

# MITSUBISHI

PROGRAMMABLE CONTROLLER

# MELSEC-A

User's Manual

## Repeater Unit for the MELSECNET/10 Coaxial Bus System type A6BR10/A6BR10-DC

### 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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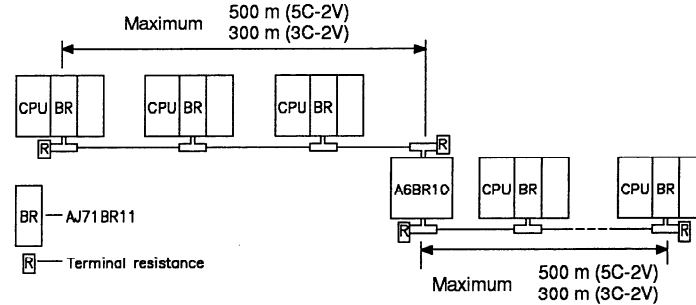
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Specifications subject to change without notice.

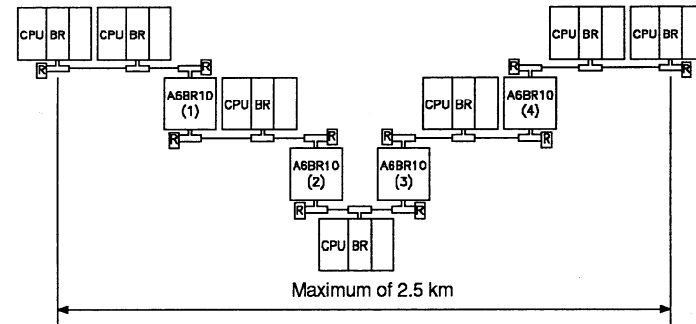
## 1. GENERAL DESCRIPTION

This user's manual describes the specification and connection methods of the A6BR10/A6BR10-DC Series Repeater Unit for the MELSECNET/10 Coaxial Bus System (hereinafter referred to as A6BR10). The A6BR10 is a unit for extending the distances between stations and the total extension distance of the coaxial bus system in a MELSECNET/10 Network System.

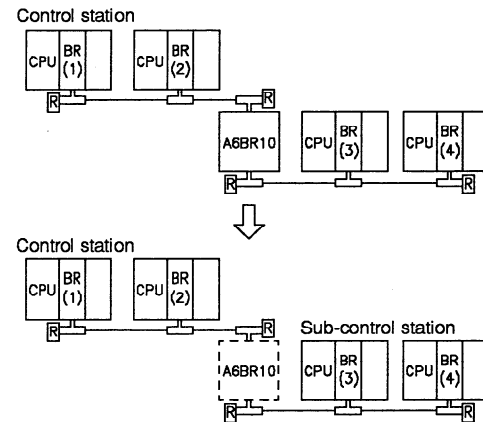
(1) An A6BR10 extends the connection distance of a network by a maximum of 500 m (5C-2V) or 300 m (3C-2V).



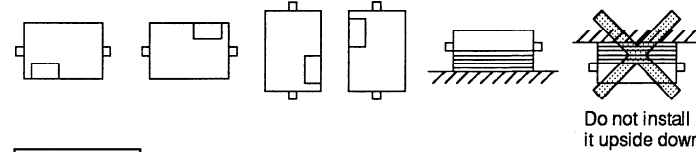
(2) One network may include up to four A6BR10s. When four A6BR10s are used in one network, the total extension distance will reach a maximum of 2.5 km.



(3) When an A6BR10 is down, the system is divided at the A6BR10. The following drawing shows an example of system division, where two separate data links are established between (1) and (2), and between (3) and (4).



(4) The A6BR10 can be installed in any direction. It can also be installed to a DIN rail (using the A6DIN2C DIN rail adapter).



