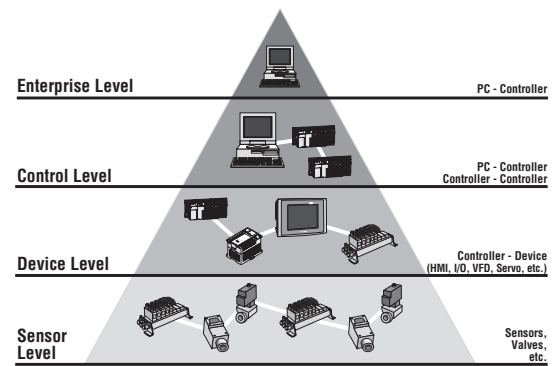


Control Network Modules

When choosing a network solution a number of criteria may come into play. Topology, bus speed, communications distance, redundancy, data transfer capabilities, the number of nodes the network can support, deterministic capabilities, cost, ease-of-use, third party support to name just a few.

But most importantly, will it work well within your specific application? When developing our family of network products, we've taken all these factors into consideration - assuring users, all the necessary features and capabilities are packaged into the network product they have selected.

From top to bottom in the network hierarchy, from open architecture protocols to seamless engineered systems, from sensor to enterprise level, we offer a host of powerful network solutions for users to choose from. The one common denominator with all Mitsubishi Electric network products is unmatched performance. In relative performance data comparisons, all our network solutions meet, exceed or dramatically outperform most competitive networks available on the global market today.



While bus speed is a critical factor in measuring performance, there are several other reasons why Mitsubishi Electric network solutions excel over others. Easy connectivity, seamless integration, synergistic performance characteristics of a Mitsubishi Electric controlled network and above all else - maximum levels of uptime without sacrificing performance or productivity. Whether you have an entire factory floor or just an individual machine to network, you'll find Mitsubishi Electric's expansive range of network options to be the superior choice.

Enterprise Level

Specifications	Ethernet (100base-TX)	Ethernet (10base-T)	Ethernet (10base-5)	Ethernet (10base-2)
Network Level	Enterprise	Enterprise	Enterprise	Enterprise
Architecture	Star (via hub)	Star (via hub)	Bus	Bus
Communications Media	Cat. 5 (UTP/STP)	Cat. 5 (UTP/STP)	via AUI transceiver	Coax
Transmission Speed	100Mbit/s	10Mbit/s	10Mbit/s	10Mbit/s
Number of Stations	Two levels of cascade connections via hubs	Four levels of cascade connections via hubs	100/segment	30/segment
Maximum Distance (m)	100/segment	100/segment	500/segment	185/segment
Remote I/O	N/A	N/A	N/A	N/A

Control Level

Specifications	CC-Link IE Control	CC-Link IE Field	MELSECNET/H
Network Level	Control	Control and Device	Control
Architecture	Loop	Bus/Loop/Star (via hub)	Bus/Loop
Communications Media	Fiber	Cat. 5	Fiber/Coax
Transmission Speed	1Gbit/s	1 Gbit/s	10/25Mbit/s (depends on module used)
Number of Stations	120	120	64 (fiber)/32 (coax)
Maximum Distance (m)	66,000	12,000	30,000 (fiber)/500 (coax)
Remote I/O	No	Yes	Yes

Note: MELSECNET/H is backwards compatible with MELSECNET/10. CC-Link IE was formerly known as MELSECNET/G.

Device Level

Specifications	CC-Link	DeviceNet	PROFIBUS-DP	MODBUS/TCP	MODBUS/RTU
Network Level	Device	Device	Device	Device	Device
Architecture	Bus	Bus	Bus	Star (via hub)	Bus
Communications Media	STP	Thick/thin trunkline	STP	Cat. 5 (UTP/STP)	STP
Transmission Speed	10Mbit/s (all devices)	0.5Mbit/s	12Mbit/s (depends on devices used)	100Mbit/s	115kbps
Number of Stations	64	64	60	64	64
Maximum Distance (m)	1200/segment (extend up to 13.2km with repeaters)	500	1200	100	1200
Remote I/O	Yes	Yes	Yes	Yes	Yes

Sensor Level

Specifications	CC-Link/LT	AS-i
Network Level	Sensor	Sensor
Architecture	Bus	Star, bus or tree
Communications Media	Dedicated mechanically keyed cable	
Transmission Speed	2.5Mbit/s	172kbit/s
Number of Stations	64	31
Maximum Distance (m)	700	100
Remote I/O	Yes	Yes



CC-Link IE Control Level Master/Local Network Modules

CC-Link IE is an industry leading alternative for open control level networking. Originally introduced as MELSECNET/G, it introduces an unprecedented 1Gbit/s Ethernet physical layer fiber topology for system performance surpassing any other network technology. MELSECNET/G has been turned over to the open administration of the CC-Link Partner Association (CLPA), and is now known as CC-Link IE. Mitsubishi Electric offers full support for CC-Link IE via the Q Series Controller.

