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Mitsubishi Programmable Controllers MELSEC-AnS/QnAS (Small Type) Series Transition Guide

From MELSEC-AnS/QnAS (Small Type) Series to

MELSEC-Q Series

AnS-Q

Comprehensive, risk-free upgrade solutions

Nov. 2013 Edition

From MELSEC-AnS/QnAS Series

MELSEC-Q Series

Complete Support for AnS/QnAS Series Upgrades

Mitsubishi Electric offers a carefully engineered combination of hardware, software, and support designed to allow you to upgrade legacy MELSEC-AnS/QnAS Series controller systems to the current MELSEC-Q Series with minimum disruption to your plant operations.

Upgrade Option

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AnS/QnAS→Q
→ Technical Bulletin
→ Replacement Handbook

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AnS/QnAS→Q MELSOFT
→ A/QnA -> Q Conversion Support Tool

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Technical Bulletin

Production discontinuation of MELSEC-AnS/QnAS (small type) series and MELSEC-I/OLINK

FA-A-0142

Precautions for replacing QnUD(E)(H)CPU with QnUDVCPU

FA-A-0147

In-depth technical documentation resource

Replacement Handbook

Transition from MELSEC-AnS/QnAS (Small Type) Series to Q Series Handbook

- **Fundamentals** L(NA)08219ENG
- **Intelligent function modules** L(NA)08220ENG

Transition from MELSEC-A/QnA (Large Type), AnS/QnAS (Small type) Series to Q Series Handbook

- **Network Modules** L(NA)08048ENG
- **Communications** L(NA)08050ENG

Transition from MELSECNET/MINI-S3, A2C (I/O) to CC-Link Handbook

L(NA)08061ENG

Transition from MELSEC-I/OLINK to AnyWire DB A20 Handbook*1

L(NA)08263ENG

Transition from MELSEC-I/OLINK to CC-Link/LT Handbook

L(NA)08062ENG

*1: AnyWire products are not available in some countries. Please consult your local Mitsubishi Electric Corporation representative for details.

- For the products shown in handbooks for transition, catalogues, and transition examples, refer to the manuals for the relevant products and check the detailed specifications, precautions for use, and restrictions before replacement.
  For the products manufactured by Mitsubishi Electric Engineering Co., Ltd., and other companies, refer to the catalogue for each product and check the detailed specifications, precautions for use, and restrictions before use.
  The manuals and catalogues for our products, products manufactured by Mitsubishi Electric Engineering Co., Ltd., are shown in Appendix of each handbook for transition.
- Products shown in these handbooks are subject to change without notice.

MEMO

[Term] This catalog uses the following terms unless otherwise noted.
- AnS/QnAS Series: Abbreviation for small types of MELSEC-A Series and MELSEC-QnA Series programmable controllers
- A/QnA Series: Abbreviation for large types of MELSEC-A Series and MELSEC-QnA Series programmable controllers
- Q Series: Abbreviation for MELSEC-Q Series Programmable controller

A/QnA -> Q Conversion Support Tool*1

Minimize program conversion efforts by GX Developer and A/QnA -> Q Conversion Support Tool.

■Complete conversion from AnS/QnAS program to Q program is supported by this tool.
It easily helps to find and correct non-completed conversion parts.

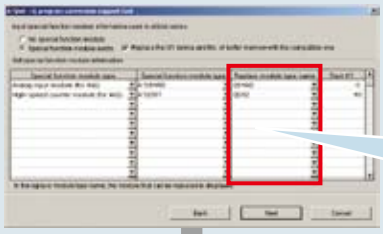
Change to Q beforehand

Convert AnS/QnAS programs to Q programs
with the GX Developer's PLC Type Change function.

AnS/QnAS program → PLC Type Change **GX Developer*2** → Q program

Original project / Converted project (after PLC type change)

Enter the configuration information on the existing AnS/QnAS special function modules.



Point 1

●Specifying a module helps to replace the X/Y device and No. of buffer memory with the compatible one.

A/QnA -> Q Conversion Support Tool

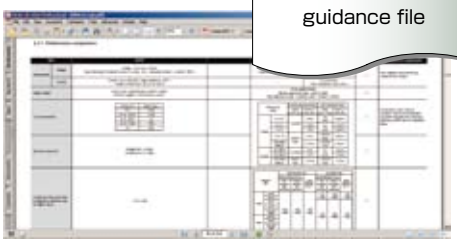
Output

Differences between the two programs and guidance on how to complete the conversion are displayed.

Differences between two programs

<See 1 on p. 6.>

HTML conversion guidance file



<See 2 on p. 7-8.>

Point 2

●No need to manually compare the existing program with the converted program!

Point 3

●A list of unconverted instructions and devices is displayed.
●Information on recommended products for unconvertible special function modules is displayed.

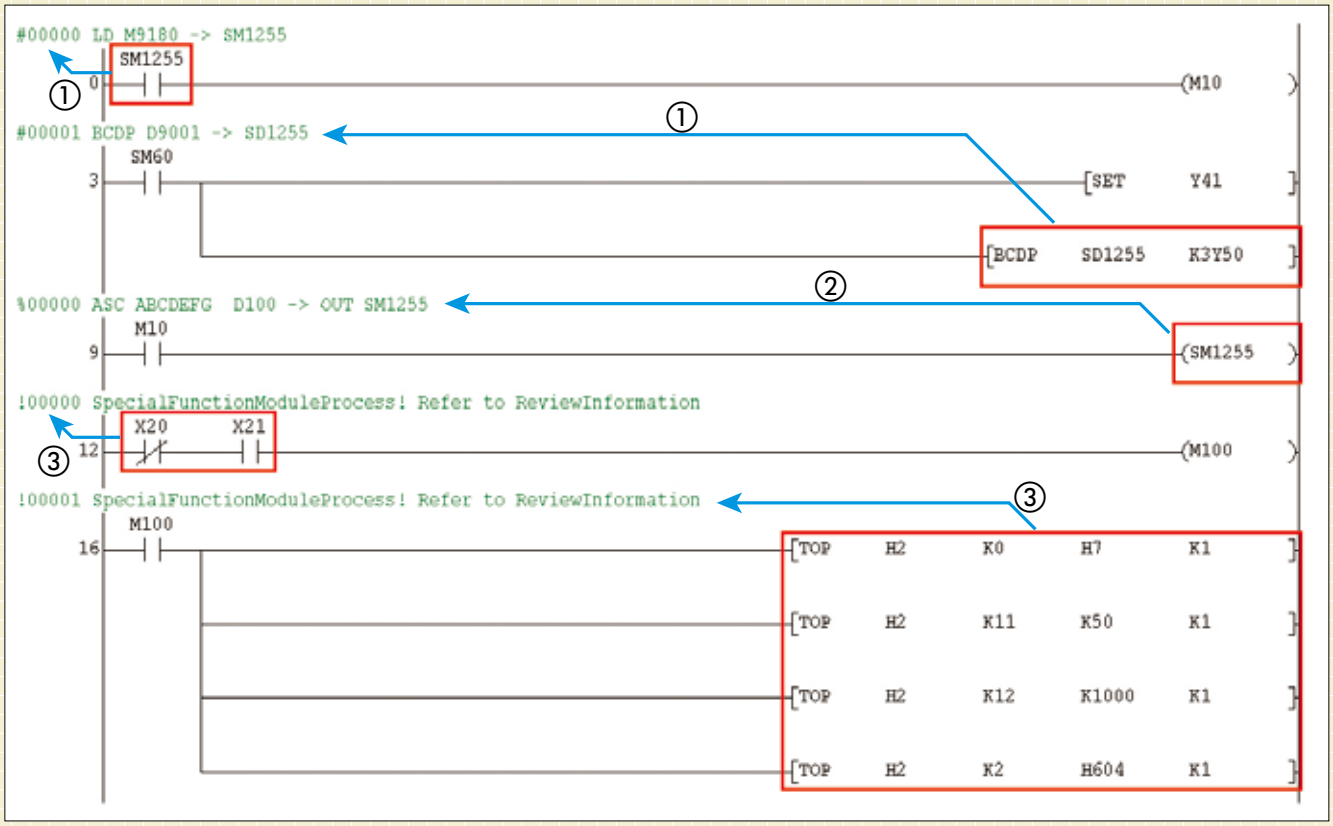
*1: This support tool applies to ladder programs only.
A/QnA -> Q Conversion Support Tool Version.1.08 or later is required with the replacement to Universal model QCPU.

*2: GX Developer cannot support the PLC type change to High-speed Universal model QCPU.
Please change the PLC type by the following application and method.
①GX Developer: Convert PLC type to Universal model QCPU then save the project data.
②A/QnA -> Q Conversion Support Tool: Output "Differences between two programs" and "HTML conversion guidance file".
③GX Developer: Correct "Differences between two programs" referring to "HTML conversion guidance file".
④GX Works2: Open "Differences between two programs"(Project - Open Other data - Open Other project)
and change the PLC type to High-speed Universal model QCPU.

Note : For the acquisition of A/QnA -> Q Conversion Support Tool, please contact your local Mitsubishi Electric sales office or sales representative.

1 Differences between the two programs

■Can be modified directly.
Prevents mistakes and improves the conversion efficiency.



〈Image of differences between the two programs〉

①Statement of unconverted devices—#

The original device and the converted device are displayed as shown below. The devices contained in the circuit block are displayed one line at a time.

[Example] #00001 BCDP D9001 → SD1255 (#00001 is a search keyword from the guidance file.)

②Statement of unconverted instructions—%

The original instruction and the converted instruction are displayed as shown below. The instructions contained in the circuit block are displayed one line at a time.

[Example] %00000 ASC ABCDEFG D100 → OUT SM1255
(%00000 is a search keyword from the guidance file.)

③Statement of special function module processes—!

For the special function module instructions (FROM, DFRO, TO, DTO and instructions using X/Y devices), a message requesting review is displayed.

[Example]] !00001 SpecialFunctionModuleProcess! Refer to ReviewInformation
(!00001 is a search keyword from the guidance file.)

