

## Hitachi EH Series PLC

(Supports Communication Mode: Procedure 1, Procedure 2)

### HMI Factory Setting:

Baud rate: 19200, 7, Even, 1 (RS-232)

Controller Station Number: 0

Control Area / Status Area: W0 / W10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

DOP series		Controller
9 pin D-sub male (RS-232)		RJ-45 cable connector (RS-232)
RXD (2)	—————	(5) SD1
TXD (3)	—————	(6) RD1
GND (5)	—————	(1) SG1
RTS (7)	—————	(7) DR1
CTS (8)	—————	(8) RS1

#### b. RS-422 (DOP-A/AE Series)

DOP series		Controller
9 pin D-sub male (RS-422)		RJ-45 cable connector (RS-422)
RXD- (1)	—————	(5) TXN
RXD+ (2)	—————	(4) TX
TXD+ (3)	—————	(6) RX
TXD- (4)	—————	(7) RXN
GND (5)	—————	(1) SG1

**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

DOP series		Controller
Terminal Block (RS-422)		RJ-45 cable connector (RS-422)
R-		(5) TXN
R+		(4) TX
T+		(6) RX
T-		(7) RXN
GND		(1) SG1

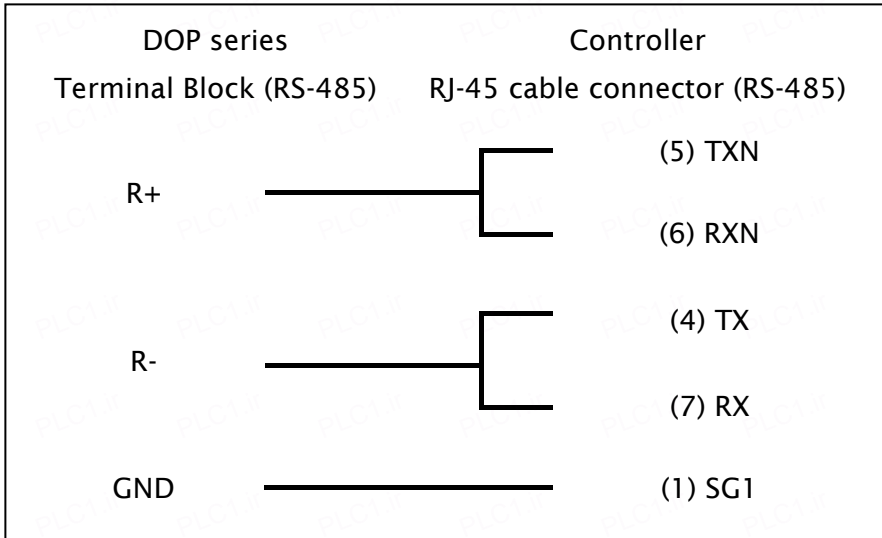
**d. RS-422 (DOP-B Series)**

DOP series		Controller
Terminal Block (RS-422)		RJ-45 cable connector (RS-422)
RXD- (9)		(5) TXN
RXD+ (4)		(4) TX
TXD+ (1)		(6) RX
TXD- (6)		(7) RXN
GND (5)		(1) SG1

