# **OPTICON**

# **Barcode Scanner**

# **Ethernet (Normal) Driver**

TOP Design Studio V1.4.10.20 or higher



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We want to thank our customers who use the Touch Operation Panel.

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Describes how to set the TOP communication.

4. External device setting Page 12

Describes how to set up communication for external devices.



## 1. System configuration

The system configuration of TOP and "OPTICON – Barcode Scanner" is as follows:

Series	Link I/F	Communication method	System setting	Cable
NLV-□□□□	Serial To Ethernet Converter	ТСР	<u>3. TOP</u> <u>communication</u> <u>setting</u> <u>4. External device</u> <u>setting</u>	Twisted pair cable*Note 1)

\*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







### 2. External device selection

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

						x
PLC select [Et	hernet]					
Filter : [All]			~	Searc	h :	
0.00					Model	Vendor
Vendor		Model				
EMOTIONTEK	^	`  <i>\$</i> \$2 =	Barcode Scanner			
FUJI Electric Co., Ltd.						
OPTICON						
PATLITE						
Giddings & Lewis Motion (	Control					
DELTA TAU Data System	s					
KEYENCE Corporation						
CEYON Technology						
Digital Electronics Corpor	ation					
BINAR Elektronic AB						
HONEYWELL						
ATLAS COPCO						
ROOTECH						
IDEC Corporation						
PLC Setting[ Barco	de Scanne	r ]				
Alias Name :	PLC1		Bind IP	Auto 🗸		
Interface :	Ethernet	1.	~		_	
Protocol :	Checksum cor	mbine	~		Con	nm Manual
Ilse Redundance	v					
Operate Condition : AN	ID ~					
Change Condition :	TimeOut	5 🌲	(Second)			
	Condition				E	dit
Primary Option						
Thinday option						
IP	192 🚖	168 🚔 0	1	×		^
IP Ethernet Protocol	192 💽 🚺	168 🌒 0	1			^
IP Ethernet Protocol Port	192 🔪 [ TCP ~ 5000 🗣	168 💽 0	1	<b>*</b>		^
IP Ethernet Protocol Port Timeout	192 🗭 [ TCP ~ 5000 🔮	168 💭 0	1			^
IP Ethernet Protocol Port Timeout Send Wait	192     ●       TCP     ∨       5000     ●       5000     ●       0     ●	168 💽 0	1			^
IP Ethernet Protocol Port Timeout Send Wait Retry	192     ●       TCP     ∨       5000     ●       5000     ●       0     ●       5     ●	168 😧 0		Ť		^
IP Ethernet Protocol Port Timeout Send Wait Retry HMI Port	192     ●       TCP     ∨       5000     ●       5000     ●       5     ●       1025     ●	168 💭 0		Á V		^
IP Ethernet Protocol Port Timeout Send Wait Retry HMI Port Trigger	192     ↓       TCP     √       5000     ↓       5000     ↓       0     ↓       1025     ↓       SYS	168 💭 0	00			
IP Ethernet Protocol Port Timeout Send Wait Retry HMI Port Trigger OK	192     ●       TCP     ∨       5000     ●       5000     ●       0     ●       5     ●       1025     ●       INSYS     ■	168 ♥ 0 168 ♥ 0 1 msec 1 msec 2 000000 2 000000				~

Settings			Contents	
ТОР	Model	Select the TOP model.		
	Vendor	Select the vendor of the ex Select "OPTICON".	xternal device.	
External device Model		Select the external device	to be connected to the TOI	P.
	Model	Interface	Protocol	
	Model	Barcode Scanner	Ethernet	Checksum combine
		Please check the system c connect is a model whose	onfiguration in Chapter 1 system can be configured.	to see if 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

- $\blacksquare [Project] \rightarrow [Property] \rightarrow [TOP Setting] \rightarrow [HMI Setup] \rightarrow [Use HMI Setup Check] \rightarrow [Edit] \rightarrow [System] \rightarrow [Ethernet]$ 
  - Set the TOP communication interface in TOP Design Studio.

