	Interfacing Modular IO Header M-CCB-H with Mitsubishi PLCs on CC-Link IE Field Basic Network

Quick Start Guide

Published Date: 25th July 2018
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1   Scope of Document

This is a Quick Start Guide to interface Mitsubishi Electric India make Modular IO with Mitsubishi PLCs (iQ-R, iQ-F, Q and L) on CC-Link IE Field Basic network.

Prerequisites

1. Engineering Tool [GX Works3/GX Works2]

   Following updated firmware versions/serial numbers (first five digits) of the CPU module and software versions of GX Works3/GX Works2.

• **MELSEC iQ-R**

Function	CPU module Firmware Version	GX Works3 software version
CC Link IE Field Network Basic	"25" or Later	"1.030G"or later

• **MELSEC iQ-F**

Function	CPU module Firmware Version	GX Works3 software version
CC Link IE Field Network Basic	"1.040" or Later	"1.030G"or later

• **MELSEC –Q/L**

Function	CPU module serial number (first five digits)	GX Works2 software version
CC Link IE Field Network Basic	"18112" or Later	"1.555D"or later

2. Modular IO setup

   a. Modular IO Configurator Tool V1.2.0.0 or Onwards.

   b. Modular IO Profile file "0x2071_M-CCB-H_0x0001_en.CSPP.zip".

   Download above files from Mitsubishi Electric India website.

References

   a. Modular IO User Manual [Manual Number : N16001AAMH]
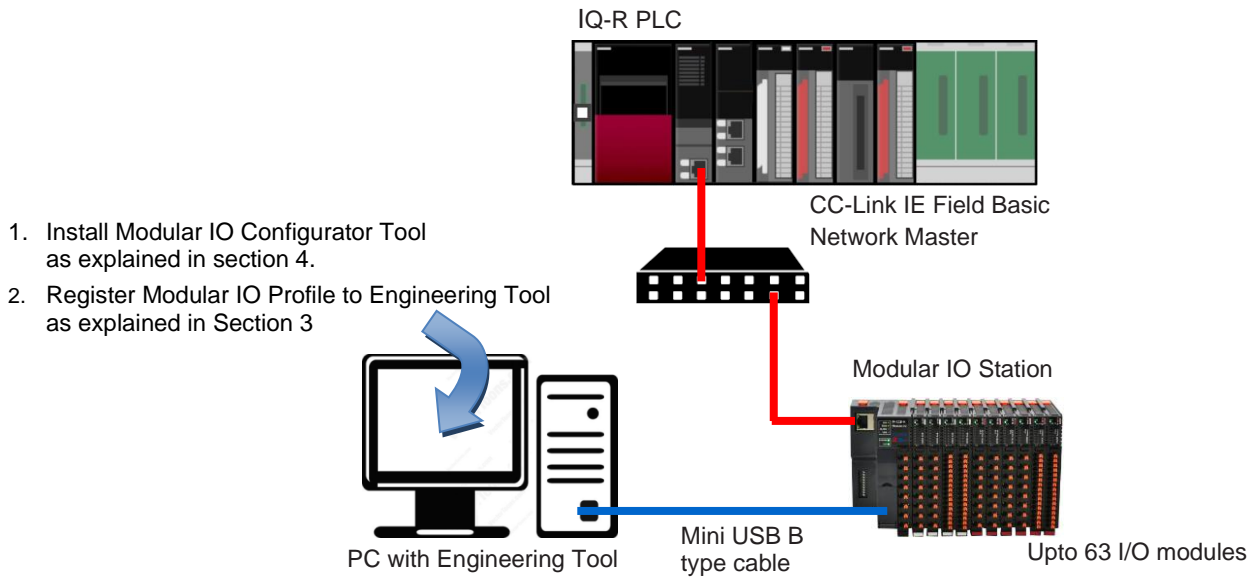   b. CC-Link IE Field Network Basic [Manual Number: SH (NA)-081684ENG-D] and onwards.

Follow the steps below to interface Modular IO with Mitsubishi PLC.

   1. Prepare Hardware Setup

   2. Register Modular IO Profile in Engineering Tool

   3. Install Modular IO Configurator Tool

   4. Configure Modular IO Station using Modular IO Configurator Tool

   5. Set Parameters in CC-Link IE Field Basic Network Setting in Engineering Tool

   6. Monitor Status and Diagnostics

Subsequent sections explain necessary steps in detail.

2   Hardware Setup

Setup diagram below shows setup with iQ-R PLC as a Master and Modular IO as a Slave device.

IQ-R PLC

CC-Link IE Field Basic
Network Master

1. Install Modular IO Configurator Tool as explained in section 4.

2. Register Modular IO Profile to Engineering Tool as explained in Section 3

Modular IO Station

PC with Engineering Tool

Mini USB B type cable

Upto 63 I/O modules

Setting of Station IP Address

Example shows DIP switch setting for value of 235

235= 200 + 20+10 +4+1
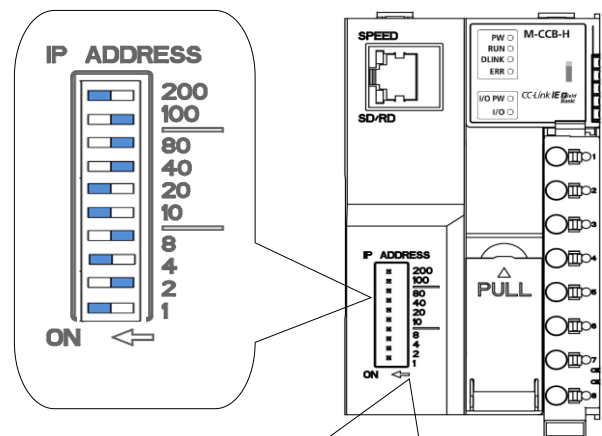
- IP address consists of 4 octets.
- The fourth octet is set by using DIP switches
- First three octets of IP address are assigned by network master station.

3   Register Modular IO Profile in Engineering Tool

This section explains how to register Modular IO profile in Engineering Tool so that Modular IO (M-CCB-H) appears in the Module List of Network Configuration Setting → CC-Link IEF Basic Configuration

1. Start GX Works3 and execute command "Tool" → "Profile Management" → "Register".
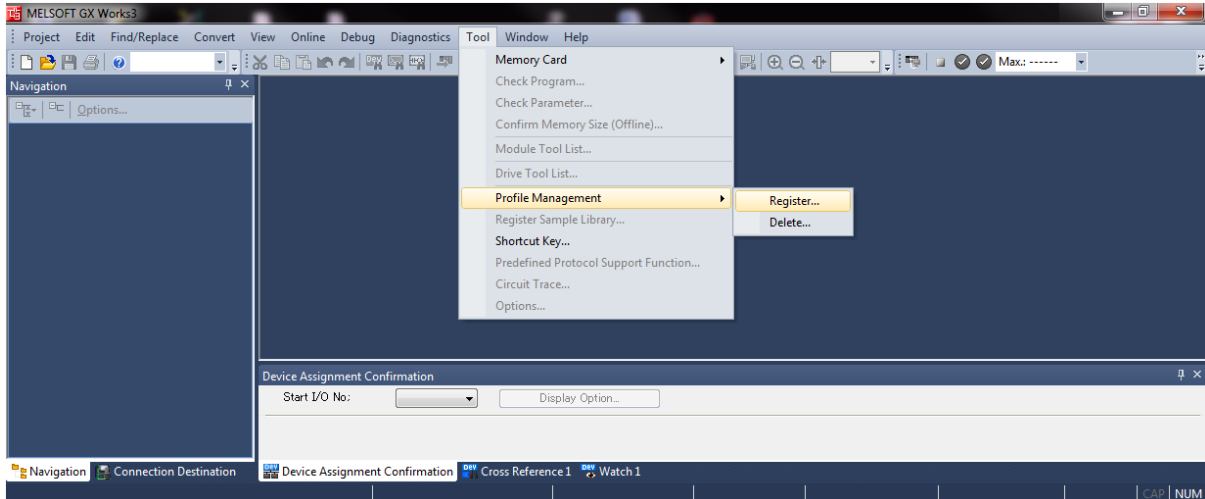
This will invoke "Register Profile" dialogue. Browse Modular IO profile file "0x2071_M-CCB-H_0x0001_en.CSPP.zip" and click on "Register" button. You will get message "Registration of the profile is completed "on successful completion.