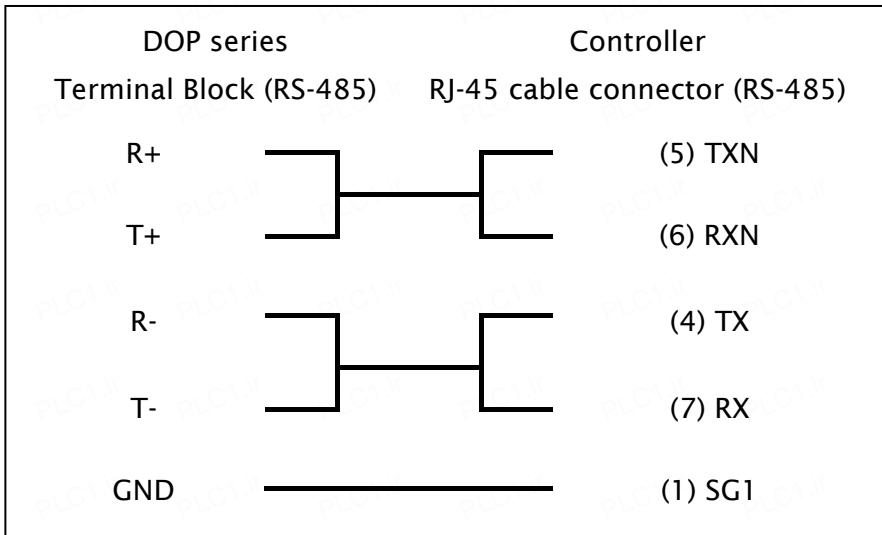
**e. RS-485 (DOP-A/AE Series)**

DOP series		Controller
9 pin D-sub male (RS-485)		RJ-45 cable connector (RS-485)
D+ (2)		(5) TXN
D+ (3)		(6) RXN
D- (1)		(4) TX
D- (4)		(7) RX
GND (5)		(1) SG1

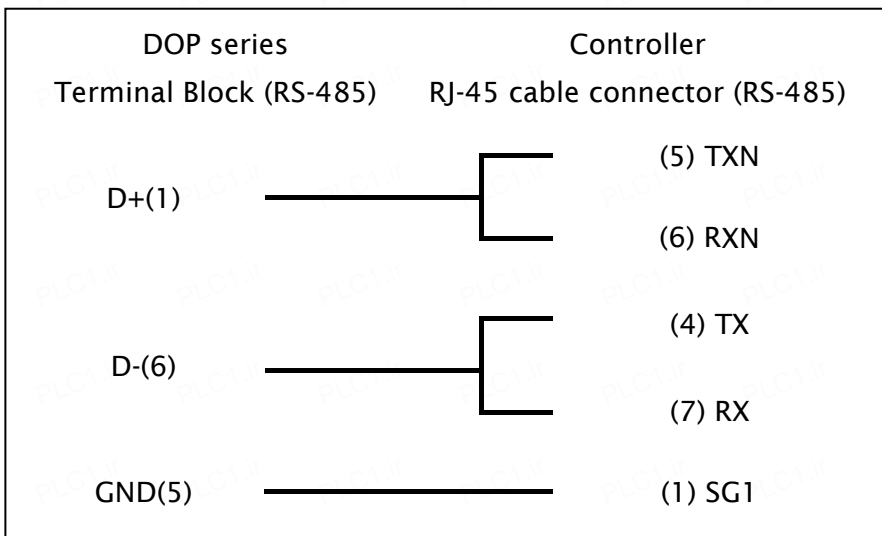
**f. RS-485 (DOP-AS57 Series)**



**g. RS-485 (DOP-AS35/AS38 Series)**



**h. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

Type	Format	Read/Write Range	Data Length	Note
	Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n)			
External Input	WXrusn	WX0000 - WXA744	Word	<a href="#">3</a> , <a href="#">5</a>
External Output	WYrusn	WY0000 - WYA744	Word	<a href="#">3</a> , <a href="#">5</a>
Internal Output	WRn	WR0 - WRC3FF	Word	
Special Internal Output	WRn	WRF000 - WRF1FF	Word	
Shared Internal Output	WMn	WM0 - WM3FF	Word	
CPU Link Area 1	WLn	WL0 - WL3FF	Word	<a href="#">4</a>
CPU Link Area 2	WLn	WL1000 - WL13FF	Word	<a href="#">4</a>
Timer/Counter	TCn	TC0 - TC511	Word	

