

December 2011

No. OCH487

REVISED EDITION-B

TECHNICAL & SERVICE MANUAL

Series SLZ Ceiling Cassettes R410A

Indoor unit
[Model names]

[Service Ref.]

SLZ-KA09NA

SLZ-KA09NA.TH
SLZ-KA09NAR1.TH

SLZ-KA12NA

SLZ-KA12NA.TH
SLZ-KA12NAR1.TH

SLZ-KA15NA

SLZ-KA15NA.TH
SLZ-KA15NAR1.TH

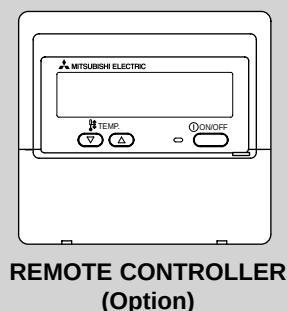
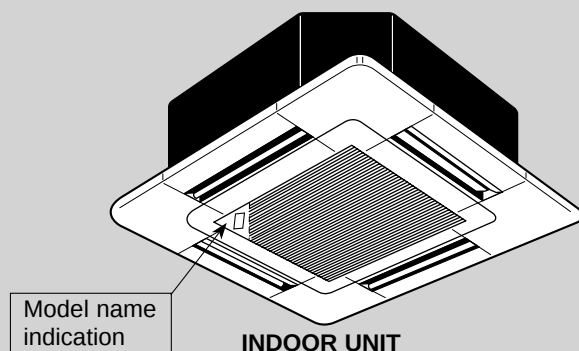
Revision:

- SLZ-KA09/12/15NAR1.TH have been added in REVISED EDITION-B.
- Some descriptions have been modified.

- Please void OCH487 REVISED EDITION-A.

Note:

- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.
- For servicing RoHS compliant products, refer to the RoHS Parts List.



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PARTS CATALOG (OCB487)


Mr. SLIM™

Use the specified refrigerant only

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified in the manuals and on the spec labels provided with our products.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

1

TECHNICAL CHANGES

SLZ-KA09NA.TH → SLZ-KA09NAR1.TH

SLZ-KA12NA.TH → SLZ-KA12NAR1.TH

SLZ-KA15NA.TH → SLZ-KA15NAR1.TH

• TURBO FAN and WASHER have been changed.

2

PART NAMES AND FUNCTIONS

Indoor Unit

SLZ-KA09NA.TH

SLZ-KA12NA.TH

SLZ-KA15NA.TH

SLZ-KA09NAR1.TH

SLZ-KA12NAR1.TH

SLZ-KA15NAR1.TH

Horizontal Air Outlet

Sets horizontal airflow automatically during cooling or dehumidifying.

Filter

Removes dust and pollutants from drawn in air.

Grille

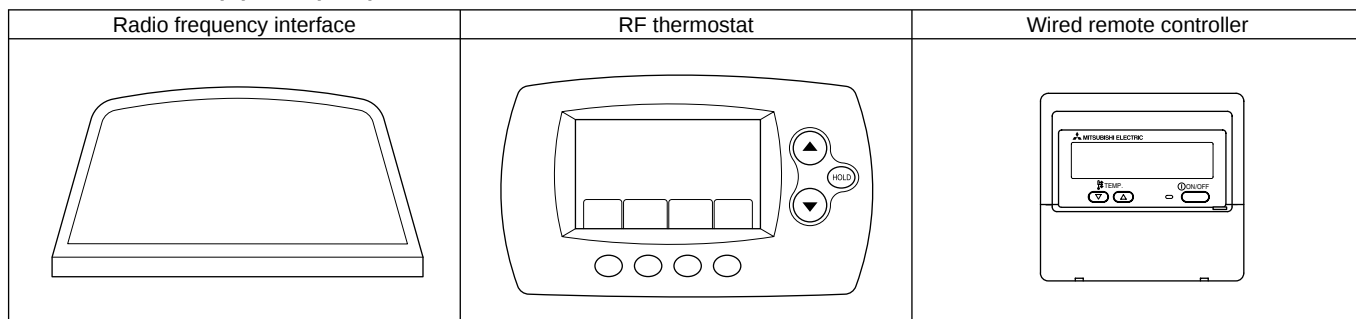
Auto Air Swing Vane

Disperses airflow up and down and adjusts the angle of airflow direction.

Air Intake

Draws in air from room.

■ Remote controller (Optional parts)



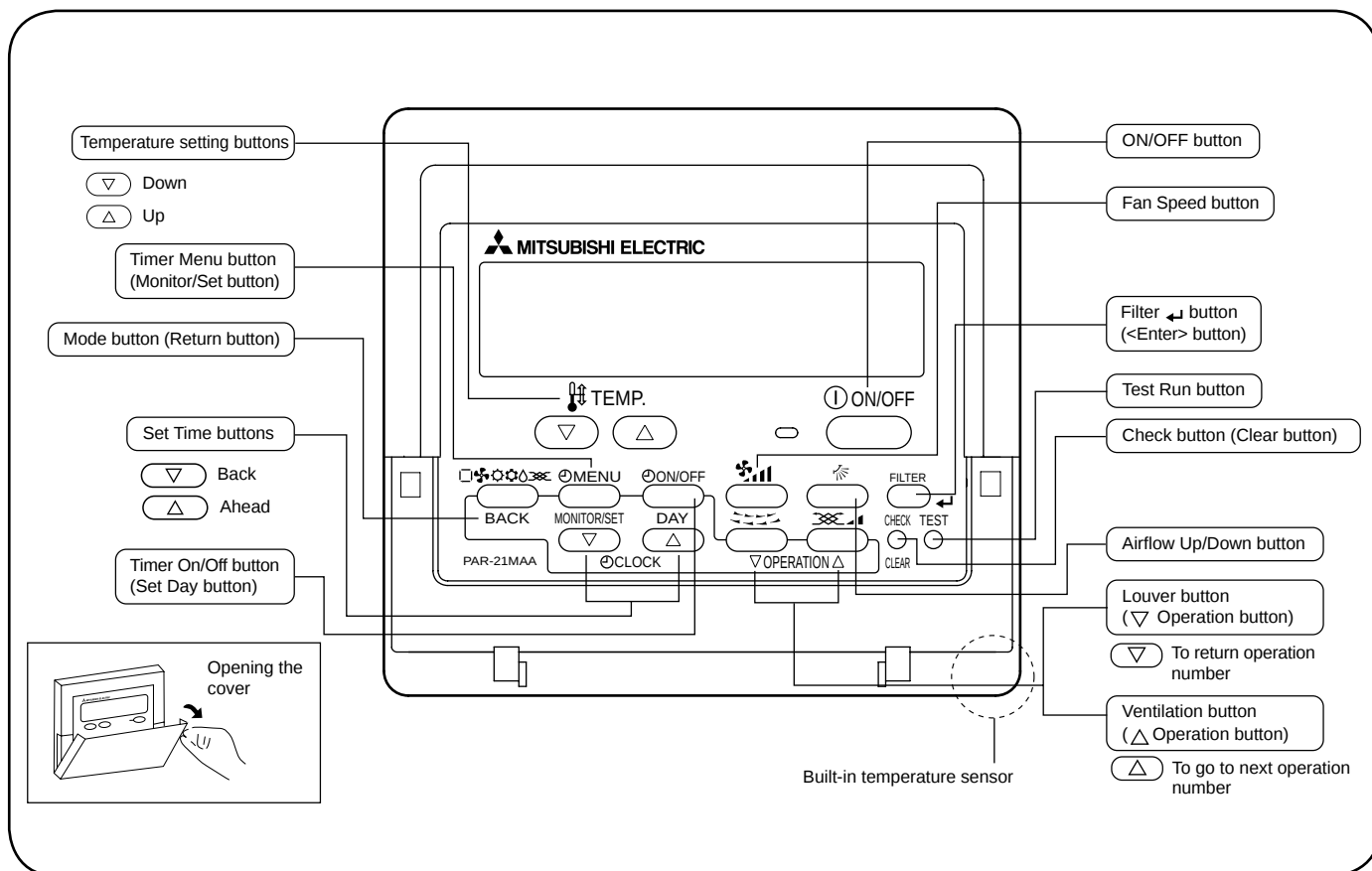
Wired remote controller (Option)

Once the controllers are set, the same operation mode can be repeated by simply pressing the ON/OFF button.

SLZ-KA09NA.TH
SLZ-KA09NAR1.TH

SLZ-KA12NA.TH
SLZ-KA12NAR1.TH

SLZ-KA15NA.TH
SLZ-KA15NAR1.TH



Wired remote controller (Option)

Display Section

For purposes of this explanation, all parts of the display are shown. During actual operation, only the relevant items will be lit.

Identifies the current operation

Shows the operating mode, etc.
*Multilanguage display is available.

"Centrally Controlled" indicator

Indicates that operation from the remote controller has been prohibited by a master controller.

"Timer is Off" indicator

Indicates that the timer is off.

Temperature Setting

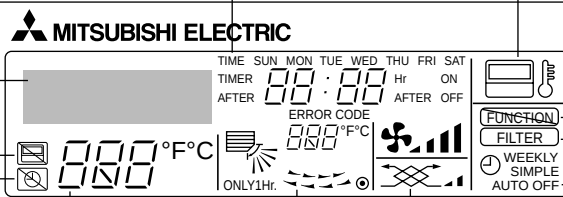
Shows the target temperature.

Day-of-Week

Shows the current day of the week.

Time/Timer Display

Shows the current time, unless the simple or Auto Off timer is set.
If the simple or Auto Off timer is set, the time to be switched off is shown.



Up/Down Air Direction indicator

Shows the direction of the outgoing airflow.

"One Hour Only" indicator

Displays if the airflow is set to low or downward during COOL or DRY mode. (Operation varies according to model.)
The indicator goes off in one hour, when the airflow direction also changes.

Room Temperature display

Shows the room temperature. The room temperature display range is 46~102°F. The display blinks if the temperature is less than 46°F or 102°F or more.

Louver display

Indicates the action of the swing louver. Does not appear if the louver is not running.

● (Power On indicator)

Indicates that the power is on.

"Sensor" indication

Displays when the remote controller sensor is used.

"Locked" indicator

Indicates that remote controller buttons have been locked.

"Clean The Filter" indicator

To be displayed on when it is time to clean the filter.

Timer indicators

The indicator comes on if the corresponding timer is set.

Fan Speed indicator

Shows the selected fan speed.

Ventilation indicator

Appears when the unit is running in Ventilation mode.

Note:

● "PLEASE WAIT" message

This message is displayed for approximately 3 minutes when power is supplied to the indoor unit or when the unit is recovering from a power failure.

● "NOT AVAILABLE" message

This message is displayed if an invalid button is pressed (to operate a function that the indoor unit does not have).

If a single remote controller is used to operate multiple indoor units simultaneously that are different types, this message will not be displayed as far as any of the indoor units is equipped with the function.

Indoor model			SLZ-KA09NA	SLZ-KA12NA	SLZ-KA15NA
Power supply		V, phase, Hz	208/230, 1, 60		
Max. fuse size (time delay)/Disconnect switch		A	15		
Min. circuit ampacity		A	1.0		
Fan motor		F.L.A	0.23	0.28	0.28
Airflow (Low - Med. - High)	Dry	CFM	280-320-350	280-320-390	280-320-390
	Wet	CFM	250-290-320	250-290-350	250-290-350
Moisture removal		pt/h	1.2	2.3	4.5
Sound pressure level (Low - Med. - High)		dB(A)	29-32-38	30-34-39	31-35-40
External finish color			Unit: Galvanized sheets with gray heat insulation Grille: ABS resin Munsell 6.4Y 8.9/0.4		
Dimensions unit <Grille>	W	in.	22-7/16 <25-19/32>		
	D	in.	22-7/16 <25-19/32>		
	H	in.	8-3/16 <25/32>		
Weight unit <Grille>		lb.	36 <7>		
Field drainpipe O.D.		in.	1-1/4		
Control voltage (by buit-in transformer)			12 - 24 VDC		

NOTE : Test conditions are based on AHRI 210/240.

