

# MITSUBISHI

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# AS-i Master Module

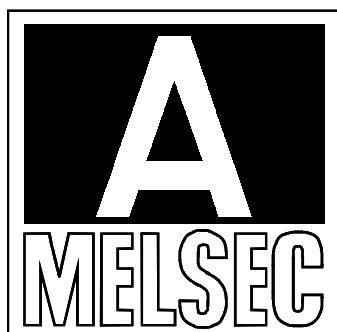
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User's Manual  
(Hardware)

## A1SJ71AS92

Thank you for buying the Mitsubishi general-purpose programmable logic 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-B(0406)MEE	

# ● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual. Also pay careful attention to safety and handle the module properly.

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

These ● SAFETY PRECAUTIONS ● classify the safety precautions into two categories: "DANGER" and "CAUTION".




**DANGER**

Procedures which may lead to a dangerous condition and cause death or serious injury, if not carried out properly.



**CAUTION**

Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by  **CAUTION** may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

## [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 PLC in an environment that conforms to the general specifications in CPU module user's manual.  
Using the PLC 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 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 fixing 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 PLC 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]

### DANGER

- Switch off all phases of the PLC power supply and AS-i power supply outside the PLC before starting installing or wiring work.  
If all phases are not switched off, there will be a danger of electric shock or damage to the product.
- 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.

## Revisions

\* The manual number is noted at the lower left of the back cover.

Print Date	*Manual Number	Revision
Apr.,2000	IB(NA)-0800122-A	First edition
Jun., 2004	IB(NA)-0800122-B	Partial correction SAFETY PRECAUTIONS, Section 3.1, Chapter 5

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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

For instructions to make the PLC compatible with EMC standards, refer to Chapter 3 "EMC AND LOW-VOLTAGE DIRECTIVE" in PLC CPU User's Manual (Hardware).

\* If Chapter 3 "EMC AND LOW-VOLTAGE DIRECTIVE" is not provided in the User's Manual (Hardware Section) of the CPU module in use, refer to the Main QnA Series CPU Compatible High-speed Accessing Basic Base Unit Additional Explanation for the Product Conforming to EMC Standards (IB-66837) (optional).

## 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 PLC in an environment that conforms to the general specifications in CPU module user's manual.  
Using the PLC 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
- Install so that the pegs on the bottom of the module fit securely into the base unit peg holes.  
The module fixing screws must be tighten by the specified torque.  
Not installing the module correctly or tightening the screws to the terminal base could result in erroneous operation, damage, or pieces of the product falling.
- Always shut off all phases of the PLC 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.

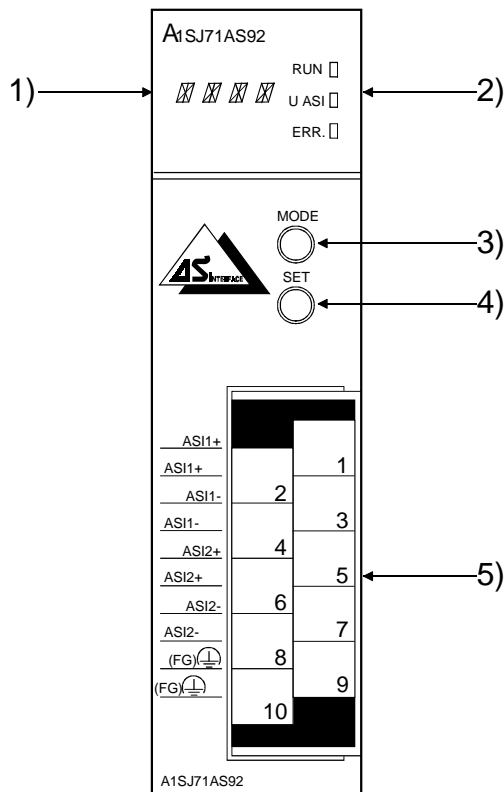
#### 3.1 Precautions for handling

- 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 fixing screws, terminal block installation screws and terminal block terminal screws within the following range.

Screw position	Tightening torque range
Module fixing 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

### DANGER

- Switch off all phases of the PLC power supply and AS-i power supply outside the PLC before starting installing or wiring work.  
If all phases are not switched off, there will be a danger of electric shock or damage to the product.
- 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.