Accessories

Two T-shape connectors

Items to be separately purchased

Terminal resistance ..... A6RCON-R75

## 2. SPECIFICATIONS

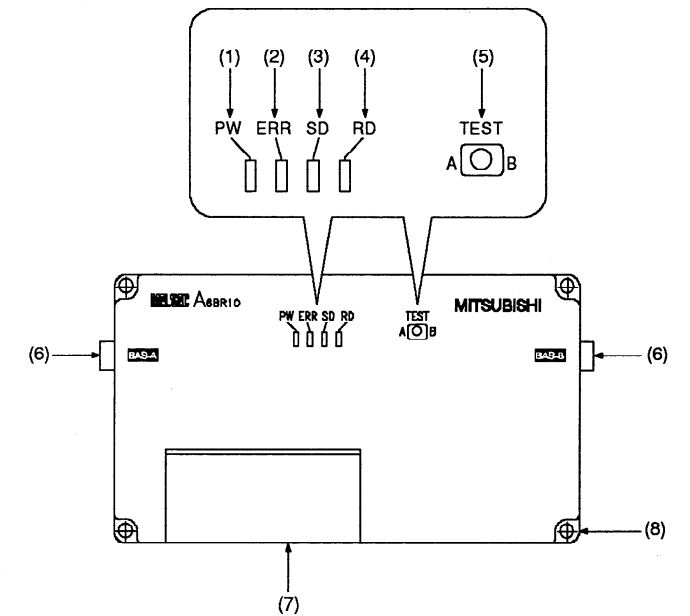
### 2.1 General Specifications

### 2.2 Performance Specifications

The following table gives the performance specifications of A6BR10/A6BR10-DC.

Item	A6BR10	A6BR10-DC
Transmission speed (baud rate)	10MBPS	
Max. number of units to be installed per network	4	
Extension distance per unit	300m(3C-2V), 500m (5C-2V)	
Total extension distance	300mX5=1.5km (3C-2V), 500mX5=2.5km (5C-2V)	
Max. number of connected stations	32 stations (AJ71BR11)	
Input power source		
Voltage	100 to 240 VAC +10% -15% (85 to 264 VAC)	24 VDC +30% -35% (15.6 VDC to 31.2 VDC)
Frequency	50/60 Hz ± 5%	—
Max. apparent power	21 VA	—
Max. power	—	9 W
Rush current	Max. 40A, within 8 msec	Max. 17A, within 1 msec
Efficiency	65% or more	65% or more
Allowable momentary power interruption time	20 msec	10 msec
Current consumption	0.2 A	0.6 A
Alarm output for abnormal continuous transmission	ERR1: On when the A6BR10 is abnormal (a power-off error). ERR2: On when the A6BR10 is normal.	
Insulation method	Non-isolated	
Rated switching voltage/current	24 VDC 2A (Resistance load) 240 VAC 2A(COSφ=1)	
Min. switching load	5 VDC 1mA	
Max. switching voltage	264 VAC 125 VDC	
Response time	OFF→ON	10 msec or less
	ON→OFF	12 msec or less
Life	Mechanical	10 million times or more
	Electrical	100 thousand times or more at rated switching voltage/ current load.
		200 VAC 1.5 A, 200 AAC 1A(COSφ=0.7) 100 thousand times or more
		200 VAC 1A, 200 AAC 0.5A(COSφ=0.35) 100 thousand times or more
	24 VDC 1A, 100 ADC 0.1A(L/R=7msec) 100 thousand times or more	
Surge absorber	Not provided	
External connection		
Output status	<p>The diagram below shows the output statuses of ERR1 and ERR2 corresponding to the LED statuses of PW (power) and ERR (error).</p>	
Mass	0.5 kg	

