

CoolAIR

7.5 to 60 tons

Series BW

Packaged Water Cooled DX Unit

Series BA

Split System Air Cooled DX Unit

Series BPA

Packaged Air Cooled DX Unit

Series BHW

Chilled Water Air Handling Unit



Table of Contents

General.....	3
Introduction.....	3
CoolAIR Features.....	4
AIR Industrial A/C Products Comparison	6
Resources.....	7
Additional Services.....	8
Series BW – Packaged Water Cooled DX Unit.....	9
Series BW – Unit Capacities	9
Series BW – Dimensional Info	9
Series BA and BPA – Split System and Packaged Air Cooled DX Unit	11
Series BA and BPA – Unit Capacities	11
Series BA – Dimensional Info (AHU).....	12
Series BA – Dimensional Info (Air Cooled Condenser)	12
Series BHW – Chilled Water Air Handling Unit	14
Series BHW – Unit Capacities.....	14
Series BHW – Dimensional Info.....	15

GENERAL

Advance Industrial Refrigeration, Inc. reserves the right to make changes and/or improvements in designs, features, options, and procedures without notice or obligation.

Introduction

CoolAIR air conditioning units offer superior features and options while maintaining cost competitive to standard commercial air conditioning units. Units are available in a range of 7.5 to 60 tons of cooling capacity.

Series BW

Series BW is a vertical, water cooled package DX air conditioning unit. The unit has a fan section (top) and compressor/condenser section (bottom).

Series BA

Series BA is an air cooled split system DX air conditioning unit with vertical air handling unit section and remote air cooled condenser. The air handling unit has a fan section (top) and compressor section (bottom).

Series BPA

Series BPA is an air cooled packaged DX air conditioning unit.

Series BHW

Series BHW is a vertical, chilled water air handling unit.



Figure 1: Series BHW (rear view)

CoolAIR Features

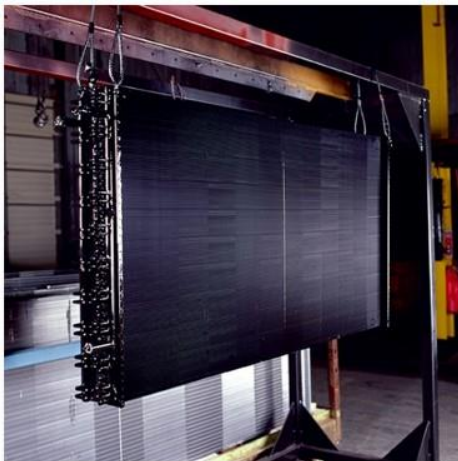
Fans

Supply fans are constant speed, DWDI, forward curved centrifugal design, balanced per ANSI/AMCA 204-05, G6.3 level. Bearings are pillow block design. Units above 15 tons are provided with dual blowers and a single TEFC motor.



Coils

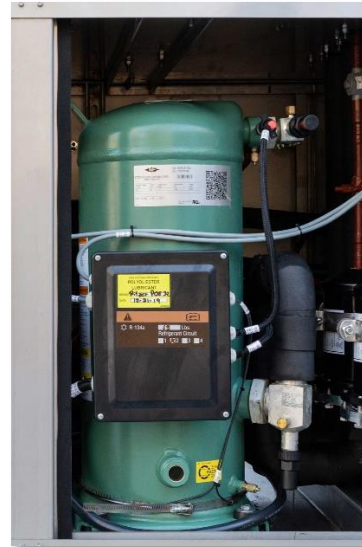
DX and chilled water cooling coils are furnished with copper tubes and aluminum fins. Maximum fin spacing is 12 fins/inch. Options for 90/10 cupro-nickel tubes and coil protective coatings are available upon request.



Compressors

Compressors are scroll design, with oil sight glass, crank case heater, and high/low pressure switches.

Refrigerant is R-410a.



Condensers

Condensers are furnished with 0.035" thick copper tubes with removable heads for tube cleaning. Option for 90/10 cupro-nickel tubes are available upon request.



Filter Driers

Each refrigerant circuit is equipped with suction and discharge service valves, liquid line filter drier with removable cores, liquid sight glass moisture indicator, liquid line solenoid valve, and thermostatic expansion valve.



Water Regulating Valves

Condenser water regulating valves are pressure actuated type with capillary tube to modulate water flow and maintain system head pressure. Valves are shipped loose for field installation.



Electrical Panel

Unit control panel is NEMA 12 rated and mounted on the unit casing. Power supply may be 208-230v/3ph/60hz, 480v/3ph/60hz, or 575v/3ph/60hz.



