MITSUBISHI ELECTRIC SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

CE

#### No.OC303 REVISED EDITION-A

## **TECHNICAL & SERVICE MANUAL**

## Series SEZ Ceiling Concealed R410A

Indoor unit [Model names]

SEZ-A12AR

SEZ-A18AR

SEZ-A24AR

[Service Ref.] SEZ-A12AR.TH SEZ-A18AR.TH SEZ-A24AR.TH Revision : • " 2. SPECIFICATIONS " has

been modified.

#### Note :

•This manual does not cover the following outdoor units. When servicing them, please refer to the service manual No.OC304 REVISED EDITION-A and this manual in a set.

Please void OC303.





WIRED REMOTE CONTROLLER

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Page	Revise point	Service Ref.	Incorrect	Correct
5	Electrical date	SEZ-A12AR.TH	33	48
5	Power input	SEZ-A18AR.TH	49	61
6	Rated frequency	SEZ-A24AR.TH	64	87

## **1** PART NAMES AND FUNCTIONS



#### Wired remote controller

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

#### Operation buttons



#### Display



#### Caution

- Only the Power display lights when the unit is stopped and power supplied to the unit.
- "NOT AVAILABLE" is displayed when the Air speed button are pressed. This indicates that this room unit is not equipped with the fan direction adjustment function and the louver function.
- When power is turned ON for the first time, it is normal that "H0" is displayed on the room temperature indication (For max. 2minutes). Please wait until this "H0" indication disappear then start the operation.

## SPECIFICATIONS

	Indoor model		SEZ-A1	2AR.TH	SEZ-A18AR.TH			
	Function		Cooling	Heating	Cooling	Heating		
	Power supply		Single	phase	Single phase			
			230V,	50Hz	230V, 50Hz			
Capacity	Air flow (High/Low)	m³ /h	780/	600	1020	1020/720		
	Power outlet	A	1	0	2	0		
<u>_</u>	Running current *1	A	0.2	21	0.2	27		
LIC	Power input Rated frequency	W	4	8	6	1		
ata	Auxiliary heater	A(kW)	_	_	_	_		
ĞΠ	Power factor *1	%	94	95	97	98		
	Fan motor current *1	А	0.2	21	0.27			
	Model		PK6V	19-EF	PK6V32-EF			
ق _	Winding	Ω	WHT-BLK : 251.4	BLK-BLU : 19.9	WHT-BLK : 161.9	BLK-BLU : 50.3		
Far	resistance (at20°C)		BLU-YLW : 26.5	YLW-BRN : 13.2	BLU-YLW : 18.7	YLW-BRN : 8.0		
			BRN-RED : 50.0		BRN-RED : 39.2			
	Dimensions W×H×D	mm	1100×2	70×700	1100×270×700			
	Weight	kg	33	.5	33.5			
	Air direction		1		1			
र इ	Sound level (High/Low)	dB(A)	35/	30	39/	/31		
ma	Fan speed (High/Low)	rpm	770/	630	840/	/640		
E E	Fan speed regulator		3	}	3	3		
cia	Thermistor RT11 (at 25℃)	kΩ	1	0	1	0		
Spe	Thermistor RT12 (at 25°C)	kΩ	1	0	1	0		
	Thermistor RT13 (at 25°C)	kΩ	1	0	1	0		
	Remote controller model	·	PAR-2	0MAA	PAR-20MAA			

NOTE : Test conditions are based on ISO 5151

Cooling : Indoor D.B. 27°C W.B. 19°C Outdoor D.B. 35°C W.B. 24°C Heating : Indoor D.B. 20°C W.B. 5°C Outdoor D.B. 7°C W.B. 6°C Refrigerant piping length (one way): 5m ∗1 Measured under rated operating frequency.

