

## Differences of programmable controllers for process control and redundant system between MELSEC-Q series and MELSEC iQ-R series

■Date of Issue

April 2017 (Ver. A: October 2018)

■Relevant Models

MELSEC iQ-R series programmable controllers for process control and redundant system

Thank you for your continued support of Mitsubishi Electric programmable controllers, MELSEC-Q series and MELSEC iQ-R series.

This bulletin provides differences of programmable controllers for process control and redundant system between MELSEC-Q series and MELSEC iQ-R series.

Note that the products, reference manuals, and references described in this bulletin provide information as of September 2018.

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## 1 GENERIC TERMS

Generic term	Description
RCPU	A generic term for the R04CPU, R04ENCPU, R08CPU, R08ENCPU, R16CPU, R16ENCPU, R32CPU, R32ENCPU, R120CPU, R120ENCPU, R08PCPU, R16PCPU, R32PCPU, R120PCPU, R08SF CPU, R16SF CPU, R32SF CPU, and R120SF CPU
RnCPU	A generic term for the R04CPU, R04ENCPU, R08CPU, R08ENCPU, R16CPU, R16ENCPU, R32CPU, R32ENCPU, R120CPU, and R120ENCPU
RnPCPU	A generic term for the R08PCPU, R16PCPU, R32PCPU, and R120PCPU
QnUDPV CPU	A generic term for the Q04UDPV CPU, Q06UDPV CPU, Q13UDPV CPU, and Q26UDPV CPU
QnPRH CPU	A generic term for the Q12PRH CPU and Q25PRH CPU

## 2 DIFFERENCES BETWEEN THE MELSEC-Q SERIES AND THE MELSEC iQ-R SERIES

This bulletin describes the differences among the MELSEC-Q series Universal model Process CPU (QnUDPV CPU) and the Redundant CPU (QnPRH CPU) and the MELSEC iQ-R series Process CPU (RnPCPU).

The RnPCPU has the process mode and the redundant mode. The redundant mode is used to configure a redundant system. For details on the differences between the QnPH CPU and the RnPCPU, refer to this bulletin and the following.

 Method of replacing Process CPU with Universal model Process CPU (FA-A-0155)

The descriptions in this bulletin are as of September 2018.

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## 2.1 Applicable Products

### Products that can be used with the QnUDVPCPU and RnPCPU (process mode)

The following table summarizes the differences of products that can be used with the QnUDVPCPU and the RnPCPU (process mode).

For details on the modules that can be used with the RnPCPU (process mode), refer to the following.

 MELSEC iQ-R Module Configuration Manual

Pay attention to the power capacity at model selection because the current consumption value differs between the QnUDVPCPU and RnPCPU.

Item	QnUDVPCPU	RnPCPU (process mode)
Programmable controller CPU	Q04UDVPCPU, Q06UDVPCPU, Q13UDVPCPU, Q26UDVPCPU	R08PCPU, R16PCPU, R32PCPU, R120PCPU
Motion CPU	Q172DSCPU, Q173DSCPU	R16MTCPU, R32MTCPU, R64MTCPU
C Controller module	Q12DCCPU-V (basic mode/extended mode)	R12CCPU-V
SD memory card	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD
Extended SRAM cassette	Q4MCA-1MBS, Q4MCA-2MBS, Q4MCA-4MBS, Q4MCA-8MBS	NZ2MC-8MBSE
Main base unit	Q33B, Q35B, Q38B, Q312B, Q35DB, Q38DB, Q312DB	R35B, R38B, R312B, R310B-HT
Extension base unit	Q65B, Q68B, Q612B	R65B, R68B, R612B, R610B-HT
Extension cable	QC06B, QC12B, QC30B, QC50B, QC100B	RC06B, RC12B, RC30B, RC50B
Power supply module	Q61P, Q62P, Q63P, Q64P	R61P, R62P, R63P, R64P
Redundant power main base unit	Q38RB	R310RB, R38RB-HT
Redundant power supply extension base unit	Q68RB	R610RB, R68RB-HT
Redundant power supply module	Q63RP, Q64RPN, Q64RP	R63RP, R64RP
Input module	QX10, QX40, QX40-TS, QX40-S1, QX40H, QX41, QX41-S1, QX42, QX42-S1, QX80, QX80-TS, QX80H, QX81, QX82, QX82-S1	RX10, RX40C7, RX41C4, RX42C4, RX40PC6H, RX41C6HS, RX40NC6H
Interrupt module	QI60	RX40C7
Output module	QY10, QY10-TS, QY40P, QY40P-TS, QY41P, QY42P, QY80, QY80-TS, QY81P, QY82P	RY10R2, RY40NT5P, RY41NT2P, RY42NT2P, RY40PT5P, RY41PT1P, RY42PT1P, RY41NT2H, RY41PT2H
I/O combined module	QH42P	RH42C4NT2P
Analog input module	Q64AD, Q68ADV, Q68ADI	R60AD4, R60ADV8, R60ADI8, R60ADH4, R60AD8-G, R60AD16-G
Analog output module	Q64DAN, Q68DAVN, Q68DAIN	R60DA4, R60DAV8, R60DAI8, R60DA8-G, R60DA16-G
Temperature input module	Q64RD, Q68RD3-G, Q64TD, Q64TDV-GH, Q68TD-G-H01, Q68TD-G-H02	R60TD8-G, R60RD8-G
Temperature control module	Q64TCTT, Q64TCTTBW, Q64TCTTN, Q64TCTTBWN	R60TCRT4, R60TCRT4BW, R60TCRT2T2T2, R60TCRT2T2TBW
Simple motion module	QD77MS2, QD77MS4, QD77MS16	RD77MS2, RD77MS4, RD77MS8, RD77MS16, RD77GF4, RD77GF8, RD77GF16
Positioning module	QD75P2(N), QD75P4(N), QD75D2(N), QD75D4(N)	RD75P2, RD75P4, RD75D2, RD75D4
High-speed counter module	QD62, QD62E, QD62D	RD62P2, RD62P2E, RD62D2
Ethernet interface module	QJ71E71-B2, QJ71E71-B5, QJ71E71-100	RJ71EN71
CC-Link IE Controller Network module	QJ71GP21-SX, QJ71GP21S-SX	RJ71GP21-SX
CC-Link IE Field Network module	QJ71GF11-T2	RJ71GF11-T2
CC-Link module	QJ61BT11N	RJ61BT11
AnyWireASLINK master module	QJ51AW12AL	RJ51AW12AL
Serial communication module	QJ71C24N, QJ71C24N-R2, QJ71C24N-R4	RJ71C24, RJ71C24-R2, RJ71C24-R4
MES interface module	QJ71MES96	RD81MES96
GOT	GOT1000, GOT2000	GOT1000, GOT2000 <sup>*1</sup>


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Item	QnUDPVCPU	RnPCPU (process mode)
MELSEC iQ-R series module	Not supported	Supported
MELSEC-Q series module	Supported	Supported* <sup>2</sup>
MELSEC-A series module	Supported	Not supported
Engineering software	GX Works2, PX Developer	GX Works3
Setting/monitoring tools for the C Controller module	SW3PVC-CCPU-J, SW3PVC-CCPU-E (basic mode) SW4PVC-CCPU-J, SW4PVC-CCPU-E (extended mode)	CW Configurator
Development tool	CW Workbench2.6 (basic mode) CW Workbench3.2 (extended mode)	CW Workbench3.3
MES Interface Function Configuration Tool	MX MESInterface	MX MESInterface-R
High speed data logger module	QD81DL96	RD81DL96
High speed data communication module	QJ71DC96	Not supported

\*1 For the connectable GOT and its connection type, refer to the following.

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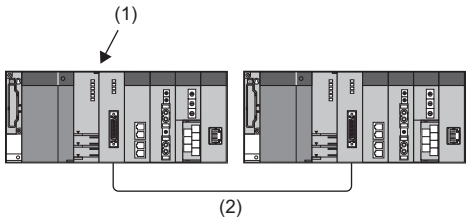
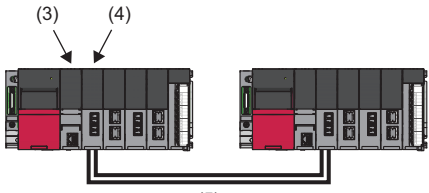
\*2 For the applicable modules, refer to the following.

 MELSEC iQ-R Module Configuration Manual

### Products that can be used with the QnPRHCPU and RnPCPU (redundant mode)

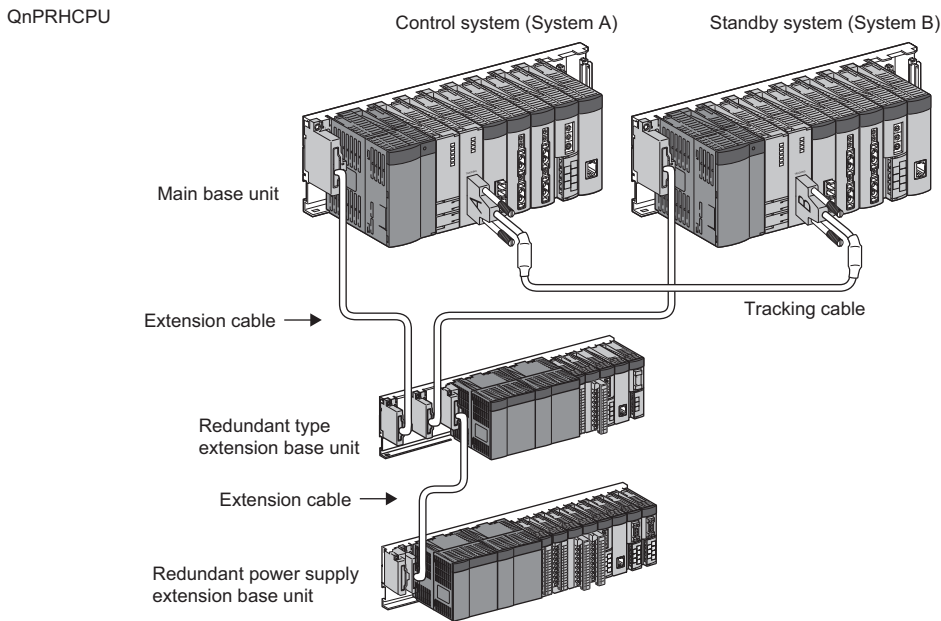
The QnPRHCPU and RnPCPU (redundant mode) differ in the redundant system configuration.

The following table summarizes the differences in the redundant system configuration and the precautions for system configuration.

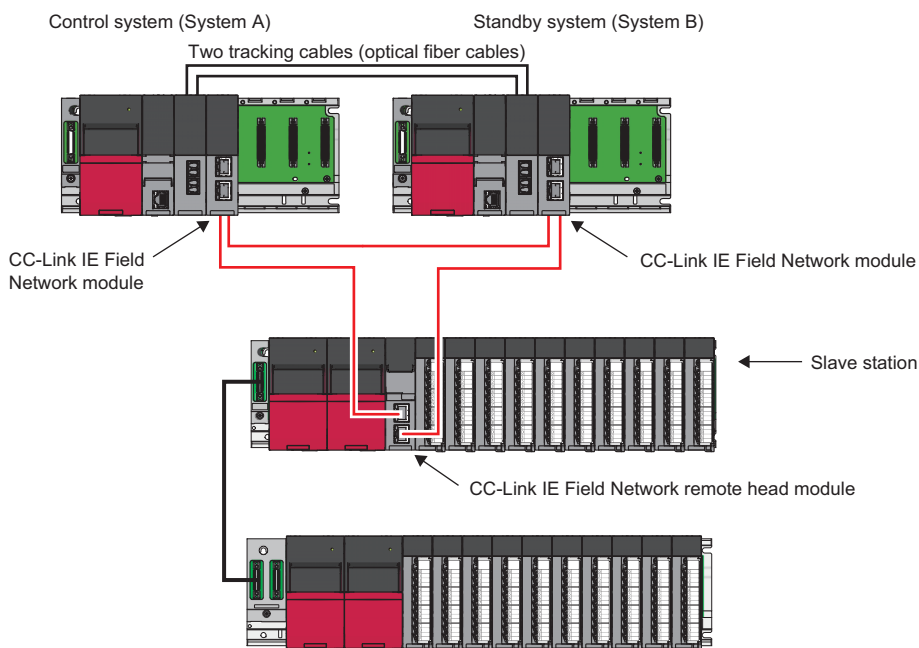
Item	QnPRHCPU	RnPCPU (redundant mode)	
Minimum system configuration	<ul style="list-style-type: none"> <li>• Base unit</li> <li>• Power supply module</li> <li>• QnPRHCPU (1)</li> <li>• Tracking cable (2)</li> </ul>  <p>The QnPRHCPU occupies two slots.</p>	<ul style="list-style-type: none"> <li>• Base unit</li> <li>• Power supply module</li> <li>• RnPCPU (3)</li> <li>• Redundant function module (4)</li> <li>• Tracking cable (5)</li> </ul>  <p>The combination of the RnPCPU and the redundant function module configures a redundant system. The RnPCPU occupies one slot, and the redundant function module occupies one slot. The redundant function module can be mounted on any slot of the main base unit. (It does not have to be next to the RnPCPU.) A redundant configuration of tracking cables is available. Connecting two cables enables the tracking communication to continue even if either of them is disconnected.</p>	
Control of I/O module, intelligent function module	<ul style="list-style-type: none"> <li>• Via extension base units</li> <li>• Via MELSECNET/H remote I/O network</li> </ul>	<ul style="list-style-type: none"> <li>• Via CC-Link IE Field Network remote head modules</li> <li>■ Alternative to the system that controls via extension base units                             <p>The configuration via slave stations of CC-Link IE Field Network can be an alternative. (☞ Page 6 Alternative to the system that controls I/O module/intelligent function module via extension base units)</p> <p>For the alternative, I/O assignments and the network settings need to be changed. Therefore, the parameters and programs also need to be changed.</p> </li> <li>■ Alternative to the system that controls via remote stations                             <p>For CC-Link IE Field Network alternative to MELSECNET/H remote I/O network, refer to the following.</p> </li> </ul>	
Remote I/O network	Network system	<ul style="list-style-type: none"> <li>• Via MELSECNET/H remote I/O network</li> </ul>	<ul style="list-style-type: none"> <li>• CC-Link IE Field Network</li> <li>The RnPCPU (redundant mode) does not support MELSECNET/H.</li> <li>■ Alternative to MELSECNET/H remote I/O network                             <p>The CC-Link IE Field Network remote head module can be an alternative. (☞ Page 6 Alternative to the system that controls I/O module/intelligent function module via extension base units)</p> <p>For the alternative, network modules, cables, parameters, and programs need to be changed.</p> <p>For the CC-Link IE Field Network remote head module, the maximum station-to-station distance is 100m. (The station-to-station distance can be extended using an optical media converter recommended by CLPA.)</p> </li> </ul>
	Redundant remote head module of the remote I/O, slave station	Not supported	Supported (☞ Page 7 Redundant slave station and network)
	Redundant line	Not supported	Supported (☞ Page 7 Redundant slave station and network)

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Alternative to the system that controls I/O module/intelligent function module via extension base units

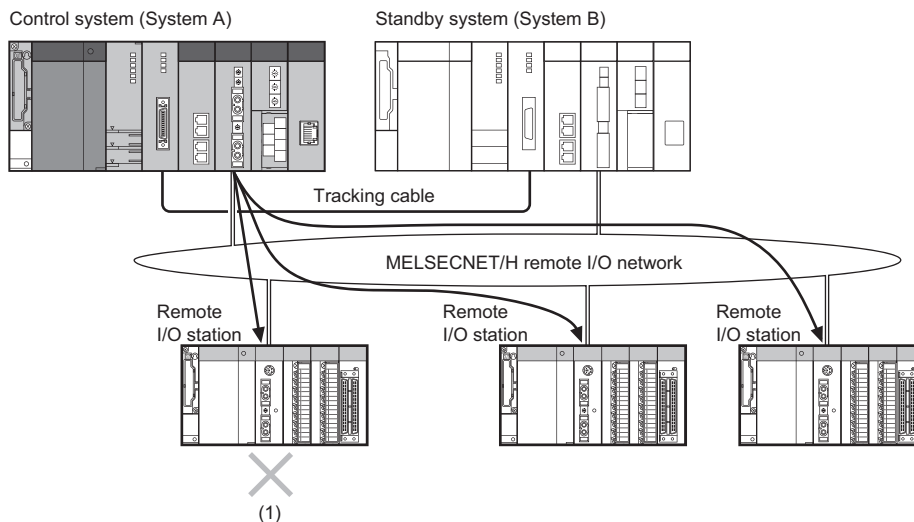


RnPCPU (redundant mode)



**Redundant slave station and network**

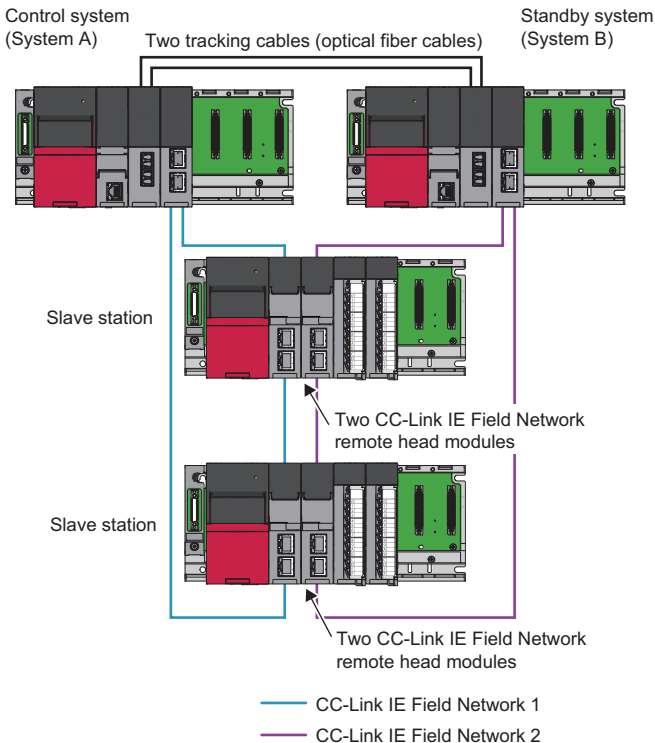
QnPRHCPU



(1) When a failure occurs in the network module of a remote I/O station, the control of that remote I/O station cannot continue.



