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

| IB No. | IB-0800177-A |
| --- | --- |
| Model | AJ65FBTA4-16D-U |

## AJ65FBTA4-16D CC-Link System Low Profile Waterproof Type Remote I/O Module User's Manual

## ● SAFETY PRECAUTIONS ●
(Read these precautions before using.)

When using this equipment, thoroughly read this manual. Also pay careful attention to safety and handle the module properly.
These precautions apply only to this 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 result in 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 PRECATUIONS]

#### ◇DANGER
● When a communication error occurs in the data link, the communication error station will be in the following condition. Configure an interlocking circuit in a sequence program using the communication status information so that the safety of the overall system is always maintained.
Accident may occur due to output error or malfunction.
(1) Input points from remote I/O station will be all switched off.
(2) Output points from remote I/O station will be all switched off.
● Input could be switched on or off when a problem occurs in the remote I/O modules. So build an external monitoring circuit that will monitor any output signals that could cause a serious accident.

#### ⚠CAUTION
● Use each module in an environment as specified in the "general specification" in the CPU module user's manual. Usage of the module outside the general specification range may cause electric shock, fire, malfunction, product damage or deterioration.
● Do not have control cables and communication cables bundled with or placed near by the main circuit and/or power cables. Wire those cables at least 100mm(3.94 inch) away from the main circuit and/or power cables. It may cause malfunction due to noise interference.

### [INSTALLATION PRECAUTIONS]

#### ⚠CAUTION
● Do not directly touch the module's conductive parts.
Doing so could cause malfunction or trouble in the module.
● Tighten the module securely using DIN rail or installation screws within the specified torque range.
Loose terminal screws may cause a short circuit or erroneous operation. If the terminal screws are too tight, it may cause falling, short circuit or erroneous operation due to damage of the screws.

### [WIRING PRECAUTIONS]

#### ◇DANGER
● Perform installation and wiring after disconnecting the power supply at all phases externally. If the power is not disconnected at all phases an electric shock or product damage may result.

#### ⚠CAUTION
● Be sure to ground the FG terminal to the protected grounding conductor. Otherwise there will be a danger of malfunctions.
● Fix the attachment screws of the waterproof cap and communication adapter securely within the specified torque range.
Loose attachment screws may cause a fire or erroneous operation. If the attachment screws are too tight, it may cause a short circuit or erroneous operation due to damage of the screws.
● Perform correct wiring for the module according to the product's rated voltage and terminal arrangement. Connecting to a power supply different from rating or miss-wiring may cause fire and/or product failure.
● Fix terminal screws securely within the regulated torque. Loose terminal screws may cause fire and/or malfunction.
If the terminal screws are too tight, it may cause short circuit or erroneous operation due to damage of the screws.
● Make sure foreign objects do not get inside the module, such as dirt and wire chips. It may cause fire, product failure or malfunction.
● IP67 is only satisfied when the waterproof plug, waterproof cap, and communication adapter are all connected.
● Do not attach the communication cable to the I/O connector in order to keep the same form for the I/O connector, communication connector and the power connector. Otherwise, the module may be damaged or there may be erroneous operation.

### [STARTING AND MAINTENANCE PRECAUTIONS]

#### ◇DANGER
● Do not touch terminals when the power is on. It may cause an electric shock or malfunction.
● Perform cleaning the module or retightening of terminal screws after turning off the all external power supply for sure. If you do not switch off the external power supply, it will cause failure of malfunction of the module.

