

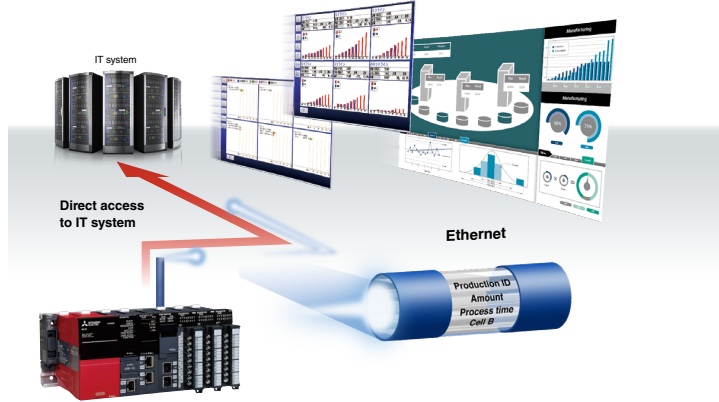
Information and Network Modules

MES Interface Module

The iQ-R Series MES Interface module mounts right on the iQ-R base unit and provides the production floor with direct connectivity to IT systems and databases. This module can act as a single source information provider, making sure that the manufacturing process is operating flawlessly from start to finish. The transmission of data can be event-driven, providing real-time production status and enable immediate response to production-related problems.

The MES Interface module is a crucial enabling technology for Mitsubishi Electric's e-F@ctory solution. Some benefits of implementing an MES solution include:

- Quicker setup time
- Reduced waste, re-work, and scrap
- More accurate capture of cost-information
- Increased uptime



MES Interface Module Specifications

Model Number		RD81MES96
Stocked Item		S
Certification		UL • cUL • CE
External Interface	Ethernet (1000BASE-T/100BASE-TX/10BASE-T)	2CH
	SD Memory Card Slot	SD memory card/SDHC memory card (2 GB...16 GB)
Database Connection	Supported Database (*1)	Oracle® Database, Microsoft® SQL Server, Microsoft® Access
	Number of Connected Databases	Max. 16/project
Job	Allowable Number of Settings	Max. 64/project
	Trigger Buffering Count	192
	Trigger Conditions (Number of Combinations)	2 conditions/job
Action	Allowable Number of Settings	Max. 1920/project, max. 30 (20 main processing actions + 10 pre/post-processing actions)/job
	SQL Text	SELECT, INSERT, UPDATE, DELETE, Multi-SELECT, STORED PROCEDURE
	Database Communication Action Fields	Max. 65536/project Data Assignment Settings: Max. 1024 fields/DB action. 256 for STORED PROCEDURE Narrowing-Down Condition Settings: Max. 8 lines/DB communication action
	No. of Operations Possible for Operation Action	(Max. 20 binary operations)/operation action
Program Execution: Allowable Number of Settings		Max. 10 programs. (Max. 10 for the total of main processing and pre/post-processing actions)/job
Device Tag	Accessible CPU Modules	Programmable controller CPU: RCPU (*2), QCPU (Q mode), LCPU, C Controller (standard model)
	Number of Tags	64/project
	Number of Components	1024/tag, 65536/project
Data Sampling Interval	High-Speed Sampling (ms)	Synchronized with the scan time, 1...900 (up to 8K points)
	General Sampling (s)	0.1...0.9, 1...3600
DB Buffering: Buffering Size at Communication Error		2,048 MB (Two DB buffers of up to 1,024 MB each can be set)

Notes:

1. For details, please refer to the relevant manual.
2. Supported by programmable controller CPUs (including CC-Link IE embedded CPU) and Process CPUs.

