

SIEMENS

SIMATIC NET

S7-300 - PROFIBUS CP 342-5

Equipment Manual

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Manual Part B




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Legal information

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 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.

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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.

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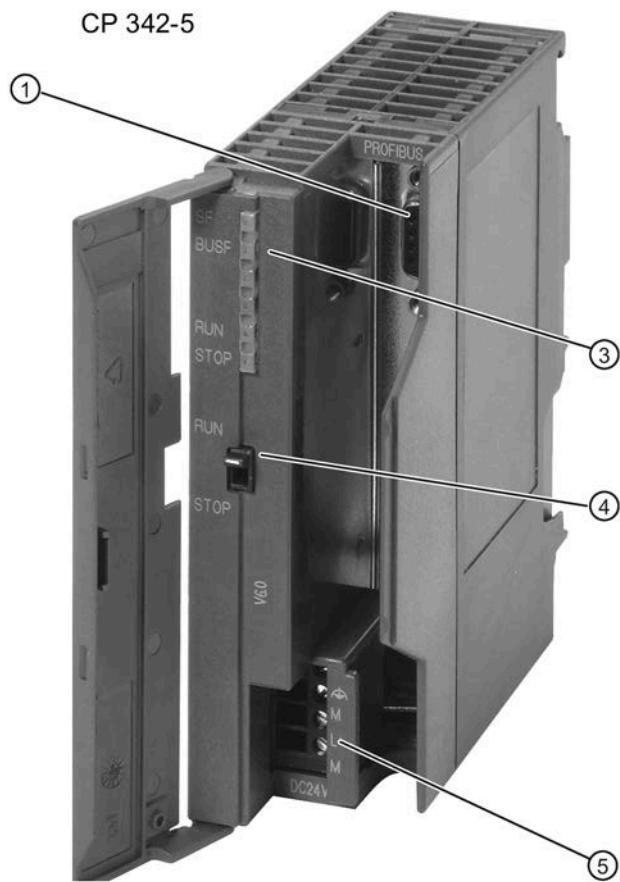
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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed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

Preface



- ① 9-pin D-sub female connector
- ② Status and error displays
- ③ Mode selector
- ④ Connector for power supply and functional ground

Validity of this manual

This manual contains information on the following products:

- **CP 342-5**
Article number: 6GK7 342-5DA03-0XE0
Hardware version: 2
Firmware version: V6.0.66
Communications processor for connection of SIMATIC S7-300 / to PROFIBUS DP

Product name

- CP

In this document, the term "CP" is also used instead of the full product name of the two modules.

Structure of the documentation

The documentation for this device consists of the following parts:

- Manual Part A - Configuration manual "Configuring and Commissioning S7 CPs for PROFIBUS"

You will find this manual on the Manual DVD that ships with every CP or on the Internet at the following address:

Link: (<https://support.industry.siemens.com/cs/ww/de/view/1158693>)

- Manual Part B - Manual "S7 CPs for PROFIBUS CP 342-5" (this manual)

New in this edition

- New approvals (CCC / UKEX)
- Editorial revision

Replaced documentation

This manual replaces the manual edition 07/2017.

Current manual edition on the Internet

You will also find the current version of this manual on the Internet pages of Siemens Industry Online Support:

CP 342-5: (<https://support.industry.siemens.com/cs/ww/en/ps/15674/man>)

You can find the documentation for the discontinued CP 342-5 FO here:

CP 342-5 FO: (<https://support.industry.siemens.com/cs/ww/en/ps/15675/man>)

License conditions

Note

Open source software - CP 342-5

Read the license conditions for open source software carefully before using the product. The acceptance of the disclaimers of liability and warranty it contains is a clear precondition of the use of open source software.

You will find license conditions in the document "OSS_CP3425_86.pdf" on the data medium supplied with the product documentation and on the Internet pages of Siemens Industry Online Support.

FAQs on the Internet

You will find detailed information (FAQs) on using the PROFIBUS S7-CPs at the following Internet address (entry type: FAQ):

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15673/faq>)

Note on firmware/software support

Check regularly for new firmware/software versions or security updates and apply them. After the release of a new version, previous versions are no longer supported and are not maintained.

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 constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

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Link: (<http://www.siemens.com/industrialsecurity>)

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

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under

Link: (<https://www.siemens.com/cert>)

Observe the following security recommendations to prevent unauthorized access to the system.

- Evaluate your plant as a whole in terms of security. Use a cell protection concept with suitable products.
- Keep the firmware up to date. Check regularly for security updates of the firmware and use them.
- Restrict physical access to the device to qualified personnel.
- Configure a protection level of the CPU.

Recycling and disposal



The product is low in pollutants, can be recycled and meets the requirements of the WEEE directive 2012/19/EU "Waste Electrical and Electronic Equipment".

Do not dispose of the product at public disposal sites. For environmentally friendly recycling and the disposal of your old device contact a certified disposal company for electronic scrap or your Siemens contact.

Keep to the local regulations.

You will find information on returning the product on the Internet pages of Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/view/109479891>)

SIMATIC NET glossary

The SIMATIC NET glossary describes terms that may be used in this document.

You will find the SIMATIC NET glossary in the Siemens Industry Online Support at the following address:

Link: (<https://support.industry.siemens.com/cs/ww/en/view/50305045>)

Training, Service & Support

You will find information on Training, Service & Support in the multi-language document "DC_support_99.pdf" on the data medium supplied with the documentation.

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Application and functions

1.1 Application

Automation system

The CP communications processor is intended for operation in a SIMATIC S7-300 / C7-300 automation system. It allows connection of the S7-300 / C7-300 to a PROFIBUS fieldbus system.

1.2 Interfaces and connectors

The connectors are located behind the cover of the housing of the CP.

Connection to PROFIBUS

- **CP 342-5**

The interface is a 9-pin D-sub female connector operating according to the RS485 standard.

For information on the connection see section Installing, connecting and commissioning (Page 36).

Connection to power supply

A 4-pin terminal is available for the 24 VDC power supply,

For information on the connection see section Installing, connecting and commissioning (Page 36).

1.3 Communications services

Supported communications services

In its current configuration, the CP supports the following communications services:

- **PROFIBUS DP**
 - as DP master class 1 (PROFIBUS DP according to EN 50170 DPV0, DP master)
 - as DP slave (PROFIBUS DP according to EN 50170 DPV0, DP slave)

Note

DP master or DP slave

Please note, however: The CP only supports operation either as DP master or DP slave. You can also deselect DP mode altogether.

- **S7 communication and PG/OP communication**
 - PG functions with uploading / downloading of FM modules, configuration / diagnostics and routing
 - Operator control and monitoring functions (HMI)
Multiplexing TD/OP connections

When multiplexing OP connections, the following acyclic services are supported:

- read once
- write once
- read system status list

- Client and server for data exchange via communication blocks on S7 connections configured at both ends

The following blocks/functions are available:

BSEND FB 12, BRCV FB 13,

PUT FB 14, GET FB 15

USEND FB 8, URCV FB 9

C_CNTRL FC 62

You will find a more detailed description in /5/ (Page 54).

