Part 2

Outdoor Unit

Engineering Data

1 Specifications

1.1 Outdoor Units

8-12HP

Table 2-1.1: 8-12HP specifications

HP			8	10	12
Model name			MV6-R252WV2RN1	MV6-R280WV2RN1	MV6-R335WV2RN1
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	22.4	28	33.5
	Power input	kW	6.54	9.78	11.88
	EER		3.43	2.86	2.82
Heating[2] (rated)	Capacity	kW	22.4	28	33.5
	Power input	kW	5.01	6.92	9.03
	COP		4.47	4.05	3.71
Heating[2] (max)	Capacity	kW	25	31.5	37.5
	Power input	kW	6.30	9.00	11.83
	COP		3.97	3.50	3.17
SEER			7.26	6.60	6.80
ηs,c		%	287.3	261.2	269.1
SCOP			4.29	4.39	4.59
ηs,h		%	168.5	172.7	180.8
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		1		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		1		
	Motor output	kW	0.92	0.92	0.92
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	9000	9500	10000
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	8	8	8
Pipe connections[4]	Liquid pipe	mm	Φ12.7	Φ12.7	Φ12.7
	Low pressure gas pipe	mm	Φ25.4	Φ25.4	Φ25.4
	High pressure gas pipe	mm	Φ19.1	Φ19.1	Φ19.1
Sound pressure level[5]		dB(A)	58	61	62
Sound power level[5]		dB(A)	78	82	83
Net dimensions (W×H×D)		mm	990×1635×790	990×1635×790	990×1635×790
Packed dimensions (W×H×D)		mm	1090×1805×860	1090×1805×860	1090×1805×860
Net weight		kg	232	232	232
Gross weight		kg	248	248	248
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:
1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those of the unit's stop valve.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

16-18HP

Table 2-1.2: 16-18HP specifications

HP			14	16	18
Model name			MV6-R400WV2RN1	MV6-R450WV2RN1	MV6-R500WV2RN1
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	40	45	50
	Power input	kW	13.21	17.45	21.99
	EER		3.03	2.58	2.27
Heating[2] (rated)	Capacity	kW	40	45	50
	Power input	kW	10.04	12.19	13.46
	COP		3.98	3.69	3.71
Heating[2] (max)	Capacity	kW	45	50	56
	Power input	kW	12.86	15.87	17.07
	COP		3.50	3.15	3.28
SEER			6.65	6.44	6.22
ηs,c		%	263.2	254.7	245.7
SCOP			4.27	4.33	4.35
ηs,h		%	168.0	170.2	170.9
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		1		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		2		
	Motor output	kW	0.92×2	0.92×2	0.92×2
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	14000	14900	15800
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	10	10	10
Pipe connections[4]	Liquid pipe	mm	Φ15.9	Φ15.9	Φ15.9
	Low pressure gas pipe	mm	Φ28.6	Φ28.6	Φ28.6
	High pressure gas pipe	mm	Φ22.2	Φ22.2	Φ22.2
Sound pressure level[5]		dB(A)	63	64	65
Sound power level[5]		dB(A)	84	88	88
Net dimensions (W×H×D)		mm	1340×1635×825	1340×1635×825	1340×1635×825
Packed dimensions (W×H×D)		mm	1405×1805×910	1405×1805×910	1405×1805×910
Net weight		kg	300	300	300
Gross weight		kg	325	325	325
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those of the unit's stop valve.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

20-24HP

Table 2-1.3: 20-24HP specifications

HP			20	22	24
Model name			MV6-R560WV2RN1	MV6-R615WV2RN1	MV6-R680WV2RN1
Combination type			10HP+10HP	10HP+12HP	10HP+14HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	56	61.5	68
	Power input	kW	19.56	21.66	22.99
	EER		2.86	2.84	2.96
Heating[2] (rated)	Capacity	kW	56	61.5	68
	Power input	kW	13.84	15.95	16.96
	COP		4.05	3.86	4.01
Heating[2] (max)	Capacity	kW	63	69	76.5
	Power input	kW	18.00	20.83	21.86
	COP		3.50	3.31	3.50
SEER			6.57	6.68	6.60
ηs,c		%	259.8	264.2	261
SCOP			4.39	4.49	4.32
ηs,h		%	172.6	176.6	169.8
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		2		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		2	2	3
	Motor output	kW	0.92×2	0.92×2	0.92×3
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	19000	19500	23500
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	16	16	18
Pipe connections[4]	Liquid pipe	mm	Φ15.9	Φ15.9	Φ15.9
	Low pressure gas pipe	mm	Φ28.6	Φ28.6	Φ34.9
	High pressure gas pipe	mm	Φ28.6	Φ28.6	Φ28.6
Sound pressure level[5]		dB(A)	61	62	63
Sound power level[5]		dB(A)	84	84	88
Net dimensions (W×H×D)		mm	(990×1635×790)×2	(990×1635×790)×2	990×1635×790+1340×1635×825
Packed dimensions (W×H×D)		mm	(1090×1805×860)×2	(1090×1805×860)×2	1090×1805×860+1405×1805×910
Net weight		kg	232×2	232×2	232+300
Gross weight		kg	248×2	248×2	248+325
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

26-30HP

Table 2-1.4: 26-30HP specifications

HP			26	28	30
Model name			MV6-R735WV2RN1	MV6-R785WV2RN1	MV6-R835WV2RN1
Combination type			12HP+14HP	12HP+16HP	12HP+18HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	73.5	78.5	83.5
	Power input	kW	25.09	29.33	33.87
	EER		2.93	2.68	2.47
Heating[2] (rated)	Capacity	kW	73.5	78.5	83.5
	Power input	kW	19.07	21.22	22.49
	COP		3.85	3.70	3.71
Heating[2] (max)	Capacity	kW	82.5	87.5	93.5
	Power input	kW	24.69	27.70	28.90
	COP		3.34	3.16	3.23
SEER			6.69	6.58	6.43
ηs,c		%	264.6	260.2	254.2
SCOP			4.40	4.43	4.44
ηs,h		%	173.0	174.2	174.6
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		2		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		3		
	Motor output	kW	0.92×3	0.92×3	0.92×3
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m³/h	24000	24900	25800
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	18	18	18
Pipe connections[4]	Liquid pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Low pressure gas	mm	Φ34.9	Φ34.9	Φ34.9
	High pressure gas	mm	Φ28.6	Φ28.6	Φ28.6
Sound pressure level[5]		dB(A)	64	65	66
Sound power level[5]		dB(A)	89		
Net dimensions (W×H×D)		mm	990×1635×790+	990×1635×790+	990×1635×790+
Packed dimensions (W×H×D)		mm	1090×1805×860+	1090×1805×860+	1090×1805×860+
Net weight		kg	232+300	232+300	232+300
Gross weight		kg	248+325	248+325	248+325
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

32-36HP

Table 2-1.5: 32-36HP specifications

HP			32	34	36
Model name			MV6-R900WV2RN1	MV6-R950WV2RN1	MV6-R1000WV2RN1
Combination type			16HP+16HP	16HP+18HP	18HP+18HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	90	95	100
	Power input	kW	34.9	39.44	43.98
	EER		2.58	2.41	2.27
Heating[2] (rated)	Capacity	kW	90	95	100
	Power input	kW	24.38	25.65	26.92
	COP		3.69	3.70	3.71
Heating[2] (max)	Capacity	kW	100	106	112
	Power input	kW	31.75	32.95	34.15
	COP		3.15	3.22	3.28
SEER			6.42	6.30	6.20
ηs,c		%	253.8	249.0	245.0
SCOP			4.33	4.33	4.35
ηs,h		%	170.2	170.2	171.0
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		2		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		4		
	Motor output	kW	0.92×4	0.92×4	0.92×4
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	29800	30700	31600
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	20	20	20
Pipe connections[4]	Liquid pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Low pressure gas	mm	Φ34.9	Φ34.9	Φ34.9
	High pressure gas	mm	Φ28.6	Φ28.6	Φ28.6
Sound pressure level[5]		dB(A)	67	68	68
Sound power level[5]		dB(A)	91	91	91
Net dimensions (W×H×D)		mm	(1340×1635×825)×2	(1340×1635×825)×2	(1340×1635×825)×2
Packed dimensions (W×H×D)		mm	(1405×1805×910)×2	(1405×1805×910)×2	(1405×1805×910)×2
Net weight		kg	300×2	300×2	300×2
Gross weight		kg	325×2	325×2	325×2
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

