

A&D CO., LTD

A&D Weighing Indicator AD Series (Stream Mode)

Supported version

TOP Design Studio

V1.4.10.27 or higher



CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

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 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 "A&D Co., Ltd. – A&D Weighing Indicator AD Series (Command Mode)" is as follows.

| Series | CPU | Link I/F | Communication method | System setting | Cable |
|--------|---------|------------------|----------------------|--|--------------------------------|
| AD | AD-4401 | RS-232C I/O Port | RS-232C | 3. TOP communication setting 4. External device setting | 5. Cable table |

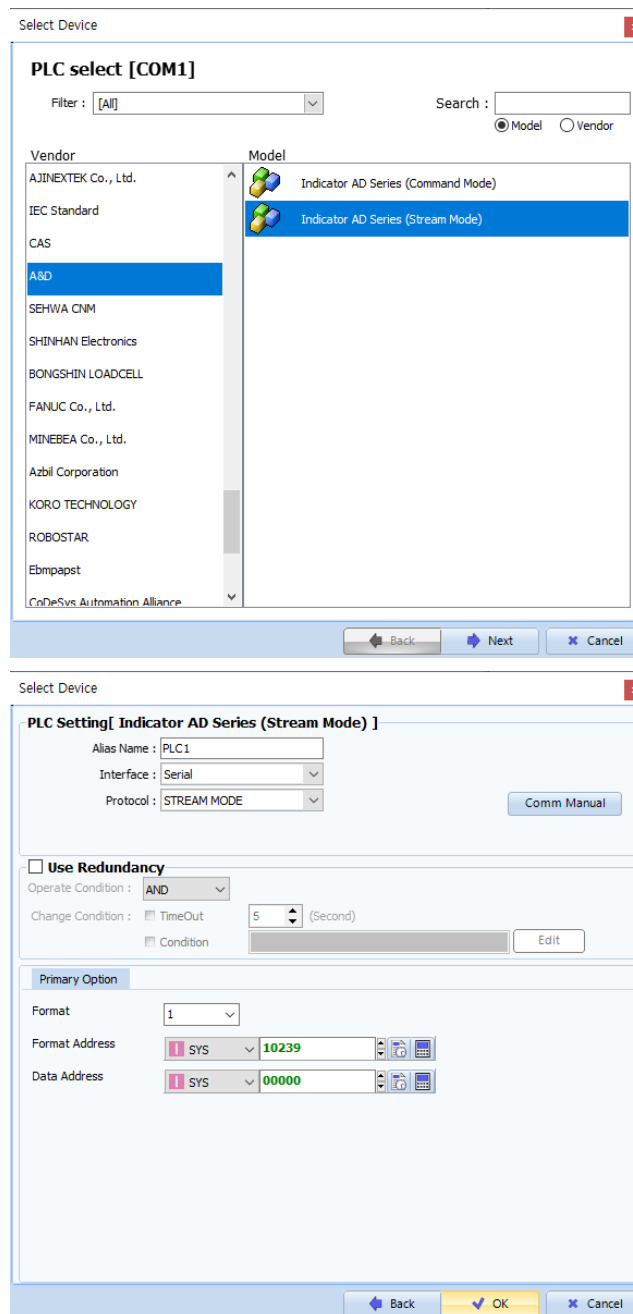
■ Connection configuration

- 1:1 (one TOP and one external device) connection – This configuration is available in RS232c communication.



