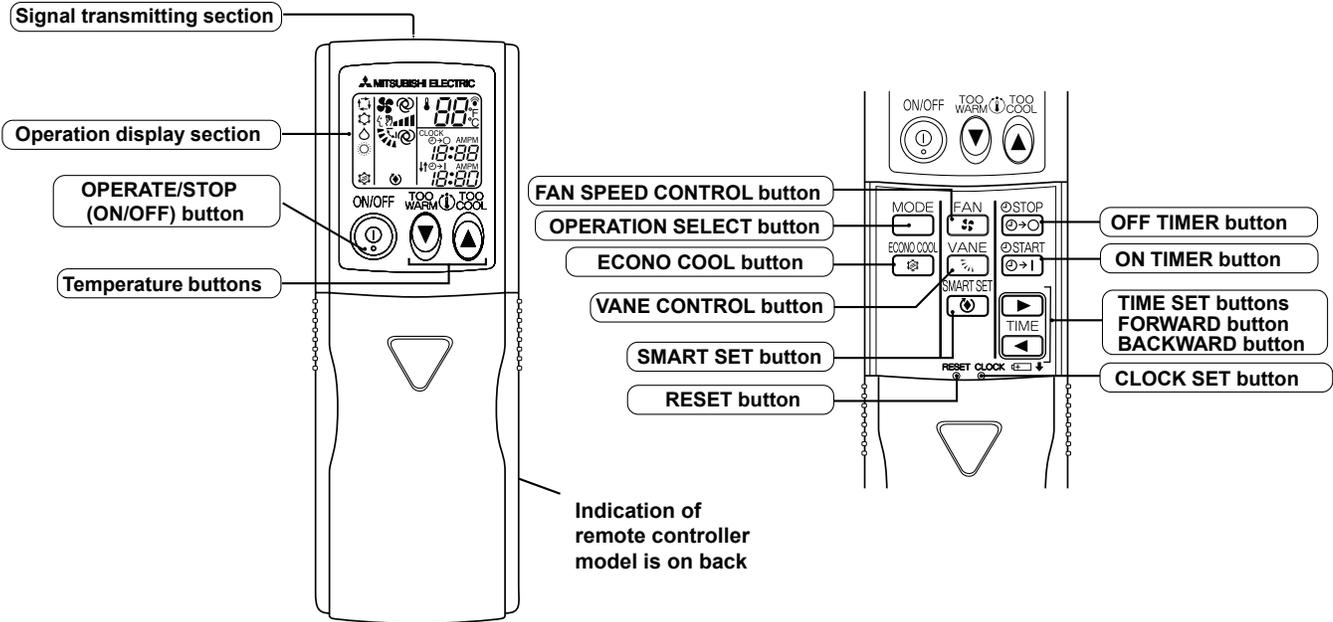## 8 | MICROPROCESSOR CONTROL

MSZ-GE06NA MSZ-GE09NA MSZ-GE12NA MSZ-GE15NA MSZ-GE18NA
MSY-GE09NA MSY-GE12NA MSY-GE15NA MSY-GE18NA

WIRELESS REMOTE CONTROLLER   E.g.: MSZ type

Signal transmitting section

MITSUBISHI ELECTRIC

Operation display section

OPERATE/STOP
(ON/OFF) button

Temperature buttons

FAN SPEED CONTROL button

OPERATION SELECT button

ECONO COOL button

VANE CONTROL button

SMART SET button

RESET button

MODE   FAN
ECONO COOL   VANE
SMART SET

ON/OFF   TOO WARM   TOO COOL

⊘STOP   OFF TIMER button

⊘START   ON TIMER button

TIME   ► ◄   TIME SET buttons
FORWARD button
BACKWARD button

RESET CLOCK   CLOCK SET button

Indication of
remote controller
model is on back

NOTE: Last setting will be stored after the unit is turned OFF with the remote controller. Indoor unit receives the signal of the remote controller with beeps.

INDOOR UNIT DISPLAY SECTION

Operation Indicator lamp

The operation indicator at the right side of the indoor unit indicates the operation state.
 • The following indication applies regardless of shape of the indication.

