Mitsubishi Electric India

MODULAR I/O

Flexible and compact distributed I/Os

Supports various field bus

CC-Link IE Field | CC-Link IE TSN | CC-Link IE Field Basic | Modbus TCP | EtherNet/IP

Modular I/O

Flexible, Compact and Cost-effective Distributed I/O

Modular I/O series is ideal for application requiring flexible and cost-effective remote I/Os. Modular I/O station can be formed by using required Header module, I/O modules and System modules required for it.

With different field bus Header modules and flexible I/Os, increases its adaptability in different network architecture greatly.

COMPATIBILITY AND FLEXIBILITY

COMPATIBILITY

The compatibility of different Header modules makes it simple in adopting network and configuring system as per the need of the application.

- **Modular architecture**

  Modular I/O station comprises of one Header and up to 63 I/O modules.

- **Network connectivity**

  Modular I/O station can be connected to various open networks and field bus like CC-Link IE Field, CC-Link IE TSN, CC-Link IE Field Basic, Modbus TCP and EtherNet/IP using respective Header module.

FLEXIBILITY

The flexibility of I/O modules makes it simple in configuring system as per required I/Os.

- **Wide range of I/O modules**

  Multiple variants with 2,4,8, 16 I/O points are available. Meet the need of the application with required digital and analog I/O modules, serial modules as well as system modules.

- **Gain more flexibility with integrated structure**

  The backplane connections and field supply connections are automatically formed to reduce the installation and wiring efforts of each I/O modules.

- **USB communication as standard**

  USB interface on each Header module helps to configure and monitor diagnostics locally at Modular I/O station without interfacing to the network.

- **Configuration using SD memory card**

  Header supports configuration file transfer to / from SD memory card.

EASE OF INSTALLATION

DIN rail mounted header and slide-in required I/O modules gives effortless mounting, eliminates base unit and saves overall system cost.

- **Quick, easy and accurate wiring**

  With removable 8/16-Pin Terminal Block and push type connection helps quick and easy wiring, reduces system commissioning time by 60%.

- **Compact design**

  Compact hardware design of Header and I/O modules saves overall system space.

- **Module identification**

  White and Red colours are used to differentiate inputs and outputs which allow a user for easy identification.

- **Module status identification**

  Bi-colour status LED display the current status of module which helps as user to identify module status.

  Thus overall features of quick installation and wiring without using any tool drastically reduces startup time.

Modular I/O Configuration Tool

Modular I/O Configuration Tool is software developed for configuring modular I/O system, monitoring I/O status and diagnostics. The easy-to-use software helps to speed up commissioning.

OPTIMISED DOWNTIME

Software extends benefits beyond system configuration and provides additional functionality as below to reduce maintenance cost and optimise downtime.

- **System monitor and diagnostics**

  Monitor operation status between Master station and Modular I/O station resulting in quickly identifying network errors.

  Header diagnostic provides overall detail diagnostic of connected I/O station, Slot diagnostic provides diagnostic of selected I/O modules at slot level as well as individual channel-level which enable faster troubleshooting.

- **Effective output test**

  The software also facilitates output test function to test outputs without interfacing to the network. Thus helps in simplifying troubleshooting, optimise downtime as well as startup time.

- **IO Map**

  This feature displays local address and field bus adress of IO point in Modular I/O system.

EFFECTIVE ENGINEERING

- **Graphic based configuration**

  Simply select Header module from the list and add required I/O modules to creat station configuration easily. GUI provides graphical image of Modular I/O station as per configuration, healthiness of individual module, I/O data, user configurable parameters and detailed information for selected module as a help.
  Single configuration project for multiple Modular I/O station enables easy handling of project file.

- **Auto configuration**

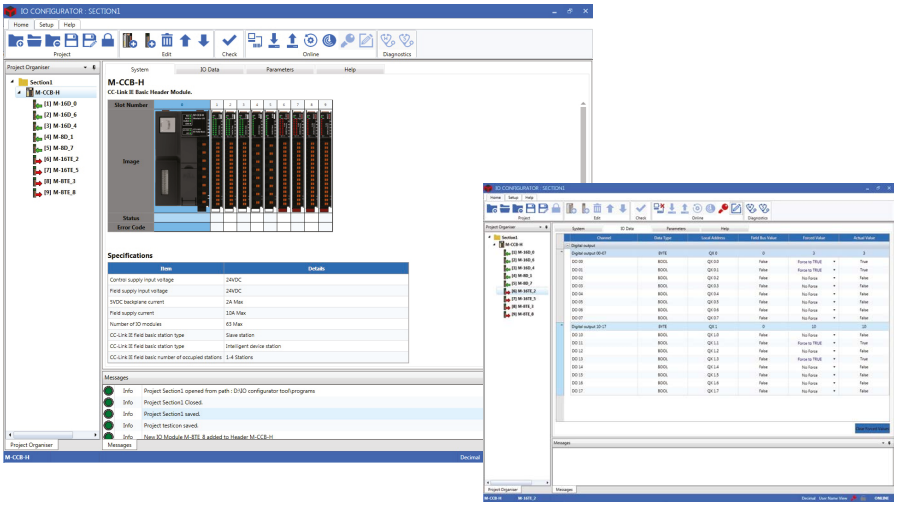
  Online-Scan feature provides auto configuration of Modular I/O station by just selecting Header module and scanning the I/O modules attached to it; thus, helps in reducing overall configuration time.

- **System validation**

  Prevents invalid configuration to download, keep track of power supply consumption, field supply isolation as well as maximum number of I/O modules allowed and provide alerts accordingly.