2. External device selection

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



| 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 "Indicator Series". | | | | | |
| | PLC | Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>A&D AD Series (Stream Mode)</td> <td>Serial</td> <td>STREAM MODE</td> </tr> </tbody> </table> <p>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.</p> | Model | Interface | Protocol | A&D AD Series (Stream Mode) | Serial |
| Model | Interface | Protocol | | | | | |
| A&D AD Series (Stream Mode) | Serial | STREAM MODE | | | | | |

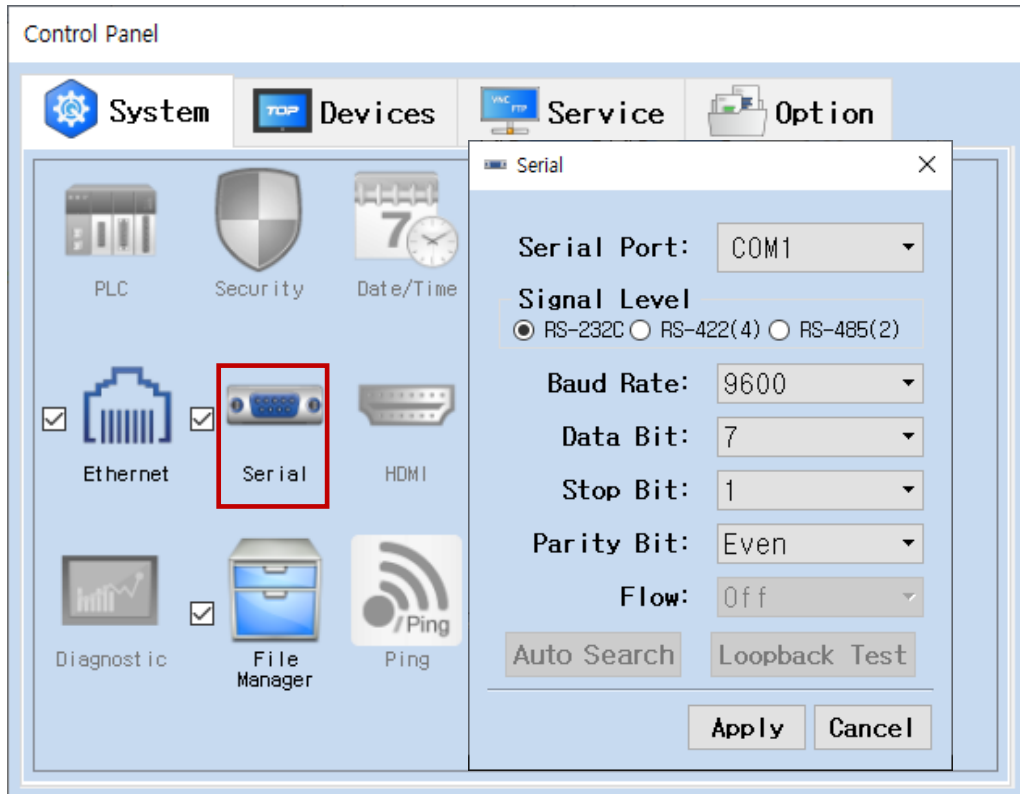
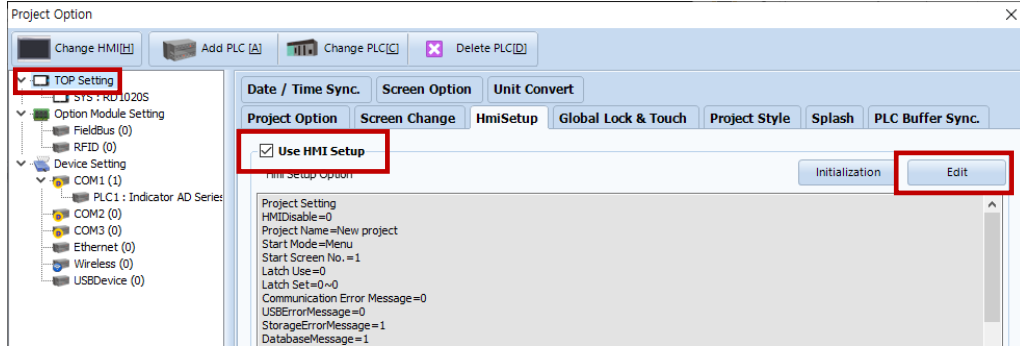
3. TOP communication setting

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 properties > TOP settings] → [HMW settings] → [Check Use HMI settings] → [Edit] → [System] → [Serial]
 - Set the TOP communication interface in TOP Design Studio.



