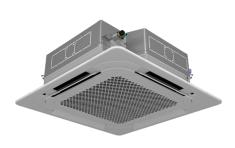


Ductless Floating Air® Pro Multi-Zone R-454B Refrigerant











Outdoor Unit 230-Volt: FPHMR18A3D, FPHMR27A3D, FPHMR36A3D, FPHMR42A3D

Wall Mounted Unit 230-Volt: FAHMW07A3D, FAHFW09A3D, FAHFW12A3D, FAHFW18A3D,

FAHFW24A3D

Cassette 230-Volt: FPHFC09A3D, FPHFC12A3D, FPHFC18A3D, FPHFC24A3D

Ducted 230-Volt: FPHFD09A3D, FPHFD18A3D, FPHFD24A3D

Air Handler Unit 230-Volt: FPHFA18A3D, FPHFA24A3D

THE EXPERTS IN ROOM AIR CONDITIONING

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Friedrich Authorized Parts Depots

Important Safety Information

The information in this manual is intended for use by a qualified technician who is familiar with the safety procedures required for installation and repair, and who is equipped with the proper tools and test instruments required to service this product.

Installation or repairs performed by unqualified individuals may expose both the installer and users to hazards resulting in injury or electrical shock which can be serious or even fatal.

Maintenance is the responsibility of the owner. Failure to properly maintain or repair equipment may result in personal injury and/or various types of property damage (fire, flood, etc.).

Safety warnings have been placed throughout this manual to alert you to potential hazards that may be encountered. If you install or perform service on equipment, it is your responsibility to read and obey these warnings to quard against any bodily injury or property damage which may result to you or others. Due to continuing research in new energy-saving technology, all information in this manual is subject to change without notice.

This service manual is designed to be used in conjunction with the installation and operation manuals provided with each air conditioning system.

This service manual was written to assist the professional service technician to quickly and accurately diagnose and repair malfunctions.

Installation procedures are not given in this manual. They are given in the Installation/Operation manual which can be acquired on the Friedrich website. Click the link or scan the QR code to access the Professional page where you can locate our technical literature.



SAFETY IS IMPORTANT

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is a safety Alert symbol. This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what will happen if the instructions are not followed.

All safety messages will follow the safety alert symbol with the word "WARNING" or "CAUTION". These words mean:



**WARNING Indicates a hazard which, if not avoided, can result in severe personal injury or death and damage to product or other



CAUTION Indicates a hazard which, if not avoided, can result in personal injury and damage to product or other property.



Indicates property damage can occur if instructions are not followed.



This symbol indicates that this appliance uses a flammable refrigerant. If the refrigerant is leaked and is exposed to an external ignition source, there is a risk of fire.



This symbol indicates that the Operation Manual should be read carefully.



This symbol indicates that service personnel should be handling this equipment with reference to the installation manual.



This symbol indicates that information is available such as the Installation and Operation manual, or the Service Manual.

Personal Injury Or Death Hazards

	▲ WARNING	A AVERTISSEMENT	▲ ADVERTENCIA
SAFETY FIRST	Do not remove, disable or bypass this unit's safety devices. Doing so may cause fire, Doing so may cause fire, injuries, or death.	Ne pas supprime, désactiver ou contourner cette l'unité des dispositifs de sécurité, faire vous risqueriez de provoquer le feu, les blessures ou la mort.	No eliminar, desactivar o pasar por alto los dispositi- vos de seguridad de la unidad. Si lo hace podría producirse fuego, lesiones o muerte.



ALWAYS USE INDUSTRY STANDARD PERSONAL PROTECTIVE EQUIPMENT (PPE)

ELECTRICAL HAZARDS:

- Unplug and/or disconnect all electrical power to the unit before performing inspections, maintenance, or service.
- Ensure proper lockout/tagout procedures are followed..
- Always work in the company of a qualified assistant if possible.
- Capacitors, even when disconnected from the electrical power source, retain an electrical charge potential capable of causing electric shock or electrocution.
- Handle, discharge, and test capacitors according to safe, established, standards, and approved procedures.
- Extreme care, proper judgment, and safety procedures must be exercised if it becomes necessary to test or troubleshoot equipment with the power on to the unit.
- Do not spray water on the air conditioning unit while the power is on.
- Electrical component malfunction caused by water could result in electric shock or other electrically unsafe conditions when the power is restored and the unit is turned on, even after the exterior is dry.
- Use air conditioner on a single dedicated circuit within the specified amperage rating.
- Use on a properly grounded outlet only.
- Do not cut or modify the power supply cord or remove the ground prong of the plug.
- Never operate the unit on an extension cord.
- Follow all safety precautions and use proper and adequate protective safety aids such as: gloves, goggles, clothing, properly insulated tools, and testing equipment etc.
- Failure to follow proper safety procedures and/or these warnings can result in serious injury or death.

PERSONAL INJURY OR DEATH HAZARDS

- REFRIGERATION SYSTEM REPAIR HAZARDS:
- Use approved standard refrigerant recovering procedures and equipment to relieve high pressure before opening system for repair. Reference EPA regulations (40 CFR Part 82, Subpart F) Section 608.
- Do not allow liquid refrigerant to contact skin. Direct contact with liquid refrigerant can result in minor to moderate injury.
- Be extremely careful when using an oxy-acetylene torch. Direct contact with the torch's flame or hot surfaces can cause serious burns.
- Make certain to protect personal and surrounding property with fire proof materials and have a fire extinguisher at hand while using a torch.
- Provide adequate ventilation to vent off toxic fumes, and work with a qualified assistant whenever possible.
- Always use a pressure regulator when using dry nitrogen to test the sealed refrigeration system for leaks, flushing etc.
- MECHANICAL HAZARDS:
- Extreme care, proper judgment and all safety procedures must be followed when testing, troubleshooting, handling, or working around unit with moving and/or rotating parts.
- Be careful when handling and working around exposed edges and corners of the sleeve, chassis, and other unit components especially the sharp fins of the indoor and outdoor coils.
- Use proper and adequate protective aids such as: gloves, clothing, safety glasses etc.
- Failure to follow proper safety procedures and/or these warnings can result in serious injury or death.

PROPERTY DAMAGE HAZARDS

- FIRE DAMAGE HAZARDS:
- Read the Installation/Operation Manual for the air conditioning unit prior to operating.
- Use air conditioner on a single dedicated circuit within the specified amperage rating.
- Be extremely careful when using acetylene torch and protect surrounding property.
- Failure to follow these instructions can result in fire and minor to serious property damage.
- WATER DAMAGE HAZARDS:
- Improper installation, maintenance or servicing of the air conditioner unit can result in water damage to personal items or property.
- Ensure that the units drain has sufficient pitch to the outside to allow water to drain from the unit.
- Do not drill holes in the bottom of the drain pan or the underside of the unit.
- Failure to follow these instructions can result in damage to the unit and/or minor to serious property damage.

6

Personal Injury Or Death Hazards

WARNING: The manufacturer's warranty does not cover any damage or defect to the air conditioner caused by the attachment

or use of any components, accessories or devices (other than those authorized by the manufacturer) into, onto or in conjunction with the air conditioner. You should be aware that the use of unauthorized components, accessories or devices may adversely affect the operation of the air conditioner and may also endanger life and property. The manufacturer disclaims any responsibility for such loss or injury resulting from the use of such unauthorized components, accessories or devices.

WARNING: This appliance is not intended for use by persons (Including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children must be supervised to prevent misuse of the appliance.

WARNING: The maximum altitude for this appliance is 2,000 meters(6,562 feet).

Do not use above 2,000 meters(6,562 feet).

AWARNING: Electrical Shock Hazard

Disconnect all power to the unit before starting maintenance. All electrical connections and wiring MUST be installed by a qualified electrician and conform to the National Code and all local codes which have jurisdiction. Failure to do so can result in property damage, severe electrical shock or death.



AWARNING: Read Installation Manual

Read this manual thoroughly prior to equipment installation or operation. It is the installer's responsibility to properly apply and install the equipment. Installation must be in conformance with the NFPA 70-2023 national electric code or current edition, International Mechanic code 2021 or current edition, and any other local or national codes.



AWARNING: Safety First

Do not remove, disable, or bypass this unit's safety devices. Doing so may cause fire, injuries, or death.

AWARNING: This Product uses R-454B Refrigerant

Do not use any method to accelerate the defrosting or cleaning, other than those recommended by the manufacturer.

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.



Refrigerant Safety Group A2L

WARNING: Refrigeration System under High pressure Do not puncture, heat, expose to flame or incinerate. Only certified refrigeration technicians should service this equipment. R32 systems operate at higher pressures than R22 equipment. Appropriate safe service and handling practices must be used.

CAUTION: Do Not Operate Equipment During Active Stages Of Construction

To ensure proper operation, Friedrich requires that all equipment is not operated during active construction phases. This includes active stages of completing framing, drywalling, spackling, sanding, painting, flooring, and moulding in the equipment's designated conditioning space. The use of this equipment during construction could result in premature failure of the components and/or system and is in violation of our standard warranty guidelines. The operation of newly installed equipment during construction will accelerate the commencement and/or termination of the warranty period.

WARNING: Keep all air circulation and ventilation openings free from obstruction.

WARNING: The unit should not be in contact with any equipment that will transmit vibration to the unit. Any excessive vibration or pulsation to the unit could result in damage to the refrigerant tubing.



Model And Serial Number Location

Indoor Unit On side of Unit Early Production models of the A2L Indoor heads are marked as R-454B. These heads are compatible with both R-32 and R-454B Refrigerant. Later models have the R-454B designation removed.



Figure 101 (Indoor Wallmount Unit Model Nameplate location)

Outdoor Unit On side of Unit



Figure 102 (IOutdoor Unit Model Nameplate location)

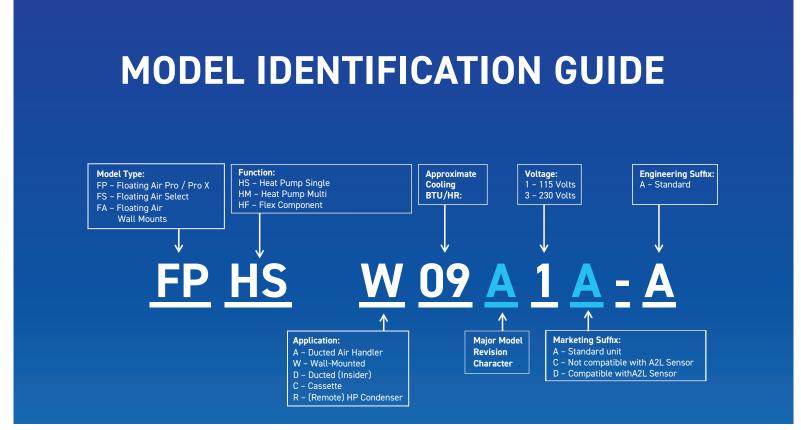


Figure 103 (Model Number Reference Guide)

Serial Number Reference Guide

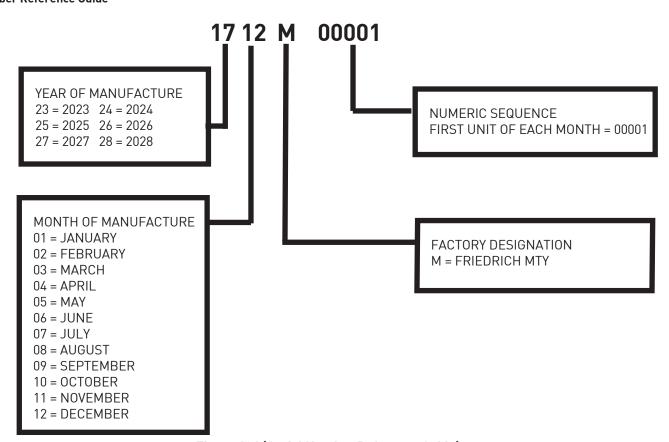


Figure 104 (Serial Number Reference Guide)

18-27k BTU (Outdoor Units)

FAC Model		Unit	FPHMR18A3D	FPHMR27A3D
Туре			Inverter	Inverter
Power Supply		V/ph/Hz	208-230/1/60	208/230/1/60
Energy Star Standard		Y/N	Υ	Υ
Energy Star -Cold Climate		Y/N	Υ	Y
	Pe	rformance		
Cooling	Rated Capacity at 95°F	Btu/h	18000	27000
	Cooling Capacity Range(MIN-MAX)	Btu/h	9000~22000	9000-31000
	Cooling Capacity Range(MIN-MAX)	Btu/h	18000	27000
	Capacity at 115°F	Btu/h	18000	27000
	Power Input	W	1350(510-2610)	2100 850-3000
	Current	А	6.3(2.4-12.1)	9.3(3.6-13.6)
	EER2 at 95°F	Btu/h/W	13.3	12.9
	SEER2	Btu/h/W	22.0	23.0
	Working Temperature Range	°F	5~125	5~125
Heating	Rated Capacity at 47°F	Btu/h	18000	27000
	Heating Capacity Range(MIN-MAX)	Btu/h	9000-30000	9000-44000
	Power Input	W	1380(450-3381)	2200(1300-4500)
	Current	А	6.4(2.1-15.7)	10(5.9-20)
	COP2 at 47°F	W/W	3.8	3.6
	COP @ 5F	W/W	2.0	1.8
	HSPF2(IV)	Btu/h/W	10.00	10.0
	HSPF2(V)	Btu/h/W	8.0	7.7
	Rated Capacity Heating at 17°F (-8.3°C)	Btu/h	11500	17600
	Maximum Heating Capacity @17°F (-8.3°C)	Btu/h	18000	27000
	Maximum Heating Capacity @5°F (-15°C)	Btu/h	18000	27000
	Maximum Heating Capacity @-5°F (-20.5°C)	Btu/h	13500	20000
	Maximum Heating Capacity @-13°F (-25°C)	Btu/h	13356	19177
	Maximum Heating Capacity @-22°F (-30°C)	Btu/h	/	/
	Working Temperature Range	°F	-22~75	-22~75
Outdoor Airflow	Air Circulation(high) for Outdoor	ft3 CFM	1850	3356.9
	Outdoor Sound Pressure(High)	dB (A)	55	62
Outdoor Fan Motor	Model		ZWB1710L00A	ZWB4710L18A
	Qty		1	1
	Output	W[HP]	60[1/12]	220[1/3]
	Speed (Hi)	r/min	880	850
		gure 105	<u> </u>	'

18-27k BTU (Outdoor Units)

Refrigeration Refrigeration Refrigerant Refrigerant char Compressor type Compressor MFC Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe		Unit	FPHMR18A3D	FPHMR27A3D
Refrigeration Refrigeration Refrigerant Compressor type Compressor MFC Compress		Cooling (A)	5.8	9.3
Refrigeration Refrigeration Refrigerant Compressor type Compressor MFC Compress		Heating (A)	6.1	10
Refrigeration Refrigeration Refrigerant Refrigerant char Compressor type Compressor MFC Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	Rating of Overcurrent		25 (After Serial number 2510F00593)	30 (After Serial Number 2510F02740)
communication of Refrigeration Refrigerant Refrigerant chart Compressor type Compressor MFC Compressor mode Expansion Device Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (is outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)			30.0 (Serial number 2510F00593 and prior)	40 (Serial Number 2510F02740 and Prior)
Refrigeration Refrigerant Refrigerant char Compressor type Compressor MFC Compressor mod Expansion Device Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (is outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	um Circuit Amnacitu)	Amps	21.0	27 (After Serial Number 2510F02740)
Refrigeration Moisture Remove Refrigerant Refrigerant chart Compressor type Compressor MFC Compressor mode Expansion Device Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengte Max. Elevation (is outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	im circuit Ampacity)		21.0	25 (Serial Number 2510F02740 and Prior)
Refrigerant Refrigerant char Compressor type Compressor MFG Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	rire size and type		4 x 14 AWG Stranded THHN	4 x 14 AWG Stranded THHN
Refrigerant char Compressor type Compressor MFC Compressor mod Expansion Device Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (is outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	l	pints/hr	2.4	3.0
Compressor type Compressor MFG Compressor MFG Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)			R454B	R454B
Compressor MFG Compressor MFG Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refriga after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH) Packing(LxWxH)	je volume	oz	51.1	76.2
Compressor mod Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH			ROTARY	ROTARY
Expansion Devic Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH	i .		Panasonic	Panasonic
Condenser mate Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refriga after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH	el#		KRD220XAA21	KKD330XAA21
Liquid Pipe Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH	Device		EEV	EEV
Gas Pipe Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)	ial		copper pipe+Hydrophilic aluminium	copper pipe+Hydrophilic aluminium
Max. Pipe Lengt Max. Pipe Lengt Max. Elevation (i outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)		inch	1/4	1/4
Max. Elevation (i outdoor unit) Pre-charge Pipe additional refriga after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)		inch	3/8	3/8
outdoor unit) Pre-charge Pipe additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)	n (Total)	ft	164	230
additional refrige after Pre-charge DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)	ndoor units higher than	ft	49	49
DIMENSIONS & WEIGHT Outdoor Unit Dimension (WxH Packing(LxWxH)	Length	ft	50	75
Outdoor Unit Dimension (WxH Packing(LxWxH)	rant charge per foot length	ounces/foot	0.16	0.16
Packing(LxWxH)		•	•	•
	(D)	inches	33-7/8×26-3/8×12-1/4	38-3/8 ×32-7/8 ×14-1/8
		mm	860×670×310	975×835×360
Net Weight		inches	39×17-3/4×-28-3/4	43-3/4×18-1/8×37-3/4
Net Weight		mm	990×450×730	1111×460×960
		lbs	46	72.9
		kg	101.4	160.6
Shipping Weight		lbs	51	83.1
		kg	112.4	183.2
Dimensions Stack height (Stack	ck I imit)inch	1 -	28-3/4*4	37-3/4*4

36-42k BTU (Outdoor Units)

FAC Model		Unit	FPHMR36A3D	FPHMR42A3D
Туре			Inverter	Inverter
Power Supply		V/ph/Hz	208/230/1/60	208/230/1/60
Energy Star Standard	Energy Star Standard		Υ	Y
Energy Star -Cold Climate		Y/N	Υ	Y
Performance				
Cooling	Rated Capacity at 95°F	Btu/h	36000	42000
	Cooling Capacity Range(MIN-MAX)	Btu/h	9000-46800	9000-54600
	Cooling Capacity Range(MIN-MAX)	Btu/h	36000	42000
	Capacity at 115°F	Btu/h	36000	42000
	Power Input	W	2802(1200-5350)	3500(1200-6300)
	Current	А	12.8(5.3-24)	15.5(5.3-28.0)
	EER2 at 95°F	Btu/h/W	12.85	12
	SEER2	Btu/h/W	22	22
	Working Temperature Range	°F	5~125	5~125
Heating	Rated Capacity at 47°F	Btu/h	36000	48000
	Heating Capacity Range(MIN-MAX)	Btu/h	9000-54000	9000-58000
	Power Input	W	2700(1950-5250)	3910(1950-5400)
	Current	А	12.5(9.0-23.8)	18.0(9.0-24.5)
	COP2 at 47°F	W/W	3.91	3.60
	COP @ 5°F	W/W	1.9	1.9
	HSPF2(IV)	Btu/h/W	10	9.5
	HSPF2(V)	Btu/h/W	7.8	7.4
	Rated Capacity Heating at 17°F (-8.3°C)	Btu/h	22600	28200
	Maximum Heating Capacity @17°F (-8.3°C)	Btu/h	36000	36000
	Maximum Heating Capacity @5°F (-15°C)	Btu/h	36000	36000
	Maximum Heating Capacity @-5°F (-20.5°C)	Btu/h	27000	28000
	Maximum Heating Capacity @-13°F (-25°C)	Btu/h	26175	27216
	Maximum Heating Capacity @-22°F (-30°C)	Btu/h	/	/
	Working Temperature Range	°F	-22~75	-22~75
Outdoor Airflow	Air Circulation(high) for Outdoor	ft3 CFM	3356.9	3356.9
	Outdoor Sound Pressure(High)	dB (A)	64	64
Outdoor Fan Motor	Model		ZWB4710L18A	ZWB4710L18A
	Qty		1	1
	Output	W[HP]	220[1/3]	220[1/3]
	Speed (Hi)	r/min	830	830
	<u>'</u> '	gure 106		

36-42k BTU (Outdoor Units)

FAC Model		Unit	FPHMR36A3D	FPHMR42A3D
Electrical	Rated Current	Cooling (A)	12.8	15.5
		Heating (A)	12.5	18
	MOP(Rating of Overcurrent Protective Device		35 (After Serial Number 2510F03164)	40 (After Serial Number 2510F08709)
		A	50 (Serial Number 2510F03164 and Prior)	60 (Serial Number 2510F08709 and Prior)
	MCA(Minimum Circuit Ampocity)	Amps	34 (Serial Number 2510F03164 and After)	37 (After Serial Number 2510F08709)
	MCA(Minimum Circuit Ampacity)		32 (Before Serial Number 2510F03164 and Prior)	36 (Serial Number 2510F08709 and Prior)
	communication wire size and type		4 x 14 AWG Stranded THHN	4 x 14 AWG Stranded THHN
Refrigeration	Moisture Removal	pints/hr	4.3	4.4
	Refrigerant		R454B	R454B
	Refrigerant charge volume	oz	105.8	105.8
	Compressor type			ROTARY
	Compressor MFG		CRSS	CRSS
	Compressor model #		C-7RZ420H1CAF	C-7RZ420H1CAF
	Expansion Device		EEV	EEV
	Condenser material		copper pipe+Hydrophilic aluminium	copper pipe+Hydrophilic aluminium
	Liquid Pipe	inch	1/4	1/4
	Gas Pipe	inch	3/8	3/8
	Max. Pipe Length (Total)	ft	230	262
	Max. Elevation (indoor units higher than outdoor unit)	ft	49	49
	Pre-charge Pipe Length	ft	100	125
	additional refrigerant charge per foot after Pre-charge length	ounces/foot	0.16	0.16
DIMENSIONS & WEIGHT				
Outdoor Unit	Dimension (WxHxD)	inches	38-3/8 ×32-7/8 ×14-1/8	38-3/8 ×32-7/8 ×14-1/8
		mm	975×835×360	975×835×360
	Packing(LxWxH)	inches	43-3/4×18-1/8×37-3/4	43-3/4×18-1/8×37-3/4
		mm	1111×460×960	1111×460×960
	Net Weight	lbs	77	78
		kg	169.8	172
	Shipping Weight	lbs	87	88
		kg	191.8	194
Dimensions	Stack height (Stack Limit)inch	•	37-3/4*4	37-3/4*4

7-12K Wall Mounted Units

, i=i\	Trounted office				
	FAC Indoor Model		FAHMW073D	FAHFW09A3D	FAHFW12A3D
	Power Supply	V/ph/Hz		208V/230V~,60Hz,1P	
	Energy Star Standard	Y/N	Υ	Υ	Y
	Energy Star -Cold Climate	Y/N	Υ	Υ	Υ
		Performar	nce		
	Air Circulation(Max)	ft3 CFM	382	382	394
	Air Circulation(high)	ft3 CFM	341	341	365
Indoor Air-	Air Circulation(medium)	ft3 CFM	294	294	312
Flow	Air Circulation(low)	ft3 CFM	247	247	253
	Indoor Sound Pressure(Max/H/M/L/Quiet)	dB (A)	42/39/37/35/32	42/39/37/35/32	42/39/37/35/32
	Model		KD09060033	KD09060033	KD09060033
ndoor Fan	Qty		1	1	1
Motor	Output	W[HP]	25[1/30]	25[1/30]	25[1/30]
	Speed(Hi/Med/Lo)	r/min	25[1/30]	1101/938/800	1154/992/800
		DIMENSIONS &	WEIGHT		
	Dimension (WxHxD)	inches 1/8ths	33 7/8 ×11 2/8 ×8 4/8	33 7/8 ×11 2/8 ×8 4/8	33 7/8 ×11 2/8 ×8 4/
	Differsion (WXAXD)	mm	860×285×216	860×285×216	860×285×216
	Packing(LxHxW)	inches 1/8ths	36 5/8 ×15 ×11 2/8	36 5/8 ×15 ×11 2/8	36 5/8 ×15 ×11 2/8
	Facking(LXTXVV)	mm	930×380×285	930×380×285	930×380×285
Indoor Unit	Not Weight	lbs	22.1	22.1	22.1
	Net Weight	kg	10	10	10
		·	26.5	26.5	26.5
	Chinais Matth	lbs	20.5		
	Shipping Weight	kg	12	12	12
	Shipping Weight Stack height (Stack Limit) Indoor Unit				

18-24k BTU Wall Mounted Units

	FAC Indoor Model		FAHFW18A3D	FAHFW24A3D
	Power Supply	V/ph/Hz		•
	Energy Star Standard	Y/N	Υ	Υ
	Energy Star -Cold Climate	Y/N	Υ	Υ
		Performa	nce	
	Air Circulation(Max)	ft3 CFM	647	706
	Air Circulation(high)	ft3 CFM	588	647
Indoor AirFlow	Air Circulation(medium)	ft3 CFM	482	559
1114001 7111 1011	Air Circulation(low)	ft3 CFM	382	441
	Indoor Sound Pressure(Max/H/M/L/Quiet)	dB (A)	48/45/41/39/36	50/48/43/41/39
	Model		ZWK465A00410	K1B310497
Indoor Fan	Qty		1	1
Motor	Output	W[HP]	35[1/21]	35[1/21]
	Speed(Hi/Med/Lo)	r/min	1100/960/800	1200/1040/880
	D	IMENSIONS &	WEIGHT	
	Dimension (WxHxD)	inches	45 2/8 ×13 2/8 ×10 1/8	45 2/8 ×13 2/8 ×10 1/8
	Dimension (WXHXD)	mm	1148×336×256	1148×336×256
	Decking(LyLlyAA)	inches	47 7/8 ×16 1/8 ×13	47 7/8 ×16 1/8 ×13
Indoor Unit	Packing(LxHxW)	mm	1215×410×330	1215×410×330
indoor Unit	Non Waining	lbs	34.2	34.2
	Net Weight	kg	15.5	15.5
	Chinning Weight	lbs	39.7	39.7
	Shipping Weight	kg	18	18
	Stack height (Stack Limit) Indoor Unit		8	8
	A2L Sensor	Y/N	Optional	Optional
		Figure 2	04	

9-12k BTU Cassette

	FAC Indoor Model		FPHFC09A3D	FPHFC12A3D
Power Supply Energy Star Standard		V/ph/Hz	208-230/1/60	208-230/1/60
		Y/N	Υ	Υ
Energy Star -Cold Climate		Y/N	Y	Y
	Air Circulation(Max)	ft3 CFM	341	341
	Air Circulation(high)	ft3 CFM	341	341
Indoor AirFlow	Air Circulation(medium)	ft3 CFM	294	294
IIIdoor Airi tow	Air Circulation(low)	ft3 CFM	235	235
	Indoor Sound Pressure(Max/H/M/L/Quiet)	dB (A)	52	52
	Model		ZW465B500021	ZW465B500021
	Qty		1	1
Indoor Fan Motor	Output	W[HP]	57[1/13]	57[1/13]
	Capacitor	μF	NA	NA
	Speed(Hi/Med/Lo)	r/min	700/600/500	700/600/500
Electrical	communication wire size and type		4 x 14 AWG stranded THHN	4 x 14 AWG stranded TH
	Refrigerant		R454B	R454B
Refrigeration	Evaporator material		Hydrophilic aluminium fin & Copper tube	Hydrophilic aluminium fi Copper tube
	Liquid Pipe	inch	1/4	1/4
	Gas Pipe	inch	3/8	3/8
	Gas Pipe DIMENSIONS		3/8	3/8
	DIMENSIONS		3/8 22-1/2 ×8-1/2×22-1/2	3/8 22-1/2 ×8-1/2×22-1/2
		& WEIGHT		
Indoor Unit	DIMENSIONS Dimension (WxHxD)	& WEIGHT inches	22-1/2 ×8-1/2×22-1/2	22-1/2 ×8-1/2×22-1/2
Indoor Unit	DIMENSIONS	& WEIGHT inches	22-1/2 ×8-1/2×22-1/2 570×215×570	22-1/2 ×8-1/2×22-1/2 570×215×570
Indoor Unit	DIMENSIONS Dimension (WxHxD) Packing(LxWxH)	& WEIGHT inches mm inches	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2
Indoor Unit	DIMENSIONS Dimension (WxHxD)	& WEIGHT inches mm inches mm	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292
Indoor Unit	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight	& WEIGHT inches mm inches mm lbs	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2
Indoor Unit	DIMENSIONS Dimension (WxHxD) Packing(LxWxH)	& WEIGHT inches mm inches mm lbs kg	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5
Indoor Unit	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight	inches mm inches mm lbs kg lbs	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8
Indoor Unit	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight	inches mm inches mm lbs kg lbs kg	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/ 730×668×292 34.2 15.5 40.8 18.5
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight	inches mm inches mm lbs kg lbs kg inches	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620
Indoor Unit Panel (Grille)	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight Dimension (WxHxD)	inches mm inches mm lbs kg lbs kg inches mm	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight Dimension (WxHxD) Packing(LxWxH)	inches mm inches mm lbs kg lbs kg inches mm inches	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight Dimension (WxHxD)	inches mm inches mm lbs kg lbs kg inches mm inches mm	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/ 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Dimension (WxHxD) Packing(LxWxH) Net Weight	inches mm inches mm lbs kg lbs kg inches mm inches	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/ 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Shipping Weight Dimension (WxHxD) Packing(LxWxH)	inches mm inches mm lbs kg lbs kg inches mm inches mm inches kg	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7 2.6	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/ 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7 2.6
	DIMENSIONS Dimension (WxHxD) Packing(LxWxH) Net Weight Dimension (WxHxD) Packing(LxWxH) Net Weight	inches mm inches mm lbs kg lbs kg inches mm inches mm inches kg	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7 2.6 9.9	22-1/2 ×8-1/2×22-1/2 570×215×570 28-3/4 ×26-1/4×11-1/2 730×668×292 34.2 15.5 40.8 18.5 24-3/8×1-5/8×24-3/8 620×40×620 27-1/8×26-3/4 ×4-1/2 690×680×115 5.7 2.6 9.9

18-24k BTU Cassette

F.A	C Indoor Model		FPHFC18A3D	FPHFC24A3D
	Power Supply	V/ph/Hz	208-230/1/60	208-230/1/60
Energy Star Standard Energy Star -Cold Climate		Y/N	Υ	Υ
		Y/N	Υ	Y
	Air Circulation(Max)	ft3 CFM	643	706
	Air Circulation(high)	ft3 CFM	643	706
Indoor AirFlow	Air Circulation(medium)	ft3 CFM	554	588
	Air Circulation(low)	ft3 CFM	465	494
	Indoor Sound Pressure(Max//H/M/L/ Quiet)	dB (A)	50	53
	Model		ZW511B500061	ZW511B500061
	Qty		1	1
Indoor Fan Motor	Output	W[HP]	75[1/10]	75[1/10]
	Capacitor	μF	NA	NA
	Speed(Hi/Med/Lo)	r/min	420/3810/320	470/400/340
Electrical	communication wire size and type		4 x 14 AWG stranded THHN	4 x 14 AWG stranded THF
	Refrigerant		R454B	R454B
Refrigeration	Evaporator material		Hydrophilic aluminium fin & Copper tube	Hydrophilic aluminium fin Copper tube
	Liquid Pipe	inch	1/4	3/8
	Gas Pipe	inch	1/2	5/8
	DIMEN	NSIONS & WEIGHT		
	Dimension (WxHxD)	inches	33-1/8 ×9-1/4 ×33-1/8	33-1/8 ×9-1/4 ×33-1/8
		mm	840×236×840	840×236×840
	Packing(LxWxH)	inches	37-3/8 ×12-5/8 ×37-3/8	37-3/8 ×12-5/8 ×37-3/8
Indoor Unit		mm	950×320×950	950×320×950
	Not Weight	lbs	52.9	52.9
	Net Weight	kg	24.0	24.0
	Shipping Weight	lbs	63.9	63.9
	Shipping Weight	kg	29.0	29.0
	Dimension (WxHxD)	inches	37-3/8×2×37-3/8	37-3/8×2×37-3/8
		mm	950×50×950	950×50×950
	Packing(LxWxH)	inches	40-1/8×39-3/8×4-1/8	40-1/8×39-3/8×4-1/8
Panel (Grille)	I doking(EATTAIT)	mm	1020×1000×105	1020×1000×105
r affet (Offitte)			14.3	14.3
r affet (Office)	Net Weight	lbs	14.3	14.0
r anet (or itte)	Net Weight	kg	6.5	6.5
r anet (or itte)	-		6.5 19.8	6.5 19.8
Tallet (Office)	Net Weight Shipping Weight	kg lbs kg	6.5	6.5
ondensate pump lift	-	kg lbs	6.5 19.8	6.5 19.8

9-12k BTU Ducted

	FAC Indoor Model		FPHFC09A3D	FPHFC12A3D
	Туре		Ducted	Ducted
	Power Supply	V/ph/Hz	208~230/1/60	208~230/1/60
E	nergy Star Standard	Y/N	Y	Y
Ene	rgy Star -Cold Climate	Y/N	Y	Y
	Air Circulation(Max)	ft3 CFM	324	324
	Air Circulation(high)	ft3 CFM	324	324
	Air Circulation(medium)	ft3 CFM	294	294
	Air Circulation(low)	ft3 CFM	235	235
Indoor AirFlow	Indoor Sound Pressure(Max/H/M/L/Quiet)	dB (A)	57	57
	500 (; 1100)	Rated with filter	0.2	0.2
	ESP (in-H20)	Range with filter	0-0.12	0-0.12
	Model		TWZ65-S01	TWZ65-S01
	Qty		1	1
Indoor Fan Motor	Output	W[HP]	37[1/20]	37[1/20]
	Capacitor	μF	NA	NA
	Speed(Hi/Med/Lo)	r/min	1110/1000/800	1110/1000/800
Electrical	Communication wire size and type	No. x AWG	4 x 14 AWG Stranded THHN	4 x 14 AWG Stranded T
Refrigeration	Evaporator material		Hydrophilic aluminium fin & Copper tube	Hydrophilic aluminium Copper tube
J. T.	Liquid Pipe	inch	1/4	1/4
	Gas Pipe	inch	3/8	3/8
	· ·	IS & WEIGHT		
	Dimension (WxHxD)	inches	35-7/8 ×7-1/2×17-5/8	35-7/8 ×7-1/2×17-5,
	Difficultion (WXTIXD)	mm	910×190×447	910×190×447
	Packing(LxWxH)	inches	42-1/2×22-1/4×11-1/4	42-1/2×22-1/4 ×11-1
Indoor Unit		mm	1080×565×285	1080×565×285
	Not Weight	lbs	44.1	44.1
	Net Weight	kg	20.0	20.0
	Chinning Weight	lbs	51.8	51.8
	Shipping Weight	kg	23.5	23.5
	101.6	Y/N	Υ	Υ
	A2L Sensor	1711	·	•

18-24k BTU Ducted

	FAC Indoor Model		FPHFC18A3D	FPHFC24A3D
	Туре		Ducted	Ducted
	Power Supply	V/ph/Hz	208~230/1/60	208~230/1/60
E	nergy Star Standard	Y/N	Y	Y
Ene	ergy Star -Cold Climate	Y/N	Y	Y
	Air Circulation(Max)	ft3 CFM	530	735
	Air Circulation(high)	ft3 CFM	530	735
	Air Circulation(medium)	ft3 CFM	471	647
	Air Circulation(low)	ft3 CFM	412	559
Indoor AirFlow	Indoor Sound Pressure(Max/H/M/L/Quiet)	dB (A)	60	68
	ESP (in-H20)	Rated with filter	0.2	0.6
	LSI (IIPII20)	Range with filter	0-0.56	0-0.66
	Model		ZWF-100H	ZWF-210H
	Qty		1	1
Indoor Fan Motor	Output	W[HP]	62[1/12]	107[1/7]
	Capacitor	μF	NA	NA
	Speed(Hi/Med/Lo)	r/min	920/820/720	1400/1250/1100
Electrical	communication wire size and type	No.x AWG	4 x 14 AWG Stranded THHN	4 x 14 AWG Stranded THHN
Refrigeration	Evaporator material		Hydrophilic alumini- um fin & Copper tube	Hydrophilic alumini- um fin & Copper tube
rten igeration	Liquid Pipe	inch	1/4	3/8
	Gas Pipe	inch	1/2	5/8
	DIMENSIONS &	WEIGHT		
	Dimension (WxHxD)	inches	31-1/2×9-5/8×27-1/2	43-1/4×9-5/8×27-1/2
		mm	800×245×700	1100×245×700
	Packing(LxWxH)	inches	38-5/8×12-3/8×31- 7/8	50-3/8×12-3/8×31- 7/8
Indoor Unit	3, ,	mm	980×315×810	1280×315×810
		lbs	58.4	73.9
	Net Weight	kg	26.5	33.5
	61	lbs	58.4	73.9
	Shipping Weight	kg	31	38.5
	A2L Sensor	Y/N	Y	Υ
Ма	x Condensate pump lift	ft	2.3	2.3
	Figure 2	08		

18-24k BTU AHU

	Indoor Model Number		FPHFA18A3D	FPHFA24A3D
	Rated Capacity at 95°F	Btu/h	18000	24000
Cooling	Current	A	7.1	9.3
Cooting	Operating temperature range Indoor	°F	61-86	61-86
	Operating temperature range indoor	°C	16-30	16-30
	Rated Capacity at 47°F	Btu/h	18000	24000
Heating	Current	A	6.5	8.7
neating	Operating temperature range Indoor	°F	61-86	61-86
	Operating temperature range indoor	°C	16-30	16-30
	Thermostat type		wired	wired
Electrical	Communication wire size and type		4 x 14 AWG stranded THHN	4 x 14 AWG stranded THHN
	Thermostat Wire		6-10 x 18 AWG*	6-10 x 18 AWG*
	Rated	m3/h	1360	1360
	Ralea	CFM	800	800
	W: M	m3/h	900-1400	900-1400
Indoor AirFlow	Min-Max	CFM	529-823	529-823
		m3/h	900	900
	Ultra low speed	CFM	529	529
	Rated	In.W.C.(Pa)	0.58(145Pa)	0.58(145Pa)
ESP	Range	In.W.C.(Pa)	0-0.8(200Pa)	0-0.8(200Pa)
Indoor N	loise (Sound Pressure)	dB(A)	51	51
	Qty		1	1
	Model		ZW702B500035	ZW702B500035
Indoor fan motor (DC inverter)	output	W[HP]	373[1/2]	373[1/2]
(DC IIIverter)	RLA	А	2.6	2.6
	Speed	r/min	350~1400	350~1400
	Number of Rows		6	6
		mm	21	21
	Tube Pitch(a)	in	0.827	0.827
		mm	13.6	13.6
	Row Pitch(b)	in	0.535	0.535
		mm	1.4	1.4
Indoor Coil	Fin Spacing	Fins Per in	18	18
	Fin Type		Hydrophilic aluminium	Hydrophilic aluminium
	Tube Outside Diameter and Type	mm	Φ7,innergroove aluminium tube	Φ7,innergroove aluminium tube
	Coil Dimension(WxHxD)	mm	2×(405×420×40.8)	2×(405×420×40.8)
		in	2×(16×16-1/2×1-5/8)	2×(16×16-1/2×1-5/8)
-	Number of Circuits		6	6
Indoor Metering Device		1	EEV	EEV
<u> </u>	11 . 12:1	KW	5/10	5/10
Indoor Unit	Heater Kit (optional)	\text{\text{NVV}}	3/10	3/10

Allowable Configurations (Non AHU 27k BTU)

Notes:

1. Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)

95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)

Heating capacity is based on 70°F DB(21°C DB)/60°F WB (15.6°C WB) (Indoor temperature)

47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)

- 2. The totally Capacity of connected indoor units is up to 24k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the value for connecting with the following indoor units
- 7K Btu/h Class:wall mount
- 9K Btu/h Class:wall mount or Cassette or duct
- 12K Btu/h Class:wall mount or Cassette or duct

Combination of	FPHMR18	BA3D Cooling	Capacity													
Indoor Units	Α	В	С	D	Total Cap	acity (Btu/h)		Power Inpu	ıt(W)		(A)	SEER	EER			
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	МАХ	NOM	MIN	MAX	1		w/w			
07+07	7000	7000	N/A	N/A	14000	7000	17100	1070	500	1990	5.0	21.0	3.8			
07+09	7000	9000	N/A	N/A	16000	7000	19600	1220	500	2600	5.7	21.8	3.8			
07+12	6500	11500	N/A	N/A	18000	7000	22000	1350	500	2610	6.3	22.0	3.9			
09+09	9000	9000	N/A	N/A	18000	9000	22000	1350	510	2610	6.3	22.0	3.9			
09+12	8500	9500	N/A	N/A	18000	9000	22000	1350	510	2610	6.3	22.0	3.9			
12+12	9000	9000	N/A	N/A	18000	12000	22000	1350	520	2610	6.3	22.0	3.9			
	•							•	•							
Combination of	FPHMR18	BA3D Heating	Capacity													
Indoor Units	Α	В	С	T	1			D I	+(D+/b)		(A) HSPF (
	1.7	15	•	D	Total Cap	acity (Btu/h)		Power Inpu	IL(DLU/II)		(A)	ПЭРГ	COP			
	Btu/h	Btu/h	Btu/h	D Btu/h	NOM	MIN	MAX	NOM NOM	MIN	MAX	Į (A)	ПЭРГ	COP W/W			
07+07	+	+	+	+			MAX 23000	· ·	, , , ,	MAX 3200	6.0	9.6				
07+07 07+09	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	+	NOM	MIN				W/W			
	Btu/h 7000	Btu/h 7000	Btu/h N/A	Btu/h N/A	NOM 14000	MIN 11200	23000	NOM 1300	MIN 430	3200	6.0	9.6	W/W 3.2			
07+09	Btu/h 7000 7000	Btu/h 7000 9000	Btu/h N/A N/A	Btu/h N/A N/A	NOM 14000 16000	MIN 11200 11200	23000 27000	NOM 1300 1320	MIN 430 430	3200 3300	6.0	9.6	W/W 3.2 3.6			
07+09 07+12	Btu/h 7000 7000 6500	Btu/h 7000 9000 11500	Btu/h N/A N/A N/A	Btu/h N/A N/A N/A	NOM 14000 16000 18000	MIN 11200 11200 14500	23000 27000 30000	NOM 1300 1320 1380	MIN 430 430 430	3200 3300 3381	6.0 6.1 6.4	9.6 9.8 10.0	W/W 3.2 3.6 3.8			

Allowable Configurations (Non Ahu 27K BTU)

Notes:

- 1. Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)
 95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)
 Heating capacity is based on 70°F DB(21°C DB)/60°F WB (15.6°C WB) (Indoor temperature)
 - 47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)
- 2. The totally Capacity of connected indoor units is up to 36k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the value for connecting with the following indoor units
 - 7K Btu/h Class:wall mount
 - 9K Btu/h Class:wall mount or Cassette or duct
 - 12K Btu/h Class:wall mount or Cassette or duct
 - 18K Btu/h Class:wall mount or Cassette or duct

Combination of	FPHMR2	7A3D Coolin	g Capacity										
Indoor Units	Α	В	С	D	Total Cap	acity (Btu/h	n)	Power In	put(W)		(A)	SEER	EER
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX	1		W/W
07+18	7000	18000	N/A	N/A	25000	7000	29000	2010	820	2800	8.9	22.2	3.7
09+18	9000	18000	N/A	N/A	27000	9000	31000	2100	850	3000	9.3	23.0	3.8
12+12	12000	12000	N/A	N/A	24000	12000	28000	1920	880	2700	8.5	21.8	3.7
12+18	10800	16200	N/A	N/A	27000	12000	31000	2100	880	3000	9.3	23.0	3.8
18+18	13500	13500	N/A	N/A	27000	18000	31300	2100	910	3000	9.3	23.0	3.8
07+07+07	7000	7000	7000	N/A	21000	7000	25000	1720	820	2330	7.6	20.5	3.6
07+07+09	7000	7000	9000	N/A	23000	7000	27000	1870	820	2570	8.3	21.3	3.6
07+07+12	7000	7000	12000	N/A	26000	7000	30000	2070	820	2890	9.2	22.6	3.7
07+07+18	5900	5900	15200	N/A	27000	7000	31000	2100	820	3000	9.3	23.0	3.8
07+09+09	7000	9000	9000	N/A	25000	7000	29000	2030	820	2800	9.0	22.2	3.6
07+09+12	6800	8600	11600	N/A	27000	7000	31000	2100	820	3000	9.3	23.0	3.8
07+09+18	5600	7100	14300	N/A	27000	7000	31000	2100	820	3000	9.3	23.0	3.8
07+12+12	6200	10400	10400	N/A	27000	7000	31000	2100	820	3000	9.3	23.0	3.8
07+12+18	5200	8800	13000	N/A	27000	7000	31000	2100	820	3000	9.3	23.0	3.8
09+09+09	9000	9000	9000	N/A	27000	9000	31000	2100	850	3000	9.3	23.0	3.8
09+09+12	8100	8100	10800	N/A	27000	9000	31000	2100	850	3000	9.3	23.0	3.8
09+09+18	6750	6750	13500	N/A	27000	9000	31000	2100	850	3000	9.3	23.0	3.8
09+12+12	7400	9800	9800	N/A	27000	9000	31000	2100	850	3000	9.3	23.0	3.8
12+12+12	9000	9000	9000	N/A	27000	12000	31000	2100	880	3000	9.3	23.0	3.8

Combination of	FPHMR27/	A3D Heating	g Capacity										
Indoor Units	Α	В	С	D	Total Capa	city (Btu/h)		Power Inpu	t(Btu/h)		(A)	HSPF	СОР
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX]		w/w
07+18	7000	18000	N/A	N/A	25000	16000	40800	2130	1270	4200	9.7	9.7	3.4
09+18	9000	18000	N/A	N/A	27000	20100	44000	2200	1300	4500	10.0	10.0	3.6
12+12	12000	12000	N/A	N/A	24000	24000	39000	2050	1330	4050	9.3	9.5	3.4
12+18	10800	16200	N/A	N/A	27000	24000	44000	2200	1330	4500	10.0	10.0	3.6
18+18	13500	13500	N/A	N/A	27000	26000	44000	2200	1360	4500	10.0	10.0	3.6
07+07+07	7000	7000	7000	N/A	21000	16000	35000	1860	1270	3500	8.5	8.9	3.3
07+07+09	7000	7000	9000	N/A	23000	16000	38000	1990	1270	3850	9.1	9.3	3.4
07+07+12	7000	7000	12000	N/A	26000	16000	43000	2180	1270	4350	9.9	9.8	3.5
07+07+18	5900	5900	15200	N/A	27000	16000	44000	2200	1270	4500	10.0	10.0	3.6
07+09+09	7000	9000	9000	N/A	25000	16000	41000	2160	1270	4200	9.8	9.7	3.4
07+09+12	6800	8700	11500	N/A	27000	16000	44000	2200	1270	4500	10.0	10.0	3.6

Allowable Configurations (Non Ahu 27K BTU)

Combination of	FPHMR27	A3D Heating	Capacity										'
Indoor Units	Α	В	С	D	Total Capa	city (Btu/h)		Power Inpu	t(Btu/h)		(A)	HSPF	СОР
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX]		W/W
07+09+18	5600	7100	14300	N/A	27000	16000	44000	2200	1270	4500	10.0	10.0	3.6
07+12+12	6000	10500	10500	N/A	27000	16000	44000	2200	1270	4500	10.0	10.0	3.6
07+12+18	5100	8800	13100	N/A	27000	16000	44000	2200	1270	4500	10.0	10.0	3.6
09+09+09	9000	9000	9000	N/A	27000	20100	44000	2200	1300	4500	10.0	10.0	3.6
09+09+12	8100	8100	10800	N/A	27000	20100	44000	2200	1300	4500	10.0	10.0	3.6
09+09+18	6750	6750	13500	N/A	27000	20100	44000	2200	1300	4500	10.0	10.0	3.6
09+12+12	7400	9800	9800	N/A	27000	20100	44000	2200	1300	4500	10.0	10.0	3.6
12+12+12	9000	9000	9000	N/A	27000	24000	44000	2200	1330	4500	10.0	10.0	3.6

Allowable Configurations (Non Ahu 36K BTU)

Notes:

1. Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)

95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)

Heating capacity is based on $70^{\circ}\text{F DB}(21^{\circ}\text{C DB})/60^{\circ}\text{F WB }(15.6^{\circ}\text{C WB})$ (Indoor temperature)

47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)

- 2. The totally Capacity of connected indoor units is up to 48k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the value for connecting with the following indoor units

7K Btu/h Class:wall mount

9K Btu/h Class:wall mount or Cassette or duct

12K Btu/h Class:wall mount or Cassette or duct

18K Btu/h Class:wall mount or Cassette or duct

24K Btu/h Class:wall mount or Cassette or duct

Combination of	FPHMR36	A3D Cooling	Capacity										
Indoor Units	Α	В	С	D	Total Capa	city (Btu/h)		Power Inp	ut(W)		(A)	SEER	EER
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX			w/w
07+24	7000	24000	N/A	N/A	31000	7000	40300	2410	1150	4600	11.0	20.0	3.8
09+24	9000	24000	N/A	N/A	33000	9000	42900	2570	1200	4900	11.7	20.2	3.8
12+18	12000	18000	N/A	N/A	30000	12000	39000	2335	1250	4460	10.7	20.0	3.8
12+24	12000	24000	N/A	N/A	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
18+18	18000	18000	N/A	N/A	36000	18000	46800	2802	1300	5350	12.8	22.0	3.8
18+24	15400	20600	N/A	N/A	36000	18000	46800	2802	1300	5350	12.8	22.0	3.8
07+09+18	7000	9000	18000	N/A	34000	7000	44200	2700	1150	5050	12.3	21.4	3.7
07+09+24	6300	8100	21600	N/A	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+12+12	7000	12000	12000	N/A	31000	7000	40300	2500	1150	4600	11.4	20.5	3.6
07+12+18	6800	11700	17500	N/A	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+12+24	6000	10000	20000	N/A	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+18+24	5200	13000	17800	N/A	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
09+09+12	9000	9000	12000	N/A	30000	9000	39000	2350	1200	4450	10.7	20.2	3.7
09+09+18	9000	9000	18000	N/A	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+24	7700	7700	20600	N/A	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+12+12	9000	12000	12000	N/A	33000	9000	42900	2600	1200	4900	11.9	21.1	3.7
09+12+18	8300	11100	16600	N/A	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+12+24	7200	9600	19200	N/A	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+18+24	6400	12700	16900	N/A	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
12+12+12	12000	12000	12000	N/A	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
12+12+18	10300	10300	15400	N/A	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
12+12+24	9000	9000	18000	N/A	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
12+18+24	8000	12000	16000	N/A	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
07+07+07+07	7000	7000	7000	7000	28000	7000	36400	2200	1150	4150	10.1	20.0	3.7
07+07+07+09	7000	7000	7000	9000	30000	7000	39000	2390	1150	4450	10.9	20.2	3.7
07+07+07+12	7000	7000	7000	12000	33000	7000	42900	2600	1150	4900	11.9	21.1	3.7
07+07+07+18	6500	6500	6500	16500	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+07+24	5600	5600	5600	19200	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+09+09	7000	7000	9000	9000	32000	7000	41600	2520	1150	4750	11.5	20.8	3.7
07+07+09+12	7000	7000	9000	12000	35000	7000	45500	2760	1150	5200	12.6	21.7	3.7
07+07+09+18	6200	6200	7800	15800	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+09+24	5400	5400	6900	18300	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+12+12	6600	6600	11400	11400	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+12+18	5700	5700	9900	14700	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+07+12+24	5000	5000	8600	17400	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8

Allowable Configurations (Non Ahu 36K BTU)

Combination of	FPHMR36	A3D Cooling	Capacity										
Indoor Units	Α	В	c	D	Total Capa	city (Btu/h)		Power Inpu	ıt(W)		(A)	SEER	EER
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	МАХ	NOM	MIN	MAX	1		W/W
07+09+09+09	7000	9000	9000	9000	34000	7000	44200	2700	1150	5050	12.3	21.4	3.7
07+09+09+12	6800	8800	8800	11600	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+09+09+18	5900	7500	7500	15100	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+09+09+24	5100	6600	6600	17700	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+09+12+12	6300	8100	10800	10800	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+09+12+18	5500	7000	9400	14100	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+09+12+24	4900	6200	8300	16600	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+12+12+12	6000	10000	10000	10000	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
07+12+12+18	5200	8800	8800	13200	36000	7000	46800	2802	1150	5350	12.8	22.0	3.8
09+09+09+09	9000	9000	9000	9000	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+09+12	8300	8300	8300	11100	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+09+18	7200	7200	7200	14400	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+09+24	6400	6400	6400	16800	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+12+12	7700	7700	10300	10300	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+12+18	6750	6750	9000	13500	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+09+12+24	6000	6000	8000	16000	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+12+12+12	7200	9600	9600	9600	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
09+12+12+18	6300	8500	8500	12700	36000	9000	46800	2802	1200	5350	12.8	22.0	3.8
12+12+12+12	9000	9000	9000	9000	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
12 12 12 12	7000	7000	7000	7000	00000	12000	1 40000	2002	1200	10000	12.0	22.0	+
12+12+12+18	l annn	l annn	I annn	12000	34000	12000	44800	2802	1250	5350	128	1 22 N	138
12+12+12+18	8000	8000	8000	12000	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
12+12+12+18 Combination of	1			12000	36000	12000	46800	2802	1250	5350	12.8	22.0	3.8
	1	A3D Heating		12000 D	Total	12000	46800	2802 Power	1250	5350	12.8 (A)	22.0 HSPF	3.8 COP
Combination of	FPHMR36A	A3D Heating	Capacity	· · · · · · · · · · · · · · · · · · ·		12000	46800		1250	5350			
Combination of	FPHMR36A	A3D Heating	Capacity	· · · · · · · · · · · · · · · · · · ·	Total Capacity	12000 MIN	46800 MAX	Power Input	1250 MIN	5350 MAX			
Combination of	FPHMR36A	A3D Heating	Capacity C	D	Total Capacity (Btu/h)			Power Input (Btu/h)					СОР
Combination of Indoor Units	FPHMR36/ A Btu/h	A3D Heating B Btu/h	Capacity C Btu/h	D Btu/h	Total Capacity (Btu/h)	MIN	MAX	Power Input (Btu/h)	MIN	MAX	(A)	HSPF	COP W/W
Combination of Indoor Units	FPHMR36A A Btu/h 7000	B Btu/h	Capacity C Btu/h N/A	D Btu/h N/A	Total Capacity (Btu/h) NOM	MIN 7000	MAX 46500	Power Input (Btu/h) NOM	MIN 1900	MAX 4520	(A) 10.8	HSPF 9.1	COP W/W 3.9
Combination of Indoor Units 07+24 09+24	FPHMR36/A Btu/h 7000 9000	B Btu/h 24000 24000	Capacity C Btu/h N/A N/A	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000	MIN 7000 9000	MAX 46500 49500	Power Input (Btu/h) NOM 2325 2475	MIN 1900 1950	MAX 4520 4813	(A) 10.8 11.5	9.1 9.2	COP W/W 3.9 3.9
Combination of Indoor Units 07+24 09+24 12+18	FPHMR36A A Btu/h 7000 9000 12000	Btu/h 24000 24000 18000	Capacity C Btu/h N/A N/A N/A	Btu/h N/A N/A N/A	Total Capacity (Btu/h) NOM 31000 33000	MIN 7000 9000 12000	MAX 46500 49500 45000	Power Input (Btu/h) NOM 2325 2475 2250	MIN 1900 1950 2000	MAX 4520 4813 4375	10.8 11.5 10.4	9.1 9.2 9.0	COP W/W 3.9 3.9 3.9
07+24 09+24 12+18 12+24	FPHMR36/A Btu/h 7000 9000 12000 12000	Btu/h 24000 24000 18000 24000	Capacity C Btu/h N/A N/A N/A N/A	Btu/h N/A N/A N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000	MIN 7000 9000 12000 12000	MAX 46500 49500 45000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700	MIN 1900 1950 2000 2000	MAX 4520 4813 4375 5250	10.8 11.5 10.4 12.5	9.1 9.2 9.0 10.0	COP W/W 3.9 3.9 3.9 3.9
07+24 09+24 12+18 12+24 18+18	FPHMR36/A Btu/h 7000 9000 12000 12000 18000	Btu/h 24000 24000 18000 24000	Capacity C Btu/h N/A N/A N/A N/A N/A	Btu/h N/A N/A N/A N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000	MIN 7000 9000 12000 12000 18000	MAX 46500 49500 45000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700	MIN 1900 1950 2000 2000 2050	MAX 4520 4813 4375 5250 5250	10.8 11.5 10.4 12.5 12.5	9.1 9.2 9.0 10.0	W/W 3.9 3.9 3.9 3.9 3.9
07+24 09+24 12+18 12+24 18+18	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400	Btu/h 24000 24000 18000 24000 18000 20600	Capacity C Btu/h N/A N/A N/A N/A N/A N/A N/A	Btu/h N/A N/A N/A N/A N/A N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 18000	MAX 46500 49500 45000 54000 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700	MIN 1900 1950 2000 2000 2050 2050	MAX 4520 4813 4375 5250 5250 5250	10.8 11.5 10.4 12.5 12.5 12.5	9.1 9.2 9.0 10.0 10.0	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400 7000	Btu/h 24000 24000 18000 24000 18000 20600 9000	Capacity C Btu/h N/A N/A N/A N/A N/A N/A 18000	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000 36000 34000	MIN 7000 9000 12000 12000 18000 7000	MAX 46500 49500 45000 54000 54000 51000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600	MIN 1900 1950 2000 2000 2050 2050 1900	MAX 4520 4813 4375 5250 5250 5250 4958	10.8 11.5 10.4 12.5 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300	Btu/h 24000 24000 18000 24000 18000 20600 9000 8100	Capacity C Btu/h N/A N/A N/A N/A N/A N/A N/A 21600	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000 36000 34000 34000	MIN 7000 9000 12000 12000 18000 18000 7000	MAX 46500 49500 45000 54000 54000 51000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700	MIN 1900 1950 2000 2000 2050 2050 1900 1900	MAX 4520 4813 4375 5250 5250 5250 4958 5250	10.8 11.5 10.4 12.5 12.5 12.5 12.1 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000	Btu/h 24000 24000 18000 24000 18000 20600 9000 8100 12000	Capacity C Btu/h N/A N/A N/A N/A N/A N/A 18000 21600 12000	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000 36000 34000 36000 31000	MIN 7000 9000 12000 12000 18000 7000 7000	MAX 46500 49500 45000 54000 54000 51000 54000 46500	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700 2400	MIN 1900 1950 2000 2000 2050 1900 1900 1900	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4958	10.8 11.5 10.4 12.5 12.5 12.5 12.1 12.5 11.1	9.1 9.2 9.0 10.0 10.0 9.7 10.0 9.3	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12	FPHMR36A A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000 6800	Btu/h 24000 24000 18000 24000 18000 20600 9000 8100 12000 11670	Capacity C Btu/h N/A N/A N/A N/A N/A N/A 18000 21600 12000 17530	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000 36000 34000 34000 31000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000	MAX 46500 49500 45000 54000 54000 51000 54000 46500 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700 2400 2700	MIN 1900 1950 2000 2050 2050 1900 1900 1900	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250	10.8 11.5 10.4 12.5 12.5 12.5 12.1 12.5 11.1 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12 07+12+18	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 7000 6300 7000 6800 5860	Btu/h 24000 24000 18000 24000 18000 24000 18000 21000 110000 11670 10040	Capacity C Btu/h N/A N/A N/A N/A N/A N/A 18000 21600 12000 17530 20100	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000 36000 36000 31000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000 7000	MAX 46500 49500 45000 54000 54000 51000 54000 46500 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700 2400 2700 2700 2700	MIN 1900 1950 2000 2000 2050 1900 1900 1900 1900	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250 5250	10.8 11.5 10.4 12.5 12.5 12.1 12.5 11.1 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3 10.0	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12 07+12+18 07+12+24	FPHMR36A A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000 6800 5860 5140	Btu/h 24000 24000 18000 24000 18000 20600 9000 8100 12000 11670 10040 13200	Capacity C Btu/h N/A N/A N/A N/A N/A 18000 21600 12000 17530 20100 17660	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000 36000 36000 31000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000 7000 7000	MAX 46500 49500 45000 54000 54000 54000 54000 54000 54000 54000 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700 2400 2700 2700 2700 2700	MIN 1900 1950 2000 2050 2050 1900 1900 1900 1900 1900	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250 5250 5250 5250	10.8 11.5 10.4 12.5 12.5 12.5 12.1 12.5 11.1 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3 10.0 10.0	3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.8 3.9 3.8 3.9 3.9
07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12 07+12+18 07+12+24 07+18+24 09+09+12	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000 6800 5860 5140 9000	Btu/h 24000 24000 18000 24000 18000 24000 18000 20600 9000 8100 12000 11670 10040 13200 9000	Capacity C Btu/h N/A N/A N/A N/A N/A 18000 21600 12000 17530 20100 17660 12000	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000 36000 36000 36000 36000 36000 36000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000 7000 7000	MAX 46500 49500 45000 54000 54000 54000 54000 54000 54000 54000 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2400 2700 2700 2700 270	MIN 1900 1950 2000 2000 2050 1900 1900 1900 1900 1900 1950	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250 5250 5250 4375	10.8 11.5 10.4 12.5 12.5 12.1 12.5 11.1 12.5 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3 10.0 10.0 10.0 9.2	3.9 3.9 3.9 3.9 3.9 3.9 3.9 3.8 3.9 3.8 3.9 3.9 3.9
Combination of Indoor Units 07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12 07+12+18 07+12+24 07+18+24 09+09+18	FPHMR36A A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000 6800 5860 5140 9000	Btu/h 24000 24000 18000 24000 18000 20600 9000 8100 12000 11670 10040 13200 9000	Capacity C Btu/h N/A N/A N/A N/A N/A 18000 21600 12000 17530 20100 17660 12000 18000	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 36000 36000 36000 36000 36000 36000 36000 36000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000 7000 9000 9000	MAX 46500 49500 45000 54000 54000 54000 54000 54000 54000 54000 54000 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2600 2700 2700 2700 270	MIN 1900 1950 2000 2050 2050 1900 1900 1900 1900 1900 1950 1950	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250 5250 5250 5250 5250	10.8 11.5 10.4 12.5 12.5 12.1 12.5 11.1 12.5 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3 10.0 10.0 10.0 10.0	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.8 3.9 3.8 3.9 3.9
Combination of Indoor Units 07+24 09+24 12+18 12+24 18+18 18+24 07+09+18 07+09+24 07+12+12 07+12+18 07+12+24 07+12+24 09+09+12 09+09+18 09+09+24	FPHMR36/A Btu/h 7000 9000 12000 12000 18000 15400 7000 6300 7000 6800 5860 5140 9000 9000 7700	Btu/h 24000 24000 18000 24000 18000 24000 18000 20600 9000 8100 11670 10040 13200 9000 9000 7700	Capacity C Btu/h N/A N/A N/A N/A N/A 18000 21600 17530 20100 17660 12000 18000 20600	D Btu/h N/A N/A	Total Capacity (Btu/h) NOM 31000 33000 30000 36000 36000 36000 36000 36000 36000 36000 36000 36000 36000 36000	MIN 7000 9000 12000 12000 18000 7000 7000 7000 7000 7000 9000 9000	MAX 46500 47500 45000 54000 54000 54000 54000 54000 54000 54000 54000 54000 54000 54000	Power Input (Btu/h) NOM 2325 2475 2250 2700 2700 2700 2400 2700 2700 2700 270	MIN 1900 1950 2000 2000 2050 1900 1900 1900 1900 1950 1950 1950	MAX 4520 4813 4375 5250 5250 5250 4958 5250 4521 5250 5250 5250 4375 5250 5250	10.8 11.5 10.4 12.5 12.5 12.5 12.1 12.5 11.1 12.5 12.5	9.1 9.2 9.0 10.0 10.0 10.0 9.7 10.0 9.3 10.0 10.0 10.0 9.2 10.0	COP W/W 3.9 3.9 3.9 3.9 3.9 3.9 3.8 3.9 3.8 3.9 3.9