- **Global realization by language support***

  Support multi-language features for software menus.

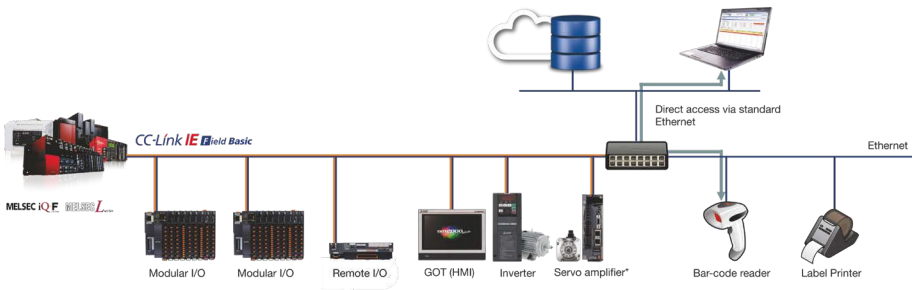


*Will be available soon

SYSTEM ARCHITECTURE

The System Architecture illustrates Modular I/O system on CC-Link IE Field Basic Network, All CPU modules with Ethernet port provides built-in CC-Link IE Field Basic protocol.

*Also support Modbus TCP Protocol



Product Specifications

Modular I/O system provides various header modules, I/O modules, system modules

▪ HEADER MODULES

Modular I/O system support CC-Link IE Field Basic Modbus TCP and EtherNet/IP

Item		Specification					
Module name		CC-Link IE Field Basic					Modbus TCP
Module ordering code		M-CCB-H					M-MT-H
System power supply	Input voltage	24 VDC (11 to 28.8 VDC, Ripple included), 22 Watts					
	Inrush current	20 A for 20 µsec duration					
	Protection	Reverse polarity protection					
	Output voltage	5 VDC					
	Output current for I/O modules	2 A					
Field power supply	Input voltage	24 VDC (18 to 30 VDC, ripple included)					
	Maximum input current at 24 VDC	10 A					
External connection	Network communication	RJ45 female					
	Input power supply (system) power supply and field power supply	8 Point terminal block					
	Configuration port	USB 2.0					
Fieldbus support		CC-Link IE Field Basic					Modbus TCP server; 1 client connection
Station type		Slave station					Slave station
Number of occupied stations		1-4 Station (user configurable)					Not applicable
Number of I/O modules		Maximum 63					
I/O Data size		Depends on number of stations occupied					Not applicable
		No. of occupied stations	RX	RY	RWr	RWw	1024 Digital inputs
		1	64 Bit	64 Bit	32 Word	32 Word	1024 Digital output
		2	128 Bit	128 Bit	64 Word	64 Word	256 Analog inputs
		3	192 Bit	192 Bit	96 Word	96 Word	256 Analog outputs
		4	256 Bit	256 Bit	128 Word	128 Word	512 Bytes status memory

Item		Specification
Module name		EtherNet/IP
Module ordering code		M-EIP-H
System power supply	Input voltage	24 VDC (11 to 28.8 VDC, Ripple included), 22 Watts
	Inrush current	20 A for 20 µsecs duration
	Output voltage	5 VDC
	Output current for I/O modules	2 A
	Protection	Reverse polarity protection
Field power supply	Voltage	24 VDC (18 to 30 VDC, ripple included)
	Current	10 A
External Connections	Network communication	RJ45 female - 2 nos. (Configured as embedded switch)
	Input power supply (System power supply and field power supply)	8-Point terminal block
	Output system power supply	6-Pins
	Output field power supply	2-Pins
	Configuration port	USB 2.0
Fieldbus Support		EtherNet/IP
Ethernet Interface		2 (Layer 2 switch with DLR support)
Station Type		Communication adapter
DLR Support		Yes

*Refer user manual for detailed product information

▪ DIGITAL INPUT MODULES

Item		Specification			
Ordering code		M-8D	M-16D	M-8DE	M-16DE
Input type		Sink (Negative common)		Source (Positive common)	
No. of input points		8	16	8	16
Voltage rating		24 VDC (18 to 30 VDC Including Ripple)			
ON voltage		18 VDC Minimum			
OFF voltage		5 VDC Maximum			
Maximum voltage		40 VDC			
ON state current per point		6 mA typical at 24 VDC			
OFF state current		3.8 mA at 24 VDC			
Filter time		3ms to 70ms software (selectable). 10 msec (defaut)			
Input impedance		5.2 KΩ			
Isolation	Between input and internal circuit	Optical 1.5 kV			
	Between input	No isolation			
I/O memory consumption	Input bits (IX)	8 Points (1 Byte)	16 Points (2 Bytes)	8 Points (1 Byte)	16 Points (1 Bytes)
	Diagnostics (SB) (User configurable)	1 byte			
System power supply consumption		45 mA	65 mA	45 mA	65 mA
Field power supply consumption		Number of inputs simultaneously ON X 6 mA			
Terminal block (Removable push type)		8-point	16-point	8-point	16-point
Recommended wire specifications*		0.5 to 2 sq.mm (AWG 20 TO 14) solid wire or stranded (flexible) wire with lugs (except 16-points)			

*For 16 Point : 0.5 to 1.00 sq.mm. (AWG 20 to 16)

