

A&D CO., LTD

A&D Weighing Indicator AD Series (Command Mode) Computer Link Driver

Supported version

TOP Design Studio

V1.3.3.2 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".

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Describes the devices required for connection, the setting of each device, cables, and configurable systems.

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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.

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Describes the cable specifications required for connection.

6. Supported addresses [Page 11](#)

Check for addresses that 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) Computer Link" is as follows.

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

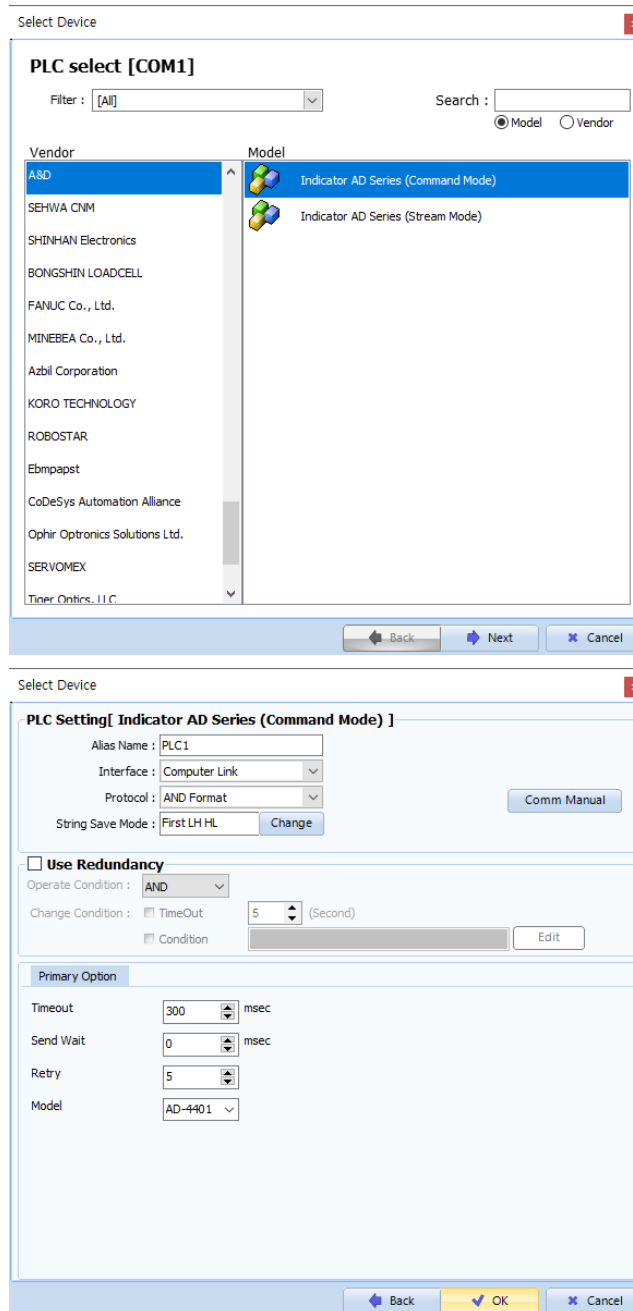
■ Connection configuration

- 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>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>A&D AD Series (Command Mode)</td> <td>Computer Link</td> <td>AND Format</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 (Command Mode)	Computer Link
Model	Interface	Protocol					
A&D AD Series (Command Mode)	Computer Link	AND Format					