Allowable Configurations (Non Ahu 36K BTU)

Combination of	FPHMR36	A3D Heating	Capacity										-
Indoor Units	A	В	С	D	Total Capacity (Btu/h)			Power Input (Btu/h)			(A)	HSPF	СОР
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX			W/W
09+18+24	6350	12700	16950	N/A	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
12+12+12	12000	12000	12000	N/A	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9
12+12+18	10300	10300	15400	N/A	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9
12+12+24	9000	9000	18000	N/A	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9
12+18+24	8000	12000	16000	N/A	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9
07+07+07+07	7000	7000	7000	7000	28000	7000	42000	2100	1900	4083	9.7	8.9	3.9
07+07+07+09	7000	7000	7000	9000	30000	7000	45000	2270	1900	4375	10.5	9.2	3.9
07+07+07+12	7000	7000	7000	12000	33000	7000	49500	2500	1900	4813	11.6	9.6	3.9
07+07+07+18	6450	6450	6450	16650	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+07+24	5600	5600	5600	19200	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+09+09	7000	7000	9000	9000	32000	7000	48000	2400	1900	4667	11.1	9.5	3.9
07+07+09+12	7000	7000	9000	12000	35000	7000	52500	2670	1900	5104	12.4	9.9	3.8
07+07+09+18	6150	6150	7900	15800	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+09+24	5350	5350	6900	18400	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+12+12	6650	6650	11350	11350	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+12+18	5700	5700	9800	14800	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+07+12+24	5040	5040	8640	17280	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+09+09	7000	9000	9000	9000	34000	7000	51000	2590	1900	4958	12.0	9.7	3.9
07+09+09+12	6800	8760	8760	11680	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+09+18	5860	7540	7540	15060	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+09+24	5100	6600	6600	17700	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+12+12	6300	8100	10800	10800	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+12+18	5450	7000	9400	14150	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+09+12+24	4850	6200	8350	16600	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+12+12+12	6000	10000	10000	10000	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
07+12+12+18	5150	8800	8800	13250	36000	7000	54000	2700	1900	5250	12.5	10.0	3.9
09+09+09+09	9000	9000	9000	9000	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+09+12	8300	8300	8300	11100	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+09+18	7200	7200	7200	14400	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+09+24	6350	6350	6350	16950	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+12+12	7700	7700	10300	10300	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+12+18	6750	6750	9000	13500	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+09+12+24	6000	6000	8000	16000	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+12+12+12	7200	9600	9600	9600	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
09+12+12+18	6300	8500	8500	12700	36000	9000	54000	2700	1950	5250	12.5	10.0	3.9
12+12+12+12	9000	9000	9000	9000	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9
12+12+12+18	8000	8000	8000	12000	36000	12000	54000	2700	2000	5250	12.5	10.0	3.9

Allowable Configurations (Non Ahu 42K BTU)

Notes

- 1. Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)
 - 95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)
 - Heating capacity is based on 70°F DB(21°C DB)/60°F WB (15.6°C WB) (Indoor temperature)
 - 47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)
- 2. The totally Capacity of connected indoor units is up to 54k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the value for connecting with the following indoor units
 - 7K Btu/h Class:wall mount
 - 9K Btu/h Class:wall mount or Cassette or duct
 - 12K Btu/h Class:wall mount or Cassette or duct
 - 18K Btu/h Class:wall mount or Cassette or duct
 - 24K Btu/h Class:wall mount or Cassette or duct

Combination of	FPHMR42	A3D Cooling	Capacity			,							
Indoor Units	Α	В	С	D	E	Total Capa	acity (Btu/	/h)	Power	Input(Btu	ı/h)	(A)	SEER
	Btu/h	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX]	
12+24	12000	24000	N/A	N/A	N/A	36000	12000	46800	3000	1270	5400	13.3	20.0
18+18	18000	18000	N/A	N/A	N/A	36000	18000	46800	3000	1340	5400	13.3	20.0
18+24	18000	24000	N/A	N/A	N/A	42000	18000	54600	3500	1340	6300	15.5	22.0
24+24	21000	21000	N/A	N/A	N/A	42000	24000	54600	3500	1410	6300	15.5	22.0
7+18+24	6000	15400	20600	N/A	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
9+18+24	7400	14800	19800	N/A	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
12+18+24	9300	14000	18700	N/A	N/A	42000	12000	54600	3500	1270	6300	15.5	22.0
7+7+7+7	7000	7000	7000	7000	N/A	28000	7000	36400	2390	1130	4200	10.6	20.0
7+7+7+9	7000	7000	7000	9000	N/A	30000	7000	39000	2530	1130	4500	11.2	20.0
7+7+7+12	7000	7000	7000	12000	N/A	33000	7000	42900	2770	1130	4950	12.3	20.0
7+7+7+18	7000	7000	7000	18000	N/A	39000	7000	50700	3290	1130	5850	14.6	21.3
7+7+7+24	6530	6530	6530	22410	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+9+9	7000	7000	9000	9000	N/A	32000	7000	41600	2690	1130	4800	11.9	20.0
7+7+9+12	7000	7000	9000	12000	N/A	35000	7000	45500	2960	1130	5250	13.1	20.2
7+7+9+18	7000	7000	9000	18000	N/A	41000	7000	53300	3500	1130	6150	15.5	21.8
7+7+9+24	6250	6250	8050	21450	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+12+12	7000	7000	12000	12000	N/A	38000	7000	49400	3210	1130	5700	14.2	21.0
7+7+12+18	6680	6680	11450	17190	N/A	42000	7000	54600	3530	1130	6300	15.7	22.0
7+7+12+24	5880	5880	10080	20160	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+18+24	5250	5250	13500	18000	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+9	7000	9000	9000	9000	N/A	34000	7000	44200	2890	1130	5100	12.8	20.0
7+9+9+12	7000	9000	9000	12000	N/A	37000	7000	48100	3130	1130	5550	13.9	20.7
7+9+9+18	6840	8800	8800	17560	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+24	6000	7700	7700	20600	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+12+12	7000	9000	12000	12000	N/A	40000	7000	52000	3400	1130	6000	15.1	21.5
7+9+12+18	6400	8200	11000	16400	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+12+24	5650	7300	9700	19350	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+18+24	5100	6500	13000	17400	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+12+12+12	6900	11700	11700	11700	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+12+12+18	6000	10300	10300	15400	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+12+12+24	5300	9200	9200	18300	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
7+12+18+24	4800	8300	12400	16500	N/A	42000	7000	54600	3500	1130	6300	15.5	22.0
9+9+9+9	9000	9000	9000	9000	N/A	36000	9000	46800	3060	1200	5400	13.6	20.5

Allowable Configurations (Non Ahu 42K BTU)

Combination of	FPHMR42	A3D Cooling	Capacity			,							
Indoor Units	A	В	c	D	E	Total Capa	city (Btu/	/h)	Power	Input(Btu	ı/h)	(A)	SEER
	Btu/h	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX		
9+9+9+12	9000	9000	9000	12000	N/A	39000	9000	50700	3300	1200	5850	14.6	21.3
9+9+9+18	8400	8400	8400	16800	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+9+24	7400	7400	7400	19800	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+12+12	9000	9000	12000	12000	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+12+18	7900	7900	10500	15700	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+12+24	7000	7000	9300	18700	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+18+24	6300	6300	12600	16800	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+12+12+12	8400	11200	11200	11200	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+12+12+18	7400	9900	9900	14800	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+12+12+24	6620	8840	8840	17700	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
9+12+18+24	6000	8000	12000	16000	N/A	42000	9000	54600	3500	1200	6300	15.5	22.0
12+12+12+12	10500	10500	10500	10500	N/A	42000	12000	54600	3500	1270	6300	15.5	22.0
12+12+12+18	9300	9300	9300	14100	N/A	42000	12000	54600	3500	1270	6300	15.5	22.0
7+7+7+7+7	7000	7000	7000	7000	7000	35000	7000	45500	3010	1130	5250	13.4	20.2
7+7+7+7+9	7000	7000	7000	7000	9000	37000	7000	48100	3120	1130	5550	13.8	20.7
7+7+7+7+12	7000	7000	7000	7000	12000	40000	7000	52000	3370	1130	6000	15.0	21.5
7+7+7+7+18	6400	6400	6400	6400	16400	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+7+9+9	7000	7000	7000	9000	9000	39000	7000	50700	3300	1130	5850	14.6	21.2
7+7+7+9+12	7000	7000	7000	9000	12000	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+7+9+18	6100	6100	6100	7900	15800	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+7+9+24	5450	5450	5450	7000	18650	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+7+12+12	6500	6500	6500	11250	11250	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+7+12+18	5750	5750	5750	9900	14850	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+9+9+9	7000	7000	9000	9000	9000	41000	7000	53300	3480	1130	6150	15.4	21.8
7+7+9+9+12	6680	6680	8590	8590	11460	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+9+9+18	5880	5880	7560	7560	15120	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+9+12+12	6260	6260	8050	10700	10730	42000	7000	54600	3500	1130	6300	15.5	22.0
7+7+12+12+12	5880	5880	10080	10080	10080	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+9+9	6800	8800	8800	8800	8800	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+9+12	6400	8200	8200	8200	11000	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+9+18	5650	7250	7250	7250	14600	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+9+12+12	6000	7700	7700	10300	10300	42000	7000	54600	3500	1130	6300	15.5	22.0
7+9+12+12+12	5600	7300	9700	9700	9700	42000	7000	54600	3500	1130	6300	15.5	22.0
9+9+9+9+9	8400	8400	8400	8400	8400	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+9+9+12	7900	7900	7900	7900	10400	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+9+9+18	7000	7000	7000	7000	14000	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+9+12+12	7400	7400	7400	9900	9900	42000	9000	54600	3500	1200	6300	15.5	22.0
9+9+12+12+12	7050	7050	9300	9300	9300	42000	9000	54600	3500	1200	6300	15.5	22.0

Allowable Configurations (Non Ahu 42K BTU)

Combination of	FPHMR42A	3D Heating	Capacity									-	
Indoor Units	Α	В	С	D	E	Total Capa	citv (Btu/	 h)	Power	Input(Btu	/h)	(A)	SEER
	Btu/h	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX	" "	
12+24	12000	24000	N/A	N/A	N/A	36000	12000	43500	2930	2170	4050	13.5	8.0
18+18	18000	18000	N/A	N/A	N/A	36000	18000	43500	2930	2240	4050	13.5	8.0
18+24	18000	24000	N/A	N/A	N/A	42000	18000	50750	2420	2240	4725	15.8	8.3
24+24	24000	24000	N/A	N/A	N/A	48000	24000	58000	3910	2310	5400	18.0	9.5
7+18+24	6900	17600	23500	N/A	N/A	48000	7000	58000	3910	2030	5400	18.0	9.5
9+15+24	8500	16900	22600	N/A	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
9+18+24	8500	16900	22600	N/A	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
12+18+24	10700	16000	21300	N/A	N/A	48000	12000	58000	3910	2170	5400	18.0	8.0
7+7+7+7	7000	7000	7000	7000	N/A	28000	7000	33800	2320	2030	3200	10.7	8.0
7+7+7+9	7000	7000	7000	9000	N/A	30000	7000	36300	2490	2030	3450	11.5	8.0
7+7+7+12	7000	7000	7000	12000	N/A	33000	7000	39900	2720	2030	3750	12.6	8.6
7+7+7+18	7000	7000	7000	18000	N/A	39000	7000	47100	3220	2030	4450	14.9	9.2
7+7+7+24	7000	7000	7000	24000	N/A	45000	7000	54370	3710	2030	5120	17.1	8.0
7+7+9+9	7000	7000	9000	9000	N/A	32000	7000	38700	2680	2030	3700	12.4	8.2
7+7+9+12	7000	7000	9000	12000	N/A	35000	7000	42300	2960	2030	4090	13.7	8.8
7+7+9+18	7000	7000	9000	18000	N/A	41000	7000	49500	3400	2030	4700	15.7	9.4
7+7+9+24	7000	7000	9000	24000	N/A	47000	7000	56800	3870	2030	5350	17.9	8.5
7+7+12+12	7000	7000	12000	12000	N/A	38000	7000	45900	3130	2030	4330	14.4	9.1
7+7+12+18	7000	7000	12000	18000	N/A	44000	7000	53200	3620	2030	5000	16.7	9.5
7+7+12+24	6720	6720	11520	23040	N/A	48000	7000	58000	3910	2030	5400	18.0	9.5
7+7+18+24	6000	6000	15400	20600	N/A	48000	7000	58000	3910	2030	5400	18.0	8.1
7+9+9+9	7000	9000	9000	9000	N/A	34000	7000	41100	2800	2030	3870	12.9	8.4
7+9+9+12	7000	9000	9000	12000	N/A	37000	7000	44700	3050	2030	4210	14.1	9.0
7+9+9+18	7000	9000	9000	18000	N/A	43000	7000	52000	3560	2030	4920	16.4	9.5
7+9+9+24	6900	8800	8800	23500	N/A	48000	7000	58000	3910	2030	5400	18.0	8.7
7+9+12+12	7000	9000	12000	12000	N/A	40000	7000	48300	3290	2030	4550	15.2	9.3
7+9+12+18	7000	9000	12000	18000	N/A	46000	7000	55600	3770	2030	5210	17.4	9.5
7+9+12+24	6500	8300	11050	22150	N/A	48000	7000	58000	3910	2030	5400	18.0	9.5
7+9+18+24	5800	7450	14900	19850	N/A	48000	7000	58000	3910	2030	5400	18.0	9.0
7+12+12+12	7000	12000	12000	12000	N/A	43000	7000	52000	3540	2030	4890	16.3	9.5
7+12+12+18	6900	11750	11750	17600	N/A	48000	7000	58000	3910	2030	5400	18.0	9.5
7+12+12+24	6100	10500	10500	20900	N/A	48000	7000	58000	3910	2030	5400	18.0	9.5
7+12+18+24	5500	9450	14150	18900	N/A	48000	7000	58000	3910	2030	5400	18.0	8.3
9+9+9+9	9000	9000	9000	9000	N/A	36000	9000	43500	2980	2100	4120	13.8	8.6
9+9+9+12	9000	9000	9000	12000	N/A	39000	9000	47100	3210	2100	4430	14.8	9.2
9+9+9+18	9000	9000	9000	18000	N/A	45000	9000	54400	3720	2100	5140	17.2	9.5
9+9+9+24	8450	8450	8450	22650	N/A	48000	9000	58000	3910	2100	5400	18.0	8.9
9+9+12+12	9000	9000	12000	12000	N/A	42000	9000	50750	3460	2100	4780	16.0	9.5
9+9+12+18	9000	9000	12000	18000	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
9+9+12+24	8000	8000	10650	21350	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
9+9+18+24	7200	7200	14400	19200	N/A	48000	9000	58000	3910	2100	5400	18.0	9.2
9+12+12+12	9000	12000	12000	12000	N/A	45000	9000	54350	3700	2100	5110	17.1	9.5
9+12+12+18	8470	11290	11290	16950	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
9+12+12+24	7580	10100	10100	20220	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5
9+12+18+24	6900	9100	13700	18300	N/A	48000	9000	58000	3910	2100	5400	18.0	9.5

Allowable Configurations (Non Ahu 42K BTU)

Combination of	FPHMR42	MR42A3D Cooling Capacity												
Indoor Units	Α	В	С	D	E	Total Capa	city (Btu/	h)	Power	Input(Btu	/h)	(A)	SEER	
	Btu/h	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX]		
12+12+12+12	12000	12000	12000	12000	N/A	48000	12000	58000	3910	2170	5400	18.0	9.5	
12+12+12+18	10680	10680	10680	15960	N/A	48000	12000	58000	3910	2170	5400	18.0	8.2	
7+7+7+7	7000	7000	7000	7000	7000	35000	7000	42300	2910	2030	4020	13.4	8.4	
7+7+7+7	7000	7000	7000	7000	9000	37000	7000	44700	3040	2030	4200	14.0	8.7	
7+7+7+7+12	7000	7000	7000	7000	12000	40000	7000	48350	3290	2030	4550	15.2	9.3	
7+7+7+7+18	7000	7000	7000	7000	18000	46000	7000	55600	3810	2030	5260	17.6	8.6	
7+7+7+9+9	7000	7000	7000	9000	9000	39000	7000	47100	3230	2030	4460	14.9	8.9	
7+7+7+9+12	7000	7000	7000	9000	12000	42000	7000	50750	3520	2030	4860	16.2	9.5	
7+7+7+9+18	7000	7000	7000	9000	18000	48000	7000	58000	3910	2030	5400	18.0	9.5	
7+7+7+9+24	6220	6220	6220	8000	21340	48000	7000	58000	3910	2030	5400	18.0	9.2	
7+7+7+12+12	7000	7000	7000	12000	12000	45000	7000	54350	3730	2030	5150	17.2	9.5	
7+7+7+12+18	6580	6580	6580	11260	17000	48000	7000	58000	3910	2030	5400	18.0	8.8	
7+7+9+9+9	7000	7000	9000	9000	9000	41000	7000	49550	3380	2030	4670	15.6	9.1	
7+7+9+9+12	7000	7000	9000	9000	12000	44000	7000	53200	3660	2030	5060	16.9	9.5	
7+7+9+9+18	6720	6720	8640	8640	17280	48000	7000	58000	3910	2030	5400	18.0	9.4	
7+7+9+12+12	7000	7000	9000	12000	12000	47000	7000	56800	3900	2030	5390	18.0	9.5	
7+7+12+12+12	6720	6720	11520	11520	11520	48000	7000	58000	3910	2030	5400	18.0	9.0	
7+9+9+9	7000	9000	9000	9000	9000	43000	7000	52000	3570	2030	4930	16.5	9.3	
7+9+9+9+12	7000	9000	9000	9000	12000	46000	7000	55600	3800	2030	5250	17.5	9.5	
7+9+9+9+18	6500	8300	8300	8300	16600	48000	7000	58000	3910	2030	5400	18.0	9.5	
7+9+9+12+12	6880	8800	8800	11760	11760	48000	7000	58000	3910	2030	5400	18.0	9.5	
7+9+12+12+12	6460	8300	11080	11080	11080	48000	7000	58000	3910	2030	5400	18.0	9.5	
9+9+9+9+9	9600	9600	9600	9600	9600	48000	9000	58000	3910	2100	5400	18.0	9.5	
9+9+9+9+12	9000	9000	9000	9000	12000	48000	9000	58000	3910	2100	5400	18.0	9.5	
9+9+9+9+18	8000	8000	8000	8000	16000	48000	9000	58000	3910	2100	5400	18.0	9.5	
9+9+9+12+12	8480	8480	8480	11280	11280	48000	9000	58000	3910	2100	5400	18.0	9.5	
9+9+12+12+12	7950	7950	10700	10700	10700	48000	9000	58000	3910	2100	5400	18.0	9.5	

Allowable Configurations - With OneAHU (FPHMR36A3D)

Notes:

Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)
 95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)
 Heating capacity is based on 70°F DB(21°C DB)/60°F WB (15.6°C WB) (Indoor temperature)

47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)

- 2. The totally Capacity of connected indoor units is up to 48k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the valid for connecting with the following indoor units;

7K Btu/h Class:wall mount

9K Btu/h Class:wall mount or Cassette or duct

12K Btu/h Class:wall mount or Cassette or duct

18K Btu/h Class:wall mount or Cassette or duct

24K Btu/h Class:wall mount or Cassette or duct

18KBtu/h Class:wall mount or Cassette or duct or AHU (only can match one AHU)

24KBtu/h Class:wall mount or Cassette or duct (only can match one AHU)

Combination					FPI	IMR36A3D (Cooling Capa	acity											
of Indoor Units	Α	В	С	Total Capa	city (Btu/h)		Power Inp	ut(W)		(A)	SEER	EER							
	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX]		W/W							
07+24	7000	24000	N/A	31000	7000	36000	2675	1150	3600	12	18.1	3.4							
09+24	9000	24000	N/A	33000	9000	37000	2853	1200	3700	12	18.3	3.4							
12+18	12000	18000	N/A	30000	12000	39000	2592	1250	4460	11	18.1	3.4							
12+24	12000	24000	N/A	36000	12000	46800	3110	1250	5350	14	19.9	3.4							
07+09+18	7000	9000	18000	34000	7000	44200	2997	1150	5050	13	19.4	3.3							
07+09+24	6300	8100	21600	36000	7000	46800	3110	1150	5350	14	19.9	3.4							
07+12+18	6800	11700	17500	36000	7000	46800	3110	1150	5350	14	19.9	3.4							
07+12+24	6000	10000	20000	36000	7000	46800	3110	1150	5350	14	19.9	3.4							
09+09+18	9000	9000	18000	36000	9000	46800	3110	1200	5350	14	19.9	3.4							
09+09+24	7700	7700	20600	36000	9000	46800	3110	1200	5350	14	19.9	3.4							
09+12+18	8300	11100	16600	36000	9000	46800	3110	1200	5350	14	19.9	3.4							
09+12+24	7200	9600	19200	36000	9000	46800	3110	1200	5350	14	19.9	3.4							
12+12+18	10300	10300	15400	36000	12000	46800	3110	1250	5350	14	19.9	3.4							
12+12+24	9000	9000	18000	36000	12000	46800	3110	1250	5350	14	19.9	3.4							

Combination	FPHMR3	FPHMR36A3D Heating Capacity													
of Indoor Units	Α	В	С	Total Cap	acity (Btu/l	ո)	Power Ir	Power Input(Btu/h)			HSPF	СОР			
	Btu/h Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX			w/w				
07+24	7000	24000		31000	7000	46500	2582	1900	4520	11.3	8.2	3.5			
09+24	9000	24000		33000	9000	49500	2748	1950	4813	12.0	8.3	3.5			
12+18	12000	18000		30000	12000	45000	2498	2000	4375	10.9	8.1	3.5			
12+24	12000	24000		36000	12000	54000	2997	2000	5250	13.1	9.0	3.5			
07+09+18	7000	9000	18000	34000	7000	51000	2886	1900	4958	12.6	8.8	3.5			
07+09+24	6300	8100	21600	36000	7000	54000	2997	1900	5250	13.1	9.0	3.5			
07+12+18	6800	11670	17530	36000	7000	54000	2997	1900	5250	13.1	9.0	3.5			
07+12+24	5860	10040	20100	36000	7000	54000	2997	1900	5250	13.1	9.0	3.5			
09+09+18	9000	9000	18000	36000	9000	54000	2997	1950	5250	13.1	9.0	3.5			
09+09+24	7700	7700	20600	36000	9000	54000	2997	1950	5250	13.1	9.0	3.5			
09+12+18	8300	11100	16600	36000	9000	54000	2997	1950	5250	13.1	9.0	3.5			
09+12+24	7200	9600	19200	36000	9000	54000	2997	1950	5250	13.1	9.0	3.5			
12+12+18	10300	10300	15400	36000	12000	54000	2997	2000	5250	13.1	9.0	3.5			
12+12+24	9000	9000	18000	36000	12000	54000	2997	2000	5250	13.1	9.0	3.5			

Allowable Configurations - With One AHU (FPHMR42A3D)

Notes

- Cooling capacity is based on 80°F DB (26.7°C DB)/67°F WB (19.4°C WB) (Indoor temperature)
 95°F DB (35°C DB) /75°F WB (24°C WB) (Outdoor temperature)
 Heating capacity is based on 70°F DB(21°C DB)/60°F WB (15.6°C WB) (Indoor temperature)
 47°F DB (8.3°C DB)/43°F WB (6°C WB) (Outdoor temperature)
- 2. The totally Capacity of connected indoor units is up to 54k Btu/h
- 3. It is not possible to have only one indoor unit connected, be sure to connect at least 2 indoor units
- 4. The below data is the valid for connecting with the following indoor units;

7K Btu/h Class:wall mount

9K Btu/h Class:wall mount or Cassette or duct

12K Btu/h Class:wall mount or Cassette or duct

18K Btu/h Class:wall mount or Cassette or duct

24K Btu/h Class:wall mount or Cassette or duct

18KBtu/h Class:wall mount or Cassette or duct or AHU (only can match one AHU)

24KBtu/h Class:wall mount or Cassette or duct (only can match one AHU)

Combination	FPHMR42A3D Cooling Capacity												
of Indoor Units	Α	В	С	D	Total Cap	acity (Btu/	h)	Power Ir	nput(Btu/h)		(A)	SEER	
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX	7		
12+24	12000	24000	N/A	N/A	36000	12000	46800	3330	1270	5400	14.6	16.2	
07+07+24	7000	7000	24000	N/A	42000	7000	54600	3885	1150	6300	17.0	18.9	
07+09+18	7000	9000	18000	N/A	34000	7000	44200	3145	1150	5100	13.7	15.3	
07+09+24	7000	9000	24000	N/A	40000	7000	52000	3700	1150	6000	16.2	18.0	
07+12+18	7000	12000	18000	N/A	37000	7000	48100	3423	1150	5550	15.0	16.7	
07+12+24	7000	12000	23000	N/A	42000	7000	54600	3885	1150	6300	17.0	18.9	
09+09+18	9000	9000	18000	N/A	36000	9000	46800	3330	1200	5400	14.6	16.2	
09+09+24	9000	9000	24000	N/A	42000	9000	54600	3885	1200	6300	17.0	18.9	
09+12+18	9000	12000	18000	N/A	39000	9000	50700	3608	1200	5850	15.8	17.6	
09+12+24	8370	11160	19470	N/A	42000	9000	54600	3885	1200	6300	17.0	18.9	
12+12+18	12000	12000	18000	N/A	42000	12000	54600	3885	1250	6300	17.0	18.9	
12+12+24	9000	9000	18000	N/A	36000	12000	46800	3110	1250	5350	13.6	19.9	
7+7+7+18	7000	7000	7000	18000	39000	7000	50700	3652	1130	5850	16.0	19.3	
7+7+7+24	7000	7000	7000	21000	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+7+9+18	7000	7000	9000	18000	41000	7000	53300	3885	1130	6150	17.0	19.7	
7+7+9+24	6710	6710	8630	19950	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+7+12+18	7000	7000	12000	16000	42000	7000	54600	3918	1130	6300	17.1	19.9	
7+7+12+24	6260	6260	10730	18750	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+9+9+18	7000	9000	9000	17000	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+9+9+24	6440	8200	8200	19160	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+9+12+18	6700	8600	11450	15250	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+9+12+24	6000	7700	10300	18000	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+12+12+18	6240	10700	10700	14360	42000	7000	54600	3885	1130	6300	17.0	19.9	
7+12+12+24	5640	9650	9650	17060	42000	7000	54600	3885	1130	6300	17.0	19.9	
9+9+9+18	8750	8750	8750	15750	42000	9000	54600	3885	1200	6300	17.0	19.9	
9+9+9+24	7850	7850	7850	18450	42000	9000	54600	3885	1200	6300	17.0	19.9	
9+9+12+18	8220	8220	10960	14600	42000	9000	54600	3885	1200	6300	17.0	19.9	
9+9+12+24	7380	7380	9840	17400	42000	9000	54600	3885	1200	6300	17.0	19.9	
9+12+12+18	7700	10250	10250	13800	42000	9000	54600	3885	1200	6300	17.0	19.9	
9+12+12+24	6960	9270	9270	16500	42000	9000	54600	3885	1200	6300	17.0	19.9	
12+12+12+18	9600	9600	9600	13200	42000	12000	54600	3885	1270	6300	17.0	19.9	

Allowable Configurations -With One AHU FPHMR42A3D

Combination	FPHMR4	2A3D Heati	ng Capacity							,		
of Indoor Units	A	В	С	D	Total Cap	acity (Btu/	h)	Power In	put(Btu/h)		(A)	HSPF
	Btu/h	Btu/h	Btu/h	Btu/h	NOM	MIN	MAX	NOM	MIN	MAX	7	
12+24	12000	24000	N/A	N/A	36000	12000	43500	3255	2170	4050	14.2	6.4
07+07+24	7000	7000	24000	N/A	42000	7000	50750	3798	1900	4050	16.6	7.5
07+09+18	7000	9000	18000	N/A	34000	7000	41083	3074	1900	4958	13.4	6.1
07+09+24	7000	9000	24000	N/A	40000	7000	48333	3617	1900	5250	15.8	7.2
07+12+18	7000	12000	18000	N/A	37000	7000	44708	3345	1900	5250	14.6	6.6
07+12+24	7000	12000	23000	N/A	42000	7000	50750	3798	1900	5250	16.6	7.5
09+09+18	9000	9000	18000	N/A	36000	9000	43500	3255	1950	5250	14.2	6.4
09+09+24	9000	9000	24000	N/A	42000	9000	50750	3798	1950	5250	16.6	7.5
09+12+18	9000	12000	18000	N/A	39000	9000	47125	3526	1950	5250	15.4	7.0
09+12+24	8370	11160	19470	N/A	42000	9000	50750	3798	1950	5250	16.6	7.5
12+12+18	12000	12000	18000	N/A	42000	12000	50750	3798	2000	5250	16.6	7.5
12+12+24	9000	9000	18000	N/A	36000	12000	54000	2997	2000	5250.0	13.1	9.0
7+7+7+18	7000	7000	7000	18000	39000	7000	47100	3574	2030	4450	15.6	8.3
7+7+7+24	7000	7000	7000	24000	45000	7000	54370	4118	2030	5120	18.0	7.2
7+7+9+18	7000	7000	9000	18000	41000	7000	49500	3774	2030	4700	16.5	8.5
7+7+9+24	7000	7000	9000	24000	47000	7000	56800	4296	2030	5350	18.8	7.7
7+7+12+18	7000	7000	12000	18000	44000	7000	53200	4018	2030	5000	17.6	8.6
7+7+12+24	6720	6720	11520	23040	48000	7000	58000	4340	2030	5400	19.0	8.6
7+9+9+18	7000	9000	9000	18000	43000	7000	52000	3952	2030	4920	17.3	8.6
7+9+9+24	6900	8800	8800	23500	48000	7000	58000	4340	2030	5400	19.0	7.9
7+9+12+18	7000	9000	12000	18000	46000	7000	55600	4185	2030	5210	18.3	8.6
7+9+12+24	6500	8300	11050	22150	48000	7000	58000	4340	2030	5400	19.0	8.6
7+12+12+18	6900	11750	11750	17600	48000	7000	58000	4340	2030	5400	19.0	8.6
7+12+12+24	6100	10500	10500	20900	48000	7000	58000	4340	2030	5400	19.0	8.6
9+9+9+18	9000	9000	9000	18000	45000	9000	54400	4129	2100	5140	18.0	8.6
9+9+9+24	8450	8450	8450	22650	48000	9000	58000	4340	2100	5400	19.0	8.1
7+9+12+18	9000	9000	12000	18000	48000	9000	58000	4340	2100	5400	19.0	8.6
9+9+12+24	8000	8000	10650	21350	48000	9000	58000	4340	2100	5400	19.0	8.6
9+12+12+18	8470	11290	11290	16950	48000	9000	58000	4340	2100	5400	19.0	8.6
9+12+12+24	7580	10100	10100	20220	48000	9000	58000	4340	2100	5400	19.0	8.6
12+12+12+18	10680	10680	10680	15960	48000	12000	58000	4340	2170	5400	19.0	7.4

Blower Data

9. Blower Data (only for Air Handler type)

Airflow performance data is based on cooling performance with a coil and no filter in place. Check the performance table for appropriate unit size selection. External static pressure should stay within the minimum and maximum limits shown in the table below in order to ensure proper cooling, heating.

Air Flow Table

N4l - l	N4-4					SCFM			
Model	Motor			Ex	ternal Static	Pressure-Inc	ches W.C.[kF	Pa]	
Number	Speed		0.1[.02]	0.2[.05]	0.3[.07]	0.4[.10]	0.6[.145]	0.7[.170]	0.8[.20]
	Top (1)	CFM	1121	1117	1112	1106	1142	1140	1121
	Tap (1)	Watts	57	80	96	120	161	186	214
	Top (2)	CFM	1204	1231	1220	1213	1260	1261	1243
	Tap (2)	Watts	69	95	113	139	183	210	242
18K/24K	Tap (2)	CFM	1343	1360	1348	1337	1385	1391	1383
ION/24N	Tap (3)	Watts	87	116	135	164	212	242	277
	Top (4)	CFM	1423	1433	1422	1410	1464	1473	1458
	Tap (4)	Watts	98	129	150	180	231	262	298
	Tap (5)	CFM	1533	1544	1530	1519	1579	1584	1576
	rap (5)	Watts	115	150	173	207	261	294	334
	Tan (4)	CFM	897	898	906	909	907	902	890
	Tap (1)	Watts	115	151	174	208	260	289	321
	Top (2)	CFM	964	989	993	998	1000	998	987
	Tap (2)	Watts	140	180	204	241	296	327	364
261/	Top (2)	CFM	1075	1093	1098	1100	1100	1101	1098
36K	Tap (3)	Watts	175	219	246	284	342	376	417
	Tan (4)	CFM	1139	1151	1158	1160	1163	1166	1158
	Tap (4)	Watts	198	243	272	312	374	407	448
	Top (F)	CFM	1227	1240	1246	1250	1254	1253	1252
	Tap (5)	Watts	232	283	314	357	422	458	502
	Top (1)	CFM	1405	1432	1441	1439	1430	1421	1405
	Tap (1)	Watts	203	247	275	316	375	406	442
	Tap (2)	CFM	1518	1549	1552	1560	1547	1537	1528
	1ap (2)	Watts	245	295	320	367	426	458	498
101/	Tan (2)	CFM	1683	1694	1693	1695	1692	1685	1668
48K	Tap (3)	Watts	313	356	388	434	509	538	579
	Tap (4)	CFM	1725	1750	1756	1766	1765	1751	1741
	Tap (4)	Watts	335	386	419	466	546	581	619
	Tap (5)	CFM	1838	1856	1863	1870	1867	1854	1852
	Tap (5)	Watts	393	443	476	532	608	647	699

^[!] Required 340-450CFM/ton range.

^[!] Airflow based upon the Unit operates at 230V with no electric heater kit and no filter. Airflow at 208V is approximately the same as 230V.

Room Size Restriction

	Maximum Refrigerant Charge X[oz(g)]									
Model (Btu/h)	18k	27k	36k	42k						
Maximum Refrigerant Charge	69.67 (1975)	101.34 (2873)	127 (3600)	128.33 (3638)						
	Figure 209									

Minimum room size R-454B refrigerant is determined by total refrigerant charge in system. Use this chart to determine the minimum room size the indoor head can be installed in without an A2L Sensor. Wall mounted heads are capable off adding an optional accessory A2L sensor. All cassettes and Ducted units have an A2L sensor installed and are exempt from the room size restriction.

Prior to installing the unit use the formulas below to determine the total refrigerant charge for the unit. If the total charge is less than 64 oz. there is no room size restriction. If the total charge is over 64 oz. refer to the Required Minimum Room Area chart to determine the minimum square footage of the room the indoor unit can be installed in. If rooms are connected by opening that people can walk through but with no door installed, those areas can be considered one space. If the total refrigerant charge exceeds the room area, the indoor unit shall not be installed without an A2L sensor.

MARNING

Required minimum room area Y [ft.²(m²)]

	Ducte	d unit	Casset	te unit	Wall-mou	nted unit			
X[oz.(g)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]			
<63.49(1800)		N.	No res	triction	C 08	· · · · · · · · · · · · · · · · · · ·			
63.49(1800)		60(5.5)		60(5.5)		73(6.8)			
67.02(1900)		63(5.8)		63(5.8)		77(7.1)			
70.55(2000)		66(6.1)		66(6.1)] [81(7.5)			
74.08(2100)		69(6.4)		69(6.4)] [85(7.9)			
77.60(2200)		73(6.8)		73(6.8)] [90(8.3)			
81.13(2300)		77(7.1)	j	77(7.1)		93(8.6)			
84.66(2400)		80(7.4)		80(7.4)] [97(9.0)			
88.18(2500)		83(7.7)		83(7.7)] [102(9.4)			
91.71(2600)		86(8.0)		86(8.0)] [106(9.8)			
95.24(2700)		90(8.3)		90(8.3)] [109(10.1)			
98.77(2800)		93(8.6)		93(8.6)] [113(10.5)			
102.29(2900)		95(8.9)		95(8.9)] [118(10.9)			
105.82(3000)		99(9.2)		99(9.2)	[122(11.3)			
109.35(3100)		103(9.5)		103(9.5)		125(11.6)			
112.88(3200)		106(9.8)		106(9.8)		130(12.0)			
116.40(3300)		109(10.1)		109(10.1)	1	134(12.4)			
119.93(3400)	7.2(2.2)	112(10.4)	7.2(2.2)	112(10.4)	5.9(1.8)	138(12.8)			
123.46(3500)		115(10.7)		115(10.7)	1 [141(13.1)			
126.99(3600)]	120(11.1)		120(11.1)	1 [146(13.5)			
130.51(3700)]	123(11.4)		123(11.4)	1 [153(14.2)			
134.04(3800)		126(11.7)		126(11.7)	1 [162(15.0)			
137.57(3900)]	130(12.0)		130(12.0)	1 [170(15.8)			
141.10(4000)	1	133(12.3)		133(12.3)	1 [179(16.6)			
144.62(4100)		136(12.6)		136(12.6)] [188(17.4)			
148.15(4200)		139(12.9)		139(12.9)		197(18.3)			
151.68(4300)		142(13.2)		142(13.2)		207(19.2)			
155.21(4400)		146(13.5)		146(13.5)] [217(20.1)			
158.73(4500)		151(14.0)		151(14.0)		226(21.0)			
162.26(4600)		159(14.7)		159(14.7)		236(21.9)			
165.79(4700)		165(15.3)		165(15.3)		247(22.9)			
169.32(4800)		173(16.0)		173(16.0)		258(23.9)			
172.84(4900)		180(16.7)		180(16.7)		268(24.9)			
176.37(5000)		187(17.3)		187(17.3)] [279(25.9)			

Indoor Unit Clearances

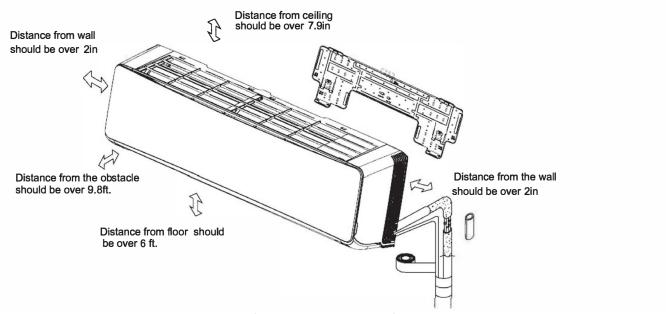
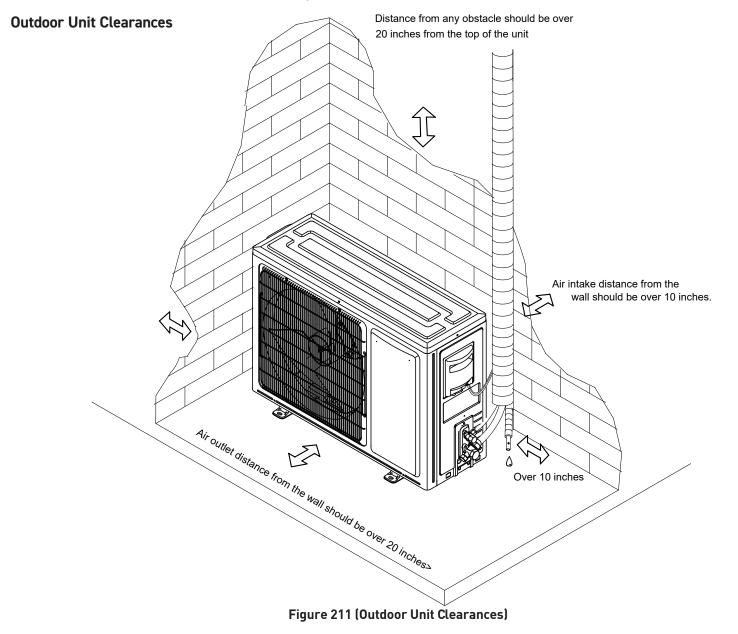
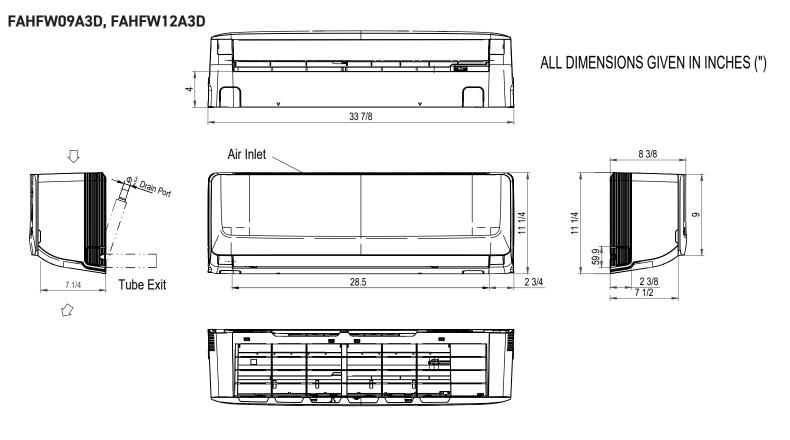
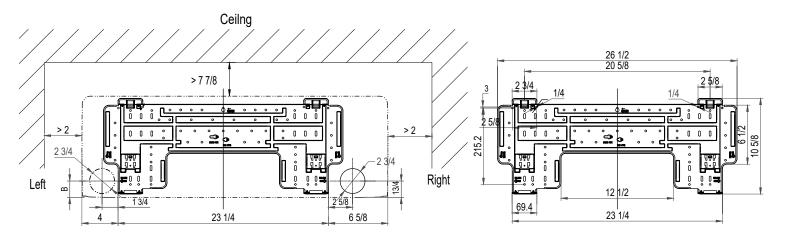


Figure 211 (Indoor Unit Clearances)

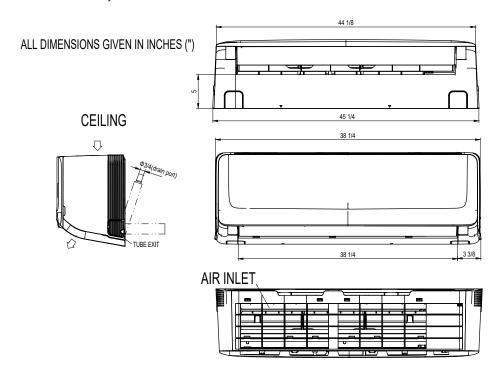


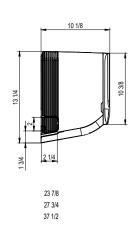
Dimensions Indoor Unit

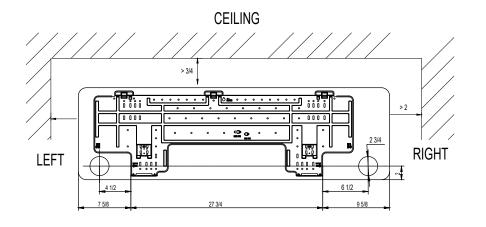


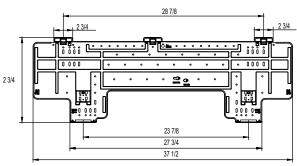


Dimensions Indoor Unit FAHFW18A3D, FAHFW24A3D





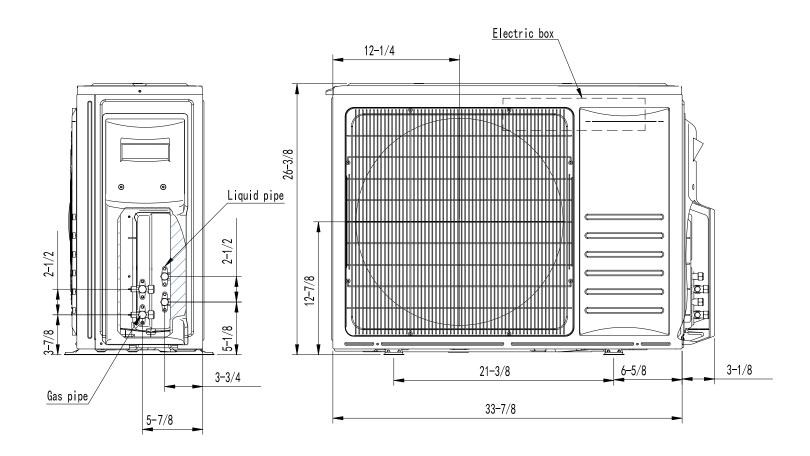


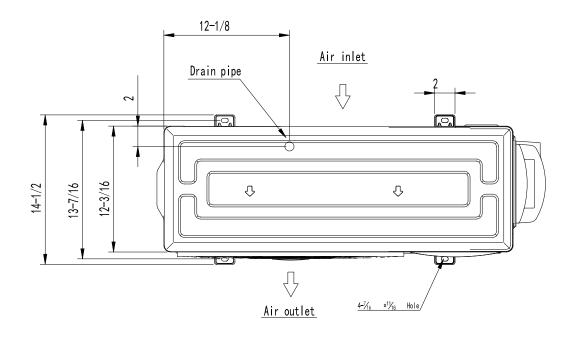


Dimensions Outdoor Unit

FPHMR18A3D

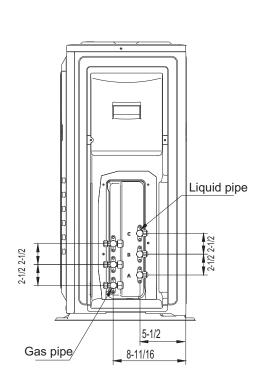
18K Unit: in.

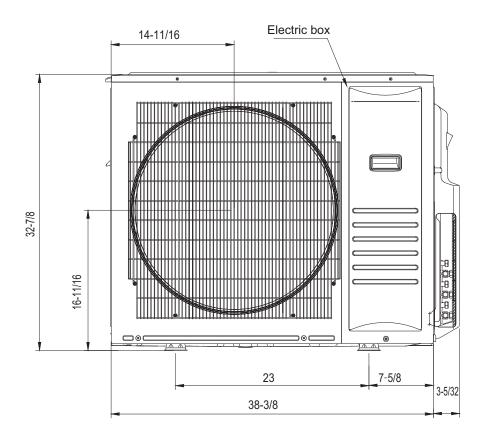




Dimensions Outdoor Unit FPHMR27A3D, FPHMR36A3D, FPHMR42A3D

27K/36K/42KK Unit: in.





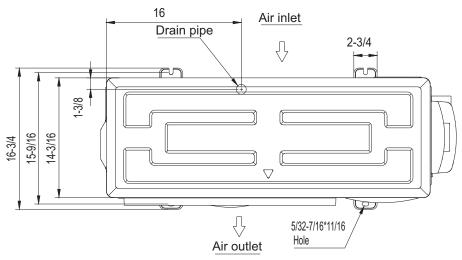
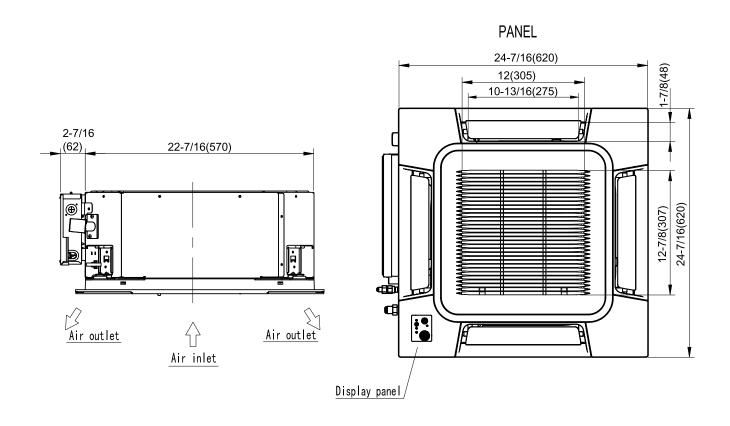


Figure 215

Unit: in.(mm)



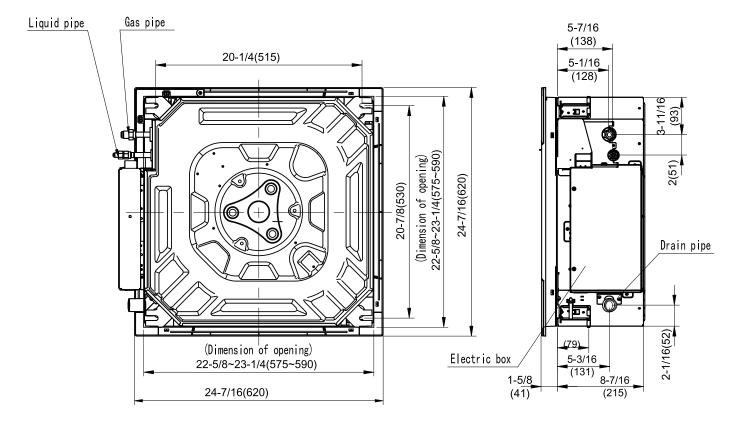
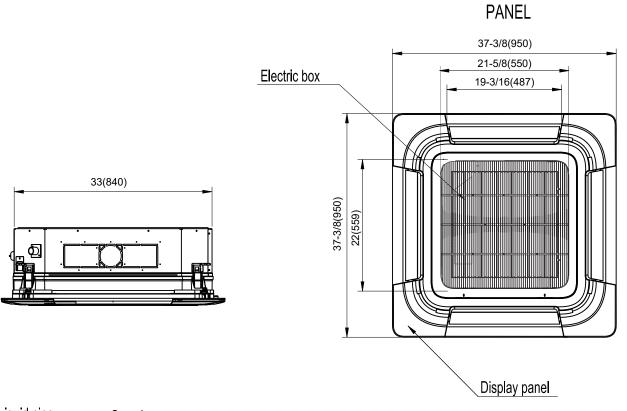
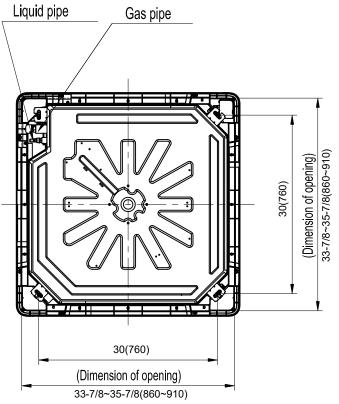


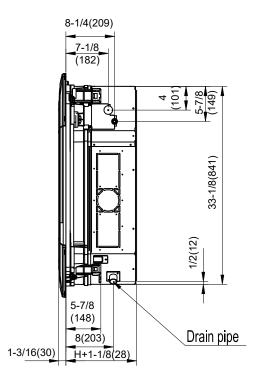
Figure 216

Dimensions Cassette (18 and 24k BTU)

Unit: (mm)





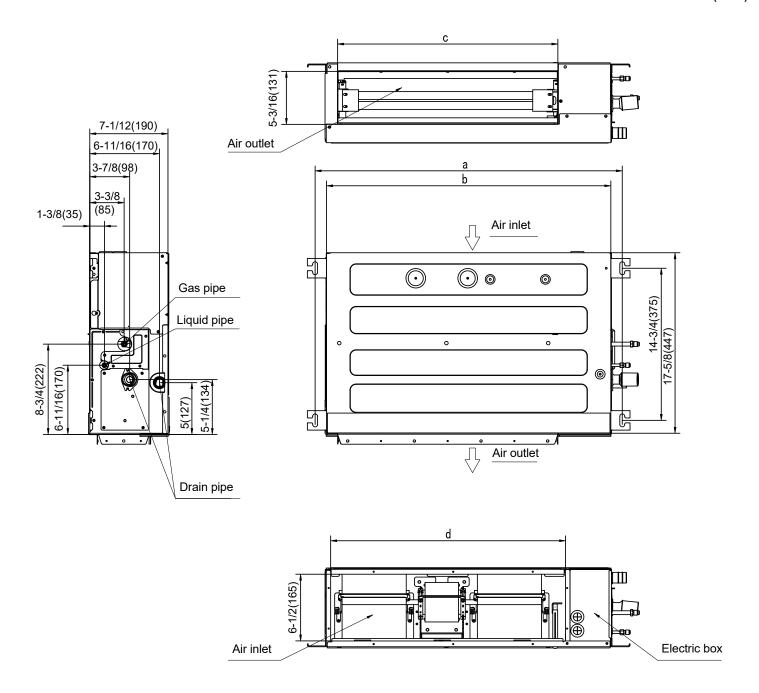


Model	Н
18K/24K	236
36K	272

Figure 217

Dimensions Ducted (9 and 12k BTU)

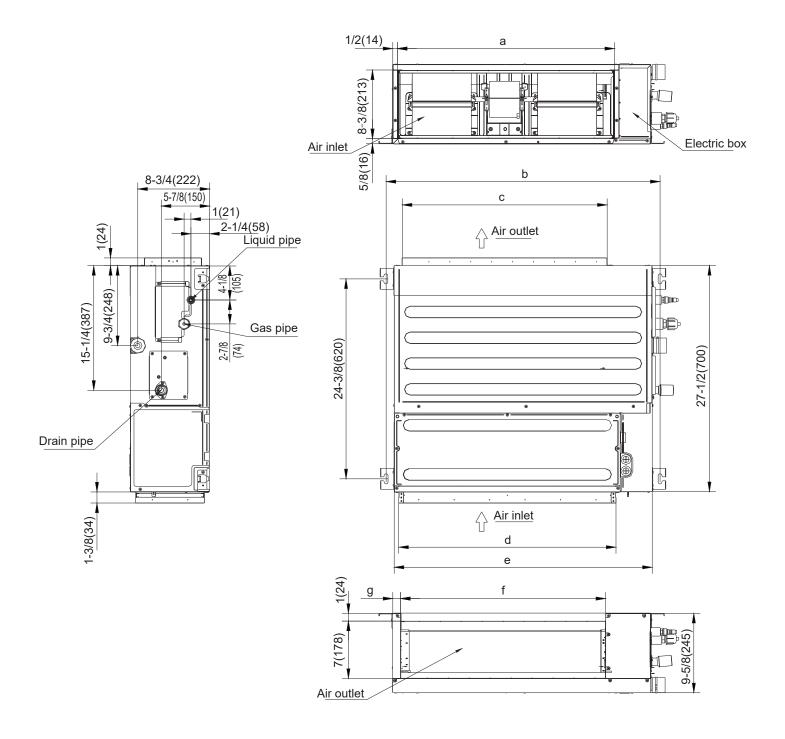
Unit: in.(mm)



Model (Btu/h)	а	b	С	d
9K/12K	37-13/16	35-13/16	29-1/2	30
	(961)	(910)	(749)	(786)

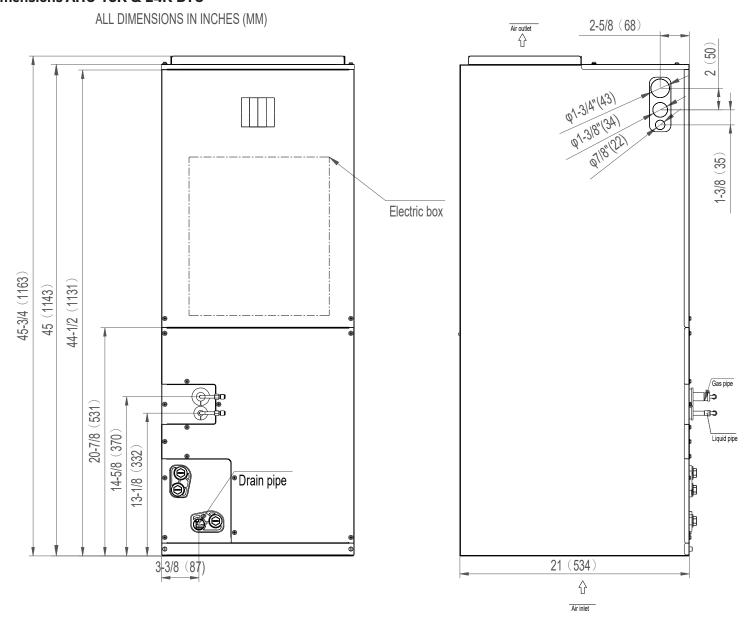
Dimensions Ducted (18 and 24k BTU)

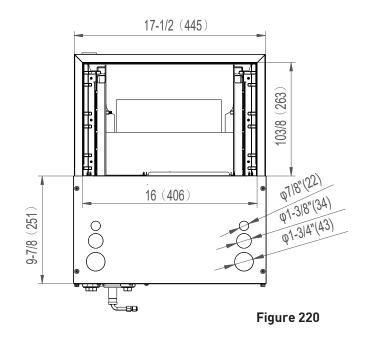
Unit: in.(mm)



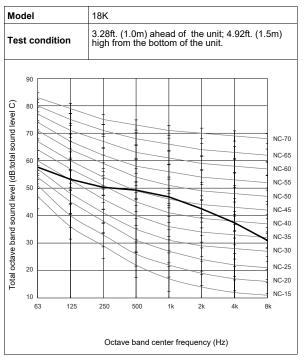
Model(Btu/h)	а	b	С	d	е	f	g
18K	26-1/2	33-1/2	25	26-1/2	31-1/2	25	1
	(674)	(850)	(636)	(673)	(800)	(636)	(24)
24K	38-3/8	45-1/4	35-7/8	38-1/4	43-1/4	35-7/8	1-7/8
	(974)	(1150)	(912)	(973)	(1100)	(912)	(49)

Dimensions AHU 18K & 24K BTU





Sound Pressure Data - Outdoor Units NC (Noise Criterion)

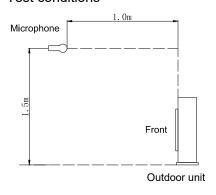


Model	36K			
Test condition 3.28ft. (1.0m) ahead of the unit; 4.92ft. (1 high from the bottom of the unit.				
90 90 10 10 10 10 10 10 10 10 10 10 10 10 10	NC-70 NC-65 NC-60 NC-55 NC-50 NC-45 NC-40 NC-35 NC-30 NC-25 NC-20 NC-15			
Octave band center frequency (Hz)				

Model 27K $3.28 ft.\ (1.0 m)$ ahead of the unit; 4.92 ft. (1.5 m) high from the bottom of the unit. **Test condition** 90 Total octave band sound level (dB:total sound level C) 80 70 NC-70 NC-65 60 NC-60 NC-55 50 NC-50 NC-45 40 NC-40 NC-35 30 NC-30 20 NC-20 NC-15 10 500 63 125 250 Octave band center frequency (Hz)

Model	42K				
Test condition	3.28ft. (1.0m) ahead of the unit; 4.92ft. (1.5m) high from the bottom of the unit.				
90 (O sound level (dB:total sound level (dB:	NC-70 NC-65 NC-66 NC-65 NC-55 NC-50 NC-40 NC-35 NC-30 NC-25 NC-20 NC-15				
Octave band center frequency (Hz)					

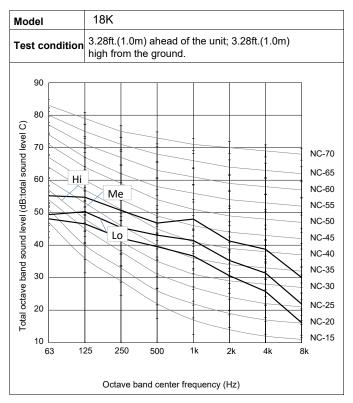
Test conditions

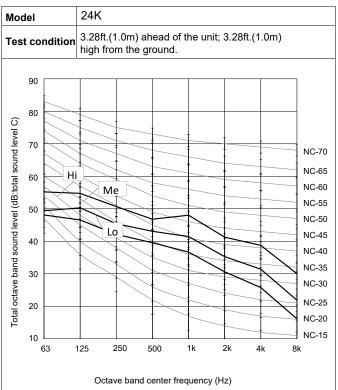


Notes:

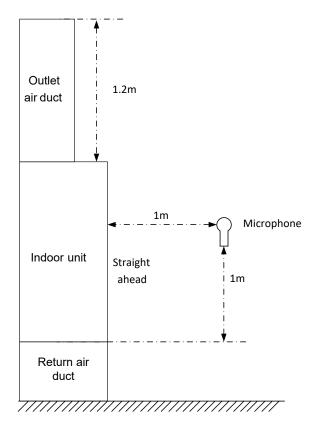
- 1.The sound power level is dependent on the operating conditions of the unit. Sound measurements shall be carried out at the standard rating conditions.
- Test method reference standard EN 12102-1.
- 2. Power source 230V, 50Hz.
- 3. The operation values were obtained in an semianechoic chamber (conversion values).
- 4. Sound levels will varies with operating and environmental conditions.