Note

The partner station can be an S7-300, S7-400 or PG/PC application with SIMATIC NET OPC server; raw data tags using BSEND/BRECV to WinCC are not supported.

- Server for data exchange on connections configured at both ends without communications blocks on the S7-300 / C7-300 station

- **Open communications services (SEND/RECEIVE interface) over FDL connections of the following type:**
 - Specified FDL connections
 - Free layer 2 connections (SDA, SDN)
 - Broadcast
 - Multicast

The services of the CP listed above can be used independently at the same time.

1.4 Performance data and behavior in operation

1.4.1 Transmission speeds supported

The transmission speed is set with the SIMATIC STEP 7 configuration software. For permitted values, refer to Technical specifications (Page 45).

Note

Remember the cable length

The permitted cable length must be kept to depending on the transmission speed. Refer to the information in *I3/* (Page 54).

1.4.2 Characteristic data of the DP interface / DP master

General characteristic data

When operating the CP as a DP master, the following characteristic data is significant:

Characteristic	Explanation / values
Number of operable DP slaves	124 max.
Total number of operable slots	1024 max.
Size of the DP data areas (total): <ul style="list-style-type: none"> • DP input area • DP output area 	2160 bytes max. 2160 bytes max.
Size of the DP data areas (per DP slave): <ul style="list-style-type: none"> • DP input area • DP output area 	244 bytes max. 244 bytes max.
Size of the DP diagnostics data:	240 bytes per DP slave
PROFIBUS address range for DP master mode	1 - 125

Note

Optimum token passing

You can achieve optimum token passing by taking the following measures:

- Assign the lower PROFIBUS addresses to the active nodes.
 - In the "Highest PROFIBUS address" input box, enter the highest PROFIBUS address of an active node.
-

Note

Possible lack of resources with extensive configuration and parameter assignment data

The maximum number of connectable DP slaves as shown in the table can be reduced if the DP slaves require extensive configuration and parameter assignment data.

In this case, the configuration memory on the CP is not adequate. You will receive a message in the diagnostics buffer of the CP indicating a lack of resources when you load the configuration data.

Enhanced DP master functions

As DP master, the CP supports:

- SYNC/FREEZE (acyclic)
- Shared input/output (acyclic)
- Enable / disable DP slaves
- Settings that can be changed at run time:
 - own PROFIBUS address
 - DP operating mode (no DP, DP master, DP slave active/passive)
- Hardware interrupts / diagnostics interrupts

Hardware and diagnostics interrupts do not need to be evaluated in the user program. Hardware and diagnostics interrupts are acknowledged automatically by the CP.

You can use single diagnostics to obtain interrupt information.

Execution times of the program blocks for PROFIBUS DP

The following table will help you to calculate the CPU cycle times (OB1) in DP master mode. The table contains the execution time of the program blocks (DP_SEND, DP_RECV) required for DP processing on the S7-300 / C7-300 CPU.

Component	Explanation / guideline values	
Execution time on the CPU 314C-2DP (6ES7 314-6CF00-0AB0)	Per DP_Send block call: <ul style="list-style-type: none"> <3.0 ms at 8 bytes <5.0 ms at 2160 bytes ¹⁾ 	Per DP_RECV block call: <ul style="list-style-type: none"> <3.3 ms at 8 bytes <5.8 ms at 2160 bytes ¹⁾
Execution time on the CPU 317-2PN/DP (6ES7 317-2EJ10-0AB0)	Per DP_SEND block call: <ul style="list-style-type: none"> <1.5 ms at 8 bytes <2.3 ms at 2160 bytes ¹⁾ 	Per DP_RECV block call: <ul style="list-style-type: none"> <1.7 ms at 8 bytes <2.8 ms at 2160 bytes ¹⁾

¹⁾ the following applies at data lengths > 240 bytes: The data is transferred segmented over several block calls.

Note

Time values are guidelines

The times shown for DP master mode should only be considered as guideline values. The values apply only for a mono master configuration when no other services (for example PG functions) are processed on the CP.

Note

DP master mode and S7 slaves (ET-200)

You will find important information on using and configuring (importing the GSD file) S7 slaves (ET200) when operating the CP as DP master on the Internet under the following entry ID:

Link: (<https://support.industry.siemens.com/cs/ww/en/view/21628502>)

1.4.3 Characteristic data of the DP interface / DP slave

General characteristic data

The following characteristic data is important for successful data transfer from the DP master to the DP slave:

Characteristic	Explanation / values	
Generic station description (GSD)	Depending on the CP type, use the following GSD files:	
	CP 342-5 (6GK7 342-5DA02-0XE0)	SIEM80D6.GSD
	CP 342-5 (6GK7 342-5DA03-0XE0)	SI0180D6.GSD

Characteristic		Explanation / values
	You will find GSD files on the Internet at the following address: Link: (https://support.industry.siemens.com/cs/ww/en/view/113652)	
Size of the DP data areas	DP input area	240 bytes max.
	DP output area	240 bytes max.
Min. slave interval		0.6 ms
SYNC / FREEZE	CP 342-5 (6GK7 342-5DA03-0XE0)	Is supported
User parameter assignment data		3 bytes; value: 40 00 00 (fixed)
User diagnostics data		0 bytes

Note**Fail-safe**

Fail-safe mode is possible only if you use the GSD files listed in the table above.

Execution times of the program blocks for PROFIBUS DP

The following table will help you to calculate the CPU cycle times (OB1) in DP slave mode. The table contains the execution time of the FCs (FC DP_SEND, FC DP_RECV) required for DP processing on the S7-300 / C7-300 CPU.

Component	Explanation / values	
Execution time on the CPU 314C-2DP (6ES7 314-6CF00-0AB0)	Per DP_SEND block call: <ul style="list-style-type: none"> <3.0 ms at 8 bytes <5.0 ms at 240 bytes 	Per DP_RECV block call: <ul style="list-style-type: none"> <3.3 ms at 8 bytes <5.8 ms at 240 bytes
Execution time on the CPU 317-2PN/DP (6ES7 317-2EJ10-0AB0)	Per DP_SEND block call: <ul style="list-style-type: none"> <1.5 ms at 8 bytes <2.3 ms at 240 bytes 	Per DP_RECV block call: <ul style="list-style-type: none"> <1.7 ms at 8 bytes <2.8 ms at 240 bytes

Note**Time values are guidelines**

The times shown for DP slave mode should only be considered as guideline values. The values apply only when no other services (for example PG functions) are processed on the CP.

1.4.4 Characteristic data of open communications services (SEND/RECEIVE interface) over FDL connections

General characteristic data

The characteristic data is important when operating FDL connections (specified, free layer 2 (SDA and SDN), broadcast, multicast):

Characteristic	Explanation / values
Total number of FDL connections that can be operated.	16 max.
Size of the transferable data area on FDL connections.	1-240 bytes maximum per specified FDL connection (for sending and receiving): Free Layer 2, broadcast and multicast: Up to 236 bytes of user data can be transferred per job. The job header occupies an additional 4 bytes.

