Quick Start Guide: Interfacing Modular IO Header M-EIP-H with Mitsubishi Scanner on EtherNet/IP Network

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Scope of Document

This is a Quick Start Guide to interface Mitsubishi Electric India make Modular IO with Mitsubishi Communication Module (RJ71EIP91) and iQ-F FX5-ENET/IP on EtherNet/IP.

Prerequisites

1.GX Works3 Software version 1.043V or onwards.

2.EtherNet/IP configuration tool for RJ71EIP91/ FX5-ENET/IP

3.Modular IO setup

- a. Modular IO Configurator Tool V1.5.0.0 or onwards.
- b. Modular IO EDS file "M-EIP-H_0_1.eds"

Download Modular IO setup from Mitsubishi Electric India website.

References

- a. Modular IO User Manual [Manual Number: N16001AAMH]
- b. M-EIP-H EtherNet/IP Object Classes, Messages and Services [Manual number: N18011AAMG03]
- c. iQ-R CPU User Manual [Manual Number: SH(NA)-081915ENG-A]
- d. iQ-F CPU User Manual [Manual Number: SH(NA)-082027ENG-A]

Follow the steps below to interface Modular IO with Mitsubishi Communication Module.

- 1. <u>Prepare Hardware Setup</u>
- 2. Install "Modular IO Configurator Tool"
- 3. Configure Modular IO Station using "Modular IO Configurator Tool"
- 4. Configure Ethernet/IP Communication Module in "Engineering Tool" "GX-Works3"
- 5. Add M-EIP-H EDS File to "EtherNet/IP Configuration Tool"
- 6. Configure EtherNet/IP Network using "EtherNet/IP Configuration Tool"
- 7. Monitor IO Data, Status and Diagnostics

Subsequent sections explain necessary steps in detail.



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1 Hardware Setup

Setup diagram below shows setup with Mitsubishi iQ-R PLC with EtherNet/IP Communication Module (Scanner-RJ71EIP91) and Modular IO station with Header module M-EIP-H as an adapter.



Modular IO station supports 2 Ethernet ports (ETH1 and ETH2; Layer 2 switch with DLR support). But scanner RJ1EIP91 supports 1 Ethernet port. User can connect any one port of Modular IO station to Ethernet/IP network.

Note: Setup for iQ-F PLC will include module iQ-F FX5-ENET/IP and required modules as applicable.

Setting of IP Address of Modular IO Station

Example shows DIP switch setting for value of 235.

235= 200 + 20+10 +4+1



Meaning of DIP switch positions:

Address	Descriptions
0 or >=255	IP address (all the four octets) are set as per parameter setting 'IP address' of modular IO configurator
1-254	4 th octet of IP address is set according to DIP switch

Note: It is necessary to power cycle Header module to effect the change in DIP switch setting.



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2 Install Modular IO Configurator Tool

This is one-time activity. You should have following installer files stored at same location on your PC.

- a. ModularIOConfiguratorSetupx.x.x.exe
- b. ModularIOCommunicationComponentx.x.x.x.exe
 - x.x.x.x is a version of the software.

Software setup requirement:

Processor	Intel core i3 or Higher version
Disk space	200 MB
RAM memory	2GB or Higher
Screen resolution	1280 x 768 or Higher
Platform	Windows 7 (64 bit/ 32 bit)/ Windows 8 (64 bit)/ Windows 8.1 (64 bit)/ Windows 10 (64 bit)
USB interface	USB 2.0

Following steps explain how to install Modular IO Configuration Tool

1. Run ModularIOConfiguratorSetupx.x.x.exe. It will open Modular IO Configuration Tool Setup wizard.

Click on Next button to complete installation of Modular IO Configuration Tool Setup, Communication Component Setup and Device Driver

2. Click on Finish button to complete Modular IO Configuration Tool Setup.

- Connect the Modular IO Header module (M-EIP-H) to the machine using USB (2.0) cable. For the first time, the driver automatically is searched and configured. Please wait for few minutes while this step is executed.
- 4. Once the driver is successfully installed, following message will appear.





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3 Configure Modular IO Station

This section explains configuration and special features of Modular IO Configurator Tool.

Example here shows configuration of following modules.

