

SIMATIC NET

PG/PC - PROFIBUS CP 5612

Operating Instructions

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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

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

NOTICE

indicates that property damage can result if proper precautions are not taken.

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.

Preface

Validity of this documentation

These operating instructions are valid for the following product:

- CP 5612
Article number: 6GK1 561-2AA00

Content of this documentation

These operating instructions contain information about the installation and configuration of the CP 5612 communications processor.

Updated operating instructions on the Internet

You will find the current version of these operating instructions on the Product Support pages under the following entry ID:
58826992 (<https://support.industry.siemens.com/cs/ww/en/view/58826992>)

Further documentation

The documents listed below contain more detailed information on commissioning and using the communications processor. You will find this documentation on the Product Support pages on the Internet under the following entry link:

Support (<https://support.industry.siemens.com/cs/ww/en/ps>)

Enter the entry ID shown below of the relevant manual as the search item.

- **Configuration manual Commissioning PC Stations**

This provides you with detailed information on commissioning and configuring SIMATIC NET PC communications modules.

Entry ID:

109488960 (<https://support.industry.siemens.com/cs/ww/en/view/109488960>)

- **System manual SIMATIC NET Industrial Communication with PG/PC**

- **Volume 1– Basics**

Entry ID:

77376110 (<https://support.industry.siemens.com/cs/ww/en/view/77376110>)

- **Volume 2– Interfaces**

Entry ID:

77378184 (<https://support.industry.siemens.com/cs/ww/en/view/77378184>)

The system manuals introduce the topic of industrial communication and explain the communications protocols used. There is also a description of the OPC interface as user programming interface.

- **Installation manual "SIMATIC NET PC Software"**

This document contains detailed information on installing the "SIMATIC NET PC Software".

Entry ID:
77377602 (<https://support.industry.siemens.com/cs/ww/en/view/77377602>)

- **System manual PROFIBUS Network Manual**

In this document you will find detailed information about setting up a PROFIBUS network.

Entry ID:
35222591 (<https://support.industry.siemens.com/cs/ww/en/view/35222591>)

SIMATIC NET documentation

You will find the entire SIMATIC NET documentation on the pages of Product Support:
15247 (<https://support.industry.siemens.com/cs/ww/en/ps/15247>)

Go to the required product group and make the following settings:

→ Entry list → Entry type "Manuals / Operating Instructions"

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SIMATIC NET, HARDNET, SOFTNET, CP 1612, CP 1613, CP 5612, CP 5613, CP 5614, CP 5622

Industry Online Support

In addition to the product documentation, you are supported by the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:
Link: (<https://support.industry.siemens.com/cs/de/en/>)

Apart from news, there you will also find:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option submitting a support query:
Link: (<https://support.industry.siemens.com/My/ww/en/requests>)
- Our service offer:

Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact data on the Internet at the following address:

Link: (https://www.automation.siemens.com/aspa_app/?ci=yes&lang=en)

SITRAIN - Training for Industry

The training offer includes more than 300 courses on basic topics, extended knowledge and special knowledge as well as advanced training for individual sectors - available at more than 130 locations. Courses can also be organized individually and held locally at your location.

You will find detailed information on the training curriculum and how to contact our customer consultants at the following Internet address:

Link: (<https://sitrain.automation.siemens.com/DE/sitrain/default.aspx?AppLang=en>)

Industrial Networks Education

Training and certification for Industrial Networks

In our Industrial Networks Education courses you'll learn to design and implement wired and wireless data networks and connect them to a corporate network. You will also receive instruction on how to secure, diagnose and optimize communication networks. Certification can also be offered to supplement almost all training courses.

Link: (<https://www.siemens.com/industrial-networks-education>)

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines, and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions form one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. These systems, machines and components should only be connected to the enterprise network or the Internet if and only to the extent necessary and with appropriate security measures (firewalls and/or network segmentation) in place.

You can find more information on protective measures in the area of industrial security by visiting: (<https://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends performing product updates as soon as they are available and using only the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (<https://www.siemens.com/industrialsecurity>).

SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary on the Internet at the following address:

50305045 (<http://support.automation.siemens.com/WW/view/en/50305045>)

Recycling and disposal



The products are low in harmful substances, can be recycled and meet the requirements of the Directive 2012/19/EU for disposal of waste electrical and electronic equipment (WEEE).

Do not dispose of the products at public disposal sites.

For environmentally compliant recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste or your Siemens representative.

Note the different national regulations.

