

## AJ65FBTA4-16DE 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".



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



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 PRECAUTIONS]



- 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.



- 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]



- 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]



- 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.



- 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]



- 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.



- Never try to disassemble or 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]



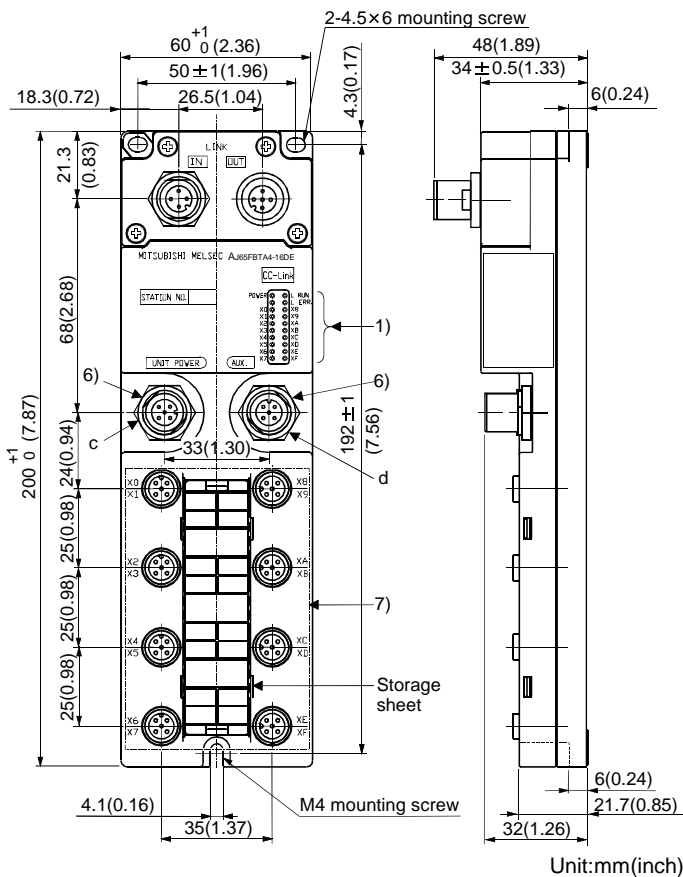
- When disposing of this product, treat it as industrial waste.

(0101)MEE

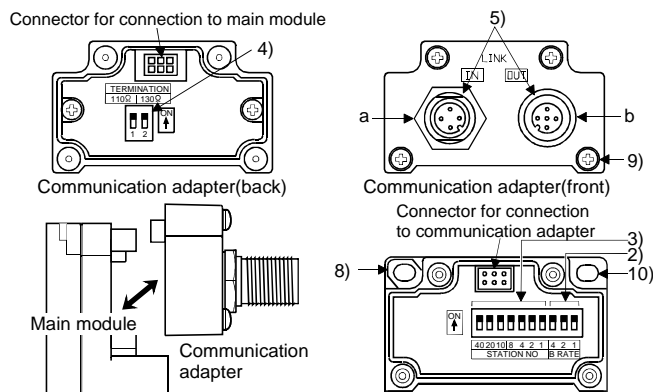
### 1. Specification

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 ON → OFF
	1.5ms or lower (when 24VDC) 1.5ms or lower (when 24VDC)
Input form	Negative Common (Source 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 Current
	20.4 to 26.4VDC (ripple ratio : within 5%) 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.



Unit:mm(inch)

