



PIO E84 OHT EMULATOR USER'S MANUAL

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CanTops



< Table of Contents >

1. About our Products

- 1) Product Overview
- 2) Product Feature
- 3) Product code

2. Product Specification

- 1) I/O Operating Signal Display
- 2) Others

3. Major Connector Function

- 1) DSUB Connector
- 2) MOLEX Connector

4. Apparatus Specification

- 1) Apparatus Drawing

5. Usage after Connection with IR-PIO

- 1) Operating Method and Sequence
- 2) IR-PIO Data Communication Configuration Diagram

6. . Usage after Connection with RF-PIO

- 1) Operating Method and Sequence
- 2) RF-PIO Data Communication Configuration Diagram

Appendix : Emulation Setting

- 1) Usage



1. About our Products(1)

1) Product Overview

The PIO E84 OHT EMULATOR is a device to input/output data signals automatically for communications with the PIO(slave) attached to the equipment without OHT through connection with the OHT PIO(master) according to the **“SEMI-E84”** communication standard.

This device is used to **“test the operation of communications with equipment”**.

2) Product Feature

- Communication and emulation with equipment on behalf of OHT
- Confirmation of input/output between PIO(master) and PIO(slave) through LED
- Connected to the PIO DSUB 25 pin for use(I/O connection)
- Setting of emulator functions through DSUB 9-pin serial connection
- Use of the emulation start/error reset button switch
- Power supply with a 24V adaptor

3) Product Code

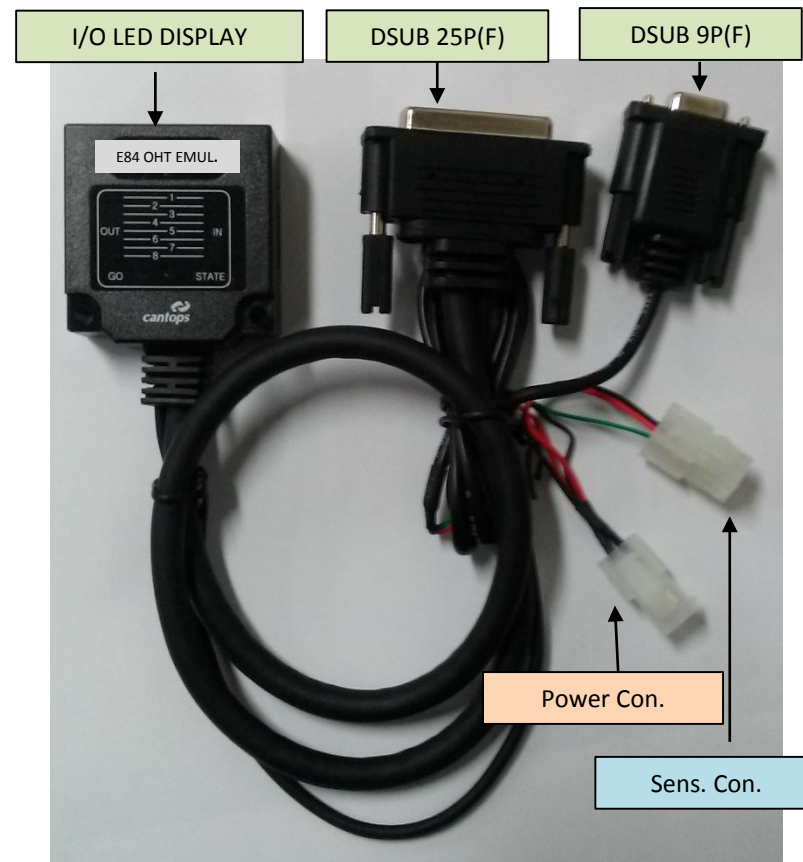
Item name	Connection type
CTS-E84S-MC01	E84 OHT auto signal generator
CTS-PMAN-AA01	E84 manual and auto simulator



2. Product Specification(1)

1) I/O Operating Signal Display

Division	EMUL.	LED	Operating signal
OHT signal	OUT 1	Orange	Valid
	OUT 2	Orange	CS_0
	OUT 3	Orange	-
	OUT 4	Orange	-
	OUT 5	Orange	TR_REQ
	OUT 6	Orange	BUSY
	OUT 7	Orange	COMPT
	OUT 8	Orange	CONT
EQP signal	IN 1	Red	L_REQ
	IN 2	Red	U_REQ
	IN 3	Red	-
	IN 4	Red	READY
	IN 5	Red	-
	IN 6	Red	-
	IN 7	Red	HO_AVBL
	IN 8	Red	ES



