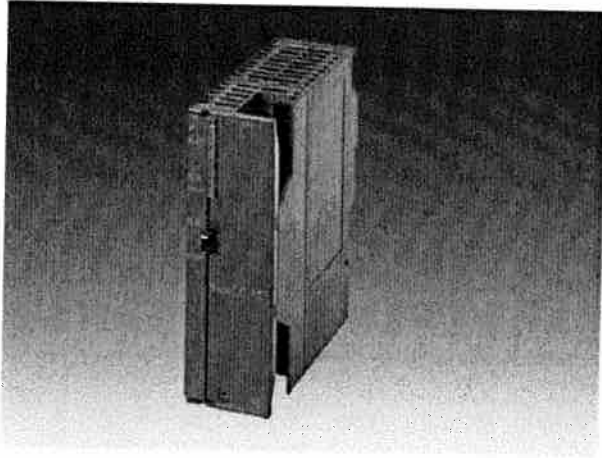


Communication - CP 342-5



Overview

- PROFIBUS DP master or slave with electrical interface to connect the SIMATIC S7-300 and the SIMATIC C7 to PROFIBUS up to 12 Mbit/s (including 45.45 kbit/s)
- Direct connection to the optical PROFIBUS-Network through FOC interface for plastic and PCF FO cables.
- Communication services:
 - PROFIBUS-DP
 - PG/OP communication
 - S7 communication (Client, Server, Multiplexing)
 - S5-compatible communication (SEND/RECEIVE)
- Simple configuration and programming using PROFIBUS
- PG/OP communication between networks through S7 routing.
- Module changeover without PG

Benefits

Designed for Industry

- Expansion of the process I/O at SIMATIC S7-300 by several PROFIBUS-DP interfaces
- Flexible utilization of the process I/O through dynamic activation of DP slaves
- Subprocess-oriented configuration of an automation solution by implementing several CPs
- Optimization of applications and many application options through sending of data with S7 communication
- Comprehensive control + monitoring through multiplex function with OP communication
- Suitable for closed loop control tasks due to SYNC and FREEZE.

Area of application

The communications processor CP 342-5 is the cost-optimized communication module of SIMATIC S7-300 and SIMATIC C7 for the PROFIBUS-DP bus system.

The CP 342-5 FO contains a FO interface, which enables noise-immune connections even in environment subject to extreme noise interference. The CP 342-5 offloads communication tasks from the CPU.

SIMATIC S7-300 and SIMATIC C7 communication and:

- the distributed I/O system ET200 with integrated optical interface

- S7-300 with SIMATIC S7-400
with IM 467 FO and
CP 342-5 FO
- PC with CP 5613 FO/5614 FO
- other PROFIBUS DP stations with electrical interface through the Optical Bus Terminal (OBT)

The number of CPs that can be operated depends on the performance range of the CPU and the communication services used.

Design

The CP 342-5 offers all the advantages of the SIMATIC S7-300 system design:

- Compact design;
single standard width of the SM modules of the SIMATIC S7-300
- Integrated FO interface;
2 Duplex-sockets for direct connection to the optical PROFIBUS through
2 × 2 Simplex connectors and 2 plug-in adapters
- 4-pin terminal block for connecting the external supply voltage of 24 V DC
- Easy assembly;
the CP 342-5 is mounted on the sectional rail of the S7-300 and connected to the adjacent modules through the bus connectors. There are no restrictions as to the slots used.
- In conjunction with the IM 360/ 361, the CP 342-5 can also be operated in the expansion rack (ER).
- User-friendly wiring;
Sub-D socket and terminal are easily accessible
- The CP 342-5 can be operated without a fan.
A backup battery or memory module is not required

Functions

The CP 342-5 provides the user with various communications services for the PROFIBUS bus system:

- PROFIBUS-DP (according to IEC 61 158/EN 50 170, master or slave)
- PG/OP communication
- S7 communication
- S5-compatible communication (SEND/RECEIVE).

PROFIBUS-DP master

The CP 342-5 operates as a DP master according to IEC 61 158/EN 50 170, Volume 2 and handles data transfer completely independently. It supports the utilities of master class 1 and 2.

The data areas of the distributed I/O are transferred consistently between CP and CPU. This pertains both to the use of the CP as DP master and as DP slave.

As DP master it facilitates interfacing to the S7-300, such as:

- The distributed I/O system ET 200 with integrated optical interface
- SIMATIC S7-300
with CP 342-5 FO as Slave
- PC with CP 5614 FO as Slave and
- Other DP slaves with electrical interface using the Optical Bus Terminal (OBT).

Additionally, the CP 342-5 offers the functions: SYNC, FREEZE, shared input/output as well as the activating/deactivating of DP slaves.

