

Changes for the Better

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



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



Comprehensive, risk-free upgrade solutions



From the MELSEC-AnS/QnAS Series
→ The 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 AnS and QnAS Series controller systems to the current MELSEC-Q Series with minimum disruption to your plant operations.

Upgrade Options

Related information

P 3

- Technical bulletins
- Replacement handbooks

AnS→Q

Convert existing A Series programs

P 5

- A/QnA → Q conversion support tool

AnS→Q MELSOFT

Reuse existing A Series I/O with Q Series

P 9

- QA extension base unit
- Upgrade tool

AnS→Q

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

P 13

- 24 V DC input modules with a rated input current of 6 mA

AnS→Q

Replace Temperature control modules without changing of the connected existing temperature sensor

P 13

- Temperature control module

AnS→Q

Replace high-speed counter modules without restrains from specifications of the connected external devices

P 13

- Dedicated replacement high-speed counter modules

AnS→Q

Use existing MELSECNET/B twisted pair cables to construct MELSECNET/H network systems

P 14

- MELSECNET/H network module (twisted bus type)

Network

Q Series MELSECNET(II), MELSECNET/B compatibility

P 15

- AnS (small type) local station dedicated module

Network

Support capabilities

P 16

- Global FA centers

Support

Product list

P 17

- List of products used for upgrade

Support



At-a-glance technical overviews

Technical Bulletins

Transition to made-to-order production (MELSEC-AnS/QnAS (small type) series)

FA-A-0094

- The information of transition to made-to-order production may be changed without notice. For the most recent information, contact your local MITSUBISHI representative.

In-depth technical documentation resources

Replacement Handbooks

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 MELSENET/MINI-S3, A2C (I/O) to CC-Link Handbook

L(NA)08061ENG

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

L(NA)08062ENG

- 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., Mitsubishi Electric System & Service 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., and Mitsubishi Electric System & Service Co., Ltd., are shown in Appendix of each handbook for transition.
- Products shown in this handbook are subject to change without notice.

MEMO

A series of horizontal dashed lines for writing.

Automatic Program Conversion: GX Developer & Q Conversion Support Tool

Minimize program conversion efforts by using GX Developer's PLC Type Change function and the Q Conversion Support Tool.

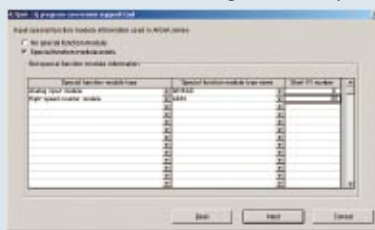
■ The Q Conversion Support Tool boosts productivity by avoiding time spent consulting manuals for guidance on finishing program conversions.

Change to Q beforehand

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



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



A/QnA → Q conversion support tool

Output

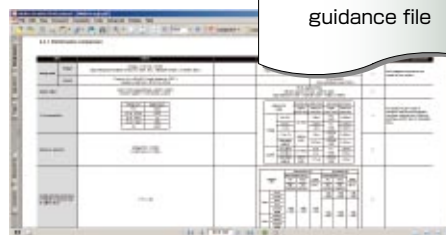
Differences between the two programs and guidance on how to complete the conversion are displayed.

Differences between two programs



<See 1 on p. 6.>

HTML conversion guidance file



<See 2 on p. 7-8.>



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



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

Note 1: This support tool applies to ladder programs only.

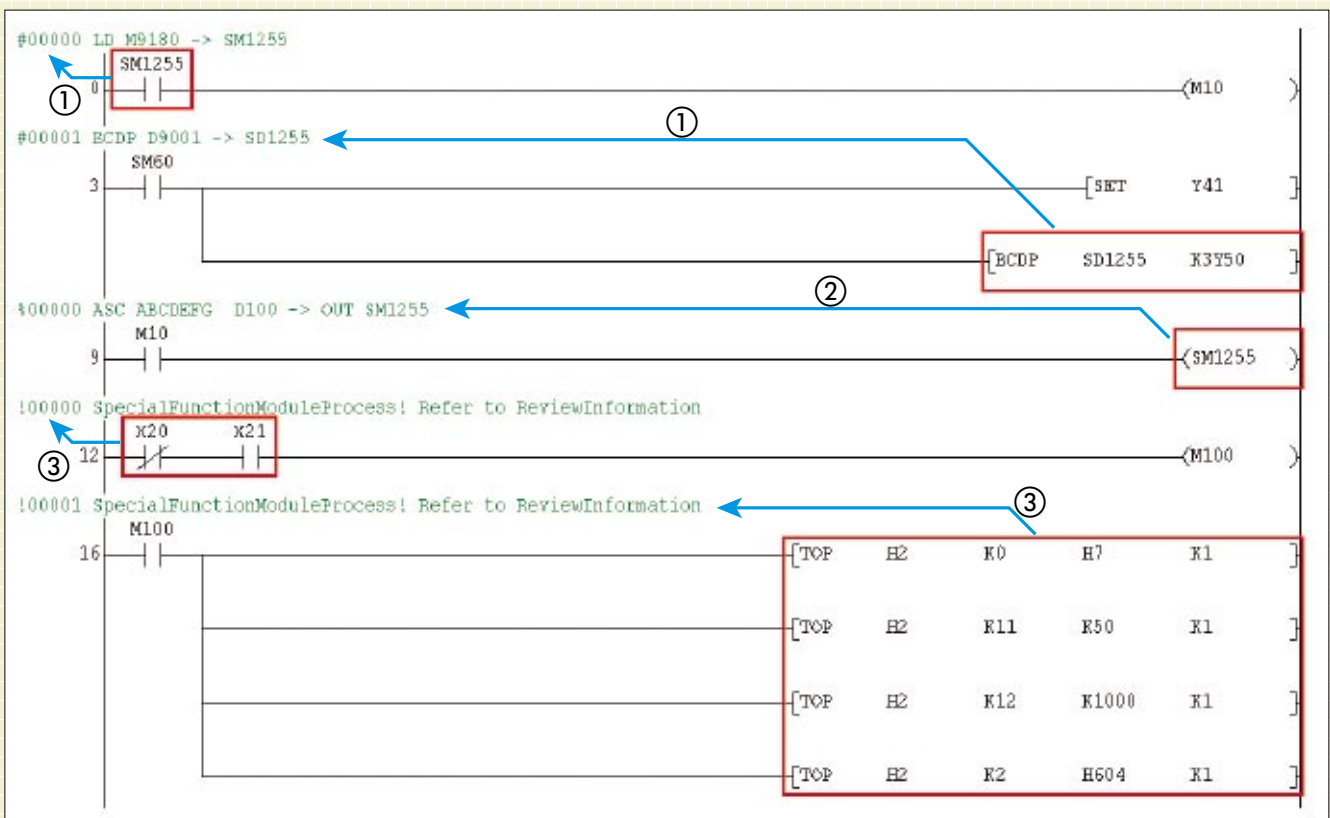
Note 2: Conversion from AnS/Q2AS(H) programs to Q programs is also supported.

Note 3: The A/QnA → Q Conversion Support Tool does not support Universal model (QnU) CPUs. To convert a CPU to a Universal model QCPU, perform the following procedure.