2. After registration, M-CCB-H can be seen in the Module List of "CC-Link IEF Basic Configuration" as shown below.

To view the CC-Link IEF Basic Configuration window,

[Navigation window] ⇨ [Parameter] ⇨ [CPU module model name] ⇨ [Module Parameter] ⇨ [Basic Settings] ⇨ [CC Link IEF Basic Setting] ⇨ [Network Configuration Setting] and then click on<Detailed Setting>
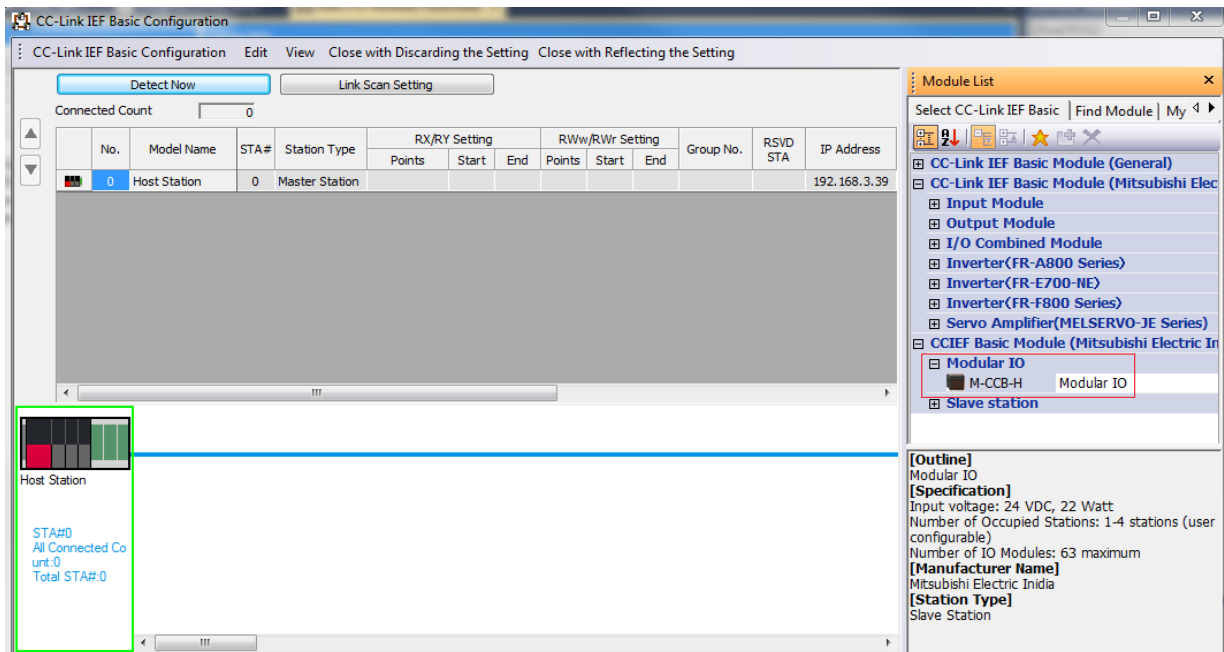
NOTE:

Follow the same procedure to register Modular IO profile in GX Works 2.

4   Install Modular IO Configurator Tool

You should have following installer files stored at the same location.

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

   Clc on Next button to complete installation of Modular IO Configuration Tool Setup, Communication Component Setup and Device Driver
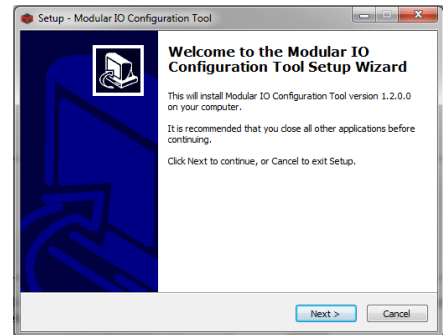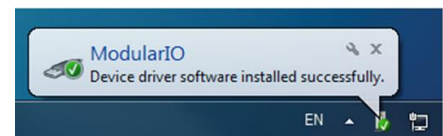
2. Click on Finish button to complete Modular IO Configuration Tool Setup.
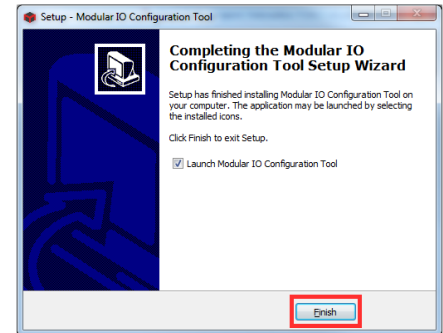
3. Connect the Modular IO Header module (M-CCB-H) to the machine using USB (2.0) cable. For the first time, the driver automatically is searched and configured. Please wait for few minutes while this step is executed.
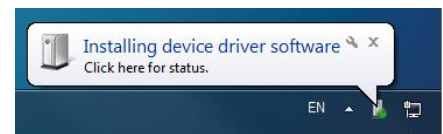
4. Once the driver is successfully installed, following message will appear.

5   Configure Modular IO Station

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

5.1 Configuration of Modular IO Station

Example here shows configuration of following modules.

Description	Ordering Code	Quantity
CC Link IE Field Basic Header Module	M-CCB-H	1
16 Digital Input, 24 VDC, Sink Type (Negative Common) Module	M-16D	1
16 Digital Output, 24 VDC, Source Type Module	M-16TE	1
2 Channel Universal Analog Input Module	M-UAD2	1
2 Channel Analog Output Voltage/ Current Module	M-DA2	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
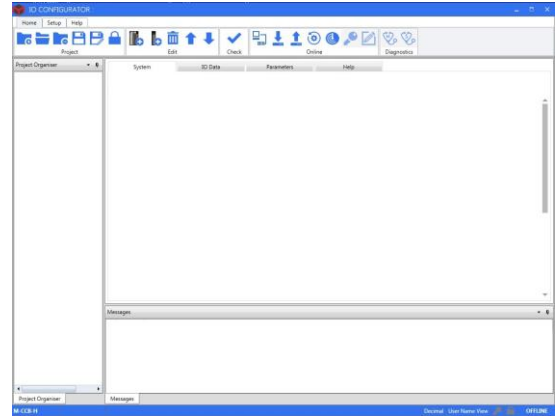
2. Click on [icon] create new project. This operation opens "Create Project" window.

   Enter project name, browse path where project file will be saved. Select Bus type as CC-Link IE Field Basic.
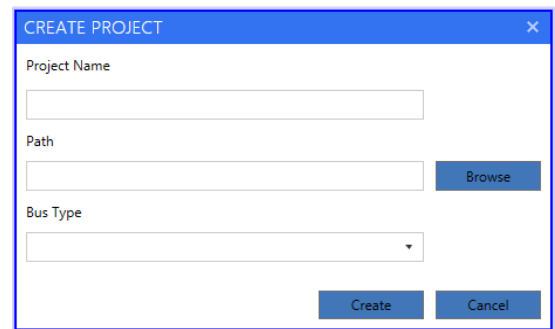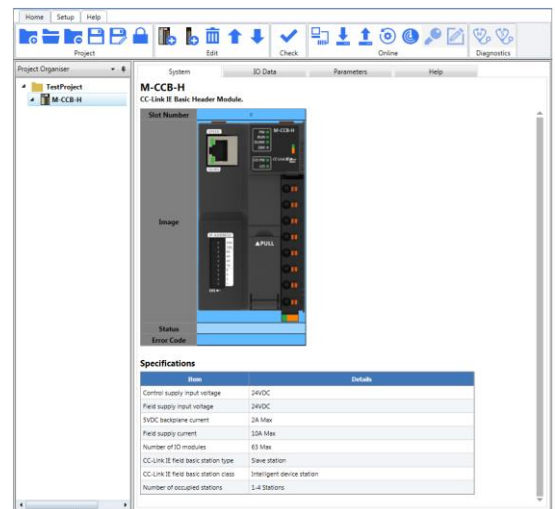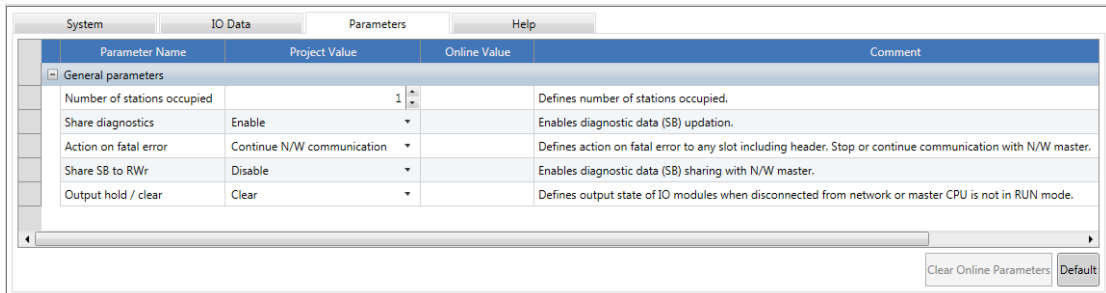
3. Add and configure Header module.