< EMULATOR configuration >



2. Product Specification(2)

Division	EMULATOR	LED	Operating signal
Communication status	GO	Green	Master PIO communication standby : EMULATOR LED On Master PIO communication start : EMULATOR LED Off
Operating status	STATE	Green	EMULATION normal operation: Flashing in a 0.25 sec interval EMULATION error generation: Flashing in a 0.05 sec interval EMULATION FOUN sensor detection standby: LED On

2) Others

Use environment	Storage environment	Storage temperature: -25 ~ 70°C Storage humidity: 5~95 %RH(However, there shall be no dew condensation)
	Operating environment	Operating temperature: 0 ~ 40°C Operating humidity:35~85 %RH (However, there shall be no dew condensation) Vibration: 4~150 Hz, 4.9m/s ² or less
Power terminal	Input voltage	DC24V ±10% (DC 18~26V)
	Consumed current	20mA or less @ 24V
Component	Power terminal	24V adaptor
	DSUB 9 pin(Female)	1:1 cross connected cable
	Sensor switch	Start switch(push s/w)



3. Major Connector Function

1) DSUB connector

Division	Major function
DSUB 25P (Female)	I/O communication with PIO
DSUB 9P (Female)	Data communication timeout time setting ※ RF-PIO requires separate ID setting work.

2) MOLEX connector

Division	Specification		Pin information			
	Housing	Terminal	1	2	3	4
Molex 4p (Sens.)	5559-04	5558	NC	GND	+24V	Sens.
Molex 2p (Power supply)	5559-02	5558	+24V	GND	-	-



Technical drawing of a mechanical part, showing front and side views with dimensions.

Front View Dimensions:

- Overall width: 50
- Overall height: 67
- Inner rectangular cutout width: 46
- Radius of the bottom corners: R5
- Radius of the bottom fillet: R4.3
- Width of the bottom flange: 15
- Overall width of the base: 42
- Height of the base: 9
- Width of the base: 5

Side View Dimensions:

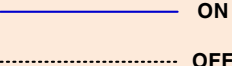
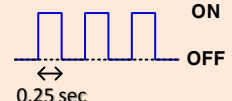
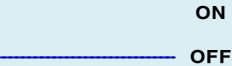
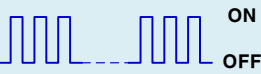
- Overall width: 20
- Height of the base: 3



5. Usage after Connection with IR-PIO(1)

1) Operating Method and Sequence

- ① Connect the OHT IR-PIO(Master) DUSB 25P(M) to the DUSB 25P(F) connector of the PIO EMULATOR, and then connect the adaptor connector to the MOLEX 2p(power connector). **(Power input)**
- ② Check the **"GO, STATE LED"** in the PIO EMULATOR and the IR-PIO(Master). **(Before starting data communication)**

Division	Output	LED status	Communication timing
PIO EMULATOR	GO	On	
	STATE	Flashing in a 0.25 sec interval	
IR-PIO(Master)	GO	Off	
	STATE	Flashing in a 0.05 sec interval	

- ③ Data communication timeout and port setting for the PIO EMULATOR(DSUB 9P(F), using a serial port)
 - Data communication timeout : Basic setting is provided during shipment to be used without separate change.
 - ※ For the basic value and resetting of data communication timing for the equipment, refer to the emulation setting method in the appendix.
 - Port setting : The E84 communication uses only CS_0 to require no separate setting.
- ④ Install the IR-PIO(Master) such that its transmission/reception window may coincide with the equipment IR-PIO(Slave).



5. Usage after Connection with IR-PIO(2)

- ⑤ Push the switch connected to the MOLEX 4P(Sens.). **(Data communication start)**
- When ON/OFF once after switch connection : Load/Unload only once
 - When keeping the switch ON : Repeated Load/Unload in a regular period
- ⑥ Check the GO/STATE LED in the PIO EMULATOR and the IR-PIO(Master). **(During data communication)**

Division	Output	LED status	Communication timing
PIO EMULATOR	GO	Off	
	STATE	Flashing in a 0.25 sec interval, and LED On only in a FOUP operation section	
IR-PIO(Master)	GO	On	
	STATE	Flashing in a 0.25 sec interval	