- ① Using GX Developer, change the PLC type of the original project to a PLC type which is supported by the A/QnA → Q Conversion Support Tool. (Converted project 1)
- ② Again using GX Developer, change the PLC type of the original project to Universal model QCPU. (Converted project 2)
- ③ Open the original project and the converted project 1 in the A/QnA → Q Conversion Support Tool.
- ④ Reflect the output result from step 3 to the converted project 2.

1 Differences between the two programs

- Can be modified directly.
Prevents mistakes and improves efficiency.



(Image of differences between the two programs)

① Statement 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.

(E.g.) `#00001 ANI M9201 → SM1255`
 ("#00001" is a search keyword in the HTML conversion guidance file.)

② Statement 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.

(E.g.) `%00001 [LRDP K3 D10 D100 K3] → OUT SM1255`
 ("%00001" is a search keyword in the HTML conversion guidance file.)

③ Statement 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.

(E.g.) `!00001 Special Function Module Process! Refer to ReviewInformation`
 ("!00001" is a search keyword in the HTML conversion guidance file.)

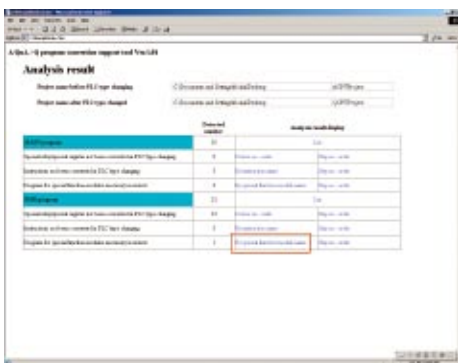
Automatic Program Conversion: GX Developer & Q Conversion Support Tool

2 HTML conversion guidance file

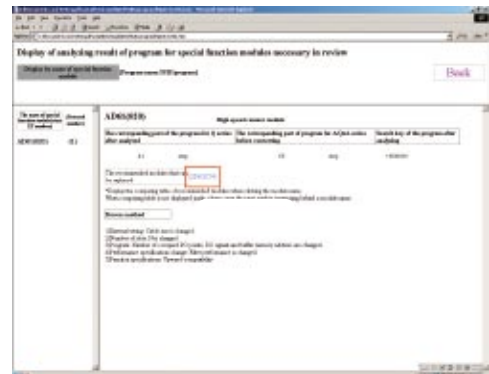
Easy comparison of performance specifications before and after replacement.

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 1) 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.



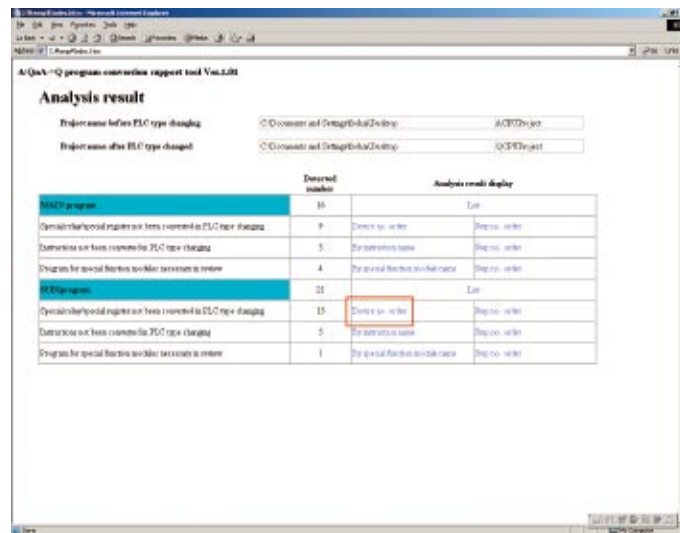
Click the recommended module name next to "The recommended modules that can be replaced."