#### Specifications and rating conditions of main electric parts

#### **INDOOR UNIT**

Item	Model	SEZ-A12AR.TH SEZ-A18AR.TH SEZ-A24AR.TH				
Indoor fan capacitor	(C1)	SEZ-A12/18AR.TH : 2.5µF 440V SEZ-A24AR.TH : 3.0µF 440V				
Fuse	(FUSE)	250V 3.15A				
Varistor	(ZNR1)	ERZV10D471				
Terminal block (TB)		POWER SUPPLY : 3P TO OUTDOOR UNIT : 4P				
Contactor	(52C)	G4A-1A-E-PS 12V DC				
Indoor fan motor therma	al fuse	145°C ±2°C				

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	Indoor model		SEZ-A24AR.TH			
	Function		Cooling	Heating		
	Power supply		Single phase 230V, 50Hz			
Capacity	Air flow (High/Low)	1200	1200/720			
	Power outlet	А	20			
_	Running current *1	А	0.34			
irice	Power input Rated frequency	W	8	7		
ata	Auxiliary heater	A(kW)	_	_		
ĞШ	Power factor *1	%	98	98		
	Fan motor current *1	А	0.34			
	Model		PK6V50-EF			
Fan motor	Winding resistance (at20°C)	Ω	WHT-BLK : 101.1 BLU-YLW : 14.7 BRN-RE	BLK-BLU : 56.1 YLW-BRN : 6.7 D : 28.2		
	Dimensions W×H×D	mm	1100×270×700			
	Weight	kg	33	.5		
	Air direction		1			
Irks	Sound level(High/Low)	dB(A)	43/	32		
ma	Fan speed(High/Low)	rpm	890/	660		
a le	Fan speed regulator		3	6		
ecie	Thermistor RT11 (at 25℃)	kΩ	1	0		
Spe	Thermistor RT12 (at 25℃)	kΩ	1	0		
	Thermistor RT13 (at 25°C)	kΩ	10			
	Remote controller model		PAR-20MAA			

NOTE : Test conditions are based on ISO 5151

Cooling : Indoor D.B. 27°C W.B. 19°C Outdoor D.B. 35°C W.B. 24°C Heating : Indoor D.B. 20°C W.B. 15°C Outdoor D.B. 7°C W.B. 6°C Refrigerant piping length (one way): 5m \*1 Measured under rated operating frequency.

#### **NOISE CRITERION CURVES**



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

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Models	Refrigerent pipe (liquid)	Refrigerent pipe (gas)
SEZ-A12AR	Ø6.35mm flared connection 1/4F	ø9.52mm flared connection 3/8F
SEZ-A18AR	¢6.35mm flared connection 1/4F	<pre> φ12.7mm flared connection 1/2F </pre>
SEZ-A24AR	¢6.35mm flared connection 1/4F	<pre></pre>

Unit : mm



S	SYMBOL	NAME	SYMBOL	NAME
	I.B	INDOOR CONTROLLER	MF	FAN MOTOR
		BOARD	RT11	ROOM TEMPERATURE THERMISTOR
	C1	FAN MOTOR CAPACITOR	RT12	PIPE TEMPERATURE THERMISTOR / LIQUID
	FUSE	FUSE(3.15A)	RT13	CONDENSER / EVAPORATOR TEMPERATURE THERMISTOR
	X2,X4,X5	RELAY(FAN MOTOR)	ТВ	TERMINAL BLOCK
	ZNR1	VARISTOR	R.B	REMOTE CONTROLLER BOARD
	52C	COMPRESSOR CONTACTOR		

The 12V DC is NOT always against the ground. Terminal 3 has 12V DC against terminal N. However, between 3 and 2, these terminals are NOT electrically insulated by the transformer or other device.

#### NOTES:

- 1.Since the indoor fan motor(MF) is connected with 50Hz power,if 60Hz power is used, change the wiring connection showing fig: \*1 [fig: \*1] [fig: \*1] [50] YELLOW
- Indoor Fan Motor(MF) for 60Hz

- 2. About the outdoor side electric wiring refer to the outdoor unit electlic wiring diagram for servicing.
- 3.Use copper conductors only. (For field wiring)
- 4.Symbols below indicate.
  - ⊙: Terminal block □□□: Connector

How to remove the terminals shown at " \* " mark.

