

Fanuc LTD

Power Mate i Series

Computer Link Driver

Supported version

TOP Design Studio

V1.0 or higher



CONTENTS

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

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Describes how to set the TOP communication.
- 4. External device setting** [Page 9](#)

Describes how to set up communication for external devices.
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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 "Fanuc LTD. Power Mate i Series " is as follows:

| Series | CPU | Communication method | System setting | Cable |
|--------------|---------------------|----------------------|--|------------------------------------|
| Fanuc Series | Power Mate i Series | RS-232C | 3. TOP communication setting 4.1. External device setting 1 | 5.1. Cable table 1 |
| | | RS-422 (4 wire) | 3. TOP communication setting 4.1. External device setting 1 | 5.1. Cable table 1 |

■ Connection configuration

- 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422 communication.

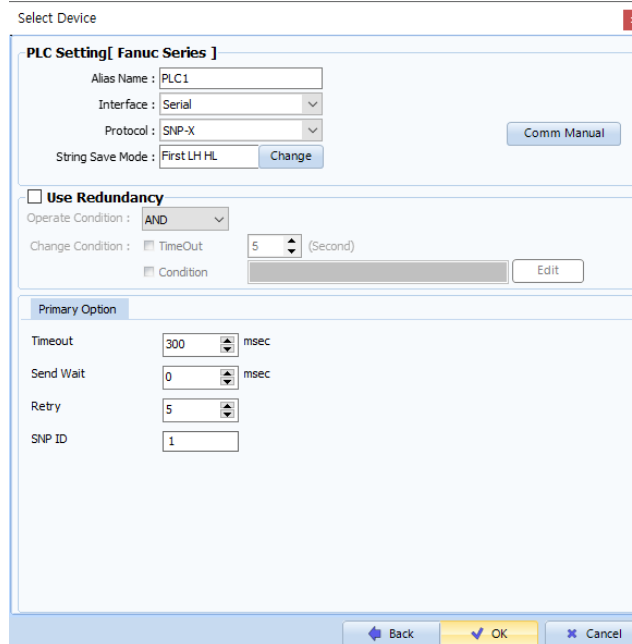
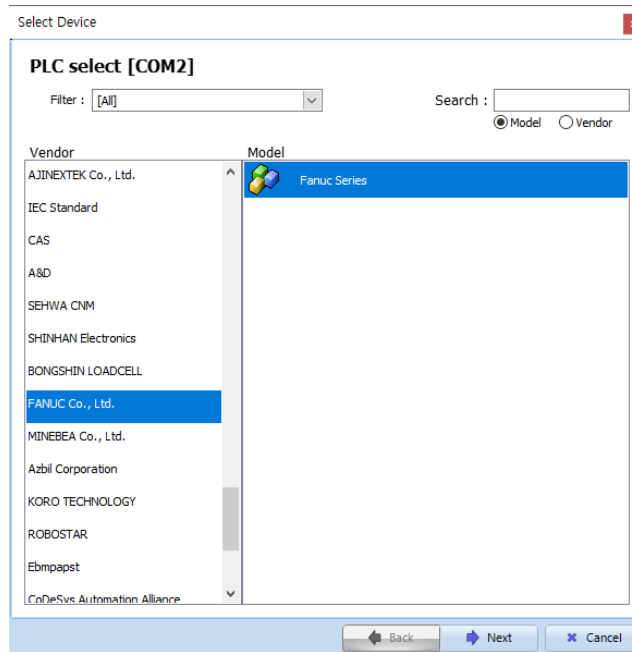


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422 communication.