38-42HP

Table 2-1.6: 38-42HP specifications

HP			38	40	42
Model name			MV6-R1070WV2RN1	MV6-R1120WV2RN1	MV6-R1185WV2RN1
Combination type			12HP+12HP+14HP	12HP+12HP+16HP	12HP+14HP+16HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	107	112	118.5
	Power input	kW	36.97	41.21	42.54
	EER		2.89	2.72	2.79
Heating[2] (rated)	Capacity	kW	107	112	118.5
	Power input	kW	28.1	30.25	31.26
	COP		3.81	3.70	3.79
Heating[2] (max)	Capacity	kW	120	125	132.5
	Power input	kW	36.52	39.53	40.56
	COP		3.29	3.16	3.27
SEER			6.71	6.62	6.58
ηs,c		%	265.4	261.8	260.2
SCOP			4.45	4.47	4.37
ηs,h		%	175.0	175.8	171.8
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		3		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		4	4	5
	Motor output	kW	0.92×4	0.92×4	0.92×5
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	34000	34900	38900
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	26	26	28
Pipe connections[4]	Liquid pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Low pressure gas	mm	Φ41.3	Φ41.3	Φ41.3
	High pressure	mm	Φ34.9	Φ34.9	Φ34.9
Sound pressure level[5]		dB(A)	65	67	67
Sound power level[5]		dB(A)	89	89	89
Net dimensions (W×H×D)		mm	(990×1635×790)×2+ 1340×1635×825	(990×1635×790)×2+ 1340×1635×825	990×1635×790+ (1340×1635×825)×2
Packed dimensions (W×H×D)		mm	(1090×1805×860)×2+14 05×1805×910	(1090×1805×860)×2+ 1405×1805×910	1090×1805×860+ (1405×1805×910)×2
Net weight		kg	232×2+300	232×2+300	232+300×2
Gross weight		kg	248×2+325	248×2+325	248+325×2
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

44-48HP

Table 2-1.7: 44-48HP specifications

HP			44	46	48
Model name			MV6-R1235WV2RN1	MV6-R1300WV2RN1	MV6-R1350WV2RN1
Combination type			12HP+16HP+16HP	14HP+16HP+16HP	16HP+16HP+16HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	123.5	130	135
	Power input	kW	46.78	48.11	52.35
	EER		2.64	2.70	2.58
Heating[2] (rated)	Capacity	kW	123.5	130	135
	Power input	kW	30.25	32.27	36.57
	COP		4.08	4.03	3.69
Heating[2] (max)	Capacity	kW	137.5	145	150
	Power input	kW	43.58	44.60	47.62
	COP		3.16	3.25	3.15
SEER			6.52	6.47	6.42
ηs,c		%	257.8	255.8	253.8
SCOP			4.39	4.31	4.33
ηs,h		%	172.6	169.4	170.2
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		3		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		5	6	6
	Motor output	kW	0.92×5	0.92×6	0.92×6
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	39800	43800	44700
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	28	30	30
Pipe connections[4]	Liquid pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Low pressure gas pipe	mm	Φ41.3	Φ41.3	Φ41.3
	High pressure gas	mm	Φ34.9	Φ34.9	Φ34.9
Sound pressure level[5]		dB(A)	68	68	69
Sound power level[5]		dB(A)	91	91	93
Net dimensions (W×H×D)		mm	990×1635×790+ (1340×1635×825)×2	(1340×1635×825)×3	(1340×1635×825)×3
Packed dimensions (W×H×D)		mm	1090×1805×860+ (1405×1805×910)×2	(1405×1805×910)×3	(1405×1805×910)×3
Net weight		kg	232+300×2	300×3	300×3
Gross weight		kg	248+325×2	325×3	325×3
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

50-54HP

Table 2-1.8: 50-54HP specifications

HP			50	52	54
Model name			MV6-R1400WV2RN1	MV6-R1450WV2RN1	MV6-R1500WV2RN1
Combination type			16HP+16HP+18HP	16HP+18HP+18HP	18HP+18HP+18HP
Power supply		V/N/Hz	380-415/3/50		
Cooling[1]	Capacity	kW	140	145	150
	Power input	kW	56.89	61.43	65.97
	EER		2.46	2.36	2.27
Heating[2] (rated)	Capacity	kW	140	145	150
	Power input	kW	37.84	39.11	40.38
	COP		3.70	3.71	3.71
Heating[2] (max)	Capacity	kW	156	162	168
	Power input	kW	48.82	50.02	51.22
	COP		3.20	3.24	3.28
SEER			6.34	6.27	6.20
ηs,c		%	250.6	247.8	245.0
SCOP			4.33	4.35	4.35
ηs,h		%	170.2	171.0	171.0
Connected indoor unit	Total capacity		50-200% of outdoor unit capacity[3]		
	Maximum quantity		64	64	64
Compressor	Type		DC inverter		
	Quantity		3		
	Oil type		FV68H		
	Start-up method		Soft start		
Fan	Type		Propeller		
	Motor type		DC		
	Quantity		6	6	6
	Motor output	kW	0.92×6	0.92×6	0.92×6
	Static pressure	Pa	0,20,40,60,80(Selectable)		
	Air flow rate	m^3/h	45600	46500	47400
	Drive type		Direct		
Refrigerant	Type		R410A		
	Factory charge	kg	30	30	30
Pipe connections[4]	Liquid pipe	mm	Φ19.1	Φ19.1	Φ19.1
	Low pressure gas	mm	Φ41.3	Φ41.3	Φ41.3
	High pressure gas	mm	Φ34.9	Φ34.9	Φ34.9
Sound pressure level[5]		dB(A)	69	69	70
Sound power level[5]		dB(A)	93	93	93
Net dimensions (W×H×D)		mm	(1340×1635×825)×3	(1340×1635×825)×3	(1340×1635×825)×3
Packed dimensions (W×H×D)		mm	(1405×1805×910)×3	(1405×1805×910)×3	(1405×1805×910)×3
Net weight		kg	300×3	300×3	300×3
Gross weight		kg	325×3	325×3	325×3
Ambient temp. operation range	Cooling[6]	°C(DB)	-15 ~ 52		
	Heating	°C(WB/DB)	-25 ~ 19/-25~27		
	Domestic hot water	°C(DB)	-20 ~ 43		

Notes:

1. Indoor air temperature 27°C DB, 19°C WB; outdoor air temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor air temperature 20°C DB; outdoor air temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Refer to table 1-5.1: Indoor and outdoor unit combination ratio limitations in Part 1.
4. Diameters given are those for the pipe connecting the outdoor unit combination to the first indoor branch joint for systems with total equivalent liquid piping lengths of less than 90m. For systems with total equivalent liquid piping lengths of 90m or longer, please refer to Part 3 “System Design and Installation” for connection piping diameters.
5. Sound pressure level is measured at a position 1m in front of the unit and 1.3m above the floor in a semi-anechoic chamber.
6. -15°C to -5°C low temperature cooling operation is just available for MS01.

1.2 Mode Selection Box

MS01/N1-D / MS04/N1-D / MS06/N1-D

Table 2-1.9: MS01/N1-D, MS04/N1-D, MS06/N1-D specifications

Model name			MS01/N1-D[1]	MS04/N1-D	MS06/N1-D
Power supply		V/ph/Hz	220-240/1/50		
Max. number of indoor unit groups			1	4	6
Max. number of units per group			8	5	5
Max. number of downstream indoor units			8	20	30
Max. capacity of each group of indoor units		kW	32	16	16
Total capacity of downstream indoor units		kW	32	49	63
Pipe connections to ODU	Liquid pipe	mm	Ø9.53/Ø12.7	Ø9.53/Ø12.7/Ø15.9/Ø19.05	Ø9.53/Ø12.7/Ø15.9/Ø19.05
	Low pressure gas pipe	mm	Ø15.9/Ø19.1/Ø22.2	Ø19.1/Ø22.2/Ø28.6	Ø19.1/Ø22.2/Ø28.6
	High pressure gas pipe	mm	Ø12.7/Ø15.9/Ø19.1	Ø15.9/Ø19.1/Ø22.2/Ø28.6	Ø15.9/Ø19.1/Ø22.2/Ø28.6
Pipe connections to IDU	Liquid pipe	mm	Ø6.35/Ø9.53	Ø6.35/Ø9.53	Ø6.35/Ø9.53
	Gas pipe	mm	Ø12.7/Ø15.9	Ø12.7/Ø15.9	Ø12.7/Ø15.9
Sound pressure level[2]		dB(A)	40	44	45
Sound power level[2]		dB(A)	60	63	65
Net dimensions (W×H×D)		mm	440×195×296	668×250×574	668×250×574
Packed dimensions (W×H×D)		mm	740×275×405	1020×390×850	1020×390×850
Net weight		kg	10.5	33	36
Gross weight		kg	14	58	61

Notes:

1. MS01 is for low temperature cooling operation and leakage detection.
2. The sound level is measured at a position 1m below the MS box in a semi-anechoic chamber whilst the MS box is switching mode. MS box should not be installed in locations with low-noise requirements.