√ EMULATOR display in case of an error

Division	EMUL. output	LED status	Communication timing
PIO EMULATOR	GO	On	
	STATE	Flashing in a 0.05 sec interval	

※ Turning OFF/ON the Start button during reoperation after an error converts it into the initial state. (Resetting of the state in a 0.25sec interval)

5. Usage after Connection with IR-PIO(3)

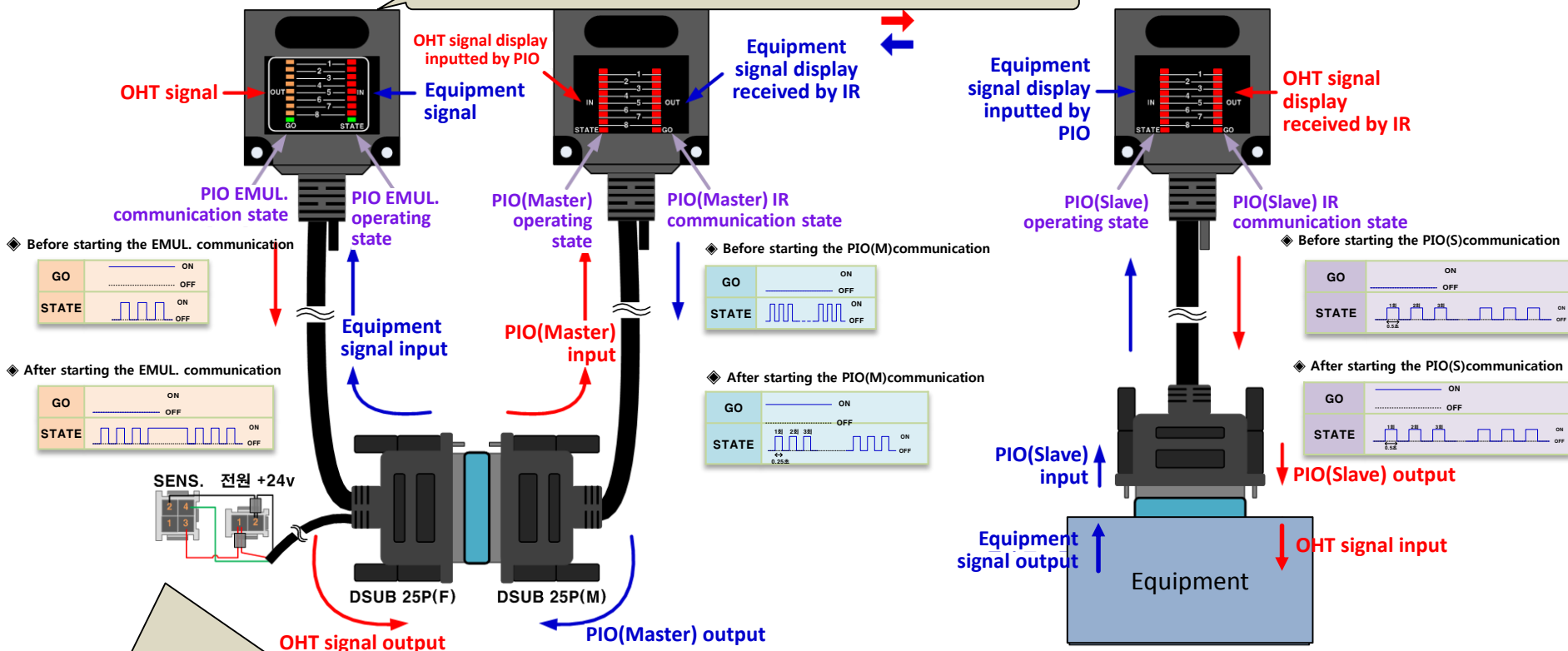
2) IR-PIO data communication configuration diagram

→ OHT signal progress direction

→ Equipment signal progress direction

< PIO OHT EMULATOR > The E84 communication uses only CS_0 to require no separate setting of ports.