Unit Casings

Casings are fabricated from 18 gauge 304 stainless steel with fasteners and toolless compression latches that allow for easy removal. Fan sections panels and gasketed doors are insulated with 1" thick closed cell elastomeric foam.



AIR Industrial A/C Products Comparison

	CoolAIR	PreciseAIR	ControlAIR	Commercial
Humidity Control to 72°F/40% RH	No	Yes	Yes	No
Unit Casing and Frame	Single Wall 18 ga Stainless Steel	Single Wall 18 ga Stainless Steel	Double Wall 18 ga Stainless Steel	Varies
Air Handler Panel Insulation	1" Thick Elastomeric Foam	1" Thick Elastomeric Foam	1" Thick Elastomeric Foam	Varies
Access Doors on Each Side	Yes Removable Panels	Yes Removable Panels	Yes Hinged Doors	No
Supply Outlet Backdraft Dampers	Not Required (1 Motor)	Not Required (1 Motor)	Yes	Not Required (1 Motor)
Drain Pan	Double Slope Stainless Steel	Double Slope Stainless Steel	Double Slope Stainless Steel	Varies
Fan Wheel Design	Forward Curved	Forward Curved	Backward Inclined above 20 tons	Forward Curved
Number of Fan Motors (for units with 2 fans)	Dual Fans with 1 TEFC Motor	Dual Fans with 1 TEFC Motor	Independent TEFC Motor for Each Fan	Dual Fans with 1 ODP Motor
Fan Motor Control	Starter	Starter (standard) VFD (option)	VFD	Starter (standard) VFD (option)
Pillow Block Fan Bearings	Standard	Standard	Standard	No
Compressor Design/Modulation	Scroll On/Off	Scroll w/VFD	Reciprocating Cylinder Unloading	Scroll On/Off
Shell and Tube Condensers	Standard	Standard	Standard	Varies
90/10 Cupro-Nickel Condenser Tubes	Option	Option	Option	Varies
Water Regulating Valves (DX)	Capillary (Pressure Actuated)	Capillary (Pressure Actuated)	Electronic	Capillary (Pressure Actuated)
Expansion Valves (DX)	Thermostatic	Thermostatic	Electronic	Thermostatic
Serviceable Filter/Drier	Standard	Standard	Standard	No
Heater Location	Duct Mounted as Specified	Duct Mounted as Specified	Unit Mounted	Varies
Remote Control Panel	No	Option	Option	No
NEMA 4X Control Panel	No	Option	Option	No
Unit Controller	Room Thermostat	Carel PLC (standard) CompactLogix (option)	Carel PLC (standard) CompactLogix (option)	Varies
Ethernet Communications	No	Option	Option	No
Locking Non-Fused Disconnect Switch	No	Option	Option	No

Resources

The following information is available for download: <https://www.air-eng.com/resources>

Product Catalog and IOM Manual

- Catalog-CoolAIR, “Product Catalog - CoolAIR”.
- IOM-CoolAIR, “Installation, Operation, and Maintenance Manual - CoolAIR”.

Drawings

- CoolAIR Dimensional Drawings

Model Designations

- Series BW
- Series BA
- Series BPA
- Series BHW

Guide Specifications

- Series BW
- Series BA
- Series BPA
- Series BHW

Manuals

- IOM-CoolAIR, “Installation, Operation, and Maintenance Manual - CoolAIR”.

Technical Bulletins

- TB-14, “Piping Recommendation for Refrigerant Systems”.
- TB-15, “Condensate Trapping”.
- TB-33, “Blowers Maintenance”.
- TB-60, “Mechanical Water Regulating Valve Hose Installation”.
- TB-63, “T6 Pro Thermostat Installation Instructions”.
- TB-64, “Torque Bolts Generic Assembly”.

Technical Reports

- TR-01, “Pre-startup Checklist”.
- TR-02, “A/C Unit Start-up Report”.

