

## Establishing a Connection with the Fenac Ethernet IP Encoder Device

Power cable and data cable are correctly connected to the device. Details about the connection pinout structure are explained in the section "4.Connector & Pin Assignment". Power cable and data cable are indicated in the figure on the side. It is also specified to which input ports the power cable and data cable will be connected to the Fenac Ethernet IP encoder. The device can be supplied with DC voltage in the range of 10V to 30V. The other end of the data cable must be connected to an Ethernet IP master. Here we will talk about two



methods. Defining a personal computer as an ethernet IP master device and connect the data cable to the ethernet port of a PC is an easy method, as no external hardware is required. You can do your various tests in this way. The other method is to use a PLC device with Ethernet IP Master as traditionally.



## **Allen- Bradley PLC as Ethernet IP Master**

In our example here, we will use Allen Bradley's PLC as the master device. After supplying the Fenac Ethernet Ip Encoder by a voltage in the range of 10-30V from the power supply, connect the data cable to the Ethernet port of your PC. After this process, the status LEDs on the ethernet port of your PLC will light up, indicating that there is a successful connection.

Rockwell's Studio 5000 (in our case version 35.00.00) must be installed in your PC. Open the Studio 5000 interface.

1) Click on File>New> to start a new project. Select your PLC device, in our case it is 5069-L306ERM. Give the project to a name then click Next.

2) Next click Finish button to create project.

🗿 New Project				?	×	💰 New Project			?	×
Project Types			Search		×	5069-L306ERM C Fenac EthernetiP	CompactLogix™ 5380 Controller			
S Logix	<ul> <li>Comp</li> <li>Comp</li> <li>Comp</li> <li>Comp</li> <li>Comp</li> <li>So</li> <li>So</li></ul>	act GuardLogix <sup>®</sup> actLogix <sup>™</sup> 5370 actLogix <sup>™</sup> 5380 69-L306ER 69-L306ER 69-L3100ERM 69-L310ER 69-L310ER 69-L310ER-NSE 69-L320ER	2 5370 Safety Controller 2 5380 Safety Controller Controller CompactLogix <sup>™</sup> 5380 Controller CompactLogix <sup>™</sup> 5380 Controller		•	Fenac_EthernetIP Revision: Security Authority: Secure With: Description:	35 ×         No Protection         Use only the selected Security Arauthorization         Logical Name <controller name<="" td="">         Permission Set</controller>	v Juthority for authentication and		
	Name: Location:	Fenac_Ethernet	:IP	Brows	÷					
		Cancel	Back Next	Finis	h		Cancel	Back Next	Fini	ish

**3)** Click on Tool menu and Click EDS Hardware Installation Tool.



4) Click next. Make sure Register a device description files selected then click Next. Browse the eds file(you can downloaded from fenac.com.tr) and click Next till the finish button.



**5)** Right click on "A1, Ethernet" and chose Properties. On the "General" tab window click on "Change IP Mode" then select A1/A2: Linear/DLR and click OK to save.

1/0	COL	General General		Majas Faulta	Mines Enulte	Data (Time	Advanced	SEC Evention	Period	Change EtherNet/IP Mode			
4	5069 A1	9 Backplane [0] 5069-L306ERM Fen Fthernet	ac_Ethernet	P Vendor:	Rockwell Auto	omation/Allen-Bradl	ey	Advanced	SFC Execution	Project	Current mode:	A1/A2: Dual-IP	
	۸	New Module	IP	Type:	5069-L306EF	RM CompactLogix"	5380 Controller		Change	Controller	New mode:	A1/A2: Linear/DLR	~
▲ 뫎		Import Module Discover Modules	IP	Revision:	35.011						Move I/O and MSG Paths to port:	A1/A2: Dual-IP A1/A2: Linear/DLR	
	6	Paste	Ctri+V	Chassis Typ	e. <none></none>				~				
	C	Properties Alt-	+Enter	Slot:	0 ‡						ОК С	ancel	Help
		Print	•	EtherNet/IP Mode:	A1/A2: Dual-I	IP (			Change	IP Mode			

6) Open your PC's Network & Internet Settings. Change adapter options than click properties. Select Internet Protocol Verison 4(TCP/Ipv4) then click on properties. Enter the IP address and Subnetmask below then click OK.

