



Engineering Specification

ATA-75-HACW-P-*T-SDE*F Central Air to Air Heat Pump R410a, 60 Hz



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002688SPC-01

Model Nomenclature

Indoor Unit:

ATA-75-HACW-P-1T-SDELf-xx

Series:

ATA = Air To Air heat pump

Nominal Size:

25 = 020 compressor
 45 = 030 compressor
 55 = 040 compressor
 65 = 051 compressor
 75 = 060 compressor

Functions:

H = Heating
 AC = Active Cooling
 W = domestic hot Water

Refrigerant:

P = R410a

Voltage Code:

1 = 230-1-60 VAC
 2 = 208-3-60 VAC
 4 = 460-3-60 VAC

Revision:

01, 02 etc.

Air Outlet Orientation:

F = Field configurable

Air Return Orientation:

L = Left return
 R = Right return

Blower Motor:

E = ECM (variable speed)

Fan Type:

D = Direct drive

Air Coil:

S = standard

Compressor:

T = 2 stage scroll

APPLICATION TABLE - INDOOR UNIT										
SIZE	FUNCTION	REFRIGERANT	VOLTAGE	COMPRESSOR	BLOWER	REVISIONS				
ATA-75	H A C W	P	1 2 4	T	S D E L F S D E R F	03				

Matching Outdoor Unit:

ACE - 75 - P - 1/6 - SDE - xx

Series:

ACE = All weather Condenser / Evaporator

Nominal Size:

75 = matched to size 75 indoor unit

Refrigerant:

P = R410a

Revision:

01, 02, etc.

Fan:

D = Direct Drive
 E = EC motor

Air Coil:

S = Standard
 K = Coated

Voltage Code:

1/6 = 208/230-1-60 or
 220-1-50

APPLICATION TABLE - OUTDOOR UNIT										
SERIES	SIZE	REFRIGERANT	VOLTAGE	AIR COIL	FAN	REVISIONS				
ACE	75	P	1/6	K	D E	08				

Maritime Geothermal Ltd. has a continuous improvement policy and reserves the right to modify specification data at any time without prior notice .

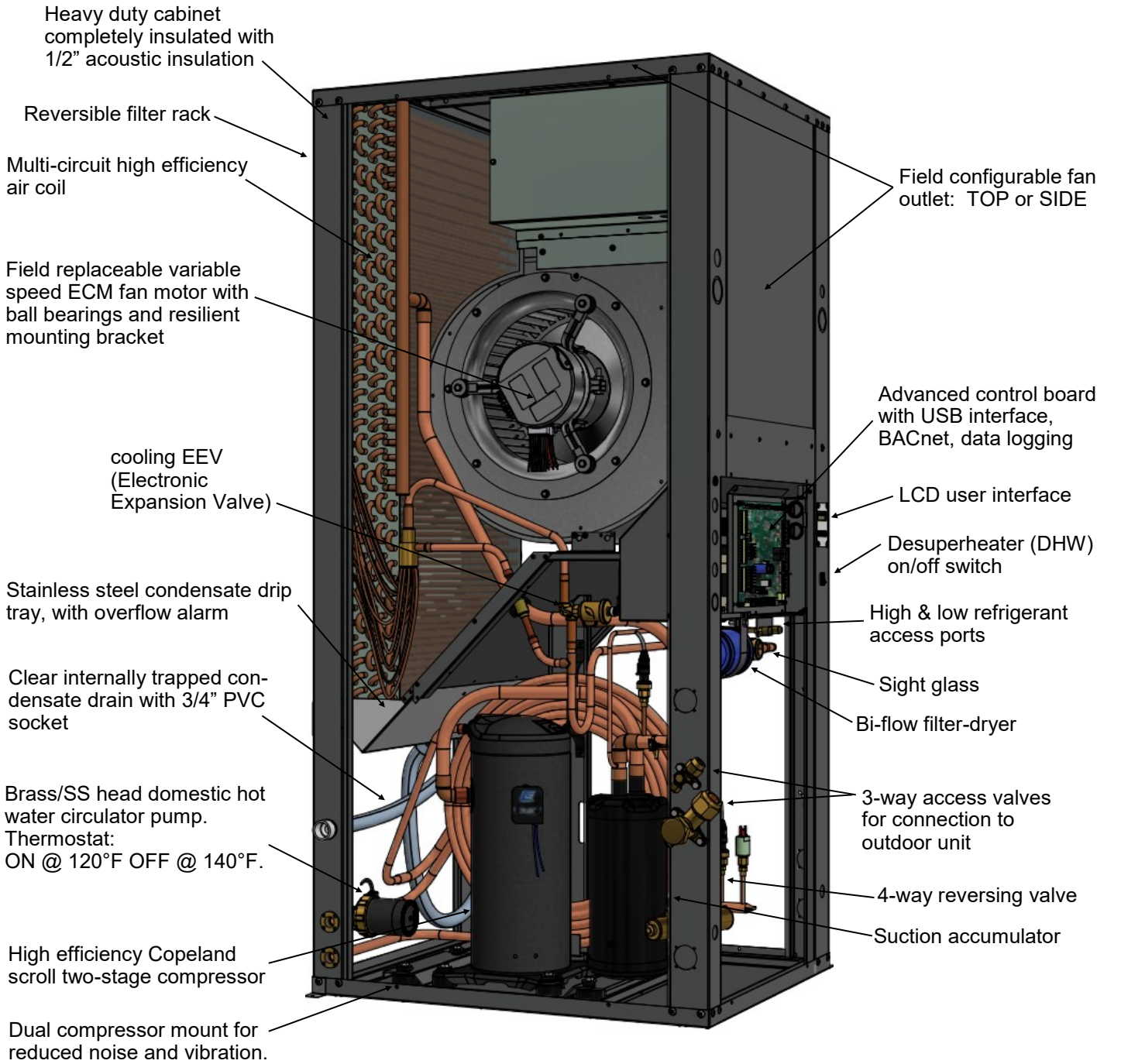
Design Features

- Split air to air heat pump system with compressor and electronics completely indoors
- Easy refrigerant connection between indoor and outdoor units using 3-way access valves, like a mini split
- Sturdy satin galvanized indoor and outdoor cabinets with powder coat finish
- Electrical box mounted high for unobstructed access to compressor; layout allows easy access for service
- Copeland 2-stage scroll compressor with start capacitor kit on single phase models
- Dual grommet mounting system for compressor and acoustically insulated indoor cabinet for quiet operation
- ECM fan motor with single side service access
- Field configurable fan outlet position: top or side
- Optional plenum heater can be internally mounted with top fan outlet configuration
- Reversible air filter rack
- Stainless steel condensate drip tray
- Clear condensate drain with 3/4" PVC socket connection, internally trapped
- Multi-circuit high efficiency air coil
- Refrigeration service ports located inside unit (1/4" Schrader)
- Indoor cabinet completely insulated to abate noise
- Suction line accumulator for compressor protection
- Two Electronic Expansion Valves (EEVs)
- Outdoor air heat exchanger coated for corrosion protection, as a standard feature
- High and low refrigerant pressure sensors
- Temperature sensors on both water lines and refrigerant suction line
- Advanced control board with BACnet interface for remote operation and data access including all sensor data and alarm conditions, PWM outputs (or 0-10VDC), configurable analog inputs (0-5VDC or 4-20mA) with onboard 5VDC, 12VDC and 24VDC power supplies.
- USB port for complete data access including real-time charting, data logging, and diagnostic functionality with manual override operation; free PC App software included
- LCD user interface
- Double wall Domestic Hot Water desuperheater for heating potable water
- Built in brass/SS head circulator for domestic hot water circuit
- 1/2" brass FPT fittings for Domestic Hot Water connections
- TUV listed for electrical certification (CSA / UL / ETL equivalent)

Options & Accessories

- 3-stage heat / 2-stage cool programmable thermostat, Wifi and standard versions
- Anti-vibration pad for under indoor unit
- Compressor sound jacket
- Secure Start or Easy Start module
- Passive electrostatic cleanable permanent air filter
- Electric plenum heaters 5 / 7 / 10 / 15 / 20 kW, internally mountable for top fan outlet configuration
- Compressor current sensor

Design Features - Indoor Unit



Start capacitor kit standard on all single phase models

Design Features - Outdoor Unit

Minimal components in outdoor unit, for maximum component life and ease of service

Fully removable side panel, for access to field connection points and all components

Side cover protects and conceals field piping & wiring

Swing out fan panel for easy fan access & serviceability

Heating EEV, check valve, and piping located at side, out of airflow

Outdoor temperature sensor reads out on indoor unit

Visor protects motors from water ingress and immobilization from freezing

EC (electronically commutated) fan hub motors, for full variable speed operation and maximum energy efficiency

Heavy duty cabinet, constructed of powder coated galvanized components

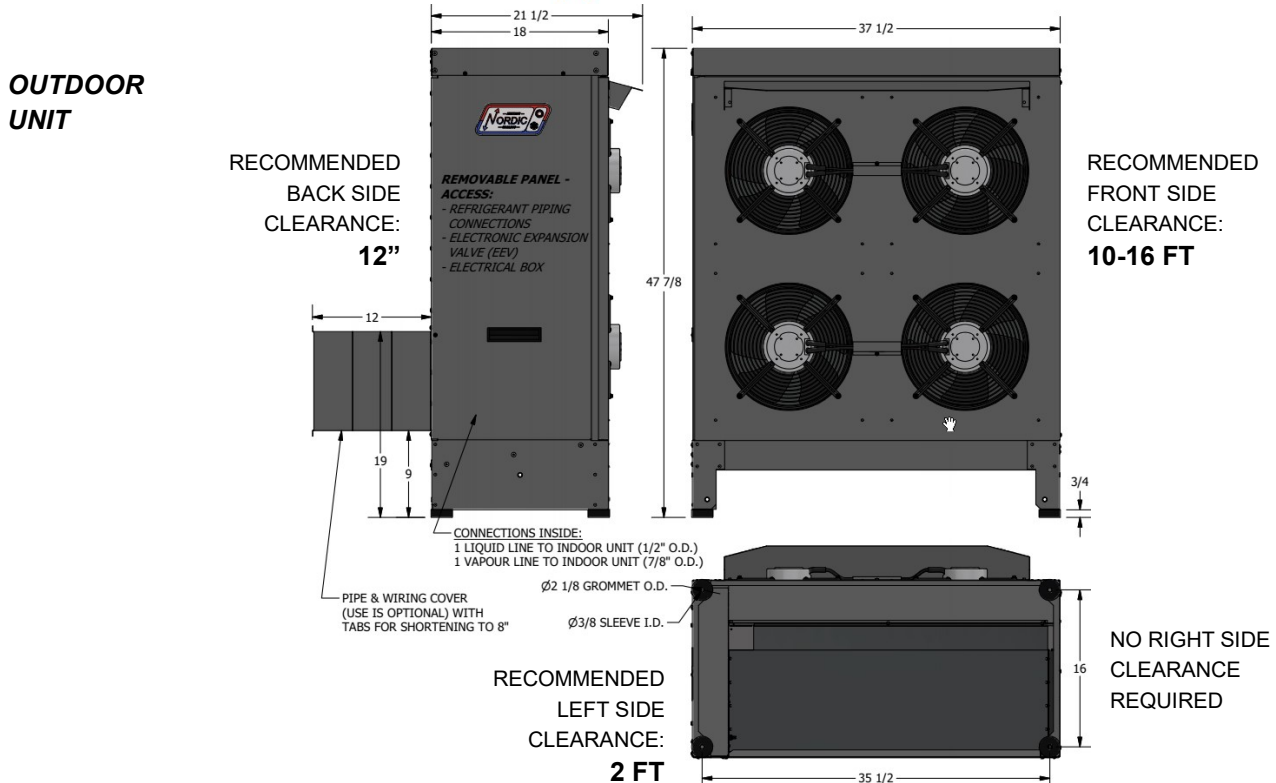
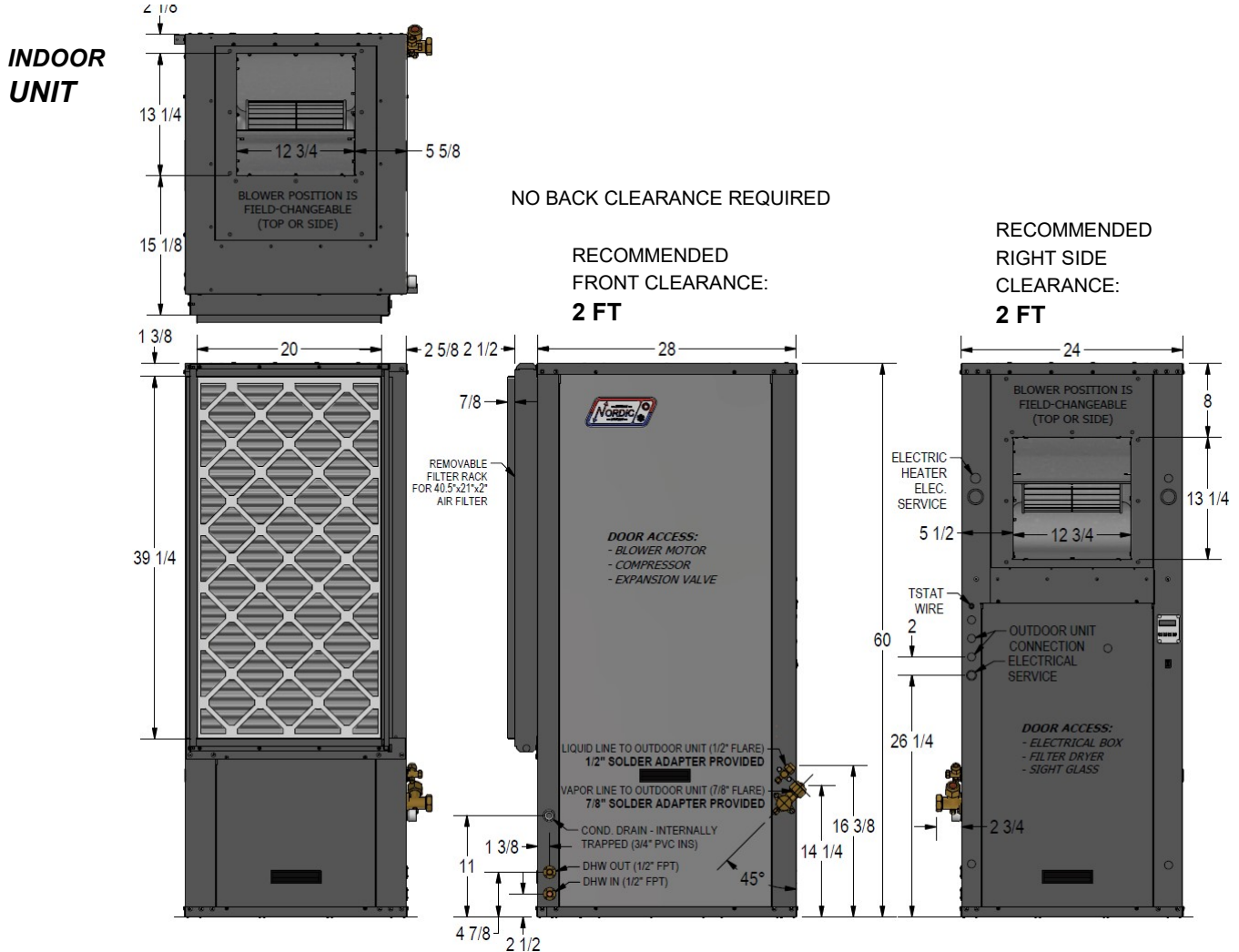
Mounting grommets for vibration isolation

