SIEMENS

SIMATIC NET

S7-1500 - PROFIBUS CM 1542-5

Operating Instructions

10/2016

C79000-G8976-C290-03

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

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:

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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.

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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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C79000-G8976-C290-03
℗ 10/2016 Subject to change

Preface

Purpose of the documentation

This device manual supplements the system manual of the automation system S7-1500 and the function manuals. All functions that go beyond the system are described in the system manual.

With the information in this manual and the system manual, you will be able to commission the CM 1542-5 communications module.

Abbreviations and names

- **CM**

  In this document, the term "CM" (communications module) is used instead of the full product name "CM 1542-5".

- **STEP 7**

  The name STEP 7 is used to mean the STEP 7 Professional configuration tool.

New in this release

- New firmware version V2.0 Support of FDL
- Editorial revision

Replaced edition

Release 11/2014

Current manual release on the Internet

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

Link: (https://support.industry.siemens.com/cs/ww/en/ps/15671/man)

Sources of information and other documentation

See section Guide to the documentation (Page 7).

License conditions

Note

Open source software

The product contains open source software. Read the license conditions for open source software carefully before using the product.

You will find license conditions in the following document on the supplied data medium:

- OSS_CM15425_86.pdf

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 only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit
Link: (http://www.siemens.com/industrialsecurity)

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use 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
Link: (http://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:

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

Table of contents

Guide to the documentation

1

Introduction

The documentation of the SIMATIC products has a modular structure and covers topics relating to your automation system.

The complete documentation for the S7-1500 system consists of a system manual, function manuals and device manuals.

The STEP 7 information system (online help) also supports you in configuring and programming your automation system.

Overview of the documentation on communication with S7-1500

The following table lists additional documents, which supplement this description of CM 1542-5 and are available in the Internet.

Table 1- 1 Documentation for the CM 1542-5

Topic	Documentation	Most important contents
System description	System manual: S7-1500 Automation System (https://support.industry.siemens.com/cs/ww/en/view/59191792)	• Application planning • Installation • Connecting • Commissioning
Module properties	Device manual: Power supplies (https://support.industry.siemens.com/cs/ww/en/ps/13721/man)	• Connecting • Parameter assignment/ addressing • Interrupts, error messages, diagnostics and system alarms • Technical specifications • Dimensional drawing
	Device manual: Signal modules (https://support.industry.siemens.com/cs/ww/en/ps/13743/man)	
System diagnostics	Function manual: System diagnostics (https://support.industry.siemens.com/cs/ww/en/view/59192926)	• Overview • Diagnostics evaluation for hardware/software
Communication	Function manual: Communication (https://support.industry.siemens.com/cs/ww/en/view/59192925)	• Overview
	Function manual PROFINET with STEP 7 (https://support.industry.siemens.com/cs/ww/en/view/49948856)	• PROFINET basics • PROFINET functions • PROFINET diagnostics

Topic	Documentation	Most important contents
	Function manual PROFIBUS with STEP 7 (https://support.industry.siemens.com/cs/ww/en/view/59193579)	• PROFIBUS basics • PROFIBUS functions • PROFIBUS diagnostics
	Function manual: Web Server (https://support.industry.siemens.com/cs/ww/en/view/59193560)	• Function • Operation
Interference-free installation of control systems	Function Manual: Interference-free installation of control systems (https://support.industry.siemens.com/cs/ww/en/view/59193566)	• Basics • Electromagnetic compatibility • Lightning protection • Housing selection
Memory concept	Function manual: Structure and Use of the CPU Memory (https://support.industry.siemens.com/cs/ww/en/view/59193101)	• Design • Principle of operation • Use
Cycle and response times	Function manual: Cycle and Response Times (https://support.industry.siemens.com/cs/ww/en/view/59193566)	• Basics • Calculations
Analog value processing	Function manual: Analog value processing (https://support.industry.siemens.com/cs/ww/en/view/67989094)	• Wiring options • Tables of measured values

SIMATIC manuals

All current manuals for SIMATIC products are available for download free of charge from the Internet:
Link: (http://www.siemens.com/automation/service&support)

CP/CM documentation in the SIMATIC NET Manual Collection (article number A5E00069051)

The "SIMATIC NET Manual Collection" DVD contains the device manuals and descriptions of all SIMATIC NET products current at the time it was created. It is updated at regular intervals.

Version History / current downloads for the SIMATIC NET S7-CPs/CMs

The "Version History/Current Downloads for SIMATIC NET S7 CPs (PROFIBUS)" provides information on all CPs available up to now for SIMATIC S7 (PROFIBUS). You will find the document on the Internet:
Link: (https://support.industry.siemens.com/cs/ww/en/view/67225941)

Product overview, functions

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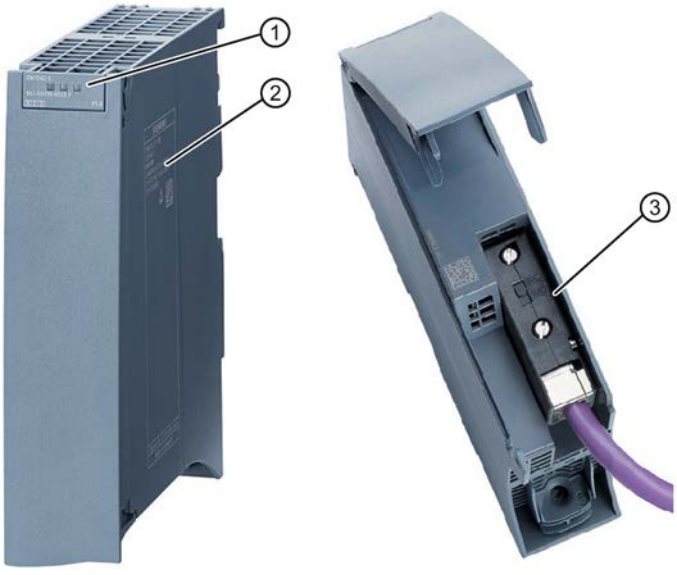
2.1 Product data

Article number, validity and product names

This description contains information on the following product:

CM 1542-5
article number 6GK7 542-5DX00-0XE0
hardware product version 1
firmware version V2.0
communications module CM 1542-5 for connection of S7-1500 to PROFIBUS DP.

