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-D(1112)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]

⚠ WARNING

- If a communication error occurs in the AS-i system, the input will turn OFF from the slave having the communication error.
  Output to the slave with communication error will be held or cleared depending on the slave specifications.
  The AS-i system communication error can be confirmed with the buffer memory's List of Active Slaves (LAS) (15 to 16H, 75 to 76H) and with the input signal Config OK (X4, X9).
  Using the above information, configure an interlock circuit on the sequence program so that the system activates safely.
  There is a risk of accidents caused by incorrect outputs or incorrect operations.
- Depending on the unit fault, the input/output could enter the ON state or OFF state.
  Provide a circuit for external monitoring for input/output signals that could lead to major accidents.

⚠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
- 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.

[WIRING PRECAUTIONS]

⚠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. ● 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	Partial correction SAFETY PRECAUTIONS, Section 3.1, Chapter 5
Sep., 2010	IB(NA)-0800122-C	"PLC" was changed to "programmable controller". Partial correction SAFETY PRECAUTIONS, Correspondence to EMC Directives and Low-Voltage Directives, Chapter 3, 4, 6 Addition CONDITIONS OF USE FOR THE PRODUCT
Dec., 2011	IB(NA)-0800122-D	Addition SAFETY PRECAUTIONS (Chinese)

CONTENTS

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)

COMPLIANCE WITH EMC AND LOW VOLTAGE DIRECTIVES

(1) Method of ensuring compliance

To ensure that Mitsubishi programmable controllers maintain EMC and Low Voltage Directives when incorporated into other machinery or equipment, certain measures may be necessary. Please refer to one of the following manuals.

- User's manual for the CPU module used
- User's manual (hardware) for the CPU module or base unit used

The CE mark on the side of the programmable controller indicates compliance with EMC and Low Voltage Directives.

(2) Additional measures

To ensure that this product maintains EMC and Low Voltage Directives, please refer to one of the manuals listed under (1).

1. Overview

This manual explains the specifications and names of each parts, etc., of the A1SJ71AS92 model AS-i master module (abberviated 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

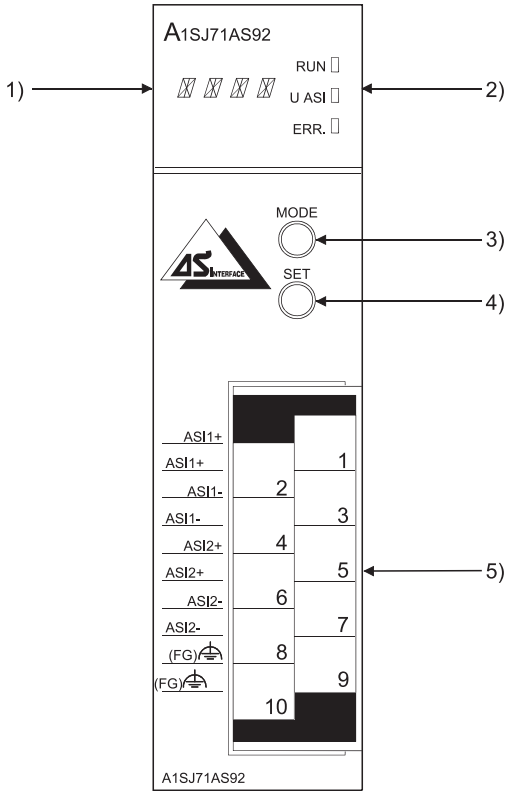
3.1 Precautions for handling

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.	

