KDT Systems Co., Ltd.

CIMON PLC Series

HMI Protocol Serial Driver

Supported version TOP Design Studio V1.4.9.85 or higher

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

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Refer to this section to check the data addresses which can communicate with an external device.

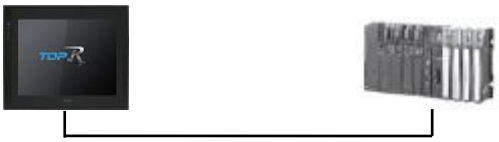
1. System configuration

The system configuration of TOP and KDT Systems Co., Ltd. – CIMON HMI Protocol is as follows:

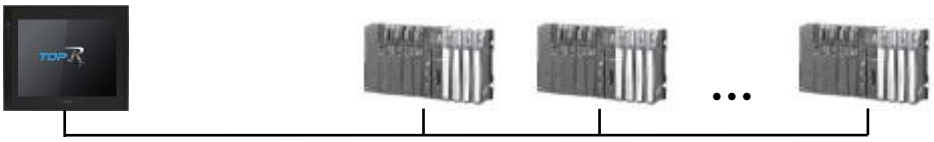
Series	CPU	Link I/F	Communication method	System setting	Cable
XP	CM1-XP1S	Built-in Serial	RS-232C	3. TOP communication setting 4. External device setting	5. Cable table
	CM1-XP1F CM1-XP2F	CM1–SC02A CM1-SC02CDMA	RS–232C RS-422/485		
	CM1-XP3F	CM1–SC01A	RS–232C		
	CM1-XP1E CM1-XP2E CM1-XP3E	CM1–SC01B	RS–422/485		
	CM1–XP1R CM1–XP1A	CM1–SC02A CM1-SC02CDMA	RS–232C RS-422/485		
	CM1–XP2A	CM1–SC01A	RS–232C		
	CM1–XP3A	CM1–SC01B	RS–422/485		
CP	CM1-CP3E CM1-CP4E CM1-CP4F CM1-CP4C	Built-in Serial	RS-232C		
		CM1–SC02A CM1-SC02CDMA	RS-232C RS-422/485		
		CM1–SC01A	RS–232C		
		CM1–SC01B	RS–422/485		
	CM1-CP4D CM1-CP4U	Built-in Serial	RS-485		
		CM1–SC02A CM1-SC02CDMA	RS-232C RS-422/485		
		CM1–SC01A	RS–232C		
		CM1–SC01B	RS–422/485		
	CM1–CP3A CM1–CP3B	CM1–SC02A CM1-SC02CDMA	RS-232C RS-422/485		
	CM1–CP3P	CM1–SC01A	RS–232C		
	CM1–CP3U CM1–CP4A CM1–CP4B	CM1–SC01B	RS–422/485		
PLC-S	CM3-SP32MDT CM3-SP32MDTE CM3-SP32MDC	Built-in Serial	RS-232C		
		CM3-SP02ERS CM3-SP02ERSC	RS–232C RS–422/485		
	CM3-SP32MDCE CM3-SP16MDR CM3-SP16MDRE	CM3-SP02ERR CM3-SP02ERC	RS-232C		
	CM3-SP32MDTV CM3-SP32MDTF	Built-in Serial	RS–232C RS–485		
	CM3-SP32MDCV CM3-SP32MDCF	CM3-SP02ERS CM3-SP02ERSC	RS–232C RS–422/485		
	CM3-SP16MDRV CM3-SP16MDRF	CM3-SP02ERR CM3-SP02ERC	RS-232C		

