

# MHI

**TECHNICAL MANUAL  
& PARTS LIST**

**DRAFT**

## **INVERTER WALL MOUNTED TYPE ROOM AIR-CONDITIONER (Split system, air to air heat pump type)**

**SRK20ZD-S**

**INDOOR UNIT**

Model SRK20ZD-S



**OUTDOOR UNIT**

Model SRC20ZD-S



**REMOTE CONTROLLER**



# 1 GENERAL INFORMATION

## 1.1 Specific features

The “Mitsubishi Daiya” room air-conditioner: SRK series are of split and wall mounted type and the unit consists of indoor unit and outdoor unit with refrigerant precharged in factory. The indoor unit is composed of room air cooling or heating equipment with operation control switch and the outdoor unit is composed of condensing unit with compressor.

### (1) Inverter (Frequency converter) for multi-steps power control

- Heating/Cooling

The rotational speed of a compressor is changed in step in relation to varying load, interlocked with the indoor and outdoor unit fans controlled to change frequency, thus controlling the capacity.

- Allowing quick heating/cooling operation during start-up period. Constant room temperature by fine-tuned control after the unit has stabilized.

### (2) Fuzzy control

- Fuzzy control calculates the amount of variation in the difference between the return air temperature and the setting temperature in compliance with the fuzzy rules in order to control the air capacity and the inverter frequency.

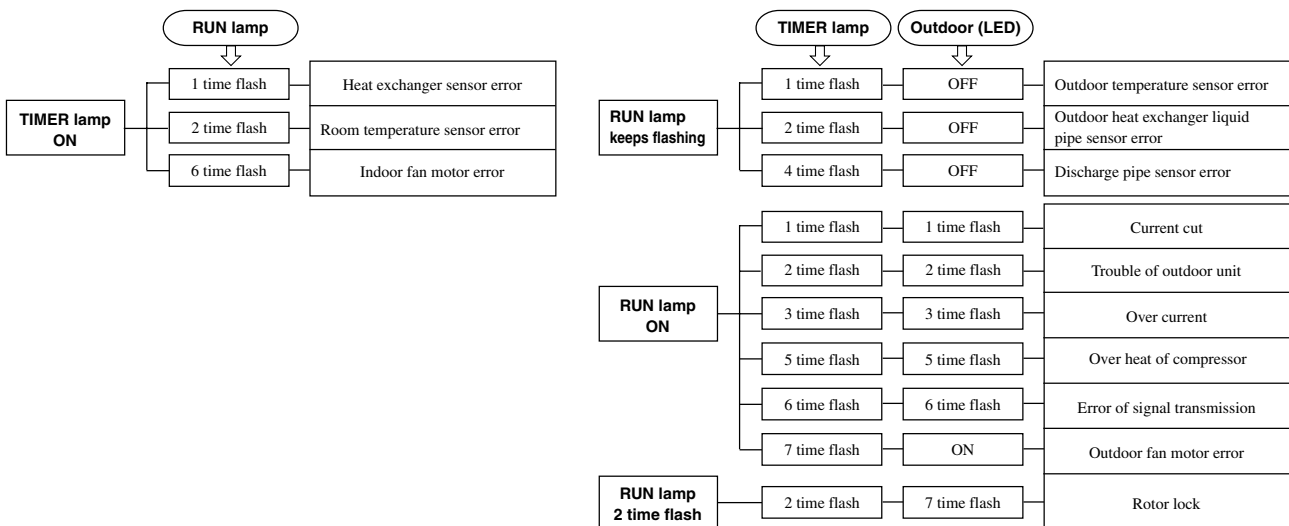
### (3) Remote control flap

The flap can be automatically controlled by operating wireless remote control.

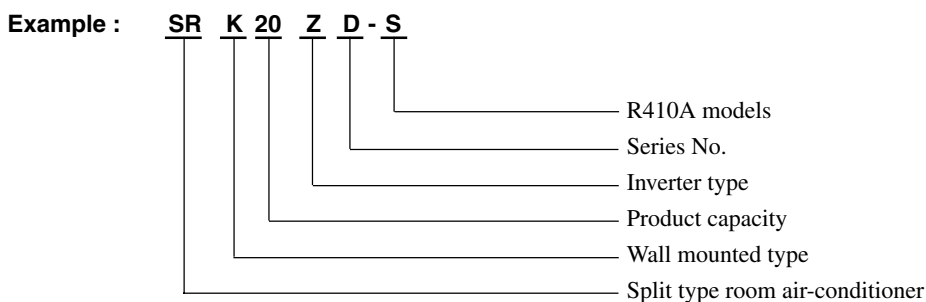
- Air scroll (AUTO): Flap operation is automatically control.
- Swing: This will swing the flap up and down.
- Memory flap: Once the flap position is set, the unit memorizes the position and continues to operate at the same position from the next time.