CC-Link IE Control Optical Fiber Cordsets

Model Number	Description	Stocked Item
QG- M-B-LL	CC-Link IE cordset, where _ represents length 1, 2, 3, 5, 10, 15, 20, 25, 30, 35, 40 or 50 meters	S
Belden	Belden part numbers. Ordered directly through Belden	-

Model Number	QJ71GP21-SX	QJ71GP21S-SX
Stocked Item	S	-
Certification	UL • cUL • CE	
Network Common Memory	256 kB	
Transient Transmission Capacity	960 bytes	
Communication Speed	1GB	
Number of Stations Per Network	When Universal model QCPU is used for control station: 120; (Control station: 1, Normal station: 119); When High Performance model QCPU is used for control station: 64 (Control station: 1, Normal station: 63)	
Connection Cable	Optical fiber cable (Multi-mode fiber)	
Overall Cable Distance	66000m (When 120 stations are connected)	
Max. Station-To-Station Distance	550m	
Max. Number of Networks	239	
Max. Number of Groups	32	
I/O Device Points Occupied	32	48 (I/O assignment: Empty first half: 16 points, Latter half: 32 points for intelli.)
External Power Supply	Voltage	20.4V to 31.2VDC
	Current	0.28A
	Terminal Screw Size	M3
	Applicable Solderless Terminal	R1.25-3
	Allowable Momentary Power Failure Time	1ms (Level PS1)
Internal Current Consumption (5VDC)	0.85A	0.90A
Weight (kg)	0.18	0.28
Base Unit Slots Occupied	1	2

CC-Link IE Field Network Module

CC-Link IE Field brings 1 Gigabit speed for cyclic, acyclic and transient data transmission to RJ45 and Cat 5e cabling infrastructure. Create mixtures of line and star topology, and maintain control over up to 120 controller or remote I/O stations simultaneously on the same network.

Model Number	QJ71GF11-T2 (*1)	
Stocked Item	S	
Certification	UL • cUL • CE	
Network Common Memory	32 kB	
Transient Transmission Capacity	2048 bytes	
Ethernet	Communication Speed	1Gbps
	Connection Cable	An Ethernet cable that meets the 1000BASE-T standard (Category 5e or higher, shielded RJ45)
	Maximum Station-to-Station Distance	100m max. (Compliant with ANSI/TIA/EIA-568-B (Category 5e))
	Total Distance	Line topology: 12000m (when connected to 1 master station and 120 slave stations) Star topology: Depends on the system configuration
	Number of Cascade Connections	Up to 20
	Transmission Path	Line topology, star topology, ring topology and mix of both line topology and star topology is possible
Number of Connected Stations in One Network	Master Station	1 station
	Local Station	120 stations (Local station or Remote I/O) (*2)
Maximum Number of Networks	239	
Communication Method	Token passing method	
Number of Occupied I/O Points	32 points (I/O assignment: Intelligent 32 points)	
Internal Current Consumption (5VDC)	0.85A	
Weight (kg)	0.18	
Base Unit Slots Occupied	1	

Notes:

- Must be used with QnU Universal CPUs with Serial Numbers starting with '12012' or higher.
- For CC-Link IE Field Remote I/O stations, refer to the LJ72GF15-T2 CC-Link IE Field Slave Head station.

MELSECNET/H Control Level Master/Local Network Modules

Use MELSECNET/H to link Q Series systems together on a control level network for the coordinated operation of multiple controllers on a production line or large machine. MELSECNET/H also supports the direct connection of PCs onto the network for SCADA or maintenance applications. MELSECNET/H was designed to offer similar performance benefits to most industrial Ethernet systems, while offering the high degree of performance required in an automation environment.

MELSECNET/H Optical Fiber

Optical fiber media cable is available for connecting MELSECNET/H networks.

Model Number	Description	Stocked Item
AS-1000M-B	Optical fiber cable, sold by the meter	S
DL-72ME	AS-1000M-B connector, MEAU offers the service to provide pre-terminated cables as required	S
PA7003	Splice connector for joining pre-terminated AS-1000M-B cable	-
CAK-0068ME	Optional termination tool kit for AS-1000M-B and DL-72ME for on-site termination work	-