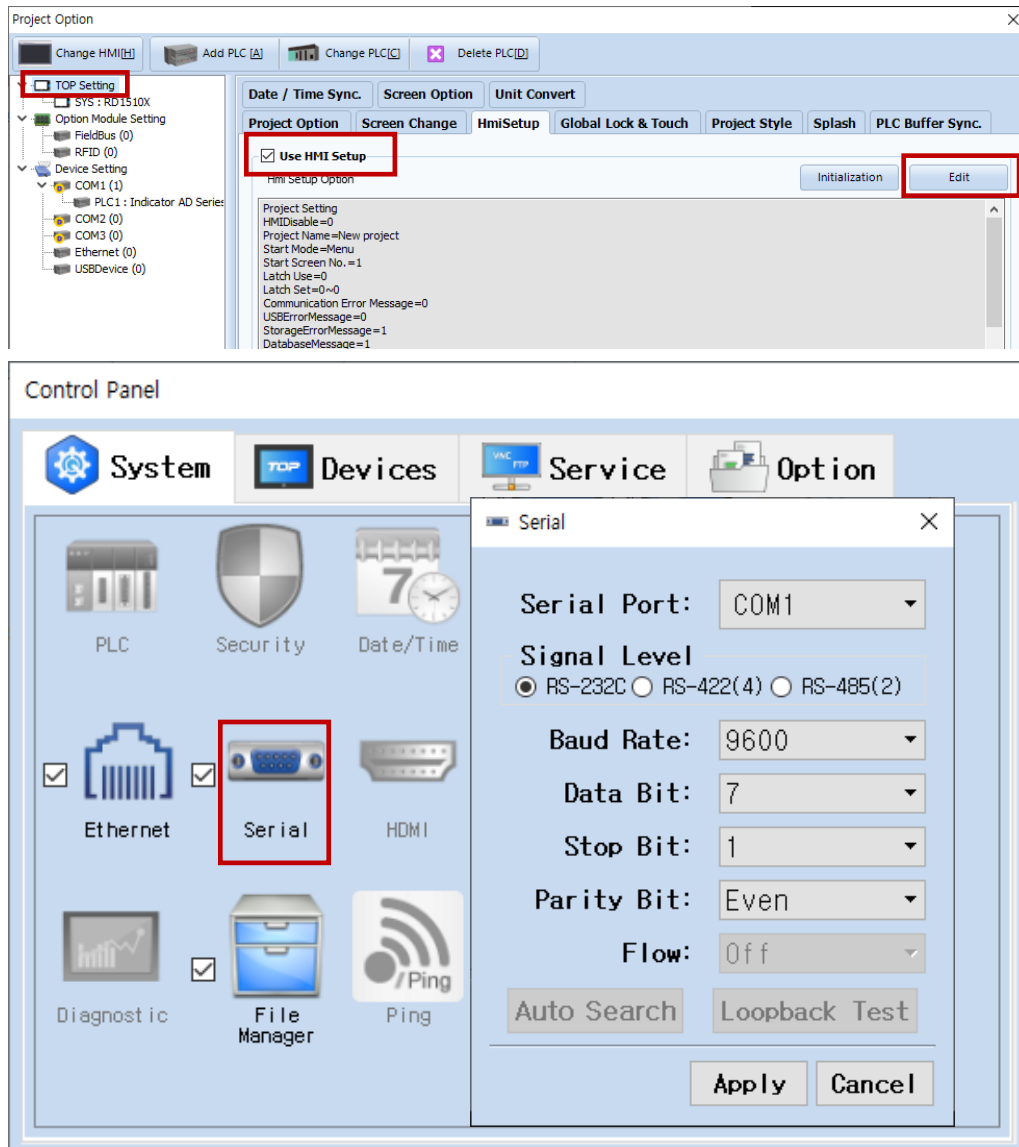
3. TOP communication setting

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] → [Project option > Check "Use HMI settings" > Edit > Serial]
- Set the TOP communication interface in TOP Design Studio.