### (4) Self diagnosis function

- We are constantly trying to do better service to our customers by installing such judges that show abnormality of operation as follows.



## 1.2 How to read the model name



## 2 SELECTION DATA

### 2.1 Specifications

Model SRK20ZD-S (Indoor unit)  
SRC20ZD-S (Outdoor unit)

Item		Model	SRK20ZD-S	SRC20ZD-S	
Cooling capacity <sup>(1)</sup>		W	2000 (0.5-2.9)		
Heating capacity <sup>(1)</sup>		W	2700 (0.5-4.7)		
Power source			1 Phase, 220-240V, 50Hz		
Operation data <sup>(2)</sup>	Cooling input	kW	0.44		
	Running current (Cooling)	A	2.4/2.3/2.2		
	Heating input	kW	0.62		
	Running current (Heating)	A	3.0/2.9/2.8		
	Inrush current	A	3.0/2.9/2.8		
	COP			Cooling: 4.55 Heating: 4.35	
	Noise level	Cooling	Sound level	Hi 36, Me 29, Lo 21	44
Power level			52	58	
Heating		Sound level	Hi 38, Me 32, Lo 25	47	
		Power level	54	61	
Exterior dimensions Height × Width × Depth		mm	250 × 815 × 249	540 × 720 × 290	
Color			Cool white	Stucco white	
Net weight		kg	9.0	32	
Refrigerant equipment Compressor type & Q'ty			-	RM-B5077MD1 (Rotary type) × 1	
Motor		kW	-	0.75	
Starting method			-	Line starting	
Heat exchanger			Louver fins & inner grooved tubing	Straight fins & inner grooved tubing	
Refrigerant control			Capillary tubes + Electronic expansion valve		
Refrigerant <sup>(3)</sup>		kg	R410A 0.9 (Pre-Charged up to the piping length of 15m)		
Refrigerant oil		ℓ	0.35 (MA68)		
Deice control			Microcomputer control		
Air handling equipment Fan type & Q'ty			Tangential fan × 1	Propeller fan × 1	
Motor		W	29	24	
Air flow (at High)	(Cooling)	CMM	7.0	30	
	(Heating)		8.5	25	
Air filter, Q'ty			Polypropylene net (washable) × 2	-	
Shock & vibration absorber			-	Cushion rubber (for compressor)	
Electric heater			-	-	
Operation control Operation switch			Wireless-Remote controller	-	
Room temperature control			Microcomputer thermostat	-	
Pilot lamp			RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)		
Safety equipment			Compressor overheat protection, Heating overload protection (High pressure control), Overcurrent protection, Frost protection, Serial signal error protection, Indoor fan motor error protection, Cooling overload protection		
Refrigerant piping	O.D	mm (in)	Liquid line: φ6.35 (1/4") Gas line: φ9.52 (3/8")		
	Connecting method		Flare connecting		
	Attached length of piping		Liquid line: 0.47 m	-	
	Insulation		Gas line : 0.40 m	Necessary (Both sides)	
Drain hose			Connectable		
Power source cord			2.5 m (3 cores with Earth)		
Connection wiring	Size × Core number		1.5 mm <sup>2</sup> × 4 cores (Including earth cable)		
	Connecting method		Terminal block (Screw fixing type)		
Accessories (included)			Mounting kit		
Optional parts			-		

Notes (1) The data are measured at the following conditions.

Operation	Item	Indoor air temperature		Outdoor air temperature		Standards
		DB	WB	DB	WB	
Cooling		27°C	19°C	35°C	24°C	ISO-T1, JIS C9612
Heating		20°C	-	7°C	6°C	ISO-T1, JIS C9612

The piping length is 7.5m.

- (2) The operation data are applied to the 220/230/240V districts respectively.  
(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.  
(Purging is not required even for the short piping.)