Air coil with heavy duty fins, installed at slant for most effective condensate runoff and no drip tray where condensate could re-freeze

Intelligent defrost logic eliminates unnecessary defrosts and ensures complete defrost each time

Dimensions (with Left Return Indoor Unit)

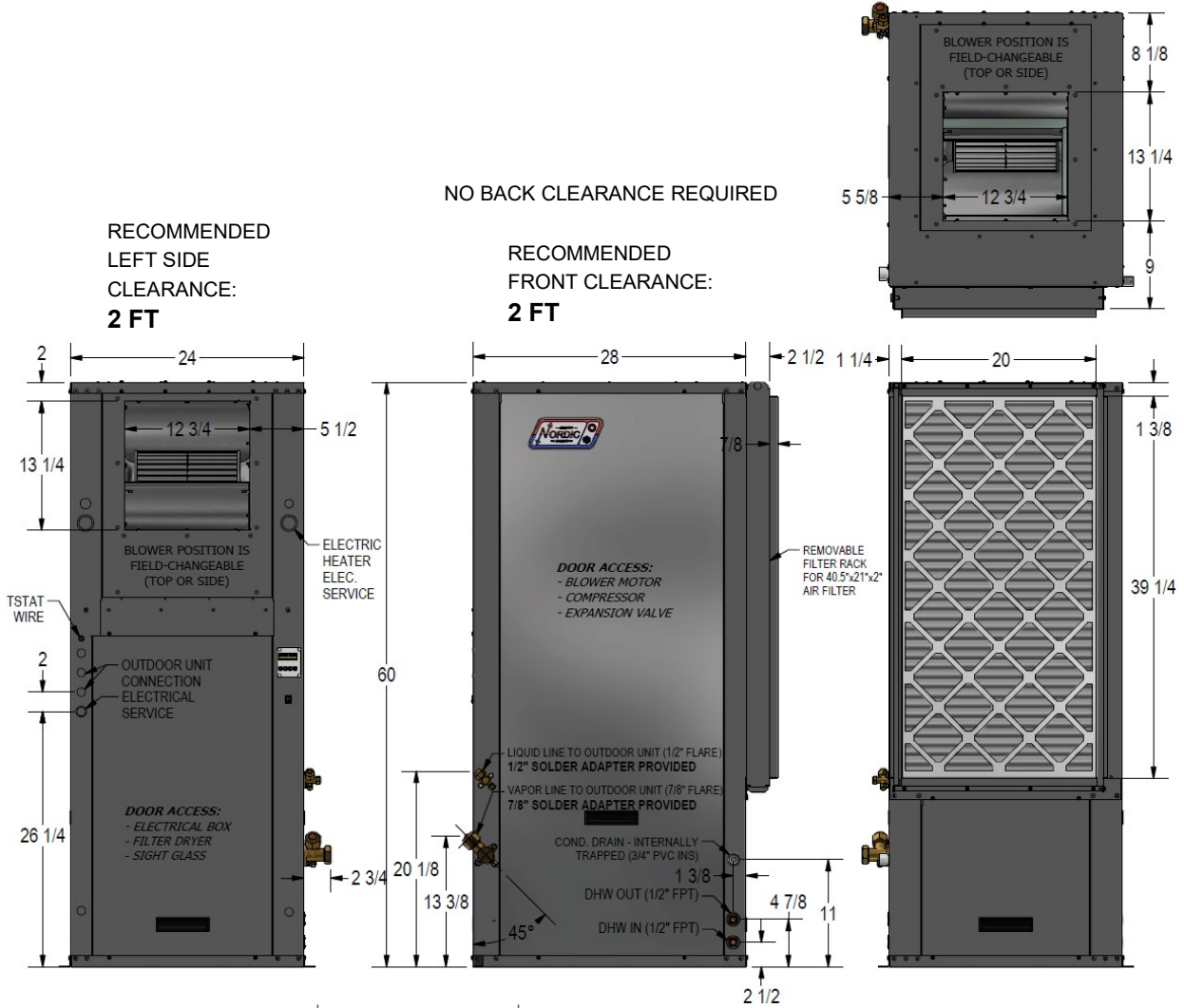
All dimensions in inches



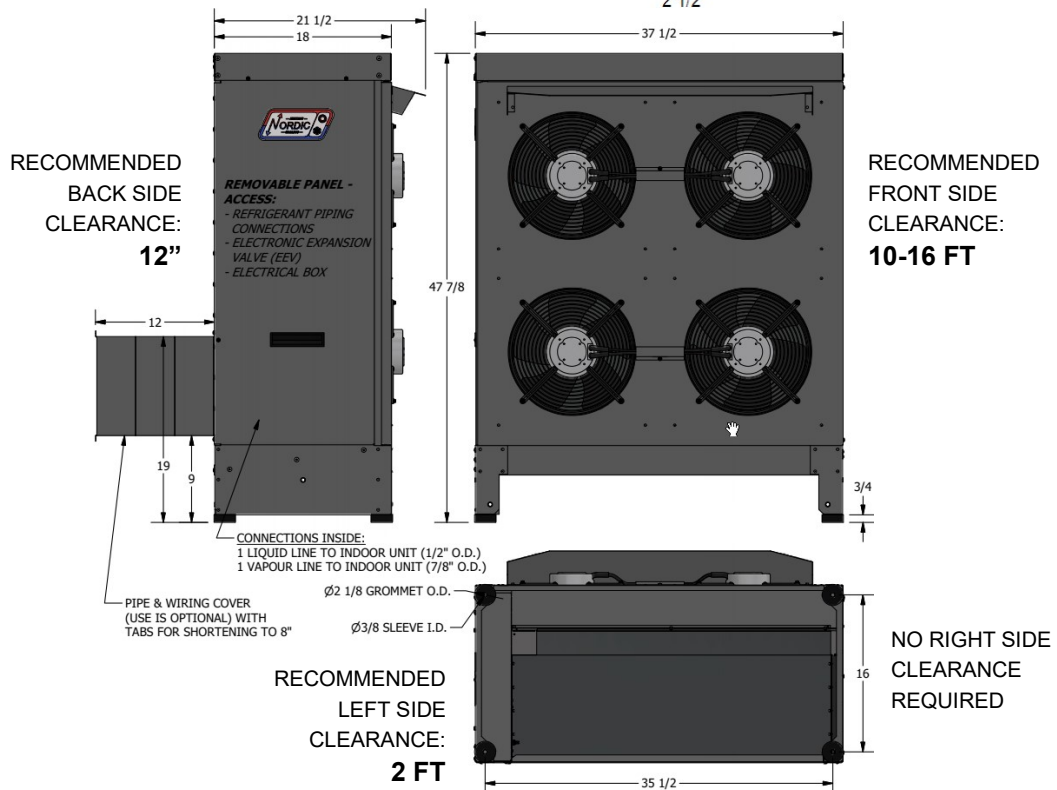
Dimensions (with Right Return Indoor Unit)

