MEMORY LINK SLAVE

Serial Driver

Supported version

TOP Design Studio V1.4.6.26 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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Select a TOP model and an external device.

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Describes how to set the TOP communication.

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Describes the cable specifications required for connection.

5. Supported addresses

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

6. Interrupt function

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Describes how the TOP sends Interrupt Output message to the external device.



1. System configuration

The system configuration of TOP and Memory Link Slave communication driver is as follows:

Series	Link I/F	Communication method	System setting	Cable
		RS-232C	<u>3. TOP</u>	
-	Serial	RS-422 (4 wire)	communication	4. Cable table
		RS-485 (2 wire)	setting	

Connection configuration

• 1:N (one external device and one TOP) connection – configuration which is possible in RS232C/422/485 communication.



• 1:N (one external device and multiple TOPs) connection – configuration which is possible in RS422/485 communication.





2. External device selection

■ Select a TOP model and a port, and then select an external device.

erest provide			
PLC select [COM1]			
Filter : [All]		Search :	
		Mo	del 🔿 Vendor
Vendor Model			
SANGJI Precision Co., Ltd.	/ Link Slave		
DEVA			
OPTICON			
TOHNICHI			
Giddings & Lewis Motion Control			
DELTA TAU Data Systems			
KEYENCE Corporation			
Digital Electronics Corporation			
HONEYWELL			
MISUMI			
PARKER HANNIFIN Corporation			
TOSHIBA			
ATLAS COPCO			
liect Device			
PLC Setting[Memory Link Slave]			
Alias Name : PLC1			
Alias Name : PLC1 Interface : Serial Protocol : Memory Link			Comm Manual
Alias Name : PLC1 Alias Name : PLC1 Interface : Serial Protocol : Memory Link V			Comm Manual
Alias Name : PLC1 Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundance			Comm Manual
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : AND			Comm Manual
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : AND Change Condition : TimeOut 5 \$ (Seco	nd)		Comm Manual
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : AND Change Condition : TimeOut Condition Condition	nd)		Comm Manual
PLC Setting Memory Link Slave J Alias Name : PLC1 Interface : Serial Protocol : Memory Link Duse Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Opton	nd)		Comm Manual
PLC Setting Memory Link Slave J Alias Name : PLC1 Interface : Serial Protocol : Memory Link Duse Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Option SendWait (ms) 0	nd)		Comm Manual
PLC Setting Memory Link Slave J Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : ND Change Condition : TimeOut 5 \$ (Seco Condition Primary Option SendWait (ms) 0 \$ Interrupt Address 555 00013	nd)		Edit
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : AND Change Condition : AND Change Condition : TimeOut Condition Primary Opton SendWait (ms)	nd)		Edit
PLC Setting[Memory Link Slave] Alias Name : Plc I Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : Ange Condition : TimeOut Change Condition : Primary Option SendWait (ms) Interrupt Address	nd)		Edit
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : Ange Condition : TimeOut 5 Condition	nd)		Comm Manual
PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : Anage Condition : TimeOut Condition Primary Option SendWait (ms) Interrupt Address SYS 00013	nd)		Comm Manual
PLC Setting[Memory Link Slave] Alias Name : Plc1 Interface : Serial Protocol : Memory Link Operate Condition : AND Change Condition : Primary Option SendWait (ms) Interrupt Address	nd)		Comm Manual
PLC Setting Memory Link Slave J Alias Name : PLC1 Interface : Serial Protocol : Memory Link Dese Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Option SendWait (ms) Interrupt Address SYS 00013	nd)		Edit
PLC Setting Memory Link Slave J Alias Name : PLC1 Interface : Serial Protocol : Memory Link Use Redundancy Operate Condition : AND Change Condition : TimeOut Condition Primary Option SendWait (ms) Interrupt Address USS V 00013	nd)		Edit

Sett	ings		Con	tents	
ТОР	Model	Check the TOP display and process t	o select the	touch model.	
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select Digital Electronics Corporation .			
PLC	PLC	Select the TOP communication drive	r. Interface		Protocol
		Memory Link Slave	Serial		Set Users
		Supported Protocol			
		Memory Link		Extended Memo	ry Link
		Please check the system configurati connect is a model whose system ca	ion in Chap In be config	ter 1 to see if th ured.	e external device you want to



