

MITSUBISHI ELECTRIC CITY MULTI Control System and Mr. SLIM Air Conditioners

Simple MA Controller PAC-YT51CRB Installation Manual



This instruction manual describes how to install the Simple MA Controller for Mitsubishi Building Air Conditioning Systems, direct expansion type CITY MULTI air conditioner units ("A" type and later), and Mr. SLIM 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 for them.

1 Safety Precautions

- Read these Safety Precautions and perform installation work accordingly.
- The following two symbols are used to denote dangers that may be caused by incorrect use and their degree:
 - WARNING** This symbol denotes what could lead to serious injury or death if you misuse the PAC-YT51CRB.
 - CAUTION** This symbol denotes what could lead to a personal injury or damage to your property if you misuse the PAC-YT51CRB.
- After reading this installation manual, give it and the indoor unit installation manual to a place where he or she can see it at any time. When someone moves or repairs the PAC-YT51CRB, make sure that this manual is forwarded to the end user.

WARNING

- 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 installation manual. Any deficiency caused by installation may result in an electric shock or fire.
- Install in a place that is strong enough to withstand the weight of the PAC-YT51CRB. Any lack of strength may cause the PAC-YT51CRB to fall down, resulting in personal injury.
- 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.
- Never modify or repair the PAC-YT51CRB by yourself. Any deficiency caused by modification or repair may result in an electric shock or fire. Consult with your dealer about repairs.

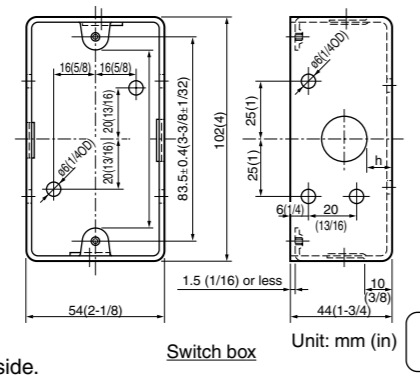
CAUTION

- Do not install in any place exposed to flammable gas leakage. Flammable gases accumulated around the body of PAC-YT51CRB may cause an explosion.
- Do not use in any special environmental. Using in any place exposed to oil (including machine oil), steam and sulfuric gas may deteriorate the performance significantly or give damage to the component parts.
- Wire so that it does not receive any tension. Tension may cause wire breakage, heating or fire.
- Completely seal the wire lead-in port with putty etc. Any dew, moisture, insects entering the unit may cause an electric shock or a malfunction.
- When installing the remote controller in a hospital or communication facility, take ample countermeasures against noise. Inverters, emergency power supply systems, high-frequency medical equipment, and wireless communication equipment can cause the remote controller for malfunction or to fall. Radiation from the remote controller may affect communication equipment and prevent medical operations on the human body or interfere with image transmission and cause noise.
- Never connect the power supply with the control wiring terminals. Doing so will certainly cause a controller to catch fire.

2 Checking the Supplied Parts

- Check that the box includes the following parts in addition to this installation manual:

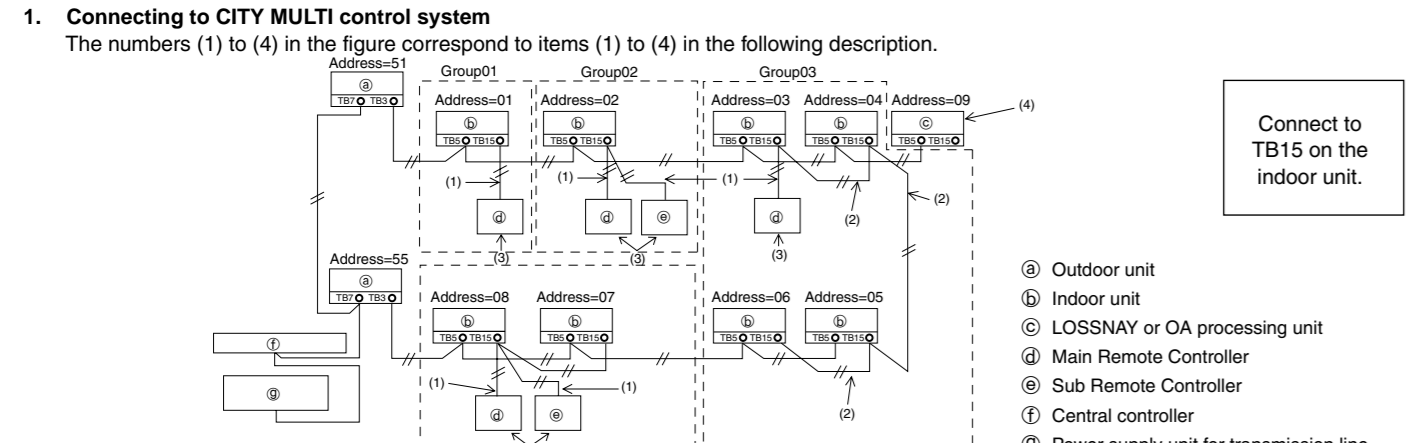
Remote Controller Model Name	Enclosed Parts
PAC-YT51CRB	(1) Simple MA Controller 1 (2) Cross-recessed pan-head screws 2 (3) Operation manual 3
- NOTE: The parts listed below must be purchased separately.
 - (1) Cable connecting the remote controller to the indoor unit: Use the cable specified below.
 - Cable type | CVTF or CVV (2-core): 0.75 ~ 1.25 mm² (stranded 16 AWG) or equivalent
 - CVV is a control cable which is sheathed in polyvinyl chloride with polyvinyl insulated wires inside.



