



Direct expansion outdoor
unit reversible heat pump for
MiniVRF systems

Mini VRF MSAN6-XMi 200T - 335T



TECHNICAL BULLETIN



SIZE	200T	224T	260T	280T	335T
COOLING CAPACITY KW	20	22.4	26.0	28.5	33.5
HEATING CAPACITY KW	20	22.4	26.0	28.5	33.5

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General Information

Indoor and Outdoor Unit Capacities

Indoor Units

Standard indoor unit abbreviation codes

ABBREVIATION CODE	TYPE	ABBREVIATION CODE	TYPE
Q1DN	One-way Cassette	CN	High Static Pressure Duct
Q2DN	Two-way Cassette	GWMN	Wall-mounted
Q4AN	Compact Four-way Cassette	DDLC	Ceiling & Floor
Q4DN	Four-way Cassette	DZ	Floor Standing
CNT2	Medium Static Pressure Duct		

Standard indoor unit capacity range

Capacity		Capacity index	Q1DN	Q2DN	Q4AN	Q4DN	CNT2	CN	GWMN	DDLC	DZ
KW	HP										
1.7	0.5	17	-	-	17	-	17	-	17	-	-
1.8	0.6	18	18	-	-	-	-	-	-	-	-
2.2	0.8	22	22	22	22	-	22	-	22	-	22
2.8	1	28	28	28	28	28	28	-	28	-	28
3.6	1.25	36	36	36	36	36	36	-	36	36	36
4.5	1.6	45	45	45	45	45	45	-	45	45	45
5.2	1.9	52	-	-	52	-	-	-	-	-	-
5.6	2	56	56	56	-	56	56	-	56	56	56
7.1	2.5	71	71	71	-	71	71	71	71	71	71
8.0	3	80	-	-	-	80	80	80	80	80	80
9.0	3.2	90	-	-	-	90	90	90	90	90	-
10.0	3.6	100	-	-	-	100	-	-	-	-	-
11.2	4	112	-	-	-	112	112	112	-	112	-
14.0	5	140	-	-	-	140	140	140	-	140	-
14.0	6	160	-	-	-	-	-	160	-	-	-
20.0	7	200	-	-	-	-	-	200	-	-	-
25.0	9	250	-	-	-	-	-	250	-	-	-
28.0	10	280	-	-	-	-	-	280	-	-	-
40.0	14	400	-	-	-	-	-	400	-	-	-
45.0	16	450	-	-	-	-	-	450	-	-	-
56.0	20	560	-	-	-	-	-	560	-	-	-

Fresh air processing unit

Fresh air processing unit capacity range

Capacity	12.5kW	14kW
Capacity index	125	140

Heat recovery ventilator

Heat recovery ventilator capacity range

Capacity	200m ³ /h	300m ³ /h	400m ³ /h	500m ³ /h	800m ³ /h	1000m ³ /h	1500m ³ /h	2000m ³ /h
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Outdoor Units

Outdoor unit capacity range

Capacity	Model Name
7HP	MSAN6-XMi 200T
8HP	MSAN6-XMi 224T
9HP	MSAN6-XMi 260T
10HP	MSAN6-XMi 280T
12HP	MSAN6-XMi 335T

⚠ MSAN6-XMi series outdoor units could not be combined.

General Information

External Appearance

Indoor Units

Standard indoor unit appearance

One-way Cassette Q1DN 	Two-way cassette Q2DN 
Compact Four-way Cassette Q4AN 	Four-way Cassette Q4DN 
Medium Static Pressure Duct CNT2 	High Static Pressure Duct CN 
Wall-mounted GWMN 	Ceiling & Floor DDLCL 
Floor Standing DZ 	

Fresh air processing unit

Fresh air processing unit appearance

Fresh Air Processing Unit CNFA 

Heat Recovery Ventilator

Heat recovery ventilator appearance



Outdoor Units

Outdoor unit appearance



General Information

Nomenclature

Indoor Units

Standard indoor units

Q1DN **-2** **X** **M** **i** **D** **22**
 ① ② ③ ④ ⑤ ⑥ ⑦

Legend		
NO.	Code	Remarks
1	Q1DN	Indoor unit type Q1DN: One-way Cassette Q2DN: Two-way Cassette Q4AN: Four-way Cassette Compact Q4DN: Four-way Cassette CNT2: Medium Static Pressure Duct CN: High Static Pressure Duct GWMN: Wall-mounted DDLCL: Ceiling & Floor DZ: Floor Standing
2	2	2nd generation indoor unit
3	X	R410A
4	M	Midea
5	i	Inverter
6	D	Series category (D: DC series)
7	22	Capacity index (the capacity in kW multiplied by 10)

Fresh air processing unit

CNFA **-2** **X** **M** **i** **D** **280**
 ① ② ③ ④ ⑤ ⑥ ⑦

Legend		
NO.	Code	Remarks
1	CNFA	Fresh Air Processing Unit
2	2	2nd generation indoor unit
3	X	R410A
4	M	Midea
5	i	Inverter
6	D	Series category (D: DC series)
7	280	Capacity index (the capacity in kW multiplied by 10)

Fresh air processing unit

HRV - 2 - M i D 200
 ① ② ③ ④ ⑤ ⑥

Legend		
NO.	Code	Remarks
1	HRV	Heat recovery ventilator
2	2	2nd generation indoor unit
3	M	Midea
4	i	Inverter
5	D	Series category (D: DC series)
6	200	Airflow in m ³ /h

Outdoor Units

M S A N 6 - X M i 200 T
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Legend		
NO.	Code	Remarks
1	M	Condensing unit
2	S	Scroll
3	A	Air-source
4	N	heat pump
5	6	The 6th generation heat pump VRF
6	X	R410A
7	M	Midea
8	i	inverter
9	200	Capacity index (the capacity in kW multiplied by 10)
10	T	3 phase, 380-415V, 50 Hz

General Information

Combination Ratio

$$\text{Combination ratio} = \frac{\text{Sum of capacity indexes of the indoor units}}{\text{Capacity index of the outdoor unit}}$$

Indoor and outdoor unit combination ratio limitations

Type	Minimum combination ratio	Maximum combination ratio		
		Standard indoor units only	Fresh air processing units only	Fresh air processing units and standard indoor units together
MSAN6-XMi Series outdoor units	50%	130%	100%	100%

- When fresh air processing units are installed together with standard indoor units, the total capacity of the fresh air processing units must not exceed 30% of the total capacity of the outdoor units and the combination ratio must not exceed 100%.

Combinations of Indoor and outdoor units

Outdoor unit capacity			Sum of capacity indexes of connected indoor units (standard indoor units only)	Sum of capacity indexes of connected indoor units (fresh air processing units and standard indoor units together)	Maximum number of connected indoor units
kW	HP	Capacity index			
20.0	7	200	100 to 260	100 to 200	10
22.4	8	224	112 to 291.2	126 to 224	13
26.0	9	260	130 to 338	130 to 260	15
28.0	10	280	140 to 364	140 to 280	16
33.5	12	335	167.5 to 435.5	167.5 to 335	20

System selection procedure

Step 1: Establish design conditions

Design temperature and humidity (indoor and outdoor)
 Required heat load of each room
 System peak load
 Piping length, level differences
 Indoor unit specifications (type and quantity)

Step 2: Select indoor units

Decide indoor unit safety factor

Select indoor unit models ensuring that:
 $\text{Indoor unit capacity corrected for indoor air temperature WB}^1 \geq \text{Required heat load} \times \text{Indoor unit safety factor}$

Step 3: Select outdoor units

Determine required total heat load on outdoor units

Use the sum of the peak load of each room

Use the system peak load

Provisionally select outdoor unit capacity based on combination ratio limitations

Confirm that the number of indoor units connected to the outdoor units is within limitation

Correct cooling and heating capacities of the outdoor units for the following items:
 Outdoor air temperature / Indoor air temperature WB / Combination ratio / Piping length, level difference / Piping heat loss / Frost accumulation (for heating capacity only)

Is corrected outdoor unit capacity \geq Required total heat load on outdoor units?

NO

VRF system selection is complete

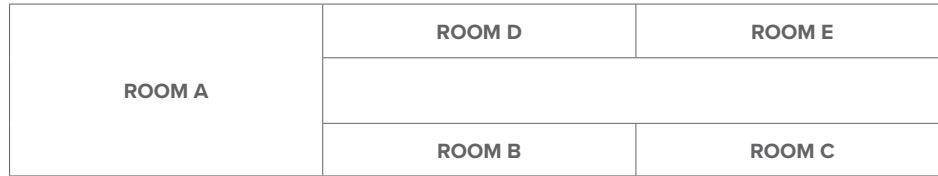
1. If the indoor design temperature falls between two temperatures listed in the indoor unit's capacity table, calculate the corrected capacity by interpolation. If the indoor unit selection is to be based on total heat load and sensible heat load, select indoor units which satisfy not only the total head load requirements of each room but also the sensible heat load requirements of each room. As with total heat capacity, the sensible heat capacity of indoor units should be corrected for indoor temperature, interpolating where necessary. For the indoor unit capacity tables, refer to the indoor unit technical manuals.

General Information

Example

The following is a selection example based on total heat load for cooling.

Figure 1-5.1: Room plan



Establish design conditions

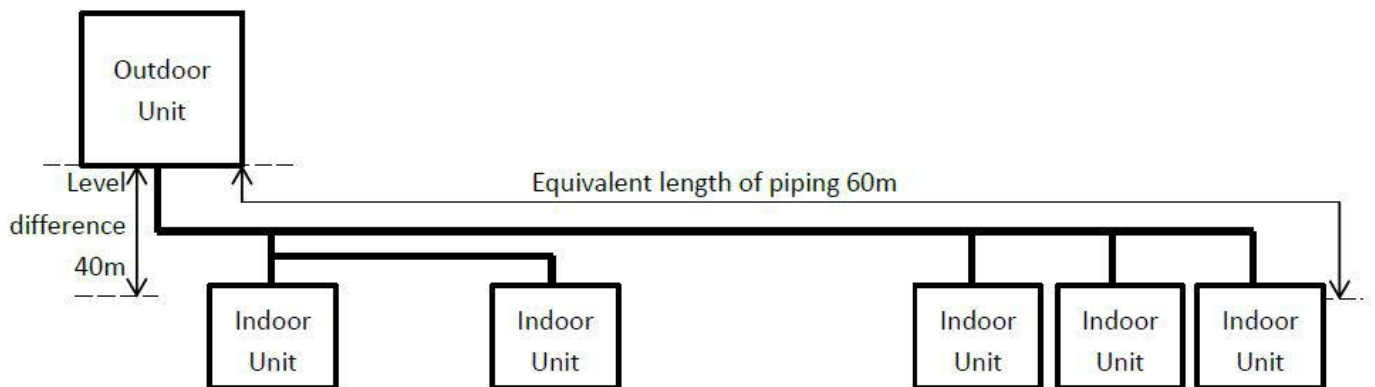
- Indoor air temperature 25°C DB, 18°C WB; outdoor air temperature 33°C DB.
- Determine peak load of each room and system peak load. As shown in Table 1-5.1, the system peak load is 26.5kW.

Table 1-5.1: Required heat load of each room (kW)

Time	Room A	Room C	Room D	Room E	Room F	Total
9:00	9.1	3.0	3.0	2.9	2.9	20.9
12:00	7.4	5.1	5.1	4.0	4.0	25.6
14:00	9.3	4.5	4.5	4.1	4.1	26.5
16:00	8.3	3.9	3.9	3.8	3.8	23.7

- The maximum piping lengths and level differences in this example are as given in Figure 1-5.2.

Figure 1-5.2: System diagram



- Indoor unit type for all rooms: Medium Static Pressure Duct (CNT2)

Step 2: Select indoor units

- In this example, a safety factor is not used (i.e. the safety factor is 1).
- Select indoor unit models using the medium static pressure duct cooling capacity table. Each indoor unit's corrected capacity needs to be greater than or equal to the peak load of the relevant room. The selected indoor units are shown in Table 1-5.3.

Table 1-5.2: Extract from medium static pressure duct (CNT2) cooling capacity table

Model	Capacity index	Indoor air temperature													
		14°C WB		16°C WB		18°C WB		19°C WB		20°C WB		22°C WB		24°C WB	
		20°C DB		23°C DB		26°C DB		27°C DB		28°C DB		30°C DB		32°C DB	
		TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
CNT2	22	1.5	1.4	1.8	1.5	2.1	1.6	2.2	1.6	2.3	1.7	2.4	1.5	2.4	1.5
	28	1.9	1.7	2.3	1.9	2.6	2.1	2.8	2.1	3.0	2.1	3.1	2.0	3.1	1.9
	36	2.5	2.1	2.9	2.3	3.4	2.5	3.6	2.6	3.8	2.7	4.2	2.8	3.9	2.3
	45	3.1	2.6	3.7	2.8	4.2	3.1	4.5	3.2	4.8	3.2	4.9	3.1	5.1	2.9
	56	3.9	3.0	4.6	3.3	5.3	3.6	5.6	3.7	5.9	3.8	6.2	3.7	6.2	3.4
	71	4.9	3.9	5.8	4.3	6.7	4.7	7.1	4.9	7.5	4.8	7.8	4.6	7.8	4.3
	80	5.5	4.4	6.6	4.9	7.5	5.3	8.0	5.5	8.4	5.5	8.8	5.2	8.8	4.8
	90	6.2	5.3	7.3	5.8	8.4	6.3	9.0	6.4	9.6	6.5	9.9	6.1	9.9	5.7
	112	7.7	6.4	9.1	7.1	10.5	7.7	11.2	7.8	11.9	8.1	12.5	7.8	12.5	7.4
	140	9.7	7.8	11.3	8.6	13.2	9.6	14.0	9.8	14.8	9.8	15.7	9.7	15.4	8.8

Abbreviations:

TC: Total capacity (kW); SHC: Sensible heat capacity (kW)

Table 1-5.3: Selected indoor units

	ROOM A	ROOM B	ROOM C	ROOM D	ROOM E
Peak heat load (kW)	9.3	5.1	5.1	4.1	4.1
Selected indoor unit	CNT2-2-XMi D112	CNT2-2-XMi D56	CNT2-2-XMi D56	CNT2-2-XMi D45	CNT2-2-XMi D45
Corrected TC (kW)	10.5	5.3	5.3	4.2	4.2

Step 3: Select outdoor unit

- Determine the required total heat load from the indoor units to the outdoor unit based on either the sum of the peak loads of each room or the system peak load. In this example, it is determined based on the system peak load. Therefore, the required heat load is 26.5kW.
- Provisionally select an outdoor unit using the sum of the capacity indexes (CIs) of the selected indoor units (as shown in Table 1-5.4), ensuring that the combination ratio is between 50% and 130%. Refer to Table 1-5.5. As the sum of CIs of the indoor units is 314, outdoor units 9HP, 10HP and 12HP are potentially suitable. Start from the smaller, which is the 9HP unit.

Table 1-5.4: Sum of indoor unit capacity indexes

Model	Capacity Index	No. of units
CNT2-2-XMi D112	112	1
CNT2-2-XMi D56	56	2
CNT2-2-XMi D45	45	2
Sum of CIs		314

General Information

Table 1-5.5: Combinations Of Indoor and outdoor units

Outdoor unit capacity			Sum of capacity indexes of connected indoor units (standard indoor units only)	Maximum number of connected indoor units
kW	HP	Capacity index		
20.0	7	200	100 to 260	10
22.4	8	224	112 to 291.2	13
26.0	9	260	130 to 338	15
28.0	10	280	140 to 364	16
33.5	12	335	167.5 to 435.5	20

- The number of connected indoor units is 5 and the maximum number of connected indoor units on the 9HP outdoor unit is 12, so the number of connected indoor units is within the limitation.
- Calculate the corrected capacity of the outdoor unit:
 - The sum of the indoor unit CIs is 314 and the CI of the 9HP outdoor unit (MSAN6-XMi 260T) is 260, so the combination ratio is $314 / 260 = 121\%$.
 - Using the outdoor unit's cooling capacity table, interpolate to obtain the capacity ("B") corrected for outdoor air temperature, indoor air temperature, and combination ratio. Refer to Tables 1-5.6 and 1-5.7.

Table 1-5.6: Extract from table 2-8.3 MSAN6-XMi 260T Tcooling capacity

CR	Outdoor air temp. (°C DB)	Indoor air temp. (°C DB / °C WB)	
		25.8 / 18.0	
		TC kW	PI kW
130%	31	28.46	8.79
	33	28.03	9.13
	35	27.61	9.49
120%	31	27.95	8.52
	33	27.54	8.86
	35	27.10	9.21

Table 1-5.7: Cooling capacity calculated by interpolation

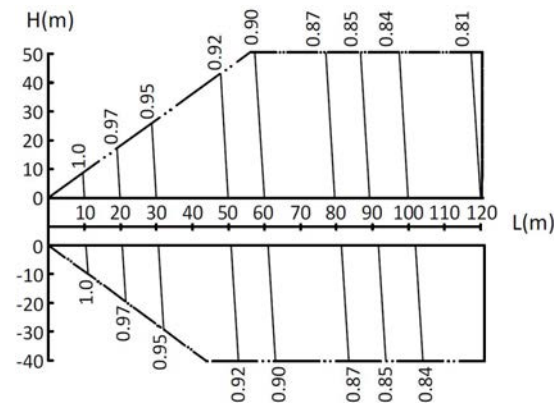
CR	Outdoor air temp. (°C DB)	Indoor air temp. (°C DB / °C WB)	
		25.8 / 18.0	
		TC kW	PI kW
130%	33	28.03	9.13
		B = 27.59¹	
		27.54	8.86

Notes:

1. $27.54 + (28.03 - 27.54) \times (121 - 120) / (130 - 120) = 27.59$

C) Find the correction factor for piping length and level difference ("K1")

Figure 1-5.3: MSAN6-XMi rate of change in cooling capacity



Notes:

1. The horizontal axis shows equivalent length of piping between farthest indoor unit and first outdoor branch joint; the vertical axis shows the largest level difference between indoor unit and outdoor unit. For level differences, positive values indicate that the outdoor unit is above the indoor unit, negative values indicate that the outdoor unit is below the indoor unit.

d) Calculate the corrected capacity of MSAN6-XMi 260T ("C") by using K1:

$$C = B \times K1 = 27.59 \times 0.898 = 24.77\text{kW}$$

- The corrected capacity 24.77 kW is lower than required total heat load 26.5kW, so selection is not complete. Step 3 should be repeated from the point where the outdoor unit capacity is provisionally selected.

Repeat Step 3: Select outdoor unit

- Determine the required total heat load from the indoor units to the outdoor unit based on either the sum of the peak loads of each room or the system peak load. In this example, it is determined based on the system peak load. Therefore, the required heat load is 26.5kW.
- Provisionally select an outdoor unit using the sum of the capacity indexes (CIs) of the selected indoor units (as shown in Table 1-5.4), ensuring that the combination ratio is between 50% and 130%. Refer to Table 1-5.5. As the sum of CIs of the indoor units is 314, outdoor units 9-16HP are potentially suitable. For the 9HP unit is not suitable, try to select 10HP unit.

Table 1-5.8: Sum of indoor unit capacity indexes

Model	Capacity Index	No. of units
CNT2-2-XMi D112	112	1
CNT2-2-XMi D56	56	2
CNT2-2-XMi D45	45	2
Sum of CIs		314

Table 1-5.9: Combinations of Indoor and outdoor units

Outdoor unit capacity			Sum of capacity indexes of connected indoor units (standard indoor units only)	Maximum number of connected indoor units
kW	HP	Capacity index		
20.0	7	200	100 to 260	10
22.4	8	224	112 to 291.2	13
26.0	9	260	130 to 338	15
28.0	10	280	140 to 364	16
33.5	12	335	167.5 to 435.5	20

- The number of connected indoor units is 5 and the maximum number of connected indoor units on the 10HP outdoor unit is 16, so the number of connected indoor units is within the limitation.
- Calculate the corrected capacity of the outdoor unit:
 - a) The sum of the indoor unit CIs is 314 and the CI of the 10HP outdoor unit MSAN6-XMi 280T is 280, so the combination ratio is $314 / 280 = 112\%$.
 - b) Using the outdoor unit's cooling capacity table, interpolate to obtain the capacity ("B") corrected for outdoor air temperature, indoor air temperature, and combination ratio. Refer to Tables 1-5.10 and 1-5.11.

General Information

Table 1-5.6: Extract from table 2-8.3 MSAN6-XMi 280T Tcooling capacity

CR	Outdoor air temp. (°C DB)	Indoor air temp. (°C DB / °C WB)	
		25.8 / 18.0	
		TC kW	PI kW
120%	31	30.64	10.86
	33	30.19	11.30
	35	29.71	11.74
110%	31	30.55	10.75
	33	29.96	11.37
	35	29.46	11.81

Table 1-5.7: Cooling capacity calculated by interpolation

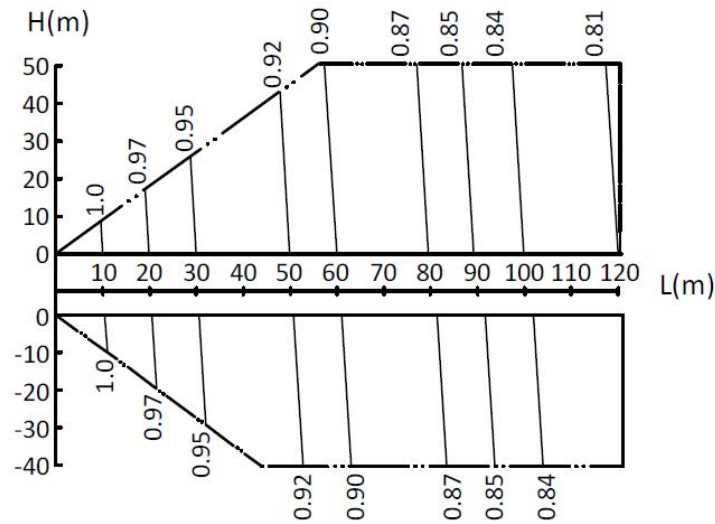
CR	Outdoor air temp. (°C DB)	Indoor air temp. (°C DB / °C WB)	
		25.8 / 18.0	
		TC kW	PI kW
120%	33	30.19	11.30
B = 30.01'			
110%	33	29.96	11.37

Notes:

1. $29.96 + (30.19 - 29.96) \times (112 - 110) / (120 - 110) = 30.01$

c) Find the correction factor for piping length and level difference ("K1")

Figure 1-5.4: MSAN6-XMi rate of change in cooling capacity



Notes:

1. The horizontal axis shows equivalent length of piping between farthest indoor unit and outdoor unit; the vertical axis shows the largest level difference between indoor unit and outdoor unit. For level differences, positive values indicate that the outdoor unit is above the indoor unit, negative values indicate that the outdoor unit is below the indoor unit.

d) Calculate the corrected capacity of MSAN6-XMi 280T ("C") by using K1:

$$C = B \times K1 = 30.01 \times 0.898 = 26.95 \text{ kW}$$

■ The corrected capacity 26.95 kW is larger than required total heat load 26.5kW, so selection is complete.

HP			7	8	9
Model name			MSAN6-XMi 200T	MSAN6-XMi 224T	MSAN6-XMi 260T
Power supply		Ph-V-H		380-415/3/50	
Cooling ¹	Capacity	kW	20	22.4	26.0
	Power input	kW	5.28	6.77	10.04
	EER		3.79	3.31	2.59
	η _{s,c}		281,4	270,2	259
	SEER		7,11	6,83	6,55
Heating ² (Rated)	Capacity	kW	20	22.4	26.0
	Power input	kW	4.43	5.42	6.86
	COP		4.51	4.13	3.79
	η _{s,h}		155	167,4	178,2
	SCOP		3,95	4,26	4,53
Heating ³ (Max.)	Capacity	kW	22.5	25.0	28.5
	Power input	kW	5.95	6.67	7.70
	COP		3.78	3.75	3.70
Connected indoor unit	Total capacity		50-130% of outdoor unit capacity		
	Maximum quantity		11	13	15
Compressor	Type		DC inverter rotary		
	Quantity		1		
	Oil type		RB75EA		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		2		
	Motor output	kW	0.17×2	0.17×2	0.17×2
	Air flow rate	m ³ /h	9000	9000	10000
Refrigerant	Drive type		Direct		
	Type		R410A		
Pipe connections ⁴	Factory charge	kg	6.5	6.5	6.5
	Liquid pipe	mm	Φ12.7	Φ12.7	Φ12.7
	Gas pipe	mm	Φ19.1	Φ19.1	Φ22.2
Sound pressure level ⁵		dB(A)	58	58	59
Sound power level ⁵		dB(A)	78	78	78
Net dimensions (W×H×D)		mm	1120×1558×528		
Packed dimensions (W×H×D)		mm	1270×1720×565		
Net weight		kg	143	143	144
Gross weight		kg	159	159	160
Ambient Temp. operation range ⁶	Cooling	°C	-5~48		
	Heating	°C	-20~24		

Notes:

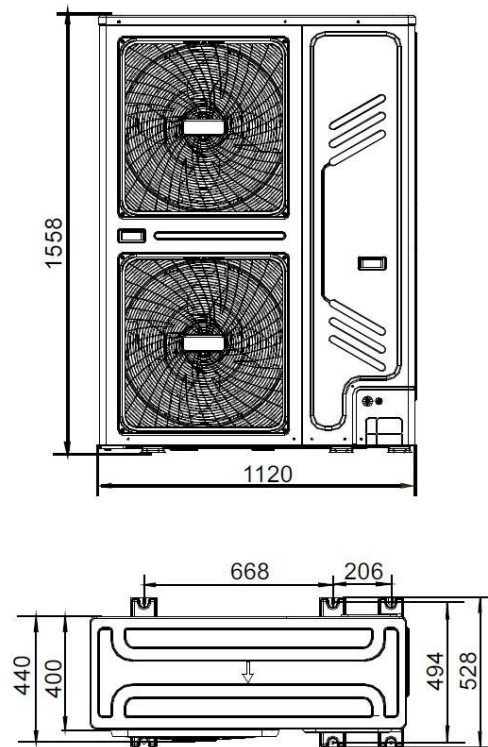
1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
4. Diameters given are those of the unit's stop valves.
5. Sound pressure level is measured at a position 1m in front of the unit and 1m above the floor in a semi-anechoic chamber.
6. Cooling range -15~48 possible for units produced after 1th of April 2021.

Engineering data

HP			10	12
Model name			MSAN6-XMi 280T	MSAN6-XMi 335T
Power supply	Ph-V-H		380-415/3/50	
Cooling ¹	Capacity	kW	28.5	33.5
	Power input	kW	12.23	15.30
	EER		2.33	2.19
	$\eta_{s,c}$		251	253,8
	SEER		6,35	6,42
Heating ² (Rated)	Capacity	kW	28.5	33.5
	Power input	kW	7.68	10.15
	COP		3.71	3.30
	$\eta_{s,h}$		179,4	155,4
	SCOP		4,56	3,96
Heating ³ (Max.)	Capacity	kW	31.5	37.5
	Power input	kW	8.73	11.72
	COP		3.61	3.20
Connected indoor unit	Total capacity	50-130% of outdoor unit capacity		
	Maximum quantity		16	20
Compressor	Type	DC inverter rotary		DC inverter rotary
	Quantity		1	1
	Oil type		RB75EA	FV50S
	Start-up method		Soft start	Soft start
Fan	Type	Propeller		
	Motor type	DC		
	Quantity	2		
	Motor output	kW	0.17×2	0.17×2
	Air flow rate	m ³ /h	11000	11300
	Drive type	Direct		
Refrigerant	Type	R410A		
	Factory charge	kg	6.5	8
Pipe connections ⁴	Liquid pipe	mm	Φ12.7	Φ12.7
	Gas pipe	mm	Φ22.2	Φ25.4
Sound pressure level ⁵		dB(A)	60	61
Sound power level ⁵		dB(A)	78	81
Net dimensions (W×H×D)		mm	1120×1558×528	
Packed dimensions (W×H×D)		mm	1270×1720×565	
Net weight		kg	144	157
Gross weight		kg	160	173
Ambient Temp. operation range ⁶	Cooling	°C	-5~48	
	Heating	°C	-20~24	

Notes:

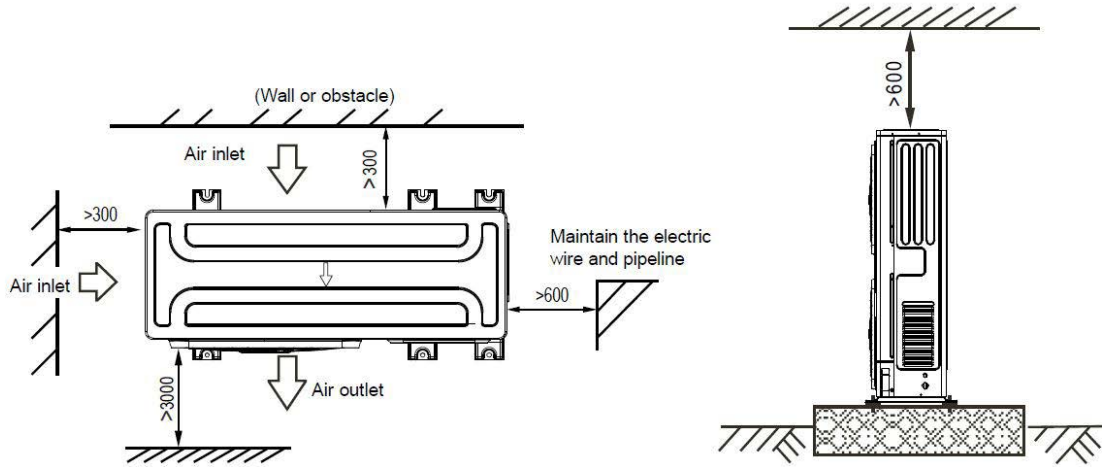
- Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- Diameters given are those of the unit's stop valves.
- Sound pressure level is measured at a position 1m in front of the unit and 1m above the floor in a semi-anechoic chamber.
- Cooling range -15~48 possible for units produced after 1th of April 2021.



Installation Space Requirements

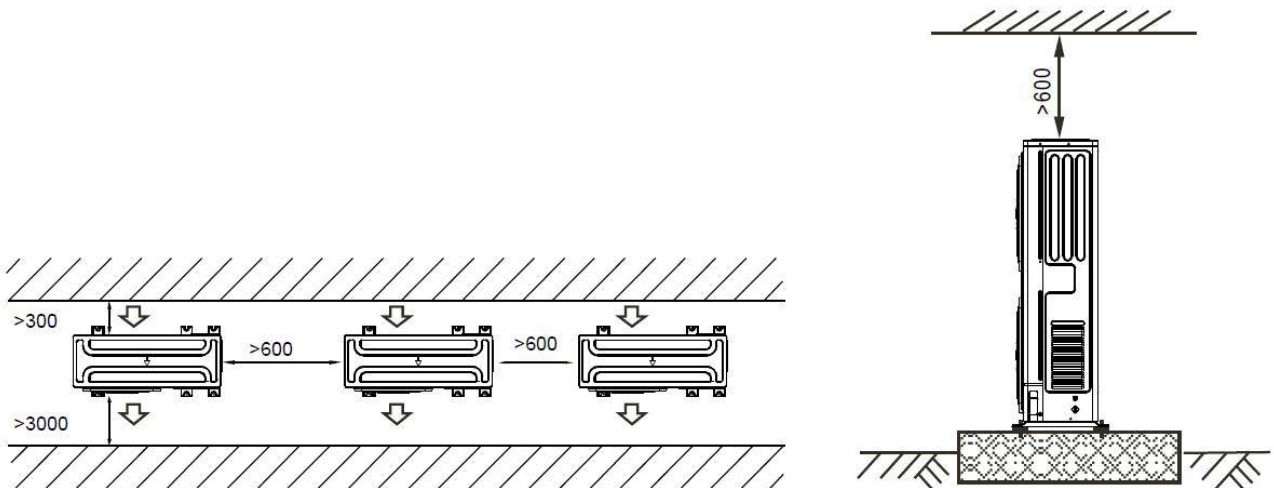
For single unit installation

Single unit installation (unit: mm)

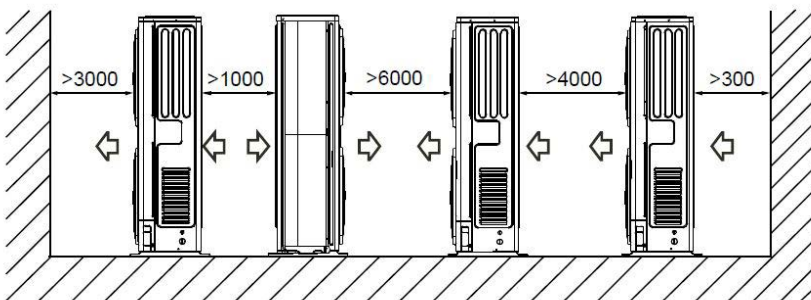


For single-row installation

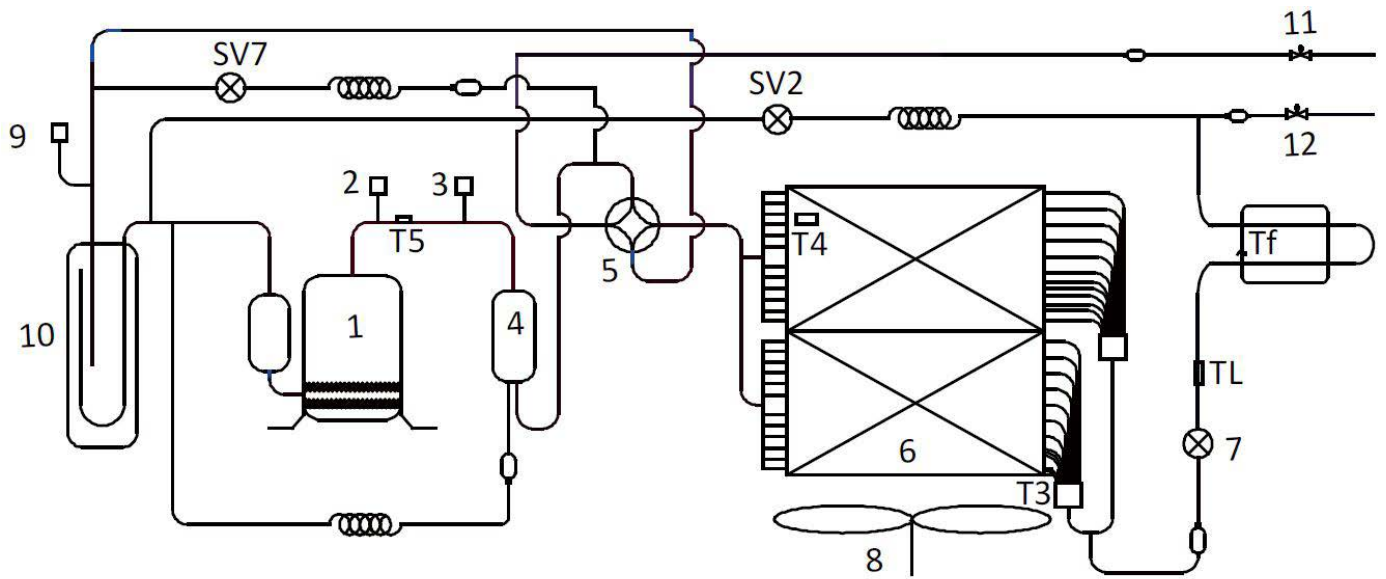
Parallel connect the two units or above (unit: mm)



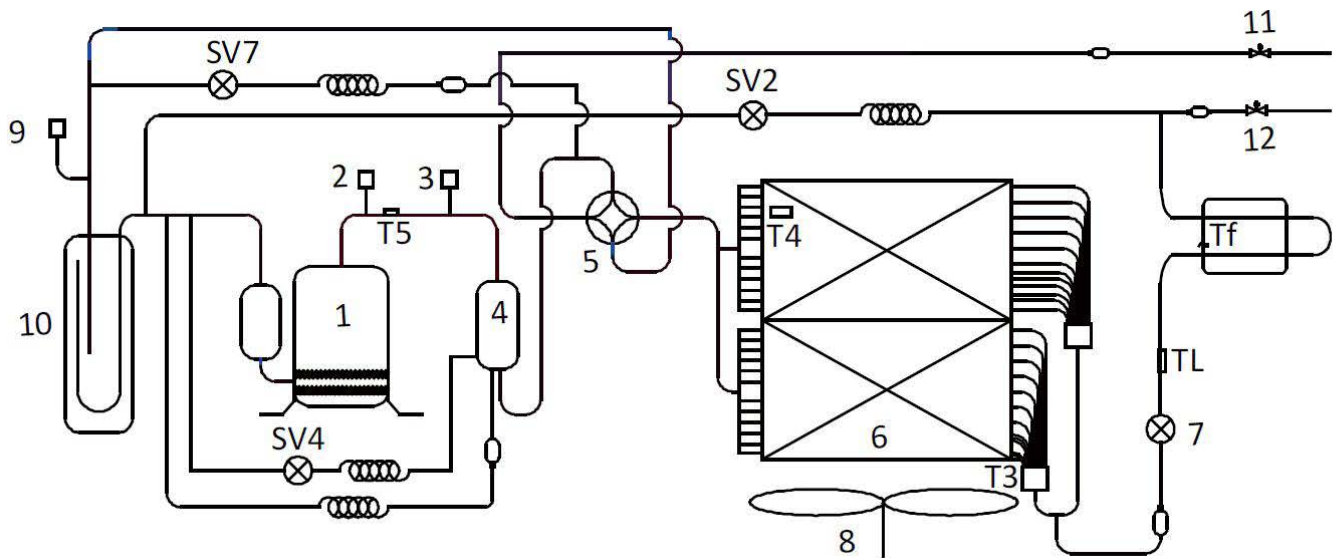
Parallel connect the front with rear sides (unit: mm)



7/8/9/10HP piping diagram



12HP piping diagram



Legend

No.	Parts name	No.	Parts name
1	Compressor	11	Stop valve (gas side)
2	High pressure switch	12	Stop valve (liquid side)
3	High pressure sensor	13	Heat exchanger temperature sensor
4	Oil separator	14	Outdoor ambient temperature sensor
5	Four-way valve	15	Discharge temperature sensor
6	Heat exchanger	16	Heat sink temperature sensor
7	Electronic expansion valve (EXV)	17	Refrigerant cooling pipe temperature sensor
8	Fan	18	Liquid injection valve
9	Low pressure switch	19	Oil return valve
10	Accumulator	20	Refrigerant bypass valve

Key components

Key components:

1. Oil separator:

Separates oil from gas refrigerant pumped out of the compressor and quickly returns it to the compressor. Separation efficiency is up to 99%.

2. Accumulator:

Stores liquid refrigerant and oil to protect compressor from liquid hammering.

3. Electronic expansion valve (EXV):

Controls refrigerant flow and reduces refrigerant pressure.

4. Four-way valve:

Controls refrigerant flow direction. Closed in cooling mode and open in heating mode. When closed, the heat exchanger functions as a condenser; when open, the heat exchanger functions as an evaporator.

5. Solenoid valve SV2:

Protects the compressor. If compressor discharge temperature rises above 98°C, SV2 opens and sprays a small amount of liquid refrigerant to cool the compressor. SV2 closes again once the discharge temperature has fallen below 85°C.

6. Solenoid valve SV4:

Returns oil to the compressor. Opens once the compressor has run for 200 seconds and closes 600 seconds later and then opens for 3 minutes every 20 minutes.

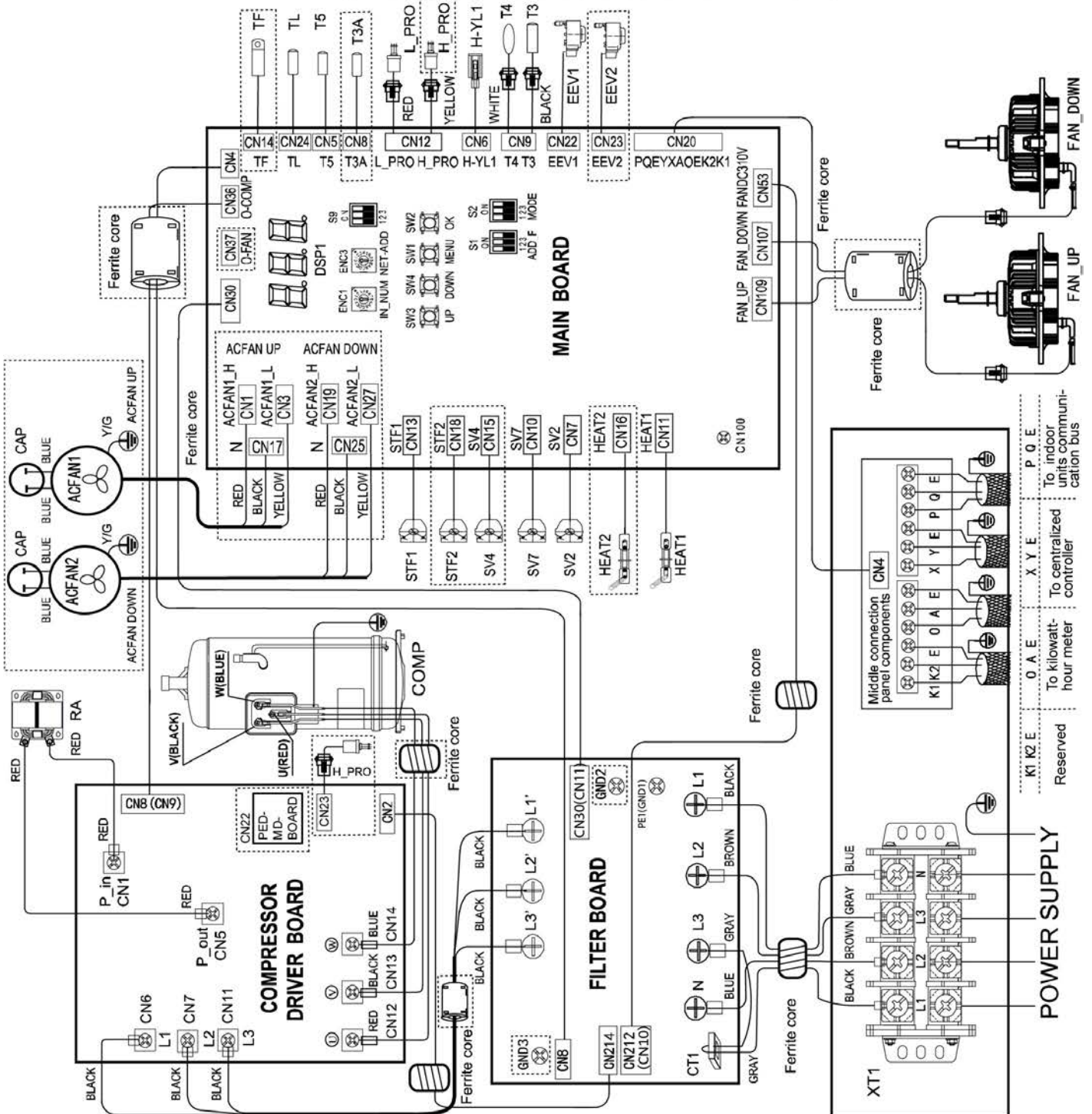
7. Solenoid valve SV7:

Allows refrigerant return to the compressor directly. Opens when indoor air temperature is close to the set temperature to avoid frequent compressor on/off.

8. High and low pressure switches:

Regulate system pressure. When system pressure rises above the upper limit or falls below the lower limit, the high or low pressure switches turn off, stopping the compressor. After 5 minutes, the compressor restarts.

CODE	NAME
ACFAN1/2	AC fan motor
COMP	Inverter compressor
EEV1/2	Electric expansion valve
FAN_UP/DOWN	DC fan motor
HEAT1/HEAT2	Crankcase heating
H_PRO/L_PRO	High/Low pressure switch or shoring stub
H-YL1	High pressure sensor
XT1	Big 4-phase terminal
CT1	AC current transformer
RA	Reactor
STF1/STF2	4-way valve
SV2/SV4/SV7	Solenoid valve
T3/T3A	Piping temperature sensor
T4	Outdoor ambient temperature sensor
T5	Inverter compressor discharge temperature sensor
TL	Cooling refrigerant radiator pipe temperature sensor
TF	Inverter-module heatsink temperature sensor



Electrical data

Electrical data

Capacity	Model	Power Supply ¹						Compressor			OFM	
		Hz	Volts	Min.	Max.	MCA ²	TOCA ³	MFA ⁴	MSC ⁵	RLA ⁶	kW	FLA
				volts	volts							
7HP	MSAN6-XMi 200T	50	380~415	342	456	19	24.3	25	/	12	2×0.17	2.1+2.1
8HP	MSAN6-XMi 224T	50	380~415	342	456	19	24.3	25	/	12.4	2×0.17	2.1+2.1
9HP	MSAN6-XMi 260T	50	380~415	342	456	20.5	24.3	25	/	15	2×0.17	2.1+2.1
10HP	MSAN6-XMi 280T	50	380~415	342	456	21	24.3	25	/	18.4	2×0.17	2.1+2.1
12HP	MSAN6-XMi 335T	50	380~415	342	456	26.4	33.2	32	/	19.6	2×0.17	2.1+2.1

Abbreviations:

MCA: Maximum Circuit Amps; TOCA: Total Over-current Amps; MFA: Maximum Fuse Amps; MSC: Maximum Starting Current (A); RLA: Rated Load Amps; FLA: Full Load Amps

Notes:

1. Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits. Maximum allowable voltage variation between phases is 2%.

2. Select wire size based on the value of MCA.

3. TOCA indicates the total overcurrent amps value of each OC set.

4. MFA is used to select overcurrent circuit breakers and residual-current circuit breakers.

5. MSC indicates the maximum current on compressor start-up in amps.

6. RLA is based on the following conditions: indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB..

Functional Components and Safety Devices

Functional components and safety devices

Item	7HP		8HP		9HP		10HP		12HP	
	MSAN6-XMi 200T		MSAN6-XMi 224T		MSAN6-XMi 260T		MSAN6-XMi 280T		MSAN6-XMi 335T	
Compressor	Compressor discharge pipe temperature sensor				90°C = 5kΩ ± 3%					
	Crankcase heater				25W				25W × 2	
Inverter module	Inverter module temperature sensor				-				90°C = 5kΩ ± 5%	
Fan motor	Safety thermostat	On			115°C					
		Off			-					
System	High pressure switch				-				Off: 4.4 (±0.1) MPa / On: 3.2 (±0.1) MPa	
	Low pressure switch				Off: 0.05 (±0.05) MPa / On: 0.15 (±0.05) MPa					
	High pressure sensor				Output voltage (V) = 0.8696 × P + 0.5 (where P is the discharge pressure in MPa)					
	Heat exchanger temperature sensor				25°C = 10kΩ					
	Outdoor ambient temperature sensor				25°C = 10kΩ					

