

ECR60 and ECT60 TwinCAT User Manual

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1. Installation of TwinCAT3

1.1 Installation conditions

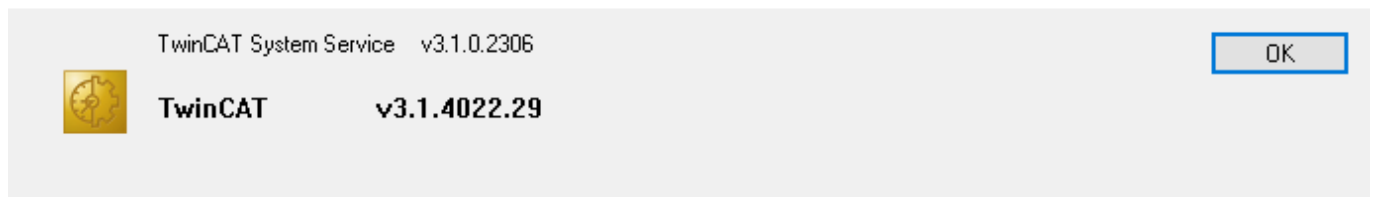
Operating system : Above Windows 7, TwinCAT3 is compatible with Windows 10.

CPU : Intel CPU

Network card : Intel network card, other manufacturers network card can be demonstrated, synchronization control accuracy is very poor.

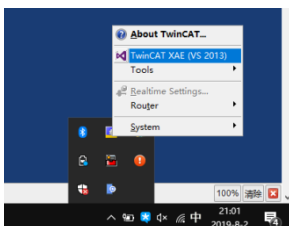
Software version : [TwinCAT V3.1.4022.29](#)

About TwinCAT System



1.2 Software installation

After normal installation, there is a TwinCAT3 background in the lower right corner.



2. Setup of TwinCAT3

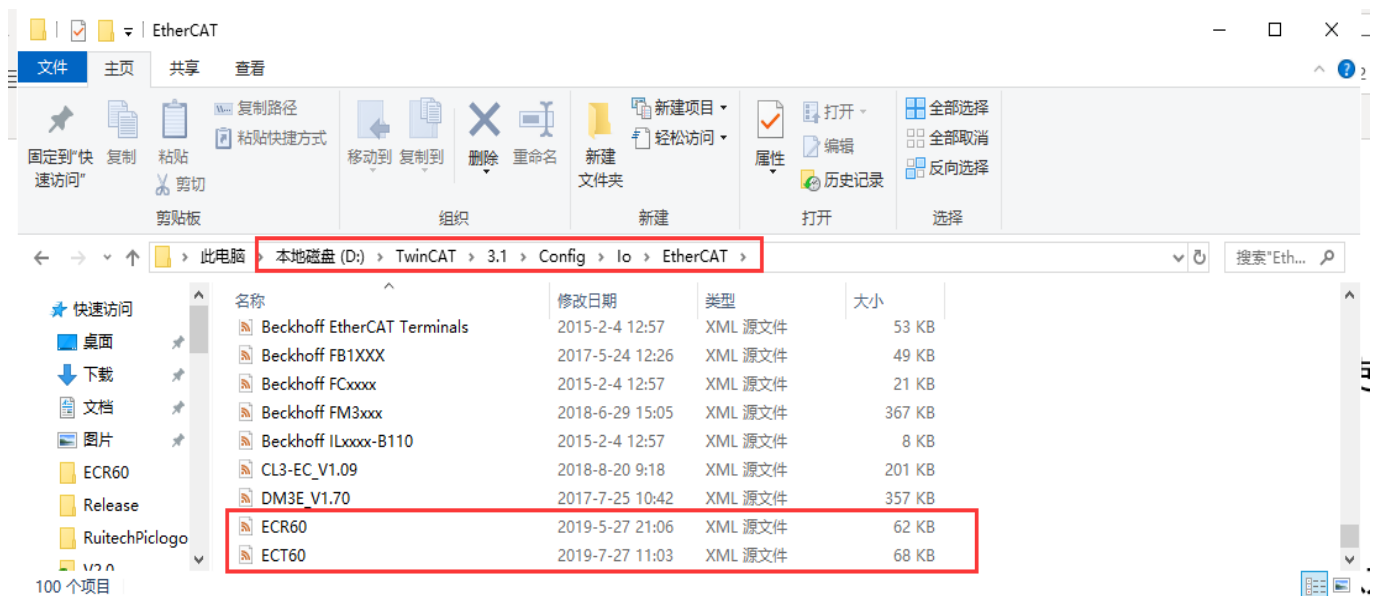
2.1 Add device description file

The description file for ECR60 is ECR60.xml.

The description file for ECT60 is ECT60.xml.

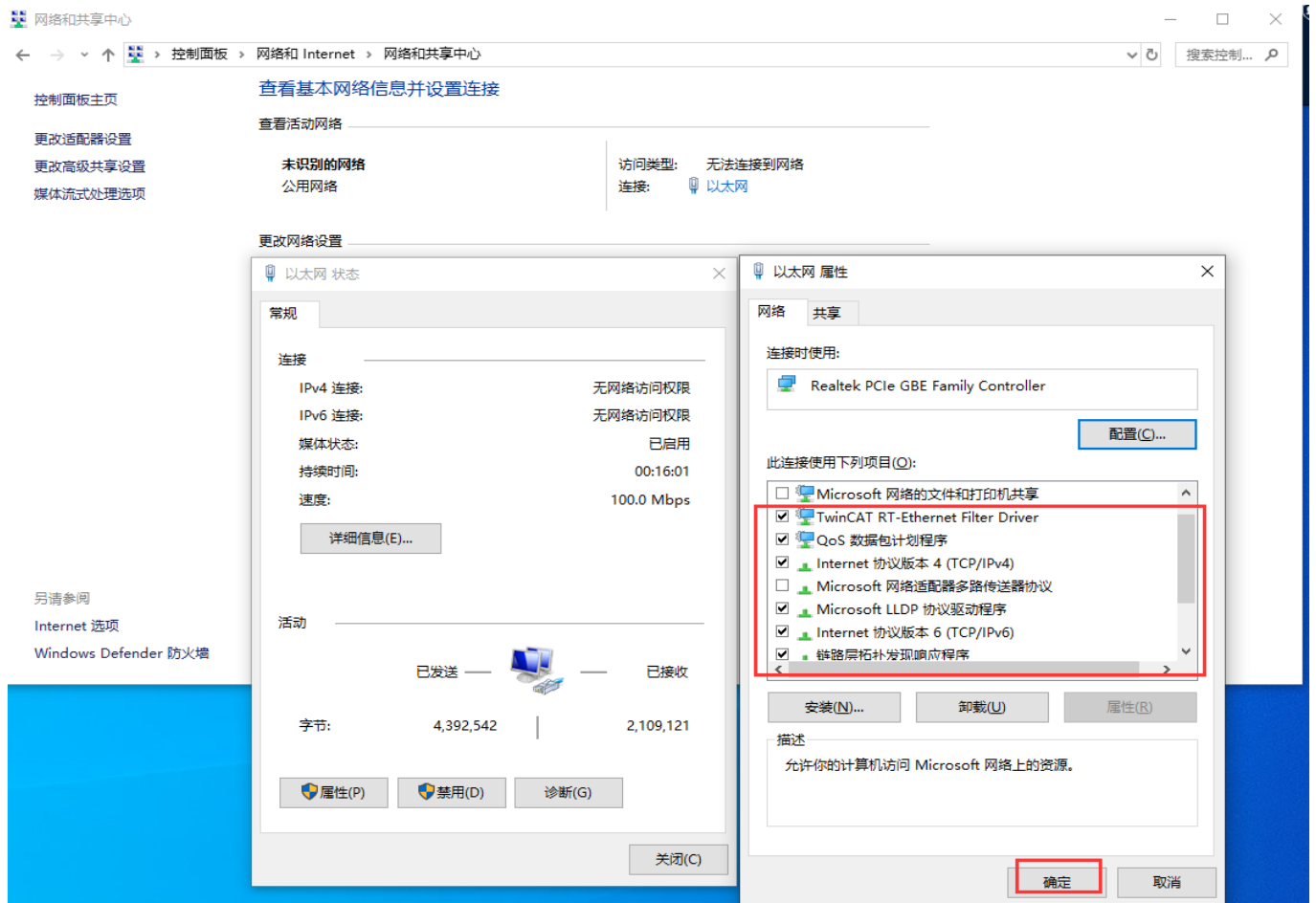
The user needs to copy the ECR60. XML file and ECT60. XML file to the following path:

<D:\TwinCAT\3.1\Config\Io\EtherCAT>.

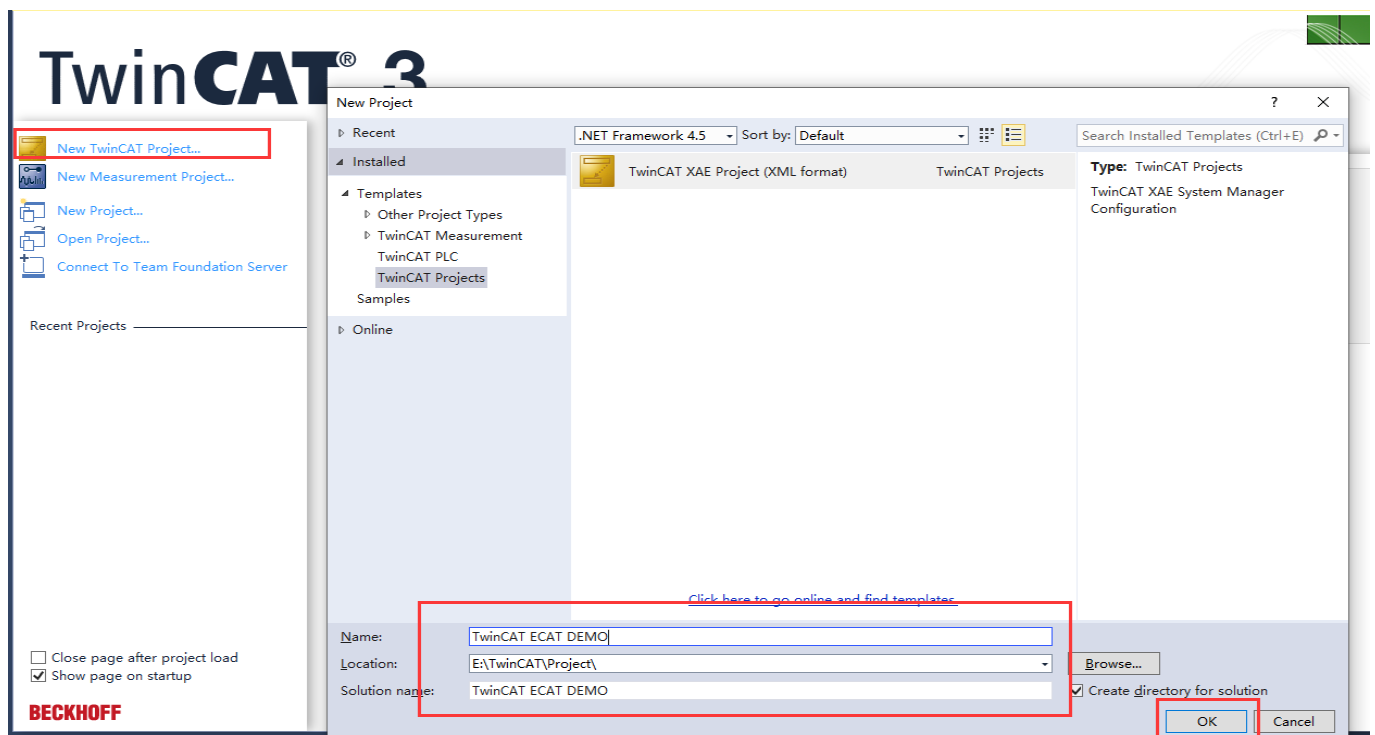


2.2 Setup

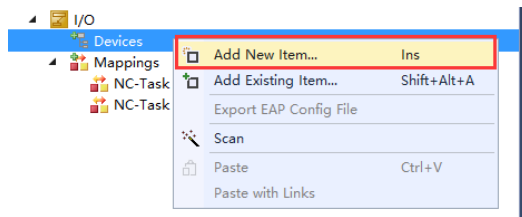
Step1: The user needs to open the Ethernet by using the computer, allow TwinCAT to access the Ethernet, and know the name of the Ethernet connection used, and select the corresponding Ethernet connection for subsequent operations.



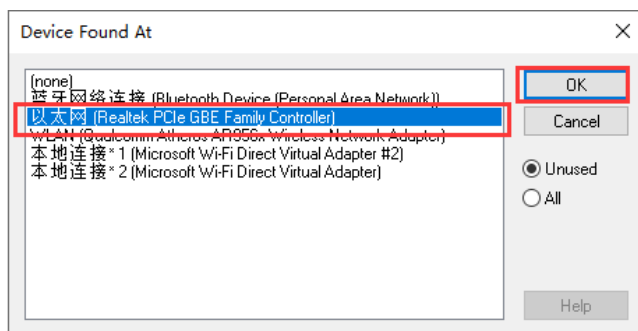
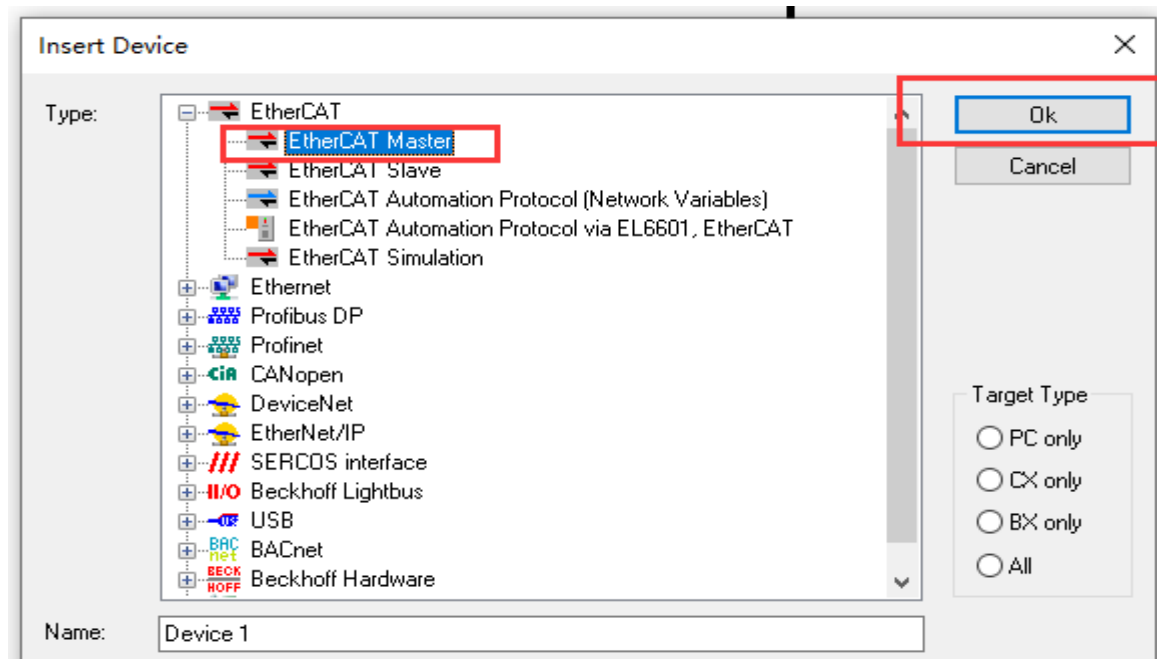
Step2: Build a new TwinCAT project