Execution times of the program blocks AG_SEND / AG_RECV

The following table will help you to calculate the CPU cycle times (OB1) for FDL connections. The table contains the execution time of the FCs (FC AG_SEND, FC AG_RECV) required for DP processing on the S7-300 / C7-300 CPU.

Component	Explanation / values	
Execution time on the CPU 314C-2DP (6ES7 314-6CF00-0AB0)	Per AG_SEND block call: • <5.1 ms at <=240 bytes	Per AG_RECV block call: • <5.7 ms at <=240 bytes
Execution time on the CPU 317-2PN/DP (6ES7 317-2EJ10-0AB0)	Per AG_SEND block call: • <2.4 ms at <=240 bytes	Per AG_RECV block call: • <2.8 ms at <=240 bytes

Time response on FDL connections

Refer to the following table for transmission rates with FDL connections dependent on the following parameters:

- Frame length (number of bytes)
- CPU type

The values were measured while sending or receiving successively (at a transmission rate of 1.5 Mbps; bus profile standard; 9 nodes).

Table 1- 1 Number of FDL frames per second for CPU 317

Frame length	Number of FDL frames per second
8 bytes	140 / s
128 bytes	138 / s
240 bytes	135 / s

1.4.5 Characteristics of S7 communication

General characteristic data

The following information is important when operating S7 connections:

Characteristic	Explanation / values
Number of operable S7 connections	16 maximum S7 connections configured at one end / both ends; including PG and TD/OP connections

Dependencies and restrictions relating to the number of S7 connections

Depending on the configuration and modes, remember the following:

- The actual possible number of S7 connections that can be operated depends on the type of CPU being used. Further restrictions result from multiprotocol mode; note the information in the section Parallel use of communications services (multiprotocol mode) (Page 18)
- If the CP is configured as a DP slave, the following restrictions apply:
 - S7 connections cannot be operated;
 - OP multiplex mode is not possible.

Execution times for program blocks for S7 connections

The following table will help you to calculate the CPU cycle times (OB1) for S7 connections. The table contains the execution time of the program blocks (PUT, GET, USEND, URCV, BSEND, BRCV) required for DP processing on the S7-300 / C7-300 CPU.

Block type	Execution time on the CPU per block call					
	PUT	GET	USEND	URCV	BSEND	BRCV
Data length	<=160 bytes			<=16 K bytes		
CPU 314C-2DP (6ES7 314-6CF00-0AB0)	<5.6 ms	<5.8 ms	<6.0 ms	<5.6 ms	<5.7 ms	<5.8 ms
CPU 317-2PN/DP (6ES7 317-2EJ10-0AB0)	<2.1 ms	<2.5 ms	<2.0 ms	<2.4 ms	<2.1 ms	<2.7 ms

Time response on S7 connections

Refer to the following table for transmission rates with S7 connections dependent on the following parameters:

- Frame length (number of bytes)
- Job type
- CPU type

The values were measured while sending or receiving successively (at a transmission rate of 1.5 Mbps; bus profile standard; 9 nodes).

Table 1- 2 Number of S7 frames per second for CPU 317

Request type	Frame length	Number of S7 frames per second
PUT	<=160 bytes	29 / s
GET	<=160 bytes	26 / s
USEND/URCV	<=160 bytes	35 / s
BSEND/BRCV	<=160 bytes	25 / s
	<=400 bytes	14 / s
	<=800 bytes	8 / s

1.4.6 Characteristic data for multiplexing OP connections

General characteristic data

The following information is important when operating HMI (TD/OP) connections:

Characteristic	Explanation / values
Number of operable HMI connections	16 max.

When multiplexing OP connections, the following acyclic services are supported:

- read once
- write once
- read system status list

If cyclic services or ProAgent interfacing (ALARM_S message block) are required, please continue to use the rack/slot addressing of the remote S7-300 CPU.

Note

PG connections and connections to WinCC

PG connections and connections to WinCC are not operated over the multiplexer. When operating a PG, a connection resource is always occupied.

1.4.7 Parallel use of communications services (multiprotocol mode)

Speed

Using the various available communications services at the same time affects the communication speed.

Note

Recommendation for multiprotocol mode

In multiprotocol mode - DP + FDL + S7 functions / TD/OP connections - you should select a delay time of 2-5 ms.

Overall operational limits

When using communications connections/services at the same time, it is not possible to achieve the maximum values as when using the communications connections/services alone.

Note the following limits:

Characteristic	Explanation / values
Number of operable connections in total:	
<ul style="list-style-type: none"> in operation with PROFIBUS DP (DP master with up to 15 DP slave ¹⁾) 	44 maximum Of these, up to 16 FDL connections and 12 S7 connections and 16 OP connections in multiplex mode.
<ul style="list-style-type: none"> in operation without PROFIBUS DP 	48 maximum

1) The number of S7 connections that can be operated when using the module as DP master depends on the number and configuration of the assigned DP slaves (see table below).

Influence of the data length in S7 communication

In S7 communication, the data length of the jobs and in DP mode, the number of DP slaves and the length of the I/O data mean the following restrictions:

- Number of S7 connections
- Number of jobs that can be sent at one time

The decisive factor is the job with the highest data length.

The information in the following table applies to S7 job types BSEND/BRCV, PUT/GET, and USEND/URCV.

Data length in bytes ¹⁾	Number of S7 connections or number of S7 jobs		
	S7 communication only	With DP master and 32 DP slaves ET200B (1 byte I data and 1 byte Q data)	With DP master and 32 DP slaves ET200M (32 byte I data and 32 byte Q data)
<=1000	16	10	8
2000	16	8	6
4000	16	6	5
8000	8	4	4
16000	4	2	2
32000	2	1	1

1) A maximum of 32 Kbytes can be transmitted with one BSEND/BRCV block, with PUT/GET/USEND/URCV a maximum of 160 bytes in each case.

1.5 Requirements for use

1.5.1 Operation in control device families

SIMATIC device families

You can operate the CP in the following device families:

- SIMATIC S7-300 stations with the following CPU types:
 - Standard
 - Compact
 - Modular
- SIMATIC C7 compact units in C7 packaging system
- SINUMERIK

1.5.2 Project engineering

Configuration and downloading the configuration data

It is possible to download the configuration data to the CP via MPI or PROFIBUS. The following version of STEP 7 is required:

STEP 7 version	Functions of the CP
STEP 7 as of V5.1	The functional range of the following CP type can be configured: <ul style="list-style-type: none"> • 6GK7342-5DA02-0XE0
<ul style="list-style-type: none"> • STEP 7 as of V5.4.5 with Hotfix 4 and HSP 1049 • STEP 7 as of V5.5.2 • STEP 7 Professional V11 or higher 	The functional range of the following CP type can be configured: <ul style="list-style-type: none"> • 6GK7342-5DA03-0XE0

Depending on what is available on your PG / PC and the S7-300 station, use one of the following connectors to load the configuration data: MPI, Industrial Ethernet or PROFIBUS.

Note

Changing bus parameters

If you change the bus parameters in the configuration data, you must not load this configuration data on the CP via PROFIBUS!

Note

Extensive configuration

Before loading an extensive configuration over a previous configuration, you should run a memory reset on the CP.