#### ⚠CAUTION
● Never try to disassemble of modify module. It may cause product failure, malfunction, fire or cause injury.
● Make sure to switch all phases of the external power supply off before installing or removing the module to/from the panel. If you do not switch off the external power supply, it will cause failure or malfunction of the module.
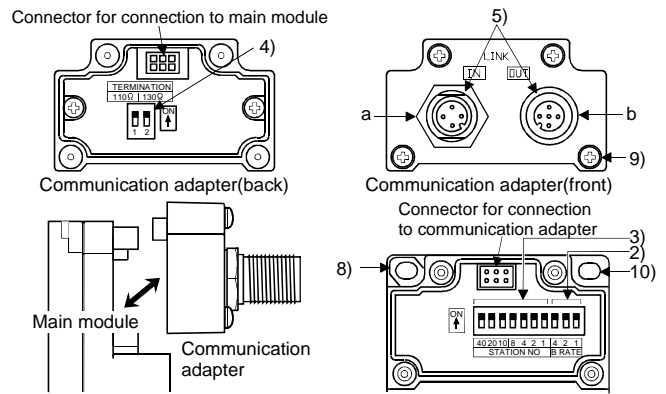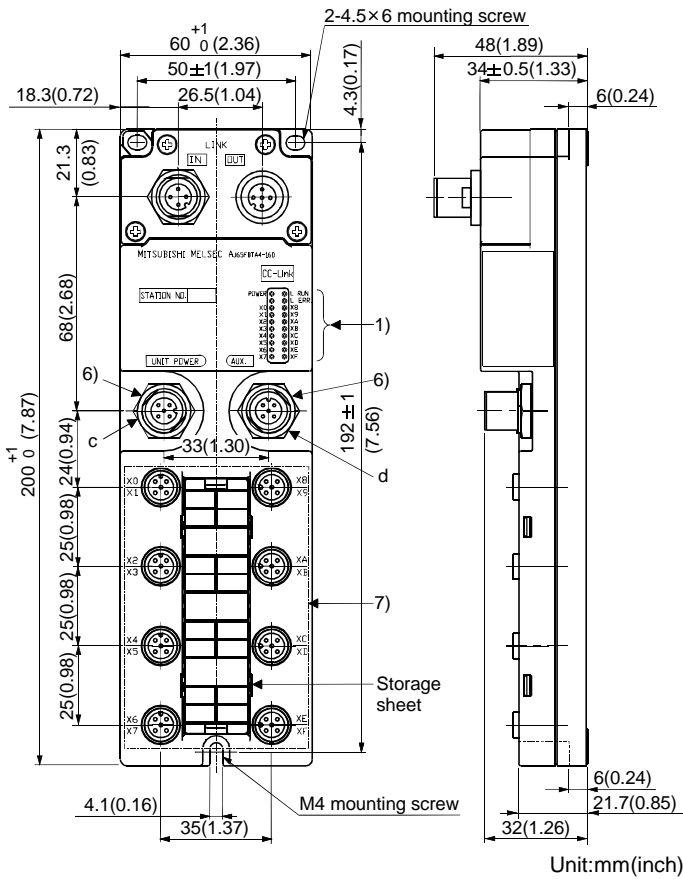
### [DISPOSAL PRECAUTIONS]

#### ⚠CAUTION
● When disposing of this product, treat it as industrial waste.
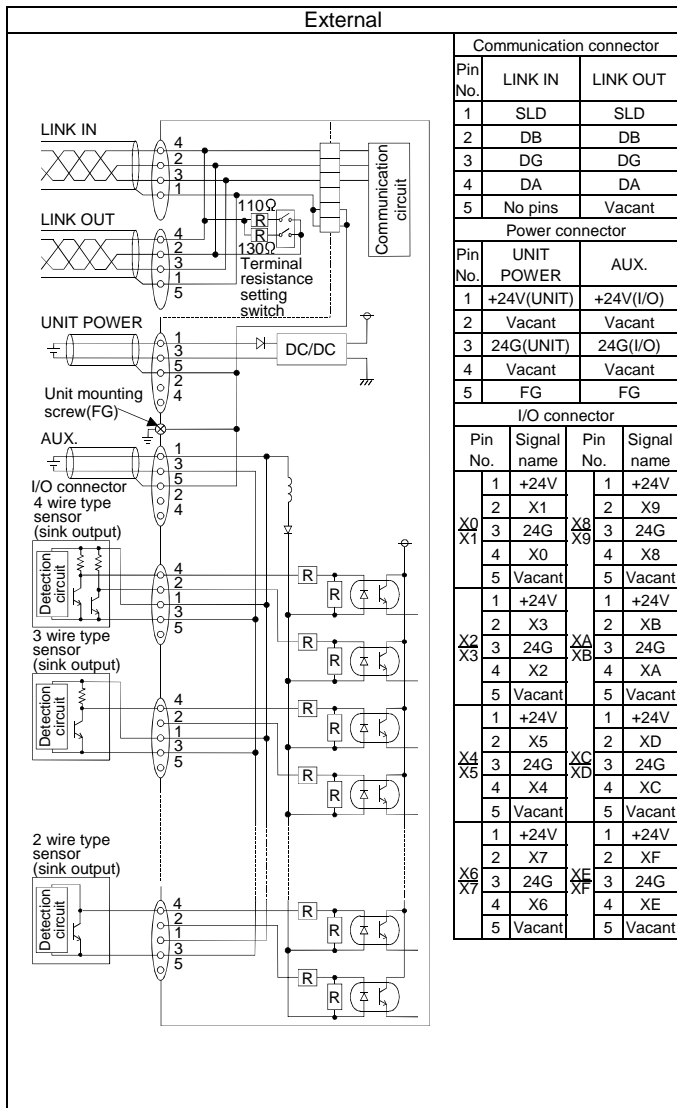
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## 1. Specification

