

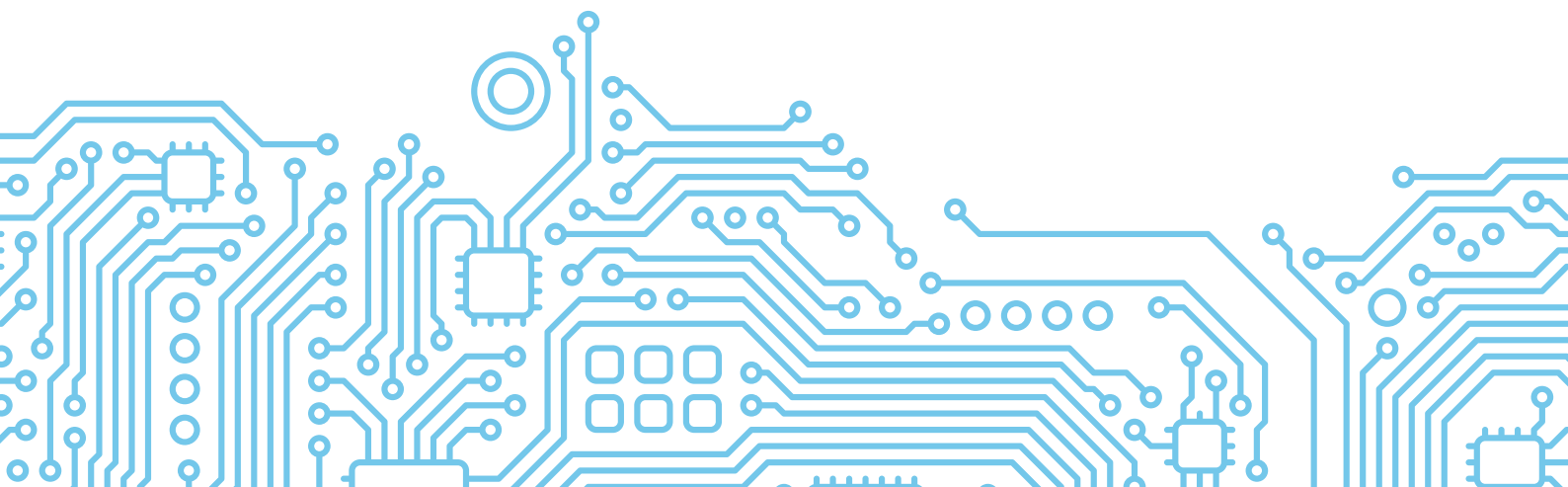
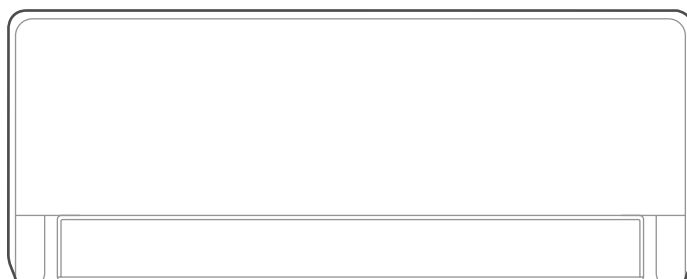


TM\_EZ(GA)\_R32\_3D INV\_EU\_NA\_2502

# EAZY R32 3D INVERTER CONTROL

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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
MSEZAU-09HRFN8-QRD6GW	MOX231-09HFN8-QRD6GW	9k	220-240V~, 50/60Hz, 1Phase
MSEZBU-12HRFN8-QRD6GW	MOX231-12HFN8-QRD6GW	12k	
MSEZCU-18HRFN8-QRD6GW	MOX431-18HFN8-QRD6GW	18k	
MSEZDU-21HRFN8-QRD6GW	MOX430-21HFN8-QRD6GW	21k	
MSEZDU-24HRFN8-QRD6GW	MOX430-24HFN8-QRD6GW	24k	

## 2. General Specifications

Model		MSEZAU-09HRFN8-QRD6GW	MSEZBU-12HRFN8-QRD6GW	
Power supply	V- Ph-Hz	220-240-1-50/60	220-240-1-50/60	
Rated Power Input	W	2200	2200	
Rated Current	A	10	10	
Compressor	Model	KSN103D42UEZ31	KSN103D42UEZ31	
	Type	ROTARY	ROTARY	
	Brand	GMCC	GMCC	
	Capacity	W	3220	3220
	Input	W	813	813
	Rated current(RLA)	A	4.9	4.9
	Locked rotor Amp(LRA)	A	/	/
	Thermal protector		/	/
	Thermal protector position		/	/
	Capacitor	uF	/	/
Refrigerant oil/oil charge	ml	POE VG74 280	POE VG74 280	
Indoor fan motor	Model	ZKFP-30-8-357L	ZKFP-30-8-357L	
	Input	W	42.9	42.9
	Output	W	30	30
	Insulation class		B	B
	Waterproofing class		IP20	IP20
	Capacitor	uF	/	/
	Speed(Hi/Mi/Lo)	r/min	1050/930/870	1000/880/820
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	19.5x11.6	19.5x11.6
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	Φ5,innergroove tube	Φ5,innergroove tube
	Coil length x height x width	mm	530x195x23.2+530x97.5x23.2	620x195x23.2+620x97.5x23.2
	Number of circuits		3	3
Indoor air flow (Hi/Mi/Lo)	m3/h	510/360/285	600/450/370	
Indoor sound pressure level (Hi/Mi/Lo)	dB(A)	39/34/25/19.0	39/32/26/20	
Indoor sound power level	dB(A)	56	56	
Indoor unit	Dimension(W*D*H)	mm	723x199x286	813x201x289
	Packing (W*D*H)	mm	780x270x365	870x270x365
	Net/Gross weight	kg	7.5/9.6	8/10.4
Outdoor fan motor	Model	ZKFN-25-10-6L	ZKFN-25-10-6L	
	Input	W	55.5	55.5
	Output	W	25	25
	Insulation class		B	B
	Waterproofing class		IP24	IP24
	Capacitor	uF	/	/
	Speed	r/min	800/600	780/600

Outdoor coil	Number of rows		1	1
	Tube pitch(a)x row pitch(b)	mm	18x17.3	18x17.3
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ5,innergroove tube	Φ5,innergroove tube
	Coil length x height x width	mm	745x504x17.3	745x504x17.3
	Number of circuits		3	3
Outdoor air flow		m <sup>3</sup> /h	2200	2200
Outdoor sound pressure level		dB(A)	54.0	55
Outdoor sound power level		dB(A)	62	62
Outdoor unit	Dimension(W*D*H)	mm	765x303x555	765x303x555
	Packing (W*D*H)	mm	887x337x610	887x337x610
	Net/Gross weight	kg	23.1/25.4	23.1/25.4
Refrigerant	Type		R32	R32
	GWP		675	675
	Charged quantity	kg	0.55	0.58
Design pressure		MPa	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm (inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
	Max. refrigerant pipe length	m	25	25
	Max. difference in level	m	10	10
Connection wiring			5x1.5	5x1.5
Plug type			3x1.5 / no-plug	3x1.5 / no-plug
Thermostat type			Remote Control	Remote Control
Operation temperature			16-30	16-30
Ambient temperature	Indoor(cooling/ heating)	°C	16~32/0~30	16~32/0~30
	Outdoor(cooling/heating)	°C	-15~50/-25~24	-15~50/-25~24
Qty'per 20' /40' /40'HQ			100/220/245	95/200/235

## 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.

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.

2) Capacities are Net Capacities.

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

Model		MSEZCU-18HRFN8-QRD6GW	MSEZDU-21HRFN8-QRD6GW MSEZDU-24HRFN8-QRD6GW	
Power supply	V- Ph-Hz	220-240-1-50/60	220-240-1-50/60	
Rated Power Input	W	2800	3800	
Rated Current	A	13.5	19	
Compressor	Model	KSN140D58UFZ	KTM240D46UKT2	
	Type	ROTARY	ROTARY	
	Brand	GMCC	GMCC	
	Capacity	W	4315	4780/7600
	Input	W	1090	805/2045
	Rated current(RLA)	A	7.15	4.15/9.30
	Locked rotor Amp(LRA)	A	/	/
	Thermal protector		/	/
	Thermal protector position		NA	NA
	Capacitor	uF	/	/
Refrigerant oil/oil charge	ml	ESTER OIL VG74 440	VG74 620	
Indoor fan motor	Model	ZKFP-35-10-188L	ZKFP-58-8-26L	
	Input	W	55	88
	Output	W	35	58
	Insulation class		B	B
	Waterproofing class		IP20	IP20
	Capacitor	uF	/	/
	Speed(Hi/Mi/Lo)	r/min	1000/868/802	1050/910/840
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	19.5x11.6	21x13.37
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminium	Hydrophilic aluminium
	Tube outside dia.and type	mm	Φ5,innergroove tube	Φ7,innergroove tube
	Coil length x height x width	mm	770x195x23.2+770x117x23.2	820x231x26.74+820x126x26.74
	Number of circuits		4	4
Indoor air flow (Hi/Mi/Lo)	m <sup>3</sup> /h	800/600/470	1090/790/635	
Indoor sound pressure level (Hi/Mi/Lo)	dB(A)	43/36/28/21.5	46/39.5/32.5/21.5	
Indoor sound power level	dB(A)	58	60	
Indoor unit	Dimension(W*D*H)	mm	975x218x308	1055x231x330
	Packing (W*D*H)	mm	1035x295x385	1130x405x315
	Net/Gross weight	kg	10.2/13.3	13/16.4
Outdoor fan motor	Model	ZKFN-80-10-1L	ZKFN-80-10-1L	
	Input	W	99.28	99.28
	Output	W	80	80
	Insulation class		B	B
	Waterproofing class		IP24	IP24
	Capacitor	uF	/	/
	Speed	r/min	700/530	830/550

Outdoor coil	Number of rows		1.6	2
	Tube pitch(a)x row pitch(b)	mm	18x17.3	18x17.3
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ5,innergroove tube	Φ5,innergroove tube
	Coil length x height x width	mm	900*612*17.3+540*612*17.3	900*612*17.3+870*612*17.3
	Number of circuits		8	8
Outdoor air flow		m <sup>3</sup> /h	3500	3500
Outdoor sound pressure level		dB(A)	57	60
Outdoor sound power level		dB(A)	65	68
Outdoor unit	Dimension(W*D*H)	mm	890x342x673	890x342x673
	Packing (W*D*H)	mm	995x398x740	995x398x740
	Net/Gross weight	kg	37.8/41.0	41.0/44.0
Refrigerant	Type		R32	R32
	GWP		675	675
	Charged quantity	kg	0.85	1.08
Design pressure		MPa	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm (inch)	Φ6.35/Φ12.7(1/4"/1/2")	Φ6.35/Φ12.7(1/4"/1/2")
	Max. refrigerant pipe length	m	30	50
	Max. difference in level	m	20	25
Connection wiring			5x1.5	5x2.5
Plug type			3x2.5 / no-plug	3x2.5 / no-plug
Thermostat type			Remote Control	Remote Control
Operation temperature			16-30	16-30
Ambient temperature	Indoor(cooling/ heating)	°C	16~32/0~30	16~32/0~30
	Outdoor(cooling/heating)	°C	-15~50/-25~24	-15~50/-25~24
Qty'per 20' /40' /40'HQ			65/135/155	65/130/150

## 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.

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.

2) Capacities are Net Capacities.

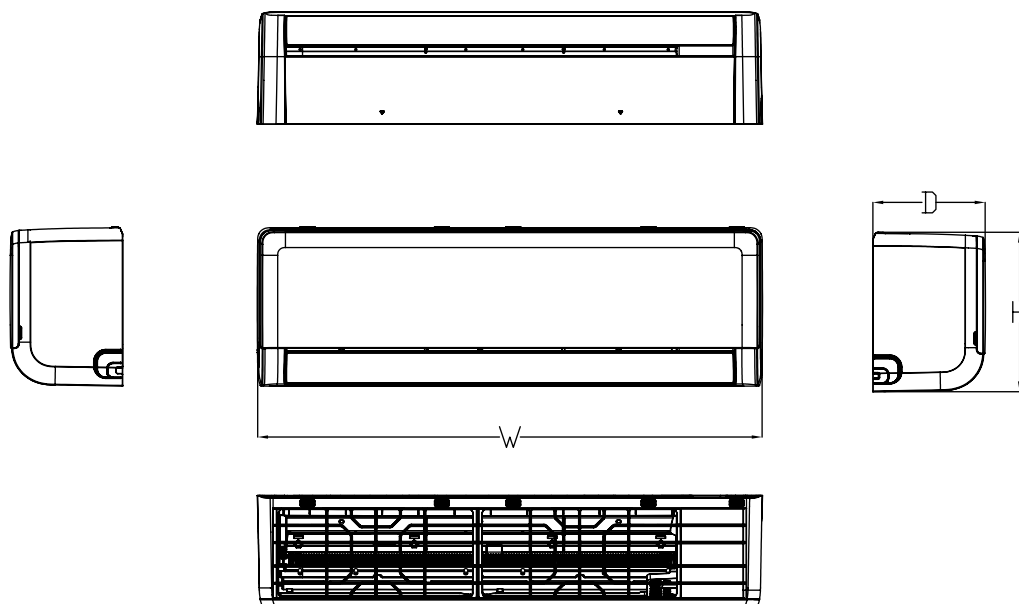
3) Due to our policy of innovation some specifications may be changed without notification.



### 3. Dimensional Drawings

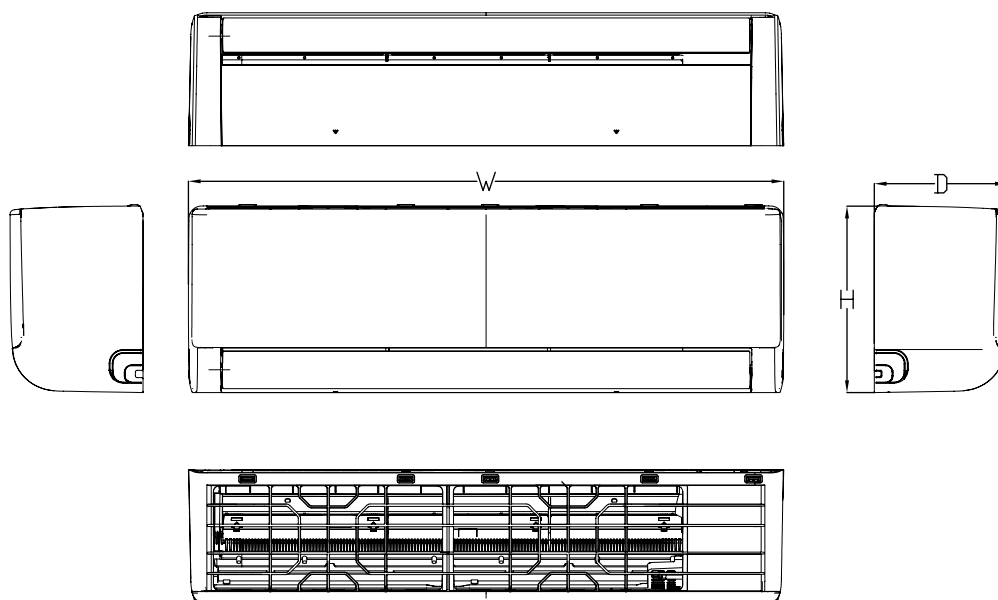
#### 3.1 Indoor Unit

Model A



Capacity (Btu/h)	Unit	W	D	H
9k	mm	723	199	286
12k	mm	813	201	289
18k	mm	975	218	308
21k/24k	mm	1055	231	330

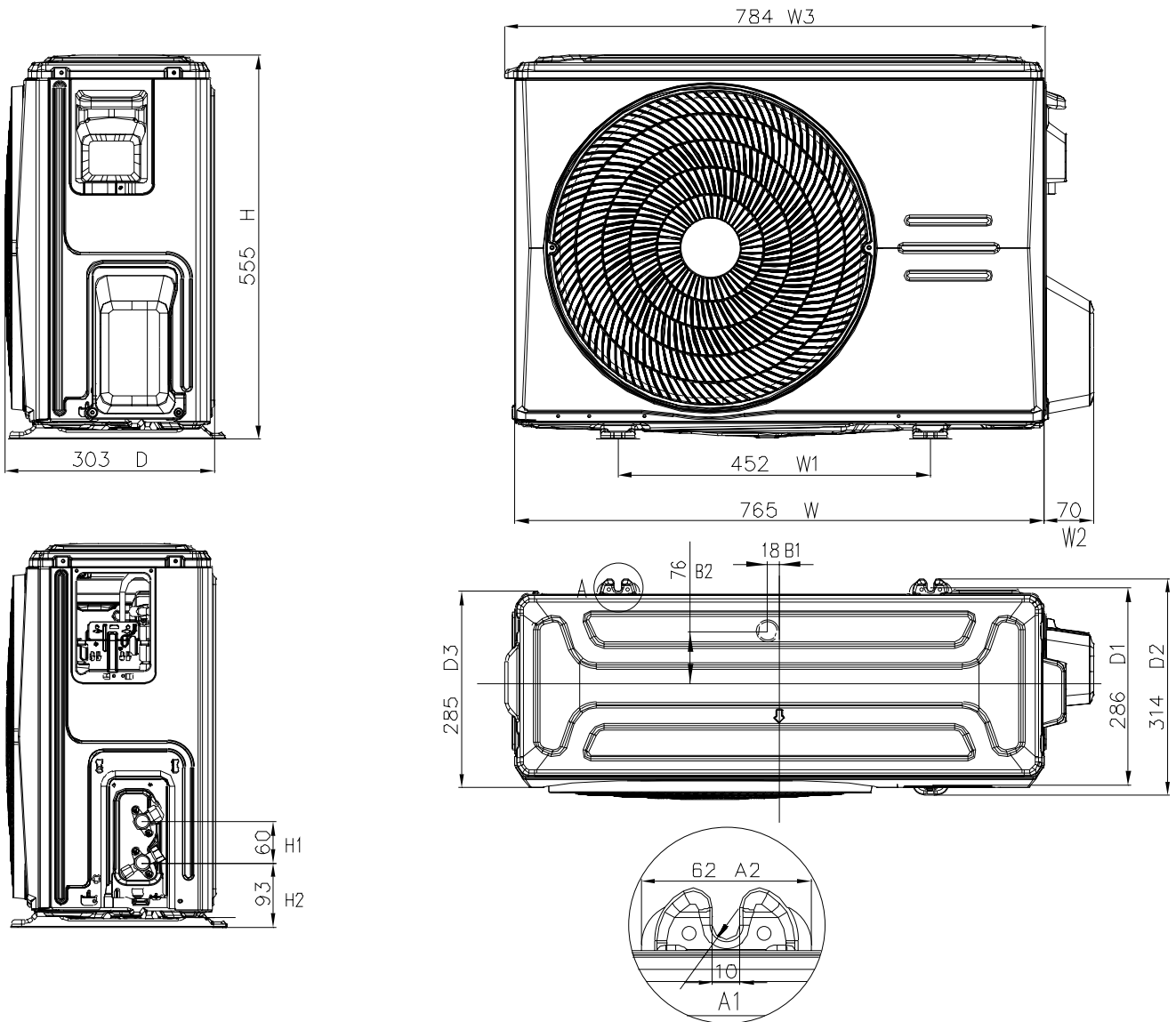
Model B



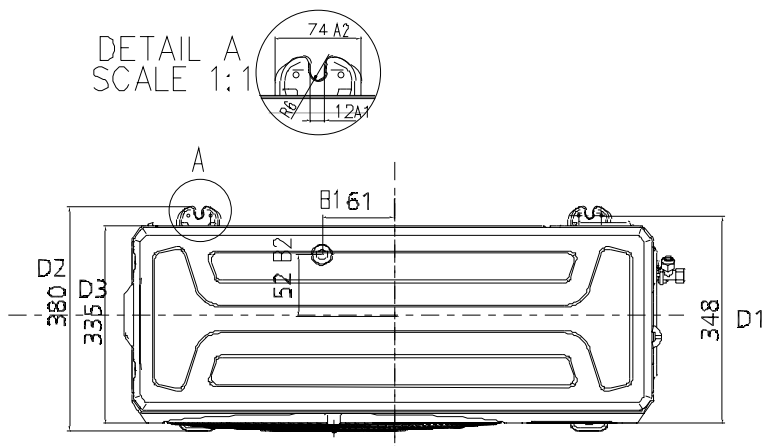
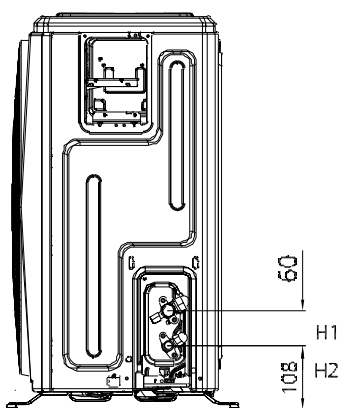
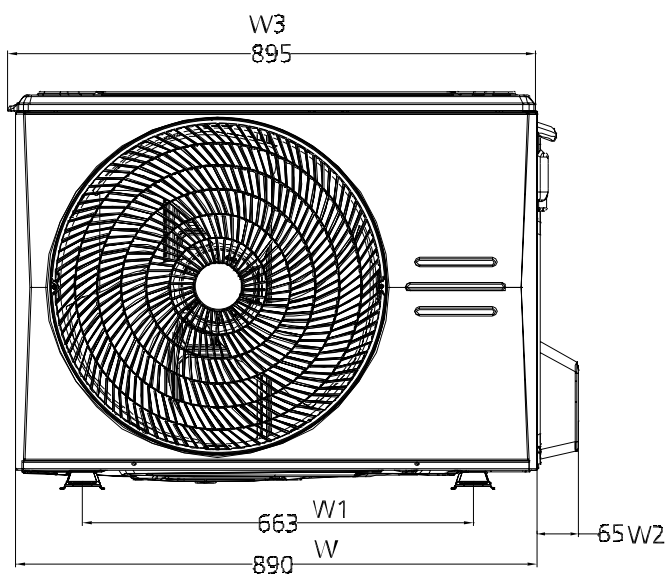
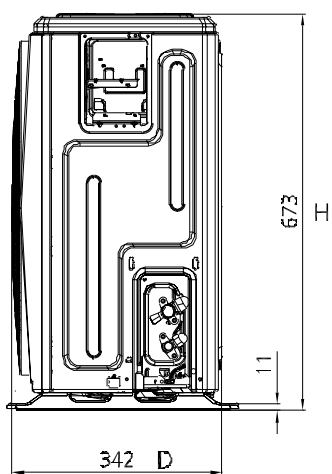
Capacity (Btu/h)	Unit	W	D	H
9k	mm	723	199	286
12k	mm	813	201	289
18k	mm	975	218	308
21k/24k	mm	1055	231	330

### 3.2 Outdoor Unit

9k/12k

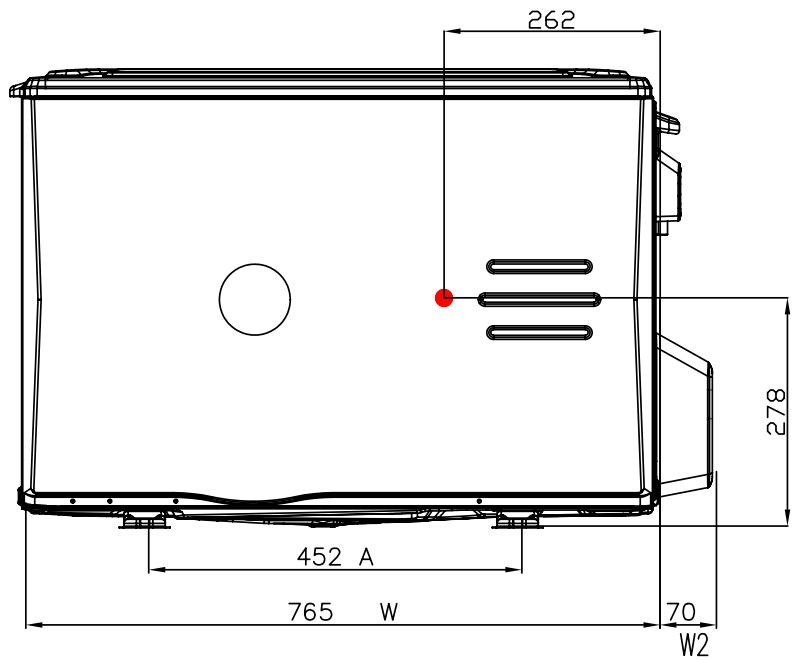
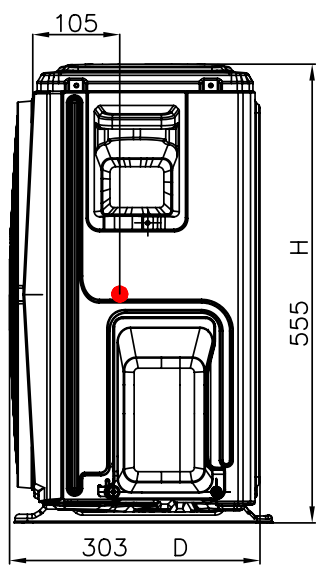