Sr. No.	Module Code	Description	Qty
1	M-EIP-H	Modular IO Header: EtherNet/IP Adapter	1
2	M-16D	16 Digital Input, 24 VDC, Sink Type (Negative Common) Module	1
3	M-16TE	16 Digital Output, 24 VDC, Source Type Module	1
4	M-UAD2	2 Channel Universal Analog Input Module	1
5	M-DA2	2 Channel Analog Output Voltage/ Current Module	1

Following steps explain how to configure modular IO station in a Modular IO Configurator Tool.

1. Open Modular IO Configurator Tool and view screen layout as beside



Click on create new project.
 This operation opens "Create Project" window.

Enter Project Name, Browse Path and Select Bus type as "Ethernet/IP".

CREATE PROJECT		×
Project Name		
Test		
Path		
C:\Users\Shilpa.Sharma\Desktop		Browse
Bus Type		
Ethernet/IP	•	
	Create	Cancel





4. Select Header module from Project Organiser window and click on "Parameters" tab to set Header configuration parameters. User can modify Project Values for individual parameter.

System	IO Data	Parameters	Help	
Parameter Name	Project Value	Online Value		Comment
General parameters				
IP address	192 . 168 . 3 . 253		Header IP address.	< To set IP address on Modular IO station,
Subnet mask	255 . 255 . 255 . 0		Subnet mask.	refer section 1. Hardware Setup
Gateway address			Gateway IP address.	
Action on fatal error	Stop N/W communication		Defines action on fatal error to	any slot including header. Stop or continue communication with N/W master.
Output hold / clear	Clear •		Defines output state of IO mod	Jules when disconnected from network or master CPU is not in RUN mode.

5. Add and configure IO module to modular IO station, as below.

Click on function to open dialog box of "Add Module" which shows list of IO modules grouped as per IO module type.

Select M-16D Digital Input module and click on Add button.





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Select M-16TE Digital output	ADD MODULE			×
Module and click on Add button.	IO Modules Analog input Analog output Digital input Digital output Digital outpu	Number of outputs Number of outputs Output signal voltage Output current rating SVDC backplane current consumption	DC, Source type module. 16 Transistor, Source 24VDC (18 to 30VDC including ripple) 500mA per output 130mA	
	User Name M-101E_1		No. of Module Add	Cancel

Note: Follow the above procedure to add other modules as required.

6. After adding and configuring all modules, 'Check' V the project.



Input size (IX, IW, SB) = 23 bytes, Output size (QX, QW) = 6 bytes.

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- 7. Configure Bus End module (M-BE) at the last slot position if there are 16 or more IO modules.
- 8. Connect Header module to your machine via standard USB cable.

Click on $\frac{1}{2}$ to download the configuration to connected Header module. This pop ups progress window as shown below. After successful downloading, click Ok.

DOWNLOAD ×	DOWNLOAD ×
Starting Download	Download complete!
5 <mark>0</mark>	100
	 Bytes sent 651 of 651
Close on Completion	Close on Completion
Ok Cancel	Ok Cancel



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3.1 Special Features of Modular IO Configurator Tool

1. Scan IO modules connected to Header module:

Tool facilitates quick configuration of a modular IO station if setup is available with IO modules attached to the Header module. Using "Scan IO Module" function, tool can read the list of IO modules (other than system modules) physically attached to the Header module.

Select Header module and click on Online function (This opens following window of Scan IO Modules.



Add modules to project to add IO modules to the Header module by replacing existing IO modules if any.

NOTE:

System modules are passive modules. Hence, Header module cannot detect presence of System modules in a modular IO station. So, System modules do not appear in the list after scan.

2. Output test in online monitoring mode:

This is online feature and useful to test output module locally even when Header module is not connected to the fieldbus/ network. User can write individual output (True/ False to digital output module and channel data to analog output module) and test individual output.

Follow the steps as below, to write outputs for test purpose.

- 1. Click on function to connect to Header module. Icon changes to and Status bar is updated as ONLINE.
- 2. Enable output test by clicking on function \checkmark .lcon changes color to red \checkmark and also updates status on status bar. This allows user to write force output values to actual output values. When Output test is enabled, IO LED on Header module turns yellow.
- 3. Select output module to test output and then select "IO Data" tab.
- 4. Select individual output DO nn (for Digital output) or CHn (for Analog output).
- 5. Select option as
 - Force to true/ Force to False/ No Force for Digital output and
 - Enter value between -32768 and 32767 for Analog output.

Color of Forced values change to red.

- 6. Repeat step 5 for other output module as required.
- 7. Click on Online function 🥢 to write Forced values to Actual values. Forced value overwrites Field bus values.

