



Compact Comfort HVAC

Series 2

Indoor Unit Product Information

1 PHASE, 220-240V, 50Hz

HS-LBH-2	HS-RAD-11
HS-MBH-4	HS-RAD-16
HS-MBH-9	HS-RAD-20
HS-VAV-11	HS-RAD-24
HS-VAV-16	HS-QB-11
HS-VAV-20	HS-QB-16
HS-VAV-24	HS-QB-20
	HS-QB-24

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This Technical Manual describes the installation of SAI HVAC Ducted split air conditioners.

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1. Precautions

The following guidelines are intended for the installation of Compact Comfort HVAC Air Conditioning units used on domestic and commercial installations. Only suitably qualified trade personnel should carry out installations of Split or package Air Conditioning systems. Full compliance with the local codes and regulations, which govern the installation of the equipment, is the responsibility of the installer.

Before Installation, the electrical power should be checked to determine if adequate is available with correct voltage on site. The position of the equipment, after a survey of the building and the duct layout, should meet the following criteria.

1.1 Important Safety Information

WARNING: Please read the manual carefully, failure to follow instructions may result in serious injury or death.

- The indoor unit should be slung or mounted on anti-vibration devices, in a location capable of supporting the weight of the unit.
- Provide sufficient clearance from the top and the sides of the unit to enable servicing of the fan motor, coil, etc.
- The location should allow easy water drainage.
- The location should allow easy connection to the outdoor unit.
- There should be NO heat source, steam, oil gas, corrosive gas, salty air, inflammable materials or electromagnetic waves near the unit.
- All drain pipes are to be lower than the unit base and have a “P” trap or similar trap fitted.
- Field or installation wiring must be connected as per the connection diagram to ensure the unit performs as it is designed.
- Installer / Electrician is to ensure that when an external overload device is fitted, it can be calibrated or set to the maximum amp draw on the rating plate of the motor it is controlling.

IMPORTANT: Please read the installation guide for the outdoor SAI HVAC Air Conditioner relevant to your installation.

2. Low-Mid Static Indoor Line-up

HS-LBH-2



HS-MBH-4



HS-MBH-9



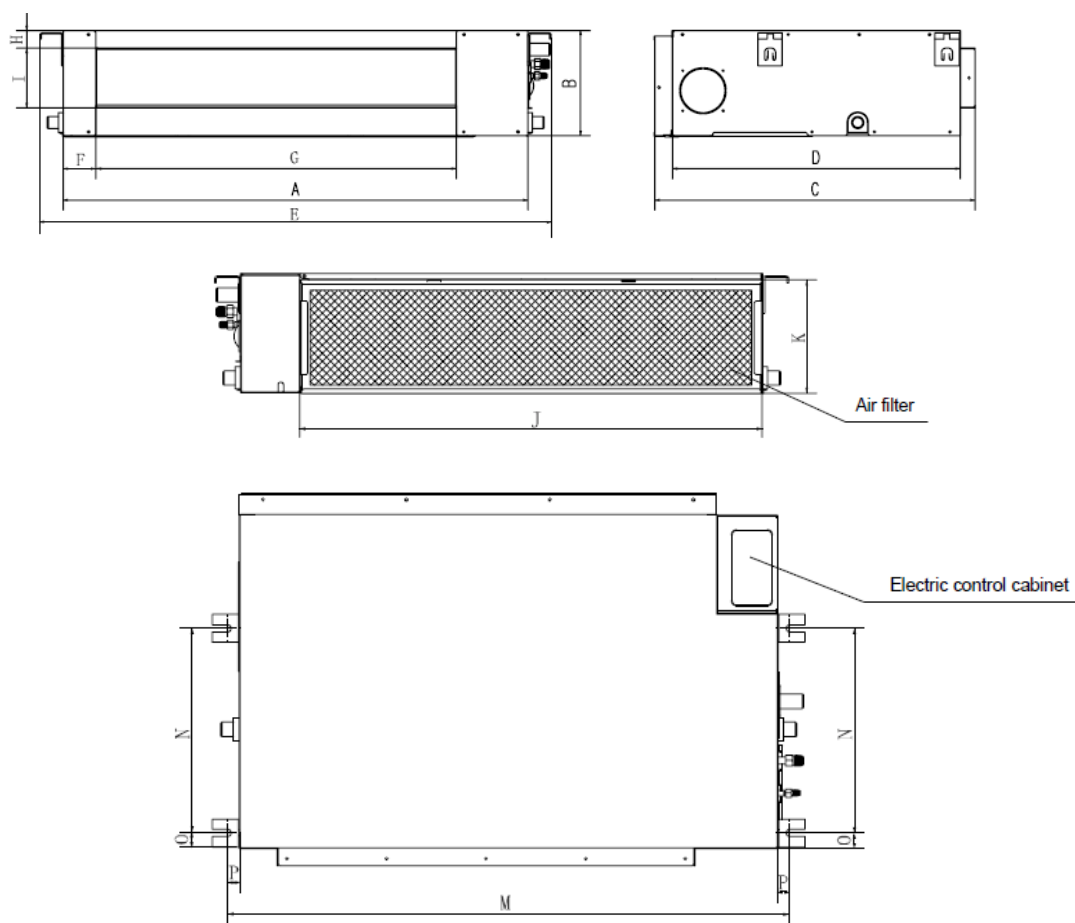
2.1 Mid Static Indoor Specifications

Model			HS-LBH-2	HS-MBH-4
Power supply		V-Ph-Hz	220-240/1/50	
Cooling	Capacity	kW	2.2	3.6
	Power Input	W	40	45
Heating	Capacity	kW	2.6	4.0
	Power input	W	40	45
Air flow rate	Minimum	L/s	108	120
	Nominal		144	161
	Maximum		201	225
External static pressure		Pa	10 (0~50)	
Unit	Net Dimensions (WxDxH)	mm	780 x 500 x 210	
	Packed Dimensions (WxDxH)	mm	870 x 525 x 285	
	Net/Gross weight	kg	18/21	
Connection Size	Liquid pipe	mm	Φ6.4 (1/4)	
	Gas pipe	mm	Φ12.7 (1/2)	
	Drain pipe	mm	25mm (20mm Pressure Pipe with MB Adapter)	
Maximum distance from outdoor		m	Engineering required above 30m	
Supply/Return Air Spigot Size (LxH)		mm	SA 512 x 145 - RA 600 x 196	

Model		HS-MBH-9	
Power Supply		V-Ph-Hz	220-240/1/50
Cooling	Capacity	kW	9.0
	Power Input	W	120
Heating	Capacity	kW	10.0
	Power input	W	120
Air flow rate	Minimum	L/s	265
	Nominal		350
	Maximum		535
External static pressure		Pa	20(10~100)
Unit	Net Dimensions (WxDxH)	mm	1230 x 775 x 270
	Packed Dimensions (WxDxH)	mm	1355 x 795 x 350
	Net/Gross weight	kg	37/45
Connection Size	Liquid pipe	mm	Φ9.5 (3/8)
	Gas pipe	mm	Φ15.9 (5/8)
	Drain pipe	mm	25mm (20mm Pressure Pipe with MB adapter)
Maximum distance from outdoor		m	Engineering required above 30m
Supply/Return Air Spigot Size (LxH)		mm	SA 933 x 179 - RA 1035 x 260

2.2 Unit Dimensions (mm)

HS-LBH-2, HS-MBH-4, HS-MBH-9



Model Names	Dimensions (mm)							
	A	B	C	D	E	F	G	H
HS-LBH-2	700	210	500	450	780	45	512	17
HS-MBH-4								
HS-MBH-9	1140	270	775	710	1230	65	933	35

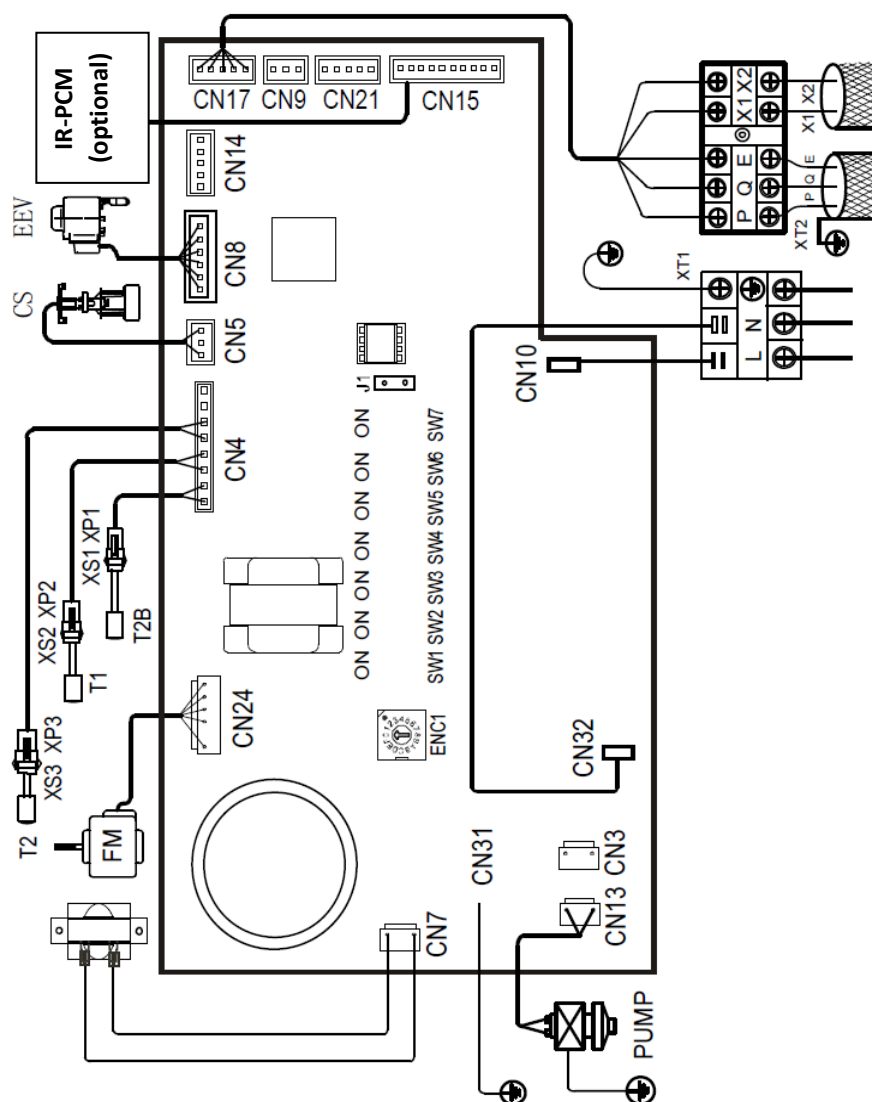
Model Names	Dimensions (mm)							
	I	J	K	L	M	N	O	P
HS-LBH-2	145	600	196	-	740	350	35	20
HS-MBH-4								
HS-MBH-9	179	1035	260	-	1180	490	26	20

