MVT Valve Terminal Node User Manual

Version 1.0, 2024-04-24

EtherCAT

天津宜科自动化股份有限公司

Tianjin Elco Automation Co.,Ltd

directory

1. Product Introduction

The MVT series valve island nodes adopt an integrated design of bus interface, IO-Link expansion port and power supply, and are installed on the electrical interface of the busbar. Currently, IO-Link slave stations, multi-protocol slave stations and multi-protocol master stations are mainly launched. The compatible bus protocols include Profinet, Ethernet/IP, CC-LINK IE Field BASIC and EtherCAT.

The MVT series connection system adopts the M12 socket design, which is convenient for power supply and quick bus insertion.

The MVT series master station type valve island nodes are suitable for application scenarios such as PNP sensors, limit switches, dry contact signal acquisition, and PNP load output, providing cost-effective valve island product solutions for industries such as automobiles, photovoltaics, and logistics.

2. Version change history

Date of revision	Release version	content of change
2025-04	V1.0	The first edition of the manual is released

3. About manual acquisition

This manual is not shipped with the product, and if you need to obtain an electronic PDF file, you can obtain it in the following ways:

- Log in to the official website of Elco (www.elco-holding.com.cn), search for keywords and download.
- Use WeChat to search and follow the official public account of " Elco Automation" to get the product matching manual.
- Contact the sales engineer of Elco Automation in your area to get the latest manual materials.

4. Warranty Statement

Under normal use, if the product fails or is damaged, Elco Automation is responsible for the 18-month warranty (from the date of delivery, subject to the date of delivery, and the contract agreement shall be implemented in accordance with the agreement). More than 18 months, the repair fee will be charged.。

Within 18 months, the repair fee will be charged for product damage caused by the following conditions.

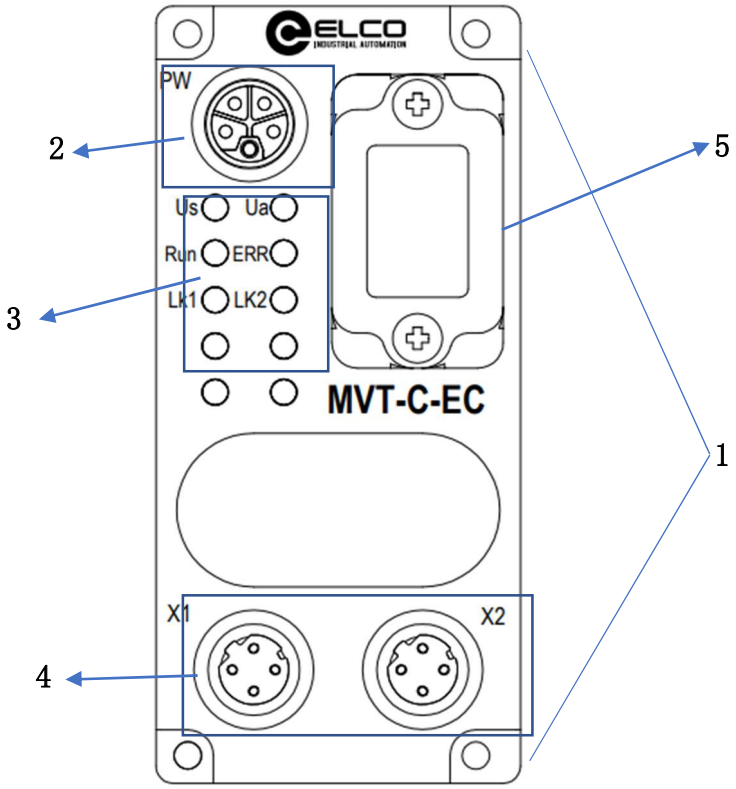
- Failure to operate this product as specified in the manual, resulting in damage to the product.
- Fire, flood, abnormal voltage, product damage.
- Use of this product for non-normal functions, resulting in damage to the product.
- Product damage caused by exceeding the specified scope of use of the product.
- Secondary damage to the product caused by force majeure (natural disasters, earthquakes, lightning strikes).

The service fee is calculated according to the unified standard of Elco, and if there is a contract, it will be handled according to the principle of contract priority.

5. Introduction to the MVT series of modules

5.1. Appearance and function introduction

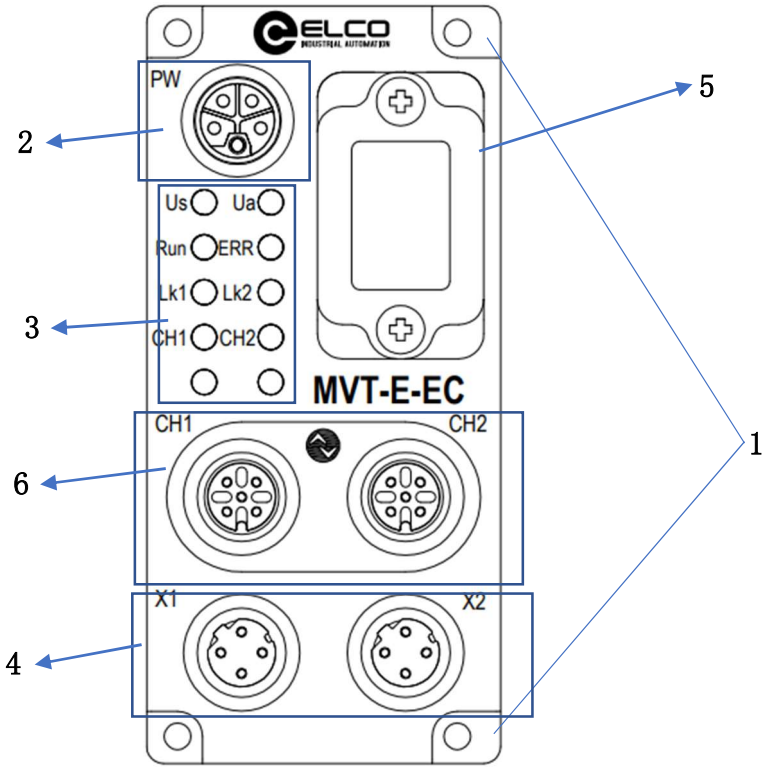
5.1.1. MVT-C-EC appearance and function introduction



ordinal	name	function	state
1	**Module fixing clips**		
	Module fixing holes	Module fixing holes	-
2	**Power connector**		
	1	System power Us+	-
	2	Auxiliary power Ua-	-
	3	System power Us-	-
	4	Auxiliary power Ua+	-
	5	PE	-
3	**Diagnostic light**		
	Us	System voltage status indication	

	Ua	Auxiliary voltage status indication	
	RUN	Operating status indication	
	ERR	Module status indication	
	Lk1/Lk2	Network port connection status indication	
4	**Bus interface**		
	1	Transmitter TD+	
	2	Receiver RD+	
	3	Transmitter TD-	
	4	Receiver RD-	
5	**control panel**	Program burning port	

5.1.2. MVT-E-EC appearance and function introduction



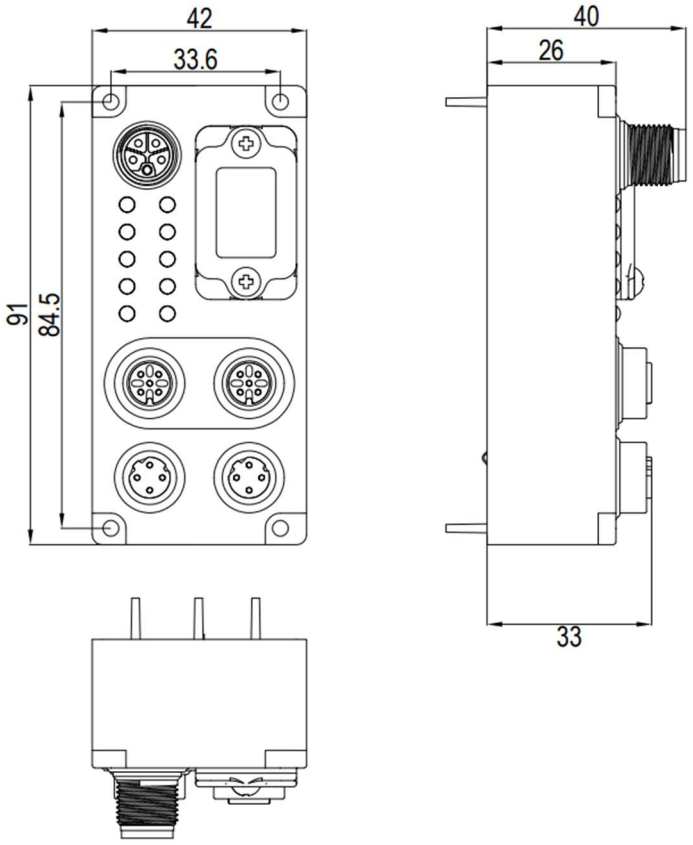
ordinal	name	function	state
1	**Module fixing clips**		
	Module fixing holes	It is used to fix the valve terminal node on the valve terminal interface	-
2	**Power connector**		
	1	System power Us+	**-**
	2	Auxiliary power Ua-	**-**
	3	System power Us-	-
	4	Auxiliary power Ua+	-
	5	PE	-
3	**Diagnostic light**		
	Us	System voltage status indication	
	Ua	Auxiliary voltage status indication	
	RUN	Operating status indication	
	ERR	Module status indication	
	Lk1/Lk2	Network port connection status indication	
	CH1/CH2	port1/port2 status indication	
4	**Bus interface**		
	1	Transmitter TD+	
	2	Receiver RD+	
	3	Transmitter TD-	
	4	Receiver RD-	
5	**control panel**	Program burning port	
6	**Signal interface**		
	1	US 24V+	
	2	I/O	
	3	US 0V	
	4	C/Q	
	5	PE	

5.2. Module Specifications

Ordering data			
Type		MVT-C-EC	MVT-E-EC
Description		Support the EtherCAT protocol	Support the EtherCAT protocol With IO-Link master interface (2*Class-A)
Matching Festo valve Terminals		VTUG series	
Field bus			
Protocol		EtherCAT	EtherCAT
Field bus, connection system		2*M12,D-CODE,4pin, Female	2* M12,D-CODE,4pin,Female
IO-Link Expansion port		——	2*M12,A-CODE,5pin,Female
Electrical isolation		yes	
Transmission rate		100Mbps	100Mbps
Max. address volume, inputs		7 Byte	106 Byte
Max. address volume, outputs		6 Byte	74 Byte
Power supply			
Nominal operating voltage DC		24V	
Operational voltage range DC		18-30V	
System Max. power supply		4A	4A
Valve Max. power supply		2A	2A
Intern power consumption nominal operating voltage		Less than 200 mA	Less than 200 mA
Power supply, connection system		M12*1, L-CODE, 5pin, Male	M12*1, L-CODE, 5pin, Male
Technical data			
Expansion port type		——	2*Class-A
Max. number of solenoid coils		48	

