

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS SIMATIC S7

2XV9450-1AU00

COMMUNICATION PROCESSOR

Used with the applicable SIMATIC communication configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

The background of the entire page is a blurred industrial factory setting. Overlaid on this are several digital, semi-transparent blue elements. In the upper right, there's a white box containing the Siemens logo and tagline. Below this, there are various icons and text boxes floating in the air, including a '24/7' circular arrow icon, a 'NEWS' box with a person icon, a 'Home' button, and a large 'Industry Online Support' text. A man in a light blue shirt is seen from the side, looking at a tablet that displays a technical interface. The overall theme is industrial automation and digital connectivity.

SIEMENS

Ingenuity for life

Ethernet Communication (ISO on TCP) between SIMATIC S5 and SIMATIC S7-1500 Controllers

CP1543-1, CP1430 TCP

<https://support.industry.siemens.com/cs/ww/en/view/109482475>

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1.3 Components used

This application example has been created with the following hardware and software components:

Table 1-1

Component	Number	Article number	Note
SIMATIC S7-1500			
CPU1516-3PN	1	6ES7 516-3AN01-0AB0 ⁽¹⁾ 6ES7 516-3AN00-0AB0	V 2.6 ⁽¹⁾ V 1.8
CP1543-1	1	6GK7 543-1AX00-0XE0	V 1.1
DI 16x24VDC HF_1	1	6ES7 521-1BH00-0AB0	-
DQ 16x24VDC/0.5A ST_1	1	6ES7 522-1BH00-0AB0	-
PM 190W 120/230VAC	1	6EP1333-4BA00	-
Standard IE cable (RJ45)	1		-
TIA Portal V15.1	1	6ES7822-1AA05-0YE5	optional
SIMATIC S5			-
CPU 944	1	6ES5944-7UA22	-
CP1430 TCP	1	2XV9450-1AU00	V 2.07
PS 7A/15A	1	6ES5 951-7LD12	-
IE TP CORD 15/RJ45 cable	1	6XV1850-2LH60	Wire length 6m
Adaptation capsule	1	6ES5491-0LA12	for CP1430 TCP
STEP 5	1	6ES5894-0MA04	V 7.23
NCM COM1430 TCP		2XV9450-1AU01	V 2.07

^{*1}To do this, perform a device replacement in the hardware configuration.

This application example consists of the following components:

Table 1-2

Component	File name	Note
Documentation	109482475_Comm_S5-S71500_DOC_v12_en.pdf	-
STEP 7 Projekt für S7-1500	109482475_S7-1500_Station_V15.1.zip	-
STEP 5 Project and the NCM project file for CP 1430 TCP	109482475_Comm_S5_PROJ_v10.zip	-

2 Engineering

Overview

The following chapters will give you a detailed overview of all communication variants.

Table 2-1

S5 service	SIMATIC S5 - CP1430 TCP			
	Active FETCH/WRITE	SEND/ RECEIVE Bidirectional		
S7-1500 service	Passive FETCH/WRITE	OUC programmed via compact instruction	OUC programmed via single instructions	OUC parameterized via single instructions
via CP1543-1	Scenario 1	Scenario 3	Scenario 4b	Scenario 4a
via S7-1500 CPU	✗	Scenario 5	Scenario 2b	Scenario 2a

2.1 Hardware setup

The description of the hardware installation is divided into setting up the SIMATIC S7-1500 and the SIMATIC S5 hardware. The example setup includes all example scenarios described in chapter 2.

Prerequisites

Two programming devices are used for the commissioning of this application example. This is necessary, because the engineering software of the SIMATIC S7 and of the SIMATIC S5 requires a different Windows operating system.

