

ACiQ

R32 UNITARY AIR HANDLER & HEAT PUMP CONDENSER

TECHNICAL SALES GUIDE

Models Covered:

ACiQ-24-AH32

ACiQ-36-AH32

ACiQ-48-AH32

ACiQ-60-AH32

ACiQ-24-HP32

ACiQ-36-HP32

ACiQ-48-HP32

ACiQ-60-HP32



As a result of continuous product improvement, the specification and design of this unit are subject to change without advanced notice. Consult your manufacturer or your dealer for further details regarding this product. The images and illustrations within this manual are for reference only. The actual shape and size of your product may vary.

CONTENTS

1 MODELS LIST..... 1

2 NOMENCLATURE..... 2

3 FUNCTION 2

4 PRODUCT DATA..... 4

5 FAN CHARACTERISTICS 9

6 DIMENSION 11

7 WIRING DIAGRAM 18

1 MODELS LIST

1.1 Outdoor Unit

Model	Power Supply	Product Code	Appearance
	V/Ph/Hz		
ACiQ-24-HP32	208/230V-1Ph-60Hz	CF090W3110	
ACiQ-36-HP32	208/230V-1Ph-60Hz	CF090W3130	
ACiQ-48-HP32	208/230V-1Ph-60Hz	CF090W3120	
ACiQ-60-HP32	208/230V-1Ph-60Hz	CF090W3010	

1.2 Indoor Unit

Model		Cooling/Heating Capacity (Btu/h)	Power Supply	Product Code	Appearance
			V/Ph/Hz		
Air handler	ACiQ-24-AH32	24000/24000	208/230V-1Ph-60Hz	EH010N0210	
Air handler	ACiQ-36-AH32	34000/34000	208/230V-1Ph-60Hz	EH010N0220	
Air handler	ACiQ-48-AH32	48000/48000	208/230V-1Ph-60Hz	EH010N0190	
Air handler	ACiQ-60-AH32	54000/54000	208/230V-1Ph-60Hz	EH010N0200	

NOTE: 1 Ton = 12000Btu/h = 3.517kW

2 NOMENCLATURE

ACiQ-24-HP32

NO.	Description	Options
1	Product code/Brand	ACiQ R32 UNITARY SPLIT SYSTEM
2	Cooling capacity code	Nominal capacity (kBtu/h)
3	Unit type	HP=Heat Pump/Outdoor unit; AH= High pressure air handler
4	Type of refrigerant	32 = R32

3 FUNCTION

3.1 Description

ACiQ R32 UNITARY SPLIT SYSTEM Series Air Conditioners have combined the extraordinary comfort of the central air conditioners with the convenient installation and facility of the mini type of the split air conditioners. It is equipped with the condenser coil constructed of the hydrophilic aluminum sheet and the inner groove copper pipe, and also the low-noise compressor with various protections on the high/low pressure, high discharge temperature, overload, and the sensor malfunction alarm. The casing of this unit is made of pre-painted steel, capable of resisting corrosion and rust creep and ensuring minimal fading when exposed to sunlight.

ACiQ R32 UNITARY SPLIT SYSTEM Series Air Conditioners can offer the perfect combination of superior product quality, high operating efficiency and cost efficiency. The capacity rated according to AHRI 210/240-2023 ranges from 24kBtu/h to 54kBtu/h, which could be sufficient to different requirements from customers. These units have achieved ETL certificate. All units are factory tested prior to dispatch to verify the operation performance and control functioning.

The unit can set for heating even when the outdoor ambient temperature drops to -30°C (-22°F) and thus an ideal for locations that require heating in winter. The careful design from each part to the whole unit, together with the all-round process test and unit test, offers the high reliability for the whole system.

Perfect system protections can guarantee the safety of the system at utmost and get rid of the irreparable damage to the compressor or other critical parts under the harsh working conditions.

3.2 Features-Outdoor Units

24V and RS485 dual communication control, in line with the market traditional wiring habits, engineering adaptability. The outdoor unit can auto adjust capacity intelligently without communication.

Compact side discharge design occupies half area than that of conventional top discharge design, which is highly suitable for constricted application. It can be installed either on the ground or on the wall

to save more space. The installation is similar to American conventional AC installation and extra training is not required.

3.3 Indoor Units



Airflow Patterns for Extra Comfort:

It can connect many supply-air outlets to the duct, so that it can make the temperature and humidity of the whole room even. All units are provided with filters that they are easily accessible from the rear of the unit.

Flexible Installation:

Air-supply or air-return type, condensation water exit direction etc can be selected flexibly.

Easy Maintenance:

Evaporator coils are constructed of quality inner groove copper tube and hydrophilic aluminum sheet. It adopts easy and reliable configuration design, so Maintenance is very convenient and easy.



Versatile Functions:

- Time display function
- Timer function
- Memory function
- °F/°C switch function
- Temperature display function
- E-heater function
- 4-way valve energizing function
- Temperature compensation function

4 PRODUCT DATA

4.1 Product Data at Rated Condition

Air Handler

Model	Indoor Unit		ACiQ-24-AH32	ACiQ-36-AH32	ACiQ-48-AH32	ACiQ-60-AH32
	Product Code		EH010N0210	EH010N0220	EH010N0190	EH010N0200
	Outdoor Unit		ACiQ-24-HP32	ACiQ-36-HP32	ACiQ-48-HP32	ACiQ-60-HP32
	Product Code		CF090W3110	CF090W3130	CF090W3120	CF090W3010
Capacity	Cooling Capacity	Btu/h	24000	34000	48000	54000
	Heating Capacity	Btu/h	24000	34000	48000	54000
Power Input	Cooling	kW	2.05	2.98	4.17	4.91
	Heating	kW	2.01	3.02	4.26	4.80
SEER 2/ HSPF2		—	16.00/9.50	16.50/9.50	17.00/9.50	16.00/9.00
Indoor Unit			ACiQ-24-AH32	ACiQ-36-AH32	ACiQ-48-AH32	ACiQ-60-AH32
Fan	Drive	—	Direct	Direct	Direct	Direct
	Motor Output	kW	0.37×1	0.37×1	0.75×1	0.75×1
	Air Flow	m³/h (CFM)	1292 (760)	1700 (1000)	2040 (1200)	2550 (1500)
	Rated Ext. Static Pressure	Pa (InWg)	125 (0.50)	125 (0.50)	125 (0.50)	125 (0.50)
	Ext. Static Pressure Range	Pa (InWg)	0~250 (0-1.0)	0~250 (0-1.0)	0~250 (0-1.0)	0~250 (0-1.0)
Sound Pressure Level(H/M/L)		dB(A)	50	51	52	53
Air Filter		—	Metal	Metal	Metal	Metal
Drain Piping		mm (inch)	Φ25.4×1.2 (Φ1×0.05)	Φ25.4×1.2 (Φ1×0.05)	Φ25.4×1.2 (Φ1×0.05)	Φ25.4×1.2 (Φ1×0.05)
Outline Dimensions (W×D×H)		mm (inch)	460×540×1105 (18-1/8×21-1/4×43-1/2)	540×540×1224 (21-1/4×21-1/4×48-3/16)	630×540×1320 (24-13/16×21-1/4×51.968)	630×540×1320 (24-13/16×21-1/4×51.968)
Net Weight		kg (lb)	61.5 (135.6)	74 (163.1)	90.5 (199.5)	90.5 (199.5)
Outdoor Unit			ACiQ-24-HP32	ACiQ-36-HP32	ACiQ-48-HP32	ACiQ-60-HP32
Power Supply		—	208/230V-1Ph-60Hz			
Heat Exchange		—	Inner Groove Copper Tube-Aluminum Fin			
Compressor	Type	—	Inverter Rotary	Inverter Rotary	Inverter Rotary	Inverter Rotary
Refrigerant	Control	—	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve	Electronic Expansion Valve
	Charge	kg (oz)	2.5 (88.2)	2.9 (102.3)	4.6 (162.3)	4.6 (162.3)
Outline Dimensions (W×H×D)		mm (inch)	990×370×960 (39×14-9/16×37-13/16)	990×370×960 (39×14-9/16×37-13/16)	900×340×1260 (35-7/16×13-3/8×49-5/8)	900×340×1260 (35-7/16×13-3/8×49-5/8)
Net Weight		kg (lb)	85.0 (187.4)	85.0 (187.4)	109.5 (241.4)	109.5 (241.4)
Piping Connections	Liquid	Inch	3/8"	3/8"	3/8"	3/8"
	Gas	Inch	3/4"	3/4"	3/4"	3/4"
	Max. Length	m (ft)	50 (164.0)	50 (164.0)	30 (98.4)	30 (98.4)
	Max. Height	m (ft)	30 (98.4)	30 (98.4)	15 (49.2)	15 (49.2)

