TECHNICAL BULLETIN

[Title] Discontinuation of production of the positioning module type A1SD70
[Date of Issue] August 2012 (Ver. A: June 2013)
[Relevant Models] A1SD70

Thank you for your continued support of Mitsubishi programmable controllers, MELSEC-AnS series.

Production of the positioning module type A1SD70 (hereafter abbreviated as A1SD70) will be discontinued.

1. Model to be discontinued

Production of the positioning module type A1SD70 will be discontinued.
(For details, refer to "4. Model to be discontinued and replacement model".)

2. Schedule

Order acceptance: August 30, 2013
Discontinuation of production: September 30, 2013

3. Reason for discontinuation

Some parts of the above product are now obsolete. Therefore, we will have difficulty to maintain the production system.

4. Model to be discontinued and replacement model

Model to be discontinued	Replacement model
A1SD70	QD73A1

To replace the discontinued module with the QD73A1, the system needs to be replaced by the MELSEC-Q series system.

5. Delivery date

Please purchase the product ahead of time.
For details of the delivery date, please consult your local Mitsubishi representative.

6. Repair acceptance

Repair acceptance: September 30, 2020 (for seven years after discontinuation of production)

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7. Comparison of the A1SD70 and the QD73A1

(1) Performance specification comparison

Item		A1SD70	QD73A1
Number of occupied I/O points		48 points (I/O assignment: empty 16 points and special 32 points)	48 points (I/O assignment: empty 16 points and intelligent 32 points)
Positioning	Speed command	1 to 400000(pulse/s)	1 to 4000000(pulse/s)
	In-position range	1 to 2047pulse	1 to 20479pulse
Positioning feedback pulse input	Pulse frequency	Open collector: 100kpulse/s TTL: 100kpulse/s Differential output: 100kpulse/s	Open collector: 200kpulse/s TTL: 200kpulse/s Differential output: 1Mpulse/s
OPR control		With OPR address change OPR method and OPR direction depend on the DIP switch setting.	With OPR address change OPR method and OPR direction depend on the parameter setting.
Internal current consumption		5VDC 0.3A	5VDC 0.52A
External supply voltage/current terminal block		+15VDC 0.2A, -15VDC 0.02A	No external power supply
External dimensions		130(H)mm × 69.5(W)mm × 93.6(D)mm	98(H)mm × 55.2(W)mm × 90(D)mm
Weight		0.4kg	0.20kg
Starting time (from a start request to analog output start)		Absolute system: 4.4ms (additional 0.2ms for two-phase trapezoidal positioning) Incremental system: 4.5ms (additional 0.2ms for two-phase trapezoidal positioning) JOG operation: 4.3ms OPR (near-point dog method): 4.4ms OPR (count method): 5.1ms	Absolute system: 1.2ms (same for two-phase trapezoidal positioning) Incremental system: 1.2ms (same for two-phase trapezoidal positioning) JOG operation: 1.2ms OPR (near-point dog method): 1.2ms OPR (count method): 1.2ms
LED		None	RUN
		ERR.1/ERR.2 (Minor/major error)	ERR.
		None	ZERO
		None	GAIN
		SV RDY (Servo READY signal)	None (check with Servo READY signal (X1B)[*1])
		DOG (Near-point dog signal)	None (check with Near-point dog signal (X1C)[*1])
		STOP (Stop signal)	None (check with External stop signal (X1D)[*1])
		FLS (Upper limit signal)	None (check with Upper limit signal (X1E)[*1])
		RLS (Lower limit signal)	None (check with Lower limit signal (X1F)[*1])
		IN-POS. (In-position)	None (check with In-position signal (X16)[*1])
		POLE (Deviation counter polarity)	None (check with the buffer memory of Deviation counter value)
		2^N (Deviation counter value)	
		PC RDY (PLC READY signal)	None (check with PLC READY signal (Y2D)[*1])

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Item		A1SD70	QD73A1
LED	ZERO (OPR request signal)	Adjustment using volumes	None (check with OPR request signal (X12)[*1])
	EEX (Excessive error)		None (check with Excessive error signal (X17)[*1])
	WDT ERR. (Hardware error)		None (check with WDT error, H/W error signal (X10)[*1])
	V-MODE (Operating status)		None (check with Operating status of the speed-position control switch mode (X2D)[*1])
Zero/gain adjustment		Adjustment using volumes	• Adjustment using the UP/DOWN switch • Adjustment using the buffer memory
Mode switch		DIP switch	Intelligent function module switch

*1 This is the device number of when a QD73A1 is mounted to the slots No.0 and No.1 and the empty 16 points is set in the slot No.0.

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(2) Function comparison

○: Usable, ✕: Unusable

Function			A1SD70	QD73A1	Difference
OPR control			○	○	-
Major positioning control	Position control mode	Positioning control	○	○	The buffer memory addresses for positioning data are different.
		Two-phase trapezoidal positioning control	○	○	
	Speed-position control switch mode		○	○	[Buffer memory addresses for positioning data] The buffer memory addresses for positioning data are different. [New speed-position movement amount (buffer memory)] • A1SD70: The value written during speed control is reflected. • QD73A1: The setting is cleared to 0 when the speed-position control switch mode starts. [Stroke limit range] • A1SD70: Stroke limit lower limit to upper limit • QD73A1: 1 to 2147483647
JOG operation			○	○	-
Electronic gear function			○	○	-
Speed limit function			○	○	-
Stroke limit function			○	○	-
Upper limit switch (FLS)/lower limit switch (RLS) function			○	○	-
Current value change function			○	○	[Procedure] • A1SD70: The current value can be changed by writing a new current value in the buffer memory. • QD73A1: The current value can be changed by setting 1 in "Current value change request".
Speed change function			○	○	[Procedure] • A1SD70: Speed can be changed by writing a new speed value in the buffer memory. • QD73A1: Speed can be changed by setting 1 in "Speed change request".
Deviation counter clear function			○	○	-
In-position function			○	○	-
Multiplication setting			○	○	-
Zero/gain adjustment			○	○	[Method] • A1SD70: Switches on the front of the A1SD70 • QD73A1: Switches on the front of the QD73A1 or a sequence program
Module status monitor function			✕	○	-
Error history function			✕	○	-
Module error collection function			✕	○	-
Error clear function			✕	○	-