3-1. Operating range

(1) Power supply

	Rated voltage	Guaranteed voltage (V)
Indoor unit	208/230 V 1 phase 60 Hz	Min. 187 208 230 Max. 253 -----+-----+-----+-----

(2) Operation

Mode	Condition	Intake air temperature (°F)			
		Indoor		Outdoor	
		DB	WB	DB	WB
Cooling	Standard temperature	80	67	95	—
	Maximum temperature	95	71	115	—
	Minimum temperature	67	57	14	—
	Maximum humidity	78%		—	
Heating	Standard temperature	70	60	47	43
	Maximum temperature	80	67	75	65
	Minimum temperature	70	60	-4	-5

3-2. Outlet air speed and coverage

Model	Function	Airflow (CFM)	Air speed (ft./s.)	Coverage (ft.)
SLZ-KA09NA	Dry	350	11.2	12.1
	Wet	320	10.2	11.1
SLZ-KA12NA	Dry	390	12.1	13.5
	Wet	350	10.9	12.1
SLZ-KA15NA	Dry	390	12.1	13.5
	Wet	350	10.9	12.1

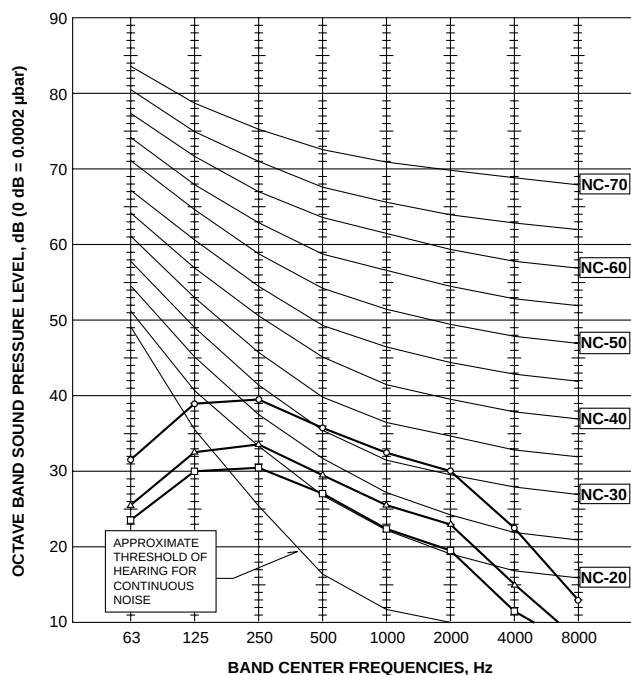
- The air coverage is the figure up to the position where the air speed is 1 ft./s., when air is blown out horizontally from the unit properly at the High speed position. The coverage should be used only as a general guideline since it varies according to the size of the room and furniture arranged inside the room.

NOISE CRITERION CURVES

SLZ-KA09NA.TH SLZ-KA09NAR1.TH

<60Hz>

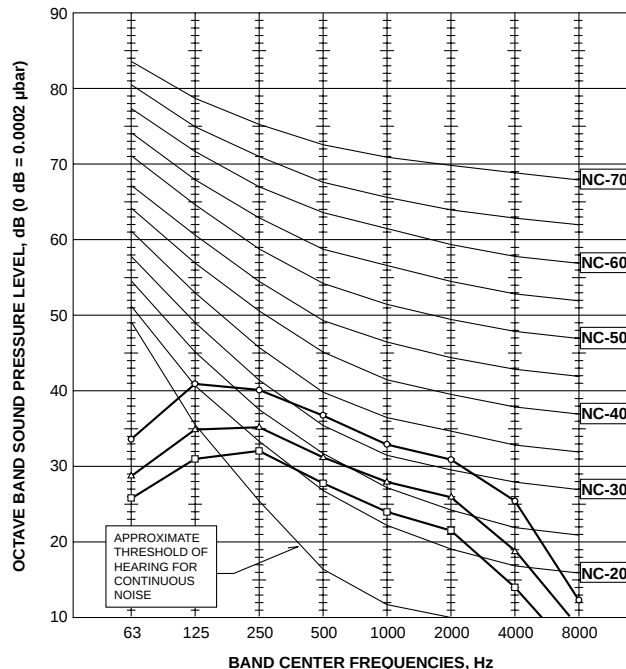
NOTCH	SPL(dB)	LINE
High	38	○—○
Medium	22	△—△
Low	29	□—□



SLZ-KA12NA.TH SLZ-KA12NAR1.TH

<60Hz>

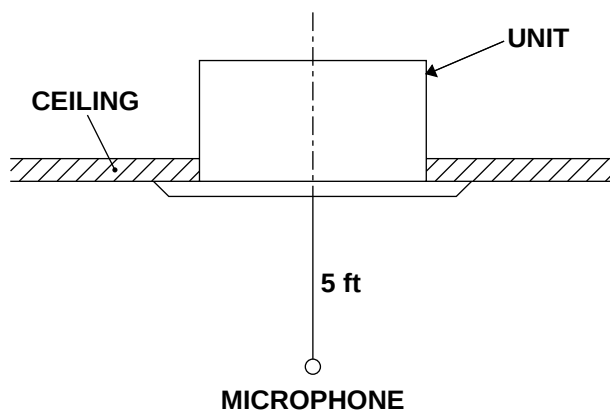
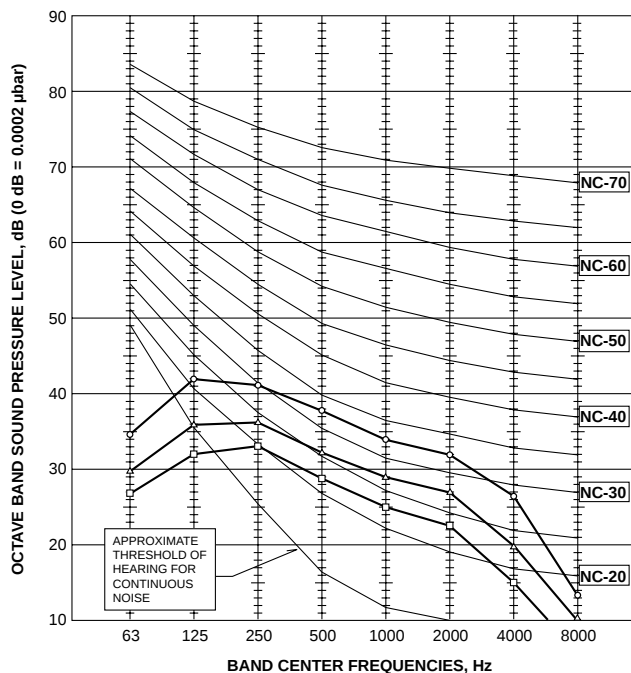
NOTCH	SPL(dB)	LINE
High	39	○—○
Medium	40	△—△
Low	30	□—□



SLZ-KA15NA.TH SLZ-KA15NAR1.TH

<60Hz>

NOTCH	SPL(dB)	LINE
High	40	○—○
Medium	35	△—△
Low	31	□—□



NOTE: The sound level is measured in an anechoic room where echoes are few, when compressor stops. The sound may be bigger than the indicated level in actual use due to surrounding echoes. The sound level can be higher by about 2 dB than the indicated level during cooling and heating operation.

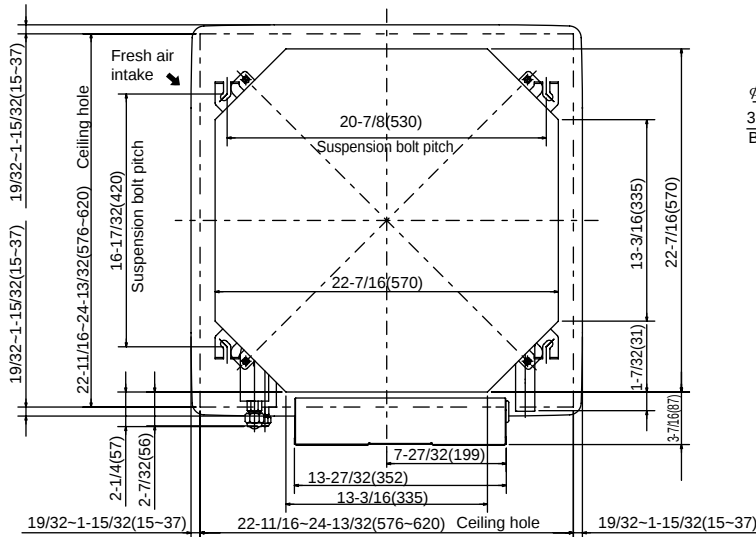
OCH487B

SLZ-KA09NA.TH
SLZ-KA09NAR1.TH

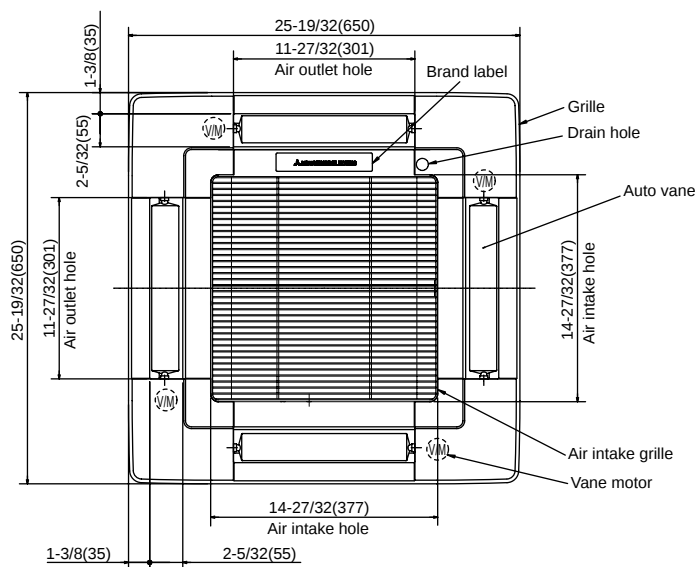
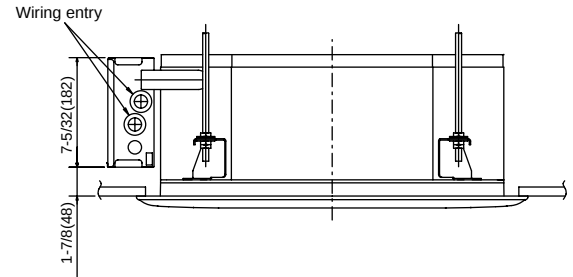
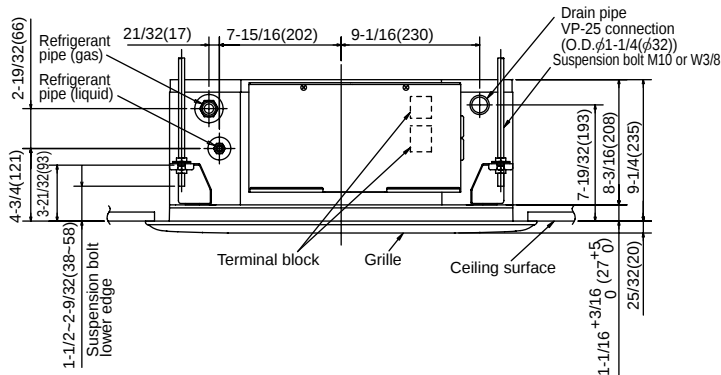
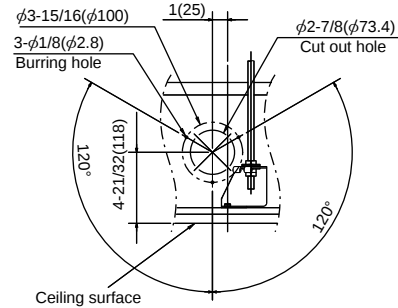
SLZ-KA12NA.TH
SLZ-KA12NAR1.TH