Cooling Capacity Tables - MSAN6-XMi 200T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
130%	-5	18.11	2.18	22.02	2.45	24.84	2.64	25.56	2.86	27.33	3.06	28.08	3.32	28.30	3.35
	-2	18.11	2.18	22.02	2.50	24.84	2.64	25.77	2.88	27.33	3.06	28.08	3.37	28.30	3.38
	0	18.11	2.22	22.02	2.55	24.84	2.74	25.77	3.05	27.33	3.23	28.08	3.41	28.30	3.42
	2	18.11	2.26	22.02	2.55	24.84	2.84	25.77	3.22	27.33	3.27	28.08	3.43	28.30	3.47
	4	18.11	2.31	22.02	2.61	24.84	2.95	25.77	3.24	27.33	3.31	28.08	3.43	28.30	3.54
	6	18.11	2.36	22.02	2.66	24.84	3.07	25.77	3.26	26.86	3.42	27.27	3.43	28.30	3.57
	8	18.11	2.41	22.02	2.73	24.84	3.23	25.77	3.43	26.60	3.53	26.97	3.45	27.99	3.60
	10	18.11	2.46	22.02	2.79	24.84	3.36	25.77	3.55	26.34	3.55	26.89	3.55	27.65	3.71
	12	18.11	2.51	22.02	2.85	24.84	3.43	25.50	3.59	25.97	3.65	26.67	3.62	27.36	3.73
	14	18.11	2.56	22.02	2.91	24.69	3.45	25.29	3.61	25.65	3.68	26.48	3.68	27.00	3.81
	16	18.11	2.60	22.02	2.97	24.40	3.54	24.85	3.68	25.32	3.76	26.29	3.76	26.75	3.87
	18	18.11	2.65	22.02	3.04	24.04	3.60	24.44	3.73	25.00	3.86	26.10	3.89	26.50	3.93
	20	18.11	2.71	22.02	3.24	23.78	3.78	24.08	3.91	24.67	4.05	25.91	4.08	26.25	4.12
	21	18.11	2.78	22.02	3.37	23.68	3.88	24.15	4.01	24.35	4.14	25.72	4.18	26.00	4.22
	23	18.11	2.98	22.02	3.63	23.24	4.07	23.61	4.20	24.02	4.33	25.54	4.37	25.75	4.41
	25	18.11	3.18	22.02	3.90	22.87	4.25	23.27	4.38	23.70	4.52	25.35	4.56	25.50	4.61
	27	18.11	3.40	22.02	4.19	22.58	4.44	22.94	4.67	23.37	4.71	25.16	4.76	25.25	4.81
	29	18.11	3.63	22.02	4.49	22.22	4.63	22.61	4.92	23.05	4.90	24.97	4.95	25.00	5.00
	31	18.11	3.87	21.27	4.76	21.89	4.82	22.32	5.16	22.72	5.09	24.78	5.15	24.75	5.20
	33	18.11	4.12	20.90	4.95	21.56	5.01	21.94	5.44	22.40	5.28	24.60	5.34	24.50	5.40
	35	18.11	4.40	20.54	5.14	21.24	5.20	21.56	5.45	22.07	5.48	24.41	5.54	24.25	5.60
	37	18.11	4.68	20.25	5.37	20.90	5.40	21.30	5.54	21.75	5.68	24.22	5.74	24.00	5.81
	39	18.11	4.98	19.88	5.58	20.54	5.61	20.97	5.73	21.55	5.87	24.03	5.94	23.75	6.01
	41	18.11	5.24	19.68	5.79	20.32	5.82	20.64	5.92	20.98	6.04	21.64	6.10	23.50	6.17
43	18.11	5.45	19.54	6.01	20.22	6.19	20.30	6.28	20.76	6.35	21.24	6.40	23.25	6.46	
45	18.11	5.66	19.41	6.28	20.00	6.46	19.97	6.58	20.46	6.65	20.67	6.69	23.00	6.83	
48	18.11	6.41	19.29	6.57	19.79	6.74	19.63	6.90	20.16	7.06	20.09	7.23	22.75	7.39	
120%	-5	16.94	2.13	19.66	2.30	22.86	2.66	24.87	2.99	26.05	3.19	26.63	3.46	27.22	3.56
	-2	16.94	2.15	19.66	2.33	22.86	2.69	24.87	3.01	26.05	3.23	26.63	3.49	27.22	3.57
	0	16.94	2.17	19.66	2.35	22.86	2.73	24.87	3.02	26.05	3.26	26.63	3.52	27.22	3.58
	2	16.94	2.17	19.66	2.37	22.86	2.75	24.87	3.05	26.05	3.28	26.63	3.54	27.22	3.59
	4	16.94	2.19	19.66	2.41	22.86	2.80	24.87	3.08	26.05	3.32	26.63	3.55	27.22	3.60
	6	16.94	2.22	19.66	2.43	22.86	2.83	24.87	3.12	26.05	3.36	26.63	3.58	27.22	3.61
	8	16.94	2.24	19.66	2.46	22.86	2.88	24.87	3.17	26.05	3.40	26.63	3.59	27.22	3.63
	10	16.94	2.27	19.66	2.49	22.86	2.91	24.87	3.23	26.05	3.40	26.63	3.60	27.22	3.64
	12	16.94	2.31	19.66	2.54	22.86	2.97	24.87	3.30	25.69	3.42	26.27	3.58	26.85	3.67
	14	16.94	2.35	19.66	2.60	22.86	3.04	24.87	3.37	25.32	3.44	25.98	3.64	26.56	3.71
	16	16.94	2.40	19.66	2.66	22.86	3.10	24.83	3.42	25.03	3.49	25.61	3.70	26.20	3.77
	18	16.94	2.44	19.66	2.72	22.86	3.22	24.33	3.52	24.67	3.59	25.25	3.79	25.90	3.83
	20	16.94	2.49	19.66	2.83	22.86	3.49	24.08	3.71	24.38	3.78	24.96	3.98	25.54	4.01
	21	16.94	2.51	19.66	2.94	22.86	3.63	23.65	3.94	24.16	3.87	24.81	4.07	25.40	4.12
	23	16.94	2.69	19.66	3.18	22.86	3.92	23.15	4.25	23.87	4.06	24.45	4.27	25.03	4.30
	25	16.94	2.87	19.66	3.41	22.50	4.10	22.87	4.44	23.50	4.25	24.16	4.46	24.74	4.50
	27	16.94	3.06	19.66	3.67	22.21	4.29	22.52	4.72	23.21	4.45	23.79	4.65	24.38	4.70
	29	16.94	3.27	19.66	3.94	21.93	4.47	22.13	4.93	22.85	4.63	23.43	4.85	24.08	4.89
	31	16.94	3.48	19.66	4.22	21.50	4.67	21.84	5.17	22.56	4.83	23.14	5.05	23.72	5.10
	33	16.94	3.71	19.66	4.52	21.19	4.86	21.50	5.39	22.19	5.02	22.77	5.24	23.36	5.29
	35	16.94	3.95	19.66	4.84	20.85	5.05	21.11	5.46	21.90	5.22	22.48	5.44	23.06	5.50
	37	16.94	4.20	19.66	5.17	20.53	5.24	20.84	5.49	21.33	5.52	22.12	5.63	22.70	5.70
	39	16.94	4.47	19.59	5.48	20.17	5.43	20.48	5.52	20.96	5.61	21.83	5.84	22.41	5.89
	41	16.94	4.72	19.43	5.52	20.01	5.62	20.30	5.78	20.59	5.80	21.25	6.03	21.78	6.10
43	16.94	4.93	19.32	5.56	19.85	5.78	20.14	5.91	20.43	6.00	20.88	6.23	21.45	6.30	
45	16.94	5.13	19.22	5.61	19.66	5.90	19.93	6.12	20.25	6.20	20.46	6.43	21.30	6.50	
48	16.94	5.89	19.10	6.05	19.49	6.21	19.76	6.38	20.09	6.54	20.07	6.71	21.03	6.87	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 200T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
110%	-5	15.63	1.84	18.06	2.08	21.85	2.47	22.56	2.77	24.30	3.05	26.13	3.17	26.71	3.38
	-2	15.63	1.88	18.06	2.11	21.85	2.49	22.56	2.80	24.30	3.08	26.13	3.20	26.71	3.40
	0	15.63	1.89	18.06	2.12	21.85	2.51	22.56	2.82	24.30	3.11	26.13	3.24	26.71	3.44
	2	15.63	1.94	18.06	2.14	21.85	2.55	22.56	2.85	24.30	3.14	26.13	3.29	26.71	3.48
	4	15.63	1.97	18.06	2.17	21.85	2.58	22.56	2.89	24.30	3.19	26.13	3.33	26.71	3.52
	6	15.63	1.99	18.06	2.20	21.85	2.61	22.56	2.94	24.30	3.23	26.13	3.37	26.71	3.57
	8	15.63	2.01	18.06	2.23	21.85	2.64	22.56	2.97	24.30	3.27	26.13	3.39	26.71	3.61
	10	15.63	2.04	18.06	2.27	21.85	2.68	22.56	3.03	24.30	3.32	26.13	3.42	26.71	3.64
	12	15.63	2.08	18.06	2.32	21.85	2.74	22.56	3.09	24.30	3.39	25.84	3.47	26.34	3.69
	14	15.63	2.12	18.06	2.36	21.85	2.80	22.56	3.15	24.30	3.45	25.47	3.50	26.05	3.71
	16	15.63	2.15	18.06	2.41	21.85	2.85	22.56	3.21	24.30	3.53	25.18	3.54	25.69	3.75
	18	15.63	2.19	18.06	2.46	21.85	2.92	22.56	3.31	24.30	3.70	24.81	3.73	25.40	3.87
	20	15.63	2.24	18.06	2.52	21.85	3.11	22.56	3.57	23.94	3.89	24.52	3.91	25.03	4.06
	21	15.63	2.26	18.06	2.60	21.85	3.23	22.56	3.85	23.79	3.98	24.31	4.01	24.89	4.15
	23	15.63	2.37	18.06	2.80	21.85	3.48	22.56	4.09	23.43	4.16	24.01	4.20	24.52	4.35
	25	15.63	2.53	18.06	3.01	21.85	3.74	22.56	4.37	23.14	4.35	23.65	4.39	24.23	4.53
	27	15.63	2.69	18.06	3.23	21.85	4.02	22.28	4.58	22.78	4.53	23.36	4.58	23.87	4.73
	29	15.63	2.87	18.06	3.46	21.85	4.31	21.86	4.84	22.49	4.73	22.99	4.77	23.58	4.92
	31	15.63	3.06	18.06	3.71	21.44	4.62	21.46	5.11	22.12	4.91	22.70	4.96	23.21	5.12
	33	15.63	3.25	18.06	3.97	21.02	4.89	21.33	5.31	21.83	5.10	22.34	5.15	22.92	5.31
35	15.63	3.46	18.06	4.24	20.67	5.08	20.76	5.38	21.46	5.30	21.97	5.35	22.56	5.50	
37	15.63	3.79	18.06	4.53	20.17	5.27	20.53	5.40	21.10	5.48	21.68	5.54	22.19	5.70	
39	15.63	4.11	18.06	4.84	19.81	5.46	20.14	5.60	20.74	5.68	21.32	5.74	21.90	5.90	
41	15.63	4.44	18.06	4.88	19.45	5.50	19.95	5.64	20.39	5.72	20.64	5.80	21.25	5.94	
43	15.63	4.76	18.06	4.94	19.08	5.54	19.73	5.68	20.05	5.76	20.47	5.95	20.93	6.06	
45	15.63	5.03	18.06	5.12	18.72	5.65	19.38	5.79	19.71	5.88	19.93	6.08	20.47	6.26	
48	15.63	5.77	18.06	5.93	18.36	6.09	19.11	6.25	19.37	6.42	19.70	6.58	20.02	6.74	
100%	-5	14.03	1.89	16.47	2.06	19.72	2.27	20.00	2.67	21.69	2.60	24.93	2.88	25.69	3.18
	-2	14.03	1.92	16.47	2.09	19.72	2.32	20.00	2.69	21.69	2.64	24.93	2.92	25.69	3.20
	0	14.03	1.94	16.47	2.11	19.72	2.36	20.00	2.73	21.69	2.67	24.93	2.97	25.69	3.24
	2	14.03	1.97	16.47	2.14	19.72	2.41	20.00	2.75	21.69	2.70	24.93	3.02	25.69	3.29
	4	14.03	1.99	16.47	2.18	19.72	2.44	20.00	2.79	21.69	2.74	24.93	3.05	25.69	3.33
	6	14.03	2.03	16.47	2.21	19.72	2.48	20.00	2.85	21.69	2.78	24.93	3.10	25.69	3.38
	8	14.03	2.06	16.47	2.25	19.72	2.53	20.00	2.90	21.69	2.82	24.93	3.15	25.69	3.44
	10	14.03	2.10	16.47	2.29	19.72	2.57	20.00	2.95	21.69	2.88	24.93	3.21	25.69	3.49
	12	14.03	2.14	16.47	2.34	19.72	2.67	20.00	3.01	21.69	2.94	24.93	3.27	25.33	3.52
	14	14.03	2.19	16.47	2.39	19.72	2.79	20.00	3.20	21.69	2.99	24.93	3.34	25.04	3.56
	16	14.03	2.23	16.47	2.45	19.72	2.86	20.00	3.28	21.69	3.06	24.19	3.39	24.69	3.60
	18	14.03	2.27	16.47	2.50	19.72	2.97	20.00	3.41	21.69	3.12	23.90	3.51	24.40	3.69
	20	14.03	2.32	16.47	2.59	19.72	3.21	20.00	3.64	21.69	3.36	23.54	3.69	24.04	3.88
	21	14.03	2.34	16.47	2.69	19.72	3.44	20.00	3.86	21.69	3.48	23.40	3.78	23.90	3.97
	23	14.03	2.51	16.47	2.91	19.72	3.70	20.00	4.13	21.69	3.74	23.11	3.96	23.54	4.16
	25	14.03	2.68	16.47	3.13	19.72	4.00	20.00	4.34	21.69	4.02	22.76	4.15	23.26	4.34
	27	14.03	2.87	16.47	3.37	19.72	4.23	20.00	4.60	21.69	4.31	22.40	4.33	22.90	4.53
	29	14.03	3.07	16.47	3.62	19.72	4.55	20.00	4.73	21.61	4.59	22.11	4.68	22.61	4.72
	31	14.03	3.28	16.47	3.88	19.72	4.87	20.00	4.82	21.33	4.77	21.76	4.85	22.26	4.91
	33	14.03	3.50	16.47	4.16	19.72	5.10	20.00	4.95	20.97	4.96	21.47	5.03	21.97	5.10
35	14.03	3.73	16.47	4.46	19.72	5.20	20.00	5.28	20.61	5.29	21.11	5.34	21.61	5.39	
37	14.03	3.98	16.47	4.77	19.72	5.24	19.74	5.52	20.41	5.60	20.83	5.67	21.26	5.74	
39	14.03	4.24	16.47	5.10	19.72	5.33	19.49	5.73	20.13	5.83	20.47	5.95	20.97	6.00	
41	14.03	4.39	16.47	5.30	19.72	5.41	19.24	5.94	19.85	6.06	19.72	6.12	20.67	6.18	
43	14.03	4.55	16.47	5.40	19.72	5.59	19.17	6.22	19.57	6.32	19.84	6.43	19.91	6.48	
45	14.03	4.76	16.47	5.55	19.72	5.94	19.05	6.62	19.29	6.98	19.67	7.33	19.59	7.47	
48	14.03	5.49	16.47	5.91	19.72	6.34	18.83	7.13	19.01	7.55	19.22	7.97	19.30	8.40	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 200T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
90%	-5	12.17	1.51	14.53	1.65	16.89	1.82	18.04	2.13	19.55	2.08	22.27	2.31	23.91	2.54
	-2	12.17	1.53	14.53	1.67	16.89	1.85	18.04	2.15	19.55	2.11	22.27	2.34	23.91	2.56
	0	12.17	1.55	14.53	1.69	16.89	1.88	18.04	2.18	19.55	2.13	22.27	2.38	23.91	2.59
	2	12.17	1.57	14.53	1.71	16.89	1.93	18.04	2.20	19.55	2.16	22.27	2.42	23.91	2.63
	4	12.17	1.59	14.53	1.74	16.89	1.95	18.04	2.23	19.55	2.19	22.27	2.44	23.91	2.66
	6	12.17	1.62	14.53	1.77	16.89	1.99	18.04	2.28	19.55	2.22	22.27	2.48	23.91	2.70
	8	12.17	1.65	14.53	1.80	16.89	2.02	18.04	2.32	19.55	2.26	22.27	2.52	23.91	2.75
	10	12.17	1.68	14.53	1.84	16.89	2.05	18.04	2.36	19.55	2.30	22.27	2.57	23.91	2.79
	12	12.17	1.71	14.53	1.88	16.89	2.13	18.04	2.41	19.55	2.35	22.27	2.62	23.91	2.81
	14	12.17	1.75	14.53	1.92	16.89	2.23	18.04	2.56	19.55	2.40	22.27	2.67	23.91	2.85
	16	12.17	1.78	14.53	1.96	16.89	2.29	18.04	2.62	19.55	2.45	22.27	2.71	23.91	2.88
	18	12.17	1.82	14.53	2.00	16.89	2.37	18.04	2.73	19.55	2.50	22.27	2.81	23.91	2.96
	20	12.17	1.86	14.53	2.07	16.89	2.57	18.04	2.91	19.55	2.69	22.27	2.95	23.91	3.10
	21	12.17	1.87	14.53	2.15	16.89	2.75	18.04	3.09	19.55	2.78	22.27	3.02	23.91	3.18
	23	12.17	2.00	14.53	2.33	16.89	2.96	18.04	3.30	19.55	2.99	22.27	3.17	23.91	3.33
	25	12.17	2.15	14.53	2.51	16.89	3.20	18.04	3.47	19.55	3.21	22.27	3.32	23.91	3.47
	27	12.17	2.29	14.53	2.70	16.89	3.39	18.04	3.68	19.55	3.45	22.27	3.47	23.91	3.63
	29	12.17	2.45	14.53	2.89	16.89	3.64	18.04	3.79	19.55	3.67	22.27	3.75	23.91	3.77
	31	12.17	2.63	14.53	3.11	16.89	3.89	18.04	3.85	19.55	3.82	22.27	3.88	23.91	3.93
	33	12.17	2.80	14.53	3.33	16.89	4.08	18.04	3.96	19.55	3.97	22.27	4.02	23.91	4.08
35	12.17	2.98	14.53	3.57	16.89	4.16	18.04	4.22	19.55	4.23	22.27	4.27	23.91	4.32	
37	12.17	3.18	14.53	3.82	16.89	4.19	18.04	4.41	19.55	4.48	22.27	4.54	23.91	4.60	
39	12.17	3.39	14.53	4.08	16.89	4.27	18.04	4.49	19.55	4.67	22.27	4.76	23.91	4.80	
41	12.17	3.51	14.53	4.24	16.89	4.33	18.04	4.57	19.55	4.85	22.27	4.90	23.91	4.95	
43	12.17	3.64	14.53	4.32	16.89	4.47	18.04	4.66	19.55	5.06	22.27	5.14	23.91	5.18	
45	12.17	3.81	14.53	4.44	16.89	4.75	18.04	4.74	19.55	5.16	22.27	5.36	23.91	5.47	
48	12.17	4.39	14.53	4.60	16.89	4.82	18.04	5.03	19.55	5.24	22.27	5.45	23.91	5.66	
80%	-5	10.85	1.16	12.94	1.20	15.02	1.39	16.10	1.30	17.50	1.73	19.91	1.99	21.35	2.28
	-2	10.85	1.18	12.94	1.21	15.02	1.41	16.10	1.30	17.50	1.75	19.91	2.01	21.35	2.30
	0	10.85	1.19	12.94	1.23	15.02	1.43	16.10	1.33	17.50	1.77	19.91	2.03	21.35	2.32
	2	10.85	1.21	12.94	1.24	15.02	1.45	16.10	1.39	17.50	1.80	19.91	2.07	21.35	2.35
	4	10.85	1.22	12.94	1.26	15.02	1.48	16.10	1.39	17.50	1.82	19.91	2.10	21.35	2.38
	6	10.85	1.24	12.94	1.29	15.02	1.51	16.10	1.43	17.50	1.85	19.91	2.14	21.35	2.43
	8	10.85	1.26	12.94	1.31	15.02	1.54	16.10	1.49	17.50	1.89	19.91	2.18	21.35	2.45
	10	10.85	1.29	12.94	1.34	15.02	1.57	16.10	1.50	17.50	1.93	19.91	2.20	21.35	2.49
	12	10.85	1.31	12.94	1.37	15.02	1.60	16.10	1.54	17.50	1.97	19.91	2.25	21.35	2.53
	14	10.85	1.34	12.94	1.40	15.02	1.63	16.10	1.57	17.50	2.00	19.91	2.29	21.35	2.58
	16	10.85	1.37	12.94	1.42	15.02	1.66	16.10	1.61	17.50	2.04	19.91	2.33	21.35	2.62
	18	10.85	1.39	12.94	1.45	15.02	1.70	16.10	1.67	17.50	2.08	19.91	2.38	21.35	2.71
	20	10.85	1.42	12.94	1.49	15.02	1.73	16.10	1.81	17.50	2.16	19.91	2.56	21.35	2.83
	21	10.85	1.44	12.94	1.50	15.02	1.76	16.10	1.95	17.50	2.24	19.91	2.65	21.35	2.90
	23	10.85	1.54	12.94	1.56	15.02	1.89	16.10	2.11	17.50	2.40	19.91	2.84	21.35	3.03
	25	10.85	1.65	12.94	1.67	15.02	2.03	16.10	2.27	17.50	2.56	19.91	3.04	21.35	3.17
27	10.85	1.76	12.94	1.78	15.02	2.18	16.10	2.49	17.50	2.74	19.91	3.26	21.35	3.30	
29	10.85	1.88	12.94	1.91	15.02	2.33	16.10	2.59	17.50	2.93	19.91	3.41	21.35	3.43	
31	10.85	2.01	12.94	2.03	15.02	2.49	16.10	2.77	17.50	3.13	19.91	3.54	21.35	3.57	
33	10.85	2.15	12.94	2.17	15.02	2.66	16.10	2.95	17.50	3.33	19.91	3.68	21.35	3.70	
35	10.85	2.29	12.94	2.31	15.02	2.84	16.10	3.24	17.50	3.55	19.91	3.81	21.35	3.84	
37	10.85	2.44	12.94	2.46	15.02	3.03	16.10	3.39	17.50	3.79	19.91	3.94	21.35	3.97	
39	10.85	2.60	12.94	2.62	15.02	3.23	16.10	3.52	17.50	4.04	19.91	4.08	21.35	4.11	
41	10.85	2.69	12.94	2.74	15.02	3.35	16.10	3.64	17.50	4.06	19.91	4.18	21.35	4.21	
43	10.85	2.79	12.94	2.86	15.02	3.47	16.10	3.82	17.50	4.15	19.91	4.24	21.35	4.27	
45	10.85	2.92	12.94	3.01	15.02	3.62	16.10	4.06	17.50	4.26	19.91	4.28	21.35	4.33	
48	10.85	3.37	12.94	3.63	15.02	3.89	16.10	4.14	17.50	4.40	19.91	4.66	21.35	4.92	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 200T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
70%	-5	9.51	0.94	11.38	0.97	13.18	1.13	14.12	1.30	15.34	1.40	17.42	1.61	18.73	1.85
	-2	9.51	0.95	11.38	0.98	13.18	1.15	14.12	1.31	15.34	1.42	17.42	1.63	18.73	1.86
	0	9.51	0.96	11.38	1.00	13.18	1.16	14.12	1.32	15.34	1.44	17.42	1.65	18.73	1.88
	2	9.51	0.98	11.38	1.01	13.18	1.18	14.12	1.35	15.34	1.46	17.42	1.68	18.73	1.91
	4	9.51	0.99	11.38	1.02	13.18	1.20	14.12	1.37	15.34	1.48	17.42	1.71	18.73	1.93
	6	9.51	1.01	11.38	1.05	13.18	1.22	14.12	1.40	15.34	1.50	17.42	1.73	18.73	1.97
	8	9.51	1.02	11.38	1.07	13.18	1.25	14.12	1.42	15.34	1.53	17.42	1.77	18.73	1.99
	10	9.51	1.04	11.38	1.09	13.18	1.27	14.12	1.45	15.34	1.57	17.42	1.79	18.73	2.02
	12	9.51	1.07	11.38	1.11	13.18	1.30	14.12	1.48	15.34	1.59	17.42	1.82	18.73	2.05
	14	9.51	1.09	11.38	1.13	13.18	1.32	14.12	1.52	15.34	1.62	17.42	1.86	18.73	2.09
	16	9.51	1.11	11.38	1.15	13.18	1.35	14.12	1.53	15.34	1.66	17.42	1.89	18.73	2.13
	18	9.51	1.13	11.38	1.18	13.18	1.38	14.12	1.53	15.34	1.69	17.42	1.93	18.73	2.20
	20	9.51	1.15	11.38	1.21	13.18	1.40	14.12	1.63	15.34	1.75	17.42	2.08	18.73	2.30
	21	9.51	1.17	11.38	1.21	13.18	1.43	14.12	1.75	15.34	1.81	17.42	2.15	18.73	2.35
	23	9.51	1.25	11.38	1.26	13.18	1.54	14.12	1.84	15.34	1.95	17.42	2.31	18.73	2.46
	25	9.51	1.33	11.38	1.36	13.18	1.65	14.12	1.98	15.34	2.08	17.42	2.47	18.73	2.57
	27	9.51	1.43	11.38	1.45	13.18	1.76	14.12	2.12	15.34	2.22	17.42	2.64	18.73	2.68
	29	9.51	1.53	11.38	1.55	13.18	1.89	14.12	2.22	15.34	2.38	17.42	2.76	18.73	2.78
	31	9.51	1.63	11.38	1.65	13.18	2.02	14.12	2.37	15.34	2.54	17.42	2.87	18.73	2.90
	33	9.51	1.74	11.38	1.76	13.18	2.16	14.12	2.51	15.34	2.71	17.42	2.98	18.73	3.00
	35	9.51	1.86	11.38	1.87	13.18	2.30	14.12	2.63	15.34	2.88	17.42	3.09	18.73	3.12
	37	9.51	1.98	11.38	1.99	13.18	2.46	14.12	2.75	15.34	3.07	17.42	3.20	18.73	3.22
	39	9.51	2.11	11.38	2.13	13.18	2.62	14.12	2.85	15.34	3.28	17.42	3.31	18.73	3.33
	41	9.51	2.19	11.38	2.22	13.18	2.72	14.12	2.95	15.34	3.29	17.42	3.39	18.73	3.41
43	9.51	2.26	11.38	2.32	13.18	2.81	14.12	3.10	15.34	3.36	17.42	3.44	18.73	3.47	
45	9.51	2.37	11.38	2.44	13.18	2.93	14.12	3.29	15.34	3.46	17.42	3.74	18.73	3.90	
48	9.51	2.73	11.38	2.99	13.18	3.26	14.12	3.52	15.34	3.78	17.42	4.04	18.73	4.31	
60%	-5	8.11	0.76	9.69	0.83	11.27	0.91	12.06	1.17	13.09	1.27	14.91	1.41	16.01	1.62
	-2	8.11	0.77	9.69	0.84	11.27	0.92	12.06	1.18	13.09	1.29	14.91	1.43	16.01	1.63
	0	8.11	0.78	9.69	0.85	11.27	0.94	12.06	1.20	13.09	1.31	14.91	1.46	16.01	1.65
	2	8.11	0.79	9.69	0.86	11.27	0.95	12.06	1.22	13.09	1.33	14.91	1.48	16.01	1.67
	4	8.11	0.80	9.69	0.87	11.27	0.97	12.06	1.23	13.09	1.36	14.91	1.51	16.01	1.70
	6	8.11	0.81	9.69	0.89	11.27	0.99	12.06	1.26	13.09	1.38	14.91	1.54	16.01	1.74
	8	8.11	0.83	9.69	0.90	11.27	1.01	12.06	1.29	13.09	1.41	14.91	1.57	16.01	1.76
	10	8.11	0.84	9.69	0.92	11.27	1.03	12.06	1.32	13.09	1.43	14.91	1.60	16.01	1.76
	12	8.11	0.86	9.69	0.94	11.27	1.05	12.06	1.35	13.09	1.46	14.91	1.63	16.01	1.79
	14	8.11	0.88	9.69	0.96	11.27	1.07	12.06	1.37	13.09	1.49	14.91	1.66	16.01	1.82
	16	8.11	0.89	9.69	0.98	11.27	1.09	12.06	1.39	13.09	1.52	14.91	1.69	16.01	1.86
	18	8.11	0.91	9.69	1.00	11.27	1.11	12.06	1.42	13.09	1.54	14.91	1.71	16.01	1.89
	20	8.11	0.93	9.69	1.04	11.27	1.13	12.06	1.45	13.09	1.56	14.91	1.75	16.01	1.93
	21	8.11	0.94	9.69	1.08	11.27	1.15	12.06	1.55	13.09	1.59	14.91	1.77	16.01	1.97
	23	8.11	1.01	9.69	1.17	11.27	1.24	12.06	1.66	13.09	1.69	14.91	1.84	16.01	1.98
	25	8.11	1.08	9.69	1.26	11.27	1.33	12.06	1.75	13.09	1.80	14.91	1.96	16.01	2.11
	27	8.11	1.15	9.69	1.35	11.27	1.42	12.06	1.83	13.09	1.91	14.91	2.09	16.01	2.25
	29	8.11	1.23	9.69	1.45	11.27	1.52	12.06	1.91	13.09	2.04	14.91	2.23	16.01	2.40
	31	8.11	1.32	9.69	1.56	11.27	1.63	12.06	2.02	13.09	2.17	14.91	2.37	16.01	2.57
	33	8.11	1.41	9.69	1.67	11.27	1.74	12.06	2.10	13.09	2.30	14.91	2.52	16.01	2.73
	35	8.11	1.50	9.69	1.79	11.27	1.86	12.06	2.12	13.09	2.44	14.91	2.69	16.01	2.91
	37	8.11	1.60	9.69	1.91	11.27	1.98	12.06	2.21	13.09	2.59	14.91	2.86	16.01	3.10
	39	8.11	1.70	9.69	2.05	11.27	2.11	12.06	2.30	13.09	2.69	14.91	3.03	16.01	3.30
	41	8.11	1.76	9.69	2.12	11.27	2.19	12.06	2.38	13.09	2.78	14.91	3.17	16.01	3.51
43	8.11	1.83	9.69	2.17	11.27	2.27	12.06	2.50	13.09	2.92	14.91	3.31	16.01	3.67	
45	8.11	1.97	9.69	2.44	11.27	2.58	12.06	2.72	13.09	3.16	14.91	3.46	16.01	3.83	
48	8.11	2.27	9.69	2.54	11.27	2.82	12.06	3.09	13.09	3.37	14.91	3.64	16.01	3.92	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 200T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
50%	-5	6.82	0.63	8.15	0.68	9.45	0.75	10.10	1.03	10.95	1.07	12.45	1.22	13.42	1.32
	-2	6.82	0.64	8.15	0.69	9.45	0.77	10.10	1.06	10.95	1.09	12.45	1.24	13.42	1.33
	0	6.82	0.64	8.15	0.70	9.45	0.78	10.10	1.06	10.95	1.11	12.45	1.26	13.42	1.36
	2	6.82	0.65	8.15	0.71	9.45	0.79	10.10	1.07	10.95	1.13	12.45	1.26	13.42	1.38
	4	6.82	0.66	8.15	0.72	9.45	0.80	10.10	1.07	10.95	1.15	12.45	1.30	13.42	1.42
	6	6.82	0.67	8.15	0.73	9.45	0.82	10.10	1.08	10.95	1.17	12.45	1.32	13.42	1.46
	8	6.82	0.68	8.15	0.75	9.45	0.83	10.10	1.08	10.95	1.18	12.45	1.34	13.42	1.51
	10	6.82	0.70	8.15	0.76	9.45	0.85	10.10	1.07	10.95	1.22	12.45	1.37	13.42	1.53
	12	6.82	0.71	8.15	0.78	9.45	0.87	10.10	1.08	10.95	1.24	12.45	1.40	13.42	1.55
	14	6.82	0.73	8.15	0.80	9.45	0.88	10.10	1.09	10.95	1.26	12.45	1.42	13.42	1.58
	16	6.82	0.74	8.15	0.81	9.45	0.90	10.10	1.09	10.95	1.28	12.45	1.44	13.42	1.61
	18	6.82	0.75	8.15	0.83	9.45	0.92	10.10	1.09	10.95	1.30	12.45	1.47	13.42	1.64
	20	6.82	0.77	8.15	0.86	9.45	0.94	10.10	1.14	10.95	1.33	12.45	1.49	13.42	1.67
	21	6.82	0.78	8.15	0.90	9.45	0.95	10.10	1.20	10.95	1.34	12.45	1.51	13.42	1.69
	23	6.82	0.83	8.15	0.97	9.45	1.03	10.10	1.28	10.95	1.37	12.45	1.54	13.42	1.72
	25	6.82	0.89	8.15	1.04	9.45	1.10	10.10	1.37	10.95	1.41	12.45	1.61	13.42	1.84
	27	6.82	0.95	8.15	1.12	9.45	1.18	10.10	1.47	10.95	1.49	12.45	1.72	13.42	1.96
	29	6.82	1.02	8.15	1.20	9.45	1.26	10.10	1.52	10.95	1.59	12.45	1.83	13.42	2.09
	31	6.82	1.09	8.15	1.29	9.45	1.35	10.10	1.62	10.95	1.69	12.45	1.94	13.42	2.22
	33	6.82	1.16	8.15	1.38	9.45	1.44	10.10	1.71	10.95	1.79	12.45	2.07	13.42	2.36
35	6.82	1.24	8.15	1.48	9.45	1.54	10.10	1.76	10.95	1.90	12.45	2.19	13.42	2.51	
37	6.82	1.32	8.15	1.59	9.45	1.64	10.10	1.83	10.95	2.01	12.45	2.33	13.42	2.67	
39	6.82	1.41	8.15	1.69	9.45	1.75	10.10	1.91	10.95	2.13	12.45	2.47	13.42	2.83	
41	6.82	1.46	8.15	1.76	9.45	1.82	10.10	1.97	10.95	2.23	12.45	2.60	13.42	2.97	
43	6.82	1.51	8.15	1.80	9.45	1.88	10.10	2.10	10.95	2.28	12.45	2.73	13.42	3.10	
45	6.82	1.58	8.15	2.02	9.45	2.15	10.10	2.32	10.95	2.55	12.45	2.99	13.42	3.23	
48	6.82	1.86	8.15	2.12	9.45	2.39	10.10	2.65	10.95	2.91	12.45	3.18	13.42	3.44	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 224T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
130%	-5	20.29	2.80	24.67	3.14	27.82	3.38	28.62	3.67	30.61	3.92	31.45	4.26	31.70	4.29
	-2	20.29	2.80	24.67	3.20	27.82	3.38	28.87	3.69	30.61	3.92	31.45	4.32	31.70	4.33
	0	20.29	2.85	24.67	3.26	27.82	3.52	28.87	3.90	30.61	4.15	31.45	4.37	31.70	4.39
	2	20.29	2.90	24.67	3.27	27.82	3.65	28.87	4.13	30.61	4.20	31.45	4.40	31.70	4.46
	4	20.29	2.96	24.67	3.34	27.82	3.78	28.87	4.15	30.61	4.25	31.45	4.40	31.70	4.54
	6	20.29	3.02	24.67	3.41	27.82	3.93	28.87	4.19	30.08	4.38	30.54	4.40	31.70	4.57
	8	20.29	3.09	24.67	3.50	27.82	4.14	28.87	4.40	29.79	4.52	30.21	4.42	31.35	4.62
	10	20.29	3.16	24.67	3.58	27.82	4.31	28.87	4.55	29.50	4.56	30.12	4.56	30.97	4.75
	12	20.29	3.21	24.67	3.65	27.82	4.40	28.56	4.60	29.09	4.68	29.87	4.64	30.64	4.78
	14	20.29	3.28	24.67	3.73	27.66	4.42	28.32	4.63	28.72	4.72	29.66	4.72	30.24	4.89
	16	20.29	3.33	24.67	3.81	27.33	4.54	27.83	4.72	28.36	4.82	29.44	4.83	29.96	4.97
	18	20.29	3.40	24.67	3.89	26.92	4.61	27.38	4.78	28.00	4.95	29.23	4.99	29.68	5.04
	20	20.29	3.47	24.67	4.16	26.64	4.85	26.97	5.02	27.63	5.19	29.02	5.23	29.40	5.29
	21	20.29	3.56	24.67	4.32	26.52	4.97	27.05	5.14	27.27	5.31	28.81	5.36	29.12	5.41
	23	20.29	3.82	24.67	4.65	26.02	5.21	26.45	5.38	26.90	5.55	28.60	5.60	28.84	5.66
	25	20.29	4.08	24.67	5.00	25.62	5.45	26.06	5.62	26.54	5.80	28.39	5.85	28.56	5.91
	27	20.29	4.36	24.67	5.37	25.29	5.69	25.69	5.98	26.18	6.04	28.18	6.10	28.28	6.17
	29	20.29	4.65	24.67	5.76	24.88	5.93	25.33	6.30	25.81	6.29	27.97	6.35	28.00	6.42
	31	20.29	4.97	23.82	6.11	24.52	6.18	25.00	6.62	25.45	6.53	27.76	6.60	27.72	6.67
	33	20.29	5.29	23.41	6.35	24.15	6.42	24.57	6.98	25.09	6.77	27.55	6.85	27.44	6.92
35	20.29	5.64	23.01	6.59	23.79	6.67	24.15	7.10	24.72	7.02	27.34	7.11	27.16	7.18	
37	20.29	6.00	22.68	6.88	23.41	6.92	23.86	7.10	24.36	7.28	27.12	7.37	26.88	7.45	
39	20.29	6.39	22.27	7.16	23.01	7.19	23.49	7.35	24.14	7.53	26.91	7.61	26.60	7.71	
41	20.29	6.72	22.04	7.43	22.76	7.46	23.11	7.59	23.50	7.74	24.23	7.82	26.32	7.92	
43	20.29	6.99	21.88	7.70	22.64	7.94	22.74	8.05	23.26	8.14	23.79	8.21	26.04	8.28	
45	20.29	7.25	21.74	8.05	22.40	8.28	22.36	8.44	22.92	8.52	23.15	8.58	25.76	8.76	
48	20.29	8.22	21.60	8.43	22.16	8.64	21.99	8.85	22.58	9.06	22.50	9.27	25.48	9.48	
120%	-5	18.97	2.73	22.02	2.95	25.61	3.42	27.86	3.84	29.18	4.09	29.83	4.44	30.48	4.56
	-2	18.97	2.75	22.02	2.99	25.61	3.45	27.86	3.86	29.18	4.14	29.83	4.48	30.48	4.58
	0	18.97	2.78	22.02	3.01	25.61	3.50	27.86	3.87	29.18	4.18	29.83	4.51	30.48	4.59
	2	18.97	2.79	22.02	3.05	25.61	3.53	27.86	3.92	29.18	4.20	29.83	4.54	30.48	4.60
	4	18.97	2.81	22.02	3.09	25.61	3.58	27.86	3.96	29.18	4.26	29.83	4.55	30.48	4.61
	6	18.97	2.84	22.02	3.12	25.61	3.63	27.86	4.00	29.18	4.31	29.83	4.59	30.48	4.63
	8	18.97	2.87	22.02	3.15	25.61	3.69	27.86	4.06	29.18	4.36	29.83	4.61	30.48	4.65
	10	18.97	2.90	22.02	3.20	25.61	3.73	27.86	4.14	29.18	4.36	29.83	4.62	30.48	4.67
	12	18.97	2.96	22.02	3.26	25.61	3.81	27.86	4.23	28.77	4.38	29.42	4.59	30.07	4.70
	14	18.97	3.02	22.02	3.34	25.61	3.89	27.86	4.32	28.36	4.41	29.09	4.67	29.75	4.76
	16	18.97	3.07	22.02	3.41	25.61	3.98	27.80	4.38	28.03	4.48	28.69	4.75	29.34	4.83
	18	18.97	3.13	22.02	3.49	25.61	4.13	27.25	4.51	27.63	4.60	28.28	4.86	29.01	4.91
	20	18.97	3.19	22.02	3.63	25.61	4.48	26.97	4.76	27.30	4.84	27.95	5.10	28.61	5.15
	21	18.97	3.22	22.02	3.77	25.61	4.66	26.49	5.05	27.06	4.97	27.79	5.22	28.44	5.28
	23	18.97	3.44	22.02	4.07	25.61	5.02	25.93	5.45	26.73	5.21	27.38	5.47	28.03	5.52
	25	18.97	3.68	22.02	4.38	25.20	5.26	25.62	5.69	26.32	5.45	27.06	5.71	27.71	5.77
	27	18.97	3.93	22.02	4.70	24.87	5.50	25.22	6.06	26.00	5.70	26.65	5.97	27.30	6.02
	29	18.97	4.19	22.02	5.05	24.56	5.74	24.79	6.31	25.59	5.94	26.24	6.22	26.97	6.27
	31	18.97	4.47	22.02	5.41	24.08	5.99	24.46	6.63	25.26	6.19	25.92	6.47	26.57	6.53
	33	18.97	4.76	22.02	5.79	23.73	6.23	24.08	6.91	24.85	6.44	25.51	6.72	26.16	6.79
35	18.97	5.06	22.02	6.20	23.35	6.47	23.65	7.00	24.53	6.69	25.18	6.97	25.83	7.05	
37	18.97	5.39	22.02	6.63	23.00	6.72	23.34	7.04	23.88	7.08	24.77	7.22	25.43	7.31	
39	18.97	5.73	21.94	7.02	22.59	6.97	22.94	7.08	23.48	7.19	24.45	7.48	25.10	7.56	
41	18.97	6.05	21.76	7.08	22.41	7.21	22.74	7.42	23.06	7.44	23.80	7.73	24.39	7.82	
43	18.97	6.32	21.64	7.13	22.23	7.41	22.56	7.58	22.89	7.69	23.38	7.99	24.02	8.07	
45	18.97	6.58	21.52	7.20	22.02	7.56	22.32	7.85	22.69	7.94	22.91	8.24	23.85	8.33	
48	18.97	7.55	21.39	7.76	21.83	7.97	22.13	8.18	22.50	8.39	22.48	8.60	23.55	8.81	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 224T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
110%	-5	17.51	2.36	20.23	2.66	24.48	3.16	25.26	3.56	27.22	3.91	29.26	4.07	29.91	4.33
	-2	17.51	2.41	20.23	2.70	24.48	3.19	25.26	3.59	27.22	3.94	29.26	4.11	29.91	4.36
	0	17.51	2.43	20.23	2.72	24.48	3.22	25.26	3.62	27.22	3.99	29.26	4.15	29.91	4.41
	2	17.51	2.48	20.23	2.75	24.48	3.27	25.26	3.66	27.22	4.03	29.26	4.21	29.91	4.47
	4	17.51	2.53	20.23	2.78	24.48	3.31	25.26	3.71	27.22	4.10	29.26	4.27	29.91	4.51
	6	17.51	2.56	20.23	2.82	24.48	3.34	25.26	3.77	27.22	4.14	29.26	4.32	29.91	4.58
	8	17.51	2.58	20.23	2.86	24.48	3.39	25.26	3.81	27.22	4.19	29.26	4.35	29.91	4.62
	10	17.51	2.61	20.23	2.91	24.48	3.44	25.26	3.88	27.22	4.26	29.26	4.38	29.91	4.66
	12	17.51	2.67	20.23	2.97	24.48	3.51	25.26	3.96	27.22	4.35	28.94	4.45	29.51	4.73
	14	17.51	2.71	20.23	3.03	24.48	3.59	25.26	4.04	27.22	4.43	28.53	4.48	29.18	4.76
	16	17.51	2.76	20.23	3.09	24.48	3.66	25.26	4.12	27.22	4.52	28.20	4.54	28.77	4.81
	18	17.51	2.81	20.23	3.16	24.48	3.74	25.26	4.24	27.22	4.74	27.79	4.78	28.45	4.96
	20	17.51	2.87	20.23	3.23	24.48	3.98	25.26	4.57	26.81	4.98	27.47	5.02	28.04	5.20
	21	17.51	2.90	20.23	3.33	24.48	4.14	25.26	4.93	26.65	5.10	27.22	5.14	27.87	5.32
	23	17.51	3.04	20.23	3.59	24.48	4.46	25.26	5.25	26.24	5.33	26.90	5.39	27.47	5.57
	25	17.51	3.24	20.23	3.86	24.48	4.79	25.26	5.60	25.92	5.57	26.49	5.63	27.14	5.81
	27	17.51	3.45	20.23	4.14	24.48	5.15	24.95	5.87	25.51	5.81	26.16	5.87	26.73	6.06
	29	17.51	3.68	20.23	4.44	24.48	5.53	24.48	6.21	25.18	6.06	25.75	6.12	26.41	6.31
	31	17.51	3.92	20.23	4.75	24.01	5.93	24.03	6.55	24.77	6.30	25.43	6.36	26.00	6.56
	33	17.51	4.17	20.23	5.08	23.55	6.27	23.89	6.81	24.45	6.54	25.02	6.61	25.67	6.81
35	17.51	4.44	20.23	5.43	23.16	6.51	23.25	6.89	24.04	6.79	24.61	6.86	25.26	7.06	
37	17.51	4.86	20.23	5.80	22.60	6.76	22.99	6.92	23.63	7.03	24.29	7.10	24.86	7.31	
39	17.51	5.27	20.23	6.20	22.19	7.00	22.56	7.17	23.23	7.28	23.88	7.35	24.53	7.57	
41	17.51	5.69	20.23	6.25	21.78	7.05	22.34	7.23	22.84	7.33	23.12	7.44	23.80	7.62	
43	17.51	6.10	20.23	6.34	21.38	7.10	22.10	7.28	22.46	7.38	22.93	7.63	23.45	7.77	
45	17.51	6.45	20.23	6.56	20.97	7.25	21.70	7.43	22.07	7.53	22.32	7.80	22.92	8.03	
48	17.51	7.40	20.23	7.61	20.56	7.81	21.41	8.02	21.69	8.23	22.07	8.43	22.43	8.64	
100%	-5	15.72	2.42	18.45	2.64	22.09	2.91	22.40	3.42	24.29	3.34	27.92	3.70	28.77	4.08
	-2	15.72	2.46	18.45	2.67	22.09	2.97	22.40	3.44	24.29	3.39	27.92	3.74	28.77	4.10
	0	15.72	2.48	18.45	2.71	22.09	3.02	22.40	3.50	24.29	3.42	27.92	3.81	28.77	4.15
	2	15.72	2.52	18.45	2.74	22.09	3.09	22.40	3.53	24.29	3.46	27.92	3.87	28.77	4.22
	4	15.72	2.55	18.45	2.79	22.09	3.13	22.40	3.58	24.29	3.51	27.92	3.91	28.77	4.27
	6	15.72	2.60	18.45	2.83	22.09	3.18	22.40	3.66	24.29	3.56	27.92	3.97	28.77	4.33
	8	15.72	2.64	18.45	2.89	22.09	3.24	22.40	3.72	24.29	3.62	27.92	4.04	28.77	4.41
	10	15.72	2.69	18.45	2.94	22.09	3.29	22.40	3.78	24.29	3.69	27.92	4.11	28.77	4.47
	12	15.72	2.75	18.45	3.01	22.09	3.42	22.40	3.86	24.29	3.77	27.92	4.20	28.37	4.51
	14	15.72	2.80	18.45	3.07	22.09	3.58	22.40	4.10	24.29	3.84	27.92	4.29	28.05	4.56
	16	15.72	2.86	18.45	3.14	22.09	3.66	22.40	4.20	24.29	3.92	27.09	4.34	27.65	4.62
	18	15.72	2.91	18.45	3.21	22.09	3.80	22.40	4.37	24.29	4.00	26.77	4.50	27.33	4.74
	20	15.72	2.98	18.45	3.32	22.09	4.12	22.40	4.67	24.29	4.30	26.37	4.73	26.93	4.97
	21	15.72	3.00	18.45	3.45	22.09	4.41	22.40	4.95	24.29	4.46	26.21	4.84	26.77	5.09
	23	15.72	3.21	18.45	3.73	22.09	4.75	22.40	5.29	24.29	4.80	25.89	5.08	26.37	5.33
	25	15.72	3.44	18.45	4.02	22.09	5.12	22.40	5.56	24.29	5.15	25.49	5.32	26.05	5.57
	27	15.72	3.68	18.45	4.32	22.09	5.43	22.40	5.89	24.29	5.53	25.09	5.56	25.65	5.81
	29	15.72	3.93	18.45	4.64	22.09	5.83	22.40	6.07	24.21	5.88	24.77	6.00	25.33	6.05
	31	15.72	4.21	18.45	4.98	22.09	6.24	22.40	6.18	23.89	6.12	24.37	6.22	24.93	6.30
	33	15.72	4.49	18.45	5.33	22.09	6.54	22.40	6.35	23.49	6.36	24.05	6.45	24.61	6.54
35	15.72	4.78	18.45	5.72	22.09	6.67	22.40	6.77	23.09	6.78	23.65	6.85	24.21	6.92	
37	15.72	5.10	18.45	6.12	22.09	6.72	22.11	7.08	22.86	7.18	23.33	7.27	23.81	7.37	
39	15.72	5.43	18.45	6.54	22.09	6.84	21.83	7.35	22.54	7.48	22.93	7.63	23.49	7.69	
41	15.72	5.63	18.45	6.79	22.09	6.94	21.55	7.62	22.23	7.77	22.09	7.85	23.15	7.93	
43	15.72	5.84	18.45	6.92	22.09	7.17	21.47	7.98	21.92	8.11	22.22	8.24	22.30	8.31	
45	15.72	6.11	18.45	7.12	22.09	7.62	21.33	8.48	21.61	8.95	22.03	9.40	21.95	9.58	
48	15.72	7.04	18.45	7.58	22.09	8.12	21.09	9.14	21.30	9.68	21.53	10.22	21.62	10.76	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 224T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
90%	-5	13.63	1.94	16.28	2.11	18.92	2.33	20.20	2.73	21.89	2.67	24.94	2.96	26.78	3.26
	-2	13.63	1.97	16.28	2.14	18.92	2.38	20.20	2.76	21.89	2.71	24.94	3.00	26.78	3.28
	0	13.63	1.99	16.28	2.17	18.92	2.42	20.20	2.80	21.89	2.74	24.94	3.05	26.78	3.32
	2	13.63	2.02	16.28	2.19	18.92	2.47	20.20	2.82	21.89	2.77	24.94	3.10	26.78	3.37
	4	13.63	2.04	16.28	2.23	18.92	2.50	20.20	2.86	21.89	2.81	24.94	3.13	26.78	3.41
	6	13.63	2.08	16.28	2.26	18.92	2.55	20.20	2.93	21.89	2.85	24.94	3.18	26.78	3.47
	8	13.63	2.11	16.28	2.31	18.92	2.59	20.20	2.98	21.89	2.90	24.94	3.23	26.78	3.53
	10	13.63	2.15	16.28	2.35	18.92	2.63	20.20	3.02	21.89	2.95	24.94	3.29	26.78	3.58
	12	13.63	2.20	16.28	2.40	18.92	2.73	20.20	3.08	21.89	3.01	24.94	3.36	26.78	3.61
	14	13.63	2.24	16.28	2.46	18.92	2.86	20.20	3.28	21.89	3.07	24.94	3.43	26.78	3.65
	16	13.63	2.29	16.28	2.51	18.92	2.93	20.20	3.36	21.89	3.14	24.94	3.47	26.78	3.69
	18	13.63	2.33	16.28	2.57	18.92	3.04	20.20	3.50	21.89	3.20	24.94	3.60	26.78	3.79
	20	13.63	2.38	16.28	2.65	18.92	3.30	20.20	3.73	21.89	3.44	24.94	3.78	26.78	3.98
	21	13.63	2.40	16.28	2.76	18.92	3.53	20.20	3.96	21.89	3.57	24.94	3.88	26.78	4.07
	23	13.63	2.57	16.28	2.98	18.92	3.80	20.20	4.23	21.89	3.84	24.94	4.06	26.78	4.26
	25	13.63	2.75	16.28	3.21	18.92	4.10	20.20	4.45	21.89	4.12	24.94	4.25	26.78	4.45
	27	13.63	2.94	16.28	3.46	18.92	4.34	20.20	4.71	21.89	4.42	24.94	4.44	26.78	4.65
	29	13.63	3.15	16.28	3.71	18.92	4.67	20.20	4.85	21.89	4.71	24.94	4.80	26.78	4.84
	31	13.63	3.37	16.28	3.98	18.92	4.99	20.20	4.94	21.89	4.90	24.94	4.98	26.78	5.04
	33	13.63	3.59	16.28	4.27	18.92	5.23	20.20	5.08	21.89	5.09	24.94	5.16	26.78	5.23
35	13.63	3.83	16.28	4.57	18.92	5.34	20.20	5.42	21.89	5.42	24.94	5.48	26.78	5.53	
37	13.63	4.08	16.28	4.89	18.92	5.37	20.20	5.66	21.89	5.74	24.94	5.82	26.78	5.89	
39	13.63	4.34	16.28	5.23	18.92	5.47	20.20	5.75	21.89	5.98	24.94	6.10	26.78	6.15	
41	13.63	4.51	16.28	5.43	18.92	5.55	20.20	5.86	21.89	6.22	24.94	6.28	26.78	6.34	
43	13.63	4.67	16.28	5.54	18.92	5.74	20.20	5.97	21.89	6.48	24.94	6.60	26.78	6.65	
45	13.63	4.89	16.28	5.69	18.92	6.10	20.20	6.07	21.89	6.62	24.94	6.87	26.78	7.02	
48	13.63	5.63	16.28	5.90	18.92	6.17	20.20	6.45	21.89	6.72	24.94	6.99	26.78	7.26	
80%	-5	12.16	1.49	14.49	1.54	16.82	1.79	18.03	1.67	19.60	2.22	22.29	2.55	23.91	2.92
	-2	12.16	1.51	14.49	1.55	16.82	1.81	18.03	1.67	19.60	2.24	22.29	2.57	23.91	2.95
	0	12.16	1.52	14.49	1.57	16.82	1.84	18.03	1.71	19.60	2.27	22.29	2.60	23.91	2.97
	2	12.16	1.55	14.49	1.59	16.82	1.86	18.03	1.78	19.60	2.31	22.29	2.66	23.91	3.01
	4	12.16	1.56	14.49	1.62	16.82	1.89	18.03	1.79	19.60	2.34	22.29	2.70	23.91	3.06
	6	12.16	1.59	14.49	1.65	16.82	1.93	18.03	1.84	19.60	2.38	22.29	2.74	23.91	3.11
	8	12.16	1.62	14.49	1.69	16.82	1.97	18.03	1.90	19.60	2.42	22.29	2.79	23.91	3.14
	10	12.16	1.65	14.49	1.72	16.82	2.01	18.03	1.93	19.60	2.48	22.29	2.83	23.91	3.19
	12	12.16	1.69	14.49	1.76	16.82	2.05	18.03	1.97	19.60	2.52	22.29	2.88	23.91	3.25
	14	12.16	1.72	14.49	1.79	16.82	2.09	18.03	2.01	19.60	2.57	22.29	2.93	23.91	3.31
	16	12.16	1.75	14.49	1.82	16.82	2.13	18.03	2.06	19.60	2.62	22.29	2.99	23.91	3.37
	18	12.16	1.79	14.49	1.86	16.82	2.17	18.03	2.14	19.60	2.67	22.29	3.05	23.91	3.47
	20	12.16	1.82	14.49	1.91	16.82	2.22	18.03	2.32	19.60	2.77	22.29	3.28	23.91	3.63
	21	12.16	1.84	14.49	1.92	16.82	2.26	18.03	2.50	19.60	2.87	22.29	3.40	23.91	3.72
	23	12.16	1.97	14.49	2.00	16.82	2.43	18.03	2.71	19.60	3.08	22.29	3.65	23.91	3.89
	25	12.16	2.11	14.49	2.14	16.82	2.61	18.03	2.91	19.60	3.29	22.29	3.90	23.91	4.06
	27	12.16	2.26	14.49	2.29	16.82	2.79	18.03	3.19	19.60	3.52	22.29	4.18	23.91	4.23
	29	12.16	2.41	14.49	2.44	16.82	2.99	18.03	3.33	19.60	3.76	22.29	4.37	23.91	4.40
	31	12.16	2.58	14.49	2.61	16.82	3.19	18.03	3.56	19.60	4.01	22.29	4.54	23.91	4.58
	33	12.16	2.75	14.49	2.78	16.82	3.41	18.03	3.79	19.60	4.28	22.29	4.71	23.91	4.75
35	12.16	2.93	14.49	2.96	16.82	3.64	18.03	4.15	19.60	4.56	22.29	4.88	23.91	4.92	
37	12.16	3.13	14.49	3.15	16.82	3.88	18.03	4.34	19.60	4.86	22.29	5.06	23.91	5.09	
39	12.16	3.33	14.49	3.36	16.82	4.14	18.03	4.51	19.60	5.18	22.29	5.23	23.91	5.27	
41	12.16	3.45	14.49	3.52	16.82	4.29	18.03	4.67	19.60	5.20	22.29	5.36	23.91	5.40	
43	12.16	3.58	14.49	3.67	16.82	4.45	18.03	4.89	19.60	5.32	22.29	5.43	23.91	5.48	
45	12.16	3.74	14.49	3.86	16.82	4.64	18.03	5.20	19.60	5.46	22.29	5.49	23.91	5.55	
48	12.16	4.32	14.49	4.65	16.82	4.98	18.03	5.31	19.60	5.65	22.29	5.98	23.91	6.31	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 224T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
70%	-5	10.65	1.21	12.75	1.25	14.77	1.45	15.81	1.67	17.18	1.80	19.51	2.07	20.98	2.37
	-2	10.65	1.22	12.75	1.26	14.77	1.47	15.81	1.68	17.18	1.82	19.51	2.09	20.98	2.39
	0	10.65	1.24	12.75	1.28	14.77	1.49	15.81	1.69	17.18	1.84	19.51	2.11	20.98	2.41
	2	10.65	1.25	12.75	1.29	14.77	1.51	15.81	1.73	17.18	1.87	19.51	2.16	20.98	2.44
	4	10.65	1.27	12.75	1.31	14.77	1.54	15.81	1.76	17.18	1.90	19.51	2.19	20.98	2.48
	6	10.65	1.29	12.75	1.34	14.77	1.57	15.81	1.80	17.18	1.93	19.51	2.22	20.98	2.52
	8	10.65	1.31	12.75	1.37	14.77	1.60	15.81	1.83	17.18	1.96	19.51	2.26	20.98	2.55
	10	10.65	1.34	12.75	1.40	14.77	1.63	15.81	1.86	17.18	2.01	19.51	2.29	20.98	2.59
	12	10.65	1.37	12.75	1.43	14.77	1.66	15.81	1.89	17.18	2.05	19.51	2.34	20.98	2.63
	14	10.65	1.39	12.75	1.45	14.77	1.69	15.81	1.95	17.18	2.08	19.51	2.38	20.98	2.68
	16	10.65	1.42	12.75	1.48	14.77	1.73	15.81	1.96	17.18	2.12	19.51	2.43	20.98	2.73
	18	10.65	1.45	12.75	1.51	14.77	1.76	15.81	1.97	17.18	2.17	19.51	2.48	20.98	2.82
	20	10.65	1.48	12.75	1.55	14.77	1.80	15.81	2.09	17.18	2.25	19.51	2.66	20.98	2.95
	21	10.65	1.49	12.75	1.56	14.77	1.83	15.81	2.24	17.18	2.33	19.51	2.76	20.98	3.02
	23	10.65	1.60	12.75	1.62	14.77	1.97	15.81	2.36	17.18	2.50	19.51	2.96	20.98	3.15
	25	10.65	1.71	12.75	1.74	14.77	2.11	15.81	2.54	17.18	2.67	19.51	3.17	20.98	3.29
	27	10.65	1.83	12.75	1.86	14.77	2.26	15.81	2.72	17.18	2.85	19.51	3.39	20.98	3.43
	29	10.65	1.96	12.75	1.98	14.77	2.42	15.81	2.85	17.18	3.05	19.51	3.54	20.98	3.57
	31	10.65	2.09	12.75	2.12	14.77	2.59	15.81	3.04	17.18	3.25	19.51	3.68	20.98	3.71
	33	10.65	2.23	12.75	2.25	14.77	2.77	15.81	3.22	17.18	3.47	19.51	3.82	20.98	3.85
35	10.65	2.38	12.75	2.40	14.77	2.95	15.81	3.37	17.18	3.70	19.51	3.96	20.98	3.99	
37	10.65	2.54	12.75	2.56	14.77	3.15	15.81	3.52	17.18	3.94	19.51	4.10	20.98	4.13	
39	10.65	2.70	12.75	2.73	14.77	3.36	15.81	3.66	17.18	4.20	19.51	4.24	20.98	4.28	
41	10.65	2.80	12.75	2.85	14.77	3.48	15.81	3.79	17.18	4.22	19.51	4.35	20.98	4.38	
43	10.65	2.90	12.75	2.98	14.77	3.61	15.81	3.97	17.18	4.31	19.51	4.41	20.98	4.44	
45	10.65	3.04	12.75	3.13	14.77	3.76	15.81	4.22	17.18	4.43	19.51	4.79	20.98	5.00	
48	10.65	3.50	12.75	3.84	14.77	4.18	15.81	4.51	17.18	4.85	19.51	5.19	20.98	5.52	
60%	-5	9.08	0.97	10.85	1.06	12.62	1.17	13.51	1.49	14.66	1.63	16.70	1.81	17.93	2.08
	-2	9.08	0.99	10.85	1.07	12.62	1.18	13.51	1.52	14.66	1.66	16.70	1.84	17.93	2.09
	0	9.08	1.00	10.85	1.09	12.62	1.20	13.51	1.53	14.66	1.68	16.70	1.87	17.93	2.12
	2	9.08	1.01	10.85	1.10	12.62	1.22	13.51	1.56	14.66	1.70	16.70	1.90	17.93	2.15
	4	9.08	1.02	10.85	1.12	12.62	1.24	13.51	1.58	14.66	1.74	16.70	1.93	17.93	2.18
	6	9.08	1.04	10.85	1.14	12.62	1.26	13.51	1.62	14.66	1.77	16.70	1.97	17.93	2.23
	8	9.08	1.06	10.85	1.16	12.62	1.29	13.51	1.65	14.66	1.81	16.70	2.01	17.93	2.26
	10	9.08	1.08	10.85	1.18	12.62	1.32	13.51	1.70	14.66	1.84	16.70	2.05	17.93	2.26
	12	9.08	1.10	10.85	1.21	12.62	1.34	13.51	1.73	14.66	1.88	16.70	2.09	17.93	2.30
	14	9.08	1.12	10.85	1.23	12.62	1.37	13.51	1.76	14.66	1.91	16.70	2.12	17.93	2.33
	16	9.08	1.15	10.85	1.26	12.62	1.40	13.51	1.79	14.66	1.94	16.70	2.16	17.93	2.38
	18	9.08	1.17	10.85	1.29	12.62	1.42	13.51	1.82	14.66	1.98	16.70	2.20	17.93	2.42
	20	9.08	1.19	10.85	1.33	12.62	1.45	13.51	1.85	14.66	2.00	16.70	2.24	17.93	2.47
	21	9.08	1.20	10.85	1.39	12.62	1.48	13.51	1.99	14.66	2.03	16.70	2.27	17.93	2.52
	23	9.08	1.29	10.85	1.50	12.62	1.59	13.51	2.12	14.66	2.16	16.70	2.36	17.93	2.54
	25	9.08	1.38	10.85	1.61	12.62	1.70	13.51	2.24	14.66	2.30	16.70	2.51	17.93	2.71
	27	9.08	1.48	10.85	1.73	12.62	1.82	13.51	2.35	14.66	2.45	16.70	2.68	17.93	2.89
	29	9.08	1.58	10.85	1.86	12.62	1.95	13.51	2.45	14.66	2.61	16.70	2.86	17.93	3.08
	31	9.08	1.69	10.85	2.00	12.62	2.09	13.51	2.58	14.66	2.78	16.70	3.04	17.93	3.29
	33	9.08	1.80	10.85	2.14	12.62	2.23	13.51	2.69	14.66	2.95	16.70	3.23	17.93	3.50
35	9.08	1.92	10.85	2.29	12.62	2.38	13.51	2.72	14.66	3.13	16.70	3.44	17.93	3.74	
37	9.08	2.05	10.85	2.45	12.62	2.54	13.51	2.84	14.66	3.32	16.70	3.66	17.93	3.98	
39	9.08	2.18	10.85	2.62	12.62	2.71	13.51	2.95	14.66	3.45	16.70	3.89	17.93	4.23	
41	9.08	2.26	10.85	2.72	12.62	2.81	13.51	3.06	14.66	3.57	16.70	4.07	17.93	4.50	
43	9.08	2.34	10.85	2.78	12.62	2.91	13.51	3.20	14.66	3.74	16.70	4.24	17.93	4.71	
45	9.08	2.53	10.85	3.13	12.62	3.30	13.51	3.49	14.66	4.05	16.70	4.43	17.93	4.91	
48	9.08	2.91	10.85	3.26	12.62	3.61	13.51	3.97	14.66	4.32	16.70	4.67	17.93	5.03	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 224T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
50%	-5	7.64	0.81	9.13	0.88	10.58	0.97	11.31	1.33	12.27	1.38	13.95	1.57	15.03	1.69
	-2	7.64	0.82	9.13	0.89	10.58	0.98	11.31	1.36	12.27	1.40	13.95	1.59	15.03	1.71
	0	7.64	0.83	9.13	0.90	10.58	1.00	11.31	1.37	12.27	1.42	13.95	1.61	15.03	1.74
	2	7.64	0.84	9.13	0.91	10.58	1.01	11.31	1.37	12.27	1.44	13.95	1.62	15.03	1.77
	4	7.64	0.85	9.13	0.93	10.58	1.03	11.31	1.37	12.27	1.47	13.95	1.66	15.03	1.82
	6	7.64	0.86	9.13	0.94	10.58	1.05	11.31	1.38	12.27	1.50	13.95	1.69	15.03	1.87
	8	7.64	0.88	9.13	0.96	10.58	1.07	11.31	1.39	12.27	1.52	13.95	1.71	15.03	1.93
	10	7.64	0.90	9.13	0.98	10.58	1.09	11.31	1.38	12.27	1.56	13.95	1.76	15.03	1.96
	12	7.64	0.91	9.13	1.00	10.58	1.11	11.31	1.39	12.27	1.59	13.95	1.79	15.03	1.99
	14	7.64	0.93	9.13	1.02	10.58	1.13	11.31	1.39	12.27	1.62	13.95	1.82	15.03	2.03
	16	7.64	0.95	9.13	1.04	10.58	1.16	11.31	1.40	12.27	1.64	13.95	1.85	15.03	2.06
	18	7.64	0.97	9.13	1.07	10.58	1.18	11.31	1.40	12.27	1.67	13.95	1.88	15.03	2.10
	20	7.64	0.99	9.13	1.10	10.58	1.20	11.31	1.47	12.27	1.70	13.95	1.91	15.03	2.14
	21	7.64	1.00	9.13	1.15	10.58	1.22	11.31	1.54	12.27	1.72	13.95	1.94	15.03	2.16
	23	7.64	1.07	9.13	1.24	10.58	1.32	11.31	1.65	12.27	1.75	13.95	1.97	15.03	2.21
	25	7.64	1.14	9.13	1.34	10.58	1.41	11.31	1.75	12.27	1.81	13.95	2.07	15.03	2.36
	27	7.64	1.22	9.13	1.44	10.58	1.51	11.31	1.89	12.27	1.91	13.95	2.20	15.03	2.52
	29	7.64	1.31	9.13	1.54	10.58	1.62	11.31	1.95	12.27	2.04	13.95	2.34	15.03	2.68
	31	7.64	1.40	9.13	1.65	10.58	1.73	11.31	2.07	12.27	2.16	13.95	2.49	15.03	2.85
	33	7.64	1.49	9.13	1.77	10.58	1.85	11.31	2.19	12.27	2.30	13.95	2.65	15.03	3.03
35	7.64	1.59	9.13	1.90	10.58	1.97	11.31	2.25	12.27	2.43	13.95	2.81	15.03	3.22	
37	7.64	1.70	9.13	2.03	10.58	2.10	11.31	2.35	12.27	2.58	13.95	2.98	15.03	3.42	
39	7.64	1.81	9.13	2.17	10.58	2.24	11.31	2.44	12.27	2.73	13.95	3.16	15.03	3.63	
41	7.64	1.87	9.13	2.26	10.58	2.33	11.31	2.53	12.27	2.85	13.95	3.33	15.03	3.80	
43	7.64	1.94	9.13	2.30	10.58	2.41	11.31	2.70	12.27	2.93	13.95	3.50	15.03	3.97	
45	7.64	2.03	9.13	2.59	10.58	2.76	11.31	2.98	12.27	3.27	13.95	3.84	15.03	4.14	
48	7.64	2.39	9.13	2.72	10.58	3.06	11.31	3.40	12.27	3.74	13.95	4.07	15.03	4.41	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 260T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
130%	-5	23.55	4.15	28.63	4.65	32.29	5.02	33.22	5.45	35.53	5.81	36.51	6.32	36.79	6.36
	-2	23.55	4.15	28.63	4.75	32.29	5.02	33.50	5.48	35.53	5.81	36.51	6.40	36.79	6.42
	0	23.55	4.22	28.63	4.84	32.29	5.22	33.50	5.79	35.53	6.15	36.51	6.48	36.79	6.51
	2	23.55	4.30	28.63	4.85	32.29	5.41	33.50	6.13	35.53	6.22	36.51	6.53	36.79	6.61
	4	23.55	4.39	28.63	4.95	32.29	5.61	33.50	6.16	35.53	6.30	36.51	6.52	36.79	6.73
	6	23.55	4.48	28.63	5.06	32.29	5.83	33.50	6.21	34.92	6.50	35.45	6.52	36.79	6.78
	8	23.55	4.59	28.63	5.19	32.29	6.15	33.50	6.52	34.58	6.71	35.06	6.55	36.39	6.85
	10	23.55	4.68	28.63	5.31	32.29	6.39	33.50	6.75	34.24	6.76	34.96	6.76	35.95	7.05
	12	23.55	4.76	28.63	5.42	32.29	6.53	33.15	6.83	33.76	6.94	34.67	6.88	35.57	7.09
	14	23.55	4.86	28.63	5.53	32.10	6.55	32.87	6.86	33.34	7.00	34.42	7.00	35.10	7.25
	16	23.55	4.94	28.63	5.65	31.72	6.74	32.30	7.00	32.92	7.14	34.18	7.16	34.78	7.37
	18	23.55	5.04	28.63	5.77	31.25	6.84	31.78	7.09	32.49	7.34	33.93	7.41	34.45	7.47
	20	23.55	5.15	28.63	6.17	30.92	7.20	31.30	7.44	32.07	7.69	33.69	7.76	34.13	7.84
	21	23.55	5.28	28.63	6.40	30.78	7.37	31.39	7.62	31.65	7.87	33.44	7.95	33.80	8.02
	23	23.55	5.67	28.63	6.90	30.21	7.73	30.70	7.98	31.23	8.23	33.20	8.31	33.48	8.39
	25	23.55	6.05	28.63	7.42	29.73	8.09	30.25	8.33	30.81	8.60	32.95	8.68	33.15	8.76
	27	23.55	6.46	28.63	7.96	29.35	8.44	29.82	8.87	30.38	8.95	32.71	9.05	32.83	9.14
	29	23.55	6.90	28.63	8.54	28.88	8.80	29.40	9.35	29.96	9.32	32.46	9.42	32.50	9.51
	31	23.55	7.36	27.65	9.06	28.46	9.17	29.02	9.81	29.54	9.68	32.22	9.79	32.18	9.90
	33	23.55	7.84	27.17	9.41	28.03	9.52	28.52	10.35	29.12	10.05	31.97	10.16	31.85	10.27
35	23.55	8.36	26.70	9.77	27.61	9.89	28.03	10.36	28.70	10.42	31.73	10.54	31.52	10.65	
37	23.55	8.90	26.32	10.21	27.18	10.26	27.69	10.52	28.27	10.80	31.48	10.92	31.20	11.05	
39	23.55	9.47	25.85	10.61	26.70	10.66	27.26	10.89	28.02	11.17	31.24	11.29	30.87	11.43	
41	23.55	9.97	25.58	11.02	26.42	11.06	26.83	11.26	27.27	11.48	28.13	11.60	30.55	11.74	
43	23.55	10.36	25.40	11.42	26.28	11.78	26.39	11.94	26.99	12.07	27.61	12.17	30.22	12.28	
45	23.55	10.76	25.24	11.93	26.00	12.28	25.96	12.52	26.60	12.64	26.86	12.72	29.90	12.99	
48	23.55	12.19	25.08	12.50	25.72	12.81	25.52	13.12	26.21	13.43	26.12	13.74	29.57	14.05	
120%	-5	22.02	4.04	25.55	4.38	29.72	5.07	32.33	5.69	33.87	6.07	34.62	6.59	35.38	6.77
	-2	22.02	4.08	25.55	4.43	29.72	5.12	32.33	5.73	33.87	6.14	34.62	6.64	35.38	6.79
	0	22.02	4.12	25.55	4.46	29.72	5.19	32.33	5.75	33.87	6.20	34.62	6.69	35.38	6.81
	2	22.02	4.13	25.55	4.52	29.72	5.23	32.33	5.81	33.87	6.23	34.62	6.74	35.38	6.82
	4	22.02	4.17	25.55	4.58	29.72	5.32	32.33	5.87	33.87	6.32	34.62	6.75	35.38	6.84
	6	22.02	4.22	25.55	4.62	29.72	5.39	32.33	5.94	33.87	6.39	34.62	6.81	35.38	6.86
	8	22.02	4.26	25.55	4.67	29.72	5.47	32.33	6.02	33.87	6.46	34.62	6.83	35.38	6.90
	10	22.02	4.31	25.55	4.74	29.72	5.53	32.33	6.14	33.87	6.47	34.62	6.85	35.38	6.93
	12	22.02	4.39	25.55	4.84	29.72	5.65	32.33	6.27	33.39	6.50	34.15	6.81	34.91	6.97
	14	22.02	4.47	25.55	4.95	29.72	5.78	32.33	6.40	32.92	6.54	33.77	6.92	34.53	7.06
	16	22.02	4.56	25.55	5.06	29.72	5.90	32.27	6.50	32.54	6.64	33.30	7.04	34.05	7.17
	18	22.02	4.64	25.55	5.17	29.72	6.12	31.63	6.69	32.07	6.82	32.83	7.21	33.68	7.27
	20	22.02	4.73	25.55	5.39	29.72	6.65	31.30	7.05	31.69	7.18	32.45	7.56	33.20	7.63
	21	22.02	4.78	25.55	5.60	29.72	6.91	30.75	7.49	31.40	7.36	32.26	7.74	33.01	7.83
	23	22.02	5.11	25.55	6.04	29.72	7.45	30.10	8.09	31.02	7.72	31.78	8.12	32.54	8.19
	25	22.02	5.45	25.55	6.49	29.25	7.80	29.73	8.43	30.55	8.08	31.40	8.48	32.16	8.56
	27	22.02	5.83	25.55	6.98	28.87	8.15	29.27	8.98	30.17	8.45	30.93	8.85	31.69	8.93
	29	22.02	6.21	25.55	7.49	28.50	8.51	28.77	9.37	29.70	8.81	30.46	9.22	31.31	9.30
	31	22.02	6.63	25.55	8.03	27.95	8.88	28.40	9.83	29.32	9.19	30.08	9.59	30.84	9.69
	33	22.02	7.05	25.55	8.59	27.54	9.24	27.95	10.24	28.85	9.54	29.61	9.97	30.36	10.06
35	22.02	7.51	25.55	9.20	27.10	9.60	27.45	10.38	28.47	9.92	29.23	10.34	29.98	10.45	
37	22.02	7.99	25.55	9.83	26.69	9.97	27.10	10.44	27.72	10.50	28.75	10.71	29.51	10.84	
39	22.02	8.50	25.46	10.41	26.22	10.33	26.62	10.50	27.25	10.66	28.38	11.10	29.13	11.21	
41	22.02	8.97	25.26	10.49	26.01	10.70	26.39	11.00	26.77	11.04	27.62	11.47	28.31	11.59	
43	22.02	9.37	25.12	10.57	25.81	11.00	26.19	11.24	26.56	11.41	27.14	11.84	27.88	11.97	
45	22.02	9.76	24.98	10.67	25.56	11.21	25.91	11.64	26.33	11.78	26.59	12.22	27.69	12.35	
48	22.02	11.19	24.83	11.51	25.34	11.82	25.68	12.13	26.12	12.44	26.09	12.75	27.34	13.06	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 260T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
110%	-5	20.32	3.50	23.48	3.95	28.41	4.69	29.33	5.27	31.59	5.80	33.96	6.03	34.72	6.43
	-2	20.32	3.57	23.48	4.00	28.41	4.73	29.33	5.33	31.59	5.85	33.96	6.09	34.72	6.46
	0	20.32	3.60	23.48	4.03	28.41	4.77	29.33	5.37	31.59	5.91	33.96	6.16	34.72	6.54
	2	20.32	3.68	23.48	4.07	28.41	4.85	29.33	5.43	31.59	5.98	33.96	6.25	34.72	6.62
	4	20.32	3.76	23.48	4.12	28.41	4.91	29.33	5.50	31.59	6.07	33.96	6.34	34.72	6.68
	6	20.32	3.79	23.48	4.18	28.41	4.96	29.33	5.59	31.59	6.14	33.96	6.41	34.72	6.79
	8	20.32	3.83	23.48	4.25	28.41	5.02	29.33	5.65	31.59	6.22	33.96	6.45	34.72	6.86
	10	20.32	3.87	23.48	4.31	28.41	5.10	29.33	5.75	31.59	6.32	33.96	6.50	34.72	6.92
	12	20.32	3.95	23.48	4.41	28.41	5.21	29.33	5.88	31.59	6.45	33.59	6.60	34.25	7.01
	14	20.32	4.02	23.48	4.49	28.41	5.32	29.33	5.99	31.59	6.57	33.11	6.65	33.87	7.06
	16	20.32	4.09	23.48	4.59	28.41	5.43	29.33	6.11	31.59	6.70	32.73	6.73	33.39	7.13
	18	20.32	4.17	23.48	4.68	28.41	5.55	29.33	6.29	31.59	7.03	32.26	7.09	33.02	7.36
	20	20.32	4.25	23.48	4.79	28.41	5.91	29.33	6.78	31.12	7.39	31.88	7.44	32.54	7.72
	21	20.32	4.30	23.48	4.94	28.41	6.14	29.33	7.31	30.93	7.57	31.60	7.62	32.35	7.89
	23	20.32	4.50	23.48	5.32	28.41	6.62	29.33	7.78	30.46	7.91	31.22	7.99	31.88	8.26
	25	20.32	4.80	23.48	5.72	28.41	7.11	29.33	8.30	30.08	8.26	30.74	8.35	31.50	8.62
	27	20.32	5.12	23.48	6.14	28.41	7.64	28.96	8.71	29.61	8.62	30.37	8.70	31.03	8.99
	29	20.32	5.46	23.48	6.58	28.41	8.20	28.42	9.21	29.23	8.99	29.89	9.07	30.65	9.36
	31	20.32	5.81	23.48	7.05	27.87	8.79	27.89	9.72	28.76	9.35	29.51	9.43	30.18	9.73
	33	20.32	6.18	23.48	7.54	27.33	9.30	27.73	10.10	28.38	9.70	29.04	9.80	29.80	10.10
35	20.32	6.58	23.48	8.06	26.88	9.65	26.99	10.22	27.90	10.07	28.57	10.17	29.33	10.47	
37	20.32	7.21	23.48	8.61	26.23	10.02	26.68	10.27	27.43	10.43	28.19	10.54	28.85	10.84	
39	20.32	7.82	23.48	9.20	25.75	10.38	26.19	10.64	26.96	10.80	27.71	10.91	28.47	11.22	
41	20.32	8.43	23.48	9.27	25.28	10.46	25.93	10.72	26.51	10.87	26.83	11.03	27.63	11.30	
43	20.32	9.05	23.48	9.40	24.81	10.53	25.65	10.79	26.07	10.95	26.62	11.32	27.22	11.53	
45	20.32	9.56	23.48	9.73	24.34	10.75	25.19	11.02	25.62	11.17	25.91	11.57	26.61	11.91	
48	20.32	10.97	23.48	11.28	23.87	11.59	24.85	11.89	25.18	12.20	25.61	12.51	26.03	12.81	
100%	-5	18.24	3.59	21.41	3.92	25.64	4.32	26.00	5.07	28.19	4.95	32.41	5.48	33.39	6.04
	-2	18.24	3.64	21.41	3.97	25.64	4.41	26.00	5.11	28.19	5.02	32.41	5.55	33.39	6.08
	0	18.24	3.68	21.41	4.02	25.64	4.48	26.00	5.19	28.19	5.07	32.41	5.65	33.39	6.15
	2	18.24	3.74	21.41	4.07	25.64	4.58	26.00	5.23	28.19	5.13	32.41	5.74	33.39	6.25
	4	18.24	3.78	21.41	4.14	25.64	4.64	26.00	5.31	28.19	5.20	32.41	5.80	33.39	6.33
	6	18.24	3.86	21.41	4.20	25.64	4.72	26.00	5.42	28.19	5.28	32.41	5.89	33.39	6.43
	8	18.24	3.92	21.41	4.29	25.64	4.81	26.00	5.52	28.19	5.37	32.41	5.99	33.39	6.54
	10	18.24	3.99	21.41	4.36	25.64	4.88	26.00	5.61	28.19	5.48	32.41	6.10	33.39	6.63
	12	18.24	4.08	21.41	4.46	25.64	5.07	26.00	5.72	28.19	5.59	32.41	6.22	32.93	6.69
	14	18.24	4.16	21.41	4.55	25.64	5.31	26.00	6.08	28.19	5.69	32.41	6.36	32.55	6.77
	16	18.24	4.24	21.41	4.66	25.64	5.43	26.00	6.24	28.19	5.82	31.44	6.44	32.09	6.85
	18	18.24	4.32	21.41	4.76	25.64	5.64	26.00	6.48	28.19	5.94	31.07	6.67	31.72	7.02
	20	18.24	4.41	21.41	4.92	25.64	6.11	26.00	6.92	28.19	6.38	30.60	7.01	31.25	7.38
	21	18.24	4.45	21.41	5.12	25.64	6.55	26.00	7.34	28.19	6.61	30.42	7.18	31.07	7.55
	23	18.24	4.76	21.41	5.53	25.64	7.04	26.00	7.85	28.19	7.11	30.05	7.54	30.60	7.90
	25	18.24	5.10	21.41	5.96	25.64	7.60	26.00	8.24	28.19	7.64	29.59	7.89	30.23	8.26
	27	18.24	5.45	21.41	6.41	25.64	8.05	26.00	8.74	28.19	8.20	29.12	8.24	29.77	8.62
	29	18.24	5.83	21.41	6.88	25.64	8.65	26.00	9.00	28.10	8.72	28.75	8.91	29.40	8.97
	31	18.24	6.24	21.41	7.38	25.64	9.25	26.00	9.16	27.73	9.08	28.29	9.23	28.93	9.34
	33	18.24	6.66	21.41	7.91	25.64	9.69	26.00	9.42	27.26	9.43	27.91	9.57	28.56	9.70
35	18.24	7.09	21.41	8.48	25.64	9.89	26.00	10.04	26.80	10.06	27.45	10.16	28.10	10.26	
37	18.24	7.57	21.41	9.07	25.64	9.96	25.66	10.50	26.53	10.65	27.08	10.78	27.64	10.92	
39	18.24	8.05	21.41	9.69	25.64	10.14	25.34	10.90	26.17	11.09	26.61	11.31	27.26	11.40	
41	18.24	8.35	21.41	10.07	25.64	10.29	25.01	11.30	25.80	11.53	25.64	11.64	26.87	11.76	
43	18.24	8.66	21.41	10.27	25.64	10.63	24.93	11.83	25.44	12.02	25.79	12.23	25.89	12.32	
45	18.24	9.06	21.41	10.56	25.64	11.30	24.76	12.58	25.08	13.28	25.57	13.95	25.47	14.21	
48	18.24	10.44	21.41	11.25	25.64	12.05	24.48	13.56	24.72	14.36	24.99	15.16	25.09	15.96	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 260T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90%	-5	15.82	2.88	18.89	3.13	21.96	3.45	23.45	4.05	25.41	3.96	28.95	4.39	31.08	4.84
	-2	15.82	2.92	18.89	3.17	21.96	3.52	23.45	4.09	25.41	4.02	28.95	4.44	31.08	4.87
	0	15.82	2.95	18.89	3.21	21.96	3.58	23.45	4.15	25.41	4.06	28.95	4.52	31.08	4.92
	2	15.82	2.99	18.89	3.25	21.96	3.66	23.45	4.19	25.41	4.10	28.95	4.59	31.08	5.00
	4	15.82	3.02	18.89	3.31	21.96	3.71	23.45	4.25	25.41	4.16	28.95	4.64	31.08	5.06
	6	15.82	3.08	18.89	3.36	21.96	3.78	23.45	4.34	25.41	4.22	28.95	4.71	31.08	5.14
	8	15.82	3.13	18.89	3.43	21.96	3.85	23.45	4.42	25.41	4.30	28.95	4.80	31.08	5.23
	10	15.82	3.20	18.89	3.49	21.96	3.91	23.45	4.49	25.41	4.38	28.95	4.88	31.08	5.31
	12	15.82	3.26	18.89	3.57	21.96	4.05	23.45	4.58	25.41	4.47	28.95	4.98	31.08	5.35
	14	15.82	3.33	18.89	3.64	21.96	4.24	23.45	4.87	25.41	4.55	28.95	5.09	31.08	5.42
	16	15.82	3.39	18.89	3.73	21.96	4.35	23.45	4.99	25.41	4.65	28.95	5.15	31.08	5.48
	18	15.82	3.45	18.89	3.80	21.96	4.51	23.45	5.18	25.41	4.75	28.95	5.34	31.08	5.62
	20	15.82	3.53	18.89	3.93	21.96	4.89	23.45	5.54	25.41	5.11	28.95	5.61	31.08	5.90
	21	15.82	3.56	18.89	4.10	21.96	5.24	23.45	5.88	25.41	5.29	28.95	5.75	31.08	6.04
	23	15.82	3.81	18.89	4.42	21.96	5.63	23.45	6.28	25.41	5.69	28.95	6.03	31.08	6.32
	25	15.82	4.08	18.89	4.77	21.96	6.08	23.45	6.60	25.41	6.11	28.95	6.31	31.08	6.60
	27	15.82	4.36	18.89	5.13	21.96	6.44	23.45	6.99	25.41	6.56	28.95	6.59	31.08	6.90
	29	15.82	4.67	18.89	5.50	21.96	6.92	23.45	7.20	25.41	6.98	28.95	7.12	31.08	7.18
	31	15.82	4.99	18.89	5.90	21.96	7.40	23.45	7.33	25.41	7.26	28.95	7.38	31.08	7.47
	33	15.82	5.33	18.89	6.33	21.96	7.75	23.45	7.54	25.41	7.54	28.95	7.65	31.08	7.76
35	15.82	5.67	18.89	6.78	21.96	7.91	23.45	8.03	25.41	8.04	28.95	8.13	31.08	8.21	
37	15.82	6.05	18.89	7.26	21.96	7.97	23.45	8.39	25.41	8.52	28.95	8.62	31.08	8.74	
39	15.82	6.44	18.89	7.76	21.96	8.11	23.45	8.53	25.41	8.87	28.95	9.05	31.08	9.12	
41	15.82	6.68	18.89	8.06	21.96	8.23	23.45	8.69	25.41	9.22	28.95	9.31	31.08	9.41	
43	15.82	6.92	18.89	8.22	21.96	8.51	23.45	8.85	25.41	9.62	28.95	9.78	31.08	9.86	
45	15.82	7.25	18.89	8.44	21.96	9.04	23.45	9.01	25.41	9.82	28.95	10.19	31.08	10.41	
48	15.82	8.35	18.89	8.76	21.96	9.16	23.45	9.56	25.41	9.96	28.95	10.36	31.08	10.76	
80%	-5	14.11	2.20	16.82	2.28	19.53	2.65	20.93	2.47	22.75	3.29	25.88	3.78	27.75	4.33
	-2	14.11	2.23	16.82	2.30	19.53	2.68	20.93	2.48	22.75	3.33	25.88	3.82	27.75	4.37
	0	14.11	2.26	16.82	2.33	19.53	2.73	20.93	2.53	22.75	3.37	25.88	3.86	27.75	4.40
	2	14.11	2.29	16.82	2.36	19.53	2.76	20.93	2.64	22.75	3.42	25.88	3.94	27.75	4.47
	4	14.11	2.31	16.82	2.40	19.53	2.81	20.93	2.65	22.75	3.47	25.88	4.00	27.75	4.53
	6	14.11	2.36	16.82	2.45	19.53	2.86	20.93	2.72	22.75	3.53	25.88	4.06	27.75	4.61
	8	14.11	2.40	16.82	2.50	19.53	2.92	20.93	2.82	22.75	3.59	25.88	4.14	27.75	4.65
	10	14.11	2.45	16.82	2.56	19.53	2.98	20.93	2.86	22.75	3.67	25.88	4.19	27.75	4.73
	12	14.11	2.50	16.82	2.61	19.53	3.04	20.93	2.93	22.75	3.74	25.88	4.27	27.75	4.82
	14	14.11	2.55	16.82	2.65	19.53	3.10	20.93	2.99	22.75	3.81	25.88	4.35	27.75	4.90
	16	14.11	2.60	16.82	2.70	19.53	3.17	20.93	3.06	22.75	3.88	25.88	4.44	27.75	4.99
	18	14.11	2.65	16.82	2.76	19.53	3.22	20.93	3.17	22.75	3.96	25.88	4.53	27.75	5.15
	20	14.11	2.71	16.82	2.83	19.53	3.29	20.93	3.45	22.75	4.11	25.88	4.86	27.75	5.39
	21	14.11	2.73	16.82	2.85	19.53	3.35	20.93	3.70	22.75	4.25	25.88	5.04	27.75	5.52
	23	14.11	2.92	16.82	2.96	19.53	3.60	20.93	4.02	22.75	4.56	25.88	5.41	27.75	5.77
	25	14.11	3.13	16.82	3.18	19.53	3.86	20.93	4.32	22.75	4.87	25.88	5.79	27.75	6.02
	27	14.11	3.34	16.82	3.39	19.53	4.14	20.93	4.73	22.75	5.21	25.88	6.20	27.75	6.27
	29	14.11	3.58	16.82	3.62	19.53	4.43	20.93	4.93	22.75	5.57	25.88	6.48	27.75	6.53
	31	14.11	3.83	16.82	3.87	19.53	4.73	20.93	5.27	22.75	5.94	25.88	6.73	27.75	6.79
	33	14.11	4.08	16.82	4.12	19.53	5.06	20.93	5.62	22.75	6.34	25.88	6.99	27.75	7.04
35	14.11	4.35	16.82	4.39	19.53	5.40	20.93	6.16	22.75	6.76	25.88	7.24	27.75	7.30	
37	14.11	4.64	16.82	4.67	19.53	5.76	20.93	6.44	22.75	7.20	25.88	7.50	27.75	7.55	
39	14.11	4.94	16.82	4.98	19.53	6.14	20.93	6.69	22.75	7.68	25.88	7.76	27.75	7.82	
41	14.11	5.12	16.82	5.22	19.53	6.37	20.93	6.93	22.75	7.72	25.88	7.96	27.75	8.00	
43	14.11	5.31	16.82	5.45	19.53	6.60	20.93	7.26	22.75	7.88	25.88	8.06	27.75	8.13	
45	14.11	5.55	16.82	5.72	19.53	6.88	20.93	7.72	22.75	8.10	25.88	8.14	27.75	8.23	
48	14.11	6.40	16.82	6.90	19.53	7.39	20.93	7.88	22.75	8.37	25.88	8.87	27.75	9.36	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 260T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
70%	-5	12.36	1.79	14.80	1.85	17.14	2.15	18.36	2.48	19.94	2.67	22.65	3.07	24.35	3.51
	-2	12.36	1.81	14.80	1.87	17.14	2.18	18.36	2.49	19.94	2.70	22.65	3.10	24.35	3.55
	0	12.36	1.83	14.80	1.89	17.14	2.21	18.36	2.50	19.94	2.73	22.65	3.13	24.35	3.57
	2	12.36	1.86	14.80	1.92	17.14	2.24	18.36	2.57	19.94	2.78	22.65	3.20	24.35	3.63
	4	12.36	1.88	14.80	1.95	17.14	2.28	18.36	2.61	19.94	2.81	22.65	3.25	24.35	3.68
	6	12.36	1.92	14.80	1.99	17.14	2.32	18.36	2.66	19.94	2.86	22.65	3.30	24.35	3.74
	8	12.36	1.95	14.80	2.03	17.14	2.37	18.36	2.71	19.94	2.91	22.65	3.36	24.35	3.78
	10	12.36	1.99	14.80	2.07	17.14	2.42	18.36	2.76	19.94	2.98	22.65	3.40	24.35	3.84
	12	12.36	2.03	14.80	2.11	17.14	2.47	18.36	2.81	19.94	3.03	22.65	3.47	24.35	3.91
	14	12.36	2.07	14.80	2.15	17.14	2.51	18.36	2.90	19.94	3.09	22.65	3.53	24.35	3.98
	16	12.36	2.11	14.80	2.19	17.14	2.57	18.36	2.91	19.94	3.15	22.65	3.60	24.35	4.05
	18	12.36	2.15	14.80	2.24	17.14	2.61	18.36	2.91	19.94	3.21	22.65	3.67	24.35	4.17
	20	12.36	2.20	14.80	2.29	17.14	2.67	18.36	3.11	19.94	3.33	22.65	3.95	24.35	4.37
	21	12.36	2.22	14.80	2.31	17.14	2.72	18.36	3.33	19.94	3.45	22.65	4.09	24.35	4.47
	23	12.36	2.37	14.80	2.41	17.14	2.92	18.36	3.51	19.94	3.70	22.65	4.39	24.35	4.68
	25	12.36	2.54	14.80	2.58	17.14	3.13	18.36	3.77	19.94	3.95	22.65	4.69	24.35	4.88
	27	12.36	2.71	14.80	2.75	17.14	3.36	18.36	4.03	19.94	4.23	22.65	5.03	24.35	5.09
	29	12.36	2.90	14.80	2.94	17.14	3.59	18.36	4.22	19.94	4.52	22.65	5.25	24.35	5.29
	31	12.36	3.10	14.80	3.14	17.14	3.84	18.36	4.50	19.94	4.82	22.65	5.46	24.35	5.51
	33	12.36	3.31	14.80	3.34	17.14	4.10	18.36	4.77	19.94	5.14	22.65	5.67	24.35	5.71
35	12.36	3.53	14.80	3.56	17.14	4.38	18.36	4.99	19.94	5.48	22.65	5.88	24.35	5.92	
37	12.36	3.76	14.80	3.79	17.14	4.67	18.36	5.22	19.94	5.84	22.65	6.08	24.35	6.13	
39	12.36	4.01	14.80	4.04	17.14	4.98	18.36	5.42	19.94	6.23	22.65	6.29	24.35	6.34	
41	12.36	4.16	14.80	4.23	17.14	5.17	18.36	5.62	19.94	6.26	22.65	6.45	24.35	6.49	
43	12.36	4.31	14.80	4.42	17.14	5.35	18.36	5.89	19.94	6.39	22.65	6.54	24.35	6.59	
45	12.36	4.50	14.80	4.64	17.14	5.58	18.36	6.26	19.94	6.57	22.65	7.11	24.35	7.41	
48	12.36	5.19	14.80	5.69	17.14	6.19	18.36	6.69	19.94	7.19	22.65	7.69	24.35	8.19	
60%	-5	10.55	1.44	12.60	1.57	14.65	1.73	15.68	2.22	17.02	2.42	19.38	2.69	20.81	3.08
	-2	10.55	1.46	12.60	1.59	14.65	1.76	15.68	2.25	17.02	2.46	19.38	2.73	20.81	3.10
	0	10.55	1.48	12.60	1.61	14.65	1.78	15.68	2.28	17.02	2.49	19.38	2.77	20.81	3.14
	2	10.55	1.50	12.60	1.63	14.65	1.80	15.68	2.32	17.02	2.53	19.38	2.82	20.81	3.18
	4	10.55	1.51	12.60	1.66	14.65	1.84	15.68	2.35	17.02	2.58	19.38	2.87	20.81	3.23
	6	10.55	1.55	12.60	1.68	14.65	1.87	15.68	2.40	17.02	2.63	19.38	2.93	20.81	3.30
	8	10.55	1.57	12.60	1.72	14.65	1.91	15.68	2.45	17.02	2.68	19.38	2.98	20.81	3.36
	10	10.55	1.60	12.60	1.75	14.65	1.95	15.68	2.51	17.02	2.73	19.38	3.04	20.81	3.35
	12	10.55	1.63	12.60	1.79	14.65	1.99	15.68	2.56	17.02	2.78	19.38	3.09	20.81	3.40
	14	10.55	1.67	12.60	1.83	14.65	2.03	15.68	2.60	17.02	2.83	19.38	3.15	20.81	3.46
	16	10.55	1.70	12.60	1.87	14.65	2.07	15.68	2.65	17.02	2.88	19.38	3.20	20.81	3.53
	18	10.55	1.73	12.60	1.91	14.65	2.11	15.68	2.69	17.02	2.94	19.38	3.26	20.81	3.59
	20	10.55	1.77	12.60	1.97	14.65	2.15	15.68	2.75	17.02	2.96	19.38	3.33	20.81	3.66
	21	10.55	1.79	12.60	2.05	14.65	2.19	15.68	2.95	17.02	3.02	19.38	3.36	20.81	3.74
	23	10.55	1.91	12.60	2.22	14.65	2.36	15.68	3.15	17.02	3.20	19.38	3.49	20.81	3.77
	25	10.55	2.05	12.60	2.39	14.65	2.53	15.68	3.32	17.02	3.42	19.38	3.73	20.81	4.02
	27	10.55	2.19	12.60	2.57	14.65	2.71	15.68	3.48	17.02	3.64	19.38	3.97	20.81	4.28
	29	10.55	2.34	12.60	2.76	14.65	2.90	15.68	3.63	17.02	3.87	19.38	4.24	20.81	4.57
	31	10.55	2.50	12.60	2.96	14.65	3.09	15.68	3.83	17.02	4.12	19.38	4.51	20.81	4.88
	33	10.55	2.67	12.60	3.17	14.65	3.31	15.68	4.00	17.02	4.37	19.38	4.80	20.81	5.20
35	10.55	2.85	12.60	3.40	14.65	3.53	15.68	4.03	17.02	4.64	19.38	5.11	20.81	5.54	
37	10.55	3.04	12.60	3.64	14.65	3.77	15.68	4.21	17.02	4.93	19.38	5.43	20.81	5.90	
39	10.55	3.23	12.60	3.89	14.65	4.02	15.68	4.37	17.02	5.11	19.38	5.76	20.81	6.28	
41	10.55	3.35	12.60	4.04	14.65	4.17	15.68	4.53	17.02	5.29	19.38	6.04	20.81	6.68	
43	10.55	3.47	12.60	4.12	14.65	4.32	15.68	4.75	17.02	5.55	19.38	6.29	20.81	6.98	
45	10.55	3.75	12.60	4.64	14.65	4.90	15.68	5.17	17.02	6.00	19.38	6.57	20.81	7.28	
48	10.55	4.31	12.60	4.83	14.65	5.36	15.68	5.88	17.02	6.40	19.38	6.93	20.81	7.45	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 260T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
50%	-5	8.86	1.19	10.60	1.30	12.29	1.44	13.13	1.97	14.24	2.04	16.19	2.32	17.44	2.50
	-2	8.86	1.21	10.60	1.32	12.29	1.46	13.13	2.02	14.24	2.08	16.19	2.35	17.44	2.54
	0	8.86	1.22	10.60	1.33	12.29	1.48	13.13	2.02	14.24	2.10	16.19	2.39	17.44	2.58
	2	8.86	1.24	10.60	1.35	12.29	1.50	13.13	2.03	14.24	2.14	16.19	2.40	17.44	2.63
	4	8.86	1.25	10.60	1.37	12.29	1.52	13.13	2.04	14.24	2.18	16.19	2.46	17.44	2.70
	6	8.86	1.28	10.60	1.39	12.29	1.55	13.13	2.05	14.24	2.22	16.19	2.50	17.44	2.78
	8	8.86	1.30	10.60	1.42	12.29	1.59	13.13	2.06	14.24	2.25	16.19	2.54	17.44	2.87
	10	8.86	1.33	10.60	1.45	12.29	1.62	13.13	2.04	14.24	2.32	16.19	2.61	17.44	2.91
	12	8.86	1.35	10.60	1.48	12.29	1.65	13.13	2.06	14.24	2.36	16.19	2.65	17.44	2.95
	14	8.86	1.38	10.60	1.51	12.29	1.68	13.13	2.07	14.24	2.40	16.19	2.70	17.44	3.01
	16	8.86	1.41	10.60	1.55	12.29	1.72	13.13	2.07	14.24	2.43	16.19	2.75	17.44	3.06
	18	8.86	1.44	10.60	1.58	12.29	1.75	13.13	2.08	14.24	2.48	16.19	2.79	17.44	3.12
	20	8.86	1.47	10.60	1.63	12.29	1.78	13.13	2.18	14.24	2.53	16.19	2.84	17.44	3.18
	21	8.86	1.48	10.60	1.70	12.29	1.82	13.13	2.29	14.24	2.55	16.19	2.87	17.44	3.21
	23	8.86	1.58	10.60	1.84	12.29	1.95	13.13	2.44	14.24	2.60	16.19	2.92	17.44	3.28
	25	8.86	1.70	10.60	1.98	12.29	2.09	13.13	2.60	14.24	2.68	16.19	3.07	17.44	3.50
	27	8.86	1.81	10.60	2.13	12.29	2.24	13.13	2.80	14.24	2.84	16.19	3.27	17.44	3.73
	29	8.86	1.94	10.60	2.29	12.29	2.40	13.13	2.89	14.24	3.02	16.19	3.48	17.44	3.97
	31	8.86	2.07	10.60	2.45	12.29	2.56	13.13	3.08	14.24	3.21	16.19	3.70	17.44	4.23
	33	8.86	2.21	10.60	2.63	12.29	2.74	13.13	3.24	14.24	3.41	16.19	3.93	17.44	4.50
35	8.86	2.36	10.60	2.82	12.29	2.93	13.13	3.34	14.24	3.60	16.19	4.17	17.44	4.77	
37	8.86	2.51	10.60	3.02	12.29	3.12	13.13	3.49	14.24	3.82	16.19	4.43	17.44	5.08	
39	8.86	2.68	10.60	3.22	12.29	3.33	13.13	3.62	14.24	4.06	16.19	4.69	17.44	5.39	
41	8.86	2.78	10.60	3.35	12.29	3.45	13.13	3.75	14.24	4.23	16.19	4.94	17.44	5.64	
43	8.86	2.88	10.60	3.41	12.29	3.58	13.13	4.00	14.24	4.34	16.19	5.19	17.44	5.89	
45	8.86	3.01	10.60	3.84	12.29	4.09	13.13	4.42	14.24	4.85	16.19	5.69	17.44	6.14	
48	8.86	3.54	10.60	4.04	12.29	4.54	13.13	5.04	14.24	5.54	16.19	6.04	17.44	6.54	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 280T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
90%	-5	17.34	3.50	20.71	3.82	24.07	4.21	25.71	4.94	27.85	4.82	31.73	5.34	34.07	5.89
	-2	17.34	3.55	20.71	3.86	24.07	4.29	25.71	4.98	27.85	4.89	31.73	5.41	34.07	5.93
	0	17.34	3.59	20.71	3.91	24.07	4.36	25.71	5.05	27.85	4.94	31.73	5.51	34.07	6.00
	2	17.34	3.64	20.71	3.96	24.07	4.46	25.71	5.10	27.85	5.00	31.73	5.60	34.07	6.10
	4	17.34	3.68	20.71	4.03	24.07	4.52	25.71	5.17	27.85	5.07	31.73	5.66	34.07	6.16
	6	17.34	3.76	20.71	4.09	24.07	4.60	25.71	5.29	27.85	5.15	31.73	5.74	34.07	6.26
	8	17.34	3.82	20.71	4.18	24.07	4.68	25.71	5.38	27.85	5.23	31.73	5.84	34.07	6.37
	10	17.34	3.89	20.71	4.25	24.07	4.76	25.71	5.46	27.85	5.34	31.73	5.95	34.07	6.46
	12	17.34	3.97	20.71	4.34	24.07	4.94	25.71	5.57	27.85	5.44	31.73	6.06	34.07	6.52
	14	17.34	4.05	20.71	4.44	24.07	5.17	25.71	5.93	27.85	5.55	31.73	6.20	34.07	6.60
	16	17.34	4.13	20.71	4.54	24.07	5.30	25.71	6.08	27.85	5.67	31.73	6.28	34.07	6.67
	18	17.34	4.21	20.71	4.63	24.07	5.50	25.71	6.32	27.85	5.79	31.73	6.50	34.07	6.85
	20	17.34	4.30	20.71	4.79	24.07	5.96	25.71	6.75	27.85	6.22	31.73	6.83	34.07	7.19
	21	17.34	4.34	20.71	4.99	24.07	6.38	25.71	7.16	27.85	6.44	31.73	7.00	34.07	7.36
	23	17.34	4.64	20.71	5.39	24.07	6.86	25.71	7.65	27.85	6.93	31.73	7.34	34.07	7.70
	25	17.34	4.97	20.71	5.81	24.07	7.41	25.71	8.03	27.85	7.45	31.73	7.69	34.07	8.05
	27	17.34	5.32	20.71	6.24	24.07	7.84	25.71	8.52	27.85	7.99	31.73	8.03	34.07	8.40
	29	17.34	5.69	20.71	6.70	24.07	8.43	25.71	8.77	27.85	8.50	31.73	8.68	34.07	8.74
	31	17.34	6.08	20.71	7.19	24.07	9.02	25.71	8.93	27.85	8.84	31.73	8.99	34.07	9.10
	33	17.34	6.49	20.71	7.71	24.07	9.45	25.71	9.18	27.85	9.19	31.73	9.32	34.07	9.46
35	17.34	6.91	20.71	8.26	24.07	9.64	25.71	9.78	27.85	9.80	31.73	9.90	34.07	10.00	
37	17.34	7.37	20.71	8.84	24.07	9.71	25.71	10.22	27.85	10.37	31.73	10.51	34.07	10.64	
39	17.34	7.85	20.71	9.45	24.07	9.88	25.71	10.39	27.85	10.81	31.73	11.02	34.07	11.11	
41	17.34	8.14	20.71	9.81	24.07	10.03	25.71	10.58	27.85	11.23	31.73	11.34	34.07	11.46	
43	17.34	8.43	20.71	10.01	24.07	10.36	25.71	10.78	27.85	11.71	31.73	11.91	34.07	12.00	
45	17.34	8.83	20.71	10.29	24.07	11.01	25.71	10.97	27.85	11.96	31.73	12.42	34.07	12.68	
48	17.34	10.18	20.71	10.67	24.07	11.15	25.71	11.64	27.85	12.13	31.73	12.62	34.07	13.11	
80%	-5	15.47	2.68	18.44	2.77	21.41	3.22	22.94	3.01	24.94	4.00	28.37	4.60	30.42	5.27
	-2	15.47	2.72	18.44	2.80	21.41	3.27	22.94	3.02	24.94	4.05	28.37	4.65	30.42	5.32
	0	15.47	2.75	18.44	2.84	21.41	3.32	22.94	3.08	24.94	4.11	28.37	4.70	30.42	5.37
	2	15.47	2.79	18.44	2.88	21.41	3.36	22.94	3.22	24.94	4.17	28.37	4.80	30.42	5.44
	4	15.47	2.82	18.44	2.92	21.41	3.42	22.94	3.23	24.94	4.22	28.37	4.87	30.42	5.52
	6	15.47	2.88	18.44	2.98	21.41	3.49	22.94	3.32	24.94	4.30	28.37	4.95	30.42	5.62
	8	15.47	2.92	18.44	3.04	21.41	3.56	22.94	3.44	24.94	4.37	28.37	5.04	30.42	5.67
	10	15.47	2.98	18.44	3.11	21.41	3.63	22.94	3.48	24.94	4.47	28.37	5.11	30.42	5.76
	12	15.47	3.04	18.44	3.17	21.41	3.70	22.94	3.57	24.94	4.55	28.37	5.20	30.42	5.87
	14	15.47	3.10	18.44	3.23	21.41	3.77	22.94	3.64	24.94	4.64	28.37	5.30	30.42	5.97
	16	15.47	3.16	18.44	3.29	21.41	3.86	22.94	3.73	24.94	4.73	28.37	5.41	30.42	6.08
	18	15.47	3.23	18.44	3.36	21.41	3.93	22.94	3.86	24.94	4.83	28.37	5.51	30.42	6.27
	20	15.47	3.30	18.44	3.44	21.41	4.01	22.94	4.20	24.94	5.00	28.37	5.93	30.42	6.57
	21	15.47	3.33	18.44	3.47	21.41	4.08	22.94	4.51	24.94	5.18	28.37	6.14	30.42	6.72
	23	15.47	3.56	18.44	3.61	21.41	4.39	22.94	4.89	24.94	5.56	28.37	6.59	30.42	7.03
	25	15.47	3.81	18.44	3.87	21.41	4.71	22.94	5.26	24.94	5.94	28.37	7.05	30.42	7.33
	27	15.47	4.07	18.44	4.13	21.41	5.04	22.94	5.77	24.94	6.35	28.37	7.55	30.42	7.64
	29	15.47	4.36	18.44	4.42	21.41	5.39	22.94	6.01	24.94	6.79	28.37	7.89	30.42	7.95
	31	15.47	4.66	18.44	4.71	21.41	5.76	22.94	6.42	24.94	7.24	28.37	8.20	30.42	8.27
	33	15.47	4.97	18.44	5.02	21.41	6.16	22.94	6.84	24.94	7.72	28.37	8.52	30.42	8.58
35	15.47	5.30	18.44	5.35	21.41	6.58	22.94	7.50	24.94	8.23	28.37	8.82	30.42	8.90	
37	15.47	5.65	18.44	5.69	21.41	7.01	22.94	7.84	24.94	8.78	28.37	9.13	30.42	9.20	
39	15.47	6.02	18.44	6.07	21.41	7.48	22.94	8.15	24.94	9.36	28.37	9.45	30.42	9.52	
41	15.47	6.24	18.44	6.35	21.41	7.76	22.94	8.44	24.94	9.40	28.37	9.69	30.42	9.75	
43	15.47	6.47	18.44	6.63	21.41	8.04	22.94	8.84	24.94	9.60	28.37	9.82	30.42	9.90	
45	15.47	6.77	18.44	6.97	21.41	8.38	22.94	9.40	24.94	9.87	28.37	9.92	30.42	10.03	
48	15.47	7.80	18.44	8.40	21.41	9.00	22.94	9.60	24.94	10.20	28.37	10.80	30.42	11.40	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 280T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
70%	-5	13.55	2.18	16.22	2.25	18.79	2.62	20.12	3.02	21.86	3.25	24.83	3.74	26.69	4.28
	-2	13.55	2.21	16.22	2.28	18.79	2.65	20.12	3.03	21.86	3.29	24.83	3.77	26.69	4.32
	0	13.55	2.23	16.22	2.31	18.79	2.69	20.12	3.05	21.86	3.33	24.83	3.81	26.69	4.35
	2	13.55	2.26	16.22	2.34	18.79	2.73	20.12	3.13	21.86	3.38	24.83	3.89	26.69	4.42
	4	13.55	2.29	16.22	2.37	18.79	2.77	20.12	3.18	21.86	3.42	24.83	3.95	26.69	4.48
	6	13.55	2.34	16.22	2.42	18.79	2.83	20.12	3.24	21.86	3.49	24.83	4.02	26.69	4.56
	8	13.55	2.37	16.22	2.47	18.79	2.89	20.12	3.30	21.86	3.55	24.83	4.09	26.69	4.60
	10	13.55	2.42	16.22	2.53	18.79	2.95	20.12	3.36	21.86	3.63	24.83	4.14	26.69	4.67
	12	13.55	2.47	16.22	2.57	18.79	3.00	20.12	3.42	21.86	3.69	24.83	4.22	26.69	4.76
	14	13.55	2.52	16.22	2.62	18.79	3.06	20.12	3.53	21.86	3.76	24.83	4.30	26.69	4.85
	16	13.55	2.57	16.22	2.67	18.79	3.13	20.12	3.54	21.86	3.84	24.83	4.38	26.69	4.93
	18	13.55	2.62	16.22	2.73	18.79	3.19	20.12	3.55	21.86	3.91	24.83	4.47	26.69	5.09
	20	13.55	2.67	16.22	2.79	18.79	3.25	20.12	3.78	21.86	4.06	24.83	4.81	26.69	5.33
	21	13.55	2.70	16.22	2.81	18.79	3.31	20.12	4.05	21.86	4.20	24.83	4.98	26.69	5.45
	23	13.55	2.89	16.22	2.93	18.79	3.56	20.12	4.27	21.86	4.51	24.83	5.34	26.69	5.70
	25	13.55	3.09	16.22	3.14	18.79	3.82	20.12	4.59	21.86	4.82	24.83	5.72	26.69	5.95
	27	13.55	3.31	16.22	3.35	18.79	4.09	20.12	4.91	21.86	5.15	24.83	6.12	26.69	6.20
	29	13.55	3.53	16.22	3.58	18.79	4.38	20.12	5.14	21.86	5.51	24.83	6.40	26.69	6.45
	31	13.55	3.78	16.22	3.82	18.79	4.67	20.12	5.48	21.86	5.87	24.83	6.65	26.69	6.71
	33	13.55	4.03	16.22	4.07	18.79	5.00	20.12	5.82	21.86	6.27	24.83	6.91	26.69	6.96
	35	13.55	4.30	16.22	4.34	18.79	5.33	20.12	6.08	21.86	6.68	24.83	7.16	26.69	7.22
	37	13.55	4.58	16.22	4.62	18.79	5.69	20.12	6.36	21.86	7.12	24.83	7.41	26.69	7.46
	39	13.55	4.88	16.22	4.93	18.79	6.06	20.12	6.61	21.86	7.59	24.83	7.67	26.69	7.72
	41	13.55	5.06	16.22	5.15	18.79	6.29	20.12	6.84	21.86	7.63	24.83	7.86	26.69	7.91
43	13.55	5.24	16.22	5.38	18.79	6.52	20.12	7.17	21.86	7.79	24.83	7.96	26.69	8.03	
45	13.55	5.49	16.22	5.66	18.79	6.79	20.12	7.62	21.86	8.00	24.83	8.66	26.69	9.03	
48	13.55	6.33	16.22	6.94	18.79	7.54	20.12	8.15	21.86	8.76	24.83	9.37	26.69	9.98	
60%	-5	11.56	1.76	13.81	1.91	16.06	2.11	17.19	2.70	18.65	2.94	21.25	3.27	22.81	3.75
	-2	11.56	1.78	13.81	1.94	16.06	2.14	17.19	2.74	18.65	2.99	21.25	3.32	22.81	3.78
	0	11.56	1.80	13.81	1.96	16.06	2.17	17.19	2.77	18.65	3.03	21.25	3.37	22.81	3.83
	2	11.56	1.83	13.81	1.99	16.06	2.20	17.19	2.83	18.65	3.08	21.25	3.44	22.81	3.88
	4	11.56	1.84	13.81	2.02	16.06	2.24	17.19	2.86	18.65	3.14	21.25	3.49	22.81	3.93
	6	11.56	1.88	13.81	2.05	16.06	2.28	17.19	2.92	18.65	3.20	21.25	3.56	22.81	4.02
	8	11.56	1.91	13.81	2.09	16.06	2.33	17.19	2.98	18.65	3.27	21.25	3.63	22.81	4.09
	10	11.56	1.95	13.81	2.13	16.06	2.38	17.19	3.06	18.65	3.32	21.25	3.70	22.81	4.08
	12	11.56	1.99	13.81	2.18	16.06	2.42	17.19	3.12	18.65	3.39	21.25	3.77	22.81	4.15
	14	11.56	2.03	13.81	2.23	16.06	2.47	17.19	3.17	18.65	3.44	21.25	3.84	22.81	4.22
	16	11.56	2.07	13.81	2.28	16.06	2.52	17.19	3.23	18.65	3.51	21.25	3.90	22.81	4.30
	18	11.56	2.11	13.81	2.32	16.06	2.57	17.19	3.28	18.65	3.58	21.25	3.97	22.81	4.38
	20	11.56	2.16	13.81	2.40	16.06	2.62	17.19	3.35	18.65	3.61	21.25	4.05	22.81	4.46
	21	11.56	2.18	13.81	2.50	16.06	2.67	17.19	3.59	18.65	3.67	21.25	4.09	22.81	4.55
	23	11.56	2.33	13.81	2.70	16.06	2.87	17.19	3.83	18.65	3.90	21.25	4.26	22.81	4.60
	25	11.56	2.49	13.81	2.91	16.06	3.08	17.19	4.05	18.65	4.16	21.25	4.54	22.81	4.89
	27	11.56	2.67	13.81	3.13	16.06	3.30	17.19	4.24	18.65	4.43	21.25	4.84	22.81	5.22
	29	11.56	2.85	13.81	3.36	16.06	3.53	17.19	4.42	18.65	4.72	21.25	5.16	22.81	5.57
	31	11.56	3.05	13.81	3.61	16.06	3.77	17.19	4.67	18.65	5.02	21.25	5.49	22.81	5.95
	33	11.56	3.25	13.81	3.86	16.06	4.03	17.19	4.87	18.65	5.33	21.25	5.84	22.81	6.33
	35	11.56	3.47	13.81	4.14	16.06	4.30	17.19	4.91	18.65	5.65	21.25	6.22	22.81	6.75
	37	11.56	3.70	13.81	4.43	16.06	4.59	17.19	5.13	18.65	6.00	21.25	6.61	22.81	7.18
	39	11.56	3.94	13.81	4.74	16.06	4.89	17.19	5.33	18.65	6.23	21.25	7.02	22.81	7.64
	41	11.56	4.08	13.81	4.92	16.06	5.07	17.19	5.52	18.65	6.44	21.25	7.35	22.81	8.13
43	11.56	4.23	13.81	5.02	16.06	5.26	17.19	5.78	18.65	6.76	21.25	7.66	22.81	8.50	
45	11.56	4.57	13.81	5.65	16.06	5.97	17.19	6.30	18.65	7.31	21.25	8.01	22.81	8.87	
48	11.56	5.25	13.81	5.89	16.06	6.53	17.19	7.16	18.65	7.80	21.25	8.44	22.81	9.08	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 280T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
50%	-5	9.71	1.46	11.62	1.59	13.47	1.75	14.39	2.40	15.61	2.49	17.74	2.83	19.12	3.05
	-2	9.71	1.48	11.62	1.61	13.47	1.77	14.39	2.46	15.61	2.53	17.74	2.87	19.12	3.09
	0	9.71	1.49	11.62	1.63	13.47	1.80	14.39	2.47	15.61	2.56	17.74	2.91	19.12	3.14
	2	9.71	1.51	11.62	1.65	13.47	1.82	14.39	2.47	15.61	2.61	17.74	2.93	19.12	3.20
	4	9.71	1.53	11.62	1.67	13.47	1.85	14.39	2.48	15.61	2.66	17.74	3.00	19.12	3.29
	6	9.71	1.56	11.62	1.70	13.47	1.89	14.39	2.50	15.61	2.71	17.74	3.05	19.12	3.38
	8	9.71	1.59	11.62	1.74	13.47	1.93	14.39	2.51	15.61	2.74	17.74	3.09	19.12	3.49
	10	9.71	1.62	11.62	1.77	13.47	1.97	14.39	2.49	15.61	2.82	17.74	3.18	19.12	3.54
	12	9.71	1.65	11.62	1.80	13.47	2.01	14.39	2.50	15.61	2.88	17.74	3.23	19.12	3.60
	14	9.71	1.68	11.62	1.84	13.47	2.05	14.39	2.52	15.61	2.92	17.74	3.29	19.12	3.67
	16	9.71	1.72	11.62	1.89	13.47	2.09	14.39	2.52	15.61	2.96	17.74	3.35	19.12	3.73
	18	9.71	1.75	11.62	1.93	13.47	2.13	14.39	2.53	15.61	3.02	17.74	3.40	19.12	3.80
	20	9.71	1.79	11.62	1.99	13.47	2.17	14.39	2.65	15.61	3.08	17.74	3.46	19.12	3.87
	21	9.71	1.80	11.62	2.07	13.47	2.21	14.39	2.79	15.61	3.11	17.74	3.50	19.12	3.91
	23	9.71	1.93	11.62	2.24	13.47	2.38	14.39	2.97	15.61	3.16	17.74	3.56	19.12	3.99
	25	9.71	2.07	11.62	2.41	13.47	2.55	14.39	3.16	15.61	3.26	17.74	3.74	19.12	4.26
	27	9.71	2.21	11.62	2.59	13.47	2.73	14.39	3.41	15.61	3.46	17.74	3.98	19.12	4.55
	29	9.71	2.36	11.62	2.79	13.47	2.92	14.39	3.52	15.61	3.68	17.74	4.23	19.12	4.84
	31	9.71	2.53	11.62	2.99	13.47	3.12	14.39	3.75	15.61	3.91	17.74	4.50	19.12	5.15
	33	9.71	2.70	11.62	3.20	13.47	3.34	14.39	3.95	15.61	4.15	17.74	4.79	19.12	5.48
35	9.71	2.87	11.62	3.43	13.47	3.56	14.39	4.07	15.61	4.39	17.74	5.08	19.12	5.82	
37	9.71	3.06	11.62	3.67	13.47	3.80	14.39	4.25	15.61	4.66	17.74	5.39	19.12	6.18	
39	9.71	3.26	11.62	3.93	13.47	4.05	14.39	4.42	15.61	4.94	17.74	5.72	19.12	6.56	
41	9.71	3.38	11.62	4.08	13.47	4.20	14.39	4.57	15.61	5.15	17.74	6.02	19.12	6.87	
43	9.71	3.50	11.62	4.16	13.47	4.36	14.39	4.87	15.61	5.29	17.74	6.33	19.12	7.17	
45	9.71	3.67	11.62	4.68	13.47	4.99	14.39	5.38	15.61	5.91	17.74	6.94	19.12	7.48	
48	9.71	4.31	11.62	4.92	13.47	5.53	14.39	6.14	15.61	6.75	17.74	7.36	19.12	7.97	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 335T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
130%	-5	30.34	6.33	36.89	7.09	41.61	7.65	42.81	8.30	45.78	8.86	47.04	9.63	47.40	9.69
	-2	30.34	6.33	36.89	7.24	41.61	7.65	43.17	8.35	45.78	8.86	47.04	9.76	47.40	9.79
	0	30.34	6.43	36.89	7.38	41.61	7.95	43.17	8.82	45.78	9.37	47.04	9.87	47.40	9.92
	2	30.34	6.55	36.89	7.39	41.61	8.24	43.17	9.34	45.78	9.48	47.04	9.95	47.40	10.07
	4	30.34	6.70	36.89	7.55	41.61	8.55	43.17	9.38	45.78	9.60	47.04	9.94	47.40	10.26
	6	30.34	6.83	36.89	7.71	41.61	8.89	43.17	9.46	44.99	9.90	45.67	9.94	47.40	10.34
	8	30.34	6.99	36.89	7.90	41.61	9.37	43.17	9.94	44.55	10.23	45.18	9.99	46.88	10.44
	10	30.34	7.13	36.89	8.09	41.61	9.74	43.17	10.28	44.12	10.30	45.04	10.30	46.32	10.74
	12	30.34	7.26	36.89	8.25	41.61	9.94	42.71	10.40	43.50	10.57	44.67	10.48	45.83	10.81
	14	30.34	7.41	36.89	8.42	41.36	9.99	42.36	10.46	42.96	10.67	44.35	10.66	45.23	11.05
	16	30.34	7.53	36.89	8.61	40.87	10.27	41.62	10.66	42.41	10.88	44.04	10.91	44.81	11.22
	18	30.34	7.68	36.89	8.80	40.26	10.42	40.94	10.80	41.87	11.18	43.72	11.29	44.39	11.39
	20	30.34	7.84	36.89	9.40	39.84	10.97	40.33	11.34	41.32	11.72	43.40	11.83	43.97	11.95
	21	30.34	8.05	36.89	9.76	39.66	11.24	40.45	11.62	40.78	11.99	43.09	12.12	43.55	12.22
	23	30.34	8.64	36.89	10.51	38.92	11.78	39.55	12.16	40.24	12.54	42.77	12.66	43.13	12.79
	25	30.34	9.22	36.89	11.30	38.31	12.32	38.98	12.70	39.69	13.10	42.46	13.23	42.71	13.35
	27	30.34	9.85	36.89	12.14	37.82	12.87	38.42	13.52	39.15	13.64	42.14	13.79	42.29	13.93
	29	30.34	10.51	36.89	13.01	37.21	13.41	37.88	14.25	38.61	14.21	41.83	14.35	41.88	14.50
	31	30.34	11.22	35.63	13.80	36.67	13.97	37.39	14.95	38.06	14.75	41.51	14.91	41.46	15.08
	33	30.34	11.95	35.01	14.35	36.11	14.51	36.75	15.77	37.52	15.31	41.20	15.48	41.04	15.65
	35	30.34	12.75	34.40	14.89	35.57	15.08	36.11	15.79	36.97	15.87	40.88	16.06	40.62	16.23
37	30.34	13.56	33.92	15.56	35.02	15.64	35.68	16.04	36.43	16.46	40.57	16.65	40.20	16.83	
39	30.34	14.43	33.31	16.17	34.40	16.25	35.12	16.60	36.10	17.02	40.25	17.21	39.78	17.42	
41	30.34	15.19	32.96	16.79	34.04	16.86	34.56	17.16	35.14	17.49	36.24	17.67	39.36	17.89	
43	30.34	15.79	32.72	17.41	33.86	17.95	34.00	18.20	34.78	18.39	35.58	18.55	38.94	18.72	
45	30.34	16.39	32.52	18.18	33.50	18.72	33.44	19.08	34.27	19.26	34.61	19.38	38.52	19.79	
48	30.34	18.57	32.31	19.05	33.14	19.52	32.88	19.99	33.77	20.47	33.65	20.94	38.11	21.41	
120%	-5	28.37	6.16	32.93	6.67	38.29	7.72	41.66	8.68	43.63	9.24	44.61	10.04	45.59	10.31
	-2	28.37	6.22	32.93	6.75	38.29	7.81	41.66	8.73	43.63	9.36	44.61	10.12	45.59	10.35
	0	28.37	6.28	32.93	6.80	38.29	7.91	41.66	8.76	43.63	9.45	44.61	10.19	45.59	10.37
	2	28.37	6.30	32.93	6.88	38.29	7.97	41.66	8.85	43.63	9.49	44.61	10.27	45.59	10.39
	4	28.37	6.36	32.93	6.98	38.29	8.10	41.66	8.94	43.63	9.63	44.61	10.29	45.59	10.42
	6	28.37	6.43	32.93	7.04	38.29	8.21	41.66	9.05	43.63	9.74	44.61	10.37	45.59	10.46
	8	28.37	6.49	32.93	7.12	38.29	8.34	41.66	9.18	43.63	9.85	44.61	10.41	45.59	10.51
	10	28.37	6.56	32.93	7.22	38.29	8.42	41.66	9.36	43.63	9.86	44.61	10.44	45.59	10.56
	12	28.37	6.69	32.93	7.37	38.29	8.61	41.66	9.55	43.03	9.90	44.00	10.38	44.97	10.63
	14	28.37	6.82	32.93	7.54	38.29	8.80	41.66	9.76	42.41	9.97	43.51	10.54	44.49	10.76
	16	28.37	6.94	32.93	7.71	38.29	8.99	41.58	9.90	41.93	10.12	42.90	10.73	43.88	10.93
	18	28.37	7.07	32.93	7.88	38.29	9.33	40.75	10.20	41.32	10.40	42.29	10.98	43.39	11.09
	20	28.37	7.22	32.93	8.21	38.29	10.13	40.33	10.75	40.83	10.95	41.81	11.53	42.78	11.63
	21	28.37	7.28	32.93	8.53	38.29	10.53	39.62	11.41	40.46	11.22	41.56	11.80	42.54	11.93
	23	28.37	7.78	32.93	9.20	38.29	11.35	38.78	12.32	39.97	11.77	40.95	12.37	41.93	12.47
	25	28.37	8.31	32.93	9.90	37.68	11.89	38.31	12.85	39.37	12.32	40.46	12.92	41.44	13.04
	27	28.37	8.88	32.93	10.63	37.19	12.42	37.72	13.69	38.88	12.88	39.85	13.48	40.83	13.61
	29	28.37	9.47	32.93	11.41	36.73	12.97	37.07	14.27	38.27	13.43	39.25	14.05	40.34	14.18
	31	28.37	10.10	32.93	12.23	36.01	13.53	36.59	14.98	37.78	14.00	38.76	14.62	39.73	14.77
	33	28.37	10.75	32.93	13.09	35.49	14.08	36.01	15.61	37.17	14.55	38.15	15.19	39.12	15.34
	35	28.37	11.44	32.93	14.02	34.92	14.63	35.37	15.82	36.68	15.11	37.66	15.76	38.63	15.92
37	28.37	12.18	32.93	14.99	34.39	15.20	34.91	15.91	35.72	16.01	37.05	16.32	38.03	16.51	
39	28.37	12.96	32.81	15.87	33.78	15.74	34.30	16.01	35.11	16.25	36.56	16.91	37.54	17.08	
41	28.37	13.67	32.54	15.99	33.52	16.30	34.00	16.76	34.49	16.82	35.59	17.48	36.48	17.66	
43	28.37	14.27	32.37	16.11	33.25	16.76	33.74	17.13	34.23	17.38	34.97	18.05	35.92	18.24	
45	28.37	14.88	32.19	16.27	32.93	17.09	33.39	17.73	33.93	17.95	34.26	18.62	35.67	18.82	
48	28.37	17.06	31.99	17.53	32.65	18.01	33.09	18.48	33.65	18.96	33.61	19.43	35.22	19.91	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 335T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
110%	-5	26.19	5.33	30.26	6.02	36.61	7.14	37.78	8.04	40.71	8.84	43.76	9.19	44.74	9.80
	-2	26.19	5.44	30.26	6.10	36.61	7.21	37.78	8.12	40.71	8.91	43.76	9.29	44.74	9.85
	0	26.19	5.49	30.26	6.14	36.61	7.27	37.78	8.18	40.71	9.01	43.76	9.38	44.74	9.97
	2	26.19	5.61	30.26	6.21	36.61	7.40	37.78	8.27	40.71	9.11	43.76	9.52	44.74	10.09
	4	26.19	5.72	30.26	6.28	36.61	7.48	37.78	8.38	40.71	9.26	43.76	9.66	44.74	10.19
	6	26.19	5.78	30.26	6.36	36.61	7.56	37.78	8.52	40.71	9.36	43.76	9.76	44.74	10.34
	8	26.19	5.83	30.26	6.47	36.61	7.65	37.78	8.61	40.71	9.47	43.76	9.83	44.74	10.45
	10	26.19	5.90	30.26	6.57	36.61	7.77	37.78	8.77	40.71	9.63	43.76	9.90	44.74	10.54
	12	26.19	6.03	30.26	6.72	36.61	7.94	37.78	8.96	40.71	9.82	43.27	10.05	44.13	10.68
	14	26.19	6.13	30.26	6.84	36.61	8.10	37.78	9.12	40.71	10.01	42.66	10.13	43.64	10.75
	16	26.19	6.23	30.26	6.99	36.61	8.27	37.78	9.31	40.71	10.22	42.18	10.26	43.03	10.87
	18	26.19	6.36	30.26	7.13	36.61	8.46	37.78	9.58	40.71	10.72	41.56	10.80	42.54	11.22
	20	26.19	6.48	30.26	7.30	36.61	9.00	37.78	10.33	40.10	11.26	41.08	11.34	41.93	11.76
	21	26.19	6.55	30.26	7.53	36.61	9.35	37.78	11.14	39.86	11.53	40.71	11.61	41.69	12.03
	23	26.19	6.86	30.26	8.11	36.61	10.09	37.78	11.86	39.25	12.05	40.23	12.18	41.08	12.59
	25	26.19	7.32	30.26	8.72	36.61	10.83	37.78	12.65	38.76	12.59	39.61	12.72	40.59	13.14
	27	26.19	7.80	30.26	9.36	36.61	11.65	37.31	13.27	38.15	13.14	39.13	13.26	39.98	13.70
	29	26.19	8.32	30.26	10.03	36.61	12.50	36.62	14.04	37.66	13.70	38.51	13.82	39.49	14.26
	31	26.19	8.86	30.26	10.74	35.91	13.40	35.94	14.81	37.05	14.24	38.03	14.37	38.88	14.82
	33	26.19	9.42	30.26	11.49	35.21	14.17	35.73	15.39	36.56	14.78	37.42	14.93	38.39	15.39
35	26.19	10.03	30.26	12.28	34.63	14.71	34.77	15.58	35.95	15.35	36.81	15.49	37.78	15.95	
37	26.19	10.98	30.26	13.12	33.79	15.28	34.38	15.65	35.34	15.89	36.32	16.06	37.17	16.51	
39	26.19	11.92	30.26	14.01	33.18	15.82	33.74	16.21	34.73	16.45	35.71	16.62	36.69	17.10	
41	26.19	12.85	30.26	14.13	32.58	15.94	33.41	16.33	34.16	16.57	34.57	16.81	35.60	17.21	
43	26.19	13.79	30.26	14.32	31.97	16.05	33.05	16.45	33.59	16.69	34.30	17.25	35.07	17.56	
45	26.19	14.57	30.26	14.83	31.36	16.38	32.46	16.79	33.01	17.03	33.38	17.63	34.28	18.15	
48	26.19	16.72	30.26	17.19	30.75	17.66	32.02	18.12	32.44	18.59	33.00	19.06	33.54	19.52	
100%	-5	23.50	5.48	27.59	5.97	33.03	6.58	33.50	7.72	36.32	7.54	41.75	8.35	43.02	9.21
	-2	23.50	5.55	27.59	6.04	33.03	6.71	33.50	7.78	36.32	7.65	41.75	8.46	43.02	9.27
	0	23.50	5.62	27.59	6.12	33.03	6.83	33.50	7.90	36.32	7.73	41.75	8.61	43.02	9.38
	2	23.50	5.70	27.59	6.20	33.03	6.98	33.50	7.97	36.32	7.82	41.75	8.75	43.02	9.53
	4	23.50	5.75	27.59	6.30	33.03	7.07	33.50	8.09	36.32	7.93	41.75	8.84	43.02	9.64
	6	23.50	5.88	27.59	6.40	33.03	7.19	33.50	8.27	36.32	8.05	41.75	8.98	43.02	9.79
	8	23.50	5.97	27.59	6.53	33.03	7.33	33.50	8.41	36.32	8.19	41.75	9.13	43.02	9.96
	10	23.50	6.09	27.59	6.65	33.03	7.44	33.50	8.54	36.32	8.35	41.75	9.30	43.02	10.11
	12	23.50	6.21	27.59	6.79	33.03	7.72	33.50	8.71	36.32	8.51	41.75	9.48	42.42	10.19
	14	23.50	6.33	27.59	6.94	33.03	8.08	33.50	9.27	36.32	8.68	41.75	9.69	41.95	10.32
	16	23.50	6.46	27.59	7.10	33.03	8.28	33.50	9.50	36.32	8.86	40.51	9.81	41.35	10.44
	18	23.50	6.58	27.59	7.25	33.03	8.60	33.50	9.88	36.32	9.05	40.03	10.16	40.87	10.71
	20	23.50	6.73	27.59	7.50	33.03	9.31	33.50	10.55	36.32	9.73	39.43	10.68	40.27	11.24
	21	23.50	6.79	27.59	7.80	33.03	9.98	33.50	11.19	36.32	10.08	39.20	10.95	40.03	11.51
	23	23.50	7.26	27.59	8.42	33.03	10.73	33.50	11.96	36.32	10.84	38.72	11.48	39.43	12.05
	25	23.50	7.78	27.59	9.08	33.03	11.58	33.50	12.56	36.32	11.64	38.12	12.02	38.95	12.58
	27	23.50	8.31	27.59	9.76	33.03	12.26	33.50	13.32	36.32	12.49	37.52	12.56	38.36	13.14
	29	23.50	8.89	27.59	10.49	33.03	13.19	33.50	13.71	36.20	13.29	37.04	13.57	37.88	13.67
	31	23.50	9.51	27.59	11.25	33.03	14.10	33.50	13.96	35.72	13.83	36.44	14.06	37.28	14.23
	33	23.50	10.15	27.59	12.05	33.03	14.77	33.50	14.36	35.13	14.37	35.97	14.58	36.80	14.79
35	23.50	10.81	27.59	12.92	33.03	15.07	33.50	15.30	34.53	15.32	35.37	15.48	36.20	15.63	
37	23.50	11.53	27.59	13.83	33.03	15.18	33.07	16.00	34.18	16.22	34.89	16.43	35.61	16.65	
39	23.50	12.27	27.59	14.77	33.03	15.45	32.65	16.62	33.72	16.90	34.29	17.24	35.13	17.38	
41	23.50	12.73	27.59	15.35	33.03	15.68	32.23	17.21	33.25	17.57	33.04	17.73	34.63	17.92	
43	23.50	13.19	27.59	15.65	33.03	16.21	32.12	18.03	32.78	18.32	33.23	18.63	33.36	18.77	
45	23.50	13.80	27.59	16.08	33.03	17.22	31.91	19.18	32.32	20.24	32.95	21.25	32.82	21.66	
48	23.50	15.91	27.59	17.14	33.03	18.36	31.54	20.66	31.85	21.88	32.20	23.10	32.33	24.33	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 335T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
90%	-5	20.38	4.38	24.34	4.77	28.30	5.26	30.22	6.18	32.74	6.03	37.30	6.68	40.05	7.37
	-2	20.38	4.44	24.34	4.83	28.30	5.37	30.22	6.23	32.74	6.12	37.30	6.77	40.05	7.42
	0	20.38	4.49	24.34	4.90	28.30	5.46	30.22	6.32	32.74	6.18	37.30	6.89	40.05	7.50
	2	20.38	4.56	24.34	4.96	28.30	5.58	30.22	6.38	32.74	6.25	37.30	7.00	40.05	7.63
	4	20.38	4.60	24.34	5.04	28.30	5.66	30.22	6.47	32.74	6.34	37.30	7.07	40.05	7.71
	6	20.38	4.70	24.34	5.12	28.30	5.75	30.22	6.61	32.74	6.44	37.30	7.18	40.05	7.83
	8	20.38	4.77	24.34	5.22	28.30	5.86	30.22	6.73	32.74	6.55	37.30	7.31	40.05	7.97
	10	20.38	4.87	24.34	5.32	28.30	5.95	30.22	6.83	32.74	6.68	37.30	7.44	40.05	8.09
	12	20.38	4.97	24.34	5.43	28.30	6.18	30.22	6.97	32.74	6.81	37.30	7.59	40.05	8.15
	14	20.38	5.07	24.34	5.55	28.30	6.47	30.22	7.41	32.74	6.94	37.30	7.75	40.05	8.25
	16	20.38	5.17	24.34	5.68	28.30	6.62	30.22	7.60	32.74	7.09	37.30	7.85	40.05	8.35
	18	20.38	5.26	24.34	5.80	28.30	6.88	30.22	7.90	32.74	7.24	37.30	8.13	40.05	8.56
	20	20.38	5.38	24.34	6.00	28.30	7.45	30.22	8.44	32.74	7.78	37.30	8.54	40.05	8.99
	21	20.38	5.43	24.34	6.24	28.30	7.98	30.22	8.95	32.74	8.06	37.30	8.76	40.05	9.21
	23	20.38	5.81	24.34	6.74	28.30	8.59	30.22	9.57	32.74	8.67	37.30	9.19	40.05	9.64
	25	20.38	6.22	24.34	7.27	28.30	9.26	30.22	10.05	32.74	9.32	37.30	9.62	40.05	10.06
	27	20.38	6.65	24.34	7.81	28.30	9.81	30.22	10.65	32.74	9.99	37.30	10.04	40.05	10.51
	29	20.38	7.11	24.34	8.39	28.30	10.55	30.22	10.97	32.74	10.64	37.30	10.86	40.05	10.94
	31	20.38	7.61	24.34	9.00	28.30	11.28	30.22	11.17	32.74	11.06	37.30	11.25	40.05	11.38
	33	20.38	8.12	24.34	9.64	28.30	11.82	30.22	11.49	32.74	11.49	37.30	11.66	40.05	11.83
	35	20.38	8.65	24.34	10.33	28.30	12.06	30.22	12.24	32.74	12.26	37.30	12.38	40.05	12.50
37	20.38	9.22	24.34	11.06	28.30	12.14	30.22	12.79	32.74	12.98	37.30	13.14	40.05	13.32	
39	20.38	9.82	24.34	11.82	28.30	12.36	30.22	13.00	32.74	13.52	37.30	13.79	40.05	13.90	
41	20.38	10.18	24.34	12.28	28.30	12.55	30.22	13.24	32.74	14.05	37.30	14.19	40.05	14.34	
43	20.38	10.55	24.34	12.52	28.30	12.96	30.22	13.49	32.74	14.65	37.30	14.90	40.05	15.02	
45	20.38	11.04	24.34	12.87	28.30	13.78	30.22	13.73	32.74	14.96	37.30	15.53	40.05	15.86	
48	20.38	12.73	24.34	13.34	28.30	13.95	30.22	14.57	32.74	15.18	37.30	15.79	40.05	16.40	
80%	-5	18.18	3.36	21.67	3.47	25.16	4.03	26.97	3.76	29.31	5.01	33.34	5.76	35.76	6.60
	-2	18.18	3.41	21.67	3.51	25.16	4.09	26.97	3.77	29.31	5.07	33.34	5.82	35.76	6.66
	0	18.18	3.44	21.67	3.56	25.16	4.16	26.97	3.86	29.31	5.14	33.34	5.88	35.76	6.71
	2	18.18	3.49	21.67	3.60	25.16	4.20	26.97	4.02	29.31	5.22	33.34	6.00	35.76	6.81
	4	18.18	3.53	21.67	3.66	25.16	4.28	26.97	4.04	29.31	5.28	33.34	6.10	35.76	6.91
	6	18.18	3.60	21.67	3.73	25.16	4.36	26.97	4.15	29.31	5.37	33.34	6.19	35.76	7.03
	8	18.18	3.66	21.67	3.81	25.16	4.46	26.97	4.30	29.31	5.47	33.34	6.31	35.76	7.09
	10	18.18	3.73	21.67	3.90	25.16	4.54	26.97	4.35	29.31	5.59	33.34	6.39	35.76	7.21
	12	18.18	3.81	21.67	3.97	25.16	4.63	26.97	4.46	29.31	5.70	33.34	6.51	35.76	7.34
	14	18.18	3.88	21.67	4.04	25.16	4.72	26.97	4.55	29.31	5.80	33.34	6.63	35.76	7.47
	16	18.18	3.96	21.67	4.12	25.16	4.82	26.97	4.66	29.31	5.92	33.34	6.76	35.76	7.61
	18	18.18	4.04	21.67	4.21	25.16	4.91	26.97	4.83	29.31	6.04	33.34	6.90	35.76	7.84
	20	18.18	4.12	21.67	4.31	25.16	5.02	26.97	5.25	29.31	6.26	33.34	7.41	35.76	8.21
	21	18.18	4.16	21.67	4.34	25.16	5.10	26.97	5.64	29.31	6.48	33.34	7.68	35.76	8.41
	23	18.18	4.45	21.67	4.52	25.16	5.49	26.97	6.12	29.31	6.95	33.34	8.24	35.76	8.79
	25	18.18	4.77	21.67	4.84	25.16	5.89	26.97	6.58	29.31	7.43	33.34	8.82	35.76	9.17
	27	18.18	5.10	21.67	5.17	25.16	6.30	26.97	7.21	29.31	7.95	33.34	9.44	35.76	9.56
	29	18.18	5.45	21.67	5.52	25.16	6.75	26.97	7.52	29.31	8.49	33.34	9.87	35.76	9.94
	31	18.18	5.83	21.67	5.89	25.16	7.21	26.97	8.04	29.31	9.06	33.34	10.26	35.76	10.34
	33	18.18	6.22	21.67	6.28	25.16	7.71	26.97	8.56	29.31	9.66	33.34	10.65	35.76	10.73
	35	18.18	6.63	21.67	6.69	25.16	8.23	26.97	9.38	29.31	10.30	33.34	11.04	35.76	11.13
37	18.18	7.07	21.67	7.12	25.16	8.77	26.97	9.81	29.31	10.98	33.34	11.42	35.76	11.51	
39	18.18	7.53	21.67	7.60	25.16	9.35	26.97	10.19	29.31	11.71	33.34	11.82	35.76	11.91	
41	18.18	7.81	21.67	7.95	25.16	9.70	26.97	10.56	29.31	11.76	33.34	12.12	35.76	12.19	
43	18.18	8.09	21.67	8.30	25.16	10.06	26.97	11.06	29.31	12.01	33.34	12.28	35.76	12.38	
45	18.18	8.46	21.67	8.72	25.16	10.48	26.97	11.76	29.31	12.35	33.34	12.41	35.76	12.55	
48	18.18	9.76	21.67	10.51	25.16	11.26	26.97	12.01	29.31	12.76	33.34	13.51	35.76	14.26	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Cooling Capacity Tables - MSAN6-XMi 335T