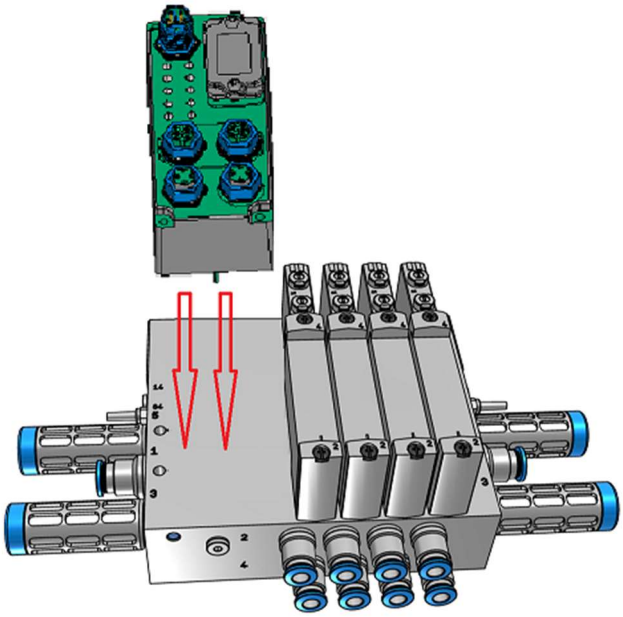
Maximum number of valve positions	24		
Power supply, inputs（pin1&pin3）		——	IO-Link port Max 1.6A
Input signal type		——	PNP type sensor,Travel switch,dry contact(SIO mode)
Power supply, outputs（pin2&pin3）		——	Max 2A
Output signal type		——	PNP type loads
Diagnosis			
Communication status	Communication failure alarm		
Power supply detection	Low voltage alarm		
System diagnostics	System failure alarm		
General parameters			
Dimensions	42*91*40mm		
Type of mounting	On electrical interface		
Operation temperature	-5℃-60℃		
Storage temperature	-20℃-70℃		
protection class	IP67		

5.3. Module Dimensions



6. Mechanical installation and disassembly of products

6.1. Installation location



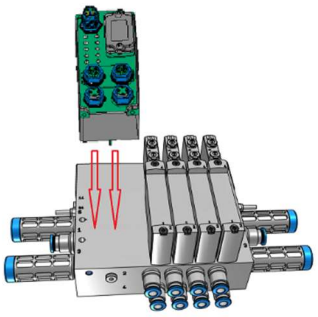
The installation position is as shown in the above figure. Install the valve island node horizontally at the electrical interface of the valve island gas circuit board. The connector and control panel must face upwards.

Warn!

- → **Only professional maintenance personnel who have received relevant training in electrical equipment and have sufficient electrical knowledge can install this product;**
- → **When disassembling and disassembling modules, it is necessary to disconnect all external power supplies used by the system before performing the operation. If the power supply is not completely disconnected, it may lead to electric shock or module failure and malfunction;**
- → **Do not use MVT in the following places: places with dust, oil smoke, conductive dust, corrosive gases, and flammable gases; Exposure to high temperatures, condensation, wind and rain; Occasions with vibration and shock. Electric shock, fire, mishandling can also cause damage and deterioration of the product;**

6.2. MVT product installation

The installation of MVT products can be carried out in the following steps:



STEP1：Buckle the valve terminal node at the electrical interface of the valve terminal;

STEP2：Use a screwdriver to secure the screws on the valve terminal nodes.

Warn!

→ **To install, align the valve terminal node with the electrical interface and insert the pin in the direction indicated by the arrow；**

→ **Tighten the mounting bolts without excessive force to prevent damage to the product;**

6.3. Valve terminal node disassembly

Use a flathead screwdriver or similar tool to unscrew the mounting screws counterclockwise and pull the node module out away from the valve terminal manifold plate.

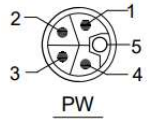
Warn!

The mechanical installation and disassembly of the module need to be operated by qualified professional mechanical personnel, and attention should be paid to the correct wearing and use of labor protection equipment.

7. Interface definition of valve terminal nodes of the MVT series

7.1. MVT-C-EC interface definition

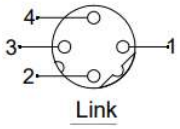
Power port Male



1, System power Us+
2, Auxiliary power Ua-
3, System power Us-
4, Auxiliary power Ua+
5, Protective earthing PE

Power port

Bus port Female

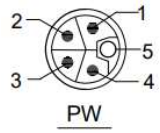


1, Transmitter TD+
2, Receiver RD+
3, Transmitter TD-
4, Receiver RD-

Bus port

7.2. MVT-E-EC interface definition

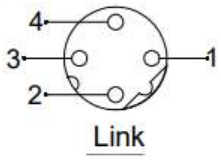
Power port Male



1, System power Us+
2, Auxiliary power Ua-
3, System power Us-
4, Auxiliary power Ua+
5, Protective earthing PE

Power port

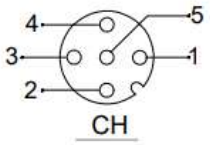
Bus port Female



1, Transmitter TD+
2, Receiver RD+
3, Transmitter TD-
4, Receiver RD-

Bus port

Signal port Female



1, System power 24V+
2, I/O
3, System power 0V
4, C/Q
5, Protective earthing PE

Signal port

8. Electrical installation and wiring of the product

8.1.Cable specifications

8.1.1. Communication cables

Ethernet bus communication uses shielded network cable for network data transmission, without short circuit, dislocation and poor contact; The length of the cable between the devices cannot exceed 100m, and the signal will be attenuated and the normal communication will be affected. The following types of communication cables are recommended:

project	specification
Cable type	Elastic crossover cable, S-FTP, Category 5 wire
Criteria met	EIA/TIA568A，EN50173，ISO/IEC11801 EIA/TI Abulletin TSB，EIA/TIA SB40-A&TSB36
Traverse section	AWG26
Wire type	Twisted pair
Number of cable pairs	4

The pre-injection connector has better communication stability and construction convenience, and the pre-injection connector of the Elco brand can provide personalized customization of cable material and length under the condition of meeting the requirements of communication technology, and the following Elco Ethernet connectors are available:

type	description
E16DA4002M020	RJ45-M12 Double-ended Pre-Injection Ethernet Connector, Pin Straight, D-CODE, 4-PIN, Cat5e, PVC, cord length 2 meters, fixed installation
E11D04002M020	M12-M12 Double-ended Pre-Injection Ethernet connector, straight end ended, D-CODE, 4-PIN, Cat5e, PVC, cable length 2 m, fixed installation
E16DA4004M020	RJ45-M12 Double-ended Pre-Injection Ethernet Connector, Pin Straight, D-CODE, 4-PIN, Cat5e, PUR, cord length 2 m, tow chain suitable

E11D04004M020	M12-M12 Double-ended Pre-Injection Ethernet connector, straight head, D-CODE, 4-PIN, Cat5e, PUR, cable length 2 m, tow chain suitable

WARN!

- → **Disconnect all power connections before wiring construction!**
- → **Copper wire only!**
- → **To ensure safety, ensure that the grounding terminal of the module is securely connected to the ground!**
- → **Wiring work must be operated by authorized electrical personnel to ensure construction safety!**
- → **Improper cables may cause serious equipment damage or personal injury!**
- → **Connect cables by referring to this manual or the wiring diagram printed on the side of the module. Incorrect wiring may cause module damage or personal injury!**

More Ethernet connector selection please refer to Elco "Connection system Comprehensive sample".

8.1.2. Power and signal lines

Power supply and signal wiring requirements:

The MVT-C-EC and MVT-E-EC power supplies adopt M12, L-CODE, 5-pin pin connectors, and the MVT-E-EN expansion ports adopt M12, A-CODE, 5-pin hole connectors.

9. Input and output data structures

9.1. MVT-C-EC process data structure

It occupies 6 Bytes of output and 7 Bytes of input								
BYTE 0	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 0.7	Q 0.6	Q 0.5	Q 0.4	Q 0.3	Q 0.2	Q 0.1	Q 0.0
description	Valve_4_12	Valve_4_14	Valve_3_12	Valve_3_14	Valve_2_12	Valve_2_14	Valve_1_12	Valve_1_14
BYTE 1	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 1.7	Q 1.6	Q 1.5	Q 1.4	Q 1.3	Q 1.2	Q 1.1	Q 1.0
description	Valve_8_12	Valve_8_14	Valve_7_12	Valve_7_14	Valve_6_12	Valve_6_14	Valve_5_12	Valve_5_14
BYTE 2	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 2.7	Q 2.6	Q 2.5	Q 2.4	Q 2.3	Q 2.2	Q 2.1	Q 2.0
description	Valve_12_12	Valve_12_14	Valve_11_12	Valve_11_14	Valve_10_12	Valve_10_14	Valve_9_12	Valve_9_14
BYTE 3	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 3.7	Q 3.6	Q 3.5	Q 3.4	Q 3.3	Q 3.2	Q 3.1	Q 3.0
description	Valve_16_12	Valve_16_14	Valve_15_12	Valve_15_14	Valve_14_12	Valve_14_14	Valve_13_12	Valve_13_14
BYTE 4	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 4.7	Q 4.6	Q 4.5	Q 4.4	Q 4.3	Q 4.2	Q 4.1	Q 4.0
description	Valve_20_12	Valve_20_14	Valve_19_12	Valve_19_14	Valve_18_12	Valve_18_14	Valve_17_12	Valve_17_14
BYTE 5	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
address	Q 5.7	Q 5.6	Q 5.5	Q 5.4	Q 5.3	Q 5.2	Q 5.1	Q 5.0
description	Valve_24_12	Valve_24_14	Valve_23_12	Valve_23_14	Valve_22_12	Valve_22_14	Valve_21_12	Valve_21_14
Input	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
BYTE 0	Status 8	Status 7	Status 6	Status 5	Status 4	Status 3	Status 2	Status 1
BYTE 1	Status 16	Status 15	Status 14	Status 13	Status 12	Status 11	Status 10	Status 9
BYTE 2	Status 24	Status 23	Status 22	Status 21	Status 20	Status 19	Status 18	Status 17
BYTE 3	Status 32	Status 31	Status 30	Status 29	Status 28	Status 27	Status 26	Status 25
BYTE 4	Status 40	Status 39	Status 38	Status 37	Status 36	Status 35	Status 34	Status 33
BYTE 5	Status 48	Status 47	Status 46	Status 45	Status 44	Status 43	Status 42	Status 41
BYTE 6	Uaux Overvoltage	Uaux Undervoltage	Usys Overvoltage	Usys Undervoltage	Uaux Error	Reserved	connect normally	unsent