MS08/N1-D / MS10/N1-D / MS12/N1-D

Table 2-1.10: MS08/N1-D, MS10/N1-D, MS12/N1-D specifications

Model name			MS08/N1-D	MS10/N1-D	MS12/N1-D
Power supply		V/ph/Hz	220-240/1/50		
Max. number of indoor unit groups			8	10	12
Max. number of units per group			5	5	5
Max. number of downstream indoor units			40	47	47
Max. capacity of each group of indoor units		kW	16	16	16
Total capacity of downstream indoor units		kW	85	85	85
Pipe connections to ODU	Liquid pipe	mm	Ø12.7/Ø15.9/Ø19.1/Ø22.2	Ø12.7/Ø15.9/Ø19.1/Ø22.2	Ø12.7/Ø15.9/Ø19.1/Ø22.2
	Low pressure gas pipe	mm	Ø22.2/Ø28.6/Ø34.9	Ø22.2/Ø28.6/Ø34.9	Ø22.2/Ø28.6/Ø34.9
	High pressure gas pipe	mm	Ø19.1/Ø22.2/Ø28.6	Ø19.1/Ø22.2/Ø28.6	Ø19.1/Ø22.2/Ø28.6
Pipe connections to IDU	Liquid pipe	mm	Ø6.35/Ø9.53	Ø6.35/Ø9.53	Ø6.35/Ø9.53
	Gas pipe	mm	Ø12.7/Ø15.9	Ø12.7/Ø15.9	Ø12.7/Ø15.9
Sound pressure level[1]		dB(A)	47	47	47
Sound power level[1]		dB(A)	65	65	65
Net dimensions (W×H×D)		mm	974×250×574	974×250×574	974×250×574
Packed dimensions (W×H×D)		mm	1320×390×850	1320×390×850	1320×390×850
Net weight		kg	48	51	54
Gross weight		kg	79	82	85

Notes:

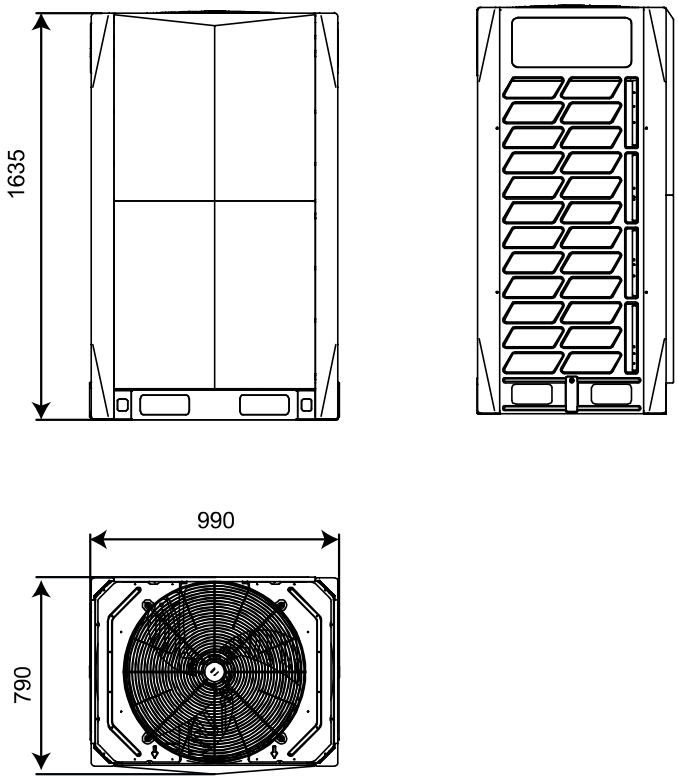
1. The sound level is measured at a position 1m below the MS box in a semi-anechoic chamber whilst the MS box is switching mode. MS box should not be installed in locations with low-noise requirements.

2 Dimensions

2.1 Single Units

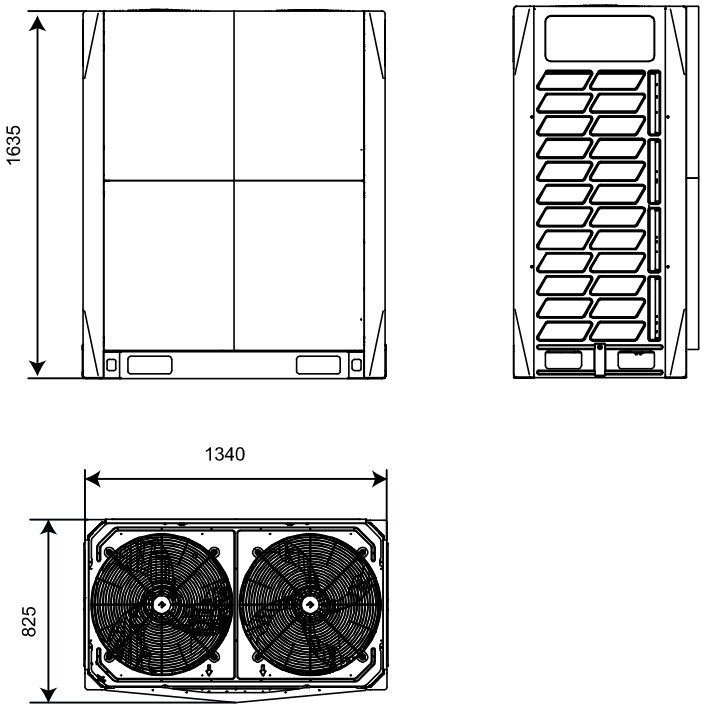
8/10/12HP

Figure 2-2.1: 8/10/12HP dimensions (unit: mm)



14/16/18HP

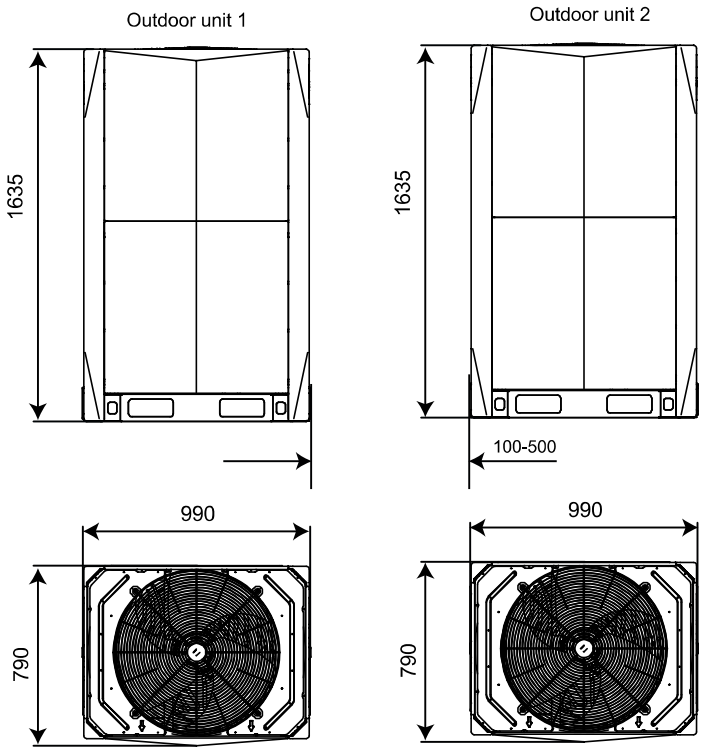
Figure 2-2.2: 14/16/18HP dimensions (unit: mm)



