# HITACHI

**H** Series

# **Serial Driver**

V1.4.11.10 or higher

Supported version 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 <u>Page 4</u>

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 10

Describes the cable specifications required for connection.

## 6. Supported addresses

#### Page 11

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 H Series" is as follows:

Series	СРИ	Link I/F	Communication method	System setting	Cable
		CPU Port	RS-232C	3. TOP communication	
HITACHI	H-Series	COMM-H COMM-2H	RS-232C RS-422	<u>setting</u> <u>4. External device</u> <u>setting</u>	5. Cable table

#### ■ Connectable configuration

• 1:1 connection





#### • 1:N connection







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# 2. External device selection

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

PLC select [CO	M2]						
Filter : [All]			$\sim$		Search :		
						Model	○ Vendor
Vendor		Model					
MODBUS Organization	^	<b>\$</b>	EH-150/MIC	RO-EH Series	,		
SIEMENS AG.		80	H Series				
Rockwell Automation		~					
GE Fanuc Automation							
PANASONIC Electric Work	ks						
YASKAWA Electric Corpor	ation						
YOKOGAWA Electric Corp	oration						
Schneider Electric Industr	ies						
KDT Systems							
PS Automation							
	_						
HITACHI IES							
FATEK Automation Corpo	ration						
DELTA Electronics							
KOYO Electronic Industrie	× ×						
elect Device							
DLC Sotting[ EDA S	orioc 1						
PLC Setting[ FDA Setting[ FDA Setting[ FDA Setting[ FDA Setting]	eries ]						
PLC Setting[ FDA S Alias Name : Interface :	eries ] PLC1 Serial		~				
PLC Setting[ FDA S Alias Name : Interface : Protocol :	eries ] PLC1 Serial COMM		~ ~			Com	ım Manual
PLC Setting[ FDA Set Alias Name : Interface : Protocol : String Save Mode :	eries ] PLC1 Serial COMM First LH HL	Cha	∼ ∼ nge			Com	ım Manual
PLC Setting[ FDA Setting[ FDA Setting[ FDA Setimation of the set o	PLC1 Serial COMM First LH HL	Cha	↓ ↓ nge			Com	ım Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition :	eries] PLC1 Serial COMM First LH HL / D $\checkmark$	Cha	v v nge			Com	ım Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition :	PLC1 Serial COMM First LH HL D TimeOut	Cha 5	nge (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundanc Operate Condition : Change Condition :	PLC1 Serial COMM First LH HL D TimeOut Condition	Cha 5	nge (Second)			Con	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Operate Condition : AN Change Condition : Change Condition :	PLC1 Serial COMM First LH HL D TimeOut Condition	Cha 5	nge			Con	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Change Condition : Primary Option Timeout	PLC1 Serial COMM First LH HL D Condition 300	Cha 5 ( msec	v v v (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundance Operate Condition : Change Condition : Primary Option Timeout Send Wait	PLC1 Serial COMM First LH HL D TimeOut Condition 300 0 0 0 0 0 0 0 0 0 0 0 0	Cha 5 ( msec msec	nge (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : AN Change Condition : M Change Condition : M Ch	PLC1 Serial COMM First LH HL D ~ TimeOut Condition	Cha 5 msec msec	v v nge (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No.	PLC1 Serial COMM First LH HL D ~ TimeOut Condition 300 0 5 0 5 0	Cha 5 msec msec	v nge (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Use Redundancy Operate Condition : Primary Option Timeout Send Wait Retry Station No. Hardware Flow Control	PLC1 Serial COMM First LH HL D ~ TimeOut Condition 300 © 5 © 0 ©	Cha 5 msec msec	v nge (Second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Use Redundancy Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No. Hardware Flow Control	PLC1 Serial COMM First LH HL D ~ TimeOut Condition 300 (©) 5 (©) 5 (©) 0 (©) 5 (©)	Cha 5 msec msec	vvv nge (Second)			Con	im Manual
PLC Setting[ FDA S Alias Name : Interface : String Save Mode : Use Redundancy Operate Condition : Use Redundancy Operate Condition : Primary Option Timeout Send Wait Retry Station No. Hardware Flow Control	eries ]           PLC1           Serial           COMM           First LH HL           D           TimeOut           Condition           300           0           5           0           No	Cha	second)			Com	im Manual
PLC Setting[ FDA S Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry Station No. Hardware Flow Control	eries ] PLC1 Serial COMM FirstLH HL D TmeOut Condition	Cha	inge (Second)			Com	im Manual

Settings		Contents				
TOP	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 "H 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] → [HMI Setup > "Use HMI Setup" Check > Edit > Serial]

C	20		с · -		· · · ·
Set the IC	JP commur	nication inte	erface in	IOP De	sign Studio.

