

CP 340, CP 341, CP 440, CP 441-1 and CP 441-2 point-to-point coupler modules



simatic

S7-300/S7-400



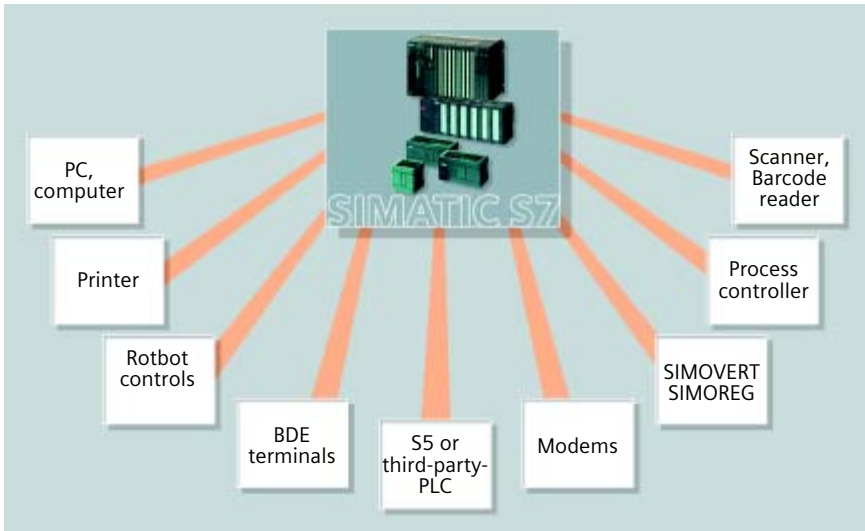
Point-to-point coupling using communications processors (CPs) is a high-capacity and low-cost alternative to bus systems.

The advantage of point-to-point coupling as opposed to bus systems is especially incisive when only a few (RS 485) units are to be coupled to the SIMATIC® S7.

In addition, CPs can integrate cost-effective third-party systems to SIMATIC S7. Due to the extensive flexibility of CPs, different transfer technology, speeds or even customized transfer protocols can be realized.

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Point-to-point coupler modules for SIMATIC S7



Point-to-point coupling with SIMATIC S7 CPs

Overview

The following coupler modules are available:

For the SIMATIC S7-300:

- CP 340
Economic CP entry into the world of minicontrollers.
- CP 341
High performance computer link.

For the SIMATIC S7-400:

- CP 440
Optimum connection of scanners.
- CP 441-1
Economic coupling with a variable interface.
- CP 441-2
High speed coupling with two variable interfaces.

The transfer technology of coupler modules

Coupler modules for the S7-300 are available in three versions with different transfer technology. Adaptation is achieved for S7-400 modules by inserting corresponding interface modules without the need of external converters.

RS 232C

This transfer technology is especially suitable for short transfer distances of up to 15 m and a transfer rate of up to 76.8 kbit/s.

20 mA

For long transfer distances of up to 1000 m (9.6 kbit/s) and a transfer rate of up to 19.8 kbit/s (up to 500 m).

RS 422/485

For transfer rates of up to 1200 m (19.2 kbit/s) and high transfer rates of up to 76.8 kbit/s (up to 250 m).

Protocol driver

All point-to-point coupler modules have different protocol drivers integrated into the operating system:

- ASCII drivers for random telegram design connecting up third-party components.
- 3964 (R) drivers for components which make use of the standardized open Siemens 3964 (R) Protocol .

- RK 512 driver for the computer link (for CP 341 and CP 441-2 only).
- Printer driver for commercial printer.
- Loading customized protocols (for CP 241 and CP 441-2 only). The MODBUS master and MODBUS slave protocol (RTU format) and data highway are available.

Setting parameters

CPs - as are all S7 modules - are parameterized with a PG or PC using CPUs.