2.2 Combinations of Units

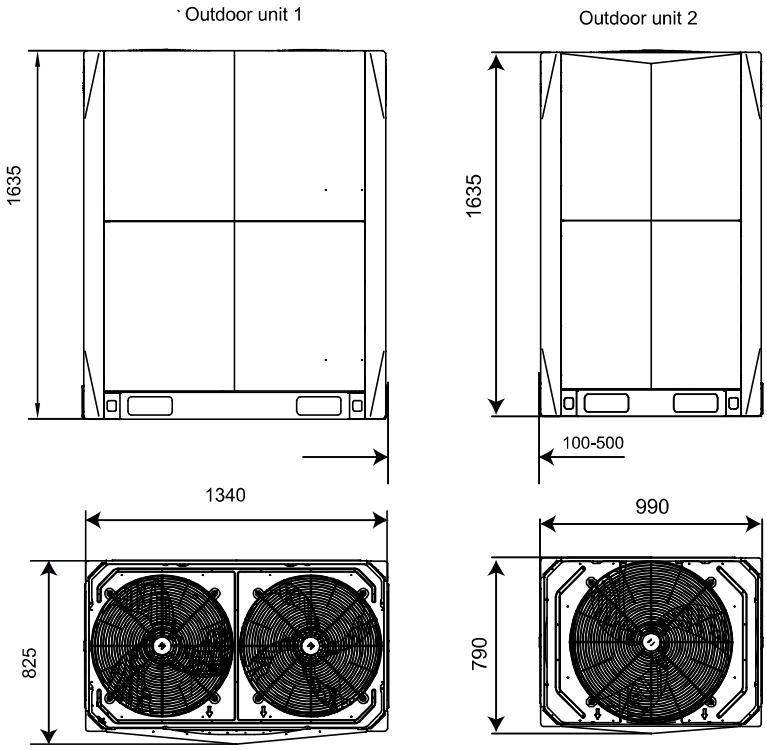
20/22HP

Figure 2-2.3: 20/22HP dimensions (unit: mm)



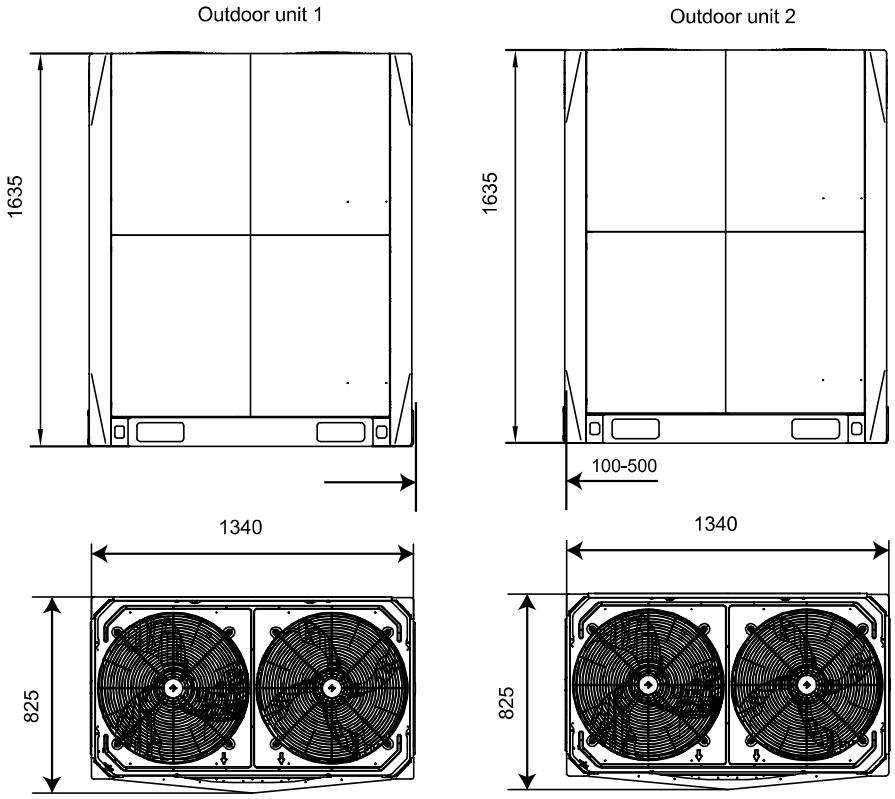
24/26/28/30HP

Figure 2-2.4: 24/26/28/30HP dimensions (unit: mm)



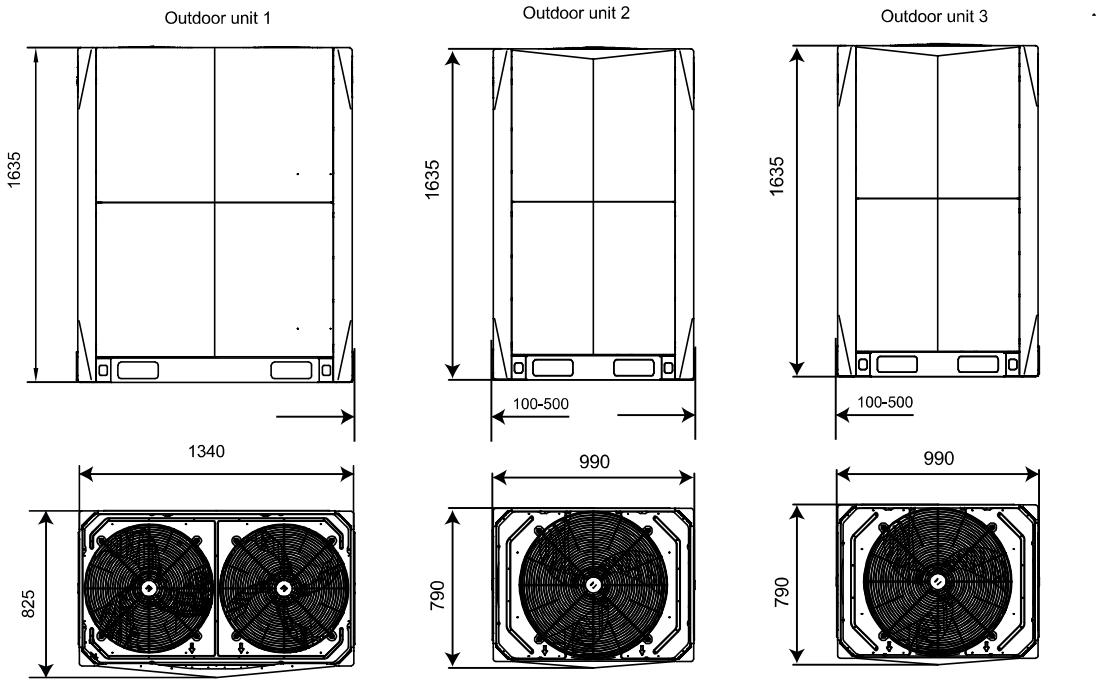
32/34/36HP

Figure 2-2.5: 32/34/36HP dimensions (unit: mm)



