1 Overview

This product information contains additional information about the following product:

Summary

This document contains information about

- ➢ The NCM COM 1430 TF configuration tool. This is required to install, start up and test a SINEC CP1430 TF.
- ➢ The following communications processors

order number: 6GK1143-0TA00 and 0TB00
6GK1143-0TA01 and 0TB01
6GK1143-0TA02

This product information supplements the manual. It therefore provides you with information about characteristics of the product that could not be taken into account when the product manual went to print.

The product information deals with the following aspects:

- ➢ The scope of the product
- ➢ The environment required to operate the COM (devices and operating system)
- ➢ Conditions required for installation
- ➢ Compatibility with existing SINEC COMs
- ➢ Installation of the NCM COM 1430 TF

Copyright © by Siemens

1.2 Area of Application of the CP 1430 TF

SINEC H1/H1FO - the Siemens cell and area network - has proved itself as a reliable bus system in production automation.

The SINEC CP 1430 TF communications processor is the network card for connection of SIMATIC S5 programmable logic controllers to the SINEC H1/H1FO cell and area network. (see Fig. 1.1).

The SINEC CP 1430 TF communications processor is available in two versions with different ranges of performance:

- ➢ Basic version
- ➢ Extended version

Both versions provide the complete range of functions for transport and TF services. The extended version has a greater memory capacity allowing more communications connections and its integrated clock is more accurate. The differences between the two versions are explained in detail in Section 4.6.

The SINEC NCM COM 1430 TF (abbreviated to COM 1430) is used to configure the communications connections of the CP 1430 TF communications processor.

The COM 1430 configuration software can be operated on

- ➢ PGs of the 7xx series with the S5 DOS-ST operating system and the STEP 5 basic package from version 6.3 and higher
- ➢ AT-compatible PCs with the MS-DOS operating system and the STEP 5 basic package for PCs from version 6.3 and higher.

2.2 CP 1430 TF Communications Processor for SIMATIC S5

System Integration
The CP 1430 TF communications processor is the communications interface to the SINEC H1/H1FO cell and area network for the following types of SIMATIC S5 programmable logic controllers:

- ➢ SIMATIC S5-115 U/H
- ➢ SIMATIC S5-135 U
- ➢ SIMATIC S5-155 U/H

The CP 1430 TF is designed specifically for the programmable logic controllers listed above. It is inserted as a module in the S5 rack.

Functions
The CP 1430 TF provides communication via the following:

- ➢ A transport interface for homogeneous (S5-S5) networks with
  - data transfer services in the expedited and normal modes
  - data transfer in the connection-oriented (transport connections) and connectionless (datagram services) modes.

- ➢ A SINEC TF interface for open communication with services for the following:
  - non-language oriented transfer -> variable services.
  - device monitoring -> VMD services.
  - supplying data and programs to the PLC -> domain services.
  - device control -> program invocation services
  - time synchronization -> clock services.

- ➢ PG online functions using bus paths
  - to all PLCs (CPUs) via the AS511 interface
  - to the S5-155U/H using backplane bus communication

Comparison of the Interfaces

For direct communication links, the CP 1430 TF provides data transfer on the transport layer 4 and the application layer 7. The following sections illustrate the differences and the table below summarizes these differences. Based on the table, you can decide which interface is suitable for your application. For more detailed information, refer to the documentation indicated in the table.

Interface	**Transport Interface**	**TF Interface**
Characteristics	Byte-oriented Communication	Message-oriented communication with services for controlling devices and transferring variables
	SIMATIC S5-specific Communication	Communication standardized in compliance with MMS
Area of Application	**Homogeneous Network** of SIMATIC controllers Communication possible with existing CP 535 and CP 143 systems	**Open Network** SIMATIC controllers with connections to host computers or systems of other vendors Migration to SIMATIC S7/M7
Documentation	CP 1430 TF manual Volume 1 Chapters 1 and 2 introduction Chapters 3 and 7	CP 1430 TF manual Volume 1, Chapters 1 and 2 introduction Volume 2, TF interface

Table 2.1: Comparison of the Interfaces

How the CP 1430 TF Operates

The CP 1430 TF operates as a slave processor system of the programmable logic controller and exchanges messages with the CPU of the programmable logic controller via a dual-port RAM and the S5 backplane bus. Communication is triggered by the application program on the S5 PLC using handling blocks (HDBs).