DIGITAL OUTPUT MODULES

Item		Specification	
Ordering code		M-8TE	M-16TE
Output type (device)		Source type (Transistor)	
No. of outputs points		8	16
Voltage rating		24 VDC (18 to 30 V including ripple)	
Current rating1		0.5 A per output	
ON voltage drop		0.6 VDC maximum	
ON state resistance		200 mΩ	
OFF state leakage current		10 µA	
Response time	OFF to ON	250 µsecs	
	OFF to ON	300 µsecs	
Isolation	Between output and internal circuit	Optical 1.5 kV	
Protection		Output short circuit protection, fast demagnetization for inductive loads	
IO memory consumption	Output Bits (QX)	8 Points (1 Byte)	16 Points (2 Byte)
	Diagnostics (SB)	1 Byte	
System power supply consumption		105 mA	130 mA
Field power supply consumption		Sum of output loads simultaneously ON	
Terminal block (Rmovable push type)		8-point	16-point
Recommended wire specifications*		0.5 to 2 sq. mm (AWG 20 to 14) solid wire or stranded (flexible) wire with lugs (except 16-point)	

*For 16 Point : 0.5 to 1.00 sq.mm. (AWG 20 to 16)
1 for more details refer user manual

UNIVERSAL ANALOG INPUT MODULE

Specification	Description				
Ordering code	M-UAD2				
Number of input channels	2 CH. universal, non-isolated				
Input types (User configurable)	Voltage	0 to 10 VDC, ±10 VDC, ±10 mV			
	Current	0 to 20 mA, 4 to 20 mA			
	RTD	3 Wire PT100 (385) : -50 to 250°C			
		3 Wire PT100 (385) : -50 to 250°C			
		3 Wire PT100 (385) : -200 to 850°C			
	Thermocouple	J Type : -100 to 1200°C			
		K Type : -100 to 1372°C			
Resolution and overall accuracy	16 bits				
	Input type	Basic resolution	Basic digital output (Integer format)	Overall accuracy in % of FSD	
				25°C	60°C
	0 to 10 VDC	0.15 mV	0 to 32000	±0.2	±0.3
	±10 VDC	0.3 mV	-32000 to 32000	±0.2	±0.3
	±100 mV	3 µV	-32000 to 32000	±0.1	±0.2
	0 to 20 mA	0.3 µA	0 to 32000	±0.2	±0.3
	4 to 20 mA	0.3 µA	0 to 32000	±0.2	±0.3
	PT100	0.1°C	-2000 to 8500	±0.3	±0.6
	PT100	0.01°C	-5000 to 25000	±0.5	±1
	PT1000	0.01°C	-5000 to 25000	±0.4	±0.6
	J Type TC	0.1°C	-1000 to 12000	±1	±1.5
	K Type TC	0.1°C	-1000 to 13720	±1	±1.5

4 CH. THERMOCOUPLE/ RTD INPUT MODULE

Specification	Description				
Ordering code	M-TCRT4				
Number of Input Channels	4 CH, Thermocouple/RTD, Differential, Non-isolated				
Input Types (user configurable)	RTD	3 Wire PT 100 (385): -200°C to 850°C			
		3 Wire PT 100 (385): -50°C to 250°C			
		3 Wire PT 1000 (385): -50°C to 250°C			
	Thermocouple	J Type: -100 to 1200°C			
		K Type: -100 to 1372°C			
Resolution and Overall Accuracy*	16 bits				
	Input Type	Basic Resolution	Basic Digital Output (Integer format)	Overall accuracy in % of FSD	
				25°C	60°C
	PT100	0.1°C	-2000 to 8500	±0.4	±0.8
	PT100	0.01°C	-5000 to 25000	±1.0	±1.2
	PT1000	0.01°C	-5000 to 25000	±1.0	±1.2
	J Type TC	0.035°C	-1000 to 12000	±1.2	±1.8
	K Type TC	0.049°C	-1000 to 13720	±1.0	±1.2

8 CH ANALOG INPUT VOLTAGE MODULE

Specification	Description				
Ordering code	M-ADV8				
Number of input channels	8 CH, Voltage, non-isolated				
Input types (User configurable)	Voltage	0 to 10V (Default), -10 to 10V and 0 to 5V			
		16 bits			
Resolution and overall accuracy	Input type	Resolution	Digital output (Integer format)	Overall accuracy in % of FSD	
				25°C	60°C
	0 to 10V	0.3 mV	0 to 32000	±0.2	±0.3
	-10 to 10V	0.3 mV	-32000 to 32000	±0.2	±0.3
	0 to 5V	0.156 mV	0 to 32000	±0.2	±1.2

8 CH ANALOG INPUT CURRENT MODULE

Specification	Description				
Ordering code	M-ADI8				
Number of input channels	8 CH, Current, non-isolated				
Input types (User configurable)	Current	0 to 20mA (Default), 4 to 20mA			
Resolution and overall accuracy	16 bits				
	Input type	Resolution	Digital output (Integer format)	Overall accuracy in % of FSD	
				25°C	60°C
	0 to 20mA	0.6 µV	0 to 32000	±0.2	±0.3
	4 to 20mA	0.6 µV	0 to 32000	±0.2	±0.3

▪ 4 CH ANALOG INPUT MODULE (VOLTAGE/CURRENT)

Specification	Description				
Ordering code	M-AD4				
Number of input channels	4 CH, Voltage / Current, non-isolated				
Input types (User configurable)	Voltage	0 to 10V, -10 to 10V			
	Current	0 to 20mA, 4 to 20mA			
Resolution and overall accuracy	16 bits				
	Input type	Resolution	Digital output (Integer format)	Overall accuracy in % of FSD	
				25°C	60°C
	0 to 10V	0.3 mV	0 to 32000	±0.2	±0.3
	-10 to 10V	0.3 mV	-32000 to 32000	±0.2	±0.3
	0 to 20mA	0.6 µV	0 to 32000	±0.2	±0.3
	4 to 20mA	0.6 µV	0 to 32000	±0.2	±0.3