After writing output values to actual values, color of Forced values change to blue.

8. Change in digital output is indicated by output LED indication on the digital output module. User can measure actual output signal to test digital output and analog output



9. For digital output, function "Enable/ Disable output test" pand "Write values" are used as shown below.

In online monitoring mode, select digital output module, here M-16TE is selected as an example. By default, forcing of output is disable.

Organiser 🝷 🖡	System IO	Data	Parameters	Help		
AI	Channel	Data Type	Local Address	Field Bus Value	Forced Value	Actual Value
M-EIP-H (Online)	 Digital output 					
🛻 [1] M-16D_0	Digital output 00-07	BYTE	QX 0	0	-	0
[2] M-16TE_1	DO 00	BOOL	QX 0.0	False	No Force 🔹	False
[3] M-UAD2_2	DO 01	BOOL	QX 0.1	False	No Force 💌	False
[4] M-DA2_3	DO 02	BOOL	QX 0.2	False	No Force 🔹	False
	DO 03	BOOL	QX 0.3	False	No Force 💌	False
	DO 04	BOOL	QX 0.4	False	No Force 🔹	False
	DO 05	BOOL	QX 0.5	False	No Force 🔹	False
	DO 06	BOOL	QX 0.6	False	No Force 🔹	False
	DO 07	BOOL	QX 0.7	False	No Force 💌	False
	Digital output 10-17	BYTE	QX 1	0	:	0
	DO 10	BOOL	QX 1.0	False	No Force 🔹	False
	DO 11	BOOL	QX 1.1	False	No Force 💌	False
	DO 12	BOOL	QX 1.2	False	No Force 🔹	False
	DO 13	BOOL	QX 1.3	False	No Force 🔹	False
	DO 14	BOOL	QX 1.4	False	No Force 💌	False
	DO 15	BOOL	QX 1.5	False	No Force 🔹	False
	DO 16	BOOL	QX 1.6	False	No Force 🔹	False
	DO 17	BOOL	QX 1.7	False	No Force 💌	False
						Collapse All Clear Force

Click on function Plcon changes color to red P This enables output test feature and allows forcing of individual output as shown.

MODULAR IO CONFI	GURATOR : AL						- • ×		
Home Documentation	Setup Help								
a 🗖 🖌 a 💾 (□ ▲ ↓	· · · ·	I ₩ ± 1	喿 🕒 📀	Diagnostic	s 🗸		
Project		Edit	Check		Online		IO Map		
ject Organiser 👻 🖣	System	IO Data		Parameters	Help				
AI	Channel	Data Type	Local	Field Bus Value	Forced Value	Actual V	alue 📩	Forced Value	
M-EIP-H (Online)	 Digital output 								
(1) M-16D_0	Digital output 00-	-07 BYTE	QX 0	0		÷ 0			
[2] M-16TE_1	DO 00	BOOL	QX 0.0	False	No Force	▼ False		Force to TRUE	
🚰 [3] M-UAD2_2	DO 01	BOOL	QX 0.1	False	No Force	• Faise	_	Force to TRUE	
[4] M-DA2_3	DO 02	BOOL	QX 0.2	False	No Force	▼ False		No Force	
	DO 03	BOOL	QX 0.3	False	No Force	▼ False		No Force	
	DO 04	BOOL	QX 0.4	False	No Force	▼ False		No Force	
	DO 05	BOOL	QX 0.5	False	No Force	 False 		No Force	
	DO 06	BOOL	QX 0.6	False	No Force	▼ False		No Force	
	DO 07	BOOL	QX 0.7	False	No Force	 False 		No Force	
	Digital output 10	-17 BYTE	QX 1	0		: 0			
	DO 10	BOOL	QX 1.0	False	No Force	▼ False		No Force	
	DO 11	BOOL	QX 1.1	False	No Force	▼ False		No Force	
	DO 12	BOOL	QX 1.2	False	No Force	▼ False		No Force	
	DO 13	BOOL	QX 1.3	False	No Force	▼ False		No Force	
	DO 14	BOOL	QX 1.4	False	No Force	▼ False		No Force	
	DO 15	POOL	OV 1.5	Ealea	No Form	- Entro	•	No Force	
						Collapse All Clear	Forced Values	No Force	
								No Force	
oiect Organiser	Messages						- ¢		
	Merraner						ONUME		

After selection of either Force to TRUE or Force to FALSE, online changed force value for output turns red as shown above.