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Description of the device

1.1 Product characteristics

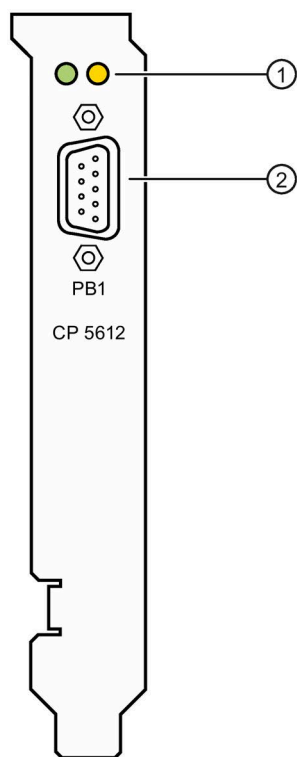
Properties

The CP 5612 is a communications processor for connecting PCs (personal computers) or PGs (programming devices) to PROFIBUS and MPI networks. The essential properties are as follows:

- Transmission speeds up to 12 Mbps.
- Floating RS-485 connector.
- Linking of up to 32 devices (PC, PG, SIMATIC S7 or ET 200) to form a network segment.
 - By linking several segments with repeaters, up to 64 nodes can be connected.
- The additional interface signals for a direct link to a PLC (Programmable Logic Controller) are supported up to 187.5 Kbps.
- Installation in PGs and PCs with a PCI slot. The following is supported:
 - PCI, 33 MHz / 66 MHz, 32 bits / 64 bits
 - Plug and play

Appearance

The following graphic shows the CP 5612 communications processor:



- 1 LEDs
- 2 PROFIBUS interface PB1 (master or slave)

1.2 PROFIBUS interface

PROFIBUS network

The physical link between the PROFIBUS interface and the PROFIBUS network is via a floating RS-485 interface that is part of the module. Depending on the network configuration, data rates of 9.6 Kbps up to a maximum of 12 Mbps are possible in the PROFIBUS network.

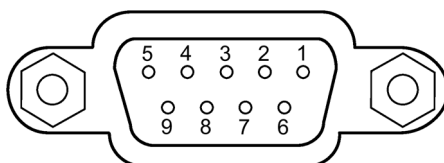
Note

You will find information about the structure of a PROFIBUS network in the system manual "PROFIBUS Network Manual". The document is part of the Manual Collection. You will also find this on the Product Support pages under the following entry ID:

35222591 (<http://support.automation.siemens.com/WW/view/en/35222591>)

PIN assignment

The D-sub female connector has the following pin assignment:



PIN	Short name	Meaning	Input/output
1	NC	Socket pin 1 is not connected.	-
2	NC (M24)	Socket pin 2 is not connected. With other MPI/DP components, the return line of the floating 24 V power supply may be via this pin.	-
3	LTG_B	Signal line B of the PROFIBUS connector.	Input/output
4	RTSAS	RTSAS, input signal for direct MPI link. The control signal is "1" active when the automation system connected over a special MPI cable is sending.	Input
5	M5EXT	M5EXT return line (GND) of the 5 V power supply and reference potential for the signals RTSAS and RTS of the PROFIBUS interface.	Output
6	P5EXT	P5EXT power supply (+5 V) for the 5 V power supply. (only for bus termination)	Output
7	NC (P24V)	Socket pin 7 is not connected. With other MPI/DP components, the P24V supply of the floating 24 V power supply may be via this pin.	-
8	LTG_A	Signal line A of the PROFIBUS connector.	Input/output
9	RTS	RTS output signal of the CP module. The control signal is "1" active when the device (PG or PC) is sending.	Output
Shield		The shield is connected to components of the connector housing.	

1.3 Meaning of the LED display

LED display

The meaning of the LED display is as follows:

Green and yellow LED	Meaning
Green on	Indicates token rotation (in other words, normal operation)
Green off	Incorrect bus parameters, defective bus (e.g. short-circuit) or CP not in operation
Green flashing fast, yellow off	Module not started; normal status following reset
Green and yellow flashing alternately	When using more than one module in a PG/PC: Identification of the module using a diagnostics tool
Green and yellow flashing synchronously	Exception state; error in firmware
Yellow on	DP slave mode
Yellow off	Not DP slave mode
Yellow flashing at one-second intervals	Error in DP slave mode.

Software installation

2.1 Installing the "SIMATIC NET PC Software"

"SIMATIC NET PC Software"

The "SIMATIC NET PC software" is one of several software packages with which you can operate the communications processor in your PG/PC.

To configure the communications processor, you require additional configuration software. You will find information on the configuration software in the section "Configuration (Page 19)".

Condition

The plug and play function is activated in the BIOS of your PG/PC.

