



**Catalog 1104-14**

**Enfinity™ Console Water Source Heat Pumps  
1/2 to 1½ Ton**

**R-410A Models MHC Standard Range & MHW Extended Range**

**Unit Sizes 007-018**



<b>Model Nomenclature</b>	3	Information for initial start-up	36
<b>AHRI Performance Data</b>	4	Airflow correction factors	37
<b>Enfinity™ Console Water Source Heat Pumps</b>	5	Antifreeze correction factors	37
Introduction	5		
With Enfinity water source heat pumps, you benefit from:	5		
<b>Features &amp; Options</b>	6		
Configuration	7	Flat top – high sill, left-hand piping – unit size 007 - 012	38
Cabinet	7	Flat top – high sill, right-hand piping – unit size 007 - 012	38
Chassis	7	Flat top – low sill, left hand piping – unit size 007 - 012	39
Optional factory installed features	7	Flat top – low sill, right-hand piping – unit size 007 - 012	39
<b>Controls Options</b>	8	Flat top – high sill, left hand piping – unit size 015 - 018	40
MicroTech® III unit controller	9	Flat top – high sill, right hand piping – unit size 015 - 018	40
MicroTech® III unit controller with LonWORKS or BACnet communication module	11	Flat top – low sill, left hand piping – unit size 015 - 018	41
MicroTech III unit controller with communication modules features	11	Flat top – low sill, right-hand piping – unit size 015 - 018	41
I/O expansion module	12	Slope top – high sill, left-hand piping – unit size 007 - 012	42
<b>Control Accessories</b>	14	Slope top – low sill, left-hand piping – unit size 007 - 012	43
Thermostats and Remote Sensors used with MHC units – standalone operation	14	Slope top – high sill, left-hand piping – unit size 015 - 018	44
<b>Control Accessories</b>	15	Slope top – high sill, right hand piping – unit size 015 - 018	44
Remote control node (RCN)	15	Slope top – low sill, left-hand piping – unit size 015 - 018	45
Room temperature sensors for MicroTech III unit controller – building automated system (BAS) operation	16	Slope top – low sill, right hand piping – unit size 015 - 018	45
Thermostats used with MHC console units –standalone operation.	17	Wireless temperature control (T9000)	46
Unit mounted thermostats used with MHC console units –standalone operation	18	Remote control node (RCN)	46
<b>Applications</b>	19	Supply and return water hoses	46
Water source heat pump systems	20	Combination balancing and shutoff valves	47
Boiler / tower applications: AHRI 320 / ISO 13256-1	20	2-way motorized valve	47
Open loop well water applications: AHRI 325 / ISO 13256-1	20	Piping package (options)	47
Closed loop geothermal applications: AHRI 330/ISO 13256-1	21	Outdoor air dampers	50
Application considerations	22	Extended end pocket (option)	50
Unit selection	23	Multiple unit control panel (MUCP)	50
<b>Capacity Data</b>	24		
Unit Size 007 (295 SCFM)	24		
Unit Size 009 (355 SCFM)	26	<b>Typical Wiring Diagrams</b>	51
Unit Size 012 (370 SCFM)	28	Typical MicroTech III unit controller for sizes 007-015 – 208/230/60Hz/1-phase	51
Unit Size 015 (535 SCFM)	30	Typical MicroTech III unit controller with electric heat for size 018 208/230/60Hz/1-phase	52
Unit Size 018 (485 SCFM)	32	Typical MicroTech III unit controller with communication module and wall-mounted room temperature sensor – 265/277/60Hz/1-phase	53
<b>Engineering Data</b>	34	<b>Engineering Guide Specifications</b>	54
Physical data	34		
Electrical data	34		
Fan performance	35		
Operating limits	36		

<b>1</b>	<b>2-4</b>	<b>5</b>	<b>6-8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14-15</b>	<b>16-17</b>	<b>20</b>	<b>23</b>	<b>24-26</b>	<b>30-32</b>	<b>34</b>	<b>35-37</b>	<b>38</b>
W	MHC	1	007	S	E	H	B	T	01	S2	2	L	UNL	B04	E	75V	R

<b>Category</b>	<b>Code Option</b>	<b>Code Designation</b>	<b>Description</b>
<b>Product Category</b>	1	W	= Water Source Heat Pump
<b>Model Type</b>	2-4	MHC	= R410A, Wall Mounted, Standard Range
		MHW	= R410A, Wall Mounted, Geothermal Range
<b>Design Series</b>	5	2	= Design 2
<b>Nominal Capacity</b>	6-8	007 009 012 015 018	= 7,000 Btuh Nominal Cooling = 9,000 Btuh Nominal Cooling = 12,000 Btuh Nominal Cooling = 15,000 Btuh Nominal Cooling = 18,000 Btuh Nominal Cooling
<b>Controls</b>	9	S H J	= MicroTech® III Unit Controller - SmartSource = MicroTech III series 2 controller w/LonWorks Comm Module = MicroTech III series 2 controller w/BACnet Comm Module
<b>Voltage</b>	10	A E J	= 115-60-1 (Sizes 007-012 only) = 208-230/60/1 = 265/277-60-1
<b>Cabinet Height</b>	11	H L	= High Sill = Low Sill
<b>Return Air</b>	12	B F	= Bottom Return (High Sill) = Front Return (Low Sill)
<b>Discharge Air</b>	13	T	= Top
<b>Blower Motor</b>	14-15	01	= Standard
<b>Cabinet Type / Discharge Grille</b>	16-17		
<b>Cabinet Type</b>	16	A B F S	= Flat Top w/12" Extended End Pocket (Code Option 11 must be "H") = Slope Top w/12" Extended End Pocket (Code Option 11 must be "H") = Flat Top = Slope Top
<b>Discharge Grille</b>	17	C 2 3	= Chassis Only = Standard Stamped Louver = Multi-Directional Grille
<b>Heating Options</b>	20	2 3	= 2.5 kW Electric Heat (Sizes 007, 009, 012 Only) (208-230/60/1 or 265/277-60-1) = 3.5 kW Electric Heat (Sizes 015, 018 Only) (208-230/60/1 or 265/277-60-1)
<b>Piping Hand</b>	23	L R	= Left = Right
<b>Thermostat Control / Programmability &amp; Options</b>	24-26		
<b>Controls</b>	24	R S U W	= Remote Wireless = Wall-Mounted Space Sensor w/NSB Override (Standalone Only) (265/277-60-1 w/No Electric Heat Option) = Unit Mounted Thermostat with LCD Display (Standalone Only) = Wall Mounted Thermostat with Fan Speed Switch (Standalone Only)
<b>Programmability</b>	25	N P Y	= Non-Programmable = 7-Day Programmable w/LCD Display = None
<b>Options</b>	26	L M P R	= Low Limit Control (Must be code option 24-"R", "U" or "W" or code option 25-"Y") = Low Limit Control and Unit-mounted NSB Override Switch (Must be code option 24-"W" or code option 25-"Y") = NSB Override Switch (Must be code option 24-"W" or code option 25-"Y") = Remote Sensor (Must be code option 24-"W")
<b>Options</b>	30-32	B02 B04 B06	= 2" Rear Extension = 4" Rear Extension = 6" Rear Extension
<b>Power Connection</b>	34	C D E	= Unit Mounted 20A Plug and Cord (Cannot be 265/277-60-1, w/code option "2" or "3") = Unit Mounted 20A Plug and Cord with Fused Disconnect Switch = Unit Mounted 20A Plug and Cord with Non-Fused Disconnect Switch
<b>Cabinet Electrical</b>	35-37	75V	= 75VA Control Transformer
<b>Water Flow Control</b>	38	P R W	= 2-Way Motorized 1/2" Isolation Valve, High Close-Off Pressure N.C. (Normally Closed) and Supply, Return, Bypass Hand Valves and Measureflow Device = 1/2" Supply, Return and Bypass Valves Only = 2-Way Motorized 1/2" Isolation Valve, High Close-Off Pressure N.C. (Normally Closed) and Supply, Return and Bypass Hand Valves

## Enfinity™ - high performance, high efficiencies, lower operating costs

**Table 1: AHRI performance data (rated in accordance with AHRI/ASHRAE/ISO Standard 13256-1). English (I-P) units**

Unit Size	Fluid Flow Rate		Water Loop				Ground Loop			
			Cooling 86°F EWT		Heating 68°F EWT		Cooling 77°F EWT		Heating 32°F EWT	
	(GPM)	(CFM)*	Capacity (Btuh)	EER (Btuh/W)	Capacity (Btuh)	COP	Capacity (Btuh)	EER (Btuh/W)	Capacity (Btuh)	COP
007	1.9	295	7700	14.5	9110	5.0	8300	16.9	5600	3.3
009	2.4	355	9200	14.0	11000	4.5	9700	16.1	7000	3.2
012	2.9	370	11000	13.1	13700	4.3	11700	15.3	8900	3.2
015	3.7	535	14500	15.1	18200	5.2	15400	17.3	10900	3.4
018	4.6	485	16400	13.4	20900	4.3	17300	15.3	13200	3.4

Legend: **Btuh** = British Thermal Units per Hour      **COP** = Coefficient of Performance      **EER** = Energy Efficiency Ratio

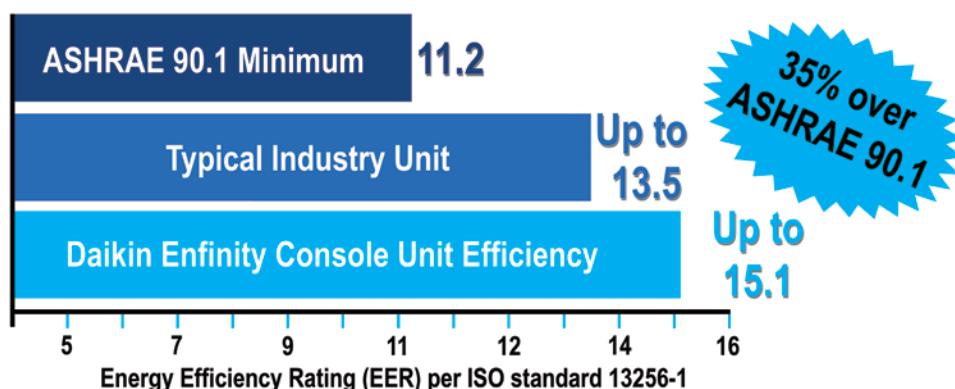
**Water Loop:** 1. Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 86°F (30°F) EWT  
2. Heating capacity is based on 68°F db, 59.0°F wb (20/15°C) EAT and 68°F (20°C) EWT.

**Ground Loop:** 1. Cooling capacity is based on 80.6°F db, 66.2°F wb (27/19°C) EAT and 77°F (25°F) EWT  
2. Heating capacity is based on 68°F db, 59.0°F wb (20/15°C) EAT and 32°F (0°C) EWT.

**Notes:** Ratings are at 208 volt electrical.

\* CFM based on dry coil

**35% greater efficiency than the minimum required by ASHRAE 90.1, for units less than 17,000 Btuh per ISO Standard 13256-1 for Boiler/Tower applications.**



## Introduction

More than 30 years ago, McQuay (Now Daikin Applied) designed the first complete line of water source heat pumps for high efficiency, individually-zoned comfort control in offices, schools, assisted living facilities, manufacturing facilities and other commercial buildings. Our reputation for outstanding reliability and quiet operation has been reinforced in thousands of successful installations.

Enfinity water source heat pumps incorporate the best of our past and the best of what's new. Using feedback from building owners, consulting engineers, contractors and service engineers, we designed Enfinity products to give you maximum flexibility to design, install, operate and maintain the ideal water source heat pump system for your building project. And we incorporated non-ozone depleting R-410A refrigerant, which—along with high Energy Efficiency Ratios (EER's)—helps preserve our environment and precious energy resources.

## With Enfinity water source heat pumps, you benefit from:

### ***High efficiency that minimizes environmental impact and lowers operating costs***

- Units exceed ASHRAE Standard 90.1 minimum requirements
- Standard range or geothermal application flexibility

### ***Engineered for flexibility and performance***

- Two cabinet sizes, each with Daikin's subtle aesthetic and small footprint design, make it easy to meet the space requirements of your new construction or replacement application.
- MicroTech® unit controller with Open Choices™ feature allows easy, low cost integration with the Building Automation System (BAS) of your choice.

### ***Improved efficiency***

- Factory-installed, unit-mounted thermostats save time and money versus installing wall-mounted thermostats.
- Wide range of factory-installed options, including electric heat, motorized valves and thermostat options help you meet more specific application requirements with minimum design or installation time and expense.

### ***Easy, low-cost maintenance***

- Easy access to the unit compressor (end panel), fan section and coil (front panel) and unit controls (left or right end panel).
- A easily removable blower motor allows the tangential fan wheel to remain in the housing during motor replacement.
- A hinged control box allows easy access to the piping compartment.

### ***Quiet operation***

- New Gentleflo™ fan wheel allows the fan motor to operate at lower speed for quieter operation.
- High efficiency rotary compressor mounted on a mass plate system reduces noise due to vibration.

### ***Superior indoor air quality (IAQ)***

- Removable, non-corrosive and double-sloped polymer drain pan promotes positive condensate drainage.
- Optional closed-cell insulation prevents insulation fibers from entering the air stream.

### ***R-410A refrigerant with zero ozone depletion potential or phase-out date***

- R-410A is classified as A1/A1 – lower toxicity, no flame propagation – per ASHRAE Standard 31.



**1 Cabinets**

- Design flexibility with slope top or flat top configurations and directional grille options
- Service accessible with removable top, front, and end panels

**2 Compressor**

- Increased energy savings using high efficiency rotary design
- Zero ozone depleting R-410A refrigerant with no phase-out date

**3 Gentleflo™ fan**

- High efficiency and quiet multi-speed tangential fan system

**4 MicroTech® III unit controller**

- Streamlined network controls using LonWORKS® or BACnet® communication modules
- I/O expansion module for electric heat and multiple fan speeds

**5 LED status lights**

- Easy diagnosis and troubleshooting of fault condition indicators

**6 Filter**

- Easily accessible and serviceable 1/2" standard disposable filter

**7 Hinged control box**

- Increases service access to plumbing end compartment for fast installation and maintenance

**8 2-way motorized valve packages (optional)**

- Factory-installed or field-installed choice for variable pumping applications.
- Reduced operating costs with two-way isolation valves

**9 Double-sloped drain pan**

- Easily removable and cleanable, non-corrosive polymer design promotes maintenance and superior Indoor Air Quality (IAQ)

**10 T9000 wireless temperature controller (option)**

- Precise temperature control without installation and wiring expenses
- Factory-installed or field-installed choice for 24V thermostat controlled units

**Remote control node (RCN)**

- Easy integration with unit and temperature controls

**11 Multi-directional grilles (option)**

- Discharge air directional control using rotatable grilles

**12 High sill extended end pocket (option)**

- Increases service access 11" for piping or field-installed pump

**Outside air dampers (option - not shown)**

- Increased ventilation air control - motorized or manual operation

**7" high sub base (option - not shown)**

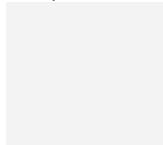
- Increases piping arrangement flexibility

**2", 4", 6" cabinet rear extension (option - not shown)**

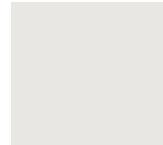
- Extends space behind unit for piping (high sill units only)

**Expanded paint colors – for any decor.**

Cupola White



Off White



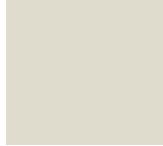
Putty Beige



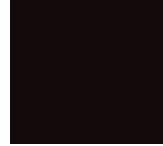
Soft Gray



Antique Ivory



Oxford Brown



(Discharge Grille &amp; Subbase)

## Configuration

Console water source heat pumps are available in five cooling capacity sizes, from 1/2 through 1½ tons, (1757 to 5274 watts). Each is available in four different configurations.

Flat top units meet the traditional requirements for a rugged unit. Slope top units offer a more modern look. The high silhouette unit is 25" (635mm) high and the low silhouette unit is only 22½" (572mm) high. The overall unit dimensions are very compact; unit sizes 007 through 012 are 46" (1168mm) long and sizes 015 through 018 are 54" (1372mm) long. All units are a constant 10¾" (273mm) deep for minimum floor space and a consistent "look" for all unit sizes.

All units incorporate a slide-out chassis concept which allows it to be installed easily or removed and replaced quickly when service is required to minimize downtime for the space the unit serves. The cabinet is made up of individual panels, each of which can be easily removed to expose the chassis for field hook-up of water and electrical connections. The chassis easily slides off the subbase for service or changeout.

## Cabinet

All cabinets are painted with optional Antique Ivory or Cupola White baked enamel finish for an aesthetically pleasing appearance. The discharge grilles and subbase can be Oxford Brown or match the cabinetry on flat top or slope top units.

The shallow 22 degree slope top cabinet is constructed of 18-gauge steel. The top and side corners and grille are constructed of tough, impact-resistant ABS polycarbonate. The grille extends to the front and sides for a smooth look as well as providing a curtain stop in back. The discharge grilles can be rotated to direct the air in an 11 degree angle from the vertical and can be reversed for a 33 degree discharge angle. The control door has a finger slot and simply lifts up for access to the thermostat. Overall, the slope top unit allows minimal airflow interference from curtains and objects resting on the cabinet, while at the same time providing a rugged, aesthetically pleasing look.

The flat top cabinet is constructed of 18-gauge steel with grille options that meet basic needs with its rugged construction and its 11 degree discharge angle.

## Chassis

The chassis houses the fan section, refrigerant circuit and controls. The air enters through the bottom of the chassis, through the subbase or through the front panel in low sill units.

The refrigeration system includes a rotary compressor, reversing valve, coaxial heat exchanger, capillary tubes, air coil, high and low side access valves, and safety controls. Access to the compressor is through a removable end panel. The compressor is isolated from the unit with external vibration mounts, mass plate/viscoelastic damping material and the compartment is totally insulated to make the quietest console unit on the market. Safety

controls include low temperature (freezestat) and refrigerant high pressure switches. The control box is hinged for easy access to all of the controls. The MicroTech III unit controller offers both standalone or communicating (LonWorks or BACnet) control options.

Each uses a printed circuit board for clean wiring and a low voltage control circuit with a 50 VA transformer. See [on page 8](#) for more detailed information. Main power is made to a chassis-mounted 2" x 4" (51mm x 102mm) junction box.

The fan section employs Daikin's Gentleflo tangential system fan and efficient, two-speed PSC motor for selectable airflow and/or noise level. Access to the fan wheel is made through the top panel. The motor is secured to the chassis with three screws for easy service.

Water piping connections are 5/8" O.D. copper tubing (sweat connection stubs) and terminate away from the side of the chassis in the piping compartment for easy access. Unique left- and right-hand piping (includes condensate and electrical) locations are available. The 3/4" (19mm) I.D. flexible clear vinyl condensate drain tube is internally trapped and extends 14" (356mm) into the piping compartment for easy connection. Piping (electrical and condensate also) can enter through the back wall or through the floor within the subbase. The chassis allows for a piping compartment between the chassis and the cabinet.

## Optional factory installed features

Boilerless system electric heat eliminates the need for a boiler in the heat pump water loop. An electric heater is added to the discharge side of the fan scroll. If the entering water temperature falls to 58°F (15°C) the thermostat locks out compressor operation. On a call for heat, the electric heater is energized. When the entering water temperature raises, the unit will resume compressor operation on a call for heat. An emergency electric heat override plug allows for electric heat, if the compressor (mechanical) heat should fail. Each unit has various heater sizes to select from. Not available on 115 volt units. Not CSA listed.

## Extended end pocket (high sill units)

Optional extended cabinet end pocket for high sill units, provides 11" of additional area inside the left or right end pocket for piping or a field-installed pump.

## Multi-directional grilles

Selectable plastic Multi-Directional Grilles can rotate 90, 180 or 270 degrees for added control of discharge air direction.

## 2", 4", 6" cabinet rear extension (high sill units)

The optional, factory-installed rear extension for (high sill units only) provides extended space between the wall and unit for piping.

## Control choices and added functionality

The control box is accessible through the left or right end corner panel. It houses the major operating electrical controls including the MicroTech® III unit controller, transformer, compressor relay and fan relay. Each component is accessible for service or replacement.

### **Four unique control choices are offered with the MicroTech III unit controller:**

- Standalone operation using a MicroTech III unit controller
- MicroTech III unit controller with I/O Expansion module
- MicroTech III unit controller with a LonWorks® communication module
- MicroTech III unit controller with a BACnet® communication module

Each option features direct quick-connect wiring to all unit-controlled components for “clean” wiring inside the control box.

**Table 2: Control options**

Control	Description	Application	Protocol
<b>MicroTech III</b>  (Standalone) Unit Controller.	The MicroTech III unit controller is a standalone microprocessor-based control board conveniently located in the unit control box for accessibility. The board is designed to provide standalone control of a Water Source Heat Pump using a wall thermostat or a wall mounted temperature sensor. Each unit controller is factory programmed, wired, and tested.	Each unit controller is factory programmed, wired, and tested for complete control of single zone, standalone operation of your Daikin Water Source Heat Pump.	Unit-mounted or wall-mounted thermostat
<b>I/O Expansion Module</b> 	The I/O Expansion Module is an extension of the Microtech III unit controller and provides additional functionality to the Microtech III control system. It is required on all units with an LED annunciator and provides operation of the boilerless electric heat feature.	Allows for: <ul style="list-style-type: none"> <li>• Monitoring of entering water temperature for boilerless electric heat control.</li> <li>• Outputs for optional electric heat</li> </ul>	Unit-mounted or wall-mounted thermostat
<b>LonWorks</b>  Communication Module	The MicroTech III unit controller can accept a plug-in LonWorks communication module to provide network communications and added functionality to easily integrate with an existing BAS. The communication module can be factory- or field-installed and is tested with all logic required to monitor and control the unit.	LonTALK application protocol is designed for units that are integrated into a LonWORKS communication network for centralized scheduling and management of multiple heat pumps.	LonMARK 3.4 Certified
<b>BACnet</b>  Communication Module	The MicroTech III unit controller can accept a plug-in BACnet communication module to provide network communications and added functionality to easily integrate with an existing BAS. The communication module can be factory- or field-installed and is tested with all logic required to monitor and control the unit.	Designed to be linked with a centralized building automation system (BAS) through a BACnet communications network for centralized scheduling and management of multiple heat pumps.	BACnet MS/TP

## MicroTech® III unit controller

The MicroTech III Unit Controller is a microprocessor-based control board conveniently located in the unit control box for easy access through a removable access panel. The standalone unit controller is a hard wired interface and provides all the necessary field connections. The board can be wired for 24-volt AC output to the wall thermostat by using terminals R & C. An LED annunciation is located on the front corner of the unit chassis to quickly check the operating status of the unit.

## MicroTech III operating features

Assumes cycle fan operation-not continuous fan operation:

- **Start-up** – The unit will not operate until all the inputs and safety controls are checked for normal conditions.
- **Cooling mode** – On a call for cooling, the compressor and fan will start after the various control timers have expired. If the reversing valve output is energized, the reversing valve output will be de-energized 5 seconds after the compressor has been energized. When the load is satisfied, the compressor and fan shut off.
- **Heating mode** – On a call for heating, the compressor and fan start after the various control timers have expired. If the reversing valve output is de-energized, the reversing valve output will be energized 5 seconds after the compressor has been energized. When the load is satisfied, the compressor and fan shut off. The reversing valve remains energized.
- **Short cycle protection & random start** – After power cycle or deactivation of certain alarms, or when leaving the unoccupied mode, a new random compressor start-delay time between 300 and 360 seconds is generated. The random start timer prevents compressors in different units from starting simultaneously. Compressor minimum OFF (360 sec) and compressor minimum ON (180 sec) timers prevent compressor short cycling.
- **Unoccupied mode** – A simple “grounded” signal between terminals U and C (no power source required), puts the unit into the unoccupied mode for night setback operation.
- **Override mode** – A switch on the deluxe automatic changeover thermostat can be activated during the unoccupied mode to put the unit back into the occupied mode for two hours for after-hours heating or cooling.
- **Motorized valve/pump restart** – The IV/PR (H8) terminals on the The MicroTech III unit controller are used to energize (open) a motorized valve or start a water pump to get water circulating prior to starting the compressor on call for heating or cooling. The IV/PR (H8) terminal may be “daisy chained” between 200 units.

- **Brownout protection** – The MicroTech III unit controller measures the input voltage and will suspend compressor and fan operation if the voltage falls below 80% of the unit nameplate rated value. A unique LED status is generated and an output is available to a “fault” LED at the thermostat.
- **Unit shutdown** – A simple grounded signal puts the unit into the shutdown mode. Compressor and fan operations are suspended. A unique LED status is generated and an output signal is made available for connection to a “fault” LED at the thermostat.
- **Condensate overflow protection** – The MicroTech III unit controller incorporates a liquid sensor at the top of the drain pan. Upon sensing water, cooling operation is suspended and an LED status is generated.
- **Remote reset of automatic lockouts** – The Remote Reset feature provides the means to remotely reset some lockouts generated by high-pressure and/or low-temperature faults. When the MicroTech III unit controller is locked out due to one of these faults, and the cause of the fault condition has been cleared, energizing the O-terminal for 11 seconds or more forces the MicroTech III unit controller to clear the lockout. Cycling unit power also clears a lockout if the conditions causing the fault have been alleviated.
- **Intelligent alarm reset** – The Intelligent Reset feature helps to minimize nuisance trips of automatic lockouts caused by low-temperature faults. This feature clears faults the first two times they occur within a 24-hour period and triggers an automatic lockout on the 3rd fault. The retry count is reset to zero every 24 hours.
- **Equipment protection control** – The MicroTech III unit controller receives separate input signals from the refrigerant high-pressure switch and the low suction line temperature sensor. In a high-pressure situation, compressor operation is suspended. In a low temperature situation, the unit goes into a defrost cycle where the unit is put into cooling operation for 60 seconds until the coaxial heat exchanger is free of ice. Each switch generates its own unique LED status and output is available to a “fault” LED at the thermostat if either situation exists.

**Note:** Most unit fault conditions are the result of operating the equipment outside the unit specifications.

**Table 3: MicroTech III controller configuration jumper settings**

Baseboard Description	Jumper(s)	Setting	Model
Normal / Test Mode	JP1	JP1 = Open	Normal Operation
		JP1 = Shorted	Service / Test Mode
Fan Operation	JP2	JP2 = Open	Continuous Fan Operation (On)
		JP2 = Shorted	Cycling Fan Operation (Auto)
Loop Fluid	JP3	JP3 = Open	Water Loop Fluid
		JP3 = Shorted	Glycol Loop Fluid
Freeze Fault Protection	JP4	JP4 = Open JP4 = Shorted	Not Used
Room Sensor Setpoint Potentiometer Range	JP5	JP5 = Open	Short Range: -5 to +5 °F (-2.78 to +2.78 °C)
		JP5 = Shorted	Long Range: 55 to 95 °F (12.78 to 35 °C)
Thermostat / Room Sensor	JP6	JP6 = Open	Thermostat Control
		JP6 = Shorted	Room Sensor Control
Compressor Heating Source	JP7	JP7 = Open	Allow Compressor Heating Mode Operation
		JP7 = Shorted	Disable Compressor Heating Mode Operation
I/O Expansion Module	JP8	JP8 = Open	I/O Expansion Board Not Present
		JP8 = Shorted	I/O Expansion Board Is Required

### ⚠ WARNING

Proper antifreeze/water solution is required to minimize the potential of fluid freeze-up. Jumper JP3 is factory set for water freeze protection with the jumper open. Operation at fluid temperatures below 32°F with anti-freeze protection requires JP3 to be field configured for the jumper closed. If unit is employing a fresh water system (no anti-freeze protection), it is extremely important that JP3 jumper setting remains in the open position (factory default setting) in order to shut down the unit at the appropriate water temperature to protect your heat pump from freezing. Failure to do so can result in unit damage, property damage and will void unit warranty.