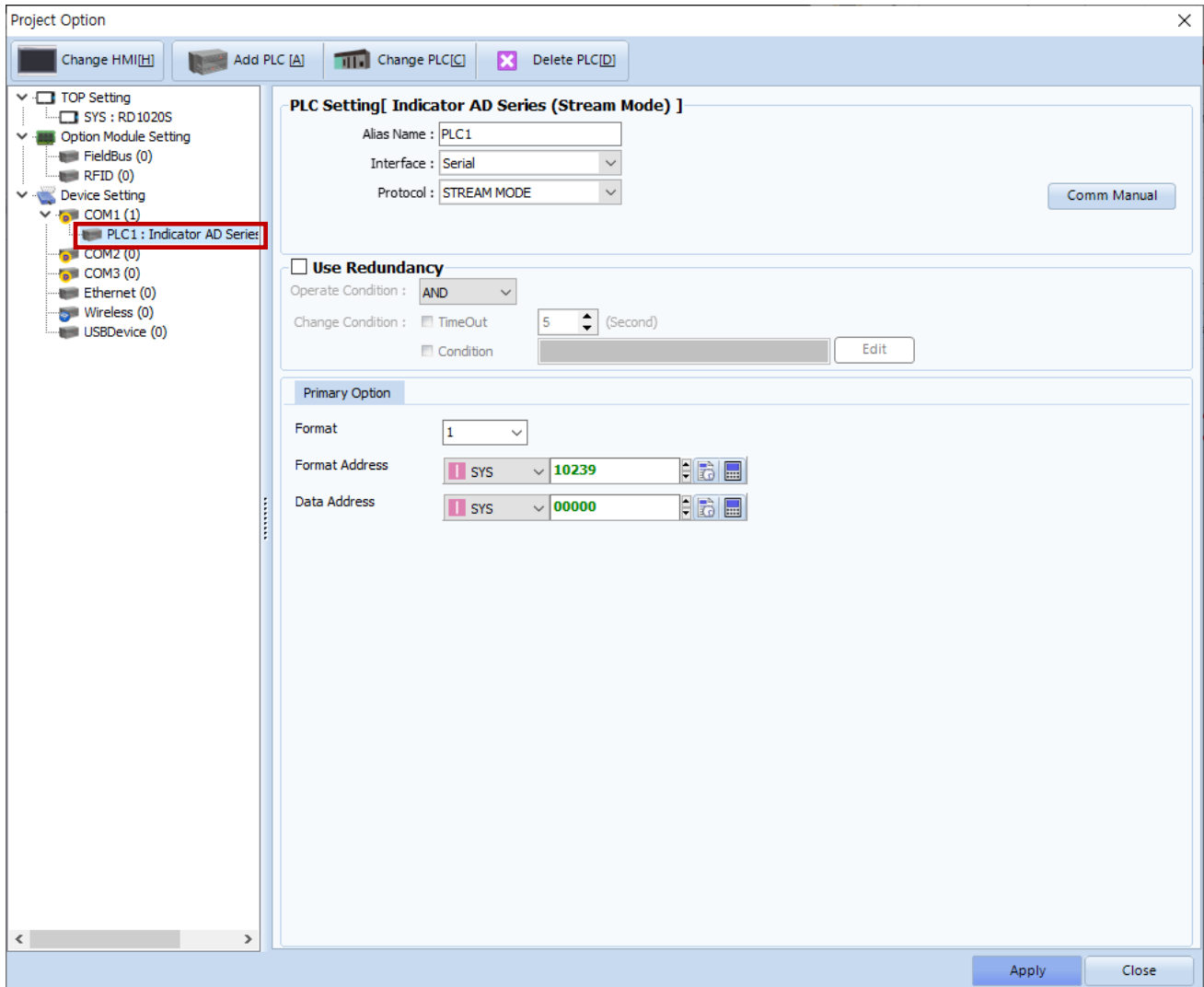
| Items | TOP | External device | Remarks |
|---------------------|---------|-----------------|---------|
| Signal Level (port) | RS-232C | RS-232C | |
| Baud Rate | | 9600 | |
| Data Bit | | 7 | |
| Stop Bit | | 1 | |
| Parity Bit | | Even | |