Prior to hardware installation

Install the software as described in the installation manual "SIMATIC NET PC Software". You will find this installation manual on the Product Support pages under the following entry ID: 77377602 (<https://support.industry.siemens.com/cs/ww/en/view/77377602>)

You should also note the current information on the "SIMATIC NET PC software" on the Product Support pages:
Support (<https://support.industry.siemens.com/cs/ww/en/ps/15362/pm>)

After the hardware installation

After installing the communications processor, your PG/PC automatically searches for a suitable driver.

1. Follow the instructions of the Hardware Wizard of Windows.
2. Do not activate the search for drivers on the Internet.

2.2 Uninstalling the "SIMATIC NET PC Software"

Condition

The "SIMATIC NET PC Software" is installed on the PG/PC.

Procedure

Note

The recommended procedure removes the entire "SIMATIC NET PC Software" on the PG/PC, not only the driver for the communications processor.

Uninstall the entire software package as described and recommended in the installation manual "SIMATIC NET PC Software".

You will find the installation manual on the "SIMATIC NET PC Software" DVD or on the Product Support pages under the following entry ID:

77377602 (<https://support.industry.siemens.com/cs/ww/en/view/77377602>)

Hardware installation

3.1 Safety notices

**WARNING****Electric shock possible - work only when the power supply is off**

Opening the PG/PC and plugging or pulling the communications processor is permitted only when the power is off.

Turn off your PG/PC and pull the power cable connector before you start the hardware installation.

NOTICE**Note the EC directives**

Components can be damaged or destroyed by electrostatic discharge. When installing, keep to the rules for electrostatically sensitive devices (ESD).

- Pick up components and modules only by their edges. Do not touch the pins or conductors.
- Before opening the PG/PC, make sure that you discharge any electrostatic charge from your body. You can do this by touching metal parts on the back panel of the PG/PC pulling the power plug.
- Make sure that you also discharge any electrostatic charge from tools you intend to use for the work on the PG/PC.
- Do not operate the PG/PC with the housing open.

NOTICE**Firm mounting**

The communications processor must sit firmly and uniformly in the slot. Check that the module sits firmly in the slot as described in the manual accompanying your PG/PC.

Note**Oblique installation position is permitted**

Some PG/PC designs require oblique installation of the communications processor. This is permitted.

3.2 Installing hardware

Permitted number of communications processors in the PG/PC

The driver software supports a maximum of 2 communications processors per PG/PC, of which a maximum of 1 communications processor may be in configured mode.

Automatic adaptation of the bus clock speed

The communications processor is designed for a bus clock speed of 66 MHz. If the communications processor is inserted in a PCI slot with a higher bus clock speed, the bus clock speed is adapted to the highest possible bus rate of the communications processor. Examples:

- The PCI slot is automatically reduced to a bus clock speed of 66 MHz.
- The bus clock speed of the communications processor is automatically reduced to 33 MHz if a communications processor with a 33 MHz bus clock speed is connected.

Procedure

Note

- **First install the software**

First install the software before you insert the communications processor in the slot.

- **Activated plug and play function**

The plug and play function must be activated in the BIOS of your PG/PC.

Follow the steps outlined below when inserting the communications processor:

1. Turn off your PG/PC and pull the power cable connector.
2. Open the PC housing as described in the manual accompanying your PG/PC.
3. Remove the cover of a free PCI slot.
4. Remove the communications processor from its packaging.
5. Insert the communications processor in the PCI slot and secure it.
Make sure that the communications processor is correctly inserted and secured.
6. Close the PC housing as described in the manual accompanying your PG/PC.
7. Insert the power plug into the socket again and turn your PG/PC on.
The plug and play function of Windows automatically searches for a driver.
8. Follow the instructions of the Hardware Wizard of Windows.
Do not activate the search for drivers on the Internet.

3.3 Hardware compatibility

Compatibility with other communications processors

The CP 5612 can replace the following communications processors:

- CP 5621
- CP 5611 A2
- CP 5611

Note

PCI module

Please note: The CP 5612 is a PCI card. The CP 5621, on the other hand, is a PCI Express card. This means that you can only replace a CP 5621 with a CP 5612 if there is a PCI slot available on the PG/PC.

Note

If the previous CP has been removed from the PG/PC, no configuration changes need to be made

You can adopt the configuration of the previous CP. To do this, you simply need to reload the configuration.

Note the following: When loading the previous configuration, the previous CP has priority over the new CP. As long as the previous CP is connected, its configuration cannot be adopted by the new CP. You should therefore remove the previous CP from your PC/PG.

Procedure for replacement

When replacing a module, follow the steps described in the section "Hardware installation (Page 15)".

Configuration

Configuring

To be able to configure the communications processor, the following engineering or configuration tools are available:

- STEP 7 V5.5
- STEP 7 Professional (TIA Portal)
- Communication Settings (COML S7)

The steps involved are described in the "Commissioning PC Stations" manual or in the relevant online helps.

