

SIEMENS

SIMATIC NET

Produktinformation
Product Information
Information produit
Informazioni sul prodotto
Información sobre producto

C79000–Z8964–C038–05

Stand/ Dated/ Edition/ Versione/ Versiòn 06/99

CP 343–1

6GK7 343-1BA00-0XE0

ab Ausgabestand 7 (FW–Stand V5.00)
version 7 or higher (firmware V5.00)
à partir de la version 7 (microprogramme V5.00)
a partire dalla versione 7 (versione FW V4.00)
a partir de la versión 7 (FW-V5.00)

SIMATIC S7–300

Deutsch / English / Français / Italiano / Español

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Sous réserve de modifications
Con riserva di modifiche
Sujeto a cambios

Hinweis / Note / Avertissement / Avvertenza / Indicación

Achtung

Vor der Inbetriebnahme Hinweise in der entsprechenden aktuellen Dokumentation beachten. Die Bestelldaten hierfür entnehmen Sie bitte den Katalogen oder wenden Sie sich an Ihre örtliche SIEMENS-Niederlassung.

Die Inbetriebnahme ist solange untersagt, bis festgestellt wurde, daß die Maschine, in die diese Komponente eingebaut werden soll, den Bestimmungen der Richtlinie 89/392/EWG entspricht.

Attention

Prior to startup you must observe the notes in the relevant documentation. For ordering data of the documentation please refer to catalogs or contact your local SIEMENS representative.

Startup must not take place until it is established that the machine, which is to accommodate this component, is in conformity the guideline 89/392/EEC.

Attention

Avant la mise en service, respecter les instructions de la documentation actuelle correspondante. Pour les références de commande de la documentation, veuillez-vous reporter aux catalogues ou consulter votre agence locale SIEMENS.

La mise en service est interdite tant que la machine dans laquelle est incorporé ce composant n'est pas conforme aux prescriptions de la directive 89/392/CEE.

Attenzione

Prima della messa in funzione, osservare attentamente le avvertenze riportate nella documentazione corrente. Per i dati di ordinazione consultare i cataloghi oppure rivolgersi alla locale fidale SIEMENS.

La messa in funzione è vietata fino a quando non è stato accertato che macchina, in cui il componente deve essere installato, non rispetta le disposizioni della direttiva 89/392/CCE.

Atención

Antes de la puesta en marcha observar las indicaciones contenidas en la documentatción actual correspondiente. La referencia de la misma puede consultarse en los catálogos o solicitarse a su agencia SIEMENS local.

Está prohibida la puesta en marcha hasta comprobar que la máquina en donde va a incorporarse este componente cumple lo especificado en la directiva 89/392/CCE.

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Compatibility with the Previous Version

The version of the CP 343-1 described here is functionally compatible with and can be used to replace the CP 343-1 with order number 6GK7 343-1BA00-0XE0 version 6.

The CP 343-1 described here has **more functions**. Refer to the information in Section 1.1.

Reply Form (at the end of this product information):



We would like to know the purpose for which you are using this module and would also like to know your opinion of the module and the documentation. You can help us to provide you with better support and to further improve the product. We would be grateful if you would complete the reply form and return it to us by post or fax.

Notes for the Reader

Safety Guidelines

This manual contains notices which you should observe to ensure your own personal safety, as well as to protect the product and connected equipment. These notices are highlighted in the manual by a warning triangle and are marked as follows according to the level of danger:

Note

draws your attention to particularly important information on the product, handling the product, or to a particular part of the documentation.



Caution

indicates that minor personal injury or property damage can result if proper precautions are not taken.



Warning

indicates that death, severe personal injury or substantial property damage can result if proper precautions are not taken.



Danger

indicates that death, severe personal injury or substantial property damage will result if proper precautions are not taken.

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Siemens AG
A&D
Industrial Automation Systems
Postfach 4848, D-90327 Nürnberg

Disclaimer of Liability

We have checked the contents of this manual for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in this manual are reviewed regularly and any necessary corrections included in subsequent editions. Suggestions for improvement are welcomed.

Technical data subject to change.

1 The CP 343-1 Communications Processor

Application

The CP 343-1 communications processor is designed for operation in an S7-300 programmable logic controller. It allows the S7-300 to be attached to Industrial Ethernet.