NOTES:

- The design of this unit conforms to the requirements of AHRI 210/240-2023 standard.
- The air volume is measured at the relevant standard external static pressure.

c. Cooling (heating) capacity stated above is measured under nominal working conditions corresponding to standard external static pressure. The parameters are subject to change with the improvement of products, in which case the values on nameplate shall prevail.

—		Indoor	Outdoor
Cooling		DB: 26.7°C(80.1°F) WB: 19.4°C(66.9°F)	DB: 35°C(95.0°F) WB: 23.9°C(75.0°F)
Heating		DB: 21.1°C(70.0°F) WB: 15.6°C(60.1°F)	DB: 8.33°C(47.0°F) WB: 6.11°C(43.0°F)
Piping Length	24k~60k units	7.5m(24.6ft)	

4.2 Operation Range

Mode	Range of Outdoor Temperature
Cooling	-15.0°C(5.0°F)~ 54.0°C(129.2°F)
Heating	-30.0°C(-22.0°F)~24.0°C(75.2°F)

4.3 Cooling Performance

NOTES:

- ESP: External Static Pressure
- DB: Dry Bulb Temperature; WB: Wet Bulb Temperature
- TC: Total Capacity; SHC: Sensible Heat Capacity
- Air Handler

ACiQ-24-AH32

Outdoor Temperature	Indoor Temperature °F								
	60			70			80		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°F	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)
50	13500	13690	1060	18000	17690	1240	23000	18450	1280
65	14200	13500	1120	19000	17500	1380	24000	18500	1450
75	15200	14100	1290	20000	18100	1540	24000	18980	1640
85	17600	14220	1520	21680	18220	1750	25000	19290	1890
95	15200	14550	1640	20000	18550	1860	24000	19380	2150
105	15600	14220	1860	20500	18220	2080	24000	19250	2260
115	16400	14620	2230	20600	17950	2260	23500	18800	2540

ACiQ-36-AH32

Outdoor Temperature	Indoor temperature °F								
	60			70			80		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°F	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)
50	22600	16020	1950	28000	21360	2160	31500	23560	2380
65	23200	16180	2160	29000	22360	2350	33000	24130	2450
75	23600	15880	2380	30000	21150	2580	34000	23900	2630
85	24500	15860	2560	31000	22840	2720	35000	24560	2840
95	23600	16850	2710	30000	23560	2860	34000	25530	2980
105	23600	15990	2840	30000	23120	3020	34000	24100	3160
115	23000	15900	3040	29500	22530	3190	33500	24030	3390

ACiQ-48-AH32

Outdoor Temperature	Indoor temperature °F								
	60			70			80		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°F	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)
50	37600	19420	3785	42000	23950	3220	46000	27650	3450
65	38200	20090	3528	43000	23560	3450	47000	27980	3620
75	38600	20020	3226	44000	25480	3670	48000	29760	3760
85	39500	19860	2746	45000	24600	3850	49000	28950	3950
95	38600	21020	2546	44000	25480	4020	48000	28460	4170
105	38600	20090	2895	44000	24120	4210	48000	28660	4390
115	38000	19500	3106	43000	24560	4390	47500	28660	4620

ACiQ-60-AH32

Outdoor Temperature	Indoor temperature °F								
	60			70			80		
	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°F	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)	(Btu/h)	(Btu/h)	(W)
50	44300	22720	3560	48500	27650	3790	52500	31800	3950
65	45000	24160	3780	49000	27980	4070	53000	32120	4120
75	46600	24850	3940	50000	29760	4240	54000	33820	4380
85	46600	23280	4130	51000	28950	4450	55000	34180	4650
95	46000	22000	4350	50000	28460	4670	54000	34050	4910
105	46000	21230	4520	50000	28660	4850	54000	34650	5120
115	45500	22120	4780	49400	28660	5060	53300	34050	5380

4.4 Heating Performance

NOTES:

- RLA: Rated load amperes (marked in the nameplate of the outdoor unit)
- FLA: Full load current
- Fuse: On the main board

Air Handler

ACiQ-24-AH32

Outdoor Temperature	Indoor Temperature °F					
	60		70		80	
	TC	PI	TC	PI	TC	PI
°F	(Btu/h)	(W)	(Btu/h)	(W)	(Btu/h)	(W)
-22	14800	4020	14000	4120	13200	4310
-15	16500	4350	15000	4460	15600	4680
-5	17500	5480	16200	5670	16700	5770
5	20000	5120	19800	5260	19300	5420
17	24000	2040	23000	3170	20400	3340
32	24000	2190	23000	2320	20500	2470
47	25000	1970	24000	2020	21000	2150
60	28800	2280	28000	2340	26500	24300

ACiQ-36-AH32

Outdoor Temperature	Indoor Temperature °F					
	60		70		80	
	TC	PI	TC	PI	TC	PI
°F	(Btu/h)	(W)	(Btu/h)	(W)	(Btu/h)	(W)
-22	19000	4020	18600	4120	18000	4430
-15	20600	4350	20500	4460	20000	4660
-5	25000	5480	24500	5670	24000	5790
5	30600	5120	29000	5260	27000	5540
17	34000	3060	33000	3170	29200	3540
32	34000	3190	33000	3320	31400	3400
47	35000	2970	34000	3020	31800	3030
60	39000	3350	38000	3440	36000	3480