Sound Power Data - AHU NC (Noise Criterion)





Test condition Air handler:



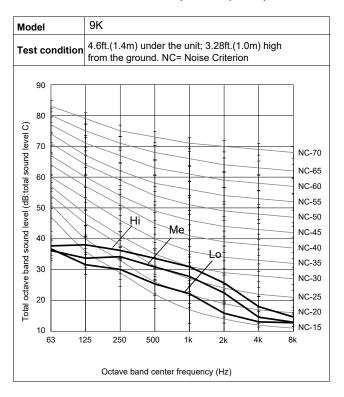
Notes:

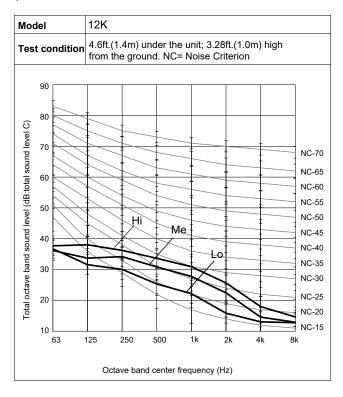
1. The sound power level is dependent on the operating conditions of the unit. Sound measurements shall be carried out at the standard rating conditions.

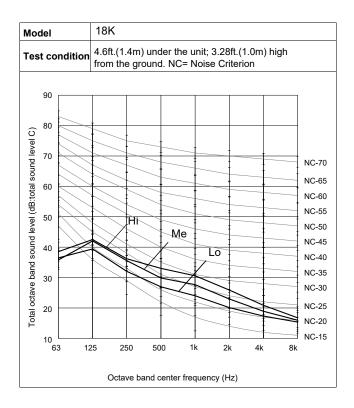
Test method reference standard AHRI Standard 260.

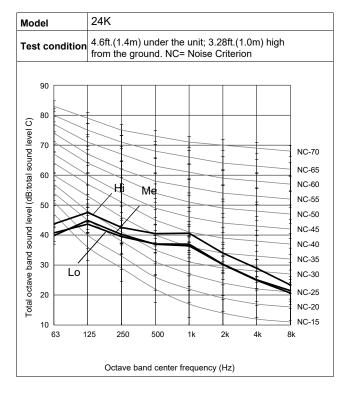
- 2.Power source 230V, 60Hz.
- 3. The operation values were obtained in an semianechoic chamber (conversion values).
- 4. Sound levels will varies with operating and environmental conditions.

Sound Power Data - Indoor Units (Ducted) NC (Noise Criterion)



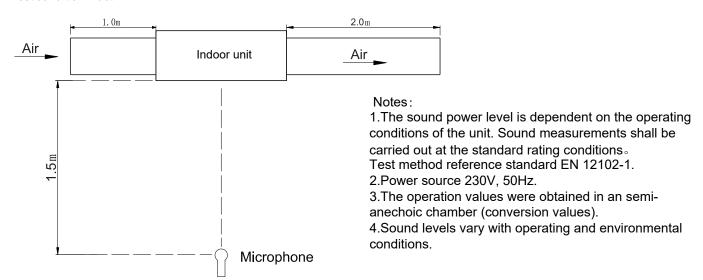




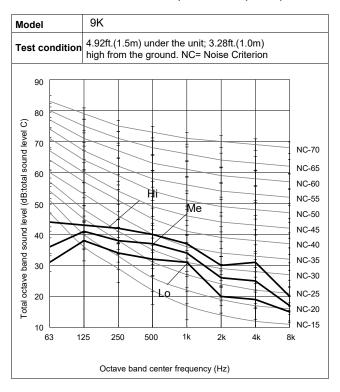


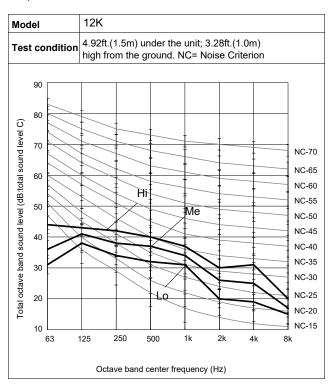
Sound Power Data - Indoor Units (Ducted) NC (Noise Criterion)

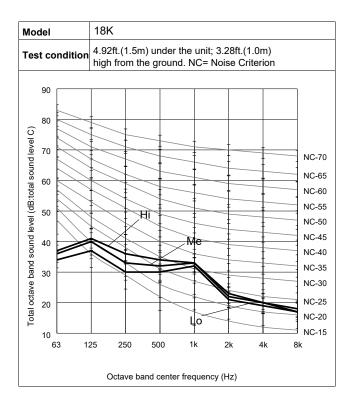
Test condition Duct:

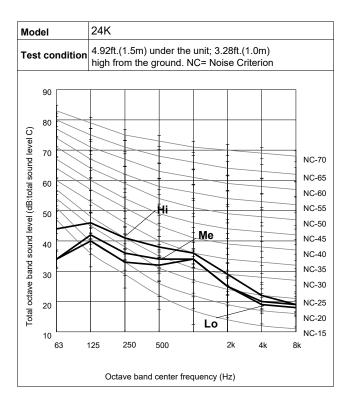


Sound Power Data - Indoor Units (Cassettes) NC (Noise Criterion)



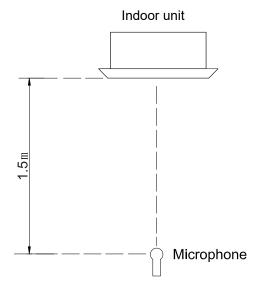






Sound Pressure Data - Indoor Units (Cassettes) NC (Noise Criterion)

Test condition Cassette:



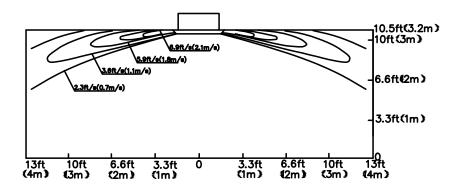
Notes:

- 1.The sound power level is dependent on the operating conditions of the unit. Sound measurements shall be carried out at the standard rating conditions.
- Test method reference standard EN 12102-1.
- 2.Power source 230V, 50Hz.
- 3. The operation values were obtained in an semianechoic chamber (conversion values).
- 4. Sound levels vary with operating and environmental conditions.

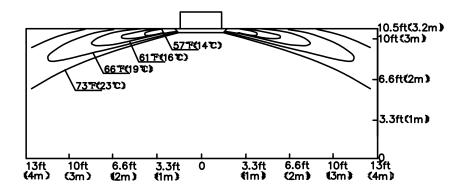
Airflow Distribution (9k Cassette)

9K

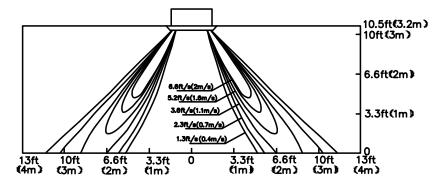
1)Cooling/Air Velocity Distribution



2)Cooling/Air Temperature Distribution



3)Heating/Air Velocity Distribution



4)Heating/Air Temperature Distribution

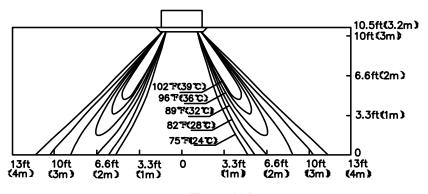
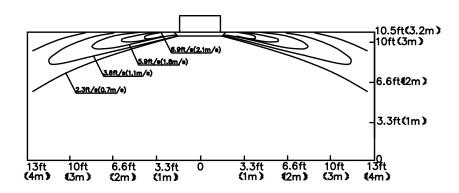


Figure 224

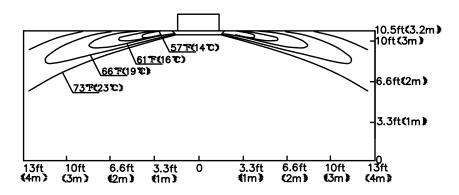
Airflow Distribution (12k Cassette)

12K

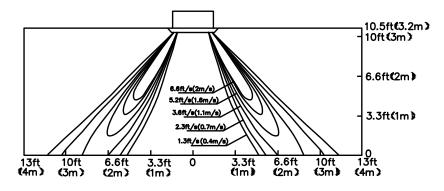
1)Cooling/Air Velocity Distribution



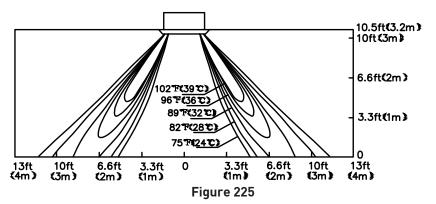
2)Cooling/Air Temperature Distribution



3)Heating/Air Velocity Distribution



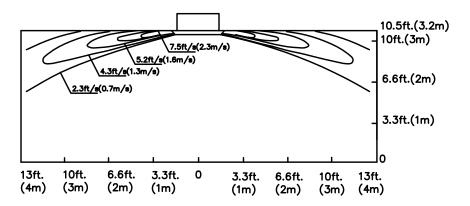
4) Heating/Air Temperature Distribution



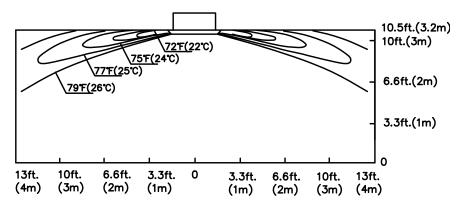
Airflow Distribution (18k Cassette)

18K

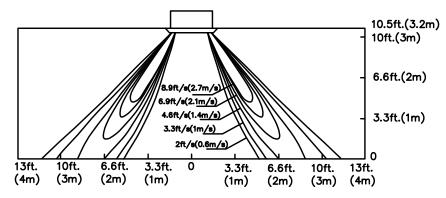
1)Cooling/Air Velocity Distribution



2)Cooling/Air Temperature Distribution



3)Heating/Air Velocity Distribution



4)Heating/Air Temperature Distribution

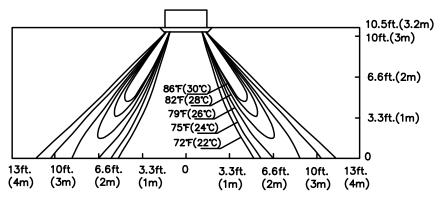
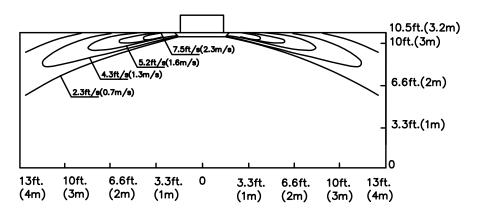


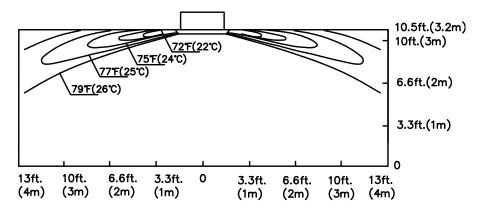
Figure 226

Airflow Distribution (24k Cassette)

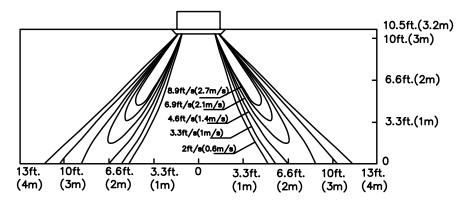
1)Cooling/Air Velocity Distribution



2)Cooling/Air Temperature Distribution



3)Heating/Air Velocity Distribution



4) Heating/Air Temperature Distribution

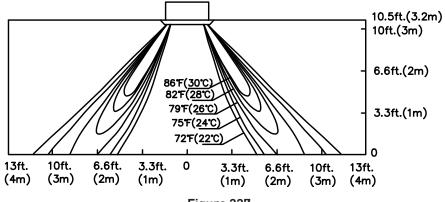
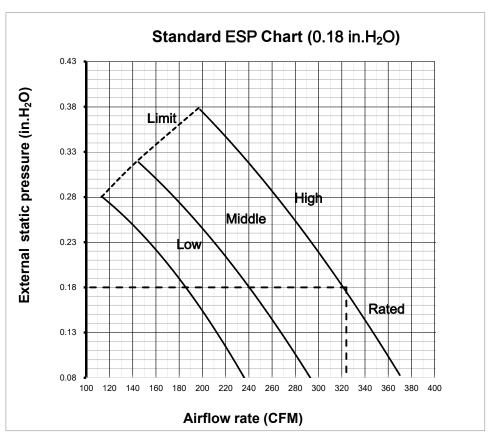
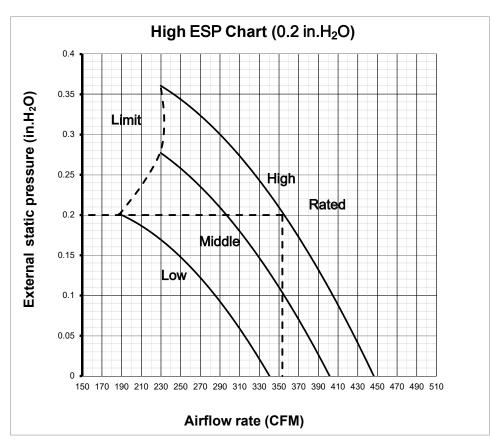


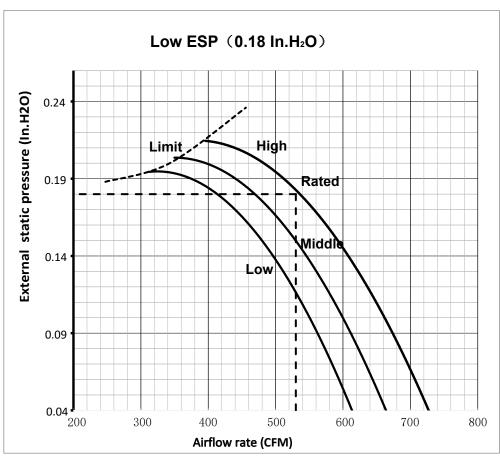
Figure 227

ESP (External Static Pressure) Chart (9-12k Ducted Units)





ESP (External Static Pressure) Chart (18k Ducted Units)



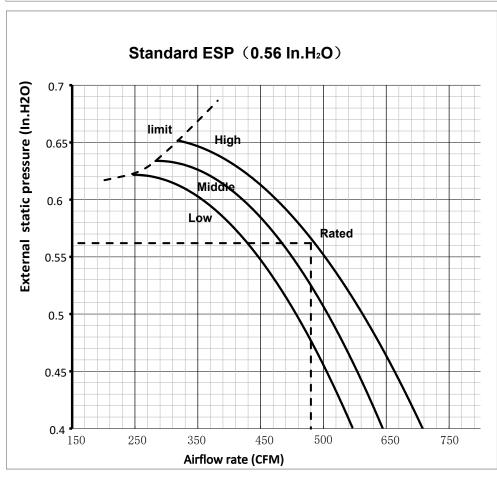
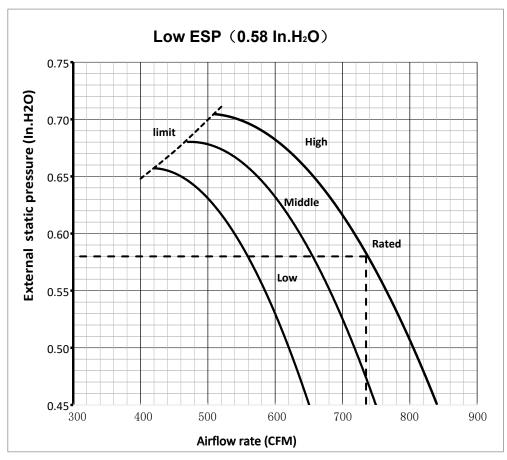
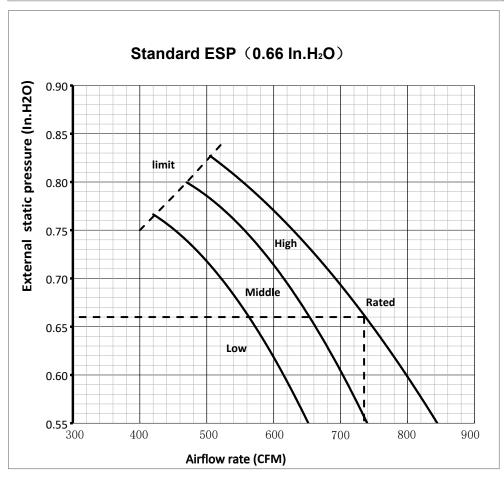


Figure 229

ESP (External Static Pressure) Chart (24k Ducted Units)





General

Safety Precautions

Alert Symbols:

↑ DANGER: The symbol refers to a hazard which can result in severe personal injury or death.

▲ WARNING: The symbol refers to a hazard or an unsafe practice which may result in severe personal injury or death.

▲ CAUTION : The symbol refers to a hazard or an unsafe practice which may result in minor personal injury, product or property damage.

: It refers to the remarks and instruction to the operation, maintenance and service.

- Installation, maintenance and repair of this unit must be performed by a qualified, licensed service personnel.
- Read these instructions thoroughly before installation or operation. Failure to follow these instructions may result in improper installation, service or maintenance, possibly resulting in fire, electrical shock, property damage, personal injury or death.
- Before installation, check if the voltage of the power supply at installation site is the same as the voltage shown on the nameplate.



- Do not perform any alteration to this product, otherwise, it may cause water leakage, breakdown, short circuit, electric shock, fire, etc.
- An unventilated area where the appliance using FLAMMABLE REFRIGERANTS is installed shall be so constructed that should any refrigerant leak, it will not stagnate so as to create a fire or explosion hazard.
- Piping, welding and other such work should be carried out far away from the flammable and explosive materials, including the air conditioner refrigerant, to guarantee the security of the site.
- To protect the air conditioner from heavy corrosion, avoid installing the outdoor unit in the place, where sea water can splash directly onto it or in sulphurous air near a spa.



- The appliance shall be installed in accordance with national wiring regulations;
- This unit must only be connected to other units that have been confirmed by the manufacturer.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
 - Children should be supervised to ensure that they do not play with the appliance.
- The place where this product is installed must have the reliable electrical grounding facilities and protections. Please do not connect the grounding of this product to various kinds of air feeding ducts, drain pipes, lightning protection facilities as well as other piping lines to avoid electric shock and damage caused by other factors.
- Wiring must be done by the qualified electrician. All the wiring operations must be conducted according to the local electrical codes.
- You should consider the capacity of the electric current of your electrical meter and socket before installation.
- The power wire where this product is installed should have the independent leakage protection device and the electric current over-load protection device provided for this product.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
 - The appliance shall be stored in a room without continuously operating ignition sources(for example: open flames, an operating gas appliance or operating electric heater.) Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- For duct connected appliances, false ceilings or drop ceilings can't be used as a return air plenum.

General

INSTALLATION

Safety Precautions

A WARNING

- Never use gasoline or other flammable gas near the air conditioner to avoid danger. When any abnormality like burnt smell, deformation, fire, smoke, etc. is found, you should stop using the air conditioner, immediately cut off the main power supply and contact the dealer.
- The first 6 inches of supply air plenum and duct work must be constructed of sheet metal as required by NFPA 90B.
- The supply air plenum or duct must have a solid sheet metal bottom piece directly after the air handler unit with no opening, registers or flexible air ducts located in it. If flexible supply air ducts are used, they may be located only in the side walls of the rectangular plenum, a minimum of 6 inches from the solid bottom.
- Do not install the air conditioner where excessively high heat-generating objects are placed.
- Auxiliary devices which may be a POTENTIAL IGNITION SOURCE shall not be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 600°C and electric switching devices.
- Only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork. You can contact the manufacturer for the detail.

▲ WARNING

PROPOSITION 65:

- This appliance contains fiberglass insulation. Respirable particles of fiberglass are known to State of California to cause cancer.
- All manufacturer products meet current federal OSHA Guidelines for safety. California Proposition 65 warnings are required for certain products, which are not covered by the OSHA standards.
- California's Proposition 65 requires warnings for products sold in California that
 contain or produce any of over 600 listed chemicals known to the State of California to
 cause cancer or birth defects such as fiberglass insulation, lead in brass, and
 combustion products from natural gas.
- All "new equipment" shipped for sale in California will have labels stating that the
 product contains and /or produces Proposition 65 chemicals. Although we have not
 changed our processes, having the same label on all our products facilitates
 manufacturing and shipping. We cannot always know "when, or if" products will be
 sold in the California market.
- You may receive inquiries from customers about chemicals found in, or produced by, some of our heating and air conditioning equipment, or found in natural gas used with some of our products. Listed below are those chemicals and substances commonly associated with similar equipment in our industry and other manufacturers.
 - -Glass Wool (Fiberglass) Insulation
 - -Carbon Monoxide(CO)
 - -Formaldehyde
 - -Benzene
- More details are available at the websites for OSHA (Occupational Safety and Health Administration), at www.osha.gov and the State of California's OEHHA (Office of Environmental Health Hazard Assessment), at www.oehha.org. Consumer education is important since the chemicals and substances on the list are found in our daily lives. Most consumers are aware that products present safety and health risks, when improperly used, handled and maintained.

General

INSTALLATION

Safety Precautions

A CAUTION

- Do not turn the air conditioner on and off from the main power switch. Use the ON/OFF operation button.
- Do not stick anything into the air inlet and air outlet of both the indoor and outdoor units. This is dangerous because the fan is rotating at a high speed.
- Do not cool or heat the room too much if babies or invalids are present.
- Means for disconnection from the supply mains having a contact separation in all
 poles that provide full disconnection under over voltage category III conditions must
 be incorporated in the fixed wiring in accordance with the wiring rules.
- Type and rating of circuit breakers / ELB are detailed below.
- The method of connection of the appliance to the electrical supply and interconnection of separate components are detailed below.
- The information of dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures is detailed below.
- The range of external static pressures for ducted appliances is detailed below.
- Make sure the blower motor support is tight (3-motor mounting bolts). Then check to see if wheel is tightly secured to motor shaft before operation unit.

NOTE:

- Storage condition: Temperature -13~140°F (-25~60°C) Humidity 30%~80%
- Heating and electric heater function are only valid for heat pump types.
- This air conditioner uses new refrigerant HFC (R454B), R454B refrigerant is flammable.
- Read this manual carefully before using this air conditioner. If you still have any difficulties or problems, consult your dealer for help.
- The air conditioner is designed to provide you with comfortable room conditions. Use this unit only for its intended purpose as described in this instruction manual.
- The minimum rated airflow:

Model	Min. rated airflow required CFM(gph)
18K/24K	238.4(1.07×10 ⁵)
36K	327.5(1.47×10 ⁵)
48K	479.0(2.15×10 ⁵)

Safety Precautions

Precautions for using R454B refrigerant

The basic installation work procedures are the same as the conventional refrigerant (R22 or R410A). However, pay attention to the following points:

/\ WARNING

1. Transportation equipment containing flammable refrigerants.

Pay attention to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment, permitted to be transported together will be determined by the applicable transport regulations.

2. Equipment signs

Signs for similar appliances (containing flammable refrigerants) used in a work area generally are addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location. All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in accordance with these signs.

The effectiveness of signs should not be diminished by too many signs being placed together. Any pictograms used should be as simple as possible and contain only essential details.

3. Disposal of equipment containing flammable refrigerants

In compliance with national regulations.

4. Storage of equipment/appliances

The storage of equipment should be in accordance with the manufacturer's instructions.

5. Storage of packed (unsold) equipment

- •Storage package protection should be constructed so that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant.
- •The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.
- •The storage temperature should not exceed 140°F (60°C), as the refrigerant leakage may occur above 140°F (60°C), which can cause danger.

6. Information on servicing

6-1 Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. To repair the refrigerating system, the following precautions should be complied with prior to conducting work on the system.

6-2 Work procedure

Work shall be undertaken following a controlled procedure so as to minimise the risk of flammable gas or vapour being leaked while the work is being performed.

6-3 General working area

- •All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- •The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by controlling flammable material.

- 6-4 Checking for leakage of refrigerant
 •The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potential flammable atmospheres.
 - •Ensure that the leak detection equipment being used is suitable for flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

6-5 Fire extinguisher

- •If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.
- •Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

6-6 No ignition sources

- •No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- •All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.
- •Prior to working, the area around the equipment should be checked to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

6-7 Ventilated area

•Ensure that the area is in the open air or that it is adequately ventilated before tearing down the system or conducting any hot work.

Safety Precautions

WARNING

- •A degree of ventilation shall be kept during the period that the work is carried out.
- •The ventilation should safely disperse any released refrigerant and preferably discharge it externally into the atmosphere.

6-8 Checks of the refrigeration equipment

- Where electrical components are being changed, they shall be fit for the purpose and the correct specification.
- · At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

• The following checks shall be applied to installations using flammable refrigerants:

The charge amount is in accordance with the room size within which the refrigerant containing parts are installed;

The ventilation machinery and outlets are operating adequately and are not obstructed;
If an indirect refrigerating circuit is used, the secondary circuit shall be checked for the leak of refrigerant;
Marking of the equipment should be visible and legible. Illegal markings and signs hall be corrected;

- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

6-9 Checks of electrical devices

- Repair and maintenance of electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- This shall be reported to the owner of the equipment so all parties are advised.

· Initial safety checks shall include:

- Do not discharge capacitors. Remove power from the unit and check that the LEDs on all PCBs are out before working on the unit.
- That there no live electrical components and wiring are exposed while charging, recovering or purging the
- That there is continuity of earth bonding.

7. Repairs of sealed components

Sealed electrical components shall be replaced.

8. Repairs of intrinsically safe components

Intrinsically safe components must be replaced.

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

10. Detection of flammable refrigerants

- · Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant
- A halide torch (or any other detector using a naked flame) shall not be used.

11. Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants:

• Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)

- Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
 Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (maximum 25%) is confirmed.

 • Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing
- chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

 If a leak is suspected, all naked flames shall be removed/ extinguished.

• If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

Removal of refrigerant shall be according to the manual.

MARNING

12. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs or for any other purpose
- -conventional procedures shall be used.
- However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.
- The following procedure shall be adhered to:
- Safely remove refrigerant following local and national regulations;
- Evacuate;
- Purge the circuit with inert gas;
- Evacuate;
- Continuously flush or purge with inert gas when using flame to open circuit;
- Open the circuit.
- The refrigerant charge shall be recovered into the correct recovery cylinders.
- The system shall be "flushed" with OFN to render the unit safe.
- This process may need to be repeated for several times.
- Compressed air or oxygen shall not be used for this task.
- Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable working.
- This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

13. Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed:
- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system pressure shall be tested with OFN.
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.

14. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail.

It is recommended that all refrigerants are recovered safely.

Prior to the task, an oil and refrigerant sample shall be taken in case that an analysis is required prior to the re-use of recovered refrigerant. It is essential that electrical power is available before the task.

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure ensure that:
- Mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- All personal protective equipment is available and being used correctly;
- The recovery process is supervised at all times by a competent person;
- Recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80 % volume liquid charge).

^

Safety Precautions

MARNING

- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

15. Labelling

Equipment shall be labelled stating that it has been de-commissioned and empty of refrigerant. The label shall be dated and signed.

For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANTS.

16. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended that all refrigerant is removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge is available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Empty recovery cylinders are evacuated and, if possible, cooled before recovery.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.
- Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

17. Competence of service personnel

Information and training

The training should include the substance of the following:

Information about the explosion potential of flammable refrigerants to show that flammables may be dangerous when handled without care.

Information about potential ignition sources, especially those that are not obvious, such as lighters, light switches, vacuum cleaners, electric heaters,

Information about the concept of sealed components and sealed enclosures according to UL 60335. Information about the correct working procedures:

a) Commissioning

- Ensure that the floor area is sufficient for the refrigerant charge or that the ventilation duct is assembled in a correct manner.
- Connect the pipes and carry out a leak test before charging with refrigerant.
- Check safety equipment before putting into service.

Safety Precautions

MARNING

b) Maintenance

- Portable equipment shall be repaired outside on in a workshop specially equipped for servicing units with flammable refrigerants.
- Ensure sufficient ventilation at the repair place.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates sparks.
- Reassemble sealed enclosures accurately If seals are worn, replace them.
- Check safety equipment before putting into service.

c) Repair

- Portable equipment shall be repaired outside or in a workshop specially equipped for servicing units with flammable refrigerants.
- Ensure sufficient ventilation at the repair place.
- Be aware that of the equipment may be caused by refrigerant loss and a refrigerant leak is possible.
- Do not discharge capacitors. Remove power from the unit and check that the LEDs on all PCBs are out before working on the unit.
- When brazing is required the following procedures shall be carried out in the right order.
- Remove the refrigerant
- Evacuate the refrigerant circuit.
- Purge the refrigerant circuit with nitrogen for 5 min.
- Evacuate again
- Remove parts to be replaced by cutting, not by flame.
- Purge the braze point with nitrogen during the brazing procedure.
- Carry out a leak test before charging with refrigerant.
- Reassemble sealed enclosures accurately. If seals are worn, replace them.
- Check safety equipment before putting into service.

d) Decommissioning

- If the safety is affected when the equipment is putted out of service, the refrigerant charge shall be removed before decommissioning.
- Ensure sufficient ventilation at the equipment location.
- Be aware that malfunction of the equipment may be caused by refrigerant loss and a leak is possible.
- Do not discharge capacitors. Remove power from the unit and check that the LEDs on all PCBs are out before working on the unit.
- Remove the refrigerant
- e) Disposal
- Ensure sufficient ventilation at the working place.
- Remove the refrigerant.
- Evacuate the refrigerant circuit
- Purge the refrigerant circuit with nitrogen for 5 min.
- Evacuate again.
- · Cut out the compressor and drain the oil.

Safety Precautions

MARNING

- The pipe-work shall be complianced with national gas regulations.
- Appliance shall be installed, operated and stored in a room with a floor area larger than Y (Y see below).
- The installation of pipe-work shall be kept to a a room with a floor area larger than Y (Y see below).
- · When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
- · Do not place any other electrical products or household belongings under indoor unit or outdoor unit. Condensation dripping from the unit might get them wet, and may cause damage or malfunction of your property.
- · Do not use means to accelerate the defrosting process or to clean, other than those recommended by the
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- · Be aware that refrigerants may not contain an odor.
- To keep ventilation openings clear of obstruction.
- The appliance shall be stored in a well-ventilated area where the room size meets requirements as specified for operation.
- · The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
- Any person involved with a refrigerant circuit should hold a valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with required specification.
- Service shall only be performed as recommended by the equipment manufacturer.
- Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- The appliance shall be installed and stored so as to prevent mechanical damage.
- Mechanical connectors used indoors shall comply with ISO 14903. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated.
- The installation of pipe-work shall be kept to a minimum.
- Mechanical connections shall be accessible for maintenance purposes.
 - That pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed;
 - That afer completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements;
 - The minimum test pressure for the low side: 414psig (2.86MPa)

 - The minimum test pressure for the low side: 414psig (2.56Wil d)
 The minimum test pressure for the high side: 600psig (4.14MPa)
 Field-made refrigerant pipe joints shall be tightness Tested. The Test method shall be Nitrogen pressure of at least 550psi for 30 minutes. The joints must be welded, brazed, or press-fit tight and hold maximum allowable system pressure. No Leak shall be detected.
 - The appliances are equipped a REFRIGERANT DETECTION SYSTEM.

 - The indoor unit must be powered except for service.

 And the selected controller shall be connected to this symbol wire and can display the caution information if the REFRIGERANT leakage is detected.
 - When REFRIGERANT leakage is detected, the fan shall work. And the compressor shall stop.

 - You must contact qualified personnel to repair.

 REFRIGERANT DETECTION SYSTEM include a means for self-testing to determine if a REFRIGERANT SENSOR or SENSING ELEMENT malfunction has occurred. If occurs, the fan shall work, and the compressor shall stop. The controller displays the caution information.
 - You must contact qualified personnel to repair.
 - REFRIGERANT DETECTION SYSTEM shall only be replaced by the appliance manufacture

MARNING

Note:

- The indoor unit shall be installed in the room whose area Y bigger than the below requirements; Or installed in a room, naturally ventilated to outdoors;
- Or installed in a room without continuously operating open flames (e.g. an operating gas appliance) or other POTENTIAL IGNITION SOURCES (for e.g. an operating electric heater, hot surfaces).
- A flame-producing device may be installed in the same space if the device is provided with an effective flame arrest.
- If the duct system meet the below requirement, the minimum room area of conditioned space (equal to Y) can be calculated by all the rooms.
- 1) The appliances shall be connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space.
- 2) If no refrigerant detection system is provided, then, spaces where the airflow may be limited by zoning dampers shall not be included in the determination of Y. Y shall not less than below requirement.
- If the duct system doesn't meet the below requirement, any one room shall meet below minimum room area. And any duct outlet(the supply and return air) shall be 7.2ft.(2.2m) high.

Required minimum room area Y [ft.2(m2)]

	required imministrators and in [14 (iii /ii					
Refrigerant	Air handler unit					
charge amount X[oz.(g)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]	Return air outlet height [ft.(m)]	Y[ft.²(m²)]
70.54(2000)		401(37.3)		80(7.5)		65(6.1)
81.13(2300)		530(49.3)		92(8.6)]	76(7.1)
88.88(2500)		628(58.3)		101(9.4)]	83(7.7)
91.71(2600)		678(63)		105(9.8)]	86(8)
98.77(2800)		787(73.1)		113(10.5)]	93(8.6)
105.82(3000)		903(83.9)		122(11.3)		99(9.2)
112.88(3200)		1028(95.5)		129(12)		105(9.8)
119.93(3400)		1160(107.8)		138(12.8)		112(10.4)
126.99(3600)		1328(123.4)		147(13.7)		121(11.2)
134.04(3800)		1449(134.6)		161(15)		126(11.7)
141.10(4000)		1606(149.2)	5.9(1.8)	179(16.6)	7.2(2.2)	132(12.3)
148.15(4200)		1771(164.5)		197(18.3)		139(12.9)
155.21(4400)	2(0.6)	1943(180.5)		216(20.1)		145(13.5)
162.26(4600)		2124(197.3)		236(21.9)		158(14.7)
169.32(4800)		2312(214.8)		257(23.9)		172(16)
176.37(5000)		2509(233.1)		279(25.9)		186(17.3)
183.42(5200)		2714(252.1)		301(28)		202(18.8)
190.48(5400)		2927(271.9)		325(30.2)		217(20.2)
197.53(5600)		3147(292.4)		350(32.5)		236(21.7)
204.59(5800)		3376(313.6)		375(34.8)		251(23.3)
211.64(6000)		3613(335.7)		402(37.3)		269(25)
218.7(6200)		3858(358.4)		428(39.8)		287(26.7)
225.75(6400)		4111(381.9)		456(42.4)		306(28.4)
232.81(6600)		4371(406.1)		485(45.1)		325(30.2)
239.86(6800)		4640(431.1)	Ī	516(47.9)		346(32.1)
246.92(7000)		4918(456.9)		547(50.8)		366(34)
253.97(7200)		5202(483.3)		578(53.7)] [388(36)
261.03(7400)		5496(510.6)		610(56.7)		409(38)

General

Safety Precautions

Explanation of symbols displayed on the indoor unit or outdoor unit.

Refrigerant safety group A2L	WARNING	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
CAUTION		This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
[]i	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

Cassette

Symbols in this User's Manual are interpreted as shown below:



The feature of the appliance, instead of a fault.

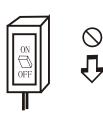
Pay attention to such a situation.

Be sure to follow the instruction.

Grounding is necessary.

Warning: Incorrect handling could

cause a serious hazard, such as death, serious injury,etc.



Do not use the power supply circuit breaker or pull off the plug to turn it off during operation. This may cause a fire due to spark, etc.



Avoid dirt accumulation on power supply circuit breaker. Connect the power supply cord to it firmly and correctly, Otherwise it may lead to electric shock or a fire break out due to insufficient contact.



Provide accurate power supply in accordance with the rating plate requirement. Otherwise, serious faults may occur or a fire may be break out.



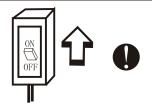
Do not apply excess pressure, pull or press the power supply cord, otherwise, the power supply cord car break leading to electric shock or fire.



Never insert a stick or similar object to the unit. Since the fan is rotating at high speed, this may cause an injury.



It is harmful for your health if you are exposed to cold air for prolonged period of time. Hence it is recommended for uniform distribution of airflow in the room.



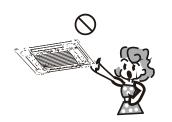
Turn off the appliance first and then cut off power supply when appliance malfunctions.



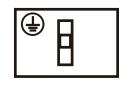
Do not repair the appliance on your own, this may lead to electric shock and so on.



Prevent the air flow from reaching the gas burners and stove.



Do not operate the unit with wet hands.



It is user's responsibility to make the appliance grounded according to local and national codes or ordinances by a licensed person.

Cassette

Operating condition

The protective device may trip and stop if it is operated outside the allowed temperature range.

If the air conditioner runs in "COOLING" or "DRY" mode with door or window open for a long time when relative humidity is above 85%, dew may drip down from the air outlet.

Noise pollution

• Install the air conditioner at a place that can bear its weight to for quiet operation.

Features of protector

The protective device will work at following cases:

 Turning off the appliance and restarting it at once or changing mode during operation, you need to wait at least 3 minutes.

Inspection

After operating for a long time, the air conditioner should be inspected on the following items:

- Overheat of the power supply cord and plug or even a burnt smell.
- Abnormal operating sound or vibration.
- Water leakage from indoor unit.
- Electrification of metal cabinet.
- Stop the air conditioner if above trouble occurs. It is advisable to have a detailed inspection after using the appliance for 5 years even if none of the above condition occurs.

Features of HEATING mode

Preheating

At the beginning of HEATING operation, the airflow from indoor unit is discharged 2-5 minutes later.

Defrosting

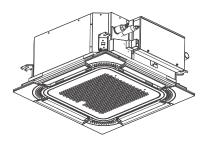
During HEATING operation the appliance will defrost automatically to improve efficiency. This procedure usually lasts for 2-10 minutes. During defrosting, fans stop operation. After defrosting completes, it returns to "HEATING" mode automatically.

It is hard to increase the room temperature when outdoor temperature is very low. It might take longer time if the working temperature range not closer to the operation limits.

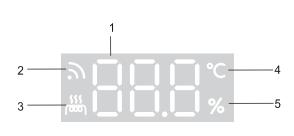
Cassette

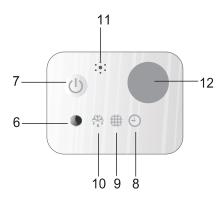
Indoor unit





Display panel





- 1 Temperature/humidity indicator
 Display indoor set temperature or indoor temperature; Display indoor humidity (models without a humidity sensor display "______").
- 2 Wi-Fi receiver
 - It lights up when Wi-Fi is connected. It stops lighting when Wi-Fi is disconnected.
- **3** Electric heater indicator (It is only valid for the air conditioner with electric heater function.) It lights up during heating mode when electric heater is on. It stops lighting when heater is completed.
- 4 Temperature Unit (°C) indicator
 - It lights up when the air conditioner displays with Celsius temperature, and stops lighting when it is displays with Fahrenheit temperature.
- 5 Humidity indicator
 - It lights up when display humidity.

NOTE: The figures in this manual are based on the external view of a standard model.

Consequently, the shape may differ from the air conditioner model you have selected.

Cassette

6 Run indicator (Red)

It lights on during operation. It lights off during SLEEP mode.

7 Emergency switch

The filter clean indicator is reset when the switch is pressed. The unit will be started or stopped when the switch is pressed. The unit will be operated in forced cooling mode if press the switch continuously for more than 5s when the unit is off.

8 Timer indicator (Green)

It lights on when timer is in use. It lights off when timer completes.

9 Filter clean (Yellow)

It lights on when the filter should be cleaned.

10 Defrost indicator (Green)

It lights on during defrosting and it lights off when defrosting is complete.

11 Buzzer

It rings when the signal from remote controller is received.

12 Infrared receiver

Receives signal from the remote controller.

Operation Manual

1. Special Remarks

• 3-minute protection after the compressor stops

To protect compressor, the system implements a 3 minutes once operation is stopped.

• 5 minute-protection

Compressor must run for at least 5 minutes once operation starts. During the 5 minutes, compressor will not stop even after set point is reached. The system will shut off if manually turned off using the remote controller.

Cooling operation

The fan of the indoor unit will never stop running in cooling operation. It continues to operate even if the compressor stops working.

Heating operation

Heating capacity depends on external factors like outdoor unit temperature. Heating capacity might decrease if outdoor ambient temperature is too low.

Anti-freezing function during cooling

When the air temperature from the indoor outlet is too low, the unit will run for some time under the fan mode, to avoid frost or ice forming on the indoor heat exchanger.

• Anti cold air function

When heating, in order to prevent the indoor unit from blowing cold air, the fan speed is controlled at low speed air or stopped in heating mode, and the fan speed is set according to the indoor coil temperature.

Defrosting

When the outdoor temperature is too low, ice may form on the outdoor heat exchanger, reducing heating performance. When this happens, the defrost cycle of the system will start. During the defrost cycle, the indoor unit fan stops (or runs at a very low speed in some cases), to prevent cold draft.

Once the defrost cycle is complete, heating operation and the fan speed resume.

· Discharging the residual heating air

When stopping the air conditioner in normal operation, the fan motor will run with low speed for a while to blow out the residual hot air.

Auto restart from power outage

When the power supply is recovered after power outage, all presets still be in effect and the system will run according to the previous settings.

Cassette

2. Filter Cleaning

ACAUTION

Do not operate the system without air filter to protect the indoor unit heat exchanger against being clogged.

Turn off the main power switch before changing or cleaning filter. (The previous operation mode may appear.)

Installation or maintenance work of air filter must be performed by qualified professional personnel.

2.1 Filter Cleaning Indication

(1) For THREE-EIGHT indicators

When letters "FC" displays, it indicates it's time to clean the filter.

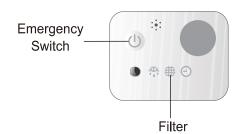
(2) For light indicators

Step 1

It is time to clean the filter, when the filter icon is turned on.

Cancel the setting

Press Emergency switch \bigcirc to return to the standard state.



2.2 Take Out the Filter

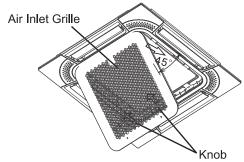
Take out the air filter according to the following steps.

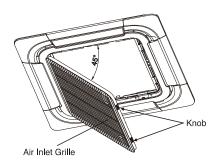
Step 1

Open the air inlet grille after pushing the two knobs as the arrow mark.

Step 2

Take out the air filter from the air inlet grille by supporting the air grille and lifting the air filter after detaching the filter from the hinges.





2.3 Clean the Filter

Clean the air filter according to the following steps.

Step 1

Use a vacuum cleaner or rinse the air filter to remove the dirt.



Do not use hot water with temperature higher than 104°F (40°C).

Step 2

Dry the air filter in the shade to remove excess moisture.

2.4 Resetting of Filter

Press key "TURBO" on the remote controller for 5 seconds, then release the button to restore.

Cassette

3. Trouble Shooting



When condensate drain overflows from the indoor unit, stop the operation and contact a qualified, licensed service professional.

When you smell or see smoke coming out of the unit, turn OFF the main power supply and contact a qualified, licensed service professional.

3.1 If Trouble issue persists

If the issue continues after checking the following, contact your contractor and inform them of the following items.

- (1) Model number and serial number
- (2) Details of the issue

3.2 No Operation

Check whether the SET TEMP is set at the correct temperature.

3.3 Not Cooling or Heating Properly

- Check for obstruction of air flow of outdoor or indoor units.
- Check if there are too many heating sources in the room.
- Check if the air filter is clogged.
- Check if the doors or windows are open.
- Check if the temperature condition is within the operation range.

3.4 This is Not Abnormal

• Odour from Indoor Unit

Unpleasant odour diffuses from indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.

Sound from Deforming Parts

When start or stop the system, a sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.

• Dew on Air Panel

When the cooling operation continues for a long period of time under high humidity conditions, dew can form on the air panel.

Refrigerant Flow Sound

While the system is being started or stopped, the refrigerant flow sound may be heard.

Installation and Maintenance

1. Safety Notice



- Installation should be performed by a qualified personnel. (Improper installation may cause water leakage and damage, shock, or fire.)
- Install the unit according to the instructions given in this manual. (Incomplete installation may cause water leakage and damage, electrical shock, or fire).
- Be sure to use the supplied or specified installation parts. (Use of other parts may result in a poor installation, water leakage, shock, or fire).
- Install the air conditioner on a solid structure that can support the unit weight. (Inadequate support or incomplete installation may cause injury).
- ·Electrical work should be carried out in accordance with the installation manual and national and local

Cassette

- For wiring, use a cable long enough to cover the entire distance. Do not use an extension cord.
- Use the specified types of wires for electrical connections between the indoor and outdoor units. (Tightly connect the wires so their terminals with no external stresses).
- Poor or loose connections may cause terminal overheating or fire.
- After connecting all the wiring be sure to secure the cables so that they do not put pressure on the electrical covers or panels. (Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, or fire).
- When installing or relocating the system, be sure to keep the refrigerant circuit free from air (Air in the refrigerant circuit may cause an abnormal pressure rise or rupture, resulting in injury).
- If any refrigerant has leaks out during the installation work, ventilate the room.
- After all installation is completed, check to make sure that no refrigerant is leaking out. (Refrigerant produces a toxic gas if exposed to flames).
- When making piping connection, do not let any debris or contaminants other than the specified refrigerant get into refrigeration cycle. (Doing so will cause reduced performance, abnormal high pressure in the refrigeration cycle, explosion and injury).
- Make sure that the equipment is properly grounded. Do not ground the unit to a utility pipe, lightning arrester, or telephone grounding. Incomplete grounding may cause electrical shock. (A high surge current from lightning or other sources may cause damage to the equipment).
- An earth leakage circuit breaker may be required depending on the site condition to prevent electrical shock.
- Disconnect the power supply before wiring, piping, or checking the unit.
- When moving the units, do not tilt the unit incline more than 45 degree. Pay attention to the sharp edges of the air conditioner to avoid any injury.
- During wired controller installation, ensure that the length of the wire between the indoor unit and remote controller is within 131 ft. (40 m).



- Do not install the equipment in a location where there is danger of exposure to flammable gas leakage. (A high concentration of flammable gas near the unit may result in fire)
- Install condensate drain piping according to the instructions in this manual. (Inadequate piping may cause flooding).
- Tighten the flare nut according to the specifications with a torque wrench. (Tightening the flare nut beyond specified torque may damage the flare nut).

2. Tools and Instruments for Installation

Number	Tool	Number	Tool	
1	Standard screwdriver	8	Knife or wire stripper	
2	Refrigerant vacuum pump	9	Level	
3	Charge hose	10	Hammer	
4	Pipe bender	11	Drill	
5	Adjustable wrench	12	Flaring kit	
6	Pipe cutter	13	Inner hexagon spanner and torque wrench	
7	Cross head screwdriver	14	Measuring Tape	

3. Installation of the Indoor Unit



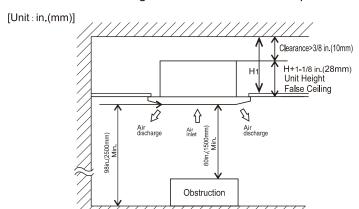
Do not install the indoor unit in a flammable environment to avoid fire or an explosion.

▲ WARNING

- Check to ensure that the overhead structure can support the weight of the equipment. Otherwise the indoor unit may topple, and fall down causing injury.
- Do not install the indoor unit outdoors. If done, an electric hazard or electric leakage will occur.

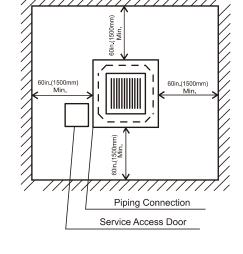
3.1 Initial Check

- Install the indoor unit with a proper clearance around it for operation and maintenance space, as shown in Fig.3.1.
- Provide a service access door near the unit piping connection area on the ceiling.
- Ensure that the ceiling has a sufficient strength to hang the indoor unit.
- Check that the ceiling surface is flat for the air panel installation work.



NOTE:

H1: Size determination with at least a 1% downward slope of the drain pipe.



[Unit:in.(mm)]

Capacity (Btu/h)	Н	
9K/12K	8-7/16	
9K/12K	(215)	
18K/24K	9-1/4	
10N/24N	(236)	
36K/48K	10-3/4	
30K/46K	(272)	

Fig. 3.1 Space around Indoor Unit

- Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air distribution can be achieved in the room. It is recommended that the indoor unit is installed 8 ft. (2.5m) to 10 ft. (3m) from the floor level.
- Do not install flammable items in the service space for the indoor unit.
- Avoid obstacles which may obstruct the air intake or the air discharge flow.
- Do not install the indoor unit in a machine shop or kitchen where oil vapor or mist flows through the indoor unit.
 - The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and in severe cases, damaging the indoor unit.
- Pay attention to the following points when the indoor unit is installed in a hospital or other facilities with electromagnetic waves from medical equipment:
 - (A) Do not install the indeer unit where the electromagnetic wave is directly radiated to the electrical have

Cassette

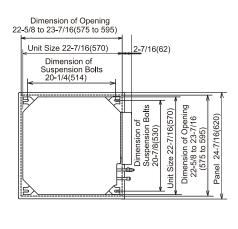
- (C) Instal the remote controller within a field provided and installed steel box. Prepare a steel case and install the remote control switch in it. Install remote controller wire with a steel electric conduit. Connect a ground wire to both the box and the tube.
- (D) Install a noise filter when the power supply emits harmful noises.
- To avoid any corrosive chemical reaction at the heat exchanger, do not install the indoor unit in an acid or alkaline environment. If the indoor unit has to be installed in such environments, use corrosion-proof type unit.

3.2 Installation

3.2.1 Opening of False Ceiling and Suspension Bolts

- (1) Determine the final location and orientation of installation of the indoor unit. Allow adequate space for piping, wiring, and maintenance.
 - Indoor unit installation template is printed on the packaging. Cut out the template for opening the false ceiling and installing the suspension bolts.
- (2) Cut out the area for the indoor unit in the false ceiling and install suspension bolts, as shown in Fig. 3.2.

Unit: in. (mm)



9K/12K

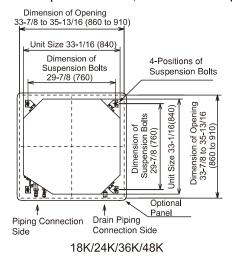


Fig. 3.2 Opening of False Ceiling and Suspension Bolts

- (3) Check to ensure that the ceiling is horizontally level, otherwise the condensate may not drain properly, issues can occur.
- (4) Strengthen the opening parts of the false ceiling.
- (5) Mount suspension bolts, as shown in Fig. 3.3.

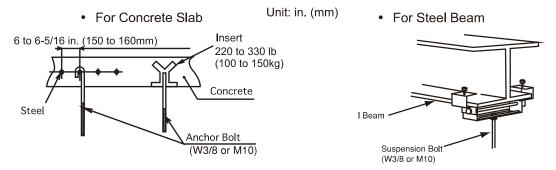


Fig. 3.3 Mounting Suspension Bolts

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3.2.2 Mounting Position of the Indoor Unit

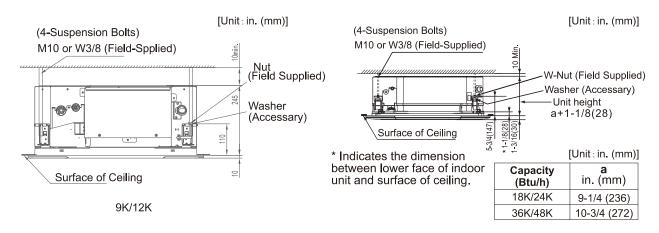


Fig. 3.4 Mounting Position [Unit: in. (mm)]

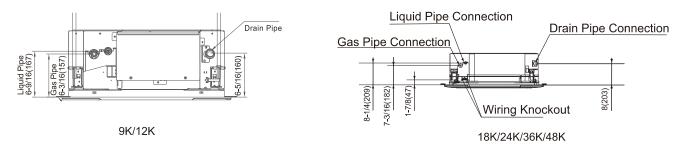
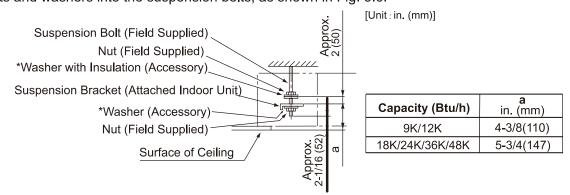


Fig. 3.5 Indoor Unit and Air Panel [Unit: in. (mm)]

3.2.3 Installing the Indoor Unit

(1) Mount the nuts and washers into the suspension bolts, as shown in Fig. 3.6.



^{*}Place the washer so that the surface with insulation faces downwards.

Fig. 3.6 Mounting Nuts and washer

Cassette

- (2) Lift the indoor unit by hoist, and do not apply any force on the drain pan.
- (3) Secure the indoor unit using the nuts and washer, as shown in Fig. 3.7.

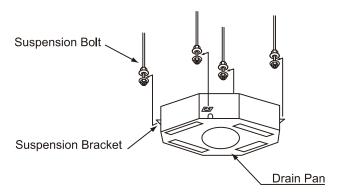


Fig. 3.7 Mounting the Indoor Unit

NOTE: If a false ceiling is already constructed, complete all piping and wiring work inside the ceiling before securing the indoor unit.

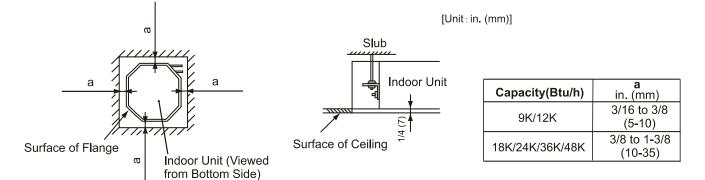
3.2.4 Adjusting the Space between Indoor Unit and False Ceiling Opening



- Check the level of the drain pan using a leveler to avoid incorrect operation of the drain discharge mechanism in the indoor unit. The drain piping side of the indoor unit must be approximately 5mm lower than the other side.
- Tighten the nuts of the suspension brackets after the adjustment is completed. Apply LOCK-TIGHT paint* to the bolts and nuts to prevent them from loosening, otherwise, abnormal noises or sounds may occur and the indoor unit may fall down.

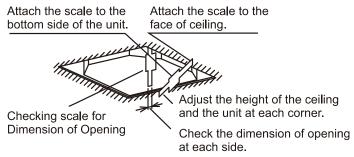
LOCK-TIGHT paint*: Paint the lock bolts and nuts. Adjust the indoor unit to the correct position while checking with the scale (factory-supplied).

- (1) Installation template is attached with the packing.
- (2) Adjust the position of indoor unit, according to the dimensions.

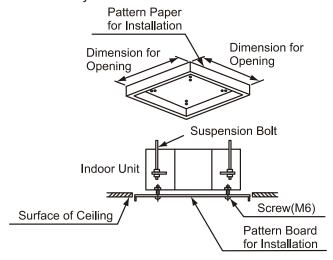


Cassette

a. For Ceiling already Completed with Panels



b. Ceiling not Completed with Panels yet



3.3 Installation Details for Air Panels

- Installation work for air panel should be done according to the Installation Manual for Air Panel.
- Ensure that the connector between indoor unit and the air panel is properly connected.

4. Refrigerant Pipe

A DANGER

Use refrigerant R454B in the refrigerant cycle (refer to outdoor nameplate). Do not add oxygen, acetylene or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-pressure test. These type of gases are extremely dangerous, which may cause an explosion. It is recommended to use nitrogen to perform these tests.

4.1 Pipe Material

- (1) Prepare locally-supplied copper pipes.
- (2) Select the piping size from the following table.

Model	Gas pipe [in. (mm)]	Liquid pipe [in. (mm)]		
9K/12K	ø 3/8 (9.52)	ø1/4 (6.35)		
18K	ø 1/2 (12.7)	ø 1/4 (6.35)		
24K/36K	ø 5/8 (15.88)	ø 3/8 (9.52)		
48K	ø 3/4 (19.05)	ø 3/8 (9.52)		

Cassette

4.2 Pipe Connection

(1) Position of piping connection is shown in Fig. 4.1.(Indoor Unit)

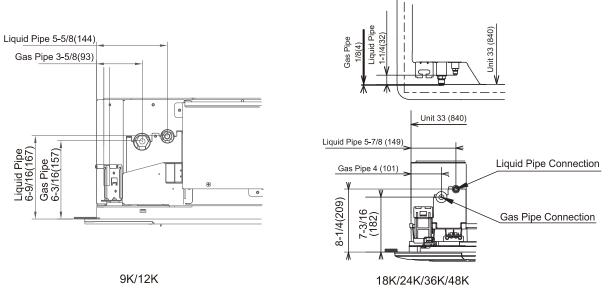


Fig. 4.1 Position of Piping Connection [Unit:in. (mm)]

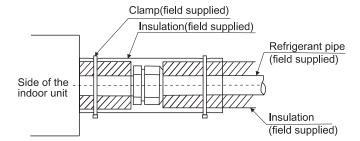
(2) When tightening the flare nut, use torque wrench and adjustable as shown in Fig.4.2.



Tube size [in. (mm)]	Torque [lbf-ft. (N-m)]		
ø 1/4 (6.35)	14.8 (20)		
ø 3/8 (9.52)	29.5 (40)		
ø 1/2 (12.7)	44.3 (60)		
ø 5/8 (15.88)	59.0 (80)		
ø 3/4 (19.05)	73.8 (100)		

Fig. 4.2 Tightening Work of Flare Nut

(3) After finishing connecting the refrigerant pipes, keep it warm with the insulation material.



Cassette

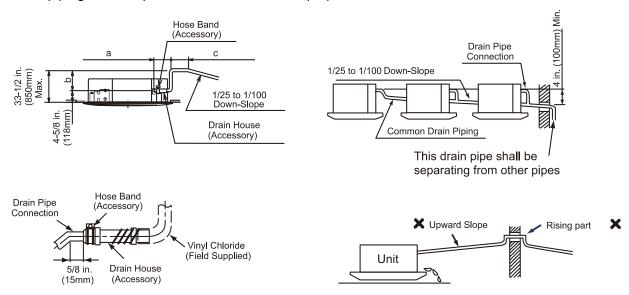
5. Drain Piping

▲ CAUTION

- Do not create an upper-slope or rise for the drain piping, since drain water can flow back to the indoor unit causing leakage into the room when the system operation is stopped.
- Do not connect the drain pipe with sanitary, sewage piping, or any other drainage piping.
- When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common drain pipe, also the pipe must be sized properly based on system capacity.

5.1 Conduct Drain Piping Work

- (1) Prepare a polyvinyl chloride pipe with a 1-1/4 in. (32mm) outer diameter.
- (2) Fasten the tubing to drain hose with the adhesive agent and factory-supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.



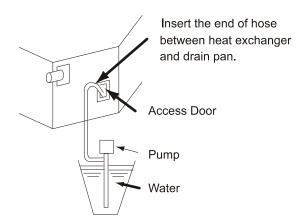
- * The total length of a+b+c:
 - $a \le 12$ in. (300mm), $b \le 33-1/2$ in. (850mm), $c \le 2$ in. (50mm), $a+b+c \le 43-5/16$ in. (1100mm)
- * In case of lifting the drain pipe at outlet part, perform the drain piping work as shown in the above figure.
- (3) Insulate the drain pipe after connecting the drain hose.

