SIEMENS

SIMATIC NET

**PG/PC - Industrial Ethernet
CP 1628**

Operating Instructions

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE
indicates that an unintended result or situation can occur if the relevant information is not taken into account.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction 1

Security messages

NOTICE
For its automation and drives product portfolio, Siemens provides IT security mechanisms to support secure operation of the plant/machine. Our products are continuously being further developed also taking into account the aspect of IT security. We therefore recommend that you regularly check for updates of our products and that you only use the latest versions. You will find information in: (http://support.automation.siemens.com/WW/llisapi.dll?func=cslib.csinfo2&aktprim=99&lang=en) Here, you can register for a product-specific newsletter. For the secure operation of a plant/machine, it is also necessary to integrate the automation components in a full IT security concept for the entire plant/machine that represents the state of the art in IT technology. You will find information on this in: (http://www.siemens.com/industrialsecurity) Products from other manufacturers that are being used must also be taken into account.

Content of the document

These operating instructions contain the information you require to install and commission the CP 1628 communications processor.

Table 1- 1   Structure of the documentation for the CP 1628

Name of the document	Why you should read it
Operating Instructions CP 1628	This provides a step-by-step guide to installing the CP 1628 in your PC.
Configuration Manual Commissioning PC Stations	This contains the information required to commission and configure a SIMATIC NET communications module.
Manuals • SIMATIC NET Industrial Communication with PG/PC Volume 1 - Basics • SIMATIC NET Industrial Communication with PG/PC Volume 2 - Interfaces	This manual introduces you to industrial communication and explains the available communications protocols. It also describes the OPC interface as a user programming interface.
Manual Configuring Hardware and Communication Connections with STEP 7	This contains instructions on configuring a plant.

Name of the document	Why you should read it
Manual Time-of-Day Functions of the CP 1613	This manual supports you when you want to include the time-of-day functions of the CO 1613 communications processor in your user programs.
Readme file for the "SIMATIC NET PC Software" DVD	This contains important information on SIMATIC NET PC software products.
Online helps	You can access detailed information on the individual functions.
Installation instructions for the "SIMATIC NET PC Software" DVD	This document provides you with the information you require to install the "SIMATIC NET PC Software" DVD on your PG/PC.
Configuration Manual Industrial Ethernet Security – Basics and Application	This document provides you with detailed information on how to make the security settings for the CP 1628.

Further documentation

You will find the documentation listed above on the current "SIMATIC NET PC Software" DVD with the Manual Collection. The Manual Collection is a collection of all the SIMATIC NET product documentation.

1.1 Training, Service & Support

Training, Service & Support

You will find information on Training, Service & Support in the multilanguage document "DC_support_99.pdf" in the "doc" subdirectory on the "SIMATIC NET PC Software" DVD that ships with the products.

Description

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2.1 Components of the product

The following components are supplied with the CP 1628:

- CP 1628 communications processor
- Driver / software CD for the CP 1628
- Safety notices for the CP 1628
- "SIMATIC NET PC Software" DVD

Please check that the consignment you have received is complete. If it is not complete, please contact your supplier or your local Siemens office.

2.2 Product description

Product features

The CP 1628 is a PCIe module for connecting PGs/PCs to Industrial Ethernet. The essential properties are as follows:

- Two RJ-45 ports for Industrial Ethernet for connecting twisted-pair cables
- The following data rates are supported:
  - 10/100 Mbps (half/full duplex)
  - 1000 Mbps (full duplex)
- Can be used as a 2-port switch (both RJ-45 connectors lead to the integrated switch)
- Own processor on the CP 1628 relieves the PC/PG CPU
- Autosensing, autocrossover, autonegotiation
- ISO and TCP/IP transport protocol onboard
- Integrated security (firewall, VPN)

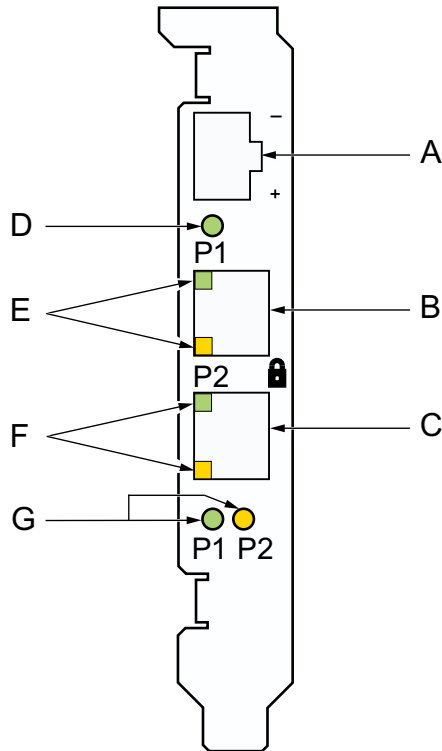
Note

All CP 1613 and CP 1623 software products can be operated with the CP 1628.