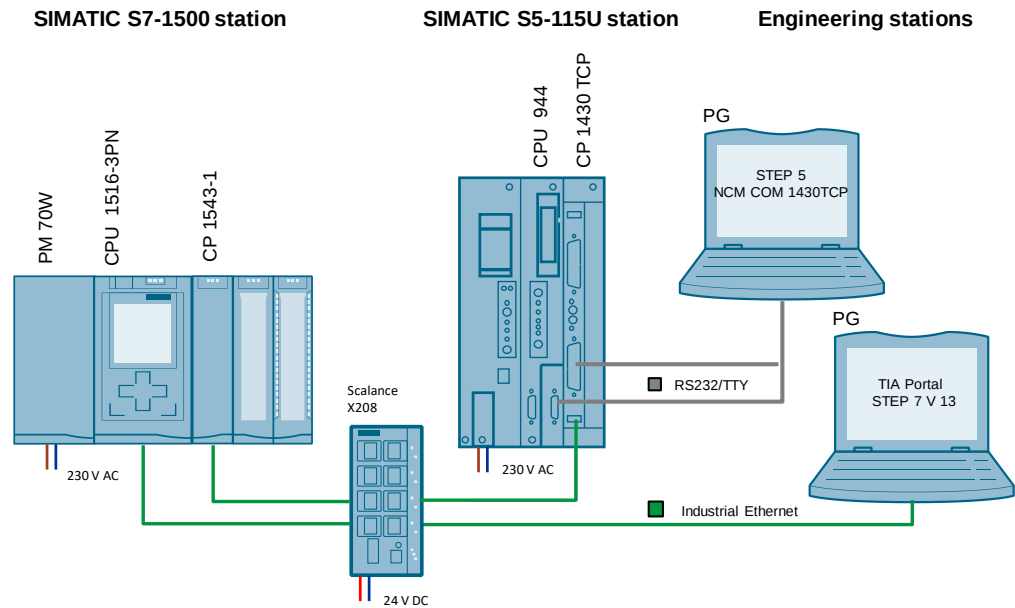
Programming device with STEP 5 V 7: Windows XP

Programming device with TIA Portal STEP 7 V 15.1: Windows 7

Please make sure that the IP addresses used in the project do not overlap with other Ethernet nodes or are used several times.

Hardware setup

The figure below shows the complete hardware setup of the example.



The following table includes the overview of all IP addresses used in this example for the SIMATIC S7-1500 and the SIMATIC S5. A fixed configuration of the IP addresses is required.

The subnet mask is 255.255.0.0 in all network components.

Table 2-2

Device	IP address	Designation
SIMATIC S7		
CPU1516 -3PN	140.140.111.102 (port X1)	SIMATIC S7-1500 CPU
CP1543-1	140.140.111.103 (port X1)	SIMATIC S7 CP1543-1
SIMATIC S5		
CP1430 TCP	140.140.111.104	SIMATIC S5 CP1430 TCP
PG/PC		
PG/PC (WinXP/STEP5)	140.140.111.100	Programming device with STEP5 and NCM COM 1430TCP
PG/PC (TIA Portal)	140.140.111.101	Programming device with TIA Portal

Note

In general, the installation guidelines of all components have to be observed. Please observe the installation and connection guidelines from the corresponding manuals of the components used.

2.1.1 Installing the hardware for the S7-1500 station

For setting up the hardware, please proceed according to the following table:

No.	Action	Remark
1.	PC/PG	Connect the PC/PG to the SCALANCE switch via a standard Ethernet cable (RJ 45).
2.	Install the S7-1500 power supply	- Connect the power module to the power grid (220 / 230 V AC). - The SIMATIC S7 PM module supplies all modules required for the S7-1500 station.
3.	S7 CPU1516-3 PN	- Expand the S7-1500 CPU 1516 with the PM module via backplane bus connectors. - Connect the Ethernet port X1 (RJ 45) to a port of the SCALANCE switch.
4.	CPU 1543-1	- Connect the CP1543-1 to the CPU 1516-3PN via a backplane bus connector. - Connect the Ethernet port X1 (RJ 45) of the CP to the SCALANCE switch via a standard Ethernet cable (RJ 45).
5.	I/O modules	- Connect the I/O modules to the CP1543-1 via backplane bus connectors. - Use an external 24V DC power supply to supply the I/O modules with power.

2.1.2 Installing the hardware for the SIMATIC S5 station

For setting up the hardware, please proceed according to the following table:

Table 2-3

No.	Action	Remark
1.	PC/PG	Connect the PC/PG with STEP 5 being installed to the SIMATIC S5 (CPU 944 and/or CP1430TCP) via the serial interface and the PG-AG cable.
2.	Power supply PS 7A/15A	Plug the power supply PS 7A/15A into the backplane bus UR 1 of the SIMATIC S5 and connect it to the power grid (220 / 230 V AC).
3.	S5-CPU944	Plug RAM modules into the CPU 944 and the CPU into the S5 backplane bus UR1 at the CPU slot.
4.	S5 CP1430 TCP	- Plug the CP1430 TCP into the S5 backplane bus UR 1 via an adaptation capsule. Plug a RAM module into the CP1430 TCP. - Connect the 15-pin Ethernet connection of the CP1430 TCP to the SCALANCE switch via a TP cord cable (15-pin/RJ45).