Rockwell Automation, Inc.

Control/Compact Logix Series Ethernet Driver

Supported version TOP Design Studio V1.0 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".

1. System configuration

Page 2

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. Supported addresses Page 10

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



1. System configuration

The system configuration of TOP and "Rockwell Automation, Inc. – Control/Compact Logix Series Ethernet" is as follows.

Series	CPU	Link I/F	Communication method	System setting	Cable
		1756-ENET/B		3. TOP communication	
		1756-ENET	Ethernet (TCP)	setting	
Controlloniu		1756-ENBT		4.1. External device setting 1	
ControlLogix	All CPUs			3. TOP communication	
		1761-NET-ENI	Ethernet (TCP)	setting	
				4.2. External device setting 2	Twisted pair
				3. TOP communication	cable*Note 1)
CompactLogix ·	All CPUs	1761-NET-ENI	Ethernet (TCP)	setting	
				4.2. External device setting 2	
	1769-L32E 1769-L35E	769-L32E CPU Direct		3. TOP communication	
			Ethernet (TCP)	setting	
		1769-L35E			4.3 External device setting 3

*Note 1) Twisted pair cable

- Refer to STP (Shielded Twisted Pair Cable) or UTP (Unshielded Twisted Pair Cable) Category 3, 4, 5.

- Depending on the network configuration, you can connect to components such as the hub and transceiver, and in this case, use a direct cable.

■ Connectable configuration

• 1:1 connection (one TOP and one external device) connection





2. External device selection

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

Select Device					x
PLC select [Ether	net]				
Filter : [All]		`	1	Search :	
				Model	() Vendor
Vendor	_	Model			
LS Industrial Systems	^	🌮 a	ontrol/CompactLogix Ser	ies	
MODBUS Organization	- 1	🌮 м	croLogix Series		
SIEMENS AG.		s.	C-500 Series		
Rockwell Automation			ntrol/Compact agiv For	ion (Import Liner Too	,
GE Fanuc Automation		ļ 🛹 ч	Sint of Compact Ogix Ser	ies (import user rag	,
PANASONIC Electric Works					
YASKAWA Electric Corporation	1				
YOKOGAWA Electric Corporati	ion				
Schneider Electric Industries					
KDT Systems					
RS Automation					
FATEK Automation Corporatio	n				
DST ROBOT					
BACnet	~				
			A Pack	A Next	M. Cancel
			- Duck	- HEAL	- cancer
Select Device					x
PLC Setting[Control/C	Compact	Logix Serie	es]		
PLC Setting[Control/C Alias Name : PLC	Compact	Logix Serie	Bind IP : Auto	~	
PLC Setting[Control/C Alias Name : PLC Interface : Ethe	Compact 1 ernet	Logix Serie	es] Bind IP : Auto	~	
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe	Compact 1 ernet erNet/IP	Logix Serie	Bind IP : Auto	Con	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First	Compacti 1 ernet erNet/IP t LH HL	Logix Serie	Bind IP : Auto	Con	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First	Compacti 1 ernet erNet/IP t LH HL	Logix Serie	Bind IP : Auto	Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND	Compacti 1 ernet erNet/IP tLH HL	Logix Serie	Bind IP : Auto	Con	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Eth Protocol : Eth String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time	Compacti 1 ernet erNet/IP tLH HL Out fition	Logix Serie	es] Bind IP : Auto	Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Cond	Compactil 1 ernet erNet/IP t LH HL	Logix Serie	es] Bind IP : Auto	Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Cond Primary Option	Compacti 1 ernet erNet/IP : LH HL Out dition	Logix Serie	es] Bind IP : Auto	V Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Eth Protocol : Eth String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Conc Primary Option IP 192	Compacti 1 ernet erNet/IP t LH HL Out dition 2 1 1	Logix Serie	es] Bind IP : Auto	v (0)	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP 192 Ethernet Protocol TCF	Compacti 1 ernet erNet/IP tLH HL Out dition 2 () () () () () () () () () ()	Change	es] Bind IP : Auto	v (0)	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Eth Protocol : Eth String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP 192 Ethernet Protocol TCP Port 448	Compacti 1 ernet ernet/IP cUH HL Out dition 1 e 1 1 1 1 1 1 1 1 1 1 1 1 1	Change	es] Bind IP : Auto	v Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP 192 Ethernet Protocol TCF Port 448 Timeout 100	Compacti 1 ernet ernet/IP cLH HL out dition 1 e i i i i i i i i i i i i i	Change	es] Bind IP : Auto	V Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP 192 Ethernet Protocol TCC Port 448 Timeout 100 Send Wait 0	Compacti 1 ernet ernet/IP iLH HL Out ition 1 iti	Logix Serie	Second)	v Co	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP Port Port Port Gend Wait O CPU Slot No	Compacti 1 ernet ernet/IP : LH HL Out itton 1 itton itton 1 itton 1 itton i	Logix Serie	second)	Ч (Сол	nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Cond Primary Option IP Port Port 448 Timeout Operate Noticol Change Condition : Condition : Condition	Compacti 1 ernet ernet/IP LH HL Out ition 2 16 0 1	Logix Serie	second)		nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Use Redundancy Operate Condition : AND Change Condition : Time Primary Option IP Port Port Timeout Cond Send Wait O OPU Slot No	Compacti 1 ernet erNet/IP LH HL Out ition 2 () () () () () () () () () ()	Logix Serie	second)		nm Manual
PLC Setting[Control/C Alias Name : PLC Interface : Ethe Protocol : Ethe String Save Mode : First Operate Condition : AND Change Condition : AND Change Condition : Time Cond Primary Option IP 192 Ethernet Protocol TCF Port 448 Timeout 100 Send Wait 0 CPU Siot No 0	Compacti 1 ernet erNet/IP LH HL Out dition 118 0 118 0 118 118 118 118 11	Logix Serie	es] Bind IP : Auto		nm Manual

