# S & E

# **TMS Series**

# **Ethernet Driver**

V1.4.11.37 or higher

TOP Design Studio

Supported version



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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.

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Describes how to set up communication for external devices.



## 1. System configuration

The system configuration of TOP and "S & E TMS Series" is as follows.

Series	Communication method	System setting	Cable
TMS-080 TMS-160 TMS-160W	Ethernet (TCP)	3. TOP communication setting	Twisted pair cable <b>*Note 1)</b>

\*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.

■ Connection configuration

• 1:1 connection





### 2. External device selection

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

						x
PLC select [Et	hernet]					
Filter : [ΔI]			×	Search ·		
[red				(	Model	○ Vendor
Vendor		Model				
BECKHOFF Automation	^	80	TMS-080			
FASTECH Co., Ltd.		8	TMS-160			
ODVA			TMS-160W			
HYOSUNG						
HB TECH						
DNP						
FANUC Co., Ltd.						
BOOSTER						
Robots and Design						
CoDeSvs Automation Alli	ance					
Cognex Corporation						
C & F	_					
Device and Device						
Peripheral Device	~					
			Back	🚽 📫 Ne	ext	X Cancel
Select Device						x
PLC Setting[ TMS-(	180 ]					
Alias Name :	PLC1		Bind IP : Auto	$\sim$		
			~			
Interface :	Ethernet		~			
Interface : Protocol :	Ethernet Private Protoco	ol	~		Com	m Manual
Interface : Protocol :	Ethernet Private Protoco	ol	~		Com	m Manual
Interface : Protocol :	Ethernet Private Protoco	ol	~		Com	m Manual
Interface : Protocol : Use Redundance Operate Condition :	Ethernet Private Protoco	ol			Com	m Manual
Interface : Protocol : Use Redundance Operate Condition :	Ethernet Private Protoco D TimeOut Condition	ol 5	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : A Change Condition :	Ethernet Private Protoco V D V TimeOut Condition	ol	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : A Change Condition : C Primary Option	Ethernet Private Protoco U U U U U U U U U U U U U U U U U U	ol 5	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : AP Change Condition : Primary Option IP	Ethernet Private Protoco ID TimeOut Condition 192 11	ol 5 68	<ul> <li>(Second)</li> <li>0 () 1 ()</li> </ul>		Com	m Manual
Interface : Protocol : Protocol : Operate Condition : A Change Condition : Primary Option IP Ethernet Protocol	Ethernet Private Protoco Private Protoco D TimeOut Condition 192 11 TCP ~	ol 5 € 68 €	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : AP Change Condition : Primary Option IP Ethernet Protocol Port	Ethernet Private Protoco D TimeOut Condition 192 10 TCP 5000 5000	68 🗣	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : AP Change Condition : I Primary Option IP Ethernet Protocol Port Timeout	Ethernet Private Protoco D TimeOut Condition 192  10 192  10 10 192  10 10 10 10 10 10 10 10	68 💽	(Second)		Ed	m Manual
Interface : Protocol : Operate Condition : At Change Condition : At Change Condition : T Primary Option IP Ethernet Protocol Port Timeout Send Wait	Ethernet       Private Protoco       D       D       TimeOut       Condition       192       S000       S000       S000       S000       S000       S000	68 💭 msec msec	(Second)		Com	m Manual
Interface : Protocol : Operate Condition : A Change Condition : A Change Condition : I Primary Option IP Ethernet Protocol Port Timeout Send Wait	Ethernet           Private Protoco           ID           ID           ITImeOut           Condition           152           5000           5000           3000           0	68 💽 msec msec	(Second)		Com	it
Interface : Protocol : Operate Condition : A Change Condition : C Primary Option IP Ethernet Protocol Port Timeout Send Wait • Spot Info	Ethernet           Private Protoco           ID           ID           ID           ID           ITimeOut           Condition           IS2           ID           IS2           IS000           IS000           ID           ID	68 💭	(Second)		Com	it
Interface : Protocol : Operate Condition : A Change Condition : A Primary Option IP Ethernet Protocol Port Timeout Send Wait • Spot Info - Count : 3	Ethernet           Private Protoco           Image: Condition           192         Image: Condition           192         Image: Condition           192         Image: Condition           100         Image: Condition	68 💓	(Second)		Com	it
Interface : Protocol : Operate Condition : A Change Condition : A Change Condition : A Primary Option IP Ethernet Protocol Port Timeout Send Wait • Spot Info - Count : 3 - X Pos Start Address	Ethernet Private Protoco  Private Protoco  ImeOut Condition  192 € 1  TCP  S000 €  3000 €  0 €	ol 5 * 68 * msec msec	(Second)       0     1       1     1		Com Ed	m Manual it

Settings			Contents	
ТОР	Model	Check the display and process of TOP to select the touch model.		
External device	Vendor	Select the vendor of the external dev	ice to be connected to TOP.	
		Select "S & E".		
		Select the external device to be connected to the TOP.		
	Model	Model	Interface	Protocol
		TMS-080, TMS-160, TMS-160W	Ethernet	Private Protocol
F		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] → [HMI settings > Check "Use HMI settings" > Edit > Ethernet ]
  - Set the TOP communication interface in TOP Design Studio.



