

MITSUBISHI

AS-i Master Module

User's Manual
(Hardware)

A1SJ71AS92

Thank you for buying the Mitsubishi general-purpose programmable controller MELSEC-A Series

Prior to use, please read both this manual and detailed manual thoroughly and familiarize yourself with the product.



MODEL	A1SJ71AS92-U-H-JE
MODEL CODE	13JQ99
IB(NA)-0800122-C(1009)MEE	

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

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

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the programmable controller system safety precautions.

In this manual, the safety precautions are classified into two levels: "⚠WARNING" and "⚠CAUTION".

⚠WARNING Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.

⚠CAUTION Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under "⚠CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety.

Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[DESIGN PRECAUTIONS]

⚠CAUTION

- Do not bundle AS-i cable together with main circuit or power lines, or lay them close to these lines.
As a guide, separate these lines by a distance of at least 100 mm, otherwise malfunctions may occur due to noise.

[INSTALLATION PRECAUTIONS]

⚠CAUTION

- Use the programmable controller in an environment that conforms to the general specifications in CPU module user's manual.
Using the programmable controller in the environments outside the ranges stated in the general specifications will cause electric shock, fire, malfunction, or damage to/deterioration of the product.
- Do not touch conductive parts or electronic components of the module with your bare hands.
This could cause malfunction or failure of the module

[INSTALLATION PRECAUTIONS]

CAUTION

- Insert the module fixing projection into the fixing hole in the base unit and then tighten the module mounting screw within the specified torque. Then tighten the module mounting screw to the specified torque. Incorrect installation with no screws could result in malfunction, failure or fall of the module. Tightening the screw excessively may cause fall, short circuit, or malfunction of the module due to damage of the screw or the module.
- Always shut off 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]

WARNING

- 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 install the terminal covers enclosed with the product before turning ON the power or operating the product after installation or wiring. Failure to install the terminal cover could lead to electric shocks.

CAUTION

- Always confirm the products terminal layout before wiring to the module. Incorrect wiring could lead to fires or faults.
- Tighten terminal screws to the specified torque.
If a terminal screw is not tightened to the specified torque, the module may fall out, short circuit, or malfunction. If a terminal screw 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.
- AS-i cables connected to a module must always be run in a duct or held securely using clamps.
If a cable is not run in a duct or not held securely using clamps, the cable will sag, move, or be pulled by mistake, which will cause damage to the module and the cable and also malfunctioning due to loose connection of the cable.
- When removing the AS-i cable from a module, do not pull it out by the cable. A cable loosen the screws that hold the cable onto the module then remove the cable.
If the cable is pulled while it is connected to the module, the module and/or the cable will be damaged and may malfunction due to loose connection of the cable.

[WIRING PRECAUTIONS]

CAUTION

- Use applicable solderless terminals and tighten them within the specified torque range. If any spade solderless terminal is used, it may be disconnected when the terminal screw comes loose, resulting in failure.

● CONDITIONS OF USE FOR THE PRODUCT ●

- (1) Mitsubishi programmable controller ("the PRODUCT") shall be used in conditions;
- i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and
 - ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

- (2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries.

MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above, restrictions Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTS are required. For details, please contact the Mitsubishi representative in your region.

Revisions

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

Print Date	*Manual Number	Revision
Apr., 2000	IB(NA)-0800122-A	First edition
Jun., 2004	IB(NA)-0800122-B	<div style="border: 1px solid black; display: inline-block; padding: 2px;">Partial correction</div> SAFETY PRECAUTIONS, Section 3.1, Chapter 5
Sep., 2010	IB(NA)-0800122-C	"PLC" was changed to "programmable controller". <div style="border: 1px solid black; display: inline-block; padding: 2px;">Partial correction</div> SAFETY PRECAUTIONS, Correspondence to EMC Directives and Low-Voltage Directives, Chapter 3, 4, 6 <div style="border: 1px solid black; display: inline-block; padding: 2px;">Addition</div> CONDITIONS OF USE FOR THE PRODUCT

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About the Manuals

The following product manuals are available. Please use this table as a reference to request the appropriate manual as necessary.

Detailed Manual

Manual name	Manual No. (Model code)
AS-i Master Module User's Manual type A1SJ71AS92	SH-080085 (13JR15)

Correspondence to EMC Directives and Low-Voltage Directives

When incorporating the Mitsubishi programmable controller into other industrial machinery or equipment and keeping compliance with the EMC and low voltage directives, refer to Chapter 3 "EMC Directive and Low Voltage Instruction" of the User's Manual (Hardware) for the CPU module used or the programmable controller CPU supplied with the base unit.