By doing this, you avoid the configuration storage space on the CP being exceeded. If the configuration storage space on the CP is not adequate, the diagnostics buffer of the CP reports a lack of resources when you download the configuration data.

Replacing a module without a programming device

The CP supports the option of storing the configuration data of the CP on the CPU. If you use this option, this means that module replacement is possible without having to load the configuration data from the PG again.

The configuration data is then stored in load memory of the CPU. Storage of the configuration data is protected from power failure by the battery backup or the EPROM module card in the CPU.

1.5.3 Program blocks

Program blocks

For some communications services, there are preprogrammed functions and function blocks (FCs / FBs / instructions) available as the interface in your STEP 7 user program.

Note**Current program blocks**

We recommend that you always use the latest block versions for all module types.

You will find information on the current block versions and the current blocks to download from the Internet in our Customer Support under entry ID:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15673/pm>)

This recommendation assumes that you are using the latest firmware for the particular module type.

Further information

- On programming and use of the CP as DP master or DP slave
On initializing the CP as DP master or DP slave and on the running of the program, see /1/ (Page 53)
- Interfaces and program sequence
Refer to the documentation of the program blocks in the online help of STEP 7 or in the manual /4/ (Page 54)

1.6 Compatibility with the previous product

1.6.1 Enhanced functions and modifications

Replacing a module

The CP 342-5 (6GK7 342-5DA03-0XE0) is suitable as a replacement for the following predecessor products:

- CP 342-5 (6GK7 342-5DA00-0XE0)
- CP 342-5 (6GK7 342-5DA01-0XE0)
- CP 342-5 (6GK7 342-5DA02-0XE0)

Functional differences

In the following table, you can see the performance and functional characteristics that differ from the previously available device types.

Performance/functional characteristics	CP type 6GK7 342-5-****-0XE0			
	-5DA00-	-5DA01-	-5DA02-	-5DA03-
Number of connectable DP slaves	64	124	124	124
I/O configuration limits DP master	240 bytes	2160 bytes	2160 bytes	2160 bytes
I/O configuration limits DP slave	86 bytes	240 bytes	240 bytes	240 bytes
Also supports transmission speeds > 1.5 Mbps			●	●
Supports SYNC / FREEZE in DP slave mode				●
Interface in the user program in DP mode	Refer to the information in section Compatibility in the user program in DP mode (Page 24).			

1.6.2 Replacing older modules / module replacement

Module replacement

If you replace one of the modules listed below with the new module CP 342-5 (6GK7 342-5DA03-0XE0), remember the following procedure:

Module used up to now	What to do / module replacement
6GK7 342-5DA00-0XE0	<p>Supply the new module with an adapted configuration as follows:</p> <ol style="list-style-type: none"> In STEP 7 / HW Config, replace the already configured CP 342-5 with the new module; You will find this in the hardware catalog. Save, compile and load the configuration data to the CPU or CP again.
6GK7 342-5DA01-0XE0 6GK7 342-5DA02-0XE0	<p>Case a: Configuration unchanged</p> <p>If you have no requirements beyond what you had with the previous CP (for example configuration limits), you do not need to make changes in the configuration.</p> <p>You only need to remember the following distinction during commissioning:</p> <ul style="list-style-type: none"> With the module you are replacing, you chose to have the configuration data stored on the CPU. When you start up the CP, the configuration data will be loaded automatically from the CPU. You had not chosen this option for the CP you are replacing. In this case, load the configuration data again from your PG/PC to the CP. <p>Case b: adapted configuration</p> <p>If you want to use the extended options of the new CP, follow the steps below:</p> <ol style="list-style-type: none"> Use the new FCs (version 3.0 or higher; see also section Compatibility in the user program in DP mode (Page 24)) in your user program. Note: If applicable, remember changes to the data format of the ANY pointer on the FC interface; you will find more detailed information in the online help for the blocks. In STEP 7 / HW Config, replace the already configured CP 342-5 with the new module; You will find this in the hardware catalog. Expand your configuration to suit your needs, for example the connection configuration. Save, compile and load the configuration data to the CPU or CP again.

Note**What to do with a slot left empty**

If you cannot eliminate gaps in the slots left by replacing modules by closing up the remaining modules, you will need to use a dummy module (6ES7 370-0AA01-0AA0). The dummy module is not configured and does not occupy any address space.

In this case, the address switch on the rear of the module must be set to "Non Address Mode" (NA).

1.6.3 Compatibility in the user program in DP mode

Device-dependent differences on the program block interface

Compared with previous modules, the CP reacts differently in the following ways. Remember the effects in your user program. The following table provides an overview:

Table 1- 3 Changes in response

Topic / relates to		Response of the device types CP 342-5 6GK7 342-5DA00-0XE0 CP 342-5 6GK7 342-5DA01-0XE0	New response of the device types CP 342-5 6GK7 342-5DA02-0XE0 CP 342-5 6GK7 342-5DA03-0XE0
1.	DPSTATUS output parameter in program block DP_RECV		
	DP master mode:	Bit 6: Display of "received data overflow"	Bit 6: is no longer set
	DP slave mode:	Bit 3: Display of "No frame from DP master within the watchdog time" Bit 4: Display of "DP data overflow"	Bit 3: is no longer set Bit 4: is no longer set
2.	DP modes	A distinction is made between STOP and OFFLINE.	The STOP mode is mapped to the OFFLINE mode.
3.	Set current DP mode	- is supported -	With the version of the CP 342-5 described here, the following job parameters are no longer supported for program block DP_CTRL with CTYPE 4: <ul style="list-style-type: none"> RUN with AUTOCLEAR RUN without AUTOCLEAR
4.	Cyclic reading of the input/output data using program block DP_CTRL ¹⁾	- is supported -	With the version of the CP 342-5 described here, the following services of program block DP_CTRL are no longer supported: <ul style="list-style-type: none"> CTYPE = 7 CTYPE = 8 These job types are rejected with code 8311H.