ACiQ-48-AH32

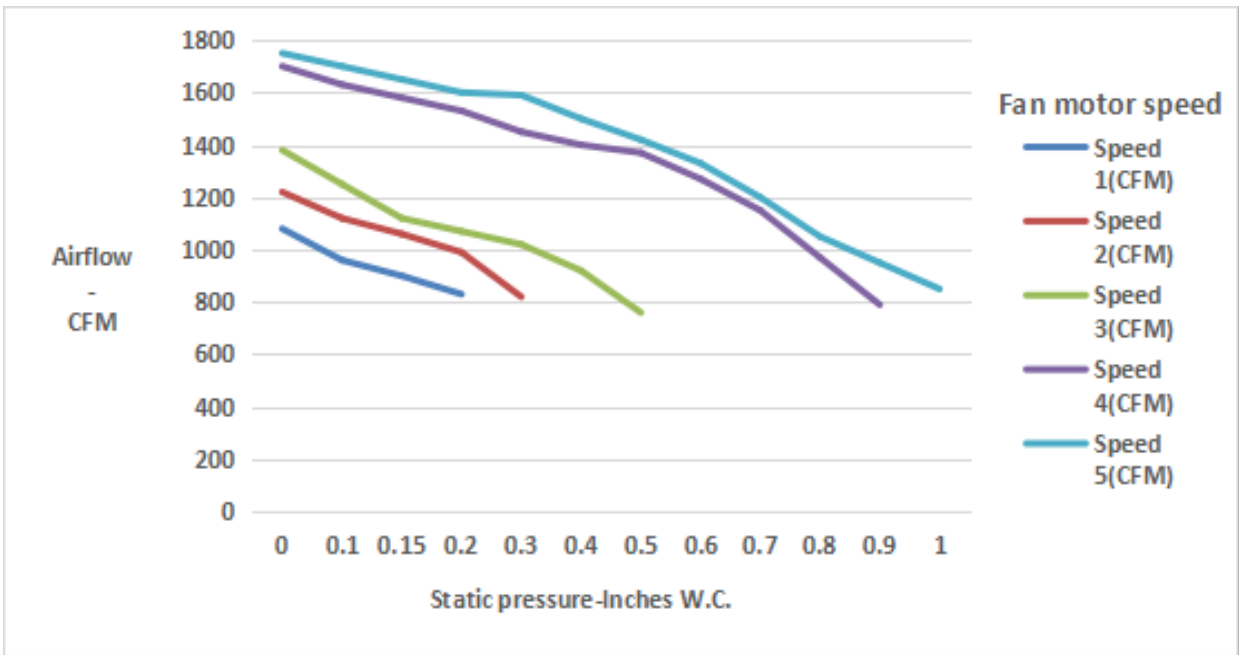
Outdoor Temperature	Indoor Temperature °F					
	60		70		80	
	TC	PI	TC	PI	TC	PI
°F	(Btu/h)	(W)	(Btu/h)	(W)	(Btu/h)	(W)
-22	26000	5860	25500	6060	24600	6230
-15	35400	6150	35000	6380	34200	6590
-5	41000	6680	40500	6990	39000	7220
5	45300	7160	45000	7320	43600	7560
17	34000	3640	33000	3870	32000	4120
32	48400	4450	48000	4570	46500	4680
47	49200	4080	48000	4260	47200	4420
60	53200	4460	51600	4760	49520	4950

ACiQ-60-AH32

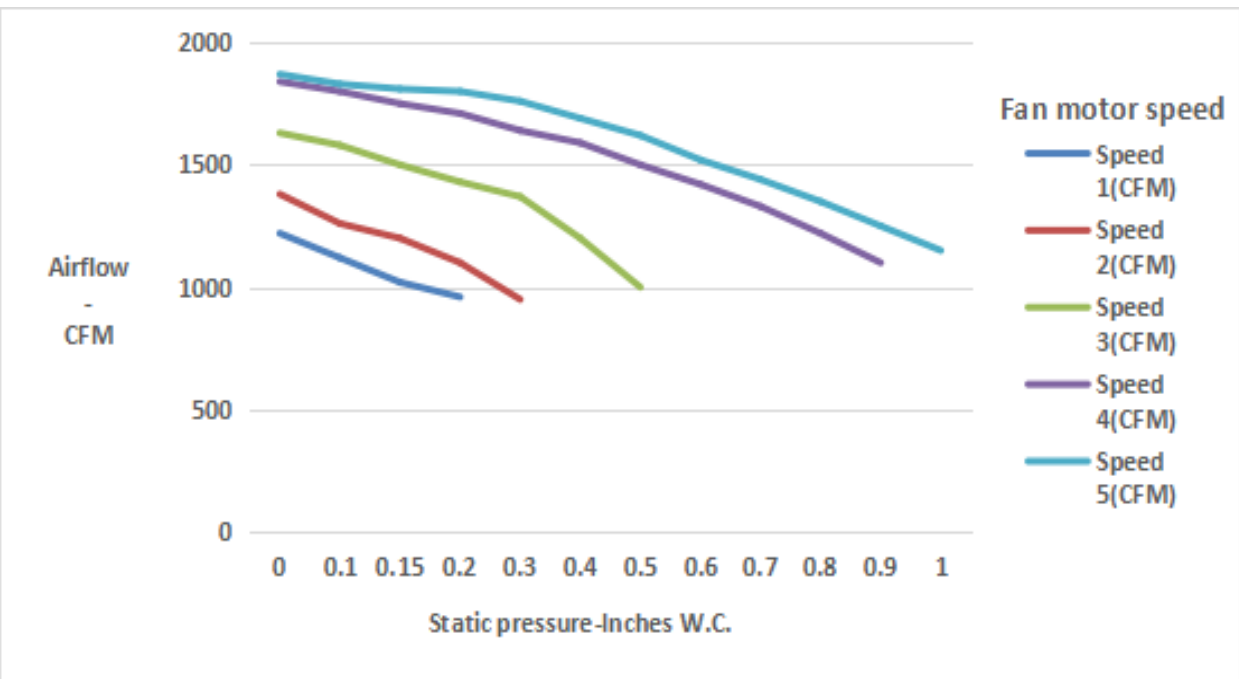
Outdoor Temperature	Indoor temperature °F					
	60		70		80	
	TC	PI	TC	PI	TC	PI
°F	(Btu/h)	(W)	(Btu/h)	(W)	(Btu/h)	(W)
-22	28500	5980	27000	6240	25500	6420
-15	38400	5530	36400	6490	35400	6030
-5	43600	5820	42500	6020	40400	6480
5	45600	7060	45000	7320	43200	7650
17	40200	4160	38000	4460	36400	4750
32	54800	4850	53800	5110	51900	5320
47	56600	4520	54000	4800	53200	4960
60	59400	4980	57400	5240	55200	5460

