MA & Contact Terminal Interface MAC-397IF-E

Photo

Descriptions

Enables to control multiple air conditioners from a (remote) location by connecting the On/Off contact point. It can also control the operation of the relay with error signals by connecting the MA remote controller PAR-21MAA.

Applicable Models

- MSZ-FA/GA
- MFZ-KA
- SEZ-KA
- SLZ-KA

Specifications

Power		12V DC (supplied from indoor unit)
Operating conditions		Indoor only (ambient temperature: 0 to 40℃ , no condensation)
Connection of centralized controller	Communication cable	3-wire (recommended: microphone cord (MVVS) 0.3mm2)
	Communication cable distance	Max. 100m
Connection of MA smooth remote controller / MA deluxe remote controller	Communication cable	2-wire (recommended: optional PAC remote controller cable PAC-YT81HC)
	Communication cable distance	Max. 10m
Indoor unit connecting cable		Dedicated 5-wire cable
Weight		300g (including indoor unit connecting cable)

Dimensions

Unit : mm

2000　　160

15

40

70

10　　140　　30
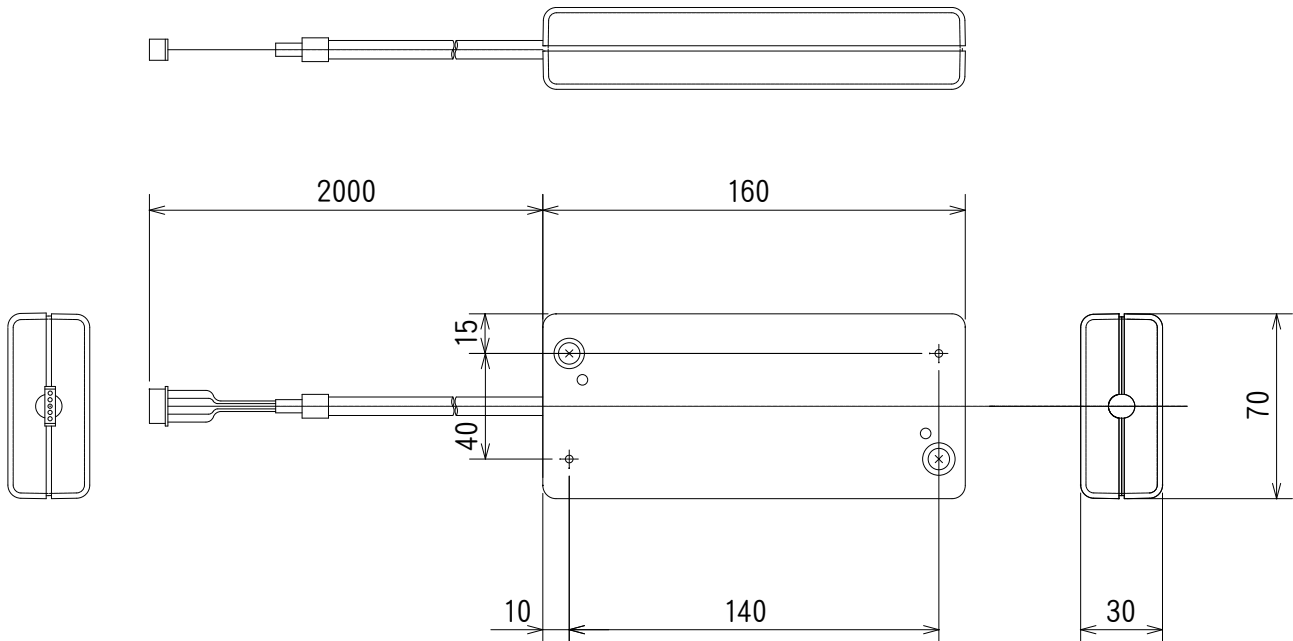
How to Use / How to Install

1. Before Installation

1.1.　How to Use the MA & CONTACT TERMINAL Interface

■**Functions**

Centralized control (Fig. 2-1)

You can turn multiple air conditioners on and off from one location. (MAC-821SC-E (8-Room))

Use as wired remote controller (Fig. 2-2)

You can use the MA remote controller as a wired remote controller. (PAR-21MAA)

Remote control (Fig. 2-3)

You can turn on and off an air conditioner from a remote location by connecting the ON/OFF contact point.

