

Connecting Rockwell (Allen-Bradley)

ControlLogix 5000 Series - Ethernet

GP

Model	Product		Remark		
GP	GP-2300L	Optional	Ethernet	I/F	Unit
	GP-2300T	cannot be	used.		
	GP-2400T				
	GP-2500T				
	GP-2600T				
GLC	GLC2600T	Optional	Ethernet	I/F	Unit
	GLC2500T	cannot be	used.		
	GLC2400T				
	GLC2300T				
	GLC2300L				

* 77R Series cannot be used.

 \ast 2X01 Series cannot be used.



PLC

CPU	Link I/F		
		Communication Method	GP
ControlLogix5000			
Series			
1756-L1			
1756-L1M1	1756-ENET	Ethernet Cable	
1756-L1M2	1756-ENBT	IEEE802.3 Compliant	
1756-L1M3			
1756-L55M13			
1756-L55M14			
1756-L55M16			

* CompactLogix is not officially supported, however, connection performance has been confirmed. Please check the connection before using. We are not responsible for communication problem at all.

Connection Structure PLC

1 to 1 Connection





1 to n Connection

* Up to 64 slave devices including GPs can be connected to the master PLC. This is a theoretical value, but not an evaluated value.



n to 1 Connection

* Up to 2 PLCs can be connected.



* There are 2 communication types for the Ethernet communication; full duplex and half duplex. The type of GP/GLC is half duplex communication, and if PLC has full duplex communication type, communication may be failed. This problem will be solved by using HUB. We recommend you to use HUB to avoid the problem.

Pro-face[®]

Procedure to Connect PLC





Communication Settings [PLC]

Two programs are required for Controllogix PLC communication settings.

- RSLinx Software to connect PLC and PC with RSLogix5000 installed (Ver.2.41.00 is used in this sample.)
- 2. RSLogix5000 Ladder Software (Ver.7.00.00 is used in this sample.)
 - * Communication Settings on RSLogix5000

Please connect PLC and PC with RSLinx before creating a ladder. (Contact Rockwell Automation, Inc. for more details.)

1) Start up RSLogix5000.

Select [File] --> [New...].

Set the new project name, CPU type, base, and slot number.

Vendor:	Allen-Bradley		
Туре:	1756-L1 ControlLogix5550 Controller	-	OK
Revision:	12 -		Cancel
	F Redundancy Enabled	t S	Help
Name:	Logix_ETH	•••••••••••••••••••••••••••••••••••••••	
Description:		*	
		<u>*</u>]	
Chassis Type:	1756-A4 4-Slot ControlLogix Chassis	-	
Slot:			
Create In:	C:\RSLogix 5000\Projects		Browse

Setting Example)

Setting Item	Setting Detail	Remark
Туре	1756-L1	СРИ Туре
	ControlLogix5550 Controller	
Name	Logix_ETH	Project Name (Arbitrary)
Description	(Blank)	Project Description (Arbitrary)
Chassis Type	1756-A4	Base Type
	4 Slot ControlLogix Chassis	
Slot	0	Slot with CPU set
Create In	D:/RSLogix 5000/Projects	Where Project saved in



2) Follow the procedures to set the Ethernet unit.

Set I/O configuration.

Right-Click [I/O configuration] --> click [New Module].





3) Set the Ethernet unit type. Select [Ethernet Bridge] and click [OK].

* [1756 Ether Bridge] has to be selected to communicate.

Select Module Typ	e	×			
Туре:	Major Revision:				
1756-ENET/B	2				
Туре	Description				
1756-ENET/B	1756 Ethernet Bridge	-			
1756-EWEB/A	1756 10/100 Mbps Ethernet Bridge w/Enhanced Web Services よ				
1756-HSC	1756 High Speed Counter				
1756-HYD02	2 Axis Hydraulic Servo	1			
1756-IA16	16 Point 79V-132V AC Input				
1756-IA16I	16 Point 79V-132V AC Isolated Input				
1756-IA8D	8 Point 79V-132V AC Diagnostic Input				
1756-IB16	16 Point 10V-31.2V DC Input				
1756-IB16D	16 Point 10V-30V DC Diagnostic Input				
1756-IB16I	16 Point 10V-30V DC Isolated Input, Sink/Source				
1756-IB32/A	32 Point 10V-31.2V DC Input				
1756-IB32/B	32 Point 10V-31.2V DC Input	-			
: Show					
Vendor: 📶	🗾 🔽 Other 🖾 Specialty I/OSelect.	A.II			
🔽 Analog 🔽	Digital 👿 Communication 🐺 Motion 🐺 Controller				
	OK Cancel Help	1			



4) Set the details of the Ethernet unit.