■ Connectable configuration

・1:1 connection

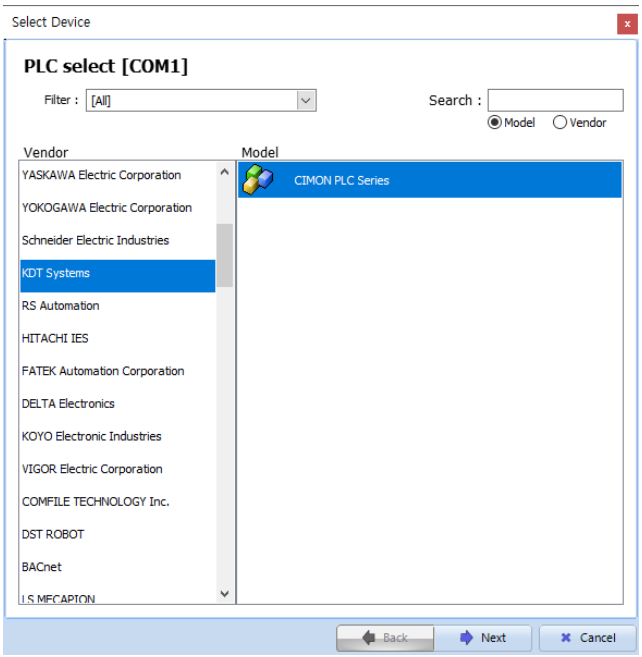


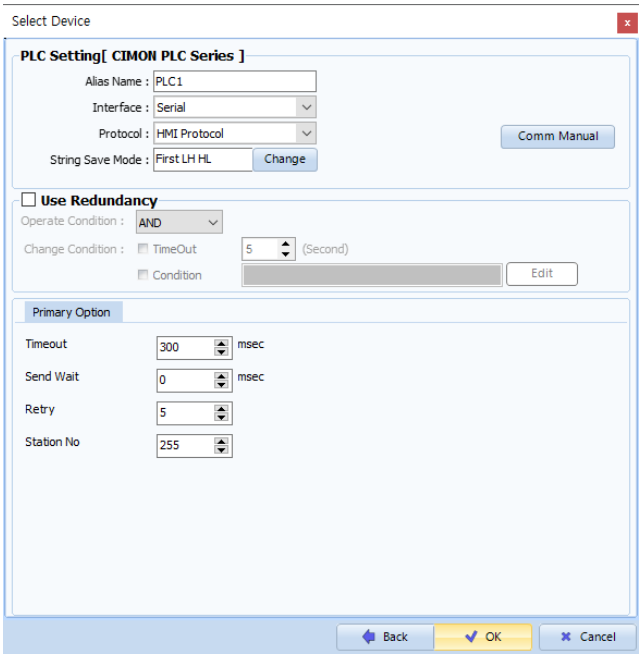
・1:N connection



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 “KDT Systems”.
	PLC	Select an external device to connect to TOP. **Model** / **Interface** / **Protocol** CIMON PLC Series / Serial / HMI Protocol 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

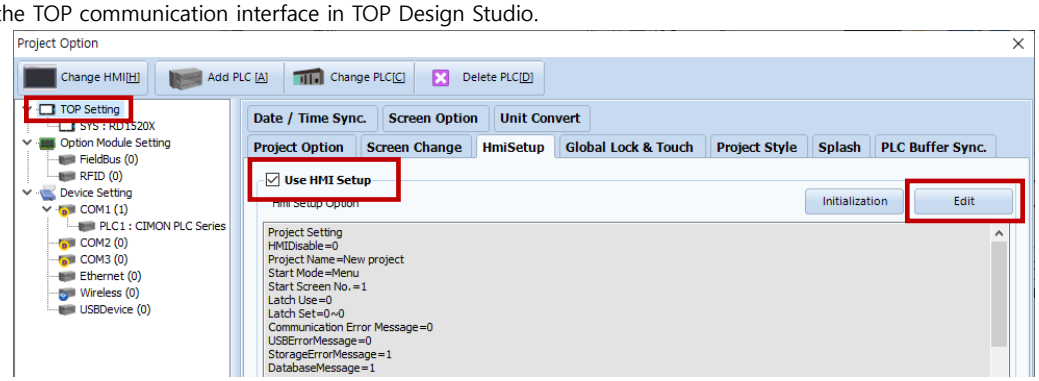
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