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Clicking on function i writes online changed force value to actual value and force value changes color as blue as below.

iome Documentation 3	etup	neip		1				
	/		1 +	\sim	H 1 1	🧈 🕓 🔊		Diagnostics 💙
Project		Edit		Check		Online		IO N
ect Organiser 👻 🖣		System	IO Data		Parameters	Help		
AI		Channel	Data Type	Local	Field Bus Value	Forced Value		Actual Value
🔺 🎆 M-EIP-H (Online)	-	Digital output						
[1] M-16D_0	^	Digital output 00-07	BYTE	QX 0	0		3	0
[2] M-16TE_1		DO 00	BOOL	QX 0.0	False	Force to TRUE	-	False
[3] M-UAD2_2		DO 01	BOOL	QX 0.1	False	Force to TRUE	*	False
[4] M-DA2_3		DO 02	BOOL	QX 0.2	False	No Force	•	False
		DO 03	BOOL	QX 0.3	False	No Force	*	False
		DO 04	BOOL	QX 0.4	False	No Force	*	False
		DO 05	BOOL	QX 0.5	False	No Force	-	False
		DO 06	BOOL	QX 0.6	False	No Force	*	False
		DO 07	BOOL	QX 0.7	False	No Force	*	False
	^	Digital output 10-17	BYTE	QX 1	0			0
		DO 10	BOOL	QX 1.0	False	No Force	-	False
		DO 11	BOOL	QX 1.1	False	No Force	*	False
		DO 12	BOOL	QX 1.2	False	No Force	*	False
		DO 13	BOOL	QX 1.3	False	No Force	*	False
		DO 14	BOOL	QX 1.4	False	No Force	-	False
		DO 15	POOL	OV 1.5	Enles	Nie Course	-	Ealea
							Collap	se All Clear Forced V
, [4							

NOTE:

Output test is possible only if modular IO station is healthy. Confirm status of modular IO station using LED indications on Header module.

Forcing of output continues as long as modular IO station is powered on and in ONLINE monitoring mode. When user tries to go OFFLINE, tool prompt user to clear forced values.



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4 Configure Ethernet/IP Communication Module

Open Engineering Tool GxWorks3 and create new project with selected CPU module as follow.
 [Project] ⇒ [New]

New	x	MELSOFT GX Works3
<u>S</u> eries	RCPU -	Add a module. [Module Name] R08CPU [Start I/O No.] 3E00
<u>Т</u> уре	12 R08	Module Setting Setting Change
Mode	· · · · · · · · · · · · · · · · · · ·	Module Label:Not use
Program Language	Ladder 🗸	
	OK Cancel	Do Not Show this Dialog Again OK

2. Add Network Module RJ1EIP91 module as follow

[Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ Right-click ⇒ [Add New Module]

Module Selection			Soloct Notwork Module
Module Type	Retwork Module		
Module Name	RJ71EIP91		Select RJ1EIP91
Station Type	<u> </u>		
Advanced Settings			
Mounting Position			
Mounting Base	Main Base		
Mounting Slot No.	0	-	
Start I/O No. Specification	Not Set	-	
Start I/O No.	0000 H		
Number of Occupied Points pe	r 1 Sli 32Point		
Station Type			
Select station type.			
]	
	OK	Cancel	

3. Set parameters of RJ1EIP91 as follow

[Navigation window] ⇒ [Parameter] ⇒ [Module Information] ⇒ [RJ1EIP91] ⇒ [Basic Setting]

Item		Setting Value
Various Operations Settings		
Mode Settings	Online	
Own Node Setting	Set the information of the own node such as IP address.	
IP Address Setting	Set the IP address, subnet mask, and default gateway for the own node.	
IP Address	192.168.3.3	
Subnet Mask	255.255.255.0	
Default Gateway		

4. From application program turn ON output Y10 ^{*1} (start EtherNet/IP communication) of RJ71EIP91.

*1 Address of Output Y10 will change depending on slot number of RJ71EIP91 and modules configured in base rack.

5. Download the configuration to CPU module. Now reset the CPU module or turn the system off and on.

[Online] \Rightarrow [Write to PLC].



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5 Add M-EIP-H EDS File to EtherNet/IP Configuration Tool

Following steps explain the procedure to add EDS file in EtherNet/IP Configuration Tool. This is one-time activity after installation of Tool.