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

For making this product compliant with the EMC and low voltage directives, please refer to Chapter 3 of CPU module User's Manual (Hardware).

1. Overview

This manual explains the specifications and names of each parts, etc., of the A1SJ71AS92 model AS-i master module (abbreviated as A1SJ71AS92) which are used with AS-i system.

- 1) The use, cable used and installation position of the A1SJ71AS92 are indicated on the following chart.

Use	Application
The master of AS-i system	Main base, Extension base I/O slot

- 2) Please verify the existence of the following parts after opening the package.

a) In the case of A1SJ71LP21

Product name	Quantity
AS-i Master Module A1SJ71AS92	1

- 3) Application CPU

A1SJCPU-S3, A1SCPU, A2SCPU, A1SJHCPU, A1SHCPU, A2SHCPU, A2USCPU(S1), A2USHCPU-S1, Q2ASCPU(S1), Q2ASHCPU(S1), Q02CPU-A, Q02HCPU-A and Q06HCPU-A

2. Performance Specification

The A1SJ71AS92 performance specifications are shown below.

Item	Specification
Number of AS-i systems	Two systems
Maximum number of AS-i slaves	62 (31 × 2 systems)
Maximum number of AS-i system input/output points	Input 248 points (124 points × 2 systems)
	Output 248 points (124 points × 2 systems)
Input/output refresh time	Approx. 5ms (when maximum number of input/output points are connected)
Communication speed	167kbps
Transmission distance	Maximum 100m(328.1 ft.)/system (Maximum 300m (984.3 ft.) when two repeaters are used)
Connection type	Bus network type, independent for each system.(Star, line, tree or ring)
Communication method	APM modulation method (Alternating Pulse Modulation)
Error control method	Parity check
Internal memory	Flash ROM (for registering slave configuration) Number or writes: 10000 times or less
Number of occupied input/output points	32 points (I/O assignment: special 32 points)
Applicable wire	Use AS-i cables
Applicable crimp terminal	R2-3.5, RAV 2-3.5, RAP 2-3.5, RBV 2-3.5, RBP 2-3.5 (JIS C2805 compliant)
External power supply	Voltage 30.5VDC (supplied independently to each system from AS-i power supply)
	Current consumption 70mA/system (TYP 30.5VDC)
5VDC internal current consumption	0.15A
Weight	0.30kg

For general specifications of the A1SJ71AS92, refer to the users manual for the CPU module that is to be used.

3. Handling

[INSTALLATION PRECAUTIONS]

CAUTION

- Use the programmable controller in an environment that conforms to the general specifications in CPU module user's manual.
Using the programmable controller in the environments outside the ranges stated in the general specifications will cause electric shock, fire, malfunction, or damage to/deterioration of the product.
- Do not touch conductive parts or electronic components of the module with your bare hands.
This could cause malfunction or failure of the module
- Insert the module fixing latch on the bottom of the module into the fixing hole of the base unit securely, and use the module fixing hole as the supporting point to install the module. Then tighten the module mounting screw to the specified torque. Incorrect installation with no screws could result in malfunction, failure or fall of the module. Tightening the screw excessively may cause fall, short circuit, or malfunction of the module due to damage of the screw or the module.
- Always shut off 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.

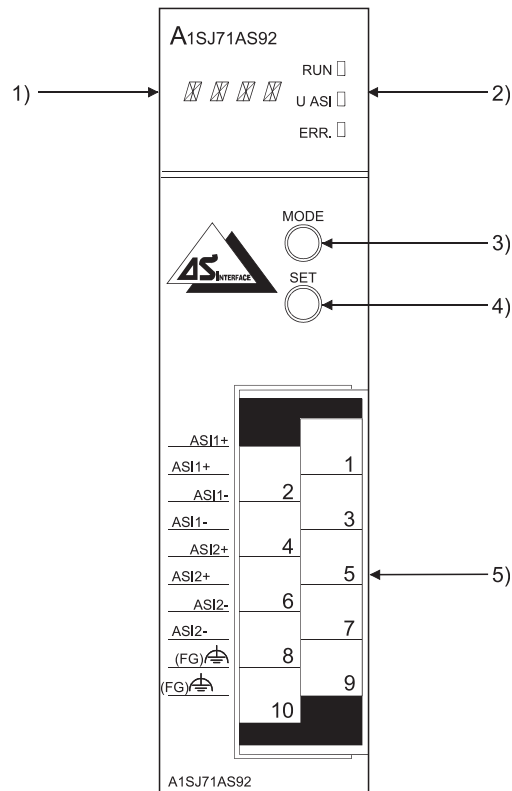
3.1 Precautions for handling

- 1) The main modules case is made of plastic, so do not drop it or subject it to strong impacts.
- 2) Do not dismount the printed wiring board from the case. It may damage the module.
- 3) Tighten the module mounting screws, terminal block installation screws and terminal block terminal screws within the following range.