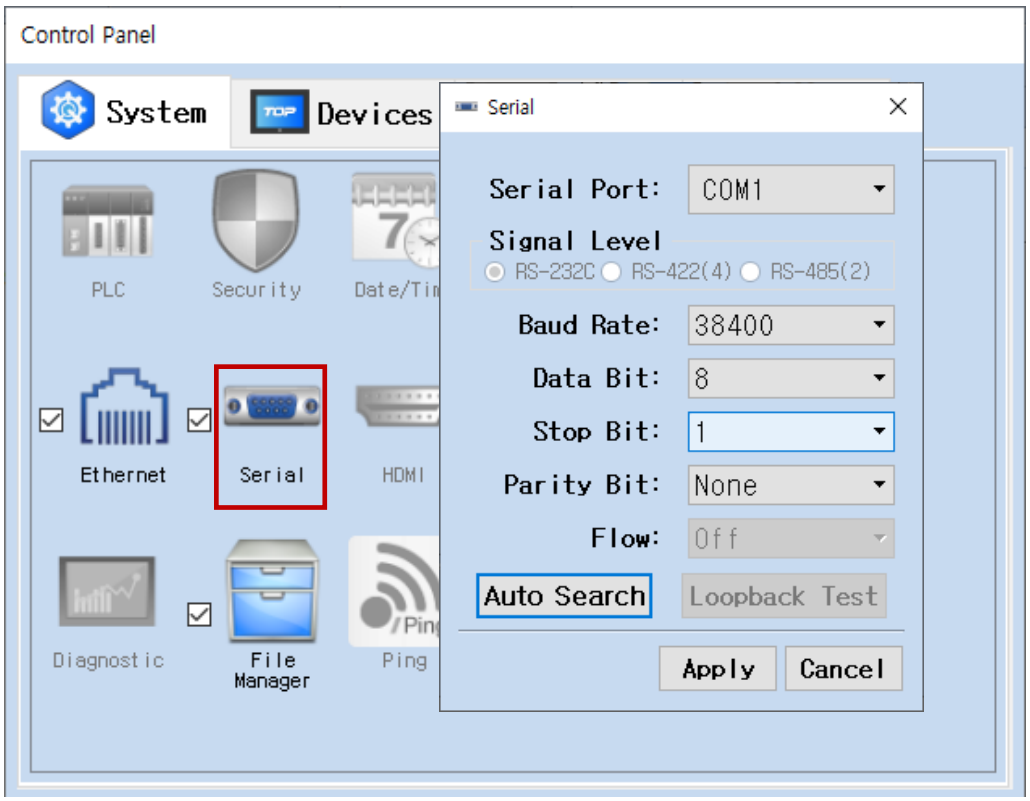
3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project] → [Property] → [TOP Setting] → [HMI Setup] → [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-422/485	RS-232C RS-422/485	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