 Right click on 'Add' button' in 'Device Library' to register new EDS file. 	 Select location of EDS file and click Next button to continue. 	
EDS Management	EDS Management	
This Wizard allows you to add EDS files.	Select the Location of the EDS File(s) : Add File(s) Add all the EDS from the Directory Directory or File Name : D:\SHILPA\PROJECT\Ethemet IP- Modular IO Header-280618\Uthunga\Fimware Files\1 The EDS files usable in EIP-CT are registered in the EDS base. Select the location of the file(s) and click on Next button to insert the EDS files in the base.	
Click Next Cancel Help EDS file gets correctly added. Click Next to continue EDS Management	Click Next Cancel Help Click Finish button to finish adding EDSs to the library.	
Product Name Status Major Revision Minor Revision Vendor Nar ✓ M-EIP-H Revision 1.1 Correctly added. 1 1 Mtsubishi E ✓ M-EIP-H Revision 1.1 Correctly added. 1 1 Mtsubishi E ✓ Image: Major Revision Image: Major Revision Image: Major Revision New Selected File Click Next Click Next Major Revision Image: Major Revision Mew Selected File	The action is completed.	
<back next=""> Cancel Help</back>	<back cancel="" finish="" help<="" th=""></back>	

• After adding EDS to the Device Library, M-EIP-H device is shown under EtherNet/IP Devices in Device Library tab.





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6 Configure EtherNet/IP Network Using Ethernet/IP Configuration Tool

1. Add scanner module to configuration from configuration description area.

Select "RJ71EIP91" in the EtherNet/IP setting →[Description] →[Properties]



2. Set Scanner IP address

Element Properties	٢.
Element 1:	
Select the Element to Add:	
Type Description	
RJ71EIP91 MELSEC iQ-R Series EtherNet/IP module	
Enter scanner IP address	
IP Address: 192 . 168 . 3 . 3	
OK <u>C</u> ancel Help	

Note: Scanner IP address should be same as one configured in scanner configuration in GX Works3. Refer "Section- 4 (3)".



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3. Drag and drop M-EIP-H module to protocol view area which will pop up dialogue as shown below



Then click on tab "Connections" to configure size of Input and Output.

General Connections Online Parameters M Configured Connections :	Nodule Informations Port Configuration	n EDS File	
M-EIP-H Revision 1.1 General Check Device Identity Configuration Setting	Name Connection No. Time-out Multiplier Input - T->O Input Size Input Mode Priority Trigger Type Request Packet Interval (RPI) Output - O->T Output Size Output Mode Output Type Priority Request Packet Interval (RPI)	Value 1 SE x16 23 Point to Point Fixed Scheduled Cyclic 20 6 Point to P SE Scheduled Scheduled SCH SE SCH SCH SE SCH SCH SCH SCH SCH SCH SCH SCH	T input size
Add Remove Description Refresh period for the output O->T connection	on in milliseconds.	Cancel	Help

Note: Input size and Output size can be set as per IO configuration of Modular IO station. Refer "<u>Section- 3 (6)</u>".

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4. Now M-EIP-H device is configured



5. Click on 🚰 in Main Menu bar to download the configuration to scanner module. This pops up progress window as shown below. After successful downloading, click Ok

herNet/IP Configuration	n Tool for RJ71EIP91	
Target Parameters		
IP Address :	192 . 168 . 3 . 3	
User Name :	MELSEC	EtherNet/IP Configuration Tool for RI71EID01
Password :	RJ71EIP91	
FTP Path :	1	
File to Download : 🔍	EipConfData.BIN	Configuration successfully downloaded in the module.
	configuration.apa	
		OK
		L
Downloa	ad Cancel	

Note:

Reset of CPU module or power recycle of iQ-R PLC is necessary to apply changes in configuration of RJ71EIP91



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7 Monitor Status, IO Data and Diagnostics

7.1 Monitor Network Status

Ethernet I/P network status for scanner and adapter stations can be monitored using

- LED indications on Header module
- Ethernet I/P Configuration Tool
- Engineering Tool GxWorks3
- Modular IO Configurator Tool

Using LED indications on Header module

Communication between Scanner and M-EIP-H is confirmed by LED indications on Header module. Refer LED label on Header module as below.