Copen Network & Internet settings	🖗 Ethernet0 Properties 🛛 🗙	Internet Protocol Version 4 (TCP/IPv4) Properties
Change adapter options View network adapters and change connection settings.	Networking Connect using:	General You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Ethernet0 Enabled Intel(R) 82574L Gigabit Network C Disable Status Diagnose Bridge Connections Create Shortcut Delete: Rename Properties	Configure This connection uses the following items:  Client for Microsoft Networks Client Fole and Printer Sharing for Microsoft Networks CoS Packet Scheduler  Alcrosoft Network Adapter Multiplexor Protocol Alcrosoft LLDP Protocol Driver Internet Protocol Version 6 (TCP/IPv6) Internet Protocol Version 6 (TCP/IPv6) Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The defaut wide area network protocol (Internet Protocol. The defaut	Obtain an IP address automatically         Image: Straight of the settings         Image: Straight of the settings         Image: Straight of the settings upon exit
	OK Cancel	OK

7) Open RSLinc Classic Application. Connect you PLC's usb cable (or ethernet) Under the USB section right click and select "Module Configuration". Under the "Port Configuration" tab, Set Port for A1 or A2 then set "Manually configure IP settings" and enter the valus below in the image.

	USB\16 5069-L306ERM/A Configuration	×
App 🧲	General Port Configuration Advanced Port Configuration Network	
App - 문 Workstation, DESKTOP-0T5T1GJ - 움 Linx Gateways, Ethernet - 움 AB_ETHIP-1, Ethernet - 움 AB_VBP-1, 1789-A17/A Virtual Chassis - 생 USB - 15, 5059-L305ERM LOGIX305ERM, fenac, v3 Remove Configure New DDE/OPC Topic	General       Fort Configuration       Network         Port:       A1/A2 <ul> <li></li></ul>	\$
Data Monitor Configure Driver Upload EDS file from device Security Device Properties Module Statistics Module Configuration	Secondary Name 0.0.0.0 Server: 0.0.0 Domain Name:  Host Name:  Status: Network Interface Configured OK Cance	a Apply Help

8) Right click on "A1/A2, Ethernet". Then In the Select Module Type menu search for fenac eds file and double click on it. Then write Name for Encoder in our case we use "fenac" as a name. Click IP Address and enter 192.168.2.101. To chose connection you can click on Change button.

	8	New Moo	ule		fenac				Clear Filte	rs	Show Fil	Iters 3
		Import M	odule Modules				Destruction					
	ส์	Paste	Ctrl+V	-	FenacEncod	ler-Eth/IP	FNC_AEI	n PM_ETHERNE	TIP_ENCOD	ER Encoder	1	
		Propertie	s Alt+Enter	-	I. R							
		Print		•	1 of 824 Module 1	Types Found					Add to H	avorite
	_	1001/11/28			Close on Crea	ate					Close	
Ger Ger Mod	Moc neral* necti dule I emet I t Con	ion Info Protocol figuration	<b>General</b> Type: Parent:	FenacEnd Local	coder-Eth/IP FNC_AI	EIPM_ETHEI	RNETIP_ENC	CODER				)
Ger Ger Mod Inte	Moc meral* dule I met I t Con work	ion Info Protocol figuration	General Type: Parent: Name: Description:	FenacEno Local fenac	coder-Eth/IP FNC_AI	EIPM_ETHE	RNETIP_ENC	CODER Ethemet Add O Private N	Iress letwork: ss:	192.168.1. 192 . 16	÷. 8,2,1	) D1
Ger Ger Mod Inte	Moo necti dule I emet I t Con work	dule ion Info Protocol figuration	General Type: Parent: Name: Description:	FenacEnc Local fenac	coder-Eth/IP FNC_AI	EIPM_ETHE		CODER Ethernet Add O Private N IP Addres O Host Nan	Iress letwork: ss: ne:	192.168.1. 192 . 16	÷ 8 , 2 , 11	01
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Ger Con Inte Port	Moconeral* nnecti dule I emet I t Conf work	ion Info Protocol figuration	General Type: Parent: Name: Description: Module Defin Revision:	FenacEnc Local fenac	2.001	EIPM_ETHE	RNETIP_ENC	CODER Ethemet Add O Private N IP Addres O Host Nan	Iress letwork: ss: ne:	192.168.1. 192 . 16	8,2,1	01
Ger Cor Inte Port	Moc neral* necti dule I t Con work	ion Info Protocol figuration	General Type: Parent: Name: Description: Module Defin Revision:	FenacEnc Local fenac	coder-Eth/IP FNC_AI	EIPM_ETHE		CODER Ethernet Add O Private N IP Addree O Host Nan	Iress letwork: ss: ne:	192.168.1. 192 . 16	÷ 8 , 2 , 11	01

