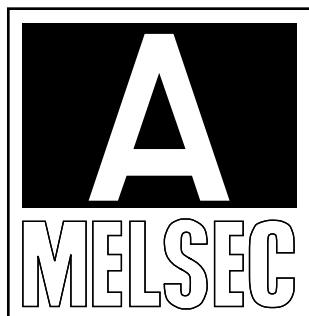
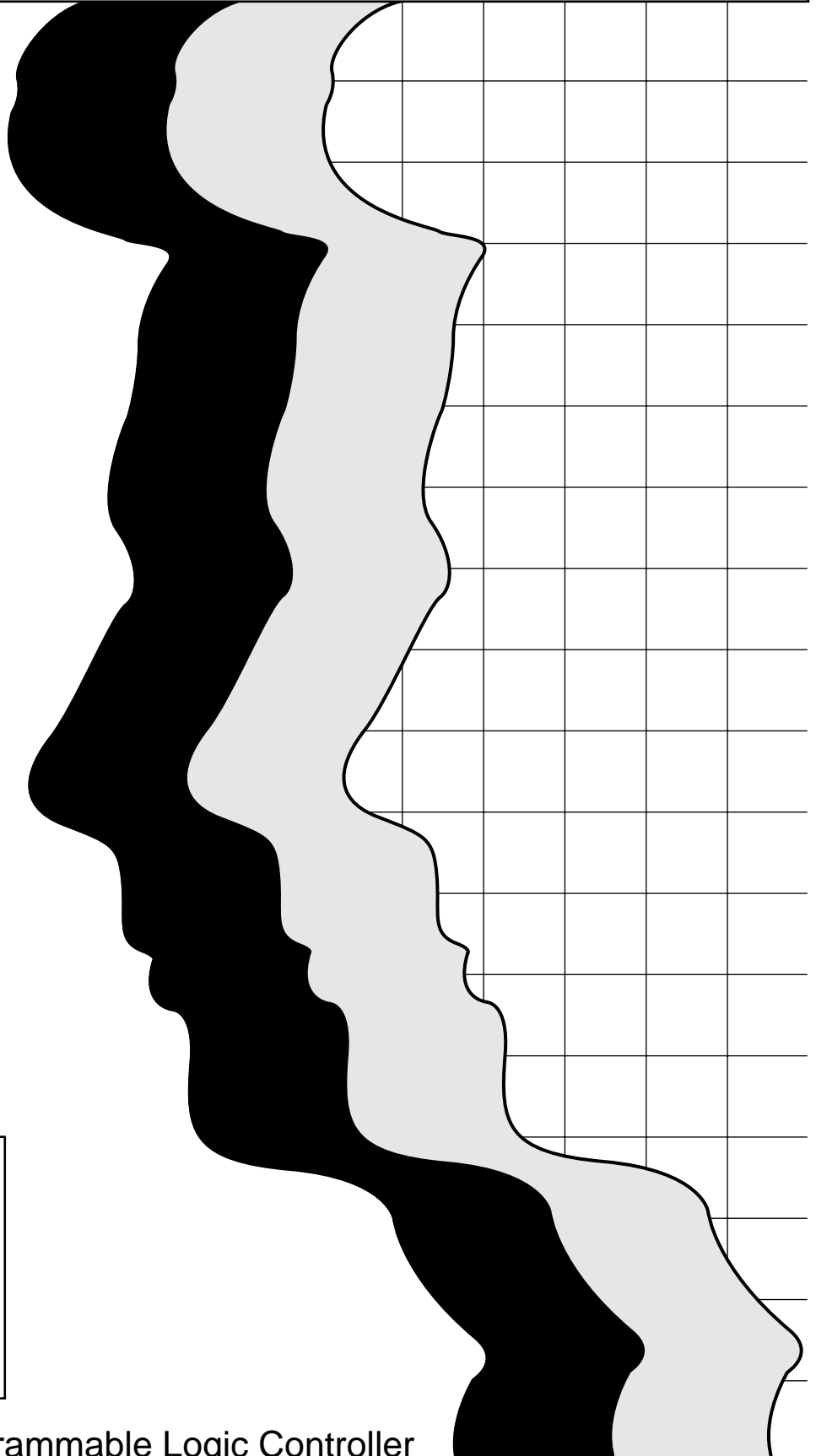


MITSUBISHI

MELSEC-I/O Link Remote I/O System Master Module
type AJ51T64/A1SJ51T64

User's Manual



Mitsubishi Programmable Logic Controller



● 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]

 DANGER
<ul style="list-style-type: none">• Provide safety circuits external to the PC that ensure that the system as a whole will continue to operate safely even in the event of an external power supply fault or PC failure. Failure to provide such circuits may lead to accidents caused by erroneous outputs or malfunction.<ol style="list-style-type: none">(1) Configure emergency stop circuits, protective circuits, interlock circuits for opposing operations such as forward/reverse, and interlock circuits to prevent damage to the machine - such as those for upper and lower positioning limits - external to the PC.(2) If the PC detects either of the following error statuses it stops operation and turns all outputs OFF:<ul style="list-style-type: none">• Actuation of the power supply module's overcurrent protection device or overvoltage protection device• Error detected by the self-diagnosis function at the PC CPU, such as a watchdog timer error.

 **DANGER**

In addition, faults in the output control section of output modules, which cannot be detected by the PC CPU, may cause all outputs to go ON.

A failsafe circuit must therefore be configured external to the PC to ensure that the machinery will operate safely. For examples of failsafe circuits, refer to the User's Manual for the CPU module.

(3) Failures of output module relays and transistors may lead to outputs going ON or OFF. Provide external circuits to monitor output signals whose failure could result in serious accidents.

- When a data link communication error occurs, the status shown below will be established at the faulty station. In order to ensure that the system operates safely at such times, configure an interlock circuit in the sequence program. Failure to provide such a circuit may lead to accidents caused by erroneous outputs or malfunction.

(1) All inputs from remote I/O stations go OFF

(2) All outputs from remote I/O stations go OFF

 **CAUTION**

- Do not bundle control lines or communication wires together with main circuit or power lines, or lay them close to these lines.

As a guide, separate the lines by a distance of at least 100 mm, otherwise malfunctions may occur due to noise.

[INSTALLATION PRECAUTIONS]

 **CAUTION**

- Use the PC in an environment that conforms to the general specifications in the manual. Using the PC in environments outside the ranges stated in the general specifications will cause electric shock, fire, malfunction, or damage to/deterioration of the product.
- When using an A1SJ51T64 master module, make sure that the module fixing projection on the base of the module is properly engaged in the fixing hole in the base unit before mounting the module, and then tighten the module mounting screws to the stipulated torque. Failure to mount or secure the module properly could result in malfunction, failure, or in the module falling. When using an AJ51T64 master module, make sure that the module fixing projection on the base of the module is properly engaged in the fixing hole in the base unit before mounting the module. Failure to mount the module properly could result in malfunction, failure, or in the module falling.
- Secure remote I/O modules properly on a DIN rail or with mounting screws. If a module is not secured properly, it could fall.
- Tighten screws to within the stipulated torque range. Loose screws could cause falling of the module, short circuits, and malfunction. Overtightening could damage the screws or module, and cause falling of the module, short circuits, and malfunction.

[WIRING PRECAUTIONS]

DANGER

- Switch off all phases of the power supply externally before starting installation or wiring work. Failure to do so could result in electrical shocks and equipment damage.
- After installation and wiring is completed, be sure to attach the terminal cover provided before switching the power ON and starting operation. Failure to do so could result in electrical shock.

CAUTION

- Be sure that the communication cable connected to the module is kept in a duct or fixed with cramps.
Failure to do so may cause a damage to the module or cables due to dangling, shifting or inadvertent handling of cables, or misoperation because of bad cable contacts.
- You must ground the FG terminal to a ground exclusive to the PC.
- Carry out wiring to the PC correctly, checking the rated voltage and terminal arrangement of the product.
Using a power supply that does not conform to the rated voltage, or carrying out wiring incorrectly, will cause fire or failure.
- Tighten the terminal screws to the stipulated torque.
Loose screws will cause short circuits, fire, or malfunctions.
Overtightening could damage the screws or module, and cause falling of the module, short circuits, and malfunction.
- Do not grab on the cable when removing the communication cable connected to the module.
When removing the cable with a connector, hold the connector on the side that is connected to the module.
Pulling the cable that is still connected to the module may cause a damage to the module or cable, or misoperation due to bad cable contacts.
- Tighten screws to within the stipulated torque range. Loose screws could cause falling of the module, short circuits, and malfunction. Overtightening could damage the screws or module, and cause falling of the module, short circuits, and malfunction.

[STARTING AND MAINTENANCE PRECAUTIONS]

DANGER

- Do not touch terminals while the power is ON.
This will cause malfunctions.
- Switch off all phases of the power supply externally before starting cleaning or re-tightening the terminal screws. Carrying out this work while the power is ON will cause failure or malfunction of the module. Loose screws could cause short circuits, fire, and malfunction. Overtightening could damage the screws or module, and cause falling of the module, short circuits, and malfunction.

 **CAUTION**

- Read the manual thoroughly and confirm safety before connecting a peripheral device to the CPU during operation and performing an online operation (particularly program change, forced output, or operation status change). Misoperation could damage the machine and cause accidents.
- Do not disassemble or modify any module.
This will cause failure, malfunction, injuries, or fire.
- Switch the power OFF before mounting or removing the module.
Mounting or removing it with the power ON can cause failure or malfunction of the module.

[DISPOSAL PRECAUTIONS]

 **CAUTION**

- When disposing of this product, handle it as industrial waste.

REVISIONS

* The manual number is given on the bottom left of the back cover.

Print Date	*Manual Number	Revision
Aug., 1995	IB (NA) 66574-A	First edition
Jun., 1996	IB (NA) 66574-B	Model name added on release of AJ51T64. Addition to module specifications on release of AJ55TB[][]-16[][] Partial addition Section 5.1
Aug., 1997	IB (NA) 66574-C	Partial correction SAFETY PRECAUTIONS, Section 2.1, 3.4, 4.2.1, 4.2.2, 8.1, 8.9
Nov., 1998	IB (NA) 66574-D	Partial correction SAFETY PRECAUTIONS, Section 2.1, 5.1, 5.2, 5.3

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Purpose Programmable Controllers. Please read this manual carefully so that the equipment is used to its optimum. A copy of this manual should be forwarded to the end User.

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1. GENERAL DESCRIPTION

This user's manual describes the specifications, connection, and programming of the AJ51T64/A1SJ51T64 MELSEC-I/O LINK Remote I/O System Master Module (hereafter called the "master module").

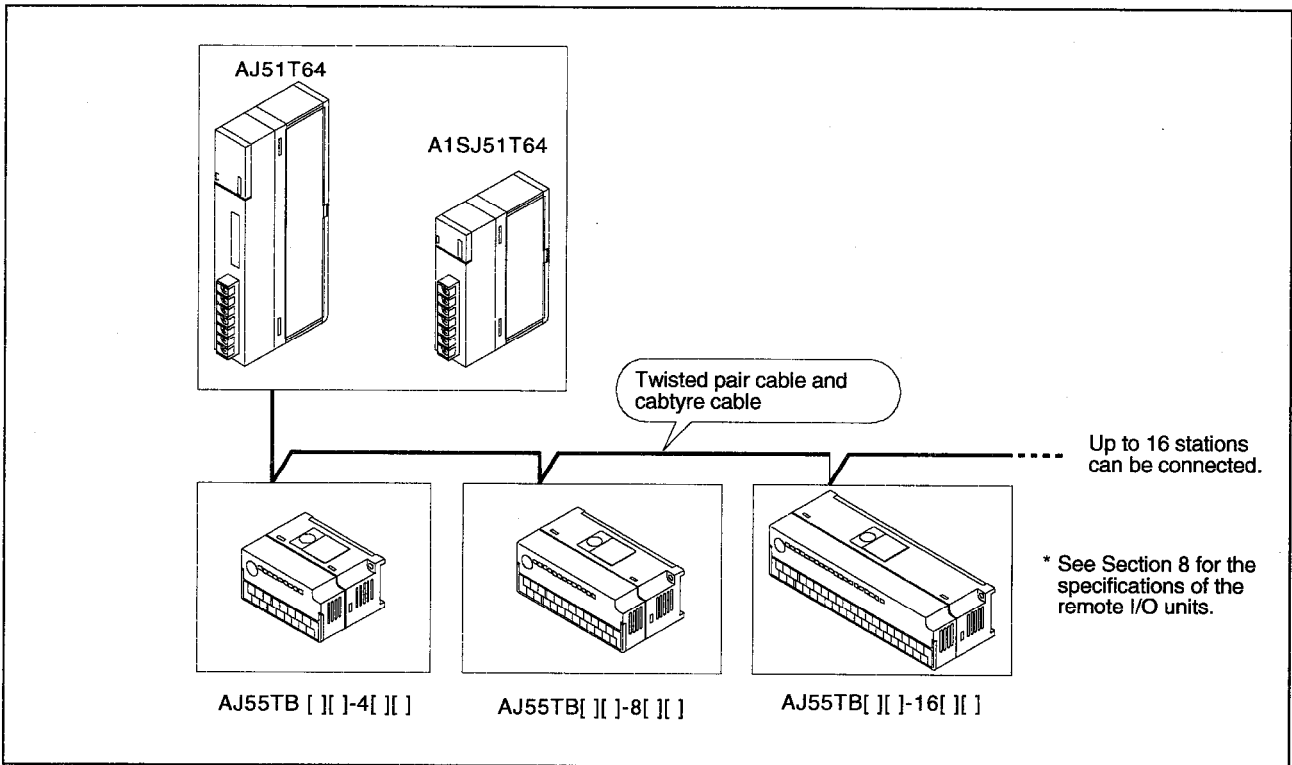
1.1 Features

MELSEC-I/O LINK is an easily programmable remote I/O system which has simple wiring and does not require troublesome parameter settings.

- (1) Up to 128 I/O points can be controlled
When used with an 8-point/16-point I/O unit (AJ55TB32-8[][], AJ55TB32-16[][]), a single master module can control a maximum of 128 points (input: 64 points, output: 64 points).
- (2) Flexible connection
Bus connection allows T-junctions and makes terminal resistors unnecessary, so connection is flexible.
- (3) Prevention of communication system malfunctions
Bus connection prevents the entire system from going down simply because one station is down.
- (4) Programming is simple.
Programming is possible using X/Y devices only.

2. SYSTEM CONFIGURATION

2.1 System Configuration



(1) Applicable CPUs

The master modules can be used with the following PC CPUs (including PC CPUs with link functions).

(a) When using AJ51T64:

- | | | |
|----------------|-----------------|-------------------|
| • A0J2CPU | • A0J2HCPU | • A1CPU |
| • A2CPU(S1) | • A3CPU | • A1NCPUC |
| • A2NCPUC(S1) | • A3NCPUC | • A3MCPUC |
| • A3HCPU | • A2ACPU(S1) | • A3ACPU |
| • A2UCPU(S1) | • A3UCPU | • A4UCPU |
| • A73CPU(S3) | • A81CPU | • A52GCPUC(T21B)* |
| • A1SCPU(S1)* | • A1SCPUC24-R2* | • A1SJCPU(S3)* |
| • A2SCPU(S1)* | • A1SHCPU | • A1SJHCPU |
| • A2SHCPU(S1) | • A2ASCPU-S1* | |
| • Q2ACPU(S1) | • Q3ACPU | • Q4ACPU |
| • Q2ASCPU(S1)* | • Q2ASHCPU(S1)* | |

* When using the AJ51T64 in combination with one of the PC CPUs marked with an asterisk, mount it on a type A5 []B or A6 []B extension base unit.

(b) When using A1SJ51T64:

- | | | |
|------------------|----------------|----------------|
| • A1SCPU(S1) | • A1SCPUC24-R2 | • A1SJCPU(S3) |
| • A2SCPU(S1) | • A1SHCPU | • A1SJHCPU |
| • A2SHCPU(S1) | • A2ASCPU(S1) | |
| • A52GCPUC(T21B) | • Q2ASCPU(S1) | • Q2ASHCPU(S1) |

- (2) Number of modules that can be loaded
Any number of modules that does not exceed the number of I/O points of the applicable CPU can be used.
- (3) Loading slot
The master module can be loaded into any slot of the base unit except in the following cases.
Note that the power capacity may become insufficient if the module is loaded onto an extension base unit without a power supply module (A1S52B(S1), A1S55B(S1), or A1S58B(S1)).
If loading the master module on an extension base unit that does not have a power supply module, select a power supply module, a main base unit, an extension base unit, and extension cable, by considering the following points.
 - 1) Current capacity of the main base unit
 - 2) Voltage drop in the main base unit
 - 3) Voltage drop in the extension base unit
 - 4) Voltage drop in the extension cable
- (4) Data link system
The master module can be loaded at any master, local, or remote I/O stations in data link system.
- (5) Network system
The master module can be mounted at any control, normal, master, or remote I/O station in the network system.

REMARK

For details on calculating the number of I/O units that can be loaded and the voltage drop, refer to the user's manual for the PC CPU to be used.

2.2 Notes on Configuring a System

With an I/O link, consider the following points when designing the system in order to prevent erroneous inputs to the remote I/O units.

(1) Measures against erroneous input when the power is turned ON or OFF

(a) When turning on the power

Recommendation 1: Switch ON both the power supply to the remote I/O unit and the external power supply to the master module before switching ON the power supply to the PC CPU.

Recommendation 2: Simultaneously switch on the power supplies of the remote I/O unit and the master module and the power supply to the PC CPU.

(b) When turning off the power supply

Recommendation 1: Switch off the power supply to the PC CPU before switching off both the power supply to the remote I/O unit and the external power supply to the master module.

Recommendation 2: Simultaneously switch off the power supply to the remote I/O unit, the power supply to the PC CPU, and the external power supply to the master module.

(2) Measures against erroneous input due to momentary power interruption

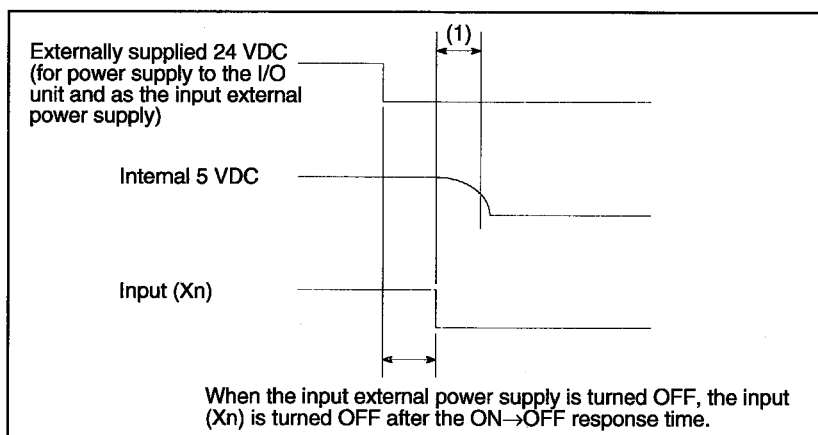
Erroneous input may occur if the power to a remote I/O unit is momentarily interrupted.