2. External device selection

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



| Settings | | Contents | | | | | | | |
|--------------------|---------------|---|-------|-----------|----------|--------------|---------------|-------|--------------------|
| TOP | Model | Check the TOP display and process to select the touch model. | | | | | | | |
| External device | Vendor | Select the vendor of the external device to be connected to TOP. Please select "Fanuc LTD." | | | | | | | |
| | PLC | Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>Fanuc Series</td> <td>Computer Link</td> <td>SNP-X</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Supported Protocol</th> </tr> </thead> <tbody> <tr> <td>SNP-X</td> </tr> </tbody> </table> 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. | Model | Interface | Protocol | Fanuc Series | Computer Link | SNP-X | Supported Protocol |
| Model | Interface | Protocol | | | | | | | |
| Fanuc Series | Computer Link | SNP-X | | | | | | | |
| Supported Protocol | | | | | | | | | |
| SNP-X | | | | | | | | | |

3. TOP communication setting

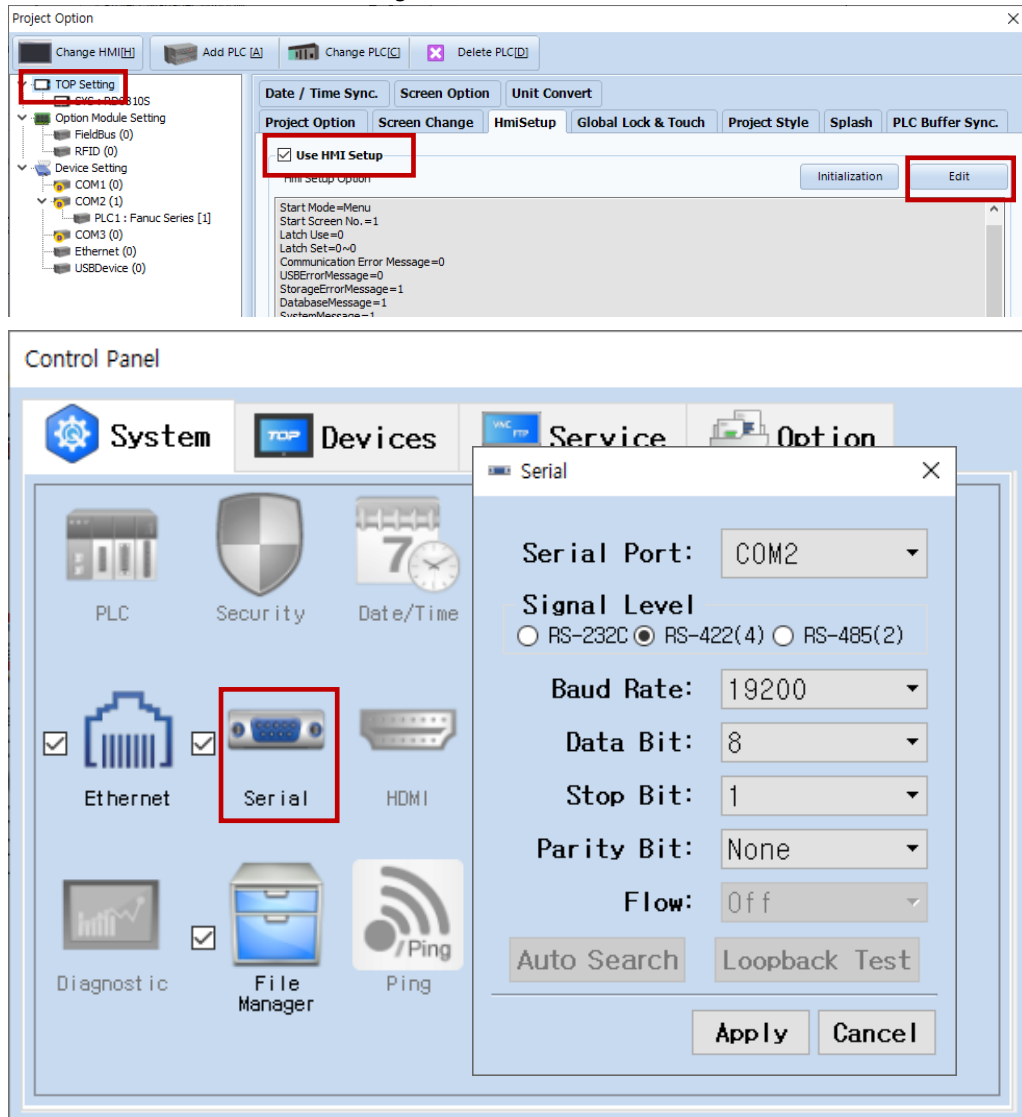
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