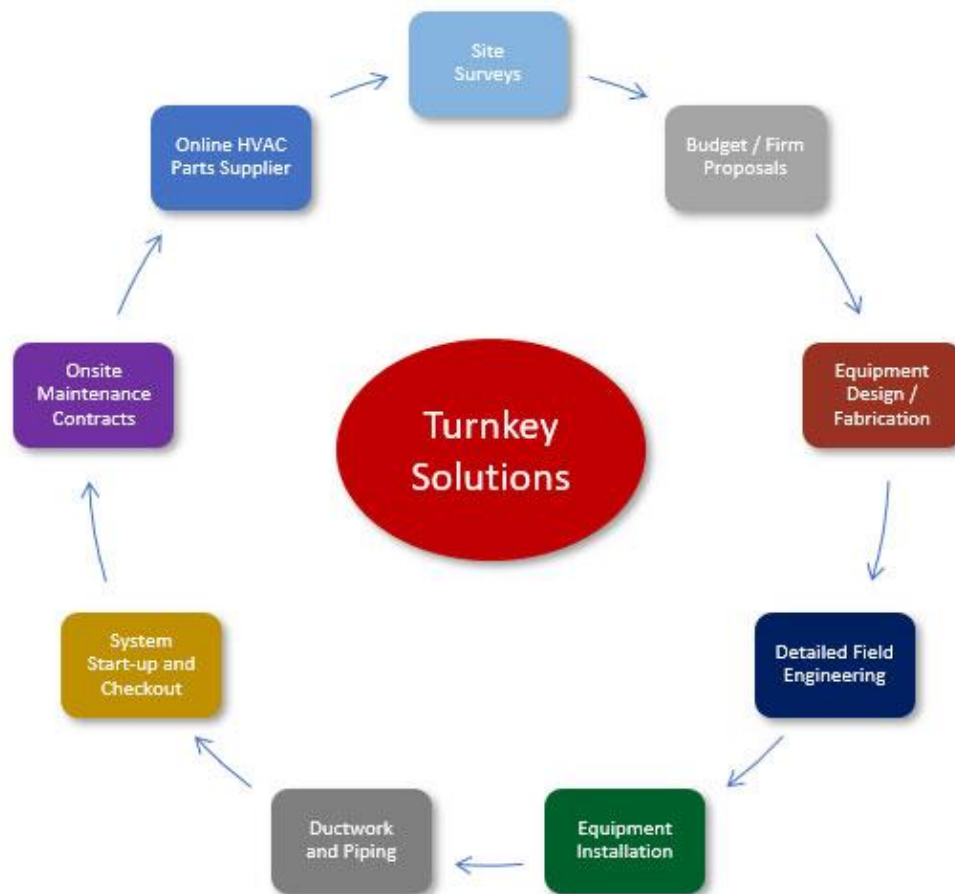
Miscellaneous

- AIR Standard Warranty Policy.

Additional Services

AIR offers additional services to provide a full turnkey mechanical solution for our customers. These include:

- Startup and commissioning support for all AIR equipment by a factory certified technician.
- Detailed mechanical engineering, including design of ductwork, piping, etc.
- Demolition of existing equipment, ductwork, and piping.
- Rental equipment for temporary cooling.
- Furnish and installation of new AIR equipment, including chillers, pump packages, air conditioning units, carbon filtration units, recirculation units, etc.
- Furnish and installation of additional equipment not manufactured by AIR, required for a complete system.
- Fabrication and installation of new ductwork and piping.
- Architectural/structural modifications, as related to the HVAC installation.
- Web based parts supplier for all AIR and other HVAC equipment.
- Permanent on-site maintenance contracts offering continuous support for AIR and other HVAC equipment.



SERIES BW – PACKAGED WATER COOLED DX UNIT

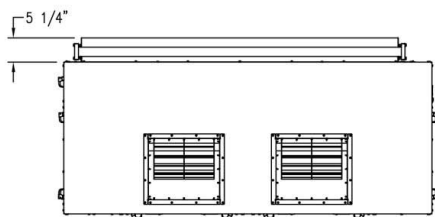
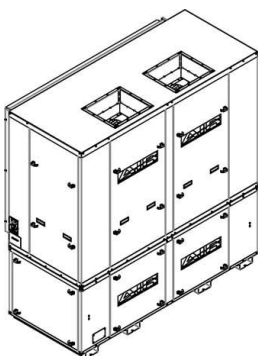
Series BW – Unit Capacities

