Training Document for Comprehensive Automation Solutions

Totally Integrated Automation (TIA)

MODULE E05

PROFINET with

IO-Controller CP343-1 Advanced

and

IO-Device ET 200S

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The following symbols are provided as a guide through Module E5:



1. PREFACE

In terms of its contents, Module E05 is part of the teaching unit entitled '**IT Communication with SIMATIC S7**'.



Learning Objective:

In Module E05, the reader learns how PROFINET is started up with the CP343-1 Advanced as IO controller and the ET200S as IO device. Module E05 demonstrates the method in principle, using a short example.

Prerequisites:

To successfully work through Module E05, the following knowledge is assumed:

- Knowledge in handling Windows
- Fundamentals of PLC programming with STEP 7 (for example, Module A3 'Startup' PLC Programming with STEP 7)
- Fundamentals of network engineering (for example, Appendix V Basics of Network Engineering)

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Hardware and software required

- 1 PC, operating system Windows 2000 Professional starting with SP4/XP Professional starting with SP1/Server 2003 with 600MHz and 512RAM, free hard disk storage 650 to 900 MB, MS Internet Explorer 6.0 and network card
- 2 Software STEP7 V 5.4
- **3** PLC SIMATIC S7-300 with CP343-1 Advanced Sample configuration:
 - Power supply: PS 307 2A
 - CPU: CPU 314C-2DP
 - CP: CP343-1 Advanced
- 4 Distributed periphery ET 200S for PROFINET with 2 digital inputs and 4 digital outputs Sample Configuration:
 - Interface Module IM151-3 PN HIGH FEATURE (HF)
 - Power module PM-E DC 24V ...48V/AC 24V...230V
 - Electronic module: 2DI Standard DC 24V
 - Electronic module: 4DO Standard DC 24V/0.5A
- 5 Ethernet connection between PC, CPU 343-1 Advanced and ET200S with IM 151-3 PN HF



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2. NOTES ON USING THE CP343-1 ADVANCED



The CP343-1 Advanced is the communication module of the SIMATIC S7-300 for Industrial Ethernet with PROFINET functionality.

Having its own processor, it relieves the CPU of communication tasks, and makes additional connections possible.

The parameters are assigned and the Industrial Ethernet and PROFINET are configured with the Software STEP7. This provides the user with a uniform configuring tool for central as well as distributed configurations.

The CP343-1 Advanced allows for connecting the SIMATIC S7-300 to the Industrial Ethernet with the following capabilities:

- 10/100 Mbit/s Full/Half duplex connection with auto-sensing for automatic switching
- Connection by means of RJ45
- TCP/UDP transport protocol
- PG/OP communication
- Network overreaching PG/OP communication through S7 routing
- S7 Communication
- S5 compatible communication
- Multicast for UDP
- IT communication:

HTTP communication permits access to process data using the Web browser; FTP communication allows for program-controlled FTP client communication, access to data blocks by means of FTP servers, data handling of own data system by means of FTP, Email.

- Remote programming and initial startup by means of the network
- IP address assignment by means of DHCP, simple PC tool, or programming block with HMI
- Access protection based on IP addresses
- Time of day synchronization of the CPU by means of NTP or SIMATIC procedure
- Integration into network management systems by the support of SNMP

With programmed FC block calls, the user program triggers the transfer of data areas for communication, and successful execution is monitored. The FC blocks needed for communication are stored in the library "SIMATIC_NET_CP". To use these functions, they have to be integrated in (copied to) your "own" project.



Note:

- In Module E05, the CP343-1 Advanced is used on the PROFINET as IO controller.

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3. NOTES ON USING THE ET200S WITH THE IM 151-3 PN HF



The SIMATIC ET200S is a decentral IO device configured in a highly modular mode. It can be operated with different interface modules:

IM 151-1 BASIC, IM 151-1 STANDARD and **IM 151-1 FO STANDARD** for connecting a maximum of 63 IO modules (all types except PROFIsafe) to the PROFIBUS DP; alternatively, bus connection with RS 485 Sub-D connector or by means of an integrated fiber-optic connection

IM 151-1 HIGH FEATURE for connecting a maximum of 63 IO modules (all types, including clocked mode for PROFIsafe) to PROFIBUS DP; bus connection with RS485 Sub-D connector

IM 151-3 PN for connecting a maximum of 63 IO modules (all types, including the clocked mode for PROFIsafe) to PROFINET IO controllers; bus connection by means of RJ45 connector

IM 151-3 PN HF (HIGH FEATURE) for connecting a maximum of 63 IO modules (all types; including the clocked mode for PROFIsafe) to PROFINET IO controllers; bus connection with 2 x RJ45 connector

IM 151-7/F-CPU, IM 151-7/CPU or **IM 151-7/CPU FO** for connecting a maximum of 63 IO modules (all types; PROFIsafe only with IM151-7/F CPU) to PROFIBUS DP; alternatively bus connection with RS 485 Sub-D connector or by means of an integrated fiber-optic connection; with integrated CPU 314 of the SIMATIC S7-300, for preprocessing process data.

The following IO modules can be used:

Power modules for individual grouping of load and encoder supply voltages and their monitoring

Digital electronic modules for connecting digital sensors and actuators

Analog electronic modules for connecting analog sensors and actuators

Sensor module for connecting IQ sense sensors

Technology modules Electronic modules with integrated technological functions, such as counting, positioning, data exchange, etc.

Frequency converters and motor starter modules

For training purposes, an integrated system is provided, suitable for teaching many technologies

Notes:

- In Module E05, the interface module IM151-3 PN HF is used as PROFINET IO device.
- A micro memory card is required for running the IM151-3 PN HF!

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4. STARTING UP PROFINET

(IO CONTROLLER CP343-1 ADVANCED/IO DEVICE ET200S)



Below, the startup of a PROFINET network with the CP343-1 Advanced as IO controller and the ET200S as IO device is described.

To test the configuration, a program is written. In this program, an indicator lamp P1 is activated when two buttons, S0 and S1, are operated simultaneously.

Assignment List:

10.0	S0	Button Selection 1
I0.1	S1	Button Selection 2
O0.0	P1	Indicator lamp



 The central tool in STEP 7 is the 'SIMATIC Manager'. It is called here with a double click. (→ SIMATIC Manager)



 STEP 7 programs are managed in projects. We are now setting up such a project (→ File → New)

SIMATIC Manager		
Datei Zielsystem Ansicht Extras Fenster Hilfe		
Neu	Ctrl+N	
Assistent 'Neues Projekt'		
Öffnen	Ctrl+O	
S7-Memory Card	•	
Memory Card-Datei	•	
Löschen		
Reorganisieren		
Verwalten		
Archivieren		
Dearchivieren		
Seite einrichten		
1 PROFIsafe02 (Projekt) F:\0_57_Projekte\PROFIs_2		
2 Profi Umrichter (Projekt) F:\0_57_Projekte\Profi_Um		
3 Erreichbare Teilnehmer PROFIBUS		
Beenden	Alt+F4	
rstellt ein neues. Projekt oder eine neue Bibliothek.		