RnPCPU (redundant mode)



- With the redundant remote head module (two remote head modules are mounted on one base unit), the control continues with one remote head module even if an error occurs in the other remote head module.
- With the redundant line of CC-Link IE Field Network (two network lines are prepared and the redundant remote head module of each station is connected to either of lines), the communications continue in one network line even if an error occurs in the other line.


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The following table summarizes the differences of products that can be used with the QnPRHCPU and the RnPCPU (redundant mode).

Item	QnPRHCPU	RnPCPU (redundant mode)
Programmable controller CPU	Q12PRHCPU, Q25PRHCPU	R08PCPU, R16PCPU, R32PCPU, R120PCPU
Redundant function module	Not supported	R6RFM
Tracking cable	QC10TR, QC30TR	Optical fiber cable that meets the following standards (multimode optical fiber (GI)) • IEEE802.3 (1000BASE-SX) • IEC 60793-2-10 Types A1a.1
SD memory card	Not supported	NZ1MEM-2GBSD, NZ1MEM-4GBSD, NZ1MEM-8GBSD, NZ1MEM-16GBSD
Extended SRAM cassette	Not supported	NZ2MC-8MBSE
SRAM card	Q2MEM-1MBS, Q2MEM-2MBS, Q3MEM-4MBS	Not supported
Flash card	Q2MEM-2MBF, Q2MEM-4MBF	Not supported
ATA card	Q2MEM-8MBA, Q2MEM-16MBA, Q2MEM-32MBA	Not supported
Main base unit	Q33B, Q35B, Q38B, Q312B	R35B, R38B, R312B, R310B-HT
Extension base unit	Q65WRB, Q68RB	Not supported
Extension cable	QC05B, QC06B, QC12B, QC30B, QC50B, QC100B	Not supported
Power supply module	Q61P-A1, Q61P-A2, Q61P, Q61P-D, Q62P, Q63P, Q64P, Q64PN	R61P, R62P, R63P, R64P
Redundant power main base unit	Q38RB	R310RB, R38RB-HT
Redundant type extension base unit	Q65WRB	Not supported
Redundant power extension base unit	Q68RB	Not supported
Redundant power supply module	Q63RP, Q64RPN, Q64RP	R63RP, R64RP
Input module	QX10, QX10-TS, QX28, QX40, QX40-S1, QX40-TS, QX40H, QX41, QX41-S1, QX41-S2, QX42, QX42-S1, QX50, QX70, QX70H, QX71, QX72, QX80, QX80-TS, QX80H, QX81, QX81-S2, QX82, QX82-S1, QX90H, QX41Y41P	RX10, RX40C7, RX41C4, RX42C4, RX40PC6H, RX41C6HS, RX40NC6H
Output module	QY10, QY10-TS, QY18A, QY22, QY40P, QY40P-TS, QY41H, QY41P, QY42P, QY50, QY68A, QY70, QY71, QY80, QY80-TS, QY81P, QY82P	RY10R2, RY40NT5P, RY41NT2P, RY42NT2P, RY40PT5P, RY41PT1P, RY42PT1P, RY41NT2H, RY41PT2H
I/O combined module	QH42P, QX48Y57	RH42C4NT2P
MODBUS interface module	QJ71MB91	Not supported
MODBUS/TCP interface module	QJ71MT91	Not supported
Ethernet interface module	QJ71E71-B2, QJ71E71-B5, QJ71E71-100	RJ71EN71
CC-Link IE Controller Network module	QJ71GP21-SX, QJ71GP21S-SX	RJ71GP21-SX
CC-Link IE Field Network module	Not supported	RJ71GF11-T2
CC-Link module	QJ61BT11N	RJ61BT11
MELSECNET/H network module	QJ71LP21-25, QJ71LP21S-25, QJ71LP21G, QJ71BR11	Not supported
GOT	GOT900, GOT1000, GOT2000	GOT1000, GOT2000*1
MELSEC iQ-R series module	Not supported	Supported
MELSEC-Q series module	Supported	Supported*2
Engineering software	GX Works2, GX Developer, PX Developer	GX Works3

\*1 For the connectable GOT and its connection type, refer to the GOT2000 NEWS Vol.1 (L08301ENG-A).

\*2 For the applicable modules, refer to the following.

 MELSEC iQ-R Module Configuration Manual



## 2.2 CPU Modules

This section describes the differences between the QnUDPVCPU/QnPRHCPU and the RnPCPU (process mode/redundant mode).

### Instructions

#### Differences between the QnUDPVCPU and the RnPCPU (process mode)


The following table summarizes the differences between the QnUDPVCPU and the RnPCPU (process mode).

Classification		QnUDPVCPU	RnPCPU (process mode)
Basic instruction	Conversion from BIN 16-bit data to floating-point data (single precision)	FLT	INT2FLT <sup>*1</sup>
	Conversion from BIN 32-bit data to floating-point data (single precision)	DFLT	DINT2FLT <sup>*1</sup>
	Conversion from BIN 16-bit data to floating-point data (double precision)	FLTD	INT2DBL <sup>*1</sup>
	Conversion from BIN 32-bit data to floating-point data (double precision)	DFLTD	DINT2DBL <sup>*1</sup>
	Conversion from floating-point data to BIN 16-bit data (single precision)	INT	FLT2INT <sup>*1</sup>
	Conversion from floating-point data to BIN 32-bit data (single precision)	DINT	FLT2DINT <sup>*1</sup>
	Conversion from floating-point data to BIN 16-bit data (double precision)	INTD	DBL2INT <sup>*1</sup>
	Conversion from floating-point data to BIN 32-bit data (double precision)	DINTD	DBL2DINT <sup>*1</sup>
	Conversion from BIN 16-bit to BIN 32-bit data	DBL	INT2DINT <sup>*1</sup>
	Conversion from BIN 32-bit to BIN 16-bit data	WORD	DINT2INT <sup>*1</sup>
	Conversion from single precision to double precision	ECON	FLT2DBL <sup>*1</sup>
	Conversion from double precision to single precision	EDCON	DBL2FLT <sup>*1</sup>

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Classification		QnUDPVCPU	RnPCPU (process mode)
Application instruction	Conversion from ASCII to hexadecimal BIN	HEX	ASC2INT <sup>*1</sup>
	Conversion from hexadecimal BIN to ASCII	ASC	INT2ASC <sup>*1</sup>
	Square root operation for floating-point data (single precision)	SQR	ESQRT <sup>*1</sup>
	Square root operation for floating-point data (double precision)	SQRD	EDSQRT <sup>*1</sup>
	BCD 4-digit square roots	BSQR	BSQRT <sup>*1</sup>
	BCD 8-digit square roots	BDSQR	BDSQRT <sup>*1</sup>
	Ramp signal	RAMP	RAMPQ <sup>*1</sup>
	16-bit data search	SER	SERDATA <sup>*1</sup>
	32-bit data search	DSER	DSERDATA <sup>*1</sup>
	BIN 16-bit data sort operations	SORT	SORTD <sup>*1</sup>
	BIN 32-bit data sort operations	DSORT	DSORTD <sup>*1</sup>
	Time data conversion (from hour/minute/second to second)	SECOND	TIME2SEC <sup>*1</sup>
	Time data conversion (from second to hour/minute/second)	HOUR	SEC2TIME <sup>*1</sup>
	Reading 2-word data from intelligent function module	DFRO	DFROM <sup>*1</sup>
	Reading device comment data	COMRD	Not supported <sup>*1</sup>
	File setting for comments	QCDSET	
	High-speed block transfer of file register	RBMOV	BMOV
	Refresh	COM (without execution condition)	COM (with execution condition) <sup>*1</sup>
		CCOM (with execution condition)	
	Writing to host CPU shared memory	TO, S.TO	TO <sup>*1</sup>
	Reading module information	UNIRD	UNIINFRD <sup>*1</sup>
	Interrupt disable	DI (without execution condition)	DI (with execution condition) <sup>*1</sup>
	Interrupt enable	EI (without execution condition)	EI (with execution condition) <sup>*1</sup>
Instruction of reading/writing from/to the device in the CPU module in another station by IP address specification	SP.READ	Not supported	
	SP.WRITE		
SFC step/transition comment readout instruction	S.SFCSCOMR	Not supported	
	S.SFCTCOMR		
Sequence instruction	No operations	PAGE	Not supported

\*1 For details on the differences, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**Differences between the QnPRHCPU and the RnPCPU (redundant mode)**

The following table summarizes the differences of instructions between the QnPRHCPU and the RnPCPU (redundant mode).

Classification		QnPRHCPU	RnPCPU (redundant mode)
Basic instruction	Conversion from BIN 16-bit data to floating-point data (single precision)	FLT	INT2FLT <sup>*1</sup>
	Conversion from BIN 32-bit data to floating-point data (single precision)	DFLT	DINT2FLT <sup>*1</sup>
	Conversion from BIN 16-bit data to floating-point data (double precision)	FLTD	INT2DBL <sup>*1</sup>
	Conversion from floating-point data to BIN 16-bit data (single precision)	INT	FLT2INT <sup>*1</sup>
	Conversion from floating-point data to BIN 32-bit data (single precision)	DINT	FLT2DINT <sup>*1</sup>
	Conversion from BIN 16-bit to BIN 32-bit data	DBL	INT2DINT <sup>*1</sup>
	Conversion from BIN 32-bit to BIN 16-bit data	WORD	DINT2INT <sup>*1</sup>
Application instruction	Conversion from ASCII to hexadecimal BIN	HEX	ASC2INT <sup>*1</sup>
	Conversion from hexadecimal BIN to ASCII	ASC	INT2ASC <sup>*1</sup>
	Square root operation for floating-point data (single precision)	SQR	ESQRT <sup>*1</sup>
	BCD 4-digit square roots	BSQR	BSQRT <sup>*1</sup>
	BCD 8-digit square roots	BDSQR	BDSQRT <sup>*1</sup>
	16-bit data search	SER	SERDATA <sup>*1</sup>
	32-bit data search	DSER	DSERDATA <sup>*1</sup>
	BIN 16-bit data sort operations	SORT	SORTD <sup>*1</sup>
	BIN 32-bit data sort operations	DSORT	DSORTD <sup>*1</sup>
	Time data conversion (from hour/minute/second to second)	SECOND	TIME2SEC <sup>*1</sup>
	Time data conversion (from second to hour/minute/second)	HOUR	SEC2TIME <sup>*1</sup>
	Reading 2-word data from intelligent function module	DFRO	DFROM <sup>*1</sup>
	Reading device comment data	COMRD	Not supported <sup>*1</sup>
	File setting for comments	QCDSET	
	High-speed block transfer of file register	RBMOV	BMOV
	Refresh	COM (without execution condition)	COM (with execution condition) <sup>*1</sup>
	Reading module information	UNIRD	UNIINFRD <sup>*1</sup>
	Interrupt disable	DI (without execution condition)	DI (with execution condition) <sup>*1</sup>
	Interrupt enable	EI (without execution condition)	EI (with execution condition) <sup>*1</sup>
	Instruction of reading/writing from/to the device in the CPU module in another station by IP address specification	SP.READ	Not supported
		SP.WRITE	
	SFC step/transition comment readout instruction	S.SFCSCOMR	Not supported
		S.SFCTCOMR	
	Index modification of entire ladder	IX <sup>*2</sup>	Not supported
		IXEND <sup>*2</sup>	Not supported
	Designation of modification values in index modification of entire ladder	IXDEV <sup>*2</sup>	Not supported
		IXSET <sup>*2</sup>	Not supported
Special format failure check	CHKST <sup>*2</sup>	Not supported	
	CHK <sup>*2</sup>	Not supported	
Changing check format of CHK	CHKCIR <sup>*2</sup>	Not supported	
	CHKEND <sup>*2</sup>	Not supported	
Program execution status check	PCHK <sup>*2</sup>	Not supported	


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Classification		QnPRHCPU	RnPCPU (redundant mode)
Application instruction	Forced transition check instruction	LD TRn <sup>*2</sup>	Not supported
		AND TRn <sup>*2</sup>	Not supported
		OR TRn <sup>*2</sup>	Not supported
		LDI TRn <sup>*2</sup>	Not supported
		ANDI TRn <sup>*2</sup>	Not supported
		ORI TRn <sup>*2</sup>	Not supported
		LD BLm\TRn <sup>*2</sup>	Not supported
		AND BLm\TRn <sup>*2</sup>	Not supported
		OR BLm\TRn <sup>*2</sup>	Not supported
		LDI BLm\TRn <sup>*2</sup>	Not supported
		ANDI BLm\TRn <sup>*2</sup>	Not supported
		ORI BLm\TRn <sup>*2</sup>	Not supported
		Active step change instruction	SCHG(D) <sup>*2</sup>
	Forced transition EXECUTE & CANCEL instructions	SET TRn <sup>*2</sup>	Not supported
SET BLm\TRn <sup>*2</sup>		Not supported	
RST TRn <sup>*2</sup>		Not supported	
RST BLm\TRn <sup>*2</sup>		Not supported	
Block switching instruction	BRSET(S) <sup>*2</sup>	Not supported	
Sequence instruction	No operations	PAGE	Not supported

\*1 For details on the differences, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

\*2 For details on the instructions, refer to the following.

 QnUCPU User's Manual (Function Explanation, Program Fundamentals)

## Parameters

### Differences between the QnUDPVCPU and the RnPCPU (process mode)

The following table summarizes the differences of parameters between the QnUDPVCPU and the RnPCPU (process mode).

Item	QnUDPVCPU	RnPCPU (process mode)
CPU module	PLC parameter (PARAM.QPA)	<ul style="list-style-type: none"> <li>• System parameter (SYSTEM.PRM)<sup>*1</sup></li> <li>• CPU parameter (CPU.PRM)<sup>*1</sup></li> <li>• Module parameter (UNIT.PRM)<sup>*1</sup></li> <li>• Memory card parameter (MEMCARD.PRM)<sup>*1</sup></li> </ul>
Intelligent function module	Intelligent function module parameter (IPARAM.QPA)	Module parameter (UNIT.PRM)

\*1 Refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

### Differences between the QnPRHCPU and the RnPCPU (redundant mode)

The following table summarizes the differences of parameters between the QnPRHCPU and the RnPCPU (redundant mode).

