



# VEC-VE 总线型运动控制器扩展模块 硬件手册

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# Preface

Thank you for purchasing VE motion controller! VE motion controller is a high-performance EtherCAT bus controller developed by our company. This manual describes the hardware description and application method of relevant extensions of VE motion controller.For more details, users can go to the official website of VECTOR:http://www.szvector.com/。

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# **Chapter I Overview of extension modules**

# **1.1 Introduction to extension modules**

The motion controllers of VECTOR VE series integrate rich motion control modules with powerful processing and computing functions. The structure supports the expansion of distributed IO and local IO, and the function supports digital input/output module, analog AD/DA module, XY pulse module and encoder counting module etc., which can make the VE series motion controller can be widely used in temperature, flow, pressure and other process control systems .

Туре	Model	Function
Distributed IO	VEC-VE-EX-32IO-A	16-point DI input, 16-point DO output, input
extension		and output can be NPN or PNP
	VEC-VE-EX-ECAT-SUB	point DI input, 32-point DO output, input and
		output can be NPN or PNP
		24channels of analog inputs $(-10V\sim10V)$
		2 channels of analog output $(-10V \sim +10V)$
		1 channel of sending pulse (XY pulse)
		2 channel encoder count (AB pulse, Support
		probe function and pulse sending)
Local I/O	VEC-VE-EX-8DI-NPN	8 point NPN DI input
extension	VEC-VE-EX-16DI-NPN	16 point NPN DI input
	VEC-VE-EX-8DO-NPN	8 point NPN DI output
	VEC-VE-EX-16DO-NPN	16 point NPN DI input
	VEC-VE-EX-8DI-PNP	8 point PNP DI input
	VEC-VE-EX-16DI-PNP	16 point NPN DI input
	VEC-VE-EX-8DO-PNP	8 point PNP DI output
	VEC-VE-EX-16DO-PNP	16 point PNP type DO out
	VEC-VE-EX-4AD	4-way voltage and current input module
	VEC-VE-EX-4DA	4-way voltage and current output module
	VEC-VE-EX-EDR	1 Road encoder
	VEC-VE-EX-8AD-U	8-way voltage input module
	VEC-VE-EX-8AD-I	8-way current input module
	VEC-VE-EX-8DA-U	8-way voltage output module
	VEC-VE-EX-8DA-I	8-way current output module
	VEC-VE-EX-2PT	The 2-way PT100 input module
	VEC-VE-EX-4TC	A 4-way thermocouple input module
coupler	VEC-VE-CPR-P	When the local I/O expansion is far from the
		host, the local expansion IO module can be
		installed on the coupler, which is connected
		to the host through network cables

#### 1.1.1 Expansion Module Models and Functions

#### **1.1.2 Module configuration**

The LOCAL IO expansion module of the VE series can be installed to the right of the host unit, expansion unit, or coupler. As shown below:



The distributed I/O expansion module can be installed anywhere and connected to the host unit through network cables. As shown below:



# 1.2 Overall dimensions

(1) VEC-VE-EX-32IO-A



(2) VEC-VE-EX-ECAT-SUB



(3) Local expansion module of VE series





## **1.3 General Specifications**

#### **1.3.1 Module Storage Environment**

The product must be placed in packing box before installation; If the machine is not in use temporarily, In order to make the product can meet the company's warranty scope and future maintenance, note the following when storing:

(1) Must be placed in a dry and grime free place;

(2) The ambient temperature of the storage location must be within the range of  $-20^{\circ}$ C to  $+65^{\circ}$ C;

(3) The relative humidity of the storage location must be in the range of 0% to 95%, and there is no condensation;

(4) Avoid storage in an environment containing corrosive gases and liquids;

(5) Properly packaged and stored on shelves or countertops.

#### **1.3.2 Module Installation Environment**

The operating temperature of this product is  $-10^{\circ}$ C to  $+40^{\circ}$ C.

It is recommended that the ambient temperature be below +40 °C for Long hours at work. If the ambient temperature is above +40 °C, place it in a well-ventilated place to ensure product reliability. If the product is installed in a distribution box, the size and ventilation conditions of the distribution box must be make sure all internal electronic devices are not in danger of overheating, and attention should be paid to whether vibration of the machine will affect the electronics of the distribution box. In addition, the conditions of use also include the following:

(1) Places without high heat generating devices;

- (2) Places without water droplets, steam, dust and oily dust;
- (3) Places without non-corrosive, flammable gas, liquid places;
- (4) Places without no- floating dust and metal particles ;
- (5) Places without vibration;
- (6) Places without electromagnetic noise interference.

#### 1.3.3 Installation and disassembly

The installation adopts the buckle type DIN rail installation, It is very convenient to install and disassemble.





# Chapter || Distributed IO extension

# 2.1 I/O Extension Concepts

The I/O capacity of the host is limited. If the system needs more I/O control, you can connect the I/O expansion module to the host.

### **2.2 Product introduction**

VE motion controller supports distributed IO expansion and local IO expansion. Among them, distributed IO expansion modules mainly include DIO32 (hybrid) and FIO76 (hybrid); The local IO expansion module has 6 types: 8DI, 8DO, 16DI, 16DO, 4AI, 4AO, etc. see 1.1.1 model and function of expansion module for specific models.

The following describes IO models and how to use them.

# **2.3 VEC-VE-EX-32IO-A**

#### 2.3.1 Product Appearance and configuration

(1) EtherCAT(IN) : EtherCAT network input, connected to the host output or the last extension EtherCAT(OUT)

(2) EtherCAT(OUT) : EtherCAT network output, connected to the next extension input EtherCAT(IN) or not connected

③ External 24V power supply and DI wiring terminal. Its definition is as follows:



### 2.3.2 Product Wiring Description

You can select NPN and PNP for DI and DO based on the jumper port on the terminal. The specific connection mode is as follows:





#### 2.3.3 Object description of EtherCAT

The product provides a device description file named "model.xml". Each device model has its corresponding device description file. The file import method is performed in the master configuration,As long as the master station supports standard EtherCAT communication, the device configuration can be imported normally.

VEC-VE-EX-32IO-A extension has one RPDO (1702) and one TPDO (1B02), which contains the following objects:

Object	Definition
1702(RPDO259)	6300h(Write output 16-bit): 16 bit DO output
1B02(TPDO259)	6100h(Read input 16-bit): 16 bit DO input

After importing the file device, it can be seen that the AI mapping is shown in the figure below. For the import method, see the 《VE motion controller programming manual》 of VECTOR

变量	映射	通道	地址	类型	单元	描述
		Write output 16-bit	%QW0	UINT		Write output 16-bit
· *		Read input 16-bit	%IW0	UINT		Read input 16-bit
÷ *		Pulse Counter 1	%ID1	UDINT		Pulse Counter 1
÷*		Pulse Counter 2	%ID2	UDINT		Pulse Counter 2

#### 2.3.4 Device Adding descriptions

		⑦ 添加设备 ×
	<ul> <li>× 通目 同步单元分配</li> <li>○ 自动配置主站//</li> <li>EtherCAT NIC设置</li> <li>目的地址(MAC)</li> <li>源地址(MAC)</li> </ul>	**         名称         VECMod_4AO           日志         动作           第         ●附加设备(A) ○ 插入设备(I) ○ 损出设备(P) ○ 更新设备(U)           全文指示的字符串         供应商           名称         供应商 版本           資本         構造
● 】 PLC_PR6 (PR6) ● 】 test (PR6) ● 】 test (PR6) ● 】 test2 (PR6) ● 】 test3 (PR6) ● ③ 任务配置 ● ③ 任务配置 ● ③ 任务配置 ● ① test3 ● ① test3	<ul> <li>网络名称</li> <li>● 技MAC选择网络</li> <li>■ 分布式町钟</li> <li>周期</li> <li>400</li> <li>同步偏移</li> <li>20</li> <li>□ 同步窗口监視</li> </ul>	KUCLECAT-SERVO GAULECAT-SERVO GAULECAT-SERVO GAULECAT-SERVO GAULECAT-SERVO GAULECAT-SERVO SZVector Revision=16#0000000 EtherCAT Slave EverCAT Slave GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULECATOR GAULE
MainTack QlassCoop)     EtherCAT_Master_SoftMotion (EtherCAT Master SoftMotion)     SoftMotion General Axis Pool	<ul> <li>約</li> <li>約</li> <li>約</li> <li>約</li> <li>利</li> <li>利</li> <li>利</li> <li>一</li> <li>置</li> <li>(方加可象)</li> <li>添加可求</li> </ul>	名事:         VECMod_4AO           健康音:         SZVector           題:         健康音:           慶本音:         Revision=16#00000000           健長貴:         VECMod_4AO           董捷:         EtherCAT Slave imported from Slave XML: VECModular4AO_           20200912.xml Device:         VECMod_4AO
[〕 POUs 列表 Appication.JeMa2.SMC_PathCopierFie_C Q ◆ ▼ 过速符码	<ul> <li>添加设备… (2)</li> <li>插入设备…</li> <li>扫描设备…</li> <li>失能设备</li> <li>更新设备…</li> </ul>	格被选设备作为最后一个子设备添加 EtherCAT_Master_SoftHotion         (5)           企此窗口打开时,您可以在导航器中选择另一个目标节点。)         添加设备           关闭

(1) Add VEC-VE-EX-32IO-A to the software

(2)As shown in the following figure, it is added successfully;



(3) Connect to the VE host and scan the network.



(4)As shown below, the EtherCAT network adapter is assigned to eth0

<b>→</b> 쿠 ×	EtherCAT_Master_So	ftMotion 🗙				▼ 工具箱
•	通用 同步单元分配 日志	EtherCAT参数 = Ethe	erCATI/O映射 ≓	EtherCATIEC对象 状态	○ 信息	
	☑ 自动配置主站/从站			EtherCAT		
	THE ACAT MICON					
	目的地址(MAC)	FF-FF-FF-FF-FF-FF		□肩用几末		
	源地址(MAC)	00-01-02-03-04-06	浏览…			
	网络名称	eth0				
	● 按MAC 选择网络	○ 按2轮 法 择 [2]	2			
远择网络适面	C226					
MACHEH	2段 描述					
- 000102	030406 etb0					
- B61AC2	74DAB9 eth1	1				
- 000000	1000003 enp1s0					
0						
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					明定	甲止
						4

(5) It can then be used according to the above object description;

# 2.4 VEC-VE-EX-ECAT-SUB (mix)

#### 2.4.1 Product Appearance and Configuration introduction

(1)EtherCAT(IN) : EtherCAT network input, connected to the host output or the last extension EtherCAT(OUT)

(2)EtherCAT(OUT) : EtherCAT network output, connected to the next extension input EtherCAT(IN) or not connected

(3) The functions are as follows:

- (1) 32 point digital input, 32 point digital output, input and output optional NPN or PNP;
- (2) 4-channel analog input (-10V~+10V)
- ③ 2-channel analog output (-10V~+10V)
- (4) 1-channel pulse counter (XY pulse)
- (5) 2-channel encoder count (AB pulse, support probe function, support pulse)

(4)External 24V power supply and DI wiring terminal. Its definition is as follows:



### 2.4.2 Product Wiring Description





#### 2.4.3 Description of the EtherCAT object

The product provides a device description file named "model.xml". Each device model has its corresponding device description file. The file import method is performed in the master configuration, As long as the master station supports standard EtherCAT communication, the device configuration can be imported normally.

VEC-VE-EX-ECAT-SUB (hybrid) extension has one RPDO (1600) and one TPDO (1A00). Note that a maximum of 16 groups of process parameters can be configured in 1A00. It contains the following objects::

Object	Definition			
	6320h(Write output 32-bit): 32-bit DO output			
	6411:01(Write analogue output 16-bit of channal1): Analog output channel 1			
	6411:02(Write analogue output 16-bit of channal2): Analog output channel 2			
1600 60B8h(Touch Probe Function): Probe function register				
(The first RPDO)	2003h(Pulse output1 control low32): Pulse output 1 pulse period: If it is a			
	period of n microseconds, write the value of n microseconds times 50			
	2004h(Pulse output1 control high32): Pulse output 1 total number (Scope:			
	-2147483648~~~2147483647)			
	2000h(Pulse Counter low32): Pulse counter low 32 bits			
	2001h(Pulse Counter high32): Pulse counter high 32 bits			
	2005h(Pulse output1 status low32): Actual insertion time			
2006h(Pulse output1 status high32): Number of pulses sent				
	6120h(Read input 32-bit):32-bit DI input6004h(Position Value):Encoder 1 position			
	6104h(Position Value2): Encoder 2 position			
1A00	6401:01(Read analogue input 16-bit of channal1): Analog input channel 1			
(The first TPDO)	6401:02(Read analogue input 16-bit of channal2): Analog input channel 2			
	6401:03(Read analogue input 16-bit of channal3): Analog input channel 3			
	6401:04(Read analogue input 16-bit of channal4): Analog input channel 4			
	60B9(Touch Probe Status): Probe status			
60BA(Probe1 PosLatchPos): Latch position value of rising edge of 60BB(Probe1 NegLatchPos): Latch position value of falling edge of				
	60BD(Probe2 NegLatchPos): Latch position value of falling edge of probe 2			

After importing the file device, it can be seen that the I/O mapping is shown in the figure below. For the import method, see the  $\langle VE motion controller programming manual \rangle$  of VECTOR

🖶 - 🍫	Write output 32-bit	%QD7	UDINT	Write output 32-bit
⊞ <b>*</b> ø	Write analogue output 16-bit of channal 1	%QW16	INT	Write analogue output 16-bit of channal 1
🖶 - <b>*</b> ø	Write analogue output 16-bit of channal 2	%QW17	INT	Write analogue output 16-bit of channal 2
1 ··· · · · · · · · · · · · · · · · · ·	Touch Probe Function	%QW18	UINT	Touch Probe Function
🖻 - <sup>r</sup> ø	Pulse output1 control low32	%QD10	UDINT	Pulse output1 control low32
±	Pulse output1 control high32	%QD11	UDINT	Pulse output1 control high32
🖶 - 🍫	Pulse Counter low32	%ID16	UDINT	Pulse Counter low32
⊞ <b>*</b> ≱	Pulse Counter hig32	%ID17	UDINT	Pulse Counter hig32
18 - <b>X</b>	Pulse output1 status low32	%ID 18	UDINT	Pulse output1 status low32
1 - <b>*</b>	Pulse output 1 status high 32	%ID 19	UDINT	Pulse output1 status high32
🖶 - 🍫	Read input 32-bit	%ID20	UDINT	Read input 32-bit
± *>	Position Value	%ID21	UDINT	Position Value
🖻 - 🍫	Position Value 2	%ID22	UDINT	Position Value 2
H- *	Read analogue input 16-bit of channal 1	%IW46	INT	Read analogue input 16-bit of channal 1
🖶 🍫	Read analogue input 16-bit of channal 2	%IW47	INT	Read analogue input 16-bit of channal 2
🛨 ᡟ	Read analogue input 16-bit of channal 3	%IW48	INT	Read analogue input 16-bit of channal 3
1 · · · · · · · · · · · · · · · · · · ·	Read analogue input 16-bit of channal 4	%IW49	INT	Read analogue input 16-bit of channal 4
🗄 🍫	Touch Probe Status	%IW50	UINT	Touch Probe Status
😑 - 🍫	Probe 1PosLatchPos	%ID26	UDINT	Probe 1PosLatchPos
±- 🔖	Probe 1NegLatchPos	%ID27	UDINT	Probe 1NegLatchPos
🖻 - 🍫	Probe2PosLatchPos	%ID28	UDINT	Probe2PosLatchPos
ii	Probe2NegLatchPos	%ID29	UDINT	Probe2NegLatchPos

### 2.4.4 Function Description

1、Pulse input function.