Step3: Add a new item

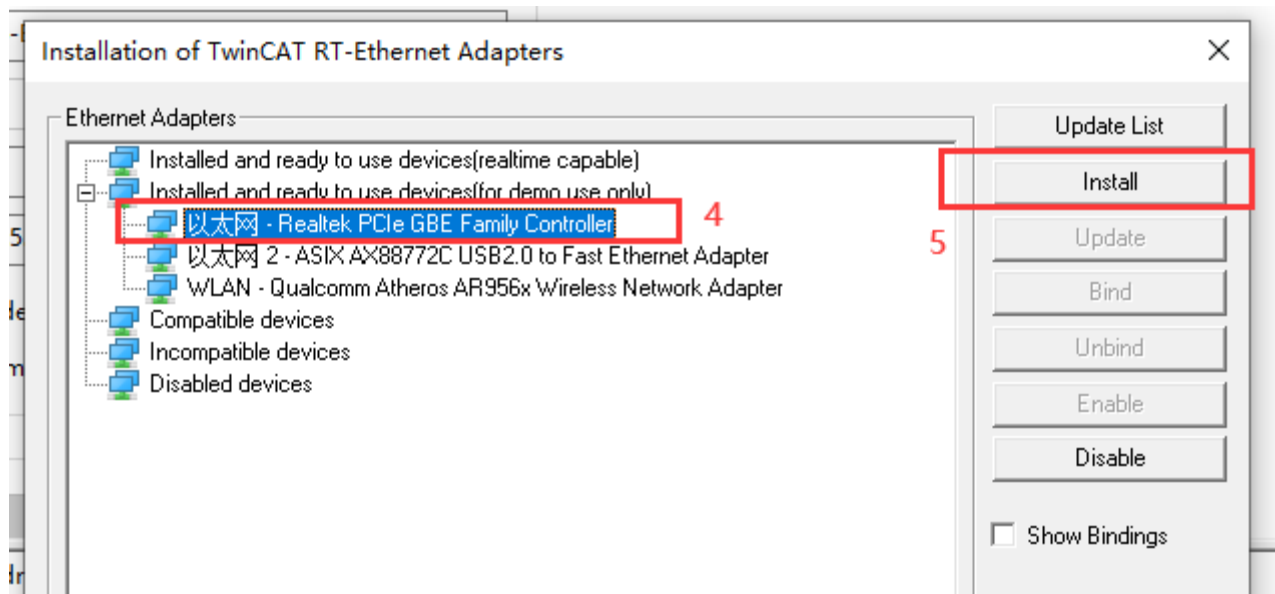
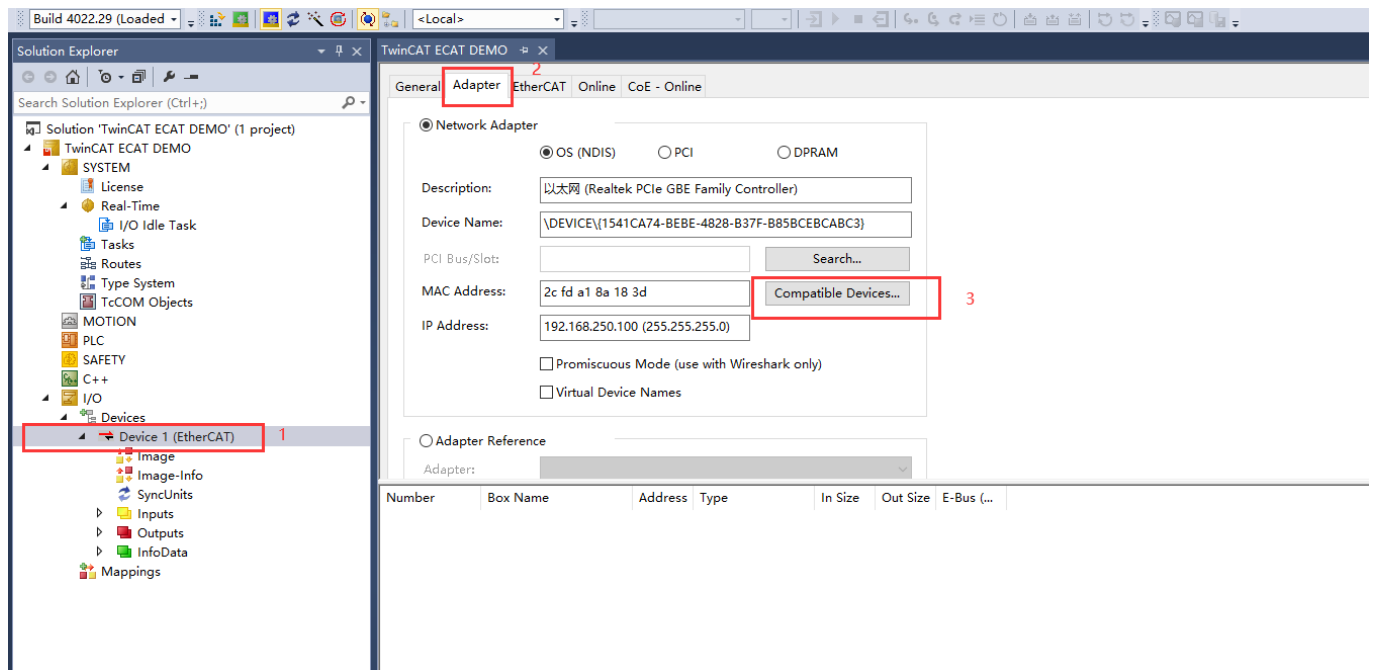


Step4: Add a master network card



Step5: Install the driver

Please follow the steps shown below.



General Adapter EtherCAT Online CoE - Online

☒ Network Adapter

☒ OS (NDIS) ☐ PCI ☐ DPRAM

Description: 以太网 (Realtek PCIe GBE Family Controller)

Device Name: \\DEVICE\\{1541CA74-BEBE-4828-B37F-B85BCEBCABC3}

PCI Bus/Slot: Search... 6

MAC Address: 2c fd a1 8a 18 3d Compatible Devices...