Sr. No	LED	Color	Color Status Description					
1	PW	Green	ON	System power to Header module is ON				
2	MS	Green	ON	Device operational				
3	NS	Green	ON	Device on-line and has at least one CIP connection is established				
4	I/O PW	Green	ON	Field power to Header module is ON				
5	I/O	Green	ON	Header module is powered ON and communicating with IO module and no error is present.				

Using Ethernet I/P Configuration Tool

Follow the steps below to monitor network status as explained below.

1. Switch EtherNet/IP Configuration Tool to the online state.

[File] ⇒ [Go Online]

2. Enable diagnostic mode.

[Device] ⇒ [Diagnostic]

3. When the diagnostic mode is enabled, the connection status of EtherNet/IP devices is displayed in protocol view area as shown below.



Changes for the Better

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Using Engineering Tool GxWorks3

The status of the Class1 communication and the error details can be checked with the following buffer memory areas.

- a. 'Data link status (Class1)' (Un\G27136 to Un\G27151)
- b. 'Error status (Class1)' (Un\G27152 to Un\G27167)
- c. 'Reserved station (Class1)' (Un\G27168 to Un\G27183)
- d. 'Class1 Connection Behavior Error status' (Un\G27392 to Un\G27647)
- e. 'Node information area' (Un\G28160 to Un\G28170)

Refer "MELSEC iQ-R CPU Module (Application) - SH(NA)-081915ENG-A" user manual for more details.

Using Modular IO Configurator Tool

Open configuration file and connect via USB port. Click on diagnostic function "Header Diagnostics" Voto monitor EtherNet/IP diagnostic information of connected Header module.

Modular IO station provides 2 Ethernet ports (ETH1 and ETH2; Layer 2 switch with DLR support). But scanner RJ1EIP91 supports 1 Ethernet port. User can connect any one of the port of Modular IO station. Accordingly, diagnostics of the port can be monitored.

	Diagnostics	Value	Description		
 Slots 48-63 Interface (ETH1) 	EtherNet/IP Communication I	Diagnostic			
Interface status		1	Ethernet interface status (0 : Link down, 1: Link up).		
Interface speed		100	10MB or 100MB.		
Interface (ETH2)		ł			
Ethernet Link (ETH	H1)				
Received byte co	unt	6591008	Number of bytes received.		
Received unicast	frames count	13564	Number of unicast frames received.		
Received non uni	cast frames count	4649	Number of non-unicast frames received.		
Sent byte count	Sent byte count		Number of bytes transmitted.		
Sent unicast fram	Sent unicast frames count		Number of unicast frames transmitted.		
Sent non unicast	frames count	0	Number of non-unicast frames transmitted.		
Large error count	t	0	Number of frames received with large frame error.		
Align error count		0	Number of frames received with alignment error.		
FCS error count		0	Number of frames received with CRC/FCS error.		
Receive error cou	int	0	Number of frames with other receive errors.		
Single collision co	ount	0	Number of frames transmitted after single collision.		
Multi collision co	unt	0	Number of frames transmitted after multiple collisions.		
Drop count		0	Number of frames dropped after excessive collisions.		
Sent error count		0	Number of frames with other transmit errors.		
Ethernet Link (ETH	H2)				
CIP Diagnostics					



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7.2 Monitor IO Data

After communication between Scanner and M-EIP-H is established, IO data sharing between RJ71EIP91 and M-EIP-H will start as shown below.



- (1): Connection open (2): Response
- (3) : Input data updation (4) : Output data updation

The table below shows how Header memory IX, IW, SB, QX and QW is mapped to Input and output memory of scanner module.

Input memory area

Module	Buffer Memory Address	Byte 1	Byte 0
M-16D	Un\G65536	IX1	IX0
M-UAD2	Un\G65537	IW0	
	Un\G65538	IW1	
	Un\G65539	SB1	SB0
	Un\G65540	SB3	SB2
	Un\G65541	SB5	SB4
	Un\G65542	SB7	SB6
	Un\G65543	SB9	SB8
	Un\G65544	SB11	SB10
	Un\G65545	SB13	SB12
	Un\G65546	SB15	SB14
	Un\G65547		SB16

Output memory area

Module	Buffer Memory Address	Byte 1	Byte 0
M-16TE	Un\ G196608	QX1	QX0
M-DA2	Un\ G196609	QW0	
	Un\ G196609	QW1	

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Note:

- 1. Refer "MELSEC qi-R CPU Module (Application)- SH(NA)-081915ENG-A" manual for buffer memory details.
- 2. In case of FX5-ENET/IP buffer memory will be as follow:
 - Input Memory Area : Un\G12000 to Un\G35999
 - Output Memory Area : (Un\G60000 to Un\G83999)

Refer "MELSEC I-F FX5-ENET/IP User's Manual: SH(NA)-082027ENG-A" manual for buffer memory details.

