汇川 AM400 系列 PLC 组态森特奈 EtherCAT

## 总线模块使用教程



1、本例中使用汇川 PLC 型号为"AM401-CPU1608TN",通过汇川的 EtherCAT 分支器(GR10-EC-6SW)连接了三个森特奈 EtherCAT 模块,分别是 ELCT-IM16-0001、ELCT-IM16-0005、ELCT-IM16-5201,首先打开汇川编程软件 "InoProShop",点击"New Project"新建工程。

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												Basic Operations
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2、选择"Standard Project",然后在中间选择正确的 PLC 型号"AM401-CPU1608TP/TN",右侧可以选择编程语言,并在下方设置工程名称和存储路径, 点击"OK"。

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New Project	Device           1         AC801-0221-U0R0           1         AC802-0222-U0R0           1         AC810-0122-U0R0           1         AC810-0122-U0R0           1         AC811-0031-U0R0           1         AC811-0031-U0R0           1         AC811-021-U01608TN-C           1         AM402-CPU1608TP/TN           1         AM403-CPU1608TP/TN           1         AM403-CPU1608TP/TN           1         AM600-CPU1608TP/TN           1         AM600-CPU1608TP/TN           1         AM600-CPU1608TP/TN           1         AM610-CPU1608TP           1         AM600-CPU1608TP/TN           1         AM600-CPU1608TP           1         AM600-CPU1608TP           1         AM600-CPU1608TP           1         AM600-CPU1608TP           1         CODESYS SoftMotion RTE V3           1         CODESYS SoftMotion Win V3 x64           1         Inovance_Windows_RTE_X64           1         PitchDrive	<ul> <li>Language         <ul> <li>Ladder Logic Diagram (LD)</li> <li>Device</li> <li>Instruction</li> <li>1 R5485: support MODBUS-RTU master/slave protocol and free port protocol</li> <li>1 CAN: Support CANOpen master station and CANLink master/slave protocol, the master station supports a maximum of 63 slave stations</li> <li>1 channel Ethernet: 1 channel supports MODBUS-TCP master/slave protocol (the maximum number of slave stations is 63)</li> <li>1 therCAT bus, maximum number of saxes 4, maximum support 128 EtherCAT slaves, maximum support 4 4PME (4PME and virtual axis do not account for the number of axes)</li> </ul> </li> </ul>
<u>N</u> ame: den Location: F:V	no	■ Built-in 16-channel ordinary input (can do 8-channel ×
		OK Cancel

## 3、下面要安装模块的 ESI 文件,点击菜单"TOOLs"---"Device Repository"

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Device (AM401-CPU1608TP/TN)	InoProShop Tool
Q Device Diagnosis	Eault Dignosis
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¶ LocalBus Config ∰ PLC Logic 	Customize
Library Manager	

4、在弹出的对话框中,点击"Install",然后找到 ESI 文件的正确路径,点击打开

即可安装。

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() () ()	\Users\\zh_n\Deskta	pp\Sentinel ELC 6-52xx <sup>*</sup> install	CT-xxxx-52x	x v 1.8.xml repository.			Details
							Close .:i

5、双击左侧"Network Configuration",然后点击中间 PLC 图标,并勾选"EtherCAT

Master"来添加 EtherCAT 主站。



6、下面要进行控制器联机,双击"Device(AM401-CPU1608TP/TN),最右侧可以看 到 PLC 图标位置是黑色小点,说明未联机。点击中间"Scan Network…",并在弹 出的对话框中选择"AM401-CPU1608TN【0003.89AA.B058】",然后点击'OK'。 此时可以看到 PLC 位置黑色小点变成绿色,代表联机正常。



7、右键左侧的"ETHERCAT(EtherCAT Master SoftMotion)",选择"Scan For Devices…",在弹出对话框中点击"Scan Device",此时可以扫描到实际连接的模块信息。然后点击:"Copy all to project"。

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ETHERCAT		Edit Object With	ormation
		Edit IO mapping	
		Import mappings from CSV	
SoftMotion General Axis		Export mappings to CSV	
HIGH_SPEED_IO (High		Collapse Application	
MODBUS_TCP (ModbusT		Simulation	
ETHERCAT (EtherCAT Ma	aster	SoftMotion)	

demo.project\* - InoProShop(V1.5.2)



				anned Devices
Address Write Alias Addre	AutoIncAddress	Alias Address	Devicetype	Devicename
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	-1	3	IM16 16CH Input	ELCT_IM16
	-2	2	ELCT-IM16-0004_5 EtherCAT Slave IP67	ELCT_IM16_0004_5
	-3	0	ELCT-IM16-52xx	ELCT_IM16_52xx
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8、下面我们可以把所有的 EtherCAT 从站(包括分支器本身两个站点)配置在 站点别名的方式下运行。双击第一个模块"ELCT-IM16(IM16 16CH Input)",点 击"General",勾选右侧的"Optional",勾选后,下面"Identification"下方的默认选 项是"Data Word (2 Bytes)",注意:针对 ELCT 系列-0001 和-0003 型号的总 线模块,必须选择 "Identification"下方的"Configured Station Alias (AD0 0X0012)"选项,同时,可将后面的数字是改成想要的站点别名地址,本例中, 改为 1。 (如果设置时,一直保留勾选默认选项"Data Word (2 Bytes)"并 且登录启动,那么模块将无法运行,需要将模块的 ESI 文件重新更新 一遍才能使用,具体方法参考文末介绍。)