(a) Cause

The hardware of the remote I/O units internally converts the 24 VDC power supply for the I/O unit into 5 V DC before use. If a momentary power interruption occurs at a remote I/O unit, the following condition applies:

(Time lapse until the internal 5 VDC of the remote I/O unit is turned OFF) < (ON→OFF response time of the I/O unit).

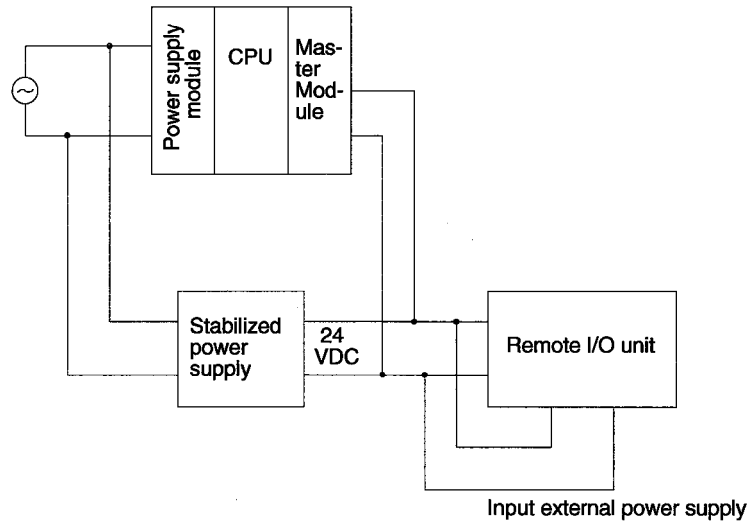
This will cause erroneous input if an I/O refresh occurs during period (1) as shown in the chart below.



2. SYSTEM CONFIGURATION

MELSEC-A

- (b) Measures against erroneous input
Connect the power supply module and the stabilized power supply to the same power supply.



3. SPECIFICATIONS

MELSEC-A

3. SPECIFICATIONS

This section gives the general specifications and performance specifications.

3.1 General Specifications

Table 3.1 gives the general specifications of A-series programmable controllers.

Table 3.1 General Specifications

Item	Specifications				
Operating ambient temperature	0 to 55°C				
Storage ambient temperature	-20 to 75°C				
Operating ambient humidity	10 to 90 %RH, no dewing				
Storage ambient humidity	10 to 90 %RH, no dewing				
Vibration resistance	Conforms to *2 JIS C 0911	Frequency	Acceleration	Amplitude	Sweep Count
		10 to 57 Hz	—	0.075 mm (0.003 in.)	10 times *1(1 octave/minute)
		57 to 150 Hz	9.8 m/s ² (1 g)	—	
Shock resistance	Conforms to JIS C 0912 (15 g x 3 times in 3 directions) *2				
Noise durability	By noise simulator at 1500 Vpp noise voltage, 1 μs noise width and 25 to 60 Hz noise frequency				
Withstanding voltage	1500 VAC for 1 minute across AC external terminals and ground 500 VAC for 1 minute across DC external terminals and ground				
Insulation resistance	5 MΩ or greater measured with 500 VDC insulation resistance tester across AC external terminals and ground				
Grounding	Class 3 grounding. If proper grounding impossible, connect the grounding wire to the panel.				
Operating atmosphere	Free of corrosive gases. Dust should be minimal.				
Cooling method	Self-cooling				

REMARKS

*1 One octave means a change from the initial frequency to double or half frequency.
For example, all of the following are changes of one octave: 10 Hz to 20 Hz, 20 Hz to 40 Hz, 40 Hz to 20 Hz, and 20 Hz to 10 Hz.

*2 JIS stands for Japan Industrial Standards.

3. SPECIFICATIONS

3.2 Performance Specifications

The Performance specifications of the MELSEC-I/O LINK (Master Module) are listed below.

Table 3.2 Performance Specifications

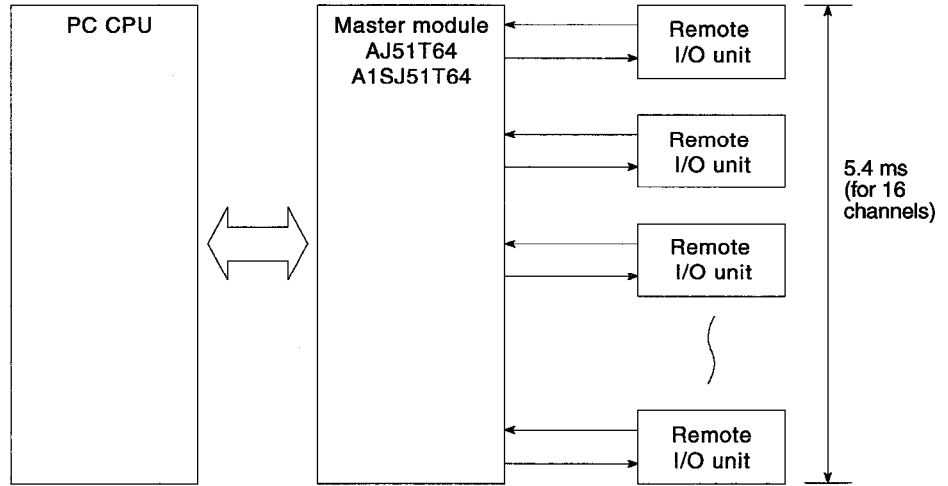
Items	Specifications	
	AJ51T64	A1SJ51T64
Max. number of control I/O points	128 points (if the same numbers are used for X and Y.)	
I/O refresh time	Approx. 5.4 ms (regardless of the number of points)	
Communication cable	0.75 mm ² or larger twisted pair cable 0.75 mm ² or larger cabtyre cable	
Communication specifications	Communication speed	38400 bps
	Communication method	Register insertion method
	Synchronization method	Combination of frame synchronization and bit synchronization methods
	Error control system	Parity check
	Transmission channel	Bus (T-junctions possible, terminal resistors unnecessary)
	Transmission distance	Overall distance: 200 m (656 ft.)
	Max. number of remote I/O units connectable as stations	16 stations per master module
Error (RUN) indication/output	Indication by LEDs The PC CPU detects errors as "blown fuse". External output with RUN A/RUN B	
Number of occupied I/O points	64 points (I/O allocation: 64 output points)*	
External power supply voltage	21.6 to 27.6 VDC (for the transmission channel)	
External power supply current consumption	90 mA (TYP 24 VDC)	
Internal current consumption (5 VDC)	115 mA	115 mA
Weight (kg)[lb]	0.35 [0.77]	0.3 [0.66]

* If only a few remote I/O units are used, perform I/O allocation with a peripheral device to decrease the number of occupied I/O points to 16, 32, or 48.

For details on the noise durability, dielectric withstand voltage, insulation resistance, etc., of a PC system that uses the AJ51T64/A1SJ51T64, refer to the power supply module specifications in the CPU module User's Manual.

REMARK

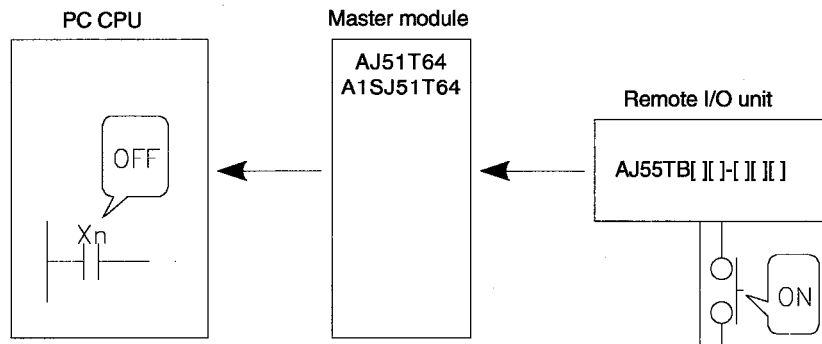
The following is a schematic illustration explaining the system of communication. The illustration shows that the PC CPU and master module always communicate to each other the I/O data received from and to be sent to the 16 stations.



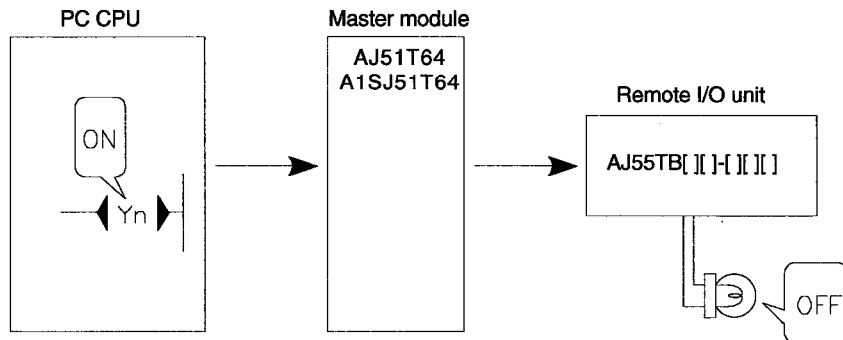
3.3 Handling of I/O Data of Faulty Stations

All I/O data of a remote I/O unit that has become a faulty station due to a disconnection or other problem is "OFF".

[Input]



[Output]



3. SPECIFICATIONS

3.4 Cable Specifications

This section gives the specifications of the twisted pair cables and the cabtyre cables.

(1) Cable specifications

Table 3.3 shows the specifications of the twisted pair cables and cabtyre cables.

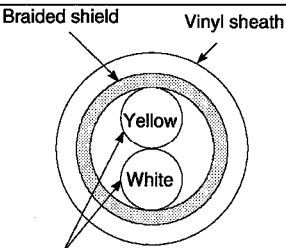
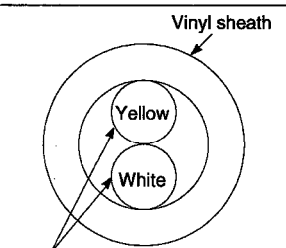
Table 3.3 Cable Specifications

Item	Specifications	
	Shielded twisted pair cable	Cabtyre cable
Cable type	Shielded twisted pair cable	Cabtyre cable
Logarithm	0.75 mm ² x 1P	0.75 mm ² x 2C
Conductor resistance (20 °C)	29 Ω/km or less	
Electrostatic capacity (1 kHz)	75 nF/km or less	—
Characteristic impedance (100 kHz)	100 Ω on the average	—
Insulation resistance	500 MΩ/km or greater	
Withstanding voltage	500 VDC/minute or greater	
Outside dimensions	φ8.5 mm or smaller	φ9 mm or smaller

(2) Recommended cables

This section gives the model names, specifications, and manufacturers of the recommended cables.

Table 3.4 Recommended Cables

Item	Specifications	
	KNPEV-SB 0.75SQ x 1P	KNEV-SB 0.75SQ x 2C
Cable type	Shielded twisted pair cable	Unshielded cabtyre cable
Logarithm	0.75 mm ² x 1P	0.75 mm ² x 2C
Conductor resistance (20 °C)	26.3 Ω/km or less	
Electrostatic capacity (1 kHz)	60 nF/km or less	—
Characteristic impedance (100 kHz)	90 Ω on average	—
Insulation resistance	10,000 MΩ/km or greater	
Withstanding voltage	1000 VAC	
Cross-section	 <p>Pair of 0.75 mm² PE insulated conductors</p>	 <p>Two cores: 0.75 mm² PE insulated conductors</p>
External dimensions	φ7.5 mm or less	φ7 mm or less

3. SPECIFICATIONS

MELSEC-A

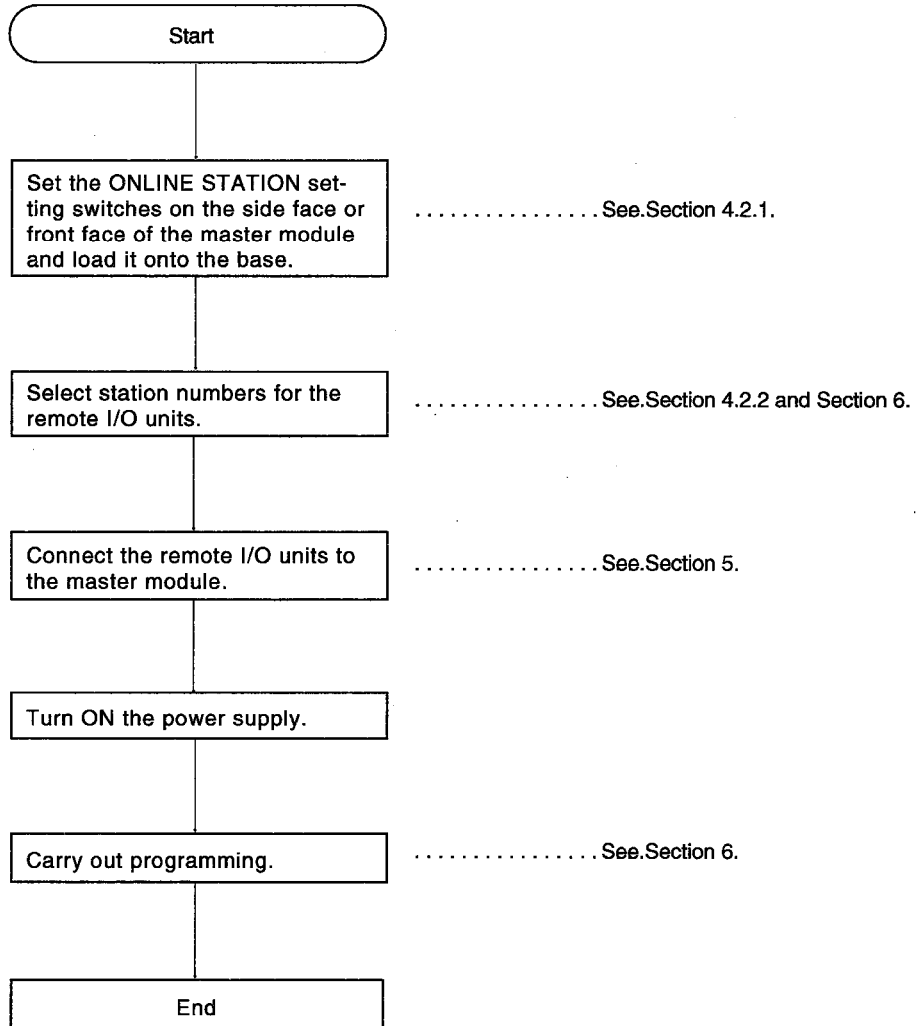
The following are the other recommended cables and their manufacturers.

Model	Type
SPEV(SB)-0.75-1P	Shielded twisted pair (1P)
KMPEV-SB CWS-178 0.75SQ x 1P	Shielded twisted pair (1P)
2PNCT 0.75SQ x 2C	Two-core cabtyre
DPEV SB 0.75 x 1P	Shielded twisted pair (1P)
VCT 0.75 x 2C	Two-core cabtyre
D-KPEV-SB 0.75 x 1P	Shielded twisted pair (1P)
IPEV-SB 1P x 0.75	Shielded twisted pair (1P)

4. PRE-OPERATION SETTINGS AND PROCEDURES

4.1 Pre-Operation Procedures

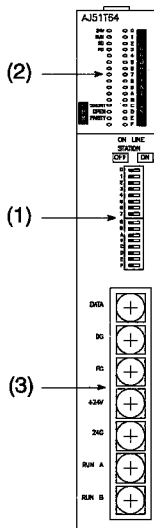
The following flowchart shows the pre-operation settings and procedures.



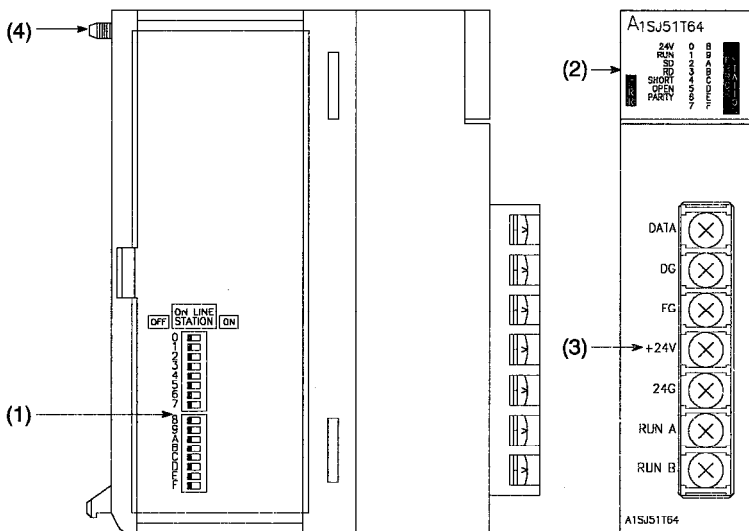
4.2 Nomenclature and Settings

4.2.1 Master module

(1) AJ51T64



(2) A1SJ51T64



4. PRE-OPERATION SETTINGS AND PROCEDURES

MELSEC-A

No.	Name and Appearance	Description			
(1)	<p>ON LINE STATION</p>	<p>Select station numbers for the connected remote I/O units. (Factory setting: all ON) "0" to "F" in the drawing to the left represent the 16 station numbers.</p> <p>ON : Communication performed (with error check) OFF: Communication not performed (no error check)</p> <p>* To prevent communication errors, turn OFF the station number switches for the unconnected station numbers.</p>			
(2)	<p>LED</p>	Name	LED status	Description	
		24 V	ON	External power supply voltage (24 VDC) is normal.	
			OFF	External power supply voltage (24 VDC) is insufficient.	
		RUN *1	ON	All data received from the remote I/O units activated with the ONLINE STATION switches is normal.	
			OFF	Abnormal data has been received from a remote I/O station ("SHORT", "OPEN", or "PARITY" error has occurred). Meanwhile, communication is continued with normal stations.	
		SD	ON	Data is being transferred	
		RD *2	ON	Data is being received.	
		ERR.	SHORT	ON	Short between DATA and DG.
			OPEN	ON	Disconnection in transmission line, faulty remote I/O station, or power (24 VDC) OFF.
			PARITY	ON	Abnormal data has been received from a remote I/O station.
ERROR STATION	0 to F	ON	Indicates the station number of the remote I/O unit with which communication is not possible		

*1: The RUN "OFF" status can also be confirmed with "Blown Fuse (M9000, D9000, and D9100 to 9107)" at the PC CPU.

M9000, RUN status (blown fuse detected)

(SM60)*

D9000, First I/O No. of master module (module No. with blown fuse)

(SD60)*

D9100 to 9107, Module No. with blown fuse (details)

(SD1300 to SD1307)*

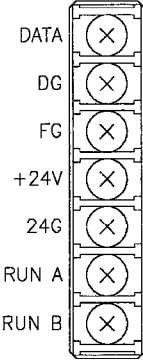
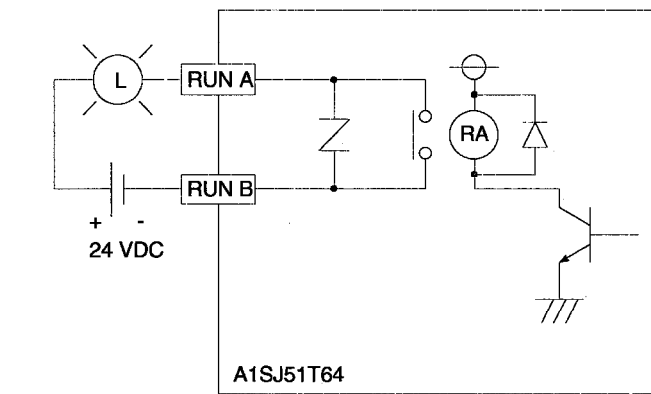
* : Special relays/special registers when using QnACPU

Note: This does not enable identification of remote I/O modules that are down.

