# **Rockwell Automation, Inc.**

# MicroLogix, SLC-500 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".

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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. – SLC500/MicroLogix Series EthernetIP" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable	
MicroLogix	MicroLoigx 1000 MicroLoigx 1100 MicroLogix 1200 MicroLogix 1500	1761-NET_ENI	Ethernet(TCP)	<u>3.2 Settings example 2</u> (Page 5)	Twisted pair cable	
	MicroLoigx 1100	CPU Direct	Ethernet(TCP)	3.1 Settings example 1 (Page 4)		
SLC500	SLC 5/05	CPU Direct	Ethernet (TCP)	3.1 Settings example 1 (Page 4)	^NOTE T)	
	SLC 5/03 SLC 5/04 SLC 5/05	1761-NET-ENI	Ethernet (TCP)	<u>3.2 Settings example 2</u> (Page 5)		

\*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

 $\cdot$  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.

LE BEIEU [LI	hornot1				
	nernetj				
Filter : [All]			~	Search :	
Vandar		Model		01.00	
M2I Corporation			ontrol/CompactLogix Se	ries	
MITSUBISHI Electric Corr	poration		and of composition of		
OMRON Industrial Auton	nation		licroLogix Series		
Control of Industrial Sustaine		🛛 🌽 s	LC-500 Series		
		- 🌮 🛛	ontrol/CompactLogix Se	ries (Import User Ta	g)
MODBUS Organization					
SIEMENS AG.					
Rockwell Automation					
GE Fanuc Automation					
PANASONIC Electric Wo	rks				
YASKAWA Electric Corpo	ration				
YOKOGAWA Electric Cor	poration				
Schneider Electric Indust	ries				
KDT Systems					
RS Automation		~			
					1
PLC Setting[ Micro Alias Name :	Logix Seri	ies ]	Bind IP : Auto	~	
Interface :	Ethernet		~	_	
String Save Mode :	Einernet/Ip	Chang	e	Co	mm Manual
bailing bave hidde .		chang			
	У	-			
	un u				
Use Redundance Operate Condition : A Change Condition :	ND ∽ TimeOut	5	(Second)		
Use Redundanc Operate Condition : A Change Condition :	ND V TimeOut Condition	5 🗘	(Second)		Edit
Use Redundance Operate Condition : A Change Condition :	ND ~ TimeOut Condition	5	(Second)		Edit
Use Redundance Operate Condition : A Change Condition : Primary Option IP	ND V TimeOut Condition	5	(Second)		Edit
Use Redundance Operate Condition : A Change Condition :  Primary Option IP Ethernet Protocol	ND V TimeOut Condition	5 \$	(Second)		Edit
Use Redundance Operate Condition : A Change Condition :  Primary Option IP Ethernet Protocol Doct	TimeOut Condition		(Second)		Edit
Use Redundance Operate Condition : A Change Condition :  Primary Option IP Ethernet Protocol Port Toruch	TimeOut Condition		(Second)		Edit
Use Redundance Operate Condition : Al Change Condition : C Primary Option IP Ethernet Protocol Port Timeout	TimeOut Condition 192 💽 TCP 44818	5 \$ 168 \$ 0 \$ msec	(Second)		Edit
Use Redundance Operate Condition : Al Change Condition : C Primary Option IP Ethernet Protocol Port Timeout Send Wait	ImeOut           Condition           192           TCP           44818           1000           0	5 158 158 0 msec msec	(Second)		Edit
Use Redundance Operate Condition : Al Change Condition : C Primary Option IP Ethernet Protocol Port Timeout Send Wait	ND         TimeOut           TimeOut         Condition           192         Image: Condition           TCP         44818           1000         Image: Condition	5 • • • • • • • • • • • • • • • • • • •	(Second)		Edit
Use Redundance Operate Condition : A Change Condition : Primary Option IP Ethernet Protocol Port Timeout Send Wait	ND TimeOut Condition 192 : 192 : 192 : 448.18 : 1000 : 0 : 100	5 • 0 168 • 0 • msec • msec	(Second)		Edit
Use Redundance Operate Condition : A Change Condition : Primary Option IP Ethernet Protocol Port Timeout Send Wait	ND TimeOut Condition 192 : TCP 44818 : 1000 : 0 : 0	5 • • • • • • • • • • • • • • • • • • •	(Second)		Edit
Use Redundance Operate Condition : A Change Condition : Primary Option IP Ethernet Protocol Port Timeout Send Wait	ND            TimeOut         Condition           192         :           TCP         :           14818         :           1000         :           0         :	5 • 0 168 • 0 • msec • msec	(Second)		Edit

