CKD
ABSODEX
ACTUATOR Driver

Supported version   TOP Design Studio   V1.4.2 or higher

CONTENTS

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

1. System configuration

The system configuration of TOP and "CKD – ABSODEX Actuator" is as follows:

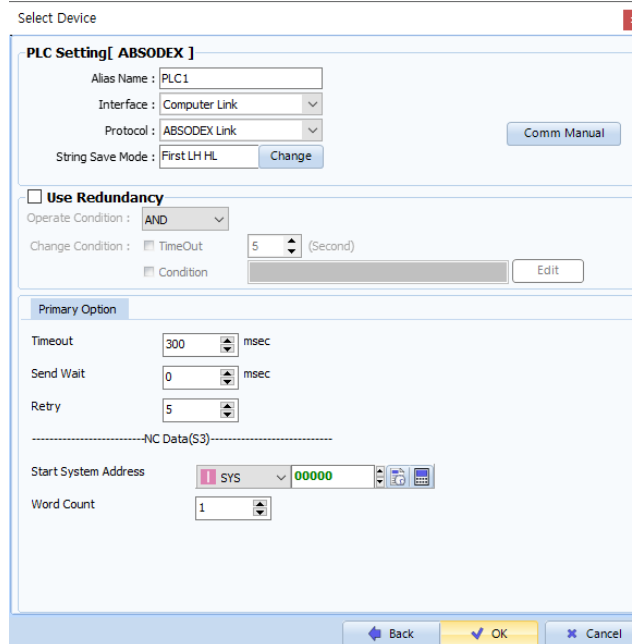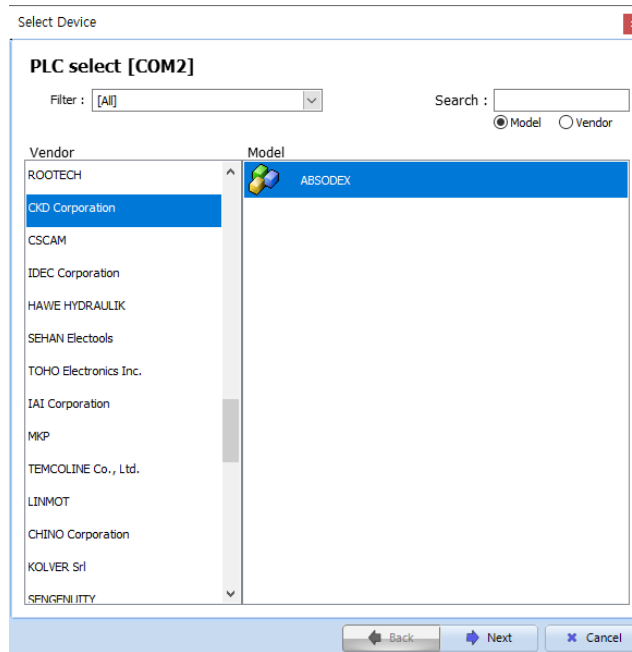| Series	CPU	Link I/F	Communication method	Communication setting	Cable
CKD	ABSODEX Actuator	-	RS–232C	3. TOP communication setting	4.1. Cable table 1

■ Connection configuration

· 1:1 (one TOP and one external device) connection

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. Select "CKD Corporation".
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
CKD ABSODEX	Computer Link	ABSODEX Link

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.

