Siemens S7-200 PPI

Supported Series: Siemens S7-200 series PLC (CPU212/214/215/216/221/222/224/226/226XM)
Website: http://www.siemens.com/entry/cc/en/

HMI Setting:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Recommended</th>
<th>Options</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC type</td>
<td>SIEMENS S7-200 PPI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLC I/F</td>
<td>RS485 2w</td>
<td>RS485 2w</td>
<td></td>
</tr>
<tr>
<td>Baud rate</td>
<td>9600</td>
<td>9600, 19200, 187.5K</td>
<td>Only MT6000/8000V2 support baud rate 187.5 K</td>
</tr>
<tr>
<td>Data bits</td>
<td>8</td>
<td>7, 8</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td>Even</td>
<td>Even, Odd, None</td>
<td></td>
</tr>
<tr>
<td>Stop bits</td>
<td>1</td>
<td>1, 2</td>
<td></td>
</tr>
<tr>
<td>Turn around delay</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACK delay time (ms)</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLC sta. no.</td>
<td>2</td>
<td>1 ~ 126</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Online simulator</th>
<th>YES</th>
<th>Extend address mode</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcast command</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PLC Setting:

PLC setting PLC sta. no. can not be the same as HMI sta. no.

Device Address:

<table>
<thead>
<tr>
<th>Bit/Word</th>
<th>Device type</th>
<th>Format</th>
<th>Range</th>
<th>Memo</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>I</td>
<td>DDDDo</td>
<td>0 ~ 40957</td>
<td>Input (I)</td>
</tr>
<tr>
<td>B</td>
<td>Q</td>
<td>DDDDo</td>
<td>0 ~ 40957</td>
<td>Output (O)</td>
</tr>
<tr>
<td>B</td>
<td>M</td>
<td>DDDDo</td>
<td>0 ~ 40957</td>
<td>Bit Memory</td>
</tr>
<tr>
<td>B</td>
<td>VW_Bit</td>
<td>DDDDDo</td>
<td>0 ~ 102397</td>
<td>V Memory Bit Address</td>
</tr>
<tr>
<td>B</td>
<td>S</td>
<td>DDDDo</td>
<td>0 ~ 40957</td>
<td>SCR</td>
</tr>
<tr>
<td>B</td>
<td>SM</td>
<td>DDDDo</td>
<td>0 ~ 40957</td>
<td>Special Memory</td>
</tr>
<tr>
<td>B</td>
<td>T_Bit</td>
<td>DDD</td>
<td>0 ~ 255</td>
<td>Timer</td>
</tr>
<tr>
<td>B</td>
<td>C_Bit</td>
<td>DDD</td>
<td>0 ~ 255</td>
<td>Counter</td>
</tr>
<tr>
<td>Byte</td>
<td>VB</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td></td>
</tr>
</tbody>
</table>
### PLC Connection Guide

<table>
<thead>
<tr>
<th>Bit/Word</th>
<th>Device type</th>
<th>Format</th>
<th>Range</th>
<th>Memo</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>VW</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>V Memory</td>
</tr>
<tr>
<td>W</td>
<td>VW_Odd</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>V Memory</td>
</tr>
<tr>
<td>DW</td>
<td>VD</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>V Memory Double Word</td>
</tr>
<tr>
<td>DW</td>
<td>VD_Odd</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>V Memory Double Word</td>
</tr>
<tr>
<td>W</td>
<td>VW_String</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>String</td>
</tr>
<tr>
<td>W</td>
<td>VW_String_Odd</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>String</td>
</tr>
<tr>
<td>DW</td>
<td>VD_String</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>String</td>
</tr>
<tr>
<td>DW</td>
<td>VD_String_Odd</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>String</td>
</tr>
<tr>
<td>Byte</td>
<td>MB</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Byte Memory</td>
</tr>
<tr>
<td>W</td>
<td>MW</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Word Memory</td>
</tr>
<tr>
<td>W</td>
<td>MW_Odd</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Word Memory</td>
</tr>
<tr>
<td>W</td>
<td>T</td>
<td>DDD</td>
<td>0 ~ 255</td>
<td>Timer</td>
</tr>
<tr>
<td>W</td>
<td>C</td>
<td>DDD</td>
<td>0 ~ 255</td>
<td>Counter</td>
</tr>
<tr>
<td>DW</td>
<td>MD</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Word Memory</td>
</tr>
<tr>
<td>Byte</td>
<td>SB</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>SCR</td>
</tr>
<tr>
<td>W</td>
<td>SW</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>SCR</td>
</tr>
<tr>
<td>DW</td>
<td>SD</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>SCR</td>
</tr>
<tr>
<td>Byte</td>
<td>SMB</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Special Memory</td>
</tr>
<tr>
<td>W</td>
<td>SMW</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Special Memory</td>
</tr>
<tr>
<td>DW</td>
<td>SMD</td>
<td>DDDDD</td>
<td>0 ~ 10239</td>
<td>Special Memory</td>
</tr>
</tbody>
</table>

- Double Word and floating point value must use VD device type.