Status indicator output (Fig. 2-4)

You can control the operation of the relay with either of the on/off or error/ok status output signals.
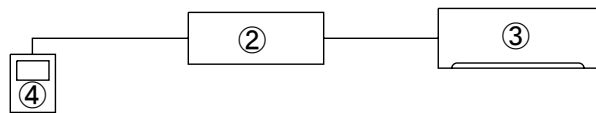
■**Sample System Configuration**

Fig. 2-1
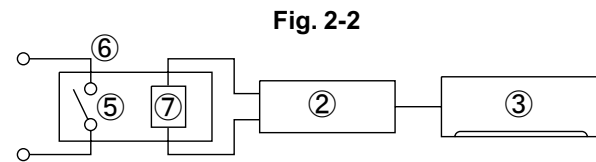
Fig. 2-2

Fig. 2-3

Fig. 2-4

① Centralized controller
② MA & CONTACT
　 TERMINAL Interface
③ RAC
④ MA remote controller

⑤ Contact point
⑥ Relay
⑦ Coil
⑧ Breaker

1.2. Parts

Before installing the unit, make sure that you have all the necessary parts.

■Accessory

|		
(1)	Interface unit	1
(2)	Wall mounting brackets	1
(3)	Screws (black) for mounting (2)3.5 ×12	4
(4)	Cushioning material (with adhesive)	1
(5)	Mounting cord clamp (small)	2
(6)	Mounting cord clamp (medium)	2
(7)	Mounting cord clamp (large)	2
(8)	Screws (black) for mounting (5)-(7) 3.5 ×12 * Use when attaching the clamps to the interface unit	2
(9)	Screws for mounting (5)-(7) 4 × 10 * Use when mounting the clamps on or near the RAC	1
(10)	Screws for mounting (5)-(7) 4 ×16 * Use when mounting the clamps and electrical wire mounting bracket	1
(11)	Fasteners (for joining the lead wires)	5
(12)	Wiring cord clamp	5
(13)	Screws (black) for mounting (12) 3.5 × 12	5
(14)	Screws (black) for mounting the interface case 3.5 ٭12	2
(!5)	Lead wires (6)	1

٭ Items to Prepare at the Installation Site

(A)	Signal wire extension cable (if necessary) Shield wiring CVVS/CPEVS
(B)	Switch, relay, coin timer, etc. (if necessary) * Please use products with supplementary insulation.
(C)	Related products sold separately * Prepare the necessary number of parts sold separately as needed for your system.

*   CPEVS; PE insulated PVC jacketed shielded communication cable
*   CVVS; PVC insulated PVC jacketed shielded control cable
    PE: Polyethylene   PVC: Polyvinyl chloride

2. Connecting the MA & CONTACT TERMINAL Interface to RAC

・ Connect the interface unit and the RAC indoor control board using the connecting cable that came with the interface.
・ Extending or shortening the connecting cable that comes out of the interface may cause it to malfunction. Also, keep the connecting cable as far as possible away from the electrical wires and ground wire. Do not bundle them together.

