Doc Num: UD02-A003EN-A

Interfacing Modular IO Header M-CCIEF-H with Mitsubishi iQ-R PLC on CC-Link IE TSN Network



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Quick Start Guide: Interfacing Modular IO Header M-CC	IEF-H with Mitsubishi iQ-R PLCs on CC-Link IE TSN network
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1. Scope of Document

This Quick Start Guide explains procedure to interface Mitsubishi Electric India make Modular IO with a Mitsubishi iQ-R PLC over a CC-Link IE TSN network.

Prerequisites

- 1. Hardware
 - MELSEC iQ-R PLC with CC-Link IE TSN Master (Example uses PSU(R61P), CPU (R04CPU), RJ71GN11-T2 (firmware version 23))
 Modular IO station with M-CCIEF-H (CC-Link IE TSN header module)
 - Header assembly modules Base module, Power supply module, Header module and I/O Adapter module.
 - (Example uses M-B3, M-APSU, M-CCIEF-H and M-ADP)

IO modules as per requirement

(Example uses IO modules as M-16D, M-16TE, M-AD4 and M-DA4)

2. Engineering tools

- MELSEC iQ-R GX Works3 (Version 1.106L or higher)
- Modular IO Modular IO Configurator tool (Version 2.1.0.0 or higher)
 Download from Mitsubishi Electric India website https://mitsubishielectric.in/fa/fa-modular-io.html
- Modular IO Profile file "0x2071_M-CCIEF-H_0001_en_CCLinkIETSN.CSPP.zip" Download from Mitsubishi Electric India website -<u>https://mitsubishielectric.in/fa/fa-modular-io.html</u>

References

- Modular IO User Manual [Manual Number N16001AAMH]
- MELSEC iQ-R CC-Link IE TSN User's Manual (Application) (SH(NA)-082129ENG)

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

- 1. Prepare Hardware Setup
- 2. Register Modular IO Profile in GX Works3
- 3. Install Modular IO Configurator Tool
- 4. <u>Configure Modular IO Station</u>
- 5. Configure iQ-R master station
- 6. Monitor Status and Diagnostics

Subsequent sections explain necessary steps in detail.

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2. Prepare Hardware Setup

The setup diagram below shows MELSEC iQ-R PLC with RJ71GN11-T2 network module as a CC-Link IE TSN Master and Modular IO station with header module M-CCIEF-H as Slave device.



PC with Engineering Tool

Setting of IP address / station number

Following two methods can be used to set IP address/ station number

Using parameter + Rotary switch

In this method the first three octets are set using parameter 'IP address' and fourth octet of IP address is set using two rotary switches x1 and x16 (hexadecimal) provided on the front side of Header module. For example:

To set IP address to 192.168.3.21, do settings in Modular IO Configurator Tool as below:

- IP address setting = Rotary switch
- IP address = 192.168.3.X
 - Value of X is ignored when "IP address setting = Rotary switch".
- To set 4th octet value i.e. 21 using rotary switch, set x16 = 1 and set x1 = 5. i.e. (1*16)+(5*1)=21



NOTE:

IP address can also be set using parameters ignoring switch setting on the module.

IP address set by rotary switch is detected only during power on, so set the IP address when the header module is powered off.

Refer 'Modular IO User Manual' for more details.

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3. Register Modular IO Profile in GX Works 3

This section explains how to register Modular IO profile in Engineering Tool so that Modular IO (M-CCIEF-H) appears in the Module List of Network Configuration Setting \rightarrow CC-Link IE TSN Configuration.

1. Start GX Works3 and execute command "Tool" \rightarrow "Profile Management" \rightarrow "Register".

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This will invoke "Register Profile" dialogue. Browse Modular IO profile file "0x2071_M-CCIEF-H_0001_en_CCLinkIETSN.CSPP.zip" and click on "Register" button. You will get the message "Registration of the profile is completed "on successful completion.

