KEYENCE.

KV KV-700/1000/3000/5000/7000 Series

Computer Link Serial Driver

Supported version TOP Design Studio V4.0 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.

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.

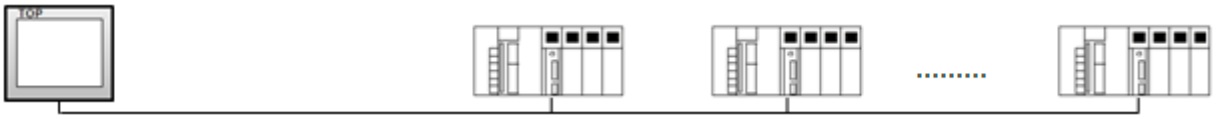
1. System configuration

The system configuration of TOP and "Keyence KV Series Computer Link" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
KV Series Loader	KV-700 KV-1000 series KV-3000 series KV-5000 series KV-7000 series	NC10L NC20L	RS-422	3. TOP communication setting 4. External device setting	5.1. Cable table 1

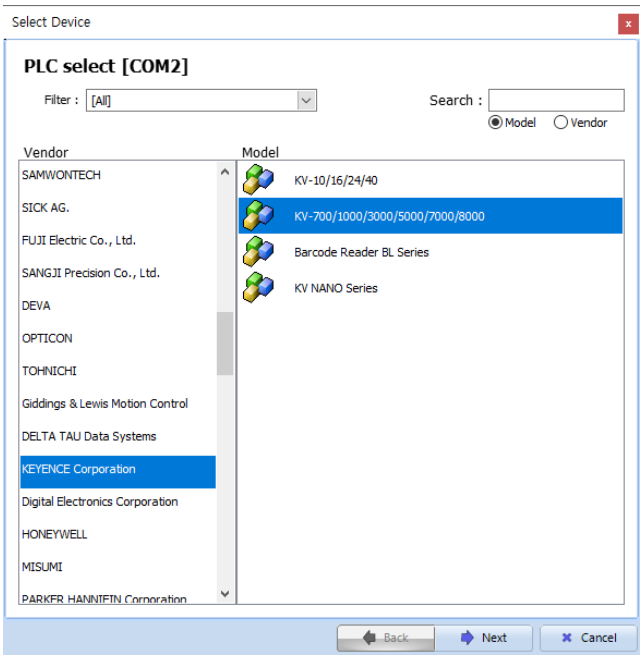
■ Connection configuration

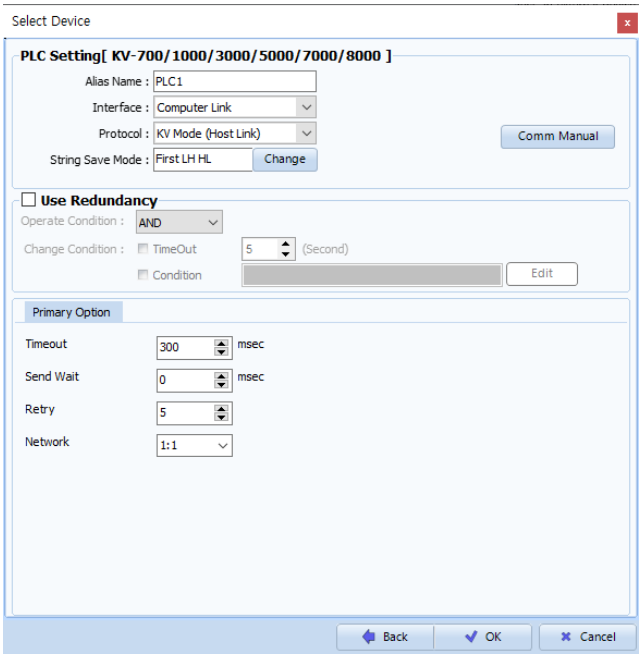
・1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422 communication.