18k/21k/24k

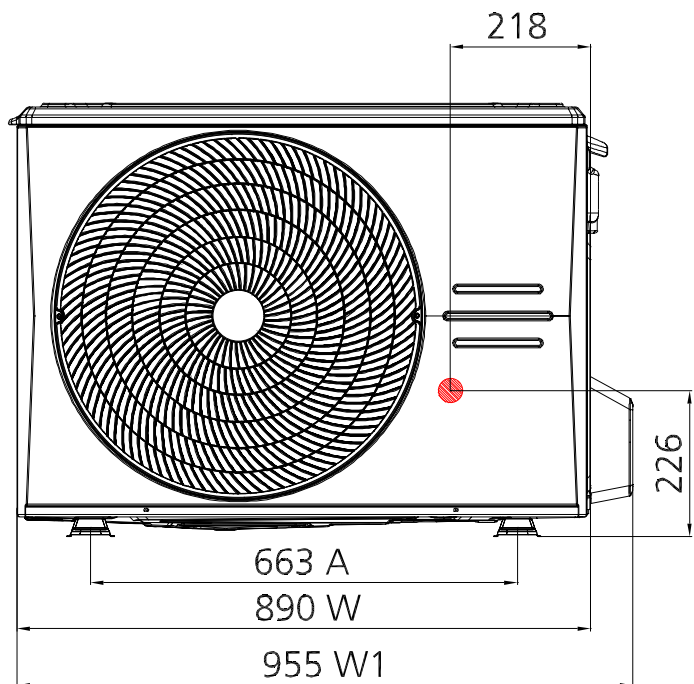
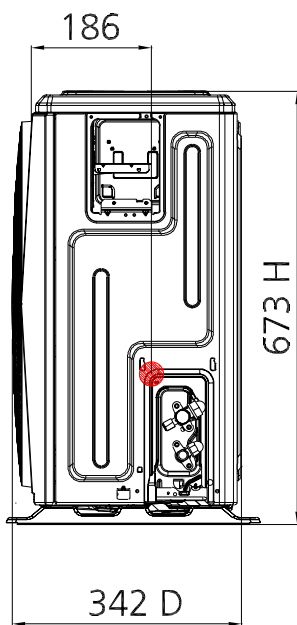


## 4. Centre of gravity

9k/12k



18k/21k/24k

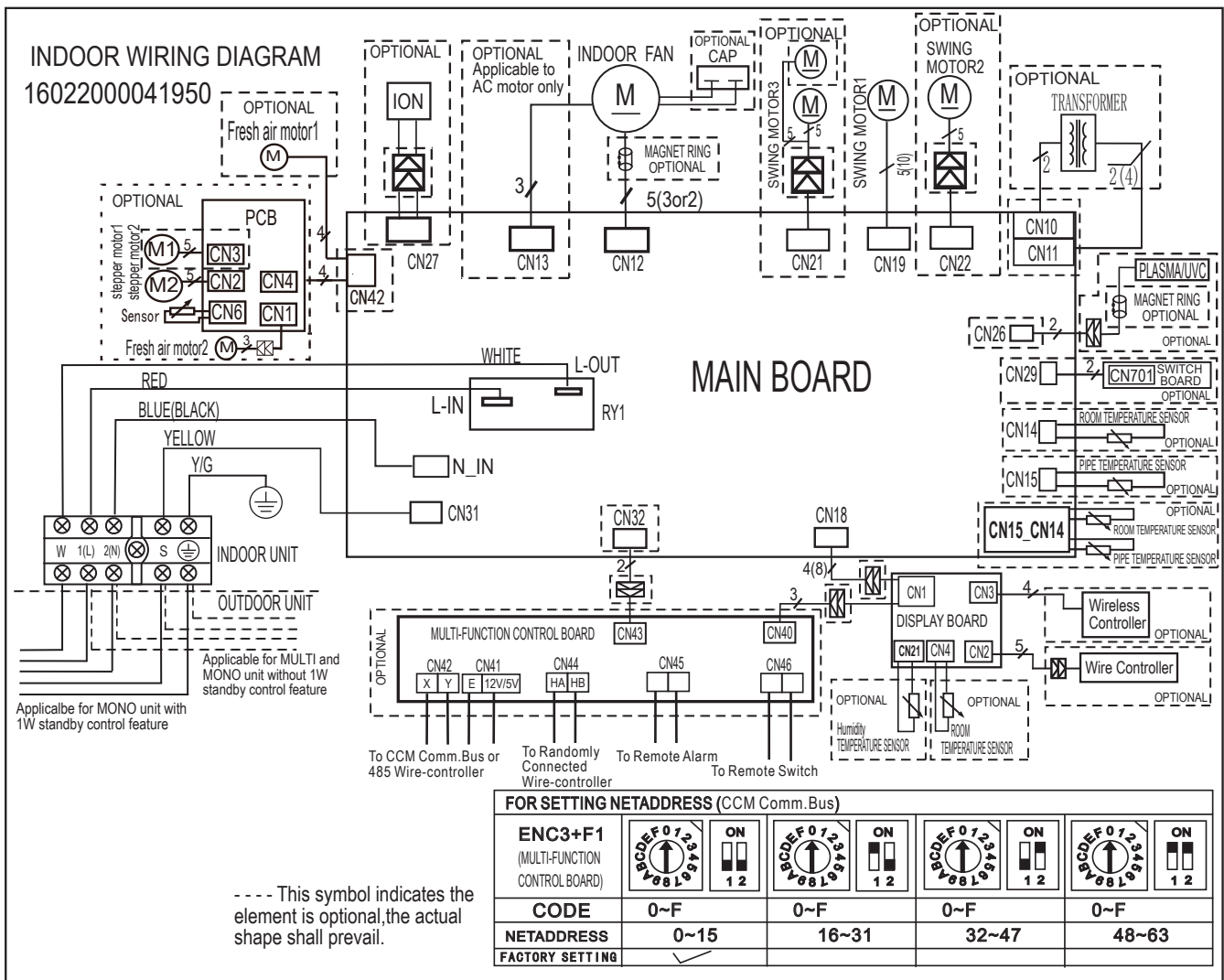


## 5. Electrical Wiring Diagrams

### 5.1 Indoor unit

Abbreviation	Paraphrase
Y/G	Yellow-Green Conductor
ION	Positive and Negative Ion Generator
CAP	Capacitor
PLASMA	Electronic Dust Collector
L	LIVE
N	NEUTRAL

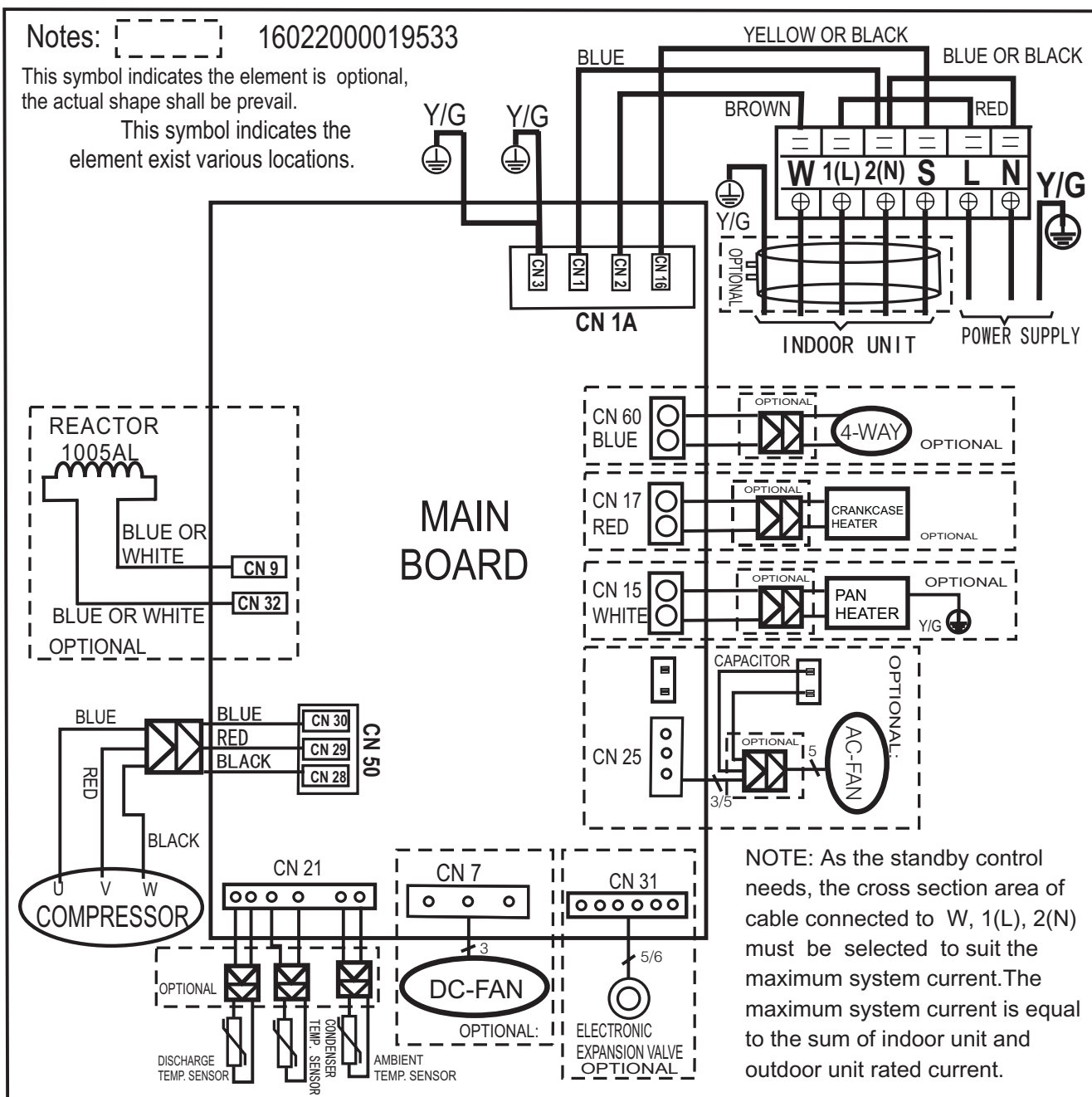
9k~24k



## 5.2 Outdoor Unit

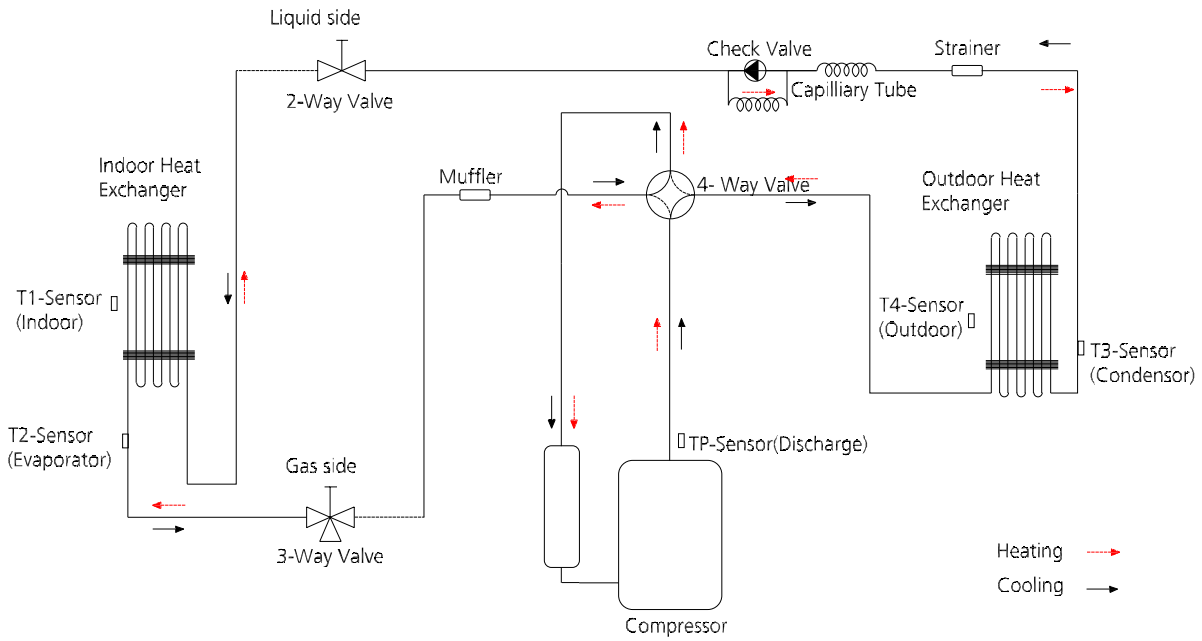
Abbreviation	Paraphrase
4-WAY	Gas Valve Assembly/4-WAY VALVE
AC-FAN	Alternating Current FAN
DC-FAN	Direct Current FAN
COMP	Compressor

9k~24k



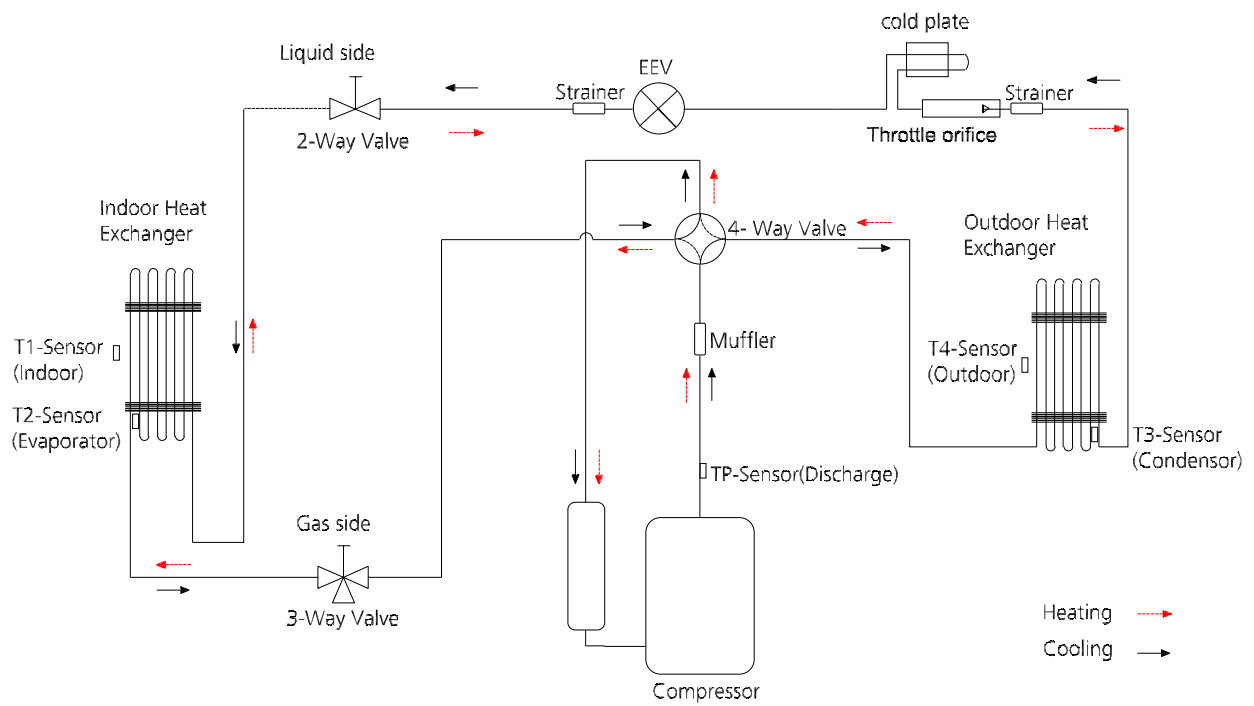
## 6. Refrigerant Cycle Diagrams

### 6.1 Heat pump

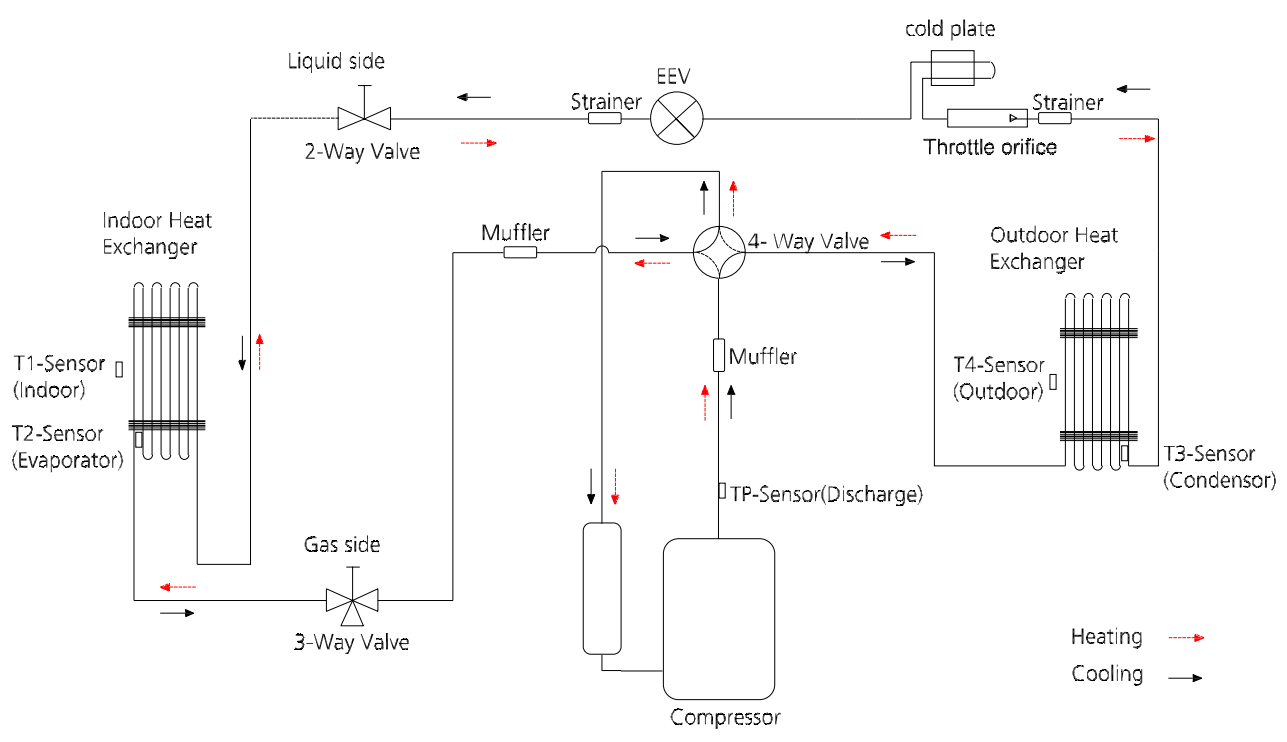


Capacity (Btu/h)	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
9k	9.52(3/8)	6.35(1/4)	5/16.4	25/82	0	10/32.8	12g/m (0.13oz/ft)
12k	9.52(3/8)	6.35(1/4)	5/16.4	25/82	0	10/32.8	





Capacity (Btu/h)	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
18k	12.7(1/2)	6.35(1/4)	5/16.4	30/98.4	0	20/65.6	12g/m (0.13oz/ft)



Capacity (Btu/h)	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
21k/24k	12.7(1/2)	6.35(1/4)	5/16.4	50/164	0	25/82	12g/m (0.13oz/ft)

## 7. Capacity Tables

### 7.1 Cooling

		9k																
INDOOR AIRFLOW (CMH)	OUTDOOR DB(°C)	ID WB (°C)	16.0				18.0				19.0				22.0			
		ID DB (°C)	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0
285	-15	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.30	0.34	0.39	0.27	0.32	0.36	0.41	0.29	0.34	0.38	0.44	0.31	0.36	0.41	0.46
		PI	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.21
	-10	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.30	0.34	0.39	0.27	0.32	0.36	0.41	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47
		PI	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20
	-5	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.30	0.35	0.39	0.27	0.32	0.37	0.42	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47
		PI	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19
	0	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.31	0.35	0.40	0.28	0.32	0.37	0.42	0.29	0.34	0.39	0.45	0.31	0.36	0.41	0.47
		PI	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18
	5	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.31	0.35	0.40	0.28	0.32	0.37	0.42	0.29	0.34	0.39	0.45	0.31	0.37	0.41	0.47
		PI	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17
	10	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.31	0.35	0.40	0.28	0.33	0.37	0.42	0.30	0.35	0.39	0.45	0.31	0.37	0.42	0.48
		PI	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16
	15	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.26	0.31	0.35	0.40	0.28	0.33	0.37	0.43	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48
		PI	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18
	20	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.27	0.32	0.36	0.41	0.29	0.34	0.38	0.44	0.31	0.36	0.41	0.46	0.32	0.38	0.43	0.49
		PI	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19
	25	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.28	0.32	0.37	0.42	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.44	0.50
		PI	0.18	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.21
	30	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.28	0.33	0.38	0.43	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.34	0.39	0.45	0.51
		PI	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.26	0.27	0.27	0.27	0.27
	35	TC	1.24	1.24	1.24	1.24	1.31	1.31	1.32	1.32	1.39	1.39	1.39	1.40	1.47	1.48	1.48	1.48
		S/T	0.28	0.33	0.38	0.43	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.34	0.39	0.45	0.51
		PI	0.29	0.30	0.30	0.30	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35
	40	TC	1.07	1.07	1.08	1.08	1.14	1.14	1.14	1.14	1.21	1.21	1.21	1.21	1.28	1.28	1.28	1.28
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.49	0.34	0.40	0.46	0.52
		PI	0.26	0.26	0.26	0.26	0.28	0.28	0.28	0.28	0.29	0.29	0.29	0.30	0.31	0.31	0.31	0.31
	45	TC	0.83	0.83	0.83	0.83	0.88	0.88	0.88	0.88	0.93	0.93	0.94	0.94	0.99	0.99	0.99	0.99
		S/T	0.30	0.36	0.40	0.46	0.32	0.38	0.43	0.49	0.34	0.40	0.45	0.52	0.36	0.42	0.48	0.55
		PI	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.26	0.26	0.26	0.26
	50	TC	0.47	0.47	0.47	0.47	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56
		S/T	0.31	0.36	0.41	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	0.37	0.43	0.49	0.56
		PI	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18