SLZ-KA15NA.TH
SLZ-KA15NAR1.TH

Unit : inch (mm)



Detail drawing of fresh air intake

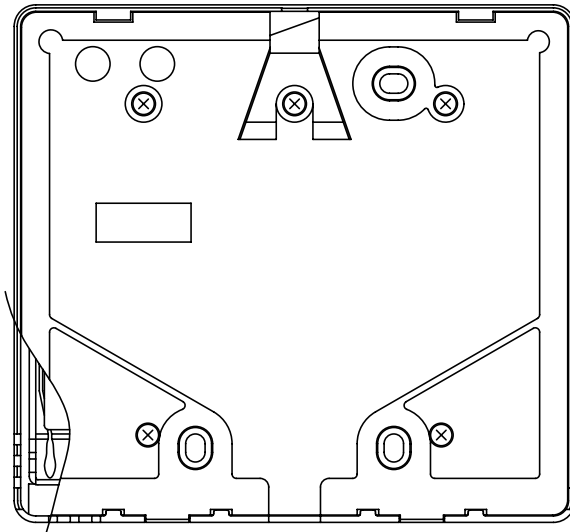
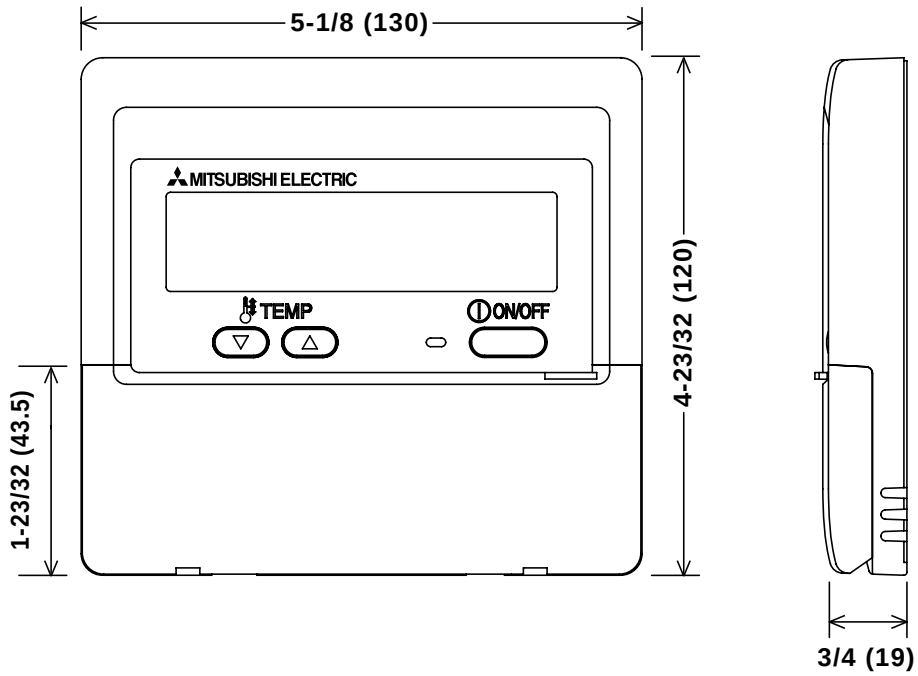


Models	Refrigerant pipe (liquid)	Refrigerant pipe (gas)
SLZ-KA09NA	1/4 inch ($\phi 6.35\text{mm}$) flared connection	3/8 inch ($\phi 9.52\text{mm}$) flared connection
SLZ-KA12NA	1/4 inch ($\phi 6.35\text{mm}$) flared connection	3/8 inch ($\phi 9.52\text{mm}$) flared connection
SLZ-KA15NA	1/4 inch ($\phi 6.35\text{mm}$) flared connection	1/2 inch ($\phi 12.7\text{mm}$) flared connection

WIRED REMOTE CONTROLLER

(Option)

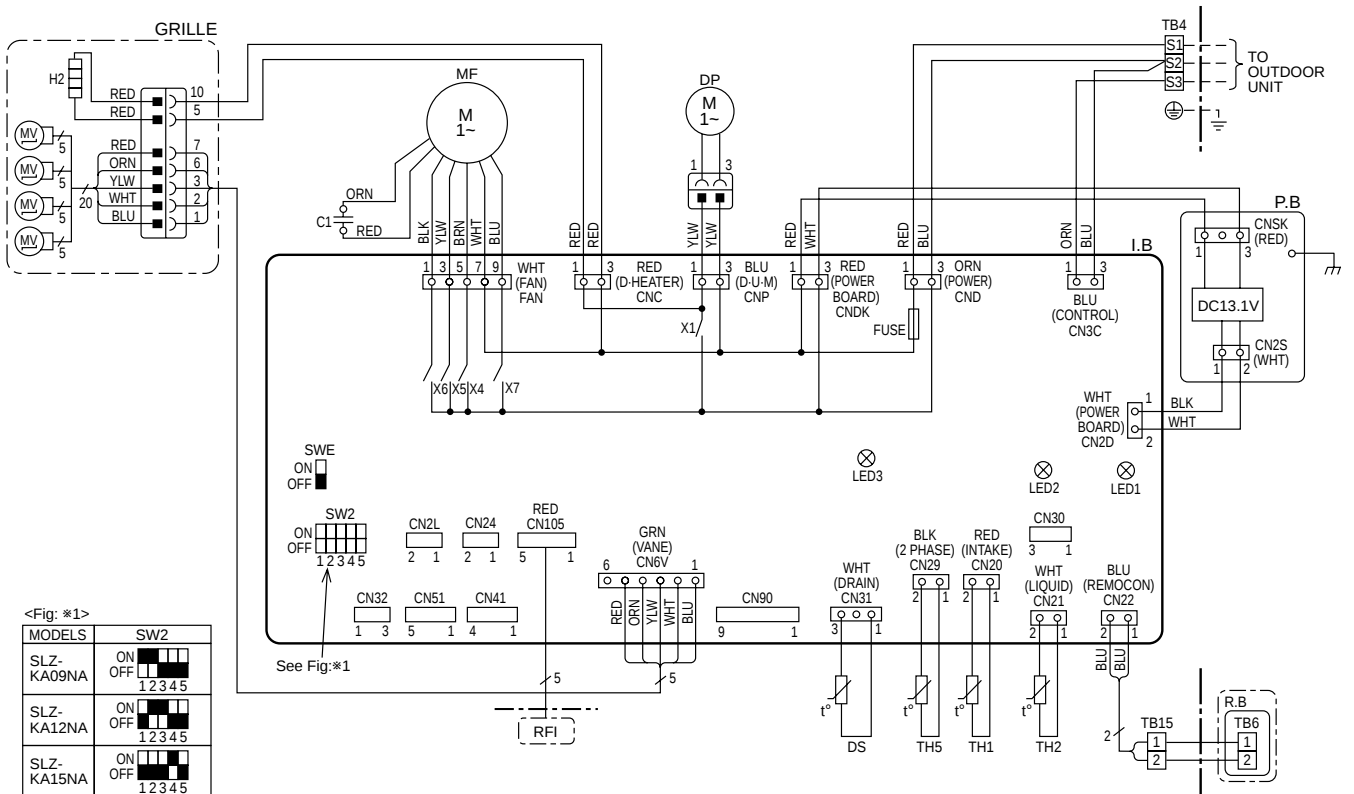
Unit : inch (mm)



SLZ-KA09NA.TH
SLZ-KA09NAR1.TH

SLZ-KA12NA.TH
SLZ-KA12NAR1.TH

SLZ-KA15NA.TH
SLZ-KA15NAR1.TH



[LEGEND]

SYMBOL	NAME	SYMBOL	NAME
P.B	INDOOR POWER BOARD	C1	CAPACITOR (FAN MOTOR)
I.B	INDOOR CONTROLLER BOARD	DP	DRAIN PUMP
CN2L	CONNECTOR (LOSSNAY)	DS	DRAIN SENSOR
CN24	CONNECTOR (BACK-UP HEATING)	RFI	RADIO FREQUENCY INTERFACE FOR RF THERMOSTAT
CN30	CONNECTOR (LLC)	H2	DEW PREVENTION HEATER
CN32	CONNECTOR (REMOTE SWITCH)	MF	FAN MOTOR (WITH THERMAL FUSE)
CN41	CONNECTOR (HA TERMINAL-A)	MV	VANE MOTOR
CN51	CENTRALLY CONTROL	TB4	TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE)
CN105	CONNECTOR (RADIO FREQUENCY INTERFACE)	TB15	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
FUSE	FUSE (T6.3AL250V)	TH1	ROOM TEMP. THERMISTOR (32°F / 15kΩ, 77°F / 5.4kΩ DETECT)
LED1	POWER SUPPLY (I.B)	TH2	PIPE TEMP. THERMISTOR/LIQUID (32°F / 15kΩ, 77°F / 5.4kΩ DETECT)
LED2	POWER SUPPLY (I.B)	TH5	COND. / EVA. TEMP. THERMISTOR (32°F / 15kΩ, 77°F / 5.4kΩ DETECT)
LED3	TRANSMISSION (INDOOR-OUTDOOR)	OPTION PART	
SW2	SWITCH (CAPACITY CODE)	R.B	WIRED REMOTE CONTROLLER BOARD
SWE	SWITCH (EMERGENCY OPERATION)	TB6	TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE)
X1	DRAIN PUMP/DEW PREVENTION HEATER		
X4	RELAY (FAN MOTOR LL)		
X5	RELAY (FAN MOTOR Lo)		
X6	RELAY (FAN MOTOR Hi)		
X7	RELAY (FAN MOTOR Me)		

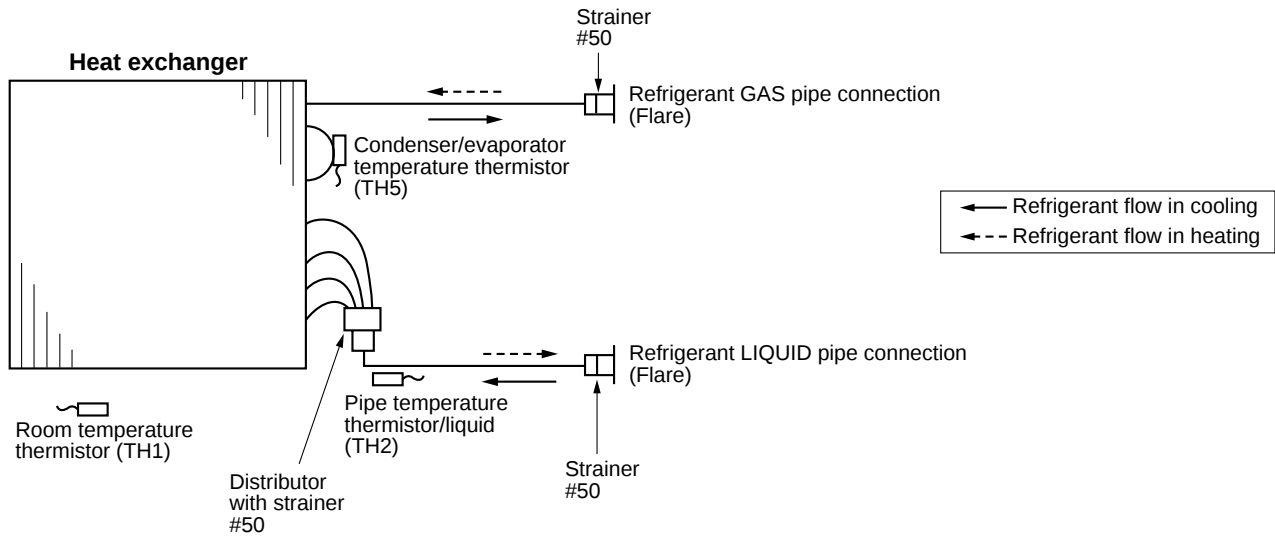
- NOTES: 1. Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
 2. Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers (S1, S2, S3).
 3. Use copper supply wires.
 4. Symbols used in wiring diagram above are, □○□ : Connector, □□□ : Terminal (block).