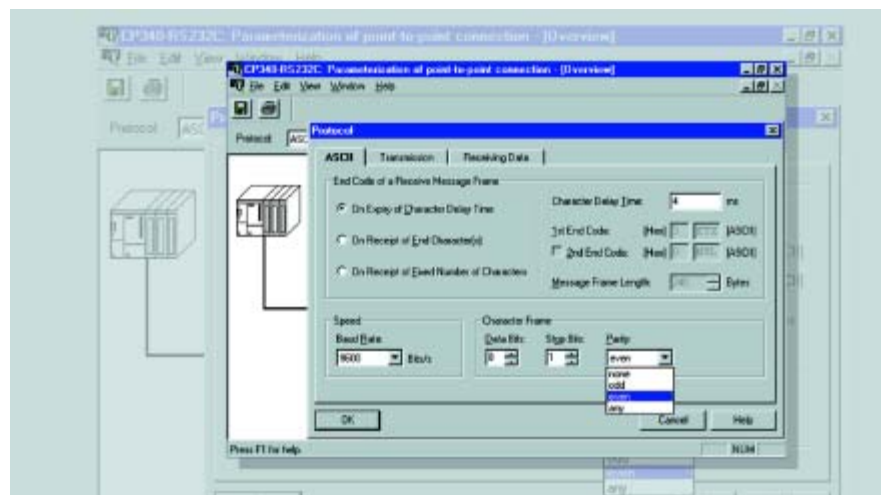
The PG is simply connected to the CPU. The configuring data is stored in a system data block which in turn is stored in the CPU.

This means that the new module can be reused immediately.

The parameterization interface is identical for all point-to-point SIMATIC S7 coupler modules, i.e. training expense is minimal.

Configuring package

For every CP there is a configuring package on a CD with electronic manual, parameterization screens and standard function blocks for communication of the CPU with CP.



Setting CP parameters with STEP 7

CP 340, CP 341, CP 440, CP 441-1/CP 441-2

CP 340 for SIMATIC S7-300

The CP 340 communications processor is the cost-efficient and complete solution for serial communication with smaller amounts of data for non-time critical processes. It can be used in the SIMATIC S7-300 and in the ET 200M (with S7 al master).

Design

- Robust plastic housing
- LEDs, for displaying "send", "receive", and "errors"
- Communications interfaces



CP 340

CP 341 for SIMATIC S7-300

The CP 341 communications processor is used for fast, top performance serial data exchange using point-to-point coupling when the CPU is not to be occupied with communications tasks. It can be used in the SIMATIC S7-300® and in the ET 200M (with S7 as master).

The CP 341 is suitable for use with third-party devices due to its two loadable third-party protocols:

- MODBUS; for communication to MODBUS protocol with RTU format.
- Data highway; for data transfer to the full duplex (DF1) protocol for data highway asynchronous link (Allen Bradley).

Design

- Robust plastic housing
- LEDs, for displaying "Senden", "Receiving" and "Error"
- Communications interface

CP 440 for SIMATIC S7-400

The CP 440 communications processor is used for high performance transfer (up to 115200 bit/s) of short telegrams using RS 422/RS 485 (X27). Preferably speaking, it is possible to use point-to-point coupling, for example:

- SIMATIC S7, SIMATIC S5 automations systems and thir-party controllers
- PGs, PCs
- Robot controls
- Scanners,barcode readers
- Measuring devices
- Scales

With RS 485 technology it is possible to link up to 32 partners.

Design

- Robust plastic housing
- LEDs; for displaying "send", "receive", "internal errors" and "external errors".



CP 341

CP 441-1 for SIMATIC S7-400

The CP 441 is suitable for simple inexpensive point-to-point coupling with high transfer rates of up to 38400 bit/s.

Depending on the requirements, the serial interface of this CP can be occupied with one of three different interfaces: RS 232 C, 20 mA or RS 422/485.

This enables the most diverse unit to be connected, e.g. industrial PC, SIMATIC or Hayes compatible modems.

Design

- Robust plastic housing
- LEDs; for displaying "send", "receive", "internal errors" and "external errors"
- 1 slot for accepting pluggable interface modules

CP 441-2 for SIMATIC S7-400

For top performance computer link with time-critical tasks. It is also suitable for third-party devices due to its two loadable third-party protocols ((MODBUS and data highway, see above). The CP 441-2 is designed for speed and high-level demands (up to 115200 bit/s).

The two serial interfaces of this CP, depending on the requirements, can be occupied variably with two of three different interface modules: RS 232 C, 20 mA or RS 422/4852. This enables the most diverse units to be connected, e.g. industrie PC, SIMATIC, or Hayes compatible modems.