   Click on function [icon] this opens *Add Header* dialogue box and shows list of Header modules of selected Bus Type. Select Header module M-CCB-H and click on *Add* button.
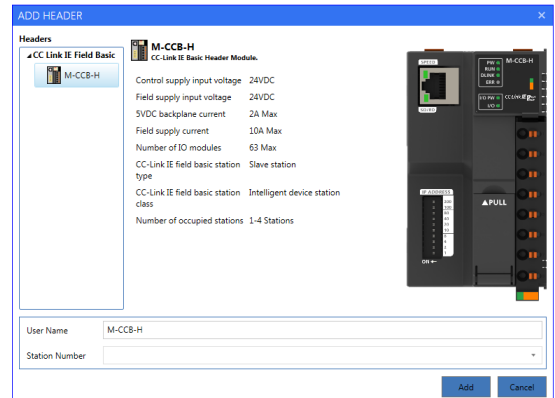
   Added Header module is displayed in tree view as well as in System tab of working area as beside.
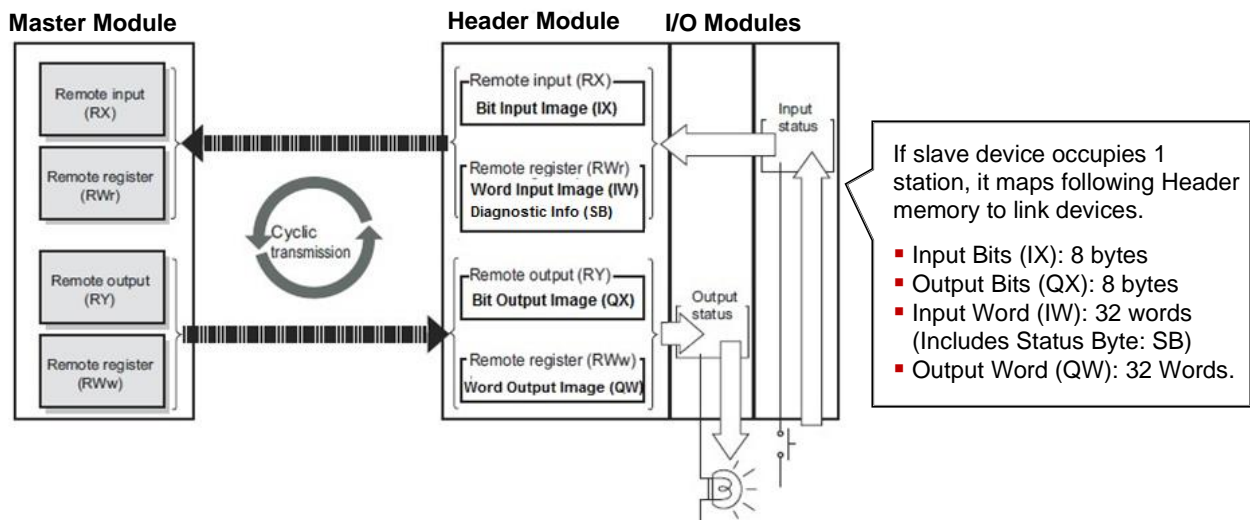
4. Select Header module from Project Organiser window and click on "Parameters" tab to set Header configuration parameters. User can modify Project Values for individual parameter.

Parameter Name	Project Value	Online Value	Comment
General parameters			
Number of stations occupied	1		Defines number of stations occupied.
Share diagnostics	Enable		Enables diagnostic data (SB) updation.
Action on fatal error	Continue N/W communication		Defines action on fatal error to any slot including header. Stop or continue communication with N/W master.
Share SB to RWr	Disable		Enables diagnostic data (SB) sharing with N/W master.
Output hold / clear	Clear		Defines output state of IO modules when disconnected from network or master CPU is not in RUN mode.

Number of stations occupied can be configured as 1 to 4. The same number should be configured in Network Configuration Settings in CC-Link IEF Basic Configuration in Engineering Tool.

The figure below shows memory mapping of Header module memory (IX, QX, IW, QW and SB) to link devices (RX, RY, RWr and RWw).

If slave device occupies 1 station, it maps following Header memory to link devices.

- Input Bits (IX): 8 bytes
- Output Bits (QX): 8 bytes
- Input Word (IW): 32 words (Includes Status Byte: SB)
- Output Word (QW): 32 Words.

So user can configure following IO modules, if number of stations occupied is 1.

| Header memory	Number of Points	IO module	Max. Number of Modules if Share diagnostics	
			Disable	**Enable**
Input Bits (IX)	64 bits	16-Pt digital input	4	
		8-Pt /4-Pt digital input	8	
Output Bits (QX)	64 bits	16-Pt digital output	4	
		8-Pt /4-Pt digital output	8	
Input Word (IW)	32 words	2-Ch analog input	16	5
		4-Ch analog input	8	3
Output Word (QW)	32 words	2-Ch analog output	16	10
		4-Ch analog output	8	6

NOTE:

1. SB memory is shared with network master if "Share SB to RWr" parmeter is set as 'Enable'.

2. IW memory is mapped to RWr memory and then SB memory is mapped to RWr memory consecutively

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.
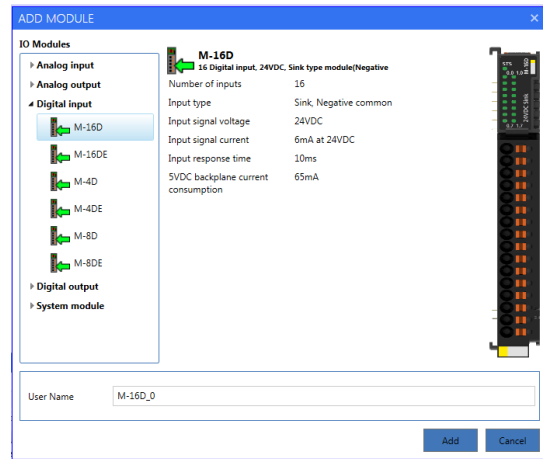
Select M-16TE Digital output module and click on Add button.
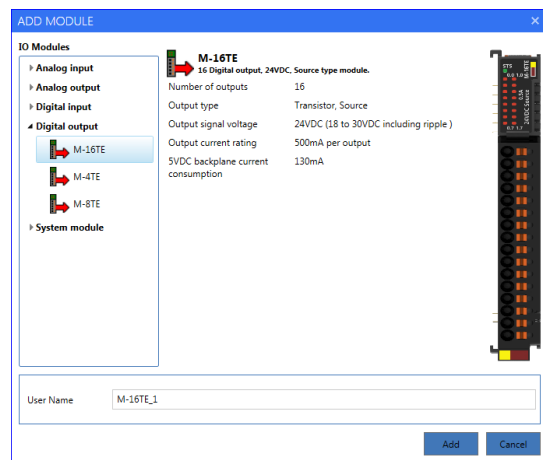
Follow the same procedure to Add M-UAD2 and M-DA2. Then configure analog IO channels as per the application requirement. User can configure IO type and engineering scaling. Added IO modules are displayed in tree view and in System tab in working area as shown as below.
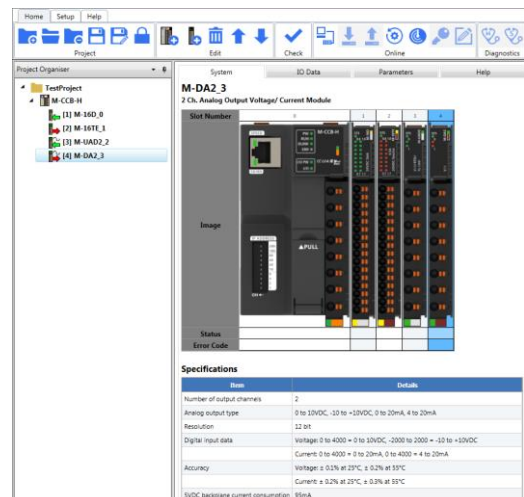
6. User should attach Bus End module (M-BE) at the last slot position if there are 16 or more IO modules.

