

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

October 2019

No. OCH711

TECHNICAL & SERVICE MANUAL

Series PKFY Wall Mounted

Indoor unit

[Model Name] [Service Ref.]

PKFY-WL10VLM-E.TH

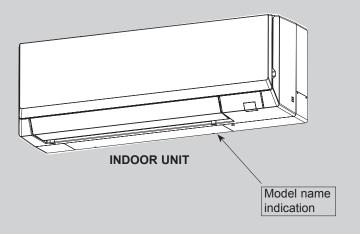
PKFY-WL15VLM-E.TH

PKFY-WL20VLM-E.TH

PKFY-WL25VLM-E.TH

PKFY-WL32VLM-E.TH

PKFY-WL40VLM-E.TH



CONTENTS

1. SAFETY PRECAUTION2
2. PARTS NAMES AND FUNCTIONS3
3. SPECIFICATION11
4. NOISE CRITERION CURVES14
5. OUTLINES AND DIMENSIONS16
6. WIRING DIAGRAM18
7. REFRIGERANT SYSTEM DIAGRAM19
8. TROUBLESHOOTING19
9. DISASSEMBLY PROCEDURE26
PARTS CATALOG (OCR711)



SAFETY PRECAUTION

Read before installation and performing electrical work

- •Thoroughly read the following safety precautions prior to installation.
- Observe these safety precautions for your safety.
- •This equipment may have adverse effects on the equipment on the same power supply system.
- Contact the local power authority before connecting to the system.

Symbol explanations



∕!∖ WARNING

This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or death.



<u>∕!∖</u> CAUTION

This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or damage to the unit.



Indicates an action that must be avoided



Indicates important instructions.



Indicates a parts that requires grounding.



Indicates that caution must be taken with rotating parts. (This symbol is on the main unit label.) <Color: Yellow



Indicates that the parts that are marked with this symbol pose a risk of electric shock. (This symbol is on the main unit label.) <Color: Yellow>



WARNING

Carefully read the labels affixed to the main unit.

∕!\ WARNING

- Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit. It may also be in violation of applicable laws.

MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant

- Ask your dealer or a qualified technician to install the unit.
- Improper installation by the user may result in water leakage, electric shock,
- Properly install the unit on a surface that can withstand its weight.
- Unit installed on an unstable surface may fall and cause injury
- Only use specified cables. Securely connect each cable so that the terminals do not carry the weight of the cable.
- Improperly connected cables may produce heat and start a fire.
- •Take appropriate safety measures against wind gusts and earthquakes to prevent the unit from toppling over.
- Improper installation may cause the unit to topple over and cause injury or damage to the unit.
- Only use accessories (i.e., air cleaners, humidifiers, electric heaters) recommended by Mitsubishi Electric.
- Do not make any modifications or alterations to the unit.
- Consult your dealer for repair. - Improper repair may result in water leakage, electric shock, or fire.
- Do not touch the heat exchanger fins with bare hands.
- The fins are sharp and pose a risk of cuts
- Properly install the unit according to the instructions in the Installation Manual.
- Improper installation may result in water leakage, electric shock, or fire.
- Have all electrical work performed by an authorized electrician accord-ing to the local regulations and the instructions in this manual. Use a dedicated circuit.
- Insufficient power supply capacity or improper installation of the unit may re-sult in malfunctions of the unit, electric shock, or fire.

- Keep electrical parts away from water.
- Wet electrical parts pose a risk of electric shock, smoke, or fire.
- *Securely attach the control box cover.
- If the cover is not installed properly, dust or water may infiltrate and pose a risk of electric shock, smoke, or fire
- Only use the type of refrigerant that is indicated on the unit when installing or relocating the unit.
- Infiltration of any other types of refrigerant or air into the unit may adversely affect the refrigerant cycle and may cause the pipes to burst or explode.
- *Consult your dealer or a qualified technician when moving or reinstalling the unit.
- Improper installation may result in water leakage, electric shock, or fire.
- After completing the service work, check for a refrigerant leak.
- If leaked refrigerant is exposed to a heat source, such as a fan heater, stove, or electric grill, toxic gases will be generated.
- *Do not try to defeat the safety features of the unit.
- Forced operation of the pressure switch or the temperature switch by defeating the safety features for these devices, or the use of accessories other than the ones that are recommended by Mitsubishi Electric may result in smoke, fire, or explosion.
- Consult your dealer for proper disposal method.
- Do not use a leak detection additive.

Precautions for handling units for use with water

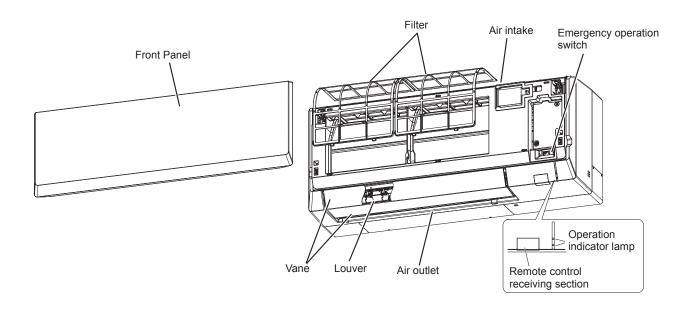


∕!∖ CAUTION

- Do not use the existing water piping.
- Store the piping materials indoors, and keep both ends of the pipes sealed until immediately before installation. Keep the joints wrapped in plastic bags. If dust or dirt enters the water circuit, it may damage the heat exchanger and cause water leakage.
- Only use water.
- Only use clean water as a refrigerant. The use of water outside the specification may damage the refrigerant circuit.
- Install the unit so that external force is not applied to the water pipes.

PARTS NAMES AND FUNCTIONS

2-1. Indoor unit



2-2. Wired Remote Controller <PAR-40MAA>

Wired remote controller function

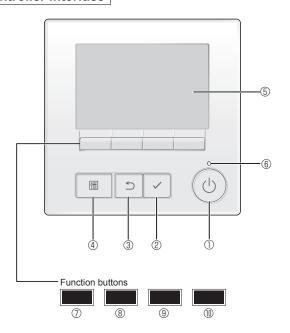
The functions which can be used are restricted according to each model.

 \bigcirc : Supported imes : Unsupported

	Function	PAR-4	0MAA		
	Function	Slim	CITY MULTI		
Body	Product size H × W × D (mm)	120 × 12	0 × 14.5		
	LCD	Full Do	t LCD		
	Backlight				
Energy saving	Energy saving operation schedule	O ×			
	Automatic return to the preset temperature)		
Restriction	Setting the temperature range restriction				
Function*	Operation lock function				
	Weekly timer	0			
	ON/OFF timer				
	High Power	0	×		
	Manual vane angle				

^{*}Some functions may not be available depending on model types.

Controller interface



① [ON/OFF] button

Press to turn ON/OFF the indoor unit.

② [SELECT] button

Press to save the setting.

③ [RETURN] button

Press to return to the previous screen.

4 [MENU] button

Press to bring up the Main menu.

⑤ Backlit LCD

Operation settings will appear.

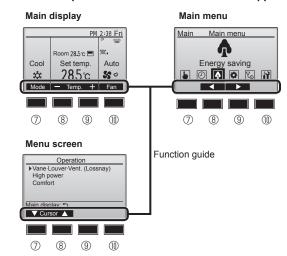
When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the [ON/OFF] button)

The functions of the function buttons change depending on the screen.

Refer to the button function guide that appears at the bottom of the LCD for the functions they serve on a given screen.

When the system is centrally controlled, the button function guide that corresponds to the locked button will not appear.



6 ON/OFF lamp

This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.

☐ ⑦ Function button [F1]

Main display: Press to change the operation mode.

Menu screen: The button function varies with the screen.

8 Function button [F2]

Main display: Press to decrease temperature.

Main menu: Press to move the cursor left.