*2: The brightness of RD differs according to the number of connected stations. (The fewer the stations, the dimmer it is.)

4. PRE-OPERATION SETTINGS AND PROCEDURES

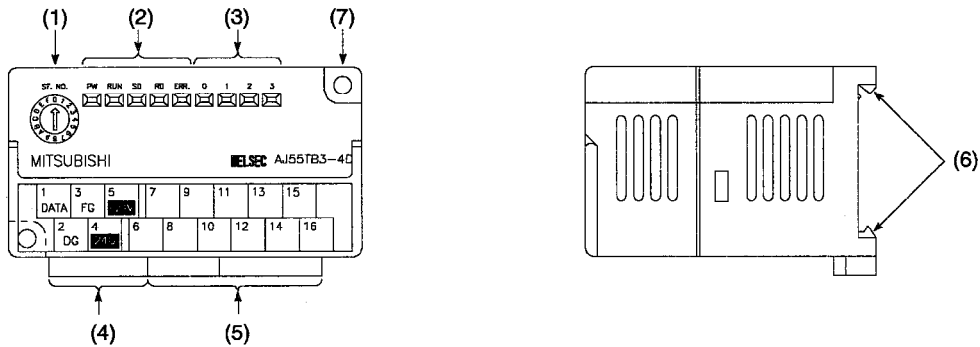
MELSEC-A

No.	Name and Appearance	Description													
(3)	Terminal block	For connecting signals, a power supply, and RUN output to the module. (Size: M4, clamp torque: 100 to 137 N·cm (10 to 14 kg·cm) [8.8 to 12.32 lb·inches])													
		<table border="1"> <thead> <tr> <th data-bbox="510 324 646 358">Name</th> <th data-bbox="654 324 1149 358">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="510 358 646 392">DATA</td> <td data-bbox="654 358 1149 392">Data</td> </tr> <tr> <td data-bbox="510 392 646 425">DG</td> <td data-bbox="654 392 1149 425">Data ground</td> </tr> <tr> <td data-bbox="510 425 646 459">FG</td> <td data-bbox="654 425 1149 459">Frame ground</td> </tr> <tr> <td data-bbox="510 459 646 526">+24 V</td> <td data-bbox="654 459 1149 526">Power supply for 24 VDC transmission (positive)</td> </tr> <tr> <td data-bbox="510 526 646 593">24 G</td> <td data-bbox="654 526 1149 593">Power supply for 24 VDC transmission (negative)</td> </tr> </tbody> </table>	Name	Description	DATA	Data	DG	Data ground	FG	Frame ground	+24 V	Power supply for 24 VDC transmission (positive)	24 G	Power supply for 24 VDC transmission (negative)	See Section 5 "CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS" for details of connection.
	Name	Description													
	DATA	Data													
	DG	Data ground													
	FG	Frame ground													
	+24 V	Power supply for 24 VDC transmission (positive)													
	24 G	Power supply for 24 VDC transmission (negative)													
	<table border="1"> <thead> <tr> <th data-bbox="510 593 646 627">RUN A</th> <th data-bbox="654 593 1149 627">RUN B</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="654 593 1149 627">External output determining the ON/OFF status of RUN LED</td> </tr> <tr> <td colspan="2" data-bbox="654 627 1149 649">ON : RUN LED lit</td> </tr> <tr> <td colspan="2" data-bbox="654 649 1149 672">OFF : RUN LED unlit</td> </tr> </tbody> </table>	RUN A	RUN B	External output determining the ON/OFF status of RUN LED		ON : RUN LED lit		OFF : RUN LED unlit							
	RUN A	RUN B													
	External output determining the ON/OFF status of RUN LED														
	ON : RUN LED lit														
	OFF : RUN LED unlit														
	Specifications	Output type	Contact output												
		Insulation method	Relay insulation												
Rated load voltage and current		24 VDC (resistance load), 240 VAC (COSφ=1), 2 A/point													
Min. switching load		5 VDC 1mA													
Max. switching voltage		250 VAC 110 VDC													
Response time		OFF→ON	10 ms or less												
		ON→OFF	12 ms or less												
Life		Mechanical	20 million operations or more												
		Electrical	100 thousand operations or more at the rated switching load and switching voltage												
			100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)												
	100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)														
Max. switching frequency	3600 times/hour														
Surge suppressor	Varistor														
External connection	 <p style="text-align: center;">A1SJ51T64</p>														

4. PRE-OPERATION SETTINGS AND PROCEDURES

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4.2.2 Remote I/O Unit (AJ55TB[][]-[][])



No.	Name and Appearance	Description		
(1)	<p>STATION No.</p>	<p>For selecting a station number between 0 and F. (Factory setting: 0) Also, set the ONLINE STATION setting switches on the master module to prevent errors at the unconnected station numbers. (See Section 4.2.1 for details.)</p>		
(2)	<p>LED</p> <p>PW RUN SD RD ERR.</p>	Name	LED status	Description
		PW	ON	Internal 5 V source from the external power supply is normal.
			OFF	Internal 5 V source from the external power supply is abnormal.
		RUN	ON	Data reception from the master module is normal.
			OFF	Data reception from the master module is abnormal.
		SD	ON	Data is being transferred to the master module.
RD	ON	Data is being received from the master module.		
ERR.	ON	Data received from the master module is abnormal.		
(3)	<p>LED</p> <p>0 1 2 3</p>	Indicate the input/output status.		
(4)	Terminal block	For connecting signals and a power supply to the module. (Size: M3, clamp torque: 39 to 59 N·cm {4 to 6 kg·cm} [3.4 to 6.1 lb·inches])		
		Name	Description	
		DATA	Data	Refer to Section "5 CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS" for details of connection.
		DG	Data ground	
		FG	Frame ground	
+24 V	Power supply for transmitting 24 VDC (positive)			
24 G	Power supply for transmitting 24 VDC (negative)			
(5)	Terminal block	For connection to receive/send input/output signals (Size: M3, clamp torque: 39 to 59 N·cm {4 to 6 kg·cm} [3.4 to 6.1 lb·inches]) Refer to Section 7 "SPECIFICATIONS OF REMOTE I/O UNITS" for details of connection.		
(6)	DIN rail mounting hooks	Hooks for mounting the unit on a DIN rail		
(7)	Unit mounting hole	Hole for mounting the unit on a panel (Size: M4, clamp torque: 78 to 118 N·cm {8 to 12 kg·cm} [6.9 to 10.4 lb·inches])		

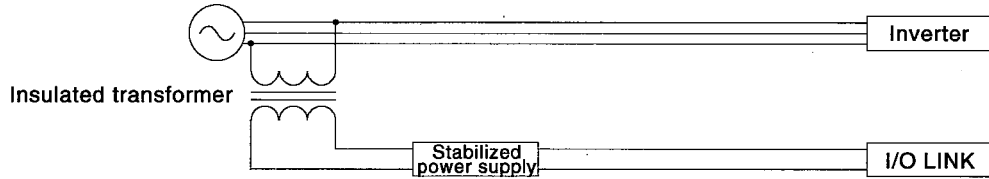
5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

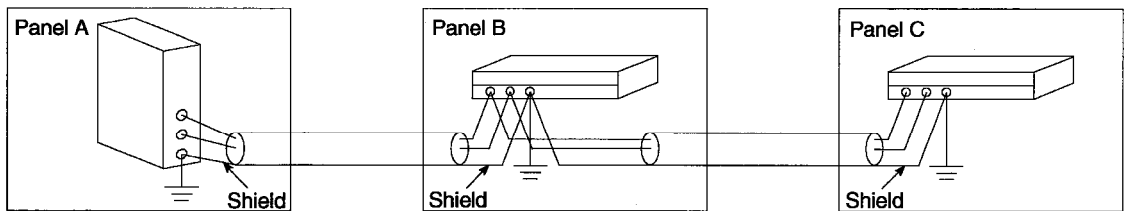
5.1 Notes on Connection

In order to prevent unnecessary noise trouble, design the system with the following considerations paid to the communication lines and grounding lines of the I/O link.

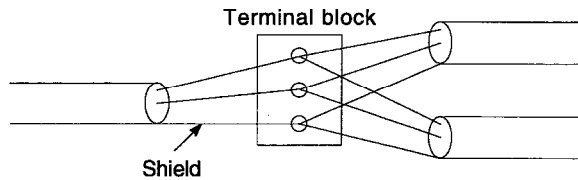
- (1) The power supply feeding the stabilized power supply of the I/O link must be in a separate system from the power lines for motors and inverters, or separated by an insulated transformer.



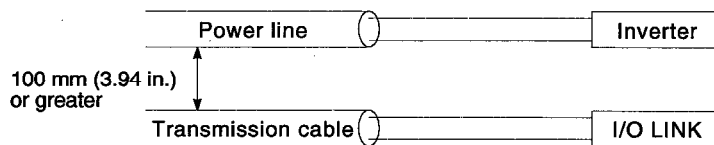
- (2) In cases where equipment that generates high-frequency noise - such as an inverter - is installed in the same panel, use twisted-pair cable for the transmission cables, and ground the wire shielding at the modules at both ends. (See Section (4).)



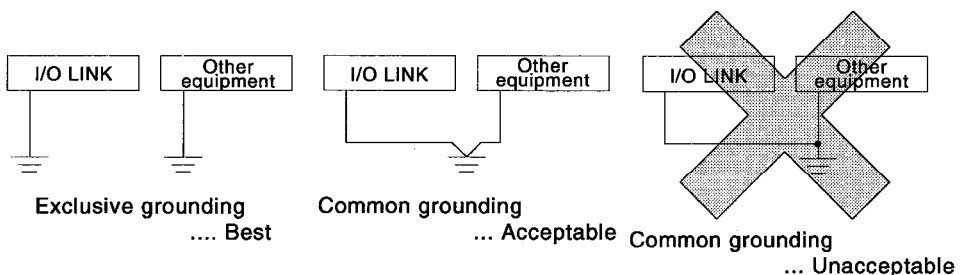
At T branches, connect the shielding with a terminal block. The shielding does not have to be grounded here.



- (3) Keep transmission lines away from high-voltage power lines. If they must be run close together, separate them with a steel shield.



- (4) Make the grounding wire connected to the FG terminal as thick as possible (2.0 mm²). Carry out grounding as shown below. In particular, avoid common grounding with equipment that generates high-frequency noise.



5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

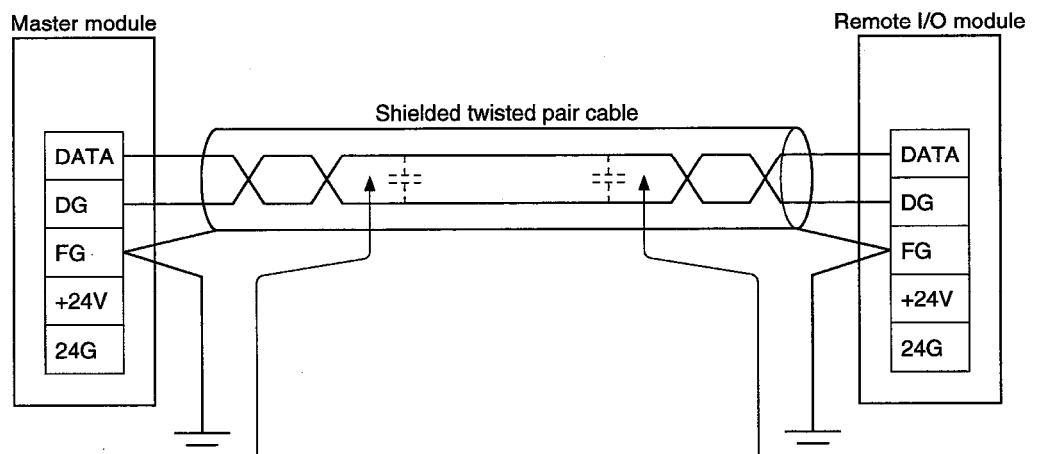
MELSEC-A



CAUTION

- If the 24 VDC is mistakenly applied to a signal line (DATA, DG), the module will be destroyed. Be sure to check that the connections are correct before turning on the external power supply (24 VDC).

- (5) Precautionary notes when grounding the twisted pair cable shield
- When the shield of a shielded transmission cable is grounded, the transmission waveform may be affected by the ground condition, and communication errors may be generated in long-distance systems. This phenomenon is caused by the connection between the ground and transmission signals at a high frequency via a condenser due to the static electricity capacity held between the shield and transmission cable. This becomes more likely to occur as the transmission distance gets longer, since the static electricity capacity increases. This phenomenon may also occur when only one side of the shield is grounded.



* There will be no effects from the ground if a cab tire cable is used, since it has no shield.

5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

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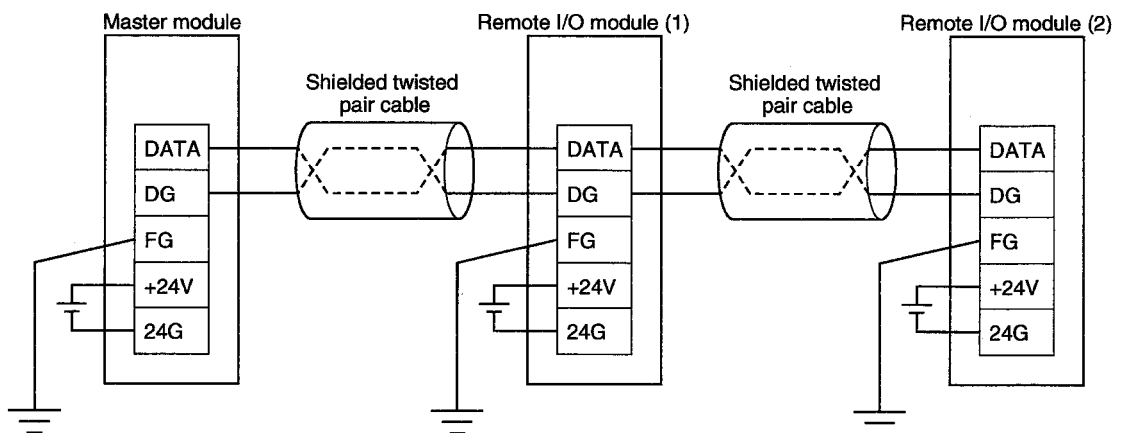
(a) Shield treatment

Effects from the grounded shield are dependent on the number of remote I/O modules connected and overall distance. Do not ground the shield if your system has a configuration in which the combination of number of remote I/O modules connected and overall distance is as shown in the table below.

Number of remote I/O modules connected	Overall distance range where grounding of shield should be avoided
1	—
2	150 m (492.15 ft.) or more
3	130 m (426.53 ft.) or more
4	110 m (360.91 ft.) or more
5	100 m (328.1 ft.) or more
6	90 m (295.29 ft.) or more
7	85 m (278.89 ft.) or more
8	75 m (246.08 ft.) or more
9	70 m (229.67 ft.) or more
10	65 m (213.27 ft.) or more
11	60 m (196.86 ft.) or more
12	
13	55 m (180.46 ft.) or more
14	
15	
16	50 m (164.05 ft.) or more

The number of modules indicated in the "number of remote I/O modules" is not the number of stations.

(b) Cable wiring

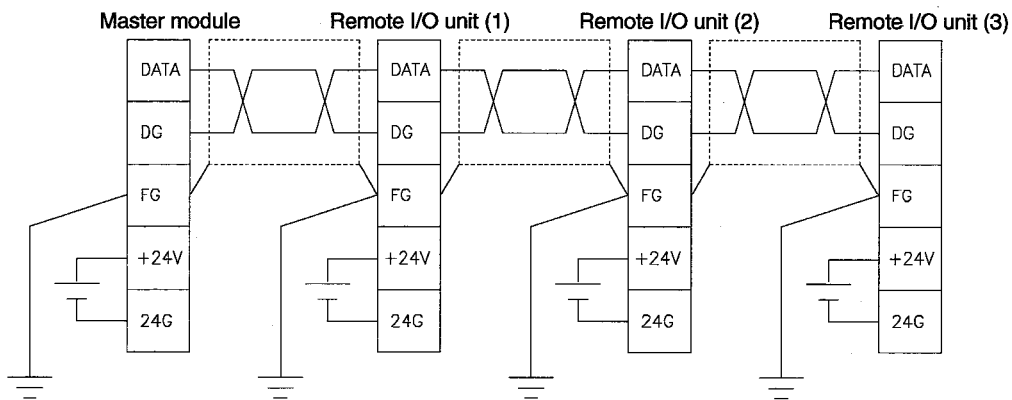


5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

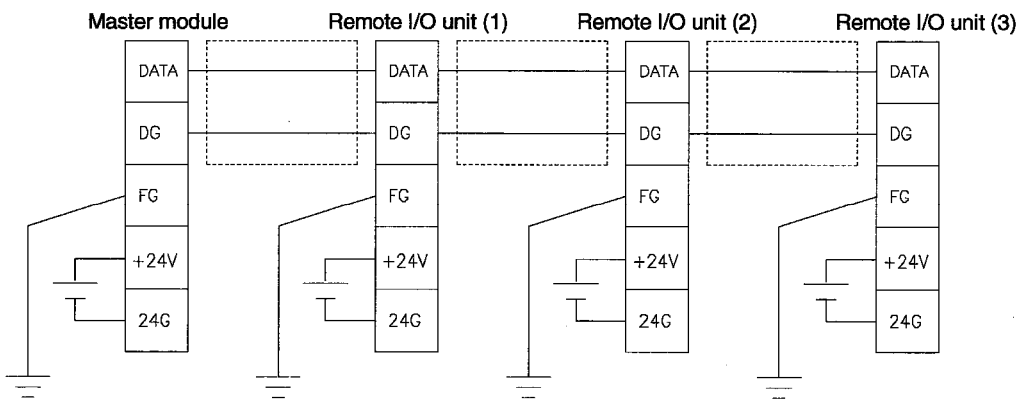
5.2 Connections

The connection methods when using twisted pair cable and when using cabtyre cable are shown below.