MELSECNET/H Control Level Master/Local Network Modules

Model Number	QJ71LP21-25	QJ71LP21S-25	QJ71LP21G	QJ71LP21GE
Stocked Item	S	-	-	-
Certification	UL • cUL • CE			
Connection Form	Duplex loop type			
Max. Number of Link Points Per Network		MELSECNET/H Mode	MELSECNET/10 Mode	
	LX/LY	8192 points (8k bits)	8192 points (8k bits)	
	LB	16384 points (16k bits)	8192 points (8k bits)	
	W	16384 points (16k words)	8192 points (8k words)	
Max. Number of Link Points Per Station	[LW+LB+LY<=2000 bytes (cyclic communication)]+[LW+LB+LY<=2000 bytes (low-speed cyclic communication)]			
Transient Transmission Capacity	Max. 1920 bytes/frame			
Transmission Speed	10Mbps/25Mbps (depending on switch setting) (*1)		10Mbps	10Mbps
Cable Type	Optical (AS-1000M-B (SI, 200/250)) (*2)	Optical (AS-1000M-B (SI, 200/250)) (*2)	Optical (GI-50/125)	Optical (GI-62.5/125)
Max. Number of Networks	239			
Max. Number of Groups	32			
Number of Stations Connected	64 stations (1: control station, 63: normal station)			
Overall Distance	30km (98360.67 ft.)			
Station to Station Distance	Cable Type	Transmission Speed		2km (6557.38 ft.)
		10Mbps	25Mbps	
	SI	500m (3278.69 ft.)	200m (1312.33 ft.)	
	H-PCF	1km (3278.69 ft.)	400m (1312.33 ft.)	
	Broadband H-PCF	1km (3278.69 ft.)	1km (3278.69 ft.)	
	QSI	1km (3278.69 ft.)	1km (3278.69 ft.)	
Distance Extension Repeater	-			
I/O Device Points Occupied	32 points	48 points (I/O assignment: first 16 points as empty, 1st 32 points as intelligent)	32 points	
External Power Supply	Voltage	-	20.4 to 31.2VDC	-
	Current	-	0.20 A	-
	Terminal Screw Size	-	M3 Screw	-
	Applicable Solderless Terminal	-	R1.25-3	-
	Applicable Wire Size	-	0.3 to 1.25 mm ²	-
Tightening Torque	-	42 to 58N • cm	-	-
Internal Current Consumption (5VDC) (A)	0.55	0.55	0.55	0.55
Weight (kg)	0.11	0.20	0.11	0.11
Base Unit Slots Occupied	1	2	1	

Notes:

- 25 Mbps is available for the MELSECNET/H mode only.
- Other types of fiber cables can be used, see "Station-to-station distance". To order pre-assembled AS-1000M-B cables, specify cable length, two DL-72ME connectors, and labor-TSS surcharge.

MELSECNET/H Control Level Master/Local Network Modules

Model Number	QJ71BR11	QJ71NT11B		
Stocked Item	S	S		
Certification	UL • cUL • CE			
Connection Form	Simplex bus type	Token bus		
Max. Number of Link Points Per Network				
		MELSECNET/H Mode	MELSECNET/10 Mode	
	LX/LY	8192 points (8k bits)	8192 points (8k bits)	MELSECNET/H Mode, MELSECNET/H Extended Mode (*1)
	LB	16384 points (16k bits)	8192 points (8k bits)	LX/LY 8192 points
	W	16384 points (16k words)	8192 points (8k words)	LB 16384 points
			W 16384 points	
Max. Number of Link Points Per Station	[LW+LB+LY<=2000 bytes (cyclic communication)]+[LW+LB+LY<=2000 bytes (low-speed cyclic communication)]		MELSECNET/H mode: $\{(LY+LB)/8 + (2 \times LW)\} \leq 2000$ bytes (*2) MELSECNET/H Extended mode: $\{(LY+LB)/8 + (2 \times LW)\} \leq 35840$ bytes (*2)	
Transient Transmission Capacity	Max. 1920 bytes/frame			
Transmission Speed	10Mbps	156kbps/312kbps/625kbps/1.25Mbps/2.5Mbps/5Mbps/10Mbps (Switched by network parameters)		
Cable Type	Coaxial 75Ω; RG-59B/U RG-11A/U	Twisted pair cable or CC-Link Ver.1.10-compatible cable (*4)		
Max. Number of Networks	239			
Max. Number of Groups	32			
Number of Stations Connected	32 stations (1: control station, 31: normal station)			
Overall Distance	500m (1639.34 ft.); RG-11A/U / 300m; (983.61 ft.) (RG-59B/U)			
Station to Station Distance		Communication Speed	Twisted Pair Cable	CC-Link Ver. 1.10-Compatible Cable
		156kbps (*3)	1200m	1200m
		312kbps	600m	900m
		625kbps	400m	600m
		1.25Mbps	200m	400m
		2.5Mbps	(Not applicable)	200m
		5Mbps		150m
	10Mbps	100m		
Distance Extension Repeater	Up to 2.5km (8196.72 ft.) by connection of max. four repeaters. Use A6BR10/ A6BR10-DC repeaters.		-	
I/O Device Points Occupied	32 points	32 points		
Internal Current Consumption (5VDC) (A)	0.75	0.6		
Weight (kg)	0.11	0.13		
Base Unit Slots Occupied	1			

Notes:

1. Mode selection is performed using network parameters.
2. The number of LY points of the stations set in the I/O master station is the sum total of the LY points for output to all stations within the block.
3. This value is set as default of the communication speed.
4. For details of cable specifications, refer to the User Manual.

MELSECNET/H Remote I/O Network Modules

These modules form a complimentary solution to the master/local modules. The master/local modules allow CPUs to be linked for information exchange. The remote I/O modules fit on a base rack in place of the CPU, and allow this rack of I/O to be operated under the control of a remote Q Series CPU over a MELSECNET/H link.