SERIES BW PERFORMANCE										
Unit Size	BW-090	BW-120	BW-180	BW-240	BW-300	BW-360	BW-480	BW-600	BW-720	
Nominal Tons	7.5	10	15	20	25	30	40	50	60	
Humidity Control	No	No	No	No	No	No	No	No	No	
COMPRESSORS										
# of Ref. Circuits/Compressors	1	1	1	2	2	2	2	2	2	
Compressor Design	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	
Refrigerant Type	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	
EVAPORATOR COILS										
Number of Rows	4	4	4	4	4	4	4	4	4	
Fins per Inch	12	12	12	12	12	12	12	12	12	
Face area (ft ²)	7.5	10.0	15.0	20.0	24.0	30.0	35.0	48.0	54.0	
SUPPLY FANS										
Nominal CFM (total)	3,000	4,000	6,000	8,000	10,000	12,000	16,000	20,000	24,000	
Blower Quantity	1	1	1	2	2	2	2	2	2	
Blower Motor HP	3.0	3.0	7.5	7.5	10.0	15.0	15.0	25.0	25.0	
ENT. AIR	COOLING CAPACITY									
80°F DB 67°F WB	Total (btuh)	102,800	135,000	195,300	259,200	328,800	400,100	522,200	663,800	818,700
	Sensible (btuh)	93,700	97,500	143,400	190,800	299,400	290,400	379,900	481,800	584,500
	Flow (gpm)	25.7	33.8	48.8	64.8	82.2	100.0	130.6	166.0	204.7
75°F DB 62.5°F WB	Total (btuh)	93,700	125,700	179,800	249,000	299,400	373,900	479,300	615,900	755,500
	Sensible (btuh)	72,100	96,500	141,000	189,200	234,300	288,000	371,600	475,900	575,900
	Flow (gpm)	23.4	31.4	45.0	62.3	74.9	93.5	119.8	154.0	188.9
72°F DB 60°F WB	Total (btuh)	89,200	119,100	173,000	239,800	285,100	354,200	458,500	587,200	728,100
	Sensible (btuh)	70,700	94,300	138,900	188,100	229,400	281,300	366,200	466,400	568,200
	Flow (gpm)	22.3	29.8	43.3	60.0	71.3	88.6	114.6	146.8	182.0
POWER REQUIREMENTS (amps)										
MCA/MOP (460v/3ph/60hz)	23.7/ 35	33.5/ 35	45.2/ 70	62.3/ 80	66.4/ 90	82.1/ 105	99.6/ 130	126.1/165	207/ 205	
MCA/MOP (575v/3ph/60hz)	19.1/ 30	28.4/ 45	36.4/ 55	52.7/ 70	48.5/ 65	65.9/ 85	79.9/ 105	100.7/130	123.1/ 165	

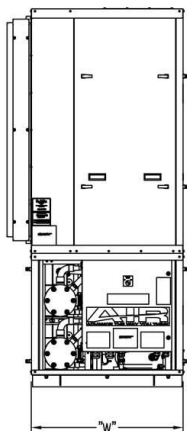
- Condenser water flow based on entering at 85°F, leaving at 95°F.

- Contact AIR's sales staff at info@air-eng.com for a detailed proposal based on your design conditions.

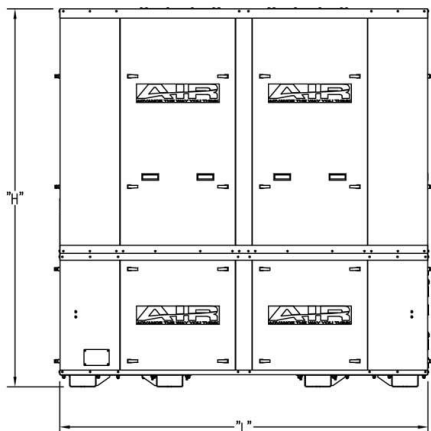
Series BW – Dimensional Info



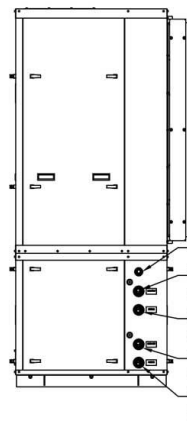
TOP VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

- Condensate Drain 3/4" NPT
- "F" NPT Coupling
Condenser Water Out Circuit 1
- "F" NPT Coupling
Condenser Water In Circuit 1
- "F" NPT Coupling
Condenser Water Out Circuit 2
- "F" NPT Coupling
Condenser Water In Circuit 2

SERIES BW DIMENSIONS

UNIT SIZE	W	L	H	# of Circuits	F	SHIPPING WEIGHT
BW-090	33"	48"	74-5/8"	1	1-1/4" NPT	1,100 LBS
BW-120	33"	55"	74-5/8"	1	1-1/4" NPT	1,200 LBS
BW-180	33"	69"	86-5/8"	1	1-1/2" NPT	1,300 LBS
BW-240	33"	69"	86-5/8"	2	1-1/4" NPT	1,600 LBS
BW-300	33"	80"	86-5/8"	2	1-1/4" NPT	1,800 LBS
BW-360	33"	80"	98-5/8"	2	1-1/2" NPT	2,000 LBS
BW-480	40"	92"	105-5/8"	2	2" NPT	2,400LBS
BW-600	40"	106"	117-5/8"	2	2" NPT	2,700 LBS
BW-720	45	118"	117-5/8"	2	2-1/2" NPT	3,000 LBS