- NOTE: If you need to use a cable extension longer than 10 m (32 ft), select an electric wire that meets the following specifications:
 - Wire specification | CVTF or CVV (2-core): 1.05 mm² (stranded 16 AWG) or equivalent
- The switch box is necessary for mounting. Use the switch box specified in the right.

3 How To Wire Transmission Line

The wiring is different when the remote controller is connected to a CITY MULTI control system ("A" type and later) and when it is connected to a Mr. SLIM air conditioner (A control type). The wiring also differs with the system configuration. Check the system used.



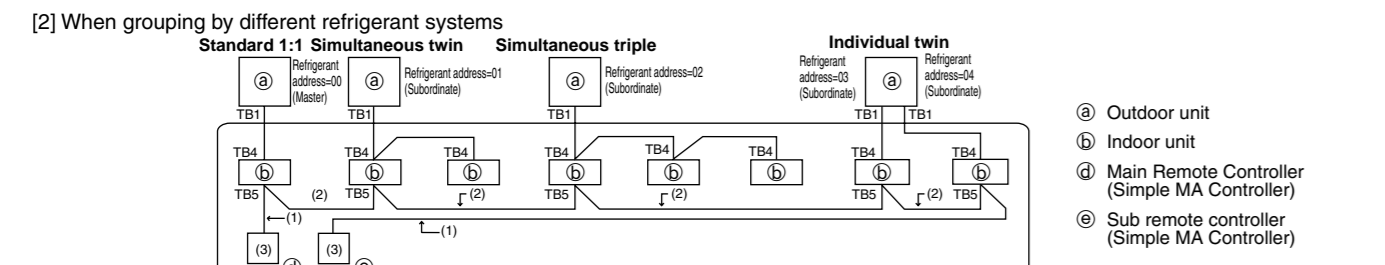
- (1) Wiring from the remote controller:
 - Connect to the MA remote controller terminal block (TB15) on the indoor unit.
 - The terminal block has no polarity. Continue to the terminal block at the rear bottom of the remote controller.
- (2) Operating in a group (Groups 03 and 04 above):
 - Interconnect the MA remote controller terminal block (TB15) of the indoor units you want to operate as a group, and connect the MA remote controller to that point.
 - When also in combination with a CITY MULTI control system as shown in the figure above, group setting at the system controller (central controller) in the figure above is necessary.
- (3) Number of connectable remote controllers (groups 02 and 04)
 - A main remote controller and one sub remote controller, a total of two, can be connected to a group made up of indoor units.
- (4) To interlock to a LOSSNAY or OA processing unit, make the following settings using the remote controller. (For a description of how to set an interlock, see section (6) Ventilation Setting.)
 - Set the LOSSNAY or OA processing unit address and the address of the indoor units you want to interlock.
- (5) Total length of remote controller wiring
 - The simple MA controller can be wired up to 200 m (656 ft). Procure 0.75 ~ 1.25 mm² (stranded 16 AWG), 2-core cable at the installation site.

CAUTION Remote controllers cannot be wired together. Only one wire can be connected to the remote controller terminal block.

NOTE: When interlocking the MA remote controller with a LOSSNAY or OA processing unit, always set the address of all the indoor units in the group and the address of the LOSSNAY or OA processing unit.

4 Connecting to Mr. SLIM air conditioner

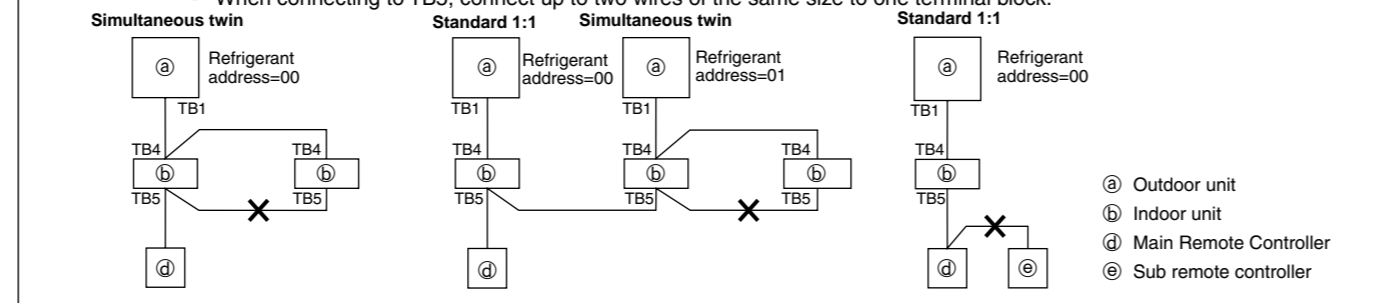
- The remote controller wiring depends on the system configuration. Check the system configuration. Wire the remote controller as shown in the example below.
- (1) Connecting the remote controller for each refrigerant system (Standard 1:1, simultaneous twin, simultaneous triple, simultaneous four, individual twin)
 - Standard 1:1 Simultaneous twin
 - Simultaneous twin
 - Individual twin



- (2) When grouping by different refrigerant systems
 - Standard 1:1 Simultaneous triple
 - Individual twin
- Set the refrigerant address using the outdoor unit dip switches. (For more information, refer to the outdoor unit installation manual.)
- All the indoor units enclosed in [] are controlled as one group.
 - (1) Wiring from remote controller
 - Connect to indoor unit TB5 (remote controller terminal block). (The terminal block has no polarity.)
 - For simultaneous multi type, when mixing various types of indoor units, always connect the remote controller to the indoor unit with the most functions (wind velocity, vane, louver, etc.).