2.3 Piping Connection Sizes

Model	Connection Pipe Size (mm)	
	Gas (Small)	Gas (Large)
HS-LBH-2	Φ6.35 – 1 / 4	Φ12.7 – 1 / 2
HS-MBH-4	Φ6.35 – 1 / 4	Φ12.7 – 1 / 2
HS-MBH-9	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8

2.4 Wiring Diagrams

HS-LBH-2, HS-MBH-4, HS-MBH-9



2.5 Spigot Sizes

Model	Supply Air (L x H)	Return Air (L x H)
HS-LBH-2	512 x 145	600 x 196
HS-MBH-4		
HS-MBH-9	933 x 179	1035 x 260

3. High Static Indoor Line-up

HS-VAV-11



HS-VAV-16



HS-VAV-24



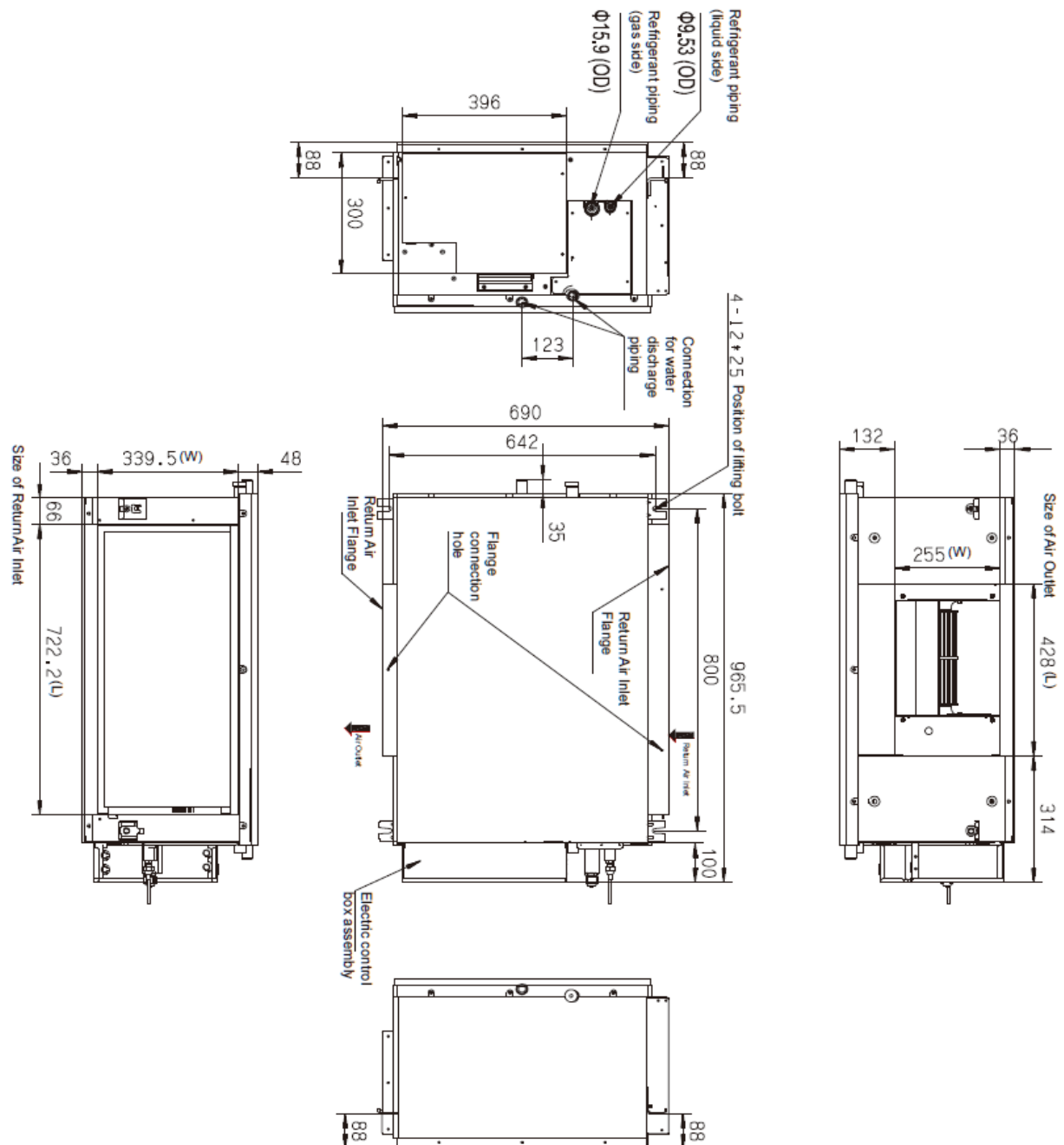
3.1 High Static Indoor Specifications

Model			HS-VAV-11	HS-VAV-16
Power supply			220-240/1/50	
Cooling	Capacity	kW	10.5	16
	Power Input	W	380	700
Heating	Capacity	kW	11.5	17.0
	Power input	W	380	700
Air flow rate	Minimum	L/s	200	200
	Nominal		519	739
	Maximum		645	1150
External static pressure		Pa	100 (30~120)	
Unit	Net Dimensions (WxDxH)	mm	965 x 690 x 423	1322 x 691 x 423
	Packed Dimensions (WxDxH)	mm	1090 x 768 x 440	1436 x 768 x 450
	Net/Gross weight	kg	48/55	63/70
Connection Size	Liquid pipe	mm	Φ9.5 (3/8)	
	Gas pipe	mm	Φ15.9 (5/8)	
	Drain pipe	mm	25mm (20mm Pressure Pipe with V1 Adapter)	
Maximum distance from Outdoor		m	Engineering required above 30m	Engineering required above 40m
Supply/Return Air Spigot Size (LxH)		mm	SA 428 x 255 – RA 722 x 339.5	SA 933 x 250 – RA 1076 x 338

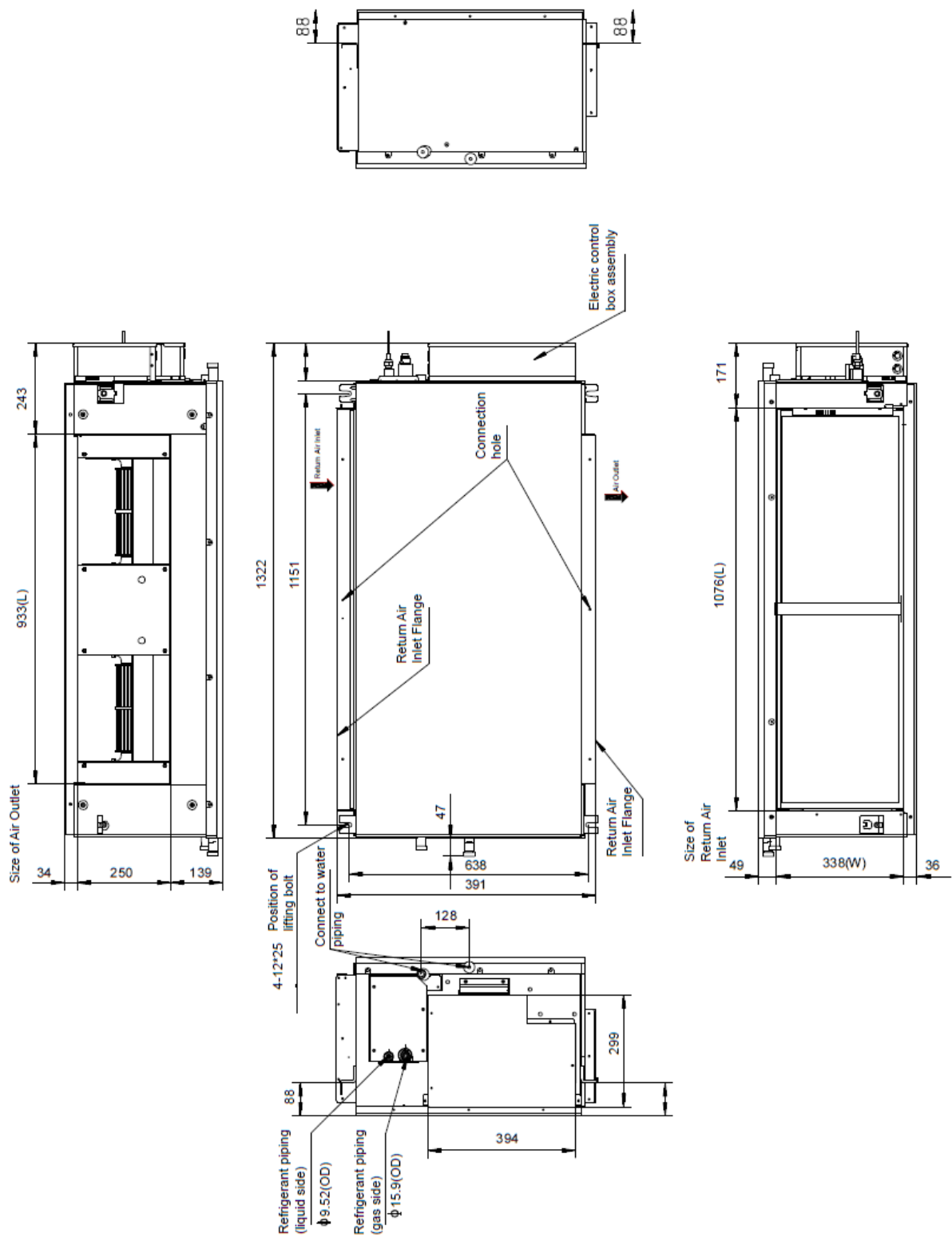
Model			HS-VAV-20	HS-VAV-24
Power supply			220-240/1/50	
Cooling	Capacity	kW	20	25
	Power Input	W	990	1200
Heating	Capacity	kW	22.5	26
	Power input	W	990	1200
Air flow rate	Minimum	L/s	250	
	Nominal		1200	
	Maximum		1400	
External static pressure		Pa	100 (30~150)	
Unit	Net Dimensions (WxDxH)	mm	1454 × 931 x 515	
	Packed Dimensions (WxDxH)	mm	1509 x 990 x 550	
	Net/Gross weight	kg	130/142	
Connection Size	Liquid pipe	mm	Φ12.7 (1/2)	
	Gas pipe	mm	Φ22.2 (7/8)	
	Drain pipe	mm	32mm (20mm Pressure Pipe with V2 Adapter)	
Maximum distance from outdoor		m	Engineering required above 50m	Engineering required above 60m
Supply/Return Air Spigot Size (LxH)		mm	SA 936 x 378 – RA 1122 x 342	