5 FAN CHARACTERISTICS

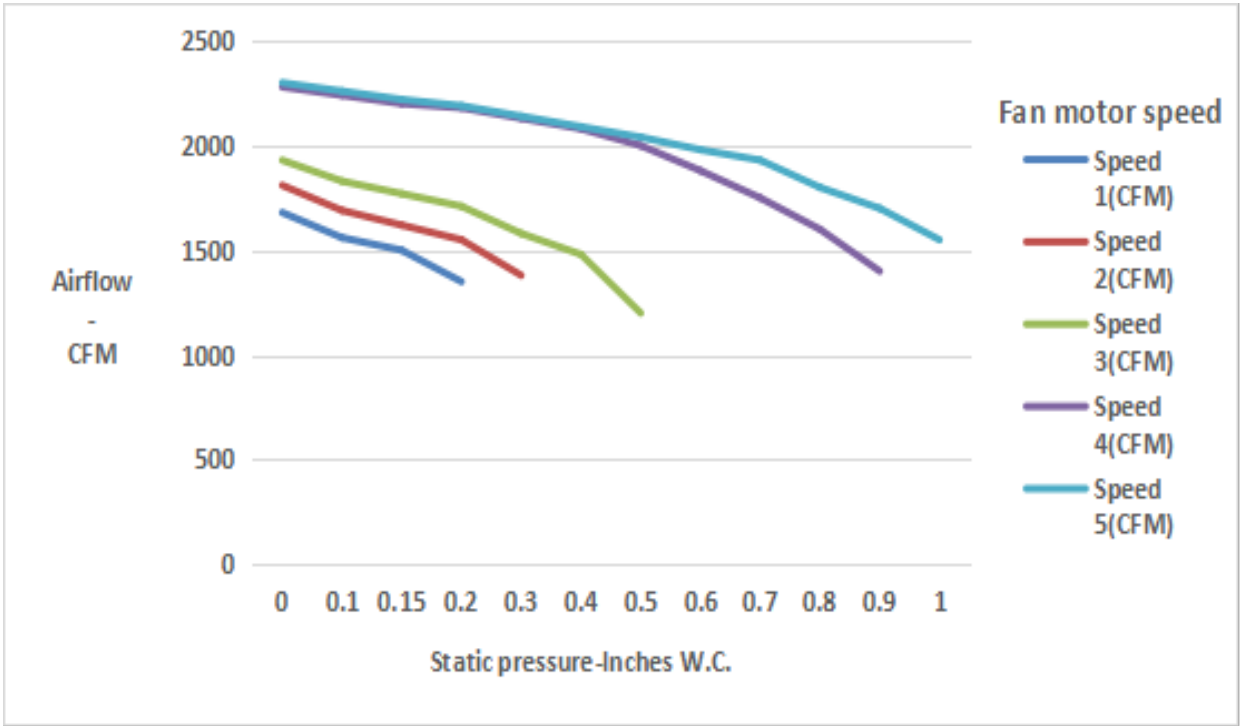
ACiQ-24-AH32



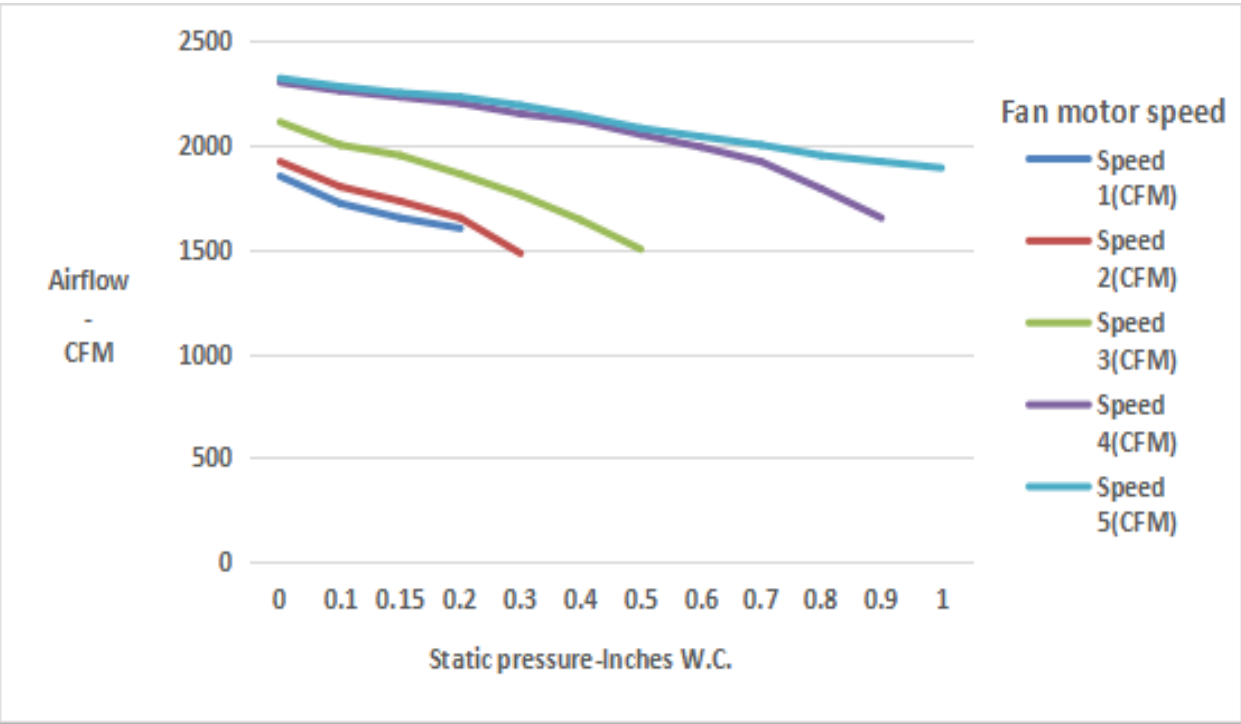
ACiQ-36-AH32



ACiQ-48-AH32



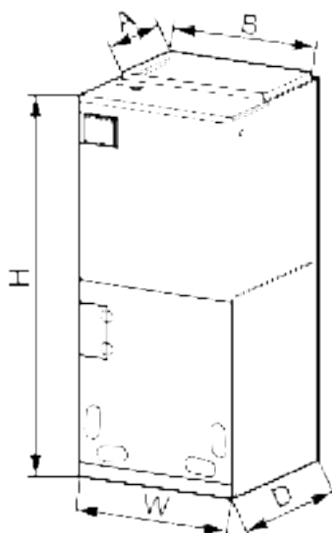
ACiQ-60-AH32



6 DIMENSION

6.1 Indoor Units

Air Handler



Unit: inch(mm)

Model	Dimension				
	W	D	H	A	B
ACiQ-24-AH32	18-1/8 (460)	21-1/4 (540)	43-1/2 (1105)	11-5/8 (295)	16-3/4 (426)
ACiQ-36-AH32	21-1/4 (540)	21-1/4 (540)	48-3/16 (1224)	11-5/8 (295)	20 (508)
ACiQ-48-AH32	24-13/16 (630)	21-1/4 (540)	52 (1320)	11-5/8 (295)	20 (508)

NOTE:

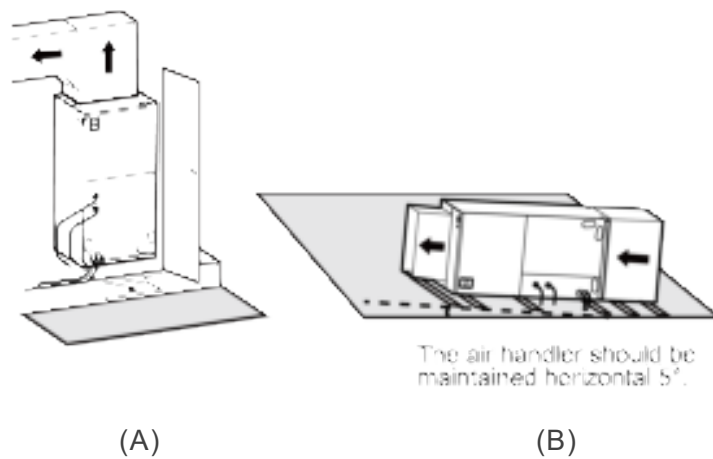
When installing the air handler, take consideration to minimize the length of refrigerant tubing as much as possible. Do not install the air handler in a location either above or below the condenser that violates the instructions provided with the condenser. Service clearance is to take precedence. Allow a minimum of 24" in front of the unit for service clearance. When installing in an area directly over a finished ceiling (such as an attic), an emergency drain pan is required directly under the unit. See local and state codes for requirements. When installing this unit in an area that may become wet, elevate the unit with a sturdy, non-porous material. In installations that may lead to physical damage (i.e. a garage) it is advised to install a protective barrier to prevent such damage.

This air handler is designed for a complete supply and return ductwork system. Do not operate this

product without all ductwork attached.

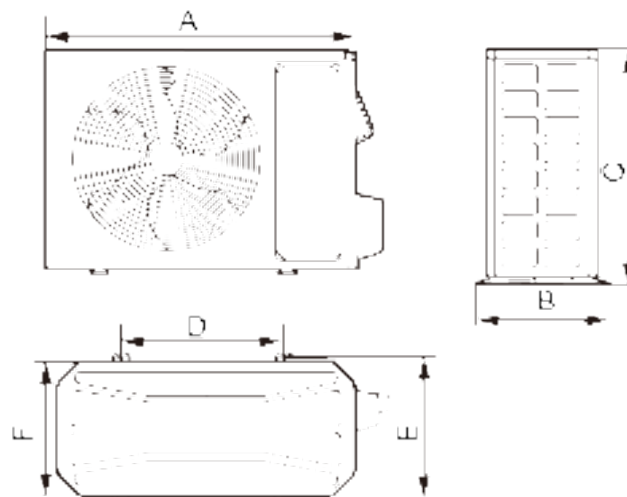
Based upon the actual conditions, if air handler is installed as Fig (A), the air handler should be concealed in a specific room or space and make sure the air handler is not accessible to the general public.

Based upon the actual conditions, if air handler is installed as Fig (B), make sure that there is enough space for care and maintenance and the height between the air handler and ground is above 2500mm. And the air handler is not accessible to the general public.



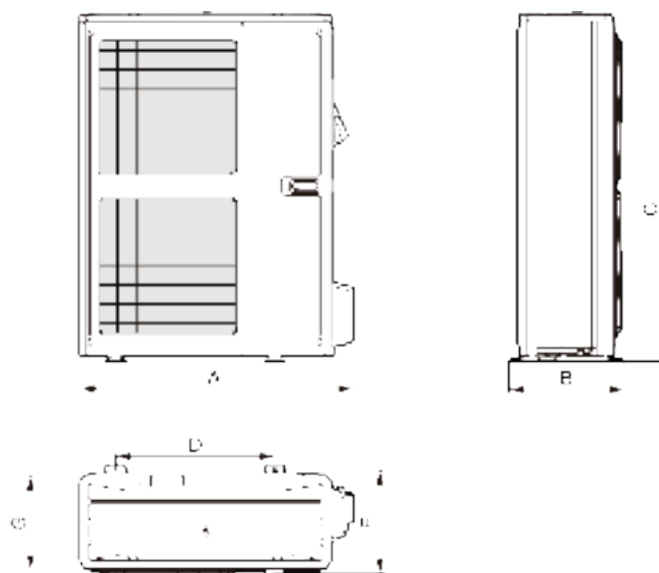
6.2 Outdoor Units

Be suit for ACiQ-24-HP32, ACiQ-36-HP32, ACiQ-48-HP32, ACiQ-60-HP32 unit:



Unit: inch (mm)

Model \ Item	A	B	C	D	E	F
ACiQ-24-HP32	39	16-13/16	37-13/16	29-3/4	15-9/16	14-9/16
ACiQ-36-HP32	(990)	(427)	(960)	(755)	(396)	(370)



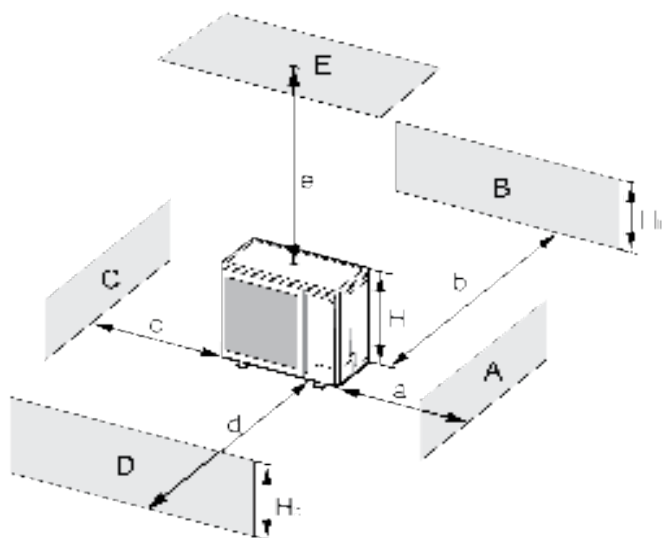
Unit: inch (mm)

Model \ Item	A	B	C	D	E	F
ACiQ-48-HP32	35-7/16	16-1/4	49-5/8	22-7/16	14-7/8	13-3/8
ACiQ-60-HP32	(900)	(412)	(1260)	(570)	(378)	(340)