2. After registration, M-CCIEF-H can be seen in the Module List of "CC IE TSN Configuration" as shown below.

To view the CC IE TSN Configuration window,

 $[Navigation window] \Rightarrow [Parameter] \Rightarrow [Module Information] \Rightarrow [Master module RJ71GN11-T2] \Rightarrow [Basic Settings] \Rightarrow [Network Configuration Setting] and then click on<Detailed Setting>$

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4. Install Modular IO Configurator Tool

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

- a. ModularIOConfiguratorSetup2.1.0.0.exe
- b. ModularIOCommunicationComponent2.1.0.0.exe

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 11 (64 bit)
USB interface	USB 2.0

Following steps explain how to install Modular IO Configuration Tool

1. Run ModularIOConfiguratorSetup2.1.0.0.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-CCIEF-H) to the machine using USB (2.0) cable. For the first time, the driver is automatically searched and configured. Please wait for few minutes while this step is executed.
- 4. Once the driver is successfully installed, following message will appear.



Device driver software installed successfully

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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
3-slots Base Module	M-B3	1
Redundant AC Power Supply Module	M-APSU	1
CC Link IE Field Header Module	M-CCIEF-H	1
I/O Adapter Module	M-ADP	1
16 Point Digital Input, 24 VDC, Sink Type (Negative Common) Module	M-16D	1
16 Point Digital Output, 24 VDC, Source Type Module	M-16TE	1
2 Channel Universal Analog Input Module	M-AD4	1
2 Channel Analog Output Voltage/ Current Module	M-DA4	1

The following steps explain how to configure modular IO station.

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 where project file will be saved. Select Bus type as CC-Link IE TSN.

Click on 📗 Add header button

Project Na	ame					
QuickSta	art					
Path						
d:/MIO P	Projects					Browse
Bus Type						
CC Link I	IE TSN				-	
						<u> </u>
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3.

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 Add and configure Header module
 Add Header dialogue box shows list of Header modules of selected Bus Type. Select Header module M-CCIEF-H and

click on 'Add' button.

5. Select header assembly according to base module requirement and click on 'Select' button.

6. Configure header assembly modules as per requirement and click on Add button.

7. Added Header assembly is displayed in tree view as well as in System tab of working area as beside.









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 Set header parameters - Select Header module H1 from Project Organizer window and click on "Parameters" tab to set Header configuration parameters. User can modify Project Values for individual parameter.

	Parameter Name	Project Value					
General para	meters						
Action on fat	tal error	Continue N/W communication					
Share S8 to F	łwy	Disable					
Output hold	/ clear	Char					
Share diagon	entra	Enable					
- Network par	anietata.						
IP Address a	prim	Rotary switch					
iP address		. 192 . 1	1. 15 . 1				
Subnet mask		255 . 255	- 255 . 0				
Remote read	t enable	Disable					
OC Link IE TS	N Type	Class B					
CC Link IE TS	N Speed	YORPS					

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9. 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.

10. Select M-16TE Digital output module and click on Add button.



NOTE:

You can use 'Scan IO modules' function of Modular IO configurator to read the list of IO modules (other than system modules) physically attached to the Header assembly.

Refer 'Modular IO User Manual' for more details.

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11. Follow the same procedure to add M-AD4 and M-DA4.

Added IO modules are displayed in tree view and in System tab in working area as shown below.



After adding modules, set parameters of each IO module as per the application requirement.

For details of parameters of IO modules, refer 'Modular IO User Manual'.

- 12. User should attach Bus End module (M-BE) at the last slot position if there are 16 or more IO modules.
- 13. Use 'Check' button to validate configuration. IO memory consumption of Modular IO station is displayed in message window as shown above.
- 14. 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.

DOWNLOAD ×	DOWNLOAD ×
Starting Download	Download complete!
Close on Completion	100 Bytes sent 651 of 651 Close on Completion
Ok Cancel	Ok Cancel

15. Connect to modular IO station from Modular IO configurator tool and check IO module health and monitor IO memory. Refer section '<u>Diagnostics in 'Modular IO Configurator</u>' for details.

NOTE:

You can use 'Output Test' function of Modular IO configurator to test output modules locally even when header is not connected to the fieldbus/ network. You can write individual output (True/ False to digital output module and channel data to analog output module) and test individual output. Refer 'Modular IO User Manual' for more details.

