



CEILING CONCEALED DUCT R410A 3D INVERTER CONTROL

TECHNICAL MANUAL





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Specifications

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1. Model Reference

Refer to the following table to determine the specific indoor and outdoor unit model number of your purchased equipment.

Indoor Unit Model	Outdoor Unit Model	Capacity (Btu/h)	Power Supply
42QSM018VSG	38QSM018VSG	18K	4
42QSM024VSP	38QSM024VSP	24K	TΨ, 220-240V~, 50Hz
42QSM036VSP	38QSM036VSP	36K	
42QSM048V	38QSM048V	48K	3 Φ , 380-415V~,
42QSM060V	38QSM060V	60K	50Hz

2. General Specifications

UnitaryUser <t< th=""></t<>
INVERTINGEVEMINVEMIN220-240,15060220-240,15080220-240,15080Revertupply(obdor)VEMIN220-240,15060220-240,15080220-240,15080Max. LameitVE220-240,15060270044800Max. LameitVE21070074800Max. LameitA111514.12.1VEMINVEMIN2207007-10-1010Max. LameitA770Max. LameitA770Max. LameitA111Max. LameitA111Max. LameitA888Max. LameitA888Max. LameitA111Max. LameitA888Max. LameitA898Max. LameitA111Max. LameitA899Max. LameitA830Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. LameitA111Max. Lameit <td< td=""></td<>
IntervalVPH-NUQ202-04,15060Q20-74,15060Q20-24,15060Max. Put currerMQ310M300A600Common VersionAC115A141Q11String currerAA/QQModelA/CQQModelGC207N-160-81-2Z207N-160-81-2Z207N-160-81-2Indoor fam toolModelGC207N-160-81-2Z207N-160-81-2Indoor fam toolModelGCGIndoor fam toolMSGGGardoor fam toolMGGGGardoor fam toolMGGGGardoor fam toolMGGGGardoor fam toolGGGGGardoor fam toolGGGG
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Indeor coll C.Fin spacing mm 1.4 1.4 1.5 Indoor coll d.Fin type (code) Mydrophilic aluminum Hydrophilic aluminum Hydrophilic aluminum Hydrophilic aluminum e.Tube outside dia and type mm $\Phi7$,Inner groove tube $\Phi7$,Inner groove tube $\Phi7$,Inner groove tube $\Phi7$,Inner groove tube f.Coil length x height x width mm $695x252x33.48$ $915x294x40.11$ $1030x378x33.48$ g.Number of circuits M 6 7 8 moder Index Tibow (H/MiLo) M3/h $970805/630$ $1365/1101/880$ $2250/180/1360$ B.Tom Manage Pa 25 25 37 f.Bom Pa 0.100 0.160 0.160 Indoor rule Flevel (H/MLo) dB(A) $43/39/34$ $40/38/35.5$ $48.5/45.5/42.5$ Indoor rule Flevel (H/MLo) MB(A) $43/39/34$ $40/38/35.5$ $48.5/45.5/42.5$ Indoor rule Packing (W*D*H) mm $1070x725x270$ $1305x805x305$ $1405x915x355$
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Indoor air flow (H/M/Lo) m3/h 970/805/630 1365/1101/880 2250/1880/1360 ESP Rated Pa 25 37 Range Pa 0.100 0.160 0.160 Indoor noise level (Hi/M/Lo) dB(A) 43/39/34 40/38/35.5 48.5/45.5/42.5 Indoor unit Dimension(W*D*H) mm 880x674x210 1100x774x249 1200x874x300 Indoor unit Packing (W*D*H) mm 1070x725x270 1305x805x305 1405x915x355 Net/Gross weight Kg 25.8/31 32.6/39.9 44.5/52.7 Drainge water pipe dia mm OD425mm OD425mm OD425mm Qtyper 20' /40' /40'HQ Indoor 120/264/297 77/161/184 62/130/149 Indoor Model
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Capacity W 4175 7135 8610 Input W 1085 1970 2660 Bated current(RLA) A 7.6 9 9.5
Input W 1085 1970 2660 Bated current(RLA) A 7.6 9 9.5
Rated current(RLA) A 7.6 9 9.5
Compressor
Locked rotor Amp(LRA) A // // /
Thermal protector / / / /
Thermal protector position NA NA NA
Capacitor µF / / /
Refrigerant oil/oil charge ml VG75 / 440 RB75EA /670 RMM68EA or ACS-68R or equiva- lent/1050
Model ZKFN-80-8-3 ZKFN-120-8-2 ZKFN-120-8-2
Qty 1 1 1
Insulation class E B B
Outdoor fan motor IP rating IPX4 IPX4 IPX4
Input W 88 150.0 150.0
Capacitor uF / / /
Speed r/min 800/700/550 810/700/450 950/850/750

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	a.Number of rows		2.6	2.6	3	
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37	
	c.Fin spacing	mm	1.3	1.4	1.4	
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum	
Outdoor coil	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube	
	f.Coil length x height x width	mm	910*40.11*609	1005x756x26.74+598x756x13.37	1000x756x13.37+980x756x13.37+	
					965x/56x13.3/	
	g.Number of circuits		6	6	6	
Outdoor air flow		m3/h	2500	3800	5000	
Ou	tdoor noise level	dB(A)	58.5	58	62.5	
	Throttle type	/	Throttle valve	Throttle valve	Throttle valve	
	Dimension(W*D*H)	mm	890x342x673	946x410x810	946x410x810	
Outdoor unit	Packing (W*D*H)	mm	995x435x750	1090x500x885	1090x500x885	
	Net/Gross weight	Kg	41.0/44.3	58.6/63.2	66.0/70.9	
R	efrigerant type	Kg	Kg R410A/1.6 R410A/2.2		R410A/3.2	
C	esign pressure	MPa	4.8/1.5	4.8/1.5	4.8/1.5	
	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ12.7(1/4"/1/2")	Φ9.52/Φ15.9(3/8"/5/8")	Φ9.52/Φ19(3/8"/3/4")	
Refrigerant piping	Max. refrigerant pipe length	m	25	55	30	
	Max. difference in level	m	15	45	20	
Т	hermostat type		Wired Control	Wired Control	Wired Control	
Oper	ation temperature	C	17~30	17~30	17~30	
	Indoor(cooling/ heating)	Ċ	17~32/0~30	17~32/0~30	17~32/0~30	
Koom temperature	Outdoor(cooling/heating)	C	0~52/-15~24	0~52/-15~24	0~52/-15~24	
Qtyʻp	er 20' /40' /40'HQ	Outdoor unit	93/189/189	44/96/138	44/96/138	

Notes:

1) Capacities are based on the following conditions:

- Cooling(T1): Indoor Temperature 27°C(80.6°F) DB /19 °C(66.2°F) WB
 - Outdoor Temperature 35 °C(95°F) DB /24 °C(75.2°F) WB
 - Interconnecting Piping Length 5m
 - Level Difference of Zero.
- Cooling(T3): Indoor Temperature 29°C(84.2°F) DB /19 °C(66.2°F) WB
 - Outdoor Temperature 46 $^{\circ}\text{C}(114.8^{\circ}\text{F})$ DB /24 $^{\circ}\text{C}(75.2^{\circ}\text{F})$ WB
 - Interconnecting Piping Length 5m
 - Level Difference of Zero.

2) Capacities are Net Capacities.

3) Due to our policy of innovation some specifications may be changed without notification.

4) For max. refrigerant pipe length 55m and max. difference in level 45m is based on below installation

condition: outdoor unit is on upper side, indoor unit is in bottom side, one oil trap per 10m.

- Heating: Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
 - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
 - Interconnecting Piping Length 5 m
 - Level Difference of Zero.

	Indoor model		420 SM048V	420 SM050V
	Outdoor model		3202M048V	
Power	supply(Indoor)	V- Ph-Hz	220 240 1 50/60	220 240 1 50/60
Power	supply (Autdoor)	V Ph Uz	220-240,1,50/00	220-240,1,0000
rowers		V= F11=112	380-415,3,50/60	380-415,3,50/60
Max. in		VV	6200	7000
N	lax. current	A	11.0	12.5
Sta	rting current	A	/	/
	Model		ZKFN-560-8-1-1	ZKFN-560-8-1-1
	Qty		1	1
Indoor fan motor	Input	W	560.0	560.0
	Capacitor	u⊦	/	/
	Speed(Hi/Mi/Lo)	r/min	1020/920/840	970/890/800
	a.Number of rows		4.0	4.0
	b.Tube pitch(a)x row pitch(b)	mm	25.4x22	25.4x22
	c.Fin spacing	mm	1.5	1.5
Indoor coil	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ 9.52,Inner groove tube	Φ9.52,Inner groove tube
	f.Coil length x height x width	mm	1055x356x88	1195x457x88
	g.Number of circuits		7	9
Indoor	air flow (Hi/Mi/Lo)	m3/h	3000/2400/1950	3100/2950/2500
FSP	Rated	Pa	50	50
231	Range	Pa	0-200	0-200
Indoor no	oise level (Hi/Mi/Lo)	dB(A)	50/47/45	52/49/46
Throttle type		/	/	/
	Dimension(W*D*H)	mm	1200x625x380	1400x858x440
Indoor unit	Packing (W*D*H)	mm	1485x675x450	1605x910x505
	Net/Gross weight	Kg	55.9/63.7	72.7/84.3
Drainag	ge water pipe dia	mm	ODΦ25mm	ODΦ25mm
Qty'pe	r 20' /40' /40'HQ	Indoor unit	59/124/125	35/72/86
	Model		ATQ420D1TMU	ATQ420D1TMU
	Туре		ROTARY	ROTARY
	Brand		GMCC	GMCC
	Capacity	W	12960	12960
	Input	W	3485	3485
Compressor	Rated current(RLA)	А	7	7
	Locked rotor Amp(LRA)	А	/	/
	Thermal protector		/	/
	Thermal protector position		NA	NA
	Capacitor	μF	0.0	0.0
	Refrigerant oil/oil charge	ml	VG74/1400	VG74/1400
	Model		ZKFN-85-8-22-2	ZKFN-85-8-22-2
	Qty		2	2
Outdoor fan motor	Input	W	126.0	126.0
	Capacitor	uF	/	/
	Speed	r/min	850/750/650	850/750/650
	a.Number of rows		2.6	3.0
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	c.Fin spacing	mm	1.4	1.4
Outdoor coil	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	990x1260x26.74+580x1260x13.37	985x1260x40.11
	g.Number of circuits		7	14

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Out	door noise level	dB(A)	66	66
٦	Throttle type	/	Throttle valve	Throttle valve
	Dimension(W*D*H)	mm	952x415x1333	952x415x1333
Outdoor unit	Packing (W*D*H)	mm	1095x495x1480	1095x495x1480
	Net/Gross weight	Kg	94.0/107.2	97.0/110.3
Re	frigerant type	Kg	R410A/4.2	R410A/4.4
De	esign pressure	MPa	4.8/1.5	4.8/1.5
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ9.52/Φ19(3/8″/3/4″)	Φ9.52/Φ22(3/8″/7/8″)
	Max. refrigerant pipe length	m	55	55
	Max. difference in level	m	45	45
Th	ermostat type		Wired Control	Wired Control
Opera	ation temperature	Ċ	17~30	17~30
Design design design	Indoor(cooling/ heating)		17~32/0~30	17~32/0~30
koom temperature	Outdoor(cooling/heating)	Ċ	0~60/-7~24	0~60/-7~24
Qty′pe	er 20' /40' /40'HQ	Outdoor unit	22/48/48	22/48/48

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m3/h

Notes:

1) Capacities are based on the following conditions:

- Cooling(T1): Indoor Temperature 27°C(80.6°F) DB /19 °C(66.2°F) WB
 - Outdoor Temperature 35 °C(95°F) DB /24 °C(75.2°F) WB
 - Interconnecting Piping Length 5m
 - Level Difference of Zero.

Outdoor air flow

- Cooling(T3): Indoor Temperature 29°C(84.2°F) DB /19 °C(66.2°F) WB
 - Outdoor Temperature 46 °C(114.8°F) DB /24 °C(75.2°F) WB
 - Interconnecting Piping Length 5m
 - Level Difference of Zero.
- 2) Capacities are Net Capacities.
- 3) Due to our policy of innovation some specifications may be changed without notification.
- 4) For max. refrigerant pipe length 55m and max. difference in level 45m is based on below installation condition: outdoor unit is on upper side, indoor unit is in bottom side, one oil trap per 10m.

- Heating: Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
 - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
 - Interconnecting Piping Length 5 m
 - Level Difference of Zero.

Other products information:

- 1. Compressor Insulation material and thickness: Material: PVC + Non spinning fiber, Thickness: 10mm
- 2. Casing thickness :indoor is 0.8mm, outdoor 0.8~1.2mm (1.2mm for top cover + chassis, the other is 0.8)
- 3. Filter details (thickness, type, MERV rating): Aluminum frames thick 20mm; filter thickness: 0.2mm. Type: nylon; MERV rating: No test data; Filter function: The main function is to prevent large particles of dust into the unit body, prevent dust impact condenser the heat exchange efficiency, and prevent blocking drainage, can purify air
- 4. Is supply fan arrangement draw through or blow through?
- The blower fan is located in front of the cooling coil for 48K and 60K.
- The cooling coil is located in front of blower fan for 18K, 24K and 36K.
- 5. Please advise indoor unit fan material.
- Fan impeller material: Plastic (ABS), fan casing material: Plastic (HIPS) for 18K,24K and 36K;
- Fan impeller material: Metal, fan casing material: Metal for 48K and 60K
- 6. Outdoor fan material
- AS + glass fiber
- 7. TEAO fan motor (for indoor and outdoor)
- Indoor motor: normal radiating heat, Outdoor motor: air-cooled

3. Dimensional Drawings

3.1 Indoor Unit



Model (KBtu/h)	unit	А	В	С	D	E	F	G	Н	I	J	К	L	М	H1	H2	W1	W2
10	mm	880	210	674	660	140	706	50	136	782	190	40	920	508	78	148	88	112
18	inch	34.65	8.27	26.54	25.98	5.51	27.80	1.97	5.35	30.79	7.48	1.57	36.22	20	3.07	5.83	3.46	4.41
24	mm	1100	249	774	700	140	926	50	175	1001	228	5	1140	598	80	150	130	155
	inch	43.31	9.80	30.47	27.56	5.51	36.46	1.97	6.89	39.41	8.98	0.2	44.88	23.54	3.15	5.91	5.12	6.10
36	mm	1200	300	874	800	123	1044	50	227	1101	280	5	1240	697	80	150	185	210
	inch	47.24	11.81	34.41	31.5	4.84	41.1	1.97	8.94	43.35	11.02	0.2	48.82	27.44	3.15	5.91	7.28	8.27

High Static Pressure Duct



Model	unit	Outli	ne dime	nsion	Size mount	e of ed lug	Air outlet opening size(symmetry of air outlet opening)					Air inlet opening size(symmetry of air inlet opening)				
(KBtu/h)		А	В	С	D	E	F	G	Н	1	J	K	L	М	N	0
10	mm	625	1200	380	495	1236	1000	253	270	900	170	1145	334	325	925	130
40	inch	24.61	47.24	14.96	19.49	48.66	39.37	9.96	10.63	35.43	6.69	45.08	13.15	12.8	36.42	5.12
60	mm	858	1400	440	700	1436	1188	385	500	1000	280	1188	385	500	1000	280
	inch	33.78	55.12	17.32	27.56	56.54	46.77	15.16	19.69	39.37	11.02	46.77	15.16	19.69	39.37	11.02

3.2 Outdoor Unit

Single Fan Outdoor Unit







Model	unit	W	D	Н	W1	А	В	С
40	mm	890	342	673	955	663	354	394
18k	inch	35.04	13.46	26.50	37.60	26.10	13.94	15.51
	mm	946	410	810	1030	673	403	455
24K	inch	37.24	16.14	31.89	40.55	26.50	15.87	17.9
36k	mm	946	410	810	1030	673	403	455
Jok Jok	inch	37.24	16.14	31.89	40.55	26.50	15.87	17.9

Double Fan Outdoor Unit





Model	unit	W	D	Н	W1	А	В	С
40	mm	952	415	1333	1045	634	404	457
48k	inch	37.48	16.34	52.48	41.14	24.96	15.9	17.99
	mm	952	415	1333	1045	634	404	457
60k	inch	37.48	16.34	52.48	41.14	24.96	15.9	17.99

4. Electrical Wiring Diagrams

4.1 Indoor unit

Abbreviation	Paraphrase
Y/G	Yellow-Green Conductor
CAP1	Indoor Fan Capacitor
FAN1	Indoor Fan
AC FAN	Indoor Alternating Current Fan
PUMP	PUMP
L	LIVE
Ν	NEUTRAL
TO CCM Comm.Bus	Central Controller
T1	Indoor Room Temperature
T2	Coil Temperature of Indoor Heat Exchanger
P1	Super High Speed
P2	High Speed



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18k,24k

4.2 Some connectors introduce:



- A. For new fresh motor terminal port (also for Anion generator) CN43:
- 1. Connect the fan motor to the port , no need care L/N of the motor ;
- 2. The output voltage is the power supply;
- 3. The fresh motor can not excess 200W or 1A , follow the smaller one ;
- 4. The new fresh motor will be worked when the indoor fan motor work ;when the indoor fan motor stops , the new fresh motor would be stopped ;
- 5. When the unit enter force cooling mode or capacity testing mode , the fresh motor isn't work .