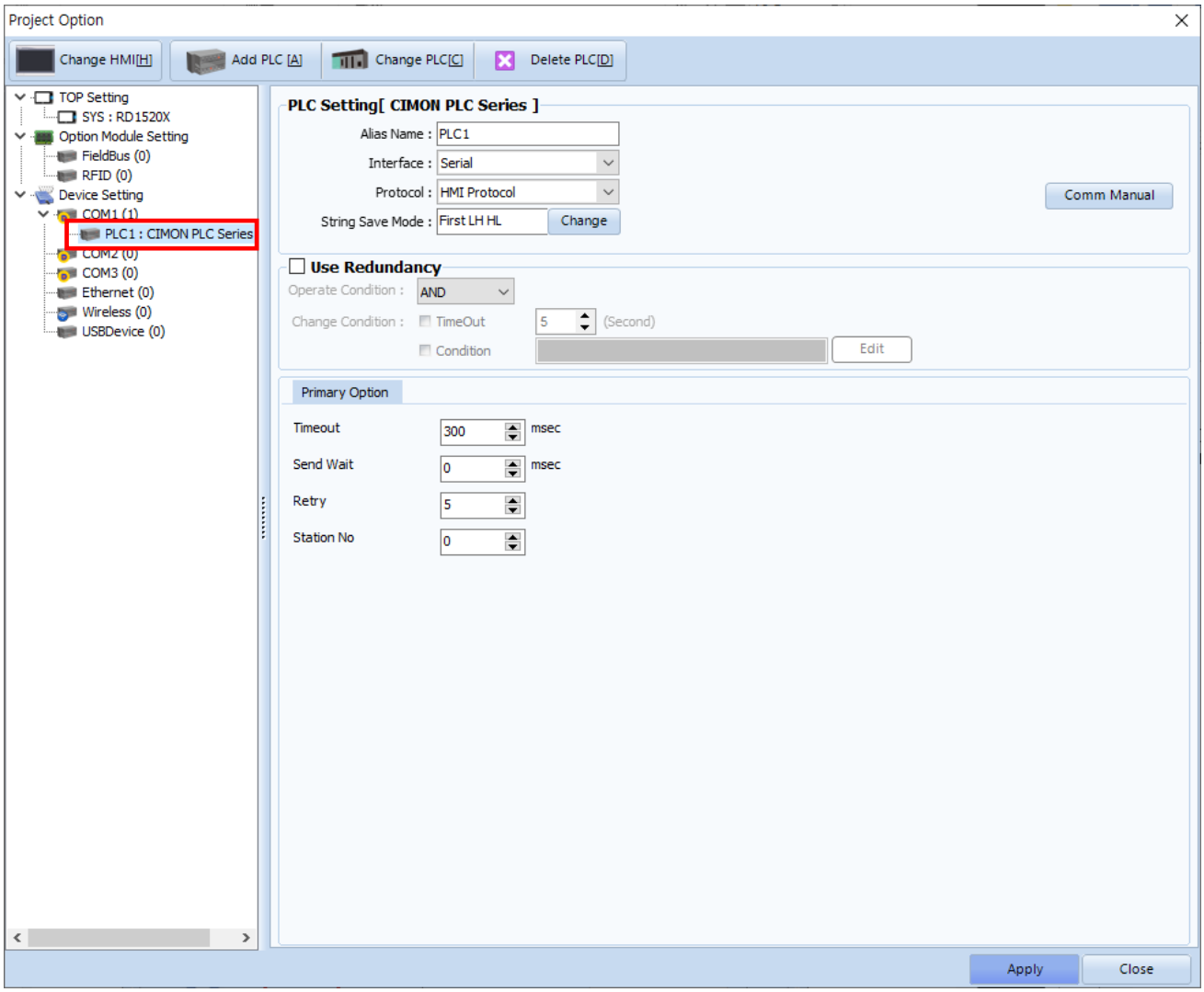
* The above settings are examples recommended by the company.

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 > CIMON PLC Series]

– Set the options of the CIMON PLC Series HMI Protocol communication driver in TOP Design Studio.

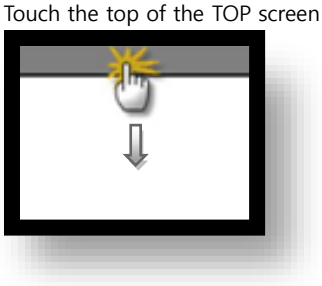


Items	Settings	Remarks
Interface	Select “Serial”.	Refer to “2. External device selection”.
Protocol	Select “HMI Protocol”.	
TimeOut (ms)	Set the time to wait for a response from an external device.	
SendWait (ms)	Set the waiting time before sending a data request to an external device.	
Station No	Enter the prefix of an external device.	