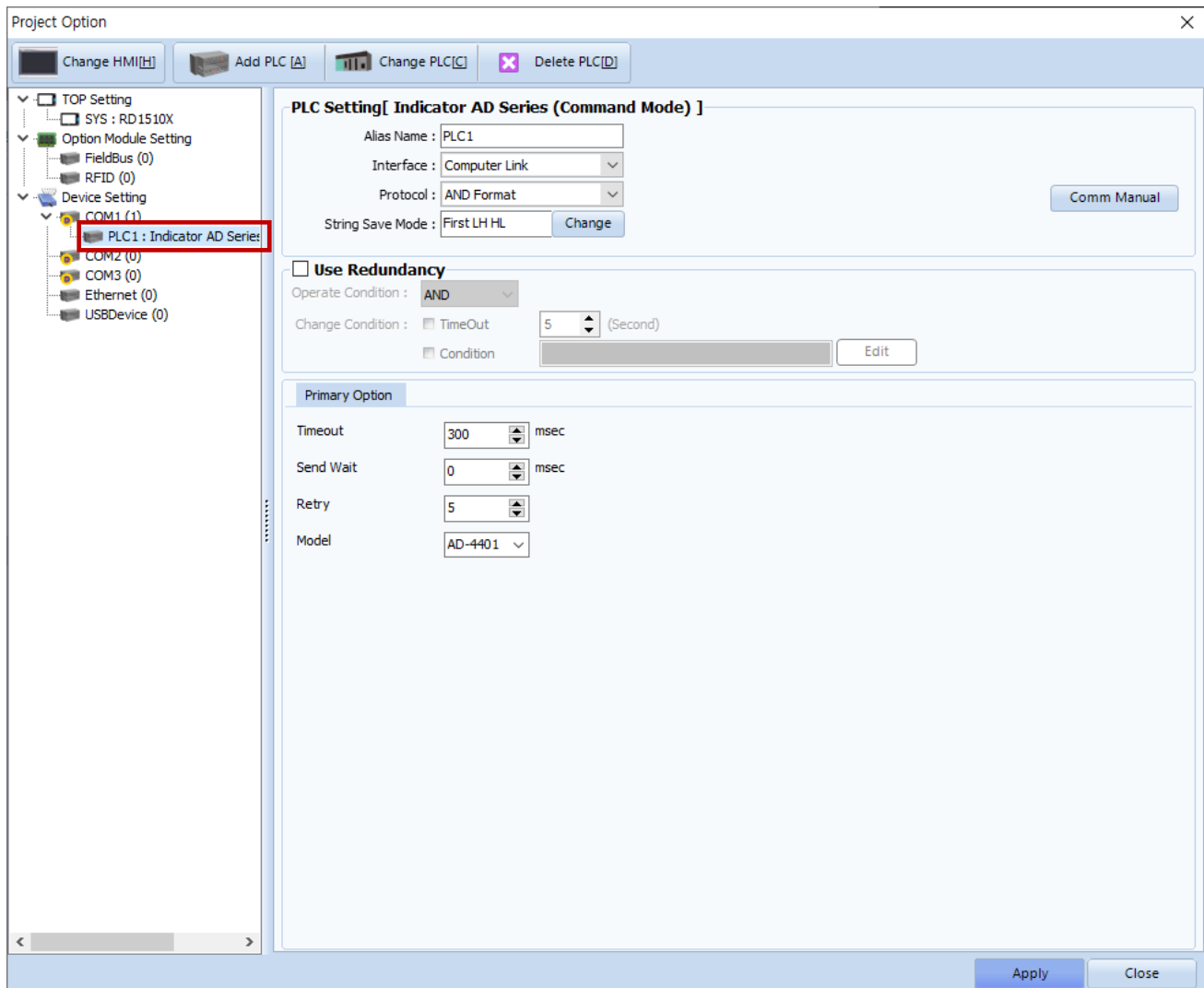
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate		9600	
Data Bit		7	
Stop Bit		1	
Parity Bit		Even	

* 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 (Command Mode)"]
 - A&D Co.,Ltd – A&D Weighing Indicator AD Series (Command Mode) Computer Link
- Set the options of the communication driver in TOP Design Studio.

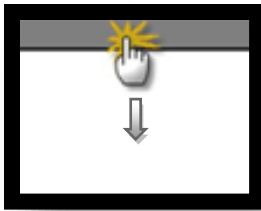


Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection" .
Protocol	Select the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time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