7. Connect Header module to your machine via standard USB cable.

   Click on 📥 to download the configuration to connected Header module. This pop ups progress window as shown below. After successful downloading, click Ok.
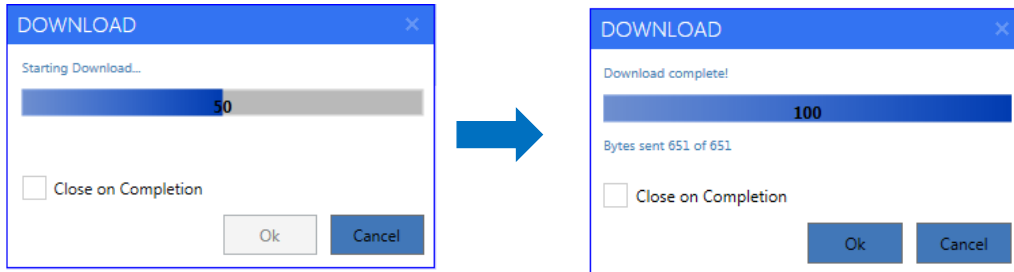

5.2 Special Features of Modular IO Configurator Tool

1. Scan IO modules connected to Header module:

   Tool facilitates quick configuration of a modular IO station if setup is available with IO modules actually 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.

Click here to start scanning
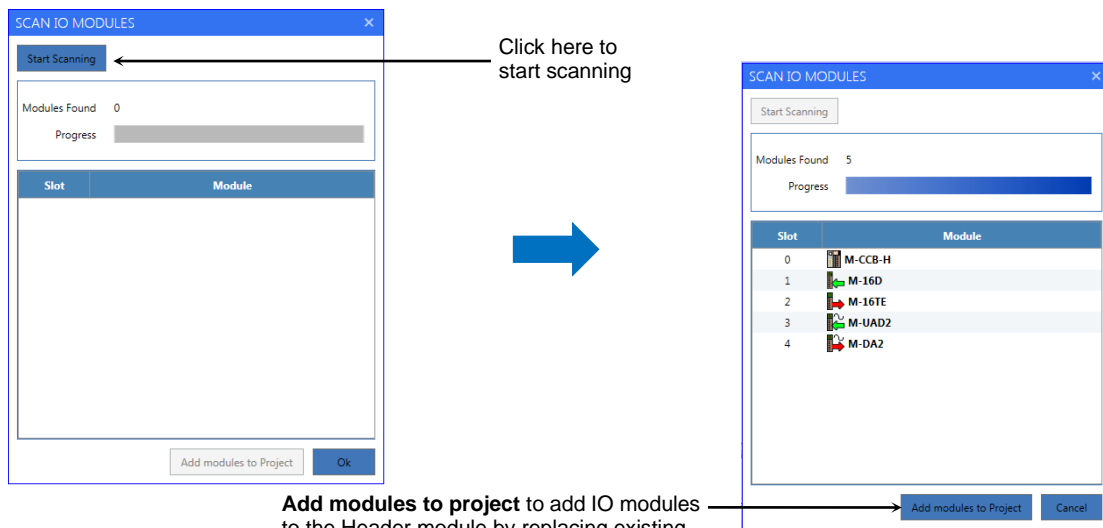
Add modules to project to add IO modules to the Header module by replacing existing IO modules if any.

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 🔑 .Icon changes color to red 🔑 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.

   Colour 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.

For digital output, function "Enable/ Disable output test" 🔑 and "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.
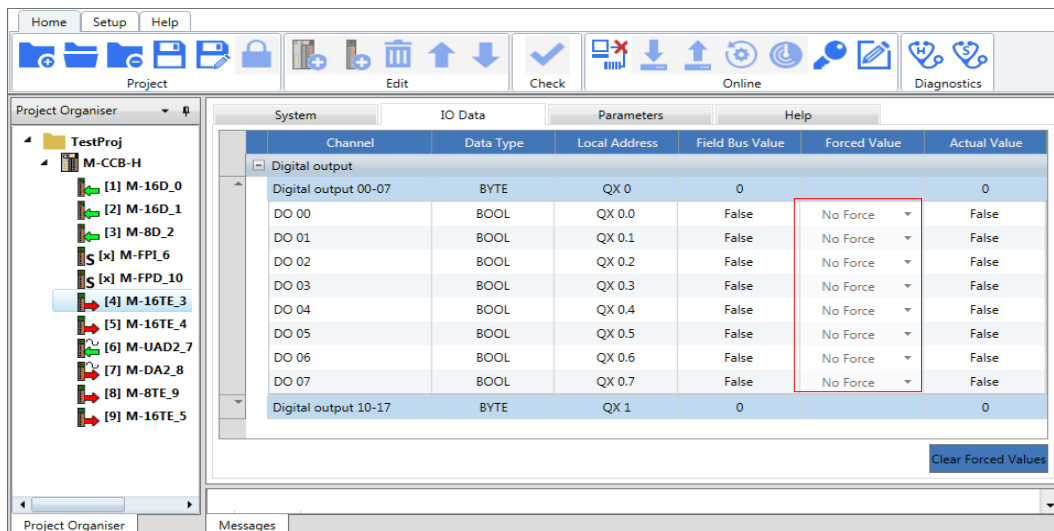
Click on function 🔑 Icon changes color to red 🔴 This enables output test feature and allows forcing of individual output as shown.
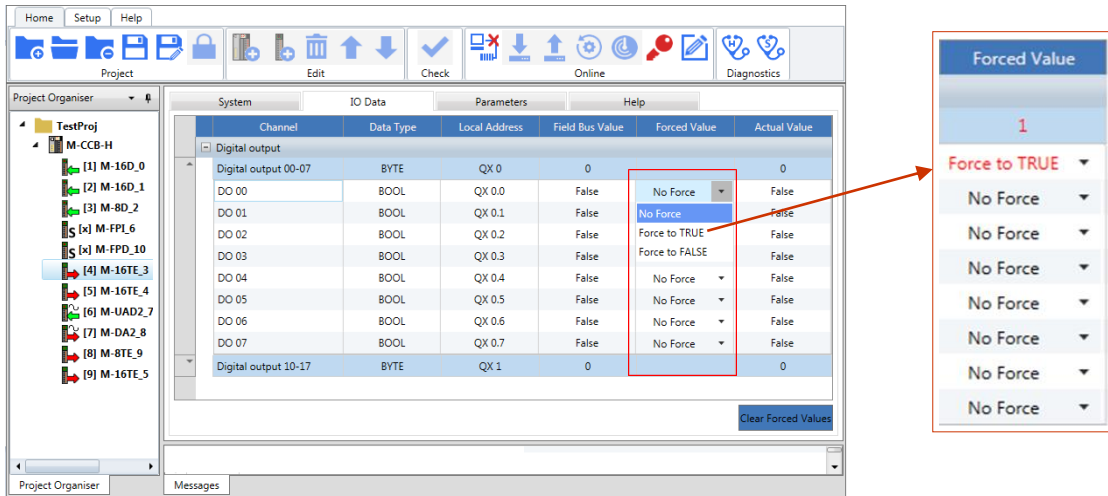
After selection of either Force to TRUE or Force to FALSE, online changed force value for output turns red as shown above.

Clicking on function ✏️ writes online changed force value to actual value and force value changes colour as blue as below.
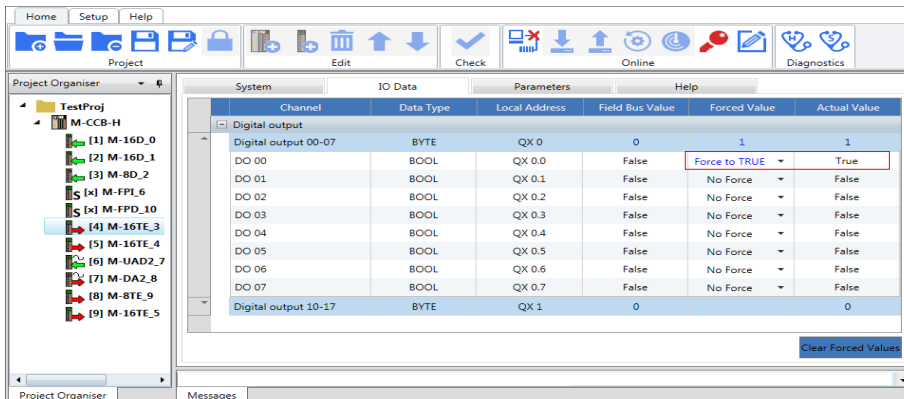
NOTE

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.

6 Set Network Configuration Setting in Engineering Tool

6.1 MELSEC iQ-R/ iQ-F Settings for the Master Station

Settings for the master station in MELSEC iQ-R/ MELSEC iQ-F are set in GX Works 3.

CC-Link IEF Basic Setting

This section describes how to configure the basic settings such as whether to use CC-Link IE Field Network Basic.