Item	QnPRHCPU	RnPCPU (redundant mode)
CPU module	<ul style="list-style-type: none"> <li>• PLC parameter (PARAM.QPA)</li> <li>• Redundant parameter (PARAM.QPA)</li> </ul>	<ul style="list-style-type: none"> <li>• System parameter (SYSTEM.PRM)</li> <li>• CPU parameter (CPU.PRM)</li> <li>• Module parameter (UNIT.PRM)</li> <li>• Memory card parameter (MEMCARD.PRM)</li> </ul>
Intelligent function module	Intelligent function module parameter (IPARAM.QPA)	Module parameter (UNIT.PRM)

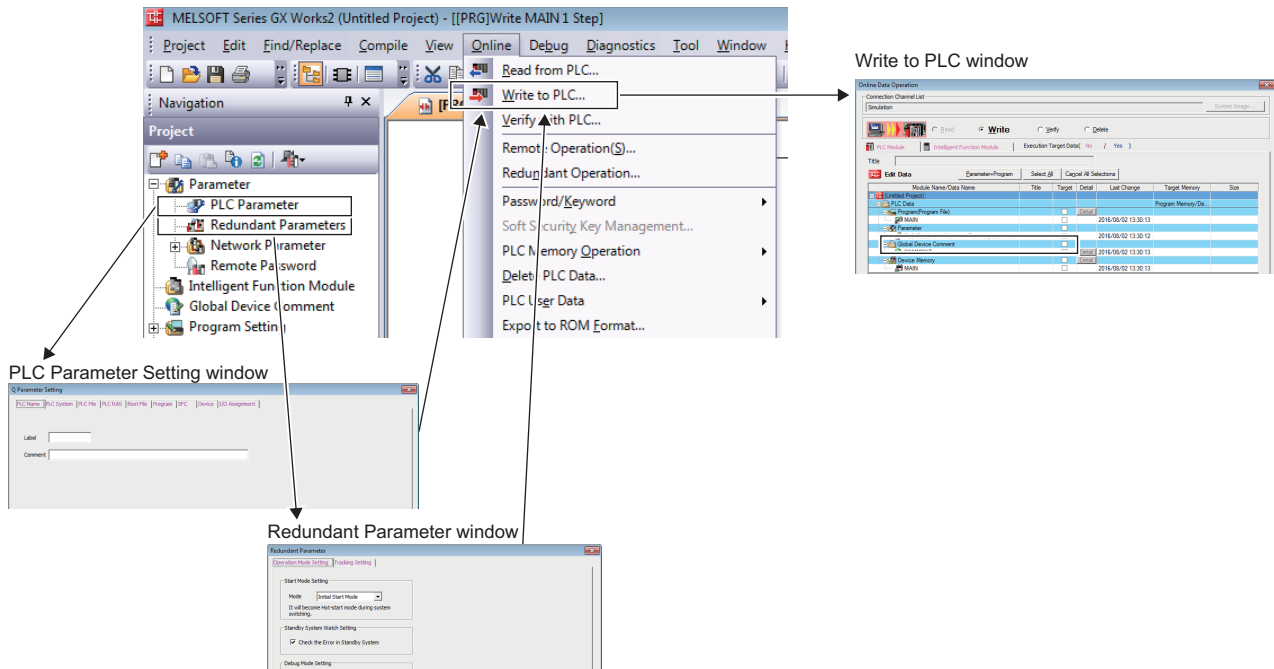
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■ CPU module

For the RnPCPU, set "Redundant Parameters" in "CPU Parameter".

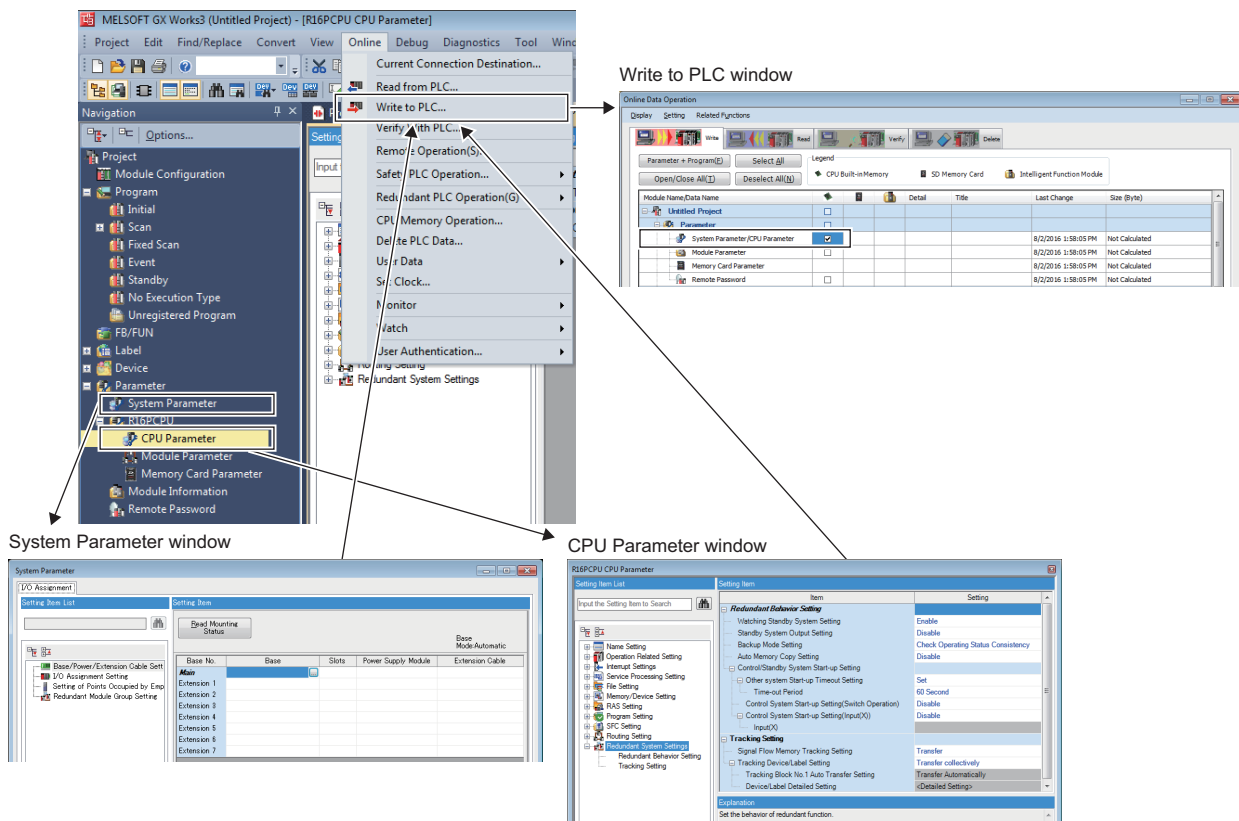
GX Works2

The PLC parameter setting window, redundant parameter window, and Write to PLC window are as follows.



GX Works3

The system parameter window, CPU parameter window, and Write to PLC window are as follows.



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**■ Built-in Ethernet function: TCP (MELSOFT connection)/UDP (MELSOFT connection) setting**

This setting is the same as that of the RnCPU. For details, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Built-in Ethernet function: TCP connection setting of socket communications (TCP/IP connection)**

This setting is the same as that of the RnCPU. For details, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Built-in Ethernet function: Broadcast communications setting of socket communications (UDP/IP connection)**

This setting is the same as that of the RnCPU. For details, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Built-in Ethernet function: Time zone setting of time setting (SNTP client)**

This setting is the same as that of the RnCPU. For details, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Built-in Ethernet function: Setting for communications using the predefined protocol (predefined protocol operating status storage device)**

This setting is the same as that of the RnCPU. For details, refer to the following.

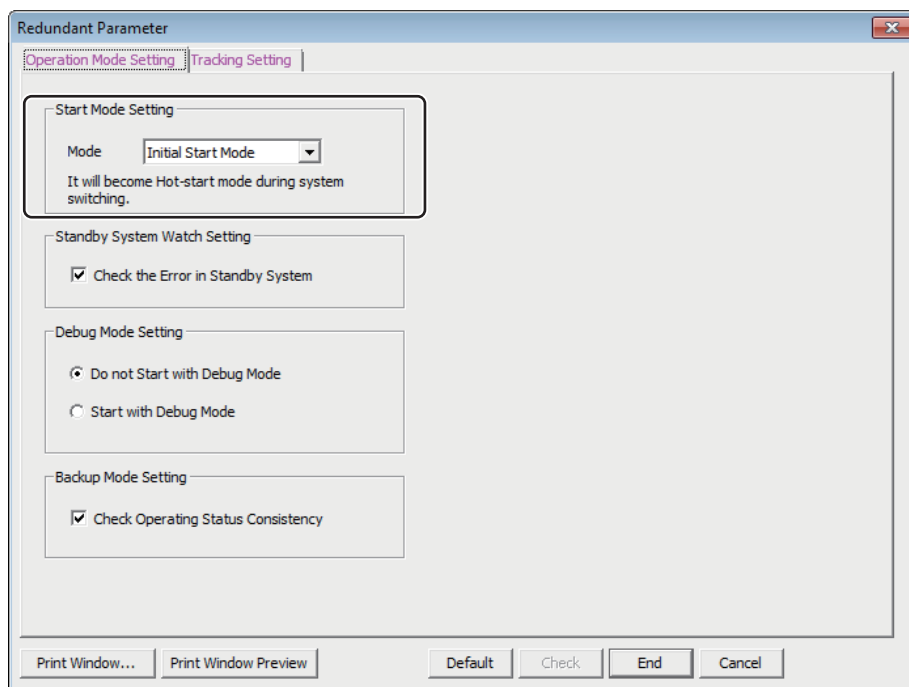
 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Start mode setting**

The start mode of the RnPCPU (redundant mode) is fixed as well as the initial start mode of the QnPRHCPU. Therefore, no setting window is provided. (By using the latch device, the operation same as the hot-start is enabled.)

**GX Works2**

The operation mode setting window of the redundant parameter is as follows.



**GX Works3**

No setting window is provided.

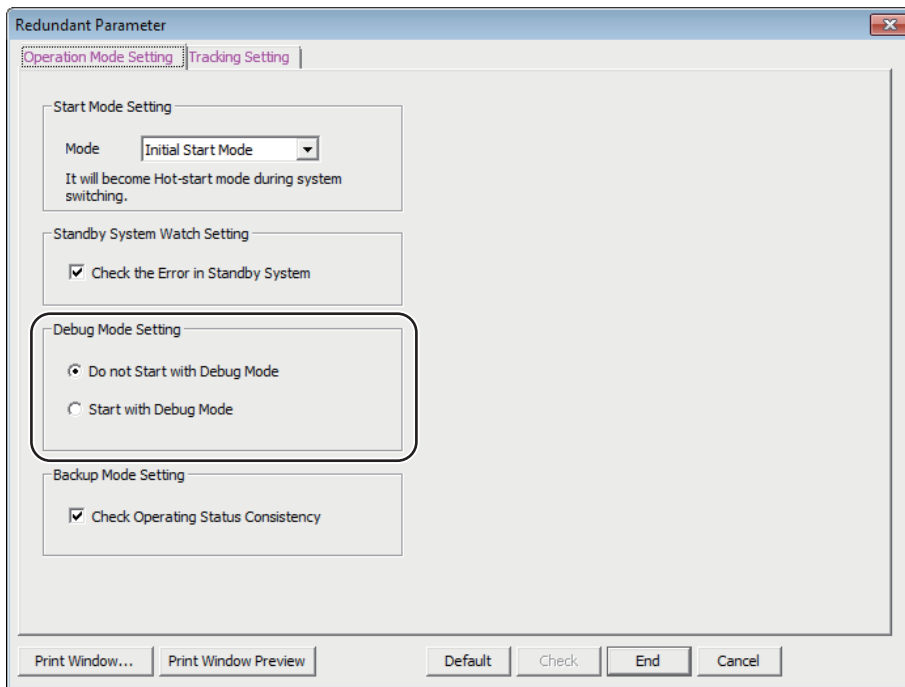
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■ Debug mode setting

For the RnPCPU (redundant mode), starting up one system and performing the specific operation (switch operation of the CPU module (RUN → STOP → RUN), online operation using GX Works3, or input (X) operation) enables debugging of the one system. Therefore, no setting window is provided.

**GX Works2**

The operation mode setting window of the redundant parameter is as follows.



**GX Works3**

No setting window is provided.



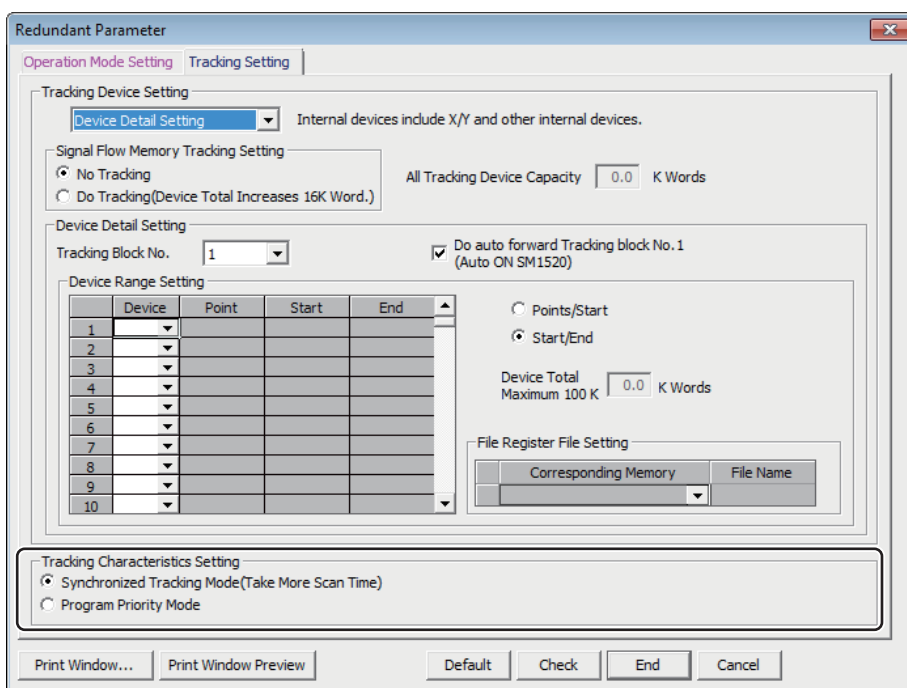
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**Tracking characteristics setting**

For the RnPCPU (redundant mode), the following scan program is executed after the tracking transfer from the control system to the standby system. (The performance of the RnPCPU is better than that of the QnPRHCPU, and the tracking time has little influence on the scan time. Thus, the RnPCPU does not have the program priority mode implemented in the QnPRHCPU, which executes the next scan execution type program at the same time as the tracking transfer starts.) Therefore, the tracking characteristics setting window is not provided for the RnPCPU (redundant mode).

**GX Works2**

The tracking setting window of the redundant parameter is as follows.



**GX Works3**

No setting window is provided.