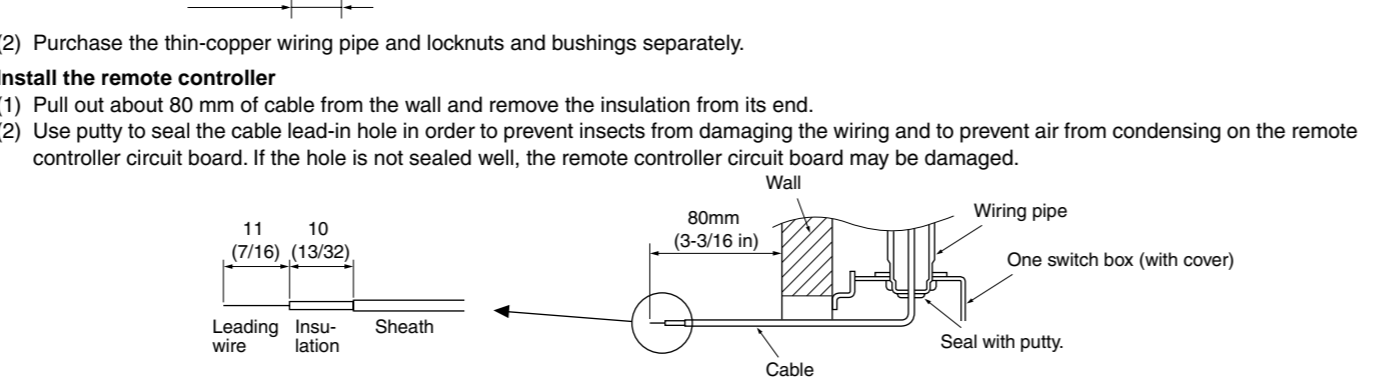
- (2) When grouping with different refrigerant systems
 - Group using the remote controller wiring. Connect the remote controller to an arbitrary indoor unit of each refrigerant system you want to group.
 - When mixing different types of indoor units in the same group, always make the outdoor unit connecting the indoor unit with the most functions (wind velocity, vane, louver, etc.) the master unit (refrigerant address = 00). Also, when the master unit is the simultaneous multi type, always satisfy the conditions of (1) above.
 - The MA compact remote controller can control up to 16 refrigerant systems as one group.
- (3) Up to two remote controllers can be connected to one group
 - When two remote controllers are connected to one group, always set the master remote controller and subordinate remote controller.
 - When only one remote controller is connected to one group, set it as the master controller. When two remote controllers are connected to one group, set the master remote controller and subordinate remote controller. (For a description of how to set the master/subordinate switch, see step 5 in section (4) How To Install.)
- (4) Total length of remote controller wiring
 - The remote controller can be wired up to 200 m (656-18 ft). Procure 0.75 ~ 1.25 mm² (16 ~ 28 AWG), 2-core cable at the installation site.

CAUTION The wiring cannot be connected to TB5 of the indoor unit of the same refrigerant system. If so connected, the system will not operate normally.

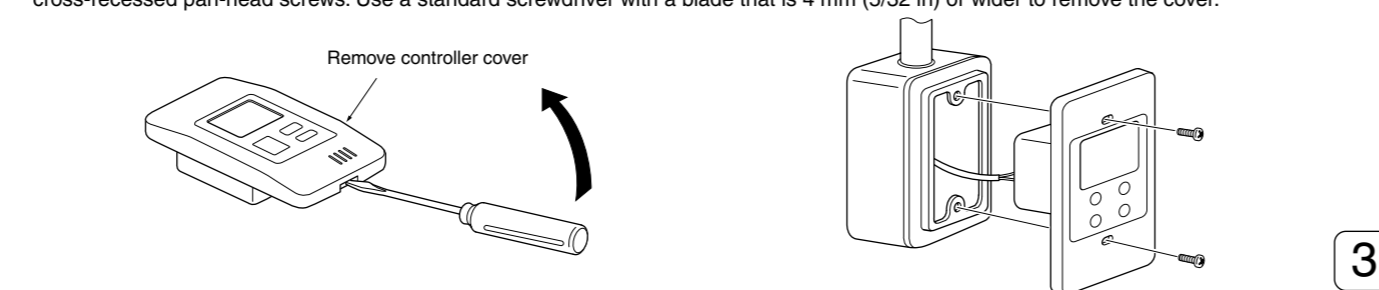


4 How To Install

- (1) Mount the switch box
 - Install the switch box (purchased separately) as explained below.
 - NOTE: Be sure to install the switch box with the clearance shown in the illustration at the left. (Check the space between the unit and any projection such as a stud.)
 - Leave a space of 120 mm (4-3/4 in.) or more below the remote controller so that the screwdriver can be used.
 - Since the remote controller is equipped with a temperature sensor, install the remote controller in a location where the average room temperature can be detected and which is not directly affected by some heat source, direct sunlight or air blown from an air conditioner.



- (2) Purchase the thin-copper wiring pipe and locknuts and bushings separately.
- (3) Connect the cable to the terminal board in the bottom rear of the simple MA controller unit.
 - The cable does not have polarity.
 - When connecting stranded cable, hold down the button on the terminal board while inserting the cable.
 - The cable connects to the main terminal board when it is inserted into the bottom terminal.
 - When disconnecting the cable, hold down the button while pulling out the cable.
 - After inserting the cable, slightly tug on it to check that it does not easily disconnect. If the cable is not securely connected, a short-circuit or malfunction may occur.



CAUTION Forcing off the cover using a screwdriver that is less than 4 mm (5/32 in.) wide may result in damage to the equipment. Attach the remote controller to a level surface. Do not overtighten the screws, otherwise the case may become deformed or break.