## 2.2 Range of usage & limitations

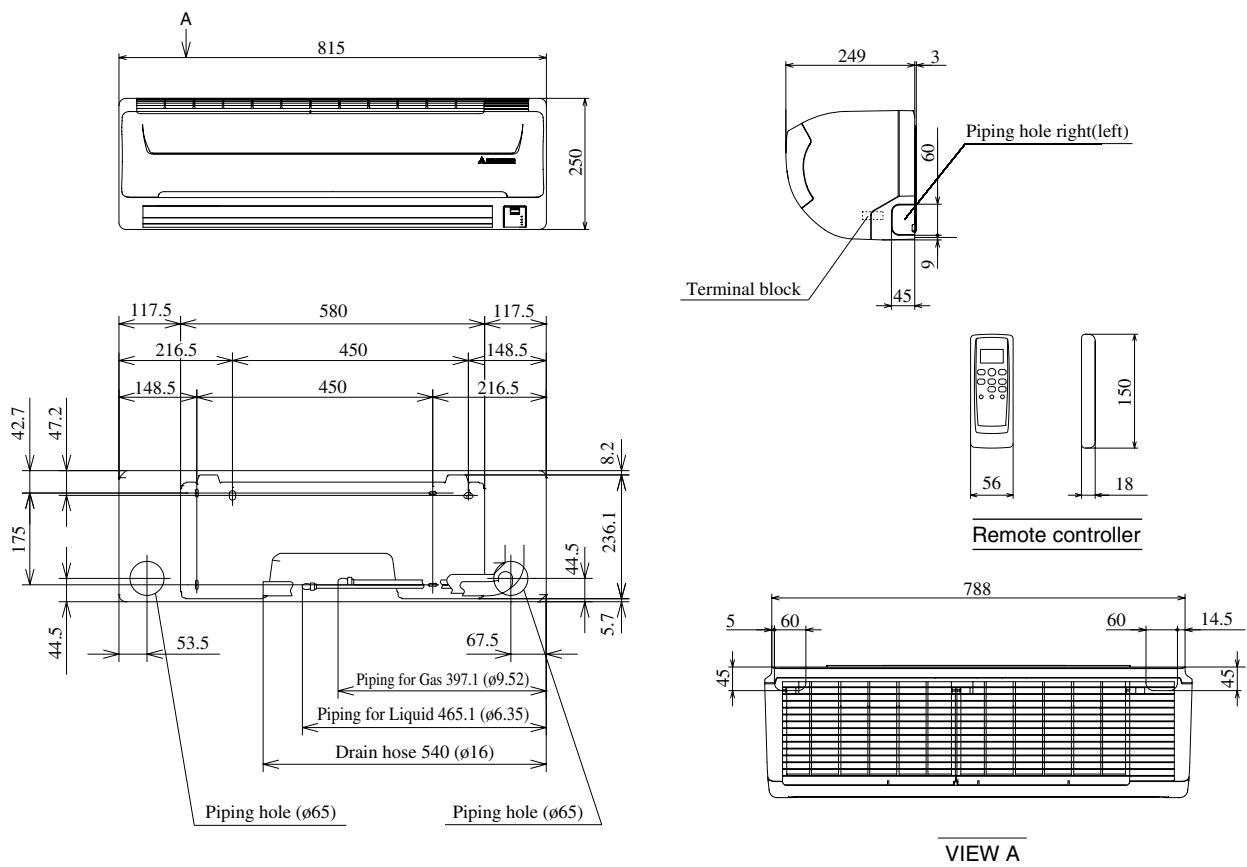
Item	Model	SRK20ZD-S
Indoor return air temperature (Upper, lower limits)		Refer to the selection chart
Outdoor air temperature (Upper, lower limits)		
Refrigerant line (one way) length		Max. 15m
Vertical height difference between outdoor unit and indoor unit		Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)
Power source voltage		Rating $\pm$ 10%
Voltage at starting		Min. 85% of rating
Frequency of ON-OFF cycle		Max. 10 times/h
ON and OFF interval		Max. 3 minutes