View of the module



① LEDs
② Type plate
③ PROFIBUS interface: 1 x 9-pin D-sub female connector (RS-485)

Figure 2-1 CM 1542-5 with closed (left) and open (right) front cover

2.2 Application

Application

The communications module CM 1542-5 is intended for operation in an S7-1500 automation system. The CM 1542-5 allows the connection of an S7-1500 station to a PROFIBUS fieldbus system.

As an alternative, the CM can be operated in the following modes:

- Class 1 DP master
- DP slave

Supported communications services

In its current configuration, the CM 1542-5 communications module supports the following communications services:

- **PROFIBUS DP master (class 1)**
  - PROFIBUS DP according to EN 50170 DPV1, DP master
  - DP master mode for DP slaves complying with the PROFIBUS DPV0 and DPV1 standard
  - DP master mode for Siemens DP slaves
  - Direct data exchange (DP slave to DP slave)

    As a DP master, the CM 1542-5 is capable of enabling direct data exchange for "its" DP slaves.
  - SYNC / FREEZE

    The outputs or inputs can be synchronized by the user program using system function DPSYNC_FR.
- **PROFIBUS DP slave**

  PROFIBUS DP according to EN 50170 DPV1, DP slave

  Note

  DP master or DP slave

  Note that the CM 1542-5 supports operation either as DP master or DP slave.
- **FDL**

  The CM handles the FDL communication using program blocks of Open User Communication (OUC) see section Configuration, programming (Page 25).
- **S7 communication**
  - PG communication for uploading / downloading of S7 configuration, diagnostics and routing
  - Operator control and monitoring functions (HMI communication)
  - Data exchange over S7 connections

- **Data record routing / field device parameter assignment**

  You can use the CM as a router for data records intended for field devices (DP slaves). Data records from devices that are not connected directly to PROFIBUS and therefore have no direct access to the DP slaves are forwarded to the DP slaves by the CM.

The services of the CM 1542-5 listed above can be used independently at the same time.

Note

Requirement for FDL, data record routing, loading of configuration/diagnostics data

For the functions FDL, data record routing and loading configuration and diagnostics data the CM must either be operated in the mode DP master mode or as a DP slave with the option "Test, Commissioning and Routing" enabled.

2.3 Further functions

Enabling /disabling DP slave - in the standard system

DP slaves can be activated and deactivated by the user program using system function D_ACT_DP.

Diagnostics requests

As a DP master (class 1), the CM 1542-5 supports diagnostics requests of a DP master (class 2).

Getting the bus topology in a DP master system

The CM 1542-5 operating as DP master supports the measurement of the PROFIBUS bus topology in a DP master system using a diagnostics repeater (DP slave).

System function DP_TOPOL in the user program can instruct diagnostics repeaters to measure the PROFIBUS BUS topology in a DP master system.

Time-of-day synchronization - time master or time slave

The CM 1542-5 can be enabled for time-of-day synchronization. As an alternative, the CM can be configured as time master or time slave on PROFIBUS.

- Time master: The CM is synchronized using the time of day in the S7-1500 station and outputs the time of day on PROFIBUS. The output interval can be set.
- Time slave: The CM receives time-of-day frames on PROFIBUS and outputs the time within the S7-1500 station. The output interval within the S7-1500 station is set permanently to 10 seconds.

Note

Recommendation for setting the time

It is advisable to set the time-of-day master so that time-of-day frames are sent at intervals of approximately 10 seconds. This achieves as small a deviation as possible between the internal time and the absolute time.

Web diagnostics

With the aid of Web diagnostics of the CPU, you read the diagnostics data from an S7 station via the Web browser on the PG/PC.

In terms of the CM, the Web pages provide the following information:

- Module and status information
- Special information on the DP master system (status of the DP slaves)

2.4 Configuration limits and performance data

2.4.1 Configuration limits - number of CMs

When using the CM type described here, the following limits apply:

- The number of CMs that can be operated in a rack depends on the CPU type being used.

  Refer to the information in the system manual (hardware configuration), see Guide to the documentation (Page 7).

2.4.2 Transmission speeds supported

The transmission speed is set in STEP 7.

Note

Remember the cable length

For the selected transmission speed, the permitted cable length must be kept to.

For this refer to the information in the PROFIBUS function manual:
Link: (https://support.industry.siemens.com/cs/ww/en/view/59193579)

2.4.3 Characteristic data of the DP interface

Characteristic data of DP mode

No special program blocks are required for DP mode. The interfacing to the distributed I/O is by direct I/O access or using program blocks (SFCs/SFBs) of the CPU.

Table 2- 1 Characteristic data of DP mode

Characteristic	Explanation / values
Max. number of operable DP slaves	125 *
Max. size of the input area of all DP slaves	8 KByte
Max. size of the output area of all DP slaves	8 KByte
Maximum number of inputs per DP slave	244 Byte
Maximum number of outputs per DP slave	244 Byte
Max. size of the consistent area for a module	128 Byte

* When using DP slaves with extensive configuration data e.g. SINAMICS devices, the number of DP slaves that can be operated on the CM sinks.

Diagnostics requests

As a DP master (class 1), the CM 1542-5 supports diagnostics requests of a DP master (class 2).

DP startup behavior

Note

Increasing the default value for startup parameters - configuration of the CPU

In some situations, it is necessary to increase the default value for the startup parameter "Parameter assignment time for the distributed I/O" in the configuration of the CPU:

- A large number of modules (DP slaves) is configured.
- When a high value is configured for the constant bus cycle time in the network properties of the PROFIBUS DP line.

2.4.4 Characteristic data of FDL communication

Characteristic data FDL

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

Table 2- 2 Characteristic data FDL

Characteristic	Explanation / values
Total number of FDL connections that can be operated	30 max.
Size of the transferable data area for FDL connections	• 1...240 bytes max. 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.

Note

Connection resources of the CPU

Depending on the CPU type, different numbers of connection resources are available. The number of connection resources is the decisive factor for the number of configurable connections. For this reason, lower values than specified here can result.

You will find detailed information on the topic of connection resources in the "Communication" function manual, see Communication (http://support.automation.siemens.com/WW/view/en/59192925).

2.4.5 Characteristics of S7 communication

Characteristics of S7 communication

The following information is important when operating S7 connections:

Table 2- 3 Characteristics of S7 connections

Characteristic	Explanation / values
Number of S7 connections via PROFIBUS	Operable in total: Max. 48 The value depends on the S7-1500 CPU being used.