360	-15	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.35	0.41	0.47	0.54	0.37	0.44	0.50	0.57	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64
		PI	0.24	0.24	0.24	0.24	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.29	0.29	0.29	0.29
	-10	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.35	0.42	0.47	0.54	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64
		PI	0.23	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.28	0.28	0.28	0.28
	-5	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.36	0.42	0.48	0.54	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.61	0.42	0.50	0.57	0.65
		PI	0.22	0.22	0.22	0.23	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.27	0.27	0.27	0.27
	0	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.36	0.42	0.48	0.54	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65
		PI	0.21	0.21	0.21	0.21	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25
	5	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.36	0.42	0.48	0.55	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65
		PI	0.19	0.19	0.19	0.20	0.21	0.21	0.21	0.21	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23
	10	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04
		S/T	0.36	0.42	0.48	0.55	0.38	0.45	0.51	0.58	0.41	0.48	0.54	0.62	0.43	0.51	0.58	0.66
		PI	0.19	0.19	0.19	0.19	0.20	0.20	0.20	0.20	0.21	0.21	0.21	0.21	0.22	0.22	0.22	0.22
15	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04	
	S/T	0.36	0.43	0.49	0.55	0.39	0.45	0.51	0.59	0.41	0.48	0.55	0.62	0.43	0.51	0.58	0.66	
	PI	0.21	0.21	0.21	0.21	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.25	
20	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04	
	S/T	0.37	0.44	0.50	0.57	0.40	0.46	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.59	0.68	
	PI	0.22	0.22	0.22	0.22	0.24	0.24	0.24	0.24	0.25	0.25	0.25	0.25	0.27	0.27	0.27	0.27	
25	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04	
	S/T	0.38	0.44	0.50	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	
	PI	0.24	0.24	0.24	0.24	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.29	0.29	0.29	0.29	
30	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04	
	S/T	0.39	0.46	0.52	0.59	0.41	0.48	0.55	0.63	0.44	0.51	0.58	0.66	0.46	0.54	0.62	0.70	
	PI	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37	
35	TC	1.70	1.70	1.71	1.71	1.81	1.81	1.81	1.81	1.91	1.92	1.92	1.92	2.03	2.03	2.03	2.04	
	S/T	0.39	0.46	0.52	0.59	0.41	0.48	0.55	0.63	0.44	0.51	0.58	0.66	0.46	0.54	0.62	0.70	
	PI	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.46	0.48	0.48	0.48	0.48	
40	TC	1.48	1.48	1.48	1.48	1.57	1.57	1.57	1.57	1.66	1.66	1.66	1.67	1.76	1.76	1.76	1.77	
	S/T	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.60	0.68	0.47	0.56	0.63	0.72	
	PI	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	0.40	0.41	0.41	0.41	0.43	0.43	0.43	0.43	
45	TC	1.14	1.14	1.14	1.15	1.21	1.21	1.21	1.22	1.28	1.28	1.29	1.29	1.36	1.36	1.36	1.37	
	S/T	0.42	0.49	0.56	0.63	0.44	0.52	0.59	0.67	0.47	0.55	0.63	0.71	0.50	0.58	0.66	0.76	
	PI	0.30	0.30	0.30	0.30	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	
50	TC	0.65	0.65	0.65	0.65	0.68	0.69	0.69	0.69	0.73	0.73	0.73	0.73	0.77	0.77	0.77	0.77	
	S/T	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	0.48	0.56	0.64	0.73	0.51	0.60	0.68	0.77	
	PI	0.20	0.20	0.20	0.20	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	
510	-15	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.49	0.57	0.65	0.74	0.51	0.60	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	0.40	0.40	0.40	0.40
	-10	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.49	0.57	0.65	0.74	0.52	0.61	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.38	0.39	0.39	0.39
	-5	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.49	0.58	0.65	0.75	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.58	0.69	0.78	0.89
		PI	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37
	0	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.29	0.29	0.29	0.29	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35
	5	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.80	0.56	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.27	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.30	0.30	0.30	0.30	0.32	0.32	0.32	0.32
	10	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80
		S/T	0.50	0.58	0.66	0.76	0.53	0.62	0.70	0.80	0.56	0.66	0.75	0.85	0.59	0.70	0.79	0.90
		PI	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27	0.29	0.29	0.29	0.29	0.31	0.31	0.31	0.31
15	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80	
	S/T	0.50	0.59	0.67	0.76	0.53	0.62	0.71	0.81	0.56	0.66	0.75	0.86	0.60	0.70	0.80	0.91	
	PI	0.28	0.28	0.28	0.28	0.30	0.30	0.30	0.30	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	
20	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80	
	S/T	0.51	0.60	0.69	0.78	0.54	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.61	0.72	0.82	0.93	
	PI	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37	
25	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80	
	S/T	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.94	
	PI	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.38	0.38	0.38	0.40	0.40	0.40	0.40	
30	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	2.64	2.64	2.79	2.79	2.80	2.80	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	0.80	0.91	0.64	0.75	0.85	0.97	
	PI	0.43	0.43	0.43	0.43	0.45	0.45	0.45	0.46	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51	
35	TC	2.34	2.35	2.35	2.35	2.48	2.49	2.49	2.49	2.63	2.63	<b>2.64</b>	2.64	2.79	2.79	2.80	2.80	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	<b>0.80</b>	0.91	0.64	0.75	0.85	0.97	
	PI	0.56	0.56	0.56	0.56	0.59	0.59	0.59	0.59	0.63	0.63	<b>0.63</b>	0.63	0.66	0.66	0.67	0.67	
40	TC	2.03	2.03	2.04	2.04	2.15	2.16	2.16	2.16	2.28	2.28	2.29	2.29	2.42	2.42	2.42	2.43	
	S/T	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.62	0.72	0.82	0.93	0.65	0.76	0.87	0.99	
	PI	0.50	0.50	0.50	0.50	0.53	0.5											

		12k																	
INDOOR AIRFLOW (CMH)	OUTDOOR DB(C)	ID WB (C)	16.0				18.0				19.0				22.0				
		ID DB (C)	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	
370	-15	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.50	0.35	0.41	0.46	0.52	
		PI	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37	0.39	0.39	0.39	0.39	
	-10	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.44	0.50	0.35	0.41	0.46	0.53	
		PI	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	
	-5	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.29	0.34	0.39	0.45	0.31	0.36	0.41	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.30	0.30	0.30	0.30	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	
	0	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.29	0.35	0.39	0.45	0.31	0.37	0.42	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.29	0.29	0.29	0.29	0.30	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	
	5	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.29	0.35	0.39	0.45	0.31	0.37	0.42	0.48	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.26	0.26	0.26	0.26	0.28	0.28	0.28	0.28	0.30	0.30	0.30	0.30	0.31	0.31	0.31	0.31	
	10	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.33	0.39	0.45	0.51	0.35	0.42	0.47	0.54	
		PI	0.25	0.25	0.25	0.25	0.27	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.30	0.30	0.30	0.30	
	15	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.34	0.39	0.45	0.51	0.36	0.42	0.47	0.54	
		PI	0.28	0.28	0.28	0.28	0.29	0.29	0.29	0.30	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	
	20	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.49	0.34	0.40	0.46	0.52	0.37	0.43	0.49	0.56	
		PI	0.30	0.30	0.30	0.30	0.32	0.32	0.32	0.32	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	
	25	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.31	0.36	0.41	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	0.37	0.43	0.49	0.56	
		PI	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37	0.39	0.39	0.39	0.39	
	30	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.32	0.37	0.42	0.48	0.34	0.40	0.45	0.51	0.36	0.42	0.48	0.54	0.38	0.45	0.51	0.58	
		PI	0.42	0.42	0.42	0.42	0.45	0.45	0.45	0.45	0.47	0.47	0.47	0.47	0.50	0.50	0.50	0.50	
	35	TC	1.86	1.87	1.87	1.87	1.98	1.98	1.98	1.98	2.09	2.10	2.10	2.10	2.22	2.22	2.22	2.23	
		S/T	0.32	0.37	0.42	0.48	0.34	0.40	0.45	0.51	0.36	0.42	0.48	0.54	0.38	0.45	0.51	0.58	
		PI	0.55	0.55	0.55	0.55	0.58	0.58	0.58	0.58	0.62	0.62	0.62	0.62	0.65	0.65	0.65	0.66	
	40	TC	1.62	1.62	1.62	1.62	1.71	1.72	1.72	1.72	1.82	1.82	1.82	1.82	1.92	1.93	1.93	1.93	
		S/T	0.33	0.38	0.44	0.50	0.35	0.41	0.46	0.53	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	
		PI	0.49	0.49	0.49	0.49	0.52	0.52	0.52	0.52	0.55	0.55	0.55	0.55	0.58	0.58	0.58	0.58	
	45	TC	1.25	1.25	1.25	1.25	1.33	1.33	1.33	1.33	1.40	1.41	1.41	1.41	1.49	1.49	1.49	1.49	
		S/T	0.34	0.40	0.46	0.52	0.36	0.43	0.48	0.55	0.38	0.45	0.51	0.59	0.41	0.48	0.54	0.62	
		PI	0.40	0.40	0.40	0.40	0.42	0.42	0.43	0.43	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	
	50	TC	0.71	0.71	0.71	0.71	0.75	0.75	0.75	0.75	0.79	0.79	0.80	0.80	0.84	0.84	0.84	0.84	
		S/T	0.35	0.41	0.47	0.53	0.37	0.44	0.50	0.56	0.39	0.46	0.53	0.60	0.42	0.49	0.56	0.63	
		PI	0.27	0.28	0.28	0.28	0.29	0.29	0.29	0.29	0.31	0.31	0.31	0.31	0.33	0.33	0.33	0.33	
	450	-15	TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88
			S/T	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.60	0.68
			PI	0.43	0.43	0.43	0.43	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51
		-10	TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88
			S/T	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.61	0.42	0.50	0.56	0.64	0.45	0.53	0.60	0.68
			PI	0.41	0.41	0.41	0.41	0.44	0.44	0.44	0.44	0.46	0.46	0.46	0.46	0.49	0.49	0.49	0.49
-5		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.38	0.44	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	
		PI	0.39	0.39	0.39	0.39	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	
0		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	
		PI	0.37	0.37	0.37	0.37	0.39	0.40	0.40	0.40	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.45	
5		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.62	0.43	0.50	0.57	0.65	0.45	0.53	0.61	0.69	
		PI	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	0.41	0.41	0.41	0.41	
10		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.38	0.45	0.51	0.58	0.41	0.48	0.54	0.62	0.43	0.51	0.58	0.66	0.46	0.54	0.61	0.70	
		PI	0.33	0.33	0.33	0.33	0.35	0.35	0.35	0.35	0.37	0.37	0.37	0.37	0.39	0.39	0.39	0.39	
15		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.39	0.45	0.52	0.59	0.41	0.48	0.55	0.62	0.43	0.51	0.58	0.66	0.46	0.54	0.61	0.70	
		PI	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	0.40	0.40	0.40	0.41	0.43	0.43	0.43	0.43	
20		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.59	0.68	0.47	0.55	0.63	0.72	
		PI	0.39	0.39	0.39	0.39	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	
25		TC	2.41	2.42	2.42	2.42	2.56	2.56	2.56	2.57	2.71	2.71	2.72	2.72	2.87	2.88	2.88	2.88	
		S/T	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45								

600	-15	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.49	0.57	0.65	0.74	0.51	0.60	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.55	0.55	0.55	0.55	0.59	0.59	0.59	0.59	0.62	0.62	0.62	0.62	0.66	0.66	0.66	0.66
	-10	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.49	0.57	0.65	0.74	0.52	0.61	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.53	0.53	0.53	0.53	0.56	0.57	0.57	0.57	0.60	0.60	0.60	0.60	0.63	0.64	0.64	0.64
	-5	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.49	0.58	0.65	0.75	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.58	0.69	0.78	0.89
		PI	0.51	0.51	0.51	0.51	0.54	0.54	0.54	0.54	0.57	0.57	0.57	0.57	0.61	0.61	0.61	0.61
	0	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51	0.54	0.54	0.54	0.54	0.57	0.57	0.58	0.58
	5	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.80	0.56	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.53
	10	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.50	0.58	0.66	0.76	0.53	0.62	0.70	0.80	0.56	0.66	0.75	0.85	0.59	0.70	0.79	0.90
		PI	0.42	0.42	0.42	0.42	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.50	0.50	0.50	0.51
	15	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.50	0.59	0.67	0.76	0.53	0.62	0.71	0.81	0.56	0.66	0.75	0.86	0.60	0.70	0.80	0.91
		PI	0.47	0.47	0.47	0.47	0.49	0.49	0.49	0.49	0.52	0.52	0.52	0.52	0.55	0.55	0.56	0.56
	20	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73
		S/T	0.51	0.60	0.69	0.78	0.54	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.61	0.72	0.82	0.93
		PI	0.51	0.51	0.51	0.51	0.54	0.54	0.54	0.54	0.57	0.57	0.57	0.57	0.60	0.60	0.61	0.61
25	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73	
	S/T	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.94	
	PI	0.55	0.55	0.55	0.55	0.58	0.58	0.58	0.58	0.62	0.62	0.62	0.62	0.65	0.66	0.66	0.66	
30	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	3.52	3.52	3.72	3.72	3.73	3.73	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	0.80	0.91	0.64	0.75	0.85	0.97	
	PI	0.71	0.71	0.71	0.71	0.75	0.75	0.75	0.75	0.79	0.79	0.79	0.80	0.84	0.84	0.84	0.84	
35	TC	3.12	3.13	3.13	3.13	3.31	3.31	3.32	3.32	3.51	3.51	<b>3.52</b>	3.52	3.72	3.72	3.73	3.73	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	<b>0.80</b>	0.91	0.64	0.75	0.85	0.97	
	PI	0.92	0.92	0.92	0.92	0.97	0.98	0.98	0.98	1.03	1.03	<b>1.04</b>	1.04	1.09	1.10	1.10	1.10	
40	TC	2.71	2.71	2.71	2.72	2.87	2.87	2.88	2.88	3.04	3.05	3.05	3.05	3.23	3.23	3.23	3.24	
	S/T	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.62	0.72	0.82	0.93	0.65	0.76	0.87	0.99	
	PI	0.82	0.82	0.82	0.82	0.87	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.97	0.97	0.97	0.98	
45	TC	2.09	2.10	2.10	2.10	2.22	2.22	2.23	2.23	2.35	2.36	2.36	2.36	2.49	2.50	2.50	2.50	
	S/T	0.57	0.67	0.77	0.87	0.61	0.71	0.81	0.92	0.65	0.76	0.86	0.98	0.68	0.80	0.91	1.00	
	PI	0.67	0.67	0.67	0.67	0.71	0.71	0.71	0.71	0.75	0.75	0.76	0.76	0.80	0.80	0.80	0.80	
50	TC	1.18	1.19	1.19	1.19	1.26	1.26	1.26	1.26	1.33	1.33	1.33	1.34	1.41	1.41	1.41	1.42	
	S/T	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.95	0.66	0.77	0.88	1.00	0.70	0.82	0.93	1.00	
	PI	0.46	0.46	0.46	0.46	0.49	0.49	0.49	0.49	0.52	0.52	0.52	0.52	0.55	0.55	0.55	0.55	

TC:Total Cooling Capacity (kW)

S/T:Sensible Cooling Capacity Ratio

PI:Power Input(kW)

**Note: The table shows the case where the operation frequency of a compressor is fixed.**

		18k																	
INDOOR AIRFLOW (CMH)	OUTDOOR DB(C)	ID WB (C)	16.0				18.0				19.0				22.0				
		ID DB (C)	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	
470	-15	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.50	0.35	0.41	0.46	0.52	
		PI	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.53	
	-10	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.44	0.50	0.35	0.41	0.46	0.53	
		PI	0.43	0.43	0.43	0.43	0.45	0.45	0.45	0.45	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51	
	-5	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.29	0.34	0.39	0.45	0.31	0.36	0.41	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.46	0.49	0.49	0.49	0.49	
	0	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.29	0.35	0.39	0.45	0.31	0.37	0.42	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.39	0.39	0.39	0.39	0.41	0.41	0.41	0.41	0.43	0.43	0.44	0.44	0.46	0.46	0.46	0.46	
	5	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.29	0.35	0.39	0.45	0.31	0.37	0.42	0.48	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	
		PI	0.35	0.35	0.35	0.35	0.37	0.38	0.38	0.38	0.40	0.40	0.40	0.40	0.42	0.42	0.42	0.42	
	10	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.33	0.39	0.45	0.51	0.35	0.42	0.47	0.54	
		PI	0.34	0.34	0.34	0.34	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.38	0.40	0.40	0.40	0.41	
	15	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.34	0.39	0.45	0.51	0.36	0.42	0.47	0.54	
		PI	0.37	0.37	0.37	0.37	0.40	0.40	0.40	0.40	0.42	0.42	0.42	0.42	0.44	0.44	0.44	0.45	
	20	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.49	0.34	0.40	0.46	0.52	0.37	0.43	0.49	0.56	
		PI	0.41	0.41	0.41	0.41	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.46	0.48	0.48	0.49	0.49	
	25	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.31	0.36	0.41	0.47	0.33	0.39	0.44	0.50	0.35	0.41	0.47	0.53	0.37	0.43	0.49	0.56	
		PI	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	0.49	0.50	0.50	0.50	0.52	0.53	0.53	0.53	
	30	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.32	0.37	0.42	0.48	0.34	0.40	0.45	0.51	0.36	0.42	0.48	0.54	0.38	0.45	0.51	0.58	
		PI	0.57	0.57	0.57	0.57	0.60	0.60	0.60	0.60	0.63	0.64	0.64	0.64	0.67	0.67	0.67	0.68	
	35	TC	2.65	2.65	2.66	2.66	2.81	2.81	2.81	2.82	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	
		S/T	0.32	0.37	0.42	0.48	0.34	0.40	0.45	0.51	0.36	0.42	0.48	0.54	0.38	0.45	0.51	0.58	
		PI	0.74	0.74	0.74	0.74	0.78	0.78	0.78	0.78	0.83	0.83	0.83	0.83	0.88	0.88	0.88	0.88	
	40	TC	2.30	2.30	2.30	2.31	2.44	2.44	2.44	2.44	2.58	2.58	2.59	2.59	2.74	2.74	2.74	2.75	
		S/T	0.33	0.38	0.44	0.50	0.35	0.41	0.46	0.53	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	
		PI	0.65	0.66	0.66	0.66	0.69	0.69	0.70	0.70	0.74	0.74	0.74	0.74	0.78	0.78	0.78	0.78	
	45	TC	1.78	1.78	1.78	1.78	1.88	1.89	1.89	1.89	2.00	2.00	2.00	2.00	2.12	2.12	2.12	2.12	
		S/T	0.34	0.40	0.46	0.52	0.36	0.43	0.48	0.55	0.38	0.45	0.51	0.59	0.41	0.48	0.54	0.62	
		PI	0.54	0.54	0.54	0.54	0.57	0.57	0.57	0.57	0.60	0.60	0.61	0.61	0.64	0.64	0.64	0.64	
	50	TC	1.00	1.01	1.01	1.01	1.06	1.07	1.07	1.07	1.13	1.13	1.13	1.13	1.20	1.20	1.20	1.20	
		S/T	0.35	0.41	0.47	0.53	0.37	0.44	0.50	0.56	0.39	0.46	0.53	0.60	0.42	0.49	0.56	0.63	
		PI	0.37	0.37	0.37	0.37	0.39	0.39	0.39	0.39	0.41	0.42	0.42	0.42	0.44	0.44	0.44	0.44	
	600	-15	TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10
			S/T	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.60	0.68
			PI	0.57	0.57	0.57	0.58	0.61	0.61	0.61	0.61	0.64	0.64	0.65	0.65	0.68	0.68	0.68	0.69
		-10	TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10
			S/T	0.38	0.44	0.50	0.57	0.40	0.47	0.53	0.61	0.42	0.50	0.56	0.64	0.45	0.53	0.60	0.68
			PI	0.55	0.55	0.55	0.55	0.59	0.59	0.59	0.59	0.62	0.62	0.62	0.62	0.66	0.66	0.66	0.66
-5		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.38	0.44	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	
		PI	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56	0.59	0.59	0.59	0.59	0.63	0.63	0.63	0.63	
0		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45	0.53	0.60	0.69	
		PI	0.50	0.50	0.50	0.50	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56	0.60	0.60	0.60	0.60	
5		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.38	0.45	0.51	0.58	0.40	0.47	0.54	0.62	0.43	0.50	0.57	0.65	0.45	0.53	0.61	0.69	
		PI	0.46	0.46	0.46	0.46	0.49	0.49	0.49	0.49	0.51	0.51	0.52	0.52	0.54	0.55	0.55	0.55	
10		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.38	0.45	0.51	0.58	0.41	0.48	0.54	0.62	0.43	0.51	0.58	0.66	0.46	0.54	0.61	0.70	
		PI	0.44	0.44	0.44	0.44	0.47	0.47	0.47	0.47	0.49	0.49	0.49	0.49	0.52	0.52	0.52	0.52	
15		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.39	0.45	0.52	0.59	0.41	0.48	0.55	0.62	0.43	0.51	0.58	0.66	0.46	0.54	0.61	0.70	
		PI	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51	0.54	0.54	0.54	0.54	0.57	0.58	0.58	0.58	
20		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.40	0.47	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.59	0.68	0.47	0.55	0.63	0.72	
		PI	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56	0.59	0.59	0.59	0.59	0.63	0.63	0.63	0.63	
25		TC	3.43	3.43	3.44	3.44	3.64	3.64	3.64	3.65	3.85	3.86	3.86	3.87	4.09	4.09	4.09	4.10	
		S/T	0.40	0.47	0.54	0.61	0.43	0.50	0.57	0.65	0.45								

800	-15	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.49	0.57	0.65	0.74	0.51	0.60	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.74	0.74	0.74	0.74	0.79	0.79	0.79	0.79	0.83	0.83	0.84	0.84	0.88	0.88	0.89	0.89
	-10	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.49	0.57	0.65	0.74	0.52	0.61	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	0.72	0.72	0.72	0.72	0.76	0.76	0.76	0.76	0.80	0.80	0.81	0.81	0.85	0.85	0.85	0.86
	-5	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.49	0.58	0.65	0.75	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.58	0.69	0.78	0.89
		PI	0.68	0.68	0.68	0.69	0.72	0.72	0.73	0.73	0.77	0.77	0.77	0.77	0.81	0.81	0.82	0.82
	0	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.65	0.65	0.65	0.65	0.69	0.69	0.69	0.69	0.73	0.73	0.73	0.73	0.77	0.77	0.77	0.77
	5	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.80	0.56	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.59	0.59	0.59	0.59	0.63	0.63	0.63	0.63	0.67	0.67	0.67	0.67	0.71	0.71	0.71	0.71
	10	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31
		S/T	0.50	0.58	0.66	0.76	0.53	0.62	0.70	0.80	0.56	0.66	0.75	0.85	0.59	0.70	0.79	0.90
		PI	0.57	0.57	0.57	0.57	0.60	0.60	0.60	0.60	0.64	0.64	0.64	0.64	0.68	0.68	0.68	0.68
15	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31	
	S/T	0.50	0.59	0.67	0.76	0.53	0.62	0.71	0.81	0.56	0.66	0.75	0.86	0.60	0.70	0.80	0.91	
	PI	0.62	0.63	0.63	0.63	0.66	0.66	0.66	0.66	0.70	0.70	0.70	0.70	0.74	0.74	0.75	0.75	
20	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31	
	S/T	0.51	0.60	0.69	0.78	0.54	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.61	0.72	0.82	0.93	
	PI	0.68	0.68	0.68	0.68	0.72	0.72	0.72	0.72	0.77	0.77	0.77	0.77	0.81	0.81	0.81	0.81	
25	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31	
	S/T	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.94	
	PI	0.74	0.74	0.74	0.74	0.78	0.78	0.78	0.79	0.83	0.83	0.83	0.83	0.88	0.88	0.88	0.88	
30	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	5.00	5.01	5.29	5.29	5.30	5.31	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	0.80	0.91	0.64	0.75	0.85	0.97	
	PI	0.95	0.95	0.95	0.95	1.00	1.01	1.01	1.01	1.06	1.07	1.07	1.07	1.13	1.13	1.13	1.13	
35	TC	4.44	4.45	4.45	4.46	4.71	4.71	4.72	4.72	4.99	4.99	<b>5.00</b>	5.01	5.29	5.29	5.30	5.31	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	<b>0.80</b>	0.91	0.64	0.75	0.85	0.97	
	PI	1.23	1.24	1.24	1.24	1.31	1.31	1.31	1.31	1.39	1.39	<b>1.39</b>	1.39	1.47	1.47	1.47	1.48	
40	TC	3.85	3.85	3.86	3.86	4.08	4.09	4.09	4.10	4.32	4.33	4.34	4.34	4.59	4.59	4.60	4.60	
	S/T	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.62	0.72	0.82	0.93	0.65	0.76	0.87	0.99	
	PI	1.10	1.10	1.10	1.10	1.16	1.16	1.17	1.17	1.23	1.23	1.23	1.24	1.31	1.31	1.31	1.31	
45	TC	2.98	2.98	2.98	2.99	3.16	3.16	3.16	3.17	3.35	3.35	3.35	3.36	3.55	3.55	3.55	3.56	
	S/T	0.57	0.67	0.77	0.87	0.61	0.71	0.81	0.92	0.65	0.76	0.86	0.98	0.68	0.80	0.91	1.00	
	PI	0.90	0.90	0.90	0.90	0.96	0.96	0.96	0.96	1.01	1.01	1.01	1.02	1.07	1.07	1.08	1.08	
50	TC	1.68	1.69	1.69	1.69	1.78	1.79	1.79	1.79	1.89	1.89	1.90	1.90	2.00	2.01	2.01	2.01	
	S/T	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.95	0.66	0.77	0.88	1.00	0.70	0.82	0.93	1.00	
	PI	0.62	0.62	0.62	0.62	0.66	0.66	0.66	0.66	0.70	0.70	0.70	0.70	0.74	0.74	0.74	0.74	

TC:Total Cooling Capacity (kW)

S/T:Sensible Cooling Capacity Ratio

PI:Power Input(kW)