- (5) When using two remote controllers in one group, set the dip switches.
 - When using two remote controllers in one group, specify the main and sub remote controllers using dip switch No. 1 shown below.
 - When connecting only one remote controller to one group, it is always the main remote controller. When connecting two remote controllers to one group, set one remote controller as the main remote controller and the other as the sub remote controller.

The factory setting is "Main".

Setting the dip switches

There are switches on the front of the remote controller. Remote controller Main/Sub and other function settings are performed using these switches. Ordinarily, only change the Main/Sub setting of SW1. (The factory settings are all "ON".)

SW No.	SW contents	Main	ON	OFF	Comment
1	Remote controller Main/Sub setting	Main	Sub	Set one of the two remote controllers at one group to "Main"	
2	Temperature display units setting	Celsius	Fahrenheit	When the temperature is displayed in [Fahrenheit], set to "No".	
3	Cooling/heating display in AUTO mode	Yes	No	When you do not want to display "Cooling" and "Heating" in the AUTO mode, set to "No".	

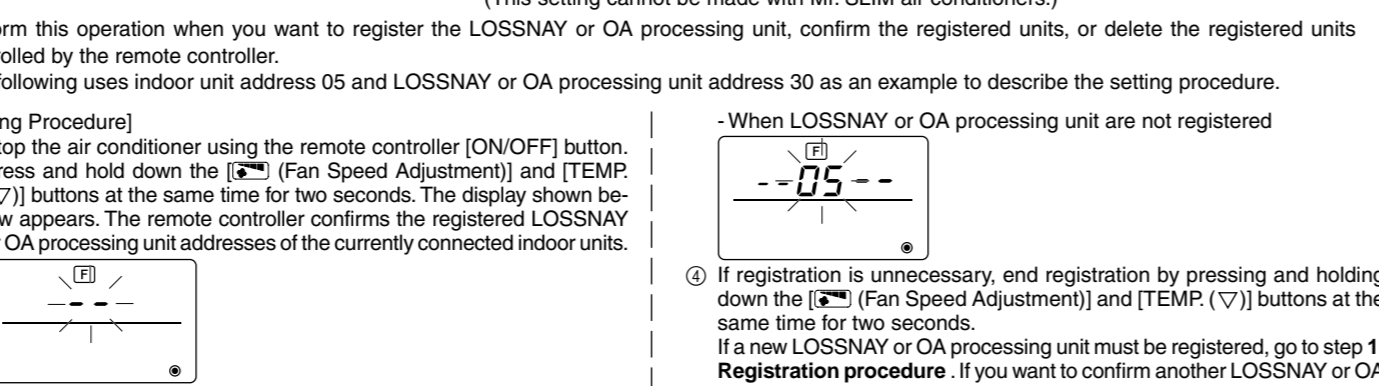
- (6) After setting the remote controller address, attach the remote controller cover.
 - When attaching the remote controller cover, set the top of the cover onto the two top hooks, then push in on the bottom of the cover until it snaps into place.
 - If the bottom of the cover is attached first, the top of the cover cannot be attached. Forcefully pushing in the top of the cover to attach it may break the hooks.

CAUTION Press in on the bottom of the cover until it snaps into place. When attaching the remote controller cover, be careful not to move the room temperature sensor out of place. Moving the sensor out of place or pinching it while attaching the cover may result in the sensor malfunctioning or being damaged.

5 Test Run

- 1. Before making a test run, refer to the "Test Run" section of the indoor unit installation manual.
- 2. When the [ON/OFF] button and [TEMP] (V) button are pressed simultaneously for 2 seconds or longer, test run is performed.
- 3. Stop the test run by pressing the [ON/OFF] button.
- 4. If trouble occurred during the test run, refer to the "Test Run" section of the indoor unit installation manual.

CAUTION The amount of time remaining for the test run is displayed. Display range: 2:00 to 0:01. After two hours, the test run stops automatically.

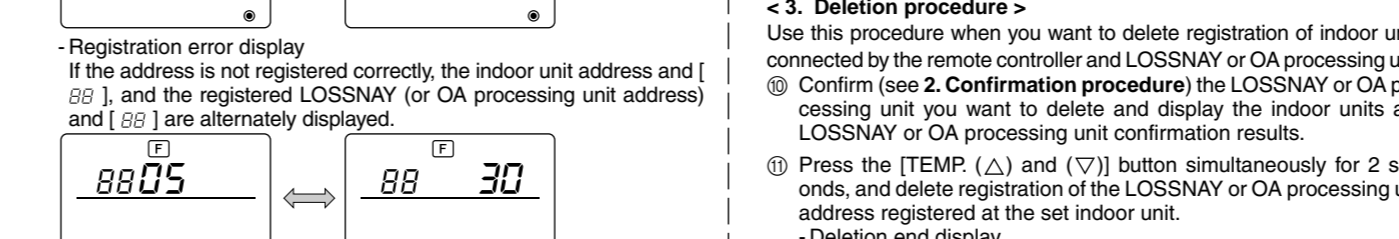


6 Ventilation Setting

Perform this operation when you want to register the LOSSNAY or OA processing unit, confirm the registered units, or delete the registered units controlled by the remote controller.