The pulse type of the pulse counter, as well as the type of the encoder 1 and 2, can be configured by starting the parameter, the configuration object:0X2007 (configure parameter1)

Bit0-Bit2: Pulse Type of pulse input counter	0: Pulse + direction positive logic
	1: Pulse + direction negative logic
	2: AB pulse
	3: CW pulse positive logic
	4: CW pulse negative logic
Bit3-Bit5: Type of encoder 1	1: 17-bit encoder
	2: 24-bit encoder
	3: 23-bit encoder
	4: Photoelectric encoder
Bit6-Bit8: Type of encoder 2	1: 17-bit encoder
	2: 24-bit encoder
	3: 23-bit encoder
	4: Photoelectric encoder

#### 2. Pulse output function.

Add a configuration object to the startup parameter:0X2009 (configure parameter3)

Bit0: AB Pulse interface 1 Type	0: AB pulse interface1 is received by the encoder
	1: AB pulse interface1 is the pulse output
Bit1: AB Pulse interface2 Type	0: AB pulse interface2 is received by the encoder
	1: AB pulse interface2 is the pulse output

Then modify 2003h, 2004h, 2013h and 2014h in the process data:

2003h(Pulse output1 control low32): Pulse output 1 Pulse period: if it is a period of N microseconds, write the value of N microseconds multiplied by 50

2004h(Pulse output1 control high32): Pulse output 1 total number (Scope: -2147483648~~~2147483647)

2013h(Pulse output2 control low32): Pulse output 2 Pulse period: if it is a period of N microseconds, write the value of N microseconds multiplied by 50

2014h(Pulse output2 control high32): Pulse output 2 total number(Scope: -2147483648~~~2147483647)

The actual number of pulses emitted by pulse output 1 and pulse output 2 and the actual pulse insertion time can be observed by adding process parameters.

object	definition
	2005h(Pulse output1 status low32): Pulse 1 Actual pulse insertion time
1A00	2006h(Pulse output1 status high32): Number of pulses that have been sent by pulse 1
(The first TPDO)	2015h(Pulse output2 status low32): Pulse 2 Actual pulse insertion time
	2016h(Pulse output2 status high32): Number of pulses that have been sent by pulse 2

3. Analog input filtering function and analog input and output function.

Configure the low-pass filtering time of analog input, which can be configured in the startup parameters. Configuration object: 0x2002

Indexes	Sub index	explanation
0X2002	0X1	Analog input AI1 Low pass filtering time, unit: 20ns
	0X2	Analog input AI2 Low pass filtering time, unit: 20ns
	0X3	Analog input AI3 Low pass filtering time, unit: 20ns
	0X4	Analog input AI4 Low pass filtering time, unit: 20ns

VEC-VE-EX-ECAT-SUB (hybrid) extension has four channels of analog input and two channels of modulus output, which includes the following objects:

Object	definition
	6401:01(Read analogue input 16-bit of channal1): Analog input channel 1
1A00	6401:02(Read analogue input 16-bit of channal2): Analog input channel 2
(The first TPDO)	6401:03(Read analogue input 16-bit of channal3): Analog input channel 3
	6401:04(Read analogue input 16-bit of channal4): Analog input channel 4
1600	6411:01(Write analogue output 16-bit of channal1): Analog output channel 1
(The first RPDO)	6411:02(Write analogue output 16-bit of channal2): Analog output channel 2

After importing the file device, it can be seen that the AI mapping is shown in the figure below. For the import method, see the  $\langle \langle VE \rangle$  motion controller programming manual  $\rangle$  of VECTOR

🖻 – 🏘	Read analogue input 16-bit of channal 1	%IW14	INT	Read analogue input 16-bit of channal 1
ii ¥≱	Read analogue input 16-bit of channal 2	%IW15	INT	Read analogue input 16-bit of channal 2
iii - ¥≱	Read analogue input 16-bit of channal 3	%IW16	INT	Read analogue input 16-bit of channal 3
1	Read analogue input 16-bit of channal 4	%IW17	INT	Read analogue input 16-bit of channal 4

4.DI high-speed counter function

(1)DI pulse counting configuration:Add configuration object in startup parameter0x2019: DI Pulse Counter Configure

Bit0-Bit5: Channel 1 DI selection	1: DI0
	2: DI1
	3: DI2
Bit6: Channel 1 counting mode	0: Channel 1 selects falling edge count
	1: Channel 1 selects rising edge count
Bit7	retain
Bit8-Bit13: Channel 2 DI selection	1: DI0
	2: DI1
	3: DI2
Bit14: Channel 2 counting mode	0: Channel 2 selects falling edge count
	1: Channel 2 selects rising edge count
Bit15	retain

(2) DI channel pulse counter:

This extension has two DI channels as pulse counters. Add and configure the following table objects in the process data group 16#1A00 as required (note that there can only be 16 groups at most when configuring the process parameters in 1A00) :

Indexes:(0x2017)DI Channal 1 Pulse Counter	DI channel 1 pulse counter
Indexes:(0x2018)DI Channal 2 Pulse Counter	DI channel 2 pulse counter

5.XY pulse counter:

The expansion has one XY pulse counter. The external encoder can observe the number of pulses sent according to needs, including objects as follows:

Object	definition
1A00	2000h(Pulse Counter low32): Pulse counter low 32 bits
(The first TPDO)	2001h(Pulse Counter high32): Pulse counter high 32 bits

#### 6. Probe function

(1) Introduction to probe function (only encoder 1 (Ab1) can use probe function)

Probe function is position latch function. It can latch the position information (encoder unit) when the external DI signal or the motor Z signal changes. The VEC supports two probes at the same time. The position information corresponding to the rising edge and falling edge of each probe signal can be recorded at the same time, and four positions can be locked at the same time. Probe 1 can select DI0 or motor Z signal as probe signal, and probe 2 can select DI1 or motor Z signal as probe signal. The position information latched by the rising edge of probe 1 is stored in 0x60BA (encoder unit), the position information latched by the rising edge of probe 1 is stored in 0x60BB (encoder unit), and the position information latched by the falling edge of probe 2 is stored in 0x60BD (encoder unit). You can also set whether each probe is locked continuously or

only once.Continuous latch refers to latch as long as the probe is enabled and the signal jumps. Locking only once means that after the probe is enabled, only the jump edge of the first signal is locked. After that, no matter whether the signal has jump or not, it will not be locked.

# Note: The Z signal mentioned above is for servo drivers and is not present in this expansion module!!!



The probe must be used in strict accordance with the following steps.

(2) The relevant objects are as follows.

Set probe function	n (0x60B8)						
Index	60B8h						
name	Set probe	efunction					
Object type	variant						
data type	Unsigned	1 16 bits					
PDO mapping	Can be n	napped					
Read and write attribute	Readable	and writable					
default value	0	0					
set range	0~65535						
detailed description							
	Bit	function					
	0 Enable probe 1: Bit0~Bit5: Probe 1 rel:		Bit0~Bit5: Probe 1 related				
	0Probe 1 is disabled Settings						
		1Probe 1 is enabled $\blacklozenge$ note:					

1	Probe 1 triggers mode	Once the enable signal of
	0—Single trigger. Trigger only when the	probe 1 (rising edge of bit0
	trigger signal is effective for the first time	of 60B8h) is valid, the
	1—Continuous trigger	function Settings of probe 1
2	Probe 1 triggers signal selection	(trigger mode, trigger signal,
	0—DI0 input signal	effective latch edge) cannot
	1—Z signal (none)	be changed, and the bit0 of
3	RES	60B8h must remain valid
4	Rising edge of probe 1 is enabled	during the operation of probe
	0Rising edge does not latch	1. When DI0 acts as the
	1Rising edge latch	trigger signal of probe 1, its
5	Probe 1 falling edge enable	rising edge and falling edge
	0Falling edge does not latch	can be enabled
	1Falling edge latch	simultaneously
6-7	RES	
8	Enable probe2:	Bit8~Bit15: Probe 1 related
	0Probe 2is disabled	◆note:
	1Probe 2 is enabled	Once the enable signal
9	Probe 2 triggers mode	of probe 2 (rising edge of
	0—Single trigger. Trigger only when the	bit8 of 60B8h) is valid, the
	trigger signal is effective for the first time	function Settings of probe 1
	1—Continuous trigger	(trigger mode, trigger signal,
10	Probe 2 triggers signal selection	effective latch edge) cannot
	0—DI1 Input signal	be changed, and the bit8 of
	1—Z signal (none)	60B8h must remain valid
11	RES	during the operation of probe
12	Rising edge of probe 2 is enabled	2. When DI0 acts as the
	0Rising edge does not latch	trigger signal of probe2, its
	1Rising edge latch	rising edge
13	Probe 2 falling edge enable	and falling edge can be
	0Falling edge does not latch	enabled simultaneously
	1Falling edge latch	
14-15	RES	1
L	1	·]

### Read probe state (0x60B9)

Index	60B9h
name	Set probe function
Object type	variant

data type	Unsigned 16 bits					
PDO mapping	Can be mapped					
Read and write attribute	Readable and writable					
default value	0					
set range	0~65535					
detailed description						
1	Bit	function				
	0	Enable probe 1:	Bit0~Bit5: Probe 1 related			
		0Probe 1 is disabled	Settings			
		1Probe 1 is enabled	♦ note:			
		Probe 1 triggers mode	Once the enable signal of			
		0—Single trigger. Trigger only when the	probe 1 (rising edge of bit0 of			
		trigger signal is effective for the first time	60B8h) is valid, the function			
		1—Continuous trigger	Settings of probe 1 (trigger			
	2	Probe 1 triggers signal selection	mode, trigger signal, effective			
		0—DI0 input signal	latch edge) cannot be changed,			
		1—Z signal (none)	and the bit0 of 60B8h must			
	3	RES	remain valid during the			
	4	Rising edge of probe 1 is enabled	operation of probe 1. When			
		0Rising edge does not latch	DI0 acts as the trigger signal of			
		1Rising edge latch	probe 1, its rising edge and			
	5	Probe 1 falling edge enable	falling edge can be enabled			
		0Falling edge does not latch	simultaneously			
		1Falling edge latch				
	6-7	RES				
	8	Enable probe2:	Bit8~Bit15: Probe 1 related			
		0Probe 2is disabled	◆note:			
		1Probe 2 is enabled	Once the enable signal of probe 2 (rising edge of bit8 of			
	9	Probe 2 triggers mode				
		0—Single trigger. Trigger only when the	60B8h) is valid, the function			
		trigger signal is effective for the first time	Settings of probe 1 (trigger			
		1—Continuous trigger	mode, trigger signal, effective			
	10	Probe 2 triggers signal selection	latch edge) cannot be changed,			
		0—DI1 Input signal	and the bit8 of 60B8h must			
		1—Z signal (none)	remain valid during the			
	11	RES	operation of probe 2. When			
	12	Rising edge of probe 2 is enabled	DI0 acts as the trigger signal of			
		0Rising edge does not latch	probe2, its rising edge and			
	1Rising edge latch falling		falling edge can be enabled			
	13Probe 2 falling edge enablesimultaneously					
	0Falling edge does not latch					
	1Falling edge latch					
	14-15	RES				

00	1
Index	60BAh
name	Probe 1 rising edge latched position
Object type	variant
data type	Signed 32-bit
PDO mapping	Can be mapped
Read and write attribute	read-only
default value	0
set range	-2147483648~2147483647
detailed description	The position latched on the rising edge of probe 1, in encoder units
Probe 1 falling edge latched	position 60BBh (encoder unit)
Index	60BBh
name	Probe 1 falling edge latched position
Object type	variant
data type	Signed 32-bit
PDO mapping	Can be mapped
Read and write attribute	read-only
default value	0
set range	-2147483648~2147483647
detailed description	The position latched on the falling edge of probe 1, in encoder units
Probe 2 rising edge latched	position 60BCh (encoder unit)
Index	60BCh
name	Probe 2 rising edge latched position
Object type	variant
data type	Signed 32-bit
PDO mapping	Can be mapped
Read and write attribute	read-only
default value	0
set range	-2147483648~2147483647
detailed description	The position latched on the rising edge of probe 2, in encoder units
Probe 2 falling edge latched	position 60BDh (encoder unit)
Index	60BDh
name	Probe 2 falling edge latched position
Object type	variant
data type	Signed 32-bit
PDO mapping	Can be mapped
Read and write attribute	read-only
default value	0
set range	-2147483648~2147483647
detailed description	The position latched on the falling edge of probe 2, in encoder units

Probe 1 rising edge latched position 60BAh (encoder unit)

#### 2.4.5 Device Adding Description

(1) Add VEC-VE-EX-32IO-A equipment on the software according to the sequence number in the figure below;



(2) As shown in the following figure, it is added successfully;

- EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
- (3) Connect to the VE host and scan the network.