IO data can be monitored on individual Header module using Modular IO Configurator Tool

Following steps explain how to monitor IO data and diagnostics of a modular IO station in online mode,

- 1. Click on function = to connect to Header module. Icon changes to and Status bar is updated as ONLINE.
- 2. Select Header module in Project Organiser window and click on tab "IO data" to monitor diagnostics (SB memory) of Header module.



3. Select IO module in Project Organiser window and click on tab "IO data" to monitor IX of selected M-16D module.

Project		Edit	Check	Online	Diagnos	tics IO Map	
t Organiser 🔹 🖡		System IO I	Data	Parameters	Help		
Test_Project		Channel	Data Type	Local Address	Field Bus Value	Forced Value	Actual Value
M-EIP-H (Online)		Digital input					
(1) M-16D_0 *		Digital input 00-07	BYTE	DX 0	0		0
[2] M-16TE_1		DI 00	BOOL	IX 0.0	False	-	False
[3] M-UAD2_2		DI 01	BOOL	DX 0.1	False	*	False
🙀 [4] M-DA2,3		DI 02	BOOL	DX 0.2	False		False
		DI 03	BOOL	DX 0.3	False		False
		DI 04	BOOL	DX 0.4	False		False
		DI 05	BOOL	DX 0.5	False	*	False
		DI 06	BOOL	DX 0.6	False		False
		DI 07	BOOL	DX 0.7	False		False
	50	Digital input 10-17	BYTE	IX 1	0		0
		DI 10	BOOL	DX 1.0	False		False
		DI 11	BOOL	DX 1.1	False		False
		DI 12	BOOL	DX 1.2	False		False
		DI 13	BOOL	IX 1.3	False	-	False
		DI 14	BOOL	DX 1.4	False		False
		DI 15	BOOL	DX 1.5	False		False
		DI 16	BOOL	DX 1.6	False		False
		DI 17	BOOL	DX 1.7	False		False



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4. Select IO module in Project Organiser window and click on tab "IO data" to monitor QX of selected M-16TE module.

		6 6 1 1	↓	~	말 于	10	0 🔎 🚺	\$\$	~		
Project	1	Edit		Check		Online		Diagnostics	IO Map		
ct Organiser 🔹 🖣		System	IO Dat	а	Param	eters	Help				
Test_Project		Channel		Data	Type Lo	al Address	Field Bus Valu	e	Forced Value		Actual Value
M-EIP-H (Online)	E 1	Digital output									
[1] M-16D_0	-	Digital output 00-07		BY	TE	QX 0	0				0
[2] M-16TE_1		DO 00		BO	OL	QX 0.0	False		No Force	*	False
[3] M-UAD2_2		DO 01		BO	OL	QX 0.1	False		No Force	*	False
[4] M-DA2_3		DO 02		BO	OL	QX 0.2	False		No Force	*	False
		DO 03		BO	OL	QX 0.3	False		No Force	*	False
		DO 04		BO	OL	QX 0.4	False		No Force	*	False
		DO 05		BO	OL	QX 0.5	False		No Force	Ψ.	False
		DO 06		BO	OL	QX 0.6	False		No Force	-	False
		DO 07		BO	OL	QX 0.7	False		No Force	*	False
	^	Digital output 10-17		BY	TE	QX 1	0				0
		DO 10		BO	OL	QX 1.0	False		No Force	-	False
		DO 11		BO	OL	QX 1.1	False		No Force	Ŧ	False
		DO 12		BO	OL	QX 1.2	False		No Force		False
		DO 13		BO	OL	QX 1.3	False		No Force	Ŧ	False
		DO 14		BO	OL	QX 1.4	False		No Force		False
		DO 15		BO	OL	QX 1.5	False		No Force	*	False
		DO 16		BO	OL	QX 1.6	False		No Force	÷	False
		DO 17		BO	OL	QX 1.7	False		No Force	*	False

Note: Follow the above procedure to monitor IO data of M-UAD (IW) and M-DA2 (QW).