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此时我们再设置另外两个模块的站点别名地址,比如,本例中我们将三个模块依次更改为1、2、3,所以同样的,我们将另外两个模块勾选"Optional,并把站点别名改为2、3",同时要注意,勾选"Optional"后,一定要勾选下方的"Configured Station Alias (AD0 0X0012)"选项。

9、此时,我们点击菜单栏的"登录"按钮,弹出对话框中,点击"YES",然后点击 菜单栏的"启动"按钮

InoProSho	op(V1.5.2)	$\times$
2	No online change possible due to severe changes : Do you want to perform a download?	
	Yes <u>N</u> o <u>D</u> etails.	••

10、此时,我们双击第一个模块,点击"Configured Station Alias( AD0 0X0012 )"

后面的"write to EEprom",系统提示要重新上电,同理,我们将另外两个模块进 行同样的操作

Diago	ostics					
Cu	root State	Teit				
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1	After writing necessary. Pl	the EEprom alias addre ease switch off and on	ss a reboot o again!	f the device i	5	
				确定		

11、整个系统重新上电以后,再登录并启动,系统通讯正常



12、下面可以定义一些变量,然后将这些变量和模块的输入输出一一映射起来, 这样就可以进行编程了,方法如下,退出登录后,双击左侧"PLC\_PRG",在右侧 我们定义一些 IO 变量,如下图:本例中我们定义三个输入变量 x1、x2、x3,分 别映射到三个模块的第一个输入点上。



13、双击第一个模块 ELCT\_IM16(IM16 16CH Input),点击右侧"EtherCAT IO Maping",双击第一个 IO 点前方的空白框,在弹出的对话框中,选择 X1,并点击 OK

Η OK

C	onfiguration II ELCT_IM16_00	04_5 🔐 ELCT_IM16_52xx 💥	Network Conf
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	∲ x3	BOOL			
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14、双击第二个模块 ELCT\_IM16\_4\_5, 在右侧"EtherCAT IO Maping"中,其中带有"ReserveBYTE"字样的是无效的字节,"BYTE0\_IN"为有效字节,然后我们将 X2 与第一个点映射起来。



General	Find	Filter	Show all
Process Data(PDO Setting)	Variable	Mapping	Channel
	<b>*</b>		ReserveBYTE3
Startup parameters(SD0 Setting)	<b>*</b>		ReserveBYTE3
	<b>*</b>		ReserveBYTE3
Online	🍫		ReserveBYTE3
CoE Online	<b>*</b>		ReserveBYTE3
	Application.PLC_PRG.x2	<b>~</b>	BYTE0_IN
EoEsettings	***		BYTE0_IN
EtherCAT I/O Mapping			BYTE0_IN
	<b>*</b>		BYTE0_IN
	N.		

15、同理双击第三个模块 ELCT\_IM16\_52xx,其中带有"Reserve\_Byte0\_OUT" 字样的是无效的字节,"BYTE0\_IN"为有效字节,然后我们将 X3 与第一个点映射 起来。

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Startup parameters(SD0 Setting)			<b></b>	Reserved_Byte0_OUT	
Online		<b>一</b> 元效	ቻኮ	Reserved_Byte0_OUT Reserved_Byte0_OUT	
CoE Online	<b>*</b>			Reserved Byte0_OUT Byte0_IN	
EtherCAT I/O Mapping	*			Byte0_IN	t
Status	<b>↓</b>	有效字	节 	Byte0_IN Byte0_IN	
		_			

Configuration 🔀 ELCT_IM16_00	004_5 FLCT_IM16_52xx X	🛞 Netwo	rk Configuration	Device
General	Find	Filter	Show all	
Process Data(PDO Setting)	Variable	Mapping	Channel	Address
	<b>*</b>		Reserved_Byte0_OUT	%QX5.3
Startup parameters(SD0 Setting)	<b>*</b>		Reserved_Byte0_OUT	%QX5.4
			Reserved_Byte0_OUT	%QX5.5
Online	<b>*</b>		Reserved_Byte0_OUT	%QX5.6
CoE Online	<b>*</b>		Reserved_Byte0_OUT	%QX5.7
	Application.PLC_PRG.x3	~⊘	Byte0_IN	%IX8.0
EtherCAT I/O Mapping	*>		Byte0_IN	%IX8.1
	]		Byte0_IN	%IX8.2

同理,可以定义更多的 IO 变量,然后和模块 IO 一一映射起来,这样就可以进行

## 编程了。

## 附:在 InoProShop 软件中,更新森特奈 EtherCAT 模块 ESI 文件的方法

在使用汇川 PLC 时,如果扫描森特奈的 EtherCAT 模块出现问题,在线登录并启 动后,模块连接不上(模块前面出现三角形图标,如下图)。



此时有可能模块内部 ESI 文件被改写,此时需要重新下载一次 ESI 文件,步骤如下:

1、双击对应模块,找到右侧"在线(Online)",点击"Write E<sup>2</sup>PROM XML"

Image: sect     Imag
Application [run]     EtherCAT I/O Mapping     Download     Upload       PLC_PRG (PRG)     Status     E2PROM access       Task Configuration     Information     Write E2PROM     Read E2PROM       ETHERCAT     EtherCAT_Task
PLC_PRG Messages - Total 0 error(s), 0 warning(s), 21 message(s)
SoftMotion General Axis Pool Build • O error(s) Expression
Description     Project     Object
generate relocations
Size of generated code: 1187548 bytes
Size of global data: 216000 bytes

2、下方信息栏出现成功标志就说明重新下载 ESI 文件成功,模块可正常运行。

DownLoad File Success!	
UpLoading	
UpLoad FileSuccess!	
Verifying	
Verify OK	