RAC   Interface unit (٭1)

Indoor control board   Connect the connecting cable that comes with the
                                        interface unit to the connector CN105 on the indoor
                                        control board.
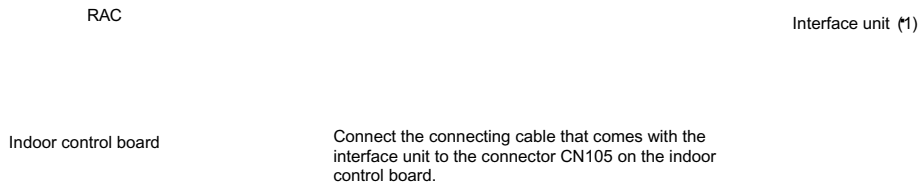
・ When this interface unit is connected to a RAC, timer operation cannot be set from a wireless remote controller.
・ When this interface unit is connected to a RAC, i-see sensor control cannot be used. Normal cooling or heating operation is performed. (MSZ-FA Series only)

3. Connecting the MA & CONTACT TERMINAL Interface with each system

(For details on each system, see the relevant instruction manual.)

・Replace the interface unit（1）mounting cord clamp with a supplied mounting cord clamp（5）-（7）based on the thickness of the connecting cable used for each system.

Mounting screws (black)（8）3.5 ×12

Interface unit（1）mounting cord clamp or mounting cord clamps（5）-（7）

Connecting cable for each system

・The cables connected to the RAC should be mounted on or near the RAC.
　If the connecting cable is not securely mounted, the connector may detach, break, or malfunction.

Mounting screws（9） 4 ×10

Mounting cord clamp（6）

Electrical wire mounting bracket
Mounting screws（10） 4 ×16

Mounting cord clamp（6）

・Set the interface dip switch (SW500-502) settings before turning on the power.
・If the interface dip switch (SW500-502) settings are not set correctly, the system will not function properly.

3.1. Centralized Control (When Connecting to a Centralized on-off remote Controller)
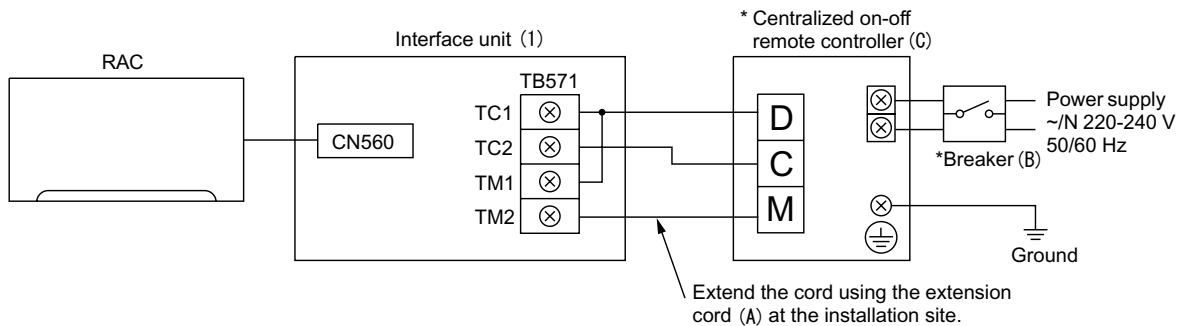
* Refer to the installation manual of centralized on-off remote controller.
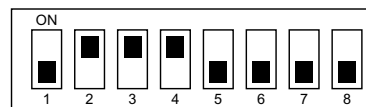
Dip switch settings

■**SW500**

Setting required
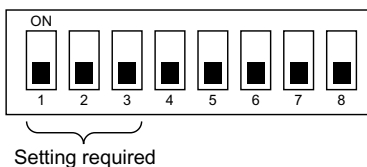
■**SW501 and SW502 do not have to be set.**
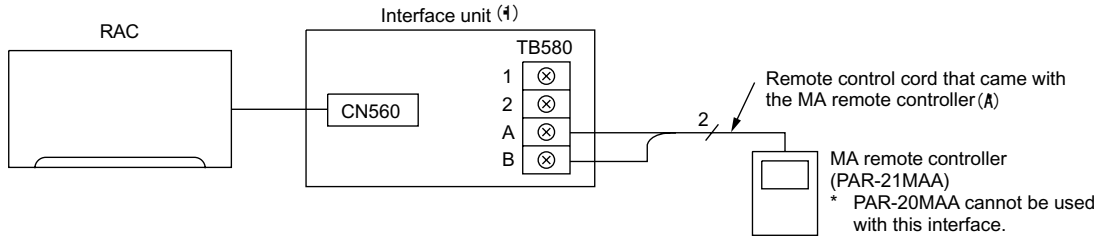
SW501