*For details on how to operate self-diagnosis refer to the technical manuals etc.

SLZ-KA09NA.TH
SLZ-KA09NAR1.TH

SLZ-KA12NA.TH
SLZ-KA12NAR1.TH

SLZ-KA15NA.TH
SLZ-KA15NAR1.TH



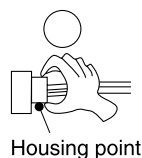
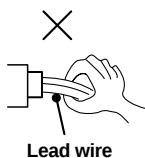
7-1. CAUTIONS ON TROUBLESHOOTING

(1) Before troubleshooting, check the followings:

- ① Check the power supply voltage.
- ② Check that the indoor/outdoor connecting wire is correct.

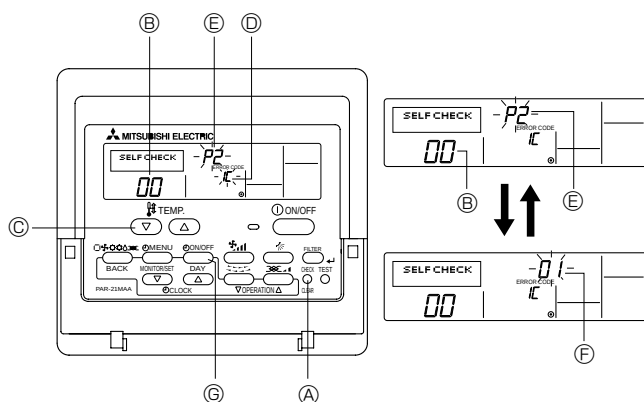
(2) Take care of the followings during servicing.

- ① Before servicing the air conditioner, be sure to turn off the remote controller first to stop the main unit, and then turn off the breaker.
- ② When removing the indoor controller board, hold the edge of the board with care NOT to apply stress on the components.
- ③ When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



7-2. SELF-CHECK

Wired remote controller (Option)



- ① Turn on the power.
- ② Press the [CHECK] button twice.
- ③ Set address with [TEMP] button if system control is used.
- ④ Press the [ON/OFF] button to stop the self-check.

(A) CHECK button

(B) Address

(C) TEMP. button

(D) IC : Indoor unit

OC: Outdoor unit

(E) Check code (--- : No trouble generated in the past.
F F F F : No corresponding unit.)

(F) Unit No.

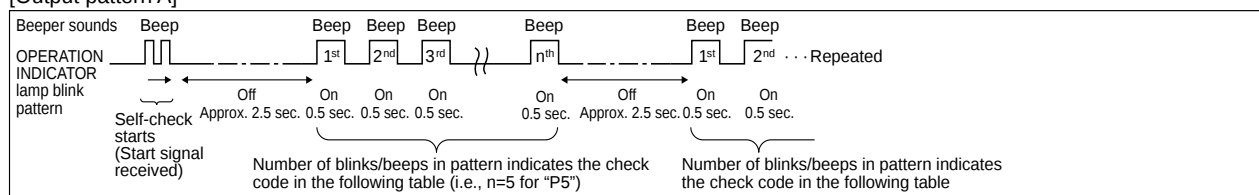
(G) Timer ON/OFF button

<To delete check code>

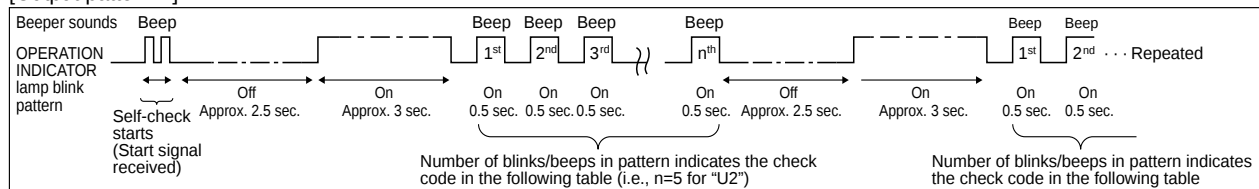
- ① Display the error code on the self-check result display screen.
- ② The address for self-check will blink when the (G) (ON/OFF) button is pressed twice within 3 seconds.

- Refer to the following tables for details on the check codes.

[Output pattern A]



[Output pattern B]



[Output pattern A] Errors detected by indoor unit

IR wireless remote controller Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)	Wired remote controller ① Check code	Symptom	Remark
1	P1	Intake sensor error	—
2	P2	Pipe (TH2) sensor error	
3	P9	Pipe (TH5) sensor error	
4	E6, E7	Indoor/outdoor unit communication error	
5	P4	Drain sensor error	
6	P5	Drain pump error	
7	P6	Freezing/Overheating protection operation	
8	EE	Communication error between indoor and outdoor units	
9	P8	Pipe temperature error	
10	E4, E5	Remote controller signal receiving error	
11	—	—	
12	Fb	Indoor unit control system error (memory error, etc.)	
—	E0, E3	Remote controller transmission error	—
—	E1, E2	Remote controller control board error	

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

IR wireless remote controller Beeper sounds/OPERATION INDICATOR lamp blinks (Number of times)	Wired remote controller ① Check code	Symptom	Remark
1	E9	Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)	For details, check the LED display of the outdoor controller board. As for outdoor unit, refer to outdoor unit's service manual.
2	UP	Compressor overcurrent interruption	
3	U3, U4	Open/short of outdoor unit thermistors	
4	UF	Compressor overcurrent interruption (When compressor locked)	
5	U2	Abnormal high discharging temperature/49C operated/insufficient refrigerant	
6	U1, Ud	Abnormal high pressure (63H operated)/Overheating protection operation	
7	U5	Abnormal temperature of heatsink	
8	U8	Outdoor unit fan protection stop	
9	U6	Compressor overcurrent interruption/Abnormal of power module	
10	U7	Abnormality of superheat due to low discharge temperature	
11	U9, UH	Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error	
12	—	—	
13	—	—	
14	Others	Other errors (Refer to the technical manual for the outdoor unit.)	

*1 If the beeper does not sound again after the initial 2 beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.

*2 If the beeper sounds 3 times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.)" after the initial 2 beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.

continued to the next page.

- On IR wireless remote controller
- ② The continuous buzzer sounds from receiving section of indoor unit.
- ③ Blink of operation lamp
- On wired remote controller
- ① Check code displayed on the LCD.

• If the unit cannot be operated properly after the test run, refer to the following table to find out the cause.

Symptom		Cause
Wired remote controller		
PLEASE WAIT	For about 2 minutes after power-on	•For about 2 minutes after power-on, operation of the remote controller is not possible due to system start-up. (Correct operation)
PLEASE WAIT → Error code	Subsequent to about 2 minutes after power-on	•Connector for the outdoor unit's protection device is not connected. •Reverse or open phase wiring for the outdoor unit's power terminal block
No messages appear even when operation switch is turned ON (operation lamp does not light up).		•Incorrect wiring between indoor and outdoor units. (incorrect polarity of S1, S2, S3) •Remote controller wire short

On the IR wireless remote controller with condition above, following phenomena take place.

- No signals from the remote controller can be received.
- Operation lamp is blinking.
- The buzzer makes a short ping sound.

Note:

Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)

For description of each LED (LED1, 2, 3) provided on the indoor controller, refer to the following table.

LED1 (power for microprocessor)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED2 (power for wired remote controller)	Indicates whether power is supplied to the wired remote controller. This LED lights only in the case of the indoor unit which is connected to the outdoor unit refrigerant address "0".
LED3 (communication between indoor and outdoor units)	Indicates state of communication between the indoor and outdoor units. Make sure that this LED is always blinking.

7-3. SELF-DIAGNOSIS ACTION TABLE

Note: Refer to the manual of outdoor unit for the details of display such as F, U, and other E.

Error Code	Abnormal point and detection method	Cause	Countermeasure
P1	Room temperature thermistor (TH1) ① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying and heating operation Short: 194°F or more Open: -40°F or less	① Defective thermistor characteristics ② Contact failure of connector (CN20) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Defective indoor controller board	①—③ Check resistance value of thermistor. 30°F.....15.8kΩ 50°F.....9.6kΩ 70°F.....6.0kΩ 90°F.....3.9kΩ 100°F.....3.2kΩ If you put force on the lead wire (draw or bend) with measuring resistance value of thermistor, breaking of wire or contact failure can be detected. ② Check contact failure of connector (CN20) on the indoor controller board. Refer to 7-4. Turn the power back on and check restart after inserting connector again. ④ Check room temperature display on remote controller. Replace indoor controller board if there is abnormal difference with actual room temperature. Turn the power off, and on again to operate after checking.
P2	Pipe temperature thermistor/Liquid (TH2) ① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying, and heating (except defrosting) operation. Short: 194°F or more Open: -40°F or less	① Defective thermistor characteristics ② Contact failure of connector (CN21) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Defective refrigerant circuit is causing thermistor temperature of 194°F or more or -40°F or less. ⑤ Defective indoor controller board	①—③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN21) on the indoor controller board. Refer to 7-4. Turn the power on and check restart after inserting connector again. ④ Check pipe <liquid> temperature with remote controller in test run mode. If pipe <liquid> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect. ⑤ Check pipe <liquid> temperature with remote controller in test run mode. If there is extreme difference with actual pipe <liquid> temperature, replace indoor controller board. Turn the power off, and on again to operate after checking.
P4	Drain sensor (DS) ① Suspensive abnormality, if short/open of thermistor is detected for 30 seconds continuously. Turn off compressor and indoor fan. ② Short/open is detected for 30 seconds continuously during suspensive abnormality. (The unit returns to normal operation, if it has been reset normally.) ③ Detect the following condition. • During cooling and drying operation • In case that pipe <liquid> temperature - room temperature < -18 deg (Except defrosting) • When pipe <liquid> temperature or room temperature is short/open temperature. • During drain pump operation	① Defective thermistor characteristics ② Contact failure of connector (CN31) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of drain sensor wiring ④ Defective indoor controller board	①—③ Check resistance value of thermistor. 30°F.....6.3kΩ 50°F.....3.9kΩ 70°F.....2.5kΩ 90°F.....1.6kΩ 100°F.....1.3kΩ ② Check contact failure of connector (CN31) on the indoor controller board. Refer to 7-4. Turn the power back on and check restart after inserting connector again. ④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited, and abnormality reappears. Turn the power off, and on again to operate after checking.
P5	Malfunction of drain pump (DP) ① Suspensive abnormality, if thermistor of drain sensor heats itself and temperature rises slightly. Turn off compressor and indoor fan. ② Drain pump is abnormal if the condition above is detected during suspensive abnormality. ③ Constantly detected during drain pump operation	① Malfunction of drain pump ② Defective drain Clogged drain pump Clogged drain pipe ③ Attached drop of water at the drain sensor • Drops of drain trickles from lead wire • Clogged filter is causing wave of drain. ④ Defective indoor controller board	① Check if drain pump works. ② Check drain function. ③ Check the setting of lead wire of drain sensor and check clogs of the filter. ④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited and abnormality reappears. Refer to 7-4. Turn the power off, and on again to operate after checking.