" \* " shows the terminals with a lock mechanism, so they cannot be removed when you pull the lead wire. Be sure to pull the wire by pushing the locking lever (projected part) of the terminal with a finger.



①Slide the sleeve.

<sup>(2)</sup>Pull the wire while pushing the locking lever.

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#### 6-1. Cautions on troubleshooting

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#### (1) Before troubleshooting, check the followings:

- Check the power supply voltage.
- <sup>®</sup> Check the indoor/outdoor connecting wire for mis-wiring.
- (2) Take care the followings during servicing.
  - ① Before servicing the air conditioner, be sure to first turn off the remote controller 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.







#### 6-2. Self-check function

#### Wired remote controller

- (1) Turn on the power.
- (2) Press the [CHECK] button twice.
- (3) Set refrigerant address with [TEMP] button if system control is used.
- (4) Press the [ON/OFF] button to stop the self-check.
  - CHECK button
  - B Refrigerant address
  - © TEMP button
  - DIC : Indoor unit
  - OC : Outdoor unit
  - Check code





#### • For description of each check code, refer to the following table.

① Check code	Symptom
5101	Room temperature thermistor error
5102	RT12, RT13, Outdoor thermistor error
2503	Drain sensor error
2502	Drain pump error
1503	Freezing safeguard operation
0405, 1501, 4210, 5102	Outdoor unit error
6831~6834	Signal error between remote controller and indoor units
6800	Communication error between indoor and outdoor units
	No alarm history
FFFF	No unit

• On wired remote controller

① Check code displayed in the LCD.

6-3. Trouble shooting(1) In case of being indicated irregularity on the self diagnoses

Check	Phenomenon	Cause	Countermeasure			
6800	Mis-wiring	Wiring between the indoor and outdoor is coming off.	Check the wiring out between the indoor and outdoor.			
		Difference of wiring polarity between the indoor and outdoor.				
	Indoor-outdoor signal error	Trouble of the outdoor inverter P.C. board.	Check the outdoor inverter P.C. board. Refer to th TECHNICAL & SERVICE MANUAL of outdoor un			
		Trouble of the Indoor controller board.	Exchange the Indoor controller board.			
5102	Pipe temperature thermistor / Liquid.	Mis-connecting of the pipe temperature thermistor / Liquid.	Reinsert the connector (CN21).			
		Trouble of the pipe temperature thermistor / Liquid.	Check the resistance value of the thermistor.			
		Trouble of the Indoor controller board.	Exchange the Indoor controller board.			
	Condenser / evaporator temperature thermistor	Mis-connecting of the condenser / evaporator temperature thermistor.	Reinsert the connector (CN29).			
		Trouble of the condenser / evaporator temperature thermistor.	Check the resistance value of the thermistor.			
		Trouble of the Indoor controller board.	Exchange the Indoor controller board.			
	Outdoor thermistor	Mis-connecting of the outdoor thermistor.	Reinsert the connector.			
		Trouble of the outdoor thermistor.	Check the resistance value of the thermistor.			
		Trouble of the outdoor inverter P.C. board.	Exchange the outdoor inverter P.C. board.			
5101	Room temperature thermistor	Mis-connecting of the room temperature thermistor.	Reinsert the connector (CN20).			
		Trouble of the room temperature thermistor.	Check the resistance value of the thermistor.			
		Trouble of the Indoor controller board.	Exchange the Indoor controller board.			
1503	Freezing protection is working.	<ol> <li>Short cycle of air cycle</li> <li>Dirty air filter</li> <li>Damaged fan</li> <li>Abnormal refrigerant</li> </ol>	<ol> <li>Clear obstructions from air cycle.</li> <li>Clean the air filter</li> <li>Check the fan</li> <li>Check the refrigerant temperature.</li> </ol>			
0405 1501 4210	Malfunction of outdoor unit	Malfunction of outdoor unit	Refer to the TECHNICAL & SERVICE MANUAL of outdoor unit.			