(4) As shown in the following figure, EtherCAT network adapter is assigned as eth0;

<b>→</b> ₽ ×	EtherCAT_Master_So	oftMotion X				▼ 工具箱
-	通用 同步单元分配 日志	EberCAT参数 = E	therCATI/O映射 두	EtherCATIEC对象 状态	○ 信息	
	☑ 自动配置主站/从站			EtherCAT		
	THE ARCAT ANTO DE					
	目的地址(MAC)	FF-FF-FF-FF-FF				
	源地址(MAC)	00-01-02-03-04-06	测克			
	网络名称	eth0				
<u></u> 生物网络注意	● 按MAC选择网络	○ 按复称法择				
加中國的目的	Unit .	/				
MAC地址	名称 描述	/				
000102	2030406 eth0	<b>×</b>				
B61AC2	274DAB9 eth1	·				
- 000000	0000003 enp1s0					
0						
				*	确定	中止
					-	

(5) It can then be used according to the above object description;

# Chapter III local IO Extension

Due to the limited IO of the host, when the system needs more IO control, the IO expansion module can be directly installed and connected to the host through the module. The local IO expansion module can be installed on the right side of the host unit, expansion unit or coupler.

The local expansion wiring method is as follows:



#### Attention:

1. The 16IO module (on the right side of the figure) supports tool free wiring, and the wiring terminals with the wire ends pressed can be directly inserted vertically into the wiring port.

2.The screwdriver needs to be inserted vertically into the port shown in the red line, and cannot be pried up or down! (As shown in the following figure)



# 3.1 VEC-VE-EX-8DI

### 3.1.1 Introduction to Product Appearance and Configuration

- (1) Indicator light: When the corresponding DI has an input signal, the indicator light is on;
- (2) The power consumption current of this expansion is 0.1A;
- ③ External 24V power supply and DI wiring terminal port. Its definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

# 3.1.2 product wiring instructions

This extended IO is divided into two types by model: VEC-VE-EX-8DI-NPN and VEC-VE-EX-8DI-PNP. The specific wiring method is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

# 3.1.3 Object description of EtherCAT

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8DI-NPN extension has a TPDO (1600) that includes the following objects:

Object	definition
1600(Byte 0)	3001h (Input) : 8-bit DI input

After importing the file device, the DI mapping is shown in the figure below. For the import method, see the VE motion controller Programming Manual of VIKODA

变量	映射	通道	地址	类型	单元	描述
🍫		Input	%IX2.0	BIT		Input
🍫		Input	%IX2.1	BIT		Input
🍫		Input	%IX2.2	BIT		Input
🍫		Input	%IX2.3	BIT		Input
🍫		Input	%IX2.4	BIT		Input
🍫		Input	%IX2.5	BIT		Input
🍫		Input	%IX2.6	BIT		Input
l 🍫		Input	%IX2.7	BIT		Input

# 3.1.4 Device Adding Description

- (1) Nest the 8DI extension that needs to be used behind the host power supply;
- (2) Add 8DI devices to the software in the sequence shown in the following figure;



(3) The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
VEC\_VEEXDI\_8DI (VEEXDI\_8DI\_NPN)

(4) Connect to the VE host and scan the network;

Device X												
角讯设置 应用	备份与还原	文件	日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	ł
扫描网络	关 *   设备 *											
,												
				-				-				
择设备												X
选择控制器的网络	铬路径:											
= 💑 Gateway	(-1(扫描)						Ť	<u>点名:</u>	^	扫	菌网络	
👘 buil	droot [0301.D07	7A]					bu	ildroot		闪	t⊈(w)	
			<u>ر ا</u>				10	点地址:			,,,,,,,,,	
							03	01.D07A				
							拔	至动:				
							UC	P				
								ETD.				
							17	3E 0001				
							B					
							I	<b>标供应育</b> :				
							Sh	enzhen Vector				
								dTechnology	~			
									72,	(0)	The table ( co)	-
									<b>佣</b> 定(	(0)	现/月(C)	

(5) As shown in the following figure, the EtherCAT network adapter is assigned as;

EtherCAT_Master_S	oftMotion X			▼ 工具箱
通用 同步单元分配 日志	5 EtherCAT参数 🗮 EtherCA	ATI/O映射 🗮 EtherCATIEC对象 状	态 ○ 信息	
☑ 自动配置主站/从站		Ether CAT.		
EtherCAT NIC设置				
目的地址(MAC)	FF-FF-FF-FF-FF	□ 广播 □ 启用冗余		
源地址(MAC)	00-00-00-00-03	浏览		
网络名称	enp1s0	/		
● 按MAC选择网络	○ 按名称选择网络			
MAC地址 名称	描述			
B61AC274DAB9 eth1	_/			
000000000003 enp1s0	M.			
			→ 确定	中止
1				

(6) Subsequently, it can be used according to the above object instructions;

# **3.2 VEC-VE-EX-8DO**

### 3.2.1 Introduction to Product Appearance and Configuration

- (1) Indicator light: When the corresponding DO has an input signal, the indicator light is on;
- (2) The power consumption current of this expansion is 0.13A;
- ③ External 24V power supply and DO wiring terminal port. Its definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

# 3.2.2 Product wiring instructions

This extended IO is divided into two types by model: VEC-VE-EX-8DO-NPN and VEC-VE-EX-8DO-PNP. The specific wiring method is as follows:



DO为PNP型接线

## 3.2.3 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8DO-NPN extension has an RPDO (1600) that includes the following objects:

Object	Definition
1A00(Byte 0)	3101h (Output) : 8-bit DO output

After importing the file device, it can be seen that the DO mapping is as shown in the figure below, and the import method is shown in the VE motion controller Programming Manual of VECTOR

变量	映射	通道	地址	类型	单元	描述
<b>*</b>		Output	%QX2.0	BIT		Output
🍫		Output	%QX2.1	BIT		Output
**		Output	%QX2.2	BIT		Output
9 west r		Output	%QX2.3	BIT		Output
		Output	%QX2.4	BIT		Output
🍫		Output	%QX2.5	BIT		Output
**		Output	%QX2.6	BIT		Output
		Output	%QX2.7	BIT		Output

# 3.2.4. Device addition instructions

(1) Nest the 8DO extension that needs to be used behind the host power supply;

(2) Add 8DO devices to the software in the sequence shown in the following figure;



(3) The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

(4) Scan for Network

Device 🗙	]											
通讯设置 应用	备份与还原	文件	日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	ł
111曲124391 233	大 *   以面 *			_	_		_		_	_	_	
)#+123八方				-	-							
四年位萬												^
选择控制器的网络	路径:											.
Gateway	-1(扫描)		٦				bu	島名: idroot	î	扫	邮网络	
1 build	iroot[0301.D0/	'AJ								闪	烁(W)	
			-				103	点地址: 01.D07A				
							族	<b>娶动:</b> p				
							目	标ID::: 3E 0001				
							1	JE 0001				
							E	标版本:				
							3.	5.15.20				
							I	<b>标供应育</b> :				
							Sh	enzhen Vector ence				
							An	dTechnology	~			
									論完	(0)	取消(C)	
									WIXE.		4743(9)	

(5) As shown in the following figure, the EtherCAT network adapter is assigned as;

通用 同步单元分配 日志	Ether AT参数 〓	EtherCATI/O映射	■ EtherCATIEC对象 状态	〇信息	
☑ 自动配置主站/从站			EtherCAT		
EtherCAT NICi2g					
目的地址(MAC)			□ 倉田冗全		
酒+h+h(MAC)	00-00-00-00-03				
原地址(HAC)	epp.1s0	14505	1		
1-328-519	0101010				
<ul> <li>         接MAC选择网络     </li> <li>         网络适配器     </li> </ul>		\$Poist			
<ul> <li>         · 按MAC选择检结     </li> <li>         网络适配器         <ul> <li></li></ul></li></ul>	一技名和选择	******			
<ul> <li>         · 技MAC选择校结     </li> <li>         网络适面配器     </li> <li>         AC地址         名称         000102030406         eth0         <u>B61AC274DAB9         eth1         00000000003         enp1s0     </u></li> </ul>	描述				

(6) Subsequently, it can be used according to the above object instructions;
## **3.3 VEC-VE-EX-16DI**

#### 3.3.1 Introduction to Product Appearance and Configuration

(1) Indicator light: When the corresponding DI has an input signal, the indicator light is on;

- (2) The power consumption current of this expansion is 0.11A;
- ③ External 24V power supply and DI wiring terminal port. Its definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

### 3.3.2 product wiring instructions

The IO trigger mode of this product uses NPN type by default. The specific wiring mode is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

## 3.3.3 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-16DI-NPN extension has two TPDOs (1600, 1601), which contain the following objects:

Object	Definition
1600(Byte 0)	3001h (Input) 8-bit DI input
1601(Byte 1)	3001h (Input) 8-bit DI input

After importing the file device, the DI mapping is shown in the figure below. For the import method, see the VE motion controller Programming Manual of VECTOR

变量	映射	通道	地址	类型	单元	描述
		Input	%IX0.0	BIT		Input
🍫		Input	%IX0.1	BIT		Input
🍫		Input	%IX0.2	BIT		Input
🍫		Input	%IX0.3	BIT		Input
🍫		Input	%IX0.4	BIT		Input
🍫		Input	%IX0.5	BIT		Input
🍫		Input	%IX0.6	BIT		Input
🍫		Input	%IX0.7	BIT		Input
*•		Input	%IX1.0	BIT		Input
**		Input	%IX1.1	BIT		Input
🍫		Input	%IX1.2	BIT		Input
🍫		Input	%IX1.3	BIT		Input
🍫		Input	%IX1.4	BIT		Input
🍫		Input	%IX1.5	BIT		Input
🍫		Input	%IX1.6	BIT		Input
		Input	%IX1.7	BIT		Input

# 3.3.4 Device addition instructions

- (1) Nest the required 16DI extensions behind the host power supply;
- (2) Add 16DI devices to the software in the sequence shown in the following figure;

	<b>,</b> 4	X EtherCAT_Maste	
10 <i>時式2</i> 3) Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC) = 副 PLC 漫撮 C 委員 Application 前 库管理器		<ul> <li>▼ 通用 同步单元分配</li> <li>☑ 自动配置主站/从</li> <li>EtherCAT NIC设置</li> <li>□ 2021244(04.5)</li> </ul>	
□ LIN1 (PRG) □ LLN1 (PRG) □ test (PRG) □ test2 (PRG) □ test3 (PRG) □ TEST4 (PRG) □ TEST4 (PRG) □ G 任务假置 □ G 任务假置 □ LIN1 □		<ul> <li>目的地址(MAC)</li> <li>源地址(MAC)</li> <li>原始名称</li> <li>④ 技MAC法择网络</li> <li>4 分布式切封中</li> <li>周期</li> <li>4000</li> <li>同步偏移</li> <li>20</li> <li>同步窗口监視</li> </ul>	名称 ・ 供应商 版本 描述 ・ Module ・ EtherCAT Slave ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ EtherCAT Slave ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ Module ・ Module ・ Module ・ EtherCAT Slave ・ Module ・ M
EtherCAT_Master_SoftMotion (EtherCAT Master SoftMo		取切 复制 結胎 置称 本 本 二 、 、 売加対象、 高加対象、 高加対象、 高加対象、 高加対象、 高加対象、 の	名称: VEEXDI_8DI_NPN 供应論: SZVector 銀: 叙本: Revision=16#00000001 使決意: VEC_VEEXDI_8DI 編誌: EtherCAT Slave imported from Slave XML: VEEDI8UU_8DI_ESI 20200408.xml Device: VEEXDI_8DI_NPNVEEXDI_8DI_NPN
· ① POUs 利務 Application. JeMa2.SMC_PathCopierFile_C Q 中 文 注	1	<u>添加设备</u> 個入设备 扫描设备 失能设备 更新设备 本t, 英	<b>将被法设备作为最后一个子设备添加</b> EtherCAT_Haster_SoftHotion ● (在此面口打开时,您可以在导航器中选择另一个目标节点。) (5) 添加设备 关闭

(3) The following figure shows that the addition was successful;



(4) Connect to the VE host and scan the network;



(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

EtherCAT_Master_S	oftMotion X				•	工具箱
通用 同步单元分配 日志	; Ether AT参数 =	EtherCATI/O映射	➡ EtherCATIEC对象 状态	5 〇 信息		
☑ 自动配置主站/从站			EtherCAT			
EtherCAT NIC设置						
Enercar Micigin						
百日小山山(INC)						
源地址(MAC)	00-00-00-00-00-03	10000				
网络名称	erip 150	/				
thmac + + × × × × × × × × × × × × × × × × ×	() わかわわる	120045				
● 按MAC选择网络	○ 按名称说	择网络				
● 按MAC选择网络 网络适配器	○ 按名称说	5择网络				
<ul> <li>         · 技MAC选择网络     </li> <li>         网络适配器         <ul> <li></li></ul></li></ul>	<ul> <li>         ·</li></ul>	择网络				
<ul> <li>         · 技MAC选择网络     </li> <li>         网络适配器     </li> <li>         MAC地址         名称     </li> <li>         - 000102030406         +th0     </li> </ul>	<ul> <li>         ·        技名称         </li> <li>         描述         </li> </ul>	择网络				
<ul> <li>         · 技MAC选择网络     </li> <li>         网络适配器         <ul> <li></li></ul></li></ul>	○ 按名称近 描述	择网络				
<ul> <li>         · 技MAC选择网络         网络适配器         MAC地址 名称         -000102030406 etb0         B61AC274DAB9 eth1         -00000000003 enp1s0         </li> </ul>	○技名称近 描述			_		
<ul> <li>         · 技MAC选择网络         网络送面配器     </li> <li>MAC地址 名称         -000102030406 eth0     </li> <li>B61AC274DAB9 eth1</li> <li>-000000000003 enp1s0</li> </ul>	「技名称近 描述					
<ul> <li>         · 技MAC选择网络         网络适配器         MAC选址 名称         - 000102030406 eth0         - b61AC274DAB9 eth1         - 000000000003 enp1s0         - 0000000000003 enp1s0         - 0000000000003 enp1s0         - 000000000000003 enp1s0         - 000000000000000000000000000000000000</li></ul>	「技名称近 描述					
<ul> <li>         · 技MAC选择网络         网络适配器         MAC选址 名称         - 000102030406 eth0         B61AC274DAB9 eth1         - 000000000003 enp1s0</li></ul>	「技名称近 描述					
<ul> <li>         · 技MAC选择网络         网络适面器         MAC选址 名称         - 000102030406 eth0         B61AC274DAB9 eth1         - 000000000003 enp1s0</li></ul>	「技名称近 描述			→ Ŭ	諚	中止

(6) Subsequently, it can be used according to the above object instructions;

#### **3.4 VEC-VE-EX-16DO**

#### 3.4.1 Introduction to Product Appearance and Configuration

- (1) Indicator light: When the corresponding DO has an input signal, the indicator light is on;
- (2) The power consumption current of this expansion is 0.22A;
- ③ External 24V power supply and DO wiring terminal port. Its definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

#### 3.4.2 Product wiring instructions

This extended IO is divided into two types by model: VEC-VE-EX-16DO-NPN and VEC-VE-EX-16DO-PNP. The specific wiring method is as follows:



DO为PNP型接线

Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

## 3.4.3 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-16DI-NPN extension has two RPDOs (1A00, 1A01), and it should be noted that when configuring process parameters in 1A00, there can only be a maximum of 16 groups, which include the following objects:

object	define
1A00(Byte 0)	3101h (Output) 8-bit DO input
1A01(Byte 1)	3101h (Output) 8-bit DO input

After importing the file device, you can see the DO mapping as follows. For the import method, see VECTOR Programming Manual for VE Motion Controller.