(1) Connection with twisted pair cables



(2) Connection with cabtyre cables

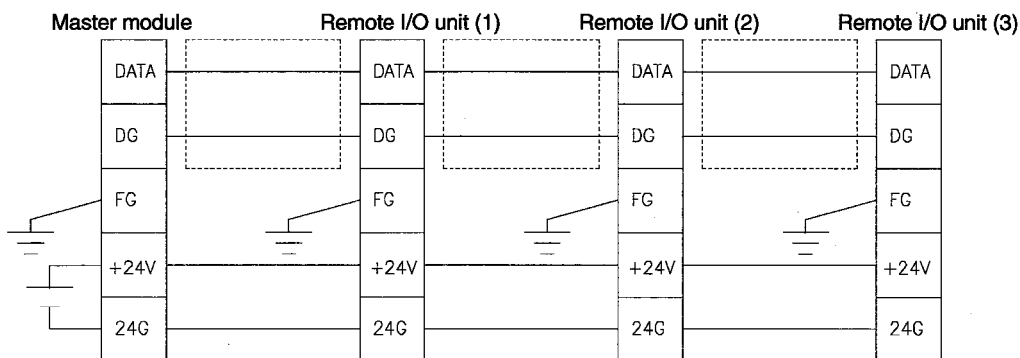


5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

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REMARK

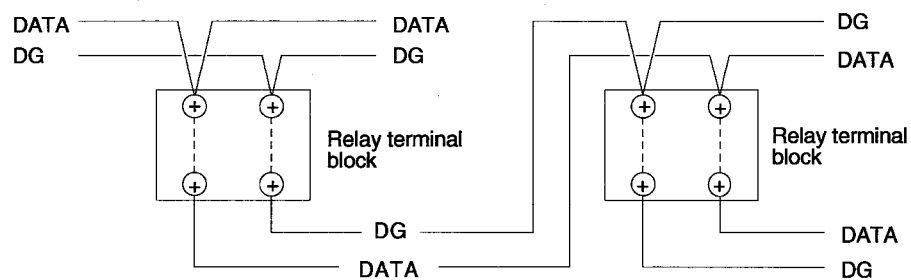
If one power supply provides power to multiple units, make sure that each unit receives sufficient voltage.



POINT

Connection methods using T-junctions are shown below.

Method for branching in the middle of a transmission line



It is possible to branch the transmission line again in another T-junction after it has already been branched once.
(However, note that the maximum overall line length is 200 m (656 ft.).)

5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

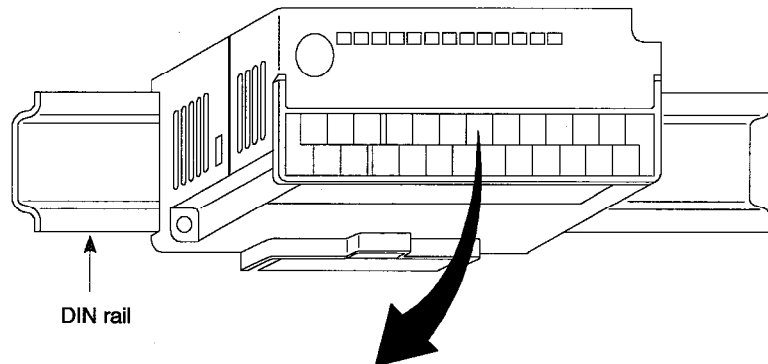
MELSEC-A

5.3 Mounting a Remote I/O Unit on a DIN Rail

This section describes how to mounting a remote I/O unit on a DIN rail.

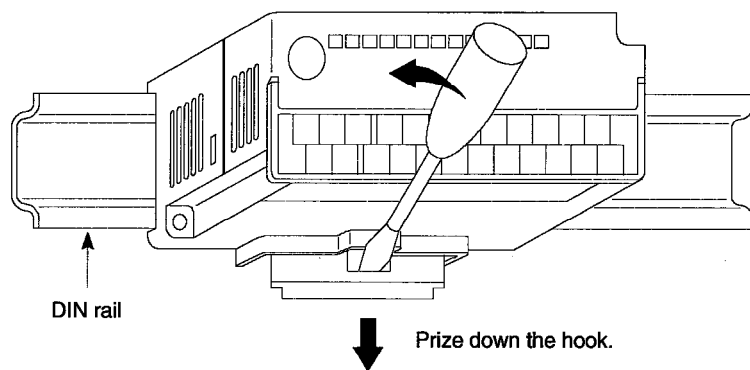
(1) Mounting procedure

- (a) Engage the groove of the upper hook with the upper rail flange by lowering the unit onto the rail.
- (b) Push the unit onto the rail and hook the lower hook onto the lower rail flange.



(2) Removal procedure

- (a) Prize down the hook on the bottom of the unit with a flat-tipped screwdriver.
- (b) Pull the unit off the rail while the hook is pulled down.



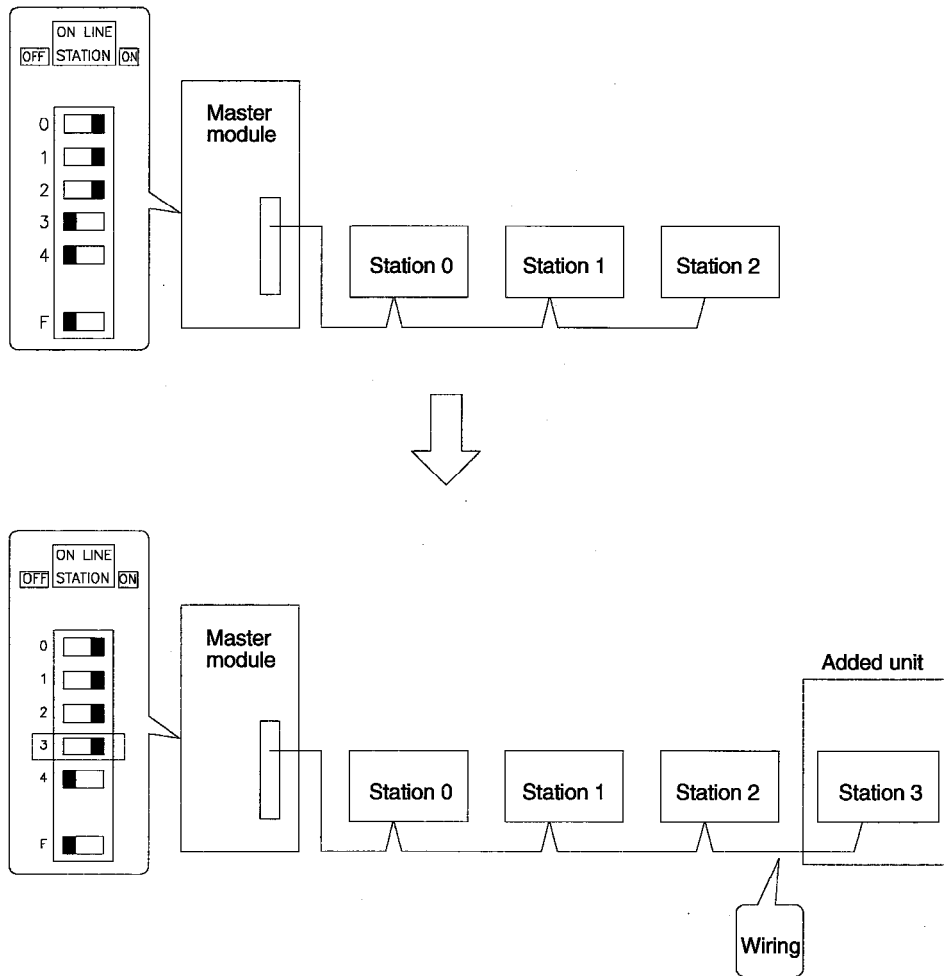
5. CONNECTION OF THE MASTER MODULE TO REMOTE I/O UNITS

5.4 Adding Remote I/O Units to an Existing System

This section explains how to add remote I/O units to an existing system.

Three-step procedure

- (1) Connect a cable to the remote I/O unit to be added.
- (2) Select a station number for the remote I/O unit.
- (3) Set the ONLINE STATION setting switches of the master module.



6. SETTING STATION NUMBERS AND PROGRAMMING

This section describes how to set station numbers for and program control of remote I/O units.

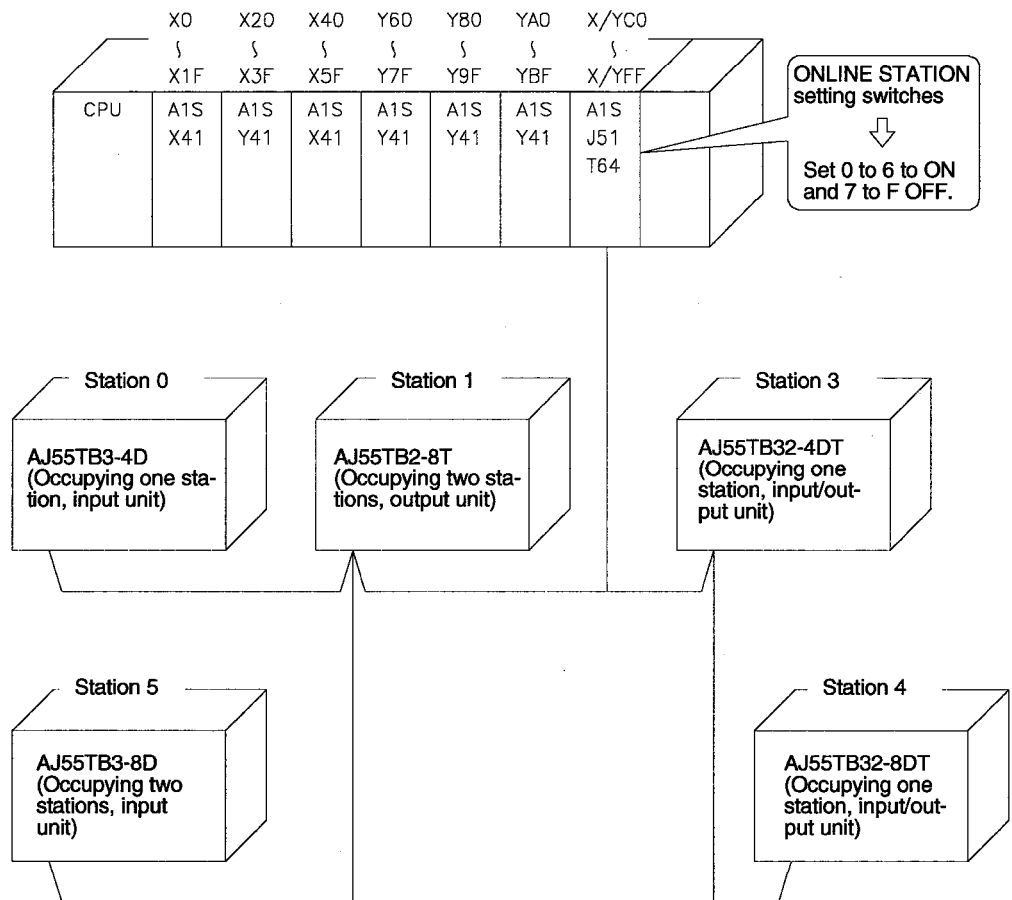
6.1 Setting a Station Number

- (1) Select a station number between 0 to F.
Station numbers do not have to be select in the order of connection.
Do not assign the same number to multiple units.
- (2) Set the ONLINE STATION setting switches accordingly.

6.2 Programming

The addresses used in a sequence program are determined by the I/O numbers of the master station and the station numbers of the remote I/O units. The I/O numbers of the master station are assigned the head addresses while the station numbers of the remote I/O units are sequentially assigned the following addresses.

[Example system configuration]



6. SETTING STATION NUMBERS AND PROGRAMMING

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The following chart shows the addresses assigned to remote I/O units.

Station No. of each re- mote I/O unit	Addresses (hexadeci- mal nota- tion)	Device		Remark
		X	Y	
0	C0	■	-	AJ55TB3-4D (input 4-point unit)
	1			
	2			
	3			
1	4	-	-	AJ55TB2-8T (output 8-point unit)
	5			
	6			
	7			
2	8	-	-	AJ55TB2-8T (output 8-point unit)
	9			
	A			
	B			
3	C	-	-	AJ55TB32-4DT (input 2-point/output 2-point unit) (4-point I/O combination units can use the first half two X and Y points only, not the second half two points.)
	D			
	E			
	F			
4	D0	■	-	AJ55TB32-8DT (input 4-point/output 4-point unit)
	1			
	2			
	3			
5	4	-	-	AJ55TB3-8D (input 8-point unit)
	5			
	6			
	7			
6	8	-	-	AJ55TB3-8D (input 8-point unit)
	9			
	A			
	B			
	C	-	-	

The device used is indicated by ■.

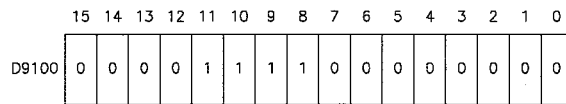
REMARK

Separate comments be assigned to X and Y devices with the same address (such as X10 and Y10) by using the extension comment function.

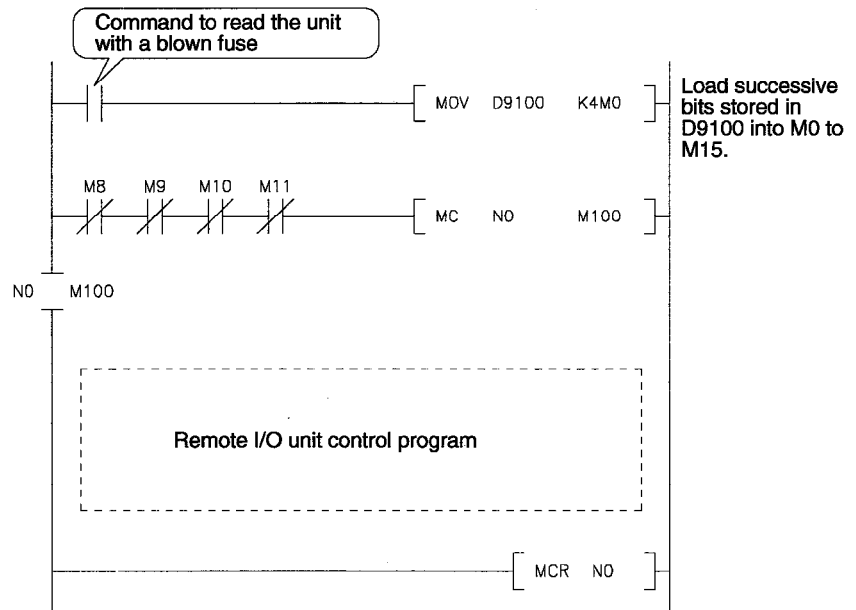
POINT

The following is an example of a program to suspend communication with all remote I/O units if even one station becomes a faulty station.

	X0 to 1F	X20 to 3F	Y40 to 5F	Y60 to 7F	X/Y80 to BF
CPU	A1S X41	A1S X41	A1S Y41	A1S Y41	A1S J51 T64



→ All the bits for X/Y80 to BF are turned ON.



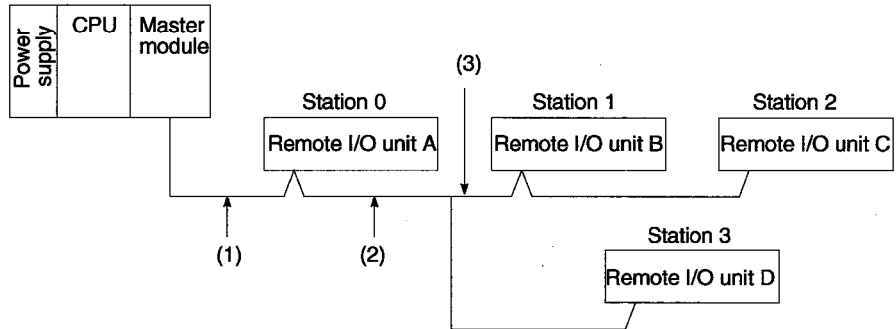
7. TROUBLESHOOTING

This section describes how to troubleshoot communication problems (when input cannot be received or output cannot be sent).

Location	Condition	Corrective action
LED of the master module	"24 V" is OFF.	Apply a voltage of 21.6 to 27.6 VDC to "+24, 24G".
	"RUN" is OFF.	Abnormal communication has occurred with a remote I/O unit that was assigned a station number with ONLINE STATION setting switches. Identify the cause with the "SHORT", "OPEN", and "PARITY" indicators.
	"SHORT" is ON.	Check the cable for a short between DATA and DG.
	"OPEN" is ON.	Check for disconnection in a signal line (DATA or DG). Also check if the power supply to any remote I/O unit is OFF. Identify the faulty station with "ERROR STATION".
	"PARITY" is ON.	Consider the possibility of noise interference since data received from a remote I/O unit is abnormal.
	A LED between "0" and "F" of the ERROR STATION is ON.	Check the remote I/O unit corresponding to the LED.
ONLINE STATION setting switches of the master module	One of the switches for a connected remote I/O unit is OFF.	Turn ON the switch.
"ST. No." of remote I/O unit	The same station number is assigned to multiple units.	Change the setting.

REMARK

The table below shows the error conditions that can be considered possible in the following system configuration based on LED statuses. It may help to identify errors in other system configurations.



	LED Status (● : ON, ○ : OFF)					System Status
	Master Module	Remote I/O Units				
		A	B	C	D	
	24V ● 0 ○ 8 ○ RUN ● 1 ○ 9 ○ SD ● 2 ○ A ○ RD ● 3 ○ B ○ SHORT ○ 4 ○ C ○ OPEN ○ 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ● RUN ● SD ● RD ● ERR ○	PW ● RUN ● SD ● RD ● ERR ○	PW ● RUN ● SD ● RD ● ERR ○	PW ● RUN ● SD ● RD ● ERR ○	Normal
"24 V" is ON.	24V ○ 0 ● 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ○ 3 ● B ○ SHORT ○ 4 ○ C ○ OPEN ● 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	Indicates power is not supplied or insufficient between +24V and -24G.
"SHORT" is ON.	24V ● 0 ● 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ● 3 ● B ○ SHORT ● 4 ○ C ○ OPEN ○ 5 ○ D ○ PARITY ● 6 ○ E ○ 7 ○ F ○	PW ● RUN ○ SD ○ RD ● ERR ○	PW ● RUN ○ SD ○ RD ● ERR ○	PW ● RUN ○ SD ○ RD ● ERR ○	PW ● RUN ○ SD ○ RD ● ERR ○	Probably indicates a short between DATA and DG, but may indicate that DATA and DG have been connected the wrong way round.

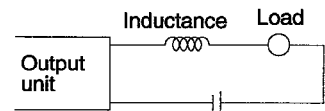
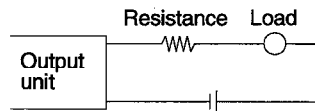
	LED Status (● : ON, ○ : OFF)					System Condition
	Master Module	Remote I/O Units				
		A	B	C	D	
"OPEN" is ON.	24V ● 0 ● 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ○ 3 ● B ○ SHORT ○ 4 ○ C ○ OPEN ● 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ○ RUN ○ SD ○ RD ○ ERR ○	PW ○ RUN ○ SD ○ RD ○ ERR ○	PW ○ RUN ○ SD ○ RD ○ ERR ○	PW ○ RUN ○ SD ○ RD ○ ERR ○	Indicates disconnection, malfunction of a remote I/O unit, or power supply OFF. Since the PWs of all the remote I/O units are OFF in this case, the power supply module may have been either turned OFF or failed.
	24V ● 0 ○ 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ● 3 ● B ○ SHORT ○ 4 ○ C ○ OPEN ● 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ● RUN ● SD ● RD ● ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	Indicates disconnection, malfunction of a remote I/O unit, or power supply OFF. Since the PWs of all the remote I/O units are ON, there must be a disconnection at the position marked by the cross.
	24V ● 0 ○ 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ● 3 ○ B ○ SHORT ○ 4 ○ C ○ OPEN ● 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ● RUN ● SD ● RD ● ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ● SD ● RD ● ERR ○	Indicates disconnection, malfunction of a remote I/O unit, or power supply OFF. Since the PWs of all the remote I/O units are ON, there must be a disconnection at the position marked by the cross.
	24V ● 0 ● 8 ○ RUN ○ 1 ● 9 ○ SD ● 2 ● A ○ RD ○ 3 ● B ○ SHORT ○ 4 ○ C ○ OPEN ● 5 ○ D ○ PARITY ○ 6 ○ E ○ 7 ○ F ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	PW ● RUN ○ SD ○ RD ○ ERR ○	Indicates disconnection, malfunction of a remote I/O unit, or power supply OFF. Since the PWs of all the remote I/O units are ON, there must be a disconnection at the position marked by the cross.