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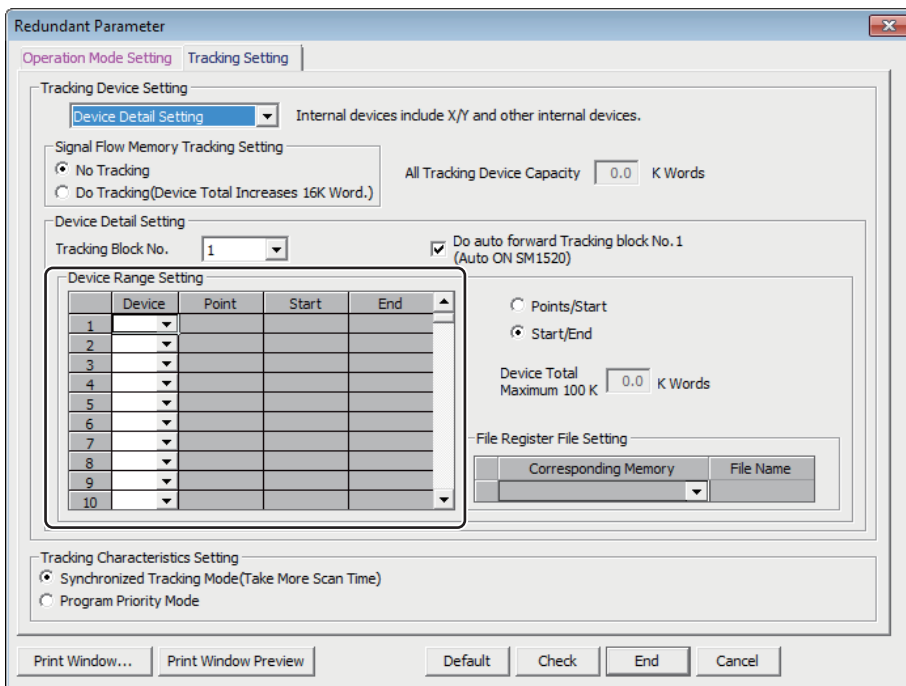
**Tracking device setting**

The QnPRHCPU cannot transfer the local devices and labels in tracking transfer. On the other hand, the RnPCPU (redundant mode) can transfer the local devices and labels (global labels and local labels) in tracking transfer.

For the RnPCPU (redundant mode), setting the global label setting to "Transfer" on the device/label detailed setting window under the tracking setting sets all global labels as the target for tracking transfer. In addition, setting the local label setting to "Transfer" sets all local labels as the target for tracking transfer.

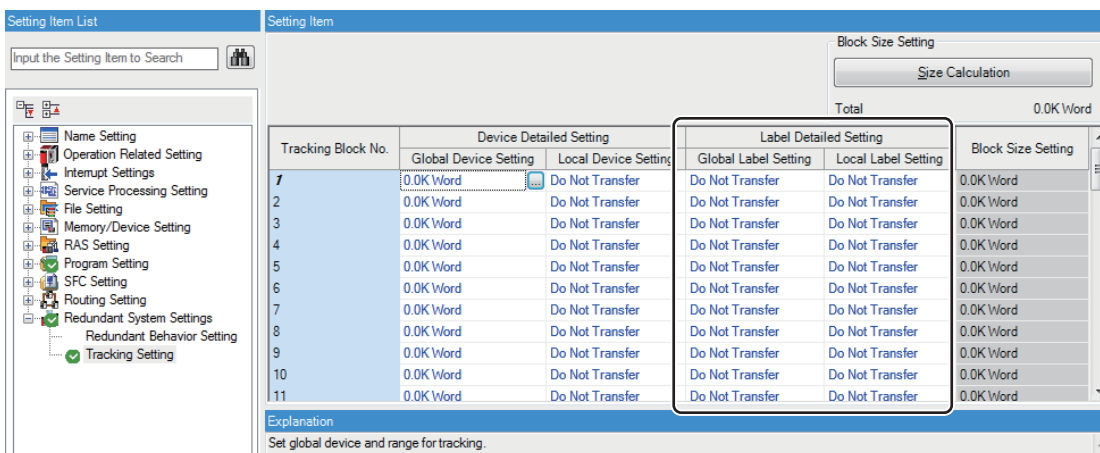
**GX Works2**

The device range settings in the tracking setting window of the redundant parameter is as follows.



**GX Works3**

The label detailed setting in the device/label detailed setting window of the CPU parameter is as follows.



In the "Global Device Setting" window, clicking the [Device Setting Reflection] button inputs the device and device range set with "Device/Label Memory Area Setting" of the CPU parameter in batch.

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**Devices and files**

This section describes the specifications differences of devices and files used with the QnUDPVCPU/QnPRHCPU and the RnPCPU.

For other devices and files, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**Special relay (SM) and special register (SD)**

Some of the SM/SD number assignments differ between the QnPHCPU/QnPRHCPU and the RnPCPU. Also, some SM/SD areas are used for different purposes. If SM/SD is used in the MELSEC-Q series program, the program needs to be corrected for MELSEC iQ-R series.

**■ Differences between the QnUDPVCPU and the RnPCPU (process mode)**

The following table summarizes the differences between the QnUDPVCPU and the RnPCPU (process mode).

Item	QnUDPVCPU	RnPCPU (process mode)
Diagnostic errors	SD0	SD0
Clock time for diagnostic error occurrence	SD1 to SD3	SD1 to SD7 (Latest self-diagnostics error time) <sup>*1</sup>
Error common information, error individual information	SM5, SM16	N/A
Error information categories, error common information, error individual information	SD4, SD5 to SD15, SD16 to SD26	SD80 to SD143 (Detailed information 1 to 2) <sup>*1</sup>
Error reset	SD50, SM84, SD81, SD82, SD84, SD85	N/A
Battery low	SD51, SD52	N/A
IP packet transfer function related information	SD180 to SD183	U3En\G310 to U3En\G313
Status of switch, LED status	SD200, SD201	SD200, SD201
Operating status of CPU	SD203	SD203
LED OFF command, LED display color, LED display priority ranking	SM202, SD202, SD204, SD207 to SD209	N/A
PAUSE enable coil	SM206	N/A
Clock data	SD210 to SD213	SD210 to SD216 <sup>*1</sup>
LED display data	SD220 to SD227	N/A
Device range check inhibit flag	SM237	N/A
Base mode	SD240	N/A
A/Q base differentiation	SD242	SD242 (Identification for whether or not Q series module can be mounted)
CPU No.'n' error flag	SM244 to SM247	SM230 to SM233
All stations refresh command	SM254	N/A
MELSECNET/10, MELSECNET/H information	SD254 to SD274	N/A
Device assignment	SD282 to SD311	SD260 to SD309
Online change (SFC inactive block)	SM329, SD329	N/A
Latch clear execution command	SM339, SD339	N/A
Ethernet information	SD340 to SD368	N/A
GINT instruction execution completion flag	SM391	N/A
Multiple CPU system information	SD393 to SD399	SD228 to SD233
Initial/minimum/maximum scan time, END processing time, constant scan wait time, scan program execution time	SD522 to SD523, SD524 to SD525, SD526 to SD527, SD540 to SD541, SD542 to SD543, SD548 to SD549	SD518 to SD519, SD522 to SD523, SD524 to SD525, SD526 to SD527, SD528 to SD529, SD530 to SD531
Memory card use conditions	SD604	SD604 (SD memory card (drive 2) usage status)
Drive 2 (SD memory card) capacity (unit: 1K byte or 1M byte)	SD603, SD606, SD607	SD606, SD607 (SD memory card (drive 2) capacity, unit: 1K byte)
Memory card remove/insert enable flag	SM609	N/A
Drive 2 (SD memory card) capacity (free space, unit: 1M byte)	SD616, SD617	SD610, SD611 (SD memory card (drive 2) free space, unit: 1K byte)
Drive 3/4 related	SM620 to SM624, SD620	N/A

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Item	QnUDPVCPU	RnPCPU (process mode)
Drive 3 (Standard RAM) capacity (unit: 1K byte)	SD622	SD618, SD619 (Device/label memory (file storage area) capacity)
Drive 4 (Standard ROM) capacity (unit: 1K byte)	SD623	SD622, SD623 (Data memory (drive 4) capacity)
Drive 3/4 use conditions	SD624	SD614 (Device/label memory (drive 3) usage status), SD620 (Data memory (drive 4) usage status)
Directory batch delete	SM638, SD638, SD639	N/A
File register information	SM640, SD640 to SD647	N/A
File register block number	SD648	SD312
Comment file information	SM650, SD650 to SD656	N/A
Data backup/restoration information	SM671, SM675, SM676, SM691, SM692, SD671 to SD679, SD689 to SD694, SD696 to SD699	N/A
Program memory/standard ROM write related information	SM680 to SM682, SD681 to SD683, SM685 to SM687, SD686 to SD688	SM628 to SM630, SD629 to SD631, SM632 to SM634, SD633 to SD635
Specification of writing to standard ROM instruction count	SD695	SD771
Boot operation information	SM660, SD660 to SD666	N/A
Parameter-valid drive information	SD670	N/A
EI flag	SM715	N/A
Block comparison	SM716 to SM718	SM704
IMASK instruction mask pattern	SD715 to SD717, SD781 to SD793	SD1400 to SD1415
Comment read completion flag	SM720	N/A
File being accessed	SM721	SM753
BIN/DBIN instruction error disabling flag	SM722	SM754
SFC comment readout instruction in execution flag	SM735	N/A
Refresh device write/read instruction in execution flag	SM739	N/A
Scaling instruction search method setting	SM750	SM755
PID bumpless processing, PID limit setting (for complete derivative)	SM774, SD774, SD775	SM792, SD792, SD793
Accumulator	SD718, SD719	N/A
Refresh processing selection when the COM instruction is executed	SD778	SD775
Sampling trace function information	SM800 to SM805, SM826, SM829	N/A
Debug function usage	SD840	N/A
Auto logging	SM841	N/A
Device information during "RAM ERROR" (Error code 1161)	SD927, SD928	N/A
Remote password count	SD979 to SD999	U3En\G320 to U3En\G340
Conversion from A series to Q series	SM1000 to SM1255, SD1000 to SD1255	N/A
IP address in-use	SD1260 to SD1265	U3En\G50 to U3En\G65 (Own node IP address)
MAC address	SD1266 to SD1268	U3En\G74 to U3En\G76 (Own node MAC address)
Time setting function (SNTP) related information	SM1270, SD1270 to SD1275 <sup>*1</sup>	U3En\G290 to U3En\G299 <sup>*1</sup>
Remote password mismatch count clear	SM1273	N/A
Forced connection invalidation	SD1276, SD1277	U3En\G280, U3En\G281
Open completion signal, open request signal, receive status signal	SD1282, SD1284, SD1286	SD1504, SD1505, SD1506
Built-in Ethernet port connection status	SD1288	N/A
Ethernet basic timeout time	SD1289	N/A
IP address change function related information	SM1292 to SM1297, SD1292 to SM1299	SM1520 to SM1523, SD1520 to SD1527
Built-in Ethernet predefined protocol function related information <sup>*2</sup>	SM1354, SM1355, SD1359 to SD1381	U3En\G692, U3En\G710 to U3En\G729

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Item	QnUDPVCPU	RnPCPU (process mode)
Built-in Ethernet port counter	SD1395	U3En\G226 (Receive FIFO overflow count)
Fuse blown module	SD1300 to SD1331	N/A
I/O module verification error	SD1400 to SD1431	N/A
Data logging	SM1940 to SM2037, SD1940 to SD2036	SM1210 to SM1307, SD1210 to SD1306
Hold mode	SM1500, SM1501	SM816, SM817
Basic period	SD1500, SD1501	SD816, SD817
Process control instruction detail error code, process control instruction generated error location	SD1502, SD1503	N/A
Dummy device	SD1506, SD1507	SD820, SD821
Bumpless function availability setting for the S.PIDP instruction	SD1508	SD818
Power supply off detection flag	SM1780	SM150
Power supply off detection status	SD1780	SD150
Power supply failure detection flag	SM1781	SM151
Power supply failure detection status	SD1781	SD151
Momentary power failure detection flag for power supply 1	SM1782	SM152
Momentary power failure detection counter for power supply 1	SD1782	SD152
Momentary power failure detection flag for power supply 2	SM1783	SM153
Momentary power failure detection counter for power supply 2	SD1783	SD153

\*1 Different types of data are stored in these areas of the RnPCPU. For this reason, the areas are not converted automatically by editing with "Open GX Works2 Format Project".

\*2 SM1355 for QnUDPVCPU cannot be used in the RnPCPU.

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■ Differences between the QnPRHCPU and the RnPCPU (redundant mode)

The following table summarizes the differences between the QnPRHCPU and the RnPCPU (redundant mode).

Item	QnPRHCPU	RnPCPU (redundant mode)
Diagnostic errors	SD0	SD0
Clock time for diagnostic error occurrence	SD1 to SD3	SD1 to SD7 (Latest self-diagnostics error time)* <sup>1</sup>
Error common information, error individual information	SM5, SM16	N/A
Error information categories, error common information, error individual information	SD4, SD5 to SD15, SD16 to SD26	SD80 to SD143 (Detailed information 1 to 2)* <sup>1</sup>
Error reset	SD50	N/A
Battery low	SD51, SD52	N/A
CHK detection	SM80	N/A
CHK number	SD80	N/A
Step transition monitoring timer setting value	SD90 to SD99	N/A
Startup of monitoring timer for step transition	SM90 to SM99	N/A
CH1 transmission speed setting (RS-232)	SD105	N/A
LED OFF command, LED display priority ranking	SM202, SD202, SD207 to SD209	N/A
PAUSE enable coil	SM206	N/A
Clock data	SD210 to SD213	SD210 to SD216* <sup>1</sup>
LED display data	SD220 to SD227	N/A
Module to which online module change is being performed	SD235	SD1602
Base mode	SD240	N/A
Max. loaded I/O read	SM250	N/A
All stations refresh command	SM254	N/A
MELSECNET/10, MELSECNET/H information	SM255 to SM257, SM260 to SM262, SM265 to SM267, SM270 to SM272 SD254 to SD274	N/A
CC-Link error	SM280, SD280, SD281	N/A
Device assignment	SD290 to SD304	SD260 to SD285
Time reserved for communication processing	SD315	N/A
Normal SFC program execution status	SM331	N/A
Program execution management SFC program execution status	SM332	N/A
Ethernet information	SD340 to SD368	N/A
Ethernet instruction reception status	SD380 to SD383	N/A
Access execution flag	SM390	N/A
Reads module service interval	SM551	N/A
Initial/minimum/maximum scan time, END processing time, constant scan wait time, scan execution type program execution time	SD522 to SD523, SD524 to SD525, SD526 to SD527, SD540 to SD541, SD542 to SD543, SD548 to SD549	SD518 to SD519, SD522 to SD523, SD524 to SD525, SD526 to SD527, SD528 to SD529 (The scan execution type program execution time is not applicable.)
Service interval measurement module	SD550	N/A
Service interval time	SD551 to SD552	N/A
Drive 1 flag	SM602	N/A
Drive 1 (memory card RAM) capacity (unit: 1K byte)	SD602	N/A
Drive 2 (memory card ROM) capacity (unit: 1K byte)	SD603	SD606 (SD memory card (drive 2) capacity)
Memory card remove/insert enable flag	SM609	N/A
Drive 3/4 related	SM620 to SM624, SD620	N/A
Drive 3 (Standard RAM) capacity (unit: 1K byte)	SD622	SD618, SD619 (Device/label memory (file storage area) capacity)
Drive 4 (Standard ROM) capacity (unit: 1K byte)	SD623	SD622, SD623 (Data memory (drive 4) capacity)
Drive 3/4 in-use flag	SM624	N/A

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Item	QnPRHCPU	RnPCPU (redundant mode)
Drive 3/4 use conditions	SD624	SD614, SD620
File register use	SM640	N/A
File register drive	SD640	N/A
File register block number	SD648	SD312
Comment use	SM650	N/A
Comment drive	SD650	N/A
Comment file name	SD651 to SD656	N/A
Boot operation information	SM660, SD660 to SD666	N/A
Memory card file register access range flag	SM672	N/A
Mask pattern	SD705, SD706	N/A
CHK instruction priority ranking flag	SM710	N/A
EI flag	SM715	N/A
IMASK instruction mask pattern	SD715 to SD717, SD781 to SD793	SD1400 to SD1415
File being accessed	SM721	SM753
BIN/DBIN instruction error disabling flag	SM722	SM754
SFC comment readout instruction in execution flag	SM735	N/A
MSG instruction reception flag	SM738	N/A
PID bumpless processing, PID limit setting (for complete derivative)	SM774, SD774, SD775	SM792, SD792, SD793
Refresh processing selection when the COM instruction is executed	SD778	SD775
Sampling trace function information	SM800 to SM805, SM826	N/A
Fuse blown module	SD1300 to SD1331	N/A
I/O module verification error	SD1400 to SD1431	N/A
Hold mode	SM1500, 1501	SM816, 817
Dummy device	SD1506, 1507	SD820, 821
Bumpless function availability setting for the S.PIDP instruction	SD1508	SD818
Operation mode	SM1510	SM1630
System A identification flag, system B identification flag	SM1511, SM1512	SM1632, SM1633
Debug mode status flag	SM1513	N/A
Control system judgment flag, standby system judgment flag	SM1515, SM1516	SM1634, SM1635
CPU module startup status	SM1517	SM1637 (System switching detection (standby system to control system))
Standby system to control system switching status flag	SM1518	SM1643
Previous Control System Identification Flag	SM1519	SM1636
Data tracking transfer trigger specification	SM1520 to 1583	SD1667 to SD1670
Redundant system LED status	SD1585	N/A
Reason(s) for system switching, Reason(s) for system switching failure conditions	SD1588, SD1589, SD1601	SD1643, SD1644, SD1649
System switching enable/disable flag from network module	SM1590	SM1645
Network module head address, which requested system switching	SD1590	SD1645 (System switching request status from a network module of own system)
Standby system error detection disable flag at system switching	SM1591	N/A
Enable/disable user system switching	SM1592	SM1646
Setting to access extension base unit of standby system CPU	SM1593	N/A

