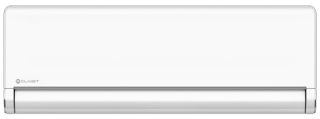
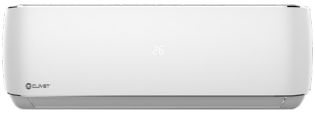
TECHNICAL MANUAL

MULTISplit

ODU-SM 2 41M - 125M



SCHIARA 2



CRISTALLO

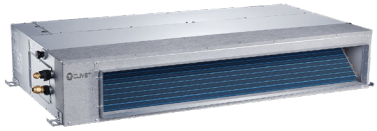


BOX 2
650X650





ESSENTIAL 2



DUCT 2



C&F 2

R32

Table of Contents

Page

1. Specifications 4

1. Model Reference
2. Functions
3. General Specifications
4. Indoor Unit Combination
5. Dimensional Drawings
6. Air Velocity and Temperature Distributions
7. Electrical Wiring Diagrams
8 Refrigerant Cycle Diagrams
9. Noise Criterion Curves
10. Electrical Characteristics
11. Static Pressure

2. Product Features 106

1. Operation Modes and Functions
2. Remote Controller Functions

3. Installation 134

1. Installation Overview
2. Location Selection
3. Indoor Unit Installation
4. Outdoor Unit Installation
5. Drainage Pipe Installation
6. Refrigerant Pipe Installation
7. Vacuum Drying and Leakage checking
8. Additional Refrigerant Charge

Table of Contents

Page

9. Engineering of Insulation
10. Engineering of Electrical Wiring
11. Test Operation

4. Static Pressure Design 165

1. Introduction
2. Charts for friction losses in round ducts
3. Dynamic losses
4. Corresponding relation between Rectangular duct and Round duct
5. Method for duct calculation
6. Unit conversion
7. Recommended outlet velocity for different occasions

Specifications

Contents

1. Model Reference 5
2. Functions 6
3. General Specifications 8
4. Indoor Unit Combination 26
5. Dimensional Drawings 28
6. Air Velocity and Temperature Distributions 40
7. Electrical Wiring Diagrams 64
8 Refrigerant Cycle Diagrams 82
9. Noise Criterion Curves 87
10. Electrical Characteristics 101
11. Static Pressure 103

1. Model Reference

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

Indoor Unit		Outdoor Unit	Power Supply
Duct 2		MU2-Y 82M MU2-Y 105M MU2-Y 125M MU2-Y 41M MU2-Y 53M MU2-Y 61M MU2-Y 79M	1Φ, 220-240V~, 50Hz
	ID3-XY 27M		
	ID3-XY 35M		
Box 650x650			
	IB3-XY 27M		
	IB3-XY 35M		
Nativ			
	IZ2-XY 27M		
	IZ2-XY 35M		
	IZ2-XY 53M		
	IZ2-XY 70M		
Cristallo / Essential 2	IM2-XY / IL3-XY 20M-27M		
	IM2-XY / IL3-XY 35M		
	IM2-XY / IL3-XY 53M		
	IM2-XY / IL3-XY 70M		
Schiara 2			
	IE2-Y 27M-35M		

2. Functions

Functions / Model	A6 Duct type	Compact Cassette type
Standard filter	O	●
Flange	O	X
Healthy filter	X	X
Drainage pump	O	●
IDU auxiliary electric heater	X	X
Infrared wired controller (KJR-12B, KJR-90A)	●	O
485 wired controller (KJR-120C, KJR-120G2)	O	O
2 cores non-polarity wired controller (KJR-120G)	O	O
Wifi	O	O
XYE port for central controller	●	●
Alarm output terminal	●	●
Remote on/off terminal	●	●
Golden Fin(Outdoor unit)	●	●

Note:

●: Standard

O: Optional

X: Not available

Functions / Model	All Easy	Aurora	Forest	XTREME
High Density Filter	●	●	●	●
Cold Catalyst Filter	●	●	●	●
Fire Proof	●	●	●	●
Turbo	●	●	●	●
Sleep	●	●	●	●
Auto-restart	●	●	●	●
Timer	●	●	●	●
super ionizer	●(9k~18k)/ O(24k)	X	X	O
horizontal louver autoswing	●	●	●	●
2 ways piping connection	●	●	●	●
H-shaped installation plate	X	●	●	●
Monolithic installation plate	O	O	O	O
louver position memory function	●	●	●	●
follow me	O	O	O	O
ECO	O	●	O	●
Remote on/off terminal	O	O	X	O
Alarm output terminal	O	X	X	O
XYE port for centrol control&weekly timer	O	O	X	O
wired controller(simplex KJR-12B,etc.)	O	O	O	O
wired controller(duplex KJR-120G/ TF-E,non-polarity)	O	X	X	O
WIFI	O	O	O	O
Golden Fin(Outdoor unit)	●	●	●	●

Note:

●: Standard

O: Optional

X: Not available

3. General Specifications

Indoor model			MTIU-07HWFNX-QRD0W	MTIU-09HWFNX-QRD0W	ID3-XY 27M	ID3-XY 35M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	7000	9000	12000	18000
	Input	W	170	180	185	200
	Current	A	1.0	1.1	1.1	1.3
Heating	Capacity	Btu/h	8000	10000	13000	19000
	Input	W	170	180	185	200
	current	A	1.0	1.1	1.1	1.3
Indoor fan motor	Model		ZKFN-55-8-22	ZKFN-55-8-22	ZKFN-55-8-22	ZKFN-160-8-1-2
	Qty		1	1	1	1
	Input	W	130.0	130.0	130.0	90.0
	Capacitor	uF	/	/	/	/
	Speed(Hi/Mi/Lo)	r/min	1080/920/790	1080/920/790	1170/1030/850	1650/1300/1000
Indoor coil	a.Number of rows	3.0	3.0	3	3	3
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.4	1.4	1.4	1.4
	d.Fin type (code)		Hydrophilic aluminum(Golden)	Hydrophilic aluminum(Golden)	Hydrophilic aluminum(Golden)	Hydrophilic aluminum(Golden)
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	526x210x40.11	526x210x40.11	526x210x40.11	695x252x40.11
	g.Number of circuits		4	4	4	4
Indoor air flow (Hi/Mi/Lo)		m3/h	500/340/230	500/340/230	600/480/300	880/650/350
ESP	Rated	Pa	25	25	25	25
	Range	Pa	0-40	0-40	0-60	0-100
Indoor sound pressure level (Hi)		dB(A)	40/34.5/27.5	40/34.5/27.5	40/34.5/27.5	41.5/38/33
Indoor sound power level (Hi)		dB(A)	58	58	59	59
Indoor unit	Dimension(W*D*H)	mm	700x506x200	700x506x200	700x506x200	880x674x210
	Packing (W*D*H)	mm	860x540x275	860x540x275	860x540x275	1070x725x280
	Net/Gross weight	Kg	18/22	18/22	18/22	24.3/29.6
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7	4.3/1.7
Drainage water pipe dia.		mm	ODΦ25	ODΦ25	ODΦ25	ODΦ25
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ12.7(1/4"/1/2")
Controller			Wired Control	Wired Control	Wired Control	Wired control
Operation temperature		°C	17~30	17~30	17~30	17~30
Room temperature	Cooling	°C	17~32	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			MCA3I-07HRFNX-QRD0	MCA3I-09HRFN8-QRD0	IB3-XY 27M	IB3-XY 35M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	7000	9000	12000	18000
	Input	W	40	40	40	102
	Current	A	0.18	0.18	0.18	0.44
Heating	Capacity	Btu/h	7500	10000	14000	18500
	Input	W	40	40	40	102
	current	A	0.18	0.18	0.18	0.44
Indoor fan motor	Model		ZKFP-46-8-1	ZKFP-46-8-1	ZKFP-46-8-1	ZKFP-46-8-1
	Old Model		WZDK46-38G	WZDK46-38G	WZDK46-38G	WZDK46-38G
	Qty		1	1	1	1
	Input	W	45	45	45	45
	Capacitor	uF	-	-	-	/
	Speed(Hi/Mi/Lo)	r/min	600/520/460	600/520/460	700/580/500	720/625/540
Indoor coil	a.Number of rows	3.0	1.0	1.0	2	2
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.3	1.3	1.3	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum(Golden)	Hydrophilic aluminum(Golden)	Hydrophilic aluminum(Golden)
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,innergroove tube	Φ7,innergroove tube	Φ7,innergroove tube
	f.Coil length x height x width	mm	1380x210x13.37	1380x210x13.37	1360x210x26.74	1360x210x26.74
	g.Number of circuits		2	2	4	4
Indoor air flow (Hi/Mi/Lo)		m3/h	580/500/450	580/500/450	617/504/415	680/560/500
Indoor sound pressure level (Hi)		dB(A)	37.0/33.0/31.5	38/33/29	41/37/34	44/42/41
Indoor sound power level (Hi)		dB(A)	51	53	58	56
Indoor unit	Dimension (W x Dx H)(body)	mm	570x570x260	570x570x260	570x570x260	570x570x260
	Packing (W x Dx H)(body)	mm	662x662x317	662x662x317	662x662x317	662x662x317
	Dimension (W x Dx H)(panel)	mm	647x647x50	647x647x50	647x647x50	647x647x50
	Packing (W x Dx H)(panel)	mm	715x715x123	715x715x123	715x715x123	715x715x123
	Net/Gross weight(body)	kg	14.5/17.3	14.5/17.3	16.2/21.4	16.2/21.4
	Net/Gross weight	kg	2.5/4.5	2.5/4.5	2.5/4.5	2.5/4.5
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7	4.3/1.7
Drainage water pipe dia.		mm	ODΦ25	ODΦ25	ODΦ25	ODΦ25
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ12.7(1/4"/1/2")
Controller			Remote Control	Remote Control	Remote Control	Remote control
Operation temperature		°C	17~30	17~30	17~30	17~30
Room tempera-ture	Cooling	°C	17~32	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			MSAFBU-07HRDNX-QRD0GW	IZ2-XY 27M	IZ2-XY 35M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	7000	9000	12000
	Input	W	20	20	20
	Current	A	0.09	0.09	0.09
Heating	Capacity	Btu/h	8000	10000	13000
	Input	W	20	20	20
	current	A	0.09	0.09	0.09
Indoor fan motor	Model		YKFG-13-4-38L	YKFG-13-4-38L	YKFG-13-4-38L
	Input	W	40	40	40
	Capacitor	uF	1.2	1.2	1.2
	Speed(Hi/Mi/Lo)	r/min	1030/850/700	1030/850/700	1130/950/750
Indoor coil	a.Number of rows	3.0	2.0	2.0	2.0
	b.Tube pitch(a)x row pitch(b)	mm	19.5x11.6	19.5x11.6	19.5x11.6
	c.Fin spacing	mm	1.2	1.2	1.2
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ5,innergroove tube	Φ5,innergroove tube	Φ5,innergroove tube
	f.Coil length x height x width	mm	595x273x23.2	595x273x23.2	595x273x23.2
	g.Number of circuits		4	4	4
Indoor air flow (Hi/Mi/Lo)		m3/h	520/460/340	520/460/340	600/500/360
Indoor sound pressure level (Hi)		dB(A)	40/30/26/21	40/30/26/21	40/34/26/22
Indoor sound power level (Hi)		dB(A)	54	53	53
Indoor unit	Dimension(W*D*H)	mm	805x194x285	805x194x285	805x194x285
	Packing (W*D*H)	mm	870x270x360	870x270x360	870x270x360
	Net/Gross weight	Kg	7.5/9.7	7.5/9.7	7.5/9.7
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
Controller		Wired Control	Remote Control	Remote Control	Remote Control
Operation temperature		°C	17~30	17~30	17~30
Room tempera-ture	Cooling	°C	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			IZ2-XY 53M	IZ2-XY 70M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	18000	24000
	Input	W	34	62
	Current	A	0.15	0.28
Heating	Capacity	Btu/h	19000	25000
	Input	W	34	62
	current	A	0.15	0.28
Indoor fan motor	Model		ZKFP-30-8-3	ZKFP-58-8-1
	Input	W	36	58.0
	Capacitor	uF	/	/
	Speed(Hi/Mi/Lo)	r/min	1130 / 900 / 800	1150 / 1000 / 850
Indoor coil	a.Number of rows	3.0	2.0	2.0
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	c.Fin spacing	mm	1.2	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	750x294x26.74	780x315x26.74
	g.Number of circuits		3	4
Indoor air flow (Hi/Mi/Lo)		m3/h	840/680/540	980/817/662
Indoor sound pressure level (Hi)		dB(A)	44/37/30/25	44.5/42/34.5/28
Indoor sound power level (Hi)		dB(A)	55	59
Indoor unit	Dimension(W*D*H)	mm	957x213x302	1040x220x327
	Packing (W*D*H)	mm	1035x295x380	1120x405x310
	Net/Gross weight	Kg	10/13	12.3/15.8
Design pressure		MPa	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ12.7(1/4"/1/2")	Φ9.52/Φ15.9(3/8"/5/8")
Controller		Wired Control	Remote control	Remote control
Operation temperature		°C	17~30	17~30
Room temperature	Cooling	°C	17~32	17~32
	Heating	°C	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			IM2-XY / IL3-XY 20M-27M	IM2-XY / IL3-XY 35M	IM2-XY / IL3-XY 53M	IM2-XY / IL3-XY 70M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	9000	12000	18000	25000
	Input	W	24	24	34	62
	Current	A	0.11	0.11	0.15	0.28
Heating	Capacity	Btu/h	10000	13000	19000	26000
	Input	W	24	24	34	62
	current	A	0.11	0.11	0.15	0.28
Indoor fan motor	Model		ZKFP-20-8-6-7	ZKFP-20-8-6-7	ZKFP-30-8-3	ZKFP-58-8-1
	Input	W	50.0	50.0	36	58
	Capacitor	uF	/	/	/	/
	Speed(Hi/Mi/Lo)	r/min	1150/850/700	1100/1000/700	1100/800/700	1100/900/700
Indoor coil	a.Number of rows	3.0	2	2	2	2
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.3	1.3	1.2	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	e.Tube outside dia. and type	mm	Φ7,Inner groove tube	Φ7,innergroove tube	Φ7,innergroove tube	Φ7,innergroove tube
	f.Coil length x height x width	mm	525x84x13.37+525x105x26.74 +525x105x26.74	605x210x26.74+605x84x26.74	750x210x26.74+ 750x126x26.74	820x210x26.74+ 820x126x26.74
	g.Number of circuits		2	2	4	4
Indoor air flow (Hi/Mi/Lo)		m3/h	416/309/230	515/459/294	750/505/420	1020/830/640
Indoor sound pressure level (Hi)		dB(A)	39/23/20	38/22/21	41/28/20	46/30/26
Indoor sound power level (Hi)		dB(A)	54	56	58	62
Indoor unit	Dimension(W*D*H)	mm	722x187x290	802x189x297	965x215x319	1080x226x335
	Packing (W*D*H)	mm	790x270x375	875x285x380	1045x305x410	1155x415x320
	Net/Gross weight	Kg	7.3/9.7	8.2/10.7	10.8/14.1	12.9/16.5
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
Controller		Wired Control	Remote Control	Remote Control	Remote Control	Remote Control
Operation temperature		°C	17~30	17~30	17~30	17~30
Room tem-perature	Cooling	°C	17~32	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			MSAEAU-09HRFNX-QRD0GW	MSAEBU-12HRFNX-QRD0GW	MSAECU-18HRFNX-QRD0GW	MSAEDU-24HRFNX-QRD0GW
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	9000	12000	18000	25000
	Input	W	24	24	34	62
	Current	A	0.11	0.11	0.15	0.28
Heating	Capacity	Btu/h	10000	14000	19000	26000
	Input	W	24	24	34	62
	current	A	0.11	0.11	0.15	0.28
Indoor fan motor	Model		ZKFP-20-8-6-7	ZKFP-20-8-6-7	ZKFP-30-8-3	ZKFP-58-8-1
	Input	W	50	50	36	58
	Capacitor	uF	/	/	/	/
	Speed(Hi/Mi/Lo)	r/min	1100/900/750	1100/900/750	1100/1000/800	1100/1000/800
Indoor coil	a.Number of rows	3.0	2.0	2.0	2.0	2.0
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.2	1.2	1.2	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia. and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	598x84x13.37+598x105x26.74 +598x84x26.74	598x84x13.37+598x105x26.74 +598x84x26.74	750x189x26.74+ 750x105x26.74	820x189x26.74+ 820x126x26.74
	g.Number of circuits		2	2	3	5
Indoor air flow (Hi/Mi/Lo)		m3/h	549/482/357	549/482/357	809/718/545	978/864/646
Indoor sound pressure level (Hi)		dB(A)	39.5/25.5/22.5	41.5/28/23	44.5/28.5/24	45.5/35.5/27
Indoor sound power level (Hi)		dB(A)	53	54	57	59
Indoor unit	Dimension(W*D*H)	mm	805x193x302	805x193x302	964x222x325	1106x232x342
	Packing (W*D*H)	mm	875x375x290	875x375x290	1045x405x310	1195x420x320
	Net/Gross weight	Kg	8.3/11	8.2/10.9	10.8/14.3	14.3/18.2
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
Controller		Wired Control	Remote Control	Remote Control	Remote Control	Remote Control
Operation temperature		°C	17~30	17~30	17~30	17~30
Room tem-perature	Cooling	°C	17~32	17~32	17~32	17~32
	Heating	°C	0~30	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			MSAGAU-09HRFNX-QRD0GW	MSAGBU-09HRFN8-QRD1GW(GA)	IE2-Y 27M-35M
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	9000	9000	12000
	Input	W	21	23	23
	Current	A	0.09	0.10	0.10
Heating	Capacity	Btu/h	10000	10000	13000
	Input	W	21	23	23
	current	A	0.09	0.10	0.10
Indoor fan motor	Model		ZKFP-20-8-6-7	ZKFP-13-8-4	ZKFP-13-8-4
	Input	W	50	18.2	18.2
	Capacitor	uF	/	/	/
	Speed(Hi/Mi/Lo)	r/min	1050//700	1050/450	1050//700
Indoor coil	a.Number of rows		2	2	2
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.3	1.3	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	525x84x13.37+525x105x26.74+525x 105x26.74	605x210x26.74+605x105x26.74	605x210x26.74+605x105x26.74
	g.Number of circuits		2	2	2
Indoor air flow (Hi/Mi/Lo)		m3/h	460/330/260	510/360/300	530/400/350
Indoor sound pressure level (Hi)		dB(A)	37.0/32.0/22.0	37/0/22	37.0/32.0/22.0
Indoor sound power level (Hi)		dB(A)	54	55	55
Indoor unit	Dimension(W*D*H)	mm	726x210x291	835x295x208	835x208x295
	Packing (W*D*H)	mm	790x270x375	905x355x290	905x355x290
	Net/Gross weight	Kg	8.0/10.5	8.7/11.5	8.7/11.5
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ9.52(1/4"/3/8")
Controller		Wired Control	Remote Control	Remote Control	Remote Control
Operation temperature		°C	16~30	16~30	16~30
Room tempera-ture	Cooling	°C	16~32	16~32	16~32
	Heating	°C	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Indoor model			MSAGBU-12HRFN8-QRD1GW(GA)	MSAGCU-18HRFNX-QRD0GW	MSAGDU-24HRFN8-QRD0GW
Power supply (Indoor)		V- Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	12000	18000	24000
	Input	W	23	38	68
	Current	A	0.10	0.17	0.30
Heating	Capacity	Btu/h	13000	19000	25000
	Input	W	23	38	68
	current	A	0.10	0.17	0.30
Indoor fan motor	Model		ZKFP-13-8-4	ZKFP-30-8-3	ZKFP-58-8-1-5
	Input	W	18.2	36.0	58.0
	Capacitor	uF	/	/	/
	Speed(Hi/Mi/Lo)	r/min	1100/900/750	1150/1000/850	1150/1000/850
Indoor coil	a.Number of rows	3.0	2	2	2
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37	21x13.37
	c.Fin spacing	mm	1.3	1.2	1.3
	d.Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	e.Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube	Φ7,Inner groove tube
	f.Coil length x height x width	mm	605x210x26.74+605x105x26.74	750x210x26.74+750x126x26.74	820x210x26.74+820x126x26.74
	g.Number of circuits		2	4	4
Indoor air flow (Hi/Mi/Lo)		m3/h	520/370/310	800/600/500	1090/770/610
Indoor sound pressure level (Hi)		dB(A)	38/33/22	41/37/31	46/37/34.5
Indoor sound power level (Hi)		dB(A)	60	56	62
Indoor unit	Dimension(W*D*H)	mm	835x208x295	969x241x320	1083x244x336
	Packing (W*D*H)	mm	905x355x290	1045x315x405	1155x415x315
	Net/Gross weight	Kg	8.7/11.3	11.2/14.6	13.6/17.3
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	Φ6.35/Φ9.52(1/4"/3/8")	Φ6.35/Φ12.7(1/4"/1/2")	Φ9.52/Φ15.9(3/8"/5/8")
Controller		Wired Control	Remote Control	Remote Control	Remote Control
Operation temperature		°C	16~30	16~30	16~30
Room tempera-ture	Cooling	°C	16~32	16~32	16~32
	Heating	°C	0~30	0~30	0~30

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

Outdoor model			M2OG-14HFN8-Q	M2OC-18HFN8-Q	M2OD-18HFN8-Q
Indoor unit combination			MSAFBU-07HRDNX-QRD0GW	MSAFBU-09HRDN8-QRD0GW	MSAFBU-09HRDN8-QRD0GW
Power Supply (Outdoor)		V-Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	14000(6210~16400)	18000(3860~18000)	18000(3860~19000)
	Input	W	1270(168~1714)	1630(150~2000)	1630(150~2000)
	Rated current	A	5.52(0.73~9.3)	7.1(0.7~9.27)	7.1(0.7~9.21)
	EER	W/W	3.2	3.24	3.24
Heating	Capacity	Btu/h	15000(5220~17400)	19000(6120~19000)	19000(6120~20000)
	Input	W	1185(265~1707)	1390(300~1670)	1390(300~1650)
	Rated current	A	5.15(1.15~9.4)	6.1(1.4~7.74)	6.1(1.4~7.41)
	COP	W/W	3.71	4.01	4.01
Max. input consumption		W	2650	2300	2850
Max. current		A	11.5	12	13
Compressor	Model		KSN140D21UFZ	KSM135D23UFZ	KSN140D21UFZ
	Type		ROTARY	ROTARY	ROTARY
	Brand		GMCC	GMCC	GMCC
	Capacity	Btu/h	4385	4230	4385
	Input	W	1140	1080	1140
	Rated current(RLA)	A	7.50	7.1	7.50
	Locked rotor Amp(LRA)	A	/	/	/
	Thermal protector position		/	/	/
	Capacitor	μF	/	/	/
	Refrigerant oil	ml	VG74 440	VG74/450	VG74 440
Outdoor fan motor	Model		ZKFN-34-8-1-3	ZKFN-40-8-1L-5	ZKFN-34-8-1-3
	Qty		1	1	1
	Output	W	34	40.0	34
	Capacitor	uF	/	/	/
	Speed	r/min	850/750/650	850/750/650	850/750/650
Outdoor coil	Number of rows		1	2.0	2
	Tube pitch(a)x row pitch(b)	mm	21x22	25.4x22	25.4x22
	Fin spacing	mm	1.2	1.4	1.4
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ9.52,Inner groove tube	Φ9.52,Inner groove tube
	Coil length x height x width	mm	870x504x22	860x508x44	860x508x44
	Number of circuits		2	4	4
Outdoor air flow		m3/h	2200	2200	/
Outdoor sound pressure level		dB(A)	56	56	55.5
Outdoor sound power level		dB(A)	64	64	65
Throttle type			EXV+Capillary	EXV+Capillary	EXV+Capillary
Outdoor unit	Dimension(W*D*H)	mm	800x333x554	800x333x554	800x333x554
	Packing (W*D*H)	mm	920x390x615	920x390x625	920x390x615
	Net/Gross weight	Kg	31.8/34.9	36/39	35.5/38.5
Refrigerant type	Type	-	R32	R32	R32
	GWP	-	675	675	675
	Charged quantity	Kg	1.1	1.3	1.25

Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	2 x Φ6.35/Φ9.52(1/4"/3/8")	2 x Φ6.35/Φ9.52(1/4"/3/8")	2 x Φ6.35/Φ9.52(1/4"/3/8")
	Max. length for all rooms	m	40	40	40
	Max. length for one indoor unit	m	25	25	25
	Max. height difference between indoor and outdoor unit	m	15	15	15
	Max. height difference between indoor units	m	10	10	10
Ambient temperature	Cooling	°C	-15~50	-15~50	-15~50
	Heating	°C	-15~24	-15~24	-15~24

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

4).For other combination, refer to the combination table.

Outdoor model			M3OE-27HFN8-Q	M3OF-21HFN8-Q	M3OF-27HFN8-Q
Indoor unit combination			MSAFBU-09HRDN8-QRD0GW	MSAFBU-07HRDNX-QRD0GW	MSAFBU-09HRDN8-QRD0GW
Power Supply (Outdoor)		V-Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	27000(7370~27000)	21000(6619~23420)	27000(10100~29000)
	Input	W	2440(200~3070)	1950(180~2240)	2450(235~3220)
	Rated current	A	10.6(0.9~13.5)	9.0(1.09~9.9)	13.7(2.2~14.3)
	EER	W/W	3.24	3.23	3.23
Heating	Capacity	Btu/h	28800(6400~31500)	22500(5900~24740)	28000(6950~32000)
	Input	W	2270(320~2850)	1780(325~1920)	2100(310~2890)
	Rated current	A	10.0(1.4~12.5)	8.5(1.94~8.5)	12.5(2.5~12.9)
	COP	W/W	3.72	3.71	3.91
Max. input consumption		W	3100	3300	3600
Max. current		A	15	15.5	17.5
Compressor	Model		KTF235D22UMT	KSN140D21UFZ	KTM240D57UMT
	Type		ROTARY	ROTARY	ROTARY
	Brand		GMCC	GMCC	GMCC
	Capacity	Btu/h	7650	4385	7715
	Input	W	2065	1140	2085
	Rated current(RLA)	A	9.4	7.50	9.45
	Locked rotor Amp(LRA)	A	/	/	/
	Thermal protector position		/	/	/
	Capacitor	μF	/	/	/
	Refrigerant oil	ml	RB74A F/670	VG74 440	VG74 670
Outdoor fan motor	Model		ZKFN-50-8-2	ZKFN-50-8-2-3	ZKFN-50-8-2-3
	Qty		1	1	1
	Output	W	50	50	50
	Capacitor	uF	/	/	/
	Speed	r/min	850/750/600	750/650/550	850/650/550
Outdoor coil	Number of rows		2	2	1
	Tube pitch(a)x row pitch(b)	mm	25.4x22	21x22	25.4x22
	Fin spacing	mm	1.4	1.2	1.4
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Unhydrophilic aluminium
	Tube outside dia.and type	mm	Φ9.52,Inner groove tube	Φ7,Inner groove tube	Φ9.52,Inner groove tube
	Coil length x height x width	mm	730x660x44	730x651x44	730x660x22
	Number of circuits		4	4	4
Outdoor air flow		m3/h	2700	/	/
Outdoor sound pressure level		dB(A)	59	57.5	59
Outdoor sound power level		dB(A)	66	65	67
Throttle type			EXV+Capillary	EXV+Capillary	EXV+Capillary
Outdoor unit	Dimension(W*D*H)	mm	845x363x702	845x363x702	845x363x702
	Packing (W*D*H)	mm	965x395x775	965x395x775	965x395x775
	Net/Gross weight	Kg	54.4/59.2	46.8/51.1	51.1/55.8
Refrigerant type	Type	-	R32	R32	R32
	GWP	-	675	675	675
	Charged quantity	Kg	1.57	1.4	1.72

Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7
Refrigerant piping	Liquid side/ Gas side	mm(inch)	3 x Φ6.35/Φ9.52(1/4"/3/8")	3 x Φ6.35/Φ9.52(1/4"/3/8")	3 x Φ6.35/Φ9.52(1/4"/3/8")
	Max. length for all rooms	m	60	60	60
	Max. length for one indoor unit	m	30	30	30
	Max. height difference between indoor and outdoor unit	m	15	15	15
	Max. height difference between indoor units	m	10	10	10
Ambient temperature	Cooling	°C	-15~50	-15~50	-15~50
	Heating	°C	-15~24	-15~24	-15~24

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

4).For other combination, refer to the combination table.

Outdoor model			M4OE-28HFN8-Q	MU2-Y 105M	M5OD-42HFN8-Q	MU2-Y 105M
Indoor unit combination			MSAFBU-07HRDNX-QRD0GW	IZ2-XY 27M	MSAFBU-09HRDN8-QRD0GW	IZ2-XY 27M
Power Supply (Outdoor)		V-Ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	28000(8000~34200)	36000(12430~37000)	42000(10170~42000)	42000(10300~42000)
	Input	W	2550(204~3446)	3300(330~4250)	4320(280~4580)	3810(280~4650)
	Rated current	A	11(1.17~15)	15.0(1.5~18.5)	18.9(1.2~20.0)	16(1.4~20.7)
	EER	W/W	3.23	3.2	2.85	3.23
Heating	Capacity	Btu/h	30000(8100~35800)	37000(9730~41000)	42000(9370~42000)	42000(11800~42000)
	Input	W	2050(431~3050)	2760(470~4210)	3100(510~4000)	3300(650~3800)
	Rated current	A	9(2.55~13.3)	12.1(2.1~18.4)	13.5(2.2~17.6)	14.6(3.0~16.6)
	COP	W/W	4.0	3.93	3.97	3.73
Max. input consumption		W	4150	4600	4700	4700
Max. current		A	19	21.5	22	22
Compressor	Model		KTM240D57UMT	KTF310D43UMT	KTF310D43UMT	KTF310D43UMT
	Type		ROTARY	ROTARY	ROTARY	ROTARY
	Brand		GMCC	GMCC	GMCC	GMCC
	Capacity	Btu/h	7715	10010	10010	10010
	Input	W	2085	2765	2765	2765
	Rated current(RLA)	A	9.45	5.38	5.38	5.38
	Locked rotor Amp(LRA)	A	/	/	/	/
	Thermal protector position		/	EXTERNAL	EXTERNAL	EXTERNAL
	Capacitor	μF	/	/	/	/
	Refrigerant oil	ml	VG74 670	VG74/1000	VG74/1000	VG74/1000
Outdoor fan motor	Model		ZKFN-120-8-2	ZKFN-120-8-2	ZKFN-120-8-2	ZKFN-120-8-2
	Qty		1	1	1	1
	Output	W	120	120	120	120
	Capacitor	uF	/	/	/	/
	Speed	r/min	900/750/600	900/750/600	900/750/600	900/750/600
Outdoor coil	Number of rows		2	2.0	3.0	3
	Tube pitch(a)x row pitch(b)	mm	21x13.37	25.4x22	25.4x22	25.4x22
	Fin spacing	mm	1.4	1.3	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ9.52,Inner groove tube	Φ9.52,Inner groove tube	Φ9.52,Inner groove tube
	Coil length x height x width	mm	1005x756x13.37+ 985x756x13.37	995x762x44	978x762x44+580x762x22	995x762x22+960x762x22+58 0x762x22
	Number of circuits		6	4	4	4
Outdoor air flow		m3/h	/	4000	3850	3850
Outdoor sound pressure level		dB(A)	61.5	61	64	64
Outdoor sound power level		dB(A)	67	67	69	69
Throttle type			EXV+Capillary	EXV+Capillary	EXV+Capillary	EXV+Capillary
Outdoor unit	Dimension(W*D*H)	mm	946x410x810	946x410x810	946x410x810	946x410x810
	Packing (W*D*H)	mm	1090x500x885	1090x500x885	1090x500x885	1090x500x885
	Net/Gross weight	Kg	62.1/67.7	68.8/75.6	73.3/80.4	74.1/79.5
Refrigerant type	Type	-	R32	R32	R32	R32
	GWP	-	675	675	675	675
	Charged quantity	Kg	2.1	2.1	2.4	2.9
Design pressure		MPa	4.3/1.7	4.3/1.7	4.3/1.7	4.3/1.7

Refrigerant piping	Liquid side/ Gas side	mm(inch)	4 x Φ6.35/3x Φ9.52+1xΦ12.7(4x1/4"/3x3/8"+1x1/2")	4 x Φ6.35/3x Φ9.52+1xΦ12.7(4x1/4"/3x3/8"+1x1/2")	5 x Φ6.35/4x Φ9.52+1xΦ12.7(5x1/4"/4x3/8"+1x1/2")	5 x Φ6.35/4x Φ9.52+1xΦ12.7(5x1/4"/4x3/8"+1x1/2")
	Max. length for all rooms	m	80	80	80	80
	Max. length for one indoor unit	m	35	35	35	35
	Max. height difference between indoor and outdoor unit	m	15	15	15	15
	Max. height difference between indoor units	m	10	10	10	10
Ambient temperature	Cooling	°C	-15~50	-15~50	-15~50	-15~50
	Heating	°C	-15~24	-15~24	-15~24	-15~24

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

4).For other combination, refer to the combination table.

Outdoor model			M2OH-14HFN8-Q	MU2-Y 53M
Indoor unit combination			MSAFBU-07HRDNX-QRD0GW	IZ2-XY 27M
Power Supply (Outdoor)		V-Ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	14000(5100~17000)	18000(7800~19500)
	Input	W	1270(115~1672)	1635(690~2000)
	Rated current	A	5.8(1.12~7.35)	7.3(3.20~9.00)
	EER	W/W	3.23	3.23
Heating	Capacity	Btu/h	15000(5200~17000)	19000(8200~19600)
	Input	W	1185(253~1592)	1500(600~1780)
	Rated current	A	5.4(1.9~7.0)	6.6(2.80~7.95)
	COP	W/W	3.71	3.71
Max. input consumption		W	2750	3050
Max. current		A	12	13.0
Compressor	Model		KSN140D58UFZ	KSN140D58UFZ
	Type		ROTARY	ROTARY
	Brand		GMCC	GMCC
	Capacity	Btu/h	4315	4315
	Input	W	1090	1090
	Rated current(RLA)	A	7.15	7.15
	Locked rotor Amp(LRA)	A	/	/
	Thermal protector position		/	/
	Capacitor	μF	/	/
	Refrigerant oil	ml	ESTER OIL VG74 440	ESTER OIL VG74 440
Outdoor fan motor	Model		ZKFN-34-10-1-3	ZKFN-34-10-1-3
	Qty		1	1
	Output	W	34	34
	Capacitor	uF	/	/
	Speed	r/min	760/700/500	760/700/500
Outdoor coil	Number of rows		1.0	2.0
	Tube pitch(a)x row pitch(b)	mm	21x22	21x22
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ9.52,Inner groove tube
	Coil length x height x width	mm	870x504x44	860*504*44
	Number of circuits		2	4
Outdoor air flow		m3/h	2100	2100
Outdoor sound pressure level		dB(A)	56	54.0
Outdoor sound power level		dB(A)	64	65
Throttle type			EXV+Capillary	EXV+Capillary
Outdoor unit	Dimension(W*D*H)	mm	805x330x554	805x330x554
	Packing (W*D*H)	mm	915x370x615	915x370x615
	Net/Gross weight	Kg	31.6/34.7	35.0/38.0
Refrigerant type	Type	-	R32	R32
	GWP	-	675	675
	Charged quantity	Kg	1.1	1.25
Design pressure		MPa	4.3/1.7	4.3/1.7

Refrigerant piping	Liquid side/ Gas side	mm(inch)	2 x Φ6.35/Φ9.52(1/4"/3/8")	2 x Φ6.35/Φ9.52(1/4"/3/8")
	Max. length for all rooms	m	40	40
	Max. length for one indoor unit	m	25	25
	Max. height difference between indoor and outdoor unit	m	15	15
	Max. height difference between indoor units	m	10	10
Ambient temperature	Cooling	°C	-15~50	-15~50
	Heating	°C	-15~24	-15~24

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

4).For other combination, refer to the combination table.

Outdoor model			M3OG-21HFN8-Q	MU2-Y 79M
Indoor unit combination			MSAFBU-07HRDNX-QRD0GW	IZ2-XY 27M
Power Supply (Outdoor)		V-Ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	21000(6800~22500)	27000(10850~28000)
	Input	W	1905(180~2200)	2450(290~3100)
	Rated current	A	8.3(1.8~10.0)	11.2(2.0~13.5)
	EER	W/W	3.23	3.23
Heating	Capacity	Btu/h	22000(6800~22800)	28000(7800~29000)
	Input	W	1738(350~1800)	2210(370~2900)
	Rated current	A	7.6(2.6~8.0)	10.1(2.4~13)
	COP	W/W	3.71	3.71
Max. input consumption		W	3910	4100
Max. current		A	17	18
Compressor	Model		KSN140D58UFZ	KTM240D57UMT
	Type		ROTARY	Twin-ROTARY
	Brand		GMCC	GMCC
	Capacity	Btu/h	4315	7740
	Input	W	1090	2085
	Rated current(RLA)	A	7.15	9.45
	Locked rotor Amp(LRA)	A	/	/
	Thermal protector position		/	/
	Capacitor	μF	/	/
	Refrigerant oil	ml	ESTER OIL VG74 440	ESTER OIL VG74 670
Outdoor fan motor	Model		ZKFN-80-8-3	ZKFN-80-8-3
	Qty		1	1
	Output	W	80	80
	Capacitor	uF	/	/
	Speed	r/min	750/700/600	800/580
Outdoor coil	Number of rows		1.6	2
	Tube pitch(a)x row pitch(b)	mm	21x22	21x13.37
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ7,Inner groove tube	Φ7,Inner groove tube
	Coil length x height x width	mm	900*609*22+540*609*22	900*609*22+865*609*22
	Number of circuits		5	6
Outdoor air flow		m3/h	3000	3000
Outdoor sound pressure level		dB(A)	58.0	58
Outdoor sound power level		dB(A)	65	67
Throttle type			EXV+Capillary	EXV+Capillary
Outdoor unit	Dimension(W*D*H)	mm	890x342x673	890x342x673
	Packing (W*D*H)	mm	1030x438x750	1030x438x750
	Net/Gross weight	Kg	43.3/47.1	48/51.8
Refrigerant type	Type	-	R32	R32
	GWP	-	675	675
	Charged quantity	Kg	1.5	1.85
Design pressure		MPa	4.3/1.7	4.3/1.7

Refrigerant piping	Liquid side/ Gas side	mm(inch)	3 x Φ6.35/Φ9.52(1/4"/3/8")	3 x Φ6.35/Φ9.52(1/4"/3/8")
	Max. length for all rooms	m	60	60
	Max. length for one indoor unit	m	30	30
	Max. height difference between indoor and outdoor unit	m	15	15
	Max. height difference between indoor units	m	10	10
Ambient temperature	Cooling	°C	-15~50	-15~50
	Heating	°C	-15~24	-15~24

Notes:

1) Capacities are based on the following conditions:

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

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

2) Capacities are Net Capacities.

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

4).For other combination, refer to the combination table.

4. Indoor Unit Combination

M2OG-14HFN8-Q, MU2-Y 41M

One Unit	Two Units	
7	7+7	9+9
9	7+9	9+12
12	7+12	
18		

M2OC-18HFN8-Q, M2OD-18HFN8-Q, M2OE-18HFN8-Q

One Unit	Two Units	
7	7+7	9+9
9	7+9	9+12
12	7+12	12+12
18		

M3OF-21HFN8-Q, MU2-Y 61M

One Unit	Two Units		Three Units	
7	7+7	9+9	7+7+7	7+9+9
9	7+9	9+12	7+7+9	9+9+9
12	7+12	9+18	7+7+12	
18	7+18	12+12		

M3OE-27HFN8-Q, M3OF-27HFN8-Q, MU2-Y 79M

One Unit	Two Units			Three Units		
7	7+7	7+18	9+18	7+7+7	7+9+12	9+9+12
9	7+9	9+9	12+12	7+7+9	7+12+12	9+12+12
12	7+12	9+12	12+18	7+7+12	9+9+9	12+12+12
18				7+9+9		

MU2-Y 82M

One Unit	Two Units			Three Units			Four Units	
7	7+7	9+9	12+12	7+7+7	7+9+12	9+9+12	7+7+7+7	7+9+9+9
9	7+9	9+12	12+18	7+7+9	7+9+18	9+9+18	7+7+7+9	7+9+9+12
12	7+12	9+18	12+24	7+7+12	7+12+12	9+12+12	7+7+7+12	9+9+9+9
18	7+18	9+24	18+18	7+7+18	9+9+9	12+12+12	7+7+9+9	
24	7+24			7+9+9				

MU2-Y 105M

One Unit	Two Units			Three Units			
7	7+7	9+9	12+12	7+7+7	7+9+12	7+18+18	9+12+18
9	7+9	9+12	12+18	7+7+9	7+9+18	9+9+9	9+12+24
12	7+12	9+18	12+24	7+7+12	7+9+24	9+9+12	9+18+18
18	7+18	9+24	18+18	7+7+18	7+12+12	9+9+18	12+12+12
24	7+24			7+7+24	7+12+18	9+9+24	12+12+18
				7+9+9	7+12+24	9+12+12	

Four Units			
7+7+7+7	7+7+9+12	7+9+9+12	9+9+9+12
7+7+7+9	7+7+9+18	7+9+9+18	9+9+9+18
7+7+7+12	7+7+12+12	7+9+12+12	9+9+12+12
7+7+7+18	7+7+12+18	7+12+12+12	9+12+12+12
7+7+9+9	7+9+9+9	9+9+9+9	12+12+12+12

M5OD-42HFN8-Q, MU2-Y 125M

One Unit	Two Units			Three Units				
7	7+7	9+9	12+12	7+7+7	7+9+9	7+12+18	9+9+18	9+18+18
9	7+9	9+12	12+18	7+7+9	7+9+12	7+12+24	9+9+24	12+12+12
12	7+12	9+18	12+24	7+7+12	7+9+18	7+18+18	9+12+12	12+12+18
18	7+18	9+24	18+18	7+7+18	7+9+24	9+9+9	9+12+18	12+12+24
24	7+24			7+7+24	7+12+12	9+9+12	9+12+24	12+18+18

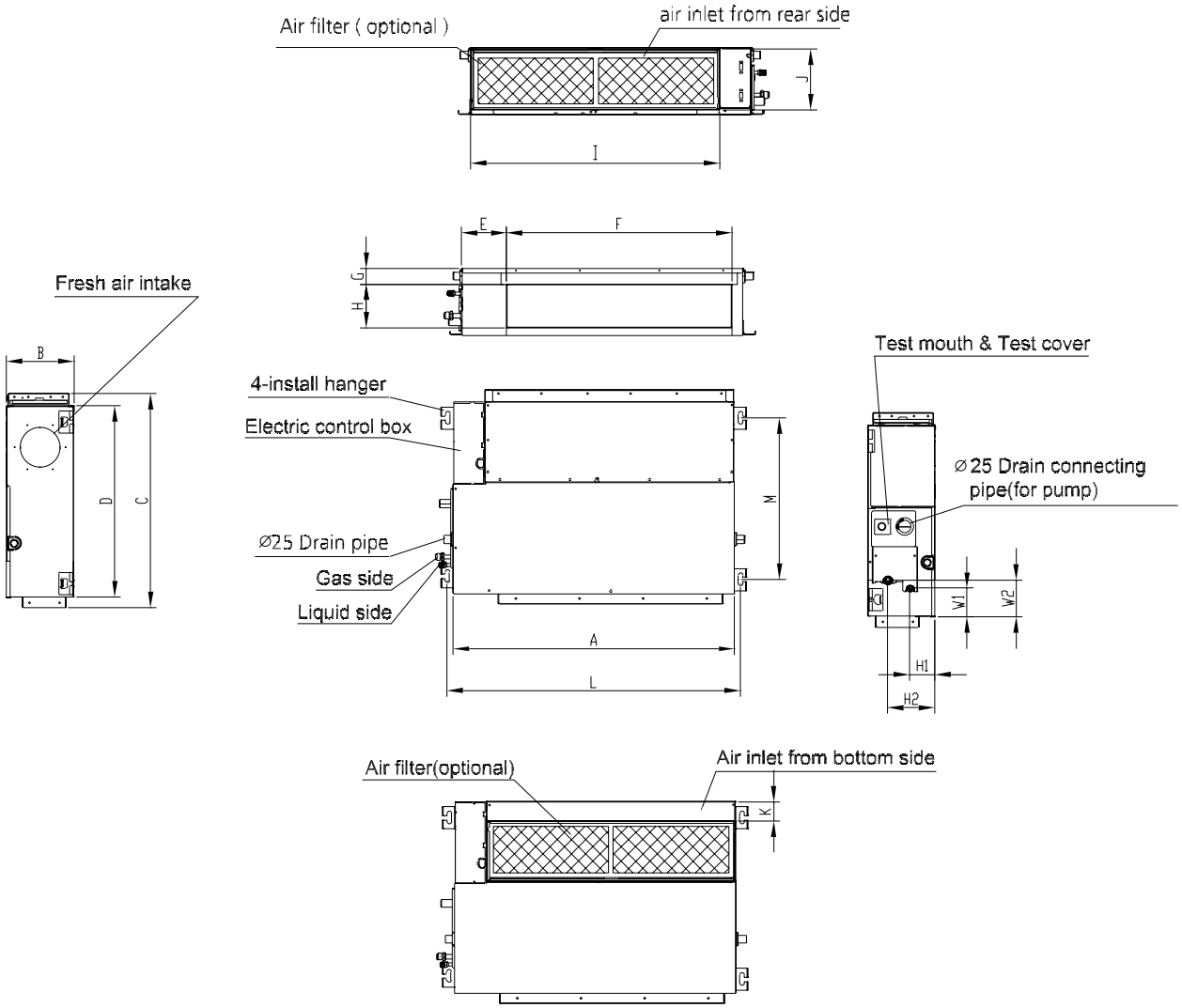
Four Units						
7+7+7+7	7+7+9+9	7+7+12+18	7+9+9+18	7+9+18+18	9+9+9+18	9+12+12+12
7+7+7+9	7+7+9+12	7+7+12+24	7+9+9+24	7+12+12+12	9+9+9+24	9+12+12+18
7+7+7+12	7+7+9+18	7+7+18+18	7+9+12+12	7+12+12+18	9+9+12+12	12+12+12+12
7+7+7+18	7+7+9+24	7+9+9+9	7+9+12+18	9+9+9+9	9+9+12+18	12+12+12+18
7+7+7+24	7+7+12+12	7+9+9+12	7+9+12+24	9+9+9+12	9+9+12+24	

Five Units				
7+7+7+7+7	7+7+7+9+18	7+7+9+12+12	7+9+9+9+18	9+9+9+12+12
7+7+7+7+9	7+7+7+12+12	7+7+9+12+18	7+9+9+12+12	9+9+12+12+12
7+7+7+7+12	7+7+7+12+18	7+7+12+12+12	7+9+12+12+12	
7+7+7+7+18	7+7+9+9+9	7+7+12+12+18	9+9+9+9+9	
7+7+7+9+9	7+7+9+9+12	7+9+9+9+9	9+9+9+9+12	
7+7+7+9+12	7+7+9+9+18	7+9+9+9+12	9+9+9+9+18	

5. Dimensional Drawings

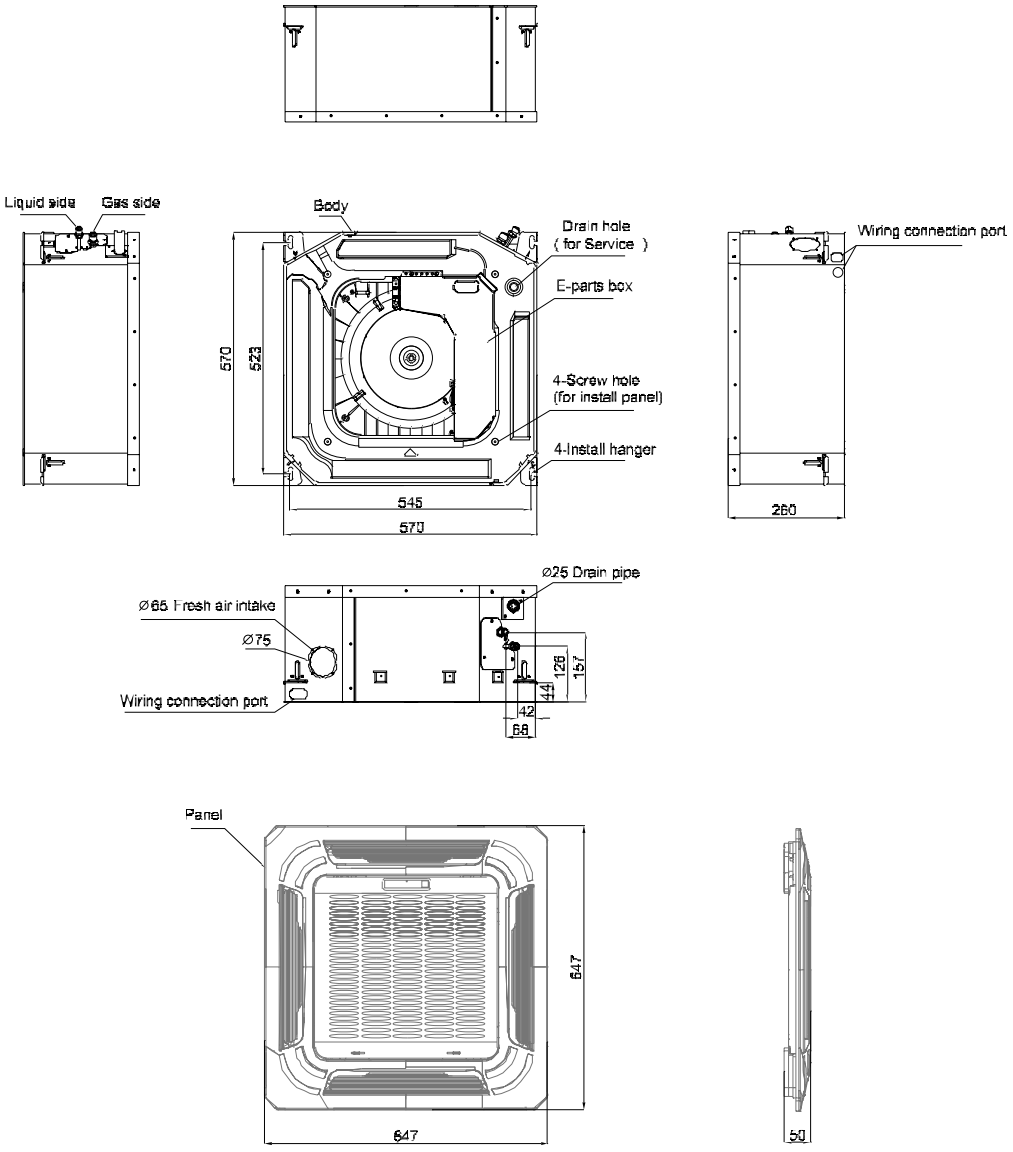
5.1 Indoor Unit

Duct 2
ID3-XY 27M-35M

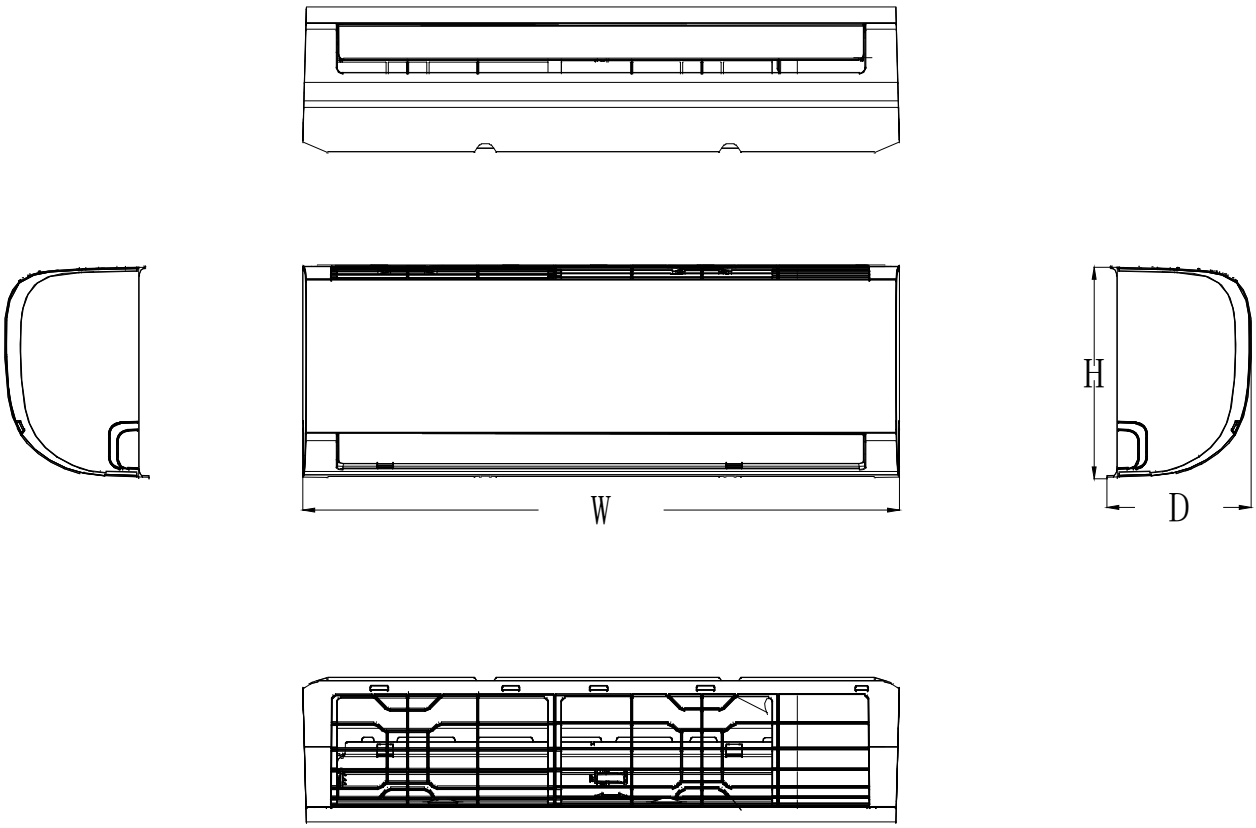


SIZE	unit	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2
27M	mm	700	200	506	450	137	537	30	152	599	186	50	741	360	84	140	84	84
	inch	27.56	7.87	19.92	17.72	5.39	21.14	1.18	5.98	23.58	7.32	1.97	29.17	14.17	3.31	5.51	3.31	3.31
35M	mm	880	210	674	600	140	706	50	136	782	190	40	920	508	78	148	88	112
	inch	34.65	8.27	26.54	23.62	5.51	27.8	1.97	5.35	30.79	7.48	1.57	36.22	20	3.07	5.83	3.46	4.41

Box 650x650
IB3-XY 27M-35M

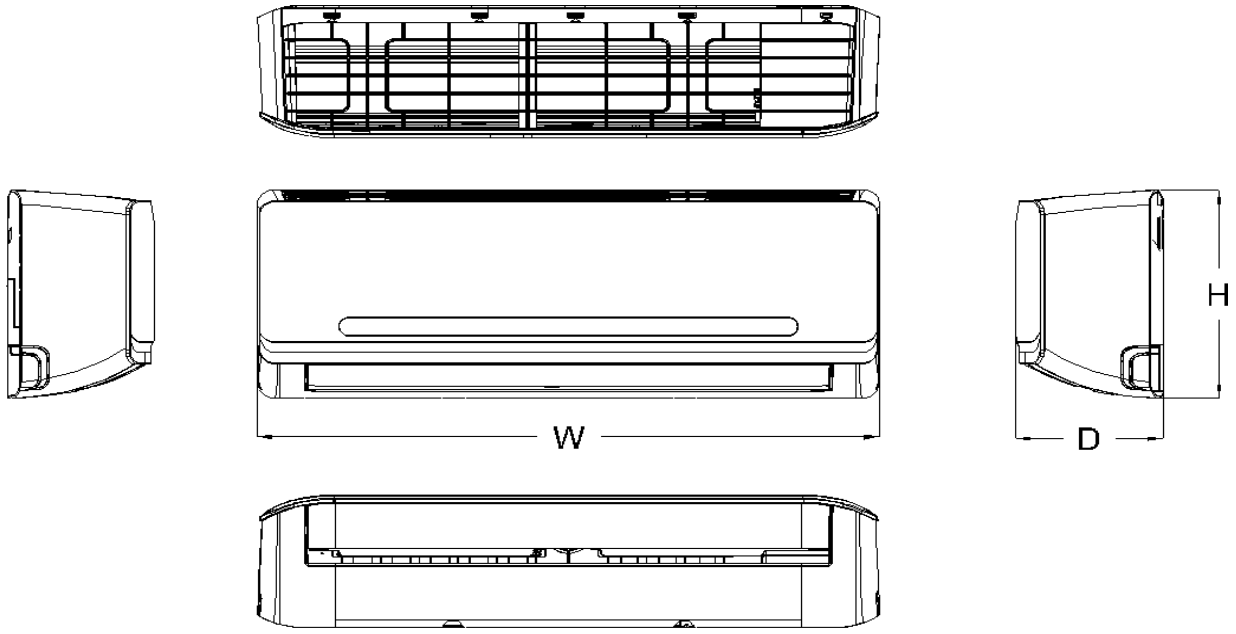


Nativ
IZ2-XY 27M-70M



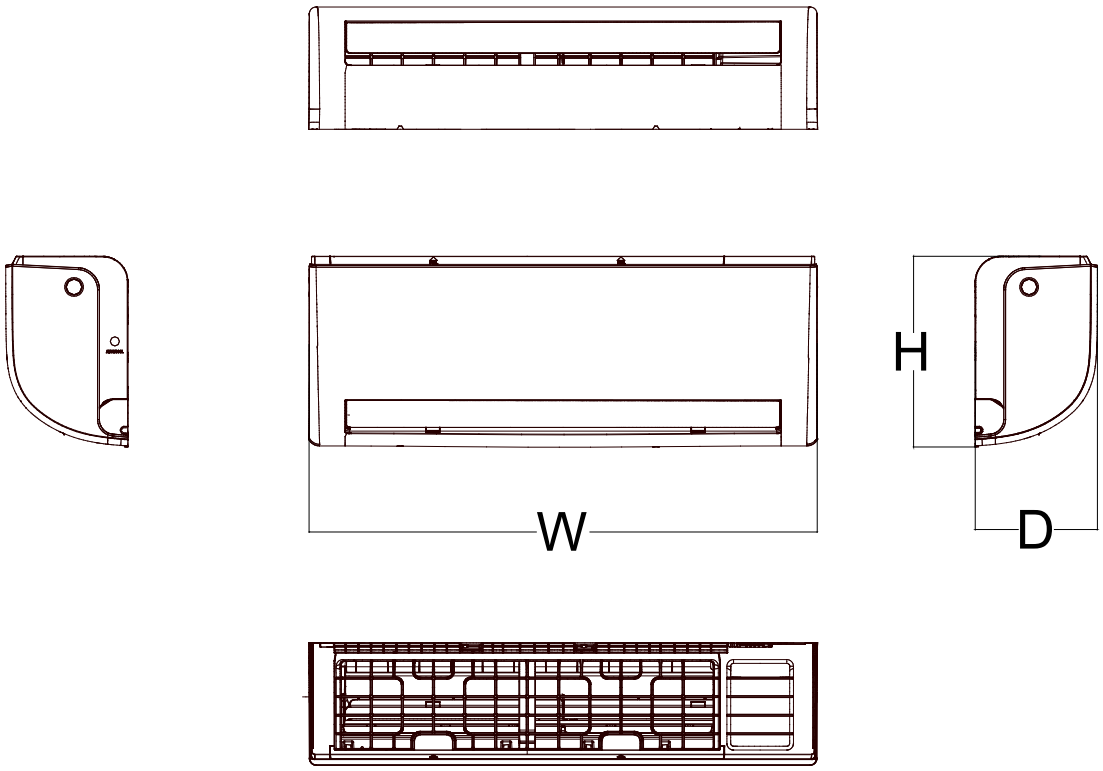
SIZE	unit	W(mm)	D(mm)	H(mm)
27M-35M	mm	805	194	285
	inch	31.7	7.6	11.2
53M	mm	957	213	302
	inch	37.7	8.4	11.9
70M	mm	1040	220	327
	inch	40.9	8.7	12.9

Cristallo / Essential 2
IM2-XY / IL3-XY 20M-70M



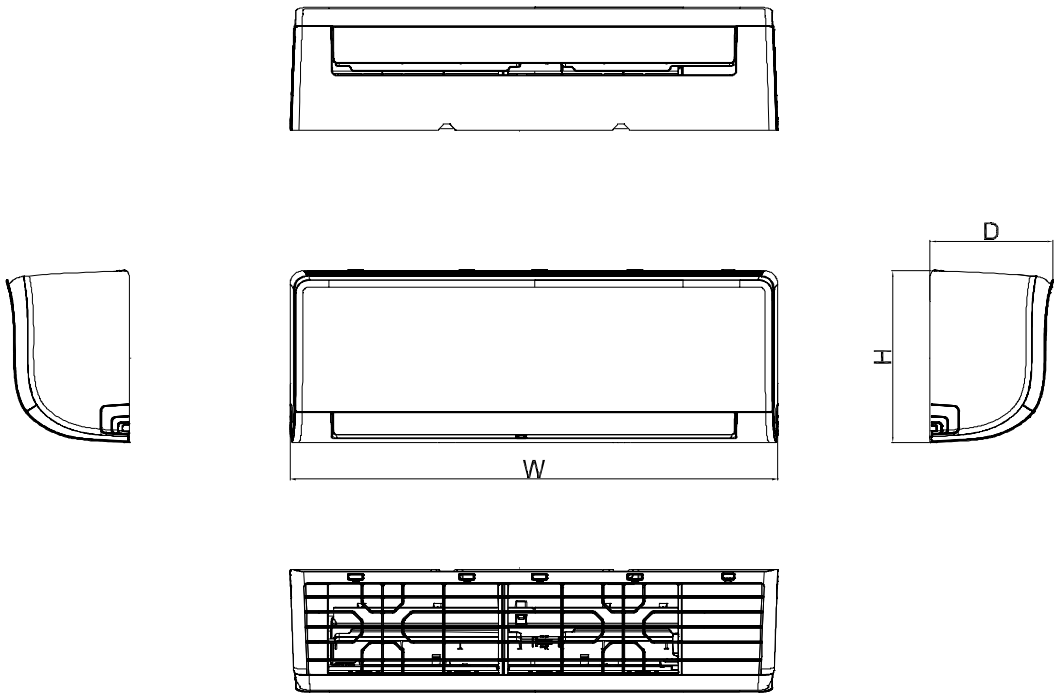
SIZE	W(mm)	D(mm)	H(mm)
20M-27M	722	187	290
35M	802	189	297
53M	965	215	319
70M	1080	226	335

All Easy



Capacity(Btu/h)	W(mm)	D(mm)	H(mm)
9k/12k	805	193	302
18k	964	222	325
24k	1106	232	342

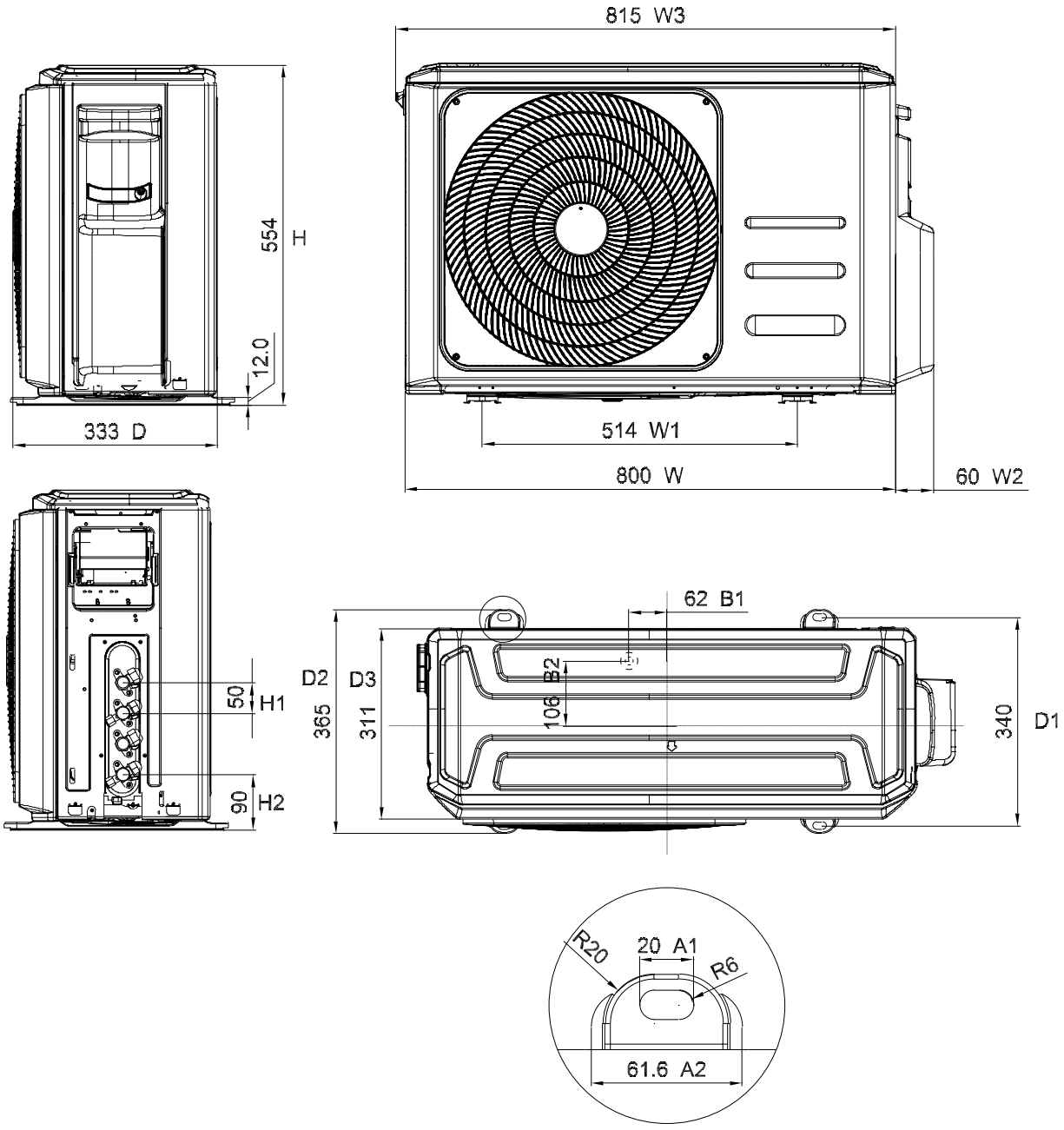
Schiara 2
IE2-Y 27M-35M



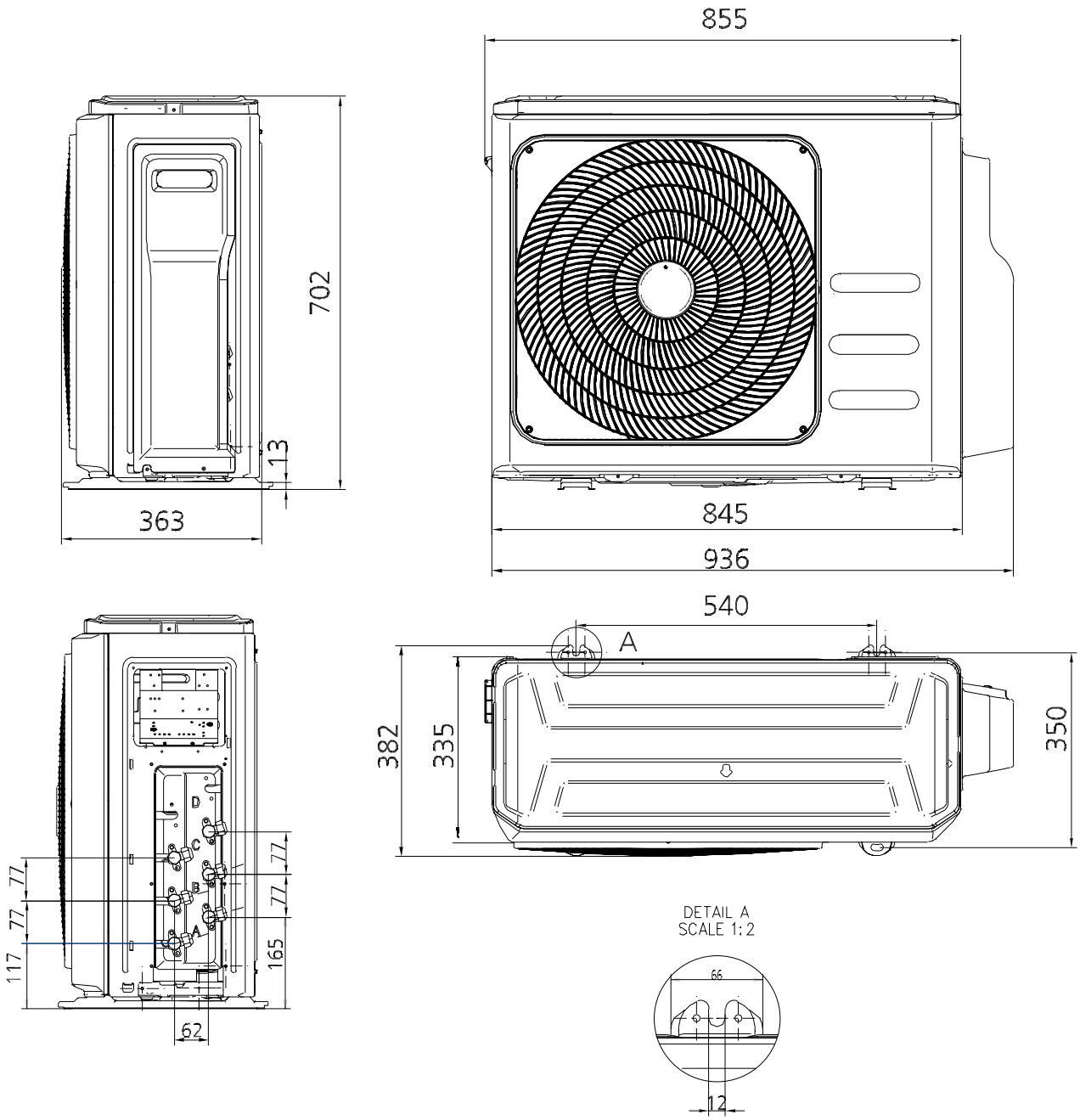
SIZE	W(mm)	D(mm)	H(mm)
27M-35M	835	208	295