• MELSEC iQ-R

[Navigation window] ⇨ [Parameter] ⇨ [CPU module model name] ⇨ [Module Parameter] ⇨ [Basic Settings]

• MELSEC iQ-F

[Navigation window] ⇨ [Parameter] ⇨ [CPU module model name] ⇨ [Module Parameter] ⇨ [Ethernet Port] ⇨ [Basic Settings]

Set "IP Address", "Subnet Mask Pattern", and "Default Router IP Address" in the "IP Address Setting" window.

IP Address	
IP Address	192.168. 3. 39
Subnet Mask	255.255.255. 0
Default Gateway	192.168. 3.100

After the IP address setting above, then set "CC-Link IEF Basic Setting "

Window

CC-Link IEF Basic Setting	
To Use or Not to Use CC-Link IEF Basic Setting	Disable
Network Configuration Settings	<Detailed Setting>
Refresh Settings	<Detailed Setting>

Displayed items

Item	Description	Setting Range	Default
To Use or Not to Use CC-Link IEF Basic Setting	Set whether to use CC-Link IE Field Network Basic.	• Enable • Disable	Disable
Network Configuration Settings	Set the information of the slave station to the master station. Moreover, configure link scan settings (timeout time and number of retries for slave station disconnection detection).	---	---
Refresh Settings	Configure the settings to automatically link refresh RX/RY/ RWr/ RWw data to the devices.	---	---

Network Configuration Settings

Set the network configuration.

Window
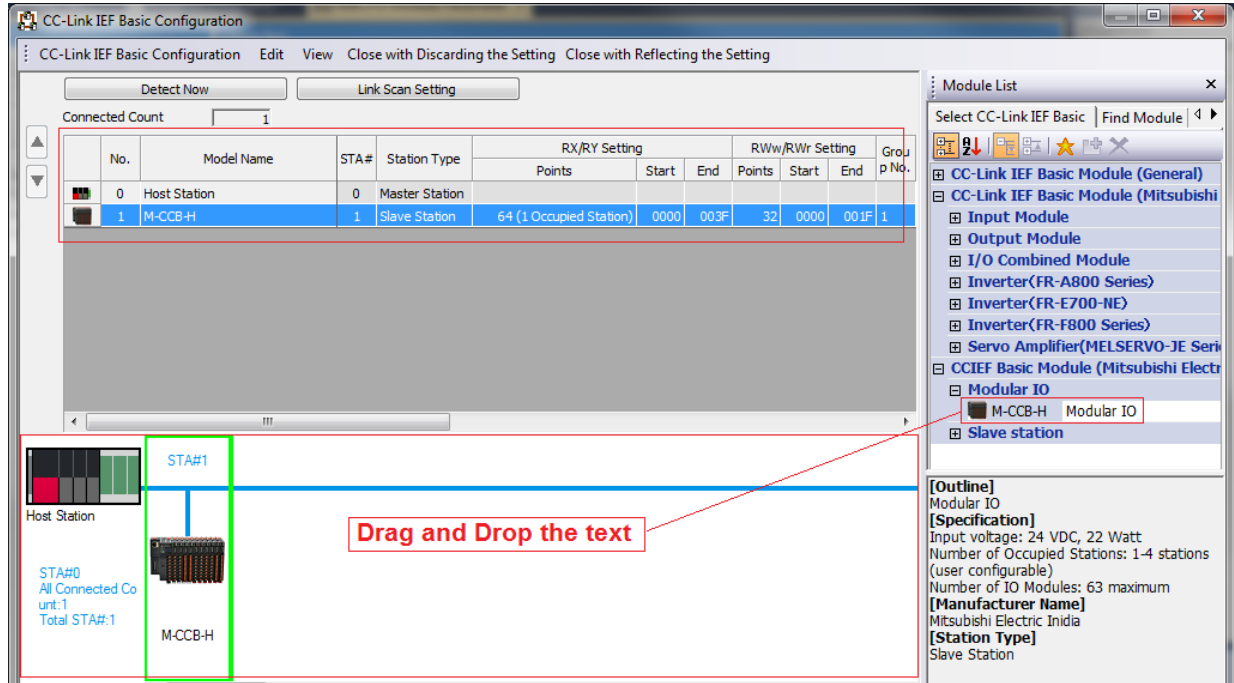
Refresh Settings

Set refresh parameters.

Window

Displayed items

Item		Description	Setting Range	Default
Link Side		The number of points for the link devices (RX/RY, RWr/RWw) for the number of occupied stations and start/end device number set in the network configuration settings are displayed.		
CPU Side	Target	The target destination to be link refreshed is displayed.	Specify Device	(Empty)
	Device Name	Set the device of the link refresh target.	X, Y, M, L, B, D, W, R	(Empty)
	Points	The number of device points for the link refresh target is displayed. (The same value as the number of points on the link side is displayed.)		
	Start	Set the start device number within the link refresh range.	Follow the device settings of the CPU parameters	
	End	The end device number within the link refresh range is displayed.		

The below screen shot shows Device Names and Start and end addresses for an example.

Link Side					CPU Side				
Device Name	Points	Start	End		Target	Device Name	Points	Start	End
RX	64	00000	0003F		Specify Device ▼	X ▼	64	00100	0013F
RY	64	00000	0003F		Specify Device ▼	Y ▼	64	00100	0013F
RWr	32	00000	0001F		Specify Device ▼	D ▼	32	0	31
RWw	32	00000	0001F		Specify Device ▼	D ▼	32	32	63

The following table shows mapping of Header module memory to link devices.

Link Side	CPU Side Address	Header Side Address	IO Modules
RX : 64bits	X00100 - X0010F	IX0-IX1	M-16D
	X00110-X0013F	Unused	
RY : 64 bits	Y00100 - Y0010F	QX0-QX1	M-16TE
	Y00110-Y0013F	Unused	
RWr : 32 Words	D0- D1	IW0-IW1	M-UAD2
	D2-D31	Unused	
RWw : 32 words	D32-D33	QW0-QW1	M-DA2
	D34-D63	Unused	

The number of link points per slave station is 64 points for RX/RY and 32 points for RWr/RWw.

However, by changing the number of occupied stations, RX/RY can be set to a maximum of 256 points in increments of 64 points and RWr/RWw can be set to a maximum of 128 points in increments of 32 points.

Number of occupied stations configured decides size of memory to be shared with master during cyclic transmission as shown below

No. of occupied stations	RX	RY	RWr	RWw
1	64 bit	64 bit	32 word	32 word
2	128 bit	128 bit	64 word	64 word
3	192 bit	192 bit	96 word	96 word
4	256 bit	256 bit	128 word	128 word

If the number of link points for the slave station is changed, the assignment range and station number are changed

Ex.
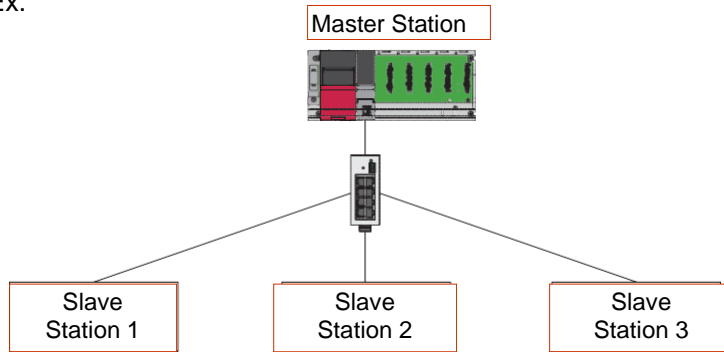
- Slave station 1: 1 station occupied
- Slave station 2: 2 stations occupied
- Slave station 3: 4 stations occupied

The following table lists the number of link points.

Slave Station	Number of occupied station	RX/RY Setting			RWr/ RWw Setting		
		No of Points	Start	End	No of Points	Start	End
1	1	64	0	3F	32	0	1F
2	2 stations occupied	128	40	BF	64	32	5F
3	4 stations occupied	256	C0	1BF	128	96	DF

NOTE:

Setting the number of link points for a slave station to 2 stations occupied means that two slave stations are connected. Thus, if the number of link points is increased, the number of connectable slave stations per network is decreased.

6.2   MELSEC-Q/L Settings for the Master Station

Settings for the master station in MELSEC-Q are set in GX Works2.

CC-Link IEF Basic Setting

This section describes how to configure whether to use CC-Link IE Field Network Basic and the settings of the refresh parameters.

[Project window] ⇨ [Parameter] ⇨ [PLC Parameter] ⇨ [Built-in Ethernet Port Setting] tab ⇨ [CC-Link IEF Basic Setting]   button.