3.2. Communication setting in TOP

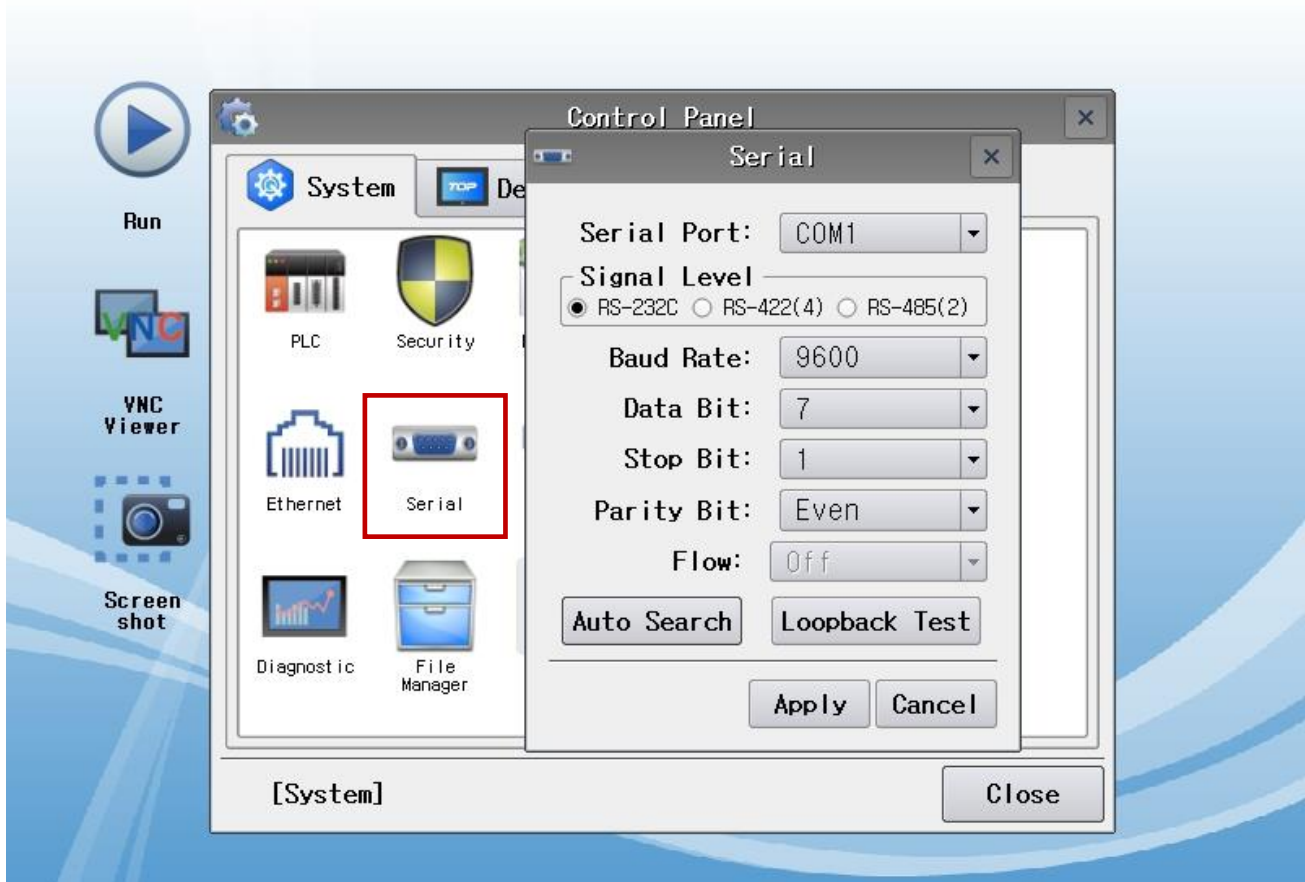
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- 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]