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Item	QnPRHCPU	RnPCPU (redundant mode)
Memory copy other system start flag, status flag, completion flag	SM1595, SM1596, SM1597	SM1653, SM1654, SM1655
Memory copy target I/O number, Memory copy status	SD1595, SD1596	SD1653, SD1654
Copy contents of standard ROM during memory copy	SM1598	N/A
Other system error flag	SM1600	SM1680
System error information	SD1600	SD1648
System switching dedicated instruction parameter	SD1602	SD1650 (System switching instruction ID number)
Other system diagnostics error, other systems self-diagnostics error	SM1610, SD1610, SM1611	SM1681, SD1681, SM1682
Other system diagnostic error occurrence time	SD1611 to SD1613	SD1682 to SD1688
Other system error information category	SD1614	N/A
Other system error common information	SD1615 to SD1625	N/A
Other system common error information, Error individual information for other systems	SM1615, SM1626	SM1683, SM1684
Other system error individual information	SD1626 to SD1636	N/A
Standby system cancel error flag	SM1649	SM1679
Standby system error cancel command	SD1649	N/A
Other system operating information	SD1650	SD1680
Network module head address, which requested system switching on host (control) system	SD1690	SD1646 (System switching request status from network module of other system)
Transfer trigger completion flag	SM1700	SM1673
Tracking error detection count	SD1700	SD1664
Manual system switching disable/enable setting during online program change redundant tracking	SM1709	N/A
Transfer tracking data during online program change enable flag	SM1710	SM1660
Waiting time for online program change (standby system)	SD1710	N/A
Transfer trigger completion flag	SM1712 to SM1775	SD1673 to SD1676
Power supply off detection flag	SM1780	SM150
Power supply off detection status	SD1780	SD150
Power supply failure detection flag	SM1781	SM151
Power supply failure detection status	SD1781	SD151
Momentary power failure detection flag for power supply 1	SM1782	SM152
Momentary power failure detection counter for power supply 1	SD1782	SD152
Momentary power failure detection flag for power supply 2	SM1783	SM153
Momentary power failure detection counter for power supply 2	SD1783	SD153
Conversion from A series to Q series	SM1000 to SM1255, SD1000 to SD1255	N/A

\*1 Different types of data are stored in these areas of the RnPCPU. For this reason, the areas are not converted automatically by editing with "Open GX Works2 Format Project".



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## Functions

The following table summarizes the differences of functions between the QnUDPVCPU/QnPRHCPU and the RnPCPU.

Item		QnUDPVCPU and RnPCPU (process mode)		QnPRHCPU and RnPCPU (redundant mode)	
		QnUDPVCPU	RnPCPU	QnPRHCPU	RnPCPU
SFC program	MELSAP3, MELSAP-L	○: GX Works2	○: GX Works3	○: GX Works2	×
	Online change (inactive block)	○	×	×	×
Sampling trace function		○	×	○	×
Latch data backup to standard ROM		○	×	×	×
CPU module change function with memory card		○	×	×	×
Monitor	Monitor condition setting	○	×	○	×
	Executorial conditioned device test	○	×	×	×
	External input/output forced on/off function	○	×	○	×
Execution time measurement	Scan time measurement	○	×	○	×
MELSEC-A series compatible function	Access by using A-compatible 1C/1E frame (A to Q converted SM/SD areas (SM1000 to SM1255, SD1000 to SD1255))	○	×	○	×
High-speed interrupt function		High-speed interrupt (I49) (The high-speed I/O refresh function and high-speed transfer function)	I49 interrupt (Set an event execution type program which will be triggered by the interrupt pointer I49, and perform refresh for each program.)	×	I49 interrupt (Set an event execution type program which will be triggered by the interrupt pointer I49, and perform refresh for each program.)
Service processing		Service processing setting	Device/label access service processing setting	Service processing setting	Device/label access service processing setting
Data logging file transfer function		○	×	×	×
Multiple CPU function	Access to the host CPU operation information area (U3En\G0 and later) in CPU shared memory	○	×	×	×
	Multiple CPU high speed transmission area (U3En\G10000 and later) in the cyclic transmission area device	○	Fixed scan communication area (U3En\HG0 and later) in the CPU buffer memory access device	×	×
	Refresh using the multiple CPU high speed transmission area (Data are refreshed during END processing.)	○	Refresh using the fixed scan communication area (Data are refreshed at execution of the multiple CPU synchronous interrupt program (I45).)	×	×
File password	Length	4 to 32 characters (File password 32)	6 to 32 characters	4 characters	6 to 32 characters
Remote password	Length	4 characters	6 to 32 characters	4 characters	6 to 32 characters


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Item		QnUDPVCPU and RnPCPU (process mode)		QnPRHCPU and RnPCPU (redundant mode)	
		QnUDPVCPU	RnPCPU	QnPRHCPU	RnPCPU
Self-diagnostic function	Error clear	Continuation errors can be cleared by types.	Continuation errors being detected are batch-cleared.	Continuation errors can be cleared by types.	Continuation errors being detected are batch-cleared.
MELSOFT connection extended setting	Access by specifying network and station number	○	×	×	×
iQ Sensor Solution function		○	×	×	×
Low-speed execution type program		×	The scan execution type or fixed scan execution type are alternative.	○	The scan execution type or fixed scan execution type are alternative.
Interrupt pointer for an error (I32 to I40)		×	×	○	The event execution type is alternative.
LED display priority ranking		×	×	○	×
System determination		×	×	The system A or B is determined by a tracking cable.	The system A or B is determined by online operation of GX Works3.
Operation mode change		×	×	<ul style="list-style-type: none"> <li>• Backup mode</li> <li>• Separate mode</li> <li>• Debug mode</li> </ul>	<ul style="list-style-type: none"> <li>• Backup mode</li> <li>• Separate mode</li> </ul>
Tracking function		×	×	Device/label that can be transferred <ul style="list-style-type: none"> <li>• Internal device</li> <li>• File register</li> </ul>	Device/label that can be transferred <ul style="list-style-type: none"> <li>• Global device (including the file register)</li> <li>• Local device</li> <li>• Global label</li> <li>• Local label</li> </ul>
Memory copy from control system to standby system		×	×	<ul style="list-style-type: none"> <li>• Memory copy with the engineering tool</li> <li>• Memory copy with the special relay and special register</li> </ul>	<ul style="list-style-type: none"> <li>• Memory copy with the engineering tool</li> <li>• Memory copy with the special relay and special register</li> <li>• Auto memory copy (new function)</li> </ul>
Online module change		×	<ul style="list-style-type: none"> <li>• Change by operating the special relay and special register</li> <li>• Direct change</li> </ul>	<ul style="list-style-type: none"> <li>• Change with the engineering tool</li> </ul>	<ul style="list-style-type: none"> <li>• Change by operating the special relay and special register</li> <li>• Direct change</li> </ul>

\*1 For details on the differences, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

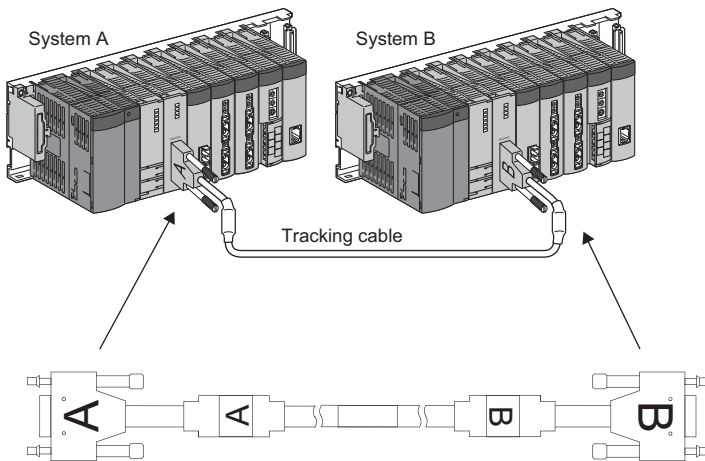
\*2 For the applicable modules, refer to the following.

 MELSEC iQ-R Module Configuration Manual

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**Determination of system A/B**

For the QnPRHCPU, a CPU module connected to the system A connector of a tracking cable is recognized as a system A. The other CPU module connected to the system B connector of the tracking cable is recognized as a system B.

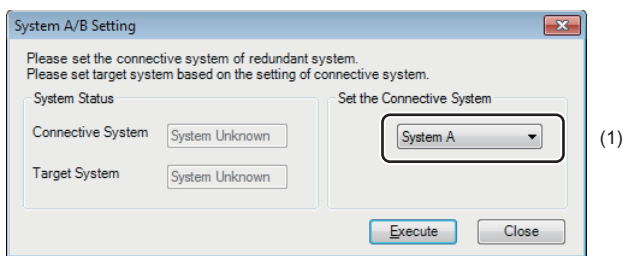


One end of a tracking cable is for system A, and the other end is for system B.

For the RnPCPU (redundant mode), the system A or B is determined by the online operation of GX Works3.

**GX Works3**

The system A/B setting window is as follows.



(1) Select the content to write to the own system.

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## 2.3 Power Supply Modules, Base Units, and I/O Modules

This section describes the differences of redundant power supply modules between the MELSEC-Q series and the MELSEC iQ-R series. For the differences of other power supply modules, base units, and I/O modules, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

### Redundant power supply module

The following table summarizes the differences of redundant power supply modules between the MELSEC-Q series and the MELSEC iQ-R series.

Item	MELSEC-Q series	MELSEC iQ-R series
Terminal screw size	M3.5	M4.0
External dimensions	98(H)×83(W)×115(D) [mm]	106(H)×54.6(W)×110(D) [mm]
POWER LED indication	On (green): Normal (at 5VDC output (at normal operation), at momentary power failure within 20ms) On (red): Power supply module failure (at 5VDC error, overload, or internal circuit failure) Off: External AC/DC input cut, fuse blown, power failure (including momentary power failure for 20ms or longer)	On (green): Normal (at 5VDC output (at normal operation), at momentary power failure within 20ms) On (red): — Off: Power supply module failure (at 5VDC error, overload, or internal circuit failure), external AC/DC input cut, fuse blown, or power failure (including momentary power failure for 20ms/10ms or longer)

## 2.4 Intelligent Function Modules

For the differences of the intelligent function module between the MELSEC-Q series and MELSEC iQ-R series, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

## 2.5 Information Modules and Network Modules

This section describes the differences between the MELSEC-Q series and the MELSEC iQ-R series in a redundant system. For further general information, refer to the following.

Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

### Ethernet interface module

The following summarizes the differences of Ethernet interface modules between the MELSEC-Q series (QJ71E71-100) and the MELSEC iQ-R series (RJ71EN71).

#### Parameters

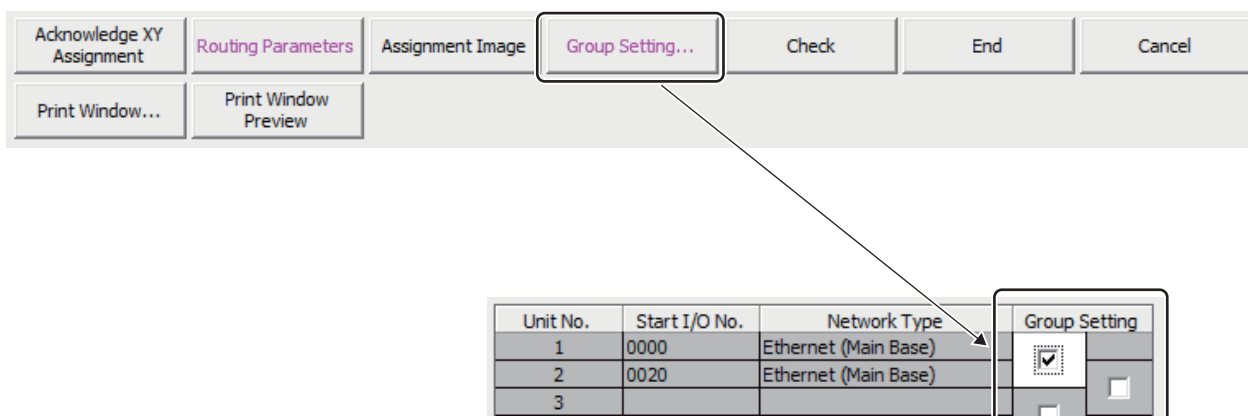
##### ■ Redundant group setting

Select an item from "Redundant Module Group Setting" in "System Parameter" for the MELSEC iQ-R series modules.

Item	MELSEC-Q series	MELSEC iQ-R series
Redundant group setting	Network Parameter • Group Setting	System Parameter • Redundant Module Group Setting

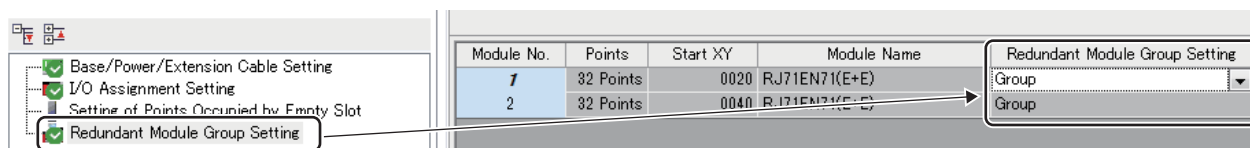
### GX Works2

The network parameter setting window is as follows.



### GX Works3

The system parameter setting window is as follows.



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**Functions**

**■ Port group setting**

Even if a communication error occurs in one port, as long as communications are possible on the other port, systems are not switched and communications by the control system continue according to the setting "Port Group Setting" in the MELSEC iQ-R series.

Item		MELSEC-Q series	MELSEC iQ-R series
Redundant group setting	Redundant Module Group Setting	Redundant group setting	The name has been changed to "Redundant Module Group Setting".
	Port Group Setting	Not supported	A new function has been added.

**■ Both systems identical IP address setting function**

An IP address common to both systems A and B (control system IP address) can be used by using the both systems identical IP address setting function of the MELSEC iQ-R series. This function enables communications with control systems without changing the connection destination (IP address) in the external device, even if system switching occurs.

Item		MELSEC-Q series	MELSEC iQ-R series
Both systems identical IP address setting function		Not supported	A new function has been added.

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### CC-Link IE Field Network master/local modules

The following summarizes the differences of CC-Link IE Field Network Master/Local modules between the MELSEC-Q series (QJ71GF11-T2) and the MELSEC iQ-R series (RJ71GF11-T2/RJ71EN71\*1). For details on the MELSEC iQ-R series modules, refer to the following manuals.

📖 MELSEC iQ-R CC-Link IE Field Network User's Manual (Application)

\*1 The RJ71EN71 can be used as a CC-Link IE Field Network module or Ethernet module by switching the mode in the parameter.