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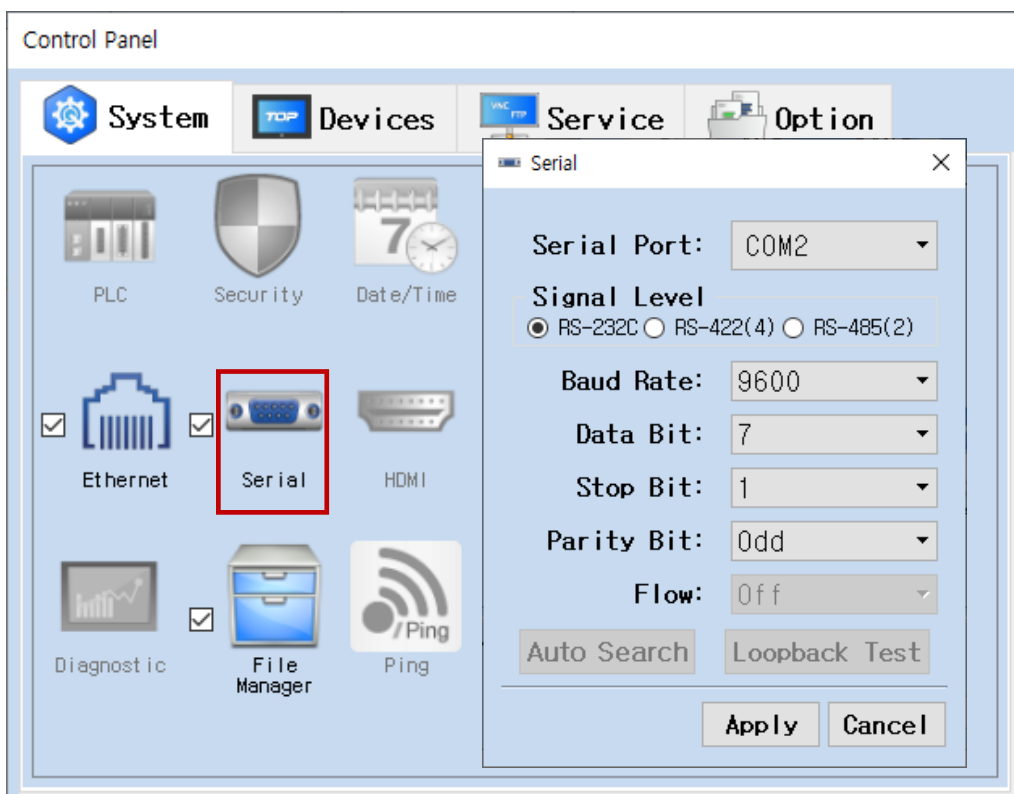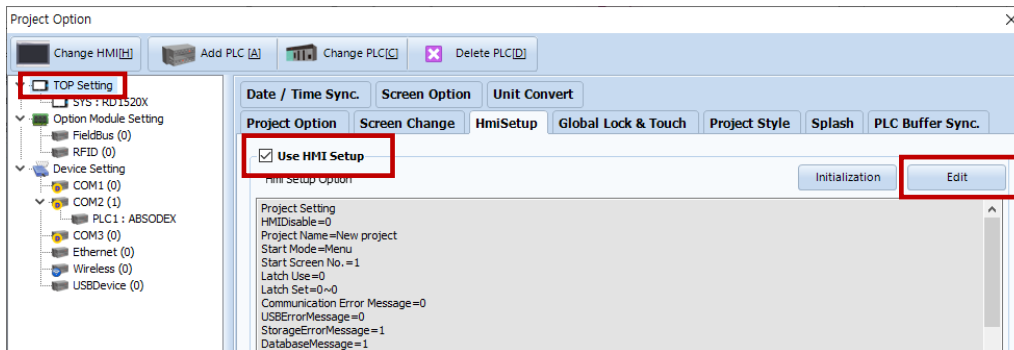
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate	9600 (fixed)		Fixed
Data Bit	7		
Stop Bit	1		
Parity Bit	Odd		

* 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 > "CKD ABSODEX"]

– Set the options of the Computer Link communication driver in TOP Design Studio.

