# MITSUBISHI ELECTRIC

CITY MULTI Control System

and Mitsubishi Mr. SLIM Air Conditioners

## **MA Remote Controller**

## PAR-21MAA

### Installation Manual

This instruction manual describes how to install the MA Remote Controller for Mitsubishi Building Air Conditioning System, direct expansion type CITY MULTI air conditioner indoor units ("-A" type and later), and Mitsubishi Mr. SLIM packaged air conditioners. Please read this manual thoroughly and install the remote controller accordingly. For information on how to wire and install the air conditioning units, refer to the installation manual. After the installation, hand over this manual to users.

## 1 Safety Precautions

- Read these Safety Precautions and perform installation work accordingly.
- The following two symbols are used to dangers that may be caused by incorrect use and their degree:

This symbol denotes what could lead to serious injury or death if you misuse the PAR-21MAA.
This symbol denotes what could lead to a personal injury or damage to your property if you misuse the PAR-21MAA.

- After reading this installation manual, give it and the indoor unit installation manual to the end user.
- The end user should keep this manual and the indoor unit installation manual in a place where he or she can see it at anytime. When someone moves or repairs the PAR-21MAA, make sure that this manual is forwarded to the end user.

Ask your dealer or technical representative to install the unit. Any deficiency caused by your own installation may result in an electric shock or fire.	Ensure that installation work is done correctly following this installa- tion manual. Any deficiency caused by installation may result in an electric shock or fire.						
Install in a place which is strong enough to withstand the weight of the PAR-21MAA. Any lack of strength may cause the PAR-21MAA to fall down, resulting in personal injury.	All electrical work must be performed by a licensed technician, accord- ing to local regulations and the instructions given in this manual. Any lack of electric circuit or any deficiency caused by installation may result in an electric shock or fire.						
Firmly connect the wiring using the specified cables. Carefully check that the cables do not exert any force on the terminals. Improper wiring connections may produce heat and possibly a fire.	<b>Do not move and re-install the PAR-21MAA yourself.</b> Any deficiency caused by installation may result in an electric shock or fire. Ask your distributor or special vendor for moving and installation.						
Never modify or repair the PAR-21MAA by yourself. Any deficiency caused by your modification or repair may result in an electric shock or fire. Consult with your dealer about repairs.	To dispose of this product, consult your dealer.						

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Do not install in any place exposed to flammable gas leakage. Do not apply AC100V or AC200V to the remote controller. The maximum Flammable gases accumulated around the body of PAR-21MAA may cause voltage that can be applied to the remote controller is 12V. an explosion The remote controller may be damaged or may generate heat and cause a fire Do not use in any special environment. Using in any place exposed to oil (including machine oil), steam and sulfuric Do not install in any steamy place such a bathroom or kitchen. Avoid any place where moisture is condensed into dew. Doing so may cause gas may deteriorate the performance significantly or give damage to the com ponent parts. an electric shock or a malfunction When installing the remote controller in a hospital or communication Do not install in any place where acidic or alkaline solution or special facility, take ample countermeasures against noise. spray are often used. Inverters, emergency power supply generators, high-frequency medical equip-Doing so may cause an electric shock or malfunction. ment, and wireless communication equipment can cause the remote control-Use standard wires in compliance with the current capacity. ler to malfunction or to fail. Radiation from the remote controller may effect A failure to this may result in an electric leakage, heating or fire communication equipment and prevent medial operations on the human body Do not touch any control button with your wet hands. or interfere with image transmission and cause noise. Doing so may cause an electric shock or a malfunction. Wire so that it does not receive any tension. Tension may cause wire breakage, heating or fire Do not wash with water. Doing so may cause an electric shock or a malfunction. Completely seal the wire lead-in port with putty etc. Any dew, moisture, insects entering the unit may cause an electric shock or a Do not press any control button using a sharp object. malfunction Doing so may cause an electric shock or a malfunction. Do not install in any place at a temperature of more than 40°C or less than 0°C or exposed to direct sunlight. Doing so may cause deformation or malfunction

## **2** Confirming the Supplied Parts

Confirm that the box includes the following parts, in addition to this installation manual:

- 1. Remote controller (cover, body)
   1

   2. Cross recessed pan head screw (M4 × 30)
   2

   3. Wood screw (4.1 × 16, used for directly hooking to the wall)
   2

   4. Caution label (in 12 languages)
   1
- \*1 For the remote control, obtain a 2-core cable between 0.3 and 1.25  $\mbox{mm}^2$  at the site.
- \*2 PAC-YT32PTA cannot be connected.