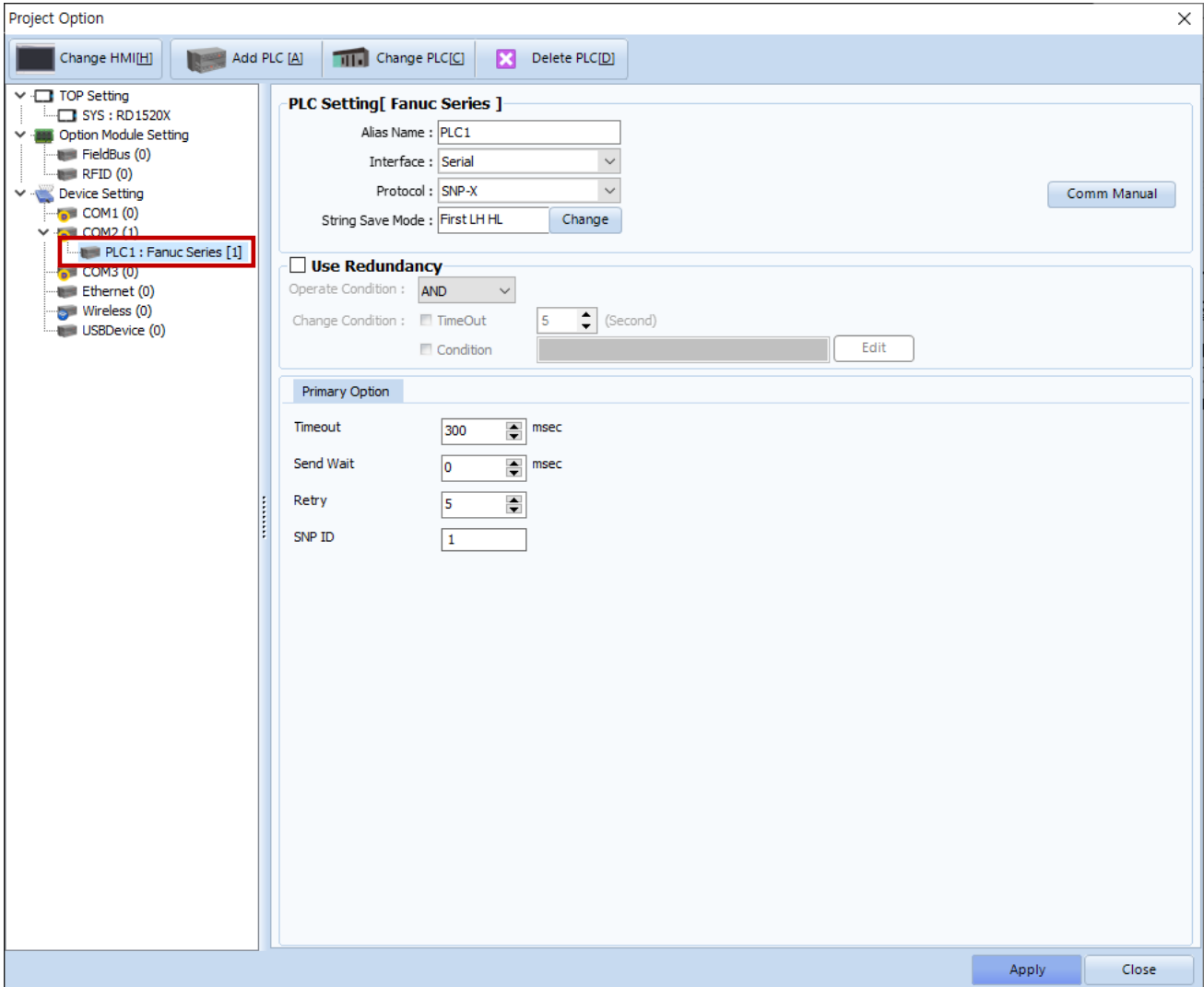
| Items | TOP | External device | Remarks |
|---------------------|-------------------|-------------------|---------|
| Signal Level (port) | RS-232C RS-422 | RS-232C RS-422 | |
| Baud Rate | 19200 | | |
| Data Bit | 8 | | |
| Stop Bit | 1 | | |
| Parity Bit | None. | | |

* The above settings are examples 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 : Fanuc LTD"]
 – Set the options of the **Power Mate i Series** communication driver in TOP Design Studio.