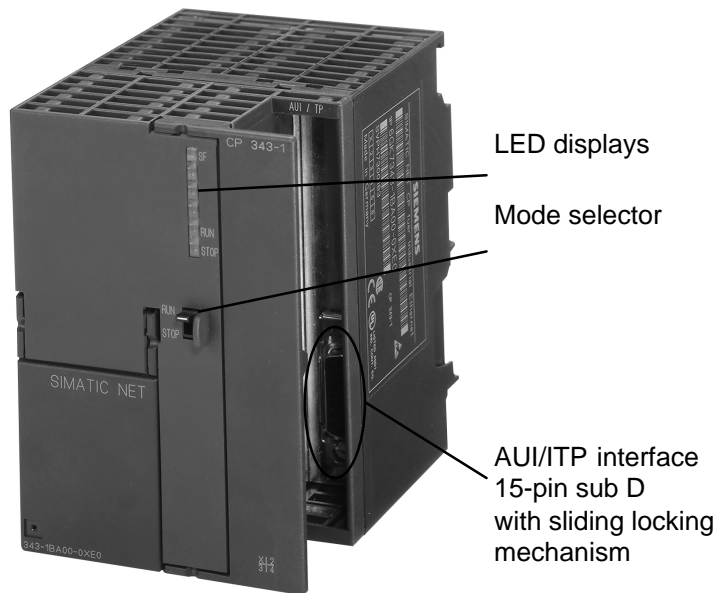


Figure 1 CP 343-1

Design

The module has been designed to match the components of the S7-300 programmable logic controller and has the following features:

- Double-width module for simple installation in the S7-300 rack.
- The operator controls and displays are all located on the front panel.
- No fan necessary.
- Direct backplane bus connection of the modules via accompanying backplane module connectors.
- 15-pin sub D female connector with sliding locking mechanism for attaching the CP 343-1 to Industrial Ethernet (automatic switchover between the AUI interface and Twisted Pair interface).

Configuration

You can configure the CP 343–1 via MPI or LAN/Industrial Ethernet. You require STEP 7 with the following version of NCM S7 for Industrial Ethernet (abbreviated to "NCM IE" below):

Table 1

Version STEP7/NCM IE	Functionality of the CP 343–1
V2.x to V5.x	The same functionality is available as with the previous versions of the CP. <ul style="list-style-type: none"> • Configuration data created with these STEP 7 or NCM versions can be downloaded to the CP 343–1.
V5.x + SP2 or higher	The full functionality including the extended functions as listed in Section 1.1 can be used. Information about the required service pack (SP2) is available on the Internet at: http://www.ad.siemens.de/csi/net

1.1 Characteristics

Services

The CP 343-1 supports the following communication services:

- S5-compatible communication with
 - SEND/RECEIVE interface via ISO transport connections
 - FETCH/WRITE services (passive; according to the S5 protocol) via ISO transport connections and ISO-on-TCP connections
- S7 communication with
 - PG functions
 - Operator control and monitoring functions
 - Data exchange using communication function blocks

PG functions:

Using the PG functions, modules such as the FM 354 or FM 355 can be accessed via the CP ("extended" PG functions).

Note

If there is a diagnostic connection to the CP via the CPU, configuration data cannot be downloaded automatically to the CP by the CPU at the same time!

Extended Functions Compared with Version 5

- Reading and writing data in the FETCH/WRITE mode

The services FETCH and WRITE are supported for direct access to system memory areas on the SIMATIC S7 PLC via ISO transport and ISO-on-TCP connections. The SIMATIC S7-300 with the CP 343-1 is always the server (passive connection establishment), while the fetch or write access (client functionality with active connection establishment) originates from a SIMATIC S5 PLC or other device

Requirements – General Operation

The following table shows the S7–300 CPUs with which the CP 343–1 can be operated with this range of functions:

Table 2

CPU	MLFB-Number
CPU 312 IFM	6ES7 312-5AC02-0AB0
CPU 312 (T)	6ES7 312-5AC82-0AB0
CPU 313	6ES7 313-1AD03-0AB0
CPU 314	6ES7 314-1AE04-0AB0
CPU 314 (T)	6ES7 314-1AE84-0AB0
CPU 314 IFM	6ES7 314-5AE03-0AB0
CPU 314 IFM (T)	6ES7 314-5AE83-0AB0
CPU 315	6ES7 315-1AF03-0AB0
CPU 315-2 DP	6ES7 315-2AF03-0AB0
CPU 315-2 DP (T)	6ES7 315-2AF83-0AB0
CPU 316-2 DP	6ES7 316-2AG00-0AB0
CPU 318-2	6ES7 318-2AJ00-0AB0

Table 2

CPU	MLFB-Number
CPU 614	6ES7 614-1AH03-0AB3
CPU 614-Z	6ES7 614-1AH03-0AB3-Z

The table lists the CPUs approved at the time of printing this product information bulletin. S7-300 CPUs approved later and not listed in the table also support the range of functions described here.