- The following uses indoor unit address 05 and LOSSNAY or OA processing unit address 30 as an example to describe the setting procedure.
- (1) Setting Procedure
 - When the air conditioner using the remote controller [ON/OFF] button.
 - Press and hold down the [FAN] (Fan Speed Adjustment) and [TEMP] (V) buttons at the same time for two seconds. The display shown below appears. The remote controller confirms the registered LOSSNAY or OA processing unit addresses of the currently connected indoor units.
- (2) Registration confirmation result
 - The indoor unit address and registered LOSSNAY or OA processing unit address are displayed alternately.
- (3) Registration procedure
 - Set the address of the LOSSNAY or OA processing unit and the indoor unit connected by the remote controller you want to register using the [TEMP] (V) and [V] buttons. (01 to 50)
 - After setting, press the [FAN] (Fan Speed Adjustment) button and set the LOSSNAY address you want to register by adjusting the [TEMP] (V) and [V] buttons. (01-50)

- (1) Press the [ON/OFF] button, and register the set indoor unit address and LOSSNAY address.
 - Registration and display
 - The indoor unit address and "LC" and LOSSNAY address and "LC" are alternately displayed.



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

<2. Confirmation procedure>

- (1) Set the address of the indoor unit connected by the remote controller whose LOSSNAY or OA processing unit you want to confirm using the [TEMP] (V) and [V] buttons. (01 to 50)
- (2) Press the [ON/OFF] button and [FAN] (Fan Speed Adjustment) button simultaneously for 2 seconds, and check the LOSSNAY address registered at the set indoor unit address.
 - Confirmation end display (When LOSSNAY is connected.)
 - The indoor unit address and "LC" and registered LOSSNAY address and "LC" are alternately displayed.

7 Function Selection

Please set the following functions connected with Mr. SLIM if it is necessary. (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.

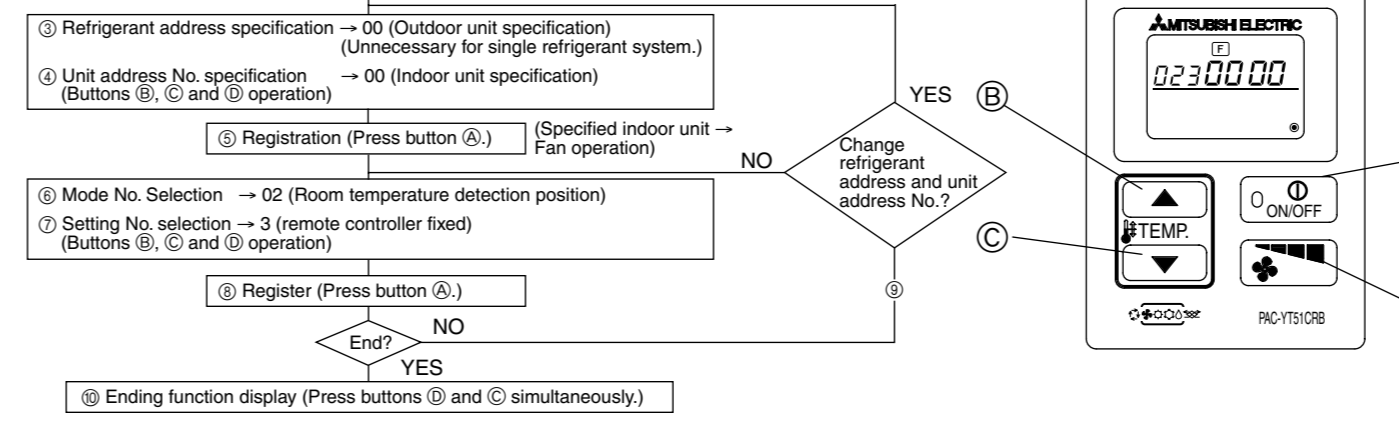
Table 1. Function selection contents (For a detailed description of the factory settings and mode of each indoor unit, refer to the indoor unit installation manual.)

Function	Settings	Mode No.	Setting No.	Check	Object Unit Address No.
Power failure automatic recovery	Not available	01	2		Unit address No. 00
Indoor unit operating average	Set by indoor unit's remote controller	02	1		
Indoor temperature detecting	Remote controller's internal sensor	02	3		These items are set for all indoor units.
OA processing unit connectivity	Not Supported	03	1		
220 V, 230 V AUTO mode	Supported (indoor unit is not equipped with outdoor-air intake)	03	2		
Energy saving cycle automatically enabled	Supported (indoor unit is equipped with outdoor-air intake)	03	3		
Energy saving cycle automatically disabled	Not supported	04	1		
Filter sign	100 Hz	07	2		Unit address No. 01 to 04 or AL
No filter sign indicator	2500 Hz	07	2		
Fan speed	Quiet ; Standard	08	1		
Standard ; High ceiling () ; PLU(H)A-PA-A type	High ceiling ; High ceiling ()	08	3		
4 directions	4 directions	09	1		
3 directions	3 directions	09	2		
2 directions	2 directions	09	3		
No. of air outlets	Not supported	10	1		These items are set for each indoor unit.
Installed options (high-performance filter)	Not supported	10	2		
No vanes	Not supported	11	1		
Up/down vane setting	Equipped with vanes (No. 1 set)	11	2		
Equipped with vanes (No. 2 set)	Equipped with vanes (No. 2 set)	11	3		
Energy saving air flow (Heating mode)	Enabled	12	1		
Humidifier	Not supported	13	1		
(Direct Add-on type)	Supported	13	2		

*For mode numbers other than listed above, refer to the indoor unit installation manual.

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

- (1) Check the function selection set contents.
 - Switch to the FUNCTION SELECTION mode. (Press [] and [] simultaneously in the remote controller OFF state.)