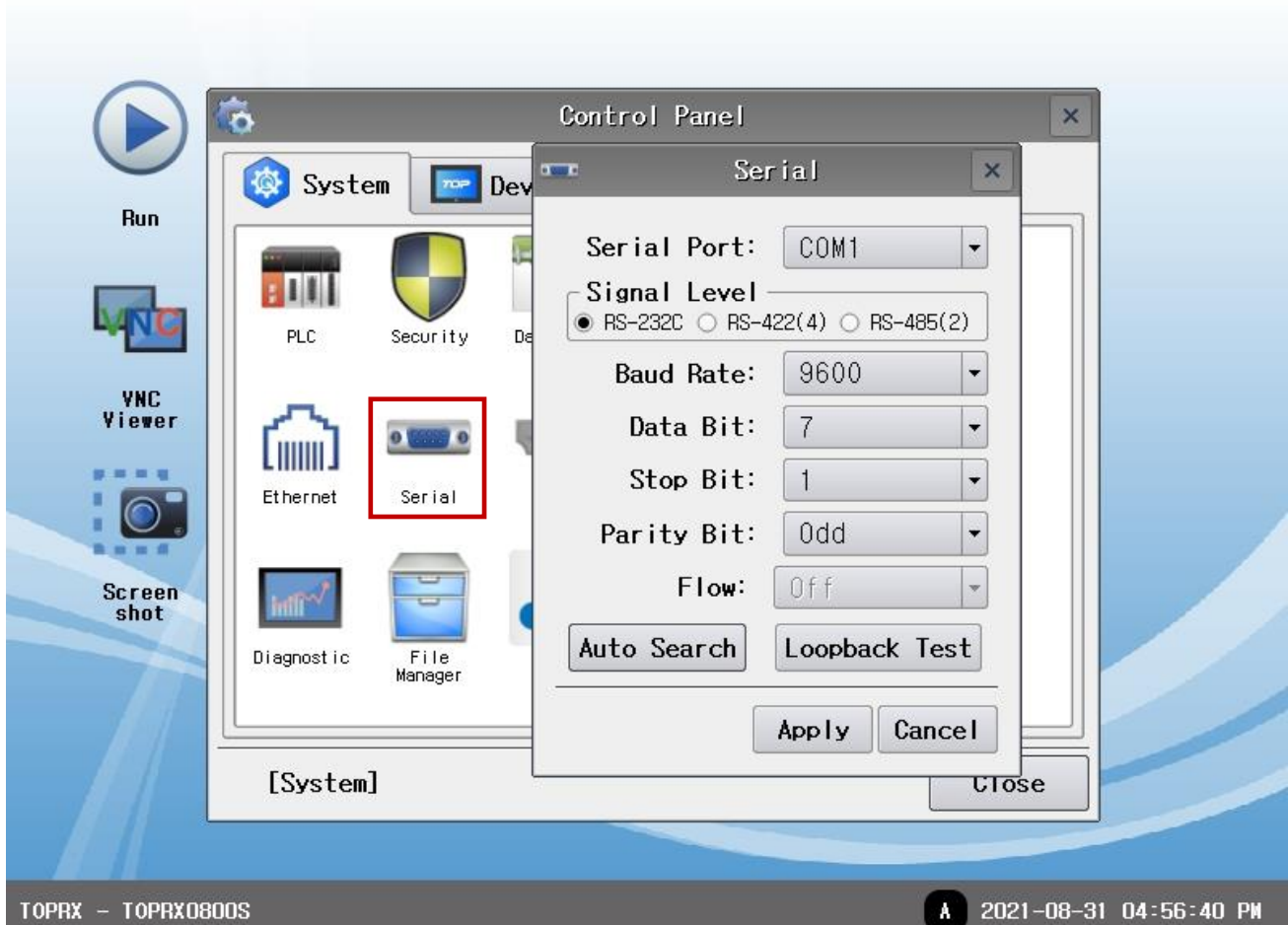| Items	Settings	Remarks
Interface	Configure the communication interface between the TOP and an external device.	Refer to "2. External device selection".
Protocol	Configure the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response 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]