Note

PG or HMI functions or data record routing

If PG or HMI functions or data record routing are used, a suitable number of S7 connections must be reserved during configuration!

Help provided by STEP 7

The number of connections on PROFIBUS shown in the table above can vary due to other influencing factors. The STEP 7 configuration tool displays warnings and help messages as soon as limit values are exceeded.

2.4.6 Performance data / operation

Measured values of transfer or reaction times

Measured values of transfer and reaction times in Ethernet, PROFIBUS and PROFINET networks for a series of configurations can be found on the Internet:
Link: (https://support.industry.siemens.com/cs/ww/en/view/25209605)

2.5 Requirements for use

2.5.1 Project engineering

Configuration

For configuring the CM the following version of STEP 7 is required:

STEP 7 version	Functions of the CM
STEP 7 Professional V14	The full functionality of the CP 1542-5 (6GK7 542-5DX00-0XE0) can be configured.

Downloading configuration data

When the configuration data is loaded on the CPU, the CM is supplied with the relevant configuration data. The configuration data can be downloaded to the CPU via PROFIBUS or any PROFINET interface of the S7-1500 station.

2.5.2 Programming

Programming

For programming the CM the following version of STEP 7 is required:

STEP 7 version	Functions of the CM
STEP 7 Professional V14	The full functionality of the CP 1542-5 (6GK7 542-5DX00-0XE0) can be programmed.

Use of FDL

For programming and using FDL, the following minimum firmware versions are required.

- CM: V2.0
- CPU: V2.0

2.6 LEDs

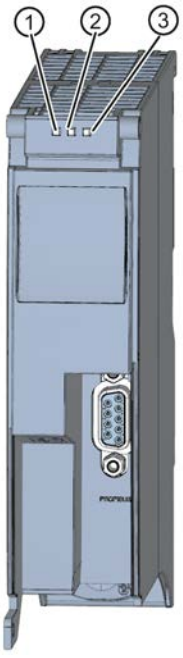
The status and error displays of the CM 1542-5 are described below.

You can find additional information on "Interrupts" in the STEP 7 online help.

You can find additional information on "Diagnostics" and "System alarms" in the function manual on the Internet:
Link: (https://support.industry.siemens.com/cs/ww/en/view/59192926)

LED display

The following figure shows the LEDs of the CM 1542-5.



① RUN/STOP LED
② ERROR LED
③ MAINT LED

Figure 2-2 LED display of the CM 1542-5 (without front cover)

Meaning of the LED displays

The CM 1542-5 has 3 LEDs to display the current operating status and the diagnostics status and these have the following meanings:

- RUN/STOP LED (one-color LED: green)
- ERROR LED (one-color LED: red)
- MAINT LED (one-color LED: yellow)

The following table shows the meaning of the various combinations of colors of the RUN/STOP, ERROR and MAINT LEDs.

Table 2- 4 Meaning of the LEDs

RUN/STOP LED	ERROR LED	MAINT LED	Meaning
LED off	LED off	LED off	No supply voltage on the CM or supply voltage too low.
LED lit green	LED lit red	LED lit yellow	LED test during startup
LED lit green	LED lit red	LED off	Startup (booting the CM)
LED lit green	LED off	LED off	CM is in RUN mode. No disruptions
LED flashing green	LED off	LED off	No CM configuration exists Loading firmware
LED lit green	LED flashing red	LED off	A diagnostics event has occurred.
LED lit green	LED off	LED lit yellow	Maintenance is demanded.
LED lit green	LED off	LED flashing yellow	Maintenance is required.
LED flashing green	LED flashing red	LED flashing yellow	Module fault

2.7 PROFIBUS interface

9-pin D-sub female connector (PROFIBUS)

The PROFIBUS connector is located behind the cover of the housing. The interface is a 9-pin D-sub female connector operating according to the RS-485 standard.

You also have the option of connecting to optical PROFIBUS networks via an Optical Bus Terminal OBT or an Optical Link Module OLM.

You will find the pin assignment of the D-sub socket in section Pin assignment PROFIBUS (Page 22).

Installation, connecting up, commissioning, operation 3

3.1 Important notes on using the device

Safety notices on the use of the device

Note the following safety notices when setting up and operating the device and during all associated work such as installation, connecting up or replacing the device.

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 (see IEC 60664-1).

⚠ WARNING

EXPLOSION HAZARD

Do not connect or disconnect cables to or from the device when a flammable or combustible atmosphere is present.

⚠ WARNING

EXPLOSION HAZARD

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

⚠ 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

DIN rail

In the ATEX and IECEx area of application only the Siemens DIN rail 6ES5 710-8MA11 may be used to mount the modules.

3.1.2 Notes on use in hazardous areas according to ATEX / IECEx

⚠ WARNING

Requirements for the cabinet/enclosure

To comply with EU Directive 94/9 (ATEX95), the enclosure or cabinet must meet the requirements of at least IP54 in compliance with EN 60529.

⚠ WARNING

If the cable or conduit entry point exceeds 70 °C or the branching point of conductors exceeds 80 °C, special precautions must be taken. If the equipment is operated in an air ambient in excess of 50 °C, only use cables with admitted maximum operating temperature of at least 80 °C.

⚠ WARNING

Take measures to prevent transient voltage surges of more than 40% of the rated voltage. 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

⚠ 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.

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.

3.2 Installing and commissioning the CM 1542-5

⚠ WARNING

Read the system manual "S7-1500 Automation System"

Prior to installation, connecting up and commissioning, read the relevant sections in the system manual "S7-1500 Automation System" (references to documentation, refer to the section Guide to the documentation (Page 7)).

Make sure that the power supply is turned off when installing/uninstalling the devices.

Configuration

One requirement for the commissioning of the CP is the completeness of the STEP 7 project data.

