Advant Controller 500

PS501 软件培训教程





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3B Control Builder PS50	1		_ 🗆 ×
▼ Deutsch English Francais	Please select language		
		Read me first	
		Documentation Examples	
		Internet - Link Where to find us	
		Exit	

- 选择语言English
- 点击Installation PS501







😵 ABB Control Builder PS501	
English Please select language	
	Read me for Installation
	Step 1: Installation Control Builder PS501
	Step 2: Installation Fieldbus Configurator SYCON.net
	Step 3: Installation GSD and EDS files
	Opt. 1: Installation Documentation (ca. 40 MB)
	Overview of examples
	Documentation of examples
	Read me Control Builder
	Main menu

■ 按指示步骤依次安装PS501









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PS501 用户界面: AC 500





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- 菜单栏
- 工具条

所有功能可以通过菜单栏进行操作,最经常使用的功能可以直接通过标准工具条中的图标进行操作。



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用户界面:



对象管理器Object Organizer 包含4个选项卡

- 程序组织单元POU
- 数据类型Data types
- 可视化Visualization
- 资源Resource



■ 信息窗口

用户界面:

输出编译操作的结果信息,包括故障信息,信号跟踪等

Data allocation	
Check task configuration	
Implementation of task 'NewTask'	
Check of the parameter configuration	
Hardware-Configuration	
POU indices:295 (28%)	
Size of used data: 2023 of 16384 bytes (12.35%)	
Size of used retain data: 0 of 1024 bytes (0.00%)	
0 Error(s), 0 Warning(s).	
Check: Unjised variables	

■ 状态条

状态条给出与软件操作相关的各种信息:

-离线/在线

一仿真模式...





PS501 创建一个新项目: AC 500



- 运行编程软件CoDeSys V2.3
- 通过图标New创建新项目
- 选择PLC CPU类型,并点击"OK"







项目设定:

I/O-Configuration		
Configurable	Download as file	
Support preemptive multitasking	Construction from the U.G.	VAR_IN_OUT as reference
Sindle task in multetaskind	Symbol contig from INI file	 Immanze imputs
		L oad bootproject automatically
Byte addressing mode	PLC Browser	
 ☐ Byte addressing mode ☑ Initialize zero 	 PLC Browser Trace 	SoftMotion

- 选定CPU后,需要进行项目设定
- 只能设定General选项卡的内容
 - 自动加载引导工程
 - 强制保持



自动生成POU:

New POU		×
Name of the new POU:	PLC_PRG	OK
Type of POU	Language of the POU	Cancel
Program	OL	
Function Block	● LD	
Function	○ FBD	
Return Type:	O SFC	
BOOL	O ST	
	C CFC	

- 新建项目后自动弹出POU对话框
- 默认自动生成命名为PLC_PRG,类型为Program的POU 在项目不需要进行任务配置的情况下,PLC_PRG默认为主 程序,不能删除和更改命名!
- PLC_PRG默认的执行模式为周期执行,周期时间为10ms
- 可以选择PLC_PRG的编程语言!





工程选项Project Options:

工作站设定,通过Project=>Options访问

- Load&Save下载和保存
- User information 用户信息
- Editor编辑器
- Desktop桌面
- Colors颜色
- Directories目录
- Log日志
- Build编译
- Passwords密码
- Source download源代码下载
- Database-connection数据库连接
- Macros宏







硬件组态

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硬件配置:



- 在Object Organizer中选择Resource 选项卡
- 双击PLC Configuration,在中间出现的窗口中进行设置
 - I/O-Bus: 本地I/O配置
 - Interfaces: CPU底板上集成 端口设置
 - Couplers: 通讯端口和扩展 通讯模块设置
 - 选中不同的项目,在右侧
 Module Parameters窗口中
 可进行参数设定







- 选中I/O-Bus,点击右键
- 选择Append Subelement,就可添加相应的I/O模块 在CPU本地最多可以添加7个I/O模块





本地I/O寻址和变量定义:

⊟	
🗊 CPU parameters[FIX]	Settings
⊕ 🗐 I/O-Bus[FIX]	
🗄 📖 📷 Interfaces[FIX]	
É······ Couplers[FIX]	
⊞ ∰ PM5x1-ETH - Internal-Ethernet[SLOT]	Automatic calculation of addresses:
	Check for overlapping addresses:
	Save configuration files in project:

■ 选择AC500,设定为地址自动分配方式

m AC500	
📊 CPU parameters[FIX]	Base parameters
Ė	
🛱 📰 DI524 - 32 digital Input[VAR]	
🖻 📆 Digital Inputs 0-31[FIX]	Commont Unput 1
📆 AT %ID0: DWORD; (* Input 0-31 *) [CHANNEL (I)]	Comment. Impart
📆 AT %IW0: WORD; (* Input 0-15 *) [CHANNEL (I)]	Channel-Id : 10200
📆 AT %IB0: BYTE; (* Input 0-7 *) [CHANNEL (I)]	Cildimerid 10200
	Class: I
JX0.1: BOOL; (* Input 1 *) [CHANNEL (I)]	
🗊 AT %IX0.2: BOOL; (* Input 2 *) [CHANNEL (I)]	Size: 1
🕕 AT %IX0.3: BOOL; (* Input 3 *) [CHANNEL (I)]	
AT %IX0.4: BOOL; (* Input 4 *) [CHANNEL (I)]	Default identifier:

- 点击AT可进行变量定义 (%IX, %QX, %IW, %QW)
- 在右侧窗口Comment处进行变量注释





Interface端口配置:

_				
	⊡ ∰ AC500		Module para	meters
I	🔚 CPU paramete	ers[FIX]	module pure	
	📻 I/O-Bus[FIX]			
	다 👦 Interfaces[FIX]			
	🗖 COM1 - 1	Incost Element	Index	Name
	🗖 COM2 -	Insert Element		RTS control
	EBP - nr	Append Subeleme	nt	Baudrate
	Couplers(FIX)	Replace element	۲.	COM1 - Online access
	Internal - no	Calculate addresses		COM1 - ASCII
		Export modulo		COM1 - MODBUS
		Export module		COM1 - CS31-Bus
		Import moaule	1	
		Cut	Ctrl+X	
		Conu	Christ	
		сору	Cui+C	
		Paste	Ctrl+V	
		Delete	Del	
	-			

- 选中COM1或COM2,点击右键
- 选择**Replace element**,可以设定不同的工作模式
 - 编程口 Online access
 - ASCII
 - MODBUS
 - CS31-Bus: COM2不能设定为此模式
- AC500可通过FBP作为从站集成到其他总线系统上





Couplers通讯配置一: 集成通讯端口



- 选择Couplers->Internal,点击右键
- 通过Replace element,选择CPU集成的网络
 - 不集成任何网络
 - Ethernet
 - ARCNET



Couplers通讯配置二: 扩展通讯模块



- 选择**Couplers**,点击右键
- 通过Append Subelement,选择相应的通讯模块
 - PROFIBUS DP
 - Ethernet
 - CANopen
 - DeviceNet
 - 计数模块



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分布式I/O



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通过CS31总线进行分布式扩展(一)





通过CS31总线进行分布式扩展(二)

🖽 📻 I/O-Bus[FIX]			
🖻 🔤 Interfaces[FIX]			
ф 🗐 COM1 - CS31-Bus[SLOT]			Index Name
白 面 DC551-CS3 由 間 DC551	Insert Element	۲	2 Ignore module 3 Module address
COM2 - Online acr	Append Subelemen	t 🕨	DC523 - 24 digital Inoutput
EBP - noneISLOT	Replace element		DC522 - 16 digital Inoutput
Couplers[FIX]	Calculate addresses		AX521 - 4 analog Input and 4 analog Output
ਁඕ── 🔛 PM5x1-ETH - Inter	Export module Import module		AO523 - 16 analog Output AI523 - 16 analog Input DI524 - 32 digital Input
	Cut	Ctrl+X	DC532 - 16 digital Input and 16 digital Inoutput
	Сору	Ctrl+C	DX522 - 8 digital Input and 8 digital Output (R)
	Paste	Ctrl+V	DX531 - 8 digital Input and 4 digital Output (R)
	Delete	Del	AX522 - 8 analog Input and 8 analog Output

- 添加CS31总线接口模块上的I/O模块
 - 最多可以添加7个模块
 - 开关量限制: 240DI和240DO
 - 模拟量限制: 32AI和32AO







通过FBP进行分布式扩展(一)

Append Subelement Replace element Calculate addresses Export module Import module	Append Subelemen	t 🕨	External - none	
	Replace element		CM572 - External-PROFIBUS DP Master	
	Calculate addresses		CM577 - External-Ethernet	
	Export modulo		CM578 - External-CANopen	
		CM575 - External-DeviceNet		
	Import module		DC541 - Interrupt / counter IO	
	Cut	Ctrl+X		
	Сору	Ctrl+C		
	Paste	Ctrl+∀		
	Delete	Del		

--- 🗊 CM572 - External-PROFIBUS DP Master[VAR]

选择Couplers,点击右键 通过Replace element,选择

CM572-DP, DP主站卡

- югалу бурт арганолюттол 🖻 🗀 library Util.lib 12.2.04 12:39: 🚊 🗑 Tools 🐨 IP config <R> 🍋 Notepad <R> 🐨 SYCON.net <R> M Alarm configuration 📸 Library Manager · 🛐 Loq 💼 PLC - Browser * III PLC Configuration "🞑 Sampling Trace " 🚔 Target Settings 🔣 Task configuration ° 🔍 Watch- and Recipe Manad 🛠 Workspace 🖹 PO... 🔧 Da... 🚍 Vis... 👼 Rei
- 在对象管理器的Resouce中打开Tools文件 夹
- 双击运行SYCON.net



通过FBP进行分布式扩展(二)



在网络配置窗口中选择现场总线的主站模块图标(本例中,选择了PROFIBUS-DP主站: CM572-DPM)。鼠标拖拽图标,将它添加到绿色的系统总线上。



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通过FBP进行分布式扩展(三)



■ 弹出一个参数配置窗口,可以设定模块的地址。



添加DP从站PDP22-FBP(DPV1 modular)到 Profibus-DP总线上(紫色)



通过FBP进行分布式扩展(四)

PanetDevice - Configur	ation PDP22-FBP (DP¥1 modul	lar)[PDP22-FBP (DP¥1 mo	dular)]<2>			
IO Device: Vendor:	PDP22-FBP (DPV1 ABB		Device ID: Vendor ID:	2335 -		FDT
Pages Tree-View 🖉		Mod	lules			
Configuration General	Available Modules:					
	Module name	Module	e Configuration :	Identifier		▲
Parameters	DC505-FBP	0×11,0	Dx20			
Groups	DI524	0×13				
Extensions	DC532	0×13,0	Dx21			
DPV1	DX531	U×10,0	UX20			
🔄 Device Description	AX522	0×10,0	Dx67			
Device	PM5×1 16 byte/word in/output	0×1F,0	0x2F,0x5F,0x6F	=		
GSD	PM5×1 16 byte in/output	0×1F,0	Dx2F			-
	Configured Modules:				Insert	Append
	Slot Module name		Module Config	uration Identifier		
	1 DC505-FBP		0×11,0×20			
	Length of input/output data:	3 bytes (max. 488 bytes)				Domouo
	Length of input data:	2 bytes (max. 244 bytes)				Kelliove
	Length of output data:	1 bytes (max. 244 bytes)				
	Number of modules:	1 (max. 8)				
		Г		1		
			OK	Cancel	Apply	Help