Remote controller cover

Remote controller body

## 3 How To Install

#### 1. Choose a place in which to install the remote controller (switch box).

- Be sure to observe the following steps:
- (1) Temperature sensors are provided with both the remote controller and the indoor units. When using the remote controller temperature sensor, the master remote controller detects the room temperature. Install the master remote controller in a place where the average room temperature can be detected and which is not affected by any heat source from direct sunlight or air blown from air conditioning units.

CAUTION The place where (when) the difference between the room temperature and the wall temperature is large, the wall temperature that is affected by the temperature of the wall on which the remote controller is installed is measured. Therefore, the difference between the room temperature and the measured wall temperature may be large. When the installation site is one of the followings, use of a temperature sensor for an indoor unit is recommended.
 When the room is not well-ventilated and the air does not reach the wall on which the remote controller is installed.
 When the difference between the temperature of the wall on which the remote controller is installed.

troller is installed and the room temperature.
When the backside of the wall on which the remote controller is installed is exposed to the outdoor air.

When the temperature changes drastically, the temperature may not be measured accurately.



Switch box two units

When a remote controller temperature sensor is used in a place which is likely to be affected by the wall on which the remote controller is installed, use of an optional spacer (Model: PAC-YT83RS) for a remote controller is recommended.

(For how to set the main and sub remote controller, see step (1) "Remote controller" [4]-3. (1) in section 6 Function Selection).

For how to set the temperature sensor, see step (2) "Unit function selection" in section 6 Function Selection).)

(2) When installing on either the switch box or the wall, allow extra space around the remote controller as shown in the figure at the right.

NOTE: Make sure that there is no wiring or wire near the remote controller sensor. If there is, the remote controller cannot detect the exact room temperature.

(3) Parts which must be supplied on site.

- · Switch box for two units
- Thin-copper wiring pipe
- Lock nut and bushing
- Surface raceways



When using the switch box

N/all

Bushing

• When installing on the switch box, seal the connections between the switch box and wiring pipe with putty.

Wiring pipe

Lock nut

Switch box

Seal around here with putty.

- When installing directly on the wall
  When opening a hole using a drill for the remote controller cord (or when taking the cord out of the back of the remote controller), seal the hole with putty.
- When routing the cord via the portion cut off from the upper cover, similarly seal that portion with putty.
- When taking the remote controller cord from back of the controller, use surface raceways.
   Use surface



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#### 3. Remove the remote controller cover.

Remote control

• Insert a minus screwdriver into one of the open slots and move the screwdriver in the arrow direction.





CAUTION Do not turn the screwdriver in the slot. Doing so may damage the slot.