< IR-PIO(Slave) >



- When ON/OFF once after switch connection : Load/Unload only once
- When keeping the switch ON : Repeated Load/Unload in a regular period

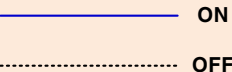

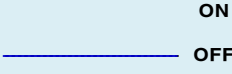

※ Turning OFF/ON the Start button during reoperation after an error converts it into the initial state. (Resetting of the state in a 0.25sec interval)



6. Usage after Connection with RF-PIO(1)

1) Operating Method and Sequence

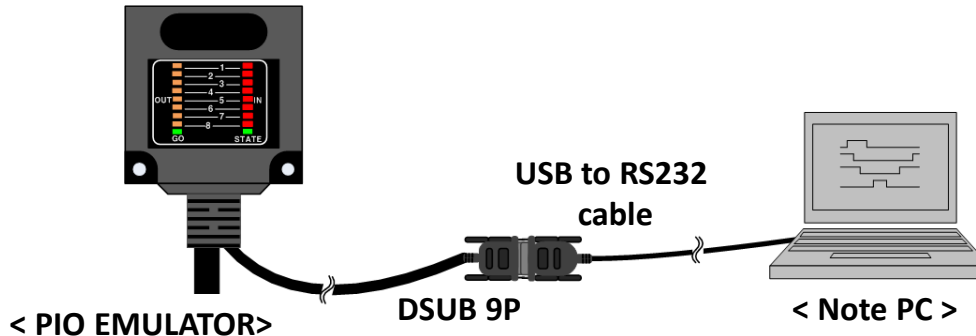
- ① Connect the DUSB 25P(F) connector of the PIO EMULATOR to the OHT RF-PIO(Master) DUSB 25P(M), and then connect the adaptor connector to the MOLEX 2p(power connector). **(Power input)**
- ② Check the **"GO, STATE LED"** in the PIO EMULATOR and the RF-PIO(Master). **(Before starting data communication)**

Division	Output	LED status	Communication timing
PIO EMULATOR	GO	On	
	STATE	Flashing in a 0.25sec interval	
RF-PIO(Master)	GO	Off	
	STATE	Flashing in a 0.05sec interval	

- ③ Data communication timeout and port setting for the PIO EMULATOR(DSUB 9P(F), using a serial port)
 - Data communication timeout : Basic setting is provided during shipment to be used without separate change.
 - ※ For the basic value and resetting of data communication timing for the equipment, refer to the emulation setting method in the appendix.
 - Port setting : The E84 communication uses only CS_0 to require no separate setting.

6. Usage after Connection with RF-PIO(2)

- ④ Connect the USB to RS232 cable to the DSUB 9 pin of PIO EMULATOR and the note PC.



- ⑤ Execute the communication program, and then enter the same ID and channel as the equipment PIO.

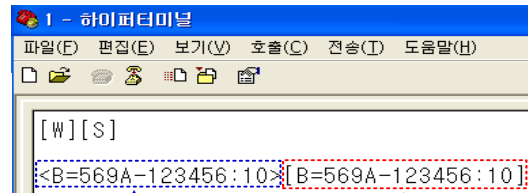
Ex) Input : **<B=569A-123456:10>**

Reply : **[B=569A-123456:10]**

Input to check the setting value: ****

Reply of the set and stored value

: **[B=569A-123456:10]**



Input with keyboard

Reply on the screen automatically

※ COM PORT setting

✓ Baud rate : 57600

✓ Data bits : 8

✓ Parity Type : None

✓ Stop bits : 1

✓ Flow control : None

- ⑥ Connect the DSUB 9P cross cable to the EMULATOR DSUB9 pin and the RF-PIO DSUB9 pin.

※ Use the cable provided by Cantops.

※ Refer to the data communication configuration diagram.

- ⑦ Push the switch connected to the MOLEX 4P(Sens.). **(Data communication start)**

- When ON/OFF once after switch connection : Load/Unload only once

- When keeping the switch ON : Repeated Load/Unload in a regular period



6. Usage after Connection with RF-PIO(3)

⑧ Check the GO/STATE LED in the PIO EMULATOR and the RF-PIO(Master). (During data communication)

Division	Output	LED status	Communication timing
PIO EMULATOR	GO	Off	
	STATE	Flashing in a 0.25 sec interval, and LED On only in a FOUP operation section	
RF-PIO(Master)	GO	On	
	STATE	Flashing in a 0.5 sec interval	