- 双击DP从站图标,添加从站I/O
- 选择Configuration->Modules,在Available Modules列表中双击添加相应模块
- 首先是FBP接口模块DC505-FBP,然后依次添加I/O模块 最多7个I/O模块,模拟量最多64路





通过FBP进行分布式扩展(五)

Configured Modules:			
Slot	Module name	Module Configuration Identifier	
1	DC505-FBP	0x11,0x20	
2	DI524	0x13	
3	DC532	0x13,0x21	
4	DC523	0x12,0x22	
5	AI523	0x5f	
6	A0523	0x6f	
7	AX521	0x53,0x63	

■ 所添加的从站I/O模块列表



选择Configuration->Parameters,可进行模块参数设置 在Module下拉菜单中选择添加的模块对其进行相应地参 数设置





通过FBP进行分布式扩展(六)

Pages Tree-View 🖉	P	arameters	
Configuration			
General	Module: AI523	Display mode: Decimal	-
Modules			
🜩 Parameters	Parameters		
Groups			
Extensions	Name	Value	
DRV1	Check Supply	ON	
DFVI	Analog data format	Standard	
Device Description	InChannel O configuration	unused	
Device	InChannel O checks	Plausibility, cut line, short	
GSD	InChannel 1 configuration	Plausihility, cut line, short	
	InChannel 1 checks	Cut line, short circuit	
	InChannel 2 configuration	Plausibility	
	InChannel 2 checks	None	
	InChannel 3 configuration	unused	
	InChannel 3 checks	Plausibility, cut line, short	
	InChannel 4 configuration	unused	
	InChannel 4 checks	Plausibility, cut line, short	

■ I/O模块参数设定后,点击OK



■ 在SYCON.net右侧窗口中展开PDP22-FBP,可以看到添加的输入和输出





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通过FBP进行分布式扩展(七)



- 添加模块依次为: DC505(8DI/8DC),DI524(32DI), DC532(16DI/16DC),DC523(24DC), AI523(16AI),AO523(16AO), AX521(4AI/4AO)
- 生成的输入输出与模块的对应关系 如图所示





通过FBP进行分布式扩展(八)



选中每个输入/输出,在下面的窗口 中选择每个字节的输入/输出,点击 右键,选择Create variable创建变 量



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通过FBP进行分布式扩展(九)

netConnect-Create v	variable	×
Signal: modular)[PDP22-FBI	P (DPV1 modular))]<3>\2 byte input\Input_1
Name of variable:	NewVariable1	
Data type:	BYTE BOOL BYTE SINT USINT	
Cre	eate variable	Cancel

Name of signal	Data type	I/O	Name of variable
Input_1	BYTE	Ι	
~Input_1. <bit 0=""></bit>	BIT	Ι	NewVariable1
~Input_1. <bit 1=""></bit>	BIT	Ι	NewVariable2
~Input_1. <bit 2=""></bit>	BIT	Ι	NewVariable3
~Input_1. <bit 3=""></bit>	BIT	Ι	NewVariable4
~Input_1. <bit 4=""></bit>	BIT	Ι	NewVariable5
~Input_1. <bit 5=""></bit>	BIT	Ι	NewVariable6
~Input_1. <bit 6=""></bit>	BIT	Ι	NewVariable7
~Input_1. <bit 7=""></bit>	BIT	Ι	NewVariable8
Input_2	BYTE	Ι	

- 创建开关量输入/输出变量
 - 在Data type选择BOOL
 - 点击Create variable

 在生成的变量表中的Name of variable一栏中定义变量名





通过FBP进行分布式扩展(十)

Besources	/VAR_GLOBAL / C	onstant \succ	RETAIN Y	INFO	
🛱 🗟 Global Variables	Name	Address	Туре	Initial	Comment
	0001 INPUT10	%IX1.0.0	BOOL		
Slot1 <r></r>	0002 INPUT11	%IX1.0.1	BOOL		
The second secon	0003 INPUT12	%IX1.0.2	BOOL		
	0004 INPUT13	%IX1.0.3	BOOL		
🖶 🗀 library standard.lib 2	0005 INPUT14	%IX1.0.4	BOOL		
😐 🛄 library SysLibMem.li	0006 INPUT15	%IX1.0.5	BOOL		
⊞… 🔲 library SysLibTime.l	0007 INPUT16	%IX1.0.6	BOOL		
@ library Sys LaskInto. @	0008 INPUT17	%IX1.0.7	BOOL		▼

- 在对象管理器的Resouce中打开Global Variables文件夹,选择 Slot1,双击
- 在中间打开的变量表中显示定义的分布I/O的变量名和地址
- 在CPU左侧插槽从左往右依次为Slot1, Slot2,...



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通过FBP进行分布式扩展(十一)

InetDevice - Configuration CM	1572-DPM[CM572-D	PM]<1>(#1)							
IO Device: CM572 Vendor: ABB	2-DPM		Device I Vendor :	D: 0x069 ID: -	₽E				
Pages Tree-View 🖉			Device Assig	nment					
Settings	Scan progress: 2/2 Devices (Current device: -)								
35 Gateway Driver	Scan								
Eirmware Download	Device	Serial number	Driver	Access path					
License Codes	CM572-DP	00000408	35 Gateway Driver	\Slot1					
Configuration									
Bus Parameters									
Station Table									
Address Table									
	Access path:								
			ОК	Cancel	Apply Help				
ABB	a) A (a)								

