LS Industrial Systems

XGI / XGR / XEC Series

CPU Direct Driver

Supported version T

TOP Design Studio V1.0 or higher



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



1. System configuration

The system configuration of TOP and "LS Industrial Systems - XGI / XGR / XEC Series CPU Direct" is as follows:

Series	CPU*Note 1)	Link I/F	Communication method	System setting	Cable
XGI	XGI-CPUE XGI-CPUH XGI-CPUS XGI-CPUU XGI-CPUU/D	PADT connector (9 pin) *Note 2)	RS232	<u>3. TOP</u> <u>communication</u> <u>setting</u> 4. External device	<u>5. Cable table</u>
XGR	XGR-CPUH			setting	
XGB	XEC-D⊡32H XEC-D⊡64H	PADT connector (6 pin) *Note 2)	RS232		

*Note 1) Check that the CPU unit is labeled as version V 1.1 or higher.

*Note 2) PADT Access connector: the PLC CPU connector used to connect to the PC Ladder S/W XG5000

Connection configuration (TOP connection–External device connection)

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



2. External device selection

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

elect Device						
PLC select [CO	OM1]					
Filter : [All]			\sim	S	earch :	
					Mod	del 🔿 Vendor
Vendor		Model				
M2I Corporation		Î 🌽	XGI/XGR/XEC Ser	ries		
MITSUBISHI Electric Cor	poration	\$	XGK/XBM/XBC Se	ries		
OMRON Industrial Autor	mation	\$	GLOFA-GM Series	s		
LS Industrial Systems		3	MASTER-K(80S/1	120S/200S	/300S/1000S) Se	ries
MODBUS Organization			STARVERT Series	5		
SIEMENS AG.			XCODE REID HE	Reader Se	ries IH-1306/130	17
Rockwell Automation				keese a		
GE Fanuc Automation			MASTER-K(500H)	/1000H) Se	eries	
PANASONIC Electric Wo	rks	V	MASTER-K 10S,1	.0S1 Series		
YASKAWA Electric Corpo	oration					
YOKOGAWA Electric Cor	poration					
Schneider Electric Indus	tries					
KDT Systems						
RS Automation		~				
PLC Setting[XGI/	XGR/XEC	Series]				
Interface	: CPU Direct	:	\sim			
Protocol	: CPU		\sim		0	Comm Manual
String Save Mode	First LH HL	Cha	nge			
Use Redundance	y					
Operate Condition :	ND N	~	_			
Change Condition :	TimeOut	5	(Second)			Edit
	Condition					cuit
Primary Option						
Timeout	300	msec				
Send Wait	0	msec				
Retry	5	•				

Settings			Contents		
ТОР	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. Please select "LS Industrial Systems".			
	PLC	Select an external device to connect to TOP.			
		Model Interface Protocol			
		XGI / XGR / XEC Series	CPU		
Please check the system configuration in Chapter 1 connect is a model whose system can be configured.				the 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	TOP External device		Remarks
Circulation (a cart)		RS-232C	Ciuc d
Signal Level (port)	KS-232C	(CPU port)	FIXEO
Baud Rate	115200		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	None.		Fixed

* 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. (COM3 supports
	only RS-485.)
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.

External device connection manual for TOP Design Studio



(2) Communication option setting

- [Project > Project Property > Device Setting > COM > "PLC1 : XGI/XGR/XEC Series"]
 - Set the options of the XGI / XGR / XEC Series CPU Direct communication driver in TOP Design Studio.

Project Option		×
Change HMI[H] Add PL	[A] Thange PLC[C] Clette PLC[D]	
TOP Setting SYS : RD1520X	Date / Time Sync. Screen Option Unit Convert	
FieldBus (0)	Project Option Screen Change HmiSetup Global Lock &	Touch Project Style Splash PLC Buffer Sync.
RFID (0) General Control (1) Ge	Use HMI Setup Hmi Setup Option Project Setting HMIDisable=0 Project Name=New project Start Mode=Menu	Initialization Edit
USBDevice (0)	Start Screen No. = 1 Latch Use=0 Latch Set=0~~0 Communication Error Message=0 USBErrorMessage=0 StorageErrorMessage=1 DatabaseMessage=1 DisplayLodLcon=0 DisplayLodLcon=0 DisplayPermissionIcon=0 DarkDraw=0 DrawTouchPos=0 TOPID=1	
	AutoRun=0 Language=English Project Advanced Setting HMIDisable=0 RunSleep=50 EffectSleep=50 CommunicationSleep=1 ProjectLoadType=1 InitDataPrevScreen=1 ErrorLogWrite=0 BlinkTime=0 WatchDog=0 SDCoverOption=0 TaskMonitor=1 CommSleepChg100e=0 CommSleepChg1000 MomentaryBitActionTime=20 CommunicationRatio=0	
<	Ethernet HMIDisable=0 ETH1=1 IP1=192.168.0.100 Subnet1=255.255.255.0 <	>
		Apply Close

Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External
Protocol	Select "CPU".	device selection".
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 <u>drag</u> it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]

	Ġ	Control Panel
	🔯 System 🔤 Do	serial ×
Run		Serial Port: COM1 🔹
MC	PLC Security	Signal Level ● RS-232C ○ RS-422(4) ○ RS-485(2)
		Baud Rate: 115200 -
Viewer		Data Bit: 8 🔹
	Ethernet Serial	Stop Bit: 1
		Parity Bit: None 🔻
Screen	source and the second s	Flow: Off -
SHOT	Diagnostic File Manager	Auto Search Loopback Test
		Apply Cancel
	[System]	CTose

Items	ТОР	External device	Remarks
Circuit (a cat)		RS-232C	Fined
Signal Level (port)	RS-232C	(CPU port)	Fixed
Baud Rate	115200		Fixed
Data Bit		Fixed	
Stop Bit		Fixed	
Parity Bit	None.		Fixed

* 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 "CPU Direct".	Refer to "2. External
Protocol	Select "CPU".	device selection".
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 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.

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	Conte	ents	Check		Remarks		
System	How to connect the sy	stem	OK	NG	1 Cretem configuration		
configuration	Connection cable name	2	OK	NG	1. 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	NG	2. External device selection		
		diagnostics	ÜK	NG	3. Communication setting		
	Serial Parameter	Transmission	OK	NG			
		Speed	OK	NG			
		Data Bit	OK	NG			
		Stop Bit	OK	NG			
		Parity Bit	OK	NG			
External device	CPU name	OK	NG				
	Communication port n	OK	NG				
	Protocol (mode)	OK	NG				
	Setup Prefix	OK	NG				
	Other detailed settings	OK	NG	4. External device setting			
	Serial Parameter	Transmission	OK	NG	4. External device setting		
		Speed	ŬK	NG			
		Data Bit	OK	NG			
		Stop Bit	OK	NG			
		Parity Bit	OK	NG			
	Check address range				6. Supported addresses		
			OK	NG	(For details, please refer to the PLC		
					vendor's manual.)		



4. External device setting

• Loader port communication interface of the "XGI / XGR / XEC Series" is fixed as the target configuration value of the following example.



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 "LS Industrial Systems Co., Ltd.")

TOP COM				XGI / XGR RS-232C Port on CPU Unit			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)	
1 5	CD	1		1	CD	1 5	
(° °)	RD	2		2	RD	(° °)	
	SD	3		3	SD		
Based on	DTR	4		4	DTR	Based on	
communication	SG	5		5	SG	communication	
cable connector	DSR	6		6	DSR	cable connector	
front,	RTS	7		7	RTS	front,	
D-SUB 9 Pin male	CTS	8		8	CTS	D-SUB 9 Pin male	
(male, convex)		9		9		(male, convex)	

■ XGI / XGR RS-232C Port on CPU Unit (1:1 connection)

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

TOP COM XEC RS-232C Port on CPU Unit Pin Pin Cable connection Pin Pin Signal Signal arrangement*Note 1) name number number name arrangement*Note 1) CD 1 1 5 1 0 RD 2 2 RD 0 õ 0 SD 3 3 SG 0, DTR 4 4 9 6 5 5 3 SG Based on Based on communication DSR 6 6 SD communication cable connector RTS 7 cable connector front, CTS 8 front, D-SUB 9 Pin male 9 D-SUB 6 Pin male (male, convex) (male, convex)

■ XEC RS-232C Port on CPU Unit (1:1 connection)

*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	Double Word Address	Remark
Input	IX0.0.0 ~ IX127.15.63	IW0.0.0 ~ QW127.15.3		
Output	QX0.0.0 ~ QX127.15.63	QW0.0.0 ~ QW127.15.3		
M memory	MX0 ~ MX2097151	MW0 ~ MW131071	MD0 ~ MD65535	
W memory	WX0 ~ WX8388607	WW0 ~ WW524287		
F memory	FX0 ~ FX32767	FW0 ~ FW2047		*Note 1)
K memory	KX0 ~ KX132959	KW0 ~ KW8309		
L memory	LX0 ~ LX180223	LW0 ~ LW11263		
R memory	RX0 ~ R524287	RW0 ~ RW32767		
A memory	AX0 ~ AX4194303	AW0 ~ AW262143		
U memory	UX0.0.0 ~ UX7.15.511	UW0 ~ UW7.15.31		

*Note 1) Cannot be written

*The lower 16 BIT data of 32 BIT data is saved in the address whose screen has been registered, and the upper 16 BIT data is saved in the address next to the address whose screen has been registered.

				-						
Ex. ۱	When saving 32 BIT o	data hexadecim	al data	12345678 in a	ldress D00100	, it is saved to	0 16 BIT	device ad	ldress a	s follows:

Items	32BIT	16BIT		
Address	D00100	D00100	D00101	
Input data (hexadecimal)	12345678	5678	1234	