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. Select "KEYENCE > KV-700/1000/3000/5000/7000"
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
KEYENCE KV Series Loader	Computer Link	Computer Link(KV LINK MODE

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

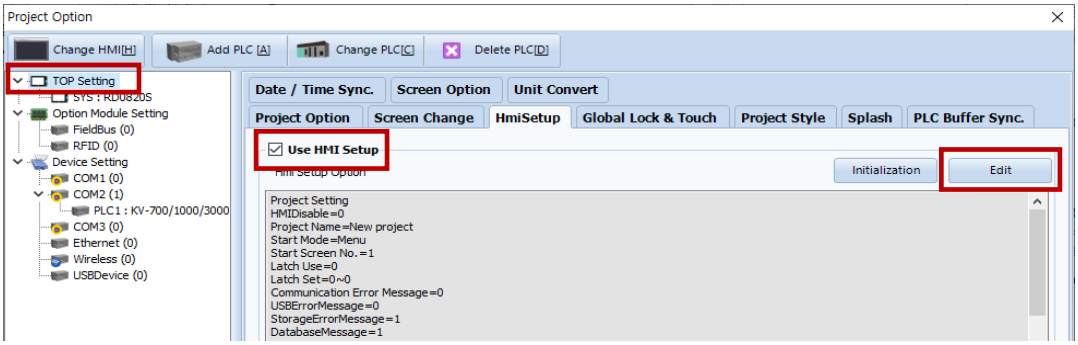
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

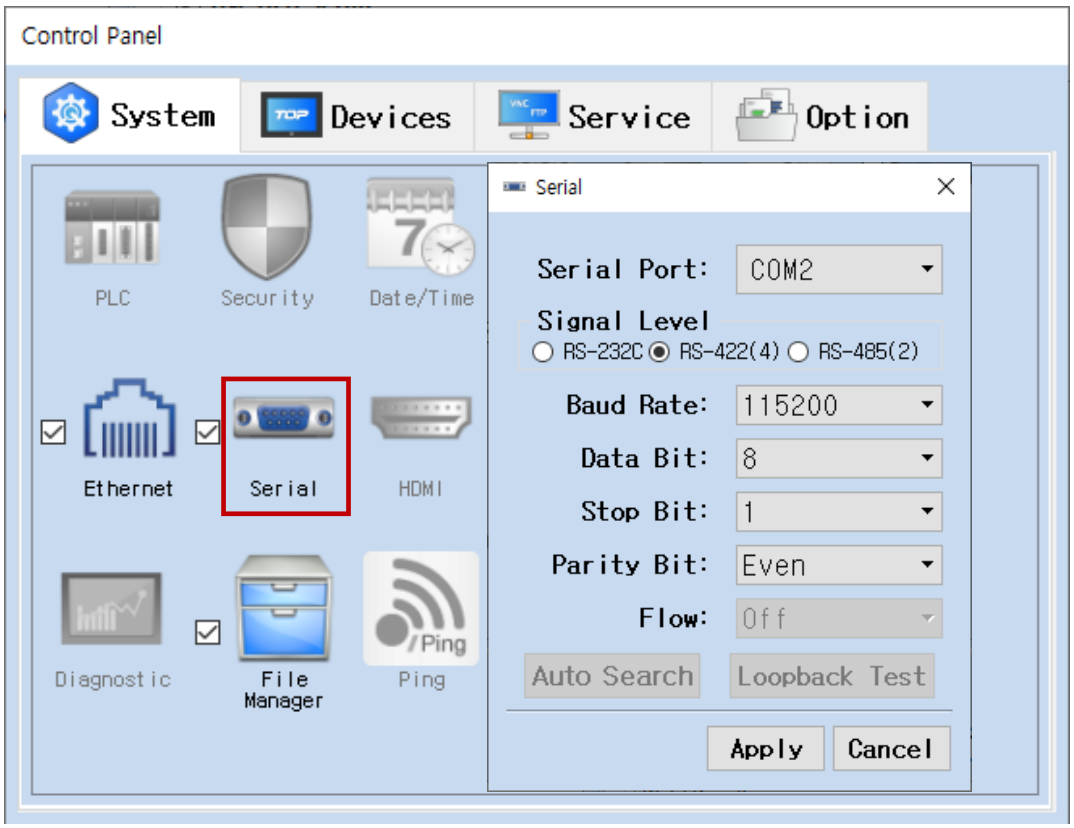
3.1 Communication setting in TOP Design Studio