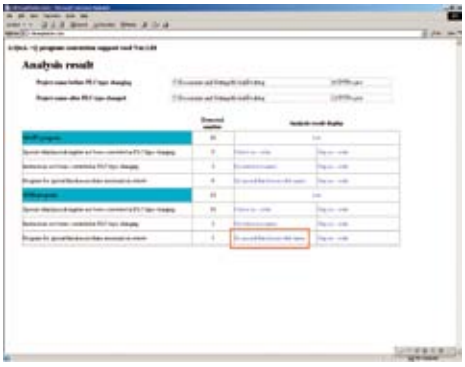
A/QnA -> Q Conversion Support Tool

2 HTML conversion guidance file

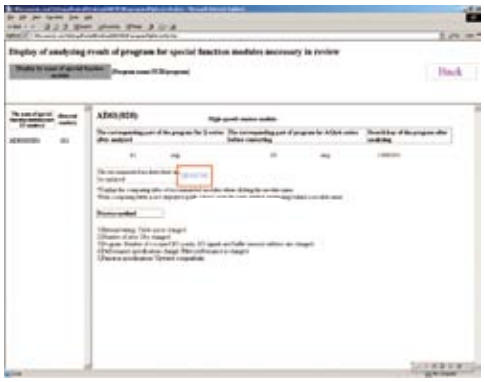
■Easy comparison of performance specifications before and after replacement.

Detailed information is displayed hierarchically in your web browser. Information on the differences between the two programs and the conversion guidance file are linked together.

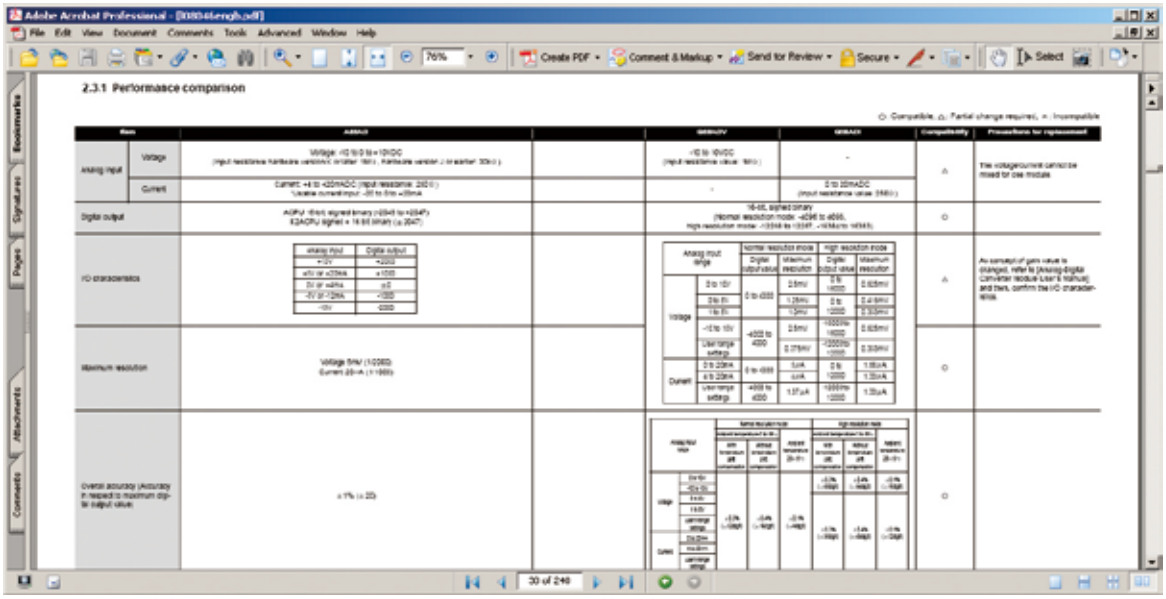
[Example] Special function module processes which need to be reviewed



Click "By special function module name" in the "Programs for special function modules necessary in review" row.



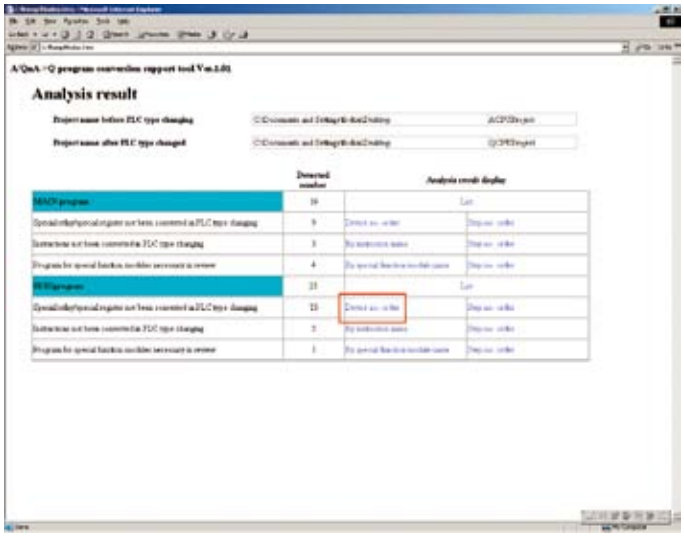
Click the recommended module name next to "The recommended modules that can be replaced."



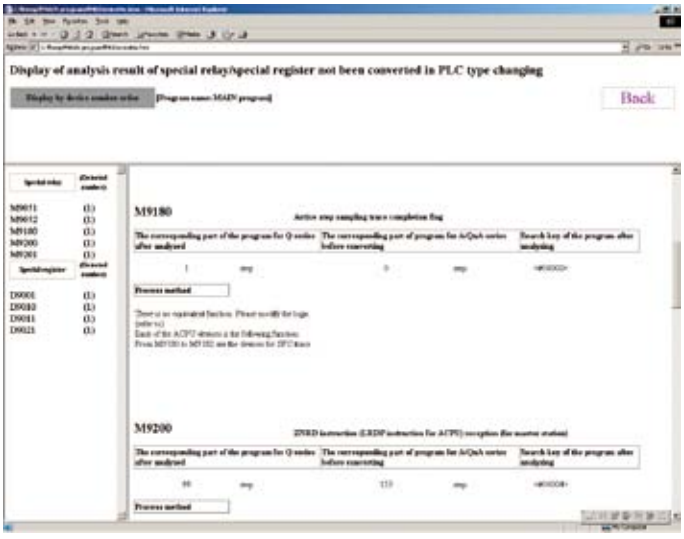
The module performance comparison can be confirmed.

■Details of unconverted special relays and registers can be displayed, improving conversion efficiency.

[Example] Special relays and registers which are not converted in the Q program



Click "Device no. order" in the "Special relay/special register not been converted in PLC type changing" row.



Confirm modified contents

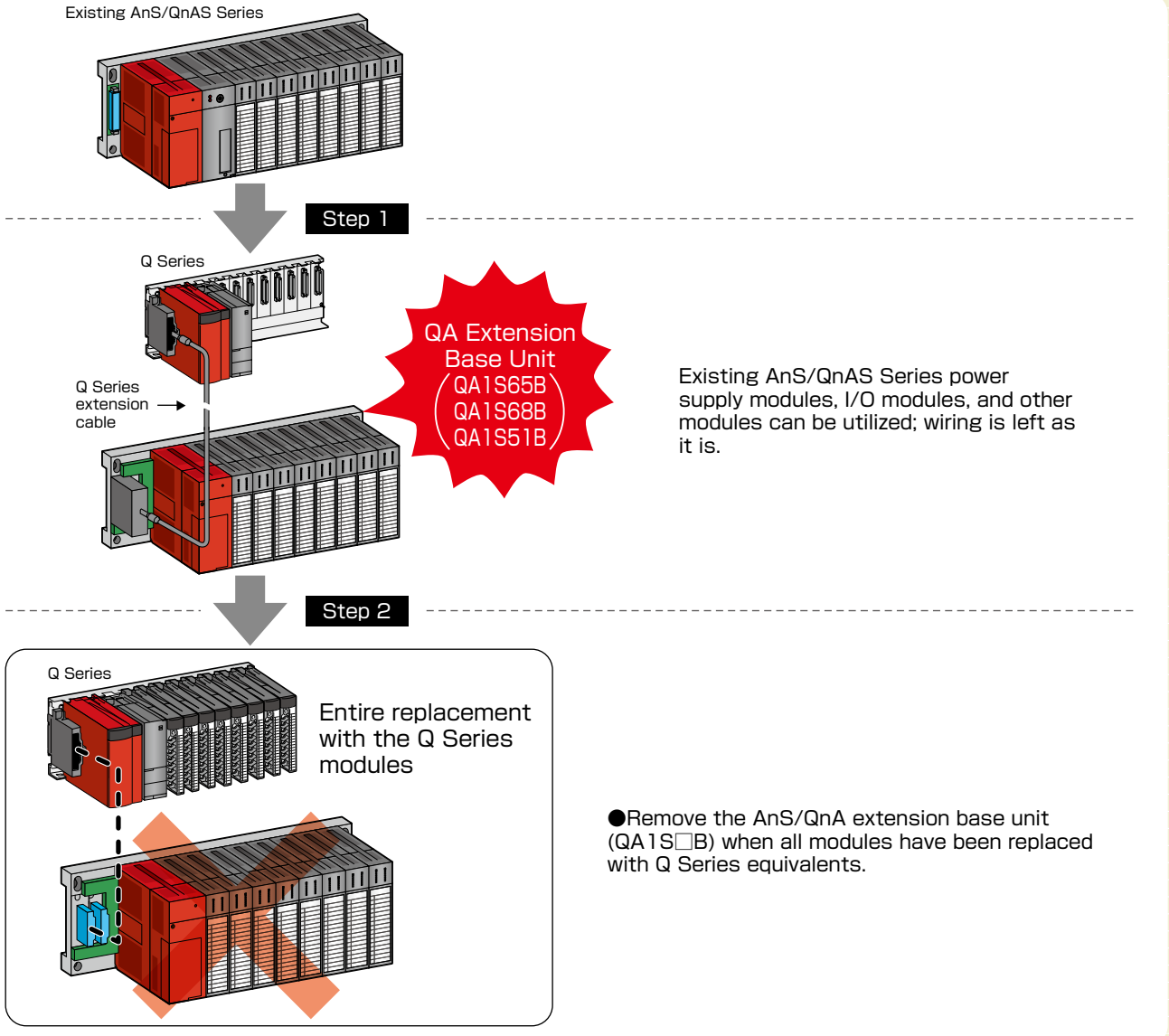
For AnS/QnAS Series

QA Extension Base Unit (QA1S65B QA1S68B QA1S51B)

Replace AnS/QnAS Series CPU with Q Series CPU while keeping existing AnS/QnAS Series modules.

■Gradual transition from Ans/QnAS Series to Q Series (Q mode).