**Note: The table shows the case where the operation frequency of a compressor is fixed.**



		21k/24k																	
INDOOR AIRFLOW (CMH)	OUTDOOR DB(C)	ID WB (C)	16.0				18.0				19.0				22.0				
			ID DB (C)	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0	23.0	25.0	27.0	29.0
635	-15	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.27	0.32	0.36	0.41	0.29	0.34	0.38	0.44	0.30	0.36	0.41	0.46	0.32	0.38	0.43	0.49	
		PI	0.63	0.63	0.63	0.63	0.67	0.67	0.67	0.67	0.71	0.71	0.71	0.71	0.75	0.75	0.75	0.75	
	-10	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.27	0.32	0.36	0.41	0.29	0.34	0.38	0.44	0.30	0.36	0.41	0.46	0.32	0.38	0.43	0.49	
		PI	0.61	0.61	0.61	0.61	0.64	0.65	0.65	0.65	0.68	0.68	0.68	0.69	0.72	0.73	0.73	0.73	
	-5	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.27	0.32	0.36	0.42	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.50	
		PI	0.58	0.58	0.58	0.58	0.62	0.62	0.62	0.62	0.65	0.65	0.65	0.65	0.69	0.69	0.69	0.69	
	0	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.27	0.32	0.37	0.42	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.44	0.50	
		PI	0.55	0.55	0.55	0.55	0.58	0.58	0.58	0.59	0.62	0.62	0.62	0.62	0.66	0.66	0.66	0.66	
	5	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.28	0.32	0.37	0.42	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.44	0.50	
		PI	0.50	0.50	0.50	0.51	0.53	0.53	0.53	0.54	0.57	0.57	0.57	0.57	0.60	0.60	0.60	0.60	
	10	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.28	0.33	0.37	0.42	0.29	0.35	0.39	0.45	0.31	0.37	0.42	0.47	0.33	0.39	0.44	0.50	
		PI	0.48	0.48	0.48	0.48	0.51	0.51	0.51	0.51	0.54	0.54	0.54	0.54	0.58	0.58	0.58	0.58	
	15	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.28	0.33	0.37	0.42	0.30	0.35	0.39	0.45	0.31	0.37	0.42	0.48	0.33	0.39	0.44	0.51	
		PI	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56	0.60	0.60	0.60	0.60	0.63	0.63	0.63	0.63	
	20	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.29	0.34	0.38	0.44	0.30	0.36	0.40	0.46	0.32	0.38	0.43	0.49	0.34	0.40	0.45	0.52	
		PI	0.58	0.58	0.58	0.58	0.61	0.61	0.62	0.62	0.65	0.65	0.65	0.65	0.69	0.69	0.69	0.69	
	25	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.29	0.34	0.39	0.44	0.31	0.36	0.41	0.47	0.33	0.38	0.43	0.50	0.35	0.41	0.46	0.53	
		PI	0.63	0.63	0.63	0.63	0.67	0.67	0.67	0.67	0.70	0.71	0.71	0.71	0.75	0.75	0.75	0.75	
	30	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.33	0.39	0.45	0.51	0.35	0.42	0.47	0.54	
		PI	0.80	0.81	0.81	0.81	0.85	0.85	0.86	0.86	0.90	0.91	0.91	0.91	0.96	0.96	0.96	0.96	
	35	TC	3.46	3.47	3.47	3.48	3.67	3.68	3.68	3.69	3.89	3.90	3.90	3.91	4.13	4.13	4.14	4.14	
		S/T	0.30	0.35	0.40	0.45	0.32	0.37	0.42	0.48	0.33	0.39	0.45	0.51	0.35	0.42	0.47	0.54	
		PI	1.05	1.05	1.05	1.05	1.11	1.11	1.11	1.12	1.18	1.18	1.18	1.18	1.25	1.25	1.25	1.25	
	40	TC	3.00	3.01	3.01	3.01	3.18	3.19	3.19	3.20	3.37	3.38	3.38	3.39	3.58	3.58	3.59	3.59	
		S/T	0.31	0.36	0.41	0.46	0.32	0.38	0.43	0.49	0.34	0.40	0.46	0.52	0.36	0.43	0.48	0.55	
		PI	0.93	0.93	0.93	0.94	0.99	0.99	0.99	0.99	1.05	1.05	1.05	1.05	1.11	1.11	1.11	1.11	
	45	TC	2.32	2.33	2.33	2.33	2.46	2.47	2.47	2.47	2.61	2.61	2.62	2.62	2.77	2.77	2.77	2.78	
		S/T	0.32	0.38	0.43	0.49	0.34	0.40	0.45	0.52	0.36	0.42	0.48	0.55	0.38	0.45	0.51	0.58	
		PI	0.77	0.77	0.77	0.77	0.81	0.81	0.81	0.81	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.92	
	50	TC	1.31	1.31	1.32	1.32	1.39	1.39	1.40	1.40	1.48	1.48	1.48	1.48	1.56	1.57	1.57	1.57	
		S/T	0.33	0.38	0.44	0.50	0.35	0.41	0.46	0.53	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	
		PI	0.53	0.53	0.53	0.53	0.56	0.56	0.56	0.56	0.59	0.59	0.59	0.59	0.63	0.63	0.63	0.63	
	790	-15	TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55
			S/T	0.36	0.43	0.48	0.55	0.38	0.45	0.51	0.58	0.41	0.48	0.54	0.62	0.43	0.51	0.58	0.66
			PI	0.84	0.85	0.85	0.85	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	1.01	1.01	1.01	1.01
		-10	TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55
			S/T	0.36	0.43	0.48	0.55	0.39	0.45	0.51	0.59	0.41	0.48	0.54	0.62	0.43	0.51	0.58	0.66
			PI	0.81	0.82	0.82	0.82	0.86	0.86	0.87	0.87	0.92	0.92	0.92	0.92	0.97	0.97	0.97	0.97
-5		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	0.41	0.48	0.55	0.63	0.44	0.51	0.58	0.66	
		PI	0.78	0.78	0.78	0.78	0.82	0.83	0.83	0.83	0.87	0.87	0.88	0.88	0.93	0.93	0.93	0.93	
0		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	0.41	0.49	0.55	0.63	0.44	0.51	0.58	0.67	
		PI	0.74	0.74	0.74	0.74	0.78	0.78	0.78	0.78	0.83	0.83	0.83	0.83	0.88	0.88	0.88	0.88	
5		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.37	0.43	0.49	0.56	0.39	0.46	0.52	0.59	0.41	0.49	0.55	0.63	0.44	0.52	0.59	0.67	
		PI	0.67	0.68	0.68	0.68	0.71	0.72	0.72	0.72	0.76	0.76	0.76	0.76	0.80	0.80	0.80	0.81	
10		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.37	0.44	0.50	0.57	0.39	0.46	0.53	0.60	0.42	0.49	0.56	0.64	0.44	0.52	0.59	0.67	
		PI	0.65	0.65	0.65	0.65	0.69	0.69	0.69	0.69	0.73	0.73	0.73	0.73	0.77	0.77	0.77	0.77	
15		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.37	0.44	0.50	0.57	0.40	0.46	0.53	0.60	0.42	0.49	0.56	0.64	0.45	0.52	0.59	0.68	
		PI	0.71	0.71	0.71	0.71	0.75	0.75	0.76	0.76	0.80	0.80	0.80	0.80	0.85	0.85	0.85	0.85	
20		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.38	0.45	0.51	0.58	0.41	0.48	0.54	0.62	0.43	0.51	0.57	0.66	0.46	0.54	0.61	0.69	
		PI	0.78	0.78	0.78	0.78	0.82	0.82	0.82	0.83	0.87	0.87	0.87	0.87	0.92	0.93	0.93	0.93	
25		TC	4.64	4.65	4.65	4.66	4.92	4.92	4.93	4.94	5.21	5.22	5.23	5.23	5.53	5.53	5.54	5.55	
		S/T	0.39	0.46	0.52	0.59	0.41	0.48	0.55	0.63									

1090	-15	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.49	0.57	0.65	0.74	0.51	0.60	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	1.13	1.13	1.13	1.14	1.20	1.20	1.20	1.20	1.27	1.27	1.27	1.28	1.35	1.35	1.35	1.35
	-10	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.49	0.57	0.65	0.74	0.52	0.61	0.69	0.78	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88
		PI	1.09	1.09	1.09	1.10	1.16	1.16	1.16	1.16	1.23	1.23	1.23	1.23	1.30	1.30	1.30	1.30
	-5	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.49	0.58	0.65	0.75	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.58	0.69	0.78	0.89
		PI	1.04	1.04	1.04	1.05	1.10	1.11	1.11	1.11	1.17	1.17	1.17	1.17	1.24	1.24	1.24	1.24
	0	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.99	0.99	0.99	0.99	1.05	1.05	1.05	1.05	1.11	1.11	1.11	1.11	1.18	1.18	1.18	1.18
	5	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.49	0.58	0.66	0.75	0.52	0.61	0.70	0.80	0.56	0.65	0.74	0.84	0.59	0.69	0.78	0.89
		PI	0.90	0.90	0.91	0.91	0.96	0.96	0.96	0.96	1.01	1.02	1.02	1.02	1.08	1.08	1.08	1.08
	10	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43
		S/T	0.50	0.58	0.66	0.76	0.53	0.62	0.70	0.80	0.56	0.66	0.75	0.85	0.59	0.70	0.79	0.90
		PI	0.87	0.87	0.87	0.87	0.92	0.92	0.92	0.92	0.97	0.97	0.98	0.98	1.03	1.03	1.03	1.04
15	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43	
	S/T	0.50	0.59	0.67	0.76	0.53	0.62	0.71	0.81	0.56	0.66	0.75	0.86	0.60	0.70	0.80	0.91	
	PI	0.95	0.95	0.95	0.96	1.01	1.01	1.01	1.01	1.07	1.07	1.07	1.07	1.13	1.14	1.14	1.14	
20	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43	
	S/T	0.51	0.60	0.69	0.78	0.54	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.61	0.72	0.82	0.93	
	PI	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.17	1.17	1.17	1.17	1.24	1.24	1.24	1.24	
25	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43	
	S/T	0.52	0.61	0.69	0.79	0.55	0.65	0.74	0.84	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.94	
	PI	1.13	1.13	1.13	1.13	1.19	1.19	1.20	1.20	1.26	1.27	1.27	1.27	1.34	1.34	1.34	1.35	
30	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	7.00	7.01	7.40	7.41	7.42	7.43	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	0.80	0.91	0.64	0.75	0.85	0.97	
	PI	1.44	1.45	1.45	1.45	1.53	1.53	1.53	1.54	1.62	1.62	1.63	1.63	1.72	1.72	1.72	1.73	
35	TC	6.21	6.22	6.23	6.24	6.59	6.60	6.60	6.61	6.98	6.99	<b>7.00</b>	7.01	7.40	7.41	7.42	7.43	
	S/T	0.53	0.63	0.71	0.81	0.57	0.66	0.75	0.86	0.60	0.70	<b>0.80</b>	0.91	0.64	0.75	0.85	0.97	
	PI	1.88	1.88	1.89	1.89	2.00	2.00	2.00	2.00	2.11	2.12	<b>2.12</b>	2.12	2.24	2.24	2.25	2.25	
40	TC	5.39	5.40	5.40	5.41	5.71	5.72	5.73	5.73	6.05	6.06	6.07	6.08	6.42	6.43	6.43	6.44	
	S/T	0.55	0.64	0.73	0.83	0.58	0.68	0.77	0.88	0.62	0.72	0.82	0.93	0.65	0.76	0.87	0.99	
	PI	1.67	1.67	1.68	1.68	1.77	1.78	1.78	1.78	1.88	1.88	1.88	1.89	1.99	1.99	2.00	2.00	
45	TC	4.17	4.17	4.18	4.18	4.42	4.42	4.43	4.44	4.68	4.69	4.69	4.70	4.97	4.97	4.98	4.98	
	S/T	0.57	0.67	0.77	0.87	0.61	0.71	0.81	0.92	0.65	0.76	0.86	0.98	0.68	0.80	0.91	1.00	
	PI	1.37	1.38	1.38	1.38	1.46	1.46	1.46	1.46	1.54	1.55	1.55	1.55	1.64	1.64	1.64	1.64	
50	TC	2.36	2.36	2.36	2.37	2.50	2.50	2.50	2.51	2.65	2.65	2.65	2.66	2.81	2.81	2.81	2.82	
	S/T	0.59	0.69	0.78	0.89	0.62	0.73	0.83	0.95	0.66	0.77	0.88	1.00	0.70	0.82	0.93	1.00	
	PI	0.94	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.06	1.06	1.06	1.06	1.12	1.13	1.13	1.13	

TC:Total Cooling Capacity (kW)

S/T:Sensible Cooling Capacity Ratio

PI:Power Input(kW)

**Note: The table shows the case where the operation frequency of a compressor is fixed.**

## 7.2 Heating

9k								[SI_Unit]	
INDOOR AIRFLOW (CMH)	HEATING PERFORMANCE AT INDOOR DRY BULB TEMPERATURE								
	OUTDOOR DB(°C)	TC:TOTAL CAPACITY IN KILOWATTS (KW)				PI:TOTAL POWER IN KILOWATTS (KW)			
		Indoor Conditions (DB °C )				Indoor Conditions (DB °C )			
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
285	-25.0	2.11	2.09	2.07	2.07	0.87	0.90	0.87	0.87
	-20.0	2.30	2.27	2.25	2.25	0.95	0.99	0.95	0.95
	-15.0	2.49	2.46	2.43	2.43	1.04	1.08	1.04	1.04
	-10.0	2.65	2.63	2.60	2.60	1.11	1.16	1.11	1.11
	-7.0	2.78	2.75	2.72	2.72	1.18	1.23	1.18	1.18
	-5.6	2.75	2.72	2.69	2.69	1.13	1.13	1.13	1.13
	-2.8	2.69	2.66	2.66	2.64	1.04	1.03	1.03	1.02
	0.0	2.64	2.61	2.58	2.58	0.94	0.93	0.93	0.92
	2.8	2.66	2.61	2.61	2.58	0.86	0.84	0.83	0.83
	5.6	2.75	2.72	2.69	2.69	0.77	0.75	0.74	0.73
	7.0	2.87	2.84	2.81	2.81	0.73	0.66	0.70	0.69
	11.1	2.90	2.87	2.84	2.81	0.60	0.57	0.56	0.54
	13.9	2.93	2.87	2.87	2.84	0.51	0.48	0.46	0.44
	16.7	2.96	2.90	2.87	2.84	0.42	0.38	0.36	0.34
18.0	2.96	2.90	2.87	2.87	0.37	0.33	0.31	0.30	
360	-25.0	2.13	2.13	2.11	2.11	0.87	0.91	0.87	0.87
	-20.0	2.32	2.32	2.29	2.29	0.96	1.00	0.96	0.96
	-15.0	2.51	2.51	2.48	2.48	1.05	1.09	1.05	1.05
	-10.0	2.68	2.68	2.65	2.65	1.12	1.17	1.12	1.12
	-7.0	2.81	2.81	2.78	2.78	1.19	1.24	1.19	1.19
	-5.6	2.78	2.78	2.75	2.75	1.14	1.14	1.14	1.14
	-2.8	2.75	2.72	2.72	2.69	1.05	1.04	1.04	1.03
	0.0	2.69	2.66	2.64	2.64	0.95	0.94	0.93	0.93
	2.8	2.69	2.66	2.66	2.64	0.86	0.85	0.84	0.83
	5.6	2.81	2.78	2.75	2.75	0.78	0.76	0.75	0.74
	7.0	2.93	2.90	2.87	2.87	0.74	0.66	0.71	0.70
	11.1	2.96	2.93	2.90	2.90	0.61	0.58	0.56	0.55
	13.9	2.99	2.93	2.93	2.90	0.51	0.48	0.46	0.45
	16.7	3.02	2.96	2.93	2.90	0.42	0.38	0.37	0.35
18.0	3.02	2.96	2.93	2.93	0.38	0.34	0.32	0.30	
510	-25.0	2.18	2.16	2.14	2.14	0.88	0.92	0.88	0.88
	-20.0	2.37	2.34	2.32	2.32	0.97	1.01	0.97	0.97
	-15.0	2.56	2.54	2.51	2.51	1.06	1.10	1.06	1.06
	-10.0	2.74	2.71	2.68	2.68	1.13	1.18	1.13	1.13
	-7.0	2.87	2.84	2.81	2.81	1.20	1.25	1.20	1.20
	-5.6	2.84	2.81	2.78	2.78	1.15	1.15	1.15	1.15
	-2.8	2.78	2.75	2.75	2.72	1.06	1.05	1.04	1.04
	0.0	2.72	2.69	2.66	2.66	0.96	0.95	0.94	0.94
	2.8	2.72	2.69	2.69	2.66	0.87	0.85	0.85	0.84
	5.6	2.84	2.81	2.78	2.78	0.78	0.76	0.75	0.74
	7.0	2.96	2.93	2.90	2.90	0.75	0.67	0.71	0.70
	11.1	2.99	2.96	2.93	2.90	0.61	0.58	0.57	0.55
	13.9	3.02	2.96	2.96	2.93	0.52	0.48	0.47	0.45
	16.7	3.05	2.99	2.96	2.93	0.42	0.39	0.37	0.35
18.0	3.05	2.99	2.96	2.96	0.38	0.34	0.32	0.30	

Note: The table shows the case where the operation frequency of a compressor is fixed.

		12k				[SI_Unit]			
INDOOR AIRFLOW (CMH)	OUTDOOR DB(°C)	HEATING PERFORMANCE AT INDOOR DRY BULB TEMPERATURE							
		TC:TOTAL CAPACITY IN KILOWATTS (KW)				PI:TOTAL POWER IN KILOWATTS (KW)			
		Indoor Conditions (DB °C )				Indoor Conditions (DB °C )			
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
370	-25.0	2.17	2.15	2.13	2.13	0.84	0.87	0.87	0.87
	-20.0	2.36	2.33	2.31	2.31	0.93	0.96	0.95	0.95
	-15.0	2.55	2.53	2.50	2.50	1.01	1.05	1.04	1.04
	-10.0	2.72	2.70	2.67	2.67	1.08	1.12	1.11	1.11
	-7.0	2.85	2.83	2.80	2.80	1.15	1.19	1.18	1.18
	-5.6	2.94	2.91	2.88	2.88	1.13	1.14	1.15	1.16
	-2.8	3.00	2.97	2.97	2.94	1.09	1.10	1.11	1.11
	0.0	3.06	3.00	3.00	2.97	1.04	1.06	1.06	1.07
	2.8	3.20	3.17	3.15	3.12	1.01	1.02	1.03	1.03
	5.6	3.47	3.41	3.41	3.38	0.98	0.99	1.00	1.00
	7.0	3.76	3.69	3.61	3.58	0.98	0.97	0.98	0.98
	11.1	3.90	3.84	3.84	3.81	0.92	0.93	0.93	0.94
	13.9	4.04	4.01	3.98	3.96	0.89	0.89	0.89	0.90
	16.7	4.22	4.16	4.13	4.10	0.85	0.85	0.86	0.86
18.0	4.28	4.22	4.19	4.16	0.83	0.84	0.84	0.84	
450	-25.0	2.22	2.20	2.20	2.18	0.85	0.88	0.87	0.87
	-20.0	2.41	2.39	2.39	2.37	0.94	0.97	0.95	0.96
	-15.0	2.61	2.59	2.59	2.56	1.02	1.06	1.04	1.05
	-10.0	2.79	2.76	2.76	2.74	1.09	1.13	1.11	1.12
	-7.0	2.92	2.89	2.89	2.87	1.16	1.20	1.18	1.19
	-5.6	3.00	2.97	2.97	2.94	1.14	1.15	1.16	1.17
	-2.8	3.09	3.06	3.03	3.00	1.09	1.11	1.11	1.12
	0.0	3.12	3.09	3.06	3.06	1.05	1.06	1.07	1.08
	2.8	3.29	3.23	3.20	3.20	1.02	1.03	1.04	1.04
	5.6	3.55	3.50	3.47	3.47	0.99	1.00	1.00	1.01
	7.0	3.84	3.78	3.69	3.66	0.98	0.97	0.99	0.99
	11.1	3.98	3.96	3.93	3.90	0.93	0.93	0.94	0.94
	13.9	4.16	4.10	4.07	4.04	0.89	0.90	0.90	0.90
	16.7	4.30	4.25	4.22	4.19	0.86	0.86	0.86	0.86
18.0	4.36	4.30	4.28	4.25	0.84	0.84	0.84	0.84	
600	-25.0	2.24	2.21	2.19	2.19	0.86	0.89	0.87	0.88
	-20.0	2.43	2.41	2.38	2.38	0.94	0.98	0.96	0.97
	-15.0	2.63	2.60	2.58	2.58	1.03	1.07	1.05	1.06
	-10.0	2.81	2.78	2.75	2.75	1.10	1.14	1.12	1.13
	-7.0	2.94	2.91	2.88	2.88	1.17	1.21	1.19	1.20
	-5.6	3.03	3.00	2.97	2.97	1.15	1.16	1.17	1.18
	-2.8	3.12	3.06	3.06	3.03	1.10	1.12	1.12	1.13
	0.0	3.15	3.12	3.09	3.06	1.06	1.07	1.08	1.08
	2.8	3.29	3.26	3.23	3.20	1.03	1.04	1.04	1.05
	5.6	3.58	3.52	3.50	3.47	0.99	1.00	1.01	1.01
	7.0	3.87	3.81	3.72	3.69	0.98	0.98	0.99	0.99
	11.1	4.04	3.98	3.96	3.93	0.93	0.94	0.94	0.94
	13.9	4.19	4.13	4.10	4.07	0.90	0.90	0.90	0.90
	16.7	4.33	4.28	4.25	4.22	0.86	0.86	0.86	0.86
18.0	4.42	4.36	4.33	4.28	0.84	0.84	0.84	0.84	

Note: The table shows the case where the operation frequency of a compressor is fixed.

18k								[SI_Unit]	
INDOOR AIRFLOW (CMH)	HEATING PERFORMANCE AT INDOOR DRY BULB TEMPERATURE								
	OUTDOOR DB(°C)	TC:TOTAL CAPACITY IN KILOWATTS (KW)				PI:TOTAL POWER IN KILOWATTS (KW)			
		Indoor Conditions (DB °C )				Indoor Conditions (DB °C )			
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
470	-25.0	3.69	3.65	3.65	3.62	1.23	1.27	1.26	1.26
	-20.0	4.01	3.96	3.96	3.94	1.35	1.40	1.38	1.39
	-15.0	4.34	4.29	4.29	4.26	1.48	1.53	1.51	1.52
	-10.0	4.64	4.58	4.58	4.55	1.57	1.63	1.61	1.62
	-7.0	4.86	4.80	4.80	4.77	1.67	1.73	1.71	1.72
	-5.6	4.83	4.77	4.77	4.74	1.64	1.66	1.67	1.69
	-2.8	4.80	4.77	4.74	4.71	1.58	1.60	1.61	1.62
	0.0	4.74	4.68	4.65	4.62	1.52	1.54	1.55	1.56
	2.8	4.83	4.77	4.74	4.71	1.48	1.50	1.51	1.51
	5.6	5.06	5.00	4.97	4.91	1.44	1.45	1.46	1.47
	7.0	5.32	5.25	5.20	5.17	1.43	1.42	1.45	1.46
	11.1	5.43	5.34	5.31	5.28	1.35	1.36	1.37	1.37
	13.9	5.52	5.43	5.40	5.34	1.30	1.31	1.31	1.32
	16.7	5.60	5.52	5.46	5.43	1.25	1.26	1.26	1.26
18.0	5.63	5.55	5.52	5.46	1.23	1.23	1.24	1.24	
600	-25.0	3.77	3.73	3.71	3.68	1.24	1.29	1.27	1.28
	-20.0	4.10	4.05	4.03	4.00	1.36	1.41	1.40	1.40
	-15.0	4.44	4.38	4.36	4.33	1.49	1.55	1.53	1.54
	-10.0	4.74	4.68	4.65	4.63	1.59	1.65	1.63	1.64
	-7.0	4.96	4.90	4.88	4.85	1.69	1.75	1.73	1.74
	-5.6	4.94	4.89	4.86	4.83	1.66	1.68	1.69	1.71
	-2.8	4.91	4.86	4.83	4.80	1.60	1.62	1.63	1.64
	0.0	4.83	4.77	4.74	4.71	1.54	1.56	1.57	1.58
	2.8	4.91	4.86	4.83	4.80	1.50	1.51	1.52	1.53
	5.6	5.15	5.09	5.06	5.03	1.45	1.46	1.47	1.48
	7.0	5.41	5.35	5.28	5.25	1.44	1.43	1.46	1.47
	11.1	5.52	5.46	5.40	5.37	1.36	1.37	1.38	1.38
	13.9	5.60	5.52	5.49	5.43	1.31	1.32	1.32	1.32
	16.7	5.69	5.60	5.55	5.52	1.26	1.26	1.27	1.27
18.0	5.72	5.63	5.60	5.55	1.23	1.24	1.24	1.24	
800	-25.0	3.80	3.76	3.76	3.74	1.26	1.30	1.29	1.29
	-20.0	4.13	4.08	4.08	4.06	1.38	1.43	1.41	1.42
	-15.0	4.47	4.42	4.42	4.39	1.51	1.56	1.55	1.55
	-10.0	4.77	4.72	4.72	4.69	1.61	1.67	1.65	1.66
	-7.0	5.00	4.94	4.94	4.91	1.71	1.77	1.75	1.76
	-5.6	4.97	4.91	4.91	4.89	1.68	1.70	1.71	1.72
	-2.8	4.94	4.89	4.86	4.86	1.62	1.64	1.65	1.66
	0.0	4.86	4.83	4.80	4.77	1.55	1.57	1.58	1.59
	2.8	4.94	4.89	4.86	4.83	1.51	1.52	1.53	1.54
	5.6	5.21	5.15	5.09	5.06	1.46	1.48	1.48	1.49
	7.0	5.46	5.40	5.34	5.31	1.45	1.44	1.47	1.48
	11.1	5.57	5.49	5.46	5.43	1.37	1.38	1.39	1.39
	13.9	5.66	5.57	5.55	5.49	1.32	1.32	1.33	1.33
	16.7	5.75	5.66	5.60	5.57	1.27	1.27	1.27	1.27
18.0	5.78	5.69	5.66	5.60	1.24	1.24	1.24	1.24	

Note: The table shows the case where the operation frequency of a compressor is fixed.

