LinMot
Servo Drive Series
LinRS Interface

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 Servo Drive Series LinRS Interface for the TOP and LinMot is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
Servo Drive	B1100 E1100 E1200 E1400	Port on CPU (X5)	RS-232C	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 10)
		Port on CPU (X5, X7/X8)	RS-422	3.2 Settings example 2 (Page 5)	5.2. Cable table 2 (Page 11)
		Port on CPU (X5, X7/X8)	RS-485	3.3 Settings example 3 (Page 6)	5.3. Cable table 3 (Page 12)

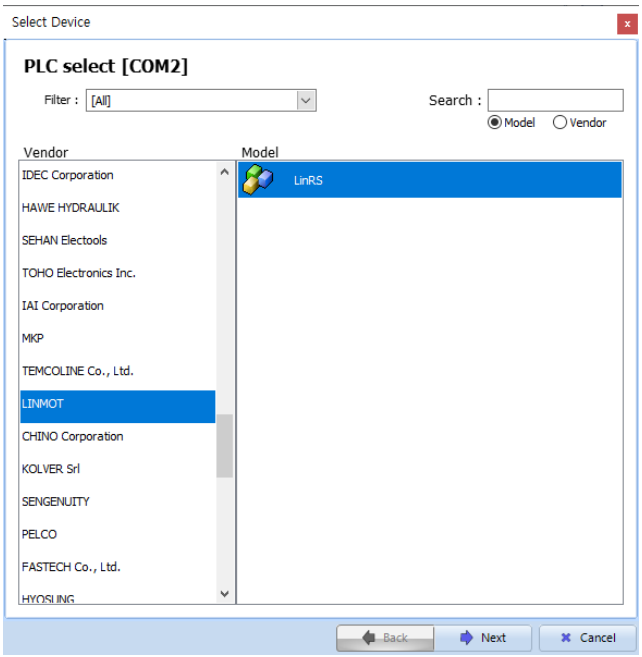
■ Connectable configuration

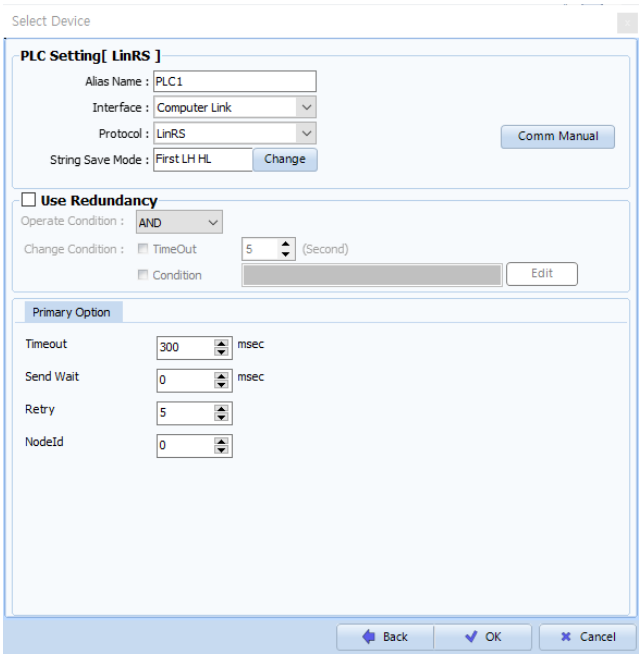
・1:1 connection (one MASTER and one TOP) connection

・1:N connection (one MASTER and multiple TOPs) 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 "LINMOT".
	PLC	Select an external device to connect to TOP.

Model	Interface	Protocol
LINRS	Computer Link	LinRS

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

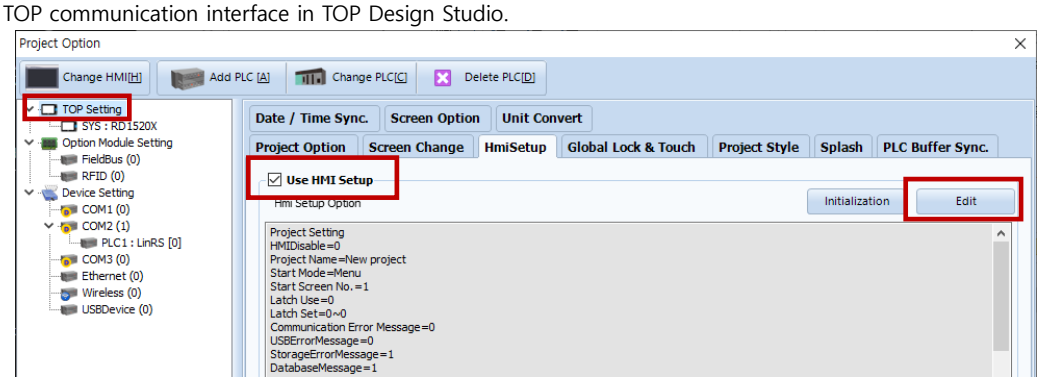
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