## 3. NAMES OF PARTS AND SETTINGS

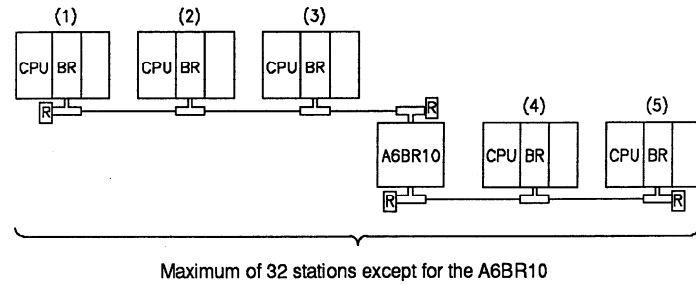


Contents	
(1)	POWER LED Turns on when the power is supplied to the A6BR10.
(2)	ERROR LED Turns on in the event of abnormal continuous transmission. To reset this status (to turn off ERROR LED), reapply power. If the LED is still on, the unit is abnormal and needs to be replaced.
(3)	SD LED Turns on when transmitting data.
(4)	RD LED Turns on when receiving data.
(5)	TEST Switch Used to conduct a hardware test for the BUS-A/BUS-B of the A6BR10. (Be sure to conduct a hardware test before data linking (operation).) Refer to 5. HARDWARE TEST for details.
(6)	Connector Used to connect the T-shape connector. Either connector can be used to connect to BUS-A or BUS-B. 
(7)	Terminal block The following illustrations show the connecting methods of the A6BR10. <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>A6BR10</p> <p>100/200 VAC Class 3 grounding See 2.2 Performance Specifications</p> </div> <div style="text-align: center;"> <p>A6BR10-DC</p> <p>24 VDC Class 3 grounding See 2.2 Performance Specifications</p> </div> </div>
(8)	Unit mounting holes Holes for mounting the A6BR10 on a board, etc.

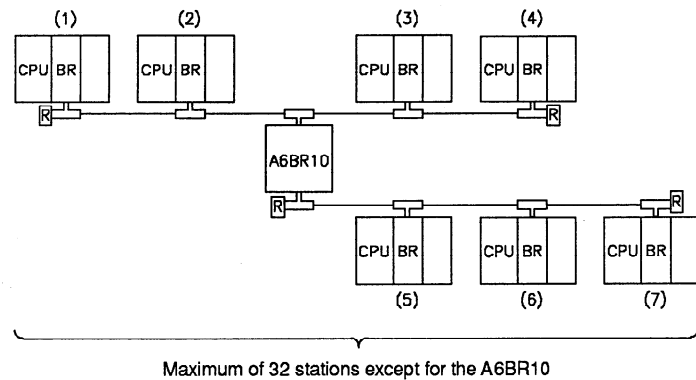
## 4. CONNECTING METHODS

There are two methods of connecting stations to extend a network.

- (1) Serial connection  
The A6BR10 is installed at the end of the network to extend the distance.



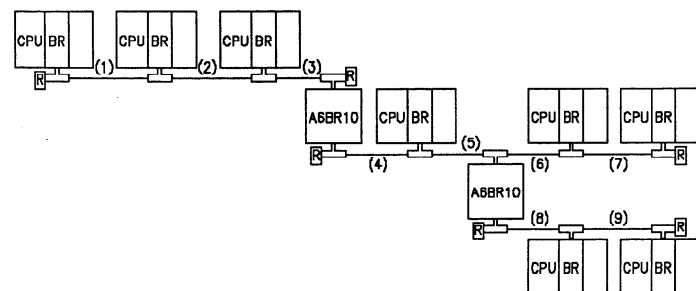
- (2) Multipoint connection  
The A6BR10 is installed in the middle of the network to extend the distance.



### Notes

The lengths of cables are limited between stations (including the lengths between the A6BR10 and its adjacent stations) whichever connecting method is adopted. (See the table below.)

[System example]



The limitations apply to all the nine cables in the drawing.

Transmission error may occur if cables other than those specified in the table are used.

### Cable length between stations

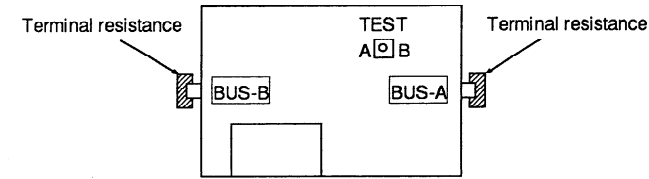
1 to 5 m (3C-2V, 5C-2V)
13 to 17 m (3C-2V, 5C-2V)
25 to 300 m (3C-2V)
25 to 500 m (5C-2V)

## 5. HARDWARE TEST

The purpose of a hardware test is to check the reception/transmission circuits of BUS-A and BUS-B of the A6BR10.