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3. The project is now assigned the 'Name' 'ET200S_PN_CP' (\rightarrow ET200S_PN_CP \rightarrow OK)

Name Ablagepfad	
-	8
I In aktuelles Multiprojekt einfüger Jame:	Тур:
J In aktuelles Multiprojekt einfüger Vame: ET200S_PN_CP	Typ: Projekt
J In aktuelles Multiprojekt einfüger Vame: ET200S_PN_CP vblageort (Pfad) :	Typ: Projekt F-Bibliothek

4. Highlight your project and insert an 'Industrial Ethernet Subnet' (→ ET200S_PN_CP → Insert → Subnet → Industrial Ethernet).

Datei Bearbeiten Einfügen Zielsystem Station IMPI Programm S7-Software S7-Software Symbol:abelle Textbibliothek Symbol:abelle Textbibliothek WinCC flexible RT	SIMATIC Manager	- [ET2005_PN_CP	D:\0_57_Projekte\ET200	5_P]		
Station Station Subretz Programm S7-Software S7-Software Symboltabelle Textbibliothek Externe Quelle	🗿 Datei Bearbeiten	Einfügen Zielsyste	em Ansicht Extras Fenster	Hilfe		_ 8
ET200S_PN_C Programm 2 PROFIBUS 37-Software 37-Boustein M7-Software Symboltabelle Textbibliothek Externe Quelle WinCC flexible RT	🗅 😂 🔡 🛲 📄	Station		Kein Filter >	💽 🎾 🔡 📾 🔣 🖣	
S7-Software S7-Baustein M7-Software Symboltabelle Textbibliothek Externe Quelle,,, WinCC Rexible RT	ET200S_PN_CF	Subnetz Programm	1 MPI 2 PROFIBUS			
Symboltabelle Textbibliothek Externe Quelle WinCC flexible RT		57-Software 57-Baustein M7-Software	3 Industrial Ethernet 4 PTP			
WinCC flexible RT		Symboltabelle Textbibliothek Externe Quelle				
		WinCC flexible R	T 🕨			

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5. Then, insert a 'SIMATIC 300 Station'. (\rightarrow Insert \rightarrow Station \rightarrow SIMATIC 300 Station)

SIMATIC Manager	- [ET2005_PN_CP	D:\0_57_Projekte\ET2005_P]			
🛃 Datei Bearbeiten 🛛	Einfügen Zielsystem	Ansicht Extras Fenster Hilfe			_ 8 ×
□ 🛩 點 🛲 	Station Subnetz Programm	1 SIMATIC 400-Station 2 SIMATIC 300-Station 3 SIMATIC H-Station	< Kein Filter >	<u>.</u> y ≋® ₩	
	57-Software 57-Baustein M7-Software	4 SIMATIC PC-Station 5 SIMATIC HMI-Station 6 Andere Station 7 SIMATIC 55			
	Symboltabelle Textbibliothek Externe Quelle	8 PG/PC			
	WinCC flexible RT	▶			
J Fügt SIMATIC 300-Station	n an der Cursorposition	ein.			

6. With a double click, open the configuration tool for the 'Hardware' (\rightarrow Hardware)

SIMATIC Manager - [ET2005_PN_CP D:\0_57_Projekte\ET2005]	_P]
🎒 Datei Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster H	ilfeX
D 😅 🎛 🛲 X 🖻 🖻 🎽 🔍 🏪 📴 🗄 🗰 🖻	🖸 🛛 < Kein Filter > 🔄 🏹 🔡 🍘 📆 🖷 🚍 🚺 🦎
ET2005_PN_CP	
Drücken Sie F1, um Hilfe zu erhalten.	TCP/IP -> Intel(R) PRO/100 VE Ne

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7. Open the hardware catalog by clicking on $(\rightarrow \mathbb{D})$. ($\rightarrow \mathbb{D}$) There, arranged in the following directories:		
PROFIBUS DP, PROFIBUS PA, PROFINET IO, SIMATIC 300, SIN	/ATIC 400,	
SIMATIC PC Based Control, and SIMATIC PC Station,		
all racks, modules and interface modules are provided for configuri	ng your hardware.	
Insert ' Rail ' with a double click. (\rightarrow SIMATIC 300 \rightarrow RACK-300		
→ Rail)		
W HW Konfig - [SIMATIC 300(1) (Konfiguration) ET2005_PN_CP1		
🖓 Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe		
A		
	Suchen:	nt ni
	Profil: Standard	-
Image: Simaric 300(1) Steckplatz Bezeichnung	PROFIBUS-OP PROFIBUS-OP PROFIBUS-PA PROFIBUS-PA PROFIBUS-PA SIMATIC 300 O CP-300 O CP-300 O FM-300 FM-300 M7-EXTENSION M7-EXTENSION P-S-300 RACK-300 SIMATIC 400 SIMATIC HMI Station SIMATIC PC Based Control 300/400 SIMATIC PC Based Control 300/400 SIMATIC PC Station	1
Drücken Sie F1, um Hilfe zu erhalten.	6ES7 390-1???0-0AA0 In verschiedenen Längen lieferbar	₹ <u></u>



Note: After that, a configuration table is displayed automatically for configuring Rack 0.

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8. From the hardware catalog, you can now select all modules that are also in your real rack, and insert them in the configuration table.

To this end, click on the name of the respective module, hold the mouse key and drag the module to a line in the configuration table.

We are starting with the power unit '**PS 307 2A**'. (\rightarrow SIMATIC 300 \rightarrow PS-300 \rightarrow PS 307 2A)

HW Konfig - [SIMATIC 300(1) (Konfig W Station Bearbeiten Einfügen Zielsyst	uration) ET2005_PN_CP] em Ansicht Extras Fenster	Hilfe					
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(0) UR Steckplatz Baugruppe 1 PS 307 2A 2 3 4 5 6 7 8 9 10	Bestellnummer 6ES7 307-18A00-04A0	Firmware	MPI-Adresse	E-Adresse	A-Adr		Image: Second
ı Drücken Sie F1, um Hilfe zu erhalten.							Änd //



Note: If your hardware differs from the one displayed here, simply select the corresponding modules from the catalog and insert them in your rack. The order numbers of the individual modules -that are also indicated on the components- are displayed in the footer of the catalog.

