1. GENERAL DESCRIPTION

1 GENERAL DESCRIPTION

This manual gives the specifications and names of parts of the A1SJ71E71-B2/B5 Ethernet Interface Module (hereafter called the A1SJ71E71-B2/B5) which is used to connect a MELSEC-A series programmable controller to a computer using the Ethernet TCP/IP method

(1) Applicable CPUs and Maximum Number of A1SJ71E71-B2/B5s

CPU Module	Maximum Number of Modules	Note
A1SCPU C24	1	When the following modules are used with the AJ71E71 B2/B5, they must be included in the total number of modules
A1SCPU (S1)		• A1SJ71C24-R2/R4/PRF A1SD51S
A1SJCPU	2	 AD51(S3), AD51H(S3), AJ71C21(S1) (in
A2SCPU (S1)		 AD51(S3), AD51H(S3), AJ71C21(S1) (in the BASIC program mode), AJ71C22 (S1)/C23/C24(S3/S6/S8), AJ71UC24 AJ71P41 AJ71E71
A2ASCPU (S1)	6	AJ/1841 AJ/18/1

(2) Applicable Base Units

The A1SJ71E71-B2/B5 can be loaded in any slot of a main base unit or extension base unit

(3) On unpacking the A1SJ71E71-B2/B5, make sure that the following items have been supplied.

Model	Name of Item	Quantity
A1SJ71E71-B2	A1SJ71E71 B2 Cheapernet Interface Module	1
	T-shaped BNC connector UG-274/U	1
A1SJ71E71-B5	A1SJ71E71-B5 Ethernet Interface Module	1

(4) Related Manuals

For the pre-operation settings and procedure, detailed explanations of each function, and troubleshooting, refer to the following manuals A1SJ71E71-B2/A1SJ71E71-B5 Ethernet Interface

Module User's Manual (IB-66547)

2. PERFORMANCE SPECIFICATIONS

2 Performance Specifications

		0			
item		Specifications			
		A1SJ71E71-B2 10BASE2 (Cheapernet)	A1SJ71E71 B5 10BASE5 (Ethernet)		
	Data transmission speed	10 Mbps			
	Transmission method	Base band			
Transmission specifications	Max network distance	925 m	2500 m		
	Max segment length	185 m	500 m		
	Max number of nodes	30/segment	100/segment		
	Min distance between nodes	0.5 m	2.5 m		
Communication	Fixed buffer	2 kbytes x 8			
data storage memory	Random access buffer	12 kbytes x 1			
Number of I/O points		32 points			
5 VDC internal current consumption [A]		0 52	0 35		
12 VDC external power supply capacity			Must satisfy the transceiver and transceiver cable specifications, taking the voltage drop in the module (max 0 8 V) into account		
Outside dimensions mm (inch)		130(5 07)[H] x 34 5(1 36)[W] x 93 6(3 69)[D]			
Weight kg (lb)		0 30(0 66) *1	0 27(0 6)		
Communication data storage memory Fixed buffer Random access buffer Random access buffer Number of I/O points 5 VDC internal current consumption [A] 12 VDC external power supply capacity Outside dimensions mm (inch)		2 kbytes x 8 12 kbytes x 1 32 points 0 52 130(5 07)[H] x 34 5 93 6(3 69)[D]	0 35 Must satisfy the transceiver and transceiver cab specifications, taking the volta, drop in the mod (max 0 8 V) int account x(1 36)[W] x		

*1 This includes the weight of the T-adapter (20g) and the terminal resistor (10g)

For the general specifications, refer to the User's Manual for the PC CPU you are using

Ethernet Interface Module type A1SJ71E71-B2/A1SJ71E71-B5 (Hardware)

MITSUBISHI

PROGRAMMABLE

A SAFETY CAUTION

To ensure correct use of this equipment, you must read the safety precautions in the CPU module user s manual before using it

INTRODUCTION

Thank you for choosing the Mitsubishi MELSEC-A Series of General Pur pose 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