**9)** Click on SINT to change it to DINT for proper parameter showing. Select connection, we chose Exclusive Owner and click OK. Click yes to any warning in this stage.

Name Size Exclusive Owner Output: 2	tions.	Compa	atible Mod	ule	
Exclusive Owner	me			Size	
Output: 2	aluaina Ouraa	4	Input:	4	DINT
	Exclusive Owner		Output:	2	

**10)** Click on Communications tab on Studio 5000 then select Who Active. Find you PLC under USB tab and click Download button. Click Download to warning again.

器 Who Active	💕 Who Active (FactoryTalk Linx)					- 🗆 X
Select Recent Path Select Communication Software	୍ତି 🛱 🌣   ବ୍ ବ୍ ା ? 🗸 ♠ DESKTOP-0T5T1GJ	Q▼ Filter			•	Go Online
Upload Download	▲ FactoryTalk Linx - Desktop, DESKTOP-0T5T1GJ ▶ 📾 1789-A17, Backplane ▶ 器 Ethemet, AB_ETHIP-1				-	Upload Download
Program Mode Run Mode	▷ 器 Ethemet, Ethemet ⊿ :÷ USB					Update Firmware Close
Test Mode Lock Controller	16. 5069-L306ERM, tenac_v3	ť	c	10	-	Help
Clear Faults						

**11)** Double Click on Controllers Tags to see parameters.

Controller Tags - SUCCESS(controller) ×									
Scope: SUCCESS V Show: All Tags									
Name == A	Value 🗧	Force Mask	Style	Data Type					
▲ fenac:C	{}	{}		_0400:FenacEncoder_EthIP_13375B54:C:0					
▶ fenac:C.SingleTurn	262144		Decimal	DINT					
▶ fenac:C.TotalRange	1073741824		Decimal	DINT					
fenac:C.Preset_Parameter	0		Decimal	DINT					
fenac:C.preset_changed	0		Decimal	DINT					
fenac:C.Store_Parameters	0		Decimal	DINT					
fenac:C.Restore_Parameters	0		Decimal	DINT					
fenac:C.Operating_Parameter	0		Decimal	INT					
fenac:C.Change_IP_Address	101		Decimal	INT					
fenac:C.Change_IP_Address2	2		Decimal	INT					
fenac:C.Change_IP_Address3	168		Decimal	INT					
fenac:C.Change_IP_Address4	192		Decimal	INT					
▲ fenac:l	{}	{}		_0400:FenacEncoder_EthIP_40A1F725:I:0					
fenac:I.ConnectionFaulted	0		Decimal	BOOL					
✓ fenac:I.Data	{}	{}	Decimal	DINT[4]					
fenac:I.Data[0] FAULT HEADE	R 0		Decimal	DINT					
♦ fenac:I.Data[1] POSITION	268637		Decimal	DINT					
fenac:I.Data[2] SPEED	0		Decimal	DINT					
♦ fenac:I.Data[3] FLAGS	0		Decimal	DINT					
▲ fenac:0	{}	{}		_0400:FenacEncoder_EthIP_B992380C:O:0					
▲ fenac:O.Data	{}	{}	Decimal	DINT[2]					
fenac:0.Data[0] PRESET ONLI	NE 1071		Decimal	DINT					
fenac:O.Data[1]	0		Decimal	DINT					

**12)** We need to change the status and Go Offline to be able to configure the encoder device. Most of the time, single turn value and total turn value are changing in encoders. Lets change the SingleTurn and TotalRange parameters (to do this we also need to enable scaling option with setting Operating\_Parameter to 4) We also try to preset device from 50 (to do this we need to enable preset\_changed to 1). After that we need to Download this new configuration to out encoder device.