Installation Location

- 1) When one outdoor unit is to be installed

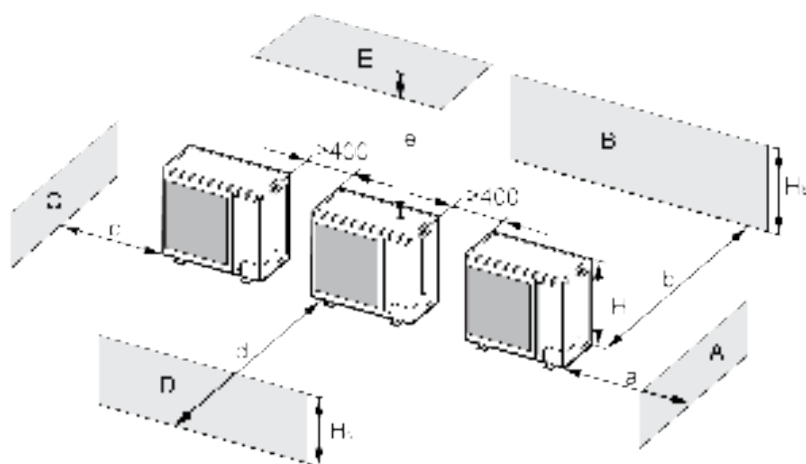
Unit: mm



A~E	H _b H _d H		(mm)				
			a	b	c	d	e
B	—		—	≥100	—	—	—
A,B,C,	—		≥300	≥100	≥100	—	—
B,E	—		—	≥100	—	—	≥1000
A,B,C,E	—		≥300	≥150	≥150	—	≥1000
D	—		—	—	—	≥1000	—
D,E	—		—	—	—	≥1000	≥1000
B,D	H _B <H _D	H _D >H	—	≥100	—	≥1000	—
	H _B >H _D	H _D <H	—	≥100	—	≥1000	—
B,D,E	H _B <H _D	H _B ≤1/2 H	—	≥250	—	≥2000	≥1000
		1/2 H<H _B ≤H	—	≥250	—	≥2000	≥1000
		H _B >H	Prohibited				
	H _B >H _D	H _D ≤1/2 H	—	≥100	—	≥2000	≥1000
		1/2 H<H _D ≤H	—	≥200	—	≥2000	≥1000
		H _D >H	Prohibited				

2) When two or more outdoor units are to be installed side by side

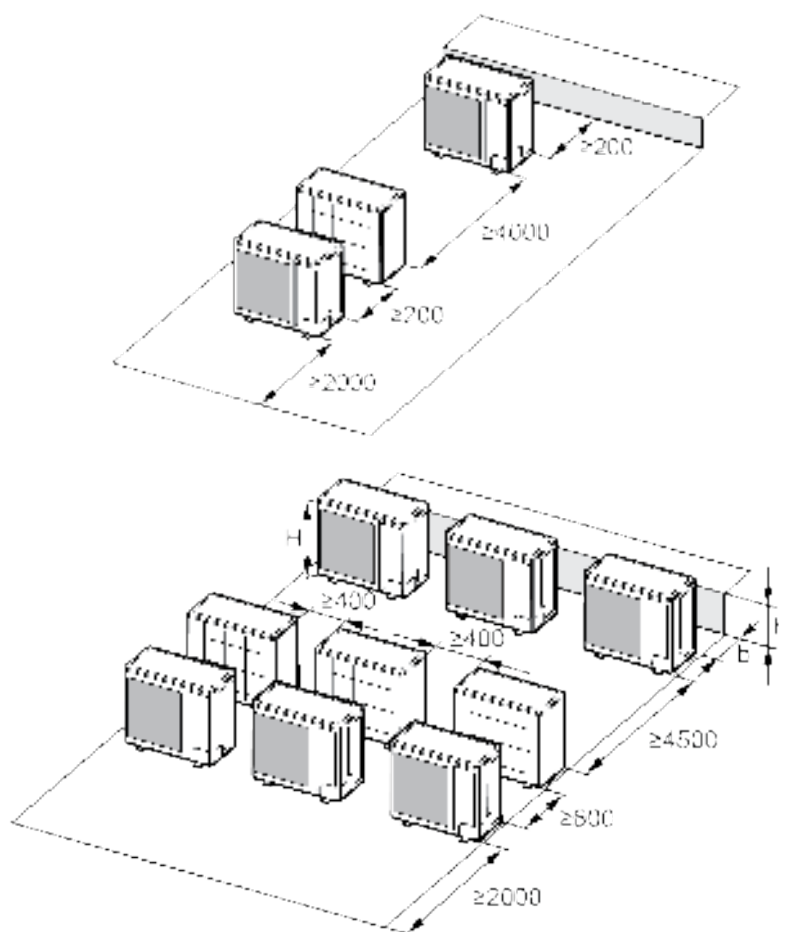
Unit: mm



A~E	H_B H_D H		(mm)				
			a	b	c	d	e
A,B,C	—		≥ 300	≥ 300	≥ 1000	—	—
A,B,C,E	—		≥ 300	≥ 300	≥ 1000	—	≥ 1000
D	—		—	—	—	≥ 2000	—
D,E	—		—	—	—	≥ 2000	≥ 1000
B,D	$H_B < H_D$	$H_D > H$	—	≥ 300	—	≥ 2000	—
	$H_B > H_D$	$H_D \leq 1/2 H$	—	≥ 250	—	≥ 2000	—
		$1/2 H < H_D \leq H$	—	≥ 300	—	≥ 2500	—
B,D,E	$H_B < H_D$	$H_B \leq 1/2 H$	—	≥ 300	—	≥ 2000	≥ 1000
		$1/2 H < H_B \leq H$	—	≥ 300	—	≥ 2500	≥ 1000
		$H_B > H$	Prohibited				
	$H_B > H_D$	$H_D \leq 1/2 H$	—	≥ 250	—	≥ 2500	≥ 1000
		$1/2 H < H_D \leq H$	—	≥ 300	—	≥ 2500	≥ 1000
		$H_D > H$	Prohibited				

3) When outdoor units are installed in rows

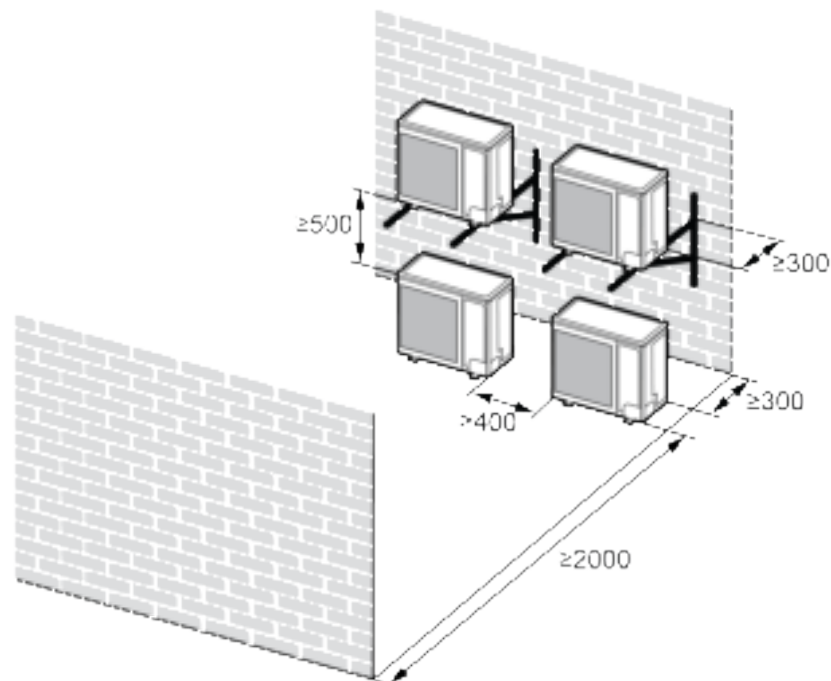
Unit: mm



HB H	(mm)
$HB \leq 1/2 H$	$b \geq 250$
$1/2 H < HB \leq H$	$b \geq 300$
$HB > H$	Prohibited