Menu screen: The button function varies with the screen.

9 Function button [F3]

Main display: Press to increase temperature.

Main menu: Press to move the cursor right.

Menu screen: The button function varies with the screen.

■ ® Function button [F4]

Main display: Press to change the fan speed.

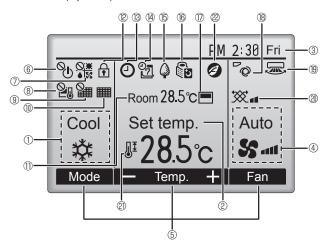
Menu screen: The button function varies with the screen.

Display

The main display can be displayed in two different modes: "Full" and "Basic". The factory setting is "Full". To switch to the "Basic" mode, change the setting on the Main display setting. (Refer to operation manual included with remote controller.)

<Full mode>

* All icons are displayed for explanation.



① Operation mode

2 Preset temperature

3 Clock

Current time appears here.

4 Fan speed

5 Button function guide

Functions of the corresponding buttons appear here.



Appears when the ON/OFF operation is centrally controlled.



Appears when the operation mode is centrally controlled.



Appears when the preset temperature is centrally controlled.



Appears when the filter reset function is centrally controlled.

10

Indicates when filter needs maintenance.

① Room temperature

Current room temperature appears here.



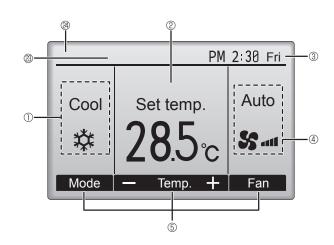
Appears when the buttons are locked.



Appears when the On/Off timer, Night setback, or Auto-off timer function is enabled.

appears when the timer is disabled by the centralized control system.

<Basic mode>



Appears when the Weekly timer is enabled.



Appears while the units are operated in the energy-save mode. (Will not appear on some models of indoor units)



Appears while the outdoor units are operated in the silent mode. (This indication is not available for CITY MULTI models.)

Appears when the built-in thermistor on the remote controller is activated to monitor the room temperature (1).

appears when the thermistor on the indoor unit is activated to monitor the room temperature.

8 **°**0

Indicates the vane setting.

19 🐷

Indicates the louver setting.

20 **XX**

Indicates the ventilation setting.



Appears when the preset temperature range is restricted.



Appears when an energy-saving operation is performed using a "3D i-See sensor" function. (not available)

② Centrally controlled

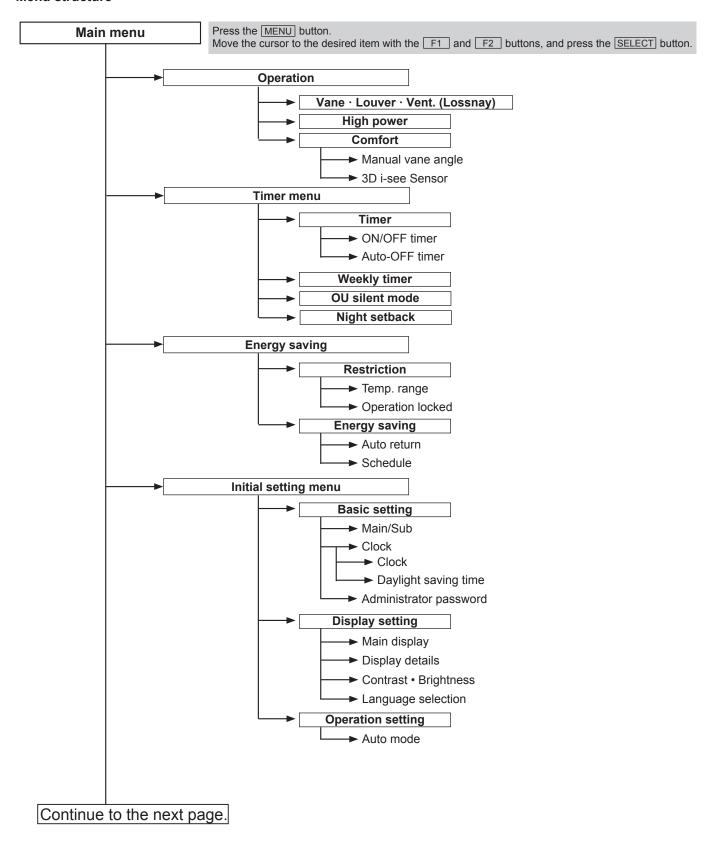
Appears for a certain period of time when a centrally-controlled item is operated

Preliminary error display

An error code appears during the preliminary error.

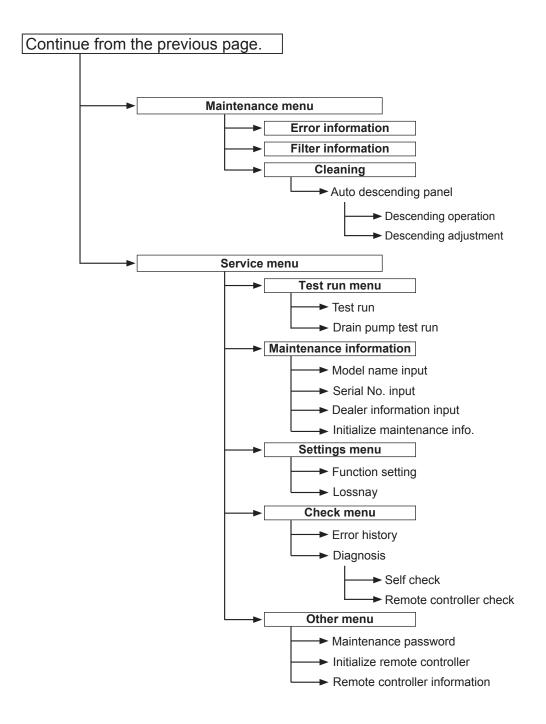
Most settings (except ON/OFF, mode, fan speed, temperature) can be made from the Main menu. (Refer to Page 10.)

Menu structure



Not all functions are available on all models of indoor units.

OCH711 6



Not all functions are available on all models of indoor units.

Main menu list

Main menu	Setting a	and display items	Setting details					
Operation	Vane · Lo (Lossnay	uver · Vent.)	Use to set the vane angle. • Select a desired vane setting from 5 different settings. Use to turn ON/OFF the louver. • Select a desired setting from "ON" and "OFF." Use to set the amount of ventilation. • Select a desired setting from "Off," "Low," and "High."					
	High pow	ver	Use to reach the comfortable room temperature quickly. • Units can be operated in the High-power mode for up to 30 minutes.					
	Comfort	Manual vane angle	Use to fix each vane angle.					
		3D i-see Sensor	Use to set the following functions for 3D i-see Sensor. • Air distribution • Energy saving option • Seasonal airflow					
Timer	Timer	ON/OFF timer *1	Use to set the operation ON/OFF times. • Time can be set in 5-minute increments.					
		Auto-Off timer	Use to set the Auto-Off time. • Time can be set to a value from 30 to 240 in 10-minute increments.					
	Weekly timer *1, *2 OU silent mode *1		 Use to set the weekly operation ON/OFF times. Up to 8 operation patterns can be set for each day. (Not valid when the ON/OFF timer is enabled.) 					
			Use to set the time periods in which priority is given to quiet operation of outdoor units over temperature control. Set the Start/Stop times for each day of the week. •Select the desired silent level from "Normal," "Middle," and "Quiet."					
	Night set	back * ¹	Use to make Night setback settings. • Select "Yes" to enable the setting, and "No" to disable the setting. The temperature range and the start/stop times can be set.					
Energy saving	Restriction	Temp. range *2	Use to restrict the preset temperature range. • Different temperature ranges can be set for different operation modes.					
	Operation lock		Use to lock selected functions. • The locked functions cannot be operated.					
	Energy saving	Auto return *2	Use to get the units to operate at the preset temperature after performing energy saving operation for a specified time period. • Time can be set to a value from 30 and 120 in 10-minute increments. (This function will not be valid when the preset temperature ranges are restricted.)					
		Schedule *1	Set the start/stop times to operate the units in the energy saving mode for each day of the week, and set the energy saving rate. • Up to 4 energy saving operation patterns can be set for each day. • Time can be set in 5-minute increments. • Energy saving rate can be set to a value from 0% or 50 to 90% in 10% increments.					

