Product overview

2

2.1 Properties

Order number

6ES7540-1AD00-0AA0

View of the module

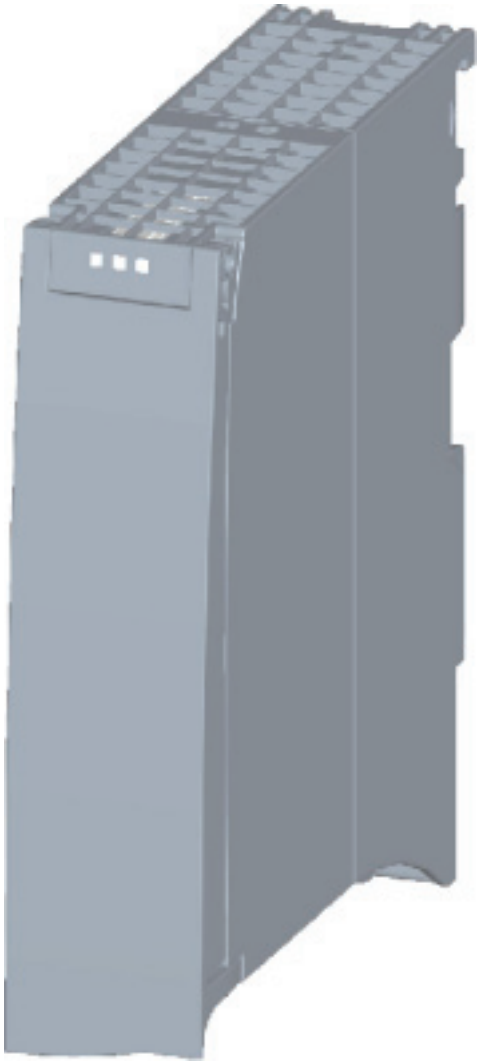


Figure 2-1 CM PtP RS232 BA view

Properties

The communication module has the following properties:

- Technical properties
  - RS232 interface
  - short-circuit proof
  - electrically disconnected
  - Protocols: 3964(R), Freeport and USS with instructions
- Supported system functions
  - Firmware update
  - Identification data I&M0
  - Parameter re-assignment in CPU RUN mode (using instructions)
  - Diagnostic interrupts

Additional information

Additional information on the properties of the CM PtP RS232 BA can be found in the function manual CM PtP - Configurations for point-to-point connections (http://support.automation.siemens.com/WW/view/en/59057093).

Information on the properties of the S7-1500 and associated modules can be found in the system manual S7 -1500 Automation System (http://support.automation.siemens.com/WW/view/en/59191792).

2.2 Accessories

Scope of delivery

The scope of delivery of the communication module includes a U connector for connection to the backplane bus.

Connecting cables

The following connecting cables can be ordered separately in the standard lengths: 5 m, 10 m and 15 m (each with a 9-pin sub D female connector).

Table 2- 1 Order numbers of connecting cables

Connecting cables for CM PtP RS232 BA CM PtP RS232 HF	Type	Order number
RS232 interface	RS232, 5 m	6ES7902–1AB00–0AA0
	RS232, 10 m	6ES7902–1AC00–0AA0
	RS232, 15 m	6ES7902–1AD00–0AA0

Online catalog

Additional order numbers for S7-1500 can be found on the Internet (http://www.siemens.com/industrymall) in the online catalog and online ordering system.

2.3 Functions

Introduction

The communication module allows you to exchange data between your own and other programmable controllers or computers by means of a point-to-point connection, and to connect various devices from a variety of manufacturers.

Functionality of the CM PtP RS232 BA

The CM PtP RS232 BA communications module offers the following functionality:

- RS232 interface
- Data transmission rate: 300 to 19200 bps
- Maximum frame length: 1 kbyte
- Transmission protocols: Freeport and 3964(R)

Note

The USS protocol can be implemented with instructions included in STEP 7 (TIA Portal).

Hardware components of a point-to-point connection

You require certain hardware components for a point-to-point connection with the CM PtP RS232 BA.

Components	Function
CPU module Accessories: Memory card	... executes the user program.
CM PtP RS232 BA communications module	... communicates with a communication partner (point-to-point) by means of the interface.
Connecting cable	... connects the CM PtP RS232 BA communications module with the communication partner. 
U connector	... provides the mechanical and electrical connection between the modules.
Optional: Power supply module (PS)	... converts the line voltage (120/230V AC or 24V DC) into the operating voltage required to supply the S7-1500.