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6. Configure iQ-R master station

1. Create new project in GX-Works3

[Open GX Works3 tool]⇔[Project]⇔[New]⇔[Series - RCPU]⇔[Type – R04]

2. Add RJ71GN11-T2 master module in configuration

[Navigation window] ⇒ [Parameter] ⇒ [System Parameter] ⇒ [I/O Assignment Setting] ⇒ [Click on Module Name field of Slot 0] ⇒ [Add New Module] ⇒[Module Type - Network Module] ⇒[Module name - RJ71GN11-T2] ⇒ [Station Type - Master Station]

3. CC-Link IE TSN Setting - Required settings

[Navigation window] ⇔[Parameter] ⇔ [Module Information] ⇔ [Master module RJ71GN11-T2] ⇔ [Required Settings]

Set "Station type", "Network No." and "Station no. / IP Address" values in the required settings window.

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		Set the station type.			
tem List Find Result		Gheck Selfinos			

4. CC-Link IE TSN Setting - Basic settings

[Navigation window] ⇔ [Parameter] ⇔ [Module Information] ⇔ [Master module RJ71GN11-T2] ⇔ [Basic Settings]

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nput the Setting Item to Search	-	llem	Setting
Required Settings Station Type Network No Parameter Setting Method Station No.IP Address Setting Basic Settings Network Topology Communication Period Setting Connection Device Information Device Station Setting Communication Speed Supplementary Cyclic Settings Link points extended setting		Metwork Configuration Settings Network Configuration Settings Refresh Settings Refresh Settings Network Topology Communication Period Setting Basic Period Setting Setting in Units of Tus Communication Period Interval Setting (Do not Set it in Units of Tus) Communication Period Interval Setting (Set it in Units of Tus) Communication Period Interval Setting (Set it in Units of Tus) System Reservation Time Cyclic Transmission Time Transient Transmission Time Multiple Period Setting Setting Setting Setting	<detailed setting=""> <detailed setting=""> Line/Star Not Set 1000 00 us 1000 00 us 20 00 us 500 00 us 480 00 us</detailed></detailed>
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5. CC-Link IE TSN Setting - Basic settings - Network Configuration Settings \rightarrow <Detailed setting> Drag 'M-CCIEF-H from module list and drop to configuration as shown below.

	Curres	tel@somecte	sí Moduk	Detection	Deb	eled Display								Module Lint	
	Assignment	Netod			Contraction	Period Sett	OWARD IN	-	SCRW.Rm					CC-Link II 15N Select	tion 4
	700.	Podel Name	STAF	Station Type	RX Setting Paints	Rif Setting Paints	RW/ Setting Points	Rillin Setting Points	Parameter	Automatic Setting	POO Happing Setting	3F Address	5.0net Pauli	II General CO-Lie	A E
	100	PROFESSION (mane parate								274-040-0-087	199-120-120-0	GG-Link E TSN	4 Mend
11	All and a second s	Pars Mcczer+H		Drag ar fro	nd drop om Mo) M-C dule li	CIEF- I st	- -	· • • • •	•••••				E General parps DC Separ DT Separ DT Separ DT Separ DT Condition D Analog Separ D Analog Separ D Analog Control D CO-Link E TO INCOLOR E TOS Control Separation Separation DO-Link E TOS Co-Link E TOS D CO-Link E	erne B d d st state S24 H Note Note
0	tink IF TSN	Configuration	Inform	affers .	_		Output								

M-CCIEF-H is added as Remote station' in CC-Link IE TSN configuration with default RX/RY Size of 16 points and RWr/RWw size of 8 points.

	ltem	Description			
RX/RY setting		Assign RX/RY points up to 1024 in increments of 16. Default: 16 points.			
RWr/RWw sett	ing	Assign RWr/RWw points up to 512 in increments of 4. Default: 8 points.			
IP Address		Set the IP address of a station that performs cyclic transmission.			
Subnet Mask		Set a subnet mask to identify a network address.			
Communicatio	n Period Setting	Set communication period setting as below:			
		 Basic period or Normal-Speed: When master station and modular IO station are operating at same speed (1Gbps or 100Mbps) 			
		 Low-Speed: When master is operating at 1Gbps and modular IO station is operating at 100Mbps. 			
CC-Link IE TS	N Class	Set whether Modular IO station is a CC-Link IE TSN Class B device or class A device.			
		Default: Class B			
CC-Link IE TSN	Cyclic Transmission Time (Min.)	The value that is calculated from the number of device stations and the number of link device points is displayed.			
Information	Communication Period Interval (Min.)	These values can be used as reference minimum values to set the cyclic transmission time and communication period interval under 'Basic setting \rightarrow Communication period setting'.			