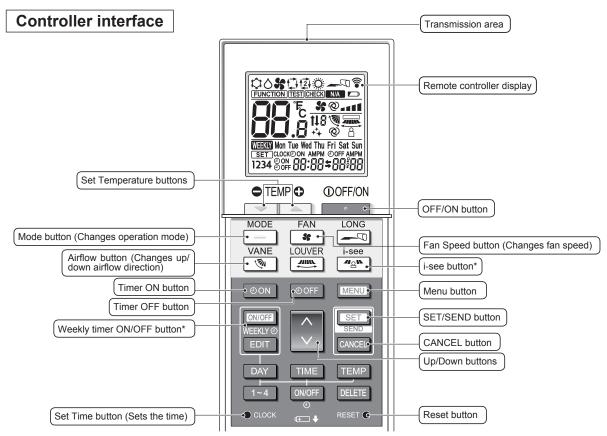
8 OCH711

^{*1} Clock setting is required. *2 1°C (33.8°F) increments.

Main menu	Setting a	and display items	Setting details					
Initial setting	Basic setting	Main/Sub	When connecting 2 remote controllers, one of them needs to be designated as a sub controller.					
		Clock	Use to set the current time.					
		Daylight saving time	Set the daylight saving time.					
		Administrator password	The administrator password is required to make the settings for the following items. • Timer setting • Energy saving setting • Weekly timer setting • Restriction setting • Outdoor unit silent mode setting • Night set back					
	Display setting	Main display	Use to switch between "Full" and "Basic" modes for the Main display. • The initial setting is "Full."					
		Black and white inversion setting	Use to invert the colors of the display, turning white background to black and black characters to white.					
		Display details	Make the settings for the remote controller related items as necessary. Clock: The initial settings are "Yes" and "24h" format. Temperature: Set either Celsius (°C) or Fahrenheit (°F). Room temp.: Set Show or Hide. Auto mode: Set the Auto mode display or Only Auto display.					
		Contrast • Brightness	Use to adjust screen contrast and brightness.					
		Language selection	Use to select the desired language.					
	Operation setting	Auto mode	Whether or not to use the Auto mode can be selected by using the button. This setting is valid only when indoor units with the Auto mode function are connected.					
Mainte- nance			 Use to check error information when an error occurs. Check code, error source, refrigerant address, unit model, manufacturing number, contact information (dealer's phone number) can be displayed. (The unit model, manufacturing number, and contact information need to be registered in advance to be displayed.) 					
	Filter info	ormation	Use to check the filter status. • The filter sign can be reset.					
	Cleaning	Auto descending panel	Use to lift and lower the auto descending panel (Optional parts).					
Service	Test run		Select "Test run" from the Service menu to bring up the Test run menu. • Test run • Drain pump test run					
	Input maintenance		Select "Input maintenance Info." from the Service menu to bring up the Maintenance information screen. The following settings can be made from the Maintenance Information screen. Model name input Serial No. input Dealer information input Initialize maintenance info.					
	Settings	Function setting	Make the settings for the indoor unit functions via the remote controller as necessary.					
		LOSSNAY setting	This setting is required only when the operation of CITY MULTI units is interlocked with LOSSNAY units.					
	Check	Error history	Display the error history and execute "delete error history".					
		Diagnosis	Self check: Error history of each unit can be checked via the remote controller. Remote controller check: When the remote controller does not work properly, use the remote controller checking function to troubleshoot the problem.					
	Other	Maintenance password	Use to change the maintenance password.					
		Initialize remote controller	Use to initialize the remote controller to the factory shipment status.					
		Remote control- ler information	Use to display the remote controller model name, software version, and serial number.					

OCH711 9

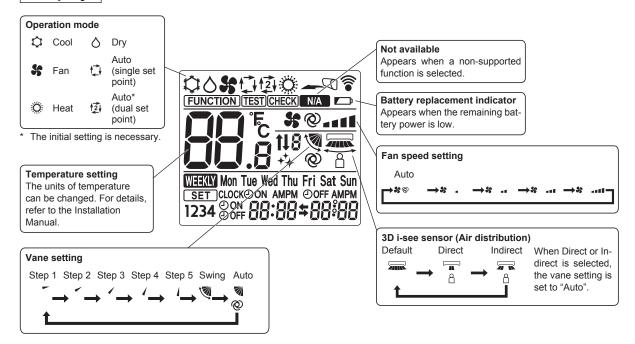
2-3. Wireless remote controller



Note:

 This button is enabled or disabled depending on the model of the indoor unit.

Display



OCH711 10

SPECIFICATION

3-1. SPECIFICATIONS

Model			PKFY-WL10VLM-E	PKFY-WL25VLM-E					
Power source				1-phase 220-240 V 50 F	Hz, 1-phase 220 V 60 Hz				
Cooling capacity	*1	kW	1.2	1.7	2.2	2.8			
(Nominal)	*1	kcal/h	1000	1500	1900	2400			
	*1	BTU/h	4100	9600					
	Power input	kW	0.02	0.02	0.03	0.04			
	Current input	Α	0.20	0.20	0.25	0.35			
Heating capacity	*2	kW	1.4	1.9	2.5	3.2			
(Nominal)	*2	kcal/h	1200	1600	2200	2800			
	*2	BTU/h	4800	6500	8500	10900			
	Power input	kW	0.01	0.01	0.02	0.03			
	Current input	A	0.15	0.15	0.20	0.30			
External finish(Mur		A	0.13		PB 9.2/0.4)	0.50			
External dimension				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				
-xterrial dimension	IIIXWXD	mm			73 × 238				
lot weight		in			0-7/16 x 9-3/8				
let weight		kg (lb)		<u> </u>	25)				
Heat exchanger				Cross fin (Aluminum	fin and copper tube)				
an	Type x Quant	ity		Line flow	v fan x 1				
	External	Pa		0.0	0)				
	static press	(mmH2O)	0(0)						
	Motor type		DC motor						
	Motor output	kW	0.03						
	Driving mecha	anism	Direct driven						
	Airflow rate	m³/min	3.3-3.8-4.1-4.5 3.3-3.8-4.3-4.9 4.0-5.0-6.0-7.0 4.0-						
	(Low-Mid2	L/s	55-63-68-75	55-63-72-82	67-83-100-117	67-90-117-140			
	-Mid1-High)	cfm	117-134-145-159	117-134-152-173	141-177-212-247	141-191-247-297			
Sound pressure le Low-Mid2-Mid1-H measured in anec	igh)	dB <a>	22-26-28-30	22-26-29-32	22-28-33-36	22-30-36-41			
nsulation material				Polyethyl	ene sheet				
Connectable outdo	or unit		HYBRID CITY MULTI/CMB-WM-V-AA, CMB-WM-V-AB/CMH-WM-V-A						
Air filter			PP Honeycomb						
Protection device			Fuse						
Connection size	Water Inlet	in			screw				
	Water outlet	in	Rc3/4 screw						
Field drain pipe siz	e	mm (in)	I.D.16 (5/8)						
Standard attachme	ent		Installation Manual, Instruction Book						
Optional parts	DRAIN PUMF	KIT	PAC-SK01DM-E						
	VALVE KIT		PAC-SK04VK-E						
Remark			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.						
Notes:			Due to continuing improveme	and a specifications may	be subject to change without	T .			
1.Nominal cooling Indoor: 27°CD.B./1 Pipe length: 7.5 m 2.Nominal heating	9°CW.B. (81°F (24-9/16 ft), Le conditions (sul 68°FD.B.), Out	D.B./66°FW. vel difference bject to JIS E door: 7°CD.E	B.), Outdoor: 35°CD.B. (95°F e: 0 m (0 ft) 88615-1) 8./6°CW.B. (45°FD.B./43°FW.I	,		Unit converter kcal/h = kW × 860 Btu/h = kW × 3,412 cfm = m³/min × 35.31 lb = kg/0.4536 Note: Above specification data is subject to rounding variation			

