



9291P01

DESIGO™ S7

CP 343-1 BACnet 6FL4343-1CX10-0XE0

Used with DESIGO S7, Building Solution & Building Integration

- **SIMATIC S7.300 CP 343-1 for Industrial Ethernet TCP/IP with BACnet communications as per EN 16484, part 5, SEND-RECEIVE and FETCH-WRITE interface, long data, UDP, TCP, S7 communications (server), routing, module exchange without programming device, 10/100 Mbit, initialization over LAN, IP-Multicast, IP configuration over DHCP, firmware V1.0.**
- **Communications services:**
 - Open IE communications (TCP/IP and UDP)
 - Programming device / OP communications
 - S7 communications (server)
 - BACnet communications based on Ethernet/IP, BACnet server as per EN16484, Part 5
 - S5-compatible communications
- **Connection for SIMATIC S7-300 to Ethernet**
 - 2 x RJ45 interface for 10/100 Mbps full/half-duplex connection (with autosensing for automatic changeover and auto-crossover function).
 - Integrated 2-port real-time switch ERTEC.
 - Multiprotocol operations on TCP and UDP transport protocol and BACnet
 - Keep Alive function
- **Multicast over UDP.**
- **Full remote programming and initial commissioning possible over Ethernet.**
- **Integration in network management over SNMP.**

- Engineering with NCM S7 for Ethernet (integrateable as of STEP 7 Version V5.4 SP4 HF6).
- Cross-network PD/OP communications using S7 routing.
- Diagnostic functions in STEP 7 and via web browser.
- Direct integration of S7-300 in complex plants over Ethernet at 100 Mbps.
- Ideal for deployment on line-structure networks using integrated 2-port real-time switch.
- Investment protection for existing plants by integrating SIMATIC S7-300 via S5-compatible communications.
- Flexible use thanks to free port selection.
- Saving space required for integration thanks to single-width design.
- Remote programming possible also via telephone network (e.g. ISDN) thanks to TCP/IP's WAN properties.
- Multicast function to reach many members.
- Access of max. 4 operating and monitoring systems to SIMATIC S7-300.
- Use of socket interface in partner system possible without RFC 1006.
- Initial commissioning direct via Industrial Ethernet.
- Use of uncrossed connecting lines possible thanks to integrated auto crossover function.
- Secure data communications via industrial-type device connection with IEC RJ45 plug 145/180 plug connector and additional strain relief thanks to latching the connector to the housing.

Functions

The CP 343-1 BACnet handles all data traffic over Ethernet. The module has its own processor. Layers 1 to 4 comply with international standards.

Multi-protocol operation of transport protocols TCP/IP and UDP as well as BACnet is possible.

The CP 343-1 BACnet has a preset, unique Ethernet address, allowing for commissioning via network.

The CP 343-1 BACnet works in multi-protocol mode for the following communications services:

BACnet communications

BACnet (Building Automation Control Network) is a standardized layer 7-protocol for building automation and control as per EN 16484, Part 5. It comprises:

- Standardized services processed autonomously by the CP.
- Standardized objects representing the user's view of automation and control.

The CP 343-1 is used with two market offering packages:

- **DESIGO S7 Building Solution** allows for using SIMATIC S7 within the DESIGO system together with an S7-HVAC library following the DESIGO PX library. Communications is via BACnet. Using an HVAC library allows for efficient engineering of HVAC applications.
- **DESIGO S7 Building Integration** integrates existing SIMATIC S7 (software without SBT HVAC LIB) in a DESIGO system over BACnet communications. This allows for efficient integration. BACnet objects and their mapping to S7 data is carried out in a mapping tool.

The standardized transport protocol UDP is used for BACnet/IP. In contrast to TCP, UDP is a transport protocol for wireless communications.

The Ethernet IP address comprises IP address, subnet mask and default gateway. BACnet devices within a subnet have the same subnet mask.

Note BACnet also employs broadcasts to communicate data, i.e. all data receive notification at the same time. Ethernet IP routers block broadcasts making direct connection of an Ethernet subnet impossible. A BBMD (BACnet Broadcast Management Device) allows for distributing broadcasts. DESIGO S7 and DESIGO PX can be deployed as BBMDs.

Devices with integrated BBMD functionality, e.g. DESIGO automation stations, do not generally allow for DHCP, i.e. automatic IP address assignment in networks.

**Programming device /
OP communications**

All S7 stations connected to the network can be remote programmed using PD/OP communications.

S7 routing

S7 routing allows for cross-network use of PD communications.

S7 communications

Operating and monitoring devices and PCs (SOFTNET-S7 or CP 1613 A2 with S7-1613) help connect S7-300 (server only) to S7-400.

**Open IE- and S5-
compatible
communications**

S5-compatible communications with SEND/RECEIVE offers a simple and optimized interface for communications based on Layer 4. Max 8 KB data can be transmitted per incident.