**b. Contacts**

Type	Format	Read/Write Range	Note
	Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n) Bit No.(b)		
External Input	Xrusb	X0000 - X44495	<a href="#">3</a> , <a href="#">5</a>
External Output	Yrusb	Y0000 - Y44495	<a href="#">3</a> , <a href="#">5</a>
Internal Output	Rb	R0 - R7FF	
Shared Internal Output	Mnb	M00 - M3FFF	
CPU Link Area 1	Lnb	L00 - L3FFF	<a href="#">4</a>
CPU Link Area 2	Lnb	L10000 - L13FFF	<a href="#">4</a>
On Delay Timer	TDb	TD0 - TD255	
Single-shot Timer	SSb	SS0 - SS255	
Up Counter	CUb	CU0 - CU511	
Up-down Counter up input	CTUb	CTU0 - CTU511	
Up-down Counter down input	CTDb	CTD0 - CTD511	
Up-down Counter down output	CTb	CT0 - CT511	

Type	Format	Read/Write Range	Note
	Rank No.(r) Unit No.(u) Slot No.(s) Word No.(n) Bit No.(b)		
Progress Value Clear	CLb	CL0 - CL511	
Rising Edge Detection	DIFb	DIF0 - DIF511	
Falling Edge Detection	DFNb	DFN0 - DFN511	

 **NOTE**

- 1) In Hitachi EH series PLC, the user can select procedure 1 and procedure 2 via DIP switch and Special Internal Input (WR). Please refer to Hitachi EH PLC manual for more detail.
- 2) In Hitachi EH-150 series , only EH-CPU\*\*\*A/448/516/548 can use procedure 2.
- 3) EH PLC's External I/O (**WX, WY, X, Y**) data must be set up first before HMI can read and write the address. Please refer to Hitachi EH PLC for more detail.
- 4) This type of register is only supported by EH-150 series.
- 5) External I/O (**X, Y, WX, WY**)address rule
  - Symbol :
    - Rank No. : r , only supported by EH-150 series
    - Unit No. : u
    - Slot No : s
    - Word No. : n
    - Bit No. : b
  - Address Sample:
    - WX103** represents unit 1, word 3 of slot 0
    - X103** represents bit 3 of slot 1
    - X113** represents bit 13 of slot 1
    - Y2004** represents unit 2, bit 4 of slot 0
    - Y2104** represents unit 2, bit 4 of slot 1
- 6) EH-150 Setting
  - DIP5 should be set to ON.
  - If DIP5 is set to ON, PLC will determine the proper procedure (1 or 2) by the value of WRf037. When setting the address, the highest bit of write value must be 1 and then

PLC can write the value into other seven bits. The data will not be lost even when the power of PLC is cut off. Therefore,

- i. Write the value 0x8000 into the address. After restart PLC, the address value will become 0x0000 and perform communication by procedure 1.
  - ii. Write the value 0xC000 into the address. After restart PLC, the address value will become 0x4000 and perform communication by procedure 2.
- Use DIP3 and DIP4 to set the communication speed of port 1.
    - i. When DIP3 is ON and DIP4 is OFF, the communication speed is 19200bps.
  - Use DIP6, PHL to set the communication speed of port 2.
    - i. When DIP6 is ON and PHL is OFF, the communication speed is 19200bps.
    - ii. The EH-150 PLC is a “Base Unit” which has a built-in CPU module. This unit allows easy connection of extension module, such as “External I/O”.

7) MicroEH

- DIP5 is used to set communication speed.
  - i. When SW1 is ON, the communication speed is 19200bps. Please refer to Hitachi EH PLC manual for more detail.
- MicroEH PLC will determine the proper procedure (1 or 2) by the value of WRf01a. Different than EH-150, when setting the address, the highest bit of write value does not need to be 1. But the data will be lost even the power of PLC is cut off. However, if set the value of R7f6 to 1, the data of WRf01a will be saved into Flash memory.
  - i. 0x0000 for procedure 1.
  - ii. 0x8000 for procedure 2.
  - iii. If the PLC uses procedure 2 and saves the data into Flash memory, it cannot connect to the peripheral devices and programs (Ladder Editor) that only support procedure 1.
  - iv. Standard External I/O built in MicroEH PLC are listed as below:
    - Digital Type
      - slot 0: X48
      - slot 1: Y32
      - slot 2: empty16
    - Analog Type
      - slot 3: X4W
      - slot 4: Y4W