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 Next, we drag the 'CPU314C-2 DP' to the second slot. The order number and the version of the CPU can be read off the front of the CPU. (→ SIMATIC 300 → CPU-300 → CPU 314C-2 DP → 6ES7 314-6CF00-0AB0)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HW Konfig	- [SIMATIC 300(1) (Konfi	iguration) ET2005_PN_CP]	1.016-							
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Steckplatz Baugruppe Bestellnummer Firmware MPI-Adresse A-Adr K 1 IPS 307 2A 6ES7 307-18A00-0AA0 Image: CPU 314C2 DP Image: CPU 315C2 DP Image: CPU 314C2 DP	4 5 6 7 8 9							ľ		PROFINET IO SIMATIC 300 C7 CP-300 CPU-300 CPU 312 CPU 312 CPU 312 CPU 312 CPU 312 CPU 313C CPU 313C CPU 313C-2 PP CPU 313C-2 PP CPU 314 CPU 312 CPU 314 CPU 3	
1 Image: PS 307 2A 6ES7 307-1BA00-0AA0 2 Image: PS 307 2A 6ES7 307-1BA00-0AA0 3 Image: PS 307 2A 6ES7 307-1BA00-0AA0 4 Image: PS 307 2A Image: PS 307 2A 4 Image: PS 307 2A Image: PS 307 2A 5 Image: PS 307 2A Image: PS 307 2A 6 Image: PS 307 2A Image: PS 307 2A 7 Image: PS 307 2A Image: PS 307 2A 8 Image: PS 307 2A Image: PS 307 2A 10 Image: PS 307 2A Image: PS 307 2A	Steckplatz	Baugruppe	Bestellnummer	Firmware	MPI-Adresse	E-Adresse	A-Adr	K		= CPU 314C-2 DP	
2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1	PS 307 2A	6ES7 307-1BA00-0AA0					-			
4	2							-		6ES7 314-6CF01-0AB0	
5 6 CPU 315 6 7 CPU 315 2 DP 7 CPU 315 2 DP CPU 315 2 DP 8 CPU 315 2 DP CPU 315 2 DP 9 CPU 315 2 DP CPU 315 2 DP 10 CPU 315 2 DP CPU 315 2 DP	4							-		E 📋 CPU 314C-2 PtP	
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8 Arbeitsspeicher 48KB;0 Imar/kAW; 9 Imar/kAW; 10 Imar/kAW;	7								6ES7 31	4-6CF00-0AB0	+ E.
10 124/D015;Alto/AU2 Integrier(; 4 Impulsausgänge (2,5kHz); 4-kanalig zählen ⊾	8					-	-	-	Arbeitssp	peicher 48KB; 0,1ms/kAW;	
	10								Impulsau	isgänge (2,5kHz); 4-kanalig zählen	-
									1		

10. When entering the CPU, the following window appears. In this window, you can assign a '**PROFIBUS DP Address**' to the CPU 314C-2 DP.

Since we are not using the PROFIBUS, we leave the settings unchanged and accept with 'OK' $(\rightarrow OK)$

Allgemein F	Parameter	
Adresse:		Bei Anwahl eines Subnetzes wird die nächste freie Adresse vorgeschlagen
Subnetz: nicht ver	metzt	Neu
		Eigenschaften
		Löschen

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11. Next, we drag the **'CP343-1 Advanced IT**' to the 4th slot. Here also, the order number and the version of the CP can be read off the front. (→ SIMATIC 300 → CP-300 → CP 343-1 Advanced-IT → 6GK7 343-1GX21-0XE0 → V1.0)



Note: Slot 3 is reserved for interface modules, and remains empty for that reason. The module's order number is indicated in the footer of the catalog.



12. When entering the CP, the window below appears. In this window, do the following: Assign an 'IP Address' to the CP343-1 Advanced-IT, specify the 'Subnet Screen Form', and select the 'Ethernet' network that has already been generated.

Optional: a '**Router Address**' can also be selected for network-overreaching communication. Confirm your input with '**OK**' (\rightarrow IP Address: 192.168.1.10 \rightarrow Subnet Mask: 255.255.255.0 \rightarrow Ethernet(1) \rightarrow Use Router \rightarrow Address: 192.168.1.1 \rightarrow OK)

		er sis i novancer (Ko/ 54)	
Allgemein Parar	einstellen / ISO-Protokol	l verwenden	
MAC-Adresse:	<u></u>	Bei Anwahl eines Subnetzes werden die nächsten freien Adressen vorgeschlager	F.
IP-Adresse: Subnetzmaske:	192.168.1.10 255.255.255.0	Netzübergang C Keinen Router verwenden Router verwenden Adresse: 192.168.1.1	
Subnetz: nicht vernet:	:t	Neu	1
Ethernet[1]		Eigenschafte	эп
		Löschen	
			1.198
ОК		Abbrechen	Hilfe

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Notes on Networking on the Ethernet (additional information is provided in Appendix V of the training document):

MAC Address:

The MAC address consists of a permanent and a variable part. The permanent part ("Basis MAC Address") identifies the manufacturer (Siemens, 3COM, ...). The variable part of the MAC address differentiates the different Ethernet stations, and should be assigned uniquely world-wide. On each module, a MAC address specified by the factory is imprinted.

Value range for the IP address:

The IP address consists of 4 decimal numbers from the value range 0 to 255 which are separated by a period; for example 141.80.0.16

Value range for the subnet screen form:

This screen form is used in order to recognize whether a station or its IP address is part of the local subnet, or can be accessed only by means of a router.

The subnet screen form consists of 4 decimal numbers from the value range 0 to 255 which are separated by a period; for example, 255.255.0.0

In their binary representation, the 4 decimal numbers of the subnet screen form have to contain from the left a series of gapless values "1" and from the right a series of gapless values "0".

The values "1" determine the area of the IP address for the network number. The values "0" determine the area of the IP address for the station address.

Example:

Correct values:	255.255.0.0 decimal = 1111 1111.1111 1111.0000 0000.0000 0000 binary
	255.255.128.0 decimal = 1111 1111.1111 1111.1000 0000.0000 0000 binary
	255.254.0.0 decimal = 1111 1111.1111 1110.0000 0000.0000.00
Incorrect value:	255.255.1.0 decimal = 1111 1111.1111 1111.0000 000 <i>1</i> .0000 0000 binary

Value range for the address of the network transition (Router):

The address consists of 4 decimal numbers from the value range 0 to 255 which are separated by a period; for example, 141.80.0.1.

Relationship of IP addresses, router address, and subnet screen form:

The IP address and the address of the network transition may differ only in positions that have a "0" in the subnet screen form.

Example:

You entered: for the subnet screen form 255.255.255.0; for the IP address 141.30.0.5, and for the router address 141.30.128.1.

The IP address and the address for the network transition are to have a different value only in the 4th decimal number. In the example, however, the 3rd position already differs.

In the example, you have to change alternatively:

- the subnet screen form to: 255.255.0.0 or
- the IP address to: 141.30.128.5 or
- the address of the network transition to: 141.30.0.1

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13. By double clicking with the mouse on the 'CP343-1 Advanced IT', you get to its properties. In this example, under 'PROFINET', set the CP's 'Operating Mode' to 'PROFINET IO Controller'. The other settings are retained. Close the window with 'OK'. (→ CP 343-1 Advanced IT → PROFINET → Operating Mode → PROFINET IO Controller → OK)

B <mark>legHW Konfig – [SIMATIC 300(1) (Konfiguration) ET2005_PN_CP]</mark> Blegh Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe	× 문_×
Image: Serie Series Series	
, Einfügen möglich	Änd

14. Confirm the note regarding network performance of PROFINET 'OK'. (\rightarrow OK).

Objekteig	genschaften (4502:804)	×
į)	Bitte stellen Sie sicher, dass im PROFINET IO-Betriel Ports, an denen PROFINET IO-Geräte angeschlosse sind, prinzipiell mit 100 MBit Vollduplex betreibbar sind Vermeiden Sie eine Auftrennung des Netzes durch H	o alle xn d. Iubs.
🗖 Diese	e Meldung in Zukunft nicht mehr anzeigen.	