9.2.MVT-E-EC process data structure

The maximum occupied input is 106 Bytes and the output is 74 Bytes									
Input	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	description
IB0	Status 8	Status 7	Status 6	Status 5	Status 4	Status 3	Status 2	Status 1	Valve Terminal Status
IB1	Status 16	Status 15	Status 14	Status 13	Status 12	Status 11	Status 10	Status 9	
IB2	Status 24	Status 23	Status 22	Status 21	Status 20	Status 19	Status 18	Status 17	
IB3	Status 32	Status 31	Status 30	Status 29	Status 28	Status 27	Status 26	Status 25	
IB4	Status 40	Status 39	Status 38	Status 37	Status 36	Status 35	Status 34	Status 33	
IB5	Status 48	Status 47	Status 46	Status 45	Status 44	Status 43	Status 42	Status 41	
IB6					Port2 Pin2	Port2 Pin4	Port1 Pin2	Port1 Pin4	IO Signal
IB7	Secondary Supply Voltage Fault	Auxiliary short circuit	IO-Link Device Validation Error	Communication Lost	Reserved	Pin2 Overload	Pin4 Overload	Pin1 Power Short	Port1 IOLINK Status
IB8	Secondary Supply Voltage Fault	Auxiliary short circuit	IO-Link Device Validation Error	Communication Lost	Reserved	Pin2 Overload	Pin4 Overload	Pin1 Power Short	Port2 IOLINK Status
IB9	Uaux Overvoltage	Uaux Undervoltage	Usys Overvoltage	Usys Undervoltage	Uaux Error	Reserved	connect normally	unsent	Status of Master
IB10~IB41	IOL Port1 Input								
IB42	IOL Port1 Status IOL:Port in IO-Link mode DC:Device connected								
							DC	IOL	
IB43	IOL Port1 Error VF: Validation failed SC: IO-Link short-circuit DF: Data storage validation failed PDI: Process data invalid								
	SC					PDI	DF	VF	
IB44~IB45	IOL Port1 Vendor ID								MSB
IB46~IB48	IOL Port1 Device ID								MSB
IB49	IOL Port1 EventQualifier1								
	Mode		Type						
IB50~IB51	IOL Port1 EventCode1								
IB52	IOL Port1 EventQualifier2								
	Mode		Type						

IB53~IB54	IOL Port1 EventCode2								
IB55	IOL Port1 EventQualifier3								
	Mode		Type						
IB56~IB57	IOL Port1 EventCode3								
Mode: 0: reserved; 1: Single event; 2: Event outgoing; 3: Event incoming Type: 0: reserved; 1: Message; 2: Warning; 3: Error EventCode: MSB									
IB58~IB89	IOL Port2 Input								
IB90	IOL Port2 Status								Ref Port1
IB91	IOL Port2 Error								
IB92~IB93	IOL Port2 Vendor ID								
IB94~IB96	IOL Port2 Device ID								
IB97	IOL Port2 EventQualifier1								
IB98~IB99	IOL Port2 EventCode1								
IB100	IOL Port2 EventQualifier2								
IB101~IB102	IOL Port2 EventCode2								
IB103	IOL Port2 EventQualifier3								
IB104~IB105	IOL Port2 EventCode3								
Output	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	description
QB0	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1	Value Terminal Output
QB1	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9	
QB2	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17	
QB3	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25	
QB4	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33	
QB5	Output 48	Output 47	Output 46	Output 45	Output 44	Output 43	Output 42	Output 41	
QB6					Port2 Pin2	Port2 Pin4	Port1 Pin2	Port1 Pin4	IO Signal
QB7	Reserved								

QB8								Diagnose Disable	Port1 Control
QB9								Diagnose Disable	Port2 Control
QB10~QB41	IOL Port1 Output								
QB42~QB73	IOL Port2 Output								

9.3.Disconnection output control description

Disconnection output control	0- Clear Output; 1- All outputs high; 2- Hold the output;

9.4.Description of channel diagnostic bits

diagnosis byte	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
Byte0	Diag CH8	Diag CH7	Diag CH6	Diag CH5	Diag CH4	Diag CH3	Diag CH2	Diag CH1
Byte1	Diag CH16	Diag CH15	Diag CH14	Diag CH13	Diag CH11	Diag CH11	Diag CH10	Diag CH9
Byte2	Diag CH24	Diag CH23	Diag CH22	Diag CH21	Diag CH20	Diag CH19	Diag CH18	Diag CH17
Byte3	Diag CH32	Diag CH31	Diag CH30	Diag CH29	Diag CH28	Diag CH27	Diag CH26	Diag CH25
Byte4	Diag CH40	Diag CH39	Diag CH38	Diag CH37	Diag CH36	Diag CH35	Diag CH34	Diag CH33
Byte5	Diag CH48	Diag CH47	Diag CH46	Diag CH45	Diag CH44	Diag CH43	Diag CH42	Diag CH41

10.Configuration and debugging

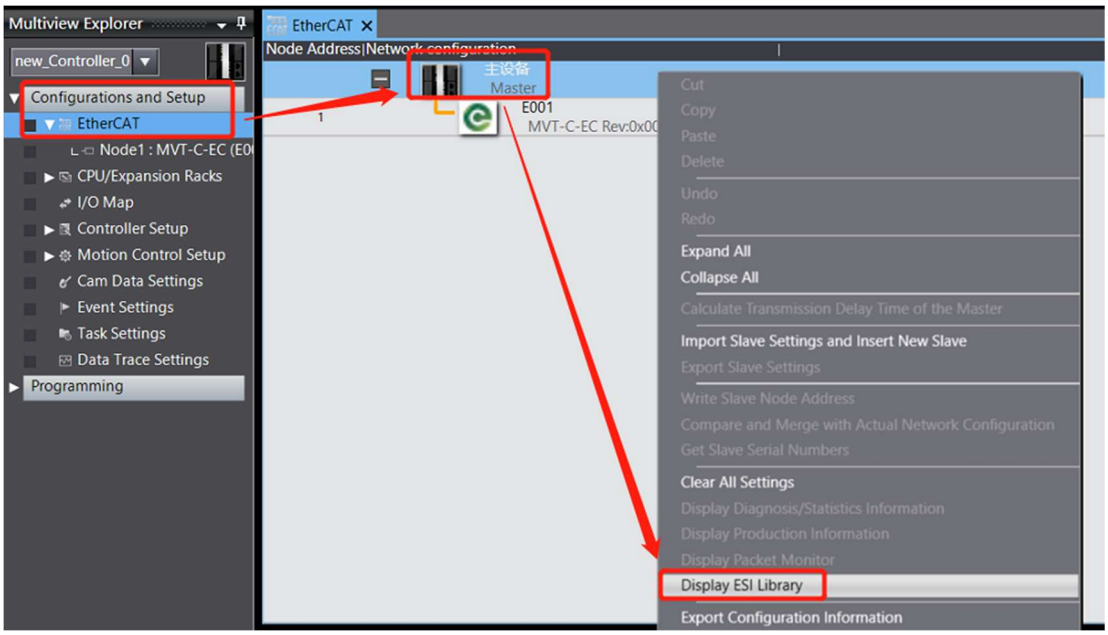
10.1. Debug in the Omron Sysmac Studio environment

10. 1. 1. Module ESI file

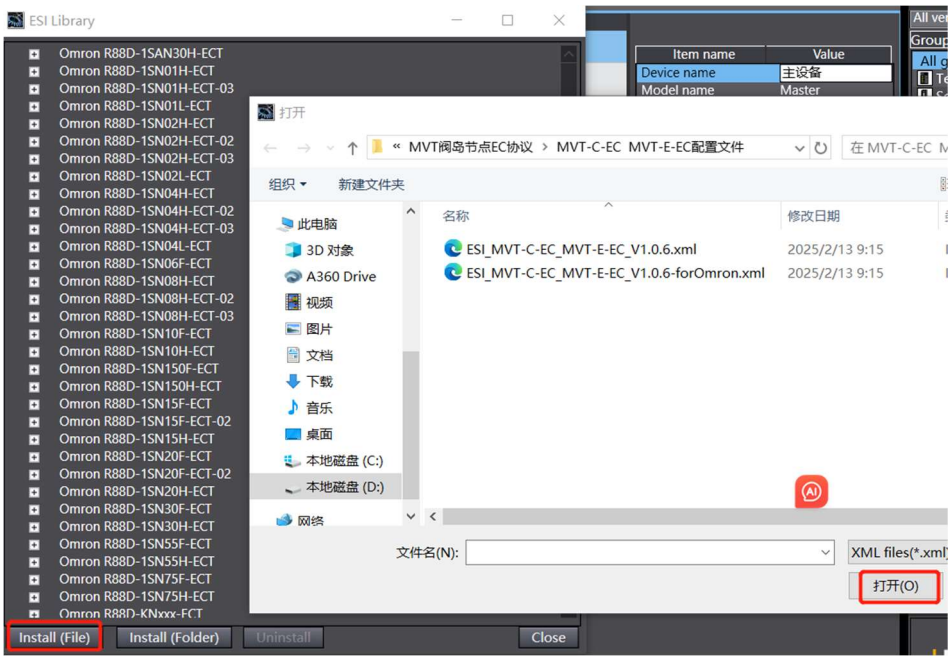
Configure the MVT series valve island node module using the ESI file (XML format). The ESI file is used to integrate the MVT valve island node module into your system as a standard EtherCAT slave station. You can visit the ELCO company website to obtain the latest xml file or call the customer service hotline to contact the technicians.

Integrating ESI files into the system depends on the configuration software you are using. Usually, the Sysmac Studio programming software of Omron used in the EtherCAT system integrates ESI files according to the following steps:

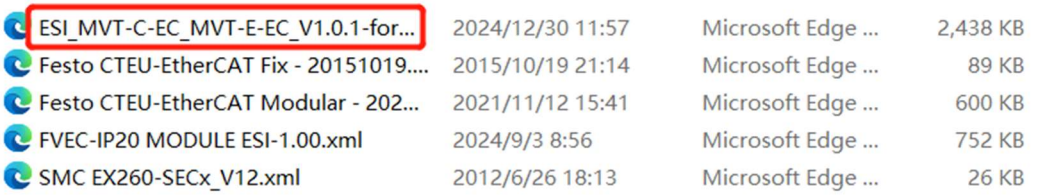
1) Run the Sysmac Studio software, and then right-click the main device in "Configurations and Setup >EtherCAT".