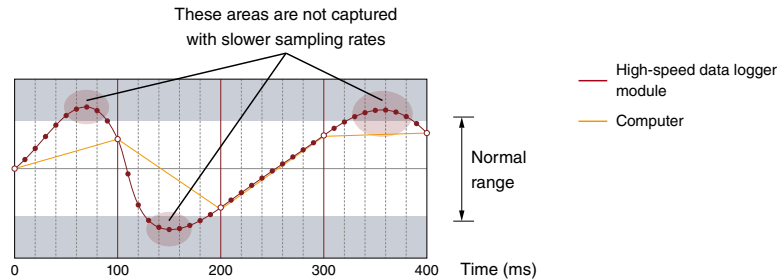
MES Interface Module Functions

Model Number		RD81MES96
Function	DB Record Read/Write	Reads/writes data in the database of the host information system
	Device Memory Read/Write	Reads/writes device memory data of the CPU module
	Trigger Condition Monitoring	Monitors values of the time or device tag components etc., and starts jobs when a trigger condition changes from false to true (the condition is satisfied)
	Data Operation and Processing	Performs four arithmetic operations, obtains remainder, performs character string operation, etc.
	Program Execution	Executes a program on the server through a MES Interface module
DB Buffering		Buffers the data sent to the database, and resend it after recovery, when the data cannot be linked due to the disconnection of the network between MES Interface module and the database or failure of the database etc.
Setup Software: MES Interface Function Configuration Tool		MX-MESIF-R-C1 (iQ-R Series MES Interface Configuration Tool Single License)

High Speed Data Logger

Whether it is in the commissioning or maintenance process, the iQ-R Series High Speed Data Logger module can be a valuable troubleshooting tool. It can be synchronized with the controller scan time to acquire critical production and quality data, achieving sampling rates of up to 0.5ms. The collected data can be saved in Unicode, CSV, or BIN format, and used to automatically populate pre-created report templates. In addition, the logged data files can be automatically sent to a FTP server or a Microsoft® Windows® share folder.

High-speed Data Sampling Function: 0.5 ms (max.)



High-speed Data Logger Specifications

Model Number		RD81DL96
Stocked Item		S
Certification		UL • cUL • CE
Accessible CPU Modules		iQ-R Series (Direct, Remote), Q Series (Remote), L Series (Remote)
Data Sampling Interval	High-speed Data Sampling (ms)	Sequence scan time synchronization; 0.5...0.9, 1...32767 (for trigger logging); 2...32767 (for continuous logging)
	General Data Sampling (s)	0.1...0.9, 1...32767; Time interval specification (specify hour/minute/second)
Amount of Sampled Data	High-speed Data Sampling	Overall amount of data: 32768 (per setting: 1024); Overall number of device points: 32768 (per setting: 4096)
	General Data Sampling	Overall amount of data: 65536 (per setting: 1024); Overall amount of data: 262144 (per setting: 4096)
Function		Data logging Logs CPU module device values at specified data sampling intervals. Event logging Monitors sampled device values from the CPU module, and logs events that occur. Report Outputs the data sampled by the high speed data logger module as an Excel® file.
Recipe		Executes the following operations using recipe files stored in the SD memory card: Transfer device values written on the recipe files to devices in the CPU module; Transfer device values in the CPU module to the recipe files.

Transmission and Interface Specifications

Model Number		RD81DL96		
Ethernet	Interface	1000BASE-T	100BASE-TX	10BASE-T
	Data Transmission Rate	1 Gbps	100 Mbps	10 Mbps
	Transmission Method	Base band		
	Number of Cascade Connections (When Using a Repeater Hub)	—	Maximum 2 stages	Maximum 4 stages
	Maximum Segment Length	100 m (distance between hub and node)		
	Supported Function	Auto-negotiation (automatic recognition of communication speed/communication method) Auto-MDI/MDI-X (automatic recognition of straight/crossing cable)		
	IP Version	IPv4 supported		
SD Memory Card Slot	Supply Power Voltage	3.3 VDC		
	Supply Power Capacity	Up to 200 mA		
	Interface	SD memory card/SDHC memory card		
	Number of Insertable Cards	1 card		
Number of Occupied I/O Points		32 points (I/O assignment: Intelligent 32 points)		
Clock		Obtained from a CPU module (in multiple CPU system, CPU No.1). Time accuracy after obtaining the time, daily error of ±9.504 seconds		
5VDC Internal Current Consumption		1.1 A		
External Dimensions (H x W x D) mm		106 x 27.8 x 110		
Weight (kg)		0.24		

Ethernet Module

The IQ-R Ethernet module has dual ports that may be configured as Ethernet, CC-Link IE Control, or CC-Link IE Field networks. Refer to the manual for valid combinations.