3.2. Communication setting in TOP

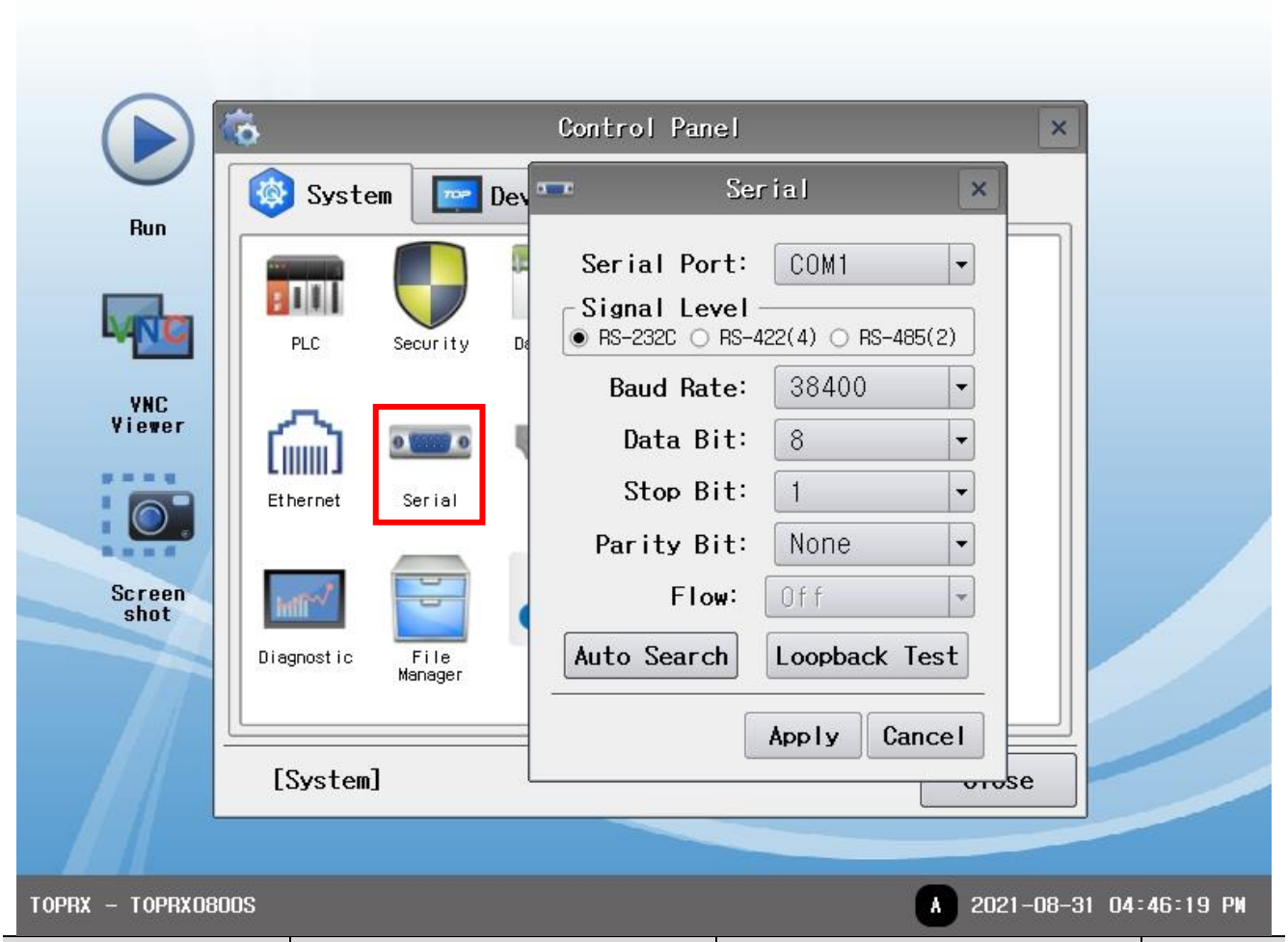
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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