#### 4. Install the lower case on the switch box or directly on the wall.



	CAUTION Do not tighten the screws too tight. Doing so may deform or crack the lower cover.								
	NOTE: - Choose a flat plane for installation.         - Fasten the switch box at more than two places when installing directly on the wall.         - When reinstalling on the wall, fasten securely using anchors.								
5.	Connect the remote control cord to the remote controller terminal block.								
	To indoor unit MA remote controller or A controll terminal block There is no polarity.								
	CAUTION Do not use crimp terminals to connect to remote controller terminal blocks. The terminals may contact the board and cause trouble or contact the cover and damage the cover.								
	CAUTION Prevent remote cord chips from getting into the remote controller. Electric shock or malfunction may result.								
6.	<ul> <li>Wiring hole for installing directly on the wall (or open wiring)</li> <li>Cut off the shaded area from the upper cover using a knife, nippers, etc.</li> <li>Take out the remote control cord connected to the terminal block via this portion.</li> </ul>								
7.	. Install the cover to the remote controller. To remove the cover, insert a minus screwdriver into one of the open slots, and move it in the direction of the arrow shown in the figure.								
	First, hook the cover to the two upper claws and then fit it to the remote controller.								
	CAUTION Press the cover until it snaps shut. If not, it may fall off. CAUTION Do not into turn the screwdriver in the slot. Doing so may damage the slot.								
	NOTE: A protection sheet is stuck to the operation section. Peel off this protection sheet before use.								
1.   2.   3. ; 4.	<ul> <li>4 Test Run</li> <li>1. Before making a test run, refer to the "Test Run" section of the indoor unit installation manual.</li> <li>2. Press the [TEST] button twice successively within three seconds. Test run starts.</li> <li>3. Stop the test run by pressing the [① ON/OFF] button.</li> <li>4. If trouble occurred during the test run, refer to the "Test Run" section of the indoor unit installation manual.</li> </ul>								
	5 Ventilation Setting								
	(This setting cannot be made with Mr. SLIM air conditioners.)								
* V	/hen the upper controller is connected, make the setting using the upper controller.								
Per	form this operation when you want to register the LOSSNAY, confirm the registered units, or delete the registered units controlled by the remote controller.								
The [Se ①	e following uses indoor unit address 05 and LOSSNAY address 30 as an example to describe the setting procedure. Itting Procedure] Stop the air conditioner using the remote controller [① ON/OFF] button. If the OFF display shown below does not appear at this time, step ② cannot be performed.								
2	Press and hold down the [FILTER] and [ >==>] buttons at the same time for two seconds. The display shown below appears. The remote controller confirms the registered LOSSNAY addresses of the currently connected indoor units.								
3	Registration confirmation result - The indoor unit address and registered LOSSNAY address are dis- played alternately. Indoor unit address and indoor unit display>								
	- When LOSSNAY are not registered								
4	If registration is unnecessary, end registration by pressing and holding down the [FILTER] and [Stars] buttons at the same time for two seconds. If a new LOSSNAY must be registered, go to step <b>1. Registration procedure</b> . If you want to confirm another LOSSNAY, go to step <b>2. Confirmation</b> procedure. To delete a registered LOSSNAY, go to step <b>3. Deletion procedure</b> .								
< 1 ⑤	. Registration procedure > Set the address of the LOSSNAY and the indoor unit connected by the remote controller you want to register using the [								

- Set the address of the LOSSNAY you want to register using the [ $\bigcirc$  CLOCK ( $\bigtriangledown$ ) and ( $\triangle$ )] buttons. 6 (01 to 50)
- ⑦ Press the [TEST] button, and register the set indoor unit address and LOSSNAY address. - Registration end display
  - The indoor unit address and "IC" and LOSSNAY address and "LC" are alternately displayed.
  - Registration error display

If the address was not correctly registered, the indoor unit address and registered LOSSNAY address are alternately displayed.

Cannot be registered because the registered indoor unit or LOSSNAY does not exist. Cannot be registered because another LOSSNAY was registered at the registered indoor unit.

#### < 2. Confirmation procedure >

- (8) Set the address of the indoor unit connected by the remote controller whose LOSSNAY you want to confirm using the [  $\oiint$  TEMP. ( $\bigtriangledown$ ) and ( $\triangle$ )] buttons. (01 to 50)
- istered at the set indoor unit address.
  - Confirmation end display (When LOSSNAY is connected.) The indoor unit address and "IC" and registered LOSSNAY address and "LC" are alternately displayed.
  - Confirmation end display (When LOSSNAY is not connected.)

Registered indoor unit address does not exist.

#### < 3. Deletion procedure >

Use this procedure when you want to delete registration of indoor units connected by the remote controller and LOSSNAY.

- (10) Confirm (see 2. Confirmation procedure) the LOSSNAY you want to delete and display the indoor units and LOSSNAY confirmation results.
- (1) Press the [ON/OFF] button twice and delete registration of the LOSSNAY registered at the set indoor unit.
  - Deletion end display Indoor unit address and "--" and registered LOSSNAY address and "--" are alternately displayed.
  - Deletion error display
  - When deletion was not performed properly.

#### **Function Selection** 6

#### (1) Function selection of remote controller

The setting of the following remote controller functions can be changed using the remote controller function selection mode. Change the setting when needed.