Error Code	Abnormal point and detection method	Cause	Countermeasure
P6	Freezing/overheating protection is operating ① Freezing protection (Cooling mode) The unit is in 6-minute resume prevention mode if pipe <liquid or condenser/ evaporator> temperature stays under 5°F for 3 minutes after the compressor started. Abnormal if it stays under 5°F for 3 minutes again within 16 minutes after 6-minute resume prevention mode. ② Overheating protection (Heating mode) The units is in 6-minute resume prevention mode if pipe <condenser / evaporator> temperature is detected as over 158°F after the compressor started. Abnormal if the temperature of over 158°F is detected again within 10 minutes after 6-minute resume prevention mode.	(Cooling or drying mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Low-load (low temperature) operation out of the tolerance range ④ Defective indoor fan motor - Fan motor is defective. - Indoor controller board is defective. ⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogging) (Heating mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Overload (high temperature) operation out of the tolerance range ④ Defective indoor fan motor - Fan motor is defective. - Indoor controller board is defective. ⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogging) ⑧ Bypass circuit of outdoor unit is defective.	(Cooling or drying mode) ① Check clogging of the filter. ② Remove blockage. ④ Measure the resistance of fan motor's winding. Measure the output voltage of fan's connector (FAN) on the indoor controller board. *The indoor controller board should be normal when voltage of AC 208/230V is detected while fan motor is connected. Refer to 7-4. ⑤ Check outdoor fan motor. ⑥⑦ Check operating condition of refrigerant circuit. (Heating mode) ① Check clogs of the filter. ② Remove blockage. ④ Measure the resistance of fan motor's winding. Measure the output voltage of fan's connector (FAN) on the indoor controller board. *The indoor controller board should be normal when voltage of AC 208/230V is detected while fan motor is connected. Refer to 7-4. ⑤ Check outdoor fan motor. ⑥~⑧ Check operating condition of refrigerant circuit.
P8	Pipe temperature <Cooling mode> Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes after compressor start and 6 minutes after the liquid or condenser/ evaporator pipe is out of cooling range. Note 1) It takes at least 9 min. to detect. Note 2) Abnormality P8 is not detected in drying mode. Cooling range : -5.4 deg $\geq$ (TH-TH1) TH: Lower temperature between liquid pipe temperature (TH2) and condenser/ evaporator temperature (TH5) TH1: Intake temperature <Heating mode> When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/ evaporator pipe temperature is not in heating range within 20 minutes. Note 3) It takes at least 27 minutes to detect abnormality. Note 4) It excludes the period of defrosting (Detection restarts when defrosting mode is over) Heating range : 5.4 deg $\leq$ (TH5-TH1)	① Slight temperature difference between indoor room temperature and pipe <liquid or condenser / evaporator> temperature thermistor - Shortage of refrigerant - Disconnected holder of pipe <liquid or condenser / evaporator> thermistor - Defective refrigerant circuit ② Converse connection of extension pipe (on plural units connection) ③ Converse wiring of indoor/ outdoor unit connecting wire (on plural units connection) ④ Defective detection of indoor room temperature and pipe <condenser / evaporator> temperature thermistor ⑤ Stop valve is not opened completely.	①~④ Check pipe <liquid or condenser / evaporator> temperature with room temperature display on remote controller board. ②③ Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire.

Error Code	Abnormal point and detection method	Cause	Countermeasure
P9	Pipe temperature thermistor / Condenser / Evaporator (TH5) ① The unit is in 3-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit does not get back to normal within 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying, and heating operation (except defrosting) Short: 194°F or more Open: -40°F or less	① Defective thermistor characteristics ② Contact failure of connector (CN29) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Temperature of thermistor is 194°F or more or -40°F or less caused by defective refrigerant circuit. ⑤ Defective indoor controller board	①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN29) on the indoor controller board. Refer to 7-4. Turn the power on and check restart after inserting connector again. ④ Operate in test run mode and check pipe <condenser/evaporator> temperature with outdoor controller circuit board. If pipe <condenser/evaporator> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect. ⑤ Operate in test run mode and check pipe <condenser/evaporator> temperature with outdoor control circuit board. If there is extreme difference with actual pipe <condenser/evaporator> temperature replace indoor controller board. There is no abnormality if none of above comes within the unit. Turn the power off and on again to operate.
E0 or E4	Remote controller transmission error(E0)/signal receiving error(E4) ① Abnormal if main or sub remote controller cannot receive any transmission normally from indoor unit of refrigerant address "0" for 3 minutes. (Error code : E0) ② Abnormal if sub-remote controller could not receive for any signal for 2 minutes. (Error code: E0) ① Abnormal if indoor controller board cannot receive normally any data from remote controller board or from other indoor controller board for 3 minutes. (Error code: E4) ② Indoor controller board cannot receive any signal from remote controller for 2 minutes. (Error code: E4)	① Contact failure at transmission wire of remote controller ② All remote controllers are set as "sub" remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board. ③ Miswiring of remote controller ④ Defective transmitting/receiving circuit of remote controller ⑤ Defective transmitting/receiving circuit of indoor controller board of refrigerant address "0" ⑥ Noise has entered into the transmission wire of remote controller.	① Check disconnection or looseness of indoor unit or transmission wire of remote controller. ② Set one of the remote controllers "main", if there is no problem with the action above. ③ Check wiring of remote controller. • Total wiring length: max. 500m (Do not use cable x 3 or more) • The number of connecting indoor units: max. 16 units • The number of connecting remote controller: max. 2 units When the above-mentioned problem of ①–③ are not seen. ④ Diagnose remote controllers. a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board. b) When "RC NG" is displayed, replace remote controller. c) When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality.
E3 or E5	Remote controller transmission error(E3)/signal receiving error(E5) ① Abnormal if remote controller could not find blank of transmission path for 6 seconds and could not transmit. (Error code: E3) ② Remote controller receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E3) ① Abnormal if indoor controller board could not find blank of transmission path. (Error code: E5) ② Indoor controller board receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E5)	① 2 remote controllers are set as "main." (In case of 2 remote controllers) ② Remote controller is connected with 2 indoor units or more. ③ Repetition of refrigerant address ④ Defective transmitting/receiving circuit of remote controller ⑤ Defective transmitting/receiving circuit of indoor controller board ⑥ Noise has entered into transmission wire of remote controller.	① Set a remote controller to main, and the other to sub. ② Remote controller is connected with only one indoor unit. ③ The address changes to a separate setting. ④–⑥ Diagnose remote controller. a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. When becoming abnormal again, replace indoor controller board. b) When "RC NG" is displayed, replace remote controller. c) When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality.



Error Code	Abnormal point and detection method	Cause	Countermeasure
E6	Indoor/outdoor unit communication error (Signal receiving error) ① Abnormal if indoor controller board cannot receive any signal normally for 6 minutes after turning the power on. ② Abnormal if indoor controller board cannot receive any signal normally for 3 minutes. ③ Consider the unit abnormal under the following condition: When 2 or more indoor units are connected to one outdoor unit, indoor controller board cannot receive a signal for 3 minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals.	① Contact failure, short circuit or, miswiring (converse wiring) of indoor/outdoor unit connecting wire ② Defective transmitting/receiving circuit of indoor controller board ③ Defective transmitting/receiving circuit of indoor controller board ④ Noise has entered into indoor/outdoor unit connecting wire.	① Check disconnection or looseness of indoor/outdoor unit connecting wire of indoor unit or outdoor unit. Check all the units in case of twin indoor unit system. ②-④ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board or outdoor controller circuit board. * Other indoor controller board may have defect in case of twin indoor unit system.
E7	Indoor/outdoor unit communication error (Transmitting error) Abnormal if "1" receiving is detected 30 times continuously though indoor controller board has transmitted "0".	① Defective transmitting receiving circuit of indoor controller board ② Noise has entered into power supply. ③ Noise has entered into outdoor control wire.	①-③ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.
Fb	Indoor controller board Abnormal if data cannot be normally read from the nonvolatile memory of the indoor controller board.	① Defective indoor controller board	① Replace indoor controller board.
E1 or E2	Remote controller control board ① Abnormal if data cannot be normally read from the nonvolatile memory of the remote controller control board. (Error code: E1) ② Abnormal if the clock function of remote controller cannot be normally operated. (Error code: E2)	① Defective remote controller	① Replace remote controller.
PA (2502) (2500)	Forced compressor stop (due to water leakage abnormality) ① When the intake temperature subtracted from liquid pipe temperature is less than 14°F, drain sensor detects whether it is soaked in the water or not at the interval of 90 seconds. (Drain pump will start operating when the drain sensor detects to be soaked in the water.) ② The unit has a water leakage abnormality when the following conditions, a) and b), are satisfied while the above-mentioned detection is performed. a) The drain sensor detects to be soaked in the water 10 times in a row. b) The intake temperature subtracted from liquid pipe temperature is detected to be less than 14°F for a total of 30 minutes. (When the drain sensor detects to be NOT soaked in the water, the detection record of a) and b) will be cleared.) ③ The drain sensor detection is performed in operations other than cooling. (When the unit stops operating, during heating or fan operation, when the unit stops because of some abnormality) *Once the water leakage abnormality is detected, abnormality state will not be released until the main power is reset.	① Drain pump trouble ② Drain defective · Drain pump clogging · Drain pipe clogging ③ Open circuit of drain sensor side heater ④ Contact failure of drain sensor connector ⑤ Dew condensation on drain sensor · Drain water trickles along lead wire. · Drain water waving due to filter clogging ⑥ Extension piping connection difference at twin, triple, quadruple system ⑦ Miswiring of indoor/outdoor connecting at twin, triple, quadruple system ⑧ Room temperature thermistor/ liquid pipe temperature thermistor detection is defective.	① Check the drain pump. Performance ② Please check whether water can be drained. ③ Check the resistance of the drain sensor side heater. ④ Check the connector contact failure. ⑤ Check the drain sensor lead wire mounted. Check the filter clogging. ⑥ Check the piping connection. ⑦ Check the indoor/outdoor connecting wires. ⑧ Check the room temperature display of remote controller. Check the indoor liquid pipe temperature display of outdoor controller board.