All versions of the SINUMERIK CPUs 840D and 810D are supported.

Requirements – ISO Transport Connections

The following conditions must be taken into account on ISO transport connections depending on the length of the data to be transferred:

Table 3

Functionality	Requirement
Transfer of data fields <= 240 bytes	The blocks AG_SEND FC5 and AG_RECV FC6 or as an alternative the blocks AG_LSEND FC50 and AG_LRECV FC60 are required.
Transfer of data fields > 240 bytes	Note the two requirements below: <ul style="list-style-type: none"> You require the blocks AG_LSEND FC50 and AG_LRECV FC60. These blocks are shipped with NCM V 4.02 with service pack 1. The blocks are shipped as standard components of newer versions of NCM. Configuration: When configuring the CP 343-1 with Hardware Configuration in STEP 7, select the option "Data length > 240 bytes" under the "Options" tab.

1.2 Performance Data

1.2.1 Characteristics of S7 Communication

The functions and characteristics of S7 communication are described in /8/ and /11/.

1.2.2 Characteristics of ISO Transport Connections

The following information is important for operating ISO transport connections (SEND/RECEIVE interface):

Table 4

Characteristic	Explanation / Values
Total number of connections on Industrial Ethernet	32 maximum
Number of connections for S7 communication on Industrial Ethernet	The actual value depends on the CPU type being used. Please refer to /1/ for the values for your CPU.
Number of ISO transport connections	16 maximum
Maximum data length for AG_SEND and AG_RECV blocks	AG_SEND and AG_RECV allow the transfer of data fields of between 1 and 240 bytes.
Maximum data length for AG_LSEND and AG_LRECV blocks	AG_LSEND and AG_LRECV are shipped for the CP 343-1 from version 5 or higher (firmware V3.00) and permit the transfer of data fields of between 1 and 8192 bytes (for more detailed information, see Table 3).

Reaction Times of ISO Transport Connections

The calculation of the reaction times with ISO transport connections is determined by the run time of the function blocks required on the S7-300 CPU (AG-SEND, AG-RECV).

Table 5

Component	Explanation / Values
Run time in the CPU 314-1	per block AG-SEND/AG-LSEND, AG-RCV/AG-LRCV 2.5 ms to 5 ms

1.3 Displays and Mode Selector

LED Displays

The LED panel on the front of the CP 343-1 has three display elements:

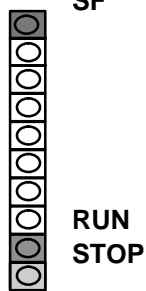








Figure 2 LED Displays

CP Operating Mode

The LEDs indicate the current operating mode of the CP 343-1 as follows:

STOP-LED (yellow)	RUN-LED (green)	SF-LED (red)	CP operating mode
●	☀	○	start up
○	●	○	RUN
☀	●	○	STOPPING
●	○	○	STOP
●	○	●	STOP with internal error

STOP-LED (yellow)	RUN-LED (green)	SF-LED (red)	CP operating mode
			Module fault / system error
Legend:	 lit	 off	 flashing

Note

Read the explanations of the operating modes in the NCM S7 for Industrial Ethernet manual /8/.

Controlling the Operating Mode

There are three ways in which you can control the mode of the CP 343-1, as follows:

- Mode selector
- From a PG/PC. You can also control the modes using the configuration software in STEP 7, as follows .
 - NCM S7, Diagnostics for Industrial Ethernet (see /8/);
 - SIMATIC Manager\CP343-1\PLC\Operating Mode

Mode Selector

With the mode selector, you can set the following modes:

- Switch from STOP to RUN:
In the RUN mode, all communication services are available.

The CP modes can only be controlled using NCM S7 or the SIMATIC Manager when the selector is set to RUN.

- Switch from RUN to STOP:
The CP changes to the STOP mode.

In the STOP mode, only the configuration and diagnostic functions are available on the CP 343-1.