Compatibility during configuration

If there is not yet a CP 5612 in the hardware catalog of your STEP 7 version, you can select a CP 5611 A2 or CP 5611 for configuration. The CP 5612 is downwards compatible with the configurations of the previous versions.

Technical specifications

Technical specifications of the CP 5612		
Connection to PROFIBUS		
	Amount	1
	Transmission speeds	9.6 kbps, 19.2 kbps, 45.45 kbps, 93.75 kbps, 187.5 kbps, 500 kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 12 Mbps
	Design	9-pin D-sub female connector with screw locking mechanism RS-485 (ungrounded within the SELV limits)
	Properties	Grounded cable shield Floating interface signals
Connection to PG/PC		
		PCI, 33 MHz / 66 MHz, 32 bit signal voltage: 5 VDC or 3.3 VDC V 2.2 plug and play
Electrical specifications of the PCI plug-in connector		
Operating voltage	Rated voltage	3.3 VDC and 12 VDC
	Permitted range	3.0 to 3.6 V DC for 3.3 V DC 11.0 to 13.0 V DC for 12 V DC
	Properties	Safety extra low voltage (SELV) to EN 60950
Current consumption	Typical for 3.3 V	150 mA
	Typical for 12 V	250 mA
Effective power loss	Typical	3.5 W
Permitted ambient conditions		
Operating conditions	Temperature (EN 60068-2-1+2)	+5 to +50°C
	Maximum temperature change	≤10 K/h
	Rel. humidity (EN 60068-2-78)	≤ 85% at 30 °C, no condensation
	Rapid temperature change (EN 60068-2-14)	+5 to +50°C, 5 cycles
Storage and transportation conditions	Temperature (EN 60068-2-1+2)	-20 to +60 °C
	Maximum temperature change	≤ 20 K/h
	Rel. humidity (EN 60068-2-78)	≤ 95% at +25 °C to +55°C, no condensation
	Fast temperature change	
	<ul style="list-style-type: none"> to EN 60068-2-14 to EN 60068-2-30 	-20 to +60 °C, 2 cycles +25 to +55°C at 95% humidity
Vibration, operating (EN 60068-2-6)	Frequency 10 to 58 Hz Frequency 58 to 500 Hz Number of cycles	0.075 mm amplitude 10 m/s ² Acceleration 10/axis

Technical specifications of the CP 5612		
Shock, operating (EN 60068-2-27)	Half sine Time Number of shocks	50 m/s ² (5 g) 30 ms 100/axis
Design, dimensions and weight		
Module format	Flat module	Short PCI card
Weight		98 g
Dimensions (W x H x D) in mm		18 x 107 x 125
Electromagnetic compatibility		
Emission	<ul style="list-style-type: none"> to EN 55022 to FCC 	Class B Class B
Immunity	On signal cables <ul style="list-style-type: none"> Surge to EN 610004-5 Burst to EN 61000-4-3 to discharge of static electricity <ul style="list-style-type: none"> Contact discharge to IEC 61000-4-2 to radiated radio frequencies <ul style="list-style-type: none"> to EN 61000-4-3 to EN 61000-4-6 	±2 kV ±2 kV ±6 kV 10 V/m at 80 MHz to 2 GHz 10 V/m, 50% on-load factor at 900 MHz and 1.89 GHz 10 V/m, 80% amplitude modulation at 1 kHz, 10 kHz to 80 MHz

Approvals

Note

The specified approvals apply only when the corresponding mark is printed on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate.

Electromagnetic compatibility - EMC directive

The communications processor meets the requirements of the EU Directive 2014/30/EU (EMC Directive).

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

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

RoHS Directive

The product meets the requirements of the EC directive 2011/65/EU (RoHS Directive) on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Applied standard: EU L174, 01/07/2011

Declaration of conformity

You will find the declaration of conformity for this communications processor on the Product Support pages under the following entry ID:

58826997 (<https://support.industry.siemens.com/cs/ww/en/view/58826997>)

C-TICK approval

The communications processor meets the requirements of the Australian AS/NZS 3548 standard according to EN 61000-6-3.

CSA approval

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

ICES conformity

The communications processor meets the requirements of the Canadian standard ICES-003. It is rated as a digital device of Class B ("Class B digital apparatus").

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 communications processor has an approval in accordance with the US standard UL 60950-1.

Marking for the customs union



EAC (Eurasian Conformity)

Eurasian Economic Union of Russia, Belarus, Armenia, Kazakhstan and Kyrgyzstan

Declaration of conformity according to the technical regulations of the customs union (TR ZU)