**Table 4: MicroTech III controller status LED's**

Description	Type*	Yellow	Green	Red
IO Expansion Communication Fail	Fault	ON	Flash	Flash
Invalid Configuration	Fault	Flash	Flash	OFF
Low Voltage Brownout	Fault	OFF	Flash	OFF
Emergency Shutdown	Mode	OFF	Flash	OFF
Compressor High Pressure (HP1)	Fault	OFF	OFF	Flash
Compressor Low Pressure (LP1)	Fault	OFF	OFF	ON
Compressor Low Suction Temp Sensor Fail (LT1)	Fault	Flash	Flash	ON
Freeze Fault Detect (Freeze Fault Protection Only)	Fault	Flash	OFF	Flash
Compressor Low Suction Temp (LT1)	Fault	Flash	OFF	OFF
Room Temp Sensor Fail (With Room Sensor Control Only)	Fault	Flash	Flash	ON
"Condensate Overflow (Cooling)	Fault	ON	OFF	OFF
Low Entering Water Temp (Heating Compressor Inhibit; No Display with Boilerless EH)	Fault	Flash	OFF	Flash
Serial EEPROM Corrupted	Fault	ON	ON	ON
Service Test Mode Enabled	Mode	Flash	Flash	Flash
Unoccupied Mode	Mode	ON	ON	OFF
Occupied, Bypass, Standby Modes	Mode	OFF	ON	OFF

Note: \* Mode / Faults are listed in order of priority.

## MicroTech® III unit controller with LonWORKS or BACnet communication module

Each Daikin Console Water Source Heat Pump can be equipped with a LonWORKS or BACnet communication module. The LonWORKS module is LONMARK 3.4 certified and designed to communicate over a LonWORKS communications network to a Building Automation System (BAS). The BACnet module is designed to communicate over a BACnet MS/TP communications network to a building automation system. Both controllers are microprocessor-based and can be factory or field-installed.

The control modules are programmed and tested with all the logic required to monitor and control the unit. Optional wall sensors may be used with the communication modules to provide limited local control of the Console Water Source Heat Pump. The MicroTech III unit controller monitors water and air temperatures and passes information to the communication module. The module communicates with the BAS, to provide network control of the Water Source Heat Pump.

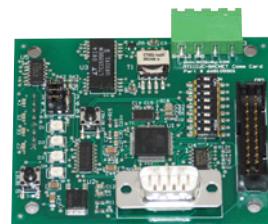
### MicroTech III LonWORKS communication module

The LonWORKS communication module is designed for units that are integrated into a LonWORKS communication network for centralized scheduling and management of multiple heat pumps.



### MicroTech III BACnet communication module

Designed to be linked with a centralized building automation system (BAS) through a BACnet communications network for centralized scheduling and management of multiple heat pumps.



### MicroTech III unit controller with communication modules features

The MicroTech III Unit Controller with LonWORKS or BACnet Communication Module orchestrates the following unit operations:

- Enable heating and cooling to maintain space temperature setpoint based on a room sensor setting
- Enable fan and compressor operation
- Monitors all equipment protection controls
- Monitors room and discharge air temperatures
- Monitors leaving water temperature
- Relays status of all vital unit functions

An on-board status LED indicates the status of the MicroTech III LonWORKS or BACnet module.

#### ***The MicroTech III unit controller includes:***

- A unit-mounted return air sensor (Factory installed)
- A unit-mounted discharge air sensor (Factory installed)
- A leaving water temperature sensor (Factory installed)

## I/O expansion module

**Note:** Only available on console units with electric heat selected.

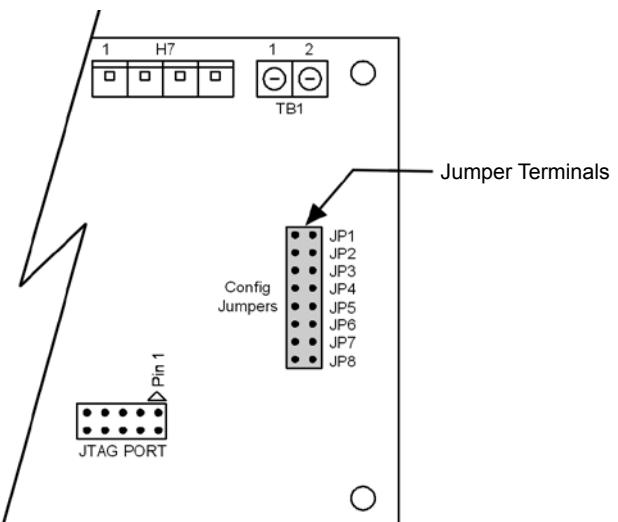


The I/O Expansion Module is a factory installed option. It is an extension of the MicroTech III unit controller and provides extra functionality.

### **The I/O expansion module has 2 main purposes:**

- The I/O Expansion Module has outputs to control electric heat on a standard Water Source Heat Pump.
- The I/O Expansion Module has an independent LED annunciator to identify operational fault conditions for the electric heater.

**Figure 1: I/O Expansion module configuration jumper terminals**



## Features

### **Standard heat pumps / single circuit units**

- Monitors entering water temperature for boilerless electric heat control

**Table 5: I/O expansion module jumper settings (when used)**

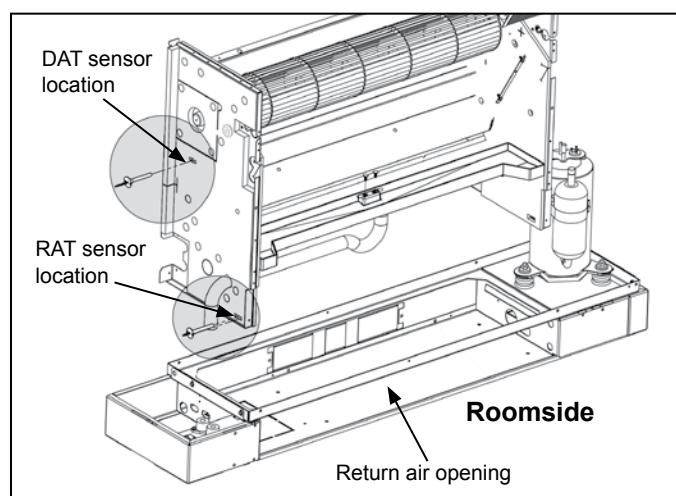
I/O Expansion Description	Jumper(s)	Setting	Description
Not Used	JP1 & JP2	JP1 = Open JP2 = Open	None
		JP1 = Shorted JP2 = Open	
		JP1 = Open JP2 = Shorted	
		JP1 = Shorted JP2 = Shorted	
Heating Options	JP3 & JP4	JP3 = Open JP4 = Open	None
		JP3 = Open JP4 = Shorted	Boilerless Electric Heat
Not Used	JP5 & JP6	JP5 = Open JP6 = Open	None
Not Used	JP7 & JP8	JP7 = Open JP8 = Open	None

**Table 6: I/O expansion module LED & fault outputs (when used)**

Description	Type	Yellow	Green	Red
Baseboard Communication Fail	Fault	Flash	OFF	Flash
Low Entering Water Temperature (No Display On Boilerless Electric Heat)	Fault	OFF	ON	Flash
Fan is OFF	Mode	OFF	ON	OFF
Fan is ON	Mode	OFF	Flash	OFF
	Mode	ON	Flash	OFF
	Mode	Flash	Flash	OFF
	Mode	Flash	Flash	OFF

**Notes:** 1. Mode / faults are listed in order of priority.

2. I/O expansion module supplied with boilerless and supplemental electric heat options.

**Figure 2: Discharge air temperature sensor (DAT) & return air temperature (RAT) sensor locations**

The communication modules provide network access to setpoints for operational control

#### Available wall sensors include:

- Room sensor
- Room sensor with LED status and tenant override button
- Room temperature sensor with LED status, timed-override button, and  $\pm 5^{\circ}\text{F}$  setpoint adjustment
- Room temperature sensor with LED status, timed-override button,  $55^{\circ}$  to  $95^{\circ}\text{F}$  setpoint adjustment

**Note:** Refer to IM 956 for (DAT), (RAT) and (LWT) leaving water temperature sensor details.

## Thermostats and Remote Sensors used with MHC units

### Wi-Fi 7-day programmable electronic thermostat, 2 heat/2 cool

Note: Refer to IO&AP 910193130 Manual for details



Wi-Fi Programmable Electronic Thermostat

For 2-stage heating, 2-stage cooling, high-low fan speed and boilerless electric heat control, the Wi-Fi programmable thermostat provides simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, this thermostat provides an easy interface to the MicroTech III SmartSource controller for both automatic and manual changeover capabilities. It can be connected to the accessory remote temperature sensor.

### 7-day programmable electronic thermostat, 2 heat/2 cool

Note: Refer to IO&AG 910193131 Manual for details



Programmable Electronic Thermostat

For 2-stage heating, 2-stage cooling and boilerless electric heat control, the programmable thermostat provides simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, this thermostat provides an easy interface to the MicroTech III SmartSource controller for both automatic and manual changeover capabilities. It can be connected to the accessory remote temperature sensor.

### Programmable and non-programmable thermostats, 1 stage heat/1 stage cool

Note: Refer to 668811301 and 668811201 Install Manuals for details



Programmable



Non-Programmable

For 1-stage heating, 1-stage cooling, both the Programmable and Non-Programmable thermostats provide simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, these thermostats provide an easy interface to the MicroTech III unit controls with automatic changeover capabilities. Each can be connected to the accessory remote temperature sensor.

### Programmable and non-programmable thermostats, 2 stage heat/2 stage cool

Note: Refer to 910121748 and 910121746 Install Manuals for details



Programmable



Non-Programmable

For 2-stage heating, 2-stage cooling, both the Programmable and Non-Programmable thermostats provide simple control capabilities. With alarm fault clearing, a timed override button and unit status LED, these thermostats provide an easy interface to the MicroTech III unit controls for both automatic and manual changeover capabilities. Each can be connected to the accessory remote temperature sensor.

## Programmable and non-programmable thermostats, 1 stage heat/1 stage cool

For 1-stage heating, 1-stage cooling, the hard wired, auto changeover Programmable and Non-Programmable thermostats provide simple control capabilities. With backlit display, two-speed fan control, field calibration button, lockout function and remote temperature sensing capabilities. These thermostats provide an easy interface to the MicroTech III unit controls.



Programmable (P/N 668811101)



Non-programmable (P/N 668811001)

## Remote room sensors used with the programmable and non-programmable thermostats



With logo (P/N 667720401)



No logo (P/N 107096001)

The remote indoor temperature sensors provide the ability to measure room temperature remotely, from the thermostat location.

## Wireless temperature control (T9000)

The T9000 Wireless Temperature Control is designed to provide precision temperature control without the installation labor and expense of wiring.

- Powered by AA batteries
- Mounts in any suitable location that will provide good temperature control.
- Large LCD display provides the user with current room temperature, set point temperature, time, program interval, and other system status information.

For detailed installation, operation refer to Operation & Maintenance Bulletin [OM 897](#).



Programmable



Non-programmable

The second part of the T9000 system is called a Remote Control Node or "RCN". An RCN interfaces with specific desired HVAC equipment, and communicates with its thermostat using unlicensed 900 MHz, radio frequency energy. At the time of installation, the T9000 thermostat is linked to one or more RCN controls. The thermostat and RCN that have been linked will not interfere with, or be affected by, any other thermostat or RCN in adjacent rooms, apartments, or neighboring homes.

## Remote control node (RCN)



Used with the Wireless Temperature Control, the RCN interfaces with specific HVAC equipment, and communicates with its thermostat using unlicensed 900 MHz, radio frequency energy. Contact your local Daikin Representative for details.

## Room temperature sensors for MicroTech III unit controller – building automated system (BAS) operation

A MicroTech III Water Source Heat Pump Room Temperature Sensor is required when connecting a console unit to a Building Automation System (BAS) using either the LonWORKS or BACnet Communication Module. All MicroTech III water source heat pump room temperature sensors provide electronic sensing of the room temperature for single or multiple-stage cooling and heating control, unit status annunciation, timed tenant override, and fault clearing capabilities.

### Digitally adjustable display sensor

**Note:** Refer to IM 1237 for details



The display sensor is used in conjunction with MicroTech III equipped units. The sensor has a digital display for temperature, occupancy, alarm, setpoint and status indication. Controls include four buttons for setpoint, occupied/unoccupied request, and override reset.

### Adjustable cool/warm sensor with occupancy switch

The Adjustable Cool/Warm Sensor with Occupancy Switch can be used for 2-stage heating, 2-stage cooling. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button. Changing the system mode, fan mode and occupancy is easily accomplished through the slider switches.



### Adjustable 55° to 95°F or +/-5°F sensors

The adjustable 55° to 95°F or +/- 5°F sensors can be used for 2-stage heating, 2-stage cooling. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button. Changing the system or fan mode is easily accomplished through the slider switches.



Adjustable 55° to 95°F Sensor



Alternate Celsius  
Slider Face

+/-5°F Sensor

### Basic room sensor

**Note:** Refer to IM 1238 for details



The basic room sensor is used in conjunction with MicroTech III equipped units. The sensor has an output for temperature, and LED status indication and includes an override reset button.

### Basic sensor



The basic sensor provides simple room temperature sensing for 2-stage heating, 2-stage cooling applications. Unit status is provided through a flashing LED located on the sensor while timed tenant override and fault reset are provided through the override button.

#### CAUTION

When an optional wall-mounted room temperature sensor is connected to the unit controller, the Return Air Temperature (RAT) sensor MUST NOT be installed. A wall-mounted room temperature sensor and the return air temperature sensor must not be connected simultaneously or the unit will not operate properly.

**Table 7: Thermostats used with stand-alone operation console units**

<b>Thermostats used with MHC console units –standalone operation</b>		Thermostats					
		Programmable / Non-Programmable	Programmable	Non-Programmable	Programmable	Non-Programmable	
<b>Standard</b>	<b>Part No. 910193126</b>	<b>Part No. 910193093</b>					
<b>Wi-Fi</b>	<b>Part No. 910193131</b>	<b>Part No. 910193130</b>					
<b>Feature</b>							
<b>Display</b>	Room Temperature & Setpoint	●	●	●	●	●	●
<b>Changeover</b>	Manual	●			●		●
	Automatic	●	●	●	●	●	●
<b>Stages</b>	Heating	2	2	2	2	2	2
	Cooling	2	2	2	2	2	2
<b>Fan Speed</b>		Unit Mounted	Remote Thermostat	Remote Thermostat	Remote Thermostat	Unit Mounted	Unit Mounted
<b>Operating Modes</b>	System	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto
	Fan	On-Auto-Hourly	On-Auto-Hourly	On-Auto-Hourly	On-Auto-Hourly	On-Auto	On-Auto
<b>Annunciation</b>	Status LED 5VDC			●	●	●	●
	Alarm Fault LED 24 VAC	●	●	●	●	●	●
<b>Reset</b>	Alarm	●	●	●	●	●	●
	Override	●	●	●	●	●	●
<b>Remote Sensors</b>	Indoor	●	●	●	●	●	●
	Outdoor						
<b>Application</b>							
<b>Electric Heat</b>	Boilerless	●	●	●	●	●	●
	Supplemental	●	●	●	●	●	●
	Primary	●	●	●	●	●	●
	Emergency	●	●	●	●	●	●
<b>Remote Sensors</b>							
<b>Used with Thermostats:</b> 910193126, 910193093, 910193131, 910193130, 668811301, 668811201, 910121748, 910121746,							
<b>Indoor Room Temperature</b>		<b>Part No. 667720401</b>	<b>Part No. 107096001</b>				

**Table 8: Unit mounted thermostats used with stand-alone operation console units**

<b>Unit mounted thermostats used with MHC console units –standalone operation</b>		<b>Thermostats</b>	
		<b>Programmable</b>	<b>Non-Programmable</b>
			
	<b>Part No. 668811101</b>	<b>Part No. 668811001</b>	
<b>Feature</b>			
<b>Display</b>	Room Temperature & Setpoint	●	●
<b>Changeover</b>	Manual		
	Automatic	●	●
<b>Stages</b>	Heating	1	1
	Cooling	1	1
<b>Operating Modes</b>	System	Cool-Off-Heat-Auto	Cool-Off-Heat-Auto
	Fan	On-Auto	On-Auto
<b>Annunciation</b>	Status LED 5VDC	●	●
	Alarm Fault LED 24 VAC	●	●
<b>Reset</b>	Alarm	Cycle Mode to "OFF" or push ▲▼ for 10 seconds	Cycle Mode to "OFF" or push ▲▼ for 10 seconds
	Setback Override	Push ▲▼ for 3 seconds	Push ▲▼ for 3 seconds

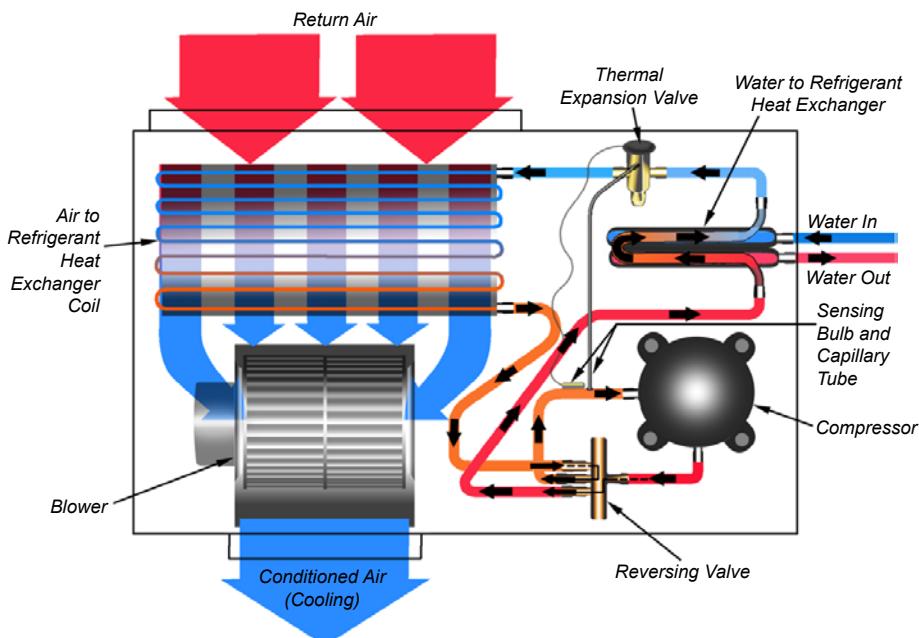
**Table 9: Room temperature sensors for BAS operation**

<b>Sensors used with MHC console units – building automated system (BAS) operation</b>		<b>Room Temperature Sensors</b>		
		<b>Digitally Adjustable Display Sensor</b>	<b>Basic Room Sensor With Cool to Warm Adjust</b>	<b>Basic Room Sensor</b>
				
		With Temperature Display, In- dicates, ALARM, Override and Occupancy.	Senses Temperature, With Tem- perature Adjust Cool to Warm, LED Status Indication, Override Reset Button	Senses Temperature, LED Status Indication, Override Reset Button
		<b>Part No. 910152147</b>	<b>Part No. 910171464</b>	<b>Part No. 910152149</b>
<b>Feature</b>				
<b>Setpoint Adjustment</b>		Digitally Adjustable	Cool to Warm	None
<b>Display</b>	Room Temperature & Setpoint	●		
	Room Humidity & Setpoint			
<b>Stages</b>	Heating	4	4	4
	Cooling	3	3	3
<b>Operating Modes</b>	System			
	Fan			
	Occupancy	LCD Display of Occupied-Unoc- cupied Icon		
<b>Annunciation</b>	Status LED	LCD Display of Unit Status	●	●
	LCD Alarm Display	●		
<b>Reset</b>	Alarm	●	●	●
	Setback Override	●	●	●

## Typical cooling and heating refrigeration cycles (for standard heat pump operation only)

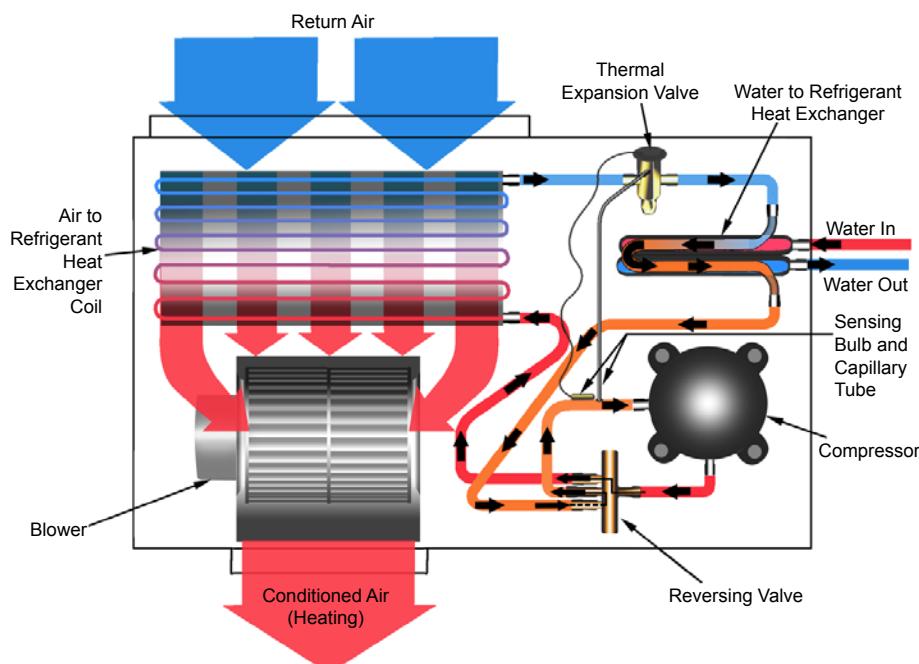
**Figure 3: Cooling refrigeration cycle**

When the wall thermostat calls for COOLING, the reversing valve directs the flow of the refrigerant, a hot gas, from the compressor to the water-to-refrigerant heat exchanger. There, the heat is removed by the water, and the hot gas condenses to become a liquid. The liquid then flows through a thermal expansion valve to the air-to-refrigerant heat exchanger coil. The liquid then evaporates and becomes a gas, at the same time absorbing heat and cooling the air passing over the surfaces of the coil. The refrigerant then flows as a low pressure gas through the reversing valve and back to the suction side of the compressor to complete the cycle.



**Figure 4: Heating refrigeration cycle**

When the wall thermostat calls for HEATING, the reversing valve directs the flow of the refrigerant, a hot gas, from the compressor to the air-to-refrigerant heat exchanger coil. There, the heat is removed by the air passing over the surfaces of the coil and the hot gas condenses and becomes a liquid. The liquid then flows through a thermal expansion valve to the water-to-refrigerant heat exchanger. The liquid then evaporates and becomes a gas, at the same time absorbing heat and cooling the water. The refrigerant then flows as a low pressure gas through the reversing valve and back to the suction side of the compressor to complete the cycle.



## Water source heat pump systems

Water source heat pump systems are one of the most efficient, environmentally friendly systems available for heating and cooling buildings. High-efficiency, self contained units (sizes 7,000 btuh to 420,000 btuh) can be placed in virtually any location within a building. Each unit responds only to the heating or cooling load of the individual zone it serves. This permits an excellent comfort level for occupants, better control of energy use for building owners and lower seasonal operating costs. The Air-Conditioning Refrigeration Institute (ARI) and the International Standards Organization (ISO) publish standards so that water source heat pumps are rated for specific applications. The ARI/ISO loop options shown in this catalog are typical water source heat pump loop choices available in today's market. These systems offer benefits ranging from low cost installation to the highest energy efficiency available in the market today.

## Boiler / tower applications: AHRI 320 / ISO 13256-1

A "Boiler/Tower" application uses a simple two-pipe water circulating system that adds heat, removes heat or transfers rejected heat to other units throughout the building. The water temperature for heating is generally maintained between 65°F – 70°F and is usually provided by a natural gas or electric boiler located in a mechanical room. The condensing water temperature, during cooling months, is maintained between 85°F and 95°F and requires the use of a cooling tower to dissipate waste heat. Cooling towers can be located on the roof, or inside or adjacent to the building. This application can be the lowest cost of the loop options available.

Note: ASHRAE 90.1 standards require that circulating pumps over 10 HP will require use of "variable frequency drive" equipment and pipe insulation to be used whenever water temperatures are below 60 degrees and above 105 degrees. See ASHRAE 90.1 Standards for details.

**Figure 5: Boiler/tower application**



## Open loop well water applications:

### AHRI 325 / ISO 13256-1

"Open Loop" well water systems use ground water to remove or add heat to the interior water loop. The key benefit of an open loop system is the constant water temperature, usually 50°F to 60°F, which provides efficient operation at a low first cost. Most commercial designers incorporate a heat exchanger to isolate the building loop from the well water. Using heat exchangers can reduce maintenance issues while still allowing the transfer of heat from unit to unit as with the "Boiler/Tower System". A successful design provides an ample amount of groundwater (approximately 2 GPM per ton) and adequate provisions for discharging water back to the aquifer or surface. Open Loop applications are commonly used in coastal areas where soil characteristics allow reinjection wells to return the water back to the aquifer. Note that some states have requirements on the depths of return water reinjection wells, and such wells must be approved by the United States Environmental Protection Agency. Also, bad water quality can increase problems with heat exchanger scaling. Suspended solids can erode the heat exchanger. Strainers can be used to contain suspended solids.

**Figure 6: Open loop well application**



## Closed loop geothermal applications: AHRI 330/ISO 13256-1

“Vertical Closed Loop” applications are installed by drilling vertical bore holes into the earth and inserting a plastic polyethylene supply/return pipe into the holes. The vertical wells are connected in parallel reverse return fashion to allow the water from the building to circulate evenly throughout the bore field. The circulating fluid dissipates heat to the ground in a similar manner as a “tower” and adds heat back to the loop like a boiler. If properly designed, the loop field can maintain the loop temperatures necessary to condition the building without the use of a boiler or a tower. Loop temperatures usually range from 37°F to 95°F in Northern climates.

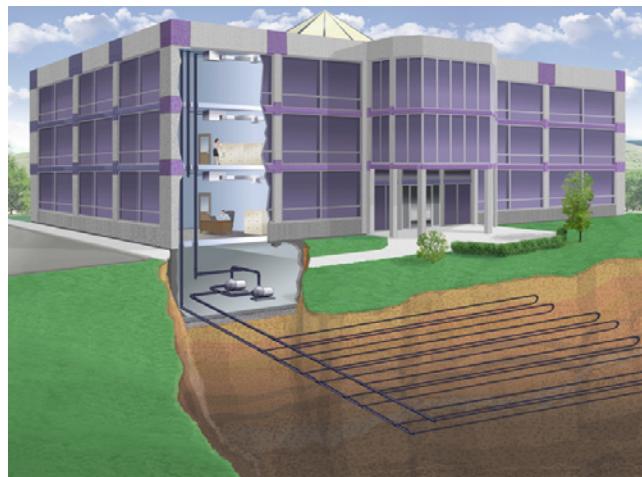
Southern applications can see temperatures ranging from 40°F to 100°F. The number of bore holes and their depth should be determined by using commercial software that is specifically designed for vertical geothermal applications. Typical bore depths of a vertical loop range from 150 to 400 feet and generally require about 250 feet of surface area per ton of cooling.

*Figure 7: Vertical loop application*



A closed loop “Horizontal” geothermal application is similar to a vertical loop application with the exception that the loops are installed in trenches approximately 5 feet below the ground surface. The piping may be installed using a “four-pipe” or “six-pipe” design and could require 1,500 to 2,000 square feet of surface area per ton of cooling. Loop temperatures for a commercial application can range from 35°F to 95°F in Northern climates. Southern climates can see temperatures ranging from 40°F to 100°F. Horizontal loops are generally not applied in urban areas because land use and costs can be prohibitive. New advances in installation procedures have improved the assembly time of horizontal loops while keeping the first cost lower than a vertical loop.