System environment

The communication module can be used in the following system environments:

Applications	Components required	Configuration
Central operation in an S7-1500 system	• CPU 151x • CM PtP RS232 BA • Power supply (optional)	STEP 7 (TIA Portal)
Distributed operation in an S7-1500 system	• CPU 151x • IM 155-5 • CM PtP RS232 BA • Power supply (optional)	STEP 7 (TIA Portal)
Distributed operation in an S7-300/400 system	• CPU 31x / CPU 41x • IM 155-5 • CM PtP RS232 BA	STEP 7 (TIA Portal) STEP 7 with integration of a GSD file
Distributed operation in a third-party system	• Third-party programmable controller • IM 155-5 • CM PtP RS232 BA	GSD file imported to/installed in the engineering system [1)]

1) Information on using the communication module in a third-party system is available in the programming and operating manual CM PtP operation with PROFINET controller (http://support.automation.siemens.com/WW/view/en/59062563).

Additional information

Information on configuration and programming of the CM PtP RS232 BA communications module is available in the function manual CM PtP - Configurations for point-to-point connections (http://support.automation.siemens.com/WW/view/en/59057093) and in the information system of the TIA Portal.

2.4 Properties of the RS232 interface

Definition

The RS232 interface is a voltage interface used for serial data transmission.

Properties

Table 2- 2 The RS232 interface has the following properties and meets the following requirements:

Type	Voltage interface
Front connector	9-pin sub-D male connector with screw lock
RS232 signals	TXD, RXD, RTS, CTS, DTR, DSR, RI, DCD, GND; all signals isolated against the backplane bus and load voltage
Max. data transmission rate	19.2 kbps
max. cable length	15 m, cable type LIYCY 9 x 0.14
Standard	DIN 66020, DIN 66259, EIA-RS 232C, CCITT V.24/V.28

RS232 signals

Table 2- 3 The table below shows the meaning of the individual RS232 accompanying signals.

Signal	Designation	Meaning
TXD	Transmit Data	Transmit data; transmit cable logically held to "1" by communication module in idle state.
RXD	Receive Data	Receive data; receive cable logically held to "1" by communication partner in idle state.
RTS	Request To Send	Request to send RTS set to "ON": Communication module ready to send; signals to the communication partner that there is data ready to send RTS set to "OFF": Communication module not ready to send
CTS	Clear To Send	Clear to send CTS set to "ON": Signals "clear to send" to the communication partner CTS set to "OFF": Signals "Not clear to send" to the communication partner
DTR	Data Terminal Ready	DTR set to "ON": Communications module switched on, ready for operation DTR set to "OFF": Communications module not switched on, not ready for operation
DSR	Data Set Ready	DSR set to "ON": Communication partner signals "ready for operation" DSR set to "OFF": Communication partner not switched on, not ready for operation
RI	Ring Indicator	Incoming call when connecting a modem
DCD	Data Carrier Detect	Carrier signal when connecting a modem. The communication partner signals with a high level that it detects incoming data on the cable.

Connecting

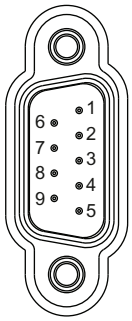
3

3.1 RS232 interface of the communications module

Terminal assignment

The table below shows the terminal assignment for the 9-pin sub D male connector in the front panel of the communications module.

Table 3- 1 Terminal assignment for the sub D male connector of the integrated interface of the communications module

Male connector of the communications module	Pin	Designation	Input/output	Meaning
	1	DCD Data Carrier Detect	Input	Received signal level
	2	RXD Receive Data	Input	Receive data
	3	TXD Transmit Data	Output	Transmit data
	4	DTR Data Terminal Ready	Output	Data terminal ready
	5	GND Ground	-	Functional ground (isolated)
	6	DSR Data Set Ready	Input	Data set ready
	7	RTS Request To Send	Output	Request to send
	8	CTS Clear To Send	Input	Clear to send
	9	RI Ring Indicator	Input	Incoming call
* View from the front				

Connecting cables

Standard connecting cables of various lengths (see chapter Accessories (Page 11)) are available for connection with a communication partner which also has a 9-pin sub-D male connector.

Please note that you must only use shielded connector casings and cables. A large surface area of the cable shield must be in contact with the connector casing on both sides.