Model			PKFY-WL32VLM-E PKFY-WL40VLM-E				
Power source			1-phase 220-240 V 50 Hz, 1-phase 220 V 60 Hz				
Cooling capacity	*1	kW	3.6	4.5			
(Nominal)	*1	kcal/h	3100	3900			
	*1	BTU/h	12300	15400			
	Power input	kW	0.04	0.05			
	Current input	Α	0.35	0.45			
Heating capacity	*2	kW	4.0	5.0			
(Nominal)	*2	kcal/h	3400	4300			
	*2	BTU/h	13600	17100			
	Power input	kW	0.03	0.04			
	Current input	Α	0.30	0.40			
External finish(Mun	sell No.)		Plastic (0.7	PB 9.2/0.4)			
External dimension	HxWxD	mm	299 x 89	98 x 238			
		in	11-25/32 x 3	5-3/8 x 9-3/8			
Net weight		kg (lb)	13(29)			
Heat exchanger			Cross fin (Aluminum	fin and copper tube)			
Fan	Type x Quant	ity	Line flov	v fan x 1			
	External Pa						
static press		(mmH2O)	0(0)				
	Motor type		DC motor				
	Motor output	kW	0.03				
	Driving mech	anism	Direct driven				
	Airflow rate	m³/min	6.3-7.6-9.0-10.4 6.4-8.2-10.0-11.				
	(Low-Mid2	L/s	105-127-150-173	107-137-167-198			
	-Mid1-High)	cfm	222-268-318-367	226-290-353-420			
Sound pressure lev (Low-Mid2-Mid1-Hi (measured in anec	gh)	dB <a>	29-34-38-41	30-36-41-45			
Insulation material			Polyethylene sheet				
Connectable outdo	or unit		HYBRID CITY MULTI/CMB-WM-V-AA, CMB-WM-V-AB/CMH-WM-V-A				
Air filter			PP Honeycomb				
Protection device	-		Fu	se			
Connection size	Water Inlet	in	Rc3/4	screw			
	Water outlet	in	Rc3/4	screw			
Field drain pipe size	e	mm (in)	I.D.16	5 (5/8)			
Standard attachme	nt		Installation Manua	I, Instruction Book			
Optional parts	DRAIN PUMF	KIT	PAC-SK	01DM-E			
Remark			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice.				
Pipe length: 7.5 m *2.Nominal heating	9°CW.B. (8̰F (24-9/16ft), Le conditions (sul 58°FD.B.), Outo	Ď.B./66°FW. vel difference pject to JIS E door: 7°CD.E	B.), Outdoor: 35°CD.B. (95°FD.B.) e: 0 m (0 ft) 38615-1) 8./6°CW.B. (45°FD.B./43°FW.B.)				

12 OCH711

Pipe length: 7.5 m (24-9/16 ft), Level difference: 0 m (0 ft)

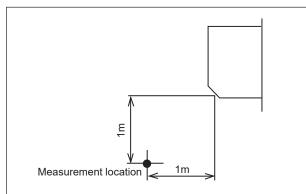
3-2. ELECTRICAL PARTS SPECIFICATIONS

Service ref. Parts name	Symbol	PKFY-WL10VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL25VLM-E.TH
Room temperature detection thermistor	TH21	Resistance 0° C/15kΩ, 10° C/9.6kΩ, 20° C/6.3kΩ, 25° C/5.4kΩ, 30° C/4.3kΩ, 40° C/3.0kΩ
Pipe temperature detection thermistor/liquid	TH22	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ
Pipe temperature detection thermistor/gas	TH23	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ
Fuse (Indoor controller board)	FUSE	T3.15AL250V
Fan motor (with thermal fuse)	MF	8 X 30W / RC0J30-QD
Vane motor (Upper)	MV1	MSFBC20 DC12V
Vane motor (Lower)	MV2	NSEK302 DC12V
Power supply terminal block	TB2	(L, N, ⊕) Rated to 250V 20A *
Transmission terminal block	TB5	(M1, M2, S) Rated to 250V 20A *
MA-Remote controller terminal block	TB15	(1, 2) Rated to 250V 10A *

^{*} Refer to WIRING DIAGRAM for the supplied voltage.

3-3. SOUND PRESSURE LEVEL

PKFY-WL•VLM-E



^{*} Measured in anechoic room.

 Sound pressure level at anechoic room : Low-Middle2-Middle1-High

 Service Ref.
 Sound pressure level dB (A)