●Construct a system that is controlled by the new Q Series CPU (Q mode) while keeping the existing AnS/QnAS Series modules mounted to a QA1S□B extension base unit. The AnS/QnAS Series modules can gradually be replaced to fully establish a Q Series system.



●The QA1S□B extension base units are compatible with High Performance Model QCPUs and Universal Model QCPUs*1 (include High-speed Universal Model QCPUs). Basic Model QCPUs, Process CPUs, Redundant CPUs, Safety CPUs and Remote I/O Stations are not compatible.

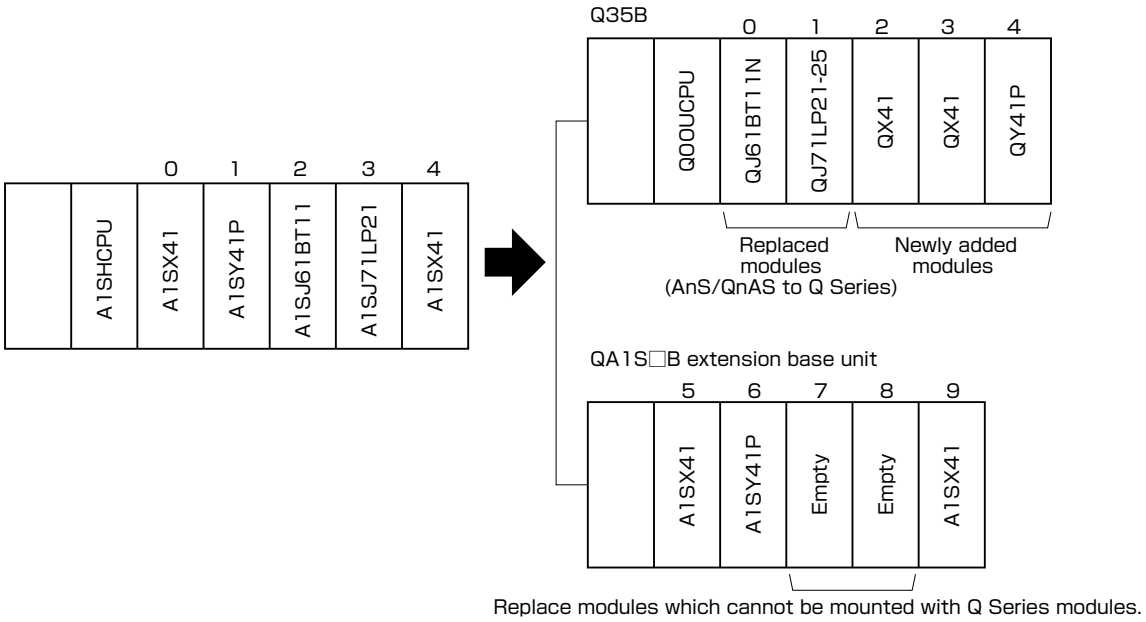
●Some modules cannot be mounted on the QA1S□B extension base units. For details, see the "QCPU User's Manual (Hardware Design, Maintenance and Inspection) (SH(NA)-080473ENG)".

●No further extensions can be made to QA1S51B as it has not got an Extension Cable Connector.
This unit cannot be used in conjunction with QA6□B and QA6ADP with A5□B nor can QA6ADP be used in conjunction with A6□B.

*1: Universal Model QCPU, whose first 5-digit serial number is 13102 or later, is compatible with the base units.

■Reduce conversion effort by using the same I/O addressing.

When reusing existing modules with a Q Series CPU, it is not required to change the I/O number of the existing modules. For new module(s) on the main base unit, assign a number after the existing modules in the I/O assignment settings. This can greatly reduce the program modification time.



Note: Assign the I/O numbers in the following order: Q Series to AnS/QnAS Series or AnS/QnAS Series to Q Series.
When the order is mixed (i.e., Q Series → AnS/QnAS Series → Q Series), an error will occur in the CPU.

■Example of I/O assignment

		Model	Type	Point	Address
Main base unit	0	QJ61BT11N	Intelli.	32	100
	1	QJ71LP21-25	Intelli.	32	120
	2	QX41	Input	32	140
	3	QX41	Input	32	160
	4	QY41P	Output	32	180

		Model	Type	Point	Address
Extension base unit	5	A1SX41	Input	32	00
	6	A1SY41P	Output	32	20
	7	——	Empty	32	40
	8	——	Empty	32	60
	9	A1SX41	Input	32	80

Q Series Large Type Base Unit
(AnS Series size)

Replace to Q Series module reusing existing wiring.

■Q Series large type base unit (AnS Series size)

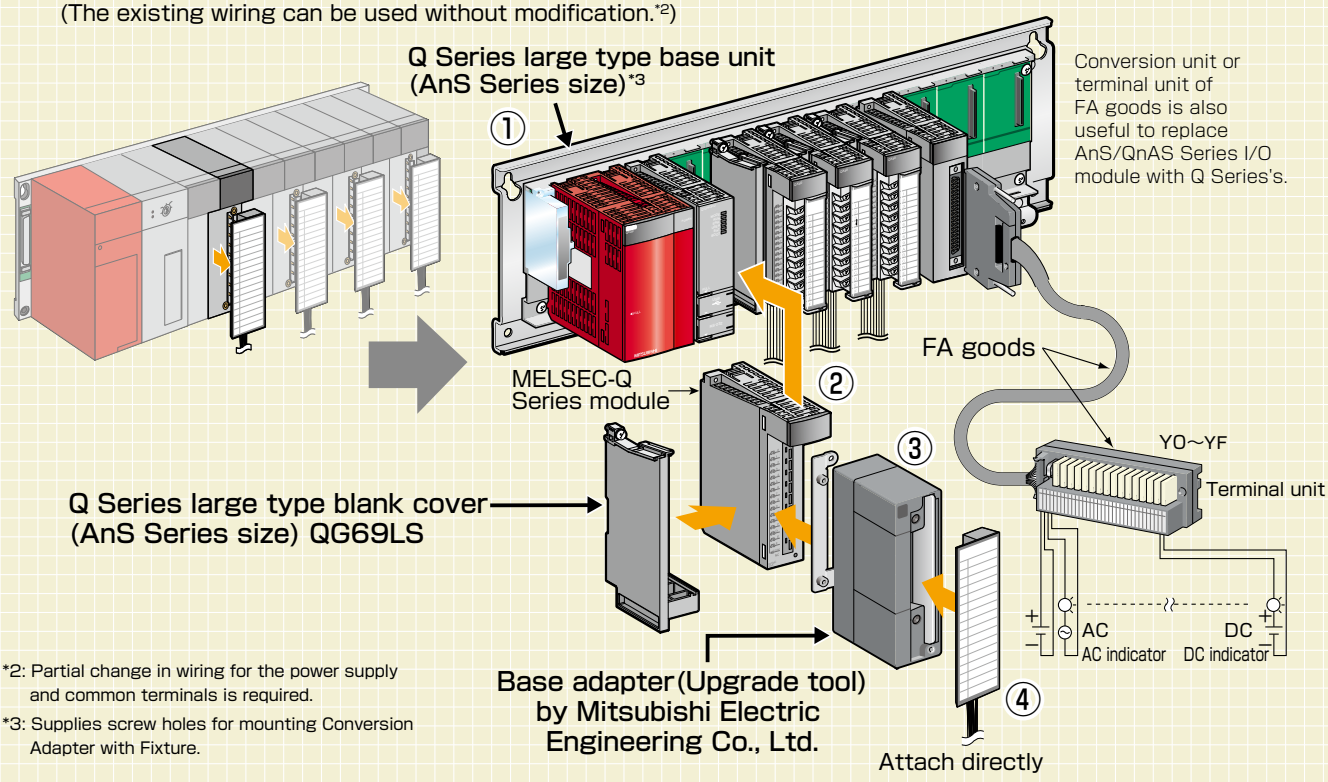
Q Series large type base unit is used to replace AnS series module with Q series, using the existing installation site and cables are utilized.

- ●Reusing a 16 point terminal block from the existing AnS/QnAS Series module reduces the rewiring work.
- ●When replacing AnS/QnAS Series module with Q Series using Conversion Adapter(Upgrade tool by Mitsubishi Electric Engineering Co., Ltd.) and the existing AnS/QnAS Series terminal block without rewiring, the width of I/O slot of this base unit is just the same as existing wide-sized AnS/QnAS Series, then the space reduces noise interference from nearby modules.*1
- ●The installation position is just the same as AnS/QnAS Series's, the installation screw holes can be used to mount Q Series large type base unit.
- ●Panel mounting type or DIN rail mounting type is available, select the type for your need.

*1: The Q Series large type blank cover QG69LS(selling separately) is required with the Q Series I/O module.

[Example] Replacing AnS/QnAS Series module with Q Series module using Conversion adapters and Q Series large type base unit

①Remove the AnS/QnAS Series module along with the base unit, install the Q Series large type base unit in the same position, and mount the Q Series module. (New installation holes are unnecessary when mounting the Q Series large type base unit.)
②Attach the Q Series large type blank cover (AnS Series size) to the Q Series module and mount the Q Series module to the Q Series large type base unit.
③Attach Conversion Adapter(Upgrade tool) to the Q Series module with the Q Series large type base unit.
④Remove the terminal blocks from the existing AnS/QnAS Series module and mount it on the Conversion adapter. (The existing wiring can be used without modification.*2)



*2: Partial change in wiring for the power supply and common terminals is required.

*3: Supplies screw holes for mounting Conversion Adapter with Fixture.

■Q Series large type base unit (AnS Series size) list

The products are used to replace with Q Series module using the installation holes of AnS/QnAS Series module. DIN rail mounting type is also available, the width of I/O slot of this base unit is just the same as existing wide-sized AnS/QnAS Series, then the space reduces noise interference from nearby modules.*4

Installation type	Main base unit	Extension unit
Panel mounting type	Q35BLS Q38BLS	Q65BLS Q68BLS Q55BLS

Installation type	Main base unit	Extension unit
DIN rail mounting type	Q35BLS-D Q38BLS-D	Q65BLS-D Q68BLS-D Q55BLS-D

*4: To mount the Q Series module on the I/O slot of the Q series large type base unit, always attach the Q series large type blank cover QG69LS(selling separately).

Upgrade Tool/FA Goods
(Manufactured by Mitsubishi Electric Engineering Co., Ltd.)

Replace AnS/QnAS Series system with Q Series system without extensive I/O rewiring.