User's Manual

IB (NA) 66546-A

The United States	Mitsubishi Electronics America Inc. (Industrial Automation Division) 800 Biermann Court, Mt Prospect IL 60056 Phone: (708)298 9223
Canada	Mitsubishi Electric Sales Canada, Inc , (Industrial Automation Division) 4299 14th Avenue, Markham: Ontario L3R OJ2 Phone: (416)475 7728
United Kingdom	Mitsubishi Electric UK Ltd. (Industrial Sales Division) Travellers Lane, Hatfield, Herts AL10 8XB Phone: (0707)276100
Germany	Mitsubishi Electric Europe GmbH, (Industrial Automation Division) Gothaer Strasse 8, Postfach 1548 D 4030 Ratingen 1 Phone (02102)4860
faiwan	Setsuyo Enterprise Co., Ltd., (106) 11th Fl., Chung Ling Bldg 363 Sec 2 Fu Hsing S Rd Taipei Taiwan R.O.C. Phone: (02)732 0161
Hongkong (& China)	Ryoden International Ltd., (Industrial & Electrical Controls Division) 10/F Manulife Tower, 169 Electric Rd North Point Hong Kong Phone: 8878870
Singapore (& Malaysia)	MELCO Sates Shingapore Pte. Ltd., (Industrial Division) 307 Atexandra Rd #05 01/02 Mitsubishi Electric Bldg Singapore 0315 Phone: 4732308
Thailand	F.A. Tech Co. Ltd., 1138/33-34 Rama 3 Rd , Vannawa Bangkok 10120 Phone: (02)295-2861-4
Avetralia	Mitsubishi Electric Australia Pty Ltd. (Industrial Controls Division) 348 Victoria Rd., Rydalmere: N.S.W. 2116 Phone: (02)684 7200
Republic of South Africa	M S A Manufacturing (Pty) Ltd (Factory Automation Division) P.O. Box 39733, Bramley Johannesburg 2018 Phone: (011)444 8080
2	MITSUBISHI ELECTRIC CORPORATION
	OFFICE SITSUBISHIDENKI BLDS MARUNOUCH TOKYO 100 TELEX: 324882 CABLE MELCO TOKYO

REMARK

The maximum node interval and segment length are illustrated below



3. NOMENCLATURE

3. NOMENCLATURE



No	Name	Description					
(1)	LED	RUN		Normal run indication			
		RDY		"Ready for communication" indication			
		BSY		"Communication processing in progress" indication			
		B1		Connection No 1 connection status			
		B2		Connection No 2 connection status			
		B3		Cor	nection No 3 connection status		
		84		Cor	nection No 4 connection status		
	RUN B1 RUM CHK B2 RUM ERR.	B5		Cor	nection No 5 connection status		
	RDY B4 ROM ERR	B6		Cor	nection No 6 connection status		
	BSY B7 COM, ERR B8 FROM TD	B7		Cor	nection No 7 connection status		
		B8		Con	nection No 8 connection status		
		RAM CH	("RA	M test in progress" indication		
Į		RAM ERF	1	"RA	M error detected" indication		
Ī		ROM CH	<	"RO	ROM test in progress" indication		
		ROM ERR		*RC	OM error detected* indication		
					"Self loopback test in progress" indication		
		COM ERR		"Self loopback error detected" indication			
				"Communication error detected" indication			
				"Data being read/written" indication			
(2)	Mode Setting Switch	Used to select the operating mode from among "online", "offline" or "self diagnostic test" Normally, leave the setting at "online" The factory setting is "0" (online)					
		Setting number	Sett na		Meaning		
		0	Onli	ne	Communication with other nodes is executed in the RUN mode		
	8 1	1	Offli	ne	The module is disconnected from the network		
·		2	Test	1	Self diagnostic test executed by using the self loopback test		
		3	Test	2	RAM test executed		
		4 Test		3	ROM test executed		
		5 to 9	Unu	sable			

No	Name	Description				
(3)	Communication condition setting switches	Used to select the start condition, communication processing condition, code type during communication, and presence/absence of TCP time out error processing The factory setting is SW1 to SW4 all "OFF"				
		Switch	Set Item		Meaning of Settings	
		SW1	Selection of line process ing when TCP time out error occurs	Used to select the line processing when a TCP time out error occurs		
	ON OFF Sw1			OFF	The line is closed on occurrence of a TCP time out error	
				ON	The line does not close on occurrence of a time out error	
		SW2	Data code selection	Used to select the data code type of data communicated with other nodes		
	SW3 SW4			OFF	Communication executed in binary code	
		: 		ON	Communication executed in ASCII code	
		SW3	CPU communi cation timing setting	Used to enable/disable writing of data from other nodes while the PC CPU is in the RUN mode		
				OFF	Writing from other nodes is disabled while the PC CPU is in the RUN mode	
				ON	Writing from other nodes is possible even while the PC CPU is in the RUN mode	
		SW4	Initial timing setting		to select the timing for the of initial processing	
				OFF	Quick start (start with no delay time) Make this setting when the system comprises a single network	
				ON	Normal start (start after 20 seconds delay time) Make this setting when the system comprises multiple networks	
(4)	10BASE2 (Cheapernet) connector	Connector for connecting an A1SJ71E71 B2 to a 10BASE2 (Cheapernet)				
(5)	AUI (transceiver cable) connector	Connector for connecting an A1SJ71 B5 to an AUI (transceiver cable)				
.(6)	External power supply terminal	Power supply terminal used to supply power to a transceiver with the A1SJ71E71-B5 Length of bared wire: 13 mm Applicable wire size: 0 5 to 2 mm ²				

