

5.11.5 RS422 A/485 Submodule

The RS422 A/485 submodule is for use exclusively in the RS422 A mode with the RK 512 computer link, data transmission with procedures 3964/3964R, data transmission with the “open driver.”

**Application** The RS422 A/485 submodule can be inserted in the following CPU:

Interface Submodule ...	For Use with ...
RS422 A/485 submodule	CPU 928B CPU 948 CP 524 CP 544

**Circuitry** With the above types of communication, the RS422 A/485 submodule can only be used in full duplex operation implemented by hardware. The electrical characteristics are governed by EIA Standard RS422 A (CCITT Recommendation V.11).

Shown in the following figure is the circuitry for the interface (transmit and receive lines):

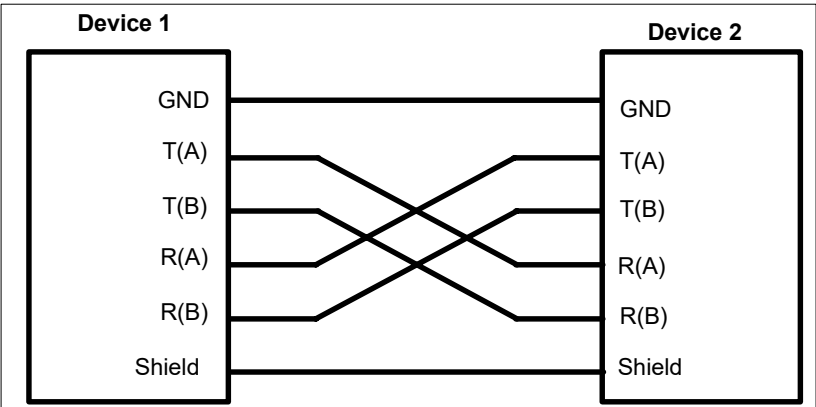


Figure 5-25 RS422 A/485 Submodule: Full Duplex Operation

Apart from the transmit and receive lines, the RS422 A/485 submodule has a number of control and signaling lines to CCITT Recommendation X.24 and ISO 8481. In association with the above types of communication, however, these control and message signals are not required and need therefore not be wired. The RS422 A/485 is a differential voltage interface and therefore exhibits higher rejection of interference than a TTY or V.24 interface.

The following applies to the signals to EIA Standard RS422 A (V.11):

Logic 0 (ON) corresponds to:  $V_A > V_B$

Logic 1 (OFF) corresponds to:  $V_A < V_B$

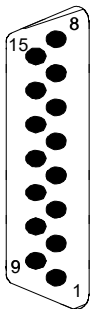
In the RS422 A/485 submodule, the interface signals are isolated from the supply voltage of the PLC.

#### Data Transmission Rate

A maximum of 19200 bps is permissible for data transmission with the RS422 A/485 submodule when used in a CPU or CP 524. When the CP 544 is used, a maximum of 76800 bps is possible.

#### Pin Assignments of the RS422 A/485 Submodule

Shown in the following figure are the pin assignments of the 15-pin subminiature D-type connector in the front plate of the RS422 A/485 submodule:

	Pin	Des. to CCITT V.24	Input/Output	Remarks
	1	Shield		
	2	T(A)	Output	
	3	C(A)	Output	
	4	R(A)	Input/Output	In full duplex operation, only data can be received on this two-wire line.
	5	I(A)	Input	
	6	S(A)	Input	
	7	B(A)	Output	
	8	GND		
	9	T(B)	Output	
	10	C(B)	Output	
	11	R(B)	Input/Output	In full duplex operation, only data can be received on this two-wire line.
	12	I(B)	Input	
	13	S(B)	Input	
	14	B(B)	Output	
	15	X(B)	Input	

### Jumper Settings on the RS422 A/485 Submodule

When the submodule is delivered, the jumpers are set as shown in the following figure. As a rule, therefore, you can use the RS 422 A/485 submodule immediately.