	LED Status (● : ON, ○ : OFF)								System Status
	Master Module				Remote I/O Units				
					A	B	C	D	
"OPEN" is ON.	24V ●	0 ○	8 ○	15 ○	PW ●	PW ○	PW ●	PW ●	Indicates disconnection, malfunction of a remote I/O unit, or power supply OFF. Since the PWs of all the remote I/O units are OFF, the power supply must have been turned OFF or failed.
	RUN ○	1 ●	9 ○	16 ○	RUN ●	RUN ○	RUN ●	RUN ●	
	SD ●	2 ○	A ○	17 ○	SD ●	SD ○	SD ●	SD ●	
	RD ●	3 ○	B ○	18 ○	RD ●	RD ○	RD ●	RD ●	
	SHORT ○	4 ○	C ○	19 ○	ERR ○	ERR ○	ERR ○	ERR ○	
	OPEN ●	5 ○	D ○	20 ○					
	PARITY ○	6 ○	E ○	21 ○					
		7 ○	F ○	22 ○					
"PARITY" is ON.	24V ●	0 ○	8 ○	15 ○	PW ●	PW ●	PW ●	PW ●	A remote I/O unit is abnormal. Since the ERROR LED of remote I/O unit C is lit, this unit is considered unable to receive data from the master module correctly (possibly due to noise interference).
	RUN ○	1 ○	9 ○	16 ○	RUN ●	RUN ●	RUN ○	RUN ●	
	SD ●	2 ●	A ○	17 ○	SD ●	SD ●	SD ○	SD ●	
	RD ●	3 ○	B ○	18 ○	RD ●	RD ●	RD ●	RD ●	
	SHORT ○	4 ○	C ○	19 ○	ERR ○	ERR ○	ERR ●	ERR ○	
	OPEN ○	5 ○	D ○	20 ○					
	PARITY ●	6 ○	E ○	21 ○					
		7 ○	F ○	22 ○					

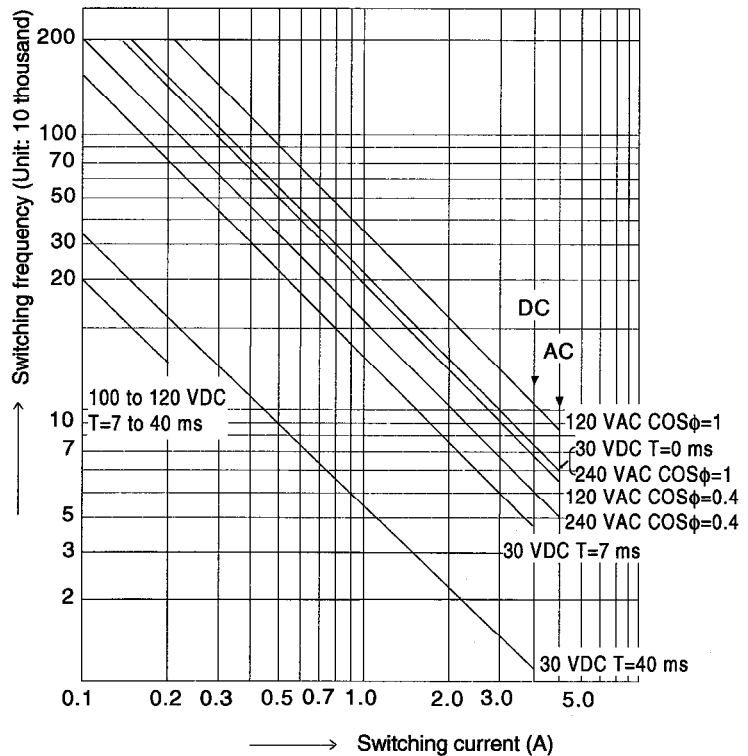
8. SPECIFICATIONS OF REMOTE I/O UNITS

8.1 Notes on Using Remote I/O Units

- (1) If a frequently-switching load or a coil load such as an electromagnet with a large capacity or a low power factor is used together with a contact output unit, the life of the output unit will be shortened.
- (2) The switching frequency for driving a load, L, in an output unit should never exceed "ON for at least 1 second and OFF for at least 1 second".
- (3) If a timer or counter is used with a DC/DC converter as the load, a rush current occurs either when the power supply is turned ON or at regular intervals during operation. This may cause a fault if a unit is selected by considering only the average current and not rush current. Accordingly, if such a load is used, connect a resistance or inductance in series with the load to decrease the influence of the rush current.



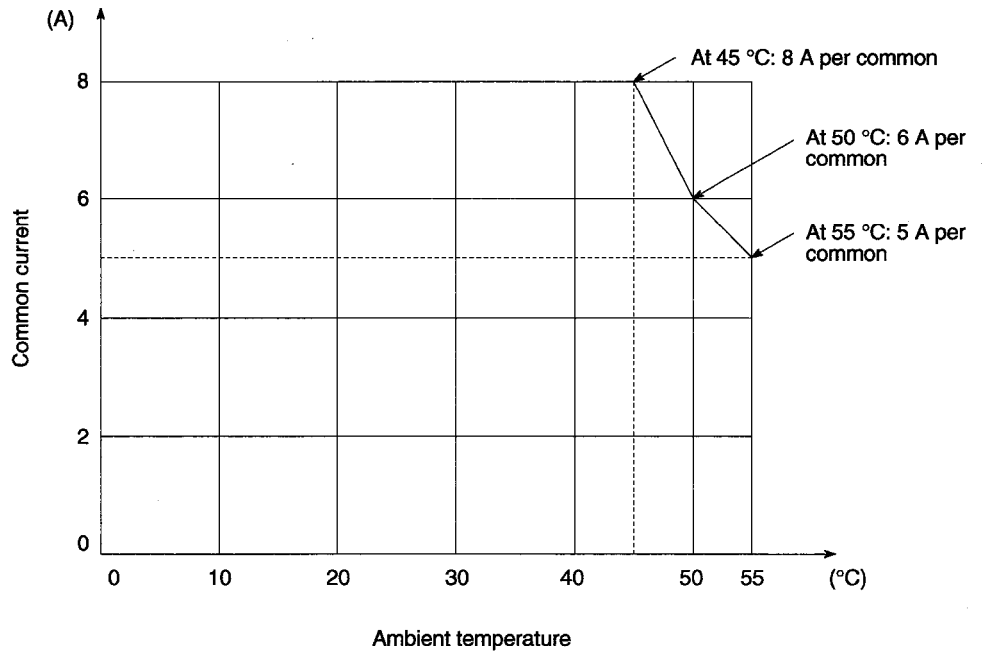
- (4) The following chart shows the relationship between the relay life of contact output units and the magnitude of switching currents. Applicable units: AJ55TB2-4R, AJ55TB2-8R, AJ55TB2-16R, AJ55TB32-4DR, AJ55TB32-8DR, and AJ55TB32-16DR



8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

- (5) With AJ55TB2-16T, the amount of current that can flow to one common varies according to the ambient temperature.

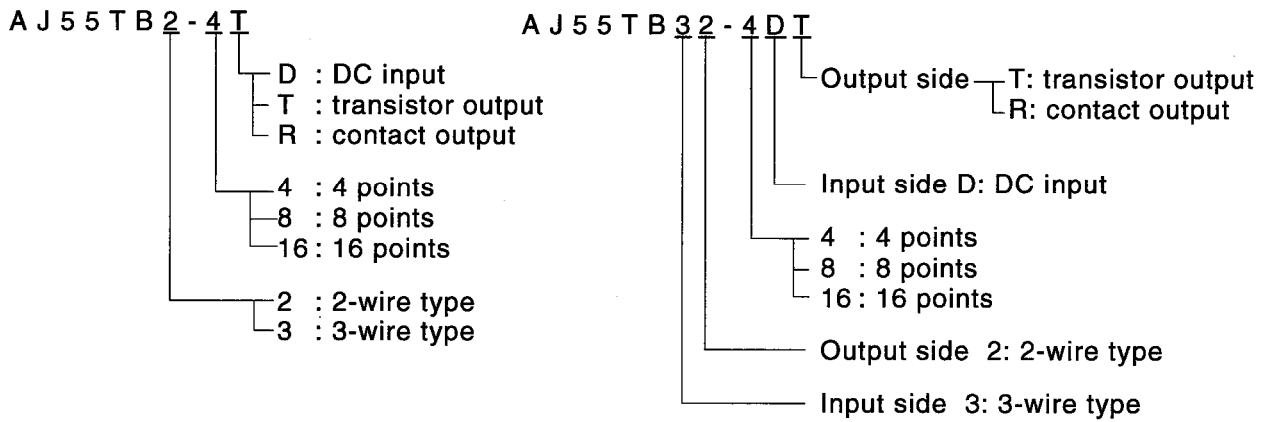


8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.2 How to Read Model Names

A guide to reading model names is presented below.



POINT

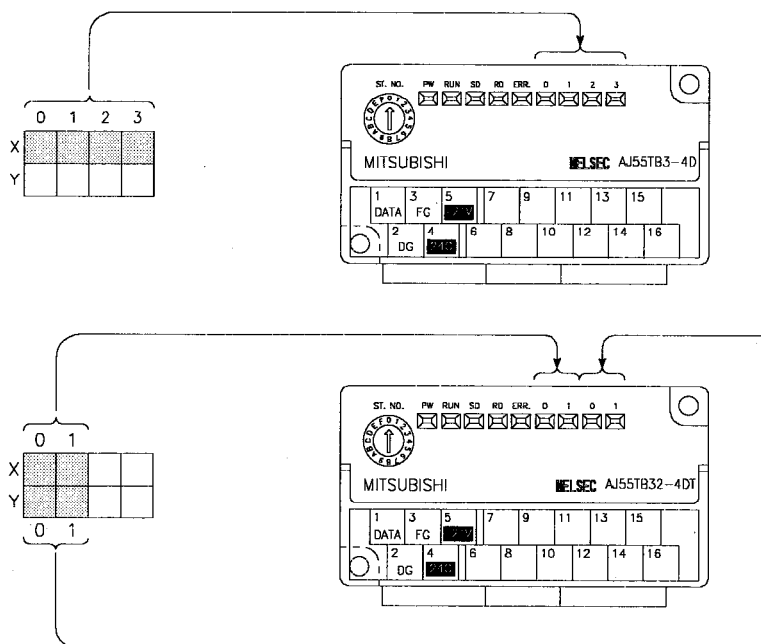
A remote I/O unit occupies one station for every four points. However, although an 8-point I/O combination unit has eight points, it occupies one station.

8.3 How to Read Specification Tables

This section describes how to read the "Number of occupied stations" in the specification table of each remote I/O unit.

The shaded boxes indicates the number of addresses from "0" assigned to the unit.

The lower example below indicates an I/O combination assigned the same addresses for X and Y.



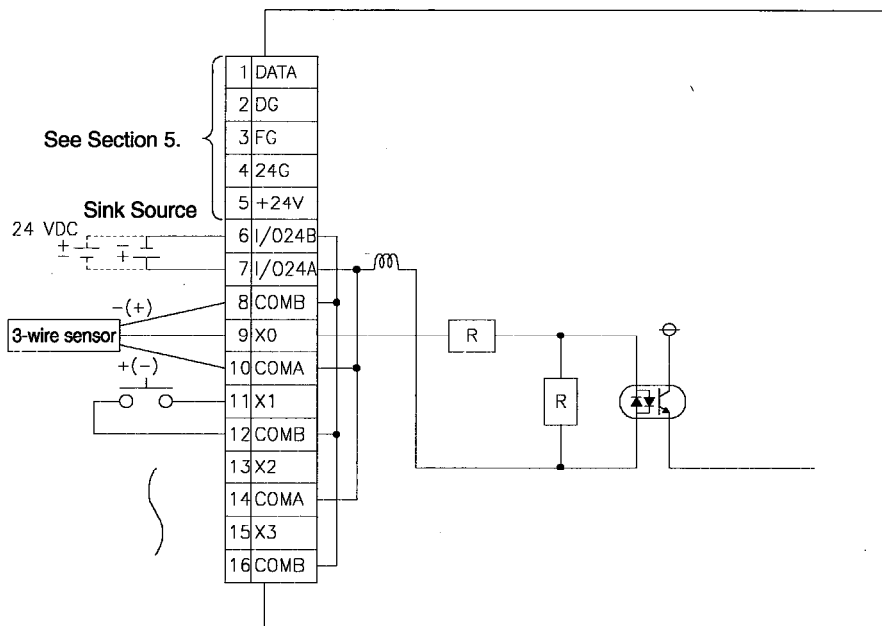
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.4 AJ55TB3-4D DC Input Unit

Specification	Type	DC Input Unit (Sink/Source Common Type)	
		AJ55TB3-4D	Appearance
Number of input points		4 points	
Insulation method		Photocoupler	
Rated input voltage		24 VDC	
Rated input current		Approx. 7 mA	
Operating load voltage range (I/O 24A, I/O 24B)		19.2 to 26.4 VDC (ripple: less than 5 %)	
Max. simultaneous input points		100 %	
ON voltage/ON current		14 V or greater/3.5 mA or greater	
OFF voltage/OFF current		6 V or less/1.7 mA or less	
Input resistance		Approx. 3.3 kΩ	
Response time	OFF→ON	10 ms or less	
	ON→OFF	10 ms or less	
Common method		4 points/common (3-wire terminal block)	
Number of occupied stations		1 station	
I/O unit power supply (+24, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	35 mA	
Weight (kg)[lb]		0.2 [0.44]	
External wiring system		16-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24B
TB7	I/O24A
TB8	COMB
TB9	X0
TB10	COMA
TB11	X1
TB12	COMB
TB13	X2
TB14	COMA
TB15	X3
TB16	COMB

* Connect this to the COMB side if the sensor is a 2-wire type.

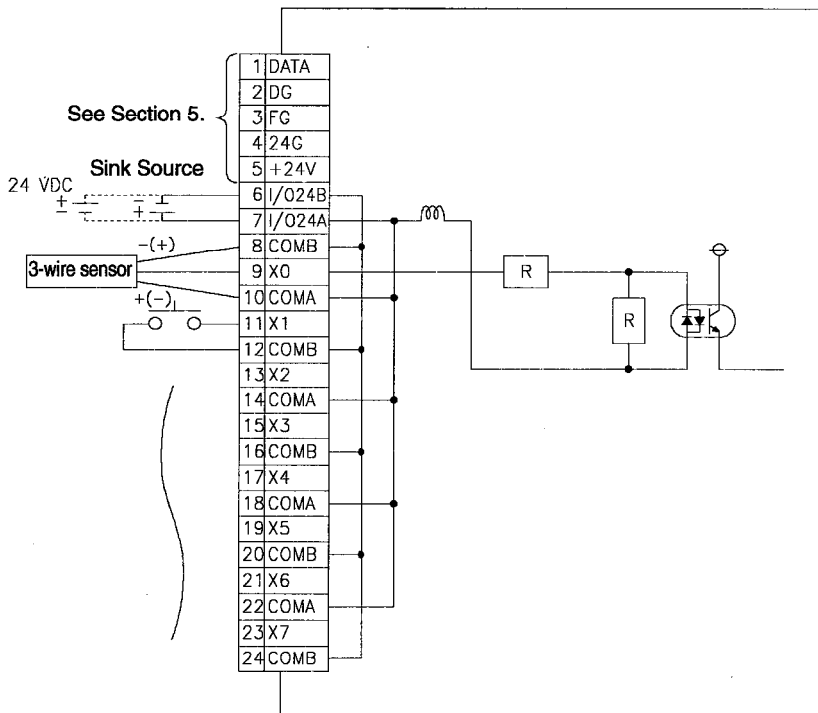
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.5 AJ55TB3-8D DC Input Unit

Specification	Type	DC Input Unit (Sink/Source Common Type)	
		AJ55TB3-8D	Appearance
Number of input points		8 points	
Insulation method		Photocoupler	
Rated input voltage		24 VDC	
Rated input current		Approx. 7 mA	
Operating load voltage range (I/O 24A, I/O 24B)		19.2 to 26.4 VDC (ripple: less than 5 %)	
Max. simultaneous input points		100 %	
ON voltage/ON current		14 V or greater/3.5 mA or greater	
OFF voltage/OFF current		6 V or less/1.7 mA or less	
Input resistance		Approx. 3.3 kΩ	
Response time	OFF→ON	10 ms or less	
	ON→OFF	10 ms or less	
Common method		8 points/common (3-wire terminal block)	
Number of occupied stations		2 stations	
I/O unit power supply (+24, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	45 mA	
Weight (kg)[lb]		0.3 [0.66]	
External wiring system		24-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24B
TB7	I/O24A
TB8	COMB
TB9	X0
TB10	COMA
TB11	X1
TB12	COMB
TB13	X2
TB14	COMA
TB15	X3
TB16	COMB
TB17	X4
TB18	COMA
TB19	X5
TB20	COMB
TB21	X6
TB22	COMA
TB23	X7
TB24	COMB

* Connect this to the COMB side if the sensor is a 2-wire type.

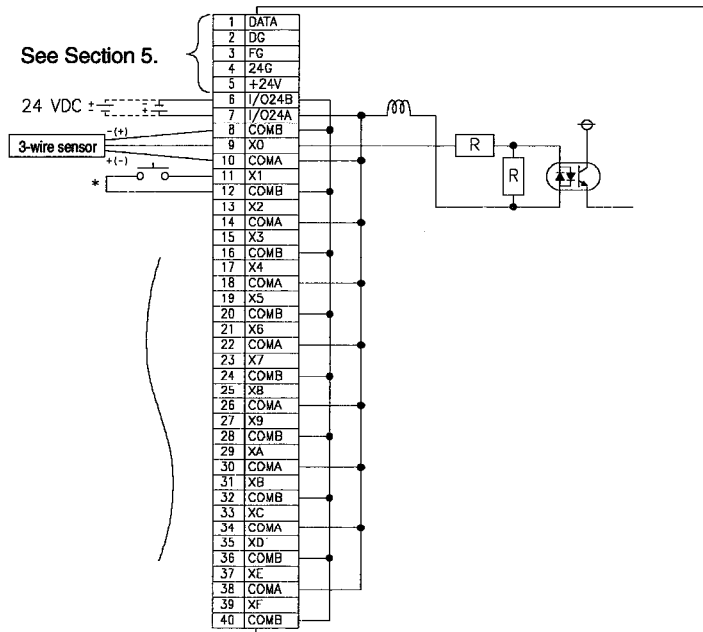
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.6 AJ55TB3-16D DC Input Unit

Specification	Type	DC Input Unit (Sink/Source Common Type)	Appearance
		AJ55TB3-16D	
Number of input points		16 points	
Insulation method		Photocoupler	
Rated input voltage		24 VDC	
Rated input current		Approx. 7 mA	
Operating load voltage range (I/O 24A, I/O 24B)		19.2 to 26.4 VDC (ripple: less than 5 %)	
Max. simultaneous input points		100 %	
ON voltage/ON current		14 V or greater/3.5 mA or greater	
OFF voltage/OFF current		6 V or less/1.7 mA or less	
Input resistance		Approx. 3.3 kΩ	
Response time	OFF→ON	10 ms or less	
	ON→OFF	10 ms or less	
Common method		16 points/common (3-wire terminal block)	
Number of occupied stations		4 stations	
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	60 mA	
Weight (kg)[lb]		0.4 [0.88]	
External wiring system		40-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections



* Connect this to the COMB side if the sensor is a 2-wire type.