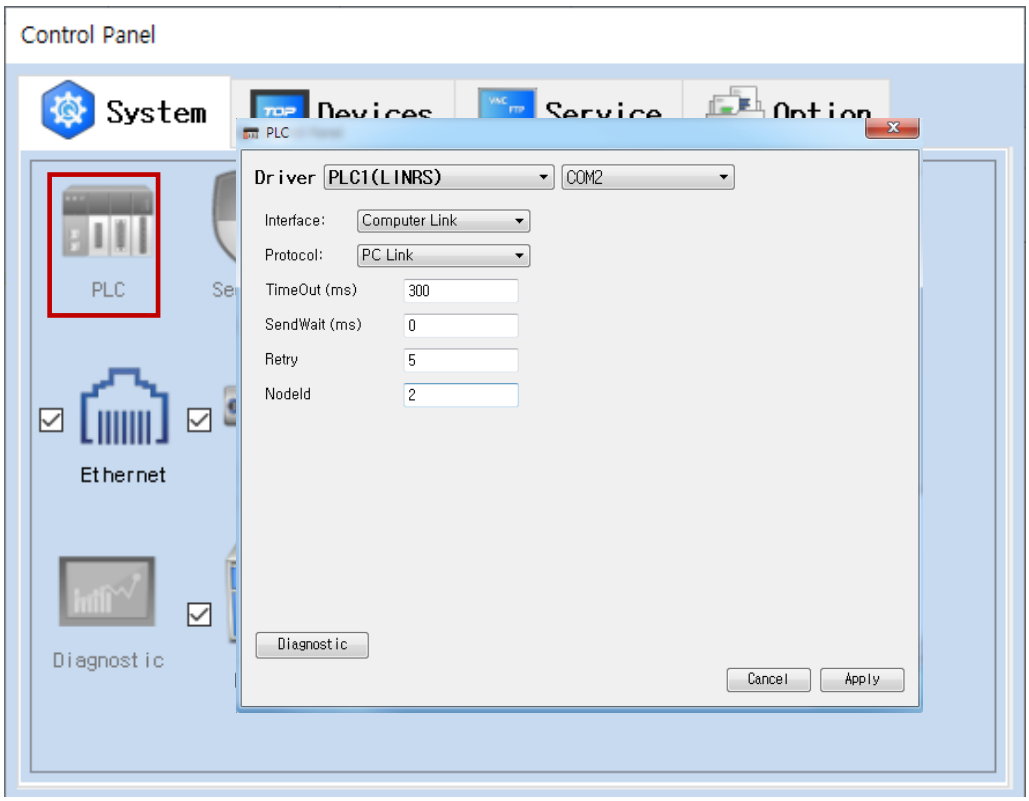
3.1 Communication setting in TOP Design Studio

(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-422C	RS-422C	
Baud Rate	57600		
Data Bit	8		
Stop Bit	1		
Parity Bit	NONE		