Control Panel          System       Devices         Image: Devices       Image: Devi	Project Option  Change HMI[H]  Add PLC [A]  Change PLC[C]  Date / Time Sync. Screen Option  Stream Option Module Setting  FieldBus (0)  FieldB	tet PLC[D] Unit Convert HmiSetup Global Lock & Touch Project Style Splash PLC Buffer Sync.  Initialization Edit
Port   PLC   Security   Date/Time   PLC   PLC   Security   Date/Time   PLC   PLC<	Control Panel	Ethernet X
Image: PLC   Security   Date/Time   Image: PLC   Security   Date/Time   Image: PLC   Security   Image: PLC   Security   Image: PLC   Security   Image: PLC   Security   Image: PLC   Ima	System Devices	Port
PLC       Security       Date/Time         MAC Address :       00:00:00:00:00:00         IP Address :       192.168.0.100         Security       Security         Security       Security         Diagnostic       File         File       Ping         Ping       Bridge Mode :		Ethernet Port : ETH1 • 0 • Link Speed : Auto •
Subnet Mask :       255.255.255.0         Gateway :       192.168.0.1         Default Gateway       Default Gateway         Diagnostic       File         File       Ping         Ping       Ping         Bridge Mode :       Use Bridge	PLC Security Date/Time	MAC Address : 00:00:00:00:00:00 IP Address : 192.168.0.100
Ethernet       Serial       HDMI       DNS (1) :       DNS (2) :         DNS (2) :       Ethernet       Primary IP : 192.168.0.100 •         Diagnostic       File Manager       Ping		Gateway : 192.168.0.1
Diagnostic       File Manager       Ping       Bridge Mode :       Use Bridge	Ethernet Serial HDMI	DNS (1) : DNS (2) :
Diagnostic File Ping Manager Bridge Mode : Use Bridge		Ethernet Primary IP : 192.168.0.100 ▼ Cable Status :
	Diagnostic File Ping Manager	Bridge Mode : 🗌 Use Bridge
Check duplicate Apply Cancel		Check duplicate Apply Cancel

Items	ТОР	External device	Remarks
IP Address	192.168.0.100	192.168.0.50	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

\* The above settings are examples recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
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 > Barcode Scanner]
  - Set the options of the Barcode Scanner communication driver in TOP Design Studio.

Project Option		×
Change HMI[H] Add PL	LC [A] TIT Change PLC[C] Clette PLC[D]	
✓ · · □ TOP Setting     SYS : RD 1520X     · · ■ Option Module Setting	PLC Setting[ Barcode Scanner ] Alias Name : PLC1 Bind IP : Auto V	
	Interface : Ethernet 🗸 🗸	
<ul> <li>✓ - Setting</li> <li>✓ COM1 (0)</li> <li>✓ COM2 (0)</li> </ul>	Protocol : Checksum combine	Comm Manual
COM3 (0)	Use Redundancy	
PLC1 : Barcode Scanner	Operate Condition : AND ~	
USBDevice (0)	Change Condition : TimeOut 5 (Second)	
	Condition	
	Primary Option	
	IP 192 🗭 168 💭 0 💭 50 💭	^
	Ethernet Protocol TCP V	
	Port 5000	
	Timeout 5000 emec	
	Send Wait 0 msec	
	Retry 5	
	HMI Port 1025	
	Trigger 00000.00	
	OK <b>00000.01</b> € 🔂 📰	
	NG SYS V 00000.02	
	TimeOut V00000.03	
	Data SYS V 00100 0 00 Words	
	Error Message	
	✓ Scan Error : Input the specified message	<b>~</b>
		Apply Close

\* The above settings are examples recommended by the company.

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select the communication protocol between the TOP and an external device.	device selection".
IP	Enter the IP address of the external device.	
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.	
Port	Enter the Ethernet communication port number of an external device.	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	*Note 1)
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external	
	device and sending the next command request.	
Retry	Configures the number of attempts for data reception upon failure.	
Trigger	Configures the Bit address for executing barcode scan.	
ОК	Configures the enabled Bit address upon successful barcode scan.	
NG	Configures the enabled Bit address upon failed barcode scan.	
TimeOut	Set the bit address which becomes ON when timeout occurs.	
Data	Configures the address and word length for entering barcode data.	

\*Note 1) Set it longer than the receiving queue time of the barcode scanner.



#### • Error Message

Enter designated message upon failed barcode scan.				
Scan Error : Input the specified Message	Configure to enable or disable.			
Message	Message			
Destination	Enter to data storage address.			
Enter reference message upon failed barcode	scan.			
Scan Error : Input a message from address	Configure to enable or disable.			
Message	Message reference address			
Destination	Message input address			
Size	Configures the buffer size of the message reference/input address	Word		
Enter designated message upon timeout.				
Time Out : Input the specified Message	Configure to enable or disable.			
Message	Message			
Destination	Enter to data storage address.			
Enter reference message upon timeout.				
Time Out : Input a message from address	Configure to enable or disable.			
Message	Message reference address			
Destination	Message input address			
Size	Configures the buffer size of the message reference/input address	Word		



#### 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

 $\blacksquare [Control Panel] \rightarrow [System] \rightarrow [Ethernet]$ 

	💼 Ethernet 🗙 🗙
Run System	Port Ethernet Port : ETH1 • 0 • Detion
	MAC Address : 00:15:1D:05:38:C5 IP Address : 192.168.0.50
VNC Viewer	Subnet Mask :  255.255.0.0 Gateway :  192.168.0.1 Befault Gateway
Ethernet	DNS (1) :
Screen shot Diagnostic	Primary IP : 192.168.0.50
[System]	Bridge Mode :     Use Bridge       Check duplicate     Apply       Cancel     Close

Items	ТОР	External device	Remarks
IP Address	192.168.0.100	192.168.0.50	
Subnet Mask	255.255.255.0	255.255.255.0	
Gateway	192.168.0.1	192.168.0.1	

 $^{\star}$  The above settings are  $\underline{\text{examples}}$  recommended by the company.