SERIES BA AND BPA – SPLIT SYSTEM AND PACKAGED AIR COOLED DX UNIT

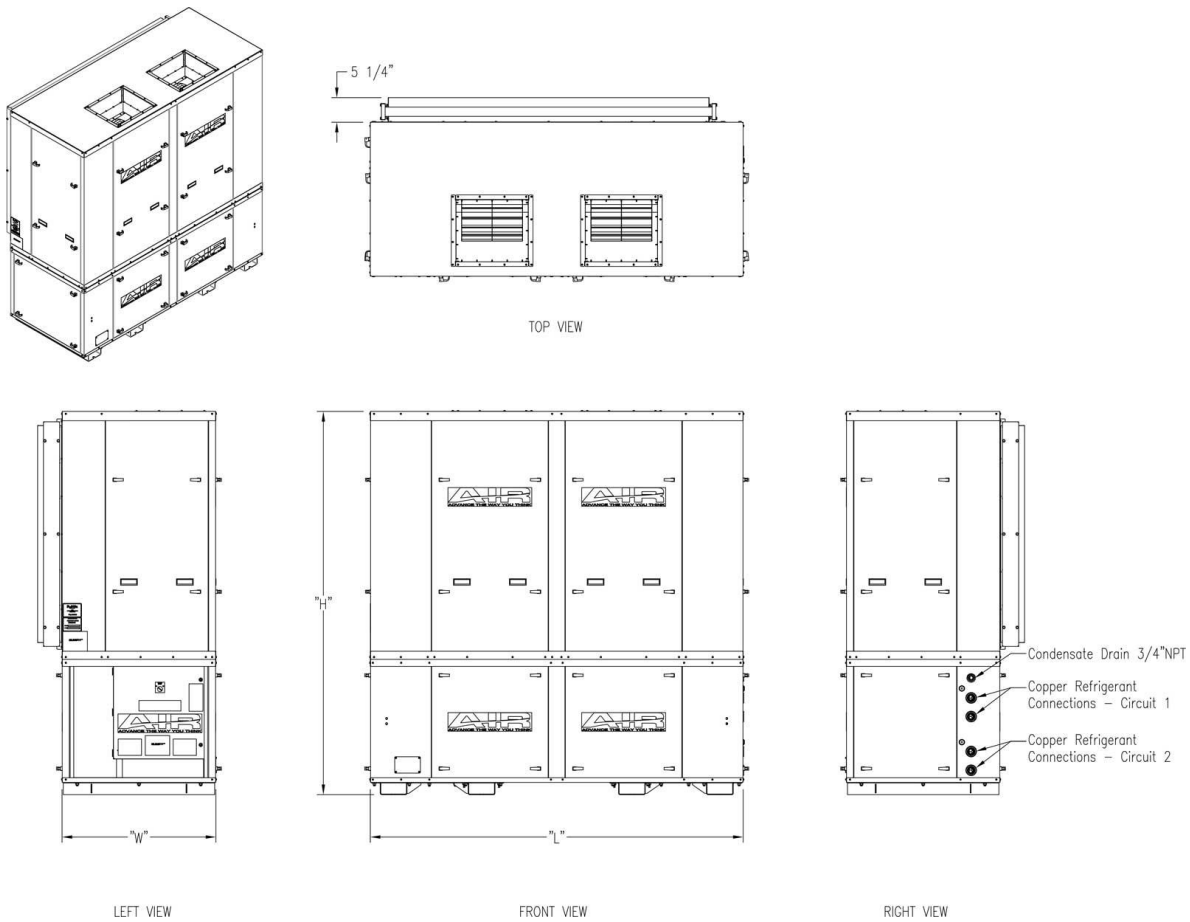
Series BA and BPA – Unit Capacities

SERIES BA/BPA PERFORMANCE										
Unit Size	BA-090 BPA-090	BA-120 BPA-120	BA-180 BPA-180	BA-240 BPA-240	BA-300 BPA-300	BA-360 BPA-360	BA-480 BPA-480	BA-600 BPA-600	BA-720 BPA-720	
Nominal Tons	7.5	10	15	20	25	30	40	50	60	
Humidity Control	No	No	No	No	No	No	No	No	No	
COMPRESSORS										
# of Ref. Circuits/Compressors	1	1	1	2	2	2	2	2	2	
Compressor Design	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	
Refrigerant Type	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	R-410a	
EVAPORATOR COILS										
Number of Rows	4	4	4	4	4	4	4	4	4	
Fins per Inch	12	12	12	12	12	12	12	12	12	
Face area (ft ²)	7.5	10.0	15.0	20.0	24.0	30.0	35.0	48.0	54.0	
SUPPLY FANS										
Nominal CFM (total)	3,000	4,000	6,000	8,000	10,000	12,000	16,000	20,000	24,000	
Blower Quantity	1	1	1	2	2	2	2	2	2	
Blower Motor HP	3.0	3.0	7.5	7.5	10.0	15.0	15.0	25.0	25.0	
ENT. AIR	COOLING CAPACITY									
80°F DB 67°F WB	Total (btuh)	101,200	133,600	192,300	255,300	323,900	396,100	517,000	657,200	810,500
	Sensible (btuh)	72,500	96,000	141,200	187,900	236,100	287,500	376,100	477,000	578,600
75°F DB 62.5°F WB	Total (btuh)	92,300	123,600	177,100	248,300	294,900	370,200	474,200	609,700	747,900