Combination (%) (Capacity index)	Outdoor air temperature D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
70%	-5	15.93	2.72	19.07	2.82	22.08	3.27	23.65	3.78	25.69	4.06	29.18	4.67	31.37	5.35
	-2	15.93	2.76	19.07	2.85	22.08	3.32	23.65	3.80	25.69	4.11	29.18	4.72	31.37	5.40
	0	15.93	2.79	19.07	2.88	22.08	3.37	23.65	3.81	25.69	4.17	29.18	4.77	31.37	5.45
	2	15.93	2.83	19.07	2.92	22.08	3.41	23.65	3.92	25.69	4.23	29.18	4.87	31.37	5.53
	4	15.93	2.86	19.07	2.97	22.08	3.47	23.65	3.98	25.69	4.28	29.18	4.95	31.37	5.61
	6	15.93	2.92	19.07	3.03	22.08	3.54	23.65	4.06	25.69	4.36	29.18	5.02	31.37	5.70
	8	15.93	2.97	19.07	3.09	22.08	3.62	23.65	4.13	25.69	4.44	29.18	5.12	31.37	5.75
	10	15.93	3.03	19.07	3.16	22.08	3.68	23.65	4.20	25.69	4.54	29.18	5.18	31.37	5.85
	12	15.93	3.09	19.07	3.22	22.08	3.76	23.65	4.28	25.69	4.62	29.18	5.28	31.37	5.95
	14	15.93	3.15	19.07	3.28	22.08	3.83	23.65	4.41	25.69	4.71	29.18	5.38	31.37	6.06
	16	15.93	3.21	19.07	3.34	22.08	3.91	23.65	4.43	25.69	4.80	29.18	5.49	31.37	6.17
	18	15.93	3.27	19.07	3.41	22.08	3.98	23.65	4.44	25.69	4.90	29.18	5.59	31.37	6.36
	20	15.93	3.35	19.07	3.49	22.08	4.07	23.65	4.73	25.69	5.08	29.18	6.01	31.37	6.66
	21	15.93	3.38	19.07	3.52	22.08	4.14	23.65	5.07	25.69	5.26	29.18	6.23	31.37	6.82
	23	15.93	3.61	19.07	3.67	22.08	4.45	23.65	5.34	25.69	5.64	29.18	6.69	31.37	7.13
	25	15.93	3.87	19.07	3.93	22.08	4.78	23.65	5.74	25.69	6.03	29.18	7.15	31.37	7.44
	27	15.93	4.13	19.07	4.19	22.08	5.11	23.65	6.15	25.69	6.45	29.18	7.66	31.37	7.75
	29	15.93	4.42	19.07	4.48	22.08	5.47	23.65	6.43	25.69	6.89	29.18	8.01	31.37	8.07
	31	15.93	4.73	19.07	4.78	22.08	5.85	23.65	6.86	25.69	7.35	29.18	8.32	31.37	8.39
	33	15.93	5.05	19.07	5.09	22.08	6.25	23.65	7.28	25.69	7.84	29.18	8.64	31.37	8.70
35	15.93	5.38	19.07	5.43	22.08	6.67	23.65	7.61	25.69	8.35	29.18	8.95	31.37	9.03	
37	15.93	5.74	19.07	5.78	22.08	7.12	23.65	7.96	25.69	8.91	29.18	9.27	31.37	9.34	
39	15.93	6.10	19.07	6.16	22.08	7.59	23.65	8.27	25.69	9.50	29.18	9.59	31.37	9.66	
41	15.93	6.33	19.07	6.45	22.08	7.87	23.65	8.56	25.69	9.54	29.18	9.83	31.37	9.89	
43	15.93	6.56	19.07	6.73	22.08	8.16	23.65	8.97	25.69	9.74	29.18	9.96	31.37	10.04	
45	15.93	6.87	19.07	7.08	22.08	8.50	23.65	9.54	25.69	10.01	29.18	10.83	31.37	11.29	
48	15.93	7.92	19.07	8.68	22.08	9.44	23.65	10.20	25.69	10.96	29.18	11.72	31.37	12.48	
60%	-5	13.59	2.20	16.23	2.39	18.88	2.64	20.20	3.38	21.93	3.68	24.98	4.09	26.81	4.70
	-2	13.59	2.23	16.23	2.42	18.88	2.68	20.20	3.43	21.93	3.74	24.98	4.16	26.81	4.73
	0	13.59	2.25	16.23	2.46	18.88	2.72	20.20	3.47	21.93	3.79	24.98	4.22	26.81	4.79
	2	13.59	2.29	16.23	2.49	18.88	2.75	20.20	3.54	21.93	3.85	24.98	4.30	26.81	4.85
	4	13.59	2.31	16.23	2.53	18.88	2.80	20.20	3.58	21.93	3.93	24.98	4.37	26.81	4.92
	6	13.59	2.36	16.23	2.57	18.88	2.85	20.20	3.66	21.93	4.01	24.98	4.46	26.81	5.03
	8	13.59	2.39	16.23	2.62	18.88	2.92	20.20	3.73	21.93	4.09	24.98	4.54	26.81	5.11
	10	13.59	2.44	16.23	2.67	18.88	2.97	20.20	3.83	21.93	4.15	24.98	4.63	26.81	5.10
	12	13.59	2.49	16.23	2.73	18.88	3.03	20.20	3.90	21.93	4.24	24.98	4.71	26.81	5.19
	14	13.59	2.54	16.23	2.78	18.88	3.09	20.20	3.97	21.93	4.31	24.98	4.80	26.81	5.27
	16	13.59	2.59	16.23	2.85	18.88	3.16	20.20	4.04	21.93	4.39	24.98	4.88	26.81	5.38
	18	13.59	2.64	16.23	2.91	18.88	3.21	20.20	4.10	21.93	4.48	24.98	4.97	26.81	5.48
	20	13.59	2.70	16.23	3.01	18.88	3.28	20.20	4.19	21.93	4.51	24.98	5.07	26.81	5.58
	21	13.59	2.72	16.23	3.13	18.88	3.34	20.20	4.49	21.93	4.60	24.98	5.12	26.81	5.70
	23	13.59	2.91	16.23	3.38	18.88	3.59	20.20	4.80	21.93	4.88	24.98	5.32	26.81	5.75
	25	13.59	3.12	16.23	3.64	18.88	3.85	20.20	5.06	21.93	5.21	24.98	5.68	26.81	6.12
27	13.59	3.33	16.23	3.92	18.88	4.12	20.20	5.31	21.93	5.54	24.98	6.05	26.81	6.53	
29	13.59	3.57	16.23	4.21	18.88	4.41	20.20	5.53	21.93	5.90	24.98	6.46	26.81	6.97	
31	13.59	3.81	16.23	4.51	18.88	4.71	20.20	5.84	21.93	6.27	24.98	6.87	26.81	7.44	
33	13.59	4.07	16.23	4.84	18.88	5.04	20.20	6.09	21.93	6.66	24.98	7.31	26.81	7.92	
35	13.59	4.34	16.23	5.18	18.88	5.38	20.20	6.14	21.93	7.07	24.98	7.78	26.81	8.44	
37	13.59	4.63	16.23	5.55	18.88	5.74	20.20	6.42	21.93	7.51	24.98	8.28	26.81	8.99	
39	13.59	4.92	16.23	5.93	18.88	6.12	20.20	6.67	21.93	7.79	24.98	8.78	26.81	9.56	
41	13.59	5.11	16.23	6.16	18.88	6.35	20.20	6.91	21.93	8.06	24.98	9.20	26.81	10.17	
43	13.59	5.29	16.23	6.28	18.88	6.58	20.20	7.23	21.93	8.46	24.98	9.59	26.81	10.63	
45	13.59	5.72	16.23	7.07	18.88	7.47	20.20	7.88	21.93	9.14	24.98	10.02	26.81	11.10	
48	13.59	6.57	16.23	7.37	18.88	8.16	20.20	8.96	21.93	9.76	24.98	10.56	26.81	11.36	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Cooling Capacity Tables - MSAN6-XMi 335T

