

## 5.14 HITACHI

### 5.14.1 Introduction

This Hitachi IOserver allows the eWON to poll tags belonging to a HITACHI EH series PLC using its serial link or ethernet interface. eWON uses standard H protocol (for serial RS232), station number H protocol (for serial RS485), and ethernet H-protocol (for ethernet).

No remote maintenance functionality is provided by this IO server.

#### 5.14.1.1 Setup

##### 5.14.1.1.1 COM configuration

HITACHI IO Server settings (eWON is acting as a HITACHI IO master)		
COM Setup		
Baud Rate:	9600	Default: 9600
Parity:	None	Default: NO
Databits:	7	Default: 7
Stop Bit(s):	1	Default: 1
HW Mode:	Full Duplex HW Handshaking	Default: Full Duplex
Reply Timeout:	5 M5	50..50000, default: 3000

Figure 97: HITACHI IOserver: COM setup

Parameter	Description
<b>Baud Rate</b>	Speed of the Serial port. Available speeds are 1200, 2400, 4800, 9600, 19200 Bauds or disabled
<b>Parity</b>	The parity to apply (None / Even / Odd)
<b>Databits</b>	Number of bits in data (7 or 8)
<b>Stop bit(s)</b>	Number of Stop bits (1 or 2)
<b>HW mode</b>	Choose the Hardware mode of communication: <ul style="list-style-type: none"> <li>• <b>Ful Duplex HW handshaking (by default)</b></li> <li>• <b>Full Duplex NO handshaking</b></li> <li>• <b>Half duplex</b></li> </ul>
<b>Reply Timeout</b>	Maximum time the eWON will wait for a valid PPI message response

Table 108: HITACHI IOserver: COM parameters

eWON implements Transmission Control Procedure 1 (One way activation Control Procedure).

When half-duplex mode is used (RS485), eWON is acting as master. So no other master may be on the bus (eg: control panel or host).

5.14.1.1.2 Topic configuration

<b>Topic A :</b>		<input checked="" type="checkbox"/> Enabled
Topic Name:	A	
Destination Device Type and Address:	EH,5	'EH', ((ipaddress,('TCP' 'UDP), port))((station)), LUMP]
Poll Rate	2000 MS	Default: 2000
<b>Topic B :</b>		<input type="checkbox"/> Enabled
Topic Name:	B	
Destination Device Type and Address:		'EH', ((ipaddress,('TCP' 'UDP), port))((station)), LUMP]
Poll Rate		Default: 2000
<b>Topic C :</b>		<input type="checkbox"/> Enabled
Topic Name:	C	
Destination Device Type and Address:		'EH', ((ipaddress,('TCP' 'UDP), port))((station)), LUMP]
Poll Rate		Default: 2000

Figure 98: HITACHI IOserver: 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 Hitachi 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-.

5.14.2 Tag name convention

<b>IO Server Name</b>	HITACHI	
<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 109: HITACHI IOserver - 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.

**5.14.2.1 Value Name**

The syntax is the following:

**<Memory Type>[<Modifier>]<address>**

Symbol	Memory type	Modifier allowed (optional)	Address
<b>X</b>	External Input Bit		<b>Hrusbb</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) bb: bit offset (00 ..FF 2 digits hexadecimal)
<b>WX</b>	External Input Word	<b>W, S</b>	<b>Hrusw</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
<b>DX</b>	External Input Double	<b>D, L, F</b>	<b>Hrusw</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
<b>Y</b>	External Output Bit		<b>Hrusbb</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1 digit hexadecimal) s: slot number (1 digit hexadecimal) bb: bit offset (00..FF: 2 digits hexadecimal)
<b>WY</b>	External Output Word	<b>W, S</b>	<b>Hrusw</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
<b>DY</b>	External Output Double	<b>D, L, F</b>	<b>Hrusw</b> H stands for hexadecimal r: remote number (1 digit hexadecimal) u: unit number (1digit hexadecimal) s: slot number (1 digit hexadecimal) w: word offset (1digit hexadecimal)
<b>R</b>	Internal Output Bit dedicated		<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
<b>WR</b>	Internal Output Word dedicated	<b>W, S</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
<b>DR</b>	Internal Output Word dedicated Double	<b>D, L, F</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
<b>M</b>	Internal Bit Output Common		<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
<b>WM</b>	Internal Word Output Common	<b>W, S</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
<b>DM</b>	Internal Word Output Common Double	<b>D, L, F</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset

**Table 110: HITACHI Memory types and address scheme**

<b>L</b>	CPU Link Bit		<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating bit offset
<b>WL</b>	CPU Link Word	<b>W, S</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset
<b>DL</b>	CPU Link Double	<b>D, L, F</b>	<b>Hxxxxxx</b> H stands for hexadecimal x: 1 to 6 digits hexadecimal indicating word offset

**Table 110: HITACHI Memory types and address scheme**

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

Symbol	Modifier	value range
<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 111: HITACHI Modifiers**

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

Examples

address	point to
<b>XH00103</b>	selection of bit3 of word 0 of input device located at remote:0 unit:0 slot:1
<b>WYH0011</b>	selection of word 0 of output device located at at remote:0 unit:0 slot 1
<b>RH105</b>	bit 105 hex (261 decimal) of Internal Output Bit Dedicated area
<b>WRSH10</b>	short located at word 10 hex of the WR area
<b>WMH10</b>	word 10 hex of Internal Word Output Common area
<b>DMH10</b>	double word 10 + 11 hex of Internal Word Output Common area
<b>WMH000010</b>	word 10 hex of Internal Word Output Common area (WMH10 is more optimal)

**Table 112: HITACHI register address examples**

**• 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 113: Tag Status meaning**

**5.14.2.2 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 syntax is the following:

**EH,[ipaddress,TCP|UDP,port][station][LUMP]**

EH Serial	
<b>EH,station</b>	<p><b>station</b> : address of the PLC on the network  <i>EH,4 eWON will access PLC number 4.</i></p>
<b>EH</b>	<p>By configuration, an HITACHI PLC could have a station number undefined.                      If this PLC is alone on a serial link, you don't need to specify a station number.</p>
<b>EH,station,LUMP</b>	<p><b>station</b> : address of the PLC on the network  <b>LUMP</b> : Link Unit Port Module  <i>EH,4,FFFF0000 eWON will access PLC number 4 with the LUMP FFFF0000.</i></p>
<b>EH,LUMP</b>	<p>By configuration, an HITACHI PLC could have a station number undefined.                      If this PLC is alone on a serial link, you don't need to specify a station number.  <b>LUMP</b> : Link Unit Port Module  <i>EH,FFFF0000 eWON will access PLC with the LUMP FFFF0000.</i></p>
EH ethernet	
<b>EH,ipaddress,TCP UDP,port</b>	<p><b>ipaddress</b> : IP address of the PLC  <b>TCP UDP</b> : select the protocol used  <b>port</b> : IP port used  <i>EH,10.0.120.203,TCP,3004 eWON will access the PLC at 10.0.120.203 with protocol TCP and port 3004</i></p>
<b>EH,ipaddress,TCP UDP,port,LUMP</b>	<p><b>ipaddress</b> : IP address of the PLC  <b>TCP UDP</b> : select the protocol used  <b>port</b> : IP port used  <b>LUMP</b> : Link Unit Port Module  <i>EH,10.0.120.203,TCP,3004,FFFF0000                      eWON will access the PLC at 10.0.120.203, protocol TCP, port 3004 and LUMP FFFF0000</i></p>

**Table 114: HITACHI device address syntax**

**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.