All dimensions in inches

INDOOR UNIT

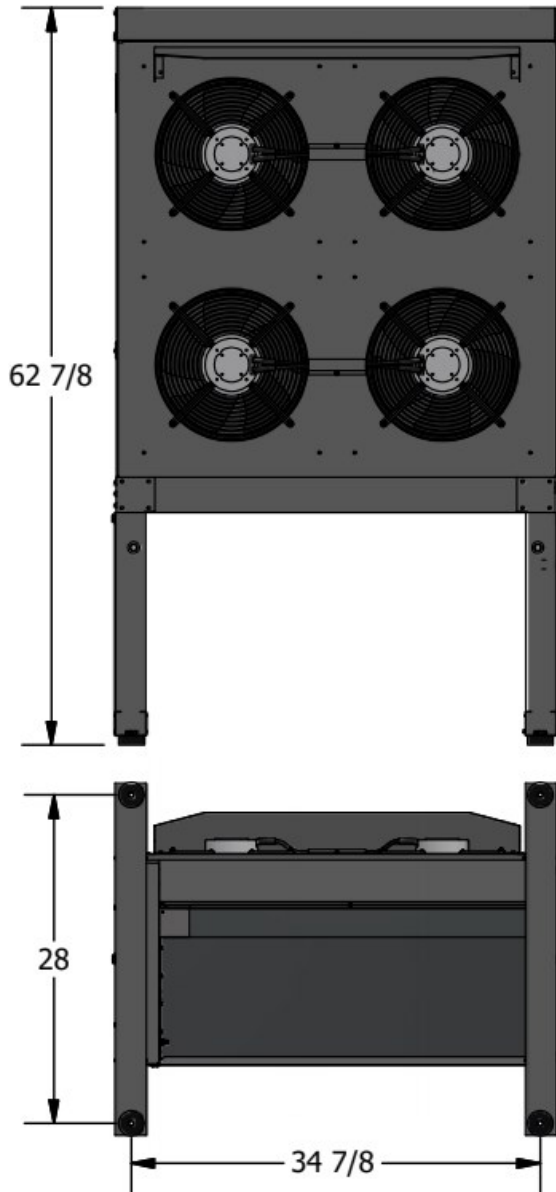


OUTDOOR UNIT

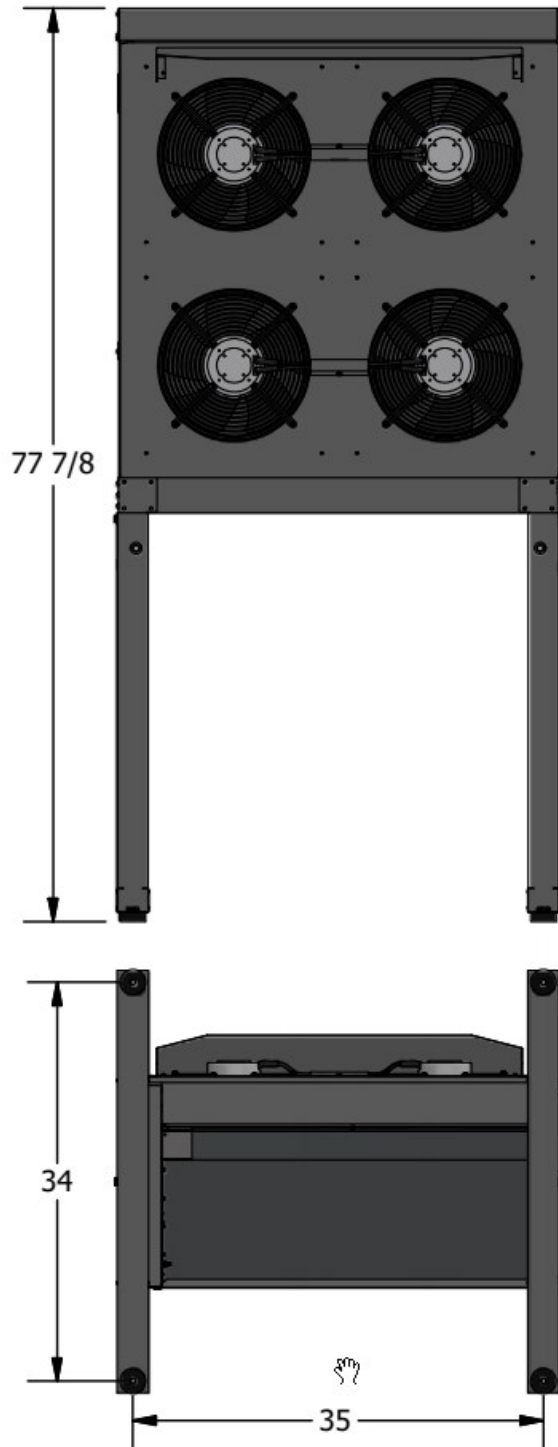


Dimensions: Leg Kit for Outdoor Unit

WITH LEG KIT



WITH TALL LEG KIT



Specifications

Heat Pump Electrical Specifications												
	Code	Power Supply			Compressor		Indoor Fan	Outdoor Unit	FLA	MCA	Max. Breaker	Min. Wire
		V-φ-Hz	MIN	MAX	RLA	LRA	Max A	Max A	Amps	Amps	Amps	ga
ATA-75	1	208/230-1-60	187	253	27.6	190	6.5	3.0	37.9	44.8	60	#6-2
	2	208-3-60	187	229	18.6	149	6.5	3.0	28.9	33.6	50	#8-3
	4	460-3-60	414	506	9.0	61	6.5	3.0	17.9	20.2	30	#10-4

Plenum Heater Electrical Specifications															
Nominal (kW)	(230-1-60)					(208-1-60)					(220-1-50)				
	Actual (kW)	FLA (A)	MCA (A)	Breaker (A)	Wire Size	Actual (kW)	FLA (A)	MCA (A)	Breaker (A)	Wire Size	Actual (kW)	FLA (A)	MCA (A)	Breaker (A)	Wire Size
5	5	20.8	26.0	30	#10	3.8	18.1	22.6	30	#10	4.2	19.1	19.1	30	#10
7	7	29.2	36.5	40	#8	5.3	25.3	31.6	40	#8	5.9	26.7	26.7	40	#6
10	10	41.7	52.1	60	#6	7.5	36.1	45.1	50	#6	8.4	38.1	38.1	50	#6
15	15	62.5	78.1	80	#4	11.3	54.2	67.7	80	#4	12.6	57.2	57.2	80	#3
20	20	83.3	104.2	100	#3	15.0	72.2	90.3	100	#3	16.8	76.3	76.3	100	#3

Refrigerant Charge				
MODEL	lb	kg	Refrigerant	Oil Type
ATA-75	13.0	5.9	R410a	POE

- Oil capacity is marked on the compressor label.
 - Refrigerant charge is subject to revision; actual charge is indicated on the unit nameplate.

Shipping Information				
ITEM	WEIGHT lb. (kg)	DIMENSIONS in (cm)		
		L	W	H
ATA-75 Indoor Unit	505 (229)	38 (97)	30 (76)	65 (165)
ACE-75 Outdoor Unit	295 (134)	36 (91)	70 (178)	56 (142)

Line Set Sizing		
ATA-75	Vapour line O.D.	7/8"
	Liquid line O.D.	1/2"



IMPORTANT NOTE: The line set between the indoor and outdoor units must not exceed 70 ft. (21 m) in length.

Indoor Unit Sound Levels (dBA)*		
MODEL	1 ft distance	3 ft distance
ATA-75	65.5	64.8

* With all doors installed.

Outdoor Unit Sound Levels (dBA)*								
MODEL	1 ft distance		3 ft distance		5 ft distance		10 ft distance	
	Front	Side	Front	Sides	Front	Sides	Front	Sides
ATA-75	71.7	66.8	68.7	63.7	65.7	61.2	60.0	57.1

* At maximum fan speed. This occurs in heating mode, or in cooling mode with outdoor greater than ~27°C.

Operating Temperature Limits					
Loop	Mode	Parameter	(°F)	(°C)	Note
Indoor	Heating	Minimum EAT	60	15	
	Heating	Maximum EAT	100	38	
	Cooling	Minimum EAT	50	10	
	Cooling	Maximum EAT	100	38	
Outdoor	Heating	Minimum EAT	-7	-22	Compressor automatically stops below this outdoor temperature.
	Cooling	Maximum EAT	120	49	Compressor automatically stops above this outdoor temperature.

BACnet Specifications
See <i>Application, Installation, & Service Manual: ATW Series</i>

Indoor Airflow Data

Indoor Airflow												
Mode	Nominal		Range		Airflow Reduction - 20%		Airflow Reduction - 15%		Airflow Reduction - 10%		Airflow Reduction - 5%	
	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s	cfm	L/s
Stg2	2200	1040	1750-2500	830-1180	1760	830	1870	880	1980	940	2090	990
Stg1	1750	830	1400-2100	660-990	1400	660	1490	700	1580	740	1660	790
AUX	2200	1040	2000-2500	940-1180	1760	830	1870	880	1980	940	2090	990
Recirc	1250	590	1000-1500	470-710	1000	470	1060	500	1130	530	1190	560
EM	2000	940										

Maximum external static pressure:
0.50in H₂O

To obtain the AR airflow values, use a dry contact to connect AR to 24VAC on the right side of control board.
Airflow reduction % is set through PC App.

Indoor Airflow Reduction for Outdoor Temperature			
Outdoor Temperature		Airflow Reduction	Airflow
> 45°F	> 7°C	0%	100%
30 to 45°F	-1 to 7°C	-5%	95%
25 to 30°F	-4 to -1°C	-10%	90%
20 to 25°F	-7 to -4°C	-15%	85%
15 to 20°F	-9 to -7°C	-20%	80%
10 to 15°F	-12 to -9°C	-25%	75%
5 to 10°F	-15 to -12°C	-30%	70%
0 to 5°F	-18 to -15°C	-35%	65%
< 0°F	< -18°C	-40%	60%

Standard Capacity Ratings

Standard CSA C656 (ARI 210-240).

Standard Capacity Ratings - Heating													60 Hz			
Indoor Air 70°F (21°C) db / 60°F (15.6°C) wb				H12 - Outdoor Air 47°F (8.3°C)				H22 - Outdoor Air 35°F (1.7°C)				H32 - Outdoor Air 17°F (-8.3°C)				
Model	Indoor Airflow		Stage	Input Energy Watts	Capacity		COP _H W/W	Input Energy Watts	Capacity		COP _H W/W	Input Energy Watts	Capacity		COP _H W/W	
	cfm	L/s			Btu/hr	kW			Btu/hr	kW			Btu/hr	kW		
75	2100	991	2	4,550	59,400	17.4	3.83	4,485	50,700	14.9	3.31	4,295	39,000	11.4	2.66	

Standard Capacity Ratings - Cooling													60 Hz			
Indoor Air 80°F (26.7°C) DB / 67°F (19.°C) WB / 50% RH				B2 - Outdoor Air 82°F (27.8°C)					A2 - Outdoor Air 95°F (35°C)							
Model	Indoor Airflow		Stage	Input Energy Watts	Capacity		EER Btu/W-hr	COP _C W/W	Input Energy Watts	Capacity		EER Btu/W-hr	COP _C W/W			
	cfm	L/s			Btu/hr	kW				Btu/hr	kW					
75	2100	991	2	4,385	64,600	18.9	14.7	4.31	5,010	59,200	17.4	11.8	3.46			

Air Heating/Cooling Performance

ATA-75-HACW-P-1T R410a, 60 Hz, ZPS60K5E-PFV

	OUTDOOR LOOP (Air)			ELECTRICAL			INDOOR LOOP (Air)						
	Outdoor Air Temperature	Evaporating Temperature	Heat Absorbed (Btu/hr)	Compressor Current (A)	Fan (W)	Input Power (W)	EAT	Cond. Temp.	Airflow (cfm)	LAT (°F)	Delta T (°F)	Heating (Btu/hr)	COP _H
HEATING	-5°F	-17	12,161	18.6	410	4,028	70°F	92	2,100	82	12	25,910	1.88
	5°F	-8	17,560	19.4	410	4,159		96	2,100	85	15	31,754	2.24
	15°F	0	23,143	20.2	410	4,293		100	2,100	88	18	37,797	2.58
	25°F	8	29,197	21.1	410	4,387		104	2,100	91	21	44,171	2.95
	35°F	17	35,401	21.9	410	4,486		108	2,100	94	24	50,710	3.31
	45°F	25	42,073	22.8	410	4,552		112	2,100	97	27	57,608	3.71
	55°F	34	48,649	23.7	410	4,657		116	2,100	101	31	64,544	4.06
	65°F	42	55,597	24.6	410	4,807		120	2,100	104	34	72,005	4.39

	OUTDOOR LOOP (Air)			ELECTRICAL			INDOOR LOOP (Air @ 50% RH)								
	Outdoor Air Temperature	Condensing Temperature	Heat Rejected (Btu/hr)	Compressor Current (A)	Fan (W)	Input Power (W)	EAT	Evap. Temp.	Airflow (cfm)	LAT (°F)	Delta T (°F)	Latent (Btu/hr)	Sensible (Btu/hr)	Cooling (Btu/hr)	EER
COOLING	50°F	63	88,261	14.0	450	3,311	80°F	46	2,100	55	25	23,167	53,291	76,458	23.1
	60°F	73	85,697	15.5	450	3,593		46	2,100	56	24	22,098	50,834	72,932	20.3
	70°F	83	83,316	17.0	450	3,984		46	2,100	57	23	20,973	48,244	69,217	17.4
	80°F	93	80,444	18.7	450	4,290		47	2,100	58	22	19,786	45,514	65,300	15.2
	90°F	104	77,778	20.8	450	4,733		47	2,100	60	20	18,261	42,813	61,074	12.9
	100°F	114	74,910	23.0	450	5,194		47	2,100	61	19	16,933	39,699	56,632	10.9
	110°F	124	72,324	25.6	450	5,801		47	2,100	63	17	15,541	36,435	51,976	9.0
	120°F	134	69,726	28.6	450	6,447		47	2,100	64	16	14,105	33,068	47,173	7.3