Model Number	QJ72LP25-25		QJ72LP25G	QJ72LP25GE	QJ72BR15
Stocked Item	S		-	-	S
Certification	UL • cUL • CE				
Connection Form	Duplex loop type				Simplex bus type
Max. Number of Link Points Per Station	Remote I/O station to remote master station ((LY+LB)/8 + (2 LW)) </- 1600 bytes				
Transient Transmission Capacity	Max. 1920 bytes/frame				
Transmission Speed	10Mbps/25Mbps (depending on switch setting)		10Mbps		
Cable Type	Optical (AS-1000M-B (SI, 200//250)) (*1)		Optical (GI-50/125)	Optical (GI-62.5/125)	Coaxial 75Ω (RG-59B/U, RG-11A/U)
Max. Number of Networks	239				
Number of Stations	65 stations (1:remote master station, 1:remote I/O station)				33 stations (1:remote master station, 32:remote I/O station)
Overall Distance	30km (98360.66 ft.)				500m (1639.34 ft.) (RG-11A/U); 300m (983.61 ft.) (RG-59B/U)
Distance Extension Repeater	-		-	-	Up to 2.5km (8196.72 ft.) 4 repeaters max. Use A6BR10/A6BR10-DC
Max. Distance Between Stations	Communication Speed: 10Mbps	SI type optical cable: 500m (3278.69 ft.); H-PCF type optical cable: 1km (3278.69 ft.); Broadband H-PCF cable: 1km (3278.69 ft.); QSI type optical cable: 1km (3278.69 ft.)	2km (6557.38 ft.)	2km (6557.38 ft.)	-
	Communication Speed: 25Mbps	SI type optical cable: 200m (1312.33 ft.); H-PCF type optical cable: 400m (1311.48 ft.); Broadband H-PCF cable: 1km (3278.69 ft.); QSI type optical cable: 1km (3278.69 ft.)	-	-	-
5VDC Internal Current Consumption (A)	0.89	0.89	0.89	0.89	1.1
Weight (kg)	0.15	0.15	0.15	0.15	0.16
Base Unit Slots Occupied	1				

Note 1: Other types of fiber can be used. See "Interstation distance". AS-1000M-B is purchased by the meter and can be ordered pre-assembled with DL-72ME connectors and LaborTSS surcharge.

CC-Link Device Level Master/Local Network Module

Device level networks typically link a controller to the physical components of a system that it controls. CC-Link represents the next level down from MELSECNET/H in the networking hierarchy and allows devices such as I/O modules, VFDs, HMIs and servos to be connected to the controller in a very cost effective, high performance way via a single network cable.

Please see the CC-Link section of the Distributed I/O section for a full listing of the CC-Link I/O products available.

Model Number	QJ61BT11N
Stocked Item	S
Certification	UL • cUL • CE
Transmission Rate	Selectable 156 kbps/ 625 kbps/ 2.5 Mbps/ 5 Mbps/ 10 Mbps
Maximum Overall Cable Distance (Maximum Transmission Distance)	Varies according to the transmission rate (156 kbps: 1200m; 10Mbps: 100m)
Maximum Number of Connected Stations (Master Station)	64
Number of Occupied Stations (Local Station)	1 to 4 stations; The number of stations can be switched using the GX Works2 parameter setting
Maximum Number of Link Points Per System	Remote I/O (RX, RY): 8192 points; Remote write register (RWw): 2048 words. Remote read register (RWr): 2048 words
Remote Station/Local Station/Intelligent Device Station/Standby Master Station Maximum Number of Link Points Per Station	Remote I/O (RX, RY): 128 points; Remote write register (RWw): 32 words (master station - remote device station/local station/intelligent device station/standby master station); Remote register (RWr): 32 words (remote device station/local station/intelligent device station/standby master station - master station)
RAS Function	Automatic return function; Slave station cut-off function; Error detection by the link special relay/register
I/O Device Points Occupied	32 points
5VDC Internal Current Consumption	0.46 A
Base Unit Slots Occupied	1

CC-Link Device Level Master/Local Network Module (continued)

Model Number		QJ61BT11N														
Max. Overall Cable Length and Interstation Cable Length (Ver. 1.10 or later)	Same Specifications Regardless of System Configuration															
		Ver. 1.10-Compatible CC-Link Dedicated Cable (Terminating Resistor 110Ω Used)														
		<table border="1"> <thead> <tr> <th>Transmission Speed</th> <th>Interstation Cable Length</th> <th>Max. Overall Cable Length</th> </tr> </thead> <tbody> <tr> <td>156kbps</td> <td rowspan="5">20 cm (7.88 inch) or more</td> <td>1200m (3934.43 ft.)</td> </tr> <tr> <td>625kbps</td> <td>900m (2950.82 ft.)</td> </tr> <tr> <td>2.5Mbps</td> <td>400m (1311.48 ft.)</td> </tr> <tr> <td>5Mbps</td> <td>160m (524.59 ft.)</td> </tr> <tr> <td>10Mbps</td> <td>100m (327.87 ft.)</td> </tr> </tbody> </table>	Transmission Speed	Interstation Cable Length	Max. Overall Cable Length	156kbps	20 cm (7.88 inch) or more	1200m (3934.43 ft.)	625kbps	900m (2950.82 ft.)	2.5Mbps	400m (1311.48 ft.)	5Mbps	160m (524.59 ft.)	10Mbps	100m (327.87 ft.)
Transmission Speed	Interstation Cable Length	Max. Overall Cable Length														
156kbps	20 cm (7.88 inch) or more	1200m (3934.43 ft.)														
625kbps		900m (2950.82 ft.)														
2.5Mbps		400m (1311.48 ft.)														
5Mbps		160m (524.59 ft.)														
10Mbps		100m (327.87 ft.)														
Connection Cable	BA1SJ61-S (signal only) / BA1SJ61-P (signal and power)															
Internal Current Consumption (5VDC) (A)	0.46															
Weight (kg)	0.12															
Base Unit Slots Occupied	1															

PROFIBUS-DP V1 and V2 Device Level Network Master Module

The QJ71PB92V supports the more recent PROFIBUS-DPV1 and V2 advanced function set.