Hardware requirements

The CP 1628 requires a PCIe slot (PCI express x1; can also be operated in x4, x8 or x16 slots).

LED display

The following graphic shows the front panel of the CP 1628 communications processor:

A	Socket for external power supply
B	Port 1
C	Port 2
D	Power/fault LED
E	2 port LEDs for Port 1
F	2 port LEDs for Port 2
G	LEDs for displaying the transmission speed of Port 1 and Port 2

The table describes the LED displays that indicate the operating states:

LED	LED	Description
Power/fault LED	off	No external power supply connected, no fault
	green	External power supply connected
	red (flashing)	Module fault/error

LED	LED	Description
2 port LEDs in each port (green and yellow)	• green, off • yellow, off	No cable connected
	• green, lit permanently • yellow, off	Link exists, no data traffic
	• green, lit permanently • yellow, flashing	• Link exists, sending/receiving data
LEDs for displaying data transmission speed P1 and P2 ports	off	• 10 Mbps or • no cable connected
	green, lit permanently	100 Mbps
	yellow, lit permanently	1000 Mbps

External power supply

If an external power supply is connected via this socket (12 to 24 VDC), the CP 1628 can also be operated as a 2-port switch even if the PC is turned off.

Notes on operating the CP 1628

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> **Note**
>
> **Number of Windows NDIS IP addresses**
>
> When operating the CP 1628, note that all applications on your PC in total must not exceed the maximum number of 16 Windows NDIS IP addresses.

Installing and connecting up

<div style="text-align: right; font-size: 3em;">4</div>

Note on lightning protection

> **Note**
>
> The requirements of EN61000-4-5, surge immunity tests
> on power supply lines, are met only when a Blitzductor is
> used with 12 to 24 VDC:
>
> 12 - 24 VDC: VT AD 24V type no. 918 402
>
> Vendor: DEHN+SÖHNE GmbH+Co.KG, Hans Dehn Str. 1, Postfach 1640, D - 92306
> Neumarkt, Germany

Number of permitted communications processors

> **Note**
>
> A maximum of four CP 1628 modules can be installed in one PG/PC.
>
> Make sure that there is adequate ventilation, especially when using the maximum number of
> modules, so that the operating temperature does not exceed 55 °C.
>
> If you have installed the SIMATIC NET PC software, you can check the operating
> temperature of the module with the "Configuration Console" tool on the "Operating data"
> properties page.

Procedure

To install and connect up the CP 1628 follow the steps outlined below:

> **NOTICE**
>
> When handling the module, make sure that you do not touch the connectors or the
> electronic components.

1. Turn off your computer and pull out the power cable connector from the socket.

2. Open the housing of the computer as described in the manual for your PG/PC and
   remove the cover of a free PCIe slot in your computer.

3. Remove the CP 1628 from its packaging.

4. Insert the CP 1628 in the PCIe slot.
   Make sure that the CP 1628 is inserted and secured correctly.

5. Close the computer housing as described in the manual accompanying your PG/PC.

6. Plug the connecting cable (twisted pair) into one of the two jacks on the front panel of the CP 1628.

7. Plug the power supply connector into the socket again and turn on your computer.

Optional: If required, connect the external power supply to the CP 1628.

Installing the software

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5.1   Installing the driver

Installation

After the PC has booted, the Windows plug-and-play mechanism searches for a driver for the communications processor. This is available on the "SIMATIC NET, PC Software" DVD and on the supplied driver/software CD.

Selecting the suitable driver

Which driver you need to install depends on the conditions in which the CP 1628 is used:

- Office
  - Operation with Security
    If the communications processor is used exclusively in an office environment in a PC network, making use of the Security settings, first install all the software packages of the supplied "SIMATIC NET PC Software", with the exception of the "NCM-PC" software. Then install all software packages from the supplied driver/software CD (driver, SCT, NCM-PC).

  - Operation without Security
    If the communications processor is used exclusively only in an office environment in a PC network, only install the driver from the driver/software CD.

- Industry
  - Operation with Security and "SIMATIC NET PC Software"
    If the communications processor is used in an industrial environment together with a SIMATIC NET communication processor software product, first install all the software packages of the supplied "SIMATIC NET PC Software", with the exception of the "NCM-PC" software. Then install all software packages of the supplied driver/software CD (driver, SCT, NCM-PC).
    If version V5.5.2 of the STEP 7 software package is preinstalled on the PC, then install the hardware support packet, HSP 1078, from the driver/software CD.

  - Operation without Security and without "SIMATIC NET PC Software"
    If the communications processor is used exclusively in an industrial environment in a PC network (without "SIMATIC NET PC Software"), install the driver from the driver/software CD.

    Note

    With "SIMATIC NET PC Software" installed and when using 4 CP 1628 modules (full configuration), the system startup takes approximately 2 minutes longer.

5.2 Uninstalling the driver

Uninstalling after using the CP 1628 with "SIMATIC NET PC Software"

- The "SIMATIC NET PC Software" DVD is installed on the PC.