*Figure 8: Horizontal loop application*



A “Surface Water” or “Lake” closed loop system is a geothermal loop that is directly installed in a lake or body of water that is near the building. In many cases, the body of water is constructed on the building site to meet drainage or aesthetic requirements. Surface loops use bundled polyethylene coils that are connected in the same manner as a vertical or horizontal loop using a parallel reverse return design. The size and the depth of the lake is critical. Commercial design services should be used to certify that a given body of water is sufficient to withstand the building loads. Loop temperatures usually range from 35°F to 90°F and prove to be the best cooling performer and lowest cost loop option of the three geothermal loops. Some applications may not be good candidates due to public access or debris problems from flooding.

*Figure 9: Surface water loop application*



## Application considerations

### Typical console installation



### Unit location

The Console Water Source Heat Pump is typically installed on an exterior wall.

Locate a Console unit to allow for easy removal of the filter and access panels. Allow a minimum of 18" (46 cm) clearance on each side of the unit for service and maintenance access.

To reduce noise emissions, install a field-provided 1/4-inch thick, rubber isolator pad below the entire base of the unit. The pad should be equal to the overall foot-print size of the unit to provide sound dampening of the unit while in operation. The unit must sit flat on the floor to prevent unwanted noise and vibration.

### Piping

The console water source heat pump unit is typically connected to the supply / return piping using a "reverse return" piping system which includes a flow control device so that flow requirements are met for each zone. A short, high pressure "flexible hose" is used to connect the unit to the building's hard piping and acts as a sound attenuator for both the unit operating noise and hydronic pumping noise. One end of the hose has a swivel fitting to facilitate removal of the unit for replacement or service. Include supply and return shutoff valves in the design to allow removal of a unit without the need to shut down the entire heat pump system. The return valve may be used for balancing and will typically have a "memory stop" so that it can be reopened to the proper position for the flow required. Fixed flow devices are commercially available and can be installed to eliminate the need for memory stop shut off valves. Include Pressure / Temperature ports to allow the service technician to measure water flow and unit operation.

### Condensate drain

The factory provided condensate drain trap on the console unit is located inside the end cabinet. Condensate removal piping must be pitched away from the unit not less than 1/4" per foot. A vent is required after the trap so that the condensate will drain away from the unit.

The vent can also act as a clean out if the trap becomes clogged. To avoid having waste gases entering the building, the condensate drain should not be directly piped to a drain/waste/vent stack. See local codes for the correct application of condensate piping to drains.

Daikin has available optional fire-rated flexible hoses to better facilitate supply and return piping connections.

These flexible hoses reduce vibration between the unit and the rigid piping system. See Catalog 1196 for more detailed hose kit features.

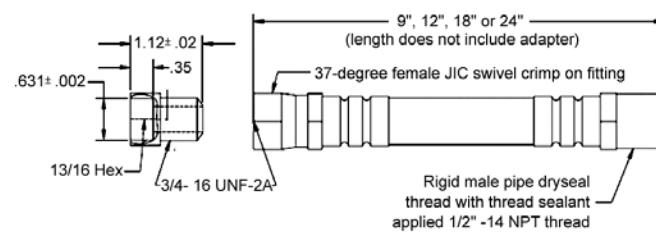
### Fire rated supply or return hoses



**Table 10: Hose specifications**

Hose Type	Nominal Length	Max. Recommended Working Pressure	Minimum Burst Pressure @ 70° to 90°	Minimum Bend Radius
1/2" MNPT Supply & Return	9"	400 psig	1600 psig	2½"
	12"	400 psig	1600 psig	2½"
	18"	400 psig	1600 psig	2½"
	24"	400 psig	1600 psig	2½"

**Figure 10: Hose detail**



## Unit selection

Achieving optimal performance with water source heat pump systems requires both accurate system design and proper equipment selection. Use a building load program to determine the heating and cooling loads of each zone prior to making equipment selections. With this information, the Daikin SelectTools™ software selection program for Water Source Heat Pumps can be used to provide fast, accurate and complete selections of all Daikin water source heat pump products. SelectTools software is available by contacting your local Daikin Representative.

While we recommend that you use Daikin SelectTools software for all unit selections, manual selections can be accomplished using the same zone load information and the capacity tables available in this catalog.

### **Boiler / tower application manual selections:**

The following example illustrates a typical selection for a zone in a boiler/tower system for a commercial building. A building load program determines that this zone needs 10,430 Btuh of total cooling, 6,950 Btuh of sensible cooling and 9,150 Btuh of total heating. The water temperatures for the boiler/tower system are 90°F for cooling and 70°F for heating. The return air temperature is 80°F dry bulb with 67°F wet bulb for cooling and 70°F for heating.

### **Zone requirements:**

Total Cooling Load	=	10,430 Btuh
Sensible Cooling Load	=	6,950 Btuh
Total Heating Load	=	9,150 Btuh
Air Flow Required	=	275 CFM
Return Air Cooling	=	80°F DB / 67°F WB
Return Air - Heating	=	70°F DB

Since a Daikin Model MHC 009 produces approximately 10,000 Btuh of cooling, it is not sufficient for this zone and a model MHC 012 should be considered. Model MHC is chosen because it is specifically designed for a boiler/tower application. Typical water flow rates for boiler/tower applications are 2.0 to 2.5 GPM per ton and in this example no antifreeze is used.

### **Selection:**

Model MHC 012 (boiler/tower)

Total Cooling Capacity @ 90 EWT	=	11,511 Btuh
Sensible cooling capacity @ 90 EWT	=	7,660 Btuh
Total Heating Capacity @ 70 EWT	=	14,160 Btuh
CFM = 275		
Water Flow required to meet capacity	=	8 GPM
Water Pressure drop	=	2.5 (FT. H2O)

**Final selection: MHC 012**

### **Extended range/geothermal applications:**

The following example illustrates the same zone in a geothermal application.

The load requirements for the zone are the same as the above example – 10,430 Btuh of total cooling and 6,950 Btuh of sensible cooling and 9,150 Btuh of heating.

Geothermal loop software programs are available to help determine the size of the loop field based on:

Desired entering water temperatures for the system.

Specific acreage available for the loop which produces specific min./max loop temps for the unit selection.

Entering water temperatures for geothermal systems can be as high as 90° to 100°F and as low as 30°F based on the geographical location of the building. Water flow rates are typically 2.5 to 3 GPM per ton and the use of antifreeze is required in most northern applications.

### **Zone requirements:**

Total Cooling Load	=	10,430 Btuh
Sensible Cooling Load	=	6,950 Btuh
Total Heating Load	=	9,150 Btuh
Air Flow Required	=	275 CFM
Return Air Cooling	=	80°F DB / 67°F WB
Return Air - Heating	=	70°F DB

A Daikin Model MHW is chosen for this geothermal application. Model MHW offers insulated water piping for condensation considerations and a different freezestat setting to allow entering water temperatures lower than 40°F (with antifreeze). Output capacities should be recalculated using the antifreeze reduction tables that are shown on "Antifreeze correction factors" on page 37.

The Model MHW 012 is first considered but may not meet the heating load because of the reduced entering water temperatures (35°F) and an antifreeze solution of 21% propylene (see page 37).

### **Selection:**

#### **Model MHW 012 (extended range model)**

Total cooling capacity @ 100 EWT	=	10,555 Btuh
$\times .980 = 10,344$		
Sensible cooling capacity @ 100 EWT	=	7,257 Btuh
$\times .980 = 7,112$		
Total heating capacity @ 35 EWT	=	9,430 Btuh
$\times .975 = 9,240$ (CFM = 284)		
Water Flow required to meet capacity	=	2.4 GPM
Water Pressure drop = $2.5 \times 1.5 = 3.75$ (FT. H2O)		

### **Final selection: MHW 012**

**Note:** In applications where the zone may be a corner office or have excessive glass area, the heating load could be greater than the heating output capacity of the MHC 012 model (say 7,800 Btuh). The choices are to upsize the unit to the next model available (015).

## Unit Size 007 (295 SCFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	1.2	0.3	0.8	65/55	<i>Tint = Operation Not Recommended</i>					4600	0.406	3200	79	3.32
		0.3	0.8	70/59						4400	0.431	2900	84	2.99
		0.3	0.8	75/63						4200	0.457	2600	88	2.69
		0.3	0.8	80/67						4000	0.482	2400	92	2.43
		0.3	0.8	85/71										
	1.8	0.8	1.8	65/55						4800	0.408	3400	80	3.44
		0.8	1.8	70/59						4600	0.433	3100	84	3.11
		0.8	1.8	75/63						4400	0.459	2800	89	2.81
		0.8	1.8	80/67						4200	0.484	2500	93	2.54
		0.8	1.8	85/71										
	2.3	1.3	3.0	65/55						4900	0.410	3500	80	3.50
		1.3	3.0	70/59						4700	0.435	3200	85	3.16
		1.3	3.0	75/63						4500	0.460	2900	89	2.86
		1.3	3.0	80/67						4300	0.486	2600	93	2.59
		1.3	3.0	85/71										
30	1.2	0.3	0.8	65/55	7900	6400	0.274	8800	28.8	5600	0.417	4200	82	3.93
		0.3	0.8	70/59	8600	6700	0.270	9500	31.9	5400	0.442	3900	87	3.58
		0.3	0.8	75/63	9300	7100	0.266	10200	35.0	5200	0.468	3600	91	3.25
		0.3	0.8	80/67	9900	7400	0.261	10800	37.9	5000	0.493	3300	96	2.97
		0.3	0.8	85/71	10600	7800	0.257	11500	41.2					
	1.8	0.8	1.7	65/55	8000	6500	0.261	8900	30.7	5700	0.419	4300	83	3.98
		0.8	1.7	70/59	8700	6800	0.257	9600	33.9	5500	0.444	4000	87	3.63
		0.8	1.7	75/63	9300	7200	0.253	10200	36.8	5300	0.470	3700	92	3.30
		0.8	1.7	80/67	10000	7500	0.248	10800	40.3	5100	0.495	3400	96	3.02
		0.8	1.7	85/71	10700	7900	0.244	11500	43.9					
	2.3	1.3	2.9	65/55	8100	6500	0.250	9000	32.4	5900	0.421	4500	83	4.10
		1.3	2.9	70/59	8700	6900	0.246	9500	35.4	5700	0.446	4200	88	3.74
		1.3	2.9	75/63	9400	7200	0.242	10200	38.8	5500	0.472	3900	92	3.41
		1.3	2.9	80/67	10100	7600	0.238	10900	42.4	5200	0.497	3500	96	3.06
		1.3	2.9	85/71	10700	7900	0.233	11500	45.9					
40	1.2	0.3	0.7	65/55	8100	6700	0.316	9200	25.6	6500	0.428	5000	85	4.45
		0.3	0.7	70/59	8700	7000	0.312	9800	27.9	6300	0.453	4800	90	4.07
		0.3	0.7	75/63	9400	7400	0.308	10500	30.5	6100	0.479	4500	94	3.73
		0.3	0.7	80/67	10100	7700	0.303	11100	33.3	5900	0.504	4200	98	3.43
		0.3	0.7	85/71	10800	8100	0.299	11800	36.1					
	1.8	0.7	1.7	65/55	8200	6700	0.303	9200	27.1	6700	0.430	5200	86	4.56
		0.7	1.7	70/59	8800	7100	0.299	9800	29.4	6500	0.455	4900	90	4.18
		0.7	1.7	75/63	9500	7400	0.295	10500	32.2	6300	0.481	4700	95	3.84
		0.7	1.7	80/67	10200	7800	0.290	11200	35.2	6000	0.506	4300	99	3.47
		0.7	1.7	85/71	10800	8100	0.286	11800	37.8					
	2.3	1.2	2.8	65/55	8200	6800	0.292	9200	28.1	6800	0.432	5300	86	4.61
		1.2	2.8	70/59	8900	7100	0.288	9900	30.9	6600	0.457	5000	91	4.23
		1.2	2.8	75/63	9600	7500	0.284	10600	33.8	6400	0.483	4800	95	3.88
		1.2	2.8	80/67	10200	7800	0.280	11200	36.4	6200	0.508	4500	99	3.57
		1.2	2.8	85/71	10900	8200	0.275	11800	39.6					
50	1.2	0.3	0.7	65/55	8000	6800	0.362	9200	22.1	7400	0.439	5900	88	4.94
		0.3	0.7	70/59	8600	7100	0.358	9800	24.0	7200	0.464	5600	92	4.54
		0.3	0.7	75/63	9300	7500	0.353	10500	26.3	7000	0.490	5300	97	4.18
		0.3	0.7	80/67	10000	7800	0.349	11200	28.7	6800	0.515	5000	101	3.87
		0.3	0.7	85/71	10600	8200	0.345	11800	30.7					
	1.8	0.7	1.7	65/55	8000	6800	0.349	9200	22.9	7600	0.441	6100	89	5.05
		0.7	1.7	70/59	8700	7200	0.345	9900	25.2	7400	0.466	5800	93	4.65
		0.7	1.7	75/63	9400	7500	0.340	10600	27.6	7200	0.492	5500	97	4.29
		0.7	1.7	80/67	10100	7900	0.336	11200	30.1	7000	0.517	5200	102	3.96
		0.7	1.7	85/71	10700	8200	0.332	11800	32.2					
	2.3	1.2	2.7	65/55	8100	6900	0.338	9300	24.0	7700	0.443	6200	89	5.09
		1.2	2.7	70/59	8800	7200	0.334	9900	26.3	7500	0.468	5900	93	4.69
		1.2	2.7	75/63	9400	7600	0.329	10500	28.6	7300	0.494	5600	98	4.33
		1.2	2.7	80/67	10100	7900	0.325	11200	31.1	7100	0.519	5300	102	4.01
		1.2	2.7	85/71	10800	8300	0.321	11900	33.6					
60	1.2	0.3	0.7	65/55	7600	6700	0.411	9000	18.5	8400	0.450	6900	91	5.47
		0.3	0.7	70/59	8300	7100	0.406	9700	20.4	8200	0.475	6600	96	5.05
		0.3	0.7	75/63	9000	7400	0.402	10400	22.4	8000	0.501	6300	100	4.68
		0.3	0.7	80/67	9700	7800	0.398	11100	24.4	7800	0.526	6000	104	4.34
		0.3	0.7	85/71	10300	8100	0.394	11600	26.1					
	1.8	0.7	1.6	65/55	7700	6800	0.398	9100	19.3	8500	0.452	7000	92	5.51
		0.7	1.6	70/59	8400	7100	0.393	9700	21.4	8300	0.477	6700	96	5.10
		0.7	1.6	75/63	9100	7500	0.389	10400	23.4	8100	0.503	6400	100	4.72
		0.7	1.6	80/67	9700	7800	0.385	11000	25.2	7900	0.528	6100	105	4.38
		0.7	1.6	85/71	10400	8200	0.381	11700	27.3					
	2.3	1.2	2.7	65/55	7800	6800	0.387	9100	20.2	8600	0.454	7100	92	5.55
		1.2	2.7	70/59	8500	7200	0.383	9800	22.2	8400	0.479	6800	96	5.13
		1.2	2.7	75/63	9100	7500	0.378	10400	24.1	8200	0.505	6500	101	4.75
		1.2	2.7	80/67	9800	7900	0.374	11100	26.2	8000	0.530	6200	105	4.42
		1.2	2.7	85/71	10500	8200	0.370	11800	28.4					

## Unit Size 007 (295 SCFM) Continued

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	1.2	0.3	0.7	65/55	7100	6500	0.463	8700	15.3	9300	0.461	7700	94	5.91
		0.3	0.7	70/59	7800	6900	0.458	9400	17.0	9100	0.487	7400	98	5.47
		0.3	0.7	75/63	8500	7200	0.454	10000	18.7	8900	0.512	7200	103	5.09
		0.3	0.7	80/67	9200	7600	0.450	10700	20.4	8700	0.537	6900	107	4.74
		0.3	0.7	85/71	9800	7900	0.446	11300	22.0					
	1.8	0.7	1.6	65/55	7200	6600	0.450	8700	16.0	9500	0.463	7900	95	6.01
		0.7	1.6	70/59	7900	6900	0.446	9400	17.7	9300	0.489	7600	99	5.57
		0.7	1.6	75/63	8600	7300	0.441	10100	19.5	9000	0.514	7200	103	5.13
		0.7	1.6	80/67	9200	7600	0.437	10700	21.1	8800	0.539	7000	107	4.78
		0.7	1.6	85/71	9900	8000	0.433	11400	22.9					
	2.3	1.1	2.6	65/55	7300	6600	0.439	8800	16.6	9600	0.465	8000	95	6.05
		1.1	2.6	70/59	8000	7000	0.435	9500	18.4	9400	0.490	7700	99	5.62
		1.1	2.6	75/63	8600	7300	0.430	10100	20.0	9200	0.516	7400	104	5.22
		1.1	2.6	80/67	9300	7700	0.426	10800	21.8	9000	0.541	7200	108	4.87
		1.1	2.6	85/71	10000	8000	0.422	11400	23.7					
80	1.2	0.3	0.7	65/55	6500	6300	0.518	8300	12.5	10200	0.472	8600	97	6.33
		0.3	0.7	70/59	7200	6600	0.514	9000	14.0	10000	0.498	8300	101	5.88
		0.3	0.7	75/63	7900	7000	0.509	9600	15.5	9800	0.523	8000	106	5.49
		0.3	0.7	80/67	8500	7300	0.505	10200	16.8	9600	0.548	7700	110	5.13
		0.3	0.7	85/71	9200	7600	0.501	10900	18.4					
	1.8	0.7	1.5	65/55	6600	6300	0.505	8300	13.1	10400	0.474	8800	97	6.42
		0.7	1.5	70/59	7300	6700	0.501	9000	14.6	10200	0.500	8500	102	5.97
		0.7	1.5	75/63	7900	7000	0.496	9600	15.9	10000	0.525	8200	106	5.58
		0.7	1.5	80/67	8600	7400	0.492	10300	17.5	9800	0.550	7900	111	5.22
		0.7	1.5	85/71	9300	7700	0.488	11000	19.1					
	2.3	1.1	2.6	65/55	6700	6400	0.494	8400	13.6	10500	0.476	8900	98	6.46
		1.1	2.6	70/59	7300	6700	0.490	9000	14.9	10300	0.501	8600	102	6.02
		1.1	2.6	75/63	8000	7100	0.485	9700	16.5	10100	0.527	8300	107	5.61
		1.1	2.6	80/67	8700	7400	0.481	10300	18.1	9900	0.552	8000	111	5.25
		1.1	2.6	85/71	9300	7800	0.477	10900	19.5					
90	1.2	0.3	0.7	65/55	5800	5900	0.576	7800	10.1	11200	0.483	9600	100	6.79
		0.3	0.7	70/59	6500	6300	0.571	8400	11.4	11000	0.509	9300	104	6.33
		0.3	0.7	75/63	7200	6600	0.567	9100	12.7	10800	0.534	9000	109	5.92
		0.3	0.7	80/67	7800	7000	0.563	9700	13.9	10600	0.560	8700	113	5.54
		0.3	0.7	85/71	8500	7300	0.559	10400	15.2					
	1.5	0.7	1.5	65/55	5900	6000	0.563	7800	10.5	11300	0.485	9600	100	6.82
		0.7	1.5	70/59	6600	6300	0.558	8500	11.8	11100	0.511	9400	105	6.36
		0.7	1.5	75/63	7200	6700	0.554	9100	13.0	10900	0.536	9100	109	5.95
		0.7	1.5	80/67	7900	7000	0.550	9800	14.4	10700	0.562	8800	113	5.57
		0.7	1.5	85/71	8600	7400	0.546	10500	15.8					
	2.0	1.1	2.5	65/55	6000	6000	0.552	7900	10.9	11500	0.487	9800	101	6.91
		1.1	2.5	70/59	6600	6400	0.548	8500	12.0	11300	0.512	9600	105	6.46
		1.1	2.5	75/63	7300	6700	0.543	9200	13.4	11100	0.538	9300	110	6.04
		1.1	2.5	80/67	8000	7100	0.539	9800	14.8	10900	0.563	9000	114	5.67
		1.1	2.5	85/71	8600	7400	0.535	10400	16.1					
100	1.2	0.3	0.7	65/55	5100	5500	0.636	7300	8.0					
		0.3	0.7	70/59	5700	5900	0.632	7900	9.0					
		0.3	0.7	75/63	6400	6200	0.628	8500	10.2					
		0.3	0.7	80/67	7100	6600	0.623	9200	11.4					
		0.3	0.7	85/71	7800	6900	0.619	9900	12.6					
	1.5	0.7	1.5	65/55	5200	5600	0.623	7300	8.3					
		0.7	1.5	70/59	5800	5900	0.619	7900	9.4					
		0.7	1.5	75/63	6500	6300	0.615	8600	10.6					
		0.7	1.5	80/67	7200	6600	0.610	9300	11.8					
		0.7	1.5	85/71	7800	7000	0.606	9900	12.9					
	2.0	1.1	2.5	65/55	5200	5600	0.612	7300	8.5					
		1.1	2.5	70/59	5900	6000	0.608	8000	9.7					
		1.1	2.5	75/63	6600	6300	0.604	8700	10.9					
		1.1	2.5	80/67	7200	6700	0.600	9200	12.0					
		1.1	2.5	85/71	7900	7000	0.595	9900	13.3					
110	1.2	0.3	0.6	65/55	4300	5100	0.699	6700	6.2					
		0.3	0.6	70/59	5000	5500	0.695	7400	7.2					
		0.3	0.6	75/63	5700	5800	0.691	8100	8.2					
		0.3	0.6	80/67	6400	6200	0.686	8700	9.3					
		0.3	0.6	85/71	7000	6500	0.682	9300	10.3					
	1.5	0.7	1.5	65/55	4400	5200	0.686	6700	6.4					
		0.7	1.5	70/59	5100	5600	0.682	7400	7.5					
		0.7	1.5	75/63	5800	5900	0.678	8100	8.6					
		0.7	1.5	80/67	6400	6200	0.673	8700	9.5					
		0.7	1.5	85/71	7100	6600	0.669	9400	10.6					
	2.0	1.1	2.5	65/55	4500	5300	0.675	6800	6.7					
		1.1	2.5	70/59	5200	5600	0.671	7500	7.7					
		1.1	2.5	75/63	5800	6000	0.667	8100	8.7					
		1.1	2.5	80/67	6500	6300	0.662	8800	9.8					
		1.1	2.5	85/71	7200	6600	0.658	9400	10.9					

**Tint = Operation Not Recommended**  
**Notes:**

1. Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
2. Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
3. See performance correction tables for operating conditions other than those listed.
4. Interpolation is permissible; extrapolation is not.
5. For performance data outside the EAT listed, refer to the Daikin SelectTools selection program
6. Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
7. Data is based on unit at full load operation.
8. Performance data based on 208/1ph power supply.

**Capacity Table Legend:**

EWT = Entering Water Temperature (°F)

GPM = Gallons Per Minute

WPD = Water Pressure Drop (PSIG)

PSI = Pounds Per Square Inch

EAT = Entering Air Temperature (°F)

LWT = Leaving Water Temperature (°F)

THA = Total Heat of Absorption (Btu)

THR = Total Heat of Rejection (Btu)

EER = Energy Efficiency Ratio

COP = Coefficient of Performance

kW = Kilowatts

**Unit Size 009 (355 SCFM)**

EWT (⃡F)	GPM	WPD		EAT (⃡F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (⃡F)	COP
20	1.5	0.7	1.5	65/55	<i>Tint = Operation Not Recommended</i>					5500	0.510	3800	79	3.16
		0.7	1.5	70/59						5300	0.536	3500	84	2.90
		0.7	1.5	75/63						5100	0.561	3200	88	2.66
		0.7	1.5	80/67						4900	0.587	2900	93	2.44
		0.7	1.5	85/71										
	2.3	1.5	3.4	65/55						5700	0.513	3900	80	3.25
		1.5	3.4	70/59						5500	0.539	3700	84	2.99
		1.5	3.4	75/63						5300	0.564	3400	89	2.75
		1.5	3.4	80/67						5100	0.590	3100	93	2.53
		1.5	3.4	85/71										
	3.0	2.5	5.6	65/55						5900	0.515	4100	80	3.35
		2.5	5.6	70/59						5700	0.541	3900	85	3.09
		2.5	5.6	75/63						5500	0.566	3600	89	2.85
		2.5	5.6	80/67						5300	0.592	3300	94	2.62
		2.5	5.6	85/71										
30	1.5	0.6	1.4	65/55	9100	5800	0.361	10300	25.2	6600	0.529	4800	82	3.65
		0.6	1.4	70/59	9800	6200	0.357	11000	27.5	6400	0.554	4500	87	3.38
		0.6	1.4	75/63	10500	6500	0.353	11700	29.7	6200	0.580	4200	91	3.13
		0.6	1.4	80/67	11100	6900	0.349	12300	31.8	6000	0.605	3900	96	2.90
		0.6	1.4	85/71	11800	7200	0.344	13000	34.3					
	2.3	1.4	3.3	65/55	9200	5900	0.344	10400	26.7	6800	0.532	5000	83	3.74
		1.4	3.3	70/59	9900	6200	0.340	11100	29.1	6600	0.557	4700	87	3.47
		1.4	3.3	75/63	10600	6600	0.336	11700	31.5	6400	0.582	4400	92	3.22
		1.4	3.3	80/67	11200	6900	0.331	12300	33.8	6200	0.608	4100	96	2.99
		1.4	3.3	85/71	11900	7300	0.327	13000	36.4					
	3.0	2.4	5.4	65/55	9300	6000	0.329	10400	28.3	7000	0.534	5200	83	3.84
		2.4	5.4	70/59	10000	6300	0.325	11100	30.8	6800	0.559	4900	88	3.56
		2.4	5.4	75/63	10600	6700	0.320	11700	33.1	6600	0.585	4600	92	3.30
		2.4	5.4	80/67	11300	7000	0.316	12400	35.8	6300	0.610	4200	96	3.02
		2.4	5.4	85/71	12000	7400	0.312	13100	38.5					
40	1.5	0.6	1.4	65/55	9300	6100	0.415	10700	22.4	7700	0.547	5800	85	4.12
		0.6	1.4	70/59	10000	6400	0.411	11400	24.3	7500	0.573	5500	89	3.83
		0.6	1.4	75/63	10700	6800	0.406	12100	26.4	7200	0.598	5200	94	3.53
		0.6	1.4	80/67	11300	7100	0.402	12700	28.1	7000	0.624	4900	98	3.28
		0.6	1.4	85/71	12000	7500	0.398	13400	30.2					
	2.3	1.4	3.2	65/55	9400	6200	0.398	10800	23.6	7900	0.550	6000	85	4.21
		1.4	3.2	70/59	10100	6500	0.393	11400	25.7	7700	0.575	5700	90	3.92
		1.4	3.2	75/63	10800	6900	0.389	12100	27.8	7500	0.601	5400	94	3.65
		1.4	3.2	80/67	11400	7200	0.385	12700	29.6	7300	0.626	5200	99	3.41
		1.4	3.2	85/71	12100	7600	0.380	13400	31.8					
	3.0	2.3	5.3	65/55	9500	6300	0.382	10800	24.9	8000	0.552	6100	86	4.24
		2.3	5.3	70/59	10200	6600	0.378	11500	27.0	7800	0.578	5800	90	3.95
		2.3	5.3	75/63	10900	6900	0.374	12200	29.1	7600	0.603	5500	95	3.69
		2.3	5.3	80/67	11500	7300	0.370	12800	31.1	7400	0.629	5300	99	3.44
		2.3	5.3	85/71	12200	7600	0.365	13400	33.4					
50	1.5	0.6	1.4	65/55	9300	6200	0.472	10900	19.7	8700	0.566	6800	88	4.50
		0.6	1.4	70/59	9900	6600	0.468	11500	21.2	8500	0.591	6500	92	4.21
		0.6	1.4	75/63	10600	6900	0.463	12200	22.9	8300	0.617	6200	97	3.94
		0.6	1.4	80/67	11300	7200	0.459	12900	24.6	8100	0.642	5900	101	3.69
		0.6	1.4	85/71	11900	7600	0.455	13500	26.2					
	2.3	1.4	3.1	65/55	9400	6300	0.455	11000	20.7	8900	0.568	7000	88	4.59
		1.4	3.1	70/59	10000	6600	0.450	11500	22.2	8700	0.594	6700	93	4.29
		1.4	3.1	75/63	10700	7000	0.446	12200	24.0	8500	0.619	6400	97	4.02
		1.4	3.1	80/67	11400	7300	0.442	12900	25.8	8300	0.645	6100	102	3.77
		1.4	3.1	85/71	12000	7700	0.437	13500	27.5					
	3.0	2.3	5.1	65/55	9500	6400	0.439	11000	21.6	9100	0.571	7200	89	4.67
		2.3	5.1	70/59	10100	6700	0.435	11600	23.2	8900	0.596	6900	93	4.37
		2.3	5.1	75/63	10800	7100	0.431	12300	25.1	8700	0.622	6600	98	4.10
		2.3	5.1	80/67	11500	7400	0.427	13000	26.9	8500	0.647	6300	102	3.85
		2.3	5.1	85/71	12100	7800	0.422	13500	28.7					
60	1.5	0.6	1.3	65/55	9000	6200	0.532	10800	16.9	9800	0.584	7800	90	4.91
		0.6	1.3	70/59	9700	6500	0.528	11500	18.4	9600	0.610	7500	95	4.61
		0.6	1.3	75/63	10300	6900	0.524	12100	19.7	9400	0.635	7200	99	4.33
		0.6	1.3	80/67	11000	7200	0.519	12800	21.2	9200	0.660	6900	104	4.08
		0.6	1.3	85/71	11700	7600	0.515	13500	22.7					
	2.3	1.3	3.0	65/55	9100	6200	0.515	10900	17.7	10000	0.587	8000	91	4.99
		1.3	3.0	70/59	9800	6600	0.511	11500	19.2	9800	0.612	7700	95	4.69
		1.3	3.0	75/63	10400	6900	0.506	12100	20.6	9600	0.638	7400	100	4.41
		1.3	3.0	80/67	11100	7300	0.502	12800	22.1	9400	0.663	7100	104	4.15
		1.3	3.0	85/71	11800	7600	0.498	13500	23.7					
	3.0	2.2	5.0	65/55	9200	6300	0.500	10900	18.4	10200	0.589	8200	91	5.07
		2.2	5.0	70/59	9800	6700	0.495	11500	19.8	10000	0.615	7900	96	4.76
		2.2	5.0	75/63	10500	7000	0.491	12200	21.4	9800	0.640	7600	100	4.48
		2.2	5.0	80/67	11200	7400	0.487	12900	23.0	9600	0.665	7300	105	4.23
		2.2	5.0	85/71	11900	7700	0.483	13500	24.6					

