HITACHI

EH-150/MICRO-EH Series

Supported version

V1.4.11.10 or higher

TOP Design Studio



CONTENTS

We want to thank our customers who use the Touch Operation Panel.

1. System configuration Page 2

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection Page 3

Select a TOP model and an external device.

3. TOP communication setting

Page 4

Describes how to set the TOP communication.

4. External device setting Page 9

Describes how to set up communication for external devices.

5. Cable table

Page 11

Describes the cable specifications required for connection.

6. Supported addresses

Page 13

Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "HITACHI EH-150/ MICRO-EH Series" is as follows:

Series	СРИ	Link I/F	Communication method	System setting	Cable
HITACHI	MICRO-EH		RS-232C	<u>3. TOP</u>	
EH-150/ MICRO-	EH-150/ EH-150 CPU316A CPU	CPU Port	RS-422 RS-485	communication setting	5. Cable table
EH Series	EH-150 Misc.		(2 wire)	<u>4. External device</u> setting	

Connectable configuration

• 1:1 connection





• 1:N connection









2. External device selection

■ Select a TOP model and a port, and then select an external device.

	Mo1					
PLC select [CO	MZJ		-			
Filter : [All]			\sim	Sea	rch : Model	Vendor
Vendor		Model			0	0
OMRON Industrial Autom	nation ^	80	EH-150/MICRO-E	H Series		
LS Industrial Systems		8	H Series			
MODBUS Organization						
SIEMENS AG.						
Rockwell Automation						
GE Fanuc Automation						
PANASONIC Electric Wor	ks					
YASKAWA Electric Corpo	ration					
YOKOGAWA Electric Corp	poration					
Schneider Electric Indust	ries					
KDT Systems						
RS Automation						
HITACHI IES						
FATEK Automation Coroc	oration Y					
PLC Setting[H Ser Alias Name :						
Alias Name : Interface :	PLC1 Serial		~			
Alias Name : Interface : Protocol :	PLC1 Serial COMM	Char	~		Con	mm Manual
Alias Name : Interface : Protocol : String Save Mode :	PLC1 Serial COMM First LH HL	Char	~		Con	mm Manual
Alias Name : Interface : Protocol : String Save Mode : Use Redundanc	PLC1 Serial COMM First LH HL	Char	~		Con	mm Manual
Alias Name : Interface : Protocol : String Save Mode :	PLC1 Serial COMM First LH HL V		ge		Con	mm Manual
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition :	PLC1 Serial COMM First LH HL V		~			mm Manual
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition :	PLC1 Serial COMM First LH HL V ID ~ TimeOut		ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition :	PLC1 Serial COMM First LH HL V TimeOut Condition		ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition :	PLC1 Serial COMM First LH HL V V TimeOut Condition	5	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : An Change Condition : Change Condition : Primary Option Timeout	PLC1 Serial COMM First LH HL V V TimeOut Condition	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 Serial COMM First LH HL Y V Condition 300 0 C C C C C C C C C C C C C	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry	PLC1 Serial COMM First LH HL Y V D V TimeOut Condition 300 S S S S S	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station No.	PLC1 Serial COMM First LH HL y y y y y y y y y y y y y	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station No.	PLC1 Serial COMM First LH HL y y y y y y y y y y y y y	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station No.	PLC1 Serial COMM First LH HL y y y y y y y y y y y y y	5 🗘	ge			
Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station No.	PLC1 Serial COMM First LH HL y y y y y y y y y y y y y	5 🗘	ge			

Settings		Contents				
ТОР	Model	Check the display and process of TOP to select the touch model.				
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "HITACHI IES".				
	PLC	Select an external device to connect to TOP. Select "EH-150/MICRO-EH Series". Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.				