## 2.3 Exterior dimensions

### (1) Indoor unit

Model SRK20ZD-S

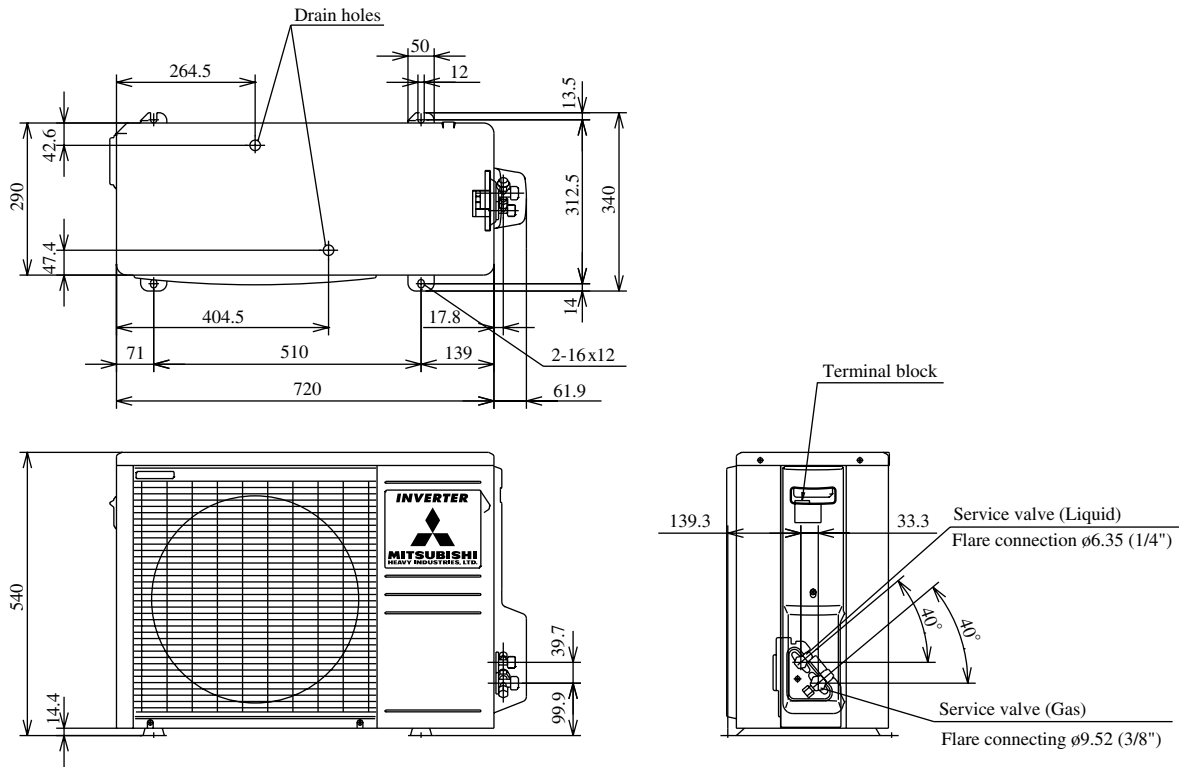
Unit: mm



**(2) Outdoor unit**

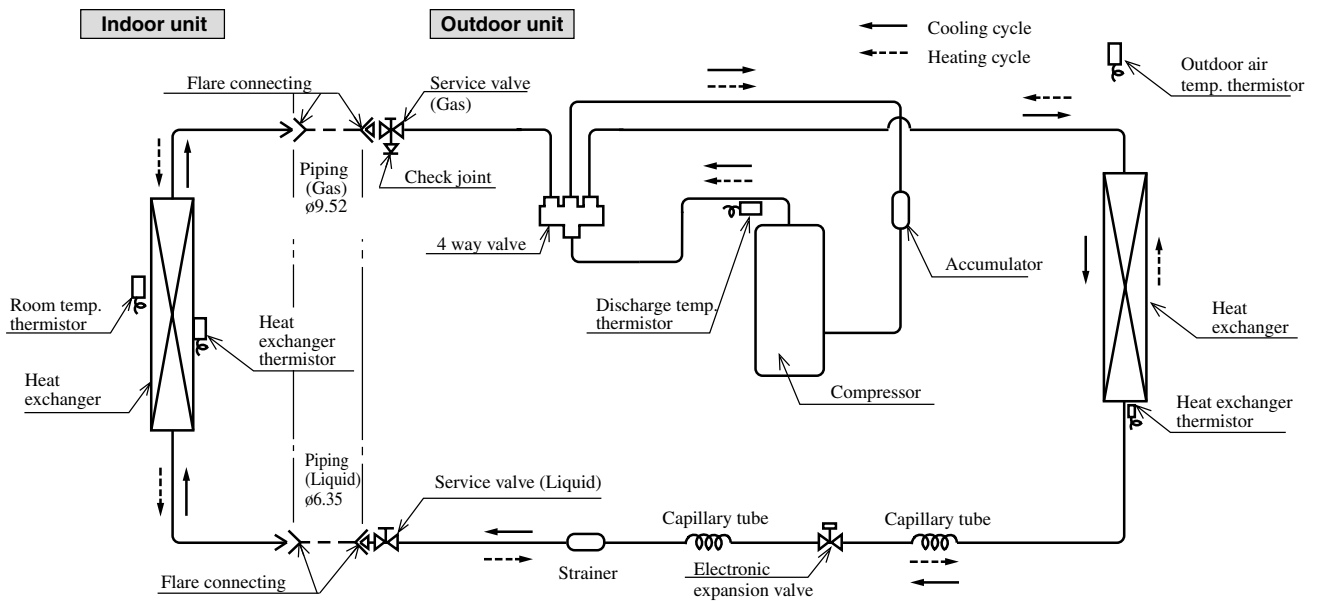
**Model SRC20ZD-S**

Unit: mm



**2.4 Piping system**

**Model SRK20ZD-S**

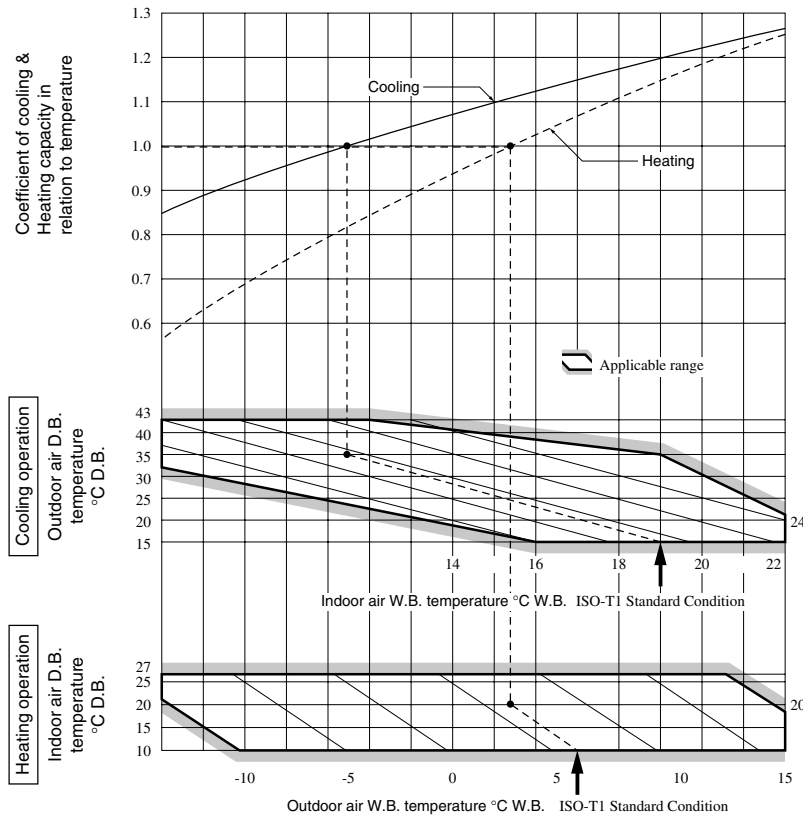


## 2.5 Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

**Net capacity = Capacity shown on specification × Correction factors as follows.**

### (1) Coefficient of cooling and heating capacity in relation to temperatures



### (2) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15
Cooling	1.0	0.99	0.975
Heating	1.0	1.0	1.0