### **CHANGING CONFIG INSTANCE PARAMETERS**

To change config instance parameters user needs to be in offline mode. For instance we can change single turn value to 100, Preset to 1234 and preset changed flag to 1, Operating Parameter to 4 (Scaling enabler), IP Address to 120 (192.168.2.120) and lastly to save all the changes to flash memory set Store Parameters to 1702257011 (save in hex form).

Name	==	Value 🗧	Force Mask 🗧 🕈	Style	Data Type
▲ shdf:C		{}	{}		_0400:FenacEncoder_EthIP_4100C9FF:C:0
shdf:C.SingleTurn			)	Decimal	DINT
shdf:C.TotalRange		1073741824		Decimal	DINT
shdf:C.Preset_Parameter		1234	>	Decimal	DINT
shdf:C.preset_changed		$\rightarrow$	>	Decimal	DINT
shdf:C.Store_Parameters	-	1702257011	>	Decimal	DINT
shdf:C.Restore_Parameters		0		Decimal	DINT
shdf:C.Operating_Parameter		-	>	Decimal	INT
shdf:C.Change_IP_Address		120	>	Decimal	INT

After downloading , new configuration and re-starting the encoder we need to change the IP Address to 192.168.2.120 to be able to communicate.

FenacEncoder-Et	h/ID	chdf		Ethernet Address	
*	۲ ۲ ۵	New Module Discover Modules Cut Copy Paste Paste Special	Ctrl+X Ctrl+C Ctrl+V	<ul> <li>Private Network:</li> <li>IP Address:</li> <li>Host Name:</li> </ul>	192.168.1. 🗘
		Delete	Delete		
		Cross Reference	Ctrl+E		
		Export Module			
		Include in Tracking	Group		
	<b>→</b>	Properties	Alt+Enter		

We can go online mode to see our changes. We can see Presetted value 1234 and we are able to connect 192.168.2.120 IP Address. And If we turn 1 turn the encoder we can see 100 counst per turn.

▲ shdf:l	{}	{}		_0400:FenacEncoder_EthIP_40A1F725:I:0
shdf:I.ConnectionFaulted	0		Decimal	BOOL
▲ shdf:l.Data	{}	<b>{}</b>	Decimal	DINT[4]
shdf:l.Data[0]	0		Decimal	DINT
shdf:l.Data[1]	1234		Decimal	DINT
shdf:l.Data[2]	0		Decimal	DINT
shdf:l.Data[3]	0		Decimal	DINT
▲ shdf:0	{}	<b>{}</b>		_0400:FenacEncoder_EthIP_B992380C:O:0
▲ shdf:O.Data	{}	<b>{}</b>	Decimal	DINT[2]
shdf:0.Data[0]	0		Decimal	DINT
shdf:0.Data[1]	0		Decimal	DINT

### **PRESET WHEN ONLINE**

If we set Data[0] of Output parameters we can Preset Position value when online too as you can see in the below picture.

▲ shdf:l	{}	{}		_0400:FenacEncoder_EthIP_40A1F725:I:0
shdf:I.ConnectionFaulted	0		Decimal	BOOL
▲ shdf:l.Data	{}	{}	Decimal	DINT[4]
shdf:l.Data[0]	0		Decimal	DINT
shdf:l.Data[1] POSITION	50		Decimal	DINT
shdf:l.Data[2]	0		Decimal	DINT
shdf:l.Data[3]	0		Decimal	DINT
▲ shdf:0	<b>{}</b>	{}		_0400:FenacEncoder_EthIP_B992380C:O:0
▲ shdf:O.Data	{}	<b>{}</b>	Decimal	DINT[2]
shdf:0.Data[0] PRESET ONLINE	-> 50		Decimal	DINT
shdf:O.Data[1]	0		Decimal	DINT

# **FEQAC** EtherNet/IP

### 4. Connector & Pin Assignment

#### **Pin Assignment**



Counter Connector Part Number

FCSF M1204 : M1204 Female Connector

FCSF M1204 R200 : M1204 Female Connector with 2 meter cable

#### Counter Connector Part Number





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