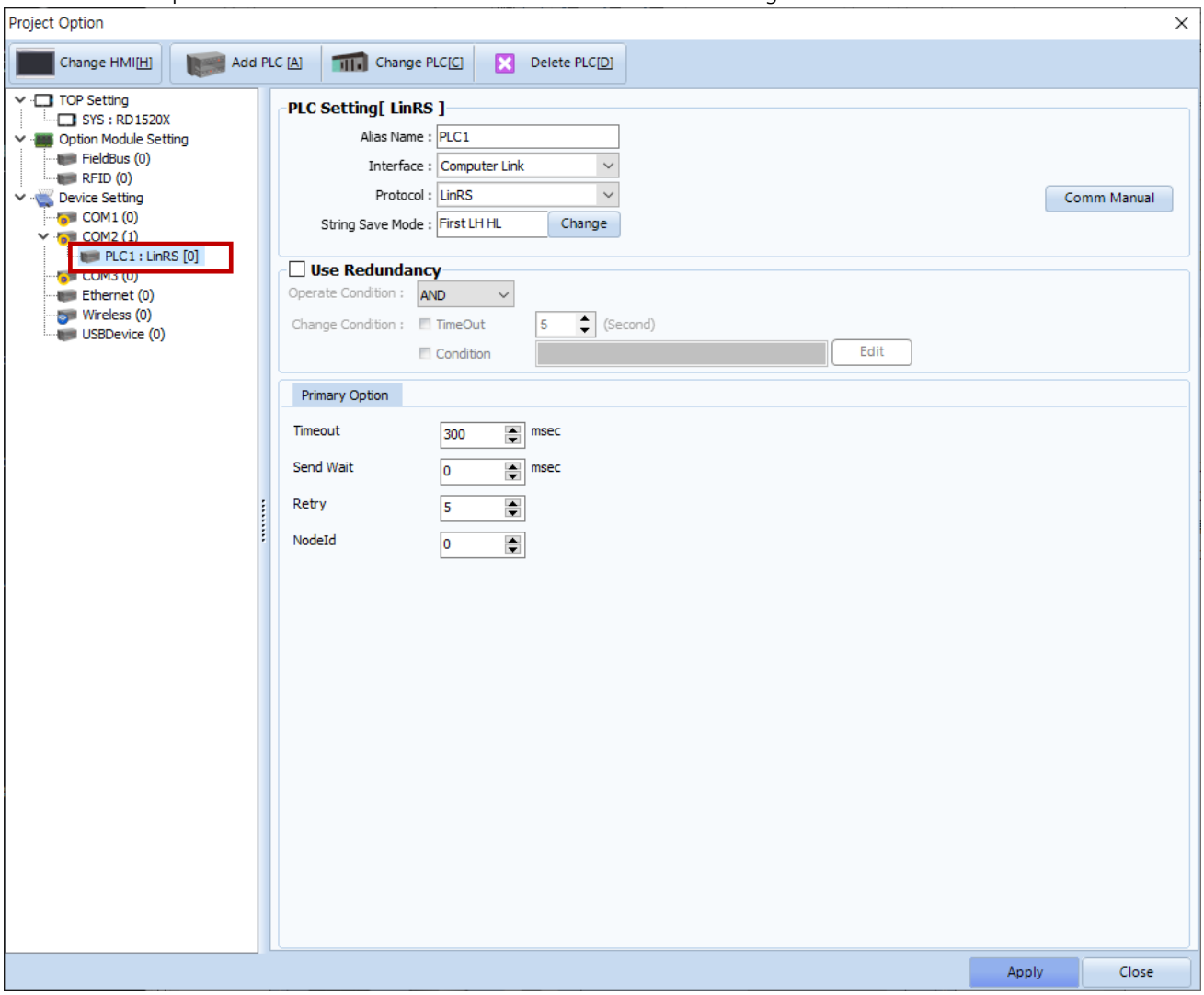
* The above settings are examples recommended by the company.

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 > "PLC1 : LINRS"]

– Set the options of the MICREX-SX Series communication driver in TOP Design Studio.

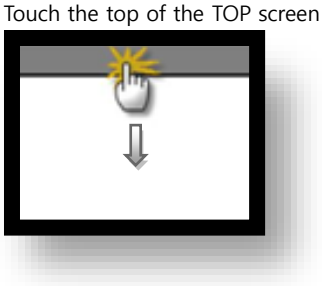


Items	Settings	Remarks
Interface	Select "Computer Link".	
Protocol	Select the serial communication protocol between the TOP and an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response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