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SETTING OF

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Item 1	Item 2	Item 3 (Setting content)		
1. Change Language	Language setting to display	<ul> <li>Display in multiple languages is possible.</li> </ul>		
("CHANGE LANGUAGE")				
2. Function limit	(1) Operation function limit setting (operation lock) ("LOCKING FUNCTION")	<ul> <li>Setting the range of operation limit (operation lock)</li> </ul>		
("FUNCTION SELEC-	(2) Use of automatic mode setting ("SELECT AUTO MODE")	Setting the use or non-use of "automatic" operation mode		
TION")	(3) Temperature range limit setting ("LIMIT TEMP FUNCTION")	<ul> <li>Setting the temperature adjustable range (maximum, minimum)</li> </ul>		
	(4) Use of automatic filter elevation panel up/down operation mode setting	• Setting the use or non-use of the automatic filter elevation panel up/down operation mode		
	(5) Use of fixed airflow direction mode setting	<ul> <li>Setting the use or non-use of the fixed airflow direction mode</li> </ul>		
3. Mode selection	(1) Remote controller main/sub setting ("CONTROLLER MAIN/SUB")	Selecting main or sub remote controller		
("MODE SELECTION")		* When two remote controllers are connected to one group, one controller must be set to sub.		
,	(2) Use of clock setting ("CLOCK")	Setting the use or non-use of clock function		
	(3) Timer function setting ("WEEKLY TIMER")	Setting the timer type		
	(4) Contact number setting for error situation ("CALL.")	Contact number display in case of error		
		Setting the telephone number		
4. Display change	<ol> <li>Temperature display °C/°F setting ("TEMP MODE °C/°F")</li> </ol>	<ul> <li>Setting the temperature unit (°C or °F) to display</li> </ul>		
("DISP MODE SETTING")	(2) Suction air temperature display setting ("ROOM TEMP DISP SELECT")	<ul> <li>Setting the use or non-use of the display of indoor (suction) air temperature</li> </ul>		
ľ.	(3) Automatic cooling/heating display setting ("AUTO MODE DISP C/H")	• Setting the use or non-use of the display of "Cooling" or "Heating" display during operation		
		with automatic mode		





<Indoor unit address>













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SETTING OF

#### [Function selection flowchart]

[1] Stop the air conditioner to start remote controller function selection mode.  $\rightarrow$  [2] Select from item1.  $\rightarrow$  [3] Select from item2.  $\rightarrow$  [4] Make the setting. (Details are specified in item3)  $\rightarrow$  [5] Setting completed.  $\rightarrow$  [6] Change the display to the normal one. (End)



#### [Detailed setting]

#### [4] -1. CHANGE LANGUAGE setting

- The language that appears on the dot display can be selected.
- Press the [⊕MENU] button to change the language.
- (1) Japanese (JP), (2) English (GB), (3) German (D), (4) Spanish (E),
- ⑤ Russian (RU), ⑥ Italian (I), ⑦ Chinese (CH), ⑧ French (F)

#### [4] -2. Function limit

- (1) Operation function limit setting (operation lock)
- To switch the setting, press the [ ON/OFF] button.
- ① no1: Operation lock setting is made on all buttons other than the [① ON/OFF] button.
- 2 no2: Operation lock setting is made on all buttons.
- ③ OFF (Initial setting value): Operation lock setting is not made.
- \* To make the operation lock setting valid on the normal screen, it is necessary to press buttons (Press and hold down the [FILTER] and [①ON/OFF] buttons at the same time for two seconds.) on the normal screen after the above setting is made.

#### (2) Use of automatic mode setting

When the remote controller is connected to the unit that has automatic operation mode, the following settings can be made.

- ① ON (Initial setting value) : The automatic mode is displayed when the operation mode is selected.
- 2 OFF
- : The automatic mode is not displayed when the operation mode is selected.
- (3) Temperature range limit setting

After this setting is made, the temperature can be changed within the set range.

- To switch the setting, press the [ ② ON/OFF] button.
- ① LIMIT TEMP COOL MODE :
- The temperature range can be changed on cooling/dry mode. ② LIMIT TEMP HEAT MODE :
- The temperature range can be changed on heating mode. (3) LIMIT TEMP AUTO MODE :
- The temperature range can be changed on automatic mode. ④ OFF (initial setting) :The temperature range limit is not active.
- \* When the setting, other than OFF, is made, the temperature range limit setting on cooling, heating and automatic mode is made at the same time. However, the range cannot be limited when the set temperature range has not changed.