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]



Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C / RS-422 / RS-485	RS-232C / RS-422 / RS-485	
Baud Rate	1152	00	
Data Bit	8		
Stop Bit	1		
Parity Bit	NO	NE	

* 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 : Memory Link Slave"]
 - Set the options of the Memory Link Slave communication driver in TOP Design Studio.
 - ① Protocol: configured upon selecting Memory Link

Project Option			×
Change HMI[H] Add P	LC [A] TIT Change PLC[C] Clette PLC[D]		
 	PLC Setting[Memory Link Slave] Alias Name : PLC1 Interface : Serial Protocol : Memory Link	Co	mm Manual
	Change Condition : TimeOut 5 (Second)		
	Primary Option SendWait (ms) Interrupt Address Interrupt Address		
		Apply	Close

Items	Settings	Remarks
Interface	Select "Serial".	2. External device
Protocol	Select the communication protocol between the TOP and an external device.	selection
Interrupt Address	Configures the internal address for executing the Interrupt function.	6. Interrupt function



2 Protocol: configured upon selecting Extended Memory Link

Project Option		×
Change HMI[H] Kadd PLC [A] Change PLC[C] K Delete PLC[D]		
IOP Setting SYS: RD1520X GOBIN Models Setting Alas Name : PLC1 Interface : Serial Interface : Serial COM3 (0) COM3 (0) COM3 (0) Operate Condition : Interface : Serial Interface : Serial Interface : Serial Interface : Serial Protocol : Ottended Memory Link Protocol : Ottended Memory Link Com3 (0) Operate Condition : Interrupt Address Sys © 00013 Interrupt Address Sys © 00013 Communication E11ASCII > Machine No. Interrupt Address Interrupt Address Sys © 00013 Terminator CR > ETX. Sum Check ACK ACK Internuet		mm Manual
	Apply	Close

Items	Settings	Remarks
Interface	Select "Serial".	2. External device
Protocol	Select the communication protocol between the TOP and an external device.	selection
Interrupt Address	Configures the internal address for executing the Interrupt function.	6. Interrupt function
Communication	Select the communication mode.	
Machine No.	Designates the TOP number to be used for communication	*Note 1)
Terminator	Selects the frame end code.	*Note 2)
ETX. Sum Check	Check whether ETX. Sum Check is used or not.	
ACK	Check whether ACK response is used or not.	
NAK	Check whether NAK response is used or not.	

*Note 1) Activates when communication mode is 1:N.

*Note 2) Activates when communication mode is ASCII.



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	ТОР	External device	Remarks
Signal Level (port)	RS-232C / RS-422 / RS-485	RS-232C / RS-422 / RS-485	
Baud Rate	1152	200	
Data Bit	8		
Stop Bit	1		
Parity Bit	NON	NE	

* 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

■ [Main Screen > Control Panel > PLC]

	🔯 Syste	em 🗾	Devices	Serv	vice 🧧	Option	
		Security	Tech 7 Date/Time	Display	Touch	Sound	
VNC ewer	Et hernet	Serial	HDMI	Initiali -zation	Sensor	((((• W)-F)	
reen hot	Diagnost ic	File Manager	Ping	Keypad Opt ion	Top Menu	MRAM Analysis	
	[System]]				Clos	se

 $\textcircled{1} \quad \textbf{Protocol: configured upon selecting Memory Link}$

1001	PLC
Driver(COM1)	PLC1(Memory Link Slave) -
Interface	Serial 🔹
Protocol	Memory Link 🔹
SendWait	
Interrupt	SYS:00013:16:16:DEC:W
Diagnostic	Apply Cancel

Items	Settings	Remarks
Interface	Select "Serial".	2 External device
Protocol	Select the communication protocol between the TOP and an external device.	<u>selection</u>
Interrupt Address	Configures the internal address for executing the Interrupt function.	6. Interrupt function