2.3.1 Performance comparison

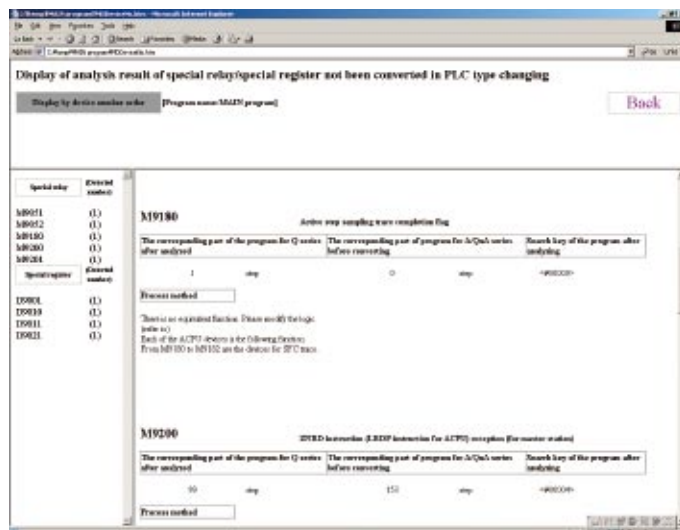
Item	original	replacement	Compatibility	Precautions for replacement																																																																																																																																																																																																																														
Analog input	Voltage input resolution hardware version: 0.25mV (10bit, hardware version: 0.125mV (8bit))	-0.5 to 10VDC input resolution (400 bit)		The voltage input circuit is needed for one module.																																																																																																																																																																																																																														
	Current Current: 4 to 40mA/DC (input resolution: 200 bit) Location current input: 20 to 200mA	0 to 20mA/DC (input resolution: 200 bit)																																																																																																																																																																																																																																
Digital output	APU (1-bit signal binary: 0.04A to 0.04A*) 12mA/DC signal + 1.8 bit (10bit) (x 20bit)	0.5V signal output (Normal resolution mode: 400 to 400, High resolution mode: 0.02A to 0.02A, 1-bit/10bit)																																																																																																																																																																																																																																
I/O characteristics	<table border="1"> <tr><td>Analog input</td><td>Digital input</td></tr> <tr><td>4 to 20</td><td>4 to 20</td></tr> <tr><td>4 to 20mA</td><td>4 to 20</td></tr> <tr><td>20 to 200</td><td>4 to 20</td></tr> <tr><td>20 to 200</td><td>4 to 20</td></tr> <tr><td>20 to 200</td><td>4 to 20</td></tr> </table>	Analog input	Digital input	4 to 20	4 to 20	4 to 20mA	4 to 20	20 to 200	4 to 20	20 to 200	4 to 20	20 to 200	4 to 20	<table border="1"> <tr><td>Normal resolution mode</td><td>High resolution mode</td></tr> <tr><td>Digital input resolution</td><td>Digital input resolution</td></tr> <tr><td>0.25mV</td><td>0.125mV</td></tr> <tr><td>0.125mV</td><td>0.0625mV</td></tr> <tr><td>0.0625mV</td><td>0.03125mV</td></tr> <tr><td>0.03125mV</td><td>0.015625mV</td></tr> <tr><td>0.015625mV</td><td>0.0078125mV</td></tr> <tr><td>0.0078125mV</td><td>0.00390625mV</td></tr> <tr><td>0.00390625mV</td><td>0.001953125mV</td></tr> <tr><td>0.001953125mV</td><td>0.0009765625mV</td></tr> 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<tr><td>0.0298023223876953125μV</td><td>0.01490116119384765625μV</td></tr> <tr><td>0.01490116119384765625μV</td><td>0.007450580596923828125μV</td></tr> <tr><td>0.007450580596923828125μV</td><td>0.0037252902984619140625μV</td></tr> <tr><td>0.0037252902984619140625μV</td><td>0.00186264514923095703125μV</td></tr> <tr><td>0.00186264514923095703125μV</td><td>0.000931322574615478515625μV</td></tr> <tr><td>0.000931322574615478515625μV</td><td>0.0004656612873077392578125μV</td></tr> <tr><td>0.0004656612873077392578125μV</td><td>0.00023283064365386962890625μV</td></tr> <tr><td>0.00023283064365386962890625μV</td><td>0.000116415321826934814453125μV</td></tr> <tr><td>0.000116415321826934814453125μV</td><td>5.8207660913467407407265625e-05μV</td></tr> <tr><td>5.8207660913467407407265625e-05μV</td><td>2.91038304567337037036328125e-05μV</td></tr> <tr><td>2.91038304567337037036328125e-05μV</td><td>1.455191522836685185181640625e-05μV</td></tr> <tr><td>1.455191522836685185181640625e-05μV</td><td>7.275957614183425925905703125e-06μV</td></tr> <tr><td>7.275957614183425925905703125e-06μV</td><td>3.6379788070917129629528515625e-06μV</td></tr> <tr><td>3.6379788070917129629528515625e-06μV</td><td>1.81898940354585648147642578125e-06μV</td></tr> <tr><td>1.81898940354585648147642578125e-06μV</td><td>9.0949470177292824073832140625e-07μV</td></tr> <tr><td>9.0949470177292824073832140625e-07μV</td><td>4.54747350886464120369160703125e-07μV</td></tr> <tr><td>4.54747350886464120369160703125e-07μV</td><td>2.273736754432320601845803515625e-07μV</td></tr> <tr><td>2.273736754432320601845803515625e-07μV</td><td>1.1368683772161603009229017578125e-07μV</td></tr> <tr><td>1.1368683772161603009229017578125e-07μV</td><td>5.68434188608080150461145087890625e-08μV</td></tr> <tr><td>5.68434188608080150461145087890625e-08μV</td><td>2.842170943040400752305725439453125e-08μV</td></tr> <tr><td>2.842170943040400752305725439453125e-08μV</td><td>1.4210854715202003761528627197265625e-08μV</td></tr> <tr><td>1.4210854715202003761528627197265625e-08μV</td><td>7.1054273576010018807643135986328125e-09μV</td></tr> <tr><td>7.1054273576010018807643135986328125e-09μV</td><td>3.55271367880050094038215679931640625e-09μV</td></tr> <tr><td>3.55271367880050094038215679931640625e-09μV</td><td>1.776356839400250470191078399658203125e-09μV</td></tr> <tr><td>1.776356839400250470191078399658203125e-09μV</td><td>8.881784197001252350955391998291015625e-10μV</td></tr> <tr><td>8.881784197001252350955391998291015625e-10μV</td><td>4.440892098500626175477695999145578125e-10μV</td></tr> <tr><td>4.440892098500626175477695999145578125e-10μV</td><td>2.2204460492503130877388479995727890625e-10μV</td></tr> <tr><td>2.2204460492503130877388479995727890625e-10μV</td><td>1.11022302462515654386942399978639453125e-10μV</td></tr> 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<tr><td>8.67361737988403549895861124998333312287890625e-13μV</td><td>4.3368086899420177494793056249916665644145578125e-13μV</td></tr> <tr><td>4.3368086899420177494793056249916665644145578125e-13μV</td><td>2.16840434497100887473965281249583328220727890625e-13μV</td></tr> <tr><td>2.16840434497100887473965281249583328220727890625e-13μV</td><td>1.0842021724855044373698264062479166641145578125e-13μV</td></tr> <tr><td>1.0842021724855044373698264062479166641145578125e-13μV</td><td>5.421010862427522186784932031239583328220727890625e-14μV</td></tr> <tr><td>5.421010862427522186784932031239583328220727890625e-14μV</td><td>2.7105054312137610933924660156979166641145578125e-14μV</td></tr> <tr><td>2.7105054312137610933924660156979166641145578125e-14μV</td><td>1.3552527156068805466962330078489583328220727890625e-14μV</td></tr> <tr><td>1.3552527156068805466962330078489583328220727890625e-14μV</td><td>6.776263578034402733481166503924479166641145578125e-15μV</td></tr> 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<tr><td>1.65436122510605535486037993026464739583328220727890625e-18μV</td><td>8.27180612553027677430189965013232369583328220727890625e-19μV</td></tr> <tr><td>8.27180612553027677430189965013232369583328220727890625e-19μV</td><td>4.135903062765138387150947750066161619583328220727890625e-19μV</td></tr> <tr><td>4.135903062765138387150947750066161619583328220727890625e-19μV</td><td>2.06795153138256919357547387503308080989583328220727890625e-19μV</td></tr> <tr><td>2.06795153138256919357547387503308080989583328220727890625e-19μV</td><td>1.0339757656912845967877369375165404049479166641145578125e-19μV</td></tr> <tr><td>1.0339757656912845967877369375165404049479166641145578125e-19μV</td><td>5.16987882845642298393868468755772202249145578125e-20μV</td></tr> <tr><td>5.16987882845642298393868468755772202249145578125e-20μV</td><td>2.58493941422821149196934234377886110112287890625e-20μV</td></tr> <tr><td>2.58493941422821149196934234377886110112287890625e-20μV</td><td>1.2924697071141057459846711718890555505639479166641145578125e-20μV</td></tr> <tr><td>1.2924697071141057459846711718890555505639479166641145578125e-20μV</td><td>6.462348535570528729923355859444772752249145578125e-21μV</td></tr> <tr><td>6.462348535570528729923355859444772752249145578125e-21μV</td><td>3.231174267785264364961677929722386376112287890625e-21μV</td></tr> <tr><td>3.231174267785264364961677929722386376112287890625e-21μV</td><td>1.61558713389263218248083896486119306112287890625e-21μV</td></tr> <tr><td>1.61558713389263218248083896486119306112287890625e-21μV</td><td>8.0779356694631609124041944824305955606112287890625e-22μV</td></tr> <tr><td>8.0779356694631609124041944824305955606112287890625e-22μV</td><td>4.038967834731580456202097241215297780306112287890625e-22μV</td></tr> <tr><td>4.038967834731580456202097241215297780306112287890625e-22μV</td><td>2.01948391736579022810104862060764889015297780306112287890625e-22μV</td></tr> <tr><td>2.01948391736579022810104862060764889015297780306112287890625e-22μV</td><td>1.0097419586828951140505243103038244450764889015297780306112287890625e-22μV</td></tr> <tr><td>1.0097419586828951140505243103038244450764889015297780306112287890625e-22μV</td><td>5.04870979341447557252512155151912222386376112287890625e-23μV</td></tr> <tr><td>5.04870979341447557252512155151912222386376112287890625e-23μV</td><td>2.5243548967072377862625607757595611111912222386376112287890625e-23μV</td></tr> <tr><td>2.5243548967072377862625607757595611111912222386376112287890625e-23μV</td><td>1.262177448353618893131280387879780555595611111912222386376112287890625e-23μV</td></tr> <tr><td>1.26217744835361889313128038787978055559561111912222386376112287890625e-23μV</td><td>6.310887241768094465663164193939892777978055559561111912222386376112287890625e-24μV</td></tr> <tr><td>6.310887241768094465663164193939892777978055559561111912222386376112287890625e-24μV</td><td>3.155443620884047232831582096969946389892777978055559561111912222386376112287890625e-24μV</td></tr> <tr><td>3.155443620884047232831582096969946389892777978055559561111912222386376112287890625e-24μV</td><td>1.577721810442023616415910483484973194946389892777978055559561111912222386376112287890625e-24μV</td></tr> <tr><td>1.577721810442023616415910483484973194946389892777978055559561111912222386376112287890625e-24μV</td><td>7.88860905221011808207955241724486597473194946389892777978055559561111912222386376112287890625e-25μV</td></tr> <tr><td>7.88860905221011808207955241724486597473194946389892777978055559561111912222386376112287890625e-25μV</td><td>3.9443045261050590410397776086224329873697473194946389892777978055559561111912222386376112287890625e-25μV</td></tr> <tr><td>3.9443045261050590410397776086224329873697473194946389892777978055559561111912222386376112287890625e-25μV</td><td>1.972152263052529520519888804311216193873697473194946389892777978055559561111912222386376112287890625e-25μV</td></tr> <tr><td>1.972152263052529520519888804311216193873697473194946389892777978055559561111912222386376112287890625e-25μV</td><td>9.860761315262647602599444021556089693873697473194946389892777978055559561111912222386376112287890625e-26μV</td></tr> <tr><td>9.860761315262647602599444021556089693873697473194946389892777978055559561111912222386376112287890625e-26μV</td><td>4.93038065763132380129972201077804484693873697473194946389892777978055559561111912222386376112287890625e-26μV</td></tr> <tr><td>4.93038065763132380129972201077804484693873697473194946389892777978055559561111912222386376112287890625e-26μV</td><td>2.4651903288156619006498610053890224234693873697473194946389892777978055559561111912222386376112287890625e-26μV</td></tr> <tr><td>2.4651903288156619006498610053890224234693873697473194946389892777978055559561111912222386376112287890625e-26μV</td><td>1.23259516440783095032493050269451121734693873697473194946389892777978055559561111912222386376112287890625e-26μV</td></tr> <tr><</tr></table>	Normal resolution mode	High resolution mode	Digital input resolution	Digital input resolution	0.25mV	0.125mV	0.125mV	0.0625mV	0.0625mV	0.03125mV	0.03125mV	0.015625mV	0.015625mV	0.0078125mV	0.0078125mV	0.00390625mV	0.00390625mV	0.001953125mV	0.001953125mV	0.0009765625mV	0.0009765625mV	0.00048828125mV	0.00048828125mV	0.000244140625mV	0.000244140625mV	0.0001220703125mV	0.0001220703125mV	0.00006103515625mV	61.03515625μV	30.517578125μV	30.517578125μV	15.2587890625μV	15.2587890625μV	7.62939453125μV	7.62939453125μV	3.814697265625μV	3.814697265625μV	1.9073486328125μV	1.9073486328125μV	0.95367431640625μV	0.95367431640625μV	0.476837158203125μV	0.476837158203125μV	0.2384185791015625μV	0.2384185791015625μV	0.11920928955078125μV	0.11920928955078125μV	0.059604644775390625μV	0.059604644775390625μV	0.0298023223876953125μV	0.0298023223876953125μV	0.01490116119384765625μV	0.01490116119384765625μV	0.007450580596923828125μV	0.007450580596923828125μV	0.0037252902984619140625μV	0.0037252902984619140625μV	0.00186264514923095703125μV	0.00186264514923095703125μV	0.000931322574615478515625μV	0.000931322574615478515625μV	0.0004656612873077392578125μV	0.0004656612873077392578125μV	0.00023283064365386962890625μV	0.00023283064365386962890625μV	0.000116415321826934814453125μV	0.000116415321826934814453125μV	5.8207660913467407407265625e-05μV	