SW502

3.2. Use as a Wired Remote Controller (Using the MA Remote Controller)

Note:

1. Be sure the Auto Heating/Cooling Display Setting on the MA remote controller is set to OFF before use.
　・**For information on how to set the Auto/Heating Cooling Display Setting, see the MA remote controller instruction manual.**
　・**The actual operating status of the unit may differ from what is shown on the remote controller display.**
2. A test run cannot be initiated using the test run switch on the MA remote controller.
3. The horizontal vanes on the unit cannot be operated using the louver switch.
4. The range of room temperature indication is between 10℃ and 38℃.

Dip switch settings

■**SW500 does not have to be set.**

■**SW501:**
　SW501- No. 1Đ4: Refrigerant address
　・Set this switch when multiple indoor units (and interfaces) are connected to a single MA remote controller.
　・Always start the refrigerant address at "0".
　・Even when connecting multiple outdoor RAC units, set a different refrigerant address for each indoor unit.

① Outdoor unit
② RAC multiple outdoor units
③ Indoor unit
④ Interface
⑤ MA remote controller
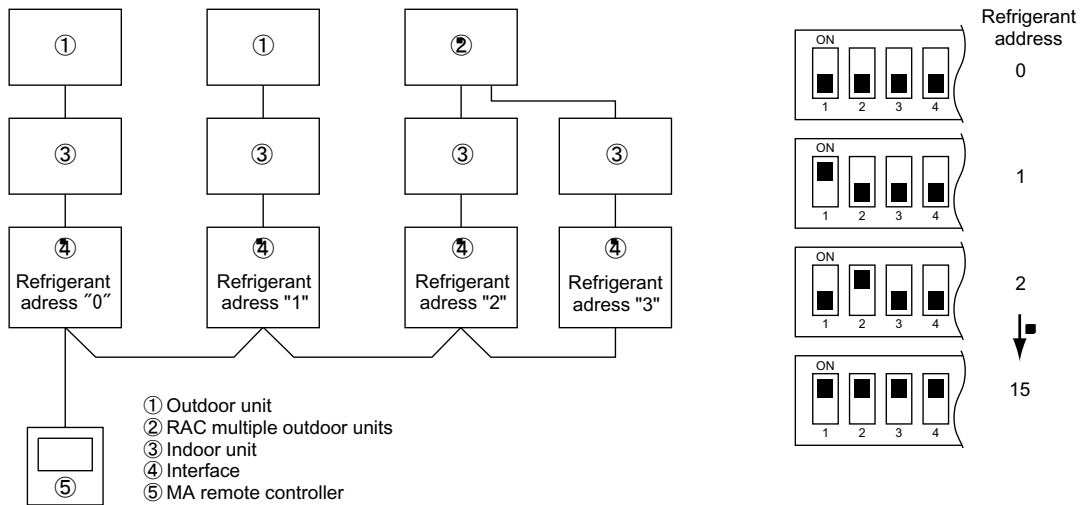
SW501- No. 5-6
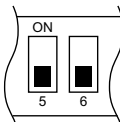
No. 5 and 6 should normally be set to OFF.
Under the following conditions, however, they should be switched to ON.

Only turn this ON when the indoor units in the same group include models where the MA remote controller and indoor unit are directly connected.

Set them to ON only when using the room temperature sensor installed in the MA remote controller.
　*　This can be switched when an accurate room temperature cannot be detected by the air conditioner unit.
　　MSZ-GA and MSZ-FA Series models do not have a room temperature sensor on their MA remote controllers.
　　(Some RAC models will not allow the use of the MA remote controller room temperature sensor.)