Note

Read the sections about downloading configuration data to the CP in the NCM S7 for Industrial Ethernet manual /8/.

1.4 Further Information on Operation

Downloading Firmware

The CP 343-1 supports firmware updates using the Firmware Loader.

An update of the firmware can be downloaded from the PC/programming device at any time. After downloading the firmware, the CPU must be reconfigured (power off/on or memory reset).

For more information on downloading the firmware, refer to the README file of the NCM S7 for Industrial Ethernet configuration software.

Note

Read the information on downloading a database to the CP in the NCM S7 manual /8/.

Group status “8183” on the FC call interface

The return values DONE=0; ERROR=1; Status=8183 can be caused by the following states:

- The CP is in the STOP mode.
- The connection is not configured.
- The connection is not established

Status on the FC call interface; special situation with FC versions

With the FCs AG_SEND (FC 5) and AG_RECV (FC 6), you receive the following return values after a connection is aborted:

- AG_SEND: DONE=1; ERROR=0; Status=0000_H
- AG_RECV: DONE=0; ERROR=1; Status=8183_H

The new FCs for longer data fields (FC AG_LSEND and AG_LRECV) react in exactly the same way to a connection abort, in other words with the return values

- DONE=0; ERROR=1; Status=8183

Influence of MPI Connections on Connections via Industrial Ethernet

If a station on **MPI** is added or removed, for example because a service PG has been connected or disconnected, it is possible that all the connections on the communications bus are aborted. This has the following effects on the communication connections on Industrial Ethernet:

- All S7 connections are temporarily aborted.
- The ISO Transport connections on which a job with a data length > 240 bytes is being processed are aborted.

The return values must be handled accordingly on the FC interface in the user program.

2 Installation

2.1 Module Accessories

The accessories required to attach the CP 343-1 to an Industrial Ethernet LAN must be ordered separately. For more detailed information, see /9/, /10/, /12/.

2.2 Procedure

Steps in Installation

Installing the CP 343-1 involves the following steps.

- Plug in the CP 343-1 and secure it with the screws (make sure that the bus connector between the CPU/IM and CP 343-1 is present).
- Attach the CP 343-1 to Industrial Ethernet as illustrated in Section 2.3.
- Connect a 24 V power supply.

Note

Make sure that you use the same voltage source as for the CPU or IM 361.

Note

The two front panels must be kept closed during operation. The module must be installed so that its upper and lower ventilation slits are not covered, allowing adequate ventilation.

Configuration

To initialize the CP 343-1 for communication services, use the configuration tool NCM S7 for Industrial Ethernet.

PG/PC Connection

You can connect the programming device when configuring the CP as follows:

- via MPI
- via Industrial Ethernet
If you configure the module via Industrial Ethernet, the CP 343-1 must already have a MAC address, in other words the hardware configuration of the CP 343-1 must already have been downloaded via the MPI interface (for details of node initialization, see /8/).

2.3 Attaching the CP 343-1 to Industrial Ethernet

The CP 343-1 can be attached to Industrial Ethernet using a

- Transceiver with an AUI interface

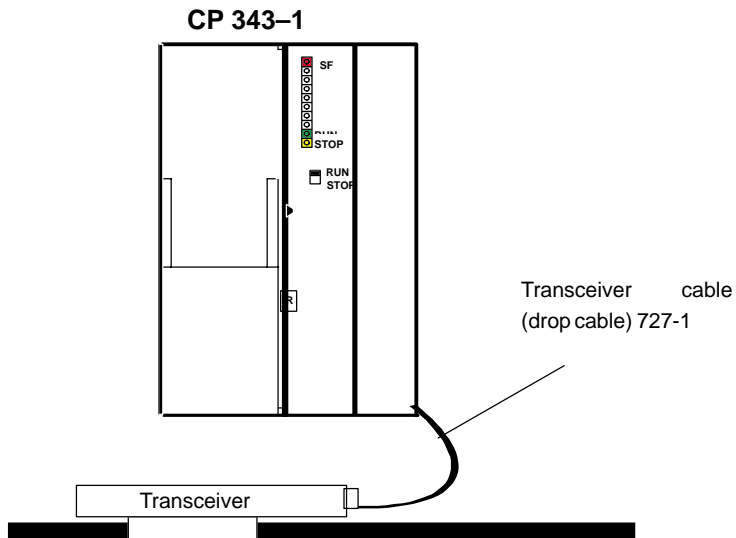


Figure 3 Attaching the CP 343-1 to Industrial Ethernet with AUI/Transceiver

The CP 343-1 generates and supplies the 13 V power required by the transceiver.