Sett	tings		Contents				
ТОР	Model	Check the TOP display and process t	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 "Rockwell Automation (AB)".					
	PLC	Select the external device to be con	Select the external device to be connected to the TOP.				
		Model	Model Interface Protocol				
		Control/Compact Logix Series Ethernet EtherNet/IP					
		Please check the system configuration in Chapter 1 to see if the external device you want to					
		connect is a model whose system ca	n 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 properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Ethernet]
 - Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
IP address*Note 1)	192.168.0.50	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, <u>192.168.0</u>.0) should match. * The above settings are examples recommended by the company.

Items	Description
IP Address	Set an IP address to be used by the TOP to use over the network.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.



(2) Communication option setting

- [Project > Project property > PLC settings > ETHERNET(1) > "PLC1 : Control/Compact Logix Series"]
 - Set the options of the communication driver of the Control/Compact Logix Series Ethernet in TOP Design Studio

Project Option			×
Change HMI[<u>H</u>] Kdd PL	C [A] TI Change PLC[C] Celete PLC[D]		
Change HMI[H]	C (A) Change PLC[C] X Delete PLC[D] PLC Setting[Control/CompactLogix Series] Alas Name : PLC1 Bind IP : Auto v Interface : Ethernet v Protocol : EtherNet/IP v String Save Mode : First LH HL Change Change Condition : AND v Change Condition : TimeOut S \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Co	mm Manual
< >>		Apply	Clore
		Арріу	Close

* The above settings are examples recommended by the company.

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select "EtherNet/IP".	device selection".
IP	Enter the IP address of the 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.	
Port	Enter the Ethernet communication port number "44818" of the external device.	Fixed
CPU Slot No	Enter the CPU slot number of the external device.	