Topic / relates to		Response of the device types CP 342-5 6GK7 342-5DA00-0XE0 CP 342-5 6GK7 342-5DA01-0XE0	New response of the device types CP 342-5 6GK7 342-5DA02-0XE0 CP 342-5 6GK7 342-5DA03-0XE0
5.	Trigger cyclic global control via program block DP_CTRL ¹⁾	- is supported -	The following applies to the DP master mode: With the version of the CP 342-5 described here, the following services of program block DP_CTRL are no longer supported: CTYPE = 1 These job types are rejected with code 8311H.
6.	Trigger acyclic global control with CLEAR job using program block DP_CTRL ¹⁾	- is supported -	The following applies to the DP master mode: With the version of the CP 342-5 described here, the following services of program block DP_CTRL are no longer supported: CTYPE = 0 command mode = CLEAR These job types are rejected with code 8318H.
7.	Trigger acyclic global control with CLEAR job using program block DP_CTRL ¹⁾	- is supported -	The following applies to the DP master mode: With the version of the CP 342-5 described here, the following services of program block DP_CTRL are no longer supported: CTYPE = 0 group select = 0 These job types are rejected with code 8318H.
8.	Consistency in the data transfer between CP and user program	The DP data area is: maximum: <ul style="list-style-type: none"> • 240 bytes in DP master mode • 86 bytes in DP slave mode 	The DP data area is: maximum: <ul style="list-style-type: none"> • 2160 bytes in DP master mode • 240 bytes in DP slave mode
<ul style="list-style-type: none"> • In terms of consistency, note the additional information following this table 			
9.	Program blocks for DP mode and for S5-compatible communication		Depending on the configuration, the older program block types can also be used along with the new program block versions. Note the version identifiers for the block library of STEP 7.
<ul style="list-style-type: none"> • Note the additional information on program blocks following this table 			
10.	Program blocks: Evaluating general properties and codes		For the CP described here, the information in the current description of the program blocks applies. Refer to /4/ (Page 54).
11.	Deterministic sending / receiving of data: Coordination between CPU and CP/PROFIBUS	In cyclic DP mode, the job confirmation on the program block interface includes the confirmation of the transfer to PROFIBUS.	In cyclic DP mode, the processing cycle on the CPU is separate from the processing cycle on the CP. <ul style="list-style-type: none"> • Send data: The confirmation of the job includes no confirmation of the successful transfer to PROFIBUS. • Receive data: It is possible that the same data was received several times.

Topic / relates to		Response of the device types CP 342-5 6GK7 342-5DA00-0XE0 CP 342-5 6GK7 342-5DA01-0XE0	New response of the device types CP 342-5 6GK7 342-5DA02-0XE0 CP 342-5 6GK7 342-5DA03-0XE0
12.	Jobs with DP_SEND and DP_RECV ¹⁾	DP slave mode: To start job processing, the program blocks DP_SEND and DP_RECV must be activated at least once. DP master mode: To start received data processing, the program block DP_RECV must be activated at least once.	Depending on the use, it is adequate to activate program block DP_SEND or DP_RECV to activate job processing. In DP master mode, at least of the two program blocks must be activated at least once.
13.	Receive buffer length too short for AG_RECV	If the receive buffer is too small, data is received until the buffer size is reached. The call is acknowledged with error code 8185H.	If the receive buffer is too small, no data is received. The call is acknowledged with error code 80B1H.
14.	<ul style="list-style-type: none"> Responder functionality of the DP master (class 1) DP master (class 2) passes jobs to DP master (class 1) Functions: <ul style="list-style-type: none"> "DDL_M_GET_Master_Diag" "DDL_M_Act_Param" 	- supported by DP master as responder -	- DP master without responder functionality -

¹⁾ See also the STEP 7 online help on the SIMATIC NET program blocks for PROFIBUS DP.

Note on 8: Consistency in the data acceptance between CP and user program

Depending on the behavior in the user program, you can consider different areas as consistent data areas on the transfer interface between CP and user program.

- Variant 1: NDR bit is evaluated on the program block interface
You can assume consistency over the entire DP data area used.
- Variant 2: NDR bit is not evaluated on the program block interface
You can assume data consistency in a contiguous, non-overlapping 32-byte area.

("Non-overlapping" means: 32-byte areas must be counted or taken into account from the start address "0" of the DP data area under consideration.)

Table 1- 4 Consistency range in DP master mode

Access method in the user program	Maximum area size with data consistency
Variant 1	2160 bytes
Variant 2	32 bytes

Table 1- 5 Consistency range in DP slave mode

Access method in the user program	Maximum area size with data consistency
Variant 1	240 bytes
Variant 2	32 bytes

Note on 9: Program blocks for the DP mode

Program blocks with the current version of STEP 7 ship with the CP. In the following table, you can see how you can use these block versions and the previous block versions for the available modules:

Program block version	can be used with module type CP 342-5 with article number 6GK7 342-...			
	...-5DA00-0XE0	...-5DA01-0XE0	...-5DA02-0XE0 configured as ..DA00 or ..DA01	...-5DA02-0XE0 ...-5DA03-0XE0
< V3.0	●	●	●	
≥ V3.0	●	●	●	●

Note**Current program blocks**

We recommend that you always use the latest block versions for all module types.

You will find information on the current block versions and the current blocks for downloading in Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15673/pm>)

This recommendation assumes that you are using the latest firmware version for the particular module type.

Further information

Refer to the documentation of the program blocks in the online help of STEP 7 or in the manual /4/ (Page 54).

1.6 Compatibility with the previous product

LEDs and mode selector

2.1 LED displays

LEDs on the front panel

On the front panel, you will see the following LEDs for displaying the operational and communications status:



Figure 2-1 LEDs on the front panel

The LEDs have the following meaning:

- SF: Group error
- BUSF: Bus faults on the PROFIBUS interface
- RUN: RUN mode
- STOP: STOP mode

Unlabeled LED placeholders have no meaning.

LEDs for displaying the operating mode

















































The different combinations of the LEDs on the front panel indicate the status according to the following scheme.

Table 2- 1 Legend - meaning of the symbols

Symbol				-
Status	ON (steady light)	OFF	Flashing	Any

2.1 LED displays

Table 2-2 LED display schemes

SF (red)	BUSF (red)	RUN (green)	STOP (yellow)	CP operating mode
Startup and operating statuses				
				Starting up (STOP → RUN)
				Running (RUN)
				Stopping (RUN → STOP) The time required for the signaled mode change depends on the size of the STEP 7 project; this can take up to 1 minute in large projects. On completion of the mode change, the data exchange with the DP slaves continues.
				Stopped (STOP) In STOP mode, configuring and performing diagnostics on the CP remain possible.
				Stopped (STOP) with error(s). In this state, the CPU or intelligent modules in the rack remain accessible using PG functions.
				Running (RUN) with problems on PROFIBUS.
				Running (RUN) with problems on the DP slaves.
Updating firmware				
				<ul style="list-style-type: none"> Ready to begin loading firmware. (Operating mode active for a period of 10 s) or <ul style="list-style-type: none"> CP is in DP slave mode and is not involved in cyclic data exchange with the DP master.
				Loading firmware.
				Invalid firmware was loaded.
				Cp waits for firmware update. (CP has incomplete firmware)
Errors				
				Module fault / system error (The two unlabeled LEDs also flash in this status.)

2.2 Mode selector

Controlling the mode

There are different ways in which you can control the operating status of the CP, as follows:

- Mode selector
- STEP 7 configuration software:
 - SIMATIC Manager / menu command: PLC > Display Accessible Nodes
 - NetPro / menu command: PLC > Operating Mode...
 - HW Config / menu command: PLC > Operating Mode...
 - NCM Diagnostics / menu command: Operating Mode

To control the CP mode from STEP 7, the mode selector must be set to RUN.

Mode selector

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

- Change from STOP to RUN

The CP enters the configured and/or loaded data in the work memory. The CP then changes to STOP.

Diagnostics of the CP is possible.

- Change from RUN to STOP

The CP changes to STOP with the following response:

- Established connections (FDL and S7 connections) are terminated.
- Configuration and diagnostics of the CP are possible.
- The following applies to DP mode:
 - DP slave mode: The CP is no longer in data transfer.
 - DP master mode: the mode is "OFFLINE".