Model Number		RJ71EN71		CPU Module	
		Ethernet	Q-Compatible Ethernet (*5)		
Stocked Item		S			
Certification		UL • cUL • CE			
Transmission Specifications	Data Transmission Speed		1Gbps/100Mbps/10Mbps	1Gbps(*1)/100Mbps/10Mbps	
	Communication Mode	1000BASE-T	Full-duplex	-	
		100BASE-TX	Full-duplex/half-duplex		
		10BASE-T	Full-duplex/half-duplex		
	Interface		RJ45 connector (Auto MDI/MDI-X)		
	Transmission Method		Base band		
	Maximum Frame Size		1518 bytes 9022 bytes (when jumbo frames are used)	1518 bytes	
	Jumbo Frame		Available	Not available	
	Maximum Segment Length		100m (length between hub and node) (*2)		
	Number of Cascade Connections	1000BASE-T	(*3)		-
100BASE-TX		2 levels maximum (*4)			
10BASE-T		4 levels maximum (*4)			
IP Version		Compatible with IPv4			
Sending/Receiving Data Storage Memory	Number of Simultaneous Open Connections		128 connections (connections usable on a program)	16 connections (connections usable on a program)	
	Fixed Buffer		5K words x 16	1K words x 16	
	Socket Communications		5K words x 48 (when only P1 is used) 5K words x 112 (when P1 and P2 are used)	-	5K words x 16
	Random Access Buffer		6K words x 1		
Dimensions (H x W x D) mm		106 x 27.8 x 110			

Notes:

- When using 1Gbps, set "Communication Speed" under "Application Settings" to "Automatic Negotiation" ("1Gbps" cannot be selected).
- For maximum segment length (length between hubs), consult the manufacturer of the hub used.
- Consult the manufacturer of the switching hub used.
- This applies when a repeater hub is used. For the number of levels that can be constructed when using a switching hub, consult the manufacturer of the switching hub used.
- Compatible with Q Series Ethernet module's I/O signal and buffer memory.

EtherNet/IP Module

Model Number		RJ71EIP91		
Stocked Item		S		
Certification		UL • cUL • CE		
EtherNet/IP Communications	Class 1 Communications	Communication Format	Standard EtherNet/IP, tag communications	
		Number of Connections (*1)	Standard EtherNet/IP: 256 • Tag communications: 256	
		Communication Data Size	1444 bytes (per connection)	
		Connection Type	Point-to-point, multicast	
		RPI (Communication Cycle)	0.5 to 60000ms	
		PPS (Communication Processing Performance)	12000PPS	
	Class 3 Communications	Communication Format	Standard EtherNet/IP	
		Number of Connections	Server: 256 (*1) • Client: None	
		Communication Data Size	1414 bytes (per connection)	
	UCMM Communications	Connection Type	Point-to-point	
		Communication Format	Standard EtherNet/IP	
		Number of Connections (Number of Simultaneous Executions)	Server: 96 Client: 32	
Communication Data Size		1414 bytes		
Transmission Specifications	Connection Type		Point-to-point	
	Number of Ports		1	
	Communication Mode		Full-duplex	
	Data Transmission Speed		100Mbps	
	Transmission Method		Base band	
	Maximum Segment Length		100m (length between hub and node) (*2)	
	Number of Cascade Connections		Consult the manufacturer of the switching hub used	
Interface		RJ45 connector		
IP Version		IPv4 is supported		
Number of Occupied I/O Points		32		
Internal Current Consumption (5VDC)		1.09A		
External Dimensions (H x W x D) (mm)		106 (base unit mounting side: 98) x 27.8 x 110		
Weight (kg)		0.24		

Notes:

- The total number of connections for Class 1 communications and Class 3 communications is 256.
- For maximum segment length (length between hubs), consult the manufacturer of the hub used.