■Upgrade tool

The upgrade tool consists of two parts: Conversion adapter to modify the existing wiring of AnS/QnAS Series input/output/analog/high-speed counter/temperature input/temperature control modules to the wiring of Q Series modules; and Q Series base adapter is mountable through the installation hole of the AnS/QnAS Series base unit.

■FA goods

FA goods are useful for system configuration with the Q Series module.
These goods consist Connector/terminal stand conversion unit, Terminal unit, Positioning module cable, etc.
Module replacement using FA goods instead is executed when the replacement is not available by reasons of the module's specification, etc.

■Conversion adapter list

For Input/output module*1(One slot type)

Input / Output	AnS/QnAS Series model	Q Series model	Conversion Adapter model
Input	A1SX10	QX10	ERNT-ASQTXY10
	A1SX10EU		
Output	A1SY10	QY10	
	A1SY10EU		
Input	A1SX40	QX40	ERNT-ASQTX40
	A1SX40-S2		
	A1SX40-S1	QX40-S1	
	A1SX80	QX80	ERNT-ASQTX80
	A1SX80-S1		
	A1SX80-S2		
Output	A1SY22	QY22	ERNT-ASQTY22
	A1SY40 (P)	QY40P	ERNT-ASQTY40
	A1SY50	QY50	ERNT-ASQTY50
	A1SY80	QY80	ERNT-ASQTY80

For Input/output module*1(Two slots type)

Input / Output	AnS/QnAS Series model	Q Series model	Conversion Adapter model
Input	A1SX20	QX28 ×2	ERNT-ASQTX20*2
	A1SX20EU		
Output	A1SY60	QY68A ×2	ERNT-ASQTY60*2
	A1SY60E		ERNT-ASQTY60E*2

For Analog module(One slot type)

Input / Output	AnS/QnAS Series model	Q Series model	Conversion Adapter model
Input	A1S64AD	Q64AD	ERNT-ASQT64AD
	A1S68AD (Voltage input)	Q68ADV	ERNT-ASQT68AD
	A1S68AD (Current input)	Q68ADI	
	A1S68AD	Q68AD-G*2	ERNT-ASQT68AD-G*3
Output	A1S62DA	Q62DAN	ERNT-ASQT62DA
	A1S68DAV	Q68DAVN	ERNT-ASQT68DA
	A1S68DAI	Q68DAIN	
I/O	A1S63ADA	Q64AD2DA*2	ERNT-ASQT63ADA

For High-speed counter module(One slot type)

Input / Output	AnS/QnAS Series model	Q Series model	Conversion Adapter model
Input	A1SD61	QD62	ERNT-ASQTD61*3
		QD62-H01	
		QD62-H02	
	A1SD62	QD62	ERNT-ASQTD62*3
	A1SD62E	QD62E	
	A1SD62D	QD62D	ERNT-ASQTD62D*3

For Temperature input module(One slot type)

Input / Output	AnS/QnAS Series model	Q Series model	Conversion Adapter model
Input	A1S68TD	Q68TD-G-H01	ERNT-ASQT68TD-H01*3
		Q68TD-G-H02*2	ERNT-ASQT68TD-H02*3
	A1S62RD3(N)	Q64RD	ERNT-ASQT62RD
	A1S62RD4(N)		

For Temperature control module(One slot type) New

AnS/QnAS Series model	Q Series model	Conversion Adapter model
A1S64TCTT-S1	Q64TCTTN	ERNT-ASQT64TCTT
A1S64TCTRT*4		
A1S64TCRT-S1	Q64TCRTN	ERNT-ASQT64TCRT
A1S64TCTRT*5		
A1S62TCTT-S2	Q64TCTTN	ERNT-ASQT62TCTT
A1S64TCTRT*6		
A1S62TCRT-S2	Q64TCRTN	ERNT-ASQT62TCRT
A1S64TCTRT*7		

For Temperature Control Modules with Disconnection Detection Function
[1 slot type with Disconnection detection connector conversion cable] New

AnS/QnAS Series model	Q Series model	Set model (Conversion Adapter model)
A1S64TCTTBW-S1	Q64TCTTBWN	ERNT-ASQT64TCTTBW (ERNT-ASQT64TCTT) *8
A1S64TCTRTBW*4		
A1S64TCRTBW-S1	Q64TCRTBWN	ERNT-ASQT64TCRTBW (ERNT-ASQT64TCRT) *8
A1S64TCTRTBW*5		
A1S62TCTTBW-S2	Q64TCTTBWN	ERNT-ASQT62TCTTBW (ERNT-ASQT62TCTT) *8
A1S64TCTRTBW*6		
A1S62TCRTBW-S2	Q64TCRTBWN	ERNT-ASQT62TCRTBW (ERNT-ASQT62TCRT) *8
A1S64TCTRTBW*7		

*1: Partial change in wiring for the power supply and common terminals is required.
*2: Not applicable to Q Series large type base unit (AnS size).
*3: Conversion adapter fixture is attached. Conversion adapter is required to mount to Base adapter or Conversion adapter DIN rail mounting bracket.
*4: For thermocouple input under standard control.
*5: For platinum RTD input under standard control.
*6: For thermocouple input under heating and cooling control
*7: For platinum RTD input under heating and cooling control
*8: Disconnection detection connector conversion cable is required to mount to Q Series large type base unit(AnS size), Base adapter, or Conversion adapter DIN rail mounting bracket.

Upgrade Tool/FA Goods
(Manufactured by Mitsubishi Electric Engineering Co., Ltd.)

■Base adapter list

The products are used to mount Q Series base unit using the existing AnS/QnAS Series installation screw holes. Also, these adapters are required to mount Conversion adapter with Support flange or Disconnection detection connector conversion cable for Temperature Control Modules with Disconnection Detection Function.

For Main base unit

AnS/QnAS Series model	Q Series model	Base Adapter model
A1S38B/A1S38HB	Q38B	ERNT-ASQB38N
A1S35B	Q35B	ERNT-ASQB35N
A1S33B	Q33B	ERNT-ASQB33N
A1S32B	Q33B	ERNT-ASQB32N
A1SJCPU	Q00JCPU Q00UJCPU	ERNT-ASQB00JN
A1SJCPU-S3		
A1SJHCPU		

For Extension base unit

AnS/QnAS Series model	Q Series model	Base Adapter model
A1S68B	Q68B	ERNT-ASQB68N
A1S65B	Q65B	ERNT-ASQB65N
A1S58B	Q68B*1	ERNT-ASQB58N
A1S55B	Q55B	ERNT-ASQB55N
A1S52B	Q52B	ERNT-ASQB52N

*1: For Base unit mounting Power supply module.

■Conversion adapter DIN rail mounting bracket list

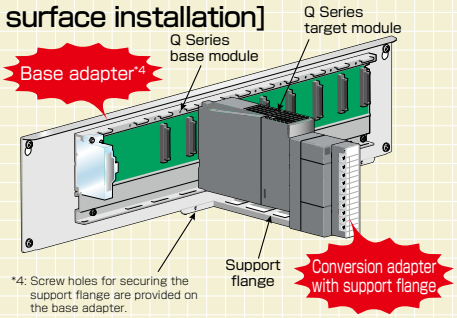
Mounting brackets for Conversion adapter with Support flange while mounting the MELSEC-Q Series base unit to DIN rail. Also, these brackets are used to mount Disconnection detection connector conversion cable for Temperature Control Modules with Disconnection Detection Function.

Main base / Extension	AnS/QnAS Series model	Q Series model	Mounting Bracket model
Main base	A1S38B/A1S38HB	Q38B	ERNT-ASQDIN3868
Extension	A1S68B	Q68B	
	A1S58B	Q68B	
Main base	A1S35B	Q35B	ERNT-ASQDIN356500J
Extension	A1S65B	Q65B	
Main base	A1SJCPU	Q00JCPU Q00UJCPU	
	A1SJCPU-S3		
	A1SJHCPU		
	A1S33B	Q33B	ERNT-ASQDIN3355
	A1S32B	Q33B	
Extension	A1S55B	Q55B	
	A1S52B	Q52B	ERNT-ASQDIN52

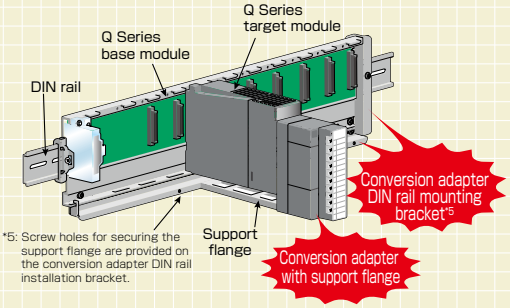
Note: A Q6DIN1, Q6DIN2 or Q6DIN3 Adapter for the DIN rail installation (manufactured by Mitsubishi Electric Corporation) is also required while mounting MELSEC-Q Series base unit with Conversion adapter DIN rail mounting bracket to the DIN rail.

■Installation with Base adapter

[Panel surface installation]

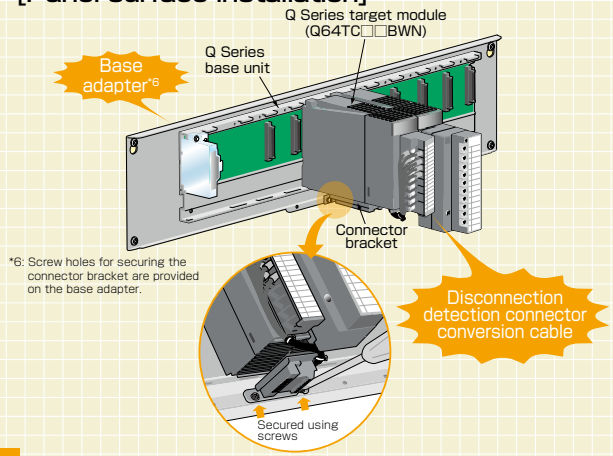


[DIN rail installation]

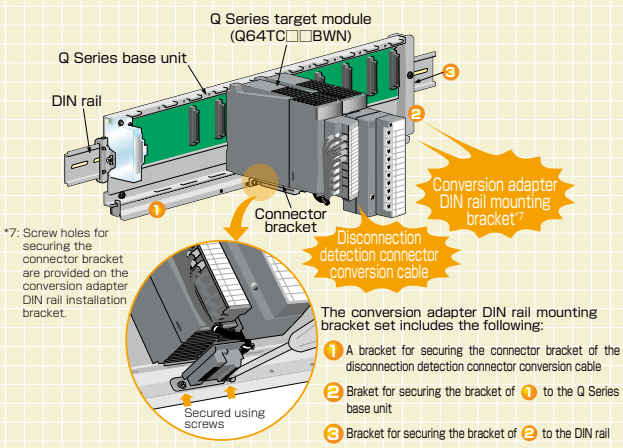


■Installing the disconnection detection connector conversion cable

[Panel surface installation]