变量	映射	通道	地址	类型	单元	描述
r <b>*</b> *		Output	%QX0.0	BIT		Output
<b>*</b>		Output	%QX0.1	BIT		Output
		Output	%QX0.2	BIT		Output
<b>*</b>		Output	%QX0.3	BIT		Output
**		Output	%QX0.4	BIT		Output
🍫		Output	%QX0.5	BIT		Output
🍫		Output	%QX0.6	BIT		Output
<b>*</b>		Output	%QX0.7	BIT		Output
🍫		Output	%QX1.0	BIT		Output
🍫		Output	%QX1.1	BIT		Output
🍫		Output	%QX1.2	BIT		Output
**		Output	%QX1.3	BIT		Output
🍫		Output	%QX1.4	BIT		Output
🍫		Output	%QX1.5	BIT		Output
- 10 · 10		Output	%QX1.6	BIT		Output
		Output	%QX1.7	BIT		Output

## 3.4.4 Device addition instructions

- (1) Nest the required 16DO extensions behind the host power supply
- (2) Add 16DO devices to the software in the sequence shown in the following figure;

			1 添加设备	×
10例ば2 ③ Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC) ④ PLC 選載 ④ Application ④ 常管理器 ⑤ LIN1 (PRG) ⑥ LE 12(PRG) ④ test (PRG) ④ test 2(PRG) ④ test 2(PRG)	<ul> <li>₽</li> </ul>	<ul> <li>×</li> <li>■ EtherCAT_Mast</li> <li>通用 同步单元分配</li> <li>✓ 自动配置主站///</li> <li>EtherCAT NIC设置</li> <li>目的地址(MAC)</li> <li>网络名称</li> <li>④ 技MAC选择网络</li> <li>』 分布式时钟</li> </ul>	<ul> <li>◎ 添加设备</li> <li>名称</li> <li>● 附加设备(A) ○ 插入设备(D) (找出设备(P) ○ 更新设备(U) (3)</li> <li>金文控索的字符串</li> <li>单位应商 SZVector</li> <li>条称</li> <li>供应商 版本</li> <li>描述</li> <li>▲ VEECPR_Ports</li> <li>SZVector</li> <li>Revision=16#0000000</li> <li>EtherCAT Slave</li> <li>(4) ● VEEDD_1600_NPN</li> <li>SZVector</li> <li>Revision=16#00000001</li> <li>EtherCAT Slave</li> </ul>	×
Softwooon General Axe Pool		周期         4000           四步偏移         20           □         同步高口监视           剪切         1           复制         1           站路         1           勤除         1           豐均         •           豐均         •           靈均         •	<ul> <li>■ VEDDO_BOO_NPN SZVector Revision=16#0000001 EtherCAT Slave</li> <li>● SSC_Device</li> <li>● 注決别分组 □ 显示所有版本(仅限专家) □ 显示过期版本</li> <li>● 名称: VEDDI_BOI_NPN 供应言: SZVector 显: SZVector SLVEVEDISUL_BOI_SIL_SIL_SIL_SIL_SIL_SIL_SIL_SIL_SIL_SI</li></ul>	
· ① POUs <b>羽法</b> Application.JeMa2.SMC_PathCopierFile_C Q ● Y		添加功象 添加文件夹 添加设备 (2) 插入设备 扫描设备 失能设备 更新设备	<b>将被送设备作力最后一个子设备添加</b> EtherCAT_Haster_SoftHotion  ● (在此窗口打开时,念可以在导航器中选择另一个目标节点。)  (5) 添加设备 美初	

(3) The following figure shows that the addition was successful;

 EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

 VEC\_VEEXDO\_16DO (VEEXDO\_16DO\_NPN)

(4) Connect to the VE host and scan the network;

Device X		
通讯设置 应用 备份与还原 文件 日志 PLC 设置 PLC指令 用户和组 访问	权限 Symbol Rights	➡ IEC对象 任务部署 礼
扫描网络 网关 - 设备 -		
\		
选择设备		×
选择控制器的网络路径:		
□- da Gateway-1(扫描)	节点名:	▲ 扫描网络
- 🗊 buildroot [0301.D07A]	buildroot	闪烁(W)
	节点地址:	1 474-4-7
	0301.D07A	
	快驱动:	
	UDP	
	月辰TD	
	173E 0001	
	REE+.	
	3.5.15.20	
	日际供应的: Shenzhen Vector	
	Science	
	AndTechnology	~
	<u>\</u>	
	Tái Tái	î定(0) 取消(C)

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

通用 同步单元分配 日志	EtherCAT参数 = EtherCA	ATI/O映射 芎 EtherCATIEC对象 状态	○ 信息	
🗹 自动配置主站/从站		Ether CAT.		
EtherCAT NIC设置				
目的地址(MAC)	FF-FF-FF-FF-FF			
源地址(MAC)	00-00-00-00-03	浏览		
网络名称	enp 1s0	/		
● 按MAC选择网络	○ 按复称选择网络			
0 12 20+ 324				
网络适配器	0 12-14/021+1-34			
O Mana Sa Activut 名称	描述			
文字:20147344           网络适配器           AC地址         名称           000102030406         eth0	描述			
Q1111	描述			
	一 Lettinodi+134			
	描述			
Q1511年19日 図括近配器 AC地址 名称 000102030406 eth0 <u>B61AC274DAB9 eth1</u> 000000000003 enp1s0	一 Licensed and a second se			

(6) Subsequently, it can be used according to the above object instructions;

## 3.5 VEC-VE-EX-4AD\_U

#### 3.5.1 Introduction to Product Appearance and Configuration

(1) Al indicator light: When the corresponding Al has an input signal, the indicator light is on; (2) The Al input range is  $-10V \sim +10V$ , corresponding to  $\pm 10000$ , and the analog resolution

is 20000;

③ External 24V power supply and AI wiring terminal port. The wiring definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

## 3.5.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-4AD extension has a TPDO (1B01) that contains the following objects:

Object	Define
	6401:01 (Read analogue input 16-bit of channal 1) : AI input channel1
1B01	6401:02 (Read analogue input 16-bit of channal 2) : AI input channel2
(TPDO260th)	6401:03 (Read analogue input 16-bit of channal 3) : AI input channel3
	6401:04 (Read analogue input 16-bit of channal 4) : AI input channel4

The AI mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR

变量 通道 单元 映射 地址 类型 H- 🍫 Read analogue input 16-bit of channal 1 %IW0 INT 😟 -- 🍋 Read analogue input 16-bit of channal 2 %IW1 INT 🕀 - 🄫 Read analogue input 16-bit of channal 3 %IW2 INT ÷. \* Read analogue input 16-bit of channal 4 %IW3 INT

Note: The unit of input values for each channel is mV;

## 3.5.3 Function Description

1. AI correction function.

Before using AI input, the AI calibration function can be activated by configuring the startup parameters. The configuration object is 0X2007 (configure parameter1), and the value of this object jumps from 0 to 1 to trigger calibration;

通用	专家过程数据 过程	数据 启动参数	日志	EtherCAT	参数 ≓	EtherCATI/O映射	=	EtherCATIEC对象	状态	○ 信息		
<b>骨</b> 添加	☑编辑 ×删除	會上移 ♣ Mov	e Down									
行	索引:子索引	名称		值	位长度	如果有错,则退	ŧ	如果有错,则至	跳行	下一行	注释	T
1	16#2007:16#00	configure parame	eter 1	1	32					0		

# 3.5.4 Device addition instructions

- (1) Nest the 4AI extensions that need to be used behind the host power supply;
- (2) Add 4AI devices to the software in the sequence shown in the following figure;

● 2 2 2 2 2 2 2 2 2 2 2 2 2 2	<ul> <li>× ● EtherCAT_Master_●</li> <li>● 通用 同步単元分配 日言</li> <li>● 自动配置主站/从站</li> <li>EtherCAT NIC设置</li> <li>目的地址(MAC)</li> <li>源地址(MAC)</li> <li>网络名称</li> <li>● 技MAC选择网络</li> <li>小布式町計中</li> <li>周期 4000</li> <li>同步偏移 20</li> </ul>	<ul> <li></li></ul>
	□ 同步面口监视	
〇 POUs 列表 Application.JeMa2.SMC_PathCopierFile_C 〇 ◆ Y 过滤符	▲管正 添加对象	

- (3) The following figure shows that the addition was successful;
  - EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
- (4) Connect to the VE host and scan the network;



(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

EtherCAT_Master_	SoftMotion X			▼ 工具箱
通用 同步单元分配 日	5 Ether AT参数 🖛 Ether CATI,	/O映射 🗮 EtherCATIEC对象 状态	○ 信息	
☑ 自动配置主站/从站		Ether CAT		
EtherCAT NIC设置	<u> </u>			
目的地址(MAC)		广播 □ 启用冗余		
酒物址(MAC)	00-00-00-00-03	·····································		
网络夕称	enp1s0			
1.359.001.01	and and			
● 按MAC选择网络 网络适配器	○ 按名称选择网络			
● 按MAC选择网络 网络适配器	○ 按名称选择网络			
<ul> <li>              按MAC选择网络         </li> <li></li></ul>	<ul> <li>技名称选择网络</li> <li>描述</li> </ul>			
<ul> <li>         ・ 技MAC选择网络         网络适配器         IAC地址 名称         000102030406 eth0</li></ul>	<ul><li>○ 按名称选择内容</li><li>描述</li></ul>			
<ul> <li>         · 技MAC选择网络     </li> <li>         网络适配器     </li> <li>         IAC地址         名称     </li> <li>         000102030406         eth0     </li> <li>         B61AC274DAB9         eth1     </li> </ul>	<ul><li>○ 按名称选择内括</li><li>// 描述</li></ul>			
<ul> <li></li></ul>	<ul><li>○ 按名称选择网络</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><li>/</li><l< td=""><td></td><td></td><td></td></l<></ul>			
<ul> <li></li></ul>	○ 按名称选择网络 描述			
<ul> <li></li></ul>	<ul><li>○ 按名称选择网络</li><li>// 描述</li></ul>			
<ul> <li>         ·  技MAC选择网络     </li> <li>         网络适配器     </li> <li>         IAC地址 名称         - 000102030406 eth0         B61AC274DAB9 eth1     </li> <li>         00000000003 enp1s0     </li> </ul>	<ul><li>○ 按名称选择网络</li><li>描述</li></ul>		确定	中止

(6) Subsequently, it can be used according to the above object instructions;

# 3.6 VEC-VE-EX-4AD\_I

#### 3.6.1 Introduction to Product Appearance and Configuration

Al indicator light: When the corresponding Al has an input signal, the indicator light is on;
 The Al input range is 0-20mA, corresponding to 0-2000, and the analog resolution is 20000;

③ External 24V power supply and AI wiring terminal port. The wiring definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

#### 3.6.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-4AD extension has a TPDO (1B01) that contains the following objects:

	· · · · · · · · · · · · · · · · · · ·
Object	Definition
	6401:01(Read analogue input 16-bit of channal 1): Al input channel 1
1B01	6401:02 (Read analogue input 16-bit of channal 2) : Al input channel 2
(TPDO260th)	6401:03 (Read analogue input 16-bit of channal 3) : Al input channel 3
	6401:04 (Read analogue input 16-bit of channal 4) : Al input channel 4

The AI mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR

Note: The unit of input values for each channel is 0.01mA;

变量	映射	通道	地址	类型	单元	
🗉 - 🍫		Read analogue input 16-bit of channal 1	%IW0	INT		
±*		Read analogue input 16-bit of channal 2	%IW1	INT		
÷ 🍫		Read analogue input 16-bit of channal 3	%IW2	INT		
÷. 🍫		Read analogue input 16-bit of channal 4	%IW3	INT		

# 3.6.3 Function Description

#### 1. AI correction function.

Before using AI input, the AI calibration function can be activated by configuring the startup parameters. The configuration object is 0X2007 (configure parameter1), and the value of this object jumps from 0 to 1 to trigger calibration;

通用	专家过程数据 过程	建数据 启动参数 日	志 EtherC	AT参数 ≓	EtherCATI/O映射	=	EtherCATIEC对象	状态	○ 信息		
┣ 添加	□ ☑编辑 × 删除	會上移 ♣ Move D	own								
行	素引:子素引	名称	值	位长度	如果有错,则退	щ	如果有错,则至	跳行	下一行	注释	
- 1	16#2007:16#00	configure parameter	1 1	32					0		

# 3.6.4 Device addition instructions

- (1) Nest the 4AI extensions that need to be used behind the host power supply;
- (2) Add 4AI devices to the software in the sequence shown in the following figure;



- (3) The following figure shows that the addition was successful;
  - EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion WECModu4AI\_0\_20mA (VECModu4AI\_0\_20mA)

(4) Connect to the VE host and scan the network;