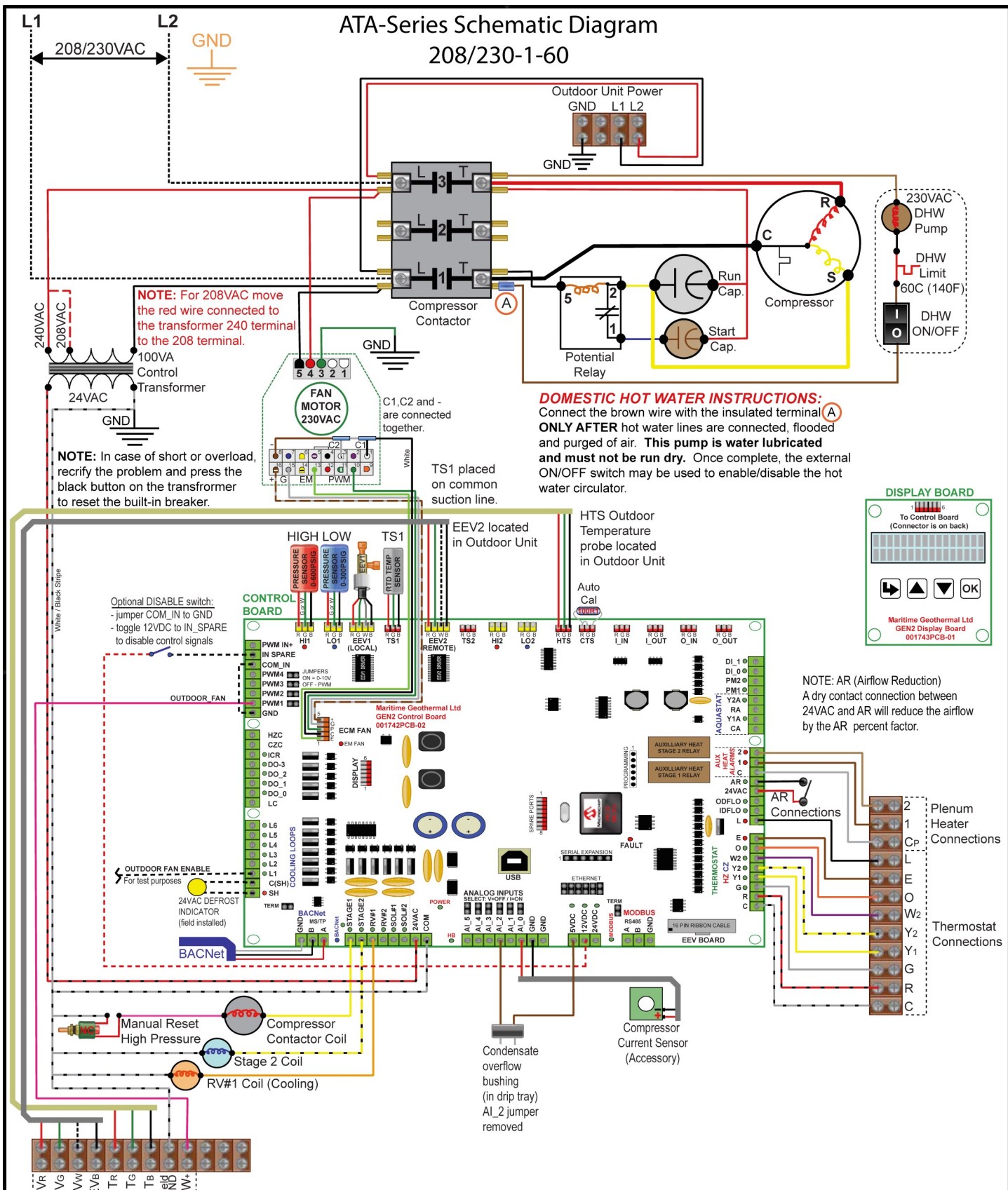
METRIC

	OUTDOOR LOOP (Air)			ELECTRICAL			INDOOR LOOP (Air)						
	Outdoor Air Temperature	Evaporating Temperature	Heat Absorbed (W)	Compressor Current (A)	Fan (W)	Input Power (W)	EAT	Cond. Temp.	Airflow (L/s)	LAT (°C)	Delta T (°C)	Heating (W)	COP _H
HEATING	-21°C	-27.1	3,563	18.6	410	4,028	21°C	33.3	990	28.0	6.9	7,592	1.88
	-15°C	-22.4	5,145	19.4	410	4,159		35.6	990	29.5	8.4	9,304	2.24
	-9°C	-17.8	6,781	20.2	410	4,293		37.8	990	31.1	10.0	11,074	2.58
	-4°C	-13.2	8,555	21.1	410	4,387		40.0	990	32.8	11.7	12,942	2.95
	2°C	-8.6	10,372	21.9	410	4,486		42.2	990	34.5	13.4	14,858	3.31
	7°C	-3.8	12,327	22.8	410	4,552		44.4	990	36.4	15.2	16,879	3.71
	13°C	0.9	14,254	23.7	410	4,657		46.7	990	38.2	17.1	18,911	4.06
	18°C	5.8	16,290	24.6	410	4,807		48.9	990	40.2	19.0	21,097	4.39

	OUTDOOR LOOP (Air)			ELECTRICAL			INDOOR LOOP (Air @ 50% RH)								
	Outdoor Air Temperature	Condensing Temperature	Heat Rejected (W)	Compressor Current (A)	Fan (W)	Input Power (W)	EAT	Evap. Temp.	Airflow (L/s)	LAT (°C)	Delta T (°C)	Latent (W)	Sensible (W)	Cooling (W)	COP _C
COOLING	10°C	17.2	25,860	14.0	450	3,311	27°C	7.8	990	12.6	14.1	6,788	15,614	22,402	6.77
	16°C	22.8	25,109	15.5	450	3,593		7.9	990	13.2	13.4	6,475	14,894	21,369	5.95
	21°C	28.3	24,411	17.0	450	3,984		8.0	990	13.9	12.8	6,145	14,135	20,280	5.09
	27°C	33.9	23,570	18.7	450	4,290		8.1	990	14.6	12.0	5,797	13,336	19,133	4.46
	32°C	40.0	22,789	20.8	450	4,733		8.2	990	15.3	11.3	5,350	12,544	17,895	3.78
	38°C	45.6	21,948	23.0	450	5,194		8.3	990	16.2	10.5	4,961	11,632	16,593	3.19
	43°C	51.1	21,191	25.6	450	5,801		8.4	990	17.0	9.6	4,553	10,675	15,229	2.63
	49°C	56.7	20,430	28.6	450	6,447		8.6	990	17.9	8.7	4,133	9,689	13,822	2.14

ATA-Series Schematic Diagram

208/230-1-60



03	000292	D. RHEAULT	D. RHEAULT	15-OCT-2021	Drawn By C. GEDDES	Date 15-OCT-2017	MARITIME GEOTHERMAL LTD. P.O. Box 2555 170 Plantation Rd. Pettitcodiac, NB CANADA E4Z 6H4 Drawing Name ATA-*-HACW-P-1*-SDE*F Schematic Diagram Size LET Drawing Number 001971SCH Drawing Rev 03 Sheet 1 / 1
02	-	D. RHEAULT	D. RHEAULT	10-FEB-2020	Checked By C. GEDDES	Date 15-OCT-2017	
01	Initial Release	C. GEDDES	C. GEDDES	15-OCT-2017	Eng. Approved By C. GEDDES	Date 15-OCT-2017	
REV	ECO#	IMPL BY	APVD BY	DATE	Mfg. Approved By	Date	
					Approved By	Date	

SYSTEM CONTROL DESCRIPTION

System Control by BACNet or External Control Signals		
BACNet Object	External	Activation
SYSTEM_G	G	Fan Recirculation Mode
SYSTEM_Y1	Y1	Compressor Stage 1 (Air)
SYSTEM_Y2	Y2	Compressor Stage 2 (Air)
SYSTEM_W2	W2	Auxiliary Heat (Air)
SYSTEM_O	O	Air Heating (OFF) / Air Cooling (ON)

BACNet INTERFACE CONNECTIONS (MS/TP RS-485)

Use twisted pair shielded, conductor cable to connect the BACNet connections to the control board connector.
 A - Communication (+)
 B - Communication (-)
 GND - Ground

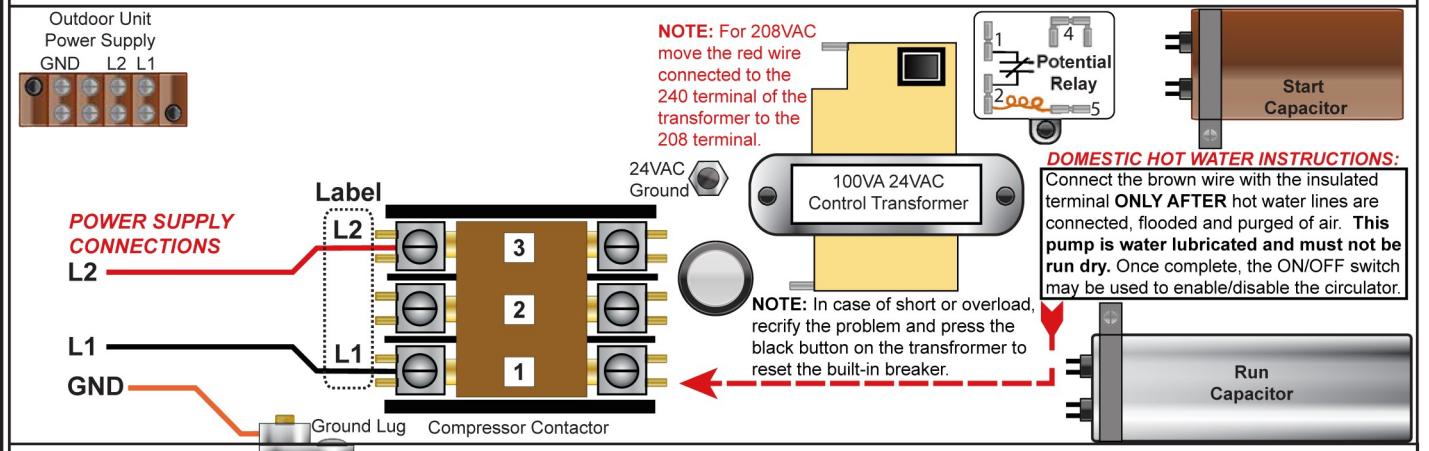
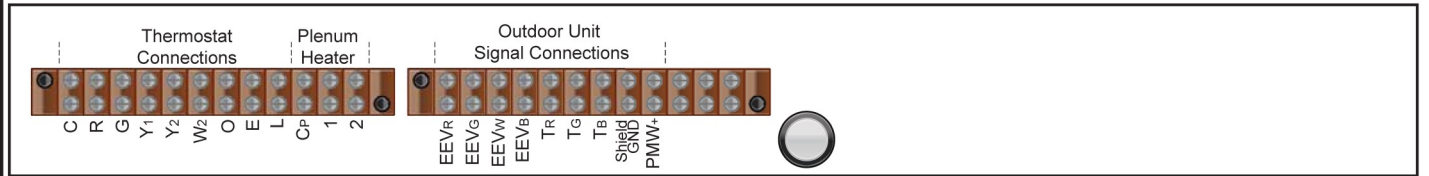
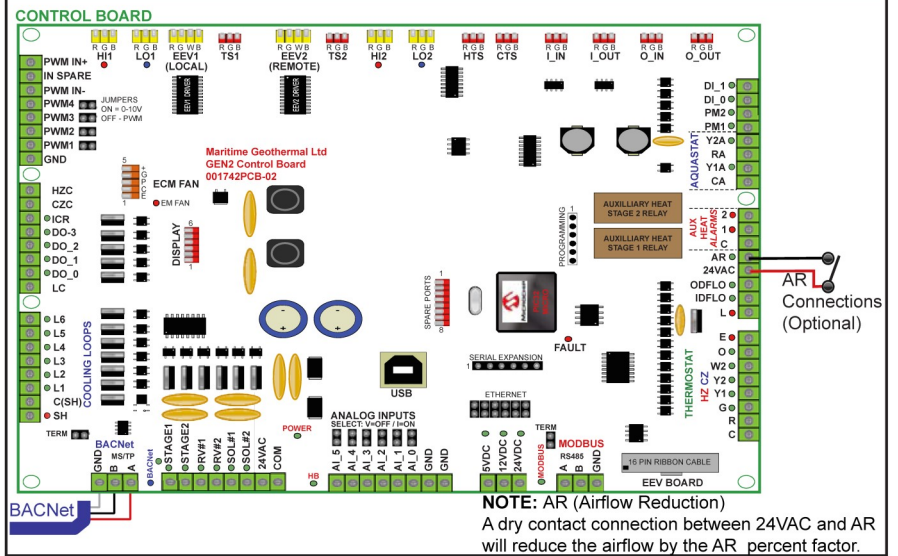
OUTDOOR UNIT SIGNAL CONNECTIONS (24VAC)

Use an 18-8 shielded cable to connect the Outdoor Unit Signal Connections to the matching Outdoor Unit Signal Connections in the heat pump electrical box. Connect the shield ground to the Shield Ground terminal.

OUTDOOR UNIT POWER CONNECTIONS (230VAC)

Use a minimum of #14-2 outdoor rated cabling to connect the power supply of the outdoor unit to the matching terminals of the outdoor power supply terminal strip in the electrical box of the heat pump.