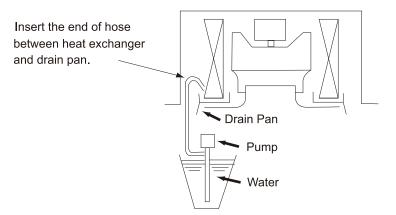


Cassette

5.2 Check Draining of the Piping

- After performing drain piping work and electrical wiring, check to ensure that water drains properly per the following procedure.
- Checking with the Float Switch:
 - (A) Switch ON the power supply.
 - (B) Start cooling operation.
 - (C) Gradually pour 64~80.6 oz(2~2.5 liters) of water into the drain pan through the access door or the air outlet.
 - (D) Check to ensure that the water flows out at the end of drain piping and no water leakage occurs. When water cannot be found at the end of drain piping, pour another 64 oz(2 liters) of water into the drain pan.
- If pouring water through the access door.
- To add water through the air outlet use the diagram below for guidance.





Cassette

6. Electrical Wiring



- Turn OFF the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, drain pipe, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Check the item below before turning ON the main switch.
- Tighten screws according to the following torque.

M3.5: 0.9 lbf·ft. (1.2 N·m)

M5: 1.5 to 1.8 lbf·ft. (2.0 to 2.4 N·m)



- Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate water or insects.
- Tightly secure the wires with the cord clamp inside the indoor unit.
- Secure the cable of the remote control switch using the cord clamp inside the electrical box.

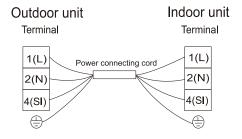
6.1 General Check

- (1) Make sure that the field-selected electrical components(main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in "7. Electrical Installation". Make sure that the components comply with National Electrical Code(NEC).
- (2) Check to ensure that the power supply voltage is within ±10% of the rated voltage.
- (3) Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.
- (4) Check to ensure that the ground wire is connected.
- (5) Power Source Main Switch Install a multi-pole main switch with a space of 1/8 in. (3.5mm) or more between each phase.

6.2 Electrical Wiring Connection

The intermediate connection between the indoor unit and the air panel should be referred to in the "Installation Manual for Air Panel".

- (1) Connect the power supply and earth wires to the terminals in the electrical box.
- (2) Connect the wires between the indoor unit and the outdoor unit to the terminals in the electrical box.

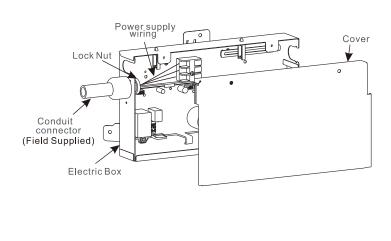


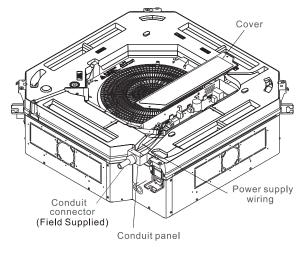
6.3 Wire connects step

- (1) Remove the screws and the cover.
- (2) Pass power supply wiring through the hole on the conduit panel or electric box.
- (3) Fasten the conduit connection to the conduit panel using the lock nut.
- (4) Connect the power supply wiring to the terminal.
- (5) Tie the power supply wiring with the clamp tightly.
- (6) After completing the wiring, seal the wiring hole with the sealing material.

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Cassette





9K/12K

18K/24K/36K/48K

7. Electrical Installation

AWARNING

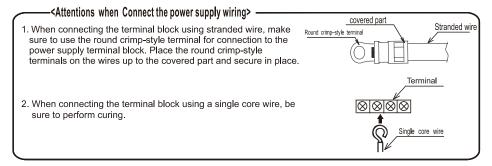
- This product must be installed on a single dedicated electrical circuit. Circuit breaker protection must be installed in accordance with this manual. In moist and humid locations, an ELB type circuit breaker must be used.
- Do not operate the system until all the check points have been cleared.
 - (A) Check to ensure that the insulation resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
 - (B) Check to ensure that the stop valves of the outdoor unit are fully opened and then start the system.

Model Capacity(Btu/h)	Transmitting Cable Size	
9K~48K	4×14AWG	

Note:

- (1) Follow local and national codes and regulations when select field wires ,and all the above are the minimum wire size.
- (2) Use copper supply wires.
- (3) Install main switch and ELB for each system separately. When used, select the high response type ELB that is acted within 0.1second.

Recommended capacity to see outdoor machine switch capacity.



8. Trial Run

Please perform trial run according to outdoor unit installation manual.

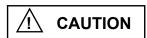
Cassette-Fresh Air Duct



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injuries.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injuries.



CAUTION, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injuries.

NOTICE

NOTICE is used to address practices not related to personal injury.

NOTE

NOTE is useful information for operation and/or maintenance.

Cassette-Fresh Air Duct

NOTICE

- If the air conditioning system is installed in a location where difference between the indoor temperature and outdoor supply air temperature is 15 degrees or more, a heat recovery ventilator is required.
 Otherwise, air conditioning is not available. In addition, when the said difference is 10 degrees or more, the Thermo-ON/OFF behavior of the operation may get slow. However, it does not affect the operation of the air conditioner.
- The installation of fresh air intake duct is prohibited for safety reason. Consult the local and national building and safety codes and regulations.
- Air filters must be installed in the duct. Fresh air does not pass through the air filter of air panel.
- A duct adapter can take in fresh air approximately 0.5 m³/min through duct fan, and a heat recovery ventilator must be installed for further fresh air intake. The amount of fresh air intake must be kept below 1.0 m³/min. When the heat recovery ventilator and duct fan are in service, the operation noise may rise. Interlock the duct fan, heat recovery ventilator and indoor unit, and they must be controlled to run only at the time of air-conditioner driving.

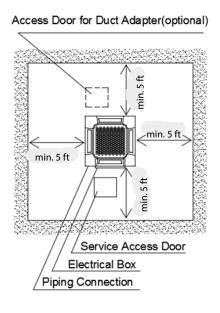
Cassette-Fresh Air Duct

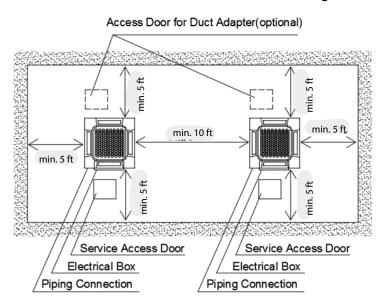
- Thermally insulate duct and duct connector using nonflammable insulation materials. Otherwise, air leakage and condensation may arise.
- Install the indoor unit and then attach the duct adapter. Otherwise, the indoor unit can't be installed for grid ceiling. For the normal ceiling, arrange a service access door near the indoor unit.

Clearance

Distance from Wall Side

Dimensions given in feet

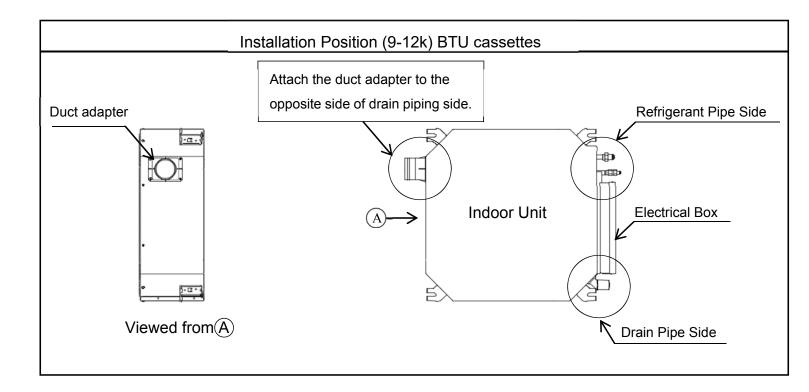




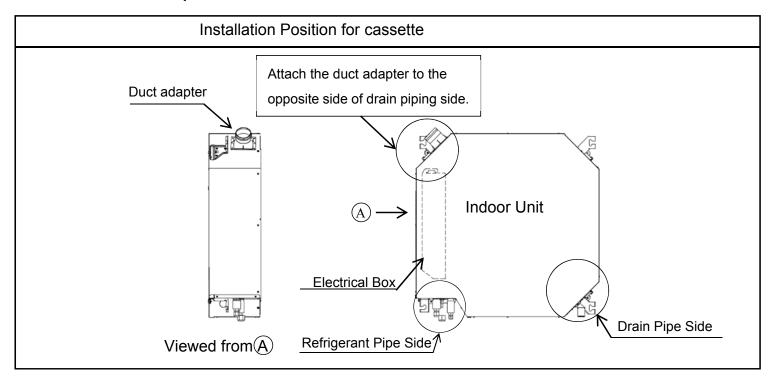
Cassette-Fresh Air Duct

2. Installation

This duct adapter is used as the connection flange to attach the fresh air intake duct.



Cassette-Fresh Air Duct Adapter



(1) Attach the duct adapter to the indoor unit in the following procedure.

Cassette-Fresh Air Duct Adapter

Procedure

- 1. Punch the knockout hole in the side plate where the duct adapter is attached with scissors, etc.
- 2. Cut of the insulation (Polystyrene) along notched part of the side plate using a cutter, etc.
- 3. File the notched part slightly to remove burr after punching. (Be sure to prevent debris getting into the indoor unit.)
- Remove debris after cutting off the insulation (Polystyrene).
 Otherwise, debris may get scattered during the indoor unit operation.

- 5. DO NOT put the edge of a cutter more than 1 1/8" into the notched part when cutting off the insulation.
- DO NOT use any tool which produces a lot of debrissuch as a saw for the opening operation.
 The drain cycle is clogged so that may cause water leakage.
- A hot knife is suggested for a clean cutout

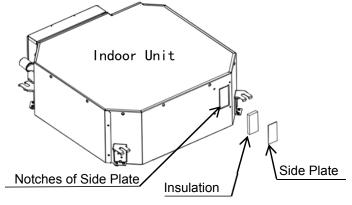
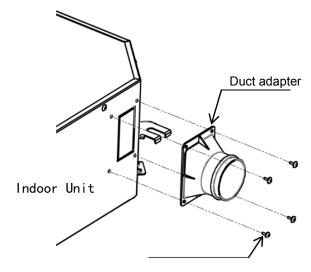


Fig.1

Cassette-Fresh Air Duct Adapter

(2) Fix the duct adapter with screws (4 pieces).



(3) Tighten the band for fixing the flexible duct.

Ducted

6.2 Change of Static Pressure

The static pressure can be freely adjusted by using specific wired controller. (For more information, please refer to other technical files or contact local technical service center of our company.)

Capacity (Btu/h)	The Range of Static Pressure	Function Code Set	
9K/12K	0-0.20 in. H ₂ O (0-50Pa)	0-50 function code value equals static pressure value, more than 45 is 0.18 in. H ₂ O (45Pa). [default: 0.18 in. H ₂ O (45Pa)]	
18K	0-0.56 in. H ₂ O (0-140Pa)	0-140 function code value equals static pressure value, more than 45 is 0.18 in. H ₂ O (45Pa). [default: 0.18 in. H ₂ O (45Pa)]	
24K	0-0.66 in. H₂O (0-165Pa)	0-165 function code value equals static pressure val	

Note: The pressure loss of filter is included in the data above.

6.3 Electrical Installation

AWARNING

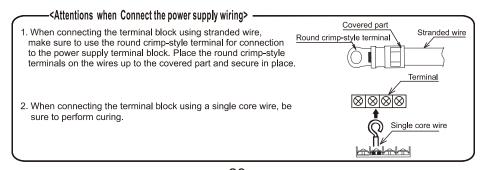
- This product must be installed on a single dedicated electrical circuit. Circuit breaker protection must be installed in accordance with this manual. In moist and humid locations, an ELB type circuit breaker must be used.
- Do not operate the system until all the check points have been cleared.
- (A) Check to ensure that the insulation resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
- (B) Check to ensure that the stop valves of the outdoor unit are fully opened and then start the system.
- Pay attention to the following items while the system is running.

 Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 194°F (90°C).

Capacity (Btu/h)	Transmitting Cable Size
9k-24k	4×14AWG

Note:

- (1) Follow local and national codes codes and regulations when select field wires, and all the above are the minimum wire size.
- (2) Use copper supply wires.
- (3) Install main switch and ELB for each system separately. When using an ELB, select the high response type ELB that is acted within 0.1second.



Ducted

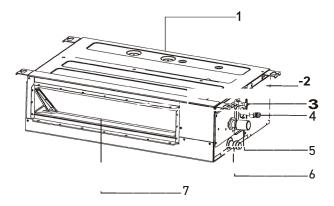
7. Test Run

Please perform test run according to outdoor unit installation manual.

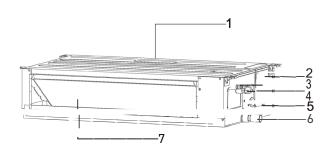
Ducted

Indoor unit

9K/12K



18K/24K



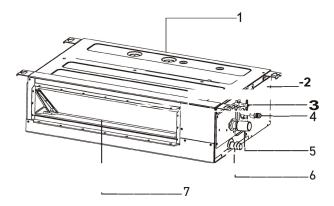
- 1. Air inlet
- 2. Electric box

- Refrigerant pipe (Liquid)
 Refrigerant pipe (Gas)
 Drain pipe (Connect with pump)
- 6. Drain pipe
- 7. Air outlet

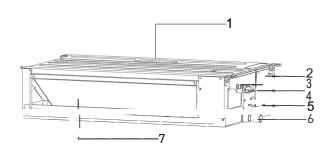
Ducted

Indoor unit

9K/12K



18K/24K

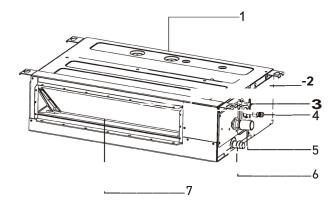


- 1. Air inlet
- Electric box
 Refrigerant pipe (Liquid)
- 4. Refrigerant pipe (Cas)5. Drain pipe (Connect with pump)6. Drain pipe7. Air outlet

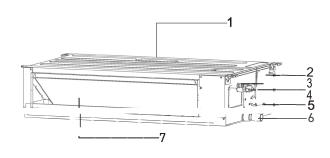
Ducted

Indoor unit

9K/12K



18K/24K



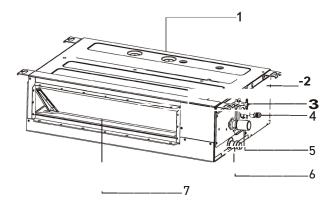
- 1. Air inlet
- 2. Electric box

- Refrigerant pipe (Liquid)
 Refrigerant pipe (Gas)
 Drain pipe (Connect with pump)
- 6. Drain pipe 7. Air outlet

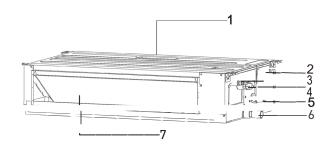
Ducted

Indoor unit

9K/12K



18K/24K



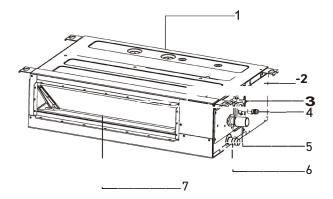
- 1. Air inlet

- Air inlet
 Electric box
 Refrigerant pipe (Liquid)
 Refrigerant pipe (Gas)
 Drain pipe (Connect with pump)
 Drain pipe
 Air outlet

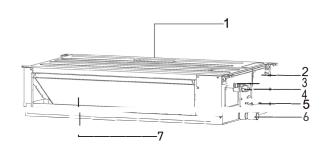
Ducted

Indoor unit

9K/12K



18K/24K

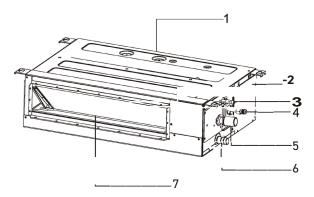


- 1. Air inlet
- 2. Electric box
- 3. Refrigerant pipe (Liquid)
- 4. Refrigerant pipe (Gas)
- 5. Drain pipe (Connect with pump)
- 6. Drain pipe
- 7. Air outlet

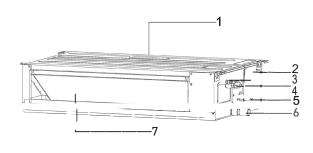
Ducted

Indoor unit

9K/12K



18K/24K

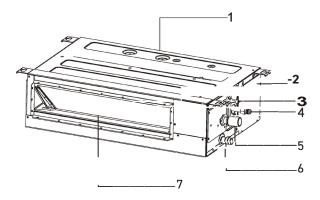


- 1. Air inlet
- 2. Electric box
- 3. Refrigerant pipe (Liquid)
- 4. Refrigerant pipe (Gas)5. Drain pipe (Connect with pump)
- 6. Drain pipe
- 7. Air outlet

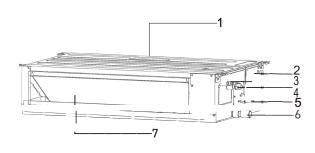
Ducted

Indoor unit

9K/12K



18K/24K



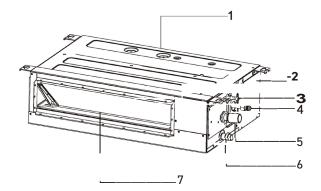
- 1. Air inlet
- 2. Electric box

- 3. Refrigerant pipe (Liquid)
 4. Refrigerant pipe (Gas)
 5. Drain pipe (Connect with pump)
- 6. Drain pipe
- 7. Air outlet

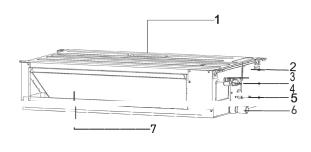
Ducted

Indoor unit

9K/12K



18K/24K



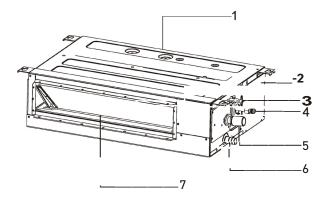
- 1. Air inlet
- 2. Electric box

- 3. Refrigerant pipe (Liquid)4. Refrigerant pipe (Gas)5. Drain pipe (Connect with pump)
- 6. Drain pipe
- 7. Air outlet

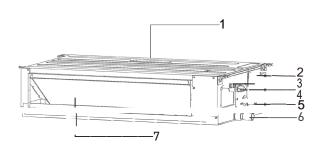
Ducted

Indoor unit

9K/12K



18K/24K



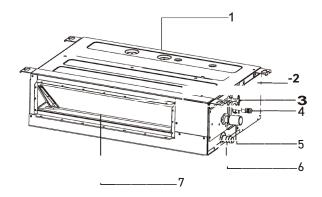
- 1. Air inlet
- 2. Electric box

- 2. Electric box
 3. Refrigerant pipe (Liquid)
 4. Refrigerant pipe (Gas)
 5. Drain pipe (Connect with pump)
 6. Drain pipe
- 7. Air outlet

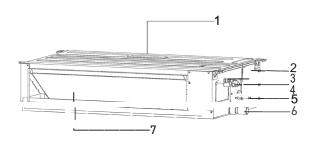
Ducted

Indoor unit

9K/12K



18K/24K

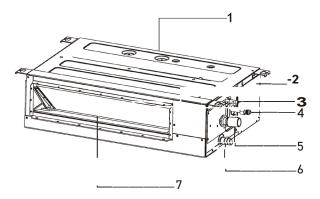


- 1. Air inlet
- 2. Electric box
- 3. Refrigerant pipe (Liquid)
- 4. Refrigerant pipe (Gas)5. Drain pipe (Connect with pump)6. Drain pipe7. Air outlet

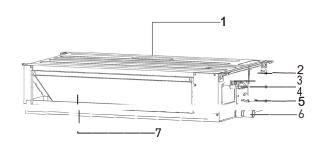
Ducted

Indoor unit

9K/12K



18K/24K



- 1. Air inlet
- 2. Electric box
- 3. Refrigerant pipe (Liquid)
- 4. Refrigerant pipe (Gas)
- 5. Drain pipe (Connect with pump)6. Drain pipe
- 7. Air outlet

Wall Mount

C.2 Clearances

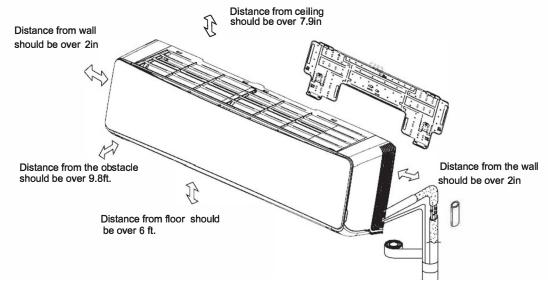


Figure C.2

Wall Mount

C.3 Pre-Installation Checkpoints

- 1. Ensure there are no obstacles near the air outlet and air can be easily blown to every corner.
- 2. Where piping and wall hole can be easily arranged.
- 3. Keep the required space from the unit to the ceiling and wall according to the installation diagram on previous page.
- 4. Where the air filter can be easily removed.
- 5. Keep the unit and remote controller 3 ft or more apart from television, radio etc.
- 6. Keep as far as possible from fluorescent lamps.
- 7. Do not put anything near the air inlet to obstruct it from air absorption.
- 8. Install on a wall that is strong enough to bear the weight of t he unit
- 9. Install in a place that will not increase operation noise and vibration.
- 10. Refer to Table C.3.3 for max line set length and max elevation.
- 11. Refer to the Outdoor Unit Installation and operation manual for piping requirements, refrigerant charging, and operational checks.

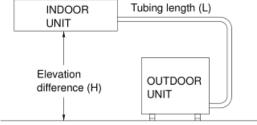


Figure C.3.1

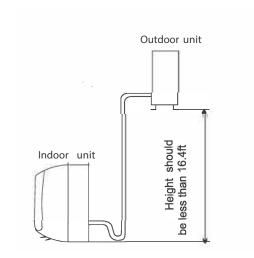
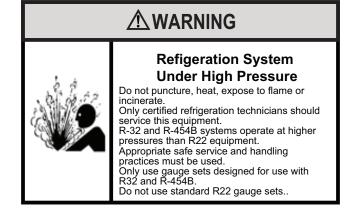


Figure C.3.2

Capacity (Btu/h)	Pipe Size		Standard	Max. Elevation	Max. Length	Additional Refrigerant
	LIQUID	GAS	Length (ft)	H (ft)	L (ft)	(oz/ft)
7k	1/4"	3/8"	25	50	66	.22
9k	1/4"	3/8"	25	50	66	.22
12k	1/4"	3/8"	25	50	66	.22
18k	1/4"	1/2"	25	50	100	.22
24k	3/8"	5/8"	25	50	100	.32
Table C.3.3						

Fire Hazard A2L refrigerant is classified as mildly flammable. Temperatures on surfaces that may be exposed to leakage of FLAMMABLE REFRIGERANTS shall not exceed 1292°F



Wall Mount

C.4 Install Mounting Plate

1. Installing the Mounting Plate

- Decide an installing location for the mounting plate according to the indoor unit location and piping direction.
- 2) Find the center of the mounting plate according to the mark on it. Then Install a screw to fix it preliminary.
- 3) Keep the mounting plate horizontally with a horizontal ruler or dropping line.
- 4) Drill holes of 1 1/4" in depth on the wall for fixing the plate.
- 5) Fix the mounting plate with as least 7 self-tapping screws. For some mounting plates with a holder in the middle, at least 8 screws are required. (Fig. C.4.1).
- Inspect if the mounting plate is well fixed. Then drill a hole for piping.

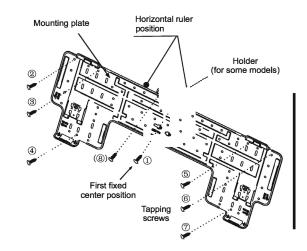


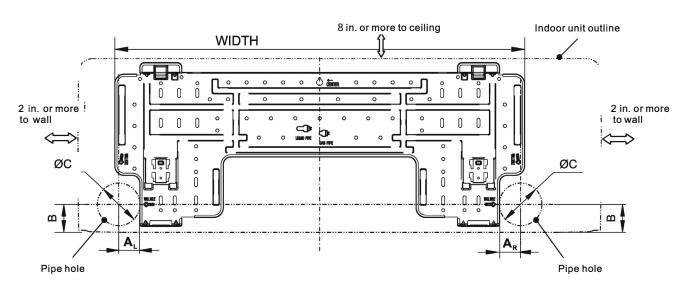
Fig. C.4.1

Note: It is recommended to install screw anchors for sheet rock, concrete block, brick and such type of wall.

Note: The center of the mounting bracket may be not the center of the indoor unit.

Note: The shape of your mounting plate may be different from the one above, but installation method is similar.

• THE MOUNTING PLATE DIAGRAMS AND DIMENSIONS (Recommended)

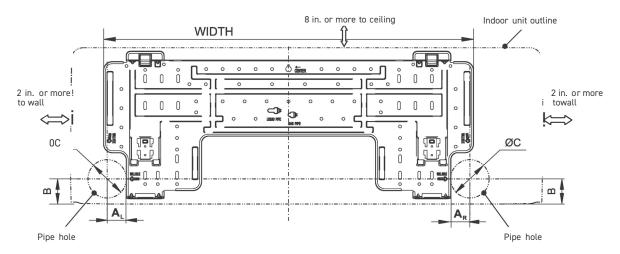


For 7K/9K/12K Series Models, WIDTH: 26 5/8 in.

C.4.2

Wall Mount

C.4 Install Mounting Plate



For 18K/ 24K Series Models, WIDTH: 37 5/38n.

C. 4.3

Wall Mount

C.5 Drill Hole for Piping

Table of Wall Hole Mounting size per Unit Size

Unit Model	Size A _L	Size A _R	Size B	Size C
Ome wood	in	in	in	in
7K/9K/12K Series	1 3/8 in	1 3/8 in	1 3/4 in	2 3/4 in
18K/24K Series	4 7/8 in	6 1/2 in	2 in	2 3/4 in

2. Drill a Hole for Piping

- 1) Decide the position of hole for piping according to the location of mounting plate.
- 2) Drill a hole on the wall. The hole should tilt a little downward toward outside.
- 3) Install a sleeve through the wall hole to keep the wall tidy and clean. (Fig. C.5)

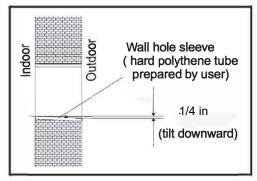
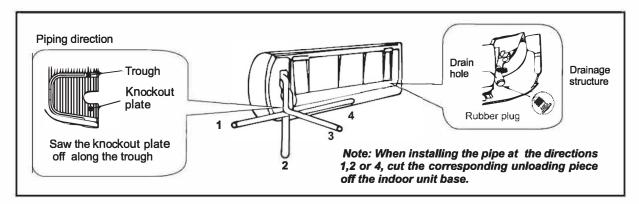


Fig. C.5

Wall Mount

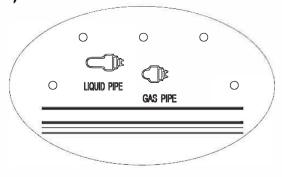
C.6 Piping Provisions

- 1) Put the piping (liquid and gas pipe) and cables through the wall hole from outside or put them through from inside after indoor piping and cables connection is complete to connect to the outdoor unit.
- 2) Decide whether to cut the knockout plate in accordance with the piping direction. (Fig. C.6.1)



Note:Drain hose can be installed on either side of the unit. If choosing both sides drainage connection, another proper drain hose is needed as there is only one drain hose attached to the unit. If choosing one side drainage connection, make sure the drain hole on the other side is well plugged.

- Put the piping (liquid and gas pipe) and cables through the wall hole from outside.
- 1 Cut the liquid pipe and gas pipe to the right length according to the position mark on the wall mounting plate (Fig. C.6.2). Ensure that the cut is flat (Fig. C.6.3).





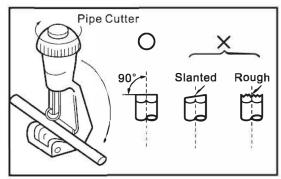
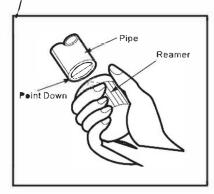
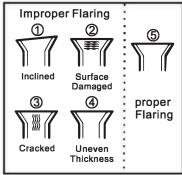


Fig.C.6.3

- Remove burrs on the cutting edges. Keep the pipe outlet down to avoid getting the metal burrs into the pipe(Fig. C.6. 4).
- 3 / Flare the pipes. Insert the pipe outlet into the copper nut before flaring the pipe. Ensure that the hole is flat with sound surface and even thickness. (Fig. C.6.5)



2`



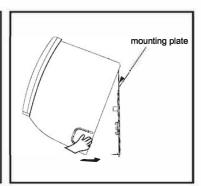


Fig. C.6. 4

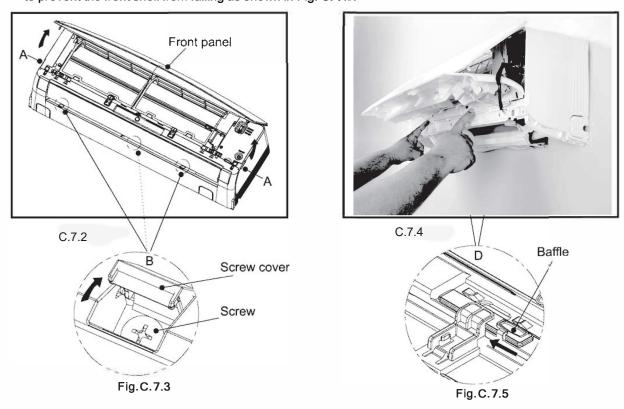
Fig. C.6.5

Fig. C.7.1

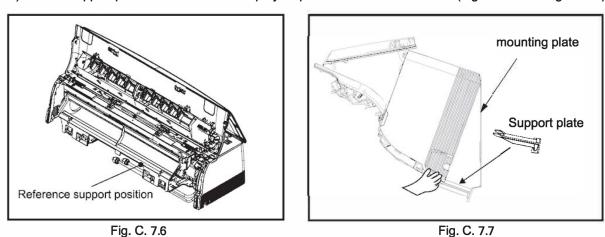
Wall Mount

C.7 Indoor Unit Installation

- 1 Hang the unit onto mounting plate (Fig. C.7.1).
- 2) In the A position, open the front panel as shown in Fig. C. 7.2.
- 3) In the B position, open the screw covers as shown in Fig. C.7.3 and remove the screws. (Note: For some models, you need to remove 3 screws.)
- 4) In the C position, open the front shell as shown in Fig. C. 7.4. Then in the D position, push the baffles to prevent the front shell from falling as shown in Fig. C. 7.5.



5) Use the support plate to move the unit step by step to reach the best location. (Fig. C. 7.6 and Fig. C. 7.7).



Note: The appearance of the model in this manual may differ from that of the air conditioner you have selected.

Wall Mount

C.7 Indoor Unit Installation

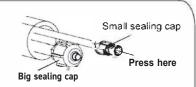
6) Connect the piping

Piping Connection:

- a. Before unscrewing the big and the small sealing caps, press the small sealing cap with the finger until the exhaust noise stops, and then loosen the finger
- b.Connect indoor unit pipes with two wrenches. Pay special attention to the allowed torque as shown below to prevent the pipes, connectors and flare nuts from being deformed and damaged.



If you don't hear the exhaust noise, please contact customer service.



Model	Pipe size (inches)	Torque (ft lbs	Nut width	Min.thickness	- Te
7K-18K	LiquidSide (1/4)	11-15ft-lbs	5/8"	0.02 "	-
24K-36K	Liquid Side (3/8)	22-26ft-lbs	7/8"	0.024"	Bil.
7K-12K	GasSide(cl> 9.53 or 3/8)	22-26ft-lbs	7/8"	0.024"	
18K	GasSide(cl>12 or1/2)	37-41ft-lbs	15/16"	0.024"	1-1970
24K	GasSide(cl>16or 5/8)	44-48ft-lbs	1 1/8"	0.024"	13
			1		100

Table C.7.8

7) After connecting piping as required, install the drain hose. Then connect the power cords. After connecting, wrap the piping, cords and drain hose together with thermal insulation materials(Fig. C.7.9-C.7.11).

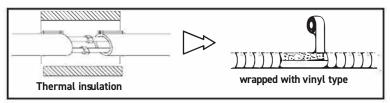


Fig. C.5.9

Note: Wrap the piping joints with thermal insulation materials and then wrap with a vinyl tape.

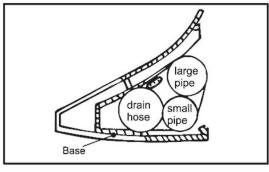


Fig. C.5.10

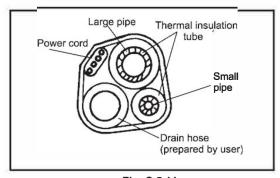


Fig. C.5.11

Note: Place the drain hose under the pipes.

Note: Insulation material uses polythene foam over 1/4" (6) mm in thickness.

Note: Drain hose Is prepared by user.

Note: Note: The appearance of the model in this manual may differ from that of the air

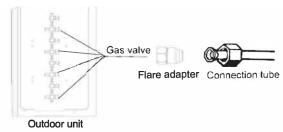
conditioner you have selected.

Wall Mount

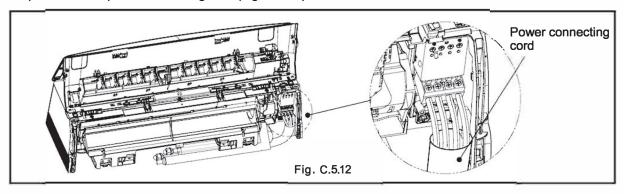
C.7 Indoor Unit Installation

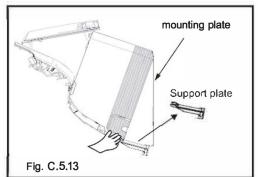


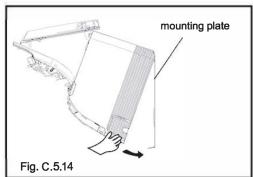
The 18K/24K indoor unit include the switch tie-in accessory only for 18K/24K indoor if required. It may switch 3/8" gas connection tube into 1/2" or 5/8" connection tube. It is installed outdoor unit.



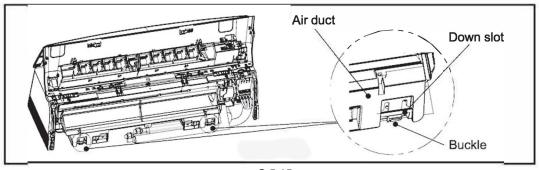
8) Connect the power connecting cord (Fig. C.5.12).







9) Remove the support plate as shown in Fig. C.5.13 Then move the unit step by step to reach the best installation, then press the 2 buckles of the air duct into 2 down slots of the mounting plate.(Fig. C.5.14 and Fig.C.5.15)

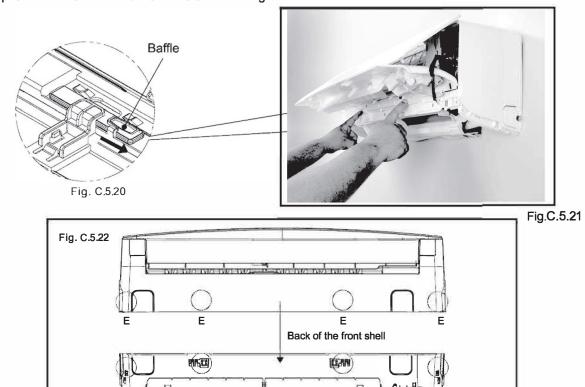


C.5.15

Wall Mount

C.7 Indoor Unit Installation

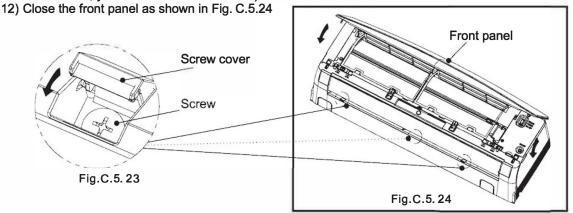
10) Pull the baffles as shown in Fig. C.5.20 Close the front shell as shown in Fig. C.5.21 . Then press the E position to fasten the front shell as shown in Fig. C.5.22



0

11) Install the screws and close the screw covers as shown in Fig. C.5.23 (Note: For some models, you need to install 3 screws.)

0



Note: The appearance of the model in this manual may differ from that of the air conditioner you have selected.

Wall Mount

INSTALLATION

MARNING



Electrical Shock Hazard

Always ensure power is disconnected before attempting to connect wires.

Model	Wire Diameter(AWG) Interconnecting Wire		
7-9k	14-4 AWG 600V THHN		
12k	14-4 AWG 600V THHN		
18k	14-4 AWG 600V THHN		
24k	14-4 AWG 600V THHN		
Table E.1			

NOTE: All communication wire must be stranded wire

GROUNDING	Unit MUST be grounded from branch circuit to unit, or through separate ground wire. Be sure that branch circuit or general purpose outlet is grounded. Do NOT use an extension cord.	
ELECTRICAL DISCONNECT	If national or local electrical codes require an electrical disconnect for the indoor unit, use a 3 pole disconnect.	

Indoor Unit

Connect the power cord to the indoor unit by connecting the wires to the terminals on the control board individually in accordance with the outdoor unit connection

Note: For some models, it is necessary to remove the cabinet to connect to the indoor unit terminal.

·Outdoor Unit

- 1. Remove the cable cross board from the unit by loosening the screw. Connect the wires to the terminals on the control board individually per circuit diagram posted on inside of access door. Refer to Figure E.2.
- 2. Secure the power cord onto the control board with cable clamp.
- 3. Reinstall the cable cross board to the original position with the screw.

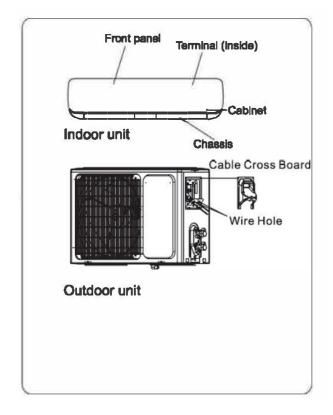


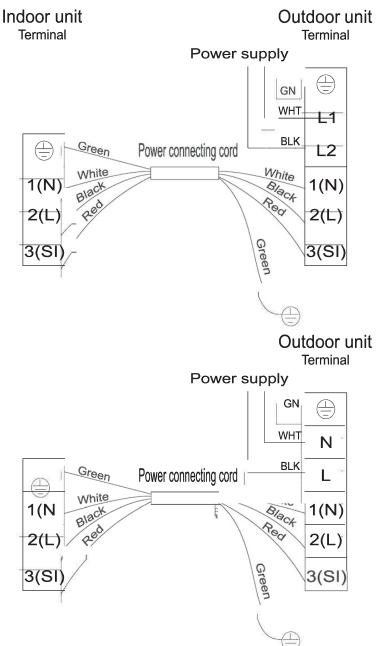
Figure E.2

Wall Mount

E.1 Indoor Unit Wiring Connection Diagram

Make sure that the color of the wires in the outdoor unit and terminal No. are the same as those of the indoor unit.



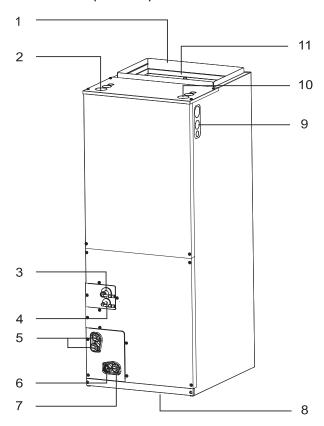


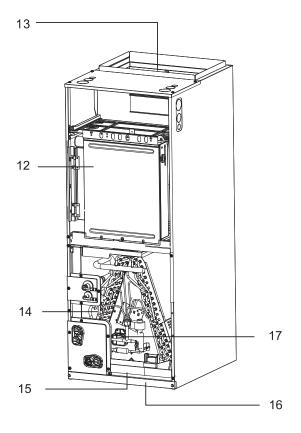
✓ Diagram is reference only, actual product terminals should be followed.

AHU

Composition of the Air conditioner

Indoor unit (18K/24K)





- 1. Supply air outlet flange
- 2. Low voltage connection (for 24V)
- 3. Refrigerant pipe (Gas)
- 4. Refrigerant pipe (Liquid)
- 5. Auxiliary drainage hole
- 6. Primary drain connection
- 7. Auxiliary drainage connection
- 8. Return air inlet
- 9,10. Knockout for power cable & To outdoor control
- 11. Supply air outlet
- 12. Electrical enclosure
- 13. Auxiliary heater (Optional)
- 14. Evaporator
- 15. Condensate drain pan
- 16. Filter cover
- 17. Refrigerant detection sensor

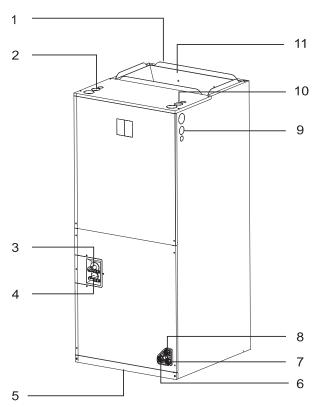
NOTE: The figures are based on the external views of the standard model.

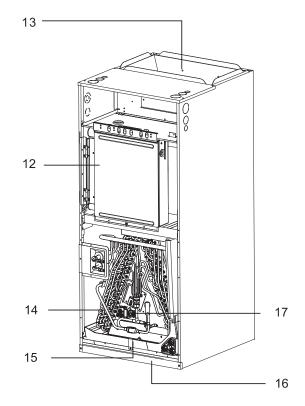
Consequently, the shape may differ for the air conditioner model you have selected.

AHU

Composition of the Air conditioner

Indoor unit (36K/48K)





- 1. Supply air outlet flange
- 2. Low voltage connection (for 24V)
- 3. Refrigerant pipe (Gas)
- 4. Refrigerant pipe (Liquid)
- 5. Return air inlet
- 6. Auxiliary drainage hole
- 7. Primary drain connection
- 8. Auxiliary drainage connection
- 9,10. Knockout for power cable & To outdoor control
- 11. Supply air outlet
- 12. Electrical enclosure
- 13. Auxiliary heater (Optional)
- 14. Evaporator
- 15. Condensate drain pan
- 16. Filter cover
- 17. Refrigerant detection sensor

NOTE: The figures are based on the external views of the standard model.

Consequently, the shape may differ for the air conditioner model you have selected.

Trouble Shooting

Trouble Shooting



When drain water overflows from the indoor unit, stop the operation and contact your dealer. When you smell or see white smoke coming out of the unit, turn OFF the main power supply and contact your dealer.

1. If Trouble still Exists

If the trouble still exists even after checking the following, contact your dealer and inform them of the following items.

- (1) Unit Model Name
- (2) Content of Trouble

2. No Operation

Check whether the SET TEMP is set at the correct temperature.

Inspect outdoor unit for error codes displayed.

3. Not Cooling or Heating Properly

- Check for obstruction of air flow of outdoor or indoor units.
- Check if there are too many heating sources in the room.
- Check if the air filter is clogged with dust.
- Check if the doors or windows are open.
- Check if the temperature condition is within the operation range.

4. This is Not Abnormal

Odour from Indoor Unit

Unpleasant odour diffuses from indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.

Sound from Deforming Parts

When start or stop the system, a sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.

Steam from Outdoor Heat Exchanger

During defrosting operation, ice on the outdoor heat exchanger melts resulting in steam.

Dew on Air Panel

When the cooling operation continues for a long period of time under high humidity conditions, dew can form on the air panel.

Refrigerant Flow Sound

While the system is being started or stopped, the refrigerant flow sound may be heard.

Air Filter

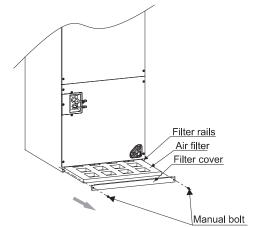
Air Filter (Not Factory-installed)

Please replace or clean the filter regularly, because there will be lots of dust accumulated on the surface of the filter after a period of time.

Follow these steps to properly replace the filter:

After removing the two manual bolts, take down the filter cover and pull out the filter from the case, then insert the new one into the case along the filter rail, at last fix the filter cover with manual bolts.

Model	Filter size (L×W×H) in.
18K/24K	20×16×1
36K	20×18×1
48K	22×20×1



Installation and Maintenance

1. Safety Notice

▲ WARNING

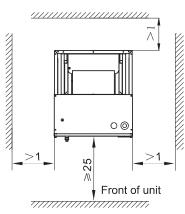
- Install the air conditioner on a solid base that can support the unit weight. (An inadequate base or incomplete installation may cause injury due to falling off from the base.)
- Electrical work should be carried out in accordance with the installation manual and the local and national electrical wiring rules or code.
 - (Insufficient capacity or incomplete electrical work may cause electrical shock or fire.)
- Be sure to use a dedicated power circuit. (Never use the power supply shared by another appliance.)
- · For wiring, use a cable long enough for the entire distance, and do not use an extension cord.
- Do not put other loads on the power supply, and please use a dedicated power circuit.
- Use the specified types of wires for electrical connections between the indoor and outdoor units. (Firmly clamp the interconnecting wires so that the terminals receive no external stress.)
- · Incomplete connections or clamping may cause terminal overheating or fire.
- After establishing connection between all the wires, fix the cables to prevent undue force on the electrical covers or panels. (Install covers over the wires, incomplete cover installation may cause terminal overheating, electrical shock or fire.)
- There is **100PSIG** high pressure nitrogen in the evaporator, please release it first before installation. It proves the evaporator to be in good state if there is nitrogen out, otherwise, it indicates the evaporator leaks.
- When installing or relocating the system, be sure to keep the refrigerant circuit free from air (Air in the refrigerant circuit may cause an abnormal pressure rise or rupture, resulting in injury.)
- If any refrigerant leakage occurs during the installation work, ventilate the room.
- After all installations are completed, make sure that no refrigerant leaks. (The refrigerant produces, toxic gas if exposed to flames.)
- When carrying out piping connection, do not let air substances other than the specified refrigerant get into
 refrigeration cycle. (Otherwise, it will cause decreased performance, abnormal high pressure in the refrigeration
 cycle, explosion and injury.)
- Make sure that the installation has a proper earth connection. Do not ground the unit to a utility pipe, arrester, or telephone grounding. Incomplete grounding may cause electrical shock. (A high surge current from lightning or other sources may cause damage to the air conditioner.)
- An earth leakage circuit breaker may be required depending on the site condition to prevent electrical shock.
- Disconnect the power supply before wiring, piping, or checking the unit.

2. Installation of the Indoor Unit

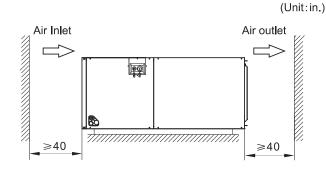
2.1 Initial Check

A CAUTION

- When moving the unit after unpacking, make sure not to exert any pressure on other parts, especially the refrigerant piping, drain piping and flange parts.
- · Wear protective gears when installing the unit.



Clearance in the Vertical Position



Clearance in the Horizontal Position

- -

AHU

INSTALLATION

Installation and Maintenance

2.2 Installation Location

Before choosing the installation site, obtain the user's approval

- Optimum air distribution is ensured.
- The air path is not blocked.
- Condensation can drain properly.
- Ensure sufficient clearance for maintenance and servicing.
- Piping between the indoor and outdoor units should be within the allowable limits. (Refer to the installation of the outdoor unit)
- The indoor unit, outdoor unit, power supply wiring and transmission wiring should be kept at least 3.3 feet away from televisions and radio, which prevents image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if a one-meter distance is maintained.)
- Do not install the indoor unit in a machinery shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the performance of the indoor unit, and may deform and in the worst case, break the plastic parts of the indoor unit.
- When the unit is installed in a hot and humid place, it is recommended to insulate the cabinet exterior and to use auxiliary drain pans.
- If installed above a finished living space, a auxiliary drain pan(as required by many building codes), must be installed under the entire unit and its condensate drain line must be routed to a location such that the user will see the condensate discharge.

2.3 Installation

NOTE:

These appliances are designed for indoor installation only.

The indoor units can be installed in one of the upflow, horizontal left, horizontal right or vertical downflow orientations as shown in Figures below.

Installation and Maintenance

18K/24K

Up-flow installation

Up-flow installation method is selected by default.

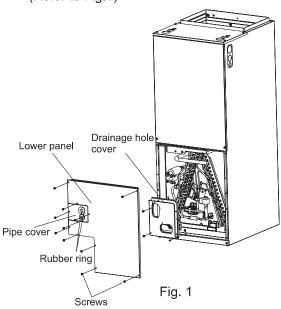
Horizontal left installation

When the unit is horizontal left mounted, Place the air outlet facing the left.

• Vertical downfow installation and Horizontal right installation

When the unit is vertical downfolw installation or horizontal right hand installation, the following steps are required. The treatment is the same for both installation methods.

 Remove the lower panel and pipe cover (including two rubber ring), then remove the drainage hole cover. Unscrew screws. (Refer to Fig.1)



(2) Remove the upper panel. (Refer to Fig.2)

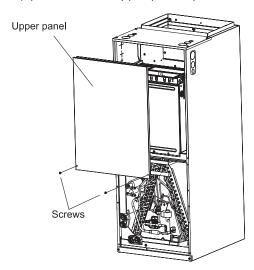


Fig. 2

(3) Remove the electrical box cover and fixing screws of the electrical box. (Refer to Fig.3)

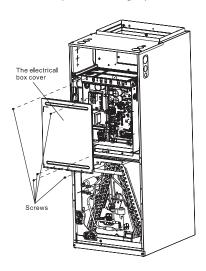


Fig. 3

(4) Remove the wiring clamps, Ti(Air inlet temperature sensor), Tc(Coil temperature sensor), EVI(Micro-Computer Control Expansion Valve), Tr(Refrigerant sensor) and humidity sensor from the socket. Take out the wires from the electrical box plugs, and put them together with the evaporator (Take care not to damage the wires and plugs). (Refer to Fig.4)

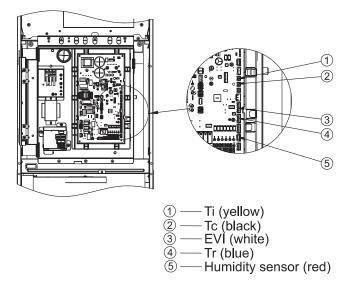


Fig. 4

Installation and Maintenance

(5) Extract the evaporator with the removed wires. (Refer to Fig.5)

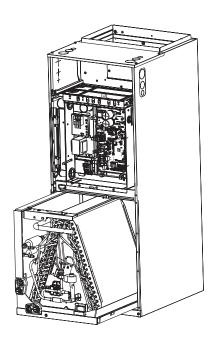


Fig. 5

(6) Remove the wiring clamps and remove the plate from the evaporator, then remove Ti(Air inlet temperature) and Humidity sensor. (Refer to Fig.6)

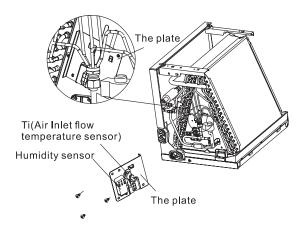


Fig. 6

(7) Follow the steps in Fig. 7 for the installation of the sensor, the plate, and the two deflectors (which need to be obtained from the dealer).

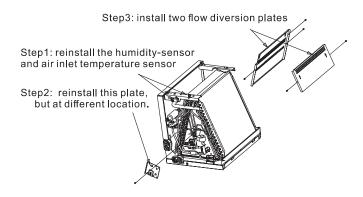
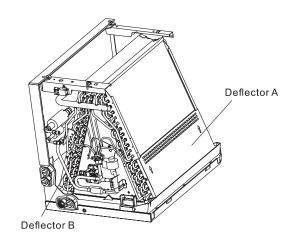


Fig. 7

NOTE:

When reinstalling the plate, the position of the plate is different from the original installation, and a hole position needs to be shifted to the right relative to the original position, and the position of the installation completion is shown in Fig. 8



Fix the fixing plate according to the position of the hook and screw in the figure.

Fig. 8

Installation and Maintenance

(8) The wire should be arranged again. As shown in Fig. 9, first use the wire tie to fix all the sensor wire harness on the copper pipe, and then the wire harness extends down to the bottom of the water receiving tray, and forms a waterproof bend through the wire clamp, please strictly follow the step and the path in the figure to route the wire, otherwise there will be a small amount of condensation flowing out of the connecting tray along the wire harness.

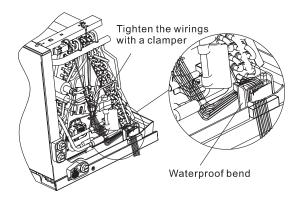


Fig. 9

(9) Rotate the evaporator for 180° and insert into the upper side of the lead rail. Pay attention to protecting the wires during the process. (Refer to Fig.10)

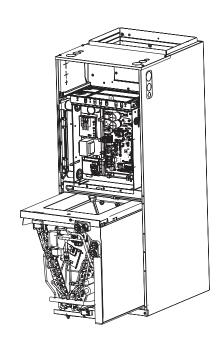


Fig. 10

(10) Rotate to open the electrical box, according to Fig. 11, pass the sensor harness through the wire hole of the middle cross beam, and then enter the inside of the electrical box through the rubber ring of the electrical box. After the wiring is completed, thermal insulation sponge should be adhered the surface of the wire harness as shown in Fig.12.

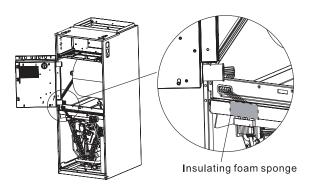


Fig. 11

(11) Insert the wires into the electrical box in its original position (Fig.4). And then refit the wires with wire clamps.

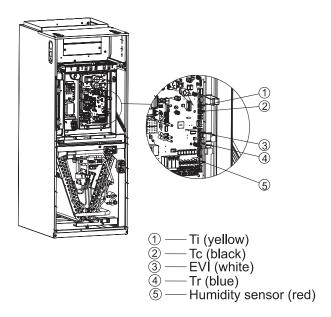


Fig. 12

Installation and Maintenance

(12) Reinstall electrical box cover, the lower panel, pipe and drainage hole cover and the upper panel.

(Refer to Fig.13)

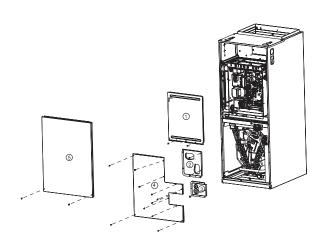


Fig. 13

After the above operations, rotate the machine 180° so that the air outlet is downward, that ism it is installed vertically downstream.
(Refer to Fig.14)

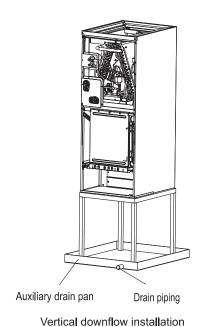
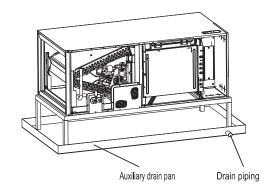


Fig. 14

Rotate the machine 90° clockwise so that the air outlet is facing to the right, which is a horizontal right side installation. (Refer to Fig.15)



Horizontal right installation

Fig. 15

Installation and Maintenance

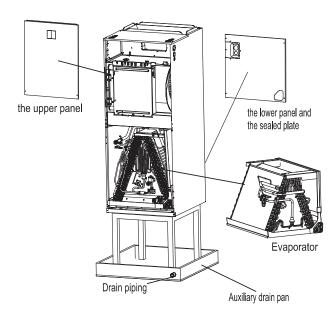
36K/48K

• Up-flow installation

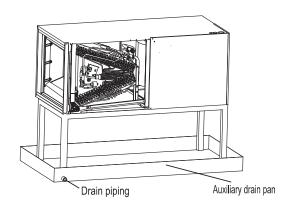
Up-flow installation method is selected by default.

• Horizontal right installation

When the unit is horizontal right mounted, Place the air outlet facing the right.



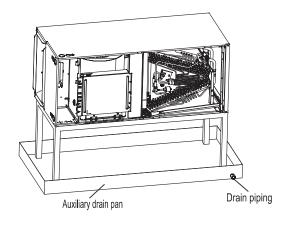
Upflow installation



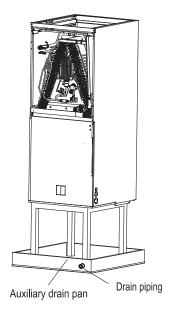
Horizontal right installation

• Vertical downflow installation and Horizontal right hand installation

When the unit is vertical downflow installation or horizontal left hand installation, the following steps are required. The vertical downflow installation modification method is the same as the horizontal right hand installation.

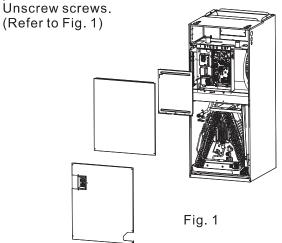


Horizontal left installation

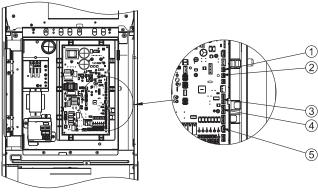


Vertical downflow installation

(1)Remove the lower panel and pipe cover (incuding two rubber ring), then remove the drainage hole cover. Remove the upper panel. Remove the electrical box cover.



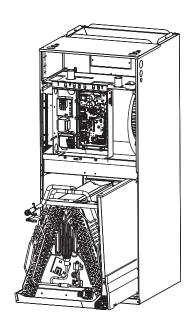
(2) Remove the wiring clamps, Ti(Air inlet temperature sensor), Tc(Coil temperature sensor), EVI(Micro-Computer Control Expansion Valve), Tr(Refrigerant sensor) and humidity sensor from the socket. Take out the wires from the electrical box plugs, and put them together with the evaporator (Take care not to damage the wires and plugs). (Refer to Fig.2)



- 1 Ti (yellow)
- ② Tc (black) ③ — EVI (white
- 3 EVI (white) 4 — Tr (blue)
- 5 Humidity sensor (red)

Fig. 2

(3)Extract the evaporator with the removed wirings. (Refer to Fig. 3)



Installation and Maintenance

(4)Remove the wiring clamps. Remove the plate from the evaporator, then remove Ti (Air inlet temperature sensor) and Humidity sensor. (Refer to Fig. 4)

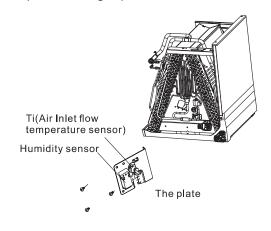


Fig. 4

(5)Install the removed Ti (Air inlet temperature sensor) and Humidity sensor. Meanwhile, add two flow diversion plates (which are got from the distributor or dealer of Hisense.). (Refer to Fig. 5)

Step3: install two flow diversion plates

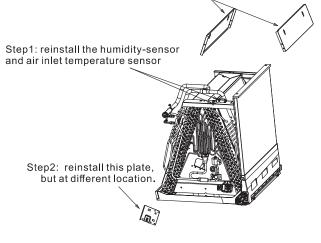


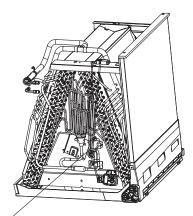
Fig. 5

NOTE:

When restall the plate, pay attention to at the correct location.

Fig. 3

Installation and Maintenance



The wirings should be arranged again.

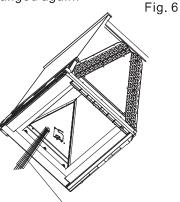


Fig. 7

(6)Rotate the evaporator for 180 degrees and insert into the upper side of the lead rail. Pay attention to protecting the wirings during the process. (Refer to Fig. 8)

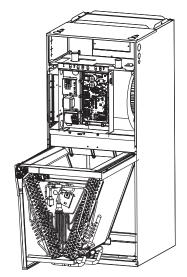


Fig. 8

(7)Remove the screws of the the electrical box and rotate it. Tighten the wirings with a clamper. Insert the wirings through the rubber ring into the electrical box. (Refer to Fig. 9)

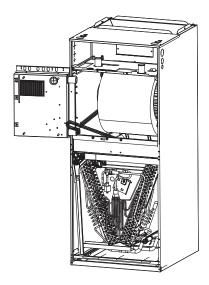
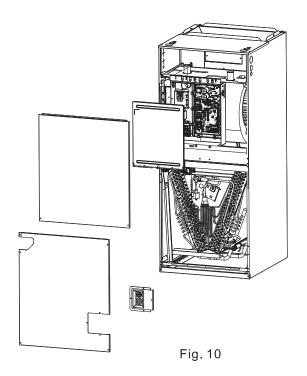


Fig. 9

- (8) Insert the wirings into the electrical box in its original position (refer to Fig.4). And then refix the wirings with wire clamps.
- Paste the insulations around wirings. (9) Reinstall electrical box cover, the lower panel, pipe and drainage hole cover and the upper panel. (Refer to Fig. 10)



Installation and Maintenance

2.4 Air duct

A WARNING

Field duct work must comply with the **National Fire Protection Association NFPA 90NFPA 90B** and any applicable local ordinance.

