MITSUBISHI AS-i Master Module

User's Manual

(Hardware)

QJ71AS92

Thank you for purchasing the Mitsubishi programmable controller MELSEC-Q series.

Prior to use, please read this and relevant manuals thoroughly to fully understand the product.



Mitsubishi Programmable Controller

MODEL	QJ71AS92-U-H						
MODEL	13JT88						
CODE	133100						
IB(NA)-0800225-D(0807)MEE							

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SAFETY PRECAUTIONS •

(Always read these instructions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The instructions given in this manual are concerned with this product only. For the safety instructions of the programmable controller system, please read the user's manual for the CPU module to use.

In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".



Note that the **CAUTION** level may lead to a serious consequence according to the circumstances.

Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

• Do not bunch AS-i cable with the main circuit or power wires, or install them close to each other.

They should be installed 100 mm (3.94 inch) or more from each other.

Not doing so could result in noise that would cause erroneous operation.

[Installation Precautions]

- Use the programmable controller in an environment that meets the general specifications in CPU module User's Manual. Using the programmable controller in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
 Do not touch conductive parts or electronic components of the module with
- Do not touch conductive parts or electronic components of the module with your bare hands.

This could cause malfunction or failure of the module.

- While pressing the lever on the lower part of the module, fully insert the module fixing latch into the hole of the base unit, snap the module into place, and tighten the module fixing screws with the specified torque. Failure to observe this could result in damage to the screws or module, module falling, short or misoperation. If the screws are tightened excessively, it may damage the screws and cause the module to short-circuit, malfunction or fall off.
 Always shut off all phases of the programmable controller power supply and
- Always shut on all phases of the programmable controller power supply and AS-i power supply externally before mounting or removing the module. Failure to shut off all phases could lead to product damage.

[Wiring Precautions]

- Switch off all phases of the programmable controller power supply and AS-i power supply outside the programmable controller before starting installing or wiring work.
 - There is a risk of electric shock or malfunction.

 Always confirm the products terminal layout before wiring to the module. Incorrect wiring could lead to fires or faults. Wiring installation screws to the specified torque. If a wiring installation screws is not tightened to the specified torque, the module may fall out, short circuit, or malfunction. If a wiring installation screws is tightened excessively, exceeding the specified torque, the module may fall out, short circuit, or malfunction due to breakage of the screw or the module. Make sure that no foreign matter such as chips or wire offcuts gets inside the module. It will cause fire, failure, or malfunction. A label is installed at the upper part of a module to prevent the entry of foreign matters. Do not remove the label during wiring. However, be sure to remove it for heat dissipation during system operation. To connect the AS-i cable to the module, the cable must be securely fixed. Please be sure to run it in a duct, or clamp it. Failure to observe this could cause the unstable cable connection, resulting in damage to the cable or module by carelessly pulling the cable, or the system malfunction due to poor cable connection. When removing AS-i cable from a module, do not pull it out by hand. Always be sure to unscrew the module mounting screws in advance. If the cable is pulled while being connected to the module, it could cause damage to the cable or module mounting screws in advance. 	
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Revisions

*The manual number is given on the bottom right of the top cover.

Jul., 2008 IB(NA)-0800225-D Change of a term "PLC" was changed to "programmable controller". Partial correction		nder is given on the bottom right of the top cover.
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"PLC" was changed to "programmable controller". Partial correction Compliance with the EMC and Low Voltage	6 IB(NA)-080022	5-C Partial correction SAFETY PRECAUTIONS, Compliance with the EMC and Low Voltage Directives,
	IB(NA)-080022	"PLC" was changed to "programmable controller".
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About Manual								
The following manual is also related to this product. In necessary, order it by quoting the details in the table below.								
Related Manual								
Manual name Manual No. (Model code)								
AS-i Master Module User's Manual SH-080291É (13JR53)								

Compliance with the EMC and Low Voltage Directives

(1) For programmable controller system

To configure a system meeting the requirements of the EMC and Low Voltage Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on the rating plate of the programmable controller.

(2) For the product

No additional measures are necessary for the compliance of this product with the EMC and Low Voltage Directives.

1. Overview

This manual explains how to handle the AS-i Master module, model number QJ71AS92 (hereinafter referred to as QJ71AS92).

After unpacking the QJ71AS92, confirm that the following products are enclosed.

Туре	Product	Quantity
QJ71AS92	QJ71AS92 type AS-i master module	1
QJT IA392	Connector	1

2. Performance Specifications

The following are the performance specifications of the QJ71AS92.

Item			Specifications					
Max. number of AS-i slaves *1		*1	62 (Group A: 31, Group B: 31)					
Max. number of I/O p	I/O points Input		248 points					
*2 (1 point = 1 bit)	oit) Output		248 points					
Max. address of anal	og I/O	Input	124 points					
points (1 point = 16 b	oits)	Output	124 points					
I/O refresh time			Approx. 5ms (without I/O slave grouping) Approx. 10ms (with I/O slave grouping) Approx. 35ms (per analog slave channel)					
Communication spee	ed		167kbps					
Transmission distanc	e		Max. 100m (max. 300m with two repeaters)					
Connection type			Bus network type (star, line, tree and ring)					
Communication method			APM modulation method (Alternating Pulse Modulation)					
Error control method			Parity check					
Internal memory			EEPROM (for parameter registration), number of writes: 100,000 times					
Number of occupied I/O points		nts	32 points (I/O assignment: 32 intelligent points)					
Cable type			Use dedicated AS-i cable.					
External supply Vol	Voltage		TYP. 30.5VDC (supplied by AS-i power supply)					
power Cu	power Current consumption		46mA (TYP 30.5VDC)					
5VDC internal current consumption		mption	0.40A					
Weight			0.12kg					

*1: This is the max. number of Ver. 2.11-compatible I/O slave stations (can be grouped) configured in the same system. If Ver.2.11-compatible I/O slaves that cannot be grouped, analog slaves, and Ver. 2.04-compatible I/O slaves are used together in the same system, calculate the max. number of slaves using the following expression.