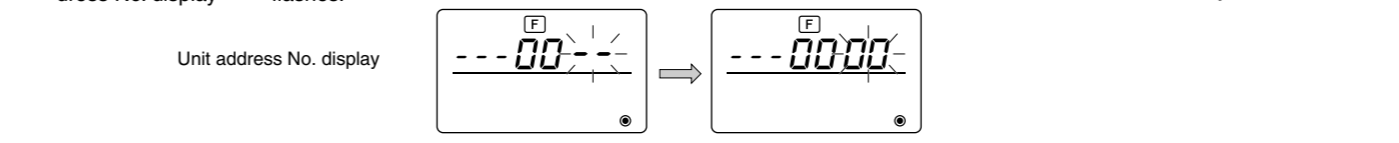


[Procedure] (Set only when change is necessary)

- (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. Check the set contents as specified in steps (2) to (4) and change the setting based on the indoor unit installation manual.
- (2) Set the remote controller to Off.
 - Press and hold down the [FAN] (Fan Speed Adjustment) and [TEMP] (V) buttons at the same time for two seconds or longer.
 - [E] (FUNCTION) blinks for a while, then the remote controller display changes to the display shown below.
- (3) Set the outdoor unit refrigerant address.
 - When the [TEMP] (V) and [TEMP] (V) buttons are pressed, the refrigerant address No. decreases and increases between 00 and 15. Set it to the refrigerant address No. whose function you want to select. (This step is unnecessary for single refrigerant system.)

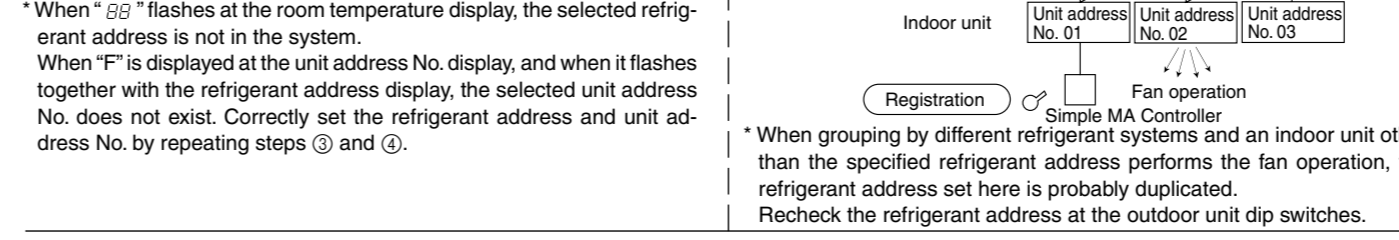
*If the remote controller enters the OFF state after the [E] (FUNCTION) and room temperature displays "FF" have flashes for two seconds, communication is probably abnormal. Make sure there are no noise sources near the transmission line.

NOTE: If you make a mistake during operation, end function selection by step (2) and repeat selection from step (2).



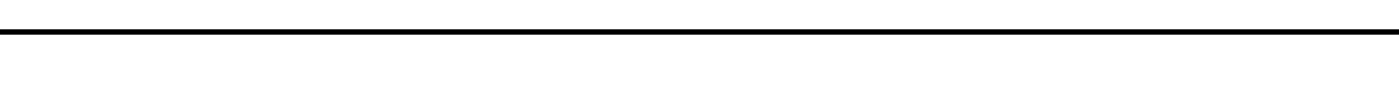
*When setting mode 1 ~ 5 set the unit address No. to "00". *When setting modes 7 to 13. *When setting for each indoor unit, set the unit address No. to "01-04". *When batch setting for all indoor units, set the unit address No. to "AL".

- (4) Refrigerant address and unit address No. registration
 - Press the [ON/OFF] button. The refrigerant address and unit address No. are registered.
 - When registered using the [ON/OFF] button, the registered indoor unit begins fan operation. When you want to know the location of the indoor units of the unit address No. whose functions were selected, check here. When the unit address No. is 00 or AL, all the indoor units of the selected refrigerant address perform the fan operation.
 - Ex) When refrigerant address 00, unit address No. = 02 registered

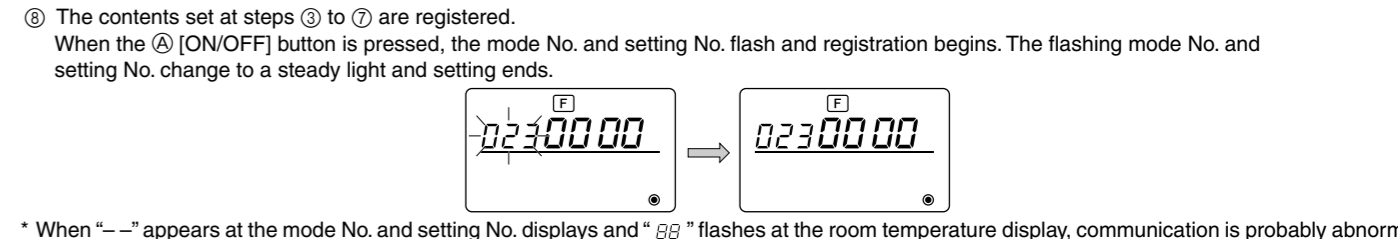


*When "05" flashes at the room temperature display, the selected refrigerant address is not in the system. When "F" is displayed at the unit address No. display, and when it flashes together with the refrigerant address display, the selected unit address No. does not exist. Correctly set the refrigerant address and unit address No. by repeating steps (3) and (4).

- (5) Mode No. selection
 - Select the mode No. you want to set with the [TEMP] (V) and [TEMP] (V) buttons. (Only the settable mode numbers can be selected.)