- 将配置文件下载到DP主站卡
- 主站模块确认

选择Setting->Driver->Device Assignment,系统将自动搜索到已连接的DP主站卡





PnetDevice - Configuration (CM572-DPM[CM572	2-DPM]<1>(#1)					
IO Device: CM57 Vendor: ABB	72-DPM					Device ID: Vendor ID:	0×069E -
Pages Tree-View Settings Settings Settings Settings Solution Driver Device Assignment Firmware Download License Codes Configuration Bus Parameters Station Table Address Table	Current Configura Channel: Driver name: Communi Channe Channe Channe	tion: Local_ Serial (R5232) ication Parameter ils cal Local_	rs Serial (RS232) Name Port Baudrate Parity Stop bits Motorola byteorder	Value COM4 19200 No 1 Yes	3S Gateway Driver 样本抓图.pro Comment	X OK Cancel New Remove Gateway Update	
							Read Configu

■ 网关设定

PS501

AC 500



通过FBP进行分布式扩展(十三)



■ 下载配置内容




第四章 程序组织单元**POU**



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程序组织单元POU

POUs Add Object	New POU
Edit Object Edit Object Copy Object Delete Object Object Properties Project database Add Action New Folder Expand Node Collapse Node	Name of the new POU: OK Type of POU Cancel Program IL Function Block IL Function FBD Return Type: SFC BOOL ST
View Instance Show Call Tree Save as template	

- 在对象管理器的POU选项卡中选择POUs,点击右键
 选择Add Object
- 弹出New POU窗口,创建新的POU
 - POU命名
 - POU类型:程序,功能块,功能
 - POU编程语言:指令表(IL),梯形图(LD),功能块 图(FBD),顺序功能图(SFC),结构文本(ST),连 续功能图(CFC)





- 变量是在程序执行期间可以修改的以BOOL,WORD,DWORD 等为类型的内存实体
- 定位变量是或者与I/O模块输入输出通道相关联的变量,或者 是与内存引用相关联的变量
- 非定位变量是既不与I/O模块也不与内存引用相关联的变量 (其在存储器内的位置不可知),没有与地址关联的变量为非 定位变量



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全局变量



- 在对象管理器的Resources选项卡中选择Global Variables, 双击Global_Variables
- 在中间窗口显示全局变量表,有三种类型: VAR_GLOBAL, CONSTANT, RETAIN
- 如果需要添加新变量,点击右键,选择New Declaration







	Name	Address	Type	Initial	Comment
0001	Rec_message		STRING(100)		
0002	? Send_message		STRING(100)	'L{1}S?*'	
0003	COM_SEND_1		COM_SEND		
0004	COM_REC_1		COM_REC		
0005	i BLINK1		BLINK		
0006	BLINK_2		BLINK		
				1	MOVE
0004					

- 双击打开POU编辑窗口,在语言编辑器的上部为局部变量声明表,包括一下类型:
 - VAR 本地变量
 - VAR_INPUT 输入变量
 - VAR_OUTPUT 输出变量
 - VAR_IN_OUT 输入/输出变量
 - CONSTANT 常数
 - **RETAIN** 保持型变量



数据类型

Standard Types	ARRAY	ОК
Jser defined Types Standard Eurotion Blocks	BUUL	
Jser defined Function Blocks	DATE	Cancel
	DINT	
	DT	
	DWORD	
	INT	
	SINT	
	STRING	
	TIME	
	TOD	
	UDINT	
	WORD .	
	J	







自动声明

Options		
Category:		
Load & Save User Information Editor	Autodeclaration	Tab-Width: 4
Desktop Colors	Autoformat	Font
Directories Log	 List components 	
Build Passwords	Declarations as tables	

如果选定Autodeclaration功能, 当输入未定义的变量时,系统会 自动弹出Declare Variable窗口

Declare Variable				×
<u>C</u> lass VAR	Name xyz	Type BOOL	2	ОК
<u>S</u> ymbol list Global_Variables	Initial Value	<u>A</u> ddress		
Co <u>m</u> ment:				☐ <u>B</u> ETAIN ☐ <u>P</u> ERSISTENT

在Declare Variable窗口,可以定义变量的种类、命名、类型、初始值、地址、注释等





输入助手



■ 编程时选中填写变量的???,按功能键F2,即可弹出Help Manager窗口

Help Manager		×
Local Variables Global Variables System Variables	BLINK_2 BLINK_2.CLOCK BLINK_2.CLOCK.ET BLINK_2.CLOCK.PT BLINK_2.CLOCK.Q BLINK_2.CLOCK.StartTime BLINK_2.COCK.StartTime BLINK_2.TIMEHIGH BLINK_2.TIMEHIGH BLINK1.CLOCK.ET BLINK1.CLOCK.ET BLINK1.CLOCK.KET BLINK1.CLOCK.Q BLINK1.CLOCK.Q BLINK1.CLOCK.Q BLINK1.CLOCK.Q BLINK1.CLOCK.StartTime BLINK1.CLOCK.StartTime BLINK1.CLOCK.StartTime BLINK1.TIMEHIGH BLINK1.TIMEHIGH BLINK1.TIMEHIGH BLINK1.TIMEHIGH	OK Cancel
1		

■ 从变量表中选择所需的变量





程序段保护

选中相应的POU,点击右键,选择
 Object Properties

Pr	operties								-	? ×
1	Access rights									1
	User Groups	0	1	2	3	4	5	6	7	
	No Access	0	0	0	0	0	0	0	0	
	Read Access	0	0	0	0	0	0	0	0	
	Full Access	۲	۲	۲	۲	۲	۲	۲	۲	
	Apply to all									
							OK		Cancel	

- 在弹出的属性窗口中设定不同 用户组对于该POU的权限
 - 无权访问
 - 只读
 - 全部权限





第五章 任务管理

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任务管理



- 在对象管理器的Resources选项卡中选择Task configuration,双击
- 在中间窗口中,选择Task configuration,点击右键
- 选择Append Task,添加新任务