3.2 Unit Dimensions (mm)

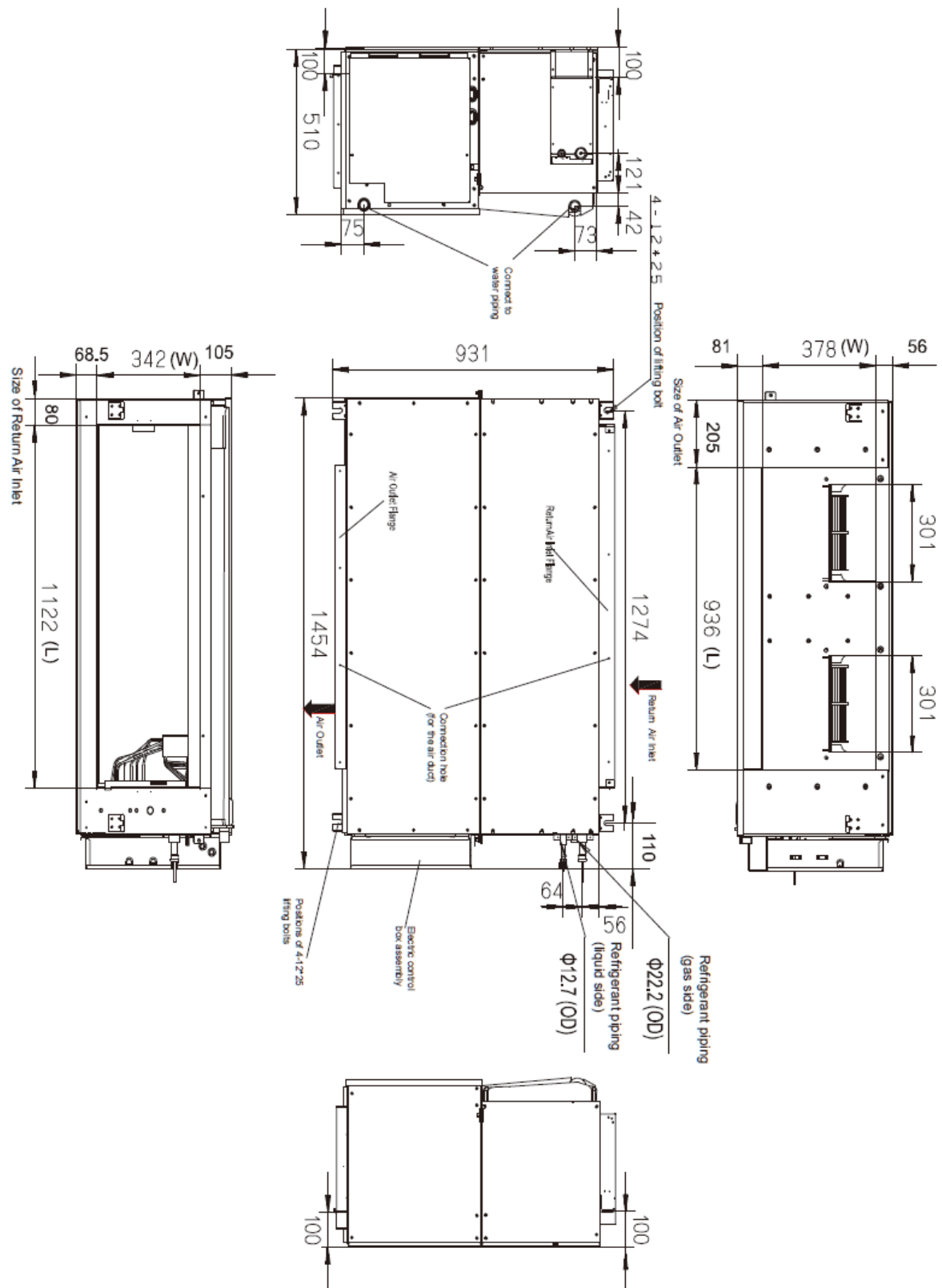
HS-VAV-11



HS-VAV-16



HS-VAV-20 / HS-VAV-24

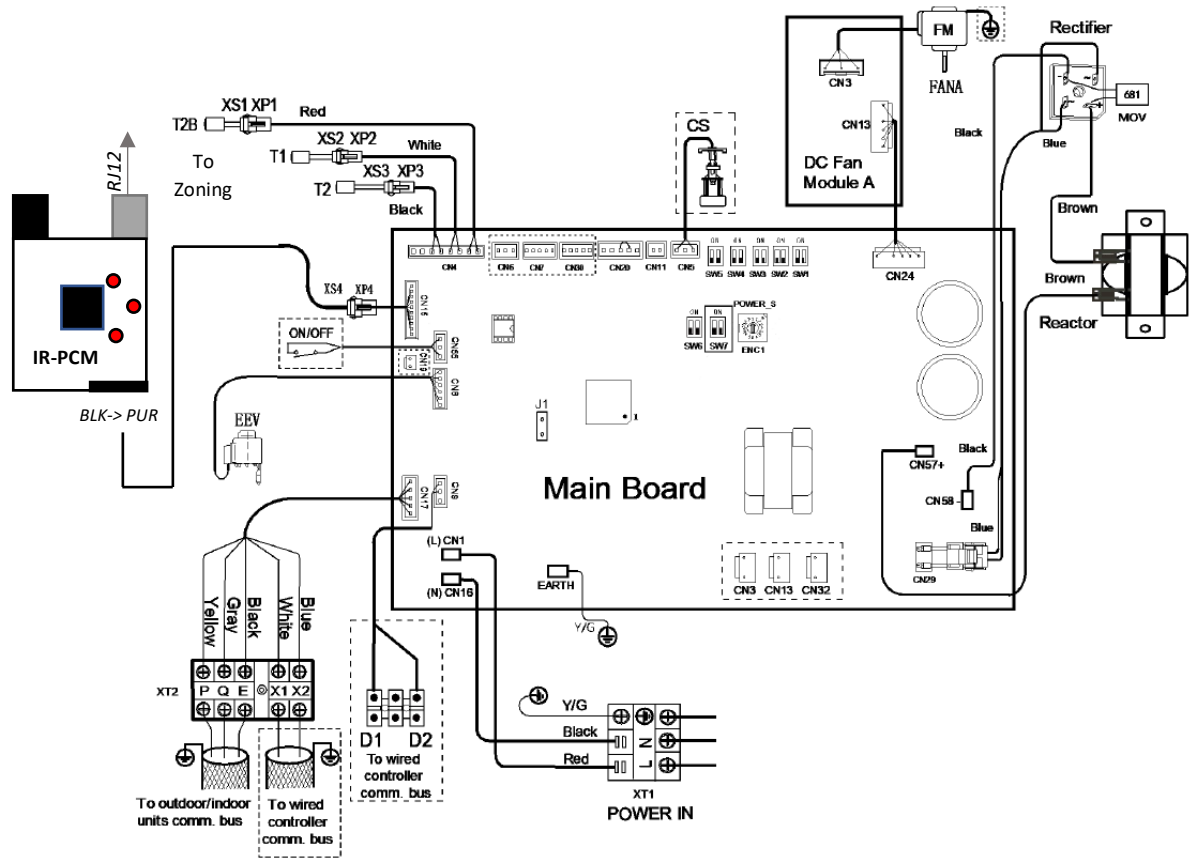


3.3 Piping Connection Sizes

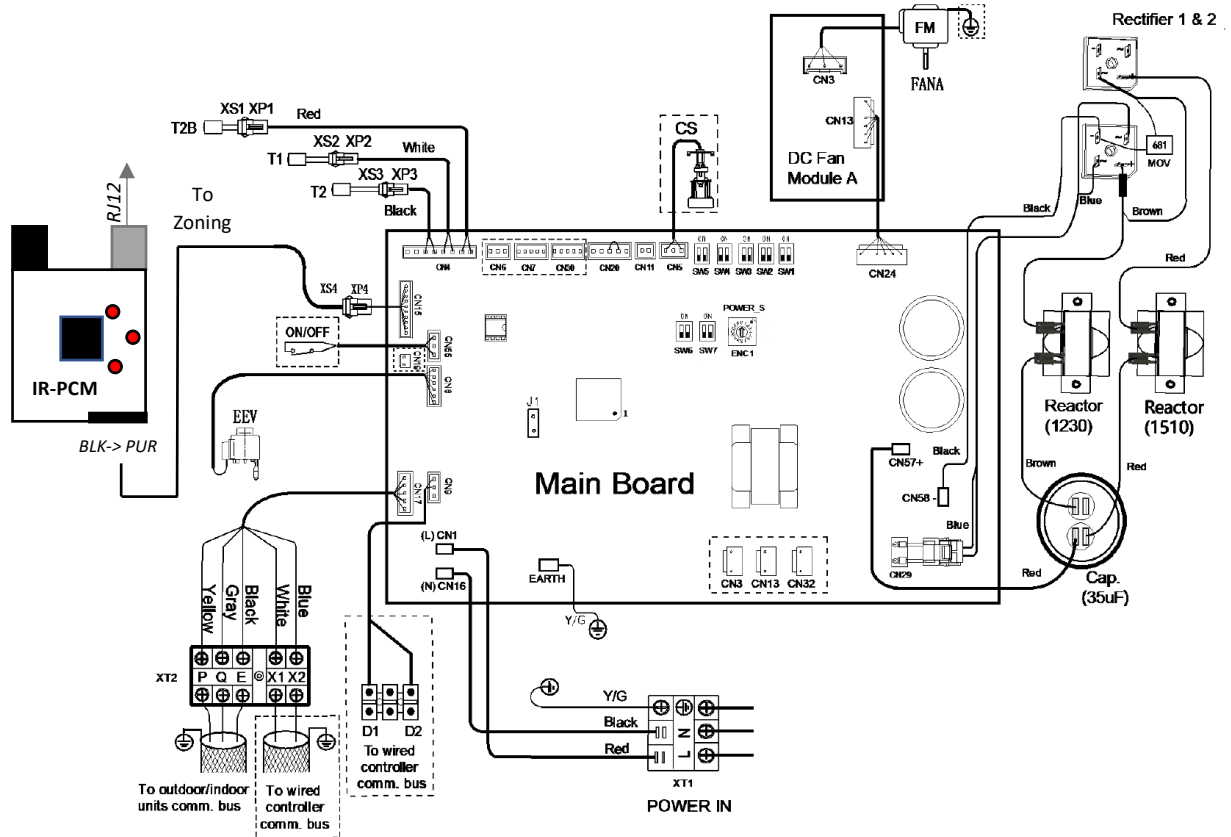
Model	Pipe Size (mm)	
	Liquid (Small)	Gas (Large)
HS-VAV-11	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-VAV-16	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-VAV-20	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8
HS-VAV-24	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8

3.4 Wiring Diagrams

HS-VAV-11, HS-VAV-16



HS-VAV-20, HS-VAV-24



3.5 Spigot Sizes

Model	Supply Air (LxH)	Return Air (LxH)
HS-VAV-11	428 x 255	722 x 339.5
HS-VAV-16	933 x 250	1076 x 338
HS-VAV-20	936 x 378	1122 x 342
HS-VAV-24	936 x 378	1122 x 342

Please note the HS-VAV-20 and the HS-VAV-24 can be split into 2 parts for easier installation.
Please contact support@compactcomfort.com for instructions on how to accomplish this.