Procedure for installation and commissioning

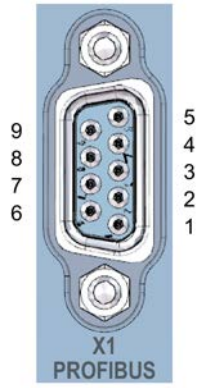
Step	Execution	Notes and explanations
1	When installing and connecting up, keep to the procedures described for installing I/O modules in the system manual "S7-1500 Automation System".	
3	Connect the CM to PROFIBUS via the RS-485 socket.	Lower surface of the CM
4	Turn on the power supply.	
5	Close the front covers of the module and keep them closed during operation.	
6	The remaining steps in commissioning involve downloading the STEP 7 project data.	The STEP 7 project data of the CM is transferred when you download to the station. To load the station, connect the engineering station on which the project data is located to the Ethernet/MPI interface of the CPU. You will find more detailed information on loading in the following sections of the STEP 7 online help: • Downloading project data • Using online and diagnostics functions

3.3 Pin assignment PROFIBUS

PROFIBUS interface

The table below shows the terminal assignment of the PROFIBUS interface. The assignment corresponds to the standard assignment of RS485 interface.

Table 3- 1 Terminal assignment PROFIBUS interface

View	Signal name		Designation
	1	-	-
	2	-	-
	3	RxD/TxD-P	Data line A
	4	RTS	Request To Send
	5	M5V2	Data reference potential (from station)
	6	P5V2	Supply plus (from station)
	7	-	-
	8	RxD/TxD-N	Data line B
	9	-	-

Note

PROFIBUS interface

The CM provides no 24 VDC power supply on the PROFIBUS interface. I/O devices (for example, PC adapter 6ES7972-0CB20-0XA0) are therefore not operational on the interface).

3.4 Mode of the CPU - effect on the CM

You can change the mode of the CPU between RUN and STOP using STEP 7 or the switch.

Depending on the operating status of the CPU, the CM behaves as described below.

Changing the CPU from STOP to RUN

- Programmed connections are established.
- In DP master mode:
  - Change from CLEAR to the OPERATE mode
- In DP slave mode:
  - Going diagnostics interrupt to the master
  - Current input data is transferred.

Changing the CPU from RUN to STOP

The reaction is as follows in STOP:

- Programmed connections are terminated.
- In DP master mode:

  Change to the CLEAR mode
- In DP slave mode:
  - Input data is sent to the DP master with the value "0" and a DP diagnostics alarm is sent.
- Regardless of the mode, the following functions remain enabled:
  - The configuration and diagnostics of the CM

    Relevant system connections for configuration, diagnostics and PG channel routing still exist.
  - Data record routing
  - S7 routing function
  - Time-of-day synchronization
  - Configured connections remain established.

Configuration, programming

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4.1 Configuration in STEP 7

Configuration in STEP 7

You configure the CM in SIMATIC STEP 7. You will find the required version in the section Project engineering (Page 15).

You will find complete information on configuration in the STEP 7 information system.

Loading and saving the configuration data

When you load the station, the project data of the station including the configuration data of the CP is stored on the CPU. You will find information on loading the station in the STEP 7 information system.

4.2 Program blocks for communication and distributed I/O

Program blocks (instructions) for communications services

For communications services, there are preprogrammed program blocks (instructions) available as the interface in your STEP 7 user program.

Table 4- 1 Instructions for PROFIBUS DP

System blocks and system functions	Meaning when used with CM
DPSYC_FR	DP slaves synchronize / freeze inputs (SYNC/FREEZE instruction)
DPNRM_DG	Reading the diagnostics data of a DP slave
DP_TOPOL	Detecting the topology for the DP master system
WRREC	Writing the data record of a DP slave
RDREC	Reading the data record of a DP slave
GETIO	Reading the process image of a DP standard slave
SETIO	Transferring the process image of a DP standard slave
GETIO_PART	Reading the process image partition of a DP standard slave
SETIO_PART	Transferring the process image partition of a DP standard slave
D_ACT_DP	Disable / enable DP slaves
DPRD_DAT	Reading consistent data of a DP standard slave (user data)
DPWR_DAT	Writing consistent data of a DP standard slave
RALRM	Event-driven reading of interrupt information (diagnostics, pull/plug, hardware interrupt) and DPV1-specific interrupts (update, status, vendor-specific interrupt)

Refer to the documentation of the program blocks in the information system of STEP 7.

Calling program blocks (instructions) for distributed I/O

Several calls are necessary for the instructions of the distributed I/O.

The time required to process the job depends on load, round-trip time and transmission speed. If these instructions are called in a loop within one cycle, the cycle time could be exceeded.

Exception: Only one call is required for RALRM "receive alarm".

Program blocks for DPV1 according to the PNO standard (PROFIBUS user organization):

- RDREC

  "Read data record from a DP slave" corresponds to SFC59 in terms of function

- WRREC

  "Write data record to a DP slave" corresponds to SFC58 in terms of function

- RALRM

  "Read interrupt information from a DP slave" - call in an interrupt OB

4.3 Program blocks for FDL

Program blocks of Open User Communication (OUC) for FDL

To use the bus access protocol FDL (Fieldbus Data Link) use the program blocks of Open User Communication (OUC). For this, create a suitable program blocks. You will find details on the program blocks in the information system of STEP 7.

The end point of an FDL connection is an S7-1500 CPU with communications module CM 1542-5. For the required firmware versions of the modules, see section Programming (Page 15).

Supported program blocks for OUC

The following instructions in the specified minimum version are available for programming Open User Communication to use FDL:

- **TSEND_C V3.1 / TRCV_C V3.1**

  Compact blocks for connection establishment and for sending and receiving data via a configured or programmed connection

  or

- **TCON V4.0 / TDISCON V2.1**

  Connection establishment / connection termination

- **TSEND V4.0 / TRCV V4.0**

  Sending or receiving data over a configured connection

- **TUSEND V4.0 / TURCV V4.0**

  Sending or receiving data over a configured connection

  With these blocks the connection parameters can be changed at runtime.

The program block can be found in STEP 7 in the "Instructions > Communication > Open User Communication" window.

Connection description of the type "TCON_FDL"

To reference the connection description, the blocks "TCON" and "TSEND_C / TRCV_C" use the CONNECT patrameter. The connection description is stored in a data block whose structure is specified by the system data type (SDT) "TCON_FDL".

Creating an SDT for the data block

You create the SDT required for every connection description as a data block. You generate the SDT type in STEP 7 by entering the name ("TCON_FDL") in the "Data type" box manually in the declaration table of block instead of selecting an entry from the "Data type" drop-down list. The SDT is then created with its preset parameters.

For FDL the following SDTs are used:

- **TCON_FDL**

  For transferring data via FDL

You will find the description of TCON_FDL in the STEP 7 information system (keyword "TCON_FDL").