B For ALARM terminal port CN33

1. Provide the terminal port to connect ALARM ,but no voltage of the terminal port , the power from the ALARM system (not from the unit)

2. Although design voltage can support higher voltage ,but we strongly ask you connect the power less than 24V, current less than 0.5A

3. When the unit occurs the problem , the relay would be closed , then ALARM works





C. For remote control (ON-OFF) terminal port CN23 and short connector of J7

1. Remove the short connector of J7 when you use ON-OFF function;

2. When remote switch off (OPEN) ;the unit would be off;

3. When remote switch on (CLOSE) ;the unit would be on;

4. When close/open the remote switch, the unit would be responded the demand within 2 seconds;

5. When the remote switch on . you can use remote controller/ wire controller to select the mode what you want ;when the remote switch off , the unit would not respond the demand from remote controller/wire controller.

when the remote switch off, but the remote controller / wire controller are on, CP code would be shown on the display board.

6.The voltage of the port is 12V DC, design Max.current is 5mA.



4.3 Micro-Switch introduce:



A. Micro-switch SW1 is for selection of indoor fan stop temperature (TEL0) when it is in anti-cold wind action in heating mode.

Range: 24°C, 15°C, 8°C, according to EEROM setting (reserved for special customizing).



T ATI	FOR SETTING FAN WHEN THERE IS NO	MOTOR CO DEMAND	NTROL
L H	SW2		
NOL	MODE	FAN OFF	FAN ON
SH2	FACTORY SETTING	$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$	

B. Micro-switch SW2 is for selection of indoor FAN ACTION if room temperature reaches the set point and the compressor stops.

Range: OFF (in 127s), Keep running.

T	FOR SETTIN	GAUTO-RES	TART
NO	SW3		ON 1
NO	MODE	AUTO-RESTART	NOT AUTO-RESTART
SW3	FACTORY SETTING	$\mathbf{\mathbf{\nabla}}$	

C. Micro-switch SW3 is for selection of auto-restart function.

Range: Active, inactive

	FOR TEMP	. COMPEN	SATION(I	HEATING)	
	SW6	ON 1 2	ON 1 2	ON 1 2	ON 1 2
1 2	CODE	6 ℃	2 ℃	4 ℃	EEPROM DEFAULT
SHG O	FACTORY SETTING	\mathbf{i}			

D. Micro-switch SW6 is for selection of temperature compensation in heating mode. This helps to reduce the real temperature difference between ceiling and floor so that the unit could run properly. If the height of installation is lower, smaller value could be chosen.

Range: 6°C, 4°C, 2°C, E function (reserved for special customizing)

Contraction of the local division of the loc	FOR SETTING NETADDRESS							
	S1+S2	407,34 908,46 934,67 12	407,934 ON 909,469 12	40 1 2 ON	4 9 9 9 8 4 8 4 8 4 8 12			
6019	CODE	0~F	0~F	0~F	0~F			
NU	NETADDRESS	0~15	16~31	32~47	48~63			
NET ADDRESS SL	FACTORY SETTING	\checkmark						

E. Micro-switch S1 and dial-switch S2 are for address setting when you want to control this unit by a central controller. Range: 00-63

Range: 00-63

	FOR SETTING POWER(DC MOTOR MODEL ONLY)										
41 - 34 5 OUB	ENC1	4000 000 000 000 000 000 000 000 000 00	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4000 000 000 000 000 000 000 000 000 00	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	400 B 4 6 8 L 9	400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 1 2 3 4 6 0 1 0 3 4 6 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	468 L9
6812	CODE	0	1	2	4	5	7	8	9	Α	В
	POWER	20	26	32~35	36~53	54~71	72~90	91~105	106~140	141~160	161~200
ENCL	FACTORY SETTING	ACTORY ACCORDING TO RELATED MODEL.									

F. Dial-switch ENC1: The indoor PCB is universal designed for whole series units from 7K to 68K. This ENC1 setting will tell the main program what size the unit is.

NOTE: Usually there is glue on it because the switch position cannot be changed at random unless you want to use this PCB as a spare part to use in another unit. Then you have to select the right position to match the size of the unit.

"20" means 2kW (7K), "105" means 10.5kW(36K), and so on.

Real Real	FOR MAI	N-SLAVE	SETTING		
	SW5	ON 1 2	ON 1 2	ON 1 2	ON 1 2
1 2 1	MODE	NAIN No slave	MAIN	MAIN	SLAVE
9 SH5 S	FACTORY SETTING	\checkmark			

G. Micro-switch SW5 is for setting the master or slave unit when the unit is in twin connection.

Range: Master no slave (Normal 1 drive 1 connection), Master (2 positions without difference), Slave

4.4 Outdoor Unit

Abbreviation	Paraphrase
CAP1, CAP2	Fan Motor Capacitor
COMP	Compressor
FM1,FM2	Outdoor DC Fan
FAN1,FAN2	Outdoor AC Fan
KM8	Contactor
CT1	AC Current Detector
D	Diode Module
EEV	Electronic Expansion Valve
H-PRO	High Pressure Switch
L-PRO	Low Pressure Switch/Shorting Stub
L	PFC Inductor
SV	4-Way Valve
TP	Exhaust Temperature Sensor
T4	Outdoor Ambient Temperature
Т3	Coil Temperature of Condenser
TH	Heatsink Temperature Sensor









48&60K

5. Refrigerant Cycle Diagrams

5.1 Heat pump



Model(Btu/h)	Pipe Size (D mm(Diameter:ø) inch)	Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant	
Wodelbtarij	Gas	Liquid	Rated	Max.	Rated	Max.	, autional Kenigerant	
18k	12.7(1/2)	6.35(1/4)	5/16.4	25/82	0	15/49.2	15g/m (0.16oz/ft)	
24k	15.9(5/8)	9.52(3/8)	5/16.4	25/82	0	15/49.2	30g/m (0.32oz/ft)	



Model No	Pipe Size (I mm(Diameter:ø) inch)	Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant	
Model No.	Gas	Liquid	Rated	Max.	Rated	Max.		
36k	19(3/4)	9.52(3/8)	5/16.4	30/98.4	0	20/65.6	30g/m (0.32oz/ft)	



Model No	Pipe Size (I mm(Diameter:ø) inch)	Piping length (m/ft)		Elevati	on (m/ft)	Additional Refrigerant	
Wodel No.	Gas	Liquid	Rated	Max.	Rated	Max.		
48k	19(3/4)	9.52(3/8)		F0/164	0	20/09 4	20a/m (0.22a-/ft)	
60k	22(7/8)	9.52(3/8)	5/10.4	JU/164	U	30/98.4	50g/m (0.3202/11)	

6. Capacity Tables

6.1 Cooling

							:	52QSM0 ⁻	18VSG									
INDOOR AIRFLOW (CFM) DB (°C) ID	ID WB (°C)		1	7.2			18	3.0			19	9.0			2:	2.0		
AIRFLOW	DB (°C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
		тс	5.31	5.31	5.31	5.31	5 45	5.45	5.45	5.45	5.62	5.62	5.62	5.62	6.05	6.05	6.05	6.05
	27.0	S/T	0.70	0.72	0.80	0.88	0.63	0.65	0.73	0.81	0.57	0.59	0.66	0.74	0.42	0.44	0.51	0.58
		PI	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
		TC	5.13	5.13	5.13	5.19	5.31	5.31	5.31	5.31	5.45	5.45	5.45	5.45	5.88	5.88	5.88	5.88
	30.0	S/T	0.70	0.73	0.81	0.89	0.63	0.66	0.74	0.82	0.57	0.59	0.67	0.75	0.41	0.44	0.51	0.58
		PI	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.30	1.30	1.30	1.30
		TC	5.05	5.05	5.05	5.11	5.19	5.19	5.19	5.19	5.36	5.36	5.36	5.36	5.77	5.77	5.77	5.77
	32.0	S/T	0.71	0.73	0.81	0.89	0.64	0.66	0.74	0.82	0.57	0.59	0.67	0.75	0.41	0.44	0.51	0.58
		PI	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.35	1.35	1.35	1.35
		TC	4.88	4.88	4.88	4.93	5.05	5.05	5.05	5.05	5.19	5.19	5.28	5.19	5.59	5.59	5.59	5.59
371	35.0	S/T	0.71	0.74	0.83	0.91	0.64	0.67	0.75	0.83	0.57	0.60	0.67	0.76	0.41	0.44	0.51	0.59
		PI	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.42	1.42	1.42	1.42	1.43	1.43	1.43	1.43
		TC	4.45	4.45	4.45	4.49	4.60	4.60	4.60	4.60	4.75	4.75	4.77	4.75	5.13	5.13	5.13	5.13
	43.0	S/T	0.73	0.76	0.86	0.95	0.65	0.68	0.77	0.87	0.58	0.61	0.70	0.79	0.41	0.44	0.52	0.60
		PI	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.67	1.67	1.67	1.67	1.68	1.68	1.68	1.68
		TC	4.31	4.31	4.31	4.34	4.46	4.46	4.46	4.46	4.60	4.60	4.60	4.60	4.98	4.98	4.98	4.98
	46.0	S/T	0.74	0.77	0.87	0.97	0.66	0.69	0.79	0.88	0.59	0.61	0.71	0.80	0.41	0.44	0.52	0.61
		PI	1.75	1.75	1.75	1.75	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.77	1.77	1.77	1.77
		TC	3.84	3.84	3.86	3.89	3.95	3.95	3.95	3.98	4.09	4.09	4.09	4.09	4.43	4.43	4.43	4.43
	52.0	S/T	0.77	0.80	0.91	1.00	0.68	0.71	0.82	0.92	0.60	0.63	0.73	0.83	0.41	0.44	0.53	0.63
		PI	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.98
		TC	5.42	5.42	5.42	5.48	5.57	5.57	5.57	5.62	5.74	5.74	5.74	5.74	6.17	6.17	6.17	6.17
	27.0	S/T	0.74	0.77	0.87	0.97	0.66	0.69	0.79	0.88	0.59	0.62	0.71	0.80	0.41	0.44	0.52	0.61
		PI	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.25	1.25	1.25	1.25
		TC	5.25	5.25	5.31	5.37	5.42	5.42	5.42	5.48	5.60	5.60	5.60	5.60	6.03	6.03	6.03	6.03
3	30.0	S/T	0.75	0.78	0.88	0.98	0.67	0.70	0.80	0.89	0.59	0.62	0.72	0.81	0.41	0.44	0.53	0.62
		PI	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	22.4 25.0 27.0 2 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 6.05 0.120 1.22 1.25	1.32	
		TC	5.17	5.17	5.22	5.28	5.31	5.31	5.31	5.37	5.48	5.48	5.48	5.48	5.91		5.91	
	32.0	S/T	0.76	0.79	0.89	0.99	0.67	0.70	0.81	0.90	0.59	0.62	0.72	0.82	0.41	0.44	0.53	0.62
		PI	1.36	1.36	1.36	1.36	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.38	1.38	1.38	1.38
		TC	4.99	4.99	5.05	5.11	5.17	5.17	5.17	5.22	5.31	5.31	5.40	5.31	5.74	5.74	5.74	5.74
474	35.0	S/T	0.77	0.80	0.90	1.00	0.68	0.71	0.81	0.91	0.60	0.63	0.73	0.83	0.41	0.44	0.53	0.63
		PI	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
		TC	4.58	4.58	4.64	4.69	4.73	4.73	4.73	4.79	4.88	4.88	4.90	4.92	5.27	5.27	5.27	5.27
	43.0	S/T	0.79	0.83	0.94	1.00	0.70	0.73	0.85	0.96	0.61	0.65	0.76	0.87	0.41	0.44	0.54	0.65
		PI	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.71	1.71	1.71	1.71	1.72	1.72	1.72	1.72
		TC	4.43	4.43	4.49	4.54	4.57	4.57	4.57	4.63	4.72	4.72	4.72	4.78	5.10	5.10	5.10	5.10
	46.0	S/T	0.81	0.84	0.96	1.00	0.71	0.75	0.87	0.98	0.62	0.65	0.77	0.88	0.41	0.44	0.55	0.66
		PI	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.81	1.81	1.81	1.81	1.82	1.82	1.82	1.82
		TC	3.95	3.95	3.98	4.01	4.06	4.06	4.09	4.12	4.21	4.21	4.21	4.23	4.58	4.58	4.58	4.58
	52.0	S/T	0.84	0.88	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.81	0.93	0.41	0.45	0.57	0.91
		PI	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.03	2.03	2.03	2.03
		TC	5.54	5.54	5.60	5.65	5.68	5.68	5.68	5.74	5.85	5.85	5.85	5.85	6.31	6.31	6.31	6.31
	27.0	S/T	0.79	0.83	0.94	1.00	0.70	0.73	0.85	0.96	0.61	0.65	0.76	0.87	0.41	0.44	0.55	0.65
		PI	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
		TC	5.37	5.37	5.42	5.48	5.54	5.54	5.54	5.60	5.71	5.71	5.71	5.71	6.14	6.14	6.14	6.14
	30.0	S/T	0.80	0.84	0.95	1.00	0.71	0.74	0.86	0.97	0.62	0.65	0.76	0.88	0.41	0.44	0.55	0.66
		PI	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.34	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
		TC	5.25	5.25	5.31	5.37	5.42	5.42	5.42	5.48	5.60	5.60	5.60	5.65	6.03	6.03	6.03	6.03
	32.0	S/T	0.81	0.84	0.96	1.00	0.71	0.75	0.87	0.98	0.62	0.65	0.77	0.88	0.41	0.44	0.55	0.66
		PI	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	25.0	10	5.11	5.11	5.17	5.22	5.25	5.25	5.25	5.31	5.42	5.42	5.51	5.57	5.85	5.85	5.85	5.85
571	35.0	5/1	0.82	0.86	0.98	1.00	0.72	0.76	0.88	1.00	0.63	0.66	0.78	0.89	0.41	0.45	0.56	0.67
		PI TO	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.48	1.48	1.48	1.48	1.49	1.49	1.49	1.49
	40.0		4.67	4.72	4.//	4.83	4.82	4.82	4.86	4.92	4.99	4.99	5.02	5.07	5.38	5.38	5.38	5.38
	43.0	5/1	0.85	0.89	1.00	1.00	0.75	0.79	0.92	1.00	0.65	0.69	0.82	0.94	0.41	0.45	0.57	0.90
			1.73	1.73	1.73	1.73	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1./4	1.76	1.76	1.76	1.76
	40.0	10	4.52	4.57	4.63	4.69	4.66	4.66	4.72	4.78	4.84	4.84	4.84	4.89	5.21	5.21	5.21	5.21
	40.0	5/1	0.87	0.91	1.00	1.00	0.76	0.80	0.94	1.00	0.65	0.69	0.83	0.96	0.42	0.45	0.58	0.92
		PI TO	1.83	1.83	1.83	1.83	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.86	1.86	1.86	1.86
	50.0	1U 8/T	4.03	4.06	4.09	4.12	4.18	4.18	4.21	4.23	4.29	4.29	4.29	4.35	4.66	4.66	4.66	4.00
	52.0	5/1	0.91	0.96	1.00	1.00	0.79	0.84	0.99	1.00	0.68	0.72	0.87	1.00	0.42	0.46	0.60	0.97
L		PI	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.06	2.06	2.06	2.06	2.08	2.08	2.08	2.08

TC:Total Cooling Capacity (kW)

S/T:Sensible Cooling Capacity Ratio

PI:Power Input(kW)

