	BIT	0.1	32.1	Input	
CH1 DI6_signal	0	BIT	0.1	32.2	Input	
CH1 DI7_signal	0	BIT	0.1	32.3	Input	
CH0 Error_Status	0	UINT	2.0	33.0	Input	
CH1 Error_Status	192	UINT	2.0	35.0	Input	
CH0 Current_location	871	DINT	4.0	37.0	Input	
CH0 Current_speed	50	DINT	4.0	41.0	Input	
CH1 Current_location	0	DINT	4.0	45.0	Input	
CH1 Current_speed	0	DINT	4.0	49.0	Input	

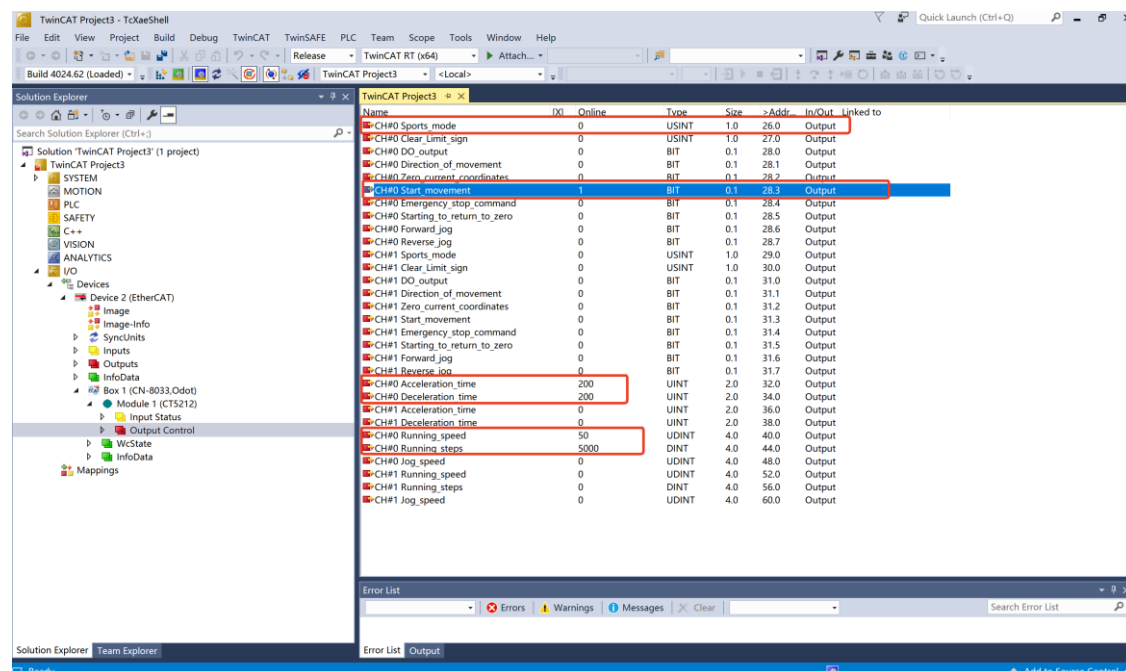
Variable Declaration Table:

Name	Online	Type	Size	Addr...	In/Out	Linked to
Module_State_Check	0	USINT	1.0	26.0	Input	
CH0 Pulse_Status_Flag	0	USINT	1.0	27.0	Input	
CH1 Pulse_Status_Flag	0	USINT	1.0	28.0	Input	
CH0 Pulse_Output_direction	0	BIT	0.1	29.0	Input	
CH0 Return_to_zero_state	0	BIT	0.1	29.1	Input	
CH0 Location_Mode_status	0	BIT	0.1	29.2	Input	
CH0 Speed_mode_status	0	BIT	0.1	29.3	Input	
CH0 Inching_mode_status	0	BIT	0.1	29.4	Input	
CH0 Zero_return_completed	0	BIT	0.1	29.5	Input	
CH0 Position_Reach	1	BIT	0.1	29.6	Input	
CH0 Speed_Reach	0	BIT	0.1	29.7	Input	
CH0 DI0_signal	0	BIT	0.1	30.0	Input	
CH0 DI1_signal	0	BIT	0.1	30.1	Input	
CH0 DI2_signal	0	BIT	0.1	30.2	Input	
CH0 DI3_signal	0	BIT	0.1	30.3	Input	
CH1 Pulse_Output_direction	0	BIT	0.1	31.0	Input	
CH1 Return_to_zero_state	0	BIT	0.1	31.1	Input	
CH1 Location_Mode_status	0	BIT	0.1	31.2	Input	
CH1 Speed_mode_status	0	BIT	0.1	31.3	Input	
CH1 Inching_mode_status	0	BIT	0.1	31.4	Input	
CH1 Zero_return_completed	0	BIT	0.1	31.5	Input	
CH1 Position_Reach	0	BIT	0.1	31.6	Input	
CH1 Speed_Reach	0	BIT	0.1	31.7	Input	
CH1 DI4_signal	0	BIT	0.1	32.0	Input	
CH1 DI5_signal	0	BIT	0.1	32.1	Input	
CH1 DI6_signal	0	BIT	0.1	32.2	Input	
CH1 DI7_signal	0	BIT	0.1	32.3	Input	
CH0 Error_Status	0	UINT	2.0	33.0	Input	
CH1 Error_Status	192	UINT	2.0	35.0	Input	
CH0 Current_location	1500	DINT	4.0	37.0	Input	
CH0 Current_speed	0	DINT	4.0	41.0	Input	
CH1 Current_location	0	DINT	4.0	45.0	Input	
CH1 Current_speed	0	DINT	4.0	49.0	Input	

Absolute position mode

The current position of channel 0 is 1500, and the movement to the position of 5000 is running at 50Hz

- Modify the value of CH#0 Sports_mode to 0;
- Confirm that the CH#0 Emergency_stop_command is 0;
- Set the acceleration time and deceleration time of channel 0 to 200ms;
- Set the CH#0 Running_speed to 50hz;
- Set the value of CH#0 Running_steps to 5000;
- Set the value of the CH#0 Start_movement to 1, the rising edge of the variable is valid;



Double-click the input data of CT-5212 to view the pulse output of channel 0, it can observe that the current position is 5000, and when the position is reached, the corresponding CH#0 Position_Reach variable will be set to 1.

Variable Declaration

Name	Address	Type	Size	I/O	Linked to
Module_State_Check	0	USINT	1.0	Input	
CH#0 Pulse_Status_Flag	0	USINT	1.0	Input	
CH#1 Pulse_Status_Flag	0	USINT	1.0	Input	
CH#0 Pulse_Output_direction	0	BIT	0.1	Input	
CH#0 Return_to_zero_state	0	BIT	0.1	Input	
CH#0 Location_Mode_status	0	BIT	0.1	Input	
CH#0 Speed_mode_status	0	BIT	0.1	Input	
CH#0 Inching_mode_status	0	BIT	0.1	Input	
CH#0 Zero_return_completed	0	BIT	0.1	Input	
CH#0 Position_Reach	1	BIT	0.1	Input	
CH#0 Speed_Reach	0	BIT	0.1	Input	
CH#0 DI0_signal	0	BIT	0.1	Input	
CH#0 DI1_signal	0	BIT	0.1	Input	
CH#0 DI2_signal	0	BIT	0.1	Input	
CH#0 DI3_signal	0	BIT	0.1	Input	
CH#1 Pulse_Output_direction	0	BIT	0.1	Input	
CH#1 Return_to_zero_state	0	BIT	0.1	Input	
CH#1 Location_Mode_status	0	BIT	0.1	Input	
CH#1 Speed_mode_status	0	BIT	0.1	Input	
CH#1 Inching_mode_status	0	BIT	0.1	Input	
CH#1 Zero_return_completed	0	BIT	0.1	Input	
CH#1 Position_Reach	0	BIT	0.1	Input	
CH#1 Speed_Reach	0	BIT	0.1	Input	
CH#1 DI4_signal	0	BIT	0.1	Input	
CH#1 DI5_signal	0	BIT	0.1	Input	
CH#1 DI6_signal	0	BIT	0.1	Input	
CH#1 DI7_signal	0	BIT	0.1	Input	
CH#0 Error_Status	0	UINT	2.0	Input	
CH#0 Current_location	5000	DINT	4.0	Input	
CH#0 Current_speed	0	UINT	4.0	Input	
CH#1 Current_location	0	DINT	4.0	Input	
CH#1 Current_speed	0	DINT	4.0	Input	

Error List

Errors	Warnings	Messages
0	0	0

A Dimension drawing