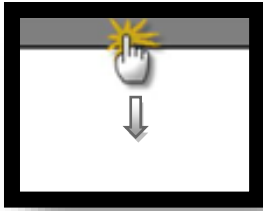


| Items | Settings | Remarks |
|---------------|---|--|
| Interface | Select "Computer Link". | Refer to "2. External device selection". |
| Protocol | Select the serial communication protocol between the TOP and an external device. | |
| TimeOut (ms) | Set the time for the TOP to wait for a response from an external device. | |
| SendWait (ms) | Set the waiting time between TOP's receiving a response from an external device and sending the next command request. | |
| SNP ID | Enter SNP ID for external device. | |

3.2. Communication setting in TOP

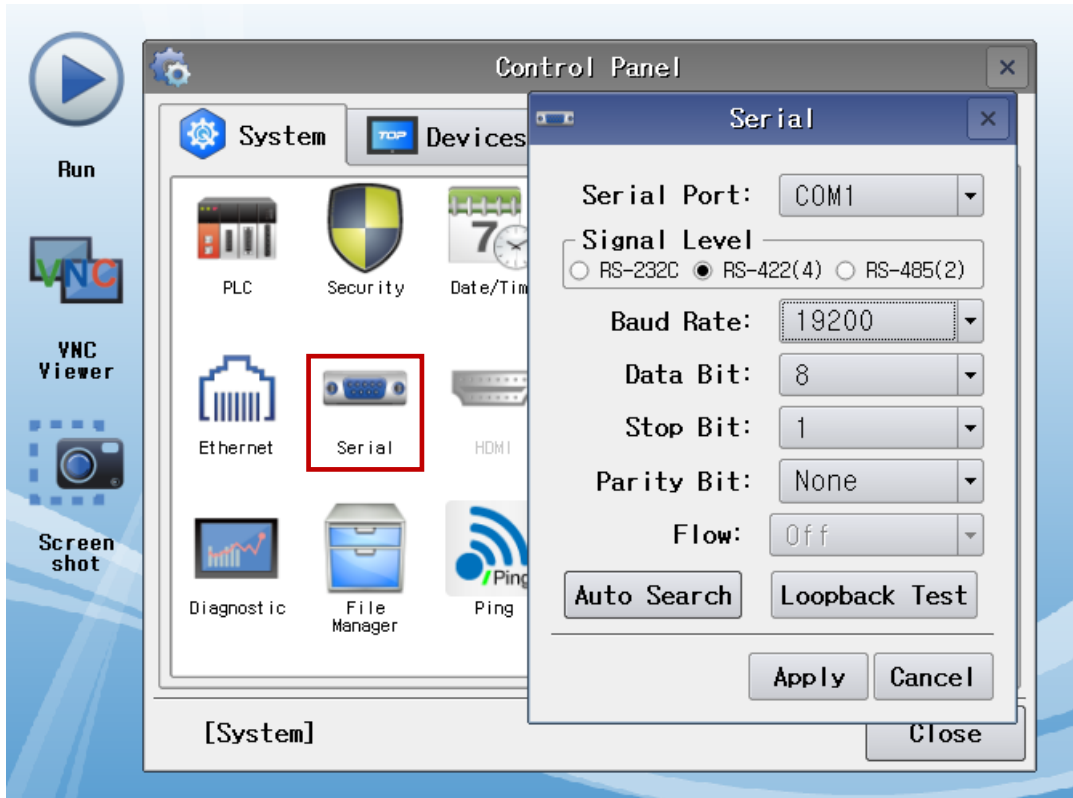
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