(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-422	RS-422	
Baud Rate	115200		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

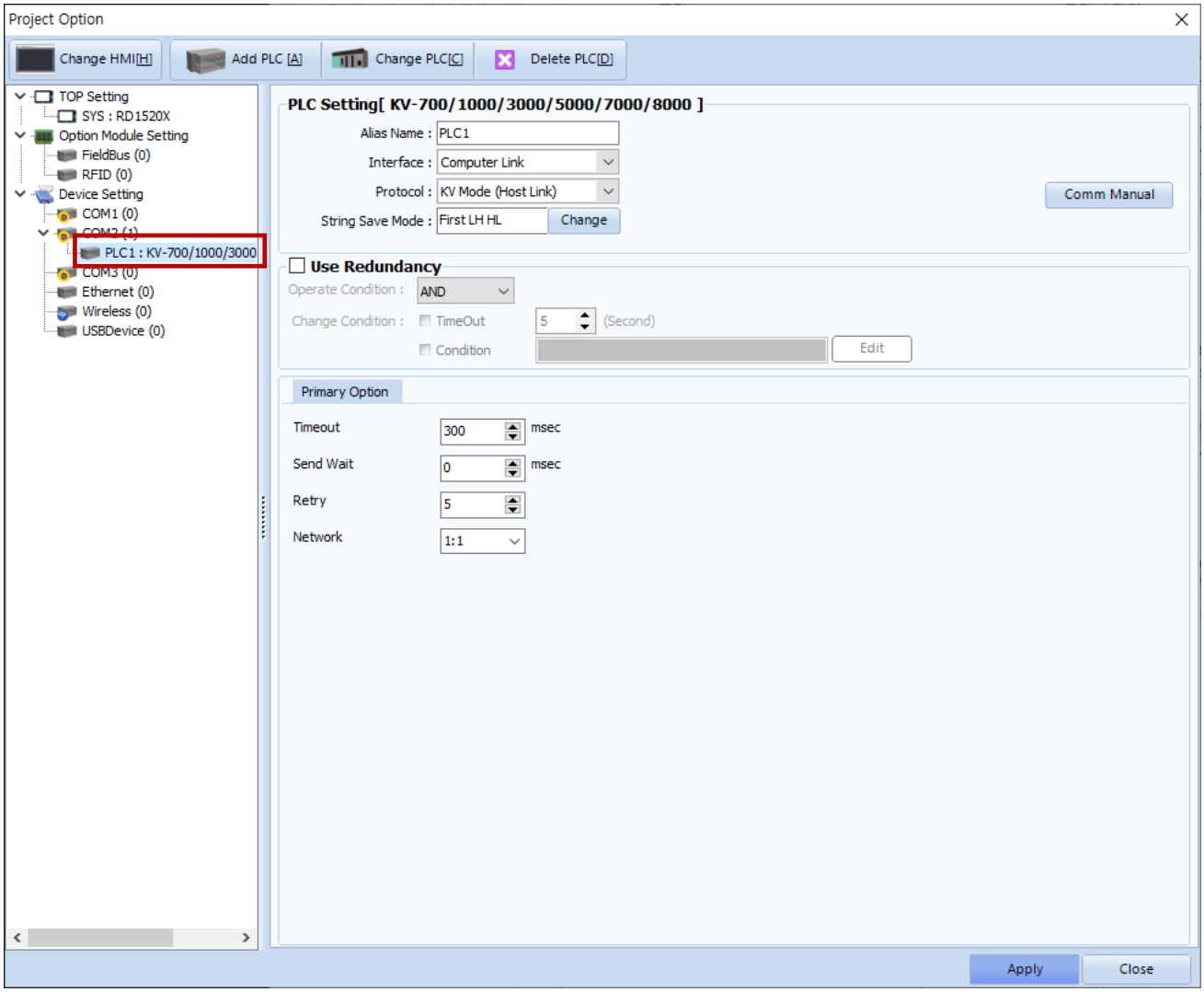
* The above settings are examples recommended by the company.