21k/24k								[SI_Unit]	
INDOOR AIRFLOW (CMH)	HEATING PERFORMANCE AT INDOOR DRY BULB TEMPERATURE								
	OUTDOOR DB(°C)	TC:TOTAL CAPACITY IN KILOWATTS (KW)				PI:TOTAL POWER IN KILOWATTS (KW)			
		Indoor Conditions (DB °C )				Indoor Conditions (DB °C )			
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
635	-25.0	5.12	5.07	5.05	5.03	2.10	2.18	2.13	2.13
	-20.0	5.56	5.51	5.49	5.46	2.31	2.40	2.34	2.34
	-15.0	6.02	5.96	5.94	5.91	2.53	2.62	2.55	2.56
	-10.0	6.42	6.37	6.34	6.31	2.70	2.80	2.72	2.73
	-7.0	6.73	6.67	6.64	6.61	2.87	2.97	2.90	2.91
	-5.6	6.67	6.61	6.59	6.56	2.78	2.79	2.80	2.80
	-2.8	6.61	6.56	6.50	6.47	2.60	2.61	2.61	2.61
	0.0	6.47	6.41	6.35	6.32	2.43	2.43	2.43	2.42
	2.8	6.56	6.47	6.44	6.38	2.27	2.26	2.26	2.25
	5.6	6.85	6.76	6.70	6.67	2.12	2.10	2.09	2.08
	7.0	7.16	7.07	7.01	6.98	2.04	1.93	2.01	2.00
	11.1	7.27	7.16	7.13	7.07	1.80	1.76	1.75	1.73
	13.9	7.33	7.24	7.18	7.13	1.63	1.59	1.57	1.55
	16.7	7.42	7.30	7.24	7.18	1.48	1.43	1.40	1.38
18.0	7.44	7.33	7.27	7.21	1.40	1.35	1.32	1.29	
790	-25.0	5.22	5.17	5.15	5.11	2.13	2.21	2.15	2.16
	-20.0	5.67	5.62	5.60	5.55	2.34	2.43	2.36	2.37
	-15.0	6.14	6.08	6.06	6.01	2.56	2.65	2.58	2.59
	-10.0	6.55	6.50	6.47	6.41	2.73	2.83	2.75	2.76
	-7.0	6.86	6.81	6.78	6.72	2.91	3.01	2.92	2.93
	-5.6	6.82	6.76	6.73	6.67	2.81	2.82	2.83	2.84
	-2.8	6.76	6.67	6.64	6.61	2.63	2.64	2.64	2.64
	0.0	6.61	6.53	6.50	6.47	2.46	2.45	2.45	2.45
	2.8	6.67	6.61	6.56	6.53	2.30	2.29	2.28	2.28
	5.6	6.99	6.90	6.85	6.79	2.14	2.12	2.11	2.10
	7.0	7.31	7.22	7.16	7.13	2.06	1.95	2.03	2.02
	11.1	7.42	7.30	7.27	7.21	1.82	1.78	1.77	1.75
	13.9	7.50	7.39	7.33	7.27	1.65	1.61	1.59	1.57
	16.7	7.56	7.44	7.39	7.33	1.48	1.44	1.42	1.39
18.0	7.62	7.50	7.44	7.39	1.41	1.36	1.33	1.30	
1090	-25.0	5.27	5.23	5.20	5.18	2.15	2.23	2.17	2.18
	-20.0	5.73	5.68	5.66	5.63	2.36	2.45	2.38	2.39
	-15.0	6.20	6.15	6.12	6.09	2.58	2.68	2.61	2.62
	-10.0	6.62	6.56	6.53	6.51	2.75	2.86	2.78	2.79
	-7.0	6.93	6.88	6.85	6.82	2.92	3.03	2.95	2.96
	-5.6	6.88	6.82	6.79	6.76	2.84	2.85	2.85	2.86
	-2.8	6.82	6.76	6.70	6.67	2.66	2.66	2.66	2.67
	0.0	6.67	6.61	6.56	6.53	2.48	2.48	2.47	2.47
	2.8	6.76	6.67	6.64	6.59	2.32	2.31	2.30	2.30
	5.6	7.05	6.96	6.93	6.88	2.16	2.14	2.13	2.13
	7.0	7.39	7.30	7.24	7.18	2.08	1.97	2.05	2.04
	11.1	7.50	7.39	7.36	7.30	1.84	1.80	1.78	1.77
	13.9	7.59	7.47	7.42	7.36	1.67	1.63	1.60	1.58
	16.7	7.68	7.56	7.50	7.44	1.50	1.46	1.43	1.41
18.0	7.71	7.59	7.53	7.47	1.43	1.37	1.35	1.32	

Note: The table shows the case where the operation frequency of a compressor is fixed.

## 8. Capacity Correction Factor for Height Difference

Capacity(Btu/h)		9k		Pipe Length (m)			
				5	10	20	25
Cooling							
Height difference H (m)	Indoor Upper than Outdoor	10			0.969	0.936	0.920
		5	0.995		0.979	0.946	0.929
		0	1.000		0.984	0.951	0.934
	Outdoor Upper than Indoor	-5	1.000		0.984	0.951	0.934
		-10			0.984	0.951	0.934
Heating							
				5	10	20	25
Height difference H (m)	Indoor Upper than Outdoor	10			0.989	0.967	0.956
		5	1.000		0.989	0.967	0.956
		0	1.000		0.989	0.967	0.956
	Outdoor Upper than Indoor	-5	0.992		0.981	0.959	0.948
		-10			0.973	0.952	0.941

Capacity(Btu/h)		12k		Pipe Length (m)			
				5	10	20	25
Cooling							
Height difference H (m)	Indoor Upper than Outdoor	10			0.973	0.948	0.936
		5	0.995		0.983	0.958	0.945
		0	1.000		0.988	0.963	0.950
	Outdoor Upper than Indoor	-5	1.000		0.988	0.963	0.950
		-10			0.988	0.963	0.950
Heating							
				5	10	20	25
Height difference H (m)	Indoor Upper than Outdoor	10			0.993	0.978	0.970
		5	1.000		0.993	0.978	0.970
		0	1.000		0.993	0.978	0.970
	Outdoor Upper than Indoor	-5	0.992		0.985	0.970	0.962
		-10			0.977	0.962	0.955

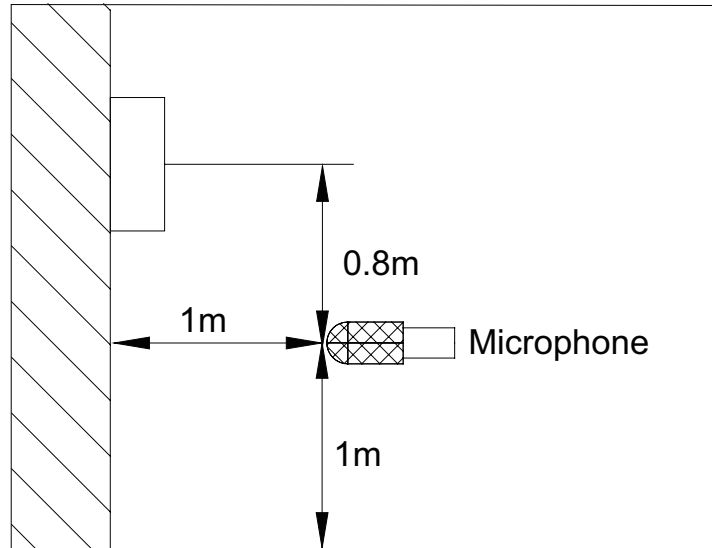
Capacity(Btu/h)		18k		Pipe Length (m)			
		Cooling		5	10	20	30
Height difference H (m)	Indoor Upper than Outdoor	20				0.928	0.912
		10			0.969	0.937	0.921
		5	0.995	0.979	0.946	0.930	
		0	1.000	0.984	0.951	0.935	
	Outdoor Upper than Indoor	-5	1.000	0.984	0.951	0.935	
		-10		0.984	0.951	0.935	
		-20			0.951	0.935	
		Heating		5	10	20	30
Height difference H (m)	Indoor Upper than Outdoor	20				0.982	0.976
		10			0.994	0.982	0.976
		5	1.000	0.994	0.982	0.976	
		0	1.000	0.994	0.982	0.976	
	Outdoor Upper than Indoor	-5	0.992	0.986	0.974	0.968	
		-10		0.978	0.966	0.960	
		-20			0.959	0.953	

Capacity (Btu/h)		21k/24k		Pipe Length (m)					
		Cooling		5	10	20	30	40	50
Height difference H (m)	Indoor Upper than Outdoor	25					0.914	0.894	0.874
		20				0.944	0.924	0.903	0.883
		10		0.975	0.954	0.933	0.912	0.891	
		5	0.995	0.984	0.963	0.942	0.921	0.900	
		0	1.000	0.989	0.968	0.947	0.926	0.905	
	Outdoor Upper than Indoor	-5	1.000	0.989	0.968	0.947	0.926	0.905	
		-10		0.989	0.968	0.947	0.926	0.905	
		-20			0.968	0.947	0.926	0.905	
-25					0.947	0.926	0.905		
		Heating		5	10	20	30	40	50
Height difference H (m)	Indoor Upper than Outdoor	25					0.983	0.977	0.970
		20				0.990	0.983	0.977	0.970
		10		0.997	0.990	0.983	0.977	0.970	
		5	1.000	0.997	0.990	0.983	0.977	0.970	
		0	1.000	0.997	0.990	0.983	0.977	0.970	
	Outdoor Upper than Indoor	-5	0.992	0.989	0.982	0.975	0.969	0.962	
		-10		0.981	0.974	0.968	0.961	0.955	
		-20			0.966	0.960	0.953	0.947	
-25					0.952	0.946	0.939		



## 9. Noise Criterion Curves

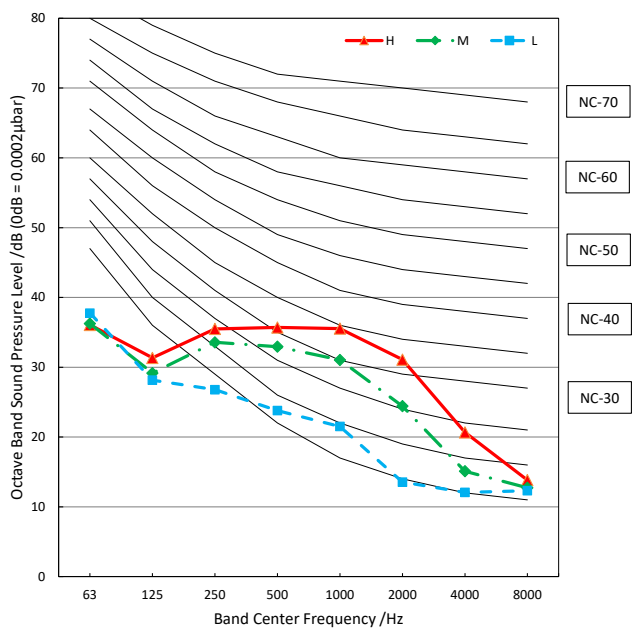
### 9.1 Indoor Unit



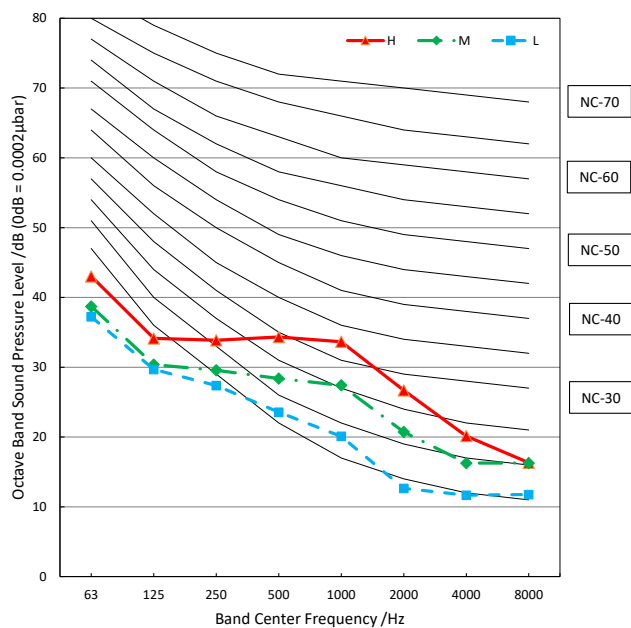
Notes:

- Sound measured at 1.0m away from the center of the unit.
- 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.

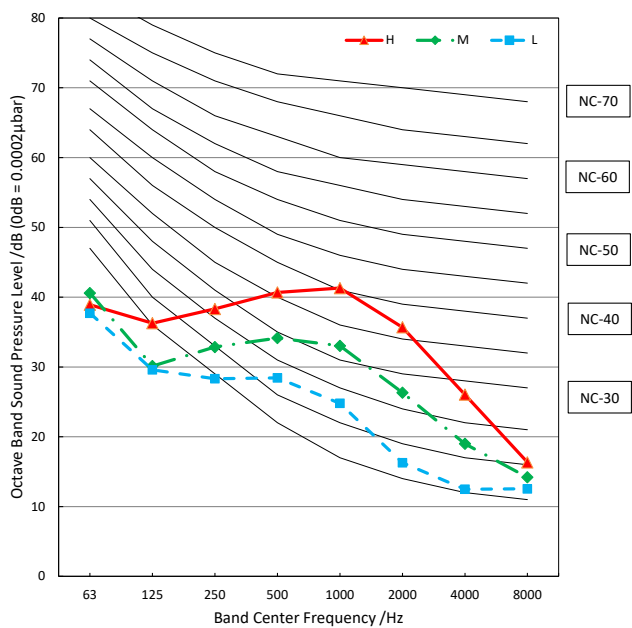
9k



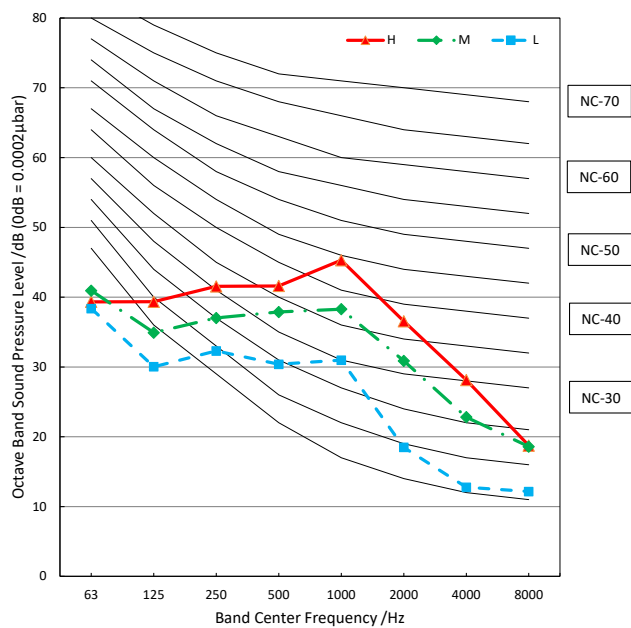
12k



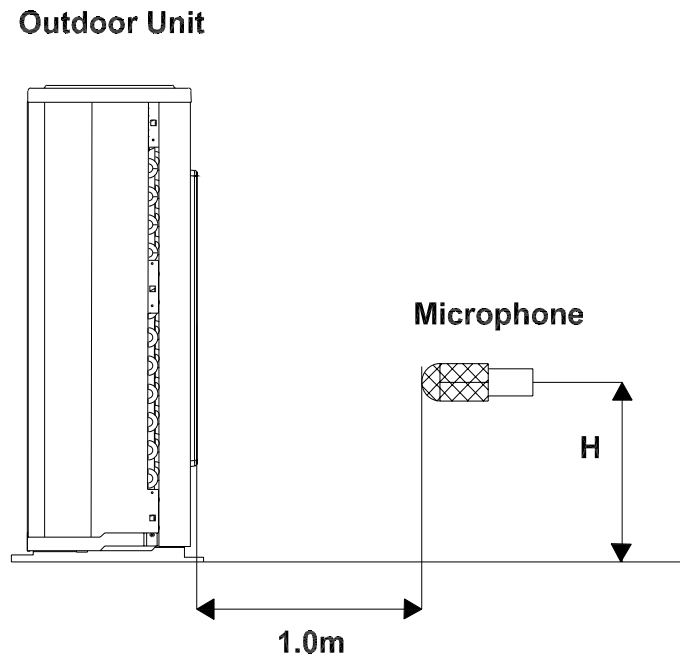
18k



21k/24k



## 9.2 Outdoor Unit

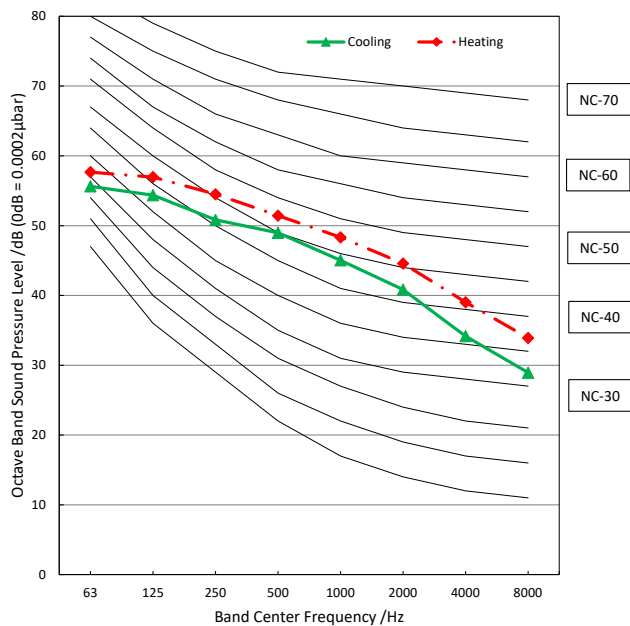


Note:  $H = 0.5 \times$  height of outdoor unit

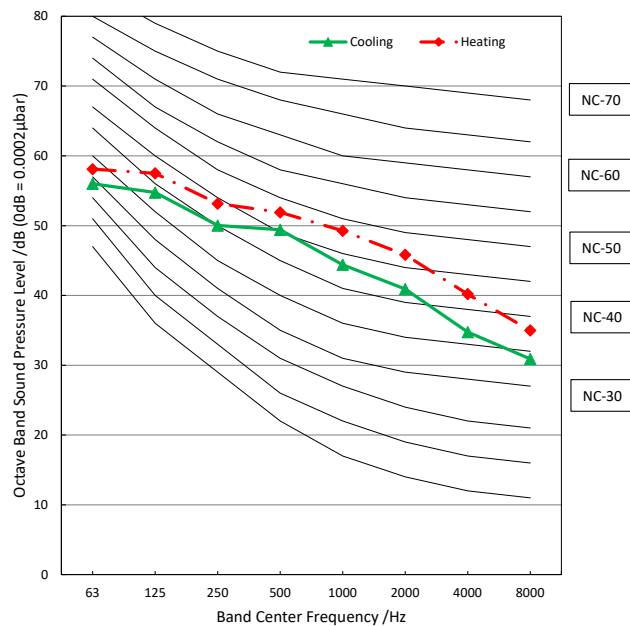
Notes:

- Sound measured at 1.0m away from the center of the unit.
- Data is valid at nominal operation condition
- Reference acoustic pressure  $OdB=20\mu Pa$
- 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.

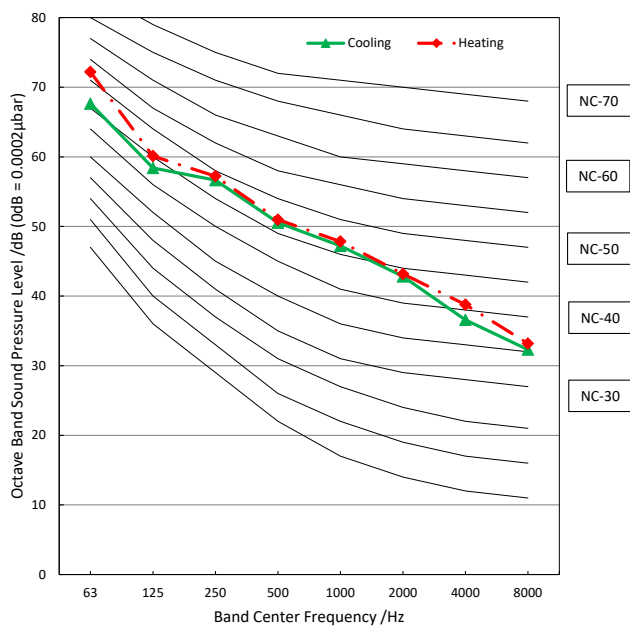
9k



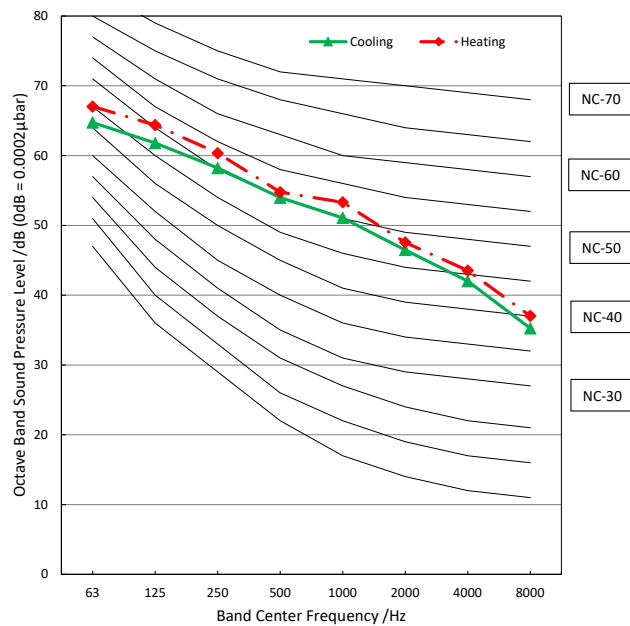
12k



18k



21k/24k



## 10. Electrical Characteristics

Capacity(Btu/h)	Outdoor Unit			Power Supply			IFM		Compressor		OFM		
	Phase	Hz	Voltage	MCA	MOP	MFA	W	FLA	MSC	RLA	Qty	W	FLA
9k	1	50/ 60	220-240 Min:198 Max:264	7.09	11.99	15	30	0.29	/	4.9	1	25	0.674
12k				7.09	11.99	15	30	0.29	/	4.9	1	25	0.674
18k				10.10	17.25	20	35	0.31	/	7.15	1	80	0.852
21k				13.00	22.30	25	58	0.52	/	9.3	1	80	0.852
24k				13.00	22.30	25	58	0.52	/	9.3	1	80	0.852

Notes:

MCA: Minimum Circuit Amperes (A)

MOP: Maximum rating over current protective device

MFA: Maximum Fuse Amperes (A)

MSC: Maximum Starting Current

RLA: Rated Load Amperes (A)

IFM: Indoor Fan Motor

OFM: Outdoor Fan Motor

FLA: Full Load Amperes (A)

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# 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
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
Tsc	Adjusted setting temperature
TP	Compressor discharge temperature
CDIFTEMP	Cooling shutdown temperature
HDIFTEMP2	Heating shutdown temperature
TCDI1	Enter defrost temperature
TCDE1	Exit defrost temperature1
TCDE2	Exit defrost temperature2 (maintain for a period of time )
TIMING_ DEFROST_TIME	Enter defrost time

In this manual, such as CDIFTEMP, HDIFTEMP2, TCDE1, TCDE2, TIMING\_DEFROST\_TIME...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 a period of time, the compressor ceases operation.

### Automatic shutoff based on fan speed

If the indoor fan speed registers below 200RPM or over 2100RPM for an extended period of time, the unit ceases operation and the corresponding error code is displayed on the indoor unit.

