KEYENCE.

KV Series Ethernet

(MC Protocol) Driver

Supported version TOP De

TOP Design Studio V1.4.9.85 or higher



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5. Supported addresses

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



1. System configuration

The system configuration of TOP and "Keyence KV Series Ethernet" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
KV Series Ethernet (MC Protocol)	KV-700 Series KV-1000 Series KV-3000 Series KV-5000 Series KV-7000 Series KV-8000 Series	Ethernet port	Ethernet (TCP/UDP)	<u>3. TOP communication</u> <u>setting</u> <u>4. External device 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.

■ 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.

Filter : [Al] Search : @Model Ovendor Vendor Wodel Wodel Wodel Wodel Vendor Wodel Vendor Wodel Vendor Vendor Wodel Vendor <	Filter: All Vendor Model PATLITE Image: Control Giddings & Lewis Motion Control Image: Control DELTA TAU Data Systems Image: Control FEYENCE Corporation Exercise BINAR Elektronic AB HONEYWELL ATLAS COPCO ROOTECH DEC Corporation Exercise LENZE EECCHOPF Automation SATECH Co 1 rd. Image: Control Patter Device Image: Control Protocol: MC Protocol 3E (Binary) Comm Manual String Save Mode: String Save Mode: First LH HL Change Comm Manual String Save Mode: First LH HL Change Condition: Elevation Signame Image: Condition: Image: Condition: Imag
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Timeout 1000 💭 msec Send Wait 0 💓 msec	Port 5000
Send Wait 0 sec	Timeout 1000 E msec
	Send Wait

Settings			Contents		
TOP	Model	Check the display and process of TOP to select the touch model.		l.	
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "KEYENCE > KV-700/1000/3000/5000/7000/8000".			
	PLC	Select an external device to connect to TOP.			
		Model	Interface	Protocol	
		KEYENCE KV Series Ethernet	Ethernet	MC Protocol	
		Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.			

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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, <u>192.168.0</u>. 0) should match.

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

 * 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 Property > Device Settings > Ethernet > PLC1 : KV-700/1000/3000/5000/7000/8000]
 - Set the options of the communication driver in TOP Design Studio.

Project Option	×
Change HMI[H] Add PLC [A] Change PLC[C] Z Delete PLC[D]	
V C TOP Setting SYS: RD1220X V Option Module Setting RFID (0) V Device Setting V Device	Comm Manual
	Apply Close

Items	Settings	Remarks	
Interface	Select "Ethernet". Refer to "2. External		
Protocol	Select the communication protocol between the TOP and an external device. <u>device selection</u> .		
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 the external device. Default port		
	is 5000.		
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.		
Retry	Set the number of times the TOP sends a request when it fails to receive a		
	response from an external device.	UDP	



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	192.168.0.51	
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 ×	
	🔯 System	Driver(ETH)	PLC1(KV-700/1000/3000/5000/7000/8000) -	
Hun		Interface	CPU Ethernet 🔹	
		Protocol	MC Protocol 3E (Bir -	
WNC	PLC S	Bind IP	Auto 💌	
VNC		IP	192 🗘 168 🗘 0 🔹 1 🔹	
Yiewer	ا வெ 🛛	Ethernet	TCP -	
	Ethernet	Port	5000 🜩	
		Timeout	1000 🖨 msec	
Screen	and the second	Send Wait	0 🖨 msec	
SNOT	Diagnostic			
	[System]	Diagnostic	Ping Test Apply Cancel	

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 the external device. Default port		
	is 5000.		
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	<u>.</u>	
	and sending the next command request.		
Retry	Set the number of times the TOP sends a request when it fails to receive a response		
	from an external device.	UDP	



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 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 sy	stem	OK	NG	1. System configuration	
configuration	Connection cable name	5	OK	NG		
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 3. Communication setting	
		Communication	ОК	NG		
		diagnostics				
	Serial Parameter	Transmission	ОК	NG		
		Speed				
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	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 Estemplishes estimat	
	Serial Parameter	Transmission	ОК	NG	<u>4. External device setting</u>	
		Speed				
		Data Bit	OK	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
	Check address range		ОК	NG	5. Supported addresses	
					(For details, please refer to the PLC	
					vendor's manual.)	



4. External device setting

Configure the Unit Editor's setup unit as shown in the figure below,

📟 Unit Editor - Edit mode								
File(F) Edit(E) Convert(P) View(V) Option(O) Window(W) Help(H)								
💀 🝙 🕋	X 🖻 👘	🗹 🔳 🔍 🛒 🚿 🚳 🔍 🚉 🐘 🛤 🛤						
0	1	Select unit/1) Setup unit/2)						
KV-3000	KV-EP21V							
R000		¹ E ² [−]						
-015 R500			-					
-507		Leading DM No.	DM10000					
	R30000 -33915	Number of DMs in use	230					
		Leading relay No. (ch unit setting)	R30000					
		Number of relays in use	640					
		Baud rate	100/10Mbps autom					
	1	Setting method of IP address	Fixed IP address(*)					
		IP address	192.168.0.51					
		Subnet mask	255.255.255.0					
		Default gateway	0.0.0.0					
		DNS server	0.0.0.0					
		Receive timeout[s]	10					
		Keep Alive[s]	600					
		Port No.	0500					
		Port No. (KVS, KV COM+, DB)	8500					
		Port No. (uplink)	8501					
		Port No. (VI)	8502					
		Port No. (system expansion)	0504					
		Circle DIG lick cost No. (UDD)	5001					
		NG sesteral sert No. (UDP)	5001					
		MC protocol port No. (TCP)	5000					
		MC protocol port No. (UDP)	5000 -					



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
Data Memory		DM0000.00 - DM65534.15	DM0000 – DM65534	
Control Memory		CM0000.00 – CM7599.15	CM0000 – CM7599	
Expansion Data Memory		EM00000.00 – EM65534.15	EM00000 – EM65534	
File Register – Current Bank		FM00000.00 – FM32767.15	FM00000 – FM32767	
Link Register		W0000.0 – W7FFF.F	W0000 – W7FFF	
File Register			7500000 75504087	
– Consecutive Number mode		ZF000000.00 - ZF324287.15	ZF000000 - ZF524287	
Input/Output		R000000 – R199915	R0000 – R1999	
Control Relay		CR0000 – CR7915	CR00 – CR79	
Internal Auxiliary Relay		MR000000 – MR399915	MR0000 – MR3999	
Latch Relay		LR00000 – LR99915	LR000 – LR999	
Link Relay		B0000 – B7FFF		
Timer Contact		TC0000 – TC3999		
Current value			T0000 – T3999	*Note 1)
Counter Contact		CC0000 – CC3999		
Current value			C0000 – C3999	*Note 1)

*Note 1) If the current value is greater than 65535, only this value will be displayed.