This interface allows for using:

- TCP transport connections
- UDP
- Multicasts for UDP

Open IE and S5-compatible communications is used to communicate with SIMATIC S5, SIMATIC S7-400 / -300 and PCs.

The function blocks required are a part of NCM S7 for Industrial Ethernet and must be integrated in the S7 application program.

S5-compatible communications featuring FETCH / WRITE allows for direct access to CPU data of SIMATIC S7 or SIMATIC S5.

The Multicast function can be used to simultaneously send and receive data to and from engineered multicast members if UDP is the transport protocol.

Diagnostics

STEP 7 or the web browser offer comprehensive diagnostic options such as

- CP operating state
- General diagnostic and statistics functions
- Connection diagnostics
- LAN controller statistics
- Diagnostic buffer
- Web diagnosis with basic diagnostic information

SNMP allows for reading all MIB-2 objects. This in turn allows for querying the current Ethernet interface status.

Type overview and order data

Type	Description	Order no.
Communication processor CP 343-1 BACnet	To connect SIMATIC S7-300 to Industrial Ethernet over TCP/IP and UDP, Multicast, S7-communications, S5-compatible communications (SEND /RECEIVE), FETCH/WRITE, integrated 2-port switch ERTEC, comprehensive diagnostic functions, module exchange without PD, SNMP, initial commissioning via LAN. Note: CP343-1 BACnet can be used with market offering Building Solution or Building Integration.	6FL4343-1CX10-0XE0
HVAC runtime license - 40 data points	DESIGO S7, Building Solution, HVAC runtime license for up to 40 data points	ASN: 6FLD7-HLK-040 SSN: S55372-C101
HVAC runtime license - 125 data points	DESIGO S7, Building Solution, HVAC runtime license for up to 125 data points	ASN: 6FLD7-HLK-125 SSN: S55372-C102
HVAC runtime license - unlimited data points	DESIGO S7, Building Solution, HVAC runtime license for unlimited data points	ASN: 6FLD7-HLK-ALL SSN: S55372-C103
HVAC runtime license - upgrade 40 to 125	DESIGO S7, Building Solution, Upgrade license for from 40 to 125 data points	ASN: 6FLD7-040-125 SSN: S55372-C104
HVAC runtime license - upgrade 125 to unlimited	DESIGO S7, Building Solution, Upgrade license for from 125 to unlimited data points	ASN: 6FLD7-125-ALL SSN: S55372-C105
HVAC runtime license - upgrade 040 to unlimited	DESIGO S7, Building Solution, Upgrade license for from 40 to unlimited data points	ASN: 6FLD7-040-ALL SSN: S55372-C106
BACnet runtime license-	DESIGO S7, Building Integration BACnet integration runtime license for 1CPU without HVAC standard blocks	ASN: 6FLD7-INT-ALL SSN: S55372-C107
IE FC TP standard cable GP 2x2	4-wire, screened TP installation line to connect to IE FC outlet RJ45/ IE FC RJ45 plug; PROFINET compliant; with UL approval; Meterware	6XV1 840-2AH10
FO standard cable GP (50/125)	Standard line, divisible, UL approval, Meterware	6XV1 873-2A
Industrial Ethernet switch SCALANCE X204-2	Industrial Ethernet switches with integrated SNMP access, web diagnosis, copper cable diagnosis, and PROFINET diagnosis, to create line, star and ring structures; four 10/100 Mbps RJ45 ports and two LWL ports.	6GK5 204-2BB00-2AA3

Type	Description	Order no.
IE FC RJ45 plug 145	RJ45 plug for Industrial Ethernet with robust metal housing and integrated insulation displacement terminal contacts to connect Industrial Ethernet FC installation lines; with 145° cable outlet; <ul style="list-style-type: none"> • 1 package = 1 item • 1 package = 10 items 	6GK1 901-1BB30-0AA0 6GK1 901-1BB30-0AB0
Engineering software NCM S7 for Industrial Ethernet	<ul style="list-style-type: none"> • 1 package = 50 items Engineering software NCM S7 Version V5.4 for Industrial Ethernet CPs, from STEP 7 V5.4; additional hardware support package (HSP); 1) documentation on CD-ROM, with electronic manuals in German, English, French, Spanish, Italian.	6GK1 901-1BB30-0AE0 Part of STEP 7 V5.4 scope of delivery
Documentation for S7 - CPs/NCM S7	For Industrial Ethernet and PROFIBUS; package of manuals to engineer S7-CPs, IE/PB link and PC stations (STEP 7 from V5.3). <ul style="list-style-type: none"> • German • English 	6GK7 080-0AA01-8AA0 6GK7 080-0AA01-8BA0

- 1) The HSP for CP 343-1 BACnet (6FL4343-1CX10-0XE0) can be downloaded and installed directly via STEP 7 from the Internet, and can be integrated from STEP 7 Version V5.4 SP4 HF6.
CFC 7.0 SP11, S7 SCL from 5.3 SP2 are required for Building Solution

