M2I Corporation

User Define Protocol

Ethernet Driver

V1.4.9.0 or higher

Supported version TOP Design Studio



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1. System configuration

The system configuration of TOP and external devices is as follows:

Series	CPU	Communication method	System setting	Cable
All c	levices supporting Ethernet	TCP/ UDP	3. TOP communication setting	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.

Connection configuration

• 1:1 connection



• 1:N connection





2. External device selection

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

Select Device					x
PLC select [E	thernet]				
Filter : [All]		~		Search :	
0.13				Mod	lel 🔿 Vendor
Vendor		Model			
M2I Corporation	^	🦨 User [Define Protocol		
MITSUBISHI Electric Co	rporation				
OMRON Industrial Auto	mation				
LS Industrial Systems					
MODBUS Organization					
SIEMENS AG.					
Rockwell Automation					
GE Fanuc Automation					
PANASONIC Electric W	orks				
YASKAWA Electric Corp	oration				
YOKOGAWA Electric Co	rporation				
Schneider Electric Indu	tries				
KDT Systems					
RS Automation	~				
			A Park	- North	M. Consul
Select Device PLC Setting[User	Define Prot	ocol]			×
Alias Name	: PLC1		Bind IP : Auto	\sim	
Protocol	: Liser Defined	(Active) V			omm Manual
	- ober benned	(icure)			omm Manual
Operate Condition :	ND V				
Change Condition :	TimeOut	5 💲 (Sec	ond)		
	Condition				Edit
Primary Option					
IP	192 🌒 1	168 🚔 0	1		
Ethernet Protocol	TCP ~	1			
Port	5000	1			
Timeout	1000	msec			
Send Wait	0	msec			
		1			
HMI Port	Not use 🗸				
HMI Port	Not use 🗸 🗸				
HMI Port	Not use 🗸				
HMI Port	Not use 🗸				
HMI Port	Not use 🗸		A Back	J OK	X Cancel

Settings		Contents					
ТОР	Model	Check the display and process	Check the display and process of TOP to select the touch model.				
	Vendor	Select the vendor of the external device to be connected to TOP. Please select "M2I Corporation".					
	Model	Select the external device to be connected to the TOP.					
External device		Model	Interface	Protocol			
		User Define Protocol	Ethernet	User Defined (Active)			
				User Defined (Passive)			



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] → [HMI Setup > "Use HMI Setup" Check > 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, 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

- [Project > Project Property > Device Setting > Ethernet > "PLC1 : User Define Protocol"]
 - Set the options of the User Define Protocol communication driver in TOP Design Studio.

Project Option		×
Change HMI[H] Add PL	C [A] TIT Change PLC[C] Delete PLC[D]	
 TOP Setting SYS : RD 1520X Option Module Setting FieldBus (0) RFID (0) Device Setting COM1 (0) COM2 (0) COM3 (0) Ethernet (1) Ethernet (1) Wreless (0) USBDevice (0) 	PLC Setting[User Define Protocol] Alias Name : PLC1 Interface : Ethernet Protocol : User Defined (Active) User Redundancy Operate Condition : AND Change Condition : TimeOut 5 (Second) Edit	Comm Manual
	Primary Option IP I92 I68 0 Ethernet Protocol TCP Port 5000 Timeout 1000 msec Send Wait 0 msec HMI Port Not use	
< >		Apply Close
		Apply Close

Items	Settings	Remarks
Interface	Select "Ethernet".	Defer to "2 External
Protocol	If the client (Master) is making a connection request, select "User Defined (Active)",	device colection"
	if the server (Slave) is receiving a connection request, select "User Defined (Passive).	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)
Send Wait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	UDP date/time
HMI Port	Enter the Ethernet communication port number of the TOP.	

*Note 1) This is the TOP internal response delay, so you don't need to set it.



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, <u>192.168.0</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]

	<u>ت</u> ه	1001	PLC ×	
	🔯 Syster	Driver(ETH)	PLC1(User Define Protocol) -	
Kun		Interface	Ethernet 💌	
	: []]]	Protocol	User Defined (Activ -	
MNC	PLC	Bind IP	Auto	
VNC		IP	192 🗘 168 🗘 0 🗘 1 🗘	
Viewer	∣∟⊜∣	Ethernet	TCP -	
	Ethernet	Port	5000	
		Timeout	1000 🗣 msec	
Screen	work	Send Wait	0 sec	
shot	mill	HMI Port	Not u 🗸	
	Diagnostic			
	[System]	Diagnostic	Ping Test [Apply] Cancel	

Items	Settings	Remarks
Interface	Select "Ethernet".	Defer to "2 External
Protocol	If the client (Master) is making a connection request, select "User Defined (Active)",	device celection"
	if the server (Slave) is receiving a connection request, select "User Defined (Passive).	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)
Send Wait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
Retry	Configure the amount of redelivery attempts from TOP to external device.	UDP date/time
HMI Port	Enter the Ethernet communication port number of the TOP.	

*Note 1) This is the TOP internal response delay, so you don't need to set it.



3.3 Communication diagnostics

 $\ensuremath{\mathbbmm}$ The relevant driver does not support communications diagnostics with the other device .



4. External device setting

*Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.



5. Script setting

Step 1. [Project > Device > Ethernet > "PLC1 : User Define Protocol" right click> User-defined protocol]

TOP Design Studio - [1-NewBaseScreen1*]

File Project	Scre	en	Edit		Object		View
Select Dot Line	Rectangle	Ellipse	PolyLine	image	A Paint	A String	Ruler
1-NewBaseScreen1	8		·				-
Project						100	
 TOPRX 1000V Project Property Option Module FieldBus (0) FFID (0) COM1 (0) COM2 (0) COM3 (0) Ethernet (1) 	Define Proto	^	- 100		· · · ·	· · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
USBDevice (0)	Chan	ge PLC					
Comm Table TAG (0) Comm Block (0)	Chan Delet Disco	ge PLC C e PLC onnect PL	Option				
 Alarm (1) Block : 1 Log (0) 	User	Defined I	Protocol				

Step 2. Write scripts for communication and save.

UserDefined Protocol		— 🗆 ×	<
New Delete[D] Save[S] Import[R] Expo	Image: Non-State Image: Non-State Image: Non-State Image: Non-State Image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-State It is in the image: Non-		
V Control Control	New Protocol*		4 ⊳
	Script ID : 1 C Memo : New Protocol		
	Run Time out (sec) : 30 C Interval (10ms) : 0		
Example User Protocol* USBDevice (0)			
		X: 1 Y:1 Markers: 0	>
	Script is Empty		
		X Close	



■ User-defined protocol function

Items	Description	Remarks
CommAsciiWrite(value)	Runs an ASCII data value write to an external device.	
CommAsciiRead(size)	Runs as many reads as the ASCII data size from the external device.	
CommReset()	Initializes communication state with the external device.	
CommWait(msec)	Sets the driver's stand-by time. (Units are in msec)	
CommErrorMsg(value)	Displays an external device communication error message.	
CommErrorClear()	Deletes an external device communication error message.	