Terminal No.	Signal Name	Terminal No.	Signal Name
TB1	DATA	TB21	X6
TB2	DG	TB22	COMA
TB3	FG	TB23	X7
TB4	24G	TB24	COMB
TB5	+24V	TB25	X8
TB6	I/O24B	TB26	COMA
TB7	I/O24A	TB27	X9
TB8	COMB	TB28	COMB
TB9	X0	TB29	XA
TB10	COMA	TB30	COMA
TB11	X1	TB31	XB
TB12	COMB	TB32	COMB
TB13	X2	TB33	XC
TB14	COMA	TB34	COMA
TB15	X3	TB35	XD
TB16	COMB	TB36	COMB
TB17	X4	TB37	XE
TB18	COMA	TB38	COMA
TB19	X5	TB39	XF
TB20	COMB	TB40	COMB

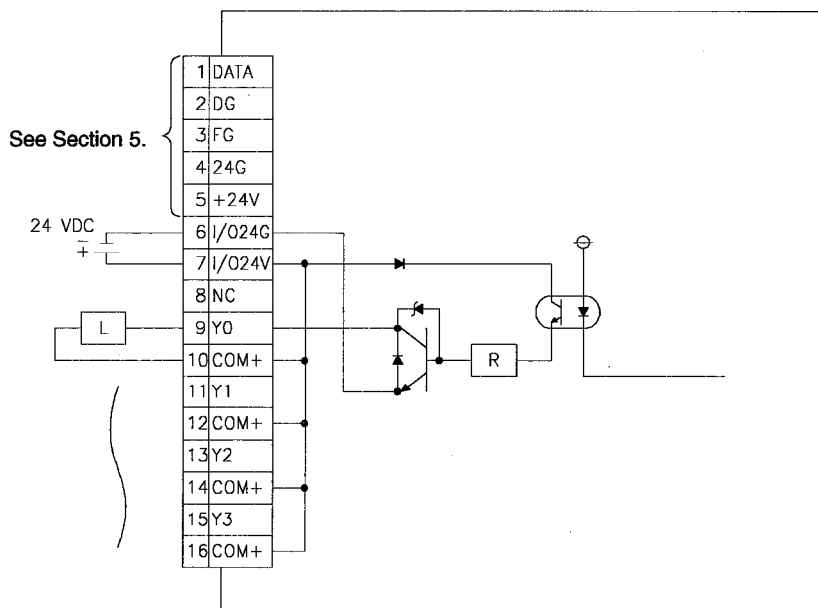
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.7 AJ55TB2-4T Transistor Output Unit

Specification	Type	Transistor Output Unit (Sink Type)	
		AJ55TB2-4T	Appearance
Number of output points		4 points	
Insulation method		Photocoupler	
Rated load voltage		12/24 VDC	
Operating load voltage range		10.2 to 30 VDC (peak voltage: 30 VDC)	
Max. load current		0.5 A/point, 2 A/common	
Max. rush current		4 A for 10 ms or less	
Leakage current (when OFF)		0.1 mA or less	
Max. voltage drop (when ON)		0.9 VDC or less (TYP) at 0.5 A, 1.5 VDC or less (MAX) at 0.5 A	
Response time	OFF→ON	2 ms or less	
	ON→OFF	2 ms or less (resistance load)	
External power supply (I/O24V, I/O24G)	Voltage	10.2 to 30 VDC	
	Current	30 mA (TYP. 24 VDC/common) not including the external load current	
Surge suppressor		Zener diode	
Common method		4 points/common (2-wire terminal block)	
Number of occupied stations		1 station	
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	45 mA	
Weight (kg)[lb]		0.2 [0.44]	
External wiring system		16-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-Y33A, V2-S3, V2-YS3A	

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	NC
TB9	Y0
TB10	COM+
TB11	Y1
TB12	COM+
TB13	Y2
TB14	COM+
TB15	Y3
TB16	COM+

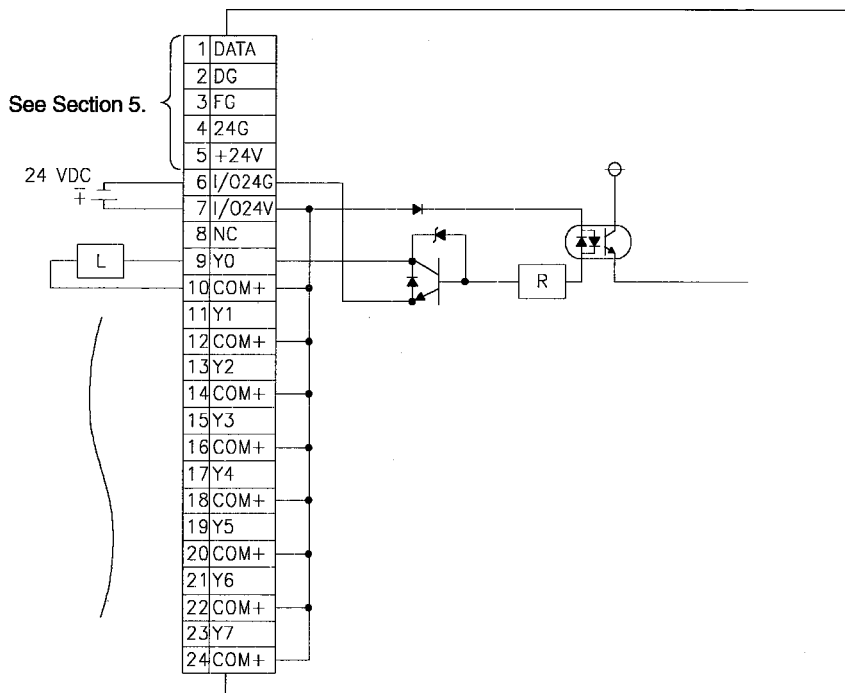
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.8 AJ55TB2-8T Transistor Output Unit

Specification	Type	Transistor Output Unit (Sink Type)		Appearance
		AJ55TB2-8T		
Number of output points		8 points		
Insulation method		Photocoupler		
Rated load voltage		12/24 VDC		
Operating load voltage range		10.2 to 30 VDC (peak voltage: 30 VDC)		
Max. load current		0.5 A/point, 4 A/common		
Max. rush current		4 A for 10 ms or less		
Leakage current (when OFF)		0.1 mA or less		
Max. voltage drop (when ON)		0.9 VDC or less (TYP) at 0.5 A, 1.5 VDC or less (MAX) at 0.5 A		
	Response time	OFF→ON	2 ms or less	
		ON→OFF	2 ms or less (resistance load)	
External power supply (I/O24V, I/O24G)	Voltage	10.2 to 30 VDC		
	Current	60 mA (TYP. 24 VDC/common) not including the external load current		
Surge suppressor		Zener diode		
Common method		8 points/common (2-wire terminal block)		
Number of occupied stations		2 stations		
I/O unit power supply (+24, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)		
	Current	55 mA		
Weight (kg)[lb]		0.3 [0.66]		
External wiring system		24-point terminal block connector (M3 screws) including a transmission circuit		
Applicable wire size		0.75 to 2 mm ²		
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	NC
TB9	Y0
TB10	COM+
TB11	Y1
TB12	COM+
TB13	Y2
TB14	COM+
TB15	Y3
TB16	COM+
TB17	Y4
TB18	COM+
TB19	Y5
TB20	COM+
TB21	Y6
TB22	COM+
TB23	Y7
TB24	COM+

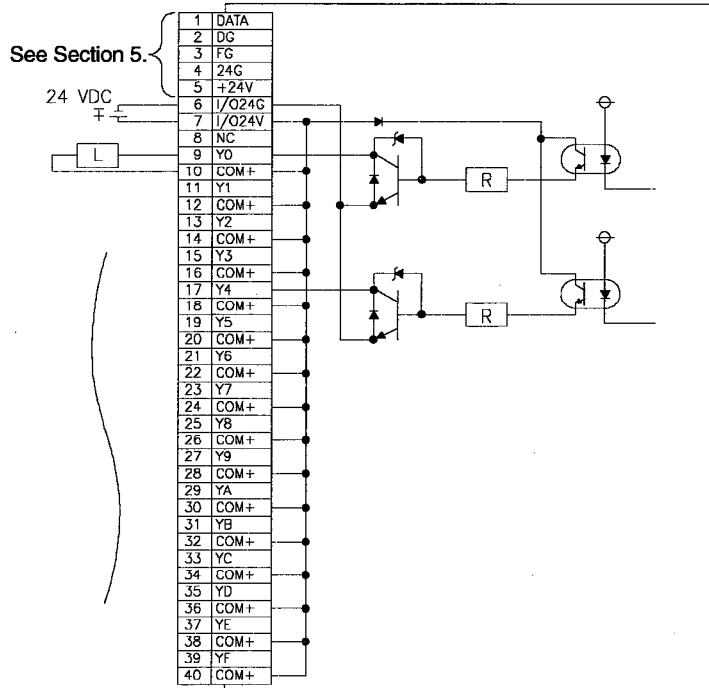
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.9 AJ55TB2-16T Transistor Output Unit

Specification		Type	Transistor Output Unit (Sink Type)	
			AJ55TB2-16T	Appearance
Number of output points			16 points	
Insulation method			Photocoupler	
Rated load voltage			12/24 VDC	
Operating load voltage range			10.2 to 30 VDC (peak voltage: 30 VDC)	
Max. load current			0.5 A/point, 5 A/common	
Max. rush current			4 A for 10 ms or less	
Leakage current (when OFF)			0.1 mA or less	
Max. voltage drop (when ON)			0.9 V or less (TYP) at 0.5 A, 1.5 V or less (MAX) at 0.5 A	
Output type			Sink type	
Response time	OFF→ON		2 ms or less	
	ON→OFF		2 ms or less (resistance load)	
External power supply (I/O24V, I/O24G)	Voltage		10.2 to 30 VDC	
	Current		120 mA (TYP. 24 VDC/common) not including the external load current	
Surge suppressor			Zener diode	
Common method			16 points/common (2-wire terminal block)	
Number of occupied stations			4 stations 	
I/O unit power supply (+24V, 24G)	Voltage		15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current		70 mA	
Weight (kg)[lb]			0.4 [0.88]	
External wiring system			40-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size			0.75 to 2 mm ²	
Applicable solderless terminals			1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections



Terminal No.	Signal Name	Terminal No.	Signal Name
TB1	DATA	TB21	Y6
TB2	DG	TB22	COM+
TB3	FG	TB23	Y7
TB4	24G	TB24	COM+
TB5	+24V	TB25	Y8
TB6	I/O24G	TB26	COM+
TB7	I/O24V	TB27	Y9
TB8	NC	TB28	COM+
TB9	Y0	TB29	YA
TB10	COM+	TB30	COM+
TB11	Y1	TB31	YB
TB12	COM+	TB32	COM+
TB13	Y2	TB33	YC
TB14	COM+	TB34	COM+
TB15	Y3	TB35	YD
TB16	COM+	TB36	COM+
TB17	Y4	TB37	YE
TB18	COM+	TB38	COM+
TB19	Y5	TB39	YF
TB20	COM+	TB40	COM+

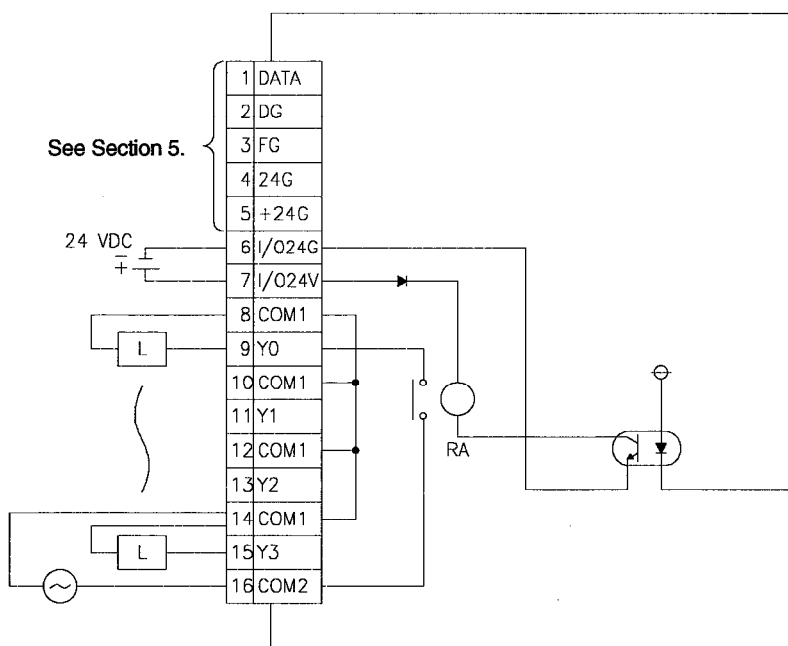
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.10 AJ55TB2-4R Contact Output Unit

Specification	Type	Contact Output Unit (Sink Type)	
		AJ55TB2-4R	Appearance
Number of output points		4 points	
Insulation method		Photocoupler	
Rated load voltage/current		24 VDC (resistance load) 2 A/point 240 VAC (COSφ=1) 8 A/common	
Min. switching load		5 VDC 1 mA	
Max. switching voltage		250 VAC 110 VDC	
Response time	OFF→ON	10 ms or less	
	ON→OFF	12 ms or less	
Life	Mechanical	20 million operations or more	
		100 thousand operations or more at the rated switching voltage and current load.	
	Electrical	100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)	
		100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35) 100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms)	
Max. switching frequency		3600 times/hour	
External power supply (I/O24V, I/O24G)	Voltage	24 VDC ±10 %, ripple: 4 Vp-p or less	
	Current	23 mA (TYP. 24 VDC, all points ON)	
Surge suppressor		None	
Common method		4 points/common	
Number of occupied stations		1 station	
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	50 mA	
Weight (kg)[lb]		0.2 [0.44]	
External wiring system		16-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	COM1
TB9	Y0
TB10	COM1
TB11	Y1
TB12	COM1
TB13	Y2
TB14	COM1
TB15	Y3
TB16	COM2

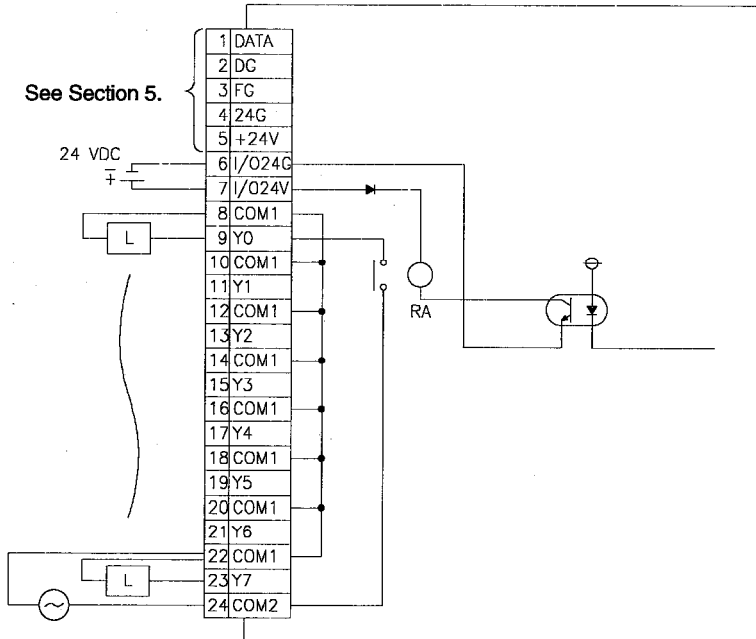
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.11 AJ55TB2-8R Contact Output Unit

Specification	Type	Contact Output Unit (Sink Type)		Appearance
		AJ55TB2-8R		
Number of output points		8 points		
Insulation method		Photocoupler		
Rated load voltage/current		24 VDC (resistance load) 2 A/point 240 VAC (COSφ=1) 8 A/common		
Min. switching load		5 VDC 1 mA		
Max. switching voltage		250 VAC 110 VDC		
Response time	OFF→ON	10 ms or less		
	ON→OFF	12 ms or less		
Life	Mechanical	20 million operations or more		
		100 thousand operations or more at the rated switching voltage and current load.		
	Electrical	100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)		
		100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)		
		100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms)		
Max. switching frequency		3600 times/hour		
External power supply (I/O24V, I/O24G)	Voltage	24 VDC ±10 %, ripple: 4 Vp-p or less		
	Current	45 mA (TYP. 24 VDC, all points ON)		
Surge suppressor		None		
Common method		8 points/common		
Number of occupied stations		2 stations		
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)		
	Current	65 mA		
Weight (kg)[lb]		0.3 [0.66]		
External wiring system		24-point terminal block connector (M3 screws) including a transmission circuit		
Applicable wire size		0.75 to 2 mm ²		
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A		

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	COM1
TB9	Y0
TB10	COM1
TB11	Y1
TB12	COM1
TB13	Y2
TB14	COM1
TB15	Y3
TB16	COM1
TB17	Y4
TB18	COM1
TB19	Y5
TB20	COM1
TB21	Y6
TB22	COM1
TB23	Y7
TB24	COM2

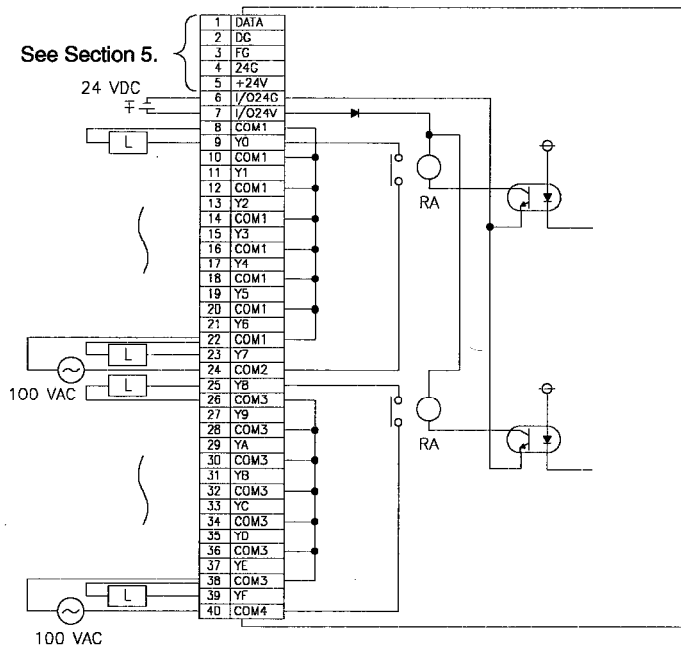
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.12 AJ55TB2-16R Contact Output Unit