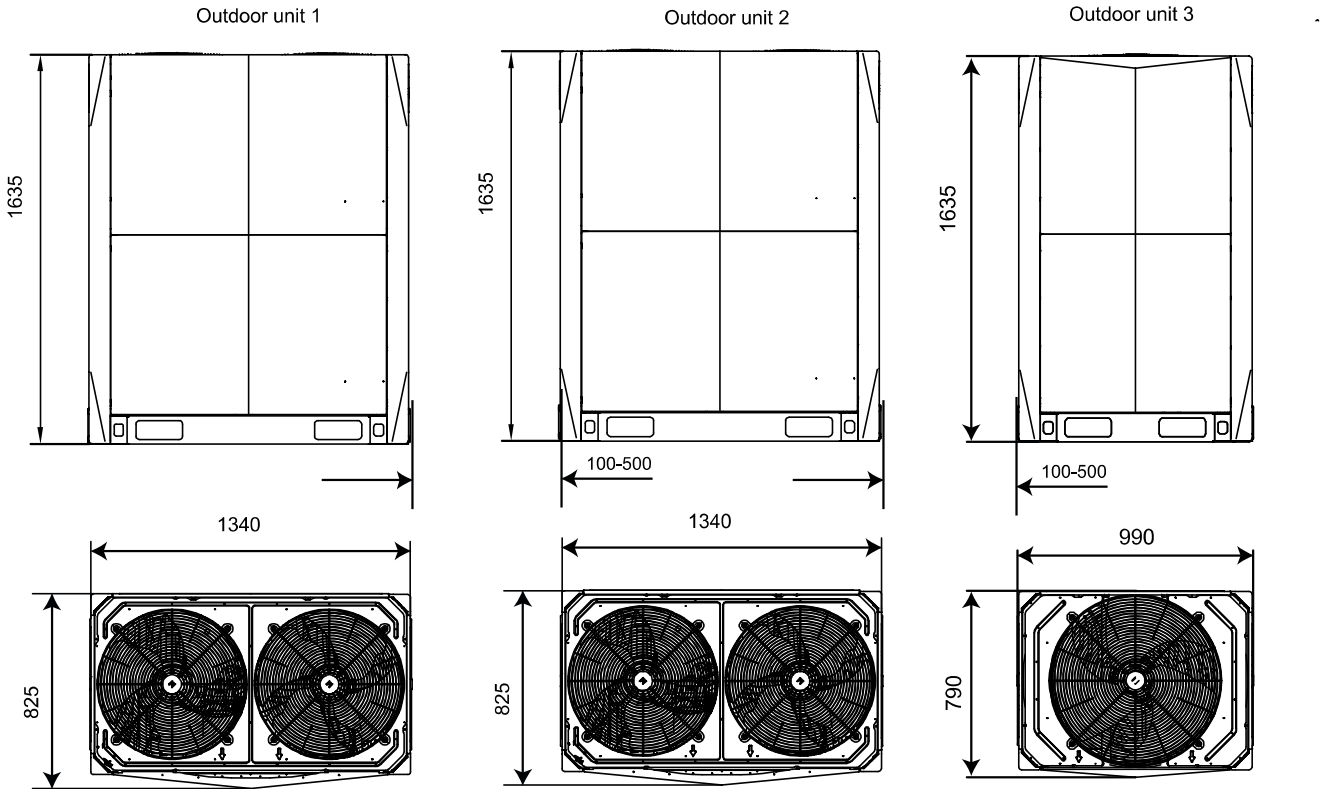
38/40HP

Figure 2-2.6: 38/40HP dimensions (unit: mm)



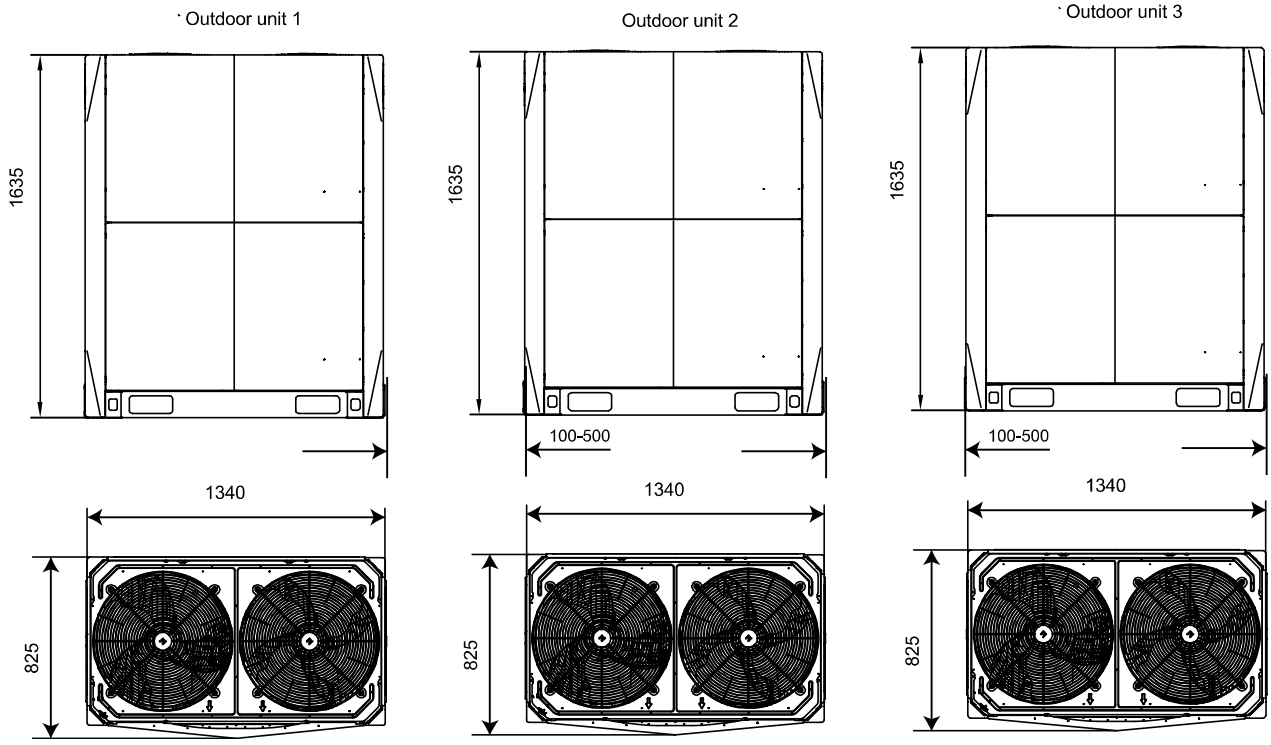
42/44HP

Figure 2-2.7: 42/44HP dimensions (unit: mm)



46/48/50/52/54HP

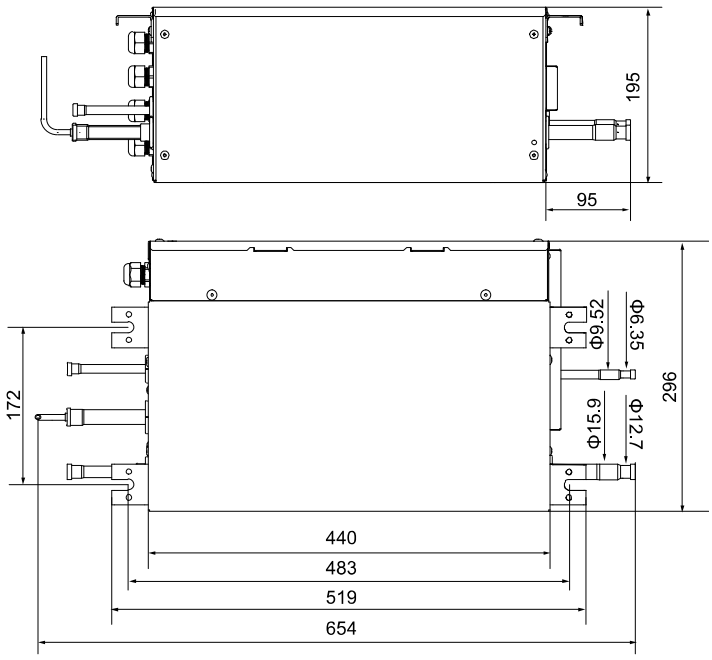
Figure 2-2.8: 46/48/50/52/54HP dimensions (unit: mm)



2.3 Mode Selection Box

MS01

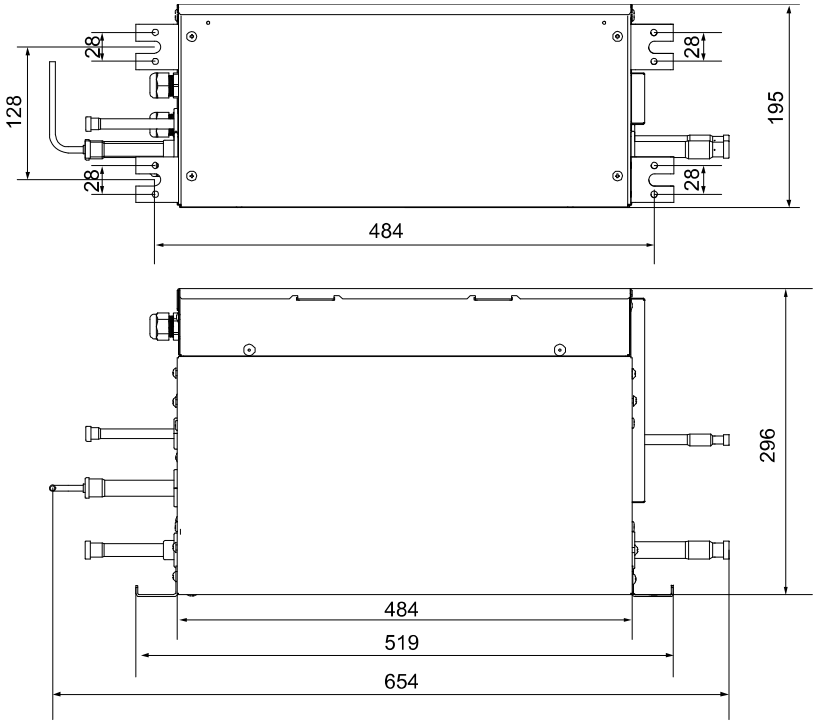
Figure 2-2.9: Ceiling-suspended type MS01 dimensions (unit: mm)



Notes :

1. MS01 can be ceiling-supended installed and wall-mounted installed.
2. MS01 is for low temperature cooling operation and leakage detection.