[DIN rail installation]

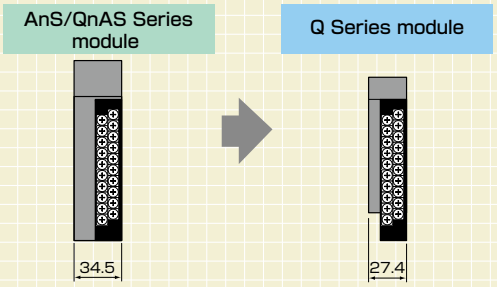


The conversion adapter DIN rail mounting bracket set includes the following:

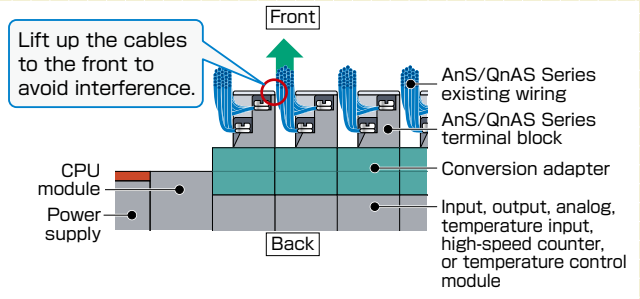
1. A bracket for securing the connector bracket of the disconnection detection connector conversion cable
2. Braket for securing the bracket of 1 to the Q Series base unit
3. Bracket for securing the bracket of 2 to the DIN rail

■Usage precaution

●Check mounting conditions before using the upgrade tool, as the module width (34.5mm(1.36inch) → 27.4mm (1.08inch)) and wiring space is decreased.

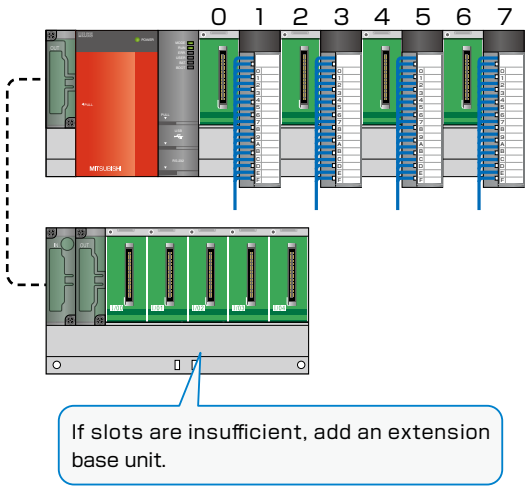


●If cables interfere with the module, lift up the cables to the front to avoid interference.



●If the cables still interfere, leave an empty slot between modules to secure wiring space.

[Example] For Q38B



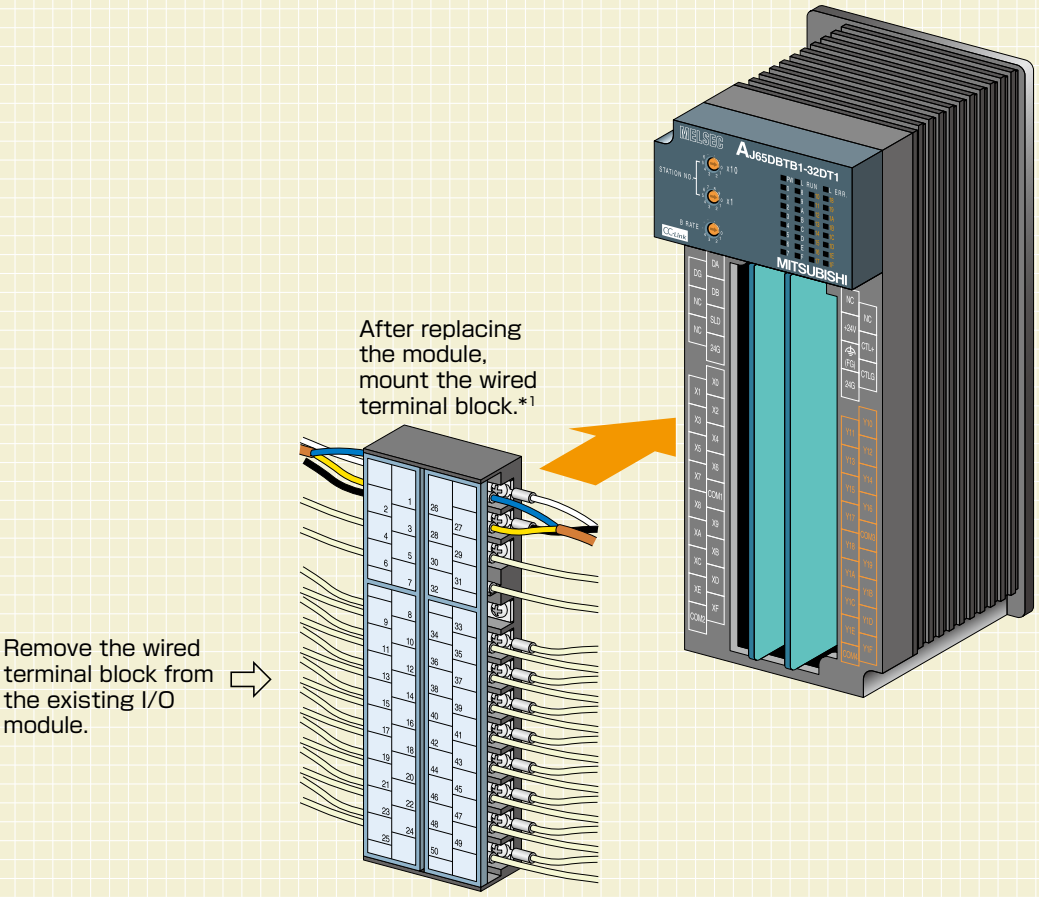
●Replace a terminal block cover with the one included with a conversion adapter.

For further specifications, precautions, and restrictions of the upgrade tool, please refer to the brochure (NA C088E-116 published by Mitsubishi Electric Engineering Co., Ltd.) or the relevant product manual.
To obtain the upgrade tool, please contact your local Mitsubishi Electric sales office or sales representative.

A2C Shape CC-Link Remote I/O Module

Replace A2CCPU and NET/MINI-S3 I/O module with CC-Link module using existing NET/MINI-S3 wiring.

■The simple replacement process helps minimize the upgrade time.
The installation size is the same as that of A2C I/O modules; existing terminal block can be mounted directly.



*1: The communication cables and power cables need to be rewired.

■Model list

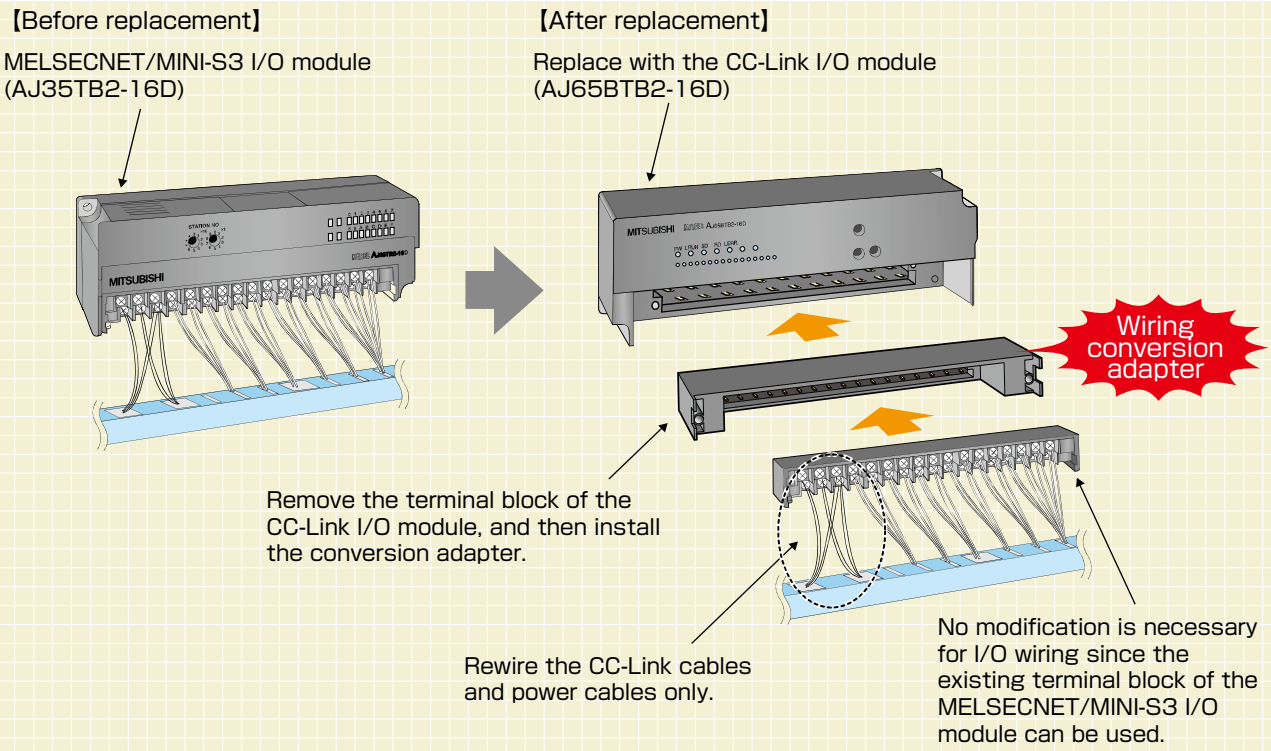
Discontinued model	Alternative model	
	Model	Outline
AX41C AX81C	AJ65DBTB1-32D	Terminal block type, 24 V DC input, 32 points, positive/negative common shared
AY51C	AJ65DBTB1-32T1	Terminal block type, 0.5 A transistor output, 32 points, sink
AX40Y50C	AJ65DBTB1-32DT1	Terminal block type, 24 V DC input, 16 points; 0.5 A transistor output, 16 points, I/O composite module
AY13C	AJ65DBTB1-32R	Terminal block type, relay output, 32 points
AX40Y10C AX80Y10C	AJ65DBTB1-32DR	Terminal block type, 24 V DC input, 16 points; relay output, 16 points, I/O composite module

MELSECNET/MINI-S3 I/O Module Wiring Conversion Adapter

Replace NET/MINI-S3 system with CC-Link network system while reusing existing NET/MINI-S3 wiring.