<<Object Properties (4502:804)

Please make sure that in the PROFINET IO mode, all ports to which PROFINET IO devices are connected can, in principle, be operated with 100Mbit full duplex. Avoid opening the network with hubs. Don't show this message again in the future.>>

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15. After you have accepted the network settings, a bar appears to the right of the CP343-1 Advanced IT, the '**PROFINET IO System**' where you can arrange PROFINET IO devices. This is done by clicking on the desired module (here the '**ET200S**' with '**IM151-3PN HF**'.) and dragging it to the '**PROFINET IO System**'. (→ PROFINET IO → I/O → ET 200S → IM151-3PN HF).

Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Extras Fenster Hilfe Image: Statuon Bearbeiten Enrügen Zielsystem Ansicht Extras Fenster Hilfe Image: Statuon Bearbeiten Extras Fenster	HW Konfig - [SIMATIC 300(1) (Konfiguration) ET2005_PN_CP]	- O ×
Image: Serie Series Image: Series Image:	💵 Station Bearbeiten Einfügen Zielsystem Ansicht Extras Fenster Hilfe	_ 8 ×
WOUR Suchen Suchen Mail 22 D2A/D076 D24/D076 Policy Policy 24 Zahlen Perfillus-Palioneiren Policy Profillus-Palioneiren 3 4 Ethernet(1) PROFINET-IO-System (100) Profillus-Palioneiren Profillus-Palioneiren 4 Ethernet(1): PROFINET IO Profillus-Palioneiren Profillus-Palioneiren 5 General Profillus-Palioneiren Profillus-Palioneiren Profillus-Palioneiren 6	D 🖆 💱 🖳 🎭 🎒 ங 💼 🚵 🎰 👔 🖪 🖼 🤮 😯	
Ethernet(1): PROFINET-ID-System (100) Gerätenummer IP-Adress Gerätenum	DP Suchers 22 D224/D076 23 A/5/A02 24 Zahlen 25 Positionieran 3 4 4 Ethernet(1): PROFINET-IO-System (100) Image: Broot standard Image: Broot standard 6 Image: Broot standard 7 Image: Broot standard 8 Image: Broot standard Image: Broot standard Image: Broot standard Image: Broot standard Image: Broot standard 10 Image: Broot standard 11 Image: Broot standard 12 Image: Broot standard 13 Image: Broot standard 14 Ethernet(1): PROFINET-IO-System (100) Image: Broot standard Image: Broot standard 14 Ethernet standard 10 Image: Broot standard 11 Image: Broot standard 12 Image: Broot standard 13 Image: Broot standard 14 Ethernet standard 15 Image: Broot standard	<u>nt</u>
Drücken Sie E1 um Hilfe zu schalten	Ethernet(1): PRDFINET-IO-System (100) Gerätenummer IP-Adress Gerätename Bestellnummer Diagnoseadresse Kommentar Weitere FELDGERÄTE SiMATIC 400 SiMATIC 400 SiMATIC 400 SiMATIC PC Based Control 300/400 SiMATIC PC PC P SiMATIC PC PC SimATIC PC SimATI	3 €≤

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16. By double clicking on the 'IM151-3 PN HF', you open its properties.

 $(\rightarrow IM151-3 PN HF)$

HW Konfig - [SIMATIC 300(1) (Konfiguration	n) ET2005_PN_CP]				
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(1) UP	Ethernet(1): Pl	ROFINE T-IO-System (11)	10) S	ychen: ofit: Standard PROFIBUS-DP PROFIBUS-PA PROFIBUS-PA PROFINET IO ⊕ General ⊕ HMI ⊕ I/O ⊕ ET 200pro ⊕ GSD ⊕ GSD ⊕ MI51-3 PN ⊕ IM151-3 PN HF ⊕ SIMATIC PC-CP	• • • • • • • • • • • • • • • • • • •
Steckplatz Baugruppe Be 0 1 1/1/151/3FNH/F 6E 1 1 1 1 2 3 1 1 3 1 1 1 5	stellnummer E-Ac	dresse A-Adresse	Diagnoseadresse K 2159*	Vetzubergang Sensors Veitere FELDGERÄTE SIMATIC 300 SIMATIC 400 SIMATIC HMI Station SIMATIC PC Based Control 300/400 SIMATIC PC Station	
				ES7 151-38A20-0A80 ROFINET IO-Device Interfacemodul IM 151- N HF (ERTEC200) für ET 2005 lektronikmodule, unterstützt Packen	3 E <u>(</u>

17. To each IO device, a 'Device Name' that is unique within the PROFINET IO system has to be assigned, and an IP address on the 'Ethernet'. (\rightarrow Device name: IM151-3PNHF \rightarrow Ethernet)

enschaften - IM15	1-3PNHF	×
llgemein 10-Zyklus		
Kurzbezeichnung:	IM151-3PNHF	
	PROFINET IO-Device Interfacemodul IM 151-3 PN HF (ERTEC20 Elektronikmodule, unterstützt Packen	00) für ET 2005 🔺
Bestell-Nr:	6ES7 151-3BA20-0AB0	
Familie:	ET200S	
Gerätename:	IM151-3PNHF	
Teilnehmer / PN-10	System	
Gerätenummer:	1 PROFINET-IO-System (100)	
IP-Adresse:	192.168.1.11 Ethernet	
IP-Adresse duro		
Kommentar:		
		×
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01/	ALL	-h-m [1.0%-

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18. After you assigned the **'IP Address'**, accept with **'OK'**. (\rightarrow IP-Address: 192.168.1.11 \rightarrow OK \rightarrow OK)

	Allgemein Parameter	
estell amilie		
eräte Teiln	IP-Adresse: 192:168.1.11 Subnetzmaske: 255.255.255	Netzübergang © Keinen Router verwenden © Router verwenden
Gerà IP-Ai	Subnetz:	Adresse: 192.168.1.1
	nicht vernetzt Ethernet(1)	Neu
omme		Löschen

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19. From the hardware catalog, you can now select all modules that are also in your real ET200S, and insert them in the configuration table.

To this end, click on the name of the respective module, hold the mouse key and drag the module to a line in the configuration table.