ATA-Series Electrical Box Diagram
 208/230VAC Single Phase 60Hz



EXTERNAL AIR CONTROL CONNECTIONS (24VAC)

Use an 18 gauge thermostat wire to connect the thermostat to the heat pump terminal strip:

- C - 24VAC Common
- R - 24VAC Hot
- G - Fan Recirculation Mode
- Y1 - Compressor Stage1
- Y2 - Compressor Stage2 (Two stage models only)
- W2 - Auxiliary Heat (Air)
- E - Emergency Heat (Air)
- O - Cooling Mode (Active) - Heating Mode (Inactive)
- L - Lockout indicator (24VAC when lockout occurs)

A dry contact connection between R and any external control connection (G, Y1, Y2, W2, E or O) will activate the external control signal input to the control board.

PLENUM HEATER CONTROL (24VAC)

Use an 18 gauge thermostat wire to connect the plenum heater to the heat pump terminal strip:

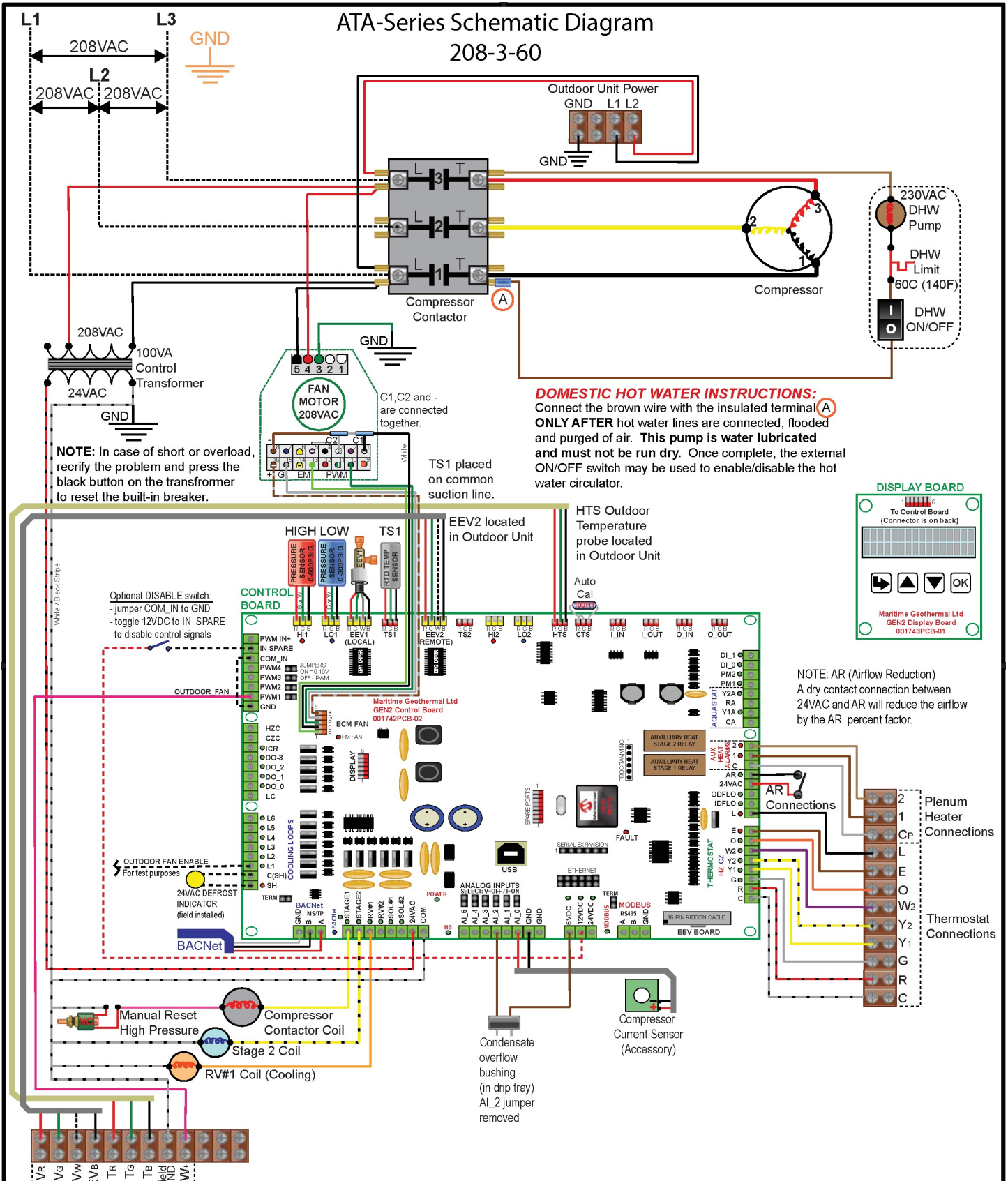
- CP - 24VAC Common
- 1 - electric heat stage 1
- 2 - electric heat stage 2

208/230VAC CONNECTIONS		
Wire	Colour	Contactor (Label)
Line 2	Red	L2
Line 1	Black	L1

Connect "GND" to ground lug

01	Initial Release	C. GEDDES	C. GEDDES	15-OCT-2017	Drawn By C. GEDDES Date 15-OCT-2017 Checked By C. GEDDES Date 15-OCT-2017 Eng. Approved By C. GEDDES Date 15-OCT-2017 Mfg. Approved By Date Approved By Date	MARITIME GEOTHERMAL LTD. P.O. Box 2555 170 Plantation Rd. Pettitcodiac, NB CANADA E4Z 6H4 Drawing Name ATA-**-HACW-P-1*-SDE*F Electrical Box Diagram
REV	ECO#	IMPL BY	APVD BY	DATE		

ATA-Series Schematic Diagram 208-3-60



REV	ECO#	IMPL BY	APVD BY	DATE
04	000296	D. RHEAULT	D. RHEAULT	1-JAN-2022
03	000292	D. RHEAULT	D. RHEAULT	15-OCT-2021
02	-	D. RHEAULT	D. RHEAULT	10-FEB-2020
01	Initial Release	D. RHEAULT	D. RHEAULT	15-OCT-2017

Drawn By	Date
D. RHEAULT	15-OCT-2017
Checked By	Date
D. RHEAULT	15-OCT-2017
Eng. Approved By	Date
D. RHEAULT	15-OCT-2017
Mfg. Approved By	Date
Approved By	Date

MARITIME GEOTHERMAL LTD.

P.O. Box 2555
 170 Plantation Rd.
 Petitcodiac, NB CANADA E4Z 6H4

Drawing Name
ATA-**-HACW-P-2*-SDE*F
Schematic Diagram

Size	LET	Drawing Number	001973SCH	Drawing Rev	04	Sheet	1 / 1
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ATA-Series Electrical Box Diagram 208VAC Three Phase 60Hz

SYSTEM CONTROL DESCRIPTION

System Control by BACNet or External Control Signals		
BACNet Object	External	Activation
SYSTEM_G	G	Fan Recirculation Mode
SYSTEM_Y1	Y1	Compressor Stage 1 (Air)
SYSTEM_Y2	Y2	Compressor Stage 2 (Air)
SYSTEM_W2	W2	Auxiliary Heat (Air)
SYSTEM_O	O	Air Heating (OFF) / Air Cooling (ON)

BACNet INTERFACE CONNECTIONS (MS/TP RS-485)

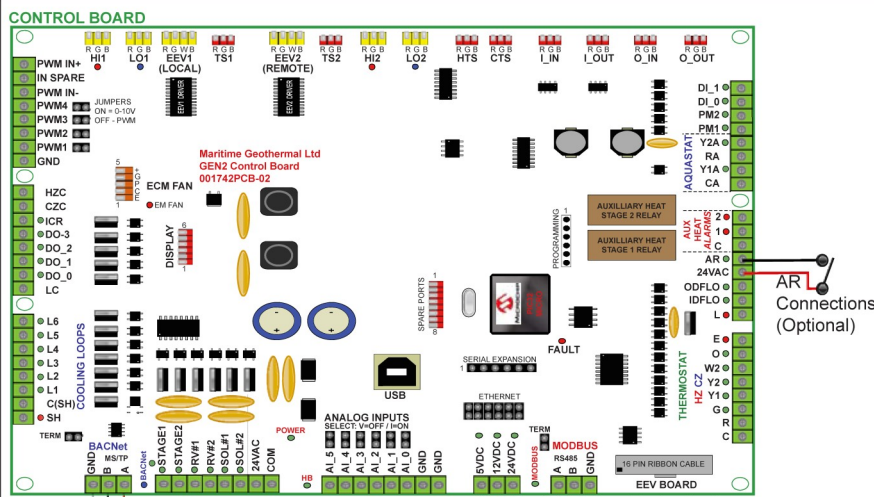
Use twisted pair shielded, conductor cable to connect the BACNet connections to the control board connector.
 A - Communication (+)
 B - Communication (-)
 GND - Ground

OUTDOOR UNIT SIGNAL CONNECTIONS (24VAC)

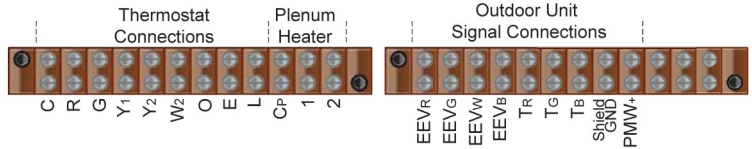
Use an 18-8 shielded cable to connect the Outdoor Unit Signal Connections to the matching Outdoor Unit Signal Connections in the heat pump electrical box. Connect the shield ground to the Shield Ground terminal.

OUTDOOR UNIT POWER CONNECTIONS (230VAC)

Use a minimum of #14-2 outdoor rated cabling to connect the power supply of the outdoor unit to the matching terminals of the outdoor power supply terminal strip in the electrical box of the heat pump.

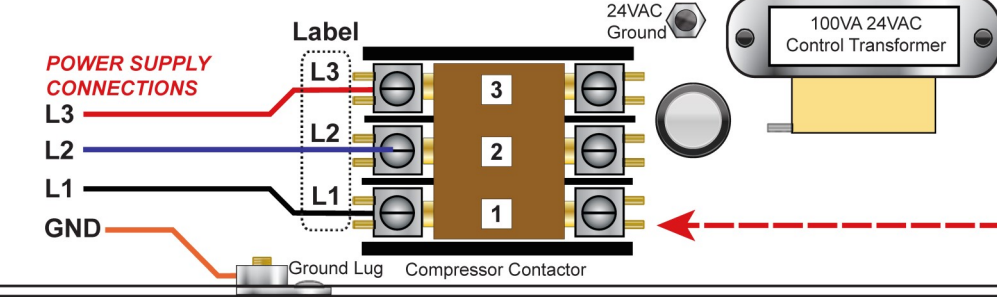


NOTE: AR (Airflow Reduction)
 A dry contact connection between 24VAC and AR will reduce the airflow by the AR percent factor.



IMPORTANT NOTE FOR 3 PHASE POWER
 If on initial startup the compressor is noisy and not pumping, reverse L1 and L2 supply wires.

NOTE: In case of short or overload, rectify the problem and press the black button on the transformer to reset the built-in breaker.



DOMESTIC HOT WATER INSTRUCTIONS:
 Connect the brown wire with the insulated terminal **ONLY AFTER** hot water lines are connected, flooded and purged of air. **This pump is water lubricated and must not be run dry.** Once complete, the ON/OFF switch may be used to enable/disable the circulator.

EXTERNAL AIR CONTROL CONNECTIONS (24VAC)

Use an 18 gauge thermostat wire to connect the thermostat to the heat pump terminal strip:
 C - 24VAC Common
 R - 24VAC Hot
 G - Fan Recirculation Mode
 Y1 - Compressor Stage1
 Y2 - Compressor Stage2 (Two stage models only)
 W2 - Auxiliary Heat (Air)
 E - Emergency Heat (Air)
 O - Cooling Mode (Active) - Heating Mode (Inactive)
 L - Lockout indicator (24VAC when lockout occurs)

A dry contact connection between R and any external control connection (G, Y1, Y2, W2, E or O) will activate the external control signal input to the control board.