IP Address: 192.168.250.100 (255.255.255.0)

☐ Promiscuous Mode (use with Wireshark only)

☐ Virtual Device Names

☐ Adapter Reference

Adapter:

Number	Box Name	Address	Type	In Size	Out Size	E-Bus (...)
--------	----------	---------	------	---------	----------	-------------

Device Found At

(none)

WLAN (Qualcomm Atheros AR956x Wireless Network Adapter)

以太网 (Realtek PCIe GBE Family Controller) 7

蓝牙网络连接 (Bluetooth Device (Personal Area Network))

本地连接* 1 (Microsoft Wi-Fi Direct Virtual Adapter #2)

本地连接* 2 (Microsoft Wi-Fi Direct Virtual Adapter)

OK 8

Cancel

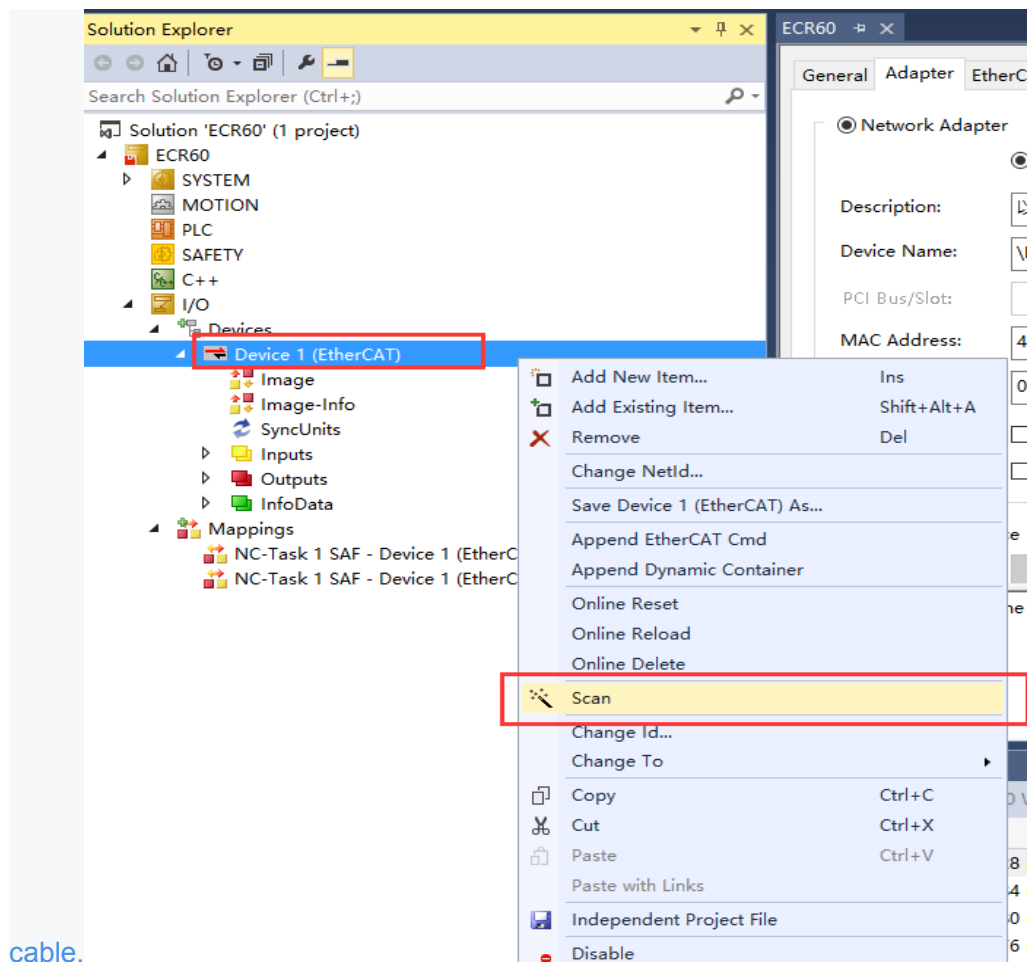
☐ Unused

☒ All

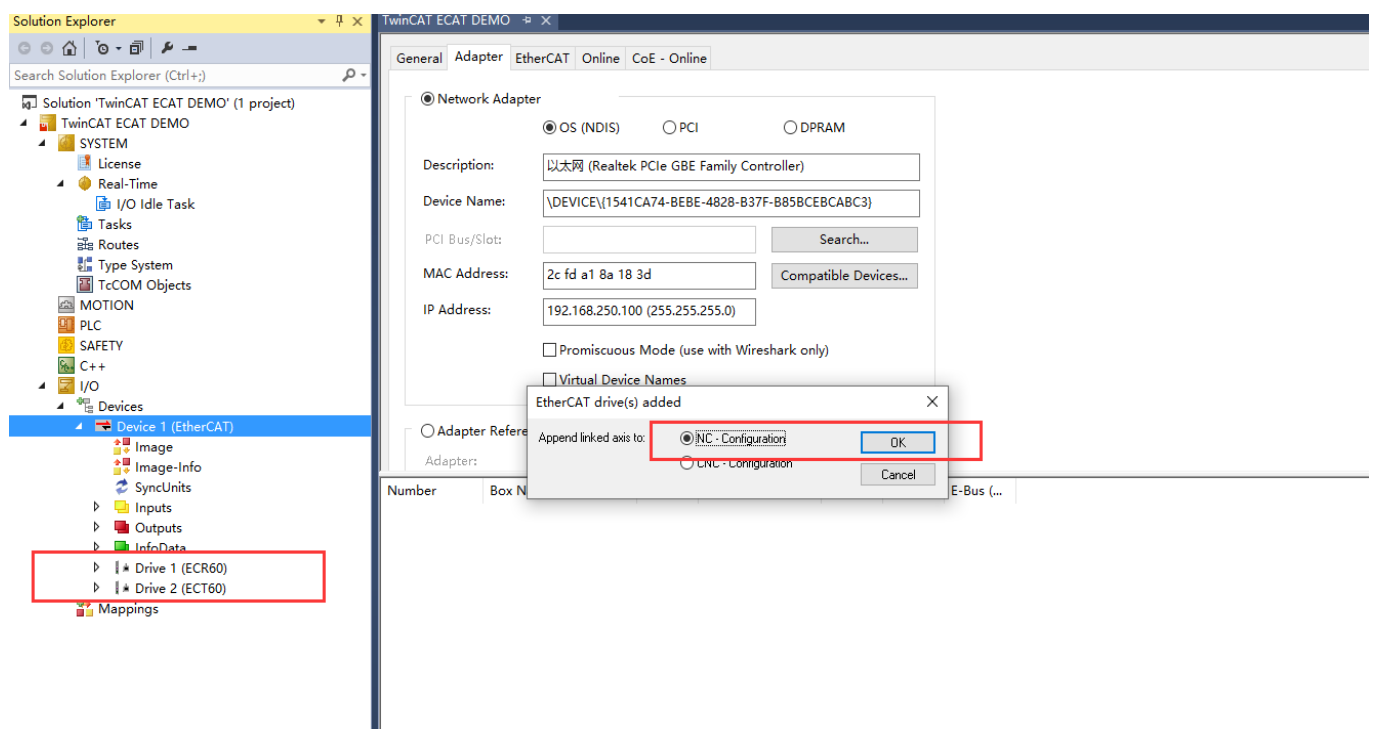
Help

2.3 Find the drive

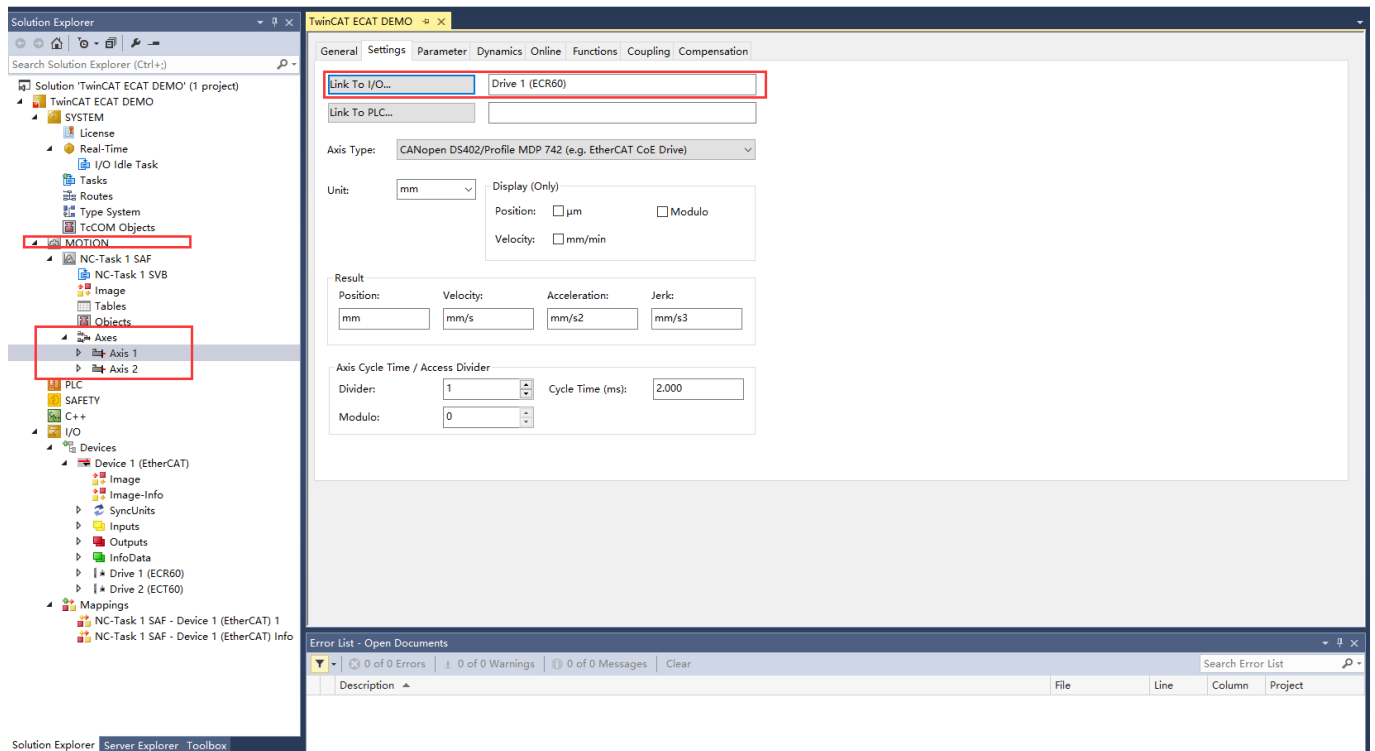
First, connect the driver to the power supply, motor and network. Then select "Scan" to automatically Scan the slave device.



The normal connection is successful. The software prompts to find device 1 ECR60 and device 2 ECT60, and prompts to add the corresponding motion axis (NC). Click OK.



At this point, the software automatically adds the motion control axis corresponding to the slave station device, as shown in the figure below. The user can select "[Motion/ NC-task1 SVB/Axes](#)", and can select Axis 1 and Axis 2 to see whether the slave devices correspond to each other.