3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project Property > TOP Setting] → [Project Options > "Use HMI Setup" Check > Edit > Serial]
 - Set the TOP communication interface in TOP Design Studio. Project Option × Change HMI[H] 💓 Add PLC [A] 📶 Change PLC[C] 🔀 Delete PLC[D] TOP Setting Date / Time Sync. Screen Option Unit Convert SYS : RD1220X
 Option Module Setting Project Option Screen Change HmiSetup Global Lock & Touch Project Style Splash PLC Buffer Sync. FieldBus (0) FieldBus (0) FID (0) Covice Setting FieldBus (0) 🛛 🗹 Use HMI Setup Initialization Edit mi setup opt Project Setting HMIDisable=0 Project Name=New project Start Mode=Menu Start Soreen No.=1 Latch Use=0 Latch Set=0~0 Communication Error Messae USBErrorMessage=0 StorageErrorMessage=1 DatabaseMessage=1 COM2 (1) PLC1 : EH-150/MICRO-EH COM3 (0) Ethernet (0) ^ Wireless (0) age =0 Control Panel 📥 Option Service System Devices TOP 🚥 Serial \times **Ideach** 1 Serial Port: COM2 • PLC Security Date/Time Signal Level ● RS-232C ○ RS-422(4) ○ RS-485(2) Baud Rate: 38400 Ŧ \checkmark \sim Data Bit: 7 Ŧ HDM I Ethernet Serial Stop Bit: 1 • Parity Bit: Even Ŧ Flow: Off ß \checkmark /Ping Auto Search Loopback Test File Ping **Diagnostic** Manager Apply Cancel

Items		ТОР	External device	Remarks		
Circuit Laural		DC 422	DC 405	RS-232C		
Signal Level	RS-232C	RS-422	RS-485	RS-422/485		
Baud Rate			38400			
Data Bit			7			
Stop Bit			1			
Parity Bit			EVEN			
* The above settings are example	es recommended by th	e company.			·	
Items	Description					
Signal Level	Select the serial communication method between the TOP and an external device.					
Baud Rate	Select the serial communication speed between the TOP and an external device.					
Data Bit	Select the serial communication data bit between the TOP and an external device.					
Stop Bit	Select the serial communication stop bit between the TOP and an external device.					
Parity Bit	Select the serial co	mmunication parity	/ bit check method betwee	n the TOP and an ext	ernal device.	



(2) Communication option setting

- [Project > Project Property > Device Settings > COM > "PLC1 : EH-150/MICRO-EH Series"]
 - Set the options of the HITACHI EH-150/MICRO-EH Series communication interface option in TOP Design Studio.

Project Option		×
Change HMI[H] Me Add PLC [A] The Change PLC [C] Change PLC [D]		
PLC Setting SYS RD 1220X Polytic Module Setting Percession Percession Polytic Module Setting Percession Polytic Module Setting Percession Percession	Co	mm Manual
< >>	Apply	Close

Items	Settings	Remarks
Interface	Select "Serial".	
Protocol	Select "COMM".	
TimeOut	Set the time for the TOP to wait for a response from an external device.	
SendWait	Set the waiting time between TOP's receiving a response from an external	
Sendwalt	device and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Station No.	Prefix	
Hardware Flow Control	Set whether flow control exists in hardware.	Check CTS *Note 1)

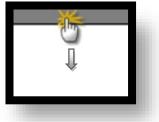
*Note 1) Confirm used communication port pin CTS.



3.2. Communication setting in TOP

* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]



Items		ТОР		External device	Remarks	
Signal Loyal (port)				RS-232C		
Signal Level (port)	RS-232C RS-422	RS-485	RS-422/485			
Baud Rate			38400			
Data Bit		7				
Stop Bit	1					
Parity Bit	EVEN					
* The above settings are setting	examples recommende	d by the company.				