4. Super High Static Indoor Line-up

HS-RAD-16



HS-RAD-20/HS-RAD-24



HS-QB-20/HS-QB-24



4.1 Super High Static Indoor Specifications

Model			HS-RAD-11	HS-RAD-16
Power supply			220-240/1/50	
Cooling	Capacity	kW	10.5	15.5
	Power Input	W	380	700
Heating	Capacity	kW	11.5	16.8
	Power input	W	380	700
Air flow rate	Minimum	L/s	200	200
	Nominal		519	739
	Maximum		645	1050
External static pressure		Pa	100 (30~350)	
Unit	Net Dimensions (WxDxH)	mm	1260 x 390 x 410	1410 x 390 x 490
	Packed Dimensions (WxDxH)	mm	1450 x 530 x 420	1630 x 530 x 530
	Net/Gross weight	kg	32 / 45	51 / 65
Connection Size	Liquid pipe	mm	Φ9.5 (3/8)	
	Gas pipe	mm	Φ15.9 (5/8)	
	Drain pipe	mm	19mm (20mm Pressure Pipe with R1 Adapter)	
Maximum distance from outdoor		m	Engineering required above 30m	Engineering required above 40m
Supply/Return Air Spigot Size (LxH)		mm	SA 936 x 378 – RA 1122 x 342	

Please note the earlier models of the HS-RAD-16 have a pipe size of 3/8-3/4 – please check the serial number with SAI HVAC

Model			HS-RAD-20	HS-RAD-24
Power supply			220-240/1/50	
Cooling	Capacity	kW	20	25
	Power Input	W	990	1200
Heating	Capacity	kW	22.5	26
	Power input	W	990	1200
Air flow rate	Minimum	L/s	250	
	Nominal		1200	
	Maximum		1400	
External static pressure		Pa	100 (30~350)	
Unit	Net Dimensions (WxDxH)	mm	1607 x 395 x 490	
	Packed Dimensions (WxDxH)	mm	1750 x 500 x 550	
	Net/Gross weight	kg	62 / 105	
Connection Size	Liquid pipe	mm	Φ12.7 (1/2)	
	Gas pipe	mm	Φ22.2 (7/8)	
	Drain pipe	mm	19mm (20mm Pressure Pipe with R1 Adapter)	
Maximum distance from outdoor		m	Engineering required above 50m	Engineering required above 60m
Supply/Return Air Spigot Size (LxH)		mm	SA 1393 x 410 – RA 1393 x 410	

Please note earlier models of the HS-RAD-20 and HS-RAD-24 have a pipe size of 3/8 - 7/8 – please check the serial number with Compact Comfort HVAC

Model			HS-QB-11	HS-QB-16
Power supply			220-240/1/50	
Cooling	Capacity	kW	10.5	15.5
	Power Input	W	380	700
Heating	Capacity	kW	11.5	16.8
	Power input	W	380	700
Air flow rate	Minimum	L/s	200	200
	Nominal		519	739
	Maximum		645	1050
External static pressure		Pa	100 (30~450)	
Unit	Net Dimensions (WxDxH)	mm	565 x 665 x 495	
	Packed Dimensions (WxDxH)	mm	820 x 980 x 510	
	Net/Gross weight	kg	52 / 59	
Connection Size	Liquid pipe	mm	Φ9.5 (3/8)	
	Gas pipe	mm	Φ15.9 (5/8)	
	Drain pipe	mm	32mm x 2 (20mm Pressure Pipe with Q1 Adapter)	
Maximum distance from outdoor		m	Engineering required above 30m	Engineering required above 40m
Supply/Return Air Spigot Size (LxH)		mm	SA 263 x 345 – RA 2 x Φ400	

Please note the earlier models of the HS-QB-11 and HS-QB-16 have a pipe size of 3/8-3/4 – please check the serial number with SAI HVAC

Model			HS-QB-20	HS-QB-24
Power supply			220-240/1/50	
Cooling	Capacity	kW	20	25
	Power Input	W	990	1200
Heating	Capacity	kW	22.5	26
	Power input	W	990	1200
Air flow rate	Minimum	L/s	250	
	Nominal		1200	
	Maximum		1200	
External static pressure		Pa	100 (30~450)	
Unit	Net Dimensions (WxDxH)	mm	765 x 718 x 490	
	Packed Dimensions (WxDxH)	mm	1190 x 980 x 520	
	Net/Gross weight	kg	65 / 72	
Connection Size	Liquid pipe	mm	Φ12.7 (1/2)	
	Gas pipe	mm	Φ22.2 (7/8)	
	Drain pipe	mm	32mm x 2 (20mm Pressure Pipe with Q1 Adapter)	
Maximum distance from outdoor		m	Engineering required above 50m	Engineering required above 60m
Supply/Return Air Spigot Size (LxH)		mm	SA 330 x 345 – RA 2 x Φ450	

Please note earlier models of the HS-QB-20 and HS-QB-24 have a pipe size of 3/8 - 7/8 – please check the serial number with SAI HVAC

4.2 Unit Dimensions (mm)

RADICAL Series

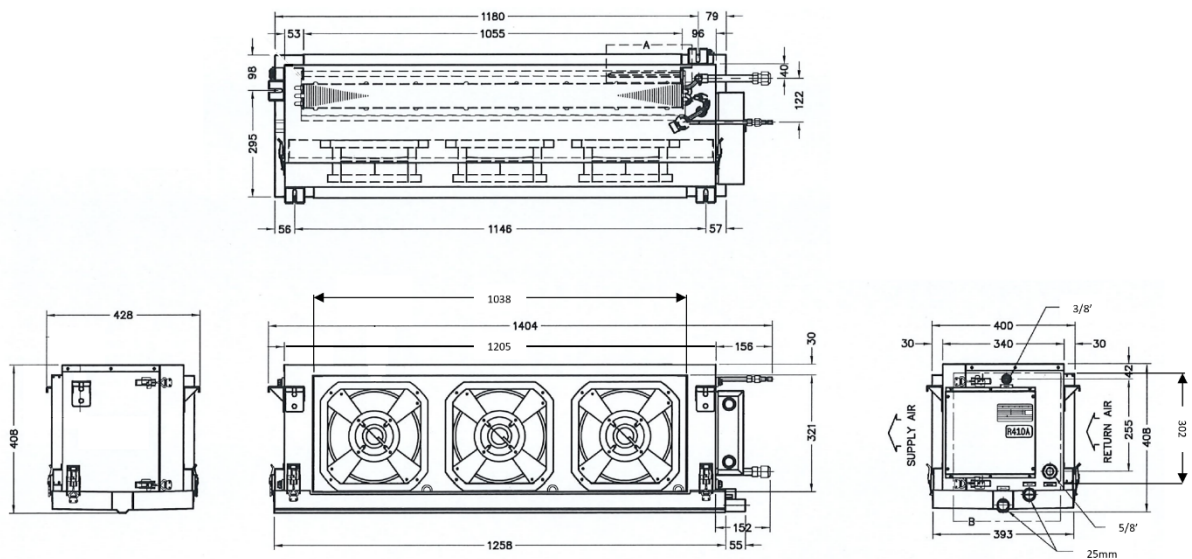
Model	Length	Width (mm)	Height (mm)	Weight (kg)	Supply Air (LxH) (mm)	Return Air (LxH) (mm)
HS-RAD-11	1258	393	408	32	1038 x 321	1055 x 302
HS-RAD-16	1407	390	490	51	1188 x 410	1193 x 410
HS-RAD-20	1607	393	490	62	1393 x 410	1393 x 410
HS-RAD-24	1607	393	490	62	1393 X 410	1393 X 410

Comfort Cube Series

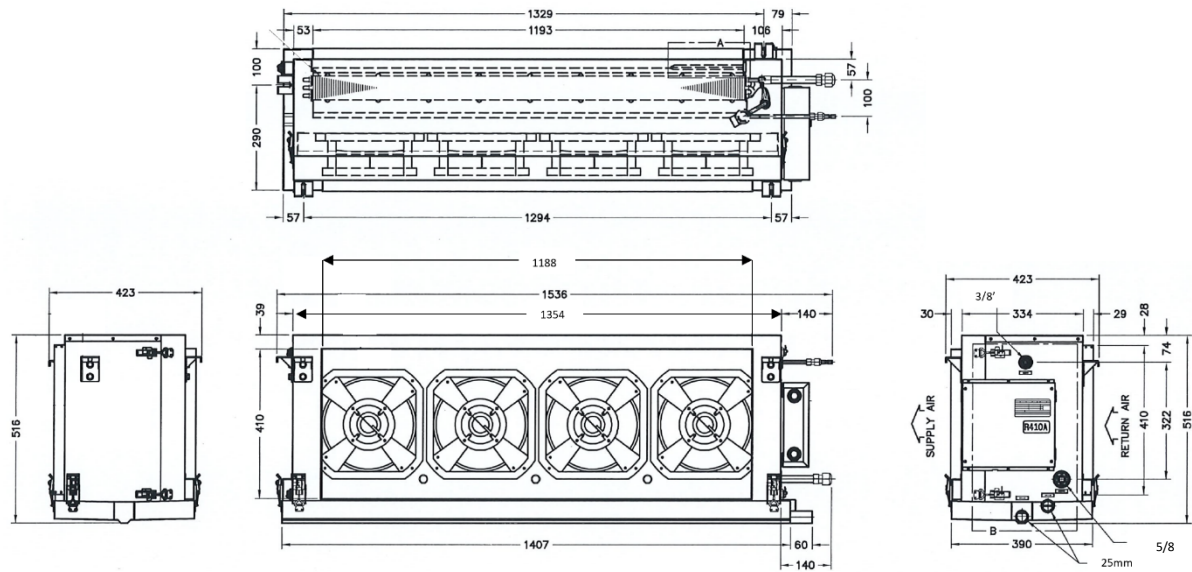
Model	Length (mm)	Width (mm)	Height (mm)	Weight (mm)	Supply Air (LxH) (mm)	Return Air (mm)
HS-QB-11	565	665	495	52	263 x 345	Ø400 x2
HS-QB-16	565	665	495	52	263 x 345	Ø400 x2
HS-QB-20	718	765	490	65	330 x 345	Ø450 x2
HS-QB-24	718	765	490	65	330 x 345	Ø450 x2