When the S5 PLC wants to send data to a partner system, the CP 1430 TF packs the data in one or more protocol data units (PDUs) and sends the PDU or PDUs to the partner system via the SINEC H1/H1FO cell and area network.

The CP 1430 TF receives the PDUs addressed to it from the SINEC H1/H1FO network and decodes these PDUs so that they can be understood by the application program of the S5 PLC (see Fig. 2.2).

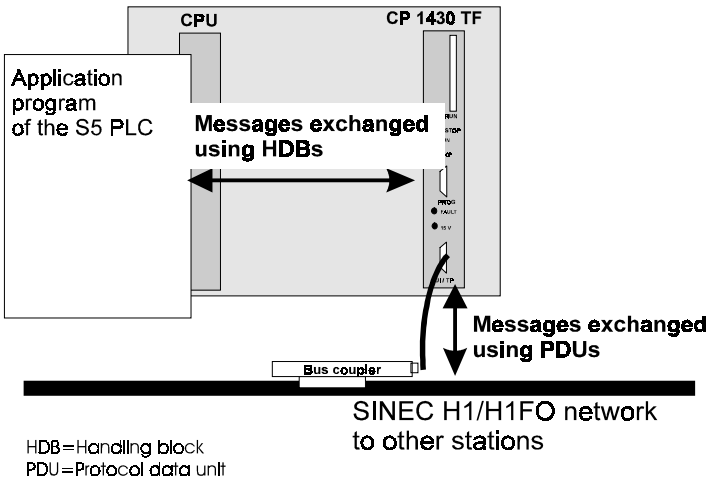

Fig. 2.2: Message Exchange between the S5 PLC, CP 1430 TF and SINEC H1 Network

➢ The connection to SINEC H1 is via a transceiver cable to a SINEC H1 transceiver or via an industrial twisted pair to a twisted pair module of a star coupler.

➢ The connection to SINEC H1FO is via a transceiver cable to a SINEC H1FO optical transceiver.

Caution When Working on the CP 1430 TF
The CP 1430 TF contains electrostatically sensitive devices (ESD). Please keep to the ESD guidelines when working with the CP 1430 TF.



Never remove or insert the CP 1430 TF module with the power supply switched on.



Never insert or remove memory cards from the CP when the power supply to the CP is on.

4.1.2 Design

The CP 1430 TF is mounted on a double Eurocard format board. The width of the front panel is 1 1/3 standard slots.

The CP 1430 TF is equipped with the following:

- ➢ Two 48-pin backplane connectors (ES902 Row 2).
- ➢ One 15-pin socket connector on the front panel with securing screws for connecting a programming device.
- ➢ One 15-pin socket connector with securing screws on the front panel
  - for connecting an Ethernet transceiver via a transceiver cable

  or
  - for connecting a star coupler via an industrial twisted pair cable.
- ➢ The front panel of the module has a rectangular slot for a memory card.
- ➢ Operator controls and displays.

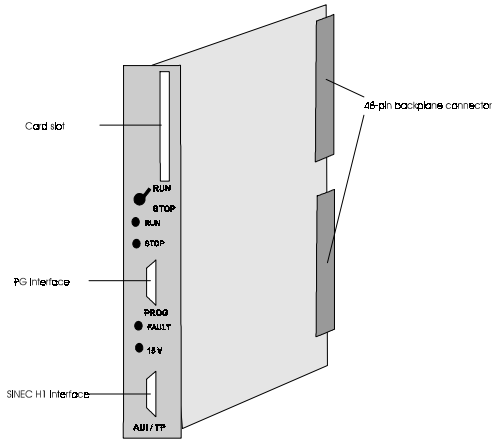

Fig. 4.1: CP 1430 TF Module

4.1.3 Displays and Controls

The CP 1430 TF has the following displays and controls (Fig. 4.2:)

Controls:

RUN/STOP mode selector:
Using the mode selector, you can switch the CP 1430 TF from the RUN to the STOP mode (see above). If no other STOP condition exists, you can also switch the CP from the STOP to RUN mode using the mode selector.

Displays:

RUN
Signals the “interface to SINEC H1/H1FO in operation" status.
The green RUN LED can only light up when the mode selector is set to RUN.

STOP
Signals the “interface to SINEC H1/H1FO not operational" status.
The red STOP LED can also be lit when the mode selector is set to RUN.

FAULT
Indicates that the available memory area has been exceeded (flashing) or a hardware fault (lit permanently).