Design

- Robust plastic housing
- LEDs per interface; for displaying "send", "receive", "internal error" and "external error"
- 2 slots for accepting pluggable interface modules



CP 441-2

Technical specifications

	CP 340	CP 341	CP 440	CP 441-1	CP 441-2
Transfer speed per interface, max.	19200 bit/s	76800 bit/s	115200 bit/s	38400 bit/s	115200 bit/s
Transfer speed per interface, min.	2400 bit/s	300 bit/s	300 bit/s	300 bit/s	300 bit/s
Transfer technology ▪ RS 232C (V.24) ▪ 20 mA (TTY) ▪ RS 422/485 (X.27)	CP 340-1A CP 340-1B CP 340-1C	CP 341-1A CP 341-1B CP 341-1C	✓ (up to 32 nodes)	all types of transfer technology as interface modules pluggable, serial	
Transfer protocol ▪ ASCII – Telegram length, max. – Transfer speed, max.	✓ 1024 byte 9600 bit/s	✓ 1024 byte 76800 bit/s	✓ 200 byte 115200 bit/s	✓ 4096 byte 38400 bit/s	✓ 4096 byte 115200 bit/s
▪ Printer driver – Transfer speed, max. – Req. memory of data handling block, approx.	✓ 9600 bit/s 2780 byte	-- 5500 byte	-- --	✓ 38400 bit/s none	✓ 115200 bit/s none
▪ 3964 (R) – Telegram length, max. – Transfer speed, max.	✓ 1024 byte 19200 bit/s	✓ 1024 byte 76800 bit/s	✓ 200 byte 115200 bit/s	✓ 4096 byte 38400 bit/s	✓ 4096 byte 115200 bit/s
▪ RK 512 (for computer link) – Telegram length, max. – Transfer speed, max.	--	✓ 1024 byte 76800 bit/s	--	--	3 4096 byte 115200 bit/s
▪ Customer specific	--	Data highway (DF1) Modbus (RTU)	--	--	Data highway (DF1) Modbus (RTU)
Serial interfaces	1	1	1	1	2
Transfer distance ▪ RS 232C (V.24) in m (bit/s)	15	15	--	10	10
▪ 20 mA (TTY) in m (bit/s)	100 active 1000 passive	1000 (9600) 500 (19200) active/passive	--	1000 (9600) 500 (19200)	1000 (9600) 500 (19200)
▪ RS 422/485 (X.27) in m (bit/s)	1200 (19200)	1200 (19200) 500 (38400) 250 (76800)	1200 (19200) 500 (38400) 200 (115200)	1200 (19200) 500 (38400)	1200 (19200) 500 (38400) 250 (76800) 200 (115200)
Order No. group	6ES7340-1.....-....	6ES7341-1.....-....	6ES7440-1.....-....	6ES7441-1.....-....	6ES7441-2.....-....

Driver can be loaded for	CP 341 und CP 441-2
MODBUS	<ul style="list-style-type: none"> ▪ MODBUS protocol with RTU format ▪ No V.24 (RS 232 C) controller and message cables ▪ Interfaces: 20 mA (TTY), RS 232C (V.24), RS 422/485 (X.27, 2 wire or 4 wire) ▪ Settable parameters: Transfer speed 300 bit/s to 76800 bit/s (TTY to 19200 bit/s)
MODBUS Master	<ul style="list-style-type: none"> ▪ Master slave coupling: SIMATIC S7 is master ▪ Implemented function codes: 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15, 16 ▪ Order No. group: 6ES7870-1AA..-....
MODBUS Slave	<ul style="list-style-type: none"> ▪ Master slave coupling: SIMATIC S7 is slave ▪ Implemented function codes: 01, 02, 03, 04, 05, 06, 08, 15, 16 ▪ Order No. group: 6ES7340-1AB..-....
Data highway	<ul style="list-style-type: none"> ▪ Data highway full duplex (DF1) protocol ▪ Interfaces: 20 mA (TTY), RS 232C (V.24), RS 422/485 (4 wire) ▪ Settable parameters: Transfer speed 300 bit/s to 76800 bit/s (TTY to 19200 bit/s) ▪ Order No. group: 6ES7340-1AE..-....

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