▪ 4 CH. ANALOG OUTPUT MODULE

Specification	Description			
Ordering code	M-DA4			
Number of outputs	4 CH, voltage/current, non-isolated, 16-bit resolution			
Output types	Voltage		Current	
	0 to 10V	-10 to 10V	0 to 10V	-10 to 10V
Input Data	0 to 32000	-32000 to 32000	0 to 32000	-32000 to 32000
Resolution	0.3 mV	0.3 mV	0.3 mV	0.3 mV
Overall Accuracy (% of FSD)	±0.18	±0.18	±0.18	±0.18
	±0.2	±0.2	±0.2	±0.2

▪ 2 CH. ANALOG OUTPUT MODULE

Specification		Description			
Ordering code		M-DA2			
Number of outputs		2 CH. Voltage/Current, non-isolated, 12-bit resolution			
Output types		Voltage		Current	
		0 to 10 VDC	-10 to +10 VDC	0 to 20 mA	4 to 20 mA
Input data		0 to 4000	-2000 to 2000	0 to 4000	0 to 4000
Resolution		2.5 mV	2.5 mV	5 µA	5 µA
Overall accuracy	At 25°C	±0.1	±0.1	±0.2	±0.2
(% of FSD)	At 60°C	±0.2	±0.2	±0.3	±0.3

SERIAL COMMUNICATION MODULES

Specification	Description	
Ordering Code	M-1R2	M-2R2
Hardware Interface	RS232 with RTS CTS flow control	RS232
Communication Type	Full duplex	Full duplex
Number of channels	1	2
Supported baud rate (in bps)	2400, 4800, 9600 (Default), 19200, 38400, 57600, 115200	
Receive Buffer Size	512 Bytes	
Transmit Buffer Size	256 Bytes	
Input Image Size	8 Bytes	16 Bytes (8 bytes per channel)
Output Image Size	8 Bytes	16 Bytes (8 bytes per channel)
Lenght of Cable	15 meters maximum	
LED Indications	1 bicolour (red+green) for, module status Indication. 4 LEDs (green) for channel indication, TX, RX : Transmit/Receive signal lines RTS, CTS* : Flow control signal lines	1 bicolour LED (red+green) for, module status Indication. 4 LEDs (green) for channel indication, TX0, RX0 : For channel 0 TX1, RX1 : For channel 1

1 CH. RS422/RS485 SERIAL COMMUNICATION MODULE

Specification		Description	
Ordering Code		M-1R4	
Number of Channels		1	
Number of Modules in a Modular IO station		2 maximum	
Supported Header Modules		M-CCIEF-H (CC-Link IE Field/ TSN Header Module)	
Transmission Standards		Comforms to RS-485/RS-422 specifications	
Communication Type		Full duple / Half duplex	
Length of Cable		1200 meters maximum	
Number of Slave Devices		16 maximum	
Supported Communication Parameters		Data transmission speed	2400, 4800, 9600 (Default), 19200, 38400, 57600, 115200
		Data bits	7,8 (Default)
		Parity	7,8 (Default)
		Stop bits	1 (Default), 2
Operation Modes		Extended Modbus RTU Master mode	
Receive Buffer Size		512 Bytes	
Transmit Buffer Size		512 Bytes	
IO data updation time		500 ms minimum (up to header)	
LED Indications		STS, RX, TX, ERR (Refer section 'LED Indications' for more details)	
Maximum Signal Voltage		± 12VDC	
System Power Supply Consumption		50 mA	
Field Power Supply Consumption		40 mA	
Terminal Block (Removable push type)		8 points	
Isolation		Between communication port and internal circuit	2500 V AC
		Between communication port and field power circuit	2500 V AC
Protection		Short circuit protection for output signal	
IO Memory Consumption	Input Bytes (IW)	10 Bytes + Read data size (configurable up 500 Bytes)	
	Output Bytes (QW)	8 Bytes + Write data size (configurable up 500 Bytes)	
	Diagnostic (SB)	4 Bytes (User configurable)	
I/O Terminals		TXD+, TXD-, RXD+, RXD-, GND, SHLD, TER	
Recommended wire specifications		Shielded twisted pair cable	

SYSTEM MODULES

Item		Description
Module name		System power extension
Module ordering code		M-SPE
System power supply	Input voltage	24 VDC (11 to 28.8 VDC, ripple included), 12 Watt
	Inrush current	20 A for 20 µsec duration
	Output voltage	5 VDC
	Output current for I/O modules	2 A
	Protection	Reverse polarity protection
Field power supply	Voltage	24 VDC (18 to 30 VDC, ripple included)
	Maximum input current at 24 VDC	5 A per input terminal
	Current	10 A
Terminal block (Removable push type)		8-point
Recommended wire specifications		0.5 to 2 sq.mm. (AWG 20 to 14) solid wire or stranded (flexible) wire with lugs

Item	Description		
Module name	Field power distribution	Field power isolator	Shield termination
Module ordering code	M-FPD	M-FPI	M-ST
Field voltage/s	24 VDC, 0 VDC	5 VDC/ 12 VDC/ 24 VDC/ 48 VDC/ 110 VAC/ 220 VAC	–
Field power contact current	Max. 10 Amps.	5 A per input terminal	5 A per input terminal
Terminal block (Removable push type)	8 - point		
Recommended wire specifications	0.5 to 2 sq. mm (AWG 20 to 14) solid wire or stranded (flexible) wire with lugs		