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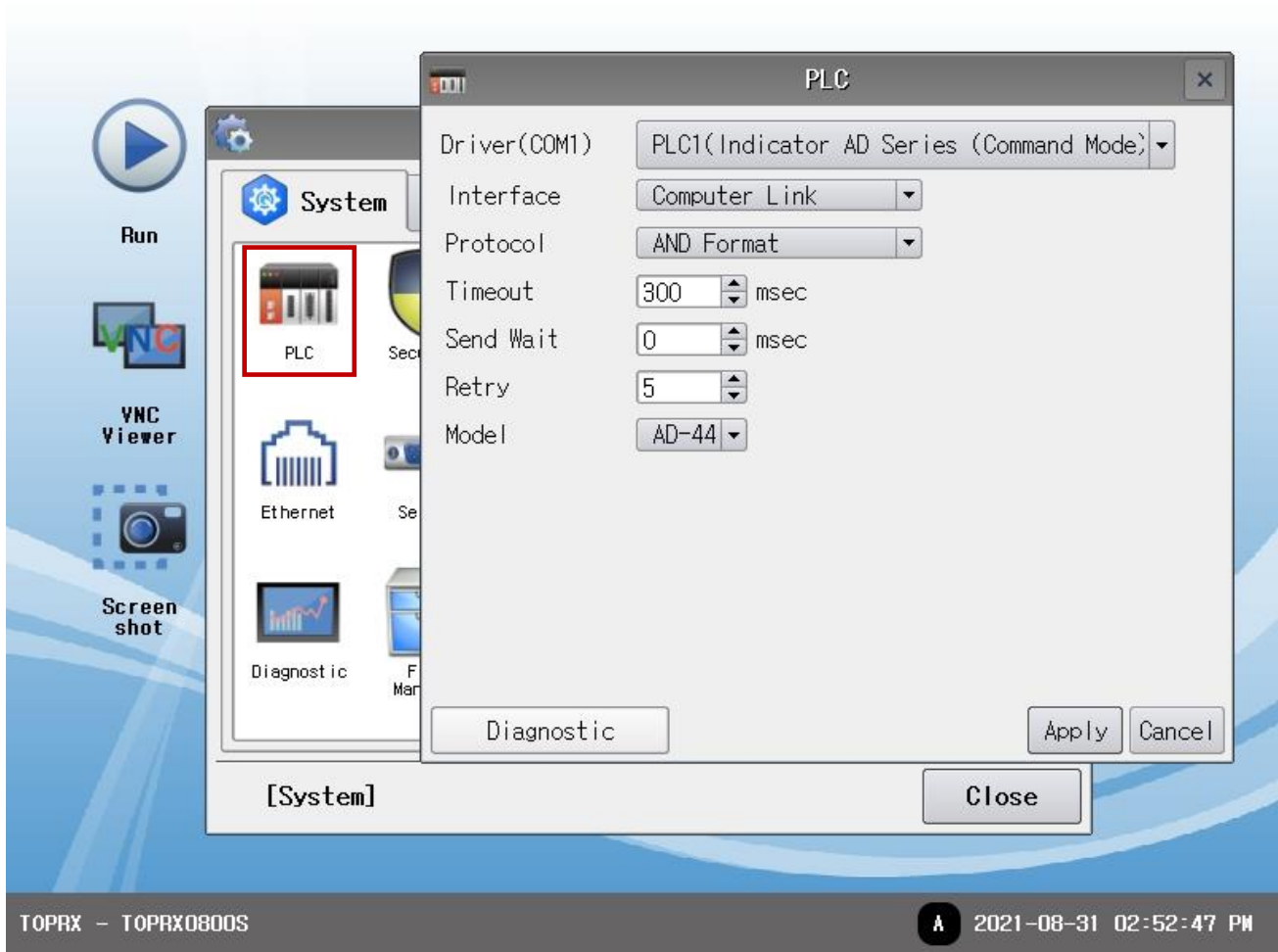
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate	9600		
Data Bit	7		
Stop Bit	1		
Parity Bit	Even		

* 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.

(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 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.	

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.

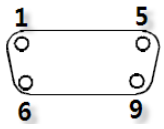
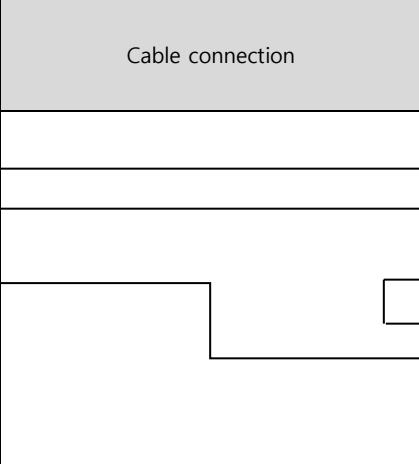
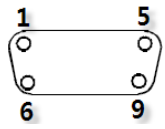
Items	Functions	Settings	Settings	Remarks
RSF-01	Output data	1	Command RW contents: Display weight	Only 1 to 4 are available
RSF-02	Data transfer mode	4	Communication method: command mode	Fixed
RSF-03	Transmission Speed	5	Communication speed: 9600 bps	
RSF-04	Parity Bit	2	Parity bit: even	
RSF-05	Character 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.