* 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 properties > PLC settings > COM > "PLC1 : A&D AD Series (Stream Mode)"]
 - A&D Co.Ltd. - A&D Weighing Indicator AD Series (Stream Mode) Computer Link
- Set the options of the communication driver in TOP Design Studio.

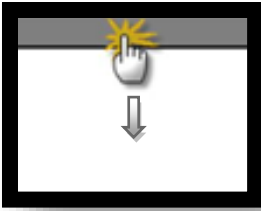


| Items | Settings | Remarks |
|----------------|--|--|
| Interface | Select "Serial". | Refer to "2. External device selection". |
| Protocol | Select the "STREAM MODE." | |
| Format | Select format 1 ~ 8 for the external device. | |
| Foramt Address | Set the address to save the format of the external device. | |
| Data Adress | Set the starting address to save data. | |

3.2. Communication setting in TOP

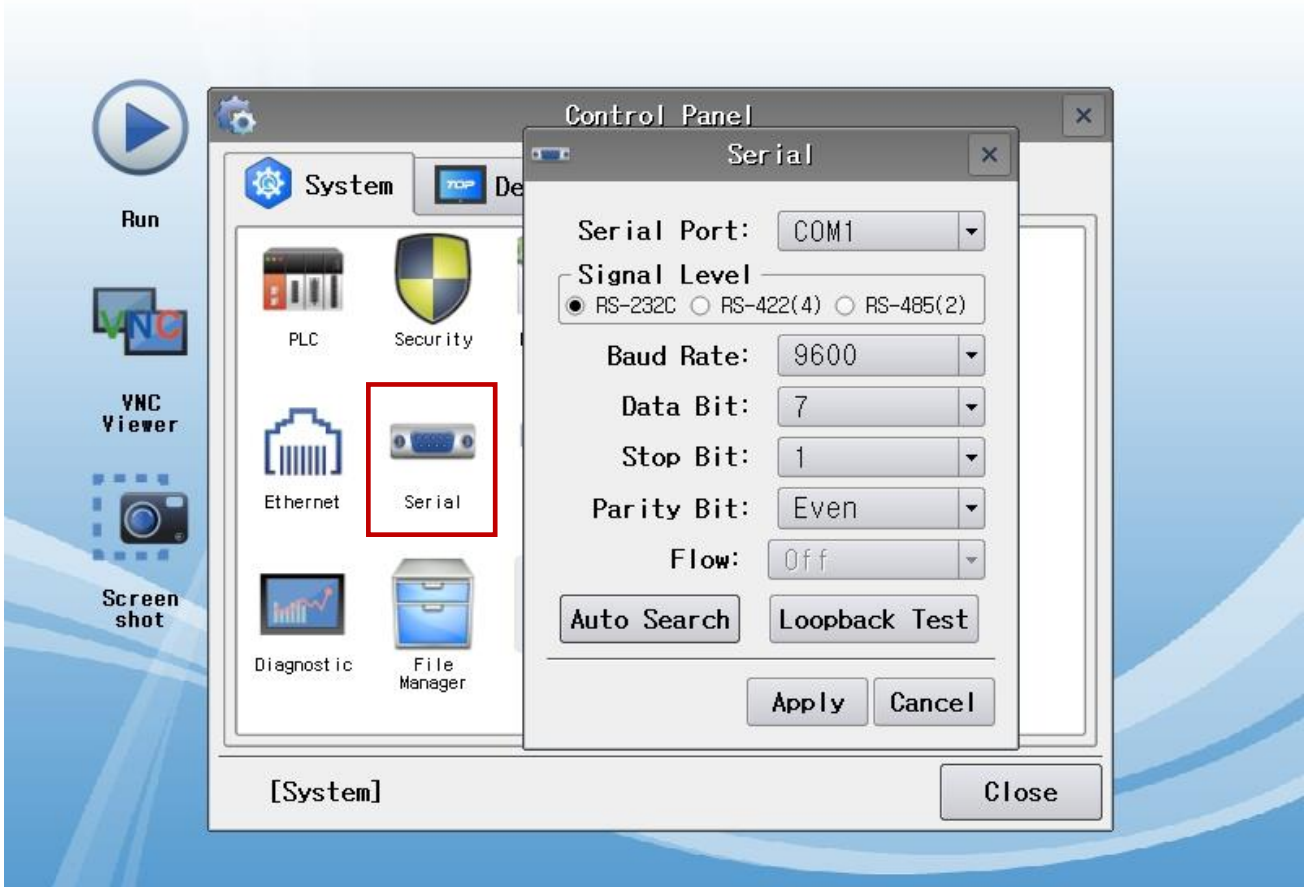
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