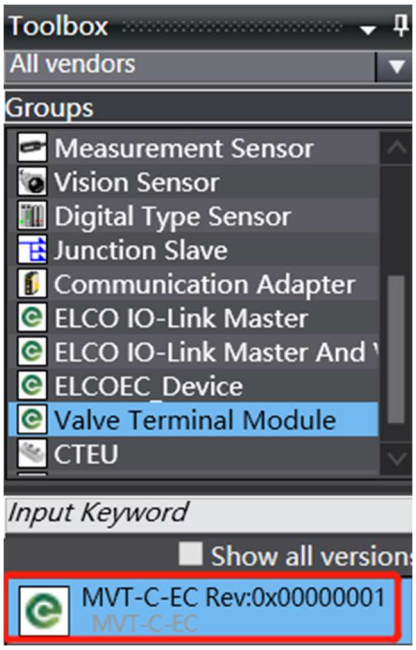
2) Click "Show ESI Library" and then click "This Folder".



3) Copy the xml file into this folder or click to open it, and then restart the software.

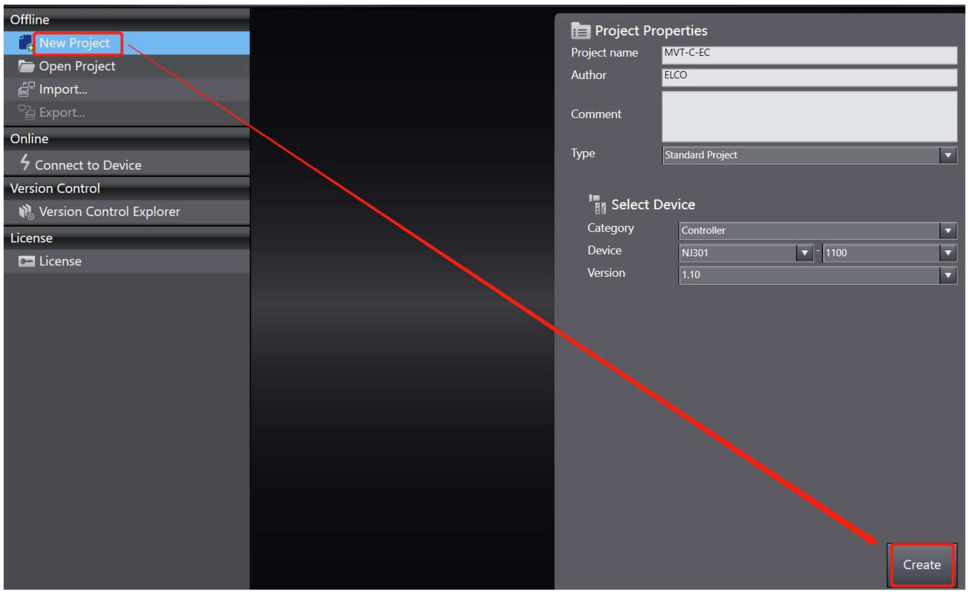


4) The newly installed MVT Valve island node is displayed under the "Valve Terminal Module" directory in the toolbox.

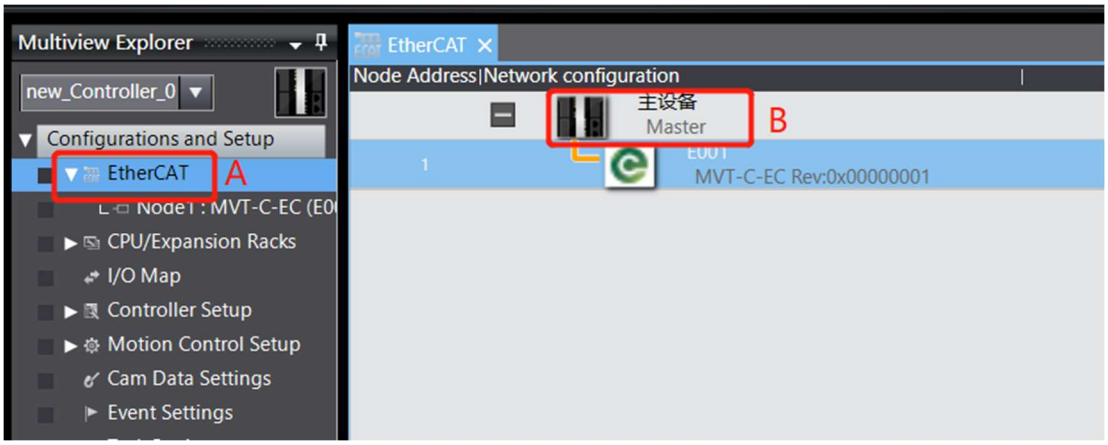


10.1.2. Module Configuration Examples in the Omron Sysmac Studio environment

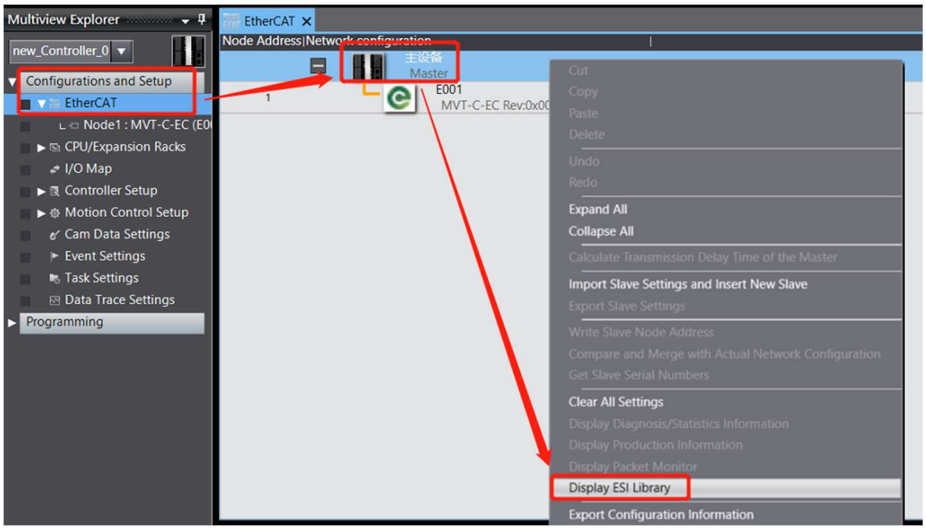
1) Open the Sysmac Studio software, click "New Project", fill in the corresponding information according to the PLC model, and click "Create".



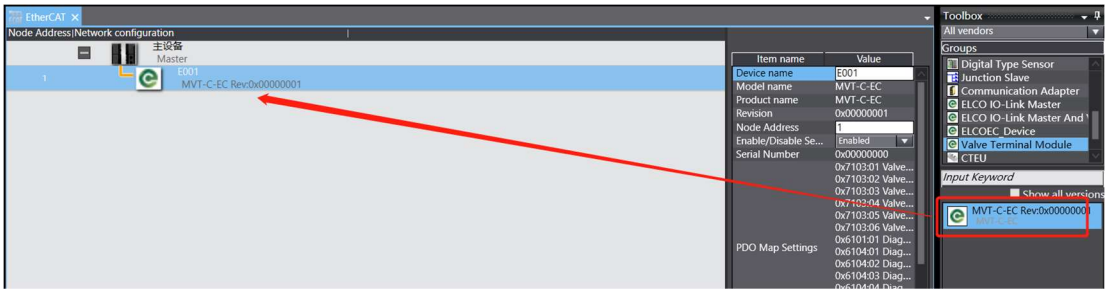
2) In the "Configuration and Settings" list on the left, select "EtherCAT", and you can see the corresponding controller icon at point B.



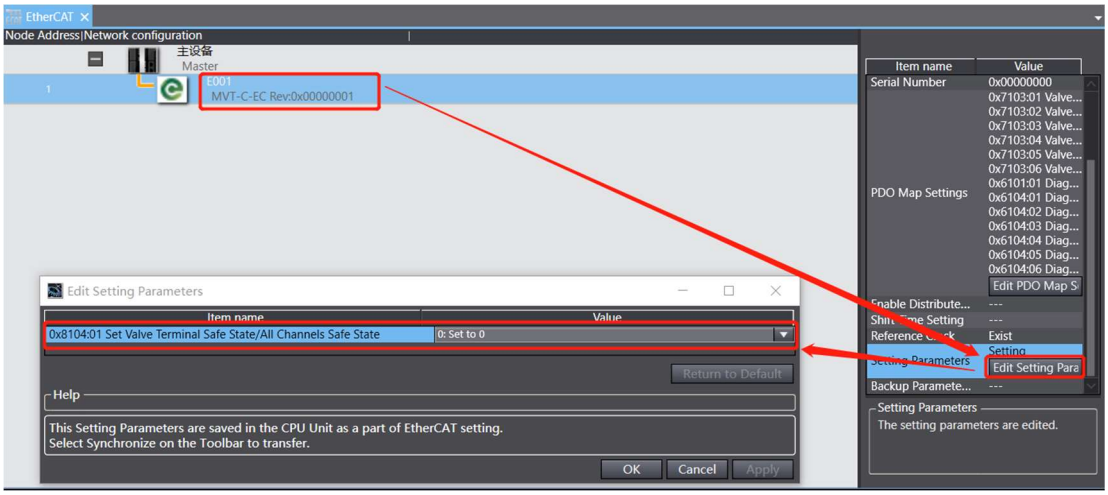
3) Right-click on "Main Device", select "Show ESI Library" from the pop-up list, and in the newly opened window interface, select "This Folder" to copy the ESI file to this folder.



4) In the "Toolbox" list on the right, find "Valve Terminal Module", and drag the module "MVT-C-EC" below to the main device. The system will allocate EtherCAT node addresses according to the connection sequence (which can also be modified as needed).