**Multi-HMIs-Multi-PLCs Communication Setting:**

![PPI Diagram]

[Image of PPI Diagram]
For S7-200 PLC, Multi-HMIs-Multi-PLCs communication can be achieved using S7/200 PPI driver, please refer to the settings below.

IN EasyBuilder COM Port Settings, two important parameters must be set:

1. **[High station address (HSA)]:**
   Setting Max. Station Number of HMI in PPI network.
   For the effectiveness of system operation, it is highly recommended that the HMI station number starts from zero and go on sequentially. If there are 4 HMI in PPI network, set station no. from 0~3, and [High station address (HSA)] to 3.
   Set HMI station number in [System Parameters] / [Model] / [HMI station no.]:

2. **[Gap update factor (GUF)]:**
   The condition to pass a Token. In PPI network only HMI can hold a Token, PLC can only be controlled.
   When the HMI that holds Token communicates with PLC for a number of times that equals to the value set here, HMI will pass the Token (control of PLC) to the next HMI. For example, if GUF is set to “1”, HMI will pass the control of PLC to the next HMI when read or write the value in an address.
If GUF is set to a bigger value, the HMI that holds Token will control the PLC for a longer time and therefore the Token won’t be passed to another HMI and cause failure in communicating with PLC.

A complete communication means HMI reads / writes PLC value for one time.

**Note:**

- HMI sta. no. can not be the same as PLC sta. no.
- Highly recommended that HMI sta. no. starts from 0 and go on sequentially for the effectiveness of operation.
- Available for EasyBuilder V4.50 and later.

**How to Import Tag:**

The tags created in the Symbol Table in Step7-MicroWIN software can be imported to EasyBuilder.

1. In **Symbol Table** create the tags. Select all the tags and click the right mouse button then **copy** the tags.

2. Launch EasyBuilder, add the driver in the device list in **System Parameter Settings**, and then click **Import Tag** button.
3. **Paste** the tags copied in step 1 and then click **OK**.

![Paste](image)

4. Select all the tags and then click **OK**.

![Add Tags](image)

5. If succeeded, the following message window shows.

![EasyBuilder Pro](image)
Pass-Through Settings:

[Designate client IP]: In Pass-through mode designate the client IP address to connect HMI. The “client” usually refers to Siemens Step 7 application.

The following lists the system registers relevant to Siemens S7-200 PPI and Siemens S7-300 MPI Pass-through feature.

- [LW-10850: disable/enable (0 : disable, 1 : normal, 2 : IP limited) (siemens pass-through)]
- [LW-10851: destination COM port (siemens pass-through)]: Generally refers to the COM port connected with PLC.
- [LW-10852: destination PLC station no. (siemens pass-through)]
- [LW-10853: communication protocol (0 : invalid, 1 : PPI, 2 : MPI) (siemens pass-through)]
- [LW-10854 to LW-10857: IP of connecting client (siemens pass-through)]: Displays current client IP address connected with HMI.
- [LW-10858 to LW-10861: IP of designated client (siemens pass-through)]: If LW-10850 is set to 1, the system registers can be used to designate the client IP connected with HMI.
- [LW-10862: connection status (0 : ready, 1 : client connecting) (siemens pass-through)]
- [LW-10863: execution status (0 : normal, 1 : error) (siemens pass-through)]
- [LW-10864: the last error (siemens pass-through)]
The following table lists the error codes, the description of each code, and the possible reason.