Programmed connection establishment or termination with TCON / TDISCON

Connections are established using the program block TCON. Note that a separate program block TCON must be called for each connection.

A separate connection must be established for each communications partner even if identical blocks of data are being sent.

After a successful transfer of the data, a connection can be terminated. A connection is also terminated by calling "TDISCON".

Note

Connection abort

If an existing connection is aborted by the communications partner or due to disturbances on the network, the connection must also be terminated by calling TDISCON. Make sure that you take this into account in your programming.

Configured and programmed FDL connections

The following types of FDL connections can be established:

- **Configured FDL connections**

  These connection types are configured in the STEP 7 program editor, see below. TSEND / TRCV or TUSEND / TURCV are used as the blocks.

  – Specified connection

    Fully configured connection between two partners

  – Unspecified connection

    Configured connection with an unspecified partner

  – Broadcast connection

    Connection with all connected partners

  – Multicast connection

    Connection with several defined partners

- **Programmed FDL connections**

  These connection types cannot be configured in the STEP 7 program editor. Instead for these connection types either calling TCON along with TSEND/TRCV or TUSEND/TURCV is required or TSEND_C / TRCV_C.

  – Specified connection

    Fully configured connection between two partners

  – Unspecified connection

    Configured connection with an unspecified partner

  – Unspecified Layer 2 connection

    Programmed FDL-Verbindung with an unspecified partner with free layer 2 access

  – Broadcast connection

    Connection to all connected partners

  – Multicast connection

    Connection to several defined partners

The specific settings for the individual connection types are explained in the STEP 7 information system in TCON_FDL.

Setting up a configured FDL connection using TSEND_C

Proceed as follows to set up a configured FDL connection in STEP 7:

1. Create a TSEND_C instruction in the program editor.

   You will be prompted to create the relevant data block.

2. Select the TSEND_C instruction and navigate in the Inspector window to "Properties" > "Configuration" > parameter group "Connection parameters".

3. In type of configuration, select "Use configured connection"

4. In connection type, select "FDL".
5. Under End point, select the partner end point. Use one of the two following partner end points.
   - CPU S7-1500 with CM 1542-5
   - Unspecified
6. Select the following interfaces under Interfaces:
   - Local: PROFIBUS interface of CM 1542-5
   - Specified partner: PROFIBUS interface of CM 1542-5
7. Select the setting <new> under Connection data.

   This creates a new connection between the two partners.

   The figure below shows a fully configured FDL connection in STEP 7.

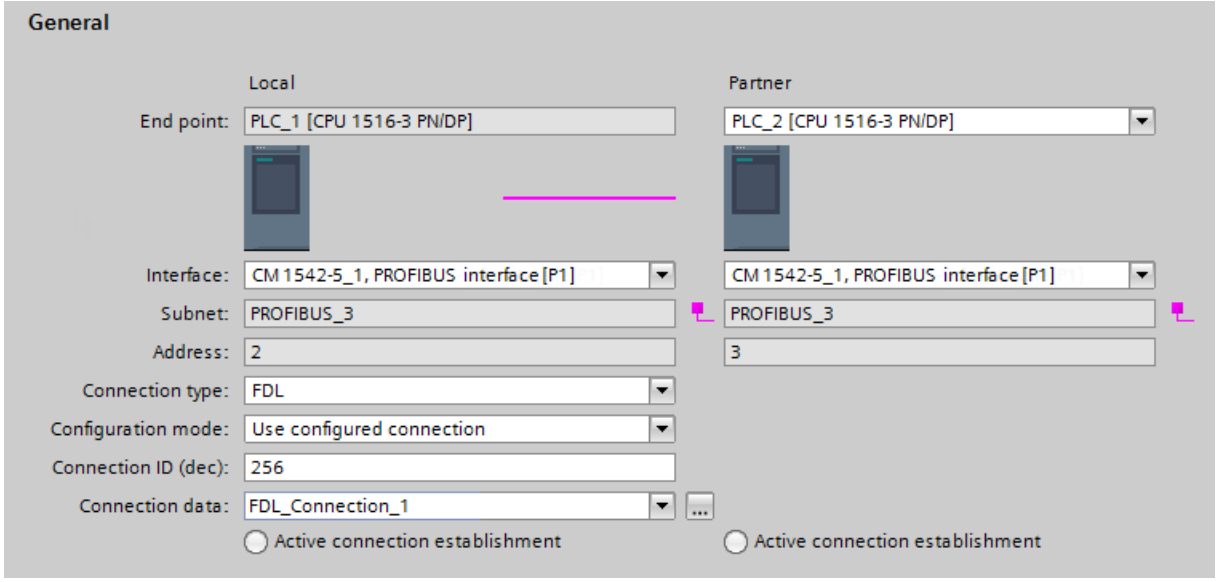

Figure 4-1 Configuring the FDL connection

8. Configure the further block parameters.

Setting up a programmed FDL connection using TSEND_C

To set up a programmed FDL connection in STEP 7, follow the steps below:

1. Create a TSEND_C instruction in the program editor.

   You will be prompted to create the relevant data block.
2. Program the block parameters.

   Interconnect the CONNECT parameter of the TCON instruction with the previously created variable "FDL_Connection" of the data type TCON_FDL.

The FDL connection is established and used for sending and receiving data.

Setting up an FDL connection in the user program

For programmed communication via FDL, you need to create and program the data block of the system data type TCON_FDL yourself and call it directly at the instruction. Follow these steps:

1. Create a global data block in the project tree.
2. In the global data block create a variable of the data type TCON_FDL.

   The following example shows the global data block "FDL_connection" with the variable "FDL_connection" of the data type TCON_FDL.

FDL_connection

	Name	Data type	Start value	R...	A...	W..	V..	Comment
1	Static			☐	☐	☐	☐	
2	FDL_connection	TCON_FDL		☐	☑	☐	☑	
3	InterfaceId	HW_ANY	0	☐	☑	☐	☑	HW identifier of PB interface submodule
4	ID	CONN_OUC	16#0	☐	☑	☐	☑	connection reference / identifier
5	ConnectionType	Byte	16#15	☐	☑	☐	☑	type of connection: 21= FDL connection
6	ActiveEstablished	Bool	false	☐	☑	☐	☑	active/passive connection establishment
7	ServiceId	Byte	16#0	☐	☑	☐	☑	service id: 0 – default, 1 – SDA, 2 – SDN
8	RemotePBAddress	Byte	16#0	☐	☑	☐	☑	remote ProfiBus partner address
9	LocalPBAddress	Byte	16#0	☐	☑	☐	☑	local ProfiBus partner address
10	RemoteLSAP	Byte	16#0	☐	☑	☐	☑	remote PB link-layer service access point
11	LocalLSAP	Byte	16#0	☐	☑	☐	☑	local PB link-layer service access point

Figure 4-2 Programming an FDL connection

3. In the data block program the parameters of the FDL cconnection, e.g. the PROFIBUS addresses.

   The type of connection is specified with the "ServiceId" parameter. You will find details in the STEP 7 information system.