Radical Series

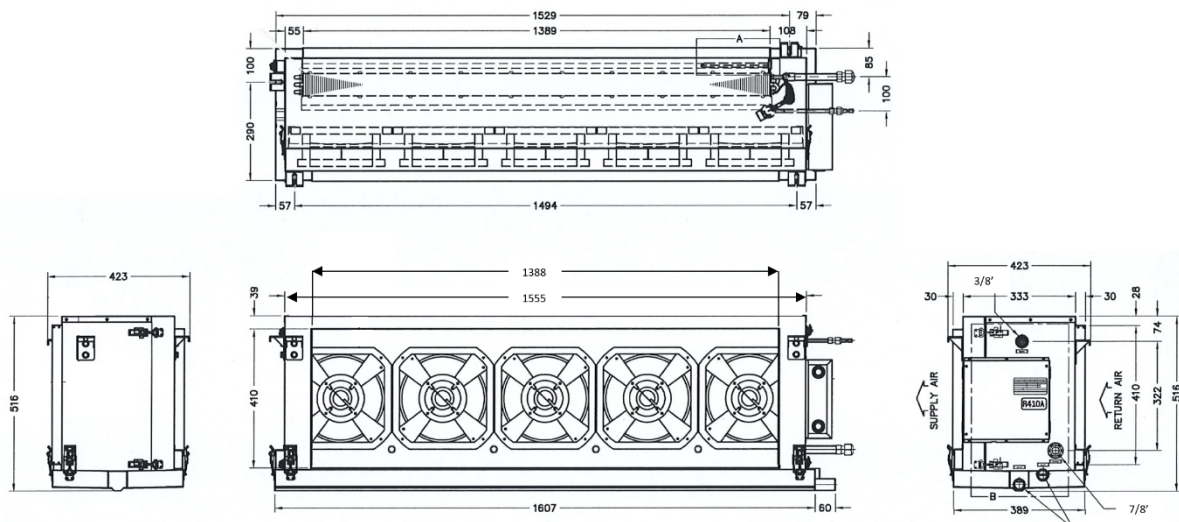
HS-RAD-11



HS-RAD-16

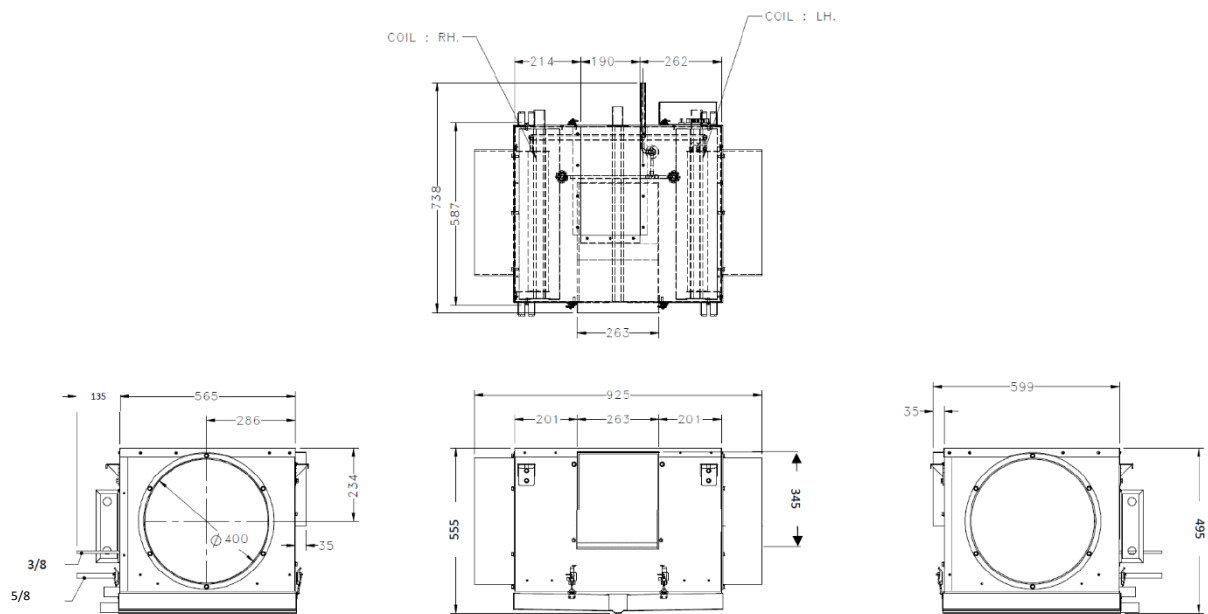


HS-RAD-2024

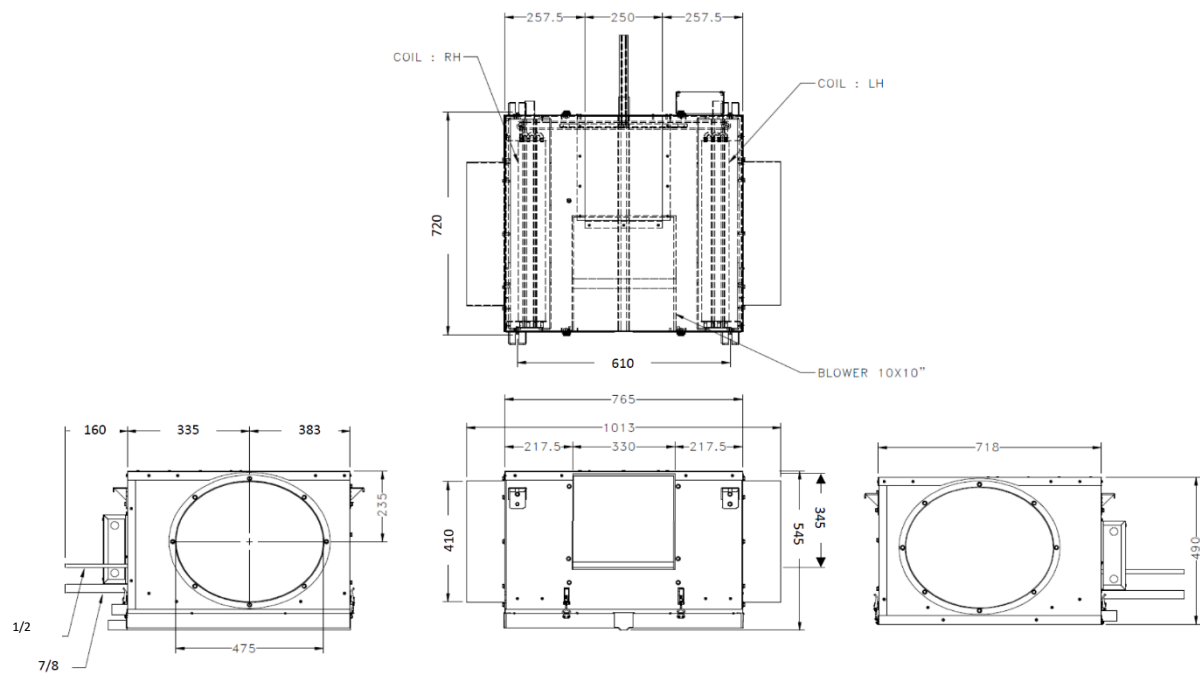


Comfort Cube Series

HS-QB-11, HS-QB-16



HS-QB-20, HS-QB-24



4.3 Piping Connection Sizes

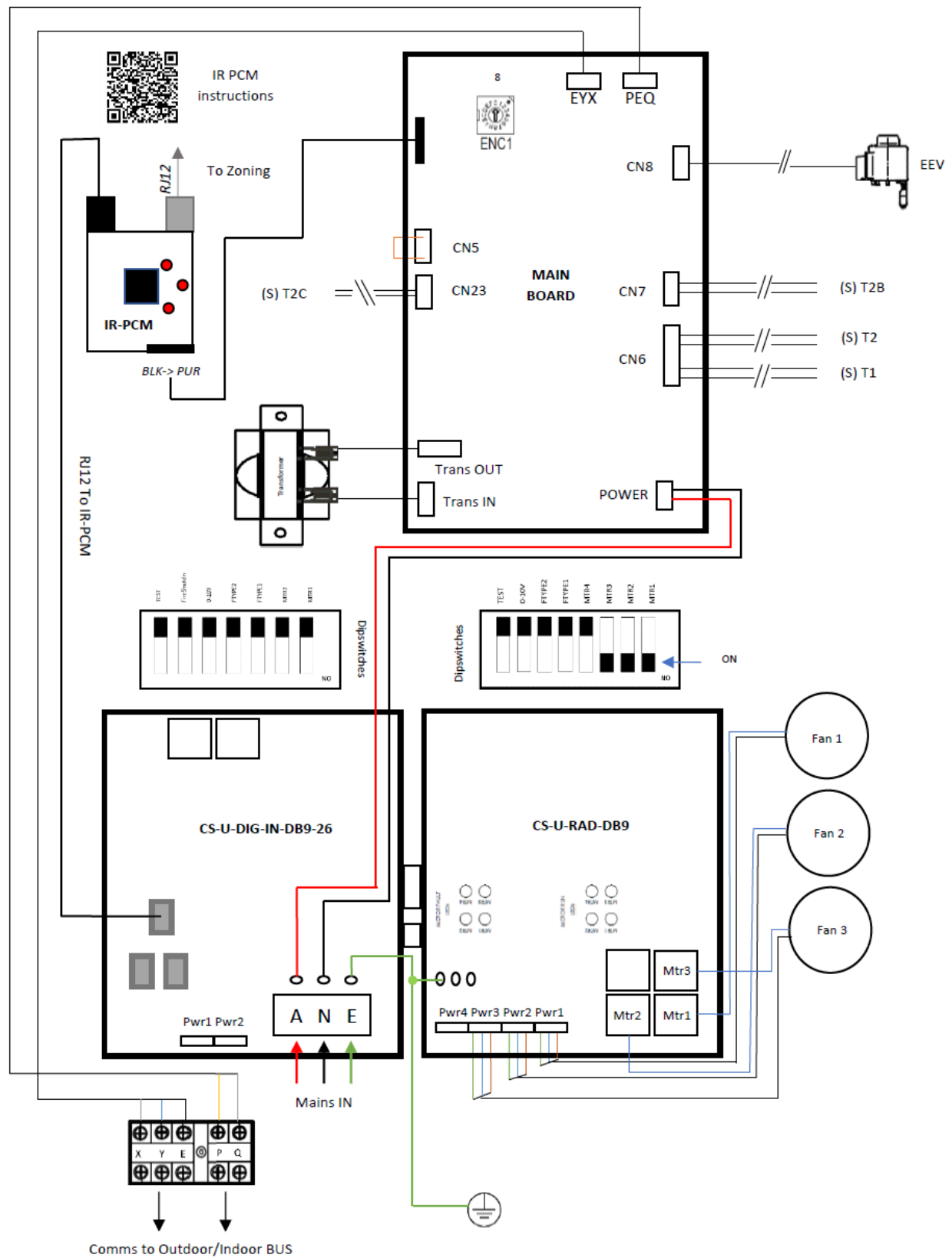
Model	Pipe Size (mm)	
	Liquid (Small)	Gas (Large)
HS-RAD-11	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-RAD-16	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-RAD-20	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8
HS-RAD-24	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8
HS-QB-11	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-QB-16	Φ9.5 – 3 / 8	Φ15.9 – 5 / 8
HS-QB-20	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8
HS-QB-24	Φ12.7 – 1 / 2	Φ22.2 – 7 / 8