Mechanical design

The CP 343-1 BACnet offers all benefits of SIMATIC S7-300 technology:

- Compact design;
The robust plastic housing contains the following on the front:
 - Two RJ45 plugs to connect to Industrial Ethernet using auto-sensing; RJ45 plugs are designed for industrial use with additional retaining collar concept to connect IE FC RJ45 Plug 145/180.
 - Diagnosis LEDs for each switch port.
 - 2-pin, plug-in terminal bar to connect external 24 VDC power supply.
- Easy mounting;
Mount the CP 343-1 BACnet on the profile bar of the S7-300 and connect to neighboring modules via bus connectors.
There are no rules for plug assignment.
- The CP 343-1 BACnet can be operated without fan.
No buffer battery required.
- The CP 343-1 BACnet can also be used in the extension rack ER together with IM 360/361.
- The module can be exchanged without programming device.

STEP 7 V5.4 SP4 or higher and NCM S7 for Industrial Ethernet plus hardware support package (HSP) is required to engineer CP 343-1, CP343-1 BACnet (6FL4343-1CX10-0XE0) inclusive. The engineering data of the CP are saved to the CPU. This allows for module group exchange without PG.

Visit our SIMATIC NET homepage on the Internet at:

http://www.automation.siemens.com/net/index_76.htm

This is where you find information on our products and solutions along with news on SIMATIC NET as well as information on events and professional publications.

See

<https://mall.automation.siemens.com/de/guest/guiRegionSelector.asp?lang=en>

for a description of the SIMATIC NET products.

For technical issues on CP343-1 BACnet, contact:

Common Support Entry:

Siemens Switzerland Ltd

SBT HQ

Tel: +41 (0) 41 724 5500

Fax: +41 (0) 41 724 5501

Email: fieldsupport-zug.ch.sbt@siemens.com

Technical data

Operating data	Power supply connection	1 x 2-pin pluggable terminal bar
	Power supply permitted range	DC +24 V +20.4 V ... +28.8 V
	Power consumption from backplane bus	Max. 200 mA.
	Power consumption from DC 24 V external	Typically 160 mA Max. 200 mA
	Power loss	5.8 W
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Interfaces	Communication connection, electric	2 x RJ45 plug (10/100 Mbps; TP) Auto negotiation/Auto crossover function
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Engineering software		NCM S7 for Industrial Ethernet (part of STEP 7 V5.4 scope of delivery)
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Communications	Transfer rate	10 / 100 Mbps, autosensing
Open IE /S5-compatible communications (SEND/RECEIVE)	Max. simultaneously possible TCP/UDP connections	Max. 8
	Amount of data	
	– TCP	8 KB
	– UDP	2 KB
S7 communications	Number of connections	Max. 4
PD/OP communications	Number of working OP connections (acyclical services)	Max. 4
Multi-protocol mode	Max. simultaneously possible connections	Max. 12
Multicast		8
BACnet	BACnet is wireless allows for communications with any number of partners	
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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
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Design	Modular format	Compact module S7-300, single width
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Dimensions, weight	Dimensions (W x H x D) in mm	40 x 125 x 120
	Weight	Approx. 200 g
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System limits

What	DESIGO S7
Configured alarm recipient (Number of entries on the NC recipient list).	30
BACnet references COV server resource COV subscription execute.	approx. 50-200
BACnet references COV-Client COV subscriptions..... Resources.	approx. 400
BACnet object in the CP for building integration.	approx. 1000
Number of BACnet I/O objects including typical HVAC application (*) for building solution	
CPU 314 ..314-1AG13 / 96 KB	approx. 20
CPU 314 ..314-1AG14 / 128 KB	approx. 40
CPU 315-2DP ..315-2AG10 / 128 KB	approx. 40
CPU 315-PN/DP ..315-2AH14 / 256 KB	approx. 150
CPU 315-PN/DP ..315-2EG10 / 128 KB	approx. 40
CPU 315-PN/DP ..315-2EH13 / 256 KB	approx. 50
CPU 317-2DP ..317-2AJ10 / 512 KB	approx. 200
CPU 317-PN/DP ..315-2EJ13 / 512 KB	approx. 200
CPU 317-PN/DP ..315-2EK13 / 1000 KB	approx. 200
CPU 317-PN/DP ..317-2EK14 / 1000 KB	approx. 800
CPU 319-PN/DP ..318-3EL00 / 1400 KB	approx. 800
Number of function block instances in the CFC chart.	32767
Trend Log – limited only be available RAM in the CPU.	Depends on RAM.
Scheduler – limited only be available RAM in the CPU.	Depends on RAM.
Calendar – limited only be available RAM in the CPU.	Depends on RAM.
Max. number of TP177 on a CPU.	3
Maximum number of CPUs on a TP177.	4
Physical data points, see datasheet for the CPU.	Depends on CPU.

(*) A calculation table is available for a more precise calculation.