

Industrial communication solutions for Windows

XS5CP521 Driver Manual

Siemens S5-90U/95U/100U With CP-521 Protocol Driver

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XS5CP521 technical specifications

General information

XS5CP521 driver allows you to connect to PLC SIMATIC series S5-90U, S5-95U and S5-100U, using the CP-521 communications processor. This driver supports both 3964 and 3964R protocols.

The data-messages format is a simplified version of that used by the RK-512 interpreter. Some user programming efforts are required to implement message-processing capabilities in the PLC according to the format used by this driver.

<Data Messages Format>

1) FETCH COMMAND (When the CP521 must send data to the PC)

(Handshake of 3964/3964R) STX (02h) -----> (According to 3964/3964R) DLE (10h) <-----> (According to 3964/3964R)

(Telegram Header) COMMAND (00h o 01h) -----> (To be processed by the user-routine)

DATABLOCK (00h a FFh) -----> (To be processed by the user-routine) DATABYTE/ DATAWORD

(00h a FFh) -----> (To be processed by the user-routine) DATASIZE (00h a FFh) -----> (To be processed by the user-routine)

(Handshake of 3964/3964R) DLE (10h) -----> (According to 3964/3964R) ETX (03h) ----->

(According to 3964/3964R) DLE (10h) <-----> (According to 3964/3964R) STX (02h) <----->

(According to 3964/3964R) DLE (10h) -----> (According to 3964/3964R)

(Reply Telegram) CONTROL (00h always) <---- (Returned by the user-routine) ERRORCODE

(00h a 30h) <---- (Returned by the user-routine) (The user should return ERRORCODE=00h to indicate the command has been executed successfully. Any other value will be assumed to be an error condition and will be reported as such. Even if an error must be reported, a full-length message must be returned with padding zeros if necessary. In this situation, the values will be ignored and discarded.)

DATA1 (xxh o xxxh) <--- (Returned by the user-routine) DATA2 (xxh o xxxh) <--- (Returned by the user-routine) DATA3 (xxh o xxxh) <--- (Returned by the user-routine)

. <--- . <--- . <--- DATA n (xxh o xxxh) <--- (Returned by the user-routine)

(Handshake of 3964/3964R) DLE (10h) <-----> (According to 3964/3964R) ETX (03h) <----->

(According to 3964/3964R) DLE (10h) -----> (According to 3964/3964R)

2) SEND COMMAND (When the CP521 receives data from the PC)

(Handshake of 3964/3964R) STX (02h) -----> (According to 3964/3964R) DLE (10h) <----->

(According to 3964/3964R)

(Telegram Header) COMMAND (02h o 03h) -----> (To be processed by the user-routine)

DATABLOCK (00h a FFh) -----> (To be processed by the user-routine) DATABYTE/ DATAWORD

(00h a FFh) -----> (To be processed by the user-routine) DATASIZE (00h a FFh) -----> (To be processed by the user-routine)

(Data) DATA1 (xxh o xxxh) ---> (To be processed by the user-routine) DATA2 (xxh o xxxh) ---> (To be processed by the user-routine) DATA3 (xxh o xxxh) --->

(To be processed by the user-routine) . ---> . ---> . ---> DATA n (xxh o xxxh) ---> (To be processed by the user-routine)

(Handshake of 3964/3964R) DLE (10h) -----> (According to 3964/3964R) ETX (03h) ----->

(According to 3964/3964R) DLE (10h) <-----> (According to 3964/3964R) STX (02h) <----->

(According to 3964/3964R) DLE (10h) -----> (According to 3964/3964R)

(Reply Telegram) CONTROL (00h always) <---- (Returned by the user-routine) ERRORCODE

(00h a 30h) <---- (Returned by the user-routine) (The user should return ERRORCODE=00h to indicate the command has been executed successfully. Any other value will be assumed to be an error condition and will be reported as such).

(Handshake of 3964/3964R) DLE (10h) <-----> (According to 3964/3964R) ETX (03h) <----->

(According to 3964/3964R) DLE (10h) -----> (According to 3964/3964R)

<PLC Internal Error Codes> The user can program the PLC to inform the system of any error condition that could appear when processing the communications by returning an error code that will be then shown with the

following message in the HMITalk1.DriverStatus property:

PLC:Returned user error code #XX:

Where XX will be the error code and the meaning should be indicated by the programmer.

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Command list

Read Data Block as Bytes

Description of this command:

Reads n bytes from a selected data block.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1-250

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Read Data Block as Words

Description of this command:

Reads n words from a selected data block.

Methods used to run this command:

Analog Input

Number of points accepted by this command:

1-128

Meaning of the DriverP0 parameter:

1

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Read Data Block as Bits

Description of this command:

Reads n bits from a selected data block.

Methods used to run this command:

Digital Input

Number of points accepted by this command:

1-250

Meaning of the DriverP0 parameter:

0

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

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Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Write Data Block as Bytes

Description of this command:

Writes n bytes of a selected data block.

Methods used to run this command:

Analog Output

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

2

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Write Data Block as Words

Description of this command:

Writes n words of a selected data block.

Methods used to run this command:

Analog Output

Number of points accepted by this command:

1-125

Meaning of the DriverP0 parameter:

3

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Write Data Block as Bits

Description of this command:

Writes n bits of a selected data block.

Methods used to run this command:

Digital Output

Number of points accepted by this command:

1-125

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Meaning of the DriverP0 parameter:

2

Meaning of the DriverP1 parameter:

Data block number (0-255).

Meaning of the DriverP2 parameter:

Starting data word (0-255).

Meaning of the DriverP3 parameter:

Indicates the protocol to be used:

0 = 3964R

1 = 3964

Meaning of the DriverP5 parameter:

Indicates the duration in milliseconds of the break signal that must be sent to the PLC when a synchron error is detected. If 0, a default value of 3000 milliseconds (3 seconds) will be internally used.

Error messages

The following list shows the possible error messages that can be returned by the driver during a failed communication in the 'Status' property.

[1005] DRIVER (Internal): Invalid driver stage
[1300] PROTOCOL (Timeout): No answer
[1421] PROTOCOL (Format): Negative acknowledge received from device
[1433] PROTOCOL (Format): Validation error in device response
[3001] CONFIG (P0): Invalid command
[3582] CONFIG (P1): Negative number not allowed
[4127] CONFIG (P2): Negative number not allowed
[4557] CONFIG (P3): Invalid protocol (0=3964R/1=3964)
[8311] CONFIG (Remote): Returned error code %Xh

Supported devices

This driver can communicate with these devices, but is not necessarily limited to this list:

SIEMENS SIMATIC S5-90U PLC With CP521
SIEMENS SIMATIC S5-95U PLC With CP521
SIEMENS SIMATIC S5-100U PLC With CP521

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