	Sensible (btuh)	71,000	95,100	138,900	186,400	230,800	285,100	367,900	471,200	570,200
72°F DB 60°F WB	Total (btuh)	89,200	117,300	170,400	236,200	280,800	350,700	453,900	581,300	720,800
	Sensible (btuh)	69,300	92,300	136,800	185,300	225,900	278,500	362,500	461,700	562,200
POWER REQUIREMENTS (amps) - Air Handling Unit										
MCA/MOP (460v/3ph/60hz)	23.7/ 35	33.5/ 55	45.2/ 70	62.3/ 80	66.4/ 90	82.1/ 105	99.6/ 130	126.1/ 165	154.0/ 205	
MCA/MOP (575v/3ph/60hz)	19.1/ 30	28.4/ 45	36.4/ 55	52.7/ 70	48.5/ 65	65.9/	79.9/ 105	100.7/ 130	123.1/ 165	
AIR COOLED CONDENSER										
Blower Quantity	1	2	2	2	2	2	2	4	4	
Blower Motor HP (standard)	3.7	3.7	3.7	4.2	4.2	4.2	4.2	3.7	4.2	
POWER REQUIREMENTS (amps) - Air Cooled Condensing Unit										
MCA/MOP (460v/3ph/60hz)	5.0/ 15	9.0/ 15	9.0/ 15	10.1/ 15	10.1/ 15	10.1/ 15	10.1/ 15	15.1/ 20	19.1/ 25	
MCA/MOP (575v/3ph/60hz)	4.6/ 15	8.3/ 15	8.3/ 15	9.3 15	9.3 15	9.3 15	9.3 15	14.8/ 20	17.6/ 25	

- Capacities based on the air cooled condenser location 95°F ambient temperature.

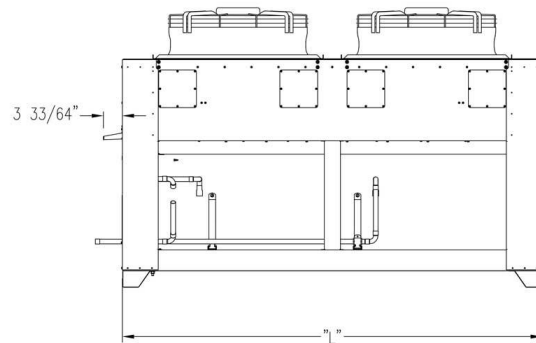
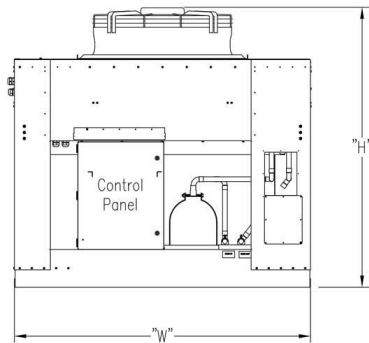
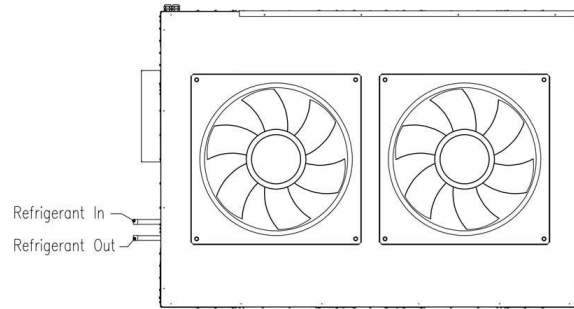
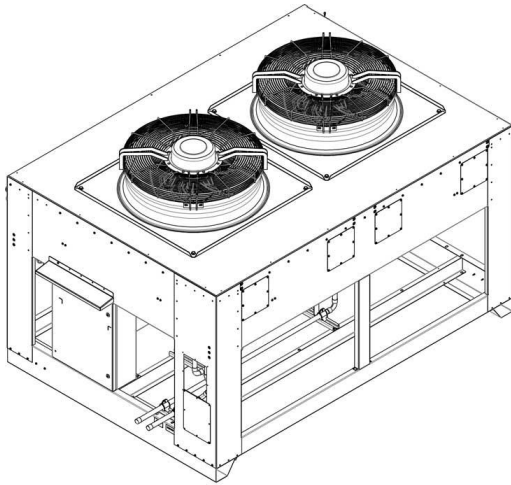
- Contact AIR's sales staff at info@air-eng.com for a detailed proposal based on your design conditions.