Do not, under any circumstances, connect return duct work to any other heat producing device such as fireplace insert, stove, etc. Unauthorized use of such devices may result in fire, carbon monoxide poisoning, explosion, personal injury or property damage.

Sheet metal duct work run in unconditioned spaces must be insulated and covered with a vapor barrier. Fibrous duct work may be used if constructed and installed in accordance with **SMACNA Construction Standard on Fibrous Glass Ducts**. Duct work must comply with National Fire Protection Association as tested by U/L Standard 181 for Class I Air Ducts. Check local codes for requirements on duct work and insulation.

Duct system must be designed within the range of external static pressure the unit is designed to operate against. It is important that the system airflow be adequate. Make sure supply and return duct work, grills, special filters, accessories, etc, are accounted for in total resistance.

3. Refrigerant Pipe

▲ DANGER

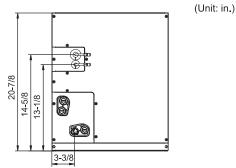
Use the refrigerant according to outdoor nameplate. When carrying out the leakage check and test, do not mix in the oxygen, the acetylene and the flammable and the reactive gas, because these gases may result in explosion. it is suggested to use nitrogen to perform these experiments.

3.1 Pipe Material

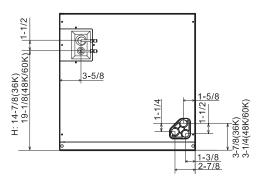
- (1) Prepare the copper pipe on the spot.
- (2) Choose dustless, non-humid, clean copper pipe Before installing the pipe, use nitrogen or dry air to below away the dust and impurity on the pipe.
- (3) Choose the copper pipe according to outdoor manual.

3.2 Pipe Connection

(1) The connection positions of the pipe are shown below.



18K/24K



36K/48K

Connection positions of the pipe

Installation and Maintenance

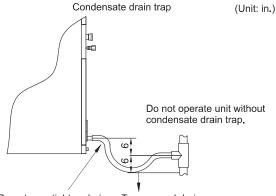
Refer to the outdoor unit Installation Instructions for details on piping size selection, piping installation, and charging information.

Coil is shipped filled with Nitrogen. Evacuate the system before charging with refrigerant. Install refrigerant lines so that it does not block service access to the front of the unit. Nitrogen should flow through the refrigerant lines while brazing.

Use a wet rag or an approved heat paste to protect the TXV sensing bulb during the brazing process. (The joints must be welded or brazed.)

4. Drain Piping

The coil drain pan has a primary and a secondary drain with 3/4" NPT female connections. The connectors required are 3/4" NPT male, either PVC or metal pipe. To prevent damage of the drain pan connection, it is recommended to seal the connector with Teflon tape, and should be hand-tightened with a torque less than 37 in-lbs. An insertion depth of approximately 3/8" to 1/2"(5-8 turns)should be expected at this torque. All horizontal drain pipes must be pitched downward away from the unit a minimum of 1/8" per foot to provide free drainage.



Do not over tighten drain fitting. Unit must be slightly pitched toward drain connection.

Do not connect the drain pipes directly to sewage pipes to avoid ammonia odour. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger. Do not twist or bend the drain hose, because excessive force is applied during twisting or bending and may also cause leakage.

The drain line should be insulated where necessary to prevent sweating and damage due to condensate forming on the outside surface of the pipe. Test condensate drain pan and drain pipe after installation is complete. Keep the case horizontal

(horizontal left or horizontal right) to ensure a smooth drainage, or incline the case 0.5° to the drainage hole, making it the lowest point for draining. Pour water into drain pan, enough to fill drain trap and line. Check to make sure drain pan is draining completely, no leaks are found in drain pipe fittings, and water is draining from the termination of the primary drain pipe.

NOTES:

If unit is located in or above a living space where damage may result from condensate overflow, a field-supplied, external condensate pan should be installed underneath the entire unit, and a secondary condensate line (with appropriate trap) should be run from the unit into the pan. Any condensate in this external condensate pan should be drained to a noticeable place. The owner of the structure must be informed that when condensate flows from the secondary drain or external condensate pan, the unit requires servicing or water damage will occur. Install traps in the condensate lines as close to the coil as possible.

Installation and Maintenance

5. Electrical Wiring

5.1 Electrical Installation



- · Before proceeding with electrical connections, make certain that power supply are as specified on the unit rating plate. See unit wiring label for proper field high and low-voltage wiring. Make all electrical connections in accordance with the NEC and any local codes or ordinances that may apply. Refer to the NEC(USA) or CSA(Canada) for wire sizing. Use copper wire only.
- Every installation must include an NEC(USA) or CSA (Canada) approved over-current protection device.



Disconnect all power before servicing or installing this unit.

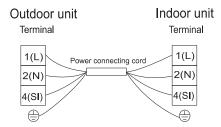
To avoid the electrical shock, please ensure the air conditioner is proper grounded.

All routing of electrical wiring must be made through provided electrical knockouts. Do not cut, puncture or alter the cabinet for electrical wiring.

Knockouts are provide on the indoor unit top panel and sides of the cabinet to allow for the entry of the supply voltage conductors. If the knockouts on the cabinet sides are used for electrical conduit, an adapter ring must be used in order to meet **UL 60335** safety requirements. An MEC or CEC approved strain relief is to be used at this entry point. Some codes/municipalities require the supply wire to be enclosed in conduit. Consult your local codes.

Electrical wiring diagram

Indoor unit connected to an outdoor unit of the same brand



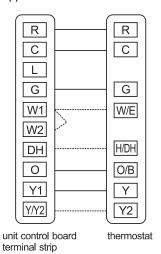
Note:

*Since there may be differences in some model's terminal blocks, wiring connection should be done according to letters on the terminal block. Please disregard numbers in this case.

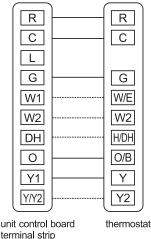
Installation and Maintenance

Indoor unit connected to a thermostat

Support 3H and 2C thermostat



Support 4H and 2C thermostat

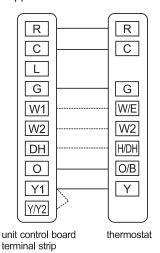


interface definition:

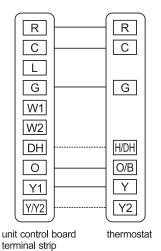
Terminal	Definition
R	AC 24V power supply
С	AC 24V common
L	Fault terminal
G	Fan signal
W1/W2	Electric auxiliary heat signal
DH	Dehumidification
0	4-Way valve
Y1	Cool1/ Heat 1
Y/Y2	Cool 2/ Heat 2

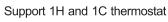
Indoor unit main control board 24V

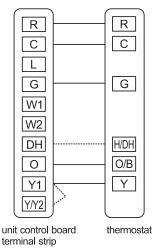
Support 3H and 1C thermostat



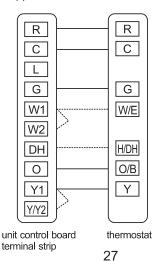
Support 2H and 2C thermostat







Support 2H and 1C thermostat



Note:

- 1. The "L" terminal displays fault information. If the thermostat has a terminal with function corresponding to "L", it needs to be connected to the "L" terminal of the unit.
- 2. When the machine does not have auxiliary electric heating, the machine only supports 2H2C and 1H1C working modes.
- 3. Mode Interfere Multi-zone outdoor units can only support a single mode at one time (cooling or heating). When the mode set at one or more indoor unit is different from the mode that outdoor unit is using, mode interfere will occur.

Driven choice Active mode	Cooling	Dry	Heating	fan
Cooling	√	V	×	√
Dry	V	V	×	√
Heating	×	×	√	×
Fan	√	√	×	√

√ --- Normal

X --- Mode interfere

Outdoor unit always run with the mode of first indoor unit that turned on. When the setting mode of following indoor unit is interfered with it, 3 beeps would be heard, and the indoor unit interfered with the normal running units would turn off automatically. If auto mode is selected, the actual running mode of the unit will be dominated by the unit of which first select auto mode. (Auto mode is invalid for some models.)

Installation and Maintenance

5.2 Electrical Data

AWARNING

 This product must be installed on a single dedicated electrical circuit. Circuit breaker protection must be installed in accordance with this manual. In moist and humid locations, and ELB type circuit breaker must be used.

When the Electric Heater Kit is installed, a separate power supply must be used to power the electric heater kit. Refer to the Heater Kit Selection kit table, and the heater kit instructions. All wiring shall be installed in accordance with local and national codes.

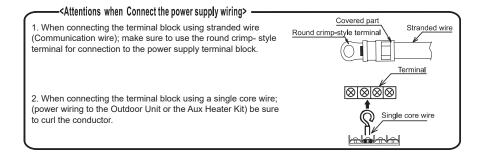
- Do not operate the system until all the check points have been cleared.
- (A) Check to ensure that the insulation resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
- (B) Check to ensure that the stop valves of the outdoor unit are fully opened and then start the system.
- Pay attention to the following items while the system is running.

 Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 194°F (90°C).

Capacity (Btu/h)	Transmitting Cable Size	Thermostat Signal Size	
18K/24K/36K/48K	4x14AWG stranded THHN	18AWG	

Note:

- (1) Follow local codes and regulations when select field wires, and all the above are the minimum wire size.
- (2) Use copper supply wires.
- (3) Install main switch and ELB for each system separately. Select the high response type ELB that is acted within 0.1second.



Installation and Maintenance

5.3 Change of Static Pressure

The static pressure can be selected by setting Dip Switches on Checker board, and the DIP switches adjustment method of the Checker board is as follows:

Capacity (Btu/h)	The Range of Static Pressure	Function Code Set
18K/24K/36K/ 48K	0-0.80 in. H ₂ O (0-200Pa)	0-200 function code value equals static pressure value, more than 145 is 0.58 in. H ₂ O (145Pa). [default: 0.58 in. H ₂ O (145Pa)]

Note: The pressure loss of filter is included in the data above.

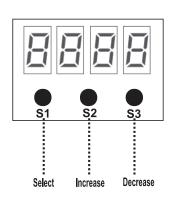
Pa	In.H ₂ O	Pa	In.H ₂ O
5	0.02	105	0.42
10	0.04	110	0.44
15	0.06	115	0.46
20	0.08	120	0.48
25	0.10	125	0.50
30	0.12	130	0.52
35	0.14	135	0.54
40	0.16	140	0.56
45	0.18	145	0.58
50	0.20	150	0.60
55	0.22	155	0.62
60	0.24	160	0.64
65	0.26	165	0.66
70	0.28	170	0.68
75	0.30	175	0.70
80	0.32	180	0.72
85	0.34	185	0.74
90	0.36	190	0.76
95	0.38	195	0.78
100	0.40	200	0.80

5.4 Digital display

There are 3 buttons on the digital display board:

- 1) Select button: Select to display outdoor/indoor unit parameter.
- "P.", "A." Parameter of indoor unit
- 2) INCREASE button: Each time it is pressed, the number rises by 1.
- 3) DECREASE button: Each time it is pressed, the number lowers by 1.

The parameter content will automatically display after the parameter code is selected for 3s.



Parameter	Prarameter
P.1	Display Static Pressure
P.3	Set Static Pressure
P.13	Monitor Indoor Fan RPM
P.19	Adjust Indoor Fan RPM
A.1	Unit A Fault Code
A.2	Unit A Valve Actual Opening
A.3	The opening of the A valve is set
A.6	Unit A Coil Temperature
A.7	Unit A Ambient Temperature

Installation and Maintenance

6. Test Run

Please perform test run according to installation manual of outdoor unit.

7. Electric Heat Kit Selection Table

Electric Heat Kit	Air Handler	Electric Heat	MIN. Circu	it Ampacity		e or Breaker Ampacity	Fan Speed Tap
Model	Model	(kW)	230VAC	208VAC	230VAC	208VAC	High
AUX5KWA		5	25	22.6	30	30	•
AUX7KWA	18K/24K	7.5	37.4	33.9	40	40	•
AUX10KWA		10	49.9	45.2	60	50	•
AUX5KWA		5	25	22.6	30	30	•
AUX7KWA	0014	7.5	37.4	33.9	40	40	•
AUX10KWA	36K	10	49.9	45.2	60	50	•
AUX15KWA		15	37.4+37.4	33.9+33.9	40+40	40+40	•
AUX5KWA		5	25	22.6	30	30	•
AUX7KWA		7.5	37.4	33.9	40	40	•
AUX10KWA	48K	10	49.9	45.2	60	50	•
AUX15KWA		15	37.4+37.4	33.9+33.9	40+40	40+40	•
AUX20KWA		20	49.9+49.9	45.2+45.2	60+60	50+50	•

•: available ×: unavailable

NOTE:

When electric heat is operating, the unit will automatically run at highest fan speed.

Heat kit is an optional part, and it must be connected to the power supply separately.

It is recommended that electric heater kit should be installed in low temperature area or when long piping is used. Check if heat kit suitable for AHU 4-way position installation.

Heat pump systems require a specified airflow. Each ton of cooling requires between 350 and 400 cubic feet of air per minute(CFM).

A 4 pin to 6 pin adapter, or a 6 pin to 4 pin adapter may need to be installed to connect to the indoor control board.

Outdoor Unit

MARNING

- That pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52.
 All field joints shall be accessible for inspection prior to being covered or enclosed;
- That after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging.
- Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 0.18 oz. per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected. The joints must be welded or brazed.

Label in accessory bag

Contains Flammable Refrigerants Contient des réfrigérants inflamm	
Refrigerant: Fluide frigorigène:	R454B
Additional Charge: Charge supplémentaire:	oz
Total Charge (Installer Reference) Charge totale (Référence du Programme d'installation):): Oz

Max. Refrigerant Charge Amount X[oz.(g)]

Model(Btu/h)	18K	27K	36K	42K
Max. Refrigerant charge [oz.(g)]	69.67(1975)	101.34(2873)	127(3600)	128.33(3638)

Minimum room size R-454B refrigerant is determined by total refrigerant charge in system. Use this chart to determine the minimum room size the indoor head can be installed in without an A2L Sensor.

Indoor heads are capable off adding an optional accessory A2L sensor. All cassettes, ducted and air handler units have an A2L sensor installed and are exempt from the room size restriction.

Prior to installing the unit use the formulas below to determine the total refrigerant charge for the unit. If the total charge is less than 64 oz. there is no room size restriction. If the total charge is over 64 oz. refer to the the Required Minimum Room Area chart to determine the minimum square footage of the room the indoor unit can be installed in. If rooms are connected by opening that people can walk through but with no door installed, those areas can be considered one space. If the total refrigerant charge exceeds the room area, the indoor unit shall not be installed without an A2L sensor.

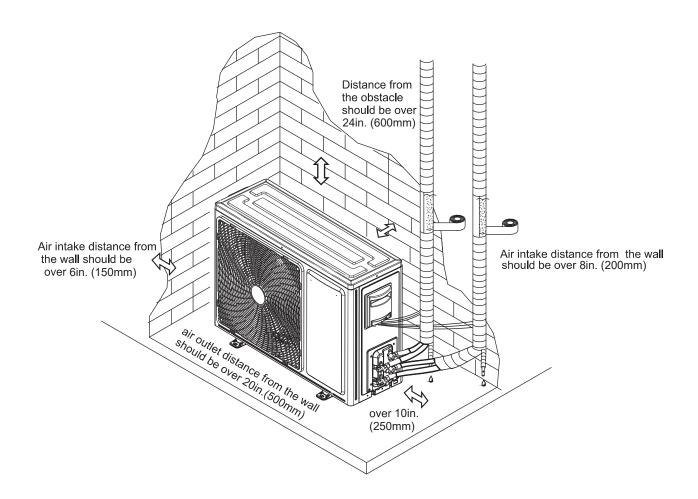
Outdoor Unit

Explanation of symbols displayed on the indoor unit or outdoor unit.

Refrigerant safety group A2L	WARNING	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
Ţ <u>i</u>	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

Outdoor Unit

Installation diagram



outdoor unit

1

- Figures in this manual are only a simple presentation of the unit, it may not match the external appearance of the unit you purchased.
- Installation must be performed in accordance with the national wiring standards by authorized personnel only.

Outdoor Unit

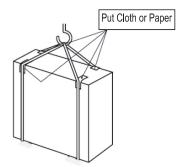
Transportation and handling before installation

Transport the product as close to the installation location as practical before unpacking.

- Handling Method
- When hanging the unit, ensure a balance of the unit, check safety and lift up smoothly.
- (1) Do not remove any packing materials.
- (2) Hang the unit under packing condition with two ropes, as shown in Fig below.
- Handling

If have no package to move, Please protect with cloth or paper.





Installation locations selection

Before choosing the installation site, obtain user approval.

- Where it is not exposed to strong wind.
- Where airflow is good and clean.
- Where it is not exposed to rain and direct sunshine.
- Where neighbors are not annoyed by operation sound or hot air.
- Where rigid wall or support is available to prevent the increase of operation sound or vibration.
- · Where there is no risk of combustible gas leakage.
- Where it is at least 3m away from the antenna of TV set or radio. An amplifier may be required for the affected device.
- Install the unit horizontally.
- Please install it in an area not affected by snowfall or blowing snow. In areas with heavy snow, please install a canopy, a pedestal and/or some baffle boards.

A CAUTION:

Avoid the following places for installation where air conditioner trouble is liable to occur.

- · Where there is much machine oil.
- Salty places such as seaside.
- · Where sulfide gas is generated such as a hot spring.
- Where there is high-frequency or wireless equipment.

NOTE:

When operating the air conditioner in low outside temperature, be sure to follow the instruction describe below.

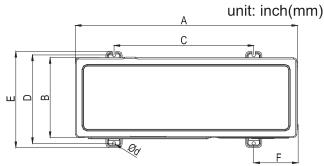
- Never install the outdoor unit in a place where its air inlet/outlet side may be exposed directly to wind.
- To prevent exposure to wind, install the outdoor unit with its air inlet side facing the wall.
- To prevent exposure to wind, it is recommended to install a baffle board on the air outlet side of the outdoor unit.

Outdoor Unit

Outdoor unit installation

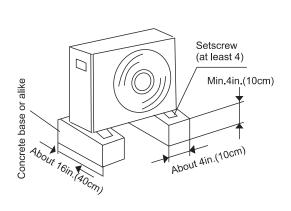
⚠NOTE:

- ·Be sure to fix the unit's legs with bolts when installing it.
- ·Be sure to install the unit firmly to ensure that it does not fall by earthquake or gust.
- ·The anchor bolts, nuts and washers for the installation are user prepared.



[Unit: in. (mm)]

Model (Btu/h)	Α	В	С	D	E	F	d
18K	33-7/8	12-3/16	21-11/32	13-7/16	14-1/2	6-5/8	7/16*21/32
	(860)	(310)	(542)	(341)	(368)	(168)	(11*17)
27K/36K/42K	38-3/8	14-3/16	23	15-1/2	16-3/4	7-5/8	7/16*21/32
	(975)	(360)	(585)	(395)	(425)	(195)	(11*17)

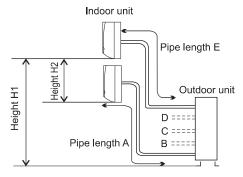


Refrigerant piping

1. Piping requirement

Model(Btu/h)	Outer Diameter of Pipe [in.(mm)]			
Model(Btu/II)	Gas	Liquid		
18K/27K/36K/42K	3/8 (9.52)	1/4 (6.35)		

The maximum allowable length of refrigerant piping, and the maximum allowable height difference between the outdoor and indoor units, are listed below. The shorter the refrigerant piping is, the better the performance will be. So the connecting pipe should be as short as possible.



Model		Up to 2 indoor units	Up to 3 indoor units	Up to 4 indoor units	Up to 5 indoor units
Item		18K	27K	36K	42K
Piping to each indoor unit (A/B/C/D/E)	[ft.(m)]	≤82(25)	≤82(25)	≤82(25)	≤82(25)
Total length of piping between all units	[ft.(m)]	A+B ≤164 (50)	A+B+C ≤230(70)	A+B+C+D≤ 230(70)	A+B+C+D+E ≤262(80)
Max height between indoor unit and outdoor unit (H1)	[ft.(m)]	≤49(15)			
Max height between indoor units (H2)	[ft.(m)]	≤25(7.5)			

Additional refrigerant charge

The unit has been filled with refrigerant, but if L (total pipe length) exceeds standard length, additional refrigerant (R454B) change is required.

For 18K: Additional refrigerant charge=[L-50ft (15m)]×0.16 oz/ft (15g/m)

For 27K: Additional refrigerant charge=[L-75ft (22.5m)]×0.16 oz/ft (15g/m)

For 36K: Additional refrigerant charge=[L-100ft (30m)]×0.16 oz/ft (15g/m)

For 42K: Additional refrigerant charge=[L-125ft (37.5m)]×0.16 oz/ft (15g/m)

2. Piping material

- (1) Prepare the copper pipe on the spot.
- (2) Choose dustless, non-humid, clean copper pipe. Before installing the pipe, use nitrogen or dry air to blow away the dust and impurity on the tube.

Outdoor Unit

(3) Piping thickness and material use the pipe as below.

Diameter [inch(mm)]	Thickness [inch(mm)]
1/4(Φ6.35)	1/32(0.8)
3/8(Φ9.52)	1/32(0.8)
1/2(φ 12.7)	1/32(0.8)
5/8(φ 15.88)	1/32(1.0)



90° ± 2°

inch(mm)

A +0

11/32(9.1)

1/2(13.2)

10/16(16.6)

3/4(19.7)

Diameter

Φd

1/4(6.35)

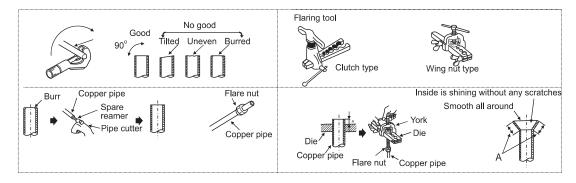
3/8(9.52)

1/2(12.7)

5/8(15.88)

0.8F

- 3. Processing of Refrigerant Piping
- (1) Pipe cutting
- · Cut the cooper pipe correctly with pipe cutter.
- (2) Burrs removal
- Completely remove all burrs from the cut cross section of the pipe.
- Put the end of the copper pipe downward to prevent burrs from dropping in the pipe.
- (3) Putting nut on
- Remove flare nuts attached to indoor and outdoor units, then put them on pipe having completed burr removal.
 (Not possible to put them on after flaring work).
- Flare nut for pipe depending on the diameter of pipe.
- (4) Flaring work
- Perform flaring work using flaring tool as shown below.
- (5) Check
- Compare the flared work with the figure below.
- If flare is noted to be defective, cut off the flared section and perform flaring work again.



- 4. Piping connection
- (1) R454B refrigerant is flammable, confirm that the valves are closed.
- (2) Connect the indoor unit and the outdoor unit with field-supplied refrigerant piping. Suspend the refrigerant piping at certain points and prevent the refrigerant piping from touching the weak part of the building such as wall, ceiling, etc.
 - (If touched, abnormal sound may occur due to the vibration of the piping. Pay special attention in case of short piping length.)
- (3) Tightening the flare nut use two spanners like figure right.
- (4) Apply the refrigerant oil (field-supply) thinly at the seat surface of the flare nut and pipe before connecting and tightening. And when tightening the flare nut, use two spanners.
- (5) Outdoor refrigerant piping should connect with stop valve.



Double Spanner work

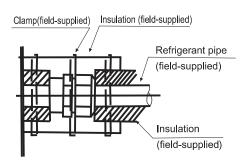
Pipe Size [inch(mm)]	Torque
1/4(Φ6.35)	14.75ft-lb (20N·m)
3/8(Φ9.52)	29.5ft-lb (40N·m)
1/2(φ12.7)	44.25ft-lb (60N·m)
5/8(φ15.88)	59ft-lb (80N·m)

Tightening Torque for Flare Nut

Outdoor Unit

- (6) After finishing connecting the refrigerant pipes, keep it warm with the insulation material like figure right.
- ·For outdoor unit side, surely insulate every piping including valves.
- Cover piping joints with pipe cover.
- Using piping tape, apply taping starting from the entry of outdoor unit. Fix the end of piping tape with adhesive tape.
- -Fix the end of piping tape with adhesive tape.
- -When piping has to be arranged through above ceiling, closet or area where temperature and humidity are high, wind additional commercially sold insulation for prevention of condensation.





Piping insulation procedure

If the diameter of connection pipe does not match the port size of outdoor unit, select proper differentdiameter joints in the accessory according to the following table.

Figure	Purpose
	Change pipe diameter from 1/4 inch (6.35mm) to 3/8 inch (9.52mm)
	Change pipe diameter from 3/8 inch (9.52mm) to 1/2 inch (12.7mm)
	Change pipe diameter from 3/8 inch (9.52mm) to 5/8 inch (15.88mm)



Connect pipes using different-diameter joint

Procedure

Note: The 18K model does not have this Different-diameter joint.

Air tight test

-Do use Nitrogen.

Connect the gauge manifold using charging hoses with a nitrogen cylinder to the check joints of the liquid line and the gas line stop valves. Perform the air-tight test.

Don't open the gas line stop valves.

Apply nitrogen gas pressure of 602psig (4.15MPa).

Check for any gas leakage at the flare nut connections, or brazed parts by gas leak detector or foaming agent.

Gas pressure doesn't decrease is OK.

After the air tight test, release nitrogen gas.

Completion Check of Applying of Ref. Nitrogen Pressure Pass Piping Repairing of Leakage Part

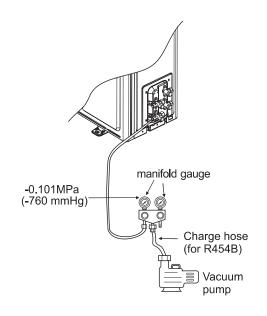
Air tight procedure

6. Vacuum pumping and charge refrigerant

- Vacuum pumping
- (1) Remove the service port cap of the stop valve on the gas pipe side of the outdoor unit.
- (2) Connect the manifold gauge and vacuum pump to the service port
- of the stop valve on the gas pipe side of the outdoor unit.

 (3) Run the vacuum pump. (Work for more than 15 minutes.)

 (4) Check the vacuum with the gauge manifold valve, then close the gauge manifold valve and stop the vacuum pump.
- (5) Leave it as is for one or two minutes. Make sure the pointer of the manifold gauge remains in the same position. Confirm that the pressure gauge shows -14.7 psig (-0.101MPa or -760mHg).
- (6) Remove the manifold gauge quickly from the service port of the stop valve.
- (7) After refrigerant pipes are connected and evacuated, fully open all stop valves on both sides of gas pipe and liquid pipe.
- (8) Open adjusted valve to add refrigerant (must be refrigerant is liquid).
- (9) Tighten the cap to the service port.
- (10) Retighten the cap.
- (11) Leak test foam with halogen leak detector to check the flare nut and brazing Carolina Department leaks. Use foam that not generate ammonia (NH3) in the reaction.



Outdoor Unit

A	WARNING	
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- (1) Each pipelines needs to be evacuated individually.
- (2) An excess or a shortage of refrigerant is the main cause of trouble to the unit. Charge the correct refrigerant quantity according to the description of label at the inside of the manual.
- (3) Check refrigerant leakage in detail. If a large refrigerant leakage occurs, it will cause danger or even explosion if a fire was being used in the room.

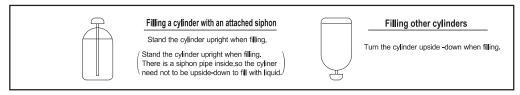
Additional refrigerant charge

The unit has been filled with refrigerant.

Please according "Piping Requirement" to calculate additional charge.

After vacuum pump procedure has been finished, first exhaust air from charge hose, then open valves, charge refrigerant as "liquid" type through Liquid stop valve.

At the end, please close valves and record the refrigerant charging quantity.



Wiring



- Turn OFF the main power switch to the indoor unit and the outdoor unit and wait for more than 3 minutes before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Avoid the wirings from touching the refrigerant pipes, plate edges and electrical parts inside the unit. If not do, the wires will be damaged and at the worst, a fire will occur.
- In Moist or Humid Locations; the installation of an ELB breaker is recommended. Always check local and national code requirements
- This unit uses an inverter, which means that it must be used an earth leak detector capable handing harmonics in order to prevent malfunctioning of the earth leak detector itself.
- For main power supply, Do not use intermediate connection wires, stranded wires(see Attentions when Connect the power supply wiring>), extension cables or control line connection, because the use of these wires may cause fever, electric shock or fire.
- The tightening torque of each screw shall be as follows.

M4: 0.7 to 1.0 lbf·ft. (1.0 to 1.3 N·m)

M5: 1.5 to 1.8 lbf·ft. (2.0 to 2.5 N·m)

M6: 3.0 to 3.7 lbf·ft. (4.0 to 5.0 N·m)

M8: 6.6 to 8.1 lbf·ft. (9.0 to 11.0 N·m)

M40. 40.0 to 47.0 lbff (40.0 to 00.0 N)

M10: 13.3 to 17.0 lbf·ft. (18.0 to 23.0 N·m)

Keep the above tightening torque when wiring work.



- With tape material along the wire wrapped, sealed wiring holes, prevent the condensed water and insects.
- Tightly secure the power source wiring using the cord clamp inside the unit.

NOTE: Fix the rubber bushes with adhesive when conduit tubes to the outdoor unit are not used.

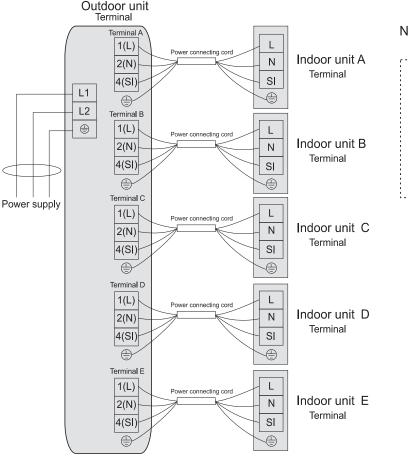
Outdoor Unit

General Check

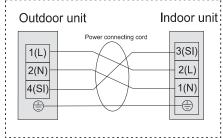
- (1) Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data.
 - Make sure that the components comply with National Electrical Code (NEC).
- (2) Check to ensure that the voltage of power supply is within +10% of nominal voltage and earth phase is contained in the power supply wires. If not, electrical parts will be damaged.
- (3) Check to ensure that the capacity of power supply is enough. If not, the compressor will be not able to operate cause of voltage drop abnormally at starting.
- (4) Check to ensure that the earth wire is connected.
- (5) Install a main switch ,multi-pole main switch with a space of 1/8 in. (3.5mm) or more, single phase main switch with a space of 1/8 in. (3.0mm) or more between each phase. Please use the special three-phase power switch for 3-Phase product.
- (6) Check to ensure that the electrical resistance is more than 2 M Ω , by measuring the resistance between ground and the terminal of the electrical parts.

If not, do not operate the system until the electrical leakage is found and repaired.

Electrical wiring diagram



Note: For some indoor units



NOTES:

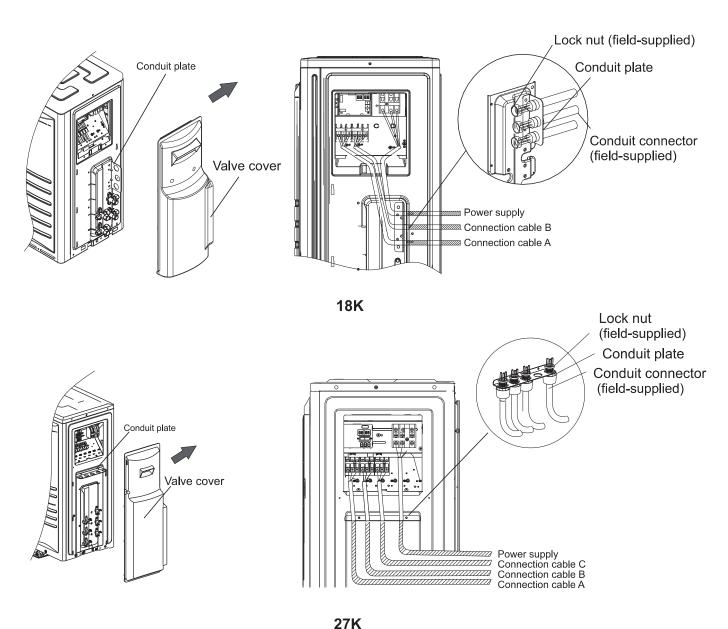
- 1. For 18K model, there is no INDOOR UNIT C, D and E. 2. For 27K model, there is no INDOOR UNIT D and E. 3. For 36K model there is no INDOOR UNIT E.

- 4. Since there is some difference between the terminal panel in the diagram and the real one, the wire connecting operation should be done according to the letters on the panel, please neglect the numbers on it.

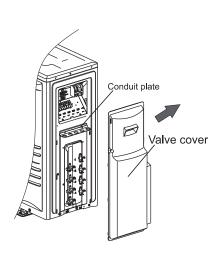
Outdoor Unit

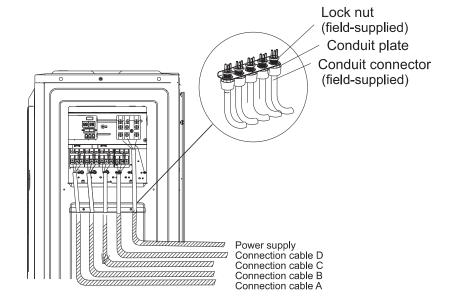
Wires connect steps:

- (1) Valve cover removal
 - Remove the two mounting screws.
 - Remove the valve cover as shown by the arrow mark.
- (2) Fasten the power supply cable and the connection cable to the conduit holder using the lock nut.
- (3) Connect the power supply cable and the connection cable to terminal.
- (4) Fasten the power supply cable and the connection cable with the cable clamp.
- (5) Be sure to seal the holes when applying the putty.
 Place the cables side to side.(Do not overlap the cables.)
- (6) Put the service cover and valve cover back after completion of the work.

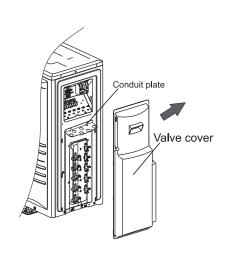


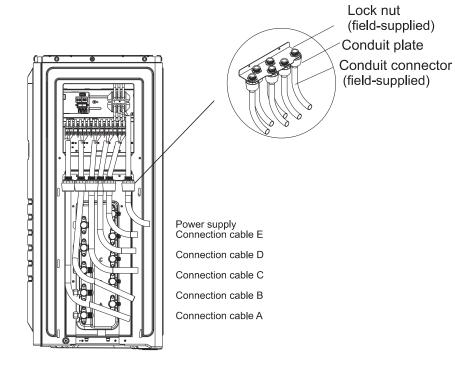
Outdoor Unit





36K





42K

Outdoor Unit

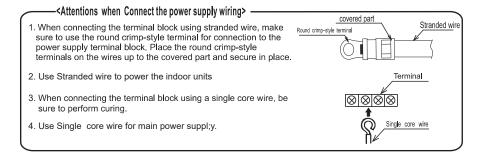
Electrical Data

Model		Circui	Circuit Breaker		MCA
(Capacity: Btu/h)	Power Supply	MOP (A)	Nominal Sensitive Current (mA)	Transmitting Cable Size	(A)
18K	208/230V ~/60Hz	30	30	4*14AWG	21
27K	208/230V ~/60Hz	40	30	4*14AWG	25
36K	208/230V ~/60Hz	50	30	4*14AWG	32
42K	208/230V ~/60Hz	60	30	4*14AWG	36

Max. Running Current (A): REFER TO NAMEPLATE

Note:

- (1) Follow local codes and regulations when select field wires, and all the above are the minimum wire size.
- (2) Install main switch and circuit breaker for each system separately. Select the high response type circuit breaker that is acted within 0.1second.



Outdoor Unit

Installation instructions

Trial run

Test run should be performed after refrigerant piping, drain, wiring, etc. have been finished.



The heat pump air conditioner is provided with a crankcase heater, check to ensure that the switch on the main power source has been ON for more than 6 hours ahead of power on preheating, when ambient temperature is below 32 degrees F. otherwise it might damage the compressor!

Do not operate the system until all the check points have been cleared.

- (A) Check to ensure that the stop valves of the outdoor unit are fully opened.
- (B) Check to ensure that the electric wires have been fully connected.
- (C) Check to ensure that the electrical resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

Test run function identification

Operate the thermostat to turn ON the appliance, and then proceed test run.

Pay attention to the following items while the system is running.

Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 194°F (90°C).

■ Turn off the power after test run is finished. Installation of the appliance is generally finished after the above operations are done. If you still have any trouble, please contact local technical service center of our company for further information.

Operation Range (Cooling and Heating)

Temperature		Heating operation	
Max	90°F	81°F	
Min	70°F	45°F	
Max	125°F	75°F	
Min	5°F	-13°F	
Figure 301			
	Min Max	Min 70°F Max 125°F Min 5°F	

^{*}Optimum performance will be achieved within these operating temperature. If air conditioner is used outside of the above conditions, the protective device may trip and stop the appliance.

^{*}The temperature of some products is allowed beyond the range. In specific situation, please consult the merchant. When relative humidity is above 80%, if the air conditioner runs in COOLING or DRY mode with door or window opened for a long time, dew may drip down from the outlet.

Remote Control

The remote controller transmits signals to the system.

SMART

Used to enter fuzzy logic operation directly, regardless of the unit is on or off.

POWER

The appliance will be started when it is energized or will be stopped when it is in operation, if you press this button.

SURGE

Used to start or stop the fast cooling/heating. (Fast cooling operates at high fan speed with 61°F set temp automatically; Fast heating operates at auto fan speed with 86°F set temp automatically)

IFEEL

Used to set IFEEL mode operation. Press it once, the IFEEL function will be started. Press it again, the IFEEL function will be shut off.

(≽ SWING

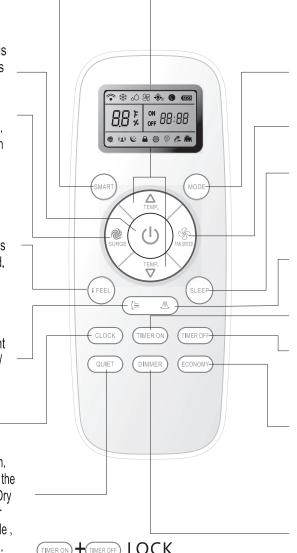
Used to stop or start vertical adjustment louver swinging and set the desired up/ down airflow direction.

CLOCK

Used to set the current time.

OUIET

Used to set or cancel Quiet Mode operation. When the air conditioner is in standby, and the mode of remote controller is in Cooling or Dry (except Super mode), press this button for about 5 seconds once to start Clean mode, then the indicator " will display on LCD.



(TIMER ON) + (TIMER OFF) LOCK

__ **+** (≥ 46°HEAT

Used to start or stop 46°HEAT mode.

Used to start or stop LOCK mode.

TEMP + -

Used to adjust the room temperature and the timer, also real time.

MODE

Press this button to select the operation mode.

FAN

Used to select fan speed in sequence auto, higher, high, medium, low or lower.

SLEEP

Used to set or cancel Sleep Mode operation.

ノル SWING

Used to stop or start Horizontal adjustment louver swinging and set the desired left/right airflow direction.

TIMER ON

Used to set or cancel the timer operation.

TIMER OFF

Used to set or cancel the timer operation.

ECONOMY

Used to set or cancel Economy Mode operation.

When in Cooling mode (except Super mode), press this button for about 5 seconds once to start Power control mode, press this button for about 5 seconds once again to stop it

DIMMER

When you press this button, all the display of indoor unit will be closed. Press any button to resume display.

Indication symbols on LCD:

Lower fan speed

Cooling indicator FA: Auto fan speed Sleep 1 indicator Dry indicator Higher fan speed Sleep 2 indicator Fan only indicator 💢 High fan speed Sleep 3 indicator Medium fan speed Heating indicator Sleep 4 indicator 46°Heat indicator ☆ Low fan speed Lock indicator

Quiet indicator Smart indicator Economy indicator Surge indicator lfeel Clean indicator

Signal transmit Battery power indicator Display set timer Display current time Display temperature

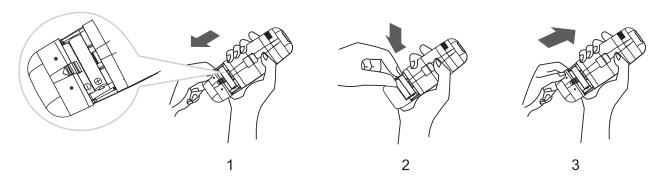
Power control indicator

Note: Each mode and relevant function will be further specified in following pages.

Remote Control

♦ How to Insert the Batteries

- 1. Remove the battery cover according to the arrow direction.
- 2. Insert new batteries making sure that the (+) and (-) of battery are matched correctly.
- 3. Reattach the cover by sliding it back into position.



Note:

• Use 2 LR03 AAA(1.5volt) batteries. Do not use rechargeable batteries. Replace batteries with new ones of the same type when the display becomes dim.

◆ Storage and Tips for Using the Remote Controller

The remote controller may be stored mounted on a wall with a holder.

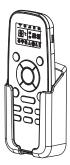
Note: The remote controller holder is an optional part.











♦ How to Use

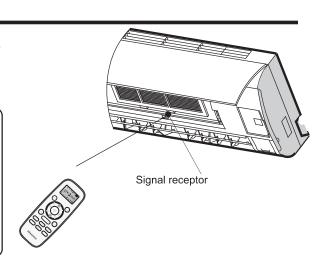
To operate system, point remote directly at unit (audible beep should sound when buttons are pressed). The remote can operate system up to 23ft away without interference.

A CAUTIONS

For appropriate signal transmission between remote controller and indoor unit, keep the signal receiver away from the following items:

- Direct sunlight or other strong lights or heat
- Flat panel television screen or other electrical appliances that react to the remote controller

Additionally, the air conditioner will not operate if curtains, doors or other materials block the signals from the remote controller to the indoor unit. If the signal may not be transmitted properly, either move these materials or consult your local dealer.



Remote Control

Operation modes

Selecting mode

Press



button

Result:

The operation modes changed in sequence:



Heating mode is NOT available for cooling only air conditioner.

FAN mode

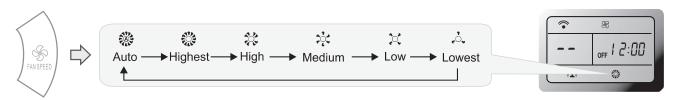
Press



button

Result:

The fan speed is changed in sequence:



At "FAN ONLY" mode, the "AUTO" is not available. At "DRY" mode, Fan speed is set at "AUTO" automatically, "FAN" button is ineffective in this case.

Setting temperature

Press



button once

Result:

Raise temperature setting by 1°F

Press <



button once

Result:

Lower temperature setting by 1°F

<u>./</u>	
Range of avail	able set temperature
*HEATING, COOLING	61°F~86°F
DRY	19°F~45°F
FAN ONLY	unable to set

*Note: Heating mode is NOT available for cooling only models. *Note: At "Dry" mode, a decrease or rise of up to 45°F can be set with Remote controller if you still feel uncomfortable.

Turning on

Press



button.

Result:

The RUN indicator of the indoor unit lights up.

SWING, SMART, TIMER ON, TIMER OFF, CLOCK, 46° HEAT, SLEEP and SURGE operation modes will be specified in the following pages.



- Changing modes during operation, sometimes the unit does not response at once. Wait 3 minutes.
 - During heating operation, air flow is not discharged at the beginning. After 2-5 minutes, the air flow will be discharged until temperature of indoor heat exchanger rises.
 - · Wait 3 minutes before restarting the appliance.

Remote Control

Airflow direction control

Vertical airflow(Horizontal airflow) Blade angle will adjust based on remote setting.

Operation mode	Direction of airflow
COOLING, DRY	horizontal
*HEATING, FAN ONLY	downward



The direction of airflow can be also adjusted by pressing the " button of the remote controller."

*Heating mode is only available for heat pump models.

Vertical airflow control (with the remote controller)

Use remote to adjust blade/louver angles.

Press " | button once.

Result: The vertical adjustment louver will swing up and down automatically.

Press " (> " button again .

Result: The louvers swing to a suitable angle as desired.



Horizontal airflow control (with the remote controller)

Use remote to adjust blade/louver angles.

Press " " button once.



Result: The horizontal adjustment louver will swing left and right automatically.

Press " ..." button again .

Result: The louvers swing to a suitable angle as desired.



Remote Control

OPERATION

SMART mode(Multizone system not capable of auto change over function)

How to set SMART mode?

Press the

Result:

button.

Enters **SMART** mode(auto change over operation)

regardless of the units ON/OFF status.

Temperature and fan speed are automatically set based on actual room temperature.



Heat pump models

Indoor temperature	Operation mode	Target temperature
70°F or below	HEATING	72°F
70°F-73°F	FAN ONLY	
73°F-79°F	DRY	Room temperature decrease 2°F after operate for 3 minutes
Over 79°F	COOLING	79°F

SMART mode will not work when system is set to SURGE Mode.

Pressing MODE will cancel SMART mode. Pressing MODE will cancel SMART mode. Note: Temperature, airflow and direction are controlled automatically in SMART mode. However, you can choose an offset of -7 to 7 if SMART mode preset is not comfortable.

♦ What you can do in SMART mode?

Issue	Button	Adjust
Not enough air flow in SMART mode.	SALSFEED.	Indoor fan speed alternates among Highest, High, Medium, low and Lowest each time when this button is pressed.
Airflow is not directed properly.	(≒ <u>√</u> 11),	Pressing SWING button once will change blade/louver position, pressing SWING again will stop swing function.

◆ How to cancel the SMART mode?

Press the

MODE

button.

Result: The SMART mode will be cancelled.



Remote Control

CLOCK button

How to adjust the real time?

1. Press CLOCK button.

Result: The time flashes on the LCD.





2. Press and buttons.

Result: Once to increase or decrease the time setting by 1 minute.

One and a half seconds to increase or decrease the time setting

by 10 minute.

For a longer time to increase or decrease the time by 1 hour.



3. Press CLOCK button again.

Result: The real time is set.

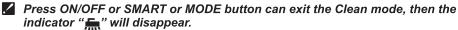


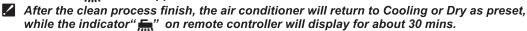


CLEAN mode

When the unit is in standby, and the mode of remote controller is in Cooling or Dry, press button for 5 seconds once to start Clean mode, then the indicator " a "will display on LCD.

Clean mode is ineffective in SUPER mode.







Remote Control

OPERATION

▲ Power control mode

When in Cooling mode, press ECONOMY button for about 5 seconds once to start Power control mode (at low fan speed), press this button for about 5 seconds once again to stop it.

When the appliance in the Power control mode, press (ECONOMY) button once by once

Result: The operation modes changed in sequence:



- Power control mode is ineffective in SURGE or ECONOMY mode.
- Except for the button of Swing, Dimmer, Ifeel, Clock, Time on, Time off, Fan, press the other buttons can exit the Powercontrol mode, and the indicator "%" will disappear.
- When start the Power control mode, the fan will automatically enter low wind speed, but you can change the wind speed by press the Fan button.

SURGE mode

SURGE mode is used to start or stop fast cooling or heating.

SURGE mode can be set when the appliance is in operation or in standby.

In SURGE mode, you can set airflow direction or timer.

♦ How to set SURGE mode?

Press SURGE

button in cool mode.

Result: At higher fan speed ,the set temperature

automatically to 61°F



Press



button in heat mode.

Result: At auto fan speed, the set temperature

automatically to 86°F



♦ How to cancel SURGE mode?

Press SURGE, MODE, FAN, ON/OFF, SLEEP or TEMPERATURE SETTING button.

Result: Display will return to previous mode

Exit from SURGE mode.



Note:

SMART button is not available in SURGE mode.

Surge mode will operate for 15 minutes unless user cancels the function.

Remote Control

46°HEAT mode

46°HEAT mode is used to set 46° heating mode.

In 46°HEAT mode, the fan speed is set at "AUTO" automatically.

How to set 46°HEAT mode?



and \(\) buttons together for about 2 seconds at the heating mode.





Result:

Result:

The 46° heat mode will be started.

How to cancel 46° HEAT mode?

Press any button except for (TIMERON), (TIMEROFF) and ()

The display * will disappear and the 46° HEAT mode will be cancelled.

Note:

In 46° HEAT mode, the default temperature is set 46° F.

46°HEAT mode can be set only when the air conditioner works in the heating mode.

TIMER mode

It is convenient to set the timer on with **TIMER ON** buttons when you go out in the morning to achieve a comfortable room temperature at the time you get home. You can also set timer off at night to enjoy a good sleep.

How to set TIMER ON?

1. Press (TIMER ON) button.

"ON 12:00" flashes on the LCD. Result:



2. Press the



button.

Result: Once to increase or decrease the time setting by 1 minute.

One and a half seconds to increase or decrease the time setting

by 10 minute.

For a longer time to increase or decrease the time by 1 hour.



3. When your desired time displayed on LCD, press the TIMER ON button and confirm it.

Result: A "beep" can be heard.

"ON" stops flashing.

The TIMER indicator on the indoor unit lights up. (invalid

for some models)



4. Timer will be displayed on the remote for 5 seconds and set time will reappear

How to cancel TIMER ON?

Press the (TIMER ON button again.

Result: A "beep" can be heard and the indicator disappears.

the time on mode has been canceled.

Note: It is similar to set TIMER OFF, you can make the appliance switch off automatically at your desired time.

QUIET mode

In this mode, the air conditioner unit work with low noise performance.

Note: Press MODE.FAN.SMART. SURGE button cancel QUIET mode.





Remote Control

ECONOMY mode

In this mode, the air conditioner will bring you energy saving performance by lower running current.

Note:

ECONOMY button is ineffective in SMART, SURGE and Power control mode.

Press ON/OFF , MODE ,TEMP \triangle , TEMP \triangle , FAN , SLEEP , QUIET or ECONOMY button cancel

Press and hold "QUIET" button and "ECONOMY" button together for 3 seconds will alternate the mode between the cooling only and the cooling and heating.

IFEEL mode

The built temperature sensor will sense the surrounding temperature, and transmit this back to the unit. This temperature will be your set point until you make another adjustment to the set point.

How to set IFEEL mode?

Press the

button.

Result: The transmit signal in the display will appear,

and the IFEEL function will be started.

Note:

Place remote in a location where the signal will be well received by unit. IFEEL should be used to adjust room temperature for momentary comfort. To get the best efficiency from your system allow the unit to operate at a set point.

This will allow the system to fluctuate with the changing room loads.

How to cancel IFEEL mode?

Press the

button once again.

The transmit signal in the display will disappear, Result:

and the IFEEL function will be shut off.

Note:

If IFEEL function fails to cancel, try holding button for 5 seconds.

Dimmer button

How to set the DIMMER?

Press the (DIMMER) button to turn off the light and the display in the unit.



If light is set to off a request from the remote to change a function will turn it on again. User will need to turn it off if that is the desired condition.

LOCK mode

How to set LOCK?

Press (TIMERON) and (TIMEROFF) buttons together for 2 seconds to start LOCK mode. The lock indicator appears on the display



Press together for 2 seconds

◆ How to cancel LOCK?

Press (TIMER ON) and (TIMER OFF) buttons together for 2 seconds to stop LOCK mode. The lock indicator disappears.



Press together

OPFRATION

Remote Control

SLEEP mode

SLEEP mode can be set in **COOLING**, **HEATING** or **DRYING** mode.

This function gives you a more comfortable environment for sleep.

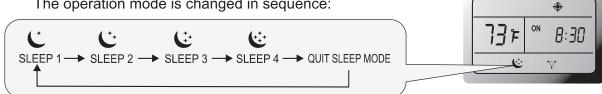
- The appliance will stop operation automatically after operating for 8 hours.
- Fan speed is automatically set at low speed.

How to set SLEEP mode?

Each time button is pressed.

Result:

The operation mode is changed in sequence:



SLEEP mode 1:

- Set temperature will rise by 2°F at most if the appliance operates in cooling mode for 2 hours constantly, then keeps steady.
- Set temperature will decrease by 2°F at most if the appliance operates in heating mode for 2 hours constantly, then keeps steady.

SLEEP mode 2:

- Set temperature will rise by 2°F if the appliance operates in cooling mode for 2 hours constantly, decrease by 1°F after 6 hours, then decrease by 1°F after 7 hours.
- Set temperature will decrease by 2°F if the appliance operates in heating mode for 2 hours constantly, rise by 1°F after 6 hours, then rise by 1°F after 7 hours.

SLEEP mode 3:

- Set temperature will rise by 1°F if the appliance operates in cooling mode for 1 hour, rise by 2°F after 2 hours, then decrease by 2°F after 6 hours, decrease by 1°F after 7 hours.
- Set temperature will decrease by 2°F if the appliance operates in heating mode for 1 hour, decrease by 2°F after 2 hours, then rise by 2°F after 6 hours, rise by 2°F after 7 hours.

SLEEP mode 4:

Set point will remain steady.

Note: Press SURGE, SMART, MODE or FAN button cancel SLEEP mode.

Note: By pressing "Sleeping mode" four times, or selecting other modes like SURGE, SMART, OR FAN,

you could cancel the sleeping function of those units without four sleeping curves.

Note: Heating is NOT available for cooling only air conditioner.

ODU Unit Function

1. Function and Control

1.1 Control mode

1) Cooling Anti-freeze Protection

To prevent freezing caused by low temperature of indoor evaporator, the air conditioner will implement real-time detection over the indoor coil temperature. If the indoor coil temperature is too low, the compressor will be prohibited from increasing or decreasing the frequency and even shut down automatically.

2) Heating Overload Protection

To prevent system overload caused by excessive pressure in heating operation, the machine will implement real-time detection over the indoor fan-coil temperature:

If the indoor coil temperature rises too high, the compressor will be prohibited from increasing the frequency; If the temperature continues to rise, the compressor will decrease the frequency; If the indoor coil temperature is too high, the compressor will stop working immediately. The compressor then will reboot after the indoor coil temperature reduces.

3) Cooling Overload Protection

To prevent system overload due to excessive pressure during cooling operation, the machine will implement real-time detection over the outdoor condenser coil temperature:

If the outdoor coil temperature grows higher, the compressor will be prohibited from increasing the frequency; If the temperature continues to rise, the compressor will decrease the frequency; If the outdoor fan-coil temperature is too high, then the compressor will stop working immediately. The compressor will reboot after the outdoor coil temperature reduces.

4) Discharge Temperature Protection

To prevent working conditions of compressor from deteriorating due to high discharge temperature, the machine will implement real-time detection over the discharge temperature.

If the discharge temperature grows higher, the compressor will be prohibited from increasing the frequency; if the temperature continues to rise, the compressor will decrease the frequency automatically; if the discharge temperature is too high, the compressor will stop working immediately. The compressor will then reboot when the discharge temperature returns to normal condition.

5) Oil-return Control

When the compressor continues to operate at low frequency, there will be an oil return. The compressor increases the frequency, and thus returns the oil through the refrigerant system to the compressor.

6) Operation Mode

a. Mode Category

Air conditioning mode is the operation mode set by users through remote control, four modes are available: cooling, heating, dehumidification, as well as fan mode.

ODU Unit Function

b. Mode conflict

The operating mode of outdoor unit is decided by the operating mode of the indoor unit booted first. Indoor unit subsequently booted will firstly determine whether it's own mode is in conflict with the outdoor mode. If so, the indoor unit will automatically shut down after three beeps; If there is no conflict, the indoor unit will boot normally. The relationship of mode conflict is as follows:

Driven choice Active mode	Cooling	Dehumidification	Heating	fan
Cooling	V	V	×	\checkmark
Dehumidification	V	V	×	√
Heating	×	×	V	×
Fan	V	√	×	√

√——Mode conflict will not happen

×———Mode conflict will happen

7) Outdoor four-way Valve Control

Four-way valve of the outdoor machine shuts down when cooling but starts when heating. The operation of heating defrosting refers to defrosting operation and, when the heating remote shutdown, the four-way valve disconnects in 50s when the compressor stops working.

8) Start-up Protection

To prevent compressor from restart frequently in the condition that system pressure has not been completely balanced, it can't be restarted within 3 minutes.

9) Pressure Protection

Pressure switch is normally kept open. If the pressure exceeds the high setpoint, the pressure switch will close and software will enter pressure protection control. Software will automatically decrease the frequency. If the pressure is still unable to return to normal condition after decreasing frequency, compressor will stop and report the fault code of pressure protection.

Basepan Heat -

1. The base pan heat tubing element is energized according to the outdoor ambient temperature which is Tout The entry and exit temperature conditions are the same for all models.

When Tout is lower than 35.6°F (2°C), the base pan heat is turned on, and when the Tout is higher than 37.4°F (3°C), the base pan heat is turned off.

2. Compressor crankcase heaters

The compressor crankcase heater is energized according to the outdoor ambient temperature which is Tout

- 2.1 When the compressor is running, the control rules for the compressor electric heating belt are as follows:
 - (1) If the Tout ≤ 14°F (-10°C), turn on the compressor crankcase heaters;
 - (2) If the Tout >- 41°F (5°C), turn off the compressor crankcase heaters;
 - (3) If the 14°F (-10°C) < Tout ≤ 41°F (5°C), keep the previous operating state;
 - (4) After each compressor starts to run for 5 minutes, turn off the compressor crankcase heaters.
- 2.2 When the compressor is stopped, the control rules for the compressor crankcase heaters are as follows:
 - (1) If the Tout ≤ 14°F (-10°C), turn on the compressor crankcase heaters;
 - (2) If the Tout > 41°F (5°C), turn off the compressor crankcase heaters;
 - (3) If the $14^{\circ}F$ (- $10^{\circ}C$) < Tout <- $41^{\circ}F$ ($5^{\circ}C$), keep the previous operating state.

ODU Unit Function

1.2 Control Logic Description

Contents

- 1) Sensors in HVAC Systems
 - 1.1 Discharge temperature sensor
 - 1.2 Suction sensor
 - 1.3 Outdoor coil temperature sensor
 - 1.4 Outdoor ambient temperature sensor
 - 1.5 Defrosting sensor
 - 1.6 Gas tube sensor
 - 1.7 Liquid tube sensor
- 2) Compressor Frequency Control
 - 2.1 Compressor frequency control
- 3) Electronic Expansion Valve Control
 - 3.1 Opening control during powering on
 - 3.2 Control of electronic expansion valves during cooling
 - 3.3 Control of electronic expansion valves during heating
- 4) Indoor/Outdoor Fan Speed Control
 - 4.1 Speed control in cooling mode
 - 4.2 Speed control in heating mode
- 5) Defrost Control
 - 5.1 Frosting judgment criteria
 - 5.2 Defrost control entry
 - 5.3 Defrost end conditions
- 6) System Protection
 - 6.1 Exhaust protection/overload cooling/overload heating/anti-freezing during cooling
 - 6.2 Compressor current protection
- 7) Other Control Modes

ODU Unit Function

1) Sensors in HVAC Systems

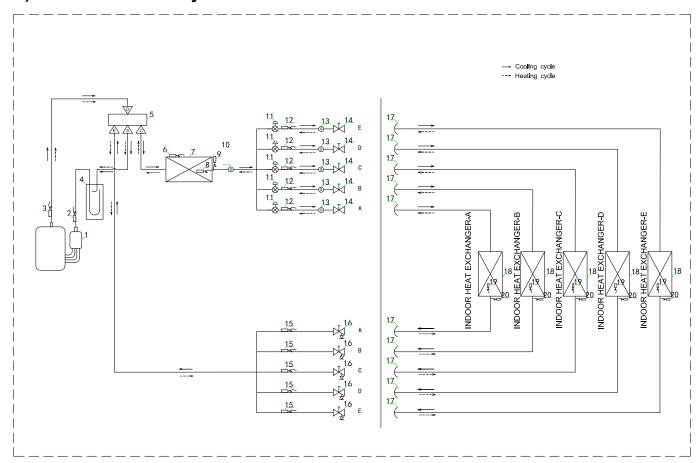


Figure 303

	3				
	List of component names				
8	Coil temperature sensor	16	Stop valve(Needle)		
7	Outdoor heat exchanger	15	Liquid tube temperature sensor		
6	Ambient temperature sensor	14	Stop valve		
5	4-Way valve	13	Strainer		
4	Gas-Liquid separator	12	Gas tube temperature sensor	20	Ambient temperature sensor
3	Discharge temperature sennor	11	Electronic expansion value	19	Coil temperature sensor
2	Suction temperature sennor	10	Strainer	18	Indoor heat exchanger
1	Two-rotor compressor	9	Frost temperature sensor	17	Hexagon nut
No.	Description	No.	Description	No.	Description

a. Discharge temperature sensor

It is designed to detect and control the temperature at the compressor discharge port. When the discharge temperature is too high, the compressor will run at low frequency or shut down.

b. Suction sensor

It is designed to detect the temperature of the compressor suction port to calculate the suction superheat (SSH).