3.2. Communication setting in TOP

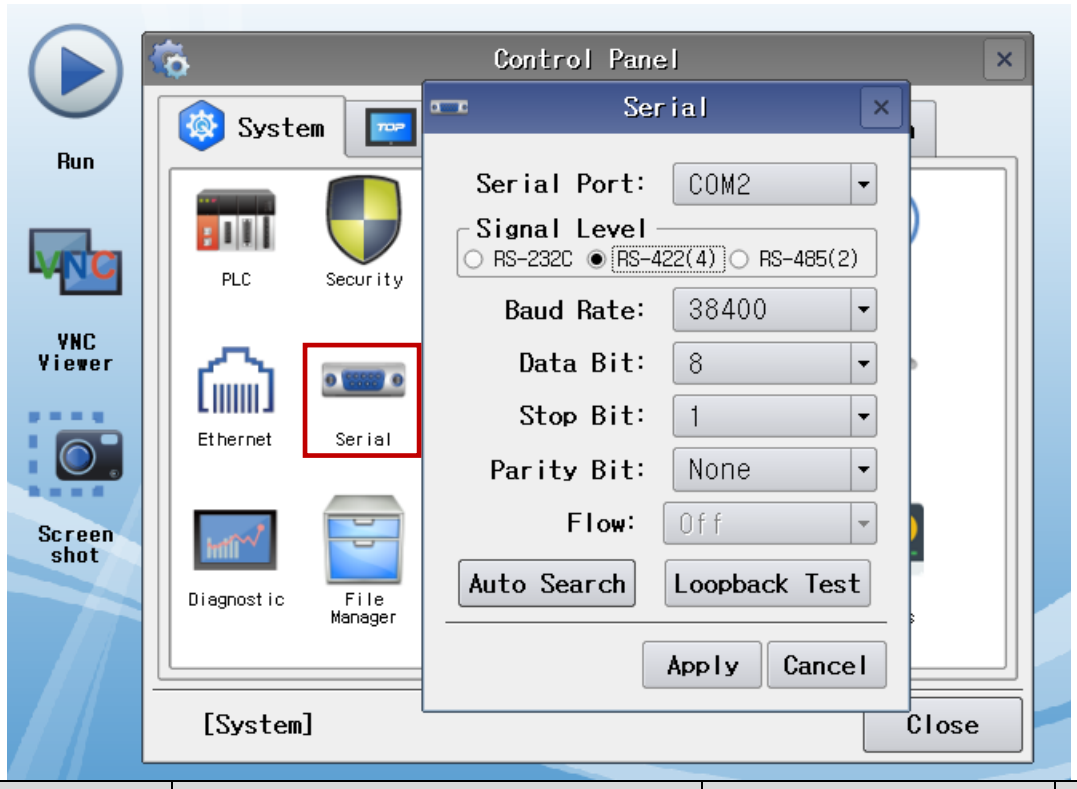
*** This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.**

■ 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]



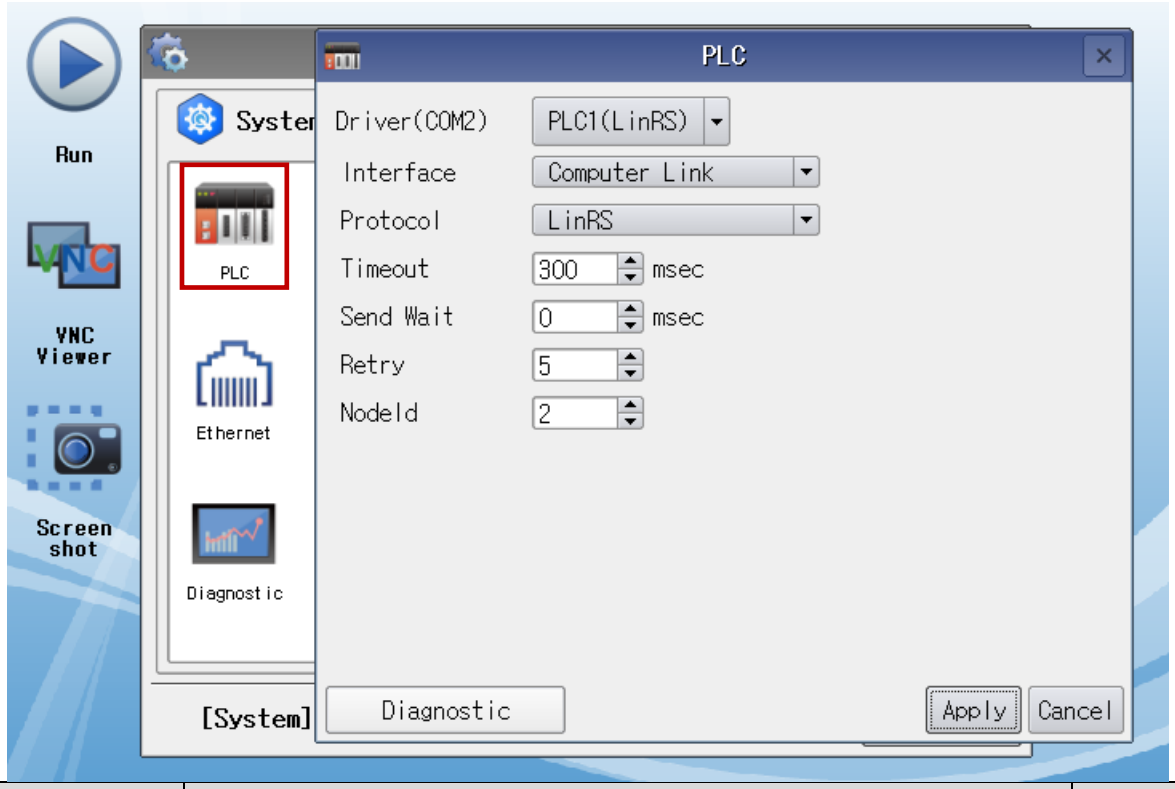
Items	TOP	External device	Remarks
Signal Level (port)	RS-422	RS-422	
Baud Rate	57600		
Data Bit	8		
Stop Bit	1		
Parity Bit	none		

* 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

■ [Main Screen > Control Panel > PLC]



Items	Settings	Remarks
Interface	Select "Computer Link".	
Protocol	Select the serial 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.	
NODEID	Prefix	

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

Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.