Figure 2-2.10: Wall-mounted type MS01 dimensions (unit: mm)



Notes :

1. MS01 can be ceiling-supended installed and wall-mounted installed.
2. Low temperature cooling operation and leakage detection function are available in MS01.

MS04-12

Figure 2-2.11: MS04-12 dimensions (unit: mm)

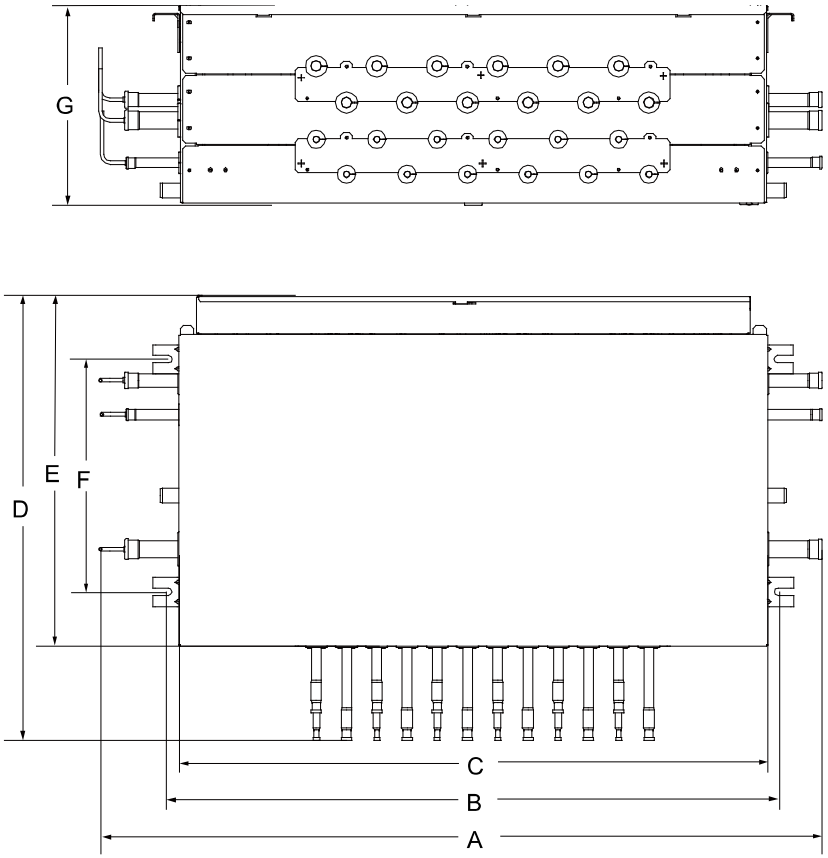


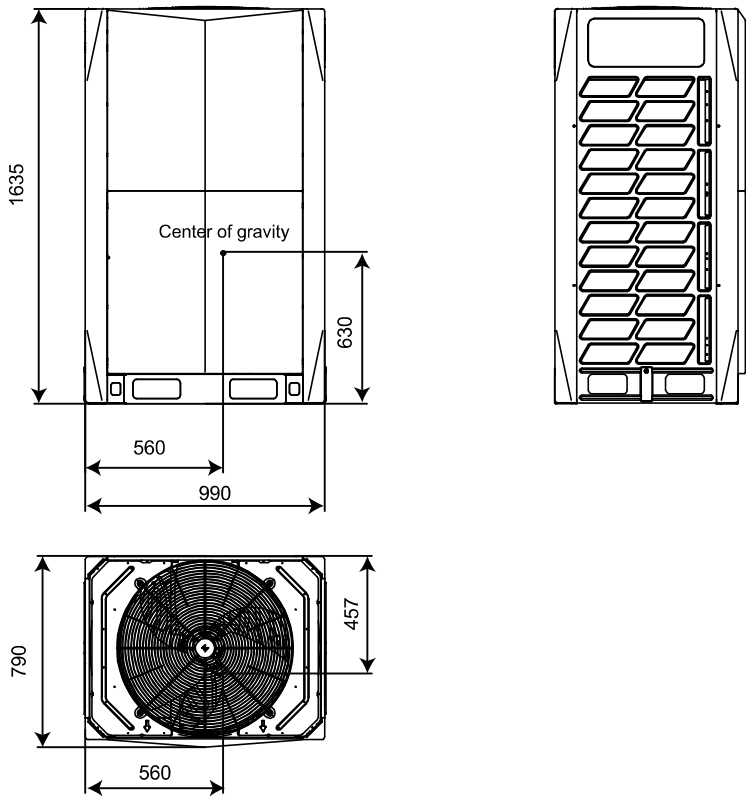
Table 2-1.1: MS04-12 sdimensions (unit :mm)

Model	A	B	C	D	E	F	G
MS04 MS06	889	702	700	700	574	383	250
MS08 MS10 MS12	1195	1008	700	700	574	383	250

3 Center of Gravity

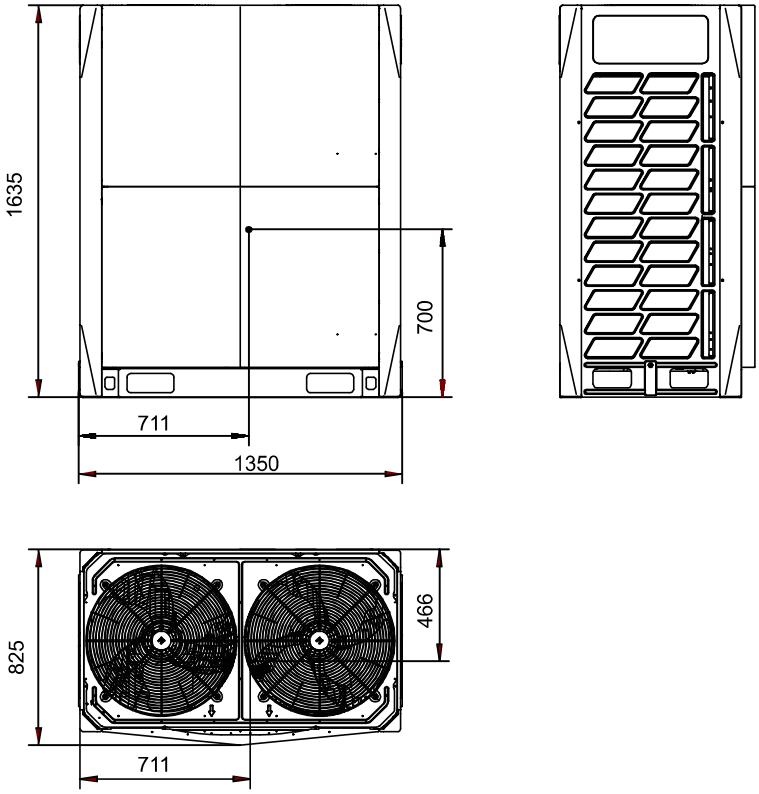
8/10/12HP

Figure 2-3.1: 8/10/12HP center of gravity (unit: mm)



14/16/18HP

Figure 2-3.2: 14/16/18HP center of gravity (unit: mm)

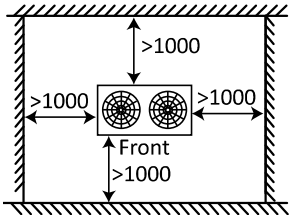


4 Installation Space Requirements

4.1 Outdoor Units Space Requirements

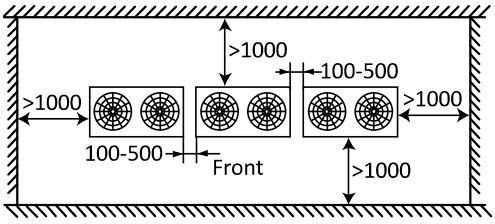
For single unit installation

Figure 2-4.1: Single unit installation (unit: mm)



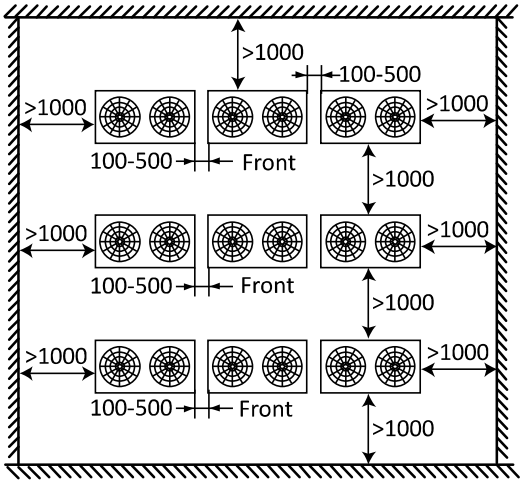
For single row installation

Figure 2-4.2: Single row installation (unit: mm)



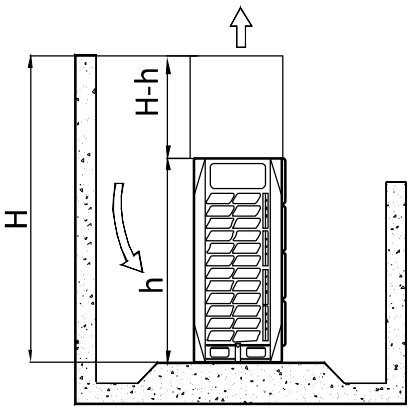
For multi-row installation

Figure 2-4.3: Multi-row installation (unit: mm)



Depending on the height of adjacent walls relative to the height of the units, ducting may be required to ensure proper air discharge. In the situation depicted in Figure 2-4.4, the vertical section of ducting should be at least H-h high.