Device 🗙	:											
通讯设置 应用	备份与还原 关 - 设备 -	文件	日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	1
									_	_		
选择设备					_			-			;	×
选择控制器的网络	铬路径:											
- Gateway	(-1(扫描)						Ť	<u>点名:</u>	^	扫	苗网络	
buil	droot [0301.D0	7A]					bu	ildroot		闪	t€(w)	
			<u>ر</u> ۱				T	点地址:				
							03	01.D07A				
							扶	<b>驱动</b> :				
								P				
							B	东ID··				
							17	3E 0001	-			
								后的大·				
							3.	5.15.20				
								后舟向来.				
							Sh	enzhen Vector				
							Sd	ience				
L							N	dTechnology	~			
									_	_		
									确定	(0)	取消(C)	1
									_			

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

通用 同步单元分配 日志 EtherATT参数 ■ EtherCATTL/O映射 ■ EtherCATTEC对象 状态 ○ 信息         ○ 自动配置主站/从站         EtherCAT NIC设置         目的地址(MAC)         序件FFFFFFF         ⑦ 白动配置主站/从站         EtherCAT         1 自动配置主站/从站         I 自动配置主站/从站         I 自动配置主法         I 自动配置主法         I 自动配置主法         I 自动通道         I 自动配置主         I 自动通道         I 自动通道         I 自动通道         I 自动         I 自动         I 自动         I 自力	EtherCAT_Master_So	ftMotion X			工具箱
回自动配置主站/从站       EtherCAT.         EtherCAT NIC设置       IFFFFFFFFFF         目的地址(MAC)       00-00-00-00-00         潮览…       高用冗余         源地址(MAC)       00-00-00-00-00         ● 技MAC选择网络       技名称选择网络         ● 技MAC选择网络       技名称选择网络         ● 技MAC选择网络       ● 技名称选择网络         ● 技MAC选择网络       ● 技名称选择网络         ● 技MAC选择网络       ● 技名称选择网络         ● 技和公选集       条称         描述       ● 表面和公式目前         ● 通知2000000003       exp1 ±0         确定       申止	通用 同步单元分配 日志	Ether CAT参数 = Ether CAT	TI/O映射 芎 EtherCATIEC对象 状态	○信息	
EtherCAT NIC设置       FF-FF-FF-FF-FF       「唐用冗余         頂地址(MAC)       00-00-00-00-03       潮览…         原始名法       erp150          ④ 按MAC选择网络       ① 按名称法择网络       ① 按AM达择网络         PKM2达择网络       ● 按MAC选择网络       ● 使用         000102030406       eth0          B61A2274DAB9       eth1       ●         0000000003       enp1s0       ●         确定       中止	🛛 自动配置主站/从站		Ether CAT		
目的地址(MAC)       FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-	EtherCAT NIC设置				
源地址(MAC) 00-00-00-00-03 浏览 网络名称 enp1s0 ● 按MAC选择网络 按名称选择网络 按名称选择网络 000000000000000000000000000000000000	目的地址(MAC)	FF-FF-FF-FF-FF	] 广播 📃 启用冗余		
网络名称     enp150       ● 技MAC选择网络     ● 技名称选择网络       - 000102030406     eth0       - 000102030406     eth1       - 00000000003     enp150	源地址(MAC)	00-00-00-00-03	浏览		
<ul> <li>● 按MAC选择网络</li> <li>● 按AK达择网络</li> <li>● 按AK达择网络</li> <li>● 按AK达择网络</li> <li>● 按AK达择网络</li> <li>● 按AK达择网络</li> <li>● 按AK达择网络</li> <li>● 使用公式40月89</li> <li>● 使用公式40月89</li></ul>	网络名称	enp1s0	/		
WAC地址 名称 描述 000102030406 eth0 B61AC274DAB9 eth1 00000000003 enp1s0 确定 中止	● 按MAC选择网络	○ 按名称选择网络			
00000200000 eth B61AC274DAB9 eth1 000000000003 enp1s0 确定 中止	MAC地址 名称	描述			
00000000003 enpis0 确定 中止	- 000102030406 eth0 - B61AC274DAB9 eth1				
确定 中止	000000000003 enp1s0				
确定 中止					
确定中止					
				→ 确定	中止

(6) Subsequently, it can be used according to the above object instructions;

# 3.7 VEC-VE-EX-4DA

#### 3.7.1 Introduction to Product Appearance and Configuration

(1) Indicator light: When the corresponding AO has an input signal, the indicator light is on; (2) The AO output range is  $-10V \sim +10V$ , corresponding to  $\pm$  10000, and the analog resolution is 20000;

③External 24V power supply and AO wiring terminal port. The wiring definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

## 3.7.2 EtherCAT O bject Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-4DA extension has an RPDO (1701) that includes the following objects:

Object	Definition
1B01	6411:01 (Write analogue output 16-bit of channal 1) : AO input channel 1

(TPDO260th)	6411:02 (Write analogue output 16-bit of channal 2) : AO input channel 2
	6411:03 (Write analogue output 16-bit of channal 3) : AO input channel 3
	6411:04 (Write analogue output 16-bit of channal 4) : AO input channel 4

After importing the file device, it can be seen that the AI mapping is shown in the figure below. For the import method, see the  $\langle\!\langle VE motion \ controller \ programming \ manual \,\rangle\!\rangle$  of VECTOR

Note: The unit of output values for each channel is mV;

变量	映射	通道	地址	类型	单元	
⊕- <b>*</b> ≱		Write analogue output 16-bit of channal 1	%QW0	INT		
±**		Write analogue output 16-bit of channal 2	%QW1	INT		
😟 - 🍢		Write analogue output 16-bit of channal 3	%QW2	INT		
±		Write analogue output 16-bit of channal 4	%QW3	INT		

#### **3.7.3 Function Description**

1. AO correction function.

Before using AO output, the AI calibration function can be activated by configuring the startup parameters. The configuration object is 0X2007 (configure parameter1), and the value of this object jumps from 0 to 1 to trigger calibration;

♣ 添加	□ ■ 编辑 × 删除	會 上移 ♣ Move Down						
行	索引:子索引	名称	值	位长度	如果有错,则退出	如果有错,则至跳行	下一行	1
1	16#2007:16#00	configure parameter 1	1	32			0	

# 3.7.4 Device addition instructions

(1) Nest the 4AO extensions that need to be used behind the host power supply;

(2) Add 4AO devices to the software in the sequence shown in the following figure;



(3)As shown in the following figure, it is added successfully;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion) VECMod\_4AO (VECMod\_4AO)

(4) Connect to the VE host and scan the network.

Device X	]									
通讯设置 应用	备份与还原 文件	E 日志 PLC i	置 PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部	署 1
扫描网络 网	关 *   设备 *									
	N									
						-				
选择设备										×
选择控制哭的网络	89843:									
Gateway	-1(扫描)				17	点名:	^	11	前网络	
- ff build	droot [0301.D07A]				bu	ildroot		277.	HT OLD	
					-	古情世-			烁(W)	
_		- \			03	01.D07A				
					35	(季¥羽): )p				
						4				
					E	标ID::				
					1/	3E 0001				
					E	标版本:				
					3.	5.15.20				
						标供应商:				
					Sh	enzhen Vector				
					Sc	ience				
					N	dTechnology	~			
							_	_		
							确定	(0)	取消(C)	
							_			

(5)As shown below, EtherCAT network adapter is assigned to ENPLS0;

EtherCAT_Master_S	oftMotion X	▼ 工具箱
通用 同步单元分配 日志	; EtherCAT参数 🚍 EtherCATI/O映射 🚔 EtherCATIEC对象 状态 🔾 信息	
☑ 自动配置主站/从站	EtherCAT	
EtherCAT NIC设置 —		
目的地址(MAC)		
源地址(MAC)	00-00-00-00-03 浏览…	
网络名称	enp 1s0	
● 按MAC选择网络	○ 按名称选择网络	
MAC地址 名称	描述	
000102030406 eth0		
B61AC274DAB9 eth1		
unpros		
inprove inprove		
	· · · · · · · · · · · · · · · · · · ·	定 中止

(6)It can then be used according to the above object description;

## 3.8 VEC-VE-EX-8AD-I

#### 3.8.1 Introduction to Product Appearance and Configuration

①indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

(2) The AI input range is 0-20mA, corresponding to 0-2000, and the analog resolution is 20000;

③ The power consumption current of this expansion is 0.18A;

④ External 24V power supply and AI wiring terminal port. The wiring definition is as follows:



be careful:

- 1. The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share one set.
- 2. The reference ground for the 8-channel analog input of this extension is 0V.

# 3.8.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8AD-I extension has a TPDO (1B01) that contains the following objects:

Object	Definition
	6401:01 (Channal 0 Analog Current Asmple Value,Unit is 0.001mA) : Al incoming channel1
	6401:02 (Channal 1 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel2
	6401:03 (Channal 2 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel3
1B01	6401:04 (Channal 3 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel4
(TPDO)	6401:05 (Channal 4 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel5
	6401:06 (Channal 5 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel6
	6401:07 (Channal 6 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel7
	6401:08 (Channal 7 Analog Current Asmple Value, Unit is 0.001mA) : Al incoming channel8

The AI mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR

变量	映射	通道	地址	类型	单元	描述
		Channal 0 Analog Current Sample Value, Unit is 0.001mA	%IW42	INT		Channal 0 Analog Current Sample Value, Unit is 0.001mA
· · · · · · · · · · · · · · · · · · ·		Channal 1 Analog Current Sample Value, Unit is 0.001mA	%IW43	INT		Channal 1 Analog Current Sample Value, Unit is 0.001mA
🖶 - ᡟ		Channal 2 Analog Current Sample Value, Unit is 0.001mA	%IW44	INT		Channal 2 Analog Current Sample Value, Unit is 0.001mA
· • · · · · · · · · · · · · · · · · · ·		Channal 3 Analog Current Sample Value, Unit is 0.001mA	%IW45	INT		Channal 3 Analog Current Sample Value, Unit is 0.001mA
🖷 - 🍫		Channal 4 Analog Current Sample Value, Unit is 0.001mA	%IW46	INT		Channal 4 Analog Current Sample Value, Unit is 0.001mA
🖶 - 🍫		Channal 5 Analog Current Sample Value, Unit is 0.001mA	%IW47	INT		Channal 5 Analog Current Sample Value, Unit is 0.001mA
😟 🍫		Channal 6 Analog Current Sample Value, Unit is 0.001mA	%IW48	INT		Channal 6 Analog Current Sample Value, Unit is 0.001mA
		Channal 7 Analog Current Sample Value, Unit is 0.001mA	%IW49	INT		Channal 7 Analog Current Sample Value, Unit is 0.001mA

#### Note: The unit of input values for each channel is 0.001mA;

#### 3.8.3 Device addition instructions

- (1) Nest the 8AD-I extension that needs to be used behind the host power supply;
- (2) Add 8AD-I devices to the software in the sequence shown in the following figure;

Dritited2     Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC)		•	通用		☑自动	动作 ● 附加设备 (▲) (	○插入设备① ○ 损出设	습요 C	更新设备(世)		
□ 副 PLC 逻辑 □ ② Application			同步单元分	561	EtherCAT	全文搜索的字符串		供应商	SZVector	3	~
<ul> <li>● 库管理器</li> <li>● 優 任冬郡害</li> </ul>			日志		目的地址	名称		供应商	版本		描述
EtherCAT_Task (IEC-Tasks)			EtherCATI,	D映射	网络名称	B Bet Etherca	at				
1 ThereCAT_Master_SoftMotion (EfferCAT Master SoftMotion) a SoftMotion General Axis Pool 2	× • • •	第500 第500 第500 第500 第500 第500 第500 第500	ی بی ا ب ب ب ب ب ب ب ب ب ب ب ب ب ب ب ب ب	<b>1</b> 余.	P994名制 ④ 技 *44 <i>▲</i> 分布 現 周時 周時 一 同步 衛5 一 同 步 電 5 二 一 日 少 二 一 日 少 二 一 日 少 二 一 一 一 一 一 一 一 一 一 一 一 一 一	<ul> <li>▲ 読 从3</li> <li>▲ 読 从3</li> <li>▲ 通</li> <li>▲</li> <li>▲</li></ul>	A STVector ISTVector ID Expansion Card 単 VEC-VE-EX-APT 単 VEC-VE-EX-APT 単 VEC-VE-EX-APT 単 VEC-VE-EX-APT 単 VEC-VE-EX-APT 単 VEC-VE-EX-APT ● VEC-VEC-VEC-VEC-VEC-VEC-VEC-VEC-VEC-VEC-	SZVector SZVector SZVector SZVector SZVector	Revision = 15 Revision = 15 Revision = 16 Revision = 16 Revision = 16 Revision = 16	#00111000 #00111000 #00111000 #00111000 #00111000 #00111000	EtherCAT Slave import EtherCAT Slave import EtherCAT Slave import EtherCAT Slave import EtherCAT Slave import
						着述: Ether VEC-VE-EX-4 将被选设音作为角 EtherCAT_Master ● (在此窗口打:	rCAT Slave imported from Slav SAI-IVEC-VE-EX-8AI-1	ve XML: VEC 择另一个目	C-VE-EX-SAI-I.xml   目标节点。)	Device: 	5 ¥A

(3) The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
VEC\_VE\_EX\_8AI\_I (VEC-VE-EX-8AI-I)

(4) Connect to the VE host and scan the network;

Device >	٢											
通讯设置 应用	备份与还原	文件	日志PL	C 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	łł
扫描网络	关 -   设备 -											
洗择设备			-		-							×
	Inch (n											~
选择控制器的网	络路径:							占么,	-	+=+		
- III buil	droot [0301 D0]	761					bu	ildroot		3-13	mmann	
			N				-	古論社・		М	烁(W)	
							03	01.D07A				
				1				wet.				
								P				
								ETD				
							17	3E 0001				
								<b>反版本</b> :				
							3.	5.15.20				
								<b>东供应音</b> :				
							Sh	enzhen Vector				
							Sc	ience dTechnology				
								orechnology	*			
										_		
									确定	(0)	取消(C)	

(5)As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

	oftMotion X			▼ 工具箱
通用 同步单元分配 日志	Ether CAT参数 = Ether CA	ATI/O映射 芎 EtherCATIEC对象 物	応 🔾 信息	
☑ 自动配置主站/从站		EtherCAT	•	
EthorCAT NICOPE				
Euler CAT INIC (2 m				
日日JJIEJI (MAC)				
源地址(MAC)	00-00-00-00-03	测见		
网络名称	enp1s0			
● 按MAC)选择网络	○ 按名称选择网络			
网络适配器				
MAC地址 名称	描述			
MAC地址 名称 	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1	描述			
AAC地址         名称           000102030406         eth0           B61AC274DAB9         eth1           000000000003         enp1z0	描述			
MAC地址 名称 - 000102030406 eth0 - D61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - <u>B61AC274DAB9 eth1</u> - 000000000003 enp1s0	描述		福会	
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述			中止