We are starting with the power unit '**PM-E DC 24V** ... **48V/AC 24...230V**. (\rightarrow PROFINET IO \rightarrow I/O \rightarrow ET 200S \rightarrow IM151-3 PN HF \rightarrow PM \rightarrow PM-E DC 24V...48V/AC 24...230V)

🖳 HW Konfig - [SIMATIC 300(1) (Konfigur	ation) ET2005_PN_CP]						
III Station Bearbeiten Einfügen Zielsystem	Ansicht Extras Fenster	Hilfe					_ B ×
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1	Comment A A						: 🗆 🗙
						S <u>u</u> chen:	nț ni
2.2 DI24/D016						Profil:	Standard
2.3 <u>A/5/A02</u> 24 Zählen	Eth	ernet(1): PROFINE	T-IO-System (1	00)			
2.5 Positionieren			IN COLUMN				
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5							⊟ ··· 💼 IM151-3 PN HF
6							AO
7							
							⊞
							E E FM
•					•		Frequenzumrichter
(1) IM151-3PNHF				Adressen par	:ken		
Steckplatz Baugruppe	Bestellnummer	E-Adresse	A-Adresse	Diagnoseadresse	к		
0 📑 IN151-3FWHF	6ES7 151-38A20-04B0			2159*	•		PM-E DC24.,48V/ AC24.,2
1 PM-E DC24/48V/ AC24/23	6ES7138-4CB10-0AB0			2158*			PM-E DC24V
3							PM-E DC24V
4							
5						6ES713	8-4CB10-0AB0 E.
7						Powermo	bdul PM-E für Elektronikmodule, DC2448V/ RTV_mit Diagnose und Sicherung
8					-		
, Einfügen möglich						l.	Änd

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20. Next, we drag the digital input module '2DI DC 24V ST' to the 2nd slot. The order number and the version can be read off the module. (\rightarrow PROFINET IO \rightarrow I/O $\rightarrow\,$ ET 200S \rightarrow IM151-3 PN HF \rightarrow DI \rightarrow 2DI DC 24V ST)

HW Konfig - [SIMATIC 300(1) (Konfigur	ation) ET2005_PN_CP]	116-						
X2 DP 2.2 D/24/D016 2.3 A45/A02 2.4 Zählen 2.5 Positionieren 3 CP 343-1 Advanced/IT 5 6 7 8		imet(1): PROFINE	T-IO-System (1	00)		Sychen: Profil:	Standard ROFINET IO General HMI 1//0 ET 200pro ET 200pro ET 200pro GSD B GD IM151-3 PN HM151-3 PN HM151-3 PN HM151-3 PN HF	× <u> </u> <u> </u>
(1) IM151-3PNHF Steckplatz Baugruppe	Bestellnummer <i>&ES7.151-38420-0460</i> 6ES7.138-4CB10-0480 6ES7.131-4B801-0440	E-Adresse	A-Adresse	Adressen ga Diagnoseadresse 2759* 2158*	K	6ES7 131 Digitalein	AI AD CP DI ZDI AC120V ST ZDI AC230V ST ZDI AC230V ST ZDI DC24V HF ZDI DC24V FT ZDI DC24V ST ZDI DC24V ST ZDI DC24V ST A D DI ZDI DC24V ST ZDI DC24V ST ZD	t t

21. Then we drag the digital output module '4 DO DC 24V/0.5A ST' to the 3rd slot. The order number and the version can be read off the module. (\rightarrow PROFINET IO \rightarrow I/O $\rightarrow\,$ ET 200S $\rightarrow\,$ IM151-3 PN HF \rightarrow DO \rightarrow 4 DO DC 24V/0.5A ST)