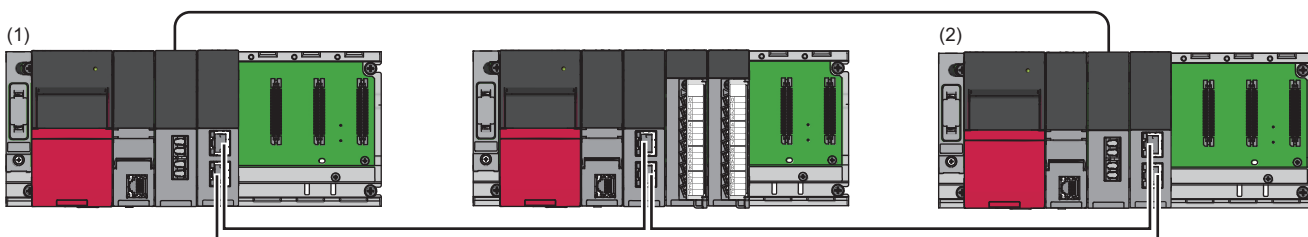
#### System configuration

The redundant system of the CC-Link IE Field Network has the following configuration.

System configuration	MELSEC-Q series	MELSEC iQ-R series	
		RJ71EN71	RJ71GF11-T2
Redundant master station	Not supported	Not supported	The master station is configured in a redundant system.
Redundant slave station			The slave station is configured in a redundant system.
Redundant line			Each of the control system and standby system is configured on a different network to make the network line redundant.

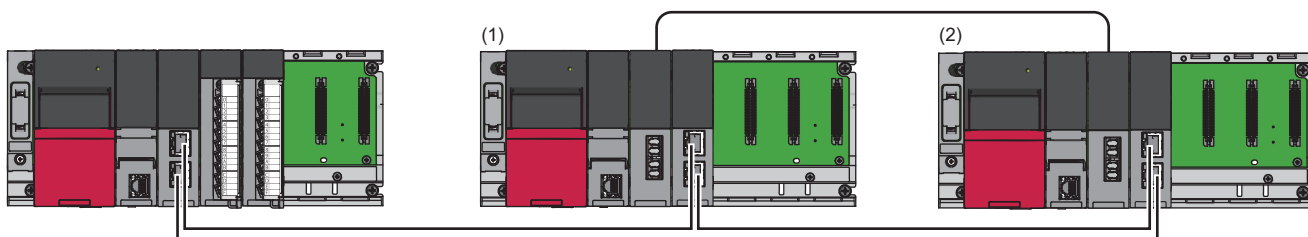
#### ■ Redundant master station

For the redundant master station, the master station (1) and the submaster station (2) are connected with a tracking cable. When an error occurs in the control system master station, the control is switched to the standby system submaster station to control the slave stations and continue data link.



#### ■ Redundant slave station

For the redundant slave station, the slave station is made redundant and connected to one network line. When an error occurs in the control system slave station (1), the control is switched to the standby system slave station (2) to control the slave station side and continue data link.

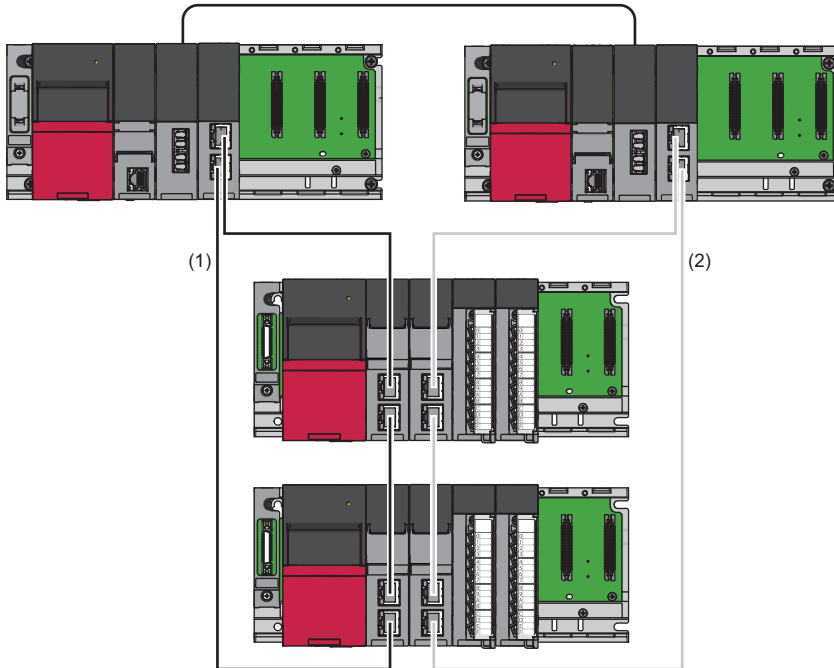


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■ Redundant line

Prepare two network lines and connect slave stations to each network line in a redundant line. (The master/local modules of both systems operate as a master station of each network.)

When an error occurs in the control system network (1), the control is switched to the standby system network (2) to control the redundant system and continue data link.



For slave stations, only remote head modules configured as a redundant system can be used.



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**Dedicated instructions**

For the differences of CC-Link IE Field Network instructions, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**Parameters**

The following table summarizes the differences of the CC-Link IE Field Network parameters.

Item	Setting location			
	MELSEC-Q series		MELSEC iQ-R series	
Network configuration setting	Network parameter	Network configuration setting	Module parameter	Network configuration setting* <sup>1</sup>
Module operation mode setting		Mode		Module operation mode setting* <sup>1</sup>
Redundant System Settings	Not supported			Redundant System Settings

\*1 For details on parameters, refer to the following.

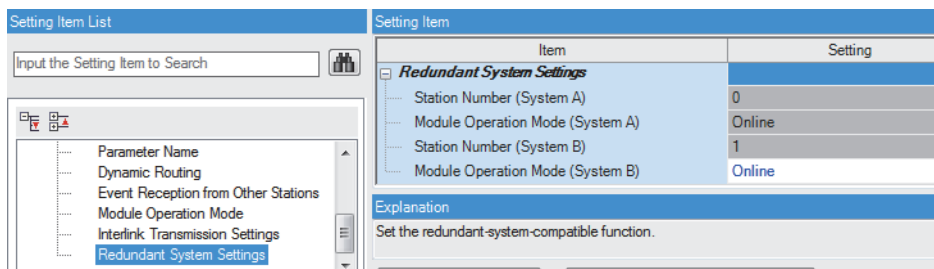
 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

**■ Redundant System Settings**

Set the redundant system function.

**GX Works3**

The module parameter setting window is as follows.



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**Functions**

The following table summarizes the differences of the CC-Link IE Field Network function.

Item	MELSEC-Q series	MELSEC iQ-R series
Redundant system function	Not supported	<ul style="list-style-type: none"> <li>■ Redundant system function</li> <li>• System switching operation</li> <li>• System switching request to the control system CPU module</li> </ul>

**■ Redundant system function**

The redundant system function improves system reliability by making the master/local module or the remote head module redundant so that the new control system can continue data link even if an error occurs in the control system.

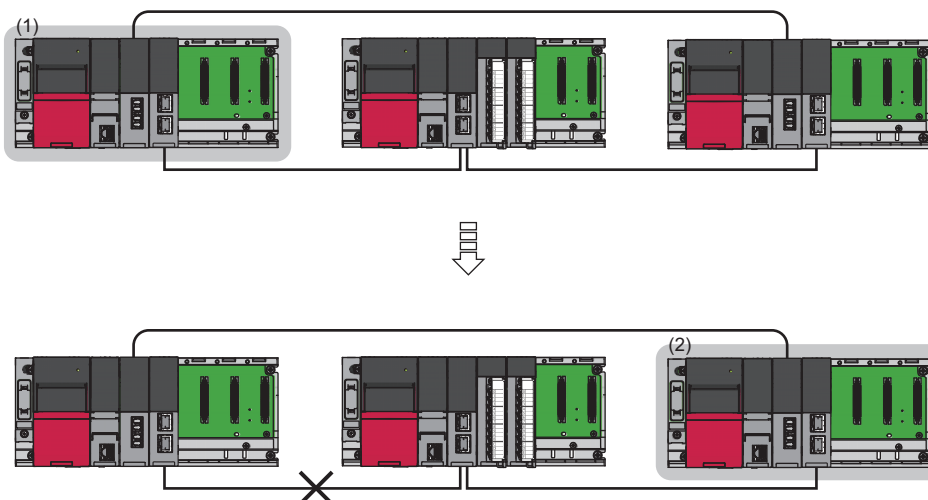
**■ System switching operation**

In a redundant system, if an error occurs in the control system, the control system and the standby system are switched. In CC-Link IE Field Network, send data is transferred to the new control system after system switching to continue data link.

- Redundant master station

When an error occurs in the control system, system switching occurs in the redundant system.

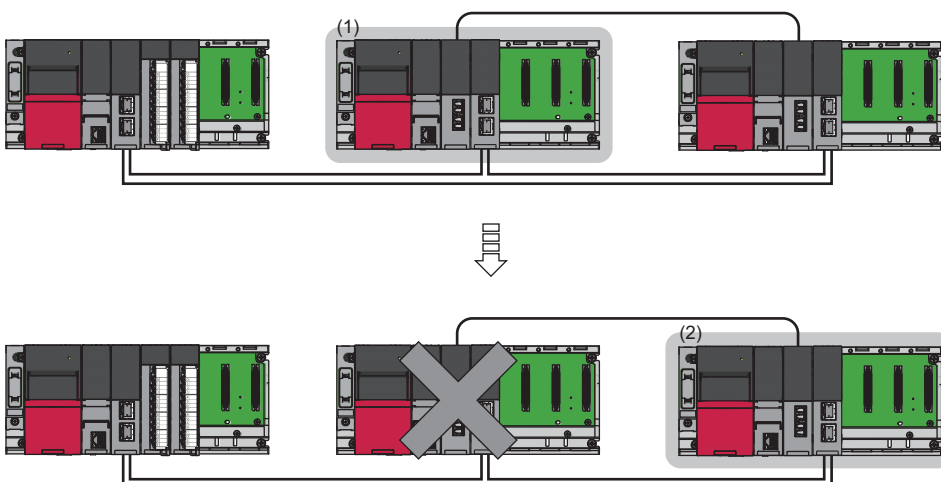
The master station (1) stops master operation and the submaster station (2) switched to the new control system takes over master operation to continue the control.



- Redundant slave station

When an error occurs in the control system, system switching occurs in the redundant system.

The control system slave station (1) stops sending data and send data is transferred to the slave station (2) that has switched to the new control system to continue data link.



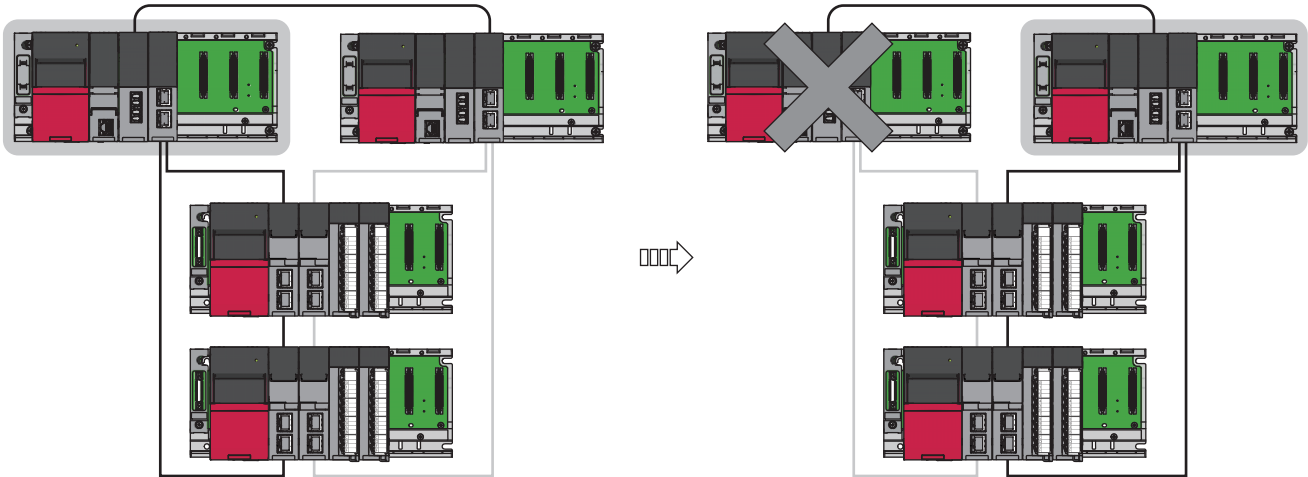
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• Redundant line

In redundant line configuration, prepare two network lines and connect a slave station to each network line. (The master/local modules of both systems operate as a master station of each network.)

When an error occurs in the control system, system switching occurs in the redundant system.

The network switched to the new control system through system switching continues the control.



■ System switching request to the control system CPU module

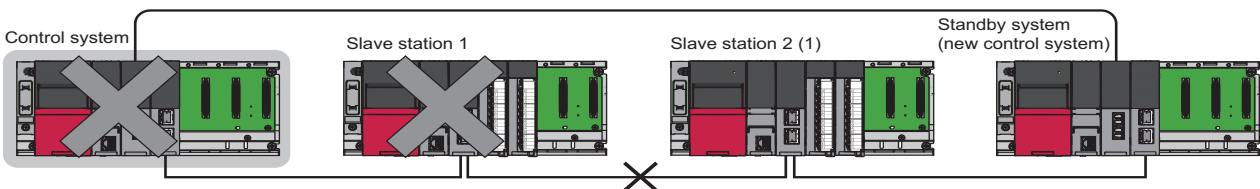
When the master/local module mounted on the control system detects a network error, it issues a system switching request to the control system CPU module.

System switching cause	Description
Moderate/major error and hardware failure	If an error which disables the continuous module processing is detected, the master/local module notifies the control system CPU module of the error and issues a system switching request.
Data link error	If the data link error status has continued for the system switching monitoring time set in "Supplementary Cyclic Settings" under "Application Settings" or longer, a system switching request is issued to the control system CPU module.
Communication error with the system switching monitoring target station	If the communication error with the system switching monitoring target station has continued for the system switching monitoring time set in "Supplementary Cyclic Settings" under "Application Settings" or longer, a system switching request is issued to the control system CPU module.
Slave station error (redundant line only)	In a redundant line configuration, if an error in the slave station has continued for the system switching monitoring time set in "Supplementary Cyclic Settings" under "Application Settings" or longer, a system switching request is issued to the control system CPU module.

• System switching monitoring target station

Setting the system switching monitoring target station can issue a system switching request to the control system CPU module when the master/local module mounted on the control system detects a communication error with the monitored slave station.

This continues the communications with the system switching monitoring target station as top priority.



Since the communications between the master station and the system switching monitoring target station (1) cannot be continued due to disconnection, a system switching request is issued. The communications with the system switching monitoring target station is continued in the submaster station of the new control system.

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### CC-Link system master/local modules

The following summarizes the differences of CC-Link system master/local modules between the MELSEC-Q series (QJ61BT11N) and the MELSEC iQ-R series (RJ61BT11).

#### Parameters

There is no difference of parameters for the redundant system between the MELSEC-Q series and the MELSEC iQ-R series.

#### Functions

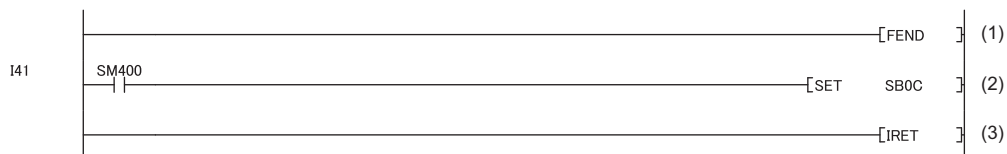
Item	MELSEC-Q series	MELSEC iQ-R series
Program when using the module in a redundant system	Use I41 (Error interrupt) to perform a forced master switching.	Perform the forced master switching by using SM1644 (ON for only one scan after system switching (control system to standby system)) in a program executed in both systems.

#### ■ Program when using the module in a redundant system

Since I41 (Error interrupt) cannot be used in the RnPCPU (process mode/redundant mode), change the program to the one using SM1644 (ON for only one scan after system switching (control system to standby system)). At this time, add a new program block and set "Both Systems Program Executions Setting" to "Both Systems Executions".

### GX Works2

The forced master switching program is as follows.



- (1) Terminate the main routine program.
- (2) Turn on the CC-Link forced master switching (SB000C).
- (3) Terminate the interrupt program.

### GX Works3

The forced master switching program is as follows.