■Wiring adapter terminal blocks eliminate the need to rewire.

[Example] Replacing AJ35TB2-16D with AJ65BTB2-16D using a Wiring conversion adapter



■Model list

Discontinued model		Alternative model		
Product name	Model	Model		Remarks (restrictions)
		Alternative module	Conversion adapter	
Input module	AJ35TB1-16D	AJ65BTB1-16D	Wiring conversion adapter for 26-point terminal block*1 A6ADP-1MC16D	*1: The overall size is increased due to addition of the adapter to the alternative module. *2: Additional wiring to CTL+ (External power supply for output) is required.
	AJ35TB2-16D	AJ65BTB2-16D	Wiring conversion adapter for 34-point terminal block*1 A6ADP-2MC16D	
Output module	AJ35TB1-16T	AJ65BTB1-16T	Wiring conversion adapter for 26-point terminal block*1, *2 A6ADP-1MC16T	

Module for Easy Replacement

Plentiful Q Series modules facilitate the replacement.

■DC input module compatible with 6mA rated input current (QX41-S2, QX81-S2)

Use modules that have a high rated input current and are compatible with proximity sensor inputs.

Common type	AnS/QnAS Series	Q Series
Positive common	A1SX41*1	QX41-S2
	A1SX41-S2	
	A1SX42*2,*3	
	A1SX42-S2*3	
Negative common	A1SX81*1	QX81-S2
	A1SX81-S2	

*1: Use QX71 when 12VDC is selected.
*2: Use QX72 when 12VDC is selected.
*3: Use two QX41-S2s when using more than 32 points.

■Temperature control module (Q64TCTTN, Q64TCRTN, Q64TCTTBWN, Q64TCRTBWN)

Temperature control module can be replaced without changing the existing temperature sensor.

Temperature sensor	AnS/QnAS Series	Q Series
Thermocouple	A1S64TCTT-S1	Q64TCTTN
	A1S62TCTT-S2	
	A1S64TCTRT	
Platinum resistance thermometers	A1S64TCRT-S1	Q64TCRTN
	A1S62TCRT-S2	
	A1S64TCTRT	
Thermocouple (Heater disconnection detection function)	A1S64TCTTBW-S1	Q64TCTTBWN
	A1S62TCTTBW-S2	
	A1S64TCTRTBW	
Platinum resistance thermometers (Heater disconnection detection function)	A1S64TCRTBW-S1	Q64TCRTBWN
	A1S62TCRTBW-S2	
	A1S64TCTRTBW	

■High-speed counter module (QD62-H01, QD62-H02)

Modules can be replaced with no spec restrictions of the existing pulse generators (e.g. encoders etc.).

Counting speed	AnS/QnAS Series	Q Series
50KPPS	A1SD61	QD62-H01
10KPPS		QD62-H02

Note1: QD62-H01/H02 have 16 occupied I/O points. To utilize the programs before module replacement, set the same start numbers of I/O signal to the modules mounted to the right of the replaced high-speed counter module.
Note2: The “limit switch output function” of A1SD61 can be substituted for the “coincidence output function” of QD62-H01/H02.

■Positioning module(QD73A1)

The positioning module realizes servomotor control with a high-resolution encoder, and is compatible with a 1 Mpps maximum input pulse (x10 conventional module).
Replace the positioning module while maintaining existing external devices such as the servo amplifiers.

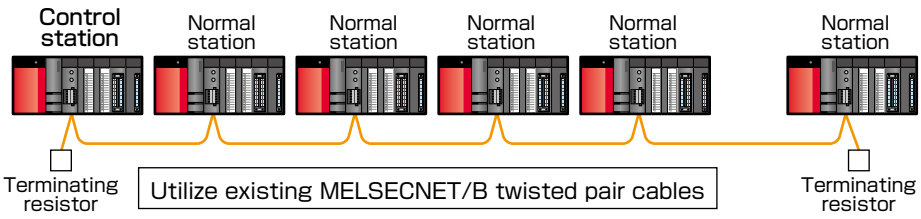
Positioning mode	AnS/QnAS Series	Q Series
Position control mode	A1SD70	QD73A1
Velocity/position control switchover mode		

MELSECNET/H Network Module

Reuse existing network cables to build MELSECNET/H network system.

■MELSECNET/H Network module (twisted bus type)

Existing twisted pair cables of MELSECNET/B data link system are used to build the MELSECNET/H network system when replacing AnS/QnAS A Series modules with Q Series modules.
Modules are replaced without modifying the previously laid network cables.
A high-speed and large-volume network system can also be built using CC-Link cables.

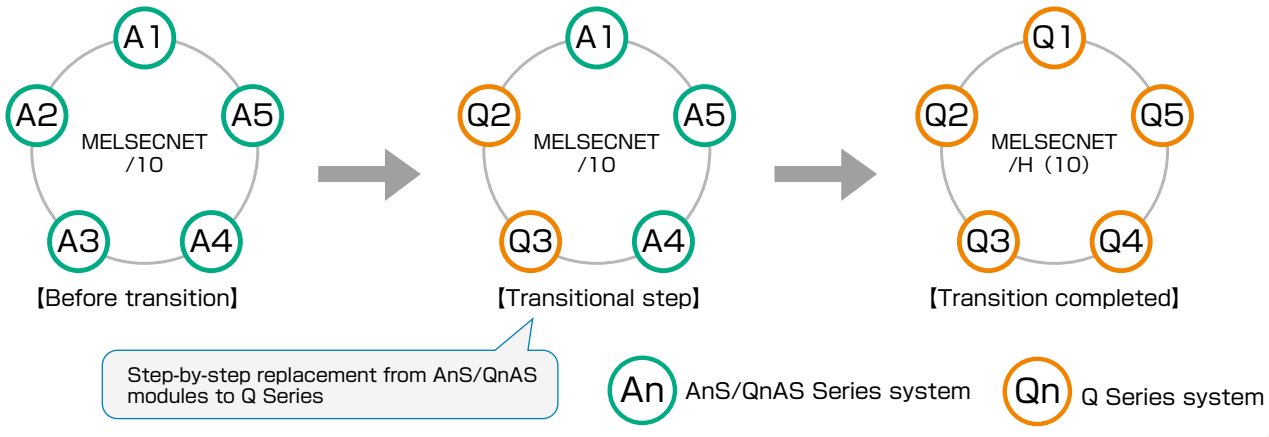


●Model list

Model	Outline
QJ71NT11B	MELSECNET/H Network module (twisted bus type)

■MELSECNET/H Network module (optical loop type, coaxial bus type)

Step-by-step transition from the existing AnS/QnAS modules with MELSECNET/10 network system to Q Series modules with MELSECNET/H(10) network system.
The transition for both of PLC to PLC network system and Remote I/O network system is completely executed with the step-by-step replacement from AnS/QnAS Series modules to Q Series modules.



●Model list (for PLC to PLC network, Remote I/O network)

AnS/QnAS Series model	Q Series transition model
A1SJ71LP21 A1SJ71QLP21	QJ71LP21-25 ※2
A1SJ71QLP21S	QJ71LP21S ※2
A1SJ71BR11 A1SJ71QBR11 A1SJ71LR21 ※1 A1SJ71QLR21 ※1	QJ71BR11 ※2

●Model list (for Remote I/O network)

AnS/QnAS Series models	Q Series transition model
A1SJ72QLP25	QJ72LP25-25 ※3
A1SJ72QBR15	QJ72BR15 ※3
A1SJ72QLR25 ※1	QJ72BR15

*1: The Q Series module is not supported in the MELSECNET/10 coaxial loop system; therefore, the coaxial loop system should be replaced with the coaxial bus system, optical loop system or twisted bus system while keeping the existing A/QnA Series modules.

*2: All remote I/O stations should be replaced to Q Series modules when replacing remote I/O network system.
Q Series master station and AnS/QnAS Series remote I/O stations cannot be mixed on the same remote I/O network system.

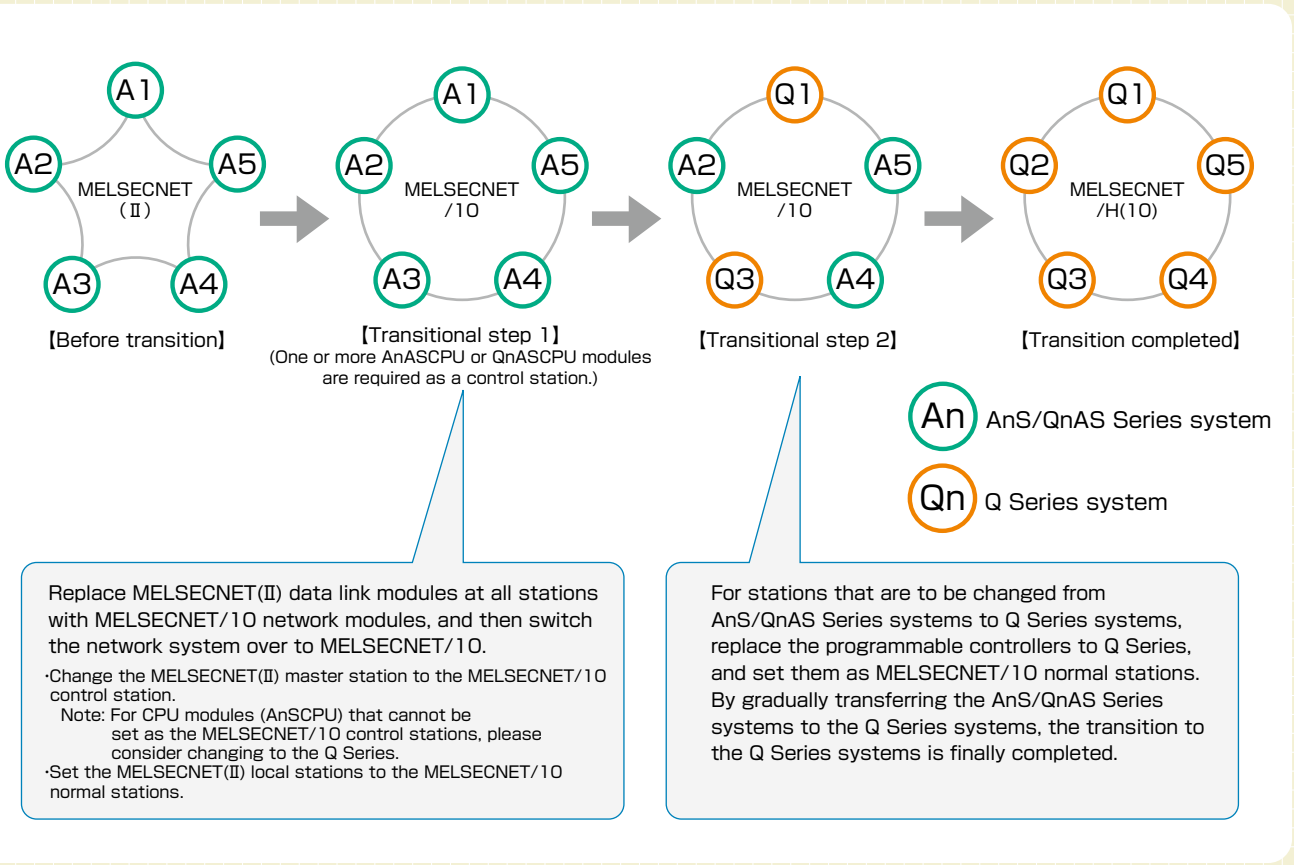
*3: AnS/QnAS Series and Q Series modules can be mixed on the same network, please use this product whose first 5-digit serial number is 15012 or later.