PLENUM HEATER CONTROL (24VAC)

Use an 18 gauge thermostat wire to connect the plenum heater to the heat pump terminal strip:
 CP - 24VAC Common
 1 - electric heat stage 1
 2 - electric heat stage 2

208VAC CONNECTIONS		
Wire	Colour	Contactor (Label)
Line 3	Red	L3
Line 2	Blue	L2
Line 1	Black	L1

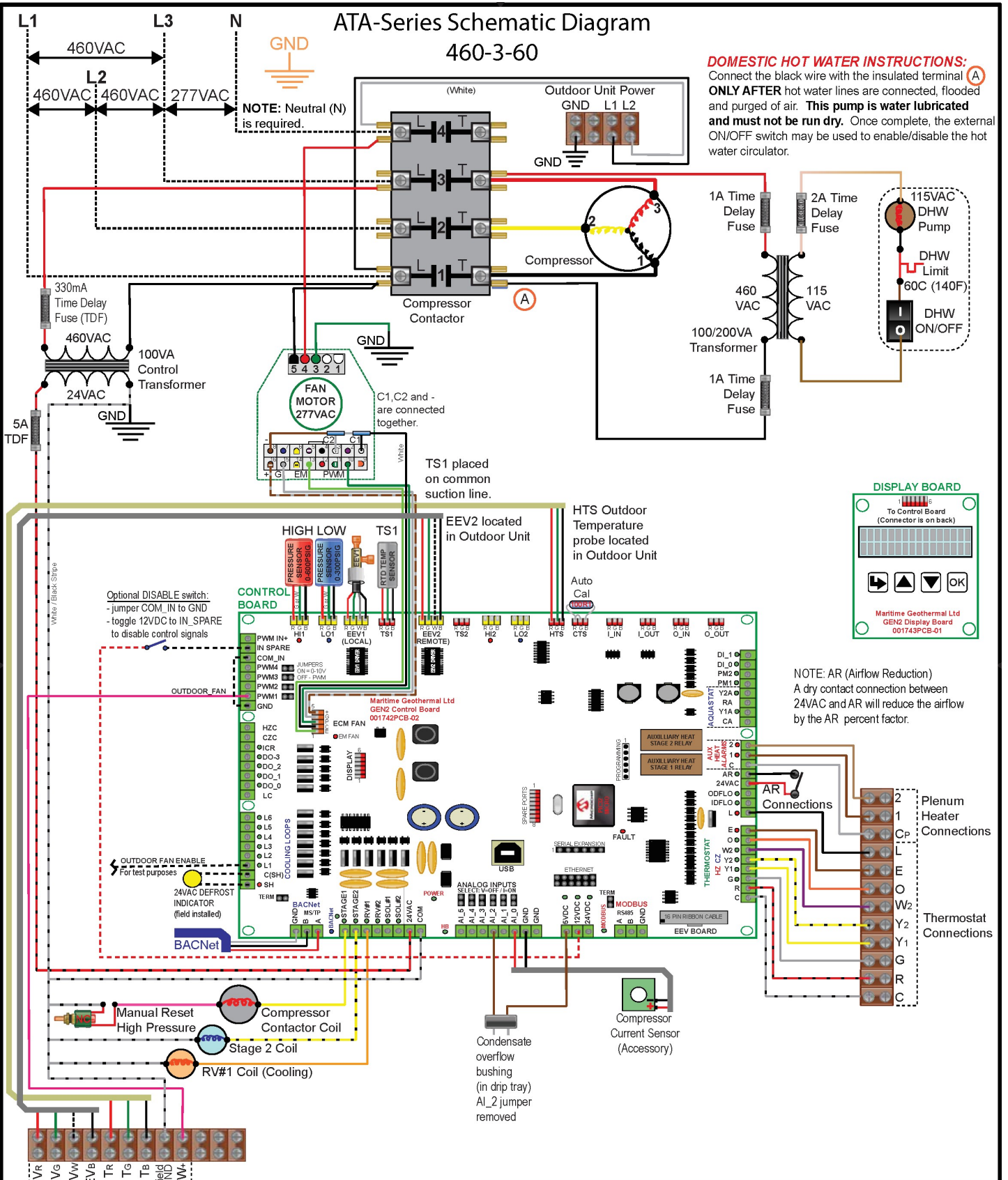
Connect "GND" to ground lug

01	Initial Release	C. GEDDES	C. GEDDES	15-OCT-2017	Drawn By C. GEDDES Date 15-OCT-2017 Checked By C. GEDDES Date 15-OCT-2017 Eng. Approved By C. GEDDES Date 15-OCT-2017 Mfg. Approved By Date Approved By Date	MARITIME GEOTHERMAL LTD. P.O. Box 2555 170 Plantation Rd. Pettitcodiac, NB CANADA E4Z 6H4 Drawing Name ATA-**-HACW-P-2*-SDE*F Electrical Box Diagram	Size LET Drawing Number 001974ELB Drawing Rev 01 Sheet 1 / 1
REV	ECO#	IMPL BY	APVD BY	DATE			

ATA-Series Schematic Diagram

460-3-60

DOMESTIC HOT WATER INSTRUCTIONS:
 Connect the black wire with the insulated terminal (A) **ONLY AFTER** hot water lines are connected, flooded and purged of air. **This pump is water lubricated and must not be run dry.** Once complete, the external ON/OFF switch may be used to enable/disable the hot water circulator.



NOTE: AR (Airflow Reduction)
 A dry contact connection between 24VAC and AR will reduce the airflow by the AR percent factor.

REV	ECO#	IMPL BY	APVD BY	DATE	Drawn By	Date	Checked By	Date	Eng. Approved By	Date	Mfg. Approved By	Date	Approved By	Date	Drawing Name	Size	Drawing Number	Drawing Rev	Sheet	
04	000296	D. RHEAULT	D. RHEAULT	1-JAN-2022	D. RHEAULT	15-OCT-2017	D. RHEAULT	15-OCT-2017	D. RHEAULT	15-OCT-2017					ATA-**-HACW-P-4*-SDE*F Schematic Diagram	LET	001975SCH	04	1 / 1	
03	000292	D. RHEAULT	D. RHEAULT	15-OCT-2021																
02	-	D. RHEAULT	D. RHEAULT	10-FEB-2020																
01	Initial Release	D. RHEAULT	D. RHEAULT	15-OCT-2017																

ATA-Series Electrical Box Diagram 460VAC Three Phase 60Hz

SYSTEM CONTROL DESCRIPTION

System Control by BACNet or External Control Signals		
BACNet Object	External	Activation
SYSTEM_G	G	Fan Recirculation Mode
SYSTEM_Y1	Y1	Compressor Stage 1 (Air)
SYSTEM_Y2	Y2	Compressor Stage 2 (Air)
SYSTEM_W2	W2	Auxiliary Heat (Air)
SYSTEM_O	O	Air Heating (OFF) / Air Cooling (ON)

BACNet INTERFACE CONNECTIONS (MS/TP RS-485)

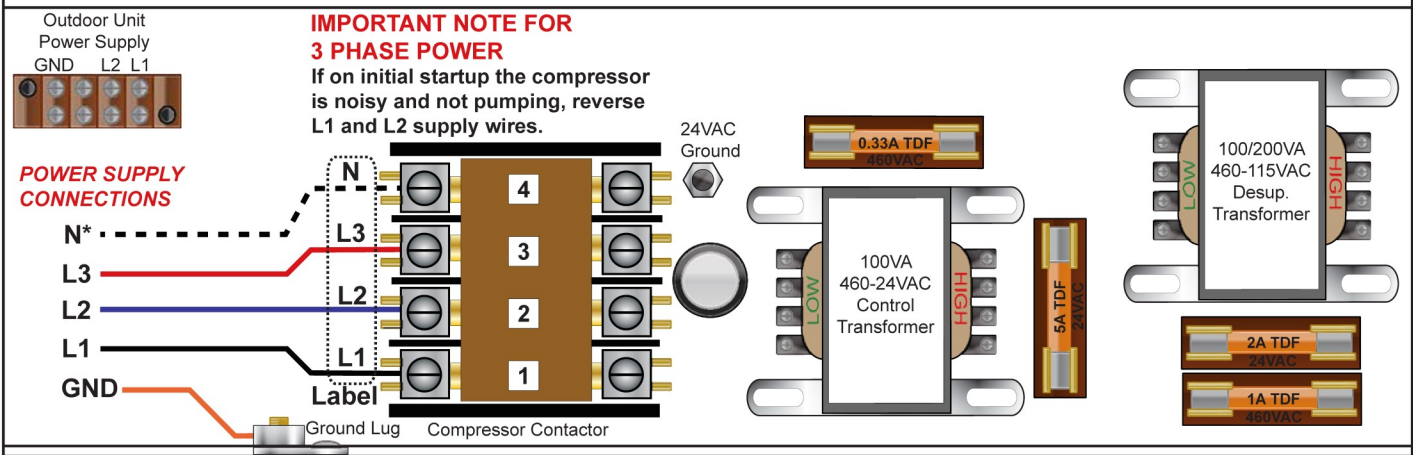
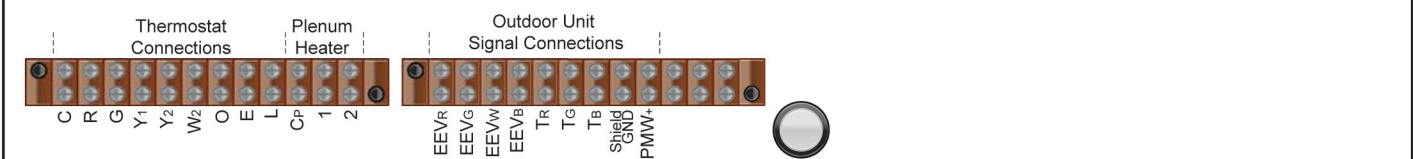
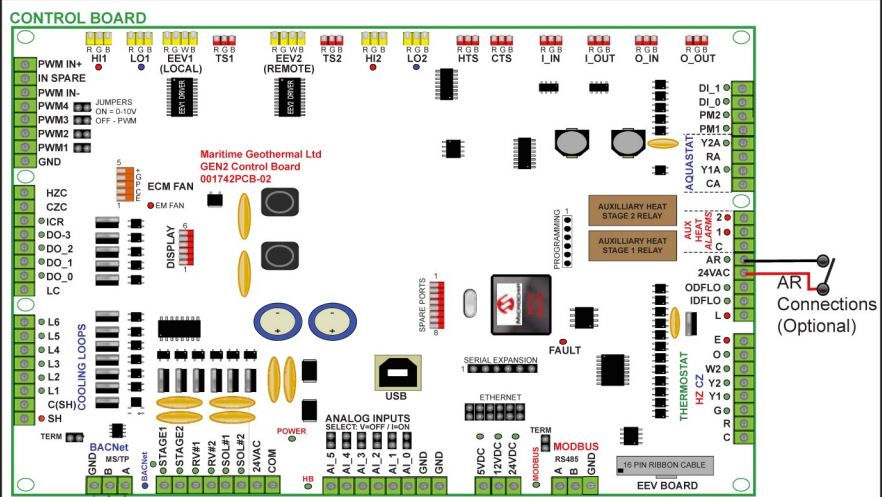
Use twisted pair shielded, conductor cable to connect the BACNet connections to the control board connector.
 A - Communication (+)
 B - Communication (-)
 GND - Ground

OUTDOOR UNIT SIGNAL CONNECTIONS (24VAC)

Use an 18-8 shielded cable to connect the Outdoor Unit Signal Connections to the matching Outdoor Unit Signal Connections in the heat pump electrical box. Connect the shield ground to the Shield Ground terminal.

OUTDOOR UNIT POWER CONNECTIONS (230VAC)

Use a minimum of #14-2 outdoor rated cabling to connect the power supply of the outdoor unit to the matching terminals of the outdoor power supply terminal strip in the electrical box of the heat pump.



EXTERNAL AIR CONTROL CONNECTIONS (24VAC)

Use an 18 gauge thermostat wire to connect the thermostat to the heat pump terminal strip:

- C - 24VAC Common
- R - 24VAC Hot
- G - Fan Recirculation Mode
- Y1 - Compressor Stage1
- Y2 - Compressor Stage2 (Two stage models only)
- W2 - Auxiliary Heat (Air)
- E - Emergency Heat (Air)
- O - Cooling Mode (Active) - Heating Mode (Inactive)
- L - Lockout indicator (24VAC when lockout occurs)

A dry contact connection between R and any external control connection (G, Y1, Y2, W2, E or O) will activate the external control signal input to the control board.