5.8207660913467407407265625e-05μV	2.91038304567337037036328125e-05μV	2.91038304567337037036328125e-05μV	1.455191522836685185181640625e-05μV	1.455191522836685185181640625e-05μV	7.275957614183425925905703125e-06μV	7.275957614183425925905703125e-06μV	3.6379788070917129629528515625e-06μV	3.6379788070917129629528515625e-06μV	1.81898940354585648147642578125e-06μV	1.81898940354585648147642578125e-06μV	9.0949470177292824073832140625e-07μV	9.0949470177292824073832140625e-07μV	4.54747350886464120369160703125e-07μV	4.54747350886464120369160703125e-07μV	2.273736754432320601845803515625e-07μV	2.273736754432320601845803515625e-07μV	1.1368683772161603009229017578125e-07μV	1.1368683772161603009229017578125e-07μV	5.68434188608080150461145087890625e-08μV	5.68434188608080150461145087890625e-08μV	2.842170943040400752305725439453125e-08μV	2.842170943040400752305725439453125e-08μV	1.4210854715202003761528627197265625e-08μV	1.4210854715202003761528627197265625e-08μV	7.1054273576010018807643135986328125e-09μV	7.1054273576010018807643135986328125e-09μV	3.55271367880050094038215679931640625e-09μV	3.55271367880050094038215679931640625e-09μV	1.776356839400250470191078399658203125e-09μV	1.776356839400250470191078399658203125e-09μV	8.881784197001252350955391998291015625e-10μV	8.881784197001252350955391998291015625e-10μV	4.440892098500626175477695999145578125e-10μV	4.440892098500626175477695999145578125e-10μV	2.2204460492503130877388479995727890625e-10μV	2.2204460492503130877388479995727890625e-10μV	1.11022302462515654386942399978639453125e-10μV	1.11022302462515654386942399978639453125e-10μV	5.551115123125782719334711999893197265625e-11μV	5.551115123125782719334711999893197265625e-11μV	2.7755575615628913596673559999465986328125e-11μV	2.7755575615628913596673559999465986328125e-11μV	1.38777878078144567983367799997329931640625e-11μV	1.38777878078144567983367799997329931640625e-11μV	6.938893903907228399166888999866499658203125e-12μV	6.938893903907228399166888999866499658203125e-12μV	3.4694469519536141995834444999332498291015625e-12μV	3.4694469519536141995834444999332498291015625e-12μV	1.7347234759768070997917222499666249145578125e-12μV	1.7347234759768070997917222499666249145578125e-12μV	8.67361737988403549895861124998333312287890625e-13μV	8.67361737988403549895861124998333312287890625e-13μV	4.3368086899420177494793056249916665644145578125e-13μV	4.3368086899420177494793056249916665644145578125e-13μV	2.16840434497100887473965281249583328220727890625e-13μV	2.16840434497100887473965281249583328220727890625e-13μV	1.0842021724855044373698264062479166641145578125e-13μV	1.0842021724855044373698264062479166641145578125e-13μV	5.421010862427522186784932031239583328220727890625e-14μV	5.421010862427522186784932031239583328220727890625e-14μV	2.7105054312137610933924660156979166641145578125e-14μV	2.7105054312137610933924660156979166641145578125e-14μV	1.3552527156068805466962330078489583328220727890625e-14μV	1.3552527156068805466962330078489583328220727890625e-14μV	6.776263578034402733481166503924479166641145578125e-15μV	6.776263578034402733481166503924479166641145578125e-15μV	3.38813178901720136674058251961239583328220727890625e-15μV	3.38813178901720136674058251961239583328220727890625e-15μV	1.6940658945086006833702912598061979166641145578125e-15μV	1.6940658945086006833702912598061979166641145578125e-15μV	8.470329472543003416851455629530989583328220727890625e-16μV	8.470329472543003416851455629530989583328220727890625e-16μV	4.23516473627150170842572781476549479166641145578125e-16μV	4.23516473627150170842572781476549479166641145578125e-16μV	2.11758236813575085421286390738274739583328220727890625e-16μV	2.11758236813575085421286390738274739583328220727890625e-16μV	1.05879118406787542710643195369137369583328220727890625e-16μV	1.0587911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61.03515625μV	30.517578125μV																																																																																																																																																																																																																																	
30.517578125μV	15.2587890625μV																																																																																																																																																																																																																																	
15.2587890625μV	7.62939453125μV																																																																																																																																																																																																																																	
7.62939453125μV	3.814697265625μV																																																																																																																																																																																																																																	
3.814697265625μV	1.9073486328125μV																																																																																																																																																																																																																																	
1.9073486328125μV	0.95367431640625μV																																																																																																																																																																																																																																	
0.95367431640625μV	0.476837158203125μV																																																																																																																																																																																																																																	
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0.11920928955078125μV	0.059604644775390625μV																																																																																																																																																																																																																																	
0.059604644775390625μV	0.0298023223876953125μV																																																																																																																																																																																																																																	
0.0298023223876953125μV	0.01490116119384765625μV																																																																																																																																																																																																																																	
0.01490116119384765625μV	0.007450580596923828125μV																																																																																																																																																																																																																																	
0.007450580596923828125μV	0.0037252902984619140625μV																																																																																																																																																																																																																																	
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0.00186264514923095703125μV	0.000931322574615478515625μV																																																																																																																																																																																																																																	
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2.91038304567337037036328125e-05μV	1.455191522836685185181640625e-05μV																																																																																																																																																																																																																																	
1.455191522836685185181640625e-05μV	7.275957614183425925905703125e-06μV																																																																																																																																																																																																																																	
7.275957614183425925905703125e-06μV	3.6379788070917129629528515625e-06μV																																																																																																																																																																																																																																	
3.6379788070917129629528515625e-06μV	1.81898940354585648147642578125e-06μV																																																																																																																																																																																																																																	
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2.273736754432320601845803515625e-07μV	1.1368683772161603009229017578125e-07μV																																																																																																																																																																																																																																	
1.1368683772161603009229017578125e-07μV	5.68434188608080150461145087890625e-08μV																																																																																																																																																																																																																																	
5.68434188608080150461145087890625e-08μV	2.842170943040400752305725439453125e-08μV																																																																																																																																																																																																																																	
2.842170943040400752305725439453125e-08μV	1.4210854715202003761528627197265625e-08μV																																																																																																																																																																																																																																	
1.4210854715202003761528627197265625e-08μV	7.1054273576010018807643135986328125e-09μV																																																																																																																																																																																																																																	
7.1054273576010018807643135986328125e-09μV	3.55271367880050094038215679931640625e-09μV																																																																																																																																																																																																																																	
3.55271367880050094038215679931640625e-09μV	1.776356839400250470191078399658203125e-09μV																																																																																																																																																																																																																																	
1.776356839400250470191078399658203125e-09μV	8.881784197001252350955391998291015625e-10μV																																																																																																																																																																																																																																	
8.881784197001252350955391998291015625e-10μV	4.440892098500626175477695999145578125e-10μV																																																																																																																																																																																																																																	
4.440892098500626175477695999145578125e-10μV	2.2204460492503130877388479995727890625e-10μV																																																																																																																																																																																																																																	
2.2204460492503130877388479995727890625e-10μV	1.11022302462515654386942399978639453125e-10μV																																																																																																																																																																																																																																	
1.11022302462515654386942399978639453125e-10μV	5.551115123125782719334711999893197265625e-11μV																																																																																																																																																																																																																																	
5.551115123125782719334711999893197265625e-11μV	2.7755575615628913596673559999465986328125e-11μV																																																																																																																																																																																																																																	