TOPRX - TOPRX0800S

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| Items | TOP | External device | Remarks |
|---------------------|---------|-----------------|---------|
| Signal Level (port) | RS-232C | RS-232C | |
| Baud Rate | | 9600 | |
| Data Bit | | 7 | |
| Stop Bit | | 1 | |
| Parity Bit | | Even | |

* 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. |

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

For more detailed setting methods than described in this example, please refer to the user manual of A&D Co., Ltd.

Step 1. While holding down the 'ENTER' key, press the 'SETPOINT' key, and then press the 'ENTER' key again.

Step 2. Press the '△' or '▽' button to change to " rS ", and press the 'ENTER' key.

Step 3. RSF(OP-04 RS-232C) Set the detailed item settings as follows.

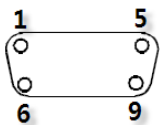
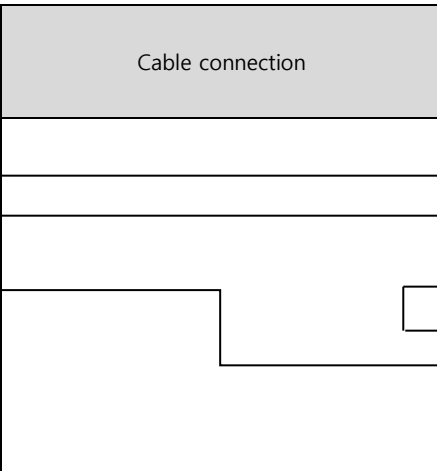
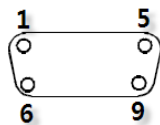
| Items | Functions | Settings | Settings | Remarks |
|--------|--------------------|----------|-----------------------------------|---------------------------|
| RSF-01 | Output data | 1 | 1~8 | Only 1 to 8 are available |
| RSF-02 | Data transfer mode | 1 | Communication method: stream mode | Fixed |
| RSF-03 | Transmission Speed | 5 | Communication speed: 9600 bps | |
| RSF-04 | Parity Bit | 2 | Parity Bit: even | |
| RSF-05 | Character bit | 7 | Character bit: 7 | |
| RSF-06 | Stop Bit | 1 | Stop Bit: 1 | |
| RSF-07 | End code | 2 | End code: CR + LF | Fixed |
| RSF-08 | Change RS-422/485 | 1 | Invalid when using RS-232C | |
| RSF-09 | Prefix | 0 | Exchange number: 0 | Fixed |

Step 4. Press the 'POWER' key (ESC key) to return to the weight display status.