NOTICE
Never connect the cable shield with the GND, as this could destroy the interfaces. GND must always be connected on both sides (pin 5), otherwise the modules could be destroyed.

3.2 Installation guidelines

To take into consideration

The general installation guidelines must be taken into consideration (see function manual EMC/EMI compatible installation of control systems (http://support.automation.siemens.com/WW/view/en/59193566)).

The cable shield must be installed on a grounding rail to maintain the EMC values (electromagnetic compatibility).

Technical specifications

7

	6ES7540-1AD00-0AA0
Product type designation	CM PtP RS232 BA
General information	
• I&M data	Yes; I&M 0
Engineering with	
STEP 7 TIA Portal can be configured/integrated as of version	V12.0 / V12.0
STEP 7 can be configured/integrated as of version	V5.5 SP2 or higher with a GSD file
PROFIBUS as of GSD version/GSD revision	- / -
PROFINET as of GSD version/GSD revision	V2.3
Installation type/mounting	
• Rail mounting possible	Yes; S7-1500 mounting rail
Supply voltage	
Voltage type of supply voltage	System power supply
Input current	
• Current consumption (rated value)	35 mA; from backplane bus
Power	
• Power from the backplane bus	0.65 W
Power loss	
• Power loss, typ.	0.6 W
Address area	
Occupied address area	
• Inputs	8 bytes
Interfaces	
1. Interface	
Interface hardware	
• RS 232	Yes
Interface hardware	
RS 232	
• Transmission rate, max.	19.2 kbps
• Max. cable length	15 m
RS-232 accompanying signals	RTS, CTS, DTR, DSR, RI, DCD

	6ES7540-1AD00-0AA0
Protocols	
Integrated protocols	
Freeport	
• Frame length, max.	1 kbyte
• Bits per character	7 or 8
• Number of stop bits	1 or 2 bits
• Parity	None, even, odd, always 1, always 0, any
3964 (R)	
• Frame length, max.	1 kbyte
• Bits per character	7 or 8
• Number of stop bits	1 or 2 bits
• Parity	None, even, odd, always 1, always 0, any
Frame buffer	
• Buffer memory for frames	2 kbyte
• Number of frames which can be buffered	255
Interrupts/diagnostics/status information	
Interrupts	
• Diagnostic interrupt	Yes
• Hardware interrupt	No
Diagnostic messages	
Diagnostics	Yes
• Wire break	Yes
Diagnostics display LED	
• RUN LED	Yes; green LED
• ERROR LED	Yes; red LED
• Receive RxD	Yes; yellow LED
• Send TxD	Yes; yellow LED
Electrical isolation	
• between backplane bus and interface	Yes
Insulation	
Insulation tested with	707 V DC (Type Test)
Ambient conditions	
Operating temperature	
• Horizontal installation, min.	0 °C
• Horizontal installation, max.	60 °C
• Vertical installation, min.	0 °C
• Vertical installation, max.	40 °C

	6ES7540-1AD00-0AA0
Distributed operation	
• At SIMATIC S7-300	Yes
• At SIMATIC S7-400	Yes
• At SIMATIC S7-1500	Yes
• At Standard Profinet Controller	Yes
• Supports Fast Startup	Yes
Dimensions	
• Width	35 mm
• Height	147 mm
• Depth	127 mm
Weights	
• Weight, approx.	0.22 kg

Additional general technical specifications for SIMATIC S7-1500 are available in the system manual S7 -1500 Automation System (http://support.automation.siemens.com/WW/view/en/59191792).

Dimensional drawing

A

The dimensional drawing of the communications module installed on a mounting rail and a dimensional drawing with open front panel are provided in the appendix. Always observe the specified dimensions for installations in cabinets, control rooms, etc.