Item	Specification
Module name	Bus end
Module ordering code	M-BE
Terminating resistor	120/QW
Power description	Nil

SD Memory Card (Configuration using SD Memory Card)

Specification	Description
Type	Micro SD
SD Card Standard	SDHC
Speed Class Supported	Class 4 (4MB/S), Class 10 (10MB/S)
Supported Memory Capacity	4GB to 32GB
File System	FAT32
SD Card Dimensions	11 x 10 x 1.0 mm
Recommendation	Transcend, Scandisk, SAMSUNG

CC-Link IE Field

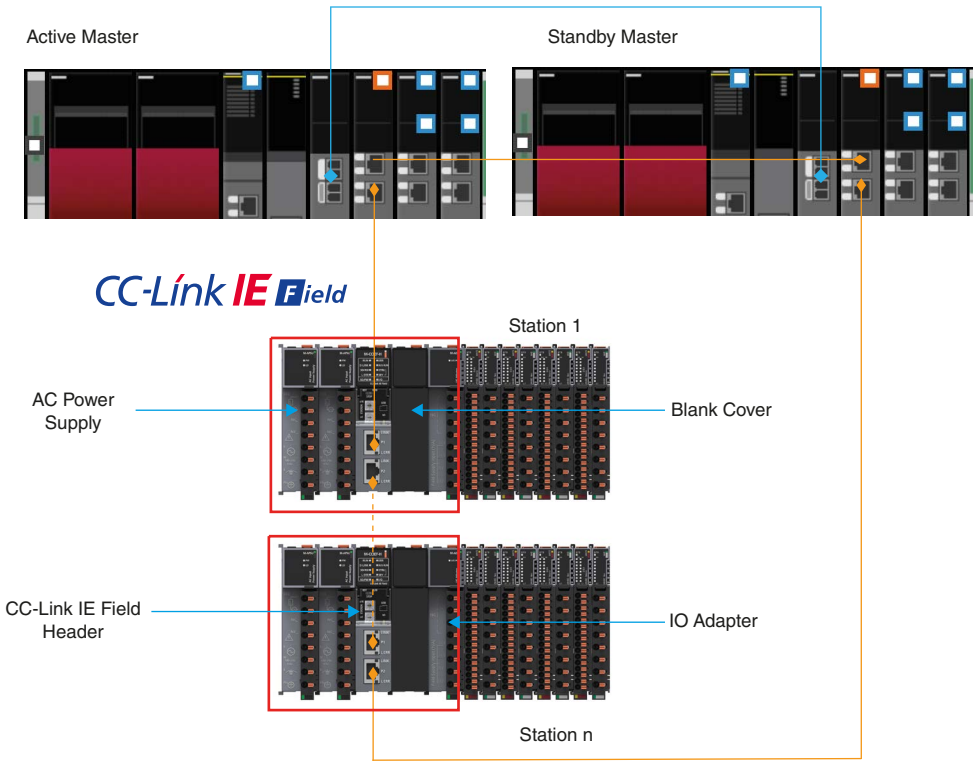
The CC-Link IE Field header serves as an intelligent device station with control over I/O operations, integrated into the base module. It supports a high transmission speed of 1 Gbps and features dual Ethernet ports, which facilitate versatile network topologies including Ring, Line, and Star configurations.

This header is particularly well-suited for large, distributed systems, where a ring topology optimizes network architecture and enhances overall efficiency. Additionally, it can be integrated with the iQ-R hot-redundant system to ensure reliability, flexibility, and seamless operation.

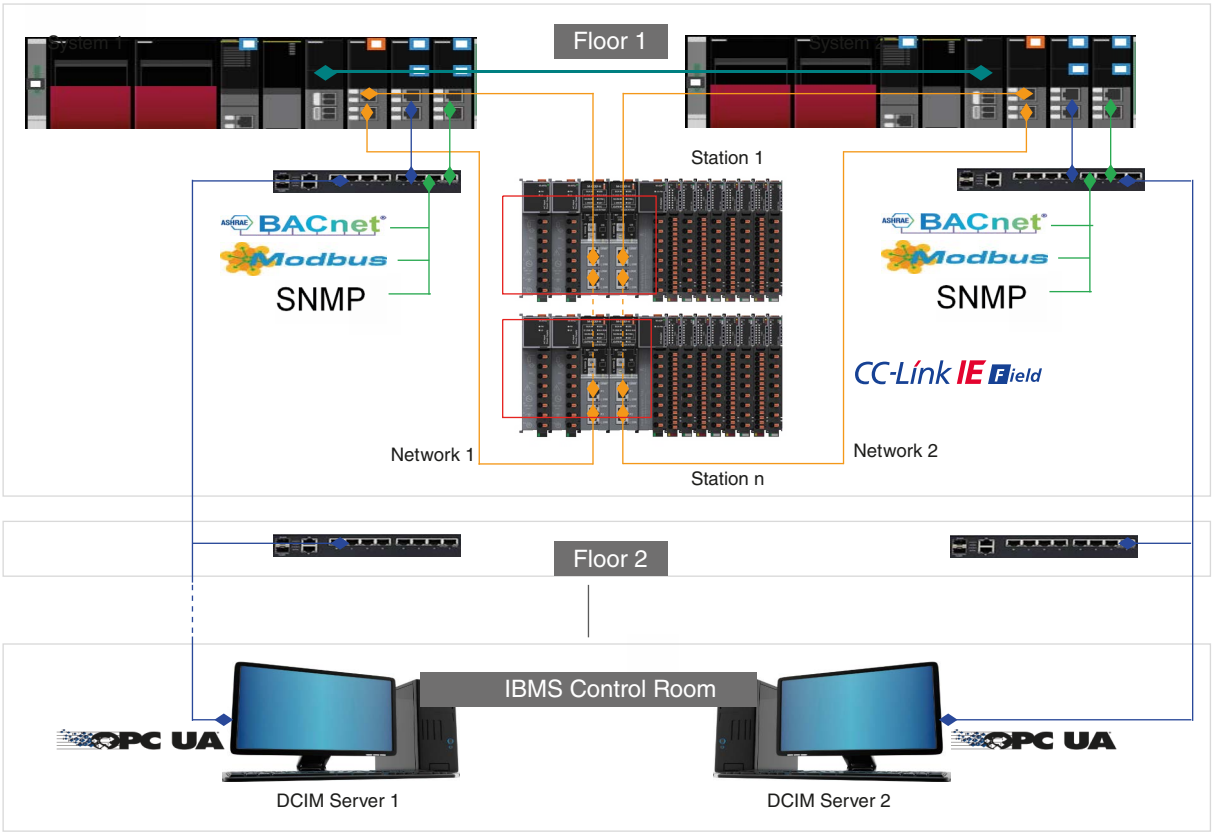
This header provides comprehensive diagnostic capabilities, ensuring the system's health and facilitating the rapid identification of issues at both I/O modules and header modules during the operation.