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e (0) UR		1				-	_		<u> </u>
2 1	DP 🔺	1					Suchen:	1	<u>M</u> †
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	Vb/AU2 Zählen	Ethe	ernet(1): PROFINE	T-IO-System (1	00)	ſ		, 	
25	Positionieren								1
3				<u></u> (1) IM15					2D0 AC24230V/1A
1 H K C	P 343-1 Advanced-IT							l 🚺	2D0 DC24V/0,5A HF
5		1		The second se				I I I I I I I I I I I I I I I I I I I	2D0 DC24V/0,5A HF
6				Sec. 10		-2020003 8	SE 83 3	10 10 🖬 🖬	ODO DOOR LIG EL OT
									200 DC24V70,5A ST
<u></u>									2D0 DC24V70,5A ST 2D0 DC24V70,5A ST
7	<u></u>								2D0 DC24V/0,54 ST 2D0 DC24V/0,54 ST 2D0 DC24V/2A HF
3									200 DC24V/0,5A ST 200 DC24V/0,5A ST 200 DC24V/2A HF 200 DC24V/2A HF
3						Ţ			200 DC24V70,5A ST 200 DC24V70,5A ST 200 DC24V72A HF 200 DC24V72A HF 200 DC24V72A ST
7	_								200 DC24V/0,54 ST 200 DC24V/0,54 ST 200 DC24V/24 HF 200 DC24V/24 HF 200 DC24V/24 ST 200 DC24V/24 ST 200 DC24V/24 ST
3	.					•			200 DC24V/0,54 ST 200 DC24V/0,54 ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 DC24. 120V/5A.
7 3 1	M151.3PNHF				ådressen na	× ken			200 DC24/V/05A 51 200 DC24/V/05A 51 200 DC24/V/05A FF 200 DC24/V/2A HF 200 DC24/V/2A HF 200 DC24/V/2A ST 200 DC24/V/2A ST 280 N0 DC24120V/5A/ 280 N0 N0 DC24120V/5A/ 280 N0 N0 DC24120V/5A/
7 3 (1)	IM151-3PNHF			1	Adressen pa	▼ ▶ cken			200 DC24/V/05A 51 200 DC24/V/05A 51 200 DC24/V/05A FT 200 DC24/V/2A HF 200 DC24/V/2A HF 200 DC24/V/2A ST 200 DC24/V/2A ST 280 N0 DC24.120V/5A/ 280 N0/NC DC24.120V/5A/ 280 N0/NC DC24.120V/5A/ 280 N0/NC DC24.120V/5A/
(1) teckplatz	M151-3PNHF Baugruppe	Bestellnummer	E-Adresse	A-Adresse	Adressen pa Diagnoseadresse	► cken			200 DC24V/05A S1 200 DC24V/05A S1 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 ND C24V/2A ST 200 ND 0C24.120V/5A, 200 ND 0C24.120V/5A, 200 ND/NC DC24.120V/5A 4 F-D0 DC24V/2A
7 3 (1) teckplatz	M151-3PNHF Baugruppe	Bestellnummer & \$557 157-384.20.6480	E-Adresse	A-Adresse	Adressen <u>p</u> a Diagnoseadresse 2759*	<pre> cken K </pre>			200 DC24V/05A ST 200 DC24V/05A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 280 N0 DC24.120V/5A, 280 N0 /NC DC24.120V/ 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A
7 3 (1) teckplatz 7	M151-3PNHF Baugruppe M151-3PNHF Prote DC24/48// AC24/2	Bestellnummer 6557/57/384,20:0450 30(6557/38-4CB10-04B0 2021 10:0420	E-Adresse	A-Adresse	Adressen pa Diagnoseadresse 2/59*	cken			200 DC24V/0,5A ST 200 DC24V/0,5A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 DC24.120V/5A. 200 N0 NC DC24.120V/5A 200 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A
7 3 (1) teckplatz 7	■ Baugruppe ■ Baugruppe ■ M/151-3PNHF PME DC24/48V/AC24/2 2D1DC24V ST ■ 2D1DC24V ST	Bestellnummer 6557 151-384.20/0460 306557 138-4CB10-0A80 6557 131-48801-0A40 6757 130-0051 0440	E-Adresse	A-Adresse	Adressen ga Diagnoseadresse 2759* 2158*	cken K			200 DC24V/05A ST 200 DC24V/05A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 DC24.120V/5A 200 N0 /NC DC24.120V/5A 200 N0 /NC DC24.120V/5A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 DD DC24V/05A ST
7 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	IM151-3PNHF Baugruppe M157.39NHF PM-E DC24/48V/ AC24/23 2D1 DC24V ST 4D0 DC24V/0.5A ST	Bestellnummer <i>&ESF 151-384,20/0460</i> 30 6ES 7 138-42810-0480 6ES 7 131-48801-04A0 6ES 7 132-48801-04A0	E-Adresse	A-Adresse	Adressen ga Diagnoseadresse 2/159* 2158*	cken K			200 DC24V/0,5A ST 200 DC24V/0,5A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 OC24.120V/5A 2R0 N0 O/NC DC24.120V/5A 2R0 N0 /NC DC24.120V/5A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 DD DC24V/2A ST 4D0 DC24V/2A ST
7 3 (1) teckplatz 7	M151-3PNHF Baugruppe M151-3PNHF PME DC24/48V/AC24/2: PME DC24/48V/AC24/2: 400 DC24V/05A ST 400 DC24V/05A ST	Bestellnummer & ESP 151-384.20.0480 30 6ES 7 139-4CB10-0AB0 6ES 7 131-4B01-0AA0 6ES 7 132-4BD01-0AA0	E-Adresse	A-Adresse	Adressen pa Diagnoseadresse 2759* 2158*	cken			200 DC24//0,5A ST 200 DC24//0,5A ST 200 DC24//2A HF 200 DC24//2A HF 200 DC24//2A ST 200 DC24//2A ST 200 DC24//2A ST 200 NO DC24.120//5A 280 N0 0/NC DC24.120//5A 280 N0/NC DC24.120//5A 4 F-D0 DC24//2A 4 F-D0 DC24//2A 4 F-D0 DC24//2A 4 D0 DC24//0,5A ST 4D0 DC24//0,5A ST 4D0 DC24//0,5A ST
7 3 (1) teckplatz 7	■ IM151-3PNHF ■ Baugruppe ■ <i>IM151-3PNHF</i> ■ <i>PME</i> 0C24/48V/ AC24/2 2DI DC24V ST ■ 4D0 DC24V/0.5A ST	Bestellnummer <i>&ES7 151 - 384.20:0460</i> 30 6ES7 139-4CB10-0A80 6ES7 131-4B801-0AA0 6ES7 132-4BD01-0AA0	E-Adresse	A-Adresse	Adressen ga Diagnoseadresse 2158* 2158*	cken K	▼ 6ES7 13	248D01-0AA0	200 DC24V/05A S1 200 DC24V/05A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 OC DC24.120V/5A 270 N0 OC DC24.120V/5A 270 N0 OC DC24V/2A 4 F-00 DC24V/2A 4 F-00 DC24V/2A 4 D0 DC24V/05A ST 4D0 DC24V/05A ST
7 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	M151-3PNHF Bauguppe <i>M151-3PNHF</i> PM-E DC24/48// AC24/2 2DI DC24/ 4D0 DC24V/0.5A ST	Bestellnummer <i>&ESF 151-384,20/04,60</i> 30 GES7 138-4CB10-0A80 6ES7 131-4EB01-0AA0 6ES7 132-4BD01-0AA0	E-Adresse	A-Adresse	Adressen pa Diagnoseadresse 2159* 2158*	cken	▼ 6ES713 Digitalau	2-48D01-0AA0 sgabemodu D0 4	200 DC24V/0.5A S1 200 DC24V/0.5A ST 200 DC24V/2A HF 200 DC24V/2A HF 200 DC24V/2A ST 200 DC24V/2A ST 200 DC24V/2A ST 200 N0 OC24.120V/5A 2R0 N0 OC24.120V/5A 2R0 N0 OC24.120V/5A 2R0 N0/NC DC24.120V/5A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 F-D0 DC24V/2A 4 DD DC24V/05A ST 4D0 DC24V/05A ST 4D0 DC24V/05A ST

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22. Now, the addresses of the inputs and outputs of the ET200S can be changed. To this end, we double click on the corresponding input and output modules in the ET200S, and set them under the tab 'Addresses'. These addresses should be noted down in any case. Addresses are assigned automatically in the sequence in which the modules are entered. (→ 2DI DC 24V ST → Addresses → OK)

HW Konfig - [SIMATIC 300(1) (Konfigur Image: Station Bearbeiten Einfügen Zielsystem	ation) ET2005_PN_CP n Ansicht Extras Fenste] er Hilfe							_ D ×
] D 😅 ≌~ 🖁 📲 🛤 (∰) 🛱 R: 🏜	i 🛍 🕕 🗖 🔡 🕅								
≥ (0) UR ×2 2.2 DP →							Sychen:		<u>ntai</u>
2.3 A/5/A02 2.4 Zählen		Ethernet(1): F	RI Eige	enschaften - 2DI	DC24¥ 5T -	(R-/52)			×
2.5 Positionieren 3 4 7 CP 343:1 Advanced-IT 5 6				Eingänge Anfang:	.0	Prozeßabt	oild:		
				Diagnoseadresse:		,	_		
(1) IM151-3PNHF									
Stecknlatz B Bauguope	Restellnummer	F.Adresse	Ê						
1 A Baugruppe	AFS7 151-384.30.0480	L'Adiesse	-						
1 PM-E DC24/48V/ AC24/23	06ES7138-4CB10-0AB0								
2 2DI DC24V ST	6ES7 131-4BB01-0AA0	0.00.1							
3 4D0 DC24V/0,5A ST	6ES7 132-4BD01-0AA0		Ó						
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5			÷						
7			+ _						H لــــــــــــــــــــــــــــــــــــ
				OK				Abbrechen	Hilfe
r Einfügen möglich			-	22					Änd //

23. By clicking on (\mathbb{R}) , the configuration table is stored and converted. (\rightarrow



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24. Now, after it was highlighted, the IO device has to be assigned a device name 'Assign device name'. (→ IM151-3PN HF → PLC → Ethernet → Assign device name)