 PKFY-WL10VLM-E.TH
 22-26-28-30

 PKFY-WL15VLM-E.TH
 22-26-29-32

 PKFY-WL20VLM-E.TH
 22-28-33-36

 PKFY-WL25VLM-E.TH
 22-30-36-41

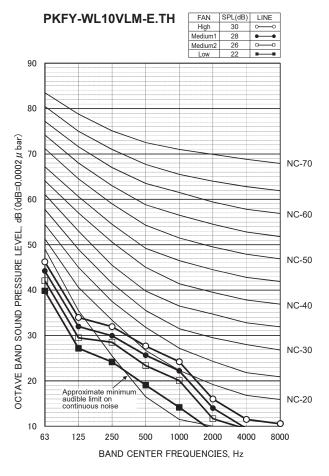
 PKFY-WL32VLM-E.TH
 29-34-38-41

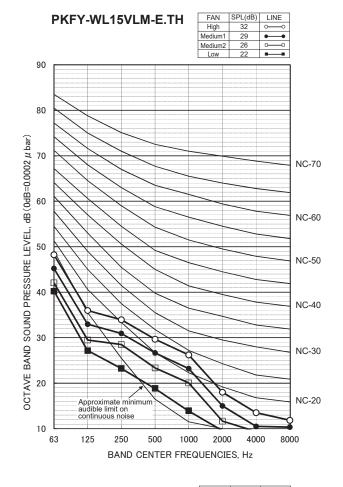
30-36-41-45

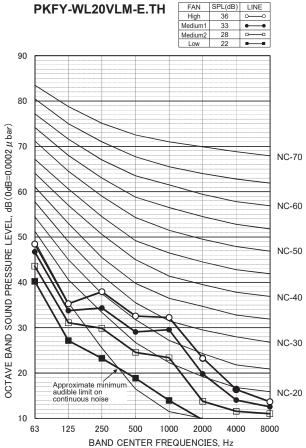
PKFY-WL40VLM-E.TH

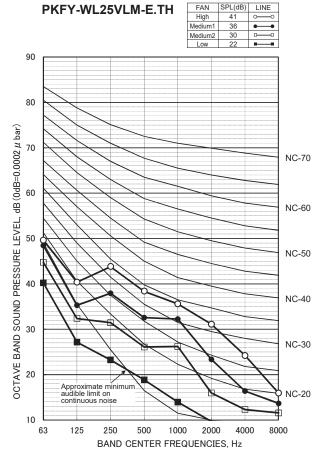
NOISE CRITERION CURVES

NOISE CRITERION CURVES

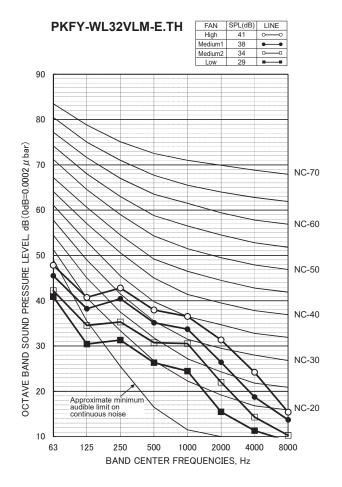


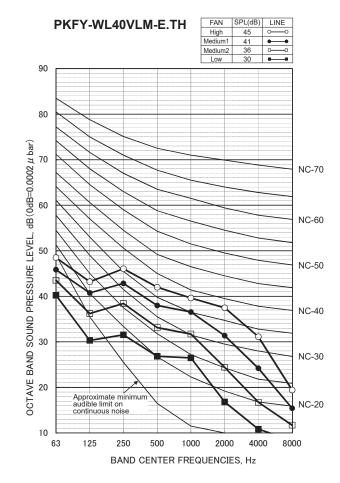






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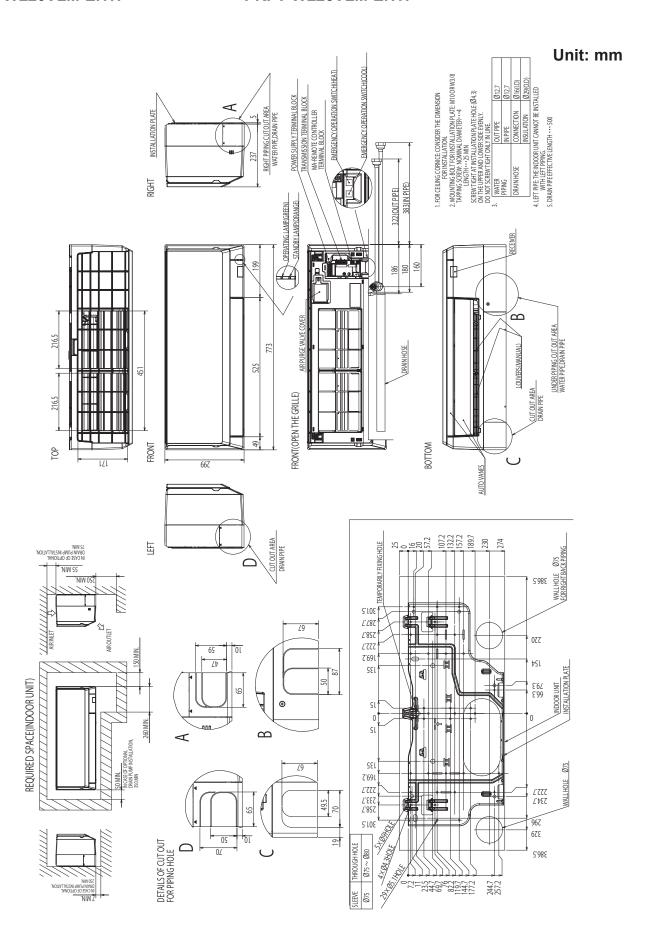




OUTLINES AND DIMENSIONS

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH

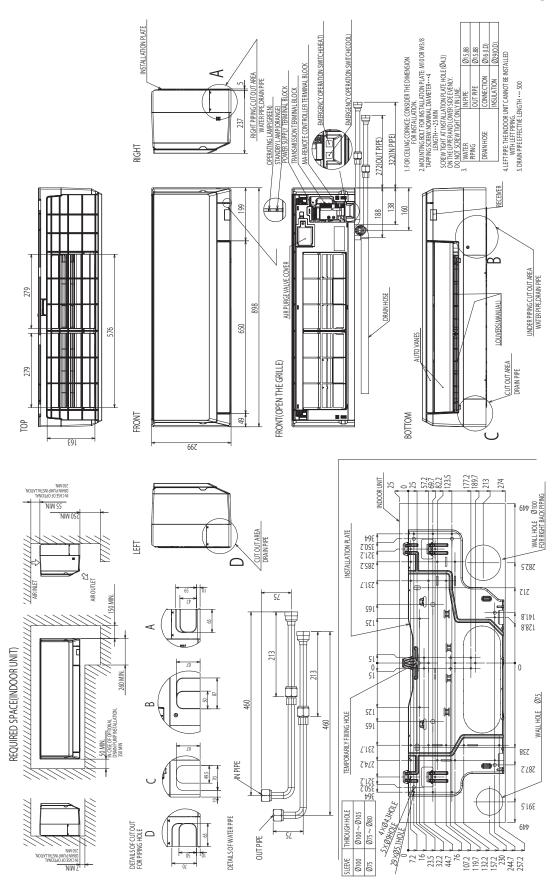
PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH



PKFY-WL32VLM-E.TH

PKFY-WL40VLM-E.TH

Unit: mm

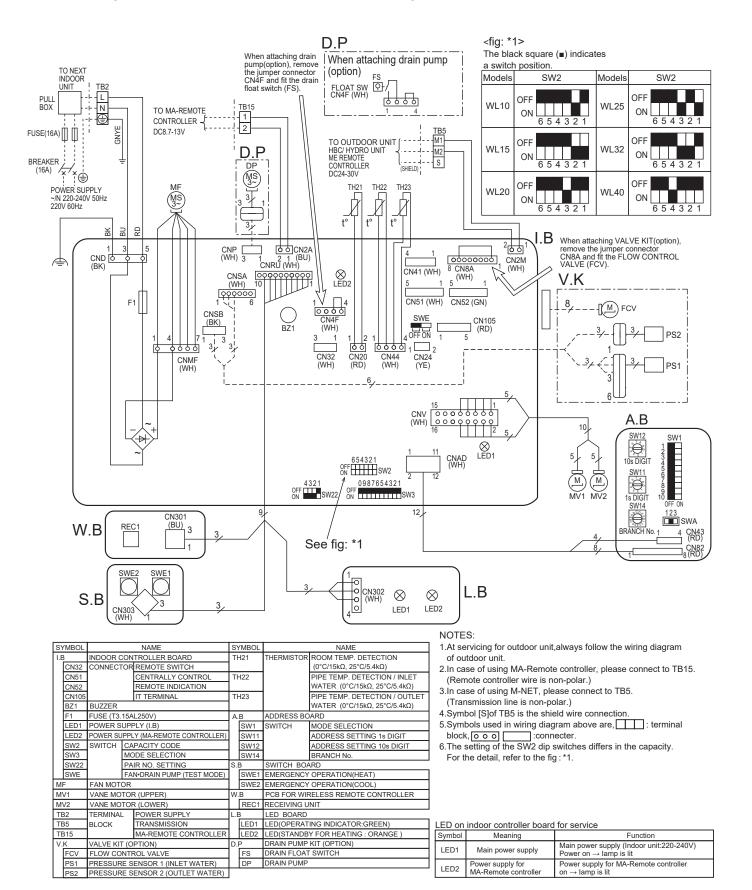


WIRING DIAGRAM

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH

6

PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH

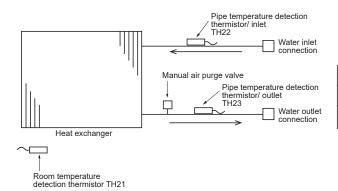


18

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REFRIGERANT SYSTEM DIAGRAM

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH



	Unit: in
ltem Model	PKFY-WL10/15/20/25/32/40VLM-E
Water inlet	Rc3/4 screw
Water outlet	Rc3/4 screw