- Industrial Twisted Pair attachment, for example using a Optical Switch Module (OSM) or hub.

When using the Industrial Ethernet installation cable shown in Figure 4, the CP 343-1 automatically switches over to Twisted Pair. Information about the pinout can be found at the end of this section.

With Industrial Twisted Pair, cables with a length of up to 100 m can be installed between the CP and Optical Switch Module (OSM).

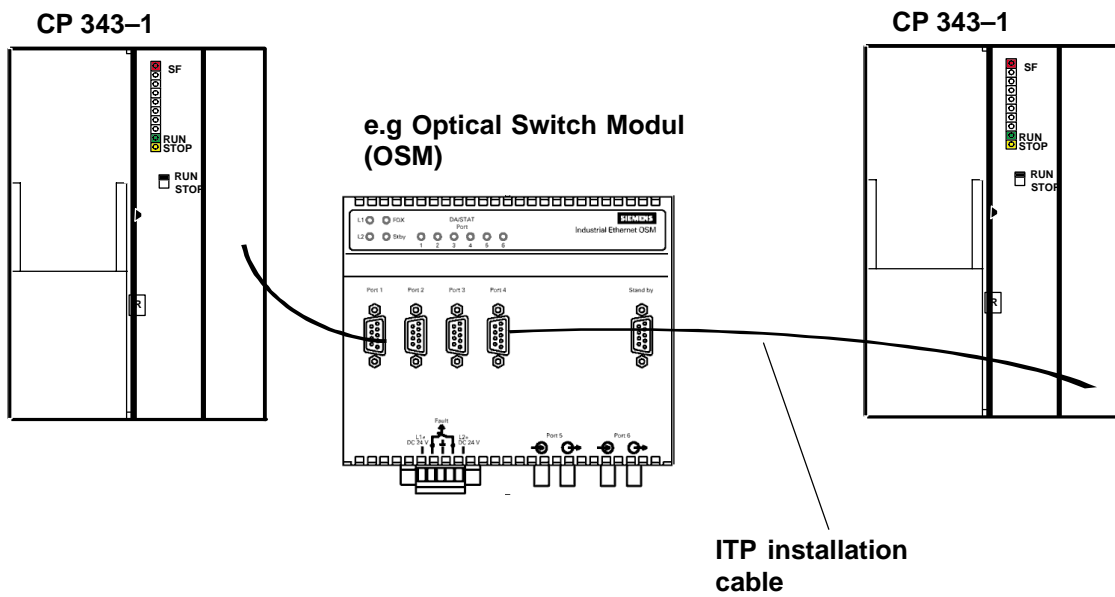


Figure 4 Attaching the CP343-1 to Industrial Ethernet with TP/Optical Switch Module (OSM) or Hub

- Optical Industrial Ethernet using an AUI attachment
 Connection of the CP 343-1 TCP to Industrial Ethernet is also possible using an optical transceiver with an AUI interface.

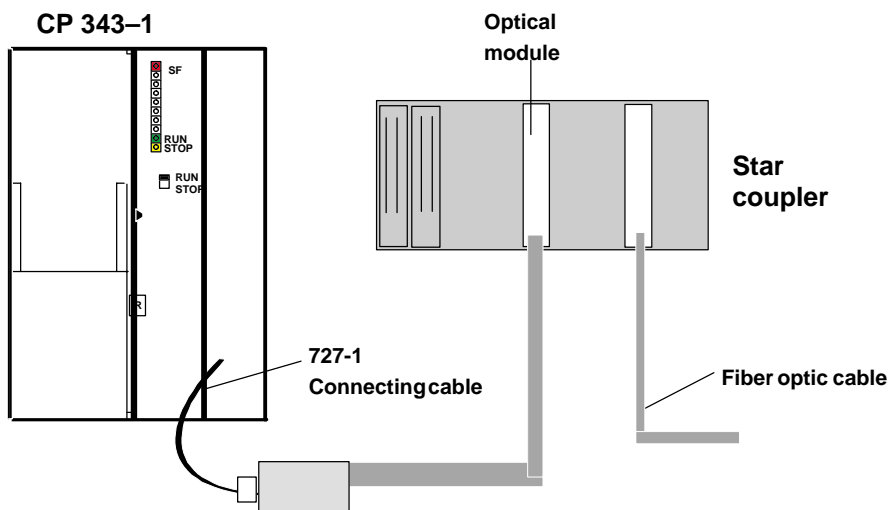


Figure 5 Attaching the CP 343-1 to Industrial Ethernet with AUI/ Optical Transceiver