Combina- tion (%) (Capacity index)	Outdoor air tempera- ture D.B.(°C)	Indoor air temperature D.B / W.B. (°C)													
		20,8/14		23,3/16		25,8/18		27/19		28,2/20		30,7/22		32/24	
		TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe	TC kWf	PI kWe
50%	-5	11.42	1.82	13.65	1.98	15.83	2.19	16.92	3.00	18.34	3.11	20.86	3.54	22.48	3.81
	-2	11.42	1.85	13.65	2.01	15.83	2.22	16.92	3.07	18.34	3.17	20.86	3.59	22.48	3.87
	0	11.42	1.87	13.65	2.03	15.83	2.25	16.92	3.08	18.34	3.20	20.86	3.65	22.48	3.93
	2	11.42	1.89	13.65	2.06	15.83	2.28	16.92	3.10	18.34	3.26	20.86	3.66	22.48	4.01
	4	11.42	1.91	13.65	2.10	15.83	2.32	16.92	3.10	18.34	3.33	20.86	3.75	22.48	4.11
	6	11.42	1.95	13.65	2.13	15.83	2.36	16.92	3.13	18.34	3.39	20.86	3.81	22.48	4.23
	8	11.42	1.98	13.65	2.17	15.83	2.42	16.92	3.14	18.34	3.43	20.86	3.87	22.48	4.37
	10	11.42	2.02	13.65	2.21	15.83	2.46	16.92	3.11	18.34	3.53	20.86	3.97	22.48	4.43
	12	11.42	2.06	13.65	2.26	15.83	2.51	16.92	3.13	18.34	3.60	20.86	4.04	22.48	4.50
	14	11.42	2.11	13.65	2.31	15.83	2.56	16.92	3.15	18.34	3.66	20.86	4.11	22.48	4.59
	16	11.42	2.15	13.65	2.36	15.83	2.62	16.92	3.15	18.34	3.71	20.86	4.19	22.48	4.66
	18	11.42	2.19	13.65	2.41	15.83	2.66	16.92	3.17	18.34	3.78	20.86	4.26	22.48	4.75
	20	11.42	2.24	13.65	2.49	15.83	2.72	16.92	3.32	18.34	3.85	20.86	4.33	22.48	4.84
	21	11.42	2.26	13.65	2.59	15.83	2.77	16.92	3.49	18.34	3.88	20.86	4.38	22.48	4.89
	23	11.42	2.41	13.65	2.80	15.83	2.98	16.92	3.72	18.34	3.96	20.86	4.45	22.48	5.00
	25	11.42	2.59	13.65	3.02	15.83	3.19	16.92	3.96	18.34	4.08	20.86	4.68	22.48	5.33
	27	11.42	2.76	13.65	3.25	15.83	3.42	16.92	4.27	18.34	4.33	20.86	4.98	22.48	5.69
	29	11.42	2.96	13.65	3.49	15.83	3.66	16.92	4.40	18.34	4.61	20.86	5.30	22.48	6.06
	31	11.42	3.16	13.65	3.74	15.83	3.91	16.92	4.69	18.34	4.89	20.86	5.63	22.48	6.45
	33	11.42	3.37	13.65	4.01	15.83	4.18	16.92	4.94	18.34	5.19	20.86	5.99	22.48	6.85
35	11.42	3.59	13.65	4.29	15.83	4.46	16.92	5.09	18.34	5.49	20.86	6.36	22.48	7.28	
37	11.42	3.83	13.65	4.60	15.83	4.76	16.92	5.32	18.34	5.83	20.86	6.75	22.48	7.73	
39	11.42	4.08	13.65	4.91	15.83	5.07	16.92	5.52	18.34	6.18	20.86	7.15	22.48	8.21	
41	11.42	4.23	13.65	5.10	15.83	5.26	16.92	5.72	18.34	6.45	20.86	7.53	22.48	8.59	
43	11.42	4.38	13.65	5.20	15.83	5.45	16.92	6.10	18.34	6.61	20.86	7.91	22.48	8.97	
45	11.42	4.59	13.65	5.86	15.83	6.24	16.92	6.73	18.34	7.39	20.86	8.68	22.48	9.36	
48	11.42	5.39	13.65	6.15	15.83	6.92	16.92	7.68	18.34	8.44	20.86	9.21	22.48	9.97	

Abbreviations:

CR: Combination ratio TC: Total capacity (kW) PI: Power input (compressor + outdoor fan motor) (kW)