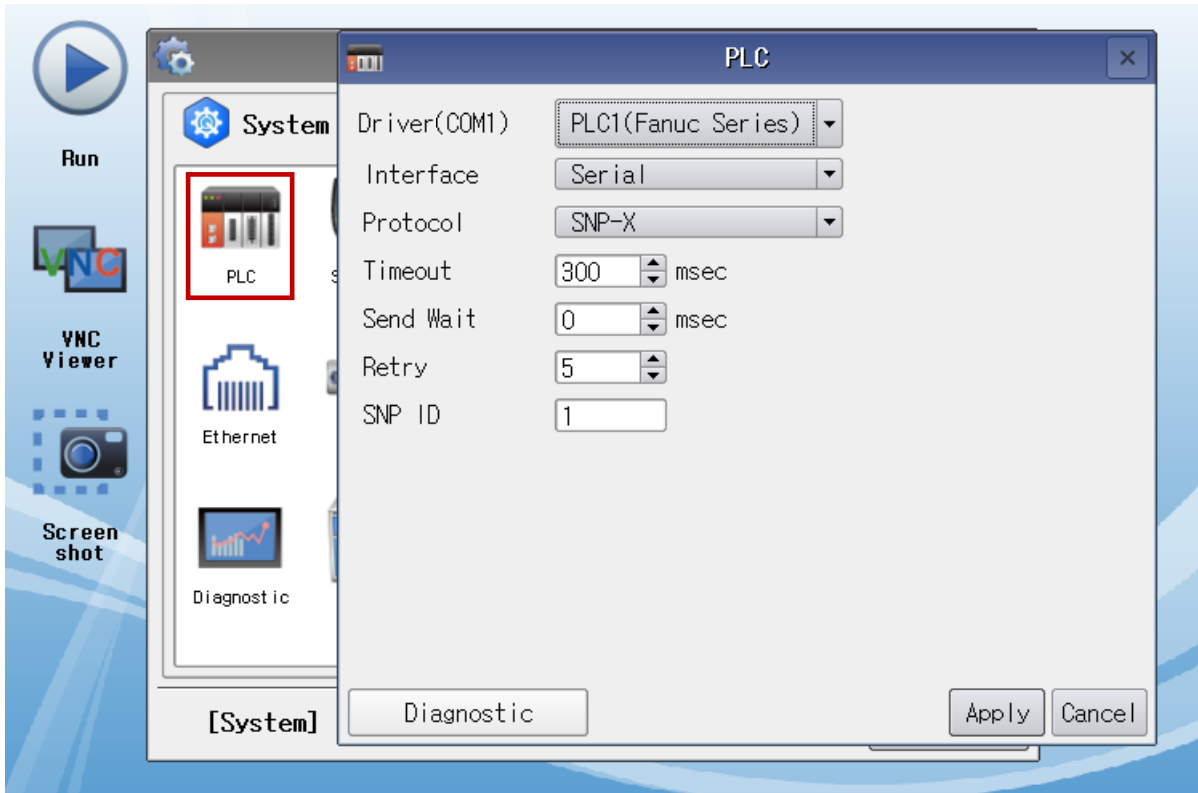
| Items | TOP | External device | Remarks |
|---------------------|-------------------|-------------------|---------|
| Signal Level (port) | RS-232C RS-422 | RS-232C RS-422 | |
| Baud Rate | 19200 | | |
| Data Bit | 8 | | |
| Stop Bit | 1 | | |
| Parity Bit | None. | | |

* The above settings are setting examples 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

■ [Main Screen > Control Panel > PLC]



| Items | Settings | Remarks |
|---------------|---|--|
| Interface | Select "Computer Link". | Refer to "2. External device selection". |
| Protocol | Select the serial communication protocol between the TOP and an external device. | |
| TimeOut (ms) | Set the time for the TOP to wait for a response from an external device. | |
| SendWait (ms) | Set the waiting time between TOP's receiving a response from an external device and sending the next command request. | |
| SNP ID | Enter SNP ID for external device. (Configure with TOP Design Studio) | |

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.