Click the [General] tab. Set [IP Address].

	×2 C*	<u>. 8</u> 8	88 🖪 🛛	RR	
fline I RUN Forces C RUN Forces R RAT Edits RAT		<none></none>) {(1) {(1)} 11er X Fyla/Chapia X	品 ♪ Compare	
 Controller Logix_ETH Controller Tags Controller Tags Controller Fault Handler Power-Up Handler Tasks MainTask MainTask Motion Groups Ungrouped Axes Trends Data Types User-Defined 	General [*] Connection I Type: 1756-EN Vendor: Allen-Bra Parent: Local Na <u>m</u> e: test Descri <u>p</u> tion:	occas (* 7458 531 / 987) Module Info Port Configur ET/B 1756 Ethernet Bridge dley	ation Port Diagnostics	Backplane ame 0 . 0 . 0	. 0
Constraints	Sl <u>o</u> t: 1 <u>-</u> <u>B</u> evision: 2 6	Electronic Keyir	ng: Compatible Module		
	Status: Offline	ОК	Cancel	Apply	Help

When the [Finish] button appears, click it.

Setting Item	Setting Detail	Remark
Name	Logix_ETH	Module Name (Arbitrary)
Description	(Blank)	Module Description (Arbitrary)
Slot	1	Match the number to the slot with the module set.
Revision	6	Match the number to the minor version of Module. (side of the Ethernet module)
Address / Host Name	(Default Setting)	Set IP address of PLC.
Electronic Keying	Compatible Module	



5) Transfer the set details to the Ethernet unit.

Select [Communications] --> [Who Active].



6) Select the destination to download to.

Who Active		
🔽 Autobrowse 🛛 Refresh		
B Workstation, PFD		Go Online
응 몹 AB DE1-1, DE1	Note 1	Upload
B 1 01, 1756-L1/A LOGIX5550, ControllogixEther_test AB_ETH-1. Ethernet		Download
192.168.0.1, 1756-ENET/B, 1756-ENET/B	Note 2	Becent
O0, 1756-L1/A LOGIX5550, ControllogixEther_test	>	Apply
		Close
	1	Close Help
		Close Help
urrent Path: AB_DF1-1		Close Help
Current Path: AB_DF1-1		Close Help

Select [Download] and transfer the settings.



Note 1)

If you download via serial port, select [AB_DF1-1,DF1] --> [1756-L1/A].

After selecting, the [Download] button will be available. Then click [Download]. The following message box will appear when downloading via serial.

Download			×
À	Download to Name: Type: Path:	a the controller: MAX_DEVICE 1756-11/A 1756-M1/A ControlLogix 5550 Controller AB_DF1-1¥1	
	Down	oad Gancel Help	

Note 2)

If you download via Ethernet port, select [AB_ETH-1,Ethernet] --> [1756-L1/A] in the tree view. After selecting, the [Download] button will be available. Then click [Download].

The following message box will appear when downloading via Ethernet.

~		100.00
/!\	Nome: ControllegiuEther teet	
	Tupe: 1756-11/4 1756-M1/4 ControlLogix 5550 Control	oller
	Path: AB_ETH-1\192.168.0.1\Backplane\0	JICI
	Download Cancel Help	

I/O Settings of PLC is completed.



Assigning Devices

With Rockwell PLC, the required arrays and number of elements are assigned on RSLogix5000. If you connect it with GP/GLC without allocating here, a host communication error will occur.

Select [Logic] to create arrays and the number of elements.

👫 RSLogix 5000 - contro	llogix5000serial [1756-01]	р Чир			
File Edit View Search	Logic Communications Tools	Windo	w Help		
	Open		•	<u>&&&</u>	
	Monitor Tags		Lange		
	Edit Tags				
No Forces	Produced Tags	4			
No Edits	Map PLC/SLC Messages	Ш		ųt ar an∆ a.	
	Verify	•	***** X = X = Y	nde filmster 🔨 salest	Alexander 🖌 Englander

A bar to set arrays will appear. Then right- click [Edit Tag Properties].