Model Number		QJ71PB92V		
Stocked Item		S		
Certification		UL • cUL • CE		
PROFIBUS-DP Station Type		Class 1 master station		
Transmissions Specifications	External Standard and Characteristics	EIA-RS485 compatible		
	Communication Cable	Shielded twisted pair cable		
	Network Configuration	Bus type (tree type if repeater is used)		
	Transmission Rate (*1) Maximum Transmission Distance (*2)	Transmission Rate	Transmission Distance	Max. Transmission Distance Using Repeater (*2)
		9.6kbps	1200m/segment	4800m/network
		19.2kbps		
		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				
Max. No. of Repeaters In a Path	3 repeaters			
Max. No. of Stations	32 stations per segment (including repeaters)			
Max. No. Slave Stations	125 slaves per single QJ71PB92V master			
I/O Data Size	Max. 8192 words (4096 input words, 4096 output words)			
I/O Device Points Occupied	32 points			
5VDC Internal Current Consumption	0.57A			
Weight (kg)	0.13			
Base Unit Slots Occupied	1			

Notes:

1. Transmission rate control is within ±0.2% (compatible with IEC 61158-2).
2. The "maximum transmission distance" in the above table is an example which assumes that 3 repeaters are being used. If more repeaters are used to extend the distance, the maximum transmission distance would be calculated as follows: [Maximum transmission distance (m/network)] = [Number of repeaters +1] x [transmission distance (m/segment)]

PROFIBUS-DP Device Level Network Slave Module

The QJ71PB93D allows a Q Series system to be connected to a third party PROFIBUS-DP network as a slave controller. This allows distributed processing systems to be built where local control of the application can be given to the Q Series, which then supplies information back to a supervisory controller. This could be another Q Series system, fitted with the QJ71PB92D. Configure the QJ71PB93D using the GX Configurator-DP plug in for GX Developer.

Model Number	QJ71PB93D			
Stocked Item	-			
Certification	UL • cUL • CE			
PROFIBUS-DP Station Type	Slave station (EN50170 Volume 2 (Parts 1-4, 8) compliant)			
Station Number Setting Range	0 to 125 (*3)			
Max. Communication Data Size	Number of I/O data is 192 words in total (Number of input or output data is up to 122 words)			
Transmission Specifications	Electrical Standards	Complies with EIA-RS485		
	Network Cable	Dedicated PROFIBUS DP cable		
	Network Configuration	Bus (tree type when a repeater is used)		
	Transmission Speed / Maximum Transmission Distance (*1, *2)	Transmission Rate	Transmission Distance (m/segment)	Max. Transmission Distance with 3 Repeaters (m)
		9.6 kbps	1200	4800
		19.2 kbps		
		45.45 kbps		
		93.75 kbps		
		187.5 kbps	1000	4000
		500 kbps	400	1600
1500 kbps		200	800	
3 Mbps	100	400		
6 Mbps				
12 Mbps				
Max. Number of Repeaters/Network	3 units (*2)			
Max. Number of Stations/Segment	32 stations (including repeaters)			
Number of Connection Nodes/Segments	32			
I/O Device Points Occupied	32 points			
5 VDC Internal Power Consumption	0.44			
Weight (kg)	0.11			
Base Unit Slots Occupied	1			

Notes:

1. Transmission speed control within ±3% (Compliant with EN50170 Volume 2)
2. Distance that the transmission distance can be expanded by (m/network) using repeaters. Maximum transmission distance (m/network) = (number of repeaters + 1) x transmission distance (m/segment)
3. Factory set to "126" (EN50170 Volume 2 compliant) Set the station number by using sequence program or GX Configurator-DP 4.03D or later. Set communication parameters on the master station side. GSD (DDB) file may be required without GX Configurator-DP Version 4.03D or later. Please contact your local Mitsubishi representative for the GSD (DDB file).

MODBUS/TCP Network Module

The QJ71MT91 module offers a full MODBUS/TCP network communications facility to any Q Series system. Use this module to establish control of a MODBUS/TCP network of devices from a Q Series based system.