Series BA – Dimensional Info (AHU)



Series BA – Dimensional Info (Air Cooled Condenser)

SERIES BA AHU DIMENSIONS					
UNIT SIZE	W	L	H	# of Circuits	SHIPPING WEIGHT
BA-090	33"	48"	74-5/8"	1	1,000 LBS
BA-120	33"	55"	74-5/8"	1	1,100 LBS
BA-180	33"	69"	86-5/8"	1	1,200 LBS
BA-240	33"	69"	86-5/8"	2	1,400 LBS
BA-300	33"	80"	86-5/8"	2	1,600 LBS
BA-360	33"	80"	98-5/8"	2	1,800 LBS
BA-480	40"	92"	105-5/8"	2	2,100 LBS
BA-600	40"	106"	117-5/8"	2	2,400 LBS
BA-720	45	118"	117-5/8"	2	2,700 LBS



SERIES BA AIR COOLED CONDENSER DIMENSIONS

UNIT SIZE	W	L	H	SHIPPING WEIGHT
BA-090	42"	58"	52"	500 LBS
BA-120	42"	74-1/2"	52"	720 LBS
BA-180	44"	84-1/2"	54"	850 LBS
BA-240	57"	90"	59"	1,380 LBS
BA-300	57"	90"	59"	1,380 LBS
BA-360	59"	92"	63"	1,750 LBS
BA-480	59"	92"	63"	1,850 LBS
BA-600	93"	104"	63"	2,150 LBS
BA-720	97"	104"	71"	2,300 LBS

SERIES BHW – CHILLED WATER AIR HANDLING UNIT

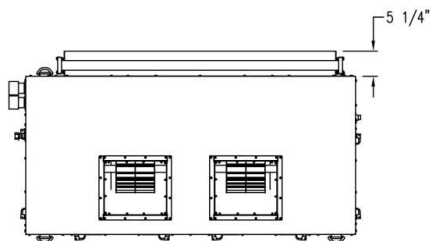
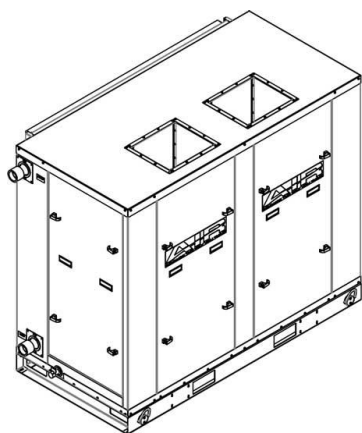
Series BHW – Unit Capacities

SERIES BHW PERFORMANCE										
Unit Size	BHW-090	BHW-120	BHW-180	BHW-240	BHW-300	BHW-360	BHW-480	BHW-600	BHW-720	
Nominal Tons	7.5	10	15	20	25	30	40	50	60	
Humidity Control	No	No	No	No	No	No	No	No	No	
CHILLED WATER COILS										
Number of Rows	4	4	4	4	4	4	4	4	4	
Fins per Inch	12	12	12	10	12	12	12	12	10	
Face area (ft ²)	7.5	10.0	15.0	20.0	24.0	30.0	35.0	48.0	54.0	
SUPPLY FANS										
Nominal CFM (total)	3,000	4,000	6,000	8,000	10,000	12,000	16,000	20,000	24,000	
Blower Quantity	1	1	1	2	2	2	2	2	2	
Blower Motor HP	3.0	3.0	7.5	7.5	10.0	15.0	15.0	25.0	25.0	
ENT. AIR	COOLING CAPACITY									
80°F DB 67°F WB	Total (btuh)	132,600	174,400	260,900	339,900	434,400	531,900	623,500	824,600	931,000
	Sensible (btuh)	90,300	122,400	178,900	234,000	297,800	362,000	464,000	577,000	663,500
	Flow (gpm)	25.5	35.0	52.0	75.0	82.0	103.0	125.0	165.0	185.0
75°F DB 62.5°F WB	Total (btuh)	94,300	122,400	181,300	238,900	310,500	37,600	452,900	571,700	650,600
	Sensible (btuh)	76,400	100,300	149,400	196,700	252,600	304,900	384,000	483,000	557,800
	Flow (gpm)	19.0	25.0	36.0	53.0	62.0	75.0	100.0	115.0	130.0
72°F DB 60°F WB	Total (btuh)	75,300	98,000	145,500	194,000	301,400	301,400	362,100	450,300	524,600
	Sensible (btuh)	67,700	89,100	132,900	175,900	270,900	270,900	340,200	425,300	494,600
	Flow (gpm)	15.0	20.0	29.0	44.0	60.0	60.0	80.0	90.0	105.0
POWER REQUIREMENTS (amps)										
MCA/MOP (208-230v/3ph/60hz)	14.5 / 25	14.5 / 25	31.5 / 50	31.5 / 50	39.7 / 70	59.0 / 105	59.0 / 105	99.0 / 175	99.0 / 175	
MCA/MOP (460v/3ph/60hz)	5.3 / 15	5.3 / 15	11.5 / 20	11.5 / 20	11.5 / 20	21.5 / 45	21.5 / 45	34.5 / 75	34.5 / 75	
MCA/MOP (575v/3ph/60hz)	4.3 / 15	4.3 / 15	9.4 / 11.7	9.4 / 11.7	9.4 / 11.7	17.4 / 35	17.4 / 35	34.2 / 60	34.2 / 60	