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6. CC-Link IE TSN Setting - Basic settings - Refresh Settings

Configure refresh settings of RJ71GN11-T2.

Below image shows refresh settings for example modular IO configuration explained in this document

No	Link Side					CPU S	ide				
INO.	Device Nam	е	Points	Start	End		Target	Device Name	Points	Start	End
-	SB	\sim	512	00000	001FF	+	Specify Devi	SB	/ 512	00000	001FF
-	SW	\sim	512	00000	001FF	+	Specify Devi	SW	512	00000	001FF
1	RX	\sim	16	00000	0000F	+	Specify Devi	X	/ 16	01000	0100F
2	RY	\sim	16	00000	0000F	+	Specify Devi	Y	/ 16	01000	0100F
3	RWr	\sim	4	00000	00003	+	Specify Devi	W	4 4	00000	00003
4	R\v/w	\sim	4	00000	00003	+	Specify Devi	W	4	01000	01003

7. CC-Link IE TSN Setting - Application settings – Communication speed (1Gbps / 100Mbps)

Set the communication speed between the module and the external device i.e. between the master and modular IO station. Communication speed setting at modular IO station may differ depending on project requirement.

In cases where master station is operating at 1Gbps and modular IO station is operating at 100Mbps, set 'Communication Period Setting' to 'Low-Speed' in 'Network Configuration Settings \rightarrow Communication Period Setting'

Prepare memory mapping of IO points from Modular IO station → Link side devices → CPU side devices.

You can prepare memory mapping of IO points from 'Modular IO station local address \rightarrow Link side devices' using 'IO map' function in Modular IO Configuration tool. The following IO map is created by tool for an example configuration.

Export address mapping to Excel and add CPU side address for each device manually.

0D	RESS	S MAPPING : M-CCIEF-H_H1			Set 'RX/ 'RWr/RWw	'RY setting start' and setting start' according ork configuration of maste					
54.4	(R)(/R)	/ Setting Start)		0 -	00 1100.00	in conriguiación or mabee					
14.	(RWie)	RWP Setting Start) 189									
Çeil	lagna	All				Lipitale Address Mapping Export To Excel					
	Set	No Module/Charmed	Manual Term	Data Type	Local Advances	Real bit Address					
*	347	M-CORT-H_HET									
*		M-160_2									
	and a	- Digital West									
	. 4	Digital input 00-07	20	EYT2	IX 0	RX 0 - RX 7					
	-	Digital input 10-17	(X	8978	18.1	RX 8 - RX F					
*	- 2	2 W-187E,1									
	1	E Dighai odput									
	*	Digital output 00-01	ax	EVTE	cpx 0	WYD+RYT					
		Digital output 10-17	QX:	BYTE.	Q1.1	RY B - RY F					
*	3	M-AD4_2	- 201 - 200		0 //	3					
	100	- Analog Input									
	+	040	w	INT :	IW D	WAY 0					
		GHT	W	int	WP 1	Rep 1					
T		042	397	INT -	W2	NVX 2					
	+	04	3W	1917	W1	TWY 3					
T	- 33	+ Displaying									
-		M-041 2									
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The following table shows mapping of Modular IO station local address \rightarrow CPU side devices of master station.

IO module	Modular IO station local address	Fieldbus address (Link Side address)	CPU Side address
M-16D	IX0.0 to IX1.7	RX0 to RXF	X01000 - X0100F
M-16TE	QX0.0 to QX1.7	RY0 to RYF	Y01000 - Y0100F
M-AD4	IW0 to IW3	RWr0 to RWr3	W00000 - W00003
M-DA4	QW0 to QW3	RWw0 to RWw3	W01000 – W01003

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7. Monitor Status and Diagnostics

7.1. Diagnostics in 'Modular IO Configurator'

7.1.1. Monitoring IO data

Following steps explain procedure to monitor IO data of a modular IO station in online mode,

- Click connect button
 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.