### 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.

### 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



Display Code	Function
00 000.kW A	<ul style="list-style-type: none"> <li>• Displays temperature, operation feature and error codes.</li> <li>• For some units, when GEAR function is activated, the display window will display and flash the target power value(kW), current value(A) or gear levels (Lx)for 15 seconds. The gear levels displays as: L1 gear( - ), L2 gear( -- ), L3 gear( --- ), L4 gear( ---- ), L5 gear( ----- ).</li> </ul>
Shield icon	When Fresh feature is turned on(some units).
AI icon	When ECOMASTER feature is turned on.
Wi-Fi icon	When Wireless Control feature is activated. (some units)
00 (for 3s when)	<ul style="list-style-type: none"> <li>• Timer ON is set. (if the unit is OFF, 00 remains on when TIMER ON is set).</li> <li>• Air magic, UV lamp, Swing, Cool(Heat) Flash Breeze away or Silent feature is turned on.</li> </ul>

<b>OF</b> (for 3s when)	<ul style="list-style-type: none"> <li>• Timer OFF is set.</li> <li>• Air magic, UV lamp, Swing, Cool(Heat) Flash , Breeze away, or Silent feature is turned off.</li> </ul>
<b>df</b>	When defrosting(cooling & heating units).
<b>CL</b>	When active clean function is turned on.
<b>FP</b>	When 8°C(46°F) heating mode is turned on(for cooling & heating units).

## 1.4 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor cease operation.
- Temperature control is disabled and indoor room temperature is displayed.
- The indoor fan speed can be set to 1%~100%, or 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(75°F).(Tsc =24°C(75°F))

## 1.5 Cooling Mode

### 1.5.1 Compressor Control

Reach the configured temperature:

- 1) When the compressor runs continuously for within 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
    - T1 is lower than or equal to (Tsc-CDIFTEMP-0.5°C(1°F))

Note: CDIFTEMP is EEPROM setting parameter. It is 2°C(4°F) usually.

- 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.
- T1 is lower than or equal to (Tsc-CDIFTEMP).

Note: CDIFTEMP is EEPROM setting parameter. It is 2°C(4°F) usually.

- 3) If one of the following conditions is satisfied, not judge protective time.
  - Compressor running frequency(fr) is more than test frequency(TestFre).
  - Compressor running frequency is equal to test frequency, T4 is more than 15°C(59°F) or T4 fault.
  - Change setting temperature.
  - Turn on/off turbo or sleep function.
  - Various frequency limit shutdown occurs.

### 1.5.2 Indoor Fan Control

- 1) In cooling mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or auto.
- 2) Auto fan
  - Descent curve
    - When T1-Tsc is lower than 3.5°C(6°F), fan speed reduces to 80%;
    - When T1-Tsc is lower than 1°C(2°F), fan speed reduces to 60%;
    - When T1-Tsc is lower than 0.5°C(1°F), fan speed reduces to 40%;
    - When T1-Tsc is lower than 0°C(0°F), fan speed reduces to 20%;
    - When T1-Tsc is lower than -0.5°C(-1°F), fan speed reduces to 1%.
  - Rise curve
    - When T1-Tsc is higher than or equal to 0°C(0°F), fan speed increases to 20%;
    - When T1-Tsc is higher than or equal to 0.5°C(0.9°F), fan speed increases to 40%;
    - When T1-Tsc is higher than or equal to 1°C(2°F), fan speed increases to 60%;
    - When T1-Tsc is higher than or equal to 1.5°C(3°F), fan speed increases to 80%;
    - When T1-Tsc is higher than or equal to 4°C(7°F), fan speed increases to 100%.

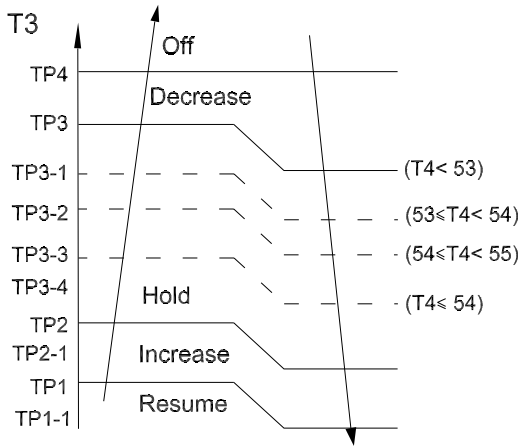
### 1.5.3 Outdoor Fan Control

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



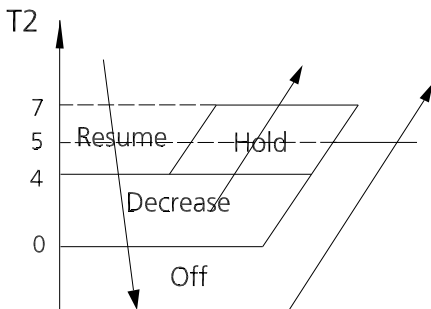
different.

### 1.5.4 Condenser Temperature Protection



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

### 1.5.5 Evaporator Temperature Protection



- 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(For 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(4°F) usually.

- If one of the following conditions is satisfied, not

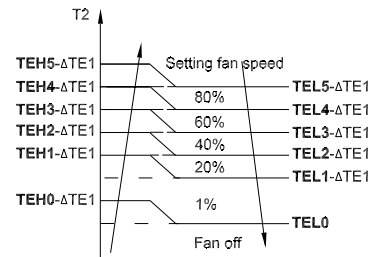
judge protective time.

- Compressor running frequency(fr) is more than test frequency(TestFre).
  - When compressor running frequency is equal to test frequency, T4 is more than 15°C(59°F) or T4 fault.
  - Change setting temperature.
  - Turn on/off turbo or sleep function..
- 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

1) In heating mode, the indoor fan operates continuously. The fan speed can be set to 1%-100%, or mute. And the anti-cold wind function has the priority.

- Anti-cold air function
  - The indoor fan is controlled by the indoor temperature T1 and indoor unit coil temperature T2.



$T1 \geq 19^{\circ}\text{C}(66^{\circ}\text{F})$	$\Delta\text{TE1}=0$
$15^{\circ}\text{C}(59^{\circ}\text{F}) \leq T1 < 19^{\circ}\text{C}(66^{\circ}\text{F})$	$\Delta\text{TE1}=19^{\circ}\text{C}-T1$ ( $66^{\circ}\text{F}-T1$ )
$T1 < 15^{\circ}\text{C}(59^{\circ}\text{F})$	$\Delta\text{TE1}=4^{\circ}\text{C}(7.2^{\circ}\text{F})$

2) Auto fan

- Rise curve
  - When T1-Tsc is higher than -1.5°C(-3°F), fan speed reduces to 80%;
  - When T1-Tsc is higher than 0°C(0°F), fan speed reduces to 60%;
  - When T1-Tsc is higher than 0.5°C(1°F), fan speed reduces to 40%;
  - When T1-Tsc is higher than 1°C(2°F), fan speed reduces to 20%.
- Descent curve
  - When T1-Tsc is lower than or equal to 0.5°C(1°F), fan speed increases to 40%;
  - When T1-Tsc is lower than or equal to 0°C(0°F), fan speed increases to 60%;
  - When T1-Tsc is lower than or equal to -1.5°C(-3°F),

fan speed increases to 80%;

- When T1-Tsc is lower than or equal to  $-3^{\circ}\text{C}(5^{\circ}\text{F})$ , fan speed increases to 100%.

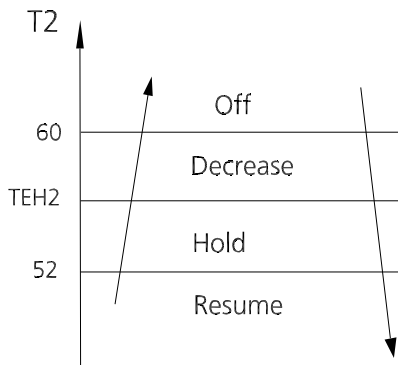
### 1.6.3 Outdoor Fan Control

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

### 1.6.4 Defrosting mode

- The unit enters defrosting mode according to changes in the temperature value of T3, 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 “df” symbol is displayed.
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
  - T3 rises above  $\text{TCDE}1^{\circ}\text{C}$ .
  - T3 maintained above  $\text{TCDE}2^{\circ}\text{C}$  for 80 seconds.
  - Unit runs for 15 minutes consecutively in defrosting mode.
- If T4 is lower than or equal to  $-22^{\circ}\text{C}(-8^{\circ}\text{F})$  and compressor running time is more than  $\text{TIMING\_DEFROST\_TIME}$ , 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  $10^{\circ}\text{C}(50^{\circ}\text{F})$ .

### 1.6.5 Evaporator Temperature Protection

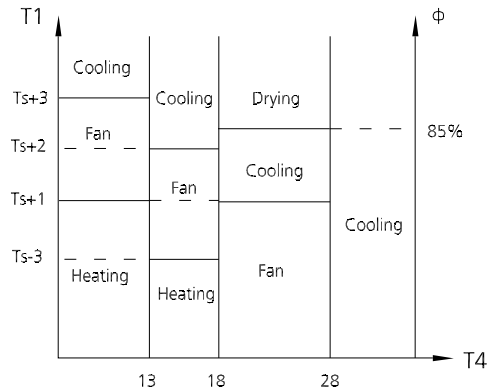


- Off: Compressor stops.
- Decrease: Decrease the running frequency to the lower level per 20 seconds.
- Hold: Keep the current frequency.

- Resume: No limitation for frequency.

## 1.7 Auto Mode

- This mode can be selected with the remote controller and the setting temperature can be changed between  $16^{\circ}\text{C}\sim 30^{\circ}\text{C}$ .
- In auto mode, the machine selects cooling, heating, auto-drying or fan-only mode on the basis of T1, Ts, T4 and relative humidity.



- If the setting temperature is modified, the machine selects a new running function.

## 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  $10^{\circ}\text{C}$ , the compressor ceases operations and does not resume until room temperature exceeds  $12^{\circ}\text{C}$ .

## 1.9 Forced Operation Function

- Forced cooling mode:

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

- Forced auto mode:

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

- The unit exits forced operation when it receives the following signals:

- Switch on

- Switch off
- Timer on
- Timer off
- Sleep mode
- Follow me
- Changes in:
  - mode
  - fan speed
  - setting temperature
- Forced defrosting mode:
  - Press AUTO/COOL button continuously for 5s under forced cooling mode to enter this mode.
  - Indoor fan will stop, defrosting lamp will light on.
  - Quit this mode and turn off the unit when:
    - quit normal defrosting
    - turn off by RC
    - Press AUTO/COOL button continuously for 5s again

### 1.10 Timer Function

- Timing range is 24 hours.
- Timer on. The machine will turn on automatically when reaching the setting time.
- Timer off. The machine will turn off automatically when reaching the setting time.
- Timer on/off. The machine will turn on automatically when reaching the setting "on" time, and then turn off automatically when reaching the setting "off" time.
- Timer off/on. The machine will turn off automatically when reaching the setting "off" time, and then turn on automatically when reaching the setting "on" time.
- The timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the "timer off" function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.
- The setting time is relative time.
- The AC will quit the timer function when it has malfunction

### 1.11 Sleep Function

- The SLEEP function is used to decrease energy use while you sleep.
- When the sleep function is activated, the air conditioner will intelligently adjust temperature, fan speed to provide a more comfortable sleeping

environment. You can freely set the fan speed and airflow angle when in sleep operation. The sleep function will automatically exit after running for 9 hours.

Note:

- The sleep function is not available in Fan and Dry mode.
- For some models with wireless control feature, the sleep operation time and sleep light can be adjusted through the app.

### 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.
- If there is a power failure while the unit is running, the compressor starts 3 minutes after the unit restarts. If the unit was already off before the power failure, the unit stands by.

### 1.13 Active Clean Function

- The Active Clean Technology washes away dust when it adheres to the heat exchanger by automatically freezing and then rapidly thawing the frost. A "pi-pi" sound will be heard.
- The Active clean operation is used to produce more condensed water to improve the cleaning effect, and the cold air will blow out. After cleaning, the internal wind wheel then keeps operating with hot air to blow-dry the evaporator, thus keeping the inside clean.
- When this function is turned on, the indoor unit display window appears "CL", after 20 to 45 minutes, the unit will turn off automatically and cancel Active Clean function.

### 1.14 Follow Me

- The FOLLOW ME function enables the remote control to measure the temperature at its current location and send this signal to the air conditioner in 3 minute intervals.
- When using AUTO, COOL or HEAT modes, measuring ambient temperature from the remote control (instead of from the indoor unit itself) will enable the air conditioner to optimize the temperature around you and ensure maximum comfort.

### 1.15 8°C Heating (For Heat Pump Units)

In heating mode, the temperature can be set to as low

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as 8°C, preventing the indoor area from freezing if unoccupied during severe cold weather.

### **1.16 Silence**

Press "Silence" or keep pressing Fan button for more than 2 seconds on the remote control to enable the SILENCE function. While this function is active, the indoor unit will run at faint breeze(1% fan speed), which reduces noise to the lowest possible level.

### **1.17 ECOMASTER Function**

Under cooling/heating mode, the fan speed will change to Auto, the set temperature will remain unchanged which brings more comfortable feelings and power-saving, and reduces temperature fluctuations.

### **1.18 Breeze Away Function(some units)**

- Press the Breeze Away button on the remote control to activate the avoiding direct air blowing on the body.
- Under Breeze Away operation, the system will adjust the louver angles and fan speed automatically. You can also choose the fan speed by remote controller.
- This feature is only available under Cool, Dry or Fan mode.

### **1.19 Wireless Control (some units)**

- Wireless control allows you to control your air conditioner using your mobile phone and a wireless coconnection.
- For the USB device access, replacement, maintenance operations must be carried out by professional staff.

### **1.20 Cool Flash function**

- Cool Flash technology can very rapidly cool an entire room. This is achieved by producing a large air volume and high flow of air.

### **1.21 Heat Flash function(For Heat Pump Units)**

- Similarly, a fast and strong flow of heated air can warm up an entire room in a short time.

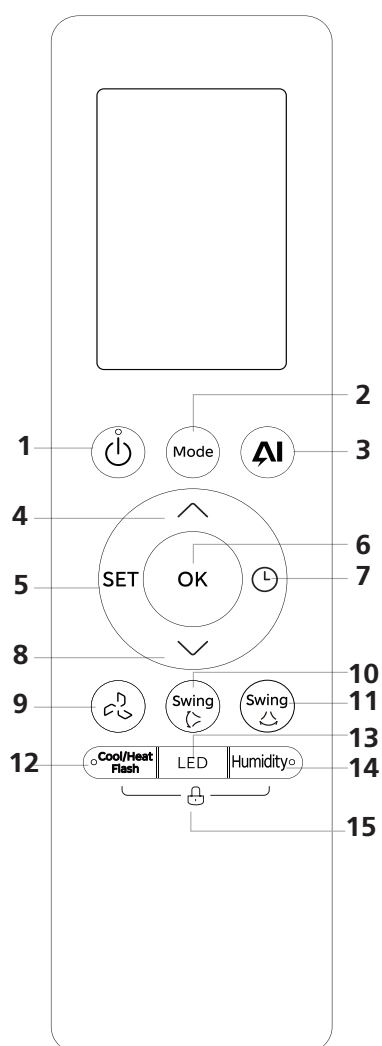
## 2. Infrared Wireless Remote Controller

### 2.1 RG10E21(2HS)/BGEF (For Model A)

#### Remote Controller Specifications

Model	RG10E21(2HS)/BGEF
Rated Voltage	3.0V (Dry batteries R03/LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5°C~60°C(23°F~140°F)

#### Buttons and Functions



Model: RG10E21(2HS)/BGEF

#### Description

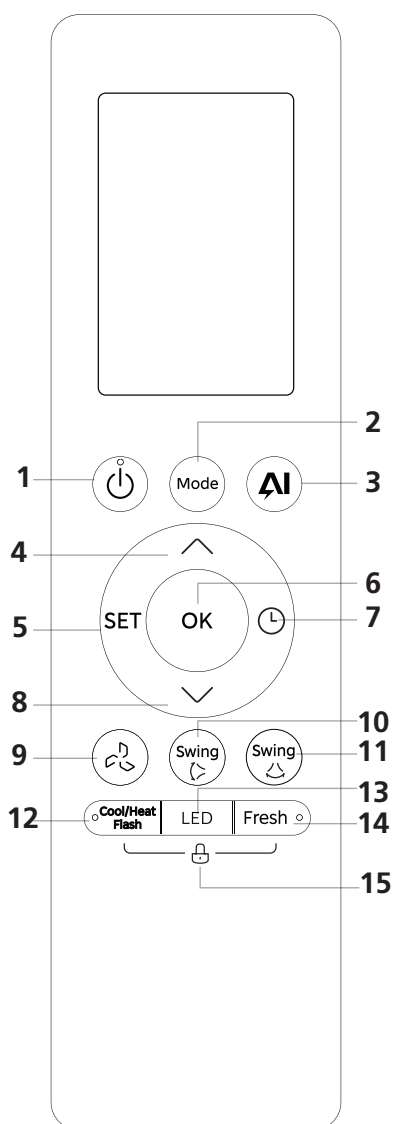
- 1 **ON/OFF:** Turn the unit on or off.
- 2 **Mode:** Auto > Cool > Dry > Heat > Fan
- 3 **ECOMASTER :** Starts and stops the energy saving operation.
- 4 **Temp Up:** Increases temperature in 0.5°C (1°F) increments. Max. temperature is 30°C (86°F).  
**NOTE:** Press together & buttons at the same time for 3 seconds will alternate the temperature display between the °C & °F
- 5 **SET:** Air magic/UV lamp > Follow Me > Active clean > Intelligent humidity control > AP mode > Sleep > Breeze away  
[\*]: Model dependent
- 6 **OK:** Used to confirm the selected functions
- 7 **Timer:** Set timer to turn unit on or off.
- 8 **Temp Down:** Decreases temperature in 0.5°C (1°F) increments. Min. temperature is 16°C (60°F).
- 9 **Fan Speed:** AU > 20% >40% > 60% > 80% > 100%. Press the TEMP or button to increase/decrease the fan speed in 1% increments.
- 10 **Swing (up and down) :** Starts and stops the horizontal louver movement.
- 11 **Swing (left and right) :** Starts and stops the vertical louver movement.
- 12 **Cool/Heat Flash:** Reduce (cool mode) or raise (heat mode) temperature in a short time.
- 13 **LED:** Turns LED display & air conditioner buzzer on and off.
- 14 **Humidity:** Adjust the room humidity during Dry operation in a range of 35%~85%. Press this button to increase the humidity in 5% increments.  
Note: After setting, the humidity settings will display on the screen
- 15 **Lock:** Press together Cool/Heat Flash and Humidity buttons simultaneously for 5 seconds to lock the keyboard. Press together these two buttons again for 2 seconds to unlock the keyboard.

## 2.2 RG10E7(B2S)/BGEF (For Model B)

### Remote Controller Specifications

Model	RG10E7(B2S)/BGEF
Rated Voltage	3.0V (Dry batteries R03/LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5°C~60°C(23°F~140°F)

### Buttons and Functions



Model: RG10E7(B2S)/BGEF

### Description

- 1 **ON/OFF:** Turn the unit on or off.
- 2 **Mode:** Auto > Cool > Dry > Heat > Fan
- 3 **ECOMASTER :** Starts and stops the energy saving operation.  
**Temp Up:** Increases temperature in 1°C (1°F) increments. Max. temperature is 30°C (86°F).
- 4 **NOTE:** Press together ^ & v buttons at the same time for 3 seconds will alternate the temperature display between the °C & °F
- 5 **SET:** Follow Me > Active clean > Intelligent humidity control > AP mode\* > Sleep > Breeze away  
[\*]: Model dependent
- 6 **OK:** Used to confirm the selected functions
- 7 **Timer:** Set timer to turn unit on or off.
- 8 **Temp Down:** Decreases temperature in 1°C (1°F) increments. Min. temperature is 16°C (60°F).
- 9 **Fan Speed:** AU > 20% >40% > 60% > 80% > 100%. Press the TEMP ^ or v button to increase/decrease the fan speed in 1% increments.
- 10 **Swing (up and down) :** Starts and stops the horizontal louver movement.
- 11 **Swing (left and right) :** Starts and stops the vertical louver movement.
- 12 **Cool/Heat Flash:** Reduce (cool mode) or raise (heat mode) temperature in a short time.
- 13 **LED:** Turns LED display & air conditioner buzzer on and off.
- 14 **Fresh:** Used to initiate the Fresh/UV lamp feature.
- 15 **Lock:** Press together Cool/Heat Flash and Fresh buttons simultaneously for 5 seconds to lock the keyboard. Press together these two buttons again for 2 seconds to unlock the keyboard.

## Remote LCD Screen Indicators

Information are displayed when the remote controller is power up.

For Model A

RG10E21(2HS)/BGEF

The diagram shows a remote LCD screen with various indicators. Lines connect these indicators to detailed descriptions in a grey-shaded area on the right.

**Indicators and their descriptions:**

- Sleep mode**: Represented by a moon icon.
- Not available for this unit.**: Represented by an icon of a person with a lightning bolt.
- Breeze away people**: Represented by an icon of a person with a breeze line.
- Not available for this unit.**: Represented by a wavy line icon.
- Low battery (If flashes)**: Represented by a battery icon.
- Follow me**: Represented by a person icon.
- Active clean**: Represented by a diamond icon with a lightning bolt.
- Intelligent humidity control**: Represented by a water drop icon with 'AI'.
- Not available for this unit.**: Represented by a person icon with a lightning bolt.
- Wireless control \***: Represented by a Wi-Fi icon.
- [\*]: Model dependent**: A note for the wireless control feature.
- Cool/Heat Flash**: Represented by a fan icon.
- Air magic \***: Represented by a shield icon.
- ECOMASTER**: Represented by 'AI'.
- Fresh \***: Represented by a leaf icon.
- Not available for this unit.**: Represented by a lightning bolt icon.
- [\*]: Model dependent**: A note for Air magic and Fresh features.
- Transmission Indicator**: Represented by a Wi-Fi icon.
- Timer ON**: Represented by a clock icon with 'ON'.
- Timer OFF**: Represented by a clock icon with 'OFF'.
- Lock Feature**: Represented by a padlock icon.
- Silence Feature**: Represented by a hand icon with a lightning bolt.
- Not available for this unit.**: Represented by a lightning bolt icon.
- Temperature/Timer/Fan speed display**: Shows '88.8' and explains it displays set temperature, fan speed, or timer setting.
- FAN SPEED**: A table showing fan speed levels and their corresponding bar indicators.
- NOTE: The fan speed can not be adjusted in AUTO or DRY mode.**
- MODE display : Displays the current mode**: Shows icons for AUTO, COOL, DRY, HEAT, and FAN.
- AUTO and HEAT mode are for cooling & heating models only.**
- Horizontal louver swing**: Represented by a louver icon with arrows.
- Not available for this unit**: Represented by a louver icon with a lightning bolt.
- Vertical louver auto swing**: Represented by a louver icon.

For Model B

RG10E7(B2S)/BGEF

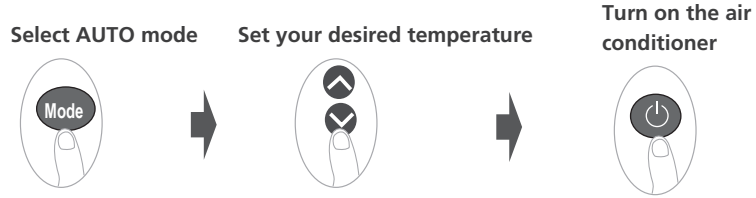
Sleep mode	Not available for this unit.	Breeze away people	Not available for this unit.	Low battery (If flashes)	
Follow me	Active clean	Intelligent humidity control	Not available for this unit.	Wireless * control	
[*]: Model dependent					
Cool/Heat Flash	Air magic *	ECOMASTER	Fresh *	Not available for this unit.	
[*]: Model dependent					
Transmission Indicator	Timer ON	Timer OFF	Lock Feature	Silence Feature	Not available for this unit.
		Temperature/Timer/Fan speed display			
		Displays the set temperature by default, fan speed or timer setting when using TIMER ON/OFF functions.			
<b>FAN SPEED</b>					
<b>AUTO</b>	<b>SILENCE</b>	<b>LOW</b>	<b>MED</b>	<b>HIGH</b>	
	1% 2-20%	21-40%	41-60%	61-80% 81-100%	
<b>NOTE: The fan speed can not be adjusted in AUTO or DRY mode.</b>					
<b>MODE display : Displays the current mode</b>					
AUTO	COOL	DRY	HEAT	FAN	
AUTO and HEAT mode are for cooling & heating models only.					
<b>Horizontal louver swing</b>					
		Not available for this unit			
<b>Vertical louver auto swing (some units)</b>					



## How To Use The Basic Functions

Before operation, please ensure the unit is plugged in and power is available.

