

# Industrial communication solutions for Windows

## XS7MPI Driver Manual

*Siemens S7-300/400 MPI Protocol Serial Link Driver*

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## XS7MPI technical specifications

### General information

The XS7MPI driver can be used to read or write data from or to PLCs of the S7-300/400 series with the MPI protocol through a serial link. It can also be used in serial-over-ethernet mode with an ethernet-to-serial converter. If you need to use ethernet on both sides, you can use the XMPITP driver instead.

Typical settings: 19200, Odd, 8, 1

### Command list

#### Request Attention Command

**Description of this command:**

Sends a request attention command to the PLC. This command consists on a sequence of telegrams that makes the driver to gain attention from the PLC before it starts replying to read and write commands. This command **MUST BE SENT** to the PLC before any other command. If you receive a communication error with any other command, this command should be sent again until you can successfully communicate. After this command is sent, the Keep Alive command should be periodically sent or the PLC will stop responding if it does not receive any telegram within the next two seconds after the last communication. If this happens, the Request Attention command should be sent again.

**Methods used to run this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

0

**Meaning of the DriverP4 parameter:**

PLC number (1-31)

**Values that are sent:**

Value in PointValue (0) = Ignored

#### Keep Attention Command

**Description of this command:**

Sends a keep attention command to the PLC. This is a 5-bytes short telegram that should be sent at least every 2 seconds to the PLC, if no other read or write commands are being sent. If this command is not periodically sent, the PLC will stop responding after 2 seconds of silence in the serial line and a new Request Attention command will be necessary to re-gain the PLC attention.

**Methods used to run this command:**

Digital Output

**Number of points accepted by this command:**

1

**Meaning of the DriverP0 parameter:**

1

**Meaning of the DriverP4 parameter:**

PLC number (1-31)

**Values that are sent:**

Value in PointValue (0) = Ignored

#### Read Multiple Registers (BYTE/WORD/DWORD)

**Description of this command:**

Reads a set of consecutive registers from a selected area, starting at a given start address.

**Methods used to run this command:**

Analog Input

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## Number of points accepted by this command:

Number of values

- 1-112 for BYTE type
- 1-56 for WORD type
- 1-28 for DWORD type

## Meaning of the DriverP0 parameter:

Type

- 2 = BYTE
- 4 = WORD
- 6 = DWORD
- Use 4 for analog inputs of 200 family
- Use 4 for analog outputs of 200 family
- Use 28 for S7 counters
- Use 29 for S7 timers
- Use 30 for IEC counters (200 family)
- Use 31 IEC timers (200 family)

## Meaning of the DriverP1 parameter:

DB Number

## Meaning of the DriverP2 parameter:

Area

- 3 = System info of 200 family
- 5 = System flags of 200 family
- 6 = Analog inputs of 200 family
- 7 = Analog outputs of 200 family
- 80h = Direct peripheral access
- 81h = Unknown
- 82h = Unknown
- 83h = DW
- 84h = Data blocks
- 85h = Instance data blocks
- 86h = Not tested
- 87h = Unknown
- 28 = S7 counters
- 29 = S7 timers
- 30 = IEC counters (200 family)
- 31 = IEC timers (200 family)
- 86 = System data area
- 0 = Raw memory

## Meaning of the DriverP3 parameter:

Data start address

## Meaning of the DriverP4 parameter:

PLC number (1-31)

## Meaning of the DriverP5 parameter:

Indicates how to treat the data returned from the PLC:

- 0 = Treat data as unsigned
- 1 = Treat data as signed

## Values that are returned:

Value in PointValue (0) = First variable value

Value in PointValue (1) = Second variable value

...

Value in PointValue (HMITalk1.DriverNumPoints-1) = Last variable value

## Write Multiple Registers (BYTE/WORD/DWORD)

### Description of this command:

Writes a set of consecutive registers to a selected area, at a given starting address.

### Important note: Make sure that the registers that you are trying

to write are not forced in the PLC. If the variables are forced, the PLC will successfully receive the data but it will not assume the new values. If you are writing a variable that could be forced, it is recommended that you read it back later to verify that the new value has been properly assumed by the PLC.