2.4 PDO mapping

Select PDO for device 1 and device 2 and use the default Settings as follows:

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Drive 1 PDO

Drive 2 PDO

Index	Size	Name	Flags	SM	SU
0x1A00	11.0	Transmit PDO 1		3	0
0x1A01	11.0	Transmit PDO 2			0
0x1A02	0.0	Transmit PDO 3			0
0x1600	7.0	Receive PDO 1		2	0
0x1601	19.0	Receive PDO 2			0
0x1602	15.0	Receive PDO 2			0

Index	Size	Offs	Name	Type	Default (h...)
0x6041...	2.0	0.0	Status Word	UINT	
0x6061...	1.0	2.0	Modes of Operation display	SINT	
0x6064...	4.0	3.0	Position Actual Value	DINT	
0x60FD...	4.0	7.0	Digital Inputs	UDINT	

Link To I/O... **Drive 1 (ECR60)**

Link To PLC... **Drive 1 (ECR60)**

Axis Type: CANopen DS402

Unit: mm

Result: Position

Axis Cycle Time / Access Di... 1

Divider: 1

Modulo: 0

Select I/O Box/Terminal (Axis 1)

Type	Name	Comment
(none)	(none)	
CANopen DS402, EtherCAT CoE	Drive 1 (ECR60)	ECR60(COE)

Link To I/O... **Drive 2 (ECT60)**

Link To PLC... **Drive 2 (ECT60)**

Axis Type: CANopen DS402/Profile MDP 742 (e.g. EtherCAT CoE Drive)

Unit: mm

Result: Position

Axis Cycle Time / Access Di... 1

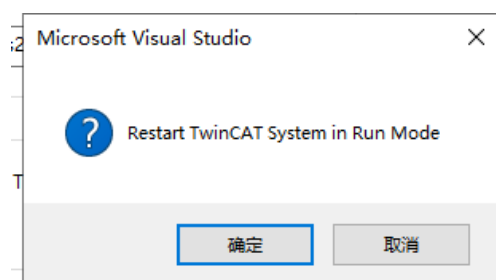
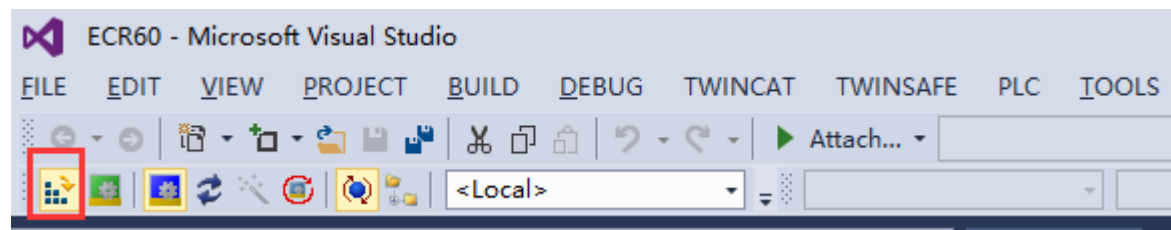
Divider: 1

Modulo: 0

Select I/O Box/Terminal (Axis 2)

Type	Name	Comment
(none)	(none)	
CANopen DS402, EtherCAT CoE	Drive 2 (ECT60)	ECT60/201(COE)