4. EQUIPMENT REQUIRED TO **CONFIGURE A NETWORK**

EQUIPMENT REQUIRED TO CONFIGURE A NETWORK 4

- (1) When using an A1SJ71E71-B2 (Cheapernet) the equipment required is that shown in the figure below This equipment must be procured by the user
 - (a) 10BASE2 (Cheapernet) coaxial cable RG-58/U
 - (b) BNC plug (for connection to a T-shape BNC con-nector) UG-86/U or equivalent
 - (c) Terminator
 - Plug type terminator BNC type or equivalent



Example Network System Configuration

- (2) When using an A1SJ71E71-B5 (Ethernet), the equipment required is that shown in the figure below This equipment must be procured by the user
 - (a) Use a coaxial cable for 10BASE5 (Ethernet), and N-connectors, N-terminators, transceivers, and transceiver cables, that satisfy IEEE802 3 10BASE5 standards Generally, use a transceiver that has a signal designated "SQETEST" or the "heart beat signal" (this signal executes a transceiver function which checks whether the transceiver operates normally after data is sent)
 - (b) Use a 12 VDC power supply to the transceiver that satisfies the specifications of the transceiver and transceiver cable, taking into account the voltage drop (max 0 8 V) in the A1SJ71E71-B5

REMARK

The IEEE802 3 standard includes the following stipulations

- Transceiver input terminal voltage ~ 12V $^{~6\%}$ to 15 V $^{+15\%}$
- Transceiver cable DC resistance 40 Ω/km max , length 50 m
- Transceiver max current consumption 500 mA or less

Accordingly, when the voltage drop of 0.8 V in the A1SJ71E71-B5 is taken into account, the guide range for the transceiver power supply is 13.08 V to 15.75 V



Example Network System Configuration

POINTS

- (1) Entrust 10BASE2 (Cheapernet) and 10BASE5 (Ethernet) installation work to a specialist contractor since adequate safety measures must be implemented For the installation environment, refer to JISX5252
- (2) When laying the transceiver cable, maintain a distance of at least 50 mm between it and power lines or circuits carrying large currents

5. HANDLING

5. HANDLING

51 Cautions on Handling

The following cautions must be observed when handling the A1SJ71E71-B2/B5

- (1) The case of the A1SJ71E71-B2/B5 is made of resin do not drop it or subject it to strong impact
- (2) Do not remove the printed circuit board from the case This could cause failure
- (3) Make sure that no wire offcuts or other debris enters the top of the module during wiring if anything does enter the module, remove it
- (4) Tighten the module mounting and terminal screws as specified below.

Screw	Tightening Torque Range		
Terminal screw for power supply connection (M4 screw)	40 N cm (4 kg cm) {3 5 lb inches}		
Module mounting screw (normally not necessary) (M4 screw)	78 5 to 117 6 N cm (8 to 12 kg cm) {6 9 to 10 3 lb inches}		

6. SELF-DIAGNOSTIC TESTS

6 Self-DIAGNOSTIC TESTS

61 Self-Loopback Test

The self-loopback test is a check whereby the node sends a test message to Itself through the network line and determines if the sent message is received unchanged the purpose is to check the hardware, including the communication circuit of the A1SJ71E71 This test takes about 5 seconds

- (1) How to do a self-loopback test
 - (a) Connect the A1SJ71-B2/B5 to a 10BASE2 or 10BASE5 line
 - (b) Set the mode setting rotary switch on the front of the A1SJ71E71-B2/B5 to "2"
 - (c) Reset the PC CPU, then start the self-loopback test Make sure the S C LED comes ON
- (2) Test results
 - (a) When the S C LED goes OFF, the self-loopback test is completed
 - (b) Confirm the test result with the S C ERR LED
 - Normal The SC ERR LED Is OFF
 - Faulty The SC ERR LED Is ON
 - (c) The following are the probable causes of faults
 - A1SJ71E71-B2/B5 hardware fault
 - 10BASE2/10BASE5 line fault
 - Faulty 12 VDC external power supply (when testing 10BASE5)
- (3) Post-test operation

Set the operating mode setting rotary switch on the front of the AJ71E71 to the online mode or another test mode, them reset the PC CPU

POINT

The hardware permits a self-loopback test to be executed while other nodes are online
However, if packets interfere with each other in the line, the test
will take longer than 5 seconds due to collisions between pack- ets
If this happens, stop data communication with the other nodes before executing the self-loopback test

7. OUTSIDE DIMENSIONS

7. OUTSIDE DIMENSIONS



Unit mm(inch)

REVISION



INPORTANT

- (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 human body and work bench
 - (b) Do not touch the conductive areas of the printed circuit board and its electrical parts with and 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 suitabillty for your specific application







Unit : mm(inch)