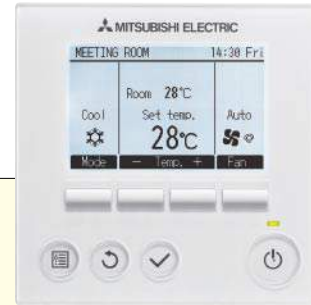


CONTROL TECHNOLOGIES

User-friendly Deluxe Remote Controller with Excellent Operability and Visibility



PAR-30MAA

Easy To Read & Easy To Use

Full Dot Liquid-crystal Display Adopted

Easier to read thanks to use of a full dot liquid-crystal display with backlight, and easier to use owing to adopting a menu format that has reduced the number of operating buttons.

Display Example [Operation Mode]

Full Dot LCD



Multi-language Display

Multi-language

Control panel operation in eight different languages

Choose the desired language, among the following languages.



Energy-efficient Control

Operation Control Functions

Energy-saving Schedule

Precise control of power consumption

The amount of power consumed in each time period is managed so that the demand value is not exceeded. The demand control function can be set to start and finish in 5-minute units. Additionally, the level can be adjusted to 0, 50, 60, 70, 80 or 90% of maximum capacity, and up to 4 patterns can be set per day. Air-conditioning operation is automatically controlled to ensure that electricity in excess of the contracted volume is not consumed.

Setting pattern example

Start time	Finish time	Capacity savings
8:15	→ 12:00	80%
12:00	→ 13:00	50%
13:00	→ 17:00	90%
17:00	→ 21:00	50%

Auto-return

Prevents wasteful operation by automatically returning to the preset temperature after specified operating time

After adjusting the temperature for initial heating in winter or cooling on a hot summer day, it is easy to forget to return the temperature setting to its original value. The Auto-return function automatically resets the temperature back to the original setting after a specified period of time, thereby preventing overheating/overcooling. The Auto-return activation time can be set in 10-minute units, in a range between 30 and 120 minutes.

*Auto-return cannot be used when Temperature Range Restrictions is in use.

Night Setback

Keep desired room temperatures automatically

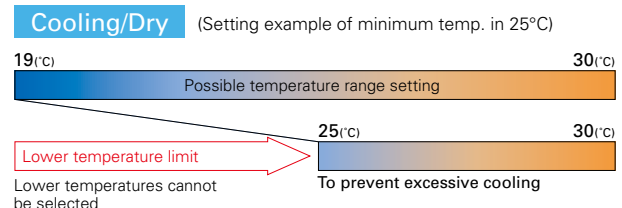
This function monitors the room temperature and automatically activates the heating mode when the temperature drops below the preset minimal temperature setting. It has the same function for cooling, automatically activating the cooling mode when the temperature rises above the preset maximum temperature setting.

Temperature Range Restriction

Temperature Range Restriction prevents overheating/overcooling

Using a temperature that is 1°C lower/higher for heating/cooling results in a 10% reduction in power consumption.* Temperature Range Restriction limits the maximum and minimum temperature settings, contributing to the prevention of overheating/overcooling.

*In-house calculations



Recommended for **Office** **Restaurant**

Auto-off Timer

Turns heating/cooling off automatically after preset time elapses

When using Auto-off Timer, even if one forgets to turn off the unit, operation stops automatically after the preset time elapses, thereby preventing wasteful operation. Auto-off Timer can be set in 10-minute units, in a range between 30 minutes and 4 hours. Eliminates all anxiety about forgetting to turn off the unit.

Recommended for **Meeting room** **Changing room**

Operation Lock

Fixed temperature setting promotes energy savings

In addition to operation start/stop, the operation mode, temperature setting and airflow direction can be locked. Unwanted adjustment of temperature settings is prevented and an appropriate temperature is constantly maintained, leading to energy savings. This feature is also useful in preventing erroneous operation or tampering.

Recommended for **Office** **School** **Public hall**
Hospital **Computer server facility**

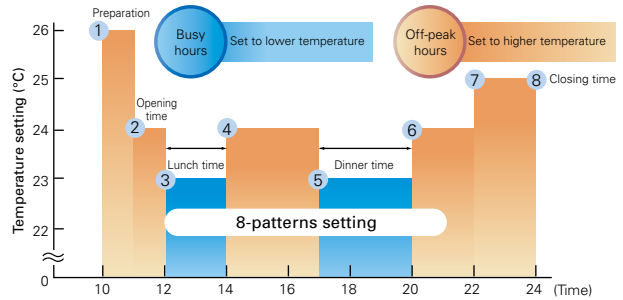
Weekly Timer

Set up to 8 patterns per day including temperature control

The Weekly Timer enables the setting of operation start and finish times and adjusting the temperature as standard features. Up to 8 patterns per day can be set, providing operation that matches the varying conditions of each period, such as the number of customers in the store.