- Please note the earlier models of the HS-RAD-16 have a pipe size of 3/8-3/4 – please check the serial number with SAI HVAC
- Please note earlier models of the HS-RAD-20 and HS-RAD-24 have a pipe size of 3/8 -7/8 – please check the serial number with SAI HVAC
- Please note the earlier models of the HS-QB-11 and HS-QB-16 have a pipe size of 3/8-3/4 – please check the serial number with SAI HVAC
- Please note earlier models of the HS-QB-20 and HS-QB-24 have a pipe size of 3/8 -7/8 – please check the serial number with SAI HVAC

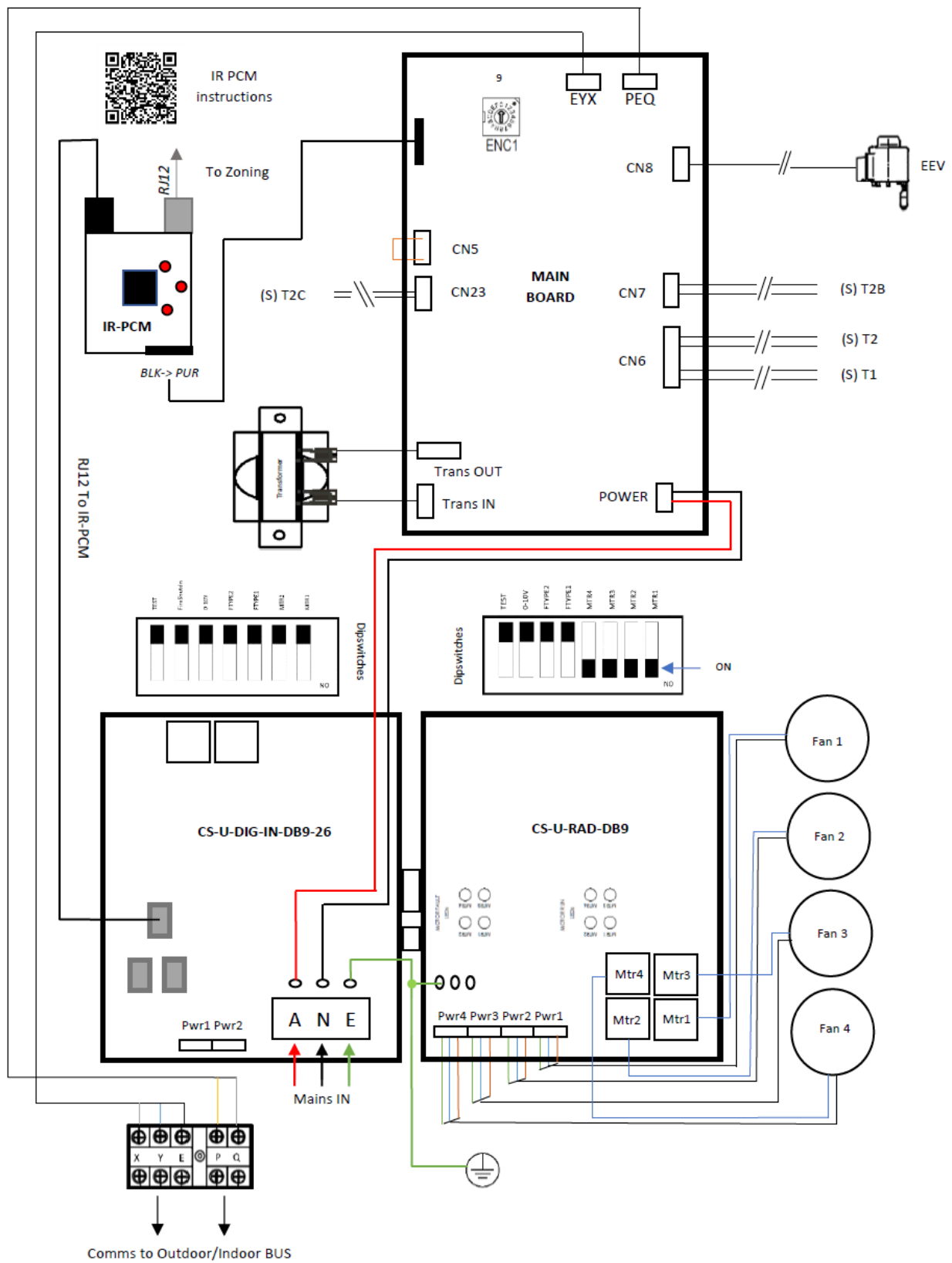
4.4 Wiring Diagrams

RADICAL Series

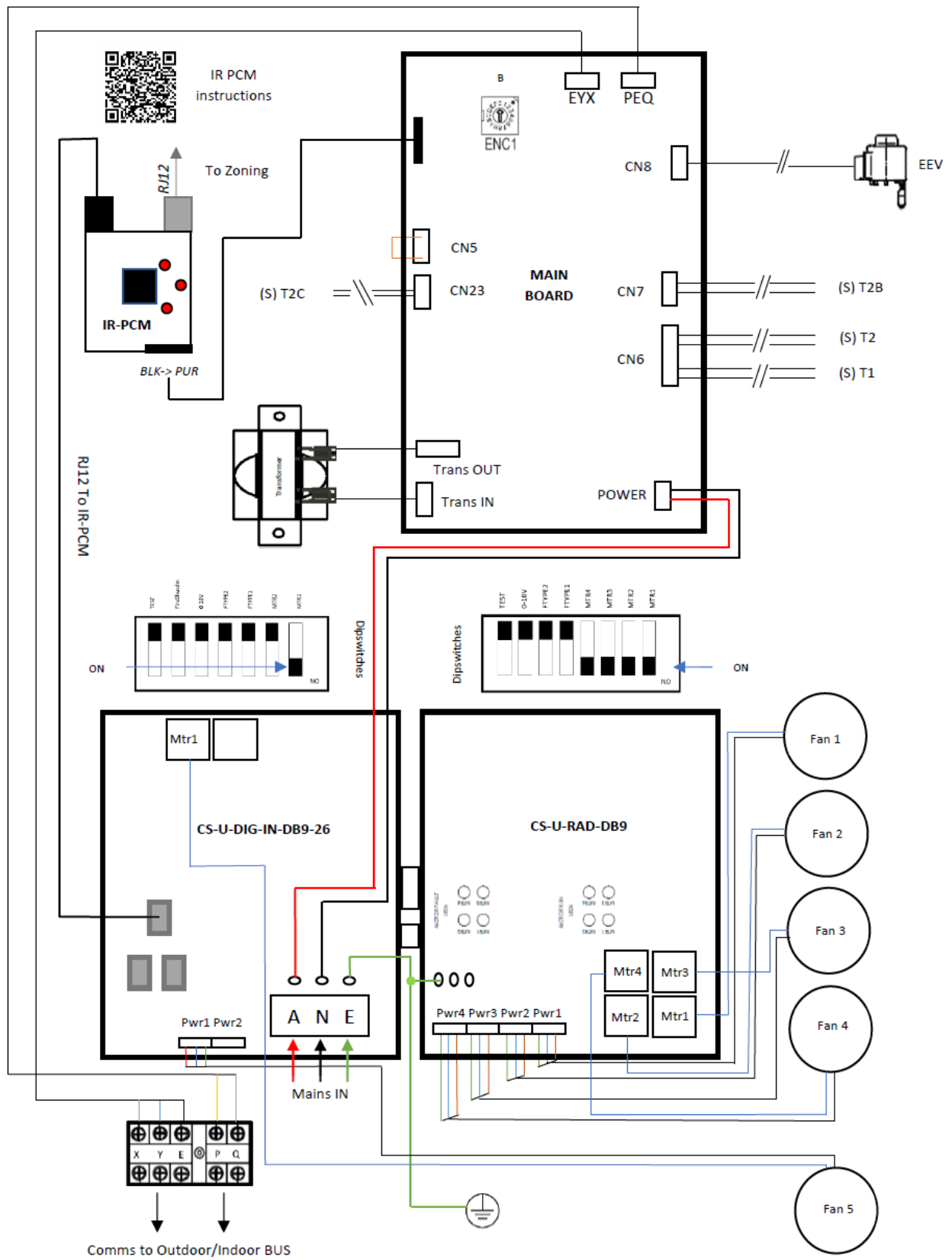
HS-RAD-11



HS-RAD-16

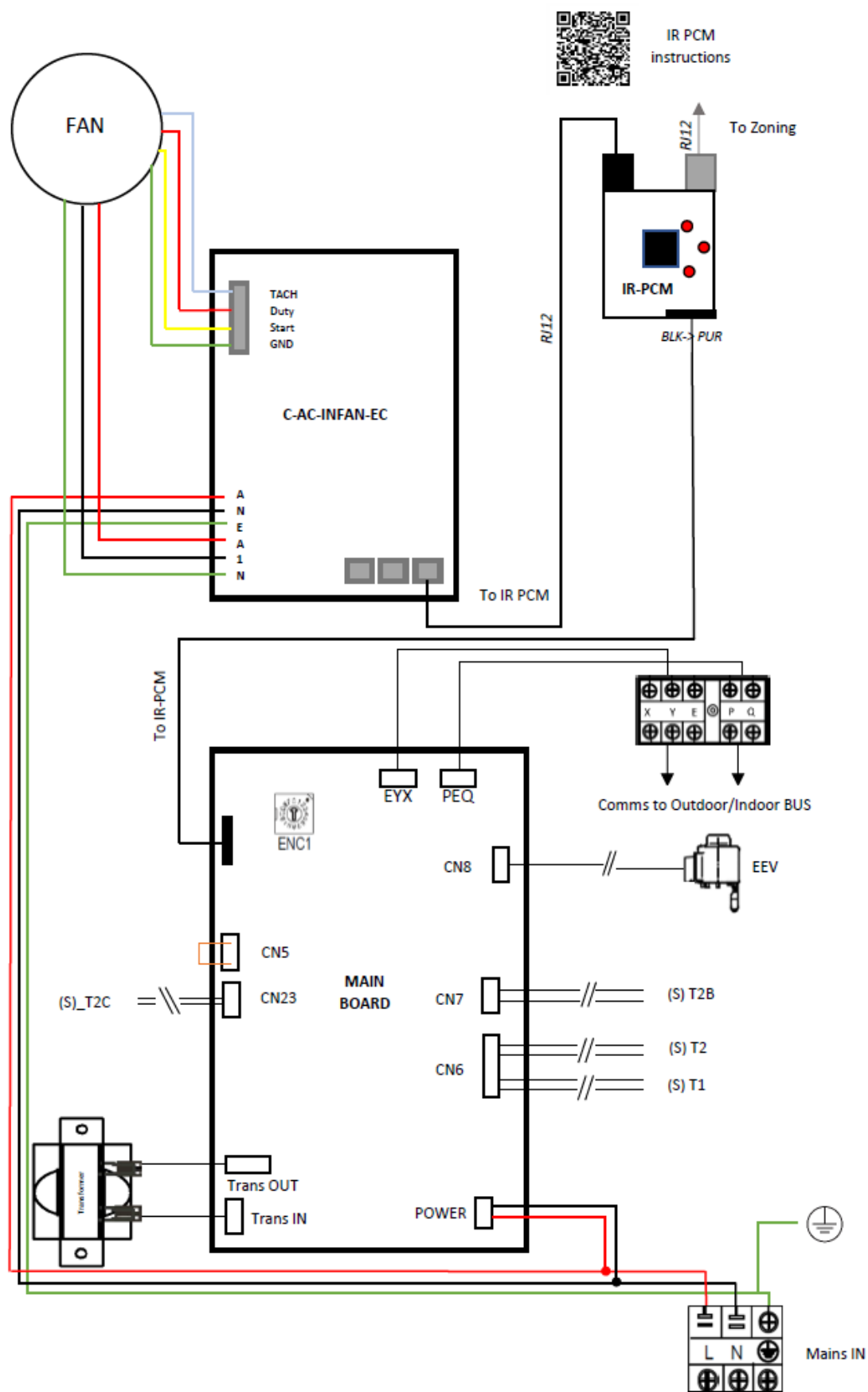


HS-RAD-20/24



COMFORT CUBE Series

QB-11, QB-16, QB-20, QB-24

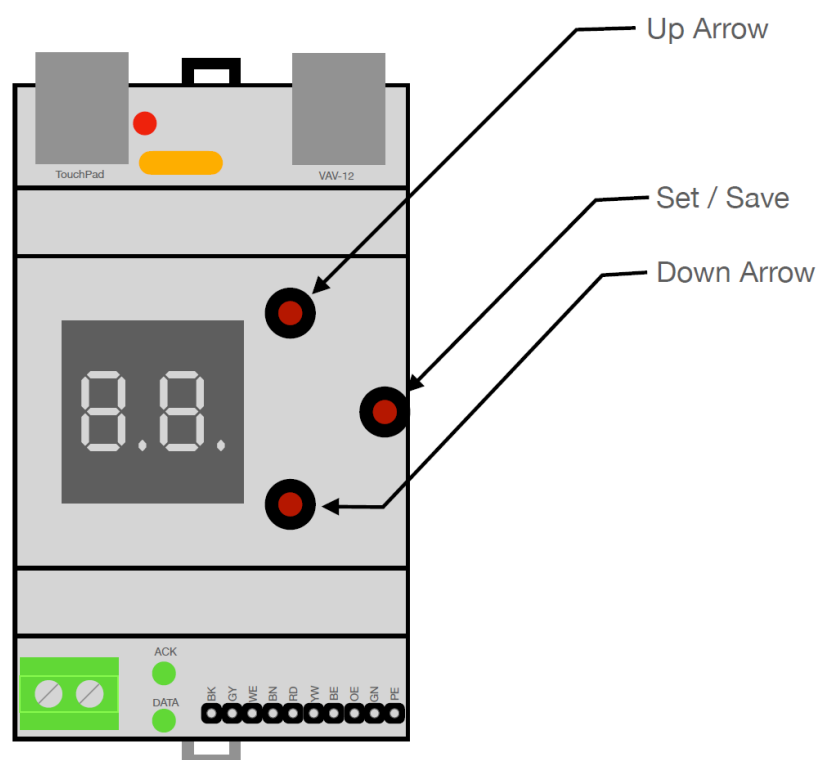


4.5 Spigot Sizes

Model	Supply Air (LxH)	Return Air (LxH)
HS-RAD-11	1038 x 321	1055 x 302
HS-RAD-16	1188 x 410	1193 x 410
HS-RAD-20	1393 x 410	1393 x 410
HS-RAD-24	1393 x 410	1393 x 410
HS-QB-11	263 x 345	2 x Φ 400
HS-QB-16	263 x 345	2 x Φ 400
HS-QB-20	330 x 345	2 x Φ 450
HS-QB-24	330 x 345	2 x Φ 450

5. IR PCM Instructions

5.1 The IR-PCM Layout