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

* 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	Configure the communication interface between the TOP and an external device.	Refer to "2. External device selection".
Protocol	Configure 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.
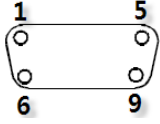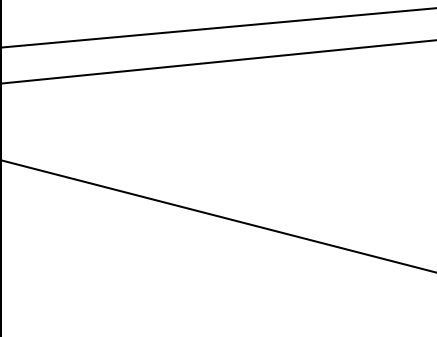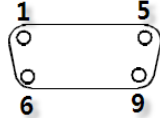
Items	Contents		Check		Remarks
System configuration	How to connect the system		OK	NG	1. System configuration
	Connection cable name		OK	NG	
TOP	Version information		OK	NG	2. External device selection 3. Communication setting
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	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. 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 "CKD ABSODEX")

4.1. Cable table 1

■ **RS-232C** (1:1 connection)

TOP COM			Cable connection	External device		
Pin arrangement*Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement*Note 1)
Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	CD	1		1	TXD	Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	RXD	
	SD	3		3	NC	
	DTR	4		4	NC	
	SG	5		5	FGND	
	DSR	6		6	NC	
	RTS	7		7	EMG	
	CTS	8		8	DGND	
		9		9	+5V	

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

5. 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.

(1) Operation Mode

Device	Bit Address	Word Address	Description	Remarks
M	-	0001 ~ 0006	Operation Mode Switching Code	Write Only

■ Device Details

Device	Address	Description	Remarks
M	0001	Automatic mode	Power-on mode Mode in which programs are run continuously
	0002	Single block mode	Mode in which programs are executed block by block
	0003	MDI(manual data input) mode	Mode in which NC code input through RS232C port is instantaneously executed
	0004	Jog mode	Communication codes S5 and S6 enable job motion
	0005	Servo off mode	Selecting M1 to M4 and M6 will turn the servo ON
	0006	Pulse string input mode	In this mode, operation proceeds according to pulse string input signals. Disable motions by using the NC program, and changing parameters. To change, switch to M1 to M5

(2) Motion Instructions

Device	Bit Address	Word Address	Description	Remarks
S	-	0001 ~ 0020	Motion Instruction Codes	Write Only

■ Device Details

Device	Address	Description	Remarks
S	0001	Start	Same function as CN3 program start input (Auto run, single block)
	0002	Program stop	Same function as CN3 program stop input
	0003	MDI & execution	One block of NC code is input and executed. (Note1)
	0004	Home return	Same function as home return instruction input
	0005	Jog(CW)	Rotation continues in accordance with PRM 14 and 15 until CN3 program stop input or continuous rotation stop or S2 and S20 communication code in input
	0006	Jog(CCW)	
	0007	Alarm Reset	Effective only for alarm Same function as that of CN3 answer input
	0010	Answer response	Valid only when an answer is waited for. Same function as that of CN3 answer input
	0020	Continuous rotation stop	Continuous rotation G7 jog operation stop. Same function as CN3 continuous rotation stop input

(Note1)

(Note 1)

For S0003 devices, the NC code for one block can be entered by the user.