- (2) Select the setting contents of the selected mode.
 - When the [ON/OFF] button is pressed, the mode No. and setting No. flash and registration begins. The flashing mode No. and setting No. change to a steady light and setting ends.



*When "-" appears at the mode No. and setting No. displays and "FF" flashes at the room temperature display, communication is probably abnormal. Make sure there are no noise sources near the transmission line.

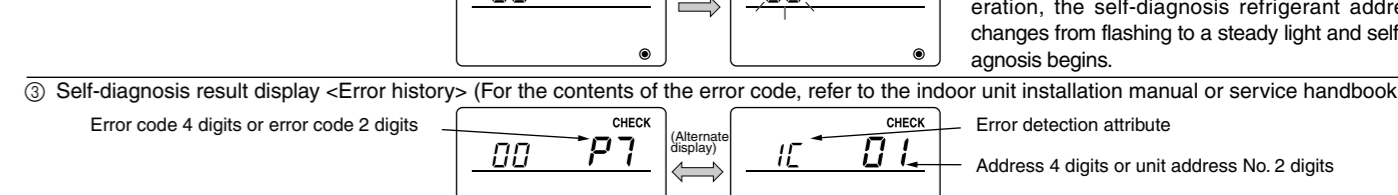
- (3) To select more functions, press the [] (Fan Speed Adjustment) and repeat steps (2) to (5).
- (4) End function selection.
 - Press and hold down the [TEMP] (V) and [TEMP] (V) buttons at the same time for two seconds or longer.
 - After a while, the function selection display disappears and the remote controller returns to the air conditioner off display.
- * Do not operate the air conditioner from the remote controller for 30 seconds after the end of function selection.

NOTE: When the functions of an indoor unit were changed by function selection after the end of installation, always indicate the set contents by entering a [] or other mark in the appropriate check field of Table 1.

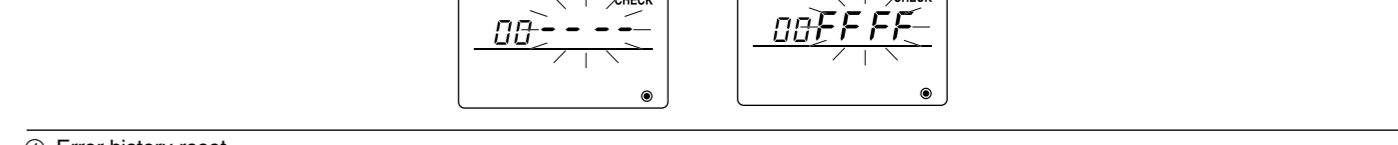
8 Self diagnosis

Retrieve the error history of each unit using the simple MA controller.

- (1) Switch to the self-diagnosis mode.
 - When the [ON/OFF] button and the [TEMP] (V) button are pressed for 5 seconds or longer, the figure shown below is displayed.

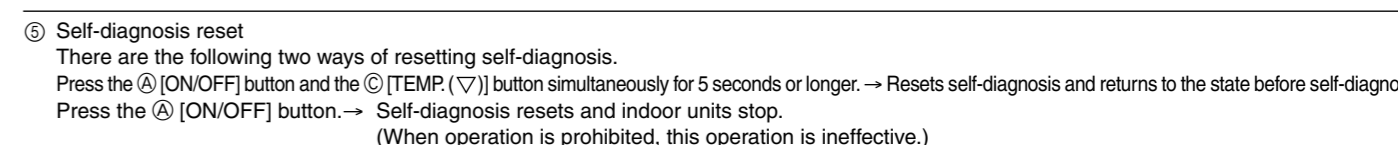


Self-diagnosis result display -Error history- (For the contents of the error code, refer to the indoor unit installation manual or service handbook.)



Error code 4 digits or error code 2 digits

- (2) Error history reset
 - The error history is displayed in (3) self-diagnosis results display. When the [FAN] (Fan Speed Adjustment) button is pressed two times successively within three seconds, the self-diagnosis object address and refrigerant address flash.

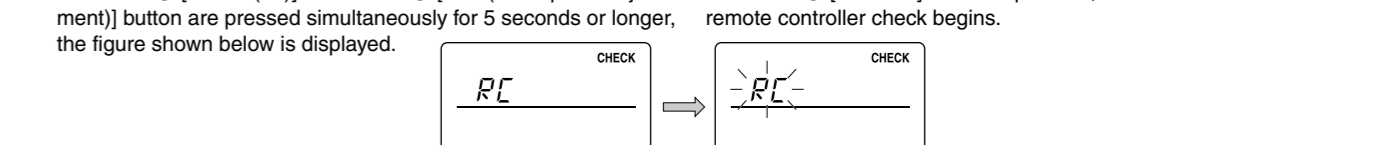


- (3) Self-diagnosis reset
 - There are the following two ways of resetting self-diagnosis. Press the [ON/OFF] button and the [TEMP] (V) button simultaneously for 5 seconds or longer. Resets self-diagnosis and returns to the state before self-diagnosis. Press the [ON/OFF] button. Self-diagnosis resets and indoor units stop. (When operation is prohibited, this operation is ineffective.)

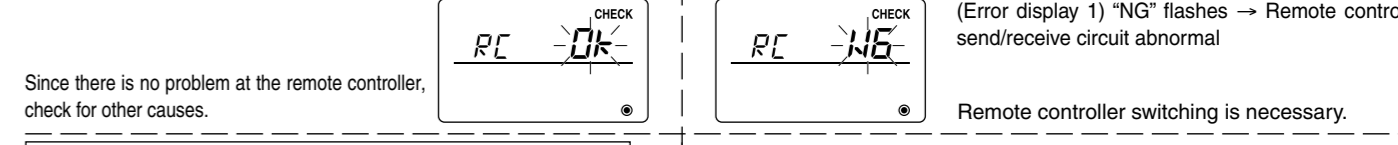
9 Remote Controller Check

When the air conditioner cannot be controlled from the simple MA controller, use this function to check the remote controller.