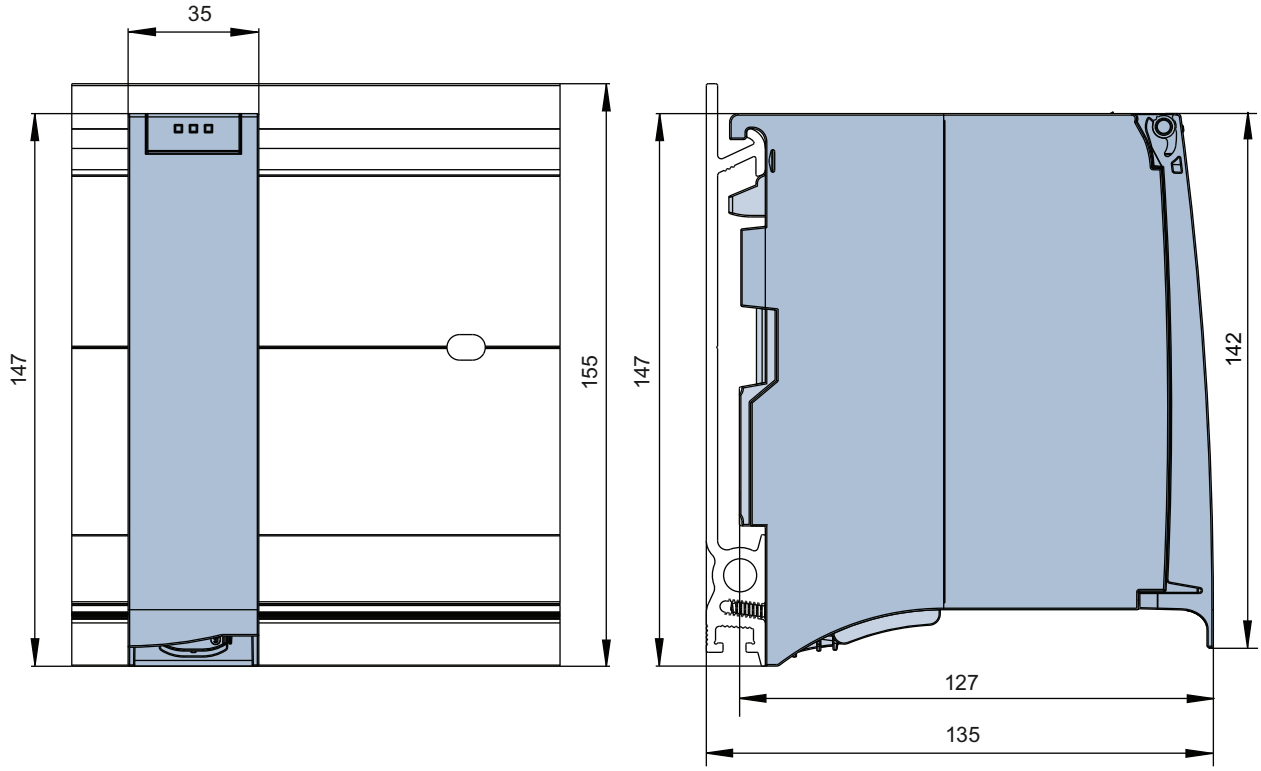


Figure A-1 Dimensional drawing of the CM PtP RS232 BA communications module

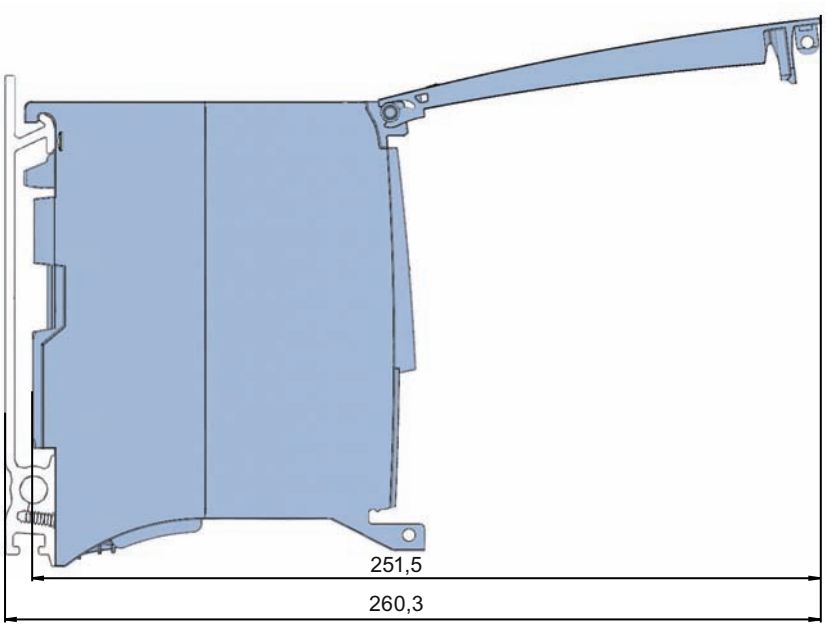


Figure A-2 Dimensional drawing of the CM PtP RS232 BA communications module with open front panel