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 > Ethernet]

	õ	💼 Eth	ernet	×		×	
Run	🔕 System	Port Ethernet Port : [ETH1 🔹 0	• Det	ion		
VNC Viewer		MAC Address : IP Address : Subnet Mask : Gateway :	00: 15: 1D: 00: 00: 00 192.168.0.50 255.255.255.0 192.168.0.1	Sou	ind		
	Ethernet	DNS (1) : DNS (2) :]Detault Gateway		FI		
Screen shot	Diagnost ic M	Ethernet Primary IP : Cable Status : Bridge Mode :	192.168.0.50 ETH1 Not connecte	MR Analy	AM ysis		
	[System]	Check duplicate	Apply Cance		Close		
Toprx – Toprx080	JS			0	2021-09	9-01 10:0)6:01 AM

Items	ТОР	External device	Remarks
IP address*Note 1)	192.168.0.50	192.168.0.51	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

*Note 1) The network addresses of the TOP and the external device (the first three digits of the IP, <u>192</u>. <u>168</u>. <u>0</u>. 0) should match.

* The above settings are examples recommended by the company.

Items	Description
IP Address	Set an IP address to be used by the TOP to use over the network.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.



(2) Communication option setting

■ [Main screen > Control panel > PLC]

	1001	PLC	×
System	Driver(ETH)	PLC1(Control/CompactLogix Ser	ies) 🔻
	Interface	Ethernet 💌	
	Protocol	EtherNet/IP 🔹	
PLC	Bind IP	Auto 💌	
	IP	192 168 0 51 0	
er II (Canal II	Ethernet	TOP	
	Port	44818	
	Timeout	300 🖨 msec	
	Send Wait	0 🖨 msec	
t	CPU Slot	0	
Diagnostic			
[System]	Diagnostic	Ping Test	Apply Cancel
TOPRYDRODS		•	2021_00_01_10-06

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select "EtherNet/IP".	device selection".
IP	Enter the IP address of the 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.	
Port	Enter the Ethernet communication port number "44818" of the external device.	Fixed
CPU Slot No	Enter the CPU slot number of the external device.	



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 whether the port (ETH1/ETH2) settings you want to use are the same as those of the external device in [Control panel > Ethernet].

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		OK	NG	
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
	Other detailed settings		OK	NG	
	Relative prefix	Project setting	OK	NG	2. External device selection
		Communication diagnostics	ОК	NG	3. Communication setting
	Ethernet port setting	IP Address	ОК	NG	
		Subnet Mask	ОК	NG	
		Gateway	OK	NG	
External device	External device CPU name Communication port name (module name)		OK	NG	
			OK	NG	
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG	4. External device setting	
	Other detailed settings		OK	NG	4. External device setting
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
	Check address range		ОК	NG	<u>5. Supported addresses</u> (For details, please refer to the PLC vendor's manual.)



4. External device setting

4.1 External device setting 1 (1756-ENBT, 1756-ENET(/B))

Set as below using "Control/CompactLogix Series" Ladder Software "RSLogix5000".

For more detailed setting methods than described in this example, refer to the PLC user manual.

- Step 1. Right-click [I/O Configuration] of the Project tree in "RSLogix5000" to select [New Module].
- Step 2. Select a module to be used in [Select Module] dialog box.
- Step 3. Right-click the added module name in the Project tree to select [Properties].
- Step 4. Set "IP Address: 192.168.0.51" and other matters in [General] tab of the [Module Properties] dialog box.

Step 5. Download the settings.

4.2 External device setting 2 (1761-NET-ENI)

Use [ENI/ENIW Utility] for communication settings to configure as shown below. For more detailed setting method than that described in this example, refer to the PLC user manual.

Step 1. From the [ENI IP Addr] tab of [ENI/ENIW Utility], configure the "IP Address : 192.168.0.51" and other settings.

Step 2. Download the configurations for 1761-NET-ENI.

4.3 External device setting 3 (CPU Direct)

Set as below using "Control/CompactLogix Series" Ladder Software "RSLogix5000".

For more detailed setting method than that described in this example, refer to the PLC user manual.

Step 1. Right-click the CPU Direct Ethernet Port of [I/O Configuration] in the Project tree, "RSLogix5000" to select [Properties].