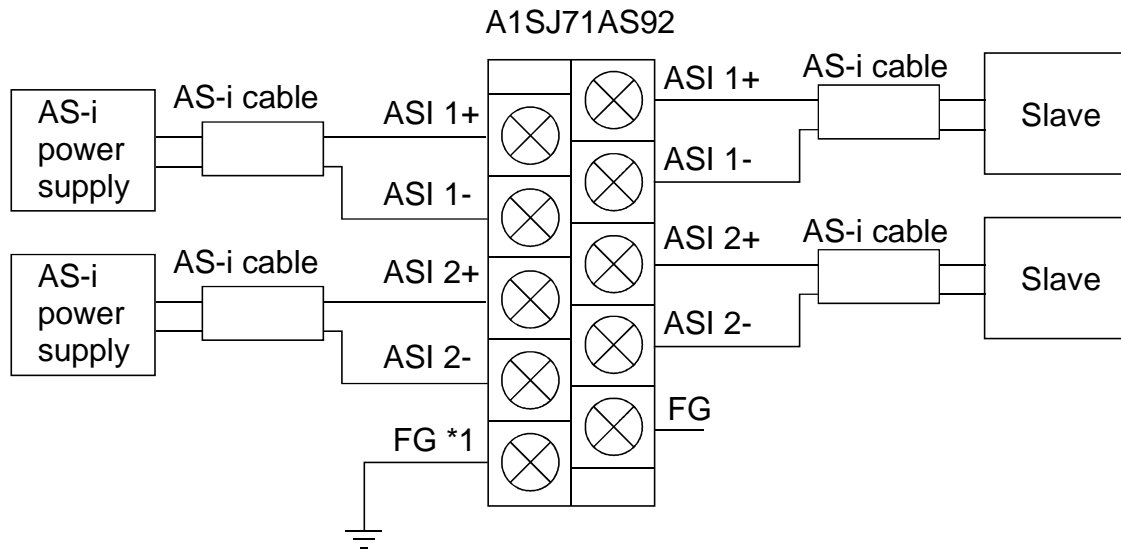
Up to two repeaters can be used, so the maximum overall distance is 300m(984.3ft.).

## 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.

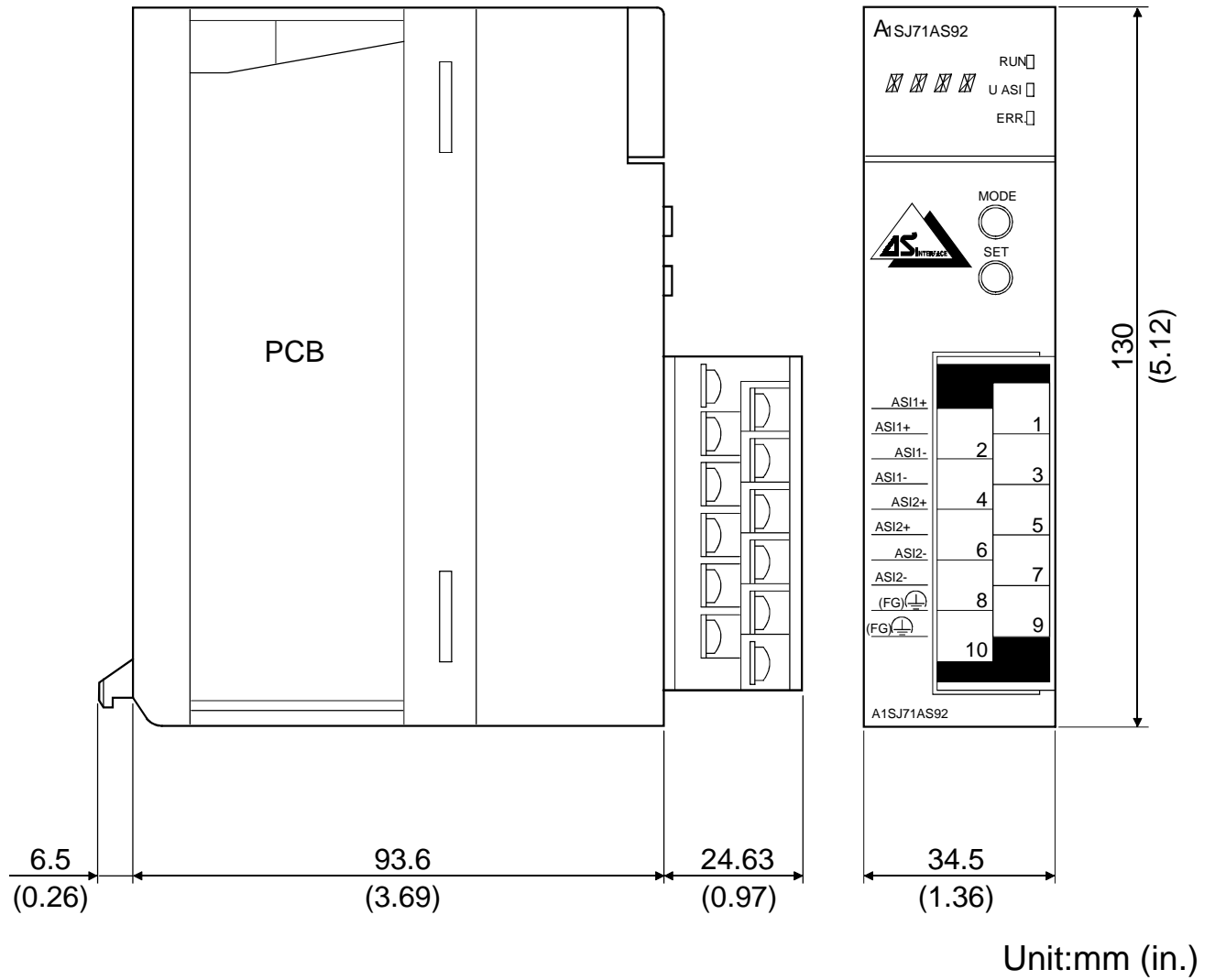
(Confirm each module being used for the AS-i power supply and slave terminal layout.)



\*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.

### 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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