

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with selected official Siemens pages

SIMATIC S7-1200

6ES7241-1AH32-0XB0

CM 1241 RS232 COMMUNICATION MODULE

OFFICIAL SOURCE

Selected Siemens product-data or system-manual pages. Original page content, color and aspect ratio are retained.

Note

Maximum current carrying capacity of the terminal contacts

The current carrying capacity of the connection contacts is max. 8 A. If this value is exceeded on the AS-i cable, the AS-i master CM 1243-2 must not be "looped in" to the AS-i cable, but must instead be connected via a spur line (only one connection pair assigned on the AS-i master CM 1243-2).

Please also ensure that the cables used are suitable for operating temperatures of at least 75 °C if current is being conducted via the AS-i master and currents of greater than 4 amperes are present.

You will find additional information on connecting the AS-i cable in the section "Installation, connection and commissioning of the modules" in the manual "AS-i Master CM 1243-2 and AS-i data decoupling unit DCM 1271 for SIMATIC S7-1200".

Terminal assignment

Label	Meaning
ASI+	AS-i connection – positive polarity
ASI–	AS-i connection – negative polarity
	Functional ground

A.16.4 RS232, RS422, and RS485

A.16.4.1 CB 1241 RS485 specifications

Note

To use this CB, your CPU firmware must be V2.0 or higher.

Table A-249 General specifications

Technical data	CB 1241 RS485
Article number	6ES7241-1CH30-1XB0
Dimensions W x H x D (mm)	38 x 62 x 21
Weight	40 grams

Table A-250 Transmitter and receiver

Technical data	CB 1241 RS485
Type	RS485 (2-wire half-duplex)
Common mode voltage range	-7 V to +12 V, 1 second, 3 VRMS continuous
Transmitter differential output voltage	2 V min. at $R_L = 100 \Omega$ 1.5 V min. at $R_L = 54 \Omega$
Termination and bias	10K to +5 V on B, RS485 Pin 3 10K to GND on A, RS485 Pin 4
Optional termination	Short Pin TB to Pin T/RB, effective termination impedance is 127 Ω , connects to RS485 Pin 3 Short Pin TA to Pin T/RA, effective termination impedance is 127 Ω , connects to RS485 Pin 4
Receiver input impedance	5.4K Ω min. including termination
Receiver threshold/sensitivity	+/- 0.2 V min., 60 mV typical hysteresis
Isolation RS485 signal to chassis ground RS485 signal to CPU logic common	707 V DC (type test)
Cable length, shielded	1000 m max.
Baud rate	300 baud, 600 baud, 1.2 kbits, 2.4 kbits, 4.8 kbits, 9.6 kbits (default), 19.2 kbits, 38.4 kbits, 57.6 kbits, 76.8 kbits, 115.2 kbits
Parity	No parity (default), even, odd, Mark (parity bit always set to 1), Space (parity bit always set to 0)
Number of stop bits	1 (default), 2
Flow control	Not supported
Wait time	0 to 65535 ms

Table A-251 Power supply

Technical data	CB 1241 RS485
Power loss (dissipation)	1.5 W
Current consumption (SM Bus), max.	50 mA
Current consumption (24 V DC) max.	80 mA

A.16 Communication interfaces

CB 1241 RS485 (6ES7241-1CH30-1XB0)	
CB 1241 RS485 6ES7 241-1CH30-1XB0 TxD RxD X20: RS485 M TA T/RB TB RTS 2 1 1	
① Connect "TA" and TB" as shown to terminate the network. (Terminate only the end devices on the RS485 network.) ② Use shielded twisted pair cable and connect the cable shield to ground.	

You terminate only the two ends of the RS485 network. The devices in between the two end devices are not terminated or biased. See the topic "Biasing and terminating an RS485 network connector" (Page 892)

Table A-252 Connector pin locations for CB 1241 RS485 (6ES7241-1CH30-1XB0)

Pin	9-Pin connector	X20
1	RS485 / Logic GND	--
2	RS485 / Not Used	--
3	RS485 / TxD+	4 - T/RB
4	RS485 / RTS	6 - RTS
5	RS485 / Logic GND	--
6	RS485 / 5 V Power	--
7	RS485 / Not used	--
8	RS485 / TxD-	3 - T/RA
9	RS485 / Not Used	--
Shell		1 - M

A.16.4.2 CM 1241 RS232 specifications

Table A-253 General specifications

Technical data	CM 1241 RS232
Article number	6ES7241-1AH32-0XB0
Dimensions (mm)	30 x 100 x 75
Weight	150 grams