New Tag			×	
Name:			ок	Input the discretionary array name
Description:			Cancel	
Тад Туре:	Base Alias Produced Consumed Consumed	onsumers		Click the button to specify the array
Data Type:			mligue	type.
Scope:	ControllogixEther_test(control	er)		
Style:		<u>~</u>		





By the above settings, the following array will be made.



[e.g.; Specifying BOOL]





[e.g.; Specifying INT]









[e.g.; Specifying DINT]



[e.g.; Specifying REAL (Floating Point)]

Data Type:					1	
REAL[250	I					UK L
PROP_IN PULSE_M	T ULTIPL	IER		<u> </u>	C	ancel
RAMP_SC RATE_LIN)ak 1Iter					Help
REAL S. CLIBVE				59 - E	1970 (1970)	
SCALE						
SEC_ORD	ER_CC	NTROLLE	ER	ليب		
SELECT_I		CED		<u> </u>		
-Array Dim	ensions					7
Dim 0		Dim 1		Dim 2		
1250		In		10		1





Selecting PLC Type

Start up GP-PRO /PBIII.

Select the following PLC Type when creating the project file.





Communication Settings [GP]

1 [GP-PRO/PB C-Package Setting]

Select [GP Setup] on Project Manager.





Select [Mode Settings] --> [Network...].

3) Setting network Information	3) Setting Network Information			
ControlLogix EtherNet/IP	• Target No. of node			
Target No. of node 1 Node No. 1 IP address 0.0.0 Slot No. 0	 Designate the number of PLCs connected to one GP unit. You can connect up to 2 PLCs. Target Node No. Designate the PLC's node number for the IP address. This node number is used when allocating addresses on the adit agreen 			
Ok Cancel Help	 Target IP address Enter your PLC's IP address Target Slot No. 			
	 Enter the PLC slot No. used for installing the CPU unit. * Host Communication Error (02:D0: **) will appear if any slot number other than that 			
	of CPU.			

Select [Transfer] --> [Setup] --> [Transfer Settings].

Г

	Communications Port
Lloload Information	⊙ сом
GP System Screen	Comm Port CDM1 Retry Count 5
Data Trans Func CSV Data(CF card)	Baud Rate 115.2K (bps)
	C <u>E</u> thernet
Transfer Method Send All Screens	IP Address 0. 0. 0. 0 Port 8000
Automatically Send Changed Screens Send User Selected Screens	C Ethernet: Auto Acquistion
	C Memory Loader
C It is transferred after preparation for a transfer is finish Setup	hed.
● Automatic Setup Use Ex	xtended Program :
C Force System Setup № 5	Simulation
O Do NUT Perform Setup	
Setup CEG file :	Jystelli Juleen
• English	
English Japanese CuBrogram Eilenhans ((in) protocoli
C English C Japanese C Selection	/in/protocol/ Browse

Transfer to GP after settings completed.



2 [GP Settings]

1) Checking GP Type	1) Checking GP Type
MAIN MENU V4.33 1 INITIALIZE 2 SCREEN DATA TRANSFER 3 SELF-DIAGNOSIS 4 RUN 2000 V4.54 2100 V4.54 CTRL_LOGIX_EIP V1.62	If you have selected Rockwell (Allen-Bradley) PLC Control Logix 5000Series Ethernet AB ControlLogix (Ethernet/IP), the following will be shown. "CRTL_LOGIX_EIP"
2) Setting up Operation Surroundings	2) Setting up Operation Surroundings
SETUP OPERATION SURROUNDINGS MENU	[MAIN MENU]
1 SETUP OPERATION SURROUNDINGS	↓ [INITIALIZE]
2 SETUP ETHERNET INFORMATION 3 SETUP ETHERNET EXT. INFORMATION	[PLC SETUP]
4 DESTINATION NODES INFORMATION	
	[SETUP OPERATION SURROUNDINGS]
3) Checking System Start Address	<u>3) Checking System Start Address</u>
SET UP OPERATION SURROUNDINGS [SET] CANCEL STARTING ADDRESS OF(0-255) DATA AREA [INT 977:0_27] SYSTEM AREA READING AREA SIZE (0-256) [0] RESET GP ON DATA WRITE ERROR ON OFF	* The system start address cannot be changed on GP. Please use GP-PRO/PB3 to set this data and re-send to GP. [GP SYSTEM SETUP]
Note:	
The system start address cannot be changed on GP. Please use GP-FR0/FB3 to set this data and re-send to the GP.	[MODE SETUP]
1 2 3 4 5 6 7 8 8 0 ↑ ↓ BS	