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

■ [Main Screen > Control Panel > PLC]

	*				
	¢.	1001	PLC		×
	🔯 Syste	em Driver(COM2)	PLC1(EH-150/MICRO-EH Ser	ies) 🗸	
Run		Interface	Serial 💌		
		Protocol	COMM		
	PLC	: Timeout	300 🜩 msec		
VNC		Send Wait	0 🖨 msec		
VNC Viewer	്പ	Retry	5		
	Ethernet	Station No.	0		
		Hardware Flow	C No 💌		
Screen	. mit				
shot	mil				
	Diagnostic				
	[System]] Diagnostic		Apply	Cancel
		L			
Items	S	Settings			Remarks
TimeOut	S	Set the time for the TOP to wait for a response from an external device.			
SendWait	S	Set the waiting time between TOP's receiving a response from an external			

SendWait	Set the waiting time between TOP's receiving a response from an external	
	device and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	
Station No.	Prefix	
Hardware Flow Control	Set whether flow control exists in hardware.	Check CTS *Note 1)

***Note 1)** Confirm used communication port pin CTS.



3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].

- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

■ Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

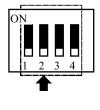
ltems	Conte	ents	Ch	eck	Remarks
System	How to connect the sy	stem	OK	NG	1 Custom configuration
configuration	Connection cable name		OK	NG	1. System configuration
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		ОК	NG	
	Relative prefix	Project setting	OK	NG	
		Communication diagnostics	OK	NG	2. External device selection 3. Communication setting
	Serial Parameter	Transmission Speed	ОК	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	ОК	NG	
External device	CPU name		OK	NG	
	Communication port n	ОК	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	4 External device cotting
	Serial Parameter	Transmission Speed	ОК	NG	4. External device setting
		Data Bit	OK	NG	
		Stop Bit	ОК	NG	
		Parity Bit	ОК	NG	
	Check address range		ОК	NG	<u>6. Supported addresses</u> (For details, please refer to the PLC vendor's manual.)



4. External device setting

For more detailed setting method than that described in this example, refer to the PLC user manual.

1. For communication with MICRO EH Series



Number	1	2	3	4	Transmission Speed (bps)
DIP Switch	ON	OFF	ON	OFF	38400
	ON	OFF	OFF	OFF	19200
	OFF	OFF	ON	OFF	9600

In the MICRO EH Series, the 10-point base unit does not have a DIP switch, so the transmission speed is fixed at 38400 bps.

-	– Fo	r use of	f port	1, you	must se	et WRF	01A reg	gister a	s follov	vs:						
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
WRF	03D	а	b	С	d	е	f	g	h				i			
-	 For use of port 2 (RS-422/RS-485), you must set WRF03D register as follows:. 															
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
WRF	03D	а	b	С	d	е	f	g	h				i			
	k	oit		value												
		а	0: F	0: Port 0, 1: Port 2												
Ī		h	0.	0 : Transmission control procedure 1, 1 : Transmission control procedure 2												

D	o . Transmission control procedure 1, 1 . Transmission control procedure 2							
с) : do not use prefix, 1 : use prefix (not used for port 1)							
d, e, f	Not used							
g, h	00 : 4800 bps, 01 : 9600 bps, 10 : 19200 bps, 11 : 38400 bps							
i	Prefix (BCD 00 - 31) (not used for port 1)							

% Transmission Control Procedure (Procedure) 1 fixed.

2. For communication with EH-150 Series

8				Transmission Speed			1	2	3	4	5	6	Т		
7 6				(9600				off	on	on				
5		Por	rt1	1	9200				on	off	on				
4				3	8400				off	off	on				
3				(9600							on	off		
2		Por	rt2	1	9200							off	on		
OFF ON				3	8400							on	on		
L	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
WRF037	а	b	с	d	е	f	g	h				i			

bit	value
а	1
b	0 : Transmission control procedure 1, 1 : Transmission control procedure 2
С	0 : do not use prefix, 1 : use prefix (not used for port 1)
d	Not used
e, f	00
g, h	00 : RS-232, 01 : RS-422, 10 : RS-485
i	Prefix (BCD 00–31)

** EH-150 CPU316A : Transmission Control Procedure (Procedure) 2, other : Transmission Control Procedure (Procedure) 1 Fixed.