Note

Longer transition times in complex systems

Depending on the extent of the configuration, it can take up to 1 minute before the CP reaches the "OFFLINE" mode.

Further information

Read the explanations relating to the topic of "Downloading the configuration to the target system" in the I1/ (Page 53) manual.

Installation, wiring, commissioning, removal

3.1 Important notes on using the device

The following safety notices must be adhered to when setting up and operating the device and during all associated work such as installing, connecting, replacing or removing devices.

3.1.1 Notes on use in hazardous areas

 **WARNING**

The device may only be operated in an environment with pollution degree 1 or 2 as described in EN/IEC 60664-1, GB/T 16935.1.

 **WARNING**

EXPLOSION HAZARD

You may only connect or disconnect cables carrying electricity when the power supply is switched off or when the device is in an area without inflammable gas concentrations.

 **WARNING**

EXPLOSION HAZARD

Do not operate the mode switch if there is a potentially explosive atmosphere.

3.1.2 Notes on use in hazardous areas according to ATEX / UKEX / IECEx / CCC-Ex

 **WARNING**

Requirements for the cabinet

To comply with EU Directive 2014/34 EU (ATEX 114), UK Regulation SI 2016/1107 or the conditions of IECEx or CCC-Ex, the housing or cabinet must meet the requirements of at least IP54 (according to EN/IEC 60529, GB/T 4208) in compliance with EN IEC/IEC 60079-7, GB 3836.8.

3.1 Important notes on using the device

 **WARNING**

Suitable cables at high ambient temperatures in hazardous area

Use heat-resistant cables with an ambient temperature ≥ 60 °C; these cables must be rated for an ambient temperature that is at least 20 °C higher. The cable entries used on the housing must comply with the IP degree of protection required by EN IEC 60079-0 / GB 3836.1.

 **WARNING**

Transient overvoltages

Take measures to prevent transient overvoltages of more than 40% of the rated voltage (or more than 119 V). This is the case if you only operate devices with SELV (safety extra-low voltage).

3.1.3 Notes on use in hazardous areas according to UL HazLoc and FM

This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

This equipment is suitable for use in Class I, Zone 2, Group IIC or non-hazardous locations only.

 **WARNING**

When used in hazardous environments corresponding to Class I, Division 2 or Class I, Zone 2, the device must be installed in a cabinet or a suitable enclosure.

 **WARNING**

EXPLOSION HAZARD

Replacing components may impair suitability for Class 1, Division 2 or Zone 2.

 **WARNING**

If the device is installed in a cabinet, the inner temperature of the cabinet corresponds to the ambient temperature of the device.

 WARNING**EXPLOSION HAZARD**

The equipment is intended to be installed within an ultimate enclosure. The inner service temperature of the enclosure corresponds to the ambient temperature of the module. Use installation wiring connections with admitted maximum operating temperature of at least 30 °C higher than maximum ambient temperature.

3.2 Installation, removal and repairs in hazardous areas

 WARNING**Impermissible accessories and spare parts**

Risk of explosion in hazardous areas

- Only use original accessories and original spare parts.
- Observe all relevant installation and safety instructions described in the manuals for the device or supplied with the accessories or spare parts.

 WARNING**Unsuitable cables or connectors**

Risk of explosion in hazardous areas

- Only use connectors that meet the requirements of the relevant type of protection.
- If necessary, tighten the connector screw connections, device fastening screws, grounding screws, etc. according to the specified torques.
- Close unused cable openings for electrical connections.
- Check the cables for a tight fit after installation.

 WARNING**Improper installation of shielded cables**

There is a risk of explosion due to equalizing currents between the hazardous area and the non-hazardous area.

- Ground shielded cables that cross hazardous areas at one end only.
- Lay a potential equalization conductor when grounding at both ends.

 **WARNING**

Lack of equipotential bonding

If there is no equipotential bonding in hazardous areas, there is a risk of explosion due to equalizing current or ignition sparks.

- Ensure that equipotential bonding is available for the device.

 **WARNING**

Unprotected cable ends

There is a risk of explosion due to unprotected cable ends in hazardous areas.

- Protect unused cable ends according to IEC/EN 60079-14.

 **WARNING**

Insufficient isolation of intrinsically safe and non-intrinsically safe circuits

Risk of explosion in hazardous areas

- When connecting intrinsically safe and non-intrinsically safe circuits, ensure that the galvanic isolation is performed properly in compliance with local regulations (e.g. IEC 60079-14).
- Observe the device approvals applicable for your country.

 **WARNING**

Unauthorized repair of devices in explosion-proof design

Risk of explosion in hazardous areas

- Repair work may only be performed by personnel authorized by Siemens.

3.3 Installing, connecting and commissioning

NOTICE

Improper mounting

Improper mounting may damage the device or impair its operation.

- Before mounting the device, always ensure that there is no visible damage to the device.
- Mount the device using suitable tools. Observe the information in the respective section about mounting.

 **WARNING**

Open equipment

The devices are "open equipment" acc. to the standard IEC 61010-2-201 or UL 61010-2-201 / CSA C22.2 No. 61010-2-201. To fulfill requirements for safe operation with regard to mechanical stability, flame retardation, stability, and protection against contact, the following alternative types of installation are specified:

- Installation in a suitable cabinet.
- Installation in a suitable enclosure.
- Installation in a suitably equipped, enclosed control room.

 **WARNING**

Power supply

The device is designed for operation with a directly connectable safety extra low voltage (SELV) from a limited power source (LPS).

The power supply therefore needs to meet at least one of the following conditions:

- Only safety extra low voltage (SELV) with limited power source (LPS) complying with IEC 60950-1 / EN 60950-1 / VDE 0805-1 or IEC 62368-1 / EN 62368-1 / VDE 62368-1 may be connected to the power supply terminals.
- The power supply unit for the device must meet NEC Class 2 according to the National Electrical Code (r) (ANSI / NFPA 70).

If the equipment is connected to a redundant power supply (two separate power supplies), both must meet these requirements.

What to do / steps

1. Install the CP on the S7 standard rail.
Slots 4 to 11 are permitted for the CP in racks 0 to 3 (connected by IM 360/361).
2. Establish the connection via the enclosed bus connector to the backplane bus.
Proceed as described in the sections dealing with installation and wiring, explained in detail in /2/ (Page 54).

Note

No operation in the expansion rack with connection via an IM 365

The CP cannot be used in an expansion rack that is connected via the IM 365! Reason: The required communication bus is not connected to the extension rack via the IM 365.

3.4 Disassembly

3. Connect the CP to the power supply.

Follow the instructions as described in detail in /2/ (Page 54) when wiring between the power supply and the CPU.

Note**Connecting to the power supply**

- Connect the CPU, CP and IM (if used) to the same power supply.
- Only wire up the S7300 / C7300 with the power switched off!

Note**Guidelines for grounding and chassis grounding concept**

When it ships, the CP has a jumper inserted between the M and functional earth terminals. If you want to ground the reference potential, do not remove the jumper between the M and functional earth terminals.