HW Konfig -	[SIMATIC 300(1) arbeiten Einfügen	(Konfigura Zielsystem	ation) ET2005_PN_CP Ansicht Extras Fenst] er Hilfe						
0 🚅 🔓	R 6 B	Laden ir	n Baugruppe	Ct	rl+L					al
10) UR	P	Baugrup	open-Identifikation laden open-Identifikation laden in	PG,			<u>_</u>	Suchen:	: (1)	₩‡
22 0	N24/D016 I5/402	Gestört	e Baugruppen		7.10	C		Profil:	Standard	•
2.4 Z 2.5 F 3 4 F C 5	'ählen 'ositionieren P 343-1 Advanced-I'	Baugrup Betriebs Urlösch Uhrzeit Beobad	openzustand szustand en stellen stellen	Ct Ct	rl+D rl+I	(1) IM151-3	-			
8		Firmwar Geräter	e aktualisieren namen auf Memory Card sp	eichern					200 DC24V/0,54 ST 200 DC24V/0,54 ST 200 DC24V/2,64 ST 200 DC24V/24 HF 200 DC24V/24 HF	
		Etherne	ŧ		Et	hernet-Teilnehmer be	arbeiten		2D0 DC24V/2A ST	
<u> • </u>		PROFIB	US		F Ge	erätenamen überprüfe erätenamen vergeber	en		2R0 N0 DC24120V/5A	e c
(1)	M151-3PNHF	Service	Jaten speichern			Ad	ressen <u>p</u> acken		2R0 N0/NC DC24120//	<u>,</u>
Steckplatz	Baugruppe		Bestellnummer	E-Adresse	A-Adresse	Diagnoseadresse	Kommentar		4 F-D0 DC24V/2A	
0	M151-3FNHF		6E57 151-3BA20+0AB0			2159*			4 F-D0 DC24V/2A	
1	PM-E DC24/48V	7 AC24/230	6ES7138-4CB10-0AB0			2158*			🚺 4D0 DC24V/0,5A ST	
$\frac{2}{2}$	2DI DC24V ST		6ES7 131-4BB01-0AA0	0.00.1					4D0 DC24V/0,5A ST	
3	4DU DC24V70,5	ASI	6ES7132-4BD01-0AA0		0.00.3				4D0 DC24V/2A ST	_
4									<u> </u>]
6								6ES7 13	32-4BD01-0AA0	₹
7								Ugitalau	usgabemodul DU 4xDC24V/U.5A, Standard, - itzt Taktsunchronität	
8										
Vergabe von PRO	FINET IO Device-Ger	ätenamen.						0		- ,



Note: A precondition for this is that the PG/PC interface is set to TCP/IP and the PC's network card is configured correctly. For example: IP address 192.168.1.99, Subnet 255.255.255.0 and Router address 192.168.1.1. (refer to Module E02!)

Note: Make sure your programming device is connected to the ET200S via the Ethernet!

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25. Now, the ET200S has to be selected in order to assign a name 'Assign name'. (\rightarrow ET200S \rightarrow Assign name)

Name zuweisen Teilnehmer-Blinktest Dauer (Sekunden): 3
Name zuweisen Teilnehmer-Blinktest Dauer (Sekunden): 3
Name zuweisen Teilnehmer-Blinktest Dauer (Sekunden): 3
Teilnehmer-Blinktest Dauer (Sekunden): 3
Blinken ein Blinken aus



Note: If there are several IO devices in the network, the device can be identified with the imprinted MAC address.

26. The new device name is then displayed in the area '**Existing Devices**'. Then, '**Close**' the dialog. (→ Close)

ierätenamen	vergeben				2
Gerätename:	IM151-3PNHF	•	Gerätetyp:	ET 2005	
Vorhandene G	eräte:				
IP-Adresse	MAC-Adresse	Gerätetyp	Gerätenam	e	Name zuweisen
🗂 nur Geräte	gleichen Typs anzei	gen 🗔 nur	Geräte ohne	Namen anzeige	Teilnehmer-Blinktest Dauer (Sekunden): 3 T Blinken ein Blinken aus
Aktualisie	eren Exp	ortieren			
Schließen]		_		Hilfe

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27. By clicking on $\overset{\circ}{\underline{m}}$, you can now load the configuration table to the PLC. The CPU's operating mode switch should be on Stop! (\rightarrow





Note: Make sure your programming device is connected to the CP via the Ethernet!

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28. CPU 314C-2 DP is confirmed as the destination module for loading the configuration table. (\rightarrow OK)

Baugruppe	Träger Steckplatz
CPU 314C-2 DP	0 2
AU	
Alles markieren	

29. In the dialog below, you can have the devices that are connected to the network '**Display**'ed. (→ Display)

Über welche Teilne	e auswanten hmeradresse ist das Pl	G mit der Baugruppe CF	PU 314C-2 DP v	erbunden?
Baugruppenträger:				
Steckplatz:	2 =			
	-			
Zielstation:	• Lokal	0.0		
	C Uber Netzüberg	ang zu erreichen		
Anschluß an Ziels	tation eingeben:			
IP-Adresse	MAC-Adresse	Baugruppentyp	Stationsname	Baugruppenn
192.168.1.10				
<u> </u>				<u>)</u>
Erreichbare Teilneh	mer:			
(Þ
ا		Anzeiren		
•		Anzeigen		×
*		Anzeigen		×

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30. Then, select the MAC address of the CP on the Ethernet. If you are connected to only one CPU, just accept with '**OK**'. (→ OK)

Baugruppenträger:	0 3			
Steckplatz:	2 🚔			
7				
Lielstation:	 Lokal Okas Materia 	1.1		
	C Ober Netzübergang	g zu erreichen		
Anschluß an Zielst	ation eingeben:			
IP-Adresse	MAC-Adresse	Baugruppentyp	Stationsname	Baugruppen
	00 00 00 00 00 MC	67 200 CD		
	08-00-06-98-28-AC	57-300 CP		
∢	08-00-06-9B-2B-AC	57-300 CP		•
✓ rreichbare Teilnehr	08-00-06-98-28-AC	57-300 CP		•
✓ I rreichbare Teilnehr	08-00-06-98-28-AC	57-300 CP		•
∢ Treichbare Teilnehr	08-00-06-98-28-AC	S7-300 CP		J
∢ Treichbare Teilnehr	08-00-06-98-28-AC	S7-300 CP		
<	08-00-06-98-28-AC	\$7-300 CP		
I	08-00-06-98-28-AC	57-300 CP		



Note: If several IO controllers are on the network, the device can be identified with the imprinted MAC address.



31. Now, the correct IP address has to be assigned to the controller if the address has not been set correctly yet. Confirm this in the dialog below with 'Yes'. (\rightarrow Yes)



<<The selected station does not have an IP address. Do you want to assign address 192.168.1.10 now?>>

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32. After you loaded the hardware configuration, you can start setting the program. From the 'SIMATIC Manager', open the block 'OB1' with a double click. (\rightarrow OB1)



33. Select the 'Programming language STL' and accept with 'OK'. (\rightarrow STL \rightarrow OK)

Eigenschaften - Organis	ationsbaustein		x
Allgemein - Teil 1 Allgem	ein - Teil 2 Aufrufe Attribute		
Name:	OB1		
Symbolischer Name:			
Symbolkommentar:			
Erstellsprache:	AWL		
Projektpfad:			
Speicherort des Projekts	D:\0_S7_Projekte\ET200S_P		
Frstellt am	Code 21.08.2006.13:44:34	Schnittstelle	
Zuletzt geändert am:	07.02.2001 15:03:43	15.02.1996 16:51:12	
Kommentar:	"Main Program Sweep (Cycle)"		*
OK		Abbrechen H	ilfe

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i

By means of programmed FC block calls, the user program triggers the transfer of the data areas for the inputs and outputs of the IO devices. These FCs also monitor the successful execution.