Indication	Operation state	Room temperature
●̇ ●̇	The unit is operating to reach the set temperature	About 4°F(2°C) or more away from set temperature
●̇ ○	The room temperature is approaching the set temperature	About 2 to 4°F(1 to 2°C) from set temperature
● ○̇	Standby mode (Only during multi system operation)	—

●̇ Lighted
○̇ Blinking
○ Not lighted

8-1. COOL (✿) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button.
   OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select COOL mode with OPERATION SELECT button.
(3) Press TEMPERATURE buttons (TOO WARM or TOO COOL button) to select the desired temperature.
   The setting range is 61 ~ 88°F (16 ~ 31°C).

1. Coil frost prevention

The compressor operational frequency is controlled by the temperature of the indoor heat exchanger to prevent the coil from frosting.
When the temperature of indoor heat exchanger becomes too low, the coil frost prevention mode works.
The indoor fan operates at the set speed and the compressor stops. This mode continues until the temperature of indoor heat exchanger rises.

2. Low outside temperature operation

When the outside temperature is lower, low outside temperature operation starts, and the outdoor fan slows or stops.

8-2. DRY (△) OPERATION

(1) Press OPERATE/STOP (ON/OFF) button.
   OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select DRY mode with OPERATION SELECT button.
(3) The set temperature is determined from the initial room temperature.

1. Coil frost prevention

Coil frost prevention is as same as COOL mode. (8-1.1.)

2. Low outside temperature operation

Low outside temperature operation is as same as COOL mode. (8-1.2.)

8-3. HEAT (☼) OPERATION (MSZ)

(1) Press OPERATE/STOP (ON/OFF) button.
   OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select HEAT mode with OPERATION SELECT button.
(3) Press TEMPERATURE buttons (TOO WARM or TOO COOL button) to select the desired temperature.
   The setting range is 61 ~ 88°F (16 ~ 31°C).

1. Cold air prevention control

When the compressor is not operating or is starting, and the temperature of indoor heat exchanger and/or the room temperature is low or when defrosting is being done, the indoor fan will stop or rotate in Very Low speed.

2. High pressure protection

The compressor operational frequency is controlled by the temperature of the indoor heat exchanger to prevent the condensing pressure from increasing excessively.
When the temperature of indoor heat exchanger becomes too high, the high pressure protection works.
The indoor fan operates following the cold air prevention control. This mode continues until the temperature of indoor heat exchanger falls.

3. Defrosting

Defrosting starts when the temperature of outdoor heat exchanger becomes too low.
The compressor stops once, the indoor/outdoor fans stop, the 4-way valve reverses and the compressor re-starts.
This mode continues until the temperature of outdoor heat exchanger rises or the fixed time passes.

8-4. FAN(❀)OPERATION (MSY)

(1) Press OPERATE/STOP (ON/OFF) button.
   OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select FAN mode with OPERATION SELECT button.
(3) Select the desired fan speed. When AUTO, it becomes Low.
   Only indoor fan operates. Outdoor unit does not operate.

8-5. "I FEEL CONTROL" (▭) OPERATION (MSY)

(1) Press OPERATE/STOP (ON/OFF) button on the remote controller. OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select "I FEEL CONTROL" mode with OPERATION SELECT button.
(3) The operation mode is determined by the room temperature at start-up of the operation.
   • Once the mode is fixed, the mode does not change by room temperature afterwards.
   • Under the ON TIMER (⏲→|) operation, mode is determined according to the room temperature at the start-up of operation.

(4) The initial set temperature is decided by the initial room temperature.

Initial room temperature	Model	Initial set temperature
79°F (26°C) or more	COOL mode of "I FEEL CONTROL"	75°F (24°C)
77 to 79°F (25 to 26°C)		Initial room temperature minus 4°F (2°C)
Less than 79°F (25°C)	DRY mode of "I FEEL CONTROL"	Initial room temperature minus 4°F (2°C)

(5) TEMPERATURE buttons
In "I FEEL CONTROL" (▭) mode, set temperature is decided by the microprocessor based on the room temperature.
In addition, set temperature can be controlled by TOO WARM or TOO COOL buttons when you feel too cool or too warm.
Each time the TOO WARM or TOO COOL button is pressed, the indoor unit receives the signal and emits a beep tone.
• **Fuzzy control**
When the TOO COOL or TOO WARM button is pressed, the microprocessor changes the set temperature, consider-ing the room temperature, the frequency of pressing TOO COOL or TOO WARM button and the user's preference to heat or cool. So this is called "Fuzzy control", and works only in "I FEEL CONTROL" mode.
In DRY mode of "I FEEL CONTROL", the set temperature does not change.