2.7755575615628913596673559999465986328125e-11μV	1.38777878078144567983367799997329931640625e-11μV																																																																																																																																																																																																																																	
1.38777878078144567983367799997329931640625e-11μV	6.938893903907228399166888999866499658203125e-12μV																																																																																																																																																																																																																																	
6.938893903907228399166888999866499658203125e-12μV	3.4694469519536141995834444999332498291015625e-12μV																																																																																																																																																																																																																																	
3.4694469519536141995834444999332498291015625e-12μV	1.7347234759768070997917222499666249145578125e-12μV																																																																																																																																																																																																																																	
1.7347234759768070997917222499666249145578125e-12μV	8.67361737988403549895861124998333312287890625e-13μV																																																																																																																																																																																																																																	
8.67361737988403549895861124998333312287890625e-13μV	4.3368086899420177494793056249916665644145578125e-13μV																																																																																																																																																																																																																																	
4.3368086899420177494793056249916665644145578125e-13μV	2.16840434497100887473965281249583328220727890625e-13μV																																																																																																																																																																																																																																	
2.16840434497100887473965281249583328220727890625e-13μV	1.0842021724855044373698264062479166641145578125e-13μV																																																																																																																																																																																																																																	
1.0842021724855044373698264062479166641145578125e-13μV	5.421010862427522186784932031239583328220727890625e-14μV																																																																																																																																																																																																																																	
5.421010862427522186784932031239583328220727890625e-14μV	2.7105054312137610933924660156979166641145578125e-14μV																																																																																																																																																																																																																																	
2.7105054312137610933924660156979166641145578125e-14μV	1.3552527156068805466962330078489583328220727890625e-14μV																																																																																																																																																																																																																																	
1.3552527156068805466962330078489583328220727890625e-14μV	6.776263578034402733481166503924479166641145578125e-15μV																																																																																																																																																																																																																																	
6.776263578034402733481166503924479166641145578125e-15μV	3.38813178901720136674058251961239583328220727890625e-15μV																																																																																																																																																																																																																																	
3.38813178901720136674058251961239583328220727890625e-15μV	1.6940658945086006833702912598061979166641145578125e-15μV																																																																																																																																																																																																																																	
1.6940658945086006833702912598061979166641145578125e-15μV	8.470329472543003416851455629530989583328220727890625e-16μV																																																																																																																																																																																																																																	
8.470329472543003416851455629530989583328220727890625e-16μV	4.23516473627150170842572781476549479166641145578125e-16μV																																																																																																																																																																																																																																	
4.23516473627150170842572781476549479166641145578125e-16μV	2.11758236813575085421286390738274739583328220727890625e-16μV																																																																																																																																																																																																																																	
2.11758236813575085421286390738274739583328220727890625e-16μV	1.05879118406787542710643195369137369583328220727890625e-16μV																																																																																																																																																																																																																																	
1.05879118406787542710643195369137369583328220727890625e-16μV	5.293955920339377135532157976846869583328220727890625e-17μV																																																																																																																																																																																																																																	
5.293955920339377135532157976846869583328220727890625e-17μV	2.64697796016968856776607898842343479166641145578125e-17μV																																																																																																																																																																																																																																	
2.64697796016968856776607898842343479166641145578125e-17μV	1.32348898008484428388303949421171739583328220727890625e-17μV																																																																																																																																																																																																																																	
1.32348898008484428388303949421171739583328220727890625e-17μV	6.6174449004242214194415197210585889583328220727890625e-18μV																																																																																																																																																																																																																																	
6.6174449004242214194415197210585889583328220727890625e-18μV	3.30872245021211070972075986052929479166641145578125e-18μV																																																																																																																																																																																																																																	
3.30872245021211070972075986052929479166641145578125e-18μV	1.65436122510605535486037993026464739583328220727890625e-18μV																																																																																																																																																																																																																																	
1.65436122510605535486037993026464739583328220727890625e-18μV	8.27180612553027677430189965013232369583328220727890625e-19μV																																																																																																																																																																																																																																	
8.27180612553027677430189965013232369583328220727890625e-19μV	4.135903062765138387150947750066161619583328220727890625e-19μV																																																																																																																																																																																																																																	
4.135903062765138387150947750066161619583328220727890625e-19μV	2.06795153138256919357547387503308080989583328220727890625e-19μV																																																																																																																																																																																																																																	
2.06795153138256919357547387503308080989583328220727890625e-19μV	1.0339757656912845967877369375165404049479166641145578125e-19μV																																																																																																																																																																																																																																	
1.0339757656912845967877369375165404049479166641145578125e-19μV	5.16987882845642298393868468755772202249145578125e-20μV																																																																																																																																																																																																																																	
5.16987882845642298393868468755772202249145578125e-20μV	2.58493941422821149196934234377886110112287890625e-20μV																																																																																																																																																																																																																																	
2.58493941422821149196934234377886110112287890625e-20μV	1.2924697071141057459846711718890555505639479166641145578125e-20μV																																																																																																																																																																																																																																	
1.2924697071141057459846711718890555505639479166641145578125e-20μV	6.462348535570528729923355859444772752249145578125e-21μV																																																																																																																																																																																																																																	
6.462348535570528729923355859444772752249145578125e-21μV	3.231174267785264364961677929722386376112287890625e-21μV																																																																																																																																																																																																																																	
3.231174267785264364961677929722386376112287890625e-21μV	1.61558713389263218248083896486119306112287890625e-21μV																																																																																																																																																																																																																																	
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4.038967834731580456202097241215297780306112287890625e-22μV	2.01948391736579022810104862060764889015297780306112287890625e-22μV																																																																																																																																																																																																																																	
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1.0097419586828951140505243103038244450764889015297780306112287890625e-22μV	5.04870979341447557252512155151912222386376112287890625e-23μV																																																																																																																																																																																																																																	
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- Details of unconverted special relays and registers can be displayed, improving conversion efficiency.