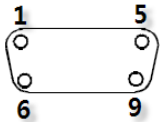
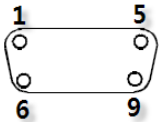
5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
(The cable diagram described in this section may differ from the recommendations of "**LINRS**")

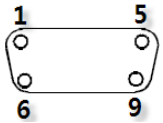
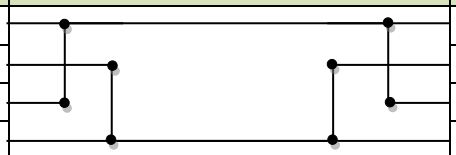
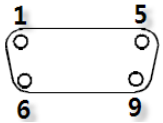
5.1. Cable table 1

■ 1:1 connection

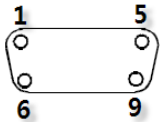
■ RS-232C wiring

TOP COM			Cable connection	PLC		
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	485 Tx+	 Based on communication cable connector front, D-SUB 9 Pin male (male, convex)
	RD	2		2	232 Tx	
	SD	3		3	232 Rx	
	DTR	4		4	485 Rx+	
	SG	5		5	GND	
	DSR	6		6	485 Rx–	
	RTS	7		7	485 Tx–	
	CTS	8		8		
		9		9		

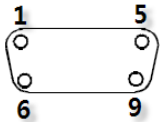
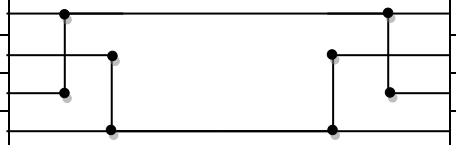
RS-485 wiring

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)	RDA	1		1	485 Tx+	 Based on communication cable connector front, D-SUB 9 Pin female (female, convex)
	RDB	4		7	485 Tx–	
	SDA	6		4	485 Rx+	
	SDB	9		6	485 Rx–	

2. RS-422 wiring

TOP COM			Cable connection	E1100/E1200/B1100		
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		3	485 Tx+	 X7/X8 Port
	RDB	4		6	485 Tx–	
	SDA	6		1	485 Rx+	
	SDB	9		2	485 Rx–	

RS-485 wiring

TOP COM			Cable connection	E1100/E1200/B1100		
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		3	485 Tx+	 X7/X8 Port
	RDB	4		6	485 Tx–	
	SDA	6		1	485 Rx+	
	SDB	9		2	485 Rx–	

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.

■ Status data

Device Name	Bit Address	Word Address	Remarks
Control word	———	CTRL	*1) *3)
Status word	STAT0 – STAT15	———	*2) *4)
Warn word	WARN0 – WARN15	———	*2) *5)
Error info message		ALM	*2) *6)

*1) Write only *2) Read only

*3) Use word data. Control details according to bit are as follows:

BIT 0	Switch on/off	BIT 4	Abort	BIT 8	Jog move +	BIT 12	Clearance check
BIT 1	Voltage enable	BIT 5	Freeze	BIT 9	Jog move –	BIT 13	Go to initial position
BIT 2	Quick stop	BIT 6	Go to position	BIT 10	Special mode	BIT 14	Reserved
BIT 3	Enable operation	BIT 7	Error acknowledge	BIT 11	Home	BIT 15	Phase search

*4) Details depending on bit are as follows.

BIT 0	Operation Enabled	BIT 4	Voltage enable	BIT 8	Event handler active	BIT 12	Fatal error
BIT 1	Switch on active	BIT 5	Quick stop	BIT 9	Special motion active	BIT 13	Motion active
BIT 2	Enable operation	BIT 6	Switch on locked	BIT 10	In target position	BIT 14	Range indicator 1
BIT 3	Error	BIT 7	Warning	BIT 11	Homed	BIT 15	Range indicator 2

*5) Details depending on bit are as follows.