任务管理

Task configuration System events NewTask	Taskattributes Name: NewTask Priority(031): 10	
	Type © gyclic © freewheeling © triggered by external event Properties Interval (e.g. #200ms):	
	Watchdog Activate watchdog Time(e.g. t#200ms): Sensitivity:	

- 可对新添加的任务进行设定
 - 命名
 - 优先级
 - 类型:周期执行(时间可设),循环执行,事件任务,外部事件任务
 - 看门狗





任务管理

∃ (∰Task configuration		Taskattributes	
⊡ (⊱) MainTask	Insert Task	<	MainTask
	Append Pr	ogram Call	
	Cut	Ctrl+X	
	Сору	Ctrl+C	
	Paste	Ctrl+V	
	Delete	Del	
	Set Debug	j Task	
	Enable / di	sable task	ent
		 triggered by egeneratives Properties Interval (e.g. t#) 	t#200ms): T#30ms
		Watchdog	chdog ms): [%]

为任务指定调用的程序 选中相应的任务,点击右键,选择Append Program Call





任务管理

Image: System events Image: System events	Program Call Program Call:	
Help Manager User defined Programs	Event PLC_PRG	OK Cancel
	Structured	

在右侧Program Call,点击选择按键,在弹出的程序列表 中选择相应的程序



系统事件

Task configuration System events	System events	
	Name Description	called
	Start Called when progr	ram starts INIT
	stop Called when progr	ram stops
	before_reset Called before rese	et takes place
	🗖 after_reset 🛛 Called after reset t	took place
	shutdown Called before shut	tdown is performed
	excpt_cycletime_ov Called when a cyc	:letime overflow happened
	excpt_watchdog Software watchdog	g OF IEC-task expired
	excpt_hardware_w Hardware watchdo	og expired. Global software error
	excpt_fieldbus Fieldbus error occ	curred
	excpt_loupdate IO-update error	
	excpt_megal_mst megal mstruction	
	excpt_access_viol Access violation	ion
	excpt in page error Page fault	
	excpt_stack_overfl Stack overflow	
	excpt_misalignment_Datatype misalign	iment
	excpt_arraybounds ARRAY bounds ex	ceeded
	excpt_dividebyzero Division BY zero	
	excpt_overflow Overflow	
	excpt_noncontinua Non continuable	
	after_reading_inputs Called after readin	ng of inputs
	before_writing_out Called before writi	ring of outputs
	Create POU	
	Interface for Event start:	
	START	
	-dwEvent:DINT_start:DWORD	
	-dwFilter : DINT	
	-dwOwner : DINT	

■ 选择System events,在右侧窗口中显示支持的系统事件



系统事件



选择相应的系统事件,在called POU一列,按功能键F2可以选择发生该系统事件时将调用的程序









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- 在对象管理器的Resources选项卡中选择Library Manager,双击
- 在中间上部窗口中,显示的是项目所包含的库
- 选择不同的库,在中间下部的窗口中显示该库包含的功能块
- 选择不同的POU,在右侧窗口显示的是对该POU的说明



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standard.lib 22.11.02 11:08:30	FUNCTION_BLOC	KCTD
lecsfc.lib 26.11.02 10:23:26	— (*	
Util.lib 12.2.04 12:39:58	Additional Library	Ins
SysLibTime.lib 18.7.05 15:39:	Delete	Del
SysTaskInfo.lib 18.7.05 15:39:	Delete	Del
SysLibMem.lib 18.7.05 15:39:5	Properties	Alt+Enter
SYSUBCALLBACK LIB 18.7.05	VAR_INPUT	
•	CD: BOOL;	(* Count Down or

在显示功能库的窗口点击右键,选择 Additional Library



在弹出的窗口中选择想要添加的库





第七章 离线仿真

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程序编译

Project	Insert	Extras	Online	Windo
Build				F11
Rebuil	dall			
Clean	all			
Load	downloa	d informa	ition	

- 选择下拉菜单Project
 - Build 对现有项目的改变进行生成
 - Rebuild all
 创建可以下载至PLC或PLC仿真器的文件

Implementation of POU 'CS31QU'		ן
Implementation of POU 'FB1'		
Initialisation code for POU 'FB1'		
Implementation of POU 'FB1.reset'		
Implementation of POU 'PLC_PRG'		
Error 4022: PLC_PRG (2): Operand expected		
Hardware-Configuration		
1 Error(s), 0 Warning(s).	•	
•		



信息窗口自动显示在分析时检测到的所有类型的错误
 双击显示的错误,系统会自动转到出现错误的地方



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离线仿真

• CoDeSys - ASCII通讯.pro* - [ABC (PRG-LD)]	
🖢 File Edit Project Insert Extras 🗌	Online Window Help	
*	Login	Alt+F8
	Logout	Ctrl+F8
	Download	itia
	Run	F5
I	Stop	Shift+F8
	Reset	
	Reset (cold)	H
0005 BLI	Reset (original)	-
0006 BLI	Toggle Breakpoint	F9
	Breakpoint Dialog	
0001	Step over	F10
2	Step in	F8
	Single Cycle	Ctrl+F5
	Write Values	Ctrl+E7
	Force Values	F7
Т	Release Force	Shift+F7
	Write/Force-Dialog	Ctrl+Shift+F7
	Chow Call Stack	
	Display Flow Control	
0002		
744	Simulation Mode	
	Communication Parameters.	
	Sourcecode download	F
	Create boot project	
	Write file to PLC	
	Read file from PLC	

- 编译程序,检查无误
- 选择Online->Simulation Mode



离线仿真

ras	Online Window	/ Help	
1 8	Login	Alt+F8	
7	Logout	Ctrl+F8	
Nar	Download		itial (
Rec	Run	F5	
Sen	Stop	Shift+F8	1)8?*'
-	Dacat		