■ [Control Panel] → [Serial]



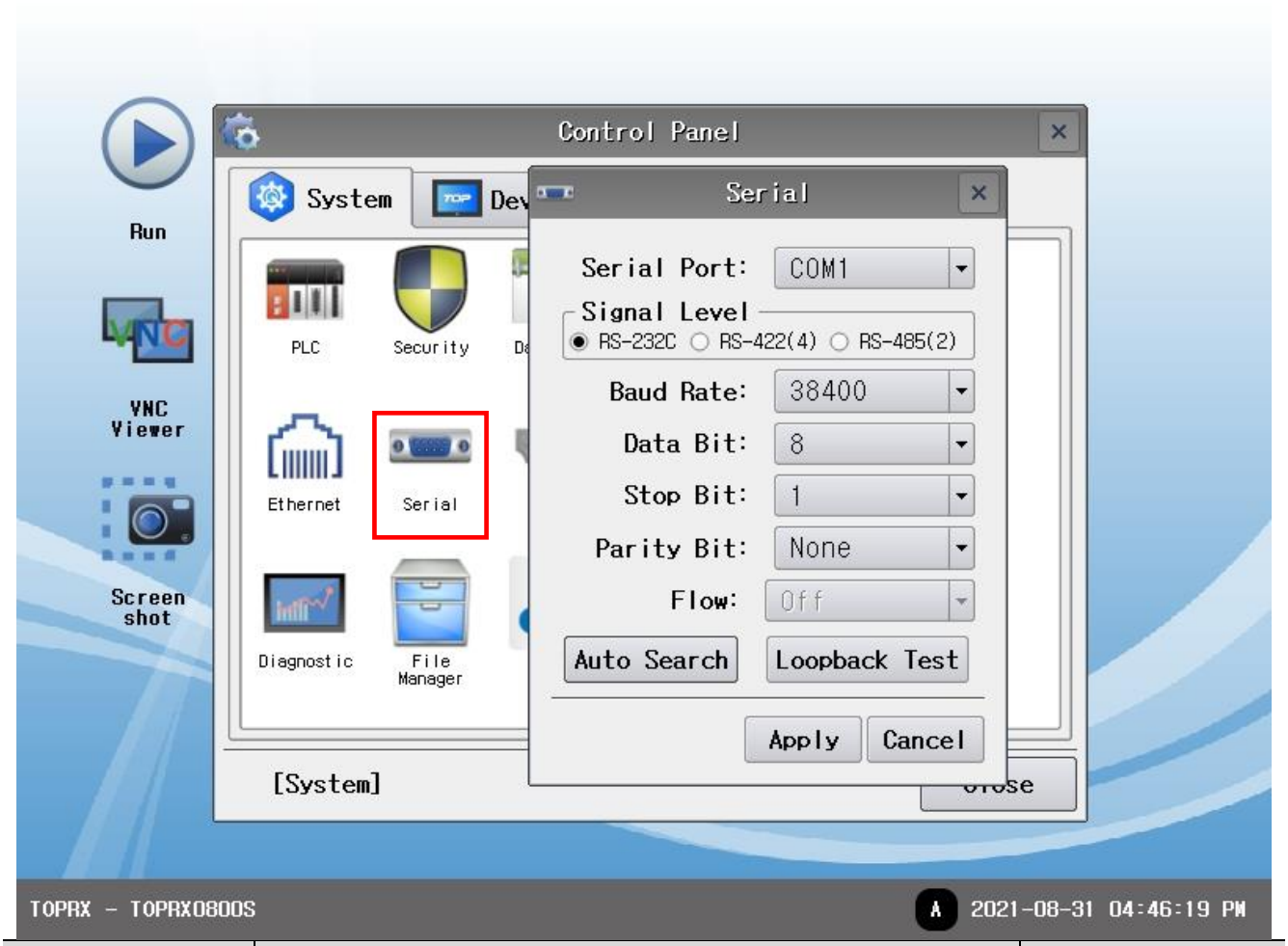
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C RS-422/485	RS-232C RS-422/485	
Baud Rate	38400		
Data Bit	8		
Stop Bit	1		
Parity Bit	None.		