TOO COOL ▲ ···To raise the set temperature 2~4°F (1~2°C)   TOO WARM ▼ ···To lower the set temperature 2~4°F (1~2°C)

8-6. AUTO CHANGE OVER ··· AUTO MODE OPERATION (MSZ)

Once desired temperature is set, unit operation is switched automatically between COOL and HEAT operation.
Mode selection
(1) Initial mode
When unit starts the operation with AUTO operation from OFF:
• If the room temperature is higher than the set temperature, operation starts in COOL mode.
• If the room temperature is equal to or lower than the set temperature, operation starts in HEAT mode.
(2) Mode change
COOL mode changes to HEAT mode when about 15 minutes have passed with the room temperature 2°F (1°C) below the set temperature.
HEAT mode changes to COOL mode when about 15 minutes have passed with the room temperature 2°F (1°C) above the set temperature.
NOTE1
If two or more indoor units are operating in multi system, there might be a case that the indoor unit, which is operating in ▭ (AUTO), cannot change over to the other operating mode (COOL ↔ HEAT**(MSZ)**) and becomes a state of standby.
Refer to **NOTE2 "FOR MULTI SYSTEM AIR CONDITIONER"**.
NOTE2
FOR MULTI SYSTEM AIR CONDITIONER
OUTDOOR UNIT: MXZ series
Multi system air conditioner can connect two or more indoor units with one outdoor unit.
• When you try to operate two or more indoor units with one outdoor unit simultaneously, one for the cooling and the others for heating, the operation mode of the indoor unit that operates first is selected. Other indoor units cannot operate, and operation indicator lamp flashes as shown in the figure below. In this case, please set all the indoor units to the same operation mode.

<Operation indicator lamp>

● Lighted
☼ Blinking
○ Not lighted

• When indoor unit starts the operation while the defrosting of outdoor unit is being done, it takes a few minutes (max. 10 minutes) to blow out the warm air.
• In the heating operation, though indoor unit that does not operate may get warm or the sound of refrigerant flow-ing may be heard, they are not malfunction. The reason is that the refrigerant continuously flows into it.
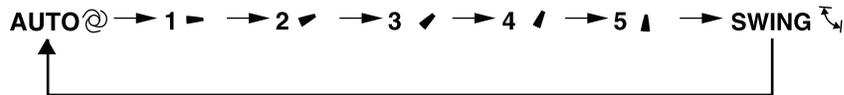
8-7. AUTO VANE OPERATION

1. Horizontal vane

(1) Vane motor drive
These models are equipped with a stepping motor for the horizontal vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approx. 12 V) transmitted from indoor microprocessor.

(2) The horizontal vane angle and mode change as follows by pressing VANE CONTROL button.

AUTO ⓐ → 1 ► → 2 ✔ → 3 ✐ → 4 ◢ → 5 ▲ → SWING ↖

(3) Positioning
To confirm the standard position, the vane moves until it touches the vane stopper. Then the vane is set to the selected angle.
Confirming of standard position is performed in the following cases:
(a) The operation starts or finishes (including timer operation).
(b) The test run operation starts.
(c) Standby mode (only during multi system operation) starts or finishes.

(4) VANE AUTO (ⓐ) mode
The microprocessor automatically determines the vane angle to make the optimum room temperature distribution.

In COOL and DRY operation
Vane angle is fixed to Horizontal position.

In HEAT operation
Vane angle is fixed to Angle 5.

Horizontal position

5

(5) STOP (operation OFF) and ON TIMER standby
In the following cases, the horizontal vane returns to the closed position.
(a) OPERATE/STOP (ON/OFF) button is pressed (POWER OFF).
(b) The operation is stopped by the emergency operation.
(c) ON TIMER is ON standby.

(6) Dew prevention
During COOL or DRY operation with the vane angle at Angle 4 or 5 when the compressor cumulative operation time exceeds 1 hour, the vane angle automatically changes to Angle 1 for dew prevention.

(7) SWING (↖) mode
By selecting SWING mode with VANE CONTROL button, the horizontal vane swings vertically.

(8) Cold air prevention in HEAT operation **(MSZ)**
The horizontal vane position is set to Upward.
NOTE: When 2 or more indoor units are operated with multi outdoor unit, even if any indoor unit turns thermostat OFF, this control does not work in the indoor unit.