Enter the NC Code by specifying the TOPR internal address and word count (code character count = word count x 2) to store NC code in the "Project Information" -> "PLC Comm Info" option as shown in the figure below.
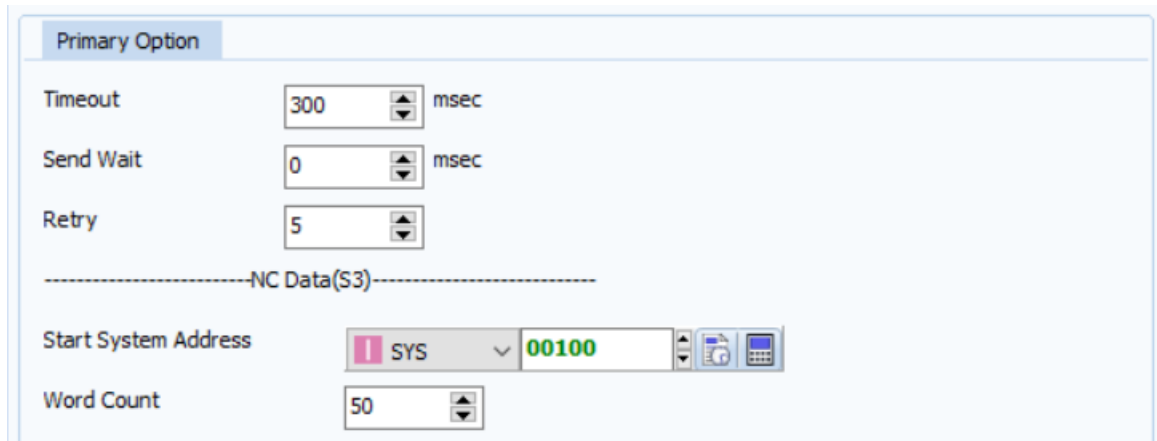
The above figure is an example of specifying 50 words (100 characters) from 100 TOP internal addresses to allow the user to enter up to 100 characters beginning from NC code 100.

(3)   Data Input and Output

Device	Bit Address	Word Address	Description	Remarks
L01	-	0000	Alarm Number Output	Read Only
L03	-	0000	Current Position Output Unit : Pulse Coordinate : Actuator coordinate	Read Only
L04	-	0000	Current Position Output Unit : Degree Coordinate : Actuator coordinate	Read Only
L05	-	0000	Current Position Output Unit : Pulse Coordinate : G92 coordinate	Read Only
L06	-	0000	Current Position Output Unit : Degree Coordinate : G92 coordinate	Read Only
L07	-	0000 ~ 9999 (Program Number)	Parameter Data Input (To read PRM)	Read : L09 Write : L07
L07A	-	0000 ~ 9999 (Program Number)	Parameter Data Input (To read PRM in angel unit)	Read : L09A Write : L07A
L07R	-	0000 ~ 9999 (Program Number)	Parameter Data Input (To read the data on RAM of PRM 8 in angle unit)	Read : L09R Write : L07R
L10	-	0000	Program Number Output	Read Only
L11	-	0000 ~ 4095	NC Program Input / Output	Read : L12 Write : L11 [note1]
L12	Not Supported	Not Supported	Not Supported	-
L13	-	0000	NC program Number/Directory Output	Read Only
L16	-	0000	Designation of Program Number	Write Only
L17	-	0000	Delete of Program Number	Write Only
L18	-	0000 ~ 0002	Change of Program Number	Write Only [note2]
L19	-	0000	Output of the Next Block of Program to be executed	Read Only
L21	-	0000	Mode Output	Read Only
L89	-	0000	Serial actuator number output	Read Only
PRG_RD	-	0000	Read NC Program in L11 Buffer	Write only [note3]
PRG_WR	-	0000	Write NC Program in L11 Buffer	Write only [note3]

(Note 1)

(1)   Address for program saving and program reading commands run for NC program writing.

(2)   The L11 device is a 32-bit device that saves 4 program characters in one address.

(3)   The program capacity is 16k bites.

(Note 2)

Device	Word Address	Description	Remarks
L18	0000	Trigger Command for change of Program Number	Write Only
	0001	Current Program number	Write Only
	0002	New Program number	Write Only

(Note 3)

(1) For Write-only PRG_RD device, if you enter the PRG-RD device program number read as data, it reads the program number corresponding to the entered data and displays it on the L11 device.

(2) For Write-only PRG_WR device, if you enter any data (regardless of the data value) on the PRG_WR device, the program entered in L11 is sent.