(6) Subsequently, it can be used according to the above object instructions;

# 3.9 VEC-VE-EX-8AD-U

#### 3.9.1 Introduction to Product Appearance and Configuration

①indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

(2) The AI input range is  $-10V \sim +10V$ , corresponding to  $\pm 10000$ , and the analog resolution is 20000;

③ The power consumption current of this expansion is 0.18A;

④ External 24V power supply and AI wiring terminal port. The wiring definition is as follows:



be careful:

1. The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share one set.

2. The reference ground for the 8-channel analog input of this extension is 0V

# 3.9.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8AD-U extension has a TPDO (1B01) that contains the following objects:

Object	Definition
	6401:01 (Channal 0 Analog Voltage Sample Value,Unit is mV) : Al incoming channel1
	6401:02 (Channal 1 Analog Voltage Sample Value,Unit is mV) : Al incoming channel2
	6401:03 (Channal 2 Analog Voltage Sample Value,Unit is mV) : Al incoming channel3
1B01	6401:04 (Channal 3 Analog Voltage Sample Value,Unit is mV) : Al incoming channel4
(TPDO)	6401:05 (Channal 4 Analog Voltage Sample Value,Unit is mV) : Al incoming channel5
	6401:06 (Channal 5 Analog Voltage Sample Value,Unit is mV) : Al incoming channel6
	6401:07 (Channal 6 Analog Voltage Sample Value,Unit is mV) : Al incoming channel7
	6401:08 (Channal 7 Analog Voltage Sample Value,Unit is mV) : Al incoming channel8

The AI mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR

#### Note: The unit of input values for each channel is mV;

变量	映射	通道	地址	类型	单元	描述
		Channal 0 Analog Voltage Sample Value,Unit is mV	%IW0	INT		Channal 0 Analog Voltage Sample Value,Unit is mV
· · · · · · · · · · · · · · · · · · ·		Channal 1 Analog Voltage Sample Value, Unit is mV	%IW1	INT		Channal 1 Analog Voltage Sample Value,Unit is mV
<b>⊕ *</b> ≱		Channal 2 Analog Voltage Sample Value, Unit is mV	%IW2	INT		Channal 2 Analog Voltage Sample Value, Unit is mV
⊞		Channal 3 Analog Voltage Sample Value,Unit is mV	%IW3	INT		Channal 3 Analog Voltage Sample Value,Unit is mV
( <b>i</b> ) - <b>N</b>		Channal 4 Analog Voltage Sample Value, Unit is mV	%IW4	INT		Channal 4 Analog Voltage Sample Value, Unit is mV
⊕ <b>*</b> ≱		Channal 5 Analog Voltage Sample Value, Unit is mV	%IW5	INT		Channal 5 Analog Voltage Sample Value,Unit is mV
1 🖶 - 🏘		Channal 6 Analog Voltage Sample Value, Unit is mV	%IW6	INT		Channal 6 Analog Voltage Sample Value,Unit is mV
±		Channal 7 Analog Voltage Sample Value, Unit is mV	%IW7	INT		Channal 7 Analog Voltage Sample Value, Unit is mV

## 3.9.3 Device addition instructions

(1) Nest the 8AD-U extension that needs to be used behind the host power supply;

(2) Add 8AD-U devices to the software in the sequence shown in the following figure;



- (3) The following figure shows that the addition was successful;
  - EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
    - VEC\_VE\_EX\_8AI\_U\_5 (VEC-VE-EX-8AI-U)
- (4) Connect to the VE host and scan the network;



(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

	oftMotion X			▼ 工具箱
通用 同步单元分配 日志	Ether CAT参数 = Ether CA	ATI/O映射 芎 EtherCATIEC对象 物	応 🔾 信息	
☑ 自动配置主站/从站		EtherCAT	•	
EthorCAT NICOPE				
Euler CAT INIC (2 m				
日日JJIEJI (MAC)				
源地址(MAC)	00-00-00-00-03	测见		
网络名称	enp1s0			
● 按MAC)选择网络	○ 按名称选择网络			
网络适配器				
MAC地址 名称	描述			
MAC地址 名称 	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1	描述			
AAC地址         名称           000102030406         eth0           B61AC274DAB9         eth1           000000000003         enp1z0	描述			
MAC地址 名称 - 000102030406 eth0 - D61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - <u>B61AC274DAB9 eth1</u> - 000000000003 enp1s0	描述		福会	
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述		→	中止

(6) Subsequently, it can be used according to the above object instructions

# 3.10 VEC-VE-EX-8DA-I

#### 3.10.1 Introduction to Product Appearance and Configuration

1 Indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

(2) The AO output range is 0-20mA, corresponding to 0-20000, and the analog resolution is 20000;

③The power consumption current of this expansion is 0.16A;

(4) External 24V power supply and AO wiring terminal port. The wiring definition is as follows:



be careful:

1. The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share one set.

2. The reference ground for the 8-channel analog output of this extension is 0V.

## 3.10.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8DA-I extension has an RPDO (1600) that includes the following objects:

Object	Definition
	6411:01 (Write analogue output 16-bit of channal 0,unit is 0.001mA) : AO incoming channel 1
	6411:02 (Write analogue output 16-bit of channal 1,unit is 0.001mA) : AO incoming channel 2
	6411:03 (Write analogue output 16-bit of channal 2,unit is 0.001mA) : AO incoming channel 3
1600	6411:04 (Write analogue output 16-bit of channal 3,unit is 0.001mA) : AO incoming channel 4
(RPDO)	6411:05 (Write analogue output 16-bit of channal 4,unit is 0.001mA) : AO incoming channel 5
	6411:06 (Write analogue output 16-bit of channal 5, unit is 0.001mA) : AO incoming channel 6
	6411:07 (Write analogue output 16-bit of channal 6,unit is 0.001mA) : AO incoming channel 7
	6411:08 (Write analogue output 16-bit of channal 7, unit is 0.001mA) : AO incoming channel 8

The AO mapping is shown in the figure below after importing the file device, and the import

method is shown in the VE motion controller Programming Manual of VECTOR

#### Note: The unit of output values for each channel is 0.001mA;

变量	映射	通道	地址	类型	单元	描述
⊞- <b>*</b> ø		Write analogue output 16-bit of channal 0, unit is 0.001mA	%QW0	INT		Write analogue output 16-bit of channal 0, unit is 0.001mA
±		Write analogue output 16-bit of channal 1, unit is 0.001mA	%QW1	INT		Write analogue output 16-bit of channal 1, unit is 0.001mA
🖶 - <sup>K</sup> ø		Write analogue output 16-bit of channal 2, unit is 0.001mA	%QW2	INT		Write analogue output 16-bit of channal 2, unit is 0.001mA
• · · · · · · · · · · · · · · · · · · ·		Write analogue output 16-bit of channal 3, unit is 0.001mA	%QW3	INT		Write analogue output 16-bit of channal 3,unit is 0.001mA
🖻 - <sup>K</sup> ø		Write analogue output 16-bit of channal 4, unit is 0.001mA	%QW4	INT		Write analogue output 16-bit of channal 4, unit is 0.001mA
⊞ <b>*</b> ø		Write analogue output 16-bit of channal 5, unit is 0.001mA	%QW5	INT		Write analogue output 16-bit of channal 5, unit is 0.001mA
<b>⊞</b> - <sup>K</sup> ⊘		Write analogue output 16-bit of channal 6, unit is 0.001mA	%QW6	INT		Write analogue output 16-bit of channal 6, unit is 0.001mA
±		Write analogue output 16-bit of channal 7, unit is 0.001mA	%QW7	INT		Write analogue output 16-bit of channal 7, unit is 0.001mA

# 3.10.3 Device addition instructions

- (1) Nest the 8DA-I expansion that needs to be used behind the host power supply;
- (2) Add 8DA-I devices to the software in the sequence shown in the following figure;



(3) The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

(4) Connect to the VE host and scan the network;

Min Device ×		+	n c il m	n ctsA	الأمريح	22234088	Currhal Diable		TECHA	化氨加雷	
扫描网络 网关	「历与近原 文件 - 设备 -	口心	PLC IZ M	PLC指文	用尸和组	10191XPR	Symbol Rights	-	IEC/N家	甘为即增	
选择设备	7		_	_						>	<
选择控制器的网络路 - <u>A Gateway-1</u> (3	径: 扫描)	-				17 bu	点名: ildroot	^	扫	苗网络	
- 📋 buildroo	ot[0301.D07A]	•				100 110 03	点地址: 01.D07A		闪	烁(W)	
			/			鉄	蹇动: )P				
				/		<b>E</b> 17	<b>泰ID</b> :: 3E 0001	l			
						<b>日</b> 3.	<b>标版本:</b> 5.15.20				
						日 Sh	标供应育: enzhen Vector				
							dTechnology	~			
								确定	(0)	取消(C)	

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

	oftMotion X			▼ 工具箱
通用 同步单元分配 日志	Ether CAT参数 = Ether CA	ATI/O映射 芎 EtherCATIEC对象 物	応 🔾 信息	
☑ 自动配置主站/从站		EtherCAT	•	
EthorCAT NICOPE				
Euler CAT INIC (2 m				
日日JJIEJI (MAC)				
源地址(MAC)	00-00-00-00-03	测见		
网络名称	enp1s0			
● 按MAC)选择网络	○ 按名称选择网络			
网络适配器				
MAC地址 名称	描述			
MAC地址 名称 	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1	描述			
AAC地址         名称           000102030406         eth0           B61AC274DAB9         eth1           000000000003         enp1z0	描述			
MAC地址 名称 - 000102030406 eth0 - D61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - <u>B61AC274DAB9 eth1</u> - 000000000003 enp1s0	描述		福会	
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述		→	中止

(6) Subsequently, it can be used according to the above object instructions

### **3.11 VEC-VE-EX-8DA-U**

#### 3.11.1 Introduction to Product Appearance and Configuration

①indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

(2) The AO output range is -10V -+10V, corresponding to  $\pm$  10000, and the analog resolution is 20000;

③ The power consumption current of this expansion is 0.16A;

(4) External 24V power supply and AO wiring terminal port. The wiring definition is as follows:



be careful:

1. The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share one set.

2. The reference ground for the 8-channel analog output of this extension is 0V.

#### 3.11.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-8DA-U extension has an RPDO (1600) that includes the following objects:

Object	Definition
	6411:01 (Write analogue output 16-bit of channal 0,unit is mV) : AO incoming channel 1
	6411:02 (Write analogue output 16-bit of channal 1,unit is mV) : AO incoming channel 2
	6411:03 (Write analogue output 16-bit of channal 2,unit is mV) : AO incoming channel 3
1600	6411:04 (Write analogue output 16-bit of channal 3,unit is mV) : AO incoming channel 4
(RPDO)	6411:05 (Write analogue output 16-bit of channal 4,unit is mV) : AO incoming channel 5
	6411:06 (Write analogue output 16-bit of channal 5,unit is mV) : AO incoming channel 6
	6411:07 (Write analogue output 16-bit of channal 6,unit is mV) : AO incoming channel 7
	6411:08 (Write analogue output 16-bit of channal 7, unit is mV) : AO incoming channel 8

The AO mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR

变量	映射	通道	地址	类型	单元	描述
······································		Write analogue output 16-bit of channal 0, unit is mV	%QW0	INT		Write analogue output 16-bit of channal 0, unit is mV
±- <b>*</b> ø		Write analogue output 16-bit of channal 1, unit is mV	%QW1	INT		Write analogue output 16-bit of channal 1, unit is mV
· · · · · · · · · · · · · · · · · · ·		Write analogue output 16-bit of channal 2,unit is mV	%QW2	INT		Write analogue output 16-bit of channal 2, unit is mV
±		Write analogue output 16-bit of channal 3,unit is mV	%QW3	INT		Write analogue output 16-bit of channal 3, unit is mV
· · · · · ·		Write analogue output 16-bit of channal 4,unit is mV	%QW4	INT		Write analogue output 16-bit of channal 4, unit is mV
±		Write analogue output 16-bit of channal 5, unit is mV	%QW5	INT		Write analogue output 16-bit of channal 5, unit is mV
· · · *•		Write analogue output 16-bit of channal 6, unit is mV	%QW6	INT		Write analogue output 16-bit of channal 6, unit is mV
±		Write analogue output 16-bit of channal 7, unit is mV	%QW7	INT		Write analogue output 16-bit of channal 7, unit is mV

Note: The unit of output values for each channel is mV;

## 3.11.3 Device addition instructions

-.1.1.1.1.1

(1) Nest the 8DA-U expansion that needs to be used behind the host power supply;

(2) Add 8DA-U devices to the software in the sequence shown in the following figure;

Intiled2     Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC)     Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC)		-	通用	E	回自动	动作 ● 附加设备(A) 〇	插入设备① 〇 拔出设	香巴 <mark>。</mark> 〇	更新设备(凹)	
			同步单元分配	Ethe	rCAT	全文搜索的字符串		供应商	SZVector	~
→ Appication 加 库管理器 = (瞬 任务配置			日志	E S	目的地址 原地址(I	名称 =- 111 現场总线		供应商	版本	描述
🛛 🕸 EtherCAT_Task (IEC-Tasks)			EtherCATI/O映列	R	络名称	Brow Ethercat				
EtherCAT_Master_SoftMotion (EtherCAT Master SoftMotion)	¥	前切	-		tama	□- 🚮 从站				
SoftMotion General Axis Pool	Ba	复制			1.00	😑 🚞 S	ZVector			
	19	粘贴			亦式明		IO Expansion Card			
	×	删除		8	#8		VEC-VE-EX-2PT	SZVector	Revision=16#00111000	EtherCAT Slave import
	• •	-			北信税		VEC-VE-EX-4TC	SZVector	Revision=16#00111000	EtherCAT Slave import
	sector.	里帕					VEC-VE-EX-8AI-I	SZVector	Revision=16#00111000	EtherCAT Slave import
	G.	属性					VEC-VE-EX-SAI-U	SZVector	Revision=16#00111000	EtherCAT Slave Import
	襺	添加对	象	(P)	2 8 L	4	VEC-VE-EX-BAO-II	SZVector	Revision=16#00111000	EtherCAT Slave import
		添加这	(件夹			· · · ·	Module			
2		添加该	镭				SSC_Device			
		插入谈	备							
		扫描设	备							
		失能论	潘							
	~	更新设	酱							
	0	编辑汉								
		编辑次	了象使用…						100 m	
		编辑10	D映射				並不所有服本(1X限专家)	山蚕不吃	LAARQA	
		从CS1	/导入映射			名称: VEC-VI	E-EX-8AO-U			
		导出時	朝到CSV			供应育: SZV 组:	ector			
						版本: Revisio	on=16#00111000			
						模块数: VEC	-VE-EX-8AO-U			
						VEC-VE-EX-8A	O-UVEC-VE-EX-8AO-U	AME: VEC	VERENBRORD, AIM DEVICE.	
						將補洗沿谷作为是!	三一个子语备添加			
						EtherCAT_Master_	SoftMotion			
						<ul> <li>(在此窗口打开)</li> </ul>	时,您可以在导航器中选	择另一个目	标节点。)	
									添加设	备 关闭
					L					