5.2 Outdoor Unit

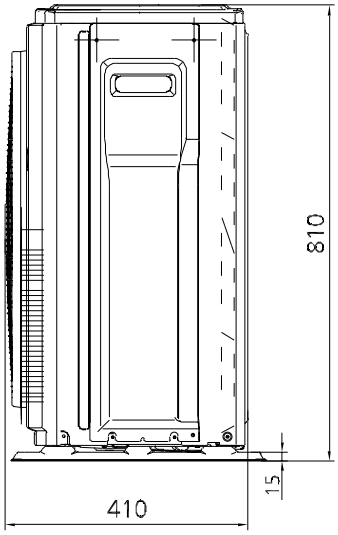
M2OG-14HFN8-Q, M2OC-18HFN8-Q, M2OD-18HFN8-Q

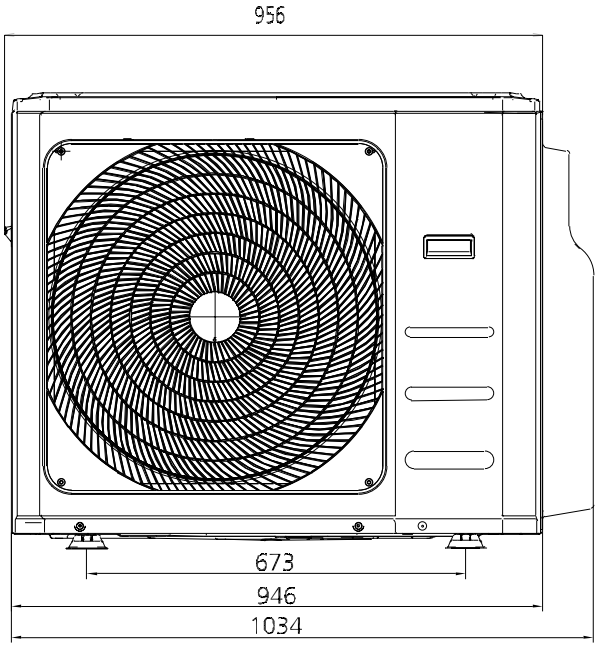


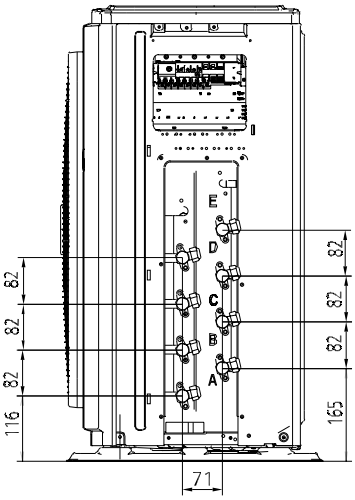
M3OF-21HFN8-Q, M3OE-27HFN8-Q, M3OF-27HFN8-Q