2.5 Activate the Settings

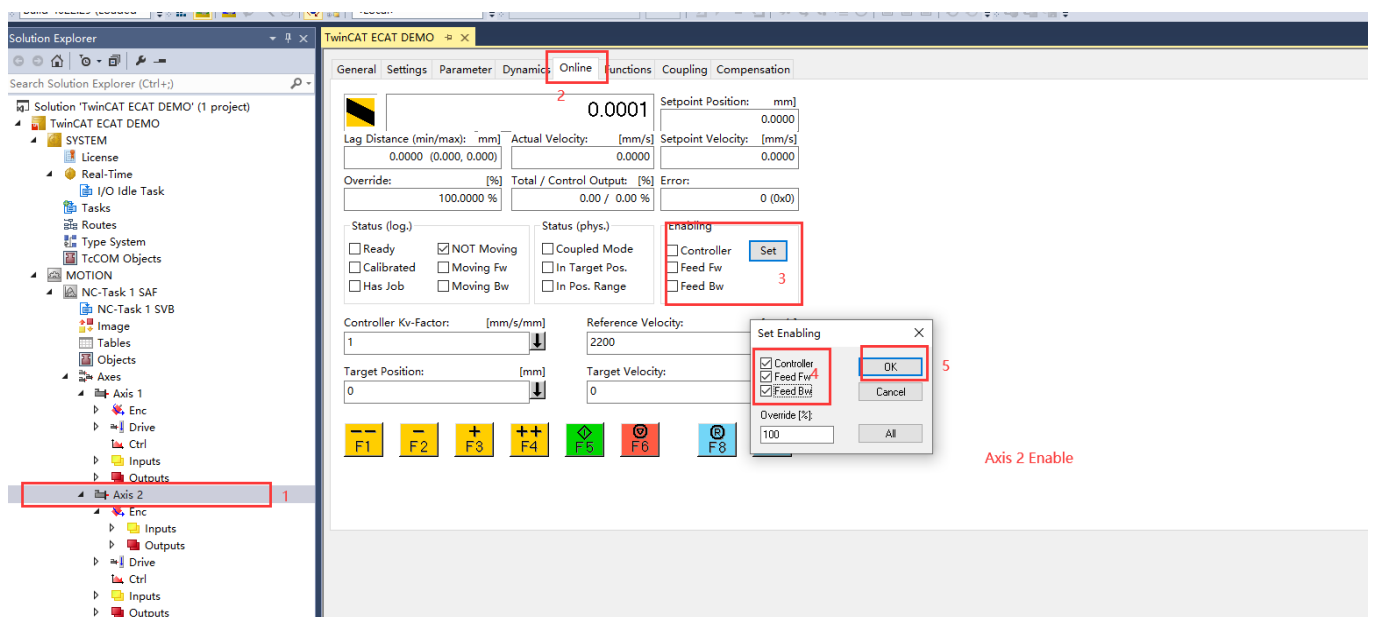
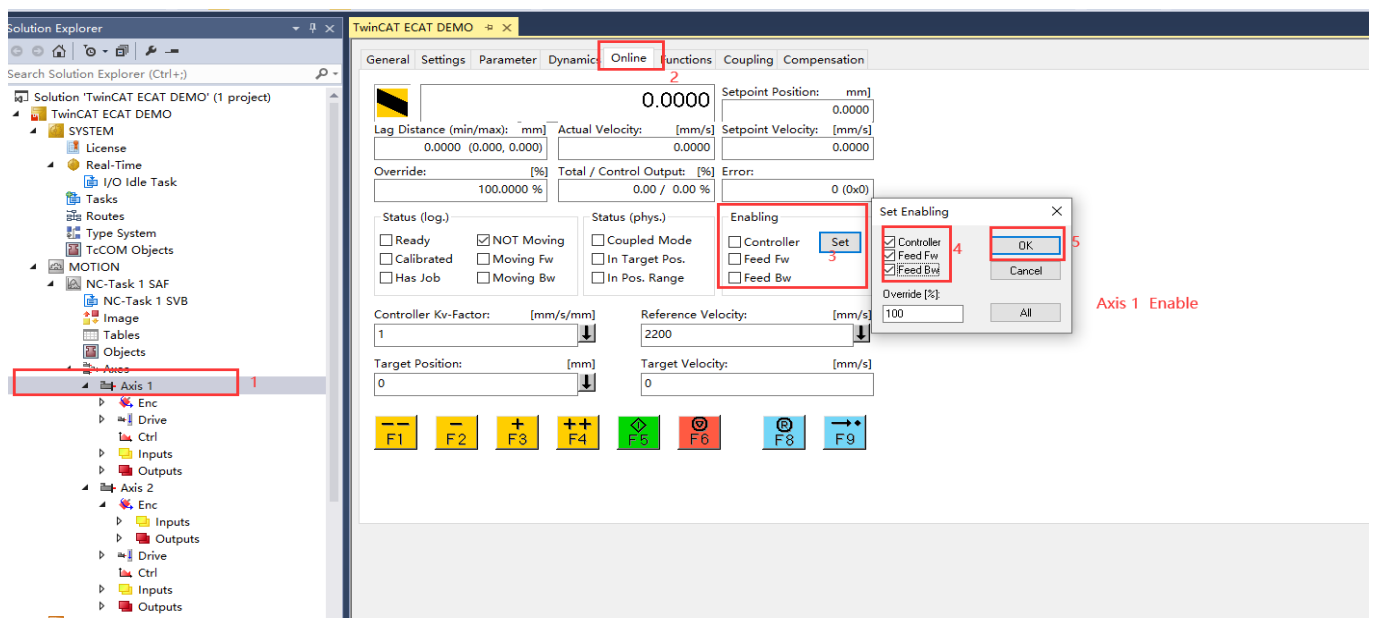


3. Motion testing and Parameter setting

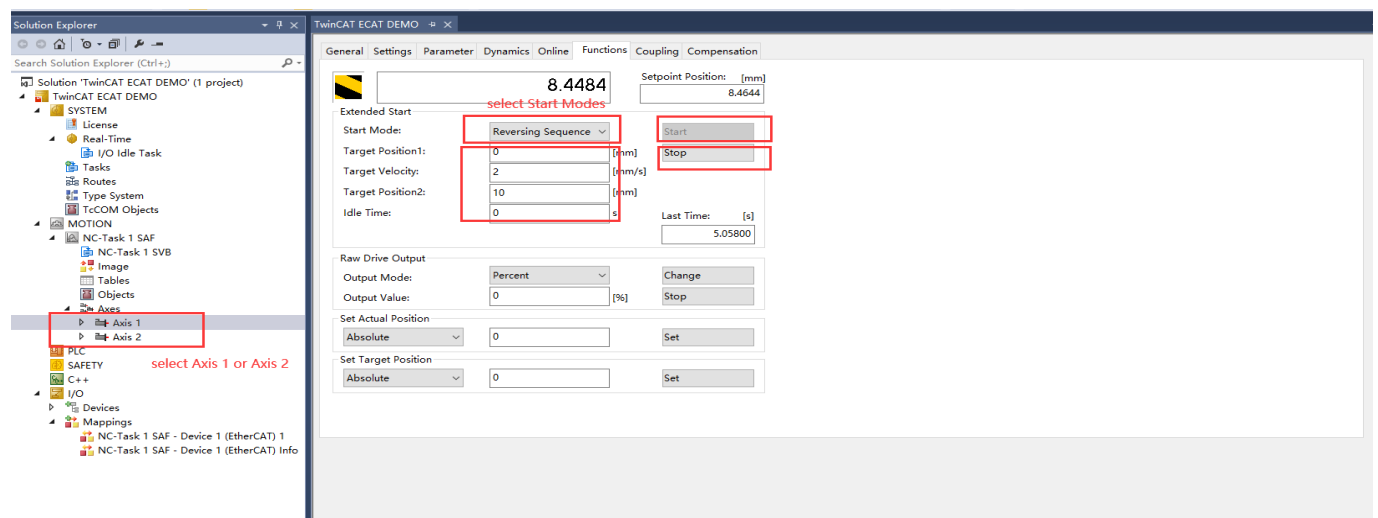
3.1 Drive motion test

1) Enable the motor in this step the driver will complete the lock shaft, parameter self-identification function, and then enter the wait command state.