Table A-254 Transmitter and receiver

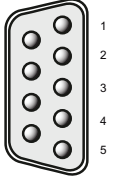
Technical data	CM 1241 RS232
Type	RS232 (full-duplex)
Transmitter output voltage	+/- 5 V min. at $R_L = 3K \Omega$
Transmit output voltage	+/- 15 V DC max.
Receiver input impedance	3 K Ω min.
Receiver threshold/sensitivity	0.8 V min. low, 2.4 max. high 0.5 V typical hysteresis
Receiver input voltage	+/- 30 V DC max.
Isolation RS 232 signal to chassis ground RS 232 signal to CPU logic common	707 V DC (type test)
Cable length, shielded	10 m max.
Baud rate	300 baud, 600 baud, 1.2 kbits, 2.4 kbits, 4.8 kbits, 9.6 kbits (default), 19.2 kbits, 38.4 kbits, 57.6 kbits, 76.8 kbits, 115.2 kbits
Parity	No parity (default), even, odd, Mark (parity bit always set to 1), Space (parity bit always set to 0)
Number of stop bits	1 (default), 2
Flow control	Hardware, software
Wait time	0 to 65535 ms

Table A-255 Power supply

Technical data	CM 1241 RS232
Power loss (dissipation)	1 W
From +5 V DC	200 mA

A.16 Communication interfaces

Table A-256 RS232 connector (male)

Pin	Description	Connector (male)	Pin	Description
1 DCD	Data carrier detect: Input		6 DSR	Data set ready: Input
2 RxD	Received data from DCE: Input		7 RTS	Request to send: Output
3 TxD	Transmitted data to DCE: Output		8 CTS	Clear to send: Input
4 DTR	Data terminal ready: Output		9 RI	Ring indicator (not used)
5 GND	Logic ground		SHELL	Chassis ground

A.16.4.3 CM 1241 RS422/485 specifications

CM 1241 RS422/485 Specifications

Table A-257 General specifications

Technical data	CM 1241 RS422/485
Article number	6ES7241-1CH32-0XB0
Dimensions W x H x H (mm)	30 x 100 x 75
Weight	155 grams

Table A-258 Transmitter and receiver

Technical data	CM 1241 RS422/485
Type	RS422 or RS485, 9-pin sub D female connector
Common mode voltage range	-7 V to +12 V, 1 second, 3 VRMS continuous
Transmitter differential output voltage	2 V min. at $R_L = 100 \Omega$ 1.5 V min. at $R_L = 54 \Omega$
Termination and bias	10K Ω to +5 V on B, PROFIBUS Pin 3 10K Ω to GND on A, PROFIBUS Pin 8 Internal bias options provided, or no internal bias. In all cases, external termination is required, see Biasing and terminating an RS485 network connector (Page 892) and Configuring the RS422 and RS485 in the S7-1200 Programmable Controller System Manual (Page 939)
Receiver input impedance	5.4K Ω min. including termination
Receiver threshold/sensitivity	+/- 0.2 V min., 60 mV typical hysteresis
Isolation RS485 signal to chassis ground RS485 signal to CPU logic common	707 V DC (type test)
Cable length, shielded	1000 m max. (baud rate dependent)
Baud rate	300 baud, 600 baud, 1.2 kbits, 2.4 kbits, 4.8 kbits, 9.6 kbits (default), 19.2 kbits, 38.4 kbits, 57.6 kbits, 76.8 kbits, 115.2 kbits
Parity	No parity (default), even, odd, Mark (parity bit always set to 1), Space (parity bit always set to 0)
Number of stop bits	1 (default), 2

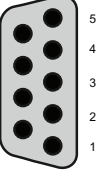
A.17 TeleService (TS Adapter and TS Adapter modular)

Technical data	CM 1241 RS422/485
Flow control	XON/XOFF supported for the RS422 mode
Wait time	0 to 65535 ms

Table A-259 Power supply

Technical data	CM 1241 RS422/485
Power loss (dissipation)	1.1 W
From +5 V DC	220 mA

Table A-260 RS485 or RS422 connector (female)

Pin	Description	Connector (female)	Pin	Description
1	Logic or communication ground		6 PWR	+5 V with 100 ohm series resistor: Output
2 TxD+ ¹	Connected for RS422 Not used for RS485: Output		7	Not connected
3 TxD+ ²	Signal B (RxD/TxD+): Input/Output		8 TXD- ²	Signal A (RxD/TxD-): Input/Output
4 RTS ³	Request to send (TTL level) Output		9 TXD- ¹	Connected for RS422 Not used for RS485: Output
5 GND	Logic or communication ground		SHELL	Chassis ground

¹ Pin 2 (TxD+) and Pin 9 (TxD-) are the RS422 transmit signals.

² Pin 3 (RxD/TxD+) and Pin 8 (RxD/TxD-) are RS485 transmit and receive signals. For RS422, Pin 3 is RxD+ and Pin 8 is RxD-.

³ The RTS is a TTL level signal and can be used to control another half duplex device based on this signal. It is active when you transmit and is inactive all other times.

A.17 TeleService (TS Adapter and TS Adapter modular)

The following manuals contain the technical specification for the TS Adapter IE Basic and the TS Adapter modular:

- Industrial Software Engineering Tools
Modular TS Adapter
- Industrial Software Engineering Tools
TS Adapter IE Basic

For more information about this product and for the product documentation, refer to the product catalog web site for the TS Adapter (<https://eb.automation.siemens.com/mall/en/de/Catalog/Search?searchTerm=TS%20Adapter%20IE%20basic&tab=>).