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Positioning execution time (between BUSY signal (X14) turning on and Positioning complete signal (X15) turning on) of the QD73A1 and A1SD70 may be different because their internal processing methods are different. As a result, the timing when In-position signal (X16) turns on may also vary.

Adjust positioning execution time using the following methods if the difference of the execution time (or the timing when In-position signal (X16) turns on) affects the system.

- Adjusting the QD73A1's positioning parameter "Acceleration time" or "Deceleration time"
- Increasing gain by changing the accumulated pulse amount setting through the QD73A1's zero/gain adjustment

For the differences of the I/O signals and buffer memory, refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.

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8. Precautions for replacing modules

  (1) Mounting a module

   A module that occupies two slots cannot be mounted to a Q series large type base unit.

  (2) I/O assignment setting

   When "Empty 0 point" is set in the first half of the slots of the A1SD70 used, configure one of the following settings so that the I/O assignment setting of the QD73A1 becomes the same as that of the A1SD70.
     1) Set "Empty 0 point" in the first half of the slots.
     2) Set the same start XY address to the second half of the slots as that of the A1SD70 set in the start XY setting.

  (3) Sequence program

   Adding and changing the sequence program is required because some buffer memory areas have been added and the addresses have been changed. Refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.

  (4) Mode setting

   To set the mode, the intelligent function module switch setting on the programming tool is used instead of the DIP switch on the side of the module. Configure the same setting as that of the A1SD70 used. For details, refer to the MELSEC-Q QD73A1 Positioning Module User's Manual.

  (5) LED indication

   I/O signals and buffer memory are used instead of some LEDs to check details in the QD73A1. Attach a lamp that supports the LED indication to the module if necessary so that the ON/OFF status of the corresponding I/O signals and values stored in the buffer memory are displayed using a sequence program. For the differences of the LED indication, refer to 7. (1).

  (6) External wiring

   (a) The connectors of the A1SD70 can be used. Note, however, that the module mounting positions and directions of the connectors are different. Check that there is enough space for wiring.

QD73A1   A1SD70

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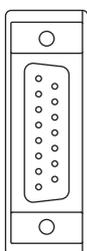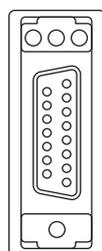
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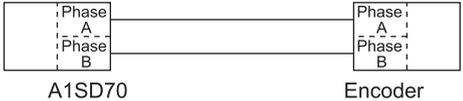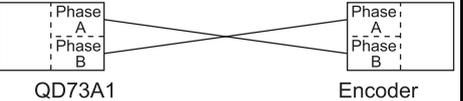**[Relevant Models]** A1SD70

(b) When the A1SD70 being used in the setting that the positive voltage is output when the positioning address increases (slide switch 1 (rotation direction setting): on) is replaced with the QD73A1, the cables between the A1SD70 and an encoder can be used.

When the A1SD70 being used in the setting that the negative voltage is output when the positioning address increases (slide switch 1 (rotation direction setting): off) is replaced with the QD73A1, the wiring change between the A1SD70 and an encoder is required.

When the A1SD70 is replaced with the QD73A1 whose serial number (first five digits) is "15042" or later, the cables between the A1SD70 and the encoder can be used by changing the intelligent function module switch setting.

<Replacement with the QD73A1 whose serial number (first five digits) is "15041" or earlier>
Change the wiring between the A1SD70 and the encoder so that each phase A and B is reversed.

No.	Slide switch 1 of the A1SD70 (rotation direction setting)	Rotation direction of the motor and encoder	Wiring between the A1SD70 and encoder	Wiring when the A1SD70 is replaced to the QD73A1
1	OFF	Same direction	Phase A / Phase B (crossed) — A1SD70 ... Encoder (Phase A / Phase B)	Phase A / Phase B (straight) — QD73A1 ... Encoder (Phase A / Phase B)
2		Reverse direction	Phase A / Phase B (straight) — A1SD70 ... Encoder (Phase A / Phase B)	Phase A / Phase B (crossed) — QD73A1 ... Encoder (Phase A / Phase B)

<Replacement with the QD73A1 whose serial number (first five digits) is "15042" or later>
Set b0 (switch 3) of the intelligent function module switch to 1.

(7) The operation for the QD73A1 while the signal is off was changed from the operation for the A1SD70 due to the safety consideration of when Servo READY signal is turned on.
• QD73A1: Clears the deviation counter to 0, and outputs 0V.
• A1SD70: Counts the feedback pulse, and outputs the voltage proportional to the deviation counter.
The QD73A1 whose serial number (first five digits) is "15042" or later operates the same as the A1SD70 by setting b4 (switch 3) of the intelligent function module switch to 1.

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REVISIONS

Version	Print Date	Revision
-	August 2012	First edition
A	June 2013	Addition of 8. (6) (b) and 8. (7)