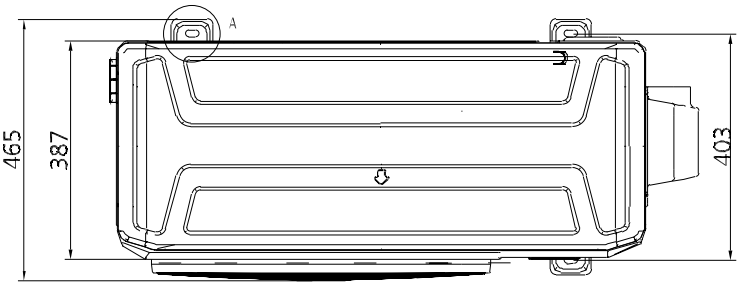


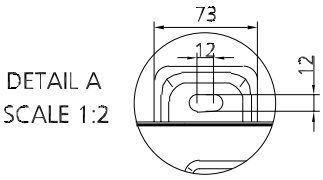
MU2-Y 82M, MU2-Y 105M



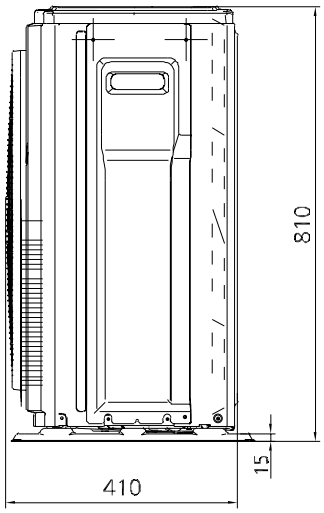


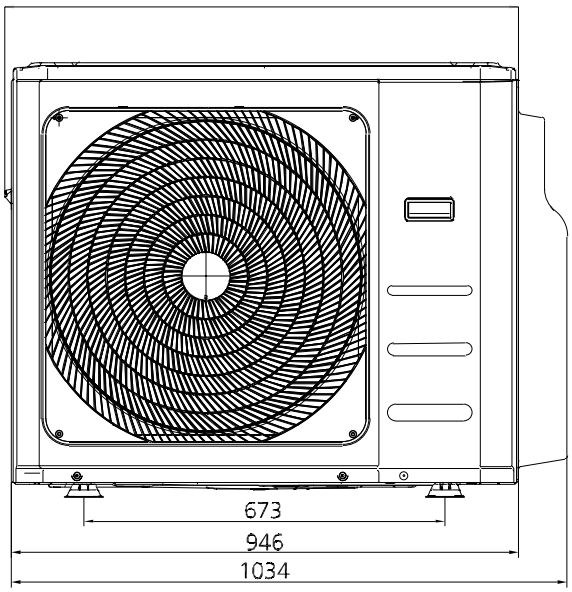


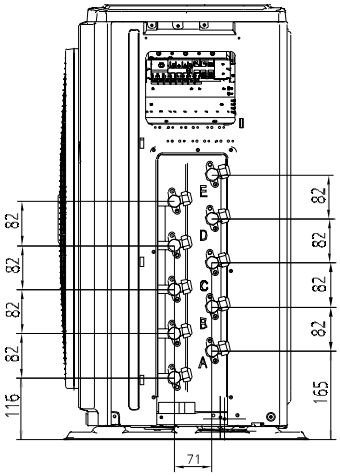


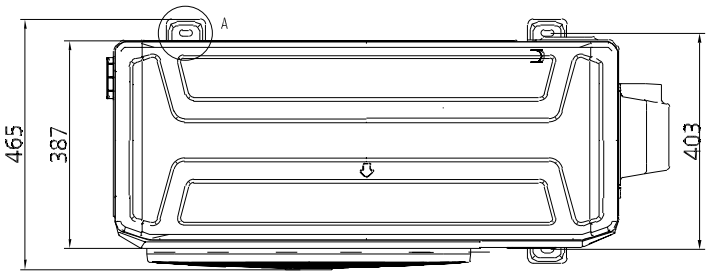


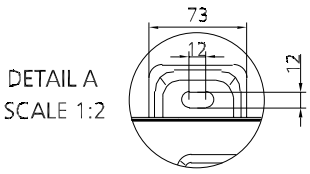
M5OD-42HFN8-Q, MU2-Y 125M



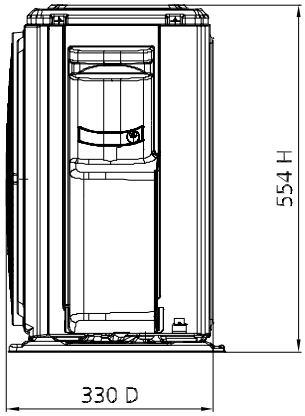


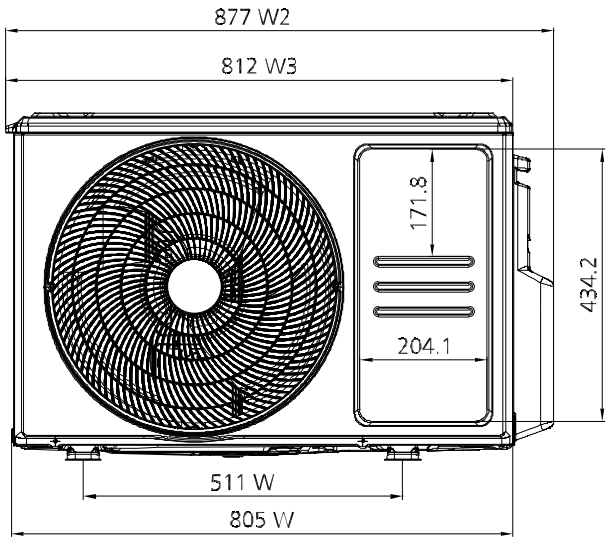


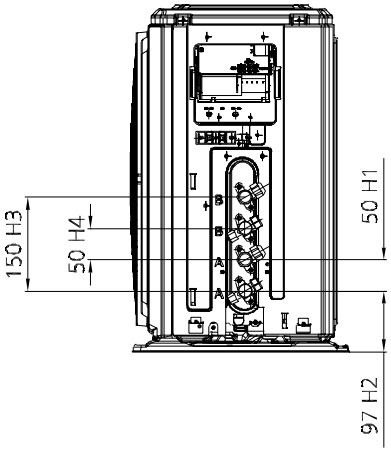


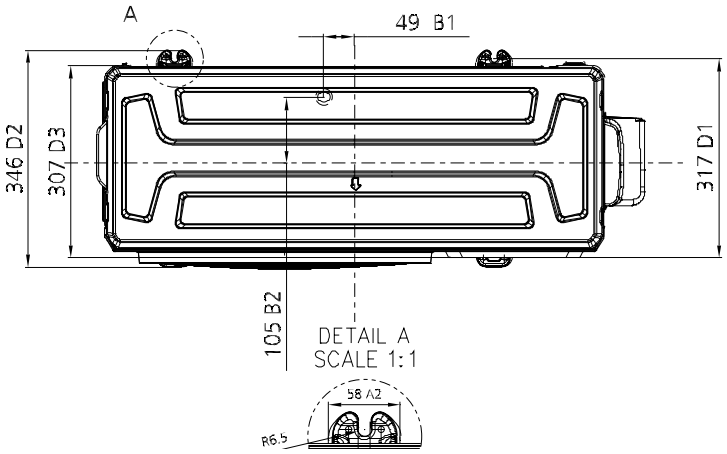


MU2-Y 41M, MU2-Y 35M

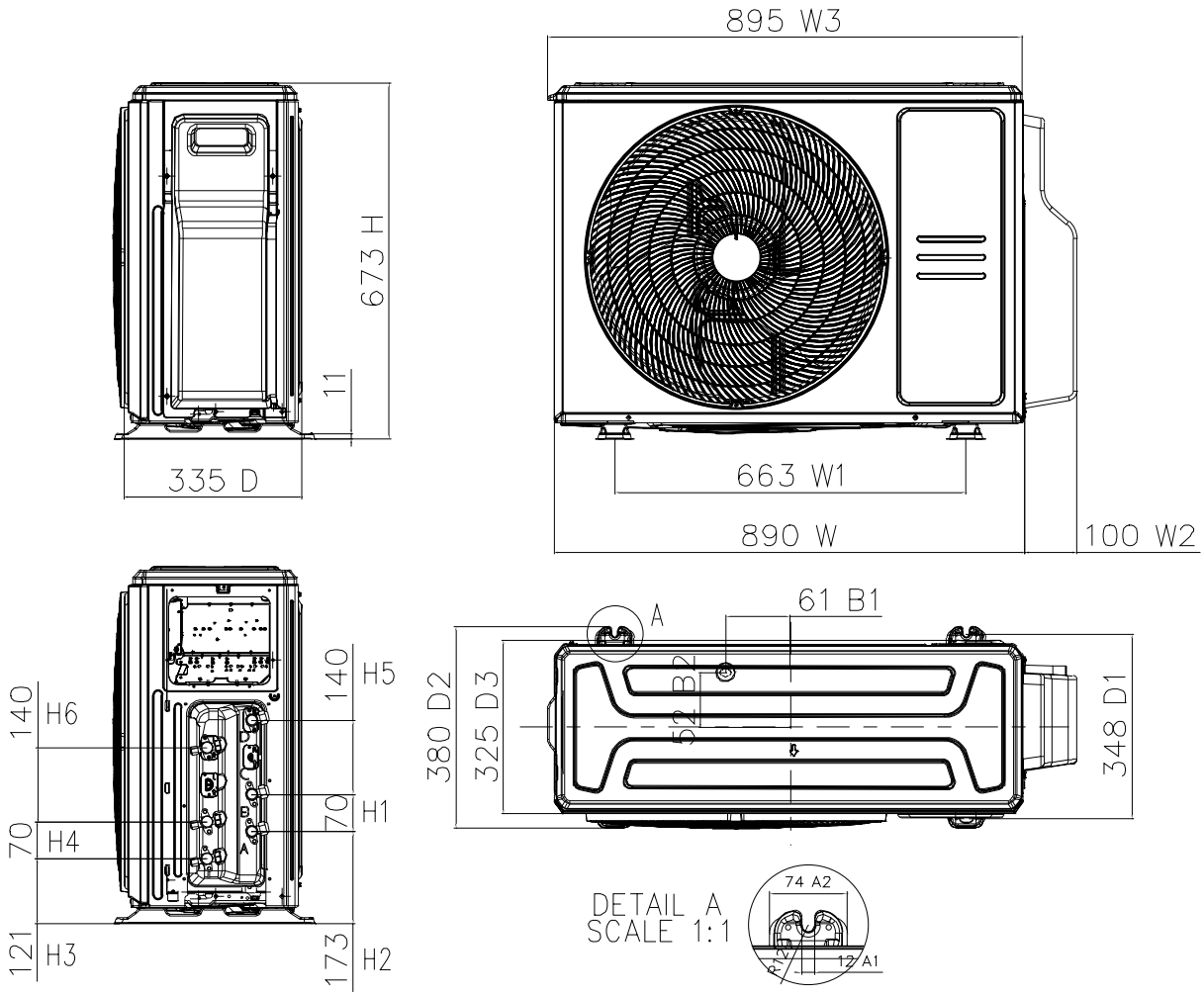








MU2-Y 61M, MU2-Y 79M

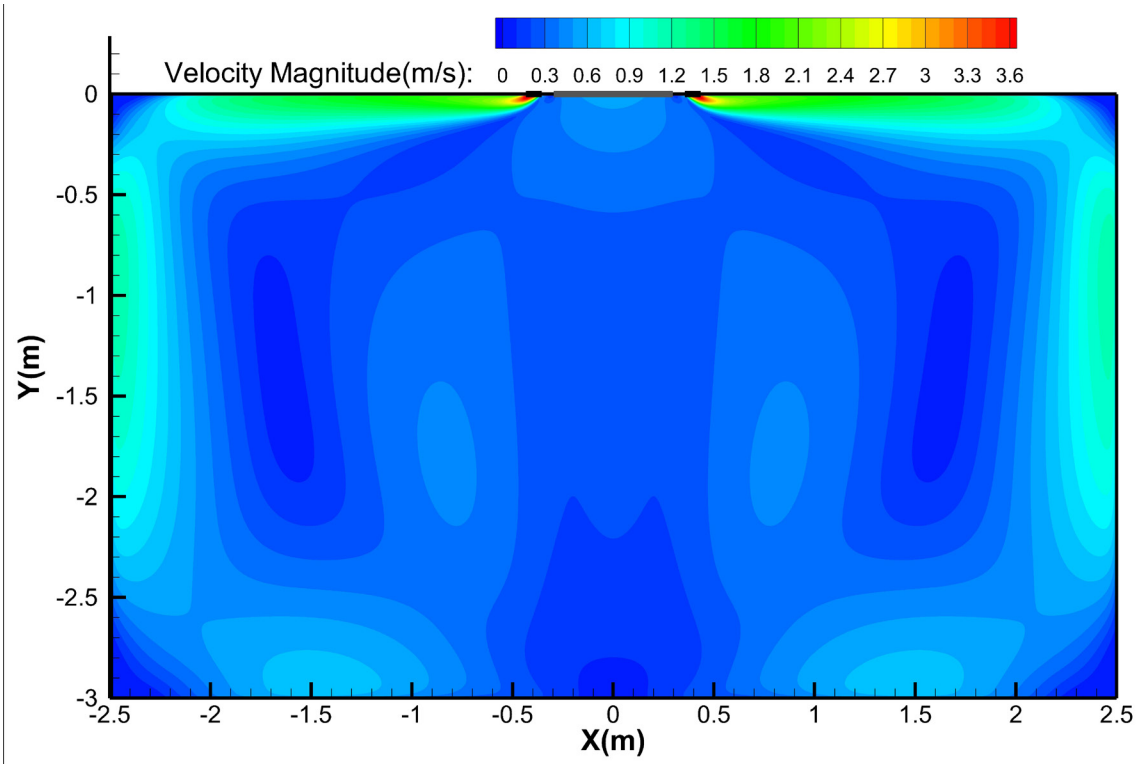


6. Air Velocity and Temperature Distributions

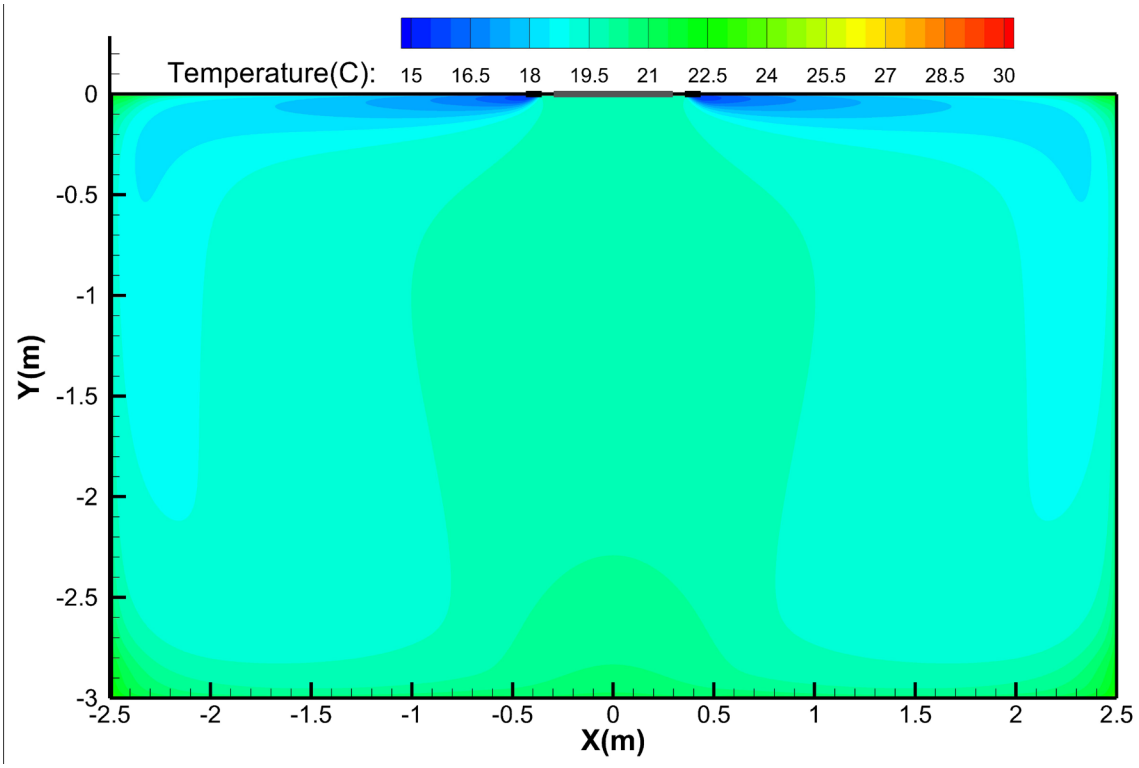
Box 650x650 27M-35M

Discharge Angle 30°

Cooling airflow velocity distributions

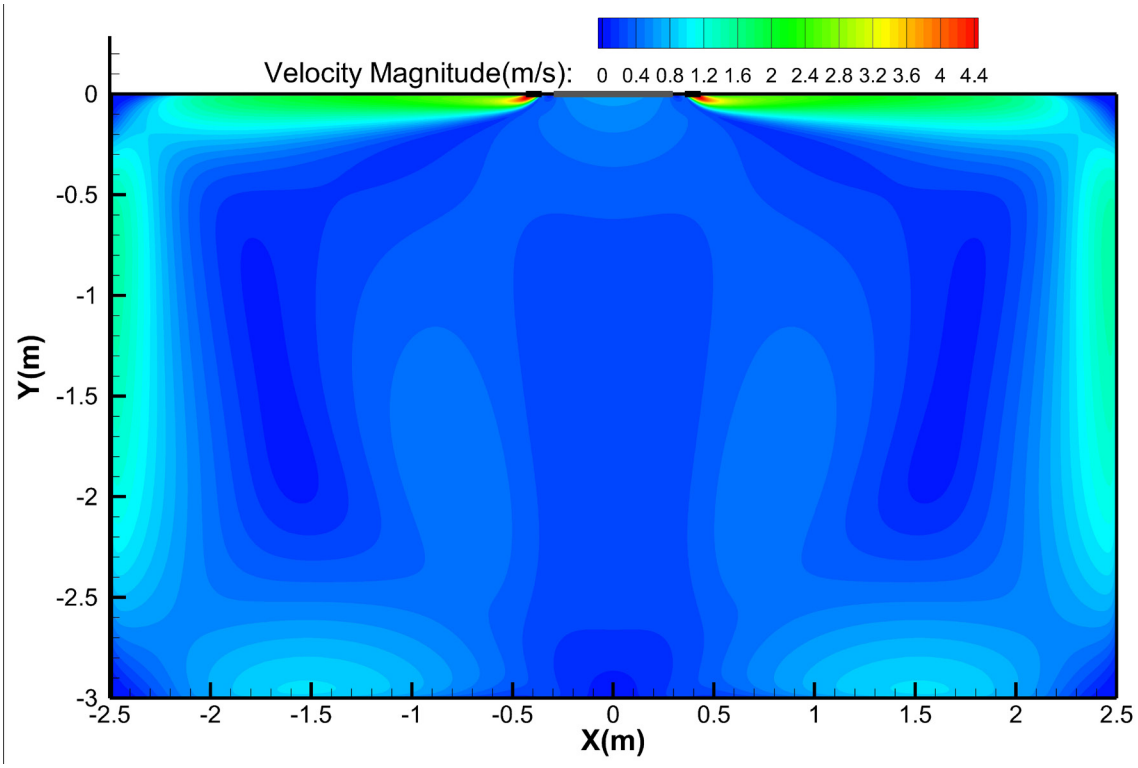


Cooling temperature distributions

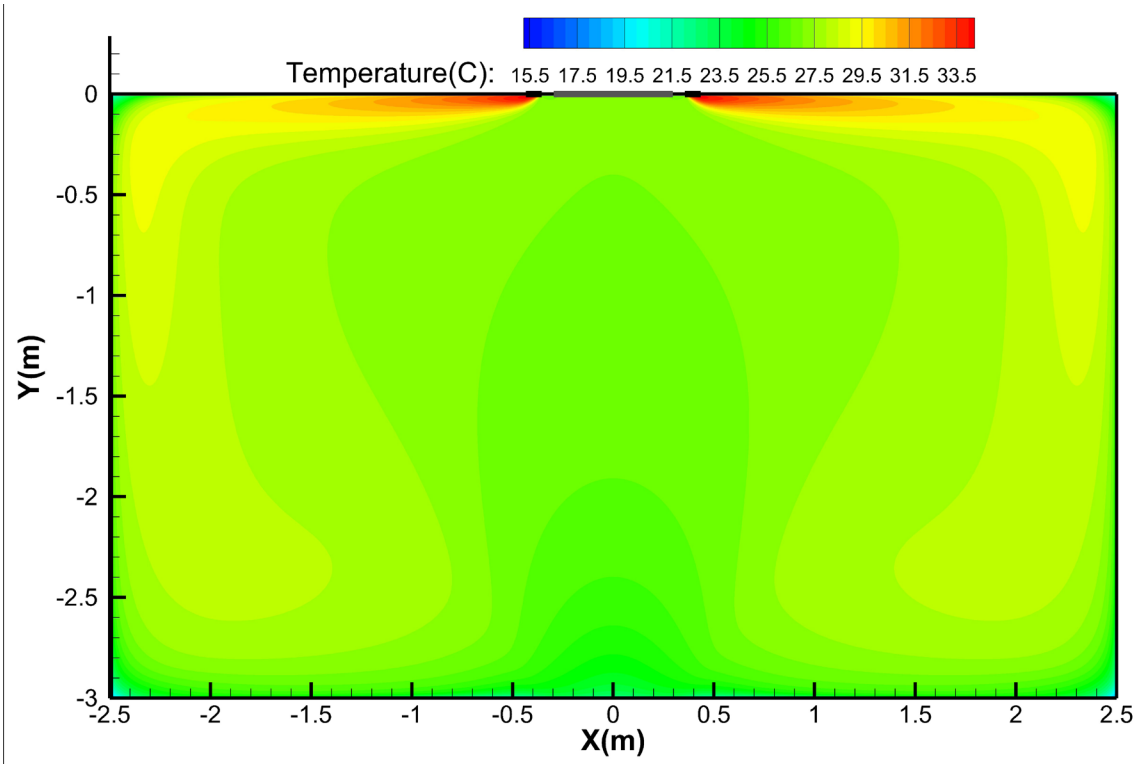


Box 650x650 27M-35M

Heating airflow velocity distributions



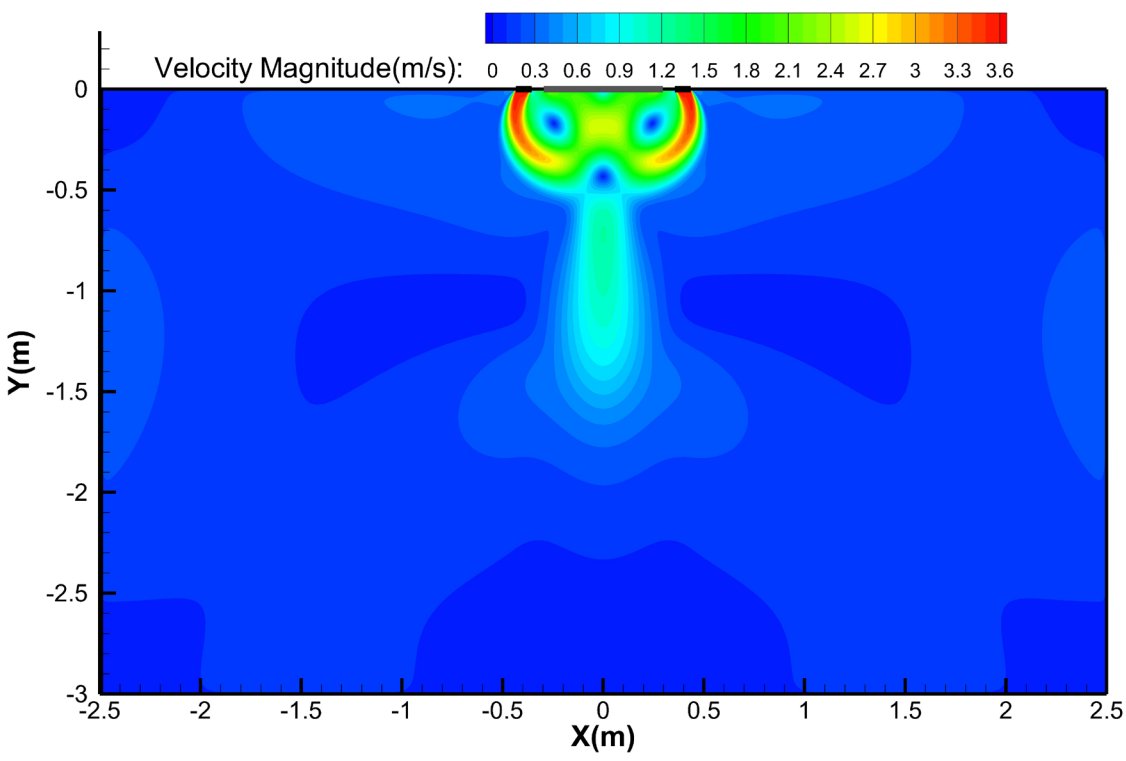
Heating temperature distributions



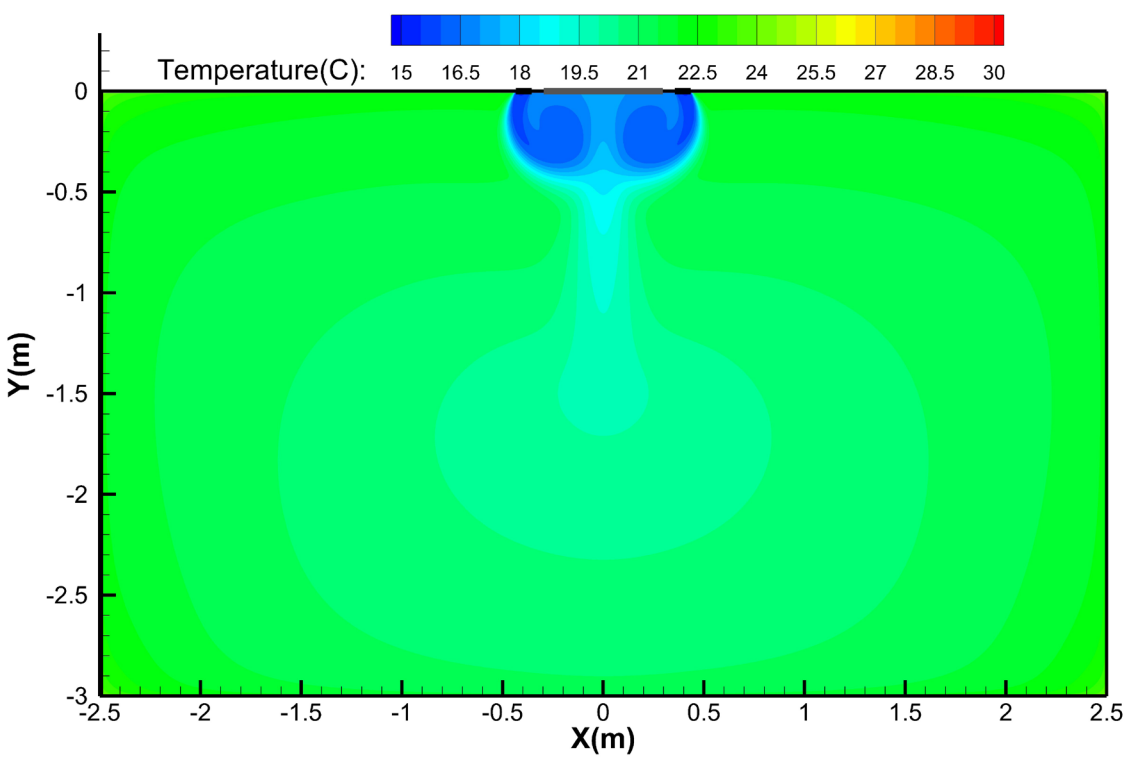
Box 650x650 27M-35M

Discharge Angle 60°

Cooling airflow velocity distributions

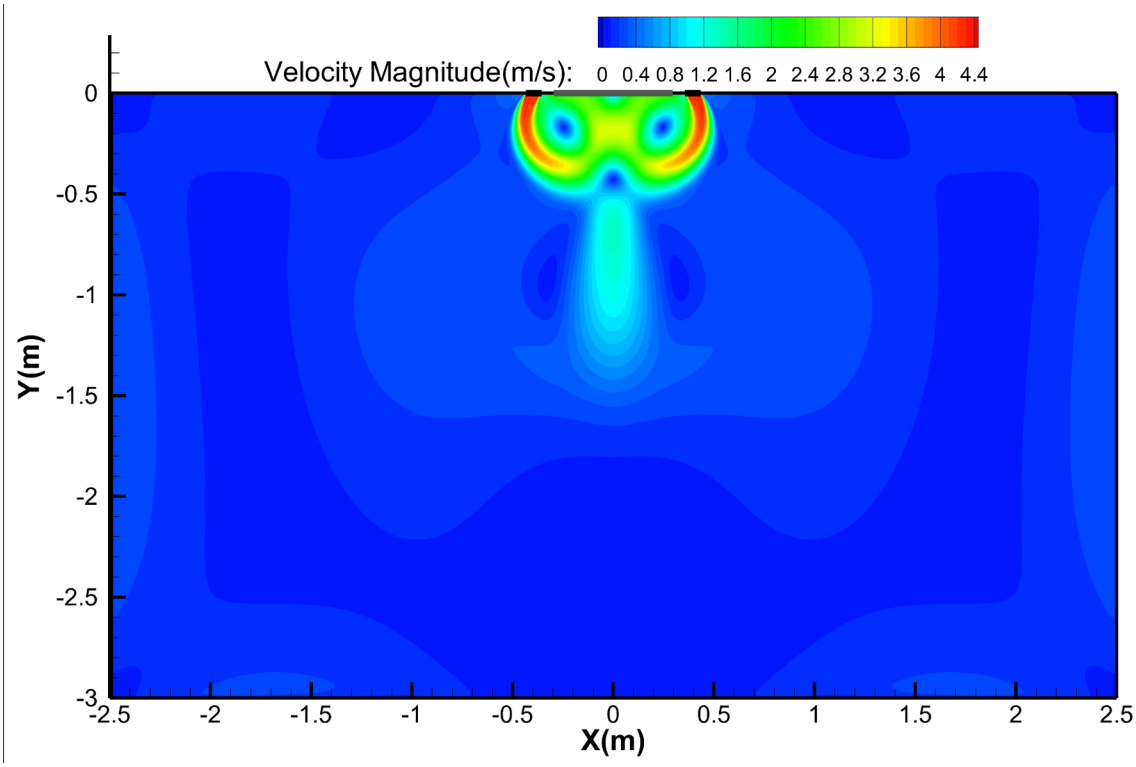


Cooling temperature distributions

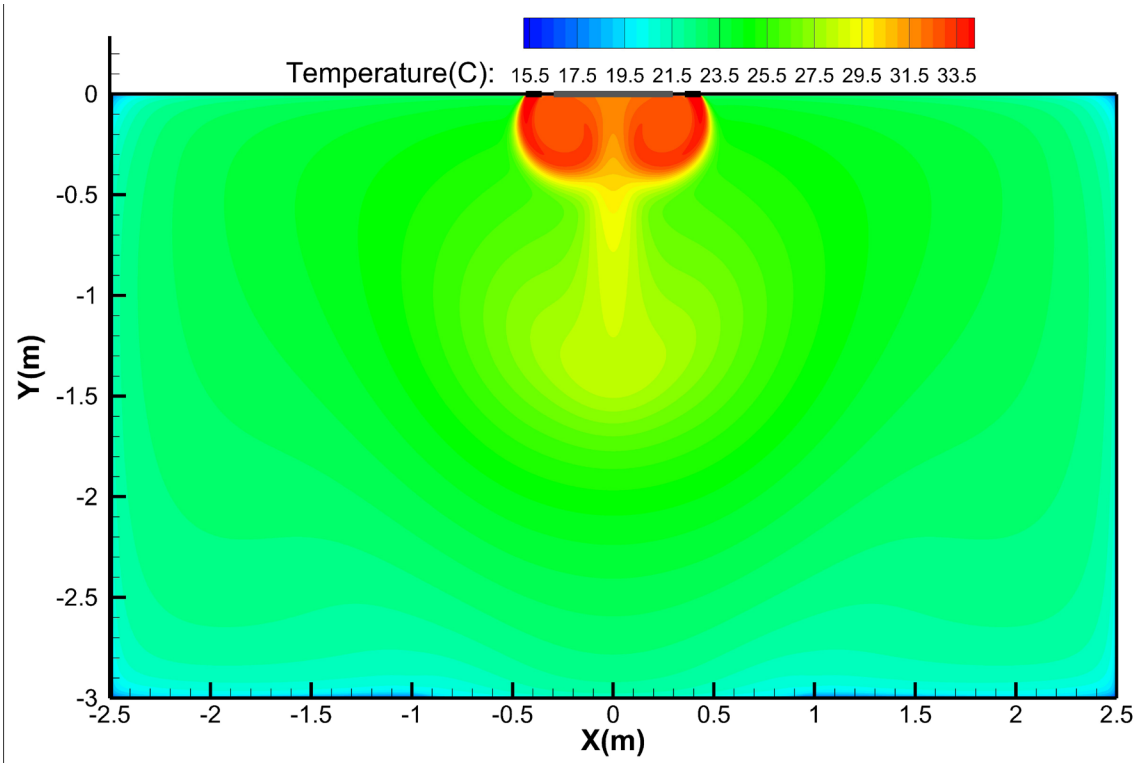


Box 650x650 27M-35M

Heating airflow velocity distributions



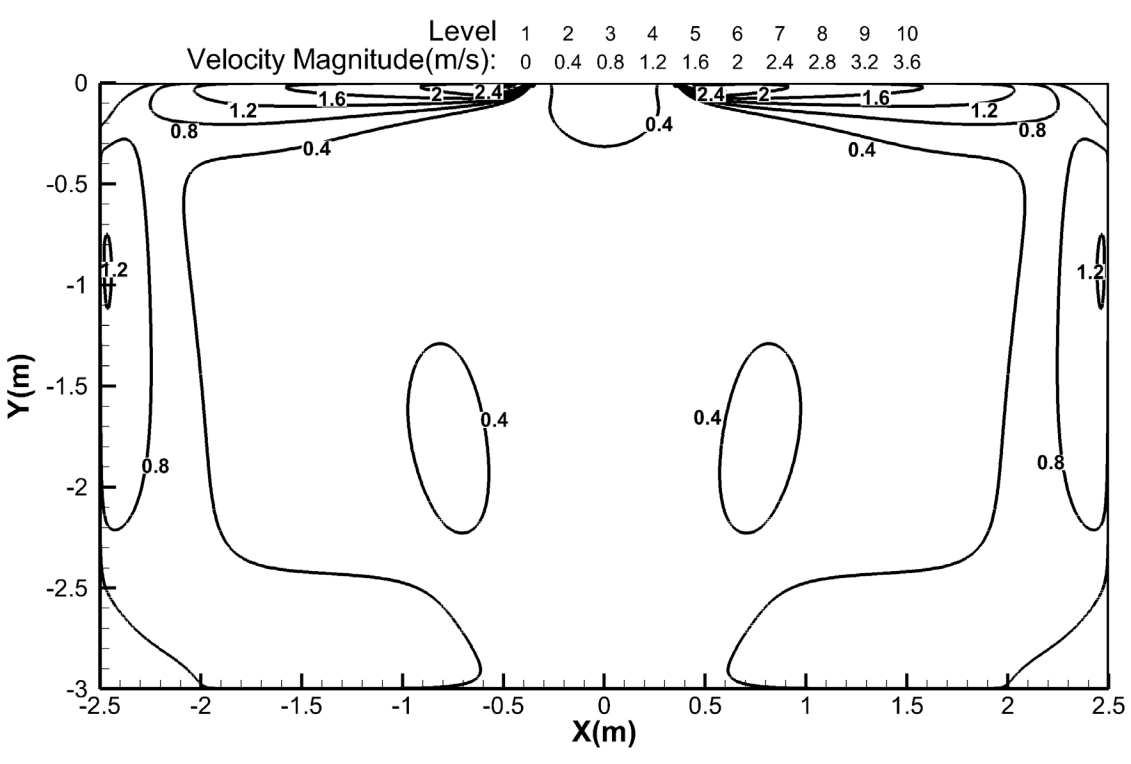
Heating temperature distributions



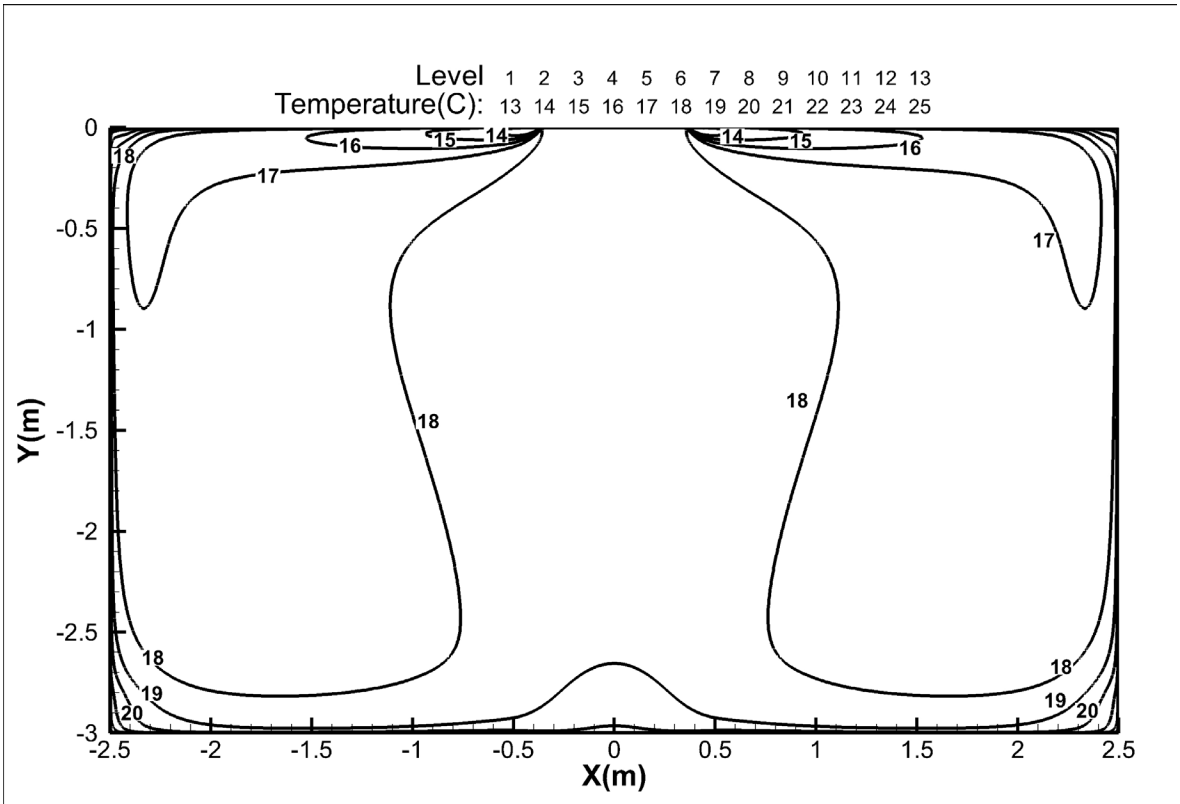
Box 650x650 35M

Discharge Angle 30°

Cooling airflow velocity distributions

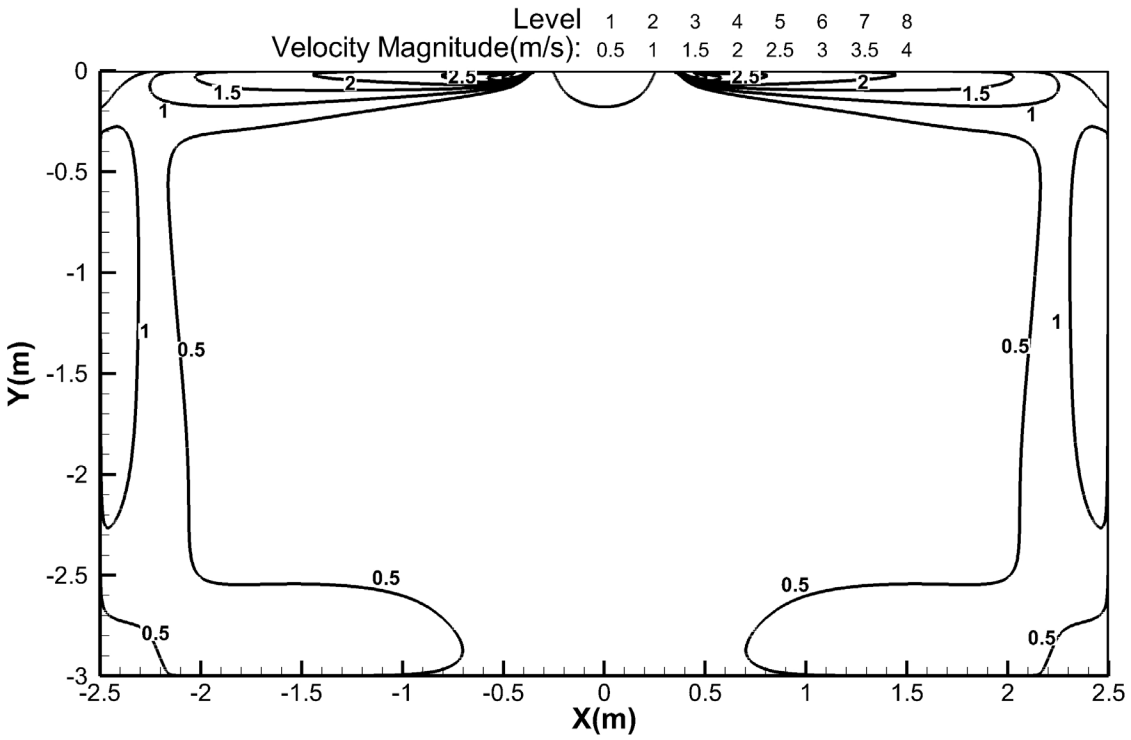


Cooling temperature distributions

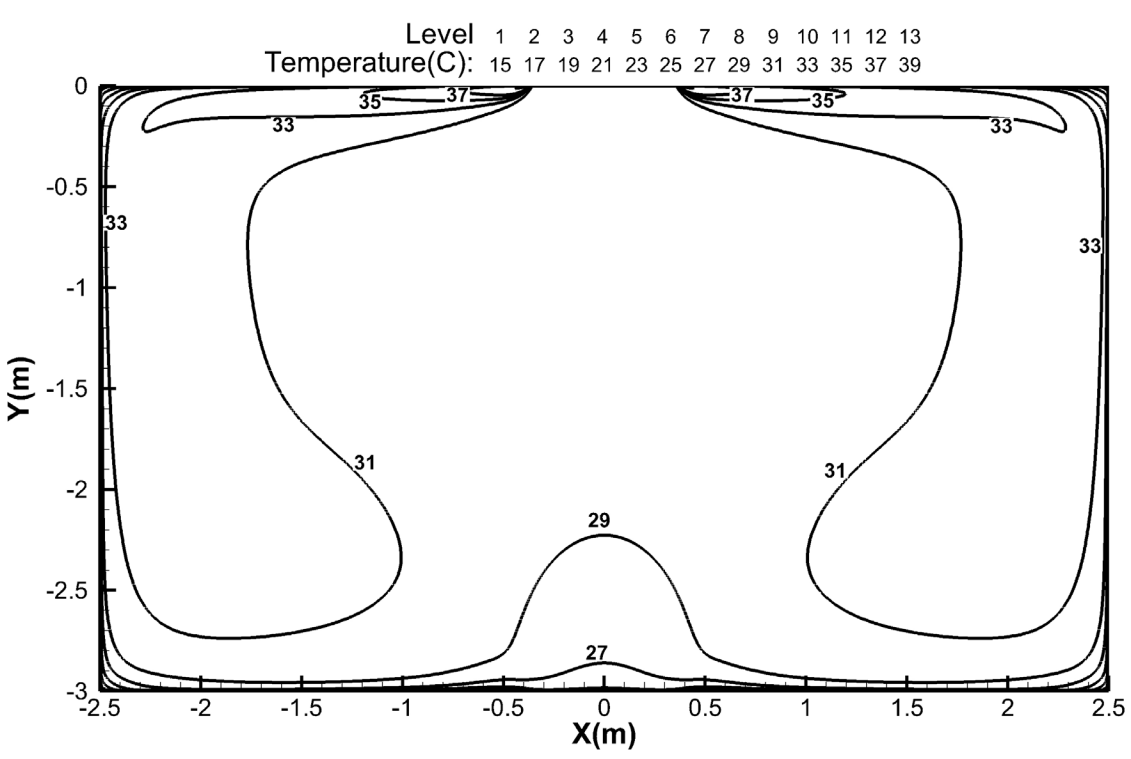


Box 650x650 35M

Heating airflow velocity distributi



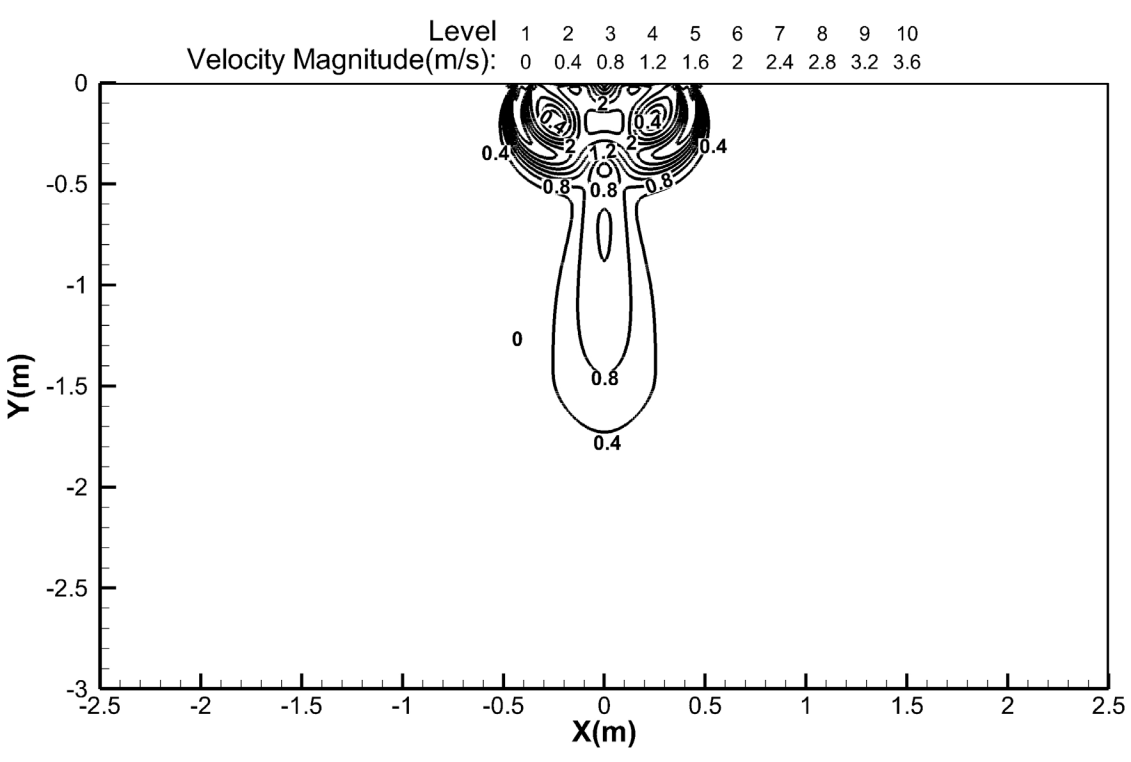
Heating temperature distributions



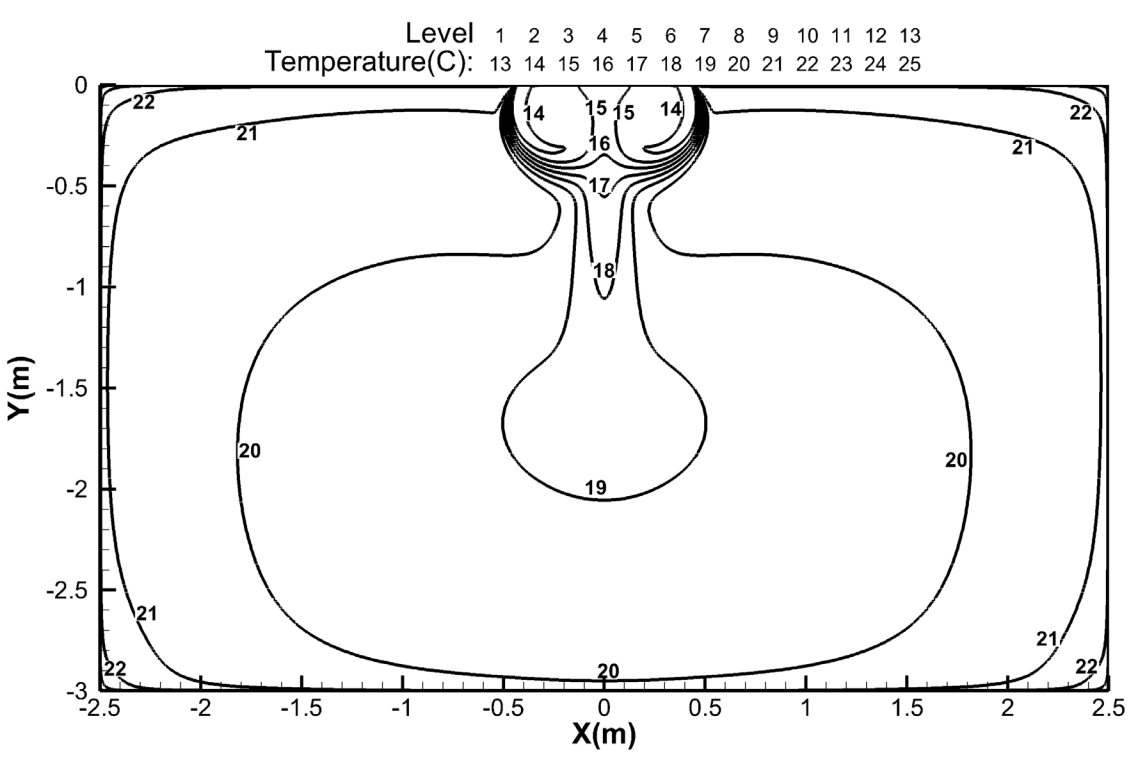
Box 650x650 35M

Discharge Angle 60°

Cooling airflow velocity distributions

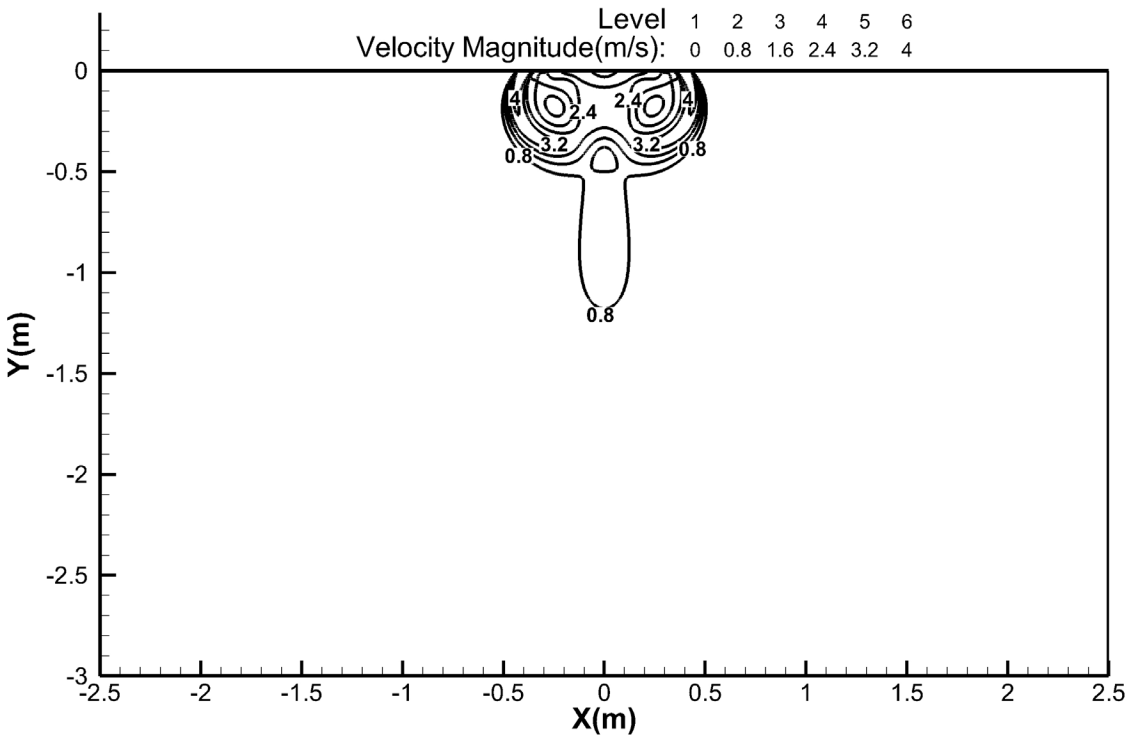


Cooling temperature distributions

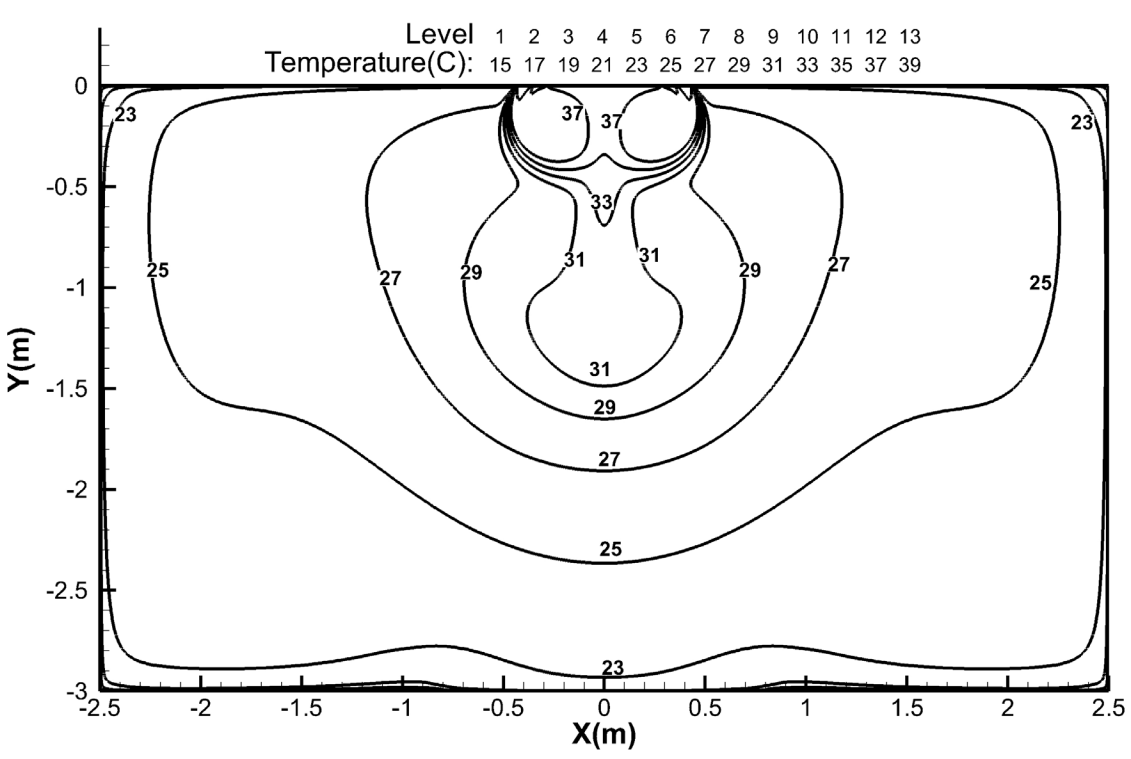


Box 650x650 35M

Heating airflow velocity distributi



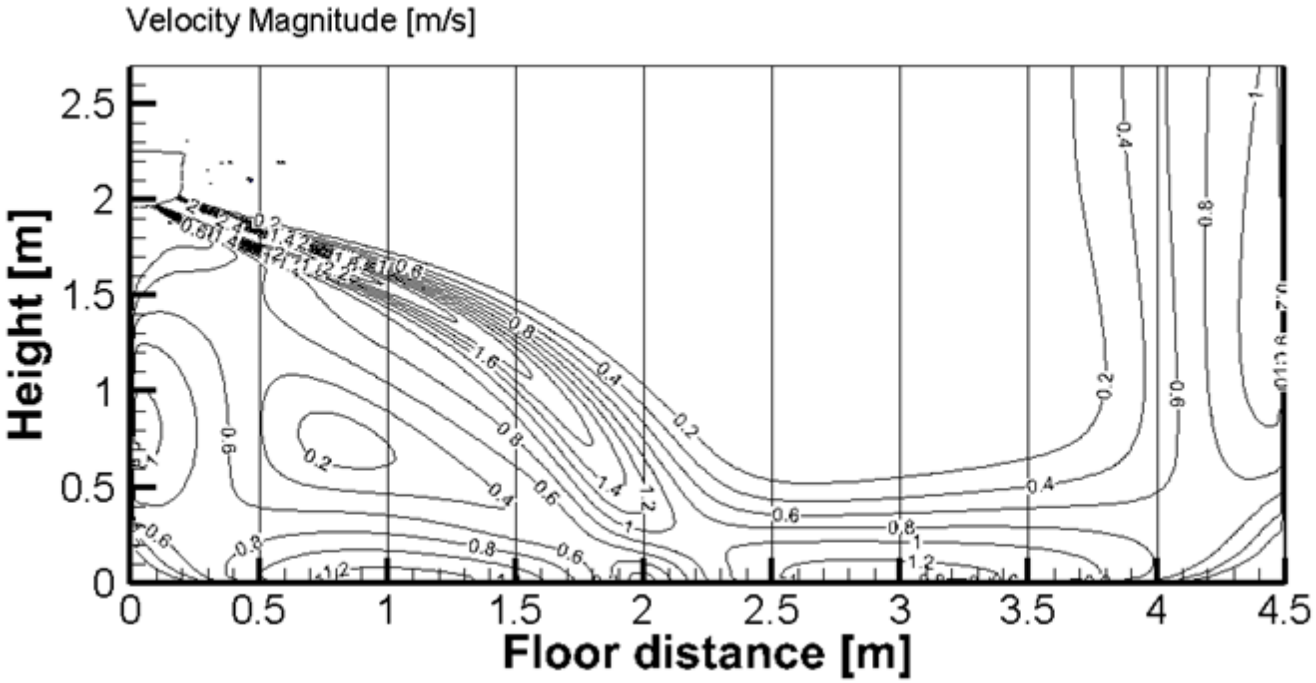
Heating temperature distributions



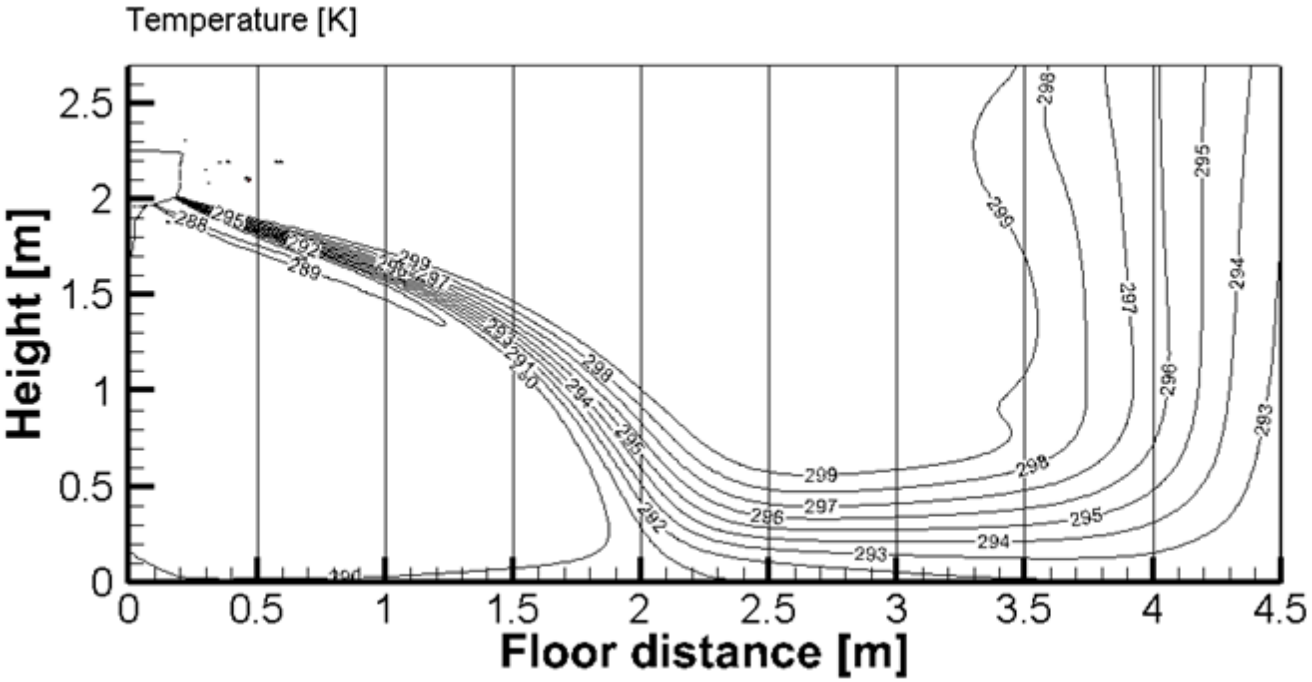
XTREME-9k

Discharge Angle 58°

Cooling airflow velocity distributions



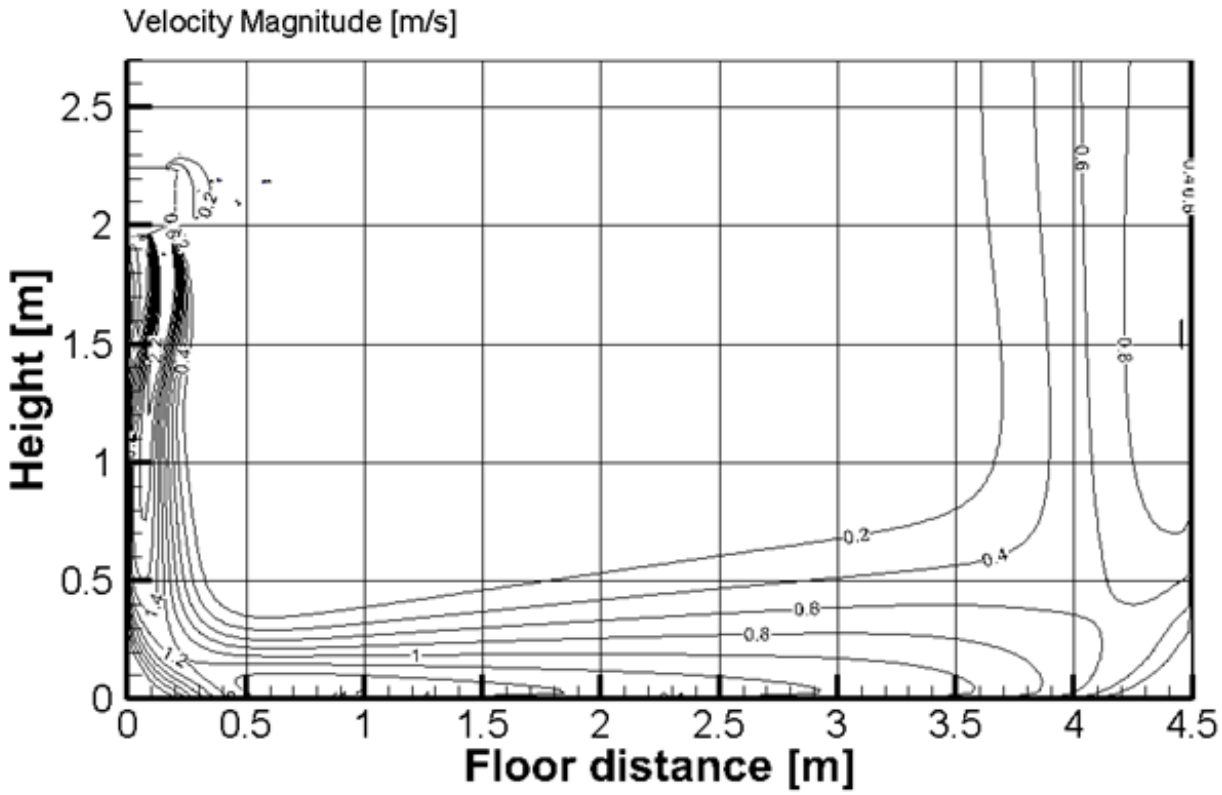
Cooling temperature distributions



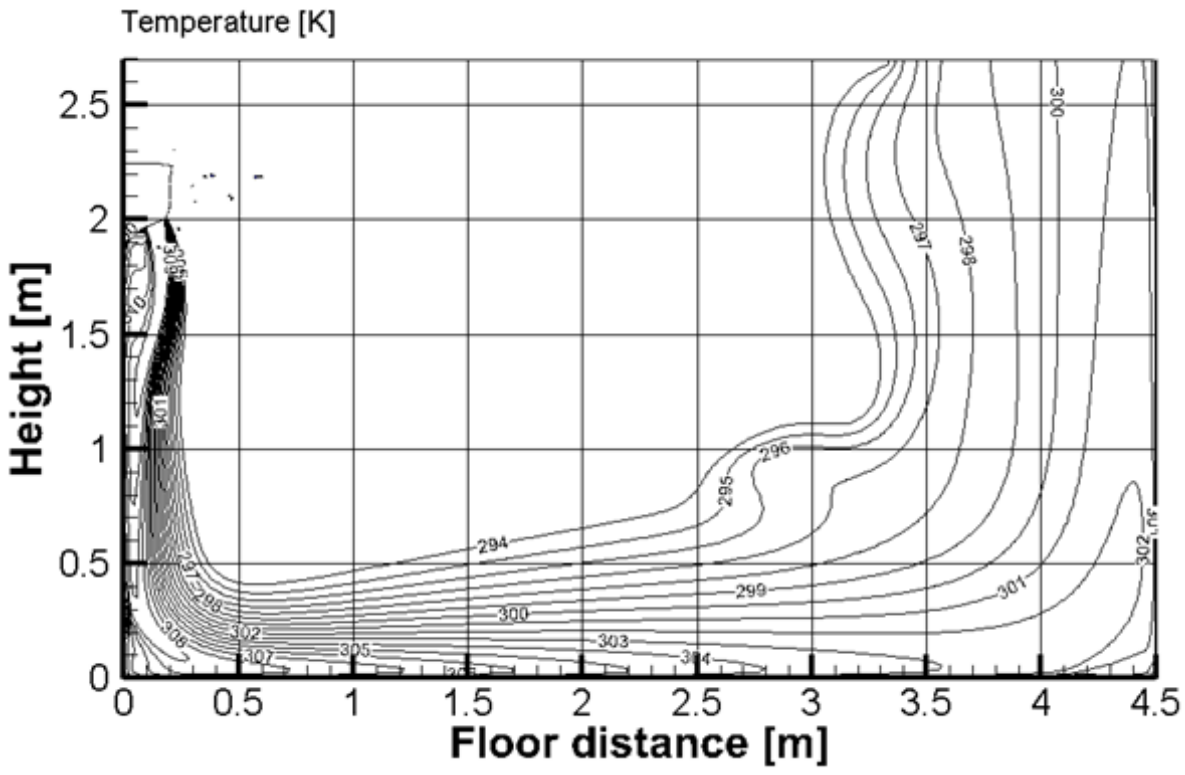
XTREME-9k

Discharge Angle 90°

Heating airflow velocity distributions



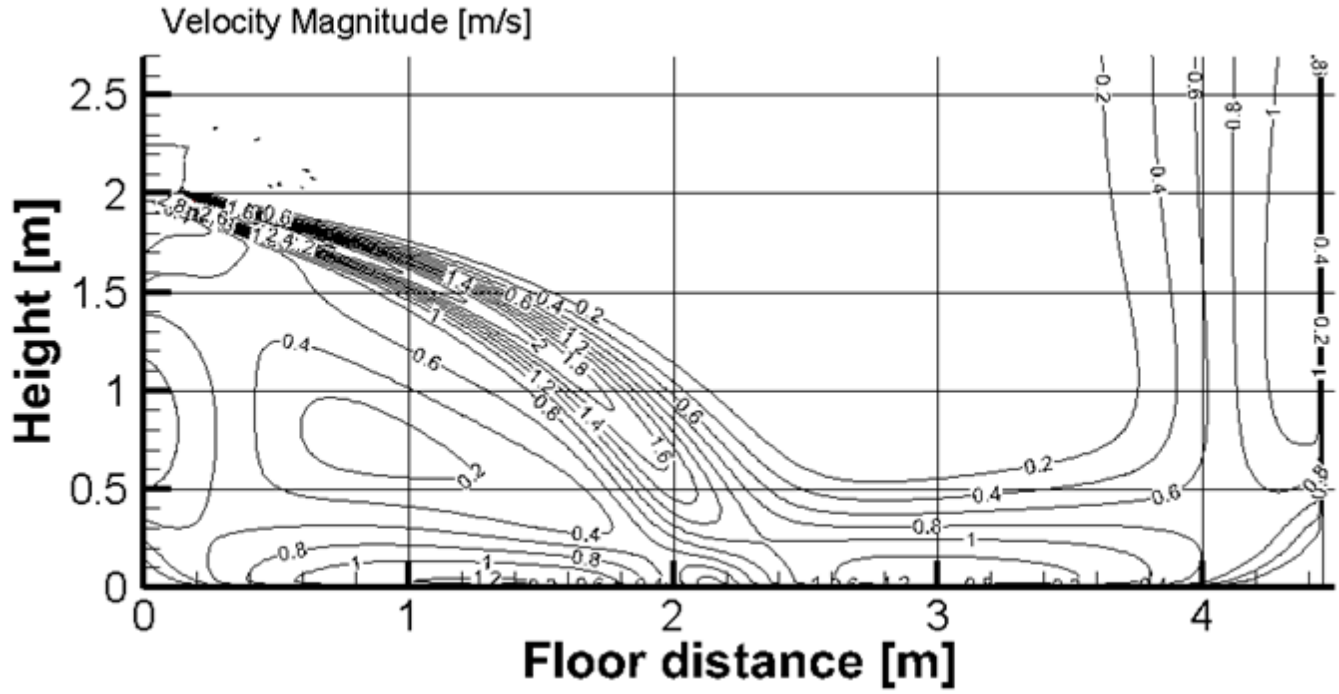
Heating temperature distributions



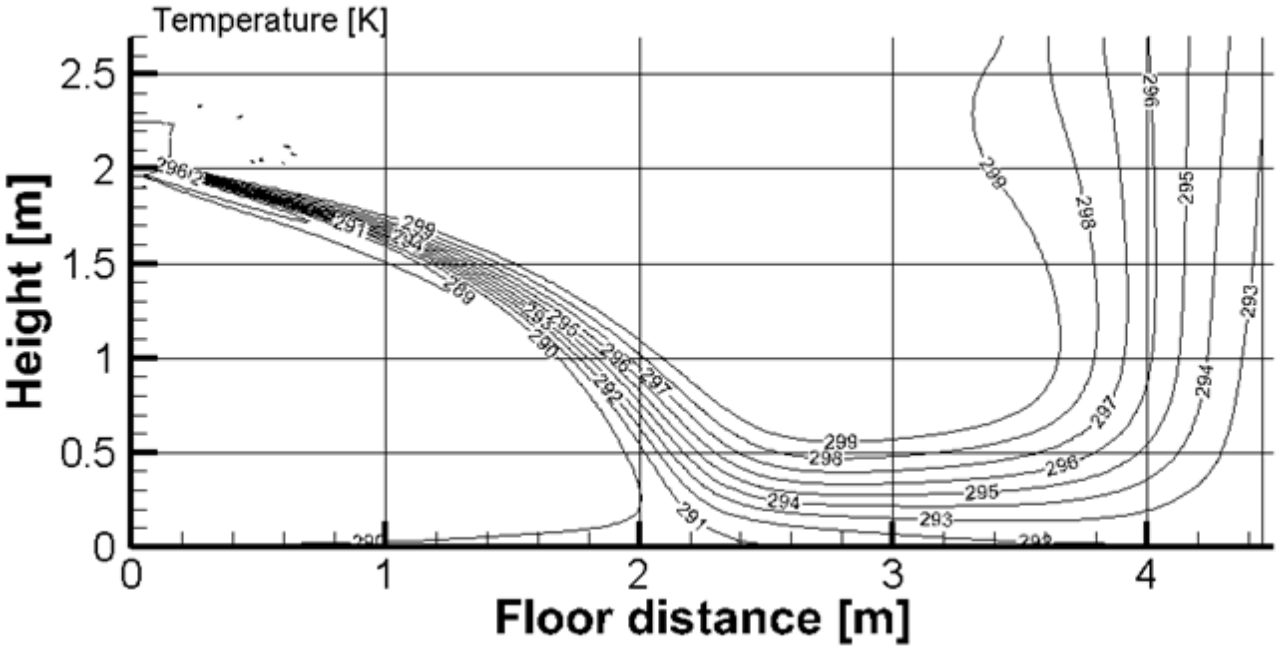
Schiara 2 27M-35M

Discharge Angle 58°

Cooling airflow velocity distributions



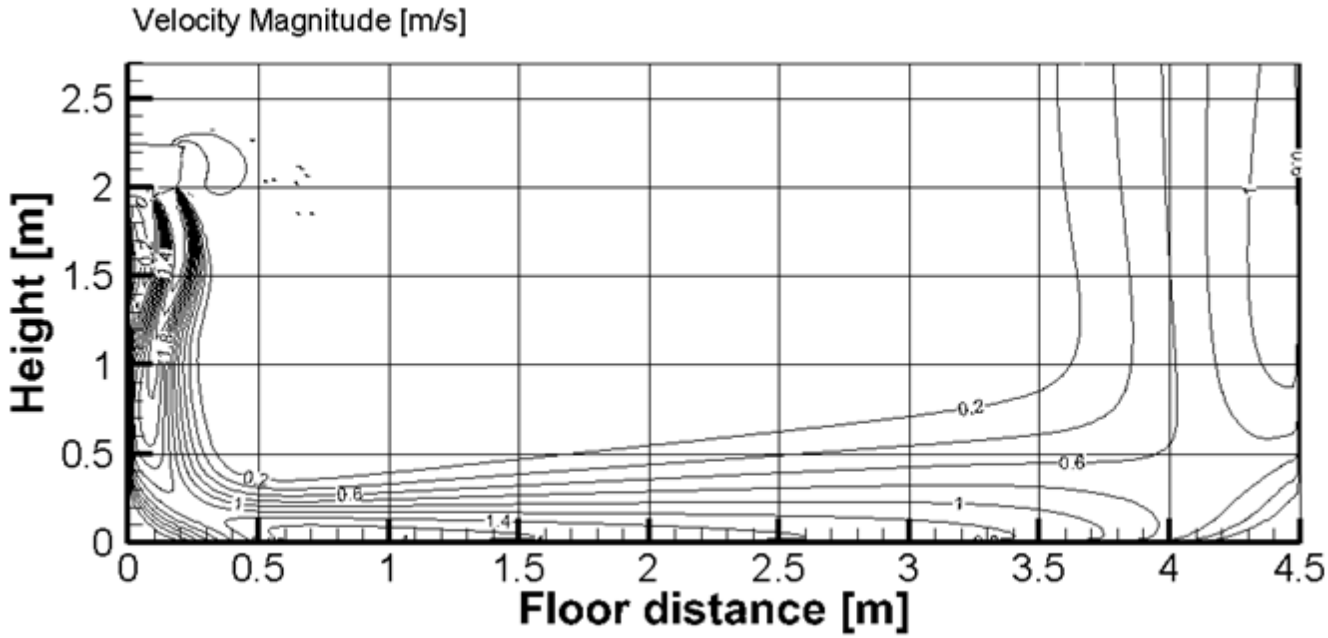
Cooling temperature distributions



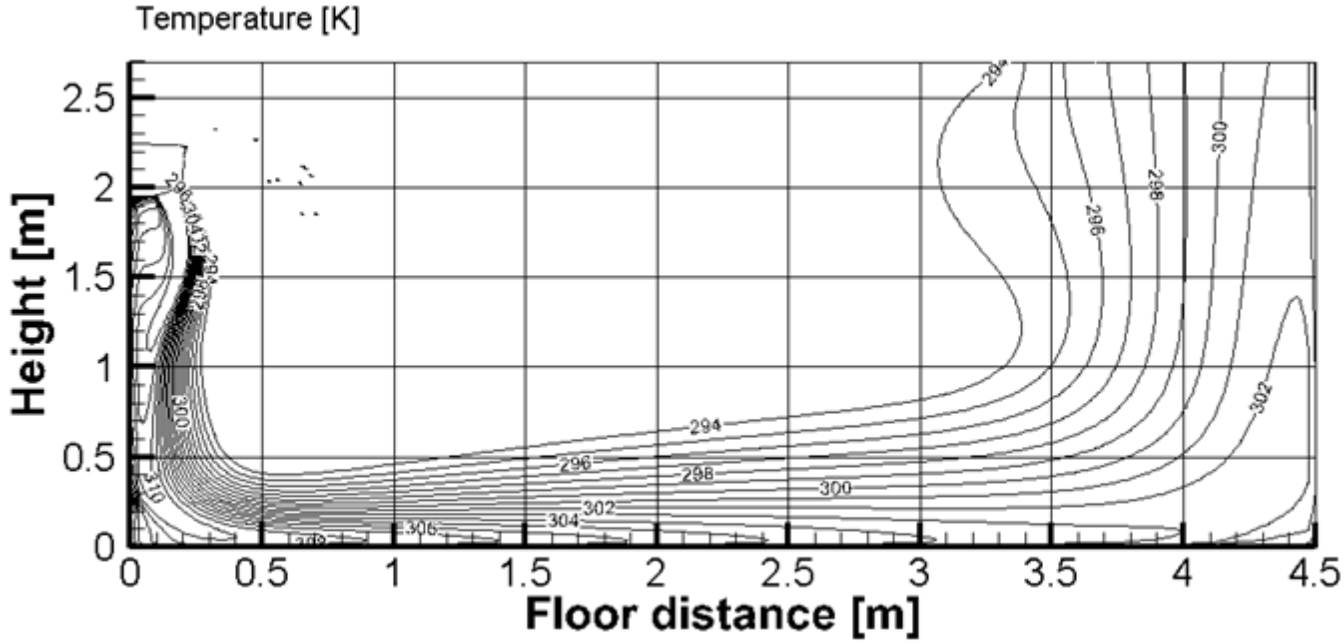
Schiara 2 27M-35M

Heating airflow velocity distributions

Discharge Angle 90°



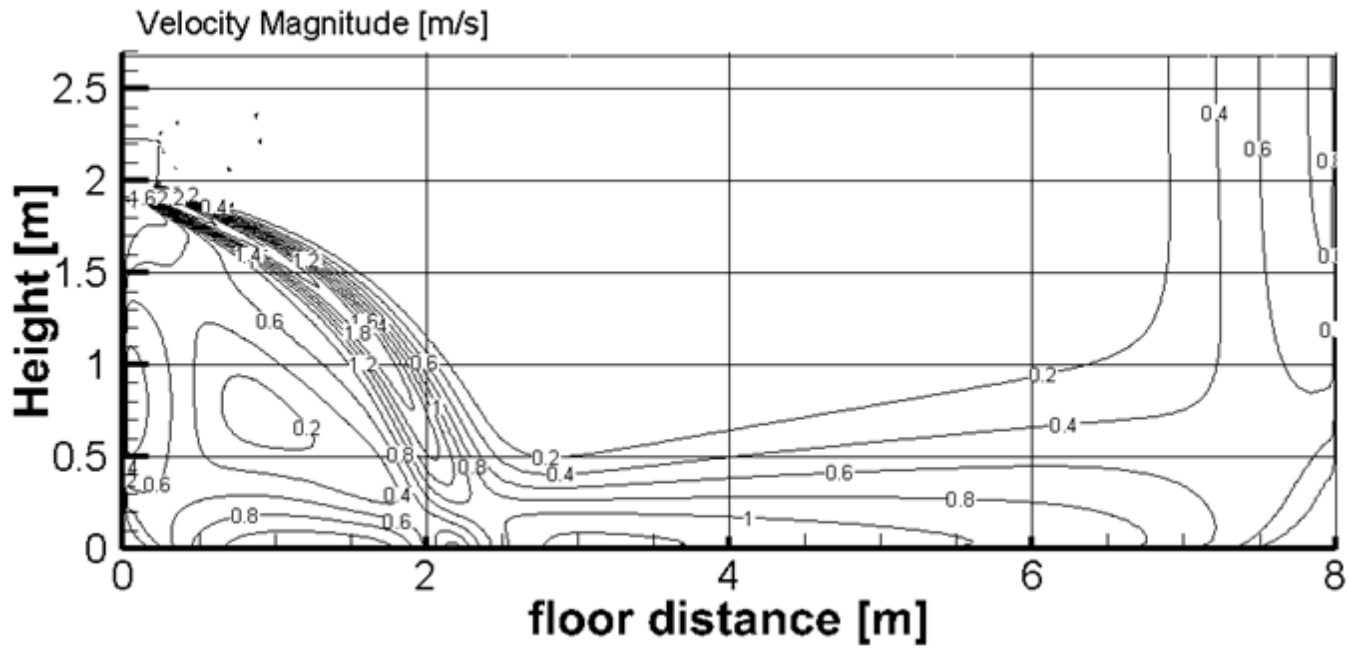
Heating temperature distributions



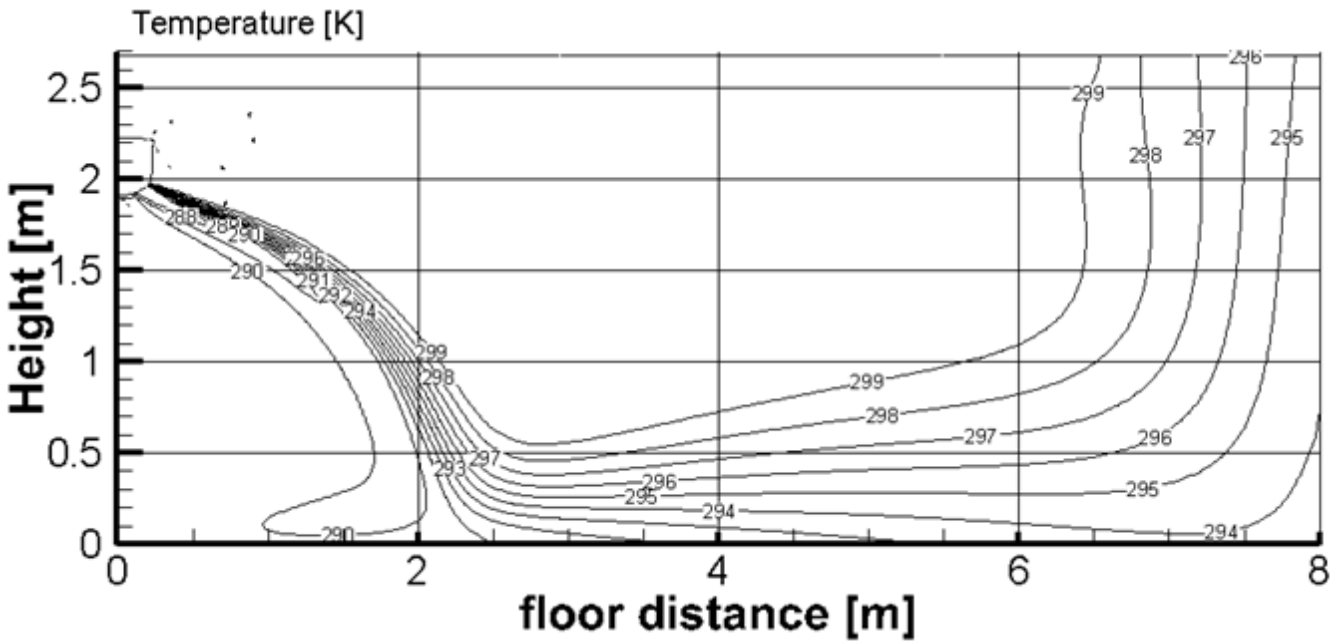
XTREME-18k

Discharge Angle 50°

Cooling airflow velocity distributions



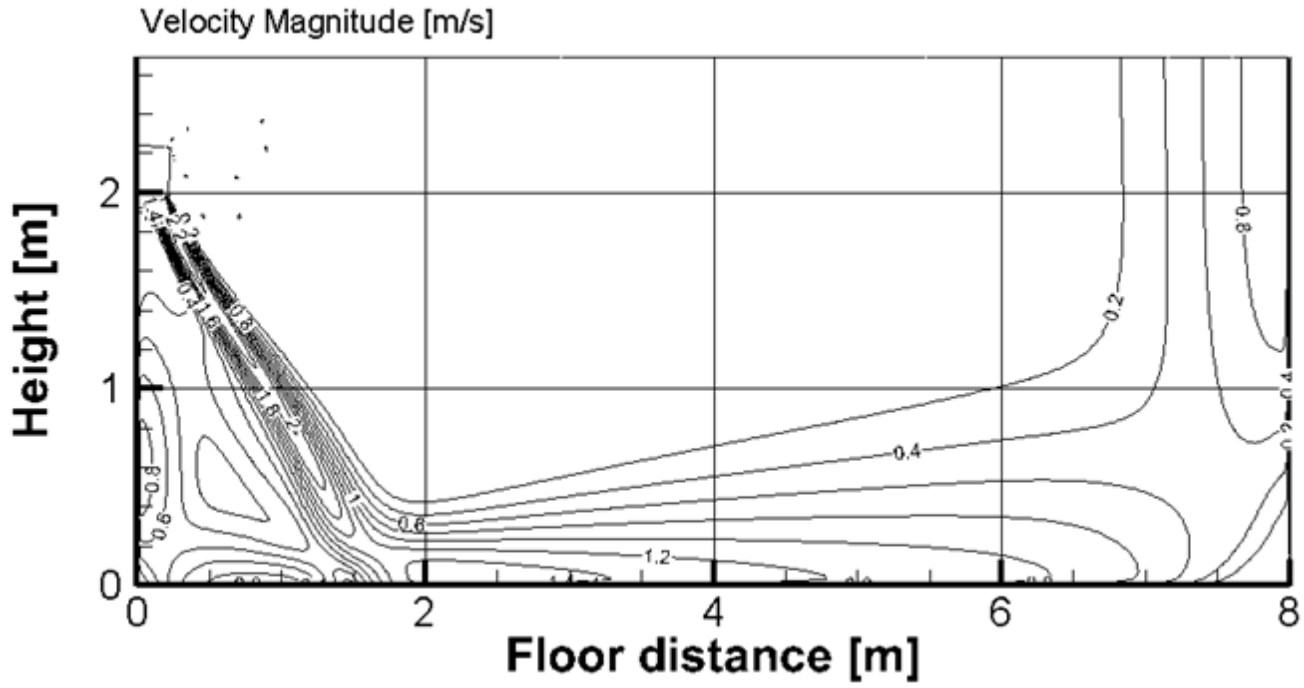
Cooling temperature distributions



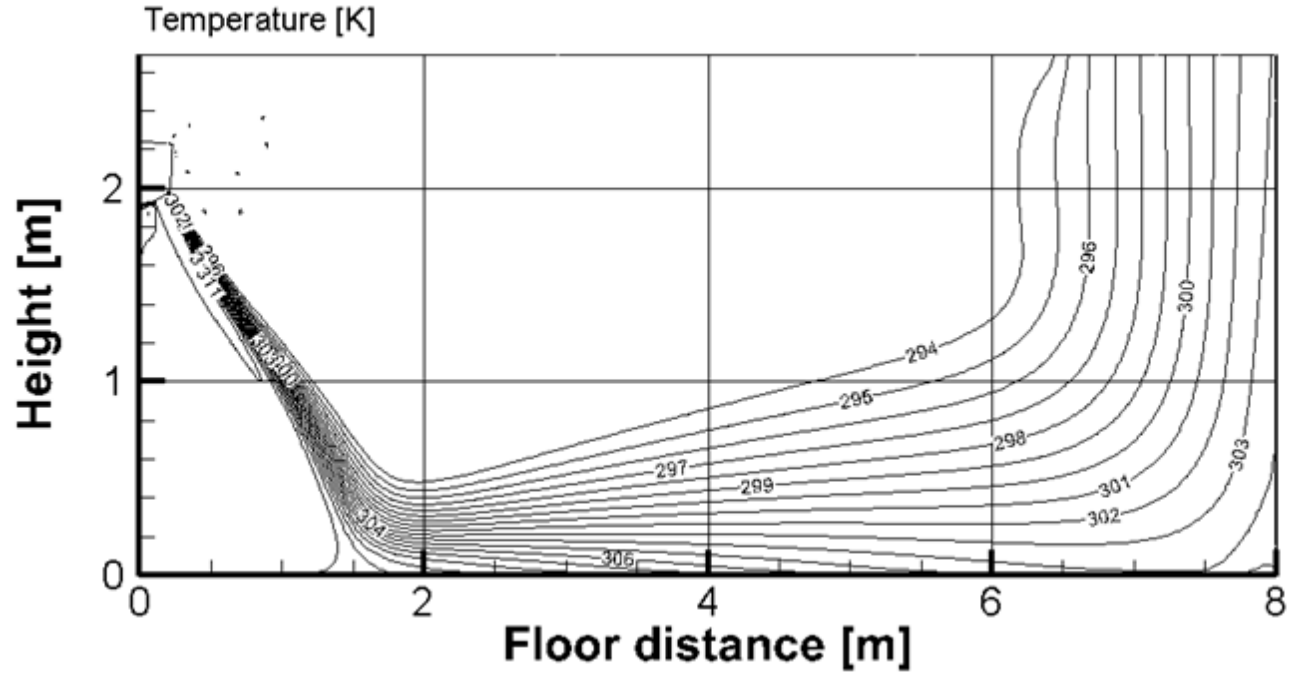
XTREME-18k

Discharge Angle 84°

Heating airflow velocity distributions



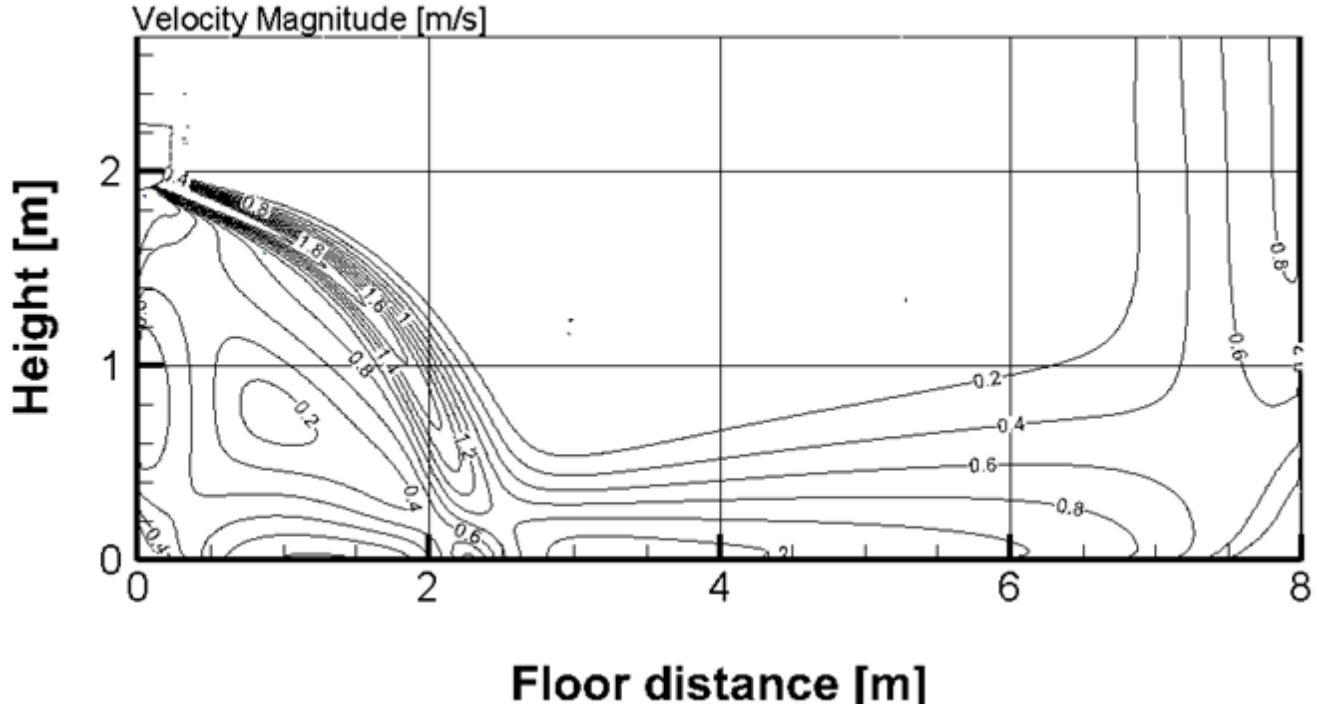
Heating temperature distributions



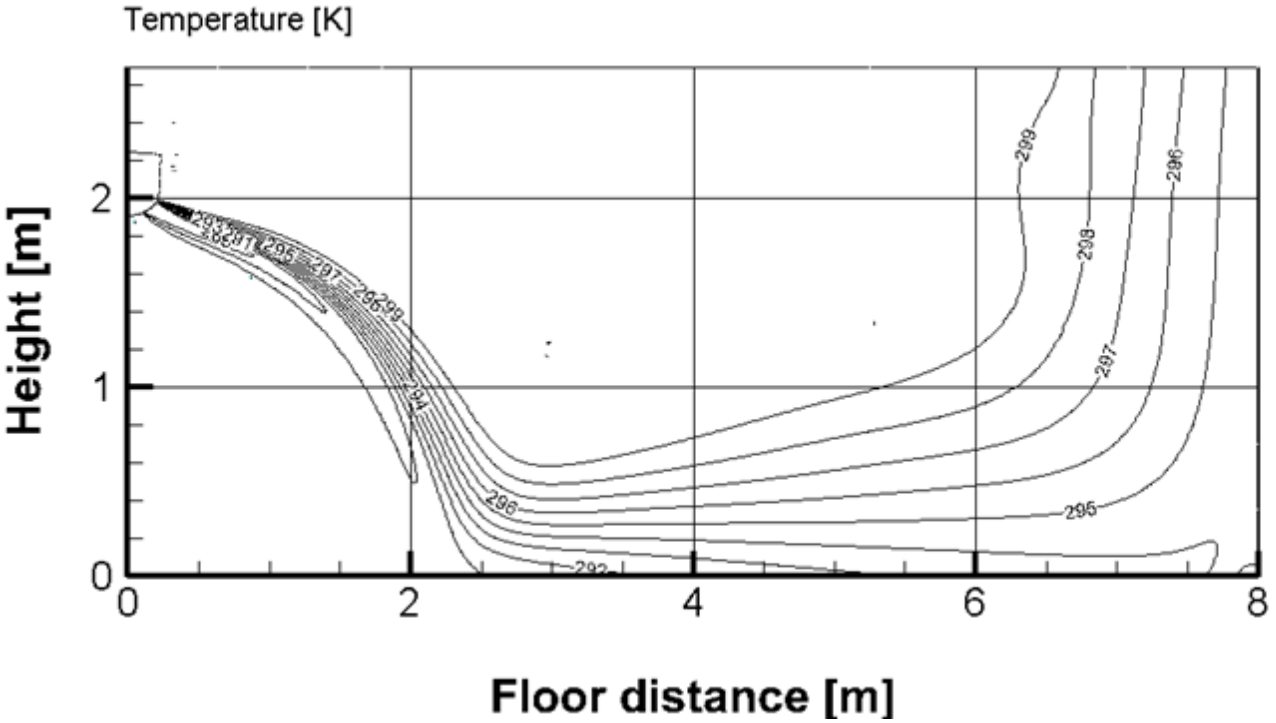
XTREME-24k

Discharge Angle 50°

Cooling airflow velocity distributions



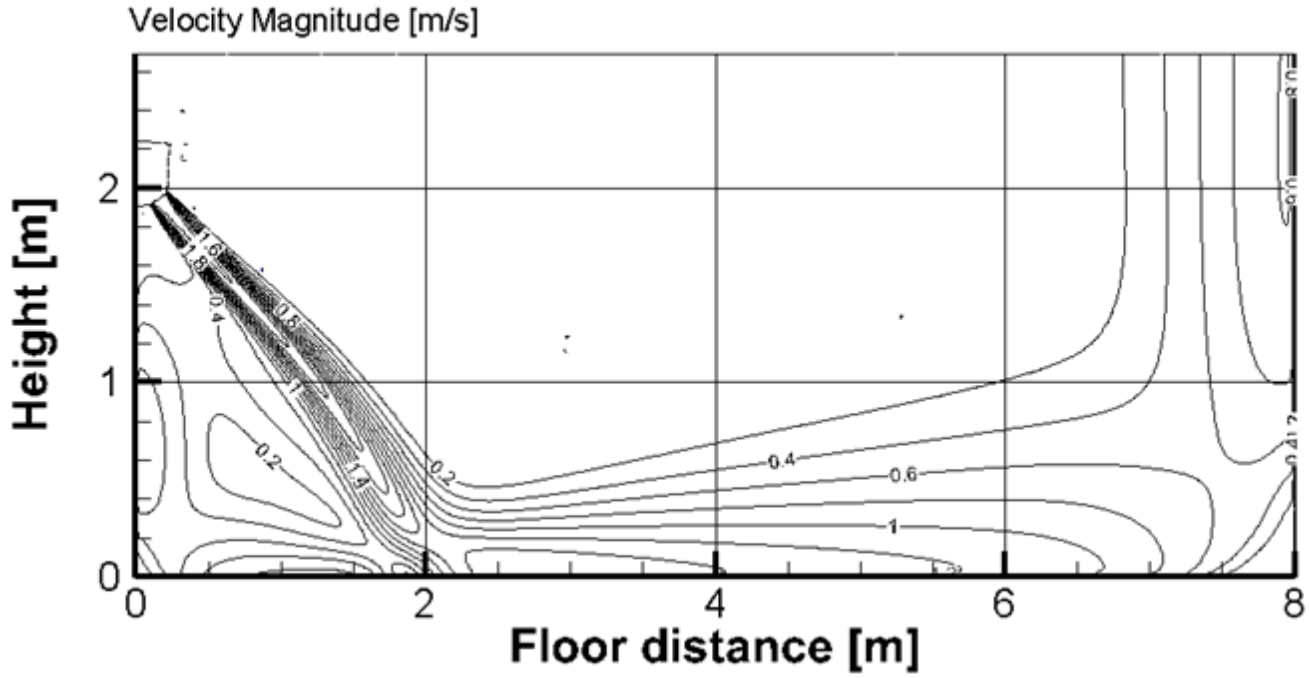
Cooling temperature distributions



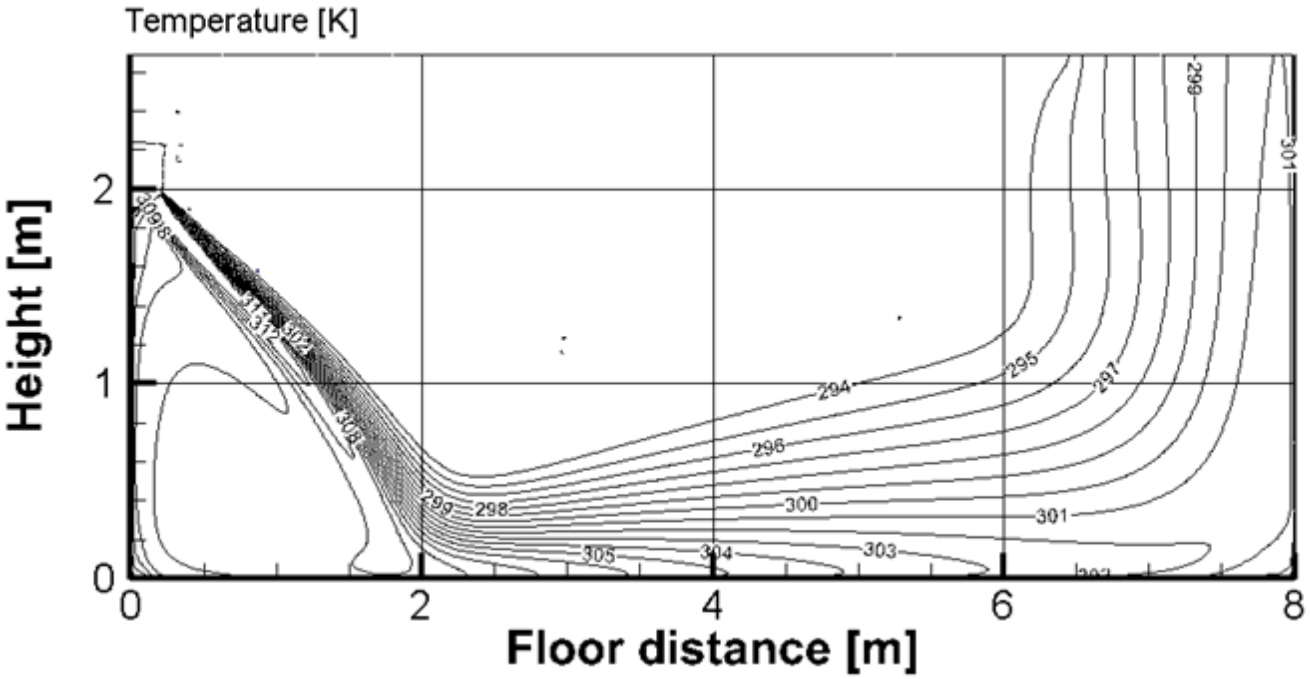
XTREME-24k

Discharge Angle 67°

Heating airflow velocity distributions



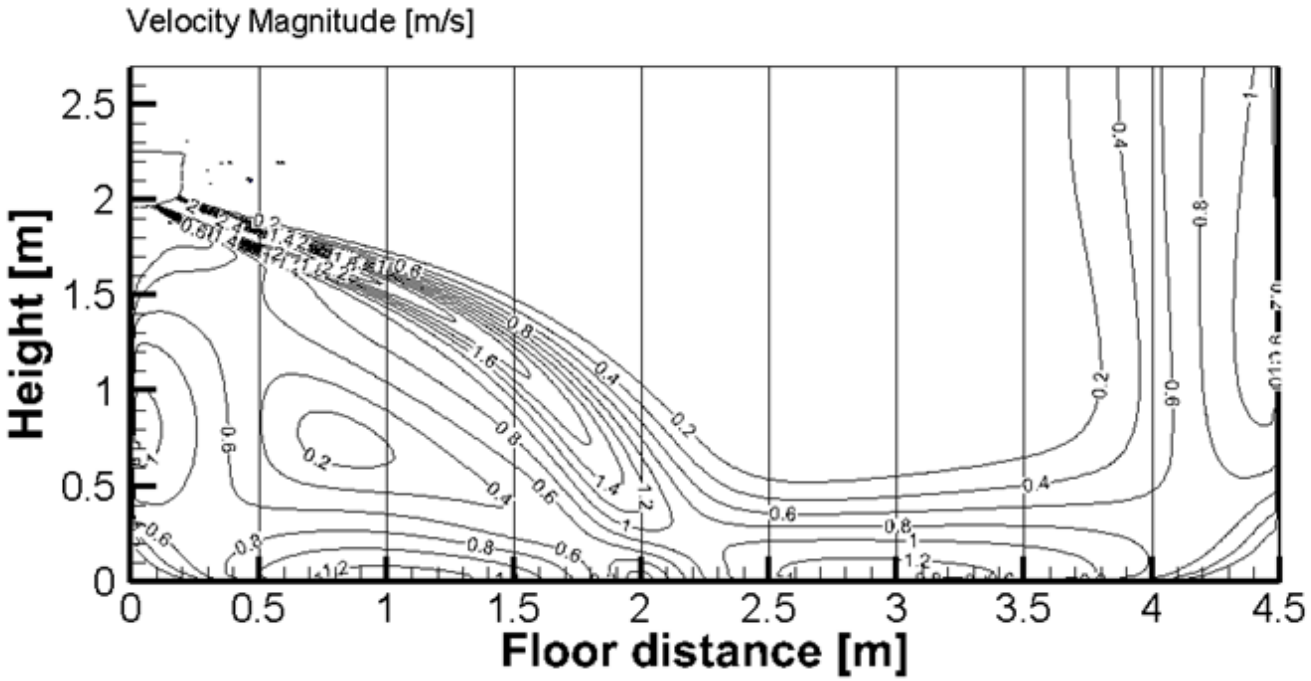
Heating temperature distributions



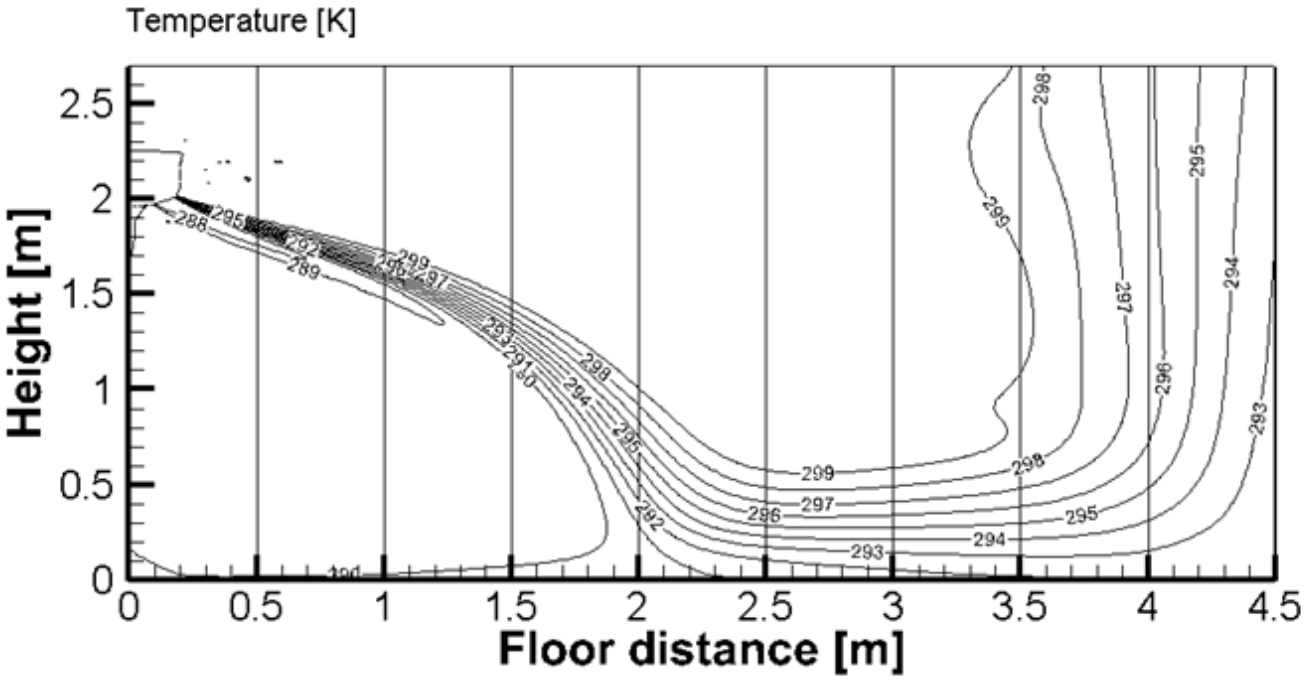
Cristallo / Essential 2 20M-27M

Discharge Angle 58°

Cooling airflow velocity distributions



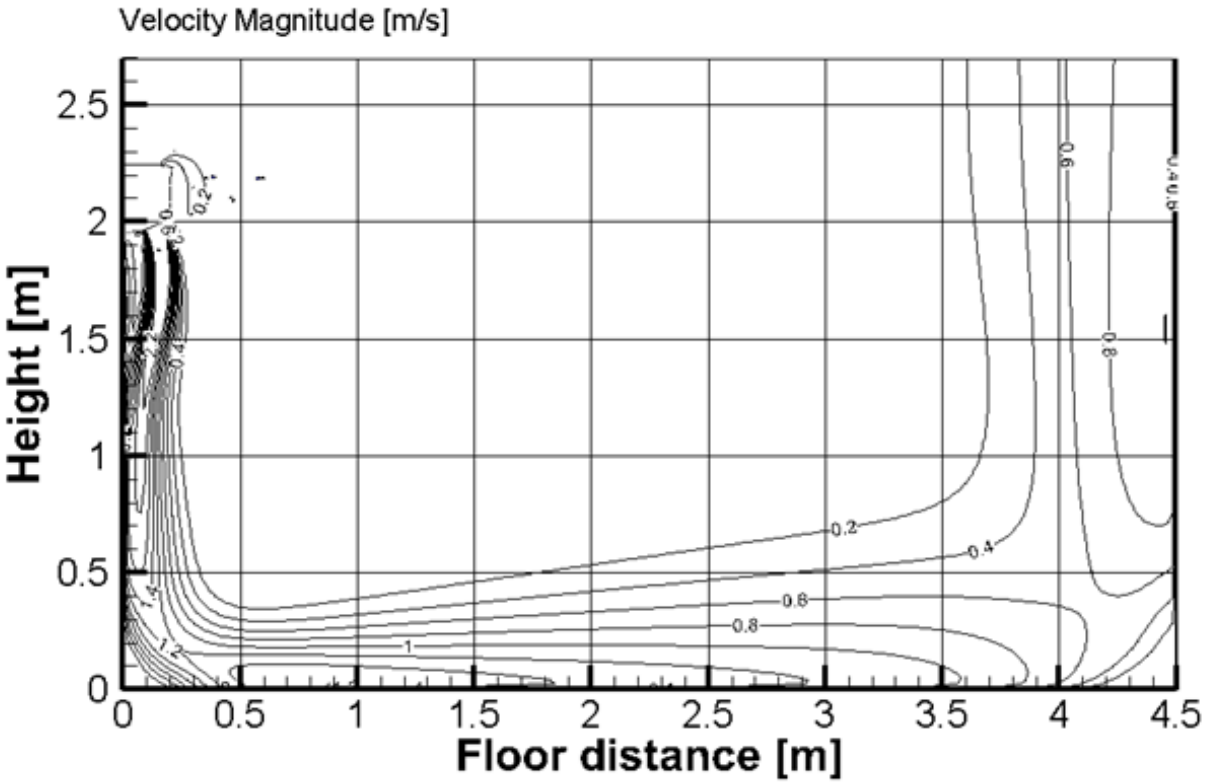
Cooling temperature distributions



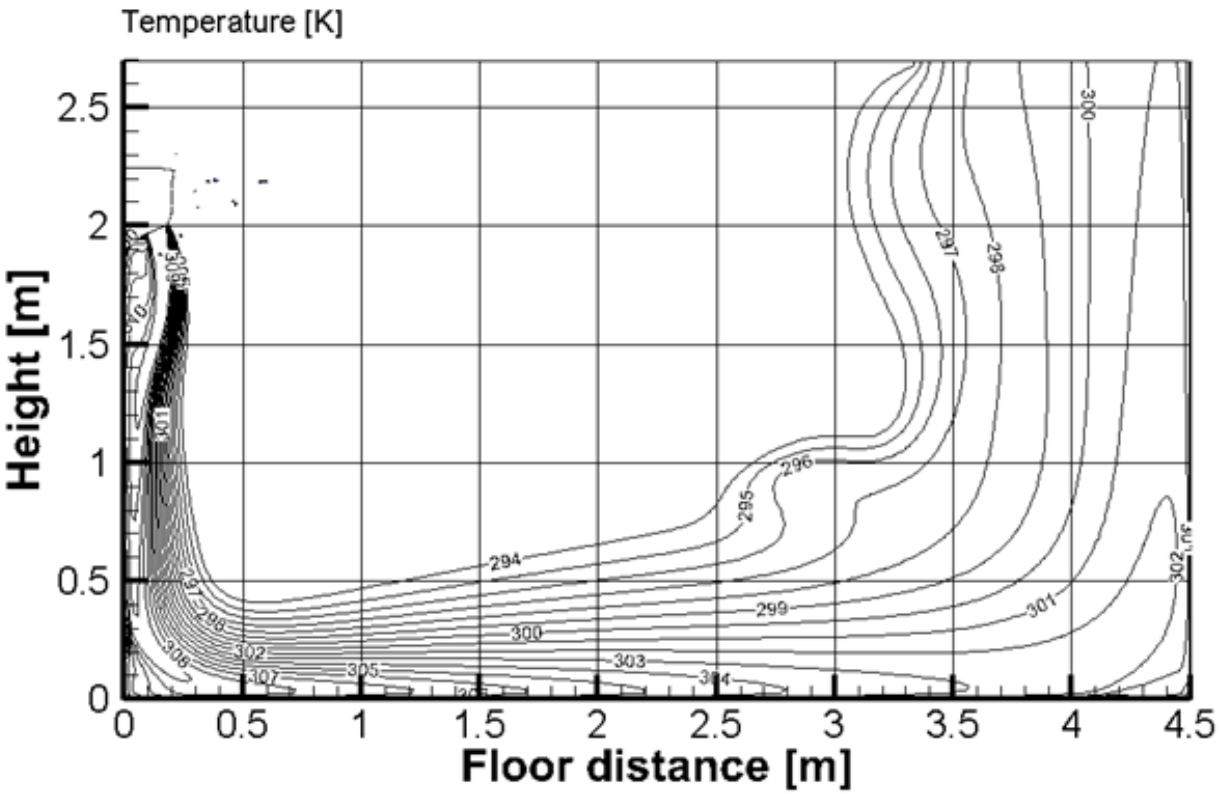
Cristallo / Essential 2 20M-27M

Discharge Angle 90°

Heating airflow velocity distributions



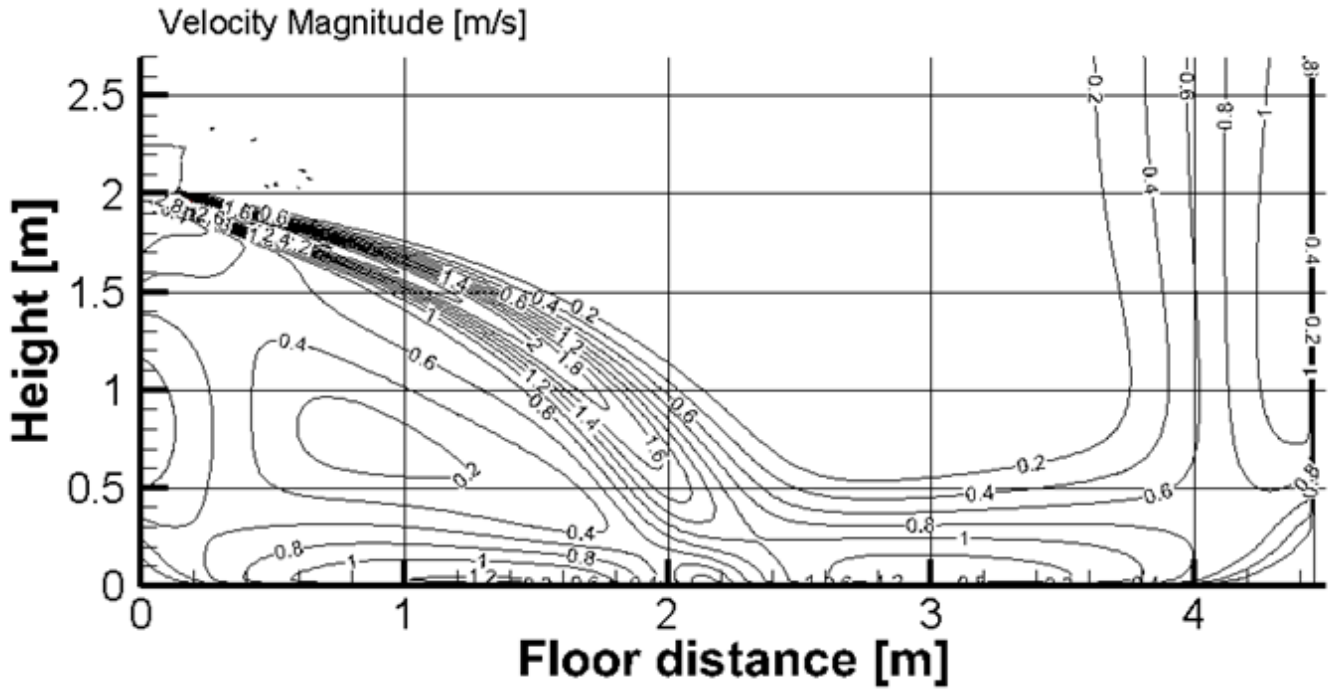
Heating temperature distributions



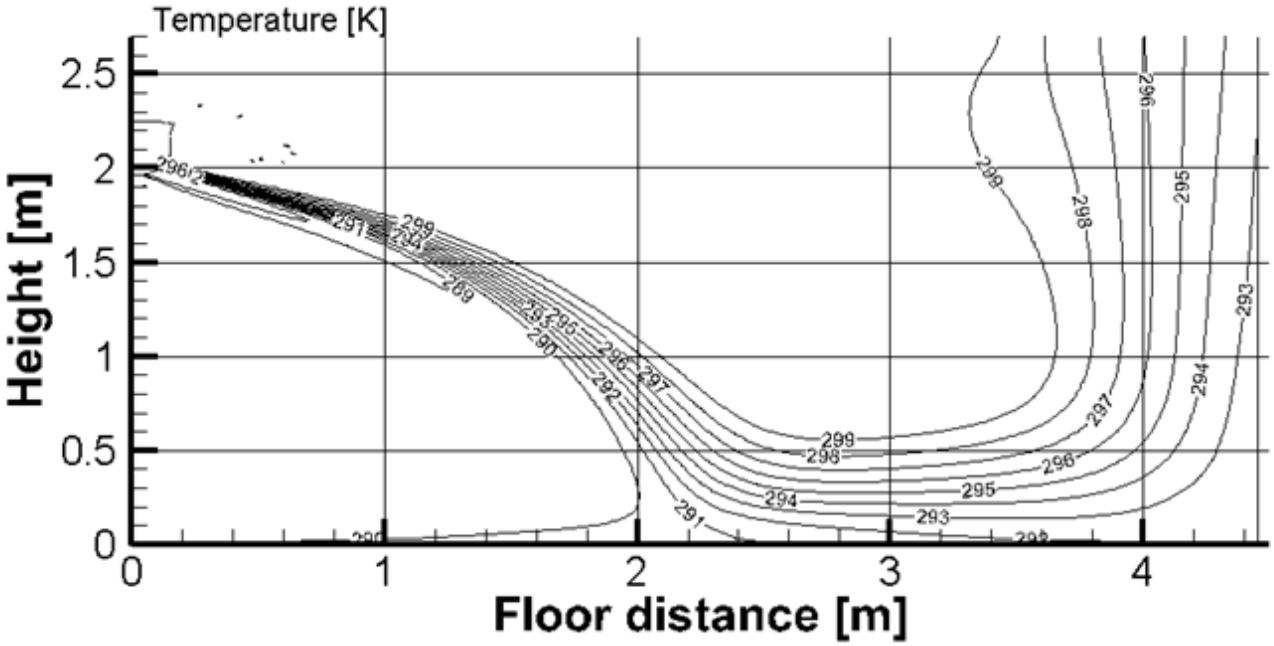
Cristallo / Essential 2 35M

Discharge Angle 58°

Cooling airflow velocity distributions



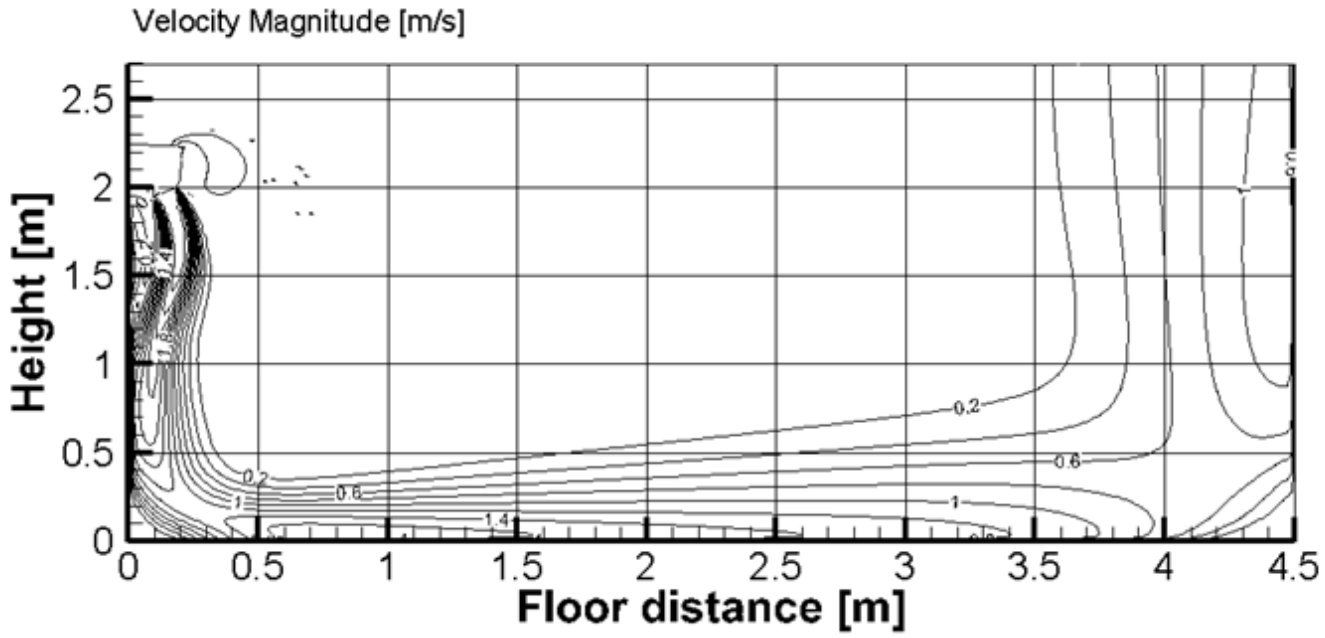
Cooling temperature distributions



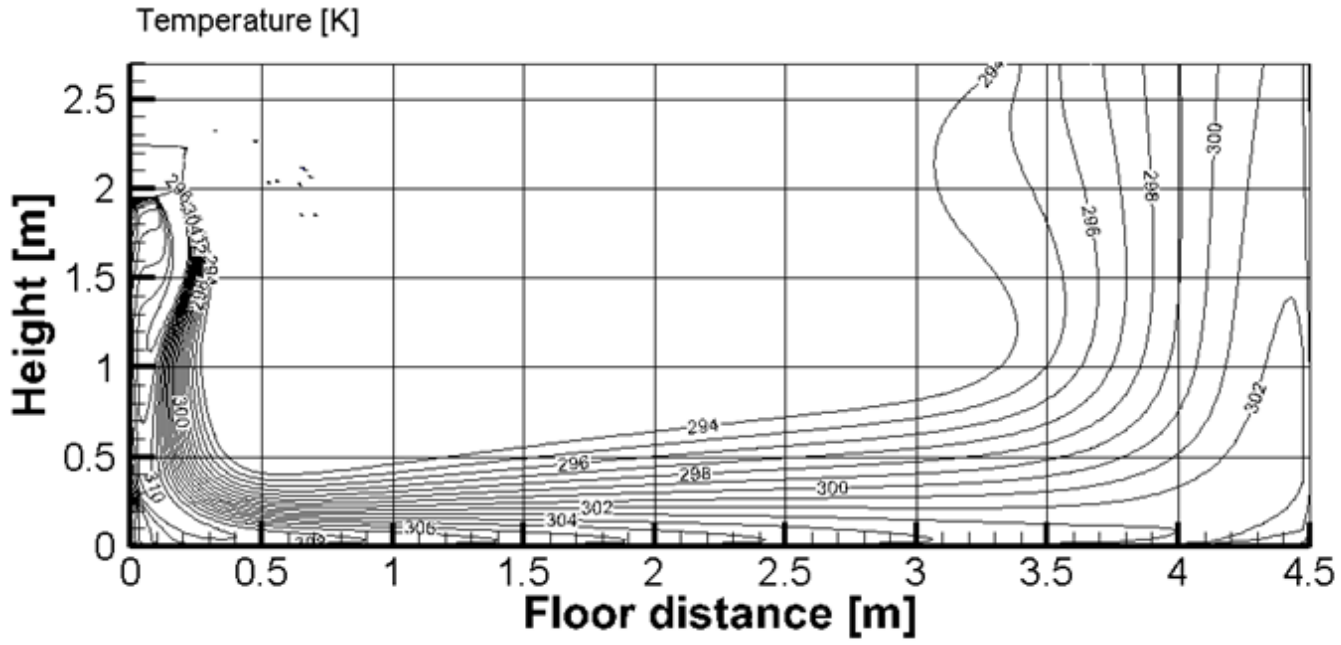
Cristallo / Essential 2 35M

Discharge Angle 90°

Heating airflow velocity distributions



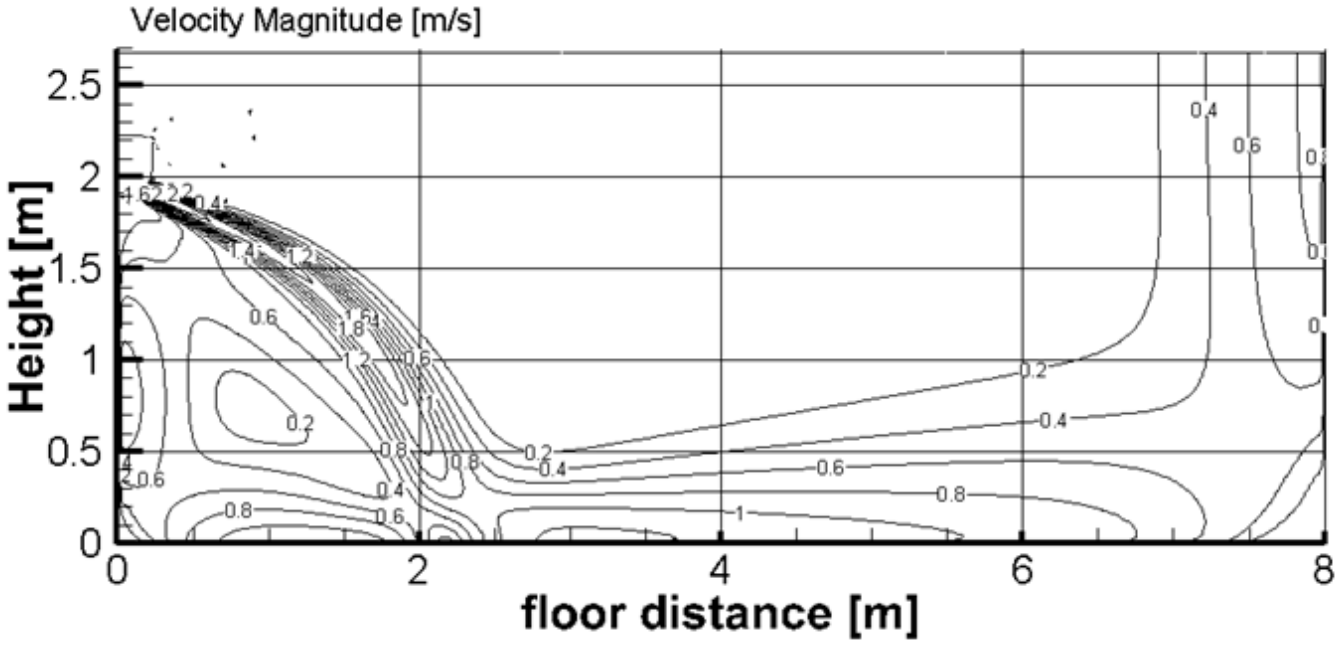
Heating temperature distributions



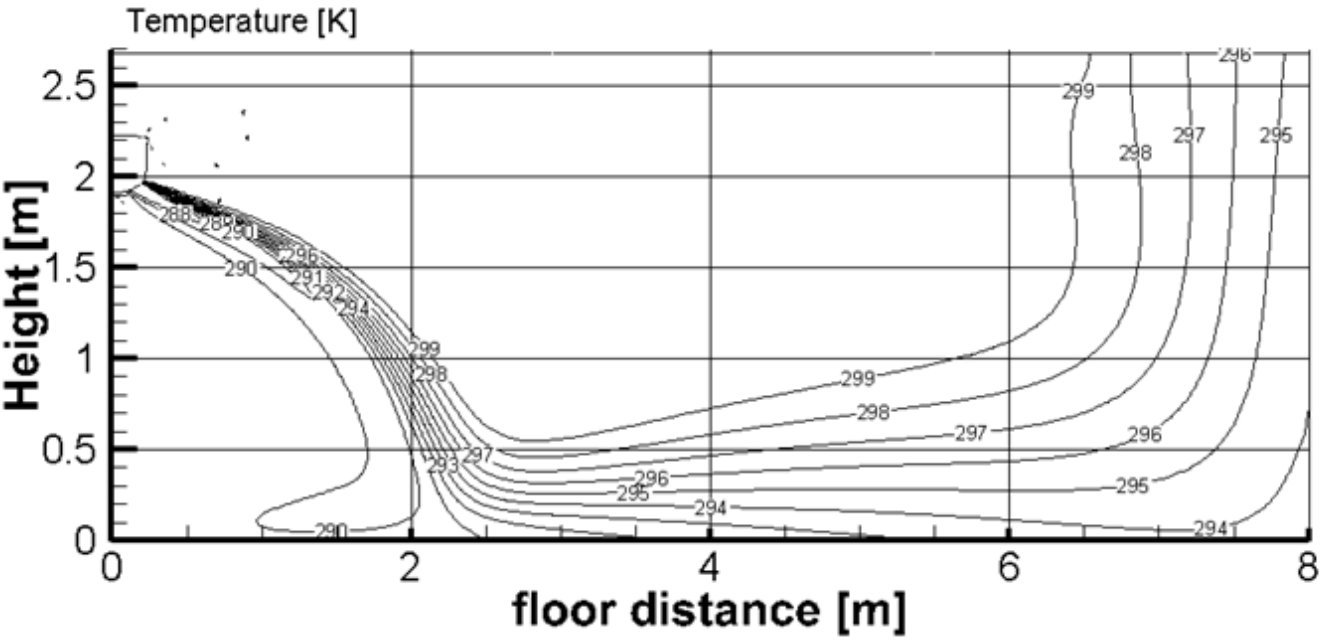
Cristallo / Essential 2 53M

Discharge Angle 50°

Cooling airflow velocity distributions



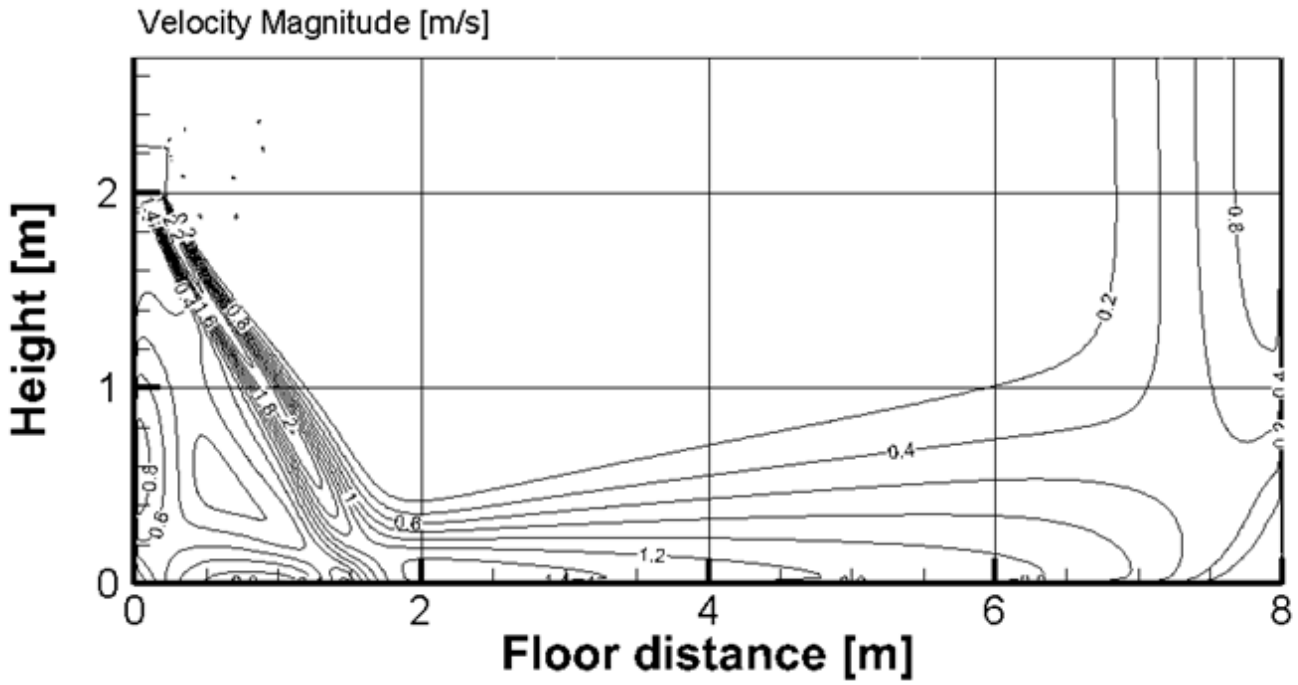
Cooling temperature distributions



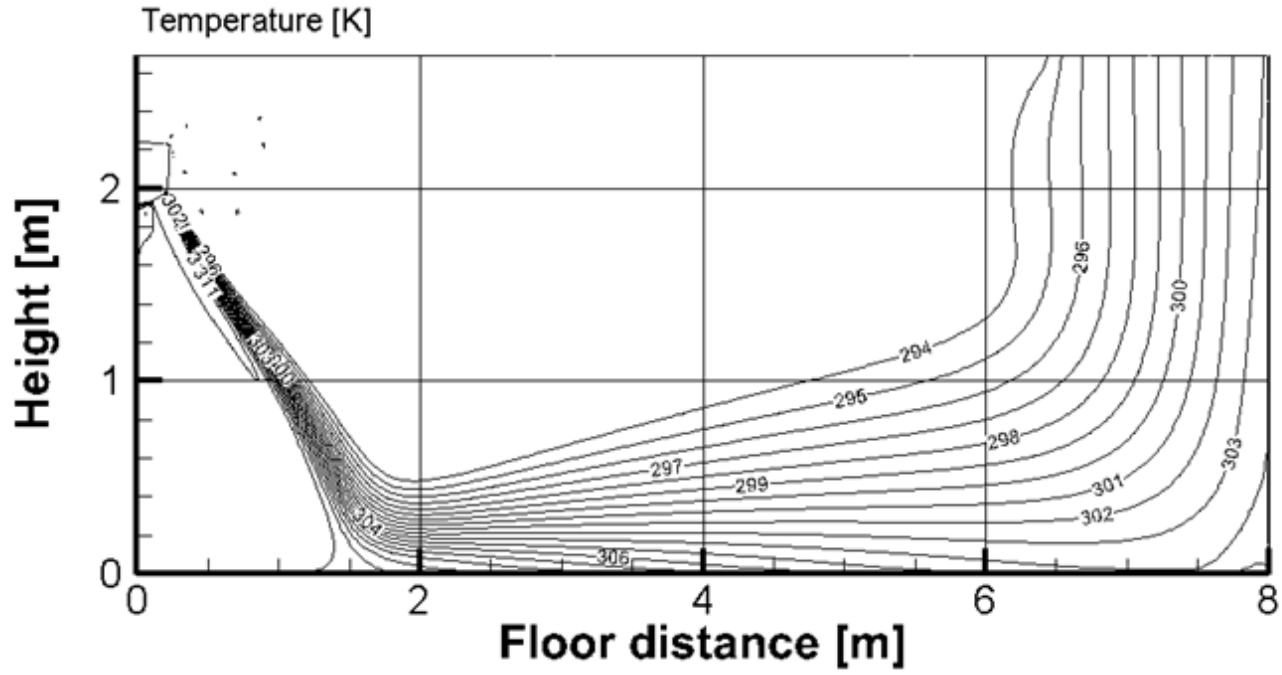
Cristallo / Essential 2 53M

Discharge Angle 84°

Heating airflow velocity distributions



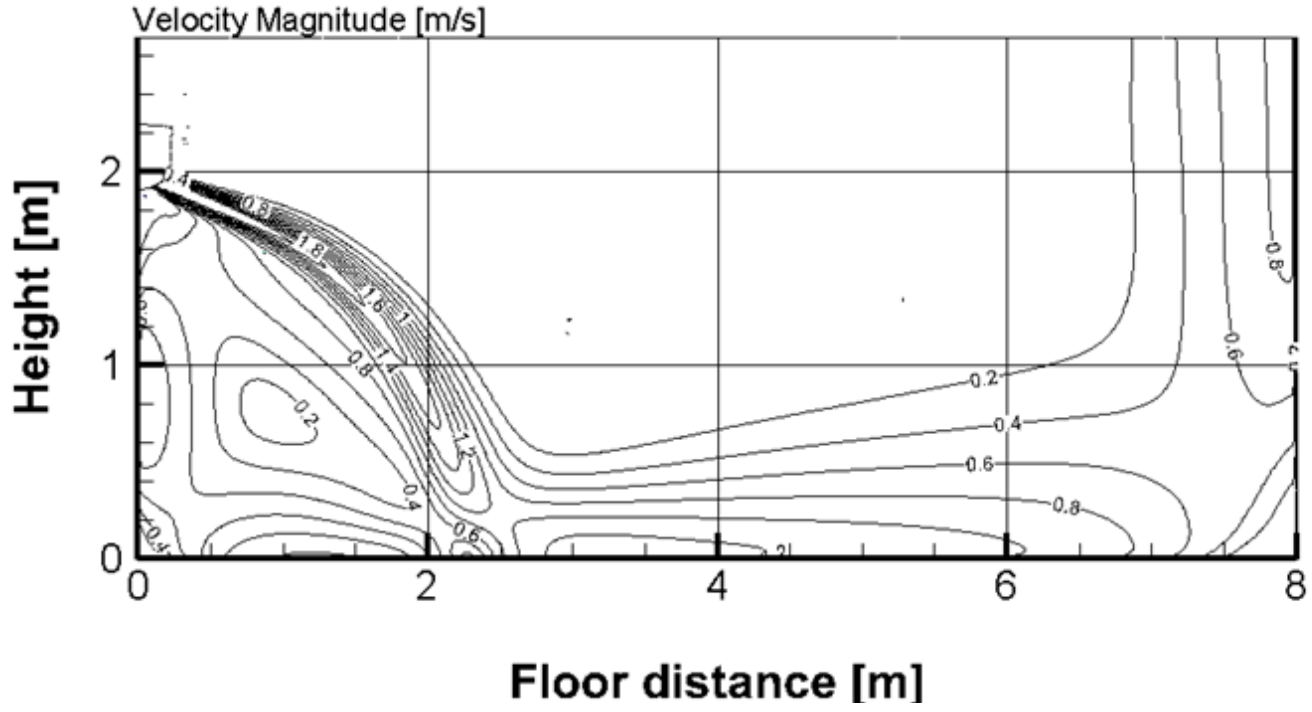
Heating temperature distributions



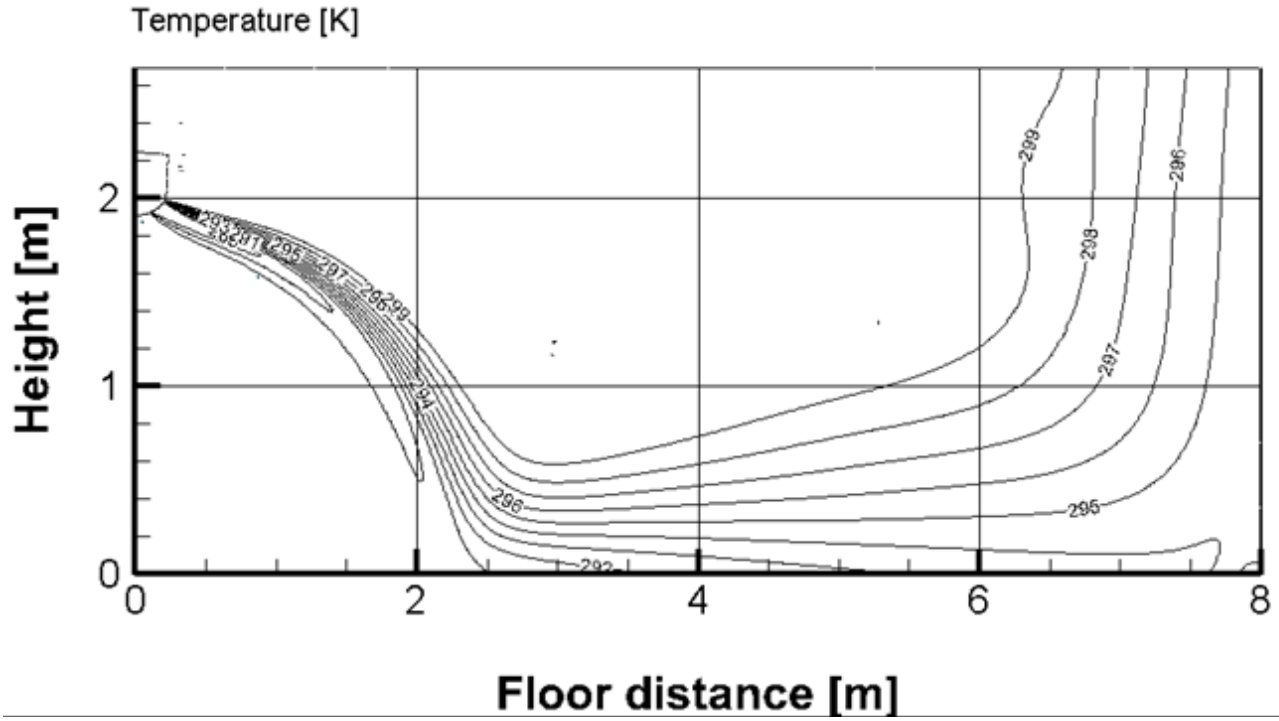
Cristallo / Essential 2 70M

Discharge Angle 50°

Cooling airflow velocity distributions



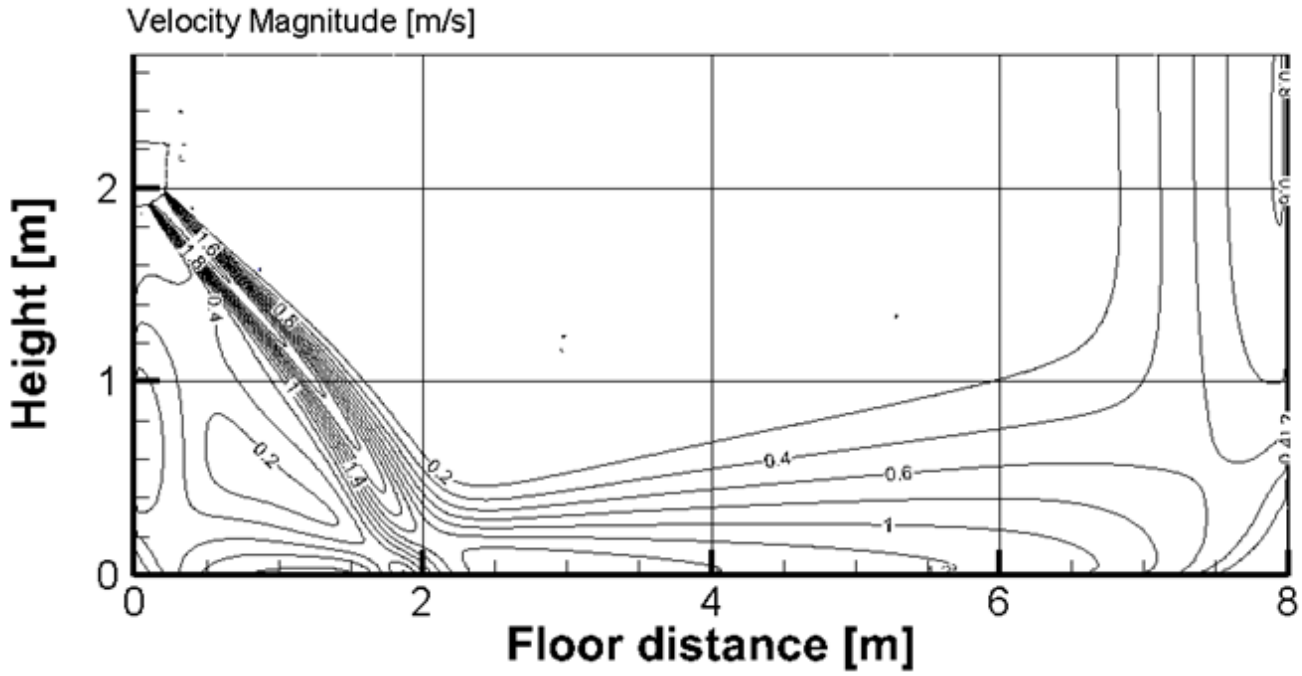
Cooling temperature distributions



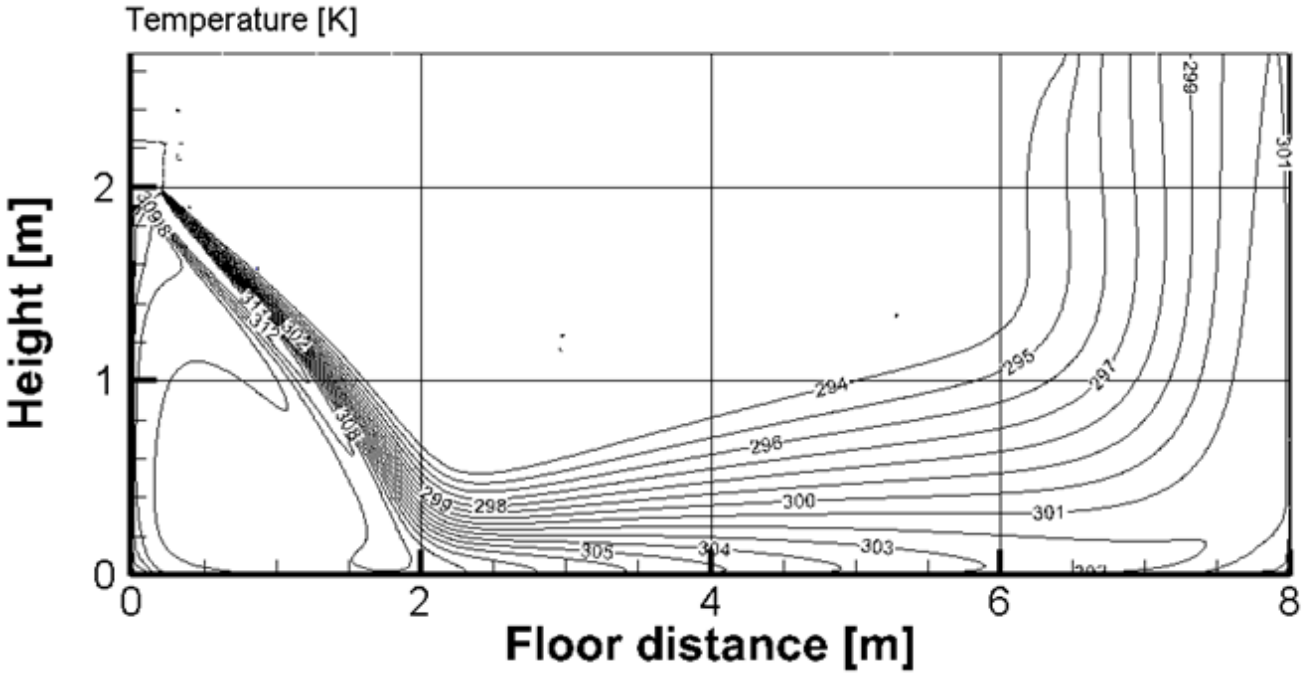