BIT 0	Motor hot sensor	BIT 4	Position lag always	BIT 8	PTC sensor 1 hot	BIT 12	Reserved
BIT 1	Motor short time overload I^2t	BIT 5	Position lag standing	BIT 9	Reserved PTC 2	BIT 13	Reserved
BIT 2	Motor supply voltage low	BIT 6	Controller hot	BIT 10	RR hot calculated	BIT 14	Interface warn flag
BIT 3	Motor supply voltage high	BIT 7	Motor not homed	BIT 11	Reserved	BIT 15	Application warn flag

*6) Displays string. (Max 32 characters)

■ Memory data

Device Name	Bit Address	Word Address	Remarks
RAM value	———	RAM0 – RAMFFFF	
ROM value	———	ROM0 – ROMFFFF	

■ Program Handling Message Group

Device Name	Bit Address	Word Address	Remarks
R00A	———	R00A	Reset Drive with Response after completion , 1
R00B	———	R00B	Reset Drive with immediate Response , 1

*1) Write only

☞ Continued on next page.

■ Motion Control

* The devices in this area execute variables using bound reference variables.

(Example) "**S00B"**(Write Interface Control Word) refers to "**_S00B1"** as the Interface Control Word data for exection.

* However, if the reference variables are not entered into the table, they are not used.

* Motion Control – 00 Group

Device Name		Bit Address	Word Address	Remarks
Write Interface Control Word	Run	S00B	———	*1)
	Interface Control Word	———	_S00B1	
Write Live Parameter	Run	S00C	———	*1)
	UPID (Unique Parameter ID)	———	_S00C1	
	Parameter Value, the Unit depends on Parameter	———	_S00C2	
Master Homing	Run	S00J	———	*1)
	Home Position	———	_S00J1	
Write X4 Intf Outputs with Mask	Run	S00D	———	*1)
	Bit Mask; Bit 0 = X4.3 Bit 1 = X4.4	———	_S00D1	
	Bit Value; Bit 0 = X4.3, Bit 1 X4.4...	———	_S00D2	
Write X6 Intf Outputs with Mask	Run	S00E	———	*1)
	Bit Mask; Bit 0 = X6.9 Bit 1 = X6.22...	———	_S00E1	
	Bit Values; Bit 0 = X6.9, Bit 1 X6.22, ...	———	_S00E2	

*1) Write only

* Motion Control – 01 Group

Device Name		Bit Address	Word Address	Remarks
VAI Go To Pos	Run	S01A	———	*1)
	Target Position	———	_S01A1	
	Maximal Velocity	———	_S01A2	
	Acceleration	———	_S01A3	
	Deceleration	———	_S01A4	
VAI Go To Pos After Actual Command	Run	S01I	———	*1)
	Target Position	———	_S01I1	
	Maximal Velocity	———	_S01I2	
	Acceleration	———	_S01I3	
	Deceleration	———	_S01I4	
VAI Go To Analog Pos	Run	S01J	———	*1)
	Maximal Velocity	———	_S01J1	
	Acceleration	———	_S01J2	
	Deceleration	———	_S01J3	
VAI Go To Pos On Rising Trigger Event	Run	S01K	———	*1)
	Target Position	———	_S01K1	
	Maximal Velocity	———	_S01K2	
	Acceleration	———	_S01K3	
	Deceleration	———	_S01K4	
VAI Increament Target Pos On Rising Trigger Event	Run	S01L	———	*1)
	Target Position	———	_S01L1	
	Maximal Velocity	———	_S01L2	
	Acceleration	———	_S01L3	

	Deceleration	———	_S01L4	
VAI Go To Pos On Falling Trigger Event	Run	S01M	———	*1)
	Target Position	———	_S01M1	
	Maximal Velocity	———	_S01M2	
	Acceleration	———	_S01M3	
	Deceleration	———	_S01M4	
VAI Increament Target Pos On Falling Trigger Event	Run	S01N	———	*1)
	Target Position	———	_S01N1	
	Maximal Velocity	———	_S01N2	
	Acceleration	———	_S01N3	
	Deceleration	———	_S01N4	

*1) Write only

* Motion Control – 02 Group

Device Name		Bit Address	Word Address	Remarks
Predef VAI go to pos	Run	S02A	———	*1)
	Position Increment	———	_S02A1	
Predef VAI Increment Dem pos	Run	S02B	———	*1)
	Position Increment	———	_S02B1	
Predef VAI Increment Target pos	Run	S02C	———	*1)
	Target Position	———	_S02C1	