・**SW502:**
　　・Set this switch based on the functions of the RAC connected to the interface.
　　・See the Page 12 table and set the switch after checking the functions using the wireless remote control that came with the RAC.

3.3. Remote Control (Turning RAC On and Off from the Contact Point)

・You can turn RAC on and off using an on/off switch like a light switch.
・Connect the supplied lead wires (6)(15)to the connector CN591 on the interface board.
・Wire the remote control components, including the switches, at the installation site.
・Please use extension cords with reinforced insulation.
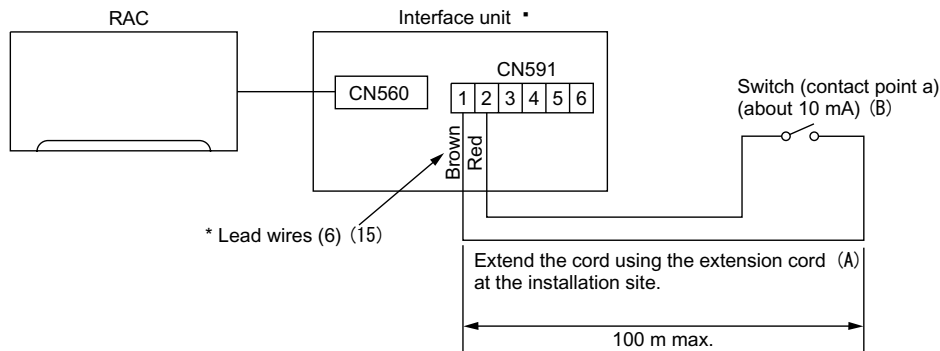
・When the switch contact point is closed (ON), the air conditioner will turn on, and when the switch contact point is open (OFF), the air conditioner will turn off.

* When connecting the connector and the lead wire, connect them using a closed end connector as shown below.
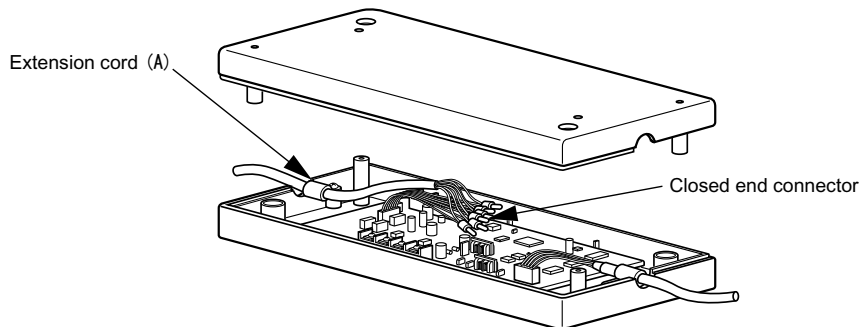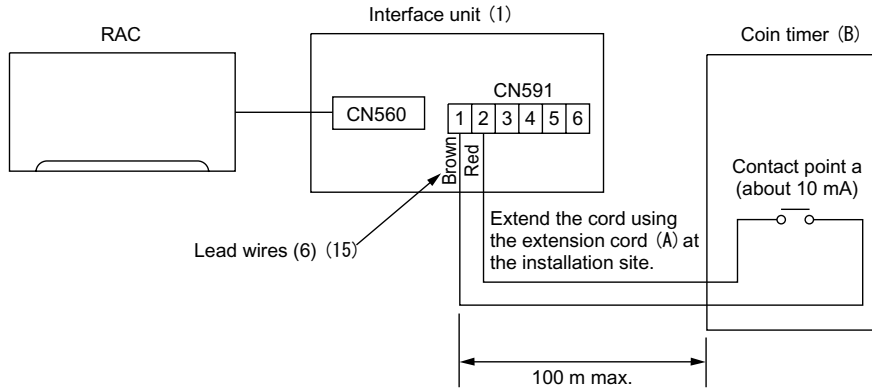