Items	ТОР	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.100	192.168.0.1	
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.

 $\ast$  The above settings are  $\underline{examples}$  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 properties > Device setting > Ethernet > "PLC1 : TMS-080" ]
  - Set the options of the communication driver of TMS Series Ethernet in TOP Design Studio.

Project Option		×
Change HMI[H] Change HMI[H]	C [A] TI Change PLC[C] Delete PLC[D]	
<ul> <li>TOP Setting</li> <li>SYS : RD1220X</li> <li>Option Module Setting</li> <li>FieldBus (0)</li> <li>FieldBus (0)</li> <li>COM1 (0)</li> <li>COM2 (0)</li> <li>COM2 (0)</li> <li>COM3 (0)</li> <li>Ethernet (1)</li> <li>PLC1 : TMS-080</li> </ul>	PLC Setting[ TMS-080 ] Alias Name : PLC1 Interface : Ethernet Protocol : Private Protocol Use Redundancy Operate Condition : AND	Comm Manual
Wireless (0) USBDevice (0)	Change Condition : TimeOut 5 (Second)	
	Primary Option	
	IP 192 💭 168 💭 0 💭 1	Î
	Ethernet Protocol	
	Port 5000 C	
	Send Wait 0 msc	
	• Spot Info - Count : 3	
	- X Pos Start Address SYS V 00100 (X3 WORD ]	
	- Y Pos Start Address 00103 2 2 2 2 (x3 WORD ]	
	- Max Temperature Start Address SYS V 00106 Start address [x3 WORD]	
	• Area Info	
	- Count : 10	
	- Use Start Address 00200 C : (x10 WORD ]	~
	Apply	Close

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

Items	Settings	Remarks
Interface	Select "Ethernet".	Refer to "2. External
Protocol	Select "Private Protocol".	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	Notucod
	external device and sending the next command request.	Not used

#### • Spot Info

Count	The number of spots of the corresponding thermal imaging camera.	
X Pos Start Address	Set the start address of the X coordinate.	
Y Pos Start Address	Set the start address of the Y coordinate.	
Max Temperature Start Address	Set the start address of the maximum temperature value.	*Note 1)





#### • Area Info

Count	The number of areas of the corresponding thermal imaging camera.	
Use Start Address	Set the start address of the Enabled/Disabled value.	Enabled: 1, Disabled: 0
TopLeft X Pos Start Address	Set the start address of the upper left X coordinate.	
TopLeft Y Pos Start Address	Set the start address of the upper left Y coordinate.	
BottomRight X Pos Start Address	Set the start address of the lower right X coordinate.	
BottomRight Y Pos Start Address	Set the start address of the lower right Y coordinate.	
Max Temperature Start Address	Set the start address of the maximum temperature value.	*Note 1)
Alarm State Start Address	Set the start address of the alarm status value.	Occurrence: 1, Non-
		occurrence: 0
Warning1 State Start Address	Set the start address of the warning 1 status value.	Occurrence: 1,
		Non-occurrence: 0
Warning2 State Start Address	Set the start address of the warning 2 status value.	Occurrence: 1,
		Non-occurrence: 0
Alarm Temperature Start Address	Set the start address of the temperature value where the alarm	*Note 1)
	occurs.	note I)
Warning1 Temperature Start	Set the start address of the temperature value where warning 1	*Note 1)
Address	occurs.	note I)
Warning2 Temperature Start	Set the start address of the temperature value where warning 2	*Note 1)
Address	occurs.	note I)
Target Distance Start Address	Set the start address of the subject distance.	*Note 1)
Emissivity Start Address	Set the start address of the emissivity.	*Note 2)

#### Window Info

X Pos Address	Set the address of X cooridinate.	
Y Pos Address	Set the address of Y cooridinate.	
Max Temperature Address	Set the address of the maximum temperature value.	*Note 1)
Alarm State Address	Set the address of the alarm status value.	Occurrence: 1,
		Non-occurrence: 0
Warning1 State Address	Set the address of the warning 1 status value.	Occurrence: 1,
		Non-occurrence: 0
Warning2 State Address	Set the address of the warning 2 status value.	Occurrence: 1,
		Non-occurrence: 0
Alarm Temperature Address	Set the start address of the temperature value where the alarm occurs.	*Note 1)
Warning1 Temperature Address	Set the start address of the temperature value where warning 1 occurs.	*Note 1)
Warning2 Temperature Address	Set the start address of the temperature value where warning 2 occurs.	*Note 1)
Target Distance Address	Set the start address of the subject distance.	*Note 1)
Emissivity Address	Set the start address of the emissivity.	*Note 2)

#### • Camera Info

Index Address	Set the address to display the index of the corresponding index.	
Name Address	Set the address to display the name of the corresponding index.	10 words fixed
ColorMap	Set the colormap to use for the thermal image.	
Video Display Type	Select the pixel type displayed on the screen.	
Min	Set the minimum for absolute value.	
Max	Set the maximum for absolute value.	