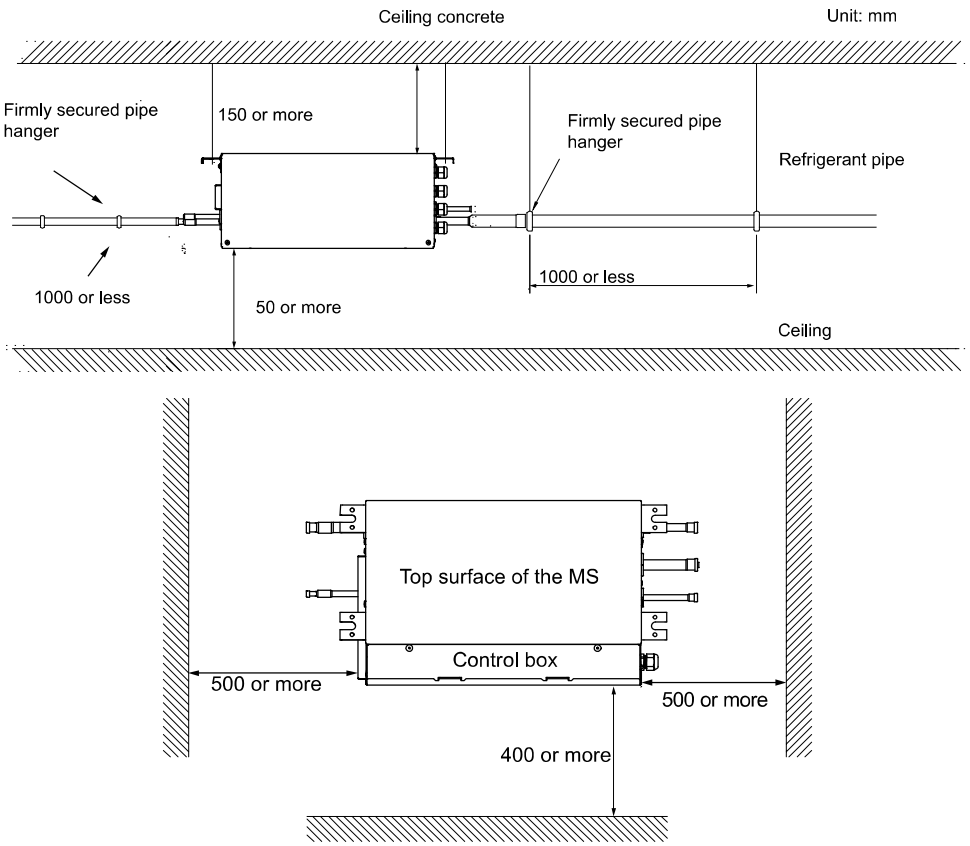
Figure 2-4.4: Top of unit below top of adjacent wall



4.2 Mode Selection Box Space Requirements

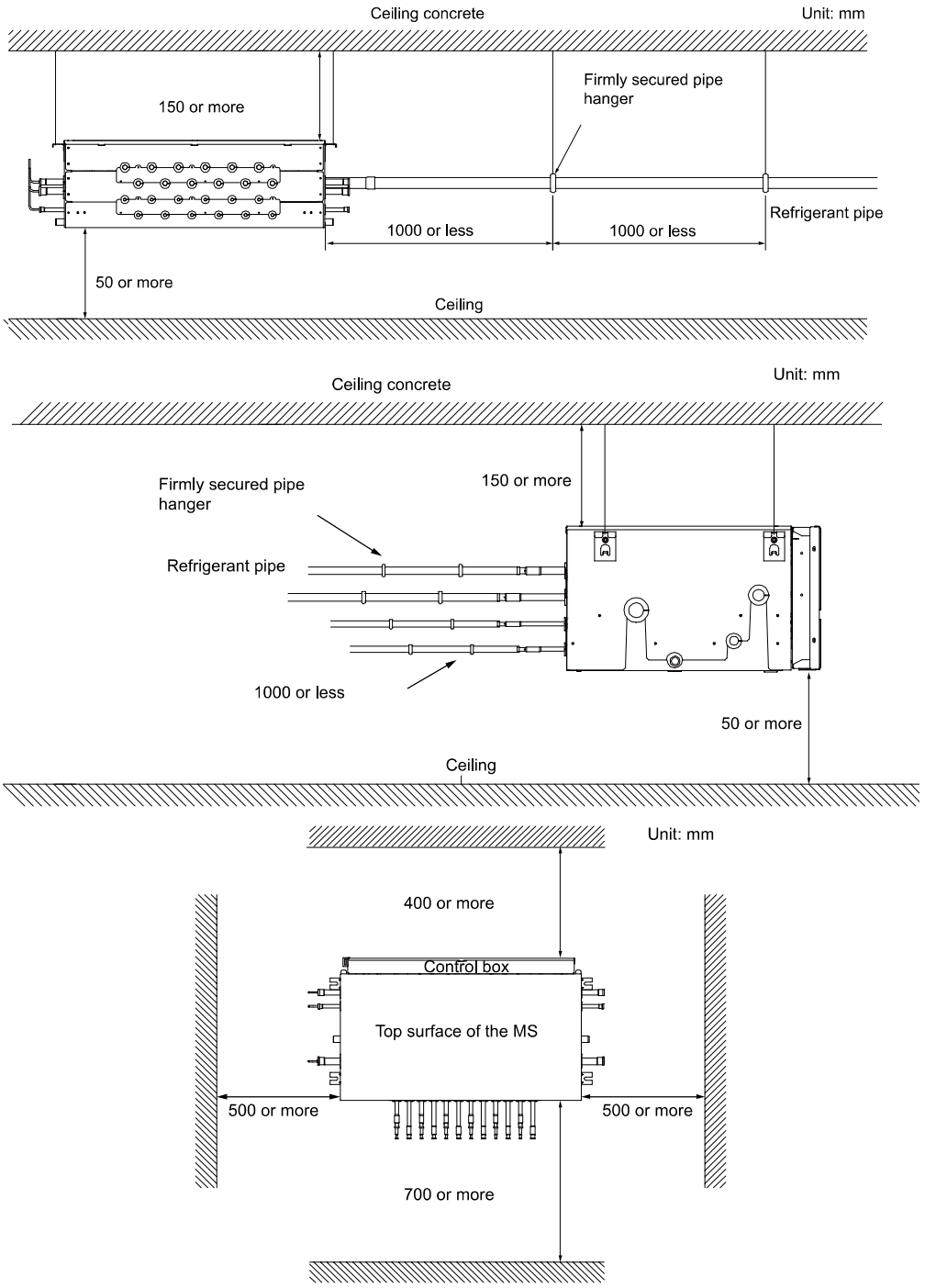
MS01

Figure 2-4.5: MS01 installation requirement (unit: mm)