CC-Link IE Control Modules

Model Number	RJ71GP21-SX	RJ71GP21S-SX	RJ71EN71 (When Configured as CC-Link IE Control)
Stocked Item	S	S	S
Certification	UL • cUL • CE		
Number of Occupied I/O Points	32	48 points 2 slots (I/O assignment: empty 16 points + intelligent 32 points)	32
Internal Current Consumption (A)	0.88	0.95	0.82
External Power Supply	Voltage	20.4 to 31.2 VDC	No external power supply function
	Current	0.28A	
	Terminal Screw Size	M3 screw	
	Applicable Solderless Terminal	R1.25-3	
	Applicable Wire Size	0.3 to 1.25mm (22 to 16 AWG)	
	Tightening Torque	0.42 to 0.58 N•m	
	Allowable Momentary Power Failure Time	1ms (level PS1)	
	Noise Immunity	Simulator noise 500Vp-p, noise width 1μs, noise frequency 25 to 60Hz (noise simulator condition)	
Maximum Number of Link Points Per Network	LB	32K points (32768 points, 4K bytes)	
	LW	128K points (131072 points, 256K bytes)	
	LX	8K points (8192 points, 1K bytes)	
	LY	8K points (8192 points, 1K bytes)	
Maximum Number of Link Points Per Station	LB	16K points (16384 points, 2K bytes), extended mode: 32K points (32768 points, 4K bytes)	
	LW	16K points (16384 points, 32K bytes), extended mode: 128K points (131072 points, 256K bytes)	
	LX	8K points (8192 points, 1K bytes)	
	LY	8K points (8192 points, 1K bytes)	
Transient Transmission Capacity	1920 bytes maximum		
Communication Speed	1Gbps		
Network Topology	Duplex loop	Line topology, star topology (coexistence of line topology and star topology is also possible), and ring topology	
Communication Cable	Optical fiber cable which satisfies 1000BASE-SX standard: Multi-mode optical fiber (GI)		Ethernet cable which satisfies 1000BASE-T standard: Category 5e or higher, straight cable (double shielded, STP)
Maximum Station-To-Station Distance	550m (when the outside diameter of the core is 50μm) 275m (when the outside diameter of the core is 62.5μm)	550m	100m (conforms to ANSI/TIA/EIA-568-B (Category 5e))
Overall Cable Distance	66000m (when 120 stations are connected and the outside diameter of the core is 50μm) 33000m (when 120 stations are connected and the outside diameter of the core is 62.5μm)	66000m (when 120 stations are connected)	Line topology: 11900m (when 120 stations are connected) Star topology: Depends on the system configuration Ring topology: 12000m (when 120 stations are connected)
Number of Cascade Connections	-		
Maximum Number of Connectible Stations	120 stations (control station: 1, normal station: 119) (*1)		
Maximum Number of Networks	239		
Maximum Number of Groups	32		
Communication Method	Token ring		Token passing
Optical Fiber Specifications	Standard: IEEE802.3, IEC 60793-2-10 Types A1a.1 Outside diameter of the core/clad: 50μm, 62.5μm/125μm Transmission loss: 3.0dB/km or lower [λ=850nm] Transmission band: 500MHz•km or higher (λ=850nm)		-
Connector Specifications	Duplex LC connector: Standard: IEC 61754-20 Type LC connector; Connection loss: 0.3dB or lower; Polished surface: PC (Physical Contact) polishing		RJ45 connector
Laser Class (IEC60825-1)	Class 1 laser product		
Dimensions (H x W x D) mm (Base Mounting Side 98mm)	106 x 27.8 x 110	106 x 56 x 110	106 x 27.8 x 110
Weight (kg)	0.18	0.26	0.17

Note 1: When using a CC-Link IE Controller Network-equipped module in a normal station, maximum number of connectible stations differs depending on the CPU module used in a control station. For details, refer to User's Manual for the control station used.

CC-Link IE Field Modules

Model Number		RJ71GF11-T2	RJ71EN71 (When Configured as CC-Link IE Field)	
Stocked Item		S	S	
Certification		UL • cUL • CE		
Maximum Number of Link Points Per Network	RX	16K points (16384 points, 2K bytes)		
	RY	16K points (16384 points, 2K bytes)		
	RWr	8K points (8192 points, 16K bytes)		
	RWw	8K points (8192 points, 16K bytes)		
Maximum Number of Link Points Per Station	Master Station	RX	16K points (16384 points, 2K bytes)	
		RY	16K points (16384 points, 2K bytes)	
		RWr	8K points (8192 points, 16K bytes)	
		RWw	8K points (8192 points, 16K bytes)	
	When the Submaster Function is Used	Master Operating Station	RX	16K points
			RY	16K points (Own station send range is 2K points)
			RWr	8K points
		Submaster Operating Station (*1)	RWw	8K points (Own station send range is 1024 points.) 8K points when communication mode is "High-Speed" (Own station send range is 256 points)
			RX	2K points (assigned to station # 0 or submaster station)
			RY	2K points (assigned to station # 0 or submaster station)
	Local Station (*1)	RWr	1024 points (assigned to station # 0 or submaster station) 256 points when communication mode is "High-Speed"	
		RWw	1024 points (assigned to station # 0 or submaster station) 256 points when communication mode is "High-Speed"	
RX		2K points (2048 points, 256 bytes)		
RY		2K points (2048 points, 256 bytes)		
Transient Transmission Capacity		1920 bytes maximum		
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		100m (conforms to ANSI/TIA/EIA-568-B (Category 5e))		
Overall Cable Distance		Line topology: 12000m (when 121 stations are connected) • Star topology: Depends on the system configuration Ring topology: 12100m (when 121 stations are connected)		
Number of Cascade Connections		20 levels maximum		
Maximum Number of Connectable Stations		121 stations (master station: 1, slave station: 120)		
Maximum Number of Networks		239		
Communication Method		Token passing		
Dimensions (H x W x D) mm		106 x 27.8 x 110		