5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. (The cable diagram described in this section may differ from the recommendations of "EH-150/MICRO-EH Series")

TC)P				External	device
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5				1	SG1	
(° °)	RD	2				
69	SD	3				
Based on				4	CD1(DCD)	
communication	SG	5		5	SD1(TXD)	
cable connector				6	RD1(RXD)	
front,				7	DR1(DSR)	
D-SUB 9 Pin male	CTS	8	1	8	RS1(RTS)	
(male, convex)						

RS-232C [MICRO-EH, EH-150 misc.]

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-232C [EH-150 : CPU316A]

TC)P		External device
Pin	Signal	Pin	Cable connection Pin Signal Pin
arrangement*Note 1)	name	number	number name arrangement*Note 1)
1 5			1 SG1
(° °)	RD	2	
6 9	SD	3	
Based on			4 CD1(DCD)
communication	SG	5	5 SD1(TXD)
cable connector			6 RD1(RXD)
front,			7 DR1(DSR)
D-SUB 9 Pin male			
(male, convex)			

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 [MICRO-EH]

ТОР					Externa	l device
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	RDA	1	• •	10	RDN	
(° °)						
6 9						
Based on	RDB	4	+ + + + + + + + + + + + + + + + + + +	- 11	RDP	
communication						
cable connector	SDA	6	┝━┥│	12	SDN	
front,						
D-SUB 9 Pin male						
(male, convex)	SDB	9	\	13	SDP	

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.



■ RS-422 [MICRO-EH]

TC)P			External device				
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin		
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)		
1 5	RDA	1 ·		13	SDP			
$\begin{pmatrix} \circ & \circ \end{pmatrix}$								
6 9								
Based on	RDB	4 ·		12	SDN			
communication								
cable connector	SDA	6 .		11	RDP			
front,								
D-SUB 9 Pin male								
(male, convex)	SDB	9 .		10	RDN			

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 [EH-150]

ТОР						Externa	l device
Pin	Signal	Pin	Cable connectio	n	Pin	Signal	Pin
arrangement*Note 1)	name	number			number	name	arrangement*Note 1)
1 5	RDA	1	•	-	4	TX	
$\begin{pmatrix} \circ & \circ \end{pmatrix}$							
6 9							
Based on	RDB	4	<u>}</u>		5	TXN	
communication							
cable connector	SDA	6	}_ •	•	7	RX	
front,							
D-SUB 9 Pin male							
(male, convex)	SDB	9	├ ──▲		6	RXN	
	500	-					

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-422 [EH-150]

TC	OP				Externa	l device
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	RDA	1		4	TX	
(° °)						
6 9						
Based on	RDB	4	· · · · · · · · · · · · · · · · · · ·	5	TXN	
communication						
cable connector	SDA	6		7	RX	
front,						
D-SUB 9 Pin male						
(male, convex)	SDB	9.		6	RXN	

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.



6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Device	Bit address	Word address	Remarks
Х	X0000 ~ X4007	WX000 ~ WX400	External input
Y	Y0100 ~ Y4021	WY010 ~ WY401	External output
R	R0000 ~ R07BF	WR000 ~ WRFFF	Internal output
М	M0000 ~ M3FFF	WM000 ~ WM3FF	Data area
L	L0000 ~ L3FFF	WL000 ~ WL3FF	Link area
TC	TC0000.00 ~ TC2047.15	TC0000 ~ TC2047	Timer/Counter current value
CL	CL0000.00 ~ CL2047.15	CL0000 ~ CL2047	Counter clear
CU	CU0000 ~ CU2047	-	Up counter
RCU	RCU0000 ~ RCU2047	-	Ring counter
CTU	CTU0000 ~ CTU2047	-	Updown counter - Up input
CTD	CTD0000 ~ CTD2047	-	Updown counter - Down input
TD	TD0000 ~ TD1023	-	Delay timer
SS	SS0000 ~ SS1023	-	Single short timer
WDT	WDT0000 ~ WDT1023	-	Watchdog timer
MS	MS0000 ~ MS1023	-	Monostable timer
TMR	TMR0000 ~ TMR1023	-	Watchdog timer