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 Property > Device Setting > COM > PLC1: Computer Link]

Set the options of the communication driver in TOP Design Studio.

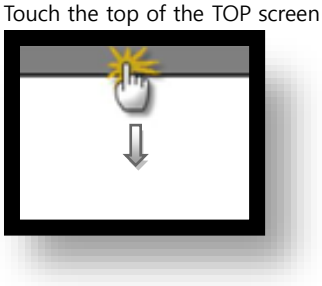


Items	Settings	Remarks
Interface	Configure the communication interface between the TOP and an external device.	Refer to "2. External device selection".
Protocol	Configure the communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from 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.	
Station Num	Enter the Kv mode's Station Num.	
StationNoUse	Determines whether or not the Station Num is going to be used. (0: Disable; 1: Enable) If the Station Num does not match the plc, the plc does not respond.	

3.2. Communication setting in TOP

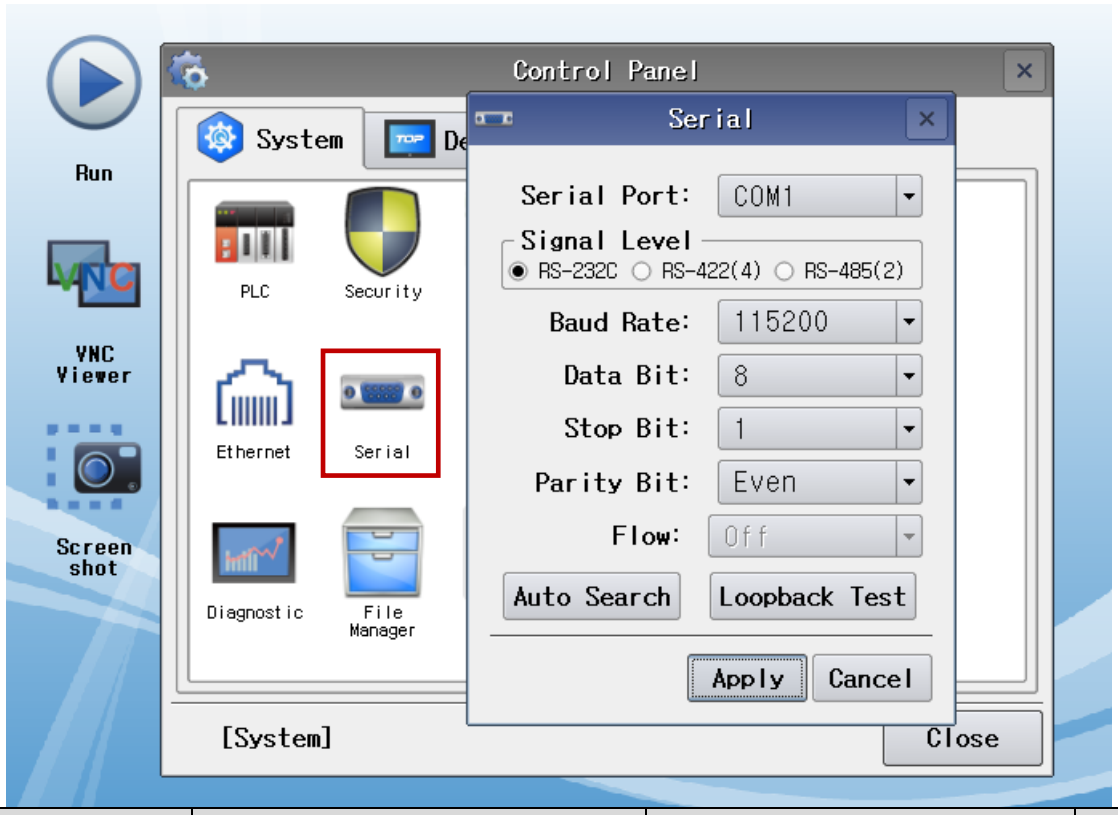
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