To display the "CC-Link IEF Basic Setting" window, set "IP Address", "Subnet Mask Pattern", and "Default Router IP Address" in the "IP Address Setting" window.

Window

Displayed items

Item		Description	Setting Range	Default
Use the CC-Link IEF Basic		Set whether to use CC-Link IE Field Network Basic.	Checked Unchecked	Unchecked
Network Configuration Settings	[Network Configuration Settings] button	Set the information of the slave station to the master station.		
Refresh Setting	Link Side	The number of points for the link devices (RX/RY, RWr/ RWw) for the number of occupied stations and start/end device number set in the network configuration settings are displayed.		

Item			Description	Setting Range	Default
Refresh Setting	CPU Side	Device Name	Set the device of the link refresh target.	X, Y, M, L, D, W, R, ZR	(Empty)
		Points	The number of device points for the link refresh target is displayed. (The same value as the number of points on the link side is displayed.)		
		Start	Set the start device number within the link refresh range.	Follow the device settings of the CPU parameters.	(Empty)
		End	The end device number within the link refresh range is displayed.		

7   Monitor Status and Diagnostics

After Network Configuration Setting, develop application program as per application requirement and download to MELSEC PLC.
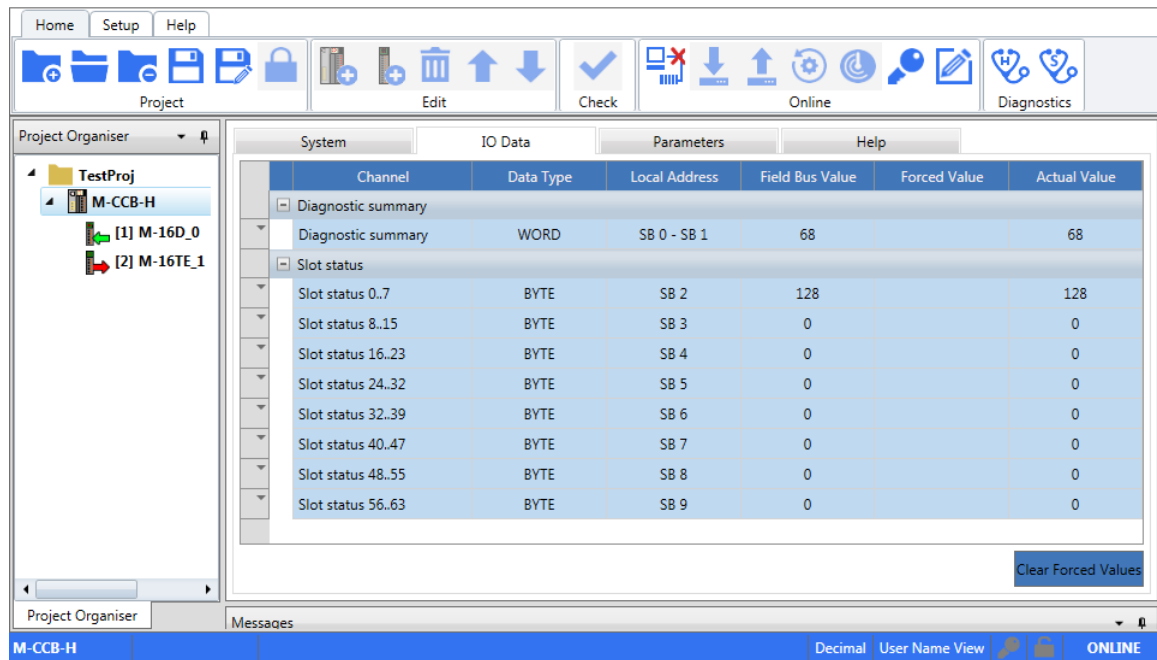
Monitor individual Modular IO station status and diagnostics locally using Modular IO Configurator Tool as explained in section 7.1.

Monitor CC-Link IE Field Network Basic diagnostics using Engineering Tool as explained in section 7.2.

7.1   Modular IO Diagnostics

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.

Channel	Data Type	Local Address	Field Bus Value	Forced Value	Actual Value
Diagnostic summary					
Diagnostic summary	WORD	SB 0 - SB 1	68		68
Slot status					
Slot status 0..7	BYTE	SB 2	128		128
Slot status 8..15	BYTE	SB 3	0		0
Slot status 16..23	BYTE	SB 4	0		0
Slot status 24..32	BYTE	SB 5	0		0
Slot status 32..39	BYTE	SB 6	0		0
Slot status 40..47	BYTE	SB 7	0		0
Slot status 48..55	BYTE	SB 8	0		0
Slot status 56..63	BYTE	SB 9	0		0

Clear Forced Values

Select IO module in Project Organiser window and click on tab "IO data" to monitor IX of selected M-16D module.
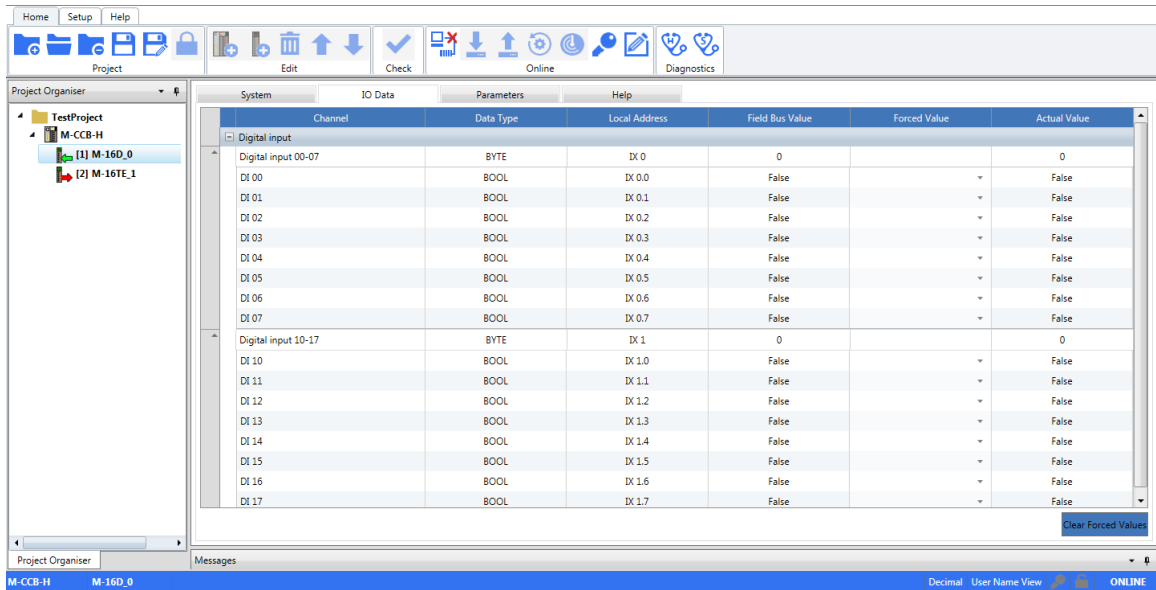
3. Select IO module in Project Organiser window and click on tab "IO data" to monitor QX of selected M-16TE module.
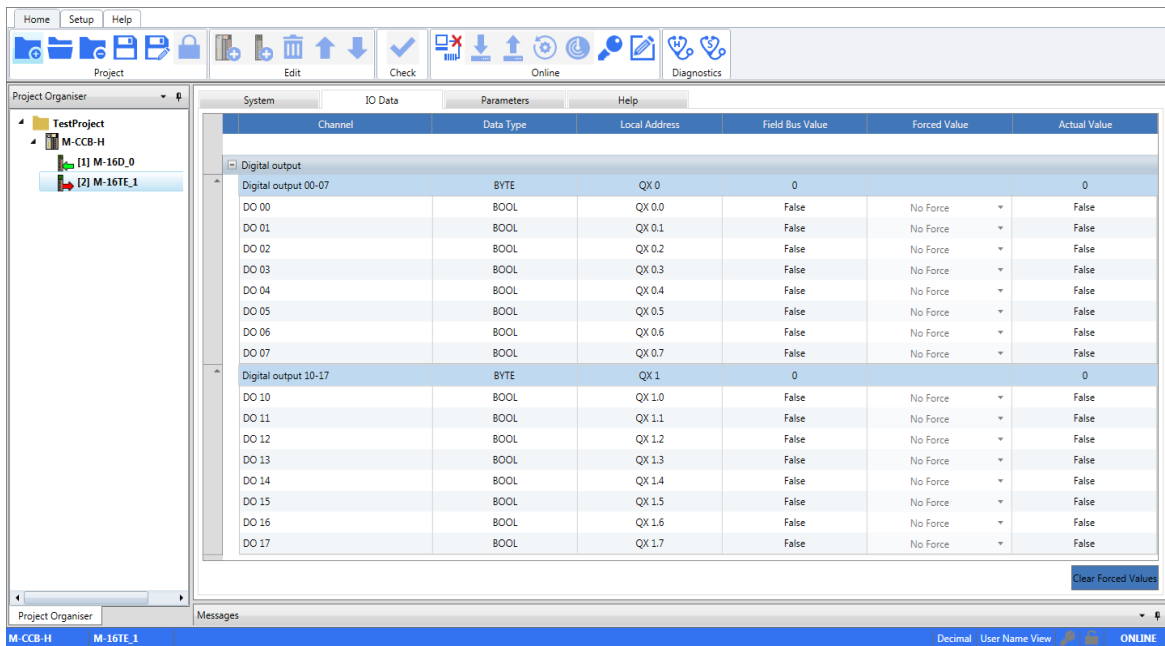
4. Header diagnostic information covers modular IO station specific as well as Header module specific diagnostic information.