Specification	Type	Contact Output Unit (Sink Type)	
		AJ55TB2-16R	Appearance
Number of output points		16 points	
Insulation method		Photocoupler	
Rated load voltage/current		24 VDC (resistance load) 2 A/point 240 VAC (COSφ=1) 8 A/common	
Min. switching load		5 VDC 1 mA	
Max. switching voltage		250 VAC 110 VDC	
Response time	OFF→ON	10 ms or less	
	ON→OFF	12 ms or less	
Life	Mechanical	20 million operations or more	
	Electrical	100 thousand operations or more at the rated switching voltage and current load.	
		100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)	
		100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)	
		100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms)	
Max. switching frequency		3600 times/hour	
External power supply (I/O24V, I/O24G)	Voltage	24 VDC ±10 %, ripple: 4 Vp-p or less	
	Current	90 mA (TYP. 24 VDC, all points ON)	
Surge suppressor		None	
Common method		8 points/common	
Number of occupied stations		4 stations	
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)	
	Current	85 mA	
Weight (kg)[lb]		0.4 [0.88]	
External wiring system		40-point terminal block connector (M3 screws) including a transmission circuit	
Applicable wire size		0.75 to 2 mm ²	
Applicable solderless terminals		1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A	

External Connections

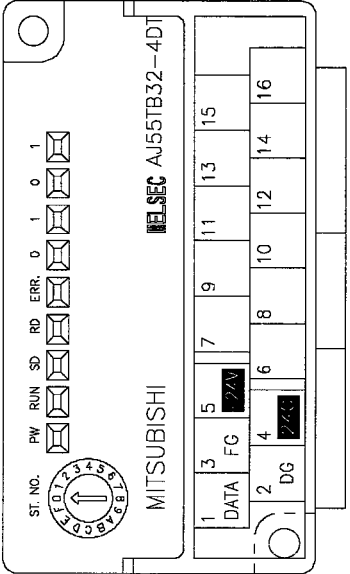
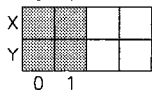


Terminal No.	Signal Name	Terminal No.	Signal Name
TB1	DATA	TB21	Y6
TB2	DG	TB22	COM1
TB3	FG	TB23	Y7
TB4	24G	TB24	COM2
TB5	+24V	TB25	Y8
TB6	I/O24G	TB26	COM3
TB7	I/O24V	TB27	Y9
TB8	COM1	TB28	COM3
TB9	Y0	TB29	YA
TB10	COM1	TB30	COM3
TB11	Y1	TB31	YB
TB12	COM1	TB32	COM3
TB13	Y2	TB33	YC
TB14	COM1	TB34	COM3
TB15	Y3	TB35	YD
TB16	COM1	TB36	COM3
TB17	Y4	TB37	YE
TB18	COM1	TB38	COM3
TB19	Y5	TB39	YF
TB20	COM1	TB40	COM4

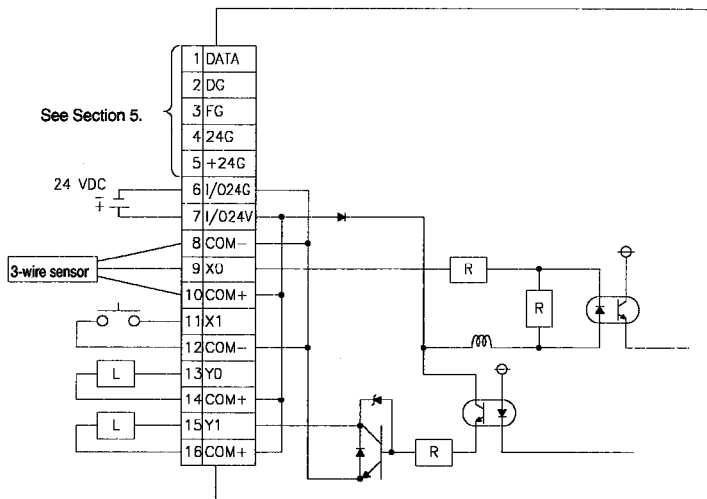
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.13 AJ55TB32-4DT Input/Output Unit

Type		DC Input (Sink/Source Common Type)/Transistor Output Combination Unit					
Specification		AJ55TB32-4DT		Appearance			
Input Specifications		Output Specifications					
Number of input points	2 points	Number of output points	2 points				
Insulation method	Photocoupler	Insulation method	Photocoupler				
Rated input voltage	24 VDC	Rated load voltage	24 VDC				
Rated input current	Approx. 7 mA	Operating load voltage range	19.2 to 26.4 VDC (peak voltage: 26.4 V)				
Operating voltage range	19.2 to 26.4 VDC (ripple: less than 5%)	Max. load current	0.5 A/point, 1 A/common				
Max. simultaneous input points	100%	Max. rush current	4 A for 10 msec. or less				
ON voltage/ON current	14 V or greater/3.5 mA or greater	Leakage current (when OFF)	0.1 mA or less				
OFF voltage/OFF current	6 V or less/1.7 mA or less	Max. voltage drop (when ON)	0.9 VDC or less (TYP.: 0.5 A) 1.5 VDC or less (max.: 0.5 A)				
Input resistance	Approx. 3.3 kΩ						
Response time	OFF→ON	Response time	OFF→ON				
	ON→OFF	ON→OFF	ON→OFF				
Common method	2 points/common	External power supply (I/O24V, I/O24G)	Voltage			19.2 to 26.4 VDC	
			Current			15 mA (TYP. 24 V DC/common) not including the external load current	
		Surge suppressor	Zener diode				
		Common method	2 points/common				
Number of occupied stations	1 stations				The latter two points cannot be used.		
	I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)				
	Current	40 mA					
Weight (kg)[lb]	0.2 [0.44]						
External wiring system	16-point terminal block connector (M3 screws) including a transmission circuit						
Applicable wire size	0.75 to 2 mm ²						
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A						

External Connections



* Connect this to the COMB side if the sensor is a 2-wire type.

Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	COM-
TB9	X0
TB10	COM+
TB11	X1
TB12	COM-
TB13	Y0
TB14	COM+
TB15	Y1
TB16	COM+

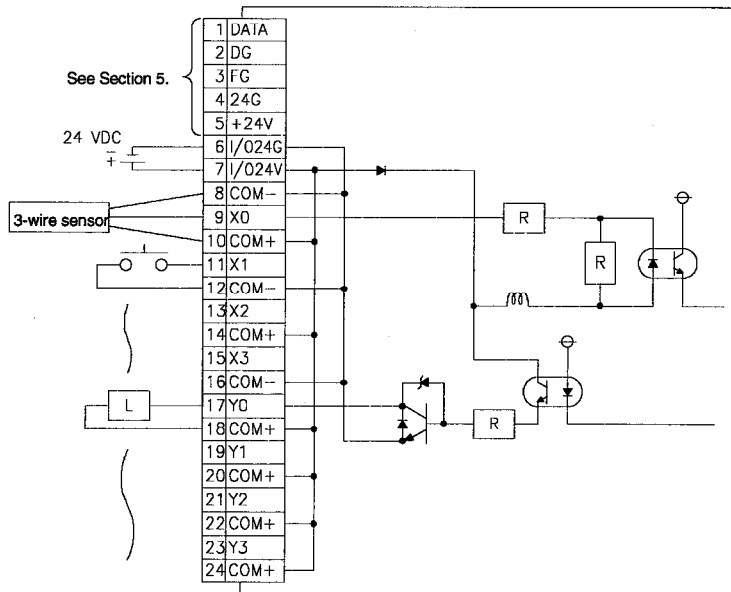
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.14 AJ55TB32-8DT Input/Output Unit

Type	DC Input (Sink/Source Common Type)/Transistor Output Combination Unit			
Specification	AJ55TB32-8DT			Appearance
Input Specifications		Output Specifications		
Number of input points	4 points	Number of output points	4 points	
Insulation method	Photocoupler	Insulation method	Photocoupler	
Rated input voltage	24 VDC	Rated load voltage	24 VDC	
Rated input current	Approx. 7 mA	Operating load voltage range	19.2 to 26.4 VDC (peak voltage: 26.4 V)	
Operating voltage range	19.2 to 26.4 VDC (ripple: less than 5 %)	Max. load current	0.5 A/point, 2 A/common	
Max. simultaneous input points	100 %	Max. rush current	4 A for 10 ms. or less	
ON voltage/ON current	14 V or greater/3.5 mA or greater	Leakage current (when OFF)	0.1 mA or less	
OFF voltage/OFF current	6 V or less/1.7 mA or less	Max. voltage drop (when ON)	0.9 V DC or less (TYP.: 0.5 A) 1.5 VDC or less (max.: 0.5 A)	
Input resistance	Approx. 3.3 kΩ	Response time	OFF→ON: 2 ms. or less ON→OFF: 2 ms. or less (resistance load)	
Response time	OFF→ON: 10 ms or less ON→OFF: 10 ms or less	Common method	4 points/common	
Common method	4 points/common	External power supply (I/O24V, I/O24G)	Voltage: 19.2 to 26.4 VDC Current: 30 mA (TYP. 24 V DC/common) not including the external load current	
Number of occupied stations	1 stations	Surge suppressor	Zener diode	
		Common method	4 points/common	
I/O unit power supply (+24V, 24G)	Voltage: 15.6 to 27.6 VDC (peak voltage: 27.6 VDC) Current: 50 mA	Weight (kg)[lb]	0.3 [0.66]	
External wiring system	16-point terminal block connector (M3 screws) including a transmission circuit			
Applicable wire size	0.75 to 2 mm ²			
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A			

External Connections



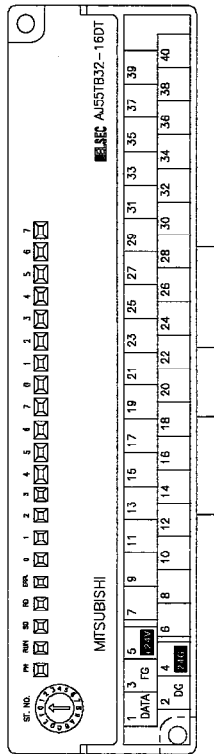
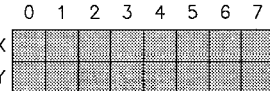
* Connect this to the COMB side if the sensor is a 2-wire type.

Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24G
TB7	I/O24V
TB8	COM-
TB9	X0
TB10	COM+
TB11	X1
TB12	COM-
TB13	X2
TB14	COM+
TB15	X3
TB16	COM-
TB17	Y0
TB18	COM+
TB19	Y1
TB20	COM+
TB21	Y2
TB22	COM+
TB23	Y3
TB24	COM+

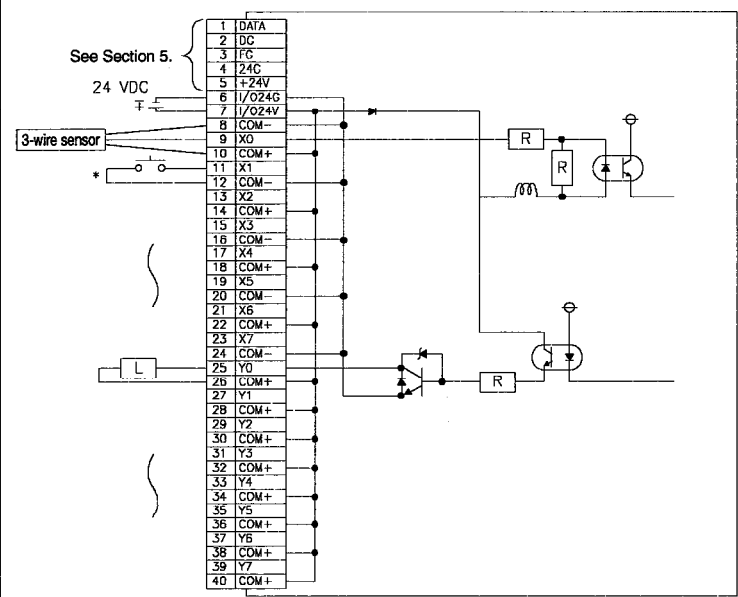
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.15 AJ55TB32-16DT Input/Output Unit

Type		DC Input Transistor Output Combination Unit					
Specification		AJ55TB32-16DT		Appearance			
Input Specifications		Output Specifications					
Number of input points	8 points	Number of output points	8 points				
Insulation method	Photocoupler	Insulation method	Photocoupler				
Rated input voltage	24 VDC	Rated load voltage	24 VDC				
Rated input current	Approx. 7 mA	Operating load voltage range	19.2 to 26.4 VDC (peak voltage: 26.4 V)				
Operating voltage range	19.2 to 26.4 VDC (ripple: less than 5 %)	Max. load current	0.5 A/point, 4 A/ common				
Max. simultaneous input points	100 %	Max. rush current	4 A for 10 ms. or less				
ON voltage/ON current	14 V or greater/3.5 mA or greater	Leakage current (when OFF)	0.1 mA or less				
OFF voltage/OFF current	6 V or less/1.7 mA or less	Max. voltage drop (when ON)	0.9 VDC or less (TYP.: 0.5 A) 1.5 VDC or less (MAX.: 0.5 A)				
Input resistance	Approx. 3.3 kΩ	Output type	Sink type				
Response time	OFF→ON	Response time	OFF→ON				
	ON→OFF		ON→OFF				
Input type	Sink type	Response time	ON→OFF				
Common method	8 points/common	External power supply (I/O24V, I/O24G)	Voltage			19.2 to 26.4 VDC	
			Current			60 mA (TYP. 24 VDC /common) not including the external load current	
		Surge suppressor	Zener diode				
		Common method	8 points/common				
Number of occupied stations	2 stations						
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)					
	Current	70 mA					
Weight (kg)[lb]	0.4 [0.88]						
External wiring system	40-point terminal block connector (M3 screws) including a transmission circuit						
Applicable wire size	0.75 to 2 mm ²						
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A						

External Connections



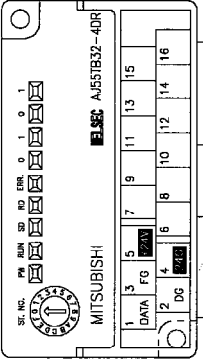
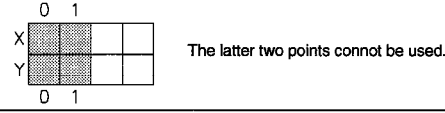
* Connect this to the COM- side if the sensor is a 2-wire type.

Terminal No.	Signal Name	Terminal No.	Signal Name
TB1	DATA	TB21	X6
TB2	DG	TB22	COM+
TB3	FG	TB23	X7
TB4	24G	TB24	COM-
TB5	+24V	TB25	Y0
TB6	I/O24G	TB26	COM+
TB7	I/O24V	TB27	Y1
TB8	COM-	TB28	COM+
TB9	X0	TB29	Y2
TB10	COM+	TB30	COM+
TB11	X1	TB31	Y3
TB12	COM-	TB32	COM+
TB13	X2	TB33	Y4
TB14	COM+	TB34	COM+
TB15	X3	TB35	Y5
TB16	COM-	TB36	COM+
TB17	X4	TB37	Y6
TB18	COM+	TB38	COM+
TB19	X5	TB39	Y7
TB20	COM-	TB40	COM+

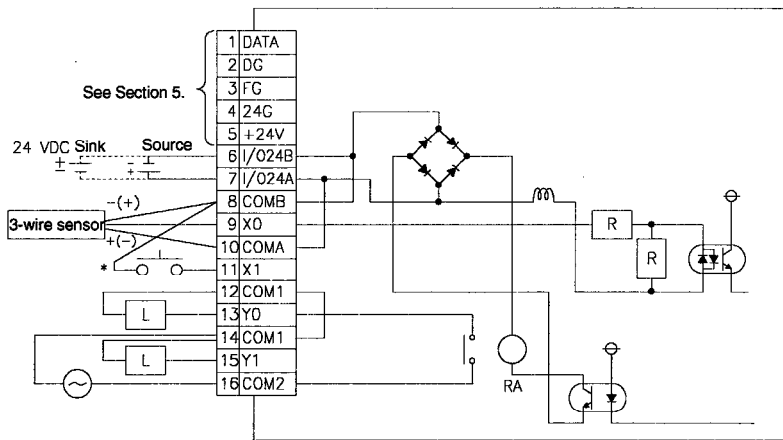
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.16 AJ55TB32-4DR Input/Output Unit

Type	DC Input (Sink/Source Common Type)/Transistor Output Combination Unit				
Specification	AJ55TB32-4DT			Appearance	
Input Specifications		Output Specifications			
Number of input points	2 points	Number of output points	2 points		
Insulation method	Photocoupler	Insulation method	Photocoupler		
Rated input voltage	24 VDC	Rated load voltage/current	24 VDC (resistance load) 40 VAC (COSφ=1) 2 A/point, 4 A/common		
Rated input current	Approx. 7 mA	Min. switching load	5 VDC 1 mA		
Operating voltage range	21.6 to 26.4 VDC (ripple: less than 5%)	Max. switching voltage	250 VAC 110 VDC		
Max. simultaneous input points	100 %	Response time	OFF→ON: 10 ms or less		
ON voltage/ON current	14 V or greater/3.5 mA or greater		ON→OFF: 12 ms or less		
OFF voltage/OFF current	6 V or less/1.7 mA or less	Life	Mechanical: 20 million operations or more		
Input resistance	Approx. 3.3 kΩ		Electrical		100 thousand operations or more at the rated switching voltage and current load.
					100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)
Response time	OFF→ON: 10 ms or less		100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)		
	ON→OFF: 10 ms or less	100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms)			
Common method	2 points/common	Max. switching frequency	3600 times/hour		
Number of occupied stations	1 station	External power supply (I/O24V, I/O24G)	Voltage: 24 V DC ±10 %, ripple (4 Vp-p or less)		
		Surge suppressor	Zener diode		
		Common method	2 points/common		
					
I/O unit power supply (+24, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)			
	Current	40 mA			
Weight (kg)[lb]	0.2 [0.44]				
External wiring system	16-point terminal block connector (M3 screws) including a transmission circuit				
Applicable wire size	0.75 to 2 mm ²				
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A				

External Connections



Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24B
TB7	I/O24A
TB8	COMB
TB9	X0
TB10	COMA
TB11	X1
TB12	COM1
TB13	Y0
TB14	COM1
TB15	Y1
TB16	COM2

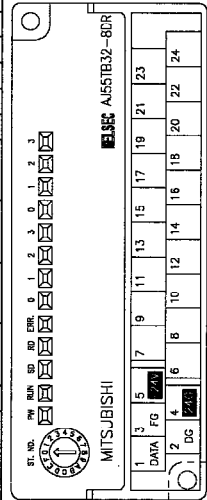
* Connect this to the COMB side if the sensor is a 2-wire type.