Screw position	Tightening torque range
Module mounting screw (M4)	78 to 118N•cm
Terminal block installation screw	35.3 to 48N•cm
Terminal block terminal screw	60.8 to 82.3N•cm

4. Part Identification Nomenclature

Indicates the name of each part of A1SJ71AS92.



No.	Name	Details
1)	17-segment LED	The operation status of the A1SJ71AS92 is displayed as a value.
2)	LED display	The operation status of the A1SJ71AS92 is shown by turning ON or OFF.
3)	MODE switch	This switch is used to change between the protected operation mode and configuration mode.
		RUN This turns ON when the A1SJ71AS92 is running normally.
		U ASI The AS-i circuit is sufficiently powered. This LED refers to the AS-i line shown on digit 1.
		ERR. Configuration error. This LED refers to the AS-i line shown on digit 1.
4)	SET switch	This switch is used to set or delete the slave address.
5)	Terminal block	This is connected to the AS-i system with an AS-i cable.

5. Wiring

WARNING

- 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 install the terminal covers enclosed with the product before turning ON the power or operating the product after installation or wiring. Failure to install the terminal cover could lead to electric shocks.

CAUTION

- Always confirm the products terminal layout before wiring to the module. Incorrect wiring could lead to fires or faults.
- Tighten terminal screws to the specified torque.
If a terminal screw is not tightened to the specified torque, the module may fall out, short circuit, or malfunction.
If a terminal screw 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.
- AS-i cables connected to a module must always be run in a duct or held securely using clamps.
If a cable is not run in a duct or not held securely using clamps, the cable will sag, move, or be pulled by mistake, which will cause damage to the module and the cable and also malfunctioning due to loose connection of the cable.
- Do not bundle AS-i cable together with main circuit or power lines, or lay them close to these lines.
As a guide, separate these lines by a distance of at least 100 mm, otherwise malfunctions may occur due to noise.
- When removing the AS-i cable from a module, do not pull it out by the cable. A cable loosen the screws that hold the cable onto the module then remove the cable.
If the cable is pulled while it is connected to the module, the module and/or the cable will be damaged and may malfunction due to loose connection of the cable.

5.1 Precautions for Wiring

1) The overall distance is up to 100m.

When using a repeater, the distance can be extended by 100m(328.1ft.) per repeater.

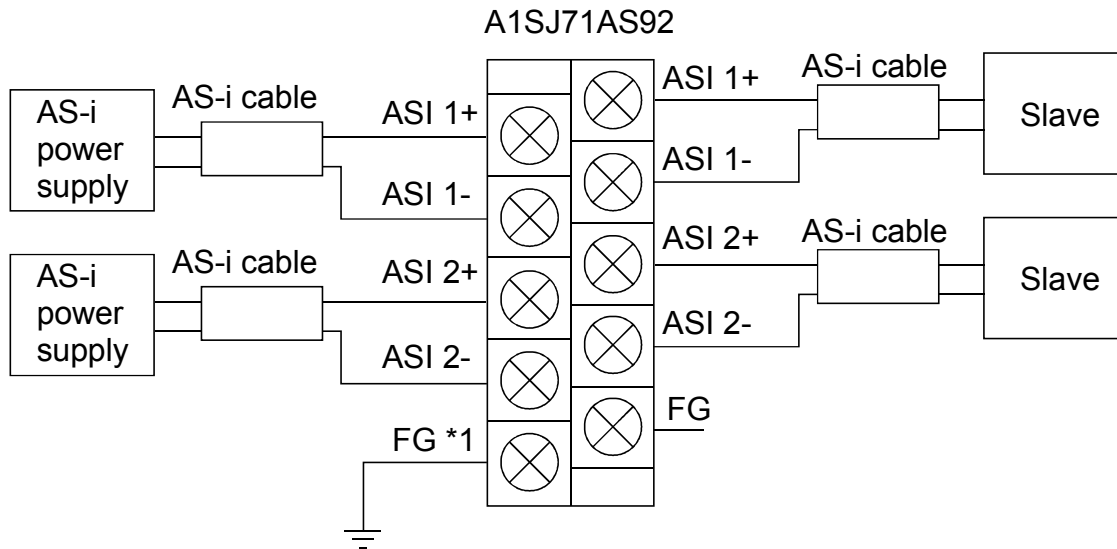
Up to two repeaters can be used, so the maximum overall distance is 300m(984.3ft.).