(Example 2) 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.



QA Extension Base Unit (QA1S65B, QA1S68B, QA1S51B)

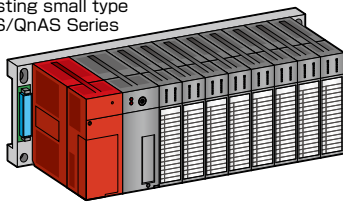
Soon

Use existing A Series modules when upgrading to QCPU.

■ Gradual transition from small type AnS/QnAS Series to Q Series (Q mode).

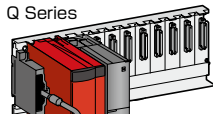
- Construct a system that is controlled by the new Q Series CPU (Q mode) while keeping the existing small type AnS/QnAS Series modules mounted to a QA1S□B extension base unit. The AnS/QnAS Series modules can gradually be replaced to fully establish a Q Series system.

Existing small type AnS/QnAS Series

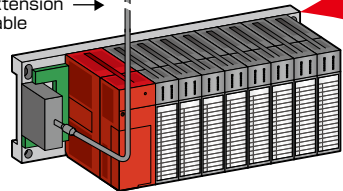


Step 1

Q Series



Q Series extension cable

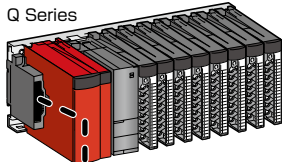


QA Extension Base Unit
(QA1S65B, QA1S68B, QA1S51B)

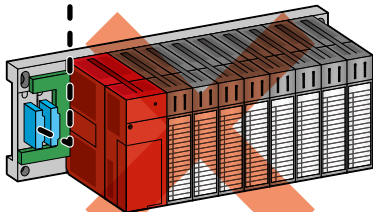
Existing small type AnS/QnAS power supply, I/O modules, and other modules can be utilized; wiring is left as it is.

Step 2

Q Series



Entire replacement with the Q Series

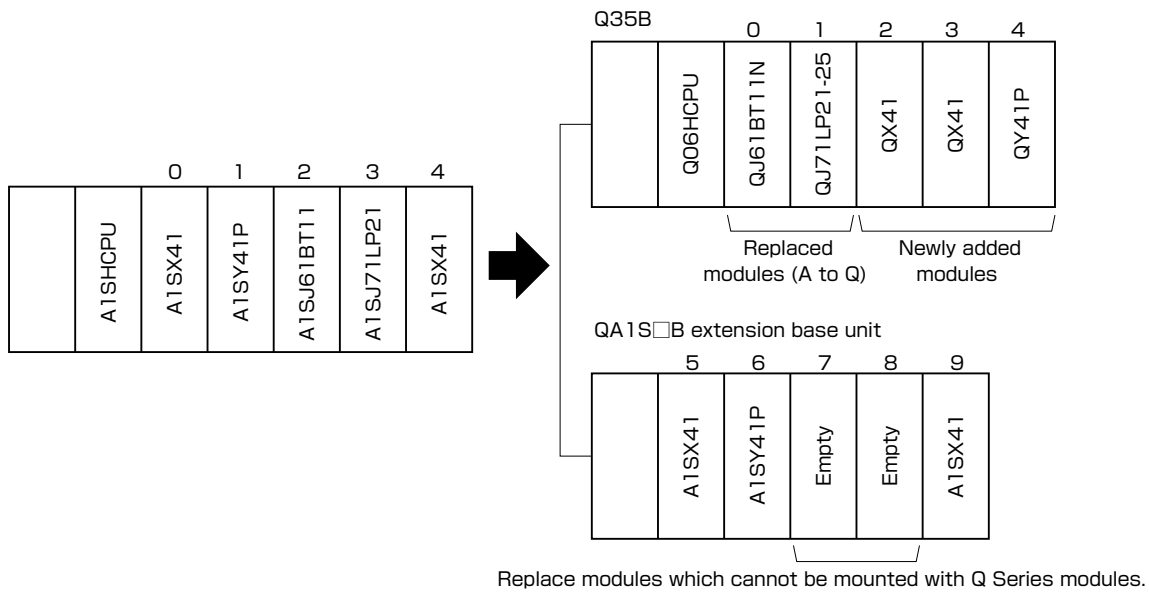


- Remove the QA extension base unit (QA1S□B) when all modules have been replaced with Q Series equivalents.