8

TROUBLESHOOTING

8-1. HOW TO CHECK THE PARTS

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH

Parts name		Check points						
Room temperature detection thermistor (TH21) Pipe temperature detection thermistor/liquid (TH22) Pipe temperature detection thermistor/gas (TH23)	Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 10 to 30°C) Normal 4.3 to $9.6 \text{ k}\Omega$ Refer to "8-1-1. Thermistor".							
Vane motor (MV1)	Measure the resistance between the terminals with a tester. (At the ambient temperature 25°C)							
		Normal						
Sky Blue Red	@-9 Red-Sky Blue Red-Sl	y Blue Red-Sk		⊕-⑥ Red-Sky Blue				
Connector(CNV) Blue Blue pin No.		300 Ω ±7%						
Vane motor (Lower (MV2))	Measure the resistance	e between the	termina	ls with a tester.	(At the ambient tem	perature 25°C)		
②Sky Blue		Normal						
(4) Sky Blue (5) Red	⑤-④ ⑤. Red-Sky Blue Red-Sl			⑤-① Red-Sky Blue				
Connector(CNV) Sky Sky Blue Blue pin No.		300 ±26.3 Ω						
Fan motor (MF)	Refer to "8-1-3. DC Fa	an motor (fan m	otor/ind	oor controller be	oard)			
Flow control valve (FCV) CN8A Yellow 1	Disconnect the connector then measure the resistance between terminals with a tester. Refer to the next page for details.							
Red 3		Normal			Abnormal			
M Green 4 Blue 5 Purple 6			8-5 -Blue	4-5 Green-Blue	Open or short			
(Optional parts) White 7 Gray 8	55	Ω ±5.6 Ω (at 2	5℃)					
Drain pump (DP) 1 RD 2 VT 3 BK (Optional parts)	 ① Check if the drain float switch works properly. ② Check if the drain pump works and drains water properly in cooling operation. ③ If no water drains, confirm that the check code 2502 will not be displayed 10 minutes after the operation starts. Note: The drain pump for this model is driven by the internal DC motor, so it is not possible to measure the resistance between the terminals. Normal Red–Black: Input 13 V DC → The pump motor starts to rotate. 							
Drain float	Measure the resistant	e between the	terminal	ls with a tester.				
switch (FS) Moving part	State of moving part	Normal	Ab	onormal	Drain float switch connector terminal			
Moving part	UP	Short	Other	than short	①(+) - ②(-)			
2 3	DOWN	Open	Other	than open	①(+) - ②(-)			
(Optional parts) 4	_	Short	Other	than short	3(+) - 4(-)	Moving		

Parts name	Check points							
Pressure sensor (Optional parts)	Pressure sensor (inner water) PS1 Pressure sensor (outlet water) PS2 Check that the pressure sensor is connected. Check the pressure sensor wiring for breakage. Pressure 0-1.0 MPa [145 psi] Vout 0.5-4.5 V 0.392 V/ 0.098 MPa [14 psi] Pressure [MPa] = 0.25 × Vout [V] - 0.125 Pressure [psi] = (0.25 × Vout [V] - 0.125) × 145	PS1 GND(RED) Vout(Brown) Vcc(DC5V)(Orange) Vcc(DC5V)(Orange) Vcc(Mhite)	PS2 Vout(White) Connector CNSB (Black)					

8-1-1. Thermistor

<Thermistor characteristic graph>

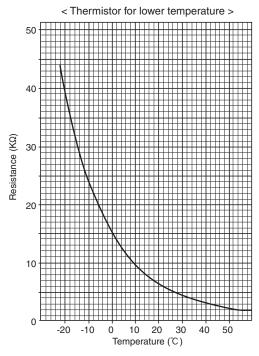
Thermistor for lower temperature

Room temperature detection thermistor (TH21)
Pipe temperature detection thermistor/liquid (TH22)
Pipe temperature detection thermistor/gas (TH23)

Thermistor R₀=15 k Ω ± 3% Fixed number of B=3480 ± 2%

Rt=15exp {
$$3480(\frac{1}{273+t} - \frac{1}{273})$$
 }

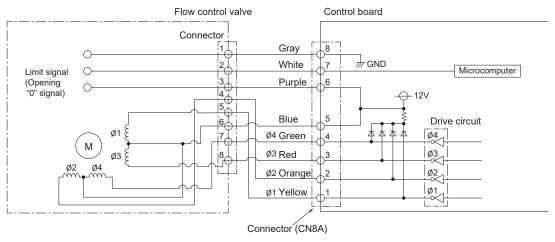
0°C 15 kΩ 10°C 9.6 kΩ 20°C 6.3 kΩ 25°C 5.4 kΩ 30°C 4.3 kΩ 40°C 3.0 kΩ



8-1-2. Flow control valve (FCV)

- ① Summary of flow control valve (FCV) operation
- The FCV is operated by a stepping motor, which operates by receiving a pulse signal from the indoor control board.
- The FCV position changes in response to the pulse signal.

Indoor control board and FCV connection

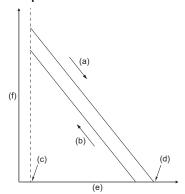


Pulse signal output and valve operation

Output (phase)	Output status							
number	1	2	3	4				
ø1	OFF	ON	ON	OFF				
ø2	ON	ON	OFF	OFF				
ø3	ON	OFF	OFF	ON				
ø4	OFF	OFF	ON	ON				

The output pulse changes in the following order: When the valve closes 1 -> 2 -> 3 -> 4 -> 1 When the valve opens 4 -> 3 -> 2 -> 1 -> 4

② FCV operation



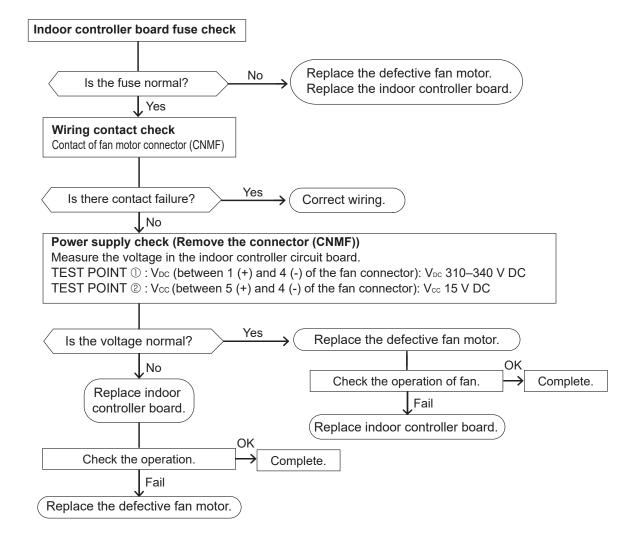
- (a) Close
- (b) Oper
- (c) Fully open valve (85 pulses)
- (d) Fully close valve (770 pulses)
- (e) No. of pulses
- (f) Valve opening degree

8-1-3. DC Fan motor (fan motor/indoor controller board)

Check method of indoor fan motor (fan motor/indoor controller board)

- ① Notes
 - · High voltage is applied to the connector (CNMF) for the fan motor. Pay attention to the service.
 - · Do not pull out the connecter (CNMF) for the motor with the power supply on.
 - (It causes trouble of the indoor controller board and fan motor.)
- 2 Self check

Conditions: The indoor fan cannot rotate.



8-2. FUNCTION OF DIP SWITCH

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH

The black square (■) indicates a switch position.