Note 1: The maximum number of points that a master station can assign to one station. A submaster station and a local station can receive the data from other stations in addition to this number of points.

CC-Link IE Field Remote Head Module

The CC-Link IE Field Remote Head module can be mounted on a main base unit, to the right of the power supply module.

Model Number		RJ72GF15-T2
Stocked Item		S
Certification		UL • cUL • CE
Maximum Number of Link Points/ Station	RX	2K points (2048 points, 256 bytes)
	RY	2K points (2048 points, 256 bytes)
	RWr	1K points (1024 points, 2K bytes)
	RWw	1K points (1024 points, 2K bytes)
Station Type		Intelligent Device Station (Slave)
Station Number		1 to 120
Network Number		1 to 239
Communication Speed		1Gbps
Network Topology		Line, start, ring
Communication Cable		Ethernet cable which satisfies 1000BASE-T standard: Category 5e or higher, straight cable (double shielded, STP)
Max Station-to-Station Distance		100m
Internal Current Consumption 5VDC		0.75A
Weight (kg)		0.2
Dimensions (H x W x D) mm		27.8 x 106 x 110

CC-Link Module

Model Number	RJ61BT11		
Stocked Item	S		
Certification	UL • cUL • CE		
Transmission Speed	Selected from 156kbps, 625kbps, 2.5Mbps, 5Mbps, and 10Mbps		
Maximum Number of Connectible Modules	64		
Number of Occupied Stations (Local Station)	1 to 4 stations (The number of stations can be changed using the engineering tool)		
Maximum Number of Link Points Per System	CC-Link Ver.1	Remote I/O (RX, RY): 2048 points; Remote register (RWw): 256 points (master station – remote device station/local station/intelligent device station/standby master station); Remote register (RWr): 256 points (remote device station/local station/intelligent device station/standby master station – master station)	
	CC-Link Ver.2	Remote I/O (RX, RY): 8192 points; Remote register (RWw): 2048 points (master station — remote device station/local station/intelligent device station/standby master station); Remote register (RWr): 2048 points (remote device station/local station/intelligent device station/standby master station – master station)	
Communication Method	Broadcast polling method		
Synchronization Method	Frame synchronization method		
Encoding Method	NRZI method		
Network Topology	Bus (RS-485)		
Transmission Format	HDLC compliant		
Error Control System	CRC ($X^{16} + X^{12} + X^5 + 1$)		
Connection Cable	Ver.1.10-compatible CC-Link dedicated cable		
Maximum Overall Cable Length	Depends on the transmission speed		
RAS Function	Standby master station • Automatic return function • Slave station cutoff function Error detection using link special relay areas (SB) and link special register areas (SW)		
Number of Occupied I/O Points	32 points		
Internal Current Consumption (5 VDC)	0.34A		
Weight (kg)	0.16		

DeviceNet Module

Model Number	RJ71DN91			
Stocked Item	S			
Certification	UL • cUL • CE			
Master Function	Node Type		DeviceNet master (Group2 Only client)	
	Node Address		0 to 63	
	Number of Connections	Message Connection		63
		I/O Connection		63 (polling, bit strobe, change of state, cyclic)
	Communication Data Size	I/O Communication	Transmit	Max. 4096 points (512 bytes), max. 256 bytes per node
			Receive	Max. 4096 points (512 bytes), max. 256 bytes per node
Message Communication		Transmit	Max. 240 bytes	
		Receive	Max. 240 bytes	
Slave Function	Node Type		DeviceNet slaves (Group2 server)	
	Node Address		0 to 63	
	Number of Connections	I/O Connection		
	Communication Data Size	I/O Communication	Transmit	Max. 1024 points (128 bytes)
			Receive	Max. 1024 points (128 bytes)
Communication Speed			Selectable from 125kbaud, 250kbaud, and 500kbaud	
Current Consumption Required on the Network			5mA	
Number of Write Accesses to a Flash ROM			Max. 100000 times	
Number of Occupied I/O Points			32	
Internal Current Consumption (5VDC)			0.30A	
Dimensions (H x W x D) mm			106 x 27.8 x 118.5	
Weight (kg)			0.15	