*Weekly Timer cannot be used when On/Off Timer is in use.

Setting Example (restaurant in summer time)



Necessary to change temperature settings for cooling/heating times.
*Joint research conducted with Japan Facility Solutions, Inc.

Installation/Maintenance Support Functions

Smooth Maintenance

Outdoor unit data accessed immediately, enabling fast maintenance

Using the Stable Operation Control (fixed frequency) of the Smooth Maintenance function, the operating status of the inverter can be checked easily via the screen on the remote controller.

Smooth Maintenance Function Operating Procedure



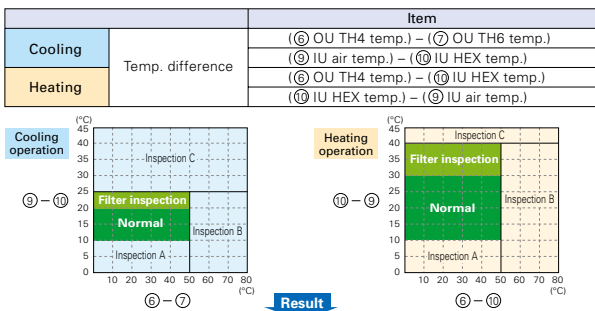
Display information (11 items)

Compressor		Indoor Unit	
①	COMP. current (A)	⑥	OU TH4 temp. (°C)
②	COMP. run time (Hr)	⑦	OU TH6 temp. (°C)
③	COMP. ON/OFF (times)	⑧	OU TH7 temp. (°C)
④	COMP. frequency (Hz)	⑨	IU air temp. (°C)
Outdoor Unit		⑩	IU HEX temp. (°C)
⑤	Sub cool (°C)	⑪	IU filter operating time* (Hr)

*IU filter operating time is the time elapsed since filter was reset.

Inspection Guidelines

The computed temperature difference is plotted as in the graph below and operating status is determined.



Result	Item
Normal	Normal operating status.
Filter inspection	Filter may be blocked.*1
Inspection A	Capacity is reduced. Detailed inspection is necessary.
Inspection B	Refrigerant level is low.
Inspection C	Filter or indoor unit heat exchanger is blocked.

*1: Due to indoor and outdoor temperatures. "Filter inspection" may be displayed even if the filter is not blocked.
* The above graphs are based on trial data. Results may vary depending on installation/temperature conditions.
● Stable operation may not be possible under the following temperature conditions:
a) In cooling mode when the outdoor induction temperature is over 40°C or the indoor induction temperature is below 23°C.
b) In heating mode when the outdoor induction temperature is over 20°C or when the indoor induction temperature is over 25°C.
● If the above temperature conditions do not apply and stable operation is not achieved after 30 minutes has passed, please inspect the units.
● The operating status may change due to frost on the outdoor heat exchanger.

Manual Vane Angle Setting

(4-way ceiling cassette)

Direction of vertical airflow for each vane can be set

Setting the vertical airflow direction for each individual vane can be performed simply via illustrated display. Seasonal settings such as switching between cooling and heating are easily changed as well.

Auto-descending Panel Operation

Easily raise/lower panels using the remote controller

Auto-descending panel operation is available as an option. Panels can be lowered/raised using a button on the wired remote controller. Filter cleaning can be performed easily.

Reassuring Troubleshooting Navigation Function

Contact Details Displayed When Abnormality Occurs Easily contact a service company when there is a problem.

The telephone number of a service company and other information can be input and stored in advance. When a problem occurs, the contact details are displayed automatically, and a call for help can be made without delay.

CONTROL TECHNOLOGIES

Advanced MA Remote Controller – A Progressive Step in the Evolution of Air Conditioning Control



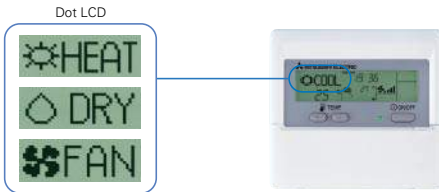
PAR-21MAA

Easy To Read & Easy To Use

Dot Liquid-crystal Display Adopted

The adoption of dot liquid-crystal display (LCD) technology and a large display screen for the control panel optimises visibility. Operation and control status are easily read at a glance.

Display Example [Operation Mode]



Multi-language Display

Multi-language

Control panel operation in eight different languages

Choose the desired language, among the following languages.