■ 选择Online->Login

; [Online Windo	w Help
Ж	Login	Alt+F8
_	Logout	Ctrl+F8
]	Download	
]	Run	F5
] 1	Stop	Shift+F8

■ 选择Online->Run,模拟运行程序



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联机功能

0	nline	Window	Help	
	Logir	1		Alt+F8
	Logo	ut		Ctrl+F8
	Dowi	nload		
	Run			F5
	Stop			Shift+F8
	Rese	t		
	Rese	t (cold)		
	Rese	t (original)		
	Тода	jle Breakpoi	nt	F9
	Break	kpoint Dialo	g	
	Step	over		F10
	Step	in		F8
	Single	e Cycle		Ctrl+F5
	Write	e Values		Ctrl+F7
	Force	e Values		F7
	Relea	ise Force		Shift+F7
	Write	e/Force-Dial	og	Ctrl+Shift+F7
	Shov	v Call Stack		
	Displa	ay Flow Cor	ntrol	
4	Simu	lation Mode		
	Com	munication	Parameters	
	Sour	cecode dov	vnload	
	Creat	te boot pro	ject	
	Write	e file to PLC		
	Read	file from Di	C	

- Reset复位
- Reset(original)复位原始状态
- Toggle Breakpoint切换断点
- Breakpoint Dialog断点对话框
- Step over单步
- Step in步进入
- Single Cycle单循环
- Write Values写入值
- Force Values强制值
- Release Force解除强制
- Write/Force-Dialog写入/强制对话框



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第八章 联机通讯设置







通讯参数设定

Online	Window Help	
Login	ו	Alt+F8
Logo	ut	Ctrl+F8
Dowi	nload	
Run		F5
Stop		Shift+F8
Rese	t	
Rese	t (cold)	
Rese	t (original)	
Тода	le Breakpoint	F9
Break	kpoint Dialog	
Step	over	F10
Step	in	F8
Singl	e Cycle	Ctrl+F5
Write	e Values	Ctrl+F7
Force	e Values	F7
Relea	ise Force	Shift+F7
Write	e/Force-Dialog	Ctrl+Shift+F7
Shov	/ Call Stack	
Displ	ay Flow Control	
Simu	lation Mode	
Com	munication Parame	ters
Sour	cecode download	
Creat	te boot project	
Write	e file to PLC	

Write file to PLC Read file from PLC ■ 选择Online->Communication Parameters





串口通讯参数设定

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串口通讯参数设定

		×
		OK
Name Value Con	nment	Cancel
		New
		Remove
		Gateway
Communication Paramet	ters: New Channel	×
Name Local_		ОК
Device		Cancel
Name ABB SL97 Fast ABB Tcp/lp Evel 2 Tcp/lp Serial (RS232) Serial (RS232, 8 bit) Tcp/lp (Level 2) Serial (Modem)	ABB SST SL 97 Fast drive ABB SST Tcp/Ip Level 2 (3S Tcp/Ip driver 3S Serial RS232 driver 3S Serial RS232 driver (8 3S Tcp/Ip level 2 driver 3S Modem driver	
	Name Value Control Name Local_ Name Local_ Device Name ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp Serial (RS232) Serial (RS232, 8 bit) Tcp/lp (Level 2) Serial (Modern) Serial (Modern)	Name Value Comment Communication Parameters: New Channel Name Info Name Local_ Device Device Name ABB SL97 Fast ABB SL97 Fast ABB SST SL 97 Fast drive ABB Tcp/lp Level 2 ABB SST Tcp/lp Level 2 i Tcp/lp 3S Tcp/lp driver Serial (RS232) 3S Serial RS232 driver (8 Serial (RS232, 8 bit) 3S Serial RS232 driver (8 Tcp/lp (Level 2) 3S Tcp/lp level 2 driver Serial (Modem) 3S Modem driver Value 29 Drive driver

- 在弹出的Communication Parameters窗口中,点击New
- 在Device列表中选择Serial(RS232),点击OK



串口通讯参数设定

Communication Parameters		×
Communication Parameters Channels Cocal Local	Name Value Comment Port COM3 Baudrate 19200 Parity No Stop bits 1 Motorola byteorder Yes	OK Cancel New Remove Gateway Update

- 进行相关参数设置:
 - Port: 选择串口
 - Baudrate: 波特率
 - Parity: 奇偶校验
 - Stop bits: 停止位
 - Motorola byteorder: Yes





临时IP地址设置

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临时IP地址设定(一)



- 在硬件组态中添加内部以太 网接口
- 连接好上位机与CPU单元 上的以太网接口

在对象管理器的Resources选 项卡中选择Tools->IP config, 双击



临时IP地址设定(二)

<mark>り CoDeSys - 祥本抓图.pro - [PLC_</mark> D File Edit Project Insert Extra	PRG (PRG-FBD)] as Online Window Help	-		-	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	🛃 🔏 🕹 🛍 🙀	100 %		al s _R	
Resources Global Variables Global Variables ibrary lecsfc.lib 26.11.02 10.23 ibrary standard.lib 22.11.02 11 ibrary SysLibMen.lib 18.7.05 1 ibrary SysLibTime.lib 18.7.05 1 ibrary SysLibTime.lib 18.7.05 1 ibrary Util.lib 12.2.04 12:39.58:	3:26: global va i:08:30: global File Options ?	OGRAM PLC R D_VAR	2_PRG	_	
	MAC Address	Device Type	Device Name	IP Address	Protocol
IP config < R> Notepad < R> Y SYCON.net < R> Ibrary Manager Icg PLC - Browser If PLC - Browser If PLC - Strouger If Target Settings If Target Settings Watch- and Recipe Manager Workspace					
	Find:		next previous		<u>Configure</u> ↓