## Unit Size 009 (355 SCFM) Continued

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	1.5	0.6	1.3	65/55	8500	6000	0.596	10500	14.3	10900	0.602	8800	93	5.30
		0.6	1.3	70/59	9200	6300	0.591	11200	15.6	10700	0.628	8600	98	4.99
		0.6	1.3	75/63	9900	6700	0.587	11900	16.9	10500	0.653	8300	102	4.71
		0.6	1.3	80/67	10500	7000	0.583	12500	18.0	10300	0.679	8000	107	4.44
		0.6	1.3	85/71	11200	7400	0.579	13200	19.3					
	2.3	1.3	3.0	65/55	8600	6100	0.578	10600	14.9	11100	0.605	9000	94	5.37
		1.3	3.0	70/59	9300	6400	0.574	11300	16.2	10900	0.631	8700	98	5.06
		1.3	3.0	75/63	10000	6800	0.570	11900	17.5	10700	0.656	8500	103	4.78
		1.3	3.0	80/67	10600	7100	0.565	12500	18.8	10500	0.682	8200	107	4.51
		1.3	3.0	85/71	11300	7500	0.561	13200	20.1					
	3.0	2.2	4.9	65/55	8700	6100	0.563	10600	15.5	11300	0.607	9200	94	5.45
		2.2	4.9	70/59	9400	6500	0.559	11300	16.8	11100	0.633	8900	99	5.13
		2.2	4.9	75/63	10100	6800	0.555	12000	18.2	10900	0.658	8700	103	4.85
		2.2	4.9	80/67	10700	7200	0.550	12600	19.5	10700	0.684	8400	108	4.58
		2.2	4.9	85/71	11400	7500	0.546	13300	20.9					
80	1.5	0.6	1.3	65/55	8000	5700	0.662	10300	12.1	12000	0.621	9900	96	5.66
		0.6	1.3	70/59	8600	6100	0.658	10800	13.1	11800	0.646	9600	101	5.35
		0.6	1.3	75/63	9300	6400	0.653	11500	14.2	11600	0.672	9300	105	5.05
		0.6	1.3	80/67	10000	6800	0.649	12200	15.4	11400	0.697	9000	110	4.79
		0.6	1.3	85/71	10600	7100	0.645	12800	16.4					
	2.3	1.3	2.9	65/55	8100	5800	0.645	10300	12.6	12200	0.624	10100	97	5.72
		1.3	2.9	70/59	8700	6100	0.640	10900	13.6	12000	0.649	9800	101	5.41
		1.3	2.9	75/63	9400	6500	0.636	11600	14.8	11800	0.674	9500	106	5.13
		1.3	2.9	80/67	10100	6800	0.632	12300	16.0	11600	0.700	9200	110	4.85
		1.3	2.9	85/71	10700	7200	0.628	12800	17.0					
	3.0	2.1	4.8	65/55	8200	5900	0.630	10400	13.0	12400	0.626	10300	97	5.80
		2.1	4.8	70/59	8800	6200	0.625	10900	14.1	12200	0.651	10000	102	5.49
		2.1	4.8	75/63	9500	6600	0.621	11600	15.3	12000	0.677	9700	106	5.19
		2.1	4.8	80/67	10200	6900	0.617	12300	16.5	11800	0.702	9400	111	4.92
		2.1	4.8	85/71	10800	7300	0.613	12900	17.6					
90	1.5	0.6	1.3	65/55	7300	5400	0.731	9800	10.0	13100	0.639	10900	99	6.00
		0.6	1.3	70/59	8000	5700	0.727	10500	11.0	12900	0.665	10600	103	5.68
		0.6	1.3	75/63	8600	6100	0.723	11100	11.9	12700	0.690	10300	108	5.39
		0.6	1.3	80/67	9300	6400	0.718	11800	13.0	12500	0.716	10100	112	5.11
		0.6	1.3	85/71	10000	6800	0.714	12400	14.0					
	2.3	1.3	2.9	65/55	7400	5500	0.714	9800	10.4	13300	0.642	11100	99	6.07
		1.3	2.9	70/59	8100	5800	0.710	10500	11.4	13100	0.667	10800	104	5.75
		1.3	2.9	75/63	8700	6200	0.705	11100	12.3	12900	0.693	10500	108	5.45
		1.3	2.9	80/67	9400	6500	0.701	11800	13.4	12700	0.718	10200	113	5.18
		1.3	2.9	85/71	10100	6900	0.697	12500	14.5					
	3.0	2.1	4.7	65/55	7500	5500	0.699	9900	10.7	13500	0.644	11300	100	6.14
		2.1	4.7	70/59	8200	5900	0.695	10600	11.8	13300	0.670	11000	104	5.81
		2.1	4.7	75/63	8800	6200	0.690	11200	12.8	13100	0.695	10700	109	5.52
		2.1	4.7	80/67	9500	6600	0.686	11800	13.8	12900	0.721	10400	113	5.24
		2.1	4.7	85/71	10200	6900	0.682	12500	15.0					
100	1.5	0.5	1.2	65/55	6600	5000	0.803	9300	8.2					
		0.5	1.2	70/59	7300	5400	0.799	10000	9.1					
		0.5	1.2	75/63	7900	5700	0.795	10600	9.9					
		0.5	1.2	80/67	8600	6100	0.790	11300	10.9					
		0.5	1.2	85/71	9300	6400	0.786	12000	11.8					
	2.3	1.2	2.8	65/55	6700	5100	0.786	9400	8.5					
		1.2	2.8	70/59	7400	5400	0.782	10100	9.5					
		1.2	2.8	75/63	8000	5800	0.777	10700	10.3					
		1.2	2.8	80/67	8700	6100	0.773	11300	11.3					
		1.2	2.8	85/71	9400	6500	0.769	12000	12.2					
	3.0	2.1	4.7	65/55	6800	5200	0.771	9400	8.8					
		2.1	4.7	70/59	7500	5500	0.766	10100	9.8					
		2.1	4.7	75/63	8100	5900	0.762	10700	10.6					
		2.1	4.7	80/67	8800	6200	0.758	11400	11.6					
		2.1	4.7	85/71	9500	6600	0.754	12100	12.6					
110	1.5	0.5	1.2	65/55	5900	4600	0.878	8900	6.7					
		0.5	1.2	70/59	6600	5000	0.873	9600	7.6					
		0.5	1.2	75/63	7300	5300	0.869	10300	8.4					
		0.5	1.2	80/67	7900	5700	0.865	10900	9.1					
		0.5	1.2	85/71	8600	6000	0.860	11500	10.0					
	2.3	1.2	2.8	65/55	6000	4700	0.860	8900	7.0					
		1.2	2.8	70/59	6700	5100	0.856	9600	7.8					
		1.2	2.8	75/63	7400	5400	0.852	10300	8.7					
		1.2	2.8	80/67	8000	5800	0.847	10900	9.4					
		1.2	2.8	85/71	8700	6100	0.843	11600	10.3					
	3.0	2.0	4.6	65/55	6100	4800	0.845	9000	7.2					
		2.0	4.6	70/59	6800	5100	0.841	9700	8.1					
		2.0	4.6	75/63	7500	5500	0.837	10400	9.0					
		2.0	4.6	80/67	8100	5800	0.832	10900	9.7					
		2.0	4.6	85/71	8800	6200	0.828	11600	10.6					

**Tint = Operation Not Recommended**

**Notes:**

1. Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
2. Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
3. See performance correction tables for operating conditions other than those listed.
4. Interpolation is permissible; extrapolation is not.
5. For performance data outside the EAT listed, refer to the Daikin SelectTools selection program
6. Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
7. Data is based on unit at full load operation.
8. Performance data based on 208/1ph power supply.

**Capacity Table Legend:**

- EWT = Entering Water Temperature (°F)
- GPM = Gallons Per Minute
- WPD = Water Pressure Drop (PSIG)
- PSI = Pounds Per Square Inch
- EAT = Entering Air Temperature (°F)
- LWT = Leaving Water Temperature (°F)
- THA = Total Heat of Absorption (Btu)
- THR = Total Heat of Rejection (Btu)
- EER = Energy Efficiency Ratio
- COP = Coefficient of Performance
- kW = Kilowatts

## Unit Size 012 (370 SCFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	2.0	1.1	2.6	65/55	<i>Tint = Operation Not Recommended</i>					7200	0.731	4700	83	2.88
		1.1	2.6	70/59						7000	0.759	4400	87	2.70
		1.1	2.6	75/63						6800	0.786	4100	92	2.53
		1.1	2.6	80/67						6600	0.814	3800	96	2.37
		1.1	2.6	85/71										
	3.0	2.5	5.6	65/55						7500	0.735	5000	84	2.99
		2.5	5.6	70/59						7300	0.762	4700	88	2.81
		2.5	5.6	75/63						7100	0.790	4400	93	2.63
		2.5	5.6	80/67						6900	0.818	4100	97	2.47
		2.5	5.6	85/71										
	4.0	4.3	9.7	65/55						7800	0.738	5300	84	3.09
		4.3	9.7	70/59						7600	0.766	5000	89	2.91
		4.3	9.7	75/63						7400	0.794	4700	93	2.73
		4.3	9.7	80/67						7100	0.821	4300	98	2.53
		4.3	9.7	85/71										
30	2.0	1.1	2.5	65/55	11500	7600	0.511	13200	22.5	8700	0.754	6100	87	3.38
		1.1	2.5	70/59	12200	8000	0.507	13900	24.1	8500	0.782	5800	91	3.18
		1.1	2.5	75/63	12900	8300	0.502	14600	25.7	8200	0.809	5400	95	2.97
		1.1	2.5	80/67	13600	8700	0.498	15300	27.3	8000	0.837	5100	100	2.80
		1.1	2.5	85/71	14300	9100	0.493	16000	29.0					
	3.0	2.4	5.4	65/55	11600	7700	0.489	13300	23.7	9000	0.758	6400	87	3.48
		2.4	5.4	70/59	12300	8100	0.484	14000	25.4	8700	0.785	6000	92	3.25
		2.4	5.4	75/63	13000	8400	0.480	14600	27.1	8500	0.813	5700	96	3.06
		2.4	5.4	80/67	13700	8800	0.475	15300	28.8	8300	0.841	5400	101	2.89
		2.4	5.4	85/71	14400	9200	0.471	16000	30.6					
	4.0	4.1	9.4	65/55	11700	7800	0.466	13300	25.1	9200	0.761	6600	88	3.54
		4.1	9.4	70/59	12400	8200	0.461	14000	26.9	9000	0.789	6300	92	3.34
		4.1	9.4	75/63	13100	8600	0.457	14700	28.7	8800	0.817	6000	97	3.15
		4.1	9.4	80/67	13800	8900	0.452	15300	30.5	8600	0.844	5700	101	2.98
		4.1	9.4	85/71	14600	9300	0.448	16100	32.6					
40	2.0	1.1	2.4	65/55	11700	7900	0.555	13600	21.1	10100	0.777	7400	90	3.81
		1.1	2.4	70/59	12400	8300	0.550	14300	22.5	9900	0.805	7200	95	3.60
		1.1	2.4	75/63	13100	8600	0.546	15000	24.0	9700	0.832	6900	99	3.41
		1.1	2.4	80/67	13900	9000	0.541	15700	25.7	9400	0.860	6500	103	3.20
		1.1	2.4	85/71	14600	9400	0.537	16400	27.2					
	3.0	2.3	5.3	65/55	11900	8000	0.532	13700	22.4	10400	0.781	7700	91	3.90
		2.3	5.3	70/59	12600	8400	0.527	14400	23.9	10200	0.808	7400	95	3.70
		2.3	5.3	75/63	13300	8700	0.523	15100	25.4	9900	0.836	7000	100	3.47
		2.3	5.3	80/67	14000	9100	0.518	15800	27.0	9700	0.864	6800	104	3.29
		2.3	5.3	85/71	14700	9500	0.514	16500	28.6					
	4.0	4.0	9.2	65/55	12000	8100	0.509	13700	23.6	10700	0.784	8000	92	4.00
		4.0	9.2	70/59	12700	8500	0.505	14400	25.1	10400	0.812	7600	96	3.75
		4.0	9.2	75/63	13400	8800	0.500	15100	26.8	10200	0.840	7300	100	3.56
		4.0	9.2	80/67	14100	9200	0.496	15800	28.4	10000	0.867	7000	105	3.38
		4.0	9.2	85/71	14800	9600	0.491	16500	30.1					
50	2.0	1.0	2.4	65/55	11600	8000	0.607	13700	19.1	11500	0.800	8800	94	4.21
		1.0	2.4	70/59	12300	8400	0.603	14400	20.4	11300	0.828	8500	98	4.00
		1.0	2.4	75/63	13000	8700	0.598	15000	21.7	11100	0.855	8200	103	3.80
		1.0	2.4	80/67	13700	9100	0.594	15700	23.1	10900	0.883	7900	107	3.61
		1.0	2.4	85/71	14500	9500	0.589	16500	24.6					
	3.0	2.3	5.1	65/55	11800	8100	0.584	13800	20.2	11800	0.804	9100	94	4.30
		2.3	5.1	70/59	12500	8500	0.580	14500	21.6	11600	0.831	8800	99	4.09
		2.3	5.1	75/63	13200	8800	0.575	15200	23.0	11400	0.859	8500	103	3.89
		2.3	5.1	80/67	13900	9200	0.571	15800	24.3	11100	0.887	8100	108	3.66
		2.3	5.1	85/71	14600	9600	0.566	16500	25.8					
	4.0	3.9	8.9	65/55	11900	8200	0.562	13800	21.2	12100	0.807	9300	95	4.39
		3.9	8.9	70/59	12600	8600	0.557	14500	22.6	11900	0.835	9100	100	4.17
		3.9	8.9	75/63	13300	8900	0.553	15200	24.1	11600	0.863	8700	104	3.94
		3.9	8.9	80/67	14000	9300	0.548	15900	25.5	11400	0.890	8400	108	3.75
		3.9	8.9	85/71	14700	9700	0.544	16600	27.0					
60	2.0	1.0	2.3	65/55	11200	7900	0.668	13500	16.8	13000	0.823	10200	97	4.63
		1.0	2.3	70/59	11900	8300	0.664	14200	17.9	12700	0.851	9800	102	4.37
		1.0	2.3	75/63	12600	8700	0.659	14800	19.1	12500	0.878	9500	106	4.17
		1.0	2.3	80/67	13300	9000	0.655	15500	20.3	12300	0.906	9200	111	3.98
		1.0	2.3	85/71	14000	9400	0.650	16200	21.5					
	3.0	2.2	5.0	65/55	11400	8000	0.646	13600	17.6	13200	0.827	10400	98	4.67
		2.2	5.0	70/59	12100	8400	0.641	14300	18.9	13000	0.854	10100	102	4.46
		2.2	5.0	75/63	12800	8800	0.637	15000	20.1	12800	0.882	9800	107	4.25
		2.2	5.0	80/67	13500	9100	0.632	15700	21.4	12600	0.910	9500	111	4.05
		2.2	5.0	85/71	14200	9500	0.628	16300	22.6					
	4.0	3.8	8.7	65/55	11500	8100	0.623	13600	18.5	13500	0.830	10700	99	4.76
		3.8	8.7	70/59	12200	8500	0.618	14300	19.7	13300	0.858	10400	103	4.54
		3.8	8.7	75/63	12900	8900	0.614	15000	21.0	13100	0.886	10100	108	4.33
		3.8	8.7	80/67	13600	9200	0.609	15700	22.3	12900	0.913	9800	112	4.14
		3.8	8.7	85/71	14300	9600	0.605	16400	23.6					

## Unit Size 012 (370 SCFM) Continued

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	2.0	1.0	2.3	65/55	10600	7700	0.738	13100	14.4	14400	0.846	11500	101	4.98
		1.0	2.3	70/59	11300	8100	0.734	13800	15.4	14200	0.874	11200	105	4.76
		1.0	2.3	75/63	12000	8500	0.729	14500	16.5	14000	0.901	10900	110	4.55
		1.0	2.3	80/67	12700	8800	0.725	15200	17.5	13700	0.929	10500	114	4.32
		1.0	2.3	85/71	13400	9200	0.720	15900	18.6					
	3.0	2.2	4.9	65/55	10700	7800	0.716	13100	14.9	14700	0.850	11800	102	5.06
		2.2	4.9	70/59	11400	8200	0.711	13800	16.0	14400	0.877	11400	106	4.81
		2.2	4.9	75/63	12100	8600	0.707	14500	17.1	14200	0.905	11100	110	4.59
		2.2	4.9	80/67	12800	8900	0.702	15200	18.2	14000	0.933	10800	115	4.39
		2.2	4.9	85/71	13500	9300	0.698	15900	19.3					
	4.0	3.7	8.5	65/55	10800	8000	0.693	13200	15.6	14900	0.853	12000	102	5.11
		3.7	8.5	70/59	11500	8300	0.688	13800	16.7	14700	0.881	11700	107	4.89
		3.7	8.5	75/63	12200	8700	0.684	14500	17.8	14500	0.909	11400	111	4.67
		3.7	8.5	80/67	13000	9100	0.679	15300	19.1	14300	0.936	11100	116	4.47
		3.7	8.5	85/71	13700	9400	0.675	16000	20.3					
80	2.0	1.0	2.2	65/55	9800	7400	0.817	12600	12.0	15800	0.869	12800	104	5.32
		1.0	2.2	70/59	10500	7800	0.813	13300	12.9	15600	0.897	12500	109	5.09
		1.0	2.2	75/63	11200	8200	0.808	14000	13.9	15400	0.924	12200	113	4.88
		1.0	2.2	80/67	11900	8600	0.804	14600	14.8	15200	0.952	12000	118	4.68
		1.0	2.2	85/71	12600	8900	0.799	15300	15.8					
	3.0	2.1	4.8	65/55	9900	7600	0.794	12600	12.5	16100	0.873	13100	105	5.40
		2.1	4.8	70/59	10600	7900	0.790	13300	13.4	15900	0.900	12800	110	5.17
		2.1	4.8	75/63	11300	8300	0.785	14000	14.4	15700	0.928	12500	114	4.95
		2.1	4.8	80/67	12000	8700	0.781	14700	15.4	15400	0.956	12100	118	4.72
		2.1	4.8	85/71	12700	9000	0.776	15300	16.4					
	4.0	3.7	8.4	65/55	10000	7700	0.772	12600	13.0	16400	0.876	13400	106	5.48
		3.7	8.4	70/59	10700	8000	0.767	13300	14.0	16200	0.904	13100	110	5.25
		3.7	8.4	75/63	11400	8400	0.763	14000	14.9	15900	0.932	12700	115	5.00
		3.7	8.4	80/67	12100	8800	0.758	14700	16.0	15700	0.959	12400	119	4.79
		3.7	8.4	85/71	12800	9100	0.754	15400	17.0					
90	2.0	1.0	2.2	65/55	8900	7100	0.904	12000	9.8	17300	0.892	14300	108	5.68
		1.0	2.2	70/59	9600	7500	0.900	12700	10.7	17000	0.920	13900	112	5.41
		1.0	2.2	75/63	10300	7800	0.895	13400	11.5	16800	0.947	13600	117	5.19
		1.0	2.2	80/67	11000	8200	0.891	14000	12.3	16600	0.975	13300	121	4.99
		1.0	2.2	85/71	11700	8600	0.886	14700	13.2					
	3.0	2.1	4.7	65/55	9000	7200	0.881	12000	10.2	17500	0.896	14400	109	5.72
		2.1	4.7	70/59	9700	7600	0.877	12700	11.1	17300	0.923	14100	113	5.49
		2.1	4.7	75/63	10400	7900	0.872	13400	11.9	17100	0.951	13900	118	5.27
		2.1	4.7	80/67	11100	8300	0.868	14100	12.8	16900	0.979	13600	122	5.05
		2.1	4.7	85/71	11800	8700	0.863	14700	13.7					
	4.0	3.6	8.2	65/55	9100	7300	0.859	12000	10.6	17800	0.899	14700	109	5.80
		3.6	8.2	70/59	9800	7700	0.854	12700	11.5	17600	0.927	14400	114	5.56
		3.6	8.2	75/63	10500	8000	0.850	13400	12.4	17400	0.955	14100	118	5.33
		3.6	8.2	80/67	11200	8400	0.845	14100	13.3	17100	0.982	13700	123	5.10
		3.6	8.2	85/71	12000	8800	0.841	14900	14.3					
100	2.0	0.9	2.2	65/55	8000	6700	0.999	11400	8.0					
		0.9	2.2	70/59	8700	7100	0.995	12100	8.7					
		0.9	2.2	75/63	9400	7400	0.990	12800	9.5					
		0.9	2.2	80/67	10100	7800	0.986	13500	10.2					
		0.9	2.2	85/71	10800	8200	0.981	14100	11.0					
	3.0	2.1	4.7	65/55	8100	6800	0.977	11400	8.3					
		2.1	4.7	70/59	8800	7200	0.972	12100	9.1					
		2.1	4.7	75/63	9500	7500	0.968	12800	9.8					
		2.1	4.7	80/67	10200	7900	0.963	13500	10.6					
		2.1	4.7	85/71	10900	8300	0.959	14200	11.4					
	4.0	3.6	8.1	65/55	8200	6900	0.954	11500	8.6					
		3.6	8.1	70/59	8900	7300	0.949	12100	9.4					
		3.6	8.1	75/63	9600	7600	0.945	12800	10.2					
		3.6	8.1	80/67	10300	8000	0.940	13500	11.0					
		3.6	8.1	85/71	11000	8400	0.936	14200	11.8					
110	2.0	0.9	2.1	65/55	7100	6300	1.103	10900	6.4					
		0.9	2.1	70/59	7800	6600	1.098	11500	7.1					
		0.9	2.1	75/63	8500	7000	1.094	12200	7.8					
		0.9	2.1	80/67	9200	7400	1.089	12900	8.4					
		0.9	2.1	85/71	9900	7700	1.085	13600	9.1					
	3.0	2.0	4.6	65/55	7200	6400	1.080	10900	6.7					
		2.0	4.6	70/59	8000	6800	1.075	11700	7.4					
		2.0	4.6	75/63	8700	7100	1.071	12400	8.1					
		2.0	4.6	80/67	9400	7500	1.066	13000	8.8					
		2.0	4.6	85/71	10100	7900	1.062	13700	9.5					
	4.0	3.5	8.0	65/55	7400	6500	1.057	11000	7.0					
		3.5	8.0	70/59	8100	6900	1.053	11700	7.7					
		3.5	8.0	75/63	8800	7200	1.048	12400	8.4					
		3.5	8.0	80/67	9500	7600	1.044	13100	9.1					
		3.5	8.0	85/71	10200	8000	1.039	13700	9.8					

**Capacity Table Legend:**

EWT = Entering Water Temperature (°F)

GPM = Gallons Per Minute

WPD = Water Pressure Drop (PSIG)

PSI = Pounds Per Square Inch

EAT = Entering Air Temperature (°F)

LWT = Leaving Water Temperature (°F)

THA = Total Heat of Absorption (Btu)

THR = Total Heat of Rejection (Btu)