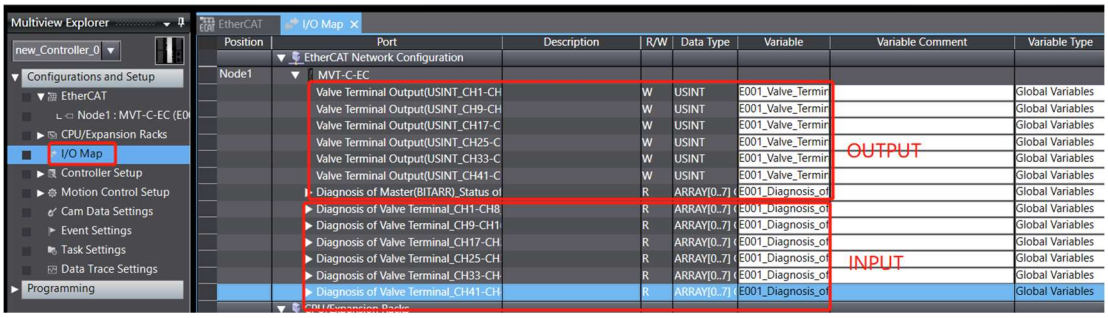


5) After configuring the MVT-C-EC valve island node, click on "Edit Initialization Parameter Settings" on the right to set the safety status of the valve island node.

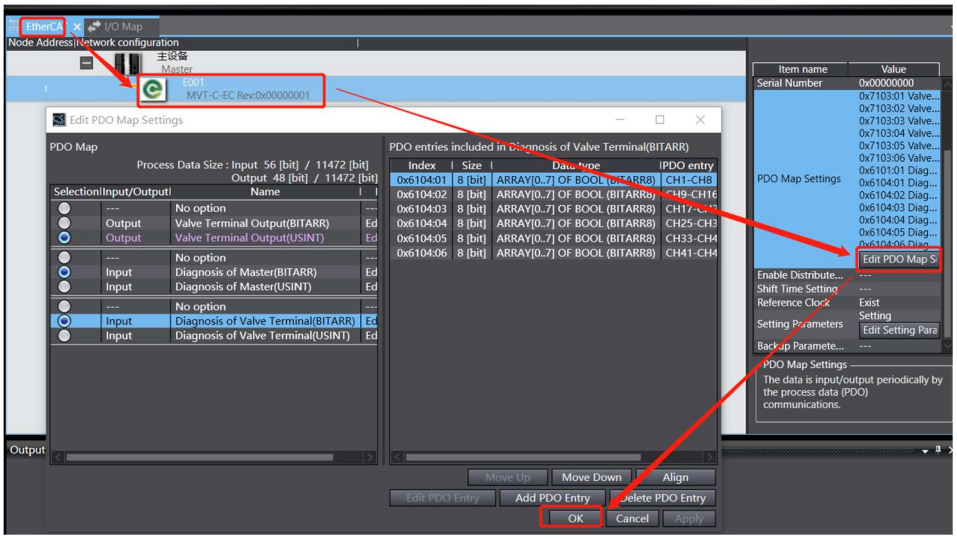


6) Double-click "I/O Mapping" in the "Configuration and Settings" list

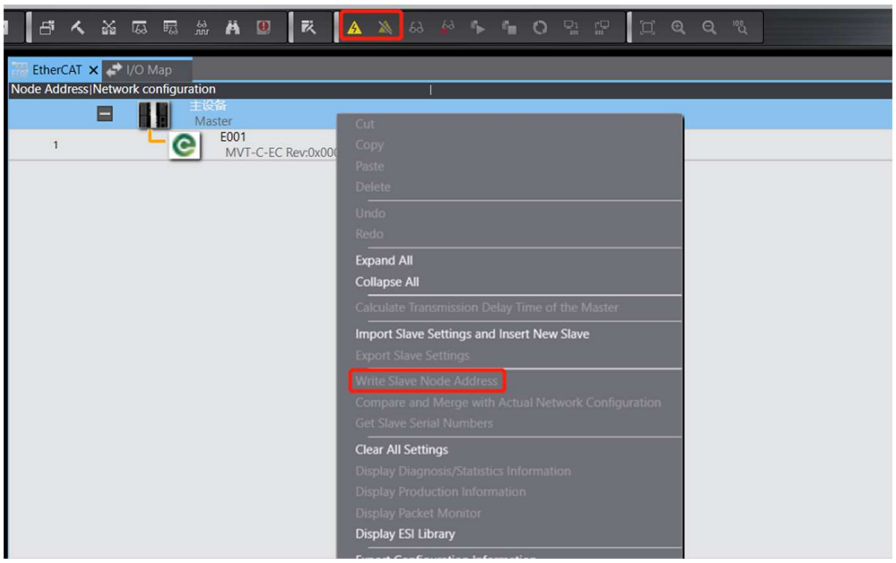
on the left to open the I/O mapping configuration interface. Here, you can see the signals and states related to the MVT valve island node, including: valve island output signal, valve island overload detection signal, etc.



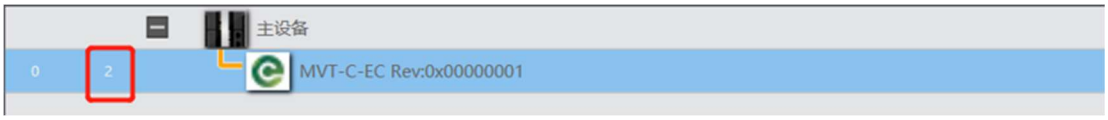
7) The data type of the signal variable of the MVT valve island node is by default in the form of an Array of Bool. The PDO mapping setting can be edited to the form of a byte (USINT) in the Settings. Users can select the corresponding variable data type according to their own programming habits.



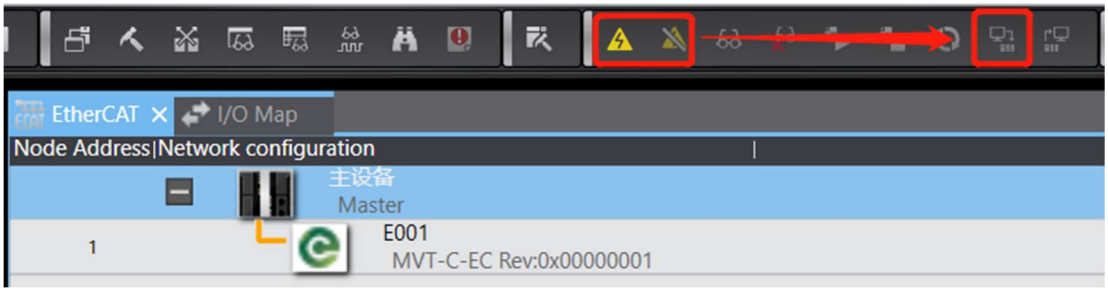
8) The configuration of the MVT valve island node has now been completed. Now, the EtherCAT node address of the valve island node needs to be modified to be consistent with the program configuration. Switch the software to online mode, double-click to open the "EtherCAT" configuration interface, right-click on the main device and select "Write Slave Device Node Address" in the pop-up menu.



9) In the opened "Write from Device Node Address" window, various EtherCAT slave stations connected in the EtherCAT network can be seen. The factory setting of the Ike MVT module is default to 0. Here, the setting value needs to be modified to 2 according to the configuration, and then click the "Write" button. After a successful write, the MVT module needs to be powered on again to activate the new address.

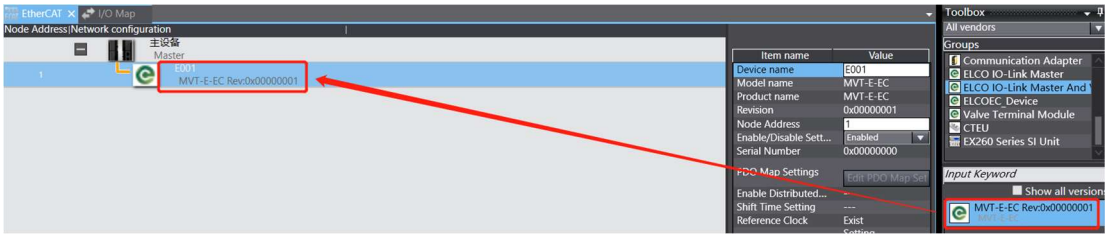


10) At this point, the configuration and configuration of the MVT module have been completed. Switch the software to online mode and click the download button to download the configuration and program to the PLC. At this point, if all configurations are correct, all the indicator lights of the MVT module will be displayed in green.

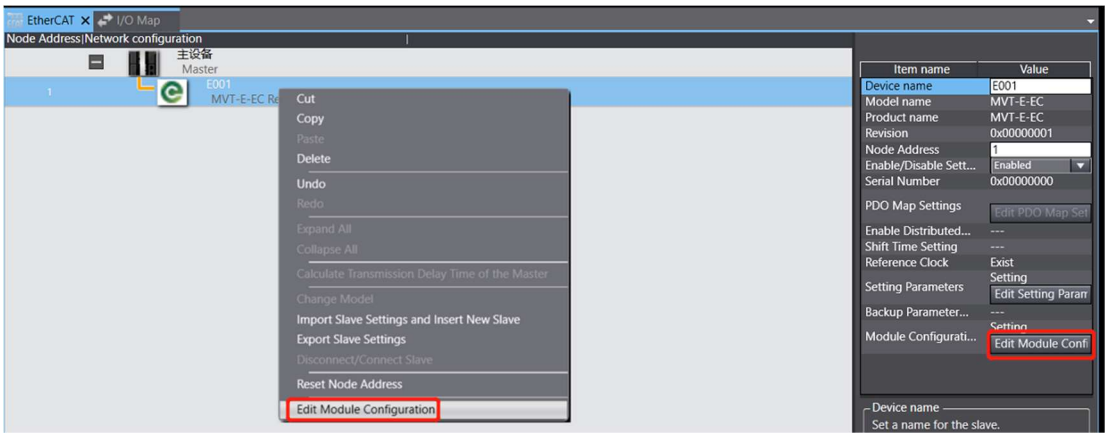


11) In the "Toolbox" list on the right, find "ELCO IO-Link Master And Valve Terminal Module", and drag the module "MVT-E-EC" below to

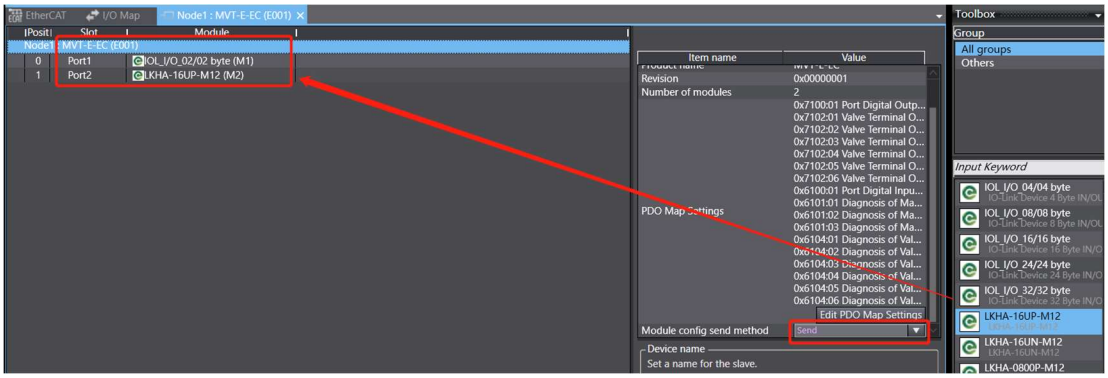
the main device. The system will allocate EtherCAT node addresses based on the connection sequence (which can also be modified as needed).