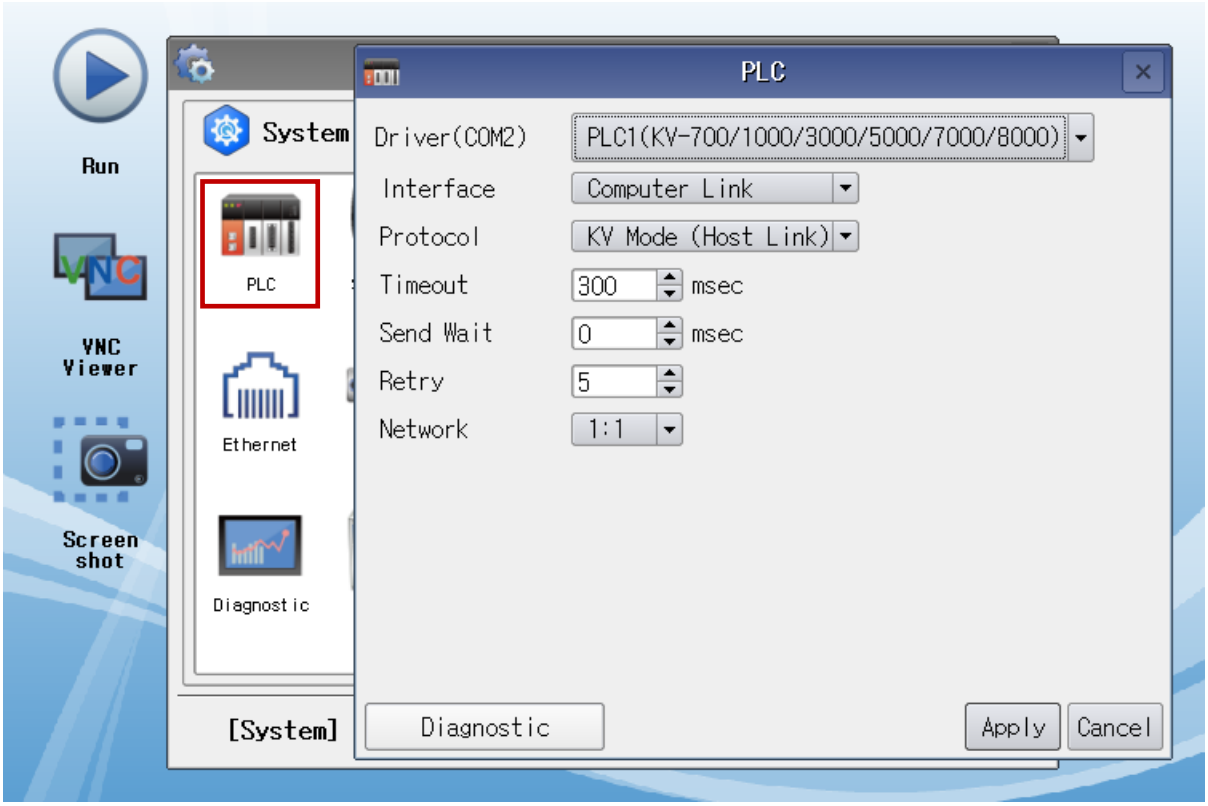
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	115200		
Data Bit	8		
Stop Bit	1		
Parity Bit	Even		

* 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	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.	
Station Num	Enter the Kv mode's Station Num.	
StationNoUse	Determines whether or not the Station Num is going to be used. (0: Disable; 1: Enable) If the Station Num does not match the plc, the plc does not respond.	

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 port (COM1/COM2/COM3) 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.)