8. SPECIFICATIONS OF REMOTE I/O UNITS

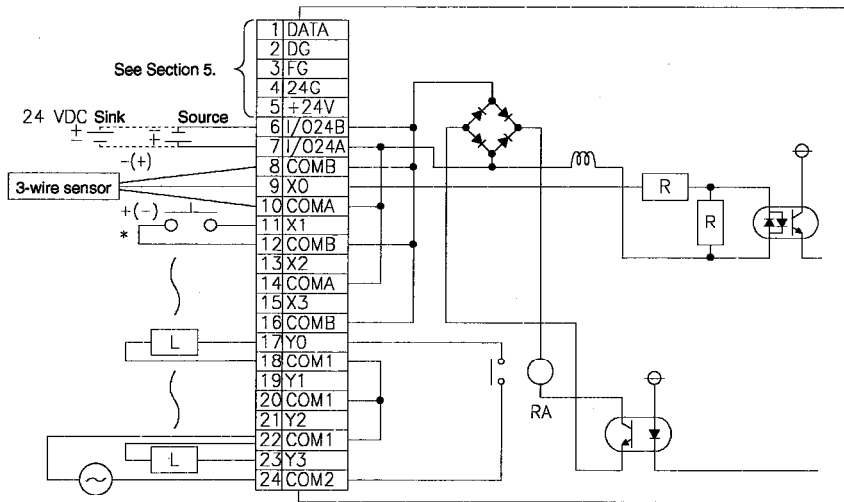
MELSEC-A

8.17 AJ55TB32-8DR Input/Output Unit

Type		DC Input (Sink/Source Common Type)/Transistor Output Combination Unit				
Specification		AJ55TB32-8DR		Appearance		
Input Specifications		Output Specifications				
Number of input points	4 points	Number of output points	4 points			
Insulation method	Photocoupler	Insulation method	Photocoupler			
Rated input voltage	24 VDC	Rated load voltage/current	24 VDC (resistance load) 40 VAC (COSφ=1) 2 A/point, 8 A/common			
Rated input current	Approx. 7 mA	Min. switching load	5 VDC 1 mA			
Operating voltage range	21.6 to 26.4 VDC (ripple: less than 5%)	Max. switching voltage	250 VAC 110 VDC			
Max. simultaneous input points	100%	Response time	ON→OFF	10 ms. or less		
ON voltage/ON current	14 V or greater/3.5 mA or greater		ON→OFF	12 ms. or less		
OFF voltage/OFF current	6 V or less/1.7 mA or less	Life	Mechanical	20 million operations or more		
Input resistance	Approx. 3.3 kΩ			Electrical	100 thousand operations or more at the rated switching voltage and current load.	
					100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)	
Response time	OFF→ON				100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)	
	ON→OFF	100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms.)				
Common method	4 points/common	Max. switching frequency	3600 times/hour			
		External power supply (I/O24A, I/O24B)	Voltage	24 VDC ±10%, ripple (4 Vp-p or less)		
			Current	23 mA (TYP. 24 VDC, all points ON)		
		Surge suppressor	Zener diode			
		Common method	4 points/common			
Number of occupied stations	1 station					
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)				
	Current	50 mA				
Weight (kg)[lb]	0.3 [0.66]					
External wiring system	24-point terminal block connector (M3 screws) including a transmission circuit					
Applicable wire size	0.75 to 2 mm ²					
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A					



External Connections



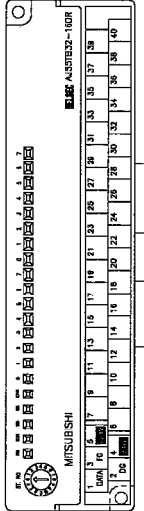
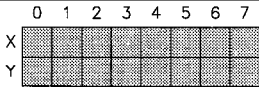
* Connect this to the COMB side if the sensor is a 2-wire type.

Terminal No.	Signal Name
TB1	DATA
TB2	DG
TB3	FG
TB4	24G
TB5	+24V
TB6	I/O24B
TB7	I/O24A
TB8	COMB
TB9	X0
TB10	COMA
TB11	X1
TB12	COMB
TB13	X2
TB14	COMA
TB15	X3
TB16	COMB
TB17	Y0
TB18	COM1
TB19	Y1
TB20	COM1
TB21	Y2
TB22	COM1
TB23	Y3
TB24	COM2

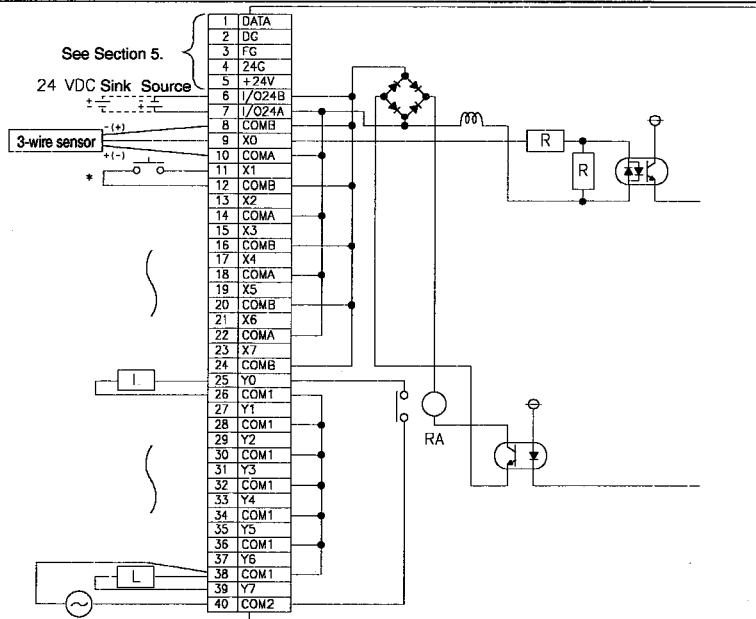
8. SPECIFICATIONS OF REMOTE I/O UNITS

MELSEC-A

8.18 AJ55TB32-16DR Input/Output Unit

Type		DC Input (Sink/Source Common Type)/Transistor Output Combination Unit				
Specification		AJ55TB32-16DR			Appearance	
Input Specifications		Output Specifications				
Number of input points	8 points	Number of output points	8 points			
Insulation method	Photocoupler	Insulation method	Photocoupler			
Rated input voltage	24 VDC	Rated load voltage/current	24 VDC (resistance load) 240 VAC (COSφ=1) 2 A/point, 8 A/common			
Rated input current	Approx. 7 mA	Min. switching load	5 VDC 1 mA			
Operating voltage range	21.6 to 26.4 VDC (ripple: 4 Vp-p or less)	Max. switching voltage	250 VAC 110 VDC			
Max. simultaneous input points	100 %	Response time	OFF→ON	10 ms or less		
ON voltage/ON current	14 V or greater/3.5 mA or greater		ON→OFF	12 ms or less		
OFF voltage/OFF current	6 V or less/1.7 mA or less	Life	Mechanical	20 million operations or more		
Input resistance	Approx. 3.3 kΩ		Electrical	100 thousand operations or more at the rated switching voltage and current load.		
Response time	OFF→ON			100 thousand operations or more at 200 VAC and 1.5 A, or 240 VAC or 1 A (COSφ=0.7)		
	ON→OFF	10 ms or less				
Input type	Sink/source common type	100 thousand operations or more at 200 VAC and 1 A, or 240 VAC and 0.5 A (COSφ=0.35)				
Common method	8 points/common	100 thousand operations or more at 24 VDC and 1A, or 100 VDC and 0.1 A (L/R=7 ms)				
		Max. switching frequency	3600 times/hour			
		External power supply (I/O24A, I/O24B)	Voltage	24 VDC ±10 %, ripple (4 Vp-p or less)		
			Current	45 mA (TYP. 24 VDC, all points ON)		
		Surge suppressor	None			
Common method	8 points/common					
Number of occupied stations	2 stations					
I/O unit power supply (+24V, 24G)	Voltage	15.6 to 27.6 VDC (peak voltage: 27.6 VDC)				
	Current	70 mA				
Weight (kg)[lb]	0.4 [0.88]					
External wiring system	40-point terminal block connector (M3 screws) including a transmission circuit					
Applicable wire size	0.75 to 2 mm ²					
Applicable solderless terminals	1.25-3, 1.25-YS3A, 2-S3, 2-YS3A, V1.25-3, V1.25-YS3A, V2-S3, V2-YS3A					

External Connections



Terminal No.	Signal Name	Terminal No.	Signal Name
TB1	DATA	TB21	X6
TB2	DG	TB22	COMA
TB3	FG	TB23	X7
TB4	24G	TB24	COMB
TB5	+24V	TB25	Y0
TB6	I/O24B	TB26	COM1
TB7	I/O24A	TB27	Y1
TB8	COMB	TB28	COM1
TB9	X0	TB29	Y2
TB10	COMA	TB30	COM1
TB11	X1	TB31	Y3
TB12	COMB	TB32	COM1
TB13	X2	TB33	Y4
TB14	COMA	TB34	COM1
TB15	X3	TB35	Y5
TB16	COMB	TB36	COM1
TB17	X4	TB37	Y6
TB18	COMA	TB38	COM1
TB19	X5	TB39	Y7
TB20	COMB	TB40	COM2

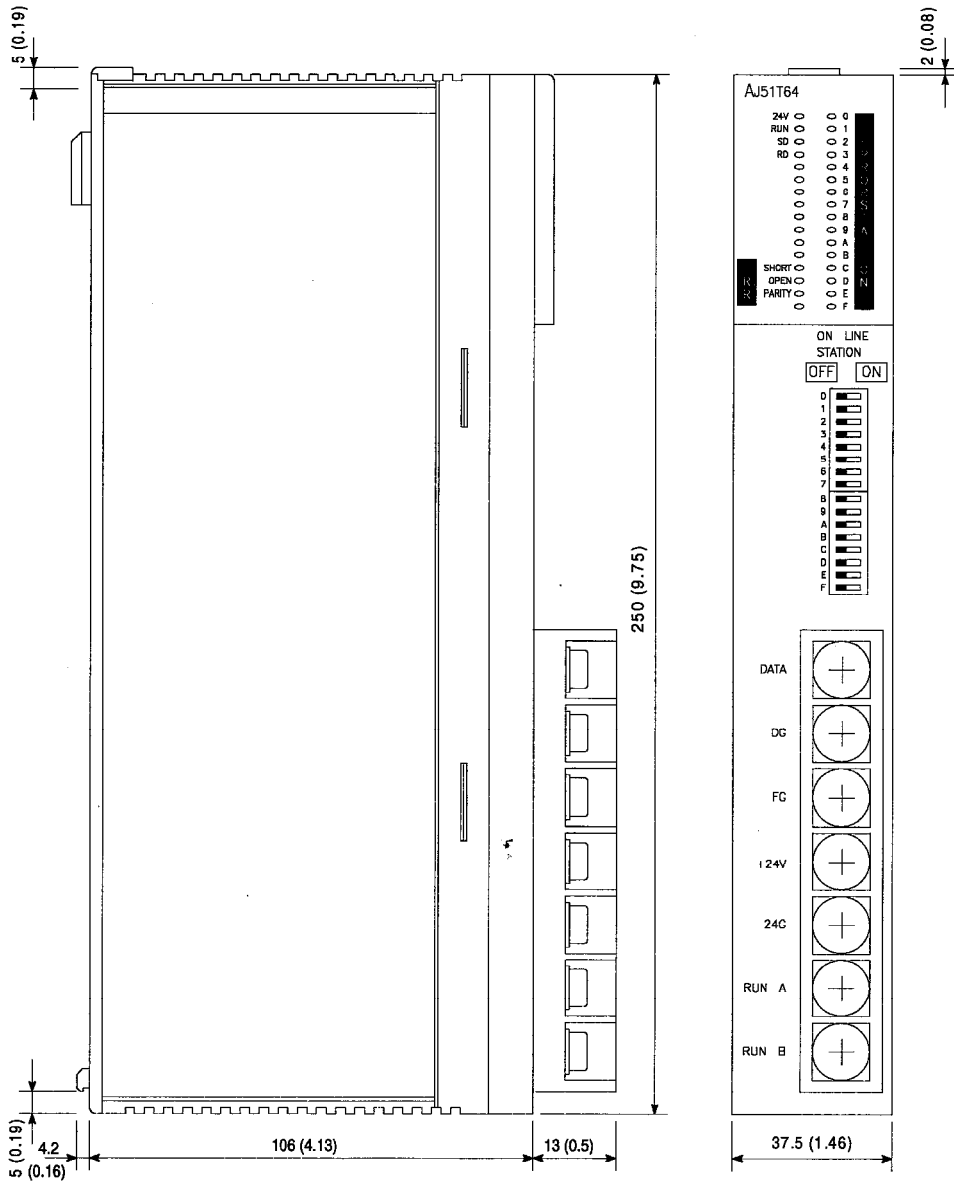
* Connect this to the COMB side if the sensor is a 2-wire type.

APPENDICES

APPENDIX 1 EXTERNAL DIMENSIONS

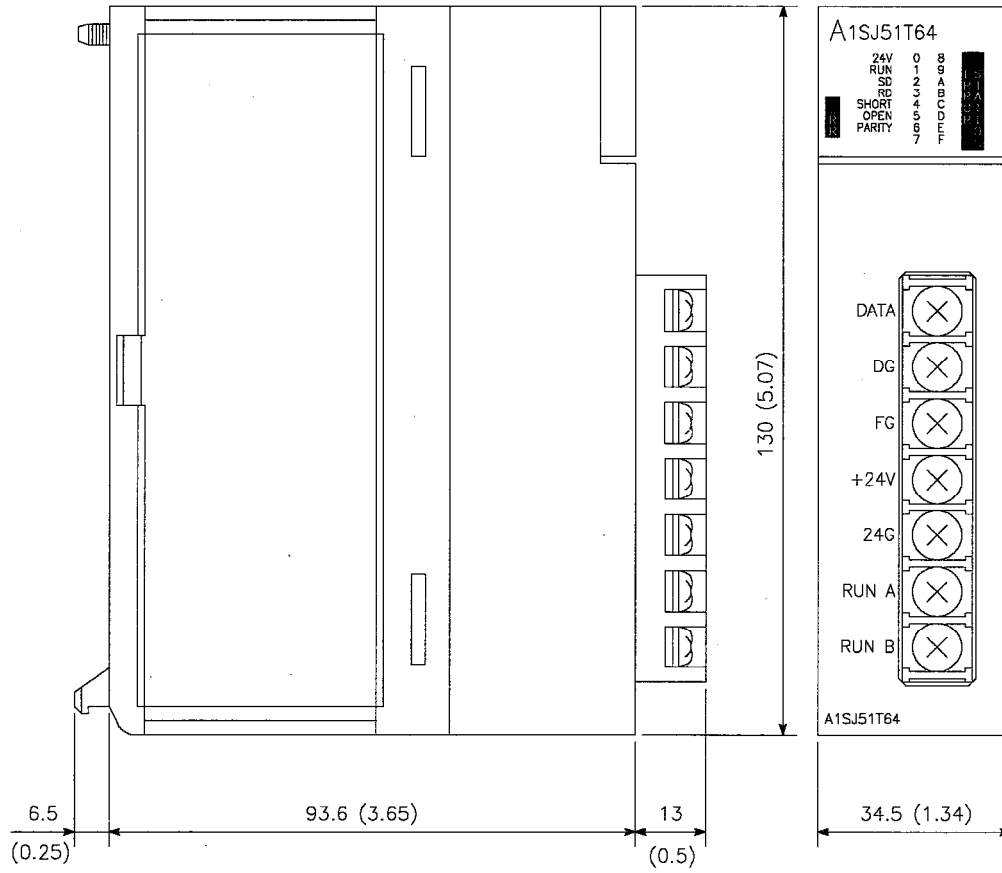
1.1 Master Module

(1) AJ51T64



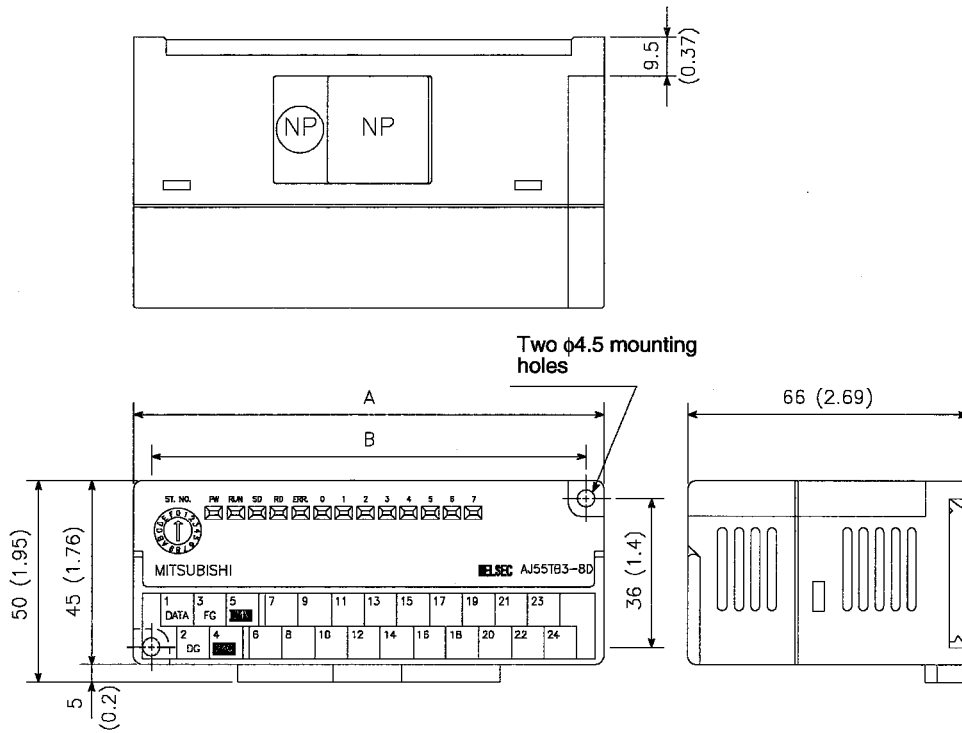
Unit: mm (inch)

(2) A1SJ51T64



Unit: mm (inch)

1.2 Remote I/O Unit



Model Name	Changed Dimensions	
	A	B
AJ55TB[][]-4[][]	82 (3.23)	73 (2.87)
AJ55TB[][]-8[][]	114 (4.4)	105 (4.09)
AJ55TB[][]-16[][]	177 (6.97)	168 (6.61)

Unit: mm (inch)

IMPORTANT

- (1) Design the configuration of a system to provide an external protective or safety interlocking circuit for the PCs.
- (2) The components on the printed circuit boards will be damaged by static electricity, so avoid handling them directly. If it is necessary to handle them take the following precautions.
 - (a) Ground your body and the work bench.
 - (b) Do not touch the conductive areas of the printed circuit board and its electrical parts with non-grounded tools, etc.

Under no circumstances will Mitsubishi Electric be liable or responsible for any consequential damage that may arise as a result of the installation or use of this equipment.

All examples and diagrams shown in this manual are intended only as an aid to understanding the text, not to guarantee operation. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.

Owing to the very great variety in possible applications of this equipment, you must satisfy yourself as to its suitability for your specific application.

MELSEC-I/O Link Remote I/O System Master Module
type AJ51T64/A1SJ51T64

User's Manual

MODEL	A1SJ51T64-U-E
MODEL CODE	13J748
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 **MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE : MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-8310 TELEX : J24532 CABLE MELCO TOKYO
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