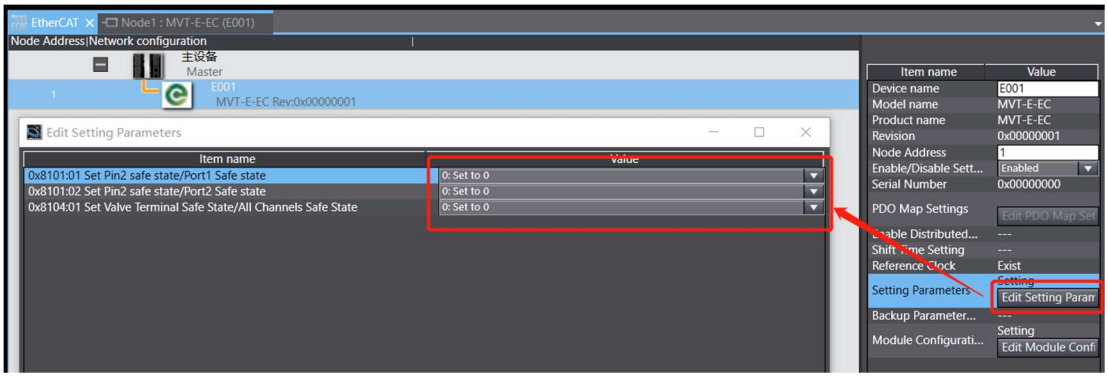
12) After configuring the CVT-E-EC valve island node, you need to set the connected valve island node. You can do this by right-clicking and selecting "Edit Module Configuration" to open the editing interface of the MVT valve island node.



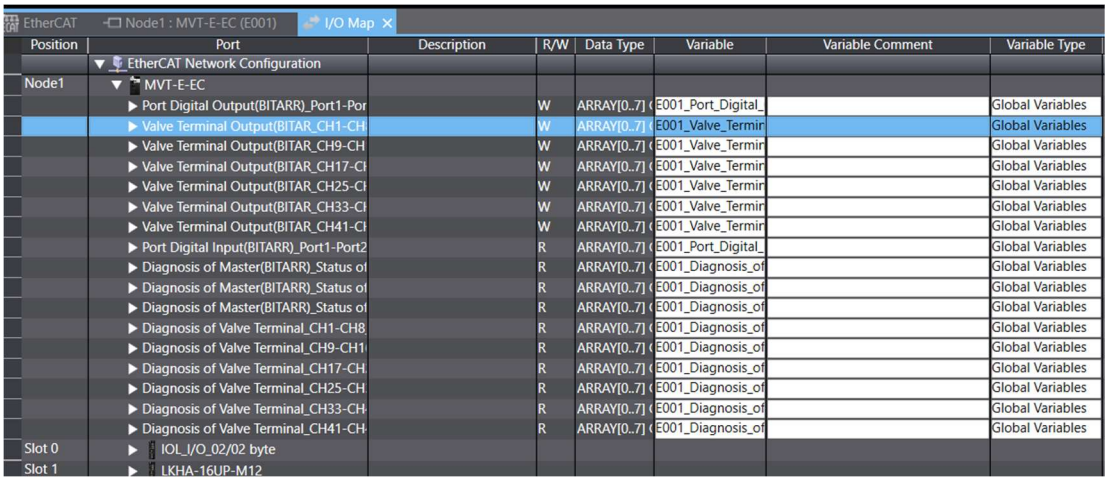
13) This EtherCAT node editing interface is used to configure the relevant configurations of the MVT extended I/ O. According to the module model used in this example, drag the corresponding I/O module from the "toolbox" list on the right to the corresponding port. In order to send the module configuration information to the MVT module, it is also necessary to set the MVT module configuration sending method to "Send".



14) Select "Edit Initialization Parameter Settings" to set the corresponding parameters.



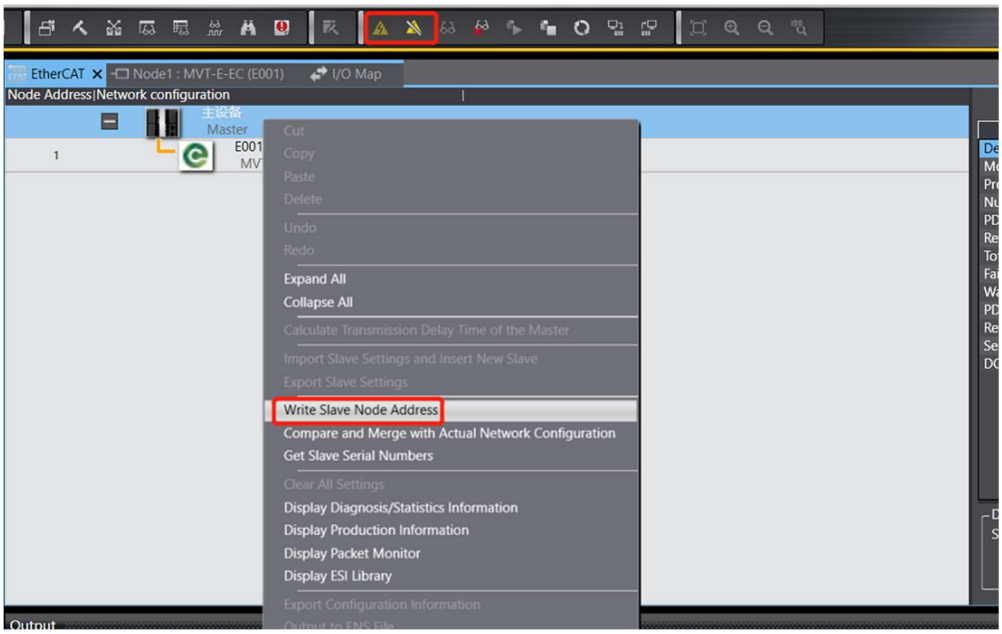
15) Double-click "I/O Mapping" in the "Configuration and Settings" list on the left to open the I/O mapping configuration interface. Here, you can see the signals and states related to the MVT valve island node, including: valve island output signal, valve island overload detection signal, etc.



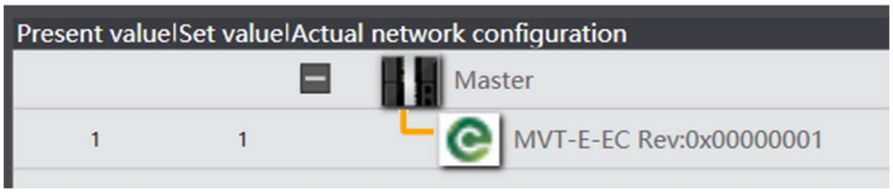
16) In this interface, you can right-click on the module model and select "Create New Device Variable" to automatically generate various variables for this MVT module. Users can also manually fill in

the variables as needed.

17) The configuration of the MVT module has now been completed. Now, the EtherCAT node address of the MVT module needs to be modified to be consistent with the program configuration. Switch the software to online mode, double-click to open the "EtherCAT" configuration interface, right-click on the main device and select "Write Slave Device Node Address" in the pop-up menu.

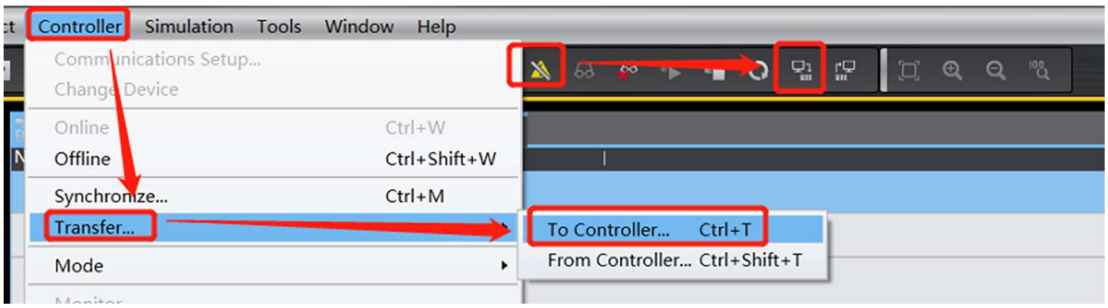


18) In the opened "Write from Device Node Address" window, various EtherCAT slave stations connected in the EtherCAT network can be seen. The factory setting of the Ike MVT module is default to 0. Here, the setting value needs to be modified to 1 according to the configuration, and then click the "Write" button. After a successful write, the MVT module needs to be powered on again to activate the new address.



19) 至 The configuration of the MVT module has been completed. Switch the software to the online mode and click the download button to download the configuration and program to the PLC. At

this time, if all configurations are correct, the NET indicator light of MVT-E-EC will be green, and the MOD light and Act light will flash red.



20) After setting the bit1 and bit3 of QB6 in the process data, the Act light should remain constantly yellow and the MOD light should remain green.