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
<th>Possible Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Successfully executed</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Prohibit client from connecting HMI</td>
<td>HMI is already running pass-through and won’t accept any request from other client.</td>
</tr>
<tr>
<td>2</td>
<td>Prohibit client from connecting HMI</td>
<td>When LW-10850 is set to 1, the client IP for connecting HMI is different from the IP specified in LW-10858 ~ LW-10861.</td>
</tr>
<tr>
<td>3</td>
<td>Invalid communication protocol</td>
<td>Invalid setting in LW-10853.</td>
</tr>
<tr>
<td>4</td>
<td>Invalid PLC station number</td>
<td>The PLC station number specified in LW-10852 does not exist.</td>
</tr>
<tr>
<td>5</td>
<td>Delayed communication</td>
<td>PLC connection failure.</td>
</tr>
<tr>
<td>6</td>
<td>Busy communication</td>
<td>PLC does not accept pass-through request, please confirm PLC settings.</td>
</tr>
<tr>
<td>7</td>
<td>Invalid pass-through request</td>
<td>Environment setup failure.</td>
</tr>
</tbody>
</table>

**Wiring Diagram:**

**Diagram 1**

**cMT Series**

- **cMT3151**

**eMT Series**

- **eMT3070**/
- **eMT3105**/
- **eMT3120**/
- **eMT3150**

<table>
<thead>
<tr>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM1</td>
<td>RS485 2W 9P Male</td>
</tr>
<tr>
<td>RS485 2W 9P Male</td>
<td></td>
</tr>
<tr>
<td>Data-</td>
<td>1</td>
</tr>
<tr>
<td>Data+</td>
<td>2</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>COM3</td>
<td></td>
</tr>
<tr>
<td>RS485 2W 9P Male</td>
<td></td>
</tr>
<tr>
<td>Data-</td>
<td>6</td>
</tr>
<tr>
<td>Data+</td>
<td>9</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Diagram 2

<table>
<thead>
<tr>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM2</td>
<td>RS485 2W</td>
</tr>
<tr>
<td>RS485 2W</td>
<td>9P Female</td>
</tr>
<tr>
<td>Data-</td>
<td>7</td>
</tr>
<tr>
<td>Data+</td>
<td>6</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

Diagram 3

<table>
<thead>
<tr>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM1</td>
<td>RS485 2W</td>
</tr>
<tr>
<td>RS485 2W</td>
<td>9P Male</td>
</tr>
<tr>
<td>Data-</td>
<td>1</td>
</tr>
<tr>
<td>Data+</td>
<td>2</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
</tr>
</tbody>
</table>

Diagram 4

<table>
<thead>
<tr>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM2</td>
<td>RS485 2W</td>
</tr>
<tr>
<td>RS485 2W</td>
<td>9P Female</td>
</tr>
<tr>
<td>Data-</td>
<td>7</td>
</tr>
<tr>
<td>Data+</td>
<td>8</td>
</tr>
<tr>
<td>GND</td>
<td>9</td>
</tr>
</tbody>
</table>
### Diagram 5

**MT-iE**  
*MT8050iE / MT8053iE*

**MT-iP**  
*MT6051iP / MT8051iP*

<table>
<thead>
<tr>
<th></th>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM2</td>
<td>RS485 2W 9P Male</td>
<td>RS485 2W 9P D-Sub Male</td>
</tr>
<tr>
<td>Data-</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Data+</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>COM3</td>
<td>RS485 2W 9P Male</td>
<td>RS485 2W 9P D-Sub Male</td>
</tr>
<tr>
<td>Data-</td>
<td>8</td>
<td>3 Data-</td>
</tr>
<tr>
<td>Data+</td>
<td>3</td>
<td>3 Data+</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>5 GND</td>
</tr>
</tbody>
</table>

### Diagram 6

**MT-iP**  
*MT6071iP / MT8071iP*

<table>
<thead>
<tr>
<th></th>
<th>HMI</th>
<th>PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM1</td>
<td>RS485 2W 9P Female</td>
<td>RS485 2W 9P D-Sub Male</td>
</tr>
<tr>
<td>Data-</td>
<td>1</td>
<td>8 Data-</td>
</tr>
<tr>
<td>Data+</td>
<td>2</td>
<td>3 Data+</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>5 GND</td>
</tr>
<tr>
<td>COM3</td>
<td>RS485 2W 9P Female</td>
<td>RS485 2W 9P D-Sub Male</td>
</tr>
<tr>
<td>Data-</td>
<td>7</td>
<td>8 Data-</td>
</tr>
<tr>
<td>Data+</td>
<td>8</td>
<td>3 Data+</td>
</tr>
<tr>
<td>GND</td>
<td>5</td>
<td>5 GND</td>
</tr>
</tbody>
</table>