### 3 SPECIFICATIONS DIFFERENCES BETWEEN THE MELSEC-Q SERIES AND THE MELSEC iQ-R SERIES MODULES

#### 3.1 CPU Modules

This section summarizes the specifications differences between the QnUDPVCPU/QnPRHCPU and RnPCPU (process mode/redundant mode).

#### Specifications differences between the QnUDPVCPU and the RnPCPU (process mode)

Function name			Availability	
			QnUDPVCPU	RnPCPU (process mode)
System configuration	Number of mountable modules	Other than the modules below	○: 64 maximum	○: 64 maximum
		Ethernet module	○: 4 maximum	○: 64 maximum
		CC-Link IE Controller Network module	○: 4 maximum	○: 8 maximum/32 maximum (in a multiple CPU system)
		CC-Link IE Field Network module	○: 8 maximum (64 maximum when a dedicated instruction is used)	○: 8 maximum/32 maximum (in a multiple CPU system) (64 maximum when a dedicated instruction is used)
		CC-Link module	○: 8 maximum (64 maximum when a dedicated instruction is used)	○: 8 maximum/32 maximum (in a multiple CPU system) (64 maximum when a dedicated instruction is used)
Number of mountable modules (Q series)	MELSECNET/H module	○: 4 maximum	×	
	Interrupt module (no setting by the engineering tool)	○: 1 maximum	○: 1 maximum/4 maximum (in a multiple CPU system)	
Modules can be used together	MELSEC iQ-R series module	×	○	
	MELSEC-Q series module	○	○: Some modules have restrictions.	
	MELSEC-AnS/A series module	○: Some modules have restrictions.	×	
	GOT (bus connection)	○	×: (Connect GOT via Ethernet.)	
Number of extension base unit levels			○: 7 maximum (Set the level with a connector pin.)	○: 7 maximum (The level is automatically recognized.)
Total length of extension cable			○: 13.2m maximum	○: 20m maximum

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Function name			Availability		
			QnUDPVCPU	RnPCPU (process mode)	
Programming	Programming language	Ladder diagram (LD)	○	○	
		Sequential function chart (SFC)	○	○*1	
		Structured text (ST)	○	○	
		Function block diagram (FBD)/ Structured ladder	○	○	
	Function block (FB)		○	○	
	Program execution type	Initial execution type		○	○
		Scan execution type		○	○
		Fixed scan execution type		○	○
		Standby type		○	○
		Event execution type		×	○: Newly added.
	Number of I/O points [X/Y]		○: 4096 points	○: 4096 points	
	User device		○	○: The devices differ.	
	File register		○: Standard RAM can be set.	○: Extended data register (D) and extended link register (W) are not provided.	
	System device		○	○: Some SM/SD areas differ.	
Constant scan		○: 0.5 to 2000ms (in increments of 0.1ms)	○: 0.2 to 2000ms (in increments of 0.1ms)		
Fixed scan interrupt	I28 to I31	○: 0.5 to 1000ms (in increments of 0.5ms)	○: 0.5 to 1000ms (in increments of 0.5ms)		
	I49	○: 0.1 to 1.0ms (in increments of 0.1ms)	○: 0.05 to 1000ms (in increments of 0.05ms)		
Memory capacity	Program capacity		○: 10K, 15K, 20K steps	○: 80K, 160K, 320K, 1200K steps	
	Program memory		○: 40K, 60K, 80K bytes	○: 320K, 640K, 1280K, 4800K bytes	
	Standard RAM and device/label memory		○: 128K bytes	○: 1188K, 1720K, 2316K, 3380K bytes	
	Standard ROM and data memory		○: 256K, 512K bytes	○: 5M, 10M, 20M, 40M bytes	
Processing time	Instruction processing time	LD instruction	○: 1.9ns	○: 0.98ns	
		OUT instruction	○: 3.9ns	○: 1.96ns	
		MOV instruction	○: 3.9ns	○: 1.96ns	
	PC MIX value		○: 220 instructions/μs	○: 419 instructions/μs	

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Function name		Availability		
		QnUDPVCPU	RnPCPU (process mode)	
Instructions	Sequence instruction	○	○	
	Basic instruction	Conversion from BIN 16-bit data to floating-point data (single precision)	○: FLT	○: INT2FLT
		Conversion from BIN 32-bit data to floating-point data (single precision)	○: DFLT	○: DINT2FLT
		Conversion from BIN 16-bit data to floating-point data (double precision)	○: FLTD	○: INT2DBL
		Conversion from BIN 32-bit data to floating-point data (double precision)	○: DFLTD	○: DINT2DBL
		Conversion from floating-point data to BIN 16-bit data (single precision)	○: INT	○: FLT2INT
		Conversion from floating-point data to BIN 32-bit data (single precision)	○: DINT	○: FLT2DINT
		Conversion from floating-point data to BIN 16-bit data (double precision)	○: INTD	○: DBL2INT
		Conversion from floating-point data to BIN 32-bit data (double precision)	○: DINTD	○: DBL2DINT
		Conversion from BIN 16-bit to BIN 32-bit data	○: DBL	○: INT2DINT
		Conversion from BIN 32-bit to BIN 16-bit data	○: WORD	○: DINT2INT
		Conversion from single precision to double precision	○: ECON	○: FLT2DBL
		Conversion from double precision to single precision	○: EDCON	○: DBL2FLT
		Application instruction	Conversion from ASCII to hexadecimal BIN	○: HEX
	Conversion from hexadecimal BIN to ASCII		○: ASC	○: INT2ASC
	Square root operation for floating-point data (single precision)		○: SQR	○: ESQRT
	Square root operation for floating-point data (double precision)		○: SQRD	○: EDSQRT
	BCD 4-digit square roots		○: BSQR	○: BSQRT
	BCD 8-digit square roots		○: BDSQR	○: BDSQRT
	Ramp signal		×: RAMP	×: RAMPQ
	16-bit data search		○: SER	○: SERDATA
	32-bit data search		○: DSER	○: DSERDATA
	BIN 16-bit data sort operations		○: SORT	○: SORTD
	BIN 32-bit data sort operations		○: DSORT	○: DSORTD
	Time data conversion (from hour/minute/second to second)		○: SECOND	○: TIME2SEC
	Time data conversion (from second to hour/minute/second)		○: HOUR	○: SEC2TIME
	Reading 2-word data from intelligent function module		○: DFRO	○: DFROM
	Interrupt disable		○: DI (without execution condition)	○: DI (with execution condition)
	Interrupt enable		○: EI (without execution condition)	○: EI (with execution condition)
	Refresh		○: COM (without execution condition)	○: COM (with execution condition)
	Select refresh (with execution condition)	○: CCOM	○: COM	
	Reading device comment data	○: COMRD	×	
	File setting for comments	○: QCDSET	×	
	High-speed block transfer of file register	○: RBMOV	×: Use the BMOV instruction instead.	

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Function name			Availability	
			QnUDPVCPU	RnPCPU (process mode)
Instructions	Application instruction	Writing to host CPU shared memory	○: TO, S.TO	○: TO
		Reading module information	○: UNIRD	○: UNIINFRD
		Instruction of reading the device in the CPU module in another station by IP address specification	○: SP.READ	×
		Instruction of writing to the device in the CPU module in another station by IP address specification	○: SP.WRITE	×
		SFC comment readout instruction	○: S.SFCSCOMR	×
		SFC transition comment readout instruction	○: S.SFCTCOMR	×
	Process control instruction	○	○	



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Function name		Availability			
		QnUDPVCPU	RnPCPU (process mode)		
Functions	Clock function		○	○: The time zone setting function is supported.	
	LED indication		○	○	
	Scan monitoring function (WDT setting)		○	○	
	Interrupt function		○	○: The multiple interrupt function is supported.	
	High-speed interrupt (I49)		○: The high-speed I/O refresh function and high-speed transfer function are supported.	○: The high-speed I/O refresh function and high-speed transfer function are not supported.	
	Database function		×	×	
	Device	Local device		○	○: Local devices should be described with "#".
		Device initial value		○	○
	Label	Local label		○	○
		Label initial value (global label/local label)		×	○: Newly added.
		Label access setting from external device		×	○: Newly added.
	Latch function		○	○	
	Latch data backup to standard ROM		○	×: Use the data backup/restoration function of a GOT.	
	Boot operation		○	○	
	Service processing setting		○	○	
Access by using A-compatible 1C/1E frame (A to Q converted SM/SD areas (SM1000 to SM1255, SD1000 to SD1255))		○	×		
iQ Sensor Solution function		○	×		
Multiple CPU function	I/O sharing when using multiple CPUs		○	○	
	Error time output mode		○	○	
	Multiple CPU synchronized startup		○	○	
	Multiple CPU clock synchronization		○	○	
	Communications by refresh		○: Data are refreshed during END processing.	○: Data are refreshed during END processing.	
	Access method to CPU shared memory/CPU buffer memory		○: FROM/TO instructions, cyclic transmission area device (U3En\G0 and later)	○: FROM/TO instructions, CPU buffer memory access device (U3En\G0 and later)	
	High-speed transmission between CPUs/ fixed scan transmission	Multiple CPU synchronous interrupt (I45)		○: 0.88ms (fixed)	○: 0.10 to 10.00ms (variable)
		Communications by refresh		○: Data are refreshed during END processing.	○: Data are refreshed at execution of the interrupt pointer, I45.
Area access method		○: FROM/TO instructions, cyclic transmission area device (U3En\G10000 and later)	○: CPU buffer memory access device (U3En\HG0 and later)		
Multiple CPU dedicated instruction		○	○		
Sampling trace		○	○: Use the trigger logging.		
Data logging function	Trigger logging and continuous logging		○	○	
	Saving format of the data logging file		○: CSV format	○: Unicode text file format, binary file format	
	File transfer function		○	×	
Scan time measurement		○	×		
Diagnostic function	Self-diagnostic function		○	○: The error code system has been changed.	
	Error clear		○	○: Continuation errors are batch-cleared.	

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Function name			Availability		
			QnUDPVCPU	RnPCPU (process mode)	
Functions	History function	Error history	○	○: The event history function is supported.	
	Monitor function	Monitor	○	○	
		Monitor condition setting	○	×	
		External input/output forced on/off function	○	×	
		Executorial conditioned device test	○	×	
	Online change	Online change (ladder mode)	○	○	
		Online change (files)	○	○	
		Change TC setting value	○	○: Use the watch function of the engineering tool.	
		Online change (inactive block) of SFC program	○	×	
	CPU module change function with memory card		○	×	×: Use the data backup/restoration function of a GOT.
	Security	File password (file password 32)	○: 4 to 32 characters (variable)	○: 6 to 32 characters (variable)	
		Remote password	○: 4 characters (fixed)	○: 6 to 32 characters (variable)	
	Built-in Ethernet function	Connection with MELSOFT products and GOT	○	○	
		MELSOFT connection extended setting	○	×	
		Communications using MC protocol/SLMP	○	○	
		Socket communications	○	○	
		Communications using the predefined protocol	○	○	
		Time setting function (SNTP client)	○	○	
		File transfer function (FTP server)	○	○	
	IP address change function		○	○	
Online module change function		×	○: • Change by operating the special relay and special register • Direct change		

\*1 Some firmware versions of the CPU module and the software versions of the engineering tool have restrictions. For details on restrictions by version, refer to each manual.

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Specifications differences between the QnPRHCPU and the RnPCPU (redundant mode)

Function name			Availability		
			QnPRHCPU	RnPCPU (redundant mode)	
System configuration	Number of mountable modules	Other than the modules below	○: 64 maximum	○: 11 maximum	
		Ethernet module	○: 4 maximum	○: 11 maximum	
		CC-Link IE Controller Network module	○: 2 maximum	○: 8 maximum	
		CC-Link IE Field Network module	×	○: 8 maximum	
		CC-Link module	○: 8 maximum	○: 8 maximum	
	Number of mountable modules (Q series)	MELSECNET/H module	○: 4 maximum	×	
		Interrupt module (no setting by the engineering tool)	×	×	
	Modules can be used together	MELSEC iQ-R series module	×	○	
		MELSEC-Q series module	○	×	
		MELSEC-AnS/A series module	×	×	
		GOT (bus connection)	×	×: (Connect GOT via Ethernet.)	
Number of extension base unit levels		○: 7 maximum (Set the level with a connector pin.)	×: (7 maximum, via remote head module, (The level is automatically recognized.))		
Total length of extension cable		○: 13.2m maximum	×		
Programming	Programming language	Ladder diagram (LD)	○	○	
		Sequential function chart (SFC)	○	×	
		Structured text (ST)	○	○	
		Function block diagram (FBD)/ Structured ladder	○	○	
	Function block (FB)		○	○	
	Program execution type	Initial execution type		○	○
		Scan execution type		○	○
		Fixed scan execution type		○	○
		Standby type		○	○
		Event execution type		×	○: Newly added.
	Number of I/O points [X/Y]		○: 4096 points	○: 4096 points	
	User device		○	○: Some SM/SD areas differ.	
	File register		○	○: Extended data register (D) and extended link register (W) are not provided.	
	System device		○	○: Some SM/SD areas differ.	
Constant scan		○: 0.5 to 2000ms (in increments of 0.5ms)	○: 0.2 to 2000ms (in increments of 0.1ms)		
Fixed scan interrupt	I28 to I31	○: 0.5 to 1000ms (in increments of 0.5ms)	○: 0.5 to 1000ms (in increments of 0.5ms)		
	I49	×	○: 0.05 to 1000ms (in increments of 0.05ms)		
Memory capacity	Program capacity		○: 124K, 252K steps	○: 80K, 160K, 320K, 1200K steps	
	Program memory		○: 496K, 1008K bytes	○: 320K, 640K, 1280K, 4800K bytes	
	Standard RAM and device/label memory		○: 256K bytes	○: 1188K, 1720K, 2316K, 3380K bytes	
	Standard ROM and data memory		○: 496K, 1008K bytes	○: 5M, 10M, 20M, 40M bytes	
Processing time	Instruction processing time	LD instruction	○: 34ns	○: 0.98ns	
		OUT instruction	○: 34ns	○: 1.96ns	
		MOV instruction	○: 102ns	○: 1.96ns	
	PC MIX value		○: 10.3 instructions/μs	○: 419 instructions/μs	

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Function name		Availability		
		QnPRHCPU	RnPCPU (redundant mode)	
Instructions	Sequence instruction	○	○	
	Basic instruction	Conversion from BIN 16-bit data to floating-point data (single precision)	○: FLT	○: INT2FLT
		Conversion from BIN 32-bit data to floating-point data (single precision)	○: DFLT	○: DINT2FLT
		Conversion from BIN 16-bit data to floating-point data (double precision)	×: FLTD	○: INT2DBL
		Conversion from BIN 32-bit data to floating-point data (double precision)	×: DFLTD	○: DINT2DBL
		Conversion from floating-point data to BIN 16-bit data (single precision)	○: INT	○: FLT2INT
		Conversion from floating-point data to BIN 32-bit data (single precision)	○: DINT	○: FLT2DINT
		Conversion from floating-point data to BIN 16-bit data (double precision)	×: INTD	○: DBL2INT
		Conversion from floating-point data to BIN 32-bit data (double precision)	×: DINTD	○: DBL2DINT
		Conversion from BIN 16-bit to BIN 32-bit data	○: DBL	○: INT2DINT
		Conversion from BIN 32-bit to BIN 16-bit data	○: WORD	○: DINT2INT
		Conversion from single precision to double precision	×: ECON	○: FLT2DBL
		Conversion from double precision to single precision	×: EDCON	○: DBL2FLT
		Application instruction	Conversion from ASCII to hexadecimal BIN	○: HEX
	Conversion from hexadecimal BIN to ASCII		○: ASC	○: INT2ASC
	Square root operation for floating-point data (single precision)		○: SQR	○: ESQRT
	Square root operation for floating-point data (double precision)		×: SQRD	○: EDSQRT
	BCD 4-digit square roots		○: BSQR	○: BSQRT
	BCD 8-digit square roots		○: BDSQR	○: BDSQRT
	Ramp signal		×: RAMP	×: RAMPQ
	16-bit data search		○: SER	○: SERDATA
	32-bit data search		○: DSER	○: DSERDATA
	BIN 16-bit data sort operations		○: SORT	○: SORTD
	BIN 32-bit data sort operations		○: DSORT	○: DSORTD
	Time data conversion (from hour/minute/second to second)		○: SECOND	○: TIME2SEC
	Time data conversion (from second to hour/minute/second)		○: HOUR	○: SEC2TIME
	Reading 2-word data from intelligent function module		○: DFRO	○: DFROM
	Interrupt disable		○: DI (without execution condition)	○: DI (with execution condition)
	Interrupt enable		○: EI (without execution condition)	○: EI (with execution condition)
	Refresh		○: COM (without execution condition)	○: COM (with execution condition)
	Select refresh (with execution condition)		×: CCOM	○: COM
	Reading device comment data		○: COMRD	×
	File setting for comments		○: QCDSET	×
	High-speed block transfer of file register		○: RBMOV	×: Use the BMOV instruction instead.