| | |
|-----------------------|--|
| OK | 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 configuration | How to connect the system | OK | NG | 1. System configuration | |
| | Connection cable name | OK | NG | | |
| TOP | Version information | OK | NG | 2. External device selection 3. Communication setting | |
| | Port in use | OK | NG | | |
| | Driver name | OK | NG | | |
| | Other detailed settings | OK | NG | | |
| | Relative prefix | Project setting | OK | | NG |
| | | Communication diagnostics | OK | | NG |
| | Serial Parameter | Transmission Speed | OK | | NG |
| Data Bit | | OK | NG | | |
| Stop Bit | | OK | NG | | |
| Parity Bit | | OK | NG | | |
| External device | CPU name | OK | NG | 4. External device setting | |
| | Communication port name (module name) | OK | NG | | |
| | Protocol (mode) | OK | NG | | |
| | Setup Prefix | OK | NG | | |
| | Other detailed settings | OK | NG | | |
| | Serial Parameter | Transmission Speed | OK | | NG |
| | | Data Bit | OK | | NG |
| | | Stop Bit | OK | | NG |
| Parity Bit | | OK | NG | | |
| Check address range | OK | NG | 6. Supported addresses (For details, please refer to the PLC vendor's manual.) | | |

4. External device setting

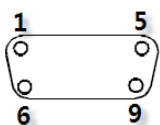
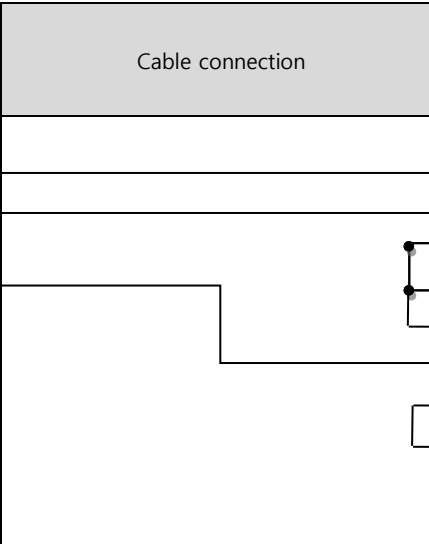
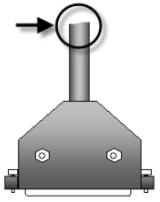
Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.

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 "Power Mate i Series")

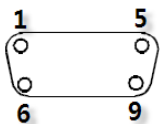
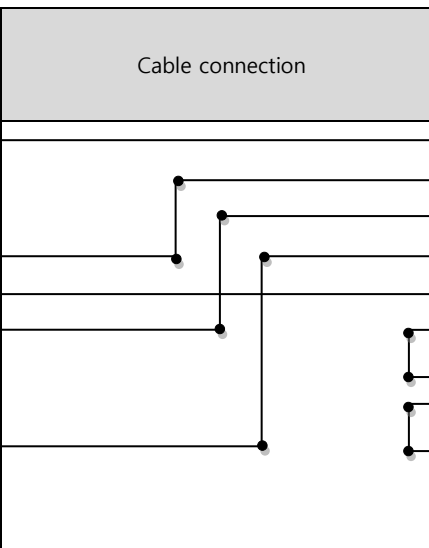
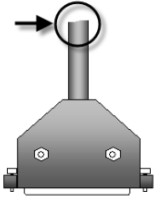
5.1. Cable table

■ RS-232C (1:1 connection) User-created cable

| TOP | | | Cable connection | External device | | |
|--|-------------|------------|--|-----------------|-------------|---|
| Pin arrangement* Note 1) | Signal name | Pin number | | Pin number | Signal name | Pin arrangement* Note 1) |
|  <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p> | CD | |  | | |  <p>Based on communication cable connector front, D-SUB 20 Pin male (male, convex)</p> |
| | RD | 2 | | 11 | SD | |
| | SD | 3 | | 1 | RD | |
| | DTR | 4 | | 3 | DR | |
| | SG | 5 | | 7 | CD | |
| | DSR | 6 | | 13 | ER | |
| | RTS | 7 | | 8 | SG | |
| | CTS | 8 | | 5 | CS | |
| | | | 15 | RS | | |