ODU Unit Function

c. Outdoor coil temperature sensor

It is designed to detect the temperature in the middle of the outdoor condenser. When the temperature is too high, the compressor will run at low frequency or shut down. Additionally, it is used to:

- 1. In cooling mode, detect the coil temperature to calculate the superheat and control the opening of the electronic expansion valve;
- 2. In cooling mode, execute the system overload control;
- 3. In heating mode, detect the temperature and control defrost entry

d. Outdoor ambient temperature sensor

It is designed to perform initial control for the outdoor fan, constrain current, and determine low-temperature cooling

e. Defrosting sensor

It is designed to determine defrost entry and exit, and calculate the superheat

f. Gas tube sensor

It is to regulate the electronic expansion valve for cooling and heating

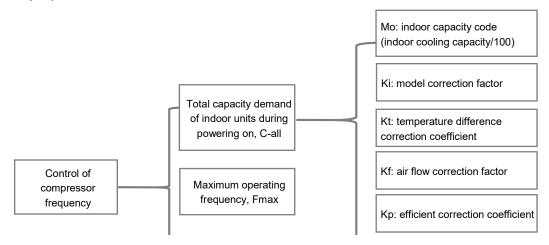
g. Liquid tube sensor

It is designed to regulate the electronic expansion valve for cooling and heating and control the correction of the expansion valve

2) Compressor Frequency Control

a. Compressor frequency control

The compressor's frequency is controlled using a proportional algorithm, which is proportional to the total demand of the internal units.



1. FUNCTION AND CONTROL

3) Electronic Expansion Valve Control

a. Opening control during powering on

Reset: Each time the power is turned on or the compressor is turned off, the electronic expansion valves close to the minimum opening and then open to the opening in standby mode in turn.

Initial opening: After powering on, the electronic expansion valve enters the initial opening first, and then regulation control only after operating for some time.

Note: When the cooling or heating is to be turned on and operating, if the power is accidentally disconnected, the cooling will fail to be turned on, the electronic expansion valve of the internal unit will be closed, and the refrigerant will not be discharged from the tube; the heating will fail to be turned on, and the electronic expansion valve of the heating part will have a certain degree of opening.

b. Control of electronic expansion valves during cooling

When cooling is enabled, the indoor units are controlled by referring to the evaporation superheat.

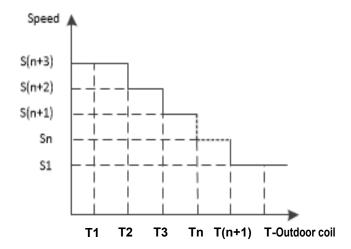
When no unit is turned on, all electronic expansion valves close fully, and no refrigerant is allowed to pass through.

After the compressor is turned on for some time, the DSH control is enabled to correct the electronic expansion valve.

1. FUNCTION AND CONTROL

b. Speed control in heating mode

In heating mode, the lower the outdoor ambient temperature, the higher the initial outdoor air speed; different initial speed gears are set according to the different outdoor ambient temperatures.



ODU Unit Function

5) Defrost Control

a. Frosting judgment criteria

After the compressor has been operating continuously for a certain time, software will determine if defrost conditions are met based on based on the outdoor ambient temperature and outdoor coil temperature. If these temperatures reach the preset value, and it operates for a certain time, it will be judged that frost has formed.

b. Defrost control entry

Stop the compressor first, turn off indoor and outdoor fans simultaneously, adjust the electronic expansion valve to an opening of defrosting, close the four-way valve, and start the compressor to defrost frequency for defrosting.

c. Defrost end conditions

Condition 1: Defrosting has been running for a certain time (the time is set by the memory)

Condition 2: T outdoor coil is ≥ preset temperature for 30s

When any of the above conditions is met, it is judged that the frost has been completely removed.

6) System Protection

a. Exhaust protection/overload cooling/overload heating/anti-freezing during cooling

Shutdown control: When the temperature exceeds the shutdown temperature for 10 seconds, shutdown control will be enabled, and a fault code will be displayed.

Frequency reduction control: When the temperature exceeds the frequency reduction temperature, the compressor first reduces the frequency and detects it every few minutes.

If frequency reduction is required, the frequency will be reduced by 5 Hz; if frequency reduction is not required, frequency reduction control will be disabled.

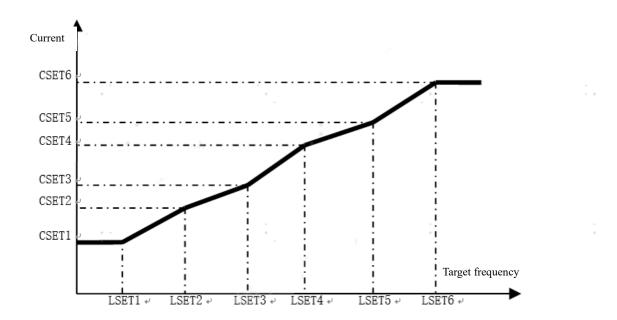
Frequency limiting control: When the temperature rises or falls to the frequency limiting temperature, the frequency of the compressor can only be reduced, not be increased.

ODU Unit Function

Category	Exhaust	Overload cooling	Overload heating	Anti-freezing during cooling
Frequency limiting temperature	Td1	Trl1	Thi1	Tf1
Frequency reduction temperature	Td2	Trl2	Thl2	Tf2
Shutdown temperature	Td13	Trl3	Thi3	Tf3
Remark	Frequency limiting – frequency reduction – shutdown temperature, exhaust temperature increases in sequence	Frequency limiting – frequency reduction – shutdown temperature, overload cooling temperature increases in sequence	Indoor unit shutdown shielding; frequency limiting – frequency reduction – shutdown temperature, overload heating temperature increases in sequence	Frequency limiting – frequency reduction – shutdown temperature, anti- freezing temperature during cooling decreases in sequence

b. Compressor current protection

The outdoor unit has different current protection value settings for different target frequencies.



ODU Unit Function

DIP setting

DIP Switch Setting of Outdoor Unit TURN ON all power sources before setting. Mark of "" indicates the position of DIP switches. S5 Dip switch setting Factory setting Factory setting Capacity: Silence ON DIP Switch Setting Factory setting Pump Down Switch Switch

1. Force defrosting mode

Cooling

Only

By default setting is OFF.

OFF -- Automatic defrosting mode

ON ---- Manual defrosting mode

Operation is valid when the dial is switched from OFF to ON state.

Forced

defrosting

OPERATION:

When the outdoor unit runs in heating mode, and the dial is switched from OFF to ON, then it will run the manual defrosting mode once.

2. Silence mode

By default setting is OFF.

OFF ----Normal mode.

ON---- Silence mode

Operation is valid when the dial is ON.

Silence mode:

Under the silence mode, the outdoor unit fan will run in medium fan speed at most.

3. Pump down mode

Actions:

The compressor runs with the target frequency, and without any protection when frequency rises; The EEV runs with setting opening; Outdoor unit fan will run with the set fan speed.

Operation procedures:

The thermostat is turned off during the whole process. Please power off before operation.

Step 1:

Open the wiring cover on the right side of the machine. Step 2:

Close all the stop valves of the liquid piping with an Allen wrench in a clockwise direction.



Field Settings ODU

Step 3:

Switch on the machine power.

Step 4:

Switch S4-2 to ON position on the checker board, the outdoor unit starts, and the current frequency value is displayed on the LED digital tube of the checker board.

Step 5:

The frequency value will keep changing until "CLOS" is displayed on the LED digital tube of the checker board, then please check whether the liquid stop valve is closed.



Step 6:

When "GOOD" is displayed on the LED digital tube of the checker board, please close all the stop valves of the gas piping with an Allen wrench in a clockwise direction within 10s.





Step 7:

Cut off machine power and the procedure for recovering refrigerant is finished.

4. Cooling only mode

By default setting is OFF.

OFF ----Cooling only mode is invalid.

ON---- Cooling only mode

Operation is valid when dial is switched from OFF to ON state before power on.

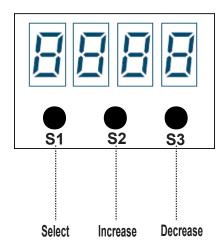
Cooling only mode

Heating mode is invalid during this mode.

Field Settings ODU

Running Parameter Query

For up to 3 IDUs/ up to 4 IDUs/ up to 5 IDUs series, outdoor running parameters can be checked by 7 segment display.



There are 3 buttons on the digital display board:

1) Select button: Select to display outdoor/indoor unit parameter.

"P." -- Parameter of outdoor unit

"A." -- Parameter of indoor unit A

"b." -- Parameter of indoor unit B

"C."-- Parameter of indoor unit C

"d." -- Parameter of indoor unit D

"E." -- Parameter of indoor unit E

2) INCREASE button: Each time it is pressed, the number rises by 1.

3) DECREASE button: Each time it is pressed, the number lowers by 1.

The parameter content will automatically display after the parameter code is selected for 3s.

Parameters can be checked as the table below.

Parameter Code	Descriptions	Parameter Code	Descriptions
P.0	Fault codes	A.1	Unit A fault codes
P.1	Compressor actual frequency	A.2	Unit A valve actual opening
P.2	Compressor driving frequency	A.4	Unit A liquid pipe temperature
P.4	Compressor target frequency	A.5	Unit A gas pipe temperature
P.5	Compressor exhaust temperature	A.6	Unit A coil temperature
P.6	Outdoor suction Temperature	A.7	Unit A ambient temperature
P.7	Outdoor ambient temperature	A.8	Unit A set temperature
P.8	Outdoor coil temperature	A.9	Unit A capacity
P.9	Outdoor defrosting temperature	A.10	Unit A set fan speed
P.10	IPM module temperature	A.11	Unit A actual suction overheating (cooling)
P.11	Outdoor capacity requirement	B.1	Unit B fault codes
P.12	IPM fault codes	B.2	Unit B valve actual opening
P.13	Outdoor DC Motor target speed	B.4	Unit B liquid pipe temperature
P.14	AC input current	B.5	Unit B gas pipe temperature
P.15	AC input voltage	B.6	Unit B coil temperature
P.16	DC bus voltage	B.7	Unit B ambient temperature
P.17	Compressor phase current	B.8	Unit B set temperature
P.18	Frequency limit code	B.9	Unit B capacity
P.20	Target suction overheating	B.10	Unit B set fan speed
P.21	Target exhaust overheaingt	B.11	Unit B actual suction overheating (cooling)
P.22	Actual suction overheating (heating)		
P.23	Actual exhaust overheating (heating)		

Field Settings ODU

Parameter Code	Descriptions	Parameter Code	Descriptions
C.1	Unit C fault codes	E.1	Unit E fault codes
C.2	Unit C valve actual opening	E.2	Unit E valve actual opening
C.4	Unit C liquid pipe temperature	E.4	Unit E liquid pipe temperature
C.5	Unit C gas pipe temperature	E.5	Unit E gas pipe temperature
C.6	Unit C coil temperature	E.6	Unit E coil temperature
C.7	Unit C ambient temperature	E.7	Unit E ambient temperature
C.8	Unit C set temperature	E.8	Unit E set temperature
C.9	Unit C capacity	E.9	Unit E capacity
C.10	Unit C set fan speed	E.10	Unit E set fan speed
C.11	Unit C actual suction overheating (cooling)	E.11	Unit E actual suction overheating (cooling)
D.1	Unit D fault codes		
D.2	Unit D valve actual opening		
D.4	Unit D liquid pipe temperature		
D.5	Unit D gas pipe temperature		
D.6	Unit D coil temperature		
D.7	Unit D ambient temperature		
D.8	Unit D set temperature		
D.9	Unit D capacity		
D.10	Unit D set fan speed		
D.11	Unit D actual suction overheating (cooling)		

Note: The right is therefore reserved to EE changing without notice.

Field Settings ODU

2.2 Test Run

Test run should be performed after refrigerant piping, drain, wiring, etc. have been finished.



The heat pump air conditioner is provided with a crankcase heater. If ambient temperature is below 32°F(0°C), check to ensure that the switch on the main power source has been ON for more than 6 hours ahead of power on preheating, otherwise it might damage the compressor!

Do not operate the system until all the check points have been cleared.

- (A) Check to ensure that the stop valves of the outdoor unit are fully opened.
- (B) Check to ensure that the electric wires have been fully connected.
- (C) Check to ensure that the electrical resistance is more than $2M\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.

Test run function identification

Operate the thermostat to turn ON the appliance, and then proceed test run.

Pay attention to the following items while the system is running.

Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than $194^{\circ}F$ ($90^{\circ}C$).

■ Turn off the power after test run is finished.
Installation of the appliance is generally finished after the above operations are done. If you still have any trouble, please contact Technical support (877) 599-5665

Field Settings Duct/AHU

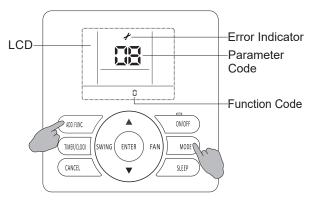
2.1.2 ESP setting (Duct /AHU type)

During the installation, choose proper static pressure according to the actual conditions within the range below to meet the user's requirements.

The static pressure can be freely adjusted by using specific wired remote controller.

Capacity (Btu/h)	The Range of Static Pressure	Function Code Set		
		2		
18K	0-0.56 in. H ₂ O (0-140Pa)	0-140 function code value equals static pressure value, more than 45 is 0.18 in. H ₂ O (45Pa). [default: 0.18 in. H ₂ O (45Pa)]		
24K	0-0.66 in. H ₂ O (0-165Pa)	0-165 function code value equals static pressure value, more than 145 is 0.58 in. H ₂ O (145Pa). [default: 0.58 in. H ₂ O (145Pa)]		
18K~24K (AHU)	0-0.80 in. H ₂ O (0-200Pa)	0-200 function code value equals static pressure value, more than 145 is 0.58 in. H ₂ O (145Pa). [default: 0.58 in. H ₂ O (145Pa)]		

Note: The pressure loss of filter is included in the data above.



C-Series wired controller

ESP setting (Wired Controller):

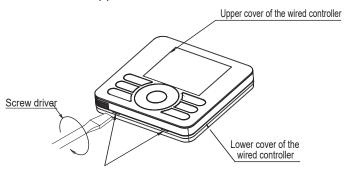
- 1 Press and hold "MODE" button and "ADD.FUNC." button for 3 seconds, symbol ✔ and parameter code starts blinking at the same time.
- 2 Press"▲/▼"button to adjust parameter number until "17" is displayed, and press "ENTER" button to enter system parameter adaption state, symbol 🖋 stops blinking.
- 3 Select desired parameter code 10 by pressing "▲/▼" button, and press "ENTER" button to confirm.
- **4** Select desired function code to rewrite the parameter values by pressing "▲ / ▼ "button, and press "ENTER" button to confirm.
- **5** Press "ON/OFF" button or "CANCEL" button to quit.

Field Settings AHU/ Ducted/ Cassette

2.1.3 Indoor unit parameter revision

1) Connecting wired controller with the indoor unit

Step 1: Remove the upper cover of the wired controller

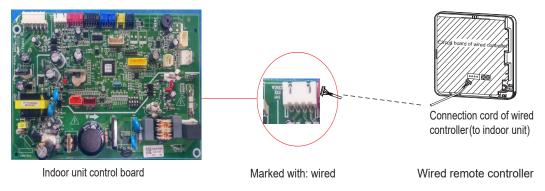


Insert a normal screw driver into the position, and gently rotate it. In this way, the upper cover can be easily removed.

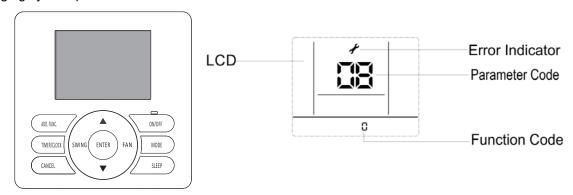
NOTE:

Control board of the remote controller is placed on upper cover. Please protect it from being scratched during removal and installation!

Step 2: Connect the wired controller with the indoor unit



2) Changing system parameter



OPERATION:

- ① Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol / and parameter number blink at the same time.
- ② Press "▲" "▼ "button to adjust parameter number until "17" is displayed. And press "ENTER" button to enter system parameter adaption state and symbol stops blinking, parameter number blinks.
- ③ Select desired parameter code by pressing "▲" / "▼"button following the table below, and press "ENTER" button to confirm.
- ④ Select desired function code by pressing "▲"/ "▼ " button, and press "ENTER" button to confirm.

Field Settings AHU/ Ducted/ Cassette

-	DADAMETED VALUE OPERATATION						
PARAMETER	PARAMETER		METER VALUE&REPRESENTATION	NOTE			
CODE	DESCRIPTION	DATA TYPE	REPRESENTATION (FUNCTION CODE)	NOIL			
1	Self Recovery of Power Break	Integer	O: Cancel Self Recovery of Power Break function; 1: Self Recovery of Power Break; others: invalid				
2	Temperature Type	Integer	Centigrade Temperature; Fahrenheit Temperature; others: invalid				
4	Ratio of ambient temperature sensed by indoor temperature sensor(cooling mode)	Integer	0~10valid, more than 10 default is10 0: 0%; 1: 10%;; 10: 100%	0-entirely use temperature sensed by wired remote controller; 10-entirely use temperature sensed by indoor unit			
5	Filter Clean Indication	Integer	O: Cancel Filter Clean prompt function; Set Filter Clean prompt function; others: invalid				
6	Filter Clean Time Set	Integer	0~32, more than 32 default is 32*1000h				
7	Installation Height Compensation	Integer	0~10m, more than 10m default is 10. =0,1,2: no fan speed compensation; =3: increase fan speed; =4~10: increase more fan speed.				
8	Cooling Temperature Compensation (indoor unit temperature sensor)	Integer	0:0°C;1:-0.5°C;2:-1°C; 3:-1.5°C;4:-2°C;5:-2.5°C; 6:-3°C;7:-3.5°C;8:-4°C; 9:-4.5°C;10:-5°C.(the wired controller displays integer with the symbol)				
9	Heating Temperature Compensation (indoor unit temperature sensor)	Integer	0:0°C;1:-0.5°C;2:-1°C; 3:-1.5°C;4:-2°C;5:-2.5°C; 6:-3°C;7:-3.5°C;8:-4°C;9:-4.5°C; 10:-5°C. (the wired controller displays integer with the symbol)				
10	Static Pressure Set	Integer	1~240, function code=static pressure more than the limit static pressure default the limit static pressure, Default is 0 (default static pressure, related to models)	Duct type (DC motor)			
12	Ratio of temperature sensed by indoor temperature sensor((Heating mode)	Integer	0~10valid, more than 10 default is10 0: 0%; 1: 10%;; 10: 100%	0-entirely use temperature sensed by wired remote controller; 10-entirely use temperature sensed by indoor unit			
13	Temperature Adjustment-Cooling	Character	-10~10°C(Single Character with symbol)	Temperature displayed on wired controller			
14	Temperature Adjustment-Heating	Character	-10~10°C(Single Character with symbol)	Temperature displayed on wired controller			
25	Access control, fire protection, ON/OFF function set	Integer	 =0, Access control, fire protection functions are all invalid; =1, Access control function is valid; =2, fire protection function is valid; =3, Access control, fire protection are all valid; =4, ON/OFF function is valid. 				
32	Refrigerant leakage fault	Integer	0:No refrigerant leakage fault 1:The unit has a refrigerant leak fault and is locked.				

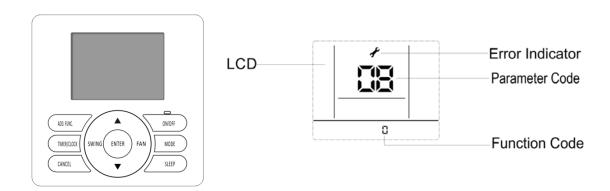
Field Settings AHU/ Ducted/ Cassette

2.1.4 Running Parameter Query

Running parameter can be referred to by 7 segment display or specified wired remote controller.

Query by wired remote controller

Operation:



OPERATION:

- (1) Hold down both "MODE" button and "ADD.FUNC." button for 3 seconds, symbol \checkmark and parameter number blinks at the same time.
- (2) Press "▲" "▼" button to select parameter number as you need, parameter value will be displayed on the LCD.

Parameter Code	Parameter Description				
06	Indoor unit air inlet temperature				
07	Indoor unit coil sensor temperature				
08	Outdoor unit ambient sensor temperature				
09	Discharge temperature				
10	Suction temperature				
11	Outdoor coil temperature				
12	Discharge pressure				
13	Suction pressure				
14	Outdoor EEV opening				
15	AC current input				
16	AC voltage				
24	Error code				
25	Drive error code				
26	Indoor unit air outlet temperature				
28	Compressor current				
29	Indoor unit room temperature				
30	Indoor unit coil inlet temperature				
31	Indoor unit coil outlet temperature				
32	Outdoor unit condenser inlet temperature				
33	Outdoor unit condenser outlet temperature				
43	Outdoor unit defrost temperature				
57	Outdoor fan 1 speed				
58	Outdoor fan 2 speed				
60	Indoor fan speed				

Field Settings AHU/ Ducted/ Cassette

2.1.5 Instructions for ON/OFF Input Control and Output Control Functions and Settings

(1) Function Introduction

ON/OFF Input Control

ON/OFF-1 Input Control (Saving Access Control Mode.)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is an Access Control usually for Room Card control or Window control.

ON/OFF-2 Input Control (Common Access Control Mode, or Dry Contact Mode)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is an Access Control usually for Room Card control or Window control.

ON/OFF-3 Input Control (Comfort Access Control Mode)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is an Access Control usually for Room Card control or Window control.

ON/OFF-4 Input Control (Fire Protection Mode)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is an special control usually for fire protection.

ON/OFF-5 Input Control (ALL On/All Off Mode A for strict local control)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is a strict local control for all on/all off control.

ON/OFF-6 Input Control (ALL On/All Off Mode B for flexible local control)

It is a kind of control mode to control the machine startup & shutdown based on the on & off input signal. It is a flexible local control for all on/all off control.

Output Control

There is 12V DC signal output when AC Error occurs.

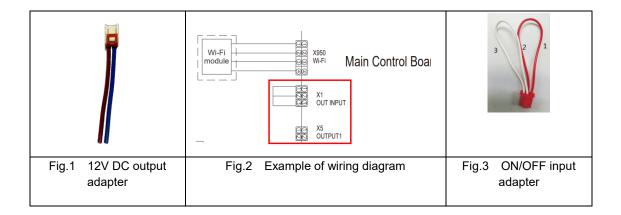
From the 12V DC output, the error can be identified by alarm lights, alarm bells, etc.in the distance.

(2) Function Setting

In case of using or cancelling ON/OFF Input Control functions, use the wired controller to modify the parameters of indoor unit.

The Output Control function is ready for the indoor unit. The installer do not need to modify the parameters of indoor unit with the wired controller. Just connect the output adapter HS 2089912 in Fig1 to output 12V DC signal.

Pins of the OUT INPUT shown in the electrical wiring diagram in Fig.2 are in short circuit state before shipment (an external short circuit adapter of ON/OFF input is shown as Fig.3).



Field Settings AHU/ Ducted/ Cassette

Table 1 Field setting of indoor unit by the wired controller

Field setting	ON/OFF Input Control					Output Control	
	Red Line			White Line			12V DC
Wired Controller	ON OFF-1	ON OFF-2	ON OFF-3	ON OFF-4	ON OFF-5	ON OFF-6	Output
0							YES
1	YES						YES
2				YES			YES
3	YES			YES			YES
4					YES		YES
5						YES	YES
6		YES		YES			YES
7			YES	YES			YES

Installer need to do the field setting of indoor unit by the wired controller according to the table1.

(3) Detailed Description

ON/OFF-1, ON/OFF-2, ON/OFF-3 Input Control is very similar. And they are usually used for the same kind of demand (for example room card) for different detailed requirement.

Table 2 Control logic of Input Control Modes

	ON Input			OFF Input		
ON/OFF	AC	Wired Controller	Controller control	AC	Wired Controller	Controller control
ON OFF-1	Standby	Standby	YES	Standby after 30s	Standby	NO
ON OFF-2	back to last setting	back to last setting	YES	Standby after 30s	Standby	NO
ON OFF-3	back to last setting	back to last setting	YES	Low Energy Saving	ON	Yes (Temperature and Fan Speed blocked)
ON OFF-4	Standby	Standby	YES	Standby after 3s	Standby	NO
ON OFF-5	ON (OFF blocked)	ON (OFF blocked)	YES (OFF blocked)	Standby after 0s	Standby	NO (ON blocked)
ON OFF-6	ON	ON	YES	Standby after 0s	Standby	YES

Field Settings AHU/ Ducted/ Cassette

• Some project requirement of ON/OFF modes

(1) Project requirement for ON/OFF-1

For some hotel projects, the air conditioner will turn off when people pull out the room card, then check out and leave the hotel. And the air conditioner will not turn on automatically when another people come in and insert the room card in the hourly room situation because the end user is always changing and the usage habit is different. Installer should choose ON/OFF-1 for this kind of projects.

(2) Project requirement for ON/OFF-2

For some hotel projects and apartment and house projects, the air conditioner will turn off when people pull out the room card and leave the hotel. And the air conditioner will turn on automatically when people come back and insert the room card. The end user is the same one and it is good to remember the user's usage habit.

Installer should choose ON/OFF-2 for this kind of projects.

And for some window contact requirement, installer can connect the window contact sensor to the input control port and choose ON/OFF 2.

(3) Project requirement for ON/OFF-3

In some hot area and countries, when people come back to hotel and insert the room card, the air conditioner will turn on. But people have to wait for 5~10 minutes until the room is cooled down. So people do not want the air conditioner off when the room card is pulled out and they want the air conditioner still on but in low energy consumption modes. Installer should choose ON/OFF-3 for this kind of projects.

For Smart Grid of air conditioner for BAFA in 2023, installer can choose ON/OFF-3.

(4) Project requirement for ON/OFF-4

In some special projects, the tender documents require that the air conditioner should be linked to the fire signal and stops when there is a fire.

Installer should choose ON/OFF-4 for this kind of projects.

(5) Project requirement for ON/OFF-5

In some close control system, we need the backup function. Usually there is two air conditioners and if one breaks down, another one will turn on automatically.

Installer should choose ON/OFF-5 for this kind of projects. Installer needs to connect a 12V DC Relay to Output Control port of Air Conditioner A and Input Control port of Air Conditioner B. And if the air conditioner A error happens, 12V DC signal will control the relay to be ON, then the ON Input signal will control air conditioner B ON automatically.

(6) Project requirement for ON/OFF-6

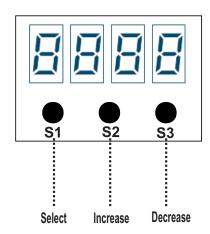
The front desk staff presses a switch and all the air conditioners in the building can be turn on by the users when people comes into office. And when people leave the office, the front desk staff will press the switch to be off and all the air conditioners in the buildings will be off. If some people need to work overtime in the office, they can turn on the air conditioner locally by the remote controller or wired controller.

Installer should choose ON/OFF-6 for this kind of projects.

It is not friendly to choose ON/OFF-5 for this kind of projects because the people working overtime in the office can not turn on the air conditioner locally after the front desk switch is off.

Field Settings/Parameter Checking for the AHU Using Checker Board

Parameters checking for Air Handler unit:



There are 3 buttons on the digital display board:

1) Select button: Select to display outdoor/indoor unit paramet .

"P.", "A." -- Parameter of indoor unit

2) INCREASE button: Each time it is pressed, the number rises by

3) DECREASE button: Each time it is pressed, the number lowers by

The parameter content will automatically display after the parameter code is selected for 3s.

Parameter	Parameter	
P.1	Display Static Pressure	
P.3	Set Static Pressure	
P.13	Monitor Indoor Fan RPM	
P.19	Adjust Indoor Fan RPM	
A.1	Unit A Fault Code	
A.2	Unit A Valve Actual Opening	
A.3	DO NOT USE this setting. For Factory Use only	
A.6	Unit A Coil Temperature	
A.7	Unit A Ambient Temperature	

Field Settings

2.2 Test Run

2.2.1 Preparation before test run and precautions

Please turn off all power supplies and confirm with a testing instrument whether all power supplies have been turned off.

Before running, please proceed the following steps to inspect the installation status:

(1) Structural damage inspect

Confirm whether there is no damage on the surface and interior of the equipment.

(2) Outdoor fan inspect

Confirm whether the impeller of the fan is located in the middle of the air outlet. Do not touch the air outlet.

(3) Fastening screw inspect

Check whether the screw parts become loose due to vibration during transportation. In addition, confirm whether the screws are tightened during installation.

Especially, be sure to inspect the screws of electrical wiring more carefully.

(4) Refrigerant leakage inspect

Vibration during transportation may cause loosening of the fastening (flaring part) position of the pipe. Check for refrigerant leakage.

Be sure to carry out this inspection carefully.

(5) Dial switch setting inspect

Confirm whether the dial switch is in the set position at the time of delivery (see: Dial setting of the outdoor unit).

(6) Insulation resistance inspect

Measure whether the resistance between the electrical component terminals and the ground reaches 2 M Ω or above with a 500 V megameter. When the resistance is below 2 M Ω , it indicates poor insulation at the electrical connection position, and the equipment cannot be operated at this time

In addition, do not apply power to the communication line terminal block (otherwise it will cause damage to the printed circuit board).

(7) Full opening of stop valve

Before conducting a test run, please check whether the stop valve of the outdoor unit is fully open.

(8) Power supply phase inspect

Do not operate when the phase sequence is incorrect or missing.

(9) Power-on of crankcase heating belt

After completing the inspection of items (1) to (8), connect the outdoor unit power supply. After powering on the crankcase heating belt, the compressor can be preheated. If the compressor is not preheated and started directly, the compressor will fail. The unit can only be started after 6 hours of power-on. Pre-heating is not required if temps have been above freezing for 6 hours or more.

(10) Confirmation of indoor and outdoor ambient temperature

The indoor ambient temperature during refrigeration operation shall not be lower than 81°F(27°C), and the outdoor ambient temperature during heating operation shall not exceed 66°F(19°C).

Field Settings



The machine can be started only after all checkpoints are checked without problems.

- (a) Check to ensure that the ground resistance of the wiring terminals exceeds 2 M Ω . Otherwise, find out and repair the leaking part before starting the system.
- (b) Check and ensure that all stop valves of the outdoor unit are turned on before starting the system.
- (c) It is recommended to power on for at least 6 hours to ensure sufficient lubrication of the compressor and extend service life.

7.2 Identification of test run functions

Turn on the remote control and perform a test run.

Test whether the function and display of the air conditioning unit are normal and whether the temperature control is in good state during the test run.

When the system is operating, the following conditions shall be noticed.

- (a) Do not touch any parts at the exhaust end to avoid scald. This is because the temperature of the compressor and pipes at the exhaust end is heated to above 194°F(90°C).
- (b) Do not press the AC contactor button, otherwise a serious accident may occur.

After the test run is completed, turn off the power. Do not touch any electrical components within 10 min after switching off the main power supply.

After completing the above operations, the installation of the equipment is usually completed. If you still have any questions, please contact our local technical service center for more information.

MAINTENANCE

Front panel and shell maintenance



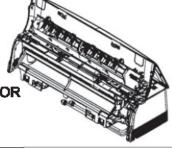
Cut off the power supply by moving the power switch in the direction of the arrow.

Note: Turn off the appliance first before cutting off the power supply.





Open the front panel and the front shell refer to Fig.9~Fig.12 of INDOOR UNIT INSTALLATION.





Wipe with a soft and dry cloth.

Use soft moisture cloth to clean if the front panel is very dirty.





Never use volatile substance such as gasoline or polishing powder to clean the appliance.





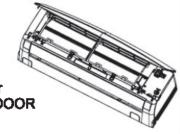
Never sprinkle water onto the indoor unit







Close the front panel and the front shell refer to Fig.22~Fig.26 of INDOOR UNIT INSTALLATION.



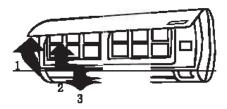
Air filter maintenance

It is necessary to clean the air filter after using it for about 200 hours.

Clean it as follows:



Stop the appliance and remove the air filter.



- 1.Open the front panel.
- Press the handle of the filter gently from the front.
- 3. Grasp the handle and slide out the filter.



Clean and reinstall the air filter.

If the dirt is conspicuous, wash it with a solution of detergent in lukewarm water. After cleaning, dry well in shade.





Close the front panel again.

Clean the air filter every two weeks if the air conditioner operates in an extremely dusty environment.

MAINTENANCE



The following is a deep cleaning and must be completed by a professional.



Users are strictly forbidden to operate privately, otherwise they will be at their own risk.

Front shell, air duct and fan maintenance



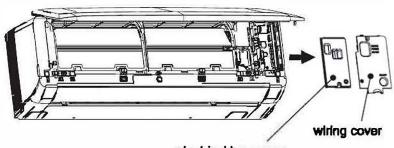
Cut off the power supply by moving the power switch in the direction of the arrow.

Note: Turn off the appllance first before cutting off the power supply.

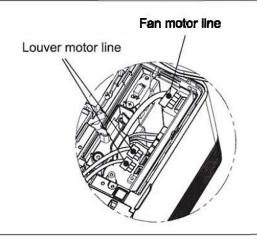




- 1. Remove the wiring cover and the electrical box cover.
- 2. Disconnect the fan motor line and the louver motor line.



electrical box cover

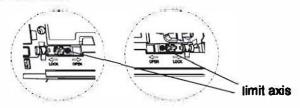


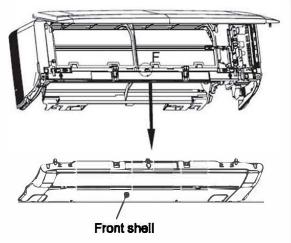


- 1. Open the screw covers and remove the screws refer to Fig.414 of INDOOR UNIT INSTALLATION.
- 2. Open the limit axes.
- 3. Remove the front shell for cleaning.

Note: Pay attention to the limit of F position, some models have two places.

Note: when you want to clean the front shell with clean water, you must first remove all the motors on the front shell.

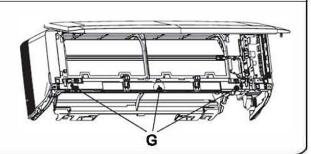






Remove the screws of the air duct. (G position and H position)

Note: Some models do not have H position screws.



MAINTENANCE

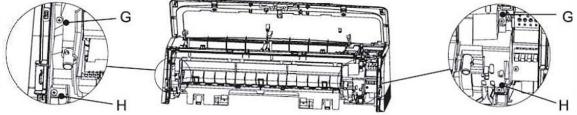


The following is a deep cleaning and must be completed by a professional.

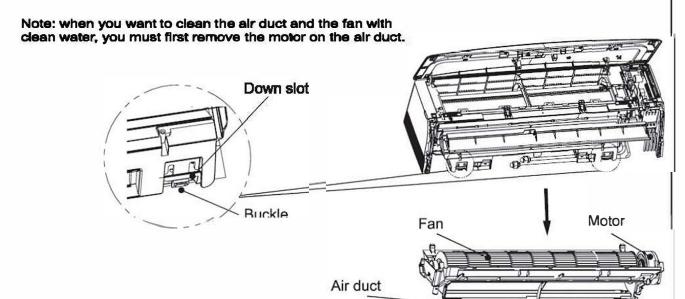


Users are strictly forbidden to operate privately, otherwise they will be at their own risk.

Front shell, air duct and fan maintenance Remove the screws of the air duct. (G position and H position) Note: Some models do not have H position screws.



 Press the 2 buckles of the air duct to disengage it from 2 down slots of the mounting plate. 2. Remove the air duct.



After cleaning, install the machine against the disassemble sequence.

Note: If the front shell, the air duct and the fan are washed with water, they must be thoroughly dried before they can be installed.

Outdoor Unit

Basic Troubleshooting

Troubleshooting	Possible Reason of Abnormality	How to Deal With
Air conditioner does not start up	1. Power supply failure; 2. Trip of breaker or blown fuse. 3. Power voltage is too low; 4. Improper setting of remote controller; 5. Remote control is short of power.	1. Check power supply circuit; 2. Measure insulation resistance to ground to see if there is any leakage; 3. Check if there is a defective contact or leak current in the power supply circuit; 4. Check and set remote control again; 5. Change batteries.
The compressor starts or stops frequently	The air inlet and outlet has been blocked.	Remove blocking obstacles.
Poor cooling/heating	 The outdoor heat exchanger is dirty, such as condenser; There are heating devices indoors The air tightness is not enough. People come in and out too frequently. Block of outdoor heat exchanger; Improper setting of temperature. 	1. Clean the heat exchanger of the outdoor unit, such as condenser; 2. Remove heating devices; 3. Keep certain air tightness indoors; 4. Remove blocking obstacles; 5. Check and try to set temperature again.
Sound from deforming parts	During system starting or stopping, a sound might be heard. However, this is due to thermal deformation of plastic parts.	It is not abnormal, and the sound will disappear soon.
Water leakage	Drainage pipe blocked or broken; Wrap of refrigerant pipe joint is not closed completely.	Change drainage pipe. Re-wrap and make it tight.
	Table 501	I

Outdoor Unit

Diagnostic Codes _ Intro

How to check fault codes

Troubleshooting according to fault codes

When the air conditioner failure occurs, the fault code will display on control board, or maintenance board.

Outdoor unit

Fault code displayed by LED lamps on outdoor main control board.

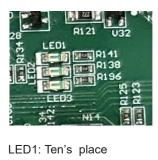
There are 3 LED lamps on control board, LED1, LED2 and LED3.

LED1 indicates fault code represented by 2-digit number, LED2 indicates fault code represented by single digit number and LED3 indicates outdoor drive control fault. When LED3 is off, LED1 and LED 2 indicate main control fault code.

When LED3 is on, LED1 and LED 2 indicate drive control fault code.

When LED3 is flickering and LED1, LED 2 are all off, indicate compressor is preheating. Failures display with 5s interval. It means LED will be off for 5s to report next fault code. System protection codes display method is the same with main control fault code. LED lamps will be off when there is no failure, protection or preheating.





LED1: Ien's place LED2: Unit's place

LED3: Drive failure indicator

Main Control Board 18K



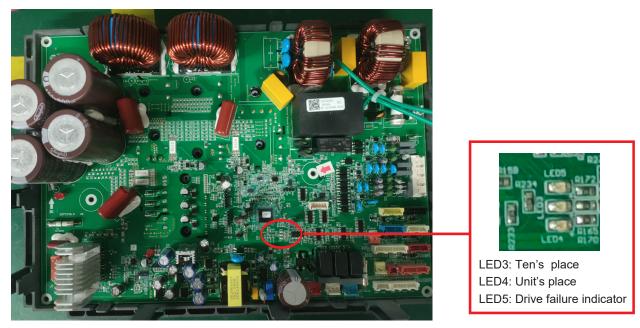


LED1: Ten's place LED2: Unit's place

LED3: Drive failure indicator

Main Control Board 27K

Outdoor Unit
Diagnostic Codes _ Intro

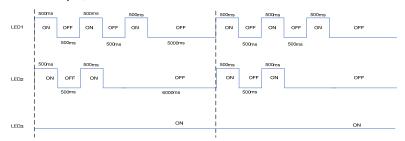


Main Control Board 36K/42K

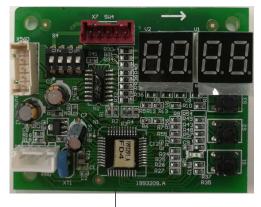
For example, outdoor main control fault 32:

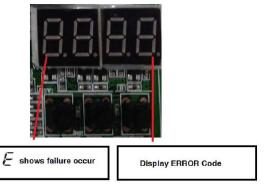


For example, outdoor drive fault 32:



Fault codes also can be checked by 7 segment display on the maintenance board. Fault codes will display directly when fault occurs.





Maintenance Board

Outdoor Unit

Diagnostic Codes _Main PCB

Fault code	Fault description	Possible reasons for abnormality	How to deal with
1	Outdoor ambient temperature sensor fault	The outdoor ambient temperature sensor is connected loosely. The outdoor ambient temperature sensor fails to work. The Main PCB sampling circuit fails.	Reconnect the outdoor ambient temperature sensor. Replace the outdoor ambient temperature sensor components. Replace the Main PCB.
2	Outdoor coil temperature sensor fault	1. The outdoor ambient temperature sensor is connected loosely;. 2. The outdoor ambient temperature sensor fails to work;. 3. The Main PCB sampling circuit fails.	Reconnect the outdoor ambient temperature sensor. Replace the outdoor ambient temperature sensor components. Replace the Main PCB.
3	The unit over-current shut down fault	1. Main PCB current sampling circuit fails; 2. The current is exceeding maximum limits high because the supply voltage is too low. 3. The compressor is blocked. 4. Overload in cooling mode; 5. Overload in heating mode."	 Replace the Main PCB. Normal protection, Check supply power. Replace the compressor. Please see Table 702 Please see Table 703.
4	EEprom Data error	EE components fails; EE components control circuit fails; EE components are inserted incorrectly."	1. Replace the Main PCB.
5	Cooling freezing protection (the indoor coil temperature is too low) or heating overload (indoor coil temperature is too high)	 The indoor unit airflow abnormal. The room temperature is too low in cooling mode or the room temperature is too high in heating. The filter is dirty. The duct resistance is too high to result in low air flow. The fan speed setting is too low. The indoor unit is not installed in accordance with the installation standards, and the air inlet is too close to the air outlet . 	1. Check whether the indoor fan, indoor fan motor and evaporator work normally. 2. Normal protection. 3. Clean the filter. 4. Check the volume control valve, duct length etc. 5. Set the fan speed to high. 6. Reinstall the indoor unit referring to the user manual to change the distance between the indoor unit and the wall or ceiling.
7	The communication fault between the indoor unit and outdoor unit	1. The communication cable is connected improperly between the indoor unit and outdoor unit. 2. The communication cable is connected loosely. 3. The communication cable fails. 4. The indoor control board fails. 5. The outdoor control board fails;. 6. Communication circuit fuse open. 7. The specification of communication cable is incorrect."	1. Reconnect the communication cable referring to the wiring diagram. 2. Reconnect the communication cable. 3. Replace the communication cable. 4. Replace the indoor control board; 5. Replace the outdoor control board. 6. Check the communication circuit, adjust the DIP switch and the short-circuit fuse. 7. Ensure communication cable is 4 X 14 AWG.
13	Compressor overheat protector device	 The wiring of the overload protector is connected loosely. The overload protector fails. The refrigerant is low. The installation pipe is much longer than the normal one, but extra refrigerant is not added; The expansion valve fails; The outdoor Main PCB has failed. 	1. Reconnect the wiring of the overload protector; 2. Replace the overload protector. 3. Using an A2L approved leak detector, Check the braze points of the unit to confirm there are no leaks, then recharge the refrigerant; 4. Add the refrigerant, refer to refrigerant Charging methods. 5. Replace expansion valve. 6. Replace the outdoor Main PCB.
14	The high pressure switch operation or the unit is turned off for high pressure protection	1. The wiring of the high pressure protector is connected loosely. 2. The high pressure protector fails; 3. The outdoor Main PCB has malfunctioned. 4. Overload in cooling; 5. Overload in heating."	 Reconnect the wiring of the high pressure protector. Replace the high pressure protector. Replace the Main PCB. Please refer to NOTE 3. Please refer to NOTE 4.
16	Overload protection in cooling mode	System overload	Please refer to NOTE 3.
17	Discharge temperature sensor fault	The wiring of the discharge temperature sensor is connected loosely. The discharge temperature sensor fails; The Main PCB sampling circuit is abnormal."	Reconnect the wiring of the discharge temperature sensor. Replace the discharge temperature sensor. Replace the outdoor Main PCB.
		Table 502	

Outdoor Unit

Diagnostic Codes _Main PCB

Fault code	Fault description	Possible reasons for abnormality	How to deal with	
18	AC voltage is abnormal	1. The AC voltage>275V or <160V; 2. The AC voltage of sampling circuit on the driver board is abnormal.	 Normal protection, please check the supply power; Replace the driver board. 	
19	Suction temperature sensor fault	The wiring of the suction temperature sensor is connected loosely. The suction temperature sensor fails. The Main PCB sampling circuit is abnormal.	Reconnect the wiring of the suction temperature sensor; Replace the suction temperature sensor; Replace the outdoor Main PCB.	
22	The defrosting sensor fault	 The wiring of the suction temperature sensor is connected loosely. The suction temperature sensor fails. The Main PCB sampling circuit is abnormal. 	Reconnect the wiring of the suction temperature sensor; Replace the suction temperature sensor; Replace the outdoor Main PCB.	
23	Expansion valve A pipe (liquid) sensor fault	1. The wiring of the sensor for the expansion valve A(liquid pipe) is connected loosely; 2. The sensor for the expansion A (liquid pipe) fails; 3. The Main PCB sampling circuit is abnormal."	 Reconnect the wiring of the sensor for the expansion valve A (liquid pipe); Replace the sensor for the expansion valve A (liquid pipe); Replace the outdoor Main PCB. 	
24	Expansion valve B (liquid) pipe sensor fault	1. The wiring of the sensor for the expansion valve B(liquid pipe) is connected loosely; 2. The sensor for the expansion B (liquid pipe) fails; 3. The Main PCB sampling circuit is abnormal."	 Reconnect the wiring of the sensor for the expansion valve B (liquid pipe); Replace the sensor for the expansion valve B (liquid pipe); Replace the outdoor Main PCB. 	
25	Expansion valve C (liquid) pipe sensor fault	1. The wiring of the sensor for the expansion valve C(liquid pipe) is connected loosely; 2. The sensor for the expansion C (liquid pipe) fails; 3. The Main PCB sampling circuit is abnormal."	 Reconnect the wiring of the sensor for the expansion valve C (liquid pipe); Replace the sensor for the expansion valve C (liquid pipe); Replace the outdoor Main PCB. 	
26	Expansion valve D (liquid) pipe sensor fault	"1. The wiring of the sensor for the expansion valve D (liquid pipe) is connected loosely; 2. The sensor of the expansion valve D (liquid pipe) fails; 3. The sampling circuit fails."	"1. Reconnect the wiring of the sensor for the expansion valve D (liquid pipe);2. Replace the sensor for the expansion valve D (liquid pipe 3. Replace the outdoor control board."	
27	Expansion valve A (gas pipe) sensor fault	1. The wiring of the sensor for the expansion valve A (gas pipe) is connected loosely; 2. The sensor of the expansion valve A (gas pipe) fails; 3. The Main PCB sampling circuit fails."	 Reconnect the wiring of the sensor for the expansion valve A (gas pipe); Replace the sensor for the expansion valve A (gas pipe); Replace the outdoor Main PCB. 	
28	Expansion valve B (gas pipe) sensor fault	1. The wiring of the sensor for the expansion valve B (gas pipe) connect is connected loosely. 2. The sensor of the expansion valve B (gas pipe) fails; 3. The Main PCB sampling circuit fails."	1. Reconnect the wiring of the sensor for the expansion valve B (gas pipe); 2. Replace the sensor for the expansion valve B (gas pipe); 3. Replace the Main PCB.	
29	Expansion valve C (gas pipe) sensor fault	1. The wiring of the sensor for the expansion valve B (gas pipe) connect is connected loosely; 2. The sensor of the expansion valve C (gas pipe) fails;. 3. The Main PCB sampling circuit fails	 Reconnect the wiring of the sensor for the expansion valve B (gas pipe); Replace the sensor for the expansion valve C (gas pipe); Replace the outdoor Main PCB. 	
30	Expansion valve D (gas pipe) sensor fault	1. The wiring of the sensor for the expansion valve B (gas pipe) connect is connected loosely; 2. The sensor of the expansion valve D (gas pipe) fails; 3. The Main PCB sampling circuit fails.	Reconnect the wiring of the sensor for the expansion valve B (gas pipe); Replace the sensor for the expansion valve D (gas pipe); Replace the outdoor control board.	
45	IPM fault	There are many reasons for this failure. You can check the driver board fault LED to further analyze the fault code of the drive board and to learn about what leads to the fault and how to operate it. Specific information can be seen in table 503.	See table 503 and 504	
46	IPM and control board communication fault	There are many reasons for this failure. You can check the driver board fault LED to further analyze the fault code of the drive board and to learn about what leads to the fault and how to operate it. Specific information can be seen in table 503 and 504.	See table 503 and 504	
Table 502				

Outdoor Unit

Diagnostic Codes _Main PCB

Fault code	Fault description	Possible reasons for abnormality	How to deal with	
47	Discharge temperature is too high	The refrigerant of the unit is low. EEV has malfunctioned. The outdoor ambient temperature is too high."	Check for refrigerant leak. Repair leak - See Refrigerant evacuation and charging. Replace EEV. Normal protection."	
48	48 The outdoor DC fan motor fault (upper fan motor) 1. Fan motor connections loose. 2. Fan motor wiring damaged. 3. The upper DC fan motor fails; 4. The drive circuit of the upper DC fan motor fails; 5. The outdoor fan has been blocked."		1. Reconnect the wiring of the up DC fan motor; 2. Repair or replace wiring. 3. Replace the upper DC fan motor; 4. Replace the Main PCB. 5. Check the outdoor fan and ensure the outdoor fan can rui normally."	
50	Expansion valve E (gas pipe) sensor wiring connections are loose. 1. Expansion valve E (gas pipe) sensor wiring connections are loose. 2. Replace the		Reconnect the wiring of the expansion valve E (gas pipe); Replace the expansion valve E (gas pipe) sensor. Replace the outdoor control board."	
53	53 Expansion valve E (liquid pipe) sensor wiring connections are loose. fault 1. Expansion valve E (liquid pipe) sensor wiring connections are loose. 2. The expansion valve E sensor (liquid pipe) fails; 3. The sampling circuit fails."		1. Reconnect the wiring of the expansion valve E (liquid pipe); 2. Replace the expansion valve E (liquid pipe) sensor. 3. Replace the outdoor control board."	
67	Fan of IPM device overheat protect	The fan of IPM is overload; The circuit of IPM fails."	Normal protection; Replace the IPM."	
91	The unit turns off due the IPM board over heating fault	1. The outdoor ambient temp. is too high; 2. The speed of the out fan motor is too low if the fan motor is AC fan motor; 3. he outdoor unit is not installed in accordance with the standard; 4. The supply power is too low.	 Normal protection; Check the fan capacitor, and replace the fan capacitor if it is failure; Reinstall the outdoor unit. Refer to the installation section of this manual; Normal protection. 	
96	Refrigerant low	Refrigerant low	Discharge the refrigerant and charge the refrigerant referring to the Nameplate of the unit. See installation section of this manual.	

96 - NOTE: DSH (Discharge Super Heat) = discharge temperature – condenser coil temperature

- 1. The opening of the outdoor electronic expansion valve > 450 steps; DSH >55; The temperature difference between indoor and outdoor coils is within 10°C; Indicates fault but does not stop;
- 1.1 The opening degree of the outdoor electronic expansion valve is above 450 steps DSH>55
- 1.2 The temp difference between the pipe temp of Evaporator and Condenser is less than 10°C AC will show E96 and AC can continue to run.
- 2. The opening of the outdoor electronic expansion valve > 450 steps; DSH>55; The temperature difference between indoor and outdoor coils is within 10°C; The temperature difference between the inner disk and the inner ring, the outer disk and the outer ring is within 2°C; stoppage
- 2.1 The opening degree of the outdoor electronic expansion valve is above 450 steps DSH>55
- 2.2 The temp difference between the pipe temp of EVA and CON is less than 10°C
- 2.3 At the same time, the temp difference between the pipe temp of CON and outdoor ambient temp is less than 2°C, AC will show E96 and AC will stop.

97	4-way valve	1. The connecting wiring of the 4- way valve coil is loose;	1. Reconnect the wiring of the 4-way valve;
	commutation failure	2. The 4-way valve coil fails;	2. Replace the 4-way valve coil;
	fault	3. The 4-way valve fails;	3. Replace the 4-way valve;
		4. The driver board of the 4-way valve fails.	4. Replace the main pcb.

NOTE 1: If the indoor unit can not start or the indoor unit stops itself after 30s, at the same time the unit do not display the fault code, please check the pin and the socket of the control board.

NOTE 2: If the indoor unit displays the 75,76,77,78 fault code after you turn on the unit, please check the TEST seat of the indoor control board or the TEST detection circuit to see whether short circuit occurs.

NOTE 3: Overload	d in cooling mode
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		THE ROOT CAUSE	CORRECTIVE MEASURE	
1		The refrigerant is excessive.	Discharge the refrigerant, and recharge the refrigerant referring to the nameplate and the installation section of this manual.	
2	The outdoor ambient temperature is too high. Please use within allowable temperature range			
	Table 502			

Outdoor Unit

Diagnostic Codes Main PCE

Fault description code		Possible reasons for abnormality	How to deal with	
3		Short-circuit occurs in the air outlet and air inlet of the outdoor unit.	Adjust the installation of the outdoor unit referring to the installation section of this manual.	
4	The outdoor heat exchanger is dirty, such as condenser. Clean the heat exchanger of the out condenser		Clean the heat exchanger of the outdoor unit, such as condenser	
5		The speed of the outdoor fan motor is too low.	Check the outdoor fan motor.	
6		The outdoor fan is broken or the outdoor fan is blocked.	Check the outdoor fan.	
7		The air inlet and outlet has been blocked.	Remove the blocked objects.	
8		The expansion valve fails.	Replace the expansion valve.	
NOTE 4	4: Over load in heating	y mode		
1		The refrigerant is excessive.	Discharge the refrigerant, and recharge the refrigerant referring to the nameplate and the installation section of this manual.	
2		The outdoor ambient temperature is too high.	Please use within allowable temperature range	
3		The indoor ambient temperature is too high.	Please use within allowable temperature range.	
4		Short-circuit occurs in the air outlet and air inlet of the outdoor unit.	Adjust the installation of the outdoor unit referring to the installation section of this manual.	
5		The indoor filter is dirty.	Clean the indoor filter.	
6		The speed of the indoor fan motor is too low.	Check the indoor fan motor and fan capacitor.	
7		The indoor fan is broken or the outdoor fan is blocked.	Check the indoor fan.	
8		The air inlet and outlet has been blocked.	Remove the blocked objects.	
9		The expansion valve fails.	Replace the expansion valve.	

Outdoor Unit

Diagnostic Codes _Driver Faults (18k)

Fault code	Fault description	Possible reasons for abnormality	How to deal with	
1	Inverter DC voltage overload fault	1. Power supply input is too high or too low;	1. Check the power supply;	
2	Inverter DC low voltage fault	2. Control board fault.	2. Change the control board.	
3	Inverter AC current overload fault			
4	Out-of-step detection	1. Compressor phase lost;	1. Check the compressor wire connection	
5	Loss phase detection fault (speed pulsation)	2. Bad control board components; 3. The compressor insulation fault.	Change the main PCB. Change the compressor.	
6	Loss phase detection fault (current imbalance)			
7	Inverter IPM fault (edge)	System overload or current overload;	1. Check the system;	
8	Inverter IPM fault (level)	2. Control board fault;3. Compressor oil shortage, serious wear of crank-	Change the compressor: Change the compressor:	
9	PFC fault (edge)	shaft;	4. Change the compressor.	
10	PFC fault (level)	4. The compressor insulation fault.		
11	PFC power detection of failure	1. The power supply is not stable; 2. Instantaneous power failure; 3. Control board failure.	Check the power supply; No need to deal with; Change the main PCB.	
12	PFC overload current detection of failure.		Check the system; Change the control board; Change the Main PCB	
13	DC voltage detected abnormal .		1. Check the power supply; 2. Change the Main PCB.	
14	PFC LOW voltage detected failure.	² control board fails.		
15	AD offset abnormal detected failure.		Change the Main PCB.	
16	Inverter PWM logic set fault.			
17	Inverter PWM initialization failure			
18	PFC_PWM logic set fault.	control board fails.		
19	PFC_PWM initialization fault.			
20	Temperature abnormal.	7		
21	Shunt resistance unbalance adjustment fault			
22	Communication failure.	Communication wire connection is not proper; control board fails;	Check the wiring; Change the Main PCB.	
23	Motor parameters setting of failure	Initialization is abnormal.	Reset the power supply.	
25	EE data abnormal	Control board EEPROM is abnormal.	1. Change EEPROM; 2. Change the Main PCB.	
26	DC voltage mutation error		Check the power supply, to provide stable power supply; Change the Main PCB.	
	Compressor drive D axis current control error		Check if the system is normal; Check if the stop valve is open; Change the control board.	
		Table 503		

Outdoor Unit Diagnostic Codes _Driver Faults(18k)

Fault code	Fault description	Possible reasons for abnormality	How to deal with
28	Compressor drive Q axis current control error	2. control board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the Main PCB.
29	Saturation error of D axis current control integral		1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the Main PCB.
30	Saturation error of Q axis current control integral		Check if the system is normal; Check if the stop valve is open; Change the Main PCB.
50	Inverter software over-current		Change the fan motor; Change the Main PCB. Change the fan motor.
51	Out-of-step detection	3. The fan motor starting overloads; 4. The fan motor is demagnetized;	1. Check the fan motor wire connection; 2. Change the control board; 3. Change the fan motor; 4. Change the fan motor; 5. Change the fan motor;
52	Abnormal speed control		Change the Main PCB. Change the fan motor; Change the fan motor;
53	Out of phase detection fault		Change the Main PCB. Change the fan motor; Change the fan motor
54	IPM-FO hardware over-current (edge)		Change the fan motor; Change the Main PCB. Change the fan motor
55	IPM-FO hardware over-current (level)		Change the fan motor; Change the Main PCB. Change the fan motor
56	The fan motor -AD Offset abnormal detection fault	The control board circuit fails.	Change the Main PCB.
57	The fan motor speed control integral saturation	Parameters are inappropriate;	Change the fan motor system; Change the fan motor; Change the Main PCB.
58	The fan motor D,Q axis current control error	The fan motor overloads, the phase current is large; The control board fault.	Check the fan motor system; Change the Main PCB.
59	The fan motor D,Q axis current control integral saturation		Change the fan motor system; Change the fan motor; Change the Main PCB.
60	The fan motor reverse	Bad control board components; Wiring problems	Change the Main PCB. Check the wiring.
61	IPM-PWM initialization fault	EE logics error; The control board fails.	Change the Main PCB. Change the Main PCB.
		Table 503	

Outdoor Unit

Diagnostic Codes _ Driver Faults (27k, 36k, 42k)

Fault code	Fault description	Possible reasons for abnormality	How to deal with	
1	Inverter DC voltage overload fault	1. Power supply input is too high or too low;	1. Check the power supply;	
2	Inverter DC low voltage fault	2. control board fault.	2. Change the main PCB.	
3	Inverter AC current overload fault	7		
4	Out-of-step detection	1. Compressor phase lost;	Check the compressor wire connection; Change the main PCB. Change the compressor.	
5	Loss phase detection fault (speed pulsation)	2. Bad control board components; 3. The compressor insulation fault.		
6	Loss phase detection fault (current imbalance)	3. The compressor insulation fault.	3. Change the compressor.	
7	Inverter IPM fault (edge)	1. System overload or current overload;	1. Check the system;	
8	Inverter IPM fault (level)	2. control board fault; 3. Compressor oil shortage, serious wear of	2. Change the main PCB.3. Change the compressor;	
9	PFC fault (edge)	crankshaft;	4. Change the compressor.	
10	PFC fault (level)	4. The compressor insulation fault.		
11	PFC power detection of failure	The power supply is not stable; Instantaneous power failure; control board failure.	Check the power supply; No need to deal with; Change the main PCB.	
12	PFC overload current detection of failure.	System overloads, and the current is too high; control board fails; PFC fails.	Check the system; Change the main PCB. Change the PFC.	
13	DC voltage detected abnormal .	1. Input voltage is too high or too low;	1. Check the power supply;	
14	PFC LOW voltage detected failure.	2. control board fails.	2. Change the main PCB.	
15	AD offset abnormal detected failure.	control board fails.	Change the main PCB.	
16	Inverter PWM logic set fault.			
17	Inverter PWM initialization failure			
18	PFC_PWM logic set fault.			
19	PFC_PWM initialization fault.			
20	Temperature abnormal.			
21	Shunt resistance unbalance adjustment fault			
22	Communication failure.	Communication wire connection is not proper; control board fails;	Check the wiring; Change the main PCB.	
23	Motor parameters setting of failure	Initialization is abnormal.	Reset the power supply.	
25	EE data abnormal	control board EEPROM is abnormal.	Change EEPROM; Change the main PCB.	
26	DC voltage mutation error	Power input changes suddenly; control board fails.	 Check the power supply, to provide stable power supply; Change the main PCB. 	
27	Compressor drive D axis current control error	System overload, phase current is too high; control board fails.	 Check if the system is normal; Check if the stop valve is open; Change the main PCB. 	
28	Compressor drive Q axis current control error	System overload, phase current is too high; control board fails.	1. Check if the system is normal; 2. Check if the stop valve is open; 3. Change the main PCB.	
29	Saturation error of Compressor drive D axis current control integral	System overloads suddenly; Compressor parameter is not suitable; control board fails.	Check if the system is normal; Check if the stop valve is open; Change the main PCB.	
30	Saturation error of Compressor drive Q axis current control integral	 System overloads suddenly; Compressor parameter is not suitable; control board fails. 	Check if the system is normal; Check if the stop valve is open; Change the main PCB.	
31	Drive AD conversion fault	control board fault	Replace the main PCB.	
35	AD Offset abnormal detection fault	control board fault	Replace the main PCB.	
		Table 504		

Outdoor Unit Diagnostic Codes _Driver Faults (27k, 36k, 42k)

Fault code	Fault description	Possible reasons for abnormality	How to deal with
50	Inverter software over-current	The fan motor system overloads; The control board fails; The fan motor is not insulated well;	1. Change the fan motor; 2. Change themain PCB. 3. Change the fan motor.
51	Out-of-step detection	1. Wiring connections are loosw. 2. Bad control board components; 3. The fan motor starting overloads; 4. The fan motor is demagnetized; 5. The fan motor is not insulated well.	1. Check the fan motor wire connection; 2. Change the main PCB. 3. Change the main PCB. 4. Change the fan motor. 5. Change the fan motor.
52	Abnormal speed control	Bad control board components; The fan motor shaft clamping; The fan motor insulation fails.	 Change the main PCB. Change the fan motor. Change the fan motor.
53	Out of phase detection fault	Phase loss of the fan motor; Bad control board components.	Change the control board; Change the fan motor; Change the fan motor
54	IPM-FO hardware over-current (edge)	The fan motor overloads or over- current; The control board fails; The fan motor insulation fails.	Change the fan motor; Change the control board; Change the fan motor
55	IPM-FO hardware over-current (level)	The fan motor overloads or over-current; The control board fails; The fan motor insulation fails.	1. Change the fan motor; 2. Change the main PCB. 3. Change the fan motor
56	The fan motor -AD Offset abnormal detection fault	The control board circuit fails.	Change the control board.
57	The fan motor speed control integral saturation	The fan motor overload mutation; Parameters are inappropriate; The control board fault.	 Change the fan motor system; Change the fan motor; Change the control board.
58	The fan motor D,Q axis current control error	The fan motor overloads, the phase current is large; The control board fault.	Check the fan motor system; Change the main PCB.
59	The fan motor D,Q axis current control integral saturation	The fan motor overload mutation; Parameters are inappropriate; The control board fault.	1. Change the fan motor system; 2. Change the fan motor; 3. Change the main PCB.
60	The fan motor reverse	Bad control board components; Wiring problems	Change the control board; Check the wiring.
61	IPM-PWM initialization fault	EE logics error; The control board fails.	1. Change the main PCB. 2. Change the main PCB.
70	Effective value protection of compressor phase current	Low power supply voltage; control board fault.	Check the power supply voltage; Replace the main PCB.
71	Start failure	System overload; control board fault; Compressor fault	 Check if the system operates properly and if the shut-off valve is turned on; Replace the main PCB. Replace the compressor.
72	IPM over- temperature fault	High outdoor ambient temperature; Improper installation of outdoor units; Low power supply voltage.	Protect properly; Reinstall the outdoor unit according to the installation specifications. Protect properly.
73	MCU error	control board fault	Replace the control board
74	Compressor speed estimation error	System overload; control board fault; Compressor fault	Check if the system operates properly and if the shut-off valve is turned on; Replace the main PCB. Replace the compressor.
75	Over-power	System overload; control board fault; Compressor fault	Check if the system operates properly and if the shut-off valve is turned on; Replace the main PCB. Replace the compressor.
76	High compressor power	1. control board fault	1. Replace the control board
		Table 504	

Outdoor Unit Diagnostic Codes _Driver Faults

Fault code	Fault description	Possible reasons for abnormality	How to deal with
80	Effective value protection of fan phase current	Abnormal fan system Abnormal control board Fan motor fault	Check if the outdoor fan is abnormal Replace the main PCB. Replace the fan motor
81	Fan startup failure	Abnormal fan system Abnormal control board Fan motor fault	 Check if the outdoor fan is abnormal Replace the control board Replace the fan motor
82	Fan IPM over- temperature	Machine system overload, and high phase current; control board fault; Poor contact of radiator	Check if the system is abnormal Replace the control board Replace the radiator
83	Air speed estimation error	control board fault	Replace the control board;
84	High air speed	control board fault	Replace the control board;
	01-132 appear in the operation process and indicate scharge Super Heat	some kind of normal operation state, instead of fau	lts, so they do not need to be dealt with.
101	When overcurrent occurs, stop the frequency from increasing.	Current control	
102	When overcurrent occurs, reduce the frequency.	Current control	
103	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.	
104	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.	
105	When the discharge temperature is too high, stop the frequency from increasing.	Frequency control to keep appropriate discharge temperature.	
106	When the discharge temperature is too high, reduce the frequency.	Frequency control to keep appropriate discharge temperature.	
107	In cooling mode, when the temperature of the outdoor unit coil is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.	
108	In cooling mode, when the temperature of the outdoor unit coil is too high, reduce the frequency.	Frequency control to keep appropriate temperature of the outdoor unit coil in cooling mode.	
113	To prevent the indoor unit from being frozen or high temperature, stop the frequency from increasing.	Frequency control to keep appropriate temperature of the indoor unit coil.	
114	To prevent the indoor unit from being frozen or high temperature, reduce the frequency.	Frequency control to keep appropriate temperature of the indoor unit coil.	
119	When DSH exceeds the target value, the valve opening gets wider to adjust the flow.	Control on expansion valve based on DSH.	
120	When DSH exceeds the target value, the valve opening gets narrower to adjust the flow.	Control on expansion valve based on DSH.	
121	When DSH exceeds the target value, stop the valve opening from getting narrower.	Control on expansion valve based on DSH.	
122	When DSH exceeds the target value, stop the valve opening from getting wider.	Control on expansion valve based on DSH.	
131	When the temperature of IPM module is too high, stop the frequency from increasing.	Frequency control to keep appropriate temperature of IPM module.	
132	When the temperature of IPM module is too high, reduce the frequency.	Frequency control to keep appropriate temperature of IPM module.	
134	When the discharge temperature is too high, stop the valve opening getting narrower.	Control on discharge temperature expansion valve.	
140	The compressor overloads.	Control on the compressor output.	
141	The compressor current overloads.	Control on the output torque of the compressor.	
		Table 504	

Indoor Unit - Wall Mount

Diagnostic Codes

The indoor display board will show the error code automatically when the unit has the following trouble:

Refer to the remote controller which the sleep key can set into 4 different combination ways, when using to check the error codes only takes effect for pressing the sleep key 10 times in ten seconds instead of 4 times.