 $\begin{array}{l} \{(N_{IO-A} + N_{IO-B}) + 2 \times (N_A + N_{IO})\} \leq 62 \ (Group \ A \ 31, \ Group \ B \ 31) \\ Number of \ Group \ A \ Ver. \ 2.11 \ compatible \ I/O \ slaves \ : \ N_{IO-A} \\ Number of \ Ver. \ 2.11 \ compatible \ analog \ slaves \ : \ N_A \\ Number of \ Ver. \ 2.04 \ compatible \ I/O \ slaves \ : \ N_{IO} \end{array}$

Slave Type	Grouping
AS-i Ver. 2.11-compatible I/O slave	Please confirm with the manufacturer of the I/O slave unit whether the unit can be grouped.
AS-i Ver. 2.04-compatible I/O slave	Disabled
AS-i Ver. 2.11-compatible analog slave	

*2: One slave uses four inputs and four outputs.

One analog slave also uses four inputs and four outputs.

For the general specifications of the QJ71AS92, refer to the user's manual of the used CPU module.

3. Loading and Installation

The following section explains the precautions when handling the QJ71AS92, from the time they are unpacked until they are installed.

For more details on the module installation, see the user's manual for the programmable controller CPU used.

3.1 Handling

- (1) Do not drop the module case and connector or subject it to heavy impact since it is made of resin.
- (2) Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the module.

Failure to do so may cause a failure or malfunctions of the module.

(3) Tighten the screws such as module fixing screws within the following ranges.

Screw location	Tightening torque range
Module fixing screw (normally not required) (M3 screw) *1	0.36 to 0.48 N•m
Communication connector installation screw	0.40 to 0.50 N•m
Communication connector wiring installation screw	0.50 to 0.60 N•m

*1 The module can be easily fixed onto the base unit using the hook at the top of the module.

However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibration.

3.2 Installation Environment

Refer to user's manual of the CPU module used.

4. Name and Setting of the Parts

Following is an explanation of the QJ71AS92 part names and settings.



No.	Name	Details															
		Shows the error code or slave address of the QJ71AS92.															
		Number Alphab								et							
		0	1	2	3	;	4	5	6	7	8	9	р	g	d		
1)	"CODE" LED		 			7 1		5	6	ר ו	8	9		9			
		Turned on/off to indirate the energy is statute of the Oliv									<u></u>						
			Turned on/off to indicate the operating statuses of the QJ71A								AS92	<u>.</u>					
		LED name			COIC	ונ	l it	who	n tha			-		oratir			
		RUN	I		gree	en	Or	n = N f = H	ormal	opera ire er	ation		ally operating. d or power not				
		U AS	SI		gree		Or Of	when n = Po f = Po	AS-i ower i ower i	powe s sup s not	plied supp	from lied fr	AS-i I om A		IS.		
2)	LED display	СМ			yello	w	con Or	ifigura ר = Co be	eing st	mode iratior ored.	n moo	le or l	ed in parameters				
		ERR	red		Off = Protected operation mode Lit when an error occurs. On = Alarm detected. Example) Slave address alarm, parameter error and so forth. Off = Alarm not detected.												
		PRG	6 EN/	۹.	yello	w	fun Or	ction า = R	autor is rea eady. ot rea	dy.	slave	addre	ess as	signr	nent		
		SEF	RR.		red				ure us	-							
		When	the	slav	e ado	dres	s 0 1	to 31	are d	isplav	ved or	ר "CO	DE", 1	the sl	ave		
		When the slave address 0 to 31 are displayed on "CODE", th types are also displayed.															
3)	"A" LED	A LE	ED	ΒL	ED						criptio						
-,					Off Off Off AS-i Ver. 2.04-compatible I slave, Ver. 2.11 non-group				•								
			On		Off												
		On Off AS-i Ver. 2.11-compatible Group A Off On AS-i Ver. 2.11-compatible Group B															
4)	"B" LED	On		On				uture		πραι		noup		Sidve	,		
		Lload to obcase between the protected exercises made and															
5)	MODE switch	Used to change between the protected operation mode and configuration mode.															
6)	SET switch	Used to set the address to the slave or set parameters to the QJ71AS92.															
7)	Connector	Connected to the AS-i system using the AS-i cable. (Refer to Section 5.2)															

5. Wiring

5.1 Precautions against wiring

Precautions of external wiring of QJ71AS92 are explained below.

(1) The overall distance is up to 100m.

The distance can be increased 100m by use of one repeater.

Since up to two repeaters can be used in series, the overall distance can be increased up to 300m.

(2) Do not bunch AS-i cable with the main circuit or power wires, or install them close to each other.

They should be installed 100 mm (3.94 inch) or more from each other.

Not doing so could result in noise that would cause erroneous operation.

5.2 Wiring

This clause explains wiring to the connector of QJ71AS92.

Be sure connect the QJ71AS92 to the AS-i system with the AS-i cable.

An example of wiring to the QJ71AS92 is shown below.

(Confirm each module being used for the AS-i power supply and slave terminal layout.) Strip the AS-i cable about 7mm and plug it to the connector.



*1: The ASI+ and ASI- terminals are connected within the module, respectively. *2: Earth the FG terminal to the protective ground conductor.



Unit: mm (inch)

Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

▲For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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