Model Number		QJ71MT91		
Stocked Item		10BASE-T	100BASE-TX	
Certification		UL • cUL • CE		
Transmission Specifications	Data Transmission Rate	10Mbps	100Mbps	
	Maximum Node-To-Node Distance	200m		
	Maximum Segment Length Between a Hub and Node	100m (Indicates the number of TCP connections that can be established simultaneously)		
	Number of Cascade Connection Stages	Max. 4 stages	Max. 2 stages	
	Max. Number of Connections Between a Hub and Node	64 connections (Indicates the number of TCP connections that can be established simultaneously)		
	Number of Routers That Can Be Set	1 default router + any 8 routers		
	Cable (Cable compliant with the IEEE802.3)	10BASE-T Standard (unshielded twisted pair cable (UTP cable), Category 3, 4, 5)	100BASE-TX Standard (shielded twisted pair cable (STP cable), Category 5)	
Connector Applicable For External Wiring		RJ45		
Master Function	Automatic Communication Function	Number of Slaves	64 slaves (Maximum number of slaves that can be communication targets)	
		Input Area Size	4k words	
		Output Area Size	4k words	
	Dedicated Instruction	Number of Instructions That Can Be Executed Concurrently	Up to 8 instructions (maximum number of dedicated instructions that can be started simultaneously from a sequence program)	
		Output Area Size	Max. 253 bytes per instruction	
Slave Function	MODBUS Device Size	Coil	64k points	
		Input	64k points	
		Input Register	64k points	
		Holding Register	64k points	
		Extended File Register	Max. 4086k points	
	No. of Simultaneously Acceptable Request Messages	64		
Number of Simultaneously Connectable MELSOFT PCs		Max. 8		
I/O Device Points Occupied		32 points		
5VDC Internal Current Consumption		0.52A		
Weight (kg)		0.11		
Base Unit Slots Occupied		1		

MODBUS® RTU Master Module

The QJ71MB91 module adds MODBUS RTU capability to a Q Series system. Use this module to communicate with and control any of a wide variety of third party MODBUS compatible products.

Model Number		QJ71MB91			
Stocked Item		S			
Certification		UL • cUL • CE			
Transmission Specifications	Number of Interfaces	RS-232 1 channel; RS-422/485 1 channel			
	Transmission Speed (bps)	Total transmission speed of two interfaces must be 115200 bps or less			
		300	600	1200	2400
		4800	9600	14400	19200
		28800	38400	57600	115200
Transmission Distance (Overall Distance)	RS-232	Max. 15m (49.2 ft.)			
	RS-422/485	Max. 1200m (3936.9 ft.) (Overall distance)			
Master Function	Automatic Communication Function	Number of Slaves	32 per channel (Indicates the max. number of slaves that can be communication targets.)		
		Input Area Size	4k words		
		Output Area Size	4k words		
	Dedicated Instruction	Number of Instructions That Can Be Executed Concurrently	1 per channel (Max. number of dedicated instructions that can be activated simultaneously from a sequence program)		
		Output Area Size	Max. 253 bytes per instruction		
Slave Function	MODBUS® Device Size	Coil	64k points		
		Input	64k points		
		Input Register	64k points		
		Holding Register	64k points		
		Extended File Register	Max. 4086k points		
	Number of Simultaneously Acceptable Request Messages	1 request per channel			
Station Number		1 to 247			
I/O Device Points Occupied		32 points			
5VDC Internal Current Consumption		0.31A			
Weight (kg)		0.20			
Base Unit Slots Occupied		1			

EtherNet/IP™ Scanner

Mitsubishi Electric offers an EtherNet/IP™ Scanner for the Q Series platform. The EIP4CCPU allows the Q Series to talk with other EtherNet/IP™ connected third party CPUs, such as ControlLogix™ or CompactLogix™, to share data and to directly control EtherNet/IP™ distributed devices such as I/O (Block or Point), Drives and other devices.

Model Number	EIP4CCPU	
Stocked Item	S	
Certification	UL • cUL • CE	
Number of Client TCP Connections	32 (*1)	
Number of Server TCP Connections	8	
PLCs Supported on Backplane	1 to 3	
Changing Configuration During Operation	Yes (*2)	
Client Class 1 Implicit (I/O) Messaging	CIP Connections	60 (*3)
	Total Combined Input and Output Data Size	Up to 14KB (high speed shared memory limitation)
	Max Data Size	511 bytes
	Connection Type (Target to Originator)	Multicast (*4)
	Transport Trigger	Cyclic
	Data Type	SINT, USINT
	RPI	1 to 8388ms
	Minimum Timeout Time	128ms (timeout multiplier is adjusted according to the RPI)
Client Explicit Messaging	Class 3 CIP Connections (Connected)	16 (*3, *5)
	UCMM (Unconnected)	16 outstanding requests (*5)
	Max Data Size	120 words
	Connection Type (Target to Originator)	Point-to-Point
	Cache Type	Un-cached
	Transport Trigger	Application
	Data Type	INT, UINT
	RPI	7500ms
	Timeout Multiplier	4x
	Tag Access Methods	Data table read/write, Typed read/write, CIP generic
PLC Implementation	Based on populating internal PLC registers with a predefined messaging structure	
Server Class 3 Explicit Messaging	CIP Connections	16
	Max Data Size	250 words
	Connection Type (Target to Originator)	T->O Point-to-Point
	Transport Trigger	Application
	Data Type	INT, UINT
	RPI	1 to 8388ms
	Timeout Multiplier	4x to 512x
	Tag Access Methods	Data table read/write, Typed read/write, CIP generic
PLC Implementation	Predefined device mappings	

Notes:

- The client TCP and CIP connections share a common resource pool. The number of TCP and CIP connections is dependent upon one another and must satisfy the following formulas:
 - (Number of TCP connections * 4) + (Number of CIP connections) <= 160
 - (Number of CIP connections) <= 60
- If configuration is changed via EtherNet/IP by editing the Connection Configuration objects (RSNetWorx for EtherNet/IP method), the configuration will take effect immediately without rebooting the device. If the configuration is transferred as an XML file via FTP to the device (Windows® Configuration Utility method), a reboot is required for the configuration to take effect.
- The number of simultaneous class 1 connections lists the total number of simultaneous I/O connections that can be made to remote devices, regardless of whether or not those devices are being served by a single adapter at one IP address (modular devices such as Flex I/O and Point I/O will consume one class 1 connection for each module attached to the chassis/adapter). Because the scanner supports up to 128 TCP connections (sockets), up to 128 simultaneous physical remote devices (adapters) can be attached to. At the same time, the scanner contains a pool of 256 class 1 CIP connections and 16 class 3 CIP connections. So, for example, if the scanner is configured to target one Flex I/O adapter with three modules on the chassis, then it will use the following internal resources: one TCP connection and three class 1 CIP connections. Additionally, if the user wants a connected explicit messaging request to target (for example) module #2 on the chassis, then this will consume one of the 16 class 3 CIP connections (so in total, one TCP connection, three class 1 CIP connections, and one class 3 CIP connection will be in use). During configuration, the user can keep adding connections until they run out of either TCP connections or 17 ICC class 1 connections. For example, if the network contains a large number of modular devices with multiple modules on each adapter, then it is likely that the pool of class 1 CIP connections will be exhausted first. On the other hand, if the network does not contain any modular devices, then only one class 1 CIP connection will be required for each TCP connection, and it is therefore likely that the number of TCP connections will be exhausted first.
- Up to 20 unique multicast addresses are supported per TCP connection.
- Both connected and unconnected explicit messaging requires the use of interrupts. Each interrupt can only service one outstanding explicit message at any given time. Since there are only 16 interrupts, the total number of outstanding connected and unconnected explicit messages cannot exceed 16.

PROFINET™ Real Time Master Module

The PROFINET Real Time (RT) communication master for the the Q Series is suitable for PROFINET IO applications. The ME1PN1FW-Q includes the Q12DCCPU-V hardware, Compact Flash card and license. GX Configurator PN configuration software needs to be purchased separately using the part number GX-CONFIG-PN-C1.

Model Number	ME1PN1FW-Q
Stocked Item	S
Certification	UL • cUL • CE
Max. Number of Total Cyclic Output Data	9900 Bytes
Max. Number of Cyclic Input Data	1437 Bytes/Device (= IOCR data length)
Max. Number of Cyclic Output Data	1437 Bytes/Device (= IOCR data length)
Max. Number of Configured Devices	128
Min. Cycle Time	1 ms
Max. Cycle Time	512 ms
RT Communication	RT Class 1
Acyclic Communication	Read/Write Records (< 5448 Bytes/Request)
Alarm Processing	Yes
DCP (Discovery & Configure Protocol)	Yes
RPC (Remote Procedure Call)	Yes (up to 4 fragments 5448 Bytes)
Baud Rate	100Mbits/s (Full-Duplex Mode)
Data Transport Layer	ETHERNET II (IEEE 802.3)
LLDP Sender	Yes

DeviceNet™ Device Level Network Master Module

The DeviceNet master module allows the Q Series to control systems that require integration of third party DeviceNet products. The QJ71DN91 module is configured by use of the GX Configurator-DN plug-in for GX Developer or GX Configurator2-DN in GX Works2. Note that this module is also capable of functioning as a DeviceNet slave if required.

Model Number		QJ71DN91						
Stocked Item		S						
Certification		UL • cUL • CE						
Node Type		DeviceNet master (Group 2 only client)						
Node Number Which Can be Set		0 to 63						
Functioning as Master	Number of Connections that Can be Created	Message Connection		63				
		I/O Connection		63 (polling, bit strobe, change of state, cyclic)				
	Amount of Communication Data	I/O Communication	Send	Max. 4096 points (512 bytes), max. 256 bytes per 1 node				
			Receive	Max. 4096 points (512 bytes), max. 256 bytes per 1 node				
		Message Communication	Send	Max. 240 bytes				
Receive	Max. 240 bytes							
Functioning as Slave	Node Type		DeviceNet slaves (Group 2 server)					
	Setting Possible Node Number		0 to 63					
	Number of Connections that Can be Created	I/O Connection		1 (polling)				
		Amount of Communication Data	I/O Communication	Send	Max. 1024 points (128 bytes)			
	Receive			Max. 1024 points (128 bytes)				
Transmission Speed		One speed can be selected from 125, 250 and 500kbit/s						
Maximum Cable Length (*1)		Communications Speed	Maximum Transmitting Distance of Trunk Line		Length of Drop Line			
			Thick Cables	Thin Cables	Thick and Thin Cables Coexist	Maximum	Total	
			125kbaud	500m (1640 ft.)	100m (328 ft.)	See table below	6m (20 ft.)	156m (511 ft.)
			250kbaud	250m (820 ft.)				78m (256 ft.)
			500kbaud	100m (328 ft.)				39m (128 ft.)
Current Consumption Required on the Network (A)		0.03						
I/O Device Points Occupied		32 points						
5VDC Internal Current Consumption (A)		0.17						
Weight (kg)		0.11						
Base Unit Slots Occupied		1						

Note 1: The maximum cable length complies with that in the DeviceNet specification (release 2.0) volumes 1 and 2.