#### (2) Other case

Phenomenon	Cause	Countermeasure
Not working of remote controller switch ON/OFF	A connector attaching the panel to the body is not connected.	Connect it.
	Short circuit the protecting parts in the Indoor controller board.	Check the varistor (ZNR1) and fuse (FUSE) out in the Indoor controller board.
	Trouble of the Indoor controller board.	Check the Indoor controller board out.
	Wiring between the indoor and the wired remote controller is coming off.	Check the wiring between the Indoor and the wired remote controller.
	Trouble of the remote controller.	Exchange the remote controller.
Working the Indoor units and not working the outdoor	Wiring between the indoor and outdoor is coming off.	Check the wiring out between the indoor and outdoor.
units.	Difference of wiring polarity between the indoor and outdoor.	
	Trouble of the outdoor inverter P.C. board.	Check the outdoor inverter P.C. board.
	Trouble of the contactor (52C).	Exchange the contactor.
	Malfunction of outdoor unit.	Refer to the TECHNICAL & SERVICE MANUAL of outdoor unit.
Not rotating the fan in the indoor unit.	Fan motor connector is coming off.	Check the connector out.
	Trouble of the Indoor controller board.	Check the fan motor output of the Indoor controller board.
	Trouble of the fan motor.	Check the resistance value between the each tap of fan motor.
Horizontal vane doesn't work.	A connector attaching the panel to the body is not connected.	Connect it.
	Fixing of horizontal vane.	Check if the connector for vane motor is connected.





#### 6-4. Test point of indoor controller board

#### Indoor controller board



#### 6-5. Trouble criterion of main parts SEZ-A12AR.TH SEZ-A18AR.TH SEZ-A24AR.TH



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	PHOTOS
	FIIOTOS
<ul><li>6. Removing the drain pan</li><li>(1) Unscrew each set screw on the right and left, and remove the drain pan pushing it toward the the back. (See Photo 1.)</li></ul>	Photo 8
<ul> <li>7. Removing the heat exchanger <ul> <li>(1) Remove the drain pan.</li> <li>(2) Remove the Under flange at heat exchanger side.</li> <li>(16 screws)</li> <li>(See Photo 8.)</li> </ul> </li> <li>(3) Remove the 4 screws of heat exchanger.( 2 screws each on left and right) <ul> <li>(See Photo 9.)</li> <li>(4) Remove the thermistor (RT12) from the holder.</li> <li>(Refer to 2.)</li> <li>(5) Remove the thermistor (RT13) from the holder.</li> <li>(Refer to 3.)</li> <li>(6) Remove the service panel.( 3 screws ) <ul> <li>(See Photo 9.)</li> </ul> </li> </ul> </li> </ul>	
pull it toward you. (See Photo 9.)	Onder hange
	Photo 9.
	20

## PARTS LIST

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Part number that is circled is not shown in the illustration.