PROFINET Module

Model Number		RJ71PN92
Stocked Item		S
Certification		UL • cUL • CE
Data Exchange	Maximum Input Data Length Per Network	4096 words
	Maximum Output Data Length Per Network	4096 words
	Maximum Input Data Length Per IO Device	1437 bytes
	Maximum Output Data Length Per IO Device	1437 bytes
	Cycle Time	512ms maximum; 1ms minimum (*1)
Service Interface	Maximum Transmission Capacity Per Request	4116 bytes
Maximum Number of Connectable IO Devices		128
Transmission Specifications	Data Transmission Speed (*2)	1Gbps/100Mbps/10Mbps
	Communication Mode	Full-duplex
	Interface	RJ45 connector (Auto-negotiation, AUTO MDI/MDI-X)
	Transmission Method	Base band
	Maximum Segment Length	100m (length between hub and node) (*3)
	Number of Cascade Connections	Consult the manufacturer of the switching hub used
	IP Version	IPv4
Communication Processing Performance		Maximum 8000 packets (frames)/second (*4)
Number of Occupied I/O Points		32
Internal Current Consumption (5VDC)		1.09A
External Dimensions (H x W x D) mm		106 (Base unit mounting side: 98) x 27.8 x 110
Weight (kg)		0.24

Notes:

1. The cycle time depends on the number of IO devices and the input/output data length.
2. Data communications at 100Mbps is recommended.
3. For maximum segment length (length between hubs), consult the manufacturer of the hub used.
4. An error occurs if the communication setting over 8000 packets (frames)/second is set in GX Configurator-PN.

iQ-R CANopen Module

Model Number		RJ71CN91
Stocked Item		S
Certification		UL • cUL • CE
Transmission Type		CAN bus network (RS-485, CSMA/CR)
Applicable Function		CANopen node CAN node
CANopen Communication Services that are Compliant with the CiA Standards		CiA-301 V4.2 CiA-302 V4.1 CiA-305 V2.2
CANopen Device/Application Profiles that are Compliant with the CiA Standards		Interface and device profile CiA-405 V2.0 for IEC 61131-3 programmable devices
Remote Transmit Request (RTR)		CANopen 405 mode: Not supported for PDO 11-bit CAN-ID Layer 2 message mode and 29-bit CAN-ID Layer 2 message mode: Supported
Amount of Communication Data (CANopen 405 Mode)	TPDO	4 words x 256
	RPDO	4 words x 256
Frame Format (11-bit CAN-ID Layer 2 Message Mode, 29-bit CAN-ID Layer 2 Message Mode)		The standard format (11-bit CAN-ID) or extended format (29-bit CAN-ID) can be selected.
Node ID		Selectable from 1 to 127
Communication Method		Acyclic, cyclic, or event-driven
Baud Rate		1Mbps/800kbps/500kbps/250kbps/125kbps/100kbps/50kbps/20kbps/10kbps
Maximum Cable Length		5000m (when used at 10kbps) 2500m (when used at 20kbps) 1000m (when used at 50kbps) 600m (when used at 100kbps) 500m (when used at 125kbps) 250m (when used at 250kbps) 100m (when used at 500kbps) 50m (when used at 800kbps) 25m (when used at 1Mbps)
Connection Cable		The CAN bus cable should conform to ISO 11898
Interface		Two-piece pluggable terminal block
Number of Write Accesses to a Flash ROM		Hundred thousand times at a maximum
Number of Occupied I/O Points		32
Internal Current Consumption (5VDC)		0.33A
Dimensions (H x W x D) mm		106 (Base unit mounting side: 98mm) x 27.8 x 118.5
Weight (kg)		0.14