PROFIBUS-DP slave

The CP 342-5 as a DP slave enables data transfer between the S7-300 and the SIMATIC S7-400 using the CP 5613 FO, CP 5614 FO or IM 467 FO and with other PROFIBUS masters using the OBT. This allows a mixed assembly of SIMATIC S5/S7, PCs, ET 200 and other field devices in accordance with PROFIBUS-DP.

For DP communications as master or slave, function calls (FCs) are necessary. These function calls (DP-SEND/DP-RECV) must be linked in the STEP 7 application program.

PG/OP communication

All the S7 stations connected to the network can be remotely programmed using PG/OP communication.

- S7 routing
With S7 routing, PG/OP communication can be used across the whole network.
 - Up to 16 TD/OP can be run to an S7-300 station through the CP 342-5. Only one connection resource in the S7 CPU is needed for this (multiplex channel). The acyclic B&B utilities are supported through the multiplex channel.

S7 communication

S7 communication is used for coupling:

- Between SIMATIC S7 automation systems.
- to PCs, e.g. with CP 5613 and S7-5613 software is used

No additional configuration is required for communications with programming devices and operator panels. The central controller can also be remotely programmed and configured through the CP 342-5.

Client functionality is provided by loadable communications chips

S5-compatible communication (SEND/RECEIVE)

Based on layer 2 (FDL) of PROFIBUS, the CP 342-5 offers a simple, optimum interface for process or field communication.

Using this interface, system-wide and high performance communication is possible between SIMATIC S5, SIMATIC S7 and PC. In addition to the SDA service (PLC/PLC links), SEND/RECEIVE also offers the SDN service (broadcast, multicast).

Coupling partners are the programmable controllers

- SIMATIC S7 with CP 342-5 FO
- SIMATIC S5 S5-115U/H, S5-135U, S5-155U/H with CP 5431 FMS/DP and
- PCs
CP 5613 FO, CP 5614 FO

Function calls must be used with SEND/RECEIVE (PLC-SEND/PLC-RECEIVE), which must be integrated in the STEP 7 user program.

Diagnostics

Extensive diagnostics is provided, among other things, through NCM S7.

- - Status mode of the CP
 - General diagnostics and statistics functions
 - Connection diagnostics
 - Bus statistics
 - Message buffer

Configuration

STEP 7 or STEP 7 and NCM S7 for PROFIBUS are necessary for configuring the CP 342-5. NCM S7 is completely embedded in the STEP 7 environment.

NCM S7 V5 or higher is an integral part of STEP 7 and is therefore always compatible with STEP 7. A single license is no longer necessary for NCM S7 V5 or higher.

From STEP 7/NCM S7 version 5, the CP's configuration data can also be stored on the CPU and remain intact during a power failure. This means that modules can be replaced without reloading the product information from a programming device. During power up, the CPU passes the configuration data on to the CP. Here, the memory size of the S7 CPU must be observed.

It is possible to configure and program all SIMATIC S7 controllers connected to the network.

The function blocks for PROFIBUS-DP are contained in the standard STEP 7 library. The function blocks for utilization of S5-compatible communication (SEND/RECEIVE) and the programmable block communication (S7 client) are located in the SIMATIC NET library following installation of NCM S7.

Technical Specifications

Technical specifications	
Data transfer rate	9.6 to 12 Mbit/s (exception: 3 and 6 Mbit/s)
Interfaces	
• Connection to PROFIBUS	9-pin Sub-D socket
• Supply voltage	4-pole terminal block
Supply voltage	24 V DC
Current consumption	
• From backplane bus	150 mA
• From 24 V DC	250 mA
Power loss	6.75 W
Permissible ambient conditions	
• Operating temperature	0 °C to +60 °C
• Transport/storage temperature	-40 °C to +70 °C
• Relative humidity	max. 95% at +25 °C
Design	
• Module format	Compact assembly
• Dimensions (W x H x D) in mm	40 x 125 x 120
• Weight	approx. 450 g
Number of CPs per S7-300	4
Performance data S7 Communication	
• Number of usable connections	max. 16
S5-compatible interface (SEND/RECEIVE)	
• Number of usable connections	max. 16
• Useful data/connections	max. 240 bytes (SEND and RECEIVE)
Multi-protocol operation	
• Number of usable connections	32 (without DP); max. 28 (with DP)
• Size of DP diagnostics data per connected slave	max. 240 bytes
DP master function	
• DP Master	DP-VO
• Number of DP slaves	124
• Total size of DP data ranges	
• - DP input range	2160 bytes
• - DP output range	2160 bytes
• Size of DP data ranges per connected slave	
• - DP input range	244 bytes
• - DP output range	244 bytes

DP slave function	
• DP slave	DP-VO
Size of DP data ranges	
• DP input range	240 bytes
• DP output range	240 bytes
PG/OP communication	
• Number of operable OP connections (acyclic services)	16