

## 5.13 S7-200 (PPI - ISOTCP)

### 5.13.1 Introduction

S7200 IO Server is dedicated to communicate directly with SIEMENS PLC of family S7-200. The eWON will connect directly to the PLC's PPI interface.

On a PPI Network, the eWON is monoMaster (eWON must be the only device acting as master on the network).

**NOTE:** PPI use the standard serial port of eWON (PPI is not compatible with eWON-MPI)  
The eWON Serial port must be configure in RS-485 (with dipswitch) to communicate in PPI.

The ISOTCP (Ethernet) is available on all eWON type.

### 5.13.2 Setup

#### 5.13.2.1 Gateway configuration

Figure 94: Gateway parameters

Parameter	Description
Destination PPI Address	Identifies the PLC PPI Destination address when ISOTCP is used

#### 5.13.2.2 COM configuration

Figure 95: PPI link configuration

Parameter	Description
COM Port	Choose your COM port (only on eWON4002)
Baud Rate	Speed of the PPI port. Available speeds are 9600, 19200 Bauds or disable
Parity	The parity to apply (None / Even /Odd)
Databits	Number of bits in data (7 or 8)
Stop bit(s)	Number of Stop bits (1 or 2)
HW mode	Choose the Hardware mode of communication: <b>Half-Duplex</b> by default or Full Duplex with/without hardware handshaking.
Reply Timeout	Maximum time the eWON will wait for a valid PPI message response
PPI Address	Device address of eWON on PPI link (0..126, default is 0)

5.13.2.3 Topic configuration

<b>Topic A :</b> <input type="checkbox"/> Enabled		
Topic Name:	A	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000
<b>Topic B :</b> <input type="checkbox"/> Enabled		
Topic Name:	B	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000
<b>Topic C :</b> <input type="checkbox"/> Enabled		
Topic Name:	C	
Global Device Address:	<input type="text"/>	PPI,destination PPI node or ISOTCP, destination TSAP
Poll Rate	<input type="text"/> MS	Default: 2000

Figure 96: Topic configuration

Three (3) topics can be used for the IO Server. These topics are used to give a common property to a group of PPI/ISOTCP Tags like:

- Enable/Disable
- Global Device Address
- Polling Rate

Topic configuration item	Description
<b>Topic enabled</b>	Enables or disables polling of all the Tags in the topic.
<b>Global Device Address</b>	See below for the Device Address Syntax. If an address is specified here, it will replace (overload) the address-defined Tag by Tag.
<b>Poll rate</b>	Defines the refresh rate of the Tag name. In a complex application, we can imagine that some Tag names must be refreshed every second - typically for digital input - and other every minute - typically: temperature-.

5.13.3 Tag name convention

<b>IO Server Name</b>	S7200	
<b>Topic Name</b>	A	
	B	
	C	
<b>Item Name</b>	ValueName, Global Device Address	PLC address is defined Tag by Tag
	ValueName	Topic PLC Address is used.

Table 102: S7200 IO server - Tag name convention table

The Item Name can contain the PLC address where the value is polled, or not. If address is also specified at topic level, the address specified at Tag level will be ignored.

**5.13.3.1 Value Name**

The syntax is the following:

**<Memory Type><Modifier><address>**

Symbol	Memory Type	Modifier allowed	Address
<b>M</b>	Internal Memory	B, C, <b>W</b> , S, D, L, F	Byte offset
<b>SM</b>	Special Memory	B, C, <b>W</b> , S, D, L, F	Byte offset
<b>V</b>	Variable Memory	B, C, <b>W</b> , S, D, L, F	Byte offset
<b>C</b>	Counter	<b>W</b> , S	Object number
<b>HC</b>	High-Speed Counter	D, L	Object number
<b>T</b>	Timer	D, L	Object number
<b>AI</b>	Analog Inputs	<b>W</b> , S	Byte offset
<b>AQ</b>	Analog Outputs	<b>W</b> , S	Byte offset
<b>I</b>	Discreted Inputs	B, C, <b>W</b> , S, D, L, F	Byte offset
<b>Q</b>	Discreted Outputs	B, C, <b>W</b> , S, D, L, F	Byte offset

**Table 103: S7200 Memory types and address scheme**

**Important:** All addresses are always in BYTES (except for Counters and Timer that are objects).

**Note:** The Modifier can be omitted, the modifier in bold will be used.

Symbol	Modifier	value range
<b>B</b>	Byte	0 .. 255
<b>C</b>	signed Byte	-128 .. 127
<b>W</b>	Word	0 .. 65535
<b>S</b>	signed Word	-32768 .. 32767
<b>D</b>	DWord	0 .. 4294967296 (*)
<b>L</b>	signed DWord	-2147483648 .. 2147483647 (*)
<b>F</b>	Float	+/- 3.4e38