- It is recommended to use QA1S□B extension base units to gradually upgrade from AnS/QnAS Series system to Q Series system while using the assets of Small type AnS/QnAS series system (The QA1S□B extension base units are compatible with High Performance Model QCPUs only. Basic Model QCPUs, Process CPUs, Redundant CPUs, Safety CPUs, Universal Model QCPUs, 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)".

■ 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 A Series or A Series to Q Series. When the order is mixed (i.e., Q Series → A 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	Input	32	20
	7 —	Empty	32	40
	8 —	Empty	32	60
	9 A1SX41	Input	32	80

Upgrade Tool

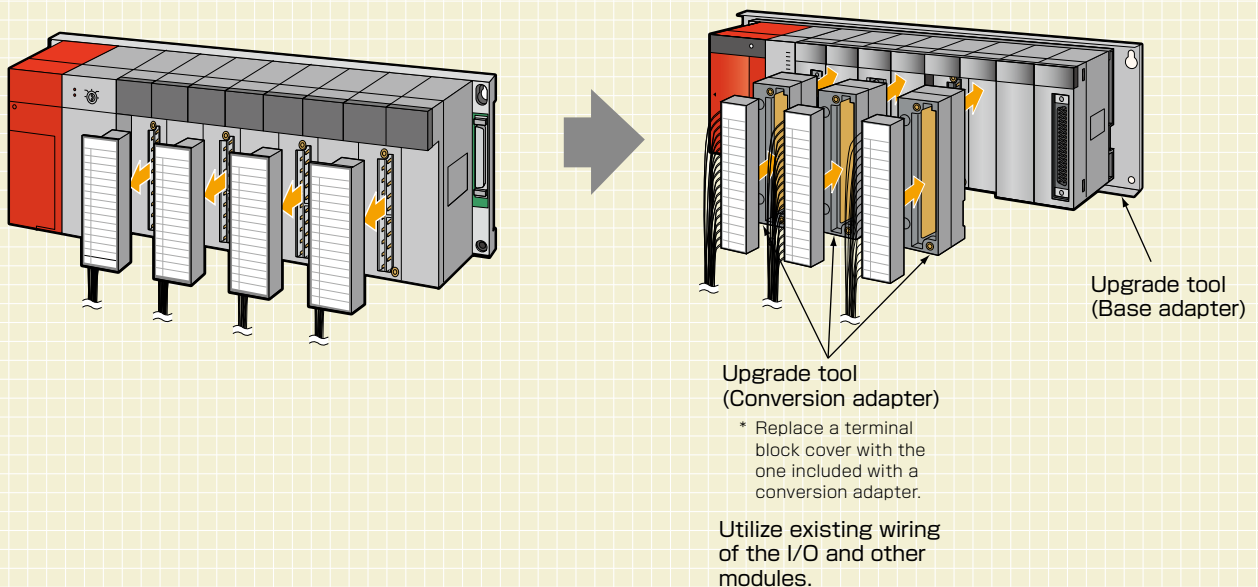
Replace AnS Series systems with Q Series without extensive I/O rewiring.

■ Upgrade tool features

The upgrade tool consists of two parts: a conversion adapter to modify the existing wiring of small-type AnS Series input/output/analog modules to the wiring of Q Series modules; and a Q Series base adapter mountable through the installation hole of the small-type AnS Series base unit.

- Remove the small type AnS Series programmable controllers along with the base unit, install the base adapter in the same position, and mount Q Series modules (New installation holes are unnecessary when mounting the base adaptor).
- Attach the conversion adapters to the Q Series modules.
- Remove the terminal blocks from the existing small type AnS Series modules and mount them on the conversion adapters (The existing wiring can be used without modification*).

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



For detailed specifications, precautions, and restrictions of the upgrade tool, please refer to the brochure (NA C088E-1 16) and user's manual.
For the upgrade tool, please contact your local Mitsubishi sales office or representative.

■ Conversion Adapter List

For input/output modules

Input / Output	AnS Series Model	Q Series Model	Conversion Adapter Model	
Input	A1SX10	QX10	ERNT-ASQTY10	
	A1SX10EU			
Output	A1SY10	QY10		
	A1SY10EU			
Input	A1SX40	QX40		ERNT-ASQTX40
	A1SX40-S2			
	A1SX40-S1	QX40-S1		
	A1SX80			
	A1SX80-S1			
A1SX80-S2	QX80			
A1SX80-S1				
Output	A1SY22	QY22	ERNT-ASQTY22	
	A1SY40 (P)	QY40P	ERNT-ASQTY40	
	A1SY50	QY50	ERNT-ASQTY50	
	A1SY80	QY80	ERNT-ASQTY80	

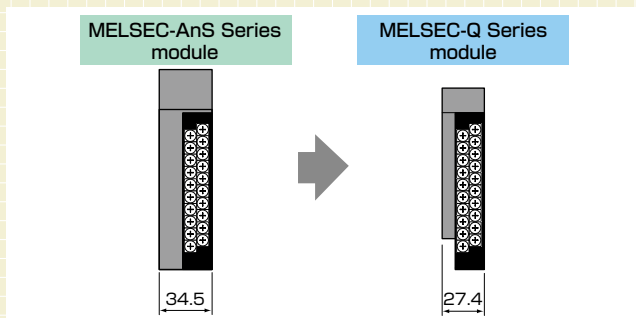
*Partial change in wiring for the power supply and common terminals is required.

For analog modules

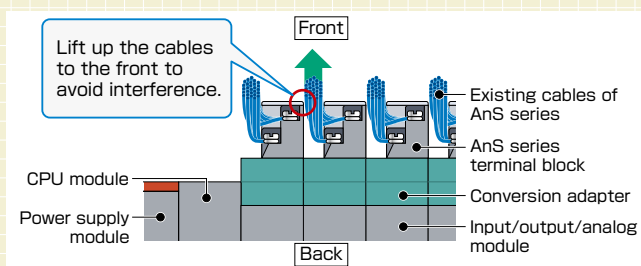
Input / Output	AnS Series Model	Q Series Model	Conversion Adapter Model
Input	A1S64AD	Q64AD	ERNT-ASQT64AD
	A1S68AD (Voltage input)	Q68ADV	ERNT-ASQT68AD
	A1S68AD (Current input)	Q68ADI	
Output	A1S62DA	Q62DAN	ERNT-ASQT62DA
	A1S68DAV	Q68DAVN	ERNT-ASQT68DA
	A1S68DAI	Q68DAIN	