Specification		Description
Module Ordering Code		M-CCIEF-H
External Connections	Network Communication	RJ45 female - 2 nos.
	Configuration Port	USB 2.0
Fieldbus Support		CC Link IE Field
Maximum Number of Link Points Per Station	RX	1K points (1024 points, 128 bytes)
	RY	1K points (1024 points, 128 bytes)
	RWr	1K points (1024 points, 2K bytes)
	RWw	1K points (1024 points, 2K bytes)
Station Type		Intelligent device station
Station Number		1 to 120 (settlable by roatary switched x 16 and x 1 (hexadecimal)
Network Number		1 to 239
Communication Speed		1Gbps
Network Topology		Line topology, star topology (coexistence of line topology and star topology is also possible), and ring topology
Communication Cable		Ethernet cable which satisfies 1000BASE-T standard: category 5e or higher, straight cable (double shielded, STP)
Maximum Station-to-Station Distance		
Number of I.O Points (Local memory)	IX	1K points (1024 points, 128 bytes)
	QX	1K points (1024 points, 128 bytes)
	IW	1K points (1024 points, 2K bytes)
	QW	1K points (1024 points, 2K bytes)
	SB	512 points (512 bytes)
Configurable Slots (on base module)*1		Header slot
Hot Swapping		Supported
Internal Current Consumption (5 Vdc)		0.75A or less
Number of IO Modules		63 maximum (including system modules*)
Dimensions (H x W x D) mm		105 x 27 x 72
Weight (in grams)		130

Architecture with iQ-R & MIO in Hot-redundant system



Architecture with iQ-R & MIO in Active-Active configuration



CC-Link IE TSN

The CC-Link IE TSN header functions as a remote station, providing control over I/O operations, and is integrated into the base module. It supports high transmission speeds of 1 Gbps and 100 Mbps, with dual Ethernet ports that enable flexible network topologies, including Ring, Line, and Star configurations. The CC-Link IE TSN header is available in Class A and Class B versions, allowing users to choose the appropriate class based on system requirements and application needs.

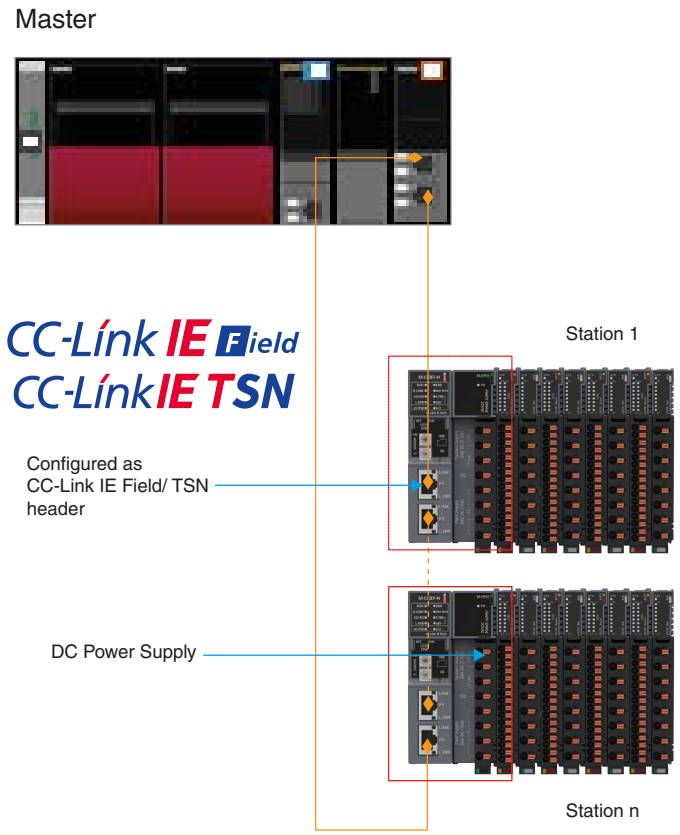
This header is particularly well-suited for large, distributed systems, where a ring topology optimizes network architecture and enhances overall efficiency ensuring reliability, flexibility, and seamless operation.

This header provides comprehensive diagnostic capabilities, ensuring the system's health and facilitating the rapid identification of issues at both I/O modules and header modules during the operation.