- To increase or decrease the temperature, press the [ Interpretation or (△)] button.
- To switch the upper limit setting and the lower limit setting, press the [5,11] button. The selected setting will flash and the temperature can be set.
   Settable range
  - Cooling/Dry mode : Lower limit: 19°C ~ 30°C Upper limit: 30°C ~ 19°C Heating mode : Lower limit: 17°C ~ 28°C Upper limit: 28°C ~ 17°C Automatic mode : Lower limit: 19°C ~ 28°C Upper limit: 28°C ~ 19°C
- \* The settable range varies depending on the unit to connect (Mr. Slim units,
- Free-plan units, and intermediate temperature units)
- (4) Use of automatic filter elevation panel up/down operation mode setting
- To switch the setting, press the [ $\bigcirc$ ON/OFF] button.
- ① ON : The operation to switch to the automatic filter elevation panel up/down operation mode is valid.
- ② OFF: The operation to switch to the automatic filter elevation panel up/down operation mode is always invalid.
- \* Switching operation: Press the filter button and the ventilation button together for 2 seconds while the display of stopped unit appears on the remote controller.
- For details of the automatic filter elevation panel up/down operation mode settings, refer to the installation manual for the indoor unit.
   With the automatic filter elevation panel up/down operation mode, the elevating operation of the panel (grill) on the indoor unit can be made.

(5) Use of fixed airflow direction mode setting

- ① ON : The operation to switch to the fixed airflow direction mode is valid.
- ② OFF: The operation to switch to the fixed airflow direction mode is always invalid.
- \* Switching operation: Press the filter button and the Fan Speed button together for 2 seconds while the display of stopped unit appears on the remote controller.
- For details of the fixed airflow direction mode settings, refer to the installation manual for the indoor unit.
  - With the fixed airflow direction mode settings, the position of the vane can be fixed for each air outlet.

[4] -3. Mode selection setting

- (1) Remote controller main/sub setting
- To switch the setting, press the [ON/OFF] button.
- ① Main : The controller will be the main controller.
- ② Sub : The controller will be the sub controller.

(2) Use of clock setting	Setting the contact numbers			
<ul> <li>To switch the setting, press the [ ② ON/OFF] button.</li> </ul>	To set the contact numbers, follow the following procedures.			
① ON : The clock function can be used.	Move the flashing cursor to set numbers. Press the [ $\cancel{H}$ TEMP. ( $\bigtriangledown$ ) and			
② OFF: The clock function cannot be used.	$(\triangle)$ ] button to move the cursor to the right (left). Press the [ $\bigcirc$ CLOCK			
(3) Timer function setting	$(\bigtriangledown)$ and $(\bigtriangleup)$ ] button to set the numbers.			
<ul> <li>To switch the setting, press the [ ON/OFF] button (Choose one of the followings.).</li> <li>WEEKLY TIMER (Initial setting value): The weekly timer can be used.</li> <li>AUTO OFF TIMER: The auto off timer can be used.</li> <li>SIMPLE TIMER: The simple timer can be used.</li> <li>TIMER MODE OFF: The timer mode cannot be used.</li> <li>TIMER MODE OFF: The timer mode cannot be used.</li> <li>TIMER MODE OFF: The timer mode cannot be used.</li> <li>TO switch the setting, press the [ ON/OFF] button.</li> <li>CALL OFF: The set contact numbers are not displayed in case of error.</li> <li>CALL **** **** **** The set contact numbers are displayed in case of error.</li> </ul>	<ul> <li>[4] -4. Display change setting</li> <li>(1) Temperature display °C/°F setting</li> <li>To switch the setting, press the [② ON/OFF] button.</li> <li>① °C: The temperature unit °C is used.</li> <li>② °F: The temperature display setting</li> <li>To switch the setting, press the [② ON/OFF] button.</li> <li>① ON : The suction air temperature is displayed.</li> <li>② OFF: The suction air temperature is not displayed.</li> <li>③ Automatic cooling/heating display setting</li> <li>To switch the setting, press the [③ ON/OFF] button.</li> <li>① ON : One of "Automatic cooling" and "Automatic heating" is displayed under the automatic mode is running.</li> <li>③ OFF: Only "Automatic" is displayed under the automatic mode.</li> </ul>			
shown on the left.				
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#### (2) Unit Function Selection Perform only when change is necessary with Mr. SLIM air conditioner. (Cannot be performed with CITY MULTI control system.)