7-4-2. Indoor controller board

SLZ-KA09NA.TH

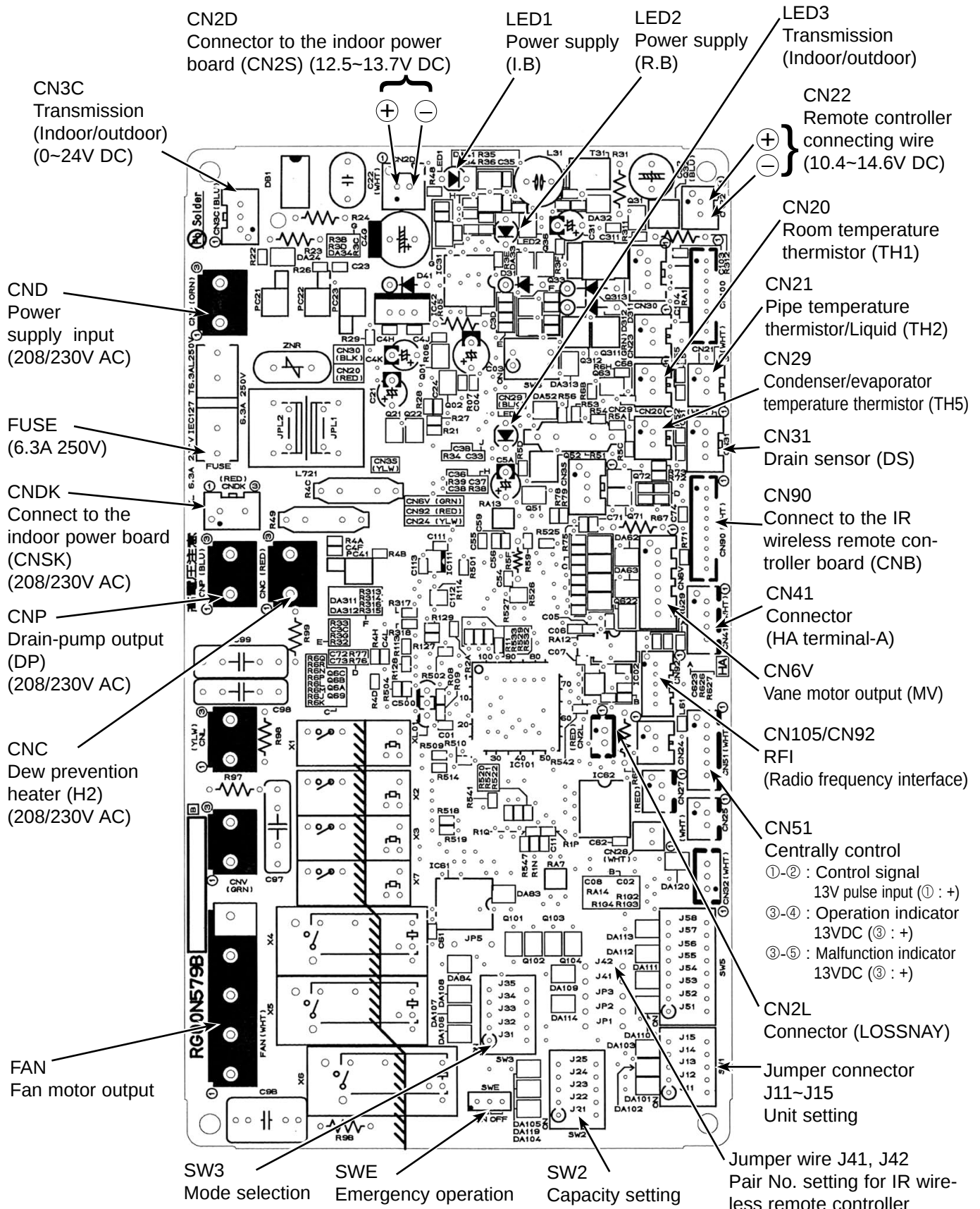
SLZ-KA12NA.TH

SLZ-KA15NA.TH

SLZ-KA09NAR1.TH

SLZ-KA12NAR1.TH

SLZ-KA15NAR1.TH



7-5. TROUBLE CRITERION OF MAIN PARTS

SLZ-KA09NA.TH

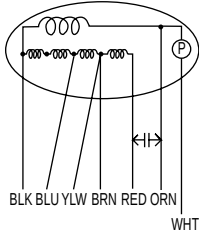
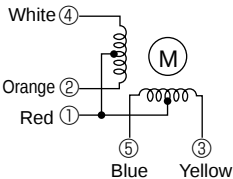
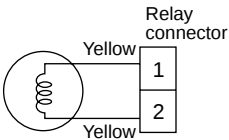
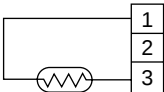
SLZ-KA12NA.TH

SLZ-KA15NA.TH

SLZ-KA09NAR1.TH

SLZ-KA12NAR1.TH

SLZ-KA15NAR1.TH

Part name	Check method and criterion																												
Room temperature thermistor (TH1)	Measure the resistance with a tester. (Part temperature 50°F ~ 86°F)																												
Pipe temperature thermistor/liquid (TH2)																													
Condenser/evaporator temperature thermistor (TH5)																													
	<table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>4.3k~9.6kΩ</td><td>Opened or short-circuited</td></tr></table>	Normal	Abnormal	4.3k~9.6kΩ	Opened or short-circuited																								
Normal	Abnormal																												
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Indoor fan motor (MF)	Measure the resistance between the terminals with a tester. (Coil wiring temperature 50°F ~ 86°F)																												
 Ⓟ : Thermal fuse 284°F±36°F	<table><tr><th rowspan="2"></th><th colspan="3">Normal</th><th rowspan="2">Abnormal</th></tr><tr><th>KA09NA</th><th>KA12NA</th><th>KA15NA</th></tr><tr><td>WHT-BLK</td><td>387~418Ω</td><td>303~328Ω</td><td>272~295Ω</td><td rowspan="4">Opened or short-circuited</td></tr><tr><td>BLK-BLU</td><td>77~83Ω</td><td>105~114Ω</td><td>79~85Ω</td></tr><tr><td>BLU-YLW</td><td>19~21Ω</td><td>39~42Ω</td><td>37~40Ω</td></tr><tr><td>YLW-RED RED-BRN</td><td>179~193Ω</td><td>235~254Ω</td><td>191~206Ω</td></tr></table>		Normal			Abnormal	KA09NA	KA12NA	KA15NA	WHT-BLK	387~418Ω	303~328Ω	272~295Ω	Opened or short-circuited	BLK-BLU	77~83Ω	105~114Ω	79~85Ω	BLU-YLW	19~21Ω	39~42Ω	37~40Ω	YLW-RED RED-BRN	179~193Ω	235~254Ω	191~206Ω			
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Vane motor (MV)	Measure the resistance between the terminals with a tester. (At the ambient temperature 68°F ~ 86°F)																												
	<table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Red — Yellow</td><td rowspan="4">300Ω</td><td rowspan="5">Open or short</td></tr><tr><td>Red — Blue</td></tr><tr><td>Red — Orange</td></tr><tr><td>Red — White</td></tr></table>	Connector	Normal	Abnormal	Red — Yellow	300Ω	Open or short	Red — Blue	Red — Orange	Red — White																			
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Drain pump (DP)	Measure the resistance between the terminals with a tester. (At the ambient temperature 68°F ~ 86°F)																												
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Drain sensor (DS)	Measure the resistance between the terminals with a tester. Measure the resistance after 3 minutes have passed since the power supply was intercepted. (At the ambient temperature 32°F ~ 140°F)																												
	<table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>0.6kΩ~6.0kΩ</td><td>Open or short</td></tr></table>	Normal	Abnormal	0.6kΩ~6.0kΩ	Open or short	(Refer to the next page for a detail.)																							
Normal	Abnormal																												
0.6kΩ~6.0kΩ	Open or short																												

<Thermistor characteristic graph>

Thermistor for lower temperature

- Room temperature thermistor (TH1)
- Pipe temperature thermistor/liquid (TH2)
- Condenser/evaporator temperature thermistor (TH5)

Thermistor $R_0=15k\Omega \pm 3\%$

Fixed number of $B=3480 \pm 2\%$

$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273 + (t-32)/1.8} - \frac{1}{273} \right) \right\}$$

30°F	15.8kΩ
50°F	9.6kΩ
70°F	6.0kΩ
80°F	4.8kΩ
90°F	3.9kΩ
100°F	3.2kΩ

Thermistor for drain sensor

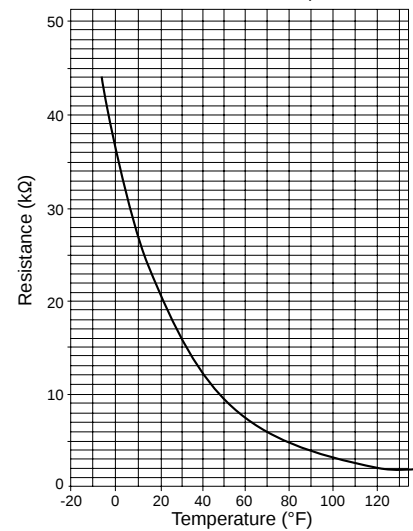
Thermistor $R_0=6.0k\Omega \pm 5\%$

Fixed number of $B=3390 \pm 2\%$

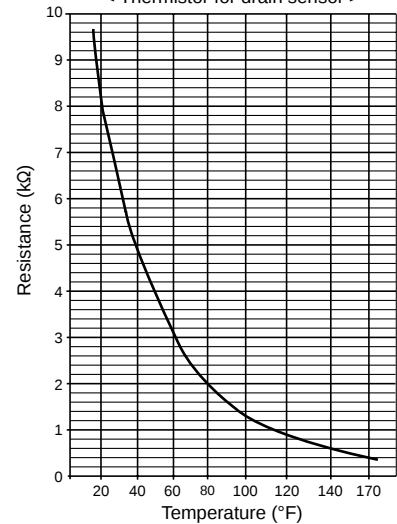
$$R_t = 6 \exp \left\{ 3390 \left(\frac{1}{273 + (t-32)/1.8} - \frac{1}{273} \right) \right\}$$

30°F	6.3kΩ
50°F	3.9kΩ
70°F	2.5kΩ
80°F	2.0kΩ
90°F	1.6kΩ
100°F	1.3kΩ

< Thermistor for lower temperature >



< Thermistor for drain sensor >



7-6. FUNCTIONS OF DIP SWITCH AND JUMPER WIRE

Each function is controlled by the dip switch and the jumper wire on control P.C. board.

Model setting and capacity setting are memorised in the nonvolatile memory of the indoor controller board.

The black square (■) indicates a switch position.

Jumper wire (○ : Short × : Open)

Jumper wire	Functions	Setting by the dip switch and jumper wire	Remarks																																																					
SW2	Capacity settings	<table><thead><tr><th>MODELS</th><th>Setting</th></tr></thead><tbody><tr><td>SLZ-KA09NA.TH</td><td><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table></td></tr><tr><td>SLZ-KA12NA.TH</td><td><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table></td></tr><tr><td>SLZ-KA15NA.TH</td><td><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table></td></tr></tbody></table>	MODELS	Setting	SLZ-KA09NA.TH	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>	1	2	3	4	5	■	■	■	■	■	ON	OFF	OFF	OFF	OFF	SLZ-KA12NA.TH	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>	1	2	3	4	5	■	■	■	■	■	ON	OFF	OFF	OFF	OFF	SLZ-KA15NA.TH	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>	1	2	3	4	5	■	■	■	■	■	ON	OFF	OFF	OFF	OFF	
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SLZ-KA15NA.TH	<table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>■</td><td>■</td><td>■</td><td>■</td><td>■</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr></table>	1	2	3	4	5	■	■	■	■	■	ON	OFF	OFF	OFF	OFF																																								
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J41 J42	Pair number setting with IR wireless remote controller	<table><thead><tr><th rowspan="2">Wireless remote controller setting</th><th colspan="2">Control PCB setting</th></tr><tr><th>J41</th><th>J42</th></tr></thead><tbody><tr><td>0</td><td>○</td><td>○</td></tr><tr><td>1</td><td>×</td><td>○</td></tr><tr><td>2</td><td>○</td><td>×</td></tr><tr><td>3 ~ 9</td><td>×</td><td>×</td></tr></tbody></table>	Wireless remote controller setting	Control PCB setting		J41	J42	0	○	○	1	×	○	2	○	×	3 ~ 9	×	×	<Initial setting> IR wireless remote controller: 0 Control PCB: ○ (for both J41 and J42) Four pair number settings are supported. The pair number settings of the IR wireless remote controller and indoor control PCB (J41/J42) are given in the table on the left. ('×' in the table indicates the jumper wire is disconnected.)																																				
Wireless remote controller setting	Control PCB setting																																																							
	J41	J42																																																						
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1	×	○																																																						
2	○	×																																																						
3 ~ 9	×	×																																																						
JP1	Unit type setting	<table><thead><tr><th>Model</th><th>JP1</th></tr></thead><tbody><tr><td>Without TH5</td><td>○</td></tr><tr><td>With TH5</td><td>×</td></tr></tbody></table>	Model	JP1	Without TH5	○	With TH5	×	There is no jumper (JP1) because these models have the cond./eva. temperature thermistor (TH5).																																															
Model	JP1																																																							
Without TH5	○																																																							
With TH5	×																																																							

8

SPECIAL FUNCTION

BACK-UP HEATING FUNCTION (CN24)

• Operation

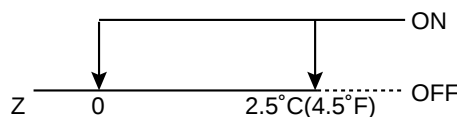
Outline of functions

The back-up heater signal is sent out according to the temperature difference between indoor room temperature and set temperature. This function is available only in heating operation.