<u> </u>								52QSM	024VSP									
INDOOR		ID WB (°C)		13	7.2			18	3.0			19	9.0			2	2.0	
	DB (℃)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
		TC	7.15	7.15	7.15	7.21	7.35	7.35	7.35	7.35	7.58	7.58	7.58	7.58	8.16	8.16	8.16	8.16
	27.0	S/T	0.70	0.73	0.81	S2QSM02 2 52QSM02 27.0 29.0 24.4 25.0 1 7.15 7.21 7.35 7.35 1 0.81 0.89 0.63 0.66 1 1.61 1.61 1.61 1.61 1.61 1.61 0.82 0.90 0.64 0.66 1.70 1.70 0.82 0.91 0.64 0.67 1 0.82 0.91 0.64 0.67 1 0.83 0.91 0.64 0.67 1 0.84 0.92 0.65 0.67 1 0.84 0.92 0.65 0.67 1 0.84 0.92 0.65 0.67 0 0.87 0.96 0.66 0.69 1 0.87 0.98 0.67 0.70 1 0.83 0.98 0.67 0.70 1 0.83 0.98 0.67 0.70 1 <td>0.74</td> <td>0.82</td> <td>0.57</td> <td>0.59</td> <td>0.67</td> <td>0.75</td> <td>0.41</td> <td>0.44</td> <td>0.51</td> <td>0.58</td>	0.74	0.82	0.57	0.59	0.67	0.75	0.41	0.44	0.51	0.58		
		S2QSM024VSP D ØB (°) 17.2 18.0 19.0 TG 7.15 7.15 7.17 7.35 7.38 7.37 7.77 7.77 </td <td>1.61</td> <td>1.61</td> <td>1.62</td> <td>1.62</td> <td>1.62</td> <td>1.62</td>	1.61	1.61	1.62	1.62	1.62	1.62										
	30.0	S/T	6.95 0.71	6.95 0.73	0.82	7.01	7.15	7.15	7.15	7.15	7.38 0.57	7.38	7.38	7.38 0.75	7.96	7.96	7.96	7.96
	00.0	PI	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.71	1.71	1.71	1.71
		TC	6.81	6.81	6.81	6.87	7.01	7.01	7.01	7.01	7.24	7.24	7.24	7.24	7.79	7.79	7.79	7.79
	32.0	S/T	0.71	0.74	0.83	0.91	0.64	0.67	0.75	0.83	0.57	0.60	0.68	0.76	0.41	0.44	0.51	0.59
		PI TC	1.76	1.76	1.76	1.76	1.76 6.81	1.76	1.76	1.76 6.81	1.77	1.77	1.77	1.77	1.77	7.56	1.77	1.77
518	35.0	S/T	0.72	0.75	0.84	0.92	0.65	0.67	0.76	0.84	0.58	0.60	0.68	0.77	0.41	0.44	0.51	0.59
		PI	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.87	1.87	1.87	1.87	1.88	1.88	1.88	1.88
		TC	6.03	6.03	6.03	6.09	6.21	6.21	6.21	6.25	6.41	6.41	6.45	6.41	6.92	6.92	6.92	6.92
	43.0	S/T PI	0.74	0.77	0.87	0.96	0.66	0.69	0.78	0.88	0.59	0.61	0.70	0.80	0.41	0.44	0.52	0.61
		TC	5.83	5.83	5.83	5.89	6.01	6.01	6.01	6.07	6.21	6.21	6.21	6.21	6.71	6.71	6.71	6.71
	46.0	S/T	0.75	0.78	0.88	0.98	0.67	0.70	0.80	0.89	0.59	0.62	0.72	0.81	0.41	0.44	0.53	0.62
		PI	2.30	2.30	2.30	2.30	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.33	2.33	2.33	2.33
	52.0	IC S/T	5.19	5.19	5.25	5.30	5.36	5.36	5.36	5.42	5.53	5.53	5.53	5.53	6.02	6.02	6.02	6.02
	52.0	PI	2.57	2.57	2.57	2.57	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.60	2.60	2.60	2.60
		TC	7.30	7.30	7.30	7.39	7.50	7.50	7.50	7.59	7.73	7.73	7.73	7.73	8.33	8.33	8.33	8.33
	27.0	S/T	0.75	0.78	0.88	0.98	0.67	0.70	0.80	0.89	0.59	0.62	0.71	0.81	0.41	0.44	0.53	0.61
		PI	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
	30.0	S/T	0.76	0.79	0.89	0.99	0.67	0.70	0.80	0.90	0.59	0.62	0.72	0.82	0.41	0.44	0.53	0.62
		PI	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.73	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74
		TC	6.96	6.96	7.01	7.07	7.16	7.16	7.16	7.21	7.39	7.39	7.39	7.39	7.96	7.96	7.96	7.96
	32.0	S/T	0.76	0.79	0.90	1.00	0.68	0.71	0.81	0.91	0.60	0.63	0.73	0.83	0.41	0.44	0.53	0.62
	25.0	TC	6.73	6.73	6.78	6.84	6.96	6.96	6.96	7.01	7.16	7.16	7.27	7.16	7.73	7.73	7.73	7.73
647	35.0	S/T	0.77	0.80	0.91	1.00	0.68	0.71	0.82	0.92	0.60	0.63	0.73	0.84	0.41	0.44	0.53	0.63
		PI	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91
	43.0	IC S/T	6.21	6.21	6.26	6.32	6.40	6.40	6.40	6.46	6.60	6.60	6.63	6.64 0.88	7.14 0.41	7.14 0.44	7.14 0.55	7.14 0.65
	40.0	PI	2.23	2.23	2.23	2.23	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.25	2.25	2.25	2.25
		TC	6.01	6.01	6.07	6.13	6.18	6.18	6.18	6.24	6.39	6.39	6.39	6.45	6.92	6.92	6.92	6.92
	46.0	S/T	0.81	0.85	0.97	1.00	0.72	0.75	0.87	0.99	0.62	0.66	0.78	0.89	0.41	0.44	0.55	0.66
			2.35	2.35	2.35	2.35	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.38	2.38	2.38	2.38
	52.0	S/T	0.85	0.89	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.81	0.94	0.13	0.15	0.13	0.13
		PI	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.64	2.64	2.64	2.64	2.66	2.66	2.66	2.66
	07.0	TC	7.44	7.44	7.53	7.62	7.67	7.67	7.67	7.76	7.90	7.90	7.90	7.99	8.51	8.51	8.51	8.51
	27.0	S/I PI	0.81	0.84	0.96	1.00	0.71	0.75	0.87	0.98	0.62	0.65	0.77	0.88	0.41	0.44	0.55	0.66
		TC	7.21	7.21	7.30	7.39	7.44	7.44	7.44	7.53	7.67	7.67	7.67	7.76	8.28	8.28	8.28	8.28
	30.0	S/T	0.82	0.85	0.98	1.00	0.72	0.76	0.88	1.00	0.63	0.66	0.78	0.90	0.41	0.45	0.56	0.67
		PI	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.78	1.78	1.78	1.78
	32.0	IC S/T	7.07	7.07	7.13	7.19	7.30	7.30	7.39	1.00	7.53	7.53	7.53	7.62	8.10	8.10	8.10	8.10
	52.0	PI	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.85	1.85	1.85	1.85
		TC	6.87	6.87	6.93	6.98	7.07	7.07	7.13	7.19	7.30	7.30	7.42	7.50	7.87	7.87	7.87	7.87
803	35.0	S/T	0.83	0.87	1.00	1.00	0.73	0.77	0.90	1.00	0.64	0.67	0.79	0.91	0.41	0.45	0.56	0.68
			1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.95 6.76	1.95	1.96	1.96	1.96	1.96
	43.0	S/T	0.87	0.91	1.00	1.00	0.76	0.80	0.94	1.00	0.65	0.70	0.83	0.97	0.42	0.45	0.58	0.90
		PI	2.27	2.27	2.27	2.27	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.28	2.30	2.30	2.30	2.30
	40.0	TC	6.13	6.18	6.24	6.30	6.30	6.30	6.36	6.42	6.51	6.51	6.51	6.57	7.06	7.06	7.06	7.06
	46.0	S/I PI	2.40	0.93	1.00	1.00	0.77	0.82	0.96	1.00	0.67	0.71	0.85	0.99	0.42	0.46	0.59	0.92
		TC	5.44	5.50	5.56	5.61	5.64	5.64	5.70	5.76	5.81	5.81	5.87	5.93	6.30	6.30	6.30	6.30
	52.0	S/T	0.93	0.98	1.00	1.00	0.81	0.86	1.00	1.00	0.69	0.74	0.89	1.00	0.42	0.46	0.61	0.97
1		PI	2.68	2.68	2.68	2.68	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.72	2.72	2.72	2.72

TC:Total Cooling Capacity (kW) S/T:Sensible Cooling Capacity Ratio

PI:Power Input(kW)

								520SM	0361/60									
INDOOR				4'	7.0			520,510	03003F			41				24	2.0	
AIRFLOW		ID WB (C)		1	1.2			10	5.0			1	9.0	<u> </u>		24	2.0	
(CFM)	DB (C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
INDOOR AIRFLOW (CFM) 800 11106	27.0		9.82	9.82	9.82	9.91	10.11	10.11	10.11	10.11	10.42	10.42	10.42	10.42	11.23	11.23	11.23	11.23
	27.0	PI	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.32	2.32	2.32	2.32
		TC	9.53	9.53	9.53	9.62	9.82	9.82	9.82	9.82	10.14	10.14	10.14	10.14	10.91	10.91	10.91	10.91
	30.0	S/T	0.73	0.76	0.86	0.95	0.66	0.68	0.78	0.87	0.58	0.61	0.70	0.79	0.41	0.44	0.52	0.60
		PI	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.45	2.45	2.45	2.45	2.46	2.46	2.46	2.46
	32.0	S/T	9.36	9.36	9.36	9.45	9.65	9.65	9.65	9.65	9.94	9.94	9.94	9.94	0.41	0.44	0.52	0.61
		PI	2.52	2.52	2.52	2.52	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.54	2.54	2.54	2.54
		TC	9.08	9.08	9.08	9.16	9.36	9.36	9.36	9.45	9.65	9.65	9.79	9.65	10.40	10.40	10.40	10.40
800	35.0	S/T	0.75	0.78	0.88	0.97	0.67	0.69	0.79	0.89	0.59	0.62	0.71	0.81	0.41	0.44	0.52	0.61
			2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.68	2.68	2.68	2.68	2.69	2.69	2.69	2.69
	43.0	S/T	0.77	0.81	0.43	1.00	0.68	0.72	0.82	0.93	0.60	0.63	0.33	0.84	0.41	0.44	0.54	0.63
		PI	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.15	3.15	3.15	3.15	3.18	3.18	3.18	3.18
		TC	8.13	8.13	8.22	8.31	8.40	8.40	8.40	8.49	8.66	8.66	8.66	8.66	9.37	9.37	9.37	9.37
	46.0	S/T	0.78	0.82	0.93	1.00	0.69	0.73	0.84	0.95	0.61	0.64	0.75	0.86	0.41	0.44	0.54	0.64
		PI TC	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.33	3.33	3.33	3.33	3.36	3.30	3.30	3.36
	52.0	S/T	0.82	0.85	0.98	1.00	0.72	0.76	0.88	1.00	0.62	0.66	0.78	0.89	0.41	0.45	0.55	0.66
		PI	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.70	3.70	3.70	3.70	3.73	3.73	3.73	3.73
		TC	10.03	10.03	10.11	10.23	10.34	10.34	10.34	10.46	10.63	10.63	10.63	10.75	11.46	11.46	11.46	11.46
	27.0	S/T	0.81	0.85	0.97	1.00	0.72	0.75	0.87	0.99	0.62	0.66	0.78	0.89	0.41	0.45	0.56	0.67
		PI TC	9.74	9.74	9.83	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.37	2.37	2.37	2.37
	30.0	S/T	0.82	0.86	0.99	1.00	0.72	0.76	0.88	1.00	0.63	0.67	0.79	0.91	0.41	0.45	0.56	0.67
		PI	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.51	2.51	2.51	2.51
		TC	9.54	9.54	9.62	9.71	9.85	9.85	9.94	10.03	10.14	10.14	10.14	10.26	10.95	10.95	10.95	10.95
	32.0	S/T	0.83	0.87	1.00	1.00	0.73	0.77	0.89	1.00	0.63	0.67	0.80	0.91	0.41	0.45	0.56	0.68
		TC	9.25	9.25	9.34	9.42	9.54	9.54	9.62	9.71	9.85	9.85	10.00	10.08	10.63	10.63	10.63	10.63
1106	35.0	S/T	0.84	0.88	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.80	0.92	0.41	0.45	0.57	0.69
		PI	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74
	40.0	TC	8.53	8.59	8.68	8.77	8.82	8.82	8.91	8.99	9.10	9.10	9.14	9.22	9.84	9.84	9.84	9.84
	43.0	5/T PI	3.22	3.22	3.22	3.22	3.23	3.23	3.23	3.23	3.24	3.24	3.24	3.24	3.25	3.25	0.59	3.25
		TC	8.29	8.38	8.47	8.55	8.58	8.58	8.67	8.76	8.85	8.85	8.85	8.94	9.59	9.59	9.59	9.59
	46.0	S/T	0.90	0.94	1.00	1.00	0.78	0.83	0.97	1.00	0.67	0.71	0.86	1.00	0.42	0.46	0.59	0.73
		PI	3.40	3.40	3.40	3.40	3.41	3.41	3.41	3.41	3.42	3.42	3.42	3.42	3.44	3.44	3.44	3.44
	52.0		7.26	7.34	7.43	7.51	7.51	7.51	7.60	7.68	7.77	7.77	7.86	7.94	8.43	8.43	8.43	8.43
	52.0	PI	3.78	3.78	3.78	3.78	3.79	3.79	3.79	3.79	3.80	3.80	3.80	3.80	3.83	3.83	3.83	3.83
		TC	10.23	10.34	10.46	10.57	10.54	10.54	10.66	10.77	10.86	10.86	10.86	10.98	11.69	11.69	11.69	11.69
	27.0	S/T	0.87	0.91	1.00	1.00	0.76	0.81	0.94	1.00	0.66	0.70	0.84	0.97	0.42	0.45	0.58	0.71
		PI	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.41	2.42	2.42	2.42	2.42
	30.0	- ТС 9/Т	9.94	10.03	10.11	10.23	10.26	10.26	10.37	10.49	10.54	10.54	10.54	10.66	11.38	11.38	11.38	11.38
	50.0	PI	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.55	2.56	2.56	2.56	2.56	2.57	2.57	2.57	2.57
		TC	9.74	9.83	9.91	10.00	10.06	10.06	10.17	10.29	10.34	10.34	10.34	10.46	11.15	11.15	11.15	11.15
	32.0	S/T	0.90	0.94	1.00	1.00	0.78	0.82	0.97	1.00	0.67	0.71	0.86	1.00	0.42	0.46	0.59	0.73
		PI	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.64	2.66	2.66	2.66	2.66
1324	35.0	тс 9/т	9.45	9.54	9.62	9.71	9.74	9.74	9.83	9.91	10.06	0.72	10.20	10.31	10.83	10.83	10.83	0.74
	00.0	PI	2.78	2.78	2.78	2.78	2.79	2.79	2.79	2.79	2.80	2.80	2.80	2.80	2.81	2.81	2.81	2.81
		TC	8.71	8.80	8.89	8.97	8.98	9.05	9.13	9.22	9.28	9.28	9.38	9.48	10.03	10.03	10.03	10.03
	43.0	S/T	0.96	1.00	1.00	1.00	0.83	0.88	1.00	1.00	0.70	0.75	0.91	1.00	0.42	0.47	0.62	0.90
		PI	3.28	3.28	3.28	3.28	3.29	3.29	3.29	3.29	3.30	3.30	3.30	3.30	3.33	3.33	3.33	3.33
	46.0	S/T	0.47 0.98	0.55	0.64	8.73	8.73 0.84	0.82	8.91	9.00	9.03	9.03	9.11	9.20	9.76	9.76	9.76	9.76
1324	10.0	PI	3.47	3.47	3.47	3.47	3.48	3.48	3.48	3.48	3.49	3.49	3.49	3.49	3.52	3.52	3.52	3.52
		тс	7.40	7.49	7.57	7.66	7.66	7.74	7.83	7.91	7.91	7.91	8.00	8.08	8.60	8.60	8.60	8.60
	52.0	S/T	1.00	1.00	1.00	1.00	0.88	0.94	1.00	1.00	0.75	0.80	0.99	1.00	0.43	0.48	0.66	0.97
		PI	3.86	3.86	3.86	3.86	3.87	3.87	3.87	3.87	3.88	3.88	3.88	3.88	3.91	3.91	3.91	3.91

TC:Total Cooling Capacity (kW) S/T:Sensible Cooling Capacity Ratio PI:Power Input(kW)