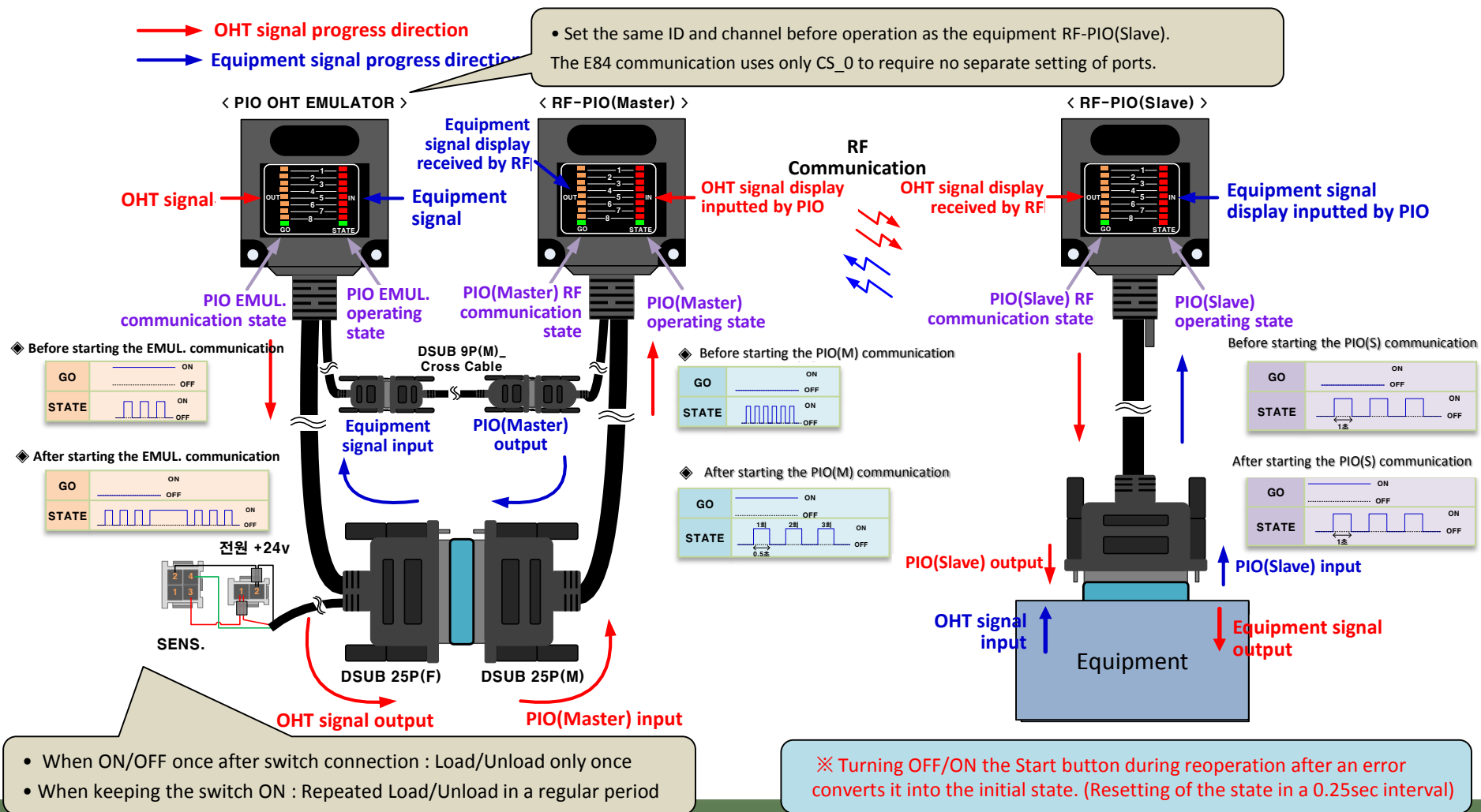
✓ EMULATOR display in case of an error

Division	EMUL. output	LED status	Communication timing
PIO EMULATOR	GO	On	
	STATE	Flashing in a 0.05 sec interval	

✗ Turning OFF/ON the Start button during reoperation after an error converts it into the initial state. (Resetting of the state in a 0.25sec interval)

6. Usage after Connection with RF-PIO(4)

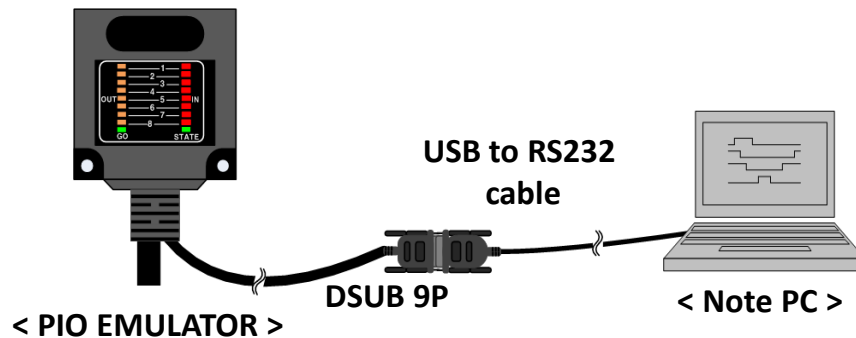
2) RF-PIO data communication configuration diagram