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oject Organiser • \$	System 10 Data Parameters Holp					
QuickStart	Childen .	Orto Type	Lood Aktions	Field Box Value	Percel Shine	Actual Value
✓HeaderAssembly-M-83	Dispositic summary					
 Assembly Modules 	Pauder status	WORD	188-581			0
P1] M-ARSP_P1	E Stor statut					
[H1] M-CCIEF-H_H1 (Online)	- Slot cature 8.7	ave	58.2	- 10		
ADPI M-ADP ADP	Tilot status 8.15	BYTE	58.3	0		0
#10 Modules	· Skot status 16.23	BYTE.	58.4			6
11 M-160 0	* Skot status 24.31	BYTE	58.5	6		0
L [2] M- 16TE 1	· Slot mature 32,39	BYTS:	58.6			0
THE REAL ADVENT	* Siter status 40.47	BYTE.	58.7			0
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The lat in the 3	* Sion statue 54.43	BYTE	58.9	0		0
					Colleges All	har Forced Value

3. To view IO data of an IO module, select the module in 'Project Organiser' window and click on tab 'IO Data' as shown below.

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sject Organiset 🔹 🕴	Aystanta IO Dasa	Click 'IO d	ata' ta	.b			
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	Di 60	800	18:0.2	False		Talas	11
APD Modules	22.03	8005	10.0.2	Patro		fate	
- No Moderer	12.04	8005	019.4	False		False	11
Contraction (1) M-THD (0)	D# 00	8001	IK 0.1	Tales.		False.	-11
121 M-16TE_1	29.06	BOOL	18.8.8	fature		Pates	
DI NAJADA 2	Di 107	8006	(K 0.7	Palae		False	
tol month	* Dight must 30-07	8/16	38.3	.0			
14] M-DA4, 3	0110	8001	0110	False		fatie	71
Soloct TO modulo	DI 11	ROOL	16.1.7	Palse		Patie	
Serect to module	10.52	8006	001.0	False		False	11
	DI 18	BOOL	10113	False		Falle	-11
	DP M	8001	053.4	Palae		False	71
	da ni	800	0615	False		False	
	Dr. 16	8005	101.1.6	false		False	H
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7.1.2. . Header diagnostic

Header diagnostic information covers modular IO station specific as well as Header module specific diagnostic information.

Click on icon 🧐 to open header diagnostic dialog 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.

	Disprovition	Value -	. Di	wentition
1	MIG station diagnostic summary	111	<	Station Diagnostics summar
	No. of configured slots	5	No. of configured slots.	
1	No. of detected slots	5	No. of detected skits.	
	Header status summery	000110100000000	Bitwise status of header module.)
1	Slots 0-15	34		Slot wise status
	Configured	0000000000011111	Bitwise module configuration status	of IO modules
	Healthy	000000000011111	Bitwise module health status.	
1	i0 error	000000000000000000	Bitwise status of module mismatch or abs	ient.
	COM error	0000000000000000	Bitwise status of module COM error after	power ON.
	Fatal error	000000000000000000000000000000000000000	Bitwise status of module fatal error.	
	Nion-fatal eeros	00000000000000000	Sitwise status of module non-fatal error.	
	Slots 10-31	1A.	63.	
10	905 32-47			
1	Stors 48-63			
-] Interlace(ETHT)			
	interface(ETH2)			
100	CC-Link IE TSN			CC-Link IE TSN diagnostics
1	Data link status of own station	0	00Ht Cyclic transfer in progress, 02Ht Cycl	R parent stopped, care the data line
	Cause of Communication Internuption	16# 00	00H. Normal communication or power or 33H: Disconnection of return in process	L 30H Cable disconnection
1			white an in the later of the second s	

7.1.3. Slot diagnostic

Slot diagnostic provides slot wise information related to ordering code of configured and present modules, version details of present modules and error code details.

Click on icon 🧐 to open slot diagnostic dialog.