Energy-efficient Control

Operation Control Functions

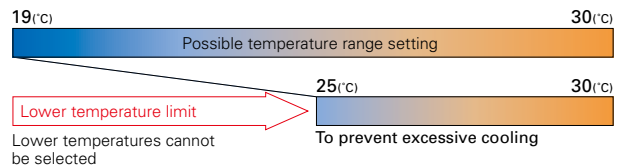
Temperature Range Restriction

Air conditioner operation restricted to within a specified operating range

Set the upper and lower limits for the temperature range during operation. Excessive heating or cooling is prevented, leading to increased energy savings.

Cooling/Dry

(Setting example of minimum temp. in 25°C)



Recommended for **Office** **Restaurant**

Auto-off Timer

Automatically turns off air conditioner

Set the time for the air conditioner to turn off automatically. The timer can be set in the range from 30 minutes up to 4 hours in 30-minute intervals.

The "Simple Timer"—starts/stops in units of 1 hour in a 72-hour period—is set at the time of shipment from the factory. It can be changed to the "Auto-off Timer" function using the remote controller.

Recommended for **Meeting room** **Changing room**

Operation Lock

Prevent operation settings from being changed

Units can be set so that the operation mode cannot be changed. When "Operation Lock" is activated, new temperature setting commands are not accepted, thereby ensuring that the unit runs in the specified (locked in) temperature range. This promotes energy savings and prevents erroneous/ mischievous operation.

Only the administrator can change settings when using the Operation Lock mode.

Recommended for **Office** **School / Private school**
Public facility like public hall **Hospital** **Server room**

Weekly Timer

Introduced in response to market demand

Control temperature on a weekly basis

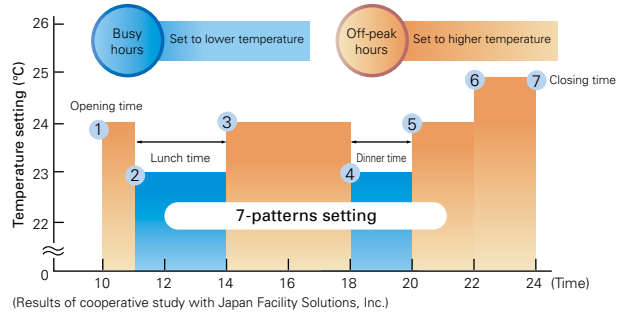
Temperature settings and On/Off control can be managed over a period of one week using the Weekly Timer. Up to eight setting patterns per calendar day are possible.

Setting the temperature 1°C higher for cooling and 1°C lower for heating leads to an energy savings of approximately 10%.

Approximate **10%***
Energy Savings

*Based on in-house calculations

Setting Example (restaurant in summer time)



Rotation Back-up

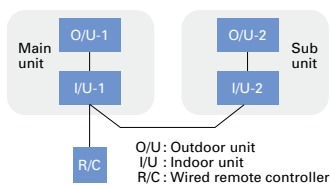
Rotation, Back-up and 2nd Stage Cut-in Functions (PAR-30MAA and PAR-21MAA)

(1) Rotation and Back-up Functions

Function Outline

- Main and sub units take turns operating according to a rotation interval setting.
- If one unit malfunctions, the other unit automatically begins operation (Back-up function)

System Image



(2) 2nd Stage Cut-in Function

Function Outline

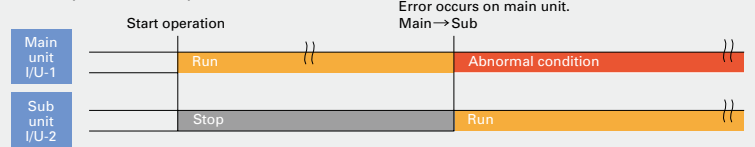
- Number of units operating is based on room temperature and predetermined settings.
- When room temperature rises above the desired setting, the standby unit starts (2-unit operation).
- When the room temperature falls 4°C below the predetermined setting, the standby unit stops (1-unit operation).

System Constraint

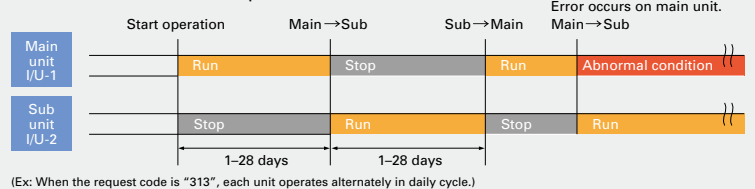
- This function is only available for rotation operation and when the back-up function is in cooling mode.