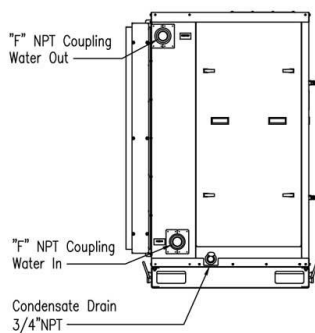
- Capacity based on chilled water entering at 45°F, leaving at 55°F.

- Contact AIR's sales staff at info@air-eng.com for a detailed proposal based on your design conditions.

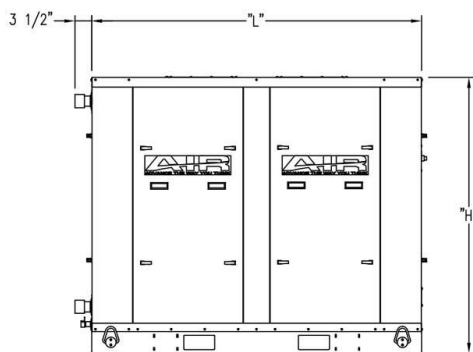
Series BHW – Dimensional Info



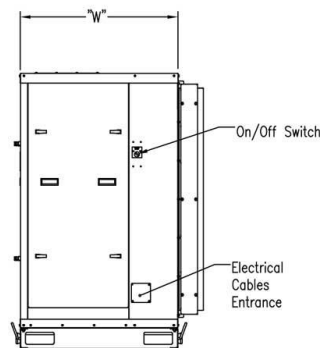
TOP VIEW



LEFT VIEW



FRONT VIEW



RIGHT VIEW

SERIES BHW DIMENSIONS

UNIT SIZE	W	L	H	F	SHIPPING WEIGHT
BHW-090	33"	48"	46"	1-1/4" NPT	700 LBS
BHW-120	33"	55"	52"	1-1/4" NPT	850 LBS
BHW-180	33"	69"	52"	1-1/2" NPT	1,000 LBS
BHW-240	33"	69"	58"	1-1/2" NPT	1,250 LBS
BHW-300	33"	80"	58"	2" Flange	1,500 LBS
BHW-360	33"	80"	70"	2" Flange	1,730 LBS
BHW-480	40"	92"	70"	2-1/2" Flange	2,000 LBS
BHW-600	40"	106"	82"	2-1/2" Flange	2,400 LBS
BHW-720	45"	118"	82"	2-1/2" Flange	2,800 LBS

Air Conditioning Products



CoolAIR
Cooling only
7.5 to 60 tons



PreciseAIR
Humidity control
to 72°F/40% RH
7.5 to 60 tons



ControlAIR
Humidity control
to 72°F/40% RH
Highest level of
reliability
3 to 60 tons

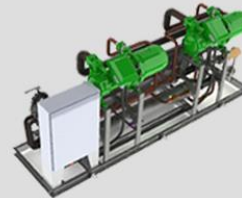
Chiller Products



ModulAIR
Modular chiller
with reciprocating
compressors
8 to 55 tons
per module



ModulAIR
Modular chiller
with reciprocating
compressors
10 to 40 tons
per module

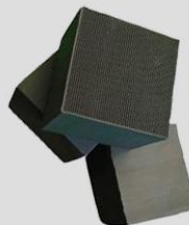


**Rotary Screw
Chiller**
Air or water cooled
chillers with
rotary screw
compressors
Up to 300 tons

Carbon Filtration Products



AdsorbAIR
Vertical upflow tub
vapor adsorber with
pellet media



MatrixAIR
Vapor adsorber with
matrix media



RecircAIR
Room recirculation
unit, pellet or matrix
media designs

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