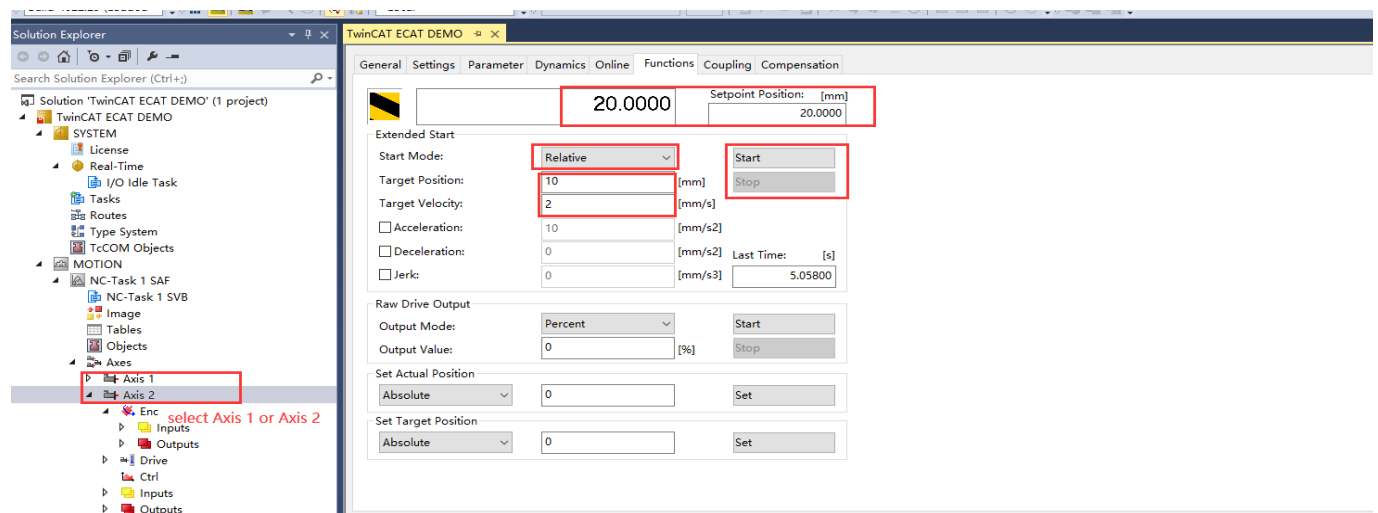
The figure below enables axis 1 and 2.



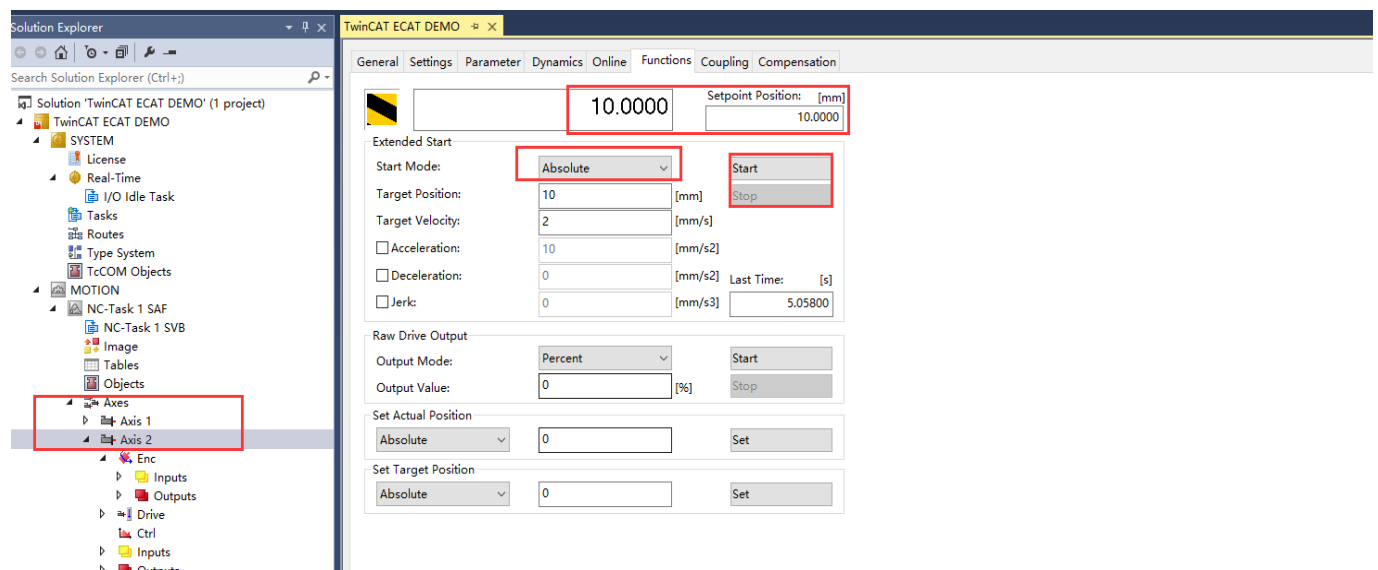
2) Reciprocating motion



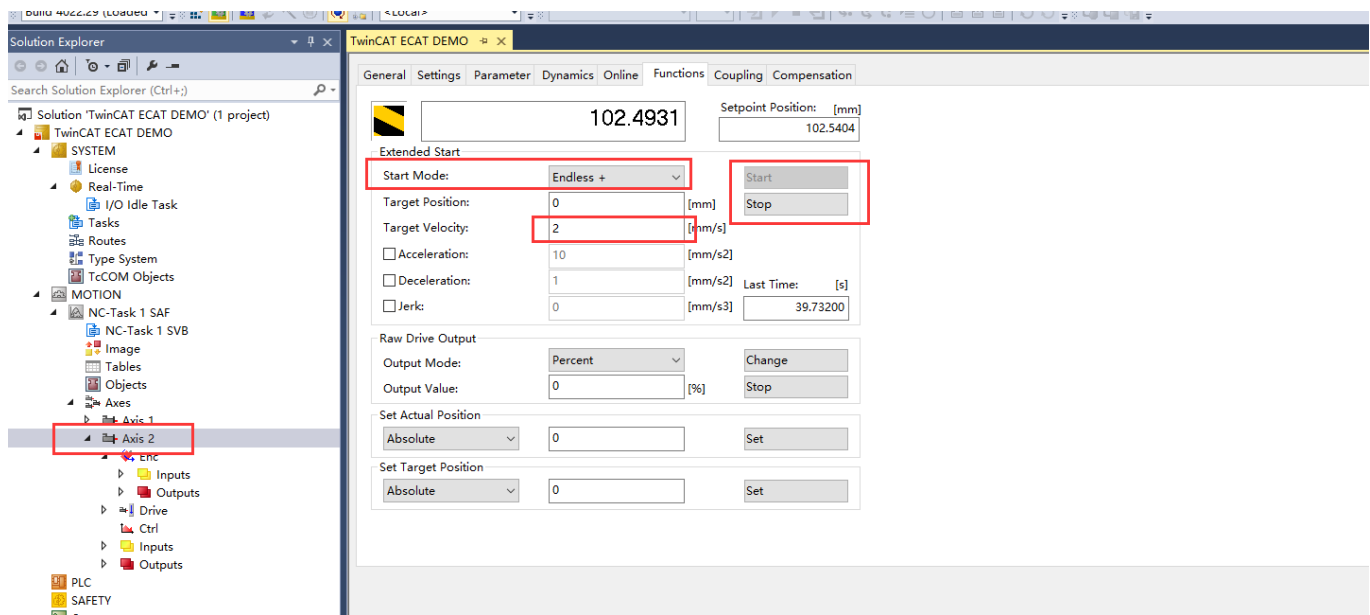
3) Move (Relative)



3) Move(Absolute)



4) JOG(Endless+)



Select Endless+ mode for continuous movement. Start the movement and the current position increases continuously towards Endless+. In the same way, choose Endless- mode to move continuously. Start the movement, the current position to Endless- decreasing.