*1) Write only

* Motion Control – 04 Group

Device Name		Bit Address	Word Address	Remarks
Time Curve With Default Parameters	Run	S04A	———	*1)
	Curve ID	———	_S04A1	
Time Curve To Pos With Adjustable Time	Run	S04D	———	*1)
	Curve ID	———	_S04D1	
	Target Position	———	_S04D2	
	Curve Time	———	_S04D3	
Time Curve To Pos With Adjustable Time On Rising Trigger Event	Run	S04K	———	*1)
	Target Position	———	_S04K1	
	Maximal Velocity	———	_S04K 2	
	Acceleration	———	_S04K 3	
Time Curve To Pos With Adjustable Time On falling Trigger Event	Run	S04L	———	*1)
	Target Position	———	_S04L1	
	Maximal Velocity	———	_S04L2	
	Acceleration	———	_S04L3	

*1) Write only

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* Motion Control – 06 Group

Device Name		Bit Address	Word Address	Remarks
Setup Encoder CAM On Rise Trigger Event With Delay Counts	Run	S06J	———	*1)
	Curve ID	———	_S06J1	
	Curve Start Delay Count	———	_S06J2	

*1) Write only

* Motion Control – 0C Group

Device Name		Bit Address	Word Address	Remarks
VAI Dec=Acc Go To Pos	Run	S0CA	———	*1)
	Target Position	———	_S0CA	
	Maximal Velocity	———	_S0CA	
	Acceleration = Deceleration	———	_S0CA	
VAI Dec=Acc Increment Dem Pos	Run	S0CB	———	*1)
	Target Position	———	_S0CB	
	Maximal Velocity	———	_S0CB	
	Acceleration = Deceleration	———	_S0CB	
VAI Dec=Acc Increment Target Pos	Run	S0CC	———	*1)
	Target Position	———	_S0CC	
	Maximal Velocity	———	_S0CC	
	Acceleration = Deceleration	———	_S0CC	

*1) Write only

* Motion Control – 10 Group

Device Name		Bit Address	Word Address	Remarks
Encoder CAM Enable	Run	S10A	———	1)
Encoder CAM Disable	Run	S10B	———	1)
Encoder CAM Go To Sync Pos	Run	S10C	———	1)
Encoder CAM Set Value	Run	S10E	———	1)
	Counter Value	———	_S10E	

*1) Write only

☞ Continued on next page.

* Motion Control – 11 Group

Device Name		Bit Address	Word Address	Remarks
Encoder CAM 1 Define Curve With Default Parameters	Run	S11A	———	1)
	Curve ID	———	_S11A	
	Curve Start Count	———	_S11A	
Encoder CAM 1 Define Curve From Act Pos	Run	S11B	———	1)
	Curve ID	———	_S11B	
	Curve Start Count	———	_S11B	
Encoder CAM 1 Define Curve To Pos	Run	S11C	———	1)
	Curve ID	———	_S11C	
	Curve Start Count	———	_S11C	
	Target Position	———	_S11C	
Encoder CAM 1 Define Curve From Pos To Pos In Counts	Run	S11D	———	1)
	Curve ID	———	_S11D	
	Curve Start Count	———	_S11D	
	Start Position	———	_S11D	
	Target Position	———	_S11D	
	CAM Length In Counts	———	_S11D	
Encoder CAM 1 Define Curve To Pos In Counts	Run	S11E	———	1)
	Curve ID	———	_S11E	
	Curve Start Count	———	_S11E	
	Target Position	———	_S11E	
	CAM Length In Counts	———	_S11E	
Encoder CAM 1 Define Curve with Amplitude Scale In Counts	Run	S11F	———	1)
	Curve ID	———	_S11F	
	Curve Start Count	———	_S11F	
	Amplitude Scale	———	_S11F	
	CAM Length In Counts	———	_S11F	
Encoder CAM 1 Enable	Run	S11G	———	1)
Encoder CAM 1 Disable	Run	S11H	———	1)
Encoder CAM 1 Change Amplitude Scale and Length	Run	S11I	———	1)
	Amplitude Scale	———	_S11I	
	CAM Length In Counts	———	_S11I	

*1) Write only

☞ Continued on next page.