Do not conduct a hardware test during data linking (operation).

- (1) Test setup  
Attach terminal resistances on both of the BUS-A and BUS-B.



- (2) Test procedure  
Throw the TEST switch toward whichever is to be tested of the BUS-A and BUS-B.

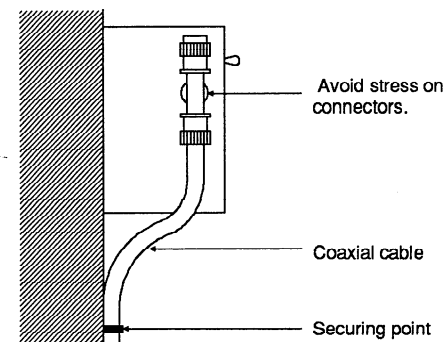
- (3) Test result  
Check the LED statuses of the SD and RD to obtain test result.

LED Status		Test Result
SD	RD	
On	On	Hardware normal
On	Off	Hardware faulty*
Off	On	Hardware faulty*

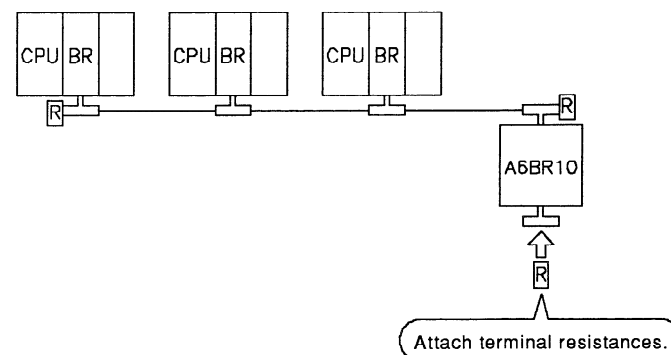
\*In the event of a hardware fault, the unit needs to be replaced.

## 6. INSTALLATION

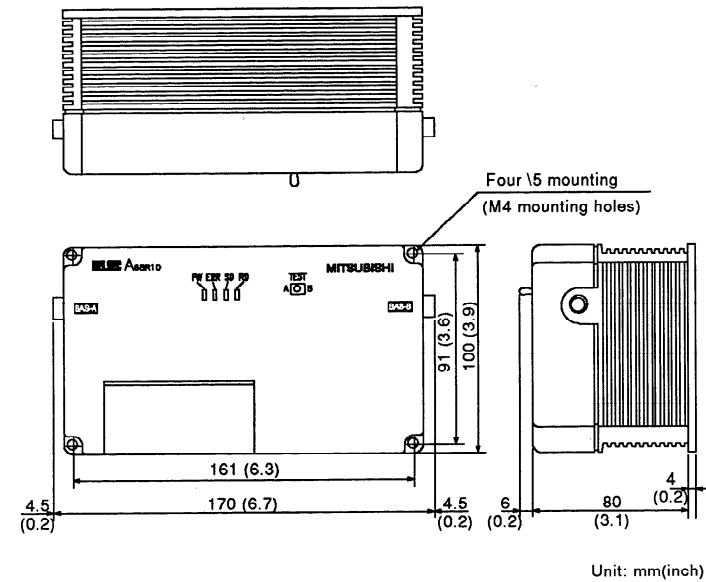
- (1) When installing the A6BR10 on a board, etc., secure coaxial cables in such a manner that does not put a stress on the connectors.



- (2) When the A6BR10 is installed in the network, make sure to attach terminal resistances to both of the BUS-A and BUS-B. Normal data linking cannot be established without terminal resistances.



## 7. EXTERNAL DIMENSION DIAGRAM



### REVISIONS

Revision	Description
A	
Jul., 1994	

### 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 can 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 suitability for your specific application.