Switch	Pole		E	notion	Operation by switch		Effective	Pomorko			
SWILCH	Pole		Ful	nction		ON			OFF	timing	Remarks
	1	The <in det<="" td=""><td colspan="3">Thermistor <intake detection="" temperature=""> position</intake></td><td>emote</td><td></td><td>Indoo</td><td>r unit</td><td></td><td>Address board</td></in>	Thermistor <intake detection="" temperature=""> position</intake>			emote		Indoo	r unit		Address board
	2	Filt	ter clog	ging	Provided			Not p	rovided		<initial setting=""></initial>
	3	Filt	ter sign	indication	2,500 hr	2,500 hr 100 hr			ON OFF		
	4	Air	intake	* 1	Not effec	tive		Not e	ffective		1 2 3 4 5 6 7 8 9 10
SW1 Mode	5		mote ir	ndication	Thermo- indication	<u> </u>			output indication	Under	*1 The model is not capable of fresh air intake. *2 Refer to <table a=""> below.</table>
Selection	6	Hu	ımidifie	r control	Fan opera mode	tion at Hea	ating		o-ON operation at g mode	suspension	
	7	Air	flow se	et in case of	Low*2			Extra			
	8	he	at therr	mo-OFF	Setting a	ir flow*1		Depe	nds on SW1-7		
	9	Au	to resta	art function	Effective			Not e	ffective		
	10	Pov	wer ON/0	OFF	Effective			Not e	ffective		
SW2 Capacity code setting	1–4		WL10 WL15 WL20	SW2 OFF ON 6 5 4 3 3 OFF ON 6 5 4 3 3	WL3	OFF ON 6 OFF ON 6 OFF ON 0	5 4 3 5 4 3	3 2 1		Before power supply ON	Indoor controller board <initial setting=""> Set for each capacity.</initial>
	1	Н	leat pun	np/Cool only	Coo	ling only			Heat pump		Indoor controller board
	2			_	_		_			Initial cottings	
	3			_		_			_		<initial setting=""></initial>
	4			_		_			_		OFF 1 2 3 4 5 6 7 8 9 0
_SW3	5			_		_		_		Under	
Function Selection	6			_		_			_	suspension	
	7 – –		_								
	8	Н	eating 4	4 degree up	Not	effective		Effective		-	
	9			_		_			_		
	10			_		_			_		

<Table A>

SW1-7	SW1-8		
OFF	OFF	Extra low	
ON	OFF	Low	
OFF	ON	Setting air flow	
ON	ON	stop	

Continue to the next page

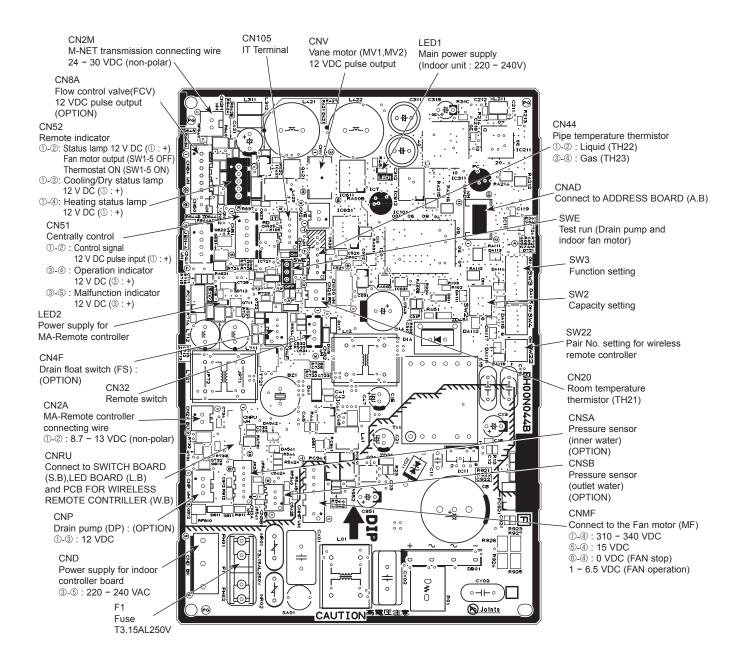
The black square (\blacksquare) indicates a switch position.

Switch	Pole	Function	Effective	Remarks
SWA (Fan speed)	1~3	Fan speed can be changed depending on SWA setting. Setting PKFY-WL**VLM-E 2	Under operation or suspension	Address board <initial setting=""> It follows as the left table.</initial>
SW11 1s digit address setting SW12 10s digit address setting	Rotary switch	SW12 SW11 Address setting should be done when M-NET remote controller is being used.	Before power supply ON	Address board <initial setting=""> SW12 SW11 SW1 SW1 SW1 SW1 SW1 SW1 SW1 SW1 SW</initial>
SW14 Connection No. setting	Rotary switch	This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.		Address board <initial setting=""> SW14</initial>
SW22 Function selection	Jumper	Function To perate each indoor unit by each remote controller when installed 2 indoor units or more are near, Pair No. setting is necessary. Pair No. setting is available with the 4 patterns (Setting patterns A to D). You may not set it when operating it by one remote controller. Setting for indoor unit. Wireless remote controller pair number: Setting operation (Fig. 1 (a))	Under operation or suspension	CLOCK AMPM CLOC
SWE Test run for Drain pump	Connector	Drain pump and fan are activated simultaneously after the connector SWE is set to ON and turn on the power. SWE OFF OFF ON The connector SWE is set to OFF after test run.		<pre><initial setting=""> SWE OFF ON</initial></pre>

8-3. TEST POINT DIAGRAM

8-3-1. Indoor controller board (I.B)

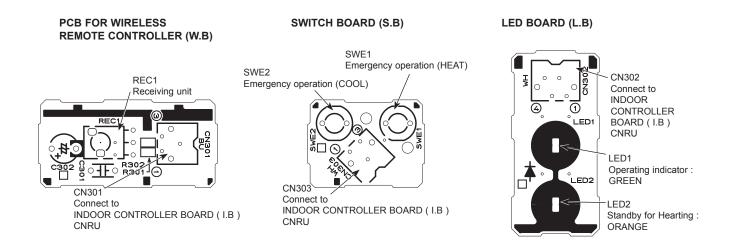
PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH



Note: The voltage range of 12 V DC in this page is between 11.5 to 13.7 V DC.

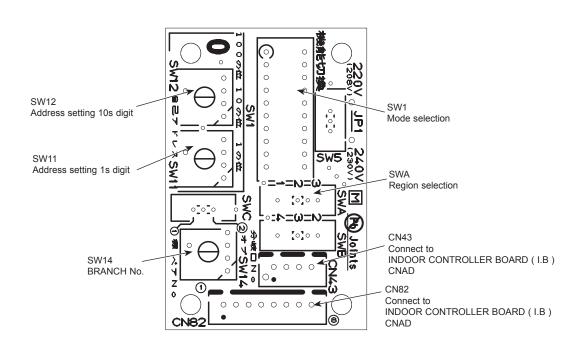
8-3-2. PCB FOR WIRELESS REMOTE CONTROLLER (W.B), SWITCH BOARD (S.B) and LED BOARD (L.B)

PKFY-WL10VLM-E.TH
PKFY-WL20VLM-E.TH
PKFY-WL32VLM-E.TH
PKFY-WL32VLM-E.TH



8-3-3. Address board (A.B) PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH

PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH



DISASSEMBLY PROCEDURE

PKFY-WL10VLM-E.TH PKFY-WL20VLM-E.TH PKFY-WL32VLM-E.TH PKFY-WL15VLM-E.TH PKFY-WL25VLM-E.TH PKFY-WL40VLM-E.TH

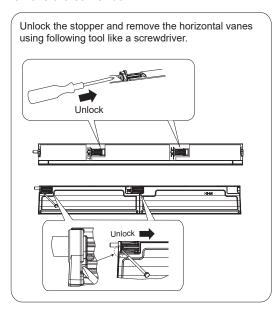
NOTE: Turn OFF the power supply before assembly.

Be careful when removing heavy parts.

OPERATION PROCEDURE

1. REMOVING THE PANEL

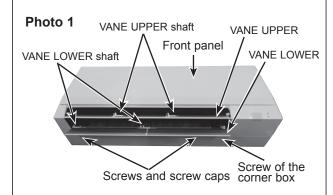
- (1) Insert the screwdriver to the hole at VANE LOWER shaft and slide the VANE LOWER shaft (2 places each). Push VANE UPPER shaft with the screwdriver.
- (2) Pull the VANE LOWER and VANE UPPER from unit.
- (3) Remove 2 screw caps of the front panel. Remove 2 screws. (See Photo 1)
- (4) Hold the lower part of both ends of the front panel and pull it slightly toward you, and then remove the front panel by pushing it upward.
- (5) Remove the screw of the corner box. (See Photo 1) Remove the corner box.