### (3) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (1), (2) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in °CWB	-10	-9	-7	-5	-3	-1	1	3	5
Adjustment coefficient	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

### How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK20ZD-S with the piping length of 15m, indoor wet-bulb temperature at 19.0°C and outdoor dry-bulb temperature 35°C is Net cooling capacity =

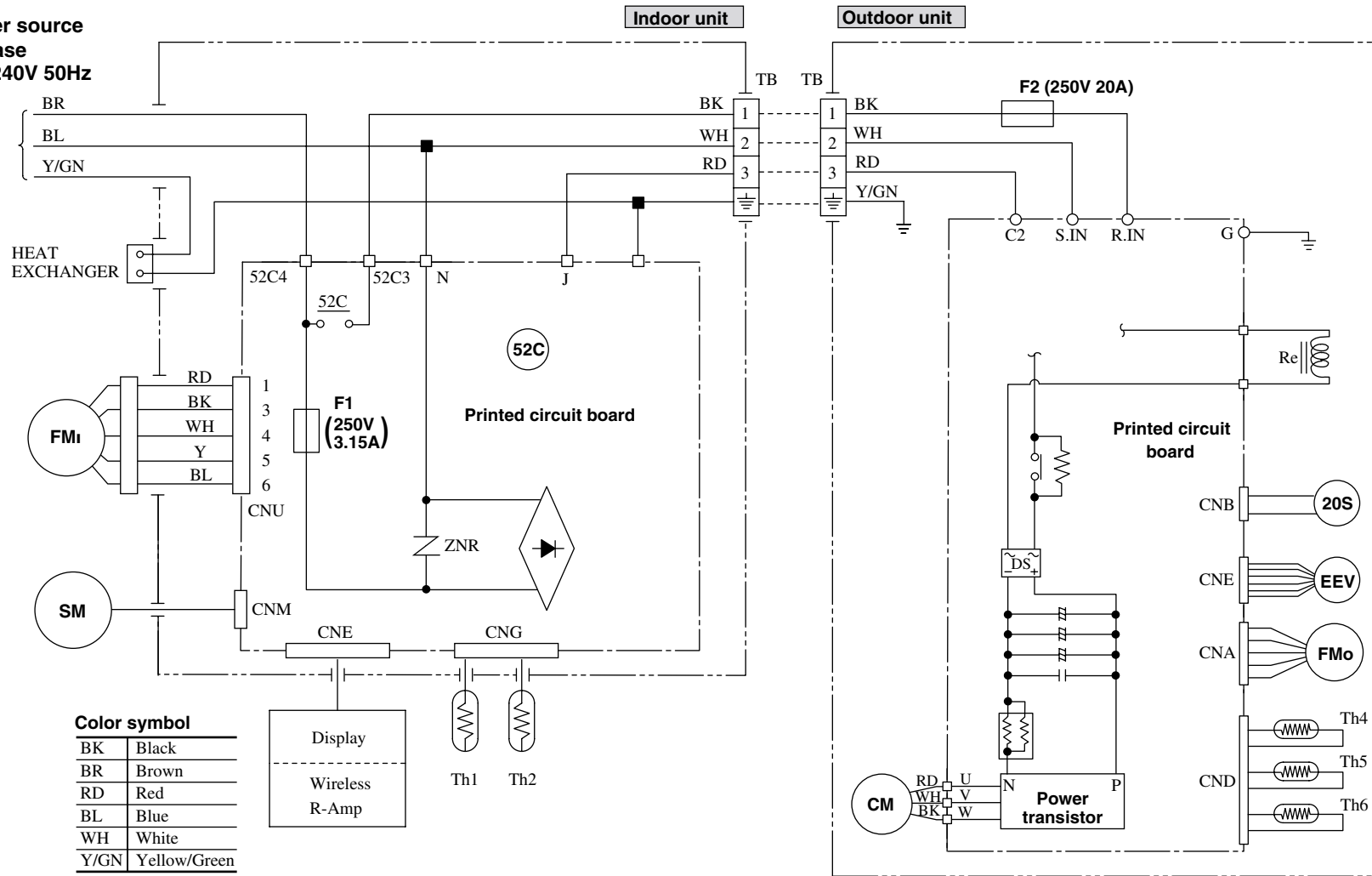
$$\begin{array}{ccccccc}
 \frac{2000}{\uparrow} & \times & \frac{0.975}{\uparrow} & \times & \frac{1.0}{\uparrow} & = & 1950 \text{ W} \\
 \text{SRK20ZD-S} & & \text{Length 15m} & & \text{Factor by air} & & \\
 & & & & \text{temperatures} & & 
 \end{array}$$