Notes: 1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 200T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
130%	-19.8	-20	18.45	6.50	18.38	6.57	18.31	6.63	18.24	6.67	18.24	6.72	18.16	6.81
	-18.8	-19	18.59	6.51	18.52	6.57	18.45	6.64	18.45	6.68	18.38	6.72	18.31	6.81
	-16.7	-17	18.88	6.52	18.81	6.58	18.73	6.65	18.73	6.69	18.66	6.73	18.59	6.82
	-13.7	-15	19.16	6.53	19.09	6.59	19.02	6.67	19.02	6.71	18.95	6.75	18.88	6.83
	-11.8	-13	19.45	6.54	19.38	6.61	19.30	6.67	19.30	6.72	19.23	6.76	19.23	6.85
	-9.8	-11	19.73	6.55	19.66	6.62	19.59	6.69	19.59	6.72	19.59	6.77	19.52	6.86
	-9.5	-10	19.87	6.56	19.80	6.62	19.80	6.69	19.73	6.73	19.73	6.77	19.66	6.86
	-8.5	-9.1	20.02	6.56	19.94	6.63	19.87	6.70	19.87	6.74	19.87	6.78	19.80	6.87
	-7	-7.6	20.23	6.57	20.16	6.63	20.16	6.71	20.09	6.75	20.09	6.79	20.02	6.88
	-5	-5.6	21.80	7.05	21.73	7.12	21.65	7.19	21.65	7.24	21.58	7.28	21.51	7.37
	-3	-3.7	22.08	7.42	22.01	7.50	21.94	7.58	21.94	7.62	21.87	7.67	21.80	7.77
	0	-0.7	22.51	8.01	22.44	8.10	22.37	8.19	22.37	8.23	22.30	8.28	22.30	8.39
	3	2.2	24.57	7.86	24.57	7.94	24.50	8.03	24.43	8.08	24.43	8.12	24.36	8.03
	5	4.1	30.91	9.72	30.84	9.67	29.21	8.84	28.07	8.44	26.93	8.04	24.72	7.27
	7	6	33.69	8.88	31.41	8.21	29.21	7.55	28.07	7.23	26.93	6.91	24.72	6.29
	9	7.9	33.69	8.11	31.41	7.53	29.21	6.96	28.07	6.69	26.93	6.42	24.72	5.88
11	9.8	33.69	7.43	31.41	6.93	29.21	6.45	28.07	6.22	26.93	5.98	24.72	5.51	
13	11.8	33.69	6.85	31.41	6.42	29.21	6.01	28.07	5.80	26.93	5.60	24.72	5.19	
15	13.7	33.69	6.40	31.41	6.03	29.21	5.67	28.07	5.49	26.93	5.31	24.72	4.95	
120%	-19.8	-20	18.43	6.79	18.36	6.86	18.29	6.93	18.29	6.98	18.21	7.02	18.14	7.11
	-18.8	-19	18.57	6.80	18.50	6.86	18.43	6.94	18.43	6.98	18.36	7.03	18.29	7.11
	-16.7	-17	18.86	6.81	18.79	6.87	18.71	6.95	18.71	6.99	18.64	7.04	18.64	7.13
	-13.7	-15	19.14	6.81	19.07	6.89	19.00	6.97	19.00	7.00	19.00	7.05	18.93	7.14
	-11.8	-13	19.43	6.83	19.36	6.90	19.86	6.98	19.29	7.02	19.29	7.06	19.21	7.15
	-9.8	-11	19.71	6.84	19.64	6.91	19.64	6.98	19.57	7.03	19.57	7.07	19.50	7.16
	-9.5	-10	19.86	6.85	19.79	6.92	19.79	6.99	19.71	7.04	19.71	7.08	19.64	7.17
	-8.5	-9.1	20.00	6.85	19.93	6.92	19.93	7.00	19.86	7.04	19.86	7.09	19.79	7.17
	-7	-7.6	20.21	6.86	20.14	6.93	20.14	7.01	20.07	7.05	20.07	7.09	20.00	7.18
	-5	-5.6	21.79	7.36	21.71	7.43	21.64	7.52	21.64	7.56	21.64	7.60	21.57	7.70
	-3	-3.7	22.07	7.75	22.00	7.83	21.93	7.92	21.93	7.96	21.86	8.01	21.86	8.11
	0	-0.7	22.50	8.37	22.43	8.46	22.36	8.55	22.36	8.60	22.36	8.65	22.29	8.70
	3	2.2	24.57	8.22	24.57	8.29	24.50	8.39	24.43	8.43	24.43	8.37	22.86	7.54
	5	4.1	30.93	9.85	29.07	9.06	27.00	8.30	25.93	7.93	24.93	7.56	22.86	6.85
	7	6	31.14	8.37	29.07	7.74	27.00	7.13	25.93	6.83	24.93	6.54	22.86	5.96
	9	7.9	31.14	7.68	29.07	7.15	27.00	6.63	25.93	6.36	24.93	6.11	22.86	5.61
11	9.8	31.14	7.09	29.07	6.63	27.00	6.18	25.93	5.95	24.93	5.73	22.86	5.29	
13	11.8	31.14	6.56	29.07	6.17	27.00	5.78	25.93	5.58	24.93	5.39	22.86	5.01	
15	13.7	31.14	6.17	29.07	5.83	27.00	5.48	25.93	5.31	24.93	5.15	22.86	4.81	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 200T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
110%	-19.8	-20	18.36	6.97	18.29	7.05	18.21	7.12	18.21	7.16	18.14	7.21	18.14	7.30
	-18.8	-19	18.50	6.98	18.43	7.05	18.36	7.12	18.36	7.17	18.29	7.21	18.29	7.30
	-16.7	-17	18.79	6.98	18.71	7.06	18.64	7.14	18.64	7.18	18.64	7.23	18.57	7.31
	-13.7	-15	19.07	7.00	19.00	7.07	18.93	7.15	18.93	7.19	18.93	7.23	18.86	7.33
	-11.8	-13	19.36	7.01	19.29	7.09	19.29	7.17	19.21	7.21	19.21	7.25	19.14	7.34
	-9.8	-11	19.64	7.03	19.57	7.10	19.57	7.17	19.50	7.22	19.50	7.26	19.43	7.36
	-9.5	-10	19.79	7.03	19.79	7.11	19.71	7.18	19.64	7.23	19.64	7.27	19.57	7.36
	-8.5	-9.1	19.93	7.04	19.86	7.11	19.86	7.19	19.79	7.23	19.79	7.27	19.71	7.36
	-7	-7.6	20.14	7.05	20.07	7.11	20.07	7.20	20.00	7.23	20.00	7.28	19.93	7.37
	-5	-5.6	21.71	7.56	21.64	7.64	21.57	7.72	21.57	7.76	21.57	7.80	20.93	7.31
	-3	-3.7	22.00	7.96	21.93	8.05	21.86	8.13	21.86	8.17	21.86	8.22	20.93	7.56
	0	-0.7	22.43	8.60	22.36	8.68	22.36	8.78	22.29	8.83	22.29	8.82	20.93	7.94
	3	2.2	24.50	8.43	24.50	8.52	24.43	8.41	23.79	8.02	22.86	7.64	20.93	6.89
	5	4.1	28.57	8.99	26.64	8.29	24.79	7.61	23.79	8.13	22.86	6.94	20.93	6.30
	7	6	28.57	7.69	26.64	7.13	24.79	6.58	23.79	6.31	22.86	6.04	20.93	5.53
	9	7.9	28.57	7.11	26.64	6.62	24.79	6.15	23.79	5.92	22.86	5.68	20.93	5.23
	11	9.8	28.57	6.61	26.64	6.18	24.79	5.77	23.79	5.57	22.86	5.36	20.93	4.97
13	11.8	28.57	6.15	26.64	5.79	24.79	5.43	23.79	5.26	22.86	5.08	20.93	4.73	
15	13.7	28.57	5.82	26.64	5.50	24.79	5.18	23.79	5.03	22.86	4.88	20.93	4.57	
100%	-19.8	-20	18.43	7.07	18.36	7.15	18.29	7.23	18.29	7.27	18.29	7.31	18.21	7.40
	-18.8	-19	18.71	7.09	18.64	7.17	18.57	7.24	18.57	7.28	18.57	7.32	18.50	7.41
	-16.7	-17	19.00	7.10	18.93	7.17	18.93	7.25	18.86	7.30	18.86	7.34	18.79	7.25
	-13.7	-15	19.29	7.11	19.21	7.18	19.21	7.27	19.14	7.30	19.14	7.35	19.07	7.11
	-11.8	-13	19.57	7.12	19.50	7.20	19.50	7.28	19.43	7.32	19.43	7.36	19.07	6.97
	-9.8	-11	19.71	7.13	19.71	7.21	19.64	7.29	19.64	7.32	19.57	7.36	19.07	6.90
	-9.5	-10	19.86	7.14	19.79	7.21	19.79	7.29	19.71	7.33	19.71	7.37	19.07	6.84
	-8.5	-9.1	20.07	7.15	20.07	7.22	20.00	7.30	19.93	7.34	19.93	7.38	19.07	6.74
	-7	-7.6	21.64	7.16	21.57	7.22	21.57	7.30	21.50	7.61	20.79	7.23	19.07	6.53
	-5	-5.6	21.93	7.17	21.86	7.22	21.86	7.30	21.64	7.86	20.79	7.48	19.07	6.75
	-3	-3.7	22.36	7.17	22.29	7.23	22.29	7.06	21.64	7.40	20.79	7.86	19.07	7.10
	0	-0.7	22.93	7.18	24.21	7.23	22.50	6.87	21.64	7.78	20.79	7.42	19.07	6.67
	3	2.2	24.43	7.63	24.21	7.05	22.50	6.67	21.64	7.16	20.79	6.83	19.07	6.17
	5	4.1	25.93	7.24	24.21	6.71	22.50	6.35	21.64	6.54	20.79	6.24	19.07	5.68
	7	6	25.93	6.84	24.21	6.36	22.50	5.95	21.64	5.72	20.79	5.48	19.07	5.02
	9	7.9	25.93	6.45	24.21	6.03	22.50	5.61	21.64	5.40	20.79	5.19	19.07	4.79
	11	9.8	25.93	6.04	24.21	5.66	22.50	5.29	21.64	5.11	20.79	4.93	19.07	4.58
13	11.8	25.93	5.66	24.21	5.34	22.50	5.02	21.64	4.86	20.79	4.71	19.07	4.40	
15	13.7	25.93	5.38	24.21	5.10	22.50	4.82	47.36	4.68	20.79	4.54	19.07	4.27	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 200T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
90%	-19.8	-20	18.21	7.18	18.14	7.25	18.07	7.33	18.07	7.37	18.07	7.42	17.14	6.73
	-18.8	-19	18.36	7.19	18.29	7.26	18.21	7.34	18.21	7.38	18.21	7.39	17.14	6.66
	-16.7	-17	18.64	7.20	18.57	7.27	18.57	7.35	18.50	7.39	18.50	7.24	17.14	6.52
	-13.7	-15	18.93	7.21	18.86	7.29	18.86	7.36	18.79	7.40	18.71	7.10	17.14	6.39
	-11.8	-13	19.21	7.23	19.14	7.30	19.14	7.37	19.07	7.30	18.71	6.95	17.14	6.27
	-9.8	-11	19.50	7.23	19.50	7.31	19.43	7.38	19.43	7.16	18.71	6.82	17.14	6.15
	-9.5	-10	19.64	7.24	19.64	7.31	19.57	7.39	19.50	7.09	18.71	6.75	17.14	6.09
	-8.5	-9.1	19.79	7.25	19.71	7.32	19.71	7.37	19.50	7.03	18.71	6.69	17.14	6.04
	-7	-7.6	20.00	7.26	20.00	7.33	19.93	7.27	19.50	6.93	18.71	6.60	17.14	5.95
	-5	-5.6	21.57	7.27	21.50	7.34	20.29	7.02	19.50	6.70	18.71	6.39	17.14	5.78
	-3	-3.7	21.86	7.28	21.79	7.35	20.29	7.26	19.50	6.93	18.71	6.61	17.14	5.98
	0	-0.7	22.29	7.29	21.79	7.35	20.29	7.63	19.50	7.29	18.71	6.95	17.14	6.29
	3	2.2	23.36	7.30	21.79	7.23	20.29	6.63	19.50	6.34	18.71	6.04	17.14	5.48
	5	4.1	23.36	7.12	21.79	6.60	20.29	6.08	19.50	5.82	18.71	5.57	17.14	5.09
	7	6	23.36	6.19	21.79	5.76	20.29	5.34	19.50	5.13	18.71	4.93	17.14	4.53
	9	7.9	23.36	5.81	21.79	5.44	20.29	5.07	19.50	4.89	18.71	4.71	17.14	4.35
	11	9.8	23.36	5.48	21.79	5.15	20.29	4.83	19.50	4.67	18.71	4.51	17.14	4.20
13	11.8	23.36	5.17	21.79	4.89	20.29	4.61	19.50	4.48	18.71	4.34	17.14	4.06	
15	13.7	23.36	4.96	21.79	4.71	20.29	4.46	19.50	4.34	18.71	4.22	17.14	3.97	
80%	-19.8	-20	18.14	7.21	18.07	7.29	18.00	7.04	17.29	6.72	16.64	6.40	15.21	5.78
	-18.8	-19	18.29	7.22	18.21	7.29	18.00	6.97	17.29	6.65	16.64	6.34	15.21	5.72
	-16.7	-17	18.57	7.23	18.50	7.31	18.00	6.83	17.29	6.51	16.64	6.21	15.21	5.60
	-13.7	-15	18.86	7.25	18.79	7.31	18.00	6.69	17.29	6.39	16.64	6.09	15.21	5.50
	-11.8	-13	19.14	7.25	19.07	7.18	18.00	6.56	17.29	6.26	16.64	5.97	15.21	5.40
	-9.8	-11	19.43	7.26	19.36	7.03	18.00	6.44	17.29	6.14	16.64	5.86	15.21	5.30
	-9.5	-10	19.57	7.27	19.36	6.97	18.00	6.37	17.29	6.08	16.64	5.80	15.21	5.25
	-8.5	-9.1	19.71	7.28	19.36	6.91	18.00	6.32	17.29	6.03	16.64	5.75	15.21	5.20
	-7	-7.6	19.93	7.29	19.36	6.80	18.00	6.23	17.29	5.95	16.64	5.67	15.21	5.13
	-5	-5.6	20.79	7.14	19.36	6.58	18.00	6.04	17.29	5.76	16.64	5.51	15.21	4.99
	-3	-3.7	20.79	7.39	19.36	6.81	18.00	6.25	17.29	5.97	16.64	5.70	15.21	5.17
	0	-0.7	20.79	7.77	19.36	7.16	18.00	6.57	17.29	6.28	16.64	5.99	15.21	5.44
	3	2.2	20.79	6.74	19.36	6.22	18.00	5.72	17.29	5.48	16.64	5.24	15.21	4.76
	5	4.1	20.79	6.17	19.36	5.72	18.00	5.29	17.29	5.08	16.64	4.86	15.21	4.45
	7	6	20.79	5.41	19.36	5.05	18.00	4.69	17.29	4.51	16.64	4.34	15.21	4.00
	9	7.9	20.79	5.13	19.36	4.81	18.00	4.50	17.29	4.34	16.64	4.18	15.21	3.88
	11	9.8	20.79	4.87	19.36	4.59	18.00	4.32	17.29	4.18	16.64	4.04	15.21	3.78
13	11.8	20.79	4.65	19.36	4.40	18.00	4.16	17.29	4.04	16.64	3.93	15.21	3.69	
15	13.7	20.79	4.49	19.36	4.27	18.00	4.05	17.29	3.95	16.64	3.84	15.21	3.63	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 200T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
70%	-19.8	-20	18.00	7.22	16.93	6.64	15.79	6.09	15.14	5.81	14.57	5.54	13.36	5.02
	-18.8	-19	18.14	7.14	16.93	6.57	15.79	6.02	15.14	5.75	14.57	5.49	13.36	4.98
	-16.7	-17	18.14	6.99	16.93	6.44	15.79	5.91	15.14	5.64	14.57	5.38	13.36	4.88
	-13.7	-15	18.14	6.86	16.93	6.31	15.79	5.79	15.14	5.54	14.57	5.28	13.36	4.79
	-11.8	-13	18.14	6.72	16.93	6.19	15.79	5.68	15.14	5.42	14.57	5.18	13.36	4.70
	-9.8	-11	18.14	6.59	16.93	6.07	15.79	5.57	15.14	5.33	14.57	5.09	13.36	4.61
	-9.5	-10	18.14	6.53	16.93	6.02	15.79	5.52	15.14	5.28	14.57	5.04	13.36	4.58
	-8.5	-9.1	18.14	6.47	16.93	5.97	15.79	5.48	15.14	5.23	14.57	5.00	13.36	4.54
	-7	-7.6	18.14	6.38	16.93	5.88	15.79	5.40	15.14	5.17	14.57	4.93	13.36	4.48
	-5	-5.6	18.14	6.18	16.93	5.71	15.79	5.25	15.14	5.03	14.57	4.80	13.36	4.37
	-3	-3.7	18.14	6.40	16.93	5.91	15.79	5.43	15.14	5.20	14.57	4.98	13.36	4.53
	0	-0.7	18.14	6.73	16.93	6.22	15.79	5.72	15.14	5.48	14.57	5.23	13.36	4.77
	3	2.2	18.14	5.86	16.93	5.42	15.79	5.00	15.14	4.79	14.57	4.59	13.36	4.19
	5	4.1	18.14	5.41	16.93	5.04	15.79	4.67	15.14	4.48	14.57	4.30	13.36	3.95
	7	6	18.14	4.79	16.93	4.48	15.79	4.18	15.14	4.03	14.57	3.88	13.36	3.59
	9	7.9	18.14	4.59	16.93	4.31	15.79	4.04	15.14	4.78	14.57	3.78	13.36	3.52
	11	9.8	18.14	4.41	16.93	4.17	15.79	3.92	15.14	3.81	14.57	3.69	13.36	3.46
13	11.8	18.14	4.24	16.93	4.04	15.79	3.82	15.14	3.72	14.57	3.61	13.36	3.41	
15	13.7	18.14	4.13	16.93	3.94	15.79	3.76	15.14	3.66	14.57	3.57	13.36	3.39	
60%	-19.8	-20	15.57	6.01	14.57	5.54	13.50	5.10	13.00	4.87	12.43	4.66	11.43	4.23
	-18.8	-19	15.57	5.95	14.57	5.49	13.50	5.04	13.00	4.83	12.43	4.61	11.43	4.20
	-16.7	-17	15.57	5.83	14.57	5.38	13.50	4.95	13.00	4.73	12.43	4.53	11.43	4.12
	-13.7	-15	15.57	5.72	14.57	5.28	13.50	4.85	13.00	4.65	12.43	4.45	11.43	4.04
	-11.8	-13	15.57	5.61	14.57	5.18	13.50	4.77	13.00	4.56	12.43	4.36	11.43	3.98
	-9.8	-11	15.57	5.50	14.57	5.09	13.50	4.68	13.00	4.48	12.43	4.29	11.43	3.91
	-9.5	-10	15.57	5.45	14.57	5.04	13.50	4.64	13.00	4.44	12.43	4.25	11.43	3.87
	-8.5	-9.1	15.57	5.41	14.57	5.00	13.50	4.60	13.00	4.41	12.43	4.22	11.43	3.85
	-7	-7.6	15.57	5.33	14.57	4.93	13.50	4.54	13.00	4.35	12.43	4.17	11.43	3.79
	-5	-5.6	15.57	5.18	14.57	4.80	13.50	4.43	13.00	4.25	12.43	4.07	11.43	3.72
	-3	-3.7	15.57	5.37	14.57	4.98	13.50	4.59	13.00	4.41	12.43	4.22	11.43	3.85
	0	-0.7	15.57	5.65	14.57	5.23	13.50	4.84	13.00	4.64	12.43	4.44	11.43	4.06
	3	2.2	15.57	4.94	14.57	4.59	13.50	4.24	13.00	4.08	12.43	3.91	11.43	3.58
	5	4.1	15.57	4.61	14.57	4.30	13.50	4.00	13.00	3.85	12.43	3.71	11.43	3.41
	7	6	15.57	4.14	14.57	3.88	13.50	3.63	13.00	3.50	12.43	3.38	11.43	3.14
	9	7.9	15.57	4.01	14.57	3.78	13.50	3.55	13.00	3.44	12.43	3.34	11.43	3.11
	11	9.8	15.57	3.89	14.57	3.69	13.50	3.49	13.00	3.39	12.43	3.29	11.43	3.10
13	11.8	15.57	3.79	14.57	3.61	13.50	3.44	13.00	3.35	12.43	3.26	11.43	3.09	
15	13.7	15.57	3.73	14.57	3.57	13.50	3.41	13.00	3.34	12.43	3.26	11.43	3.10	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 200T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
	-19.8	-20	13.00	4.87	12.14	4.52	11.29	4.17	10.79	4.00	10.36	3.83	9.50	3.50
	-18.8	-19	13.00	4.83	12.14	4.48	11.29	4.13	10.79	4.82	10.36	3.79	9.50	3.47
	-16.7	-17	13.00	4.73	12.14	4.39	11.29	4.05	10.79	3.89	10.36	3.73	9.50	3.41
	-13.7	-15	13.00	4.65	12.14	4.31	11.29	3.98	10.79	3.82	10.36	3.66	9.50	3.35
	-11.8	-13	13.00	4.56	12.14	4.23	11.29	3.91	10.79	3.75	10.36	3.60	9.50	3.29
	-9.8	-11	13.00	4.48	12.14	4.17	11.29	3.85	10.79	3.69	10.36	3.54	9.50	3.23
	-9.5	-10	13.00	4.44	12.14	4.12	11.29	3.81	10.79	3.66	10.36	3.51	9.50	3.21
	-8.5	-9.1	13.00	4.41	12.14	4.10	11.29	3.79	10.79	3.63	10.36	3.48	9.50	3.19
	-7	-7.6	13.00	4.35	12.14	4.04	11.29	3.73	10.79	3.59	10.36	3.44	9.50	3.15
50%	-5	-5.6	13.00	4.25	12.14	3.95	11.29	3.66	10.79	3.52	10.36	3.37	9.50	3.10
	-3	-3.7	13.00	4.41	12.14	4.10	11.29	3.79	10.79	3.65	10.36	3.50	9.50	3.21
	0	-0.7	13.00	4.64	12.14	4.31	11.29	4.00	10.79	3.85	10.36	3.69	9.50	3.39
	3	2.2	13.00	4.08	12.14	3.80	11.29	3.53	10.79	3.40	10.36	3.26	9.50	3.00
	5	4.1	13.00	3.85	12.14	3.60	11.29	3.37	10.79	3.25	10.36	3.13	9.50	2.90
	7	6	13.00	3.50	12.14	3.30	11.29	3.10	10.79	3.00	10.36	2.90	9.50	2.70
	9	7.9	13.00	3.44	12.14	3.26	11.29	3.08	10.79	2.99	10.36	2.90	9.50	2.72
	11	9.8	13.00	3.39	12.14	3.23	11.29	3.06	10.79	2.98	10.36	2.91	9.50	2.74
	13	11.8	13.00	3.35	12.14	3.20	11.29	3.06	10.79	2.98	10.36	2.91	9.50	2.78
	15	13.7	13.00	3.34	12.14	3.20	11.29	3.07	10.79	3.01	10.36	2.95	9.50	2.82

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 224T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
130%	-19.8	-20	20.50	7.29	20.42	7.36	20.34	7.44	20.26	7.48	20.26	7.53	20.18	7.63
	-18.8	-19	20.66	7.30	20.58	7.36	20.50	7.45	20.50	7.49	20.42	7.54	20.34	7.63
	-16.7	-17	20.97	7.31	20.89	7.38	20.82	7.45	20.82	7.50	20.74	7.55	20.66	7.65
	-13.7	-15	21.29	7.32	21.21	7.39	21.13	7.47	21.13	7.52	21.05	7.57	20.97	7.66
	-11.8	-13	21.61	7.33	21.53	7.41	21.45	7.48	21.45	7.53	21.37	7.57	21.37	7.68
	-9.8	-11	21.92	7.34	21.84	7.42	21.77	7.50	21.77	7.54	21.77	7.58	21.69	7.69
	-9.5	-10	22.08	7.35	22.00	7.42	22.00	7.50	21.92	7.55	21.92	7.59	21.84	7.69
	-8.5	-9.1	22.24	7.35	22.16	7.43	22.08	7.51	22.08	7.56	22.08	7.60	22.00	7.70
	-7	-7.6	22.48	7.36	22.40	7.44	22.40	7.52	22.32	7.57	22.32	7.61	22.24	7.71
	-5	-5.6	24.22	7.90	24.14	7.98	24.06	8.06	24.06	8.12	23.98	8.17	23.90	8.27
	-3	-3.7	24.54	8.31	24.46	8.41	24.38	8.50	24.38	8.54	24.30	8.60	24.22	8.71
	0	-0.7	25.01	8.98	24.93	9.08	24.85	9.18	24.85	9.23	24.77	9.28	24.77	9.40
	3	2.2	27.31	8.81	27.31	8.90	27.23	9.01	27.15	9.05	27.15	9.11	27.07	9.01
	5	4.1	34.35	10.90	34.27	10.84	32.45	9.91	31.18	9.46	29.92	9.02	27.46	8.15
	7	6	37.44	9.96	34.90	9.20	32.45	8.46	31.18	8.10	29.92	7.74	27.46	7.05
	9	7.9	37.44	9.09	34.90	8.44	32.45	7.81	31.18	7.50	29.92	7.20	27.46	6.59
	11	9.8	37.44	8.33	34.90	7.77	32.45	7.23	31.18	6.97	29.92	6.71	27.46	6.18
13	11.8	37.44	7.68	34.90	7.20	32.45	6.73	31.18	6.50	29.92	6.27	27.46	5.82	
15	13.7	37.44	7.18	34.90	6.76	32.45	6.36	31.18	6.15	29.92	5.95	27.46	5.55	
120%	-19.8	-20	20.48	7.61	20.40	7.69	20.32	7.77	20.32	7.82	20.24	7.87	20.16	7.97
	-18.8	-19	20.63	7.62	20.56	7.70	20.48	7.78	20.48	7.82	20.40	7.88	20.32	7.97
	-16.7	-17	20.95	7.63	20.87	7.71	20.79	7.79	20.79	7.84	20.71	7.89	20.71	7.99
	-13.7	-15	21.27	7.64	21.19	7.72	21.11	7.81	21.11	7.85	21.11	7.91	21.03	8.00
	-11.8	-13	21.59	7.66	21.51	7.73	22.06	7.82	21.43	7.87	21.43	7.91	21.35	8.02
	-9.8	-11	21.90	7.67	21.83	7.74	21.83	7.83	21.75	7.88	21.75	7.92	21.67	8.03
	-9.5	-10	22.06	7.68	21.98	7.75	21.98	7.84	21.90	7.89	21.90	7.93	21.83	8.04
	-8.5	-9.1	22.22	7.68	22.14	7.76	22.14	7.85	22.06	7.90	22.06	7.94	21.98	8.04
	-7	-7.6	22.46	7.69	22.38	7.77	22.38	7.86	22.30	7.91	22.30	7.95	22.22	8.05
	-5	-5.6	24.21	8.25	24.13	8.33	24.05	8.43	24.05	8.48	24.05	8.53	23.97	8.63
	-3	-3.7	24.52	8.69	24.44	8.78	24.37	8.88	24.37	8.93	24.29	8.98	24.29	9.09
	0	-0.7	25.00	9.38	24.92	9.48	24.84	9.58	24.84	9.64	24.84	9.70	24.76	9.76
	3	2.2	27.30	9.21	27.30	9.30	27.22	9.40	27.14	9.45	27.14	9.38	25.40	8.45
	5	4.1	34.37	11.04	32.30	10.16	30.00	9.31	28.81	8.89	27.70	8.48	25.40	7.68
	7	6	34.60	9.38	32.30	8.68	30.00	7.99	28.81	7.66	27.70	7.33	25.40	6.68
	9	7.9	34.60	8.61	32.30	8.01	30.00	7.43	28.81	7.13	27.70	6.85	25.40	6.28
	11	9.8	34.60	7.94	32.30	7.43	30.00	6.92	28.81	6.68	27.70	6.43	25.40	5.93
13	11.8	34.60	7.35	32.30	6.91	30.00	6.47	28.81	6.26	27.70	6.05	25.40	5.62	
15	13.7	34.60	6.91	32.30	6.53	30.00	6.14	28.81	5.95	27.70	5.77	25.40	5.40	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 224T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
110%	-19.8	-20	20.40	7.81	20.32	7.90	20.24	7.98	20.24	8.02	20.16	8.08	20.16	8.18
	-18.8	-19	20.56	7.82	20.48	7.90	20.40	7.98	20.40	8.03	20.32	8.08	20.32	8.19
	-16.7	-17	20.87	7.83	20.79	7.92	20.71	8.00	20.71	8.05	20.71	8.10	20.63	8.20
	-13.7	-15	21.19	7.85	21.11	7.93	21.03	8.01	21.03	8.06	21.03	8.11	20.95	8.22
	-11.8	-13	21.51	7.86	21.43	7.95	21.43	8.03	21.35	8.08	21.35	8.13	21.27	8.23
	-9.8	-11	21.83	7.88	21.75	7.96	21.75	8.04	21.67	8.09	21.67	8.14	21.59	8.25
	-9.5	-10	21.98	7.88	21.98	7.97	21.90	8.05	21.83	8.10	21.83	8.15	21.75	8.25
	-8.5	-9.1	22.14	7.89	22.06	7.97	22.06	8.06	21.98	8.10	21.98	8.15	21.90	8.26
	-7	-7.6	22.38	7.90	22.30	7.98	22.30	8.07	22.22	8.11	22.22	8.16	22.14	8.27
	-5	-5.6	24.13	8.48	24.05	8.56	23.97	8.65	23.97	8.70	23.97	8.75	23.25	8.20
	-3	-3.7	24.44	8.92	24.37	9.02	24.29	9.12	24.29	9.16	24.29	9.21	23.25	8.48
	0	-0.7	24.92	9.64	24.84	9.73	24.84	9.84	24.76	9.90	24.76	9.89	23.25	8.90
	3	2.2	27.22	9.45	27.22	9.55	27.14	9.43	26.43	8.99	25.40	8.56	23.25	7.72
	5	4.1	31.75	10.08	29.60	9.29	27.54	8.53	26.43	9.12	25.40	7.78	23.25	7.07
	7	6	31.75	8.62	29.60	7.99	27.54	7.38	26.43	7.08	25.40	6.78	23.25	6.20
	9	7.9	31.75	7.98	29.60	7.42	27.54	6.89	26.43	6.63	25.40	6.37	23.25	5.87
	11	9.8	31.75	7.40	29.60	6.93	27.54	6.47	26.43	6.24	25.40	6.01	23.25	5.57
13	11.8	31.75	6.89	29.60	6.49	27.54	6.09	26.43	5.90	25.40	5.69	23.25	5.31	
15	13.7	31.75	6.53	29.60	6.17	27.54	5.81	26.43	5.64	25.40	5.47	23.25	5.12	
100%	-19.8	-20	20.48	7.93	20.40	8.01	20.32	8.10	20.32	8.15	20.32	8.20	20.24	8.29
	-18.8	-19	20.79	7.95	20.71	8.03	20.63	8.12	20.63	8.16	20.63	8.21	20.56	8.30
	-16.7	-17	21.11	7.96	21.03	8.04	21.03	8.13	20.95	8.18	20.95	8.23	20.87	8.13
	-13.7	-15	21.43	7.98	21.35	8.05	21.35	8.15	21.27	8.19	21.27	8.24	21.19	7.97
	-11.8	-13	21.75	7.98	21.67	8.07	21.67	8.16	21.59	8.21	21.59	8.25	21.19	7.81
	-9.8	-11	21.90	7.99	21.90	8.08	21.83	8.17	21.83	8.21	21.75	8.26	21.19	7.73
	-9.5	-10	22.06	8.00	21.98	8.08	21.98	8.17	21.90	8.22	21.90	8.27	21.19	7.67
	-8.5	-9.1	22.30	8.01	22.30	8.09	22.22	8.18	22.14	8.23	22.14	8.27	21.19	7.56
	-7	-7.6	24.05	8.02	23.97	8.09	23.97	8.18	23.89	8.53	23.10	8.11	21.19	7.32
	-5	-5.6	24.37	8.03	24.29	8.10	24.29	8.19	24.05	8.82	23.10	8.39	21.19	7.57
	-3	-3.7	24.84	8.04	24.76	8.10	24.76	7.92	24.05	8.29	23.10	8.82	21.19	7.96
	0	-0.7	25.48	8.05	26.90	8.11	25.00	7.70	24.05	8.72	23.10	8.31	21.19	7.47
	3	2.2	27.14	8.56	26.90	7.91	25.00	7.48	24.05	8.02	23.10	7.66	21.19	6.92
	5	4.1	28.81	8.11	26.90	7.52	25.00	7.12	24.05	7.33	23.10	7.00	21.19	6.37
	7	6	28.81	7.67	26.90	7.13	25.00	6.67	24.05	6.41	23.10	6.14	21.19	5.63
	9	7.9	28.81	7.23	26.90	6.76	25.00	6.28	24.05	6.05	23.10	5.82	21.19	5.37
	11	9.8	28.81	6.77	26.90	6.34	25.00	5.94	24.05	5.73	23.10	5.53	21.19	5.13
13	11.8	28.81	6.34	26.90	5.98	25.00	5.63	24.05	5.45	23.10	5.28	21.19	4.93	
15	13.7	28.81	6.03	26.90	5.72	25.00	5.40	24.05	5.25	23.10	5.09	21.19	4.79	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 224T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
90%	-19.8	-20	20.24	8.05	20.16	8.13	20.08	8.22	20.08	8.27	20.08	8.31	19.05	7.54
	-18.8	-19	20.40	8.06	20.32	8.14	20.24	8.23	20.24	8.27	20.24	8.28	19.05	7.46
	-16.7	-17	20.71	8.07	20.63	8.15	20.63	8.24	20.56	8.28	20.56	8.12	19.05	7.31
	-13.7	-15	21.03	8.08	20.95	8.17	20.95	8.26	20.87	8.29	20.79	7.96	19.05	7.16
	-11.8	-13	21.35	8.10	21.27	8.18	21.27	8.27	21.19	8.19	20.79	7.79	19.05	7.03
	-9.8	-11	21.67	8.11	21.67	8.20	21.59	8.27	21.59	8.02	20.79	7.65	19.05	6.89
	-9.5	-10	21.83	8.12	21.83	8.20	21.75	8.28	21.67	7.95	20.79	7.57	19.05	6.82
	-8.5	-9.1	21.98	8.13	21.90	8.21	21.90	8.27	21.67	7.88	20.79	7.50	19.05	6.77
	-7	-7.6	22.22	8.14	22.22	8.22	22.14	8.15	21.67	7.77	20.79	7.40	19.05	6.67
	-5	-5.6	23.97	8.15	23.89	8.23	22.54	7.87	21.67	7.51	20.79	7.16	19.05	6.48
	-3	-3.7	24.29	8.16	24.21	8.23	22.54	8.14	21.67	7.77	20.79	7.41	19.05	6.70
	0	-0.7	24.76	8.18	24.21	8.24	22.54	8.56	21.67	8.17	20.79	7.79	19.05	7.05
	3	2.2	25.95	8.19	24.21	8.10	22.54	7.43	21.67	7.11	20.79	6.78	19.05	6.15
	5	4.1	25.95	7.98	24.21	7.40	22.54	6.82	21.67	6.53	20.79	6.24	19.05	5.70
	7	6	25.95	6.94	24.21	6.46	22.54	5.98	21.67	5.75	20.79	5.53	19.05	5.08
	9	7.9	25.95	6.52	24.21	6.10	22.54	5.68	21.67	5.48	20.79	5.28	19.05	4.88
	11	9.8	25.95	6.14	24.21	5.77	22.54	5.41	21.67	5.23	20.79	5.06	19.05	4.71
13	11.8	25.95	5.80	24.21	5.48	22.54	5.17	21.67	5.02	20.79	4.86	19.05	4.55	
15	13.7	25.95	5.56	24.21	5.28	22.54	5.00	21.67	4.86	20.79	4.73	19.05	4.45	
80%	-19.8	-20	20.16	8.09	20.08	8.17	20.00	7.89	19.21	7.53	18.49	7.18	16.90	6.48
	-18.8	-19	20.32	8.09	20.24	8.17	20.00	7.82	19.21	7.46	18.49	7.10	16.90	6.41
	-16.7	-17	20.63	8.10	20.56	8.19	20.00	7.66	19.21	7.30	18.49	6.96	16.90	6.28
	-13.7	-15	20.95	8.12	20.87	8.20	20.00	7.50	19.21	7.16	18.49	6.83	16.90	6.17
	-11.8	-13	21.27	8.13	21.19	8.05	20.00	7.35	19.21	7.02	18.49	6.69	16.90	6.05
	-9.8	-11	21.59	8.14	21.51	7.88	20.00	7.22	19.21	6.88	18.49	6.57	16.90	5.94
	-9.5	-10	21.75	8.15	21.51	7.81	20.00	7.14	19.21	6.82	18.49	6.50	16.90	5.88
	-8.5	-9.1	21.90	8.16	21.51	7.74	20.00	7.08	19.21	6.76	18.49	6.44	16.90	5.83
	-7	-7.6	22.14	8.17	21.51	7.63	20.00	6.99	19.21	6.67	18.49	6.36	16.90	5.76
	-5	-5.6	23.10	8.01	21.51	7.38	20.00	6.77	19.21	6.46	18.49	6.18	16.90	5.59
	-3	-3.7	23.10	8.29	21.51	7.64	20.00	7.01	19.21	6.69	18.49	6.39	16.90	5.79
	0	-0.7	23.10	8.71	21.51	8.03	20.00	7.36	19.21	7.04	18.49	6.72	16.90	6.10
	3	2.2	23.10	7.56	21.51	6.98	20.00	6.41	19.21	6.14	18.49	5.87	16.90	5.34
	5	4.1	23.10	6.91	21.51	6.41	20.00	5.93	19.21	5.69	18.49	5.45	16.90	4.99
	7	6	23.10	6.06	21.51	5.66	20.00	5.26	19.21	5.06	18.49	4.87	16.90	4.49
	9	7.9	23.10	5.75	21.51	5.39	20.00	5.04	19.21	4.87	18.49	4.69	16.90	4.35
	11	9.8	23.10	5.46	21.51	5.15	20.00	4.84	19.21	4.69	18.49	4.53	16.90	4.24
13	11.8	23.10	5.21	21.51	4.94	20.00	4.67	19.21	4.53	18.49	4.40	16.90	4.13	
15	13.7	23.10	5.03	21.51	4.78	20.00	4.54	19.21	4.43	18.49	4.31	16.90	4.07	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 224T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
70%	-19.8	-20	20.00	8.09	18.81	7.44	17.54	6.82	16.83	6.52	16.19	6.22	14.84	5.63
	-18.8	-19	20.16	8.00	18.81	7.37	17.54	6.75	16.83	6.45	16.19	6.16	14.84	5.58
	-16.7	-17	20.16	7.84	18.81	7.22	17.54	6.62	16.83	6.32	16.19	6.03	14.84	5.47
	-13.7	-15	20.16	7.69	18.81	7.08	17.54	6.49	16.83	6.21	16.19	5.92	14.84	5.37
	-11.8	-13	20.16	7.53	18.81	6.94	17.54	6.37	16.83	6.08	16.19	5.81	14.84	5.27
	-9.8	-11	20.16	7.39	18.81	6.81	17.54	6.24	16.83	5.97	16.19	5.70	14.84	5.17
	-9.5	-10	20.16	7.32	18.81	6.75	17.54	6.19	16.83	5.92	16.19	5.65	14.84	5.13
	-8.5	-9.1	20.16	7.25	18.81	6.69	17.54	6.14	16.83	5.87	16.19	5.61	14.84	5.08
	-7	-7.6	20.16	7.15	18.81	6.59	17.54	6.05	16.83	5.79	16.19	5.53	14.84	5.02
	-5	-5.6	20.16	6.93	18.81	6.40	17.54	5.89	16.83	5.64	16.19	5.38	14.84	4.90
	-3	-3.7	20.16	7.17	18.81	6.62	17.54	6.09	16.83	5.83	16.19	5.58	14.84	5.08
	0	-0.7	20.16	7.54	18.81	6.97	17.54	6.41	16.83	6.14	16.19	5.87	14.84	5.35
	3	2.2	20.16	6.56	18.81	6.08	17.54	5.61	16.83	5.37	16.19	5.14	14.84	4.70
	5	4.1	20.16	6.06	18.81	5.65	17.54	5.23	16.83	5.03	16.19	4.82	14.84	4.43
	7	6	20.16	5.37	18.81	5.03	17.54	4.69	16.83	4.51	16.19	4.35	14.84	4.02
	9	7.9	20.16	5.14	18.81	4.83	17.54	4.53	16.83	4.36	16.19	4.23	14.84	3.94
	11	9.8	20.16	4.94	18.81	4.67	17.54	4.40	16.83	4.27	16.19	4.14	14.84	3.88
13	11.8	20.16	4.76	18.81	4.52	17.54	4.28	16.83	4.17	16.19	4.05	14.84	3.82	
15	13.7	20.16	4.63	18.81	4.42	17.54	4.21	16.83	4.11	16.19	4.00	14.84	3.80	
60%	-19.8	-20	17.30	6.74	16.19	6.22	15.00	5.71	14.44	5.46	13.81	5.22	12.70	4.75
	-18.8	-19	17.30	6.67	16.19	6.16	15.00	5.66	14.44	5.41	13.81	5.17	12.70	4.71
	-16.7	-17	17.30	6.53	16.19	6.03	15.00	5.55	14.44	5.31	13.81	5.08	12.70	4.62
	-13.7	-15	17.30	6.41	16.19	5.92	15.00	5.44	14.44	5.21	13.81	4.99	12.70	4.53
	-11.8	-13	17.30	6.28	16.19	5.81	15.00	5.35	14.44	5.11	13.81	4.89	12.70	4.46
	-9.8	-11	17.30	6.17	16.19	5.70	15.00	5.25	14.44	5.03	13.81	4.80	12.70	4.38
	-9.5	-10	17.30	6.11	16.19	5.65	15.00	5.20	14.44	4.98	13.81	4.77	12.70	4.34
	-8.5	-9.1	17.30	6.07	16.19	5.61	15.00	5.16	14.44	4.94	13.81	4.73	12.70	4.31
	-7	-7.6	17.30	5.97	16.19	5.53	15.00	5.09	14.44	4.88	13.81	4.67	12.70	4.25
	-5	-5.6	17.30	5.81	16.19	5.38	15.00	4.97	14.44	4.77	13.81	4.56	12.70	4.17
	-3	-3.7	17.30	6.02	16.19	5.58	15.00	5.14	14.44	4.94	13.81	4.73	12.70	4.32
	0	-0.7	17.30	6.33	16.19	5.87	15.00	5.42	14.44	5.20	13.81	4.98	12.70	4.55
	3	2.2	17.30	5.54	16.19	5.14	15.00	4.76	14.44	4.57	13.81	4.38	12.70	4.01
	5	4.1	17.30	5.17	16.19	4.82	15.00	4.49	14.44	4.32	13.81	4.16	12.70	3.83
	7	6	17.30	4.64	16.19	4.35	15.00	4.07	14.44	3.92	13.81	3.79	12.70	3.52
	9	7.9	17.30	4.50	16.19	4.23	15.00	3.98	14.44	3.86	13.81	3.74	12.70	3.49
	11	9.8	17.30	4.36	16.19	4.14	15.00	3.92	14.44	3.80	13.81	3.69	12.70	3.47
13	11.8	17.30	4.25	16.19	4.05	15.00	3.86	14.44	3.75	13.81	3.65	12.70	3.46	
15	13.7	17.30	4.19	16.19	4.00	15.00	3.83	14.44	3.74	13.81	3.65	12.70	3.47	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 224T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
	-19.8	-20	14.44	5.46	13.49	5.07	12.54	4.67	11.98	4.49	11.51	4.29	10.56	3.92
	-18.8	-19	14.44	5.41	13.49	5.02	12.54	4.63	11.98	5.40	11.51	4.25	10.56	3.89
	-16.7	-17	14.44	5.31	13.49	4.92	12.54	4.54	11.98	4.36	11.51	4.18	10.56	3.82
	-13.7	-15	14.44	5.21	13.49	4.83	12.54	4.47	11.98	4.28	11.51	4.11	10.56	3.75
	-11.8	-13	14.44	5.11	13.49	4.75	12.54	4.39	11.98	4.21	11.51	4.03	10.56	3.69
	-9.8	-11	14.44	5.03	13.49	4.67	12.54	4.31	11.98	4.14	11.51	3.96	10.56	3.63
	-9.5	-10	14.44	4.98	13.49	4.62	12.54	4.27	11.98	4.10	11.51	3.93	10.56	3.60
	-8.5	-9.1	14.44	4.94	13.49	4.59	12.54	4.24	11.98	4.07	11.51	3.91	10.56	3.58
	-7	-7.6	14.44	4.88	13.49	4.53	12.54	4.19	11.98	4.02	11.51	3.86	10.56	3.53
50%	-5	-5.6	14.44	4.77	13.49	4.43	12.54	4.10	11.98	3.94	11.51	3.78	10.56	3.47
	-3	-3.7	14.44	4.94	13.49	4.59	12.54	4.25	11.98	4.09	11.51	3.92	10.56	3.60
	0	-0.7	14.44	5.20	13.49	4.83	12.54	4.49	11.98	4.31	11.51	4.14	10.56	3.80
	3	2.2	14.44	4.57	13.49	4.26	12.54	3.95	11.98	3.81	11.51	3.65	10.56	3.36
	5	4.1	14.44	4.32	13.49	4.04	12.54	3.78	11.98	3.64	11.51	3.51	10.56	3.25
	7	6	14.44	3.92	13.49	3.70	12.54	3.47	11.98	3.36	11.51	3.25	10.56	3.03
	9	7.9	14.44	3.86	13.49	3.65	12.54	3.45	11.98	3.35	11.51	3.25	10.56	3.05
	11	9.8	14.44	3.80	13.49	3.62	12.54	3.43	11.98	3.34	11.51	3.26	10.56	3.07
	13	11.8	14.44	3.75	13.49	3.59	12.54	3.43	11.98	3.34	11.51	3.26	10.56	3.11
	15	13.7	14.44	3.74	13.49	3.59	12.54	3.44	11.98	3.37	11.51	3.31	10.56	3.16

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 260T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
130%	-19.8	-20	23.37	8.41	23.28	8.50	23.19	8.58	23.10	8.64	23.10	8.69	23.01	8.81
	-18.8	-19	23.55	8.42	23.46	8.50	23.37	8.59	23.37	8.65	23.28	8.70	23.19	8.81
	-16.7	-17	23.91	8.43	23.82	8.52	23.73	8.61	23.73	8.66	23.64	8.71	23.55	8.83
	-13.7	-15	24.27	8.45	24.18	8.53	24.09	8.63	24.09	8.68	24.00	8.73	23.91	8.84
	-11.8	-13	24.63	8.47	24.54	8.55	24.45	8.64	24.45	8.69	24.36	8.74	24.36	8.86
	-9.8	-11	24.99	8.48	24.90	8.56	24.81	8.66	24.81	8.70	24.81	8.75	24.72	8.87
	-9.5	-10	25.17	8.49	25.08	8.56	25.08	8.66	24.99	8.71	24.99	8.77	24.90	8.88
	-8.5	-9.1	25.35	8.49	25.26	8.57	25.17	8.67	25.17	8.72	25.17	8.78	25.08	8.89
	-7	-7.6	25.62	8.50	25.53	8.58	25.53	8.68	25.44	8.73	25.44	8.79	25.35	8.90
	-5	-5.6	27.61	9.12	27.52	9.21	27.43	9.31	27.43	9.37	27.34	9.43	27.25	9.54
	-3	-3.7	27.97	9.60	27.88	9.70	27.79	9.81	27.79	9.86	27.70	9.93	27.61	10.06
	0	-0.7	28.51	10.37	28.42	10.48	28.33	10.60	28.33	10.65	28.24	10.72	28.24	10.86
	3	2.2	31.13	10.17	31.13	10.28	31.04	10.40	30.95	10.45	30.95	10.51	30.86	10.40
	5	4.1	39.16	12.58	39.07	12.51	36.99	11.44	35.55	10.92	34.11	10.41	31.31	9.41
	7	6	42.68	11.50	39.79	10.62	36.99	9.77	35.55	9.35	34.11	8.94	31.31	8.14
	9	7.9	42.68	10.49	39.79	9.75	36.99	9.01	35.55	8.66	34.11	8.31	31.31	7.60
	11	9.8	42.68	9.62	39.79	8.97	36.99	8.35	35.55	8.05	34.11	7.74	31.31	7.13
13	11.8	42.68	8.86	39.79	8.31	36.99	7.77	35.55	7.51	34.11	7.24	31.31	6.72	
15	13.7	42.68	8.29	39.79	7.81	36.99	7.34	35.55	7.10	34.11	6.87	31.31	6.41	
120%	-19.8	-20	23.34	8.78	23.25	8.87	23.16	8.97	23.16	9.03	23.07	9.08	22.98	9.20
	-18.8	-19	23.52	8.80	23.43	8.88	23.34	8.98	23.34	9.03	23.25	9.09	23.16	9.20
	-16.7	-17	23.89	8.81	23.80	8.89	23.70	8.99	23.70	9.05	23.61	9.10	23.61	9.23
	-13.7	-15	24.25	8.82	24.16	8.92	24.07	9.02	24.07	9.06	24.07	9.13	23.98	9.24
	-11.8	-13	24.61	8.84	24.52	8.93	25.15	9.03	24.43	9.08	24.43	9.14	24.34	9.26
	-9.8	-11	24.97	8.85	24.88	8.94	24.88	9.04	24.79	9.09	24.79	9.15	24.70	9.27
	-9.5	-10	25.15	8.86	25.06	8.95	25.06	9.05	24.97	9.10	24.97	9.16	24.88	9.28
	-8.5	-9.1	25.33	8.86	25.24	8.96	25.24	9.06	25.15	9.12	25.15	9.17	25.06	9.28
	-7	-7.6	25.60	8.87	25.51	8.97	25.51	9.07	25.42	9.13	25.42	9.18	25.33	9.29
	-5	-5.6	27.60	9.52	27.50	9.62	27.41	9.73	27.41	9.79	27.41	9.84	27.32	9.96
	-3	-3.7	27.96	10.03	27.87	10.14	27.78	10.25	27.78	10.30	27.69	10.37	27.69	10.49
	0	-0.7	28.50	10.83	28.41	10.94	28.32	11.06	28.32	11.13	28.32	11.20	28.23	11.26
	3	2.2	31.12	10.63	31.12	10.73	31.03	10.85	30.94	10.91	30.94	10.83	28.95	9.75
	5	4.1	39.18	12.75	36.82	11.72	34.20	10.74	32.84	10.26	31.58	9.79	28.95	8.86
	7	6	39.45	10.83	36.82	10.02	34.20	9.23	32.84	8.84	31.58	8.47	28.95	7.72
	9	7.9	39.45	9.94	36.82	9.25	34.20	8.58	32.84	8.23	31.58	7.90	28.95	7.25
	11	9.8	39.45	9.17	36.82	8.58	34.20	7.99	32.84	7.71	31.58	7.42	28.95	6.85
13	11.8	39.45	8.49	36.82	7.98	34.20	7.47	32.84	7.22	31.58	6.98	28.95	6.48	
15	13.7	39.45	7.98	36.82	7.54	34.20	7.09	32.84	6.87	31.58	6.66	28.95	6.23	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 260T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
110%	-19.8	-20	23.25	9.02	23.16	9.12	23.07	9.22	23.07	9.26	22.98	9.33	22.98	9.44
	-18.8	-19	23.43	9.03	23.34	9.12	23.25	9.22	23.25	9.27	23.16	9.33	23.16	9.45
	-16.7	-17	23.80	9.04	23.70	9.14	23.61	9.24	23.61	9.30	23.61	9.35	23.52	9.46
	-13.7	-15	24.16	9.06	24.07	9.15	23.98	9.25	23.98	9.31	23.98	9.36	23.89	9.49
	-11.8	-13	24.52	9.07	24.43	9.17	24.43	9.27	24.34	9.33	24.34	9.39	24.25	9.50
	-9.8	-11	24.88	9.09	24.79	9.18	24.79	9.28	24.70	9.34	24.70	9.40	24.61	9.52
	-9.5	-10	25.06	9.09	25.06	9.20	24.97	9.30	24.88	9.35	24.88	9.41	24.79	9.52
	-8.5	-9.1	25.24	9.11	25.15	9.20	25.15	9.31	25.06	9.35	25.06	9.41	24.97	9.53
	-7	-7.6	25.51	9.12	25.42	9.21	25.42	9.32	25.33	9.36	25.33	9.42	25.24	9.54
	-5	-5.6	27.50	9.79	27.41	9.89	27.32	9.99	27.32	10.04	27.32	10.10	26.51	9.46
	-3	-3.7	27.87	10.30	27.78	10.41	27.69	10.52	27.69	10.58	27.69	10.63	26.51	9.79
	0	-0.7	28.41	11.13	28.32	11.24	28.32	11.36	28.23	11.43	28.23	11.42	26.51	10.28
	3	2.2	31.03	10.91	31.03	11.03	30.94	10.88	30.13	10.38	28.95	9.89	26.51	8.92
	5	4.1	36.19	11.64	33.75	10.72	31.40	9.84	30.13	10.52	28.95	8.98	26.51	8.16
	7	6	36.19	9.95	33.75	9.23	31.40	8.51	30.13	8.17	28.95	7.82	26.51	7.15
	9	7.9	36.19	9.21	33.75	8.57	31.40	7.96	30.13	7.66	28.95	7.35	26.51	6.77
	11	9.8	36.19	8.55	33.75	8.00	31.40	7.47	30.13	7.21	28.95	6.94	26.51	6.43
13	11.8	36.19	7.96	33.75	7.49	31.40	7.03	30.13	6.81	28.95	6.57	26.51	6.13	
15	13.7	36.19	7.53	33.75	7.12	31.40	6.71	30.13	6.51	28.95	6.32	26.51	5.91	
100%	-19.8	-20	23.34	9.15	23.25	9.25	23.16	9.35	23.16	9.41	23.16	9.46	23.07	9.57
	-18.8	-19	23.70	9.17	23.61	9.27	23.52	9.37	23.52	9.42	23.52	9.47	23.43	9.59
	-16.7	-17	24.07	9.18	23.98	9.28	23.98	9.39	23.89	9.44	23.89	9.50	23.80	9.39
	-13.7	-15	24.43	9.21	24.34	9.30	24.34	9.41	24.25	9.45	24.25	9.51	24.16	9.20
	-11.8	-13	24.79	9.22	24.70	9.32	24.70	9.42	24.61	9.47	24.61	9.52	24.16	9.02
	-9.8	-11	24.97	9.23	24.97	9.33	24.88	9.43	24.88	9.47	24.79	9.53	24.16	8.93
	-9.5	-10	25.15	9.24	25.06	9.33	25.06	9.43	24.97	9.49	24.97	9.54	24.16	8.85
	-8.5	-9.1	25.42	9.25	25.42	9.34	25.33	9.44	25.24	9.50	25.24	9.55	24.16	8.73
	-7	-7.6	27.41	9.26	27.32	9.34	27.32	9.44	27.23	9.84	26.33	9.36	24.16	8.45
	-5	-5.6	27.78	9.27	27.69	9.35	27.69	9.45	27.41	10.18	26.33	9.69	24.16	8.74
	-3	-3.7	28.32	9.28	28.23	9.36	28.23	9.14	27.41	9.57	26.33	10.18	24.16	9.18
	0	-0.7	29.04	9.30	30.67	9.36	28.50	8.89	27.41	10.07	26.33	9.60	24.16	8.63
	3	2.2	30.94	9.88	30.67	9.13	28.50	8.63	27.41	9.26	26.33	8.84	24.16	7.99
	5	4.1	32.84	9.37	30.67	8.68	28.50	8.22	27.41	8.46	26.33	8.08	24.16	7.35
	7	6	32.84	8.85	30.67	8.24	28.50	7.70	27.41	7.40	26.33	7.09	24.16	6.49
	9	7.9	32.84	8.35	30.67	7.80	28.50	7.25	27.41	6.99	26.33	6.72	24.16	6.19
	11	9.8	32.84	7.81	30.67	7.32	28.50	6.85	27.41	6.62	26.33	6.38	24.16	5.93
13	11.8	32.84	7.32	30.67	6.91	28.50	6.49	27.41	6.29	26.33	6.09	24.16	5.69	
15	13.7	32.84	6.96	30.67	6.61	28.50	6.24	59.99	6.06	26.33	5.88	24.16	5.52	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 260T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
90%	-19.8	-20	23.07	9.30	22.98	9.39	22.89	9.49	22.89	9.54	22.89	9.60	21.71	8.70
	-18.8	-19	23.25	9.31	23.16	9.40	23.07	9.50	23.07	9.55	23.07	9.56	21.71	8.62
	-16.7	-17	23.61	9.32	23.52	9.41	23.52	9.51	23.43	9.56	23.43	9.37	21.71	8.44
	-13.7	-15	23.98	9.33	23.89	9.43	23.89	9.53	23.80	9.57	23.70	9.18	21.71	8.27
	-11.8	-13	24.34	9.35	24.25	9.44	24.25	9.54	24.16	9.45	23.70	8.99	21.71	8.11
	-9.8	-11	24.70	9.36	24.70	9.46	24.61	9.55	24.61	9.26	23.70	8.83	21.71	7.96
	-9.5	-10	24.88	9.37	24.88	9.46	24.79	9.56	24.70	9.17	23.70	8.74	21.71	7.88
	-8.5	-9.1	25.06	9.39	24.97	9.47	24.97	9.54	24.70	9.09	23.70	8.66	21.71	7.81
	-7	-7.6	25.33	9.40	25.33	9.49	25.24	9.41	24.70	8.97	23.70	8.54	21.71	7.70
	-5	-5.6	27.32	9.41	27.23	9.50	25.70	9.08	24.70	8.67	23.70	8.27	21.71	7.48
	-3	-3.7	27.69	9.43	27.60	9.51	25.70	9.40	24.70	8.97	23.70	8.56	21.71	7.73
	0	-0.7	28.23	9.44	27.60	9.52	25.70	9.88	24.70	9.43	23.70	8.99	21.71	8.14
	3	2.2	29.59	9.45	27.60	9.35	25.70	8.58	24.70	8.20	23.70	7.82	21.71	7.10
	5	4.1	29.59	9.22	27.60	8.54	25.70	7.87	24.70	7.53	23.70	7.21	21.71	6.58
	7	6	29.59	8.01	27.60	7.45	25.70	6.91	24.70	6.64	23.70	6.38	21.71	5.86
	9	7.9	29.59	7.52	27.60	7.04	25.70	6.56	24.70	6.33	23.70	6.09	21.71	5.64
	11	9.8	29.59	7.09	27.60	6.66	25.70	6.25	24.70	6.04	23.70	5.84	21.71	5.43
13	11.8	29.59	6.70	27.60	6.33	25.70	5.97	24.70	5.79	23.70	5.61	21.71	5.26	
15	13.7	29.59	6.42	27.60	6.09	25.70	5.77	24.70	5.61	23.70	5.46	21.71	5.13	
80%	-19.8	-20	22.98	9.33	22.89	9.43	22.80	9.11	21.90	8.69	21.08	8.29	19.27	7.48
	-18.8	-19	23.16	9.34	23.07	9.43	22.80	9.03	21.90	8.61	21.08	8.20	19.27	7.41
	-16.7	-17	23.52	9.36	23.43	9.45	22.80	8.84	21.90	8.43	21.08	8.03	19.27	7.25
	-13.7	-15	23.89	9.38	23.80	9.47	22.80	8.66	21.90	8.26	21.08	7.88	19.27	7.12
	-11.8	-13	24.25	9.39	24.16	9.29	22.80	8.49	21.90	8.10	21.08	7.72	19.27	6.99
	-9.8	-11	24.61	9.40	24.52	9.10	22.80	8.33	21.90	7.95	21.08	7.58	19.27	6.85
	-9.5	-10	24.79	9.41	24.52	9.01	22.80	8.24	21.90	7.87	21.08	7.50	19.27	6.79
	-8.5	-9.1	24.97	9.42	24.52	8.94	22.80	8.18	21.90	7.80	21.08	7.44	19.27	6.73
	-7	-7.6	25.24	9.43	24.52	8.80	22.80	8.07	21.90	7.70	21.08	7.34	19.27	6.64
	-5	-5.6	26.33	9.25	24.52	8.52	22.80	7.81	21.90	7.46	21.08	7.13	19.27	6.46
	-3	-3.7	26.33	9.57	24.52	8.82	22.80	8.09	21.90	7.72	21.08	7.37	19.27	6.69
	0	-0.7	26.33	10.05	24.52	9.27	22.80	8.50	21.90	8.12	21.08	7.76	19.27	7.04
	3	2.2	26.33	8.73	24.52	8.06	22.80	7.41	21.90	7.09	21.08	6.78	19.27	6.16
	5	4.1	26.33	7.98	24.52	7.41	22.80	6.84	21.90	6.57	21.08	6.29	19.27	5.76
	7	6	26.33	7.00	24.52	6.53	22.80	6.07	21.90	5.84	21.08	5.62	19.27	5.18
	9	7.9	26.33	6.63	24.52	6.23	22.80	5.82	21.90	5.62	21.08	5.41	19.27	5.02
	11	9.8	26.33	6.30	24.52	5.94	22.80	5.59	21.90	5.41	21.08	5.23	19.27	4.89
13	11.8	26.33	6.02	24.52	5.70	22.80	5.39	21.90	5.23	21.08	5.08	19.27	4.77	
15	13.7	26.33	5.81	24.52	5.52	22.80	5.25	21.90	5.11	21.08	4.97	19.27	4.69	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 260T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
70%	-19.8	-20	22.80	9.34	21.44	8.59	20.00	7.88	19.18	7.52	18.46	7.18	16.92	6.49
	-18.8	-19	22.98	9.24	21.44	8.50	20.00	7.79	19.18	7.44	18.46	7.11	16.92	6.44
	-16.7	-17	22.98	9.05	21.44	8.34	20.00	7.64	19.18	7.30	18.46	6.96	16.92	6.32
	-13.7	-15	22.98	8.87	21.44	8.17	20.00	7.49	19.18	7.16	18.46	6.83	16.92	6.19
	-11.8	-13	22.98	8.69	21.44	8.01	20.00	7.35	19.18	7.02	18.46	6.71	16.92	6.08
	-9.8	-11	22.98	8.53	21.44	7.86	20.00	7.21	19.18	6.90	18.46	6.58	16.92	5.97
	-9.5	-10	22.98	8.45	21.44	7.79	20.00	7.14	19.18	6.83	18.46	6.52	16.92	5.93
	-8.5	-9.1	22.98	8.37	21.44	7.72	20.00	7.09	19.18	6.77	18.46	6.47	16.92	5.87
	-7	-7.6	22.98	8.26	21.44	7.61	20.00	6.99	19.18	6.68	18.46	6.38	16.92	5.79
	-5	-5.6	22.98	8.00	21.44	7.39	20.00	6.80	19.18	6.51	18.46	6.22	16.92	5.66
	-3	-3.7	22.98	8.28	21.44	7.64	20.00	7.03	19.18	6.73	18.46	6.44	16.92	5.86
	0	-0.7	22.98	8.70	21.44	8.05	20.00	7.40	19.18	7.09	18.46	6.77	16.92	6.17
	3	2.2	22.98	7.58	21.44	7.02	20.00	6.47	19.18	6.20	18.46	5.94	16.92	5.42
	5	4.1	22.98	7.00	21.44	6.52	20.00	6.04	19.18	5.80	18.46	5.57	16.92	5.11
	7	6	22.98	6.20	21.44	5.80	20.00	5.41	19.18	5.21	18.46	5.02	16.92	4.64
	9	7.9	22.98	5.94	21.44	5.58	20.00	5.23	19.18	6.18	18.46	4.89	16.92	4.55
	11	9.8	22.98	5.70	21.44	5.39	20.00	5.08	19.18	4.93	18.46	4.78	16.92	4.47
13	11.8	22.98	5.49	21.44	5.22	20.00	4.94	19.18	4.81	18.46	4.68	16.92	4.41	
15	13.7	22.98	5.35	21.44	5.10	20.00	4.87	19.18	4.74	18.46	4.62	16.92	4.39	
60%	-19.8	-20	19.72	7.78	18.46	7.18	17.10	6.60	16.47	6.31	15.74	6.03	14.48	5.48
	-18.8	-19	19.72	7.70	18.46	7.11	17.10	6.53	16.47	6.25	15.74	5.97	14.48	5.43
	-16.7	-17	19.72	7.54	18.46	6.96	17.10	6.41	16.47	6.13	15.74	5.86	14.48	5.33
	-13.7	-15	19.72	7.40	18.46	6.83	17.10	6.28	16.47	6.01	15.74	5.76	14.48	5.23
	-11.8	-13	19.72	7.25	18.46	6.71	17.10	6.17	16.47	5.90	15.74	5.65	14.48	5.14
	-9.8	-11	19.72	7.12	18.46	6.58	17.10	6.06	16.47	5.80	15.74	5.55	14.48	5.06
	-9.5	-10	19.72	7.05	18.46	6.52	17.10	6.00	16.47	5.75	15.74	5.50	14.48	5.01
	-8.5	-9.1	19.72	7.01	18.46	6.47	17.10	5.96	16.47	5.70	15.74	5.46	14.48	4.98
	-7	-7.6	19.72	6.90	18.46	6.38	17.10	5.88	16.47	5.64	15.74	5.39	14.48	4.91
	-5	-5.6	19.72	6.71	18.46	6.22	17.10	5.74	16.47	5.50	15.74	5.27	14.48	4.81
	-3	-3.7	19.72	6.95	18.46	6.44	17.10	5.94	16.47	5.70	15.74	5.46	14.48	4.99
	0	-0.7	19.72	7.31	18.46	6.77	17.10	6.26	16.47	6.00	15.74	5.75	14.48	5.26
	3	2.2	19.72	6.39	18.46	5.94	17.10	5.49	16.47	5.28	15.74	5.06	14.48	4.63
	5	4.1	19.72	5.97	18.46	5.57	17.10	5.18	16.47	4.99	15.74	4.80	14.48	4.42
	7	6	19.72	5.36	18.46	5.02	17.10	4.70	16.47	4.53	15.74	4.37	14.48	4.06
	9	7.9	19.72	5.19	18.46	4.89	17.10	4.60	16.47	4.45	15.74	4.32	14.48	4.03
	11	9.8	19.72	5.03	18.46	4.78	17.10	4.52	16.47	4.39	15.74	4.26	14.48	4.01
13	11.8	19.72	4.91	18.46	4.68	17.10	4.45	16.47	4.33	15.74	4.22	14.48	4.00	
15	13.7	19.72	4.83	18.46	4.62	17.10	4.42	16.47	4.32	15.74	4.22	14.48	4.01	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 260T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
	-19.8	-20	16.47	6.31	15.38	5.85	14.30	5.39	13.66	5.18	13.12	4.95	12.03	4.53
	-18.8	-19	16.47	6.25	15.38	5.79	14.30	5.35	13.66	6.24	13.12	4.91	12.03	4.49
	-16.7	-17	16.47	6.13	15.38	5.68	14.30	5.24	13.66	5.03	13.12	4.82	12.03	4.41
	-13.7	-15	16.47	6.01	15.38	5.58	14.30	5.16	13.66	4.94	13.12	4.74	12.03	4.33
	-11.8	-13	16.47	5.90	15.38	5.48	14.30	5.07	13.66	4.85	13.12	4.65	12.03	4.26
	-9.8	-11	16.47	5.80	15.38	5.39	14.30	4.98	13.66	4.78	13.12	4.58	12.03	4.18
	-9.5	-10	16.47	5.75	15.38	5.33	14.30	4.93	13.66	4.73	13.12	4.54	12.03	4.15
	-8.5	-9.1	16.47	5.70	15.38	5.30	14.30	4.90	13.66	4.70	13.12	4.51	12.03	4.13
	-7	-7.6	16.47	5.64	15.38	5.23	14.30	4.83	13.66	4.64	13.12	4.45	12.03	4.07
50%	-5	-5.6	16.47	5.50	15.38	5.11	14.30	4.73	13.66	4.55	13.12	4.36	12.03	4.01
	-3	-3.7	16.47	5.70	15.38	5.30	14.30	4.91	13.66	4.72	13.12	4.53	12.03	4.15
	0	-0.7	16.47	6.00	15.38	5.58	14.30	5.18	13.66	4.98	13.12	4.78	12.03	4.39
	3	2.2	16.47	5.28	15.38	4.92	14.30	4.56	13.66	4.40	13.12	4.22	12.03	3.88
	5	4.1	16.47	4.99	15.38	4.66	14.30	4.36	13.66	4.21	13.12	4.05	12.03	3.75
	7	6	16.47	4.53	15.38	4.27	14.30	4.01	13.66	3.88	13.12	3.75	12.03	3.49
	9	7.9	16.47	4.45	15.38	4.22	14.30	3.98	13.66	3.87	13.12	3.75	12.03	3.53
	11	9.8	16.47	4.39	15.38	4.17	14.30	3.96	13.66	3.86	13.12	3.76	12.03	3.55
	13	11.8	16.47	4.33	15.38	4.14	14.30	3.96	13.66	3.86	13.12	3.76	12.03	3.59
	15	13.7	16.47	4.32	15.38	4.14	14.30	3.97	13.66	3.89	13.12	3.82	12.03	3.65