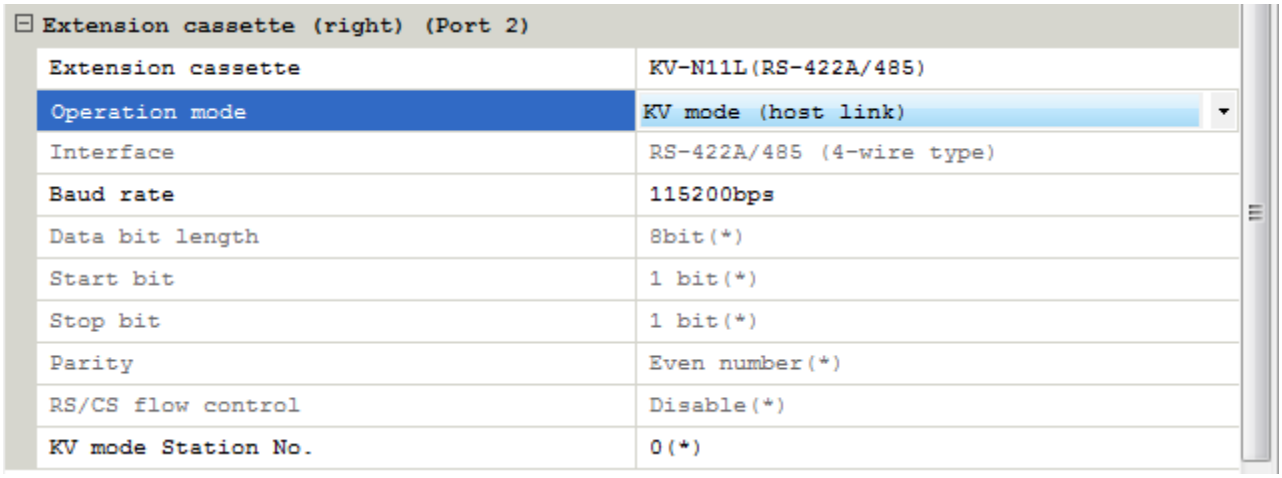
4. External device setting

4.1 KV 5500/5000/3000 series

No additional settings need to be configured for the external device.

4. 2 KV-7000 series

From Extension cassette, configure the operation mode to KV mode (host link), as shown in the figure below.



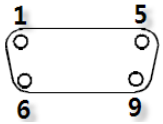
5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.

5.1. Cable table 1

■ **RS-422** (connection)

(A) TOPR COM Port (9 pin)

COM			Cable connection	"HITACHI Series"		
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			SDB	
		2				
		3				
	RDB	4			SDA	
	SG	5				
	SDA	6			RDB	
		7				
		8				
	SDB	9			RDA	

*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.

Device		Bit Address	Word Address	Remarks
Data Memory		DM0000.00 – DM65534.15	DM0000 – DM65534	
Control Memory		CM0000.00 – CM5999.15	CM0000 – CM5999	
Temporary Memory		TM000.00 – TM511.15	TM000 – TM511	
Expansion Data Memory		EM00000.00 – EM65534.15	EM00000 – EM65534	
File Register – Current Bank		FM00000.00 – FM32767.15	FM00000 – FM32767	
Work Memory		VM00000.00 – VM59999.15	VM00000 – VM59999	
Link Register		W000.00 – W999.15	W000 – W999	
Digital Timer		TRM0.00 – TRM7.15	TRM0 – TRM7	
Index Register			Z01 – Z12	32bit
Link Register			W0000 – WFFFF	
High-Speed Counter Current Value			CTH0 – CTH1	32bit
High-Speed Counter Comparator			CTC0 – CTC3	32bit
File Register – Consecutive Number mode			ZF000000 – ZF131071	
Input/Output		R00000 – R99915	R000 – R999	
Control Relay		CR0000 – CR3915	CR00 – CR39	
Internal Auxiliary Relay		MR00000 – MR99915	MR000 – MR999	
Latch Relay		LR00000 – LR99915	LR000 – LR999	
Link Relay		B0000 – BFFFF		
Timer	contact	T000 – T511	—	
	current	—	TC000 – TC511	32bit
	setting	—	TS000 – TS511	32bit
Counter	contact	C000 – C511	—	
	current	—	CC000 – CC511	32bit
	setting	—	CS000 – CS511	32bit