3 Technical Data

3.1 General Technical Data

Dimensions and Weight	
Dimensions, module in casing H x W x D (mm)	125x80x120
Weight	approx. 750 g

Voltage, Current, Operating Conditions	
Power supply	5 V DC +/- 5% 24 V DC +/- 5%
Current consumption: – from the S7-300 backplane bus: – from the external 24 V supply:	70 mA 0.6 A.
Permitted ambient temperature Specifications according to /7/ must be adhered to when operating an S7-300 tier – horizontal installation – vertical installation	0 to 60° C 0 to 40° C
Altitude	up to 3000m above sea level

All the information in /7/ in the Section "General Technical Data" regarding the following topics also applies to the CP 343-1:

- Electromagnetic compatibility
- Transportation and storage conditions
- Mechanical and climatic ambient conditions
- Insulation tests, class of protection and degree of protection

3.2 Pinout

Connector for Industrial Ethernet

On the front panel of the CP 343-1, there is a 15-pin sub D female connector with a sliding locking mechanism for connecting a transceiver cable. The signals of an ITP interface can also be applied to this connector (switchover by relay).

For operation via the AUI interface, use the 727-1 transceiver cable. A special SIMATIC NET ITP cable must be used when operating via the ITP interface.

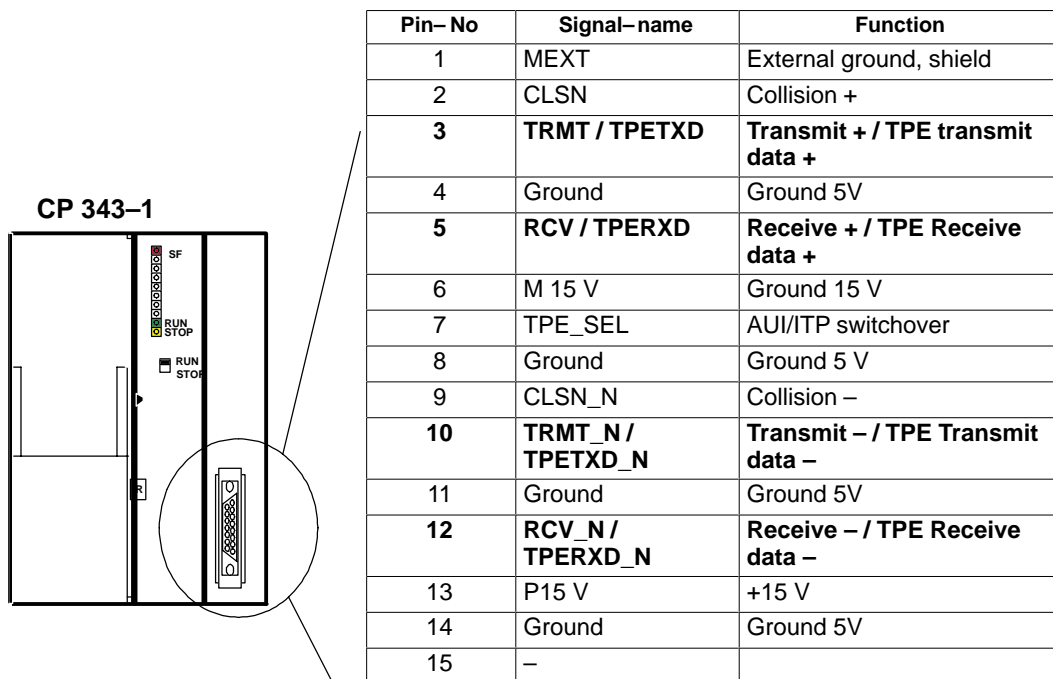


Figure 6 Connector Pinout Diagram

Notes on the Pinout

The pinout complies with the IEEE 802.3 AUI interface. The signals TPETXD / TPETXD_N and TPERXD / TPERXD_N implement the ITP interface.