4. Create a TCON instruction in the program editor.
5. Interconnect the CONNECT parameter of the TCON instruction with the previously created variable "FDL_Connection" of the data type TCON_FDL.

In the example below, the CONNECT parameter of the TCON instruction is interconnected with the tag "FDL_Connection" (data type TCON_FDL).

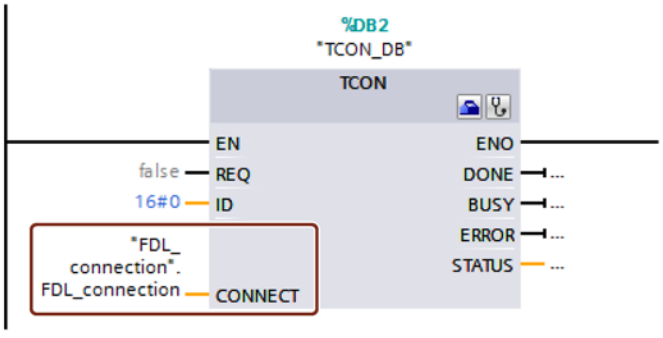

Figure 4-3 Example: TCON instruction for FDL connection

The parameters of TCON_FDL

You will find information on the parameters of TCON_FDL in the STEP 7 information system.

Note the special features of the parameters "RemoteSAP" and "RemotePBAddress":

- **RemoteSAP = 255, RemotePBAddress = 255**

  If you program the value 255 both for RemoteSAP and RemotePBAddress, data transfer from every partner will be accepted regardless of its SAP.

- **RemoteSAP = 255, RemotePBAddress = specified**

  If you program the value 255 for RemoteSAP and assign a specified value for RemotePBAddress, data transfer from the specified partner via each of its programmed SAPs will be accepted via this connection.

- **RemoteSAP = specified, RemotePBAddress = 255**

  If you program a specific value for RemoteSAP and assign the value 255 for RemotePBAddress, data transfer from every partner with the specified address will be accepted via this connection.

Diagnostics and upkeep

5

5.1 Diagnostics options

Diagnostics options

You have the following diagnostics options available for the module:

- The LEDs of the module

  Diagnostics using the LEDs is the first means of narrowing down errors/faults. To narrow the error/fault down even further, evaluate the message on the display of the S7-1500 CPU. If errors/faults occur, you can also identify them using the Web server or by evaluating the diagnostics buffer of the CPU. The diagnostics buffer of the CPU contains plain language information about the error/fault that has occurred. The diagnostics buffer is accessible via STEP 7, the display and the Web server.

  For information on the LED displays, refer to the section LEDs (Page 16).

- STEP 7: The "Diagnostics" tab in the Inspector window

  Here, you can obtain the following information on the selected module:

  – Entries in the diagnostics buffer of the CPU

  – Information on the online status of the module

- STEP 7: Diagnostics functions in the "Online > Online and diagnostics" menu

  Here, you can obtain static information on the selected module:

  – General information on the module

  – Diagnostics status

  – Information on the PROFIBUS interface

  You can obtain further information on the diagnostics functions of STEP 7 in the STEP 7 online help.

- DP diagnostics

  The DP diagnostics of the CM is described below.

  The evaluation of diagnostics data records requested by the DP master and the diagnostics interrupts or diagnostics alarms of the DP slaves is handled in the user program of the DP master station.

5.2 DP slave diagnostics

DP-V1 slave: Diagnostics interrupt

The diagnostics data is transferred as a diagnostics interrupt. Diagnostics interrupts must be acknowledged by the DP master.

Supported diagnostics functions

The CM 1542-5 supports the following blocks of DP diagnostics:

- Standard diagnostics (6 bytes)
- Identifier-related diagnostics (2 to 17 bytes), depending on the number of configured transfer areas
- Module status (5 to 35 bytes), depending on the number of configured transfer areas
- If it exists: Diagnostics interrupt (8 bytes)

User program (DP master)

To read out the diagnostics data of the DP slave (DP single diagnostics), use the "DPNRM_DG" instruction on the DP master.

Diagnostics interrupts of DP-V1 slaves are evaluated in the user program of the master using the "RALRM" instruction.

You will find the required parameter assignment for the instructions in the STEP 7 online help.

Below, there is an overview of the structure of the diagnostics data.

Overview of standard diagnostics

Standard diagnostics	
Byte	**Meaning**
0	Station status 1
1	Station status 2
2	Station status 3
3	Master address
4...5	Vendor ID of the slave

Overview of device-specific diagnostics

The device-specific diagnostics data depends on the protocol variant operating on the DP slave:

- **DP-V1 slave**

Table 5- 1 Overview of device-specific diagnostics of the CM with DP-V1 slaves

Device-specific diagnostics		
Byte	**Meaning**	
0	Header	
1	Variant Interrupt type	Variant Status type
2	Slot number	
3	Variant Interrupt specifier	Variant Status specifier
4...62	Module-specific diagnostics data	

5.3 Standard diagnostics

The coding of the standard diagnostics bytes is explained below.