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 280T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
130%	-19.8	-20	25.83	9.54	25.73	9.64	25.63	9.73	25.53	9.79	25.53	9.85	25.43	9.99
	-18.8	-19	26.03	9.55	25.93	9.64	25.83	9.74	25.83	9.81	25.73	9.87	25.63	9.99
	-16.7	-17	26.43	9.56	26.33	9.66	26.23	9.76	26.23	9.82	26.13	9.88	26.03	10.01
	-13.7	-15	26.83	9.58	26.73	9.67	26.63	9.78	26.63	9.84	26.53	9.90	26.43	10.02
	-11.8	-13	27.22	9.60	27.13	9.70	27.03	9.79	27.03	9.85	26.93	9.91	26.93	10.05
	-9.8	-11	27.62	9.61	27.52	9.71	27.42	9.82	27.42	9.87	27.42	9.93	27.32	10.06
	-9.5	-10	27.82	9.62	27.72	9.71	27.72	9.82	27.62	9.88	27.62	9.94	27.52	10.07
	-8.5	-9.1	28.02	9.62	27.92	9.72	27.82	9.83	27.82	9.89	27.82	9.95	27.72	10.08
	-7	-7.6	28.32	9.64	28.22	9.73	28.22	9.84	28.12	9.90	28.12	9.96	28.02	10.10
	-5	-5.6	30.52	10.34	30.42	10.45	30.32	10.55	30.32	10.63	30.22	10.69	30.12	10.82
	-3	-3.7	30.91	10.88	30.81	11.00	30.72	11.12	30.72	11.18	30.62	11.26	30.52	11.40
	0	-0.7	31.51	11.75	31.41	11.88	31.31	12.02	31.31	12.08	31.21	12.15	31.21	12.31
	3	2.2	34.40	11.53	34.40	11.65	34.31	11.79	34.21	11.85	34.21	11.92	34.11	11.79
	5	4.1	43.28	14.27	43.18	14.18	40.89	12.97	39.29	12.38	37.70	11.80	34.60	10.66
	7	6	47.17	13.03	43.98	12.04	40.89	11.07	39.29	10.60	37.70	10.13	34.60	9.22
	9	7.9	47.17	11.90	43.98	11.05	40.89	10.22	39.29	9.82	37.70	9.42	34.60	8.62
	11	9.8	47.17	10.91	43.98	10.17	40.89	9.47	39.29	9.13	37.70	8.78	34.60	8.09
13	11.8	47.17	10.05	43.98	9.42	40.89	8.81	39.29	8.51	37.70	8.21	34.60	7.62	
15	13.7	47.17	9.39	43.98	8.85	40.89	8.32	39.29	8.05	37.70	7.79	34.60	7.27	
120%	-19.8	-20	25.80	9.96	25.70	10.06	25.60	10.17	25.60	10.23	25.50	10.30	25.40	10.43
	-18.8	-19	26.00	9.97	25.90	10.07	25.80	10.18	25.80	10.23	25.70	10.31	25.60	10.43
	-16.7	-17	26.40	9.98	26.30	10.08	26.20	10.20	26.20	10.26	26.10	10.32	26.10	10.46
	-13.7	-15	26.80	10.00	26.70	10.11	26.60	10.22	26.60	10.27	26.60	10.35	26.50	10.47
	-11.8	-13	27.20	10.02	27.10	10.12	27.80	10.23	27.00	10.30	27.00	10.36	26.90	10.50
	-9.8	-11	27.60	10.03	27.50	10.13	27.50	10.25	27.40	10.31	27.40	10.37	27.30	10.51
	-9.5	-10	27.80	10.05	27.70	10.15	27.70	10.26	27.60	10.32	27.60	10.38	27.50	10.52
	-8.5	-9.1	28.00	10.05	27.90	10.16	27.90	10.27	27.80	10.33	27.80	10.40	27.70	10.52
	-7	-7.6	28.30	10.06	28.20	10.17	28.20	10.28	28.10	10.35	28.10	10.41	28.00	10.53
	-5	-5.6	30.50	10.80	30.40	10.91	30.30	11.03	30.30	11.10	30.30	11.16	30.20	11.30
	-3	-3.7	30.90	11.37	30.80	11.50	30.70	11.62	30.70	11.68	30.60	11.76	30.60	11.89
	0	-0.7	31.50	12.28	31.40	12.41	31.30	12.54	31.30	12.62	31.30	12.69	31.20	12.77
	3	2.2	34.40	12.06	34.40	12.17	34.30	12.31	34.20	12.37	34.20	12.28	32.00	11.06
	5	4.1	43.30	14.45	40.70	13.29	37.80	12.18	36.30	11.63	34.90	11.10	32.00	10.05
	7	6	43.60	12.28	40.70	11.36	37.80	10.46	36.30	10.02	34.90	9.60	32.00	8.75
	9	7.9	43.60	11.27	40.70	10.48	37.80	9.72	36.30	9.34	34.90	8.96	32.00	8.23
	11	9.8	43.60	10.40	40.70	9.72	37.80	9.06	36.30	8.74	34.90	8.41	32.00	7.76
13	11.8	43.60	9.62	40.70	9.05	37.80	8.47	36.30	8.19	34.90	7.91	32.00	7.35	
15	13.7	43.60	7.68	40.70	7.26	37.80	6.82	36.30	6.61	34.90	6.41	32.00	6.00	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 280T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
110%	-19.8	-20	25.70	10.22	25.60	10.34	25.50	10.45	25.50	10.50	25.40	10.58	25.40	10.70
	-18.8	-19	25.90	10.24	25.80	10.34	25.70	10.45	25.70	10.51	25.60	10.58	25.60	10.72
	-16.7	-17	26.30	10.25	26.20	10.36	26.10	10.48	26.10	10.54	26.10	10.60	26.00	10.73
	-13.7	-15	26.70	10.27	26.60	10.37	26.50	10.49	26.50	10.55	26.50	10.62	26.40	10.75
	-11.8	-13	27.10	10.29	27.00	10.40	27.00	10.51	26.90	10.58	26.90	10.64	26.80	10.77
	-9.8	-11	27.50	10.31	27.40	10.41	27.40	10.53	27.30	10.59	27.30	10.65	27.20	10.79
	-9.5	-10	27.70	10.31	27.70	10.43	27.60	10.54	27.50	10.60	27.50	10.67	27.40	10.79
	-8.5	-9.1	27.90	10.32	27.80	10.43	27.80	10.55	27.70	10.60	27.70	10.67	27.60	10.80
	-7	-7.6	28.20	10.34	28.10	10.44	28.10	10.56	28.00	10.62	28.00	10.68	27.90	10.82
	-5	-5.6	30.40	11.10	30.30	11.21	30.20	11.32	30.20	11.39	30.20	11.45	29.30	10.73
	-3	-3.7	30.80	11.68	30.70	11.80	30.60	11.93	30.60	11.99	30.60	12.06	29.30	11.10
	0	-0.7	31.40	12.61	31.30	12.74	31.30	12.88	31.20	12.96	31.20	12.94	29.30	11.65
	3	2.2	34.30	12.37	34.30	12.50	34.20	12.34	33.30	11.77	32.00	11.21	29.30	10.11
	5	4.1	40.00	13.20	37.30	12.16	34.70	11.16	33.30	11.93	32.00	10.19	29.30	9.25
	7	6	40.00	11.29	37.30	10.46	34.70	9.65	33.30	9.26	32.00	8.87	29.30	8.11
	9	7.9	40.00	10.44	37.30	9.72	34.70	9.02	33.30	8.68	32.00	8.34	29.30	7.68
	11	9.8	40.00	9.69	37.30	9.07	34.70	8.46	33.30	8.17	32.00	7.87	29.30	7.29
13	11.8	40.00	9.02	37.30	8.49	34.70	7.97	33.30	7.72	32.00	7.45	29.30	6.95	
15	13.7	40.00	8.54	37.30	8.07	34.70	7.60	33.30	7.38	32.00	7.16	29.30	6.71	
100%	-19.8	-20	25.80	10.37	25.70	10.49	25.60	10.60	25.60	10.67	25.60	10.73	25.50	10.86
	-18.8	-19	26.20	10.40	26.10	10.51	26.00	10.63	26.00	10.68	26.00	10.74	25.90	10.87
	-16.7	-17	26.60	10.41	26.50	10.53	26.50	10.64	26.40	10.70	26.40	10.77	26.30	10.64
	-13.7	-15	27.00	10.44	26.90	10.54	26.90	10.67	26.80	10.72	26.80	10.78	26.70	10.43
	-11.8	-13	27.40	10.45	27.30	10.56	27.30	10.68	27.20	10.74	27.20	10.79	26.70	10.22
	-9.8	-11	27.60	10.46	27.60	10.58	27.50	10.69	27.50	10.74	27.40	10.80	26.70	10.12
	-9.5	-10	27.80	10.48	27.70	10.58	27.70	10.69	27.60	10.75	27.60	10.82	26.70	10.03
	-8.5	-9.1	28.10	10.49	28.10	10.59	28.00	10.70	27.90	10.77	27.90	10.83	26.70	9.89
	-7	-7.6	30.30	10.50	30.20	10.59	30.20	10.71	30.10	11.16	29.10	10.62	26.70	9.58
	-5	-5.6	30.70	10.51	30.60	10.60	30.60	10.71	30.30	11.54	29.10	10.98	26.70	9.91
	-3	-3.7	31.30	10.53	31.20	10.61	31.20	10.36	30.30	10.86	29.10	11.54	26.70	10.41
	0	-0.7	32.10	10.54	33.90	10.61	31.50	10.07	30.30	11.41	29.10	10.88	26.70	9.78
	3	2.2	34.20	11.20	33.90	10.35	31.50	9.79	30.30	10.50	29.10	10.02	26.70	9.06
	5	4.1	36.30	10.62	33.90	9.84	31.50	9.32	30.30	9.59	29.10	9.16	26.70	8.34
	7	6	36.30	10.04	33.90	9.34	31.50	8.73	30.30	8.39	29.10	8.03	26.70	7.36
	9	7.9	36.30	9.46	33.90	8.84	31.50	8.22	30.30	7.92	29.10	7.62	26.70	7.02
	11	9.8	36.30	8.86	33.90	8.30	31.50	7.77	30.30	7.50	29.10	7.24	26.70	6.72
13	11.8	36.30	8.30	33.90	7.83	31.50	7.36	30.30	7.14	29.10	6.91	26.70	6.45	
15	13.7	36.30	7.89	33.90	7.49	31.50	7.07	66.30	6.87	29.10	6.67	26.70	6.26	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 280T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
90%	-19.8	-20	25.50	10.54	25.40	10.64	25.30	10.75	25.30	10.82	25.30	10.88	24.00	9.87
	-18.8	-19	25.70	10.55	25.60	10.65	25.50	10.77	25.50	10.83	25.50	10.84	24.00	9.77
	-16.7	-17	26.10	10.56	26.00	10.67	26.00	10.78	25.90	10.84	25.90	10.63	24.00	9.57
	-13.7	-15	26.50	10.58	26.40	10.69	26.40	10.80	26.30	10.86	26.20	10.41	24.00	9.38
	-11.8	-13	26.90	10.60	26.80	10.70	26.80	10.82	26.70	10.72	26.20	10.20	24.00	9.20
	-9.8	-11	27.30	10.62	27.30	10.73	27.20	10.83	27.20	10.50	26.20	10.01	24.00	9.02
	-9.5	-10	27.50	10.63	27.50	10.73	27.40	10.84	27.30	10.40	26.20	9.91	24.00	8.93
	-8.5	-9.1	27.70	10.64	27.60	10.74	27.60	10.82	27.30	10.31	26.20	9.82	24.00	8.86
	-7	-7.6	28.00	10.65	28.00	10.75	27.90	10.67	27.30	10.17	26.20	9.68	24.00	8.73
	-5	-5.6	30.20	10.67	30.10	10.77	28.40	10.30	27.30	9.83	26.20	9.38	24.00	8.48
	-3	-3.7	30.60	10.69	30.50	10.78	28.40	10.65	27.30	10.17	26.20	9.70	24.00	8.77
	0	-0.7	31.20	10.70	30.50	10.79	28.40	11.20	27.30	10.69	26.20	10.20	24.00	9.22
	3	2.2	32.70	10.72	30.50	10.60	28.40	9.73	27.30	9.30	26.20	8.87	24.00	8.05
	5	4.1	32.70	10.45	30.50	9.68	28.40	8.92	27.30	8.54	26.20	8.17	24.00	7.46
	7	6	32.70	9.08	30.50	8.45	28.40	7.83	27.30	7.53	26.20	7.24	24.00	6.64
	9	7.9	32.70	8.53	30.50	7.98	28.40	7.44	27.30	7.17	26.20	6.91	24.00	6.39
11	9.8	32.70	8.03	30.50	7.55	28.40	7.09	27.30	6.84	26.20	6.62	24.00	6.16	
13	11.8	32.70	7.59	30.50	7.17	28.40	6.77	27.30	6.57	26.20	6.36	24.00	5.96	
15	13.7	32.70	7.28	30.50	6.91	28.40	6.54	27.30	6.36	26.20	6.19	24.00	5.82	
80%	-19.8	-20	25.40	10.58	25.30	10.69	25.20	10.33	24.20	9.86	23.30	9.40	21.30	8.48
	-18.8	-19	25.60	10.59	25.50	10.69	25.20	10.23	24.20	9.76	23.30	9.30	21.30	8.40
	-16.7	-17	26.00	10.61	25.90	10.72	25.20	10.02	24.20	9.56	23.30	9.11	21.30	8.22
	-13.7	-15	26.40	10.63	26.30	10.73	25.20	9.82	24.20	9.37	23.30	8.93	21.30	8.07
	-11.8	-13	26.80	10.64	26.70	10.53	25.20	9.62	24.20	9.18	23.30	8.76	21.30	7.92
	-9.8	-11	27.20	10.66	27.10	10.32	25.20	9.45	24.20	9.01	23.30	8.60	21.30	7.77
	-9.5	-10	27.40	10.67	27.10	10.22	25.20	9.35	24.20	8.92	23.30	8.51	21.30	7.70
	-8.5	-9.1	27.60	10.68	27.10	10.13	25.20	9.27	24.20	8.85	23.30	8.43	21.30	7.63
	-7	-7.6	27.90	10.69	27.10	9.98	25.20	9.15	24.20	8.73	23.30	8.32	21.30	7.53
	-5	-5.6	29.10	10.48	27.10	9.66	25.20	8.86	24.20	8.46	23.30	8.08	21.30	7.32
	-3	-3.7	29.10	10.84	27.10	9.99	25.20	9.17	24.20	8.76	23.30	8.36	21.30	7.58
	0	-0.7	29.10	11.39	27.10	10.51	25.20	9.63	24.20	9.21	23.30	8.80	21.30	7.98
	3	2.2	29.10	9.90	27.10	9.13	25.20	8.40	24.20	8.03	23.30	7.68	21.30	6.98
	5	4.1	29.10	9.05	27.10	8.40	25.20	7.76	24.20	7.45	23.30	7.13	21.30	6.53
	7	6	29.10	7.93	27.10	7.41	25.20	6.88	24.20	6.62	23.30	6.37	21.30	5.87
	9	7.9	29.10	7.52	27.10	7.06	25.20	6.60	24.20	6.37	23.30	6.13	21.30	5.70
11	9.8	29.10	7.15	27.10	6.73	25.20	6.33	24.20	6.13	23.30	5.93	21.30	5.55	
13	11.8	29.10	6.82	27.10	6.46	25.20	6.11	24.20	5.93	23.30	5.76	21.30	5.41	
15	13.7	29.10	6.58	27.10	6.26	25.20	5.95	24.20	5.80	23.30	5.63	21.30	5.32	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 280T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
70%	-19.8	-20	25.20	10.59	23.70	9.74	22.10	8.93	21.20	8.53	20.40	8.14	18.70	7.36
	-18.8	-19	25.40	10.48	23.70	9.64	22.10	8.83	21.20	8.44	20.40	8.06	18.70	7.30
	-16.7	-17	25.40	10.26	23.70	9.45	22.10	8.67	21.20	8.27	20.40	7.89	18.70	7.16
	-13.7	-15	25.40	10.06	23.70	9.26	22.10	8.49	21.20	8.12	20.40	7.74	18.70	7.02
	-11.8	-13	25.40	9.86	23.70	9.08	22.10	8.34	21.20	7.96	20.40	7.60	18.70	6.90
	-9.8	-11	25.40	9.67	23.70	8.91	22.10	8.17	21.20	7.82	20.40	7.46	18.70	6.77
	-9.5	-10	25.40	9.58	23.70	8.83	22.10	8.10	21.20	7.74	20.40	7.39	18.70	6.72
	-8.5	-9.1	25.40	9.49	23.70	8.76	22.10	8.03	21.20	7.68	20.40	7.34	18.70	6.66
	-7	-7.6	25.40	9.36	23.70	8.63	22.10	7.92	21.20	7.58	20.40	7.24	18.70	6.57
	-5	-5.6	25.40	9.07	23.70	8.38	22.10	7.71	21.20	7.38	20.40	7.05	18.70	6.41
	-3	-3.7	25.40	9.39	23.70	8.67	22.10	7.97	21.20	7.63	20.40	7.30	18.70	6.64
	0	-0.7	25.40	9.87	23.70	9.12	22.10	8.39	21.20	8.03	20.40	7.68	18.70	7.00
	3	2.2	25.40	8.59	23.70	7.96	22.10	7.34	21.20	7.03	20.40	6.73	18.70	6.15
	5	4.1	25.40	7.93	23.70	7.39	22.10	6.84	21.20	6.58	20.40	6.31	18.70	5.79
	7	6	25.40	7.03	23.70	6.58	22.10	6.14	21.20	5.91	20.40	5.69	18.70	5.26
	9	7.9	25.40	6.73	23.70	6.33	22.10	5.93	21.20	7.01	20.40	5.54	18.70	5.16
	11	9.8	25.40	6.47	23.70	6.11	22.10	5.76	21.20	5.59	20.40	5.42	18.70	5.07
13	11.8	25.40	6.22	23.70	5.92	22.10	5.60	21.20	5.45	20.40	5.30	18.70	5.00	
15	13.7	25.40	6.06	23.70	5.78	22.10	5.52	21.20	5.38	20.40	5.24	18.70	4.97	
60%	-19.8	-20	21.80	8.82	20.40	8.14	18.90	7.48	18.20	7.15	17.40	6.83	16.00	6.21
	-18.8	-19	21.80	8.73	20.40	8.06	18.90	7.40	18.20	7.09	17.40	6.77	16.00	6.16
	-16.7	-17	21.80	8.55	20.40	7.89	18.90	7.26	18.20	6.95	17.40	6.64	16.00	6.05
	-13.7	-15	21.80	8.39	20.40	7.74	18.90	7.12	18.20	6.82	17.40	6.53	16.00	5.93
	-11.8	-13	21.80	8.22	20.40	7.60	18.90	7.00	18.20	6.69	17.40	6.40	16.00	5.83
	-9.8	-11	21.80	8.07	20.40	7.46	18.90	6.87	18.20	6.58	17.40	6.29	16.00	5.73
	-9.5	-10	21.80	8.00	20.40	7.39	18.90	6.81	18.20	6.52	17.40	6.24	16.00	5.68
	-8.5	-9.1	21.80	7.94	20.40	7.34	18.90	6.76	18.20	6.47	17.40	6.19	16.00	5.64
	-7	-7.6	21.80	7.82	20.40	7.24	18.90	6.67	18.20	6.39	17.40	6.11	16.00	5.57
	-5	-5.6	21.80	7.60	20.40	7.05	18.90	6.50	18.20	6.24	17.40	5.97	16.00	5.45
	-3	-3.7	21.80	7.88	20.40	7.30	18.90	6.73	18.20	6.47	17.40	6.19	16.00	5.66
	0	-0.7	21.80	8.29	20.40	7.68	18.90	7.10	18.20	6.81	17.40	6.52	16.00	5.96
	3	2.2	21.80	7.25	20.40	6.73	18.90	6.22	18.20	5.98	17.40	5.73	16.00	5.25
	5	4.1	21.80	6.77	20.40	6.31	18.90	5.87	18.20	5.66	17.40	5.44	16.00	5.01
	7	6	21.80	6.07	20.40	5.69	18.90	5.33	18.20	5.14	17.40	4.96	16.00	4.61
	9	7.9	21.80	5.88	20.40	5.54	18.90	5.21	18.20	5.05	17.40	4.90	16.00	4.57
	11	9.8	21.80	5.71	20.40	5.42	18.90	5.12	18.20	4.97	17.40	4.83	16.00	4.54
13	11.8	21.80	5.57	20.40	5.30	18.90	5.05	18.20	4.91	17.40	4.78	16.00	4.53	
15	13.7	21.80	5.48	20.40	5.24	18.90	5.01	18.20	4.90	17.40	4.78	16.00	4.54	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 280T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
50%	-19.8	-20	18.20	7.15	17.00	6.63	15.80	6.11	15.10	5.87	14.50	5.62	13.30	5.14
	-18.8	-19	18.20	7.09	17.00	6.57	15.80	6.06	15.10	7.07	14.50	5.57	13.30	5.09
	-16.7	-17	18.20	6.95	17.00	6.44	15.80	5.95	15.10	5.71	14.50	5.47	13.30	5.00
	-13.7	-15	18.20	6.82	17.00	6.33	15.80	5.85	15.10	5.60	14.50	5.38	13.30	4.91
	-11.8	-13	18.20	6.69	17.00	6.21	15.80	5.74	15.10	5.50	14.50	5.28	13.30	4.83
	-9.8	-11	18.20	6.58	17.00	6.11	15.80	5.64	15.10	5.42	14.50	5.19	13.30	4.74
	-9.5	-10	18.20	6.52	17.00	6.05	15.80	5.59	15.10	5.36	14.50	5.15	13.30	4.71
	-8.5	-9.1	18.20	6.47	17.00	6.01	15.80	5.55	15.10	5.33	14.50	5.11	13.30	4.68
	-7	-7.6	18.20	6.39	17.00	5.93	15.80	5.48	15.10	5.26	14.50	5.05	13.30	4.62
	-5	-5.6	18.20	6.24	17.00	5.79	15.80	5.36	15.10	5.16	14.50	4.95	13.30	4.54
	-3	-3.7	18.20	6.47	17.00	6.01	15.80	5.57	15.10	5.35	14.50	5.14	13.30	4.71
	0	-0.7	18.20	6.81	17.00	6.33	15.80	5.87	15.10	5.64	14.50	5.42	13.30	4.97
	3	2.2	18.20	5.98	17.00	5.58	15.80	5.17	15.10	4.98	14.50	4.78	13.30	4.40
	5	4.1	18.20	5.66	17.00	5.29	15.80	4.95	15.10	4.77	14.50	4.59	13.30	4.25
	7	6	18.20	5.14	17.00	4.85	15.80	4.54	15.10	4.40	14.50	4.25	13.30	3.96
9	7.9	18.20	5.05	17.00	4.78	15.80	4.52	15.10	4.39	14.50	4.25	13.30	4.00	
11	9.8	18.20	4.97	17.00	4.73	15.80	4.49	15.10	4.38	14.50	4.26	13.30	4.02	
13	11.8	18.20	4.91	17.00	4.69	15.80	4.49	15.10	4.38	14.50	4.26	13.30	4.07	
15	13.7	18.20	4.90	17.00	4.69	15.80	4.50	15.10	4.42	14.50	4.33	13.30	4.14	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 335T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
130%	-19.8	-20	30.75	12.81	30.63	12.94	30.51	13.07	30.39	13.15	30.39	13.23	30.27	13.41
	-18.8	-19	30.99	12.82	30.87	12.94	30.75	13.08	30.75	13.16	30.63	13.24	30.51	13.41
	-16.7	-17	31.46	12.84	31.34	12.97	31.22	13.10	31.22	13.18	31.10	13.26	30.99	13.44
	-13.7	-15	31.94	12.85	31.82	12.98	31.70	13.13	31.70	13.21	31.58	13.29	31.46	13.46
	-11.8	-13	32.41	12.89	32.29	13.02	32.17	13.15	32.17	13.23	32.05	13.31	32.05	13.49
	-9.8	-11	32.89	12.90	32.77	13.03	32.65	13.18	32.65	13.24	32.65	13.33	32.53	13.50
	-9.5	-10	33.12	12.92	33.00	13.03	33.00	13.18	32.89	13.26	32.89	13.34	32.77	13.52
	-8.5	-9.1	33.36	12.92	33.24	13.05	33.12	13.20	33.12	13.28	33.12	13.36	33.00	13.54
	-7	-7.6	33.72	12.94	33.60	13.07	33.60	13.21	33.48	13.29	33.48	13.37	33.36	13.55
	-5	-5.6	36.33	13.88	36.21	14.02	36.09	14.17	36.09	14.27	35.97	14.35	35.85	14.53
	-3	-3.7	36.80	14.61	36.68	14.77	36.57	14.93	36.57	15.01	36.45	15.11	36.33	15.31
	0	-0.7	37.52	15.78	37.40	15.96	37.28	16.13	37.28	16.21	37.16	16.31	37.16	16.52
	3	2.2	40.96	15.48	40.96	15.65	40.84	15.83	40.72	15.91	40.72	16.00	40.60	15.83
	5	4.1	51.52	19.15	51.41	19.04	48.68	17.42	46.78	16.62	44.88	15.84	41.20	14.32
	7	6	56.15	17.50	52.36	16.17	48.68	14.87	46.78	14.23	44.88	13.60	41.20	12.38
	9	7.9	56.15	15.97	52.36	14.84	48.68	13.72	46.78	13.18	44.88	12.64	41.20	11.57
	11	9.8	56.15	14.64	52.36	13.65	48.68	12.71	46.78	12.25	44.88	11.78	41.20	10.86
13	11.8	56.15	13.49	52.36	12.64	48.68	11.83	46.78	11.43	44.88	11.02	41.20	10.23	
15	13.7	56.15	12.61	52.36	11.88	48.68	11.17	46.78	10.81	44.88	10.45	41.20	9.75	
120%	-19.8	-20	30.71	13.37	30.60	13.51	30.48	13.66	30.48	13.74	30.36	13.82	30.24	14.01
	-18.8	-19	30.95	13.39	30.83	13.52	30.71	13.67	30.71	13.74	30.60	13.84	30.48	14.01
	-16.7	-17	31.43	13.40	31.31	13.54	31.19	13.69	31.19	13.77	31.07	13.86	31.07	14.04
	-13.7	-15	31.90	13.42	31.79	13.57	31.67	13.72	31.67	13.79	31.67	13.89	31.55	14.06
	-11.8	-13	32.38	13.46	32.26	13.59	33.10	13.74	32.14	13.82	32.14	13.91	32.02	14.09
	-9.8	-11	32.86	13.47	32.74	13.61	32.74	13.76	32.62	13.84	32.62	13.92	32.50	14.11
	-9.5	-10	33.10	13.49	32.98	13.62	32.98	13.77	32.86	13.86	32.86	13.94	32.74	14.13
	-8.5	-9.1	33.33	13.49	33.21	13.64	33.21	13.79	33.10	13.87	33.10	13.96	32.98	14.13
	-7	-7.6	33.69	13.51	33.57	13.66	33.57	13.81	33.45	13.89	33.45	13.97	33.33	14.14
	-5	-5.6	36.31	14.49	36.19	14.64	36.07	14.81	36.07	14.90	36.07	14.98	35.95	15.16
	-3	-3.7	36.79	15.26	36.67	15.43	36.55	15.60	36.55	15.68	36.43	15.78	36.43	15.97
	0	-0.7	37.50	16.49	37.38	16.66	37.26	16.84	37.26	16.94	37.26	17.04	37.14	17.14
	3	2.2	40.95	16.19	40.95	16.34	40.83	16.52	40.71	16.61	40.71	16.49	38.10	14.85
	5	4.1	51.55	19.40	48.45	17.85	45.00	16.35	43.21	15.62	41.55	14.90	38.10	13.49
	7	6	51.90	16.49	48.45	15.25	45.00	14.04	43.21	13.46	41.55	12.89	38.10	11.75
	9	7.9	51.90	15.13	48.45	14.08	45.00	13.05	43.21	12.53	41.55	12.03	38.10	11.04
	11	9.8	51.90	13.96	48.45	13.05	45.00	12.16	43.21	11.73	41.55	11.29	38.10	10.42
13	11.8	51.90	12.92	48.45	12.15	45.00	11.38	43.21	10.99	41.55	10.62	38.10	9.87	
15	13.7	51.90	12.15	48.45	11.48	45.00	10.79	43.21	10.46	41.55	10.14	38.10	9.48	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 335T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
110%	-19.8	-20	30.60	13.72	30.48	13.88	30.36	14.03	30.36	14.10	30.24	14.20	30.24	14.37
	-18.8	-19	30.83	13.74	30.71	13.88	30.60	14.03	30.60	14.11	30.48	14.20	30.48	14.39
	-16.7	-17	31.31	13.76	31.19	13.91	31.07	14.06	31.07	14.15	31.07	14.23	30.95	14.40
	-13.7	-15	31.79	13.79	31.67	13.93	31.55	14.08	31.55	14.17	31.55	14.25	31.43	14.44
	-11.8	-13	32.26	13.81	32.14	13.96	32.14	14.11	32.02	14.20	32.02	14.28	31.90	14.45
	-9.8	-11	32.74	13.84	32.62	13.98	32.62	14.13	32.50	14.22	32.50	14.30	32.38	14.49
	-9.5	-10	32.98	13.84	32.98	14.00	32.86	14.15	32.74	14.23	32.74	14.32	32.62	14.49
	-8.5	-9.1	33.21	13.86	33.10	14.00	33.10	14.17	32.98	14.23	32.98	14.32	32.86	14.51
	-7	-7.6	33.57	13.88	33.45	14.01	33.45	14.18	33.33	14.25	33.33	14.34	33.21	14.52
	-5	-5.6	36.19	14.90	36.07	15.05	35.95	15.20	35.95	15.29	35.95	15.37	34.88	14.40
	-3	-3.7	36.67	15.68	36.55	15.85	36.43	16.02	36.43	16.10	36.43	16.19	34.88	14.90
	0	-0.7	37.38	16.93	37.26	17.10	37.26	17.29	37.14	17.39	37.14	17.38	34.88	15.64
	3	2.2	40.83	16.61	40.83	16.78	40.71	16.56	39.64	15.80	38.10	15.05	34.88	13.57
	5	4.1	47.62	17.72	44.40	16.32	41.31	14.98	39.64	16.02	38.10	13.67	34.88	12.42
	7	6	47.62	15.15	44.40	14.05	41.31	12.96	39.64	12.43	38.10	11.91	34.88	10.89
	9	7.9	47.62	14.01	44.40	13.04	41.31	12.11	39.64	11.65	38.10	11.19	34.88	10.31
	11	9.8	47.62	13.01	44.40	12.18	41.31	11.36	39.64	10.97	38.10	10.56	34.88	9.78
13	11.8	47.62	12.11	44.40	11.40	41.31	10.70	39.64	10.36	38.10	10.00	34.88	9.33	
15	13.7	47.62	11.47	44.40	10.84	41.31	10.21	39.64	9.90	38.10	9.61	34.88	9.00	
100%	-19.8	-20	30.71	13.93	30.60	14.08	30.48	14.23	30.48	14.32	30.48	14.40	30.36	14.57
	-18.8	-19	31.19	13.96	31.07	14.11	30.95	14.27	30.95	14.34	30.95	14.42	30.83	14.59
	-16.7	-17	31.67	13.98	31.55	14.13	31.55	14.28	31.43	14.37	31.43	14.45	31.31	14.28
	-13.7	-15	32.14	14.01	32.02	14.15	32.02	14.32	31.90	14.39	31.90	14.47	31.79	14.00
	-11.8	-13	32.62	14.03	32.50	14.18	32.50	14.34	32.38	14.42	32.38	14.49	31.79	13.72
	-9.8	-11	32.86	14.05	32.86	14.20	32.74	14.35	32.74	14.42	32.62	14.51	31.79	13.59
	-9.5	-10	33.10	14.06	32.98	14.20	32.98	14.35	32.86	14.44	32.86	14.52	31.79	13.47
	-8.5	-9.1	33.45	14.08	33.45	14.22	33.33	14.37	33.21	14.45	33.21	14.54	31.79	13.28
	-7	-7.6	36.07	14.10	35.95	14.22	35.95	14.38	35.83	14.98	34.64	14.25	31.79	12.86
	-5	-5.6	36.55	14.11	36.43	14.23	36.43	14.38	36.07	15.49	34.64	14.74	31.79	13.30
	-3	-3.7	37.26	14.13	37.14	14.24	37.14	13.91	36.07	14.57	34.64	15.49	31.79	13.98
	0	-0.7	38.21	14.15	40.36	14.25	37.50	13.52	36.07	15.32	34.64	14.61	31.79	13.13
	3	2.2	40.71	15.04	40.36	13.89	37.50	13.14	36.07	14.10	34.64	13.45	31.79	12.16
	5	4.1	43.21	14.26	40.36	13.21	37.50	12.51	36.07	12.88	34.64	12.30	31.79	11.19
	7	6	43.21	13.48	40.36	12.54	37.50	11.72	36.07	11.26	34.64	10.79	31.79	9.89
	9	7.9	43.21	12.71	40.36	11.87	37.50	11.04	36.07	10.63	34.64	10.23	31.79	9.43
	11	9.8	43.21	11.89	40.36	11.14	37.50	10.43	36.07	10.07	34.64	9.72	31.79	9.02
13	11.8	43.21	11.14	40.36	10.51	37.50	9.89	36.07	9.58	34.64	9.27	31.79	8.66	
15	13.7	43.21	10.60	40.36	10.06	37.50	9.49	78.93	9.22	34.64	8.95	31.79	8.41	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 335T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
			TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
	D.B. (°C)	W.B. (°C)	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
90%	-19.8	-20	30.36	14.15	30.24	14.28	30.12	14.44	30.12	14.52	30.12	14.61	28.57	13.25
	-18.8	-19	30.60	14.17	30.48	14.30	30.36	14.45	30.36	14.54	30.36	14.56	28.57	13.11
	-16.7	-17	31.07	14.18	30.95	14.32	30.95	14.47	30.83	14.56	30.83	14.27	28.57	12.84
	-13.7	-15	31.55	14.20	31.43	14.35	31.43	14.51	31.31	14.57	31.19	13.98	28.57	12.59
	-11.8	-13	32.02	14.23	31.90	14.37	31.90	14.52	31.79	14.39	31.19	13.69	28.57	12.35
	-9.8	-11	32.50	14.25	32.50	14.40	32.38	14.54	32.38	14.10	31.19	13.44	28.57	12.11
	-9.5	-10	32.74	14.27	32.74	14.40	32.62	14.56	32.50	13.96	31.19	13.30	28.57	11.99
	-8.5	-9.1	32.98	14.28	32.86	14.42	32.86	14.52	32.50	13.84	31.19	13.18	28.57	11.89
	-7	-7.6	33.33	14.30	33.33	14.44	33.21	14.32	32.50	13.66	31.19	12.99	28.57	11.72
	-5	-5.6	35.95	14.33	35.83	14.45	33.81	13.83	32.50	13.20	31.19	12.59	28.57	11.38
	-3	-3.7	36.43	14.35	36.31	14.47	33.81	14.30	32.50	13.66	31.19	13.03	28.57	11.77
	0	-0.7	37.14	14.37	36.31	14.48	33.81	15.03	32.50	14.35	31.19	13.69	28.57	12.38
	3	2.2	38.93	14.39	36.31	14.23	33.81	13.06	32.50	12.48	31.19	11.91	28.57	10.80
	5	4.1	38.93	14.03	36.31	12.99	33.81	11.97	32.50	11.47	31.19	10.97	28.57	10.02
	7	6	38.93	12.20	36.31	11.35	33.81	10.51	32.50	10.11	31.19	9.72	28.57	8.92
	9	7.9	38.93	11.45	36.31	10.72	33.81	9.99	32.50	9.63	31.19	9.27	28.57	8.58
	11	9.8	38.93	10.79	36.31	10.14	33.81	9.51	32.50	9.19	31.19	8.88	28.57	8.27
13	11.8	38.93	10.19	36.31	9.63	33.81	9.09	32.50	8.82	31.19	8.54	28.57	8.00	
15	13.7	38.93	9.77	36.31	9.27	33.81	8.78	32.50	8.54	31.19	8.31	28.57	7.81	
80%	-19.8	-20	30.24	14.21	30.12	14.36	30.00	13.87	28.81	13.23	27.74	12.61	25.36	11.39
	-18.8	-19	30.48	14.22	30.36	14.36	30.00	13.74	28.81	13.10	27.74	12.48	25.36	11.27
	-16.7	-17	30.95	14.24	30.83	14.39	30.00	13.45	28.81	12.83	27.74	12.23	25.36	11.04
	-13.7	-15	31.43	14.27	31.31	14.41	30.00	13.18	28.81	12.58	27.74	11.99	25.36	10.84
	-11.8	-13	31.90	14.29	31.79	14.14	30.00	12.92	28.81	12.33	27.74	11.76	25.36	10.63
	-9.8	-11	32.38	14.31	32.26	13.85	30.00	12.68	28.81	12.09	27.74	11.54	25.36	10.43
	-9.5	-10	32.62	14.32	32.26	13.72	30.00	12.55	28.81	11.98	27.74	11.42	25.36	10.33
	-8.5	-9.1	32.86	14.34	32.26	13.60	30.00	12.45	28.81	11.88	27.74	11.32	25.36	10.25
	-7	-7.6	33.21	14.36	32.26	13.40	30.00	12.28	28.81	11.72	27.74	11.17	25.36	10.11
	-5	-5.6	34.64	14.07	32.26	12.97	30.00	11.89	28.81	11.36	27.74	10.85	25.36	9.83
	-3	-3.7	34.64	14.56	32.26	13.42	30.00	12.31	28.81	11.76	27.74	11.22	25.36	10.18
	0	-0.7	34.64	15.30	32.26	14.11	30.00	12.93	28.81	12.36	27.74	11.81	25.36	10.72
	3	2.2	34.64	13.28	32.26	12.26	30.00	11.27	28.81	10.78	27.74	10.32	25.36	9.38
	5	4.1	34.64	12.14	32.26	11.27	30.00	10.42	28.81	10.00	27.74	9.58	25.36	8.77
	7	6	34.64	10.65	32.26	9.95	30.00	9.24	28.81	8.89	27.74	8.55	25.36	7.88
	9	7.9	34.64	10.10	32.26	9.48	30.00	8.86	28.81	8.55	27.74	8.24	25.36	7.65
	11	9.8	34.64	9.59	32.26	9.04	30.00	8.50	28.81	8.24	27.74	7.97	25.36	7.45
13	11.8	34.64	9.16	32.26	8.67	30.00	8.20	28.81	7.97	27.74	7.73	25.36	7.26	
15	13.7	34.64	8.84	32.26	8.40	30.00	7.98	28.81	7.78	27.74	7.56	25.36	7.15	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Heating Capacity Tables - MSAN6-XMi 335T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
70%	-19.8	-20	30.00	14.22	28.21	13.08	26.31	11.99	25.24	11.45	24.29	10.92	22.26	9.89
	-18.8	-19	30.24	14.06	28.21	12.94	26.31	11.86	25.24	11.33	24.29	10.82	22.26	9.80
	-16.7	-17	30.24	13.78	28.21	12.69	26.31	11.64	25.24	11.11	24.29	10.60	22.26	9.61
	-13.7	-15	30.24	13.50	28.21	12.43	26.31	11.40	25.24	10.90	24.29	10.40	22.26	9.43
	-11.8	-13	30.24	13.23	28.21	12.20	26.31	11.19	25.24	10.68	24.29	10.21	22.26	9.26
	-9.8	-11	30.24	12.98	28.21	11.96	26.31	10.97	25.24	10.50	24.29	10.02	22.26	9.09
	-9.5	-10	30.24	12.86	28.21	11.86	26.31	10.87	25.24	10.40	24.29	9.92	22.26	9.02
	-8.5	-9.1	30.24	12.74	28.21	11.75	26.31	10.79	25.24	10.31	24.29	9.85	22.26	8.93
	-7	-7.6	30.24	12.57	28.21	11.58	26.31	10.63	25.24	10.17	24.29	9.72	22.26	8.82
	-5	-5.6	30.24	12.18	28.21	11.24	26.31	10.34	25.24	9.90	24.29	9.46	22.26	8.61
	-3	-3.7	30.24	12.60	28.21	11.64	26.31	10.70	25.24	10.24	24.29	9.80	22.26	8.92
	0	-0.7	30.24	13.25	28.21	12.25	26.31	11.26	25.24	10.79	24.29	10.31	22.26	9.39
	3	2.2	30.24	11.53	28.21	10.68	26.31	9.85	25.24	9.44	24.29	9.04	22.26	8.25
	5	4.1	30.24	10.65	28.21	9.92	26.31	9.19	25.24	8.83	24.29	8.48	22.26	7.78
	7	6	30.24	9.44	28.21	8.83	26.31	8.24	25.24	7.93	24.29	7.64	22.26	7.07
	9	7.9	30.24	9.04	28.21	8.49	26.31	7.97	25.24	9.41	24.29	7.44	22.26	6.93
	11	9.8	30.24	8.68	28.21	8.20	26.31	7.73	25.24	7.51	24.29	7.27	22.26	6.81
13	11.8	30.24	8.36	28.21	7.95	26.31	7.52	25.24	7.32	24.29	7.12	22.26	6.71	
15	13.7	30.24	8.14	28.21	7.76	26.31	7.41	25.24	7.22	24.29	7.03	22.26	6.68	
60%	-19.8	-20	25.95	11.84	24.29	10.92	22.50	10.04	21.67	9.60	20.71	9.17	19.05	8.34
	-18.8	-19	25.95	11.72	24.29	10.82	22.50	9.94	21.67	9.51	20.71	9.09	19.05	8.27
	-16.7	-17	25.95	11.48	24.29	10.60	22.50	9.75	21.67	9.33	20.71	8.92	19.05	8.12
	-13.7	-15	25.95	11.26	24.29	10.40	22.50	9.56	21.67	9.16	20.71	8.76	19.05	7.97
	-11.8	-13	25.95	11.04	24.29	10.21	22.50	9.39	21.67	8.99	20.71	8.59	19.05	7.83
	-9.8	-11	25.95	10.84	24.29	10.02	22.50	9.22	21.67	8.83	20.71	8.44	19.05	7.69
	-9.5	-10	25.95	10.73	24.29	9.92	22.50	9.14	21.67	8.75	20.71	8.37	19.05	7.63
	-8.5	-9.1	25.95	10.66	24.29	9.85	22.50	9.07	21.67	8.68	20.71	8.31	19.05	7.58
	-7	-7.6	25.95	10.50	24.29	9.72	22.50	8.95	21.67	8.58	20.71	8.20	19.05	7.47
	-5	-5.6	25.95	10.21	24.29	9.46	22.50	8.73	21.67	8.37	20.71	8.02	19.05	7.32
	-3	-3.7	25.95	10.58	24.29	9.80	22.50	9.04	21.67	8.68	20.71	8.31	19.05	7.59
	0	-0.7	25.95	11.13	24.29	10.31	22.50	9.53	21.67	9.14	20.71	8.75	19.05	8.00
	3	2.2	25.95	9.73	24.29	9.04	22.50	8.36	21.67	8.03	20.71	7.69	19.05	7.05
	5	4.1	25.95	9.09	24.29	8.48	22.50	7.88	21.67	7.59	20.71	7.30	19.05	6.73
	7	6	25.95	8.15	24.29	7.64	22.50	7.15	21.67	6.90	20.71	6.66	19.05	6.18
	9	7.9	25.95	7.90	24.29	7.44	22.50	7.00	21.67	6.78	20.71	6.57	19.05	6.13
	11	9.8	25.95	7.66	24.29	7.27	22.50	6.88	21.67	6.68	20.71	6.49	19.05	6.10
13	11.8	25.95	7.47	24.29	7.12	22.50	6.78	21.67	6.59	20.71	6.42	19.05	6.08	
15	13.7	25.95	7.35	24.29	7.03	22.50	6.73	21.67	6.57	20.71	6.42	19.05	6.10	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

Notes:

1. Shaded cells indicate rating condition.

Performance

Heating Capacity Tables - MSAN6-XMi 335T

CR	Outdoor air temp.		Indoor air temperature D.B. (°C)											
			16		18		20		21		22		24	
	D.B. (°C)	W.B. (°C)	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe	TC kWt	PI kWe
50%	-19.8	-20	21.67	9.60	20.24	8.90	18.81	8.20	17.98	7.88	17.26	7.54	15.83	6.90
	-18.8	-19	21.67	9.51	20.24	8.82	18.81	8.14	17.98	9.49	17.26	7.47	15.83	6.83
	-16.7	-17	21.67	9.33	20.24	8.65	18.81	7.98	17.98	7.66	17.26	7.34	15.83	6.71
	-13.7	-15	21.67	9.16	20.24	8.49	18.81	7.85	17.98	7.52	17.26	7.22	15.83	6.59
	-11.8	-13	21.67	8.99	20.24	8.34	18.81	7.71	17.98	7.39	17.26	7.08	15.83	6.49
	-9.8	-11	21.67	8.83	20.24	8.20	18.81	7.58	17.98	7.27	17.26	6.96	15.83	6.37
	-9.5	-10	21.67	8.75	20.24	8.12	18.81	7.51	17.98	7.20	17.26	6.91	15.83	6.32
	-8.5	-9.1	21.67	8.68	20.24	8.07	18.81	7.46	17.98	7.15	17.26	6.86	15.83	6.28
	-7	-7.6	21.67	8.58	20.24	7.97	18.81	7.35	17.98	7.07	17.26	6.78	15.83	6.20
	-5	-5.6	21.67	8.37	20.24	7.78	18.81	7.20	17.98	6.93	17.26	6.64	15.83	6.10
	-3	-3.7	21.67	8.68	20.24	8.07	18.81	7.47	17.98	7.18	17.26	6.90	15.83	6.32
	0	-0.7	21.67	9.14	20.24	8.49	18.81	7.88	17.98	7.58	17.26	7.27	15.83	6.68
	3	2.2	21.67	8.03	20.24	7.49	18.81	6.95	17.98	6.69	17.26	6.42	15.83	5.91
	5	4.1	21.67	7.59	20.24	7.10	18.81	6.64	17.98	6.40	17.26	6.17	15.83	5.71
	7	6	21.67	6.90	20.24	6.51	18.81	6.10	17.98	5.91	17.26	5.71	15.83	5.32
	9	7.9	21.67	6.78	20.24	6.42	18.81	6.06	17.98	5.89	17.26	5.71	15.83	5.37
	11	9.8	21.67	6.68	20.24	6.35	18.81	6.03	17.98	5.88	17.26	5.72	15.83	5.40
13	11.8	21.67	6.59	20.24	6.30	18.81	6.03	17.98	5.88	17.26	5.72	15.83	5.47	
15	13.7	21.67	6.57	20.24	6.30	18.81	6.05	17.98	5.93	17.26	5.81	15.83	5.55	

Abbreviations:

CR: Combination ratio

TC: Total capacity (kW)

PI: Power input (compressor + outdoor fan motor) (kW)

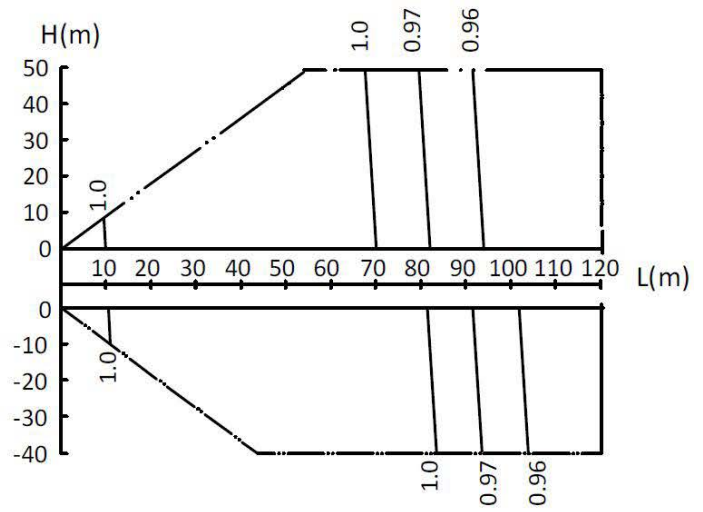
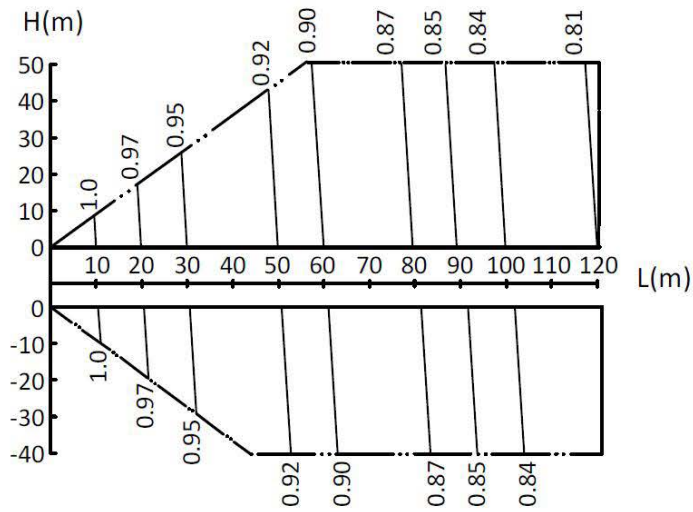
Notes:

1. Shaded cells indicate rating condition.

Capacity Correction Factors for Piping Length and Level Difference

Rate of change in cooling capacity

Rate of change in heating capacity



Notes:

1. The horizontal axis shows equivalent length of piping between farthest indoor unit and outdoor unit; the vertical axis shows the largest level difference between indoor unit and outdoor unit. For level differences, positive values indicate that the outdoor unit is above the indoor unit, negative values indicate that the outdoor unit is below the indoor unit.
2. These figures illustrate the rate of change in capacity of a system with only standard indoor units at maximum load (with the thermostat set to maximum) under standard conditions. Under partial load conditions there is only a minor deviation from the rate of change in capacity shown in these figures.
3. The capacity of the system is either the total capacity of the indoor units obtained from indoor unit capacity tables or the corrected capacity of the outdoor units as per the calculations below, whichever is smaller.

$$\text{Corrected capacity of outdoor units} = \text{Capacity of outdoor units obtained from outdoor unit capacity tables at the combination ratio} \times \text{Capacity correction factor}$$

Capacity Correction Factors for Frost Accumulation

The heating capacity tables do not take account of the reduction in capacity when frost has accumulated or while the defrosting operation is in progress. If snow has accumulated against the outside surface of the outdoor unit heat exchanger heating capacity is reduced. The reduction in heating capacity is dependent on a number of factors including the outdoor temperature, the relative humidity and the amount of frosting which has occurred.