EER = Energy Efficiency Ratio

COP = Coefficient of Performance

kW = Kilowatts

## Unit Size 015 (535 SCFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	2.5	0.7	1.5	65/55	<i>Tint = Operation Not Recommended</i>					8600	0.861	5700	80	2.92
		0.7	1.5	70/59						8400	0.889	5400	84	2.77
		0.7	1.5	75/63						8200	0.917	5100	89	2.62
		0.7	1.5	80/67						8000	0.944	4800	94	2.48
		0.7	1.5	85/71										
	3.8	1.3	3.0	65/55						9000	0.866	6000	80	3.04
		1.3	3.0	70/59						8800	0.894	5700	85	2.88
		1.3	3.0	75/63						8600	0.921	5500	90	2.73
		1.3	3.0	80/67						8300	0.949	5100	94	2.56
		1.3	3.0	85/71										
	5.0	2.0	4.6	65/55						9300	0.870	6300	81	3.13
		2.0	4.6	70/59						9100	0.898	6000	86	2.97
		2.0	4.6	75/63						8900	0.926	5700	90	2.81
		2.0	4.6	80/67						8700	0.953	5400	95	2.67
		2.0	4.6	85/71										
30	2.5	0.6	1.5	65/55	15200	8700	0.402	16600	37.8	10500	0.904	7400	83	3.40
		0.6	1.5	70/59	15900	9000	0.397	17300	40.1	10300	0.932	7100	88	3.24
		0.6	1.5	75/63	16600	9400	0.393	17900	42.2	10100	0.960	6800	92	3.08
		0.6	1.5	80/67	17300	9800	0.388	18600	44.6	9900	0.987	6500	97	2.94
		0.6	1.5	85/71	18000	10100	0.384	19300	46.9					
	3.8	1.3	2.9	65/55	15400	8800	0.372	16700	41.4	10900	0.909	7800	84	3.51
		1.3	2.9	70/59	16100	9200	0.367	17400	43.9	10700	0.937	7500	88	3.34
		1.3	2.9	75/63	16800	9500	0.363	18000	46.3	10500	0.964	7200	93	3.19
		1.3	2.9	80/67	17500	9900	0.358	18700	48.9	10200	0.992	6800	98	3.01
		1.3	2.9	85/71	18200	10300	0.354	19400	51.4					
	5.0	2.0	4.5	65/55	15600	8900	0.345	16800	45.2	11200	0.913	8100	84	3.59
		2.0	4.5	70/59	16300	9300	0.340	17500	47.9	11000	0.941	7800	89	3.42
		2.0	4.5	75/63	17000	9700	0.336	18100	50.6	10800	0.969	7500	94	3.26
		2.0	4.5	80/67	17700	10000	0.331	18800	53.5	10600	0.996	7200	98	3.12
		2.0	4.5	85/71	18400	10400	0.327	19500	56.3					
40	2.5	0.6	1.4	65/55	15100	8900	0.480	16700	31.5	12500	0.947	9300	87	3.86
		0.6	1.4	70/59	15800	9200	0.476	17400	33.2	12200	0.975	8900	91	3.66
		0.6	1.4	75/63	16500	9600	0.471	18100	35.0	12000	1.003	8600	96	3.50
		0.6	1.4	80/67	17200	10000	0.467	18800	36.8	11800	1.030	8300	100	3.35
		0.6	1.4	85/71	18000	10300	0.462	19600	39.0					
	3.8	1.2	2.8	65/55	15300	9000	0.450	16800	34.0	12800	0.952	9600	87	3.94
		1.2	2.8	70/59	16000	9400	0.446	17500	35.9	12600	0.980	9300	92	3.76
		1.2	2.8	75/63	16700	9700	0.441	18200	37.9	12400	1.007	9000	96	3.61
		1.2	2.8	80/67	17400	10100	0.437	18900	39.8	12200	1.035	8700	101	3.45
		1.2	2.8	85/71	18100	10500	0.432	19600	41.9					
	5.0	1.9	4.4	65/55	15500	9100	0.423	16900	36.6	13100	0.956	9800	88	4.01
		1.9	4.4	70/59	16200	9500	0.419	17600	38.7	12900	0.984	9500	92	3.84
		1.9	4.4	75/63	16900	9900	0.414	18300	40.8	12700	1.012	9200	97	3.67
		1.9	4.4	80/67	17600	10200	0.410	19000	42.9	12500	1.039	9000	102	3.52
		1.9	4.4	85/71	18300	10600	0.405	19700	45.2					
50	2.5	0.6	1.4	65/55	14800	8900	0.562	16700	26.3	14400	0.990	11000	90	4.26
		0.6	1.4	70/59	15500	9200	0.558	17400	27.8	14100	1.018	10600	94	4.06
		0.6	1.4	75/63	16200	9600	0.553	18100	29.3	13900	1.046	10300	99	3.89
		0.6	1.4	80/67	16900	10000	0.549	18800	30.8	13700	1.073	10000	104	3.74
		0.6	1.4	85/71	17600	10300	0.544	19500	32.4					
	3.8	1.2	2.7	65/55	14900	9000	0.533	16700	28.0	14700	0.995	11300	90	4.33
		1.2	2.7	70/59	15600	9400	0.528	17400	29.5	14500	1.023	11000	95	4.15
		1.2	2.7	75/63	16400	9700	0.524	18200	31.3	14300	1.050	10700	100	3.99
		1.2	2.7	80/67	17100	10100	0.519	18900	32.9	14100	1.078	10400	104	3.83
		1.2	2.7	85/71	17800	10500	0.515	19600	34.6					
	5.0	1.9	4.2	65/55	15100	9100	0.505	16800	29.9	15100	0.999	11700	91	4.43
		1.9	4.2	70/59	15800	9500	0.501	17500	31.5	14800	1.027	11300	95	4.22
		1.9	4.2	75/63	16500	9900	0.496	18200	33.3	14600	1.055	11000	100	4.05
		1.9	4.2	80/67	17200	10200	0.492	18900	35.0	14400	1.082	10700	105	3.90
		1.9	4.2	85/71	17900	10600	0.487	19600	36.8					
60	2.5	0.6	1.3	65/55	14200	8700	0.648	16400	21.9	16300	1.033	12800	93	4.62
		0.6	1.3	70/59	14900	9100	0.643	17100	23.2	16100	1.061	12500	98	4.44
		0.6	1.3	75/63	15600	9400	0.639	17800	24.4	15800	1.089	12100	102	4.25
		0.6	1.3	80/67	16300	9800	0.634	18500	25.7	15600	1.116	11800	107	4.09
		0.6	1.3	85/71	17000	10200	0.630	19200	27.0					
	3.8	1.2	2.7	65/55	14400	8800	0.618	16500	23.3	16600	1.038	13100	94	4.68
		1.2	2.7	70/59	15100	9200	0.614	17200	24.6	16400	1.066	12800	98	4.50
		1.2	2.7	75/63	15800	9600	0.609	17900	25.9	16200	1.093	12500	103	4.34
		1.2	2.7	80/67	16500	9900	0.605	18600	27.3	16000	1.121	12200	108	4.18
		1.2	2.7	85/71	17200	10300	0.600	19200	28.7					
	5.0	1.8	4.1	65/55	14500	9000	0.591	16500	24.5	17000	1.042	13400	94	4.78
		1.8	4.1	70/59	15200	9300	0.587	17200	25.9	16700	1.070	13000	99	4.57
		1.8	4.1	75/63	15900	9700	0.582	17900	27.3	16500	1.098	12800	103	4.40
		1.8	4.1	80/67	16600	10100	0.578	18600	28.7	16300	1.125	12500	108	4.24
		1.8	4.1	85/71	17300	10400								

## Unit Size 015 (535 SCFM) Continued

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	2.5	0.6	1.3	65/55	13400	8400	0.737	15900	18.2	18200	1.076	14500	96	4.95
		0.6	1.3	70/59	14100	8800	0.732	16600	19.3	18000	1.104	14200	101	4.77
		0.6	1.3	75/63	14800	9100	0.728	17300	20.3	17700	1.132	13800	105	4.58
		0.6	1.3	80/67	15500	9500	0.723	18000	21.4	17500	1.159	13500	110	4.42
		0.6	1.3	85/71	16200	9900	0.719	18700	22.5					
	3.8	1.1	2.6	65/55	13600	8500	0.707	16000	19.2	18500	1.081	14800	97	5.01
		1.1	2.6	70/59	14300	8900	0.703	16700	20.3	18300	1.109	14500	101	4.83
		1.1	2.6	75/63	15000	9300	0.698	17400	21.5	18100	1.136	14200	106	4.67
		1.1	2.6	80/67	15700	9600	0.694	18100	22.6	17900	1.164	13900	111	4.50
		1.1	2.6	85/71	16400	10000	0.689	18800	23.8					
	5.0	1.8	4.1	65/55	13700	8700	0.680	16000	20.1	18900	1.085	15200	98	5.10
		1.8	4.1	70/59	14400	9000	0.676	16700	21.3	18700	1.113	14900	102	4.92
		1.8	4.1	75/63	15200	9400	0.671	17500	22.7	18400	1.141	14500	107	4.72
		1.8	4.1	80/67	15900	9800	0.667	18200	23.8	18200	1.168	14200	111	4.56
		1.8	4.1	85/71	16600	10100	0.662	18900	25.1					
80	2.5	0.6	1.3	65/55	12500	8000	0.829	15300	15.1	20100	1.119	16300	100	5.26
		0.6	1.3	70/59	13200	8400	0.825	16000	16.0	19900	1.147	16000	104	5.08
		0.6	1.3	75/63	13900	8800	0.820	16700	17.0	19700	1.175	15700	109	4.91
		0.6	1.3	80/67	14600	9100	0.816	17400	17.9	19400	1.202	15300	113	4.73
		0.6	1.3	85/71	15300	9500	0.811	18100	18.9					
	3.8	1.1	2.5	65/55	12700	8200	0.799	15400	15.9	20500	1.124	16700	100	5.34
		1.1	2.5	70/59	13400	8500	0.795	16100	16.9	20200	1.152	16300	105	5.13
		1.1	2.5	75/63	14100	8900	0.790	16800	17.8	20000	1.179	16000	109	4.97
		1.1	2.5	80/67	14800	9300	0.786	17500	18.8	19800	1.207	15700	114	4.80
		1.1	2.5	85/71	15500	9600	0.781	18200	19.8					
	5.0	1.7	4.0	65/55	12800	8300	0.772	15400	16.6	20800	1.128	17000	101	5.40
		1.7	4.0	70/59	13500	8700	0.768	16100	17.6	20600	1.156	16700	105	5.22
		1.7	4.0	75/63	14200	9000	0.763	16800	18.6	20400	1.184	16400	110	5.05
		1.7	4.0	80/67	15000	9400	0.759	17600	19.8	20100	1.211	16000	115	4.86
		1.7	4.0	85/71	15700	9800	0.754	18300	20.8					
90	2.5	0.6	1.3	65/55	11500	7600	0.924	14700	12.4	22000	1.162	18000	103	5.54
		0.6	1.3	70/59	12200	7900	0.920	15300	13.3	21800	1.190	17700	108	5.36
		0.6	1.3	75/63	12900	8300	0.915	16000	14.1	21600	1.218	17400	112	5.19
		0.6	1.3	80/67	13600	8700	0.911	16700	14.9	21400	1.245	17200	117	5.03
		0.6	1.3	85/71	14300	9000	0.906	17400	15.8					
	3.8	1.1	2.5	65/55	11700	7700	0.895	14800	13.1	22400	1.167	18400	104	5.62
		1.1	2.5	70/59	12400	8100	0.890	15400	13.9	22200	1.195	18100	108	5.44
		1.1	2.5	75/63	13100	8400	0.886	16100	14.8	21900	1.222	17700	113	5.25
		1.1	2.5	80/67	13800	8800	0.881	16800	15.7	21700	1.250	17400	117	5.08
		1.1	2.5	85/71	14500	9200	0.877	17500	16.5					
	5.0	1.7	3.9	65/55	11800	7800	0.867	14800	13.6	22700	1.171	18700	104	5.68
		1.7	3.9	70/59	12600	8200	0.863	15500	14.6	22500	1.199	18400	109	5.49
		1.7	3.9	75/63	13300	8600	0.858	16200	15.5	22300	1.227	18100	113	5.32
		1.7	3.9	80/67	14000	8900	0.854	16900	16.4	22100	1.254	17800	118	5.16
		1.7	3.9	85/71	14700	9300	0.849	17600	17.3					
100	2.5	0.5	1.3	65/55	10500	7100	1.022	14000	10.3					
		0.5	1.3	70/59	11200	7400	1.017	14700	11.0					
		0.5	1.3	75/63	11900	7800	1.013	15400	11.7					
		0.5	1.3	80/67	12600	8200	1.008	16000	12.5					
		0.5	1.3	85/71	13300	8500	1.004	16700	13.2					
	3.8	1.1	2.5	65/55	10700	7200	0.992	14100	10.8					
		1.1	2.5	70/59	11400	7600	0.988	14800	11.5					
		1.1	2.5	75/63	12100	7900	0.983	15500	12.3					
		1.1	2.5	80/67	12800	8300	0.979	16100	13.1					
		1.1	2.5	85/71	13500	8700	0.974	16800	13.9					
	5.0	1.7	3.9	65/55	10800	7300	0.965	14100	11.2					
		1.7	3.9	70/59	11500	7700	0.961	14800	12.0					
		1.7	3.9	75/63	12200	8100	0.956	15500	12.8					
		1.7	3.9	80/67	12900	8400	0.952	16100	13.6					
		1.7	3.9	85/71	13600	8800	0.947	16800	14.4					
110	2.5	0.5	1.2	65/55	9500	6500	1.122	13300	8.5					
		0.5	1.2	70/59	10200	6900	1.118	14000	9.1					
		0.5	1.2	75/63	10900	7300	1.113	14700	9.8					
		0.5	1.2	80/67	11600	7600	1.109	15400	10.5					
		0.5	1.2	85/71	12300	8000	1.104	16100	11.1					
	3.8	1.1	2.4	65/55	9600	6700	1.093	13300	8.8					
		1.1	2.4	70/59	10300	7100	1.088	14000	9.5					
		1.1	2.4	75/63	11000	7400	1.084	14700	10.1					
		1.1	2.4	80/67	11700	7800	1.079	15400	10.8					
		1.1	2.4	85/71	12500	8200	1.075	16200	11.6					
	5.0	1.7	3.8	65/55	9800	6800	1.066	13400	9.2					
		1.7	3.8	70/59	10500	7200	1.061	14100	9.9					
		1.7	3.8	75/63	11200	7600	1.057	14800	10.6					
		1.7	3.8	80/67	11900	7900	1.052	15500	11.3					
		1.7	3.8	85/71	12600	8300	1.048	16200	12.0					

**Capacity Table Legend:**

EWT = Entering Water Temperature (°F)

GPM = Gallons Per Minute

WPD = Water Pressure Drop (PSIG)

PSI = Pounds Per Square Inch

EAT = Entering Air Temperature (°F)

LWT = Leaving Water Temperature (°F)

THA = Total Heat of Absorption (Btu)

THR = Total Heat of Rejection (Btu)

EER = Energy Efficiency Ratio

COP = Coefficient of Performance

kW = Kilowatts

**Tint = Operation Not Recommended****Notes:**

1. Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.

2. Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.

3. See performance correction tables for

## Unit Size 018 (485 SCFM)

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
20	3.0	0.9	2.0	65/55	<i>Tint = Operation Not Recommended</i>					10300	0.961	7000	85	3.14
		0.9	2.0	70/59						10100	0.988	6700	89	2.99
		0.9	2.0	75/63						9900	1.015	6400	94	2.86
		0.9	2.0	80/67						9600	1.042	6000	98	2.70
		0.9	2.0	85/71										
	4.5	1.7	3.9	65/55						10700	0.966	7400	85	3.24
		1.7	3.9	70/59						10500	0.993	7100	90	3.10
		1.7	3.9	75/63						10300	1.020	6800	95	2.96
		1.7	3.9	80/67						10100	1.047	6500	99	2.82
		1.7	3.9	85/71										
30	3.0	2.7	6.2	65/55						11100	0.972	7800	86	3.34
		2.7	6.2	70/59						10900	0.999	7500	91	3.19
		2.7	6.2	75/63						10700	1.025	7200	95	3.06
		2.7	6.2	80/67						10500	1.052	6900	100	2.92
		2.7	6.2	85/71										
	4.5	1.7	3.8	65/55						12800	1.018	9300	89	3.68
		1.7	3.8	70/59						12600	1.045	9000	94	3.53
		1.7	3.8	75/63						12300	1.071	8600	98	3.36
		1.7	3.8	80/67						12100	1.098	8400	103	3.23
		1.7	3.8	85/71										
40	3.0	2.6	6.0	65/55						13200	1.023	9700	90	3.78
		2.6	6.0	70/59						13000	1.050	9400	95	3.63
		2.6	6.0	75/63						12700	1.077	9000	99	3.45
		2.6	6.0	80/67						12500	1.104	8700	104	3.32
		2.6	6.0	85/71										
	4.5	0.8	1.9	65/55						14400	1.064	10800	92	3.96
		0.8	1.9	70/59						14200	1.091	10500	97	3.81
		0.8	1.9	75/63						14000	1.118	10200	102	3.67
		0.8	1.9	80/67						13800	1.144	9900	106	3.53
		1.6	3.7	65/55										
50	3.0	2.6	5.9	65/55						15200	1.075	11500	94	4.14
		2.6	5.9	70/59						15000	1.101	11200	98	3.99
		2.6	5.9	75/63						14800	1.128	11000	103	3.84
		2.6	5.9	80/67						14600	1.155	10700	108	3.70
		2.6	5.9	85/71										
	4.5	0.8	1.9	65/55						16500	1.115	12700	96	4.33
		0.8	1.9	70/59						16300	1.142	12400	101	4.18
		0.8	1.9	75/63						16100	1.169	12100	106	4.03
		0.8	1.9	80/67						15900	1.196	11800	110	3.89
		1.6	3.6	65/55										
60	3.0	2.5	5.7	65/55						16900	1.121	13100	97	4.41
		2.5	5.7	70/59						16700	1.147	12800	102	4.26
		2.5	5.7	75/63						16500	1.174	12500	106	4.12
		2.5	5.7	80/67						16300	1.201	12200	111	3.97
		2.5	5.7	85/71										
	4.5	1.5	3.5	65/55						17300	1.126	13500	98	4.50
		1.5	3.5	70/59						17100	1.153	13200	102	4.34
		1.5	3.5	75/63						16900	1.180	12900	107	4.19
		1.5	3.5	80/67						16700	1.206	12600	112	4.05
		1.5	3.5	85/71										
	6.0	0.8	1.8	65/55						18600	1.167	14600	100	4.67
		0.8	1.8	70/59						18400	1.194	14300	105	4.51
		0.8	1.8	75/63						18200	1.220	14000	110	4.37
		0.8	1.8	80/67						18000	1.247	13700	114	4.23
		1.5	3.5	85/71										

## Unit Size 018 (485 SCFM) Continued

EWT (°F)	GPM	WPD		EAT (°F)	Cooling					Heating				
		PSI	Ft of W.C.		Total (Btu/hr)	Sensible (Btu/hr)	Power Input (kW)	THR (Btu/hr)	EER	Total (Btu/hr)	Power Input (kW)	THA (Btu/hr)	LAT (°F)	COP
70	3.0	0.8	1.8	65/55	15900	9700	0.893	18900	17.8	20700	1.218	16500	104	4.98
		0.8	1.8	70/59	16600	10000	0.889	19600	18.7	20500	1.245	16300	109	4.82
		0.8	1.8	75/63	17300	10400	0.884	20300	19.6	20300	1.272	16000	114	4.67
		0.8	1.8	80/67	18000	10800	0.880	21000	20.5	20000	1.299	15600	118	4.51
		0.8	1.8	85/71	18700	11100	0.875	21700	21.4					
	4.5	1.5	3.4	65/55	16100	9800	0.859	19000	18.7	21100	1.223	16900	105	5.05
		1.5	3.4	70/59	16800	10200	0.855	19700	19.6	20900	1.250	16600	110	4.90
		1.5	3.4	75/63	17500	10600	0.850	20400	20.6	20700	1.277	16300	114	4.75
		1.5	3.4	80/67	18200	10900	0.846	21100	21.5	20400	1.304	15900	119	4.58
		1.5	3.4	85/71	18900	11300	0.841	21800	22.5					
	6.0	2.4	5.5	65/55	16300	10000	0.825	19100	19.8	21500	1.229	17300	106	5.12
		2.4	5.5	70/59	17000	10400	0.821	19800	20.7	21300	1.256	17000	110	4.97
		2.4	5.5	75/63	17700	10700	0.816	20500	21.7	21100	1.282	16700	115	4.82
		2.4	5.5	80/67	18400	11100	0.812	21200	22.7	20900	1.309	16400	120	4.68
		2.4	5.5	85/71	19100	11500	0.807	21900	23.7					
80	3.0	0.8	1.7	65/55	15000	9300	1.007	18400	14.9	22800	1.270	18500	108	5.26
		0.8	1.7	70/59	15700	9600	1.002	19100	15.7	22600	1.296	18200	113	5.11
		0.8	1.7	75/63	16400	10000	0.998	19800	16.4	22300	1.323	17800	117	4.94
		0.8	1.7	80/67	17100	10400	0.993	20500	17.2	22100	1.350	17500	122	4.79
		0.8	1.7	85/71	17800	10700	0.989	21200	18.0					
	4.5	1.5	3.4	65/55	15200	9400	0.973	18500	15.6	23200	1.275	18800	109	5.33
		1.5	3.4	70/59	15900	9800	0.968	19200	16.4	23000	1.302	18600	114	5.17
		1.5	3.4	75/63	16600	10200	0.964	19900	17.2	22700	1.329	18200	118	5.00
		1.5	3.4	80/67	17300	10500	0.959	20600	18.0	22500	1.355	17900	123	4.86
		1.5	3.4	85/71	18000	10900	0.955	21300	18.8					
	6.0	2.3	5.4	65/55	15400	9600	0.938	18600	16.4	23600	1.280	19200	110	5.40
		2.3	5.4	70/59	16100	10000	0.934	19300	17.2	23400	1.307	18900	114	5.24
		2.3	5.4	75/63	16800	10300	0.929	20000	18.1	23200	1.334	18600	119	5.09
		2.3	5.4	80/67	17500	10700	0.925	20700	18.9	22900	1.361	18300	123	4.93
		2.3	5.4	85/71	18200	11100	0.920	21300	19.8					
90	3.0	0.7	1.7	65/55	14100	8800	1.123	17900	12.6	24900	1.321	20400	112	5.52
		0.7	1.7	70/59	14800	9200	1.119	18600	13.2	24600	1.348	20000	117	5.34
		0.7	1.7	75/63	15500	9500	1.114	19300	13.9	24400	1.375	19700	121	5.20
		0.7	1.7	80/67	16200	9900	1.110	20000	14.6	24200	1.401	19400	126	5.06
		0.7	1.7	85/71	16900	10300	1.105	20700	15.3					
	4.5	1.4	3.3	65/55	14300	9000	1.089	18000	13.1	25300	1.326	20800	113	5.59
		1.4	3.3	70/59	15000	9300	1.084	18700	13.8	25100	1.353	20500	118	5.43
		1.4	3.3	75/63	15700	9700	1.080	19400	14.5	24800	1.380	20100	122	5.26
		1.4	3.3	80/67	16400	10100	1.075	20100	15.3	24600	1.407	19800	127	5.12
		1.4	3.3	85/71	17100	10400	1.071	20800	16.0					
	6.0	2.3	5.3	65/55	14500	9100	1.055	18100	13.7	25700	1.332	21200	114	5.65
		2.3	5.3	70/59	15200	9500	1.050	18800	14.5	25500	1.358	20900	118	5.50
		2.3	5.3	75/63	15900	9900	1.046	19500	15.2	25200	1.385	20500	123	5.33
		2.3	5.3	80/67	16600	10200	1.041	20200	15.9	25000	1.412	20200	127	5.18
		2.3	5.3	85/71	17300	10600	1.037	20800	16.7					
100	3.0	0.7	1.7	65/55	13100	8300	1.242	17300	10.5					
		0.7	1.7	70/59	13800	8700	1.238	18000	11.1					
		0.7	1.7	75/63	14500	9000	1.233	18700	11.8					
		0.7	1.7	80/67	15200	9400	1.229	19400	12.4					
		0.7	1.7	85/71	15900	9800	1.224	20100	13.0					
	4.5	1.4	3.3	65/55	13300	8500	1.208	17400	11.0					
		1.4	3.3	70/59	14000	8800	1.203	18100	11.6					
		1.4	3.3	75/63	14700	9200	1.199	18800	12.3					
		1.4	3.3	80/67	15400	9600	1.194	19500	12.9					
		1.4	3.3	85/71	16100	9900	1.190	20200	13.5					
	6.0	2.3	5.2	65/55	13500	8600	1.174	17500	11.5					
		2.3	5.2	70/59	14200	9000	1.169	18200	12.1					
		2.3	5.2	75/63	14900	9400	1.165	18900	12.8					
		2.3	5.2	80/67	15600	9700	1.160	19600	13.4					
		2.3	5.2	85/71	16300	10100	1.156	20200	14.1					
110	3.0	0.7	1.7	65/55	12100	7800	1.364	16800	8.9					
		0.7	1.7	70/59	12800	8200	1.359	17400	9.4					
		0.7	1.7	75/63	13500	8500	1.355	18100	10.0					
		0.7	1.7	80/67	14200	8900	1.350	18800	10.5					
		0.7	1.7	85/71	14900	9300	1.346	19500	11.1					
	4.5	1.4	3.2	65/55	12300	8000	1.330	16800	9.2					
		1.4	3.2	70/59	13000	8300	1.325	17500	9.8					
		1.4	3.2	75/63	13700	8700	1.321	18200	10.4					
		1.4	3.2	80/67	14400	9100	1.316	18900	10.9					
		1.4	3.2	85/71	15100	9400	1.312	19600	11.5					
	6.0	2.3	5.1	65/55	12500	8100	1.295	16900	9.7					
		2.3	5.1	70/59	13200	8500	1.291	17600	10.2					
		2.3	5.1	75/63	13900	8900	1.286	18300	10.8					
		2.3	5.1	80/67	14600	9200	1.282	19000	11.4					
		2.3	5.1	85/71	15300	9600	1.277	19700	12.0					

**Capacity Table Legend:**

EWT = Entering Water Temperature (°F)

GPM = Gallons Per Minute

WPD = Water Pressure Drop (PSIG)

PSI = Pounds Per Square Inch

EAT = Entering Air Temperature (°F)

LWT = Leaving Water Temperature (°F)

THA = Total Heat of Absorption (Btu)

THR = Total Heat of Rejection (Btu)

EER = Energy Efficiency Ratio

COP = Coefficient of Performance

kW = Kilowatts

## Physical data

**Table 11: Physical data**

Unit Size		007	009	012	015	018		
Unit Dimensions H x W (Extnd End) x D1 (in.)		25 x 46 (58) x 10-3/4			25 x 54 (66) 10-3/4			
Fan Wheel - D x W (in.)		4-3/8 x 27-1/4			4-3/8 x 35-3/8			
Fan Motor (hp)		1/30			1/18			
Coil Face Area (ft. <sup>2</sup> )		1.67			2.22			
Coil Rows		2	2	3	2	3		
Voltage		115-208/230	265	All Voltages				
Refrigerant Charge (oz.)		20	22	21	22	30		
Filter (Qty.) Size (in.)	Low Sill	(1) 23-3/4w x 8-3/4d			(1) 31-3/4w x 8-3/4d			
	High Sill	(1) 29-1/4w x 9-3/4d			(1) 37-1/4w x 9-3/4d			
Water Connections, Sweat Connections (in.)		5/8 O.D.						
Condensate Connection, I.D. (In.)		3/4						
Weight, Operating (lbs.)		138	144	146	166	171		
Weight, Shipping (lbs.)		158	164	166	196	201		

<sup>1</sup> Add 2", 4" or 6" to unit depth for optional rear extension.

## Electrical data

**Table 12: Standard static motor**

Unit Size	Voltage/Hz/ Phase	Compressor		Fan Motor FLA	Total Unit FLA	Minimum Voltage	Minimum Circuit Amps	Maximum Fuse or HACR Breaker Size
		RLA	LRA					
007	115-60-1	5.9	31	0.50	6.4	104	7.9	15.0
	208/230-60-1	2.9	15	0.41	3.3	187	4.0	15.0
	265/277-60-1	2.5	12	0.23	2.7	239	3.4	15.0
009	115-60-1	7.0	42	0.50	7.5	104	9.3	15.0
	208/230-60-1	3.6	21	0.41	4.0	187	4.9	15.0
	265/277-60-1	3.1	17	0.23	3.3	239	4.1	15.0
012	115-60-1	9.1	51	0.70	9.8	104	12.1	20.0
	208/230-60-1	4.4	30	0.33	4.7	187	5.8	15.0
	265/277-60-1	3.9	24	0.38	4.3	239	5.3	15.0
015	208/230-60-1	5.0	30	0.47	5.5	187	6.7	15.0
	265/277-60-1	4.3	24	0.38	4.7	239	5.8	15.0
018	208/230-60-1	6.2	32	0.47	6.7	187	8.2	15.0
	265/277-60-1	5.3	28	0.38	5.7	239	7.0	15.0

**Table 13: Standard static motor and optional electric heater (heat pump not running)**

Unit Size	Voltage/Hz/Phase	Electric Heater		Fan Motor FLA	Total Unit FLA	Minimum Voltage	*Minimum Circuit Amps	*Maximum Fuse Size
		*kW	*FLA					
007	115-60-1	—	—	—	—	—	—	—
	208/230-60-1	2.0	2.7	0.41	10.1	11.5	12.9	14.4
	265/277-60-1	3.6	12.9	0.23	13.1	239	16.4	20
009	115-60-1	—	—	—	—	—	—	—
	208/230-60-1	2.0	2.7	0.41	10.1	11.5	12.9	14.4
	265/277-60-1	3.6	12.9	0.23	13.1	239	16.4	20
012	115-60-1	—	—	—	—	—	—	—
	208/230-60-1	2.0	2.7	0.47	10.1	11.6	12.7	14.5
	265/277-60-1	3.6	12.9	0.38	13.3	239	16.6	20
015	208/230-60-1	2.7	3.7	0.47	13.6	15.7	17.1	19.6
	265/277-60-1	4.9	17.5	0.38	17.9	239	22.4	25
018	208/230-60-1	2.7	3.7	0.47	13.6	15.7	17.1	19.6
	265/277-60-1	4.9	17.5	0.38	17.9	239	22.4	25

Note: \*kW, FLA, MCA and max fuse calculated at 208, 240 and 277 volt as required by UL 1995.