Byte 0: Station status 1

Table 5- 2 Structure of station status byte 1

Bit no.	Name	Explanation
7	Master_Lock	The DP slave was assigned parameters by a different DP master. The DP slave can only be read by the configured productive DP master. This bit is set by the DP master when its bus address differs from the configured address.
6	Parameter_Fault	The last received parameter assignment frame was bad or not permitted. The DP slave sets this bit. Solution: Check the parameter settings for illegal parameters.
5	Invalid_Slave_Response	This bit is set by the DP master when no plausible response has been received from the DP slave.
4	Service_Not_Supported	This bit is set by the DP master when the master has requested a function that is not supported by the DP slave. Solution: Change the parameter setting to disable the function on the master.
3	Ext_Diag	This bit is set by the slave. • Bit =1: There is diagnostics data in the slave-specific diagnostics area. The diagnostics data can be evaluated in the user program of the master. • Bit =0: There may be status information in the slave-specific diagnostics area. The status information can be evaluated in the user program of the master.
2	Slave_Config_Check_Fault	The configuration data sent by the DP master is rejected by the DP slave. Cause: Configuration error. Solution: Change configuration.
1	Station_Not_Ready	The DP slave is not ready for productive data exchange. This is a temporary status that cannot be influenced by the DP master.
0	Station_Non_Existent	The DP slave is not reacting on the bus. This bit is set by the DP master 1 (the slave sets this bit permanently to 0). If the bit is set, the diagnostic bits have the state of the last diagnostics alarm or the initial value.

Byte 1: Station status 2

Table 5- 3 Structure of station status byte 2

Bit no.	Name	Explanation
7	Deactivated	The DP slave was identified as being not active in the local parameter record and it is not polled cyclically.
6	Reserved	- reserved -
5	Sync_Mode	The DP slave is in SYNC mode. The bit is set by the slave.
4	Freeze_Mode	The DP slave is in FREEZE mode. The bit is set by the slave.
3	Watchdog_On	Watchdog monitoring is active on the DP slave. The bit is set by the slave.
2	Status_From_Slave	Bit =1: The diagnostics information comes from the DP slave. The bit is set permanently to 1 by the slave.
1	Static_Diag	Static diagnostics If the DP slave sets this bit, the DP master must fetch diagnostics data from the DP slave until the DP slave resets the bit. The DP slave sets this bit, for example when it is not capable of data transfer.
0	Parameter_Request	The DP slave sets this bit when it needs to have new parameters assigned and be reconfigured. If bit 0 and bit 1 are both set, bit 0 has the higher priority.

Byte 2: Station status 3

Table 5- 4 Structure of station status byte 3

Bit no.	Name	Explanation
7	Ext_Data_Overflow	If this bit is set, there is more diagnostics information available than indicated in the diagnostics data. This data cannot be displayed.
6...0	Reserved	- reserved -

Byte 3: Master address

The address of the DP master that assigned parameters to this DP slave is entered in the "Master_Add" byte.

If the DP slave did not have parameters assigned to it by any DP master, the DP slave sets the address 255 in this byte.

Bytes 4 and 5: Vendor ID of the slave ("Ident_Number")

The vendor ID ("Ident_Number") for the DP slave type is entered in bytes 4 and 5. This identifier can be used to identify the slave.

The more significant part of the value is in byte 5.

5.4 Device-specific diagnostics in DP-V1

There are two variants of device-specific diagnostics with DP-V1 slaves:

- Interrupt type
- Status type

The two variants differ from each other in the coding of byte 1, bit 7 of the device-specific diagnostics data. The difference is component-specific.

Byte 0: Header

The two most significant bits have the value 00. This identifies the "module-specific diagnostics data" field (see bytes 4... 62) as a whole.

The remaining six bits indicate the length of the data field including byte 0.

Byte 1: Variant "Interrupt type"

Table 5- 5 Structure of byte 1 of the device-specific diagnostics (variant "interrupt type")

Bit no.	**Meaning**	
7	Value	Meaning
	0	**Interrupt**
6...0	**Alarm_Type**	
	0	- reserved -
	1	Diagnostics interrupt
	2	Hardware interrupt
	3	Pull interrupt
	4	Plug interrupt
	5	Status interrupt
	6	Update interrupt
	7...31	- reserved -
	32...126	Vendor-specific
	127	- reserved -

If status interrupts are received in quick succession, older status interrupts may be overwritten by newer interrupts.

Byte 1: Variant "Status type"

Table 5- 6 Structure of byte 1 of the device-specific diagnostics (variant "status type")

Bit no.	**Meaning**	
7	Value	Meaning
	1	**Status information**

Bit no.	Meaning	
6...0	**Status_Type**	
	0	- reserved -
	1	Status information
	2	Modul_Status (see also bytes 4...62)
	3...31	- reserved -
	32...126	Vendor-specific
	127	- reserved -

Byte 2: Slot number

Slot number (1...n) of the slave module

0 is the placeholder for the entire device.

Byte 3: Variant "Interrupt specifier"

Table 5- 7 Structure of byte 3 of the device-specific diagnostics (variant "interrupt specifier")

Bit no.	Meaning	
7...3	Seq_No	Unique identifier of an interrupt alarm
2	Add_Ack	If this bit is set, the DP-V1 master is indicating that this interrupt expects an acknowledgement in the form of a WRITE job.
1...0	Alarm_Specifier	
	0	No further distinction
	1	Interrupt appears, slot disrupted The slot generates an interrupt due to an error.
	2	Interrupt disappears, slot OK The slot generates the interrupt and indicates that it has no further errors.
	3	Interrupt disappears, slot still disrupted The slot generates an interrupt and indicates that it has further errors.

Byte 3: Variant "Status specifier"

Table 5- 8 Structure of byte 3 of the device-specific diagnostics (variant "status specifier")

Bit no.	Meaning	
7...2	- reserved -	
1...0	Status_Specifier	
	0	No further distinction
	1	Status appears
	2	Status disappears
	3	- reserved -

Bytes 4...62: Module-specific diagnostics: General coding

This byte contains data with module-specific information that is described in the relevant module documentation. The relevant module is identified by the slot (byte 2).

Bytes 4...62: Module-specific diagnostics with "status type" and "module status"

With the variant "status type" of the device-specific diagnostics of DP-V1 slaves (see byte 1, bit 7) and the setting "Modul_Status" (see byte 1, bits 0...6), there are two status bits here for each slot (= module). Bits not required are set to 0.

Table 5- 9 Structure of the bytes for module-specific diagnostics data

Byte	Bit assignment							
Bit	7	6	5	4	3	2	1	0
4	Module status 4		Module status 3		Module status 2		Module status 1	
5	Module status 8		Module status 7		Module status 6		Module status 5	
...	...		...		...		...	
62	Module status 236		Module status 235		Module status 234		Module status 233	

The status bits are coded as follows:

Table 5- 10 Meaning of the values of the status bits

Value	Meaning
00	Data valid
01	Data invalid - error (for example short-circuit)
10	Data invalid - wrong module
11	Data invalid - no module plugged in

5.5 DP diagnostics frames when the CPU is in STOP

DP diagnostics frames when the CPU is in STOP

All diagnostics frames from DPV0 standard slaves and all DP interrupt frames from DP-S7/DPV1 standard slaves arriving when the CPU is in STOP are forwarded to the CPU. During module startup, the diagnostics frames must then be evaluated by a suitable user program.