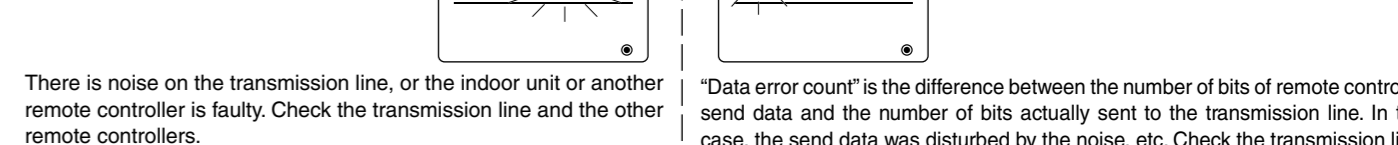
- (1) First check the power mark.
 - When normal voltage (DC12V) is not applied to the remote controller, the power mark goes off.
 - When the power mark is off, check the remote controller wiring and the indoor unit.



- (2) Switch to the remote controller check mode.
 - When the [TEMP] (V) button and [FAN] (Fan Speed Adjustment) button are pressed simultaneously for 5 seconds or longer, the figure shown below is displayed.

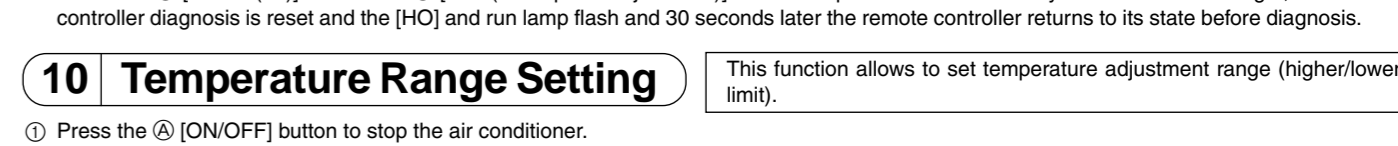


Remote controller check result -When remote controller is normal-



Since there is no problem at the remote controller, check for other causes.

[When the problem is other than the checked remote controller] (Error display 2) "E3" "6833" "6832" flash - Cannot send



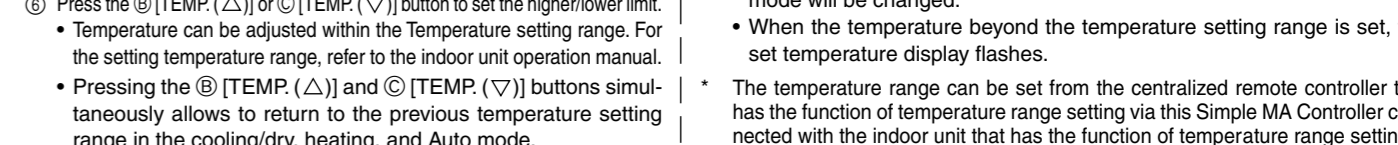
*Data error count" is the difference between the number of bits of remote controller send data and the number of bits actually sent to the transmission line. In this case, the send data was disturbed by the noise, etc. Check the transmission line.

- (3) Remote controller check reset
 - When the [TEMP] (V) button and [FAN] (Fan Speed Adjustment) button are pressed simultaneously for 5 seconds or longer, remote controller diagnosis is reset and the [HO] and run lamp flash and 30 seconds later the remote controller returns to its state before diagnosis.

10 Temperature Range Setting

This function allows to set temperature adjustment range (higher/lower limit).

- (1) Press the [ON/OFF] button to stop the air conditioner.
- (2) Press the [FAN] (Fan Speed Adjustment) button for 3 seconds or longer to set the temperature range. ([] or [] will be displayed.)
- (3) Press the [TEMP] (V) button to set the temperature range. ([] in each operation mode.)



*When the Auto mode skip is off, temperature range in the Auto mode is not displayed. *Temperature range will not be available in the all modes. *Temperature range in the cooling/dry mode. *Temperature range in the heating mode will be changed. *Temperature range in the Auto mode.

- (4) To change the temperature setting range in the cooling/dry, heating, and Auto mode, perform the procedures of (2) and (3).
- (5) Press the [FAN] (Fan Speed Adjustment) button to switch the setting between higher limit [H] and lower limit [L].
- (6) Press the [TEMP] (V) button to set the higher/lower limit.
 - Temperature can be adjusted within the Temperature setting range. For the setting temperature range, refer to the indoor unit operation manual.
 - Pressing the [TEMP] (V) and [TEMP] (V) buttons simultaneously allows to return to the previous temperature setting range in the cooling/dry, heating, and Auto mode.

*When the temperature between the temperature setting range is set, the set temperature display flashes. *The temperature range can be set from the centralized remote controller that has the function of temperature range setting via this Simple MA Controller connected with the indoor unit that has the function of temperature range setting.

11 Auto Mode Skip Setting

This function allows to enable or disable the Auto mode.

- (1) Auto mode can be enabled or disabled by pressing the [ON/OFF] button.
 - ON - Auto mode is enabled.
 - OFF - Auto mode is disabled.
- (2) Press the [TEMP] (V) and [TEMP] (V) buttons simultaneously for 3 seconds or longer to complete Auto mode skip setting.
 - The display that Auto mode skip setting is off



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