Step 2. Set "IP Address: 192.168.0.51" and other matters in [General] tab of the [Module Properties] dialog box.

Step 3. Download the settings.



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.

Ŕ	Device notation	TOP Design Studio	→ Data Type File Number : Element	
		Ladder Software "RSLogix5000"	→ Tag Name[Element]	

Device	Bit Address	Word Address	32 bits	Remarks
BOOL	BOOL000:00000 - BOOL999:31999	BOOL000:00000 - BOOL999:31999		
INT	INT000:000/00 - INT999:999/15	INT000:000 – INT999:999	1.41	
REAL		REAL000:000 – REAL999:999	L/H	
DINT	DINT000:000/00 -DINT999:999/31	DINT000:000 – DINT999:999		

Solution of the continued on next page.



※ For communication between TOP and "Control/Compact Logix Series", [File Number]: [Element] must be set in the corresponding tag. The setting method is as follows.

Execute the below in "Control/Compact Logix Series" Ladder Software "RSLogix5000".

Execute [Logic] > [Edit Tags] to create a tag to be used for communication between TOP and Control/Compact Logix.

😭 RSLogix 5000 - Testi [1769-L32E 20.13]* - [Controller Tags - Testi(controller]]									
Pile Edit View Search Logic Communications Tools Window Help									
1 🛎 🖬 🧉 🕹 🕹 🖿	1 K CH 🗌	- <u>2</u> 8 26 <u>,</u> 1 <u>2</u>	k 🗈 🛛 🕾	🔍 🔍 🛛 Select a Lang	guage,	- 🥺			
Offline Image: Constraint of the second se		Patr: AB_ETHIP-2\192.168.0 ◀ ⊢ ⊢ ◀ ⊢ ⊢ ↓ ⊢ ⊢ ↓ ⊢ ⊢ ↓ ⊢ ⊢ ↓ ⊢ ⊢ ↓ ↓ ⊢	.119\Backplane\0* -()(U)(L)- Safety (Alarms)						
Controller Organizer	-	· ↓ × Scope: 🚺 Test1 -	Show: STRING, A	LARM, ALARM_ANALOG,	ALARM_DIGITAL, A	UX_VALVE_CONTR	OL, AXIS_CIP_DRIVE,	4> - 7. 4	Enter Name Filter
State Controller Test1		Name	E Alias For	Base Tag	Data Type	Description	External Access	Constant	Style
Controller Lags	Handler	E-BOOL_TOPR			BOOL[1024]		Read/Write		Decimal
Power-Up Hand	ller	E-DINT_TOPR			DINT[1000]		Read/Write		Decimal
🖨 📇 Tasks		E-INT_TOPR			INT[1000]		Read/Write		Decimal
🖨 🧔 MainTask		- REAL_TUPR			REAL[1000]		Head/Write		Float
Items Contents									
Name		This is the name of	f the tag us	ed in "RSLogi»	(5000". (use	r definitior	ı).g		
		For communication	For communication connection with TOP, File Number must be mapped to the corresponding tag.						
		☞ Refer to "■ Ma	p PLC/SLC	Messages".					
Data Type	BOOL	32Bit Data							
-	DINT	Double Word Data							
-	INT	Word Data							
-	REAL	Float data							

■ Execute [Logic] > [Map PLC/SLC Messages] to map the tags created in [Edit Tags].

PLC	PLC2,5 / SLC Mapping						
ſ	PLC 5 / SLC Mapping						
	File Number 🛛 🛆	Name	Cancel				
	1	BOOL_TOPR					
	2	INT_TOPR	Help				
	3	REAL_TOPR					
	4	DINT_TOPR					
		Delete Map					
	Don't care						

Tag address in TOP Design Studio when set as in this example.

Тад	TOP Design Studio
BOOL_TOPR	BOOL001:00000 ~ BOOL001:01023
INT_TOPR	INT002:000 ~ INT002:999
REAL_TOPR	REAL003:000 ~ REAL003:999
DINT_TOPR	DINT004:000 ~ DINT004:999
	•