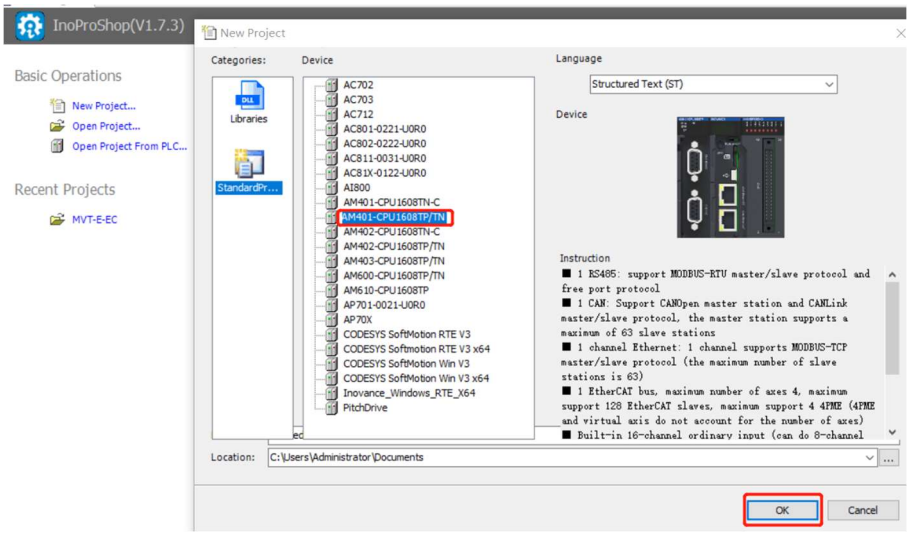
10.2. Configuration example of Inovance PLC

10.2.1. Module Configuration Examples in Inovance InoProShop Environment

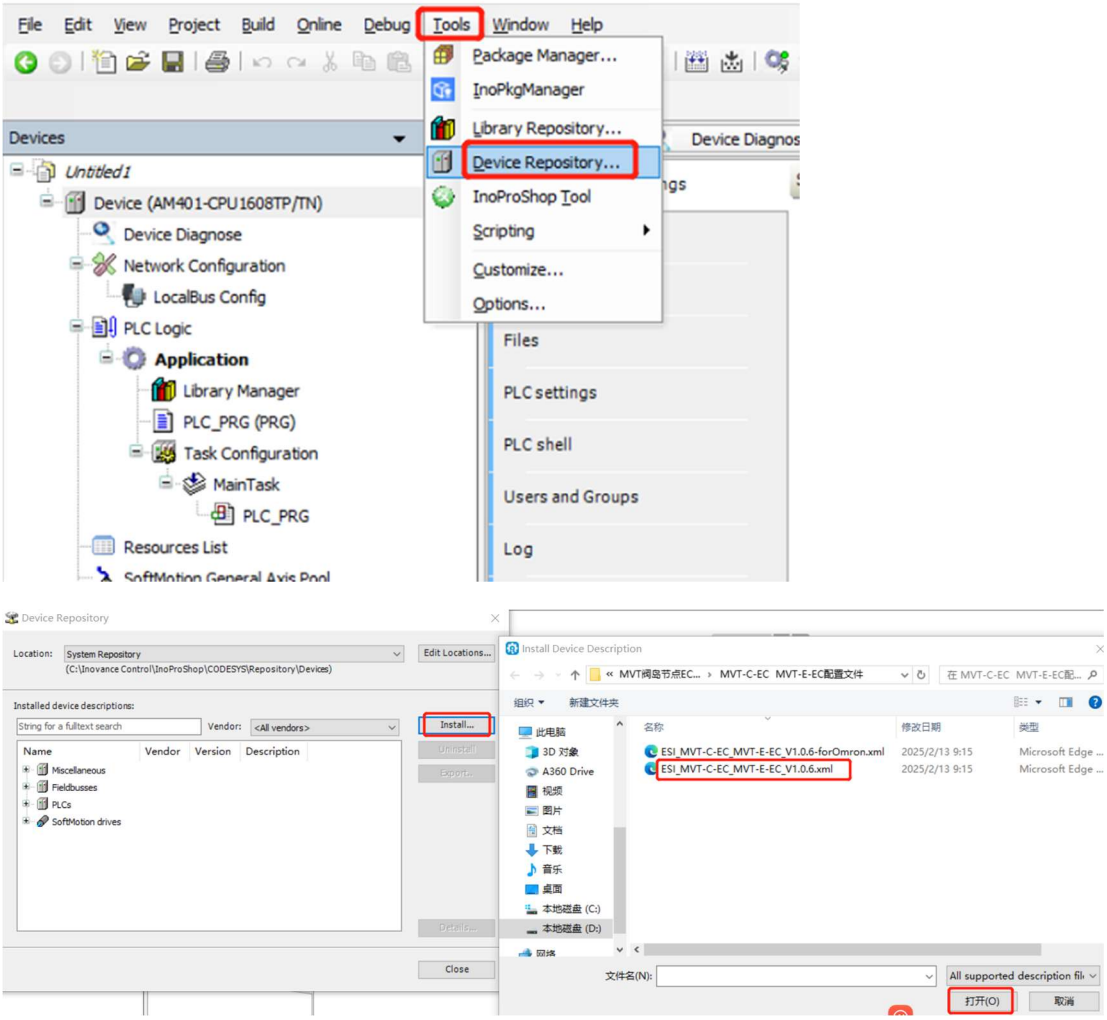
Configure the MVT series valve island node module using the ESI file (XML format). The ESI file is used to integrate the MVT valve island node module into your system as a standard EtherCAT slave station. You can visit the ELCO company website to obtain the latest ESI documents or call the customer service hotline to contact the technicians.

Integrating ESI files into the system depends on the configuration software you are using. Taking the InoProShop programming software of Inovance Company used in the EtherCAT system as an example, add ESI files according to the following steps:

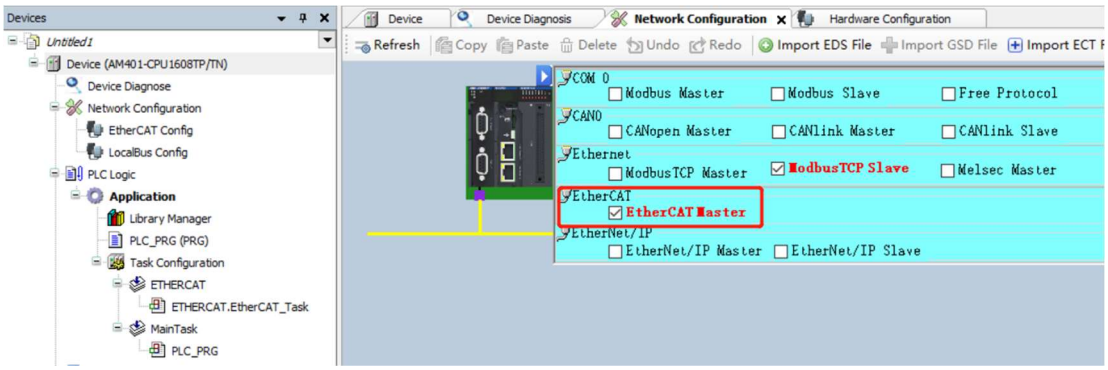
1) Open the InoProShop software and click on "New Project". Fill in the corresponding information according to the PLC model and click "OK".



2) Click on the Tools TAB in the menu bar, select the Device Library from the sub-menu, and in the pop-up interface, click Install and choose the corresponding ESI file.

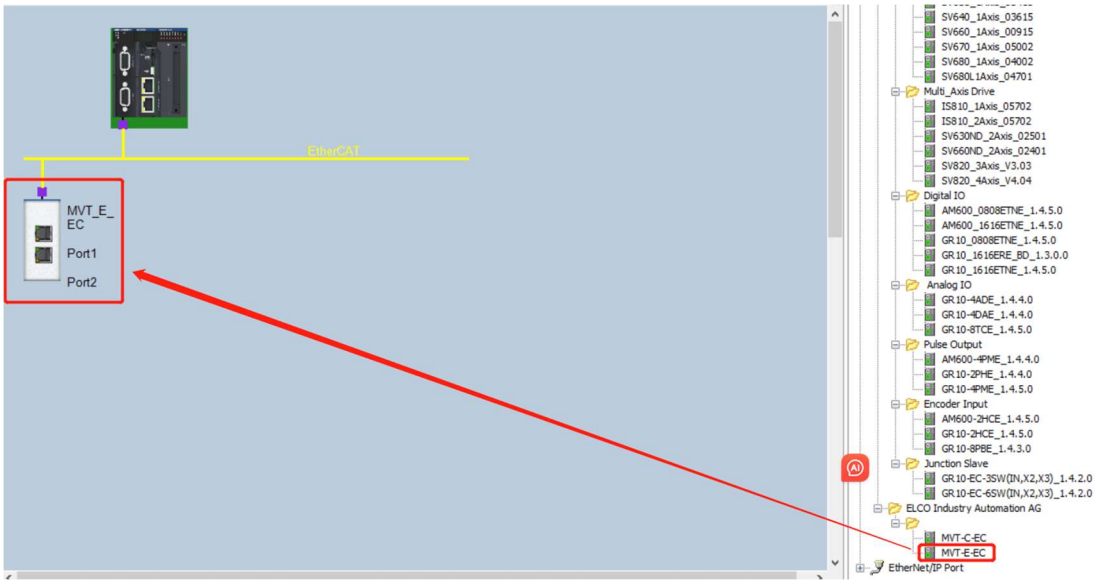


3) Double-click the network configuration, click CPU on the right side, and select EtherCAT Master Station in the menu.

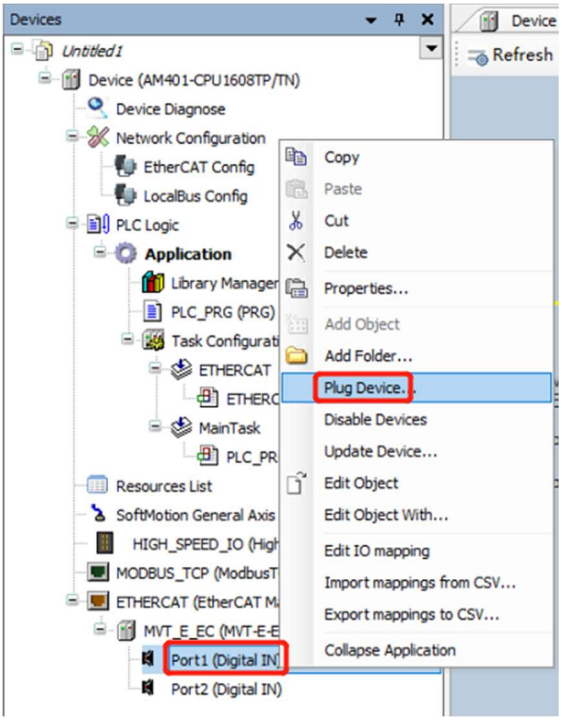


4) In the list of "Network Devices" on the right, find "ELCO Industry Automation AG", and double-click the module "MTT-E-EC" below to add it to the network environment on the left. The system will allocate EtherCAT node addresses according to the connection