| Specification | | Description |
| --- | --- | --- |
| Protection of degree | | IP67 |
| Number of input points | | 16 points |
| Isolation method | | Photocoupler |
| Rated input voltage | | 24VDC |
| Rated input current | | Approx. 7mA |
| Operating voltage range | | 20.4 to 26.4VDC (ripple ratio : within 5 %) |
| Max. simultaneous ON input points | | 100 % |
| ON voltage/ON current | | 14V or higher/3.5mA or higher |
| OFF voltage/OFF current | | 6V or lower/1.7mA or lower |
| Input resistance | | Approx. 3.3kΩ |
| Response time | OFF→ON | 1.5ms or lower (when 24VDC) |
| | ON→OFF | 1.5ms or lower (when 24VDC) |
| Input form | | Positive Common (Sink type) |
| Common wiring method | | 16 points/1 common (waterproof connector 2 to 4-wire type) |
| Number of stations occupied | | 1 station 32 points assignment (use 16points) |
| I/O module power supply | Voltage | 20.4 to 26.4VDC (ripple ratio : within 5%) |
| | Current | 40mA or lower (When 24VDC and all point is on) |
| Noise durability | | DC type noise voltage 500Vp-p noise width 1µs,noise carrier frequency 25 to 60Hz (noise simulator condition) |
| Withstand voltage | | 500VAC for 1 minute between all DC external terminals and ground |
| Insulation resistance | | 10 MΩ or higher, measured with a 500VDC insulation resistance tester |
| Weight | | 0.40kg |

For information about the connection devices necessary to use the main module, see the CC-Link System Small-Type Remote I/O Module User's Manual.

## Dimensional diagram (left top)



Unit:mm(inch)

2-4.5×6 mounting screw

60 +1 0 (2.36)
50±1(1.97)
26.5(1.04)
18.3(0.72)
4.3(0.17)
48(1.89)
34±0.5(1.33)
6(0.24)
21.3(0.83)
68(2.68)
192±1(7.56)
200 +1 0 (7.87)
24(0.94)
25(0.98)
25(0.98)
25(0.98)
25(0.98)
33(1.30)
35(1.37)
4.1(0.16)
32(1.26)
6(0.24)
21.7(0.85)

MITSUBISHI MELSEC A65FBTA4-16D
CC-Link
STATION NO.
POWER / L RUN / L ERR
UNIT POWER / AUX.
X0 X1 X2 X3 X4 X5 X6 X7 X8 X9 XA XB XC XD XE XF

1)
6)
6)
c
d
7)
Storage sheet
M4 mounting screw
LINK IN / OUT
UNIT POWER / AUX.

## Communication adapter (right top)



Connector for connection to main module
Communication adapter(back)
TERMINATION 110Ω 130Ω 1 2
4)
Communication adapter(front)
LINK IN / OUT
a
b
5)
9)
Main module
Communication adapter
Connector for connection to communication adapter
8)
ON
40 20 10 8 4 2 1 4 2 1
STATION NO    B RATE
3)
2)
10)

## External wiring diagram (left bottom)



External

LINK IN
LINK OUT
UNIT POWER
Unit mounting screw(FG)
AUX.
I/O connector 4 wire type sensor (sink output)
Detection circuit
3 wire type sensor (sink output)
Detection circuit
2 wire type sensor (sink output)
Detection circuit
110Ω R R 130Ω R
Terminal resistance setting switch
Communication circuit
DC/DC

### Communication connector

| Pin No. | LINK IN | LINK OUT |
|---|---|---|
| 1 | SLD | SLD |
| 2 | DB | DB |
| 3 | DG | DG |
| 4 | DA | DA |
| 5 | No pins | Vacant |

### Power connector

| Pin No. | UNIT POWER | AUX. |
|---|---|---|
| 1 | +24V(UNIT) | +24V(I/O) |
| 2 | Vacant | Vacant |
| 3 | 24G(UNIT) | 24G(I/O) |
| 4 | Vacant | Vacant |
| 5 | FG | FG |