Dip switch settings

■**SW500**
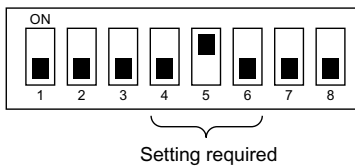
■**SW501 and SW502 do not have to be set.**

3.4. Restricting RAC Operations from the Contact Point

・You can use a coin timer or light switch to ensure that RAC will not operate.
・Connect the supplied lead wires (6)(15)to the connector CN591 on the interface board.
・Wire the remote control components, including the coin timers or switches, at the installation site.
・Please use extension cords with reinforced insulation.

*　When the contact point is open, the unit will turn off and will not be operable from the remote control.
　　When the contact point is closed, the unit will turn on and will be operable from the remote control.

Dip switch settings

SW500

Setting required
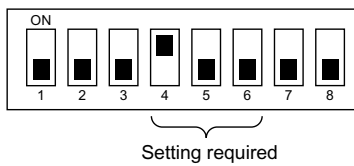
SW501 and SW502 do not have to be set.
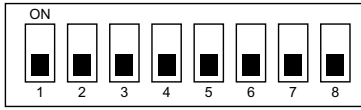
3.5. Status Signal Output Using the Relay

・You can set the external relay to ON/OFF based on whether the RAC is set to either on/off or error/ok.
・Set up and wire the relay and extension cables at the installation site.
・Please use relays with reinforced insulation.
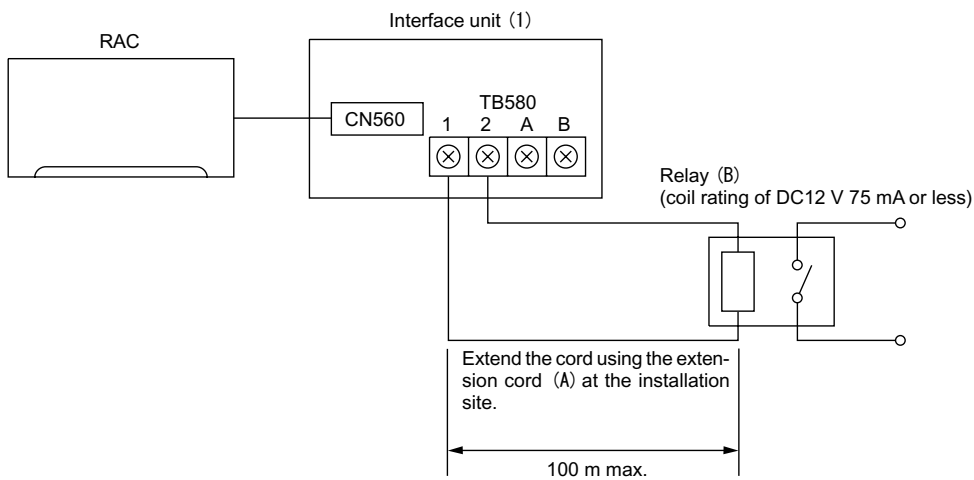
Dip switch settings

■ SW500

1. When outputting the RAC on/off

1 2 3 4 5 6 7 8

↑
Setting required

The relay is ON when the unit is running, and OFF when it is not.

2. When outputting the RAC error/ok

1 2 3 4 5 6 7 8

↑
Setting required

The relay is ON when an error has occurred, and OFF when the unit is functioning properly.

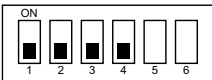### ■ SW501 and SW502 do not have to be set.