PROFIBUS-DP Station

Model Number	RJ71PB91V	
Stocked Item	S	
Certification	UL • cUL • CE	
PROFIBUS-DP Station Type	DP-Master (Class 1)	
Electrical Standard and Characteristics	Compliant with EIA-RS485	
Medium	Shielded twisted pair cable (See manual for more details)	
Network Configuration	Bus topology (or tree topology when repeaters are used)	
Data Link Method	Between DP-Masters: Token passing; Between DP-Master and DP-Slave: Polling	
Encoding Method	NRZ	
Transmission Speed (*1)	9.6kbps to 12Mbps (See manual for more details)	
Transmission Distance	Varies depending on the transmission speed. (See manual for more details)	
Maximum Number of Repeaters (Per Network)	3	
Number of Connectable Modules (Per Segment)	32 per segment (including repeaters)	
Number of Connectable Modules (Per Network)	126 per network (including DP-Master and DP-Slaves (See manual for more details)	
Maximum Number of DP-Slaves	125 (See manual for more details)	
Number of Connectable Nodes (Number of Repeaters)	32, 62 (1), 92 (2), 126 (3)	
Transmittable Data	Input Data	Maximum of 8192 bytes (maximum of 244 bytes per DP-Slave)
	Output Data	Maximum of 8192 bytes (maximum of 244 bytes per DP-Slave)
Number of Occupied I/O Points	32	
Internal Current Consumption (5VDC)	0.42A	
Dimensions (H x W x D) mm	106 (Base unit mounting side: 98mm) x 27.8 x 110	
Weight (kg)	0.16	

Note 1: Transmission speed accuracy is within $\pm 0.2\%$ (compliant with IEC61158-2).

Transmission Distance

Transmission Speed	Transmission Distance	Maximum Transmission Distance When Repeaters Are Used (*1)
9.6kbps	1200m/segment	4800m/network
19.2kbps		
45.45kbps		
93.75kbps		
187.5kbps	1000m/segment	4000m/network
500kbps	400m/segment	1600m/network
1.5Mbps	200m/segment	800m/network
3Mbps	100m/segment	400m/network
6Mbps		
12Mbps		

Note 1: The maximum transmission distance shown in the above table indicates the distance when three repeaters are used. To calculate the maximum transmission distance when repeaters are used and the transmission distance is extended, use the following formula.

Maximum transmission distance [m/network] = (Number of repeaters + 1) x Transmission distance [m/segment]

iQ-R OPC Server Module

Model Number	RD810PC96			
Stocked Item	S			
Certification	UL • cUL • CE			
SD Memory Card Slot	Interface	SD memory card/SDHC memory card (2 GB to 16 GB)		
	Power Supply	+3.3 VDC, up to 200 mA		
Ethernet Port	Number of Channels	2		
	Interface (*1)	100BASE-T	100BASE-TX	10BASE-T
	Data Transmission Rate	1000 Mbps	100 Mbps	10 Mbps
	Number of Cascaded Stages (*2)	-	Maximum 2 stages	Maximum 4 stages
	Communication Mode	Full-duplex/half-duplex		
	Transmission Method	Base band		
	Maximum Segment Length (*3)	100 m (length between a hub and a node)		
	Applicable Connector for External Wiring	RJ45 Auto-negotiation (automatic recognition of 1000BASE-T/100BASE-TX/10BASE-T) Auto-MDI/MDI-X (automatic recognition of a straight/crossing cable)		
Supported Function	Auto-negotiation (automatic recognition of 1000BASE-T/100BASE-TX/10BASE-T) Auto-MDI/MDI-X (automatic recognition of a straight/crossing cable)			
Number of Occupied I/O Points	32 points/slot (I/O assignment: Intelli. 32 points)			
Clock	Acquired from a CPU module (CPU No.1 in a multiple CPU system)			
5 VDC Internal Current Consumption	1.25 A			
External Dimensions (H x W x D) mm	106 x 27.8 x 110			
Weight (kg)	0.25			

Notes:

- 1000BASE-T/100BASE-TX/10BASE-T, and full-duplex/half-duplex communication mode are identified by an OPC UA server module depending on the hub. For connection with a hub not having the auto-negotiation function, set the setting on the hub side according to the communication mode.
- It is for a repeater hub. For a switching hub, consult the manufacturer of the hub used.
- For the maximum segment length (length between hubs), consult the manufacturer of the switching hub used.