T DIAGNOSTIC INFORMATION - [M-CCIEF-H_H1]										
Sec	Windor	Configured moduler	Present Module	Ver. Configured Module	Ver. Present Module	Hill Wr.	Fill Mr.	Ramplane Ver.	imr	
P1	0	M-APSU		1.000	1			*		
HT	1	M-COIF-H	M-COEF-H	12.0.4	1054	0.0.0.3	1004	000.12	0000	
ADP	0	M-408	*	1.0.0.0			*	*	. 8	
1	1	M-160	M-16D	12.0.0	12:00	1,0.0.0	1,2.0.0	0.0.0.3	0000	
2	1	M-16TE	M-157E	12.0.0	12.0.0	1.00.0	1,2.0.0	0.0.0	0000	
1	1	M-AD4	M-404	1000	1.0.0.0	1,0.0.0	1000	0.0.0.3	0000	
4	1	M-D44	M-DAA	1.1.0.0	1.1.0.1	1.000	1.1.0.1	0.00.3	0000	

Refer 'Modular IO user manual' for more information related to Error codes and diagnostics.

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7.2. Diagnostics in GX Works3

7.2.1. CC - Link IE TSN Diagnostics

To access CC-Link IE TSN diagnostics in GX Works3, use menu command [Diagnostics]⇔ [CC-Link IE TSN/CC Link IE Field Diagnostics]. Following CC-Link IE TSN Diagnostics window is displayed.

CC-Link IE TSN/CC-Link IE Field Diagnostics	Network status	×
Select Diagnostics Destination		Monitor Status
Nodule Module 1 (Network No. 1) Change Module.	Select Station No.1	Monitoring Shart Horsharing Sjop Monitoring St. Indo By Device Name
otal Linked Stations 1 Total Linked Stations 1 Comm. Period 1000 Parameter) 1 (Connected) 1 Interval Value Communication Unicest	us Number of Station 0 Errors Detected	Orange IP Address Display Opec OHO: Update(E) Legend
Communication st displayed here	o view atus status cation	
elected Station Communication Status Monitor (M-CCTEF H Mitro Naturals 2021), 123	dishi fluctic Operation Test	Check the transient communication mute from the connected
Sta: No. 1 No Error CC-Unik JE TSN Oless: 8 MAC Address:58-52-84-81-D0-01 JP Address: 192.1	68.3.1	station to the destination station.
	Information Confirmatio	on/Setting
NUH EAN RUNKUSENT	Station Information List	Able to check the one such as model name/IP address/I/W version of linked station in the list,
	Selected Station Operat	lim
	Remote Operation	Reset the selected station.
		Close

Refer 'MELSEC iQ-R CC-Link IE TSN User's Manual (Application) (SH(NA)-082129ENG)' for more details.

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7.3. Diagnostics in link devices of master station

The diagnostic information of CC-Link IE TSN network is also available in link special relays (SB) and link special registers (SW) of master.

Refer 'MELSEC iQ-R CC-Link IE TSN User's Manual (Application) (SH(NA)-082129ENG)' for more details.

Below are few important buffer memory addresses.

Address (Hex)	Name	Description			
Link special relays (SB)					
SB0049	Data link error status of own station (Master station)	Stores the data link error status of the own station. Off: Normal, On: Error			
SB0065	Loopback status	Stores the loopback status for the loopback function.			
SB004C	CPU operating status of own station	Stores the operating status of the CPU module on the own station. Off: RUN, PAUSE On: STOP, or moderate/major error			
SB00B0	Data link error status of each station	Stores the data link status of each station. Off: All stations normal On: Faulty station exists			
SB00C0	Reserved station setting status	Stores whether a reserved station is set. Off: No setting, On: Set			
Link special registers (SW)					
SW0049	Cause of data link stop of own station (master station)	Stores the cause which stopped the data link of the own station.			
SW00B0	Data link status of each	Stores the data link status of each station.			
to	station	0: Data link normal station			
SW00B7		1: Data link faulty station			
SW00C0 to SW00C7	Reserved station setting status	Stores the reserved station setting status of each station. 0: Station other than a reserved station (included reserved stations that have been temporarily cancelled) 1: Reserved station			
SW00F0 to SW00F7	CPU operating status of each station	Stores the CPU operating status of each station. 0: RUN, PAUSE 1: STOP or moderate/major error			

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