							52	2QSM04	8V									
INDOOR	OUTDOOR	ID WB (°C)		17	. .2			18	3.0			19	9.0			22	2.0	
AIRFLOW (CFM)	DB (°C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
(01)		TC	12.58	12.58	12.69	12.81	12.98	12.98	12.98	13.12	13.35	13.35	13.35	13.35	14.39	14.39	14.39	14.39
	27.0	S/T	0.76	0.79	0.89	0.99	0.67	0.70	0.80	0.90	0.59	0.62	0.72	0.82	0.41	0.44	0.53	0.62
		PI	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.06	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
		TC	12.23	12.23	12.35	12.46	12.61	12.61	12.61	12.72	12.98	12.98	12.98	12.98	13.99	13.99	13.99	13.99
	30.0	S/T	0.76	0.79	0.90	1.00	0.68	0.71	0.81	0.91	0.60	0.63	0.73	0.83	0.41	0.44	0.53	0.63
		PI	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.25	3.25	3.25	3.25	3.26	3.26	3.26	3.26
		TC	11.97	11.97	12.09	12.20	12.35	12.35	12.35	12.46	12.75	12.75	12.75	12.75	13.73	13.73	13.73	13.73
	32.0	S/T	0.77	0.80	0.91	1.00	0.68	0.71	0.82	0.92	0.60	0.63	0.73	0.84	0.41	0.44	0.53	0.63
		PI	3.36	3.36	3.36	3.36	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.38	3.38	3.38	3.38
		TC	11.63	11.63	11.75	11.86	11.97	11.97	11.97	12.09	12.35	12.35	12.55	12.35	13.32	13.32	13.32	13.32
1147	35.0	S/T	0.78	0.81	0.92	1.00	0.69	0.72	0.83	0.94	0.60	0.64	0.74	0.85	0.41	0.44	0.54	0.64
		PI	3.54	3.54	3.54	3.54	3.55	3.55	3.55	3.55	3.55	3.55	3.56	3.55	3.58	3.58	3.58	3.58
		TC	11.24	11.24	11.36	11.49	11.61	11.61	11.61	11.73	11.99	11.99	12.04	12.08	12.96	12.96	12.96	12.96
	43.0	S/T	0.81	0.84	0.96	1.00	0.71	0.75	0.87	0.98	0.62	0.65	0.77	0.88	0.41	0.44	0.55	0.66
		PI	4.35	4.35	4.35	4.35	4.36	4.36	4.36	4.36	4.37	4.37	4.38	4.37	4.40	4.40	4.40	4.40
		TC	11.10	11.10	11.22	11.35	11.47	11.47	11.47	11.60	11.85	11.85	11.85	11.98	12.83	12.83	12.83	12.83
	46.0	S/T	0.82	0.86	0.98	1.00	0.72	0.76	0.88	1.00	0.63	0.66	0.78	0.90	0.41	0.45	0.56	0.67
		PI	4.65	4.65	4.65	4.65	4.66	4.66	4.66	4.66	4.68	4.68	4.68	4.68	4.71	4.71	4.71	4.71
		TC	9.19	9.27	9.36	9.44	9.50	9.50	9.59	9.67	9.82	9.82	9.82	9.90	10.68	10.68	10.68	10.68
	52.0	S/T	0.86	0.90	1.00	1.00	0.75	0.79	0.93	1.00	0.65	0.69	0.82	0.95	0.41	0.45	0.57	0.70
		PI	4.91	4.91	4.91	4.91	4.92	4.92	4.92	4.92	4.93	4.93	4.93	4.93	4.97	4.97	4.97	4.97
	27.0	TC	12.84	12.84	12.96	13.10	13.24	13.24	13.24	13.39	13.65	13.65	13.65	13.79	14.68	14.68	14.68	14.68
		S/T	0.81	0.85	0.97	1.00	0.72	0.75	0.87	0.99	0.62	0.66	0.78	0.89	0.41	0.45	0.55	0.66
		PI	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
		TC	12.50	12.50	12.61	12.73	12.87	12.87	12.99	13.13	13.27	13.27	13.27	13.42	14.28	14.28	14.28	14.28
	30.0	S/I	0.82	0.86	0.98	1.00	0.72	0.76	0.88	1.00	0.63	0.66	0.79	0.90	0.41	0.45	0.56	0.67
			3.30	3.30	3.30	3.30	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.31	3.32	3.32	3.32	3.32
	22.0	ТС ОЛ	12.24	12.24	12.35	12.47	12.61	12.61	12.73	12.84	13.01	13.01	13.01	13.16	14.02	14.02	14.02	14.02
	32.0	5/1	0.83	0.87	2.42	2.42	0.73	0.77	0.89	1.00	0.03	0.07	0.79	0.91	0.41	0.45	0.00	0.08
		FI TC	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.43	3.44	12.61	3.44	3.44	3.40	3.40	3.40	12.62
1/12	35.0	S/T	0.84	0.88	1.00	12.03	0.74	0.78	0.90	12.47	0.64	0.68	0.80	0.02	0.41	0.45	0.57	0.69
1412	55.0	PI	3.61	3.61	3.61	3.61	3.62	3.62	3.62	3.62	3.62	3.62	3.63	3.62	3.62	3.62	3.62	3.62
		TC	11 41	11 50	11.62	11 74	11 76	11 76	11.88	12.00	12 15	12 15	12 21	12 33	13 13	13 13	13 13	13 13
	43.0	S/T	0.88	0.92	1.02	1.00	0.77	0.81	0.95	1 00	0.66	0.70	0.84	0.98	0.42	0.45	0.58	0.71
	40.0	PI	4 43	4 43	4 43	4 43	4 44	4 44	4 44	4 44	4 45	4 45	4 45	4 45	4 48	4 48	4 48	4.48
		TC	11.27	11.39	11.52	11.64	11.61	11.61	11.74	11.86	12.02	12.02	12.02	12.14	12,98	12.98	12,98	12,98
	46.0	S/T	0.90	0.94	1.00	1.00	0.78	0.83	0.97	1.00	0.67	0.71	0.86	1.00	0.42	0.46	0.59	0.73
		PI	4.73	4.73	4,73	4,73	4,75	4,75	4,75	4,75	4,76	4,76	4,76	4.76	4.80	4,80	4,80	4.80
		TC	9.32	9.41	9.49	9.58	9.63	9.63	9.72	9.80	9.95	9.95	10.03	10.15	10.80	10.80	10.80	10.80
	52.0	S/T	0.94	0.99	1.00	1.00	0.82	0.87	1.00	1.00	0.69	0.74	0.90	1.00	0.42	0.47	0.61	0.91
		PI	5.00	5.00	5.00	5.00	5.01	5.01	5.01	5.01	5.02	5.02	5.02	5.02	5.06	5.06	5.06	5.06

							52	2QSM04	8V									
	OUTDOOR	ID WB (°C)		17	.2			18	8.0			19	9.0			22	2.0	
(CFM)	DB (°C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
		TC	13.10	13.24	13.39	13.53	13.50	13.50	13.65	13.79	13.90	13.90	13.90	14.05	14.97	14.97	14.97	14.97
	27.0	S/T	0.89	0.93	1.00	1.00	0.78	0.82	0.96	1.00	0.67	0.71	0.86	1.00	0.42	0.46	0.59	0.73
		PI	3.18	3.18	3.18	3.18	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
		TC	12.73	12.84	12.96	13.10	13.13	13.13	13.27	13.42	13.53	13.53	13.53	13.67	14.57	14.57	14.57	14.57
	30.0	S/T	0.90	0.95	1.00	1.00	0.79	0.83	0.98	1.00	0.67	0.72	0.87	1.00	0.42	0.46	0.60	0.74
		PI	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.39	3.39	3.39	3.39
	32.0	TC	12.50	12.61	12.73	12.84	12.87	12.87	12.99	13.13	13.27	13.27	13.27	13.42	14.31	14.31	14.31	14.31
		S/T	0.91	0.96	1.00	1.00	0.79	0.84	0.99	1.00	0.68	0.72	0.88	1.00	0.42	0.46	0.60	0.74
		PI	3.48	3.48	3.48	3.48	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.49	3.51	3.51	3.51	3.51
	35.0	TC	12.09	12.21	12.32	12.44	12.50	12.50	12.61	12.73	12.87	12.87	13.07	13.22	13.88	13.88	13.88	13.88
1765		S/T	0.93	0.97	1.00	1.00	0.80	0.85	1.00	1.00	0.69	0.73	0.88	1.00	0.42	0.46	0.61	0.75
		PI	3.68	3.68	3.68	3.68	3.69	3.69	3.69	3.69	3.69	3.69	3.70	3.69	3.72	3.72	3.72	3.72
		TC	11.63	11.75	11.87	11.99	12.01	12.10	12.22	12.34	12.38	12.38	12.53	12.66	13.40	13.40	13.40	13.40
	43.0	S/T	0.98	1.00	1.00	1.00	0.84	0.89	1.00	1.00	0.71	0.77	0.93	1.00	0.42	0.47	0.63	0.90
		PI	4.51	4.51	4.51	4.51	4.53	4.53	4.53	4.53	4.53	4.53	4.54	4.53	4.57	4.57	4.57	4.57
		TC	11.49	11.61	11.74	11.86	11.86	11.99	12.11	12.24	12.24	12.24	12.36	12.49	13.27	13.27	13.27	13.27
	46.0	S/T	1.00	1.00	1.00	1.00	0.86	0.91	1.00	1.00	0.73	0.78	0.95	1.00	0.43	0.48	0.64	0.92
		PI	4.82	4.82	4.82	4.82	4.84	4.84	4.84	4.84	4.85	4.85	4.85	4.85	4.89	4.89	4.89	4.89
		TC	9.49	9.58	9.66	9.75	9.83	9.92	10.00	10.12	10.15	10.15	10.26	10.37	11.03	11.03	11.03	11.03
	52.0	S/T	1.00	1.00	1.00	1.00	0.90	0.96	1.00	1.00	0.76	0.82	1.00	1.00	0.43	0.49	0.67	0.97
		PI	5.09	5.09	5.09	5.09	5.11	5.11	5.11	5.11	5.12	5.12	5.12	5.12	5.16	5.16	5.16	5.16

TC: Total Cooling Capacity (kBtu/h) S/T:Sensible Cooling Capacity Ratio PI:Power Input(kW) Note: The table shows the case where the operation frenquency of a compressor is fixed.

	S2QSM060V INDOOR AIRFLOW OUTDOOR ID WB (°C) 17.2 18.0 19.0 22.0																	
INDOOR	OUTDOOR	ID WB (°C)		17	.2			18	3.0			19).0			22	2.0	
AIRFLOW (CFM)	DB (°C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
(01)		TC	15.07	15.07	15.21	15.36	15.53	15.53	15.53	15.67	16.02	16.02	16.02	16.02	17.25	17.25	17.25	17.25
	27.0	S/T	0.77	0.81	0.91	1.00	0.69	0.72	0.83	0.93	0.60	0.63	0.74	0.84	0.41	0.44	0.54	0.63
		PI	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.69	3.70	3.70	3.70	3.70
		TC	14.64	14.64	14.78	14.93	15.10	15.10	15.10	15.24	15.56	15.56	15.56	15.56	16.76	16.76	16.76	16.76
	30.0	S/T	0.78	0.82	0.93	1.00	0.69	0.73	0.84	0.94	0.61	0.64	0.75	0.86	0.41	0.44	0.54	0.64
		PI	3.90	3.90	3.90	3.90	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.93	3.93	3.93	3.93
		TC	14.35	14.35	14.50	14.64	14.81	14.81	14.81	14.96	15.27	15.27	15.27	15.27	16.45	16.45	16.45	16.45
	32.0	S/T	0.79	0.82	0.94	1.00	0.70	0.73	0.84	0.95	0.61	0.64	0.75	0.86	0.41	0.44	0.54	0.65
		PI	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.06	4.06	4.06	4.06	4.08	4.08	4.08	4.08
		TC	13.92	13.92	14.07	14.21	14.35	14.35	14.35	14.50	14.81	14.81	15.04	14.81	15.99	15.99	15.99	15.99
1471	35.0	S/T	0.80	0.83	0.95	1.00	0.70	0.74	0.86	0.97	0.62	0.65	0.76	0.88	0.41	0.44	0.55	0.65
		PI	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.27	4.28	4.28	4.29	4.28	4.31	4.31	4.31	4.31
		TC	12.99	13.07	13.20	13.33	13.41	13.41	13.50	13.62	13.84	13.84	13.90	13.95	14.96	14.96	14.96	14.96
	43.0	S/T	0.83	0.87	1.00	1.00	0.73	0.77	0.89	1.00	0.63	0.67	0.79	0.91	0.41	0.45	0.56	0.68
		PI	5.04	5.04	5.04	5.04	5.05	5.05	5.05	5.05	5.07	5.07	5.07	5.07	5.10	5.10	5.10	5.10
		TC	12.63	12.75	12.87	12.99	13.05	13.05	13.17	13.29	13.47	13.47	13.47	13.61	14.57	14.57	14.57	14.57
	46.0	S/T	0.85	0.88	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.81	0.93	0.41	0.45	0.57	0.69
	52.0	PI	5.33	5.33	5.33	5.33	5.34	5.34	5.34	5.34	5.36	5.36	5.36	5.36	5.40	5.40	5.40	5.40
		TC	11.04	11.15	11.27	11.38	11.41	11.41	11.53	11.64	11.78	11.78	11.78	11.90	12.82	12.82	12.82	12.82
	52.0	S/T	0.89	0.93	1.00	1.00	0.77	0.82	0.96	1.00	0.66	0.71	0.85	0.99	0.42	0.46	0.59	0.72
		PI	5.91	5.91	5.91	5.91	5.93	5.93	5.93	5.93	5.94	5.94	5.94	5.94	5.99	5.99	5.99	5.99
	27.0	TC	15.39	15.39	15.54	15.68	15.88	15.88	15.88	16.05	16.37	16.37	16.37	16.54	17.60	17.60	17.60	17.60
		S/1	0.82	0.86	0.98	1.00	0.72	0.76	0.88	1.00	0.63	0.66	0.79	0.90	0.41	0.45	0.56	0.67
		PI	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.77	3.78	3.78	3.78	3.78
		IC	14.96	14.96	15.11	15.25	15.42	15.42	15.57	15.71	15.91	15.91	15.91	16.08	17.14	17.14	17.14	17.14
	30.0	S/I	0.83	0.87	1.00	1.00	0.73	0.77	0.89	1.00	0.63	0.67	0.80	0.91	0.41	0.45	0.56	0.68
		PI	3.98	3.98	3.98	3.98	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99	4.01	4.01	4.01	4.01
	22.0	ТС ОЛ	14.67	14.07	14.82	14.96	15.13	15.13	15.28	15.42	15.59	15.59	15.59	15.74	10.80	10.80	10.80	16.80
	32.0	5/1	0.84	0.88	1.00	1.00	0.74	0.77	0.90	1.00	0.64	0.08	0.80	0.93	0.41	0.45	0.57	0.08
		TC	4.13	4.13	4.13	4.15	4.14	4.14	4.14	4.14	4.10	4.10	4.10	4.10	4.17	4.17	4.17	4.17
1735	35.0	S/T	0.85	0.89	14.50	14.00	0.74	0.78	0.02	14.90	0.64	0.68	0.81	0.03	0.41	0.45	0.57	0.60
1755	55.0	DI	4.36	4.36	1.00	1.00	4.36	4.36	4.36	1.00	4 37	4 37	1 38	4 37	4 37	4 37	4.37	4.37
		TC	13.24	13 36	13.49	13.62	13.67	13.67	13 79	13.94	14.09	14.09	14 16	14 30	15 24	15 24	15 24	15 24
	43.0	S/T	0.89	0.93	1 00	1.00	0.77	0.82	0.96	1 00	0.67	0.71	0.85	0.99	0.42	0.46	0.59	0.72
	1010	PI	5 15	5.15	5.15	5.15	5.15	5.15	5.15	5.15	5.17	5.17	5.17	5.00	5.20	5.20	5.20	5.20
		TC	12.88	13.00	13.12	13.23	13.29	13.29	13.41	13.56	13.71	13.71	13.71	13.86	14.84	14.84	14.84	14.84
	46.0	S/T	0.91	0.95	1.00	1.00	0.79	0.83	0.98	1.00	0.68	0.72	0.87	1.00	0.42	0.46	0.60	0.74
		PI	5.44	5.44	5.44	5.44	5.45	5.45	5.45	5,45	5.47	5.47	5.47	5.47	5.51	5.51	5.51	5.51
		TC	11.25	11.36	11.48	11.59	11.62	11.62	11.74	11.85	12.02	12.02	12.14	12.25	13.06	13.06	13.06	13.06
	52.0	S/T	0.96	1.00	1.00	1.00	0.83	0.88	1.00	1.00	0.70	0.75	0.91	1.00	0.42	0.47	0.62	0.91
		PI	6.04	6.04	6.04	6.04	6.05	6.05	6.05	6.05	6.07	6.07	6.07	6.07	6.11	6.11	6.11	6.11