Cristallo / Essential 2 70M

Discharge Angle 67°

Heating airflow velocity distributions



Heating temperature distributions

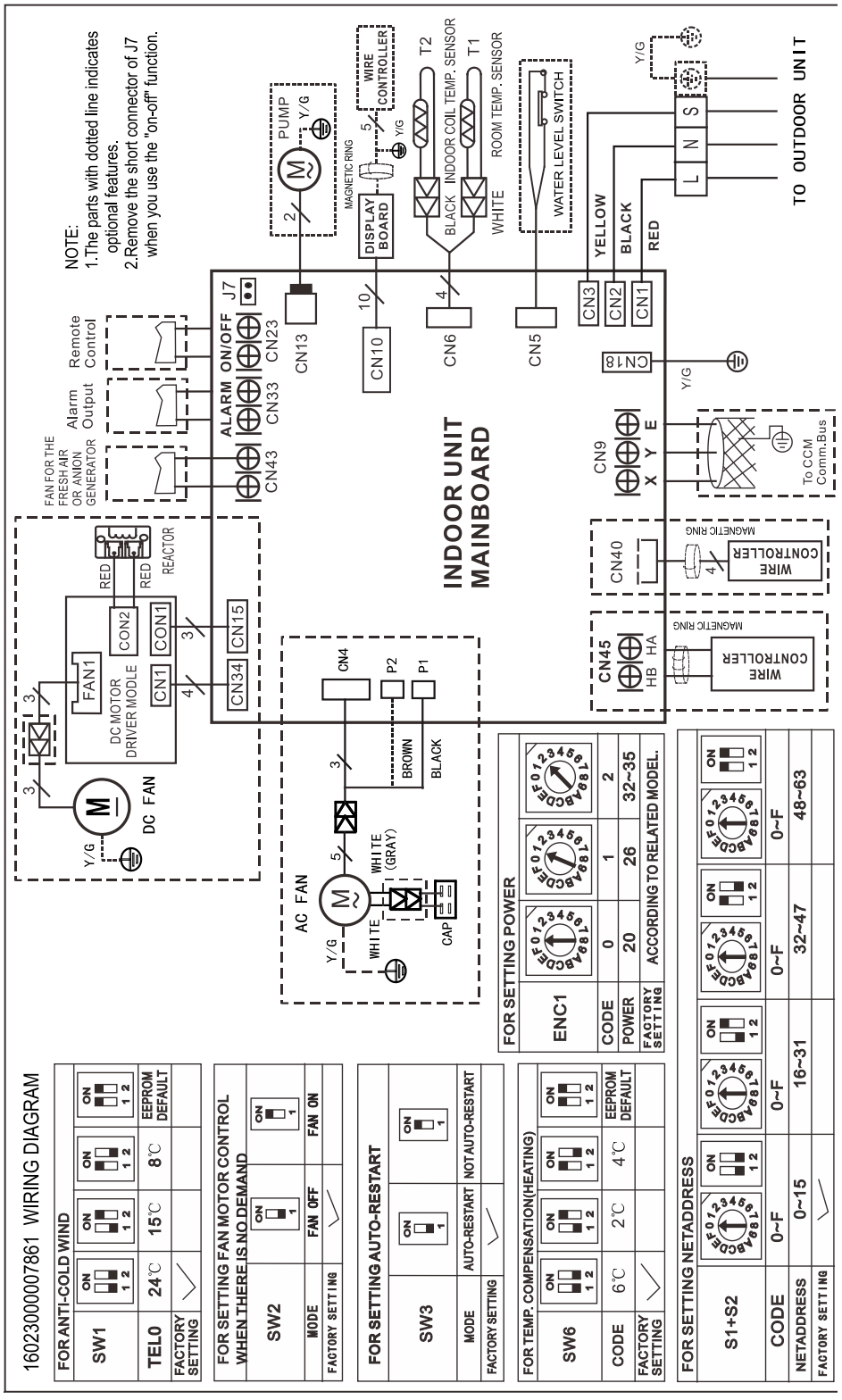


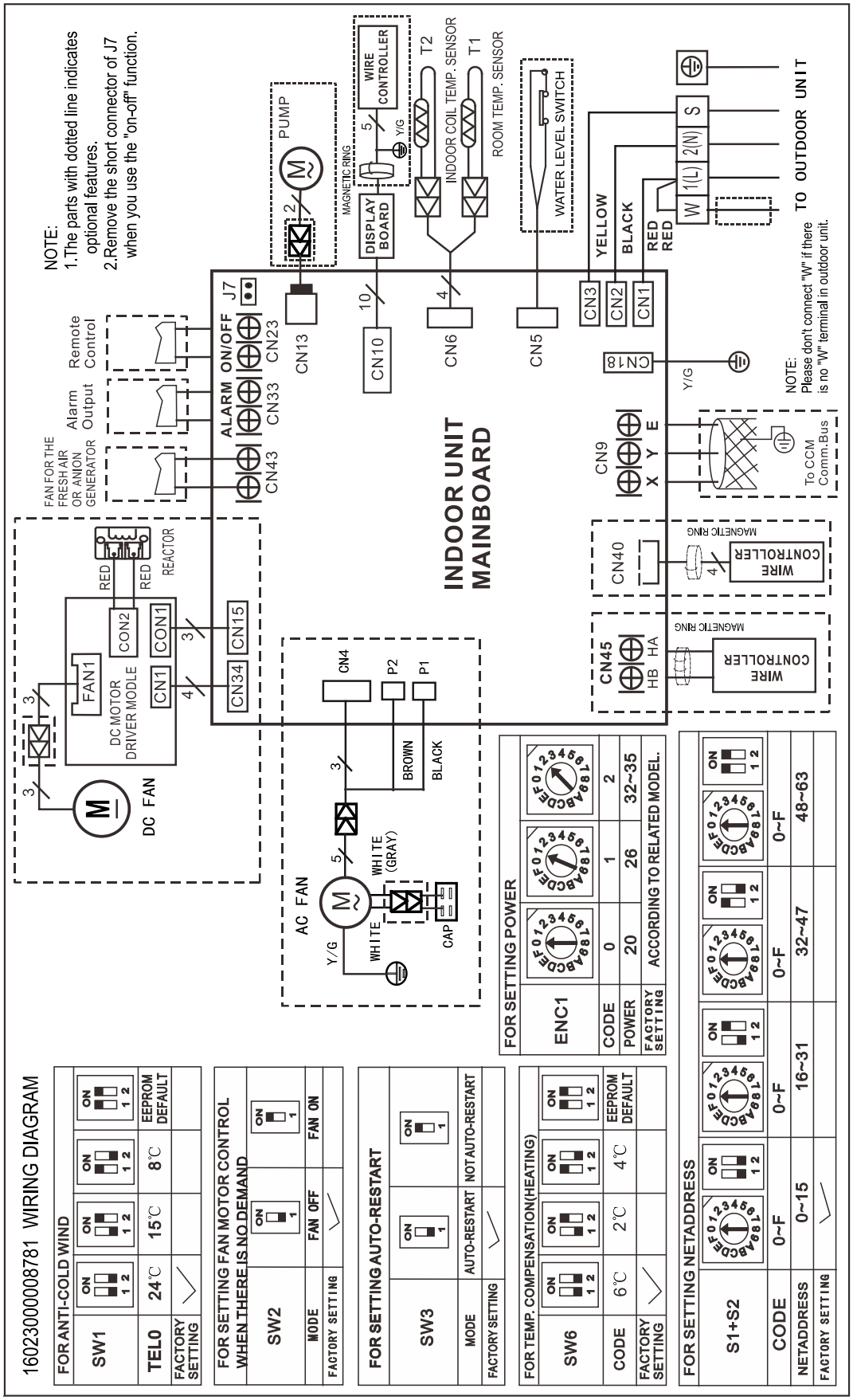
7. Electrical Wiring Diagrams

8.1 Indoor unit

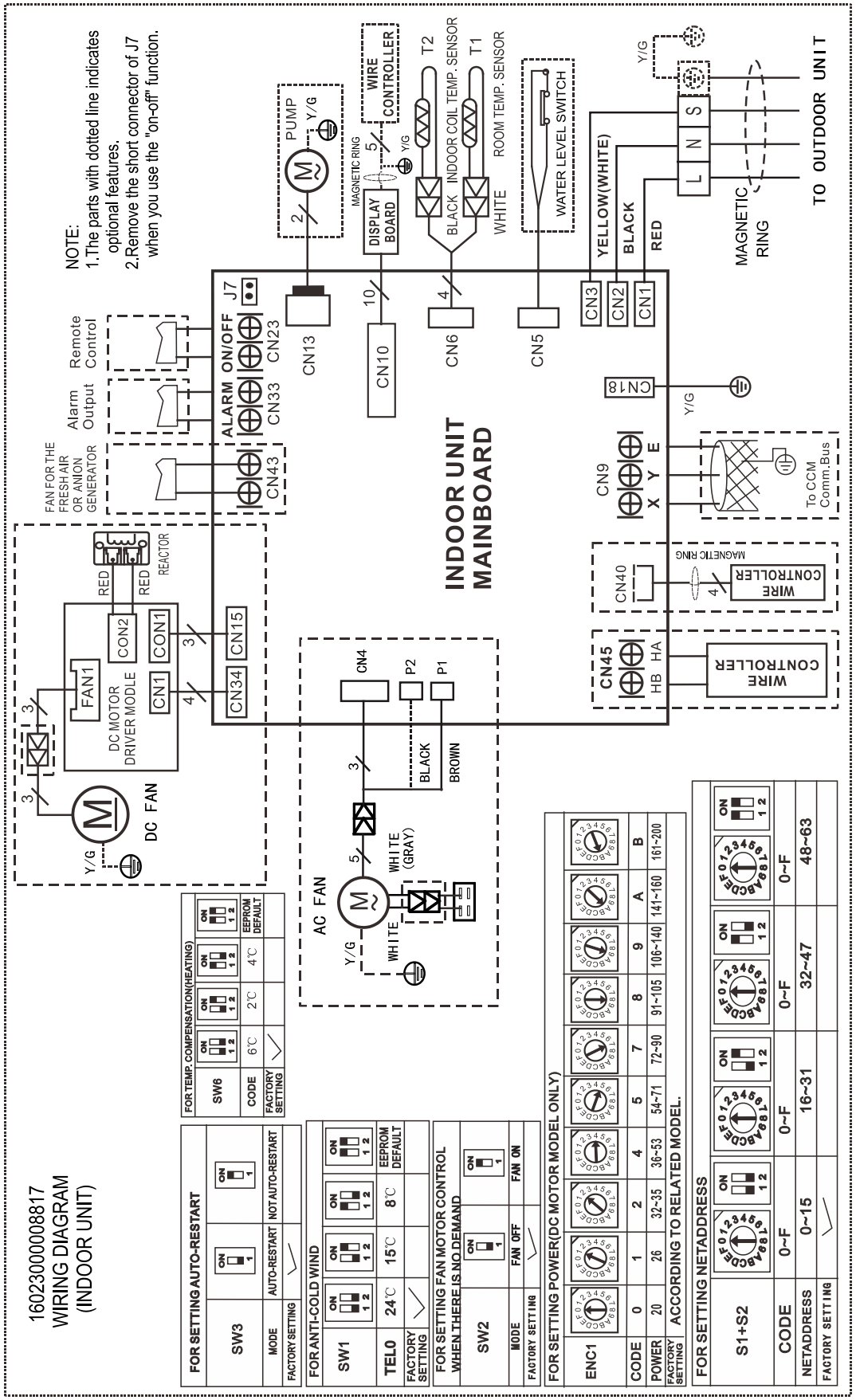
Duct 2

MTIU-07HWFNX-QRD0W, MTIU-09HWFNX-QRD0W



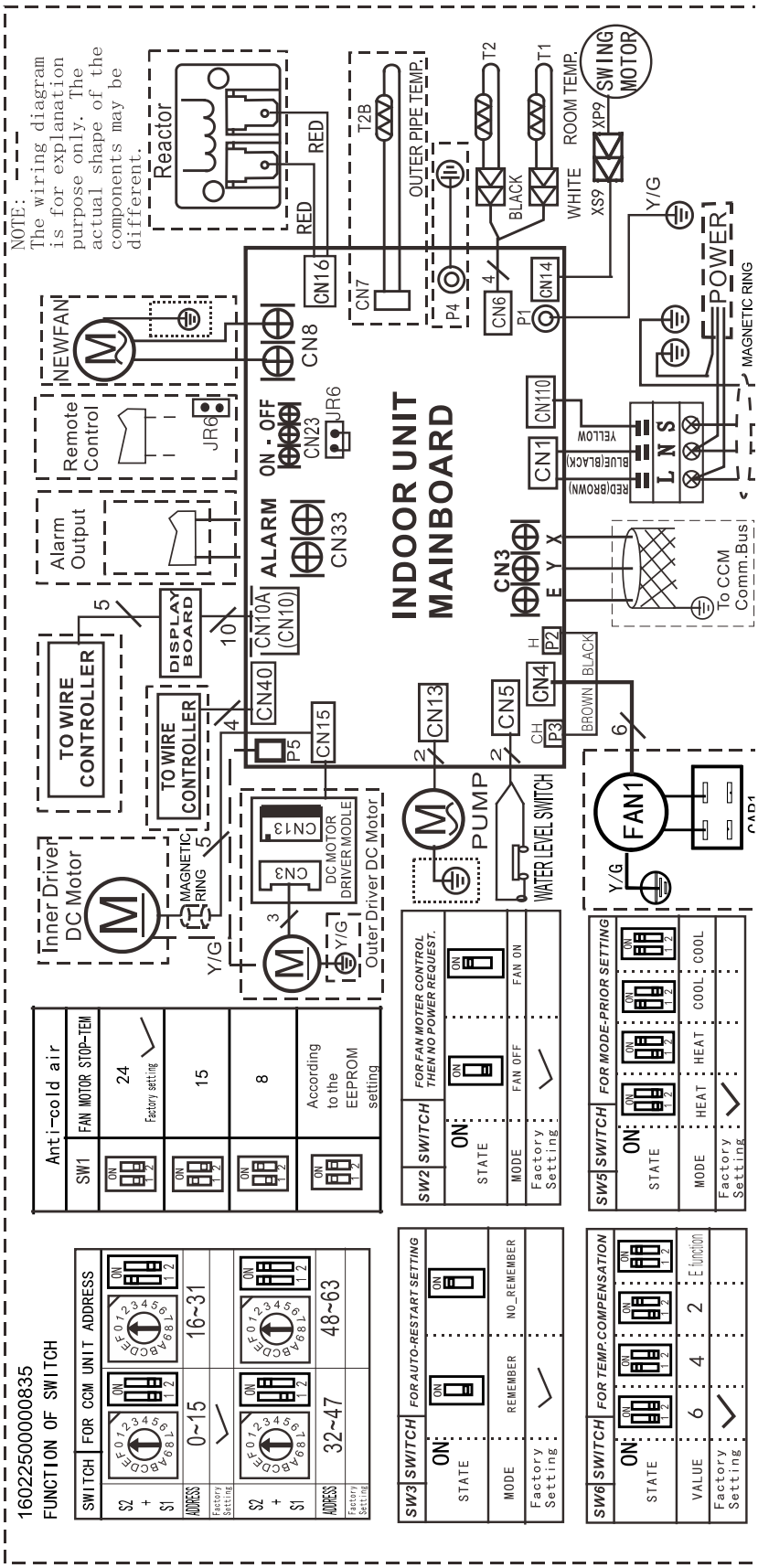

1602300000781 WIRING DIAGRAM
FOR ANTI-COLD WIND
SW1
TEL0
24℃
15℃
8℃
EEPROM DEFAULT
FACTORY SETTING
FOR SETTING FAN MOTOR CONTROL WHEN THERE IS NO DEMAND
SW2
FAN OFF
FAN ON
MODE
FACTORY SETTING
FOR SETTING AUTO-RESTART
SW3
AUTO-RESTART
NOT AUTO-RESTART
FOR TEMP. COMPENSATION(HEATING)
SW6
6℃
2℃
4℃
CODE
FACTORY SETTING
FOR SETTING POWER
ENC1
CODE
POWER
FACTORY SETTING
0
20
ACCORDING TO RELATED MODEL.
1
26
2
32~35
FOR SETTING NETADDRESS
S1+S2
CODE
NETADDRESS
FACTORY SETTING
0~F
0~15
16~31
32~47
48~63
NOTE:
1.The parts with dotted line indicates optional features.
2.Remove the short connector of J7 when you use the "on-off" function.
INDOOR UNIT MAINBOARD
ALARM ON/OFF
J7
CN43
CN33
CN23
CN13
CN10
CN6
CN5
CN3
CN2
CN1
CN18
CN9
CN40
CN45
CN4
CN34
CN15
CN1
CN2
FAN1
DC MOTOR DRIVER MODLE
DC FAN
AC FAN
REACTOR
RED
BROWN
BLACK
WHITE (GRAY)
WHITE
CAP
Y/G
P1
P2
PUMP
MAGNETIC RING
DISPLAY BOARD
WIRE CONTROLLER
INDOOR COIL TEMP. SENSOR
ROOM TEMP. SENSOR
WATER LEVEL SWITCH
YELLOW
BLACK
RED
RED
W
1(L)
2(N)
S
TO OUTDOOR UNIT
NOTE:
Please don't connect "W" if there is no "W" terminal in outdoor unit.
FAN FOR THE FRESH AIR OR ANION GENERATOR
Alarm Output
Remote Control
To CCM Comm.Bus
MAGNETIC RING
WIRE CONTROLLER
HB HA
X Y E

ID3-XY 35M

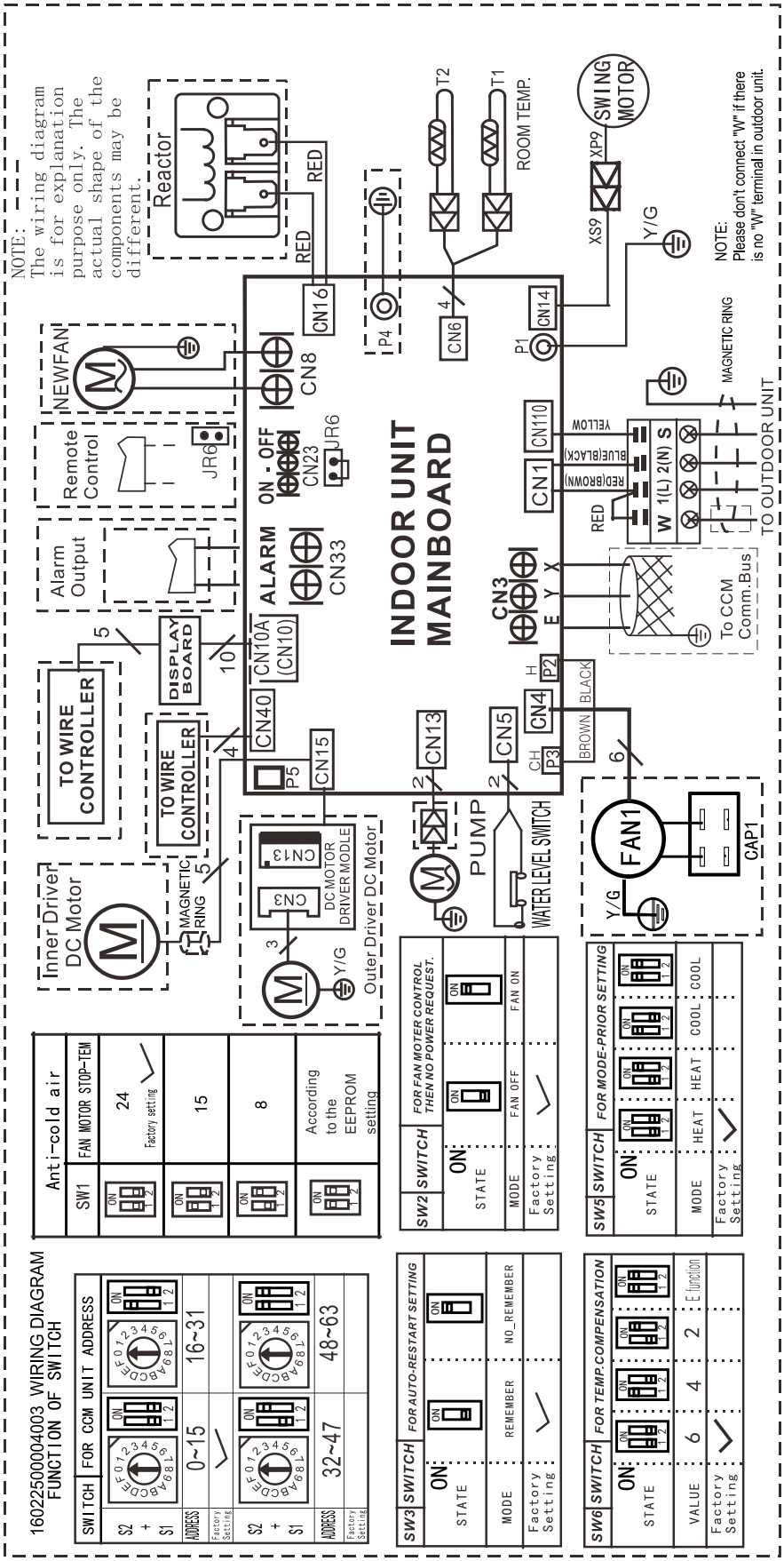

1602300000817
WIRING DIAGRAM
(INDOOR UNIT)
NOTE:
1.The parts with dotted line indicates optional features.
2.Remove the short connector of J7 when you use the "on-off" function.
INDOOR UNIT
MAINBOARD
TO OUTDOOR UNIT
DC FAN
AC FAN
PUMP
WIRE CONTROLLER
DISPLAY BOARD
MAGNETIC RING
INDOOR COIL TEMP. SENSOR
ROOM TEMP. SENSOR
WATER LEVEL SWITCH
REACTOR
DC MOTOR DRIVER MODLE
FAN FOR THE FRESH AIR OR ANION GENERATOR
Alarm Output
Remote Control
To CCM Comm.Bus
FOR SETTING AUTO-RESTART
FOR ANTI-COLD WIND
FOR TEMP. COMPENSATION(HEATING)
FOR SETTING FAN MOTOR CONTROL WHEN THERE IS NO DEMAND
FOR SETTING POWER(DC MOTOR MODEL ONLY)
FOR SETTING NETADDRESS
ACCORDING TO RELATED MODEL.

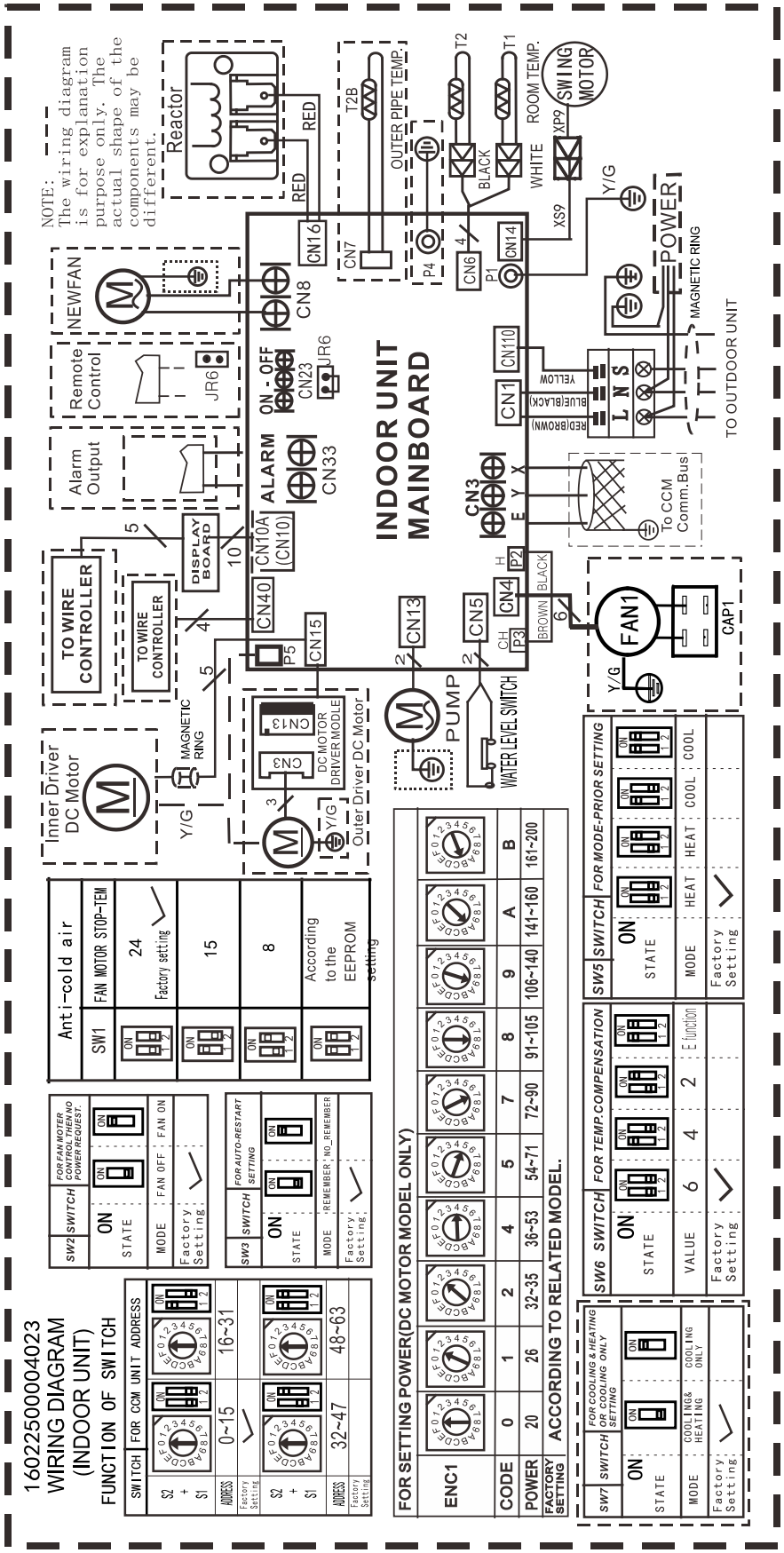
Box 650x650:

MCA3I-07HRFNX-QRD0, MCA3I-09HRFN8-QRD0



IB3-XY 27M

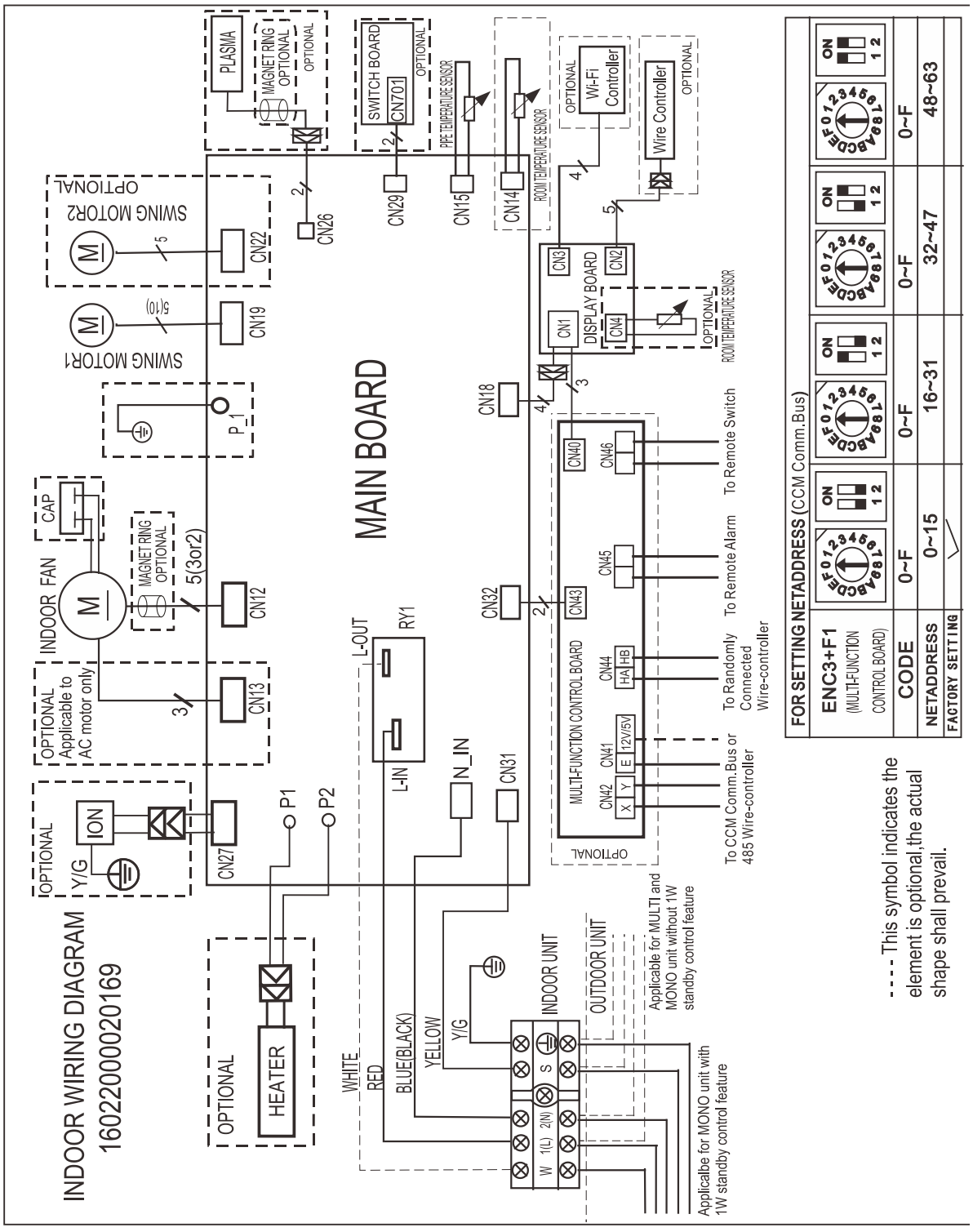

NOTE:
The wiring diagram is for explanation purpose only. The actual shape of the components may be different.
INDOOR UNIT MAINBOARD
Reactor
NEWFAN
Remote Control
Alarm Output
TO WIRE CONTROLLER
DISPLAY BOARD
ON - OFF
ALARM
CN23
CN33
CN8
CN16
CN10A (CN10)
CN40
CN15
P5
CN13
CN5
CN4
CN3
CN1
CN110
CN14
CN6
P4
P1
P2
P3
JR6
T1
T2
ROOM TEMP.
SWING MOTOR
XP9
XS9
Y/G
MAGNETIC RING
NOTE:
Please don't connect "W" if there is no "W" terminal in outdoor unit.
TO OUTDOOR UNIT
W 1(L) 2(N) S
RED(BROWN)
BLUE(BLACK)
YELLOW
RED
BLACK
BROWN
To CCM Comm.Bus
Inner Driver DC Motor
MAGNETIC RING
Outer Driver DC Motor
DC MOTOR DRIVER MODLE
PUMP
WATER LEVEL SWITCH
FAN1
CAP1
1602250004003 WIRING DIAGRAM
FUNCTION OF SWITCH
SWITCH FOR CCM UNIT ADDRESS
S2 + S1
ADDRESS
0~15
16~31
32~47
48~63
Factory Setting
Anti-cold air
SW1
FAN MOTOR STOP-TEM
24
15
8
According to the EEPROM setting
SW2 SWITCH
FOR FAN MOTER CONTROL THEN NO POWER REQUEST.
STATE
MODE
FAN OFF
FAN ON
SW3 SWITCH
FOR AUTO-RESTART SETTING
REMEMBER
NO_REMEMBER
SW5 SWITCH
FOR MODE-PRIOR SETTING
HEAT
COOL
SW6 SWITCH
FOR TEMP.COMPENSATION
VALUE
6
4
2
E function

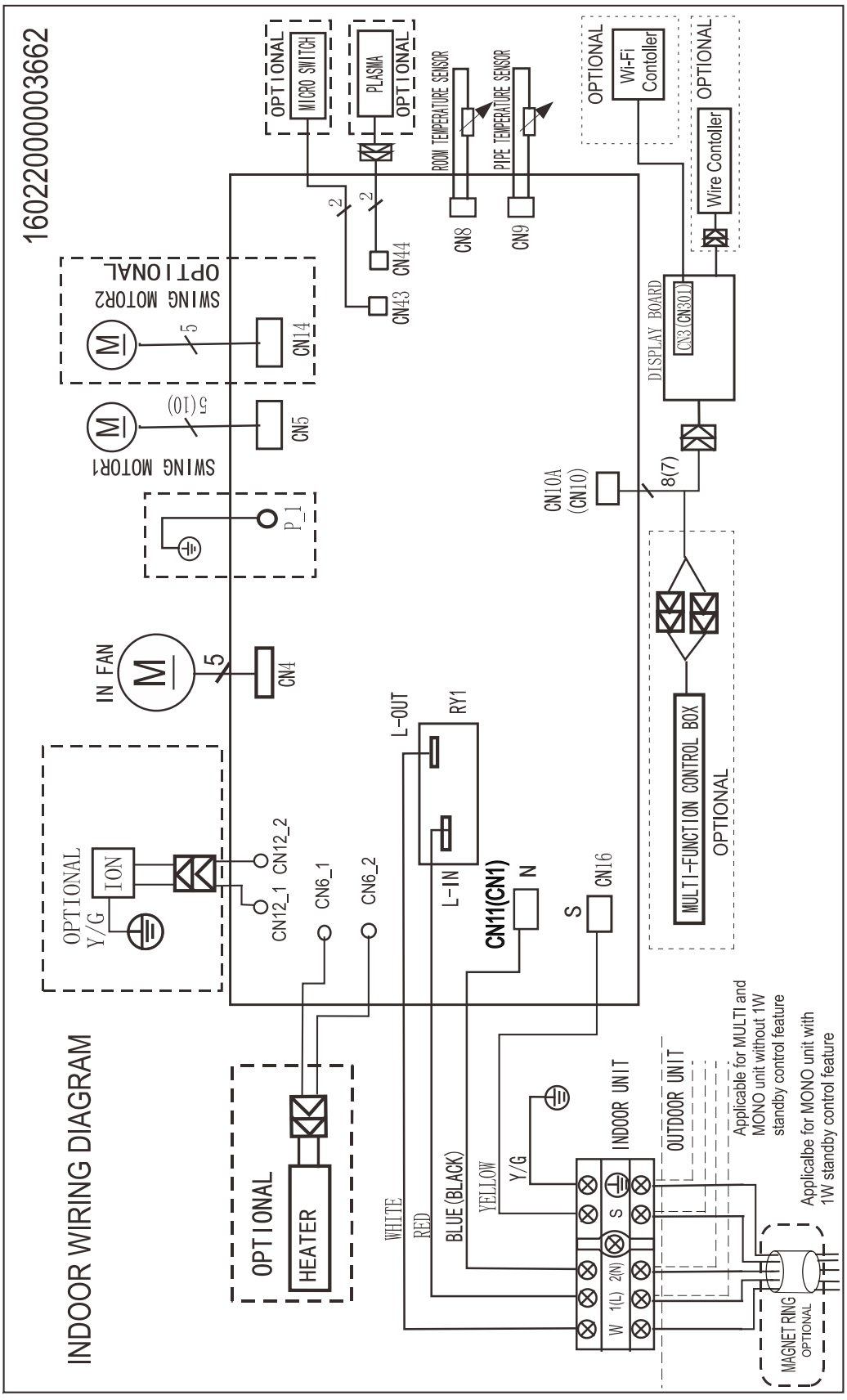

160225000040 23
WIRING DIAGRAM
(INDOOR UNIT)
FUNCTION OF SWITCH
INDOOR UNIT
MAINBOARD
NOTE:
The wiring diagram is for explanation purpose only. The actual shape of the components may be different.
Reactor
NEWFAN
Remote Control
Alarm Output
TO WIRE CONTROLLER
Inner Driver DC Motor
Outer Driver DC Motor
DC MOTOR DRIVER MODLE
MAGNETIC RING
DISPLAY BOARD
ALARM
ON - OFF
PUMP
WATER LEVEL SWITCH
FAN1
CAP1
POWER
TO OUTDOOR UNIT
To CCM Comm.Bus
OUTER PIPE TEMP.
ROOM TEMP.
SWING MOTOR
MAGNETIC RING
WHITE
BLACK
YELLOW
BLUE(BLACK)
RED(BROWN)
BROWN
RED
Y/G
L N S
E Y X
H
CH
FOR SETTING POWER(DC MOTOR MODEL ONLY)
ACCORDING TO RELATED MODEL.
Anti-cold air
FAN MOTOR STOP-TEM
Factory setting
According to the EEPROM setting
FOR FAN MOTER CONTROL THEN NO POWER REQUEST.
FOR AUTO-RESTART SETTING
FOR COOLING & HEATING OR COOLING ONLY SETTING
FOR TEMP.COMPENSATION
FOR MODE-PRIOR SETTING
Factory Setting
Specifications

Wall mounted type

Nativ IZ2-XY 27M-70M,

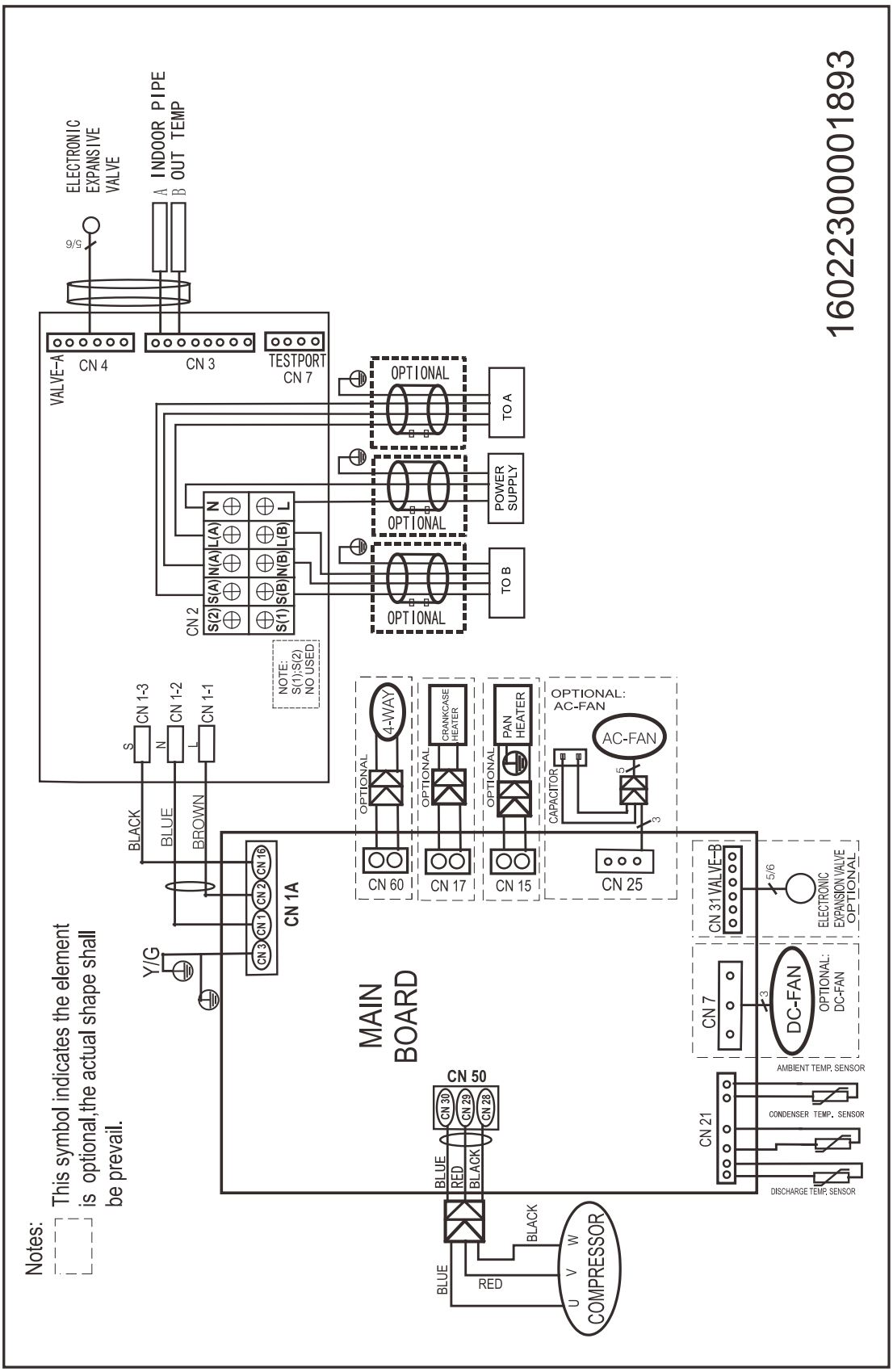
Schiara 2 IE2-Y 27M-35M



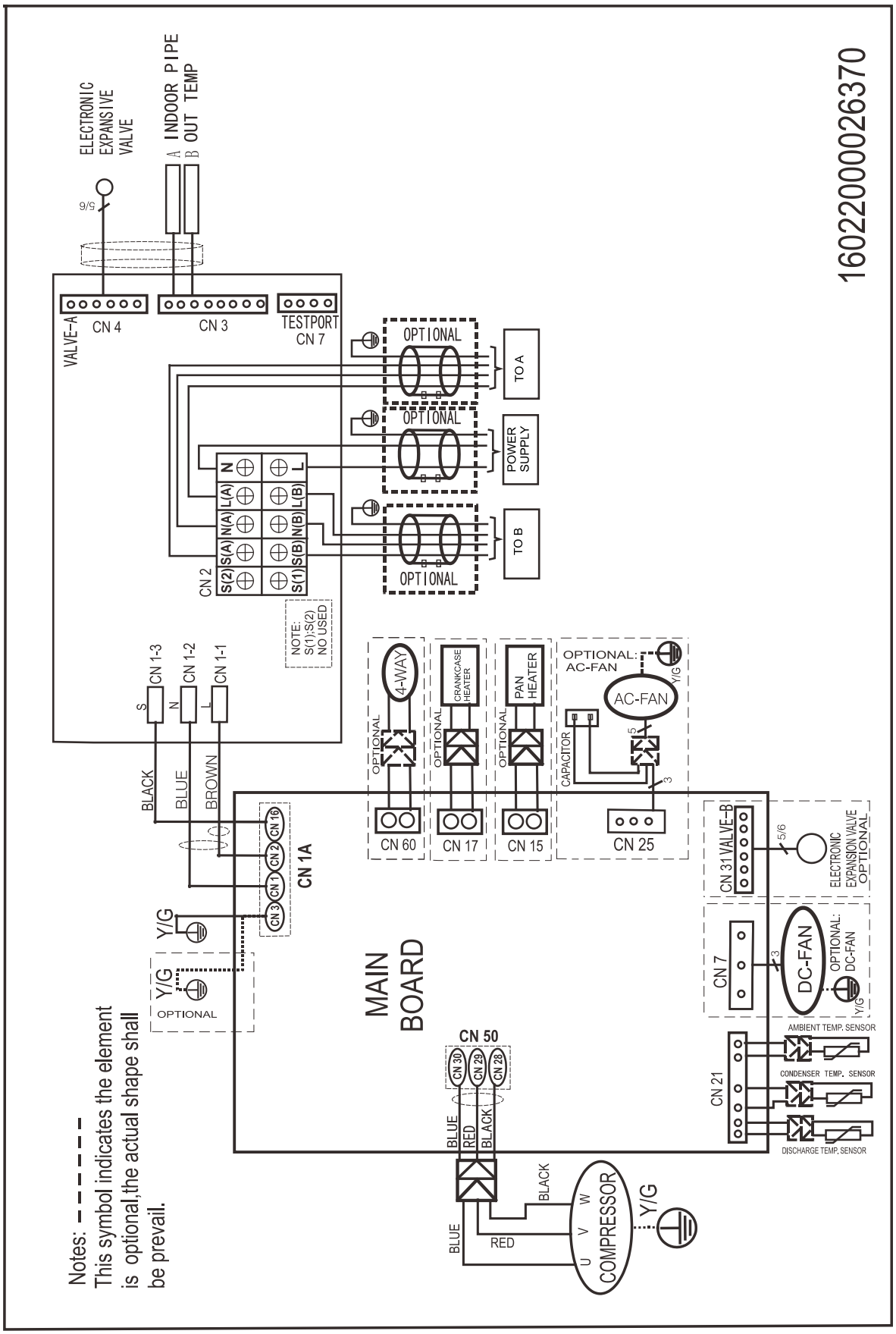

INDOOR WIRING DIAGRAM
160220000003662
OPTIONAL
MICRO SWITCH
PLASMA
OPTIONAL
ROOM TEMPERATURE SENSOR
PIPE TEMPERATURE SENSOR
OPTIONAL
Wi-Fi Contoller
OPTIONAL
Wire Contoller
CN43
CN44
CN8
CN9
DISPLAY BOARD
CN3 (CN30)
SWING MOTOR2
OPTIONAL
CN14
SWING MOTOR1
CN5
P_1
CN10A (CN10)
8(7)
IN FAN
CN4
MULTI-FUNCTION CONTROL BOX
OPTIONAL
OPTIONAL
ION
Y/G
CN12_1 CN12_2
CN6_1
CN6_2
L-OUT
RY1
L-IN
CN11(CN1)
N
S
CN16
OPTIONAL
HEATER
WHITE
RED
BLUE (BLACK)
YELLOW
Y/G
INDOOR UNIT
OUTDOOR UNIT
Applicable for MULTI and MONO unit without 1W standby control feature
Applicalbe for MONO unit with 1W standby control feature
MAGNET RING
OPTIONAL