- 4) When outdoor units are installed one above another

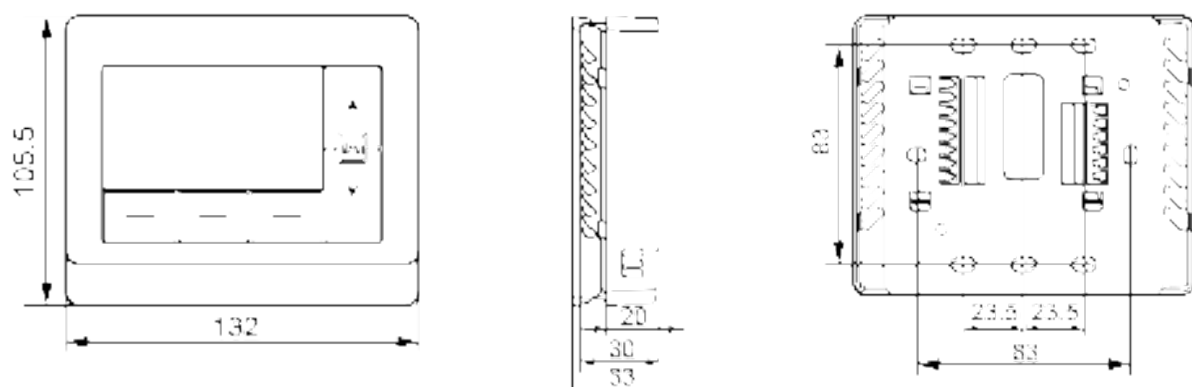
Unit: mm



6.3 Dimension – Controller

Temperature controller

Unit: mm

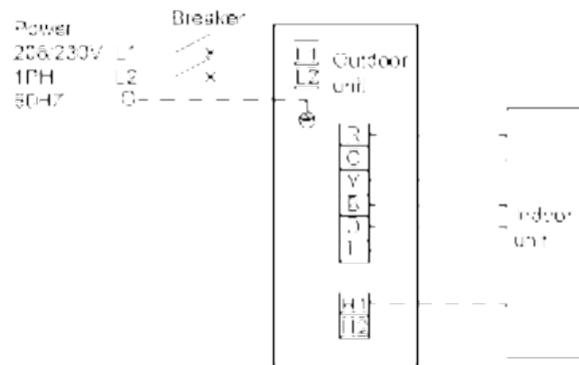


7 WIRING DIAGRAM

7.1 Field Wiring Diagrams

Outdoor Units

Be suit for ACiQ-24-HP32 & ACiQ-36-HP32 units:

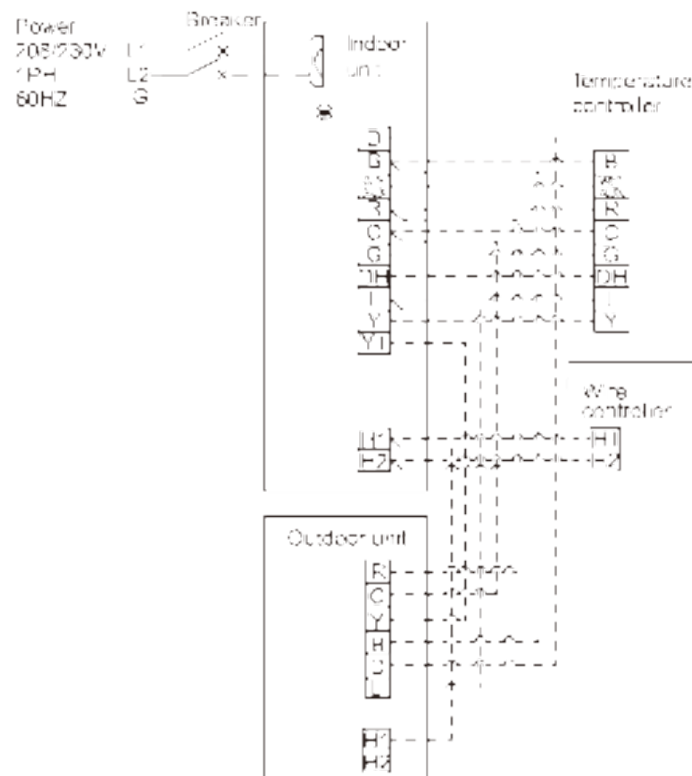


ACiQ-24-HP32, ACiQ-36-HP32,

ACiQ-48-HP32, ACiQ-60-HP32

Air Handler

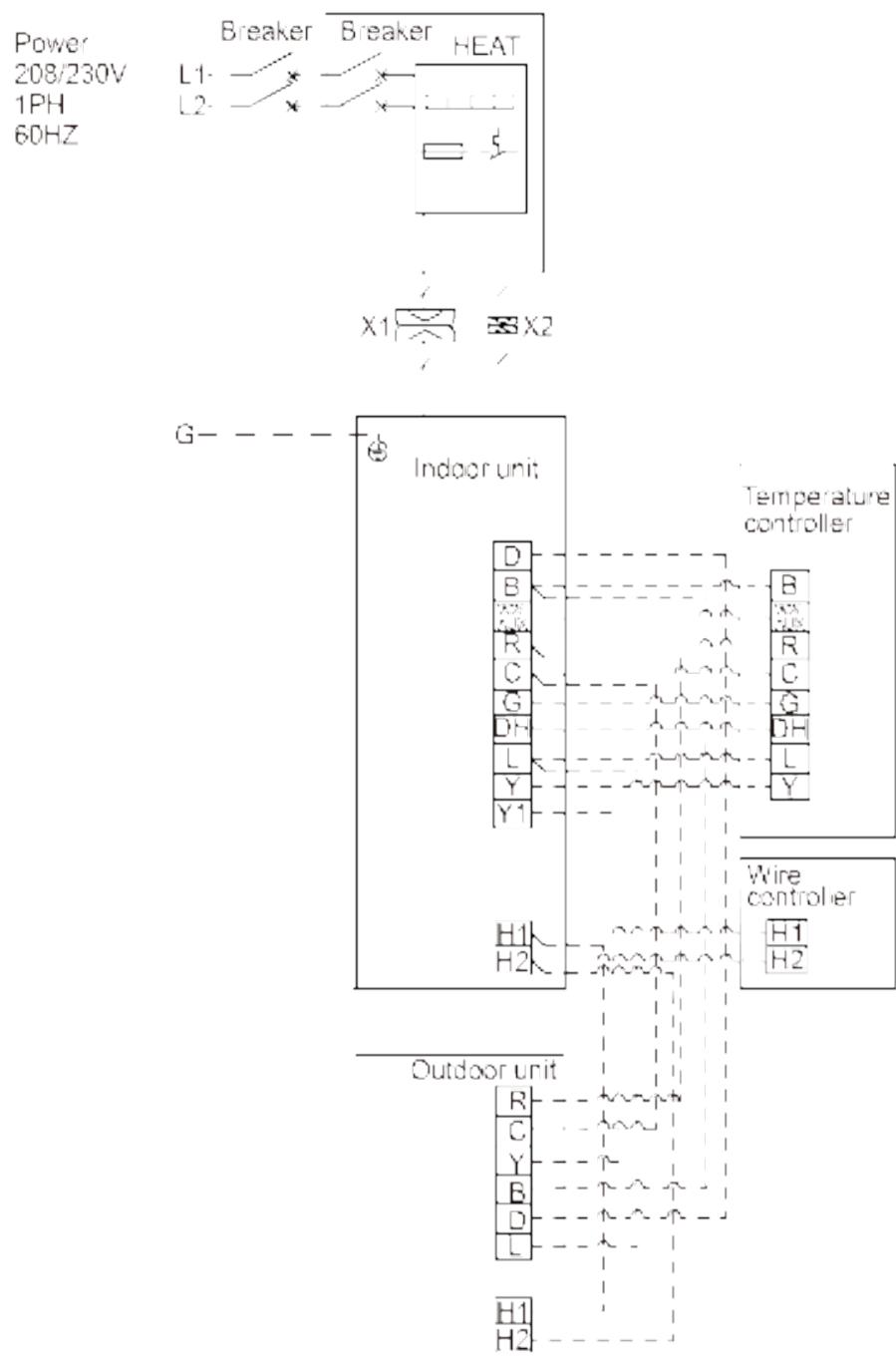
Electrical wiring of indoor units (Only for air handler without electric heater)