- AD-4401

Device	Bit Address	Word Address	Read/Write	Remarks
RW.WEIGHT	–	RW.WEIGHT	Read	*Note 1)
RW.STS	RW.STS0 ~ RW.STS2	RW.STS	Read	*Note 2)
RW.GSNT	RW.GSNT0 ~ RW.GSNT2	RW.GSNT	Read	*Note 3)
RW.UNIT	–	RW.UNIT	Read	*Note 4)
RB.WEIGHT	–	RB.WEIGHT	Read	
RF.WEIGHT	–	RF.WEIGHT	Read	*Note 1)
RF.STS	RF.STS0 ~ RF.STS2	RF.STS	Read	*Note 2)
RF.GSNT	RF.GSNT0 ~ RF.GSNT2	RF.GSNT	Read	*Note 3)
RF.UNIT	–	RF.UNIT	Read	*Note 4)
RT.WEIGHT	–	RT.WEIGHT	Read	*Note 1)
RT.UNIT	–	RT.UNIT	Read	*Note 4)
RT.COUNT	–	RT.COUNT	Read	*Note 5)
DT	DT	DT	Write	*Note 6)
MG	MG	MG	Write	*Note 7)
MN	MN	MN	Write	*Note 8)
MZ	MZ	MZ	Write	*Note 9)
MT	MT	MT	Write	*Note 10)
CT	CT	CT	Write	*Note 11)
BB	BB	BB	Write	*Note 12)
BD	BD	BD	Write	*Note 13)
HB	HB	HB	Write	*Note 14)
SS	SS	SS	Write	*Note 15)
SS.DATA	–	SS.DATA1 ~ SS.DATA7	Read/Write	*Note 16)
RS.DATA	–	RS.DATA1 ~ RS.DATA7	Read	*Note 17)

*Note 1) Float-type data. It is a device that must be registered to read data such as STS, GSNT and UNIT of the same command.

*Note 2)

Response data when the next bit is ON	
STS0	Stable
STS1	Unstable
STS2	Overload

*Note 3)

Response data when the next bit is ON	
GSNT0	Gross
GSNT1	Net
GSNT2	Tare

*Note 4) It indicates the unit being displayed by the indicator. Use only as a string (length: 2).