8.2 Outdoor Unit

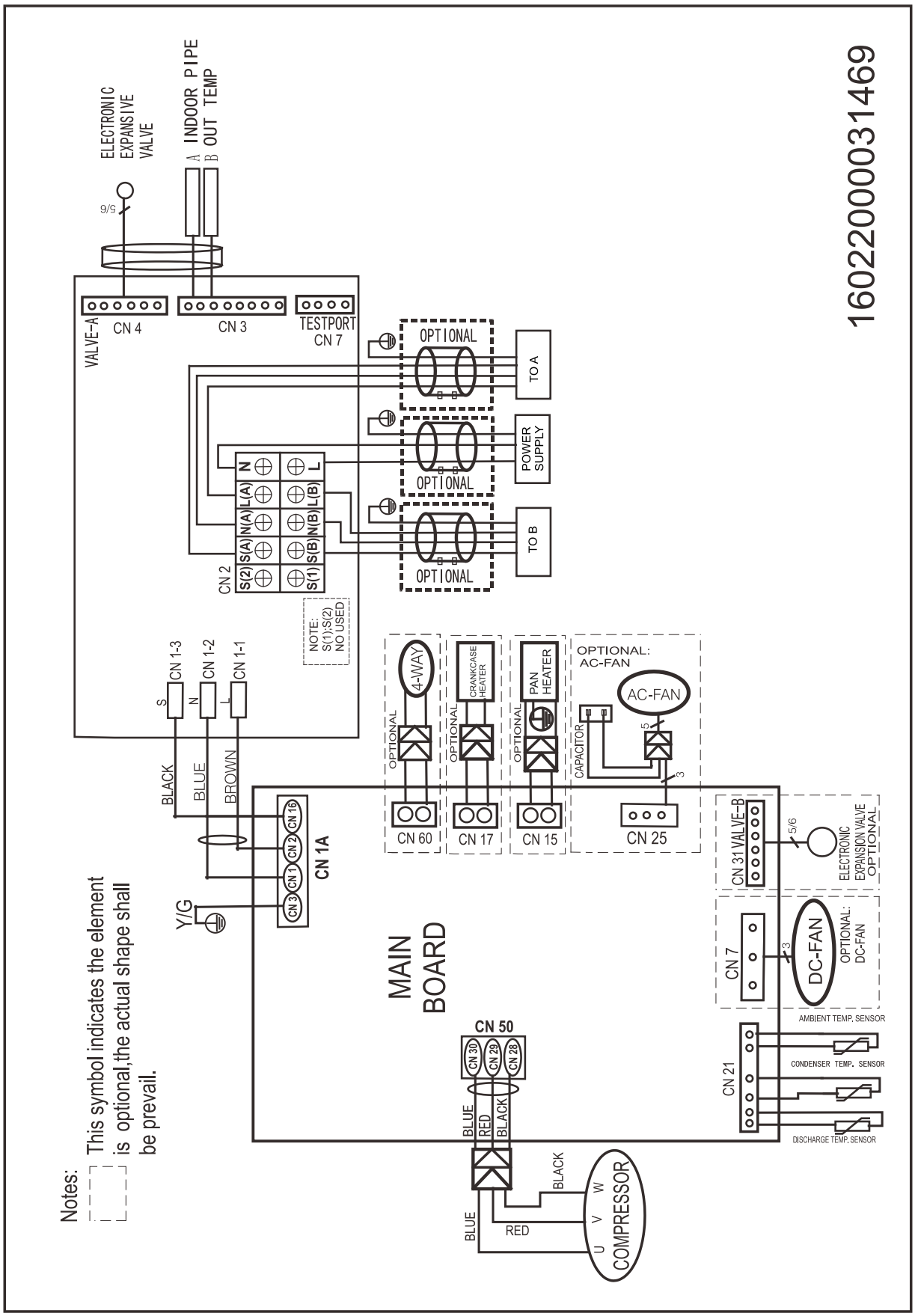
M2OG-14HFN8-Q



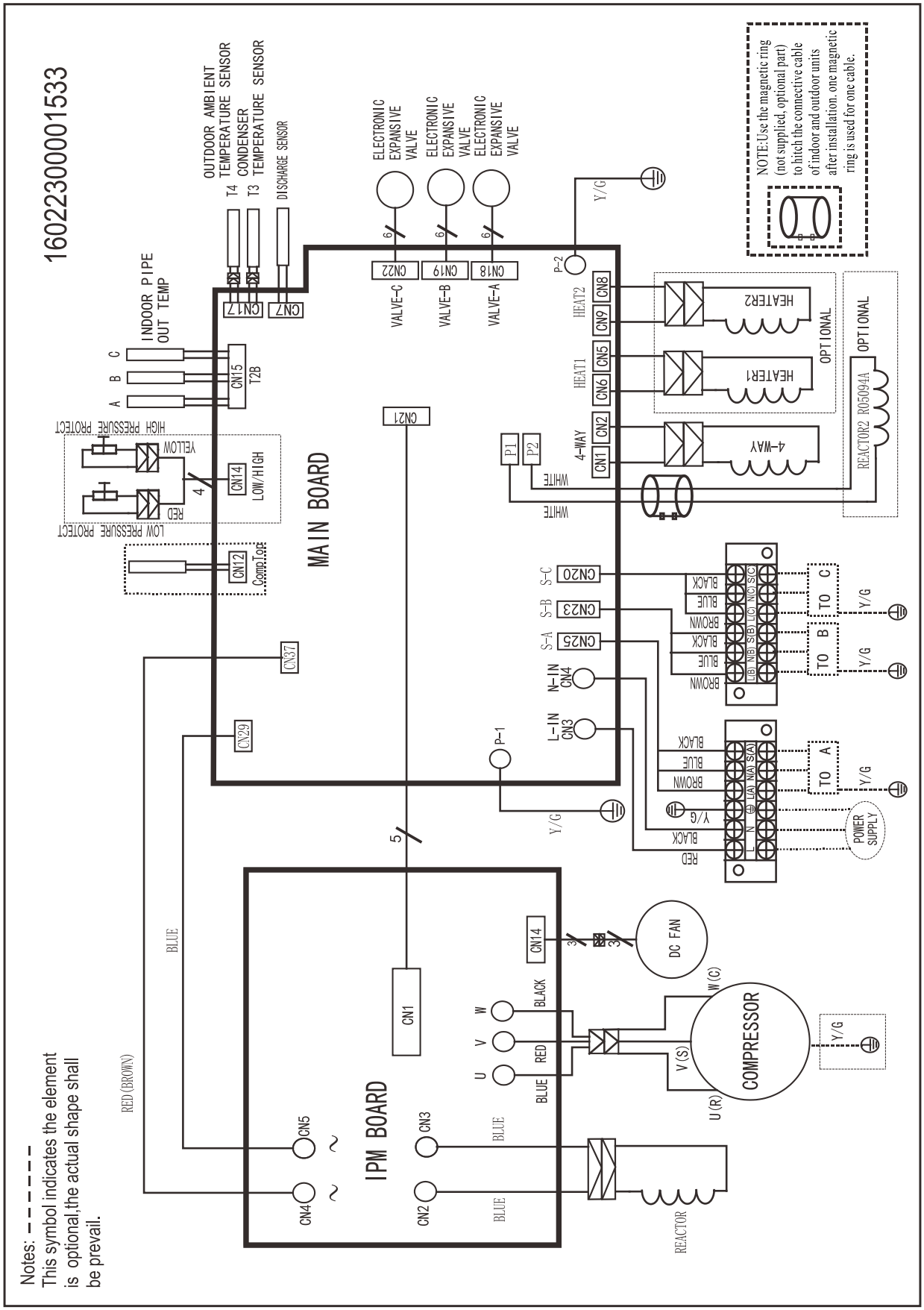
M2OC-18HFN8-Q



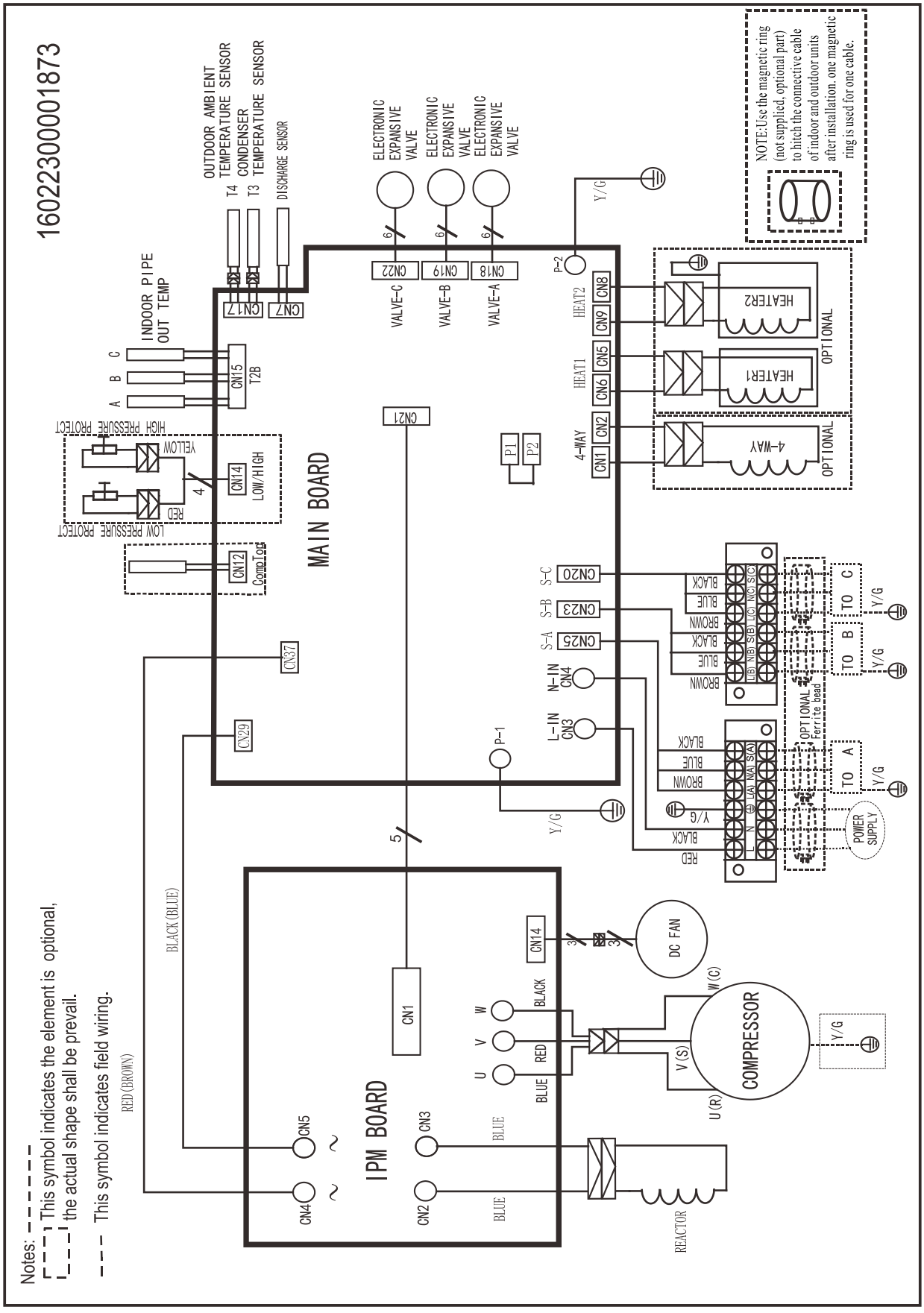
M2OD-18HFN8-Q



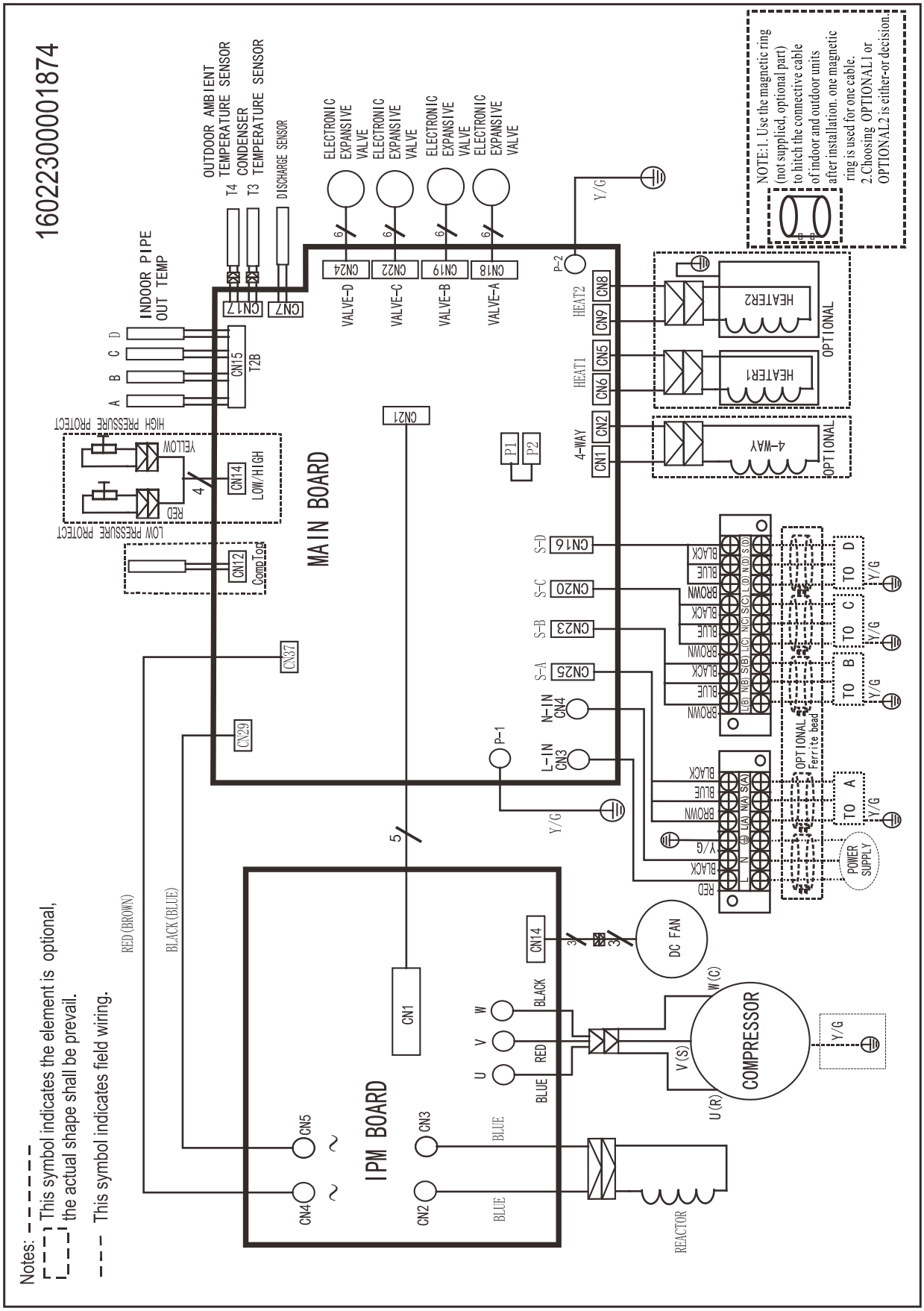
M3OE-27HFN8-Q



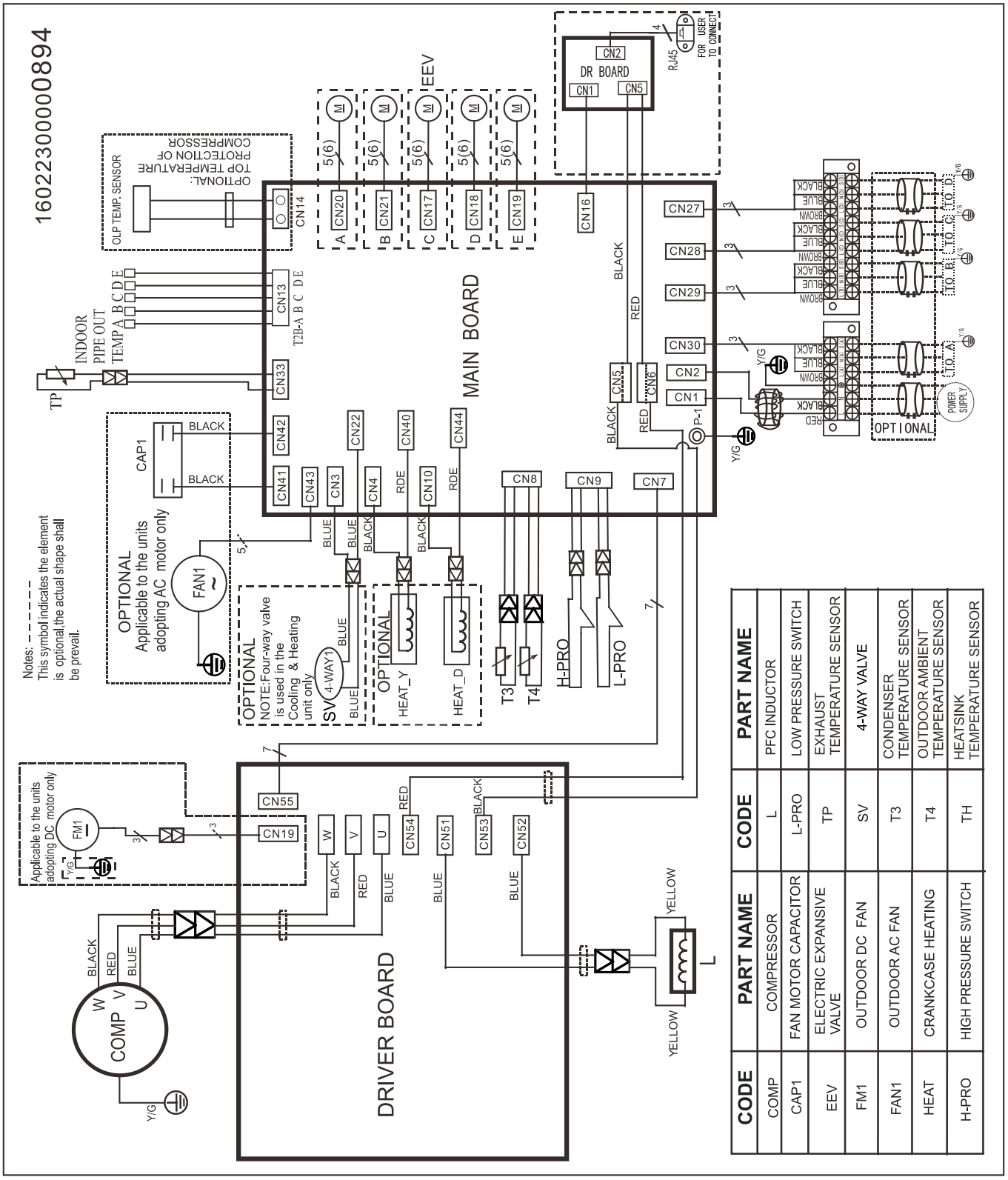
M3OF-21HFN8-Q, M3OF-27HFN8-Q



MU2-Y 82M

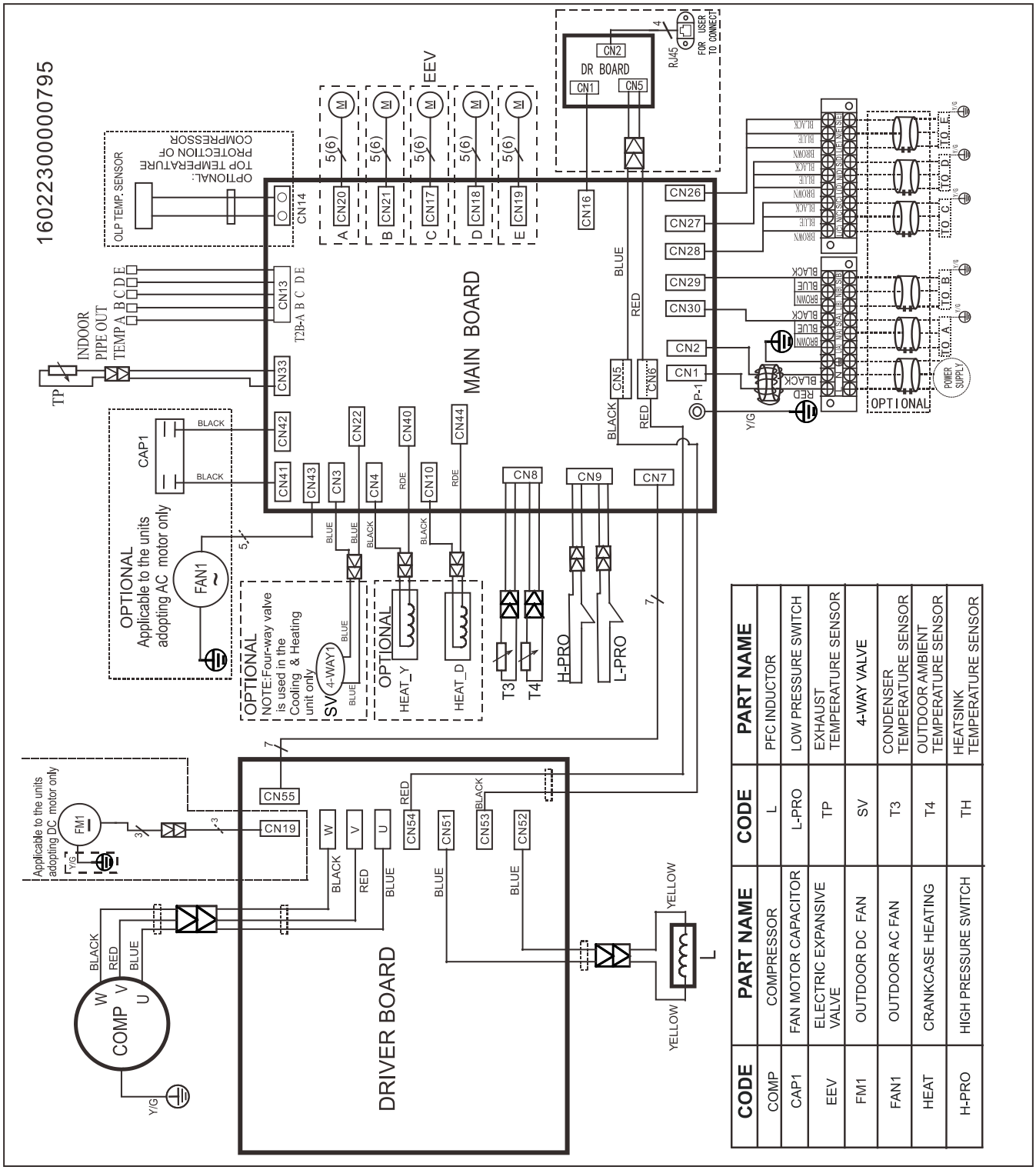

160223000001874
MAIN BOARD
IPM BOARD
OUTDOOR AMBIENT TEMPERATURE SENSOR T4
CONDENSER TEMPERATURE SENSOR T3
DISCHARGE SENSOR
INDOOR PIPE OUT TEMP
ELECTRONIC EXPANSIVE VALVE
VALVE-A
VALVE-B
VALVE-C
VALVE-D
HIGH PRESSURE PROTECT
LOW PRESSURE PROTECT
YELLOW
RED
LOW/HIGH
CompTop
HEAT1
HEAT2
4-WAY
OPTIONAL
HEATER1
HEATER2
DC FAN
COMPRESSOR
REACTOR
POWER SUPPLY
Ferrite bead
NOTE:1. Use the magnetic ring (not supplied, optional part) to hitch the connective cable of indoor and outdoor units after installation. one magnetic ring is used for one cable.
2.Choosing OPTIONAL1 or OPTIONAL2 is either-or decision.
Notes:
This symbol indicates the element is optional, the actual shape shall be prevail.
This symbol indicates field wiring.
RED (BROWN)
BLACK (BLUE)

MU2-Y 105M



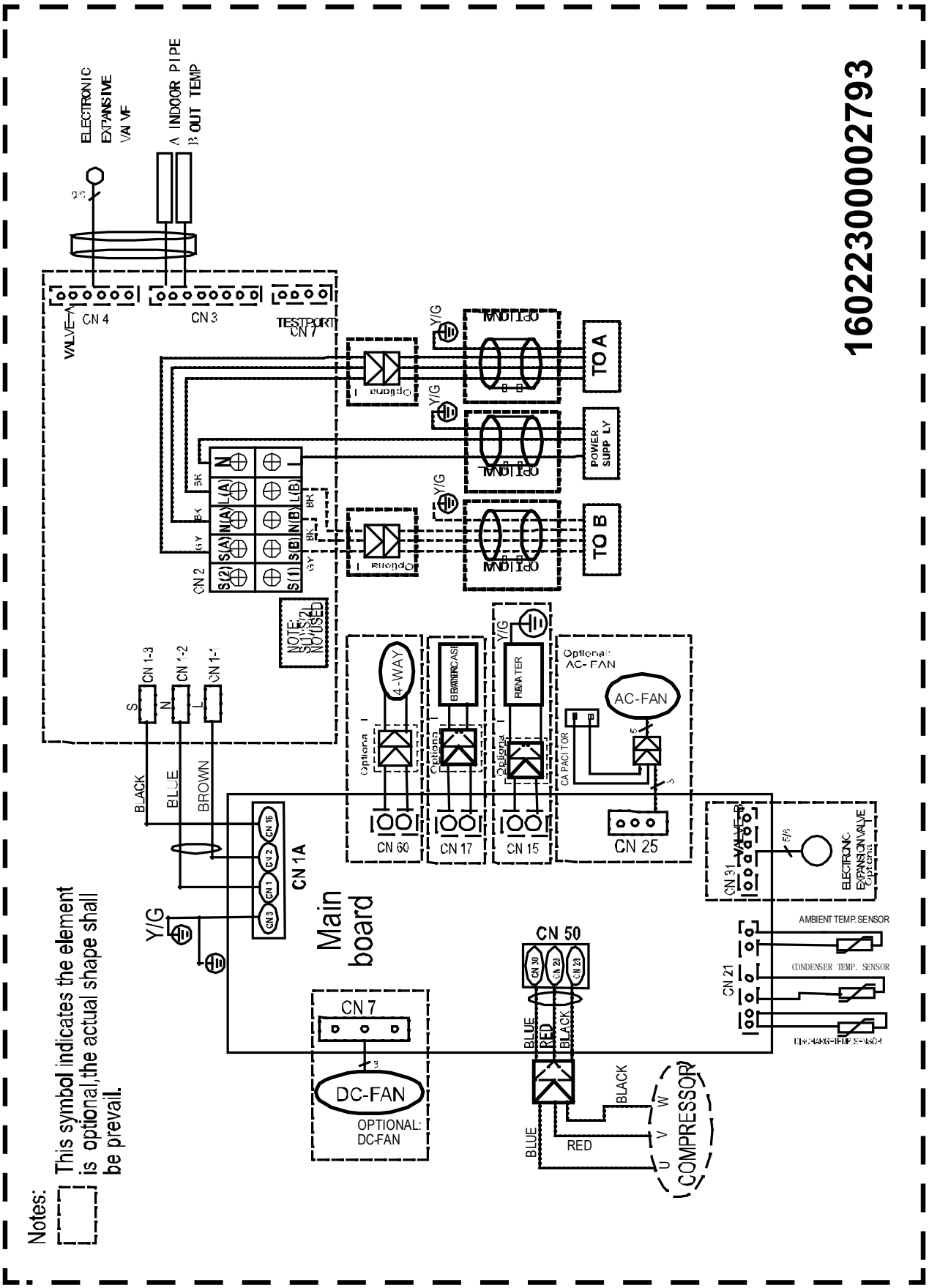
CODE	PART NAME	CODE	PART NAME
COMP	COMPRESSOR	L	PFC INDUCTOR
CAP1	FAN MOTOR CAPACITOR	L-PRO	LOW PRESSURE SWITCH
EEV	ELECTRIC EXPANSIVE VALVE	TP	EXHAUST TEMPERATURE SENSOR
FM1	OUTDOOR DC FAN	SV	4-WAY VALVE
FAN1	OUTDOOR AC FAN	T3	CONDENSER TEMPERATURE SENSOR
HEAT	CRANKCASE HEATING	T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
H-PRO	HIGH PRESSURE SWITCH	TH	HEATSINK TEMPERATURE SENSOR

M5OD-42HFN8-Q, MU2-Y 125M

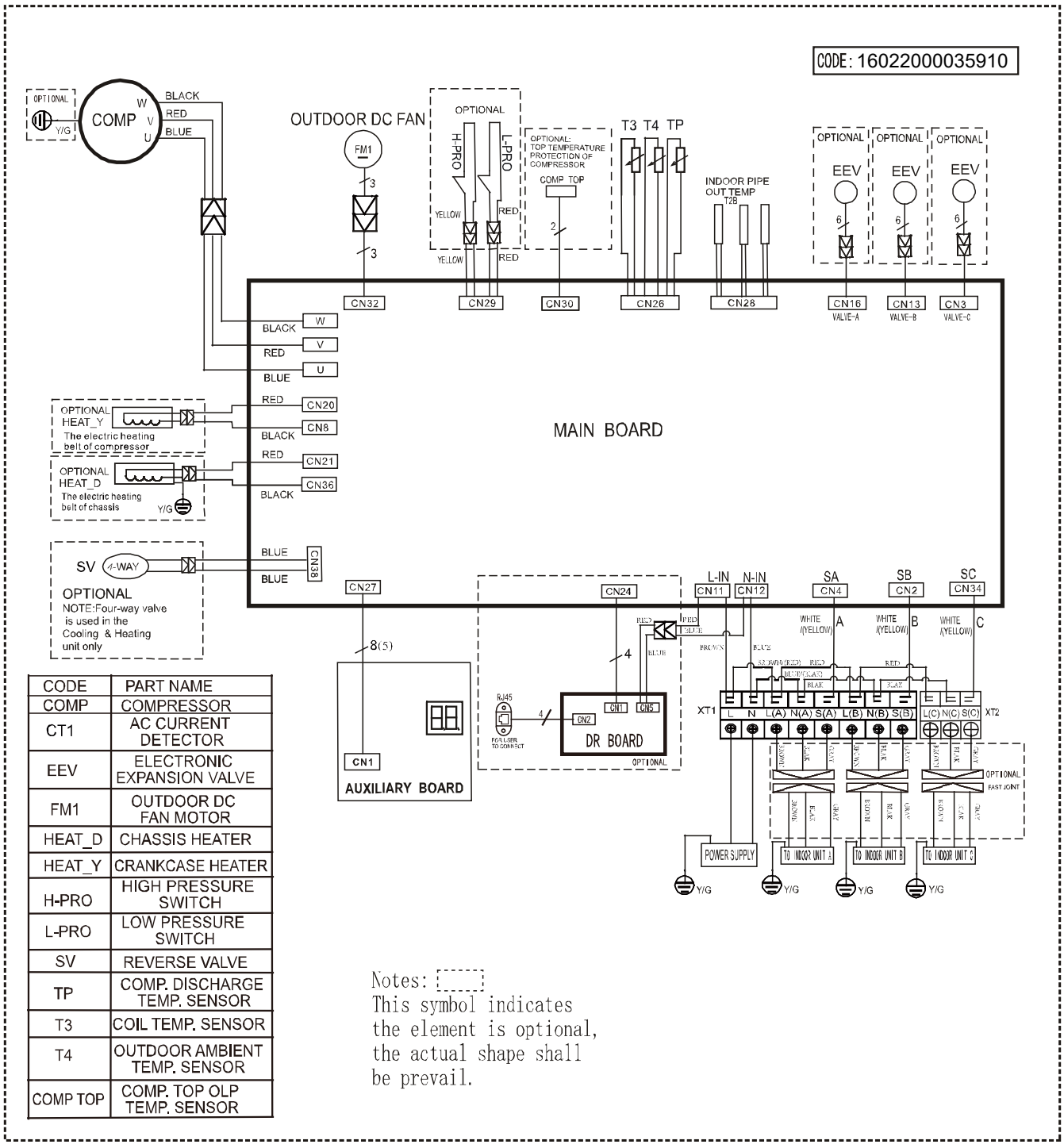


CODE	PART NAME	CODE	PART NAME
COMP	COMPRESSOR	L	PFC INDUCTOR
CAP1	FAN MOTOR CAPACITOR	L-PRO	LOW PRESSURE SWITCH
EEV	ELECTRIC EXPANSIVE VALVE	TP	EXHAUST TEMPERATURE SENSOR
FM1	OUTDOOR DC FAN	SV	4-WAY VALVE
FAN1	OUTDOOR AC FAN	T3	CONDENSER TEMPERATURE SENSOR
HEAT	CRANKCASE HEATING	T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
H-PRO	HIGH PRESSURE SWITCH	TH	HEATSINK TEMPERATURE SENSOR

MU2-Y 41M, MU2-Y 53M



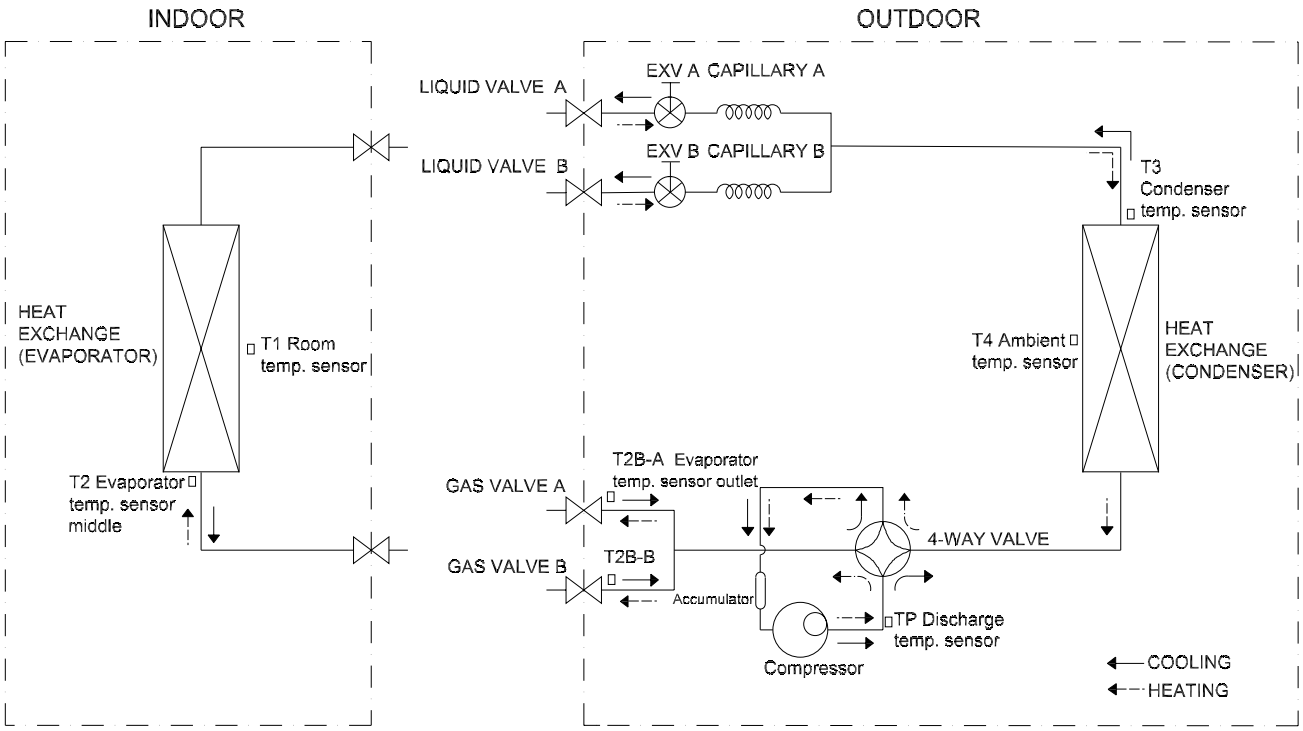
MU2-Y 61M, MU2-Y 79M



CODE	PART NAME
COMP	COMPRESSOR
CT1	AC CURRENT DETECTOR
EEV	ELECTRONIC EXPANSION VALVE
FM1	OUTDOOR DC FAN MOTOR
HEAT_D	CHASSIS HEATER
HEAT_Y	CRANKCASE HEATER
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	REVERSE VALVE
TP	COMP. DISCHARGE TEMP. SENSOR
T3	COIL TEMP. SENSOR
T4	OUTDOOR AMBIENT TEMP. SENSOR
COMP TOP	COMP. TOP OLP TEMP. SENSOR

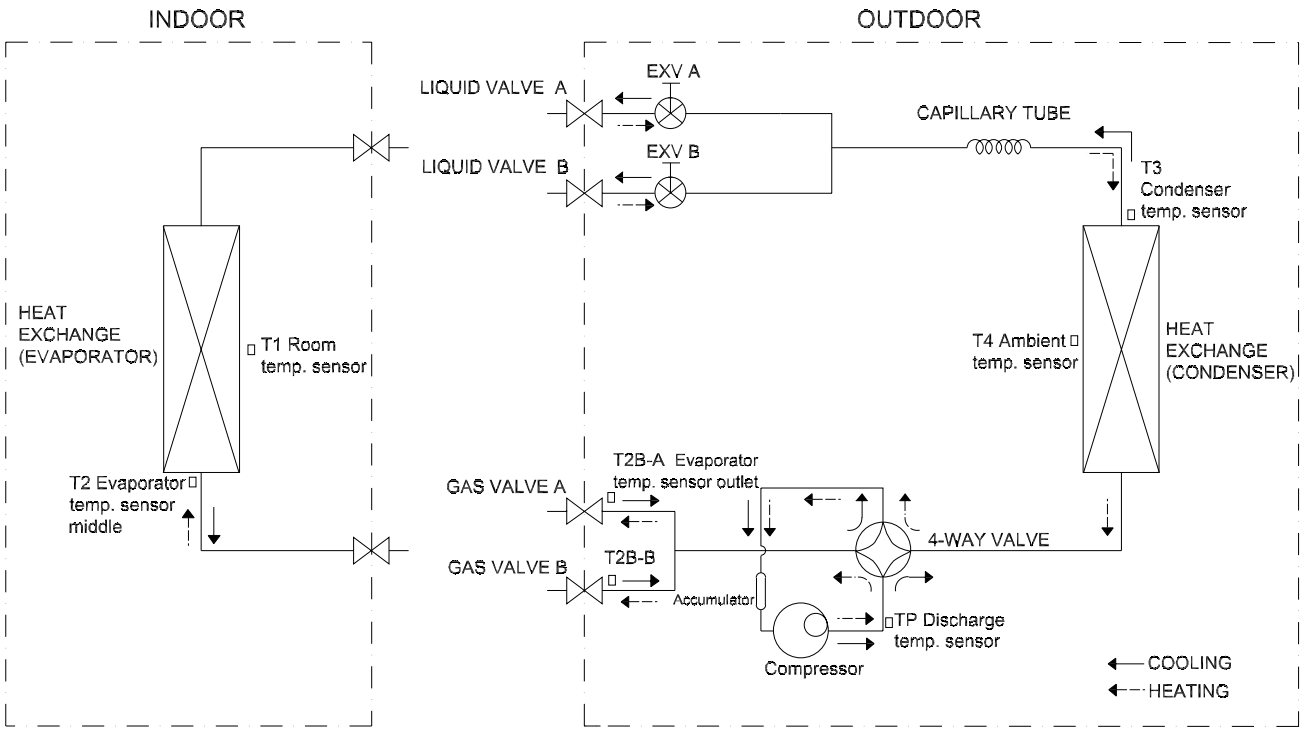
Notes: [ ]
This symbol indicates the element is optional, the actual shape shall be prevail.

8. Refrigerant Cycle Diagrams

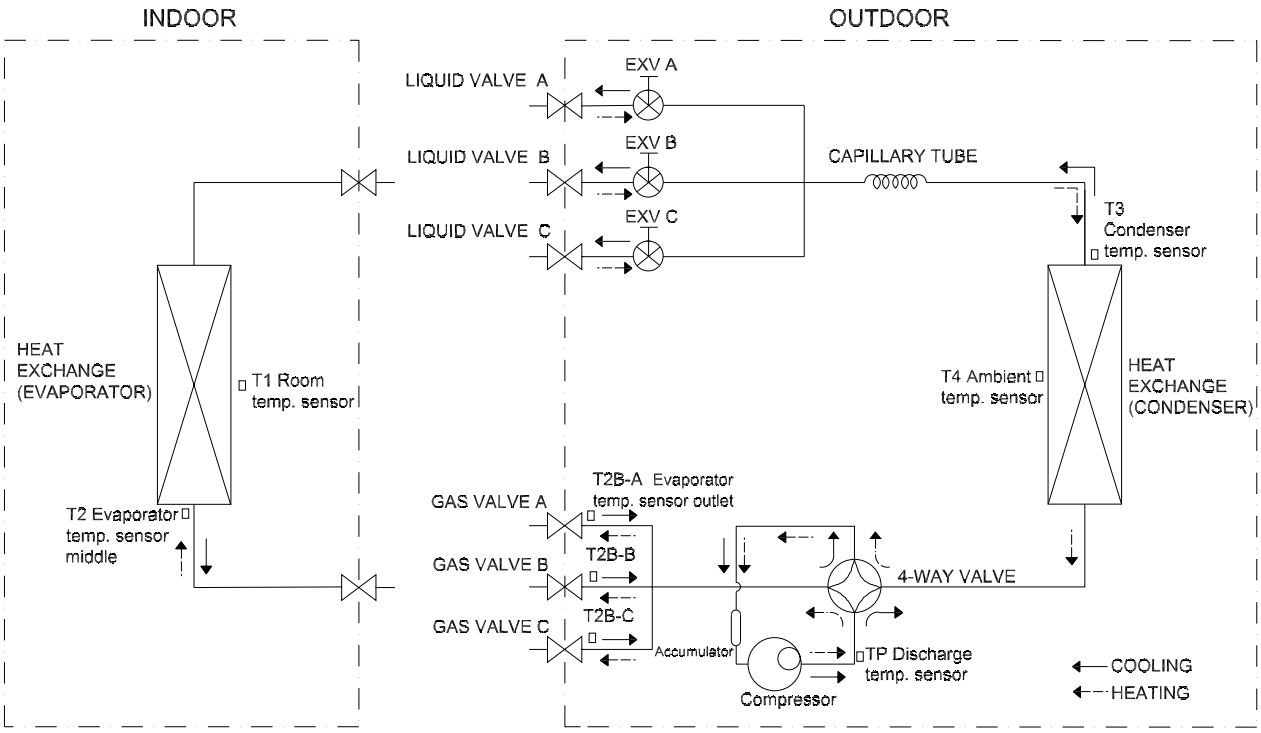


Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
M2OG-14HFN8-Q	2x9.52	2x6.35	15	25	40	15	10	12g/m
M2OC-18HFN8-Q								
M2OD-18HFN8-Q								

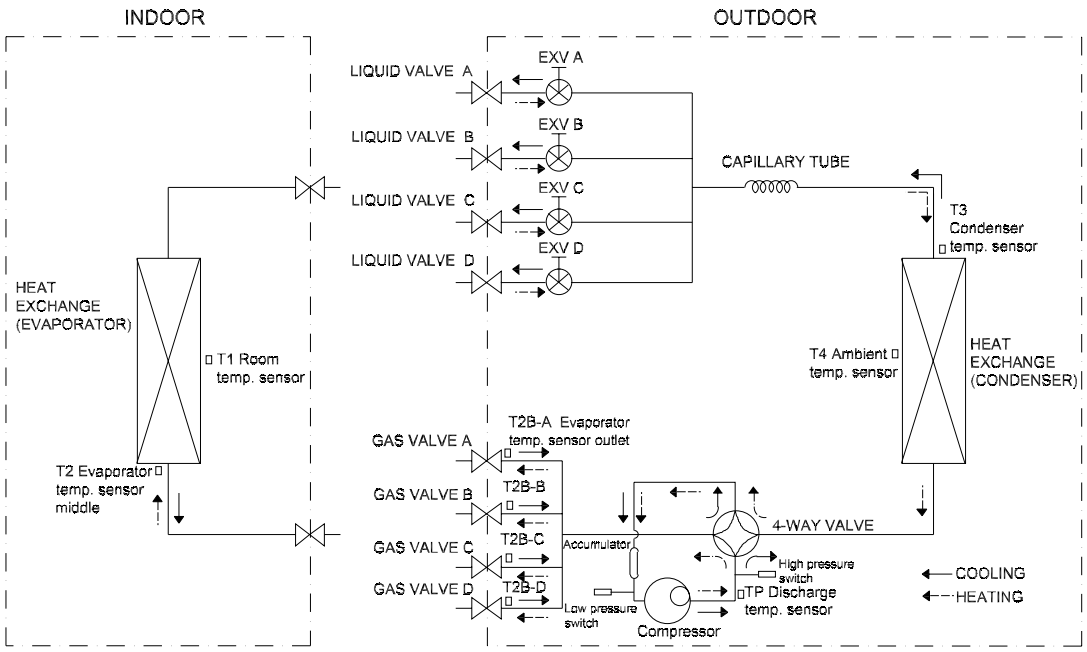
Note: For M2OC-18HFN8-Q, there is no Accumulator.



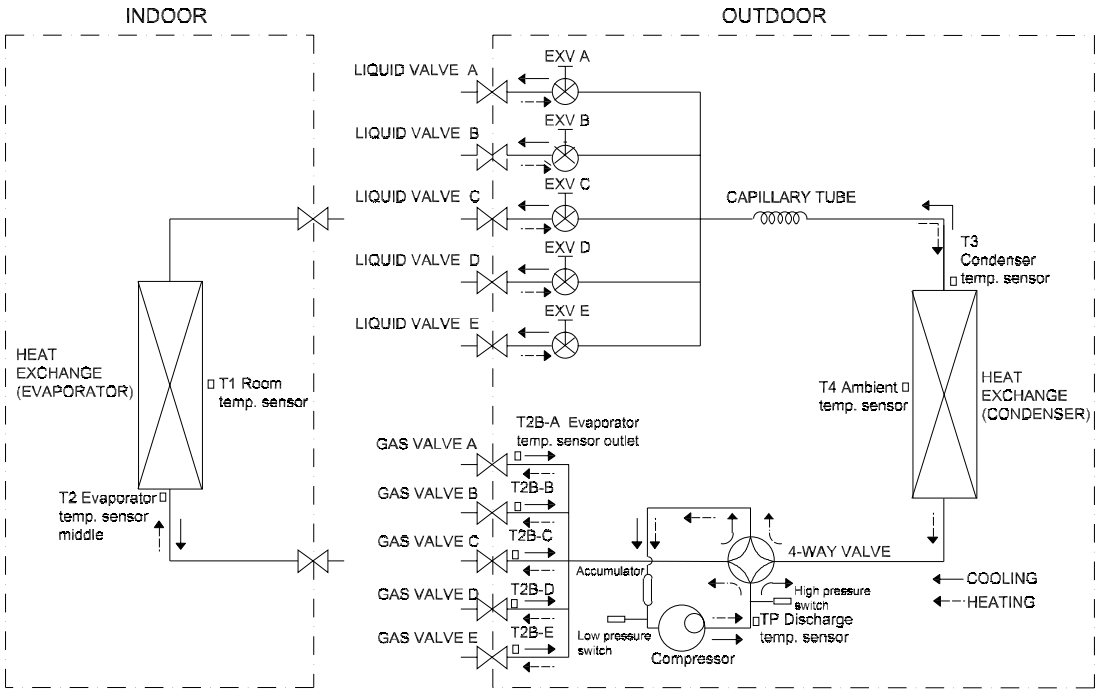
Size	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
MU2-Y 41M	2x9.52	2x6.35	15	25	40	15	10	12g/m
MU2-Y 53M								



Model	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
M3OF-21HFN8-Q	3x9.52	3x6.35	22.5	30	60	15	10	12g/m
M3OE-27HFN8-Q								
M3OF-27HFN8-Q								



Size	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
MU2-Y 82M	3x9.52+1x12.7	4x6.35	30	35	80	15	10	12g/m
MU2-Y 105M	3x9.52+1x12.7	4x6.35	30	35	80	15	10	12g/m

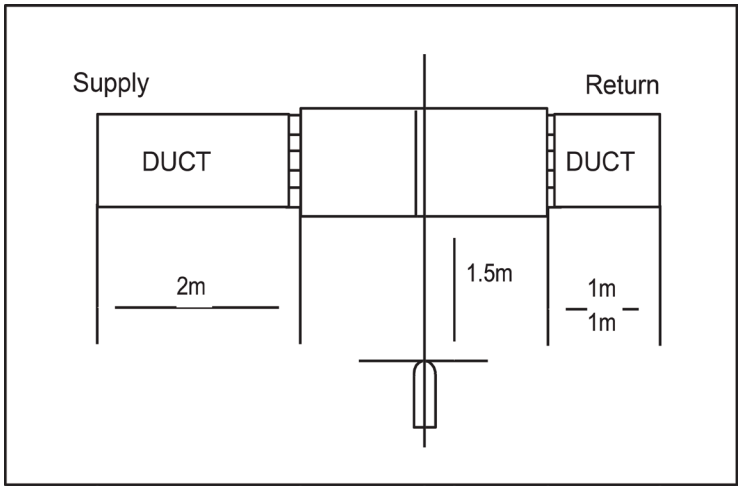


Size	Pipe Size (Diameter:ø)		Piping length (m)			Elevation (m)		Additional Refrigerant
			Rated	Max				
	Gas	Liquid		Single	Total	IDU and ODU	Between IDUs	
MU2-Y 125M	4x9.52+1x12.7	5x6.35	37.5	35	80	15	10	12g/m

9. Noise Criterion Curves

10.1 Indoor Unit

Duct 2 ID3-XY 27M-35M



Notes:

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

-Data is valid at free field condition

-Data is valid at nominal operation condition

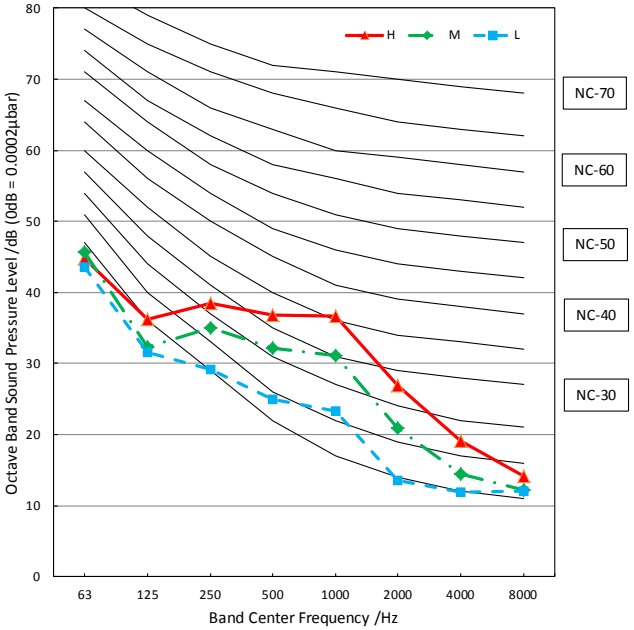
-Reference acoustic pressure OdB = 20μPa

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

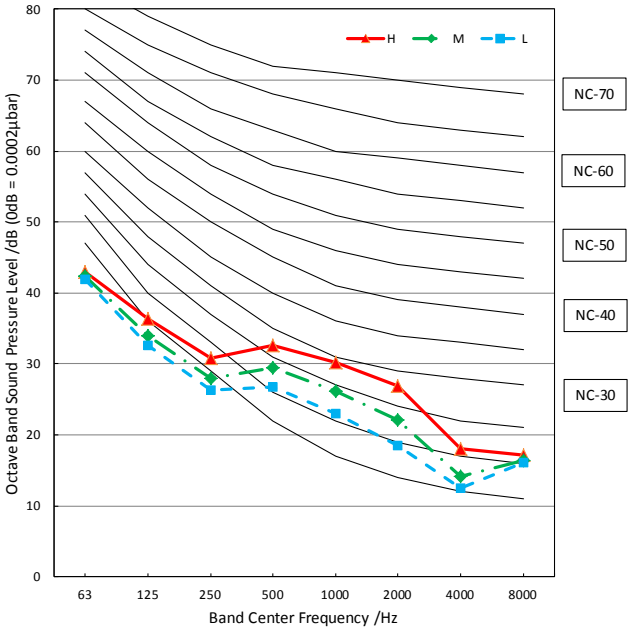
-The operating conditions are assumed to be standard.

MTIU-07HWFNX-QRD0W

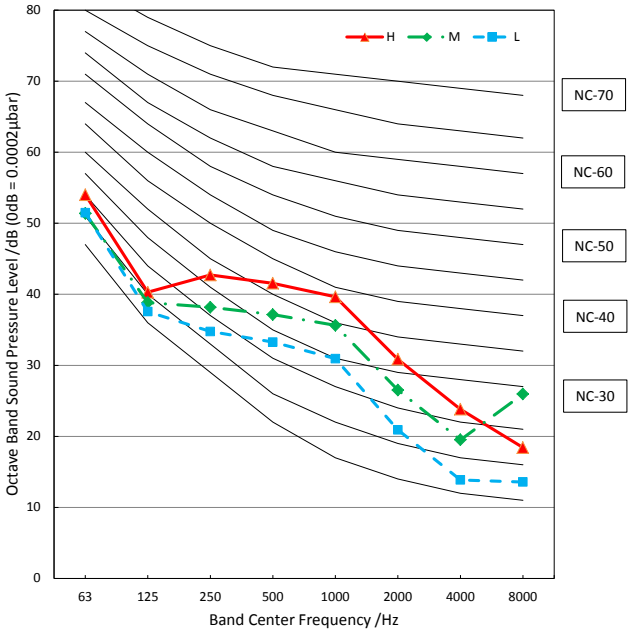
MTIU-09HWFNX-QRD0W



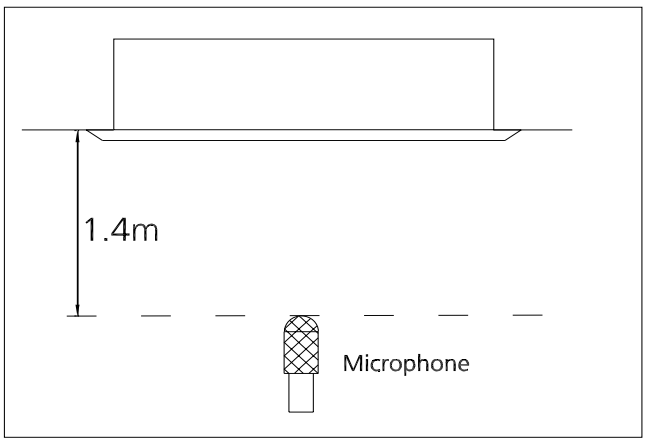
ID3-XY 27M



ID3-XY 35M



Box 650x650
IB3-XY 27M-35M



Notes:

-Sound measured at 1.4m away from the noisiest location of the unit.

-Data is valid at free field condition

-Data is valid at nominal operation condition

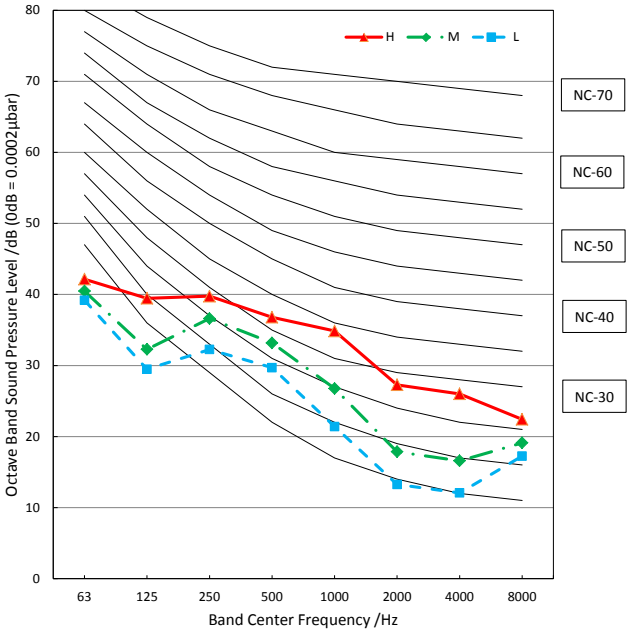
-Reference acoustic pressure OdB = 20μPa

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

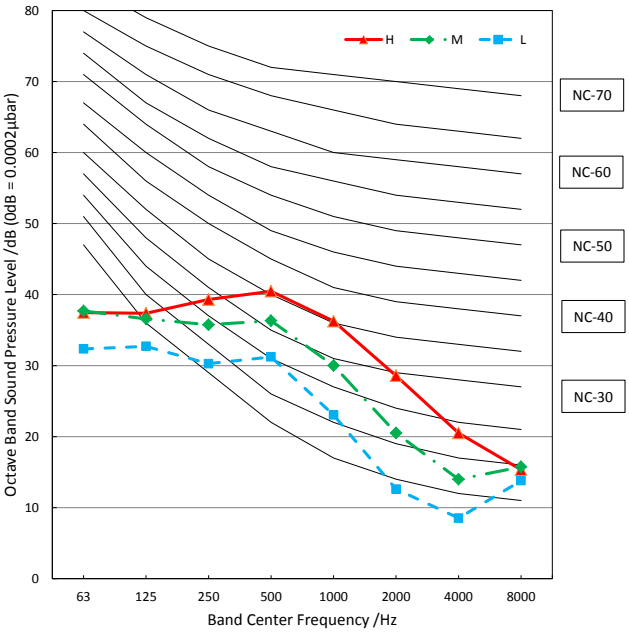
-The operating conditions are assumed to be standard.

MCA3I-07HRFNX-QRD0

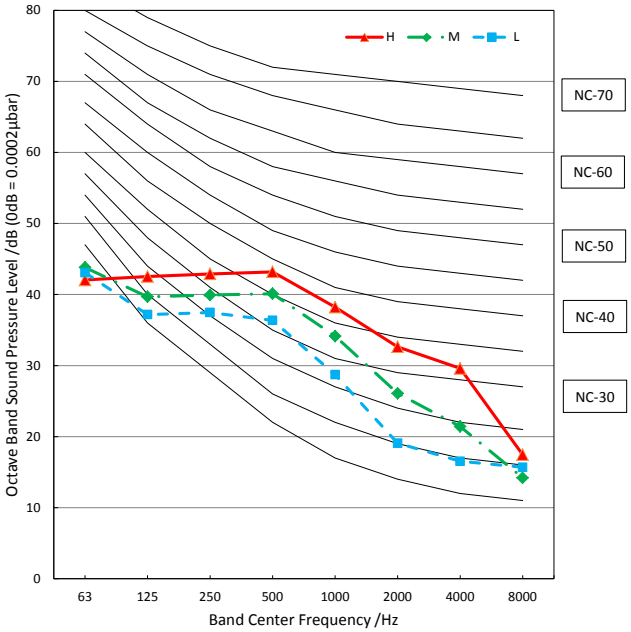
MCA3I-09HRFN8-QRD0



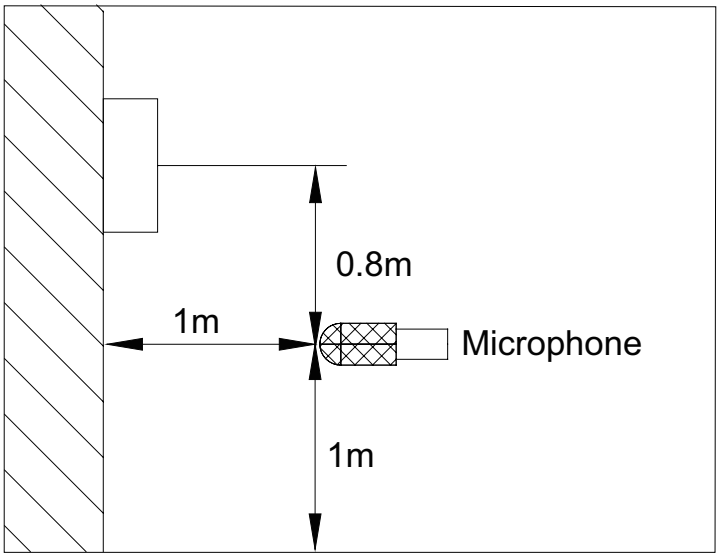
IB3-XY 27M



IB3-XY 35M



Nativ IZ2-XY
Cristallo / Essential 2 IM2-XY / IL3-XY
Schiara 2 IE2-Y



Notes:

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

-Data is valid at free field condition

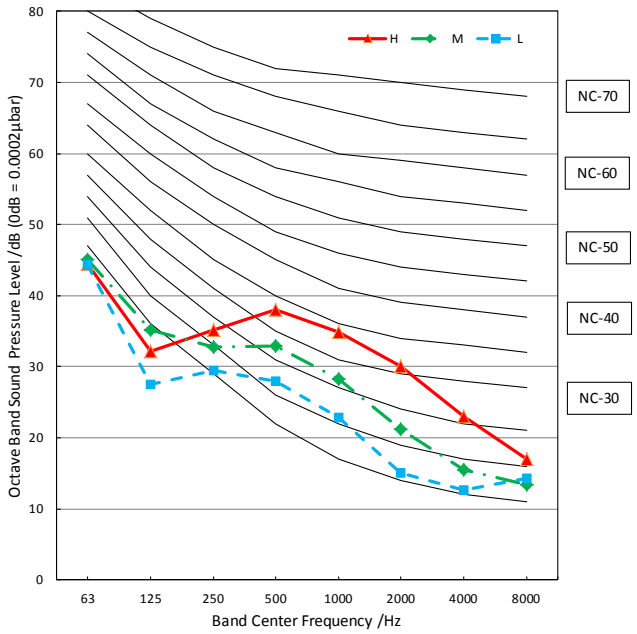
-Data is valid at nominal operation condition

-Reference acoustic pressure OdB = 20μPa

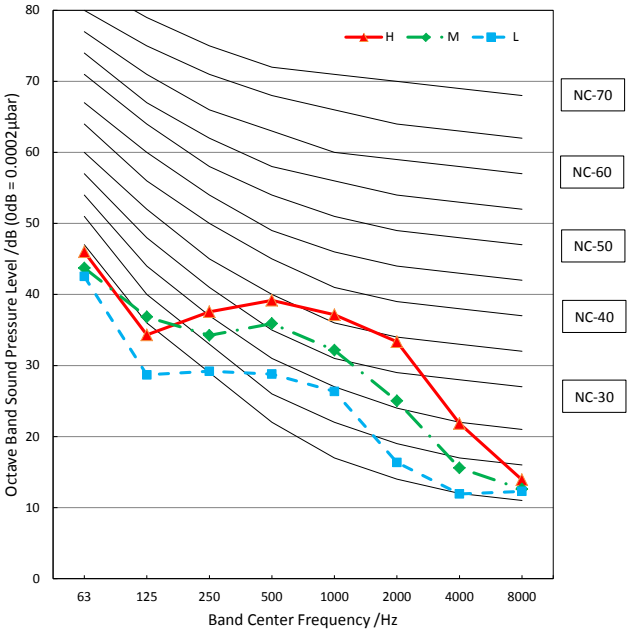
-Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.

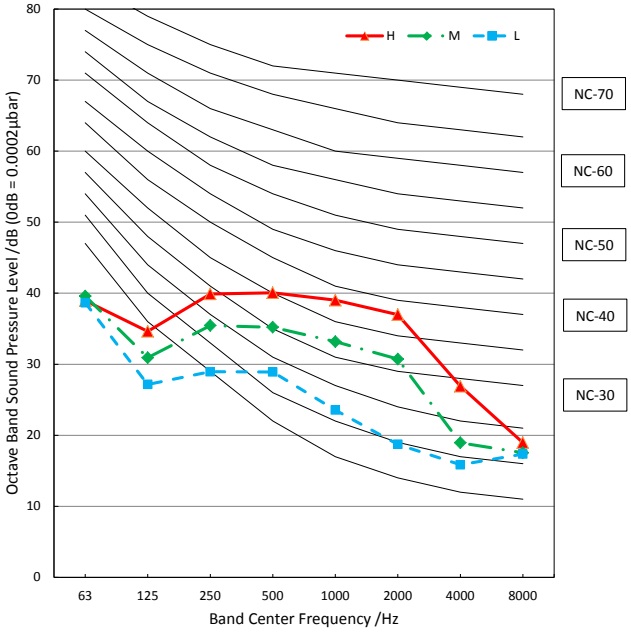
Nativ IZ2-XY 27M



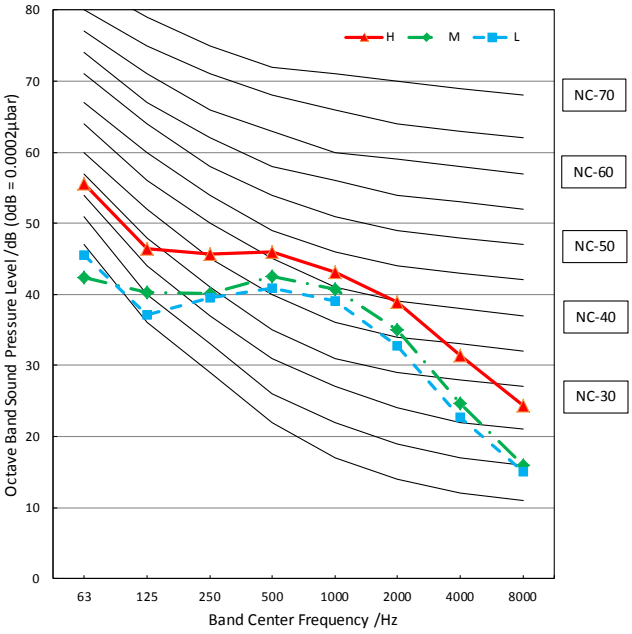
Nativ IZ2-XY 35M



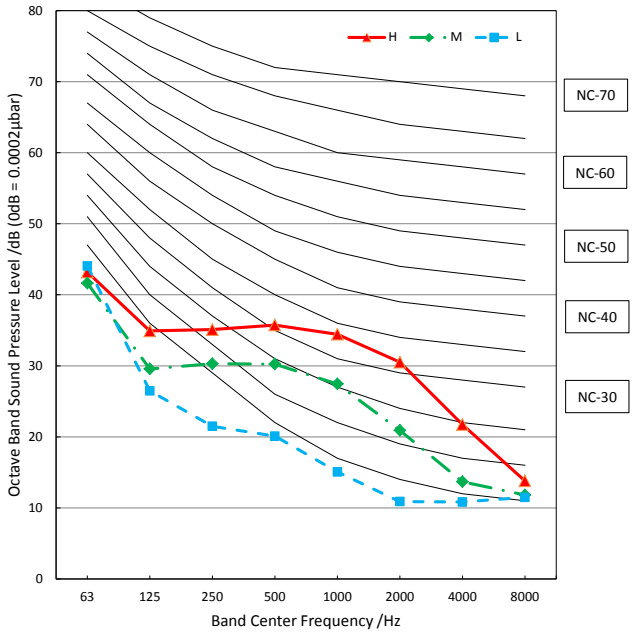
Nativ IZ2-XY 53M



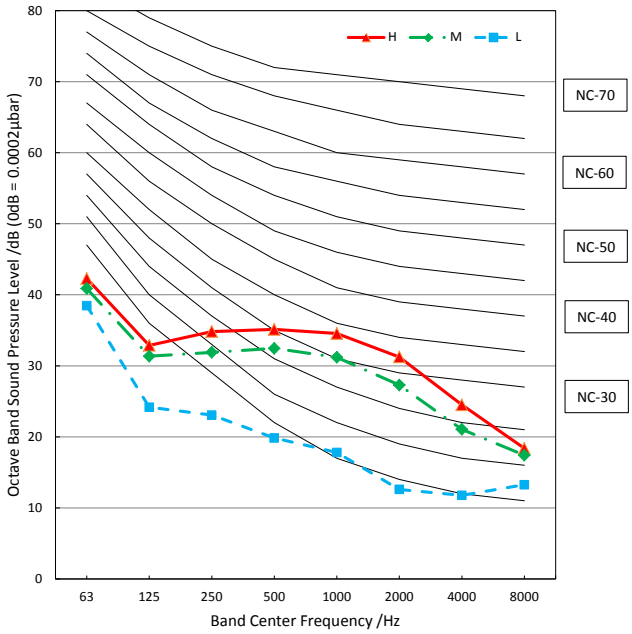
Nativ IZ2-XY 70M



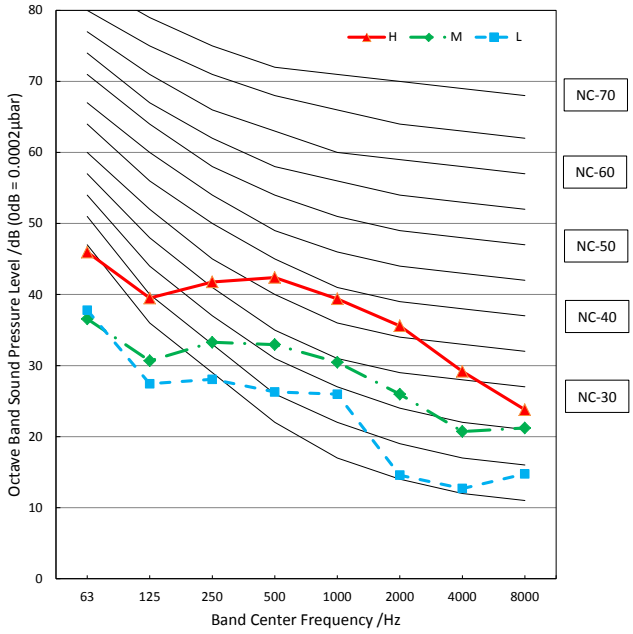
Cristallo / Essential 2
IM2-XY / IL3-XY 20M-27M



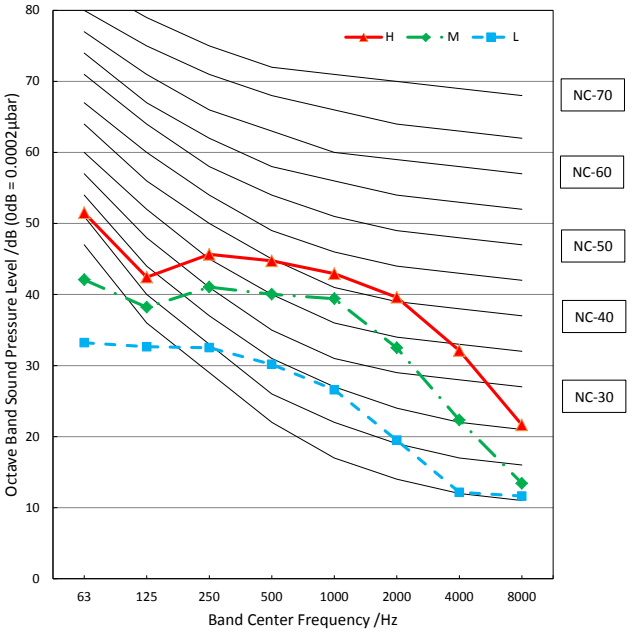
Cristallo / Essential 2
IM2-XY / IL3-XY 35M



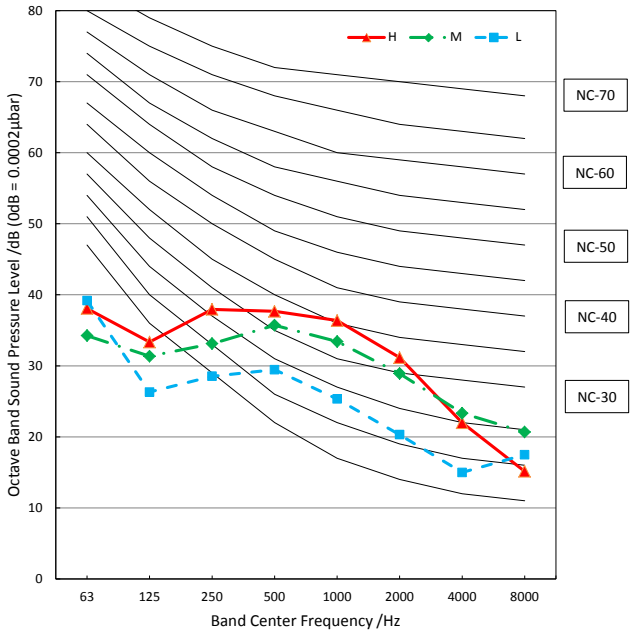
Cristallo / Essential 2
IM2-XY / IL3-XY 53M



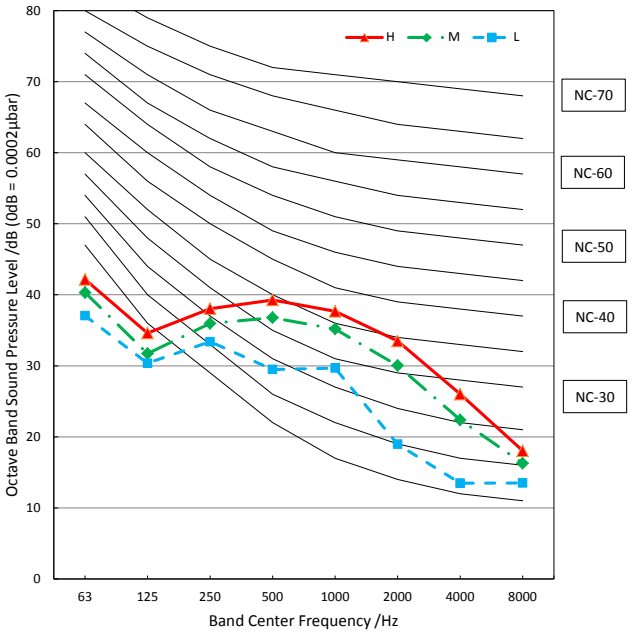
Cristallo / Essential 2
IM2-XY / IL3-XY 70M



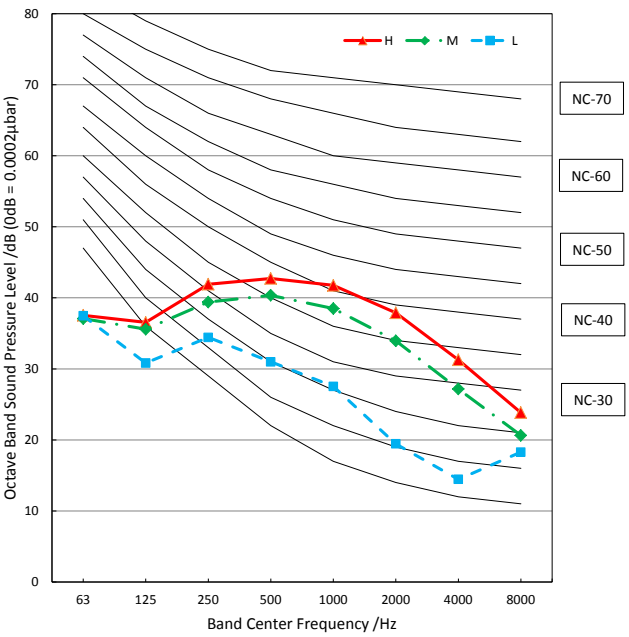
MSAEBU-09HRFN8-QRD6GW



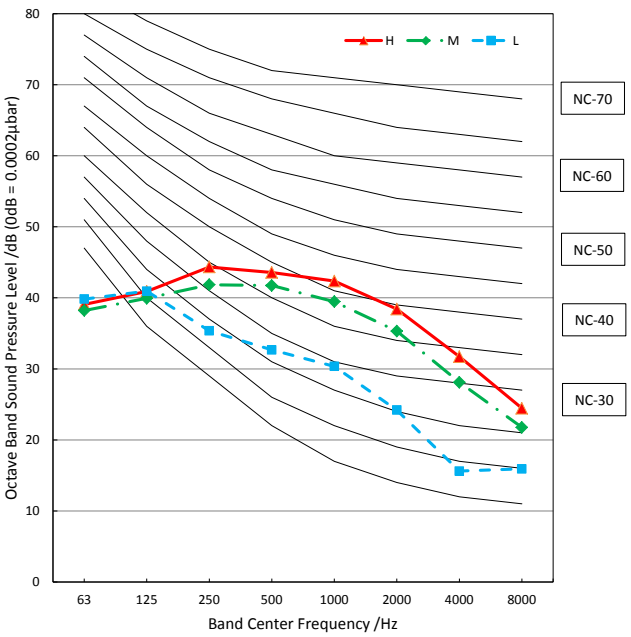
MSAEBU-12HRFN8-QRD0GW



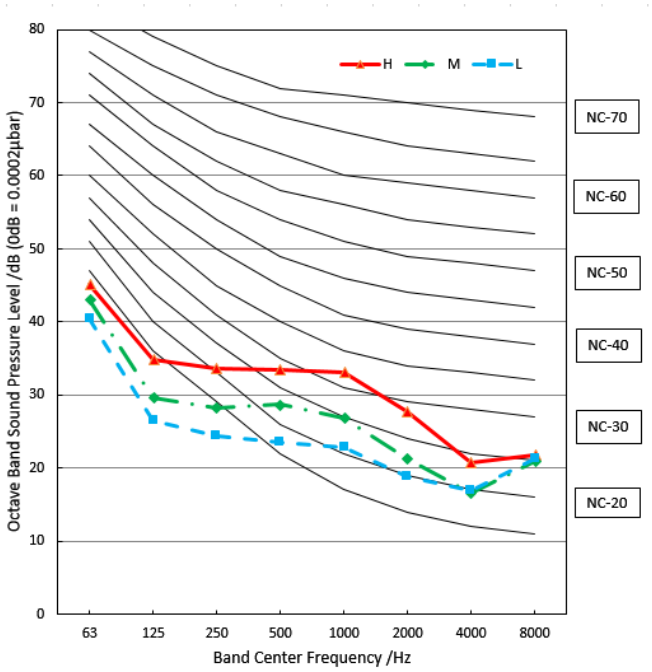
MSAECU-18HRFN8-QRD0GW



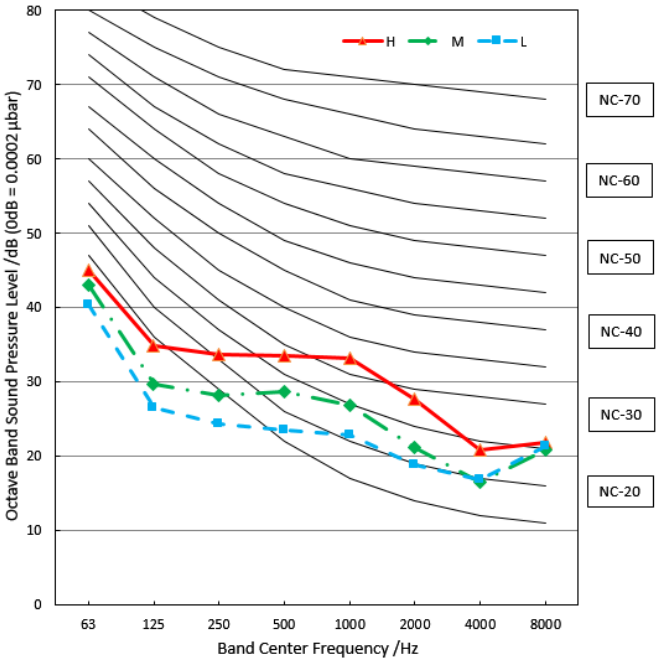
MSAEDU-24HRFN8-QRD0GW



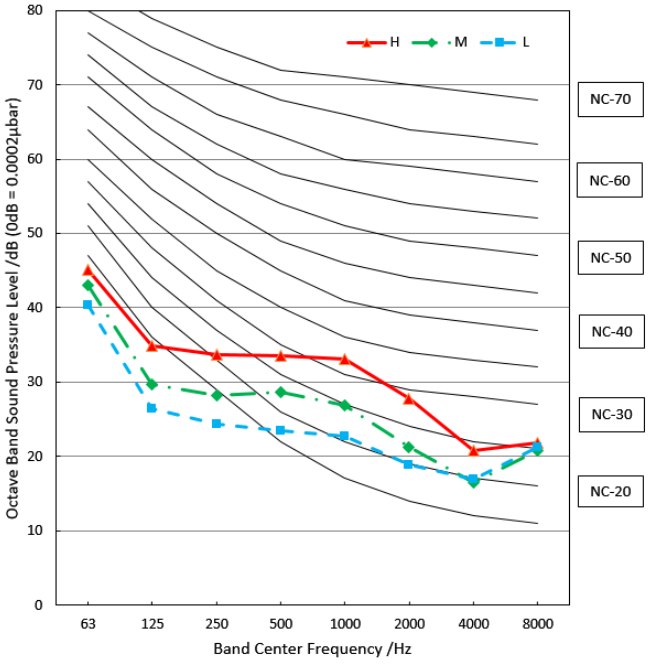
MSAGAU-09HRFNX-QRD0GW



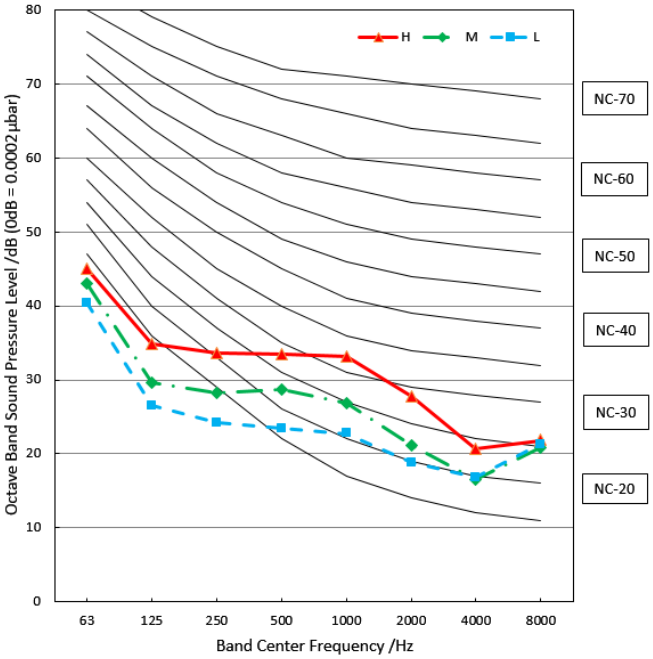
MSAGBU-09HRFN8-QRD1GW(GA)



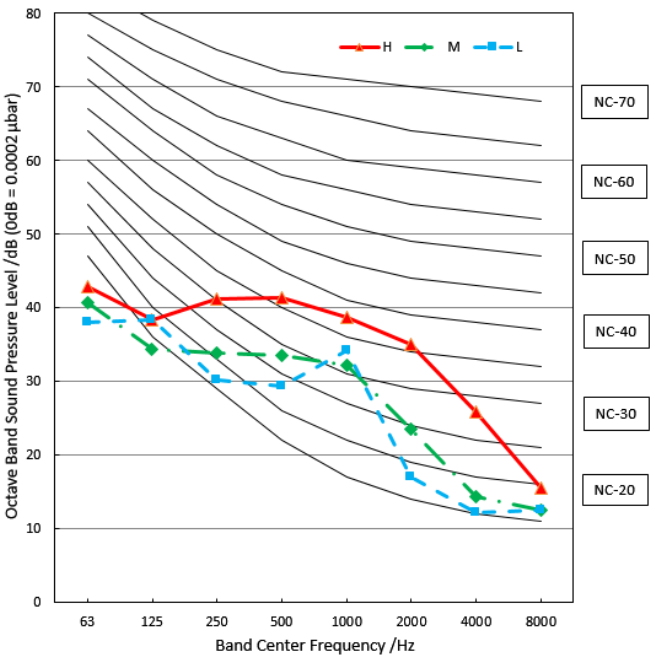
Schiara 2 IE2-Y 27M-35M



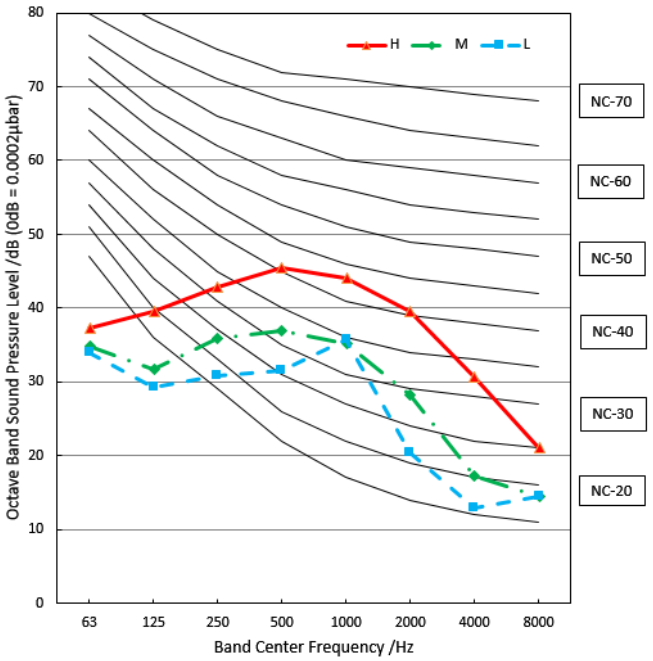
MSAGBU-12HRFNX-QRD0GW



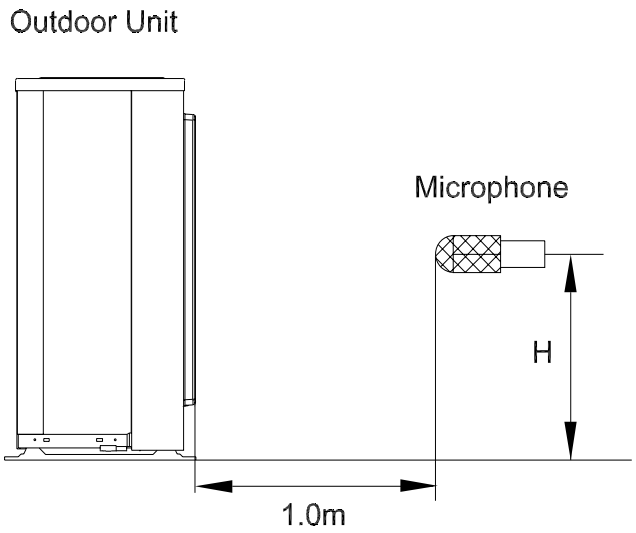
MSAGCU-18HRFNX-QRD0GW



MSAGDU-24HRFN8-QRD0GW



9.2 Outdoor Unit



Note: H= 0.5 × height of outdoor unit

Notes:

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

-Data is valid at free field condition

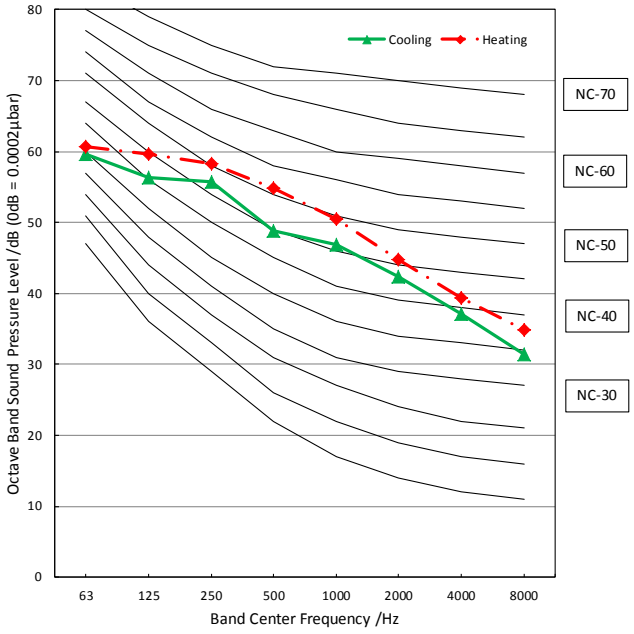
-Data is valid at nominal operation condition

-Reference acoustic pressure OdB=20μPa

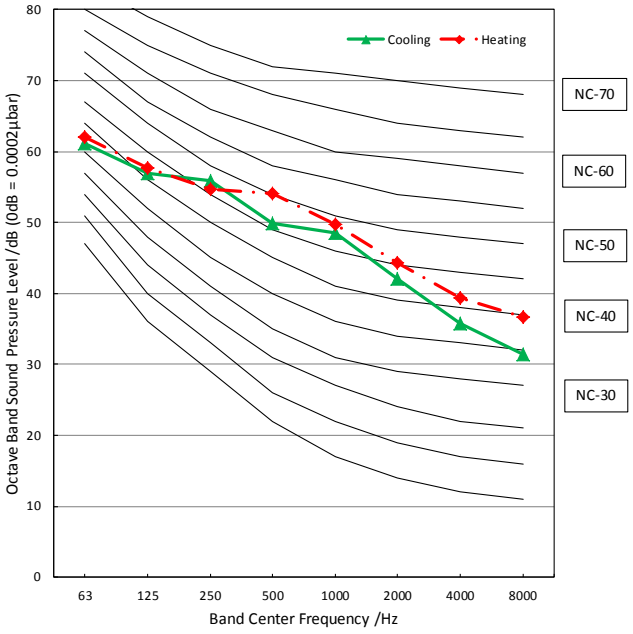
-Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.