Items	Description
IP Address	Set the IP address of the TOP.
Subnet Mask	Enter the subnet mask of the network.
Gateway	Enter the gateway of the network.



#### (2) Communication option setting

 $\blacksquare [Control Panel] \rightarrow [System] \rightarrow [PLC]$ 

	<b>Ö</b>	1001	PLC	×
$\smile$	🔯 Syste	Drvier(ETH)	PLC1(Barcode Scanner) •	
Run		Interface	Ethernet 👻	<b>_</b>
_		Protocol	Checksum combine 🛛 👻	
		Bind IP	Auto 👻	
		IP	192 🜩 168 🜩 0 🜩 50 🜩	
VNC Viewer		Ethernet Proto	TCP -	
	[     ]	Port	5000	
	Ethernet	TimeOut (ms)	5000	
		Sendwait (ms)		
Screen	wont	Trigger		
shot	<b>J</b> mili	OK	SYS:000000.01:1:1:DEC:W	
	Diagnostic	NG	SYS:000000.02:1:1:DEC:₩	-
		•		
	[System]	Diagnost	ic Ping Test	Apply Cancel

 $\ast$  The above settings are  $\underline{examples}$  recommended by the company.

Items	Settings	Remarks	
Interface	Select "Ethernet".	Refer to "2. External	
Protocol	Select the communication protocol between the TOP and an external device.		
IP	Enter the IP address of the external device.		
Ethernet Protocol	Select the Ethernet protocol between the TOP and an external device.		
Port	Enter the Ethernet communication port number of an external device.		
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	*Note 1)	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external		
	device and sending the next command request.		
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Trigger	Configures the Bit address for executing barcode scan.		
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\*Note 1) Set it longer than the receiving queue time of the barcode scanner.



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Enter designated message upon failed barcode scan.				
Scan Error : Input the specified Message	Configure to enable or disable.			
Message	Message			
Destination	Enter to data storage address.			
Enter reference message upon failed barcode scan.				
Scan Error : Input a message from address	Configure to enable or disable.			
Message	Message reference address			
Destination	Message input address			
Size	Configures the buffer size of the message reference/input address	Word		
Enter designated message upon timeout.				
Time Out : Input the specified Message	Configure to enable or disable.			
Message	Message			
Destination	Enter to data storage address.			
Enter reference message upon timeout.				
Time Out : Input a message from address	Configure to enable or disable.			
Message	Message reference address			
Destination	Message input address			
Size	Configures the buffer size of the message reference/input address	Word		



#### **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 that the settings of the connected ports in [Control Panel]  $\rightarrow$  [System]  $\rightarrow$  [Ethernet] are the same as the settings of the external device.

- Diagnosis of whether the port communication is normal or not
- Touch "Communication Diagnostics" in [Control Panel]  $\rightarrow$  [System]  $\rightarrow$  [PLC].
- Check whether communication is connected or not.

Communication	Communication setting normal
diagnostics succeeded	
Error message	Communication setting abnormal
	- Check the cable, TOP, and external device settings. (Refer to 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	T. System configuration
ТОР	Version information		OK	NG	
	Port in use		OK	NG	
	Driver name		OK	NG	
Other detailed setting			OK	NG	
	Relative prefix	Project setting	ОК	NG	2. External device selection
		Communication diagnostics	ОК	NG	3. Communication setting
	Ethernet port setting	IP Address	ОК	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
External device	CPU name		OK	NG	
	Communication port name (module name)		OK	NG	4. External device setting
	Protocol (mode)		OK	NG	
	Setup Prefix		OK	NG	
	Other detailed settings		OK	NG	
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	



## 4. External device setting

Configure the IP and port number of the external device by referring to the vendor's user manual.

Scan the barcodes below in order.

■ Initialize Barcode Scanner



Data format settings



\* Data format

	A	В	С
Part	Data size (Length)	Code data	Checksum
Length	2 bytes	N bytes	2 bytes
Description	Length of (A+B+C)	Code data	Exclusive OR of (A+B)
Description	Hex number	(Read result)	Hex number