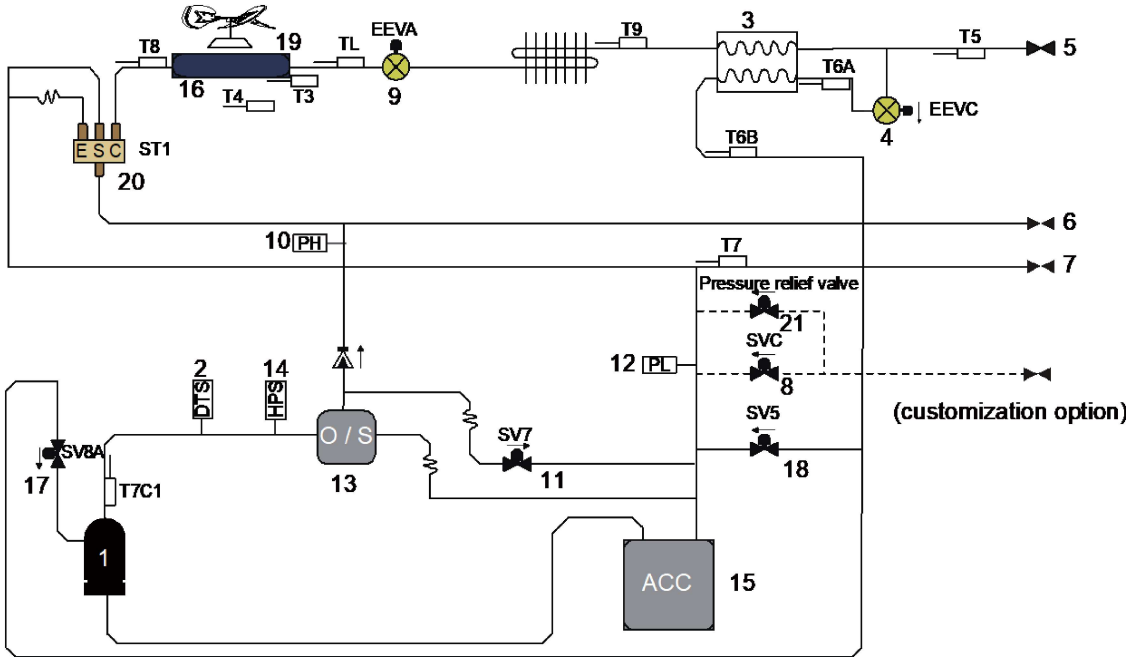
MS04-12

Figure 2-4.6: MS04-12 installation requirement (unit: mm)



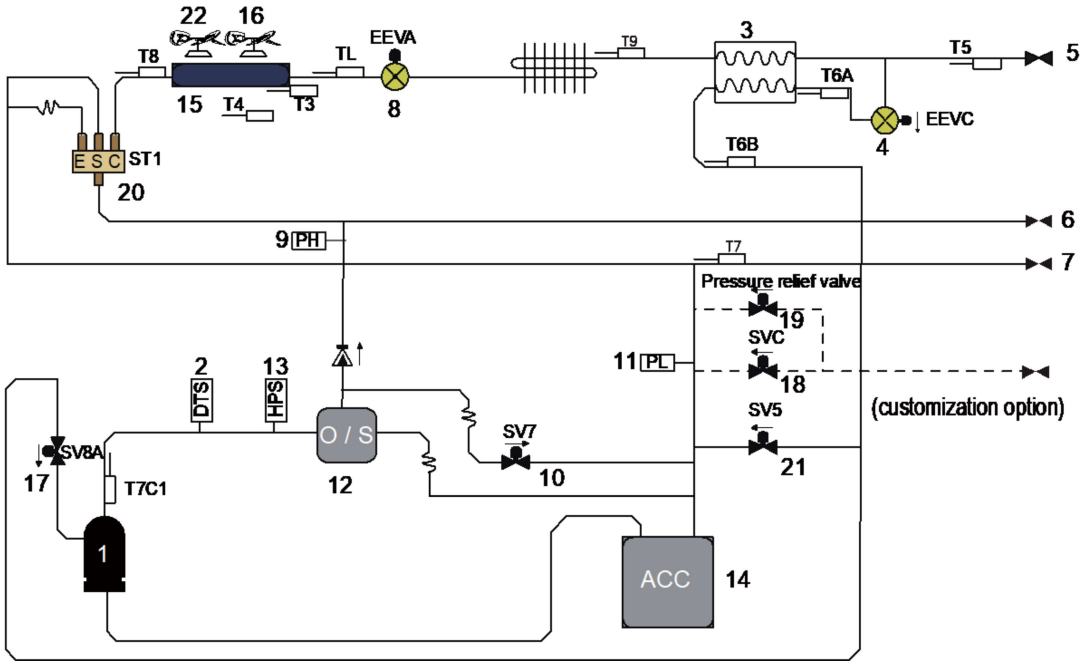
5 Piping Diagrams

Figure 2-5.1: 8HP/10HP/12HP piping diagram



Legend				
No.	**Parts name**		**No.**	**Parts name**
1	Compressor		17	Compressor vapor injection valve (SV8A)
2	Discharge temperature switch		18	Injection bypass solenoid valve(SV5)
3	Plate heat exchanger		19	FAN A
4	Electronic expansion valve (EEVC)		20	4-way valve
5	Stop valve (liquid side)		21	Pressure relief valve (customization option)
6	Stop valve (high pressure gas side)		**Sensor Code**	**Description**
7	Stop valve (low pressure gas side)		T3	Heat exchanger deicer temperature sensor
8	Refrigerant charge solenoid valve(SVC) (customization option)		T4	Outdoor air temperature sensor
9	Electronic expansion valve (EEVA)		T5	Liquid pipe temperature sensor
10	High pressure sensor		T6A	Injection liquid temperature sensor
11	Hot gas bypass solenoid valve(SV7)		T6B	Subcooling gas temperature sensor
12	Low pressure sensor		T7	Suction temperature sensor
13	Oil separator		T8	Heat exchanger gas temperature sensor
14	High pressure switch		T9	Heat sink temperature sensor
15	Gas-liquid separator		TL	Heat exchanger liquid temperature sensor
16	Heat exchanger		T7C1	Compressor discharge temperature sensor

Figure 2-5.2: 14HP/16HP/18HP piping diagram



Legend				
No.	**Parts name**		**No.**	**Parts name**
1	Compressor		18	Refrigerant charge solenoid valve(SVC) (customization option)
2	Discharge temperature switch		19	Pressure relief valve (customization option)
3	Plate heat exchanger		20	4-way valve
4	Electronic expansion valve (EEVC)		21	Injection bypass solenoid valve(SV5)
5	Stop valve (liquid side)		22	FAN A
6	Stop valve (high pressure gas side)		**Sensor Code**	**Description**
7	Stop valve (low pressure gas side)		T3	Heat exchanger deicer temperature sensor
8	Electronic expansion valve (EEVA)		T4	Outdoor air temperature sensor
9	High pressure sensor		T5	Liquid pipe temperature sensor
10	Hot gas bypass solenoid valve(SV7)		T6A	Injection liquid temperature sensor
11	Low pressure sensor		T6B	Subcooling gas temperature sensor
12	Oil separator		T7	Suction temperature sensor
13	High pressure switch		T8	Heat exchanger gas temperature sensor
14	Gas-liquid separator		T9	Heat sink temperature sensor
15	Heat exchanger		TL	Heat exchanger liquid temperature sensor
16	FAN B		T7C1	Compressor discharge temperature sensor
17	Compressor vapor injection valve (SV8A)			

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. **Gas-liquid separator:**
   Separates liquid refrigerant from gas refrigerant, stores liquid refrigerant and oil to protect compressor from liquid hammering.
3. **Electronic expansion valve (EEV):**
   Controls refrigerant flow and reduces refrigerant pressure.
4. **Four-way valve:**
   Controls heat exchanger function. When open, the heat exchanger functions as an evaporator; When closed, the heat exchanger functions as a condenser. Refer to part 3, “Heat Exchanger Control”.
5. **Plate heat exchanger:**
   In cooling mode, it can improve super-cooling degree and the super-cooled refrigerant can achieve better heat exchange in indoor side. In heating mode, the refrigerant comes from the plate heat exchanger going to the compressor can enhance the refrigerant enthalpy and improve the heating capacity in low ambient temperature. Refrigerant volume in plate heat exchanger is controlled according to temperature different between plate heat exchanger inlet and outlet or the temperature different between discharge temperature and target discharge temperature.
6. **Solenoid valve SV5:**
   Controls the refrigerant from plate heat exchanger to gas-liquid separator.
7. **Solenoid valve SV7:**
   Bypass pressure at start-up stage and control capacity at low load condition; High-pressure-rise prevention; Discharge superheat protection.
8. **Solenoid valve SV8A**
   Allows refrigerant from plate heat exchanger inject directly to the compressor. SV8A opens when compressor startup and closes when compressor stop.
9. **High pressure switch**
   Regulate system pressure. When system pressure rises above the upper limit, the high pressure switch turn off, stopping the compressor. When the high pressure protection recovers, the compressor restarts.