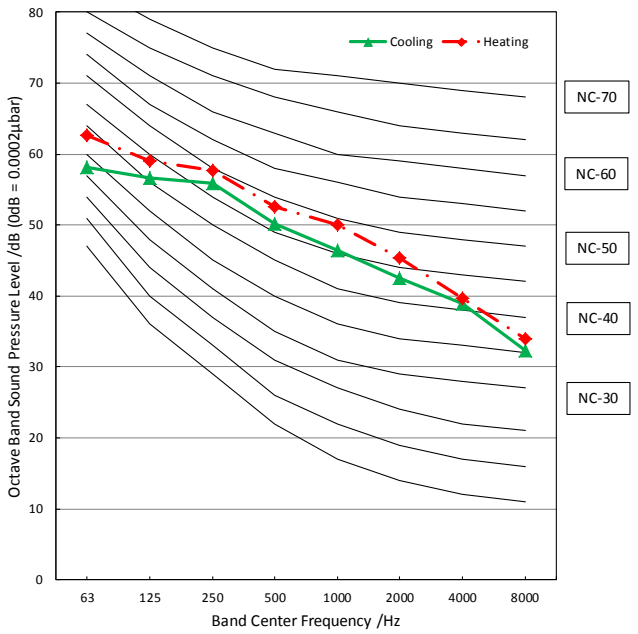
M2OG-14HFN8-Q



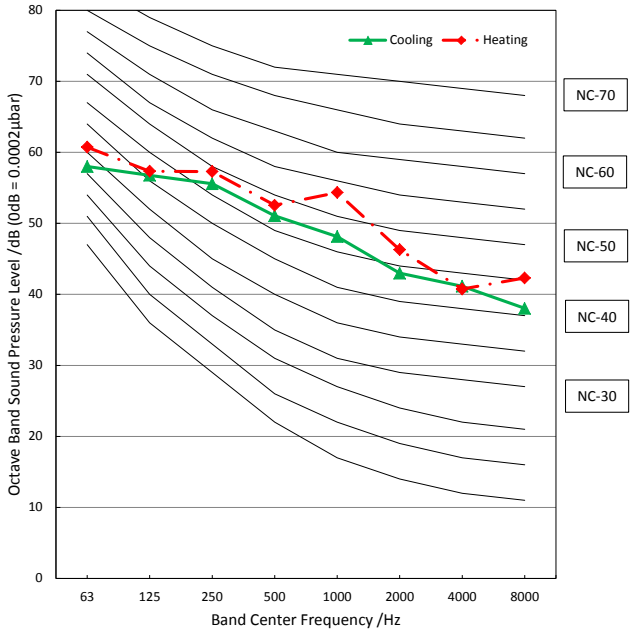
M2OC-18HFN8-Q



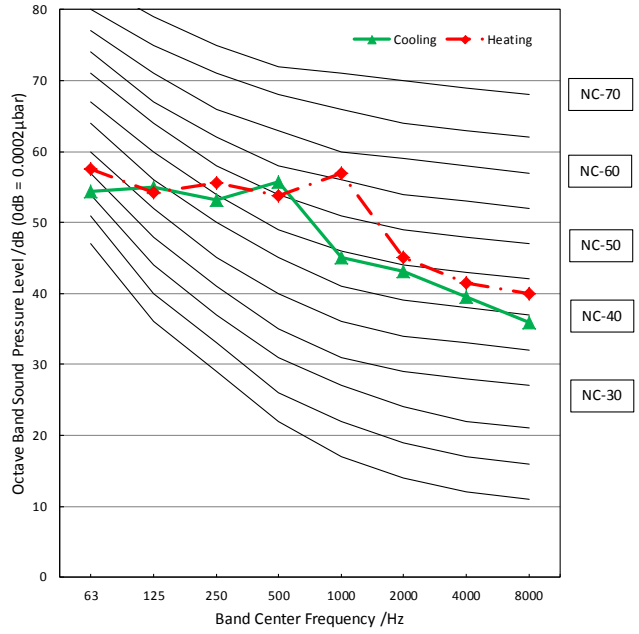
M2OD-18HFN8-Q



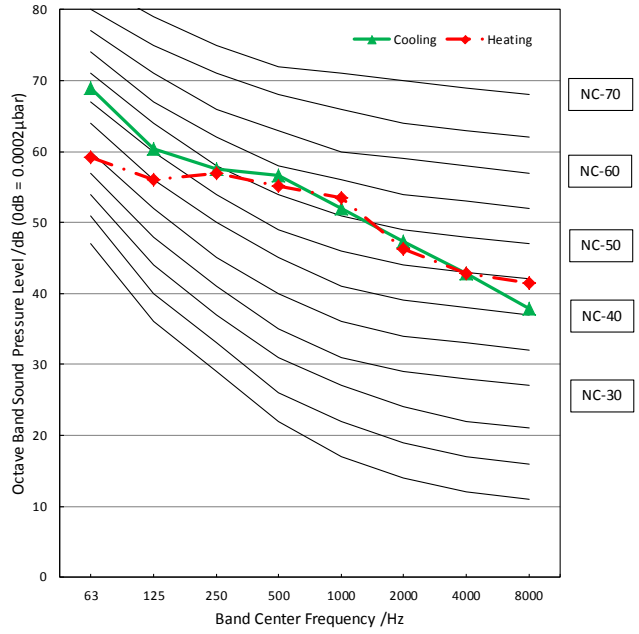
M3OF-27HFN8-Q



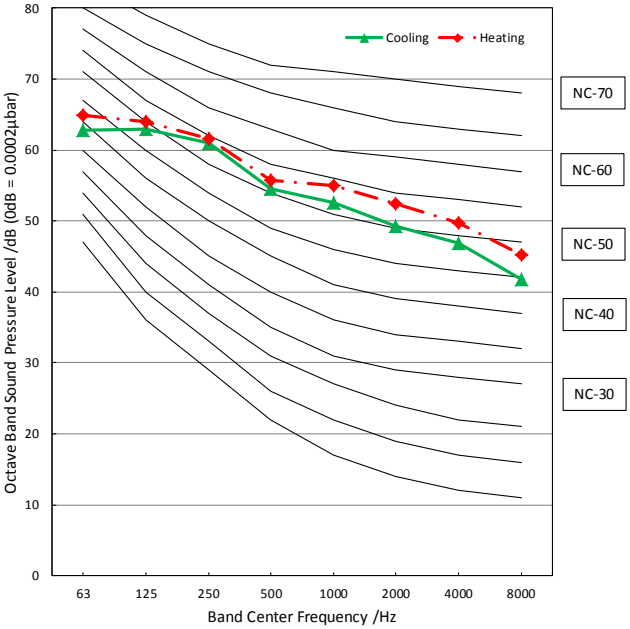
M3OF-21HFN8-Q



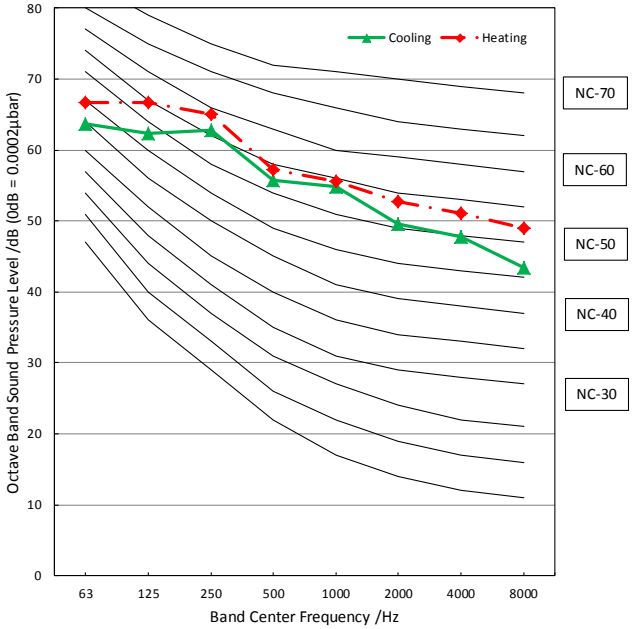
M3OE-27HFN8-Q



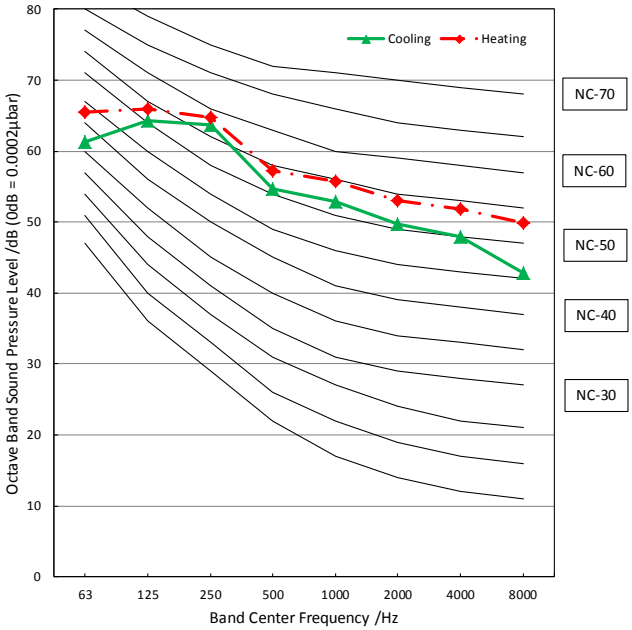
MU2-Y 82M



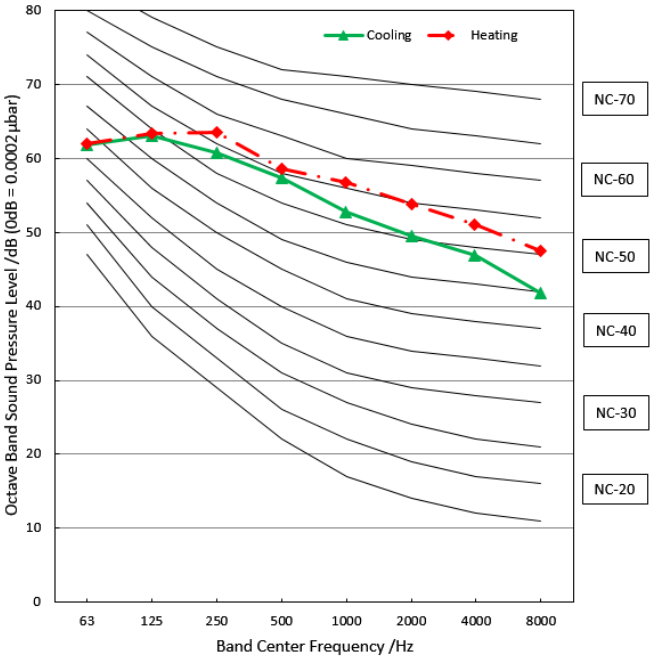
MU2-Y 105M



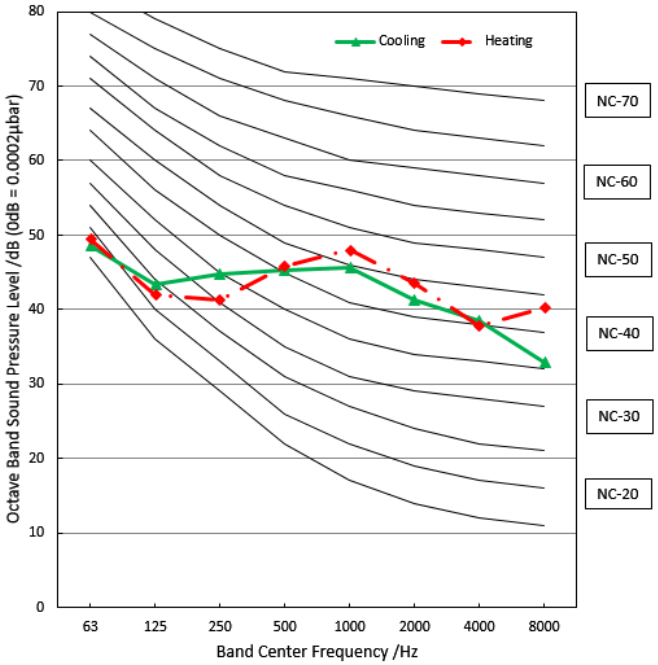
M5OD-42HFN8-Q



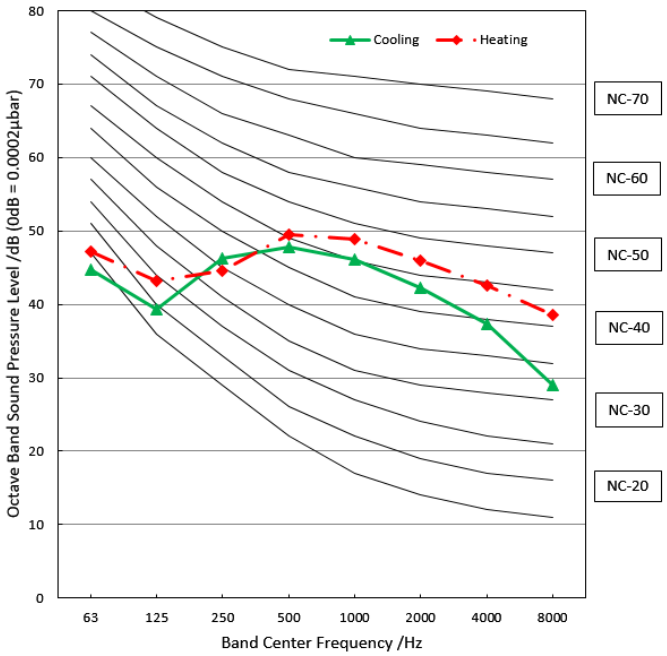
MU2-Y 125M



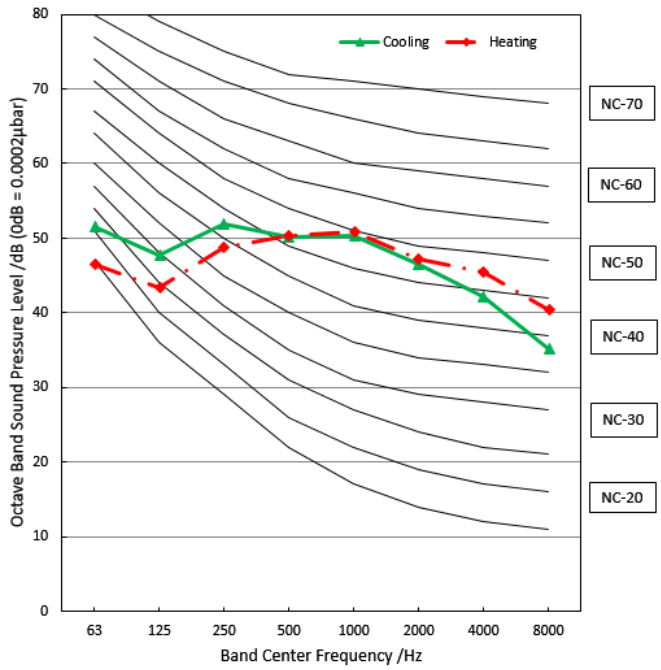
MU2-Y 41M



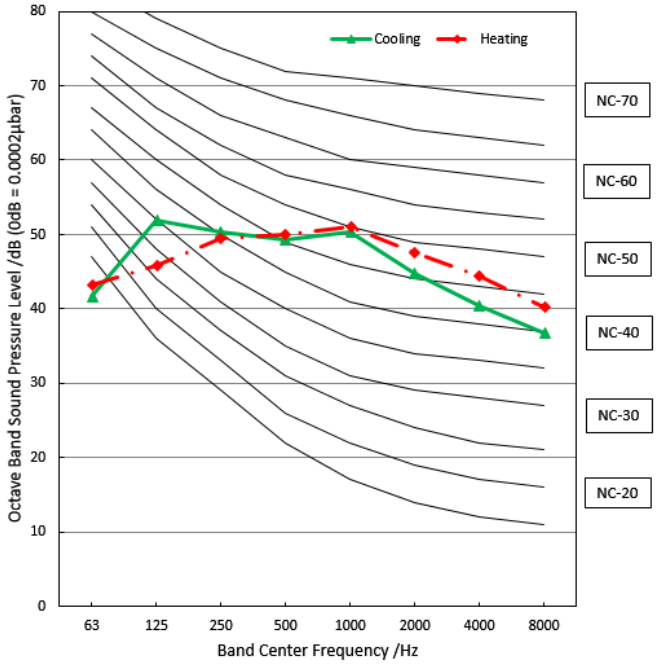
MU2-Y 53M



MU2-Y 61M



MU2-Y 79M



10. Electrical Characteristics

Model	Indoor Unit			Power Supply			IFM	
	Phase	Hz	Voltage	MCA	MOP	MFA	kW	FLA
	1	50	220-240	/	/	/	0.055	1.11
				/	/	/	0.055	1.11
ID3-XY 27M				/	/	/	0.055	1.11
ID3-XY 35M				/	/	/	0.16	1.48
				/	/	/	0.046	0.146
				/	/	/	0.046	0.146
IB3-XY 27M				/	/	/	0.046	0.146
IB3-XY 35M				/	/	/	0.046	0.146
				/	/	/	0.013	0.17
IZ2-XY 27M				/	/	/	0.013	0.17
IZ2-XY 35M				/	/	/	0.013	0.17
IZ2-XY 53M				/	/	/	0.03	0.148
IZ2-XY 70M				/	/	/	0.058	0.4
IM2-XY / IL3-XY 20M-27M				/	/	/	0.02	0.16
IM2-XY / IL3-XY 35M				/	/	/	0.02	0.16
IM2-XY / IL3-XY 53M				/	/	/	0.03	0.275
IM2-XY / IL3-XY 70M				/	/	/	0.058	0.4
				/	/	/	0.02	0.16
				/	/	/	0.02	0.16
				/	/	/	0.03	0.27
				/	/	/	0.058	0.4
				/	/	/	0.02	0.16
				/	/	/	0.013	0.047
IE2-Y 27M-35M				/	/	/	0.013	0.047
				/	/	/	0.013	0.047
				/	/	/	0.03	0.275
				/	/	/	0.058	0.4

Model	Outdoor Unit			Power Supply		Compressor		OFM		
	Phase	Hz	Voltage	MCA	MFA	MSC	RLA	Qty	kW	FLA
	1	50	220-240	11.5	20	-	7.5	1	0.034	0.39
				12	20	-	7.1	1	0.04	0.7
				13	20	-	7.5	1	0.058	0.39
				15.5	20	-	7.5	1	0.05	0.55
				15	30	-	9.4	1	0.05	0.55
				17.5	22	-	9.45	1	0.05	0.55
MU2-Y 82M				19	30	-	9.45	1	0.12	1.21
MU2-Y 105M				21.5	30	-	5.38	1	0.12	1.39
				22	30	-	5.38	1	0.12	1.39
MU2-Y 125M				22	30	-	5.38	1	0.12	1.39
MU2-Y 41M				12	20	-	7.15	1	0.034	0.89
MU2-Y 53M				13	20	-	7.15	1	0.034	0.89
MU2-Y 61M				17	20	-	7.15	1	0.08	0.88
MU2-Y 79M				18	30	-	9.45	1	0.08	0.88

Notes:

MCA: Minimum Circuit Amperes (A)

MFA: Maximum Fuse Amperes (A)

MSC: Maximum Starting Current

RLA: Rated Load Amperes (A)

IFM: Indoor Fan Motor

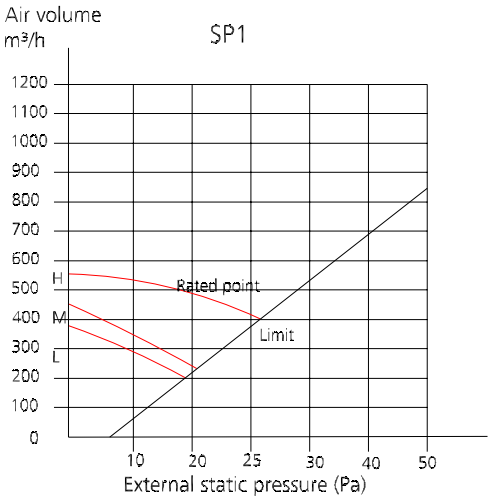
OFM: Outdoor Fan Motor

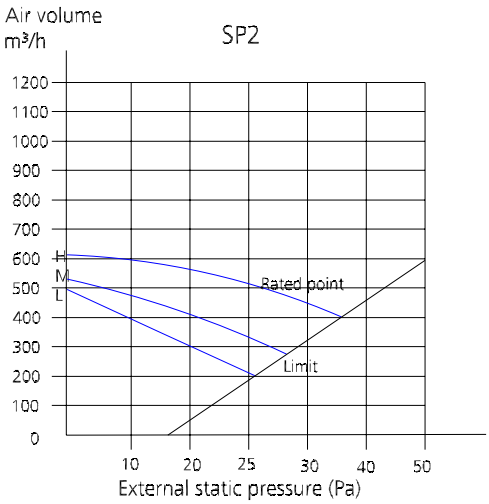
FLA: Full Load Amperes (A)

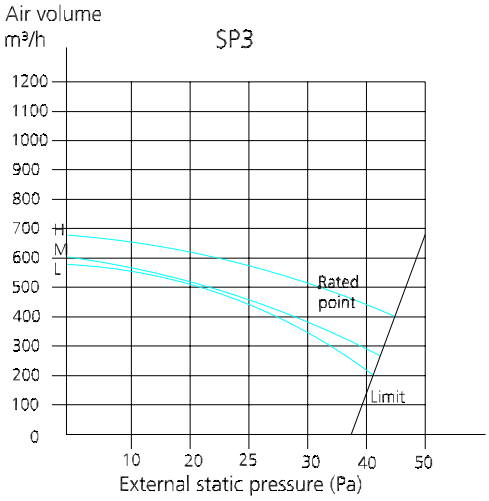
kW: Fan motor rated output(kW)

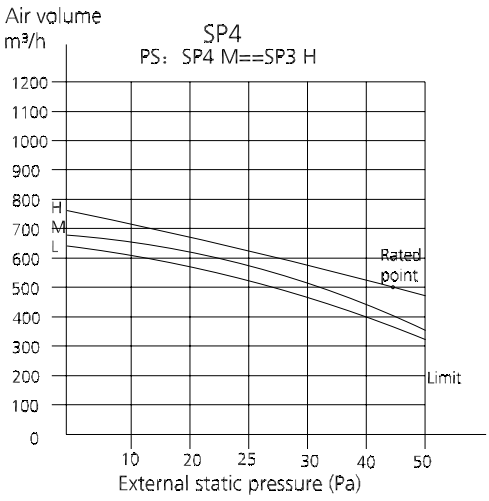
11. Static Pressure

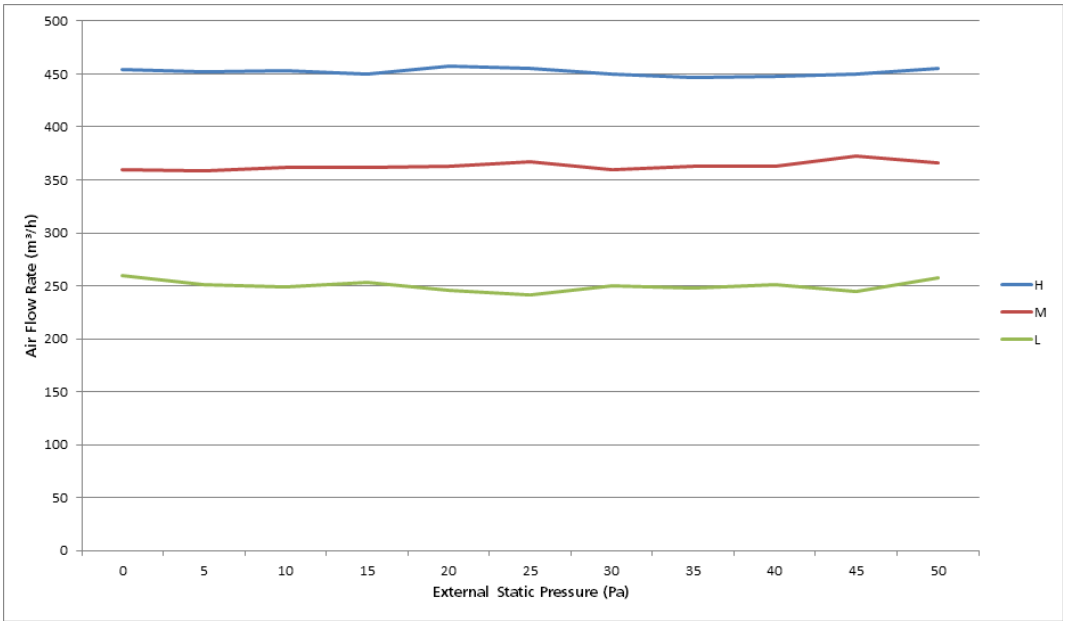
20M/27M



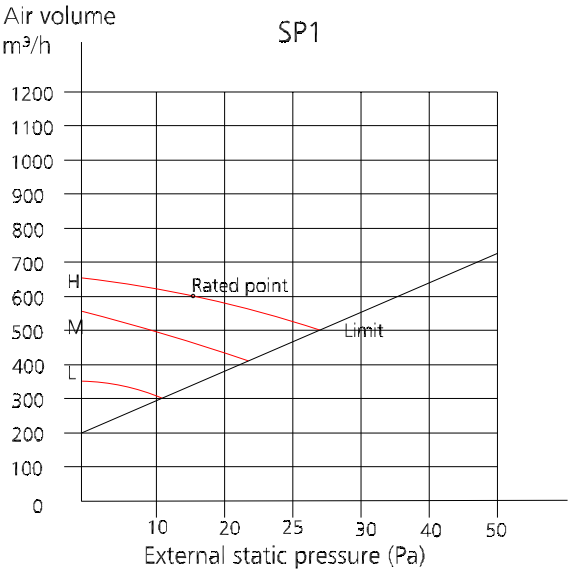


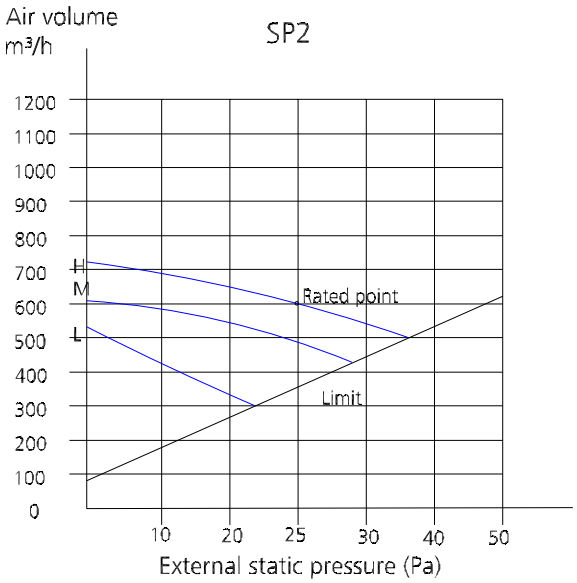


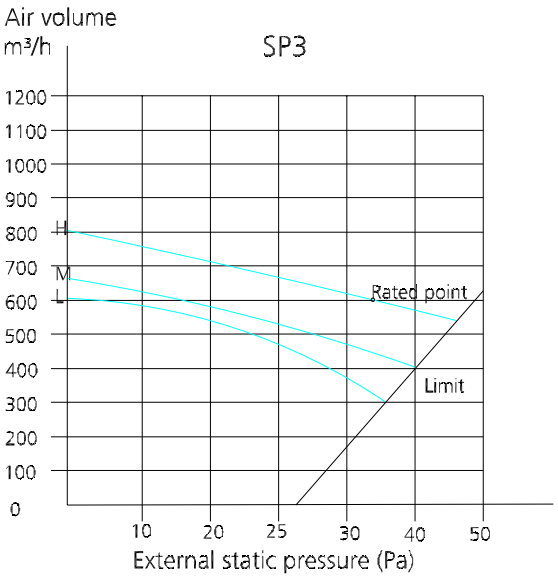


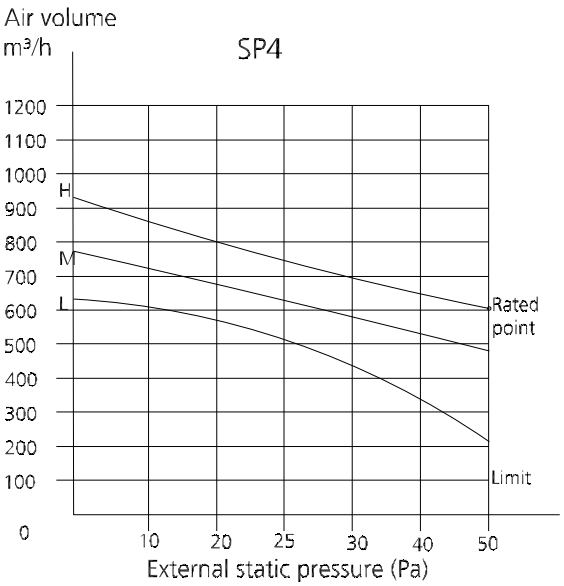


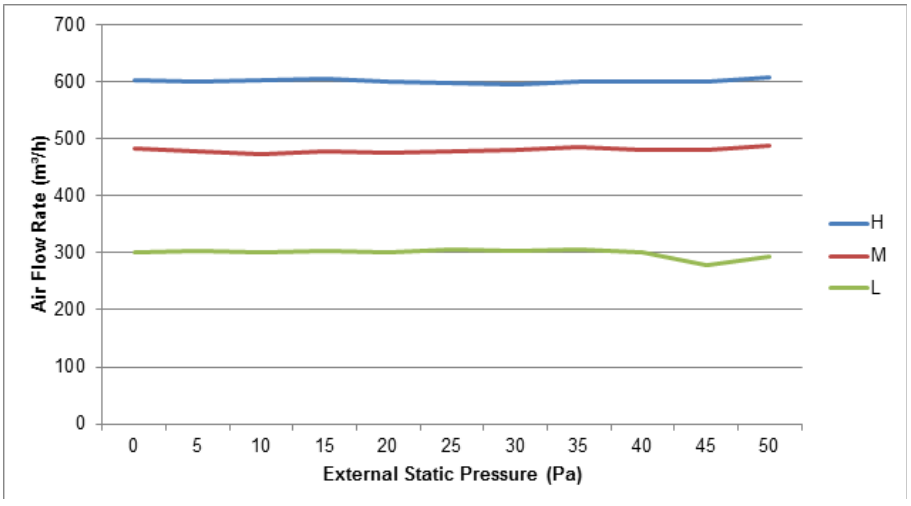
35M


Air volume
m³/h
SP1
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

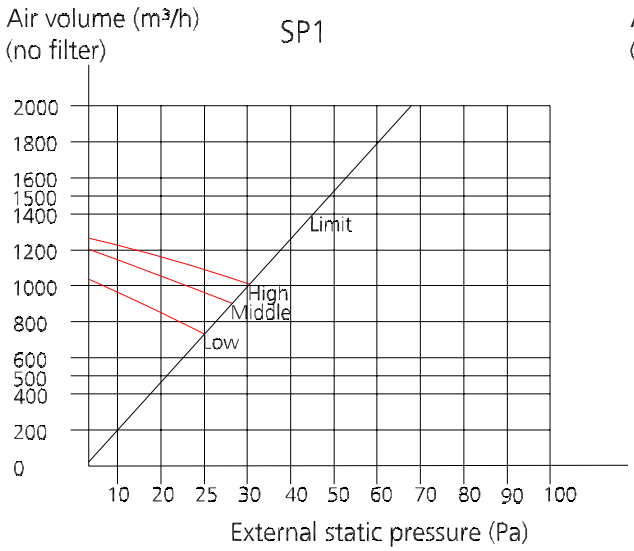

Air volume
m³/h
SP2
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

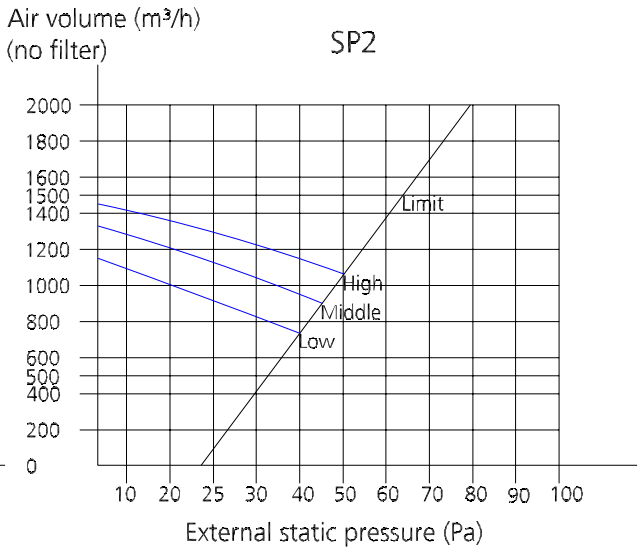

Air volume
m³/h
SP3
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

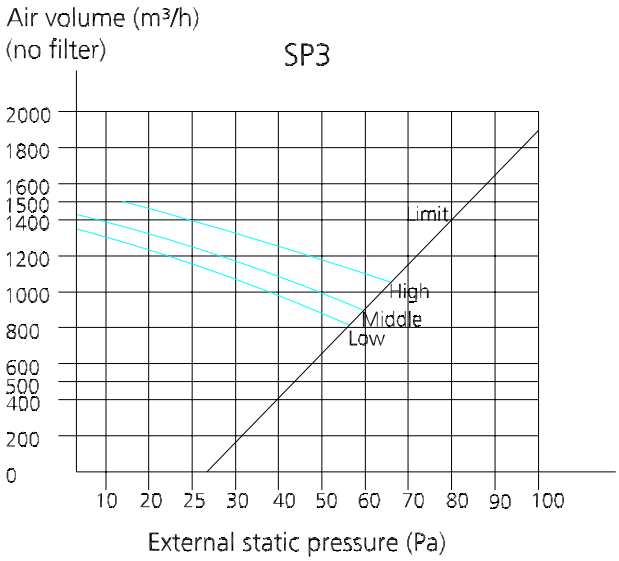

Air volume
m³/h
SP4
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
H
M
L
Rated point
Limit
10
20
25
30
40
50
External static pressure (Pa)

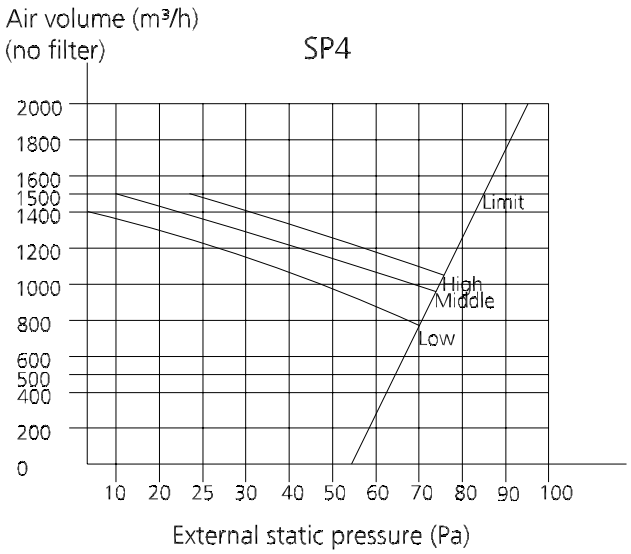

700
600
500
400
300
200
100
0
Air Flow Rate (m³/h)
0
5
10
15
20
25
30
35
40
45
50
External Static Pressure (Pa)
H
M
L

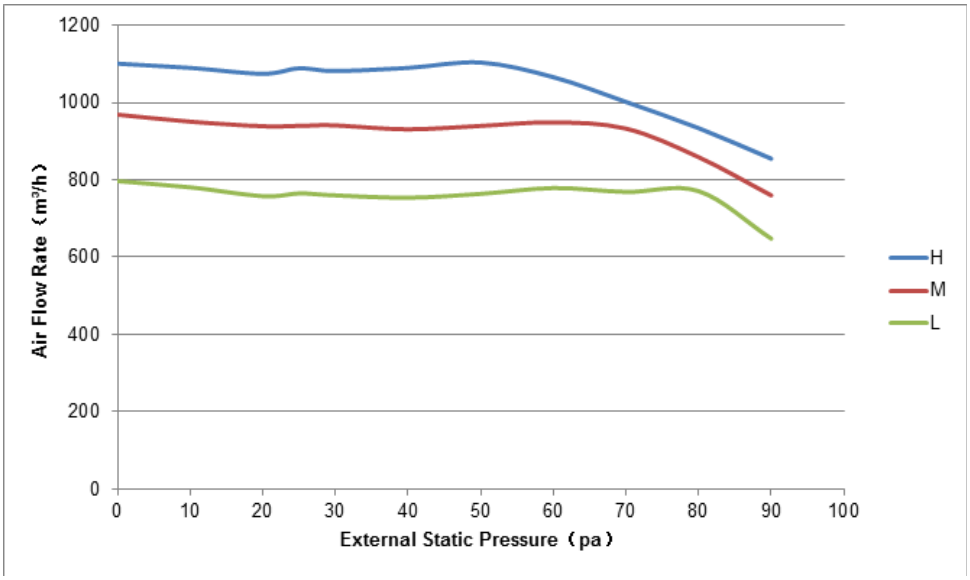
53M


Air volume (m³/h)
(no filter)
SP1
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


Air volume (m³/h)
(no filter)
SP2
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


Air volume (m³/h)
(no filter)
SP3
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


Air volume (m³/h)
(no filter)
SP4
2000
1800
1600
1500
1400
1200
1000
800
600
500
400
200
0
Limit
High
Middle
Low
10 20 25 30 40 50 60 70 80 90 100
External static pressure (Pa)


1200
1000
800
600
400
200
0
Air Flow Rate（m³/h）
0 10 20 30 40 50 60 70 80 90 100
External Static Pressure（pa）
H
M
L

Product Features

Contents

1. Display Function 107

2. Operation Modes and Functions 111

2.1 Abbreviations 111

2.2 Safety Features 111

2.3 Fan 112

2.4 Cooling Mode 112

2.5 Heating Mode (Heat pump models) 112

2.6 Auto Mode 112

2.7 Drying Mode 112

2.8 Timer Function 113

2.9 Sleep Function 113

2.10 Forced Operation Function 113

2.11 Auto-Restart 113

2.12 Follow Me 113

2.13 Drain Pump Control 113

2.14 Mode Conflict 114

3. Remote Controller Functions 114

3.1 Infrared Wireless Remote Controller 114

3.2 LCD Wired Remote Controller 120

3.3 Centralized Controller 132

3.4 Using the wire controller to set external static pressure 133

3.5 Using the wire controller to set airflow rate 133

1. Display Function

Unit display functions

Wall mounted type-Nativ:

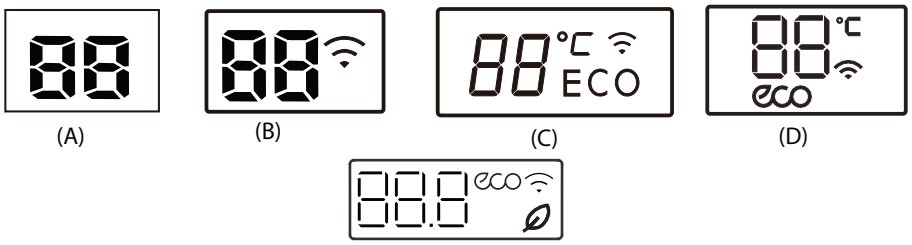


Display A Display B Display C Display D

Display		Function
fresh or		Fresh(available on select units only)
defrost or		Defrost
run or		When the unit is on
timer or		When TIMER is on
		WiFi control (available on select units only)
88	Temperature value	Temperature
	ON (3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	OF (3s)	Cancellation of Timer OFF, Fresh, Swing, Turbo, or Silent
	dF	Defrost
	cF	Warming in heating mode
	SC	Self-clean (available on select units only)
	FP	Heating in room temperature under 8°C
	E→C→0→set temperature →E gradually illuminates to 88 in one second intervals	ECO function (available on select units only)

Note: Please select the display function according to your purchase product.

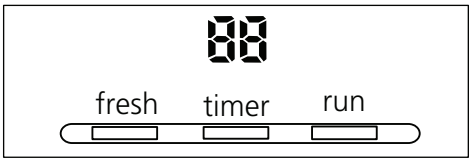
Wall mounted type-Cristallo/Essential 2:



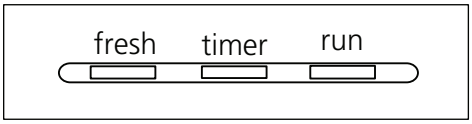
Display		Function
		Fresh(available on select units only)
ECO		ECO function (available on select units only)
°C		Lights up in different colour according to the operation mode(some units): Under COOL and DRY mode, it displays as cool colour.Under HEAT mode, it displays as warm colour.
		when Wireless Control feature is activated(some units)
88	Temperature value	Temperature
	ON (3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	OF (3s)	Cancellation of Timer OFF, Fresh, Swing, Turbo, or Silent
	dF	Defrost
	cF	Warming in heating mode
	SC	Self-clean (available on select units only)
	FP	Heating in room temperature under 8°C

Note: Please select the display function according to your purchase product.

Wall mounted type-All Easy:



Display A



Display B

Display		Function
fresh		When Fresh feature is activated(some units)
timer		When TIMER is set
run		When the unit is on
		WiFi control (available on select units only)
88	Set temperature value	Temperature
	Room temperature	Temperature (fan and Drying mode)
	 (3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	 (3s)	Activation of Timer OFF or cancellation of Fresh, Swing, Turbo, or Silent
		Defrost(Heat pump units)
		Activation of anti-cold wind in heating mode
		Self-clean (available on select units only)
		Heating in room temperature under 8°C
	set temperature gradually illuminates to in one second interval	ECO function (available on select units only)

Note: Please select the display function according to your purchase product.

Wall mounted type-Schiara 2



Display A

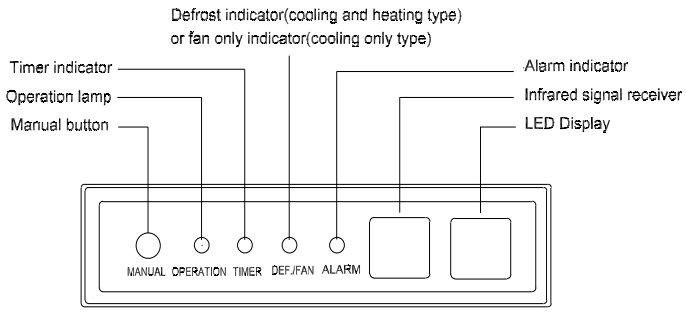


Display B

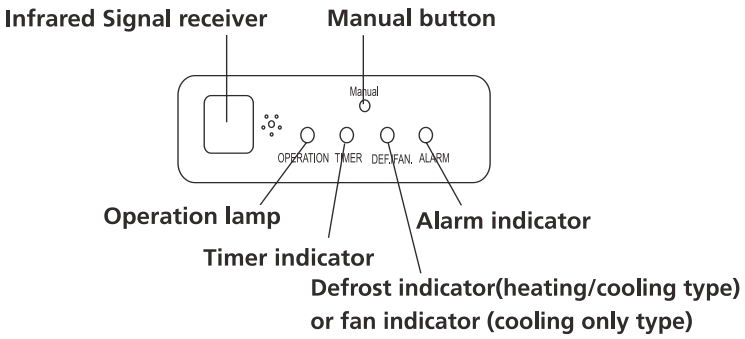
Display		Function
fresh		Fresh(available on select units only)
defrost		Defrost
run		When the unit is on
timer		When TIMER is on
		WiFi control (available on select units only)
	Temperature value	Temperature
	(3s)	Activation of Timer ON, Fresh, Swing, Turbo, or Silent
	 (3s)	Cancellation of Timer OFF, Fresh, Swing, Turbo, or Silent
		Defrost
		Active Clean(For Inverter split type) or self-cleaning(For Fixed-speed type)
		Heating in room temperature under 8°C

Note: Please select the display function according to your purchase product.

A6 Duct type:



Compact Cassette type:



2. Operation Modes and Functions

2.1 Abbreviation

Unit element abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator middle
T2B	Coil temperature of evaporator outlet(It is located in outdoor unit)
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
T5	Compressor discharge temperature
TS	Setting temperature

2.2 Safety Features

Open Circuit/Disconnection Sensor Protection

Automatic shutoff based on fan speed

For Duct 2 type,

If a fault occurs on the air volume regulator or the regulator enters protection mode, it sends the error message CF and an instruction to reduce fan speed to the master. The message and the instruction can be inquired with the remote controller or the wired controller. (Fault and protection information are displayed for one minute). After a fault occurs, the master unit shows the error code E3 and the fault count for one minute.

If the fault occurs three times, then the fan is unable to resolve the problem independently. External shutdown by a remote controller, wired controller, or central controller must be used to clear the fan fault and fault count. The fan runs normally for 5 minutes while clearing fault count.

For other types,

If the indoor fan speed registers below 300RPM for an extended period of time, it shuts off and restarts in 30 seconds. If this happens 3 times, the unit ceases operation and the corresponding error code is displayed on the indoor unit.

If outdoor fan speed registers below 100RPM or higher than 2400RPM for an extended period of time, the unit ceases operation and the corresponding error code is displayed on the indoor unit and outdoor unit.

Indoor fan delayed operation

- When the unit starts, the louver is automatically activated and the indoor fan will operate after a period of 7 seconds.
- If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

Zero crossing detection error protection(For Forest series)

If AC can not detect zero crossing signal for 4 minutes or the zero crossing signal time interval is not correct, the unit will stop and the LED will display the failure. The correct zero crossing signal time interval should be between 6-13ms.

Compressor three-minute delay at restart

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

Inverter module protection

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

Automatic shutoff based on discharge temperature

If the compressor discharge temperature exceeds a certain level for a period of time, the compressor ceases operation.

Oil return

Running rules:

1. If the compressor frequency keeps lower than setting frequency for setting time, the AC will rise the frequency to setting frequency for setting time and then resume to former frequency.

2. The EXV will keep 300p while the indoor units will keep the current running mode.

If the outdoor ambient is higher than setting frequency during the oil return, the AC quit oil return.

2.3 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor cease operation.
- Temperature control is disabled and no temperature setting is displayed.
- The indoor fan speed can be set to high, medium, low, or auto.
- The louver operations are identical to those in cooling mode.

2.4 Cooling Mode

2.4.1 Indoor Fan Control

- In cooling mode, the indoor fan operates continuously. The fan speed can be set to high, medium, low or auto.
- The auto fan acts according to the value of T1-TS.

2.4.2 Outdoor Fan Control

- The outdoor fan is controlled by T4.

2.4.3 Evaporator Temperature Protection

When T2<4°C for 250 seconds or T2<0°C, the compressor and outdoor fan cease operation and resume to normal when T2>8°C and the time of protection is no less than 3 minutes.

2.4.4 Condenser Temperature Protection

When condenser temperature is more than setting value, the compressor ceases operations.

2.5 Heating Mode(Heat pump models)

2.5.1 Indoor Fan Control

- When the compressor is on, the fan speed can be set to high, medium, low, or auto. And the anti-cold wind function has the priority.
- The auto fan acts according to the value of T1-Ts.

2.5.2 Outdoor Fan Control

- The outdoor fan is controlled by T4.

2.5.3 Defrosting mode

- The unit enters defrosting mode according to the value of temperature of T3 and the value range of temperature change of T3 and also the compressor running time.
- If any one of the following items is satisfied, the defrosting will finish and the machine will turn to normal heating mode.
  - T3 rises to be higher than TCDE1°C.
  - T3 keeps to be higher than TCDE2°C for 80 seconds.
  - The machine has run for 10 minutes in defrosting mode.

2.5.4 Evaporator Temperature Protection

When the evaporator temperature exceeds a preset protection value, the compressor and outdoor fan cease operations, the outdoor fan motor ceases operation 30 seconds later.

2.5.5 Prevent Over-Heating

In heating mode, when the indoor unit has no capacity requirement due to indoor room temperature increased, the Indoor fan will run in super breeze. (Anti-cold wind function has the priority)

2.6 Auto Mode

- This mode can be selected with the remote controller and the temperature setting can be adjusted between 17°C~30°C
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of △T (△T =T1-Ts).

ΔT	Running mode
ΔT>2°C	Cooling
-2°C≤ΔT≤2°C	Fan-only
ΔT<-2°C	Heating*

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

- Indoor fans run at the auto fan speed of the relevant mode.
- The louver operates the same as in relevant mode.
- If the machine switches mode between heating and cooling, the compressor pauses for a certain period of time intermittently and then selects a mode based on T1-Ts.
- If the setting temperature is modified, the machine selects a new running function.

2.7 Drying Mode

- Indoor fan speed is fixed at low and cannot be changed.
- Low indoor room temperature protection
- In drying mode, if room temperature is lower than 10°C, the indoor fan will stop and not resume until room temperature exceeds 12°C.
- All protections are activated and operate the same as they do in cooling mode.
- The louver operates the same as in cooling mode.

2.8 Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.
- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns on automatically at the preset Off Time and then turns off automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.
- The timer uses relative time, not clock time

2.9 Sleep Function

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

2.10 Forced operation function

- Forced cooling mode:

The compressor and outdoor fan continue to run and the indoor fan runs at rated speed. After running for 30 minutes, the AC will switch to auto mode with a preset temperature of 24°C

- Forced auto mode:

Forced auto mode operates the same as normal auto mode with a preset temperature of 24°C.

  - When any one of indoor units runs in forced cooling, it is designated as the master forced cooling unit. Other indoor units act as the slave forced cooling units. The slave forced cooling units cannot exit forced cooling mode until the master forced cooling unit does so. They then switch to cooling mode in low fan with the temperature set at 24°C.
  - Forced defrosting mode:
    - In the forced cooling mode (single heat engine for forced auto mode), press and hold the forced key for 5 seconds after release, immediately enter the forced frosting mode.
    - When any one of indoor units runs in forced defrosting mode, the indoor fan is off and other indoor fans are off. The outdoor unit operates forced defrosting.

2.11 Auto-Restart

- The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings (not including sleep mode) and, in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.
- If the unit was in forced cooling mode, it will run in this mode for 30 minutes and turn to auto mode with temperature set to 24°C.
- If there is a power failure while the unit is running, the compressor starts 3 minutes after the unit restarts. If the unit was already off before the power failure, the compressor starts 1 minute after the unit restarts.

2.12 Follow Me (Optional)

- If you press "Follow Me" on the remote, the indoor unit will beep. This indicates the follow me function is active.
- Once active, the remote control will send a signal every 3 minutes, with no beeps. The unit automatically sets the temperature according to the measurements from the remote control.
- The unit will only change modes if the information from the remote control makes it necessary, not from the unit's temperature setting.

2.13 Drain Pump Control (Optional)

- Use the water-level switch to control drain pump.
- The system checks the water level every 5 seconds.
  - When the A/C operates in cooling (including auto cooling) or forced cooling mode, the pump begins running immediately and continuously until cooling stops.
  - If the water level increases up to the control point, the LED displays an alarm code and the drain pump opens and continually monitors the water level. If the water level falls and LED alarm code is no longer

displayed (drain pump close delay is 1 minute), the unit goes back into its last mode. Otherwise, the entire system (including the pump) stops and the LED displays an alarm again after 3 minutes.

2.14 Mode Conflict

- The indoor units can not work cooling mode and heating at same time.
- Heating mode has a priority.

(1) Definition

	Cooling mode	Heating Mode	Fan	Off
Cooling mode	No	Yes	No	No
Heating Mode	Yes	No	Yes	No
Fan	No	Yes	No	No
Off	No	No	No	No

No: No mode conflict;

Yes: Mode conflict

(2) Unit action

- In case of one Indoor unit working in cooling mode or fan mode, and another indoor unit is set to heating mode, the indoor unit working in cooling mode or fan mode will change to off. The outdoor unit will change to heating mode after compressor stop 3 minutes. .
- In case of one Indoor unit working in heating mode, and another indoor unit is set to cooling mode or fan mode, the indoor unit setting to cooling mode or fan mode will change to stand by. The outdoor unit will continue working in heating mode.
- If heating mode stops (not including the indoor unit in heating mode reaching the set temperature), 3 minutes after the outdoor unit restarts and works in cooling mode or fan-only mode.

3. Remote Controller Functions

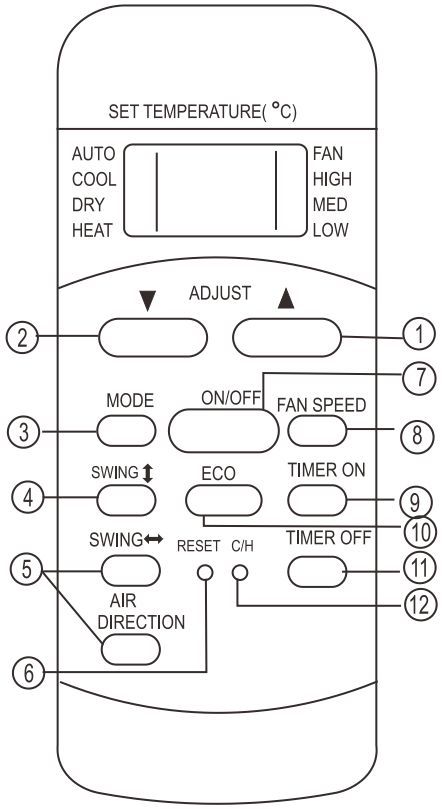
3.1 Infrared Wireless Remote Controller

3.1.1 RG51Q1/BGE(Standard for cassette)

Remote Controller Specifications

Model	RG51Q1/BGE
Rated Voltage	3.0V (Dry batteries R03/ LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5℃~60℃(23℉~140℉)

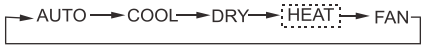
Buttons and Functions



1. TEMP UP ▲ Button: Push this button to increase the indoor temperature setting in 1℃ increments to 30℃

2. TEMP DOWN ▼ Button : Push this button to decrease the indoor temperature setting in 1℃ increments to 17℃.

3. MODE Button: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

4. SWING Button: Used to stop or start horizontal

louver movement. The louver will swing up and down automatically if push this button.

5. SWING ⇻Button: Used to stop or start vertical louver movement.

AIR DIRECTION Button: Used to set the desired up/down air flow direction. The louver changes 6 degree in angle for each press.

6. RESET Button(inner located): Once the recessed RESET button is pressed, all of the current settings will be cancelled and the controller will return to the initial settings.

7. ON/OFF Button: For turning on or turning off the air conditioner.

8. FAN SPEED Button: Fan speed will be selected in following sequence once pressing this button:

AUTO→ LOW→ MED→ HIGH

9. TIME ON Button: For time ON setting. Press this button to activate the Auto-on time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-on time setting, just press the button until the time setting is 0.0.

10. ECO Button: Select this function during the sleeping time. It can maintain the most comfortable temperature and save energy. This function is available on COOL, HEAT or AUTO mode only .

NOTE: While the unit is running under Energy-saving mode, it would be cancelled if press MODE, FAN SPEED or ON/OFF button.

11. TIME OFF Button: For time OFF setting. Press this button to activate the Auto-off time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-off time setting, just press the button until the time setting is 0.0.

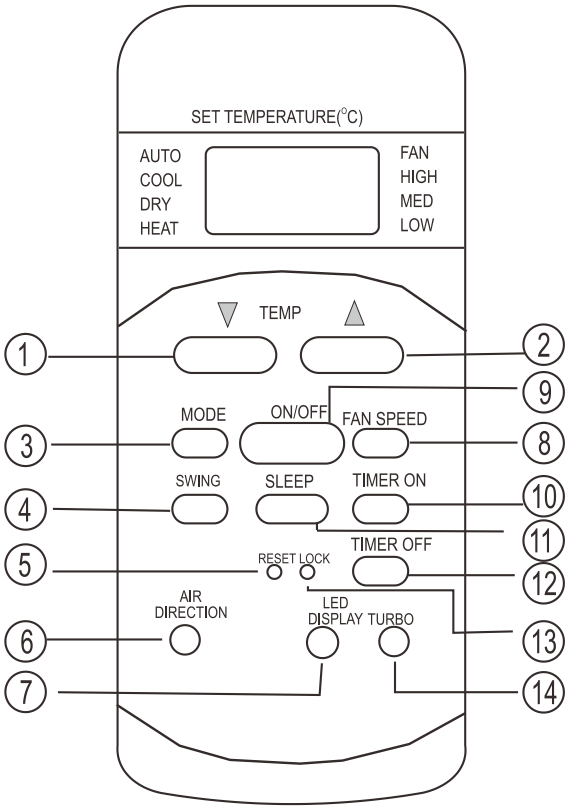
12. CH Button(inner located): Press this recessed button to shift the mode between Cooling only and Cooling & Heating according to the feature of the machine. The factory default setting mode is Cooling & Heating. For example, the unit you purchased is Cooling only models, please press this recessed button with a needle of 1mm to shift the operation mode.

3.1.2 R51M/E(Standard for Forest series)

Remote Controller Specifications

Model	R51M/E
Rated Voltage	3.0V (Dry batteries R03/ LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5℃~60℃(23℉~140℉)

Buttons and Functions



1. TEMP DOWN▼Button : Push this button to decrease the indoor temperature setting in 1℃increments to 17℃.

2. TEMP UP ▲ Button: Push this button to increase the indoor temperature setting in 1℃increments to 30℃

3. MODE Button: Once pressing, running mode will be selected in the following sequence:

AUTO→COOL→DRY→HEAT→FAN

NOTE: No heating mode for cool only type unit.

4. SWING Button: Push this switch button to activate auto swing feature of the horizontal louver. Push it again to stop.

5. RESET Button (inner located): Once the recessed RESET button is pressed, all of the current settings will be cancelled and the controller will return to the initial

settings.

6. AIR DIRECTION Button: Press this button to change the swing angle of the louver. The swing angle of the louver is 6 degree for each press. When the louver swing at a certain angle which would affect the cooling and heating effect of the air conditioner, it would automatically change the swing direction . No symbol will appear in the display area when press this button. (Not applicable to units without this function).

7. LED DISPLAY Button: Press this button to clear the digit display in the air conditioner, press it again to activate it (Not available for the units without LED display window).

8. FAN SPEED Button: Fan speed will be selected in following sequence once pressing this button:

AUTO→ LOW→ MED→ HIGH

9. ON/OFF Button: For turning on or turning off the air conditioner.

10. TIME ON Button: For time ON setting. Press this button to activate the Auto-on time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-on time setting, just press the button until the time setting is 0.0.

11. SLEEP Button: Press this button to go into the Energy-Saving operation mode. Press it again to cancel. This function is only can be used on COOL, HEAT and AUTO mode and maintain the most comfortable temperature for you.

12. TIME OFF Button: For time OFF setting. Press this button to activate the Auto-off time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-off time setting, just press the button until the time setting is 0.0.

13. LOCK Button(inner located): When you press the recessed LOCK button, all current settings are locked in and the remote controller does not accept any operation except that of the LOCK. Press again to cancel the LOCK mode.

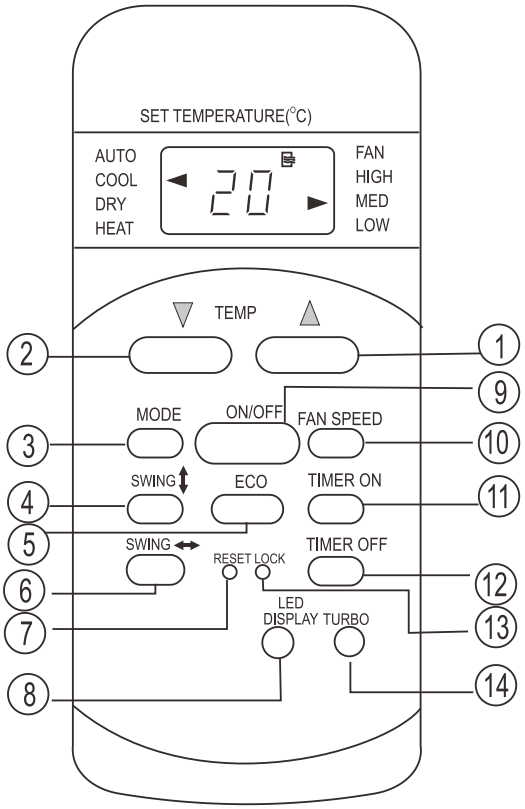
14. TURBO Button: Active/Disable Turbo function. Turbo function enables the unit to reach the preset temperature at cooling or heating operation in the shortest time(if the indoor unit does not support this function, there is no corresponding operation happened when pressing this button.)

3.1.3 RG51F1/E(Standard for Aurora series)

Remote Controller Specifications

Model	RG51F1/E
Rated Voltage	3.0V (Dry batteries R03/ LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5℃~60℃(23℉~140℉)

Buttons and Functions



1. TEMP UP ▲ Button: Push this button to increase the indoor temperature setting in 1℃ increments to 30℃

2. TEMP DOWN ▼ Button : Push this button to decrease the indoor temperature setting in 1℃ increments to 17℃.

3. MODE Button: Once pressing, running mode will be selected in the following sequence:

AUTO→ COOL→ DRY→ HEAT→ FAN

NOTE: No heating mode for cool only type unit.

4. SWING ↕ Button: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.

5. ECO Button: Used to enter the energy efficient mode. Under cooling mode, press this button, the remote controller will adjust the temperature automatically to 24°C, fan speed of Auto to save energy(but only if the set temperature is less than 24°C). If the set temperature is between 24°C and 30°C, press the ECO button, the fan speed will change to Auto, the set temperature will remain unchanged.

NOTE: Pressing the TURBO and SLEEP button, modifying the mode or adjusting the set temperature to less than 24°C will stop ECO operation.

Under ECO operation, the set temperature should be 24°C or more. it may result in insufficient cooling. If you feel uncomfortable, just press the ECO button again to stop it.

6. SWING ↔ Button: Used to stop or start vertical louver movement and set the desired left/right air flow direction. The vertical louver changes 6 degree in angle for each press.

7. RESET Button (inner located): Once the recessed RESET button is pressed, all of the current settings will be cancelled and the controller will return to the initial settings.

8. LED DISPLAY Button: Disable/Active indoor screen Display. When pushing the button, the indoor screen display is cleared, press it again to light the display.

9. ON/OFF Button: Operation starts when this button is pressed and stops when the button is pressed again.

10. FAN SPEED Button: Fan speed will be selected in following sequence once pressing this button:

AUTO → LOW → MED → HIGH

11. TIME ON Button: For time ON setting. Press this button to activate the Auto-on time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-on time setting, just press the button until the time setting is 0.0.

12. TIME OFF Button: For time OFF setting. Press this button to activate the Auto-off time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-off time setting, just press the button until the time setting is 0.0.

13. LOCK Button(inner located): When you press the recessed LOCK button, all current settings are locked in and the remote controller does not accept any operation except that of the LOCK. Press again to cancel the LOCK mode.

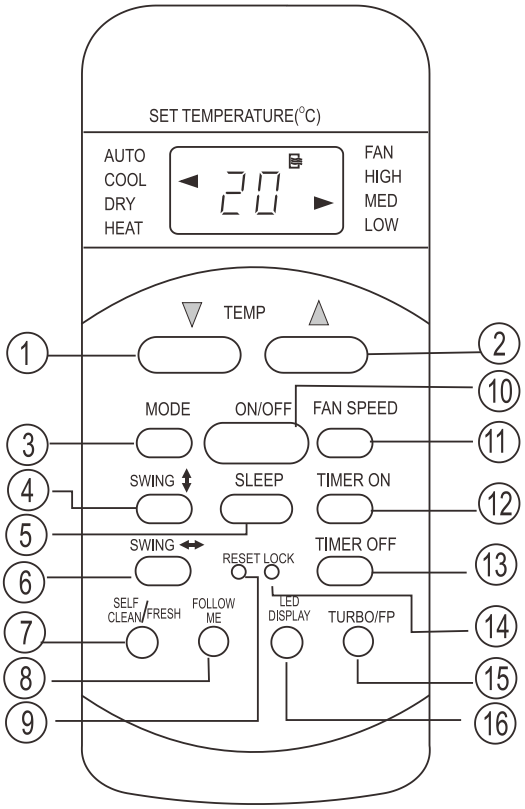
14. TURBO Button: Active/Disable Turbo function. Turbo function enables the unit to reach the preset temperature at cooling or heating operation in the shortest time(if the indoor unit does not support this function, there is no corresponding operation happened when pressing this button.)