2 Protocol: configured upon selecting Extended Memory Link



Items	Settings	Remarks
Interface	Select "Serial".	2 External device
Protocol	Select the communication protocol between the TOP and an external	selection
	device.	
Interrupt Address	Configures the internal address for executing the Interrupt function.	6. Interrupt function
Communication	Select the communication mode.	
Machine No.	Designates the TOP number to be used for communication	*Note 1)
Terminator	Selects the frame end code.	*Note 2)
ETX. Sum Check	Check whether ETX. Sum Check is used or not.	
АСК	Check whether ACK response is used or not.	
NAK	Check whether NAK response is used or not.	

*Note 1) Activates when communication mode is 1:N.

*Note 2) Activates when communication mode is ASCII.



3.3 Communication diagnostics

■ 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.

ОК	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		Ch	eck	Remarks
System	How to connect the system		OK	NG	1 System configuration
configuration	Connection cable name	5	OK	NG	T. System configuration
TOP	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	
		Communication	OK	NC	2. External device selection
		diagnostics	ÜK	NG	3. Communication setting
	Serial Parameter	Transmission	OK	NG	
		Speed	ÜK	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name		OK	NG	
	Communication port name (module name) Protocol (mode)		OK	NG	
			OK	NG	
	Setup Prefix	OK	NG		
	Other detailed settings		OK	NG	
	Serial Parameter	Transmission Speed	ОК	NG	
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range		ОК	NG	5. 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 diagrams described in this section may differ from the external device vendor's recommendations.)

■ RS-232C (1:1 connection)

СОМ				External device	
Pin	Signal	Pin	Cable connection	Signal	
arrangement*Note 1)	name	number		name	
1 5	CD	1			
(° °)	RD	2		SD	
	SD	3		RD	
Based on	DTR	4		DTR	
communication	SG	5		SG	
cable connector	DSR	6		DSR	
front.	RTS	7		RTS	
D-SUB 9 Pin male	CTS	8		CTS	
(male, convex)		9			

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

■ **RS-422** (1:1 connection)

CC	M	Λ			External device
Pin	Signal	Pin	Cable connection	Signal	
arrangement*Note 1)	name	number		name	
1 5	RDA(+)	1		SDA(+)	
(° °)		2	•	SDB(-)	
		3	•	RDA(+)	
Based on	RDB(-)	4	├──── ┥ │ ┡ ─────	RDB(-)	
communication	SG	5		SG	
cable connector	SDA(+)	6	•		
front,		7			
D-SUB 9 Pin male		8			
(male, convex)	SDB(-)	9	•		

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

■ **RS-485** (1:1 connection)

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

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



■ **RS-485** (1:1 connection)

COM			External device	
Din arrangement	Signal	Cable connection	Signal	
r in analyement	name		name	
	+		+	
O	-		-	
SG	SG		SG	

RS-422 (1:N connection) – Refer to 1:1 connection to connect in the following way.

TOP	Cable connection and signal direction	PLC	Cable connection and signal	PLC
Signal name		Signal name	direction	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		PLC	Cable connection and signal	PLC
Signal name	Cable connection and signal direction	Signal name	direction	Signal name
RDA(+)	• •	SDA(+)		SDA(+)
RDB(-)	<u>}</u>	SDB(-)		SDB(-)
SDA(+)	╞╼╎╴╶╴╴┤╘╾╴	RDA(+)	╞━┥│ │┕━─	RDA(+)
SDB(-)	┝──┥	RDB(-)	└──	RDB(-)
SG		SG		SG



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.

Internal address	Bit Address	Word Address	Remarks
SYS	00000.00 – 10239.15	00000 – 10239	*Note 1)

*Note 1) TOP-VIEW can use values between 0 to 102399.



6. Interrupt function

Describes how the TOP carries out the Interrupt Output operation to the external device.

By entering the TOP's configured internal address into the "Interrupt Address", the TOP sends an Interrupt Output message to the external device. A value lower than 1 byte of the entered value is applied to the Interrupt Output data, where the address resets to 0 upon sending the message.