							52	2QSM06	0V									
	OUTDOOR	ID WB (°C)		17	7.2			18	3.0			19	9.0			22	2.0	
(CFM)	DB (°C)	ID DB (°C)	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0	24.4	25.0	27.0	29.0
		TC	15.74	15.74	15.88	16.05	16.20	16.20	16.37	16.54	16.69	16.69	16.69	16.86	17.98	17.98	17.98	17.98
	27.0	S/T	0.83	0.87	1.00	1.00	0.73	0.77	0.89	1.00	0.63	0.67	0.80	0.92	0.41	0.45	0.56	0.68
		PI	3.84	3.84	3.84	3.84	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.86	3.86	3.86	3.86
		TC	15.28	15.28	15.42	15.57	15.74	15.74	15.88	16.05	16.23	16.23	16.23	16.40	17.49	17.49	17.49	17.49
	30.0	S/T	0.84	0.88	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.81	0.93	0.41	0.45	0.57	0.69
		PI	4.06	4.06	4.06	4.06	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.07	4.09	4.09	4.09	4.09
		TC	14.96	15.11	15.25	15.39	15.45	15.45	15.59	15.74	15.91	15.91	15.91	16.08	17.14	17.14	17.14	17.14
	32.0	S/T	0.85	0.89	1.00	1.00	0.74	0.78	0.91	1.00	0.64	0.68	0.81	0.94	0.41	0.45	0.57	0.69
		PI	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.22	4.24	4.24	4.24	4.24
	35.0	TC	14.53	14.67	14.82	14.96	14.96	14.96	15.11	15.25	15.45	15.45	15.68	15.82	16.66	16.66	16.66	16.66
1824		S/T	0.86	0.90	1.00	1.00	0.75	0.80	0.93	1.00	0.65	0.69	0.82	0.95	0.42	0.45	0.58	0.70
		PI	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.45	4.46	4.46	4.47	4.46	4.49	4.49	4.49	4.49
		TC	13.50	13.62	13.75	13.87	13.94	13.94	14.09	14.23	14.40	14.40	14.46	14.61	15.57	15.57	15.57	15.57
	43.0	S/T	0.90	0.94	1.00	1.00	0.78	0.83	0.98	1.00	0.67	0.72	0.86	1.00	0.42	0.46	0.60	0.90
		PI	5.25	5.25	5.25	5.25	5.26	5.26	5.26	5.26	5.27	5.27	5.28	5.27	5.31	5.31	5.31	5.31
		TC	13.12	13.23	13.35	13.47	13.56	13.56	13.71	13.86	14.01	14.01	14.01	14.16	15.17	15.17	15.17	15.17
	46.0	S/T	0.92	0.97	1.00	1.00	0.80	0.85	1.00	1.00	0.68	0.73	0.88	1.00	0.42	0.46	0.60	0.92
		PI	5.55	5.55	5.55	5.55	5.56	5.56	5.56	5.56	5.58	5.58	5.58	5.58	5.62	5.62	5.62	5.62
		TC	11.48	11.59	11.71	11.82	11.88	11.99	12.11	12.22	12.28	12.28	12.40	12.51	13.31	13.31	13.31	13.31
	52.0	S/T	0.97	1.00	1.00	1.00	0.84	0.88	1.00	1.00	0.71	0.76	0.93	1.00	0.42	0.47	0.63	0.97
	52.0	PI	6.16	6.16	6.16	6.16	6.18	6.18	6.18	6.18	6.19	6.19	6.19	6.19	6.24	6.24	6.24	6.24

TC: Total Cooling Capacity (kBtu/h) S/T:Sensible Cooling Capacity Ratio PI:Power Input(kW) Note: The table shows the case where the operation frenquency of a compressor is fixed.

6.2 Heating

			1	8k				[SI_	Jnit]	
			Н	EATING PERFORMA	NCE AT INDOOR DRY	/ BULB TEMPERATUR	RE			
INDOOR		-	TC:TOTAL CAPACITY	' IN KILOWATTS (KV	<pre>/)</pre>		PI:TOTAL POWER I	N KILOWATTS (KW)		
632			Indoor Condi	tions (DB °C)			Indoor Cond	itions (DB °C)		
	DB(°C)	16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0	
	-15.0	3.88	3.85	3.83	3.80	1.44	1.48	1.47	1.49	
[-10.0	4.14	4.11	4.09	4.06	1.53	1.58	1.57	1.59	
[-7.0	4.34	4.31	4.28	4.25	1.63	1.68	1.67	1.69	
[-5.6	4.48	4.46	4.43	4.40	1.60	1.63	1.65	1.66	
[-2.8	4.63	4.57	4.54	4.51	1.57	1.60	1.61	1.63	
[0.0	4.69	4.63	4.60	4.57	1.53	1.56	1.57	1.59	
632	2.8	4.92	4.86	4.83	4.80	1.51	1.54	1.55	1.56	
[5.6	5.32	5.27	5.24	5.18	1.49	1.52	1.53	1.54	
	7.0	5.78	5.72	5.60	5.54	1.48	1.50	1.52	1.53	
[11.1	6.07	5.98	5.92	5.89	1.44	1.46	1.47	1.49	
	13.9	6.30	6.21	6.15	6.12	1.41	1.43	1.44	1.46	
	16.7	6.53	6.44	6.38	6.36	1.38	1.40	1.41	1.42	
	18.0	6.65	6.56	6.50	6.47	1.37	1.39	1.40	1.41	
	-15.0	3.96	3.93	3.91	3.88	1.45	1.50	1.49	1.51	
[-10.0	4.22	4.20	4.17	4.14	1.54	1.60	1.59	1.61	
[-7.0	4.43	4.40	4.37	4.34	1.64	1.70	1.69	1.71	
	-5.6	4.57	4.54	4.51	4.48	1.62	1.65	1.67	1.68	
	-2.8	4.72	4.66	4.63	4.60	1.58	1.61	1.63	1.64	
	0.0	4.77	4.72	4.69	4.66	1.55	1.57	1.59	1.60	
805	2.8	5.03	4.95	4.92	4.89	1.53	1.55	1.56	1.58	
	5.6	5.44	5.35	5.32	5.29	1.50	1.53	1.54	1.55	
	7.0	5.93	5.83	5.72	5.66	1.50	1.51	1.53	1.54	
	11.1	6.18	6.09	6.07	6.01	1.45	1.47	1.49	1.50	
	13.9	6.41	6.33	6.30	6.24	1.42	1.44	1.45	1.47	
	16.7	6.67	6.56	6.53	6.47	1.39	1.41	1.42	1.43	
	18.0	6.79	6.67	6.65	6.59	1.38	1.40	1.41	1.42	
	-15.0	4.01	3.98	3.96	3.93	1.46	1.52	1.51	1.52	
	-10.0	4.28	4.25	4.23	4.20	1.56	1.62	1.61	1.63	
	-7.0	4.48	4.46	4.43	4.40	1.66	1.72	1.71	1.73	
	-5.6	4.63	4.60	4.57	4.54	1.64	1.67	1.69	1.70	
	-2.8	4.77	4.72	4.69	4.66	1.60	1.63	1.65	1.66	
	0.0	4.83	4.77	4.74	4.72	1.57	1.59	1.61	1.62	
973	2.8	5.06	5.00	4.98	4.95	1.54	1.57	1.58	1.60	
[5.6	5.50	5.41	5.38	5.35	1.52	1.55	1.56	1.57	
[7.0	5.99	5.89	5.77	5.72	1.51	1.53	1.55	1.56	
[11.1	6.24	6.15	6.12	6.07	1.47	1.49	1.50	1.51	
[13.9	6.47	6.38	6.36	6.30	1.44	1.46	1.47	1.48	
[16.7	6.73	6.62	6.59	6.53	1.41	1.43	1.44	1.45	
	18.0	6.85	6.73	6.70	6.65	1.40	1.41	1.42	1.43	
r				41.				I cu		
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								[51_		
		-				Y BULB TEIMPERATU				
INDOOR AIRFLOW (CMH)	OUTDOOR				v)					
	DB(°C)	10.0			24.0	16.0			24.0	
	15.0	5.22	5 19	5 12	5 11	2.00	20.0	22.0	24.0	
	-10.0	5.50	5.18	5.13	5.11	2.00	2.07	2.00	2.00	
	-7.0	5.85	5.80	5.40	5.45	2.15	2.20	2.20	2.21	
	-7.0	6.03	5.00	5.01	5.88	2.20	2.34	2.55	2.35	
	-3.0	6.17	6.11	5.91	5.88	2.23	2.27	2.23	2.51	
	-2.0	6.17	6.17	6.00	6.09	2.10	2.22	2.25	2.25	
880	0.0	6.55	6.16	6.13	6.08	2.13	2.10	2.10	2.20	
000	5.6	7 10	6.98	6.95	6.90	2.10	2.15	2.14	2.10	
	7.0	7.10	7.56	7 39	7.36	2.00	2.10	2.11	2.15	
	11.1	8.00	7.50	7.55	7.50	1.09	2.07	2.10	2.12	
	13.9	8.29	8.17	8 11	8.06	1.95	1.97	1.98	2.04	
	16.7	8.61	8.49	8.43	8 35	1.94	1.97	1.90	1 95	
	18.0	8.75	8.64	8 55	8.49	1.50	1.92	1.94	1.95	
	-15.0	5 35	5.28	5.25	5.22	2.02	2.09	2.08	2.09	
	-10.0	5.33	5.63	5.61	5.58	2.02	2.05	2.00	2.05	
	-7.0	5.99	5.05	5.87	5.84	2.10	2.25	2.21	2.23	
	-5.6	6 14	6.06	6.03	6.00	2.25	2.30	2.33	2.37	
	-2.8	6.29	6.23	6.17	6.14	2 20	2.23	2.25	2.55	
	0.0	6.37	6.29	6.26	6.20	2.14	2.18	2.20	2.27	
1101	2.8	6.66	6.58	6.55	6.49	2.12	2.14	2.16	2.18	
	5.6	7.21	7.13	7.07	7.04	2.08	2.12	2.13	2.14	
	7.0	7.80	7.71	7.54	7.51	2.07	2.09	2.12	2.13	
	11.1	8.14	8.03	8.00	7.94	2.00	2.03	2.05	2.06	
	13.9	8.46	8.35	8.29	8.23	1.96	1.99	2.00	2.01	
	16.7	8.78	8.64	8.58	8.52	1.91	1.94	1.95	1.96	
	18.0	8.93	8.78	8.72	8.67	1.89	1.92	1.93	1.94	
	-15.0	5.39	5.34	5.31	5.26	2.04	2.11	2.10	2.12	
	-10.0	5.75	5.70	5.67	5.62	2.18	2.25	2.24	2.26	
	-7.0	6.03	5.97	5.94	5.88	2.31	2.39	2.38	2.40	
	-5.6	6.20	6.14	6.11	6.06	2.28	2.32	2.34	2.36	
	-2.8	6.37	6.29	6.26	6.20	2.22	2.26	2.28	2.30	
	0.0	6.43	6.35	6.32	6.29	2.17	2.20	2.22	2.24	
1367	2.8	6.75	6.66	6.61	6.58	2.14	2.17	2.18	2.20	
	5.6	7.30	7.21	7.16	7.10	2.11	2.14	2.14	2.16	
	7.0	7.89	7.80	7.62	7.56	2.09	2.11	2.14	2.16	
	11.1	8.23	8.14	8.09	8.03	2.03	2.05	2.07	2.08	
	13.9	8.55	8.43	8.38	8.32	1.98	2.01	2.02	2.03	
	16.7	8.87	8.75	8.69	8.61	1.93	1.96	1.97	1.98	
ŀ	18.0	9.01	8.90	8.84	8.75	1.91	1.94	1.95	1.96	

			3	δk				[SI_U	Jnit]
			н	EATING PERFORMAI	NCE AT INDOOR DR	/ BULB TEMPERATUR	RE		
INDOOR		1	C:TOTAL CAPACITY	IN KILOWATTS (KW	/)		PI:TOTAL POWER I	N KILOWATTS (KW)	
AIRFLOW (CMH)	OUIDOOR		Indoor Condi	tions (DB °C)			Indoor Cond	itions (DB °C)	
	DB(°C)	16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
	-15.0	6.10	6.03	6.00	5.95	2.55	2.64	2.60	2.62
	-10.0	6.51	6.43	6.41	6.35	2.72	2.81	2.77	2.79
l i	-7.0	6.82	6.74	6.71	6.66	2.89	2.99	2.95	2.97
ĺ	-5.6	7.09	7.00	6.97	6.91	2.83	2.86	2.88	2.90
	-2.8	7.35	7.26	7.21	7.18	2.71	2.74	2.76	2.78
	0.0	7.50	7.41	7.35	7.32	2.60	2.63	2.64	2.65
1360	2.8	7.96	7.84	7.79	7.73	2.51	2.53	2.54	2.56
[5.6	8.66	8.54	8.48	8.43	2.42	2.44	2.45	2.46
	7.0	9.44	9.31	9.08	9.02	2.39	2.36	2.41	2.42
	11.1	9.92	9.77	9.72	9.66	2.24	2.25	2.26	2.26
	13.9	10.35	10.21	10.15	10.06	2.14	2.15	2.15	2.15
	16.7	10.79	10.64	10.56	10.50	2.04	2.04	2.04	2.04
	18.0	10.99	10.85	10.76	10.70	1.99	1.99	1.99	1.99
	-15.0	6.23	6.15	6.13	6.08	2.57	2.66	2.62	2.64
	-10.0	6.65	6.57	6.54	6.49	2.74	2.84	2.79	2.81
	-7.0	6.97	6.88	6.86	6.80	2.91	3.01	2.97	2.99
	-5.6	7.23	7.15	7.12	7.06	2.85	2.89	2.90	2.92
	-2.8	7.50	7.41	7.35	7.32	2.74	2.77	2.78	2.80
	0.0	7.67	7.55	7.53	7.47	2.62	2.65	2.66	2.68
1880	2.8	8.11	7.99	7.96	7.90	2.53	2.56	2.57	2.58
	5.6	8.86	8.72	8.66	8.60	2.44	2.46	2.47	2.48
	7.0	9.66	9.50	9.25	9.19	2.41	2.38	2.43	2.44
	11.1	10.12	9.98	9.92	9.83	2.26	2.27	2.27	2.28
	13.9	10.56	10.41	10.35	10.27	2.16	2.16	2.17	2.17
	16.7	11.02	10.85	10.79	10.70	2.06	2.06	2.06	2.06
	18.0	11.22	11.08	10.99	10.91	2.01	2.01	2.00	2.00
	-15.0	6.26	6.21	6.16	6.13	2.60	2.69	2.65	2.67
	-10.0	6.68	6.63	6.58	6.55	2.77	2.87	2.83	2.85
	-7.0	7.00	6.94	6.89	6.86	2.95	3.05	3.01	3.03
	-5.6	7.29	7.23	7.18	7.15	2.88	2.92	2.94	2.95
	-2.8	7.55	7.47	7.44	7.38	2.77	2.80	2.81	2.83
	0.0	7.73	7.64	7.58	7.53	2.65	2.68	2.69	2.70
2250	2.8	8.19	8.08	8.02	7.96	2.56	2.58	2.59	2.60
	5.6	8.95	8.83	8.77	8.69	2.47	2.48	2.49	2.50
	7.0	9.73	9.60	9.37	9.31	2.43	2.40	2.46	2.46
	11.1	10.21	10.09	10.01	9.95	2.28	2.29	2.29	2.30
	13.9	10.67	10.53	10.47	10.38	2.18	2.18	2.18	2.18
	16.7	11.14	10.96	10.91	10.82	2.07	2.07	2.07	2.07
	18.0	11.34	11.20	11.11	11.02	2.02	2.02	2.02	2.01