NOTE: If the troubleshooting inquiry display by 7-segment tube, then the error code will be displayed, otherwise only the LED of the display board can show.

The failure is detected when the room temperature sensor broken or shorted over 5 sec.

The failure is detected when the temperature sensor of heater exchange broken or shorted over 5 sec.

The failure is detected when each setting data is not match after the EPROM self-check two times.

The failure occurs when the grounding signal is not detected after the appliance power ON

Error	Content	The root cause is may be one of the following	
Code			
EA	The error code will display when the communication between display board and control board is interrupted.	a. The connection between the display board and control board is loose.b. The indoor control board failed.c. The wiring of the display board failed	
6	AC voltage higher or lower protection	a. the supply voltage is higher or lower than normal. b. The inner supply voltage of the unit is higher or lower than normal.	
7	Communication failure between the indoor unit and outdoor unit	a. The communication cable is disconnected or loose. b. The connection between the filter board and the terminal is incorrect or loose c. The communication cable failed. d. The connection between the filter board and the outdoor control board is incorrect or loose. e. The indoor control board failed. f. The PFC board failed. g. The power board failed. h. The outdoor control board failed.	
23	There is a leak in the product	a. There is a leak in the indoor b. There is a leak in the outdoor c. There is a leak in the connecting pipe	

For code 23, there are two situations where this fault code will be displayed.

Situtation 1

- a. The compressor runs continuously for at least 15 minutes.
- b. The room temperature cannot be lowered ($\Delta T > 3.6^{\circ} F$, where ΔT represents the difference between the indoor ambient temperature and the set temperature).
- c. The compressor frequency is relatively high (> 50Hz).
- d. The indoor unit is "not too cold" ($0 \le \Delta T$ in ≤ 3.6 °F, where ΔT in represents the difference between the indoor ambient temperature and the indoor coil temperature).
- e. The above state lasts for 5 minutes.
- f. Then, the air conditioner will enter a "fixed mode" and operate for 5 minutes.
- g. During these 5 minutes, if any of the following conditions is met for 2 minutes, it is judged as a "serious refrigerant deficiency" and the machine is stopped: Condition 1: The outdoor unit exhibits "poor heat dissipation" ($0 \le \Delta T$ out $\le 2.7^{\circ}$, where ΔT out represents the temperature difference between the outdoor coil and the outdoor environment) and the expansion valve has a large opening.

Condition 2: The exhaust pipe is "overheated", which means DSH, equal to the difference between the Exhaust temperature and Outdoor condenser coil temperature (DSH \Rightarrow 140°F).

Situtation 2:

- a. The compressor runs continuously for at least 10 minutes.
- b. The room temperature cannot be lowered ($\Delta T > 3.6$ °F, where E represents the indoor ambient temperature minus the set temperature).
- c. The air conditioner has previously experienced frequency reduction or shutdown due to excessively high exhaust pipe temperature.
- d. Within 5 seconds, the indoor unit indicates "not too cold" ($0 \le \Delta T$ in ≤ 3.6 °F, where ΔT in represents the difference between the indoor ambient temperature and the indoor coil temperature).
- e. If any of the following conditions is met, it shall be immediately judged as "severe refrigerant deficiency" and the machine shall be shut down:

Condition 1: The outdoor unit has "poor heat dissipation" $(0 \le \Delta T \text{out} \le 2.7^{\circ} \text{F}$, where $\Delta T \text{out}$ represents the temperature difference between the outdoor coil and the outdoor environment) and the expansion valve has a large opening ($\ge 250 \text{ steps}$).

Condition 2: The exhaust pipe is "overheated", which means DSH is equal to the difference between the Exhaust temperature and Outdoor condenser coil temperature (DSH \geqslant 140°F).

Condition 3: The exhaust pipe is "relatively hot" (DSH > 136°F) and the expansion valve has been opened to its maximum (= EEVmax).

33	The failure for temperature sensor of indoor room	a. The indoor room temperature sensor loose.b. The indoor room temperature sensor failed.c. The indoor control board failed.		
	Table 505			

Indoor Unit - Wall Mount Diagnostic Codes

Error	Content	The root cause is may be one of the following
Code		
34	The failure for temperature sensor of indoor coil temperature	a. The indoor coil temperature sensor loose. b. The indoor coil temperature sensor failed. c. The indoor control board failed.
36	Communication failure between the indoor unit and outdoor unit	a. the communication cable connector loose. b. the connection between the filter board and the terminal is incorrect or loose. c. the communication cable failed. d. the connection between the filter board and the outdoor control board is incorrect or loose. e. the indoor control board failed. f. the PFC board failed. g. the power board failed. h. the outdoor control board failed.
38	Indoor EEPROM failure	a. The EEPROM chip loose; b. The indoor control board failed.
39	Indoor fan motor runs abnormally.	a. Something blocking the indoor fan motor. b. The fan motor cord is disconnected or loose. c. The fan motor failed. d. The indoor control board failed.
41	The failure for Indoor grounding protection.	The indoor control board failed.
56	There is a leak in the product When the refrigerant leakage fails, the fault code 56 is displayed actively. The indoor fan is forced to run at the highest speed, and the outdoor unit stops. Other controls do not respond.	a. There is a leak in the indoor b. There is a leak in the connecting pipe
57	the error code will display when the communication between refrigerant Sensor and indoor control board have in trouble	a. The connection between the refrigerant Sensor and control board is loose;.b. The indoor control board is failure.c. The wiring of the refrigerant Sensor is failure.
77	Wi-Fi Connection Enabled	Cycle Power on/off

Indoor Wall Mount Unit Does Not Run

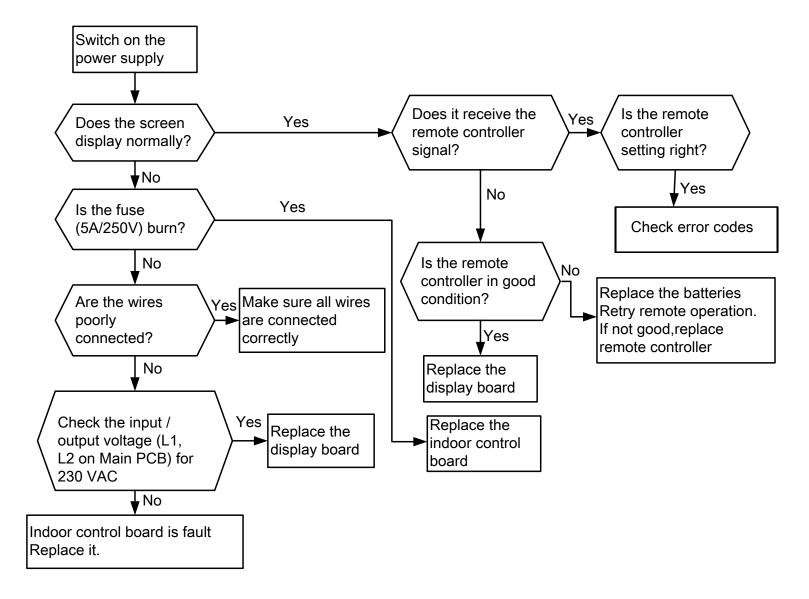


Figure 506

Indoor Wall Mount

Error Code 39-DC Fan

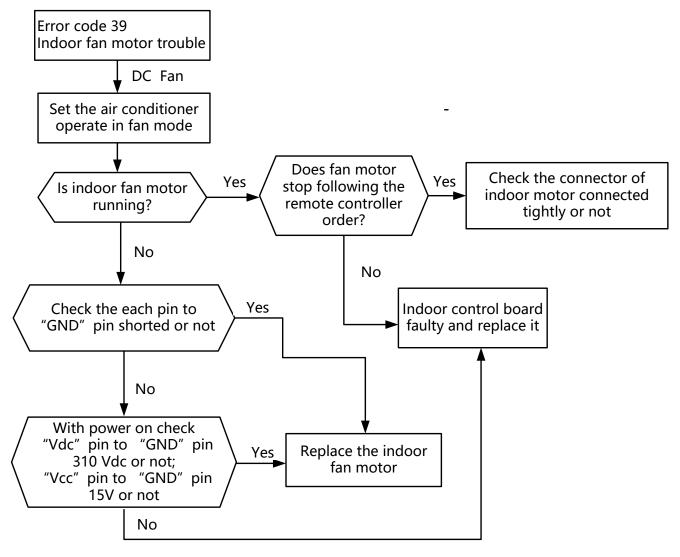
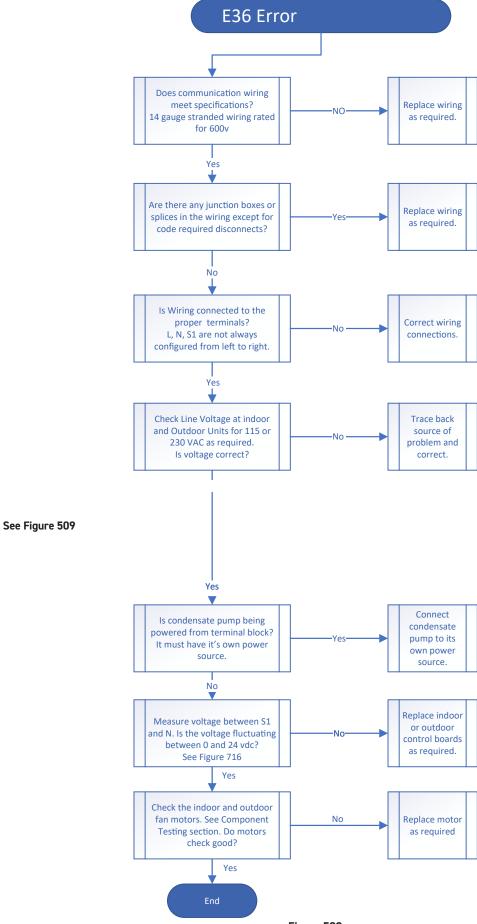


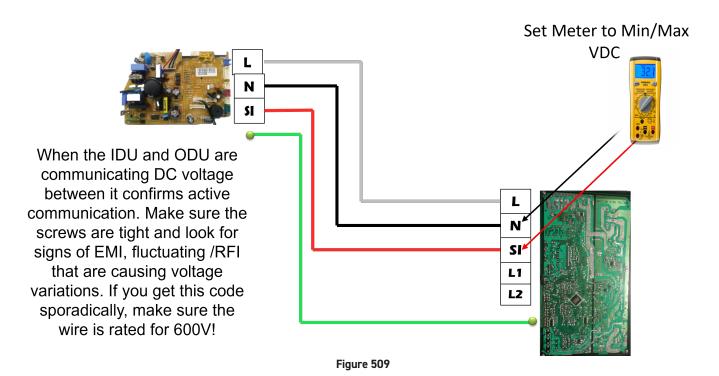
Figure 507

Indoor Wallmount Error Code 36



Indoor Wallmount Error Code 36

Check from SI to Neutral on the outdoor unit or indoor unit



Indoor Wallmount

Blank Display/Indoor Micro Switch

If the Display is blank, check to see if the door is properly closed.

If the door is properly closed, confirm that you have proper line voltage to the indoor unit.

If the indoor unit door is not properly closed, or if the door micro switch has malfunctioned the display may be blank. See Figure 717 When the micro-switch is not engaged, and the power button is depressed, there will be no display and the system will not operate or respond in any way. See Figure 718.

When the Timer On/Clock button is pressed you will see a temperature on the display, but still no system operation. After a few seconds, the display will drop the temperature leaving just the Wi-Fi and Timer icons. Still no indoor unit operation. See Figure 719.





Fig. 510 (Door Micro Switch)





Fig. 511 (Blank Display)

Indoor Wallmount

Blank Display/Indoor Unit Door Micro Switch

When the Timer On/Clock button is pressed you will see a temperature on the display, but still no system operation. After a few seconds, the display will drop the temperature leaving just the Wi-Fi and Timer icons. Still no indoor unit operation. See Figure 719.







Fig. 512 (Momentary Temp. Display)

Indoor Unit Cassette/ Ducted/ AHU

Diagnostic Codes

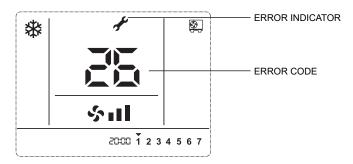
Troubleshooting according to fault codes

When the air conditioner failure occurs, the fault code will display on control board, wired controller or display panel.

How to check fault codes

Indoor unit

(1)Error codes indicated by wire remote controller (see figure below)



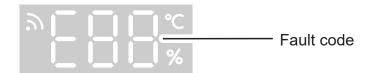
When the air conditioner malfunctions, \checkmark will be displayed on the LCD, and error codes will appear and blink.

Fault code displays on wired controller

Indoor Unit Cassette/ Ducted/ AHU Diagnostic Codes

(2) Fault codes indicated by display panel(36K/48K)

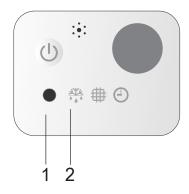
Display panel



(3) Fault codes indicated by LED lamps on display panel (9K/12K)

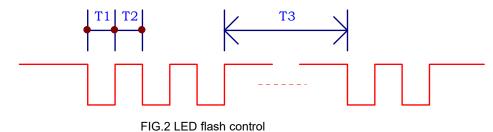
Lamp RUN (LED2, Red) and Lamp DEFROST (LED5, Green) flash. Lamp RUN displays fault code represented by 2- digit number, and lamp DEFROST displays fault code represented by single digit number (as shown fig. below). For example, fault code 36: LED RUN & defrost flash 3 times at the same time, and LED DEFROST continues flashing 3 times, it reports No. 36 fault.

Display panel



- 1 Run indicator (Red) Indicates the fault code with 2- digit number.
- 2 Defrost indicator (Green)
 Indicates the fault code with single digit number.

LED FALSH CONTROL: flash 300mS (T1), off 300mS (T2), after 2000mS (T3) fault code repeat displays. (as shown below)



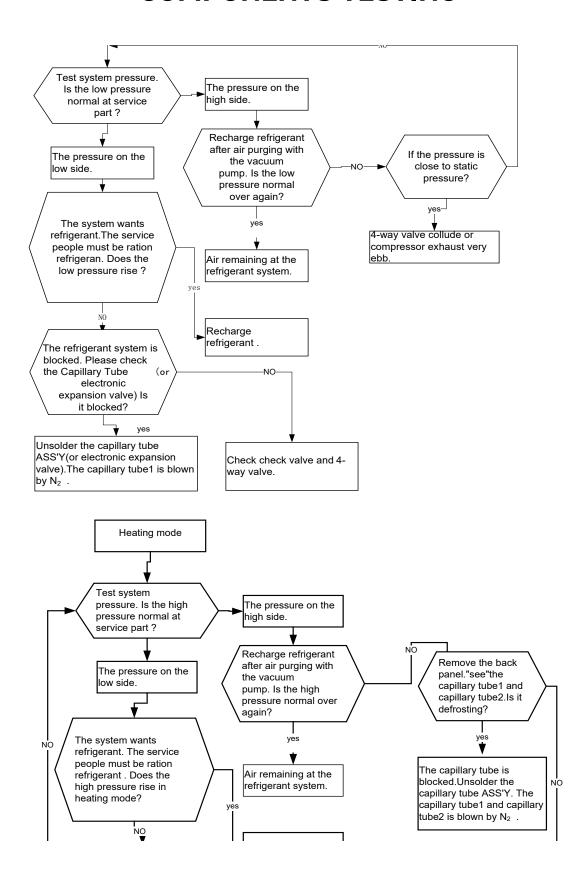
Indoor Unit Cassette, AHU, and Ducted Diagnostic Codes

Fault code	Fault description	Possible reasons for abnormality	How to deal with
37	Humidity sensor failure	1. The cable of the humidity sensor connect loose. 2. The humidity sensor is failure. 3. The indoor control board is failure.	Reconnect the cable of the humidity sensor. Replace the humidity sensor. Replace the indoor control board.
51	Drainage protection	1. Defective drain pump. 2. Improper drain piping work. 3. Drain piping clogging. 4. Defective float switch. 5. Defective indoor unit PCB. 6. Defective short circuit connector on PCB.	 Replace the drain pump. Replace the drain piping. Dredge the drain piping. Replace the float switch. Replace the indoor unit PCB. Replace the short circuit connector.
55	Mode conflict fault	The user sets the conflicting mode for more than two indoor units.	Reset the operation mode for the indoor unit, for with one outdoor unit, the user should avoid setting the conflicting operation mode with the indoor units.
sponding Multi-Sp In a mul	g fault codes (56, 57 in the table abo olit System Behavior: lti-connected system, if one indoor	ge faults, refrigerant sensor communication faults with indo ove) will be displayed on the indoor unit's wall-mounted conf unit detects a refrigerant leak or sensor communication fa wn. Non-faulty indoor units maintain their current fan spee	troller and display panel ault: The faulty indoor unit operates at maximum fan
56	Refrigerant leakage	The refrigerant sensor detects that the concentration of refrigerant in the air exceeds the threshold.	Check and repair problematic pipes and add refrigerant.
alarm th	ce Condition: After repairing the lea nreshold or confirms no leakage via	k, power-cycle the unit. The fault will reset if the system con sensor data. a a 5-minute high-speed fan operation to stabilize the system	
57	Refrigerant sensor communication fault or refrigerant sensor fault	The refrigerant sensor fails to communicate with the indoor unit for a long time. The refrigerant sensor reports the fault message such as life loss.	Replace the refrigerant sensor. Reconnect the connection cable between the refrigerant sensor and the indoor unit board.
Upon de at maxir Clearan	num speed, while the outdoor unit v	or communication failure, the indoor unit display and control will shut down. Subsequent control commands to the unit wis when communication with the refrigerant sensor is re-est overy.	ll be acknowledged but not executed.
64	Communication between Indoor & Outdoor unit Fault	1. The indoor unit and the outdoor unit are not connected properly. 2. The communication cable is connected loosely. 3. The communication cable between the indoor unit and the outdoor unit fails or the cable between the indoor control board to terminal fails or the cable between the outdoor control board to the terminal fails. 4. The indoor control board fails. 5. The outdoor control board fails.	Reconnect the connection cable referring to the indoor and outdoor wiring diagram. Reconnect the communication cable referring to the indoor and outdoor wiring diagram. Replace the communication cable referring to the indoor and outdoor wiring diagram. Replace the indoor control board; Replace the outdoor control board.
72	Indoor fan motor fault	1. The cable of the indoor fan motor is connected loosely. 2. The cable of the indoor fan motor fails; 3. The indoor fan motor fails; 4. The indoor control board fails; 5. The outdoor fan has been blocked.	1. Reconnect the cable of the fan motor. 2. Replace the cable of the fan motor. 3. Replace the fan motor. 4. Replace the indoor control board. 5. Check the indoor fan and ensure the indoor fan can run normally.
73	Indoor EEPROM Data fault	Indoor EE components fail. The control circuit of the EE components fails. The EE components has been inserted in opposite direction.	Replace the EE components. Replace the indoor control board. Reassemble the EE components of the indoor control board.
81	Indoor ambient Temperature Sensor Fault	Disconnection or contact failure of connectors on the outdoor controller circuit board Defective thermistor. Defective outdoor controller circuit board.	 Check connection of connector on the indoor controller circuit board. Check resistance value of thermistor or replace the outdoor temperature sensor. Replace outdoor controller circuit board.
		Figure 513	

Indoor Unit Cassette, AHU, and Ducted Diagnostic Codes

FE	Communication between main control board & Wired control- ler Fault (display on wired controller)	1. The wired controller and the indoor control board are connected loosely. 2. The sequence of the wiring between the wired controller to the indoor control board is wrong. 3. The wiring between the wired controller to the indoor control board fails. 4. The wired controller fails. 5. The indoor control board is abnormal.	1. Reconnect the wiring between the wired controller to the indoor control board. 2. Replace the wiring between the wired controller to the indoor control board. 3. Replace the wiring between the wired controller to the indoor control board. 4. Replace the wired controller. 5. Replace the indoor control board.		
ER	Communication between main control board & display board Fault (displays on display board)	1. The wiring between the display board to the indoor control board is connected loosely. 2. The sequence of the wiring between the display board to the indoor control board is wrong. 3. The wiring between the display board to the indoor control board fails. 4. The display board fails. 5. The indoor control board fails.	1. Reconnect the wiring between the display board to the indoor control board. 2. Replace the wiring between the display board to the indoor control board. 3. Replace the wiring between the display board to the indoor control board. 4. Replace the display board. 5. Replace the indoor control board.		
	Figure 513				

Outdoor Unit



Outdoor Unit

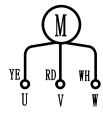
SN	SN Key components	
1	DC Motor (Outdoor unit)	
2	Compressor	
3 EEV coil		
4 4-Way valve coil		
5	Pressure switch	
6	Inductance	
7	Fuse	

1) DC Motor (Outdoor unit)

External drive type

Use the multimeter to test resistance between two terminals

Model	Test condition (Ambient temperature)	Normal test results	Deviation Range
18K	68°F (20°C)	U-V: 46Ω U-W: 46Ω V-W: 46Ω	±7%
27K/36K/42K	77°F (25°C)	U-V: 9.1Ω U-W: 9.1Ω W-V: 9.1Ω	±7%



Thermal Sensor

2) Compressor

Test in resistance.

TOOL: Multi-meter.

Test the resistance of the winding. The compressor fails if the resistance of winding is 0 (short circuit)or∞(open circuit).

Familiar error:

- 1) Compressor motor lock.
- 2) Discharge pressure value approaches static pressure value.
- 3) Compressor motor winding abnormality.

Pow er Controller Compre

Notes:

- 1) Don't put a compressor on its side or turn over.
- 2) Please assemble the compressor in your air conditioner rapidly after removing the plugs. Don't place the comp. in air for a long time.
- 3) Avoid compressor running in reverse caused by connecting electrical wire incorrectly.
- 4) Warning! In case AC voltage is impressed to compressor, the compressor performance will decrease because of its rotor magnetic force decreasing.

Outdoor Unit

Use the multimeter to test resistance between two terminals.

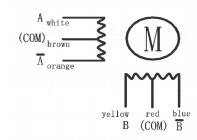
Test results:

Model	Test condition (Ambient temperature)	Normal test results	Deviation Range
18K	68°F (20°C)	U-V: 1.065Ω U-W: 1.065Ω V-W: 1.065Ω	±7%
27K	68°F (20°C)	U-V: 0.630Ω U-W: 0.630Ω V-W: 0.630Ω	±7%
36K/42K	77°F (25°C)	U-V: 0.426Ω U-W: 0.426Ω W-V: 0.426Ω	±5%

3) EEV coil

Use the multimeter to test resistance between two terminals at 68°F (20°C).

Test results:



Model	Test condition	Normal test results	Deviation Range
18K	gray (com) -orange gray (com) -black gray (com) -yellow gray (com) -red	46Ω	± 3Ω
27K	brown (com) -white brown (com) -orange red (com) -yellow red (com) -blue	46Ω	±3.7Ω
36K	brown (com) -white brown (com) -orange red (com) -yellow red (com) -blue	46Ω	± 3Ω
42K	brown (com) -white brown (com) -orange red (com) -yellow red (com) -blue	46Ω	± 3Ω

Discharge pipe temperature is too high. This means the compressor is over heating and will shut down and lock itself out. The cause for this issue is lack of refrigerant coming back to the compressor to cool the compressor. The main causes of this would be low charge, restriction or issue with the electronic expansion valve (EEV).

Remove the head off the EEV (pulls right off) & check for any rust build up. If there is any rust inside the EEV head, replace the EEV head. If there is rust on the EEV body you can clean it up with some emery cloth.





Outdoor Unit

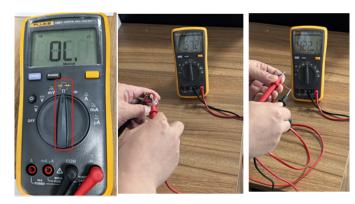
4) 4-Way valve coil

Use the multimeter to test resistance between two terminals. Test results:

Model	Test condition (Ambient temperature)	Normal test results	Deviation Range
18K/27K/36K/42K	77 °F (25 °C)	2085Ω	±10%

5) Pressure switch

Normally closed switch detection: With no pressure in the pipeline, you can turn a multimeter to the ohm range and connect the red and black probes with a pin (lead) respectively to detect whether the switch is in the "ON" state.



6) Inductance

Familiar error:

- 1) Sound abnormality
- 2) Insulation resistance disqualification.

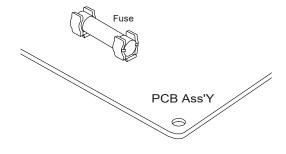
Use the multimeter to test resistance between two terminals.

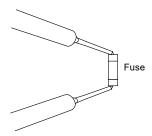
Model	Test condition (Ambient temperature)	Normal test results	Deviation Range
18K	77°F (25°C)	60mΩ Max	±7%
27K	68°F (20°ℂ)	100mΩ Max	±7%
36K/42K	77°F (25°ℂ)	30mΩ Max	±5%

7) Fuse

Checking continuity of fuse on PCB ASS'Y.

Remove the PCB ASS'Y from the electrical component box. Then pull out the fuse from the PCB ASS'Y.Check for continuity by a multimeter as shown below.

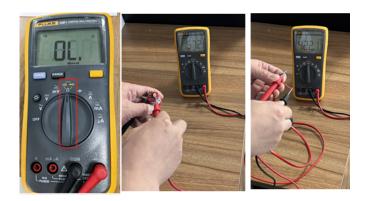




Outdoor Unit

8. Pressure switch

The pressure switch is divided into normally closed and normally open types (under atmospheric pressure), such as YK-4.0/3.4 is normally closed, and YK-2.85/3.6 and YK-0.05/0.15 are normally open.



Normally closed switch detection:

With no pressure in the pipeline, you can turn a multimeter to the ohm range and connect the red and black probes with a pin (lead) respectively to detect whether the switch is in the "ON" state.

Normally open switch detection:

With the pressure in the pipeline higher than the switching-on pressure, you can turn a multimeter to the ohm range and connect the red and black probes with a pin (lead) respectively to detect whether the switch is in the "ON" state

Cassette/ Ducted/ AHU

Key components

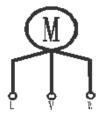
SN	Key components	
1	DC Motor (Indoor unit)	
6	Water Pump	
7	Water Switch	
8	Pressure Switch	
9	Step motor	

1. DC Motor (Indoor unit)

a. External drive

Use the multimeter to test resistance between two terminals at 77°F(25°C).

	Duct t	Duct type		e type
Model	Normal test results	Deviation range	Normal test results	Deviation range
9K/12K	U-V: 75Ω U-W: 75Ω V-W: 75Ω	±10%	U-V: 50Ω U-W: 50Ω V-W: 50Ω	±10%
18K	U-V: 39Ω U-W: 39Ω V-W: 39Ω	±7%	U-V: 32Ω U-W: 32Ω V-W: 32Ω	±10%
24K	U-V: 16.5Ω U-W: 16.5Ω V-W: 16.5Ω	±7%	U-V: 32Ω U-W: 32Ω V-W: 32Ω	±10%



6. Water pump

Use the multimeter to test resistance

between two terminals at 77°F(25°C).

Test results:

Duct type		Cassette type		
Model	Normal test results	Model	Normal test results	
9K~24K	333Ω±10%	9K~12K	333Ω±10%	

7. Water switch level

Test the resistance between two harness.

Testing condition:

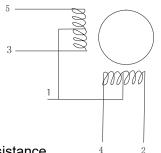
1.at the on-position condition 2.at 77°F(25°C)

Test results:

Model	Normal test results
9K/12K	≤0.3Ω
18K~24K	≤0.4Ω

Cassette/ Ducted/ AHU

9. Step motor



Test results:

Model	Normal test results
9K~24K	300Ω±7%

Test in resistance.

Tool: Multimeter.

Test the resistance of winding. The stepper motor fails if the resistance of winding is 0 (short circuit) or ∞ (open circuit).

230v Indoor Unit Main PCB Terminal ID (No A2L Sensor Capability)

FAHFW18A3D (Serial Numbers prior to 2505F05243), FAHFW24A3D (Serial Numbers prior to 2505F06609)

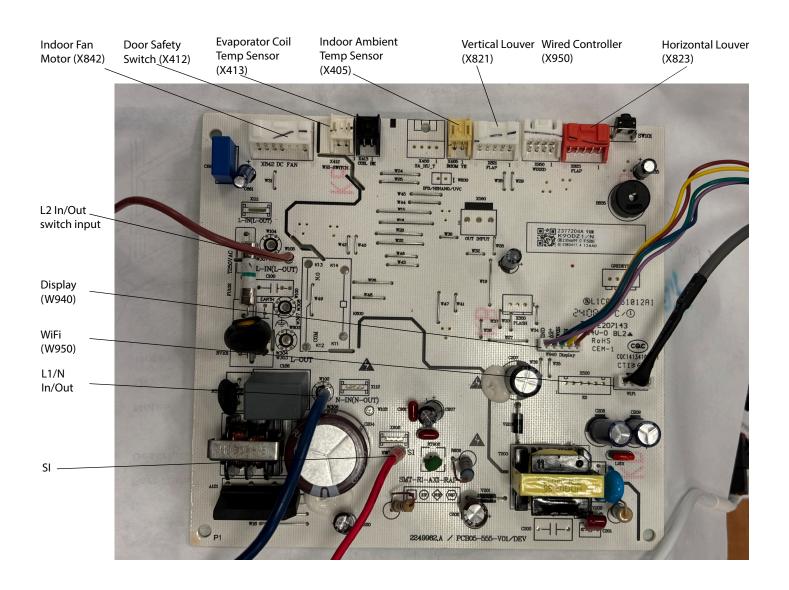
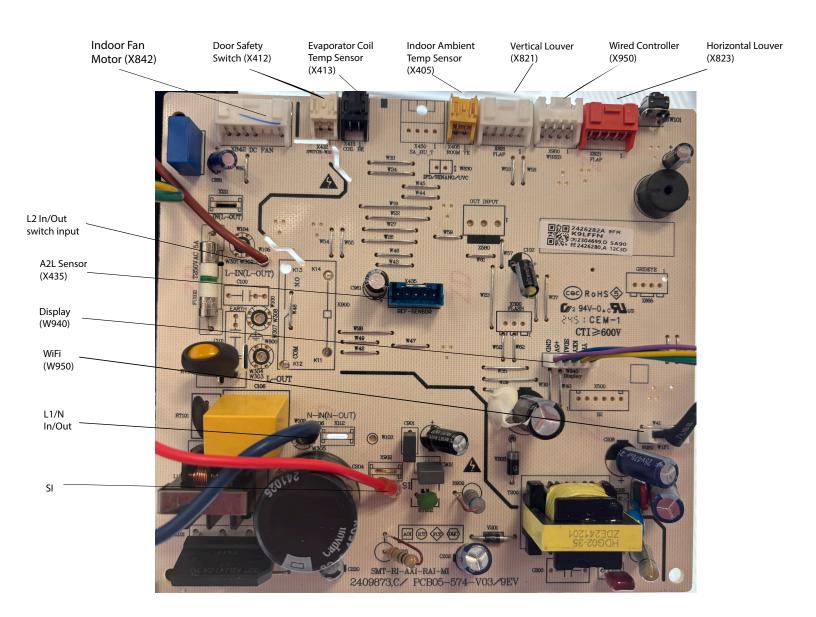


Figure 601

230v Indoor Unit Main PCB Terminal ID (With A2L Sensor Capability)

FAHFW09A3D, FAHFW12A3D, FAHFW18A3D (Serial Numbers 2505F05243 and after), FAHFW24A3D (Serial Numbers 2505F06609 and after)



Indoor Fan Motor -Wall Mount

Power Check:

- 1. Turn unit on.
- 2. Check indoor fan connector on main PCB.

There are 5 wires:

Voltage for Power (Red) to Ground (Black) = 310 VDC Motor Return Voltage (White) to Ground (Black) = 15 VDC PWM (Yellow) to Ground (Black) = 0-6.5 VDC

3. DC Voltage test

Manually rotate indoor fan motor slowly for several revolutions, and measure voltage "YELLOW" and "GND" on motor. The voltage repeats 0V DC and 5V DC.

Notes:

- Do not hold motor by lead wires.
- Do not connect or disconnect the molex connecter while power ON.
- Do not drop motor against hard material. Malfunction may not be observed at early stage after such shock. But it may be found later, this type of mishandling voids our warranty.

AWARNING

编

ELECTRIC SHOCK HAZARD

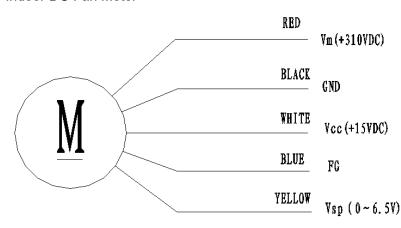
Turn off electric power before service or installation. Extreme care must be used, if it becomes necessary to work on equipment with power applied.

Failure to do so could result in serious injury or death.



Figure 602

Indoor DC Fan Motor



1	RED	Vm (+310VDC)
2		
3		
4	BLACK	GND
5	WHITE	Vcc (+15VDC)
6	BLUE	FG
7	YELLOW	Vsp (0~6.5V)

Reversing Valve

A reversing valve is a component of a heat pump that changes the direction of refrigerant flow, allowing the system to function in both heating and cooling modes.

It consists of a pressure-operated, main valve and a pilot valve actuated by a solenoid plunger. The solenoid is energized by 24 vac during the heating cycle only.

The single tube on one side of the main valve body is the high-pressure inlet to the valve from the compressor. The center tube on the opposite side is connected to the low pressure (suction) side of the system. The other two are connected to the indoor and outdoor coils. Small capillary tubes connect each end of the main valve cylinder to the "A" and "B" ports of the pilot valve. A third capillary is a common return line from these ports to the suction tube on the main valve body. Four-way reversing valves also have a capillary tube from the compressor discharge tube to the pilot valve.

The plunger assembly in the main valve can only be shifted by the pressure differential between the high and low sides of the system. The pilot section of the valve opens and closes ports for the small capillary tubes to the main valve to cause it to shift.

Checking the Reversing Valve

NOTE: System operating pressures must be near normal before valve can shift. NOTE: You must have normal operating pressures before the reversing valve can shift.

Run the unit in the heating mode then disconnect connector CN 906 from the main PCB and the valve should shift to cooling mode. If valve does not shift - replace the valve(verify the unit is properly charged before replacing valve.) For a stuck valve diagnosis run in the cooling mode and check the temp difference between the suction line from the evaporator and the common suction line at the compressor, if there is more than a 3 °F difference then change the valve.

Checking The Reversing Valve Solenoid

The solenoid coil is an electromagnetic type coil mounted on the reversing valve and is energized during the operation of the compressor in the heating cycle.

- 1. Turn off high voltage electrical power to unit.
- 2. Unplug line voltage lead from reversing valve coil.
- 3. Check for electrical resistance through the coil. If the coil is open replace the coil.
- 4. Check from each lead of coil to the copper liquid line as it leaves the unit or the ground lug. There should be no continuity between either of the coil leads and ground; if there is, coil is grounded and must be replaced.
- 5. If coil tests okay, reconnect the electrical leads.
- 6. Make sure coil has been assembled correctly.

NOTE: Do not start unit with solenoid coil removed from valve, or do not remove coil after unit is in operation. This will cause the coil to burn out.

AWARNING



ELECTRIC SHOCK HAZARD

Disconnect power to the unit before servicing. Failure to follow this warning could result in serious injury or death.

▲ WARNING

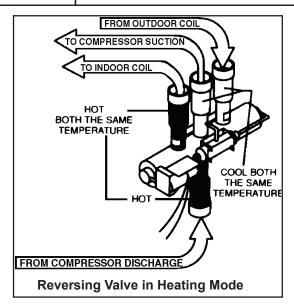
HIGH PRESSURE HAZARD

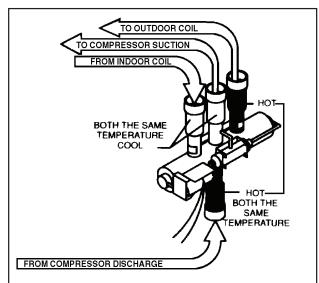


Sealed Refrigeration System contains refrigerant and oil under high pressure.

Proper safety procedures must be followed, and PPE must be utilized when working with refrigerants.

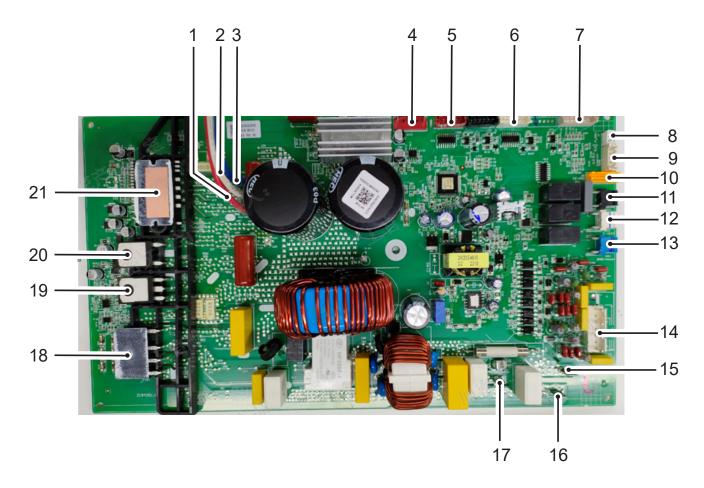
Failure to follow these procedures could result in serious injury or death.





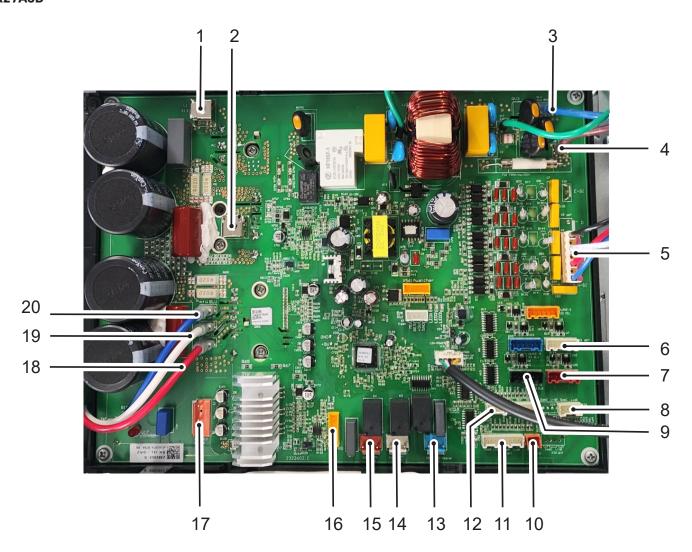
Outdoor Unit - Main PCB ID

FPHMR18A3D



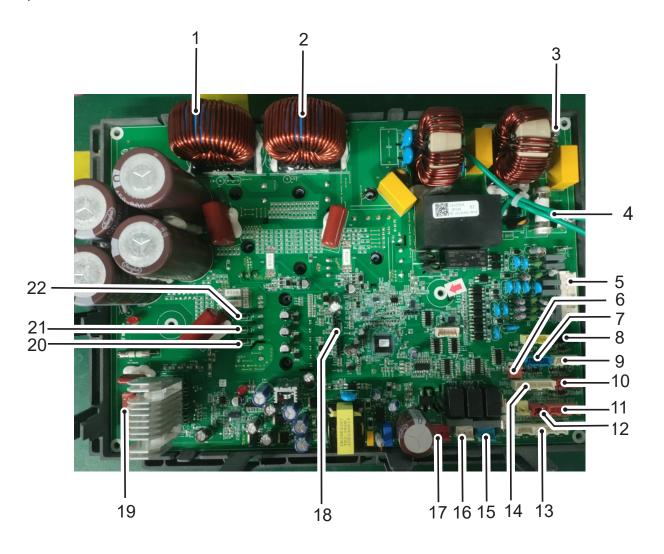
NO.	Description	NO.	Description
1	Compressor U	12	Electric Heating Belt
2	Compressor V	13	Base Heater
3	Compressor W	14	Communication Signal to Indoor
4	DC Motor	15	AC Power Lin
5	Electronic Expansion Valve A	16	AC Power Nin
6	Electronic Expansion Valve B	17	Earth
7	Ambient/ Coil/ Discharge Temp Sensor	18	Bridge Rectifier
8	EEPROM Flashing	19	IGBT
9	Communication Signal to Computer	20	Power Diode
10	EE PRG	21	IPM Module Circuit
11	4-way Valve		

Outdoor Unit - Main PCB ID FPHMR27A3D



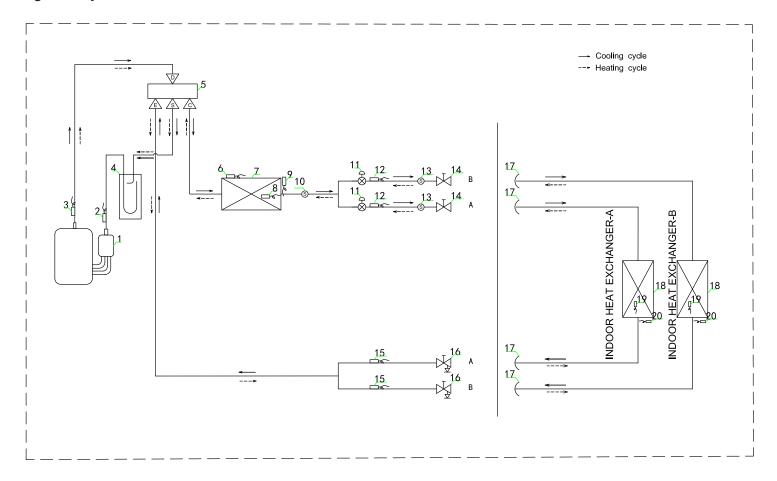
NO.	Description	NO.	Description
1	Reactor L1	11	Gas B/ Liquid B / Gas A/ Liquid A Sensor
2	Reactor L2	12	Discharge/defrost/coil/suction/outdoor sensor
3	AC Power Nin	13	Base Heater
4	AC Power Lin	14	Electric Heating Belt
5	SI	15	4-way Valve
6	Electronic Expansion Valve B	16	EEPROM Flashing
7	Electronic Expansion Valve A	17	DC Motor
8	Gas C/ Liquid C Sensor	18	Compressor U
9	Electronic Expansion Valve C	19	Compressor V
10	Overheat protector	20	Compressor W

Outdoor Unit - Main PCB ID FPHMR36A3D, FPHMR42A3D



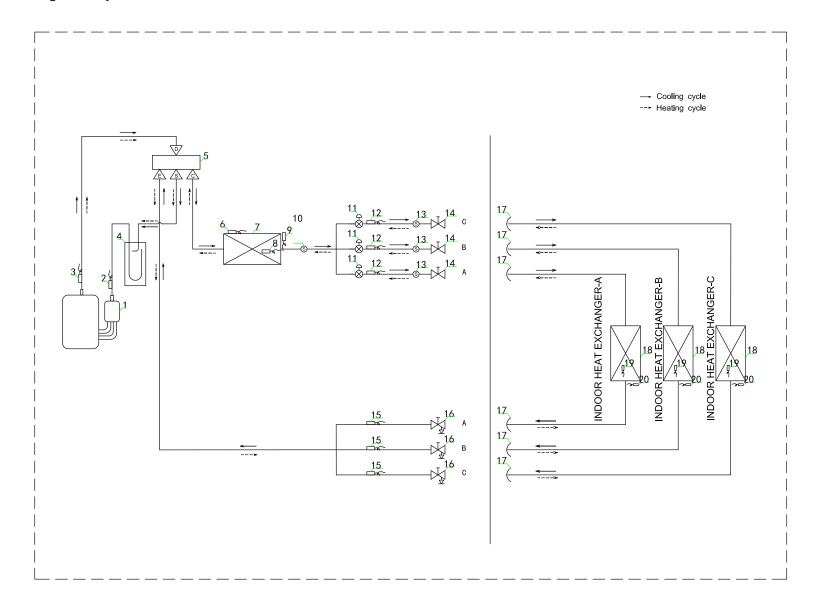
NO.	Description	NO.	Description
1	Reactor L2	12	Overheat protector
2	Reactor L1	13	GasB/LiqB/GasA/LiqA sensor
3	N-IN	14	Discharge/defrost/coil/suction/
3	IN-IIN	14	outdoor sensor
4	L-IN	15	Base heater
5	SI-(A-D)	16	Electric heating belt
6	H-press	17	4-way valve
7	Electronic expansion value D	18	EEPROM
8	Electronic expansion value C	19	DC fan motor
9	Electronic expansion value B	20	Compressor U
10	Electronic expansion value A	21	Compressor V
11	GasD/LiqD/ GasC/LiqC sensor	22	Compressor W

Refrigerant Cycle 18k



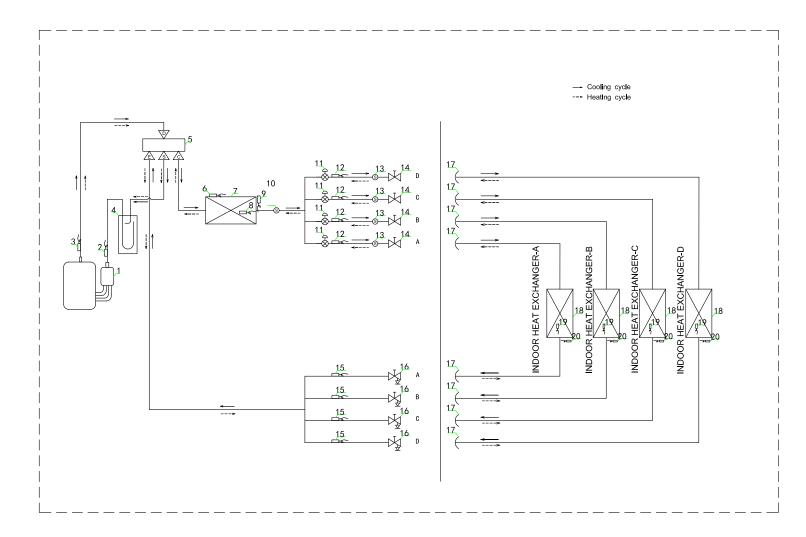
	List of components				
1	Two-rotor compressor	11	Electronic expansion valve		
2	Suction temperature sensor	12	Gas tube temperature sensor		
3	Discharge temperature sensor	13	Strainer		
4	Accumulator	14	Stop valve		
5	4-Way valve	15	Liquid tube temperature sensor		
6	Ambient temperature sensor	16	Stop valve(Needle)		
7	Outdoor heat exchanger	17	Hexagon nut		
8	Coil temperature sensor	18	Indoor heat exchanger		
9	Frost temperature sensor	19	Coil temperature sensor		
10	Strainer	20	Ambient temperature sensor		

Refrigerant Cycle 27k



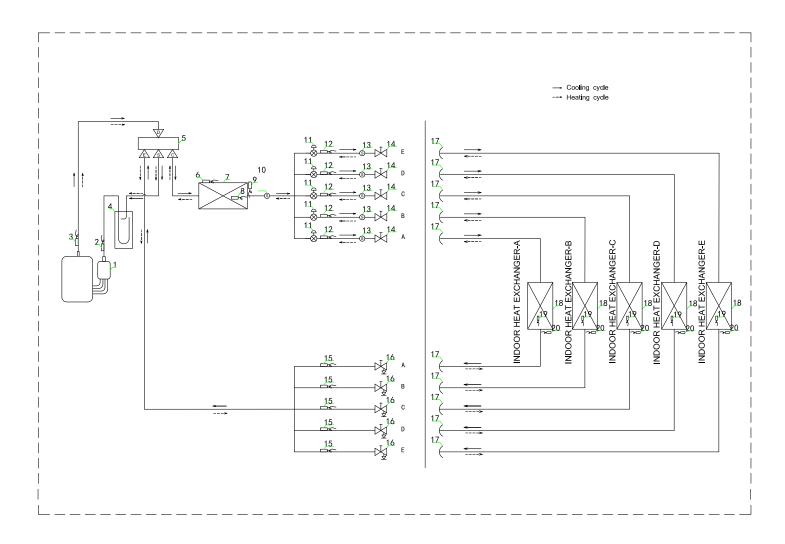
	List of components			
1	Two-rotor compressor	11	Electronic expansion valve	
2	Suction temperature sensor	12	Gas tube temperature sensor	
3	Discharge temperature sensor	13	Strainer	
4	Accumulator	14	Stop valve	
5	4-Way valve	15	Liquid tube temperature sensor	
6	Ambient temperature sensor	16	Stop valve(Needle)	
7	Outdoor heat exchanger	17	Hexagon nut	
8	Coil temperature sensor	18	Indoor heat exchanger	
9	Frost temperature sensor	19	Coil temperature sensor	
10	Strainer	20	Ambient temperature sensor	

Refrigerant Cycle 36k



	List of components			
1	Two-rotor compressor	11	Electronic expansion valve	
2	Suction temperature sensor	12	Gas tube temperature sensor	
3	Discharge temperature sensor	13	Strainer	
4	Accumulator	14	Stop valve	
5	4-Way valve	15	Liquid tube temperature sensor	
6	Ambient temperature sensor	16	Stop valve(Needle)	
7	Outdoor heat exchanger	17	Hexagon nut	
8	Coil temperature sensor	18	Indoor heat exchanger	
9	Frost temperature sensor	19	Coil temperature sensor	
10	Strainer	20	Ambient temperature sensor	

Refrigerant Cycle 42k



	List of cor	mpon	ents
1	Two-rotor compressor	11	Electronic expansion valve
2	Suction temperature sensor	12	Gas tube temperature sensor
3	Discharge temperature sensor	13	Strainer
4	Accumulator	14	Stop valve
5	4-Way valve	15	Liquid tube temperature sensor
6	Ambient temperature sensor	16	Stop valve(Needle)
7	Outdoor heat exchanger	17	Hexagon nut
8	Coil temperature sensor	18	Indoor heat exchanger
9	Frost temperature sensor	19	Coil temperature sensor
10	Strainer	20	Ambient temperature sensor

General Information

▲WARNING: Electrical Shock Hazard

Disconnect all power to the unit before starting maintenance. All electrical connections and wiring MUST be installed by a qualified electrician and conform to all codes which have jurisdiction. Failure to do so can result in property damage, severe electrical shock or death.



▲ WARNING: This Product uses R-454B Refrigerant

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

When not installed, the appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.



Refrigerant Safety Group A2L

AWARNING: Refrigeration System under High pressure

Do not puncture, heat, expose to flame or incinerate. Only certified refrigeration technicians should service this equipment. R-454B systems operate at higher pressures than R22 equipment. Appropriate safe service and handling practices must be used.



Warning: Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

NOTICE: Individuals working on these units must be EPA 608 Certified along with A2L Refrigerant Training.

Warning: Refrigerant 32 cannot be used as a retrofit for R-410A refrigerant. The mixing of refrigerant across classes is prohibited. R-454B Is not a drop in replacement for R-410A.

General Work Area: All maintenance staff and others working in the installation area shall be instructed on the nature of work being carried out. Work in confined spaces as defined by the Occupational Safety And Health Administration shall be avoided.

Warning: Job site should be examined for safety hazards such as flammable vapors, ignition sources, ventilation and confined spaces. Create a safe perimeter with barriers and signs designating a flammable area.

Warning: Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapor being present while the work is being performed.

Check for presence of refrigerant:

- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector
 using a naked flame) shall not be used.
- The following leak detection methods are deemed acceptable for all refrigerant systems:
 - 1. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. 2. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
 - If a leak is suspected, all flame sources shall be removed/extinguished.
 - If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system per EPA guidelines.

Presence of fire extinguisher: If any hot work is to be conducted on the refrigerating equipment or any associated parts, a class ABC Rated fire extinguishing equipment shall be available to hand. Have a class ABC Rated fire extinguisher adjacent to the charging area.

General Information



No ignition sources: No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.

Ventilated Area: Ensure that the area is in the open or that it is adequately ventilated before accessing the refrigerant in the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant away from the work area or external to building envelope.

During Repairs To Sealed Components: All power must be removed from the equipment being worked on prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a constant leak detector shall be located at the most critical point to warn of a potentially hazardous situation.

Checks And Repairs To Electrical Devices:

- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected remove power supply to unit. **DO NOT OPERATE.**
- Initial safety checks shall include:
 - •That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
 - •That no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - ·Verify unit is properly grounded.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of
 protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals,
 incorrect fitting of glands, etc.
- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

The following is a list of important considerations when working with R-454B equipment:

- R-454B pressure is similar to R-410A and approximately 60% higher than R-22 pressure.
- R-454B cylinders must not be allowed to exceed 125°F, they may leak or rupture.
- R-454B must never be pressurized with a mixture of compressed air, it may become MORE flammable.
- Servicing equipment and components must be specifically designed for use with R-454B and dedicated to prevent contamination.
- Manifold sets must be equipped with gauges capable of reading 750 psig (high side) and 200 psig (low side), with a 500-psig low-side retard.
- Gauge hoses must have a minimum 750-psig service pressure rating.
- Recovery cylinders must have a minimum service pressure rating of 400 psig, (DOT 4BA400 and DOT BW400 approved cylinders).
- POE (Polyol-Ester) lubricants must be used with R-454B equipment.
- To prevent moisture absorption and lubricant contamination, do not leave the refrigeration system open to the atmosphere for extended periods of time.
- If unit refrigerant is low, recover the refrigerant, evacuate, and recharge unit to nameplate amount.
- If there is any amount of refrigerant in the system charge from the low side.
- Always charge by liquid inverted.

Verify with tool manufacturers that all tools used during this repair are non-sparking and can be used with A2L Refrigerants. No halide torches for leak testing.

Refrigerant monitors or detectors must be used to detect refrigerant in the work area.

- R-454B A2L Refrigerant Recovery System.
- Vacuum Pump rated for A2L refrigerant (capable of 300 microns or less vacuum.)
- Nitrogen bottle with purging and pressurizing capabilities up to 550 psi.
- Oxy/ Acetylene torch or similar equipment utilized for brazing.
- Non-Sparking (Not Halide)Electronic Leak Detector rated for detecting A2L refrigerant.
- Digital refrigerant scale
- Refrigeration Gauges rated for A2L Refrigerants with temp scales for R-454B refrigerant.
- Gauge Manifold (Right handed threads).
- A2L compatible Vacuum Gauge capable of 300 microns or less.
- Nitrogen regulator for purging and testing, rated to 800 psi. (Capable of low psi flow)
- Pipe tubing cutter.
- Refrigerant recovery cylinder. (Flammable A2L label)
- Ventilation fan.
- Class ABC fire extinguisher.
- Process Tube adapter kit

Required Equipment

- Recovery access tool.
- Purge hose fittings
- Pinch off and opening tools





Refrigerant Removal, Recovery, and Evacuation

NOTE: When accessing the refrigerant in the system to make repairs or for any other purpose, conventional procedures shall be used. However, for FLAMMABLE REFRIGERANTS (R-454B is classified in the A2L group for mildly flammable refrigerants) it is important that best practice is followed since flammability is a consideration. Follow all EPA 608 regulations and procedures along with AHRI 15 Best Practices for A2L refrigerants.

Warning: Ensure sufficient ventilation at the repair place.

Warning: Ensure there are no open flame sources or hot surfaces that exceed 1200°F in the work area.

A Warning: Discharge capacitors in a way that won't cause any spark. The standard procedure to short circuit the capacitor terminals usually creates

NOTICE: Ensure that the following precautions are taken prior to opening the sealed system.