MELSECNET/10 Network Module
(Production continues)

Replace MELSECNET(II) system to Q Series MELSECNET/H(10) system useing existing wiring.

■Step-by-step transition from AnS/QnAS and Q Series combined systems to Q Series systems.

By using MELSECNET/10 network module, MELSECNET(Ⅱ) network can be replaced to MELSECNET/10 network while reusing the existing AnS/QnAS Series modules and cable installations.
Following the network replacement, the AnS/QnAS Series stations can be replaced with Q Series stations as needed in a step-by-step manner.
However, the step-by-step transition is not possible if the network includes of a combination of AnS/QnAS Series and Q Series stations, because AnS/QnAS Series does not support MELSECNET/H twisted bus system.



■Network module option

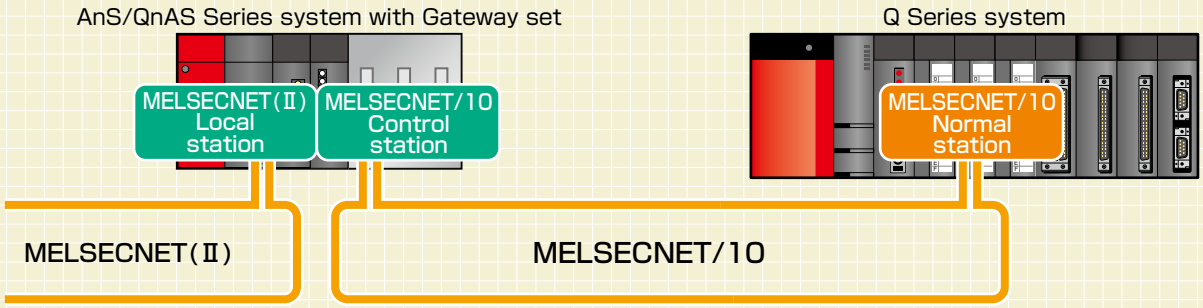
Product name	Model	
	Control/normal station	Remote I/O station
MELSECNET/10 network module	A1SJ71LP21 A1SJ71BR11 A1SJ71QLP21 A1SJ71QBR11	–

MELSECNET(Ⅱ)-MELSECNET/10 Gateway Set (Q6KT-NETGW-□□)

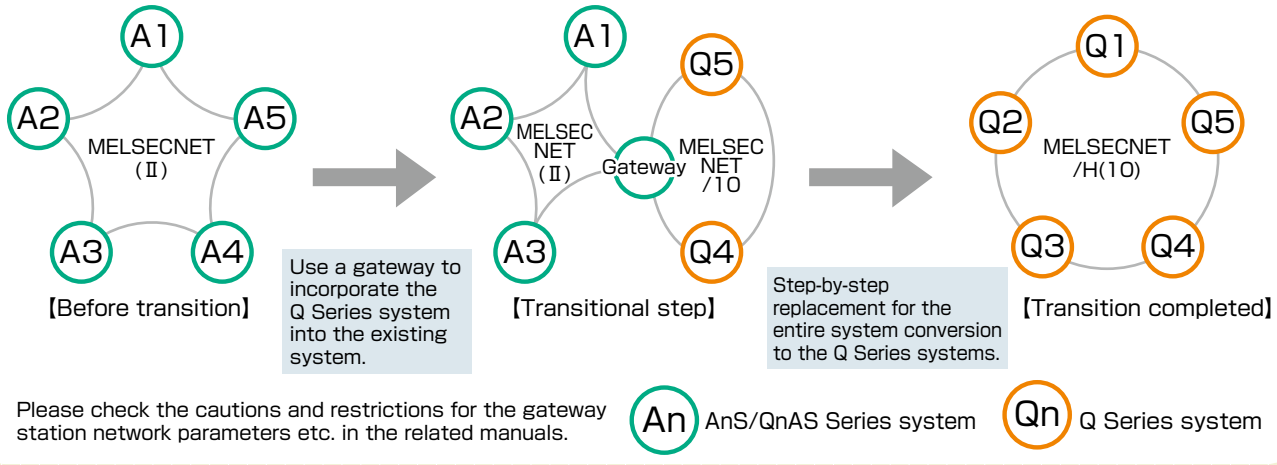
Step-by-step module replacement while transiting MELSECNET(Ⅱ) network system to MELSECNET/10.

■By using a Gateway set, a part of A/AnS Series system can be replaced with a Q Series system as a control station in the MELSECNET(Ⅱ) network. Thus, the A/AnS Series system can connect with other station such a Q Series system and communicate data each other.

[Example] Add a Q Series system into a part of the A/AnS Series system.



[Example] Step-by-step system replacement with the complete Q Series systems



■Gateway set option

Set model name	Main part			MELSECNET(Ⅱ)/B part	MELSECNET/10 part
Q6KT-NETGW-SS	A1S35B	A1S61PN	Q2ASCPU	A1SJ71AP21	A1SJ71QLP21
Q6KT-NETGW-RS				A1SJ71AR21	A1SJ71QLP21
Q6KT-NETGW-RB					A1SJ71QBR11
Q6KT-NETGW-TS				A1SJ71AT21B	A1SJ71QLP21
Q6KT-NETGW-TB					A1SJ71QBR11

Reading the model name

Q6KT-NETGW-□□
Gateway set
① ②

①Network type: MELSECNET(Ⅱ)
S: SI optical fiber cable (double loop)
R: Coaxial cable (double loop)
T: Twisted pair cable (bus)

②Network type: MELSECNET/10
S: SI optical fiber cable (double loop)
B: Coaxial cable (bus)

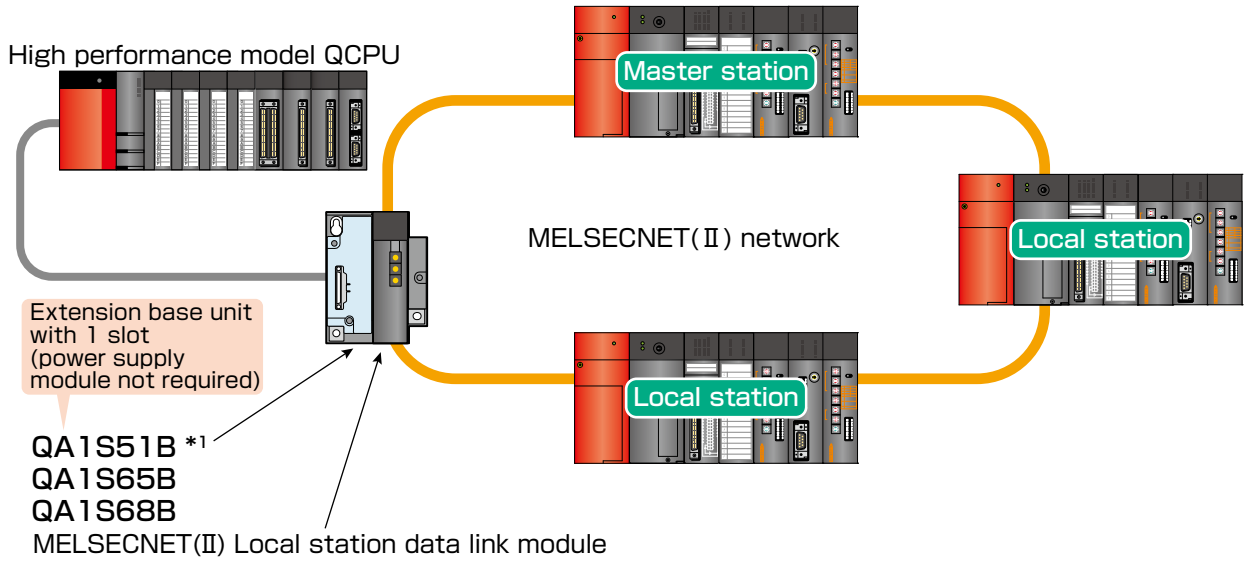
MELSECNET(Ⅱ), MELSECNET/B Local Station Data Link Module (A1SJ71AP23Q A1SJ71AR23Q A1SJ71AT23BQ)

Upgraded AnS local station data link modules permit a direct Q Series connection to existing networks as local stations.

■Available to connect a Q Series system into AnS/QnAS Series MELSECNET(Ⅱ), MELSECNET/B data link system.

The MELSECNET(Ⅱ)/B local station data link modules allow a Q Series system to directly connect to existing NET(Ⅱ)/NET/B data link system via a QA1S□B extension base unit.

[Example] MELSECNET(Ⅱ) configuration incorporating a Q Series system



*1: No further extensions can be made to QA1S51B as it has not got an Extension Cable Connector. This unit cannot be used in conjunction with QA6□B and QA6ADP with A5□B nor can QA6ADP be used in conjunction with A6□B.

■Local station data link module option

Model	Outline
A1SJ71AP23Q	MELSECNET(Ⅱ) local station data link module for SI optical fiber cable
A1SJ71AR23Q	MELSECNET(Ⅱ) local station data link module for coaxial cable
A1SJ71AT23BQ	MELSECNET/B local station data link module for shielded twisted pair cable

●Specifications

①Supported CPUs
High Performance Model QCPUs [Q02(H), Q06H, Q12H, and Q25HCPU] and Universal Model QCPUs*1 (include High-speed Universal Model QCPUs).