(3)The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

(4) Connect to the VE host and scan the network;

Device 🗙	۲										
通讯设置 应用	备份与还原	文件 日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	1
扫描网络 9	!天 ▼   设备 ▼										
							_				
选择设备										;	×
选择控制器的网络	络路径:										
🖃 🦾 Gateway	v-1(扫描)					节	点名:	^	扫	菌网络	
👘 buile	droot [0301.D07/	A]				bu	lidroot		闪	烁(W)	1
						7	点地址:				
							01.007A				
						· UD	蹇动: P				
							ETD				
						17	3E 0001	۰			
						B	标版本:				
						3.5	5.15.20				
							标供应育:				
						Sh	enzhen Vector				
						An	dTechnology	~			
								确定	(0)	取消(C)	

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

	oftMotion X		•	工具箱
通用 同步单元分配 日志	Ether CAT参数 = Ether CA	ATI/O映射 芎 EtherCATIEC对象 状	态 🔾 信息	
☑ 自动配置主站/从站		EtherCAT		
EthorCAT NICOPE				
Euler CAT INIC (2 m				
日日JJIEJI (MAC)				
源地址(MAC)	00-00-00-00-03	测见…		
网络名称	enp1s0			
● 按MAC)选择网络	○ 按名称选择网络			
网络适配器				
MAC地址名称	描述			
MAC地址 名称 	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1	描述			
AAC地址         名称           000102030406         eth0           B61AC274DAB9         eth1           000000000003         enp1z0	描述			
MAC地址 名称 - 000102030406 eth0 - D61AC274DAB9 eth1 - 000000000003 enp1s0	描述			
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述			7
MAC地址 名称 - 000102030406 eth0 - <u>B61AC274DAB9 eth1</u> - 000000000003 enp1s0	描述		福安	±.⊦
MAC地址 名称 - 000102030406 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s0	描述		确定	中止

(6) Subsequently, it can be used according to the above object instructions
#### **3.12 VEC-VE-EX-2PT**

#### 3.12.1 Introduction to Product Appearance and Configuration

#### 1 indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

Internal sampling light: When the internal sampling part of the module is working normally, the indicator light quickly flashes; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

② The measurement range is  $-50 \degree$ C  $-200 \degree$ C;

(3) The power consumption current of this expansion is 0.16A;

(4) External 24V power supply and L, I wiring terminal ports. The wiring definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

### 3.12.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-2PT extension has a TPDO (1B01) that contains the following objects:

Object	Definition
1B01	6401:01 (PT100 Temperature Value of Channal 0 ,Unit is 0.1 centigrade) : Measure channel 1
(TPDO)	6401:02 (PT100 Temperature Value of Channal 0 ,Unit is 0.1 centigrade) : Measure channel 2

The AO mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR Note: The unit of output values for each channel is 0.1 °C;

		•				
变量	映射	通道	地址	类型	单元	描述
⊞- <b>*</b> ø		PT100 Temperature Value of Channal 0 ,Unit is 0.1 centigrade	%IW0	INT		PT100 Temperature Value of Channal 0 ,Unit is 0.1 centigrade
±-*•		PT100 Temperature Value of Channal 1 ,Unit is 0.1 centigrade	%IW1	INT		PT100 Temperature Value of Channal 1 ,Unit is 0.1 centigrade

### 3.12.3 Device addition instructions

(1) Nest the 2PT expansion that needs to be used behind the host power supply;

(2) Add 2PT equipment to the software in the sequence shown in the following figure;

Untitled2		-			动作				
E Device (Vector ARM Cortex-Linux-SM-CNC-TV-MC)			通用	2 自动	●附加设备(A) ○插)	设备Ⅲ ○ 损出设	备(P) ()	更新设备(型)	
□ 回 PLC 逻辑			同步单元分配	EtherCAT			3 /#dx		
Application			135 17 05 14	EulerCAT	全又搜索的字符串		供应商	SZVector	~
🎬 库管理器			日志	目的地址	名称		供应商	版本	描述
三 🥨 任务配置			EtherCATT/OBh B	源地址(1	😑 🔟 現场总线				
EtherCAT Task (IEC-Tasks)			Linercarthouges	网络名称	😑 🔐 Ethercat				
EtherCAT_Master_SoftMotion (EtherCAT Master SoftMotio	an) X	剪切		● 按MA	🖻 📷 从站				
SoftMotion General Axis Pool		复制		1005.0 100	🗏 🛄 SZVec	tor			
	6	粘贴		⊿ 分布式8		Expansion Card			
	×	删除		周期	4	VEC-VE-EX-2PT	SZVector	Revision=16#00111000	EtherCAT Slave impo
		軍构	•	同先编称		VEC-VE-EX-4TC	SZVector	Revision=16#00111000	EtherCAT Slave impo
	100	ER ML				VEC-VE-EX-BAI-I	SZVector	Revision=16#00111000	EtherCAT Slave impo
	400	) /書1主…				VEC-VE-EX-BAD-J	SZVector	Revision=16#00111000	EtherCAT Slave impo
	1000	] 添加对	封象	円を図口		VEC VE EX SAO I	SZVector	Revision=16#00111000	EtherCAT Slave impo
	2 🖻	添加文	7件夹		B- 🔁 M	odule			
	<u> ۲</u>	添加资	备		+- 🧰 ss	GC Device			
		插入设	2音			10700000			
		扫描谈	2番						
		失能设							
		更新该	2番						
	0	编辑对							
		编辑双	了象使用		<				1
		编辑IC	D映射		☑ 按类别分组 □显示	所有版本(仅限专家)	□ 显示这	期版本	
		从CSV	/导入映射		名称: VEC-VE-EX-	-2PT			
		导出时	e时到CSV		供应育: SZVector				
					型: 能本·Revision=1	6#00111000			<b>S</b>
					模块数: VEC-VE-E	EX-2PT			~
					指述: EtherCAT S	lave imported from Slav	ve XML: VEC	-VE-EX-2PT.xml Device:	
					VEC-VE-EX-2PTVEC	-VE-EX-2PT			
					将被选设备作为最后一 EtherCAT_Master_Soft	个子设备添加 Motion			
					④ (在此窗口打开时, 1)	您可以在导航器中选	择另一个目	标节点.)	
								添加设	备关闭
									and a street

(3) The following figure shows that the addition was successful;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

(4)Connect to the VE host and scan the network;

讯设置 应用	备份与还原	文件	日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署
1描网络 网	关 - 设备 -										
_					_						
<b>译设备</b>											
择控制器的网络	者路径:										
Gateway	(-1(扫描)						Ť	点名:	^	扫	描网络
🗊 buil	droot [0301.D0	7A]					bu	ldroot		闪	烁(W)
_							T	点地址:			
							03	01.D07A			
							族	<b>驱动:</b> p			
								_			
							17	称ID:: 3E0001	-		
								<b>F</b> # <b>t</b> .			
							3.5	5.15.20			
								<u>反供应商</u> :			
							Sh	enzhen Vector			
							Sd	ence dTechnology			

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

通用 同步单元分配 日調	5 EtherCAT参数 苯 EtherCA	∏/O映射 ≓ EtherCATIEC对象 状态 ◯	) 信息	17.18
🗹 自动配置主站/从站		EtherCAT		
EtherCAT NIC设置 —	\			
目的地址(MAC)	FF-FF-FF-FF-FF	]广播		
源地址(MAC)	00-00-00-00-03	浏览		
网络名称	enp1s0			
● 技MAC 选择网络	○ 按名称选择网络			
网络适配器				
1AC地址 名称	描述			
000102030406 eth0				
B61AC274DAB9 eth1	_/			
000000000003 enp1s0				
				1
			确定	中止

(6) Subsequently, it can be used according to the above object instructions

### **3.13 VEC-VE-EX-4TC**

#### 3.13.1 Introduction to Product Appearance and Configuration

①indicator light:

ECT operation: When the expansion module is successfully connected to the controller host or coupler, the indicator light remains on; Otherwise, it will often go out;

ECT error: When the connection between the expansion module and the controller host or coupler fails, the indicator light remains on; Otherwise, it will often go out;

Internal sampling light: When the internal sampling part of the module is working normally, the indicator light quickly flashes; Otherwise, it will often go out;

CPU breathing light: When the expansion module CPU is working normally, the indicator light flashes; Otherwise, it will often go out.

(2) The measurement range is:

K-type, temperature range 0-1300 degrees Celsius;

S-type, temperature range 0-1700 degrees Celsius;

E-type, temperature range 0-600 degrees Celsius;

N-type, temperature range 0-1200 degrees Celsius;

Type B, temperature range 0-1800 degrees Celsius;

T-type, temperature range 0-400 degrees Celsius;

J-type, temperature range 0-800 degrees Celsius;

R-type, temperature range 0-1700 degrees Celsius;

3 The power consumption current of this expansion is 0.16A;

(4) External 24V power supply and L, I wiring terminal ports. The wiring definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.

#### 3.13.2 EtherCAT Object Description

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

The VEC-VE-EX-4TC extension	has a TPDO (1B01) that conta	ins the following objects:	

Object	Definition
	6401:01 (Temperature Value of Channal 0 ,Unit is 0.1 centigrade) : Measure channel 1
1B01	6401:02 (Temperature Value of Channal 1 ,Unit is 0.1 centigrade) : Measure channel 2
(TPDO)	6401:03 (Temperature Value of Channal 2 ,Unit is 0.1 centigrade) : Measure channel 3
	6401:04 (Temperature Value of Channal 3 ,Unit is 0.1 centigrade) : Measure channel 4

The AO mapping is shown in the figure below after importing the file device, and the import method is shown in the VE motion controller Programming Manual of VECTOR Note: The unit of output values for each channel is 0.1 °C;

变量	映射	通道	地址	类型	单元	描述
·⊞- ¥≱		Temperature Value of Channal 0 ,Unit is 0.1 centigrade	%IW0	INT		Temperature Value of Channal 0 ,Unit is 0.1 centigrade
1 H 1		Temperature Value of Channal 1 ,Unit is 0.1 centigrade	%IW1	INT		Temperature Value of Channal 1 ,Unit is 0.1 centigrade
😟 - 🍫		Temperature Value of Channal 2 ,Unit is 0.1 centigrade	%IW2	INT		Temperature Value of Channal 2 ,Unit is 0.1 centigrade
		Temperature Value of Channal 3 ,Unit is 0.1 centigrade	%IW3	INT		Temperature Value of Channal 3 ,Unit is 0.1 centigrade

The VEC-VE-EX-4TC extension has a thermocouple type configuration that includes the

following objects:

Object	Definition
	2002:01 (Thermocouple Type Configure of Channal 0) : 1 Channel Thermocouple Type
0,2002	2002:02 (Thermocouple Type Configure of Channal 1) : 2 Channel Thermocouple Type
0,2002	2002:03 (Thermocouple Type Configure of Channal 2) : 3 Channel Thermocouple Type
	2002:04 (Thermocouple Type Configure of Channal 3) : 4 Channel Thermocouple Type

0: K-type, temperature range 0-1300 degrees Celsius

- 1: S-type, temperature range 0-1700 degrees Celsius
- 2: E-type, temperature range 0-600 degrees Celsius
- 3: N-type, temperature range 0-1200 degrees Celsius
- 4: Type B, temperature range 0-1800 degrees Celsius
- 5: T-type, temperature range 0-400 degrees Celsius
- 6: J-type, temperature range 0-800 degrees Celsius

7: R-type, temperature range 0-1700 degrees Celsius

#### 3.13.3 Device addition instructions

(1) Nest the 4TC extension that needs to be used behind the host power supply;

(2) Add 4TC devices to the software in the sequence shown in the following figure;



- (3) The following figure shows that the addition was successful;
  - EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)
    WEC\_VE\_EX\_4TC (VEC-VE-EX-4TC)

(4) Connect to the VE host and scan the network;

Device	×											0
通讯设置 <u>应</u> 扫描网络	<b>田 备份与还原</b> 网关 - 设备 -	文件	日志	PLC 设置	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	<b>F</b> 1
进场沿名	/			_	_					_		~
选择控制器的	网络路径:											^
Gate	wav-1(扫描) ouildroot[0301.D0	7A]	1、				bu	点名: ildroot	Î	扫	節闷络 烁(W)	
			, L				<b>1</b> 03	点地址: 01.D07A				
							<b>块</b> UD	擊动: P				
					1		日 17	<b>泰ID</b> :: 3E0001				
						$\backslash$	<b>E</b> 3.5	<b>标版本</b> : 5.15.20				
							E Sh	<b>标供应育</b> : enzhen Vector				
							Sci	ence dTechnology	~			
									确定	(0)	取消(C)	
			_						NUXE.			.12

(5) As shown in the following figure, the EtherCAT network adapter is assigned as enpls0;