## Fan performance

Table 14: Airflow vs. CFM - standard static motor

Unit Size	Fan Speed	Cooling		Heating	
		SCFM	L/s	SCFM	L/s
007	Low	220	104	225	106
	High	275	130	295	139
009	Low	260	123	265	125
	High	345	163	355	168
012	Low	250	118	260	123
	High	360	170	370	175
015	Low	340	160	350	165
	High	525	248	535	252
018	Low	380	179	390	184
	High	475	224	485	229

## Operating limits

### Air limits

**Table 15: Air limits in °F (°C)**

Air Limits	Standard Range Units		Geothermal Range Units	
	Cooling	Heating	Cooling	Heating
Minimum Ambient Air <sup>1</sup>	50°F (10°C)	50°F (10°C)	40°F (4°C)	40°F (4°C)
Maximum Ambient Air <sup>2</sup>	100°F/77°F (38°C/25°C)	85°F (29°C)	100°F/77°F (38°C/25°C)	85°F (29°C)
Minimum Entering Air <sup>1</sup>	65°F/55°F (18°C/13°C)	50°F (10°C)	65°F/55°F (18°C/13°C)	50°F (10°C)
Common Design Entering Air	75°F/63°F (24°C/17°C)	70°F (21°C)	75°F/63°F (24°C/17°C)	70°F (21°C)
Maximum Entering Air <sup>2</sup>	85°F/71°C (29°C/22°C)	80°F (27°C)	85°F/71°C (29°C/22°C)	80°F (27°C)

### Fluid limits

**Table 16: Fluid limits**

Fluid Limits	Standard Range Units		Geothermal Range Units	
	Cooling	Heating	Cooling	Heating
Minimum Entering Fluid	55°F (13°C)	55°F (13°C)	30°F (-1°C)	20°F (-6°C)
Common Design Entering Fluid	85-90°F (29-32°C)	70°F (21°C)	90°F (32°C)	35-60°F (1.5-16°C)
Maximum Entering Fluid	110°F (43°C)	90°F (32°C)	110°F (43°C)	90°F (32°C)
Minimum GPM/Ton	1.5			
Nominal GPM/Ton	3.0			
Maximum GPM/Ton	4.0			

- Notes:**
1. Maximum and minimum values may not be combined. If one value is at maximum or minimum, the other two conditions may not exceed the normal condition for standard units. Geothermal range units may combine any two maximum conditions, but not more than two, with all other conditions being normal conditions.
  2. This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.

## Information for initial start-up

### Standard range units:

Units are designed to start in an ambient of 50°F (10°C), with entering air at 50°F (10°C), with entering water at 70°F (21°C), with both air and water at the flow rates used in the ISO 13256-1 rating test, for initial start-up in winter.

**Note:** *This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.*

### Geothermal range units:

Geothermal range heat pump conditioners are designed to start in an ambient of 40°F (5°C), with entering air at 40°F (5°C), with entering water at 40°F (5°C), with both air and water at the flow rates used in the ISO 13256-1 rating test, for initial start-up in winter.

**Note:** *This is not a normal or continuous operating condition. It is assumed that such a start-up is for the purpose of bringing the building space up to occupancy temperature.*

## Environment

This equipment is designed for indoor installation only. Sheltered locations such as attics, garages, etc., generally will not provide sufficient protection against extremes in temperature and/or humidity, and equipment performance, reliability, and service life may be adversely affected.

### Power supply

A voltage variation of +/-10% of nameplate voltage is acceptable.

## Airflow correction factors

**Table 17: Airflow correction factors**

	Percent of Nominal Airflow						
	85	90	95	100	105	110	115
Total Cooling Capacity	0.972	0.982	0.993	1.00	1.007	1.010	1.013
Sensible Cooling Capacity	0.926	0.948	0.974	1.00	1.027	1.055	1.066
kW - Cooling	0.977	0.984	0.993	1.00	1.011	1.018	1.028
Total Heat of Rejection	0.975	0.983	0.991	1.00	1.008	1.015	1.018
Total Heating Capacity	0.967	0.978	0.990	1.00	1.009	1.017	1.024
KW - Heating	1.009	1.006	1.003	1.00	0.997	0.995	0.993
Total Heat of Absorption	0.967	0.976	0.989	1.00	1.010	1.019	1.025

## Antifreeze correction factors

**Table 18: Ethylene glycol**

	10%	20%	30%	40%	50%
Cooling Capacity	0.9950	0.9920	0.9870	0.9830	0.9790
Heating Capacity	0.9910	0.9820	0.9770	0.9690	0.9610
Pressure Drop	1.0700	1.1300	1.1800	1.2600	1.2800

**Table 19: Propylene glycol**

	10%	20%	30%	40%	50%
Cooling Capacity	0.9900	0.9800	0.9700	0.9600	0.9500
Heating Capacity	0.9870	0.9750	0.9620	0.9420	0.9300
Pressure Drop	1.0700	1.1500	1.2500	1.3700	1.4200

**Table 20: Methanol**

	10%	20%	30%	40%	50%
Cooling Capacity	0.9980	0.9720	–	–	–
Heating Capacity	0.9950	0.9700	–	–	–
Pressure Drop	1.0230	1.0570	–	–	–

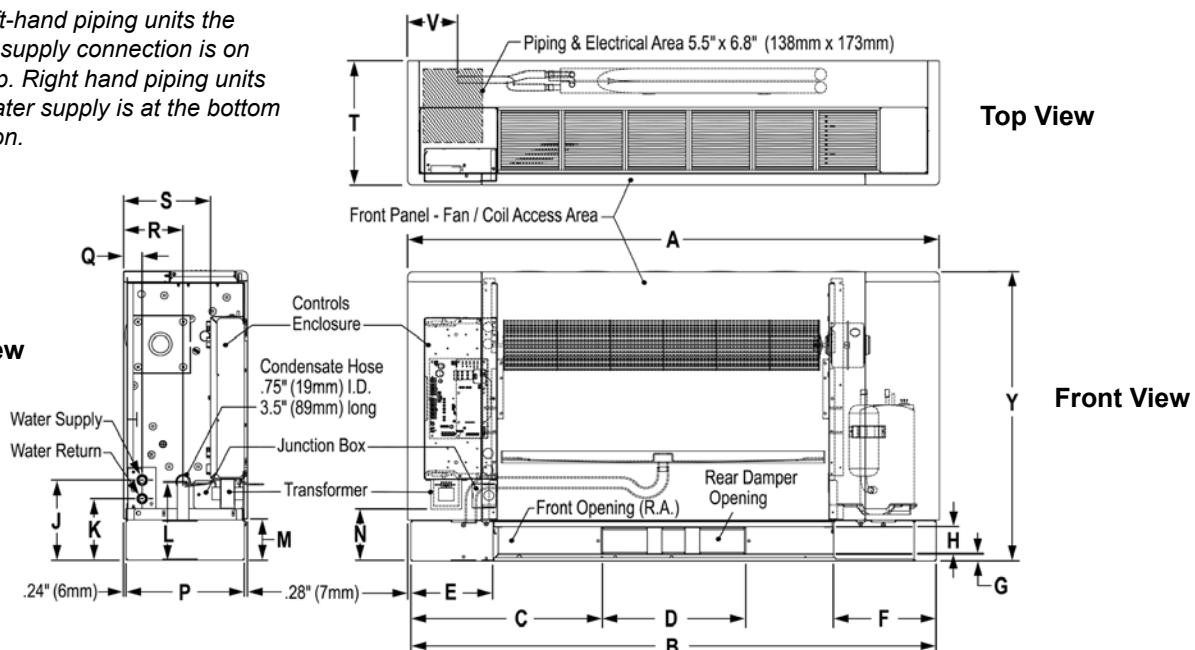
**Table 21: Ethanol**

	10%	20%	30%	40%	50%
Cooling Capacity	0.9910	0.9510	–	–	–
Heating Capacity	0.9950	0.9600	–	–	–
Pressure Drop	1.0350	0.9600	–	–	–

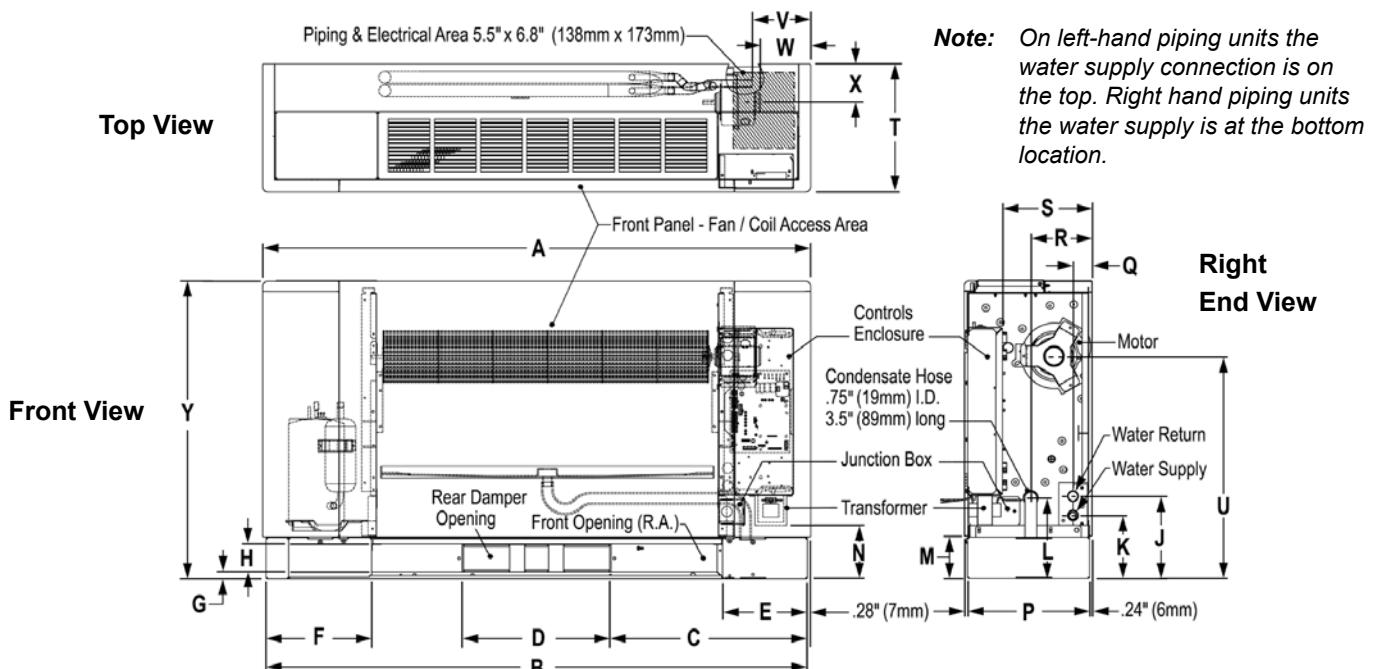
## Flat top – high sill, left-hand piping – unit size 007 - 012

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.

**Left End View**



## Flat top – high sill, right-hand piping – unit size 007 - 012



**Table 22: Dimensions**

Unit Size	A <sup>1</sup>	B	C	D	E	F	G	H	J	K	L	M
007-012	46" (1168mm)	45 <sup>5</sup> / <sub>8</sub> " (1153mm)	16 <sup>1</sup> / <sub>2</sub> " (418mm)	12 <sup>1</sup> / <sub>2</sub> " (318mm)	7" (181mm)	8 <sup>7</sup> / <sub>8</sub> " (225mm)	0.6" (14mm)	2 <sup>1</sup> / <sub>4</sub> " (57mm)	6 <sup>7</sup> / <sub>8</sub> " (175mm)	5 <sup>1</sup> / <sub>5</sub> " (132mm)	6 <sup>3</sup> / <sub>4</sub> " (172mm)	3 <sup>1</sup> / <sub>2</sub> " (90mm)
	N	P	Q	R	S	T <sup>2</sup>	U	V	W	X	Y	
	4 <sup>1</sup> / <sub>4</sub> " (108mm)	10 <sup>1</sup> / <sub>4</sub> " (260mm)	1 <sup>3</sup> / <sub>5</sub> " (41mm)	5 <sup>1</sup> / <sub>4</sub> " (134mm)	7 <sup>1</sup> / <sub>2</sub> " (192mm)	10 <sup>4</sup> " (273mm)	18 <sup>3</sup> / <sub>4</sub> " (476mm)	4 <sup>9</sup> / <sub>16</sub> " (118mm)	4 <sup>1</sup> / <sub>4</sub> " (108mm)	3 <sup>1</sup> / <sub>4</sub> " (83mm)	25" (635mm)	

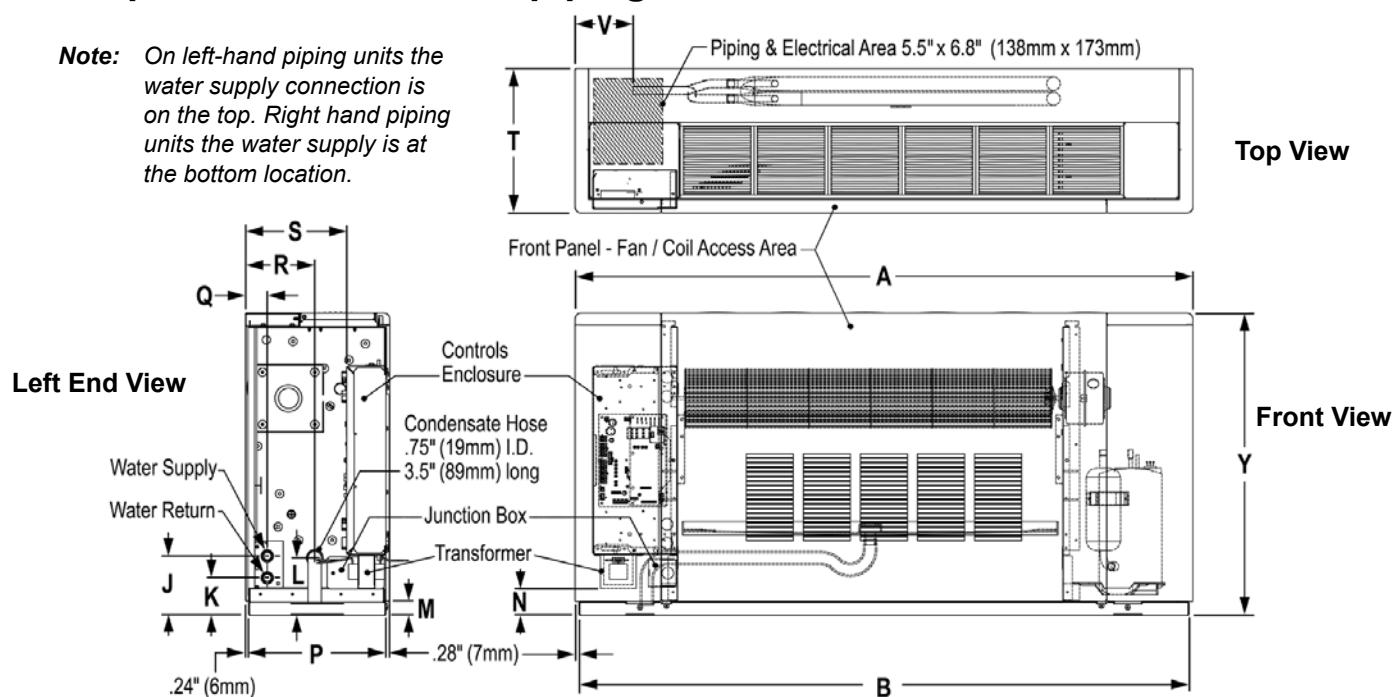
Notes: Dimensions are approximate

<sup>1</sup> Add 12" to dimension "A" unit width for optional extended end pocket.

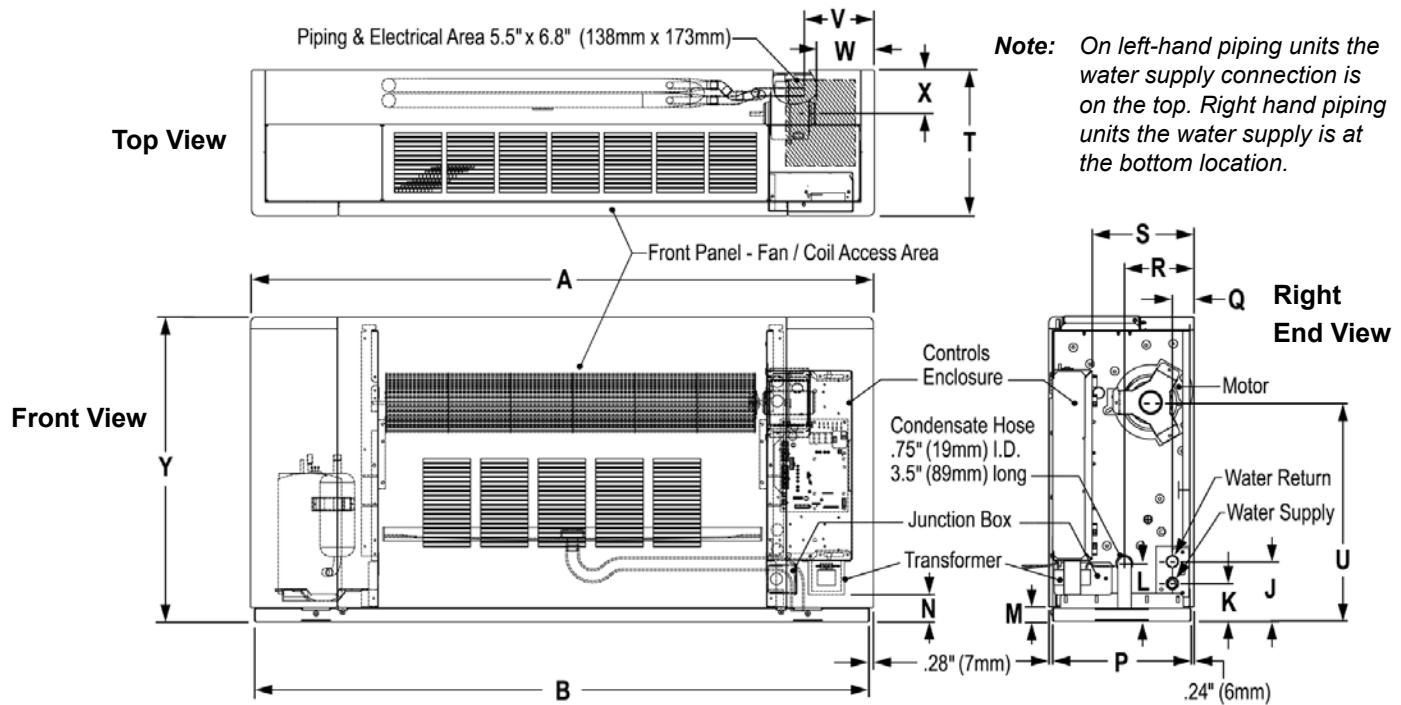
<sup>2</sup> Add 2", 4" or 6" to dimension "T" unit depth for optional rear extension (high sill units only).

## Flat top – low sill, left hand piping – unit size 007 - 012

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Flat top – low sill, right-hand piping – unit size 007 - 012



**Table 23: Dimensions**

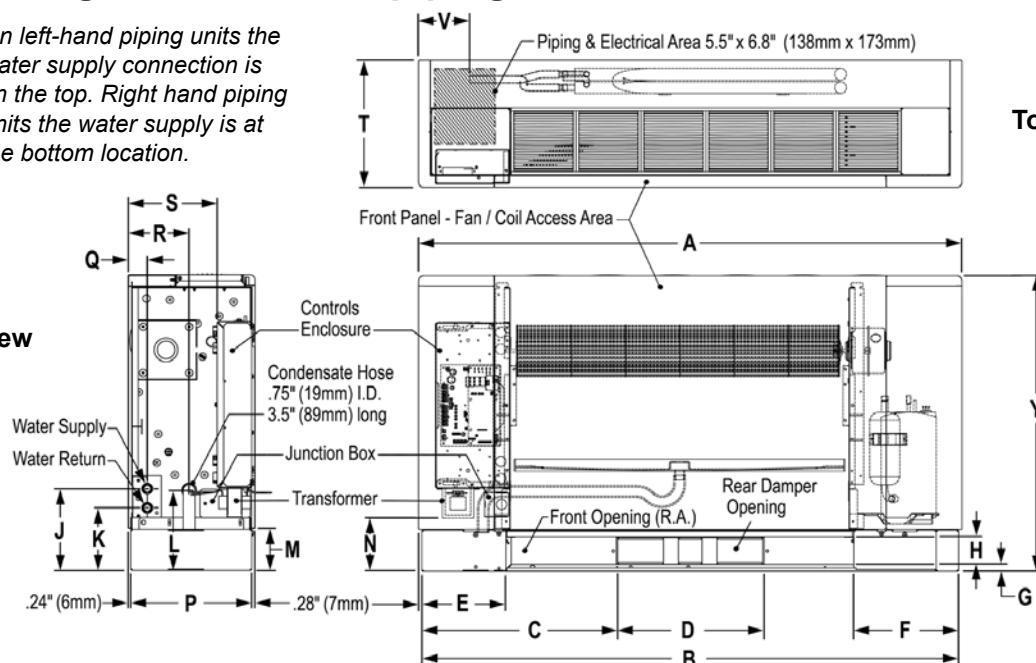
Unit Size	A	B	J	K	L	M	N	P	Q	R	S	T
007-012	46" (1168mm)	45 $\frac{5}{8}$ " (1153mm)	4 $\frac{1}{8}$ " (111mm)	2 $\frac{3}{4}$ " (70mm)	4 $\frac{1}{4}$ " (108mm)	1" (26mm)	1 $\frac{1}{4}$ " (45mm)	10 $\frac{1}{4}$ " (260mm)	1 $\frac{3}{5}$ " (41mm)	5 $\frac{1}{5}$ " (131mm)	7 $\frac{1}{2}$ " (192mm)	10 $\frac{3}{4}$ " (273mm)
	U	V	W	X	Y							
	16 $\frac{1}{4}$ " (413mm)	4 $\frac{5}{8}$ " (118mm)	4 $\frac{1}{4}$ " (108mm)	3 $\frac{1}{4}$ " (83mm)	22 $\frac{1}{2}$ " (572mm)							

**Note:** Dimensions are approximate

## Flat top – high sill, left hand piping – unit size 015 - 018

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.

**Left End View**



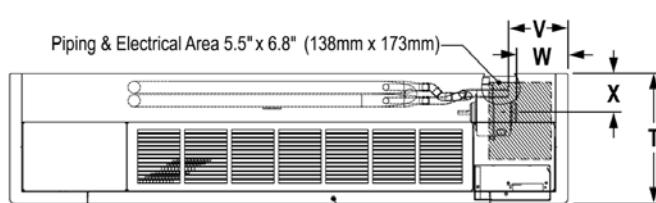
**Top View**

**Front View**

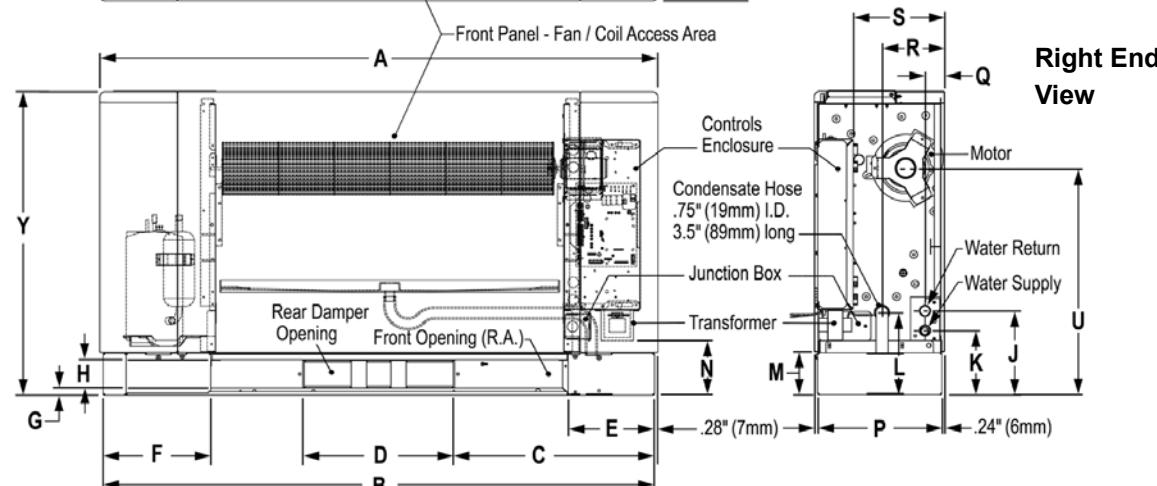
## Flat top – high sill, right hand piping – unit size 015 - 018

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.

**Top View**



**Front View**



**Right End View**

**Table 24: Dimensions**

Unit Size	A <sup>1</sup>	B	C	D	E	F	G	H	J	K	L	M
015-018	54" (1372mm)	53 $\frac{5}{8}$ " (1356mm)	20 $\frac{1}{2}$ " (519mm)	12 $\frac{1}{2}$ " (318mm)	7" (181mm)	8 $\frac{1}{8}$ " (225mm)	0.6"	2 $\frac{1}{4}$ " (57mm)	6 $\frac{1}{8}$ " (175mm)	5 $\frac{1}{2}$ " (132mm)	6 $\frac{3}{4}$ " (172mm)	3 $\frac{1}{2}$ " (90mm)
	N	P	Q	R	S	T <sup>2</sup>	U	V	W	X	Y	
	4 $\frac{1}{4}$ " (108mm)	10 $\frac{1}{4}$ " (260mm)	1 $\frac{3}{5}$ " (41mm)	5 $\frac{1}{4}$ " (134mm)	7 $\frac{1}{2}$ " (192mm)	10 $\frac{3}{4}$ " (273mm)	18 $\frac{3}{4}$ " (476mm)	4 $\frac{5}{8}$ " (118mm)	4 $\frac{1}{4}$ " (108mm)	3 $\frac{1}{4}$ " (83mm)	25" (635mm)	

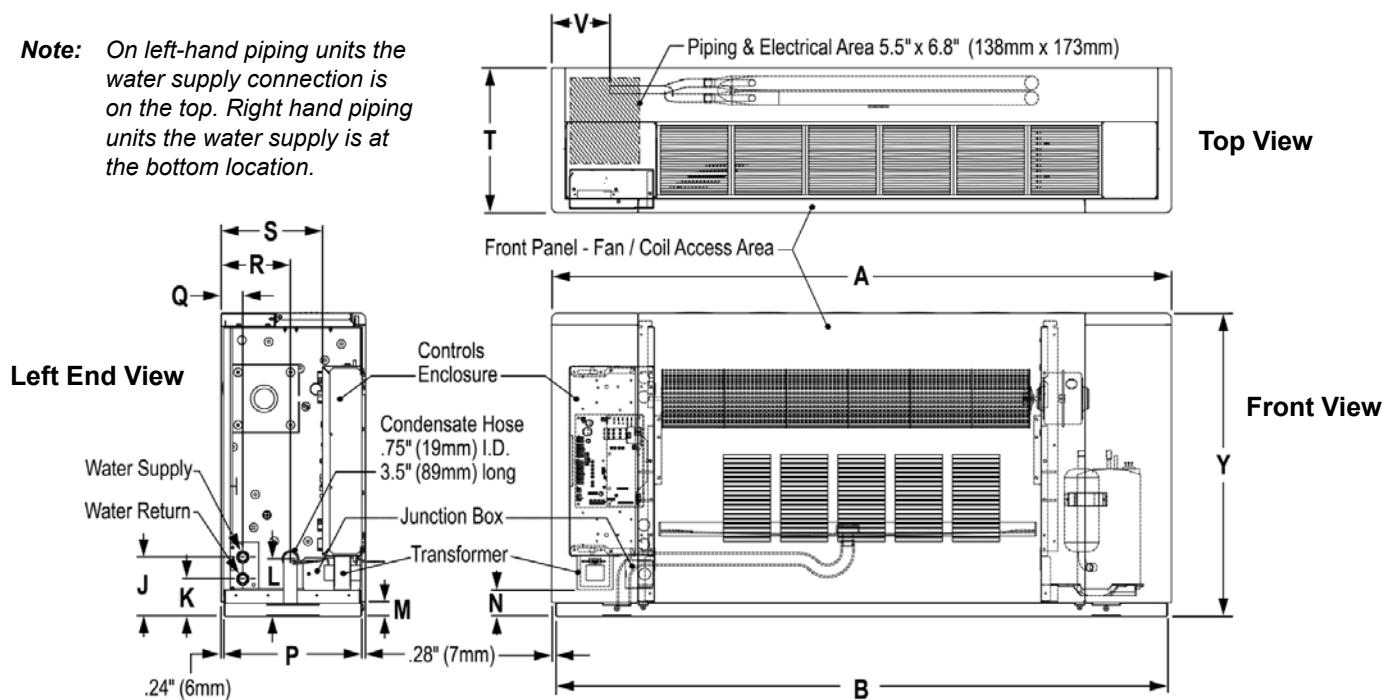
**Notes:** Dimensions are approximate

<sup>1</sup> Add 12" to dimension "A" unit width for optional extended end pocket.