3.1.4 RG51I55/BGEF(Standard for All Easy series)

Remote Controller Specifications

Model	RG51I55/BGEF
Rated Voltage	3.0V (Dry batteries R03/ LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5℃~60℃(23℉~140℉)

Buttons and Functions



1. TEMP DOWN ▼ Button : Push this button to decrease the indoor temperature setting in 1℃ increments to 17℃.

2. TEMP UP ▲ Button: Push this button to increase the indoor temperature setting in 1℃ increments to 30℃

3. MODE Button: Once pressing, running mode will be selected in the following sequence:

AUTO → COOL → DRY → HEAT → FAN

NOTE: No heating mode for cool only type unit.

4. SWING ↕ Button: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.

5. SLEEP Button: Press this button to go into the Energy-Saving operation mode. Press it again to cancel. This function is only can be used on COOL, HEAT and AUTO mode and maintain the most comfortable temperature for you.

6. SWING ↔ Button: Used to stop or start vertical louver movement and set the desired left/right air flow direction. The vertical louver changes 6 degree in angle for each press.

7. SELF CLEAN/FRESH Button: Press this button under COOL or DRY mode, the self clean function is activated. Under SELF CLEAN mode, the air conditioner will automatically clean and dry the evaporator and keep it as fresh for the next operation.

Hold down this button for at least 2 seconds to activate/ cancel FRESH feature.When the FRESH function is initiated, the Ionizer/Plasma Dust Collector(depending on models) is energized and will help to remove pollen and impurities from the air.

8. FOLLOW ME Button: Push this button to initiate the Follow Me feature, the remote display is actual temperature at its location. The remote control will send this signal to the air conditioner every 3 minutes interval until press the Follow Me button again. The air conditioner will beep to indicate the Follow Me feature has ended if it does not receive the signal during any 7 minute interval.

9. RESET Button (inner located): Once the recessed RESET button is pressed, all of the current settings will be cancelled and the controller will return to the initial settings.

10. ON/OFF Button: Operation starts when this button is pressed and stops when the button is pressed again..

11. FAN SPEED Button: Fan speed will be selected in following sequence once pressing this button:

AUTO→ LOW→ MED→ HIGH

12. TIME ON Button: For time ON setting. Press this button to activate the Auto-on time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-on time setting, just press the button until the time setting is 0.0.

13. TIME OFF Button: For time OFF setting. Press this button to activate the Auto-off time setting. Each press will increase the time setting in 30 minutes increments, up to 10 hours, then at 1 hour increments up to 24 hours. To cancel the Auto-off time setting, just press the button until the time setting is 0.0.

14. LOCK Button(inner located): When you press the recessed LOCK button, all current settings are locked in and the remote controller does not accept any operation except that of the LOCK. Press again to cancel the LOCK mode.

15. TURBO/FP Button: Active/Disable Turbo function. Turbo function enables the unit to reach the preset temperature at cooling or heating operation in the shortest time(if the indoor unit does not support this function, there is no corresponding operation happened when pressing this button.)

Hold down this button for more than 2 seconds during heating operation(only when the setting mode is HEAT) will activate 8°C heating operation mode. The unit will operate at high fan speed with the temperature automatically set to 8°C.

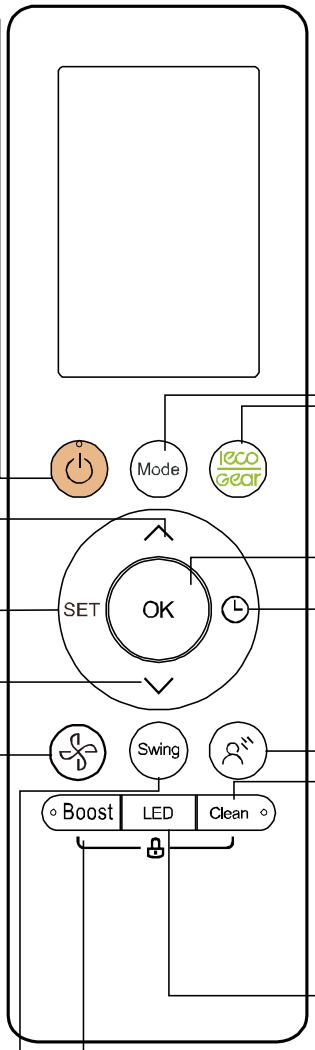
16. LED DISPLAY Button: Press this button to clear the digit display in the air conditioner, press it again to activate it (Not available for the units without LED display window).

3.1.5 RG10A(B2S)/BGEF(Standard for Schiara 2 series)

Remote Controller Speci ications

Model	RG10A(B2S)/BGEF
Rated Voltage	3.0V (Dry batteries R03/ LR03×2)
Reaching Distance	8m
Environment Temperature Range	-5℃~60℃(23℉~140℉)

Buttons and Functions



ON/OFF
Turns the unit on or off.

TEMP ∧
Increases temperate in 1°C (1°F) increments. Max. temperatu re is 30°C (86°F).
NOTE: Press together ∨& ∧ buttons at the same time for 3 seconds will alternate the temperature display between the °C & °F.

SET
Scrolls through operation functions as follows:
Fresh( ) → Sleep( )→ Follow Me( ) → AP mode( ) → Fresh...
The selected symbol will flash on the display area, press the OK button to confirm.

TEMP ∨
Decreases temperature in 1°C(1°F) increments. Min. temperature is 16°C(60°F).

FAN SPEED
Selects fan speeds in the following order: AU→ 20% →40%→60%→ 80%→ 100%.
Press the TEMP∧ or∨ button to increase/decrease the fan speed in 1% increments.

SWING
Starts and stops the horizontal louver movement. Hold down for 2 seconds to initiate vertical louver auto swing feature(some units).

BOOST
Enables unit to reach preset temperature in shortest possible time

MODE
Scrolls through operation modes as follows: **AUTO → COOL → DRY → HEAT → FAN**

ECO/GEAR
Press this button to enter the energy efficient mode in a sequence of following:
ECO →GEAR(75%) → GEAR(50%) → Previous setting mode →ECO ·····

OK
Used to confirm the selected functions

TIMER
Set timer to turn unit on or off

BREEZE AWAY
This feature avoids direct air flow blowing on the body and makes you feel indulging in silky coolness.
NTOE: This feature is available under cool, Fan and Dry mode only

CLEAN
Used to start/stop the Self Clean or Active Clean function.(Model dependent, please refer to the USER'S OPERATION & INSTALLATION MANUAL for details)

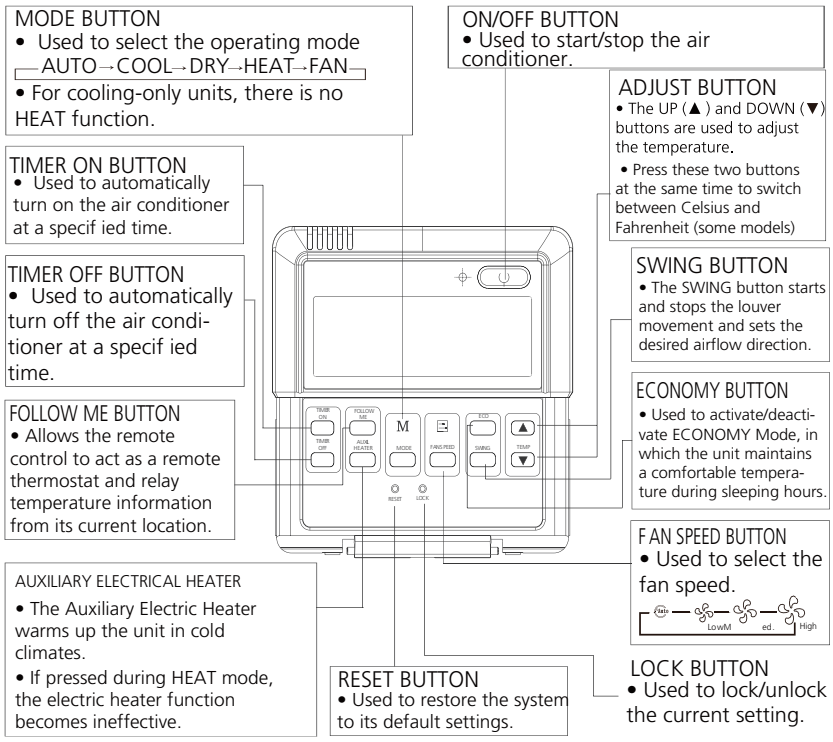
LED
Turns indoor unit's LED display and air conditioner buzzer on and off(model dependent), which create a comfortable and quiet environment.

3.2 LCD Wired Remote Controller

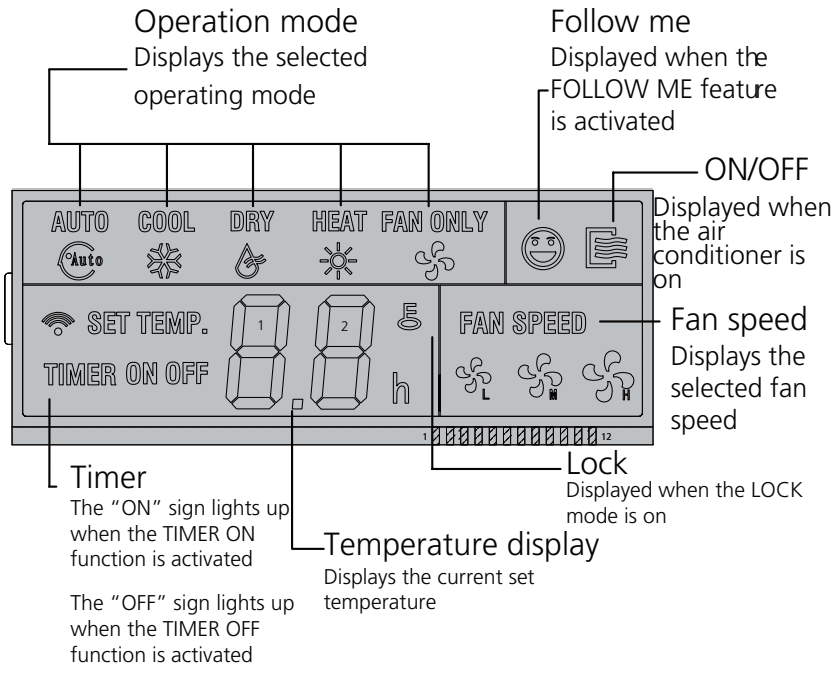
3.2.1 LCD Wired Remote Controller KJR-12B/DP(T) (Standard)

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

i) Buttons and Functions

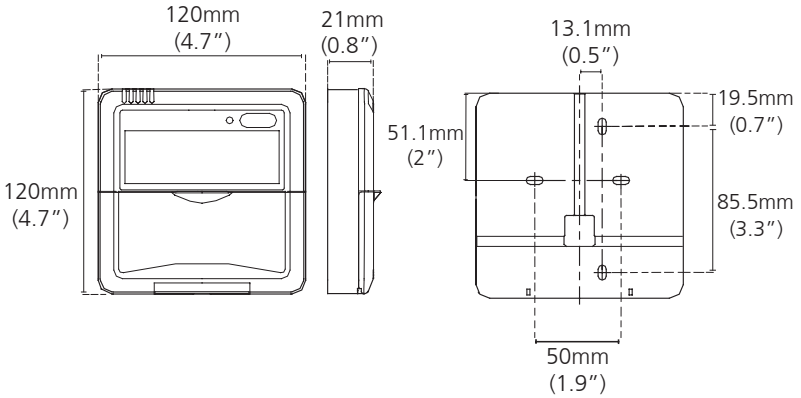


ii) LCD Screen



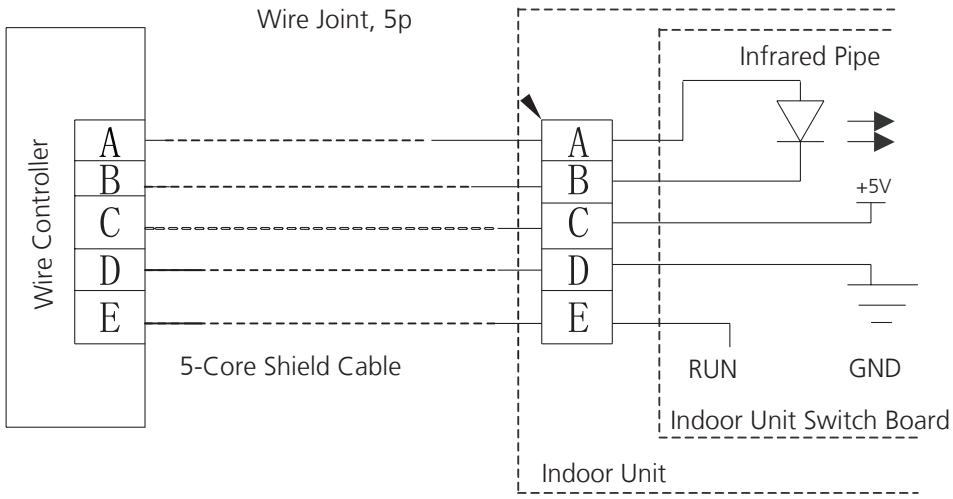
iii) Installation

- **Dimensions**



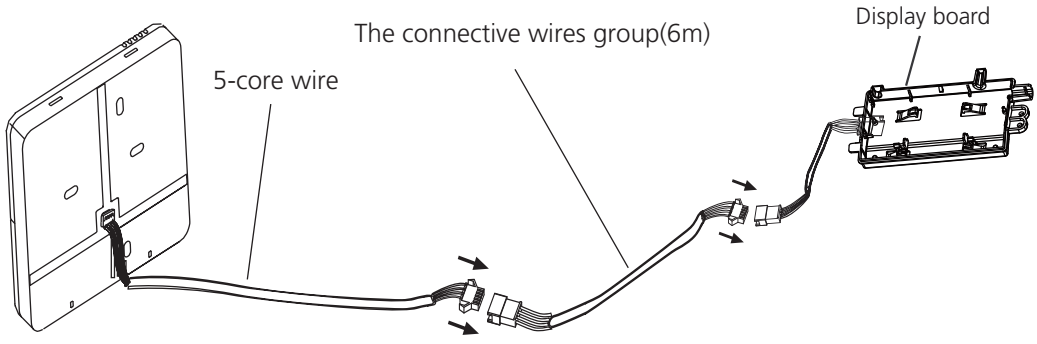
- **Wiring diagram**

Refer to the following diagram to wire the Wall mounted type remote control to the indoor unit.

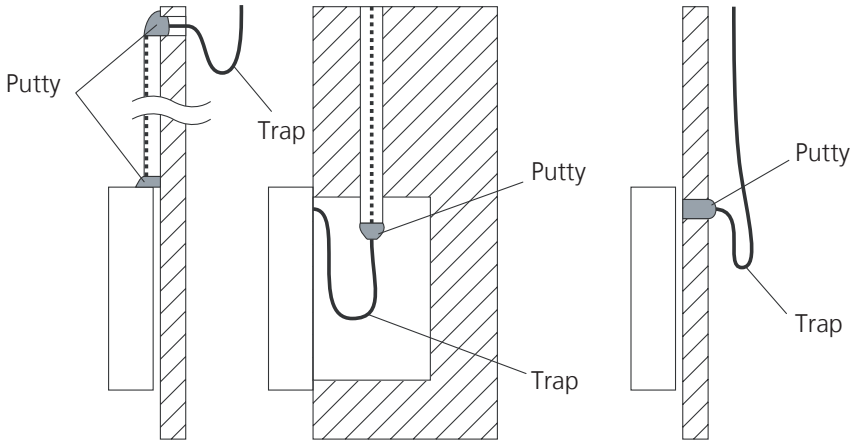


- **Installation Diagram**

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

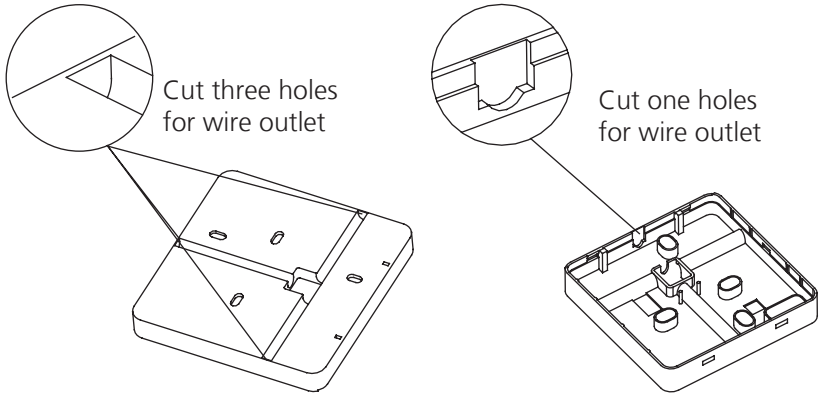


Note: Be sure to reserve a length of the connecting wire for periodic maintenance.

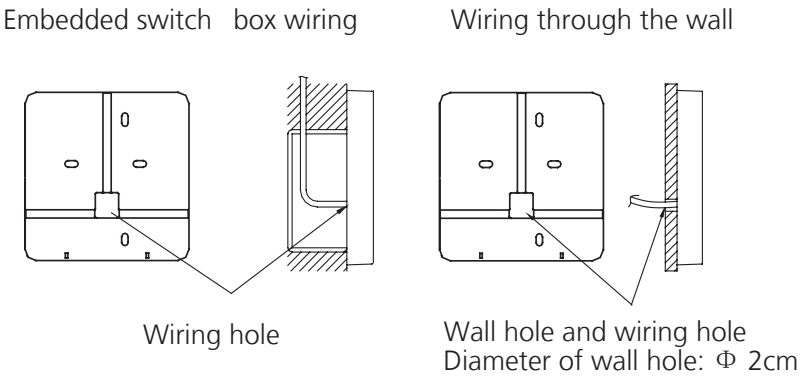


Note: DO NOT allow water to enter the remote control. Use the trap and putty to seal the wires.

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



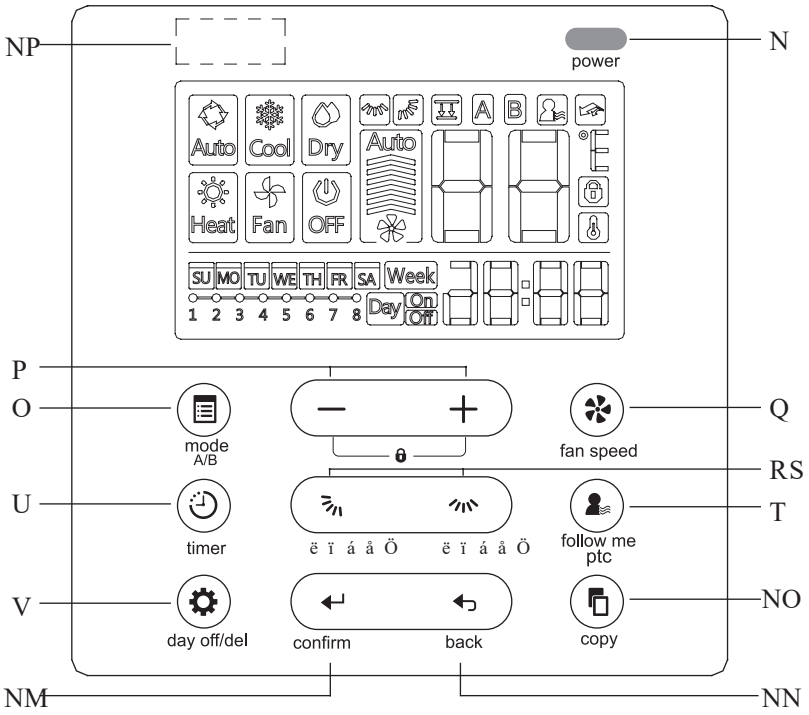
- **For shielded wiring, please refer to the picture below.**



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

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

i) Buttons and Functions



1. POWER button

Turn on of turn off the unit.

2. MODE(A/B) button

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

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

3. Adjust button

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

4. FAN SPEED button

Used to select the fan speed.

5. Up-down airflow direction and swing Button

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

6. Left-righ airflow swing Button

Press for activing the horizontal swing

7. FOLLOW ME(PTC) button

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

8. TIMER button

To set timer on and timer off time of one day

9. DELAY/DAY OFF button

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

10. CONFIRM button

To confirm an setting or call up the menu

11. BACK button

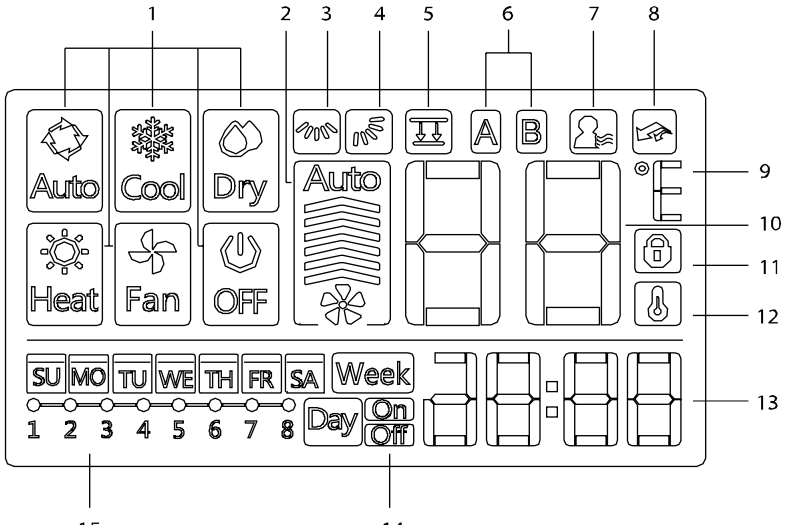
Back to previous operation or superior menu

12. COPY button

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

13 Infrared remote receiver (on some models)

ii) LCD Screen



1 Operation mode indication

2 Fan speed indication

3 Left-right swing indication

4 Up-down swing indication

5 Faceplate function indication

6 Main unit and secondary unit indication

7 Follow me function indication

8 PTC function indication

9 C° / F° indication

10 Temperature display

11 Lock indication

12 Room temperature indication

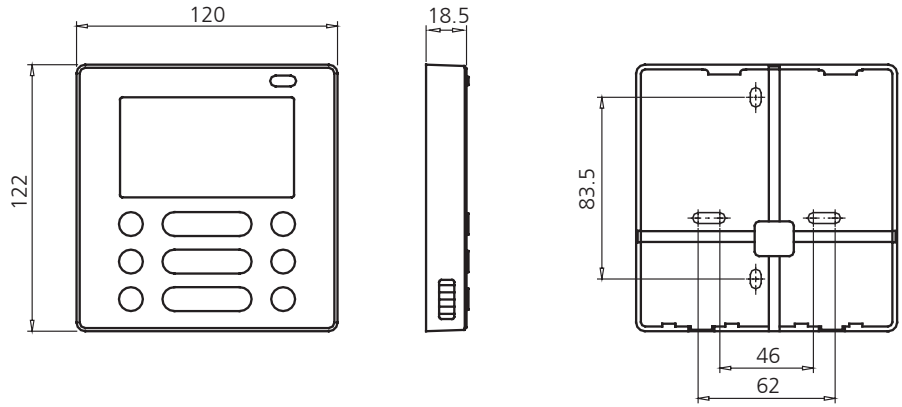
13 Clock display

14 On/Off timer

15 Timer display

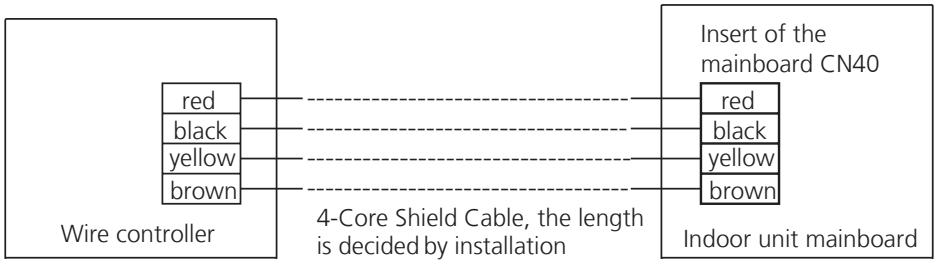
iii) Installation

- **Dimensions**



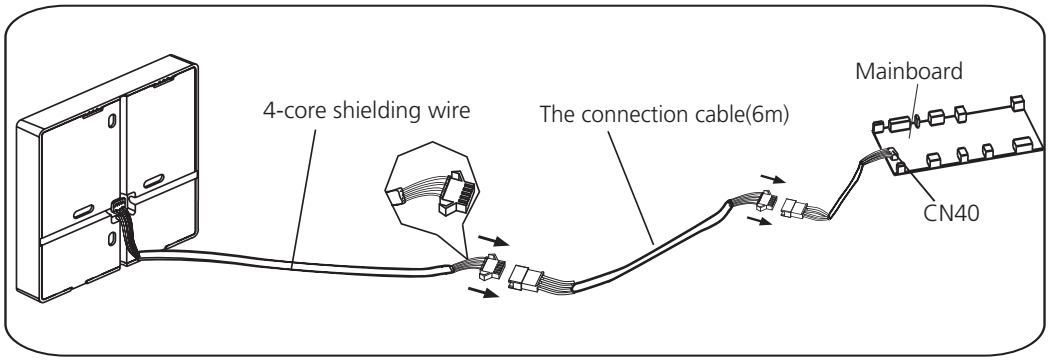
- **Wiring diagram**

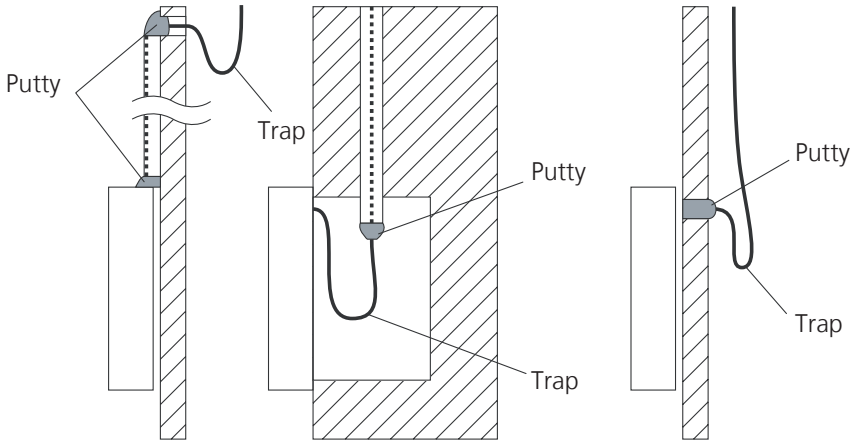
Refer to the following diagram to wire the Wall mounted type remote control to the indoor unit.



- **Installation Diagram**

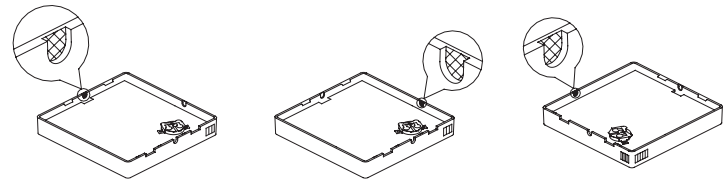
Connect the female joint of wires group from the mainboard with the male joint of connective wires group. Then connect the other side of connective wires group with the male joint of wires group leads from wire controller.





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

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

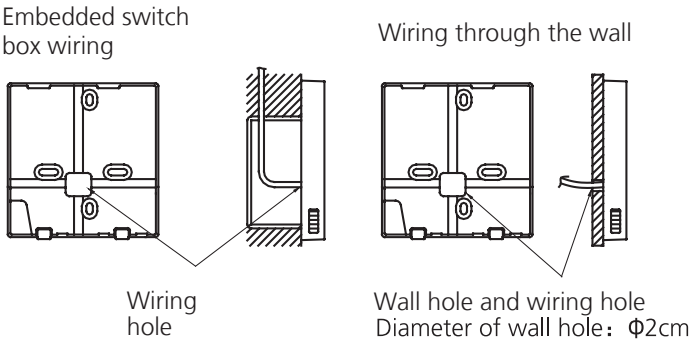


Cutting place of top side wire outlet

Cutting place of left side wire outlet

Cutting place of right side wire outlet

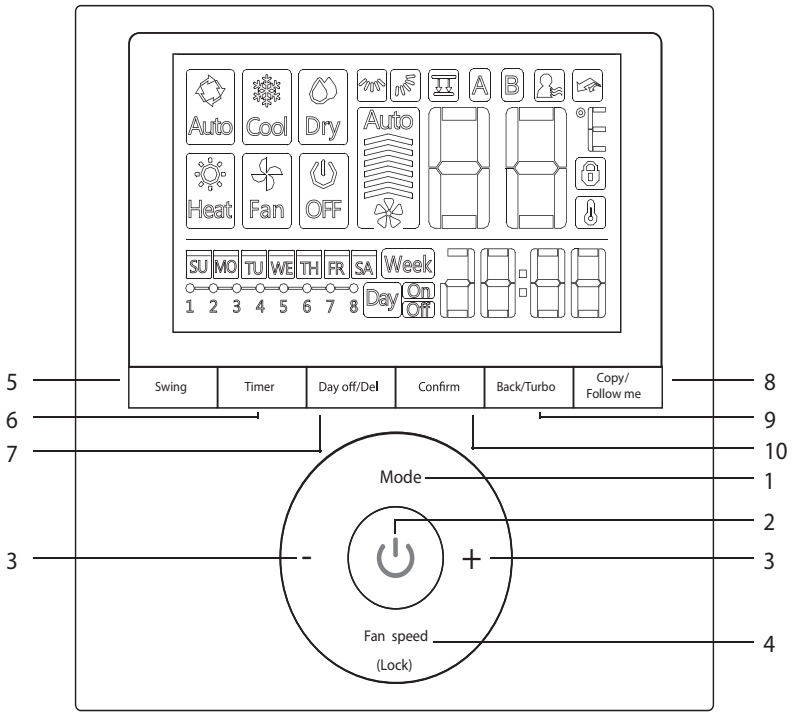
- **For shielded wiring, please refer to the picture below.**



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

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

i) Buttons and Functions



1 MODE button

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

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

2. POWER button

Turn on of turn off the unit.

3. Adjust button

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

4. FAN SPEED button

Used to select the fan speed.

5. Swing Button

Press to active vertical swing, hold for horizontal swing

6. TIMER button

To set timer on and timer off time of one day

7.DELAY/DAY OFF button

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

8. COPY/FOLLOW ME button

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

To active the follow me function while in normal operation.

9. BACK/TURBO button

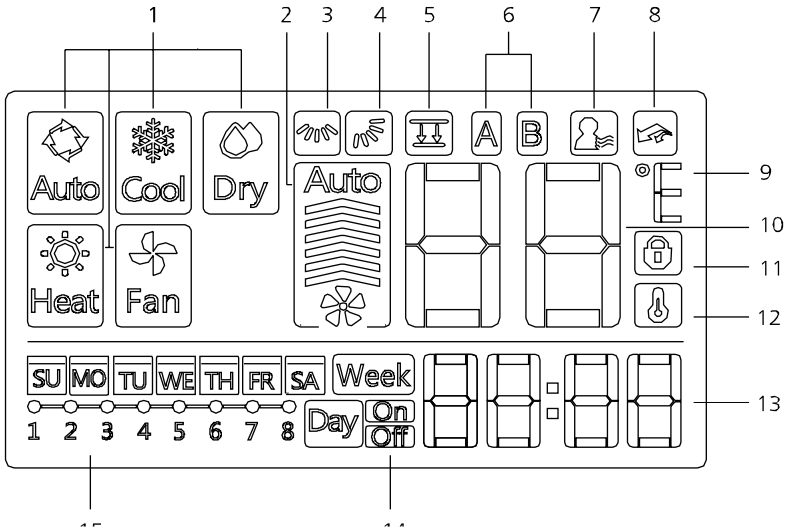
Back to previous operation or superior menu

To active turbo mode while in normal operation

10. CONFIRM button

To confirm an setting or call up the superior menu

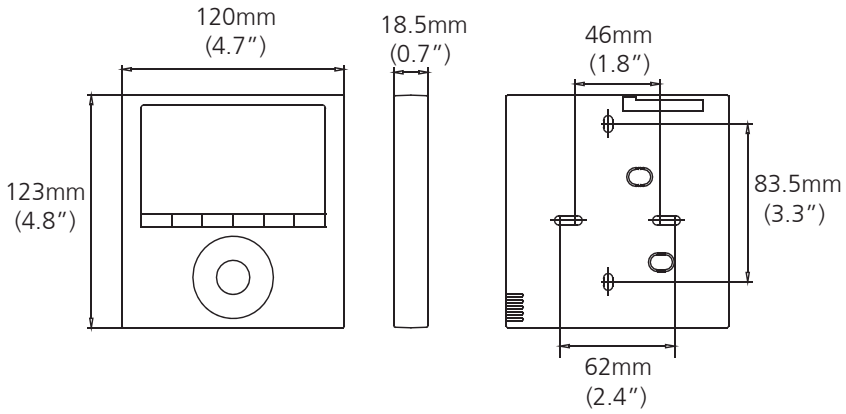
ii) LCD Screen



1 Operation mode indication
2 Fan speed indication
3 Left-right swing indication
4 Up-down swing indication
5 Faceplate function indication
6 Main unit and secondary unit indication
7 Follow me function indication
8 Turbo/PTC function indication
9 C° / F° indication
10 Temperature display
11 Lock indication
12 Room temperature indication
13 Clock display
14 On/Off timer
15 Timer display

iii) Installation

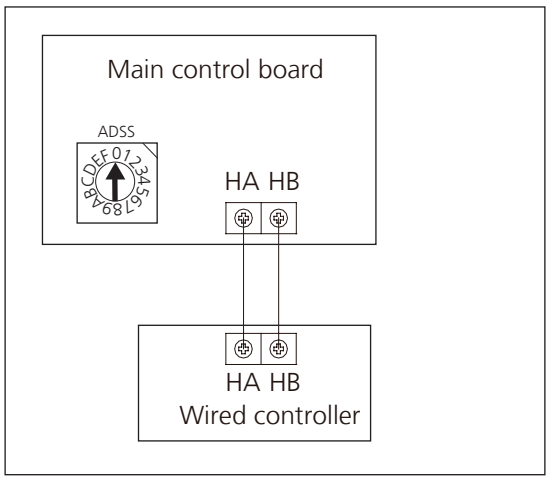
- **Dimensions**



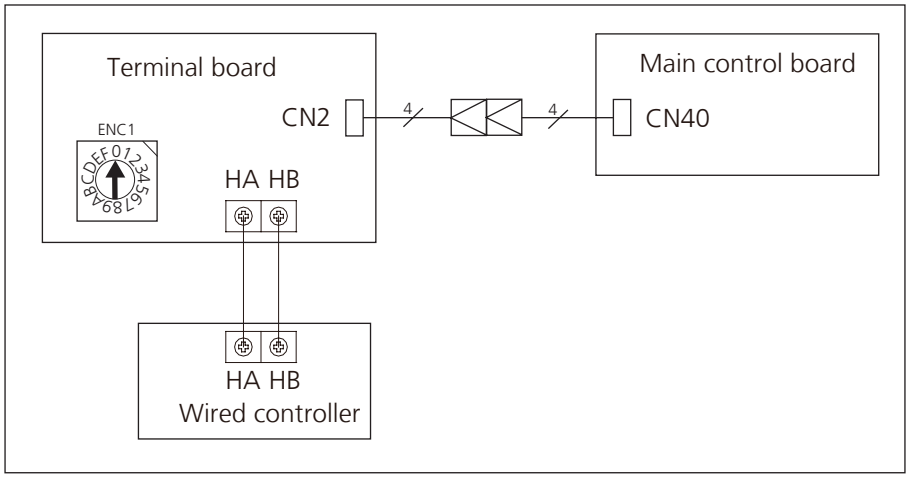
- **Wiring diagram**

1) Connection

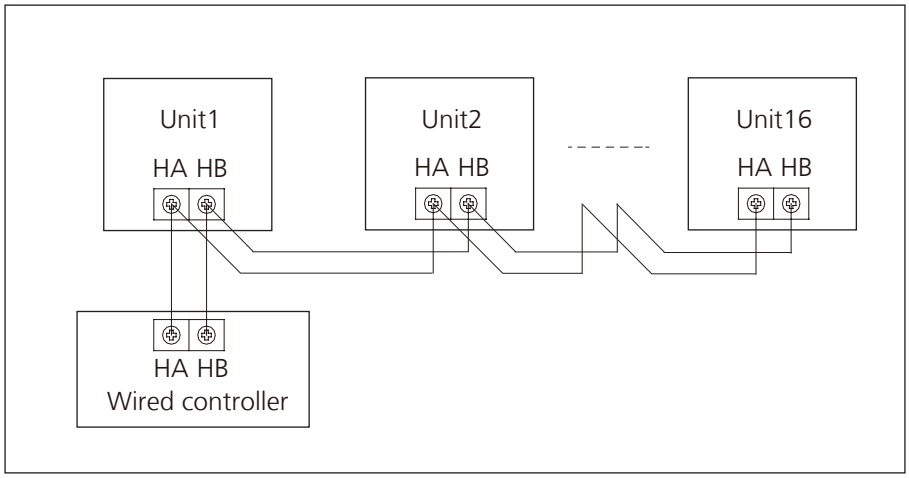
For Cassette type: The wired controller connects to main control board directly.



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



2) Address setting

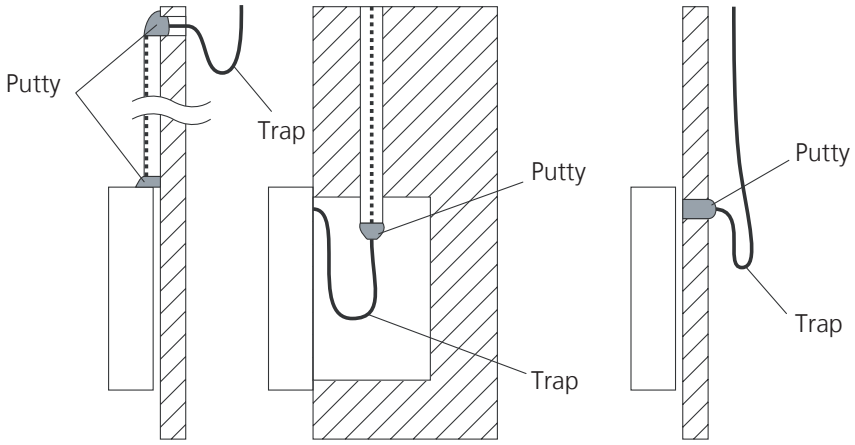


a. One non-polarity controller can control up to 16 indoor units.

b. When the non-polarity controller is connected to several units, every air-conditioner in network has only one network address to distinguish each other.

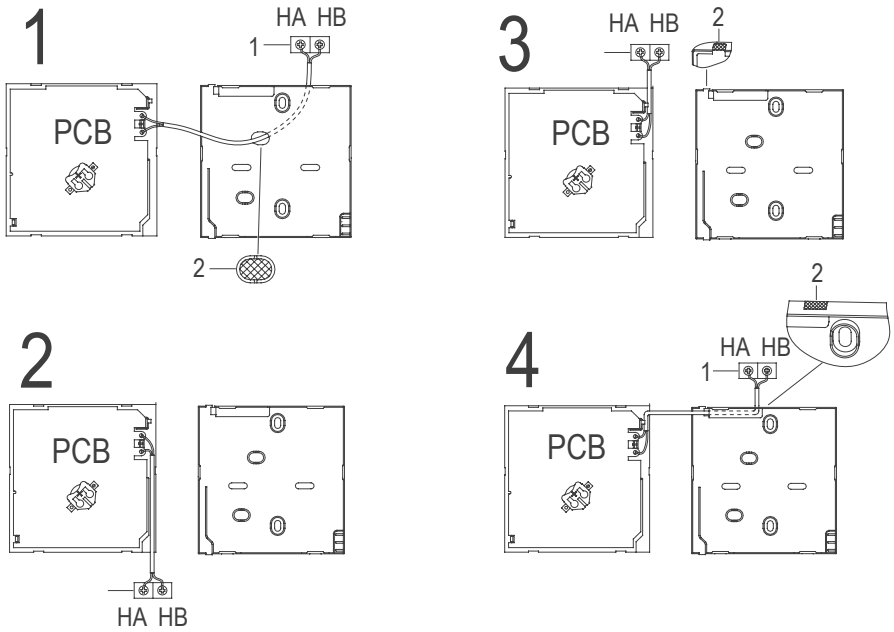
c. Address code of air-conditioner in LAN is set by code switch ENC1(Duct and Ceiling& Floor) or ADSS(Cassette) of the indoor unit, and the set range is 0-15.

d. Note: The indoor units are controlled at the same time, not independently. The purpose of setting network address is identify the unit when error occurs.



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

- **For wiring the indoor unit, there are three methods:**
  - From the rear;
  - From the bottom;
  - From the top;
  - From the top center.

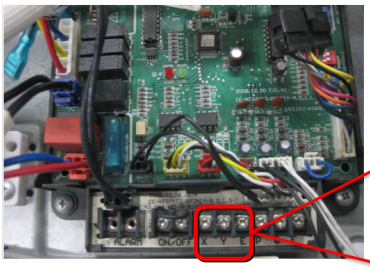


- 1: Indoor Unit.
- 2: Notch the part for the wiring to pass through with a nipper tool.
- Connect the terminals on the remote controller (HA ,HB), and the terminals of the indoor unit. (HA ,HB). (HA and HB do not have polarity.)

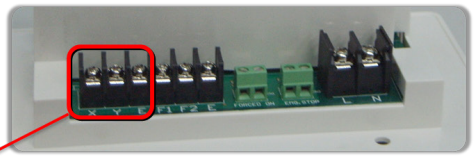
3.3 Centralized Controller

1) Connection

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



Indoor unit



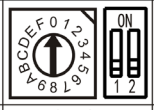
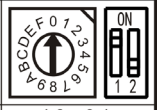
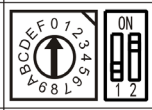
CCM03



CCM09

2) Address setting

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

SWITCH	FOR CCM UNIT ADDRESS	
S2 + S1		
ADDRESS	0~15	16~31
Factory Setting	√	
S2 + S1		
ADDRESS	32~47	48~63
Factory Setting		

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

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

3.4 Using the wire controller to set external static pressure

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

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

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

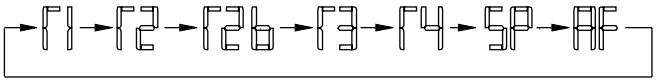
3. If there is more than one air inlet and outlet, adjust the dampers so that the airflow rate of each air inlet and outlet conforms with the designed airflow rate. Make sure the unit is in FAN ONLY mode. Press and set the airflow adjustment button on the remote control to change the airflow rate from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

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

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

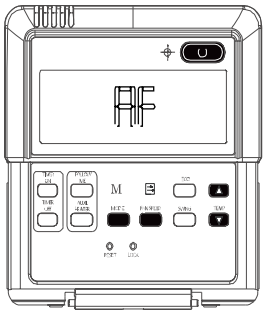
FAN button down together for three seconds. ("AF" indicator flashes for 3 times.)

- Press " △ " or " ▽ " to select the AF.



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

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



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

Caution:

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

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

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

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

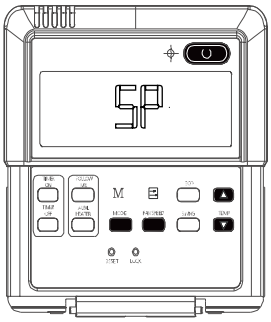
3.5 Using the wire controller to set airflow rate

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

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

2.Press " △ " or " ▽ " to select the SP.

3.Press "MODE" to set the airflow rate in the range of 0~4.



"0": No airflow change

"1"~"4":Airflow increase progressively

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

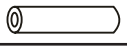
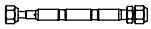
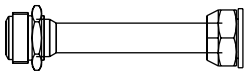
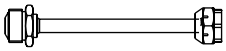
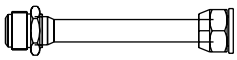
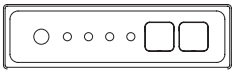
Installation

Contents

Accessories 135

1. Installation Overview 139
2. Location Selection 142
3. Indoor Unit Installation(A6 Duct type) 143
3. Indoor Unit Installation(Compact cassette type) 145
3. Indoor Unit Installation(Wall mounted type) 149
4. Outdoor Unit Installation 157
5. Drainage Pipe Installation 158
6. Refrigerant Pipe Installation 160
7. Vacuum Drying and Leakage Checking 161
8. Additional Refrigerant Charge 162
9. Engineering of Insulation 162
10. Engineering of Electrical Wiring 163
11. Test Operation 164

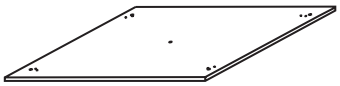
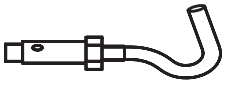
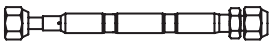
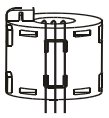
Accessories- Duct 2 type:

	Name	Shape	Quantity
Tubing & Fittings	Soundproof / insulation sheath		2
	Seal sponge (some models)		1
	Orifice (some models)		1
Drainpipe Fittings (for cooling & heating)	Drain joint (some models)		1
	Seal ring (some models)		1
EMC Magnetic Ring (some models)	Magnetic ring(Wrap the electric wires S1 & S2 (P & Q & E) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring(Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		1
Others	Manual	-	2~4
	Transfer connector(Φ12.7-Φ15.9)/(Φ0.5in-Φ0.63in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Transfer connector(Φ6.35-Φ9.52)/(Φ0.25in-Φ0.375in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Transfer connector(Φ9.52-Φ12.7)/(Φ0.375in-Φ0.5in)(Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit.		1 (on some models)
	Connecting wire for display (2m)	-	1(on some models)
	Cord protection rubber ring		1(on some models)
	Display panel *Just for testing purposes only		1(on some models-KJR-120G,KJR-120H)

Optional accessories:

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

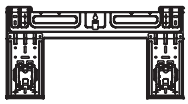
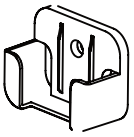
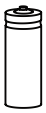
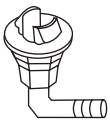
Accessories-Box 650x650 type:

	Name	Shape	Quantity
Indoor unit installation	Installation paper template (some models)		1
Refrigeration Fittings	Soundproof/insulation sheath (some models)		1
Drainpipe Fittings	Outlet pipe sheath(some models)		1
	Outlet pipe clasp(some models)		1
	Drain joint (some models)		1
	Seal ring (some models)		1
Installation Accessory (some models)	Ceiling hook		4
	Copper nut(some units) Used to make the connective pipes between indoor and outdoor units.		
	Suspension bolt		4
	Orifice tube (some units)		1
	Anti-shock rubber		1
EMC Magnetic Ring (some models)	Magnetic ring (wrap the electric wires S1 & S2 (P & Q & E) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.)		1
Others	Manual	-	2~4

Optional accessories:

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

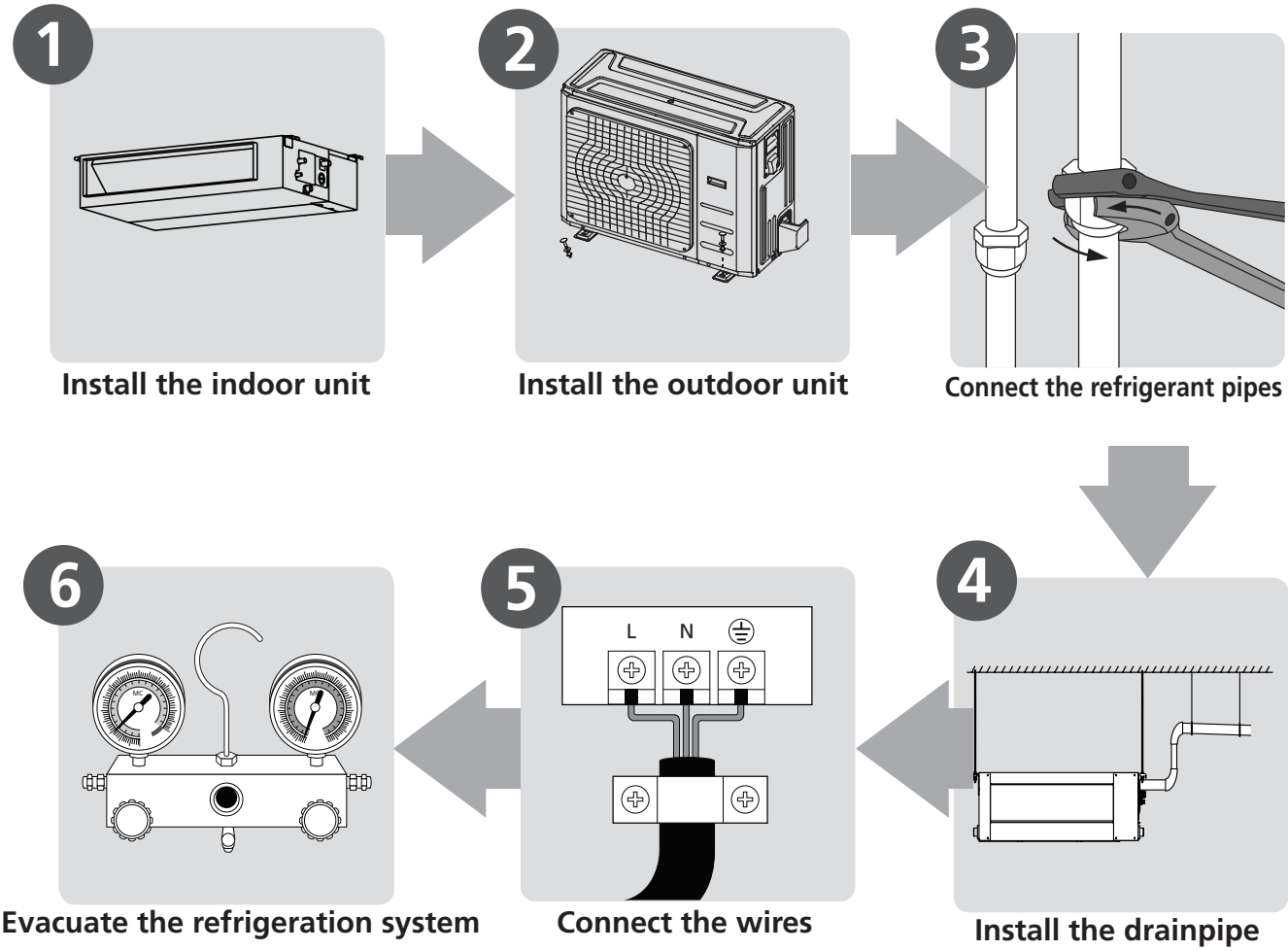
Accessories- Nativ / Cristallo-Essential 2 / Schiara 2 type

Name	Shape	Quantity	
Mounting plate		1	
Clip anchor		5	
Mounting plate fixing screw ST3.9 X 25		5	
Remote controller		1	
Fixing screw for remote controller holder ST2.9 x 10		2	Optional Parts
Remote controller holder		1	
Dry battery AAA.LR03		2	
Seal		1(for cooling & heating models only)	
Drain joint			
Manual		2~3	

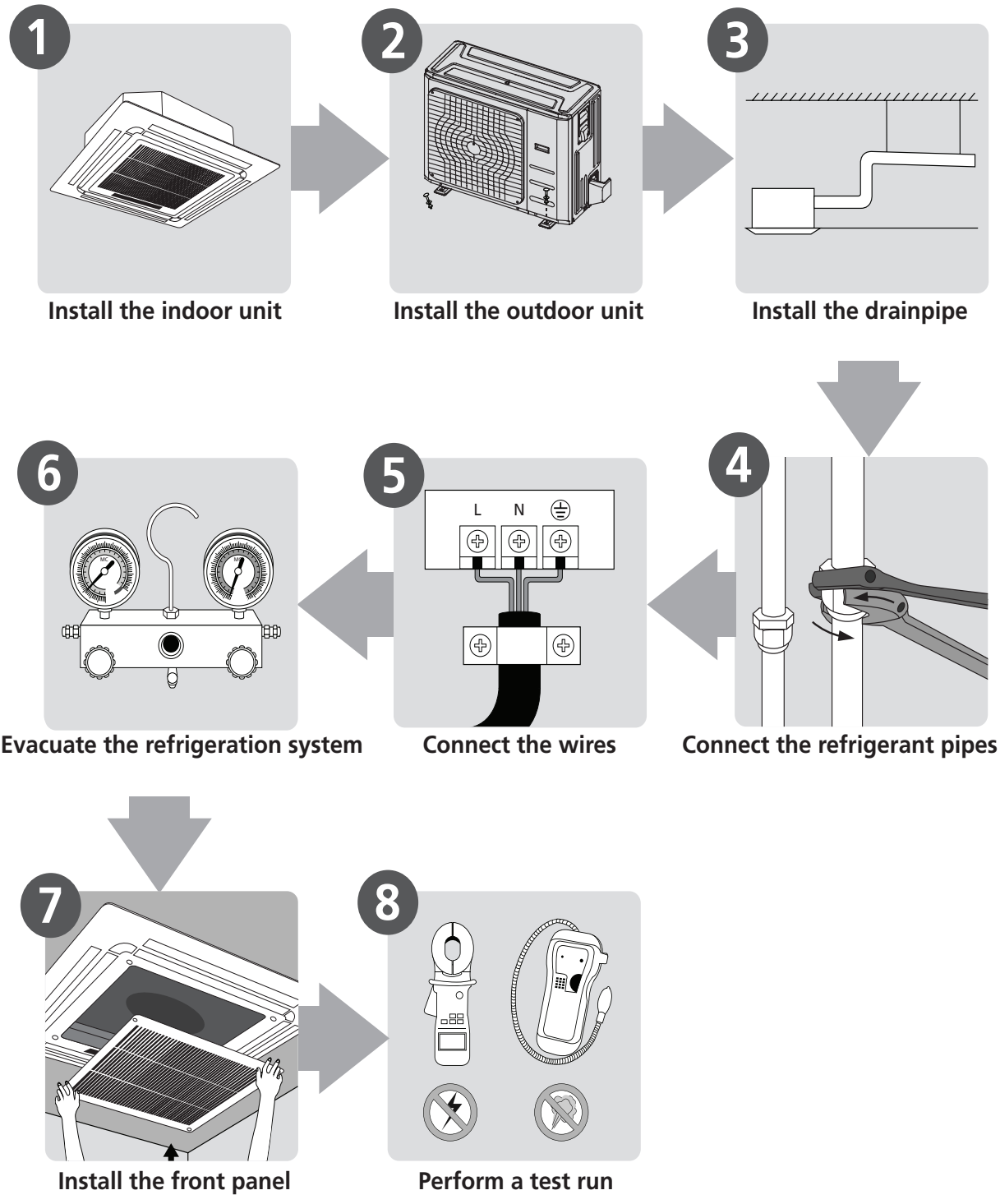
Connecting pipe assembly	Liquid side	Φ6.35 (1/4in)	Parts you must purchase. Consult the dealer about the pipe size.
		Φ9.52 (3/8in)	
	Gas side	Φ9.52 (3/8in)	
		Φ12.7 (1/2in)	
		Φ15.9 (5/8in)	

1. Installation Overview

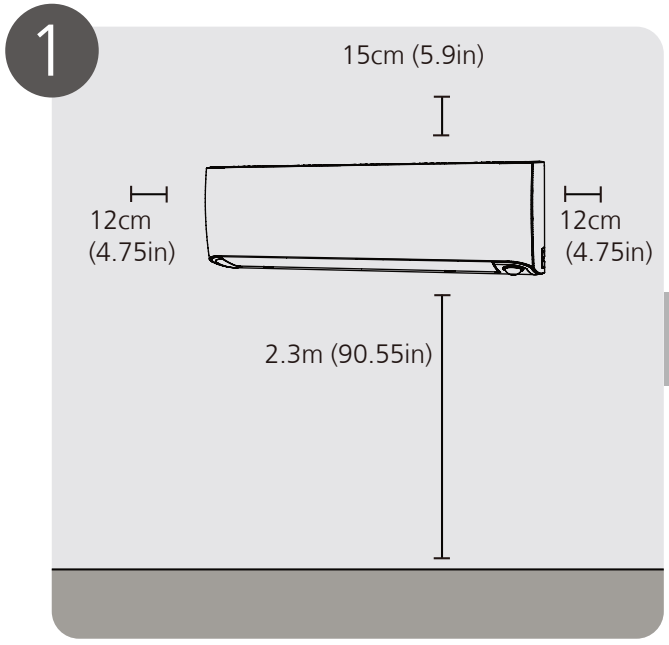
Installation Order- Duct 2 type



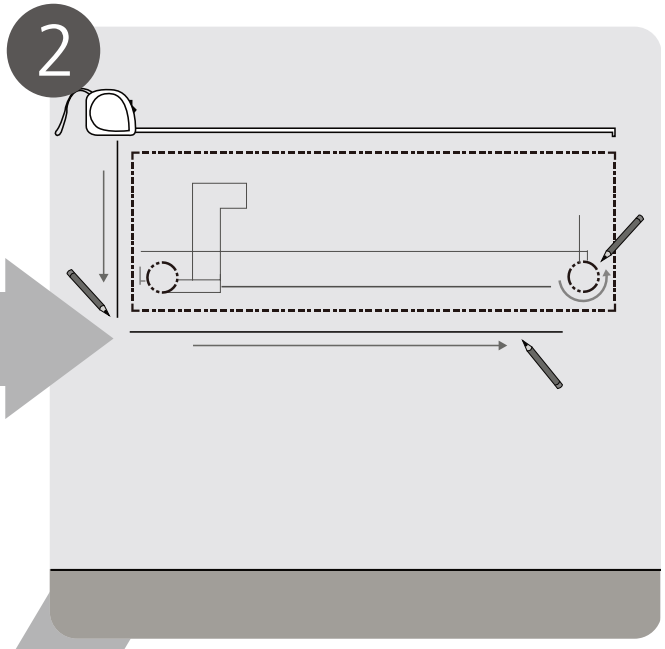
Installation Order- Box 650x650 type



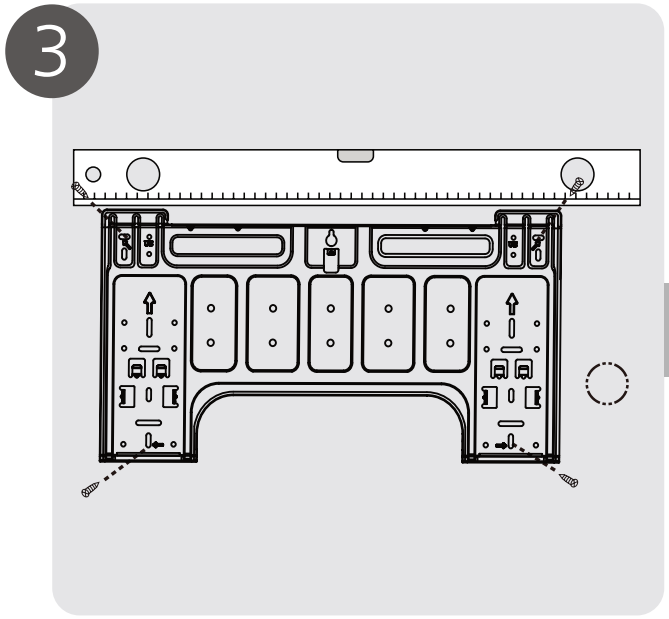
Installation Order- Nativ / Cristallo-Essential 2 / Schiara 2 type



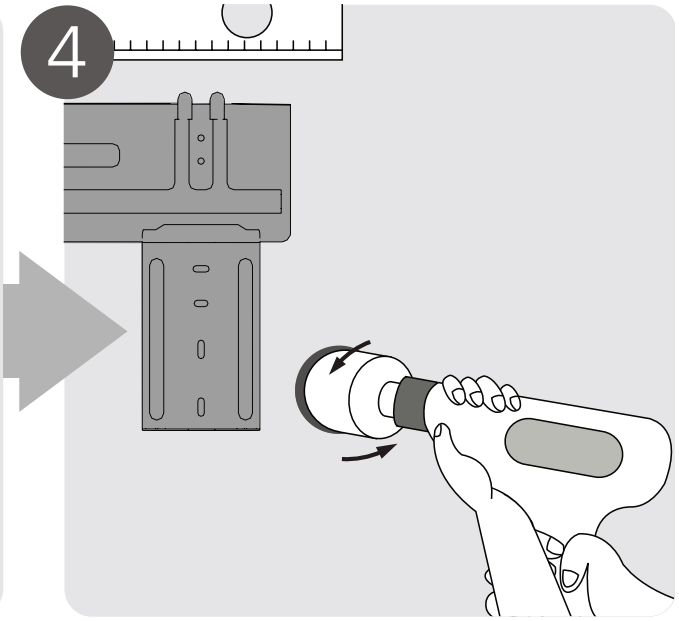
Select Installation Location



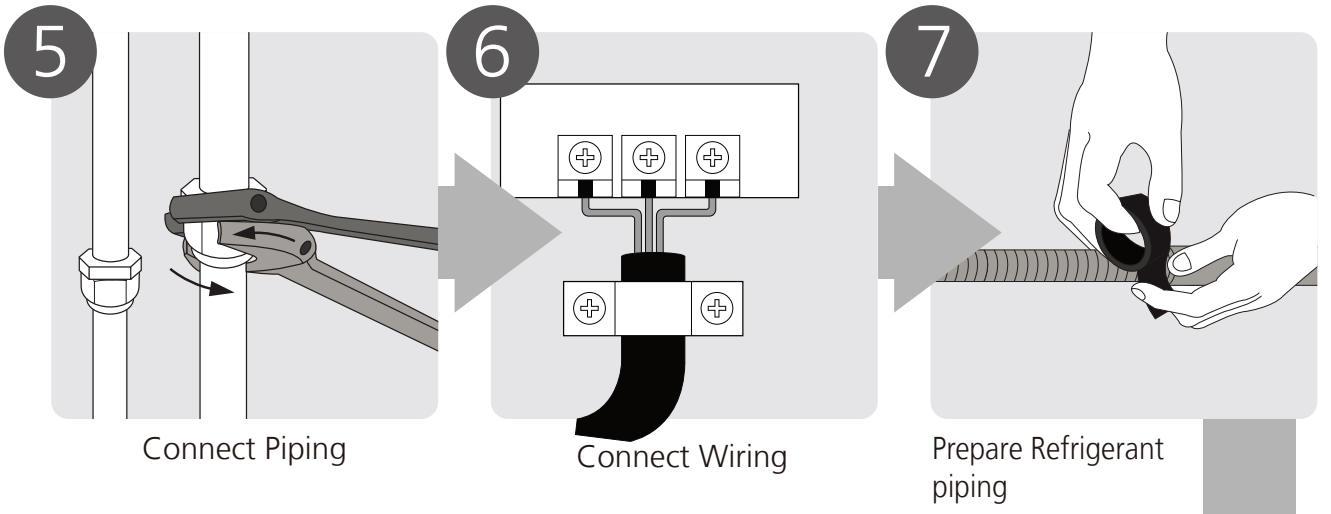
Determine Wall Hole Position



Attach Mounting Plate



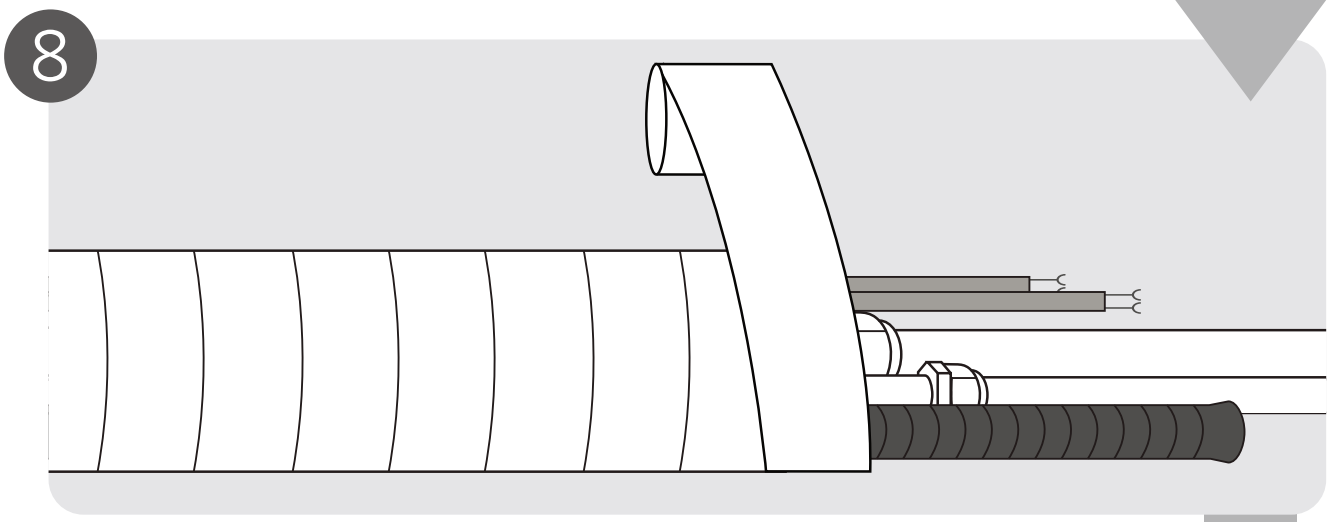
Drill Wall Hole



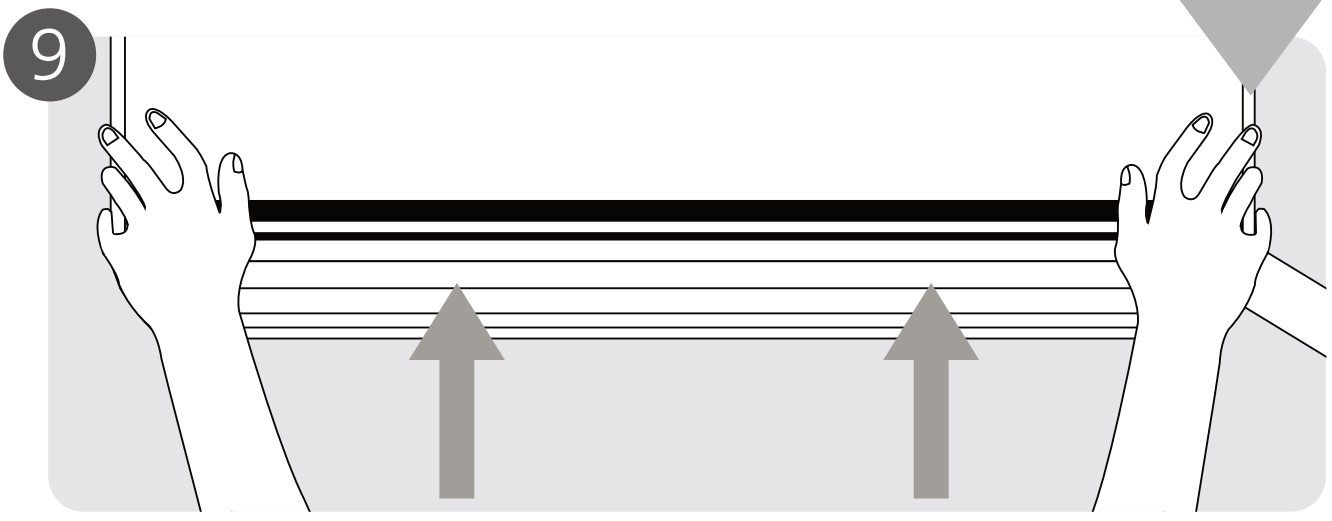
Connect Piping

Connect Wiring

Prepare Refrigerant piping



Wrap Piping and Cable
(not applicable for some locations in the US)



Mount Indoor Unit

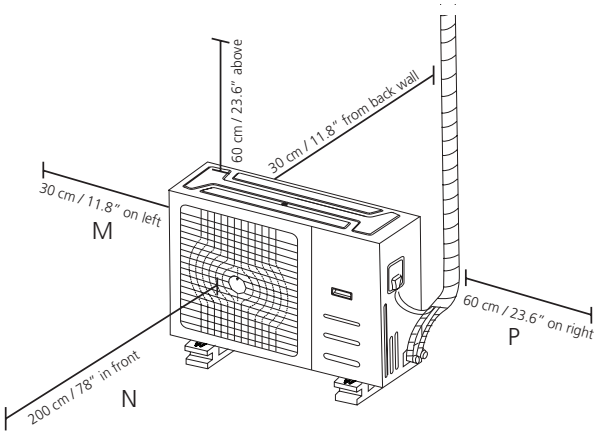
2. Location selection

2.1 Unit location selection can refer to installation manual.

2.2 DO NOT install the unit in the following locations:

- Where oil drilling or fracking is taking place.
- Coastal areas with high salt content in the air.
- Areas with caustic gases in the air, such as near hot springs.
- Areas with power fluctuations, such as factories.
- Enclosed spaces, such as cabinets.
- Areas with strong electromagnetic waves.
- Areas that store flammable materials or gas.
- Rooms with high humidity, such as bathrooms or laundry rooms.
- If possible, DO NOT install the unit where it is exposed to direct sunlight.