Corrected heating capacity values, which take these factors into account, can be calculated as follows, using the correction factors for frost accumulation given in Table 2-8.5:

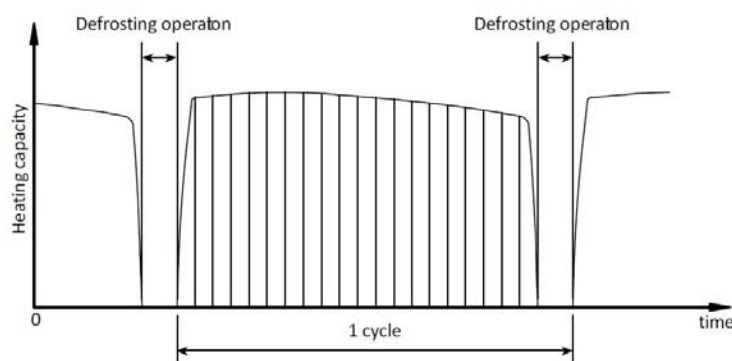
$$\text{Corrected heating capacity} = \text{Value given in outdoor heating capacity table} \times \text{Correction factor for frost accumulation}$$

Table 2-8.11: Correction factor for frost accumulation

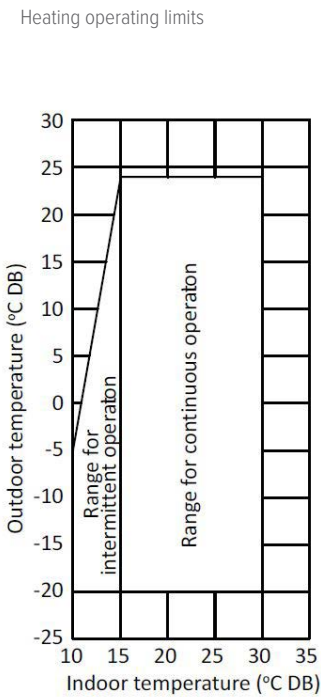
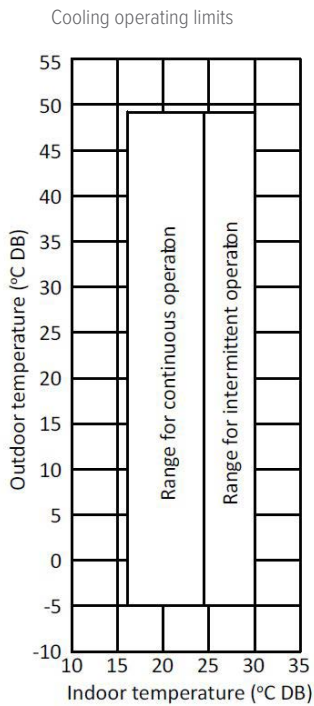
Heat exchanger inlet port temperature (°C / RH 85%)	-7	-5	-2	0	2	5	7
Correction factor for frost accumulation	0,94	0,93	0,89	0,84	0,83	0,91	1,00

Corrected heating capacities express the heating capacity over the heating/defrosting cycle shown in Figure 2-8.3.

Figure 2-8.3: Defrosting cycle



Operating Limits



Notes:

- These figures assume the following operating conditions:
 Equivalent piping length: 7.5m
 Level difference: 0

Sound Levels

Overall

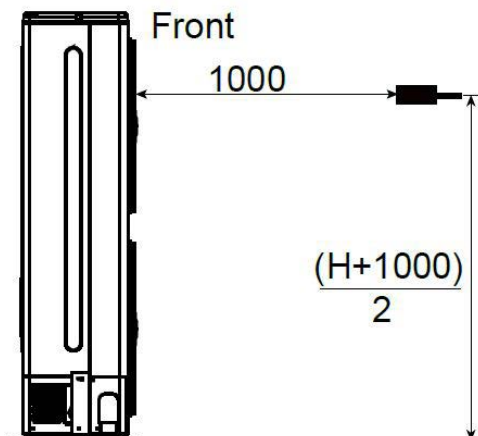
Sound pressure level

Model	dB(A)
MSAN6-XMi 200T	58
MSAN6-XMi 224T	58
MSAN6-XMi 260T	59
MSAN6-XMi 280T	60
MSAN6-XMi 335T	61

Notes:

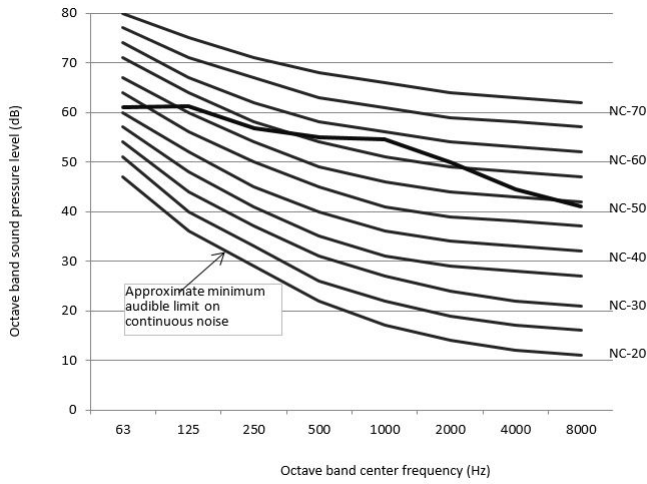
- Sound pressure level is measured at a position 1000mm in front of the unit and $(H+1000)/2$ mm above the floor in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Sound pressure level measurement (unit: mm)



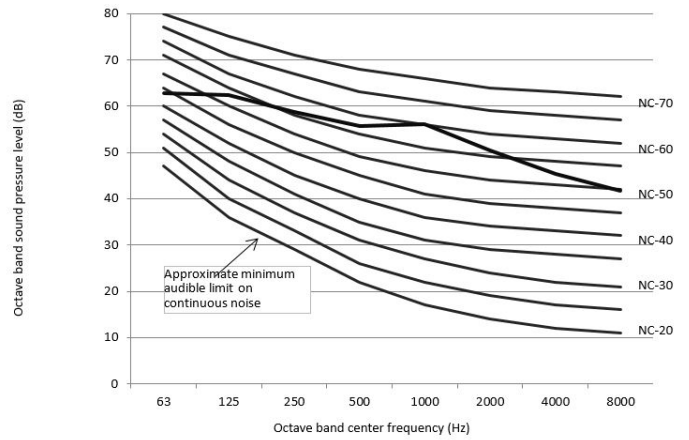
Octave Band Levels

7/8HP octave band level - 200T / 224T



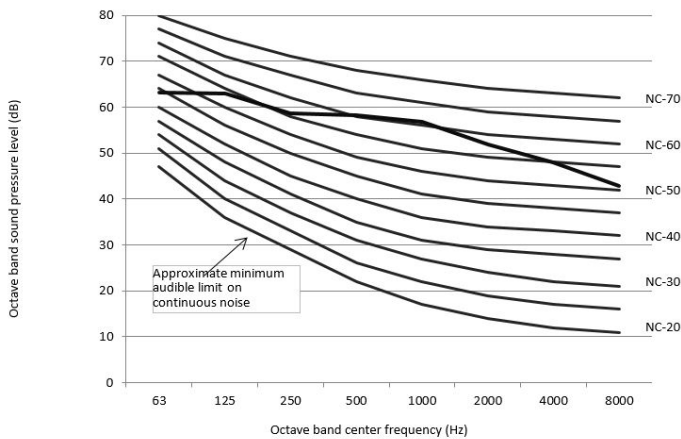
63	125	250	500	1000	2000	4000	8000	[DB(A)]
61,3	61,3	56,7	55	54,5	50	44,5	41	58

9HP octave band level - 260T



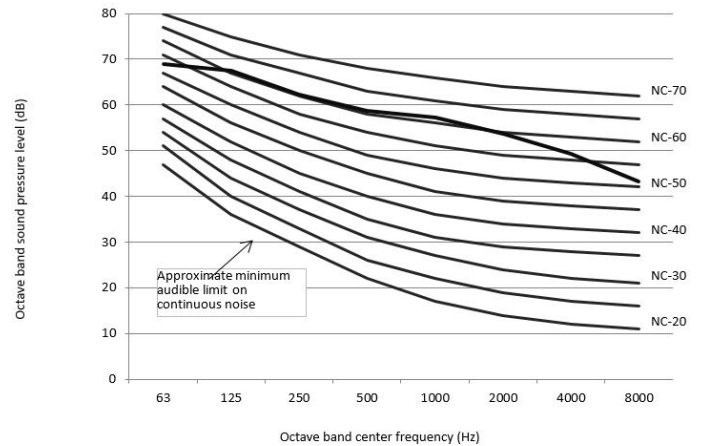
63	125	250	500	1000	2000	4000	8000	[DB(A)]
62,5	62,3	58,7	50	56	50,5	45,3	41,8	59

10HP octave band level - 280T



63	125	250	500	1000	2000	4000	8000	[DB(A)]
63	63	58,7	58,2	56,9	51,9	47,9	42,7	60








12HP octave band level - 335T



63	125	250	500	1000	2000	4000	8000	[DB(A)]
69	67,6	62,2	58,8	57,2	53,7	49,3	43,3	61

Accessories

Standard Accessories

Name	Shape	Quantity	Function
Outdoor unit installation manual		1	
Outdoor unit owner's manual		1	
Installation instructions: Indoor unit manifold		1	
Water outlet connection pipe		1	Used for outdoor drainage
Matched resistor		2	Enhances communication stability
Waterproof chassis cover		2	Used for centralized drainage
Connection pipe		1	Connecting pipes

Optional Accessories

Optional accessories	Model	Packed dimensions (mm)	Net/gross weight (kg)	Function
Indoor branch joint kits	FQZHN-01D	290×105×100	0.3 / 0.4	Distribute refrigerant to indoor units and balance flow resistance between outdoor units
	FQZHN-02D	290×105×100	0.4 / 0.6	
	FQZHN-03D	310×130×125	0.6 / 0.9	

Part 3 - System Design and Installation

Preface

1.1 Notes for Installers Boxes

The information contained in this Engineering Data Book may primarily be of use during the system design stage of a MSAN6-XMi Series VRF project. Additional important information which may primarily be of use during field installation has been placed in boxes, such as the example below, titled “Notes for installers”.



Notes for installers

Notes for installers boxes contain important information which may primarily be of use during field installation, rather than during desk based system design.

1.2 Definitions

In this Engineering Data Book, the term “applicable legislation” refers to all national, local and other laws, standards, codes, rules, regulations and other legislation that apply in a given situation.

1.3 Precautions

All system installation including installation of piping and electrical works must only be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.

Outdoor Units

Placement considerations

Placement of outdoor units should take account of the following considerations:

- ✓ Air conditioners should not be exposed to direct radiation from a high-temperature heat source.
- ✓ Air conditioners should not be installed in positions where dust or dirt may affect heat exchangers.
- ✓ Air conditioners should not be installed in locations where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
- ✓ Air conditioners should not be installed in locations where exposure to salinity may occur unless the anti-corrosion treatment for high-salinity areas customization option has been added and the precautions described in Part 3, 9 “Installation in Areas of High Salinity” are taken.
- ✓ Outdoor units should be installed in well-drained, well-ventilated positions that are as close as possible to the indoor units.

Spacing

Outdoor units must be spaced such that sufficient air may flow through each unit. Sufficient airflow across heat exchangers is essential for outdoor units to function properly. Figures 3-2.1 to 3-2.6 show spacing requirements in three different scenarios.

Figure 3-2.1: Single unit installation (unit: mm)

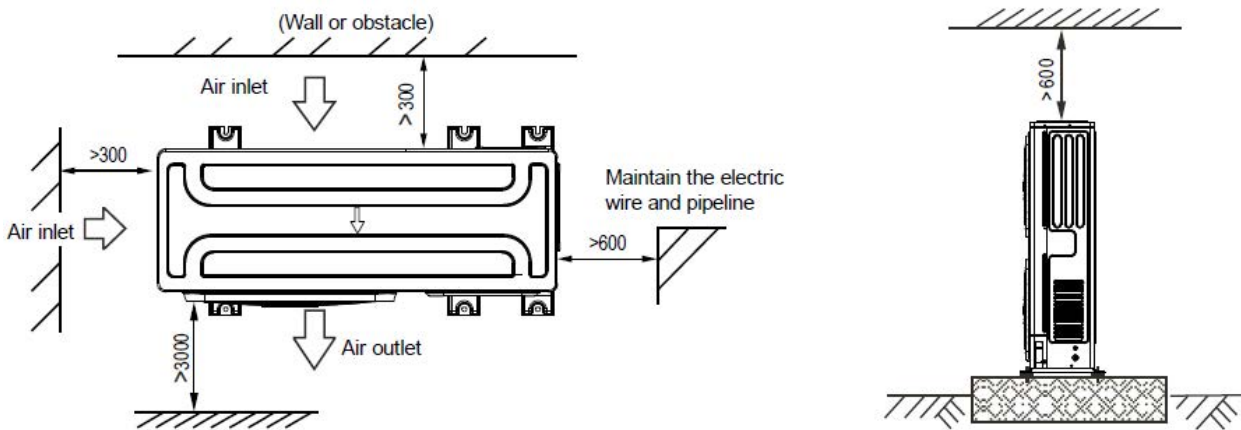


Figure 3-2.2: Parallel connect the two units or above (unit: mm)

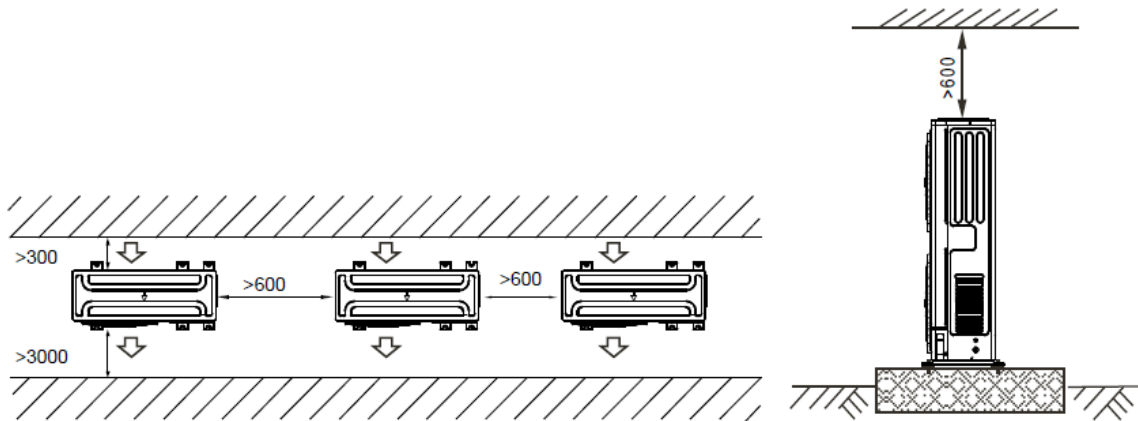
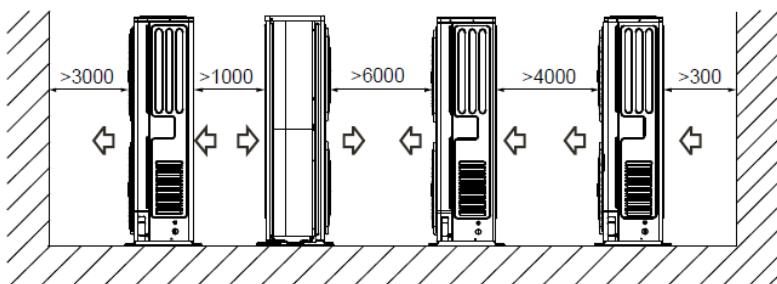


Figure 3-2.3: Parallel connect the front with rear sides (unit: mm)



Unit Placement and Installation

Base structures

Outdoor unit base structure design should take account of the following considerations:

- ✓ A solid base prevents excess vibration and noise. Outdoor unit bases should be constructed on solid ground or on structures of sufficient strength to support the units' weight.
- ✓ Bases should be at least 200mm high to provide sufficient access for installation of piping.
- ✓ Either steel or concrete bases may be suitable.
- ✓ A typical concrete base design is shown in Figure 3-2.4. A typical concrete specification is 1 part cement, 2 parts sand and 6 parts crushed stone with $\Phi 10$ mm steel reinforcing bar. The edges of the base should be chamfered.
- ✓ To ensure that all contact points are equally secure, bases should be completely level. Base design should ensure that the points on the units' bases designed for weight-bearing support are fully supported. Bolt spacings should be as per Figure 3-2.5.
- ✓ A drainage ditch should be provided to allow drainage of condensate that may form on the heat exchangers when the units are running in heating mode. The drainage should ensure that condensate is directed away from roadways and footpaths, especially in locations where the climate is such that condensate may freeze.

Figure 3-2.4: Outdoor unit typical concrete base structure design (unit: mm)

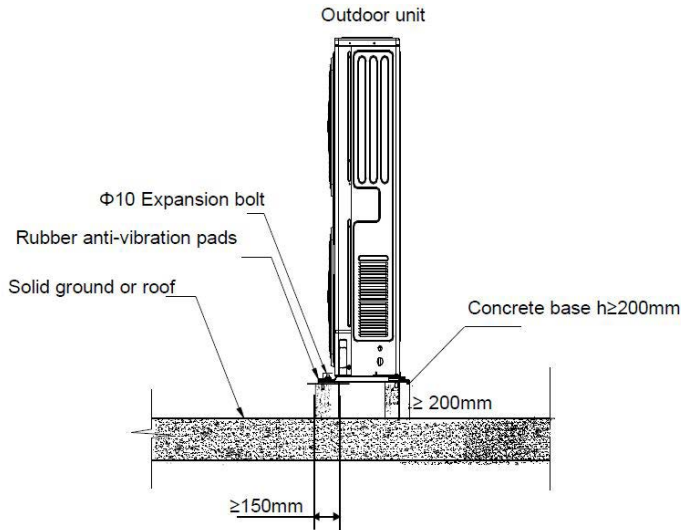
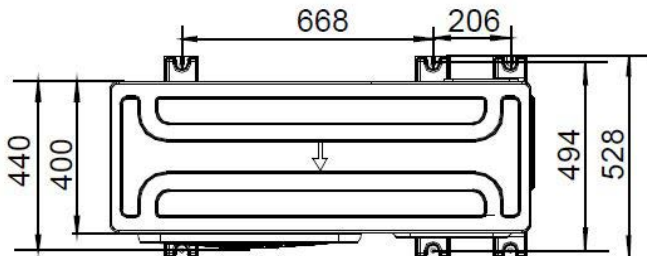


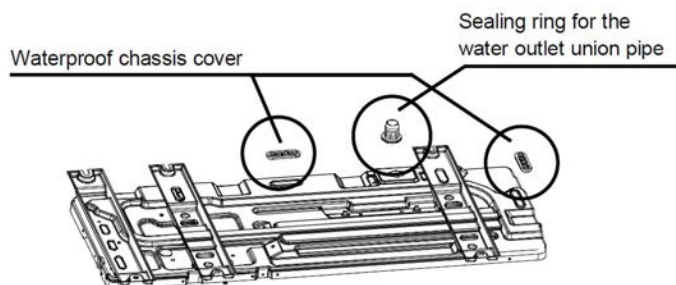
Figure 3-2.5: Expansion bolt positioning and space (unit: mm)



Centralized drainage

When centralized drainage is required, install two waterproof covers for the chassis, as shown in Figure 3-2.6. Install the water outlet union pipe and sealing ring on the chassis, and then connect the drainage pipe to complete centralized drainage installation.

Figure 3-2.6: Centralized drainage



Acceptance and unpacking



Notes for installers

- ✓ When units are delivered check whether any damage occurred during shipment. If there is damage to the surface or outside of a unit, submit a written report to the shipping company.
- ✓ Check that the model, specifications and quantity of the units delivered are as ordered.
- ✓ Check that all accessories ordered have been included. Retain the Owner's Manual for future reference.

Hoisting



Notes for installers

- ✓ Do not remove any packaging before hoisting. If units are not packaged or if the packaging is damaged, use suitable boards or packing material to protect the units
- ✓ Hoist one unit at a time, using two ropes to ensure stability.
- ✓ Keep units upright during hoisting, ensuring that the angle to the vertical does not exceed 30°

Indoor Units

Placement considerations

Placement of indoor units should take account of the following considerations:

- ✓ Sufficient space for drain piping and for access during servicing and maintenance should be allowed.
- ✓ To ensure a good cooling/heating effect, short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) should be avoided.
- ✓ To prevent excessive noise or vibration during operation, suspension rods or other weight-bearing fixings should typically be able to bear twice the unit's weight.

Hoisting



Notes for installers

- ✓ Before installing an indoor unit, check that the model to be installed is as specified in the construction drawings and confirm the correct orientation of the unit.
- ✓ Ensure that units are installed at the correct height.
- ✓ To allow smooth condensate drainage and to ensure unit stability (to prevent excessive noise or vibration), ensure that units are level to within 1° of the horizontal. If a unit is not level to within 1° of the horizontal, water leakage or abnormal vibration/noise may occur.

Refrigerant Piping Design

Design Considerations

Refrigerant piping design should take account of the following considerations:

- ✓ The amount of brazing required should be kept to a minimum.
- ✓ On the two inside sides of the first indoor branch joint ("A" in Figures 3-3.2, 3-3.3 and 3-3.4) the system should, as far as possible, be equal in terms of number of units, total capacities and total piping lengths.

Material Specification

Only seamless phosphorus-deoxidized copper piping that complies with all applicable legislation should be used. Temper grades and minimum thicknesses for different diameters of piping are specified in Table 3-3.1.

Table 3-3.1: Piping temper and thickness

Piping outer diameter (mm)	Temper ¹	Minimum thickness (mm)
Φ6.35	0 (annealed)	0.8
Φ9.53		0.8
Φ12.7		0.8
Φ15.9		1.0
Φ19.1		1.0
Φ22.2		1.2
Φ25.4		1.2
Φ28.6	1/2H (half hard)	1.3
Φ31.8		1.5
Φ38.1		1.5
Φ41.3		1.5
Φ44.5		1.5
Φ54.0		1.8

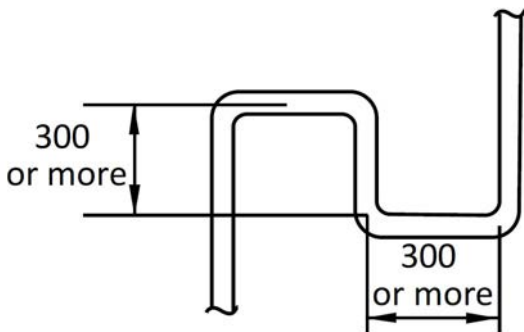
Notes:

1. 0: coiled piping; 1/2H: straight piping.

Permitted Piping Lengths and Level Differences

- 1. Requirement 1:** The total length of piping in one refrigerant system should not exceed 150 m.
- 2. Requirement 2:** The piping between the farthest indoor unit (N6) and the outdoor unit should not exceed 100 m (actual length) and 110 m (equivalent length). (The equivalent length of each branch joint is 0.5 m.)
- 3. Requirement 3:** The piping between the farthest indoor unit (N6) and first indoor branch joint (A) should not exceed 40 m in length.
- 4. Requirement 4:** Indoor auxiliary pipes (a to f) should not exceed 15 m in length.
- 5. Requirement 5:** The largest level difference between indoor unit and outdoor unit should not exceed 50 m (if the outdoor unit is above) or 40 m (if the outdoor unit is below). Additionally: If the outdoor unit is above and the level difference is greater than 20 m, it is recommended that an oil return bend with dimensions as specified in Figure 3-3.1 is set every 10 m in the gas pipe of the main pipe.
- 6. Requirement 6:** The largest level difference between indoor units should not exceed 15 m.

Figure 3-3.1: Oil return bend (unit: mm)



Refrigerant Piping Design

Figure 3-3.2: Permitted refrigerant piping lengths and level differences

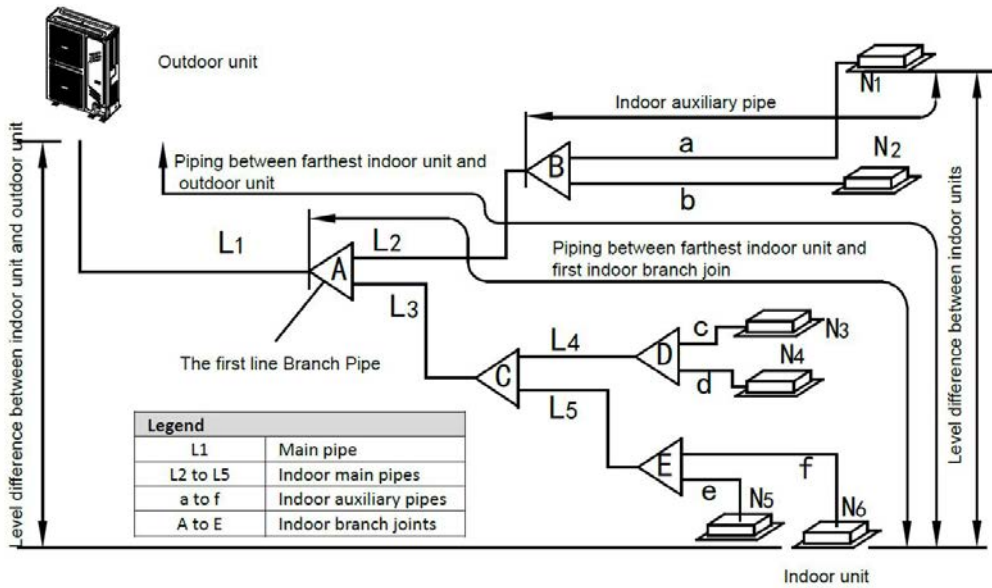


Table 3-3.2: Summary of permitted refrigerant piping lengths and level differences

Piping length		Permitted values	Piping in Figure 3-3.2	
Piping lengths	Total piping length ¹	≤ 150m	L1+L2+L3+L4+L5+a+b+c+d+e+f	
	Piping between farthest indoor unit and outdoor unit	Actual length	≤ 100m	L1+L3+L5+f
		Equivalent length	≤ 110m	
	Piping between farthest indoor unit and first indoor branch joint ³	≤ 40m	L3+L5+f	
	Pipe Length between the nearest branch and the indoor unit	≤ 15m	a,b,c,d,e,f	
Level differences	Largest level difference between indoor unit and outdoor unit ⁴	Outdoor unit is above	≤ 50m	-
		Outdoor unit is below	≤ 40m	-
	Largest level difference between indoor units ⁵	≤ 15m	-	

Notes:

1. Refer to Requirement 1, above.
2. Refer to Requirement 2, above.
3. Refer to Requirement 3, above.
4. Refer to Requirement 5, above.
5. Refer to Requirement 6, above.

When the outdoor unit connects to one indoor unit, the piping length and level difference requirements that apply are summarized in Table 3-3.3.

Table 3-3.3: Summary of permitted refrigerant piping lengths and level differences connects to one indoor unit

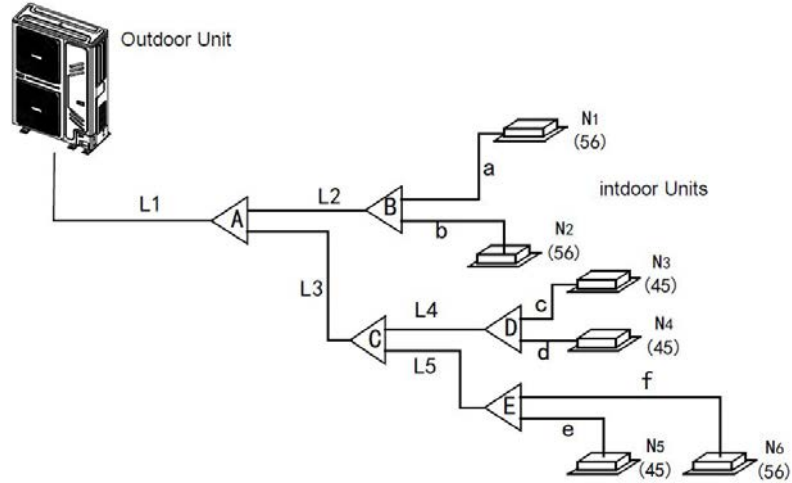
The max height drop(m)		The length of refrigerant pipe(m)	The number of bends
Outdoor unit is above	Outdoor unit is below		
25	20	50	≤ 10

Refrigerant Piping Design

Selecting Piping Diameters

Tables 3-3.4 to 3-3.5 below, specify the required pipe diameters for the indoor and outdoor piping. The main pipe (L1) and first indoor branch joint (A) should be sized according to whichever of Tables 3-3.4 and 3-3.5 indicates the larger size.

Figure 3-3.3: Selecting piping diameters



Legend	
L1	Main pipe
L2 to L5	Indoor main pipes
a to f	Indoor auxiliary pipes
A to E	Indoor branch joints
Figures in parentheses indicate indoor unit capacity indexes.	

Table 3-3.4: Main pipe1 (L1), indoor main pipes (L2 to L5) and indoor branch joint kits

Total capacity indexes of indoor units	Gas pipe (mm)	Liquid pipe (mm)	Branch joint kit
Capacity indexes < 166	Φ15.9	Φ9.53	FQZHN-01D
166 ≤ Capacity indexes < 230	Φ19.1	Φ9.53	FQZHN-01D
230 ≤ Capacity indexes < 330	Φ22.2	Φ9.53	FQZHN-02D
330 ≤ Capacity indexes < 470	Φ25.4	Φ12.7	FQZHN-03D

Notes:

- The main pipe (L1) and first indoor branch joint (A) should be sized according to whichever of Tables 3-3.3 and 3-3.4 indicates the larger size.

Table 3-3.5: Main pipe1 (L1) and first indoor branch joint (A)

Capacity of outdoor unit	Equivalent length of all liquid pipes and gas pipes < 90m			Equivalent length of all liquid pipes and gas pipes ≥ 90m		
	Gas pipe (mm)	Liquid pipe (mm)	Branch joint kit	Gas pipe (mm)	Liquid pipe (mm)	Branch joint kit
7/8HP	Φ22.2	Φ9.53	FQZHN-01D	Φ25.4	Φ12.7	FQZHN-03D
9/10HP	Φ22.2	Φ9.53	FQZHN-02D	Φ25.4	Φ12.7	FQZHN-03D
12HP	Φ25.4	Φ12.7	FQZHN-03D	Φ25.4	Φ12.7	FQZHN-03D

Notes:

- The main pipe (L1) and first indoor branch joint (A) should be sized according to whichever of Tables 3-3.4 and 3-3.5 indicates the larger size.

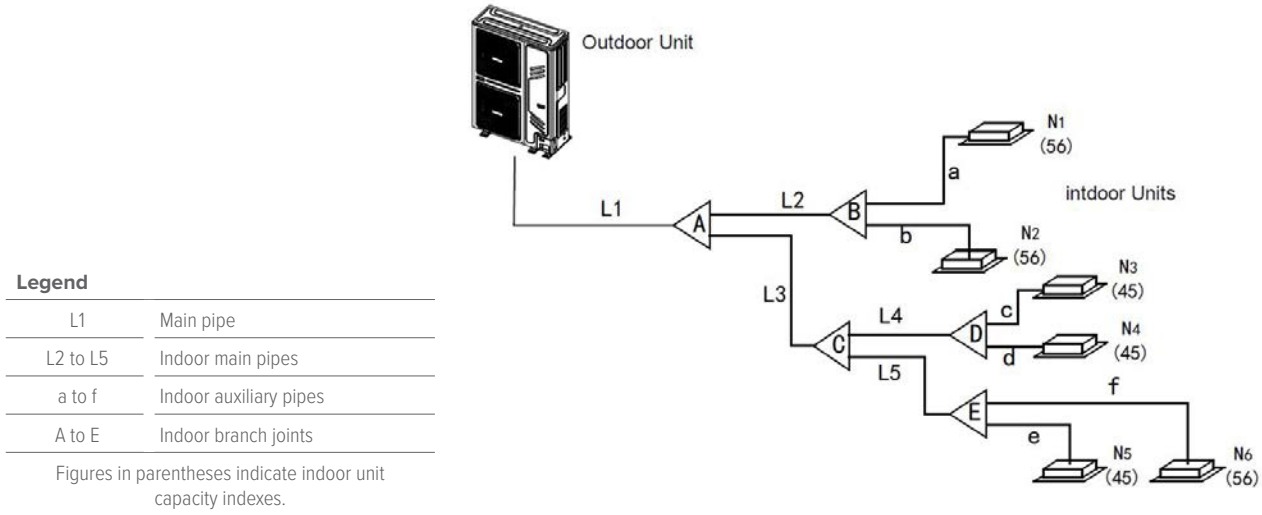
Table 3-3.6: Indoor auxiliary pipes (a to f)

Capacity of indoor unit (kW)	Gas pipe (mm)	Liquid pipe (mm)
≤ 4.5	Φ12.7	Φ6.35
≥ 5.6	Φ15.9	Φ9.53

Refrigerant Piping Selection Example

The example below illustrates the piping selection procedure for a system consisting of one outdoor unit (28kW) and 6 indoor units. The system's equivalent length of all liquid pipes and gas pipes is in excess of 90m.

Figure 3-3.4: Refrigerant piping selection example



Step 1: Select indoor auxiliary pipes

- ✓ Indoor units N1, N2 and N6 are of capacity 5.6kW. Refer to Table 3-3.4. Indoor auxiliary pipe a, b and f is $\Phi 15.9 / \Phi 9.53$.
- ✓ Indoor units N3 to N5 are of capacity 4.5kW. Refer to Table 3-3.4. Indoor auxiliary pipes c to e is $\Phi 12.7 / \Phi 6.35$.

Step 2: Select indoor main pipes and indoor branch joints B to E

- ✓ The indoor units (N1 and N2) downstream of indoor branch joint B have total capacity of $5.6 + 5.6 = 11.2\text{kW}$. Refer to Table 3-3.3. Indoor main pipe L2 is $\Phi 15.9 / \Phi 9.53$. Indoor branch joint B is FQZHN-01D.
- ✓ The indoor units (N3 and N4) downstream of indoor branch joint D have total capacity of $4.5 + 4.5 = 9\text{kW}$. Refer to Table 3-3.3. Indoor main pipe L4 is $\Phi 15.9 / \Phi 9.53$. Indoor branch joint D is FQZHN-01D.
- ✓ The indoor units (N5 and N6) downstream of indoor branch joint E have total capacity of $4.5 + 5.6 = 10.1\text{kW}$. Refer to Table 3-3.3. Indoor main pipe L5 is $\Phi 15.9 / \Phi 9.53$. Indoor branch joint E is FQZHN-01D.
- ✓ The indoor units (N3 to N6) downstream of indoor branch joint E have total capacity of $4.5 \times 3 + 5.6 = 19.1\text{kW}$. Refer to Table 3-3.3. Indoor main pipe L3 is $\Phi 19.1 / \Phi 9.53$. Indoor branch joint E is FQZHN-01D.

Step 3: Select main pipe and indoor branch joint A

- ✓ The indoor units (N1 to N6) downstream of indoor branch joint A have total capacity of $4.5 \times 3 + 5.6 \times 3 = 30.3\text{kW}$. The system's equivalent length of all liquid pipes and gas pipes is in excess of 90m. The capacity of the outdoor unit is 28kW. Refer to Tables 3-3.3 and 3-3.4. Main pipe L1 is the larger of $\Phi 22.2 / \Phi 9.53$ and $\Phi 25.4 / \Phi 12.7$, hence $\Phi 25.4 / \Phi 12.7$. Indoor branch joint A is FQZHN-03D.

Refrigerant Piping Design

Branch Joints

Branch joint design should take account of the following:

- ✓ U-shaped branch joints should be used – tee joints are not suitable. Branch joint dimensions are given in Tables 3-3.6.
- ✓ To ensure even distribution of refrigerant, branch joints should not be installed within 500mm of a 90° bend, another branch joint or the straight section of piping leading to an indoor unit, with the minimum 500mm being measured from the point where the branch joint is connected to the piping, as shown in Figure 3-3.5.

Figure 3-3.5: Branch joint spacing and separation from bends (unit: mm)

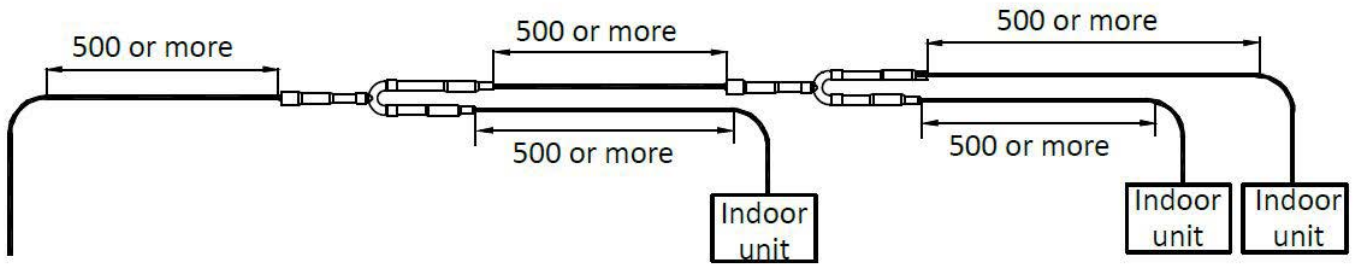


Table 3-3.7: Indoor branch joint dimensions (unit: mm)

Model	Gas side joints	Liquid side joints
FQZHN-01D		
FQZHN-02D		
FQZHN-03D		

Refrigerant Leakage Precautions

R410A refrigerant is not flammable in air at temperatures up to 100°C at atmospheric pressure and is generally considered a safe substance to use in air conditioning systems. Nevertheless, precautions should be taken to avoid danger to life in the unlikely event of a major refrigerant leakage. Precautions should be taken in accordance with all applicable legislation.

Where no applicable legislation exists, the following may be used as a guide:

- ✓ Air conditioned rooms should be large enough that if leakage of all the refrigerant in the system occurs, the concentration of the refrigerant in the room does not reach a level dangerous to health.
- ✓ A critical concentration (at which point R410A becomes dangerous to human health) of 0.3 kg/m³ can be used.
- ✓ The potential concentration of refrigerant in a room following a leak can be calculated as follows:
 - ✓ Calculate the total amount in of refrigerant in the system ("A") as the nameplate charge (the charge in the system when delivered from the factory) plus the additional charge added as per Part 3, 7.1 "Calculating Additional Refrigerant Charge".
 - ✓ Calculate the total volume ("B") of the smallest room into which refrigerant could potentially leak.
 - ✓ Calculate the potential refrigerant concentration as A divided by B.
 - ✓ If A/B is not less than 0.3 kg/m³, countermeasures such installing mechanical ventilators (either ventilating regularly or controlled by refrigerant leakage detectors) should be taken.
- ✓ Since R410A is heavier than air, particular consideration should be given to leak scenarios in basement rooms.

Figure 3-3.6: Potential refrigerant leak scenario

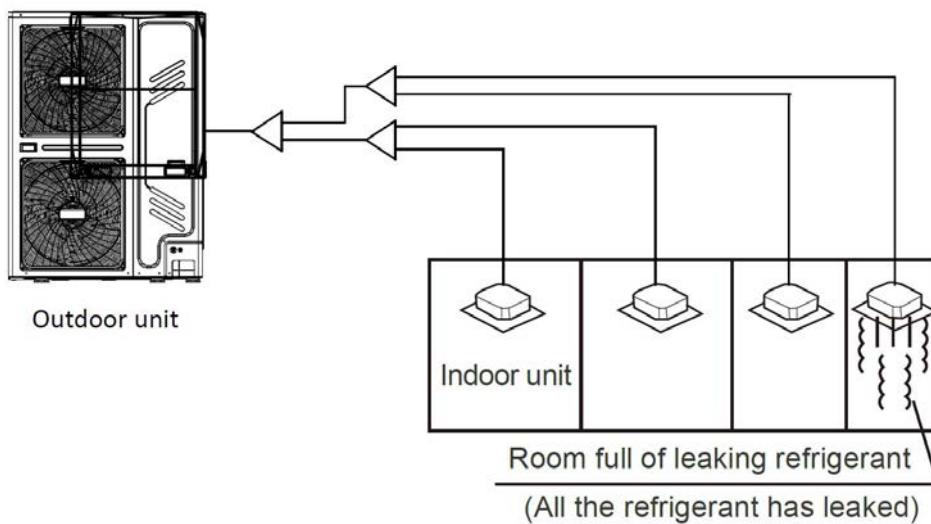
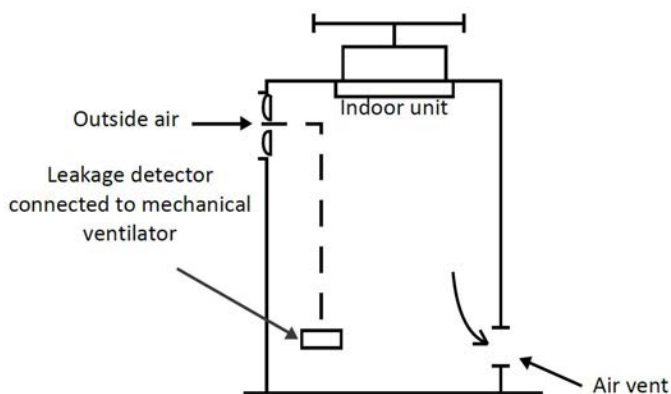


Figure 3-3.7: Mechanical ventilator controlled by refrigerant leak detector



Refrigerant Piping Installation

Procedure and Principles

Installation procedure



Notes for installers

Installation of the refrigerant piping system should proceed in the following order:



Note: Pipe flushing should be performed once the brazed connections have been completed with the exception of the final connections to the indoor units. That is, flushing should be performed once the outdoor unit have been connected but before the indoor units are connected.

Three principles for refrigerant piping

	Reasons	Measures
CLEAN	Particles such as oxide produced during brazing and/or building dust can lead to compressor malfunction	<ul style="list-style-type: none"> ✓ Seal piping during storage¹ ✓ Flow nitrogen during brazing² ✓ Pipe flushing³
DRY	Moisture can lead to ice formation or oxidization of internal components leading to abnormal operation or compressor damage	<ul style="list-style-type: none"> ✓ Pipe flushing³ ✓ Vacuum drying⁴
SEALED	Imperfect seals can lead to refrigerant leakage	<ul style="list-style-type: none"> ✓ Pipe manipulation⁵ and brazing² techniques ✓ Gas tightness test⁶

Notes:

1. See Part 3, 4.2.1 "Pipe delivery, storage and sealing".
2. See Part 3, 4.5 "Brazing".
3. See Part 3, 4.7 "Pipe Flushing".
4. See Part 3, 4.9 "Vacuum Drying".
5. See Part 3, 4.3 "Manipulating Copper Piping".
6. See Part 3, 4.8 "Gastightness Test".

Storing Copper Piping

Pipe delivery, storage and sealing



Notes for installers

- ✓ Ensure that piping does not get bent or deformed during delivery or whilst stored
- ✓ On construction sites store piping in a designated location.
- ✓ To prevent dust or moisture entering piping should be kept sealed whilst in storage and until it is about to be connected. If piping is to be used soon, seal the openings with plugs or adhesive tape. If piping is to be stored for a long time, charge the piping with nitrogen at 0.2-0.5MPa and seal the openings by brazing.
- ✓ Storing piping directly on the ground risks dust or water ingress. Wooden supports can be used to raise piping off the ground.
- ✓ During installation, ensure that piping to be inserted through a hole in a wall is sealed to ensure dust and/or fragments of wall do not enter.
- ✓ Be sure to seal piping being installed outdoors (especially if being installed vertically) to prevent rain entering

Manipulating Copper Piping

De-oiling



Notes for installers

- ✓ Lubrication oil used during some copper pipe manufacturing processes can cause deposits to form in R410A refrigerant systems, causing system errors. Oil-free copper piping should therefore be selected. If ordinary (oily) copper piping is used, it must be cleaned with gauze dipped in tetrachloroethylene solution prior to installation.

⚠ Never use carbon tetrachloride (CCl₄) for pipe cleansing or flushing, as doing so will seriously damage the system.

Cutting copper piping and removing burrs



Notes for installers

- ✓ Use a pipe cutter rather than a saw or cutting machine to cut piping. Rotate the piping evenly and slowly, applying even force to ensure that the piping does not become deformed during cutting. Using a saw or cutting machine to cut piping runs the risk of copper shavings entering the piping. Copper shavings are difficult to remove and pose a serious risk to the system if they enter the compressor or block the throttling unit
- ✓ After cutting using a pipe cutter, use a reamer/scrapper to remove any burrs that have formed at the opening, keeping the opening of the piping downwards to avoid copper shavings from entering the piping.
- ✓ Remove burrs carefully to avoid scratches, which may prevent a proper seal being formed and lead to refrigerant leakage.

Refrigerant Piping Installation

Expanding copper piping ends

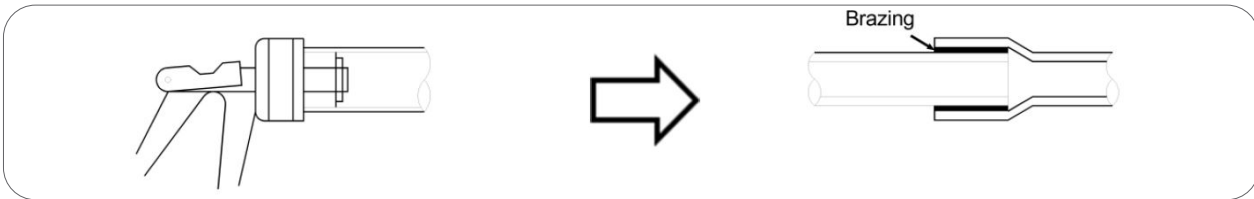


Notes for installers

- ✓ Ends of copper piping can be expanded so that another length of piping can be inserted and the joint brazed.
- ✓ Insert the expanding head of the pipe expander into the pipe. After completing pipe expansion, rotate the copper pipe a few degrees to rectify the straight line mark left by the expanding head.

⚠ Ensure that the expanded section of piping is smooth and even. Remove any burrs that remain after cutting.

Figure 3-4.1: Expanding copper piping ends



Flared joints

Flared joints should be used where a screw thread connection is required.



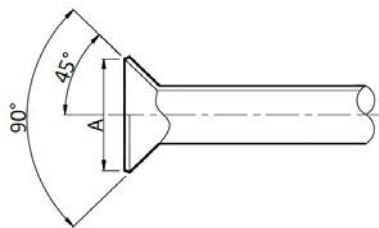
Notes for installers

- ✓ Before flaring 1/2H (half hard) piping, anneal the end of the pipe to be flared.
- ✓ Remember to place the flare nut on the piping before flaring.
- ✓ Ensure the flared opening is not cracked, deformed or scratched, otherwise it will not form a good seal and refrigerant leakage may occur.
- ✓ The diameter of the flared opening should be within the ranges specified in Table 3-4.1. Refer to Figure 3-4.2.

Table 3-4.1: Flared opening size ranges

Pipe (mm)	Flared opening diameter (A) (mm)
Φ6.35	8.7 - 9.1
Φ9.53	12.8 - 13.2
Φ12.7	16.2 - 16.6
Φ15.9	19.3 - 19.7
Φ19.1	23.6 - 24.0

Figure 3-4.2: Flared opening



- ✓ When connecting a flared joint, apply some compressor oil to the inner and outer surfaces of the flared opening to facilitate the connection and rotation of the flare nut, ensure firm connection between the sealing surface and the bearing surface, and avoid the pipe becoming deformed.

Bending piping

Bending copper piping reduces the number of brazed joints required and can improve quality and save material.



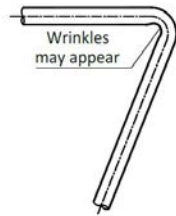
Notes for installers

Piping bending methods

- ✓ Hand bending is suitable for thin copper piping ($\Phi 6.35\text{mm} - \Phi 12.7\text{mm}$).
- ✓ Mechanical bending (using a bending spring, manual bending machine or powered bending machine) is suitable for a wide range of diameters ($\Phi 6.35\text{mm} - \Phi 54.0\text{mm}$).

- ⚠ When using a spring bender, ensure that the bender is clean before inserting it in the piping.
- ⚠ After bending a copper pipe, ensure that there are no wrinkles or deformation on either side of the pipe.
- ⚠ Ensure that bend angles do not exceed 90° , otherwise wrinkles may appear on the inner side of the pipe, and the pipe may buckle or crack. Refer to Figure 3-4.3.
- ⚠ Do not use a pipe that has buckled during the bending process; ensure that the cross section at the bend is greater than $2/3$ of the original area.

Figure 3-4.3: Pipe bending in excess of 90°



Bending piping

When the air conditioner is running, the refrigerant piping will deform (shrink, expand, droop). To avoid damage to piping, hangers or supports should be spaced as per the criteria in the Table 3-4.2. In general, the gas and liquid pipes should be suspended in parallel and the interval between support points should be selected according to the diameter of the gas pipe.

Suitable insulation should be provided between the piping and the supports. If wooden dowels or blocks are to be used, use wood that has undergone preservative treatment.

Changes in refrigerant flow direction and refrigerant temperature result in movement, expansion and shrinkage of the refrigerant piping. Piping should therefore not be fixed too tightly, otherwise stress concentrations may occur in the piping, with the potential for rupturing.

Table 3-4.2: Refrigerant piping support spacings

Pipe (mm)	Interval between support points (m)	
	Horizontal Piping	Vertical Piping
< $\Phi 20$	1	1,5
$\Phi 20 - \Phi 40$	1,5	2
> $\Phi 40$	2	2,5

Refrigerant Piping Installation

Brazing

Care must be taken to prevent oxide forming on the inside of copper piping during brazing. The presence of oxide in a refrigerant system adversely affects the operation of valves and compressors, potentially leading to low efficiency or even compressor failure. To prevent oxidation, during brazing nitrogen should be flowed through the refrigerant piping.



Notes for installers

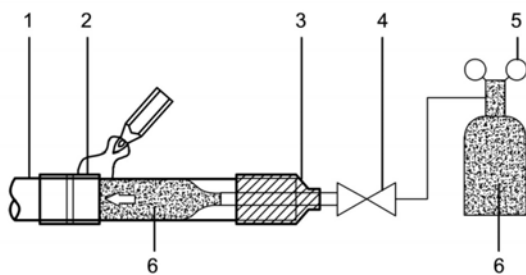
Warning

- ✓ Never flow oxygen through piping as doing so aids oxidation and could easily lead to explosion and as such is extremely dangerous.
- ✓ Take appropriate safety precautions such as having a fire extinguisher to hand whilst brazing.

Flowing nitrogen during brazing

- ✓ Use a pressure reducing valve to flow nitrogen through copper piping at 0.02-0.03MPa during brazing.
- ✓ Start the flow before brazing starts and ensure that the nitrogen continuously passes through the section being brazed until the brazing is complete and the copper has cooled down completely.

Figure 3-4.4: Flowing nitrogen through piping during brazing

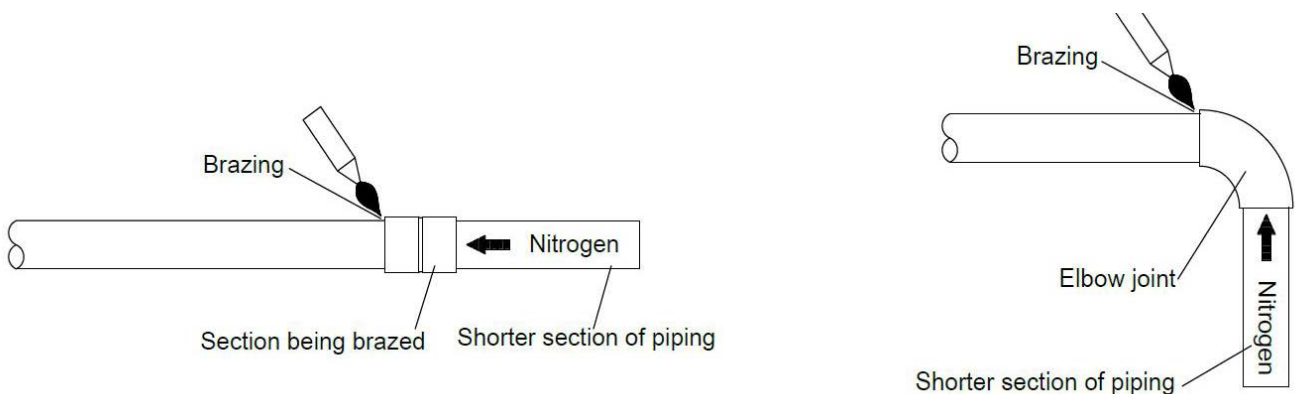


Legend

1	Copper piping
2	Section being brazed
3	Nitrogen connection
4	Hand valve
5	Pressure-reducing valve
6	Nitrogen

- ✓ When joining a shorter section of piping to a longer section, flow nitrogen from the shorter side to allow better displacement of air with nitrogen.
- ✓ If the distance from the point where nitrogen enters the piping to the joint to be brazed is long, ensure that the nitrogen is flowed for sufficient time to discharge all the air from the section to be brazed before commencing brazing.