4. Dip Switch Details
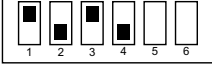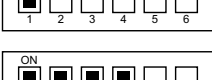
﹅ **SW500 - Input/Output Mode Settings**

SW No.	Functions	OFF	ON	Comments
No. 1	Not in use	Set to OFF	-	Be sure to set these to OFF (When set to OFF, the unit cannot communicate with the air conditioner).
No. 2	HA terminal (CN504) input switch	Pulse input	Continuous input	There is a switch between TC1 and 2 input on the TB571.
No. 3	HA terminal (CN504) output switch	Static mode	Dynamic mode	
No. 4	Remote control (CN591) mode switch 1	See the next page	See the next page	
No. 5	Remote control (CN591) mode switch 2			
No. 6	Remote control (CN591) mode switch 3			
No. 7	Relay, extermination output mode switch	On/Off output	Error/Ok output	When there is a problem while the unit is running, it will output a relay ON signal.
No. 8	Turn on/off with power option	Turn on/off with power: No (unit remains off when the source power is turned ON)	Turn on/off with power: Yes (Returns the unit to the status (on/off) it was in before the power was turned off)	When the Auto Restart function on the air conditioner itself is set to ON, be sure to set these to OFF.

Remote control (CN591) mode switch

SW 500			Functions	Operating Details
No. 4	No. 5	No. 6		
OFF	OFF	OFF	Do not use the CN591 remote control	-
OFF	OFF	ON	On/Off Prohibited/Allowed mode 1	Manual operations prohibited when CN591 No. 1 and No. 3 are closed, permitted when open. Only when No. 1 and No. 3 are closed and manual operations are prohibited. On when CN591 No. 1 and No. 2 are closed, off when open. (Cannot be operated from the remote control when manual operations are permitted. Only valid when operated from the CN591.)
OFF	ON	OFF	On/Off Prohibited/Allowed mode 2 (level input)	On when CN591 No. 1 and No. 2 are closed, off when open. Manual operations prohibited when No. 1 and No. 3 are closed, permitted when open. (Cannot be operated from the remote control when manual operations are permitted. Only valid when operated from the CN591.)
OFF	ON	ON	On/Off Prohibited/Allowed mode 3 (pulse input)	On when CN591 No. 1 and No. 2 are closed, off when No. 1 and No. 3 are closed. Manual operations prohibited when No. 1 and No. 4 are closed, and permitted when No. 1 and No. 5 are closed. (Same as when they are open.)
ON	OFF	OFF	Coin timer mode 1 (for a no-voltage contact point a)	Permitted and on when CN591 No. 1 and No. 2 are closed, manual operations prohibited and off when open. (When permitted, the unit can be operated from the remote control.)
ON	OFF	ON	Coin timer mode 2 (for a no-voltage contact point b)	Manual operations prohibited and off when CN591 No. 1 and No. 2 are closed, permitted and on when open. (When permitted, the unit can be operated from the remote control.)
ON	ON	OFF	Cooling-Heating/Temperature settings mode 1 (3 temperature patterns)	On when CN591 No. 1 and No. 2 are closed, off when open. When No. 1 and No. 3 are closed 20℃ When No. 1 and No. 4 are closed 24℃ When No. 1 and No. 5 are closed 28℃ (When multiple switches No. 3, 4, and 5 are closed, the highest temperature will be selected.) Heat when No. 1 and No. 6 are closed, cool when open. (Remote control operations are valid as always.)
ON	ON	ON	Cooling-Heating/Temperature settings mode 2 (8 temperature patterns)	On when CN591 No. 1 and No. 2 are closed, off when open. (see table below)

For the last row, the temperature settings table:

No. 1 and No. 3	No. 4	No. 5	Temperature settings
Open	Open	Open	16 ℃
Closed	Open	Open	18 ℃
Open	Closed	Open	20 ℃
Closed	Closed	Open	22 ℃
Open	Open	Closed	24 ℃
Closed	Open	Closed	26 ℃
Open	Closed	Closed	28 ℃
Closed	Closed	Closed	30 ℃

Heat when No. 1 and No. 6 are closed, cool when open.
(Remote control operations are valid as always.)