**Table 104: S7200 Modifiers**

(\*) Important: See "Tags are stored as Float" on page 62

Examples

address	point to
<b>MW4</b>	the Word at address 4 (in bytes) in the Internal Memory
<b>HCL1</b>	the HighSpeed Counter number 1 and read it in Signed DWord
<b>AQW5</b>	the Word at address 5 (in bytes) in the Analog Output zone
<b>IB3</b>	the Byte at address 3 (in bytes) in the Discrete Inputs zone
<b>I5#2</b>	the bit 2 from the Byte (read the 'Bit access modifier' note below) at address 5 (in bytes) in the Discrete Inputs zone

**Table 105: S7 200 register address examples**

**• Bit access modifier:**

For Memory Type **M**, **SM**, **V**, **I** and **Q**, it is possible to access a single bit.

A **#x** must be appended to the Value name.

**As the address is always in byte, the Bit index goes only from 0 to 7, and no Modifier are allowed.**

The syntax can be used for reading bits and for writing them as well.

**Example:**

**AQ10#5** represents bit 5 of Byte 10 in Analog Output zone.

**invalid: IW5#2** wrong because there is a Modifier

**I5#10** wrong because bit number greater than 7

• **Status register:**

The STATUS Tag is a special Tag that returns information about the current state of the communication for a given device. As for other Tags, the status Tag ValueName is composed of:

**Status, Global Device Address**

- You can define a status Tag for each PLC used.
- If you use the status address, the Tag must be configured as analog.

<b>0</b>	Communication not initialized. Status UNKNOWN. If no Tag is polled on that device address, the communication status is unknown.
<b>1</b>	Communication OK.
<b>2</b>	Communication NOT OK.

**Table 106: Tag Status meaning**

**5.13.3.2 Global Device Address**

The device address is either appended to the ValueName in the Item Name definition, or entered in the Topic global address fields. The device address is composed like following:

PPI					
<b>PPI, PPI node address</b>	<p><b>node address:</b> PPI node address of the PLC</p> <table border="1" style="width: 100%;"> <tr> <td style="background-color: #00b0f0; color: white;">Topic Name:</td> <td style="text-align: center;">A</td> </tr> <tr> <td style="background-color: #00b0f0; color: white;">Global Device Address:</td> <td style="text-align: center;">PPI,4</td> </tr> </table> <p>Reach by PPI the PLC with the node address 4</p>	Topic Name:	A	Global Device Address:	PPI,4
Topic Name:	A				
Global Device Address:	PPI,4				
ISOTCP					
<b>ISOTCP, IP address, CalledTSAP</b>	<p><b>IP address :</b> IP address of the PLC (ex: 10.0.120.204) <b>Called TSAP :</b> Transport Service Access Point (ex: 4D.57)</p> <table border="1" style="width: 100%;"> <tr> <td style="background-color: #00b0f0; color: white;">Topic Name:</td> <td style="text-align: center;">B</td> </tr> <tr> <td style="background-color: #00b0f0; color: white;">Global Device Address:</td> <td style="text-align: center;">ISOTCP,10.0.120.204,4D.57</td> </tr> </table> <p>Reach by ISOTCP the PLC at IP 10.0.120.204 with the TSAP 4D.57</p>	Topic Name:	B	Global Device Address:	ISOTCP,10.0.120.204,4D.57
Topic Name:	B				
Global Device Address:	ISOTCP,10.0.120.204,4D.57				

**Table 107: PPI/ISOTCP device address syntax**

**5.13.3.2.1 ISOTCP polling:**

You can always use the TSAP 4D.57. This is the default TSAP for a Step 7-Micro/win connection.

If you specify your own connection in the S7-200, be sure to:

- use the same TSAP for the Server and the Client (ex: Local TSAP:12.00, Remote TSAP:12.00)
- Check the "Enable the Keep Alive function for this connection" feature for this connection otherwise eWON will not be able to poll the device after a connection lost due to eWON reboot.

**Important:**

**If the PLC address is defined at the Topic level, it can be omitted in the Tag definition. In that case the Tag name will only contain the "ValueName".**

**If the PLC address is specified at the Topic level, it will replace any address defined Tag by Tag.**