### I/O connector

| | Pin No. | Signal name | | Pin No. | Signal name |
|---|---|---|---|---|---|
| X0/X1 | 1 | +24V | X8/X9 | 1 | +24V |
| | 2 | X1 | | 2 | X9 |
| | 3 | 24G | | 3 | 24G |
| | 4 | X0 | | 4 | X8 |
| | 5 | Vacant | | 5 | Vacant |
| X2/X3 | 1 | +24V | XA/XB | 1 | +24V |
| | 2 | X3 | | 2 | XB |
| | 3 | 24G | | 3 | 24G |
| | 4 | X2 | | 4 | XA |
| | 5 | Vacant | | 5 | Vacant |
| X4/X5 | 1 | +24V | XC/XD | 1 | +24V |
| | 2 | X5 | | 2 | XD |
| | 3 | 24G | | 3 | 24G |
| | 4 | X4 | | 4 | XC |
| | 5 | Vacant | | 5 | Vacant |
| X6/X7 | 1 | +24V | XE/XF | 1 | +24V |
| | 2 | X7 | | 2 | XF |
| | 3 | 24G | | 3 | 24G |
| | 4 | X6 | | 4 | XE |
| | 5 | Vacant | | 5 | Vacant |

## 2. Name and Setting of Each Area

| No. | Item | Description | | |
|---|---|---|---|---|
| 1) | Operating status indicator LEDs | LED name | Confirmation details | |
| | | POWER | On: Power supply on. Off: Power supply off. | |
| | | L RUN | On: Normal communication. Off : Communication cutoff(time expiration error). | |
| | | L ERR. | On: Communication data error. Flicker at regular intervals: Indicates that the station number setting or transmission speed setting switch position was changed while power is on. Flicker at irregular intervals: When the connection of the terminal resistor was forgotten; when the cable for the module, CC-Link is receiving noise influence. Off: Normal communication. | |
| | | X0 to XF | On: INPUT ON. Off: INPUT OFF. | |

### 2) Transmission speed setting

| Setting value | Setting switch status 4 | 2 | 1 | Transmission speed |
|---|---|---|---|---|
| 0 | OFF | OFF | OFF | 156 kbps |
| 1 | OFF | OFF | ON | 625 kbps |
| 2 | OFF | ON | OFF | 2.5 Mbps |
| 3 | OFF | ON | ON | 5.0 Mbps |
| 4 | ON | OFF | OFF | 10 Mbps |

Be sure to set the transmission speed within the above range.
Remove the communication adapter on the top part of the module to set the transmission speed. (When shipped from the factory, all settings are set to OFF.)

### 3) Station number setting switches

Select "10", "20" or "40" to set the ten's place of the station number.
Select "1","2","4" or "8" to set the one's place of the station number.
Always set the station number within the range of 1 to 64. (*1)
(Example) Set the switches as below when setting the station number to 10:

| Station number | Ten's place 40 | 20 | 10 | One's place 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| 10 | OFF | OFF | ON | OFF | OFF | OFF | OFF |

Remove the communication adapter on the top part of the module to set the station number. (When shipped from the factory, all settings are set to OFF.)

### 4) Terminal resistance setting switches

The terminal register can be turned to the ON setting by using the select switch.

| DIP switch1 | DIP switch 2 | Contents |
|---|---|---|
| OFF | OFF | No terminal resistance |
| ON | OFF | 110Ω resistor ON |
| OFF | ON | 130Ω resistor ON |
| ON | ON | Setting prohibited |

(When shipped from the factory, all settings are set to OFF.)

### 5) Waterproof connector for transmission line *2

| | Silk | Contents |
|---|---|---|
| a | LINK IN | Connector for connecting the transmission line from the IN side (master station side). (Male 4 pins) |
| b | LINK OUT | Connector for connecting the transmission line from the OUT side. Be sure to attach the waterproof cap when not in use. (Female 5 pins) |

### 6) Waterproof connector for power line *2

| | Silk | Contents |
|---|---|---|
| c | UNIT POWER | Connector for supplying power to the module. (Male 5 pins) |
| d | AUX. | Connector for supplying power to a load, etc. (Male 5 pins) |

### 7) Waterproof connector for input connection *2

Waterproof connector for connection input signal. (Female 5 pins)
Be sure to attach waterproof cap A6CAP-WP2 (sold separately) when not in use. (Tightening torque range: 0.29 N/m to 0.34 N/m.)

### 8) FG metal fitting

For module FG terminal (tightening torque range: 0.78 N/m to 1.18 N/m)

### 9) Screw for communication adapter removal/attachment

Use this screw for removal/attachment of the communication adapter to the main module when online or when changing the switch settings. (Tightening torque range: 0.42 N/m to 0.58 N/m.)

### 10) Module attachment hole

Screw hole for module attachment. 2-4.5 X 6 length hole (M4 attachment screw) (Tightening torque range: 0.78 N/m to 1.18 N/m.)

*1: Duplicate station number cannot be set.
*2: Waterproof connector (based on IEC947-5-2, M12 type)