X Addresses used in the above communication options can be only read.

\*Note 1) The actual value is the value obtained by giving one decimal place to the data value. ex) 1234 -> 123.4

\*Note 2) The actual value is the value obtained by giving two decimal place to the data value. ex) 1234 -> 12.34



#### 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 ]



Items	ТОР	External device	Remarks
IP Address*Note 1) Note 2)	192.168.0.100	192.168.0.1	
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, 192.168.0. 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

■ [ Main screen > Control panel > PLC ]

	õ	1001	PLC	×
	🔯 Syst	Driver(ETH)	PLC1(TMS-080) -	
KUN		Interface	Ethernet 💌	<u> </u>
		Protocol	Private Protocol 💌	
<b>WNC</b>	PLC	Bind IP	Auto	
VNC		IP	192 🗘 168 🗘 0 🌩 1 🜩	}
Viewer	I 🏠	Ethernet	TCP 💌	
	Ethernet	Port	5000 ≑	
0.		Timeout	3000 🖨 msec	
Screen shot	int[]~/	Send Wait	0 🖨 msec	
	Diagnostic	Spot Inf		
	[Syster	Diagnostic	<sup>p</sup> ing 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 "Private Protocol".	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	Notucod
	external device and sending the next command request.	NOT USED

#### • Spot Info

Count	The number of spots of the corresponding thermal imaging camera	
	model.	
X Pos Start Address	Set the start address of the X coordinate.	
Y Pos Start Address	Set the start address of the Y coordinate.	
Max Temperature Start Address	Set the start address of the maximum temperature value.	*Note 1)





#### • Area Info

Count	The number of areas of the corresponding thermal imaging camera	
	model.	
Use Start Address	Set the start address of the Enabled/Disabled value.	Enabled: 1, Disabled: 0
TopLeft X Pos Start Address	Set the start address of the upper left X coordinate.	
TopLeft Y Pos Start Address	Set the start address of the upper left Y coordinate.	
BottomRight X Pos Start Address	Set the start address of the lower right X coordinate.	
BottomRight Y Pos Start Address	Set the start address of the lower right Y coordinate.	
Max Temperature Start Address	Set the start address of the maximum temperature value.	*Note 1)
Alarm State Start Address	Set the start address of the alarm status value.	Occurrence: 1,
		Non-occurrence: 0
Warning1 State Start Address	Set the start address of the warning 1 status value.	Occurrence: 1,
		Non-occurrence: 0
Warning2 State Start Address	Set the start address of the warning 2 status value.	Occurrence: 1,
		Non-occurrence: 0
Alarm Temperature Start Address	Set the start address of the temperature value where the alarm occurs.	*Note 1)
Warning1 Temperature Start	Set the start address of the temperature value where the warning 1	*Note 1)
Address	occurs.	Note I)
Warning2 Temperature Start	Set the start address of the temperature value where the warning 2	*Note 1)
Address	occurs.	Note I)
Target Distance Start Address	Set the start address of the subject distance.	*Note 1)
Emissivity Start Address	Set the start address of the emissivity.	*Note 2)

#### Window Info

X Pos Address	Set the address of X coordinate.	
Y Pos Address	Set the address of Y coordinate.	
Max Temperature Address	Set the address of the maximum temperature value.	*Note 1)
Alarm State Address	Set the address of the alarm status value.	Occurrence: 1, Non-
		occurrence: 0
Warning1 State Address	Set the address of the warning 1 status value.	Occurrence: 1, Non-
		occurrence: 0
Warning2 State Address	Set the address of the warning 2 status value.	Occurrence: 1, Non-
		occurrence: 0
Alarm Temperature Address	Set the address of the temperature value where the alarm occurs.	*Note 1)
Warning1 Temperature Address	Set the address of the temperature value where warning 1 occurs.	*Note 1)
Warning2 Temperature Address	Set the address of the temperature value where warning 2 occurs.	*Note 1)
Target Distance Address	Set the start address of the subject distance.	*Note 1)

#### • Camera Info

Index Address	Set the address to display the index of the corresponding index.	
Name Address	Set the address to display the name of the corresponding index.	10 words fixed
ColorMap	Set the colormap to use for the thermal image.	
Video Display Type	Select the pixel type displayed on the screen.	
Min	Set the minimum for absolute value.	
Max	Set the maximum for absolute value.	

**\***Addresses used in the above communication options can be only <u>read</u>.

\*Note 1) The actual value is the value obtained by giving one decimal place to the data value. ex) 1234 -> 123.4.

\*Note 2) The actual value is the value obtained by giving two decimal place to the data value. ex) 1234 -> 12.34.



#### **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	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	2. External device selection
		Communication	OK	NG	3. Communication setting
		diagnostics	ÜK	NG	
	Ethernet port setting	IP Address	OK	NG	
		Subnet Mask	OK	NG	
		Gateway	OK	NG	
External device	CPU name		OK	NG	
	Communication port na	ame (module name)	OK	NG	
	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	



For external device communication setting, refer to the external device's manual.