PLENUM HEATER CONTROL (24VAC)

Use an 18 gauge thermostat wire to connect the plenum heater to the heat pump terminal strip:

- Cp - 24VAC Common
- 1 - electric heat stage 1
- 2 - electric heat stage 2

460/277VAC CONNECTIONS

Wire	Colour	Contactor (Label)
Neutral*	White	N*
Line 3	Red	L3
Line 2	Blue	L2
Line 1	Black	L1

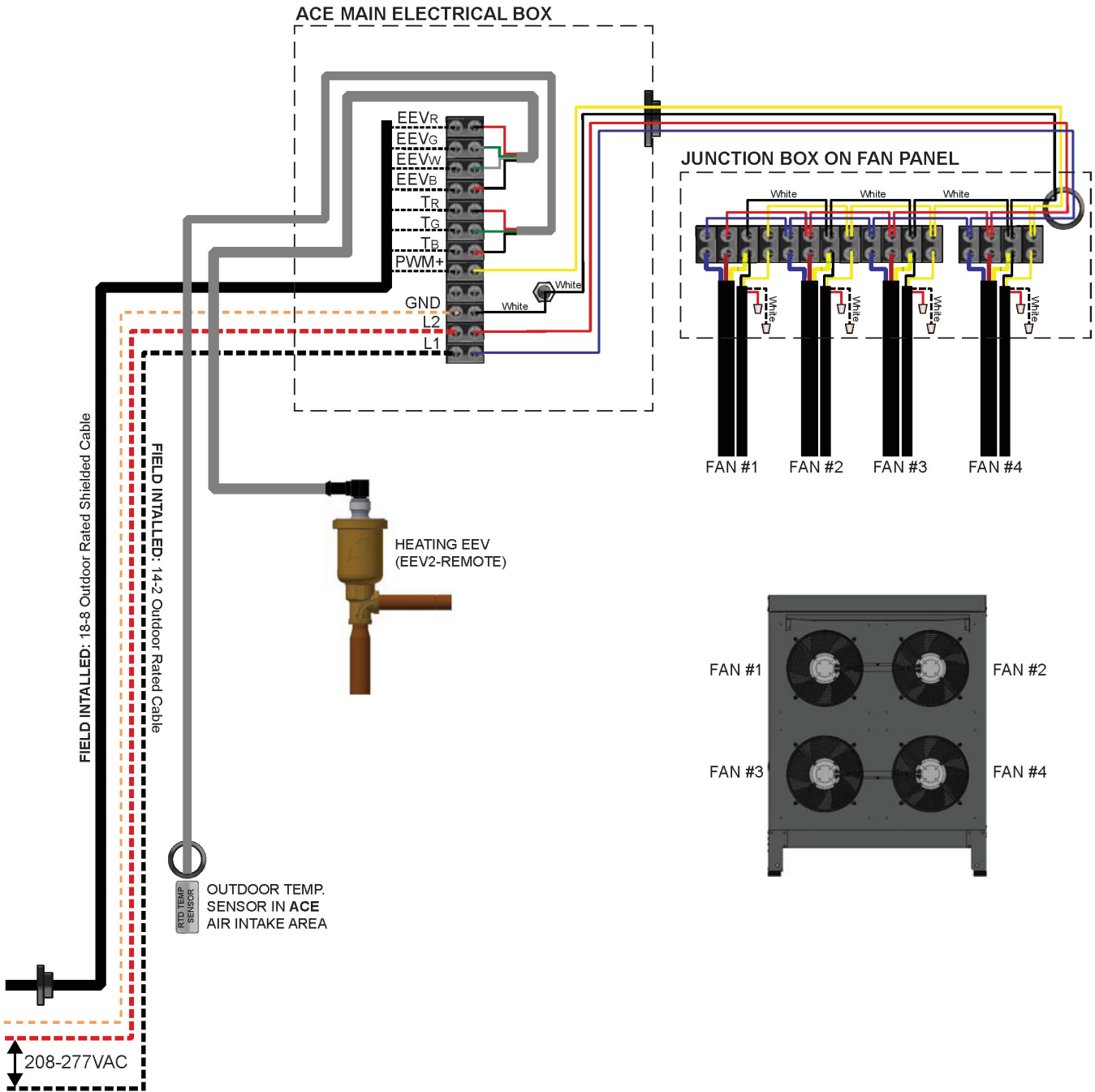
Connect "GND" to ground lug

*NOTE: Neutral (N) is required for heat pump operation.

01	Initial Release	C. GEDDES	C. GEDDES	15-OCT-2017	Drawn By C. GEDDES Date 15-OCT-2017 Checked By C. GEDDES Date 15-OCT-2017 Eng. Approved By C. GEDDES Date 15-OCT-2017 Mfg. Approved By Date Approved By Date	MARITIME GEOTHERMAL LTD. P.O. Box 2555 170 Plantation Rd. Pettitcodiac, NB CANADA E4Z 6H4 Drawing Name ATA-**-HACW-P-4*-SDE*F Electrical Box Diagram
REV	ECO#	IMPL BY	APVD BY	DATE		

ACE-75 Outdoor Unit Wiring Diagram

ACE-Series 4-Fan Schematic Diagram



Connect power and signal wires to matching terminal strip connectors in electrical box of indoor unit.

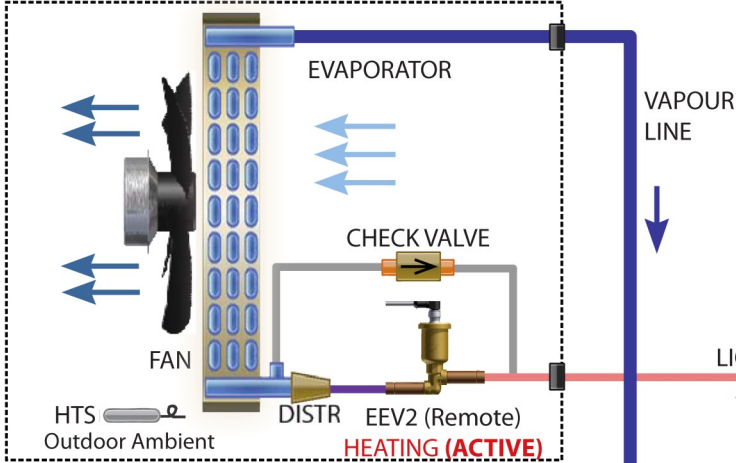
		Drawn By C. GEDDES Checked By C. GEDDES Eng. Approved By C. GEDDES Mfg. Approved By Approved By Date 14-AUG-2015		Date 14-AUG-2015 Date 14-AUG-2015 Date 14-AUG-2015 Date Date		MARITIME GEOTHERMAL LTD. P.O. Box 2555 170 Plantation Rd. Petitcodiac, NB CANADA E4Z 6H4	
03	000315	D. RHEAULT	D. RHEAULT	1-Jul-2023	Drawing Name ACE 4-Fan Outdoor Unit Schematic Diagram		
02	000275	D. RHEAULT	D. RHEAULT	1-Sep-2020	Size LET		
01	Initial Release	C. GEDDES	C. GEDDES	14-Aug-2015	Drawing Number 002014SCH		Drawing Rev 03
REV	ECO#	IMPL BY	APVD BY	DATE	Sheet 1 / 1		

ATA Series Refrigeration Circuit

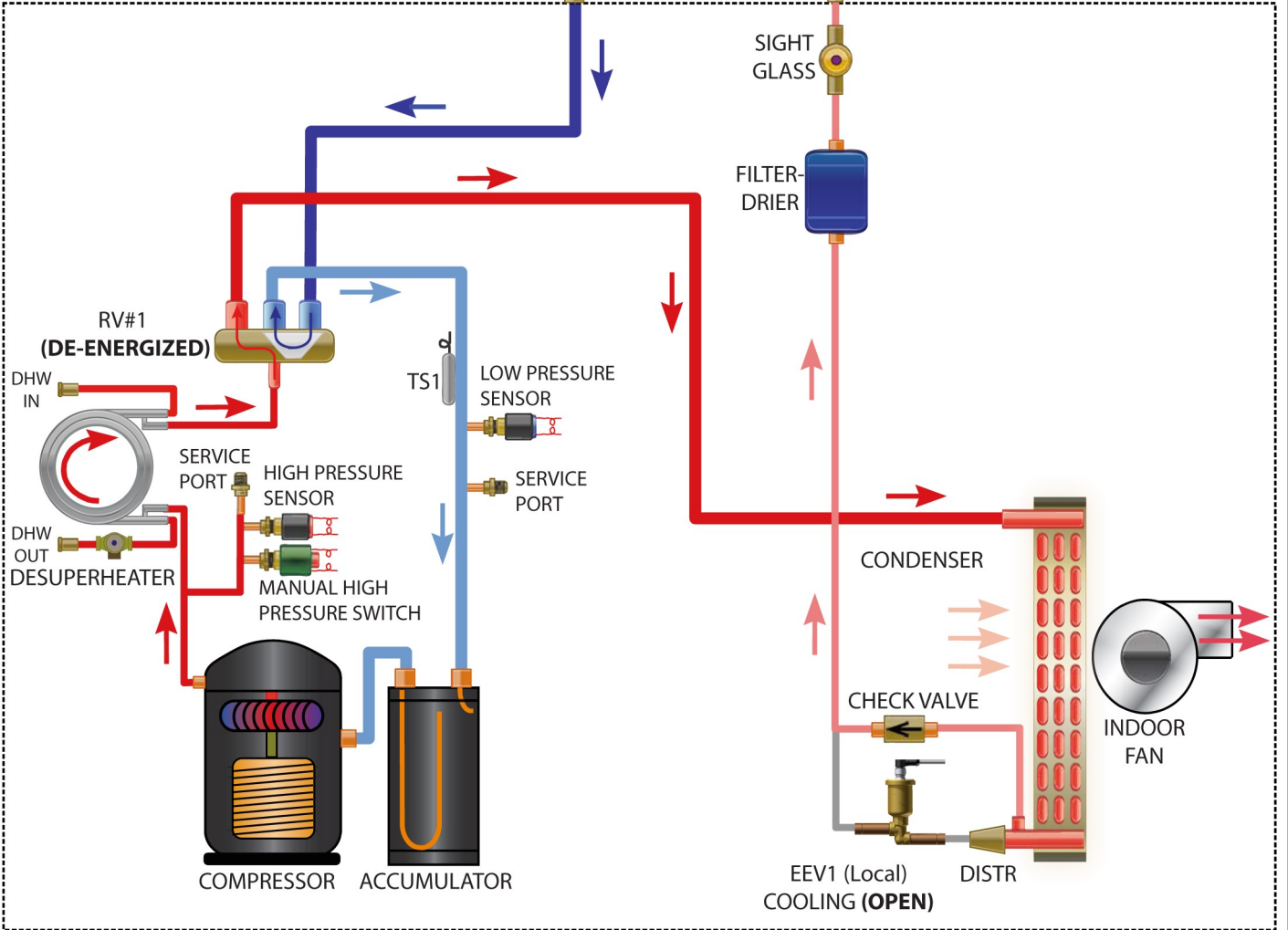
Air Heating Mode

ITEM	STATUS
RV#1	DE-ENERGIZED
EEV#1	OPEN
EEV#2	ACTIVE

ACE OUTDOOR UNIT



ATA INDOOR UNIT



Drawn By C.GEDDES	Date 16 JUL 2014
Checked By C.GEDDES	Date 16 JUL 2014
Eng. Approved By C.GEDDES	Date 16 JUL 2014
Mfg. Approved By	Date
Approved By	Date

MARITIME GEOTHERMAL LTD. P.O. Box 2555
170 Plantation Rd.
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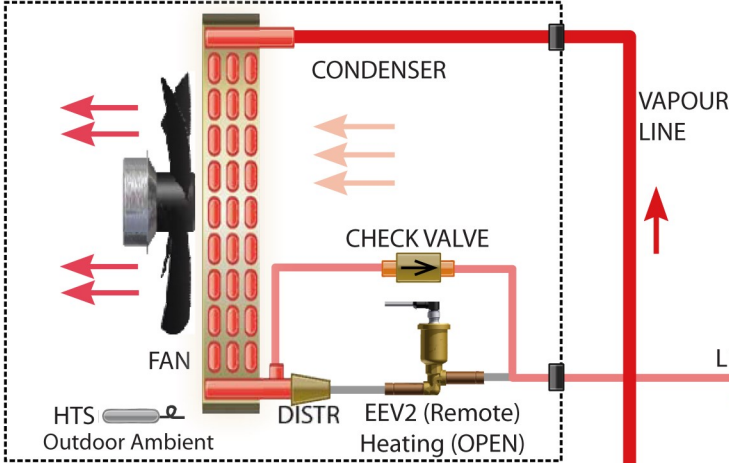
Drawing Name
**ATA-Series Refrigeration Circuit
Heating Mode**