Settings			Contents		
ТОР	Model	Check the TOP display and proces	Check the TOP display and process to select the touch model.		
External device	Vendor	Select the vendor of the external Select "Rockwell Automation (AB)"	ect the vendor of the external device to be connected to TOP.		
PLC Select the external device to be connected to the TOP			onnected to the TOP.		
		Model	Interface	Protocol	
		MicroLogix Series	Ethernet	Ethernet/IP	
		Please check the system configu connect is a model whose system	ration in Chapter 1 to see if t can be configured.	he 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 > Ethernet]
  - Set the TOP communication interface in TOP Design Studio.

Project Option		×
Change HMI[H] Add	PLC [A] TIT Change PLC[C] Delete PLC[D]	
TOP Setting	Date / Time Sync. Screen Option Unit Convert	
Option Module Setting	Project Option Screen Change HmiSetup Global Lock & Touch Project Style Spl	plash PLC Buffer Sync.
Periods (0)     Period (0)	✓ Use HMI Setup         Init           Hm Setup Option         Init           Project Setting         HMDbable=0           Project Name=New project         Start Mode=Menu           Start Storen No.=1         Latch Use=0           Latch Set=0~0         Communication Error Message=0           USBErrorMessage=0         StarageErrorMessage=1	Itialization Edit



Items	ТОР	External device	Remarks
IP Address*Note 1) Note 2)	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>. 168. 0. 0) should match.

\*Note 2) Do not use duplicate IP addresses over the same network.

\* 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 > Device Setting > ETHERNET > "PLC1 : MicroLogix Series"]
  - Set the options of the MicroLogix Series Ethernet communication driver in TOP Design Studio.

Project Option		×
Change HMI[H] Kange PLC [A] Change PLC [C] Change PLC [C]		
PLC Setting[ MicroLogix Series ]	Cor	nm Manual
* The above settings are examples recommended by the company	Apply	Close

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.	
Ethernet Protocol	Selects the Ethernet protocol "TCP" between the TOP and an external device.	Fixed
Port	Enter "44818", which is the Ethernet communication port number of the external	Eived
	device.	Fixed
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 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]

	<b>6</b>	Ethernet ×
Run	System	Port Ethernet Port : ETH1 • 0 • Link Speed : Auto
	PLC Se	MAC Address : 00:15:1D:05:38:C5 IP Address : 192.168.0.50 Subpet Mask : 255.255.0
VNC Viewer	Ethernet	Gateway : 192.168.0.1 Befault Gateway DNS (1) : DND (2) :
Screen shot	Diagnostic	Ethernet Primary IP : 192.168.0.50
	[System]	Cable Status : EIH1 Connected Bridge Mode : Use Bridge Check duplicate Apply Cancel Close

Items	ТОР	External device	Remarks
IP Address*Note 1) Note 2)	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.

\*Note 2) Do not use duplicate IP addresses over the same network.

\* 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]

	Ö	1001	PLC	×	
	🔯 Syste	Driver(ETH)	PLC1(MicroLogix Series) 🗸		
Run		Interface	Ethernet 🔹		
		Protocol	Ethernet/Ip 🔹		
<b>MNC</b>	PLC	Bind IP	Auto 💌		
VNC		IP	192 • 168 • 0 • 51 •		
Viewer	∣	Ethernet	TCP		
	Ethernet	Port	44818 🜩		
0.		Timeout	300 🜩 msec		
Screen	and	Send Wait	0 🖨 msec		
shot	mil				
	Diagnostic				
	[System]	Diagnostic	Ping Test	Apply Cancel	

\* 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.		
Ethernet Protocol	Selects the Ethernet protocol "TCP" between the TOP and an external device.	Fixed	
Port	Enter "44818", which is the Ethernet communication port number of the external	Fixed	
	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.		