(9) To change the airflow direction not to blow directly onto your body.

To change the air flow direction	When to use this function?	COOL/DRY	HEAT**(MSZ)**
Pressing and holding VANE CONTROL button for 2 seconds or more, the horizontal vane reverses and moves horizontal position. Horizontal position	Use this function if you do not want the air from the indoor unit to blow directly onto your body. • Depending on the shape of the room, the air may blow directly onto your body. • Press VANE CONTROL button again to return the vane to the previously-set position.	The air conditioner starts the cooling or drying operation approx. 3 minutes after the vane has moved to the horizontal position. • When VANE CONTROL button is pressed again, the vane returns to the previously-set position and the air conditioner starts the cool or dry operation in approx. 3 minutes.	The air conditioner starts heating operation approx. 3 minutes after the vane has moved to the horizontal position. • Sometimes the area around your feet may not get warm. To warm the area around the feet, set the horizontal vane to ⓐ (AUTO) or the downwardblowing position. • When VANE CONTROL button is pressed again, the vane returns to the previously-set position and the air conditioner starts the heat operation in approx. 3 minutes.

NOTE: • If you make the airflow not to blow directly onto your body by pressing VANE CONTROL button, the compressor stops for 3 minutes even during the operation of the air conditioner.
• The air conditioner operates with Very Low speed until the compressor turns ON again.

(10) ECONO COOL (⟐) operation (ECONOmical operation)
   When ECONO COOL button is pressed in COOL mode, set temperature is automatically set 4°F(2°C) higher.
   Also the horizontal vane swings in various cycle.
   SWING operation makes you feel cooler than set temperature. So, even though the set temperature is higher, the air
   conditioner can keep comfort. As a result, energy can be saved.
   ECONO COOL operation is cancelled when ECONO COOL button is pressed once again or VANE CONTROL button
   is pressed or changed to other operation mode.

8-8. TIMER OPERATION
1. How to set the time
(1) Check that the current time is set correctly.
   NOTE: Timer operation will not work without setting the current time. Initially "0:00 AM" blinks at the current time display
       of TIME MONITOR, so set the current time correctly with CLOCK SET button.
       How to set the current time
       (a) Press the CLOCK set button.
       (b) Press the TIME SET buttons (▶ and ◀) to set the current time.
           • Each time FORWARD button (▶) is pressed, the set time increases by 1 minute, and each time BACK-
             WARD button (◀) is pressed, the set time decreases by 1 minute.
           • Pressing those buttons longer, the set time increases/decreases by 10 minutes.
           (c) Press the CLOCK set button.
(2) Press OPERATE/STOP (ON/OFF) button to start the air conditioner.
(3) Set the time of timer.
   ON timer setting
   (a) Press ON TIMER button (⏰ START ⊙→|) during operation.
   (b) Set the time of the timer using TIME SET buttons (▶ and ◀). ※

   OFF timer setting
   (a) Press OFF TIMER button (⏰ STOP ⊙→○) during operation.
   (b) Set the time of the timer using TIME SET buttons (▶ and ◀). ※
   ※ Each time FORWARD button (▶) is pressed, the set time increases by 10 minutes: each time BACKWARD
     button (◀) is pressed, the set time decreases by 10 minutes.
2. To release the timer
   To release ON timer, press ON TIMER button (⏰ START ⊙→|).

   To release OFF timer, press OFF TIMER button (⏰ STOP ⊙→○).

   TIMER is cancelled and the display of set time disappears.
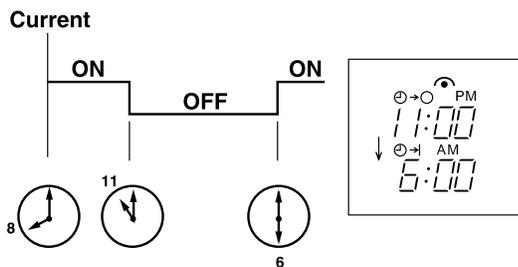

PROGRAM TIMER

• OFF timer and ON timer can be used in combination. The timer of the set time that is reached first will operate first.
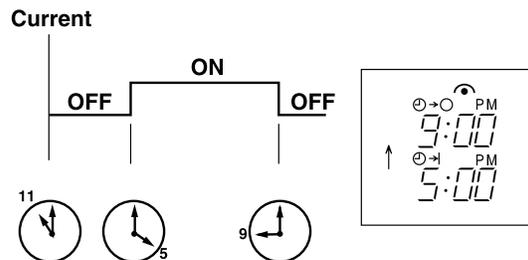• " ↓ " and " ↑ " display shows the order of OFF timer and ON timer operation.