15V
Indicates that the 15V power supply for the transceiver is functioning correctly.

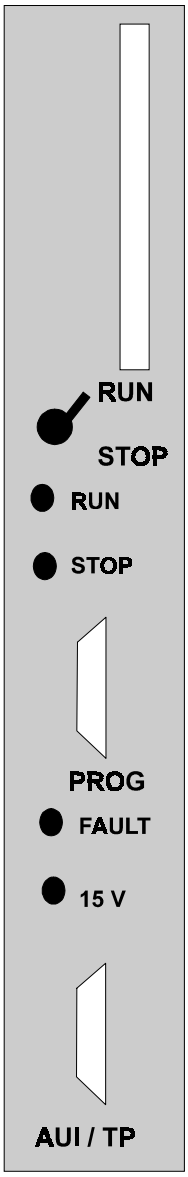

Fig. 4.2: Front Panel

4.1.4 Memory Card Slot

Memory cards can be inserted in the CP 1430 TF slot. These memory cards are used to save a CP database created with the NCM COM 1430 TF configuration tool. The following memory cards are available:

➢ RAM Cards:
- 256 Kbytes order no.: 6ES5 374-2AH21
- 512 Kbytes, order no.: 6ES5 374-2AJ21*1
- 1 Mbyte, order no.: 6ES5 374-2AK21*1
- 2 Mbytes, order no.: 6ES5 374-2AL21*1

*1= up to 256 Kbytes can be used for configuration data. The remainder is available as DRAM memory expansion.

➢ Flash EPROM Card:
- 128 Kbytes, Order no.: 6ES5 374-2FG21
- 256 Kbytes, Order no.: 6ES5 374-2FH21
- 512 Kbytes, Order no.: 6ES5 374-2FJ21*2
- 1 Mbyte, Order no.: 6ES5 374-2FK21*2
- 2 Mbytes, Order no.: 6ES5 374-2FL21*2
- 4 Mbytes, Order no.: 6ES5 374-2FM21*2

*2= up to 256 Kbytes can be used for configuration data. EPROM cards with more memory than 256 Kbytes bring no advantage.

4.1.5 Settings on the CP 1430 TF

In contrast to the previous CPs (CP 535 and CP 143 TF) no DIP switch or jumper settings are necessary on the CP 1430 TF.

The type of connection to SINEC H1/H1FO (AUI connection or industrial twisted pair) is recognized by the CP 1430 TF automatically.

4.1.6 Installing the CP 1430 TF in the PLC Rack

The CP 1430 TF can be installed in any PLC slot that is allowed for CP operation (slot label: CP). With PRIO 0 jobs, the CP 1430 TF triggers an interrupt to the CPU of the PLC at the receiving side. Since not all CP slots have interrupt lines, you must select a slot with an interrupt line if you intend to use jobs with priority PRIO 0.

For more information about PLC slots, please refer to the PLC manual.

4.1.7 Connecting the CP 1430 TF to the SINEC H1/H1FO Network

The CP 1430 TF can be connected to the SINEC H1 network as follows:

➢ With a transceiver using an AUI connection

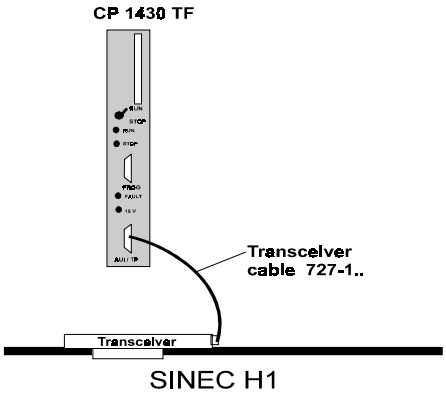

Fig. 4.3: Connecting a CP 1430 TF to SINEC H1 with AUI / Transceiver

The CP 1430 TF generates and supplies the 15 V power required by the transceiver.

➢ Industrial twisted pair connection for example via a transceiver or hub.

When using the SINEC H1 twisted pair as shown in the diagram, the CP 1430 TF automatically recognizes and adjusts itself to the twisted pair. Information about the pinouts can be found at the end of this chapter.

Using industrial twisted pairs, cable lengths of up to 100 m can be implemented.