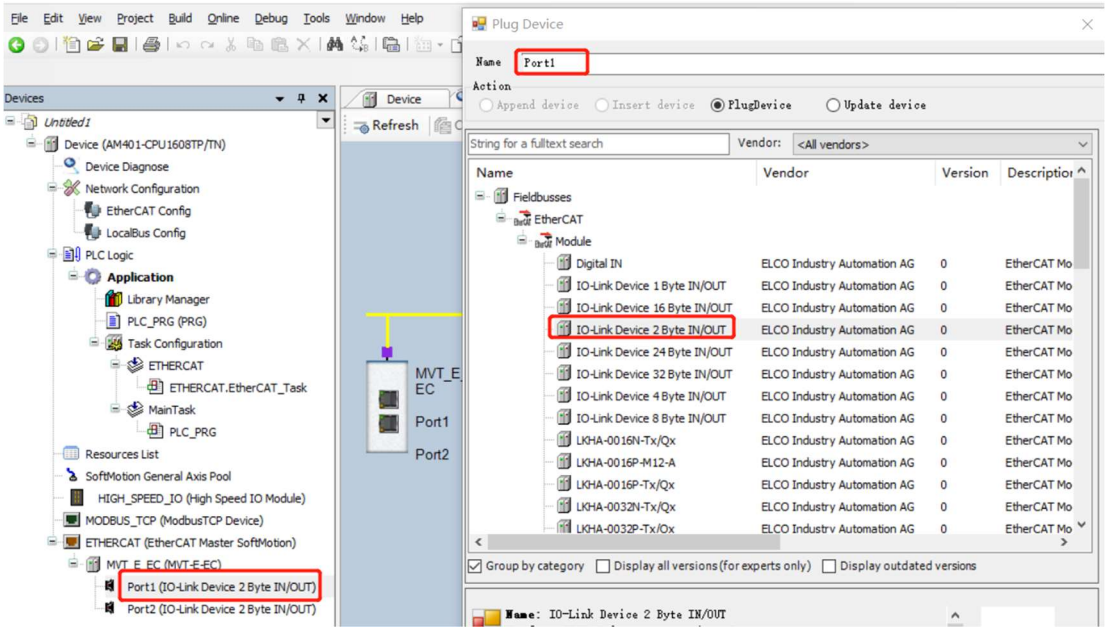
sequence (which can also be modified as needed).



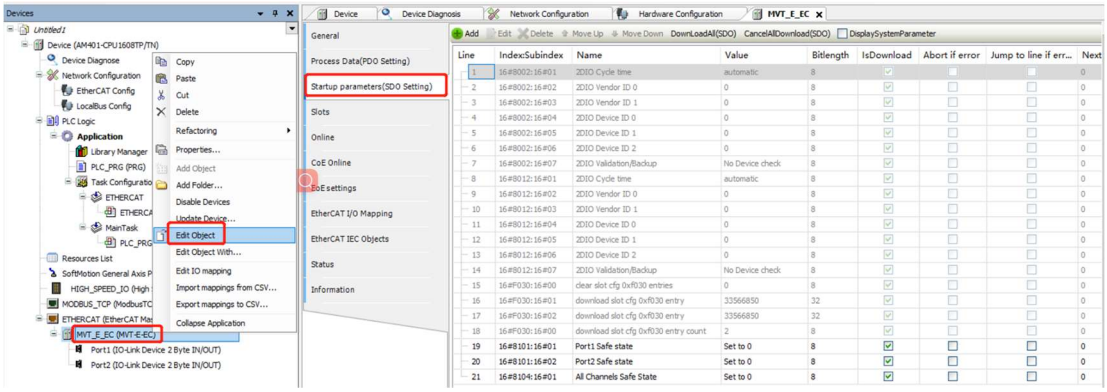
5) After configuring the CVT-E-EC node module, you need to set up the connected slave station. You can do this by selecting the CVT-E-EC node module, right-clicking and choosing "Insert Device" to open the selection interface of the MVT function module.



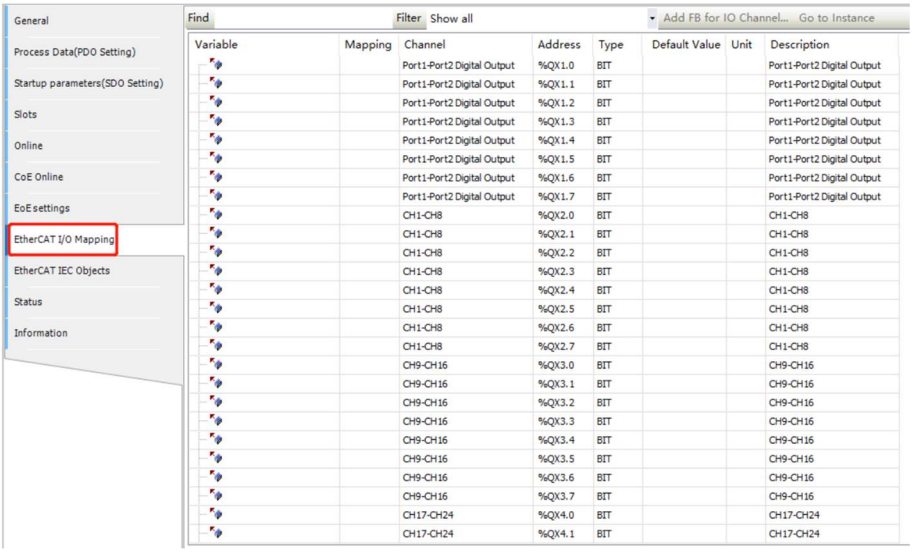
6) According to the module model used, select the corresponding slave module or general byte of the model, and double-click to complete the addition.



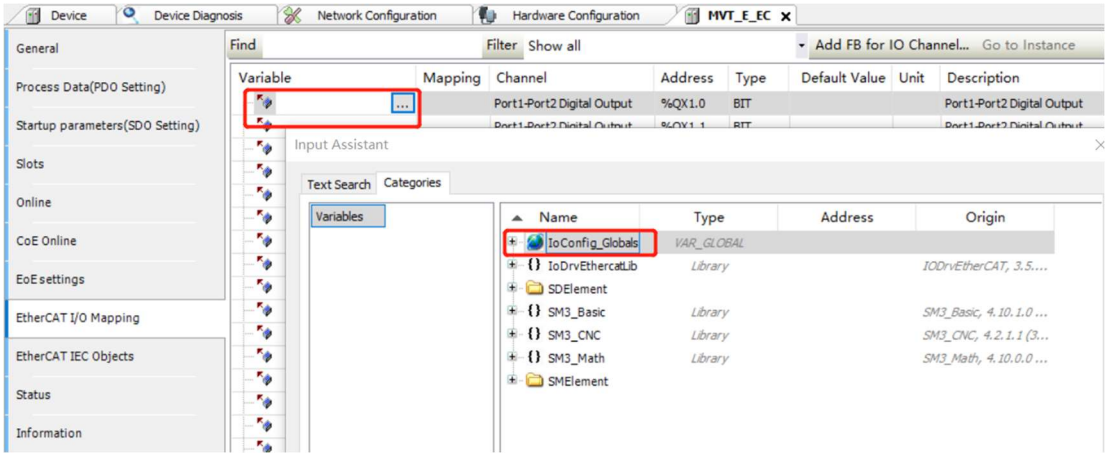
7) The module needs to select "Edit Object" from the right-click menu of the device list on the left, and configure the corresponding parameters in the startup parameters (SDO Settings), etc.



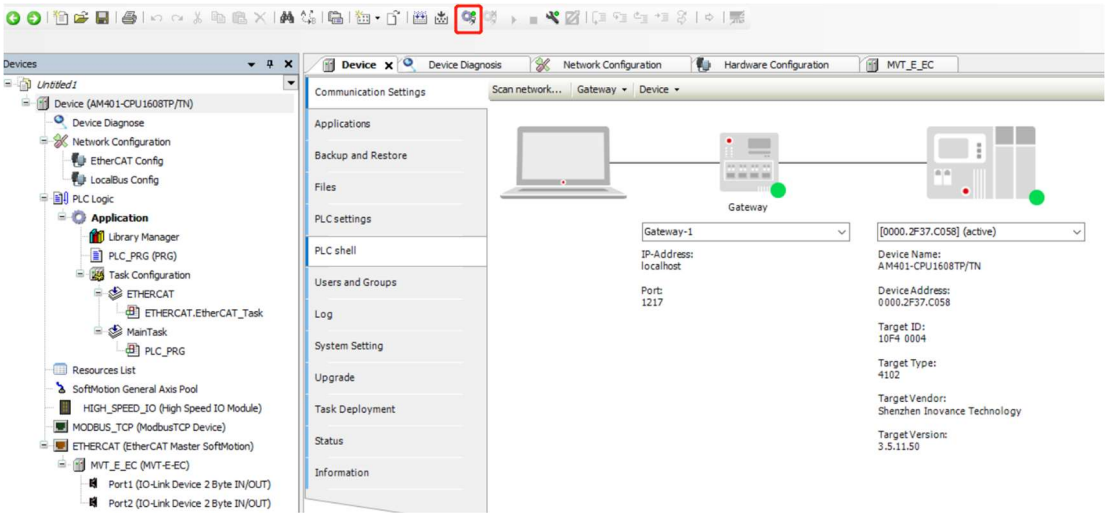
8) Click "I/O Mapping" in the list on the left to open the I/O mapping configuration interface. Here, you can see the signals and status related to the MVT module, including: the input and output status of the MVT module, the diagnostic status of the corresponding slot of the slave module, the connection status of the corresponding slot of the slave module, etc.



9) In this interface, various variables mapped to this MVT module can be selected through the "Variables" parameter on the left. Users can also manually create variables as needed.



10) At this point, the configuration and configuration of the MVT-E-EC module have been completed. Connect it to the PLC, switch the software to the online mode, and click the download button to download the configuration and program to the PLC. At this time, if all configurations are correct, the NET indicator light of MVT-E-EC will be green, and the MOD light and Act light will flash red.



11) After setting QX1.1 and QX1.3, operations can be performed on the slave station. After being positioned, the Act light remains constantly yellow while the MOD light remains evergreen.

Variable	Mapping	Channel	Address	Type	Default Value		Current Value	Prepared Value	Unit	Description
		Port1-Port2 Digital Output	%QX1.0	BIT		FALSE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.1	BIT		TRUE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.2	BIT		FALSE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.3	BIT		TRUE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.4	BIT		FALSE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.5	BIT		FALSE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.6	BIT		FALSE				Port1-Port2 D
		Port1-Port2 Digital Output	%QX1.7	BIT		FALSE				Port1-Port2 D
		CH1-CH8	%QX2.0	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.1	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.2	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.3	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.4	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.5	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.6	BIT		FALSE				CH1-CH8
		CH1-CH8	%QX2.7	BIT		FALSE				CH1-CH8
		CH9-CH16	%QX3.0	BIT		FALSE				CH9-CH16
		CH9-CH16	%QX3.1	BIT		FALSE				CH9-CH16
		CH9-CH16	%QX3.2	BIT		FALSE				CH9-CH16
		CH9-CH16	%QX3.3	BIT		FALSE				CH9-CH16
		CH9-CH16	%QX3.4	BIT		FALSE				CH9-CH16