#### **3.3 Communication diagnostics**

■ Check the interface setting status between the TOP and an external device.

- 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.
- Check if the port (ETH1/ETH2) settings you want to use in [Control Panel > Ethernet] 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	Contents		Check		Remarks	
System	How to connect the sys	stem	OK	NG	1. Contanto da Constitución	
configuration	Connection cable name	2	OK	NG	1. System configuration	
ТОР	OP 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	OK	NG		
		Subnet Mask	OK	NG		
		Gateway	OK	NG		
External device	CPU name		OK	NG		
	Communication port name (module name)		OK	NG		
	Protocol (mode)		OK	NG		
	Setup Prefix		OK	NG		
	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 (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.

#### 4.2. External device setting 2 (CPU Direct)

Set as below using "MicroLogix Series" Ladder Software "RSLogix500".

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

Step 1. Create a new project at "RSLogix500".

Step 2. From the Project tree, go to [Controller] > Select "Open" for [Channel Configuration].

**Step 3.** From the [Chan – 1 system] tab of [Channel Configuration] dialog box, configure the "<u>IP Address : 192.168.0.51</u>" and other settings.

Step 4. Download the configurations.





# 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.



Device			Bit Address	Word Address	Remarks
Input file			I:00.000/00 ~ I:63.255/15	I:00.000 ~ I:63.255	
Output file			O:00.000/00 ~ O:63.255/15	O:00.000 ~ O:63.255	
Status file			S:000/00 ~ S:163/15	S:000 ~ S:163	
Bit file			B003:000/00 ~ B003:255/15	B003:000 ~ B003:255	
			B009:000/00 ~ B255:255/15	B009:000 ~ B255:255	
Timer file	EN	Enable		T004000 T004055	
	TT	Timing	$1004:000/13 \sim 1004:255/15$	1004:000 ~ 1004:255	
	DN	Done	1009:000/13 ~ 1255:255/15	1009:000 ~ 1255:255	
	PRE	Preset		TP004:000 ~ TP004:255	
			-	TP009:000 ~ TP255:255	
	ACC	Accumulated		TA004:000 ~ TA004:255	
			-	TA009:000 ~ TA255:255	
Counter file	CU	Up enable			
	CD	Down enable			
	DN	Done	C005:000/10 ~ C005:255/15	C005:000 ~ C005:255	
	OV	Overflow	C009:000/10 ~ C255:255/15	C009:000 ~ C255:255	
	UN	Underflow			
	UA	Update Acc			
	PRE	Preset		CP005:000 ~ CP005:255	
			-	CP009:000 ~ CP255:255	
	ACC	Accumulated	_	CA005:000 ~ CA005:255	
				CA009:000 ~ CA255:255	
Control file	EN	Enable			
	EU	Enable unload			
	DN	Done			
	EM	Empty	R006:000/10 ~ R006:255/15	R006:000 ~ R006:255	
	ER	Error	R009:000/10 ~ R255:255/15	R009:000 ~ R255:255	
	UL	Unload			
	IN	Inhibit comp.			
	FD	Found			
	LEN	Length	_	RL006:000 ~ RL006:255	
				RL009:000 ~ RL255:255	
	POS	Position	_	RP006:000 ~ RP006:255	
				RP009:000 ~ RP255:255	
Integer file			N007:000/10 ~ N007:255/15	N007:000 ~ N007:255	
			N009:000/10 ~ N255:255/15	N009:000 ~ N255:255	
Floating point file			None	F008:000 ~ F255:255	
String file			None	ST009:000 ~ ST255:255	
Long word file			L009:000/00 ~ L255:255/31	L009:000 ~ L255:255	