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Function name		Availability		
		QnPRHCPU	RnPCPU (redundant mode)	
Instructions	Application instruction	Writing to host CPU shared memory	×: TO/S.TO	○: TO
		Reading module information	○: UNIRD	○: UNIINFRD
		Instruction of reading the device in the CPU module in another station by IP address specification	○: SP.READ	×
		Instruction of writing to the device in the CPU module in another station by IP address specification	○: SP.WRITE	×
		SFC comment readout instruction	○: S.SFCSCOMR	×
		SFC transition comment readout instruction	○: S.SFCTCOMR	×
		Index modification of entire ladder	○: IX	×
			○: IXEND	×
		Designation of modification values in index modification of entire ladder	○: IXDEV	×
			○: IXSET	×
		Special format failure check	○: CHKST	×
			○: CHK	×
		Changing check format of CHK	○: CHKCIR	×
			○: CHKEND	×
		Program execution status check	○: PCHK	×
		Forced transition check instruction	○: LD TRn	×
			○: AND TRn	×
			○: OR TRn	×
			○: LDI TRn	×
			○: ANDI TRn	×
			○: ORI TRn	×
			○: LD BLm\TRn	×
			○: AND BLm\TRn	×
			○: OR BLm\TRn	×
			○: LDI BLm\TRn	×
			○: ANDI BLm\TRn	×
			○: ORI BLm\TRn	×
		Active step change instruction	○: SCHG(D)	×
		Forced transition EXECUTE & CANCEL instructions	○: SET TRn	×
			○: SET BLm\TRn	×
			○: RST TRn	×
			○: RST BLm\TRn	×
		Block switching instruction	○: BRSET(S)	×
Process control instruction	○	○		
Redundant instruction	○	○		

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Function name		Availability			
		QnPRHCPU	RnPCPU (redundant mode)		
Functions	Clock function		○	○: Time zone setting function	
	LED indication		○	○	
	Scan monitoring function (WDT setting)		○	○	
	Interrupt function		○	○: The multiple interrupt function is supported.	
	High-speed interrupt (I49)		×	○: The high-speed I/O refresh function and high-speed transfer function are not supported.	
	Database function		×	×	
	Device	Local device		○	○: Local devices should be described with "#".
		Device initial value		○	○
	Label	Local label		○	○
		Label initial value (global label/local label)		×	○: Newly added.
		Label access setting from external device		×	○: Newly added.
	Latch function		○	○	
	Latch data backup to standard ROM		×	×: Use the data backup/restoration function of a GOT.	
	Boot operation		○	○	
	Service processing setting		○	○	
	Access by using A-compatible 1C/1E frame (A to Q converted SM/SD areas (SM1000 to SM1255, SD1000 to SD1255))		○	×	
	iQ Sensor Solution function		×	×	
	Multiple CPU function	I/O sharing when using multiple CPUs		×	×
		Error time output mode		×	×
		Multiple CPU synchronized startup		×	×
		Multiple CPU clock synchronization		×	×
		Communications by refresh		×	×
		Access method to CPU shared memory/CPU buffer memory		×	×
High-speed transmission between CPUs/ fixed scan transmission		Multiple CPU synchronous interrupt (I45)		×	×
		Communications by refresh		×	×
	Area access method		×	×	
Multiple CPU dedicated instruction		×	×		
Sampling trace		○	×: Use the trigger logging.		
Data logging function	Trigger logging and continuous logging		×	○	
	Saving format of the data logging file		×	○: Unicode text file format, binary file format	
	File transfer function		×	×	
Scan time measurement		○	×		

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Function name			Availability		
			QnPRHCPU	RnPCPU (redundant mode)	
Functions	Diagnostic function	Self-diagnostic function	○	○: The error code system has been changed.	
		Error clear	○	○: Continuation errors are batch-cleared.	
	History function	Error history	○	○: The event history function is supported.	
	Monitor function	Monitor	○	○	
		Monitor condition setting	○	×	
		External input/output forced on/off function	○	×	
		Executorial conditioned device test	○	×	
	Online change	Online change (ladder mode)	○	○	
		Online change (files)	○	○	
		Change TC setting value	○	○: Use the watch function of the engineering tool.	
		Online change (inactive block) of SFC program	×	×	
	CPU module change function with memory card		×	×	×: Use the data backup/restoration function of a GOT.
	Security	File password (file password 32)	○: 4 characters (fixed)	○: 6 to 32 characters (variable)	
		Remote password	○: 4 characters (fixed)	○: 6 to 32 characters (variable)	
	Built-in Ethernet function	Connection with MELSOFT products and GOT	×	○	
		MELSOFT connection extended setting	×	×	
		Communications using MC protocol/SLMP	×	○	
		Socket communications	×	○	
		Communications using the predefined protocol	×	○	
		Time setting function (SNTP client)	×	○	
File transfer function (FTP server)		×	○		
IP address change function		×	○		
Online module change function		○: Change with the engineering tool	○: • Change by operating the special relay and special register • Direct change		

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Function name		Availability			
		QnPRHCPU	RnPCPU (redundant mode)		
Functions	Redundant function	System determination	○: The system A or B is determined by a tracking cable.	○: The system A or B is determined by online operation of GX Works3.	
		System switching (between control system and standby system) function	Automatic system switching	○: • System switching when a fault occurs in the control system • System switching requested by the network module	○: • System switching when a fault occurs in the control system • System switching requested by the network module
			Manual system switching	○: • System switching using the engineering tool • System switching by using the instruction	○: • System switching using the engineering tool • System switching by using the instruction
		Program execution function in both systems		×	○: Newly added.
		Operation mode change		○: • Backup mode • Separate mode • Debug mode	○: • Backup mode • Separate mode ■Debug mode Starting up one system and performing the specific operation (switch operation of the CPU module (RUN → STOP → RUN), online operation using the engineering tool, or input (X) operation) enables debugging of one system.
		Tracking function		○: ■Device/label that can be transferred • Internal device • File register ■Upper limit of the tracking data size per block: 100K words	○: ■Device/label that can be transferred • Global device (including the file register) • Local device • Global label • Local label ■Upper limit of the tracking data size per block: 1M words
		Online program change for redundancy		○	○
		Memory copy from control system to standby system		○: • Memory copy with the engineering tool • Memory copy with the special relay and special register	○: • Memory copy with the engineering tool • Memory copy with the special relay and special register • Auto memory copy (new function)
		System consistency check		○	○
		Time synchronization		×	○: Newly added.
Built-in Ethernet function	Both systems identical IP address setting function	×	○: Newly added.		

\*1 Some firmware versions of the CPU module and the software versions of the engineering tool may be restricted. For details on restrictions by version, refer to each manual.



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### 3.2 Power Supply Modules, Base Units, and I/O Modules

This section describes the differences of redundant power supply modules between the MELSEC-Q series and the MELSEC iQ-R series. For the differences of other power supply modules, base units, and I/O modules, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

#### Redundant power supply module

The following table summarizes the differences of redundant power supply modules between the MELSEC-Q series and the MELSEC iQ-R series.

Item			MELSEC-Q series			MELSEC iQ-R series	
			Q63RP	Q64RP	Q64RPN	R63RP	R64RP
Functions	POWER LED indication status and description	On (green)	Normal (at 5VDC output or momentary power failure within 10ms/20ms)			Normal (at 5VDC output or momentary power failure within 10ms/20ms)	
		On (red)	Power supply module failure (at 5VDC error, overload, or internal circuit failure)			None	
		Off	External AC/DC input cut, fuse blown, power failure (including momentary power failure for 10ms/20ms or longer)			Power supply module failure (at 5VDC error, overload, or internal circuit failure), external AC/DC input cut, fuse blown, or power failure (including momentary power failure for 20ms/10ms or longer)	
Electrical performance	Input	Input power supply voltage	24VDC (15.6 to 31.2VDC)	100 to 120VAC/ 200 to 240VAC (85 to 132VAC/170 to 264VAC)	100 to 240VAC (85 to 264VAC)	24VDC (19.2 to 31.2VDC)	100 to 240VAC (85 to 264VAC)
		Efficiency	65% or higher		70% or higher	70% or higher	76% or higher
		Inrush current	150A within 1ms	20A within 8ms		100A within 1ms	20A within 8ms
	Output	Rated output current (5VDC)	8.5A			6.5A	9A
		Overcurrent protection	9.35A or higher			7.1A or higher	10.0A or higher

### 3.3 Intelligent Function Modules

For the differences of the intelligent function module between the MELSEC-Q series and MELSEC iQ-R series, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

### 3.4 Information Modules and Network Modules

This section describes the differences of CC-Link IE Field Network Master/Local modules between the MELSEC-Q series and the MELSEC iQ-R series. For other information modules and network module modules, refer to the following.

 Differences between MELSEC-Q series and MELSEC iQ-R series (FA-A-0171)

#### Ethernet interface module

Item		Availability		
		QJ71E71-100	RJ71EN71	
Redundant system function	System switching request to the control system CPU module	○	○	
	Redundant group setting	Redundant Module Group Setting	○: Redundant group setting	○: The name has been changed to "Redundant Module Group Setting".
		Port Group Setting	×	○: Newly added.*1
	Communication path bypass function	○	○	
	Both systems identical IP address setting function	×	○: Newly added.*1	

\*1 This function cannot be used for the Q-compatible Ethernet.

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CC-Link IE Field Network master/local modules

Item			Availability						
			QJ71GF11-T2	RJ71GF11-T2/RJ71EN71					
Performance specifications	Maximum number of link points per network		RX	○: 16K points (16384 points, 2K bytes)	○: 16K points (16384 points, 2K bytes)				
			RY	○: 16K points (16384 points, 2K bytes)	○: 16K points (16384 points, 2K bytes)				
			RWr	○: 8K points (8192 points, 16K bytes)	○: 8K points (8192 points, 16K bytes)				
			RWw	○: 8K points (8192 points, 16K bytes)	○: 8K points (8192 points, 16K bytes)				
	Maximum number of link points per station		Master station		RX	○: 16K points (16384 points, 2K bytes)	○: 16K points (16384 points, 2K bytes)		
					RY	○: 16K points (16384 points, 2K bytes)	○: 16K points (16384 points, 2K bytes)		
					RWr	○: 8K points (8192 points, 16K bytes)	○: 8K points (8192 points, 16K bytes)		
					RWw	○: 8K points (8192 points, 16K bytes)	○: 8K points (8192 points, 16K bytes)		
			When the submaster function is used		Master operating station		RX	○: 16K points	○: 16K points
							RY	○: 16K points (Own station send range is 2K points.)	○: 16K points (Own station send range is 2K points.)
							RWr	○: 8K points	○: 8K points
							RWw	○: 8K points (Own station send range is 1024 points.) <sup>1</sup>	○: 8K points (Own station send range is 1024 points.) <sup>1</sup>
	Submaster operating station		RX	○: 2K points (assigned to the station number 0 or submaster station)	○: 2K points (assigned to the station number 0 or submaster station)				
			RY	○: 2K points (assigned to the station number 0 or submaster station)	○: 2K points (assigned to the station number 0 or submaster station)				
			RWr	○: 1024 points (assigned to the station number 0 or submaster station) <sup>2</sup>	○: 1024 points (assigned to the station number 0 or submaster station) <sup>2</sup>				
			RWw	○: 1024 points (assigned to the station number 0 or submaster station) <sup>2</sup>	○: 1024 points (assigned to the station number 0 or submaster station) <sup>2</sup>				
	Local station		RX	○: 2K points (2048 points, 256 bytes)	○: 2K points (2048 points, 256 bytes)				
			RY	○: 2K points (2048 points, 256 bytes)	○: 2K points (2048 points, 256 bytes)				
			RWr	○: 1K points (1024 points, 2K bytes) <sup>2</sup>	○: 1K points (1024 points, 2K bytes) <sup>2</sup>				
			RWw	○: 1K points (1024 points, 2K bytes) <sup>2</sup>	○: 1K points (1024 points, 2K bytes) <sup>2</sup>				
	Transient transmission capacity			○: 1920 bytes maximum					
	Communication speed			○: 1Gbps					
	Network topology			○: <ul style="list-style-type: none"> <li>• Line topology</li> <li>• Star topology (Coexistence of line topology and star topology is also possible.)</li> <li>• Ring topology</li> </ul>					
	Communication cable			○: Ethernet cable which meets 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						

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Item			Availability		
			QJ71GF11-T2	RJ71GF11-T2/RJ71EN71	
Performance specifications	Maximum number of connectable stations		○: 121 stations (master station: 1, slave station: 120)	○: 121 stations (master station: 1, slave station: 120)	
	Maximum number of networks		○: 239	○: 239	
	Communication method		○: Token passing	○: Token passing	
Instructions	Link dedicated instruction		○: READ	○: READ	
			○: SREAD	○: SREAD	
			○: WRITE	○: WRITE	
			○: SWRITE	○: SWRITE	
			○: SEND	○: SEND	
			○: RECV	○: RECV	
			○: RECVS	○: RECVS	
			○: REQ	○: REQ	
			○: REMFR	○: REMFR	
			○: REMTO	○: REMTO	
	CC-Link dedicated instruction		○: RIRD	○: RIRD	
			○: RIWT	○: RIWT	
	Others		○: CCPASET	○: CCPASET	
○: UINI			○: UINI		
Functions	Cyclic transmission	Communications with other stations	Communications using RX and RY	○	
			Communications using RWr and RWw	○	
		Access to devices and link devices	Link refresh	○	
			Direct access to link devices	○	
		Cyclic data integrity assurance		○	
		Interlink transmission		○	
		Mode selection for cyclic transmission		○: Standard, High speed	○: Standard, High speed, High speed remote net
		Sequence scan synchronization specification		○	
		Cyclic transmission punctuality assurance		○	
		Input status setting for data link faulty station		○	
		Output status setting for CPU STOP		○	
		Output status setting for CPU stop error		○	
	Cyclic transmission stop and restart		○		
	Transient transmission	Communications within the same network		○	
		Communications with different networks		○	
		Dedicated instructions		○	
	RAS	Slave station disconnection		○	
		Automatic return		○	
		Module error collection		○	○: Event history function
		Loopback function		○	
Submaster function		○			

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Item			Availability		
			QJ71GF11-T2	RJ71GF11-T2/RJ71EN71	
Functions	Diagnostics	CC-Link IE Field Network diagnostics	○	○	
		Diagnostics of the module	Hardware test	○	○: The hardware test, self-loopback test, and loop test are integrated into one test.
			Self-loopback test	○	
			Loop test	○	
			Module communication test	×	
		Diagnostics of own network	Cable test	○	○
	Diagnostics of other network	Communication test	○	○	
		IP communication test	○	○	
	Others	CC-Link IE Field Network synchronous communication function	×	○: Newly added.	
		Reserved station specification	○	○	
		Temporary cancel of the reserved station setting	○	○	
		Error invalid station, temporary error invalid station setting	○	○	
		Interrupt request to CPU module	○	○	
IP packet transfer function		○	○		
Station number setting using a program		○	○		
Redundant system function	×	○: Newly added.			

\*1 8K points when communication mode is "High-Speed" (Own station send range is 256 points.)

\*2 256 points when communication mode is "High-Speed"

**CC-Link system master/local modules**

Item	Availability	
	QJ61BT11N	RJ61BT11
Program when using the module in a redundant system	○: Use I41.	○: Use SM1644.

**REVISIONS**

Version	Date of Issue	Revision
-	April 2017	First edition
A	October 2018	Addition of the Universal model Process CPU, available for e-Manual Viewer