5.2 Wiring

Use an AS-i cable to connect the A1SJ71AS92 to the AS-i system.

An example of wiring to the A1SJ71AS92 is shown below.

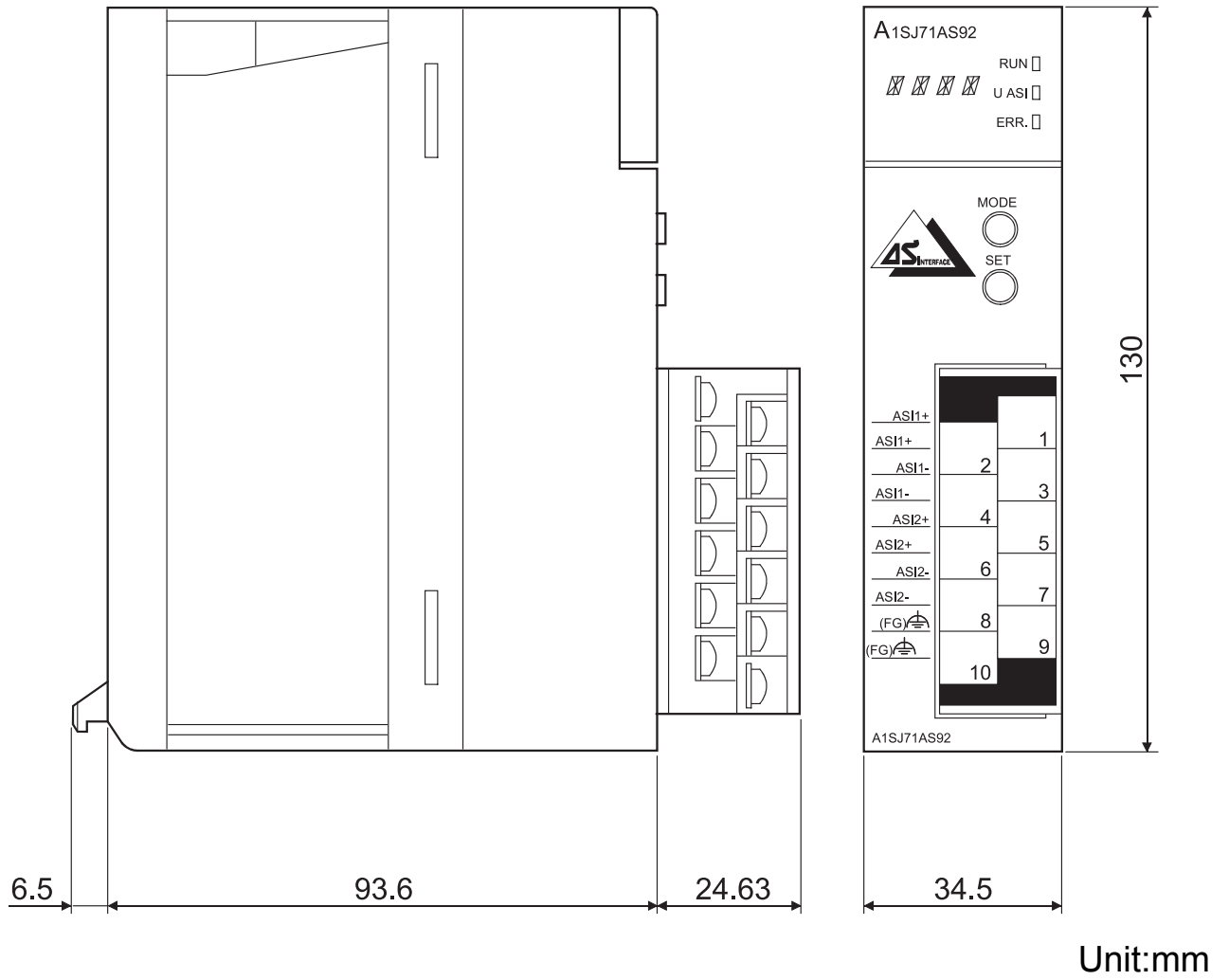
(Confirm each module being used for the AS-i power supply and slave terminal layout.)



*1: When the noise environment is bad, the terminal FG is grounded.

6. Outline Dimension Drawings

6.1 A1SJ71AS92



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.

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Specifications subject to change without notice.