Specification		Description
Module Ordering Code		M-CCIEF-H
External Connections	Network Communication	RJ45 female- 2 nos.
	Configuration Port	USB 2.0
Fieldbus Support		CC-Link IE TSN
Maximum Number of Link Points Per Station	RX	1K points (1024 points, 128 bytes)
	RY	1K points (1024 points, 128 bytes)
	RWr	512 points (512 points, 1K bytes)
	RWw	512 points (512 points, 1K bytes)
Station Type		Remote station
Communication Speed		- 1 Gbps - 100 Mbps
CC-Link IE TSN Class		CC-Link IE TSN Class B, A
CC-Link IE TSN Protocol version		Protocol version 2.0
Network Topology		Line topology, star topology (coexistence of line topology and star topology is also possible), and ring topology
Communication Cable		- 1 Gbps - Ethernet cable which satisfies 1000BASE-T standard Category 5e or higher, straight cable (shielded, STP) - 100 Mbps - Ethernet cable which satisfies 100BASE-TX standard Category 5 or higher, straight cable (shielded, STP)
Maximum Station-to-Station Distance		100m
Number of I/O Points (Local memory)	IX	1K points (1024 points, 128 bytes)
	QX	1K points (1024 points, 128 bytes)
	IW	512 points (512 points, 1K bytes)
	QW	512 points (512 points, 1K bytes)
	SB	512 points (512 bytes)
Configurable Slots (on base module)*1		Header slot.
Internal Current Consumption (5 Vdc)		0.75A or less
Number of IO Modules		63 maximum (including system modules *2)
Dimensions (H x W x D) mm		105 x 27 x 72
Weight (in grams)		130

Depending on the input power supply requirements, this header can be powered ON using AC or DC Power supply.

Architecture with iQ-R & MIO in Ring topology



AC Power supply (M-APSU)

To power on the CC-Link IE Field header, you can utilize an AC power supply. The system is designed with two AC power supply modules that provide redundant power, operating on a load-sharing principle. These modules support hot swapping, enabling the replacement of a power supply without shutting down the system or causing any disruption.

The dual power supply modules enhance system availability, significantly reducing the likelihood of downtime due to power supply issues. This setup ensures continuous and reliable operation of the system.

The system can also be configured with a single AC power supply. While this setup may not offer the same level of redundancy as a dual power supply configuration, it is still effective for providing reliable power to the CC-Link IE Field header.

DC Power supply (M-DPSU)

The M-DPSU is a 24 VDC Input Power Supply module designed as a Header assembly module. It is installed in the rightmost slot of the 2-slot base module (M-B2).

The M-DPSU module performs the following functions:

With removable 8/16-Pin Terminal Block and push type connection helps quick and easy wiring, reduces system commissioning time by 60%.

- Power Supply :

  Provides 5 VDC to both the base module and the connected I/O modules, ensuring they receive the necessary voltage for operation.

- Status Monitoring :

  Generates "Input Supply OK" and "Output Supply OK" signals to the header module, which helps confirm a healthy tartup after power-on and a proper shutdown before power failure. These signals are crucial for providing status and diagnostic information, particularly in redundant configurations.

- Backplane Interface :

  Features a backplane connector interface on the right side of the module, allowing it to forward backplane bus signals from the base module to the attached I/O modules, ensuring proper communication.

- Field Power Supply :

  Connects to a 24 VDC field power supply via a terminal block and distributes this power to the attached I/O modules, facilitating their operation.

I/O Adapter Module (M-ADP)

The I/O Adapter module, also known as the Header assembly module, is the M-ADP module. It is designed to be mounted in the ADP slot, which is the rightmost slot on both the 3-slot base module (M-B3) and the 5-slot base module (M-B5).

The M-DPSU module performs the following functions:

- Attachment of I/O Modules :

  Facilitates the connection of I/O modules to the Header assembly.

- Interface Provision :

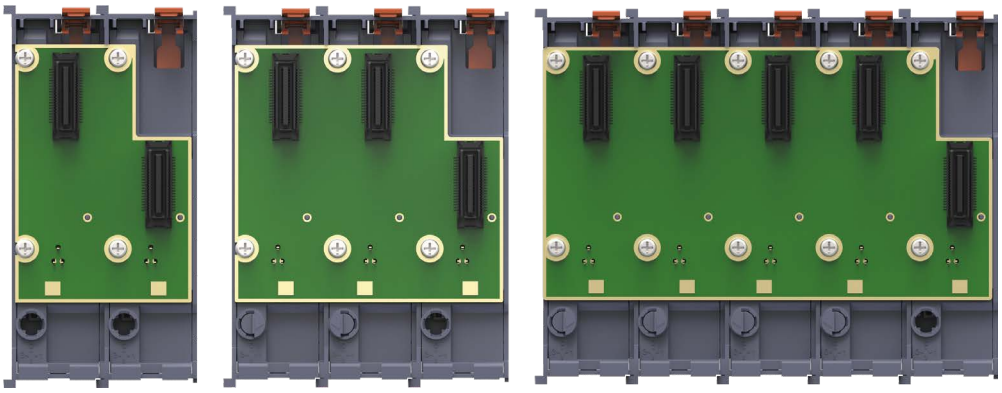
  Connects the 5 VDC supply and the backplane bus from the base module to the attached I/O modules.

- Field Power Supply :

  Provides power to the connected I/O modules, ensuring they operate correctly.