### AUTO Mode

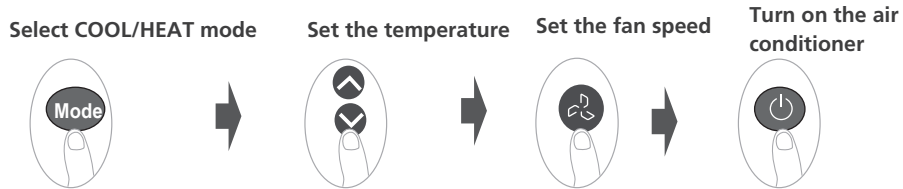


NOTE:

1. In AUTO mode, the unit will automatically select the COOL, FAN, or HEAT function based on the set temperature.

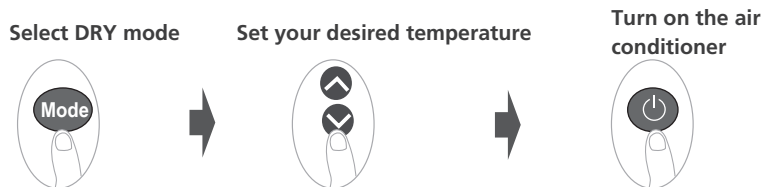
2. In AUTO mode, fan speed can not be set.

### COOL or HEAT Mode



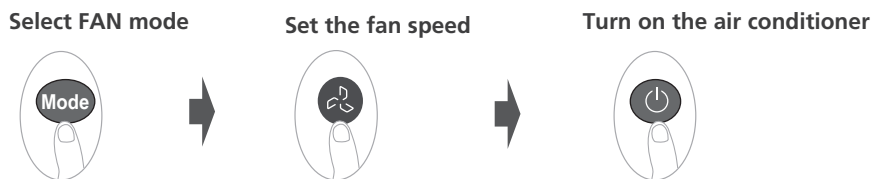
Note: Heat mode is only applicable to the Cooling & Heating models only.

### DRY Mode



NOTE: In DRY mode, fan speed can not be set since it has already been automatically controlled.

### FAN Mode

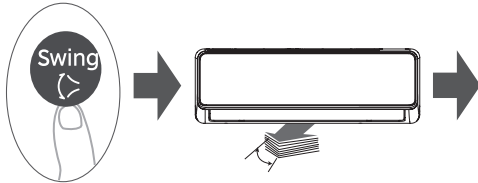


NOTE: In FAN mode, you can't set the temperature. As a result, no temperature displays in remote screen.

## How To Use The Advanced Functions

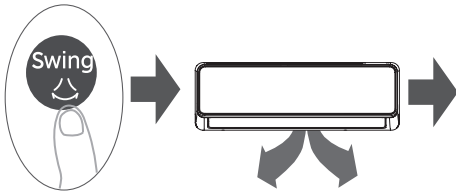
### Swing function

Press Swing button



Press this button repeatedly, and if the interval between presses is within 3 seconds, the horizontal louver will operate in the following order:  
Louver auto swing stop > Louver auto swing start > Louver angle 1 > Louver angle 2 > Louver angle 3 > Louver angle 4 > Louver angle 5.

Press this button repeatedly, and if the interval between presses is more than 3 seconds, the horizontal louver will operate in the following order:  
Louver at a certain angle > Louver auto swing start > Louver auto swing stop.



Press this button, the vertical louver will swing left and right automatically.

### LED DISPLAY



Press this button to turn on and turn off the display on the indoor unit.



Press this button more than 5 seconds (some units)

Keep pressing this button more than 5 seconds, the indoor unit will display the actual room temperature. Press more than 5 seconds again will revert back to display the setting temperature.

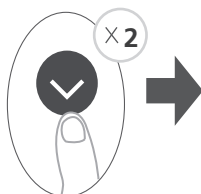
### Silence Function(some units)



Keep pressing Fan button for more than 2 seconds to activate/disable silent function. (some units)

Due to low frequency operation of compressor, it may result in insufficient cooling capacity.

### FP Function

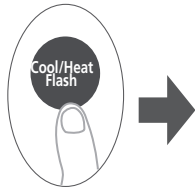


The unit will operate at high fan speed (while compressor on) with temperature automatically set to 8°C/46°F.

Note: This function is for heat pump air conditioner only.

Press this button 2 times during one second under HEAT Mode with setting temperature of 16°C/60°F to activate FP function. Press On/Off, Mode, Fan and Temp. button while operating will cancel this function.

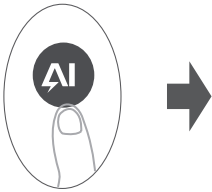
### Cool/Heat Flash Function



When you press this button in COOL mode, the Cool Flash function will start. The unit will produce a large volume of air and high airflow, the temperature of the whole room will be reduced in a short time.

When you press this button in HEAT mode, the Heat Flash function will start. Fast and strong hot airflow will warm up your whole room in a short time.

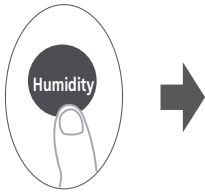
### ECOMASTER Function



Press this button when in Cool/Heat mode, the fan speed will change to Auto, the set temperature will remain unchanged which brings more comfortable feelings and power-saving, and reduces temperature fluctuations.

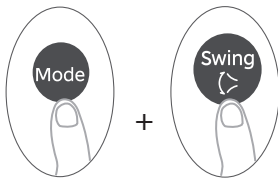
**NOTE:** This function is only available when the unit is in Cool or Heat mode. The Cool/Heat Flash and Silent function will be cancelled when the ECOMASTER function is activated. Initiating the Active clean, Cool/Heat Flash, FP, Silent function or pressing the Mode or ON/OFF button will cancel the ECOMASTER function.

### Humidity Function



Press this button to active the Humidity setting function. When in Dry mode, press this button to adjust the humidity setting in a range of 35% ~ 85%. Each press will increase the humidity in 5% increments.  
Note: After finishing setting, the humidity settings will display on the screen.

### Louver reset function (some units)



Turn off system from remote control and then press "Mode " and " Swing" button to together until hear beep sound from indoor. The indoor is into louver re-set mode. Do not press any button and it is completing the process automatically.

### Fresh function (Model RG10E7(B2S)/BGEF)



Press the Fresh button, the Ionizer or UV-C lamp (model dependent) will be activated. If has both features, these two features will be activated at the same time. This function will help to purify the air in the room.


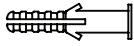



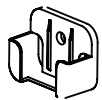
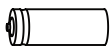


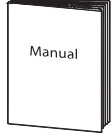



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# Installation

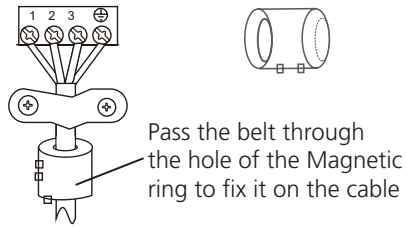
## Contents

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## Accessories

Name	Shape	Quantity	
Mounting plate		1	
Clip anchor		5~8(depending on models)	
Mounting plate fixing screw ST3.9 X 25		5~8(depending on models)	
Remote controller		1	
Fixing screw for remote controller holder ST2.9 x 10(purchase separately)		2	
Remote controller holder(purchase separately)		1	
Dry battery AAA.LR03		2	
Seal		1(for cooling & heating models only)	
Drain joint			
Manual		1-3	
Small Filter(Need to be installed on the back of main air filter by the authorized technician while installing the machine)		1~2(depending on models)	
Copper nut(for some units) (Used to connect the connecting pipes between indoor and outdoor units.)		2	
Cable clamp(For some units only) During on-site wiring, if choose outdoor power supply and the wire diameter decreases, this cable clamp needs to be used to replace the cable clamp already installed in the wire box in order to crimp the wire tightly.		1	
Connecting pipe assembly	Liquid side	Φ6.35 (1/4in)	Parts you must purchase. Consult the dealer about the pipe size.
		Φ9.52 (3/8in)	
	Gas side	Φ9.52 (3/8in)	
		Φ12.7 (1/2in)	
		Φ16 (5/8in)	
		Φ19 (3/4in)	

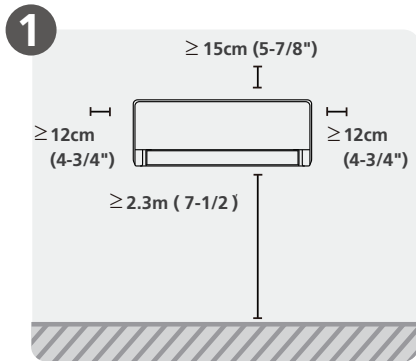
Magnetic ring and belt(if supplied ,please refer to the wiring diagram to install it on the connective cable. )



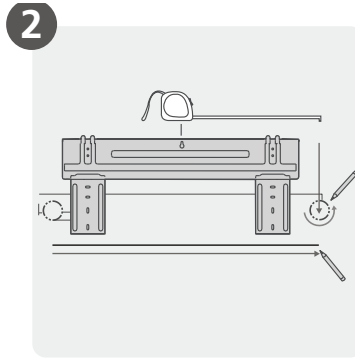
Varies by models

# 1. Installation Overview

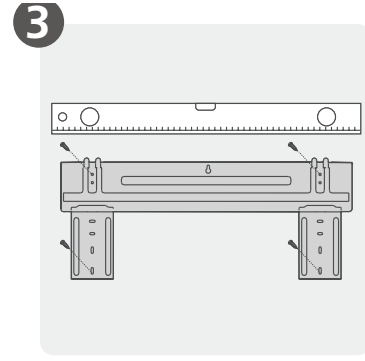
## Installation Order-Indoor Unit



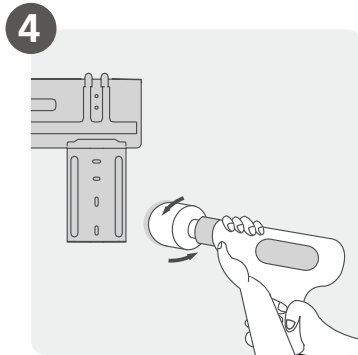
Select Installation Location



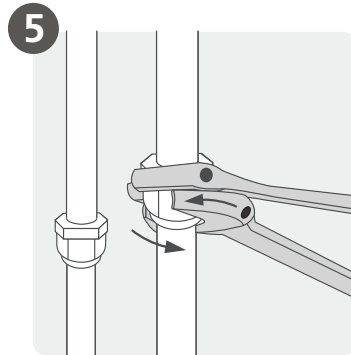
Attach Mounting Plate



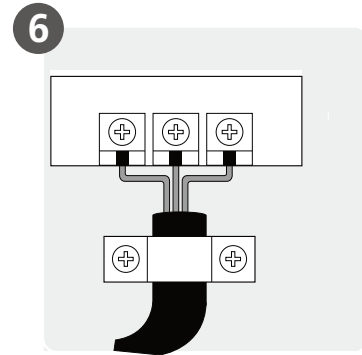
Determine Wall Hole Position



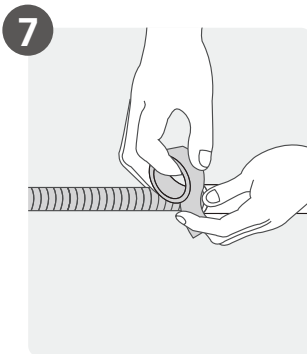
Drill Wall Hole



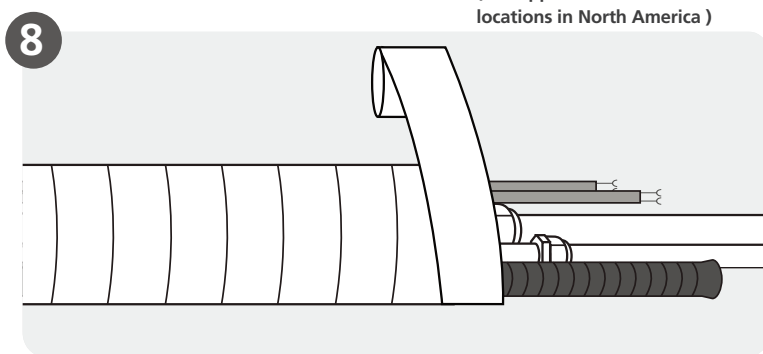
Connect Piping



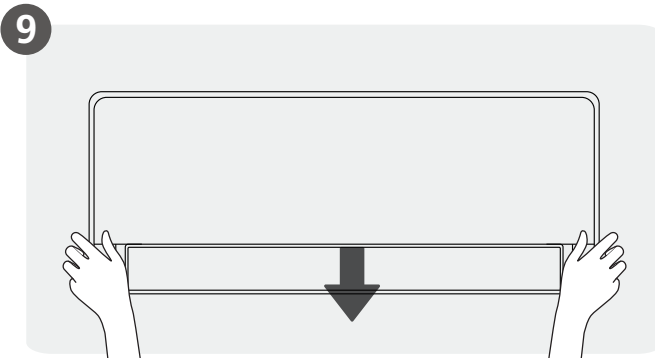
Connect Wiring  
(Not applicable for some locations in North America)



Prepare Drain Hose



Wrap Piping and Cable  
(Not applicable for some locations in North America)



Mount Indoor Unit

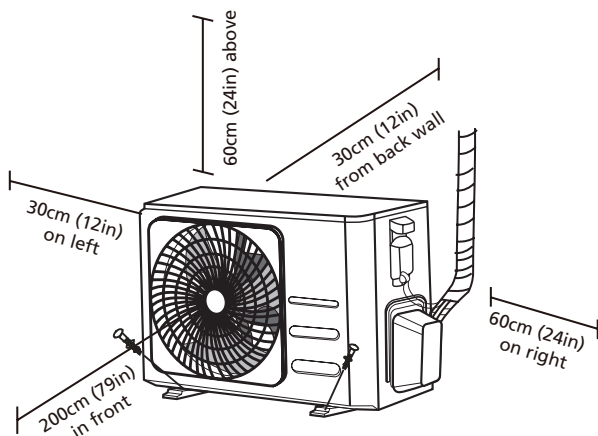
## 2. Location selection

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.

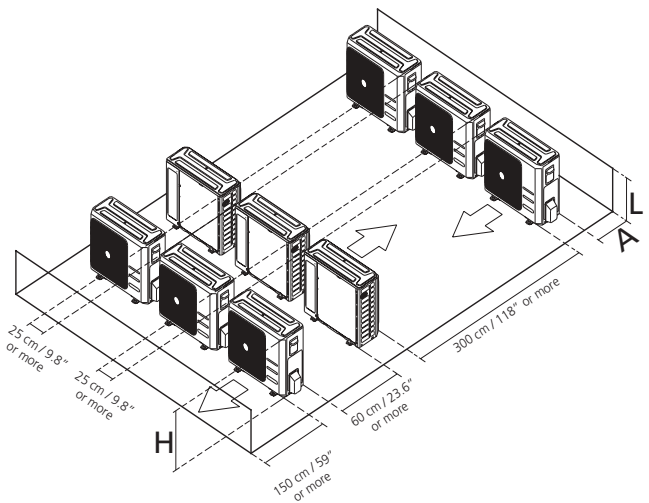
2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



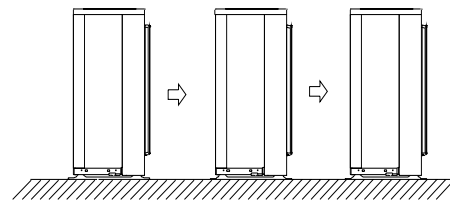
### 2.4 Rows of series installation

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

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

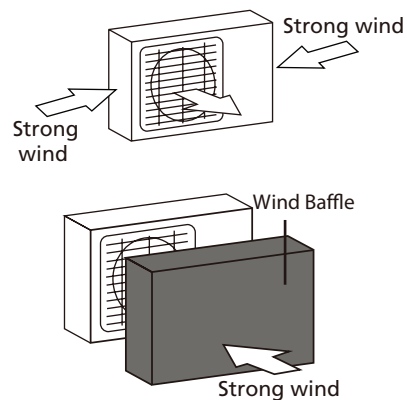


DO NOT install the rows of series like following figure.



### 2.5 If the unit is exposed to heavy wind:

- Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds.



### 2.6 If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

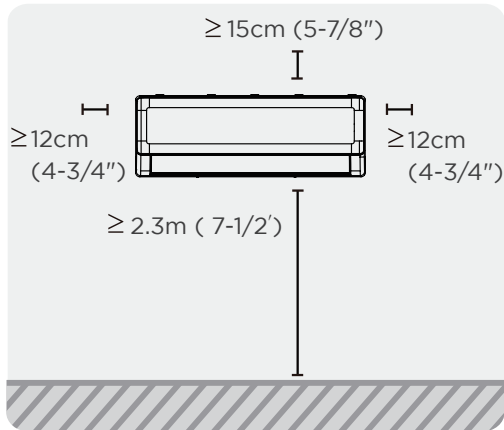
### 2.7 If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.



### 3. Indoor Unit Installation

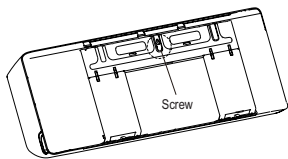
#### 3.1 Service space for indoor unit



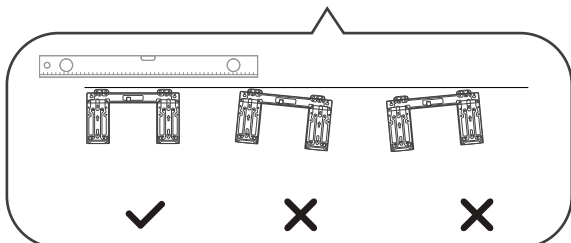
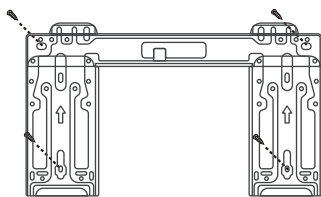
#### 3.2 Attach mounting plate to wall

- The mounting plate is the device on which you will mount the indoor unit.

1. Remove the screw that attaches the mounting plate to the back of the indoor unit.



2. Secure the mounting plate to the wall with the screws provided. Make sure that mounting plate is flat against the wall.



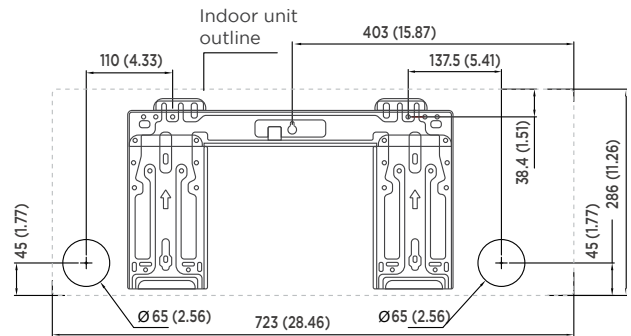
Correct orientation of Mounting Plate

3. Confirm the mounting plate you own.

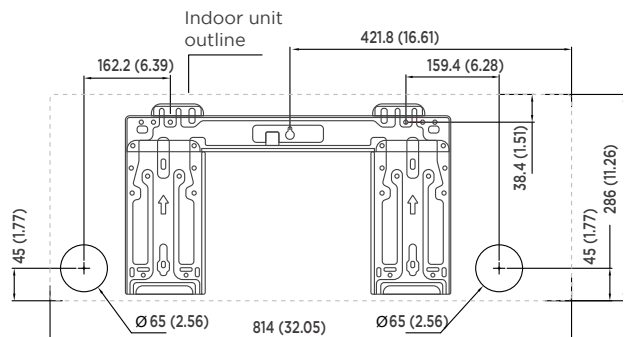
Different models have different mounting plates. Refer to following mounting plate dimensions to help you determine the optimal position. The shape of the

mounting plate may be lightly different, but the installation dimensions are the same. (Unit:mm(in))

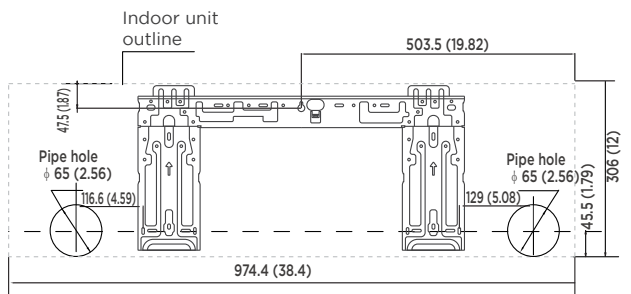
9k



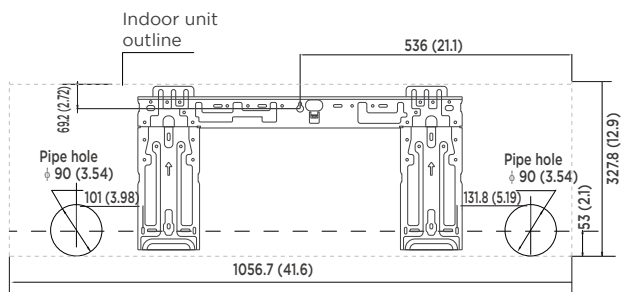
12k



18k



21k/24k

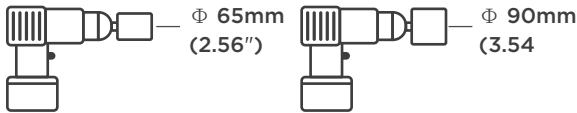


#### 3.3 Drill wall hole for connective piping

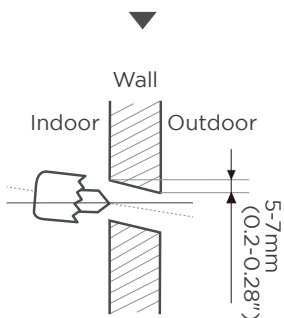
You must drill a hole in the wall for refrigerant piping, the drainage pipe, and the signal cable that will connect the

indoor and outdoor units.

1. Using a 65mm (2.5") or 90mm(3.54") (depending on models) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 5mm to 7mm (0.2-0.28"). This will ensure proper water drainage.

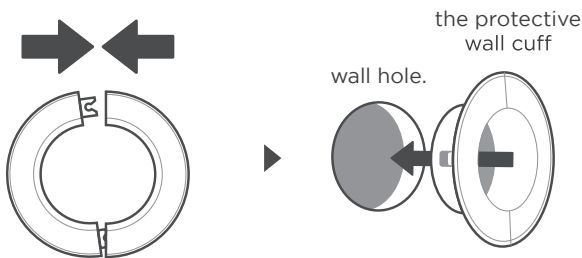


Using a 65mm (2.56") or 90mm (3.54") core drill (depending on models)



Drill the wall hole

2. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.



Place the protective wall cuff in the hole.

**NOTE:** When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

**NOTE: THE WALL HOLE SIZE**

The size of the wall hole is determined by the connective pipes. When the pipe size of the gas side is  $\phi 16\text{mm}(5/8\text{"})$  or more, the wall hole should be 90mm(3.54"). When the pipe size of gas side is less than  $\phi 16\text{mm}(5/8\text{"})$ , the wall hole should be 65mm(2.56").

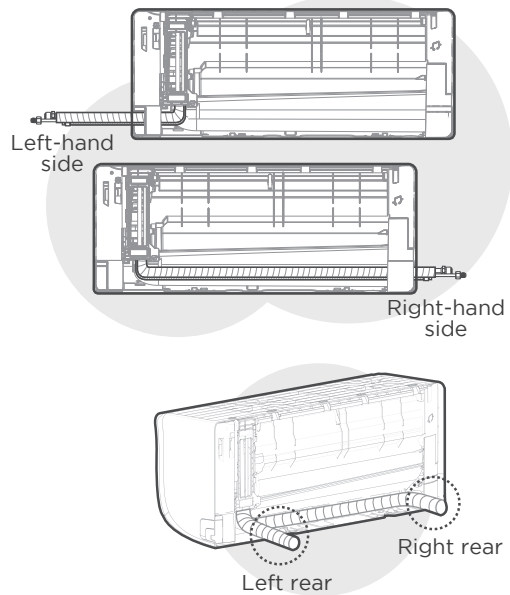
**3.4 Prepare refrigerant piping**

**NOTE:** The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall. Refer

to the Refrigerant Piping connection section of this manual for detailed instructions on pipe flaring and flare torque requirements, technique, etc.

**Four sides to exit the piping**

Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit. You have four options for the exit direction of the piping.



**NOTE ON PIPING CONNECTING**

In some locations of US, a conduit tube must be used to connect the cable. To ensure an enough space for the pipes running and the machine is against the wall after installation, It is recommended to attach the drain hose to the right-hand side (when you're facing the back of the unit).