ACiQ-24-AH32, ACiQ-36-AH32

ACiQ-48-AH32, ACiQ-60-AH32

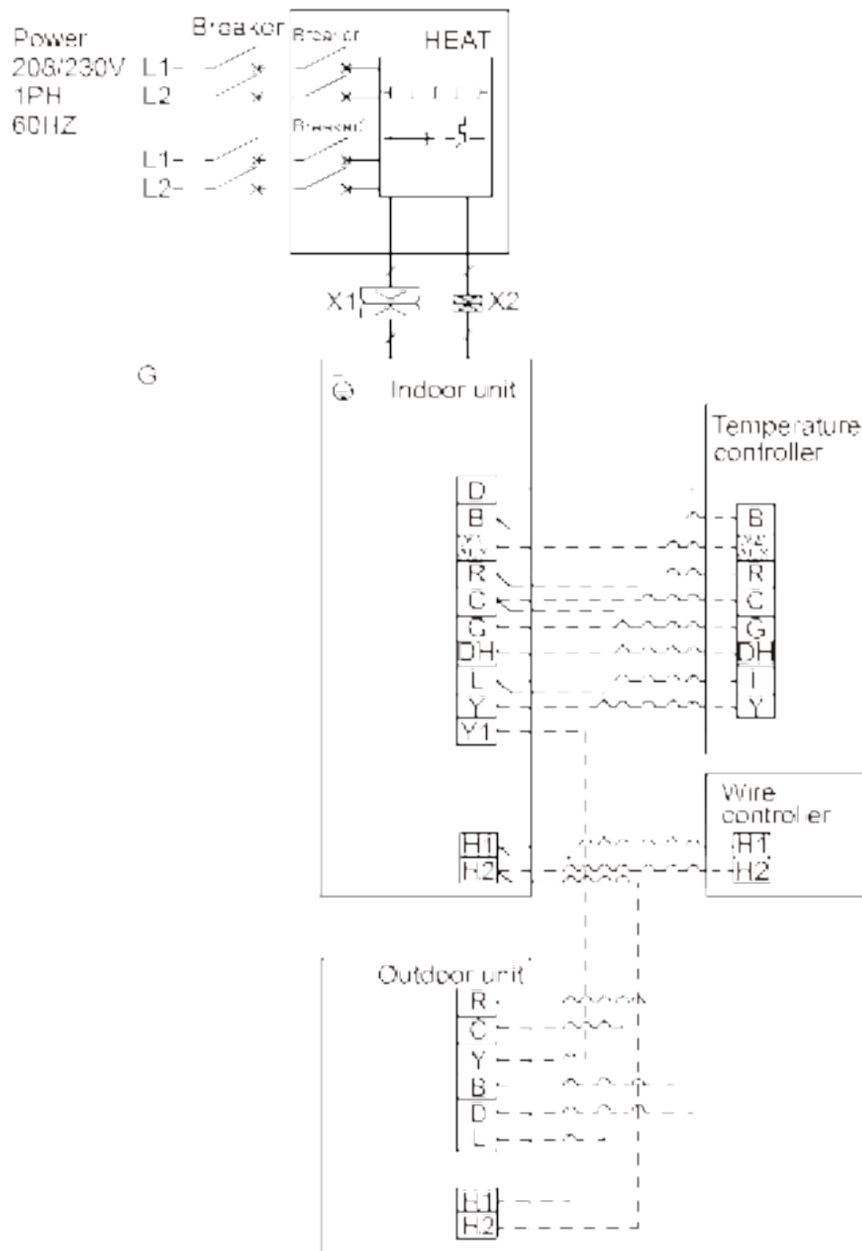
Electrical wiring of indoor units (only for air handler with BLR 6000W/240V BLR)



ACiQ-24-AH32, ACiQ-36-AH32

ACiQ-48-AH32, ACiQ-60-AH32

Electrical wiring of indoor units (only for air handler with BLR 9000W/240V or 12000W/240V)



ACiQ-36-AH32, ACiQ-48-AH32, ACiQ-60-AH32

NOTE:

Different control options:

Thermostat: AC 24V control

Wire controller: 485 communication control.

Different control methods need to change the dial code settings, please read the dial code description for details.

Y means Compressor control signal for the outdoor unit.

B which is energized under the heating mode means 4-way valve control signal.

D means defrosting signal.

R means 24V AC power supply.

C means 24V common.

G means indoor unit fan signal for the indoor unit.

W2/AUX means heater control signal.

L means refrigerant leakage protection signal.

NOTE: For cooling only unit, there is no need to connect the B and D terminals.

NOTE: When outdoor defrosts, D of outdoor unit will send 24V signal to avoid cold winds.

NOTE: Breaker must be incorporated in the fixed wiring in accordance with the wiring rules.

NOTE: When installing electric heating, M6 screws are required for grounding screws.

NOTE: DH: Dehumidification signal.

NOTE: Y1: means thermostat and compressor output signals.

7.2 Specification of Power Supply Wire and Air Switch

7.2.1 Outdoor Units

Model	Power Supply	Fuse Capacity	Minimum Circuit Ampacity	Maximum Overcurrent Protection
	V / Ph / Hz	A	A	A
ACiQ-24-HP32	208/230V-1Ph-60Hz	30	21	25
ACiQ-36-HP32	208/230V-1Ph-60Hz	30	30	27.7
ACiQ-48-HP32	208/230V-1Ph-60Hz	45	39.9	45
ACiQ-60-HP32	208/230V-1Ph-60Hz	45	39.9	45

7.2.2 Indoor Units

Air Handler

Model	Power Supply V / Ph / Hz	Minimum Circuit Ampacity	Maximum Overcurrent Protection
		A	A
ACiQ-24-AH32	208/230V-1Ph-60Hz	4.7	15
ACiQ-36-AH32		5.3	
ACiQ-48-AH32		7.1	
ACiQ-60-AH32		7.7	

ACiQ

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.