			48K					[SI_I	Jnit]	
			HEATIN	IG PERFORMANCE	AT INDOOR DRY B	ULB TEMPERATUR				
INDOOR			TC:TOTAL CAPAC	ITY IN KILOWATTS			PI:TOTAL POWE	er in Kilowatts		
(CMH)	OUTDOOR DB(C)		Indoor Cond	itions (DB [°] C)		Indoor Conditions (DB [°] C)				
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0	
	-7.0	13.7	13.4	13.5	13.4	5.21	5.39	5.28	5.30	
	-5.6	13.5	13.4	13.3	13.2	5.06	5.10	5.13	5.15	
	-2.8	13.5	13.3	13.3	13.2	4.80	4.83	4.85	4.86	
	0.0	13.3	13.2	13.1	13.0	4.54	4.56	4.57	4.58	
	2.8	13.6	13.4	13.3	13.2	4.32	4.33	4.33	4.34	
1986	5.6	14.3	14.1	14.0	14.0	4.10	4.10	4.10	4.09	
	7.0	15.1	14.9	14.8	14.7	3.99	3.86	3.98	3.98	
	11.1	15.5	15.3	15.2	15.1	3.64	3.61	3.60	3.59	
	13.9	15.8	15.5	15.4	15.3	3.40	3.36	3.34	3.32	
	16.7	16.0	15.8	15.7	15.6	3.16	3.11	3.08	3.06	
	18.0	16.2	15.9	15.8	15.7	3.04	2.99	2.96	2.93	
	-7.0	13.9	13.6	13.7	13.7	5.26	5.44	5.33	5.35	
	-5.6	13.8	13.6	13.6	13.5	5.11	5.15	5.17	5.20	
	-2.8	13.7	13.6	13.5	13.5	4.85	4.88	4.90	4.91	
	0.0	13.6	13.4	13.3	13.2	4.59	4.61	4.62	4.63	
	2.8	13.9	13.7	13.6	13.5	4.36	4.37	4.38	4.38	
2424	5.6	14.6	14.4	14.3	14.2	4.14	4.14	4.14	4.14	
	7.0	15.4	15.2	15.1	15.0	4.03	3.90	4.02	4.02	
	11.1	15.8	15.6	15.5	15.4	3.67	3.65	3.64	3.63	
	13.9	16.1	15.8	15.7	15.6	3.43	3.40	3.38	3.36	
	16.7	16.4	16.1	16.0	15.9	3.19	3.14	3.12	3.10	
	18.0	16.5	16.2	16.1	16.0	3.07	3.02	2.99	2.97	
	-7.0	14.1	13.8	13.9	13.8	5.31	5.50	5.39	5.41	
	-5.6	13.9	13.8	13.7	13.6	5.16	5.21	5.23	5.25	
	-2.8	13.9	13.7	13.7	13.6	4.90	4.93	4.95	4.96	
	0.0	13.7	13.5	13.5	13.4	4.63	4.66	4.67	4.68	
	2.8	14.0	13.8	13.7	13.7	4.41	4.42	4.42	4.43	
2835	5.6	14.7	14.6	14.4	14.4	4.18	4.18	4.18	4.18	
	7.0	15.5	15.4	15.2	15.1	4.08	3.94	4.06	4.06	
	11.1	15.9	15.7	15.6	15.5	3.71	3.69	3.67	3.66	
	13.9	16.2	16.0	15.9	15.8	3.47	3.43	3.41	3.39	
	16.7	16.5	16.3	16.1	16.0	3.22	3.17	3.15	3.13	
	18.0	16.6	16.4	16.3	16.1	3.10	3.05	3.02	3.00	

			60K			•		[SI_I	Jnit]
			HEATIN	IG PERFORMANCE	AT INDOOR DRY B	ULB TEMPERATUR			
INDOOR			TC:TOTAL CAPACITY IN KILOWATTS PI:TOTAL POWE						
AIRFLOW (CMH)			Indoor Cond	itions (DB [°] C)		Indoor Conditions (DB [°] C)			
	20(0)	16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
	-7.0	11.4	10.8	11.2	11.1	4.16	4.29	4.30	4.35
ĺ	-5.6	11.5	11.4	11.3	11.2	4.13	4.22	4.27	4.32
ĺ	-2.8	12.1	11.9	11.8	11.8	4.09	4.18	4.23	4.27
Ì	0.0	12.5	12.3	12.2	12.1	4.04	4.14	4.18	4.23
ĺ	2.8	13.4	13.2	13.1	13.0	4.04	4.14	4.18	4.23
2470	5.6	14.7	14.5	14.4	14.3	4.04	4.14	4.18	4.23
ĺ	7.0	15.8	16.0	15.5	15.4	4.05	4.16	4.19	4.24
ĺ	11.1	17.1	16.9	16.8	16.7	4.02	4.11	4.16	4.20
ĺ	13.9	18.0	17.8	17.6	17.5	4.00	4.09	4.14	4.18
ĺ	16.7	18.9	18.6	18.5	18.4	3.98	4.07	4.11	4.16
ĺ	18.0	19.3	19.1	18.9	18.8	3.97	4.06	4.10	4.15
İ	-7.0	11.6	11.0	11.4	11.3	4.20	4.34	4.35	4.40
	-5.6	11.8	11.6	11.5	11.5	4.17	4.27	4.32	4.36
	-2.8	12.3	12.2	12.1	12.0	4.13	4.22	4.27	4.32
Ī	0.0	12.7	12.6	12.5	12.4	4.09	4.18	4.23	4.27
Ī	2.8	13.6	13.5	13.4	13.2	4.09	4.18	4.22	4.27
2945	5.6	15.0	14.8	14.7	14.6	4.09	4.18	4.22	4.27
Ī	7.0	16.1	16.3	15.8	15.7	4.10	4.20	4.23	4.28
[11.1	17.5	17.2	17.1	17.0	4.06	4.15	4.20	4.24
[13.9	18.4	18.1	18.0	17.9	4.04	4.13	4.17	4.22
Ī	16.7	19.3	19.0	18.9	18.8	4.02	4.11	4.15	4.19
Ī	18.0	19.7	19.4	19.3	19.2	4.01	4.10	4.14	4.18
	-7.0	11.7	11.1	11.5	11.5	4.25	4.38	4.39	4.44
Ī	-5.6	11.9	11.7	11.7	11.6	4.21	4.31	4.36	4.40
[-2.8	12.5	12.3	12.2	12.1	4.17	4.26	4.31	4.36
[0.0	12.9	12.7	12.6	12.5	4.13	4.22	4.27	4.31
Ī	2.8	13.8	13.6	13.5	13.4	4.13	4.22	4.26	4.31
3365	5.6	15.2	15.0	14.9	14.8	4.12	4.22	4.26	4.31
Ī	7.0	16.3	16.5	16.0	15.9	4.13	4.24	4.27	4.32
Ī	11.1	17.6	17.4	17.3	17.2	4.10	4.19	4.24	4.28
ĺ	13.9	18.6	18.3	18.2	18.1	4.08	4.17	4.21	4.26
Ī	16.7	19.5	19.2	19.1	19.0	4.06	4.15	4.19	4.23
Ī	18.0	19.9	19.6	19.5	19.4	4.05	4.13	4.18	4.22

7. Capacity Correction Factor for Height Difference

Model	18k		Pi	pe Length (m)		
	Cooling		5	10	15	25
		15			0.937	0.918
	than Outdoor	10		0.971	0.947	0.927
Lloight difference		5	0.995	0.980	0.956	0.937
		0	1.000	0.985	0.961	0.941
	Outdoor Uppor	-5	1.000	0.985	0.961	0.941
	than Indoor	-10		0.985	0.961	0.941
		-15			0.961	0.941
	Heating		5	10	15	25
	Indoor Lippor	15			0.991	0.986
	than Outdoor	10		0.996	0.991	0.986
Height difference H (m)		5	1.000	0.996	0.991	0.986
		0	1.000	0.996	0.991	0.986
	Outdoor Uppor	-5	0.992	0.989	0.983	0.978
	than Indoor	-10		0.981	0.975	0.970
		-15			0.967	0.962

Note: model 42QSM018VSG/38QSM0318SG currently can't apply the long piping over 25 meters.

Model	24k					Pipe Ler	ngth (m)			
Coc	Cooling/Heating			10	15	25	35	45	50	55
	Indoor Up-	15			0.920	0.870	0.820	0.770	0.729	0.677
	per	10		0.960	0.934	0.884	0.833	0.782	0.740	0.688
	door	5	0.995	0.969	0.944	0.893	0.841	0.790	0.747	0.695
lloight differ		0	1.000	0.974	0.949	0.897	0.846	0.794	0.751	0.698
ence	Outdoor	-5	0.995	0.969	0.944	0.893	0.841	0.790	0.747	0.695
H (m)		-10		0.960	0.934	0.884	0.833	0.782	0.740	0.688
		-15			0.920	0.870	0.820	0.770	0.729	0.677
	than Indoor	-25				0.857	0.808	0.758	0.718	0.667
		-35				\nearrow	0.796	0.747	0.707	0.657
		-45				\nearrow	\nearrow	0.736	0.697	0.647

Model	36k				Pipe Ler	ngth (m)		
	Cooling		5	10	15	20	25	30
		20			\nearrow	0.906	0.890	0.874
	Indoor Upper	15			0.937	0.920	0.904	0.887
	than Outdoor	10		0.968	0.951	0.934	0.917	0.900
		5	0.995	0.978	0.961	0.944	0.927	0.909
Height difference		0	1.000	0.983	0.966	0.948	0.931	0.914
		-5	1.000	0.983	0.966	0.948	0.931	0.914
	Outdoor Upper	-10		0.983	0.966	0.948	0.931	0.914
	than Indoor				0.966	0.948	0.931	0.914
		-20			\nearrow	0.948	0.931	0.914
	Heating		5	10	15	20	25	30
		20			\nearrow	0.975	0.967	0.959
	Indoor Upper	15			0.984	0.975	0.967	0.959
	than Outdoor	10		0.992	0.984	0.975	0.967	0.959
		5	1.000	0.992	0.984	0.975	0.967	0.959
Height difference H (m)		0	1.000	0.992	0.984	0.975	0.967	0.959
		-5	0.992	0.984	0.976	0.967	0.959	0.951
	Outdoor Upper	-10		0.976	0.968	0.960	0.952	0.943
	than Indoor	-15			0.960	0.952	0.944	0.936
		-20			\nearrow	0.944	0.936	0.928

Note: model 42QSM036VSP/38QSM036VSP currently can't apply the long piping over 30 meters.

Model	48k		Pipe Length (m)								
Cooling/Heating			5	10	20	30	40	50	55		
		30			\nearrow	0.825	0.773	0.721	0.672		
	Indoor Upper	20			0.891	0.838	0.785	0.732	0.682		
	than Outdoor	10		0.958	0.904	0.850	0.797	0.743	0.693		
		5	0.995	0.968	0.913	0.859	0.805	0.750	0.700		
Height		0	1.000	0.973	0.918	0.863	0.809	0.754	0.703		
ditter-		-5	0.995	0.968	0.913	0.859	0.805	0.750	0.700		
H (m)		-10		0.958	0.904	0.850	0.797	0.743	0.693		
	Outdoor Upper	-15			0.891	0.838	0.785	0.732	0.682		
	than Indoor	-25				0.825	0.773	0.721	0.672		
		-35			\nearrow		0.761	0.710	0.662		
		-45			\nearrow		\nearrow	0.700	0.652		

Model	60k		Pipe Length (m)								
Cooling/Heating			5	10	20	30	40	50	55		
		30			\nearrow	0.797	0.734	0.671	0.613		
	Indoor Upper	20			0.874	0.810	0.745	0.681	0.622		
	than Outdoor	10		0.952	0.887	0.822	0.757	0.692	0.632		
		5	0.995	0.962	0.896	0.830	0.764	0.698	0.638		
Height		0	1.000	0.967	0.901	0.834	0.768	0.702	0.641		
differ-		-5	0.995	0.962	0.896	0.830	0.764	0.698	0.638		
H (m)		-10		0.952	0.887	0.822	0.757	0.692	0.632		
	Outdoor Upper	-15			0.874	0.810	0.745	0.681	0.622		
	than Indoor	-25				0.797	0.734	0.671	0.613		
		-35					0.723	0.661	0.604		
		-45						0.651	0.595		

8. Noise Criterion Curves

8.1 Indoor Unit



Notes:

-Sound measured at 1.5m away from the center of the unit.

-Data is valid at free field condition

-Data is valid at nominal operation condition

-Reference acoustic pressure $OdB = 20\mu Pa$

-Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.



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Band Center Frequency /Hz

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Specifications

8.2 Outdoor Unit



Note: $H= 0.5 \times height of outdoor unit$

Notes:

- -Sound measured at 1.0m away from the center of the unit.
- -Data is valid at free field condition

-Data is valid at nominal operation condition

-Reference acoustic pressure OdB=20µPa

-Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.





9. Electrical Characteristics

Capaci	ty (Btu/h)	18k	24k	36k	48k~60k
	Phase	1-phase	1-phase	1-phase	1-phase
OUDOOR UNIT POWER	Frequency and Voltage 230V, 60Hz		230V, 60Hz	230V, 60Hz	230V, 60Hz
	Power Wiring (mm²)	3×2.5	3×2.5	3×4.0	3x6.0
	Circuit Breaker/ Fuse (A)	25/20	25/20	50/40	50/40
Indoor/Outdoor	Weak Electric Signal)(mm ²)				
Wiring	Strong Electric Signal(mm ²)	4×1.0	4×1.0	4×1.0	4×1.0

10. Static Pressure

18k



Constant air volume Air Flow Rate { m³/h } M External Static Pressure (pa)

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Constant air volume









36k



Constant air volume







Product Features

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1. Operation Modes and Functions

1.1 Abbreviation

Unit element abbreviations

Abbreviation Element		
T1	Indoor room temperature	
T2	Coil temperature of evaporator	
Т3	Coil temperature of condenser	
T4	Outdoor ambient temperature	
ТР	Compressor discharge temperature	
Tsc	Adjusted setting temperature	

In this manual, such as CDIFTEMP, HDIFTEMP2, TCE1, TCE2...etc., they are well-setting parameter of EEPROM.

1.2 Safety Features

Compressor three-minute delay at restart

Compressor functions are delayed for up to ten seconds upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for nine seconds, the compressor ceases operation.

Automatic shutoff based on fan speed

If a fault occurs on the air volume regulator or the regulator enters protection mode, it sends the error message CF and an instruction to reduce fan speed to the master. The message and the instruction can be inquired with the remote controller or the wired controller. (Fault and protection information are displayed for one minute). After a fault occurs, the master unit shows the error code E3 and the fault count for one minute. If the fault occurs three times, then the fan is unable to resolve the problem independently. External shutdown by a remote controller, wired controller, or central controller must be used to clear the fan fault and fault count. The fan runs normally for 5 minutes while clearing fault count.

0	No malfunction
1	P0 Overcurrent
2	Overpressure
3	Overload
4	Over speed
5	Startup malfunction
6	Lack of phase

7	DC voltage too low
8	Communication fault
9	Parameter fault
10	L3 Current limited
11	L5 Voltage limited
12	Target speed cannot be met during the static pressure calculation process

Inverter module protection

The inverter module has an automatic shutoff mechanism based on the unit's current, voltage, and temperature. If automatic shutoff is initiated, the corresponding error code is displayed on the indoor unit and the unit ceases operation.

Indoor fan delayed operation

- When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of setting time or the louver is in place.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

Compressor preheating

Preheating is automatically activated when T4 sensor is lower than setting temperature.

Sensor redundancy and automatic shutoff

- If one temperature sensor malfunctions, the air conditioner continues operation and displays the corresponding error code, allowing for emergency use.
- When more than one temperature sensor is malfunctioning, the air conditioner ceases operation.

1.3 Display Function

Unit display functions



1.4 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor are stopped.
- Temperature control is disabled and no temperature

setting is displayed.

- The indoor fan speed can be set to 1%~100%, or low, medium, high and auto.
- The louver operations are identical to those in cooling mode.
- Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 24°C.

1.5 Cooling Mode

1.5.1 Compressor Control

Reach the configured temperature:

- 1) When the compressor runs continuously for less than 120 minutes.
 - If the following conditions are satisfied, the compressor ceases operation.
 - Calculated frequency(fb) is less than minimum limit frequency(FminC).
 - Compressor runs at FminC more than ten minutes.
 - T1 is lower than or equal to (Tsc-CDIFTEMP-0.5°C)
- 2) When the compressor runs continuously for more than 120 minutes.
 - If the following conditions are satisfied, the compressor ceases operation.
 - Calculated frequency(fb) is less than minimum limit frequency(FminC).
 - Compressor runs at FminC more than 10 minutes.
 - When T1 is lower than or equal to (Tsc-CDIFTEMP).
- 3) If one of the following conditions is satisfied, not judge protective time.
 - Compressor running frequency is more than test frequency.
 - When compressor running frequency is equal to test frequency, T4 is more than 15°C or T4 fault.
 - Change setting temperature.
 - Turbo or sleep function on/off
 - Various frequency limit shutdown occurs.