				Q'ty/set				Wiring	Recom-	Price	
No.	Parts No.	Parts name	Specification	SEZ-			Remarks	Diagram	mended	11	A
				A12AR.TH	A18AR.TH	A24AR.TH	(Drawing No.)	Symbol	Q'ty	Unit	Amount
1	E07 039 086	LEFT SIDE PANEL		1	1	1					
2	E07 039 500	SIROCCO FAN		2	2	2					
3	E02 179 505	FAN MOTOR RUBBER MOUNT		2	2	2	<2PCS/SET>				
	E07 039 300	FAN MOTOR	PK6V19-EF	1				MF			
4	E07 040 300	FAN MOTOR	PK6V32-EF		1			MF			
	E07 041 300	FAN MOTOR	PK6V50-EF			1		MF			
5	E07 143 308	ROOM TEMPERATURE THERMISTOR		1	1	1		RT11			
6	E07 039 000	FRONT PANEL		1	1	1					
7	E07 039 700	DRAIN PAN		1	1	1					
8	E07 143 309	CONDENSER / EVAPORATOR TEMPERATURE THERMISTOR		1	1	1		RT13			
9	E07 136 307	PIPE TEMPERATURE THERMISTOR / LIQUID		1	1	1		RT12			
	E07 143 620	INDOOR HEAT EXCHANGER		1							
10	E07 144 620	INDOOR HEAT EXCHANGER			1						
	E07 145 620	INDOOR HEAT EXCHANGER				1					
11	E07 143 085	RIGHT SIDE PANEL		1	1	1					
12	E07 143 293	SEPARATOR ASSY		1	1	1					
13	E07 039 809	LEFT LEG		2	2	2					
14	E07 039 290	BASE		1	1	1					
15	E07 039 808	RIGHT LEG		2	2	2					



Part numbers that is circled is not shown in the illustration.

						Q'ty/set				Wiring	Recom-	Pr	ice
No.	Pa	arts N	о.	Parts name	Specification		SEZ-		Remarks	Diagram	mended Q'ty	110:4	Amount
						A12AR.TH	A18AR.TH	A24AR.TH	(Drawing No.)	Symbol		Unit	Amount
	E07	143	447	INDOOR CONTROLLER BOARD		1				I.B			
1	E07	144	447	INDOOR CONTROLLER BOARD			1			I.B			
	E07	145	447	INDOOR CONTROLLER BOARD				1		I.B			
2	E07	1 <b>40</b>	340	COMPRESSOR CONTACTOR		1	1	1		52C			
3	E02	127	382	FUSE	250/3.15A	1	1	1		FUSE			
4	E02	661	385	VARISTOR		1	1	1		ZNR1			
5	E02	257	375	TERMINAL BLOCK	4P	1	1	1		ТВ			
6	E02	367	377	TERMINAL BLOCK	3P	1	1	1		ТВ			
7	E02	007	375	TERMINAL BLOCK	2P	1	1	1		тв			
8	E07	136	426	REMOTE CONTROLLER		1	1	1		R.B			
9	E07	018	089	REMOTE CONTROLLER CABLE		1	1	1					
10	E07	039	449	CONTROLLER COVER		1	1	1					

#### 9-1. REFRIGERANT PIPES

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The air conditioner has flared connections its indoor and outdoor sides. Please use the optional extension pipe as follows.

Applied unit	Models	Pipe length	Pipe size O.D.mm (in.)					Additional refrigerant
			Cross-section	A-Gas	B-liquid	Insulation		charge
						С	D	R410A (g)
SEZ-A12AR.TH	MAC-680PI	3m		Ø9.52 (3∕8)	¢6.35 (1/4)	¢27	¢21	
	MAC-681PI	5m						0
	MAC-682PI	7m						60
	MAC-683PI	10m						150
	MAC-684PI	15m						300
SEZ-A18AR.TH	MAC-670PI	3m		¢12.7 (1/2)		ø31	¢27	0
	MAC-671PI	5m						Ŭ
	MAC-672PI	7m						40
	MAC-673PI	10m						100
	MAC-674PI	15m						200
SEZ-A24AR.TH	MAC-860PI	3m		¢15.88 (5/8)				0
	MAC-861PI	5m						0
	MAC-862PI	7m						40
	MAC-863PI	10m						100
	MAC-864PI	15m						200

#### 9-2. AIR FILTER

Applied unit	Models				
SEZ-A12AR.TH SEZ-A18AR.TH SEZ-A24AR.TH	PAC - 1000 FT				

# Mr.SUM™



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New publication, effective Sep. 2004. Specifications subject to change without notice.