5.2 Setting the PQ Address

1. Push and hold the Set/Save arrow for 10 seconds.
2. The current address will flash on the screen
3. Use the "UP and DOWN" arrows to adjust.
4. Press the "Set/Save" Button to exit.

5.3 Setting the Maximum Fan RPM Scale

1. Push and hold the “UP” arrow for 10 seconds.
2. The current maximum fan RPM value will flash.
3. Use the “UP and DOWN” Arrows to adjust.
4. Press the “Set/Save” Button to exit.

5.4 Setting the Minimum Fan RPM Scale

1. Push and hold the “Down” arrow for 10 seconds.
2. The current minimum fan RPM value will flash.
3. Use the “UP and DOWN” Arrows to adjust.
4. Press the “Set/Save” Button to exit.

5.5 Checking the FCU Operating Conditions

1. Push the “Up or Down” arrow to select the Query number listed in the table below.
2. The Query number will be replaced with the current value after 3 seconds.

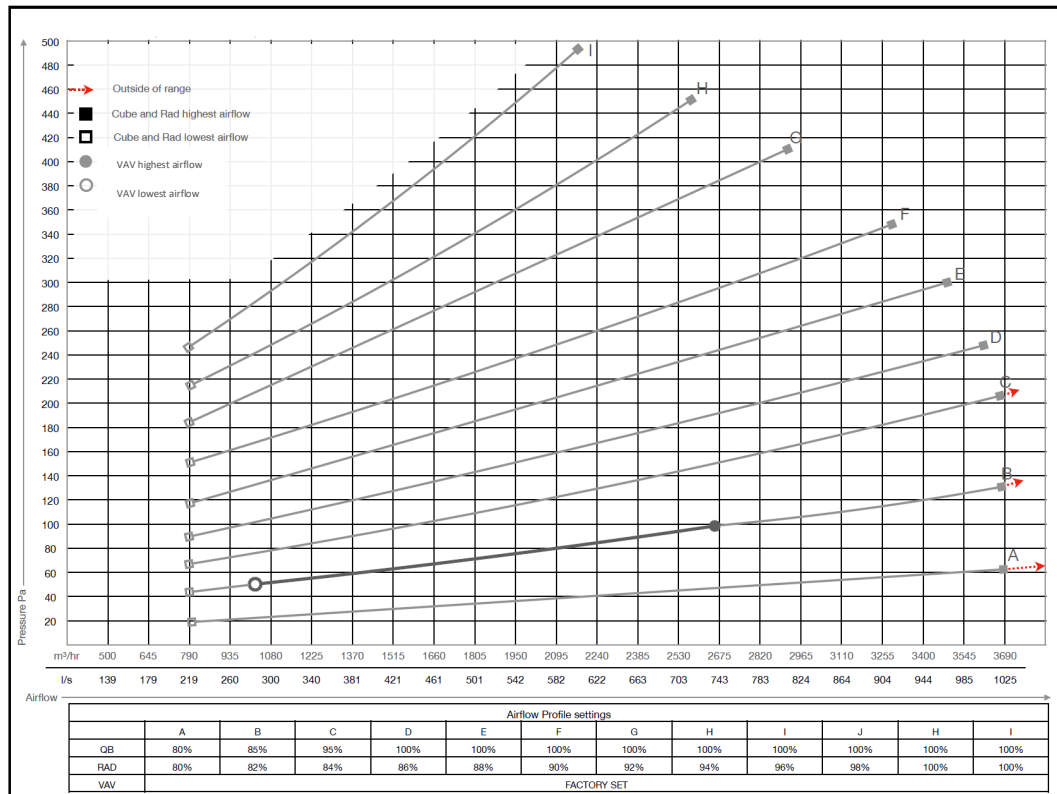
Query	Description	
0	Standby Display	
1	PQ Bus Address	1~13
2	FCU Capacity	
3	XY Network Address	
4	Control target	17~30
5	Return Air Temp	TBC
6	Return Air Temp	TBC
7	Indoor Heat exchanger Mid-Coil Temp	
8	Indoor Heat exchanger Header Pipe Temp	
9	Fault Code	
10	Reserved	--