* 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

■ [Control Panel] → [PLC]



Items	Settings	Remarks
Interface	Select "Serial".	Refer to "2. External device selection".
Protocol	Select "HMI Protocol".	
TimeOut (ms)	Set the time to wait for a response from an external device.	
SendWait (ms)	Set the waiting time before sending a data request to an external device.	
Station No	Enter the prefix of 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 that the settings of the connected ports in [Control Panel] → [Serial] are the same as the settings of the external device.

■ Diagnosis of whether the port communication is normal or not

- Touch "Communication Diagnostics" in [Control Panel] → [PLC].
- Check whether communication is connected or not.

Communication diagnostics succeeded	**Communication setting normal**
Error message	**Communication setting abnormal** - Check the cable, TOP, and external device settings. (Refer to 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

4. External device setting

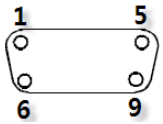
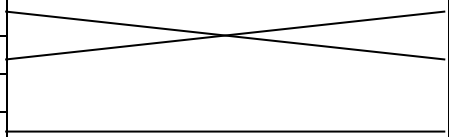
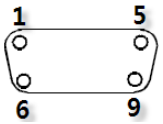
Refer to the user manual of the vendor and configure the communication channel options.

Items		Settings	Remarks
Operation mode	Protocol	HMI protocol	**Fixed**
	Prefix	0	
Communication parameter	Communication speed (BPS)	38400	
		None	
	Data bit	8	
	Stop bit	1	
		0	

5. Cable table

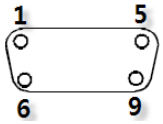
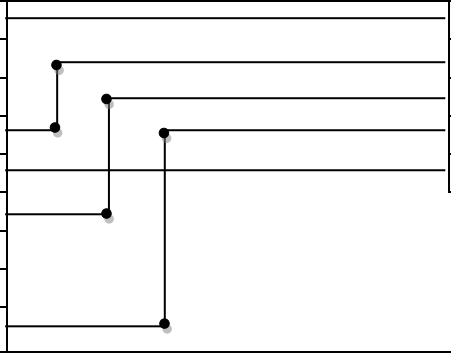
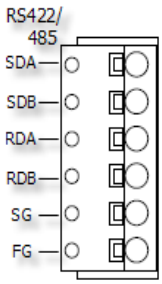
This chapter introduces a cable diagram for normal communication between the TOP and the external device.
(The cable diagram described in this section may differ from the recommendations of "KDT Systems Co., Ltd.")

■ RS-232C

TOP			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)		1		1		 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	RD	
	SD	3		3	SD	
		4		4		
	SG	5		5	SG	
		6		6		
		7		7		
		8		8		
		9		9		

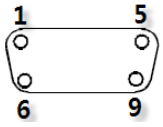
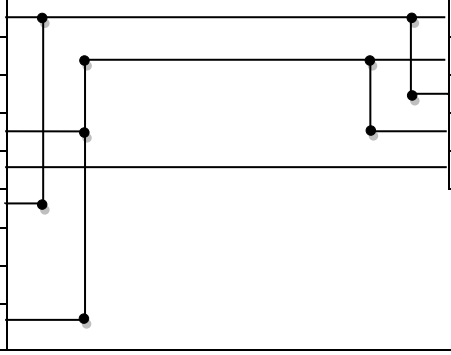
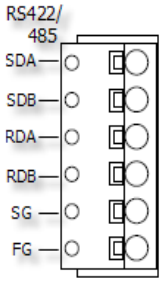
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-422