# 3 ELECTRICAL DATA

## 3.1 Electrical wiring

Model SRK20ZD-S

Power source  
1 Phase  
220-240V 50Hz



### Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CM	Compressor motor	Th1	Room temp. thermistor	20S	4 way valve (coil)
F	Fuse	Th2	Heat exchanger thermistor (Indoor unit)	52C	Magnetic contactor
FMi	Fan motor (Indoor)	Th4	Heat exchanger thermistor (Outdoor unit)	DS	Diode stack
FMo	Fan motor (Outdoor)	Th5	Outdoor air temp. thermistor	EEV	Electronic expansion valve
SM	Flap motor	Th6	Discharge temp. thermistor		
RE	Reactor	ZNR	Varistor		



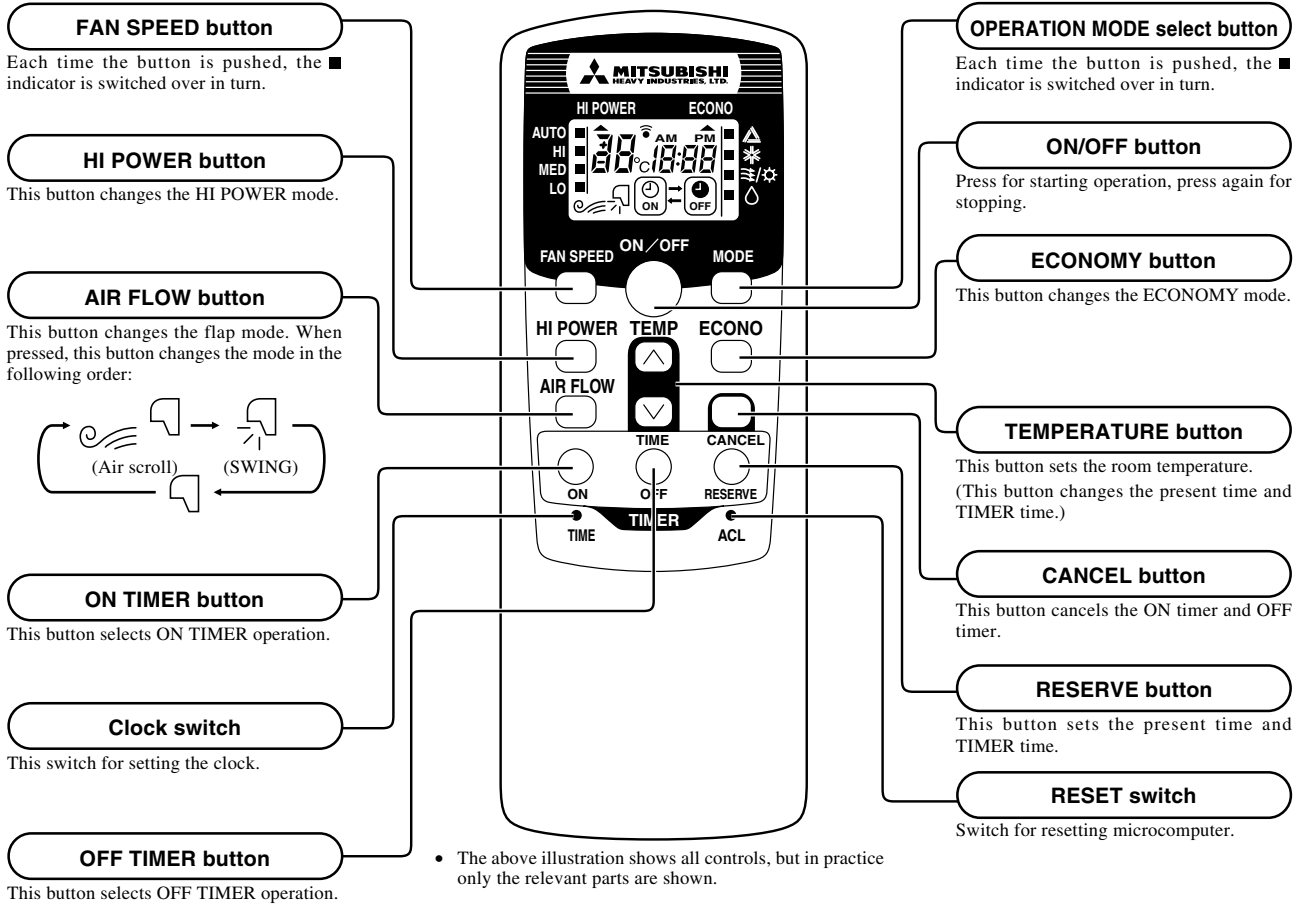
# 4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