The FC blocks needed for communication are stored in the library "SIMATIC_NET_CP". To use these functions, they have to be integrated into (copied to) your "own" project.

The FC block **PNIO SEND** transmits data from the user program in the CPU to the CP343-1 Advanced:

The block transfers the data of a specified output area of the CPU to the CP343-1 Advanced for output at the IO devices.

When calling the FC block **PNIO SEND**, the following parameters have to be entered in succession:

Name	Туре	Value Range	Comment
CPLADDR	WORD		Module start address of the CP (in STEP7, is provided
			in the configuration table).
LEN	INT	12160	Number of bytes that are to be send from the data
			area specified in SEND.
IOCS	ANY	1270 bytes	Status information for the output area
			- 1 bit per byte input data
			 Address gaps are transferred with 0 == GOOD
			- 0 == GOOD/1 == BAD
			The length of this pointer results from the variable
			LEN for:
			(LEN/8 + 1) byte
			The minimum length is 1 byte.
DONE	BOOL	0: -	The status parameter indicates whether sending was
		1: New data	successful
		transferred	
ERROR	BOOL	0: -	Error
		1: Error	
STATUS	WORD		Status display for the diagnostic and error bit.
			Regarding error analysis, important notes are
			provided in Online Help!
CHECK_ICPS	BOOL	0: -	Auxiliary bit that indicates whether IOCS should be
		1: Error	evaluated
SEND	ANY		Specifies address and length of the data area in the
			CPU from which the data that is to be sent to the IO
			devices is to be fetched. The address can refer to IO
			areas, flag areas, and data block areas.



1

The FC block **PNIO-RECV** receives data from the CP343-1 Advanced, and writes it to the user program of the CPU.

The block accepts process data of the IO devices as well as status information from the CP343-1 Advanced into a specified input area of the CPU.

When calling the FC block **PNIO-RECV**, the following parameters have to be entered in succession:

Name	Туре	Value Range	Comment
CPLADDR	WORD		Module start address of the CP (in STEP7, is provided
			in the configuration table).
LEN	INT	12160	Number of bytes that are to be received from the data
			area specified in RECV.
IOPS	ANY	1270 Byte	Status information for the input area
			- 1 bit per byte input data
			 Address gaps are transferred with 0 == GOOD
			- 0 == GOOD/1 == BAD
			The length of this pointer results from the variable
			LEN for:
			(LEN/8 + 1) byte
			The minimum length is 1 byte.
NDR	BOOL	0: -	The status parameter indicates whether new data was
		1: New data	accepted
		accepted	
ERROR	BOOL	0: -	Error bit
		1: Error	
STATUS	WORD		Status display for the diagnostic and error bit.
			Regarding error analysis, important notes are
			provided in Online Help!
CHECK_IOPS	BOOL	0: -	Auxiliary bit that indicates whether IOPS should be
		1: Error	evaluated
ADD_INFO	WORD		Additional diagnostic information, presently not used
			and therefore always 0.
RECV	ANY		Specifies address and length of the data area in the
			CPU in which the data received from the IO devices is
			to be stored. The address can refer to IO areas, flag
			areas, and data block areas.

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34. With 'LAD, STL, FBD – Program S7 Blocks', you now have an editor with which you can generate your STEP7 program accordingly. To this end, OB1 has already been opened with the first network. To generate your initial operations, highlight the first network. Now you can write your first STEP7 program. In STEP7, individual programs are usually arranged in networks. A

new network is opened by clicking on the network symbol

Here, in Network 1, the inputs of the IO devices are entered with the block 'PNIO_RECV'. In the catalog, from the 'Library' 'SIMATIC NET CP', you can drag this block to your network. (\rightarrow Libraries \rightarrow SIMATIC NET CP \rightarrow CP 300 \rightarrow FC12 PNIO RECV)

In Network 3, the outputs of the IO devices are written to with the block 'PNIO SEND'. In the catalog, from the 'Library' 'SIMATIC_NET_CP', you can drag this block to your network. (\rightarrow Libraries \rightarrow SIMATIC_NET_CP \rightarrow CP 300 \rightarrow FC11 PNIO_SEND)





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STEP7 Program in OB1:

Network 1: Enter in	puts of the PROFINET	IO devices to the PII, starting with IB64
CALL "PNIO_RECV	/11	//FC12
CPLADDR	:=W#16#100	//Module start address of the CP from
		//hardware configuration
LEN	:=1	//Length of the receive area in bytes
IOPS	:=MB90	//Status information for the input area 1 bit per
		//byte (length at least one byte)
NDR	:=M93.0	//Diagnostic bit for request processing
ERROR	:=M93.1	//Error bit
STATUS	:=MW95	//Status display for diagnostic and error bit
CHECK_IOPS	:=M93.2	//Auxiliary bit that indicates whether IOPS should be
	//evalua	ated
ADD_INFO	:=MW97	//Additional diagnostic information. Presently not
		//used
RECV	:=P#E 64.0 BYTE 1	//Address area for the inputs of the slaves
Network 2: User Pr	ogram	
U I 64.0		
U I 64.1		
= O 64.0		
Network 3: Writing	to outputs of the PRO	FINET IO devices from the PIO, starting with OB64
CALL "PNIO_SEND)"	//FC11
CPLADDR	:=W#16#100	//Module start address of the CP from the
		//hardware configuration
LEN	:=1	//Length of the send area in bytes
IOCS	:=MB80	//Status information for the output range 1 bit per
		//byte (length at least 1 byte)
DONE	:=M83.0	//Diagnostic bit for request processing
ERROR	:=M83.1	//Error bit
STATUS	:=MW85	//Status display for diagnostic and error bit
CHECK_IOCS	:=M83.2	//Auxiliary bit whether IOCS should be
		//evaluated
SEND	:=P#A 64.0 BYTE 1	//Address area for the outputs of the slaves



Note:Here, an ET200S with 1 byte input data and 1 byte outputs data is incorporated on Slot4 (module start address decimal: 256/hexa-decimal 100) by means of a CP343-1 Advanced.The input data is to be located in the input area starting with IB 64, and the output area is to write the

data to the ET200S starting with OB 64. It is important that the data of all IO devices that are defined in the hardware configuration is integrated with the blocks PNIO _RECV and PNIO _SEND, whereby all IO devices are combined in

one PNIO RECV and one PNIO SEND.

The area that is read/written to may be larger, but not smaller than the address area of the IO devices!!

The addresses of individual modules are provided in the hardware configuration.

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35. Now, the STEP7 program has to be loaded to the PLC. In our case, this is done from the 'SIMATIC Manager'. There, highlight 'OB1' and the FCs 'FC11' and 'FC12' in the folder

'Blocks', and then click on Load ' '. The CPU's key switch should be on STOP! (\rightarrow SIMATIC Manager \rightarrow Blocks \rightarrow OB1 \rightarrow FC11 \rightarrow FC12 \rightarrow





Note: Make sure that the CPU is connected to the CP via Ethernet!

36. By setting the key switch to RUN, the program is started.

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