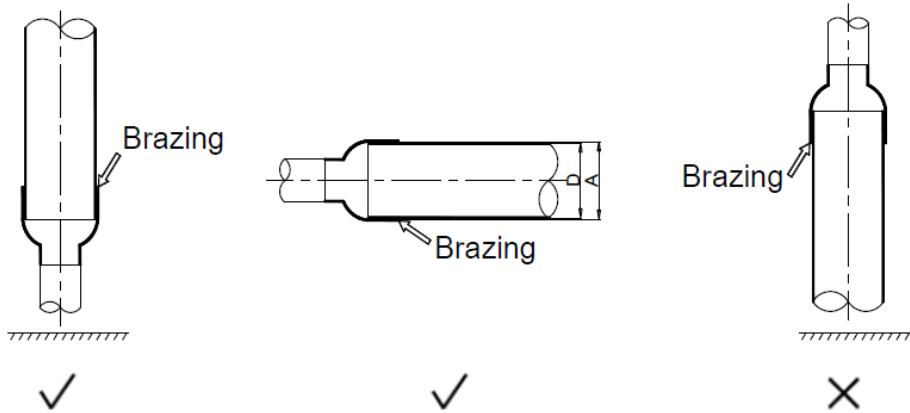
Figure 3-4.5: Flowing nitrogen from shorter side during brazing



Piping orientation during brazing

Brazing should be conducted downwards or horizontally to avoid filler leakage.

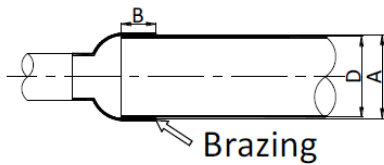
Figure 3-4.6: Piping orientation during brazing



Piping overlap during brazing

Table 3-4.3 specifies the minimum permissible piping overlap and the range of permissible gap sizes for brazed joints on piping of different diameters. Refer also to Figure 3-4.7.

Figure 3-4.7: Piping overlap and gap for brazed joints



Legend

A	Inner diameter of larger pipe
D	Outer diameter of smaller pipe
B	Inlaid depth (overlap)

Table 3-4.3: Piping overlap and gap for brazed joints¹

D (mm)	Minimum permissible B (mm)	Permissible A – D (mm)
5 < D < 8	6	0.05 - 0.21
8 < D < 12	7	
12 < D < 16	8	0.05 - 0.27
16 < D < 25	10	
25 < D < 35	12	0.05 - 0.35
35 < D < 45	14	

Notes:

1. A, B, D refer to the dimensions shown in Figure 3-4.7.

Filler

- ✓ Use a copper/phosphorus brazing alloy (BCuP) filler that does not require flux.
- ✓ Do not use flux. Flux can cause corrosion of piping and can affect the performance of compressor oil.
- ✓ Do not use anti-oxidants when brazing. Residue can clog piping and damage components.

Refrigerant Piping Installation



Notes for installers

- ✓ Use U-shaped branch joints as specified on the construction drawings – do not replace U-shaped branch joints with tee joints.
- ✓ Indoor branch joints may be installed either horizontally or vertically. Horizontal branch joints must be installed at an angle to the horizontal not exceeding 10° in order to avoid uneven distribution of refrigerant and possible malfunction. Refer to Figure 3-4.8.
- ✓ To ensure even distribution of refrigerant refrigerant, a limitation is placed on how close branch joints may be installed to bends, other branch joints and the straight sections of piping leading to indoor units. Refer to Part 3, 3.6 “Branch Joints”.

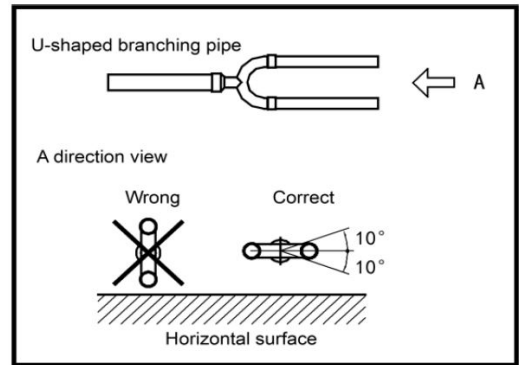


Figure 3-4.8 : Branch joint orientation

Pipe Flushing

Purpose

To remove dust, other particles and moisture, which could cause compressor malfunction if not flushed out before the system is run, the refrigerant piping should be flushed using nitrogen. As described in Part 3, 4.1.1 “Installation procedure”, pipe flushing should be performed once the piping connections have been completed with the exception of the final connections to the indoor units. That is, flushing should be performed once the outdoor units have been connected but before the indoor units are connected.



Warning

Only use nitrogen for flushing. Using carbon dioxide risks leaving condensation in the piping. Oxygen, air, refrigerant, flammable gases and toxic gases must not be used for flushing. Use of such gases may result in fire or explosion.

Procedure

The liquid and gas sides can be flushed simultaneously; alternatively, one side can be flushed first and then Steps 1 to 8 repeated, for the other side. The flushing procedure is as follows:

1. Cover the inlets and outlets of the indoor units to prevent dirt getting blown in during pipe flushing. (Pipe flushing should be carried out before connecting the indoor units to the piping system.)
2. Attach a pressure reducing valve to a nitrogen cylinder.
3. Connect the pressure reducing valve outlet to the inlet on the liquid (or gas) side of the outdoor unit.
4. Use blind plugs to block all liquid (gas) side openings, except for the opening at the indoor unit which is furthest from the outdoor unit ("Indoor unit A" in Figure 3-4.9).
5. Start to open the nitrogen cylinder valve and gradually increase the pressure to 0.5MPa.
6. Allow time for nitrogen to flow as far as the opening at indoor unit A.
7. Flush the first opening:
 - a) Using suitable material, such as a bag or cloth, press firmly against the opening at indoor unit A.
 - b) When the pressure becomes too high to block with your hand, suddenly remove your hand allowing gas to rush out.
 - c) Repeatedly flush in this manner until no further dirt or moisture is emitted from the piping. Use a clean cloth to check for dirt or moisture being emitted. Seal the opening once it has been flushed.
8. Flush the other openings in the same manner, working in sequence from indoor unit A towards the outdoor unit. Refer to Figure 3-4.10.
9. Once flushing is complete, seal all openings to prevent dust and moisture from entering.

Figure 3-4.9: Pipe flushing using nitrogen

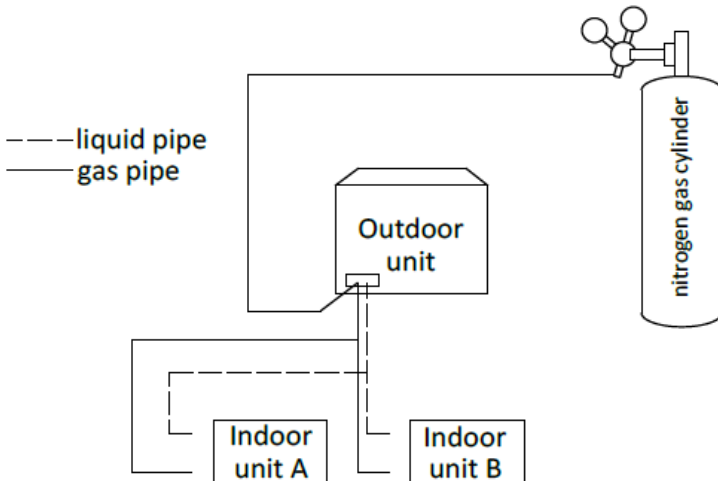
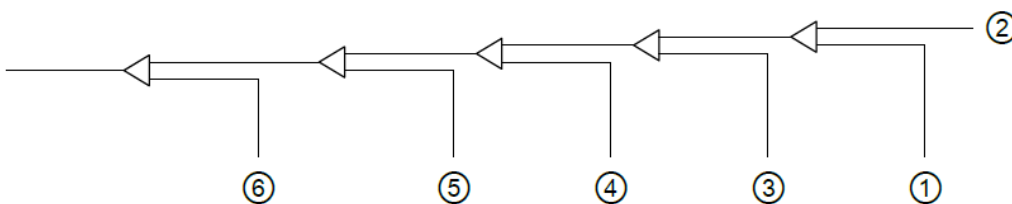


Figure 3-4.10: Pipe flushing sequence¹



Notes:

1. 1-2-3-4-5-6 working towards the outdoor unit.

Gastightness Test

Purpose

To prevent faults caused by refrigerant leakage, a gastightness test should be performed before system commissioning.



Notes for installers

Warning

Only dry nitrogen should be used for gastightness testing. Oxygen, air, flammable gases and toxic gases must not be used for gastightness testing. Use of such gases may result in fire or explosion.

Procedure

The gastightness test procedure is as follows:

Step 1

✓ Once the piping system is complete and the indoor and outdoor units have been connected, vacuum the piping to -0.1MPa.

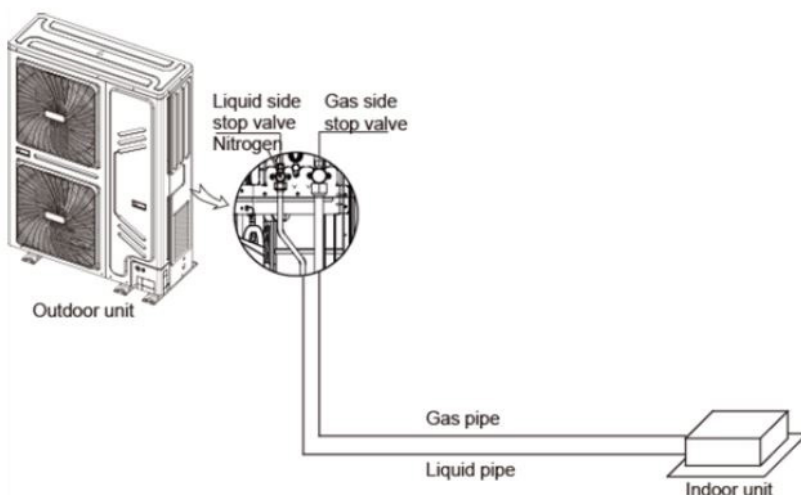
Step 2

- ✓ Charge the indoor piping with nitrogen at 0.3MPa through the needle valves on the liquid and gas stop valves and leave for at least 3 minutes (do not open the liquid or gas stop valves). Observe the pressure gauge to check for large leakages. If there is a large leakage, the pressure gauge will drop quickly.
- ✓ If there are no large leakages, charge the piping with nitrogen at 1.5MPa and leave for at least 3 minutes. Observe the pressure gauge to check for small leakages. If there is a small leakage, the pressure gauge will drop distinctly.
- ✓ If there are no small leakages, charge the piping with nitrogen at 4.2MPa and leave for at least 24 hours to check for micro leakages. Micro leakages are difficult to detect. To check for micro leakages, allow for any change in ambient temperature over the test period by adjusting the reference pressure by 0.01MPa per 1°C of temperature difference. Adjusted reference pressure = Pressure at pressurization + (temperature at observation – temperature at pressurization) x 0.01MPa. Compare the observed pressure with the adjusted reference pressure. If they are the same, the piping has passed the gastightness test. If the observed pressure is lower than the adjusted reference pressure, the piping has a micro leakage.
- ✓ If the leakage is detected, refer to Part 3, 4.8.3 “Leak detection”. Once the leak has been found and fixed, the gastightness test should be repeated.

Step 3

✓ If not continuing straight to vacuum drying (see Part 3, 4.9 “Vacuum Drying”) once the gastightness test is complete, reduce the system pressure to 0.5-0.8MPa and leave the system pressurized until ready to carry out the vacuum drying procedure.

Figure 3-4.11: Gastightness test



Gastightness Test



Notes for installers

The general methods for identifying the source of a leak are as follows:

1. Audio detection: relatively large leaks are audible.
2. Touch detection: place your hand at joints to feel for escaping gas.
3. Soapy water detection: small leaks can be detected by the formation of bubbles when soapy water is applied to a joint.
4. Refrigerant leak detection: for leaks that are difficult to detect, refrigerant leak detection may be used as follows:
 - a) Pressurize the piping with nitrogen at 0.3MPa.
 - b) Add refrigerant into the piping until the pressure reaches 0.5MPa.
 - c) Use a halogen refrigerant detector to find the leak.
 - d) If the leak source cannot be found, continuing charging with refrigerant to a pressure of 4MPa and then search again.

Vacuum Drying

Purpose

Vacuum drying should be performed in order to remove moisture and non-condensable gases from the system. Removing moisture prevents ice formation and oxidization of copper piping or other internal components. The presence of ice particles in the system would cause abnormal operation, whilst particles of oxidized copper can cause compressor damage. The presence of non-condensable gases in the system would lead to pressure fluctuations and poor heat exchange performance.

Vacuum drying also provides additional leak detection (in addition to the gas tightness test).

Refrigerant Piping Installation

Procedure



Notes for installers

During vacuum drying, a vacuum pump is used to lower the pressure in the piping to the extent that any moisture present evaporates. At 5mmHg (755mmHg below typical atmospheric pressure) the boiling point of water is 0°C. Therefore a vacuum pump capable of maintaining a pressure of -756mmHg or lower should be used. Using a vacuum pump with a discharge in excess of 4L/s and a precision level of 0.02mmHg is recommended.

Caution

- ✓ Before performing vacuum drying, make sure that all the outdoor unit stop valves are firmly closed.
- ✓ Once the vacuum drying is complete and the vacuum pump is stopped, the low pressure in the piping could suck vacuum pump lubricant into the air conditioning system. The same could happen if the vacuum pump stops unexpectedly during the vacuum drying procedure. Mixing of pump lubricant with compressor oil could cause compressor malfunction and a one-way valve should therefore be used to prevent vacuum pump lubricant seeping into the piping system.

Procedure

The vacuum drying procedure is as follows:

Step 1

- ✓ Connect the blue (low pressure side) hose of a pressure gauge to the outdoor unit gas pipe stop valve, the red (high pressure side) hose to the outdoor unit liquid pipe stop valve and the yellow hose to the vacuum pump.

Step 2

- ✓ Start the vacuum pump and then open the pressure gauge valves to start vacuum the system
- ✓ After 30 minutes, close the pressure gauge valves.
- ✓ After a further 5 to 10 minutes check the pressure gauge. If the gauge has returned to zero, check for leakages in the refrigerant piping.

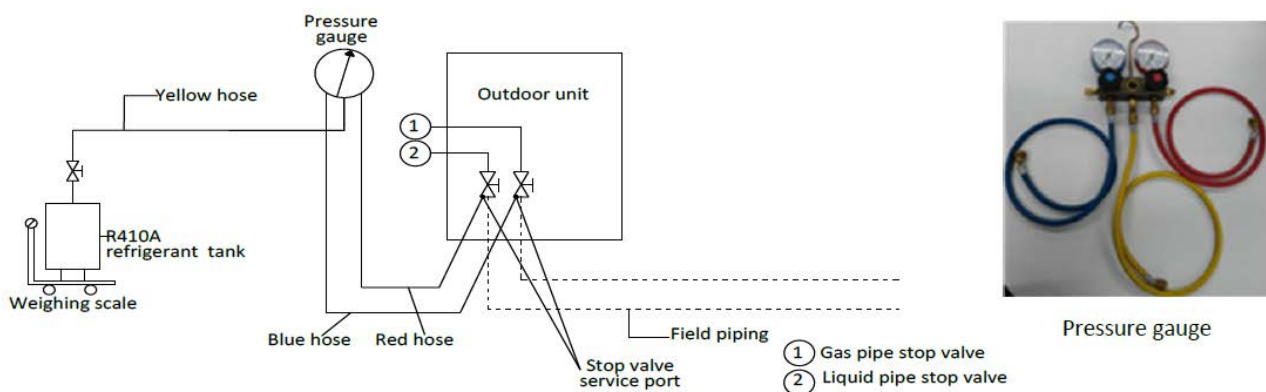
Step 3

- ✓ Re-open the pressure gauge valves and continue vacuum drying for at least 2 hours and until a pressure difference of 756mmHg or more has been achieved. Once the pressure difference of at least 756mmHg has been achieved, continue vacuum drying for 2 hours.

Step 4

- ✓ Close the pressure gauge valves and then stop the vacuum pump.
- ✓ After 1 hour, check the pressure gauge. If the pressure in the piping has not increased, the procedure is finished. If the pressure has increased, check for leakages.
- ✓ After vacuum drying, **keep the blue and red hoses connected to the pressure gauge and to the outdoor unit stop valves**, in preparation for refrigerant charging (see Part 3, 7 "Charging Refrigerant").

Figure 3-4.12: Vacuum drying

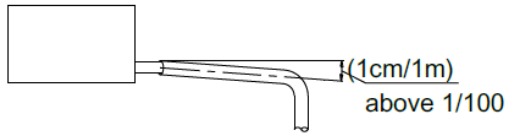


Design Considerations

Drain piping design should take account of the following considerations:

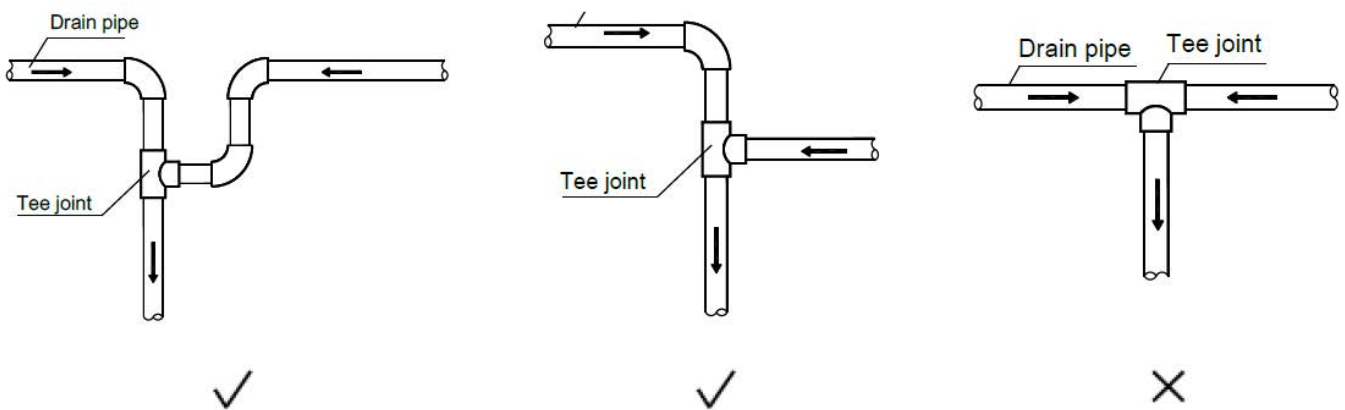
- ✓ Indoor unit condensate drain piping needs to be of sufficient diameter to carry the volume of condensate produced at the indoor units and installed at a slope sufficient to allow drainage. Discharge as close as possible to the indoor units is usually preferable.
- ✓ To prevent the drain piping becoming excessively long, consideration should be given to installing multiple drain piping systems, with each system having its own drainage point and providing drainage for a subset of the overall set of indoor units.
- ✓ The routing of drain piping should take into consideration the need to maintain sufficient slope for drainage whilst avoiding obstacles such as beams and ducting. The drain piping slope should be at least 1:100 away from indoor units. Refer to Figure 3-5.1.

Figure 3-5.1: Drain piping minimum slope requirement



- ✓ To avoid backflow and other potential complications, two horizontal drain pipes should not meet at the same level. Refer to the Figure 3-5.2 for suitable connection arrangements. Such arrangements also allow the slope of the two horizontal pipes to be selected independently.

Figure 3-5.2: Drain piping joints – correct and incorrect configurations



- ✓ Branch drain piping should join main drain piping from the top, as shown in Figure 3-5.3.
- ✓ Recommended support/hanger spacing is 0.8 – 1.0m for horizontal piping and 1.5 – 2.0m for vertical piping. Each vertical section should be fitted with at least two supports. For horizontal piping, spacing greater than those recommended leads to sagging and deformation of the pipe profile at the supports which impedes water flow and should therefore be avoided.
- ✓ Air vents should be fitted at the highest point of each drain piping system to ensure that condensation is discharged smoothly. U-bends or elbow joints should be used such that the vents face downwards, to prevent dust entering the piping. Refer to Figure 3-5.5. Air vents should not be installed too close to indoor unit lift pumps.

Figure 3-5.3: Branch drain piping joining main drain piping

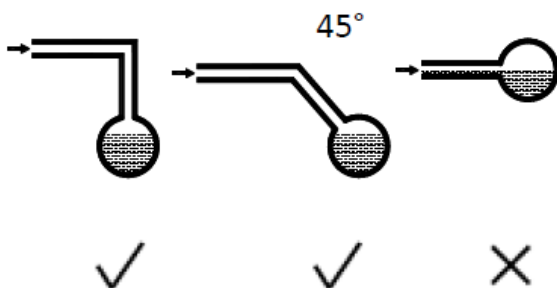
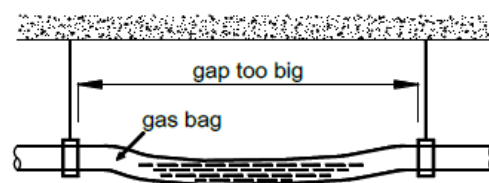
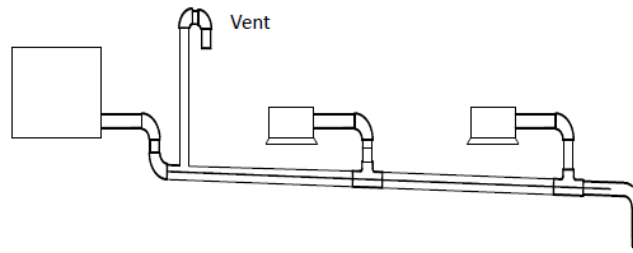


Figure 3-5.4: Effect of insufficient drain piping support



Drain Piping

Figure 3-5.5: Drain piping air vents

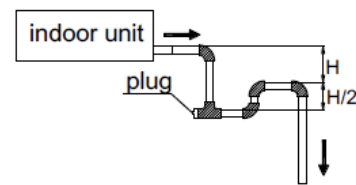


- ✓ Air conditioner drain piping should be installed separately from waste, rainwater and other drain piping and should not come into direct contact with the ground.
- ✓ Drain piping diameter should be not less than the indoor units' drain piping connection.
- ✓ To allow inspection and maintenance, the piping clamps shipped with units should be used to attach drain piping to indoor units – adhesive should not be used.
- ✓ Thermal insulation should be added to drain piping to prevent condensation forming. Thermal insulation should extend all the way to the connection with the indoor unit.
- ✓ Units with drain pumps should have separate drain piping systems from systems that use natural drainage.

Water Traps

For indoor units with a high negative pressure differential at the outlet of the drainage pan, a trap should be fitted to the drain piping to prevent poor drainage and/or water being blown back into the drainage pan. Traps should be arranged as in Figure 3-5.6. The vertical separation H should be in excess of 50mm. A plug may be fitted to allow cleaning or inspection.

Figure 3-5.6: Drain piping water traps



Selecting Piping Diameters

Select branch drainage piping (the drain piping connection to each unit) diameters according to indoor unit flow volume and select main drainage piping diameters according to the combined flow volume of the upstream indoor units. Use a design assumption of 2 liters of condensate per horsepower per hour. For example, the combined flow volume of three 2HP units and two 1.5HP units would be calculated as follows:

$$\begin{aligned} \text{Combined flow volume} &= 3 \times 2 \text{ L/HP/h} \times 2\text{HP} \\ &= 18 \text{ L/h} \\ &+ 2 \times 2 \text{ L/HP/h} \times 1.5\text{HP} \end{aligned}$$

Tables 3-5.1 and 3-5.2 specify the required piping diameters for horizontal and vertical branch piping and for main piping. Note that main piping should use PVC40 or larger.

Table 3-5.1: Horizontal drain piping diameters

PVC piping	Nominal diameter (mm)	Capacity (L/h)		Remarks
		Slope 1:50	Slope 1:100	
PVC25	25	39	27	Branch piping only
PVC32	32	70	50	
PVC40	40	125	88	
PVC50	50	247	175	Branch or main piping
PVC63	63	473	334	

Table 3-5.2: Vertical drain piping diameters

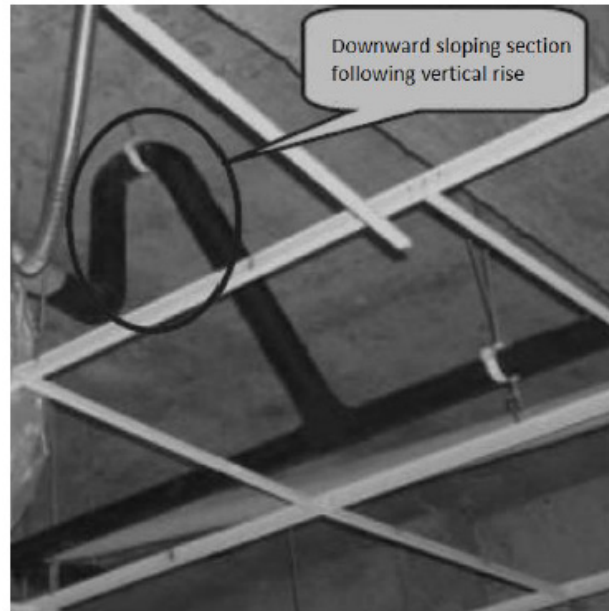
PVC piping	Nominal diameter (mm)	Capacity (L/h)	Remarks
PVC25	25	220	Branch piping only
PVC32	32	410	
PVC40	40	730	Branch or main piping
PVC50	50	1440	
PVC63	63	2760	
PVC75	75	5710	
PVC90	90	8280	

Drain Piping for Units with Lift Pumps

Drain piping for units with lift pumps should take account of the following additional considerations:

- ✓ A downward sloping section should immediately follow the vertically rising section adjacent to the unit, otherwise a water pump error will occur. Refer to Figure 3-5.7.
- ✓ Air vents should not be installed on vertically rising sections of drain piping, otherwise water may be discharged through the air vent or water flow may be impeded.

Figure 3-5.7: Downward sloping section of drain piping



Drain Piping Installation



Notes for installers

Installation of the drain piping should proceed in the following order:



- ⚠ Ensure that all joints are firm and once the drain piping is all connected conduct a watertightness test and water flow test
- ⚠ Do not connect air conditioner drain piping to waste, rainwater or other drain piping and do not let air conditioner drain piping come in to direct contact with the ground.
- ⚠ For units with drain pumps, test that the drain pump functions properly by adding water to the unit's drainage pan and running the unit. To allow inspection and maintenance, the pipe clamp s shipped with unit s adhesive should not be used.

Drain Piping

Watertightness Test and Water Flow Test

Once installation of a drainage piping system is complete, watertightness and water flow tests should be performed.



Notes for installers

Watertightness test

✓ Fill the piping with water and test for leakages over a 24 hour period

Water flow test (natural drainage test)

✓ Slowly fill the drainage pan of each indoor unit with at least 600ml of water through the inspection port and check that the water is discharged through the outlet of the drain piping.

⚠ The drain plug in the drainage pan is for removing accumulated water prior to performing indoor unit maintenance. During normal operation, the drain should be plugged to prevent leakage.

Insulation

Refrigerant Piping Insulation

Purpose

During operation, the temperature of the refrigerant piping varies. Insulation is required to ensure unit performance and compressor life-span. During cooling, the gas pipe temperature can be very low. Insulation prevents condensation forming on the piping. During heating, the gas pipe temperature can rise to as high as 100°C. Insulation serves as necessary protection from burns.

Selecting insulation materials

Refrigerant piping insulation should be closed-cell foam of B1 fire resistance rating that can withstand a constant temperature of over 120°C and that complies with all applicable legislation.

Thickness of insulation

Minimum thicknesses for refrigerant piping insulation are specified in Table 3-6.1. In hot, humid environments, the thickness of insulation should be increased over and above the specifications in Table 3-6.1.

Table 3-6.1: Refrigerant piping insulation thickness

Pipe outer diameter (mm)	Minimum insulation thickness (mm) Humidity < 80%RH	Minimum insulation thickness (mm) Humidity ≥ 80%RH
Φ6.35		
Φ9.53		
Φ12.7		
Φ15.9		
Φ19.1	15	20
Φ22.2		
Φ25.4		
Φ28.6		
Φ31.8		
Φ38.1		
Φ41.3		
Φ44.5	20	25
Φ54.0		

Installation of piping insulation

With the exception of joint insulation, insulation should be applied to piping before fixing the piping in place. Insulation at joints in refrigerant piping should be applied after the gas tightness test has been completed.



Notes for installers

- ✓ Installation of insulation should be carried out in a manner suited to the type of insulation material being used.
- ✓ Ensure there are no gaps at the joints between sections of insulation.
- ✓ Do not apply tape too tightly as doing so may shrink insulation, reducing its insulating properties leading to condensation and loss of efficiency.
- ✓ Insulate gas and liquid pipes separately, otherwise heat exchange between the two sides will greatly impact efficiency.
- ✓ Do not bind the separately insulated gas and liquid pipes together too tightly as doing so can damage the joints between sections of insulation.

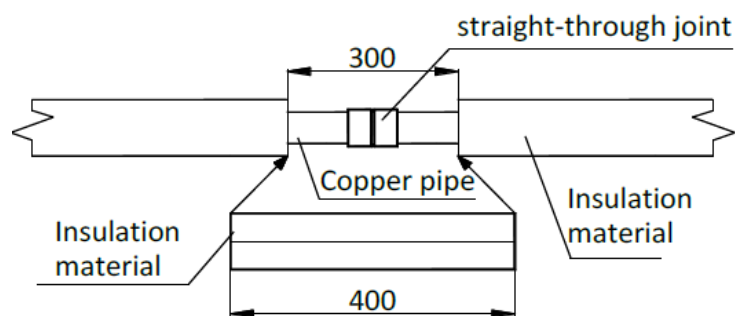
Installation of joint insulation

Insulation at joints in the refrigerant piping should be installed after the gas tightness test has been successfully completed.

The procedure at each joint is as follows:

1. Cut a section of insulation 50 to 100mm longer than the gap to be filled. Ensure that the cross-sectional and longitudinal openings are all cut evenly.
2. Embed the section into the gap ensuring that the ends abut tightly to the sections of insulation either side of the gap.
3. Glue the longitudinal cut and the joints with the sections of insulation either side of the gap.
4. Seal the seams with tape.

Figure 3-6.1: Installation of joint insulation (unit: mm)



Drain Piping Insulation

- ✓ Use rubber/plastic insulating tube with a B1 fire resistance rating.
- ✓ The insulation should typically be in excess of 10mm thick.
- ✓ For drain piping installed inside a wall, insulation is not required.
- ✓ Use suitable adhesive to seal seams and joints in the insulation and then bind with cloth reinforced tape of width not less than 50mm. Ensure tape is fixed firmly to avoid condensation.
- ✓ Ensure the drain piping insulation adjacent to the indoor unit drainage water outlet is fixed to the unit itself using adhesive, to prevent condensation and dripping.

Ducting Insulation

- ✓ Suitable insulation should be added to ducting in according with all applicable legislation.

Charging Refrigerant

Calculating Additional Refrigerant Charge

The additional refrigerant charge required depends on the lengths and diameters of the outdoor and indoor liquid pipes. Table 3-71 shows the additional refrigerant charge required per meter of equivalent pipe length for different diameters of pipe. The total additional refrigerant charge is obtained by summing the additional charge requirements for each of the outdoor and indoor liquid pipes, as in the following formula, where L1 to L8 represent the equivalent lengths of the pipes of different diameters. Assume 0.5m for the equivalent pipe length of each branch joint.

$$\begin{aligned} \text{Additional refrigerant charge R (kg)} &= L1 (\Phi 6.35) \times 0.022 \\ &+ L2 (\Phi 9.53) \times 0.057 \\ &+ L3 (\Phi 12.7) \times 0.110 \\ &+ L4 (\Phi 15.9) \times 0.170 \\ &+ L5 (\Phi 19.1) \times 0.260 \\ &+ L6 (\Phi 22.2) \times 0.360 \end{aligned}$$

Table 3-71: Additional refrigerant charge

Liquid side piping (mm)	Additional refrigerant charge per meter of equivalent length of piping (kg)
Φ6.35	0.022
Φ9.53	0.057
Φ12.7	0.110
Φ15.9	0.170
Φ19.1	0.260
Φ22.2	0.360



Notes for installers

- ⚠ Only charge refrigerant after performing a gas tightness test and vacuum drying.
- ⚠ Never charge more refrigerant than required as doing so can lead to liquid hammering
- ⚠ Only use refrigerant R410A charging with an unsuitable substance may cause explosions or accidents.
- ⚠ Use tools and equipment designed for use with R410A to ensure required pressure resistance and to prevent foreign materials from entering the system.
- ⚠ Refrigerant must be treated in accordance with applicable legislation
- ⚠ Always use protective gloves and protect your eyes when charging refrigerant.
- ⚠ Open refrigerant containers slowly

Procedure

The procedure for adding refrigerant is as follows:

Step 1

- ✓ Calculate additional refrigerant charge R (kg) (see Part 3, 7.1 "Calculating Additional Refrigerant Charge")

Step 2

- ✓ Place a tank of R410A refrigerant on a weighing scale. Turn the tank upside down to ensure refrigerant is charged in a liquid state. (R410A is a blend of two different chemicals compounds. Charging gaseous R410A into the system could mean that the refrigerant charged is not of the correct composition).
- ✓ After vacuum drying (see Part 3, 4.9 "Vacuum Drying"), the blue and red pressure gauge hoses should still be connected to the pressure gauge and to the master unit stop valves
- ✓ Connect the yellow hose from the pressure gauge to the R410A refrigerant tank.

Step 3

- ✓ Open the valve where the yellow hose meets the pressure gauge, and open the refrigerant tank slightly to let the refrigerant eliminate the air. Caution: open the tank slowly to avoid freezing your hand.
- ✓ Set the weighing scale to zero.

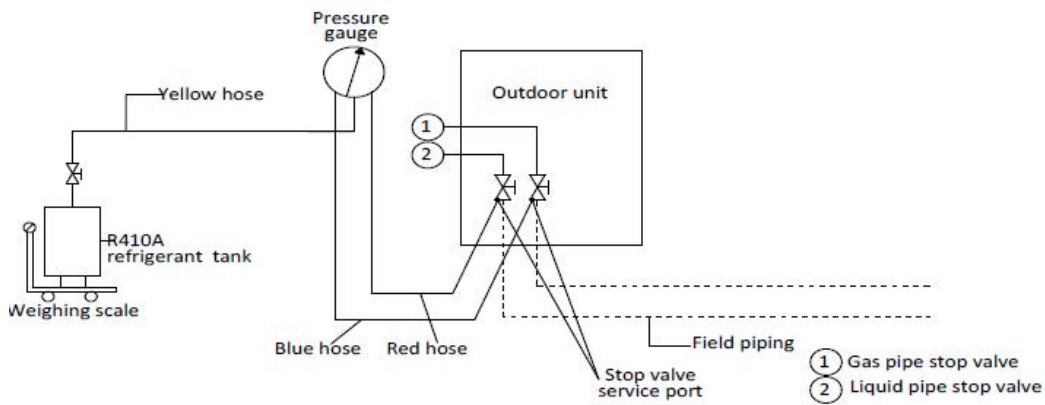
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Step 4

- ✓ Open the three valves on the pressure gauge to begin charging refrigerant.
- ✓ When the amount charged reaches R (kg), close the three valves. If the amount charged has not reached R (kg) but no additional refrigerant can be charged, close the three valves on the pressure gauge, run the outdoor unit in cooling mode, and then open the yellow and blue valves. Continue charging until the full R (kg) of refrigerant has been charged, then close the yellow and blue valves. Note: Before running the system, be sure to complete all the pre-commissioning checks as listed in Part 3, 10.3 "Pre-commissioning Checks" and be sure to open all stop valves as running the system with the stop valves closed would damage the compressor.

Figure 3-71: Charging refrigerant



Pressure gauge

Electrical Wiring

General



Notes for installers

- ⚠ All installation and wiring must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- ⚠ Electrical systems should be grounded in accordance with all applicable legislation
- ⚠ Overcurrent circuit breakers and residual current circuit breakers (ground fault circuit interrupters) should be used in accordance with all applicable legislation.
- ⚠ Wiring patterns shown in this data book are general connection guides only and are not intended for or to include all details for any specific installation.
- ⚠ The refrigerant piping, power wiring and communication wiring are typically run in parallel! However, the communication wiring should not be bound together with the refrigerant piping or power wiring. To prevent signal interference, the power wiring and communication wiring should not be run in the same conduit. If the power supply is less than 10A, a separation of at least 300mm between power wiring and communication wiring conduits should be maintained; if the power supply is in the range 10A to 50A then a separation of at least 500mm should be maintained.

Power Supply Wiring

Power supply wiring design and installation should adhere to the following requirements:

- ✓ Separate power supplies should be provided for the indoor units and outdoor unit.
- ✓ Where five or more outdoor units are installed, additional residual current protection (leakage protection) should be installed as shown in Figure 3-8.1.
- ✓ All the indoor units in a system (i.e. all the indoor units connected to the same outdoor unit) should be tied into the same power circuit with the same power supply, overcurrent and residual current protection (leakage protection) and manual switch, as shown in Figure 3-8.2. Do not install separate protectors or manual switches for each indoor unit. Powering on and shutting down all indoor units in a system should be done simultaneously. The reason for this is that if an indoor unit that is running were to suddenly power off whilst the other indoor units continued running, the evaporator of the powered-off unit would freeze since refrigerant would continue flowing to that unit (its expansion valve would still be open) but its fan would have stopped. The indoor units that remain running would not get sufficient refrigerant so their performance would suffer. Additionally, liquid refrigerant returning directly to the compressor from the powered-off unit would cause liquid hammering, potentially damaging the compressor.
- ✓ For outdoor unit power wire sizing and circuit breaker sizing, refer to Table 2-6.1 in Part 2, 6 “Electrical Characteristics”.

Figure 3-8.1: Outdoor unit power supply wiring

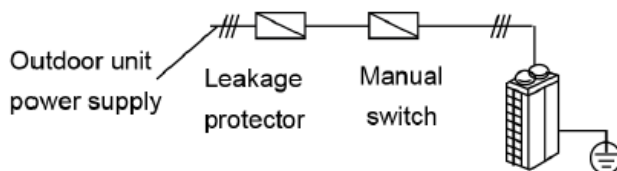
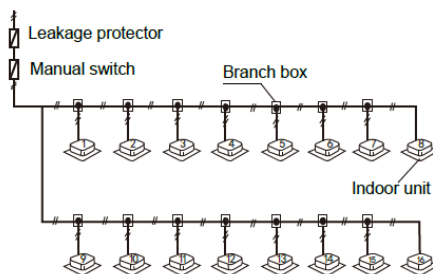


Figure 3-8.2: Indoor unit power supply wiring

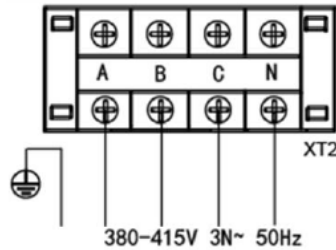




Notes for installers

The 3-phase, 380-415V, 50Hz of power supply should be connected to the outdoor unit power supply terminals as shown in Figure 3-8.3.

Figure 3-8.3: Outdoor unit 3-phase power supply terminals



Communication Wiring

Communication wiring design and installation should adhere to the following requirements:

- ✓ 0.75mm² three-core shielded cable should be used for communication wiring. Using other types of cable can lead to interference and malfunction.
- ✓ **Indoor communication wiring:**
 - ✓ The P Q E communication wires should be connected one unit after another in a daisy chain from the outdoor unit to the final indoor unit. At the final indoor unit, a 120Ω resistor should be connected between the P and Q terminals. After the final indoor unit, the communication wiring should NOT be continued back to the outdoor unit – that is, do not attempt to form a closed loop.
 - ✓ The P and Q communication wires should NOT be grounded.
 - ✓ The shielding nets of the communication wires should be connected together and grounded. Grounding can be achieved by connecting to the metal casing adjacent to the P Q E terminals of the outdoor unit electrical control box.



Notes for installers

The communication wires should be connected to the outdoor unit terminals indicated in Figure 3-8.4 and Table 3-8.1.

⚠ Communication wiring has polarity. Care should be taken to connect the poles correctly.

Figure 3-8.4: Outdoor unit communication terminals

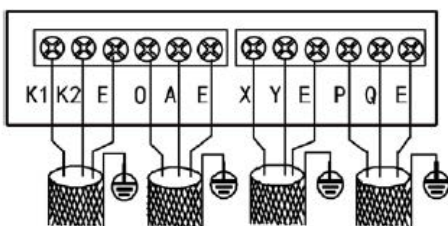
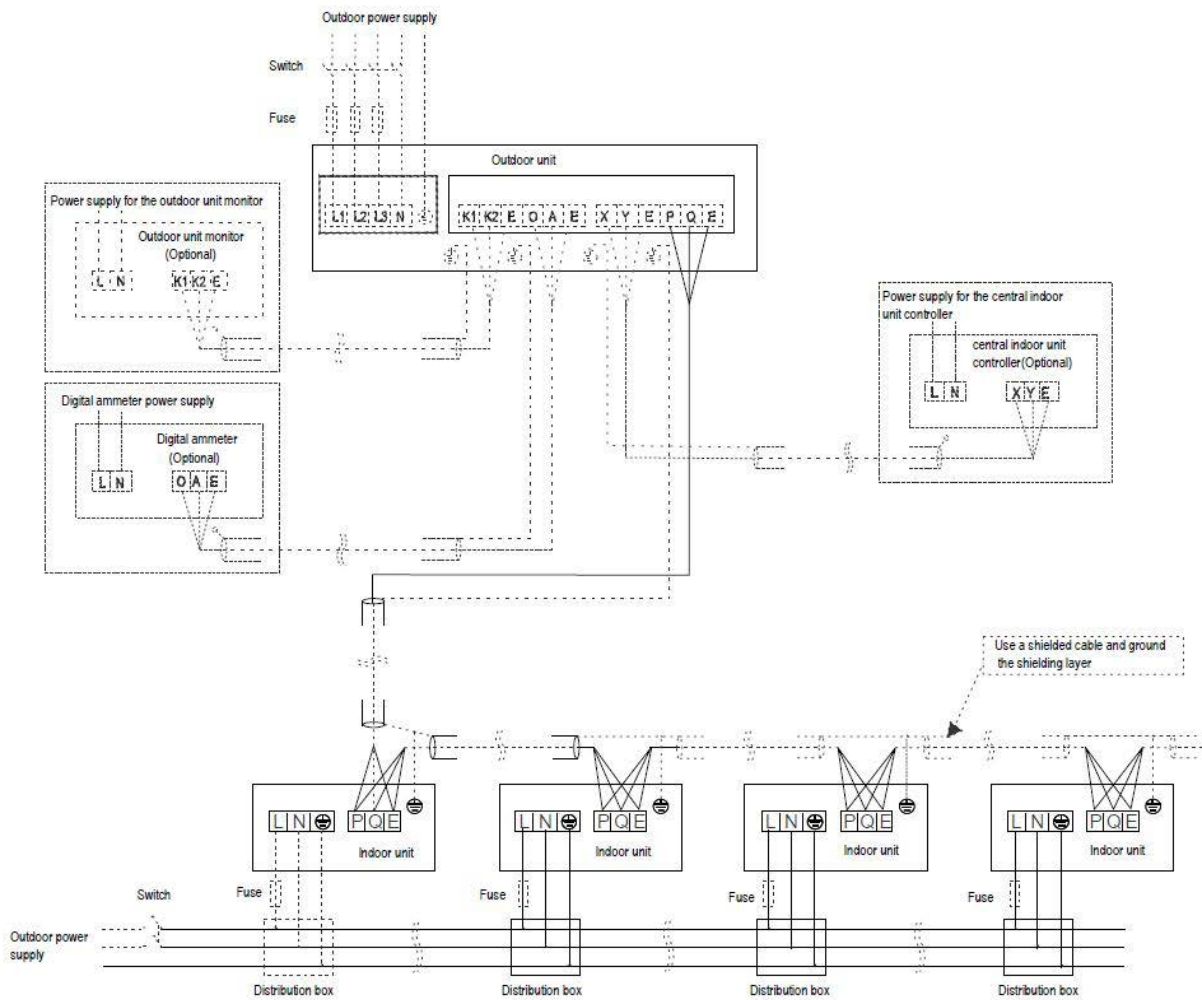


Table 3-8.1: Communication connections

Terminals	Connection
K1 K2 E	Connect to outdoor unit monitor
O A E	Connect to digital energy meter
X Y E	Connect to indoor unit centralized controller
P Q E	Connect between indoor units and master outdoor unit

Wiring example

Figure 3-8.5: System power and communication wiring example



Caution

Do not install outdoor units where they could be directly exposed to sea air. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient performance.

Outdoor units installed in seaside locations should be placed such as to avoid direct exposure to the sea air and additional anticorrosion treatment options should be selected, otherwise the service life of the outdoor units will be seriously affected.

Air conditioning installed in seaside locations should be run regularly as the running of the outdoor unit fans helps prevent build-up of salt on the outdoor unit heat exchangers.

Placement and Installation

Outdoor units should be installed 300m or more from the sea. If possible, well-ventilated indoor locations should be chosen. If it is necessary to install outdoor units outside, direct exposure to the sea air should be avoided. A canopy should be added to shield the units from sea air and rain.

Ensure that base structures drain well so that outdoor unit footings do not become waterlogged. Check that outdoor unit casing drainage holes are not blocked.

Inspection and maintenance

In addition to standard outdoor unit servicing and maintenance, the following additional inspections and maintenance should be undertaken for outdoor units installed in seaside locations:


- ✓ A comprehensive post-installation inspection should check for any scratches or other damage to painted surfaces and any damaged areas should be repainted/repared immediately.
- ✓ The units should be regularly cleaned using (non-salty) water to remove any salt that has accumulated. Areas cleaned should include the condenser, the refrigerant piping system, the outside surface of the unit casing and the outside surface of the electric control box.
- ✓ Regular inspections should check for corrosion and if necessary corroded components should be replaced and/or anti-corrosion treatments should be added.

Commissioning

Outdoor Unit Capacity Settings

The capacity of outdoor unit (on switch S9-1 and S9-2 on each outdoor unit's main PCB) is factory-set and should not need changing. Check that the capacity settings are correct. Refer to Table 3-10.1.

Table 3-10.1: Outdoor unit capacity settings

Switches	Code	Capacity
	00	10HP
	01	9HP
	10	12HP
	11	7/8HP

Multi-system Projects

For projects with multiple refrigerant systems, each independent refrigeration system (i.e. each system of one outdoor unit and its connected indoor units) should be given a test run independently, before the multiple systems that make up a project are run simultaneously.

Pre-commissioning Checks

Before turning on the power to the indoor and outdoor units, ensure the following:

1. All indoor and outdoor refrigeration piping and communication wiring has been connected to the correct refrigeration system and the system to which each indoor and outdoor unit belongs is clearly marked on each unit or recorded in some other suitable place.
2. Pipe flushing, gas tightness testing and vacuum drying have been satisfactorily completed as per instructions.
3. All condensate drain piping is complete and a water tightness test has been satisfactorily completed.
4. All power and communication wiring is connected to the correct terminals on units and controllers. (Check that the different phases of the 3-phase power supplies have been connected to the correct terminals).
5. No wiring has been connected in a short-circuit.
6. The power supplies to indoor and outdoor units have been checked and the power supply voltages are within $\pm 10\%$ of the rated voltages for each product.
7. All control wiring is 0.75mm² three-core shielded cable and the shielding has been grounded.
8. The outdoor unit's capacity switch is set correctly (see Part 3, 10.1 "Outdoor Unit Capacity Settings") and all other indoor and outdoor unit field settings have been set as required.
9. The additional refrigerant charge has been added as per Part 3, 7 "Charging Refrigerant". Note: In some circumstances it may be necessary to run the system in cooling mode during the refrigerant charging procedure. In such circumstances, points 1 to 8 above should be checked before running the system for the purpose of charging refrigerant and the outdoor unit liquid and gas stop valves should be opened.

During commissioning, it is important that you:

- ✓ Keep a supply of R410A refrigerant at hand.
- ✓ Keep the system layout, system piping and control wiring diagrams at hand.

Commissioning test run of single refrigerant system

Once all the pre-commissioning checks in Part 3, 10.3 “Pre-commissioning Checks” have been completed, a test run should be performed as described below and a MSAN6-XMi Series System Commissioning Report (see Part 3, 11 “Appendix to Part 3 – System Commissioning Report”) should be completed as a record of the operating status of the system during commissioning.

Note: When running the system for commissioning test runs, if the combination ratio is 100% or less, run all the indoor units and if the combination ratio is more than 100%, run indoor units with total capacity equal to the capacity of the outdoor unit.

The test run procedure is as follows:

1. Open the outdoor unit liquid and gas stop valves.
2. Turn on the power to the outdoor unit.
3. If manual addressing is being used, set the addresses of each indoor unit.
4. Leave the power on for a minimum of 12 hours prior to running the system to ensure that the crankcase heaters have heated the compressor oil sufficiently.
5. Run the system:
 - a. Run the system in cooling mode with the following settings: temperature 17°C; fan speed high.
 - b. After one hour, complete Sheet A of the system commissioning report then check the system parameters using the UP/DOWN button on the outdoor unit’s main PCB and complete the cooling mode columns of one Sheet D and one Sheet E of the system commissioning report for the outdoor unit.
 - c. Run the system in heating mode with the following settings: temperature 30°C; fan speed high.
 - d. After one hour, complete Sheet B of the system commissioning report then check the system parameters using the UP/DOWN button on the outdoor unit’s main PCB and complete the heating mode columns of one Sheet D and one Sheet E of the system commissioning report for the outdoor unit.
6. Finally, complete Sheet C of the system commissioning report.

Commissioning test run of multiple refrigerant systems

Once the commissioning test run of each refrigerant system has been satisfactorily completed as per Part 3, 10.4.1 “Commissioning test run of single refrigerant system”, run the multiple systems that make up a project simultaneously and check for any abnormalities.

Appendix to Part 3 – System Commissioning Report

A total of up to 4 report sheets should be completed for each system:

- ✓ One Sheet A, one Sheet B and one Sheet C per system.
- ✓ One Sheet D per outdoor unit.

MSAN6-XMi Series System Commissioning Report – Sheet A

MSAN6-XMi Series System Commissioning Report – Sheet C

MSAN6-XMi Series System Commissioning Report – Sheet D

Project name and location		System name	
----------------------------------	--	--------------------	--

DSP1 content	Parameters displayed on DSP2	Remarks	Observed values	
			Cooling mode	Heating mode
0.--	Unit capacity (Hp)	Actual value = value displayed		
1.--	Setting number of indoor units			
2.--	Operating mode			
3.--	Fan speed index			
4.--	Total capacity of outdoor unit			
5.--	Total capacity requirement of indoor units			
6.--	Main heat exchanger pipe (T3) temperature (°C)	Actual value = value displayed		
7.--	Outdoor ambient (T4) temperature (°C)	Actual value = value displayed		
8.--	Inverter compressor discharge temperature (°C)	Actual value = value displayed		
9.--	Invert module (TF) temperature (°C)	Actual value = value displayed		
10.--	Refrigerant cooling pipe (TL) temperature (°C)	Actual value = value displayed		
11.--	Compressor discharge pressure (MPa)	Actual value = value displayed x 0.1		
12.--	Discharge superheat degree (°C)	Actual value = value displayed		
13.--	EXVA position	Actual value = value displayed x 8		
14.--	Actual current (A)	Actual value = value displayed		
15.--	Inverter compressor current (A)	Actual value = value displayed		
16.--	Actual voltage (V)	Actual value = value displayed		
17.--	DC bus voltage (V)	Actual value = value displayed		
18.--	Indoor heat exchanger pipe (T2/T2B) temperature (°C)	Actual value = value displayed		
19.--	Priority mode	Refer to Note 3		
20.--	Number of indoor units currently in communication with outdoor unit	Actual value = value displayed		
21.--	Number of indoor units currently operating	Actual value = value displayed		
22.--	Most recent error or protection code	"nn" is displayed if no error or protection events have occurred since start-up		
23.--	Software version			
-- --	--	End		

Notes:

- Operating mode:
0: off; 2: cooling; 3: heating; 4: forced cooling.
- The fan speed index is related to the fan speed in rpm and can take any integer value in the range 1 (slowest) to 11 (fastest).
- Priority mode:
0: heating priority; 1: cooling priority; 2: first ON priority; 3: heating only; 4: cooling only; 5: test mode 1; 6: test mode 2.

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CLIVET S.p.A.

Via Camp Lonc 25, Z.I. Villapaiera
32032 Feltre (BL) - Italy
Tel. +39 0439 3131 - info@clivet.it

CLIVET GMBH

Hummelsbütteler Steindamm 84,
22851 Norderstedt, Germany
Tel. +49 40 325957-0 - info.de@clivet.com

Clivet Group UK LTD

Units F5 & F6 Railway Triangle,
Portsmouth, Hampshire PO6 1TG
Tel. +44 02392 381235 -
Enquiries@Clivetgroup.co.uk

CLIVET LLC

Office 508-511, Elektroavodskaya st. 24,
Moscow, Russian Federation, 107023
Tel. +7495 6462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO) Headquarter Building,
Office EG-05, P.O Box-342009,
Dubai, UAE
Tel. +9714 3208499 - info@clivet.ae

Clivet South East Europe

Jarušćica 9b
10000, Zagreb, Croatia
Tel. +385916065691 - info.see@clivet.com

Clivet Airconditioning Systems Pvt Ltd

Office No.501 & 502,5th Floor, Commercial -I,
Kohinoor City, Old Premier Compound, Off
LBS Marg, Kiroi Road, Kurla West, Mumbai
Maharashtra 400070, India
Tel. +91 22 30930200 - sales.india@clivet.com