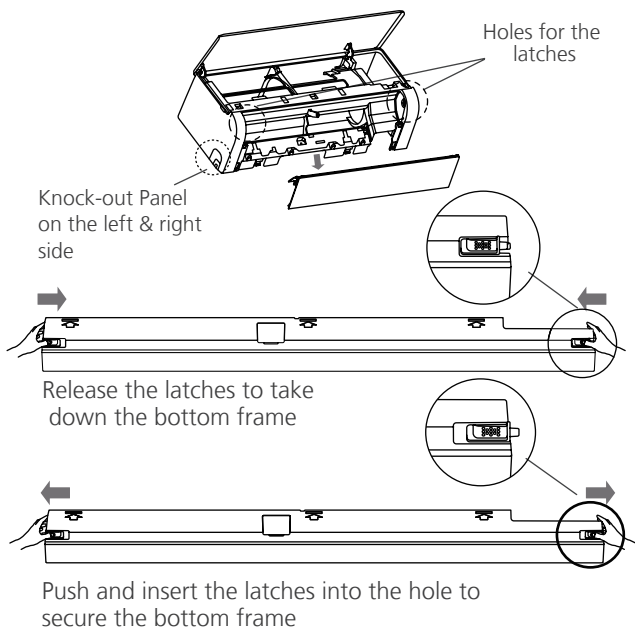
When choose Left-hand side or Right-hand side piping, please make sure that the pipes come out horizontally so as not to affect the lower panel installation.

**CAUTION:** Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

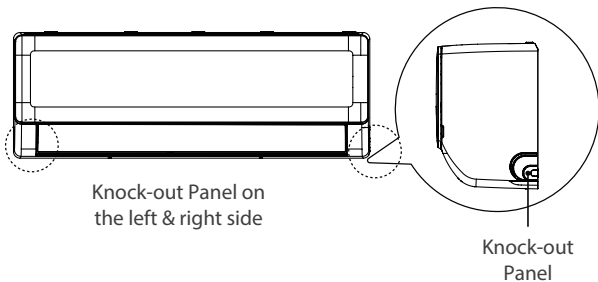
**Connect refrigerant piping**

1. Open and lift the front panel, use your thumb to pull the latches on the direction indicated by the arrows in the picture to release the latches on both sides of the frame, and then remove the bottom frame. When reinstalling the bottom frame, push the latches in the direction of the arrows, insert them into the holes as shown below to secure the frame. (Only for Model A)

For Model A



For Model B



2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. Use pliers or scissors if the plastic panel is too difficult to remove by hand.

3. Groove has been made in the knock-out panel in order to cut it conveniently. The size of the slot is determined by the diameter of piping.

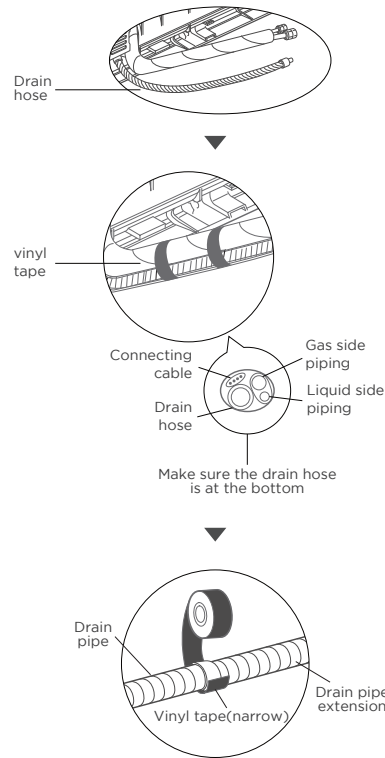
3. If existing connective piping is already embedded in the wall, proceed directly to the Connect Drain Hose step. If there is no embedded piping, connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the Refrigerant Piping Connection section of this manual for detailed instructions.

### 3.5 Connect drain hose

The drain hose can be attached to the left or right side. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit. Attach drain hose extension (purchased separately) to the end of drain hose.

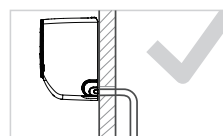
- Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.

- For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
- Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

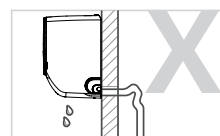


#### NOTE ON DRAIN HOSE PLACEMENT:

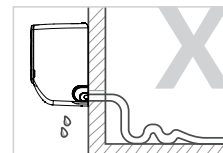
- Make sure to arrange the drain hose according to the following figures.



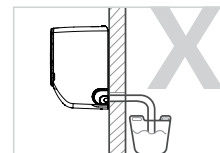
**CORRECT**  
Make sure there are no kinks or dent in drain hose to ensure proper drainage.



**NOT CORRECT**  
Kinks in the drain hose will create water traps.



**NOT CORRECT**  
Kinks in the drain hose will create water traps.

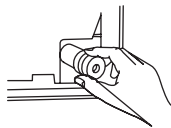


**NOT CORRECT**  
Do not place the end of the drain hose in water or in containers that collect water. This will prevent proper drainage.

#### PLUG THE UNUSED DRAIN HOLE

To prevent unwanted leaks you must plug the unused

drain hole with the rubber plug provided.



### 3.6 Connect signal and power cable

#### 3.6.1 Before performing electrical work, read these regulations

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
5. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.
6. Make sure to properly ground the air conditioner.
7. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
8. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
9. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.
10. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.

**WARNING: All wiring must be performed strictly in accordance with the wiring diagram located on the back of the Indoor Unit's front panel.**

#### 3.6.2 Connect signal and power cable

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

Cable Types:

- Indoor Power Cable (if applicable): H05VV-F or H05V2V2-F
- Outdoor Power Cable: H07RN-F
- Signal Cable: H07RN-F

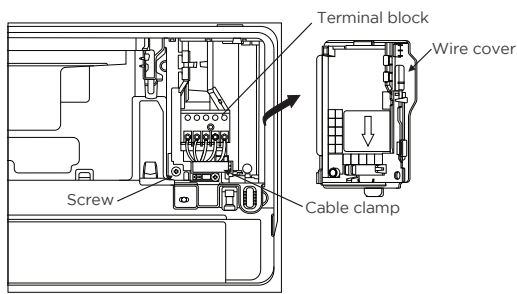
Table: Minimum Cross-Sectional Area of Power and Signal Cables

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm <sup>2</sup> )
> 3 and ≤ 6	0.75
> 6 and ≤ 10	1
> 10 and ≤ 16	1.5
> 16 and ≤ 25	2.5
> 25 and ≤ 32	4
> 32 and ≤ 40	6

#### CHOOSE THE RIGHT CABLE SIZE

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

1. Open front panel of the indoor unit.
2. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.
3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
5. Feed the signal wire through this slot, from the back of the unit to the front.
6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.
7. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
8. Replace the wire cover on the front of the unit, and the plastic panel on the back.



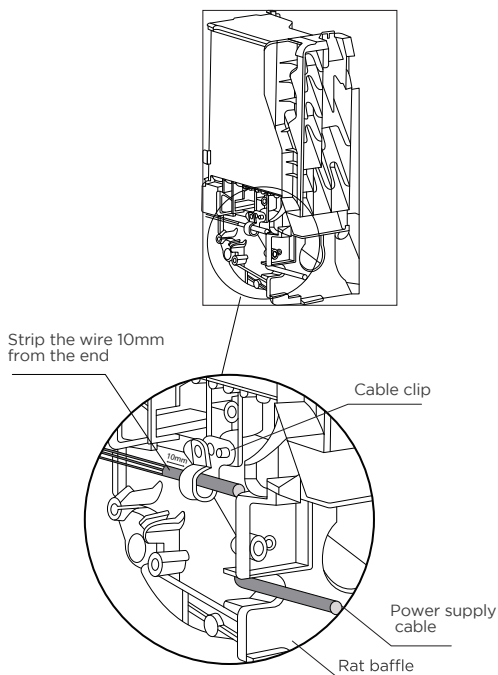
### DO NOT MIX UP LIVE AND NULL WIRES

This is dangerous, and can cause the air conditioning unit to malfunction.

Note:

For some units that require on-site connection of power cords, it is necessary to remove the front frame first, thread the power cable through the cable-cross hole in the rat baffle at the back of the indoor unit, and then pull it out from the front side, secure it with a cable clip as shown in the following diagram.

After the power cord passes through the cable clamp, strip the wire 10mm from the end, and then connect the wire to the terminal.

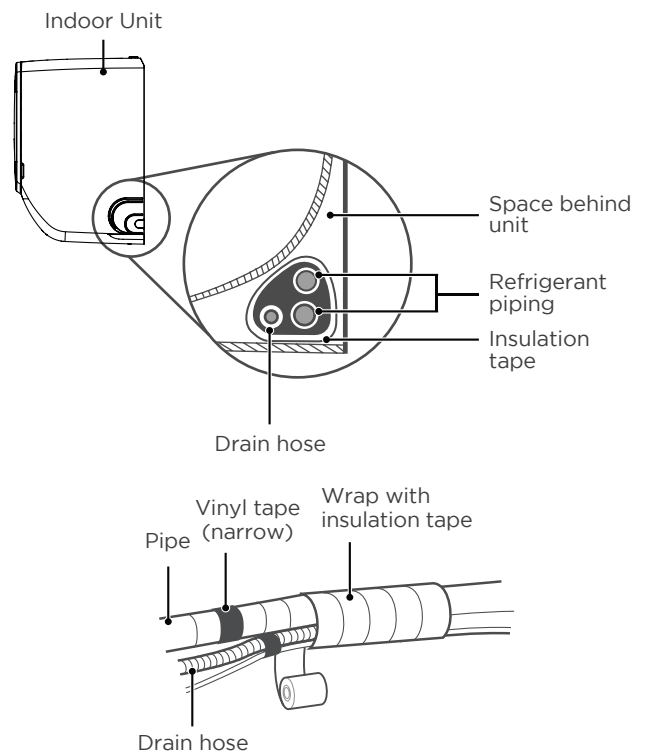


## 3.7 Wrap piping and cables

Before passing the piping, drain hose, and the signal cable through the wall hole, you must bundle them together to save space, protect them, and insulate them.

1. Bundle the drain hose, refrigerant pipes, and signal

cable according to the picture below:



2. Using adhesive vinyl tape, attach the drain hose to the underside of the refrigerant pipes.

3. Using insulation tape, wrap the refrigerant pipes, and drain hose tightly together. Double-check that all items are bundled.

4. After completing the wiring and piping connection, reinstall the lower frame.

### NOTE:

- Drain hose must be on bottom

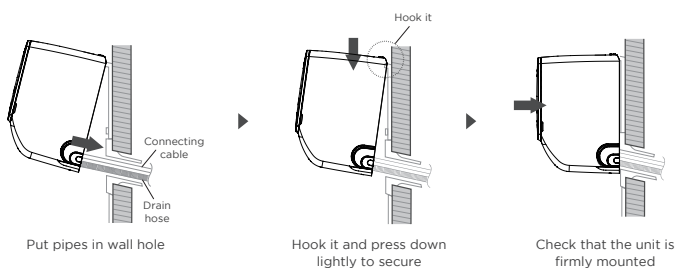
Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

- Do not wrap ends of piping

When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to test for leaks at the end of the installation process.

## 3.8 Mount indoor unit

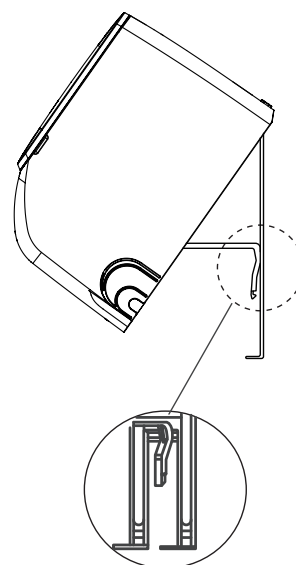
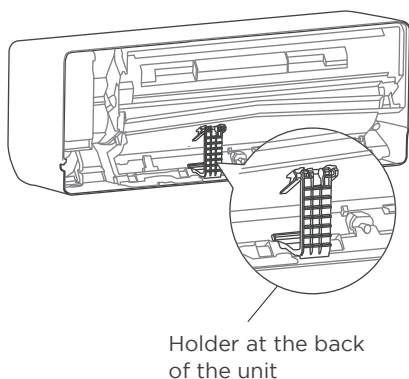
### 3.8.1 If you installed new connective piping to the outdoor unit, do the following:



- If you have already passed the refrigerant piping through the hole in the wall, proceed to Prepare refrigerant piping.
- Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.
- Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.
- Hook the top of the indoor unit on the upper hook of the mounting plate.
- Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.
- Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
- Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

**3.8.2 If refrigerant piping is already embedded in the wall, do the following:**

1. Hook the top of the indoor unit on the upper hook of the mounting plate.
2. Use the holder in the mounting plate to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.

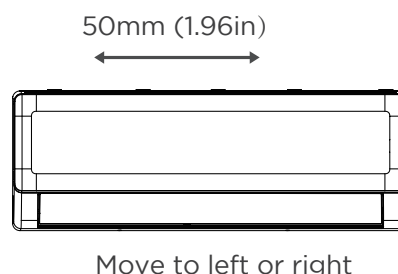


3. Connect drain hose and refrigerant piping (refer to Refrigerant Piping Connection section of this manual for instructions).
4. Keep pipe connection point exposed to perform the leak test (refer to Electrical Checks and Leak Checks section of this manual).
5. After the leak test, wrap the connection point with insulation tape.
6. Release the holder that is propping up the unit.
7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

**NOTE:**

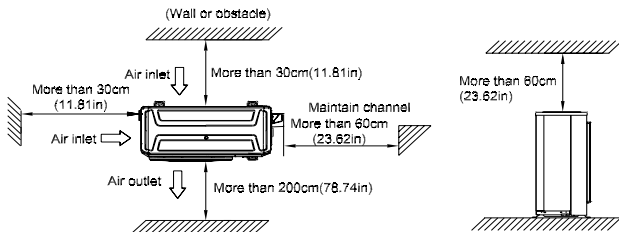
- Unit is adjustable

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 50mm (1.96in), depending on the model.

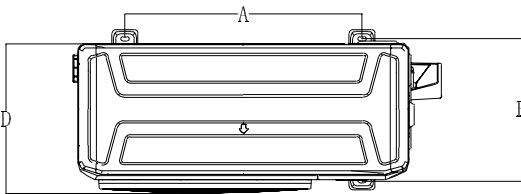


## 4. Outdoor unit installation(Side Discharge Unit)

### 4.1 Service space for outdoor unit



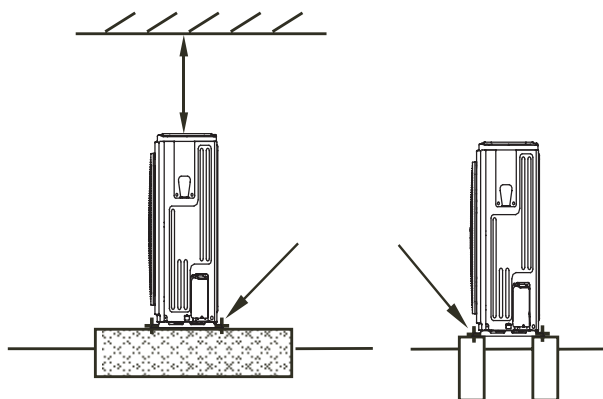
### 4.2 Bolt pitch



Capacity (Btu/h)	unit	A	B	D
9k/12k	mm	452	286	303
18k/21k/24k	mm	663	354	342

### 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.

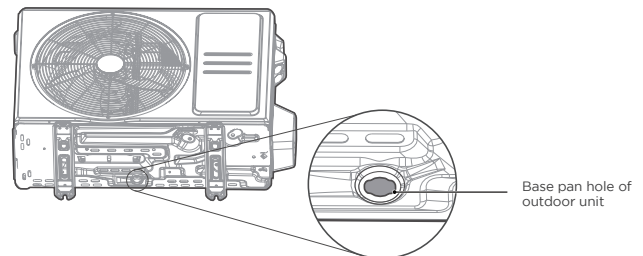
Make concrete foundation according to the specifications of the outdoor units.

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

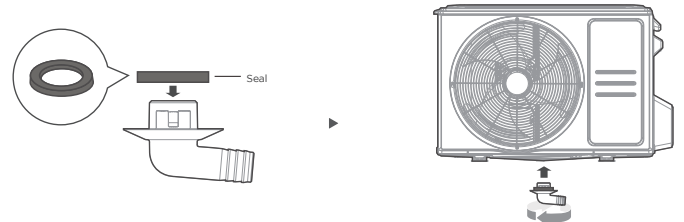
### 4.4 Install drain joint

#### NOTE: PRIOR TO INSTALLATION

Heat pump units require a drain joint. Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. For the units with base pan built-in with multiple holes for proper draining during defrost, the drain joint is no need to be installed.



Step 1: Find out the base pan hole of outdoor unit.



Step 2:

- Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
- Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
- Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

#### NOTE: IN COLD CLIMATES

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

## 5. Refrigerant Pipe Installation

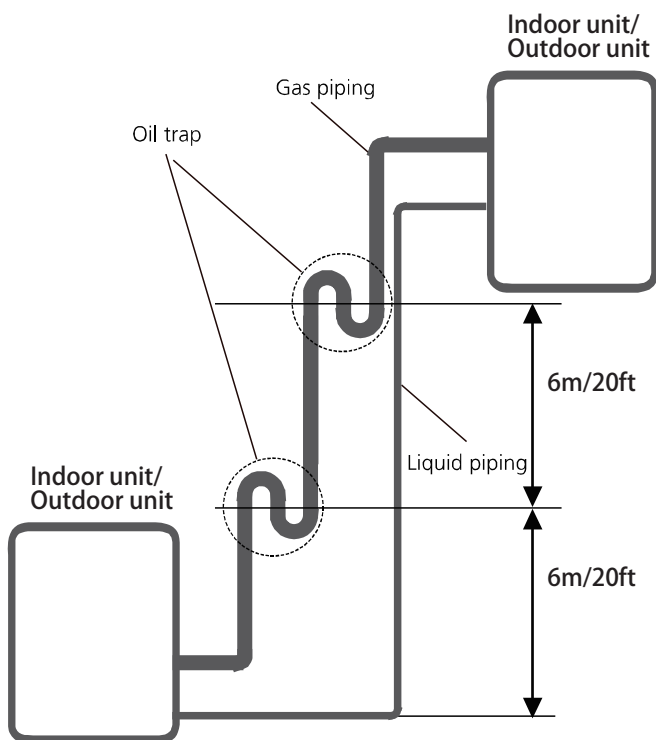
### 5.1 Maximum length and drop height

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)
9~12	25/82	10/32.8
18	30/98.4	20/65.6
21~24	50/164	25/82

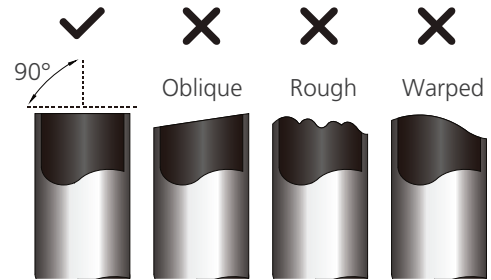
#### caution:

- The capacity test is based on the standard length and the maximum permissible length is based on the system reliability.
  - Oil traps
- An oil trap should be installed every 6m(20ft) of vertical suction line riser.



### 5.2 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.

Outer diameter of pipe (inch(mm))	A (mm/inch)	
	Min	Max
1/4" (6.35)	0.7/0.0275	1.3/0.05
3/8" (9.52)	1.0/0.04	1.6/0.063
1/2" (12.7)	1.0/0.04	1.8/0.07
5/8" (15.9)	2.0/0.078	2.2/0.086
3/4" (19)	2.0/0.078	2.4/0.094

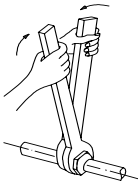
- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.
7. Drill holes if the pipes need to pass the wall.
  8. According to the field condition to bend the pipes so that it can pass the wall smoothly.
  9. Bind and 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.

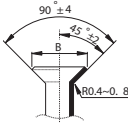


- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

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.

Pipe Diameter (inch(mm))	Torque		Sketch map
	N.m(lb.ft)		
1/4" (6.35)	18~20 (13.3~14.8)		
3/8" (9.52)	32~39 (23.6~28.8)		
1/2" (12.7)	49~59 (36.1~43.5)		
5/8" (15.9)	57~71 (42~52.4)		
3/4" (19)	67~101 (49.4~74.5)		

Pipe diameter (inch(mm))	Flare dimension B (mm/inch)		Flare shape
	Min	Max	
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	
3/4" (19)	23.2/0.91	23.7/0.93	

## 6. Air Evacuation

### 6.1 PREPARATIONS AND PRECAUTIONS

- Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Ensure to evacuate the air inside the indoor unit and pipes with vacuum pump. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated. Incorrect installation due to ignoring of the Instruction will cause serious problem to the machine.

### 6.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -76cmHg or less.
- Precision of vacuum pump shall reach 0.02mmHg or above.

### 6.3 Evacuation Instructions

#### Before Performing Evacuation

- Make sure the connective pipes between the indoor and outdoor units are connected properly.
- Check to make sure all wiring is connected properly.

#### Step 1:

- Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
- Connect another charge hose from the manifold gauge to the vacuum pump.
- Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.
- Turn on the vacuum pump to evacuate the system.
- Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76cmHG(-10<sup>5</sup> Pa).
- Close the Low Pressure side of the manifold gauge, and turn of the vacuum pump.
- Wait for 5 minutes, then check that there has been no change in system pressure.

#### Step 2:

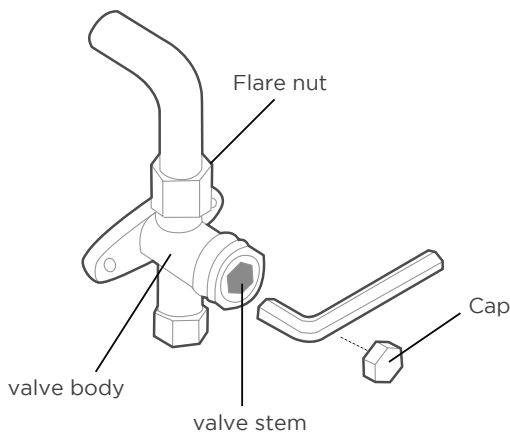
- If there is a change in system pressure, refer to Gas Leak Check section for information on how to check for leaks.
- If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve).
- Insert hexagonal wrench into the packed valve(high

pressure valve) and open the valve by turning the wrench in a 1/4 counterclockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.

- Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. The Pressure Gauge should read slightly higher than atmospheric pressure.
- Remove the charge hose from the service port.
- Using hexagonal wrench, fully open both the high pressure and low pressure valves.
- Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.

#### OPEN VALVE STEMS GENTLY

Ensure to open all the valves after evacuation. When opening valve stems, turn the hexagonal wrench until it hits against the stopper. Do not try to force the valve to open further.



## 7. 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	$V=12g/m \times (L-5)$
9.52	$V=24g/m \times (L-5)$

**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).

## 8. Electrical and Gas Leak Checks

### 8.1 Electrical Safety Checks

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to the Installation Manual.

#### 8.1.1 Before test run

- **Check Grounding Work**

Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than 0.1  $\Omega$ .

**Note:** This may not be required for some locations in the US.

#### 8.1.2 During test run

- **Check for Electrical Leakage**

During the Test Run, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

**Note:** This may not be required for some locations in the US.

### 8.2 Gas Leak Checks

There are two different methods to check for gas leaks.

- **Soap and Water Method**

Using a soft brush, apply soapy water or liquid detergent to all pipe connection points on the indoor unit and outdoor unit. The presence of bubbles indicates a leak.

- **Leak Detector Method**

If using leak detector, refer to the device's operation manual for proper usage instructions.

### 8.3 After performing gas leak checks

After confirming that the all pipe connection points DO NOT leak, replace the valve cover on the outside unit.

## 9. Test Operation

### 9.1 Before test run:

Only perform test run after you have completed the following steps:

- Electrical Safety Checks – Confirm that the unit's electrical system is safe and operating properly
- Gas Leak Checks – Check all flare nut connections and confirm that the system is not leaking
- Confirm that gas and liquid (high and low pressure) valves are fully open

### 9.2 Test Run Instructions

You should perform the Test Run for at least 30 minutes.

1. Connect power to the unit.
2. Press the ON/OFF button on the remote controller to turn it on.
3. Press the MODE button to scroll through the following functions, one at a time:
  - COOL – Select lowest possible temperature
  - HEAT – Select highest possible temperature
4. Let each function run for 5 minutes, and perform the following checks:

List of Checks to Perform	PASS/FALL	
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak	Outdoor(2)	Outdoor(2)
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvers rotate properly		
Indoor unit responds to remote controller		

5. After the Test Run is successfully completed, and you

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confirm that all checks points in List of Checks to Perform have PASSED, do the following:

- Using remote control, return unit to normal operating temperature.
- Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

### 9.3 If ambient temperature is below 16°C (60°F)

You can't use the remote controller to turn on the COOL function when the ambient temperature is below 16°C./ 17°C In this instance, you can use the MANUAL CONTROL button to test the COOL function.

1. Lift the front panel of the indoor unit, and raise it until it clicks in place.
2. The MANUAL CONTROL button is located on the right-hand side of the display box. Press it two times to select the COOL function.
3. Perform Test Run as normal.