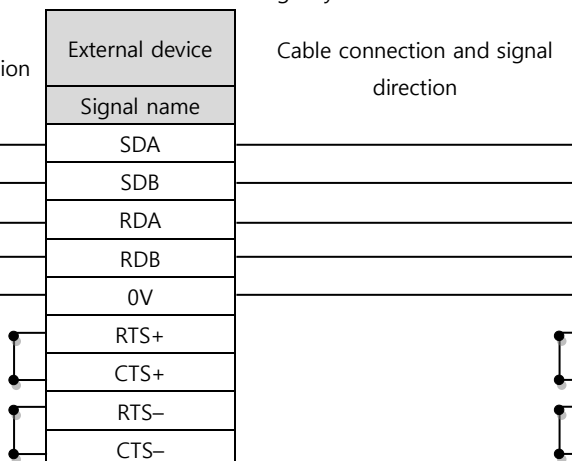
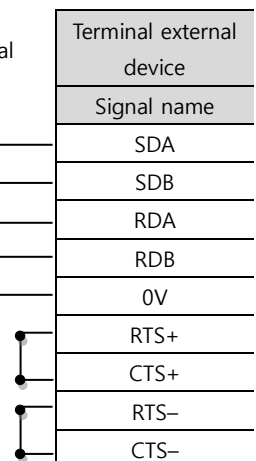
***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-422 (1:1 connection) User-created cable

| TOP | | | Cable connection | External device | | |
|--|-------------|------------|--|-----------------|-------------|---|
| Pin arrangement* Note 1) | Signal name | Pin number | | Pin number | Signal name | Pin arrangement* Note 1) |
|  <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p> | RDA | 1 |  | 4 | SDA |  <p>Based on communication cable connector front, D-SUB 20 Pin male (male, convex)</p> |
| | | 2 | | 3 | SDB | |
| | | 3 | | 2 | RDA | |
| | RDB | 4 | | 1 | RDB | |
| | | 5 | | 12 | SG | |
| | SDA | 6 | | 6 | RTS+ | |
| | | 7 | | 8 | CTS+ | |
| | | 8 | | 5 | RTS- | |
| | 9 | 7 | CTS- | | | |
| | SDB | | | | CTS- | |

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

■ RS-422 (1:N connection) – Refer to 1:1 connection to connect in the following way.

| TOP | Cable connection and signal direction | External device | Cable connection and signal direction | Terminal external device |
|-------------|--|-----------------|---|--------------------------|
| Signal name | | Signal name | | Signal name |
| RDA |  | SDA |  | SDA |
| RDB | | SDB | | SDB |
| SDA | | RDA | | RDA |
| SDB | | RDB | | RDB |
| SG | | 0V | | 0V |
| | | RTS+ | | RTS+ |
| | | CTS+ | | CTS+ |
| | | RTS- | | RTS- |
| | | CTS- | | CTS- |

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 | 32 BIT |
|-----------------|-------------------|---------------|--------|
| Input Relay | X00000.0-X00127.7 | X00000-X00126 | |
| | X00200.0-X00327.7 | X00200-X00326 | |
| | X00400.0-X00527.7 | X00400-X00526 | |
| | X00600.0-X00727.7 | X00600-X00726 | |
| | X01000.0-X01127.7 | X01000-X01126 | |
| Output Relay | Y00000.0-Y00127.7 | Y00000-Y00126 | |
| | Y00200.0-Y00327.7 | Y00200-Y00326 | |
| | Y00400.0-Y00527.7 | Y00400-Y00526 | |
| | Y00600.0-Y00727.7 | Y00600-Y00726 | |
| | Y01000.0-Y01127.7 | Y01000-Y01126 | |
| Internal Relay | R00000.0-R07999.7 | R00000-R07998 | |
| Keep relay | K00000.0-K00099.7 | K0000-K00098 | |
| Enhancing Relay | E0000.0-E09999.7 | E00000-E09998 | |
| Timer | - | T0000-T0498 | |
| Counter | - | C0000-C0398 | |
| | | C5000-C5198 | |
| Data table | D00000-D09999.7 | D00000-D09998 | |

*Note 1) When using a bit address that uses decimals, use a word address in units of "16"

*Note 2) The lower 16 BIT data of 32 BIT data is saved in the address whose screen has been registered, and the upper 16 BIT data is saved in the address next to the address whose screen has been registered.

Ex. When saving 32BIT data hexadecimal data 12345678 in address D00100, it is saved to 16BIT device address as follows:

| Items | 32BIT | 16BIT | |
|-----------------------------|----------|--------|--------|
| | Address | D00100 | D00101 |
| Input data (hexadecimal) | 12345678 | 5678 | 1234 |