Project Option				×
Change HMI[H] Add PLC [A	Change PLC[C] 🔀 Dele	ete PLC[D]		
TOP Setting	ate / Time Sync. Screen Option	Unit Convert		
Option Module Setting     FieldBus (0)	roject Option Screen Change	HmiSetup Global Lock & Touch	Project Style Splash PLC Buffer Sy	/nc.
✓ WEID (0) ✓ WEID (0) ✓ WEID (0) ✓ WEID (0)	Use HMI Setup		Initialization Ed	lit
<ul> <li>COM2 (1)</li> <li>PLC1 : H Series [0]</li> </ul>	Project Setting HMIDisable=0			^
	Project Name=New project Start Mode=Menu Start Screen No. = 1			
USBDevice (0)	Latch Use=0 Latch Set=0~0			
	USBErrorMessage =0 StorageErrorMessage =1			
	vatavaser#255dyc = 1			
Control Panel				
🔯 System 🛛	🚾 Devices	Service 🔤	🔤 Option	
		🚥 Serial	×	
		Serial Port:	COM2 👻	
PLC Secu	Jrity Date/Time	Signal Level		
		● RS-232C ○ RS-4	22(4) 🔿 RS-485(2)	
		Baud Rate:	19200 👻	
i 🖂 [mm] 🖂 🔍		Data Rit:	7 🔹	
		bata bit.		
Ethernet Si	eriai HUMI	Stop Bit:	1 •	
		Parity Bit:	Even 👻	
Land L		Flow:	∩ff –	
	Ping			
Diagnostic	File Ping	Auto Search	Loopback Test	
Ma	anager		ten lu Cener l	
			Apply Cancel	

Items		ТОР	External device	Remarks		
Cineral Laural		DC 422	DC 405	RS-232C		
Signal Level	KS-232C	KS-422	KS-485	RS-422		
Baud Rate	19200					
Data Bit	7					
Stop Bit	1					
Parity Bit			EVEN			

\* The above settings are <u>examples</u> recommended 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

- [Project > Project Property > Device Setting > COM > "PLC1: H Series"]
  - Set the options of the HITACHI Series communication interface in TOP Design Studio.

Project Option		×
Change HMI[H] Kald PLC [A]	Change PLC[C] X Delete PLC[D]	
Clange Hindig     Add Fice [3]     FieldBus (0)     FieldBus (0)	Change PLC Delete PLC ing[ H Series ] Alias Name : PLC1 Interface : Serial Protocol : COMM Save Mode : First LH HL Change edundancy Indition : AND Indition : TimeOut Condition Dption 300 msec 5 . 0 . 0 . Flow Control No	Comm 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.	
	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
Cignal Loyal (part)			DC 495	RS-232C	
Signal Level (port)	91 (port) RS-232C RS-422 RS-485		KS-400	RS-422	
Baud Rate	19200				
Data Bit	7				
Stop Bit	1				
Parity Bit	EVEN				
* The above settings are setting e	examples recommended	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]

	ō	m	PLC	×
	🔯 System	Driver(COM2)	PLC1(H Series) 🔻	
Run		Interface	Serial 💌	
		Protocol	COMM	
MNC	PLC	Timeout	300 🖨 msec	
VNC		Send Wait	0 🖨 msec	
Viewer		Retry	5	
	Ethernet	Station No.	0	
0.		Hardware Flow	V C No 💌	
Screen	-			
snot	Diagnostic			
	[System]	Diagnostic		Apply Cancel

Items	Settings	Remarks
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	
	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.

Items	Contents		Check		Remarks
System	How to connect the system		OK	NG	1 System configuration
configuration	Connection cable name		ОК	NG	1. System configuration
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication	OK	NC	2. External device selection
		diagnostics	ÜK	NG	3. Communication setting
	Serial Parameter	Transmission	OK	NC	
		Speed	ÜK	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name		OK	NG	
	Communication port n	ame (module name)	OK	NG	
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings		OK	NG	4. External device setting
	Serial Parameter	Transmission	OK		4. External device setting
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range				6. Supported addresses
			OK	NG	(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 CPU (H20 – H64)

DIP Switch					
1	1 2 Transmission Speed (bps)				
OFF	OFF	2400			
OFF	ON	4800			
ON	OFF	9600			
ON	ON	19200			
3 (	Description				
OFF		CPU Link			
ON Host Link or Remote Master		Host Link or Remote Master			

	Rotary Switch		
DIP Switch 3	x10	x1	
Remote Master	F	F	
CPU Link	Pret	fix	
Host Link	Channel		

## 2. For communication with CPU misc.

- no other CPU module settings.

#### 3. For communication with COMM-H/COMM-2H card.

DIP Switch	Value				Description	
1	ON : 8bit OFF : 7bit					Data Bit
	2400	4800	9600	19200	19200	
2	ON	OFF	ON	OFF	ON	
3	ON	OFF	OFF	ON	ON	Baud Rate (bps)
4	OFF	ON	ON	ON	ON	
5	ON: Use OFF: Not used					Enable or disable parity
6	ON : Even OFF : Odd					Parity Bit
7	ON : 2bit OFF : 1bit					Stop Bit
8	ON: Use OFF: Not used					Enable or disable Check CTS (Hardware flow control)

<b>Rotary Switch</b>	Value	Description	
x10		Drofiv	
x1		Prenx	
	1~4	Transmission control procedure: 1	
MODE	7,9	Transmission control procedure: 2	

**%** Transmission Control Procedure (Procedure) 2 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 "**H-Series**")



■ RS-232C [COMM-H/ COMM-2H, CPU Port]

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

#### \*Note 2) GND in COM1 port

#### ■ RS-422 [COMM-H/ COMM-2H]

TOP				External device		
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1	RDA	1		- 1	TXDP	
				- 2	TXDN	
Based on	RDB	4		- 4	RXDP	
communication				- 5	RXDN	
cable connector	SDA	6				
front,						
D-SUB 9 Pin male						
(male, convex)	SDB	9				

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

#### ■ RS-422 [COMM-H/COMM-2H] 1:N connection

TOP	External	External
Signal name	device	device
RDA	Signal name	Signal name
RDB	RXDP	 RXDP
SDA	RXDN	 RXDN
SDB	TXDP	TXDP
	TXDN	TXDN



## 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
γ	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