Note the information in the SIMATIC S7 installation guidelines for grounding and chassis grounding, see /2/ (Page 54)

In this document, you will find information on the topic "Setting up an S7-300 with Earthed Reference Potential" and "Setting up an S7-300 with Unearthed Reference Potential".

4. Connect the CP to PROFIBUS.

The remaining steps in commissioning involve downloading the configuration data.

For more information on configuration and in particular on node initialization, refer to the manual /1/ (Page 53) and the online help of the configuration tool.

3.4 Disassembly

 **WARNING****Improper disassembly**

Improper disassembly may result in a risk of explosion in hazardous areas.

For proper disassembly, observe the following:

- Before starting work, ensure that the electricity is switched off.
- Secure remaining connections so that no damage can occur as a result of disassembly if the system is accidentally started up.

Configuration and operation

4.1 Configuring in third-party systems

Configuring in third-party systems via GSD file

To allow configuration as DP slave in third-party systems, a GSD file is available. You will find this on the following page of Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/view/113652>)

The protocol variant DP-V1 or DP-V0 is decided during operation by the setting of the connected DP master.

4.2 Loading with modified transmission speed

Startup response with modified transmission speed

If you change the transmission speed when downloading the configuration data, expect a significantly longer startup delay on the CP. The startup delay can run into several minutes.

Note**Clear/reset CP**

Reset the CP memory before you download configuration data with a different transmission speed.

To reset memory, use the corresponding function in the configuration tool or in special diagnostics, see manual/1/ (Page 53)

4.3 DP mode

DP data exchange

If the central CPU is in STOP mode, substitute values are transferred in the DP data exchange.

The following applies: Default value = 0

4.4 Interface in the user program (status of blocks)

Status displays with the program block AG_SEND

For the CP 342-5 (6GK7 342-5DA03-0XE0), note the following over and above the information in /4/ (Page 54), Release 03/2010:

DONE	ERROR	STATUS	Meaning
0	1	8315H	Possible additional meaning: This error code can also occur with bus problems (for example physical disturbances due to bad cable connections or different settings for the transmission speed on the nodes).

Status displays with the program block DP_DIAG

For the CP 342-5 (6GK7 342-5DA03-0XE0), note the following over and above the information in /4/ (Page 54), Release 03/2010:

DONE	ERROR	STATUS	Possible with DTYPE	Meaning
1	0	0000H	0, 1 and 4-9	Job completed without error Note: With DTYPE 2, 3 and 10, error-free execution is indicated by a status code other than "0". Below (see table DP_DIAG codes in /4/ (Page 54)), you will see the detailed status codes for error-free execution for the range: 82XXH If an error occurs in execution, you receive status codes in the following ranges: 80XXH, 83XXH, 8FXXH
1	0	8248H	2, 3, 10	Job completed without error Note: This is the default code for the named diagnostics types if there is no special situation to signal.

Diagnostics and upkeep



⚠ CAUTION

Hot surfaces

Risk of burns during maintenance work on parts with a surface temperature above 70 °C (158 °F).

- Take appropriate protective measures, for example, wear protective gloves.
- Once maintenance work is complete, restore the touch protection measures.

⚠ WARNING

Cleaning the housing

- **In hazardous areas**
Only clean the outer parts of the housing with a damp, but not wet, cloth.
- **In non-hazardous areas**
Only clean the outer parts of the housing with a dry cloth.

Do not use any liquids or solvents.

5.1 Loading firmware

Firmware update

If new firmware versions are available for the CP, you will find these on the Internet pages of Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15673/dl>)

Save the firmware file to the file system of your PG/PC.

For the CP 342-5 with firmware version V6.0.66 the speed for updating the firmware was increased to 1.5 Mbps. Load the firmware file as follows:

- Load the firmware file only via the PROFIBUS interface (direct connection).
- When loading use the PROFIBUS connecting cable 6ES7 901-4BD00-0XA0 or an equivalent PROFIBUS cable.

Max. length: 200 m

Note: The use of an MPI cable is not permitted.

- When loading us the Firmware Loader:

Windows Start menu > "All Programs > Siemens Automation > SIMATIC > STEP 7 > NCM S7 > Firmware Loader"

Loading with the Firmware Loader

The Firmware Loader opens with the Start dialog.

1. Click the "Next" button.

The Firmware Loader opens the "Step 1" dialog.

2. Select the firmware to be loaded from the file system of your PG/PC using the "Browse" button.

The selected file with supplementary information is displayed in the Firmware Loader.

After selecting the firmware file click "Next".

The Firmware Loader opens the "Step 2" dialog.

3. As the interface via which you want to load the firmware on the CP select the option "PROFIBUS direct" and click "Next".

The Firmware Loader opens the dialog "Step 3".

4. Check the configuration of the PG/PC.

Click the "Modify" button to set the access point of the application and the interface parameter assignment in the "Set PG/PC Interface" dialog.

The "Set PG/PC interface" dialog opens.

Make the following settings for the access point of the application and the interface parameter assignment of the PC CP:

- CP 342-5 (5DA03): FWL_FAST_LOAD

This profile "FWL_FAST_LOAD" is supported as of SIMATIC STEP 7 V5.5 SP1.

Confirm the changes with "OK".

5. Check the settings.

Click "Next".

The Firmware Loader opens the dialog "Step 4".

6. Note the specifications of point 1 ... 6 in the dialog for step 4 of the Firmware Loader!

7. If the station is prepared according to the instructions, start loading with the "Download" button.

You can follow the loading of the firmware file with the LED pattern of the CP, see section LED displays (Page 29).

Technical specifications

Table 6- 1 CP 342-5

Technical specifications	Value
Transmission speeds supported	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
Interfaces	
Connection to PROFIBUS	9-pin D-sub female connector
Maximum current consumption on the PROFIBUS interface when connecting network components	100 mA at 5V
Rated voltage	24 V DC
Current consumption	
• from 24 V	120 mA typical / 230 mA max.
• from S7-300 / C7-300 backplane bus	40 mA typical
Cable cross section for 24 V	0.25...2.5 mm ²
Power dissipation	5 W
Permissible ambient temperature	
• With horizontal installation of the rack	0...60 °C
• With vertical installation of the rack	0...40 °C
• Transport/storage temperature	-40 °C through +70 °C
• Max. relative humidity.	95% at +25 °C
• Operating altitude	Up to 2000 m above sea level
Dimensions W x H x D (mm)	40 x 125 x 120
Weight	Approx. 300 g

Over and above this, all the information relating to the following topics in /2/ (Page 54) and in the section "General technical specifications" applies to the CP:

- Electromagnetic compatibility
- Transportation/storage conditions
- Mechanical and climatic environmental conditions
- Information on insulation checks, protection class and degree of protection

Certifications and approvals

Approvals issued

Note**Issued approvals on the type plate of the device**

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.

Approvals for shipbuilding are not printed on the device type plate.

Documents on the Internet

You will find the declarations of conformity listed below and certificates of the product on the Internet at the following address:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15674/cert>)

You can see the current versions of the standards in the relevant certificate, which you will find on the Internet at the address specified above.