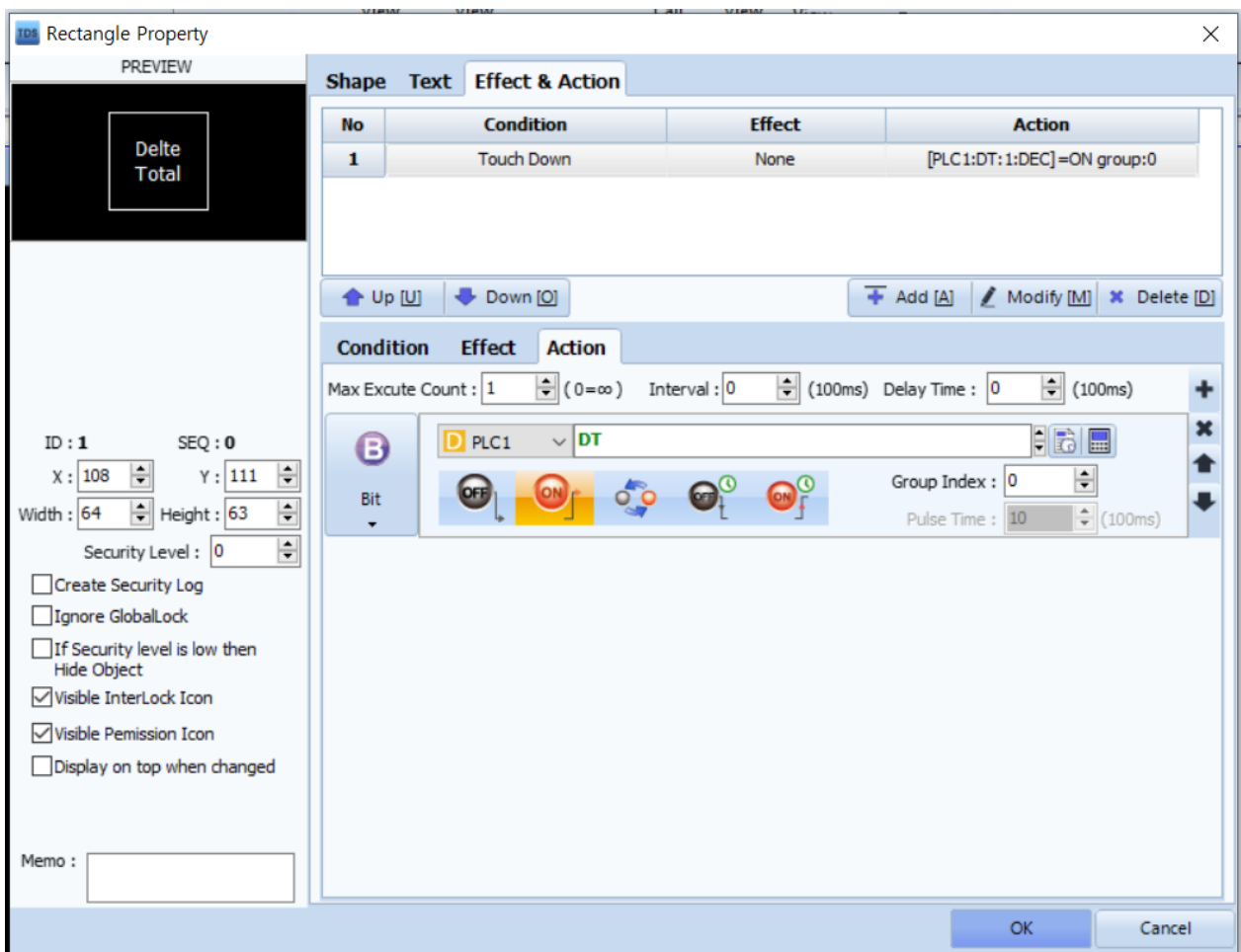
*Note 5) Data representing the total number of times.

※ For details on the commands below, refer to the user manual of A&D Co., Ltd.

- *Note 6) DT (Delete Total): Total number of times clear.
- *Note 7) MG (Make Gross): Mark as gross weight.
- *Note 8) MN (Make Net): Mark as net weight.
- *Note 9) MZ (Make Zero): Zero.
- *Note 10) MT (Make Tare): Remove the container.
- *Note 11) CT (Clear Tare): Clear container.
- *Note 12) BB (Begin Batch): Start input.
- *Note 13) BD (Begin Discharged): Start discharging.
- *Note 14) HB (Halt Batch): Emergency stop.
- *Note 15) SS (Set Setpoints): Set SETPOINT.
- *Note 16) Data to set SETPOINT using SS command.
- *Note 17) Request Setpoint: SETPOINT data currently in use.

※ **Write-only Device Use Method**

- ① Pop-up window for object's property → ② Effect and action → ③ Setting Conditions → ④ Action setting
 Set to input data to the device when a condition occurs in the action settings.



- CB/EK – I Series

Device	Bit Address	Word Address	Read/Write	Remarks
Q.WEIGHT	-	Q.WEIGHT	Read	*Note 1)
Z	Z00~Z15	-	Write	*Note 3)
U	U00~U15	-	Write	*Note 3)
Q.STS	Q.STS0 ~ Q.STS3	Q.STS	Read	*Note 2)
Q.UNIT	-	Q.UNIT	Read	*Note 4)

*Note 1) Float-type data. It is a device that must be registered to read data such as STS, GSNT and UNIT of the same command.

*Note 2)

Response data when the next bit is ON	
Q.STS0	Stable
Q.STS1	Stable in a counting mode
Q.STS2	Unstable
Q.STS3	Overload

*Note 4) It indicates the unit being displayed by the indicator. Use only as a string (length: 2).

*Note 3) Z : Set Zero

U : Unit change