Operation Pattern

[Back-up function only]

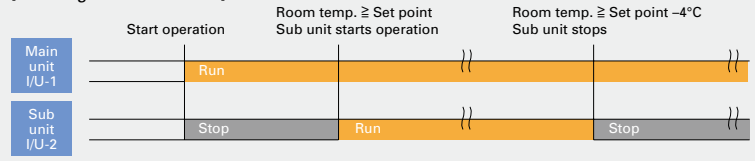


[Rotation function] & [Back-up function]



Operation Pattern

[2nd stage cut-in function]



Easy Maintenance Function (Mr. Slim Power Inverter only)

- Nearly maintenance-free operation
- Monitor operation data of the indoor and outdoor units via the remote controller. Remote controller also lets you set the operating frequency, allowing easier inspection.



Easy Maintenance Information

Compressor		Outdoor Unit		Indoor Unit	
①	Accumulated operating time (x10hr)	④	Heat exchanger temperature (°C)	⑦	Intake-air temperature (°C)
②	Number of ON/OFF times (x100 times)	⑤	Discharge temperature (°C)	⑧	Heat exchanger temperature (°C)
③	Operating current (A)	⑥	Outdoor-air temperature (°C)	⑨	Filter operating time* (hr)

*The filter operating time is the time elapsed since the filter button was reset.

Refrigerant Leakage Check (Mr. Slim Power Inverter only)


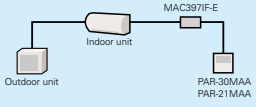
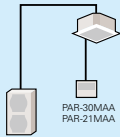

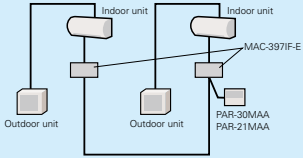
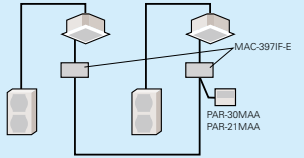
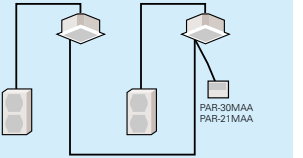

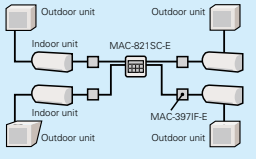
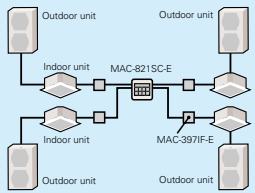

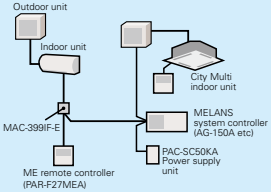
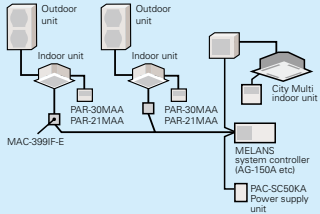
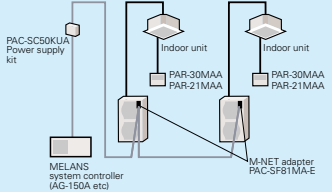
The Mr. Slim Power Inverter units come equipped with a useful new "Refrigerant Leakage Check" function. Using a wired remote controller, it is easy to check if refrigerant has been lost over a long period of use. This reduces service time and gives an added sense of safety.



SYSTEM CONTROL

Versatile system controls can be realised using optional parts, relay circuits, control panels, etc.

MAJOR SYSTEM CONTROL

	System Examples		
Indoor Unit	M Series Indoor Unit	S Series & P Series Indoor Unit	P Series Indoor Unit
Outdoor Unit	M Series and MXZ Series Outdoor	S Series and MXZ Series Outdoor	P Series Outdoor
 <p>PAR-30MAA Control PAR-21MAA Control</p>			
Details	<ul style="list-style-type: none"> Wired remote controller can be connected to indoor unit 	Standard equipment (for indoor units compatible with wired remote controllers)	
Major Optional Parts Required	<ul style="list-style-type: none"> MAC-397IF-E (Interface) PAR-30MAA (Wired remote controller) PAR-21MAA (Wired remote controller) 	<ul style="list-style-type: none"> PAR-30MAA (Wired remote controller) PAR-21MAA (Wired remote controller) 	
 <p>System Group Control</p>			
Details	<ul style="list-style-type: none"> One remote controller can control plural air conditioners with the same settings simultaneously. One remote controller can control up to 16 refrigerant systems. (When connected to a MXZ unit, MAC-397IF-E is counted as one system.) Up to two remote controller can be connected. 		
Major Optional Parts Required	<ul style="list-style-type: none"> MAC-397IF-E (Interface) PAR-30MAA (Wired remote controller) PAR-21MAA (Wired remote controller) 		<ul style="list-style-type: none"> PAR-30MAA (Wired remote controller) PAR-21MAA (Wired remote controller)
 <p>Centralised On/Off Control</p>			
Details	<ul style="list-style-type: none"> Up to 8 indoor units can be switched On/Off with one remote controller. 		
Major Optional Parts Required	<ul style="list-style-type: none"> MAC-397IF-E (Interface) MAC-821SC-E (Centralised remote controller) 		
 <p>M-NET Connections</p>			
Details	<ul style="list-style-type: none"> Group of air conditioners can be controlled by MELANS system controller (M-NET). 		
Major Optional Parts Required	<ul style="list-style-type: none"> MAC-399IF-E (M-NET Interface) MELANS System controller PAC-SC50KUA (power supply unit) 	<ul style="list-style-type: none"> PAC-SF81MA-E (M-NET converter) MELANS System controller PAC-SC50KUA (power supply unit) 	