Click on diagnostic function "Header Diagnostics" for monitoring diagnostic information of connected Header module.

This pops up following window of "HEADER DIAGNOSTIC INFORMATION".
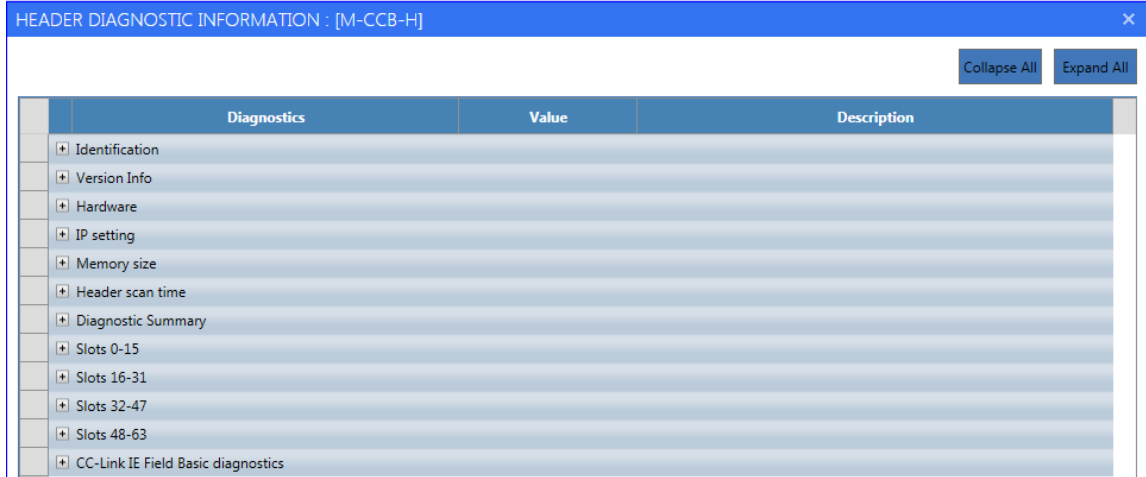
Header diagnostics are categorized for easy monitoring. User can monitor individual parameter by expanding individual diagnostic.as shown below
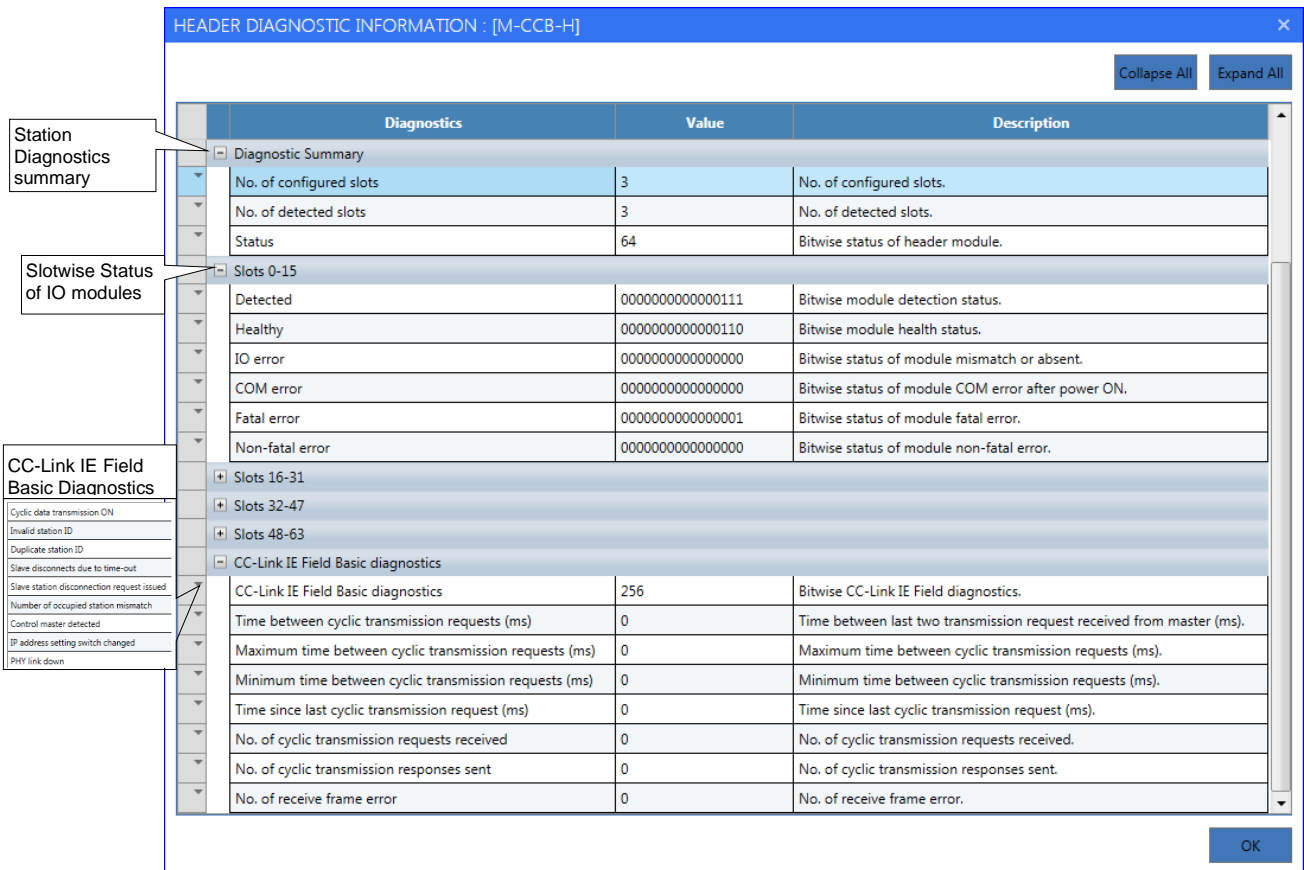
5. Slot diagnostic information provides configured modules and present modules, hardware versions and firmware versions of present modules, slot level error code, etc.

Similarly, click on function "Slot diagnostics" 🩺 to monitor slot diagnostics.

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

SLOT DIAGNOSTIC INFORMATION : [M-CCB-H]

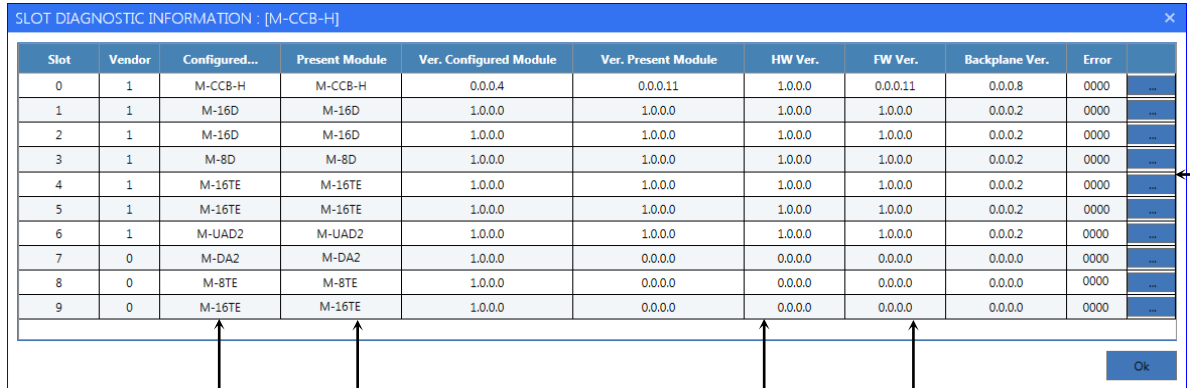| Slot	Vendor	Configured...	Present Module	Ver. Configured Module	Ver. Present Module	HW Ver.	FW Ver.	Backplane Ver.	Error	
0	1	M-CCB-H	M-CCB-H	0.0.0.4	0.0.0.11	1.0.0.0	0.0.0.11	0.0.0.8	0000	...
1	1	M-16D	M-16D	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
2	1	M-16D	M-16D	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
3	1	M-8D	M-8D	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
4	1	M-16TE	M-16TE	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
5	1	M-16TE	M-16TE	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
6	1	M-UAD2	M-UAD2	1.0.0.0	1.0.0.0	1.0.0.0	1.0.0.0	0.0.0.2	0000	...
7	0	M-DA2	M-DA2	1.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0000	...
8	0	M-8TE	M-8TE	1.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0000	...
9	0	M-16TE	M-16TE	1.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0.0.0.0	0000	...