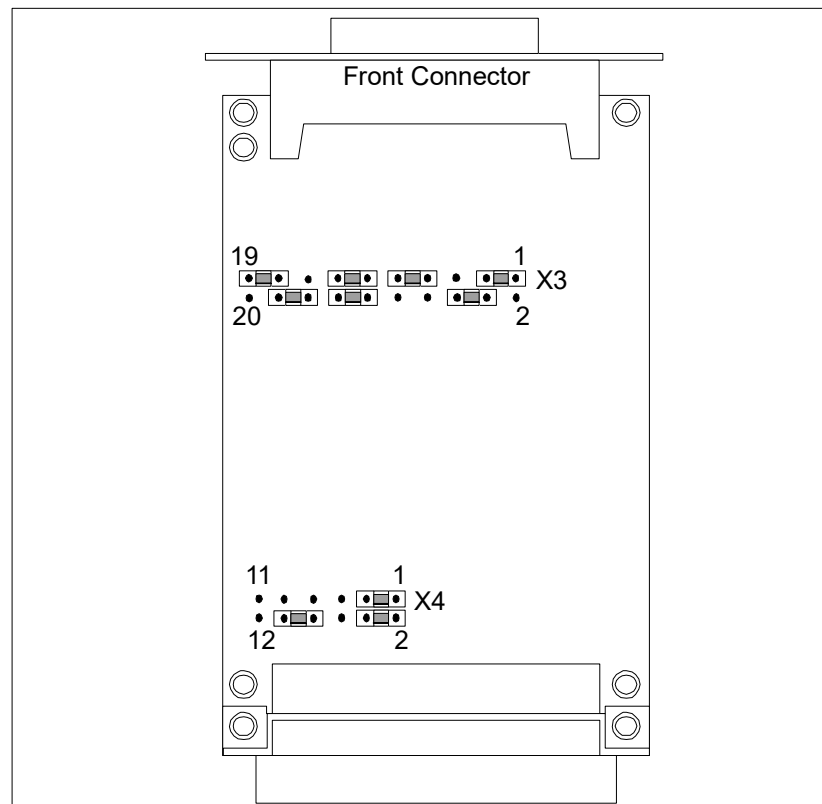
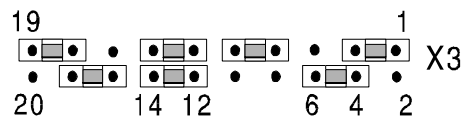


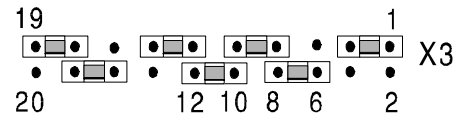
Figure 5-26 RS422-A/485 Submodule: Jumper Settings when Delivered

With the jumpers on the switch row X3 you can remove the preset for recognizing a break state from the two-wire line R.

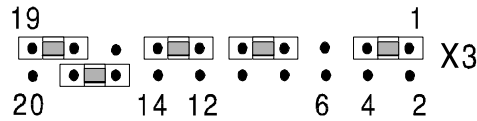
When delivered, the two-wire line R is preset with the jumpers 12-14 and 4-6 so that the break state can be recognized. Pin 4 (R(A)) of the front connector lies above a resistance on +5 V. Pin 11 (R(B)) of the front connector lies above a resistance on ground.



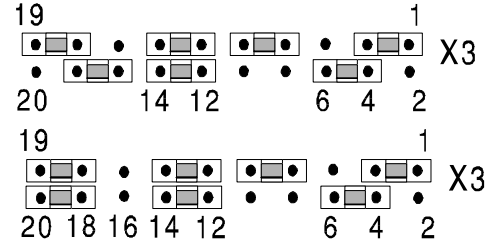
If you replug the jumpers on 10-12 and 6-8, the two-wire line R is preset as follows: pin 4 (R(A)) of the front connector lies above a resistance on ground. Pin 11 (R(B)) of the front connector lies above a resistance on +5 V. The break state cannot be recognized.



If you unplug the jumpers 12-14 and 4-6, the two-wire line R is not preset and the break state cannot be recognized clearly.



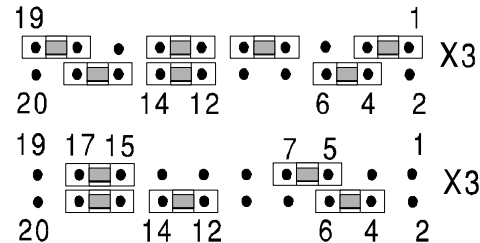
With the following jumper setting you can switch over the data direction on the two-wire line R:



**Jumper 16-18:** setting for full duplex operation. Data can only be received on the two-wire line R (default).

**Jumper 18-20:** setting for half duplex operation. Data can be transmitted or received on the two-wire line R (special driver required).

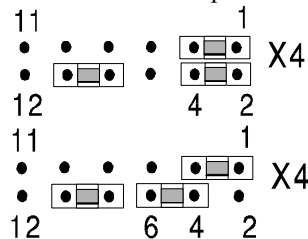
With the following jumper setting you can switch the two-wire line B as an input or an output.



**Jumper 17-19:** two-wire line B is switched as an output. The line X(B) can be used as an input. X(A) is connected to ground (default).

**Jumper 15-17:** two-wire line B is switched as an input. The line X(B) cannot be used.

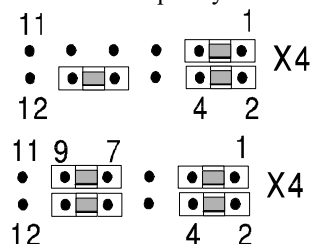
With the following jumper setting you can either place the signal /PS3 or the internal transmitting frequency (Tx Cint) on the two-wire line B. The two-wire line B must be switched as an output.