• How to connect

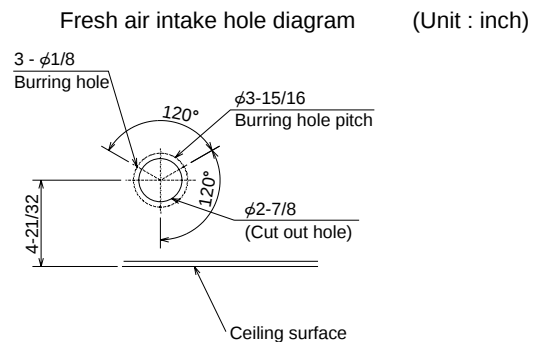
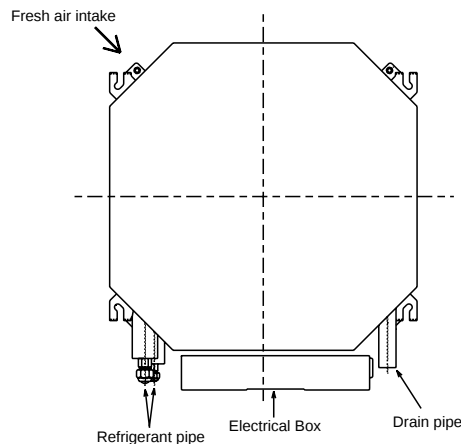
When connecting to the connector CN24 of the indoor unit, use PAC-SE56RA-E (optional parts).

	Temperature difference (Z=Set temp. - Room temp.)	Back-up heater signal output
1	$Z \leq 0^{\circ}\text{C}(^{\circ}\text{F})$	OFF
2	$0 < Z < 2.5^{\circ}\text{C}(4.5^{\circ}\text{F})$	Keeping condition
3	$2.5^{\circ}\text{C}(4.5^{\circ}\text{F}) \leq Z$	ON



9-1. FRESH AIR INTAKE (LOCATION FOR INSTALLATION)

At the time of installation, use the duct holes (cut out) located at the positions shown in following diagram, as and when required.



9-2. FRESH AIR INTAKE AMOUNT & STATIC PRESSURE CHARACTERISTICS

SLZ-KA09NA.TH

SLZ-KA12NA.TH

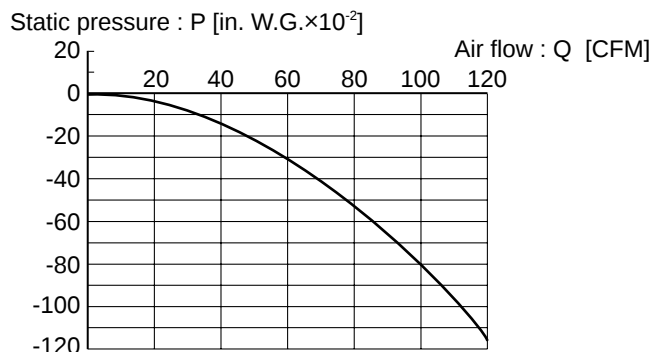
SLZ-KA15NA.TH

SLZ-KA09NAR1.TH

SLZ-KA12NAR1.TH

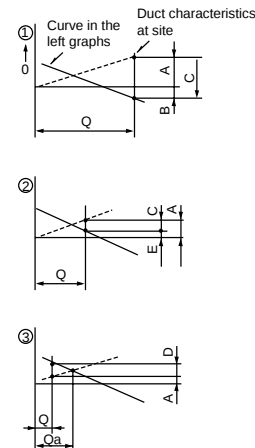
SLZ-KA15NAR1.TH

Taking air into the unit



NOTE: Fresh air intake amount should be 20% or less of whole air amount to prevent dew dripping.

How to read curves



- Q...Designed amount of fresh air intake <CFM>
- A...Static pressure loss of fresh air intake duct system with air flow amount Q <in. W.G. $\times 10^{-2}$ >
- B...Forced static pressure at air conditioner inlet with air flow amount Q <in. W.G. $\times 10^{-2}$ >
- C...Static pressure of booster fan with air flow amount Q <in. W.G. $\times 10^{-2}$ >
- D...Static pressure loss increase amount of fresh air intake duct system for air flow amount Q <in. W.G. $\times 10^{-2}$ >
- E...Static pressure of indoor unit with air flow amount Q <in. W.G. $\times 10^{-2}$ >
- Qa...Estimated amount of fresh air intake without D <CFM>

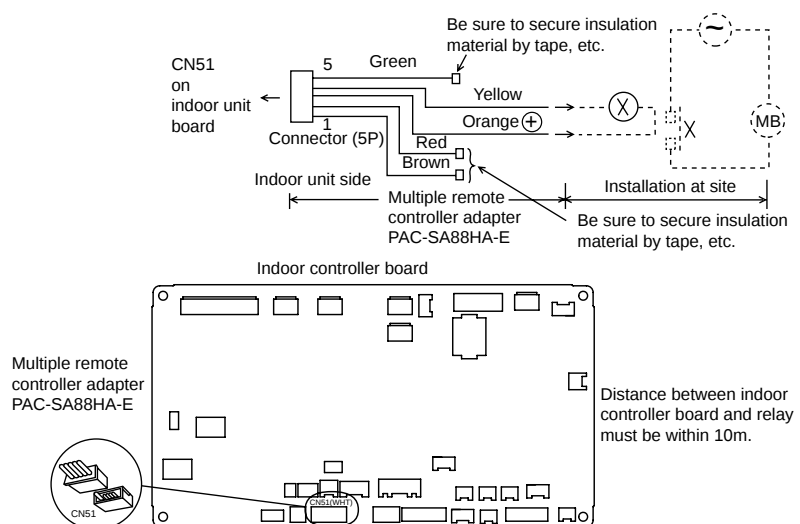
9-3. OPERATION IN CONJUNCTION WITH DUCT FAN (BOOSTER FAN)

- Whenever the indoor unit operates, the duct fan operates.

- (1) Connect the optional multiple remote controller adapter (PAC-SA88HA-E) to the connector CN51 on the indoor controller board.
- (2) Drive the relay after connecting the 12V DC relay between the Yellow and Orange connector wires.

Use a nonpolar relay of 1W or smaller.
MB: Electromagnetic switch power relay for duct fan.

X: Auxiliary relay (12V DC LY-1F)

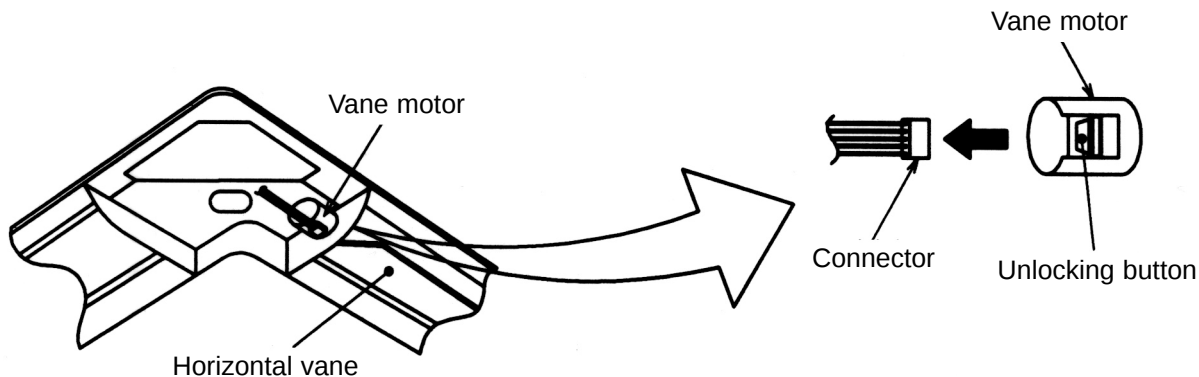


9-4. FIXING HORIZONTAL VANE

Horizontal vane of each air outlet can be fixed according to the environment where it is installed.

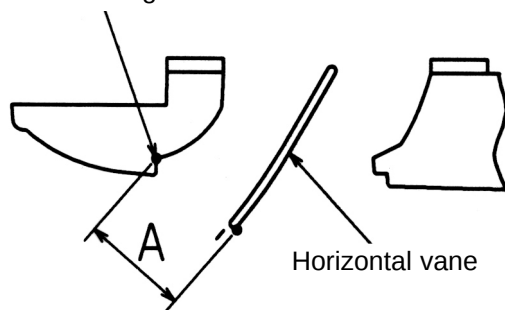
Setting procedure

- 1) Turn off a main power supply (Turn off a breaker).
- 2) Remove the vane motor connector in the direction of the arrow shown below with pressing the unlocking button as in the figure below.
Insulate the disconnected connector with the plastic tape.



- 3) Set the vertical vane of the air outlet by hand slowly within the range in the table below.

Measured standard
position of the grille



< Specified range >

Up/down airflow direction	Horizontal 30°	Downward 45°	Downward 55°	Downward 70°
A	21 mm 13/16 inch	25 mm 31/32 inch	28 mm 1-3/32 inch	30 mm 1-3/16 inch

· The vanes can be set between 21mm, 13/16 inch and 30 mm, 1-3/16 inch.



Caution:

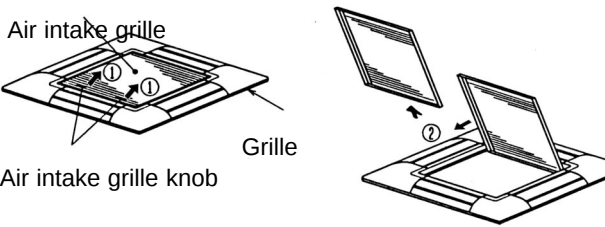
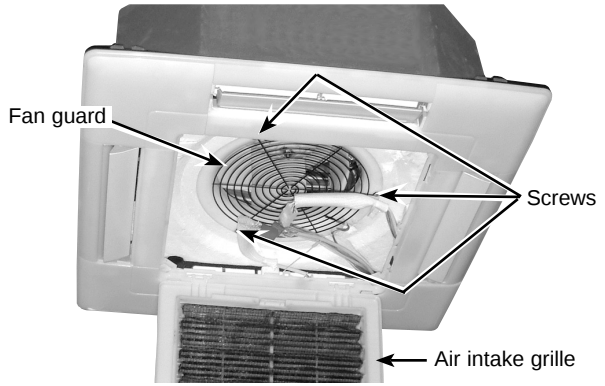
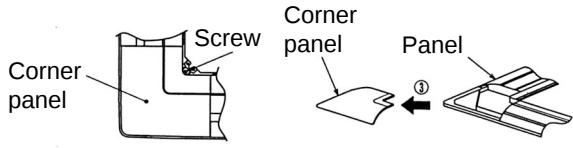
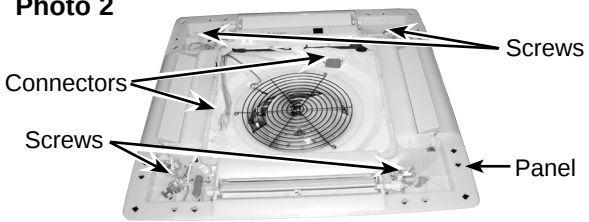
Do not set the up/down vanes passed the specified range. Condensation could form and drop from the ceiling, or the unit could malfunction.