- Verify Recovery machine is rated for A2L refrigerants.
- Mark the Job site inspection area as flammable work zone using appropriate signs.
- Utilize a Refrigerant leak detector or refrigerant monitor to sense the area for the presence of refrigerants.
- Disconnect all power supply to unit.
- Properly ground all equipment and hoses along with tank to prevent a static build up.
- Ensure adequate ventilation is provided for the job site.
- Do not mix A2L refrigerant Gages and hoses with other refrigerants.
- Keep exposure of refrigerant to Air to as minimum as possible (creates a dangerous condition).
- Under no circumstances is the mixing of refrigerants in the recovery cylinders allowed and should be strictly avoided at all times. Do not introduce oxygen into any recovery cylinders.
- 1. Recover refrigerant to EPA sec. 608 standards. If a low charge is suspected weigh recovered refrigerant and compare to unit nameplate. Refer to Figure G.3

NOTE: DO NOT RECOVER TO A VACUUM PRIOR TO FLUSHING WITH NITROGEN. STOP RECOVERY AT 0-5 PSI.

- 3. Purge system with dry nitrogen.(3-5 minutes).
- 4. Perform an evacuation to 500 microns and break vacuum with Dry Nitrogen.
- 5. Re-purge the unit for 3-5 minutes or until the nitrogen flows out both process tubes.
- 6. Re-evacuate unit to 500 microns and break vacuum with Dry Nitrogen.
- 8. Open the refrigerant circuit by cutting out components.

Transportation

Be aware that local, state, and national codes exist that regulate the transportation of flammable gases. Be sure to become informed of the regulations and always stay compliant.

Component Replacement/Brazing



• Warning: Ensure sufficient ventilation at the repair place.

Warning: Presence of fire extinguisher. If any hot work is to be conducted on the refrigerating equipment or any associated parts, have a ABC class fire extinguisher available to hand.

Warning: No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.



Warning: Ensure there are no open flame sources or hot surfaces that exceed 1200°F in the work area.

NOTE: When brazing is required, the following procedures shall be carried out in the right order:

1. Remove and recover refrigerant, and evacuate the system. Refer to the refrigerant removal, recovery, and evacuation section of this manual.

Warning: Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

- 2. Perform a check of the work area for the presence of flammable refrigerant prior to brazing or performing any hot work. Use a non-Sparking (Not Halide) A2L certified Electronic Leak Detector rated for detecting R-454B refrigerant.
- 3. Re-pipe all repairs and install all components to sealed system.
- 4. Purge nitrogen through the unit, at approximately 2-3 psi through the duration of the brazing process. (Nitrogen must be purging through the unit while any brazing is being performed.)
- 5. Pressure test unit to 550 psi minimum and hold pressure for 30 minutes minimum. Inspect for any leaks with a leak detection fluid and repair as required. Repeat as required until system passes leak test.
- 6. Triple evacuate the unit to achieve a 500 micron level.
- 7. Pressurize nitrogen to 550 psi and leak test all connections with a leak detection fluid. Repair any leaks found.
- 8. Reassemble sealed enclosures accurately. If seals are worn, replace them.
- 9. Charge the system with the amount of refrigerant specified on the model nameplate. Refer to the refrigerant charging section of this manual for charging procedures.

Refrigerant Charging

MARNING: Electrical Shock Hazard

Disconnect all power to the unit before starting maintenance. All electrical connections and wiring MUST be installed by a qualified electrician and conform to all codes which have jurisdiction. Failure to do so can result in property damage, severe electrical shock or death.



▲ WARNING: This Product uses R-454B Refrigerant

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

When not installed, the appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.



Refrigerant Safety Group A₂L



MARNING: Refrigeration System under High pressure

Do not puncture, heat, expose to flame or incinerate. Only certified refrigeration technicians should service this equipment. R-454B systems operate at higher pressures than R22 equipment. Appropriate safe service and handling practices must be used.



NOTE: Always weigh in refrigerant based on the model nameplate.



Warning:

- Ensure that contamination of different refrigerants does not occur when using charging equipment.
- Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Charge unit with refrigerant cylinder in the inverted position to obtain liquid refrigerant.
- Charge the unit according to the amount on the name plate matching the unit.
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.
- Prior to recharging a system, it shall be pressure-tested with the dry nitrogen.

The acceptable method for charging the sealed system is the Weighed in Charge Method. The weighed in charge method is applicable to all units. It is the preferred method to use, as it is the most accurate.

The weighed in method should always be used whenever a charge is removed from a unit such as for a leak repair, compressor replacement, or when there is no refrigerant charge left in the unit. To charge by this method, requires the following steps:



Warning: Ensure sufficient ventilation at the repair place.



Warning: Ensure there are no open flame sources or hot surfaces that exceed 1200°F in the work area.

1. Recover Refrigerant in accordance with EPA regulations. (Refer to Refrigerant Removal, Recovery, and Evacuation Section).

NOTE: If a low charge is suspected weigh recovered refrigerant and compare to unit nameplate.

NOTE: Service ports are located on the side of the unit. See figure G.3.

- 2. Weigh in the refrigerant charge with the proper quantity of R-454B refrigerant per model nameplate.
- 3. Perform triple evacuation.

NOTE: EPA Section 608 regulations require that if a system is charged with flammable refrigerant it must have red markings on the service ports.

Refrigerant Charging

Triple Evacuation

Friedrich requires all installations are Leak Checked and Evacuated in accordance to the "triple evacuation" process. This process promotes a dry tight refrigeration system before opening the service valves. It recommended that a single port refrigeration manifold and hoses rated over 31.5 psi be used. Refrigeration hose valves, along with a vacuum pump and micron gauge, must be used to ensure the system can be vacuumed and held under 500 microns. Check all equipment and hoses for proper usage and leaks before beginning.

1. 1st Nitrogen Pressure Test:

Ensure all refrigeration connections are properly flared, secured, and torqued to their respective settings.

Pressurize the system with nitrogen to 550 psi. Soap all connections with an approved refrigerant leak detection solution.

The pressure in the system must hold for one hour respective to the environmental conditions and should not vary less than 540psi. If pressure can not be adequate held, check integrity of flares and torque specifications. Once pressure is held adequately, purge the nitrogen charge to system pressure of 5-10 psi. DO NOT RETURN TO ATMOSPHERIC PRESSURE.

2. 1st Vacuum Micron Test:

Connect hoses and vacuum pump to the outdoor unit as shown in Fig. 436. Start the vacuum pump and vacuum to 1000 microns. Close the valve to the vacuum pump and check for micron rise for 15 minutes. If microns rise to near atmospheric pressure, there is a potential leak; repeat step 1. If microns rise over 5000, the system is very wet and will require further nitrogen purges.

3. 2nd Nitrogen Break:

Once the system holds below 5000 microns, reconnect the nitrogen tank break the system vacuum with 30-50 psi of nitrogen. Wait 5 minutes, then purge to 5-10 psi. DO NOT RETURN TO ATMOSPHERIC PRESSURE.

4. 2nd Vacuum Micron Test:

Reconnect vacuum pump and gauge and begin evacuation. Vacuum system to 500 microns. Close vacuum valve and check for micron rise. Vacuum should hold under 1000 microns. Repeat steps 3 and 4 until achieved.

5. 3rd Nitrogen Break:

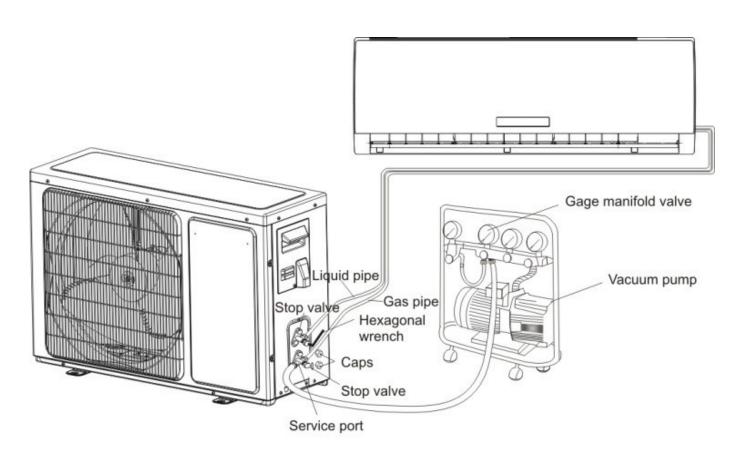
Once the system holds below 1000 microns, reconnect the nitrogen tank break the system vacuum with 30-50 psi of nitrogen. Wait 5 minutes, then purge to 5-10 psi. DO NOT RETURN TO ATMOSPHERIC PRESSURE.

6. 3rd Final Vacuum Micron Test:

Reconnect vacuum pump and gauge and begin evacuation. Vacuum system to 300 microns. Close vacuum valve and check for micron rise. Vacuum should hold under 500 microns. Repeat steps 3 and 4 until achieved. Once held under 500 microns, the system is considered dry and tight.

7. Charging the system:

Unscrew Service Valve Caps to expose the inner hexagon head. Use an allen-head spanner or service wrench with appropriate adapter to release the refrigerant into the system. If the calculated line set length is over 2 ft, weight in the additional charge with an approved refrigerant scale as needed. Refer to installation section of this manual.



Compressor Replacement

AWARNING

ELECTRIC SHOCK HAZARD

Turn off electric power before service or installation. Extreme care must be used, if it becomes necessary to work on equipment with power applied.

Failure to do so could result in serious injury or death.

WARNING

HIGH PRESSURE HAZARD



Sealed Refrigeration System contains refrigerant and oil under high pressure.

Proper safety procedures must be followed, and PPE must be utilized when working with refrigerants.

Failure to follow these procedures could result in serious injury or death.

AWARNING

W

EXPLOSION HAZARD

The use of nitrogen requires a pressure regulator. Follow all safety procedures and wear protective safety clothing etc.

Failure to follow proper safety procedures could result in serious injury or death.

A CAUTION

FREEZE HAZARD



Proper safety procedures must be followed, and proper protective clothing must be worn when working with liquid refrigerant.

Failure to follow these procedures could result in minor to moderate injury.

AWARNING



NEVER, under any circumstances, liquid charge a rotary-compressor through the LOW side. Doing so would cause permanent damage to the new compressor. Use a charging adapter.

- 1. Be certain to perform all necessary electrical and refrigeration tests to be sure the compressor is actually defective before replacing.
- 2. Recover all refrigerant from the system though the process tubes. Refer to <u>Refrigerant Removal, Recovery, and Evacuation Section of this manual</u>).

PROPER HANDLING OF RECOVERED REFRIGERANT ACCORDING TO EPA REGULATIONS IS REQUIRED.

- 3. After all refrigerant has been recovered, cut and remove compressor. Be certain to have both suction and discharge process tubes open to atmosphere.
- 4. Install the replacement compressor.

CAUTION: Seal all openings on the defective compressor immediately. Compressor manufacturers will void warranties on units received not properly sealed. Do not distort the manufacturers tube connections.

- 5. Braze all connections. Refer to the <u>Component Replacement/Brazing</u> section of this manual.
- 6. Charge system with proper amount of refrigerant per the model nameplate. Refer to the <u>Refrigerant charging section of this manual.</u>

Replace The Reversing Valve

AWARNING

HIGH PRESSURE HAZARD



Sealed Refrigeration System contains refrigerant and oil under high pressure.

Proper safety procedures must be followed, and PPE must be utilized when working with refrigerants.

Failure to follow these procedures could result in serious injury or death.

WARNING

EXPLOSION HAZARD



The use of nitrogen requires a pressure regulator. Follow all safety procedures and wear protective safety clothing etc.

Failure to follow proper safety procedures could result in serious injury or death.

NOTICE

FIRE HAZARD

The use of a torch requires extreme care and proper judgment. Follow all safety recommended precautions and protect surrounding areas with fire proof materials. Have a fire extinguisher readily available. Failure to follow this notice could result in moderate to serious property damage.

1. Recover all refrigerant from the system though the process tubes. Refer to Refrigerant Removal, Recovery, and Evacuation Section of this manual).

PROPER HANDLING OF RECOVERED REFRIGERANT ACCORDING TO EPA REGULATIONS IS REQUIRED.

2. Remove solenoid coil from reversing valve. If coil is to be reused, protect from heat while changing valve.

NOTE: When brazing a reversing valve into the system, it is of extreme importance that the temperature of the valve does not exceed 250°F at any time.

Wrap the reversing valve with a large rag saturated with water. "Re-wet" the rag and thoroughly cool the valve after each brazing operation of the four joints involved.

The wet rag around the reversing valve will eliminate conduction of heat to the valve body when brazing the line connection.

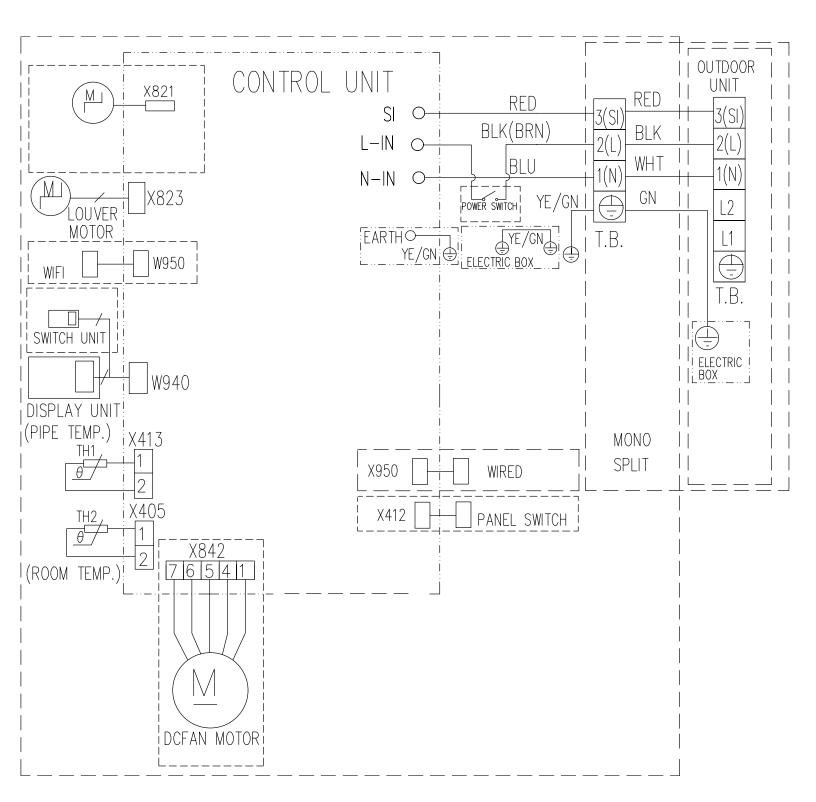
- 3. Cut all lines from reversing valve. Refer to the Brazing section of this manual.
- 4. Clean all excess braze from all tubing so that they will slip into fittings on new valve.
- 5. Remove solenoid coil from new valve.
- 6. Protect new valve body from heat while brazing with plastic heat sink (Thermo Trap) or wrap valve body with wet rag.
- 7. Fit all lines into new valve and braze lines into new valve.
- 8. Braze all connections. Refer to the Brazing section of this manual.
- 9. Pressurize with nitrogen to 550 psi and leak test all connections with a leak detection fluid. Repair any leaks found.
- 10. Once the sealed system is leak free, install solenoid coil on new valve.
- 11. Charge system with proper amount of refrigerant per the model nameplate. Refer to the refrigerant charging section of this manual.

Indoor Unit,

Wall Mount (No A2L sensor connection)

FAHFW18A3D (Serial Numbers prior to 2505F05243)

FAHFW24A3D (Serial Numbers prior to 2505F06609)



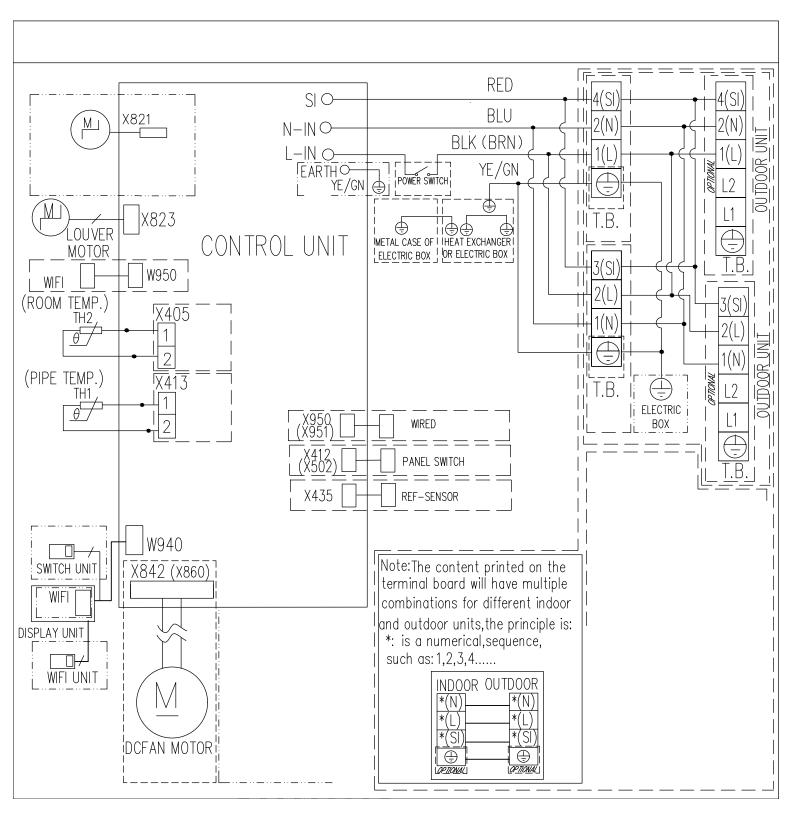
Indoor Unit

Wall Mount (With A2L sensor connection)

FAHFW09A3D, FAHFW12A3D

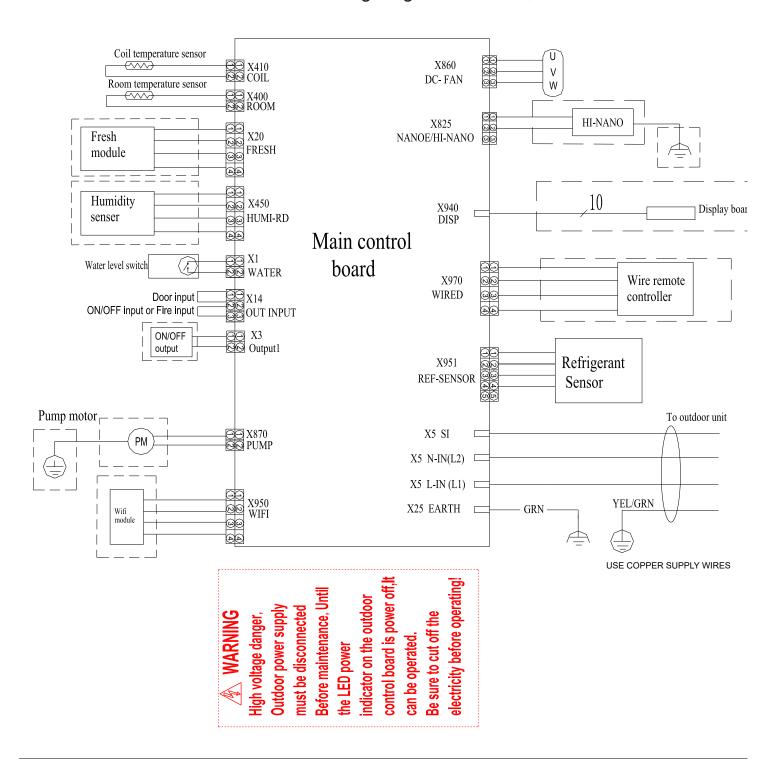
FAHFW18A3D (Serial Numbers 2505F05243 and after)

FAHFW24A3D (Serial Numbers 2505F06609 and after)

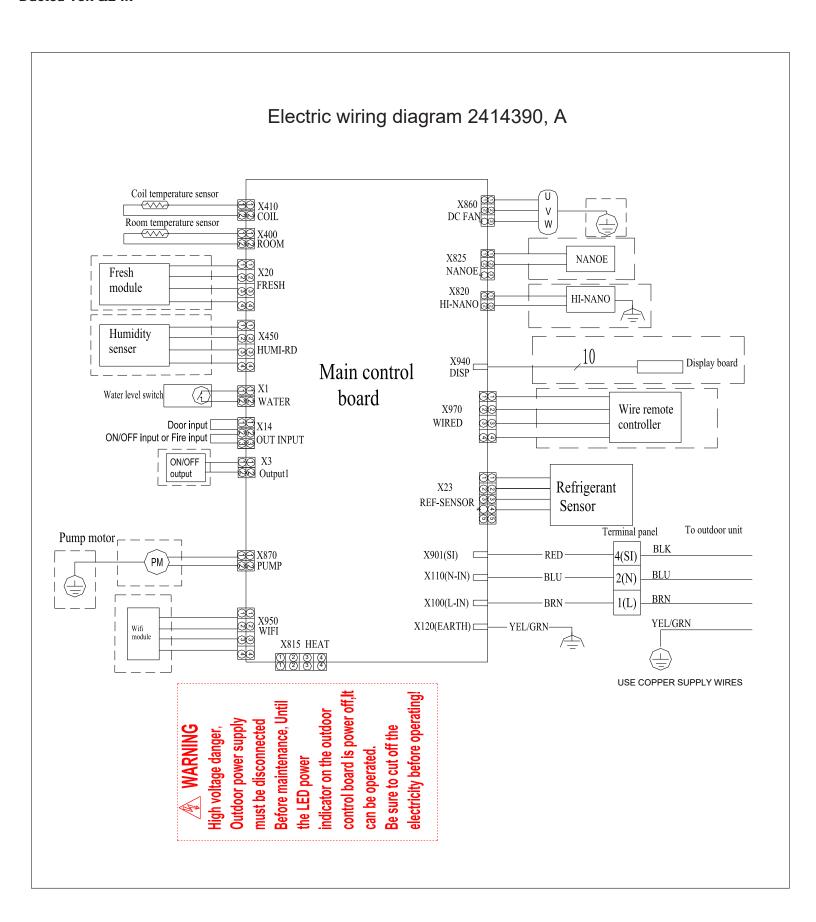


Indoor Unit
Ducted 9k &12k

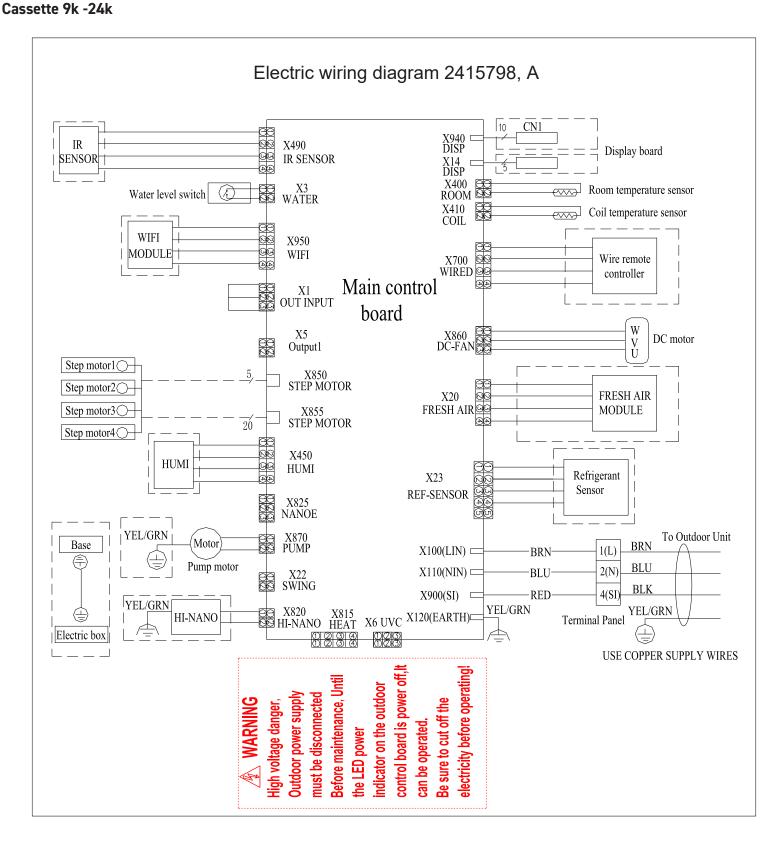
Electric wiring diagram 2416593, A



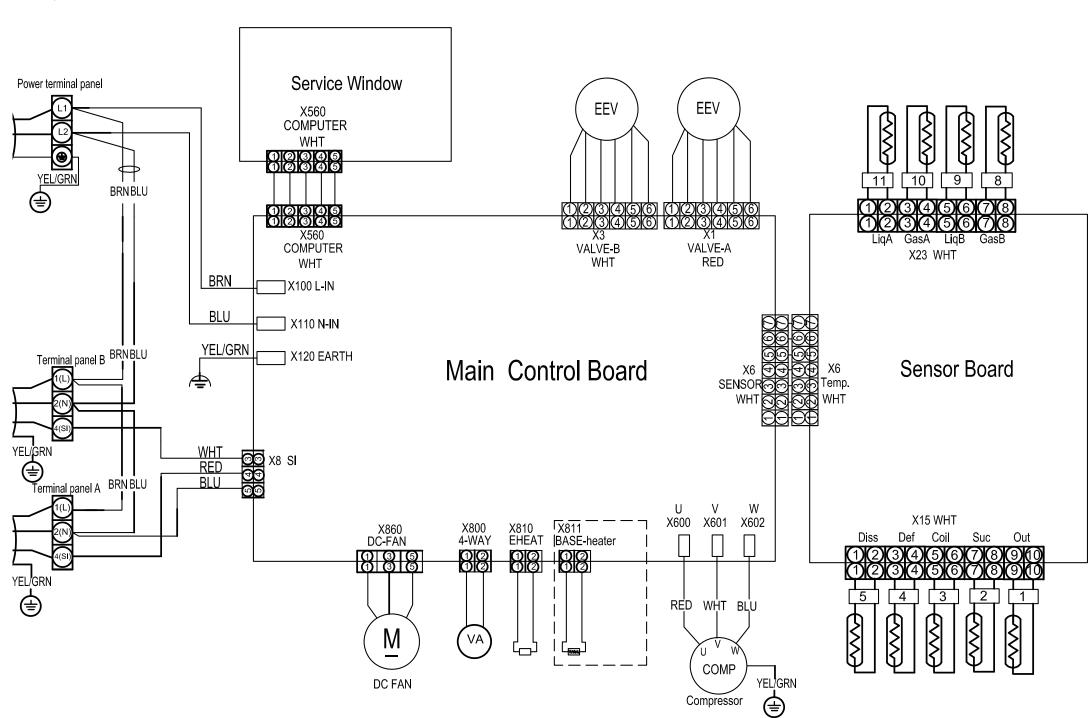
Indoor Unit
Ducted 18k &24k



Indoor Unit

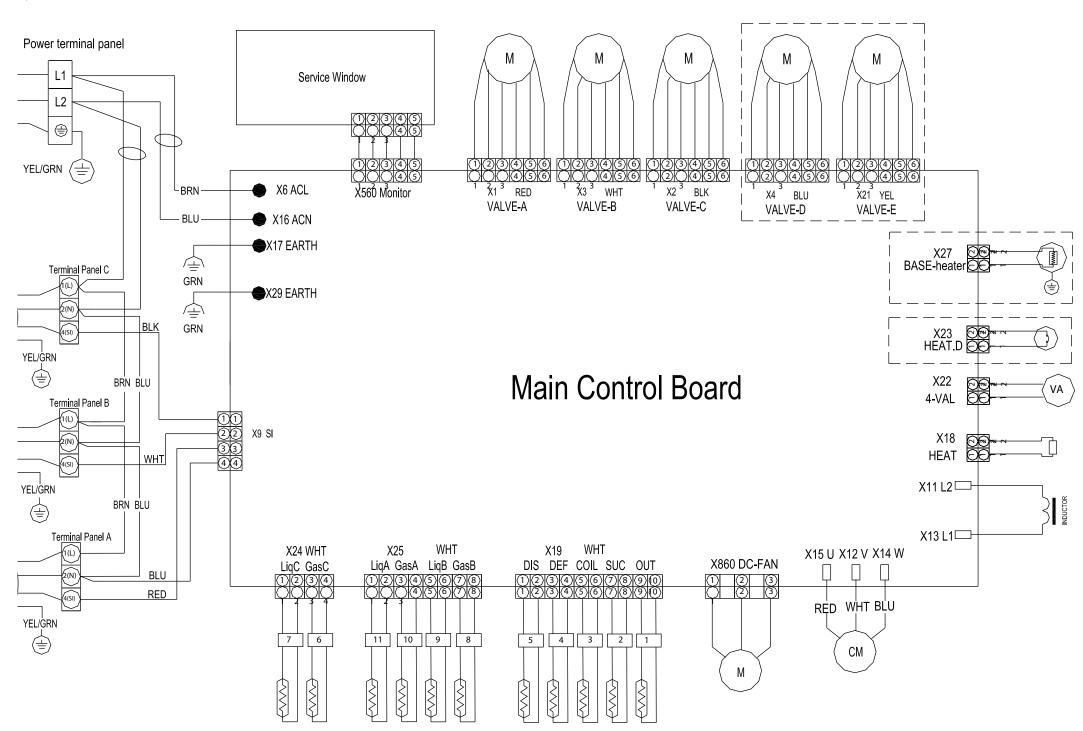


Outdoor Unit, FPHMR18A3D



WARNING High voltage danger, Outdoor power supply must be disconnected Before maintenance, Until the LED power indicator on the outdoor control board is power off, It can be operated. Be sure to cut off the electricity before operating!

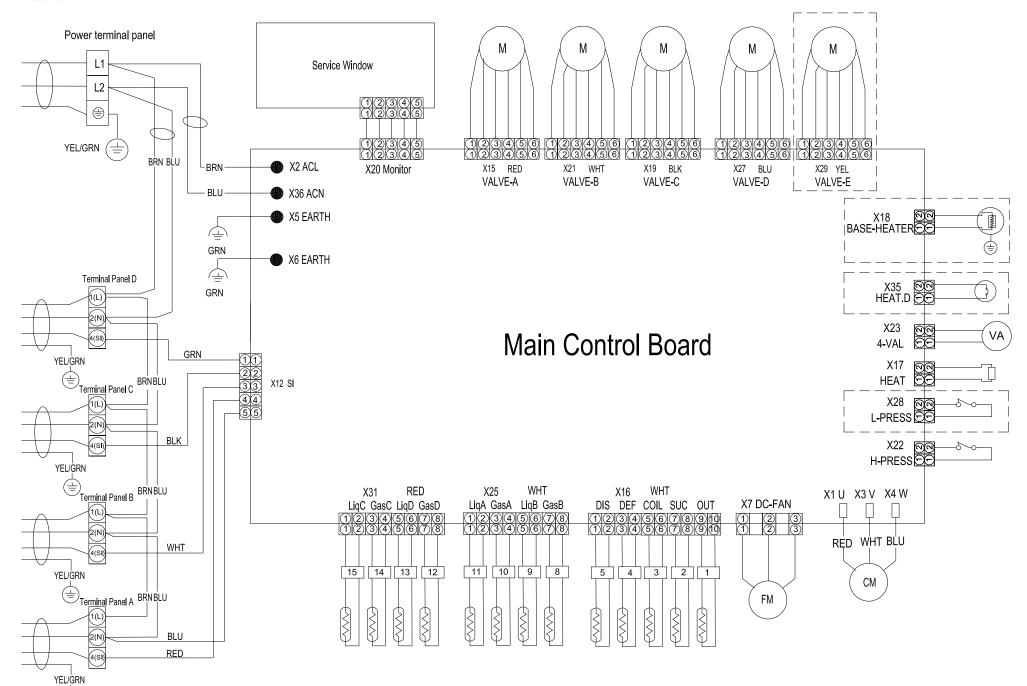
Outdoor Unit, FPHMR27A3D





operating!

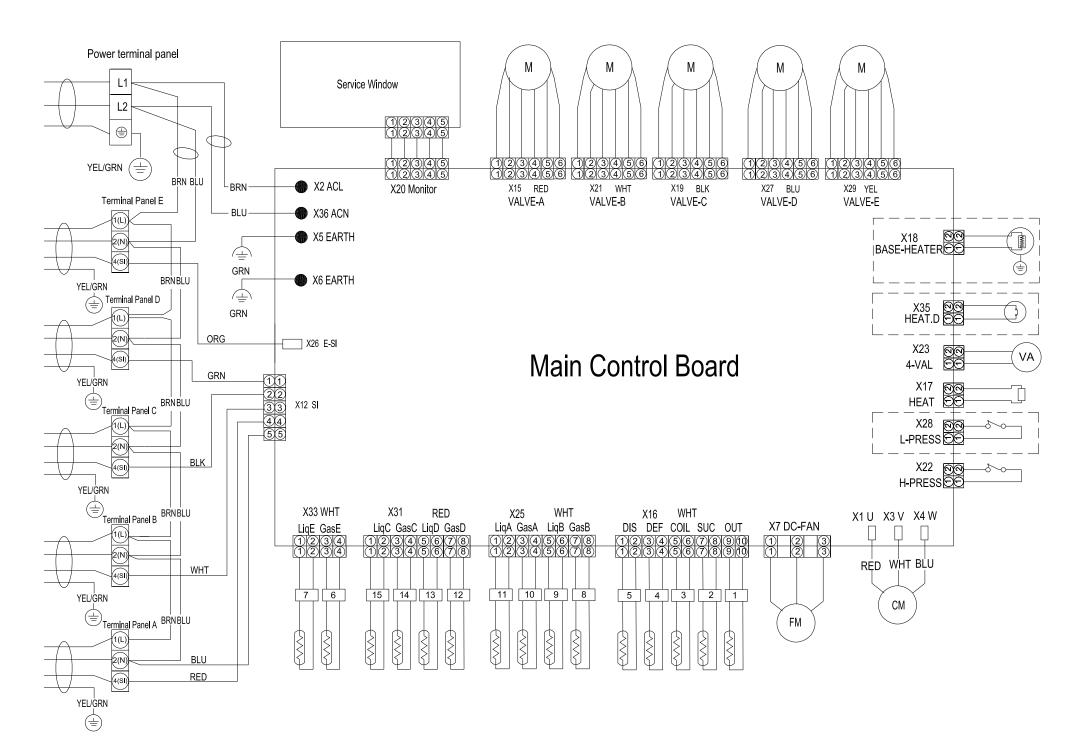
Outdoor Unit FPHMR36A3D



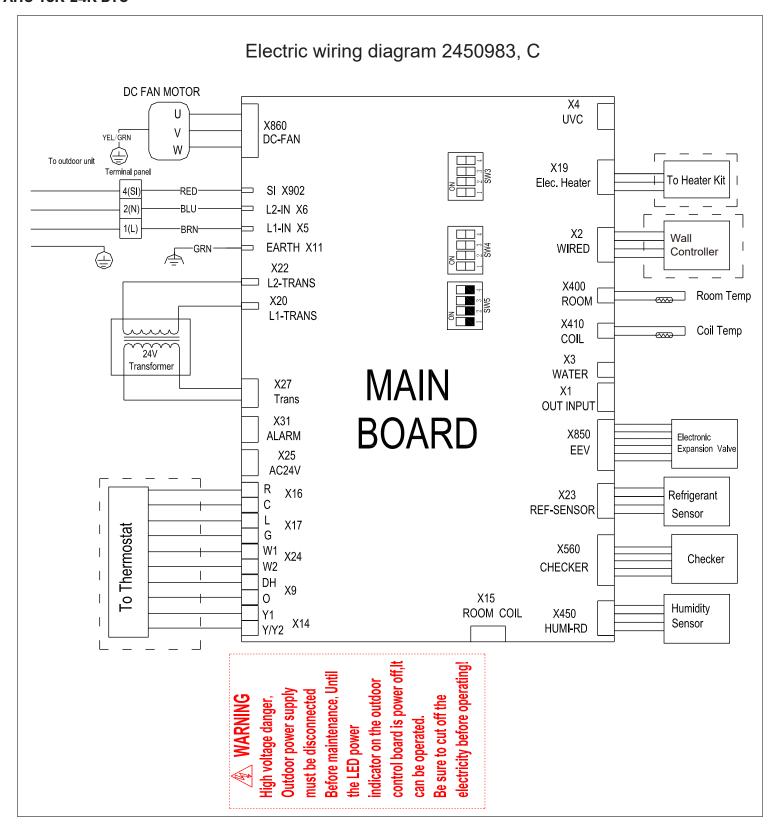
WARNING

High voltage danger,
Outdoor power supply
must be disconnected
Before maintenance,
Until the LED power
indicator on the outdoor
control board is power off,
It can be operated.
Be sure to cut off the
electricity before
operating!

Outdoor Unit FPHMR42A3D



AHU 18K-24K BTU



Interactive Parts Viewer

All Friedrich Service Parts can be found on our online interactive parts viewer.

Please click on the link below:

Interactive Parts Viewer

For Further Assistance contact Friedrich customer service at (1-800-541-6645).

Limited Warranty

Current warranty information can be obtained by referring to https://www.friedrich.com/professional/support/product-resources

Compressor Discharge Temp Sensor Resistance Values

4.3 Sensor Parameter

1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR: $R_{_0}$ = 187.25K±6.3% $R_{_{100}}$ = 3.77K±2.5% B0/100=3979K±1%

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
-30	-22	908.2603	985.5274	1065.121	-7.84	7.47
-29	-20.2	855.3955	927.6043	1001.915	-7.78	7.42
-28	-18.4	805.9244	873.4324	924.8368	-7.73	5.56
-27	-16.6	759.6097	822.7471	887.5944	-7.67	7.31
-26	-14.8	716.232	775.3041	835.9165	-7.62	7.25
-25	-13	675.5881	730.8775	787.5529	-7.56	7.2
-24	-11.2	637.4902	689.2583	742.272	-7.51	7.14
-23	-9.4	601.7645	650.2533	699.8601	-7.46	7.09
-22	-7.6	568.2499	613.6835	660.1191	-7.4	7.03
-21	-5.8	536.797	579.3832	622.8658	-7.35	6.98
-20	-4	507.2676	547.1989	587.9307	-7.3	6.93
-19	-2.2	497.5332	516.9882	555.1565	-3.76	6.88
-18	-0.4	453.4748	488.6192	524.3977	-7.19	6.82
-17	1.4	428.9819	461.9693	495.5191	-7.14	6.77
-16	3.2	405.9517	436.9251	486.3954	-7.09	10.17
-15	5	384.2888	413.3808	442.9105	-7.04	6.67
-14	6.8	363.9047	391.2386	418.9563	-6.99	6.62
-13	8.6	344.7169	370.4072	396.4325	-6.94	6.56
-12	10.4	326.6497	350.8019	375.2461	-6.88	6.51
-11	12.2	309.6286	332.3441	355.3104	-6.83	6.46
-10	14	293.5903	314.962	336.5448	-6.79	6.41
-9	15.8	278.4719	298.5822	318.3744	-6.74	6.22
-8	17.6	264.2156	283.1464	302.2294	-6.69	6.31
-7	19.4	250.7678	268.5936	286.5448	-6.64	6.26
-6	21.2	238.0783	254.8686	271.7603	-6.59	6.22
-5	23	226.1003	241.92	257.8193	-6.54	6.17
-4	24.8	214.7903	229.6997	244.6593	-6.49	6.11
-3	26.6	204.1073	218.163	232.2612	-6.44	6.07
-2	28.4	194.0135	207.2681	220.5495	-6.39	6.02
-1	30.2	184.4732	196.9759	209.4913	-6.35	5.97
0	32	175.4533	187.25	199.0468	-6.3	5.93
1	33.8	166.8952	178.0255	189.1529	-6.25	5.88
2	35.6	158.8023	169.3067	179.8058	-6.2	5.84
3	37.4	151.1467	161.0633	170.9724	-6.16	5.8
4	39.2	143.9026	153.2667	162.6216	-6.11	5.75
5	41	137.0455	145.8905	154.7246	-6.06	5.71
6	42.8	130.5528	138.9097	147.2544	-6.02	5.67
7	44.6	124.4033	132.3011	140.1856	-5.97	5.62
8	46.4	118.5769	126.0429	133.4946	-5.92	5.58
9	48.2	113.055	120.1146	127.1591	-5.88	5.54
10	50	107.8202	114.4973	121.1586	-5.83	5.5
11	51.8	102.856	109.1728	115.4734	-5.79	5.46
12	53.6	98.147	104.1246	110.0855	-5.74	5.41
13	55.4	93.6787	99.3367	104.9778	-5.7	5.37
14	57.2	89.4378	94.7946	100.1342	-5.65	5.33
15	59	85.4114	90.4842	95.5398	-5.61	5.29

Compressor Discharge Temp Sensor Resistance Values

$\begin{tabular}{lll} \textbf{4.3 Sensor Parameter} \\ 1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR: \\ R_0 = 187.25 K \pm 6.3\% \ R_{100} = 3.77 K \pm 2.5\% \ B0/100 = 3979 K \pm 1\% \\ \end{tabular}$

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
16	60.8	81.5875	86.3926	91.1805	-5.56	5.25
17	62.6	77.9551	82.5076	87.043	-5.52	5.21
18	64.4	74.5034	78.8177	83.115	-5.47	5.17
19	66.2	71.2227	75.3122	79.3848	-5.43	5.13
20	68	68.1036	71.9808	75.8414	-5.39	5.09
21	69.8	65.1373	68.8141	72.4746	-5.34	5.05
22	71.6	62.3155	65.8032	69.2746	-5.3	5.01
23	73.4	59.6306	62.9395	66.2324	-5.26	4.97
24	75.2	57.0752	60.2152	63.3395	-5.21	4.93
25	77	54.6424	57.6227	60.5877	-5.17	4.89
26	78.8	52.3258	55.1551	57.9695	-5.13	4.85
27	80.6	50.1192	52.8058	55.4778	-5.09	4.82
28	82.4	48.0168	50.5684	53.1058	-5.05	4.78
29	84.2	46.0133	48.4371	50.8472	-5	4.74
30	86	44.1034	46.4046	48.696	-4.96	4.71
31	87.8	42.2825	44.4711	46.6466	-4.92	4.66
32	89.6	40.5458	42.6261	44.6937	-4.88	4.63
33	91.4	38.8891	40.8668	42.8323	-4.84	4.59
34	93.2	37.3084	39.189	41.0576	-4.8	4.55
35	95	35.7998	37.5883	39.3653	-4.76	4.51
36	96.8	34.3596	36.0609	37.7511	-4.72	4.48
37	98.6	32.9844	34.603	36.2109	-4.68	4.44
38	100.4	31.671	33.2113	34.7412	-4.64	4.4
39	102.2	30.4164	31.8823	33.3383	-4.6	4.37
40	104	29.2176	30.613	31.9988	-4.56	4.33
41	105.8	28.0718	29.4004	30.7197	-4.52	4.29
42	107.6	26.9765	28.2417	29.4979	-4.48	4.26
43	109.4	25.9293	27.1342	28.3306	-4.44	4.22
44	111.2	24.9277	26.0755	27.215	-4.4	4.19
45	113	23.9697	25.0632	26.1488	-4.36	4.15
46	114.8	23.053	24.095	25.1293	-4.32	4.12
47	116.6	22.1757	23.1688	24.1545	-4.29	4.08
48	118.4	21.336	22.2826	23.2221	-4.25	4.05
49	120.2	20.5321	21.4345	22.3301	-4.21	4.01
50	122	19.7623	20.6226	21.4766	-4.17	3.98
51	123.8	19.0261	19.8468	20.6612	-4.14	3.94
52	125.6	18.3211	19.104	19.8808	-4.1	3.91
53	127.4	17.6458	18.3926	19.1338	-4.06	3.87
54	129.2	16.9986	17.7113	18.4185	-4.02	3.84
55	131	16.3784	17.0537	17.7335	-3.96	3.83
56	132.8	15.7839	16.4332	17.0774	-3.95	3.77
57	134.6	15.2139	15.8338	16.4488	-3.92	3.74
58	136.4	14.6673	15.2592	15.8464	-3.88	3.71
59	138.2	14.143	14.7083	15.269	-3.84	3.67
60	140	13.64	14.1799	14.7154	-3.81	3.64

Compressor Discharge Temp Sensor Resistance Values

4.3 Sensor Parameter 1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR: $R_{_0}\text{=}187.25\text{K} \pm 6.3\% \ R_{_{100}}\text{=}3.77\text{K} \pm 2.5\% \ B0/100\text{=}3979\text{K} \pm 1\%$

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
61	141.8	13.1573	13.673	14.1846	-3.77	3.61
62	143.6	12.6941	13.1868	13.6756	-3.74	3.57
63	145.4	12.2494	12.7202	13.1872	-3.7	3.54
64	147.2	11.8224	12.2723	12.7186	-3.67	3.51
65	149	11.4124	11.8424	12.269	-3.63	3.48
66	150.8	11.0185	11.4295	11.8373	-3.6	3.45
67	152.6	10.6401	11.0331	11.423	-3.56	3.41
68	154.4	10.2765	10.6522	11.0251	-3.53	3.38
69	156.2	9.9271	10.2863	10.6429	-3.49	3.35
70	158	9.5912	9.9348	10.2756	-3.46	3.32
71	159.8	9.2682	9.5968	9.9231	-3.42	3.29
72	161.6	8.9576	9.272	9.5841	-3.39	3.26
73	163.4	8.6589	8.9597	9.2583	-3.36	3.23
74	165.2	8.3716	8.6594	8.9451	-3.32	3.19
75	167	8.1	8.4	8.6	-3.3	3.2
76	168.8	7.8	8.1	8.4	-3.3	3.1
77	170.6	7.6	7.8	8.1	-3.2	3.1
78	172.4	7.3	7.6	7.8	-3.2	3.1
79	174.2	7.1	7.3	7.5	-3.2	3.0
80	176	6.9	7.1	7.3	-3.1	3.0
81	177.8	6.6	6.9	7.1	-3.1	3.0
82	179.6	6.4	6.6	6.8	-3.1	3.0
83	181.4	6.2	6.4	6.6	-3.0	2.9
84	183.2	6.0	6.2	6.4	-3.0	2.9
85	185	5.8	6.0	6.2	-3.0	2.9
86	186.8	5.7	5.8	6.0	-2.9	2.8
87	188.6	5.5	5.6	5.8	-2.9	2.8
88	190.4	5.3	5.5	5.6	-2.9	2.8
89	192.2	5.1	5.3	5.4	-2.8	2.8
90	194	5.0	5.1	5.3	-2.8	2.7
91	195.8	4.8	5.0	5.1	-2.8	2.7
92	197.6	4.7	4.8	4.9	-2.7	2.7
93	199.4	4.5	4.7	4.8	-2.7	2.6
94	201.2	4.4	4.5	4.6	-2.7	2.6
95	203	4.3	4.4	4.5	-2.7	2.6
96	204.8	4.1	4.3	4.4	-2.6	2.6
97	206.6	4.0	4.1	4.2	-2.6	2.5
98	208.4	3.9	4.0	4.1	-2.6	2.5
99	210.2	3.8	3.9	4.0	-2.5	2.5
100	210.2	3.7	3.8	3.9	-2.5	2.4
101	213.8	3.6	3.7	3.8	-2.5	2.5
101	215.6	3.5	3.6	3.6	-2.6	2.5
102	217.4	3.4	3.4	3.5	-2.6	2.5
103	217.4	3.3	3.3	3.4	-2.6	2.6
104	219.2	3.3	3.3	3.4	-2.6 -2.6	2.6
						+
106	222.8	3.1	3.2	3.2	-2.7	2.6

Compressor Discharge Temp Sensor Resistance Values

4.3 Sensor Parameter

1. THE PARAMETER OF OUTDOOR COMPRESSOR DISCHARGE TEMPERATURE SENSOR: $R_{_0}$ = 187.25K±6.3% $R_{_{100}}$ = 3.77K±2.5% B0/100=3979K±1%

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
107	224.6	3.0	3.1	3.1	-2.7	2.6
108	226.4	2.9	3.0	3.1	-2.7	2.7
109	228.2	2.8	2.9	3.0	-2.8	2.7
110	230	2.7	2.8	2.9	-2.8	2.7
111	231.8	2.7	2.7	2.8	-2.8	2.8
112	233.6	2.6	2.7	2.7	-2.8	2.8
113	235.4	2.5	2.6	2.7	-2.9	2.8
114	237.2	2.4	2.5	2.6	-2.9	2.8
115	237.2	2.4	2.4	2.5	-2.9	2.9
116	240.8	2.3	2.4	2.4	-3.0	2.9
117	242.6	2.2	2.3	2.4	-3.0	2.7
117	244.4	2.2	2.2	2.3	-3.0	3.0
	-	2.1	2.2	2.2	-3.0	3.0
119	246.2					
120	248	2.1	2.1	2.2	-3.1	3.0
121	249.8	2.0	2.1	2.1	-3.1	3.0
122	251.6	1.9	2.0	2.1	-3.1	3.1
123	253.4	1.9	2.0	2.0	-3.1	3.1
124	255.2	1.8	1.9	2.0	-3.2	3.1
125	257	1.8	1.9	1.9	-3.2	3.1
126	258.8	1.7	1.8	1.9	-3.2	3.2
127	260.6	1.7	1.8	1.8	-3.2	3.2
128	262.4	1.7	1.7	1.8	-3.3	3.2
129	264.2	1.6	1.7	1.7	-3.3	3.2
130	266	1.6	1.6	1.7	-3.3	3.3

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
-30	-22	60.8	64.8	69.0	-6.2	6.1
-29	-20.2	57.8	61.4	65.2	-5.9	5.8
-28	-18.4	54.9	58.2	61.6	-5.6	5.6
-27	-16.6	52.2	55.1	58.2	-5.4	5.3
-26	-14.8	49.6	52.3	55.1	-5.1	5.1
-25	-13	47.2	49.6	52.1	-4.9	4.8
-24	-11.2	44.9	47.1	49.4	-4.6	4.6
-23	-9.4	42.8	44.7	46.8	-4.4	4.4
-22	-7.6	40.7	42.5	44.3	-4.2	4.2
-21	-5.8	38.8	40.4	42.1	-4.0	4.0
-20	-4	36.9	38.4	39.9	-3.8	3.8
-19	-2.2	35.2	36.5	37.9	-3.6	3.6
-18	-0.4	33.5	34.7	36.0	-3.5	3.4
-17	1.4	32.0	33.1	34.2	-3.3	3.3
-16	3.2	30.5	31.5	32.5	-3.2	3.1
-15	5	29.1	30.0	30.9	-3.0	3.0
-14	6.8	27.7	28.6	29.4	-2.9	2.8
-13	8.6	26.5	27.2	28.0	-2.8	2.7
-12	10.4	25.3	26.0	26.6	-2.7	2.6
-11	12.2	24.1	24.8	25.4	-2.6	2.5
-10	14	23.0	23.6	24.2	-2.5	2.4
-9	15.8	22.0	22.5	23.1	-2.4	2.3
-8	17.6	21.0	21.5	22.0	-2.3	2.2
-7	19.4	20.1	20.5	21.0	-2.2	2.1
-6	21.2	19.2	19.6	20.0	-2.2	2.1
-5	23	18.4	18.7	19.1	-2.1	2.1
-4	24.8	17.6	17.9	18.3	-2.1	2.0
-3	26.6	16.8	17.1	17.5	-2.0	2.0
-2	28.4	16.1	16.4	16.7	-2.0	2.0
-1	30.2	15.4	15.7	16.0	-2.0	1.9
0	32	14.7	15.0	15.3	-2.0	1.9
1	33.8	14.1	14.4	14.6	-2.0	1.9
2	35.6	13.5	13.8	14.0	-2.0	1.9
3	37.4	12.9	13.2	13.4	-2.0	1.9
4	39.2	12.4	12.6	12.9	-2.1	1.9
5	41	11.9	12.1	12.3	-2.0	2.0
6	42.8	11.4	11.6	11.8	-2.1	2.0
7	44.6	10.9	11.1	11.4	-2.1	2.1
8	46.4	10.4	10.7	10.9	-2.2	2.1
9	48.2	10.0	10.2	10.5	-2.3	2.1
10	50	9.6	9.8	10.0	-2.3	2.2
11	51.8	9.2	9.4	9.6	-2.4	2.3
12	53.6	8.8	9.0	9.3	-2.4	2.4
13	55.4	8.5	8.7	8.9	-2.5	2.5
14	57.2	8.1	8.3	8.6	-2.6	2.6

	2% B0/100=345 T [°F]	1	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
T [°C] 15	59	Rmin [KΩ]	8.0	8.2	-2.7	2.7
16	60.8	7.5	7.7	7.9	-2.8	2.7
17	62.6	7.2	7.4	7.6	-2.9	2.9
18	64.4	6.9	7.4	7.6	-3.0	3.0
19	66.2	6.6	6.9	7.1	-3.1	3.1
20	68	6.4	6.6	6.8	-3.2	3.2
20 21	69.8	6.1	6.3	6.6	-3.4	3.4
22	71.6	5.9	6.1	6.3	-3.5	3.5
23	73.4	5.7	5.9	6.1	-3.7	3.6
24	75.4	5.4	5.7	5.9	-3.8	3.8
25	77	5.2	5.5	5.7	-4.0	3.9
26	78.8	5.0	5.3	5.5	-4.0	4.0
20 27	80.6	4.9	5.1	5.3	-4.1	4.0
28	82.4	4.7	4.9	5.1	-4.2	4.1
29 29	84.2	4.7	4.7	4.9	-4.2	4.2
30	86	4.4	4.6	4.8	-4.3	4.3
31	87.8	4.2	4.4	4.6	-4.4	4.3
32	89.6	4.0	4.2	4.4	-4.4	4.4
33	91.4	3.9	4.1	4.3	-4.5	4.5
34	93.2	3.8	3.9	4.1	-4.6	4.6
35	95	3.7	3.8	4.0	-3.9	4.6
36	96.8	3.5	3.7	3.9	-4.7	4.7
37	98.6	3.4	3.6	3.7	-4.8	4.8
38	100.4	3.3	3.4	3.6	-4.8	4.8
39	102.2	3.2	3.3	3.5	-4.9	4.9
40	104	3.0	3.2	3.4	-5.0	4.9
41	105.8	2.9	3.1	3.3	-5.0	5.0
42	107.6	2.8	3.0	3.1	-5.1	5.1
43	109.4	2.7	2.9	3.0	-5.2	5.1
44	111.2	2.6	2.8	2.9	-5.2	5.2
45	113	2.6	2.7	2.9	-5.3	5.2
46	114.8	2.5	2.6	2.8	-5.3	5.3
47	116.6	2.4	2.5	2.7	-5.4	5.4
48	118.4	2.3	2.4	2.6	-5.5	5.4
49	120.2	2.2	2.4	2.5	-5.5	5.5
50	122	2.2	2.3	2.4	-5.6	5.6
51	123.8	2.1	2.2	2.3	-5.7	5.6
52	125.6	2.0	2.1	2.3	-5.7	5.7
53	127.4	2.0	2.1	2.2	-5.8	5.7
54	129.2	1.9	2.0	2.1	-5.8	5.8
55	131	1.8	1.9	2.1	-5.9	5.9
56	132.8	1.8	1.9	2.0	-6.0	5.9
57	134.6	1.7	1.8	1.9	-6.0	6.0
58	136.4	1.7	1.8	1.9	-6.1	6.0
59	138.2	1.6	1.7	1.8	-6.2	6.1

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
60	140	1.6	1.7	1.8	-6.2	6.1
61	141.8	1.5	1.6	1.7	-6.2	6.3
62	143.6	1.5	1.6	1.7	-6.5	6.3
63	145.4	1.4	1.5	1.6	-6.4	6.3
64	147.2	1.4	1.5	1.6	-6.5	6.4
65	149	1.3	1.4	1.5	-6.4	6.5
66	150.8	1.3	1.4	1.5	-6.6	6.6
67	152.6	1.2	1.3	1.4	-6.6	6.6
68	154.4	1.2	1.3	1.4	-6.7	6.6
69	156.2	1.2	1.2	1.3	-6.7	6.7
70	158	1.1	1.2	1.3	-6.8	6.8
71	159.8	1.1	1.2	1.3	-6.8	6.8
72	161.6	1.1	1.1	1.2	-6.9	6.9
73	163.4	1.0	1.1	1.2	-7.0	6.9
74	165.2	1.0	1.1	1.2	-7.0	6.9
75	167	1.0	1.0	1.1	-7.1	7.1
76	168.8	0.9	1.0	1.1	-7.2	7.1
77	170.6	0.9	1.0	1.1	-7.2	7.1
78	172.4	0.9	1.0	1.0	-7.3	7.2
79	174.2	0.9	0.9	1.0	-7.3	7.3
80	176	0.8	0.9	1.0	-7.4	7.3
81	177.8	0.8	0.9	0.9	-7.4	7.4
82	179.6	0.8	0.8	0.9	-7.5	7.4
83	181.4	0.8	0.8	0.9	-7.5	7.5
84	183.2	0.7	0.8	0.9	-7.6	7.6
85	185	0.7	0.8	0.8	-7.6	7.6
86	186.8	0.7	0.8	0.8	-7.7	7.7
87	188.6	0.7	0.7	0.8	-7.7	7.7
88	190.4	0.7	0.7	0.8	-7.8	7.8
89	192.2	0.6	0.7	0.7	-7.8	7.8
90	194	0.6	0.7	0.7	-7.9	7.9
91	195.8	0.6	0.7	0.7	-8.0	7.4
92	197.6	0.6	0.6	0.7	-8.0	8.0
93	199.4	0.6	0.6	0.7	-8.1	8.0
94	201.2	0.6	0.6	0.7	-8.1	8.1
95	203	0.5	0.6	0.6	-8.2	8.1
96	204.8	0.5	0.6	0.6	-8.2	8.2
97	206.6	0.5	0.6	0.6	-8.2	8.2
98	208.4	0.5	0.5	0.6	-8.3	8.3
99	210.2	0.5	0.5	0.6	-8.4	8.3
100	212	0.5	0.5	0.6	-8.4	8.4
101	213.8	0.5	0.5	0.5	-8.5	8.4
102	215.6	0.4	0.5	0.5	-8.5	8.5
103	217.4	0.4	0.5	0.5	-8.6	8.5
104	219.2	0.4	0.5	0.5	-8.6	8.6

T [°C]	T [°F]	Rmin [KΩ]	Rnom [KΩ]	Rmax [KΩ]	DR(MIN)%	DR(MAX)%
105	221	0.4	0.4	0.5	-8.7	8.6
106	222.8	0.4	0.4	0.5	-8.7	8.7
107	224.6	0.4	0.4	0.5	-8.8	8.7
108	226.4	0.4	0.4	0.4	-8.8	8.8
109	228.2	0.4	0.4	0.4	-8.8	8.8
110	230	0.4	0.4	0.4	-8.9	8.8
111	231.8	0.3	0.4	0.4	-9.0	8.9
112	233.6	0.3	0.4	0.4	-9.0	9.0
113	235.4	0.3	0.4	0.4	-9.0	9.0
114	237.2	0.3	0.4	0.4	-9.1	9.1
115	239	0.3	0.3	0.4	-9.1	9.1
116	240.8	0.3	0.3	0.4	-9.2	9.1
117	242.6	0.3	0.3	0.4	-9.2	9.2
118	244.4	0.3	0.3	0.3	-9.3	8.8
119	246.2	0.3	0.3	0.3	-9.3	9.3
120	248	0.3	0.3	0.3	-9.3	9.3

ACCESSORIES

FreshAire IAQ (Optional)



FreshAire Purifier APWM1 by iWave® – Optional accessory for all wall-mounted ductless models that kills mold, bacteria and viruses—while effectively removing odors and VOCs.

Wall Controllers (Optional)



FPWC1 - Optional hard-wired controller for Floating Air wall-mounted and cassette indoor models. Included with concealed ducted models. Not compatible with AHU indoor models. See your Friedrich representative for options.

Cable length =24ft (8m)



DSSXEMWRTA4 - Optional wireless energy management thermostat with occupancy sensor. Compatible with Floating Air wall-mounted, cassette, and concealed ducted indoor models. Not compatible with AHU indoor models. See your Friedrich representative for options.

Sensors (Optional, Depending Upon Model)



ADS01 - Field-installed A2L sensor for Floating Air R-454B wall-mounted applications. **ADS02 -** Field-installed A2L sensor for Floating Air R-32 wall-mounted applications. See Installation and Operational Manual for additional information & requirements.



United Products Distributors Inc.

4030A Benson Ave Halethorpe, MD 21227 888-907-9675 c.businsky@updinc.com

Shivani Refigeration & Air Conditioning Inc.

2259 Westchester Ave. Bronx, NY 10462 sales@shivanionline.com

NEUCO Inc.

515 W Crossroads Parkway Bolingbrook, IL 60440 312.809.1418 borr@neuco.com

The Gabbert Company

6868 Ardmore Houston, Texas 77054

713-747-4110 800-458-4110

Johnstone Supply of Woodside

27-01 Brooklyn Queens Expway Woodside, New York 11377

718-545-5464 800-431-1143

Reeve Air Conditioning, Inc.

2501 South Park Road Hallandale, Florida 33009

954-962-0252 800-962-3383

Total Home Supply

26 Chapin Rd Ste 1109
Pine Brook, NJ 07058
877-847-0050
support@totalhomesupply.com/brands/Friedrich.html

TECHNICAL SUPPORT CONTACT INFORMATION

Friedrich Air Conditioning Co. 10001 Reunion Place, Suite 500 · San Antonio, Texas 78216 1-877-599-5665 www.friedrich.com