**Jumper 2-4:** the signal /PS3 can be transmitted via the two-wire line B (default).

**Jumper 4-6:** the internal transmitting frequency Tx Cint can be transmitted via the two-wire line B.

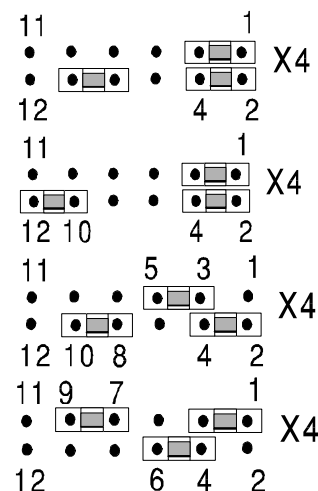
With the following jumper setting you can use the frequency transmitted via the two-wire line S as the receive frequency.



**Jumper 7-9 removed:** frequency on input S is not used as the receive frequency (default).

**Jumper 7-9 plugged:** frequency on input S is used as the receive frequency.

With the following jumper setting you can switch the transmit and receive frequencies.

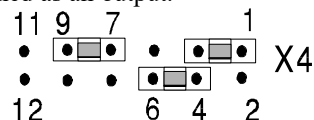


**Jumpers 8-10, 1-3:** the internal transmit frequency (TxCint) is used as the transmit and receive frequency (default).

**Jumpers 10-12, 1-3:** the internal transmit frequency (TxCint) is used as the transmit frequency and the internal receive frequency (RxCint) is used as the receive frequency.

**Jumpers 8-10, 3-5:** the frequency transmitted via the two-wire line S is used as the transmit and receive frequency.

**Jumpers 10-12, 3-5:** the frequency transmitted via the two-wire line S is used as the transmit frequency, the internal receive frequency (RxCint) is used as the receive frequency. With the following jumper setting you can set the submodule for synchronous transmission with frequency control according to the DIN draft ISO 8481. The two-wire line B (identifier X to ISO 8481) must be switched as an output.



**Jumpers 1-3, 4-6, 7-9:** the internal transmit frequency (TxCint) is used as the transmit frequency. The internal transmit frequency is simultaneously transmitted on the two-wire line B.

**Standard  
Connecting Cables  
for the  
RS422-A/485  
Submodule**

Standard cables for connecting the RS422 A/485 submodule in the CPU to the partner station are available from Siemens in various lengths, up to 1200 m.

The order numbers and lengths can be found in the ordering information.

**Connecting cable for CPU, CP 524, CP 544**

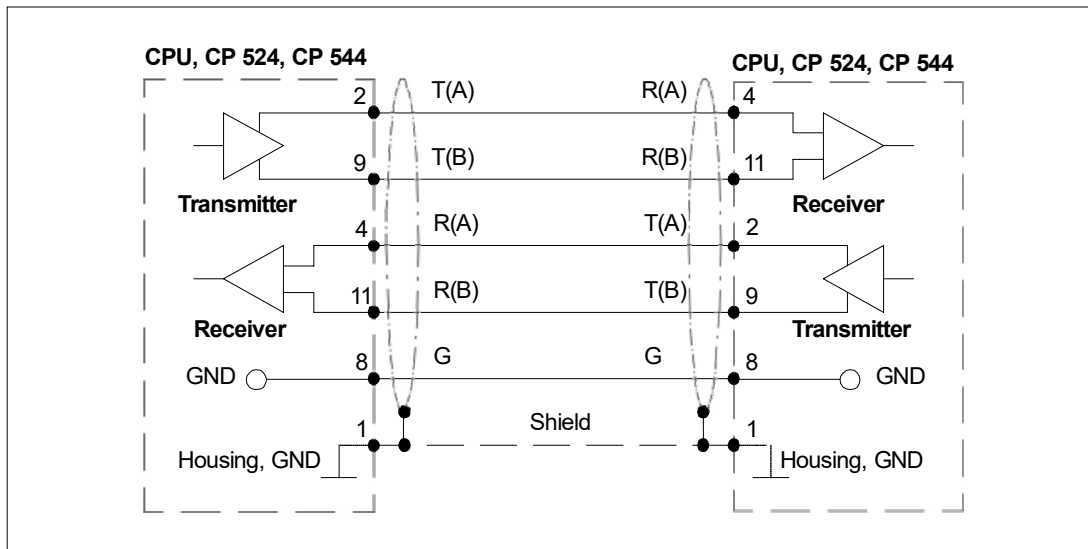


Figure 5-27 RS422-A/485 Submodule: Connecting Cable for CPU, CP 524, CP 544