EtherCAT_Master	_SoftMotion X		-	工具箱
通用 同步单元分配 日	3志 Ether CAT参数 🗮 Ether CAT	TI/O映射 🗮 EtherCATIEC对象 状态	○信息	
☑ 自动配置主站/从刻	ь -	Ether CAT		
EtherCAT NIC设置 -				
目的地址(MAC)	FF-FF-FF-FF-FF			
酒和中(MAC)	00-00-00-00-03	浏览		
网络夕称	enn 1s0	1		
● 按MAC选择网络	○按全称选择网络			
AC地址 名称	描述			
AC地址 名称	描述			
- 000102030406 eth0				
- 000102030406 eth0 - B61AC274DAB9 eth1 - 0000000000003 enp1s(				
- 000102030405 eth0 - B61AC274DAB9 eth1 - 000000000003 enp1s(				
- 000102030406 eth0 - <u>B61AC274DAB9 eth1</u> - 0000000000003 enp1s(				
- 000102030406 ethU - B61AC274DAB9 eth1 - 000000000003 enp1s				1
- 000102030406 ethU - B61AC274DAB9 eth1 - 0000000000003 enp1s			确定	中止

(6) Subsequently, it can be used according to the above object instructions

### 3.14 VEC-VE-EX-14DO

### 3.14.1 Introduction to Product Appearance and Configuration

① Indicator light:

When the corresponding DO has an input signal, the indicator light will be on;

OERR indicator light: fault protection light;

UPWR indicator light: 24V power supply indicator light;

(2) The power consumption current of this expansion is 0.13A;

③ Each DO load is less than or equal to 500mA, and the load current of a single module is less than or equal to 7A;

④ External 24V power supply and DO wiring terminal port. Its definition is as follows:



### 3.14.2 Product wiring instructions

This extended IO is model VEC-VE-EX-14 DO. The specific wiring mode is as follows:



### DO为PNP型接线

### 3.14.3 EtherCAT Object description

The product provides a device description document, named "Model Number. Xml ", each type of device has its corresponding device description file, the file import method is carried out in the main station configuration, as long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

VEC-VE-EX-14 DO extension has two RPDO (1A00,1A01), noting that up to 16 groups of process parameters in 1A00 include the following objects:

object	define
1A00(Byte 0)	3101h (Output) 8-bit DO input
1A01(Byte 1)	3101h (Output) 8-bit DO input

After importing file equipment, DO mapping is as shown in the following figure, see VECTOR VE Motion Controller Programming Manual

变量	映射	通道	地址	类型	单元	描述
		Output	%QX8.0	BIT		Output
**		Output	%QX8.1	BIT		Output
<b>*</b> ø		Output	%QX8.2	BIT		Output
<sup>K</sup> ø		Output	%QX8.3	BIT		Output
**		Output	%QX8.4	BIT		Output
**		Output	%QX8.5	BIT		Output
**		Output	%QX8.6	BIT		Output
<sup>K</sup> ø		Output	%QX8.7	BIT		Output
**		Output	%QX9.0	BIT		Output
🍫		Output	%QX9.1	BIT		Output
<b>*</b> ø		Output	%QX9.2	BIT		Output
<b>*</b> ø		Output	%QX9.3	BIT		Output
<b>*</b> ø		Output	%QX9.4	BIT		Output
🍫		Output	%QX9.5	BIT		Output
<b>*</b> ø		Output	%QX9.6	BIT		Output
L. Kor		Output	%QX9.7	BIT		Output

### 3.14.4 Device addition instructions

- (1) Expand the required 14 DO for nesting in the back of the host power supply;
- (2) Add 14 DO device to the software in the following sequence order;



(3) Successfully added in the following figure;

EtherCAT\_Master\_SoftMotion (EtherCAT Master SoftMotion)

(4) Connect to the VE host and scan the network;

b择设备 选择控制器的网络路径: ■ Jo Gateway-1(扫描)	节点名: buildroot 节点地址: 0301.D07A 扶娶动:	Î	× 扫描网络 闪烁(W)
选择控制器的运路路径: Gateway-1(扫描)  Dialogna in the state of	节点名: buildroot 节点地址: 0301.D07A 扶娶动:		扫描网络 闪烁(W)
	UDP 目标ID:: 173E 0001 目标版本: 3.5.15.20 目标供应育: Shenzhen Vector Science IndTechnology	×	

(5) As shown in the following figure, the EtherCAT network adapter is assigned to enpls0;

<ul> <li>● 通用 同步单元分配 日志 EtherAT参数 ➡ EtherCATIJO映射 ➡ EtherCATIEC对象 状态 ○ 信息</li> <li>○ 自动配置主站/从站</li> <li>EtherCAT NIC设置</li> <li>目的地址(MAC)</li> <li>FF+FF+FF+FF+FF</li> <li>○ 广播</li> <li>□ 启用冗余</li> <li>河络名称</li> <li>● 技MAC选择网络</li> <li>○ 技名称选择网络</li> </ul>	
☑ 自动配置主站/从站       EtherCAT NIC设置       目的地址(MAC)       FF-FF-FF-FF-FF       源地址(MAC)       00-00-00-00-03       浏览       网络名称       enp1s0       後MAC选择网络       ● 按MAC选择网络	
EtherCAT NIC设置 目的地址(MAC) FFFFFFFFFF 了广播 自用冗余 源地址(MAC) 00-00-00-00 ] 浏览 网络名称 enp1s0 ④ 技MAC选择网络 ① 技名称选择网络 基择网络适配器	
目的地址(MAC)     FF+FF+FF+FF     「「描」」自用冗余       源地址(MAC)     00-00-00-00-03     減汚…       网络名称     enp150       ④ 技MAC选择网络     ① 技名称选择网络	
源地址(MAC)     00-00-00-00-03     浏览…       网络名称     enp 150       ● 按MAC选择网络     按名称选择网络	
网络名称     enp 1s0       ● 按MAC选择网络     ● 按名称选择网络       站择网络适配器     ●	
<ul> <li>● 按MAC选择网络</li> <li>● 按A称选择网络</li> <li>↓ 按名称选择网络</li> <li>↓ 按名称选择网络</li> </ul>	
起译网络适配器	
MAC地址 名称 描述	
000102030406 eth0	
6010000000003 enpis0	
	_
72-5	
цяле	41E

(6) It can then be used according to the above object instructions;

## **Chapter IV Encoder extension**

### 4.1 VEC-VE-EX-EDR

### 4.1.1 Introduction to Product Appearance and Configuration

① indicator light:

Pulse A/B indicator light: turns on and off according to the signal input status of AB; DI0/1 indicator light: always on when the corresponding DI has an input signal; Otherwise, it will often go out;

AC0/1 indicator light: indicates the network connection status with the previous or subsequent level, flashing when normal; Otherwise, it will often go out;

RUN indicator light: Normally on when connected to the controller host or coupler normally; Otherwise, it will often go out;

ERR indicator light: always on when the connection to the controller host or coupler fails; Otherwise, it will often go out;

(2) The power consumption current of this extension is 0.3A+0.2A for one encoder (if not added, there is no);

③External 24V power supply and DI wiring terminal, encoder wiring port. Its definition is as follows:



Note: The 24V and 0V power supply interfaces shown in the diagram are on the host or coupler, and all local extensions share a common set.



#### Absolute value wiring mode

### 4.1.2 EtherCAT Object Description

Due to the consistency between the description files of VEC-VE-EX-EDR and VEC-VE-ECAT-SUB, the objects are also consistent. However, the only available objects are 6004h (Position Value): encoder 1 position and 6120h (Read input 32 bit): 32-bit DI input. The 6004h object is used to read the encoder position, and the 6120h object is used to read the signals of DI0 and DI1;

#### **4.1.3 Function Description**

1、Pulse input function.

The pulse type of the pulse counter, as well as the types of encoders 1 and 2, can be configured by configuring the startup parameters for 0X2007 (configure parameter1)

Bit0-Bit2: Pulse type of pulse input counter	0: Pulse+direction positive logic
	1: Pulse+direction negative logic
	2: AB pulse

	3: CW pulse correction logic
	4: CW pulse negative logic
Bit3-Bit5: Encoder 1 type	1: 17 bit encoder
	2: 24 bit encoder
	3: 23 bit encoder
	4: Photoelectric encoder
Bit6-Bit8: Encoder 2 type	1: 17 bit encoder
	2: 24 bit encoder
	3: 23 bit encoder
	4: Photoelectric encoder

### 4.1.4 Device addition instructions

(1) Add VEC-VE-EX-EDR devices to the software in the sequence shown in the following figure;

			添加设备
	≫¢	<ul> <li>              EtherCAT_Master_S             通用             岡歩単元分配             日志             ション             「自动配置主站/从站      </li> <li>             EtherCAT_NIC设置             目的地址(MAC)             源地址(MAC)             网络名称             ・             ・</li></ul>	潘加設备     StruckA     CoNod_4AO     加作     ●附加设备(A) ○ 插入设备(D) ●提出设备(P) ●更新设备(U)     全状(CNod_4AO     東新設备(D) ● 開加設备(D) ● 単新設备(D)     全状(CNod_4AC     まなしたので、(3)     金称     供应商 版本 描述     供应商 版本 描述     低化ののののののののののののののののののののののののののののののののの
EtherCAT Master_SoftMotion (EtherCAT Master SoftMotion)     SoftMotion General Axis Pool     POUs     POUs     SoftMotion.JeMa2.SMC PathCoolerFile C Q ゆ 文 いけまたご		复制 粘贴 删除 重构 , 厚性 添加对象: 添加对象: 添加对象: 添加对象: 添加对象: 添加对象: 添加对象: 添加对象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加可象: 不加意意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同意。 不同。 不同意。 不同意。 不同。 不同。 不同。 不同。 不同。 不同。 不同。 不同	
		更新设备	「「「「」」「「」」「「」」「「」」「「」」「」」「「」」「」」「」」「」」「

(2) The following figure shows that the addition was successful;

1	Eth	erCAT_	Master	SoftMotion	(EtherCAT	Master	SoftMotion)
	550	VECMo	dular (V	ECModular)			

(3) Scan for Network

· Device ; 通讯设置 应用	× 备份与还原	文件	日志	PLC 设罟	PLC指令	用户和组	访问权限	Symbol Rights	=	IEC对象	任务部署	F 1
扫描网络	列关 →   设备 →	Part	His									
					_			_				
选择设备												×
法择控制器的网	络路径:											
🖃 🦾 Gatewa	w-1(扫描)						节	点名:	^	扫	猫网络	
- 🗊 bui	Idroot [0301.D0	7A]	1				bu	ildroot		闪	lif€ (N/)	5
							T	点地址:		ra	AD (**)	-
							03	01.D07A				
							#	驱动-				
							UD	P				
								E				
							17	标ID::: 3E 0001				
							8	标版本:				
							5	5.13.20				
							H	标供应育:				
							Sh	enzhen Vector ence				
							An	dTechnology	~			

(4) As shown in the following figure, the EtherCAT network adapter is assigned as;

EtherCAT_Master_SoftMotion X	▼ 工具箱
▼ 通用 同步单元分配 日志 EtherCATT参数 葶 EtherCATI_/O映射 葶 EtherCATIEC对象 状态 〇 信息	
EtherCAT NIC设置	
目的地址(MAC) FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-FF-	
源地址(MAC) 00-00-00-00-03 浏览…	
网络名称 enpis0	
● 按MAC选择网络 ○ 按名称选择网络	
选择网络适配器	
MACUBUE 当标 / 描述	
B61AC274DAB9 eth1	
- 0000000003 enpls0	
	_
确定	中止

(5) Subsequently, it can be used according to the above object instructions;

### **Chapter V Couplers**

### 5.1 VEC-VE-CPR-P

#### 5.1.1 Introduction to Product Appearance and Configuration

①CN1-IN: EtherCAT network input, connected to the host output or the previous coupler or extended EtherCAT (OUT);

(2)CN2 OUT: EtherCAT network output, connected to the next coupler or extended input

EtherCAT (IN) or not connected;

③indicator light:

PWR: Normally on when the power supply is normal;

P0-ACT: Flashes when establishing communication with the device connected to CN1-IN;

P1 ACT: Flashes when establishing communication with the device connected to CN2 OUT;

P2 ACT: Flashes after establishing communication between the coupler and the local extension of the coupler power supply;

RUN: Normally lit when running normally;

ERR: Always on during fault;



The definition of the coupler power board is consistent with that of the host power board.

# Coupler power module wiring



number	Interface Name	Interface function
1	Host 24V input	Mainframe power supply 24V
2	IO power supply 24V	Local IO power supply 24V
3	IO power supply 0V	Local IO power supply 0V
(4)	PE	Ground wire
5	Host 0V input	Host power supply 0V
6	IO power supply 24V	Local IO power supply 24V, connected to ②
7	IO power supply 0V	Local IO power supply 0V, connected to $(3)$
8	PE	Ground wire

Note: The total power consumption current of the local expansion carried by the coupler cannot exceed 2A. The power consumption current of each local expansion is detailed in the table below:

VEC-VE-EX-8DI	0.1A
VEC-VE-EX-8DO	0.13A
VEC-VE-EX-16DI	0.11A
VEC-VE-EX-16DO	0.22A

VEC-VE-EX-8AD-U	0.18A
VEC-VE-EX-8AD-I	0.18A
VEC-VE-EX-8DA-U	0.16A
VEC-VE-EX-8DA-I	0.16A
VEC-VE-EX-2PT	0.16A
VEC-VE-EX-4TC	0.16A
VEC-VE-EX-EDR	0.3A

### 5.1.2 Device addition instructions

The product provides a device description file called "Model. xml", and each model of device has its corresponding device description file. The file import method is carried out in the main station configuration. As long as the main station supports standard EtherCAT communication, the device configuration can be imported normally.

Method of using coupler with local IO expansion:

- (1) Nest the IO extensions that need to be used behind the coupler power supply;
- (2) Add coupler devices to the software in the sequence shown in the following figure;



(3) Add local IO extensions nested behind the coupler as needed in the sequence shown in the following figure (add 8DI in this example);



(4)The following figure shows that the addition was successful;



(5)Connect to the VE host and scan the network;



(6)As shown in the following figure, the EtherCAT network adapter is assigned eth0;

▼ Ŧ X EtherCAT_M	aster_SoftMotion 🗙			▼ 工具箱
▼ 通用 同步单元分	配 日志 EberCAT参数 🗮 EtherCATI/O映	射 🗮 EtherCATIEC对象 状态	○ 信息	
☑ 自动配置主动	5/从站	Ether CAT.		
EtherCAT NICIO	e			
EdierCAT MICLO				
源地址(MAC)	00-01-02-03-04-06			
PM站-名称 ③ thmacit+探网				
选择网络适配器				
MAC地址名称	描述			
000102030406 eth0	-			
B61AC274DAB9 eth1				
			福会	фı
			RHSAE	тш

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