<sup>2</sup> Add 2", 4" or 6" to dimension "T" unit depth for optional rear extension (high sill units only).

## Flat top – low sill, left hand piping – unit size 015 - 018

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Flat top – low sill, right-hand piping – unit size 015 - 018

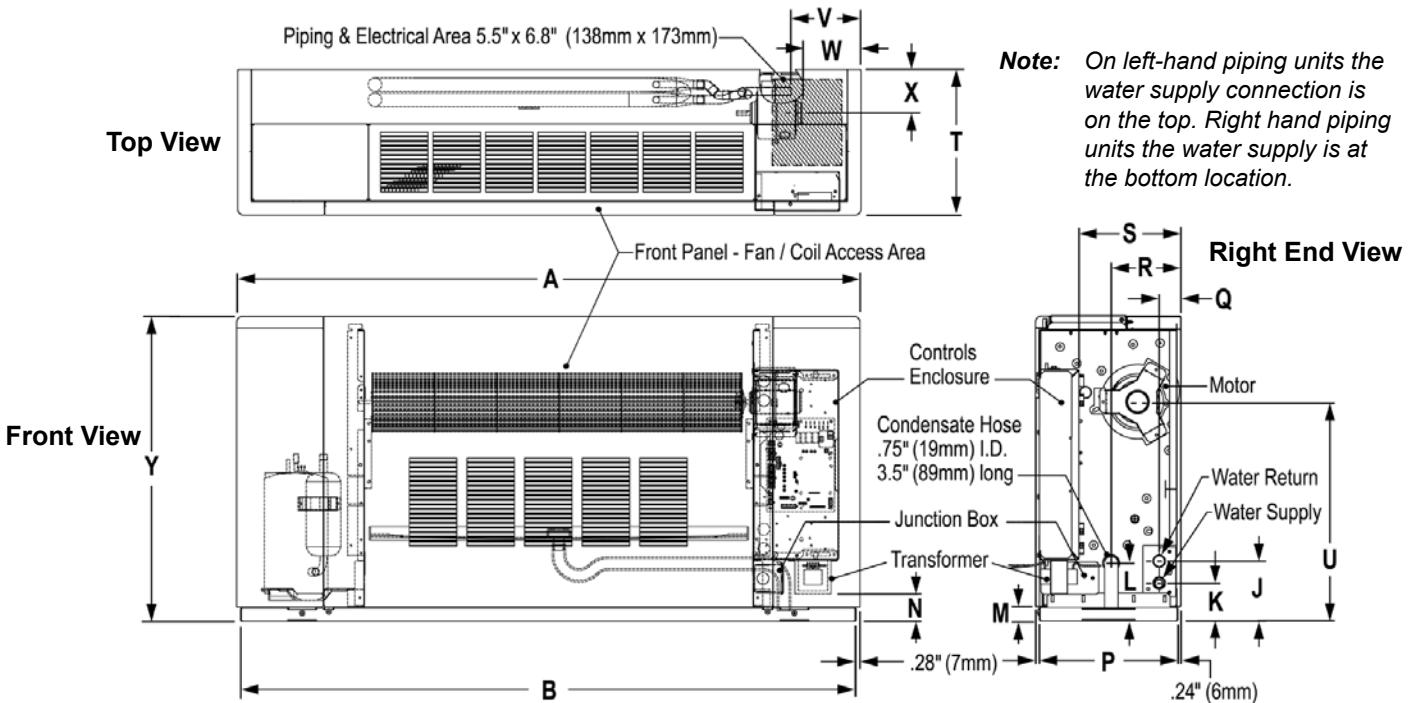


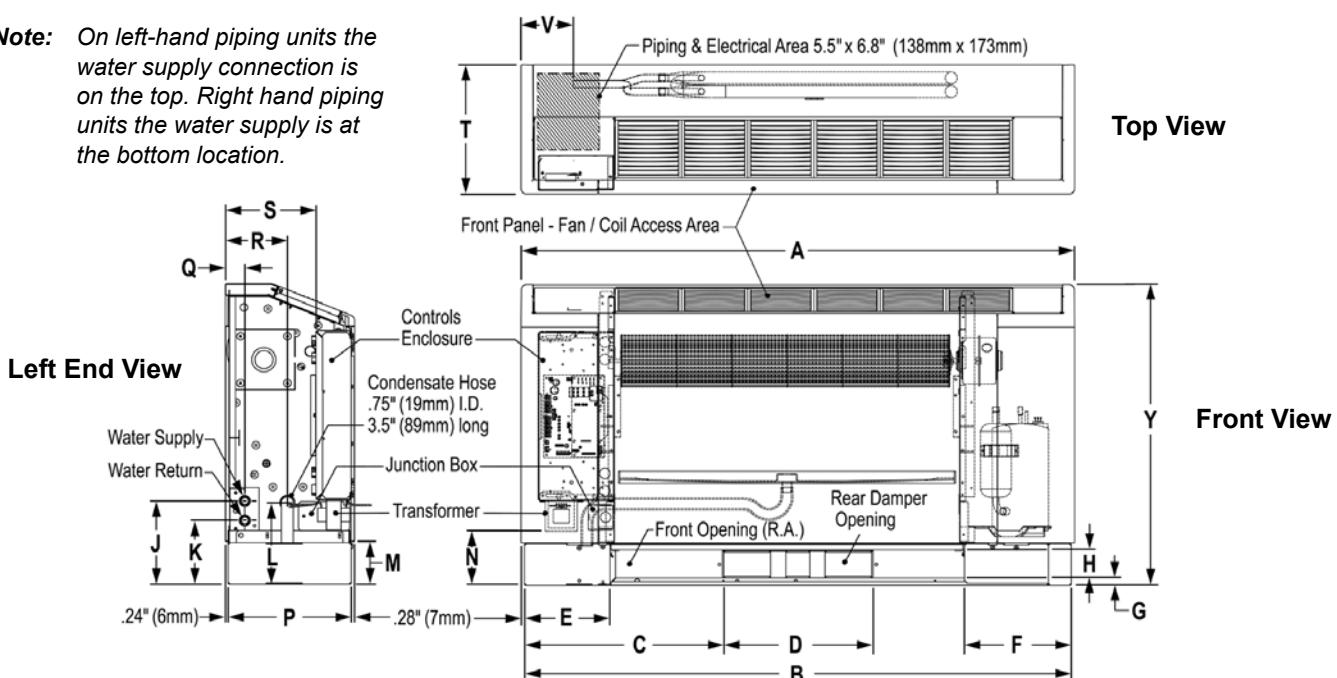
Table 25: Dimensions

Unit Size	A	B	J	K	L	M	N	P	Q	R	S	T
015-018	54" (1372mm)	53 $\frac{3}{8}$ " (1356mm)	4 $\frac{1}{8}$ " (111mm)	2 $\frac{3}{4}$ " (70mm)	4 $\frac{1}{4}$ " (108mm)	1" (26mm)	1 $\frac{1}{4}$ " (45mm)	10 $\frac{1}{4}$ " (260mm)	1 $\frac{3}{5}$ " (41mm)	5 $\frac{1}{4}$ " (134mm)	7 $\frac{1}{2}$ " (192mm)	10 $\frac{3}{4}$ " (273mm)
	U	V	W	X	Y							
	16 $\frac{1}{4}$ " (413mm)	4 $\frac{5}{8}$ " (118mm)	4 $\frac{1}{4}$ " (108mm)	3 $\frac{1}{4}$ " (83mm)	22 $\frac{1}{2}$ " (572mm)							

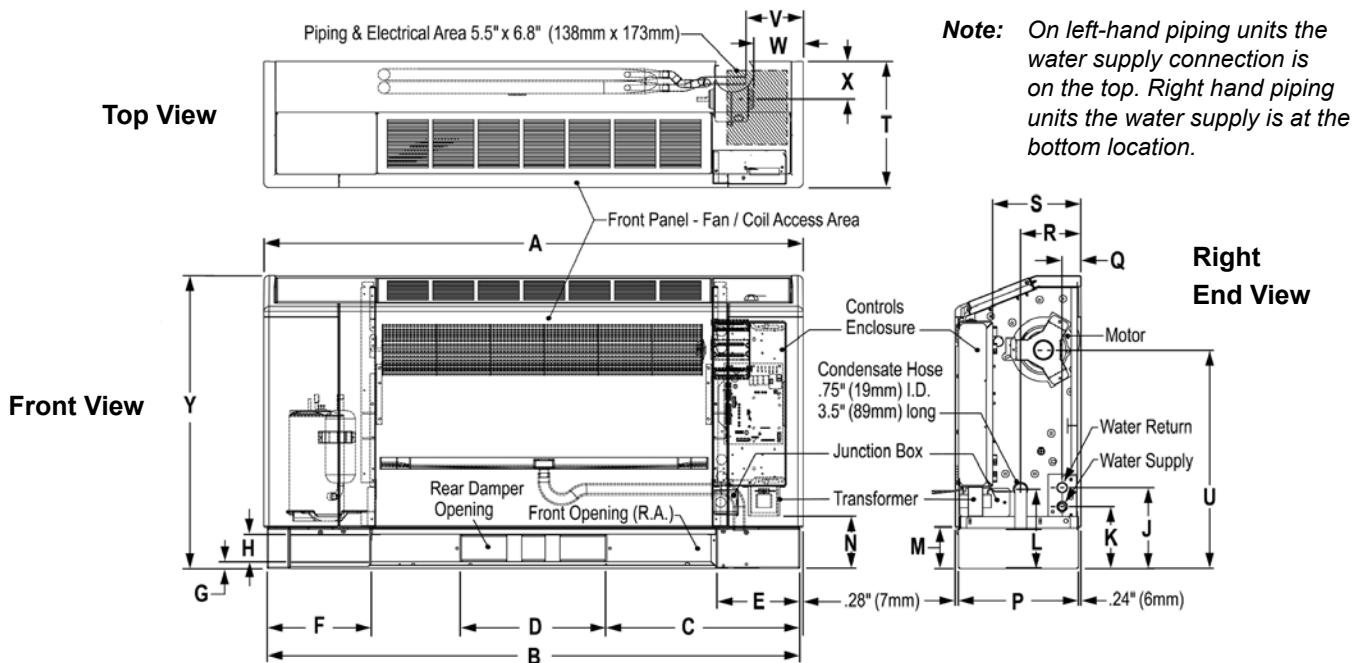
**Note:** Dimensions are approximate

## Slope top – high sill, left-hand piping – unit size 007 - 012

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Slope top – high sill, right-hand piping – unit size 007 - 012



**Table 26: Dimensions**

Unit Size	A <sup>1</sup>	B	C	D	E	F	G	H	J	K	L	M
007-012	46" (1168mm)	45 $\frac{5}{8}$ " (1153mm)	16 $\frac{1}{2}$ " (418mm)	12 $\frac{1}{2}$ " (318mm)	7" (181mm)	8 $\frac{1}{8}$ " (225mm)	0.6" (14mm)	2 $\frac{1}{4}$ " (57mm)	6 $\frac{1}{8}$ " (175mm)	5 $\frac{1}{8}$ " (132mm)	6 $\frac{3}{4}$ " (172mm)	3 $\frac{1}{2}$ " (90mm)
	N	P	Q	R	S	T <sup>2</sup>	U	V	W	X	Y	
	4 $\frac{1}{4}$ " (108mm)	10 $\frac{1}{4}$ " (260mm)	1 $\frac{3}{5}$ " (41mm)	5 $\frac{1}{4}$ " (134mm)	7 $\frac{1}{2}$ " (192mm)	10 $\frac{3}{4}$ " (273mm)	18 $\frac{3}{4}$ " (476mm)	4 $\frac{5}{8}$ " (118mm)	4 $\frac{1}{4}$ " (108mm)	3 $\frac{1}{4}$ " (83mm)	25" (635mm)	

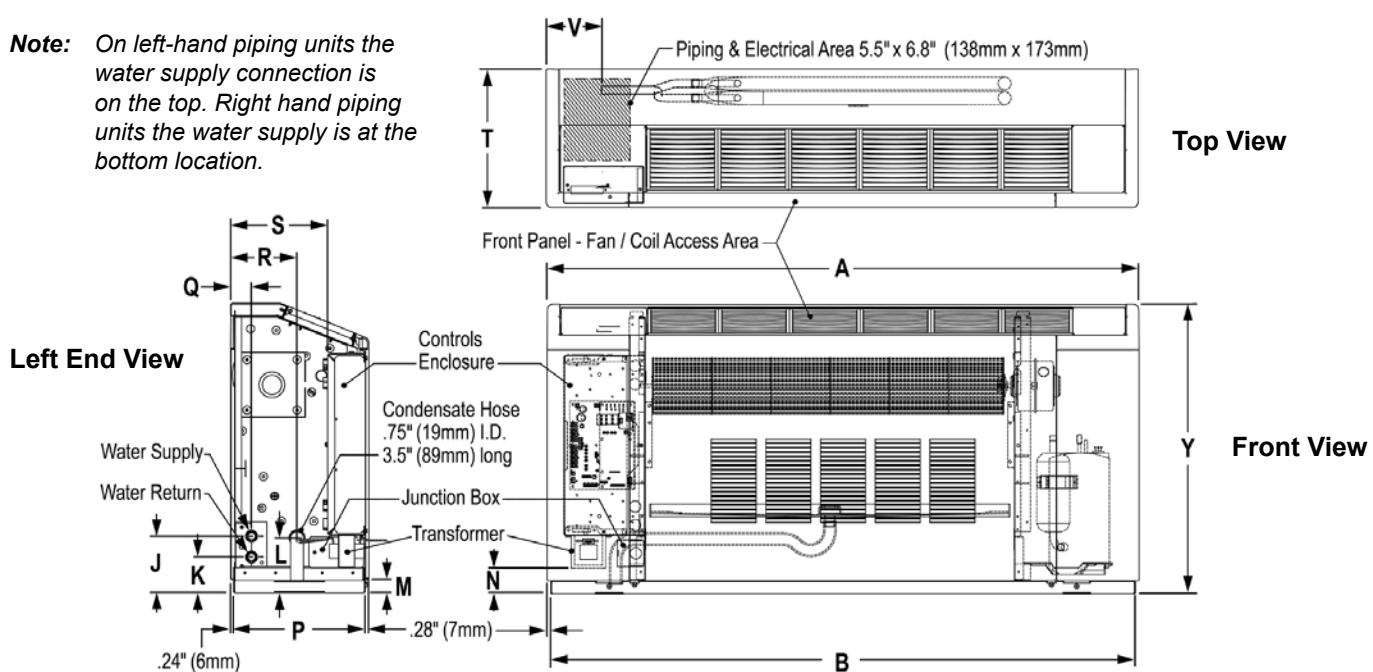
**Notes:** Dimensions are approximate

<sup>1</sup> Add 12" to dimension "A" unit width for optional extended end pocket.

<sup>2</sup> Add 2", 4" or 6" to dimension "T" unit depth for optional rear extension (high sill units only).

## Slope top – low sill, left-hand piping – unit size 007 - 012

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Slope top – low sill, right-hand piping – unit size 007 - 012

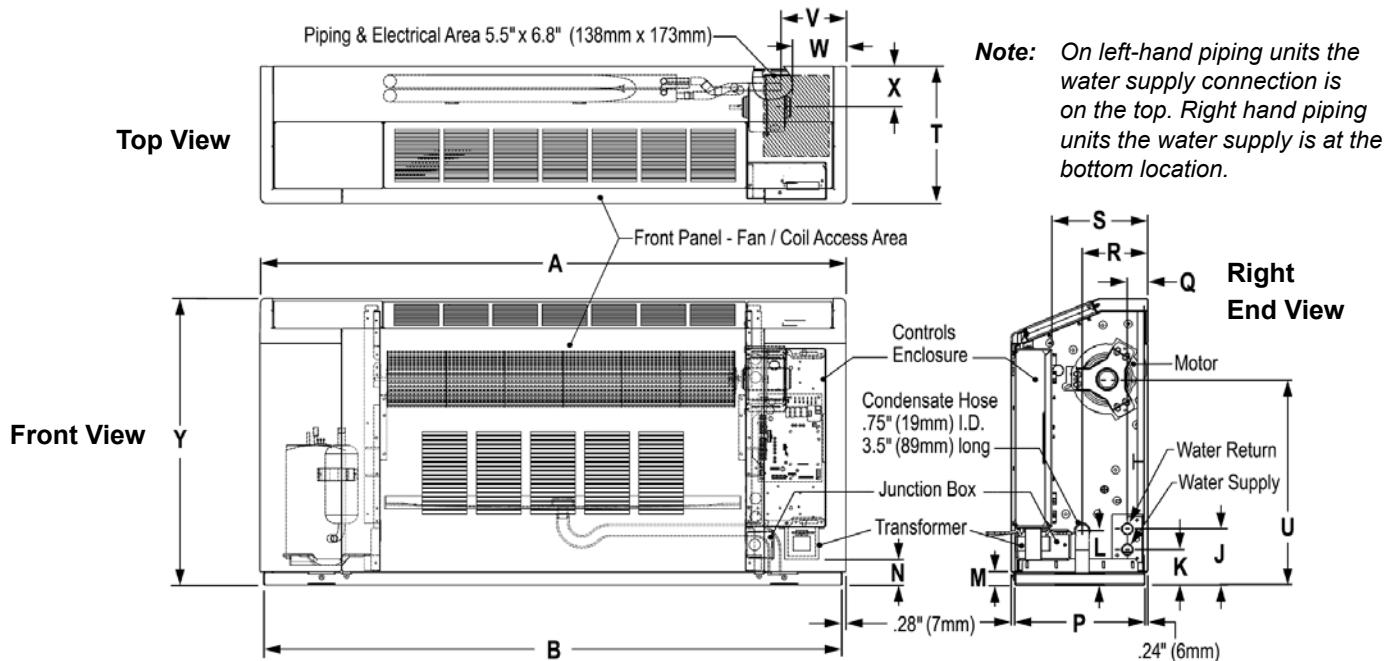


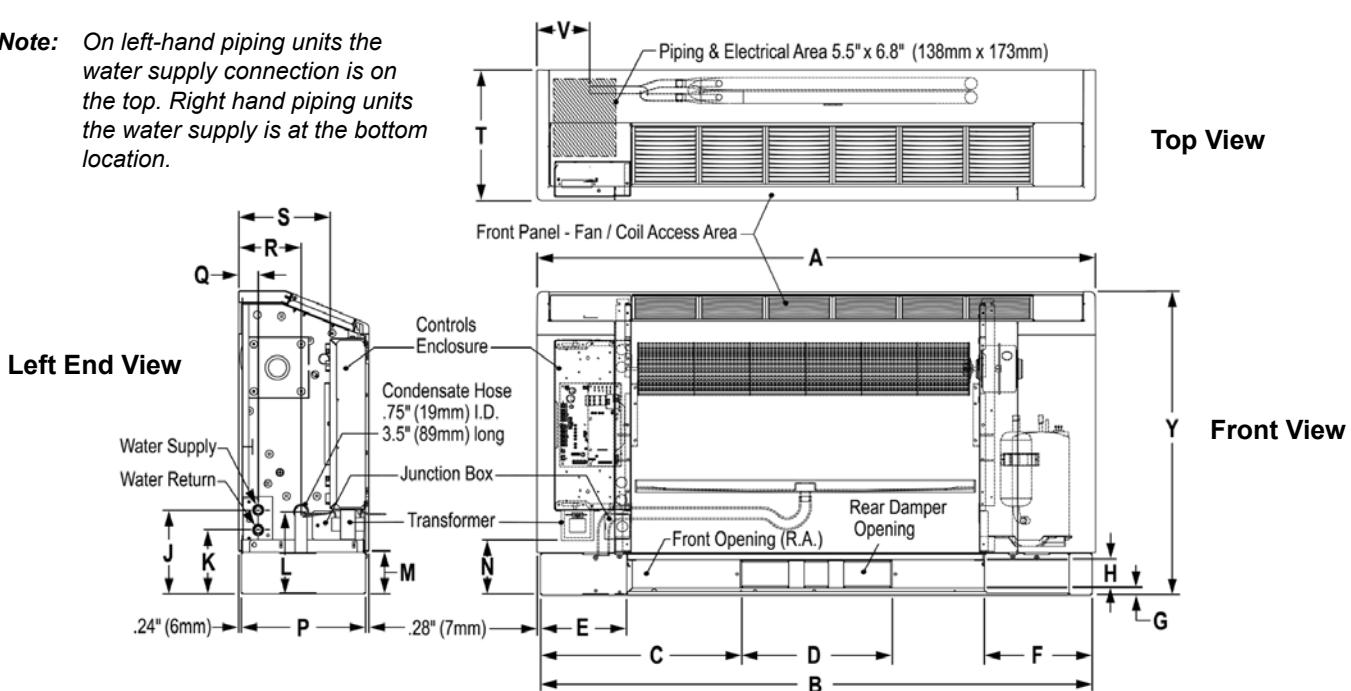
Table 27: Dimensions

Unit Size	A	B	C	D	E	F	G	H	J	K	L	M
007-012	46" (1168mm)	45½" (1153mm)	16½" (418mm)	12½" (318mm)	7" (181mm)	8½" (225mm)	0.6" (14mm)	2¼" (57mm)	6¾" (175mm)	5⅓" (132mm)	6¾" (172mm)	3½" (90mm)
	N	P	Q	R	S	T	U	V	W	X	Y	
	4¼" (108mm)	10¼" (260mm)	1¾" (41mm)	5¼" (134mm)	7½" (192mm)	10¾" (273mm)	18¾" (476mm)	4¾" (118mm)	4¼" (108mm)	3¼" (83mm)	25" (635mm)	

**Note:** Dimensions are approximate

## Slope top – high sill, left-hand piping – unit size 015 - 018

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Slope top – high sill, right hand piping – unit size 015 - 018

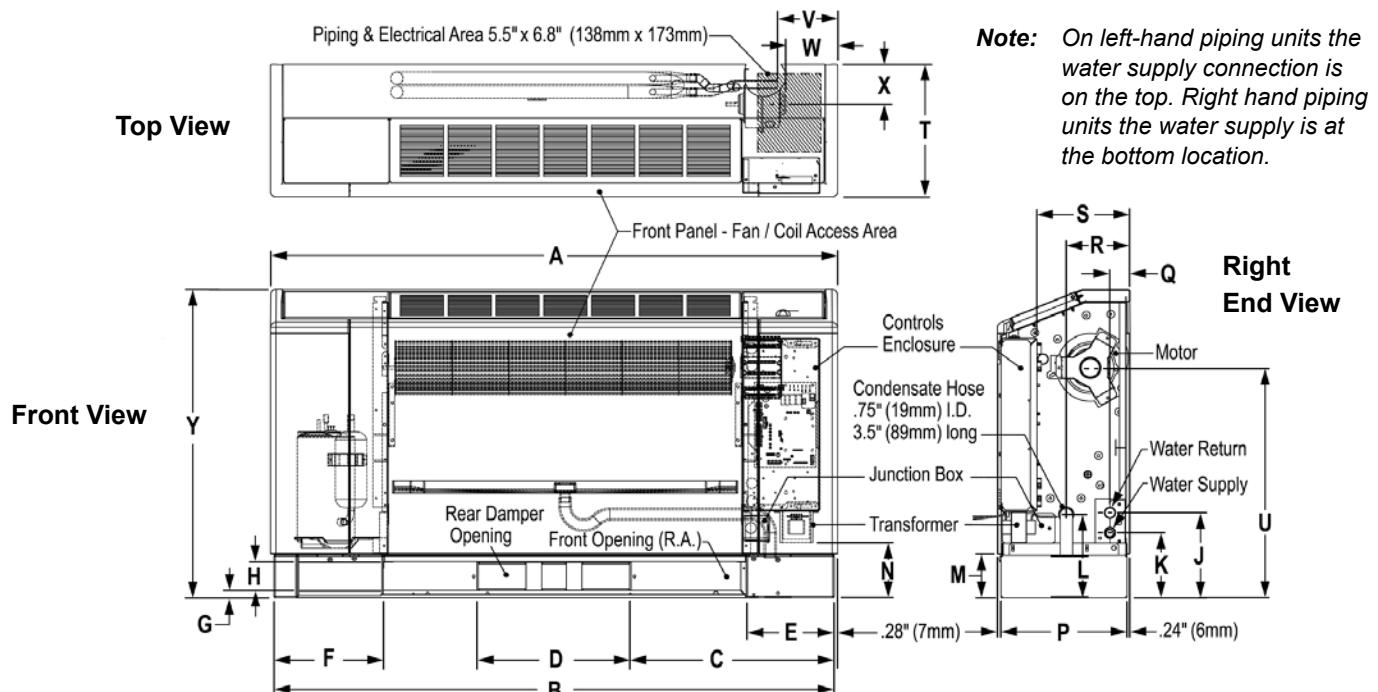


Table 28: Dimensions

Unit Size	A <sup>1</sup>	B	C	D	E	F	G	H	J	K	L	M
015-018	54" (1372mm)	53 <sup>3</sup> / <sub>8</sub> " (1356mm)	20 <sup>1</sup> / <sub>2</sub> " (519mm)	12 <sup>1</sup> / <sub>2</sub> " (318mm)	7" (181mm)	8 <sup>7</sup> / <sub>8</sub> " (225mm)	0.6" (14mm)	2 <sup>1</sup> / <sub>4</sub> " (57mm)	6 <sup>7</sup> / <sub>8</sub> " (175mm)	5 <sup>1</sup> / <sub>5</sub> " (132mm)	6 <sup>3</sup> / <sub>4</sub> " (172mm)	3 <sup>1</sup> / <sub>2</sub> " (90mm)
	N	P	Q	R	S	T <sup>2</sup>	U	V	W	X	Y	
	4 <sup>1</sup> / <sub>4</sub> " (108mm)	10 <sup>1</sup> / <sub>4</sub> " (260mm)	1 <sup>3</sup> / <sub>5</sub> " (41mm)	5 <sup>1</sup> / <sub>4</sub> " (134mm)	7 <sup>1</sup> / <sub>2</sub> " (192mm)	10 <sup>1</sup> / <sub>4</sub> " (273mm)	18 <sup>7</sup> / <sub>8</sub> " (476mm)	4 <sup>5</sup> / <sub>8</sub> " (118mm)	4 <sup>1</sup> / <sub>4</sub> " (108mm)	3 <sup>1</sup> / <sub>4</sub> " (83mm)	25" (635mm)	

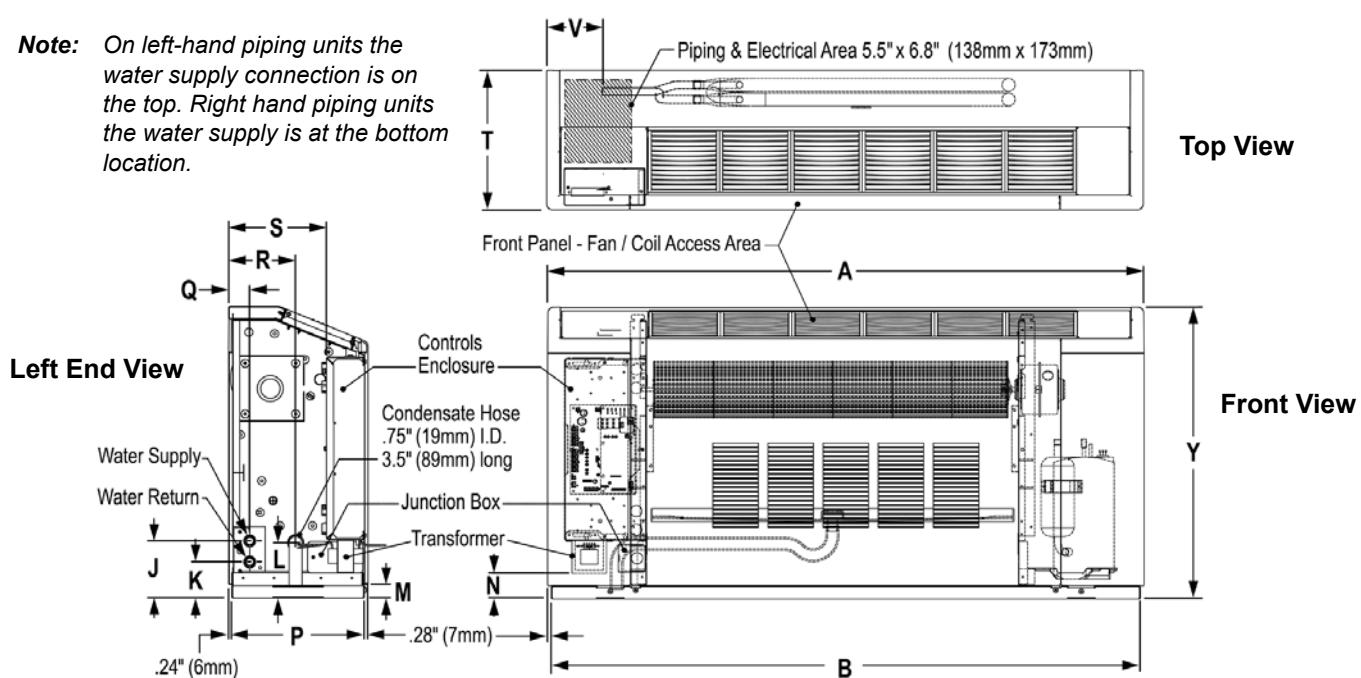
Notes: Dimensions are approximate

<sup>1</sup> Add 12" to dimension "A" unit width for optional extended end pocket.