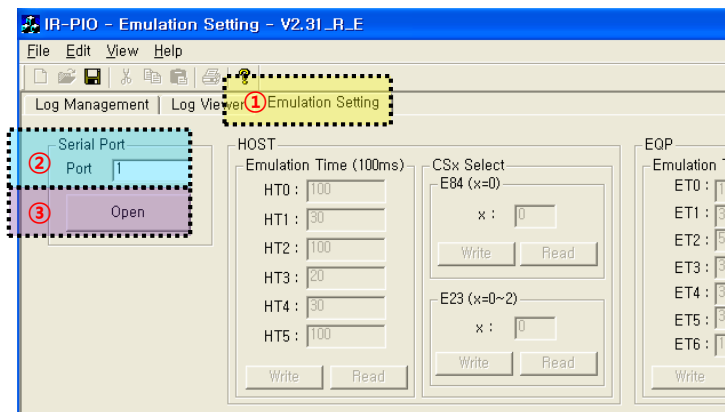
Appendix : Emulation Setting(1)

1) Usage

- Component installation



- ① Select the **"Emulation Setting"** tab.
- ② Set the **"Port"** Serial com port.
- ③ Click the **"Open"** (If the port opens, then it converts into the CLOSE display.)



Appendix : Emulation Setting(2)

- ④ Set the “data communication timeout time and port”.

IR-PIO - Emulation Setting - V2.31_R_E

File Edit View Help

Log Management | Log Viewer

PIO OHT emulator timeout time setting : 100ms/1 Ex) 10=1sec
- Errors take place if the communication is delayed beyond the set time.

Serial Port
 Port: 1
 Open

HOST
 Emulation Time (100ms)
 HT0: 100
 HT1: 30
 HT2: 100
 HT3: 20
 HT4: 30
 HT5: 100
 Write Read

EQP
 Emulation Time (100ms)
 ET0: 100
 ET1: 30
 ET2: 100
 ET3: 20
 ET4: 30
 ET5: 100
 Write Read

CSx Select
 E84 (x=0)
 x: 0
 Write Read

E23 (x=0~2)
 x: 0
 Write Read

**E84 OHT emulator port(CS) selection
 0 : Set to only CS_0**

* Range of Value
 HT : 1 ~ 255
 CS : 0 ~ 2
 ET : 1 ~ 255
 SDL : 0 ~ 1

**READ : Read the value set to the PIO EMULATOR.
 WRITE : Store the value changed by the program setting into the PIO EMULATOR.**

E-84 & E-23 Load/Unload FlowChart

E-84

Transfer Start Carrier detected Transfer is Completed

CS_0(A→P) M_2
 VALID(A→P) M_1
 TR_REQ(A→P) M_5
 BUSY(A→P) M_6
 COMPT(A→P) M_7
 CS_1(A→P) M_3
 CONT(A→P) M_8
 LU_REQ(P→A) S_1/2
 READY(P→A) S_4
 HO_AVBL(P→A) S_7
 ES(P→A) S_8

E-23

Transfer Start Carrier removed Transfer is Completed

CS_0(A→P) M_2
 VALID(A→P) M_1
 TR_REQ(A→P) M_6
 BUSY(A→P) M_7
 COMPT(A→P) M_8
 CS_1(A→P) M_3
 CS_2(A→P) M_4
 CS_3(A→P) M_5
 LU_REQ(P→A) S_1/2
 READY(P→A) S_4
 ABORT(P→A) S_3

* HOST Emulation Time *

- HT0 LREQ/UREQ on wait time
- HT1 READY on wait time
- HT2 LREQ/UREQ off wait time
- HT3 hoist comeup time
- HT4 READY off wait time
- HT5 interval time in working

* EQP Emulation Time *

- ET0 TREQ on wait time
- ET1 BUSY on wait time
- ET2 Foup Sensor sensing time
- ET3 BUSY off wait time
- ET4 TREQ off/COMPT on wait time
- ET5 COMPT/CS/VALID off wait time
- ET6 error auto recovery time