Address for declarations of conformity

The EU and the UK declarations of conformity are available to all responsible authorities at:

Siemens Aktiengesellschaft
Digital Industries
P.O. Box 48 48
90026 Nuremberg
Germany

EU Declaration of Conformity



The product meets the requirements and safety objectives of the following EC directives and it complies with the harmonized European standards (EN) for programmable logic controllers which are published in the official documentation of the European Union:

- **2014/34/EU (ATEX explosion protection directive)**

Directive of the European Parliament and the Council of 26 February 2014 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres, official journal of the EU L96, 29/03/2014, pages. 309-356

- **2014/30/EU (EMC)**

EMC directive of the European Parliament and of the Council of 26 February 2014 on the approximation of the laws of the member states relating to electromagnetic compatibility; official journal of the EU L96, 29/03/2014, pages 79-106

- **2011/65/EU (RoHS)**

Directive of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

UK Declaration of Conformity



Importer UK:

Siemens plc
Sir William Siemens House
Princess Road
Manchester
M20 2UR

The product meets the requirements of the following directives:

- UKEX Regulations

SI 2016/1107 The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, and related amendments

- EMC Regulations

SI 2016/1091 The Electromagnetic Compatibility Regulations 2016

- RoHS Regulations


SI 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

ATEX / IECEx / UKEX / CCC-Ex

Note the information in the document "Use of subassemblies/modules in a Zone 2 Hazardous Area", which you will find on the Internet at the following address:

Link: (<https://support.industry.siemens.com/cs/ww/en/view/78381013>)

The conditions must be met for safe usage of the product according to the section Notes on use in hazardous areas according to ATEX / UKEX / IECEx / CCC-Ex (Page 33).

 WARNING
<p>Observe installation guidelines</p> <p>The product meets the requirements if you observe the following during installation and operation:</p> <ul style="list-style-type: none"> • The notes in the section Installation, wiring, commissioning, removal (Page 33) • The installation guidelines in the document /2/ (Page 54)

The product meets the explosion protection requirements outlined below.

IECEx

Classification: Ex ec IIC T4 Gc, Certificate no.: IECEx DEK 18.0019X

The product meets the requirements of the standards:

- IEC 60079-0 - Explosive atmospheres - Part 0: Equipment - General requirements
- IEC 60079-7 - Explosive Atmospheres - Part 7: Equipment protection by increased safety 'e'

ATEX

Classification: II 3G Ex ec IIC T4 Gc, Certificate no.: DEKRA 18ATEX0027 X

The product meets the requirements of the standards:

- EN IEC 60079-0 - Explosive atmospheres - Part 0: Equipment - General requirements
- EN 60079-7 - Explosive Atmospheres - Part 7: Equipment protection by increased safety 'e'



UKEX

Classification: Ex ec IIC T4 Gc, Certificate no.: DEKRA 21UKEX0003 X

The product meets the requirements of the standards:

- EN IEC 60079-0 - Explosive atmospheres - Part 0: Equipment - General requirements
- EN 60079-7 - Explosive Atmospheres - Part 7: Equipment protection by increased safety 'e'



Importer UK: Siemens plc (see above)



CCC

Classification: Ex na IIC T4 Gc

The product meets the requirements of the following standards:

- GB 3836.1
Explosive atmospheres - Part 0: Equipment - General requirements
- GB 3836.3
Explosive atmospheres - Part 3: Equipment protection by increased safety "e"
- GB 3836.8
Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'

EMC

The CP meets the requirements of the following directives:

- EU directive 2014/30/EU "Electromagnetic Compatibility" (EMC directive)
- EMC Regulations SI 2016/1091 The Electromagnetic Compatibility Regulations 2016

Applied standards:

- EN 61000-6-2
Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN 61000-6-4
Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

RoHS

The CP meets the requirements of the following directives:

- EU directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
- SI 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Applied standard: EN IEC 63000

cULus Hazardous (Classified) Locations



Underwriters Laboratories Inc.

cULus Listed 7RA9 IND. CONT. EQ. FOR HAZ. LOC.:

- UL 508 (Industrial Control Equipment)
- UL 1604 (Hazardous Location)
- CSA C22.2 No. 142 (Process Control Equipment)
- CSA C22.2 No. 213 (Hazardous Location)



APPROVED for Use in:

- Cl. 1, Div. 2, GP. A, B, C, D T4A; Ta = 0 °C...60 °C
- Cl. 1, Zone 2, GP. IIC T4; Ta = 0 °C...60 °C

FM



Factory Mutual Research (FM):

Approval Standard Class Number 3611

APPROVED for Use in:

Class I, Division 2, Group A, B, C, D, Temperature Class T4A; Ta = 0 °C...60 °C

Class I, Zone 2, Group IIC, Temperature Class T4; Ta = 0 °C...60 °C

Note for Australia



AS/NZS 2064 (Class A)

Note for Korea

KCC-REM-S49-S7300CP

Current approvals

SIMATIC NET products are regularly submitted to the relevant authorities and approval centers for approvals relating to specific markets and applications.

If you require a list of the current approvals for individual devices, consult your Siemens contact or check the Internet pages of Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15673/cert>)

References

Where to find Siemens documentation

- Article numbers

You will find the article numbers for the Siemens products of relevance here in the following catalogs:

- SIMATIC NET - Industrial Communication / Industrial Identification, catalog IK PI
- SIMATIC - Products for Totally Integrated Automation and Micro Automation, catalog ST 70

You can request the catalogs and additional information from your Siemens representative. You will also find the product information in the Siemens Industry Mall at the following address:

Link: (<https://mall.industry.siemens.com>)

- Manuals on the Internet

You will find SIMATIC NET manuals on the Internet pages of Siemens Industry Online Support:

Link: (<https://support.industry.siemens.com/cs/ww/en/ps/15247/man>)

Go to the required product in the product tree and make the following settings:

Entry type "Manuals"

- Manuals on the data medium

You will find manuals of SIMATIC NET products on the data medium that ships with many of the SIMATIC NET products.

On configuring and using the CP

/1/

SIMATIC NET
S7 CPs for PROFIBUS - Configuring and Commissioning
Manual Part A
Configuration Manual
Siemens AG
Link: (<https://support.industry.siemens.com/cs/ww/en/view/1158693>)

On installing and commissioning the CP

/2/

SIMATIC S7
S7-300 Automation System
Siemens AG

- CPU 31xC and 31x Installation: Operating instructions
Link: (<https://support.industry.siemens.com/cs/ww/en/view/13008499>)
- Module Data: Reference manual
Link: (<https://support.industry.siemens.com/cs/ww/en/view/8859629>)

/3/

SIMATIC NET
PROFIBUS Network Manual
Siemens AG
(SIMATIC NET Manual Collection)
Link: (<https://support.industry.siemens.com/cs/ww/en/view/35222591>)

On programming

/4/

SIMATIC NET
Program blocks for SIMATIC NET S7 CPs
Programming Manual
Siemens AG
Link: (<https://support.industry.siemens.com/cs/ww/en/view/62543517>)

/5/

SIMATIC
System and Standard Functions for S7-300/400
Programming manual
Siemens AG
Link: (<https://support.industry.siemens.com/cs/ww/en/view/1214574>)

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