Serial Communication Modules

Model Number		RJ71C24	RJ71C24-R2	RJ71C24-R4			
Stocked Item		S	S	S			
Certification		UL • cUL • CE					
Interface	CH1	RS-232-compliance (D-sub 9 pin female)	RS-232-compliance (D-sub 9 pin female)	RS-422/485-compliance (2-piece plug-in terminal block)			
	CH2	RS-422/485-compliance (2-piece terminal block)	RS-232-compliance (D-sub 9 pin female)	RS-422/485-compliance (2-piece plug-in terminal block)			
Communication Method	Line	Full-duplex/half-duplex communications					
	MC Protocol Communication	Half-duplex communications					
	Predefined Protocol Communication	Full-duplex/half-duplex communications					
	Nonprocedural Protocol Communication	Full-duplex/half-duplex communications					
	Bidirectional Protocol Communication	Full-duplex/half-duplex communications					
Synchronization Method		Start-stop synchronization method					
Transmission Speed		1200/2400/4800/9600/14400/19200/28800/38400/57600/115200/230400(bps)					
Data Format	Start Bits	1					
	Data Bits	7/8					
	Parity Bits	1 (vertical parity) or none					
	Stop Bits	1/2					
Access Cycle	MC Protocol Communication	Processes one request during the END processing of the CPU module of the station with the C24					
	Predefined Protocol Communication	Sends or receives data when requested with the dedicated instruction (CPRCTL)					
	Nonprocedural Protocol Communication Bidirectional Protocol Communication	Sends each time a send request is issued. Can receive at any time					
Error Detection			MC protocol communication	Predefined protocol communication	Nonprocedural protocol communication	Bidirectional protocol communication	
	Parity check	Enabled	Enabled	Enabled	Enabled	Enabled	
	Sum check	Enabled	Enabled	Enabled	Enabled	Enabled	
	Horizontal parity	Disabled	Enabled	Enabled	Enabled	Disabled	
	16-bit CRC (for MODBUS)	Disabled	Enabled	Enabled	Disabled	Disabled	
<ul style="list-style-type: none"> • MC protocol communication: Select with parameters. • Predefined protocol communication: Select with the Predefined protocol support function. • Nonprocedural protocol communication: Set with user frames. • Bidirectional protocol communication: Select with parameters. • Parity check: Select odd/even of parity bit (vertical bit) with parameters. 							
Transmission Control			RS-232	RS-422/485			
	DTR/DSR control	Enabled	Disabled	Disabled			
	RS/CS control	Enabled	Disabled	Disabled			
	CD(DCD) signal control	Enabled	Disabled	Disabled			
	DC1/DC3 (Xon/Xoff) control DC2/DC4 control	Enabled	Enabled	Enabled			
<ul style="list-style-type: none"> • DTR/DSR signal control and DC code control are selected by the user. 							
Line Configuration for Connection (Target Device side: CPU Module Side) (*1)	RS-232	1:1	1:1	-			
	RS-422/485	1:1, 1:n, n:1, m:n	-	1:1, 1:n, n:1, m:n			
Line Configuration for Data Communication (Target Device Side: CPU Module Side)	RS-232	MC Protocol Communication	1:1	1:1			
		Predefined Protocol Communication	1:1	1:1			
		Nonprocedural Protocol Communication	1:1	1:1			
		Bidirectional Protocol Communication	1:1	1:1			
	RS-422/485	MC Protocol communication	1:1, 1:n, m:n		1:1, 1:n, m:n		
		Predefined Protocol Communication	1:1, n:1		1:1, n:1		
		Nonprocedural Protocol Communication	1:1, 1:n, m:n		1:1, 1:n, m:n		
		Bidirectional Protocol Communication	1:1		1:1		
Transmission Distance (Overall Distance)	RS-232	Maximum 15 m	Maximum 15 m	-			
	RS-422/485	Maximum 1200 m (overall distance)	-	Maximum 1200 m (overall distance)			
Number of Occupied I/O Points		32 points (I/O assignment: Intelli: 32 points)					
Applicable Connector for External Wiring		D-sub 9 pin (male) screw type (*2)					
5 VDC Internal Current Consumption		0.31 A	0.20 A	0.42 A			
External Dimensions (H x W x D) mm		106 x 27.8 x 110					
Weight (kg)		0.16	0.14	0.13			

Notes:

1. The total number of 'n' or 'm+n' is up to 32.
2. For more information on recommended connectors, refer to the User's Guide.