(Example 1) The current time is 8:00 PM.   (Example 2) The current time is 11:00 AM.
       The unit turns OFF at 11:00 PM, and ON at 6:00   The unit turns ON at 5:00 PM, and OFF at 9:00
       AM.   PM.

NOTE: If the main power is turned OFF or a power failure occurs while ON/OFF timer is active, the timer setting is can-
       celled. As these models are equipped with an auto restart function, the air conditioner starts operating with timer
       cancelled when power is restored.

8-9. SMART SET (◉) OPERATION

1. How to SET SMART SET operation
(1) Press OPERATE/STOP (ON/OFF) button.
(2) Select COOL, HEAT**(MSZ)** or ECONO COOL mode.
(3) Press SMART SET button.
(4) Set the temperature, fan speed, and airflow direction for SMART SET operation.

NOTE: • SMART SET operation cannot be selected during DRY or AUTO mode operation.
 • The setting range of HEAT mode in SMART SET operation is 50°F (10°C) and 61 - 87°F (16 - 31°C). **(MSZ)**
 • 2 groups of setting can be saved. (One for COOL/ECONO COOL, one for HEAT) **(MSZ)**
 • 1 group of setting can be saved. **(MSY)**

2. How to cancel operation
• Press SMART SET button again.
• SMART SET operation can also be cancelled by pressing OPERATION SELECT button to change the operation mode. The same setting is select from the next time by simply pressing SMART SET button.

8-10. EMERGENCY/TEST OPERATION

In case of test run operation or emergency operation, use EMERGENCY OPERATION switch on the right side of the indoor unit. Emergency operation is available when the remote controller is missing, has failed or the batteries of the remote controller run down. The unit will start and OPERATION INDICATOR lamp will light.

The first 30 minutes of operation is the test run operation. This operation is for servicing. The indoor fan runs at High speed and the system is in continuous operation (The thermostat does not work).

After 30 minutes of test run operation, the system shifts to EMERGENCY COOL/HEAT**(MSZ)** MODE with a set temperature of 75°F (24°C). The fan speed shifts to Med.
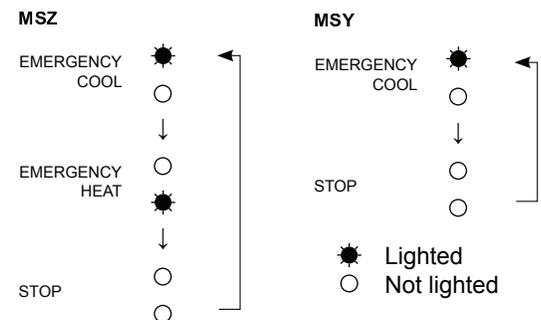
In the test run or emergency operation, the horizontal vane operates in VANE AUTO (◎) mode.

Emergency operation continues until EMERGENCY OPERATION switch is pressed once or twice or the unit receives any signal from the remote controller. In case of latter, normal operation will start.

NOTE: Do not press EMERGENCY OPERATION switch during normal operation.

Operation mode	COOL	HEAT (**MSZ**)
Set temperature	75°F(24°C)	75°F(24°C)
Fan speed	Med.	Med.
Horizontal vane	Auto	Auto

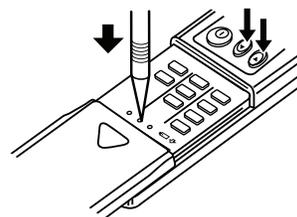**The operation mode is indicated by the Operation Indicator lamp as following**

8-11. 3-MINUTE TIME DELAY OPERATION

When the system turns OFF, compressor will not restart for 3 minutes as 3-minute time delay function operates to protect compressor from overload.

8-12. Changing temperature indication (°F/°C)

• The preset unit is °F.
• °F → °C: Press RESET button while the temperature buttons are pressed.
• °C → °F: Press RESET button or remove the batteries .

Press RESET button gently using a thin instrument.