## 4.1 Operation control function by remote control switch

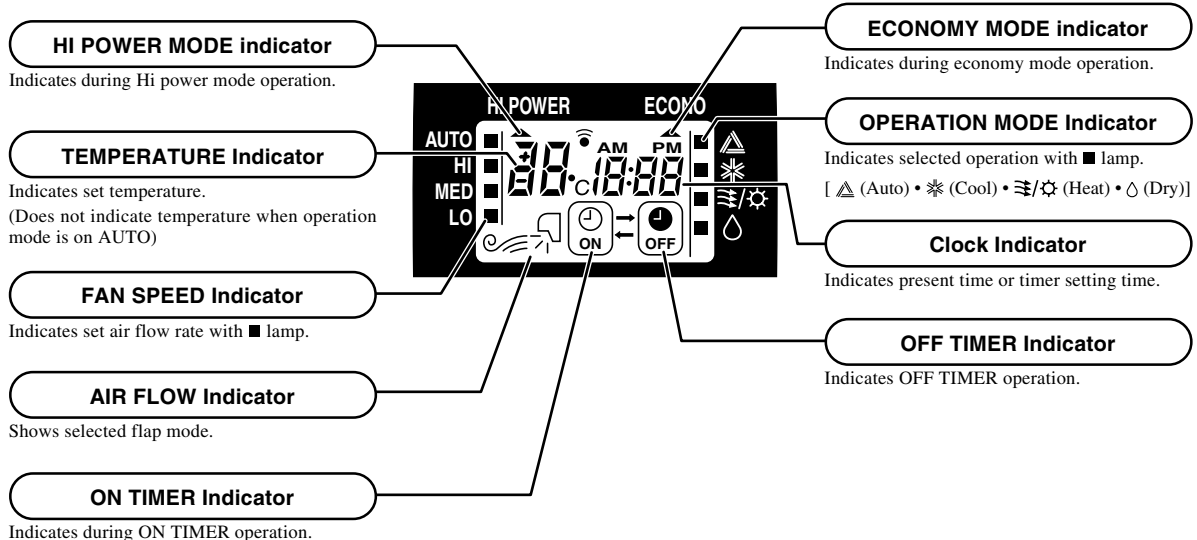
### Remote controller

Models All models

#### ◆ Operation section

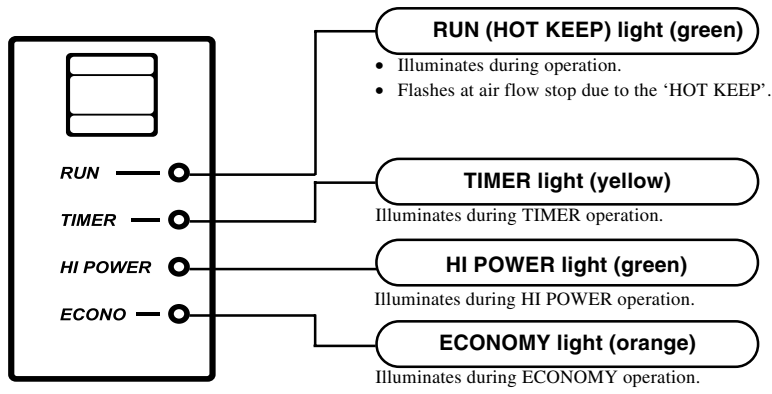


#### ◆ Indication section



**Unit indication section**

**Models All models**



# 5 INSTALLATION

R410A refrigerant is used for this air-conditioner. Execute the installation work while taking care of the following points in addition to the general caution items.