■ Instructions

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



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



■ Base Adapter List

For main base units

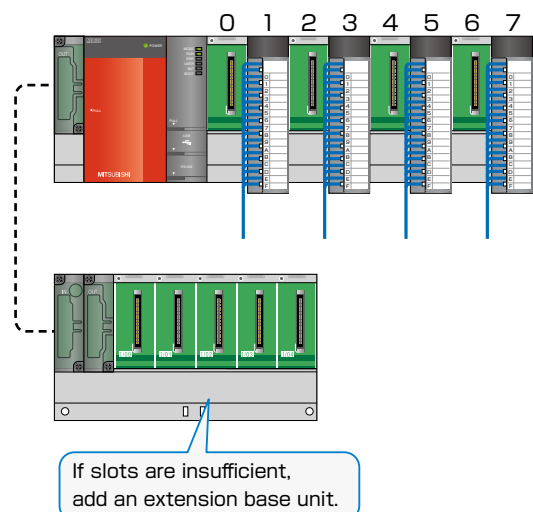
AnS Series Model	Q Series Model	Base Adapter Model
A1S38B/A1S38HB	Q38B	ERNT-ASQB38
A1S35B	Q35B	ERNT-ASQB35
A1S33B	Q33B	ERNT-ASQB33
A1SJCPU	Q00JCPU Q00UJCPU	ERNT-ASQB00J
A1SJCPU-S3		
A1SJHCPU		

For extension base units

AnS Series Model	Q Series Model	Base Adapter Model
A1S68B	Q68B	ERNT-ASQB68
A1S65B	Q65B	ERNT-ASQB65
A1S55B	Q55B	ERNT-ASQB55

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

(Ex.) For Q38B



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

Modules for Easy Replacement

A variety of modules are available to facilitate replacement.

■DC input modules 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	Small 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) **New**

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

Temperature sensor	Small type 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 modules (QD62-H01, QD62-H02)

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

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

* 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.

* The "limit switch output function" of A1SD61 can be substituted for the "coincidence output function" of QD62-H01/H02.

MELSECNET/H Network Module

QJ71NT11B (twisted bus type)

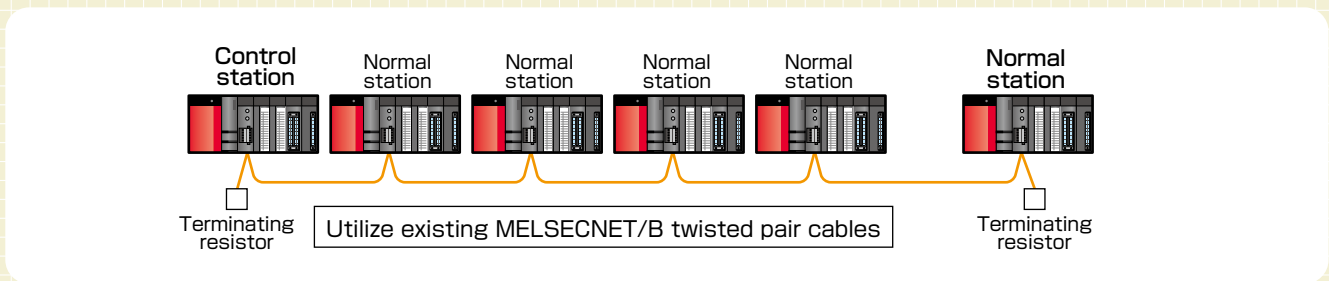
Utilize the existing MELSECNET/B twisted pair cables to build MELSECNET/H network systems.

■ MELSECNET/H network system can be built using twisted pair cables.

Existing MELSECNET/B twisted pair cables are used to build the MELSECNET/H network system when replacing small type A Series modules (MELSECNET/B) 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.



Item		Twisted bus system specification	
Number of stations per network		32 stations (1 control station, 31 normal stations)	
Cable type		Twisted pair cable	CC-Link Ver. 1.10 compatible cable
Overall distance per network		—	—
Communication speed	156 k bps	1200 m	1200 m
	312 k bps	600 m	900 m
	625 k bps	400 m	600 m
	1.25 M bps	200 m	400 m
	2.5 M bps	(N/A)	200 m
	5 M bps		150 m
	10 M bps		100 m

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.

■ Replace A Series MELSECNET(II), MELSECNET/B stations with Q Series systems.

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 of a MELSECNET(II)
configuration incorporating
the Q Series

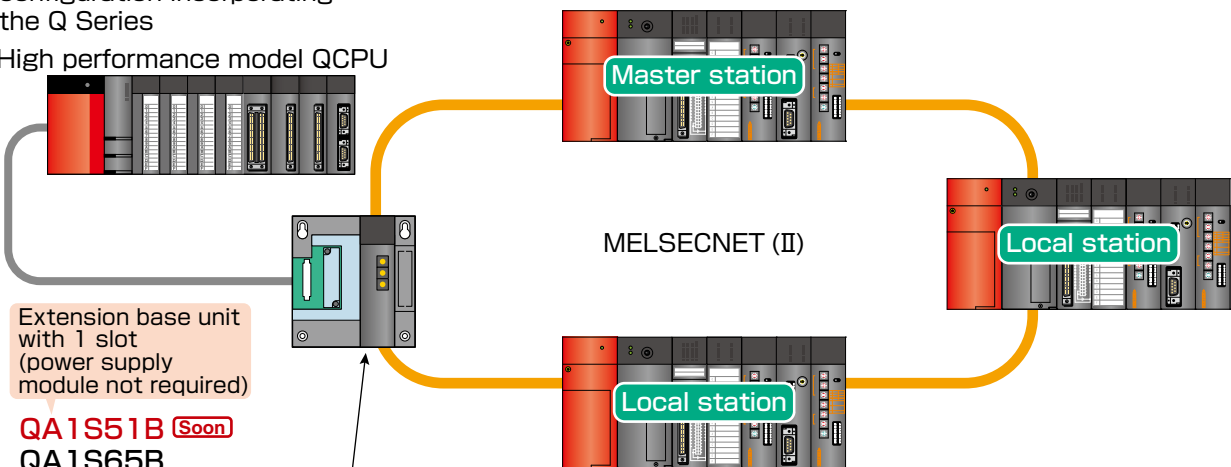
High performance model QCPU



Extension base unit
with 1 slot
(power supply
module not required)

QA1S51B (Soon)
QA1S65B
QA1S68B

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



■ Local station data link module options.

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

- ① Supported CPUs
High Performance Model QCPUs [Q02(H), Q06H, Q12H, and Q25H CPU]
- ② Compatible extension base units
QA1S□B or QA□B with A-A1S module conversion adapter (A1ADP)
- ③ Number of modules per CPU
Send point range can be further increased by mounting up to 6 modules per CPU.
- ④ Network parameters
Minimal setup required, as network parameters settings are automatically detected by the module.
- ⑤ Link 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 the "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.

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Area covered: China

Product List

List of products used for upgrade

Extension base unit

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

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 New	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).

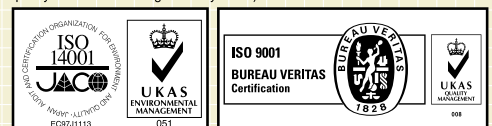
MELSECNET/H twisted bus type network module

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

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Mitsubishi Programmable Controllers

MELSEC-AnS/QnAS Series Transition Guide

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