2. REMOVING THE ELECTRICAL BOX

- (1) Remove the panel and the corner box. (Refer procedure to 1)
- (2) Remove the front and side electrical box covers (each 2 screw).
- (3) Remove the transmission wiring of TB5, the power supply wiring of TB2 and the wiring of MA-remote controller (TB15).
- (4) Disconnect the connectors on the indoor controller board.
- (5) Disconnect the connector for ground wire.
- (6) Remove the screw on lower side of the electrical box. (See Photo 3)
- (7) Push up the upper fixture catch to remove the box, then remove it from the box fixture.

PHOTOS/FIGURES



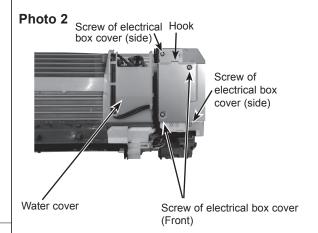
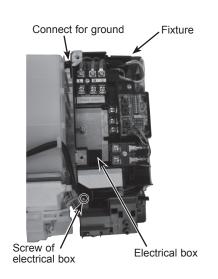


Photo 3



OPERATION PROCEDURE

3. REMOVING THE ADDRESS BOARD, THE INDOOR CONTROLLER BOARD, THE WIRELESS CONTROLLER BOARD, LED BOARD

- (1) Remove the panel and the corner box. (Refer to procedure 1)
- (2) Remove the front and side electrical box covers (each 2 screw).
- (3) Disconnect the connectors of address board.
- (4) Disconnect the connectors on the indoor controller board. (See Photo 4)
- (5) Remove the switch board holder and open the cover.
- (6) Pull out the indoor controller board toward you then remove the indoor controller board and switch board. (See Photo 4)
- (7) Remove the holder of wireless remote controller board and LED board.
- (8) Disconnect the connector of wireless remote controller board and LED board.
- (9) Remove the wireless remote controller board and LED board from the holder.

4. REMOVING THE NOZZLE ASSEMBLY (with VANE and VANE MOTOR) AND DRAIN HOSE

- (1) Remove the panel and corner box. (Refer to procedure 1)
- (2) Remove the electrical box covers. (Refer to procedure 2)
- (3) Disconnect the vane motor connector (CNV) on the indoor controller board.
- (4) Push fixture and pull out the drain hose from the nozzle assembly, and remove nozzle assembly. (See Photo 6)

5. REMOVING THE VANE MOTOR

- (1) Remove the nozzle assembly. (Refer to procedure 4)
- (2) Remove 2 screws of the vane motor unit cover, and pull out the vane motor unit.
- (3) Remove screw of the vane motor (LOWER).
- (4) Remove the vane motor (LOWER) from the vane motor unit cover.
- (5) Disconnect the connector (white) from the vane motor. (LOWER)
- (6) Remove 2 screw of the vane motor (UPPER).
- (7) Remove the vane motor (UPPER) from the vane motor unit cover
- (8) Disconnect the connector (blue) from the vane motor (UPPER).

PHOTOS/FIGURES

Photo 4

Holder of wireless remote controller board and LED board

(Holder of switch board)

Address board

Indoor controller board

Photo 5 (see the bottom)

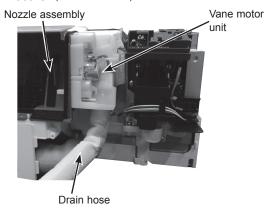


Photo 6

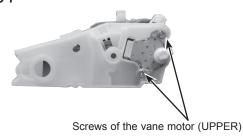
Screws of the vane motor (LOWER)

Fixture

Drain hose

Screws of the vane motor unit cover

Photo 7



OPERATION PROCEDURE

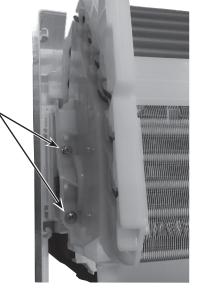
6. REMOVING THE INDOOR FAN MOTOR AND THE LINE FLOW FAN

- (1) Remove the panel and the corner box. (Refer to procedure 1)
- (2) Remove the electrical box (Refer to procedure 2) and the nozzle assembly (Refer to procedure 4).
- (3) Remove the water cover. (See Photo 2)
- (4) Loosen the screw fixing the line flow fan. (See Photo 9)
- (5) Remove 3 screws fixing the motor bed. (See Photo 8)
- (6) Remove the motor bed together with fan motor and motor band.
- (7) Release the 2 hooks of the motor band. Remove the motor band. Pull out the indoor fan motor.
- (8) Remove 2 screws fixing the left side of the heat exchanger. (See Photo 10)
- (9) Lift the heat exchanger, and pull out the line flow fan to the lower-left.

Note: When attaching the line flow fan, screw the line flow fan so 4mm gap is provided between the right end of the line flow fan and the right wall of the air passage of the box. (See Photo 9)

Photo 10

Screws of the left side of the heat exchanger



PHOTOS/FIGURES

Photo 8

Lead wire of pipe thermistor

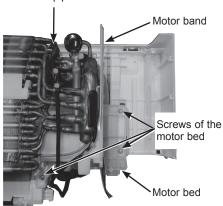
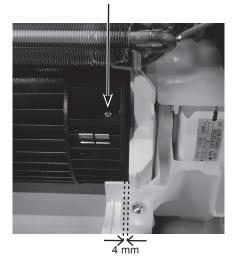


Photo 9

Screw of the line flow fan



7. REMOVING PIPE THERMISTOR AND AIR PURGE VALVE

- Remove the panel and the corner box. (Refer to procedure 1)
- (2) Remove the electrical box covers. (Refer to procedure 2)
- (3) Remove the water cover. (See Photo 2)
- (4) Remove the inlet pipe thermistor and outlet pipe thermistor.
- (5) Disconnect the connector (CN44) on the indoor controller board. (TH22 and TH23/CN44)
- (6) Remove the air purge valve

Photo 11 Air purge valve Connect for ground Outlet pipe thermistor (TH23)

Inlet pipe thermistor (TH22)

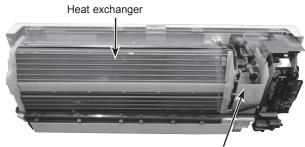
OPERATION PROCEDURE

8. REMOVING THE HEAT EXCHANGER

- (1) Remove the panel and the corner box (Refer to procedure 1).
- (2) Remove the electrical box (Refer to procedure 3) and the nozzle assembly (Refer to procedure 4).
- (3) Remove the water cover.
- (4) Remove the pipe thermistors. (Refer to procedure 7).
- (5) Disconnect the connector (CN60) on the indoor controller board.
- (6) Remove the motor bed together with fan motor and motor band (Refer to procedure 6).
- (7) Remove 2 screws fixing the left side of the heat exchanger. (See Photo 10)
- (8) Remove the heat exchanger.

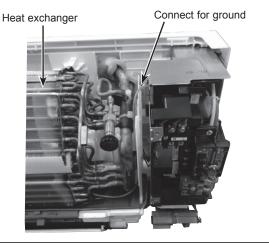
PHOTOS/FIGURES

Photo 12



Water cover

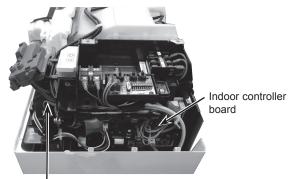
Photo 13



9. REMOVING THE ROOM TEMPERATURE THERMISTOR

- (1) Remove the panel and corner box. (Refer to procedure 1)
- (2) Remove the electrical box covers. (Refer to procedure 2)
- (3) Remove the room temperature thermistor.
- (4) Disconnect the connector (CN20) on the indoor controller board.

Photo 14



Room temp. thermistor (TH21)

CITY MULTI

MITSUBISHI ELECTRIC CORPORATION

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