1.5.2 Indoor Fan Control

- In cooling mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or low, medium, high and auto.
- 2) Auto fan action in cooling mode:
 - Descent curve
 - When T1-Tsc is lower than or equal to 3.5°C, fan speed reduces to 80%;
 - When T1-Tsc is lower than or equal to 1°C, fan speed reduces to 60%;

- When T1-Tsc is lower than or equal to 0.5°C, fan speed reduces to 40%;
- When T1-Tsc is lower than or equal to 0°C, fan speed reduces to 20%;
- When T1-Tsc is lower than or equal to -0.5°C, fan speed reduces to 1%.
- Rise curve
 - When T1-Tsc is higher than 0°C, fan speed increases to 20%;
 - When T1-Tsc is higher than 0.5°C, fan speed increases to 40%;
 - When T1-Tsc is higher than 1°C, fan speed increases to 60%;
 - When T1-Tsc is higher than 1.5°C, fan speed increases to 80%;
 - When T1-Tsc is higher than 4°C, fan speed increases to 100%.

1.5.3 Outdoor Fan Control

- The outdoor unit will be run at different fan speed according to T4 and compressor frequency.
- For different outdoor units, the fan speeds are different.

1.5.4 Condenser Temperature Protection



When the condenser temperature exceeds a configured value, the compressor ceases operation.

1.5.5 Evaporator Temperature Protection



Product Features

Page 56

Setting fan speed

Fan off

- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 1 minute.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

1.6 Heating Mode(Heat Pump Units)

1.6.1 Compressor Control

- 1) Reach the configured temperature
 - If the following conditions are satisfied, the compressor ceases operation.
 - Calculated frequency(fb) is less than minimum limit frequency(FminH).
 - Compressor runs at FminH more than 10 minutes.
 - T1 is higher than or equal to Tsc+ HDIFTEMP2.

Note: HDIFTEMP2 is EEPROM setting parameter. It is 2°C usually.

- If one of the following conditions is satisfied, not judge protective time.
 - Compressor running frequency is more than test frequency.
 - Compressor running frequency is equal to test frequency, T4 is more than 15°C or T4 fault.
 - Change setting temperature.
 - Turbo or sleep function on/off.
- 2) When the current is higher than the predefined safe value, surge protection is activated, causing the compressor to cease operations.

1.6.2 Indoor Fan Control

- In heating mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or low, medium, high and auto.
 - Anti-cold air function
 - The indoor fan is controlled by the indoor temperature T1 and indoor unit coil temperature T2.

TEL4-ΔTE1 High fan(80%) TEH3-ΔTE1 Medium fan(60%) TEH2-ΔTE1 Low fan(40%) TEH1-ΔTE1 Low fan(40%) TEH0-ΔTE1 Low fan(20%) TEH0-ΔTE1 Low fan(1%) TEL0 TEL0

T2

TEH5-ATE1

TEL5-ATE1

TEH4-ATE1

- 2) Auto fan action in heating mode:
 - Rise curve

∆TE1=0

- When T1-Tsc is higher than -1.5°C, fan speed reduces to 80%;
- When T1-Tsc is higher than 0°C, fan speed reduces to 60%;
- When T1-Tsc is higher than 0.5°C, fan speed reduces to 40%;
- When T1-Tsc is higher than 1°C, fan speed reduces to 20%.
- Descent curve
 - When T1-Tsc is lower than or equal to 0.5°C, fan speed increases to 20%;
 - When T1-Tsc is lower than or equal to 0°C, fan speed increases to 60%;
 - When T1-Tsc is lower than or equal to -1.5°C, fan speed increases to 80%;
 - When T1-Tsc is lower than or equal to -3°C, fan speed increases to 100%.

1.6.3 Outdoor Fan Control

- The outdoor unit will be run at different fan speed according to T4 and compressor frequency.
- For different outdoor units, the fan speeds are different.

1.6.4 Defrosting mode

- The unit enters defrosting mode according to the temperature value of T3 and T4 as well as the compressor running time.
- In defrosting mode, the compressor continues to run, the indoor and outdoor motor will cease operation, the defrost light of the indoor unit will turn on, and the "

- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
 - T3 rises above TCDE1.
 - T3 maintained above TCDE2 for 80 seconds.
 - Unit runs for 15 minutes consecutively in defrosting mode.
- If T4 is lower than or equal to -22°C and compressor running time is more than TIMING_DEFROST_TIME, if any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
 - Unit runs for 10 minutes consecutively in defrosting mode.
 - T3 rises above 10°C.

For some models:

- T3 is lower than 3°C(37.4°F) and compressor running time is more than 120 minutes, at this time, if T3 is lower than TCDI1+4°C(39.2°F) for 3 minutes, the unit enters defrosting mode. If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
- T3 rises above TCDE1+4°C.
- T3 maintained above TCDE2+4°C for 80 seconds.
- Unit runs for 15 minutes consecutively in defrosting mode.

1.6.5 Evaporator Coil Temperature Protection



- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 20 seconds.
- Hold: Keep the current frequency.
- Resume: No limitation for frequency.

1.7 Auto-mode

- This mode can be selected with the remote controller and the temperature setting can be adjusted between 16°C~30°C.
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of ΔT ($\Delta T = T1-TS$).

ΔΤ	Running mode
$\Delta T>2^{\circ}C(3.6^{\circ}F)$	Cooling
-3°C(-5.4°F)≤∆T≤2°C(3.6°F)	Fan-only
ΔT<-3°C(-5.4°F)	Heating*

Heating*: In auto mode, cooling only models run the fan

- Indoor fan will run at auto fan speed.
- The louver operates same as in relevant mode.
- If the machine switches mode between heating and cooling, the compressor will keep stopping for certain time and then choose mode according to Δ T.

1.8 Drying mode

- In drying mode, AC operates the same as auto fan in cooling mode.
- All protections are activated and operate the same as they do that in cooling mode.
- Low Room Temperature Protection

If the room temperature is lower than 10°C, the compressor ceases operations and does not resume until room temperature exceeds 12°C.

1.9 Forced operation function

Press the AUTO/COOL button, the AC will run as below sequence:

Forced auto \rightarrow Forced cooling \rightarrow Off

• Forced cooling mode:

The compressor and outdoor fan continue to run and the indoor fan runs at breeze speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of $24^{\circ}C(76^{\circ}F)$.

• Forced auto mode:

Forced auto mode operates the same as normal auto mode with a preset temperature of $24^{\circ}C(76^{\circ}F)$.

- The unit exits forced operation when it receives the following signals:
 - Switch off
 - Changes in:
 - mode
 - fan speed
 - sleep mode
 - Follow me

1.10 Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.

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- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns off automatically at the preset Off Time and then turns on automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time

1.11 ECO Function

- The ECO function is available in cooling, heating, or auto mode.
- The operational process for sleep mode is as follows:
 - When cooling, the temperature rises 1°C (to not higher than 30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
 - When heating, the temperature decreases 1°C(to not lower than 17°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
- The operating time for sleep mode is 8 hours, after which, the unit exits this mode and does not switches off.

1.12 Auto-Restart function

• The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.

1.13 8°C Heating(Optional)

In heating mode, the temperature can be set to as low as 8°C, preventing the indoor area from freezing if unoccupied during severe cold weather.

1.14 Self clean(Optional)

- If you press "Self Clean" when the unit is in cooling, drying, auto cooling or auto drying mode:
 - The indoor unit will run in low fan mode for a certain time, then ceases operation.

- Self Clean keeps the indoor unit dry and prevents mold growth.
- When match with multi outdoor unit, this function is disabled.

1.15 Follow me(Optional)

- If you press "Follow Me" on the remote, the indoor unit will beep. This indicates the follow me function is active.
- Once active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.
- If the unit does not receive a signal for 7 minutes or you press "Follow Me," the function turns off. The unit regulates temperature based on its own sensor and settings.

1.16 Silence(Optional)

- Press "Silence" on the remote control to enable the SILENCE function. While this function is active, the compressor frequency is maintained at a lower level than F3. The indoor unit will run at faint breeze(1%), which reduces noise to the lowest possible level.
- When match with multi outdoor unit, this function is disabled.

2. Remote Controller Functions

2.1 LCD Wired Remote Controller

2.1.1 LCD Wired Remote Controller KJR-12B/DP(T) (Standard)

The KJR-12B/DP(T) wired remote controller is standard for Duct type.

i) Buttons and Functions



ii) LCD Screen



iii) Installation

• Dimensions



• Wiring diagram

Refer to the following diagram to wire the wall-mounted remote control to the indoor unit.



• Installation Diagram

Connect the wire from the display panel of the indoor unit to a connecting cable. Then connect the other side of the connecting cable to the remote control.



Note: Be sure to reserve a length of the connecting wire for periodic maintenance.



Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

• For exposed mounting, cut holes on four of the sides according to the picture below.



• For shielded wiring, please refer to the picture below.

Embedded switch box wiring

Wiring through the wall



Wiring hole



Wall hole and wiring hole Diameter of wall hole: Φ 2cm

2.1.2 LCD Wired Remote Controller KJR-120C/TF-E(Optional)

The KJR-120C/TF-E wired remote controller is optional for all types.

i) Buttons and Functions



1. POWER button

Turn on of turn off the unit.

2. MODE(A/B) button

Used to select the operation mode: Auto / Cooling / Drying / Heating / Fan;

Hold to active the operation of auto-lifting panel when off

3. Adjust button

To set temperature, time and timer; set up or down the auto-lifting panel

4. FAN SPEED button

Used to select the fan speed.

5. Up-down airflow direction and swing Button

Press for adjusting the angel of louver, hold for vertical swing; individual louver control for cassette panel

6. Left-righ airflow swing Button

Press for activing the horizontal swing

7. FOLLOW ME(PTC) button

Allows the remote control to act as a remote thermostat and send temperature information from its current location.

- 8. TIMER button
- To set timer on and timer off time of one day
- 9. DELAY/DAY OFF button

To set 1 to 2 hours delay off for each day or a whole day off in a weekly timer schedule

10. CONFIRM button

To confirm an setting or call up the menu

11. BACK button

Back to previous operation or superior menu

12. COPY button

Copy timer setting of one day to another in weekly schedule setting

13 Infrared remote receiver (on some models)

ii) LCD Screen



- 1 Operation mode indication
- 2 Fan speed indication
- 3 Left-right swing indication
- 4 Up-down swing indication
- 5 Faceplate function indication
- 6 Main unit and secondary unit indication
- 7 Follow me function indication
- 8 PTC function indication

- 9 C° / F° indication
- 10 Temperature display
- 11 Lock indication
- 12 Room temperature indication
- 13 Clock display
- 14 On/Off timer
- 15 Timer display

iii) Installation

• Dimensions



• Wiring diagram

Refer to the following diagram to wire the wall-mounted remote control to the indoor unit.



• Installation Diagram

Connect the female joint of wires group from the mainboard with the male joint of connective wires group. Then connect the other side of connective wires group with the male joint of wires group leads from wire controller.





Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

• For exposed mounting, four outletting positions. There are three need cutting.







Cutting place of top side wire outlet

Cutting place of left side wire outlet Side wire of

Cutting place of right side wire outlet

• For shielded wiring, please refer to the picture below.

Embedded switch box wiring



Wiring hole Wiring through the wall



Wall hole and wiring hole Diameter of wall hole : Φ2cm

2.1.3 LCD Wired Remote Controller KJR-120G/TF-E(Optional)

The KJR-120G/TF-E wired remote controller is optional for all types.

i) Buttons and Functions



1 MODE button

Used to select the operation mode: Auto / Cooling / Drying / Heating / Fan;

Hold to active the operation of auto-lifting panel when off

2. POWER button

Turn on of turn off the unit.

3. Adjust button

To set temperature, time and timer; set up or down the auto-lifting panel

4. FAN SPEED button

Used to select the fan speed.

5. Swing Button

Press to active vertical swing, hold for horizontal swing

6. TIMER button

To set timer on and timer off time of one day

7.DELAY/DAY OFF button

To set 1 to 2 hours delay off for each day or a whole day off in a weekly timer schedule

8. COPY/FOLLOW ME button

To copy timer setting of one day to another in weekly schedule setting;

To active the follow me function while in normal operation.

9. BACK/TURBO button

Back to previous operation or superior menu

To active turbo mode while in normal operation

10. CONFIRM button

To confirm an setting or call up the superior menu

ii) LCD Screen



- **Product Features**
- 1 Operation mode indication
- 2 Fan speed indication
- 3 Left-right swing indication
- 4 Up-down swing indication
- 5 Faceplate function indication
- 6 Main unit and secondary unit indication
- 7 Follow me function indication

- 8 Turbo/PTC function indication
- 9 C° / F° indication
- 10 Temperature display
- 11 Lock indication
- 12 Room temperature indication
- 13 Clock display
- 14 On/Off timer
- 15 Timer display

iii) Installation

• Dimensions



• Wiring diagram

3) Connection

For Cassette: The wired controller connects to main control board directly.



For Duct, Ceiling& floor: The wired controller connects to terminal board, terminal board connects to main control board.



4) Address setting



- a. One non-polarity controller can control up to 16 indoor units.
- b. When the non-polarity controller is connected to several units, every air-conditioner in network has only one network address to distinguish each other.
- c. Address code of air-conditioner in LAN is set by code switch ENC1(Duct and Ceiling& Floor) or ADSS(Cassette) of the indoor unit, and the set range is 0-15.
- d. Note: The indoor units are controlled at the same time, not independently. The purpose of setting network address is identify the unit when error occurs.


Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

• For wiring the indoor unit, there are three methods:

- From the rear;
- From the bottom;
- From the top;
- From the top center.



- 1: Indoor Unit.
- 2: Notch the part for the wiring to pass through with a nipper tool.
- Connect the terminals on the remote controller (HA ,HB), and the terminals of the indoor unit. (HA ,HB). (HA and HB do not have polarity.)

2.2 Centralized Controller

1) Connection

For Light commercial air conditioner with XYE port, it can be directly connected to Centralized Controller (CCM03, CCM09).



2) Address setting

When setting the address, please make sure the unit is powered off. The address can be set from 0 to 63 by the switch. Turn on the unit, then the address will be effective.

SWI	TCH FOR CCM UNIT ADDRESS					
S2 + S1	LECOH H	0 7 1 3 4 5 S		LE COA		
ADDRESS		0~1	5		16~3	1
Factory Setting		\checkmark	-			
S2 + S1	LE COBAG			LEF ODBAG	0 7 23 D 4 55 8 L 9	
ADDRESS		32~4	17		48~6	3
Factory Setting						

Note: For light commercial aire conditioner with XYE port, it can be also connected to BMS (Building Management System).

If there is any CAC (central air conditioner) connecting with the central controller at the same time, please set the address from largest (63,62,61...), since the CAC units could obtain address automatically from the smallest (00,01,02...)

2.3 Using the wire controller to set external static pressure

- You can use the unit's automatic airflow adjustment function to set external static pressure.
- Automatic airflow adjustment is the volume of blowoff air that has been automatically adjusted to the quantity rated.

1. Make sure the test run is done with a dry coil. If the coil is not dry, run the unit for 2 hours in FAN ONLY mode to dry the coil.

2. Check that both power supply wiring and duct installation have been completed. Check that any closing dampers are open. Check that the air filter is properly attached to the air suction side passage of the unit.

3. If there is more than one air inlet and outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms with the designed airflow rate. Make sure the unit is in FAN ONLY mode. Press and set the airflow adjustment button on the remote control to change the airflow rate from H or L.

4. Set the parameters for automatic airflow adjustment. When the air conditioning unit is off, perform the following steps:

- When the unit is turned off, hold the MODE button and

FAN button down together for three seconds. ("AF" indicator flashes for 3 times.)





- Press "MODE". The air conditioning unit will then start the fan for airflow automatic adjustment.

After 3 to 6 minutes, the air conditioning unit stops operating once automatic airflow adjustment has finished.



Caution: DO NOT adjust the dampers when automatic airflow adjustment is active.

Caution:

• If there is no change after airflow adjustment in the ventilation paths, be sure to reset automatic airflow adjustment.

• If there is no change to ventilation paths after airflow adjustment, contact your dealer, especially if this occurs after testing the outdoor unit or if the unit has been moved to a different location.

• Do not use automatic airflow adjustment with remote control, if you are using booster fans, outdoor air processing unit, or a HRV via duct.

• If the ventilation paths have been changed, reset airflow automatic adjustment as described from step 3 onwards.

2.4 Using the wire controller to set airflow rate

When the air conditioning unit is off, perform the following steps:

1.Press"MODE" and "FAN" for three seconds.

2.Press " \triangle " or " \bigtriangledown " to select the SP.

3.Press "MODE" to set the airflow rate in the range of $0 \sim 4$.



"0": No airflow change

"1"~"4":Airflow increase progressively

4.Press "ON/OFF" to finish the airflow setting.