②Compatible extension base units
QA1S□B or QA□B with A-A1S module conversion adapter (A1ADP-SP)

③Number of modules per CPU
Send point range can be further increased by mounting up to 6 modules per CPU.

④Network parameters
Minimal setup required, as network parameters settings are automatically detected by the module.

⑤Link refresh setting
Link refresh setting is not automatically detected. Hence, FROM/TO instructions within sequence program to enable send/receive cyclic data are required.

Sample programs for link refresh are provided in "A/QnA -> Q Conversion Support Tool". The sample program can be used to create a QCPU program which may reduce development time.
For details, please contact your local Mitsubishi sales office or representative.

*1: Universal Model QCPU, whose first 5-digit serial number is 13102 or later, is compatible with the data link modules.

Product List

List of products used for upgrade

Extension base unit

Product name	Model	Outline
QA(QnA Series) extension base unit	QA1S65B	5 slots, for AnS Series modules
	QA1S68B	8 slots, for AnS Series modules
	QA1S51B	1 slot, for AnS Series modules (power supply module not required)

Q Series large type base unit (AnS Series size)

Product name	Model	Outline
Main base unit	Q35BLS	5 slots, for mounting Q Series module, panel mounting type
	Q38BLS	8 slots, for mounting Q Series module, panel mounting type
	Q35BLS-D	5 slots, for mounting Q Series module, DIN rail mounting type
	Q38BLS-D	8 slots, for mounting Q Series module, DIN rail mounting type
Extension base unit	Q65BLS	5 slots, for mounting Q Series module, panel mounting type
	Q68BLS	8 slots, for mounting Q Series module, panel mounting type
	Q65BLS-D	5 slots, for mounting Q Series module, DIN rail mounting type
	Q68BLS-D	8 slots, for mounting Q Series module, DIN rail mounting type
	Q55BLS	5 slots, for mounting Q Series module, panel mounting type, non-requires power supply module
	Q55BLS-D	5 slots, for mounting Q Series module, DIN rail mounting type, non-requires power supply module
Q series large type blank cover (AnS series size)	QG69LS	Blank cover for the Q Series module on the Q Series large type base unit (AnS Series size)

A2C shape CC-Link remote I/O module

Product name	Model	Outline
CC-Link remote I/O module (Screw/2-piece terminal block, dustproof type)	AJ65DBTB1-32D	Input: 32 points, 24 V DC (positive/negative common [sink/source]), terminal block 1-wire type, response time: 10 ms
	AJ65DBTB1-32T1	Output: 32 points, 12/24 V DC, 0.5 A transistor output (sink), terminal block 1-wire type (low leakage current type)
	AJ65DBTB1-32R	Output: 32 points, 24 V DC/240 V AC, 2 A relay output, terminal block 1-wire type
	AJ65DBTB1-32DT1	Input: 16 points, 24 V DC (positive common [sink]), 1-wire type, response time: 10 ms Output: 16 points, 24 V DC, 0.5 A transistor output (sink), terminal block 1-wire type (low leakage current type)
	AJ65DBTB1-32DR	Input: 16 points, 24 V DC (positive/negative common [sink/source]), response time: 10 ms Output: 16 points, 24 V DC/240 V AC, 2 A relay output, terminal block 1-wire type

MELSECNET/MINI-S3-CC-Link wiring conversion adapter

Product name	Model	Outline
MELSECNET/ MINI-S3-CC-Link wiring conversion adapter	A6ADP-1MC16D	26-point wiring conversion adaptor, 1-wire type 16-point input Wire conversion adaptor for mounting CC-Link module
	A6ADP-2MC16D	34-point wiring conversion adaptor, 2-wire type 16-point input Wire conversion adaptor for mounting CC-Link module
	A6ADP-1MC16T	26-point wiring conversion adaptor, 1-wire type 16-point output (with CTL+terminal) Wire conversion adaptor for mounting CC-Link module

Product List

DC input module

Product name	Model	Outline
DC input module	QX41-S2	32 points, 24 V DC, rated input current: approximately 6 mA, positive common type, 32 points/common, response time: 1 ms/5 ms/10 ms/20 ms/70 ms or less (Set by the CPU parameter at the initial setting of 10 ms for both ON to OFF and OFF to ON)
	QX81-S2	32 points, 24 V DC, rated input current: approximately 6 mA, negative common type, 32 points/common, response time: 1 ms/5 ms/10 ms/20 ms/70 ms or less (Set by the CPU parameter at the initial setting of 10 ms for both ON to OFF and OFF to ON)

Temperature control module

Product name	Model	Outline
Temperature control module	Q64TCRTN	4 channels, platinum resistance thermometers (Pt100, JPt100) No heater disconnection detection function Sampling cycle: 0.5s/4CH, 18-point terminal block
	Q64TCRTBWN	4 channels, platinum resistance thermometers (Pt100, JPt100) Heater disconnection detection function Sampling cycle: 0.5s/4CH, 18-point terminal block × 2
	Q64TCTTN	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL2, W5Re/W26Re) No heater disconnection detection function Sampling cycle: 0.5s/4CH, 18-point terminal block
	Q64TCTTBWN	4 channels, thermocouple (K, J, T, B, S, E, R, N, U, L, PL2, W5Re/W26Re) Heater disconnection detection function Sampling cycle: 0.5s/4CH, 18-point terminal block × 2

High-speed counter module

Product name	Model	Outline
High-speed counter module	QD62-H01	Replacement module with the same input filtering system and counting speed as A1SD61 (50KPPS)
	QD62-H02	Replacement module with the same input filtering system and counting speed as A1SD61 (10KPPS).

Positioning module

Product name	Model	Outline
Positioning module	QD73A1	1-axis analog output type Position control mode (positioning control, two-phase trapezoidal positioning control) Speed/position control switchover mode

MELSECNET/H twisted bus type network module

Product name	Model	Outline
MELSECNET/H twisted bus type network module	QJ71NT11B	MELSECNET/H twisted pair cable, single bus, for control/normal station

MELSECNET(Ⅱ), MELSECNET/B local station data link module

Product name	Model	Outline
MELSECNET(Ⅱ) local station data link module	A1SJ71AP23Q	MELSECNET(Ⅱ) local station data link module for SI optical fiber cable
	A1SJ71AR23Q	MELSECNET(Ⅱ) local station data link module for coaxial cable
MELSECNET/B local station data link module	A1SJ71AT23BQ	MELSECNET/B local station data link module for shielded twisted pair cable

MELSECNET(Ⅱ)-MELSECNET/10 gataway set

Product name	Model	Outline
MELSECNET(Ⅱ)-MELSECNET/10 gateway set	Q6KT-NETGW-SS	A set of A1S35B, A1S61PN, Q2ASCPU, A1SJ71AP21, and A1SJ71QLP21
	Q6KT-NETGW-RS	A set of A1S35B, A1S61PN, Q2ASCPU, A1SJ71AR21, and A1SJ71QLP21
	Q6KT-NETGW-RB	A set of A1S35B, A1S61PN, Q2ASCPU, A1SJ71AR21, and A1SJ71QBR11
MELSECNET/B-MELSECNET/10 gateway set	Q6KT-NETGW-TS	A set of A1S35B, A1S61PN, Q2ASCPU, A1SJ71AT21B, and A1SJ71QLP21
	Q6KT-NETGW-TB	A set of A1S35B, A1S61PN, Q2ASCPU, A1SJ71AT21B, and A1SJ71QBR11

Product List

Models in continuous production

Power supply module

Product name	Model
Power supply module	A1S61PN
	A1S63P

Battery

Product name	Model
Battery	A6BAT
	A8BAT
	A10BAT

Memory card

Product name	Model
Memory card	Q1MEM-64S
	Q1MEM-128S
	Q1MEM-256S
	Q1MEM-512S
	Q1MEM-1MS
	Q1MEM-2MS
	Q1MEM-64SE
	Q1MEM-128SE
	Q1MEM-256SE
	Q1MEM-512SE
	Q1MEM-1MSE

MELSECNET/10 network module

Product name	Model
MELSECNET/10 network module	A1SJ71LP21
	A1SJ71BR11
	A1SJ71QLP21
	A1SJ71QBR11

CC-Link master/local module

Product name	Model
CC-Link master/local module	A1SJ61BT11
	A1SJ61QBT11

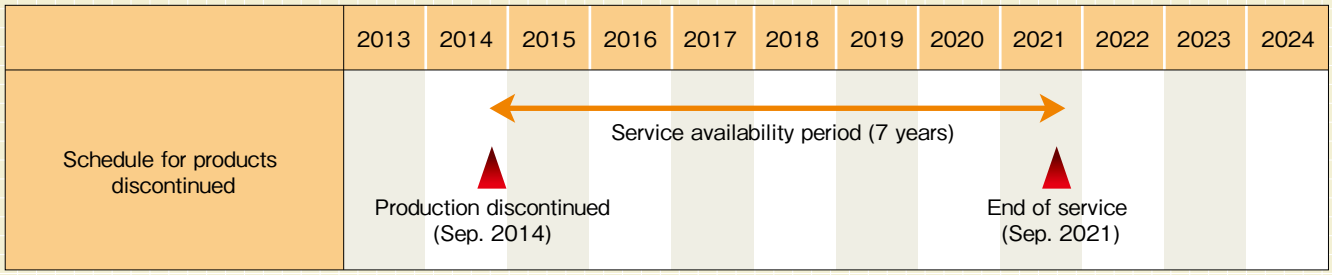
A-A1S module conversion adapter

Product name	Model
A-A1S module conversion adapter	A1ADP-XY
	A1ADP-SP

Discontinued products

Discontinued products		Date of discontinuation
Small type AnS Series Small type QnAS Series	●CPU module ●Power supply module(several modules) ●Base unit ●I/O module ●Special function module ●Network module ●Other related products(made-to-order based on AnS/QnAS Series to be discontinued)	End of Sep. 2014
I/OLINK	●Master module ●Remote I/O module	End of Sep. 2014

Service availability period



For the details of models in continuous production and the service availability period of discontinued products, please refer to Technical Bulletin No.FA-A-0142.

Responding to the amenable running of FA systems through an enhanced support system

Global FA Centers

"Mitsubishi Electric Global FA centers" have been established in various countries around the world to cover the Americas, Europe, and Asia.
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Area covered: North America, Mexico, Chile, Brazil

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