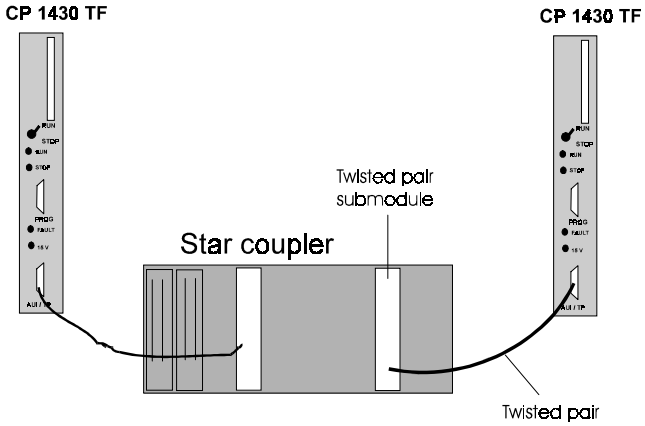

Fig. 4.4: Connecting the CP 1430 TF to SINEC H1 with TP/Star Coupler or Hub

➢ The CP 1430 TF can be connected to the SINEC H1FO network using a SINEC H1FO optical transceiver and AUI connector.

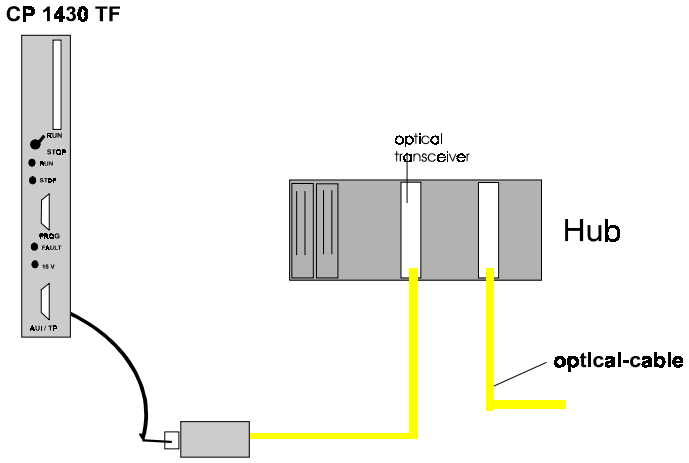

Fig. 4.5: Connecting the CP 1430 TF to SINEC H1FO with AUI / Optical Transceiver

4.4 Technical Data

Operating and Environmental Conditions

Degree of protection	IP 00
Permitted ambient temperature in operation	0 to 60 ^{o}C operation without fan
Transport and storage temperature	-40 to +70 ^{o}C
Humidity class	95% humidity at 25 ^{o}C, no condensation
Operating altitude	up to 3000 m above sea level

Table 4.3: Operating and Environmental Conditions

Components and Transmission Rates

Microprocessor	80386 SX 20 MHz
Ethernet controller	82596 SX 20 MHz
Ethernet serial interface:	82503
Transmission rates	- AS511 TTY interface, 9600 bps - AUI interface, 10 Mbps - TP interface, 10 Mbps

Table 4.4: Components and Transmission Rates

Mechanical and Electrical Data

Weight	Approx. 0.6 kg
Board format	Double Eurocard (160 x 233.4 mm)
Front panel width	20.3 mm (= 1 1/3 standard slots)
Backplane connector	ES 902, 2 x Row 2, 48-pin
Front connectors - PG connector - AUI/TP connector	 15-pin D SUB with securing screws 15-pin D SUB with securing slide
Supply voltages	+ 5 V, + 5%, - 5% +24 V, +25%, -15%
Current consumption	+ 5 V: 2.7 A max. At rated load 0.5A by transceiver +24 V: max. 70 mA UBATT (battery backup) : 110 µA max. 20 µA typical.

Table 4.5: Mechanical and Electrical Data

Other Data Depend on the Version

. CP Type / Characteristic	Basic Version	Extended Version
Dynamic RAM	512 Kbytes	2048 Kbytes
Internal capacity for configuration data	32 Kbytes	128 Kbytes
Memory reserved for dynamic configuration data (domain and PI services)	16 Kbytes	32 Kbytes
Size of the dual-port RAM for the CPU-CP interface	4 Kbytes	4 Kbytes
Memory capacity of the memory cards - Flash EPROM - RAM	128/256 Kbytes 256 Kbytes - 2 Mbytes	
Clock accuracy - Resolution - Relative	10 msec 20 msec	1 msec 2 msec

Table 4.6 : Characteristics of the CP 1430 TF Dependent on the Version