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7.3 Monitor Diagnostics

Detailed diagnostics of Ethernet ports ETH1/ETH2 and each IO module in individual Modular IO station can be monitored locally as explained below.

- 1. Click on function 🔚 to connect to Header module. Icon changes to 👫 and Status bar is updated as ONLINE.
- 2. Click on diagnostic function "Header Diagnostics" 😵 r monitoring diagnostic information of connected Header module.

This pops up following window of "HEADER DIAGNOSTIC INFORMATION".

HEADER DIAGNOSTIC INFORMATION : [M-EIP-H]			>
			Expand All
Diagnostics	Value	Description	
Identification			
Version Info			
+ Hardware			
IP setting			
Memory size			
Header scan time			
Diagnostic Summary			
+ Slots 0-15			
* Slots 16-31			
+ Slots 32-47			
+ Slots 48-63			
Interface (ETH1)			
+ Interface (ETH2)			
Ethernet Link (ETH1)			
Ethernet Link (ETH2)			
CIP Diagnostics			
+ DLR			
			OK



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Header diagnostics are categorized for easy monitoring. User can monitor individual parameter by expanding individual diagnostic.as shown below.

HEADER	DIAGNOSTIC INFORMATION : [QQQ]			
				Expar
	Diagnostics	Value	Description	
nostics	Biagnostic Summary			_
mary	No. of configured slots	5	No. of configured slots.	
	No. of detected slots	5	No. of detected slots.	
wise	Status	0	Bitwise status of header module.	
ules	sTots 0-15		-	
	Detected	000000000011111	Bitwise module detection status.	
*	Healthy	000000000011111	Bitwise module health status.	
· · · · · · · · · · · · · · · · · · ·	O error	0000000000000000	Bitwise status of module mismatch or absent.	
· · · · · · · · · · · · · · · · · · ·	COM error	000000000000000000000000000000000000000	Bitwise status of module COM error after power ON.	
*	Fatal error	000000000000000000000000000000000000000	Bitwise status of module fatal error.	
	Non-fatal error	000000000000000000000000000000000000000	Bitwise status of module non-fatal error.	
erNet/IP	Slots 16-31		•	
gnostic	Slots 32-47			
	Slots 48-63			
	nterface (ETH1)			
·]	interface status	1	Ethernet interface status (0 : Link down, 1: Link up).	
•	interface speed	100	10MB or 100MB.	
+ I	nterface (ETH2)			
	Ethernet Link (ETH1)			
*	Received byte count	137658	Number of bytes received.	
•	Received unicast frames count	717	Number of unicast frames received.	
-	Received non unicast frames count	49	Number of non-unicast frames received.	

3. Slot diagnostic information provides configured modules and present modules, hardware versions and firmware versions of present modules, slot level error code, etc.

Click on function "Slot diagnostics" 🍪 to monitor slot diagnostics.

This pops up following window of "SLOT DIAGNOSTIC INFORMATION".

							Tr.		_
Slot Vendor	Configured	Present Module	Ver. Configured Module	Ver. Present Module	HW Ver.	FW Ver.	Backplane Ver.	Error	
0 1	M-EIP-H	M-EIP-H	1.1.0.0	1.1.0.0	1.0.0.0	0.0.0.1	0.0.0.8	0000	
1 1	M-16D	M-16D	1.1.0.0	1.0.0.1	1.0.0.0	1.0.0.1	0.0.0.7	0000	
2 1	M-16TE	M-16TE	1.1.0.0	1.1.0.0	1.0.0.0	1.1.0.0	0.0.0.3	0000	·
3 1	M-UAD2	M-UAD2	1.1.0.0	1.1.0.0	1.0.0.0	1.1.0.0	0.0.0.3	0000	
4 1	M-DA2	M-DA2	1.1.0.0	1.1.0.0	1.0.0.0	1.1.0.0	0.0.0.3	0000	
List of user Header mod modules co	names of dule and IO nfigured Lis He ph	st of user nar eader module hysically attac	er names of connected nodule and IO modules v attached to the Header.		lardware vers	mware ve esent mod sion of les.	rsion of lules Error cod individua	le of I modu	lle



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MITSUBISHI ELECTRIC INDIA PVT. LTD.

Factory Automation and Industrial Division EL-3, J Block, MIDC, Bhosari, PUNE – 411 026 (INDIA) **Email** – <u>mei-faid-enquiry@asia.meap.com</u> **Web** – <u>http://in.mitsubishielectirc.com</u>