5.6 Replacing a module without a programming device

General procedure

The configuration data of the CM is stored on the CPU. This means that this module can be replaced by a module of the same type (identical article number) without using a PG.

Technical specifications

6

Note the information in the System description of SIMATIC S7-1500 (Page 7).

In addition to the information in the system description, the following technical specifications apply to the module.

Technical specifications - CM 1542-5	
Product name	CM 1542-5
Article number	6GK7 542-5DX00-0XE0
Connection to PROFIBUS	
• Number	1 x PROFIBUS interface
• Design	D-sub socket (RS-485)
• Transmission speed	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
Electrical data	
Power supply	
• Via S7-1500 backplane bus	15 V
Current consumption	
• From backplane bus	200 mA
Power dissipation	3 W
Insulation	
Insulation tested with	707 VDC (type test)
Design, dimensions and weight	
Module format	Compact module S7-1500, single width
Degree of protection	IP20
Weight	Approx. 400 g
Dimensions (W x H x D)	35 x 142 x 129 mm
Installation options	Mounting in an S7-1500 rack
Product functions *	

* You will find the product functions in the section Configuration limits and performance data (Page 12).

Approvals

7

Approvals issued

Note

Issued approvals on the type plate of the device

The specified approvals - with the exception of the certificates for shipbuilding - have only been obtained when there is a corresponding mark on the product. You can check which of the following approvals have been granted for your product by the markings on the type plate. The approvals for shipbuilding are an exception to this.

Certificates for shipbuilding and national approvals

The device certificates for shipbuilding and special national approvals can be found in Siemens Industry Online Support on the Internet:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15671/cert)

EC declaration of conformity

CE

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 February 26, 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

The EC Declaration of Conformity is available for all responsible authorities at:

Siemens Aktiengesellschaft
Division Process Industries and Drives
Process Automation
DE-76181 Karlsruhe
Germany

You will find the EC Declaration of Conformity on the Internet at the following address:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15671/cert)

IECEx

The product meet the requirements of explosion protection according to IECEx.

IECEx classification: Ex nA IIC T4 Gc

The product meets the requirements of the following standards:

- EN 60079-0

  Hazardous areas - Part 0: Equipment - General requirements

- EN 60079-15

  Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'

You can see the current versions of the standards in the IECEx certificate that you will find on the Internet at the following address:
Link: (https://support.industry.siemens.com/cs/ww/en/ps/15671/cert)

The conditions must be met for the safe deployment of the CP according to the section Notes on use in hazardous areas according to ATEX / IECEx (Page 20).

You should also note the information in the document "Use of subassemblies/modules in a Zone 2 Hazardous Area" that you will find on the Internet at the following address:
Link: (https://support.industry.siemens.com/cs/ww/en/view/78381013)

ATEX

The product meets the requirements of the EC directive:2014/34/EC "Equipment and Protective Devices for Use in Potentially Explosive Atmospheres".

Applied standards:

- EN 60079-0

  Hazardous areas - Part 0: Equipment - General requirements

- EN 60079-15

  Explosive atmospheres - Part 15: Equipment protection by type of protection 'n'

The current versions of the standards can be seen in the EC Declaration of Conformity, see above.

ATEX approval: II 3 G Ex nA IIC T4 Gc

Test number: DEKRA 12 ATEX 0240X

The conditions must be met for the safe deployment of the CP according to the section Notes on use in hazardous areas according to ATEX / IECEx (Page 20).

You should also note the information in the document "Use of subassemblies/modules in a Zone 2 Hazardous Area" that you will find here:

- In the SIMATIC NET Manual Collection in
  "All documents" > "Use of subassemblies/modules in a Zone 2 Hazardous Area"
- On the Internet at the following address:
  Link: (https://support.industry.siemens.com/cs/ww/en/view/78381013)

EMC

Until 19.04.2016 the CP meets the requirements of the EC Directive 2014/30/EU "Electromagnetic Compatibility" (EMC directive).

Applied standards:

- EN 61000-6-4

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

  Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

RoHS

The CP meets the requirements of the EC directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Applied standard:

- EN 50581:2012

c(UL)us

Applied standards:

- Underwriters Laboratories, Inc.: UL 61010-1 (Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements)
- IEC/UL 61010-2-201 (Safety requirements for electrical equipment for measurement, control and laboratory use. Particular requirements for control equipment)
- Canadian Standards Association: CSA C22.2 No. 142 (Process Control Equipment)

Report / UL file: E 85972 (NRAG, NRAG7)

cULus Hazardous (Classified) Locations

Underwriters Laboratories, Inc.: cULus IND. CONT. EQ. FOR HAZ. LOC.

Applied standards:

- ANSI ISA 12.12.01
- CSA C22.2 No. 213-M1987

APPROVED for Use in:

- Cl. 1, Div. 2, GP. A, B, C, D T3...T6
- Cl. 1, Zone 2, GP. IIC T3...T6

Ta: Refer to the temperature class on the type plate of the CP

Report / UL file: E223122 (NRAG, NRAG7)

CULUS Listed 7RA9 IND. CONT. EQ. FOR HAZ. LOC.

Note the conditions for the safe deployment of the product according to the section Notes on use in hazardous areas according to UL HazLoc (Page 20).

Note

For devices with C-PLUG memory: The C-PLUG memory module may only be inserted or removed when the power is off.

CSA

CSA Certification Mark Canadian Standard Association (CSA) nach Standard C 22.2 No. 142:

- Certification Record 063533–C-000

FM

Factory Mutual Approval Standards:

- Class 3600
- Class 3611
- Class 3810
- ANSI/ISA 61010-1

Report Number 3049847

Class I, Division 2, Group A, B, C, D, T4

Class I, Zone 2, Group IIC, T4

You will find the temperature class on the type plate on the module.

Australia - RCM

The product meets the requirements of the AS/NZS 2064 standards (Class A).

AVIS CANADIEN

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This class A digital device meets the requirements of the Canadian standard ICES-003.

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/15671/cert)

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