Combined Distance of Thick and Thin Cables

Transmission Speed	Max. Combined Distance of Thick and Thin Cables
125kbaud	Thick cable length + 5 x Thin cable length ≤ 500m (1640 ft.)
250kbaud	Thick cable length + 2.5 x Thin cable length ≤ 250m (820 ft.)
500kbaud	Thick cable length + Thin cable length ≤ 100m (328 ft.)

CC-Link/LT Sensor Level Network Master Module

The QJ61CL12 allows the Q Series to control a CC-Link/LT network segment.

Model Number		QJ61CL12				
Stocked Item		-				
Certification		UL • cUL • CE				
Control Specifications	Max. Number of Link Points [When The Same I/O Address Is Used]		256 points (512 points)	512 points (1024 points)	1024 points (2048 points)	
	Number of Link Points Per Station [When The Same I/O Address Is Used]		4 points (8 points)	8 points (16 points)	16 points (32 points)	
	Link Scan Time (ms)	When 32 Stations Are Connected	Number of Points	128 points	256 points	512 points
			2.5Mbps	0.7	0.8	1.0
			625kbps	2.2	2.7	3.8
	When 64 Stations Are Connected	156kbps	8.0	10.0	14.1	
		Number of Points	256 points	512 points	1024 points	
2.5Mbps		1.2	1.5	2.0		
	625kbps	4.3	5.4	7.4		
	156kbps	15.6	20.0	27.8		
Communication Specifications	Transmission Rate (bps)		2.5M / 625k / 156k			
	Number of Connected Units		64			
	Remote Station Numbers		1 to 64			
	RAS Function		Network diagnostics, internal loopback diagnostics, station detach function automatic return to system			
	Connection Cable		Dedicated flat cable (0.75mm ² x 4) CL9-FL4-18			
I/O Device Points Occupied (*1)		16, 32, 48, 64, 128, 256, 512, 1024				
5VDC Internal Current Consumption		0.13 A				
24VDC Power Supply (*2)	Voltage		20.4 to 28.8VDC			
	Current Consumption		0.028 A			
	Current on Startup		0.070 A			
Weight (kg)		0.09				
Base Unit Slots Occupied		1				

Notes:

1. Set by module switches
2. External supply

AS-i Sensor Level Network Master Module

The AS-i module allows Q Series to control systems that require integration of third party AS-i sensor level network products.

The GX Configurator-AS plug in for GX Developer configures the QJ71AS92 module.

Model Number		QJ71AS92	
Stocked Item		S	
Certification		CE	
Max. Number of AS-i System Slaves		62 (Group A: 31, Group B: 31)	
Max. Number of I/O Points (1 Point = 16 Bits)	Input	248 points	
	Output	248 points	
Max. Number of Analog I/O Points (1 Point = 1 Bit)	Input	124 points	
	Output	124 points	
I/O Refresh Time		Approx. 5 ms (without I/O slave grouping); Approx. 10 ms (with I/O slave grouping); Approx. 35 ms (per analog slave channel)	
Communication Speed		167 kbps	
Transmission Distance		Max. 100m (Max. 300m by use of two repeaters)	
I/O Device Points Occupied		32 points	
Connection Cable		Dedicated AS-i cable	
External Power Supply	Voltage	TYP. 30.5VDC (supplied by AS-i power supply)	
	Current Consumption	46mA (TYP 30.5VDC)	
5VDC Internal Current Consumption		0.40A	
Weight (kg)		0.12	
Base Unit Slots Occupied		1	

PC Network Cards

Many of our larger scale controller systems are typically integrated into large-scale plant wide networks that require integration with PC based systems. Mitsubishi Electric addresses this requirement with a range of PC compatible network cards that allow a PC to be directly connected to a number of our networks. These boards are typically used as the physical network interface for a PC system written in third party applications such as Microsoft® Visual Basic™, Visual C++™, etc.

Model Number	Q80BD-J71GP21-SX	Q80BD-J71GP21S-SX	Q80BD-J71LP21-25	Q81BD-J71LP21-25	Q80BD-J71LP21G	Q80BD-J71LP21GE	Q80BD-J71BR11	Q80BD-J61BT11N	Q81BD-J61BT11 (*1)
Stocked Item	-	-	S	-	-	-	S	S	-
Certification	UL • cUL • CE				CE		UL • cUL • CE		
Network Type	CC-Link IE Control		MELSECNET/H				CC-Link		
Media Type	Optical Fiber (62.5 micron)		Optical Fiber (200 micron)	Multi-mode Optical Fiber	Optical Fiber (50 micron)	Optical Fiber (62.5 micron)	Coax	Twisted Pair	
Configuration Type	Dual loop						Bus		
Station Type	Master/local								
External Power Supply	No	Yes	No						

Note 1: Supports PCI Express bus.