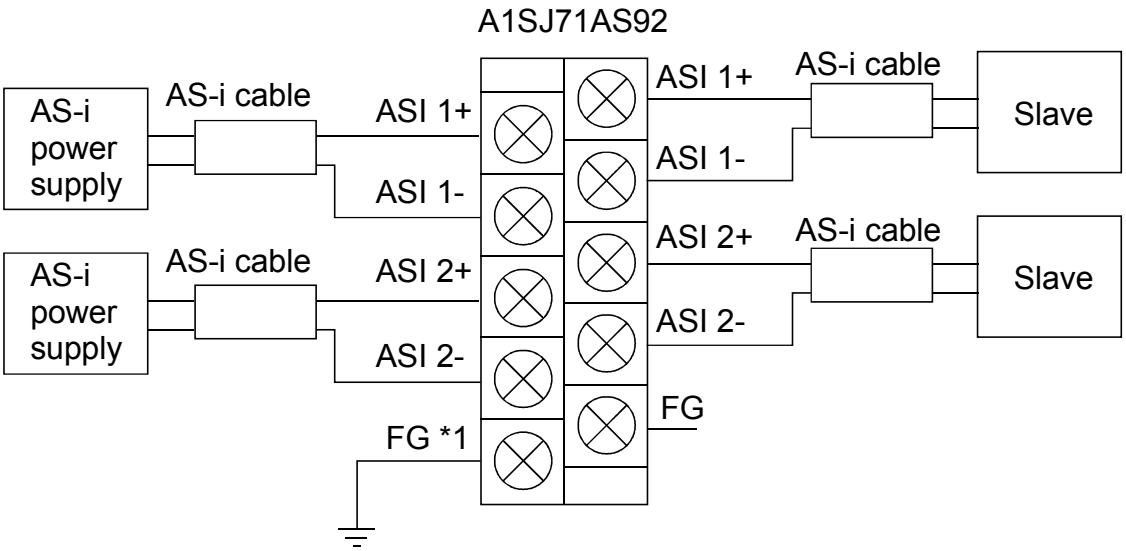
5. Wiring

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

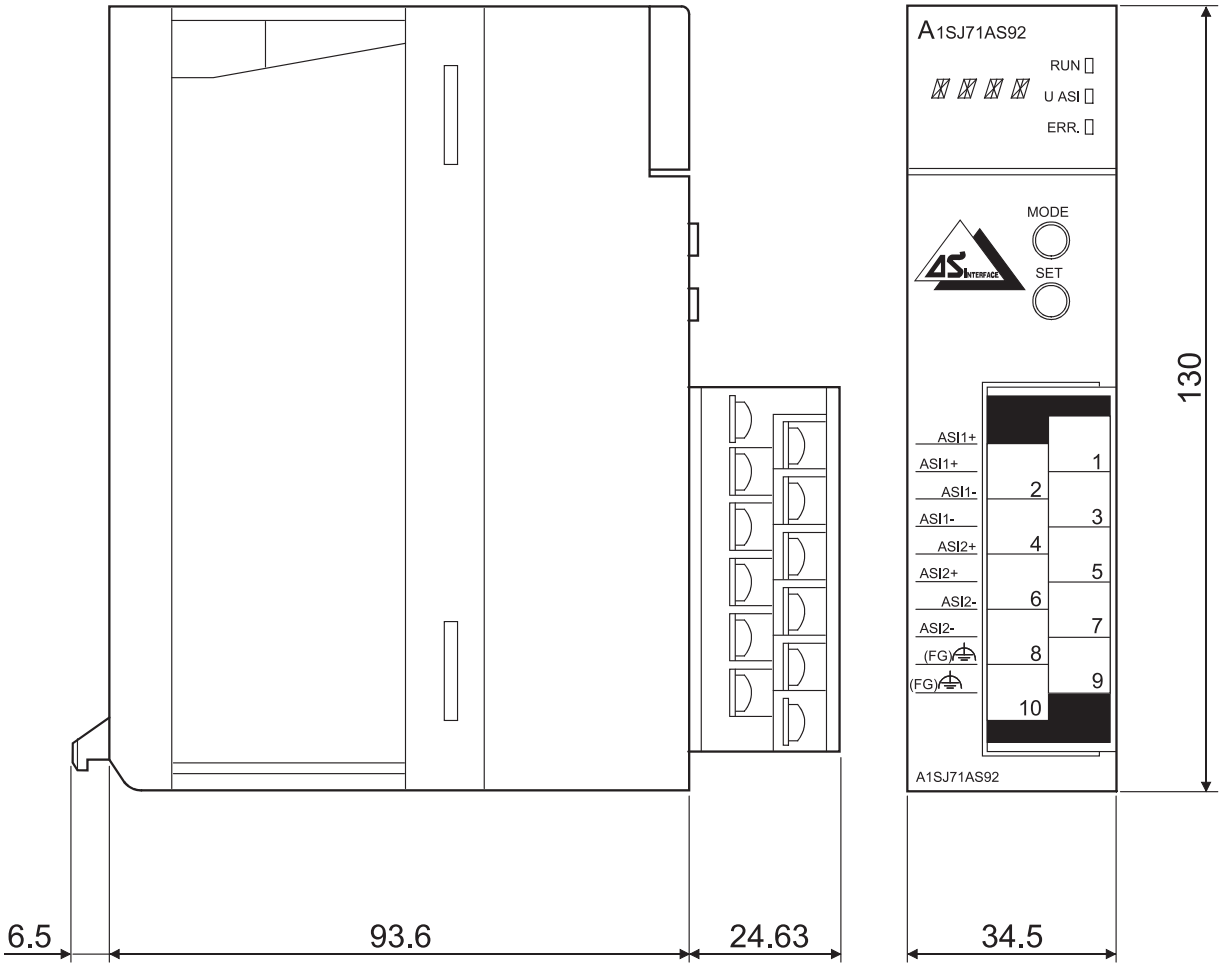
Use an AS-i cable to connect the A1SJ71AS92 to the AS-i system.
An example of wiring to the A1SJ71AS92 is shown below.
(Confirm each module being used for the AS-i power supply and slave terminal layout.)



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

6. Outline Dimension Drawings

6.1 A1SJ71AS92



Unit:mm

MEMO

MEMO

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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