## 5.1 Installation tools

Prepare the following special tools for R410A in addition to the general-purpose tools.

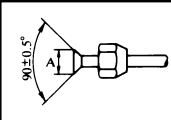
- Flare tool
- Vacuum pump adaptor
- Gauge manifold
- Leak detector
- Charge hose

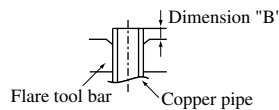
## 5.2 Refrigerant piping

- Use the copper pipe that has less than 40 mg/10 m of oil adhesion and 0.8 mm of wall thickness. Never use the thin walled pipe the thickness of which is less than 0.8 mm.
- Use the flare nut attached to the air-conditioner.

## 5.3 Pipe connection

### (1) Pipe working

	Copper pipe dia.		Dimension "A" (mm)
	Liquid side	ø6.35	9.1
	Gas side	ø9.52	13.2
		ø12.7	16.6



Copper pipe dia.	Dimension "B" (mm)
	Clutch type flare tool for R410A
ø6.35	0.0 ~ 0.5
ø9.52	0.0 ~ 0.5
ø12.7	0.0 ~ 0.5

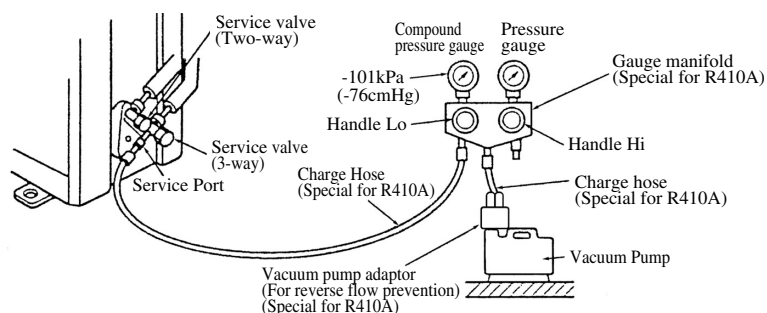
### (2) Tightening torque

- The tightening torque is shown below.

Copper pipe dia.		Across flats of flare nut (mm)	Tightening torque N·m (kgf·m)
Liquid side	ø6.35	17	14 ~ 18 (1.4 ~ 1.8)
Gas side	ø9.52	22	33 ~ 42 (3.3 ~ 4.2)
	ø12.7	24	50 ~ 62 (5.0 ~ 6.2)

### (3) Vacuuming

- The charge hose for R22 cannot be connected because the service port diameter is different from the conventional one. Use the special charge hose for R410A.
- Use the vacuum pump adaptor for reverse flow prevention to check the reverse flow of vacuum pump oil. If oil flows back to the air-conditioner, it causes failure of refrigerant cycle.



## PARTS LIST (Main parts)

### (1) Indoor unit

No.	Parts Name	Parts No.
		<b>SRK20ZD-S</b>
1	PANEL ASSY, FRONT	RKV102A600
2	PANEL, FRONT	RKV122A001G
3	PANEL, AIR INLET	RKV435A100B
4	GRILLE ASSY, AIR OUTLET	RKV435A101B
5	MOTOR, DC	SSA512T064
6	IMPELLER	SSA431G042C
7	HEAT EXCH ASSY (AIR)	RKV301A500G
8	PWB ASSY	RKV505A001CG
9	CONTROL ASSY, REMOTE	RMA502A001

## PARTS LIST (Main parts)

### (2) Outdoor unit

No.	Parts Name	Parts No.
		<b>SRC20ZD-S</b>
1	PANEL, FRONT	RCP122A001
2	PANEL, SIDE (R)	RCP123A001
3	PANEL, TOP	RCP124A001
4	GRILLE , AIR OUTLET	RCP435A001A
5	BRACKET, MOTOR	RCP116A001
6	MOTOR, DC	SSA512T038D
7	PROPELLER	SSA431B212
8	BASE ASSY	RCP111A001
9	HEAT EXCH (AIR)	RCP311A001G
10	VALVE, S (4WAY)	SSA382C077
11	COIL, SOLENOID	RSA382F010B
12	COMPRESSOR ASSY	AHT201A864D
13	PWB ASSY	RCP505A101F
14	VALVE, BODY (EXP)	SSA387F031
15	COIL, SOLENOID	SSA382F210A

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**INVERTER WALL MOUNTED TYPE  
ROOM AIR-CONDITIONER**

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