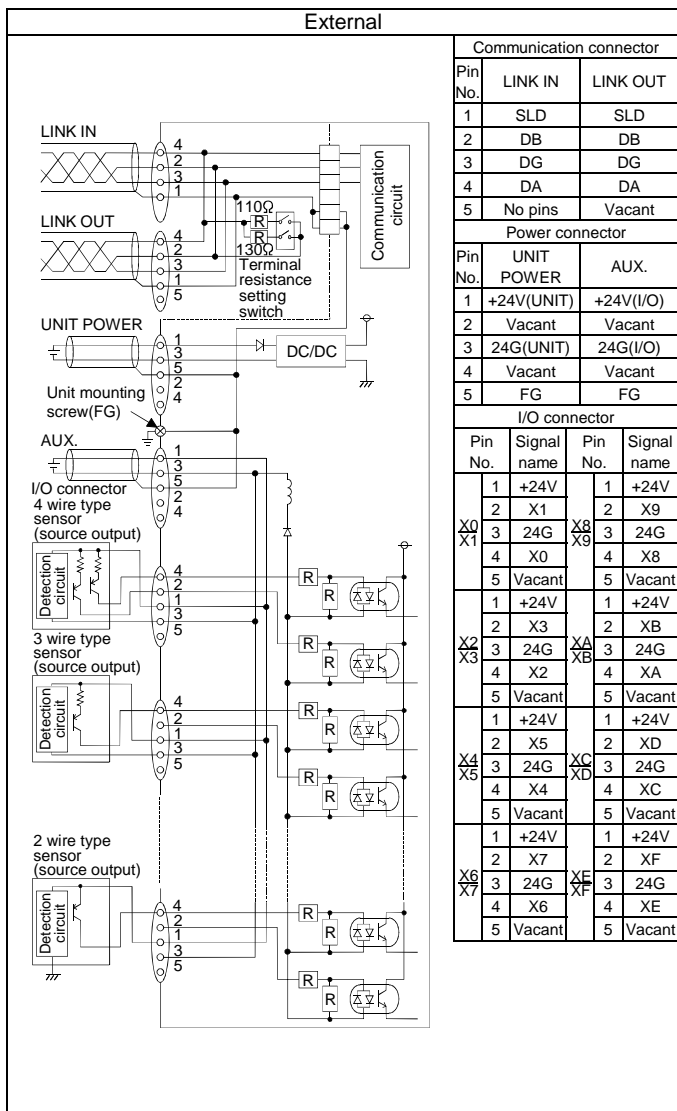


## 2. Name and Setting of Each Area

No.	Item	Description																																	
1)	Operating status indicator LEDs	Confirmation details																																	
		<table border="1"> <tr> <td>POWER</td> <td>On: Power supply on. Off: Power supply off.</td> </tr> <tr> <td>L RUN</td> <td>On: Normal communication. Off: Communication cutoff(time expiration error).</td> </tr> <tr> <td>L ERR.</td> <td>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.</td> </tr> </table>	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.																											
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.																																		
2)	Transmission speed setting	<table border="1"> <tr> <th rowspan="2">Setting value</th> <th colspan="3">Setting switch status</th> <th rowspan="2">Transmission speed</th> </tr> <tr> <th>4</th> <th>2</th> <th>1</th> </tr> <tr> <td>0</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>156 kbps</td> </tr> <tr> <td>1</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>625 kbps</td> </tr> <tr> <td>2</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>2.5 Mbps</td> </tr> <tr> <td>3</td> <td>OFF</td> <td>ON</td> <td>ON</td> <td>5.0 Mbps</td> </tr> <tr> <td>4</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>10 Mbps</td> </tr> </table> <p>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.)</p>	Setting value	Setting switch status			Transmission speed	4	2	1	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
		Setting value		Setting switch status				Transmission speed																											
4	2		1																																
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																															
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:																																	
		<table border="1"> <tr> <th rowspan="2">Station number</th> <th colspan="3">Ten's place</th> <th colspan="3">One's place</th> </tr> <tr> <th>40</th> <th>20</th> <th>10</th> <th>8</th> <th>4</th> <th>2</th> <th>1</th> </tr> <tr> <td>10</td> <td>OFF</td> <td>OFF</td> <td>ON</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> <td>OFF</td> </tr> </table> <p>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.)</p>	Station number	Ten's place			One's place			40	20	10	8	4	2	1	10	OFF	OFF	ON	OFF	OFF	OFF	OFF											
Station number	Ten's place			One's place																															
	40	20	10	8	4	2	1																												
10	OFF	OFF	ON	OFF	OFF	OFF	OFF																												
4)	Terminal resistance setting switches	The terminal register can be turned to the ON setting by using the select switch.																																	
		<table border="1"> <tr> <th>DIP switch1</th> <th>DIP switch 2</th> <th>Contents</th> </tr> <tr> <td>OFF</td> <td>OFF</td> <td>No terminal resistance</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>110・resistor ON</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>130・resistor ON</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>Setting prohibited</td> </tr> </table> <p>(When shipped from the factory, all settings are set to OFF.)</p>	DIP switch1	DIP switch 2	Contents	OFF	OFF	No terminal resistance	ON	OFF	110・resistor ON	OFF	ON	130・resistor ON	ON	ON	Setting prohibited																		
DIP switch1	DIP switch 2	Contents																																	
OFF	OFF	No terminal resistance																																	
ON	OFF	110・resistor ON																																	
OFF	ON	130・resistor ON																																	
ON	ON	Setting prohibited																																	
5)	Waterproof connector for transmission line *2	<table border="1"> <tr> <th>Silk</th> <th>Contents</th> </tr> <tr> <td>a LINK IN</td> <td>Connector for connecting the transmission line from the IN side (master station side). (Male 4 pins)</td> </tr> <tr> <td>b LINK OUT</td> <td>Connector for connecting the transmission line from the OUT side. Be sure to attach the waterproof cap when not in use. (Female 5 pins)</td> </tr> </table>	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)																											
		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	<table border="1"> <tr> <th>Silk</th> <th>Contents</th> </tr> <tr> <td>c UNIT POWER</td> <td>Connector for supplying power to the module. (Male 5 pins)</td> </tr> <tr> <td>d AUX.</td> <td>Connector for supplying power to a load, etc. (Male 5 pins)</td> </tr> </table>	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)																											
		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)



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
1	+24V	1	+24V
2	X1	2	X9
3	24G	3	24G
4	X0	4	X8
5	Vacant	5	Vacant
X2 X3		XA XB	
1	+24V	1	+24V
2	X3	2	XB
3	24G	3	24G
4	X2	4	XA
5	Vacant	5	Vacant
X4 X5		XC XD	
1	+24V	1	+24V
2	X5	2	XD
3	24G	3	24G
4	X4	4	XC
5	Vacant	5	Vacant
X6 X7		XE XF	
1	+24V	1	+24V
2	X7	2	XF
3	24G	3	24G
4	X6	4	XE
5	Vacant	5	Vacant