■**SW501: Settings when connecting an MA remote controller**

SW No.	Functions	OFF	ON	Comments
No. 1 No. 2 No. 3 No. 4	Refrigerant address 0			Only specify these settings when connecting an MA remote controller.
	Refrigerant address 1			
	Refrigerant address 2			
	Refrigerant address 3			
	Refrigerant address 4			
	Refrigerant address 5			
	Refrigerant address 6			
	Refrigerant address 7			
	Refrigerant address 8			
	Refrigerant address 9			
	Refrigerant address 10			
	Refrigerant address 11			
	Refrigerant address 12			
	Refrigerant address 13			
	Refrigerant address 14			
	Refrigerant address 15			

SW No.	Functions	OFF	ON	Comments
No. 5	Room temperature detector	Indoor unit	Remote control	This should normally be set to OFF.
No. 6	MA remote controllers are directly connected to indoor units within the same group.	Not mixed	Mixed	

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■**SW502 : Air Conditioner Function Settings**
(Set this switch based on the functions of the RAC connected to this device.)

SW No.	Functions	OFF	ON	Comments
No. 1	Availability of a heating mode	Combined cooler and heater	Cooling unit only	
No. 2	Not in use	-	-	Permanently set to ON.
No. 3	Not in use	-	-	Permanently set to ON.
No. 4	Not in use	-	-	Permanently set to ON.
No. 5	Not in use	-	-	Permanently set to OFF.
No. 6	Not in use	-	-	Permanently set to OFF.
No. 7	Not in use	-	-	Permanently set to OFF.
No. 8	Availability of a fan (Cooling model only)	Has a fan or mode OFF	No fan or mode ON	

5. Test Run (Check Operations)

■**Interface status monitor**
You can check the status of the interface by the LED lamp on the interface unit board.

LED lamp no.	Lamp off	Lamp on	Blinking
LED521	DC 12 V is not being supplied from the air conditioner.	DC 12 V is being supplied from the air conditioner.	-
LED522	Device is not communicating properly with the air conditioner.	-	Blinking at approx. 1 second intervals: Device is communicating normally with the air conditioner.
LED523	Device is not communicating properly with the MA remote controller.	-	Blinking at approx. 8 second intervals: Device is communicating normally with the MA remote controller.

*   Use the table above to check the device operations.

6. Mounting the MA & CONTACT TERMINAL Interface Unit

When mounting the interface to the back-side dent of MFZ-KA model, be sure to apply insulation material to prevent condensation from forming.
The Interface unit should be placed in a location where the connecting cable from the interface can reach an indoor unit.
The device will not function properly if the connecting cable is extended so the connecting cable should not be extended.
Mount the interface unit securely to a pillar or wall using 2 or more screws.

■**When Using Wall Mounting Brackets**（2）

1 Attach the wall mounting brackets ・ to the interface unit （1）using 2 mounting screws（3）.

Interface unit ・

Wall mounting brackets ・

Mounting screws（3）

Mounting screws（3）

2 Mount the unit to a pillar or wall using 2 mounting screws（3）.

Cord clamp for wiring（12）

Mounting screws（13）

■ **When Mounting Directly to a Wall**

Mount the interface unit (1)case to the wall using the mounting screws(3).

Interface case (14)
mounting screws

Mounting
screws (3)

* When mounting the interface unit (1) using a cushioning material (4), be sure to mount it in a location where it will not fall.

Interface unit (1)

Cushioning material (4)

When mounting the interface unit (1) inside a ceiling or wall, install an access door to facilitate maintenance.

When the interface unit (1) is mounted above an indoor RAC unit, it should be positioned 40 mm or more away from the unit to ensure that ceiling grills can be removed.

40 mm or more

Attach the interface unit (1) connecting cable here. Store extra connecting cable in the ductwork space behind the indoor RAC unit.

* If there is any slack in the connecting cable, use a fastener (11) to keep it in place.