在打开的以太网设备配置对话框中,点选
 Search Devices



临时IP地址设定(三)

<mark>。CoDeSys - 祥本抓图.pro - [PLC_F</mark> 。File Edit Project Insert Extras	P RG (PRG-FBD)] s Online Window Help				
	2 🐴 🗼 🖻 🛍 🙀	100 %		s _R	
Resources Ibrary lecsfc.lib 26.11.02 10:23 Ibrary lecsfc.lib 26.11.02 10:23 Ibrary standard.lib 22.11.02 11: Ibrary standard.lib 22.11.02 11: Ibrary SysLibMem.lib 18.7.05 1 Ibrary SysLibTime.lib 18.7.05 1 Ibrary SysLibTime.lib 18.7.05 1 Ibrary SysLibTime.lib 18.7.05 1 Ibrary SysLibTime.lib 18.7.05 1 Ibrary Util.lib 12.2.04 12:39:58:	26: global va 0001 PR 0002 VA 0003 EN 0003 EN 0003 EN 0003 EN 0003 EN 0001 PR 0002 VA 0003 EN 0003 EN 0001 PR 0002 VA 0003 EN 0003 EN 0000 EN 0000 EN 0000 EN 0000 EN 0000 EN 0000 EN 0000	OGRAM PLC R D_VAR	:_PRG	-	×
	MAC Address	Device Type	Device Name	IP Address	Protocol
Prontig < R> Notepad < R> Notepad < R> SyCON.net < R> SyCON.net < R> Dibrary Manager Dibrary Mana	00-02-A2-1D-A7-59	PM5x1ETH	PM5x1ETH [SN=00010073, ID=0xFF]	192.168.1.111	NetIdent
	Find:		next previous		Configure ► Stop Searching

系统会自动检测到CPU单元的原来已经设定的IP地址。如果,CPU中没有设定IP地址,搜索结果将是:
 IP: 0.0.0.0



临时IP地址设定(四)

1AC Address 0-02-A2-1D-A7-59	Device Type PM5x1ETH	Device Name PM5x1ETH [5N=00010073, ID=0xFF]	IP Address 192.168.1.111	Protocol NetIdent	
		onfiguration for 00-02-A2-1D-A7-5			
		ок с	ancel		able4

- 如果需要改变IP地址,选择Configure->Set IP Address
- 在弹出的IP地址设定窗口中填入IP,点击OK



临时IP地址设定(五)

Ethernet Device Cor	nfiguration			_ 🗆 X
Detected Devices:				
MAC Address	Device Type	Device Name	IP Address	Protocol
00-02-A2-1D-A7-59	PM5×1ETH	PM5×1ETH [SN=00010073, ID=0×FF]	(192.168.1.111)	NetIdent
	TD C		N	
	IP Con	riguration for 00-02-A2-10-A7-59		
			100	
	IP Ad	IP Address: 192 . 168 . (10 . 100)		
		OK Car	ncel	
	Devic			
L	Devic			
,				
ri- d				
Find:		next previous		<u>C</u> onfigure
				Search Devices

临时IP是在不具备设定或者更改固定IP地址的情况下, 临时进行程序下载和通讯。这个设定在CPU掉电后会丢 失,所有它不能用来设定稳定可靠的通讯。



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通过以太网下载程序

nmunication Para	ameters		
hannels			1
⊡-Local			
	Name Value Co	amment	Cancel
		200000	
			New
			Remove
			Gateway
	Communication Param	eters: New Channel	
	Name Local_		ОК
	Device		Cancel
	Name	Info	
	T territe		
	ABB SL97 Fast	ABB SST SL 97 Fast drive	
	ABB SL97 Fast ABB Tcp/lp Level 2	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 (
	ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 I 3S Tcp/lp driver	
	ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp Serial (RS232)	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 i 3S Tcp/lp driver 3S Serial RS232 driver	
	ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp Serial (RS232) Serial (RS232, 8 bit)	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 i 3S Tcp/lp driver 3S Serial RS232 driver (8	
	ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp Serial (RS232) Serial (RS232, 8 bit) Tcp/lp (Level 2)	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 1 3S Tcp/lp driver 3S Serial RS232 driver 3S Serial RS232 driver (8 3S Tcp/lp level 2 driver	
	ABB SL97 Fast ABB Tcp/lp Level 2 Tcp/lp Serial (RS232) Serial (RS232, 8 bit) Tcp/lp (Level 2) Serial (Modem)	ABB SST SL 97 Fast drive ABB SST Tcp/lp Level 2 i 3S Tcp/lp driver 3S Serial RS232 driver (8 3S Serial RS232 driver (8 3S Tcp/lp level 2 driver 3S Modem driver	

- 选择Online->Communication Parameters
- 在Device列表中选择TCP/IP,点击OK


通过以太网下载程序

Communication Parameters		×
Channels	Tcp/lp Comment Address 192.168.10.100 Port 1201 Motorola byteorder Yes	OK Cancel New
		Gateway Update

- 进行相关参数设置:
 - Address: 目标CPU的IP地址
 - Port: 1201
 - Motorola byteorder: Yes





固定IP地址设置



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固定IP地址设定(一)



■ 将CPU集成通讯端口设定为 Ethernet



- 在对象管理器的Resouce中打开Tools文件 夹
- 双击运行SYCON.net





固定IP地址设定(二)



- 在SYCON.net中,将ABB->Master中的PM5x1-ETH添加到中间窗口的绿色网络线上
- 双击PM5x1-ETH图标



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固定IP地址设定(三)