Set the functions of each indoor unit from the remote controller, as required. The functions of each indoor unit can be selected only from the remote controller. Set the functions by selecting the necessary items from Table 1.

Table 1. Function selection contents (For a detailed description of the factory settings and mode of each indoor unit, refer to the indoor unit installation manual.)

Function	Settings	Mode No.	Setting No.	Check	Object unit address No.
Power failure automatic	Not available	01	1		Unit address No. 00
recovery	Available (Approximate 4 minutes wait-period after power is restored.)	01	2		
Indoor temperature	Indoor unit operating average	02	1		
detecting	Set by indoor unit's remote controller	02	2		
detecting	Remote controller's internal sensor	02	3		These items are set for all in-
	Not Supported	03	1		door units.
LOSSNAY connectivity	Supported (indoor unit is not equipped with outdoor-air intake)	03	2		
	Supported (indoor unit is equipped with outdoor-air intake)	03	3		
ALITO mode	Energy saving cycle automatically enabled	05	1		
Actomode	Energy saving cycle automatically disabled	05	2		
	100 Hr	07	1		Unit address No. 01 to 04 or
Filter sign	2500 Hr	07	2		AL
	No filter sign indicator	07	3		
	Quiet	08	1		
Fan speed	Standard	08	2		
	High ceiling	08	3		
No of air outlets	4 directions	09	1		
	3 directions	09	2		
Installed options	Not supported	10	1		These items are set for each
installed options	Supported	10	2		indoor unit.
	No vanes	11	1		
Up/down vane setting	Equipped with vanes (No. 1 set)	11	2		
	Equipped with vanes (No. 2 set)	11	3		
	Disabled	12	1		
Energy saving air flow	Enabled	12	2		
Humidifier	Not supported	13	1		
	Supported	13	2		

NOTE: When the indoor unit functions were changed using the function selection after installation is complete, always indicate the set contents by entering  $\bigcirc$  or other mark in the appropriate check field of Table 1.

[Function selection flow]

First grasp the function selection flow. The following describes setting of "Room temperature detection position" of Table 1 as an example. (For the actual setting procedure, see [Setting procedure] (1) to (0).)

① Check the function selection set contents. ② Switch to the FUNCTION SELECTION mode. (Press (A) and (B) simultaneously in the remote controller OFF state.) MITSUBISHI ELECTRI Ē (3) Refrigerant address specification  $\rightarrow$  00 (Outdoor unit specification) (Unnecessary for single refrigerant system.) TEM () ON/O  $\bigcirc$ 60 ④ Unit address No. specification (Buttons © and © operation) 00 (Indoor unit specification) -(A) YES Ð (Specified indoor unit → Fan operation) B ⑤ Registration (Press button (E).) Change G NO refrigerant Ð address and unit 7L (6) Mode No. Selection  $\rightarrow$  02 (Room temperature detection position) address No.? ⑦ Setting No. selection → 3 (remote controller fixed) (Buttons ) and ) operation) ⑧ Register (Press button E).) 9 NO End? YES (1) Ending function display (Press buttons (A) and (B) simultaneously.)

#### [Procedure] (Set only when change is necessary.)

① Check the set contents of each mode. When the set contents of a mode were changed by function selection, the functions of that mode also change.



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## 7 Self check

Retrieve the error history of each unit using the remote controller.

 Switch to the self check mode.
 When the (D) [CHECK] button is pressed twice successively within three seconds, the display shown below appears.



② Set the address or refrigerant address No. you want to self check.

When the  $\bigcirc$  [ ] TEMP. ( $\bigtriangledown$ ) and ( $\triangle$ )] buttons are pressed, the address

decreases and increases between 01 and 50 or 00 and 15. Set it to the

④ Remote controller check reset

When the (f) [CHECK] button is held down for five seconds or longer, remote controller check resets and the "PLEASE WAIT" and RUN lamp flash. Approximately 30 seconds later, the remote controller returns to the state before remote controller check.

MITSUBISHI ELECTRIC CORPORATION

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