Installation

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Accessories

	Name	Shape	Quantity
	Soundproof / insulation sheath	0	2
Tubing & Fittings	Seal sponge (some models)		1
	Orifice (some models)	₿⊨⊂ı∟ı∟ı₿	1
Drainpipe Fittings	Drain joint (some models)		1
(for cooling & heating)	Seal ring (some models)	Ô	1
EMC Magnetic Ring (some models)	Magnetic ring(Wrap the electric wires S1 & S2 (P & Q & E) around the magnetic ring twice)	51&52(P&Q&E)	1
(Magnetic ring(Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		1
	Manual	-	2~3
	Transfer connector(Φ12.7-Φ15.9)/(Φ0.5in- Φ0.63in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
Others	Transfer connector($\Phi 6.35 - \Phi 9.52$)/($\Phi 0.25$ in- $\Phi 0.375$ in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Transfer connector(Φ 9.52- Φ 12.7)/(Φ 0.375in- Φ 0.5in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Connecting wire for display (2m)	-	1(on some models)
	Cord protection rubber ring	Q	1(on some models)
	Display panel *Just for testing purposes only		1(on some models- KJR-120G,KJR-120H)

Optional accessories:

- There are two types of remote controls: wired and wireless.
- Select a remote controller based on customer preferences and requirements and install in an appropriate place.
- Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

1. Installation Overview

Installation Order



Perform a test run

2. Location selection

2.1 Unit location selection can refer to installation manual.

2.2 DO NOT install the unit in the following locations:

- Where oil drilling or fracking is taking place.
- Coastal areas with high salt content in the air.
- Areas with caustic gases in the air, such as near hot springs.
- Areas with power fluctuations, such as factories.
- Enclosed spaces, such as cabinets.
- Areas with strong electromagnetic waves.
- Areas that store flammable materials or gas.
- Rooms with high humidity, such as bathrooms or laundry rooms.
- If possible, DO NOT install the unit where it is exposed to direct sunlight.
- 2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



2.4 Rows of series installation

The relations between H, A and L are as follows.

	L	А	
	L ≤ 1/2H	25 cm / 9.8" or more	
LSH	1/2H < L ≤ H 30 cm / 11.8 more		
L > H	Can not be installed		



DO NOT install the rows of series like following figure.



2.5 If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning.



DO NOT

Strong wind

3. Indoor Unit Installation

3.1 Service space for indoor unit

18k~36k



48k~60k



3.2 Hang Indoor Unit

1.Please refer to the following diagrams to locate the four positioning screw bolt hole on the ceiling. Be sure to mark the areas where ceiling hook holes will be drilled.





1240

697

For High-pressure Static Duct,

36



	Size of mounted plug		
	D	E	
48	495	1236	
60	700	1436	

2. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out.

Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit..

- 3. Install hanging screw bolts.
- 1) Cut off the roof beam.
- 2) Strengthen the point at which the cut was made. Consolidate the roof beam..

4. After you select an installation location, align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit..

5. Drill 4 holes 10cm (4") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.

- 6. Secure the bolt using the included washers and nuts.
- 7. Install the four suspension bolts.

8. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided.



9. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks.



Note: Confirm the minimum drain tilt is 1/100 or more.

3.3 Duct and accessories installation

1. Install the filter(optional) according to air inlet size.

2. Install the canvas tie-in between the body and duct.

3. The air inlet and air outlet duct should be far enough apart enough to a avoid air passage short-circuit.

4. Connect the duct according to the following

diagram.



5. Refer to the following static pressure guidelines when installing the indoor unit.

Model(KBtu/h)	Static Pressure(Pa)	
18	0-80	
24	0-100	
36	0-120	
48~60	0-160	

Change the fan motor static pressure according to external duct static pressure.

NOTE: 1.Do not put the connecting duct weight on the indoor unit.

2. When connecting duct, use inflammable canvas tie-in to prevent vibrating.

3.Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

3.4 Adjust the air inlet direction(From rear side to under-side.)(only for A6 duct type)

1. Take off ventilation panel and flange,



Bend the rear ventilation panel 90 degrees along the dotted line into a descending ventilation panel.(some models)



2. Change the mounting positions of ventilation panel and air return flange .

Ventilation panel

3. When installing the filter mesh, fit it into the flange as illustrated in the following figure.





Air return flange

NOTE: All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

3.5 Fresh air duct installation (only for A6 duct type)

Dimension :

9-12k



31k



3.6 Horizontal Installation(only for A6 duct type)

3.6.1 With External pump (18K model only)

Drain connector A, B & C are covered with caps originally. Take the cap on drain connector B off, connect the external pump to drain connector B using a hose & two hoseclamps. Then connect the drainpipe to the connector D.



Plug the external pump to the "PUMP" pin and the water level sensor to the "CN5" to enable the pump.



Fig. 1

3.6.3 With Built-in pump (24K, 31Kmodels)

Drain connector A, B & C are covered with caps originally. Connect the drainpipe to the connector D.



3.7 Vertical Installation(only for A6 duct type)

3.7.1 No need pump (Disable pump)

The pump must be disabled while the unit is installed vertically or the pump assembly is removed from its original position.

Open the cover of E-Parts Box assembly, unplug the "PUMP" pin to disable the pump function, and short connect "CN5" plug to disable the water level sensor. (see Fig. 1)

3.7.2 Drain pipe connecting

When installed vertically (up flow), the pump must be disabled firstly. Follow the 3.7.1 steps to disable the pump. For the unit with external pump (9K, 12K &18K models), the whole pump assembly can be removed. Then take the cap on drain connector off and connect the drainpipe to drain connector .



4. Outdoor unit installation(Side Discharge Unit)

4.1 Service space for outdoor unit



4.2 Bolt pitch



Capacity(kBtu/h)	А	В	D
18	663	354	342
24~36	673	403	410
48~60	634	404	415

4.3 Install Outdoor Unit

Fix the outdoor unit with anchor bolts(M10)



Cation

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.

Never hold the inlet of the outdoor unit to prevent it from deforming.

Do not touch the fan with hands or other objects.

Do not lean it more than 45, and do not lay it sidelong.

Make concrete foundation according to the specifications of the outdoor units.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.

5. Drainage Pipe Installation

Install the drainage pipe as shown below and take measures against condensation. Improperly installation could lead to leakage and eventually wet furniture and belongings.

5.1 Installation principle

- Ensure at least 1/100 slope of the drainage pipe
- Adopt suitable pipe diameter
- Adopt nearby condensate water discharge

5.2 Key points of drainage water pipe installation

1. Considering the pipeline route and elevation.

- Before installing condensate water pipeline, determine its route and elevation to avoid intersection with other pipelines and ensure slope is straight.
- 2. Drainage pipe selection
 - The drainage pipe diameter shall not small than the drain hose of indoor unit
 - According to the water flowrate and drainage pipe slope to choose the suitable pipe, the water flow-rate is decided by the capacity of indoor unit.

Relationship between water flowrate and capacity of indoor unit

Capacity (kBtu)	Water flowrate (l/h)
Cupacity (RDtu)	
12	2.4
18	4
24	6
30	7
36	8
42	10
48	12
60	14

According to the above table to calculate the total water flowrate for the confluence pipe selection.

For horizontal drainage pipe (The following table is for reference)

PVC	Reference value of inner	Allowable maximum water flowrate (I/h)		Remark	
ріре	pipe (mm)	Slope 1/50	Slope 1/100		
PVC25	20	39	27	For branch pipe	
PVC32	25	70	50		
PVC40	31	125	88	Could be used	
PVC50	40	247	175	for confluence	
PVC63	51	473	334	pipe	

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

For Vertical drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)	Remark
PVC25	20	220	For branch
PVC32	25	410	pipe
PVC40	31	730	
PVC50	40	1440	Could be
PVC63	51	2760	used for
PVC75	67	5710	pipe
PVC90	77	8280	

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

3. Individual design of drainage pipe system

- The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
- The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.

4. Supporter gap of drainage pipe

- In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
- Each vertical pipe shall be equipped with not less than two hangers.
- Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



5. The horizontal pipe layout should avoid converse flow or bad flow



- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.
- 6. Water storage pipe setting
 - If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit, the water storage pipe should be set to avoid converse flow or blow water phenomena.



- 7. Lifting pipe setting of indoor unit with water pump
- The length of lifting pipe should not exceed 750mm.
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.

• Refer the following picture for installation reference.



- 8. Blowhole setting
 - For the concentrated drainage pipe system, there should design a blowhole at the highest point of main pipe to ensure the condensate water discharge smoothly.
 - The air outlet shall face down to prevent dirt entering pipe.
 - Each indoor unit of the system should be installed it.
 - The installation should be considering the convenience for future cleaning.



9. The end of drainage pipe shall not contact with ground directly.

5.3 Drainage test

- 1. Water leakage test
 - After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.
- 2. Water discharge test

Check that the drainpipe is unhindered.

This test should be performed on newly built houses before the ceiling is paved.

2.1 Units without a pump



- Fill the water pan with 2 liters of water.
- Check that the drainpipe is unhindered
- .2.2 Units with a pump

1. Remove the test cover.

• Fill the water pan with 2 liters of water.



2. Turn on the unit in COOLING mode. You will hear the drain pump.Check whether the water is discharged properly (a 1-minute lag is possible, depending on the length of the drain pipe), Check whether water leaks from

the joints.

- 3. Turn off the air conditioner and put the cap back on.
 - After turn off the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and

even water shall run over the water collector.

• Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

Note: Drain plug at the main water-containing plate is used for eliminating accumulated water in watercontaining plate when maintaining air conditioner fault. During normal operation, the plug shall be filled in to prevent leakage.

5.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

6. Refrigerant Pipe Installation

6.1 Maximum length and drop height

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in the following table.

Capacity(kBtu/h)	Max. Length (m/ft)	Max. Elevation (m/ft)
18~24	25/82	15/49
36	30/98.4	20/65.6
48~60	50/164	30/98.4

caution:

- The capacity test is based on the standard length and the maximum permissive length is based on the system reliability.
- Oil traps

-If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.

-An oil trap should be installed every 6m(20ft) of vertical suction line riser (<36000Btu/h unit).

-An oil trap should be installed every 10m(32.8ft) of vertical suction line riser (≥36000Btu/h unit).



6.2 The procedure of connecting pipes

1. Choose the pipe size according to the specification table.

2.Confirm the cross way of the pipes.

3. Measure the necessary pipe length.

4.Cut the selected pipe with pipe cutter

• Make the section flat and smooth.



5. Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.
- 6. Flare the pipe
 - Insert a flare nut into the pipe before flaring the pipe
 - According to the following table to flare the pipe.

Pipe diameter	Flare dimensio		
(inch(mm))	Min	Max	Flare snape
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	90 [°] ±4
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	R0.4~0.8
3/4" (19)	23.2/0.91	23.7/0.93	
7/8" (22)	26.4/1.04	26.9/1.06	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.
- 7. Drill holes if the pipes need to pass the wall.

8. According to the field condition to bend the pipes so that it can pass the wall smoothly.

9. Bind and wrap the wire together with the insulated pipe if necessary.

- 10. Set the wall conduit
- 11. Set the supporter for the pipe.

12. Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.
- 13. Connect the pipe to indoor unit and outdoor unit by

using two spanners.

• Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

	Torque	Clusten man				
Pipe Diameter	N.m(lb.ft)	Sketch map				
1/4" (6.35)	15~16 (11~11.8)					
3/8" (9.52)	25~26 (18.4~19.18)					
1/2" (12.7)	35~36 (25.8~26.55)					
5/8" (15.9)	45~47 (33.19~34.67)					
3/4" (19)	65~67 (47.94~49.42)					
7/8" (22)	75-85					

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

• Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation.

Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage

compressor.

• Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

7.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

7.3.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure

gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1hour (vacuum degree of vacuum pump shall be reached -755mmHg).

2. If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.

3. If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.

4 . Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

7.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.

2. Conducting construction on rainy day, because rain water might penetrated into pipeline.

3. Construction period is long, and rain water might penetrated into pipeline.

4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

- 1. Vacuum drying for 1 hour.
- 2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm2.

Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.

3. Vacuum drying again for half an hour.

If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

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8. Additional Refrigerant Charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Formula
6.35	V=15g/m×(L-5)
9.52	V=30g/m×(L-5)

V: Additional refrigerant charge volume (g).

L : The length of the liquid pipe (m).

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

9. Engineering of Insulation

9.1 Insulation of refrigerant pipe

1. Operational procedure of refrigerant pipe insulation

Cut the suitable pipe \rightarrow insulation (except joint section) \rightarrow flare the pipe \rightarrow piping layout and connection \rightarrow vacuum drying \rightarrow insulate the joint parts

2. Purpose of refrigerant pipe insulation

- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100°C) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

3. Insulation material selection for refrigerant pipe

- The burning performance should over 120°C
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm.If in hot or wet environment place, the layer of insulation should be thicker accordingly.

4. Installation highlights of insulation construction

• Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad

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insulation and cause easy aging of the material.

9.2 Insulation of drainage pipe

1. Operational procedure of refrigerant pipe insulation

Select the suitable pipe \rightarrow insulation (except joint section) \rightarrow piping layout and connection \rightarrow drainage test \rightarrow insulate the joint parts

2. Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

3. Insulation material selection for drainage pipe

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

4. Installation and highlights of insulation construction

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

10. Engineering of Electrical Wiring

10.1 Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named "the specification of the power" to choose the wiring, make sure the selected wiring not small than the date showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.
- You must first choose the right cable size before preparing it for connection. Be sure to use H07RN-F cables.

Table: Minimum Cross-Sectional Area able of Power and Signal Cables

Rated Current of Appliance (A)	Nominal Cross-Sectional Area(mm ²)
≤ 6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25 - 32	4
32 - 45	6

11. Test Operation

11.1 The test operation must be carried out after the entire installation has been completed.

11.2 Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

11.3 Test operation

1. Open both the liquid and gas stop valves.

2. Turn on the main power switch and allow the unit to warm up.

3. Set the air conditioner to COOL mode, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Static Pressure Design

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1. Introduction

Duct system losses are the irreversible transformation of mechanical energy into heat. The two types of losses are (1) friction losses and (2) dynamic losses.

Friction losses are due to fluid viscosity and result from momentum exchange between molecules (in laminar flow) or between individual particles of adjacent fluid layers moving at different velocities (in turbulent flow). Friction losses occur along the entire duct length.

Dynamic losses result from flow disturbances caused by duct mounted equipment and fittings (e.g., entries, exits, elbows, transitions, and junctions) that change the airflow path's direction or area.

2. Charts For Friction Losses In Round Ducts

Fluid resistance caused by friction in round ducts can be determined by the friction chart. (based on galvanized sheet)



3. Dynamic Losses

For dynamic losses, please refer to below image.



Note: W Shows a diameter of round duct or long side length of the rectangular duct.

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60 172 151 135 122 111 102 94 88	58 59													158	139	124	112	102	94	8/ 01	81
	60													172	151	135	122	111	102	94	88

4. Corresponding Relation Between Rectangular Duct and Round Duct

5. Method For Duct Calculation (equal friction method)

1)Draw schematic view of the duct system.

1)Make notes for air volume and mark clearly the elbow, the branch parts, the air discharge outlet.

1)Select one main ducting route (where the maximum static pressure loss occurs).

1)Select the air velocity for the main duct in accordance with the desirable air velocity.

	Typical design velocity (m/s)						
Main duct	Residence	Public building	Factory				
	3.5~6.0	5.0~8.0	6.0~11.0				

1)Since the velocity and air volume are fixed for main duct, then use the Friction loss chart to find standard friction loss.

1)Use air volume and friction loss to find corresponding duct size and velocity for each part of main duct through Frictions loss chart.

1)Find the dynamic loss of main ducting route according to the velocity. and type of special fittings (elbows, junctions, regulating flaps, etc.)

1)Obtain the duct size and velocity of each branch duct based on the air volume and the same standard friction loss as for the main duct.

1)Find the dynamic loss of branch duct.

1)Calculate the total pressure loss.

6. Unit Conversion

- 1 inch water=248.8 N/m² (Pa)=0.0361 lb/in² (psi)=25.4 kg/cm²=0.0739 in mercury
- 1 ft³/min (cfm)=1.7 m³/h
- 1 ft/min=5.08*10-3 m/s
- 1 inch=2.54 cm=0.0254m=0.08333ft

7. Recommended Outlet Velocity For Different Occasion

The permissible sound level and correspondingly maximum air velocity, is determined by the occasion.

Noise / dB(A)	Occasion	Maximum velocity / m/s		
25	Studio, recording room	2		
35	Cinema, hospital, library	3		
40	Office, school, hotel	4		
46	Bank, public hall	5		
50	Store, post office	6		
70	Factory	10		