📮 🚍 Settings	IP_SETUP	
🛄 Firmware		
🗉 🛄 Driver	Parameter	Value
Device Assignment	Flags 0	7
🖻 🛄 Configuration	Flags 1	5
- PROJECT	IP address (Low)	1
- P SETUP	IP address	101
OMB SETUP	IP address	168
	IP address (High)	192
	▶Net mask (Low)	U
	Netmask	255
	Netmask	255
	Net mask (High)	255
	Gateway (Low)	0
	Gateway	0
	Gateway	0
	Gateway (High)	0

- 在弹出的netDevice-Configuration窗口中选择
 Setting->Configuration->IP_SETUP
- 进行IP地址和子网掩码的设定,注意高低位的顺序





固定IP地址设定(四)

p- 🛄 Settings	OMB_SETUP	
🚽 🛄 Firmware		
🕀 💼 Driver	Parameter	Value
📴 Device Assignment	Server connections	0
🖻 🛄 Configuration	Task timeout [100ms]	20
PROJECT	Omb time [100ms]	10
IP_SETUP	Send timeout [ms]	0
MB SETUP	Connect timeout [ms]	0
ETHERNET	Close timeout [ms]	0
⊡ ⊡ ⊡ Service	▶ Swap	True

- 选择Setting->Configuration->OMB_SETUP,设定关于Modbus的参数
 - Server connections: 客户端的数量
 - Task timeout: 任务超时时间
 - Omb time: 连接保持时间
 - Swap:设定为True





固定IP地址设定(五)

E-C Settings	□3S Gateway	Driver
Driver	Current Configurat	tion:
	Channel:	R5323
E Service ⊡	Driver name:	Serial (RS232)
		Read Configuration
		Gateway Configuration

选择Setting->Driver->3S Gateway Driver,点击窗口右下脚的 Gateway Configuration,进行对以太网口设定的网关配置





固定IP地址设定(六)

Channels Channels Icocal Name Value	Comment OK Cancel New Remove Gateway Update	 在弹出的Communication Parameter窗口中,点击 New键
Communication Parameters: New Channe Name Local_ Device Name Name Info ABB SL97 ABB SST SL ABB SL97 Fast ABB SST SL ABB Tcp/lp Level 2 ABB SST Tc Tcp/lp 3S Tcp/lp de Serial (RS232) 3S Serial RS Serial (RS232, 8 bit) 3S Serial RS Tcp/lp (Level 2) 3S Tcp/lp le AB Tcp/lp (Level 2) 3S Tcp/lp le	OK OK Cancel	在弹出的窗口中,选择 Serial(RS232),点击OK

固定IP地址设定(七)

Communication Parameters		×
Channels Cocal Local	Serial (RS232) Name Value Comment Port COM3 Baudrate 19200 Parity No Stop bits 1 Motorola byteorder Yes Yes	OK Cancel New Remove Gateway Update

- 进行相关参数设置:
 - Port: 选择串口
 - Baudrate: 波特率
 - Parity: 奇偶校验
 - Stop bits: 停止位
 - Motorola byteorder: Yes





固定IP地址设定(八)

	N
Device: CM577-ETH (Ethernet-Extern) Description: ABB	T
Can Settings Device Assignment Scan progress: 2/2 Devices (Current device: -) Scan	
Device Assignment Image: Configuration Image: Configuration	
Access path: {13C5F6E9-EF6D-41CB-85FB-E0E759ED2B7E}\Slot0	
OK Cancel Apply Help]

- 将计算机与PLC通过串口连接好
- 选择Setting->Driver->Device Assignment,系统会通过上一步 设定好的网关自动检测到已建立连接的以太网接口,点击 PM5x1-ETH确认。





固定IP地址设定(九)



- 在SYCON.net中选择PM5x1-ETH图标,点击右键
- 选择Connect,与设备建立连接后
- 再右键点击PM5x1-ETH图标,选择Download,下载所设定的配置





第九章 **PLC**浏览器

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PLC浏览器



- 在对象管理器的Resources选项卡中选择PLC-Browser,双击
- 在右侧窗口的命名输入行输入不同命令,可以在线查看系统的相应信息
- 输入? 回车, 可以显示所有的命令









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可视化

在对象管理器的Visualizations选项卡中选
择Visualizations文件夹,点击右键

■ 选择Add	Object
---------	--------

New Visualization	×
Name of the new Visualization:	ОК
	Cancel

给新添加的Visualization命名, 点击OK



.

I File Edit Project	Insert Extras Online	Window Help	<u> – 181 ×</u>
1 🛋 🖬 🚛 🚳 🛷	- Rectangle		
	Rounded Rectangle		
Visualizations	Ellipse		
🤠 example	Polygon		
	Polygon		••••••
	Polyline		
	Curve		
	Pie		•••••
	Ditmon		
	ыцпар	1	
	Visualization		
	Button		
	NAME FILE		
	I able		
	ActiveX element		
	Trend		
	Alarma tabla		
	Alarm table	<u> </u>	
		T	
	Loading libr	ary 'C:\Program Files\3S Software\CoDeSys V2.3\Library\standard.lib'	
	L oading libr	any (C1Program Files)3S Software)CoDeSve V2 3)Libran/legsfglib/	

■ 可视化页面编辑窗口

可视化

■ 通过Insert菜单或工具栏添加不同的组件来创建画面



PS501

AC 500



可视化



- 包括的组件有:
 - 矩形
 - 椭圆
 - 曲线
 - 位图
 - 趋势
 - 表格
 - Active X 控件
 - 仪表
 - 柱状图
 - 按钮 ...



可视化

52 51 51	S4 S5 S6	Switches tor	network 1		
Regular Element Configu Category: Text Text variables Line width Colors Colorvariables Motion absolute Motion relative Variables Input Text for tooltip Security Programmability	Shape Rectangle Rd. rectangle Ellipse Line			OK Cancel	JONLINE JOV JREAL

■ 双击选中添加的组件,可对其进行组态





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