4) Setting Up Ethernet Information	4) Setting Up Ethernet Information			
SET UP ETHERNET INFORMATION SET (CANCEL) SRC IP ADDRESS [], [], [], [], [] SRC PORT ND. []	Enter each item in the [SETUP ETHERNETINFORMATION] screen. • SRC IP ADDRESS (0 to 255) Enter the IP address for your station's GP			
	unit. To do this, separate the 32 bits of the			
	IP address into four segments of eight bits			
1234567890 1 4 88	each, separate those segments with a dot			
	and then enter them as decimal numbers.			
	• SRC PORT NO. (1024 to 65535)			
	Enter your GP's Port No.			
	8999 because they are the port numbers			
	used for Pro-Server.			
5) DESTINATION NODE INFORMATION	5) Checking Destination Node Information			
DESTINATION NODE END	The destination (PLC) network address, the destination node address, and IP address are displayed here.			
	* The destination node information settings cannot be set or changed on GP. Please use GP-PRO PB3 to change them.			
Please use GP-PRO/PB3 to change them.	[GP SYSTEM SETTINGS]			
	[MODE SETTINGS]			
	NETWORK INFORMATION SETTINGS			
	*Refer to page 6.			

NOTE

Protocol Type is TCP/IP Connection.



How to see Addresses of Controllogix and GP-PRO/PBIII

[Seeing Address on GP-PRO]



!!! Now, let's recall the arrays assigned on ControlLogix !!!



IMPORTANT ! ! Array No. (GP-PRO) = Array Name (ControlLogix) IS WRONG ! !

> Now what you need to do is.... Mapping



Mapping

[What is mapping?]

If you set addresses on GP-PRO PB/III, you cannot specify the array names (Tag Name). Instead of specifying the array names, select the array numbers. These file numbers are specified arbitrarily. You may need to map the array names and numbers on RSLogix5000. This procedure is called "Mapping".

E.g.)



[Mapping]

Select [Logic] --> [Map PLC/SLC Messages...] to start mapping.

o RSLogix 5000 - Control	logixEther_test in Controlle	
File Edit View Search	ogic Communications Tools	Window Help
	Open	
	Monitor Tags	
	Edit Tags	
No Edits 🛛 🗸	Produced Tags	
Path: AB_DF1-1\1	Map PLC/SLC Messages	
Controller Controller	Verify	•



File Number	Tag Name	Cance
1	TestAddressBOOL	
4	TestAddressDINT	Help
3	TestAddressINT	
5	TestAddressREAL	
2	TestAddressSINT	
	Delete Map	
C 2 Mapping		

Specify an array number for File Number, and select an array name for Tag Name. You can specify the array name from the pull-down menu on Tag Name.

By the above settings, file numbers are named toward each Tag Name as below.



* Array numbers (File Number) cannot be duplicated in any array type.



[Specifying Addresses on GP-PRO PB/III]



[Precautions for Address]

*	Range	of Acces	ssahle A	ddress	with	GP-	PRO	PR/III
	nange	OI Acces	ssable A	uuress	WIUII	σı	INU	I D/III

	Device	Bit Address	Word Address	Remark	
1	D:4	BOOL0:0/0 to			
	DIL	BOOL999: 999/15	DODT0:0 10 DODT999: 999		
2	8 bit integer		SINT0:0 to SINT999: 998	Bit7 $\div 2$	L/H
3	16 bit integer		INT0:0 to INT999: 999	Bit15	
4	32 bit integer		DINT0:0 to DINT999: 999	Bit32	
5	32 bit float		REAL0:0 to REAL999: 999		H/L

- * Specify the INT device for the system start address. Also create the INT array on RSLogix. Without creating, an address error will occur.
- * In case to specify REAL (Floating Point), only 32-bit float settings of E tag and K tag can be used.



* In case that BOOL is specified, the device description on manual of RSLogix and that of GP-PRO PBIII are different.

GP-PRO PB	00000000 to 00000031	00000100 to 00000131	00000200 to 00000231	-	00099900 to 00099931
RS-Logix	0 to 31	32 to 63	64 to 95	-	31968 to 31999

* In case that SINT is specified, you cannot specify an odd number for elements with GP-Pro PB/III. Specify an even number.



* With GP-PRO, up to 64 data can be read/written toward the arrays set with RSLogix. The array number to assign can be set with up to 999.