5.6 Troubleshooting Codes

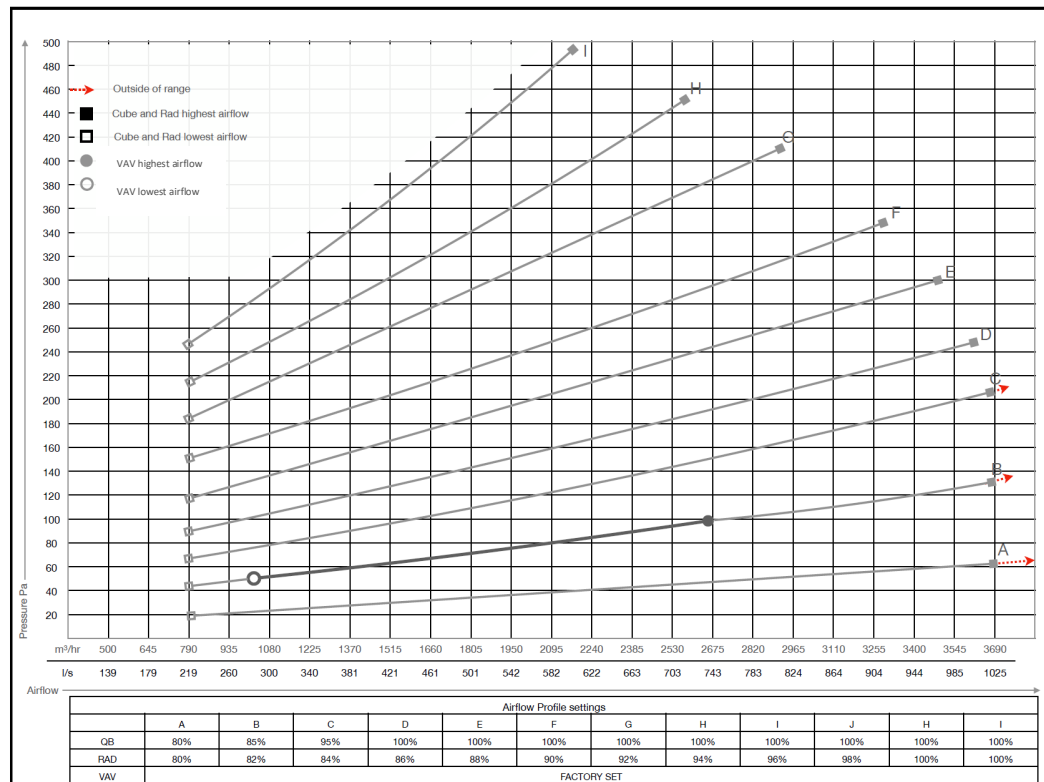
No	Type	Contents	Error Code	Remarks
1	Alarm	No Address when powered on for the first time	FE	Recover to normal display until finish setting address
2	Alarm		H0	
3	Alarm		E0	
4	Malfunction		E1	After the malfunctions disappear it will restore automatically
5	Malfunction	Temp Sensor (T1) error	E2	After the malfunctions disappear it will restore automatically
		Temp Sensor (T2) error	E3	
		Temp Sensor (T2B) error Temp Sensor (T2C) error	E4	
6	Malfunction	EEPROM error	E7	After the malfunctions disappear it will restore automatically
7	Malfunction	Outdoor unit error	Ed	After the malfunctions disappear it will restore automatically
8	Malfunction	Water level alarm	EE	After the malfunctions disappear it will restore automatically
9	Malfunction	Quantity of parallel connected DX AHU control box do not match	H7	After the malfunctions disappear it will restore automatically

6. Fan Curves

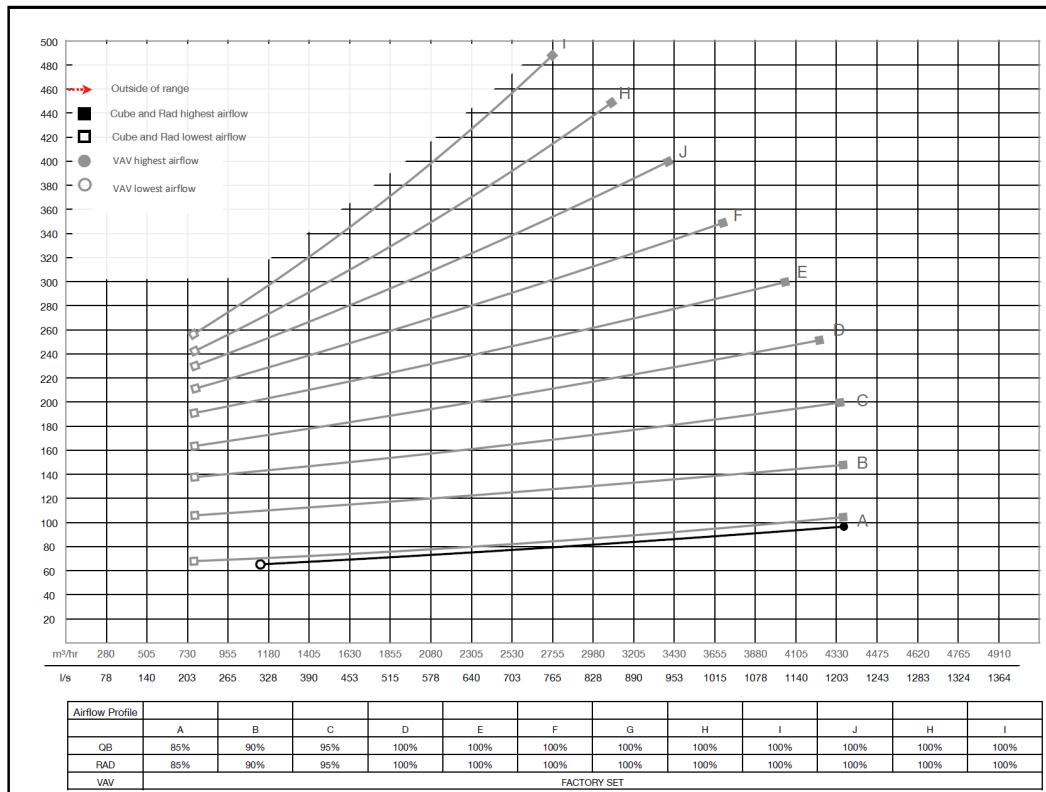
HS-VAV-11, HS-RAD-11, HS-QB-11 – Airflow Performance



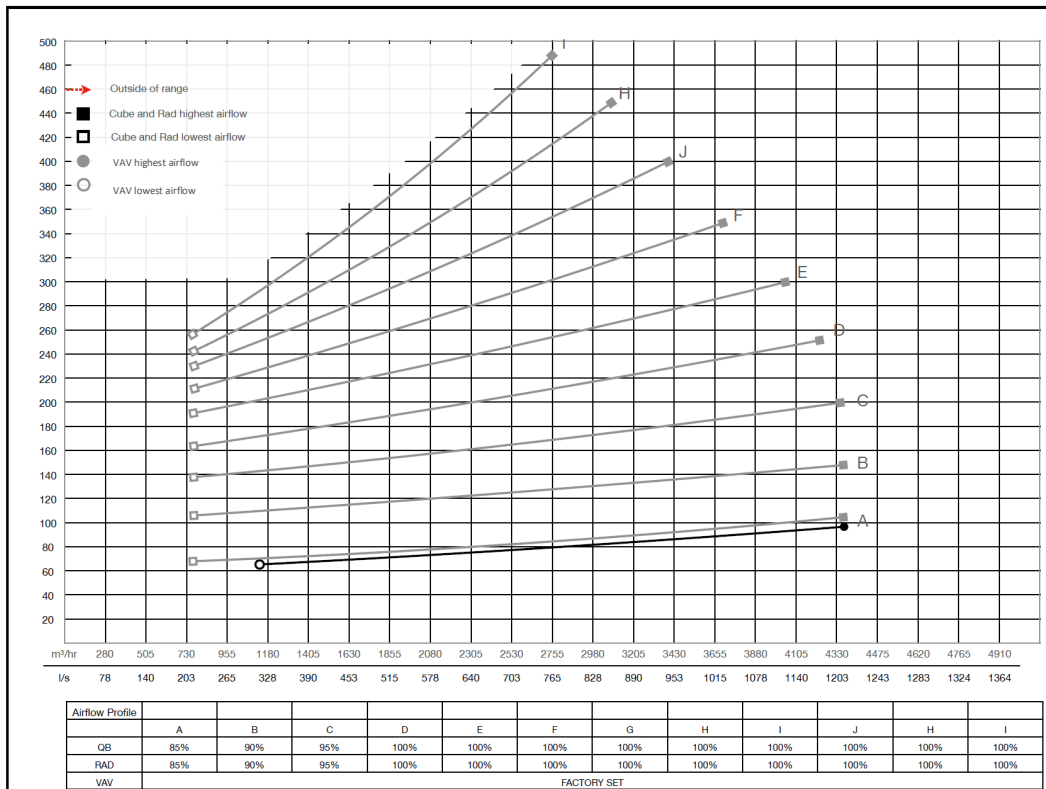
HS-VAV-16, HS-RAD-16, HS-QB-16 – Airflow Performance



HS-VAV-20, HS-RAD-20, HS-QB-20 – Airflow Performance



HS-VAV-24, HS-RAD-24, HS-QB-24 – Airflow Performance



7. Other Documents in this Series

Document ID	Technical Manual Document Description
TM_VRAF_HV-A	VRAF – Outdoor Units: Part A - Product Overview
TM-VRAF_HV-B	VRAF – Outdoor Units: Part B- Product Selection
TM-VRAF_3V-C	VRAF - 3Phase Vertical: Part C - Installation & Commissioning
TM-VRAF_3V-D	VRAF - 3Phase Vertical: Part D - Service & Troubleshooting
TM_VRAF_3H-C	VRAF - 3Phase Horizontal: Part C - Installation & Commissioning
TM_VRAF_3H-D	VRAF - 3Phase Horizontal: Part D - Service & Troubleshooting
TM_VRAF_1H-C	VRAF - Mini horizontal: Part C - Installation & Commissioning
TM_VRAF_1H-D	VRAF - Mini horizontal: Part D - Service & Troubleshooting
TM_VRAF_VRF12	Control System - Multiple FCU: VRF 12
TM_VRAF_VAV12	Control System - Multi-Zone: VAV 12
TM-BP12-BP12	Control System – Central Temp : BP12
TM_VRAF_FM12	Control System - Free Match 12
TM_VRAF_IAQ	Indoor Units Product Information