3.3 Notes on the CE Approval of SIMATIC NET Products

Product name:

CP 343-1

Order number: 6GK7 343-1BA00-0XE0

EU Directive EMC89/336/EEC

The SIMATIC NET products listed above meet the requirements of the EU directive 89/336/EEC "Electromagnetic Compatibility".



The EU conformity certificates are available for the relevant authorities according to the EU directives and are kept at the following address:
Siemens Aktiengesellschaft, Bereich A&D
Industrielle Kommunikation
SIMATIC NET (A&D PT 2)
Postfach 4848
D-90327 Nürnberg
Germany

Area of Application

The product is designed for use in an industrial environment.

Area of application	Requirements	
	Noise emission	Noise immunity
Industrial	EN 50081-2 : 1993	EN 50082-2 : 1995

Directive on Machines

The product remains a component in compliance with Article 4(2) of the EU directive on machines 89/392/EEC.

According to the directive on machines, we are obliged to point out that this product is intended solely for installation in a machine. Before the final product is started up, it must be established that it conforms to the directive 89/392EEC.

Installation Guidelines

The product meets the requirements providing you adhere to the guidelines for installation and operation in the following documentation /7/, /9/ and /12/.

4 References

The following documentation is necessary for configuration and operation and contains detailed information:

- /7/** For installing and starting up the CP 343-1
Manual: S7-300 Programmable Controller, Hardware and Installation
- /8/** For using and configuring the CP 343-1
Manual: SIMATIC NET NCM for S7 Industrial Ethernet
- /9/** SIMATIC NET Manual: Triaxial Networks for Industrial Ethernet
- /10/** Ethernet Manual (HIR)
- /11/** User's Guide to STEP 7
Part of the basic STEP 7 package.
- /12/** SIMATIC NET Manual: ITP Networks for Industrial Ethernet

Order Numbers

The order numbers for the SIEMENS documentation listed above can be found in the catalogs "SIMATIC NET Industrial Communication, Catalog IK 10" and "SIMATIC Programmable Logic Controllers SIMATIC S7 / M7 / C7".

These catalogs and additional information about the products and training courses can be obtained from your local SIEMENS office.



C79000-Z8974-C43-01
 Mail / FAX Reply (Call ++911-978-3321)

To

Siemens AG, Infoservice
 A&D Z 032
 Postfach 2348

D-90713 Fürth
 Germany

From

Name

Position

Company

Address

Town

Postcode

Country

Dear customer,

You can order a sticker to mark the actual version level of your CP's with this letter or by fax.

Please send me the sticker

Our Industrial Ethernet application:

Type of application

Which S7-300 CPU are you using ?	<input type="checkbox"/> CPU 312 IFM	<input type="checkbox"/> CPU 313	<input type="checkbox"/> CPU 314 / 314 IFM
	<input type="checkbox"/> CPU 315	<input type="checkbox"/> CPU 315-2	andere :.....

How many CP 343-1 modules are you using ?	No. of CP 343-1:	No. of CP 443-1:
		No. of S5 CPs:

Which and how many communication partners are you using in your system?	Send/Receive: <input type="checkbox"/> SIMATIC S5.....	<input type="checkbox"/> SIMATIC S7.....
	<input type="checkbox"/> PC with CP 1413.....	<input type="checkbox"/> PC with SOFTNET.....
	<input type="checkbox"/> WS.....	
	S7-Functions: <input type="checkbox"/> SIMATIC S7.....	<input type="checkbox"/> PC with CP 1413.....
	<input type="checkbox"/> PC with SOFTNET.....	<input type="checkbox"/> WS.....

Number of connections ?	SEND/RECV :	S7-Functions:
-------------------------	-------------------	---------------------

Average data length in bytes per connection ?	SEND/RECV :	S7-Functions:.....
---	-------------------	--------------------

Type of cabling	<input type="checkbox"/> Electrical with ITP	<input type="checkbox"/> Optical with OLM	other:
	<input type="checkbox"/> Electrical with Triax (Yellow Cable)	<input type="checkbox"/> Optical with star couplers	

Network topology	<input type="checkbox"/> Bus	<input type="checkbox"/> Redund. ring	<input type="checkbox"/> Star	other :
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Suggestions:

Note: Your information will be used to improve our products and will of course be handled confidentially. Suggestions for improvement are welcome on e-mail address simatic.net@nbgm.siemens.de. Please include for identification "CP 343-1".