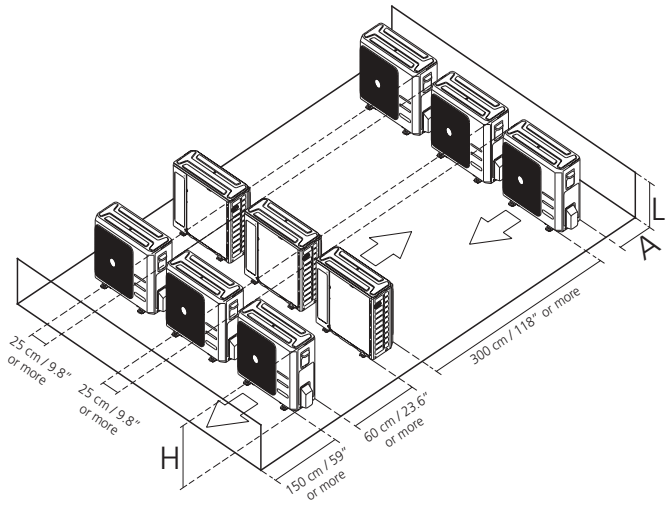
2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



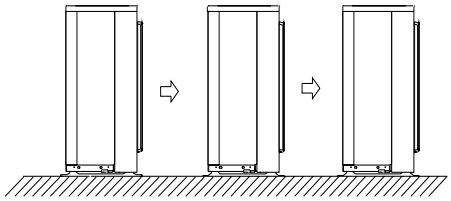
2.4 Rows of series installation

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

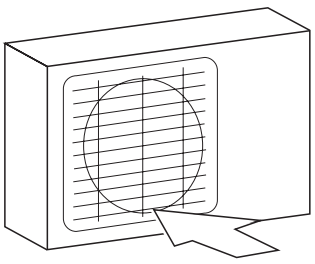
	L	A
L ≤ H	L ≤ 1/2H	25 cm / 9.8" or more
	1/2H < L ≤ H	30 cm / 11.8" or more
L > H	Can not be installed	



DO NOT install the rows of series like following figure.



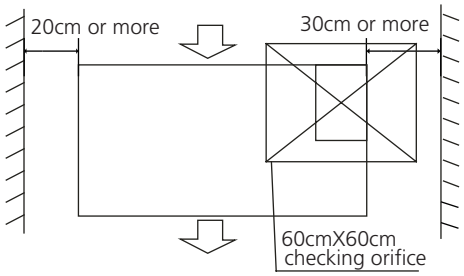
2.5 If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning.



DO NOT Strong wind

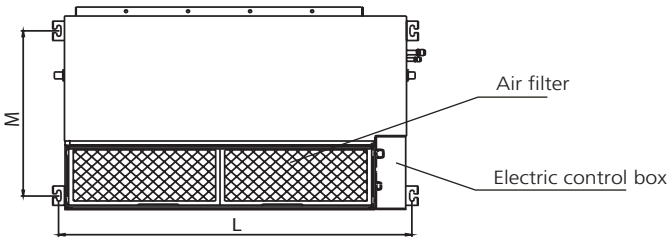
3. Indoor Unit Installation (Duct 2 type)

3.1 Service space for indoor unit



3.2 Hang Indoor Unit

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



Capacity(Btu/h)	Size of mounted plug	
	L	M
27M	741	360
53M	920	508

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

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

3. Install hanging screw bolts.

1) Cut off the roof beam.

2) Strengthen the point at which the cut was made. Consolidate the roof beam..

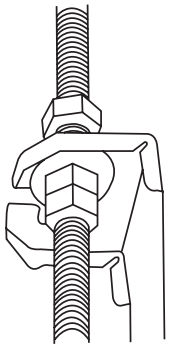
4. After you select an installation location,align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit..

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

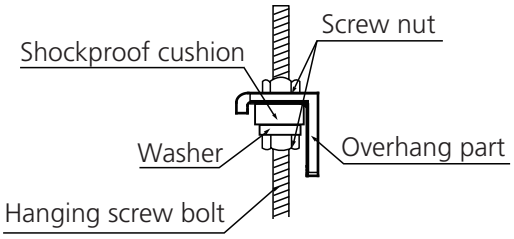
6. Secure the bolt using the included washers and nuts.

7. Install the four suspension bolts.

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



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



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

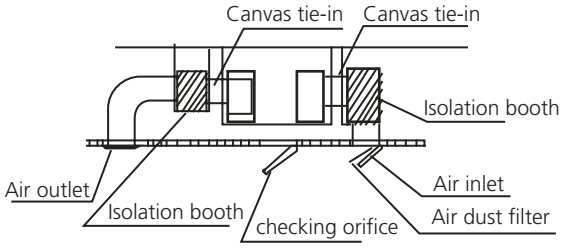
3.3 Duct and accessories installation

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

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

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

4. Connect the duct according to the following diagram.



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

Capacity(Btu/h)	Static Pressure(Pa)
27/35M	0-60
53M	0-100

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

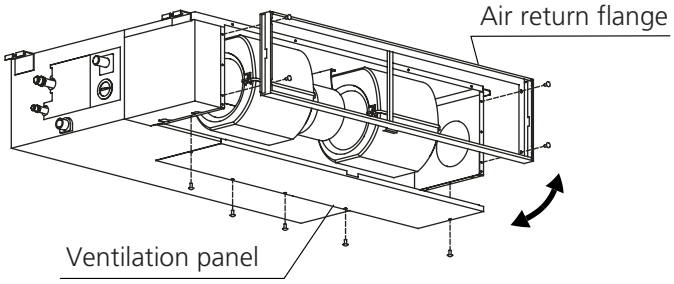
NOTE: 1. Do not put the connecting duct weight on the indoor unit.

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

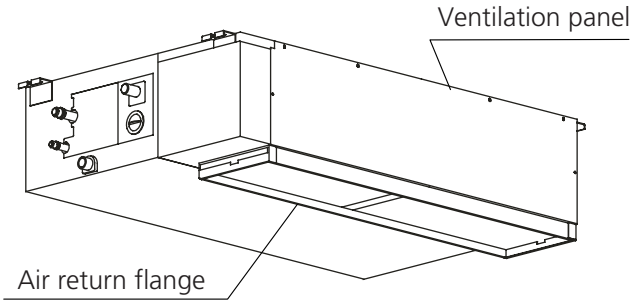
3. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

3.4 Adjust the air inlet direction(From rear side to under-side.)

1. Take off ventilation panel and flange,

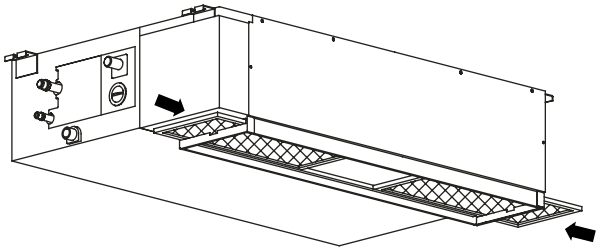


2. Change the mounting positions of ventilation panel and air return flange .



3. When installing the filter mesh, fit it into the

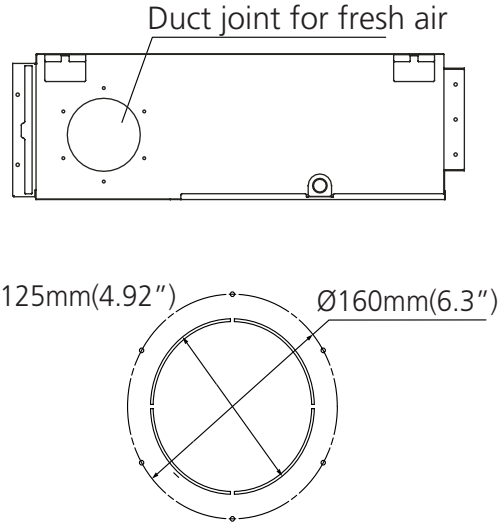
flange as illustrated in the following figure.



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

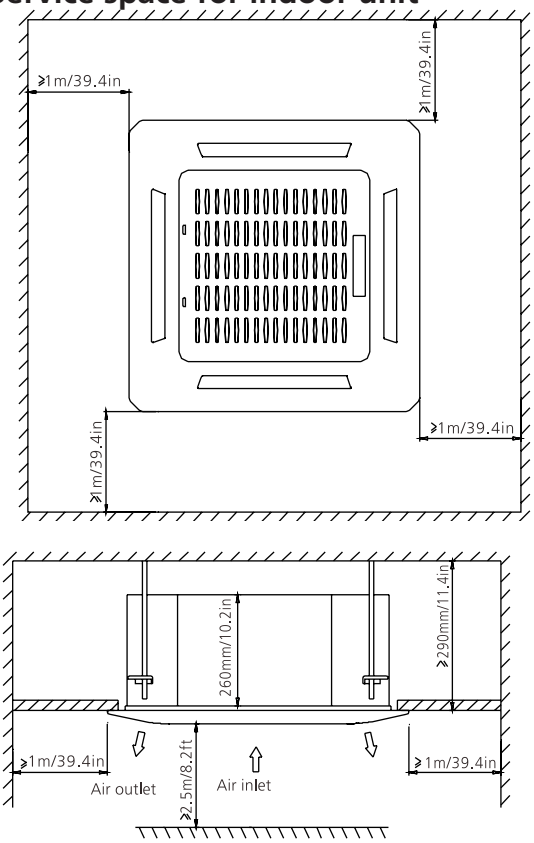
3.5 Fresh air duct installation

Dimension :



3. Indoor Unit Installation (Box 650x650 Type)

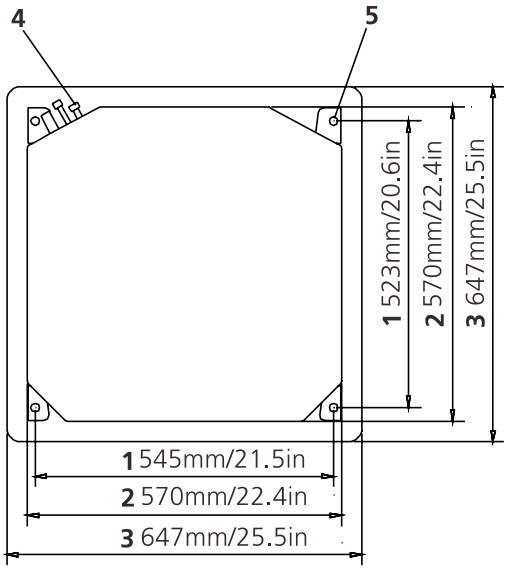
3.1 Service space for indoor unit

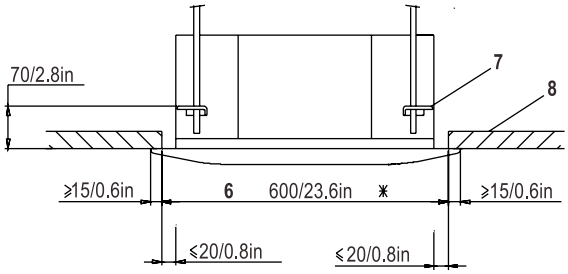


3.2 Hang Indoor Unit

1. Use the included paper template to cut a rectangular hole in the ceiling, leaving at least 1m (39.4") on all sides. The cut hole size should be 4cm(1.6") larger than the body size.

Be sure to mark the areas where ceiling hook holes will be drilled.



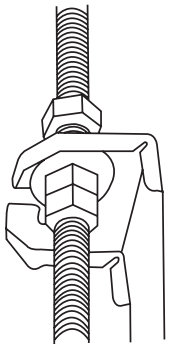


1 Suspension bolt pitch dimensions
2 Body dimensions
3 Decoration panel dimensions
4 Refrigerant piping
5 Suspension bolt (×4)
6 Ceiling opening dimensions
7 Hanger bracket
8 Ceiling board

2. Drill 4 holes 5cm (2") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
3. Using a hammer, insert the ceiling hooks into the pre-drilled holes. Secure the bolt using the included washers and nuts.
4. Install the four suspension bolts



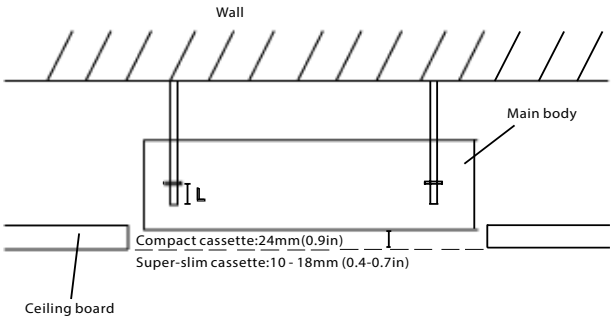
5. Mount the indoor unit. You will need two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the included washers and nuts



Adjust the position to ensure the gaps between the indoor

unit and the four sides of false ceiling are even. The bottom of the unit should be 24mm / 0.9in higher than ceiling board.

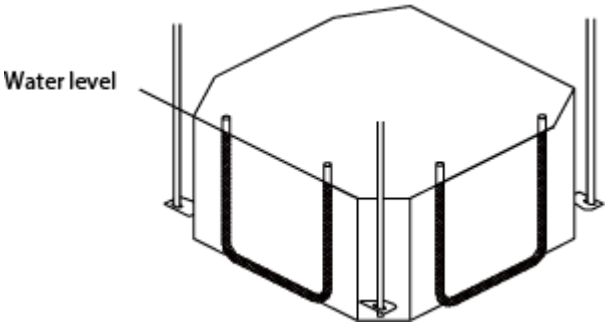
Generally, L should be half the length of the suspension bolt or long enough to prevent the nuts from coming off



CAUTION:

Ensure that the unit is completely level.

The unit is equipped with a built-in drain pump and float switch. If the unit is tilted against the direction of condensate flows (the drainpipe side is raised), the float switch may malfunction and cause water to leak.



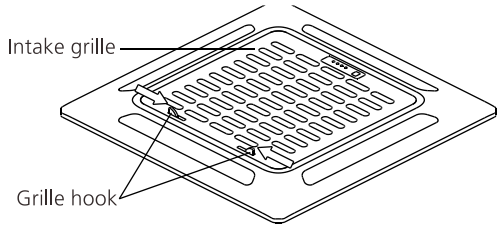
NOTE FOR NEW HOME INSTALLATION

When installing the unit in a new home, the ceiling hooks can be embedded in advance. Make sure that the hooks do not come loose due to concrete shrinkage. After installing the indoor unit, fasten the installation paper template onto the unit with bolts (M6X12) to determine in advance the dimension and position of the opening on the ceiling. Follow the instructions above for the remainder of the installation.

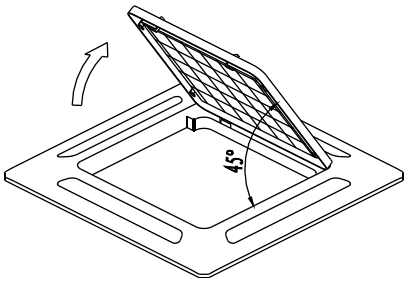
3.3 Compact Cassette Panel Installation

3.3.1 Remove the front grille

1. Slide the 2 grille hooks toward the middle of the decoration panel.



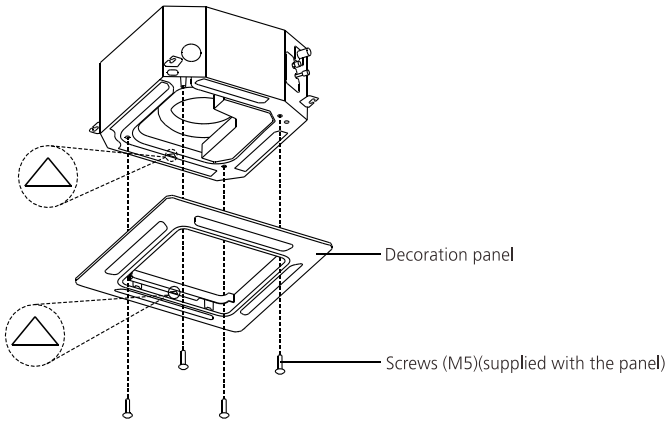
2. Hold the grille at a 45° angle, lift it up slightly and detach it from the main body.



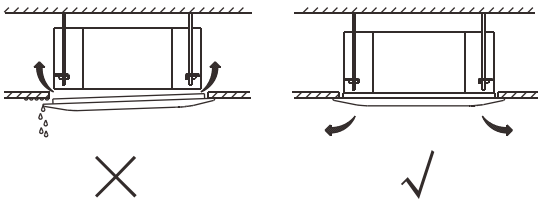
3.3.2 Install the panel

1. Align the indicate "△" on the decoration panel to the indicate "△" on the unit .

2. Attach the decoration panel to the unit with the supplied screws as shown in figure below.

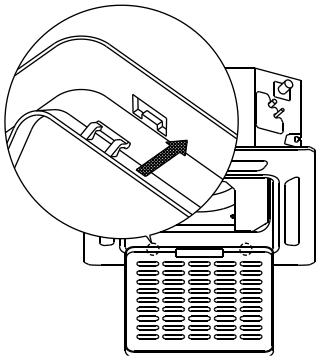


3. After installing the panel, ensure that there is no space between the unit body and decoration panel. Otherwise air may leak through the gap and cause dewdrop.

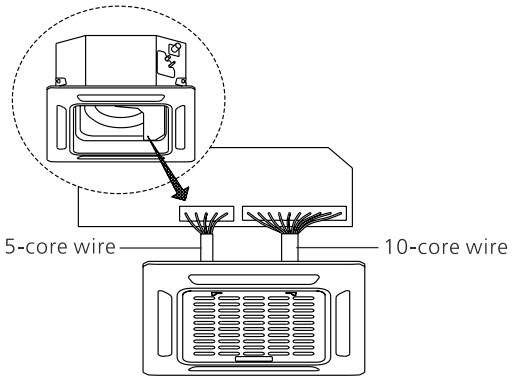


3.3.3 Mount the grille

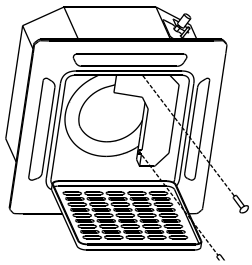
Ensure that the buckles at the back of the grille be properly seated in the groove of the panel.



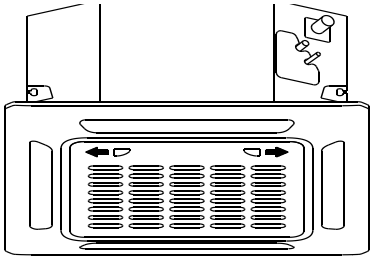
3.3.4 Connect the two wires of the panel to the main board of the unit.



3.3.5 Fasten the control box lid with two screws .

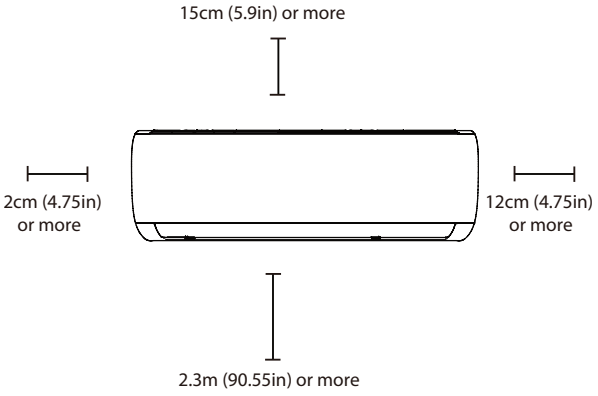


3.3.6 Close the front grille, and close the two grille hooks.



3. Indoor Unit Installation (Nativ / Cristallo-Essential 2 / Schiara 2 type)

3.1 Service space for indoor unit



3.2 Attach mounting plate to wall

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

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

2. Place the mounting plate against the wall in a location that meets the standards in the Select Installation Location step. (See Mounting Plate Dimensions for detailed information on mounting plate sizes.)

3. Drill holes for mounting screws in places that:

- have studs and can support the weight of the unit.
- correspond to screw holes in the mounting plate.

4. Secure the mounting plate to the wall with the screws provided.

5. Make sure that mounting plate is flat against the wall.

- **Mounting plate dimensions**

Different models have different mounting plates. In order to ensure that you have ample room to mount the indoor unit, the diagrams to the right show different types of mounting plates along with the following dimensions:

1. Width of mounting plate

2. Height of mounting plate

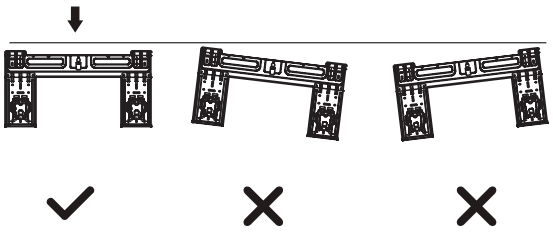
3. Width of indoor unit relative to plate

4. Height of indoor unit relative to plate

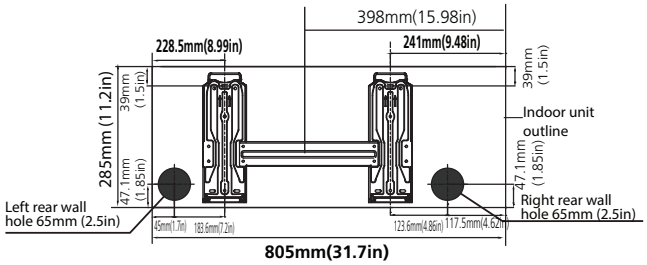
5. Recommended position of wall hole (both to the left and right of mounting plate)

6. Relative distances between screw holes

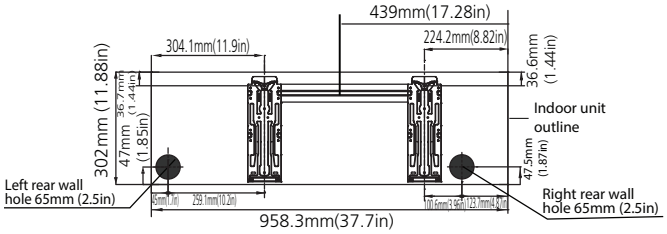
Correct orientation of Mounting Plate



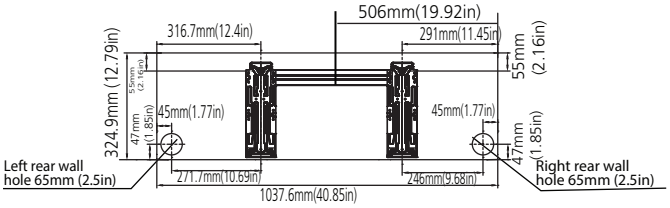
For Nativ series:



7K/9K/12K Models

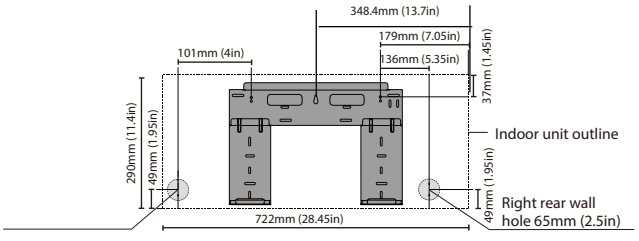


18K Model

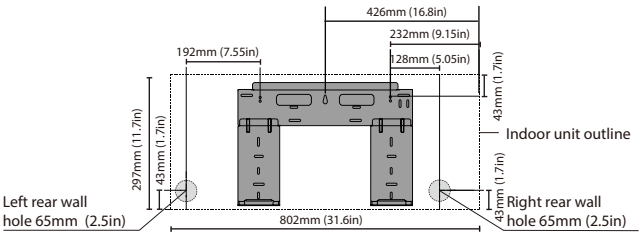


24K Model

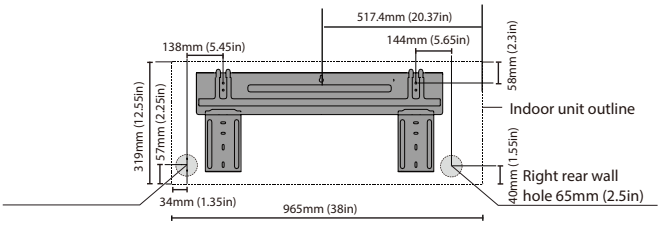
For Cristallo/Essential 2 series:



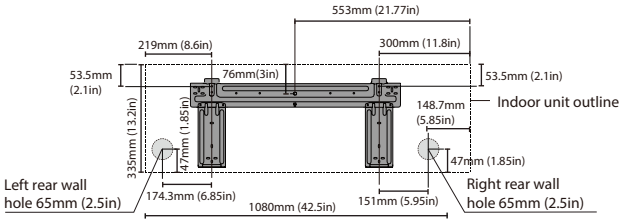
20M/27M Model



35M Model

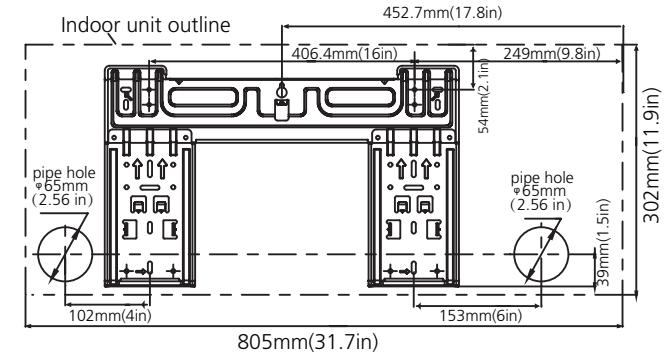


53M Model

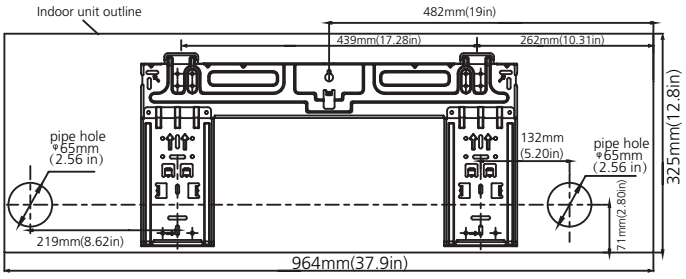


70M Model

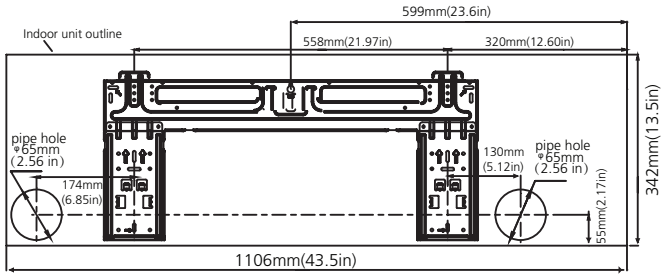
For All Easy series:



9K/12K Model

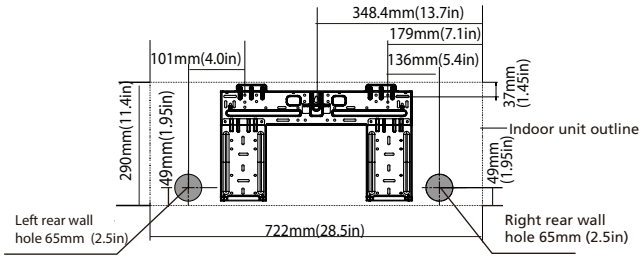


18K Model

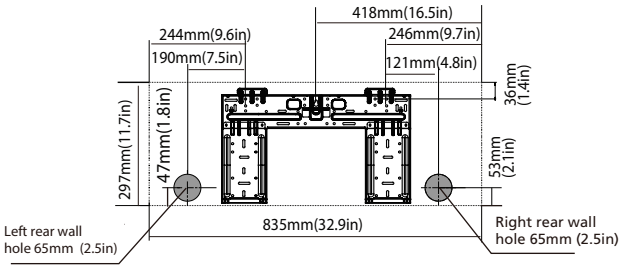


24K Model

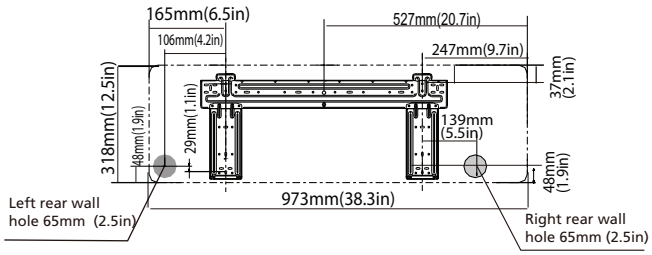
For Schiara 2 series:



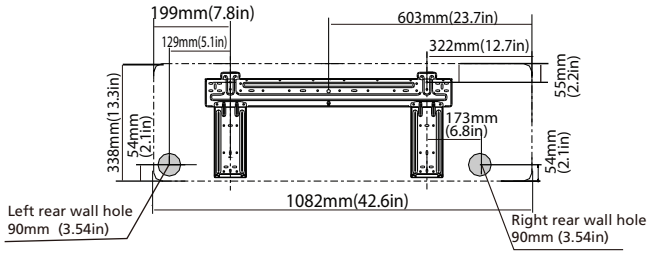
MSAGAU-09



MSAGBU-09&MSAGBU-12



18K Model



24K Model

- **Note for concrete or brick walls:**

If the wall is made of brick, concrete, or similar material, drill 5mm-diameter (0.2in-diameter) holes in the wall

and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

3.3 Drill wall hole for connective piping

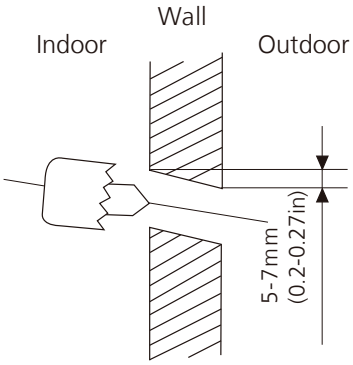
You must drill a hole in the wall for refrigerant piping, the drainage pipe, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the position of the mounting plate. Refer to Mounting Plate Dimensions on the next page to help you determine the optimal position. The wall hole should have a 65mm (2.5in) diameter at least, and at a slightly lower angle to facilitate drainage.

2. Using a 65mm (2.5in) or 90mm(3.54in) (depending on models)core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 5mm to 7mm (0.2-0.27in). This will ensure proper water drainage.

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

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



3.4 Prepare refrigerant piping

The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall. Refer to the Refrigerant Piping Connection section of this manual for detailed instructions on pipe flaring and flare torque requirements, technique, etc.

1. Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit.

2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. This will create a slot through which your piping can exit the unit. Use needle nose pliers if the plastic panel is too difficult to remove by hand.

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

4. Use scissors to cut down the length of the insulating sleeve to reveal about 15cm (6in) of the refrigerant piping. This serves two purposes:

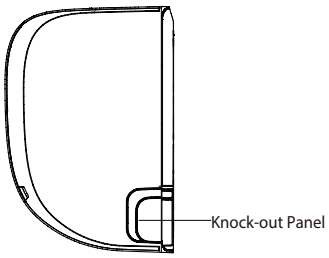
- To facilitate the Refrigerant Piping Connection process.
- To facilitate Gas Leak Checks and enable you to check for dents.

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

6. Based on the position of the wall hole relative to the mounting plate, determine the necessary angle of your piping.

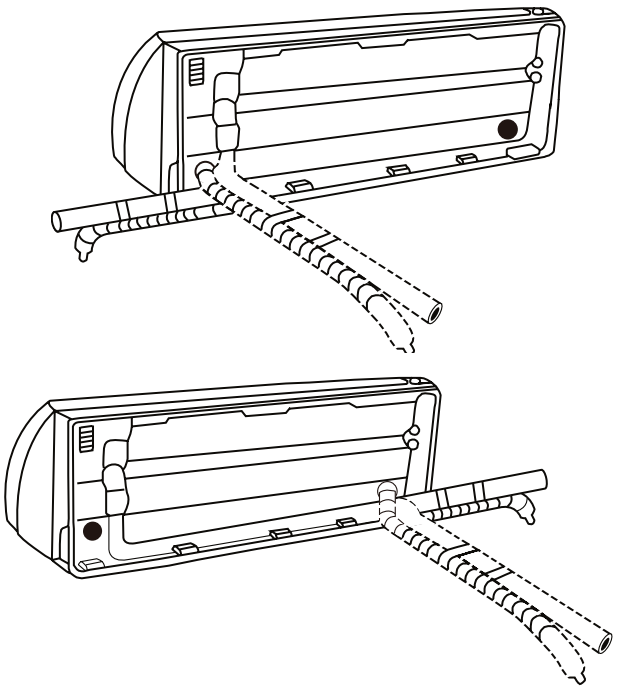
7. Grip the refrigerant piping at the base of the bend.

8. Slowly, with even pressure, bend the piping towards the hole. Do not dent or damage the piping during the process.



NOTE: Refrigerant piping can exit the indoor unit from four different angles:

- Left-hand side
- Left rear
- Right-hand side
- Right rear



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

3.5 Connect drain hose

By default, the drain hose is attached to the left hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side.

1. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit.

2. Attach drain hose extension (purchased separately) to the end of drain hose.

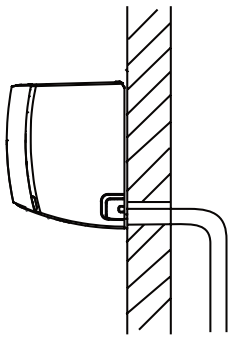
3. Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.

4. For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.

5. Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

NOTE ON DRAIN HOSE PLACEMENT:

- DO NOT kink the drain hose.
- DO NOT create a water trap.
- DO NOT put the end of drain hose in water or a container that will collect water.



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

3.6 Connect signal cable

3.6.1 Before performing electrical work, read these regulations

1. All wiring must comply with local and national electrical codes, and must be installed by a licensed electrician.

2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.

3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.

4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.

5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.

6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.

7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.

8. Make sure to properly ground the air conditioner.

9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.

10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

11. If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible

materials.

12. BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.

3.6.2 Connect signal cable

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

Cable Types:

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

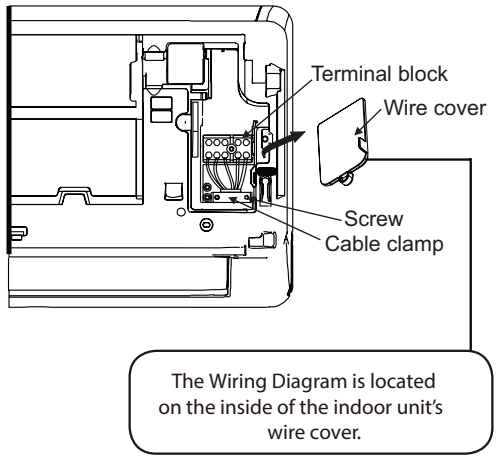
For Aurora series & Forest series:

1. Prepare the cable for connection:

- Using wire strippers, strip the rubber jacket from both ends of signal cable to reveal about 40mm (1.57in) of the wires inside.
- Strip the insulation from the ends of the wires.
- Using wire crimper, crimp u-type lugs on the ends of the wires.

2. Open front panel of the indoor unit.

3. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.



4. Unscrew the cable clamp below the terminal block and place it to the side.

5. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

6. Feed the signal wire through this slot, from the back of the unit to the front.

7. Facing the front of the unit, match the wire colors with the labels on the terminal block, connect the u-lug and and firmly screw each wire to its corresponding terminal.

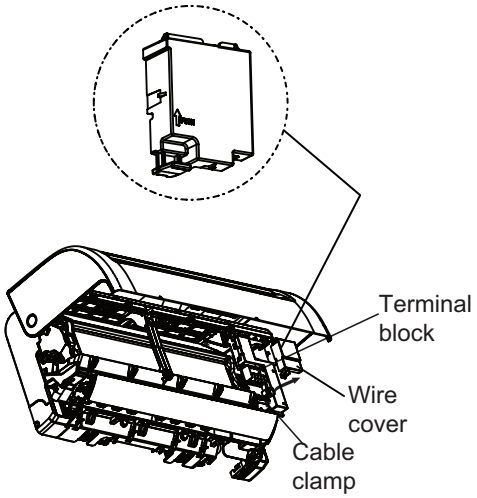
8. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

9. Replace the wire cover on the front of the unit, and the plastic panel on the back.

For All Easy series:

1. Open front panel of the indoor unit by loosen the screws according to picture below, which provide big space for wiring connection.

2. Open the wire box cover to connect the cable.



3.Unscrew the cable clamp below the terminal block and place it to the side.

4.Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

5. Feed the signal wire through this slot, from the back of the unit to the front.

6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.

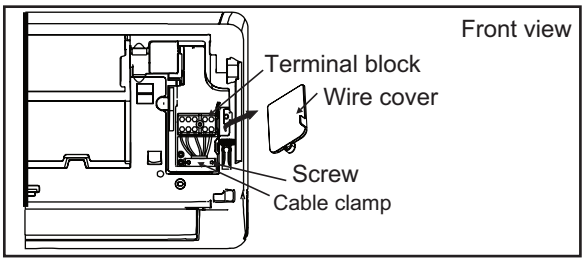
7. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

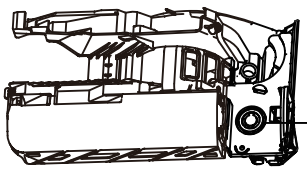
8. Replace the wire cover on the front of the unit, and the plastic panel on the back.

For Schiara 2 series:

1. Open front panel of the indoor unit.

2.Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.





NOTE:

- For the units with conduit tube to connect the cable, remove the big plastic konck-out panel to create a slot through which the conduit tube can be installed.
- For the units with five-core cable, remove the middle small plactic knock-out panel to create a slot through which the cable can exit.
- Use needle nose pliers if the plastic panel is too difficult to remove by hand.

3.Unscrew the cable clamp below the terminal block and place it to the side.

4.Facing the back of the unit, remove the plastic panel on the bottom left-hand side.

5.Feed the signal wire through this slot, from the back of the unit to the front.

6.Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wireto its corresponding terminal.

7. After checking to make sure every connectionis secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.

8. Replace the wire cover on the front of the unit, and the plastic panel on the back.

NOTE:

- Choose the right cable size

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

- Take note of fuse specifications

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board, such as: Indoor unit: T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC, etc.(The fuse is made of ceramic.)

- Pay attention to live wire

While crimping wires, make sure you clearly distinguish the Live ("L") Wire from other wires.

- All wiring must performed strictly in accordance with the wiring diagram located on the inside of the indoor unit's wire cover.
- Do not mix up live and null wires.

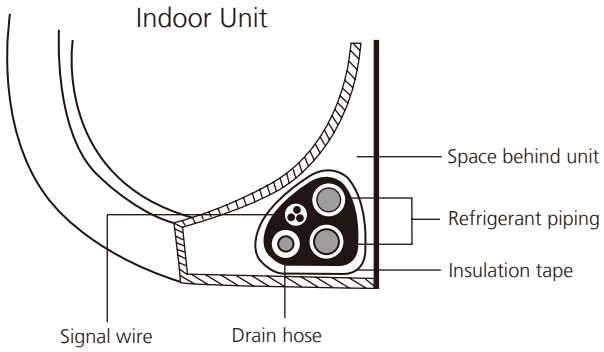
This is dangerous, and can cause the air conditioning unit to malfunction.

- The wiring connection process may differ slightly between units.

3.7 Wrap piping and cables

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

1. Bundle the drain hose, refrigerant pipes, and signal cable according to the picture below:



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

3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain hose tightly together. Double-check that all items are bundled in accordance with the picture above.

NOTE:

- Drain hose must be on bottom

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

- Do not intertwine signal cable with other wires

While bundling these items together, do not intertwine or cross the signal cable with any other wiring

- Do not wrap ends of piping

When wrapping the bundle, keep the ends of the piping

unwrapped. You need to access them to test for leaks at the end of the installation process.

3.8 Mount indoor unit

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

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to **step 4.**

2. Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.

3. Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.

4. Hook the top of the indoor unit on the upper hook of the mounting plate.

5. Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.

6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

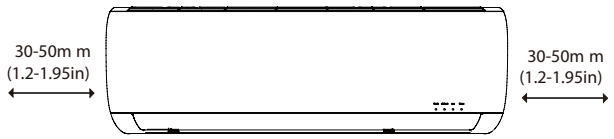
3.8.2 If refrigerant piping is already embedded in the wall, do the following:

For Cristallo-Essential 2 series, Nativ series& Schiara 2 series:

1. Hook the top of the indoor unit on the upper hook of the mounting plate.

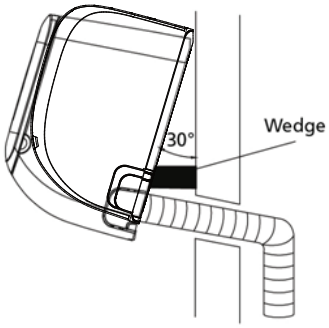
- Unit is adjustable

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.25-1.95in), depending on the model.



Move to left or right

2. Use the holder in the mounting plate to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.



3. Connect drain hose and refrigerant piping (refer to Refrigerant Piping Connection section of this manual for instructions).

4. Keep pipe connection point exposed to perform the leak test (refer to Electrical Checks and Leak Checks section of this manual).

5. After the leak test, wrap the connection point with insulation tape.

6. Remove the bracket or wedge that is propping up the unit.

7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

For All Easy series:

Step 1:Hook the indoor unit on the mounting plate:

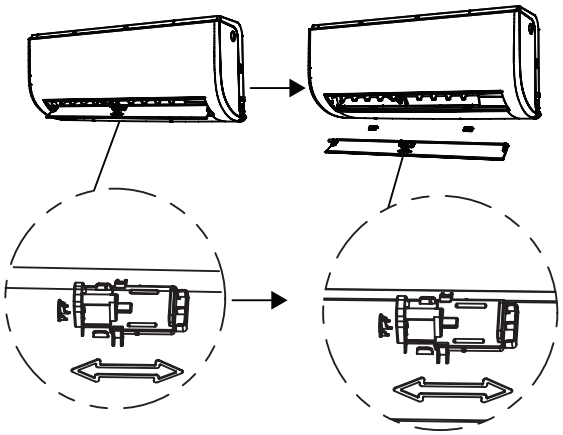
1. Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit.If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.25-1.95in), depending on the model.



Move to left or right

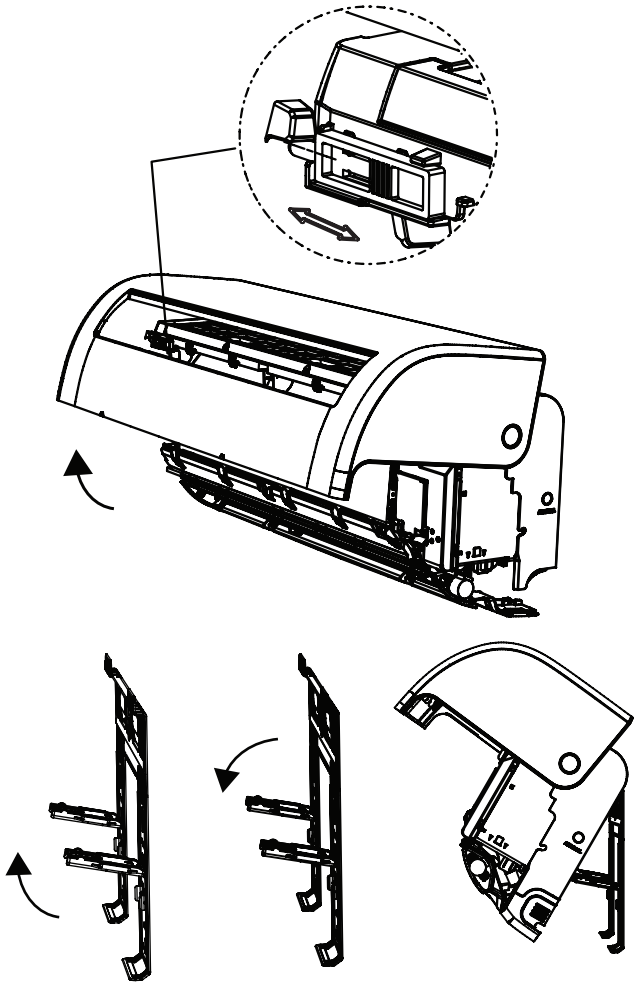
Step 2: Prepare refrigerant piping:

1. Disassemble the louver:



2. Open and fix the position of the panel

Firstly, unscrew the two screws showed in the picture below, then open the panel, and fix the position of the panel by the latch.



3. Use the holder in the mounting plate to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.

Step 3. Connect drain hose and refrigerant piping (refer to Refrigerant Piping Connection section of this manual for instructions).

Step 4. Keep pipe connection point exposed to perform the leak test (refer to Electrical Checks and Leak Checks section of this manual).

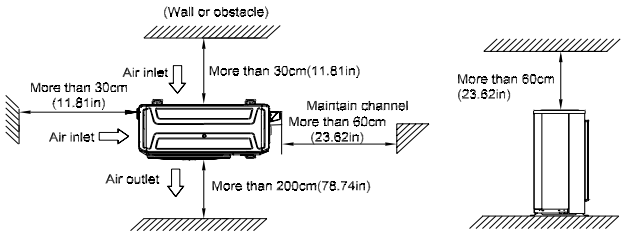
Step 5. After the leak test, wrap the connection point with insulation tape.

Step 6. Remove the bracket or wedge that is propping with insulation tape.

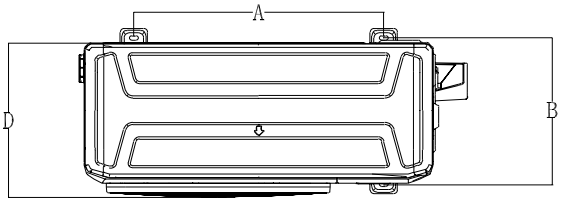
Step 7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

4. Outdoor unit installation

4.1 Service space for outdoor unit



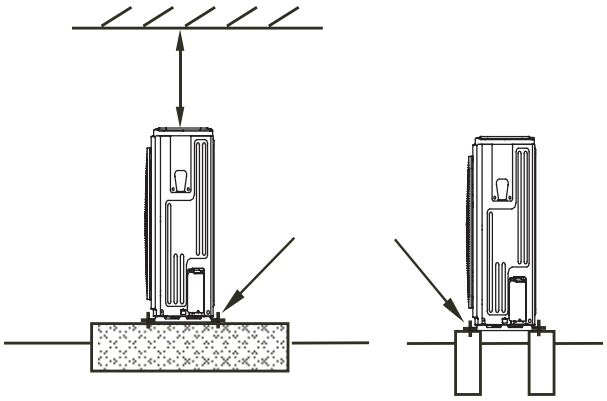
4.2 Bolt pitch



Model	A	B	D
MU2-Y 82M MU2-Y 105M MU2-Y 125M	673	403	410
MU2-Y 41M MU2-Y 53M	511	317	554
MU2-Y 61M MU2-Y 79M	663	354	673

4.3 Install Outdoor Unit

Fix the outdoor unit with anchor bolts(M10)



Cation

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

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

Do not touch the fan with hands or other objects.

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

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

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

5. Drainage Pipe Installation

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

5.1 Installation principle

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

5.2 Key points of drainage water pipe installation

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

Relationship between water flowrate and capacity of indoor unit

Capacity (kBtu)	Water flowrate (l/h)
35M	2.4
53M	4
70M	6
88M	7
105M	8
120M	10
140M	12
160M	14

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

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

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

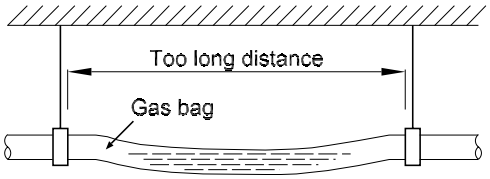
Attention: Adopt PVC40 or bigger pipe to be the main pipe.

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

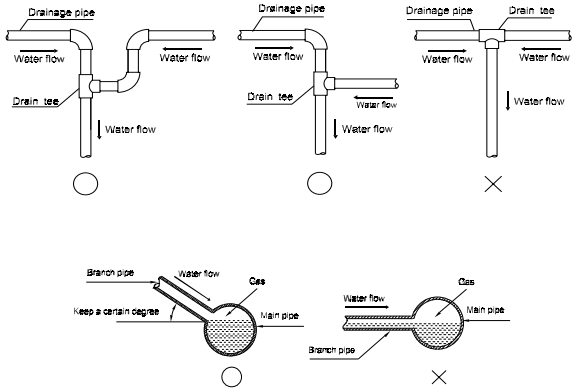
PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flowrate (l/h)	Remark
PVC25	20	220	For branch pipe
PVC32	25	410	
PVC40	31	730	Could be used for confluence pipe
PVC50	40	1440	
PVC63	51	2760	
PVC75	67	5710	
PVC90	77	8280	

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

3. Individual design of drainage pipe system
   - The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
   - The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.
4. Supporter gap of drainage pipe
   - In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
   - Each vertical pipe shall be equipped with not less than two hangers.
   - Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



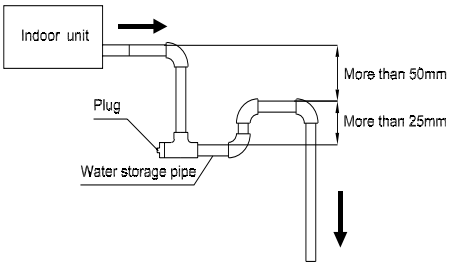
5. The horizontal pipe layout should avoid converse flow or bad flow



- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.

6. Water storage pipe setting

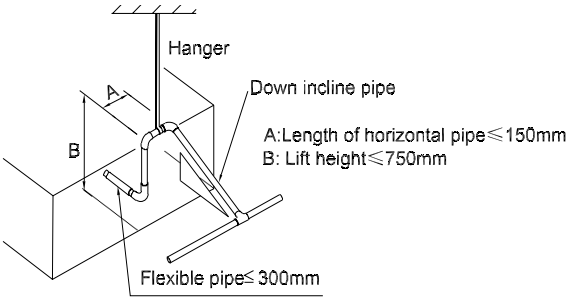
- If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit , the water storage pipe should be set to avoid converse flow or blow water phenomena.



7. Lifting pipe setting of indoor unit with water pump

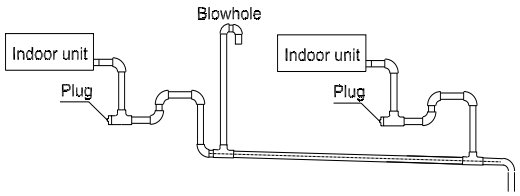
- The length of lifting pipe should not exceed 750mm.
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.

- Refer the following picture for installation reference.



8. Blowhole setting

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



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

5.3 Drainage test

1. Water leakage test

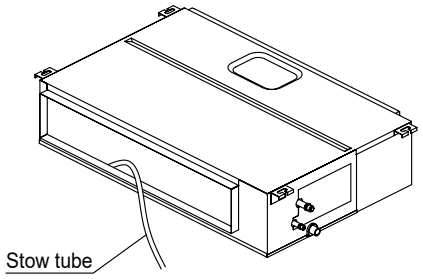
- After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.

2. Water discharge test

Check that the drainpipe is unhindered.

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

2.1 Units without a pump

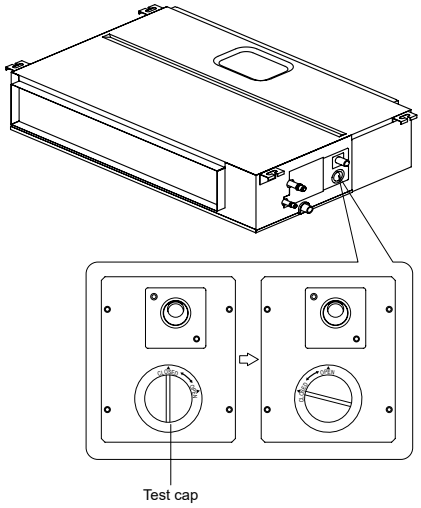


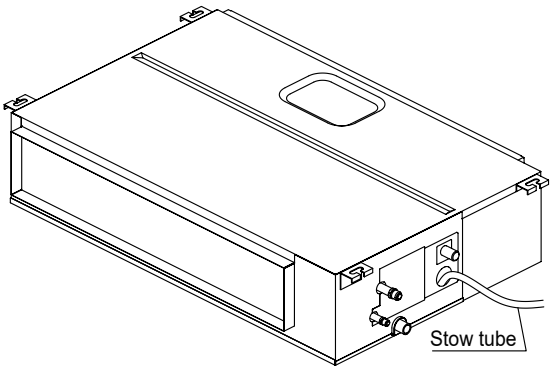
- Fill the water pan with 2 liters of water.
- Check that the drainpipe is unhindered

.2.2 Units with a pump

1. Remove the test cover.

- Fill the water pan with 2 liters of water.





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

3. Turn off the air conditioner and put the cap back on.

- After turn off the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and even water shall run over the water collector.
- Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

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

5.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

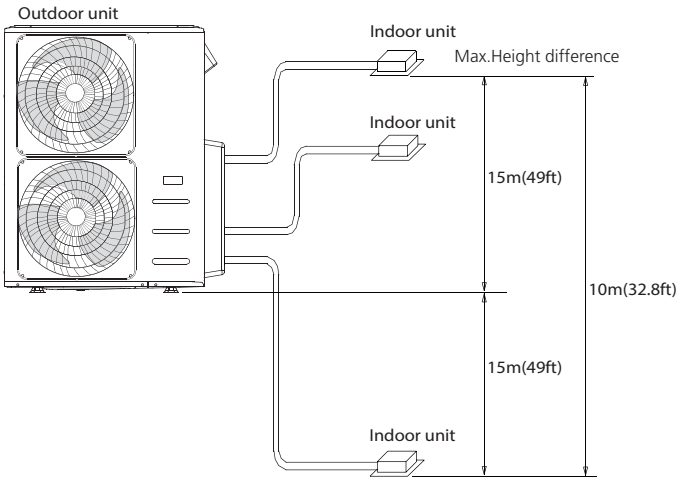
6. Refrigerant Pipe Installation

6.1 Maximum length and drop height

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

	M2OG-14HFN8-Q M2OC-18HFN8-Q M2OD-18HFN8-Q M2OH-14HFN8-Q M2OE-18HFN8-Q	M3OE-27HFN8-Q M3OF-27HFN8-Q M3OF-21HFN8-Q M3OG-21HFN8-Q M3OA-27HFN8-Q	M4OB-36HFN8-Q M4OE-28HFN8-Q	M5OD-42HFN8-Q M5OE-42HFN8-Q
Max. length for all rooms	40	60	80	80
Max. length for one indoor unit	25	30	35	35
Max. height different between IDU and ODU	15	15	15	15
Max. height different between IDUs	10	10	10	10

- When installing multiple indoor units with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram:



6.2 The procedure of connecting pipes

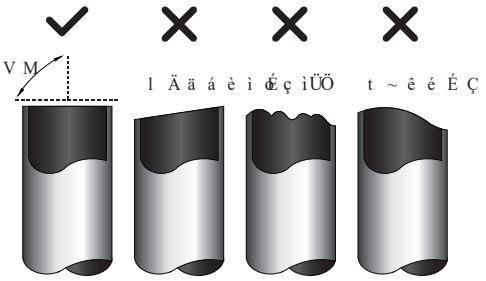
1.Choose the pipe size according to the specification table.

2.Confirm the cross way of the pipes.

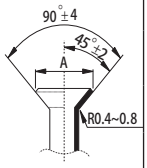
3.Measure the necessary pipe length.

4.Cut the selected pipe with pipe cutter

- Make the section flat and smooth.



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

Pipe diameter (inch(mm))	Flare dimension A (mm/inch)		Flare shape
	Min	Max	
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	
3/4" (19)	23.2/0.91	23.7/0.93	
7/8" (22)	26.4/1.04	26.9/1.06	

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

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

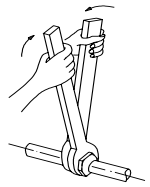
9. Bind and wrap the wire together with the insulated pipe if necessary.

10. Set the wall conduit

11. Set the supporter for the pipe.

12. Locate the pipe and fix it by supporter
   - For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
   - For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.
13. Connect the pipe to indoor unit and outdoor unit by using two spanners.
   - Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the

bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque N.m(lb.ft)	Sketch map
1/4" (6.35)	15~16 (11~11.8)	
3/8" (9.52)	25~26 (18.4~19.18)	
1/2" (12.7)	35~36 (25.8~26.55)	
5/8" (15.9)	45~47 (33.19~34.67)	
3/4" (19)	65~67 (47.94~49.42)	
7/8" (22)	75-85 (55.3-62.7)	

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

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

  Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

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

7.3 Operation procedure for vacuum drying

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

7.0.1 Ordinary vacuum drying

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

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

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

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

7.0.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.

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

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

4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.

2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm2 .

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

3. Vacuum drying again for half an hour.

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

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

8. Additional Refrigerant Charge

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

Diameter of liquid pipe (mm)	Formula
6.35	V=12g/m×((Total pipe length - pre-charge pipe lengthxN))
9.52	V=24g/m×((Total pipe length - pre-charge pipe lengthxN))

The pre-charge pipe length is 7.5m.

Note:

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

9. Engineering of Insulation

9.1 Insulation of refrigerant pipe

1. Operational procedure of refrigerant pipe insulation

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

2. Purpose of refrigerant pipe insulation

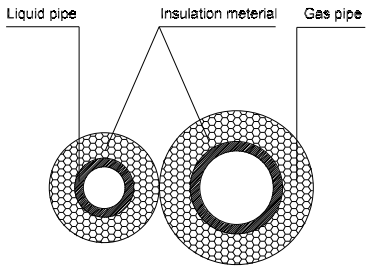
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not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

3. Insulation material selection for refrigerant pipe

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

4. Installation highlights of insulation construction

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



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

insulation and cause easy aging of the material.

9.2 Insulation of drainage pipe

1. Operational procedure of refrigerant pipe insulation

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

2. Purpose of drainage pipe insulation

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

3. Insulation material selection for drainage pipe

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

4. Installation and highlights of insulation construction

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

10. Engineering of Electrical Wiring

10.1 Highlights of electrical wiring installation

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

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

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

11. Test Operation

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

11.2 Please confirm the following points before the test operation.

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

11.3 Test operation

1. Open both the liquid and gas stop valves.

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

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

Indoor unit

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

Outdoor unit

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

Drainage Test

a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.

b. Remove the test cover. Add 2000ml of water to the tank through the attached tube.

c.Turn on the main power switch and run the air conditioner in COOL mode.

d. Listen to the sound of the drain pump to see if it makes any unusual noises.

e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.

f. Make sure that there are no leaks in any of the piping.

g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

If ambient temperature is below 17°C (63°F)

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

1. Lift the front panel of the indoor unit, and raise it until it clicks in place.

2. The MANUAL CONTROL button is located on the right-hand side of the display box. Press it two times to select the COOL function.

3. Perform Test Run as normal.

Static Pressure Design

Contents

1. Introduction 166
2. Charts For Friction Losses in Round Ducts 166
3. Dynamic Losses 167
4. Corresponding Relation Between Rectangular Duct and Round Duct 168
5. Method For Duct Calculation 169
6. Unit Conversion 169
7. Recommended Outlet Velocity For Different Occasions 169

1. Introduction

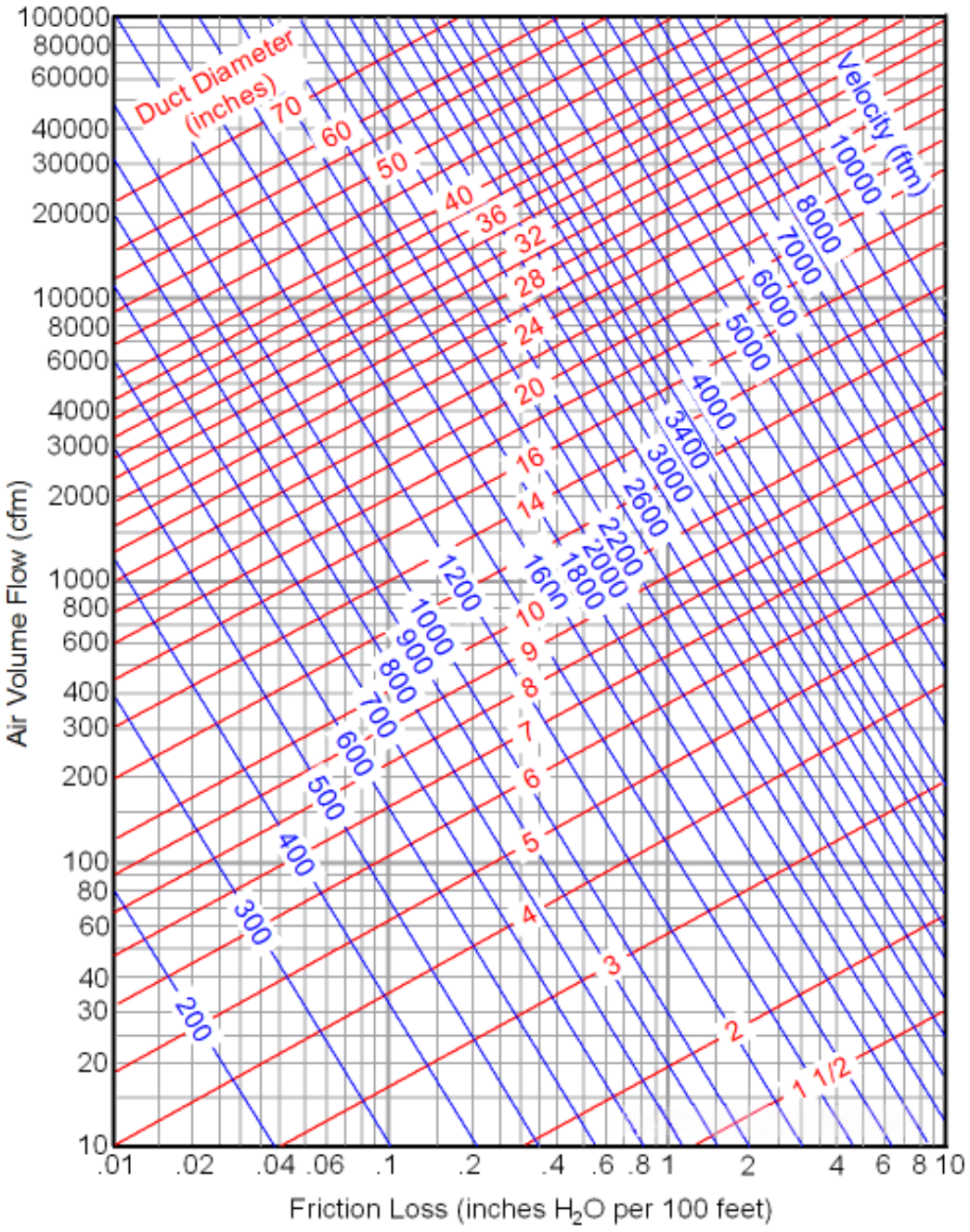
Duct system losses are the irreversible transformation of mechanical energy into heat. The two types of losses are (1) friction losses and (2) dynamic losses.

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

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

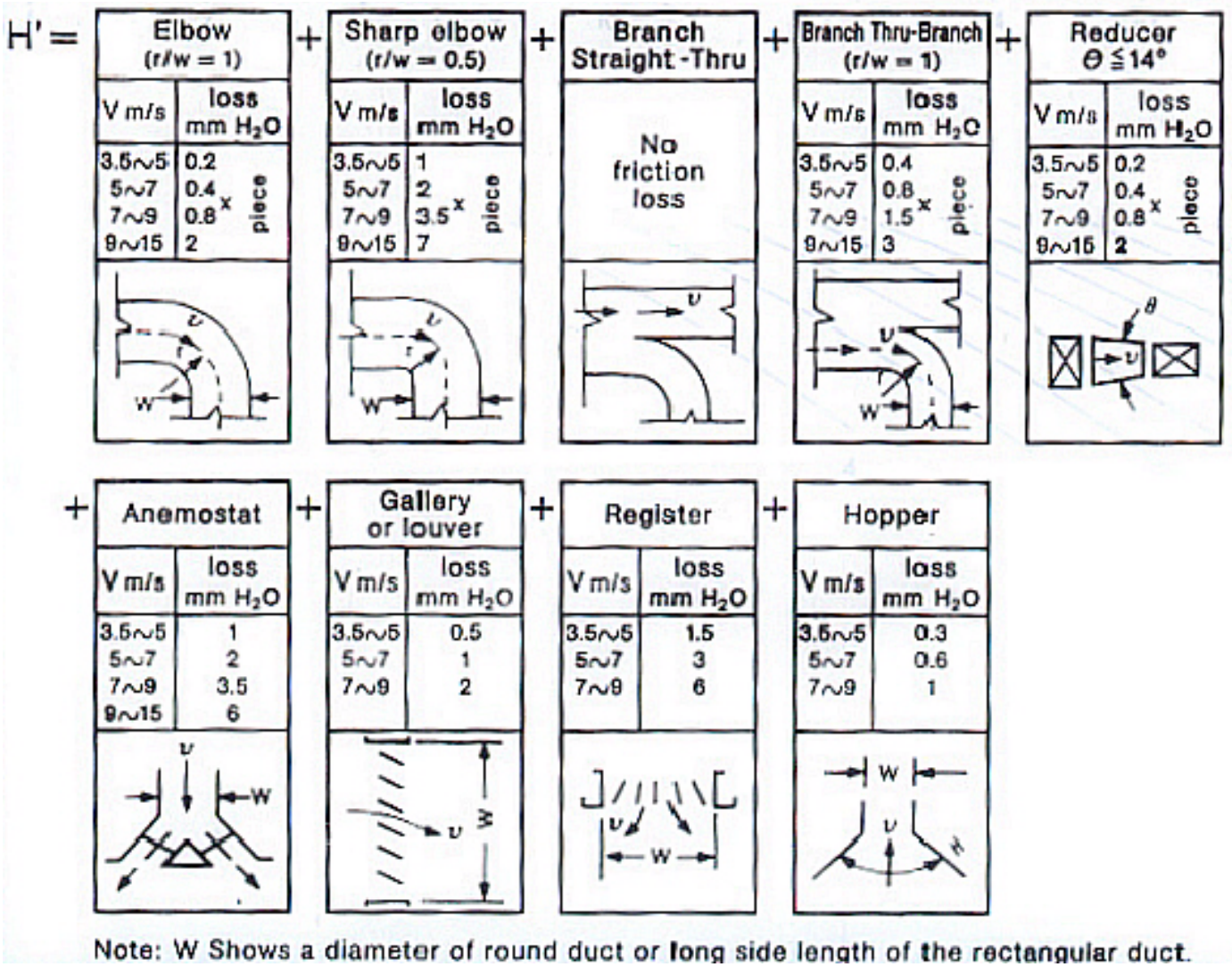
2. Charts For Friction Losses In Round Ducts

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



3. Dynamic Losses

For dynamic losses, please refer to below image.



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

4. Corresponding Relation Between Rectangular Duct and Round Duct

Circular Duct Diameter, in.	Length of One Side of Rectangular Duct a, in.																				
	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30	32	34	36
	Length Adjacent Side of Rectangular Duct b, in.																			
5	5																			
5.5	6	5																		
6	8	6																		
6.5	9	7	6																	
7	11	8	7																	
7.5	13	10	8	7																
8	15	11	9	8																
8.5	17	13	10	9																
9	20	15	12	10	8															
9.5	22	17	13	11	9															
10	25	19	15	12	10	9														
10.5	29	21	16	14	12	10														
11	32	23	18	15	13	11	10													
11.5		26	20	17	14	12	11													
12		29	22	18	15	13	12													
12.5		32	24	20	17	15	13													
13		35	27	22	18	16	14	12												
13.5		38	29	24	20	17	15	13												
14			32	26	22	19	17	14												
14.5			35	28	24	20	18	15												
15			38	30	25	22	19	16	14											
16			45	36	30	25	22	18	15											
17				41	34	29	25	20	17	16										
18				47	39	33	29	23	19	17										
19				54	44	38	33	26	22	19	18									
20					50	43	37	29	24	21	19									
21					57	48	41	33	27	23	20									
22					64	54	46	36	30	26	23	20								
23						60	51	40	33	28	25	22								
24						66	57	44	36	31	27	24	22							
25							63	49	40	34	29	26	24							
26							69	54	44	37	32	28	26	24						
27							76	59	48	40	35	31	28	25						
28								64	52	43	38	33	30	27	26					
29								70	56	47	41	36	32	29	27					
30								76	61	51	44	39	35	31	29	28				
31								82	66	55	47	41	37	34	31	29				
32								89	71	59	51	44	40	36	33	31				
33								96	76	64	54	48	42	38	35	33	30			
34									82	68	58	51	45	41	37	35	32			
35									88	73	62	54	48	44	40	37	34	32		
36									95	78	67	58	51	46	42	39	36	34		
37									101	83	71	62	55	49	45	41	38	36	34	
38									108	89	76	66	58	52	47	44	40	38	36	
39										95	80	70	62	55	50	46	43	40	37	36
40										101	85	74	65	58	53	49	45	42	39	37
41										107	91	78	69	62	56	51	47	44	41	39
42										114	96	83	73	65	59	54	50	46	44	41
43										120	102	88	77	69	62	57	53	49	46	43
44											107	93	81	73	66	60	55	51	48	45
45											113	98	86	76	69	63	58	54	50	47
46											120	103	90	80	72	66	61	56	53	49
47											126	108	95	84	76	69	64	59	55	52
48											133	114	100	89	80	73	67	62	58	54
49											140	120	105	93	84	76	70	65	60	56
50											147	126	110	98	88	80	73	68	63	59
51												132	115	102	92	83	76	71	66	61
52												139	121	107	96	87	80	74	69	64
53												145	127	112	100	91	83	77	71	67
54												152	133	117	105	95	87	80	74	70
55													139	123	110	99	91	84	78	72
56													145	128	114	104	95	87	81	75
57													151	134	119	108	98	91	84	78
58													158	139	124	112	102	94	87	81
59													165	145	130	117	107	98	91	85
60													172	151	135	122	111	102	94	88

5. Method For Duct Calculation (equal friction method)

1)Draw schematic view of the duct system.

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

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

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

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

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

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

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

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

5)Find the dynamic loss of branch duct.

6)Calculate the total pressure loss.

6. Unit Conversion

- 1 inch water=248.8 N/m^2 (Pa)=0.0361 lb/in^2 (psi)=25.4 kg/cm^2=0.0739 in mercury
- 1 ft^3/min (cfm)=1.7 m^3/h
- 1 ft/min=5.08*10-3 m/s
- 1 inch=2.54 cm=0.0254m=0.08333ft

7. Recommended Outlet Velocity For Different Occasion

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

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

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, Elektozavodskaya st. 24,
Moscow, Russian Federation, 107023
Tel. +7495 6462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO
Dubai Silicon Oasis (DSO), High Bay Complex,
Office N. 20, PO BOX 342009, Dubai, UAE
Tel. +9714 3208499 - info@clivet.ae

Clivet South East Europe
Jaruščica 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, Kirol Road, Kurla West, Mumbai
Maharashtra 400070, India
Tel. +91 22 30930200 - sales.india@clivet.com