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

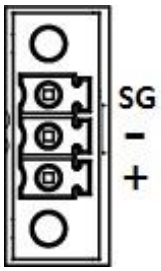
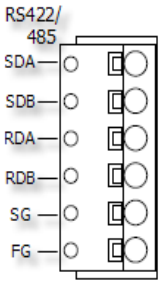
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485

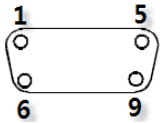
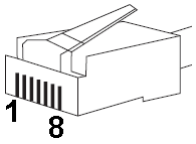
TOP			Cable connection	External device	
Pin arrangement*Note 1)	Signal name	Pin number		Signal name	Pin arrangement
 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)	RDA	1		SDA	
		2		SDB	
		3		RDA	
	RDB	4		RDB	
	SG	5		SG	
	SDA	6			
		7			
		8			
	SDB	9			

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

■ RS-485

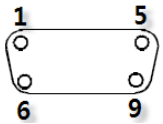
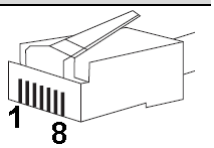
TOP		Cable connection	External device	
Pin arrangement	Signal name		Signal name	Pin arrangement
	+		SDA	
	-		SDB	
	SG		RDA	
			RDB	
			SG	

■ RS-232C

TOP			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		 Based on communication cable connector front, 8-pin male RJ45 (Male, convex)
	RD	2		2		
	SD	3		3		
	DTR	4		4	SG	
	SG	5		5	RD	
	DSR	6		6	SD	
	RTS	7		7		
	CTS	8		8		
		9				

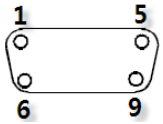
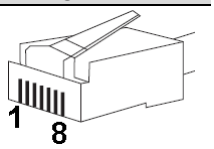
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-422

TOP			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)	RDA	1		1	SDA	 Based on communication cable connector front, 8-pin male RJ45 (Male, convex)
		2		2	SDB	
		3		3	RDA	
	RDB	4		4		
	SG	5		5	RDB	
	SDA	6		6		
		7		7		
		8		8	SG	
	SDB	9				

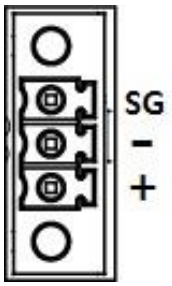
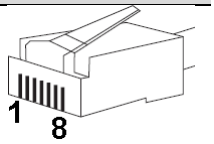
*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485

TOP			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)	RDA	1		1	SDA	 Based on communication cable connector front, 8-pin male RJ45 (Male, convex)
		2		2	SDB	
		3		3	RDA	
	RDB	4		4		
	SG	5		5	RDB	
	SDA	6		6		
		7		7		
		8		8	SG	
	SDB	9				

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

■ RS-485

TOP		Cable connection	External device		
Pin arrangement	Signal name		Pin number	Signal name	Pin arrangement*Note 1)
	+		1	SDA	 Based on communication cable connector front, 8-pin male RJ45 (Male, convex)
	-		2	SDB	
	SG		3	RDA	
			4		
			5	RDB	
			6		
			7		
			8	SG	

*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	External device
Signal name		Signal name		Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG		SG

■ RS-485 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	External device
Signal name		Signal name		Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG		SG

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.

Address		Bit	Word	Remarks
Input relay		X00000– X1023F	X00000 – X10230	
Output relay		Y00000 – Y1023F	Y00000 – Y10230	
Sub relay		M00000 – M4095F	M00000 – M40950	
Keep relay		K00000 – K4095F	K00000 – K40950	
Link relay		L00000 – L4095F	L00000 – L40950	
Timer	contact	T0000 – T4095	—	
	current	—	TC0000 – TC4095	
	setting	—	TS0000 – TS4095	
Counter	contact	C0000 – C4095	—	
	current	—	CC0000 – CC4095	
	setting	—	CS0000 – CS4095	
Data register		D00000.00 – D32766.15	D00000 – D32766	