2-Slots (M-B2), 3-Slots (M-B3), 5-Slots (M-B5) Base Modules

Three variants of the base module are available, each designed to meet different system requirements:



The base module performs the following functions:

- DIN Rail Mounting
  Enables secure installation on a DIN rail (35 x 7.5 x 1 mm).
- Module Integration
  Provides a mounting platform for header assembly modules.
- Power Distribution
  Delivers 5 VDC from the power supply module to other modules and I/O modules via the adapter module.
- Backplane Bus Interface
  Facilitates the backplane bus interface between the header module and I/O modules through the adapter module.
- Signal Handshaking
  Manages handshaking signals with the header assembly modules, ensuring proper communication and coordination.

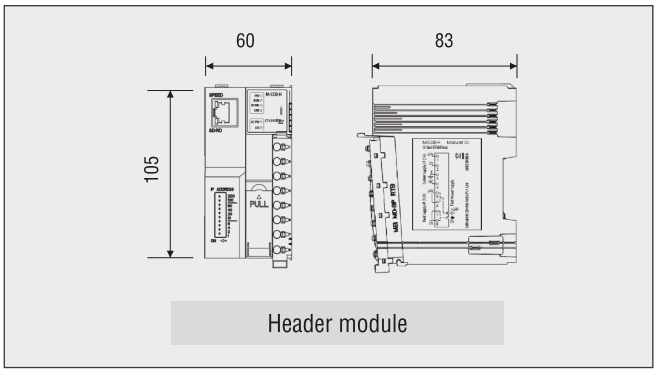
ENVIRONMENT SPECIFICATIONS

Specification	Description	
Operating temperature	Operating: 0 to 55^{0}C	Storage: -20 to 75^{0}C
Huminity	Operating: 10 to 90% RH, no condensation	Storage: 10 to 90% RH, no condensation
Altitude	2000 m or less	
Pollution level	2 maximum (only non-conductive pollution)	
Operating atmosphere	Corrosive gas must not be present	
IP protection	IP20	
EMC - Immunity: as required by IEC 61131-2, IEC 61000-6-2	Electro static discharge (ESD) (IEC 61000-4-2) ±8kV Air discharge, ±4kV contact discharge	
	Electrical fast transient (EFT) (IEC 61000-4-4): power line: ±2kV, digital I/O: ±1kV analog and communication I/O: ±1kV	
	Power frequency magnetic field (IEC 61000-4-8): 30 A/m, 50/60 Hz	
Over voltage category	II (IEC 60664-1), the surge voltage with stand level for up to the rated voltage of 30V is ±500V	
Vibration, shock	As required by EN-61131-2, IEC 60068-2-6 (test Fc), IEC 60068-2-27 (test Ea)	

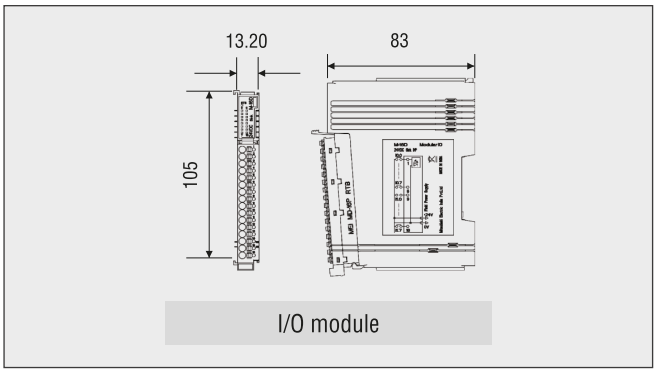
PRODUCT LIST

Type	Module	Description
Header	M-CCB-H	CC-Link IE Field Basic Header
	M-MT-H	Modbus TCP Header
	M-EIP-H	EtherNet/IP Header
	M-CCIEF-H	CC-Link IE Field / TSN Header
Digital Input	M-8D	8 DI, 24VDC, Sink Type (-Ve Common) for PNP Devices
	M-16D	16 DI, 24VDC, Sink Type (-Ve Common) for PNP Devices
	M-8DE	8 DI, 24VDC, Source Type (+Ve Common) for NPN Devices
	M-16DE	16 DI, 24VDC, Source Type (+Ve Common) for NPN Devices
Digital Output	M-8TE	8 DO, 24VDC, Source Type
	M-16TE	16 DO, 24VDC, Source Type
Analog Input	M-AD4	4 Ch. Analog Input Voltage/ Current (16-bit)
	M-ADI8	8 Ch. Analog Input Current (16-bit)
	M-ADV8	8 Ch. Analog Input Voltage (16-bit)
	M-UAD2	2 Ch. Universal Analog Input (V/I/TC/RTD) (16-bit)
	M-TCRT4	4 Ch. Thermocouple/RTD input (16-bit)
Analog Output	M-DA2	2 Ch. Analog Output Voltage/ Current (12-bit)
	M-DA4	4 Ch. Analog Output Voltage/ Current (16-bit)
Serial COM Module	M-1R2	1 Ch. Serial COM RS232 (with Handshaking signals)
	M-2R2	2 Ch. Serial COM RS232
	M-1R4	1 Ch. Serial COM (RS422/ RS485) (Modbus RTU Master)
System Modules	M-SPE	System Power Extension
	M-ST	Shield Termination
	M-FPI	Field Power Isolator
	M-FPD	Field Power Distribution
	M-BE	Bus End
	M-B5	5 slot base
	M-B3	3 slot base
	M-B2	2 slot base
	M-BC	Blank Cover
	M-APSU	230 VAC Input Power supply
	M-DPSU	24 VDC Input Power supply
	M-ADP	IO Adapter Module

EXTERNAL DIMENSIONS (All dimensions are in mm)



Header module



I/O module

*Refer user manual for more detailed information

Learn more : https://mitsubishielectric.in/fa/fa-modular-io.html

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