OTHERS

For M Series Indoor Units (New A-control Models Only)

	System Examples	Connection Details	Control Details	Major Optional Parts Required
1 Remote On/Off Operation • Air conditioner can be started/stopped remotely. (1 and 2) can be used in combination		Connect the interface to the air conditioner. Then connect the locally purchased remote controller to the terminal in the interface.	On/Off operation is possible from a remote location.	<ul style="list-style-type: none"> • MAC-397IF (Interface) • Parts for circuit such as relay box, lead wire, etc. (to be purchased locally)
2 Remote Display of Operation Status • The On/Off status of air conditioners can be confirmed remotely. (1 and 2) can be used in combination		Connect the interface to the air conditioner. Then connect the locally purchased remote controller to the terminal in the interface.	The operation status (On/Off) or error signals can be monitored from a remote location.	<ul style="list-style-type: none"> • MAC-397IF-E (Interface) • Parts for circuit to be purchased locally (DC power source needed)

For P Series and S Series Indoor Units

	System Examples		Details	Major Optional Parts Required
	Wired remote controller	Wireless remote controller		
A 2-remote Controller Control With two remote controllers, control can be performed locally and remotely from two locations.			<ul style="list-style-type: none"> • Up to two remote controllers can be connected to one group. • Both wired and wireless remote controllers can be used in combination. 	<ul style="list-style-type: none"> • Wired Remote Controller PAR-30MAA PAR-21MAA (for PKA, PAC-SH29TC-E is required) • Wireless Remote Controller PAR-SL97A-E (Except for SLZ) • Wireless Remote Controller Kit for PCA PAR-SL99B-E
B Operation Control by Level Signal Air conditioner can be started/stopped remotely. In addition, On/Off operation by local remote controller can be prohibited/permitted.			<ul style="list-style-type: none"> • Operation other than On/Off (e.g., adjustment of temperature, fan speed, and airflow) can be performed even when remote controller operation is prohibited. • Timer control is possible with an external timer. 	<ul style="list-style-type: none"> • Adapter for remote On/Off PAC-SE55RA-E • Relay box (to be purchased locally) • Remote control panel (to be purchased locally)
C Operation Control by Pulse Signal			<ul style="list-style-type: none"> • The pulse signal can be turned On/Off. • Operation/emergency signal can be received at a remote location. 	<ul style="list-style-type: none"> • Connector cable for remote display PAC-SA88HA-E/PAC-725AD (10 pcs. x PAC-SA88HA-E) • Relay box (to be purchased locally) • Remote control panel (to be purchased locally)
D Remote Display of Operating Status Operating status can be displayed at a remote location.			<ul style="list-style-type: none"> • Operation/emergency signal can be received at a remote location (when channeled through the PAC-SF40RM → no-voltage signal, when channeled through the PAC-SA88HA-E → DC 12V signal). 	<ul style="list-style-type: none"> • Remote display panel (to be purchased locally) • Connector cable for remote display PAC-SA88HA-E/PAC-725AD (10 pcs. x PAC-SA88HA-E) • Relay box (to be purchased locally) • Remote operation adapter PAC-SF40RM *Unable to use with wireless remote controller
E Timer Operation Allows On/Off operation with timer *For control by an external timer, refer to [B] Operation Control by Level Signal.			<ul style="list-style-type: none"> • Weekly Timer: On/Off and up to 8 pattern temperatures can be set for each calendar day. (Initial setting) • On/Off Timer: On/Off can be set once each within 72 hr in intervals of 5-minute units. • Auto-off Timer: Operation will be switched off after a certain time elapse. Set time can be changed from 30 min. to 4 hr. at 10 min. intervals. 	Standard functions of PAR-30MAA