### Methods used to run this command:

Analog Output

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- 1-56 for WORD type
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Type

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- 4 = WORD
- 6 = DWORD
- Use 4 for analog inputs of 200 family
- Use 4 for analog outputs of 200 family
- Use 28 for S7 counters
- Use 29 for S7 timers
- Use 30 for IEC counters (200 family)
- Use 31 IEC timers (200 family)

## Meaning of the DriverP1 parameter:

DB Number

## Meaning of the DriverP2 parameter:

Area

- 3 = System info of 200 family
- 5 = System flags of 200 family
- 6 = Analog inputs of 200 family
- 7 = Analog outputs of 200 family
- 80h = Direct peripheral access
- 81h = Unknown
- 82h = Unknown
- 83h = DW
- 84h = Data blocks
- 85h = Instance data blocks
- 86h = Not tested
- 87h = Unknown
- 28 = S7 counters
- 29 = S7 timers
- 30 = IEC counters (200 family)
- 31 = IEC timers (200 family)
- 86 = System data area
- 0 = Raw memory

## Meaning of the DriverP3 parameter:

Data start address

## Meaning of the DriverP4 parameter:

PLC number (1-31)

## Meaning of the DriverP5 parameter:

Indicates how to treat the data returned from the PLC:

- 0 = Treat data as unsigned
- 1 = Treat data as signed

## Important note:

If you receive an 'Invalid ROSCTR received' error message from the PLC, it could mean that the variable or variables do not exist in the PLC or that cannot be written.

## Values that are sent:

Value in PointValue (0) = First variable value

Value in PointValue (1) = Second variable value

...

Value in PointValue (HMITalk1.DriverNumPoints-1) = Last variable value

## 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

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[1404] PROTOCOL (Format): Error receiving acknowledge  
[1405] PROTOCOL (Format): Error receiving expected EOT  
[1412] PROTOCOL (Format): Invalid number of bytes received  
[1420] PROTOCOL (Format): NAK or EOT received from device  
[1421] PROTOCOL (Format): Negative acknowledge received from device  
[1436] PROTOCOL (Format): Invalid service\_id received  
[1437] PROTOCOL (Format): Invalid ROSCTR received  
[1442] PROTOCOL (Format): Invalid PDU header received  
[1443] PROTOCOL (Format): Invalid number of bytes in response  
[1443] PROTOCOL (Format): Invalid number of bytes in response (1)  
[1443] PROTOCOL (Format): Invalid number of bytes in response (2)  
[1443] PROTOCOL (Format): Invalid number of bytes in response (3)  
[1444] PROTOCOL (Format): Invalid sequence number in response  
[1445] PROTOCOL (Format): Invalid format in response  
[1446] PROTOCOL (Format): Invalid PLC number in response  
[1447] PROTOCOL (Format): Invalid crc in response  
[5044] CONFIG (P4): Invalid device address (1-15)  
[5044] CONFIG (P4): Invalid device address (1-31)  
[8367] CONFIG (Remote): Wrong number of data bytes  
[8379] CONFIG (Remote): Error in the application ID of the request  
[8380] CONFIG (Remote): Error in the object definition (e.g. bad data type)  
[8381] CONFIG (Remote): No resources available  
[8382] CONFIG (Remote): Error in the structure of the service request  
[8383] CONFIG (Remote): Error in the communication equipment  
[8384] CONFIG (Remote): Access error  
[8385] CONFIG (Remote): OVS error  
[8386] CONFIG (Remote): Diagnostic error  
[8387] CONFIG (Remote): Protection system error  
[8388] CONFIG (Remote): BuB error  
[8389] CONFIG (Remote): Layer 2 specific error  
[8390] CONFIG (Remote): Invalid PDU\_REF in response  
[8391] CONFIG (Remote): Hardware fault  
[8392] CONFIG (Remote): Illegal object access  
[8393] CONFIG (Remote): Invalid address (incorrect variable address)  
[8394] CONFIG (Remote): Data type is not supported (currently, only octet string is supported)  
[8395] CONFIG (Remote): Object does not exist or length error  
[8396] CONFIG (Remote): Unknown ERR\_CLS error  
[8397] CONFIG (Remote): Unknown access error

## Supported devices

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

SIEMENS S7-300 Series  
SIEMENS S7-400 Series

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