Ok

List of user names of Header module and IO modules configured

List of user names of connected Header module and IO modules physically attached to the Header.

Hardware version of present modules.

Firmware version of present modules

Error code of individual module along with error description in tool tip

Important Error Codes of the Modular IO Station

The following table lists the error codes detected by the Modular IO

| Error Code	Classification	Error Name
1000H	Fatal	Hardware failure
1001H	Fatal	Firmware watchdog error
1002H	Fatal	Configuration error
1003H	Fatal	Module absent or mismatch error
1004H	Fatal	IO module COM error
1009H	Fatal	Invalid parameter
1FFFH	Fatal	Fatal fieldbus error
2000H	Non-Fatal	Field power absent
2003H	Non-Fatal	Additional IO modules detected
2FFFH	Non-Fatal	Non-fatal fieldbus error

7.2 CC-Link IE Field Network Basic Diagnostics

Following steps explain how to monitor CC Link IE Field Basic Diagnostics

1. Connect GX Works3/GX Works2 to the CPU module on the master station.

2. Click on GX Works 3 menu command. [Diagnostics] ⇨ [CC-Link IEF Basic Diagnostics]

Window

The network status including slave stations is checked in "Network Status".
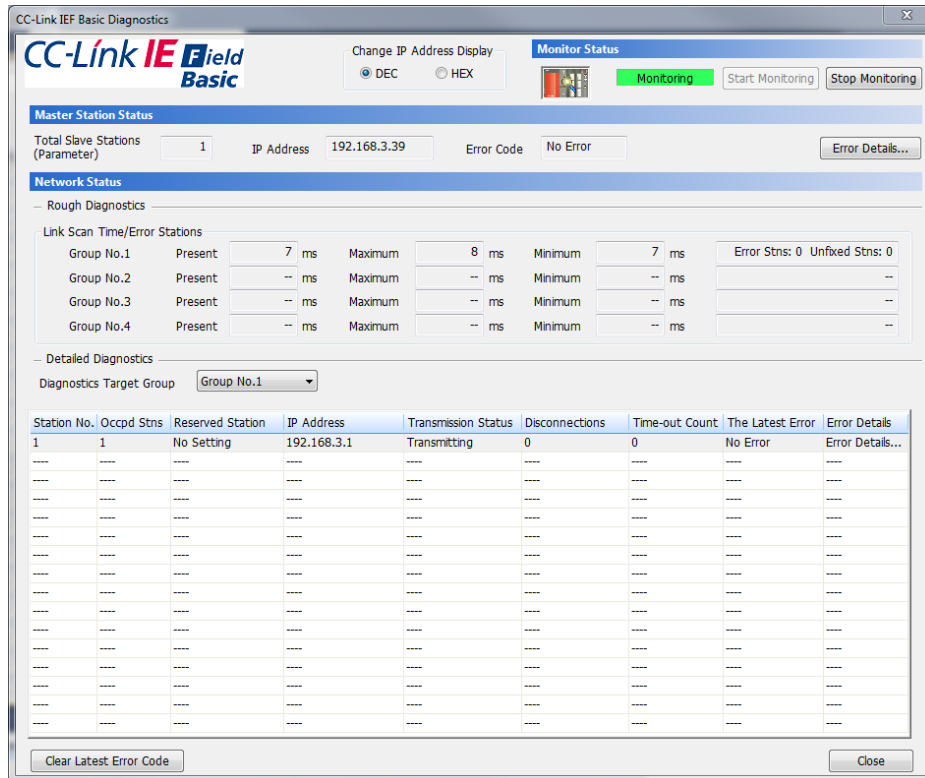
Displayed items

The status of the master station is checked in "Master Station Status".

Item	Description
Total Slave Stations (Parameter)	The total number of slave stations set in parameter is displayed.
IP Address	The IP address of the master station is displayed. The display can be switched between decimals and hexadecimals in "Change IP Address Display".
Error Code	The error code of the master station is displayed.
[Error Details] Button	The description of the error and the actions to be taken are displayed.

The network status including slave stations is checked in "Network Status".

Item	Description
Link Scan Time/Error Stations	Link scan time (present, maximum, minimum) and number of error stations/unfixed stations of each group is displayed. Error stations (Error Stns) and unfixed stations (Unfixed Stns) refer the following state. ・Error Stns: Stations where an error has been occurred ・Unfixed Stns: Stations (not including reserved stations) where the transmission status has not been fixed
Diagnostics Target Group	Select a group to display its diagnostic information list.
Station No.	The station number of the slave station is displayed.
Occpd Stns	The number of occupied stations set in parameter is displayed.
Reserved Station	The reserved station status set in parameter is displayed.
IP Address	The IP address set in parameter is displayed. "-" is displayed when the station is a reserved station and an IP address has not been set.
Transmission Status	The transmission status of the slave station is displayed. ・Unfixed: Communications with the master station not established ・Transmitting: Cyclic transmission being performed ・Disconnecting: Disconnected from the master station
Disconnections	The accumulated number of disconnection detection is displayed. ・0: No disconnections ・1 to 65535: Number of disconnection detection (accumulated number)
Time-out Count	The accumulated number of timeouts is displayed. ・0: No timeouts ・1 to 65535: Number of timeouts (accumulated number)
The Latest Error	The latest error code is displayed an error on the transmission status between the master station and slave stations detected by the master station or an error which has occurred in a slave station. When the slave station is disconnected, an error occurs. After that, even when the disconnected slave station returns to the system, the error is held. When another error occurs, the latest error will be updated (overwritten). When both errors occur, the priority of errors to be displayed is as follows. (1) An error which has occurred in a slave station (2) An error on the transmission status between the master station and slave stations detected by the master station
Error Details...	The description of the error and the actions to be taken are displayed.
[Clear Latest Error Code] button	The error code is cleared. The button can be clicked only during monitoring.

Error codes of the CC-Link IE Field Network Basic

The following table lists the error codes detected by the CC-Link IE Field Network Basic function.

Error Code	Error Name	Error details and cause
CFC0H	Cyclic transmission error (master station)	Unable to execute cyclic transmission because multiple master stations exist in the same network address.
CFC8H		Unable to execute cyclic transmission because the slave station controlled by other master station exists.
CFC9H		Unable to execute cyclic transmission because the slave station of the same IP address exists in the same network address.
CFE0H	Cyclic transmission error (slave station)	The cyclic transmission was executed for the slave station controlled by other master station.
CFE1H		The unusable number of occupied stations has been specified from master station.
CFE8H		There is no response from slave station.
CFE9H		The slave station of the same IP address has existed in the same network address.
CFF0H	Slave station error	The error occurred in slave station.

List of SM/SD/Buffer Memory Areas for CC Link IE Field Network Basic

Click on GX Works 3 menu command "Online" → "Monitor" → "Device/Buffer Memory Batch Monitor".

The following is the comparison table of the corresponding numbers and addresses.

Name	Description	SM/SD/Buffer memory		
		iQ-R PLC	iQ-F PLC	Q/L PLC
Cyclic transmission status	This relay turns on when the cyclic transmission starts.	SM1536	SM1536	SM1700
Cyclic transmission status of each station	The cyclic transmission status of each station is stored. (1 to 16 stations)	SD1536	SD1536	SD1700
Data link status	This relay turns on when an error exists even in one slave station.	SM1540	SM1540	SM1704
Data link status of each station	The data link status of each station is stored. (1 to 16 stations)	SD1540	SD1540	SD1704

Interfacing Modular IO Header M-CCB-H with Mitsubishi PLCs on CC-Link IE Field Basic network

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