Size LET	Drawing Number 001842RCD	Drawing Revision 01	Sheet 1 / 1
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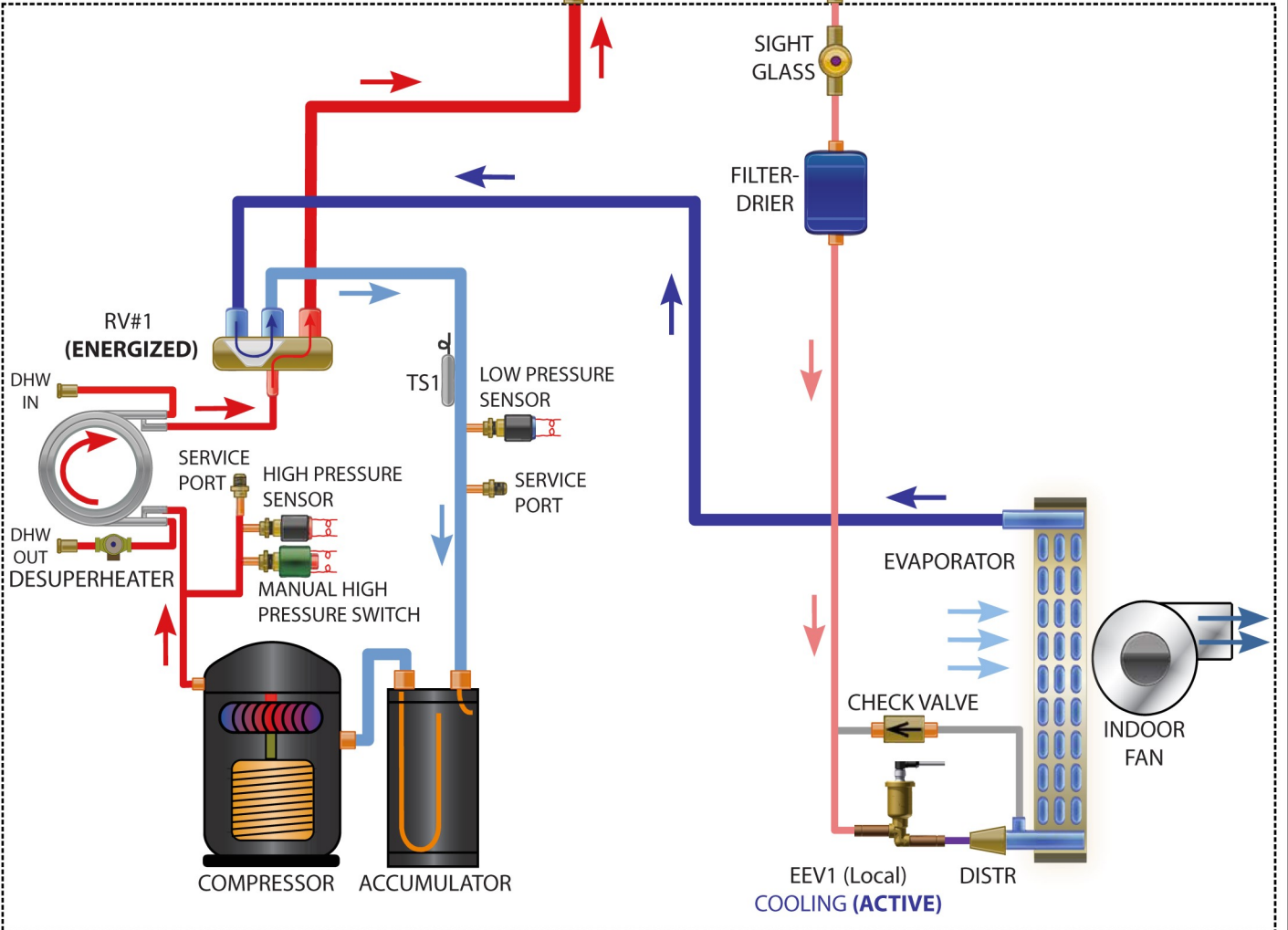
ATA Series Refrigeration Circuit Cooling / Defrost Mode

ITEM	STATUS
RV#1	ENERGIZED
EEV#1	ACTIVE
EEV#2	OPEN

ACE OUTDOOR UNIT



ATA INDOOR UNIT



Drawn By C.GEDDES	Date 16 JUL 2014
Checked By C.GEDDES	Date 16 JUL 2014
Eng. Approved By C.GEDDES	Date 16 JUL 2014
Mfg. Approved By	Date
Approved By	Date

MARITIME GEOTHERMAL LTD. P.O. Box 2555
170 Plantation Rd.
Petitcodiac, NB CANADA E4Z 6H4

Drawing Name	
ATA-Series Refrigeration Circuit Cooling / Defrost Mode	
Size LET	Drawing Number 001843RCD
Drawing Revision 01	Sheet 1 / 1

01	Initial Release	C. GEDDES	C. GEDDES	16 JUL 2014
REV	ECO#	IMPL BY	APVD BY	DATE

Engineering Guide Specifications

General

The split air to air heat pump shall consist of an indoor unit, containing the compressor and all electronics, and an outdoor unit containing only an outdoor air coil, fan, and expansion valve. The unit shall be capable of heating or cooling the indoor ducted air loop, for space heating or air conditioning purposes. The unit shall be listed by a nationally recognized safety-testing laboratory (NRTL), such as ETL, TUV, UL or CSA. The unit shall be rated in accordance with applicable standards of the Air Conditioning, Heating, and Refrigeration Institute / International Standards Organization (AHRI/ISO) and/or Canadian Standards Association (CSA). The heat pump, as manufactured by Maritime Geothermal, Petitcodiac, New Brunswick, shall be designed to operate correctly within the air temperature ranges specified in the "Operating Temperature Limits" table in this engineering specification document.

Factory Quality

Each unit shall be run tested at the factory with air circulating and outdoor unit connected. Quality control system checks shall include: computerized nitrogen pressurized leak test, evacuation of refrigeration circuit to sustained vacuum, accurate system charge, detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria. Units tested without air flow are not acceptable. The units shall be warranted by the manufacturer against defects in materials and workmanship in accordance with the warranty section at the end of this document. Optional extended factory warranty coverage may be available.

Cabinet

Each unit shall be enclosed in a sheet metal cabinet. Cabinet shall be constructed of powder coated galvanized sheet metal of minimum 20 gauge. Sheet metal gauge shall be higher where structurally required. Design and construction of cabinet shall be such that it is rigid and passes the CSA/UL Loading Test requirements (200 lb roof test). All indoor unit panels shall be lined with minimum 1/2 inch [12.7 mm] thick acoustic type glass fiber insulation. All insulation shall meet the fire retardant provisions of NFPA 90A. This material shall also provide acoustical benefit. The indoor unit must have a minimum of four access panels for serviceability of the compressor compartment. Units having only one access panel to compressor/heat exchangers/expansion device/refrigerant piping shall not be acceptable. The electrical box shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic grommets.

Refrigerant Circuit

All units shall contain only one refrigerant circuit, containing a hermetic motor scroll compressor, two Electronic Expansion Valves (EEVs), two refrigerant to air heat exchangers, factory installed high and low pressure sensors, manual reset high pressure switch, service ports, liquid line filter-dryer, sight glass, and suction accumulator.

Compressors shall be specified for heat pump duty with internal isolation consisting of rubber vibration isolators and mounting plate with rubber vibration isolators. Compressor motors shall have internal high temperature overload protection.

The electronic expansion valves shall be of stepper-motor rather than pulsing type, and shall provide proper superheat control over the unit's operating range with minimal deviation from superheat setpoint. Superheat shall be determined through the suction pressure-temperature method. Externally mounted pressure controlled water regulating flow valves or thermostatic expansion valves (TXV's) in place of electronic expansion valves are not acceptable.

The suction accumulator shall be insulated with minimum 3/8" thick closed cell insulation to prevent condensation. The accumulator's internal oil return port shall be sized properly for the unit's operating range. To ensure proper oil return, suction accumulator shall not be 'oversized'.

The unit shall be equipped with a double wall desuperheating heat exchanger, to heat domestic hot water with a small percentage of the unit's capacity while operating in space heating or cooling modes. A bronze or stainless steel head circulation pump and a temperature control to turn it off at 140°F / 60°C shall be built in.

Piping and Connections

Desuperheater connections for domestic hot water shall be 1/2" NPT, rigidly mounted to cabinet with corrosion resistant fasteners to prevent relative movement. All water connectors shall be constructed of copper or brass material for corrosion resistance and potable water safety.

The indoor unit shall be provided charged with sufficient refrigerant for the installed system to operate properly with up to 20 ft of interconnecting line set. The indoor unit shall be equipped with two 3-way refrigerant access valves for connection to the outdoor unit, so that refrigerant does not need to be removed from the system during installation.

Electrical

Controls and safety devices shall be factory wired and mounted within the unit. Controls shall include 24 volt alternating current (24VAC) activated compressor contactor, and 24VAC 100VA transformer with built in circuit breaker or fused on both primary and secondary sides. A terminal strip with screw in terminals shall be provided for field control wiring. Units shall be name-plated for use with time delay fuses or circuit breakers. Unit controls shall be 24VAC and provide heating as required by the remote thermostat or controller, or on-board controller. Unit shall provide remote fault indication to the control system via serial communications as well as provide fault messages on the front panel LCD display.

Unit Control

The control system shall have the following features:

1. Anti-short cycle time delay on compressor operation. Time delay shall be a minimum of 5 minutes, for both thermostat demand and safety control reset starts. An override shall be provided to disable this delay for unit commissioning and testing purposes.
2. Random compressor start delay of 0-120 seconds on unit power up to facilitate starting multiple units after a power failure.
3. Compressor shutdown for high or low refrigerant pressures, Loss of Charge (LOC), optional low flow conditions, and for optional phase protection faults on three phase models.
4. Automatic intelligent reset: after a trip, unit shall automatically restart when short cycle delay expires if the fault has cleared. Should a fault reoccur 2 times sequentially then permanent lockout shall occur, requiring cycling of the power to the unit in order to reset.
5. Manual reset high pressure in case of electronic board failure.
6. The low pressure shall not be monitored for the first 90 seconds after a compressor start to prevent nuisance safety trips.
7. 2 x 16 backlit Liquid Crystal Display (LCD) and four buttons provide basic configuration and data access . Unit may be configured for stand alone operation.
8. Externally mounted Universal Serial Bus (USB) port for full data access and diagnostic information, including manual override of all inputs and outputs, data-logging and real-time charting.
9. BACnet connectivity for control by building automation system, and providing alarm feedback.
10. Automatic data logging with onboard data storage, retrievable through PC software application.

Maritime Geothermal works continually to improve its products. As a result, the design and specifications of any product may be changed without notice. Please contact Maritime Geothermal at 1-506-756-8135 or visit www.nordicghp.com for latest design and specifications. Purchaser's approval of this data set signifies that the equipment is acceptable under the provisions of the job specification. Statements and other information contained herein are not express warranties and do not form the basis of any commercial contract or other agreement between any parties, but are merely Maritime Geothermal's statement of opinion regarding its products.

LIMITED RESIDENTIAL WARRANTY

MARITIME GEOTHERMAL LTD. warrants that the heat pumps manufactured by it shall be free from defects in materials and workmanship for a period of (5) FIVE YEARS after the date of installation or for a period of (5) FIVE YEARS AND (60) SIXTY DAYS after the date of shipment, whichever occurs first. In addition MARITIME GEOTHERMAL LTD. warrants that the compressor shall be free of defects in materials and workmanship for an additional period of (2) TWO YEARS from said date.

MARITIME GEOTHERMAL LTD. shall, at its option repair or replace any part or parts covered by this warranty which shall be returned to MARITIME GEOTHERMAL LTD., transportation charges prepaid, which, upon examination proves to be defective in materials or workmanship. Replacement or repaired parts and components are warranted only for the remaining portion of the original warranty period.

This warranty is subject to the following conditions:

1. The NORDIC® heat pump must be properly installed and maintained in accordance with MARITIME GEOTHERMAL LTD.'s installation and maintenance instructions.
2. The installer must complete the “**Installation Data Sheet**”, have it endorsed by the owner and return it to Maritime Geothermal Ltd. within 21 days of installation of the unit.
3. It is the responsibility of the building or general contractor to supply temporary heat to the structure prior to occupancy. These heat pumps are designed to provide heat only to the completely finished and insulated structure. Start-up of the unit shall not be scheduled prior to completion of construction and final duct installation for validation of this warranty.
4. It is the customer's responsibility to supply the proper quantity and quality of water.

If the heat pump, manufactured by MARITIME GEOTHERMAL LTD., fails to conform to this warranty, MARITIME GEOTHERMAL LTD.'s sole and exclusive liability shall be, at its option, to repair or replace any part or component which is returned by the customer during the applicable warranty period set forth above, provided that (1) MARITIME GEOTHERMAL LTD. is promptly notified in writing upon discovery by the customer that such part or component fails to conform to this warranty. (2) The customer returns such part or component to MARITIME GEOTHERMAL LTD., transportation charges prepaid, within (30) thirty days of failure, and (3) MARITIME GEOTHERMAL LTD.'s examination of such component shall disclose to its satisfaction that such part or component fails to meet this warranty and the alleged defects were not caused by accident, misuse, neglect, alteration, improper installation, repair or improper testing.