- Uninstall the SIMATIC NET PC software as described in the Installation Instructions of the "SIMATIC NET, PC Software" DVD.

NOTICE
The procedure recommended here deletes the entire SIMATIC NET PC software on the PC, not only the driver/software CD for the CP 1628.

Uninstalling after using the CP 1628 without "SIMATIC NET PC Software"

If you remove the CP 1628 from your PC and want to uninstall the driver, follow the steps below:

1. Open the Control Panel and go to the "Hardware and Sound" tab.

2. Click on "Device Manager" in the section "Devices and Printers".

3. Right-click on the driver of the communications processor, "SIMATIC Miniport CP1628 PCIe Adapter", in the path of the "Network Adapter" symbol and select the "Uninstall" menu command and confirm removal with "OK".

4. Restart your PC to remove the driver/software CD completely.

Configuring 6

Now configure the SIMATIC NET communications software to commission the communications processor. The rest of the procedure is described in the "Commissioning PC Stations" manual
(Start button "**Start > ... > Commissioning PC Stations**").

Note

The CP 1613- / CP 1623 configuration can be downloaded to the CP 1628.

Note

The CP 1628 has four consecutive MAC addresses:

- The base address printed on the module is the Windows NDIS MAC address that cannot be modified.
- The second MAC address can be changed during configuration (Industrial Ethernet MAC address).
- The third and fourth MAC addresses are reserved for future functions and cannot be modified.

6.1 Configuring Security

Security settings are made exclusively with the SCT (Security Configuration Tool) that is called up in STEP 7/NCM PC. You will find further information in the configuration manual "Industrial Ethernet Security – Basics and Application". You will find this document on the Internet under the following entry ID: 56577508
(http://support.automation.siemens.com/WW/view/en/56577508)

Approvals and certificates

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Electromagnetic compatibility

The SIMATIC NET product meets the requirements of the EC Directive: 2004/108/EEC "Electromagnetic Compatibility"

The communications processor is designed for use in the following areas:

Area of application	Requirements	
	Emission	Immunity to interference
Residential area, business and commercial operations, and small businesses	EN 61000-6-3	EN 61000-6-1
Industrial area	EN 61000-6-4	EN 61000-6-2

Installation guidelines

The products meet the requirements if you adhere to the installation and safety instructions contained in this chapter "Approvals and certificates" and in the "SIMATIC NET, Industrial Ethernet Network Manual" during installation and operation.

EC declaration of conformity

You will find the EC Declaration of Conformity for this communications processor on the Internet at the following address:

http://support.automation.siemens.com → Section **Self-help**; enter "**EC Declaration of Conformity**" and the **product name** ;
Example German: "EG-Konformitätserklärung CP 1628",
Example English: "Declaration of Conformity CP 1628".

Note for Australia

C-TICK

The communications processor meets the requirements of the AS/NZS 3548 standard.

Notices for Canada

ICES conformity

This digital class B apparatus complies with the Canadian standard ICES-003.

CSA approval

The SIMATIC NET communications processor has an approval in accordance with the CAN/CSA C22.2 No. 60950-1 standard.

Notices for USA

FCC approval

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

● Reorient or relocate the receiving antenna.

● Increase the separation between the equipment and receiver.

● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

● Consult the dealer or an experienced radio/TV technician for help.

Siemens AG is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Siemens AG. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user. The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

UL approval

The SIMATIC NET communications processor is approved in accordance with the UL 60950-1 standard, First Edition.

Note

The specified approvals apply only when the corresponding mark is printed on the communications processor.

Technical specifications

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CP 1628

The following technical specifications apply to the CP 1628 communications processor:

Data transfer	
Transmission speed	• 10/100 Mbps (half/full duplex)
	• 1000 Mbps (full duplex)

Interfaces	
Connection to 10BaseT/100BaseTx/ 1000BaseT	RJ-45 ports (two)
Connector for PG/PC	PCI Express x1; can also be operated in x4, x8 or x16 slots

Power	
PCIe power supply	3.3 VDC and 12 VDC

External power supply	
Rated voltage	12 to 24 VDC
Limit voltages	Min. 10.5 VDC
	Max. 32 VDC

Current consumption	
PCIe power at 3.3 VDC	max. 0.85 A
PCIe power at 12 VDC	max. 0.4 A

Permitted ambient conditions	
Operating temperature	+5 ... +55 °C
Transportation/storage temperature	-20 ... +60 °C

Construction	
Module format	• Standard height
	• Half width
Dimensions (H x W x D) in mm	180.5 x 21.6 x 126.3
Weight	124 g
Space required	PCIe slot

External power supply

The following technical specifications refer to the external power supply:

Requirements of the external power supply	
Electrical isolation	required
Rated voltage range	12 to 24 VDC
CP 1628 current consumption	• at 12 VDC: 0.55 A
	• at 24 VDC: 0.3 A

Connection of external power supply	
Socket strip, 2-pin	Use the supplied connector.

Note

If supplied from a separate source, this must meet the requirements to comply with NEC Class 2.

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