* Motion Control – 12 Group

Device Name		Bit Address	Word Address	Remarks
Encoder CAM 2 Define Curve With Default Parameters	Run	S12A	———	1)
	Curve ID	———	_S12A	
	Curve Start Count	———	_S12A	
Encoder CAM 2 Define Curve From Act Pos	Run	S12B	———	1)
	Curve ID	———	_S12B	
	Curve Start Count	———	_S12B	
Encoder CAM 2 Define Curve To Pos	Run	S12C	———	1)
	Curve ID	———	_S12C	
	Curve Start Count	———	_S12C	
	Target Position	———	_S12C	
Encoder CAM 2 Define Curve From Pos To Pos In Counts	Run	S12D	———	1)
	Curve ID	———	_S12D	
	Curve Start Count	———	_S12D	
	Start Position	———	_S12D	
	Target Position	———	_S12D	
	CAM Length In Counts	———	_S12D	
Encoder CAM 2 Define Curve To Pos In Counts	Run	S12E	———	1)
	Curve ID	———	_S12E	
	Curve Start Count	———	_S12E	
	Target Position	———	_S12E	
	CAM Length In Counts	———	_S12E	
Encoder CAM 2 Define Curve with Amplitude Scale In Counts	Run	S12F	———	1)
	Curve ID	———	_S12F	
	Curve Start Count	———	_S12F	
	Amplitude Scale	———	_S12F	
	CAM Length In Counts	———	_S12F	
Encoder CAM 2 Enable	Run	S12G	———	1)
Encoder CAM 2 Disable	Run	S12H	———	1)
Encoder CAM 2 Change Amplitude Scale and Length	Run	S12I	———	1)
	Amplitude Scale	———	_S12I	
	CAM Length In Counts	———	_S12I	

*1) Write only

☞ Continued on next page.

* Motion Control – 20 Group

Device Name		Bit Address	Word Address	Remarks
Start Command Table Command	Run	S20A	———	1)
	Command Table ID		_S20A	
Start Command Table Command On Rising Trigger Event	Run	S20B	———	1)
	Command Table ID	———	_S20B	
Start Command Table Command On Falling Trigger Event	Run	S20C	———	1)
	Command Table ID	———	_S20C	
Modify Command Table 16 bit Parameter in RAM	Run	S20I	———	1)
	Command Table ID	———	_S20I	
	Parameter Offset	———	_S20I	
	Parameter Value	———	_S20I	
Modify Command Table 32 bit Parameter in RAM	Run	S20J	———	1)
	Command Table ID	———	_S20J	
	Parameter Offset	———	_S20J	
	Parameter Value	———	_S20J	

*1) Write only

* Motion Control – 24 Group

Device Name		Bit Address	Word Address	Remarks
Set Cmd Table Var 1 To	Run	S24A	———	1)
	Set value	———	_S24A	
Add To Cmd Table Var 1	Run	S24B	———	1)
	Add value	———	_S24B	
Set Cmd Table Var 2 To	Run	S24C	———	1)
	Set value	———	_S24C	
Add To Cmd Table Var 2	Run	S24D	———	1)
	Add value	———	_S24D	
Write Cmd Table Var 1 To UPID RAM value	Run	S24I	———	1)
	UPID	———	_S24I	
Write Cmd Table Var 2 To UPID RAM value	Run	S24J	———	1)
	UPID	———	_S24J	
Write UPID RAM value To Cmd Table Var 1	Run	S24M	———	1)
	UPID	———	_S24M	
Write UPID RAM value To Cmd Table Var 2	Run	S24N	———	1)
	UPID	———	_S24N	

*1) Write only

* Motion Control – 38 Group

Device Name		Bit Address	Word Address	Remarks
VAI Go To Pos With Force Ctrl Limit	Run	S38A	———	1)
	Target Position	———	_S38A1	
	Maximal Velocity	———	_S38A2	
	Acceleration	———	_S38A3	
	Force Limit	———	_S38A4	
VAI Go To Pos From Act Pos And Reset Force Control	Run	S38B	———	1)
	Target Position	———	_S38B1	
	Maximal Velocity	———	_S38B2	
	Acceleration	———	_S38B3	
	Deceleration	———	_S38B4	

Force Ctrl Change Target Force	Run	S38C	———	1)
	Target Force	———	_S38C1	
VAI Go To Pos With Force Ctrl Limit and Target Force	Run	S38D	———	1)
	Target Position	———	_S38D1	
	Maximal Velocity	———	_S38D2	
	Acceleration	———	_S38D3	
	Force Limit	———	_S38D4	
	Target Force	———	_S38D5	
VAI Go To Pos With Lower Force Ctrl Limit	Run	S38E	———	1)
	Target Position	———	_S38E1	
	Maximal Velocity	———	_S38E2	
	Acceleration	———	_S38E3	
	Force Limit	———	_S38E4	
VAI Go To Pos With Lower Force Ctrl Limit and Target Force	Run	S38F	———	1)
	Target Position	———	_S38F1	
	Maximal Velocity	———	_S38F2	
	Acceleration	———	_S38F3	
	Force Limit	———	_S38F4	
	Target Force	———	_S38F5	

*1) Write only