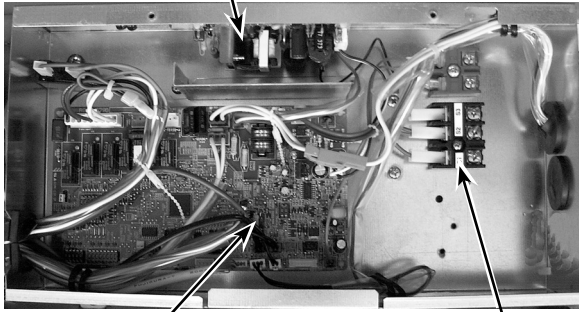
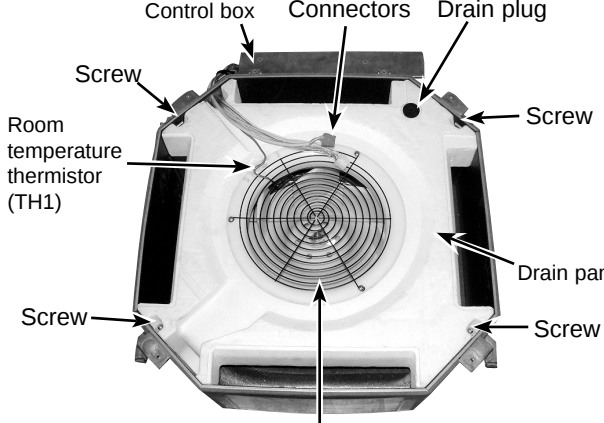
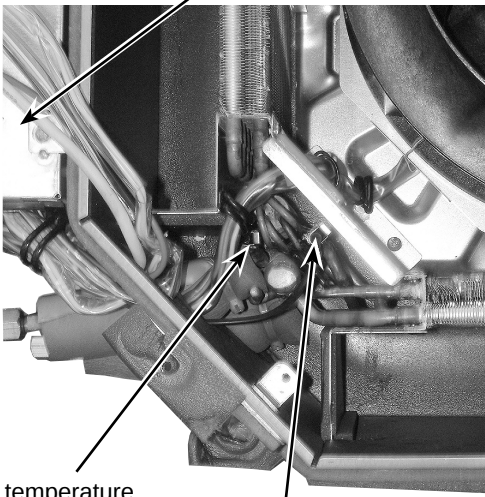
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SLZ-KA09NAR1.TH

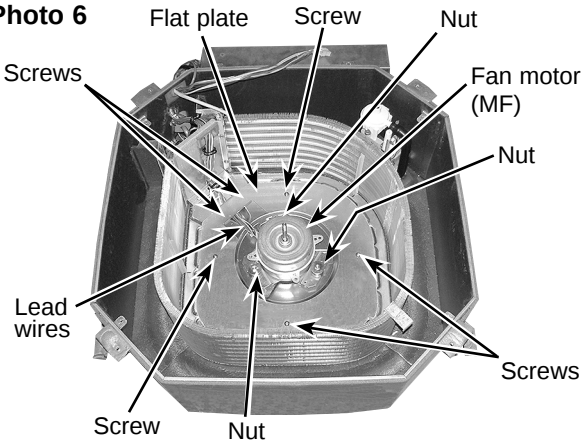
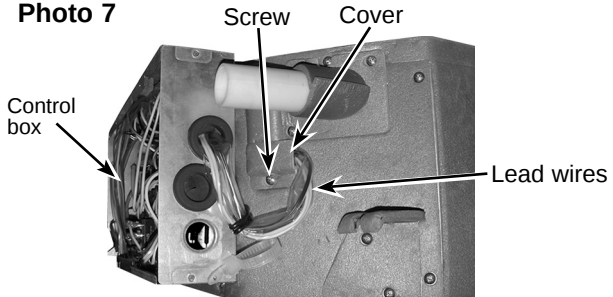
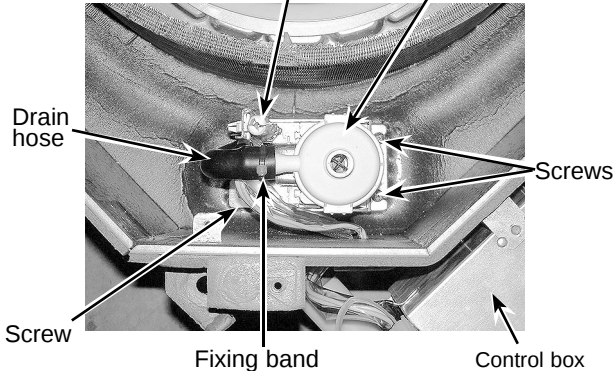
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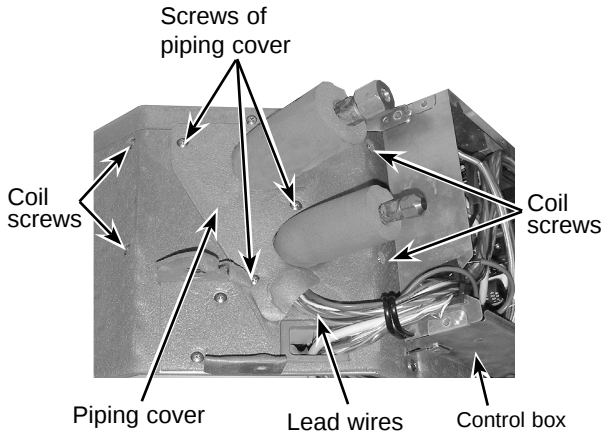
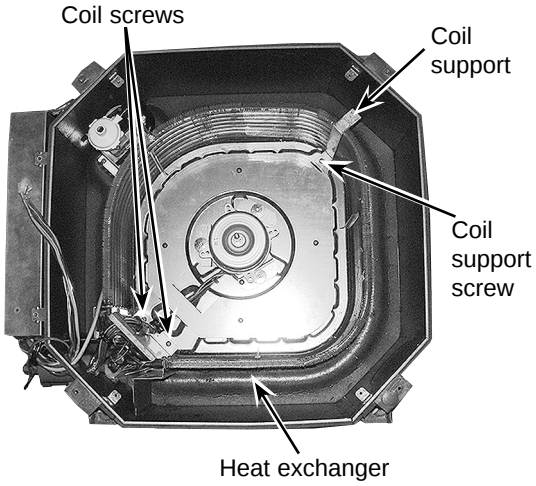
SLZ-KA15NA.TH
SLZ-KA15NAR1.TH

Be careful when removing heavy parts.

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
1. Removing the air intake grille (1) Slide the knob of air intake grille to the direction of the arrow ① to open the air intake grille. (2) Remove the string hook from the panel to prevent the grille from dropping. (3) Slide the hinge of the intake grille to the direction of the arrow ② and remove the air intake grille.	Figure 1 
2. Removing the fan guard (1) Open the air intake grille. (2) Remove the 3 screws of fan guard.	Photo 1 
3. Removing the panel (1) Remove the air intake grille. (Refer to step 1) Corner panel (See Figure 2) (1) Remove the screw of the corner. (2) Slide the corner panel to the direction of the arrow ③, and remove the corner panel. Panel (See Photo 2) (1) Disconnect the connector that connects with the unit. (2) Remove the 2 screws from the panel and loose another 2 screws, which are fixed to the oval hole, have different diameter. (3) Rotate the panel a little to remove the screws. (Slide the panel so that the screw comes to a larger diameter of the oval hole, which has 2 different diameters.)	Figure 2  Photo 2 

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
4. Removing the electrical parts (1) Remove the 2 screws and the control box cover. <Electrical parts in the control box> • Indoor controller board (I.B) • Terminal block (TB4) • Indoor power board (P.B)	Photo 3  Indoor power board (P.B) Indoor controller board (I.B) Terminal block (TB4)
5. Removing the room temperature thermistor (TH1) (1) Remove the panel. (Refer to step 3) (2) Pull out the room temperature thermistor from the drain pan. (3) Remove the 2 screws fixed to the control box cover, and remove the control box cover. (4) Remove the connector (CN20) from the indoor controller board, and disconnect the room temperature thermistor.	Photo 4  Control box Connectors Drain plug Screw Room temperature thermistor (TH1) Drain pan Screw Fan guard
6. Removing the drain pan (1) Remove the panel. (Refer to step 3) (2) Remove the room temperature thermistor and the 2 lead wires held with fastener; wireless controller board relay connector (9P red) and panel relay connector (10P white). (3) Remove the 4 screws fixed to the drain pan, and remove the drain pan. (4) Remove the fan guard. (Refer to step 2)	
7. Removing the pipe temperature thermistor/liquid (TH2) and condenser/evaporator temperature thermistor (TH5) (1) Remove the panel. (Refer to step 3) (2) Remove the drain pan. (Refer to step 6) (3) Disconnect the indoor coil thermistor from the holder. (4) Remove the 3 screws fixed to the piping cover, and remove the piping cover. (See Photo 9) (5) Remove the 2 screws fixed to the control box cover, and remove the control box cover. Pipe temperature thermistor/liquid (TH2) (6) Remove the connector (CN21) from the indoor controller board, and disconnect the pipe temperature thermistor/liquid. Condenser/evaporator temperature thermistor (TH5) (6) Remove the connector (CN29) from the indoor controller board, and disconnect the condenser/evaporator temperature thermistor.	Photo 5  Control box Pipe temperature thermistor/liquid (TH2) Condenser/evaporator temperature thermistor (TH5)

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
8. Removing the fan motor (MF) (1) Remove the panel. (Refer to step 3) (2) Remove the drain pan. (Refer to step 6) (3) Remove the nut and the washer from the turbo fan, and remove the turbo fan. (4) Remove the 2 screws fixed to the control box cover, and remove the control box cover. (5) Disconnect the connectors of the (fan 1) and the (fan 2) from the indoor controller board. (6) Remove the 3 screws fixed to the piping cover, and remove the piping cover. (See Photo 9) (7) Remove the 6 screws fixed to the flat plate, and remove the flat plate. (8) Disconnect the lead wires to the direction of the fan motor, and remove the 3 nuts of the fan motor.	Photo 6 
9. Removing the drain pump (DP) and drain sensor (DS) (1) Remove the panel. (Refer to step 3) (2) Remove the drain pan. (Refer to step 6) (3) Remove the 2 screws fixed to the control box cover, and remove the control box cover. (4) Remove the connectors of the (CNP) and the (CN31) from the indoor controller board. (5) Remove the 1 screw fixed to the cover, and remove the cover. (6) Disconnect the lead wires to the direction of the drain pump. (See Photo 7) (7) Remove the 3 screws of the drain pump. (8) Cut the drain hose band, pull out the drain hose from the drain pump. (9) Pull out the drain pump. (10) Remove the drain sensor and the holder.	Photo 7  Photo 8 

OPERATING PROCEDURE	PHOTOS & ILLUSTRATIONS
10. Removing the heat exchanger (1) Remove the panel. (Refer to step 3) (2) Remove the drain pan. (Refer to step 6) (3) Remove the nut and the washer from the turbo fan, and remove the turbo fan. (4) Remove the 2 screws fixed to the control box cover, and remove the control box cover. (5) Disconnect the connector of the (fan) from the indoor controller board. (6) Remove the 3 screws fixed to the piping cover, and remove the piping cover. (See Photo 9) (7) Remove the pipe temperature thermistor/liquid and condenser/evaporator temperature thermistor. (Refer to step 7) (8) Disconnect the lead wires to the direction of the fan motor. (9) Remove the 1 coil support screw, the 2 inside coil screws (See Photo 10), and the 4 outside coil screws (See Photo 9) from the heat exchanger, and remove the heat exchanger.	Photo 9  Photo 10 

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