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 chapter may differ from the recommendations of "A&D Co., Ltd.")

■ RS-232C (1:1 connection)

| COM | | | 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 | 1 |  | 1 | |  <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p> |
| | RD | 2 | | 2 | SD | |
| | SD | 3 | | 3 | RD | |
| | DTR | 4 | | 4 | | |
| | SG | 5 | | 5 | | |
| | DSR | 6 | | 6 | | |
| | RTS | 7 | | 7 | SG | |
| | CTS | 8 | | 8 | | |
| | | 9 | | 9 | | |

***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.

HEADER1

| Status | Display value |
|-------------------------|---------------|
| ST (stable) | 1 |
| OL (over load) | 2 |
| US (unstable) | 3 |
| TW (accumulated weight) | 4 |
| TN (accumulated count) | 5 |

HEADER2

| Status | Display value |
|------------|---------------|
| GS (gross) | 1 |
| NT (net) | 2 |
| TR (tare) | 3 |

DataAddress = Start address of data set in communication option [*Remark](#)

Ex) If setting the address of DataAddress to SYS:00000 in the communication options, DataAddress = SYS:00000

| Format | Data address |
|--|--|
| Format 1 DISPLAYEDWEIGHT | HEADER1 (DEC) 16Bit : Data Address HEADER2 (DEC) 16Bit : Data Address + 1 Weight (FLOAT) 32Bit : Data Address + 2 Unit (string) 2 letters : Data Address + 4 |
| Format 2 GROSS | HEADER1 (DEC) 16Bit : Data Address HEADER2 (DEC) 16Bit : Data Address + 1 Weight (FLOAT) 32Bit : Data Address + 2 Unit (string) 2 letters : Data Address + 4 |
| Format 3 NET | HEADER1 (DEC) 16Bit : Data Address HEADER2 (DEC) 16Bit : Data Address + 1 Weight (FLOAT) 32Bit : Data Address + 2 Unit (string) 2 letters : Data Address + 4 |
| Format 4 TARE | HEADER1 (DEC) 16Bit : Data Address HEADER2 (DEC) 16Bit : Data Address + 1 Weight (FLOAT) 32Bit : Data Address + 2 Unit (string) 2 letters : Data Address + 4 |
| Format 5 GROSS/NET/TARE (Gross/Net/Tare) | HEADER1 (DEC) 16Bit : Data Address HEADER2 (DEC) 16Bit : Data Address + 1 Weight (FLOAT) 32Bit : Data Address + 2 Unit (string) 2 letters : Data Address + 4 HEADER1 (DEC) 16Bit : Data Address + 6 HEADER2 (DEC) 16Bit : Data Address + 7 Weight (FLOAT) 32Bit : Data Address + 8 Unit (string) 2 letters : Data Address + 10 HEADER1 (DEC) 16Bit : Data Address + 12 HEADER2 (DEC) 16Bit : Data Address + 13 Weight (FLOAT) 32Bit : Data Address + 14 Unit (string) 2 letters : Data Address + 16 |

| Format | Data address |
|---|--|
| Format 6 Accumulated weight | HEADER1 (DEC) 16Bit : Data Address Weight (FLOAT) 32Bit : Data Address + 1 Unit (string) 2 letters : Data Address + 3 |
| Format 7 Accumulated counts | HEADER1 (DEC) 16Bit : Data Address Counts (FLOAT) 32Bit : Data Address + 1 |
| Format 8 ACCUMULATED WEIGHT/ COUNTS (Accumulated weight / Accumulated counts) | HEADER1 (DEC) 16Bit : Data Address Weight (FLOAT) 32Bit : Data Address + 1 Unit (string) 2 letters : Data Address + 3 HEADER1 (DEC) 16Bit : Data Address + 5 Counts (FLOAT) 32Bit : Data Address + 6 |
| | |