3.2 Drive internal parameter Settings

According to the user's requirements, the driver current size, instruction subdivision and so on are set here, and how to save parameters and restore factory Settings is pointed out.

Ps: First, modification of internal specified parameters requires modification when the motor is stationary.

Second, after modifying the internal specified parameters, you need to keep the parameters, otherwise the drive will become invalid after power failure.

1) Set current size and motor instruction subdivision

ECR60:

The screenshot shows the TwinCAT ECR60 configuration interface. On the left, the 'Solution Explorer' shows the project structure with 'Drive 1 (ECR60)' selected. The main window displays a table of parameters for the ECR60 drive. A 'Set Value Dialog' is open, showing the 'Dec' field set to 3000 and the 'Hex' field set to 0x0BB8. Red arrows point to these fields with the text 'change the current'. Another red arrow points to the 'Motor Resolution' parameter (Index 2001) with the text 'ECR60 default motor subdivision=10000; This Index 0x2001 only works on ECR60. If you change it in ECT60, please find the Index 0x2020.'

Index	Name	Flags	Value	Unit
1602:0	RXPDO 3 Mapping Parameter	RW	> 5 <	
1A00:0	TXPDO 1 Mapping Parameter	RW	> 4 <	
1A01:0	TXPDO 2 Mapping Parameter	RW	> 4 <	
1A02:0	TXPDO 3 Mapping Parameter	RW	> 0 <	
1C00:0	Sync manager type	RW	> 4 <	
1C12:0	RxPDO assign	RW	> 1 <	
1C13:0	TxPDO assign	RW	> 1 <	
1C32:0	SM output parameter	RW	> 32 <	
1C33:0	SM input parameter	RW	> 32 <	
2000	Peak Current	RW P	0x0BB8 (3000)	
2001	Motor Resolution	RW P	Usz710 (10000)	
2002	Idle Time	RW P	0x03E8 (1000)	
2003	Idle Current Percentage	RW P	0x0032 (50)	
2005:0	Outputs Function	RW P	> 2 <	
2006	Outputs Polarity	RW P	0x0003 (3)	
2007:0	Inputs Function	RW P	> 6 <	
2008	Inputs Polarity	RW P	0x003F (63)	
2009	Filter Time	RW P	0x6400 (25600)	
200A	Soft lock Time	RW P	0x03E8 (1000)	
200B:0	Current loop parameters	RW P	> 4 <	
200C:0	Motor parameters	RW P	> 6 <	
200D	Invert motor direction	RW P	0x0000 (0)	
200E	Alarm Code	RO P	0x0000 (0)	
200F	Status Code	RO P	0x0084 (132)	
2010	Zero Position	RW P	0x0000 (0)	
2011	Control mode	RW P	0x0001 (1)	
2020	Encoder Resolution	RW P	0x0FA0 (4000)	
2021	Encoder Counter in one rev	RO P	0x063E (1598)	
2022	Position Trae Error Limit	RW P	0x00000FA0 (4000)	
2023:0	Position loop parameters	RW P	> 5 <	

ECT60:

The screenshot shows the TwinCAT ECT60 configuration interface. On the left, the 'Solution Explorer' shows the project structure with 'Drive 2 (ECT60)' selected. The main window displays a table of parameters for the ECT60 drive. The 'Encoder Resolution' parameter (Index 2020) is highlighted with a red box.

Index	Name	Flags	Value	Unit
2003	Idle Current Percentage	RW P	0x0032 (50)	
2005:0	Outputs Function	RW P	> 2 <	
2006	Outputs Polarity	RW P	0x0003 (3)	
2007:0	Inputs Function	RW P	> 6 <	
2008	Inputs Polarity	RW P	0x003F (63)	
2009	Filter Time	RW P	0x6400 (25600)	
200A	Soft lock Time	RW P	0x03E8 (1000)	
200B:0	Current loop parameters	RW P	> 4 <	
200C:0	Motor parameters	RW P	> 6 <	
200D	Invert motor direction	RW P	0x0000 (0)	
200E	Alarm Code	RO P	0x0000 (0)	
200F	Status Code	RO P	0x0084 (132)	
2010	Zero Position	RW P	0x0000 (0)	
2011	Control mode	RW P	0x0001 (1)	
2020	Encoder Resolution	RW P	0x0FA0 (4000)	
2021	Encoder Counter in one rev	RO P	0x063E (1598)	
2022	Position Trae Error Limit	RW P	0x00000FA0 (4000)	
2023:0	Position loop parameters	RW P	> 5 <	

The subdivision of ECT60 is equal to the encoder resolution(The default ECT60 resolution is 4000, which means: 4000 pulses/r)

2) Store all parameters

Select the drive where you want to save the parameters

Index	Name	Flags	Value	Unit
1000	Device type	RO	0x00040192 (262546)	
1001	Error register	RO	0x00 (0)	
1008	Device name	RO	ECT60	
1009	Hardware version	RO	A1	
100A	Software version	RO	101A	
1010:0	Store Parameters	RW	> 1 <	
1010:01	Save all parameters	RW	0x0000 (0)	
1011:0	Restore Parameters	RW	> 1 <	
1018:0	Identity	RW	> 4 <	
10F1:0	Error Settings	RW	> 2 <	
10F8	Timestamp Object	RW P	0x8c48b0503ef202	
1600:0	RXPDO 1 Mapping Parameter	RW	> 3 <	
1601:0	RXPDO 2 Mapping Parameter	RW	> 6 <	
1602:0	RXPDO 3 Mapping Parameter	RW	> 5 <	
1A00:0	TXPDO 1 Mapping Parameter	RW	> 4 <	
1A01:0	TXPDO 2 Mapping Parameter	RW	> 4 <	
1A02:0	TXPDO 3 Mapping Parameter	RW	> 0 <	
1C00:0	Sync manager type	RW	> 4 <	

After saving all parameters, the drive power outage restart is valid.

3) Restore all default parameters

select the drive where you want to restore all default parameters

Index	Name	Flags	Value	Unit
1000	Device type	RO	0x00040192 (262546)	
1001	Error register	RO	0x00 (0)	
1008	Device name	RO	ECT60	
1009	Hardware version	RO	A1	
100A	Software version	RO	101A	
1010:0	Store Parameters	RW	> 1 <	
1011:0	Restore Parameters	RW	> 1 <	
1011:01	Restore all default parameters	RW	0x0000 (0)	
1018:0	Identity	RW	> 4 <	
10F1:0	Error Settings	RW	> 2 <	
10F8	Timestamp Object	RW P	0x8c48b3b7355	
1600:0	RXPDO 1 Mapping Parameter	RW	> 3 <	
1601:0	RXPDO 2 Mapping Parameter	RW	> 6 <	
1602:0	RXPDO 3 Mapping Parameter	RW	> 5 <	
1A00:0	TXPDO 1 Mapping Parameter	RW	> 4 <	
1A01:0	TXPDO 2 Mapping Parameter	RW	> 4 <	
1A02:0	TXPDO 3 Mapping Parameter	RW	> 0 <	
1C00:0	Sync manager type	RW	> 4 <	

After restoring all default parameters, the drive power outage restart is valid.

4. Contact information

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