<sup>2</sup> Add 2", 4" or 6" to dimension "T" unit depth for optional rear extension (high sill units only).

## Slope top – low sill, left-hand piping – unit size 015 - 018

**Note:** On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.



## Slope top – low sill, right hand piping – unit size 015 - 018

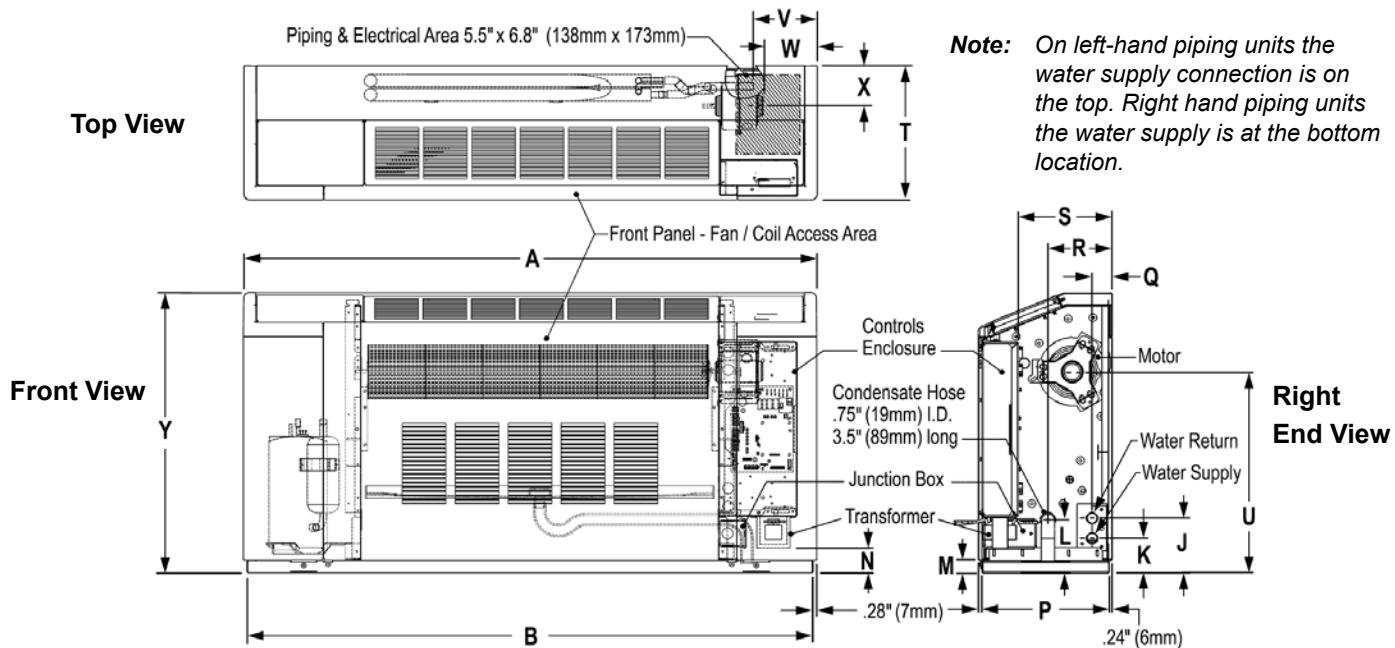
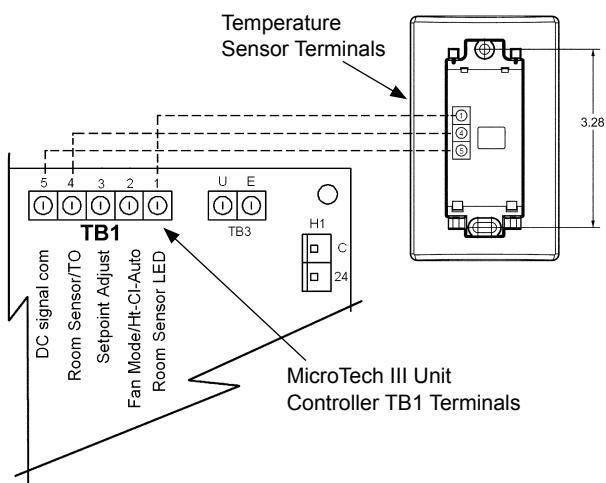


Table 29: Dimensions

Unit Size	A	B	J	K	L	M	N	P	Q	R	S	T
015-018	54" (1372mm)	53½" (1356mm)	4¾" (111mm)	2¼" (70mm)	4⅓" (108mm)	1"	1¼" (26mm)	10¼" (260mm)	1³/₅" (41mm)	5¼" (134mm)	7½" (192mm)	10¾" (273mm)
	U	V	W	X	Y							
	16¼" (413mm)	4½" (118mm)	4¼" (108mm)	3¼" (83mm)	22½" (572mm)							

Note: Dimensions are approximate

**Figure 11: Optional water source heat pump room temperature sensor 669529001 wiring**



## Wireless temperature control (T9000)

The T9000 Wireless Temperature Control is designed to provide precision temperature control without the installation labor and expense of wiring.

- Powered by AA batteries
- Mounts in any suitable location that will provide good temperature control.
- Large LCD display provides the user with current room temperature, set point temperature, time, program interval, and other system status information.

For detailed installation, operation refer to Operation & Maintenance Bulletin OM 897.



The second part of the T9000 system is called a Remote Control Node or "RCN". An RCN interfaces with specific desired HVAC equipment, and communicates with its thermostat using unlicensed 900 MHz, radio frequency energy. At the time of installation, the T9000 thermostat is linked to one or more RCN controls. The thermostat and RCN that have been linked will not interfere with, or be affected by, any other thermostat or RCN in adjacent rooms, apartments, or neighboring homes.

## Remote control node (RCN)

Used with the Wireless Temperature Control, the RCN interfaces with specific HVAC equipment, and communicates with its thermostat using unlicensed 900 MHz, radio frequency energy. Contact your local Daikin Representative for details.



## Supply and return water hoses

Hose kits with standard flexible supply and return hoses are recommended between the water source heat pump unit and building's hard piping system. This is to control possible noise and transmission of vibration from the unit in the space.

Standard supply and return fire-rated hoses have an inner tube of (EPTF) white santoprene with a braided covering of stainless steel. The supply and return hoses have a swivel fitting at one end to facilitate removal of the unit for replacement or service. Hose fittings are of plated steel with the fixed end MNPT and the swivel end fitting of 5/8" sweat brass. The maximum operating temperature is -4°F to 212°F.

A description of the hose kit for the console unit is listed below. See Catalog 1196 for more detailed hose kit features.

**Hose kit # 3:** The supply and return hose kit for console units have one fixed MNPT end and a female JIC swivel with 5/8" ID female sweat adapter. The kit includes a set of two hoses with a 1/2" connection size, in lengths of 9", 12", 18" and 24".



## Combination balancing and shutoff valves

Constructed of brass and rated at 400 psig (2758 kPa) maximum working pressure. Valves have a built-in adjustable memory stop to eliminate rebalancing. Valves have FPT connections on both ends for connection to the water hose and to the field piping.



## 2-way motorized valve

Used for variable pumping applications, the valve is wired in the compressor circuit and piped in the return water line from the unit.



A motorized valve relay and control valve assembly includes a relay, valve and wire harness. The valve opens when the compressor is turned on and closes when the compressor is off. The valve is rated for 300 psig (2068 kPa).

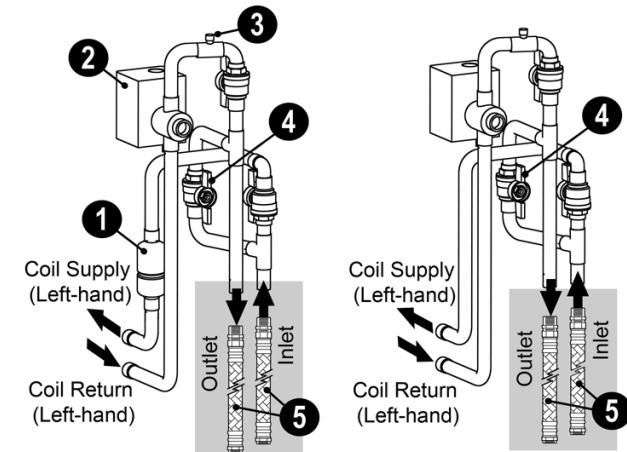
A multiple unit control panel allows a single wall-mounted thermostat to control up to three units in a common space.

An auxiliary relay controls optional devices when the fan is operating. The relay has SPDT contacts.

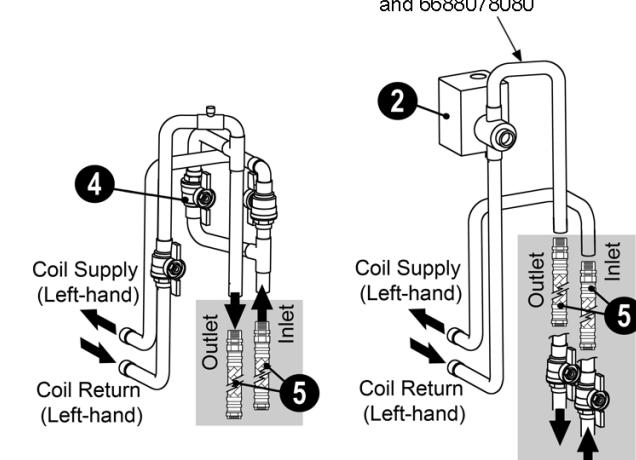
## Piping package (options)

Piping packages can be ordered as a factory-installed option. Supply and return 5/8" O.D. copper tubing, (sweat connection stubs) are standard on unit piping and optional piping packages. Motorized valves can be ordered as a field-installed accessory.

**Figure 12: Typical left hand piping package configurations**



**Note:**  
Air vent not provided on  
pipe packages 6688078070  
and 6688078080



= Field-Installed (Not Included)

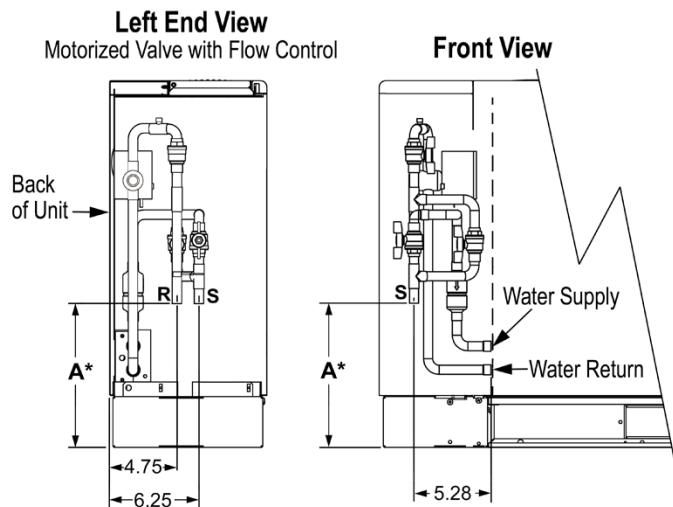
1. Measureflow device
2. 2-way motorized isolation valve
3. Air bleed vent (not provided on pipe packages 6688078070 and 6688078080)
4. Supply, return and bypass hand valve
5. Inlet-outlet flexible hoses (field-installed - Not included)

**Notes:** Optional flexible hose kits are provided with a 5/8" JIC FPT sweat adapter for field-installation to supply and return pipe stubs.

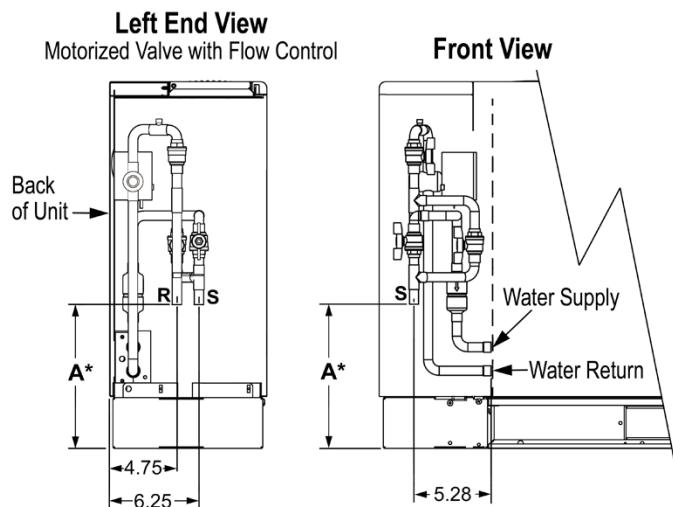
On left-hand piping units the water supply connection is on the top. Right hand piping units the water supply is at the bottom location.

## Piping packages dimensions – left hand

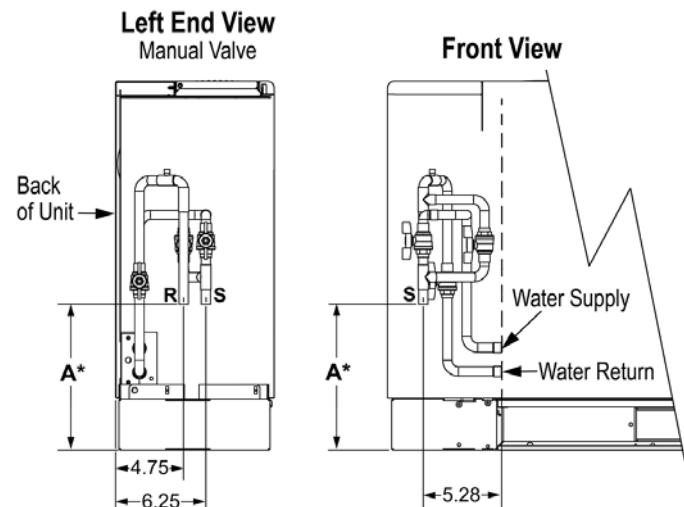
**Figure 13: Left-hand, motorized valve with flow control**



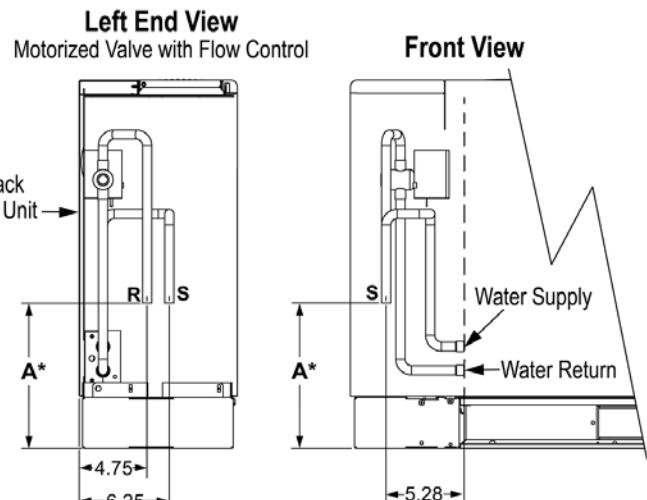
**Figure 14: Left-hand, motorized valve with flow control**



**Figure 15: Left-hand, manual valve**



**Figure 16: Left-hand, motorized valve with flow control**



Dimension "A"	
High Sill	Low Sill
9.81"	7.31"

- Notes:**
1. Air bleed vent (not provided on pipe packages 6688078070 and 6688078080).
  2. Supply and return 5/8" O.D. copper tubing, (sweat connection stubs) are standard on unit piping and optional piping packages.
  3. *Optional flexible hose kits are provided with a 5/8" JIC FPT sweat adapter for field-installation to supply and return pipe stubs.*

## Piping packages dimensions – right hand

Figure 17: Right-hand, motorized valve with flow control

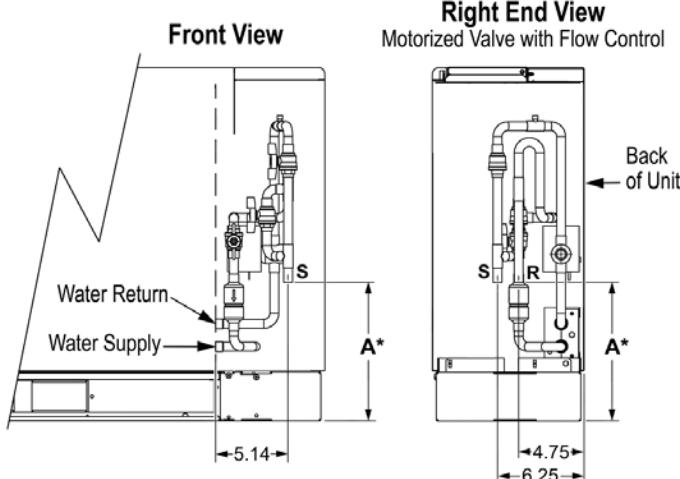


Figure 18: Right-hand, motorized valve with flow control

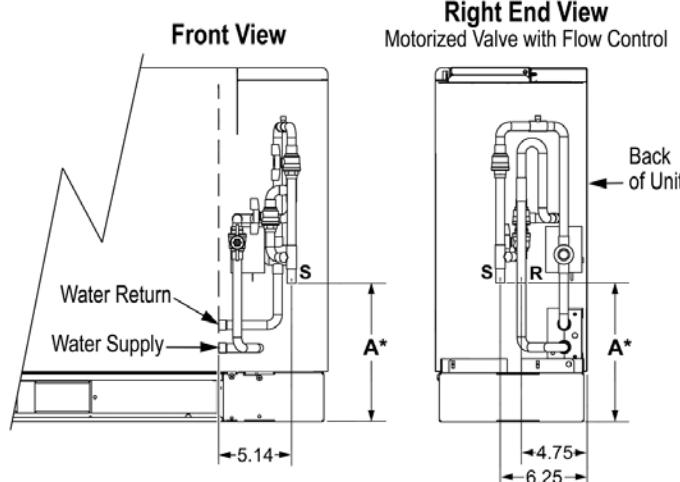


Figure 19: Right-hand, manual valve

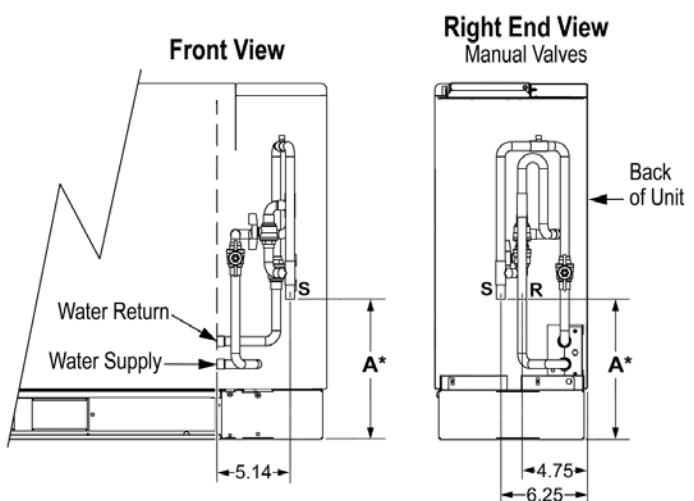
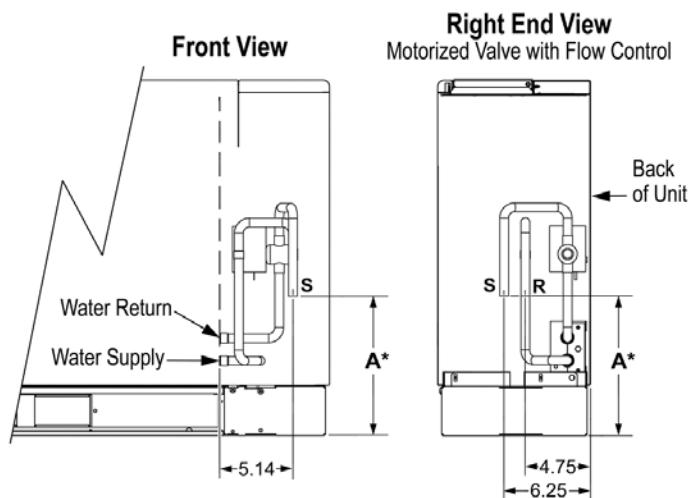


Figure 20: Right-hand, motorized valve with flow control



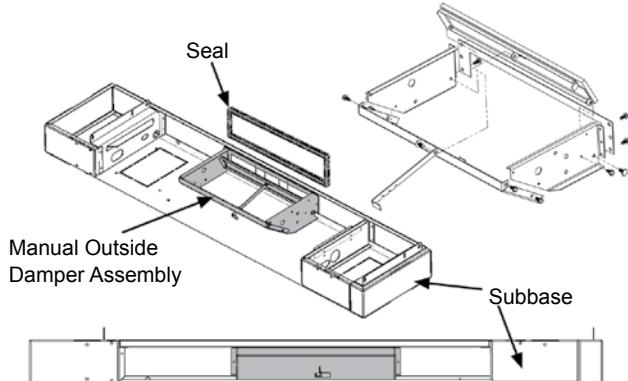
Dimension "A"	
High Sill	Low Sill
9.81"	7.31"

- Notes:**
1. Air bleed vent (not provided on pipe packages 6688078070 and 6688078080).
  2. Supply and return 5/8" O.D. copper tubing, (sweat connection stubs) are standard on unit piping and optional piping packages.
  3. *Optional flexible hose kits are provided with a 5/8" JIC FPT sweat adapter for field-installation to supply and return pipe stubs.*

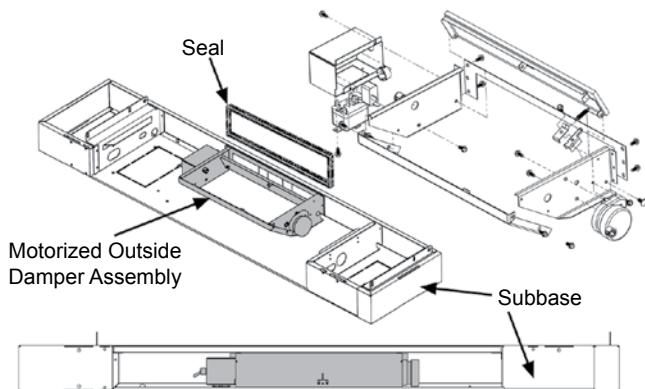
## Outdoor air dampers

Manually operated or Motorized outside air damper assemblies are available to order as field-installed accessories and provide ventilation air.

**Figure 21: Manual outdoor air damper**

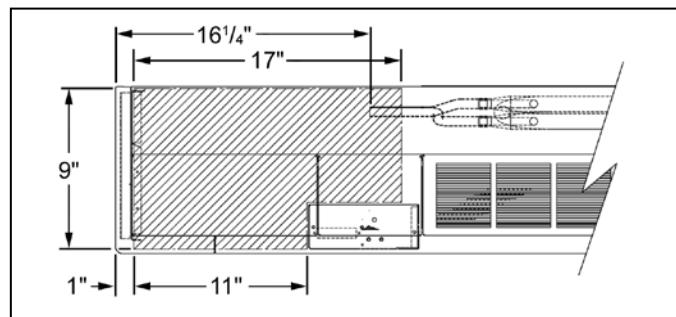


**Figure 22: Motorized outdoor air damper**



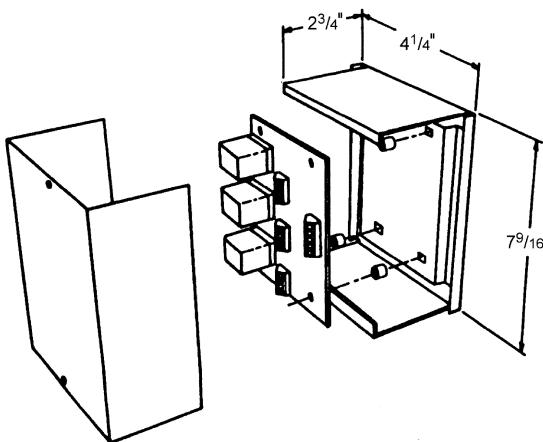
## Extended end pocket (option)

Optional extended cabinet end pocket for high sill units, provides 11" of additional area inside the left or right end pocket for piping or a field-installed pump.



## Multiple unit control panel (MUCP)

**Figure 23: Multiple unit control panel and board**



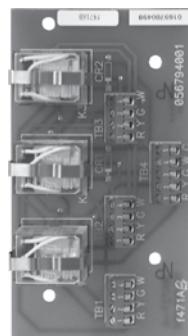
The Multiple Unit Control Panel (MUCP) is an accessory used when up to 3-units are controlled from a single thermostat. Console units must have the MUCP field-installed in a remote location, typically close to the units and convenient for service access.

**Note:** The MUCP control board does not fit inside the console unit control box.

A maximum of 2 boards may be used together if up to 6-units must be connected and controlled from a single thermostat.

**Note:** Multi-speed operation is only available with the optional unit-mounted fan speed switch.

**Figure 24: Multiple unit control panel circuit board**



The multiple unit control board provides the components necessary to protect the MicroTech III unit controller from electrical damage that may occur when using standard off-the-shelf relays.

This version of the board uses VAC relays and should not be used in combination with any other accessories or equipment that require VDC connections to the "G", "W1", or "Y1" terminals.

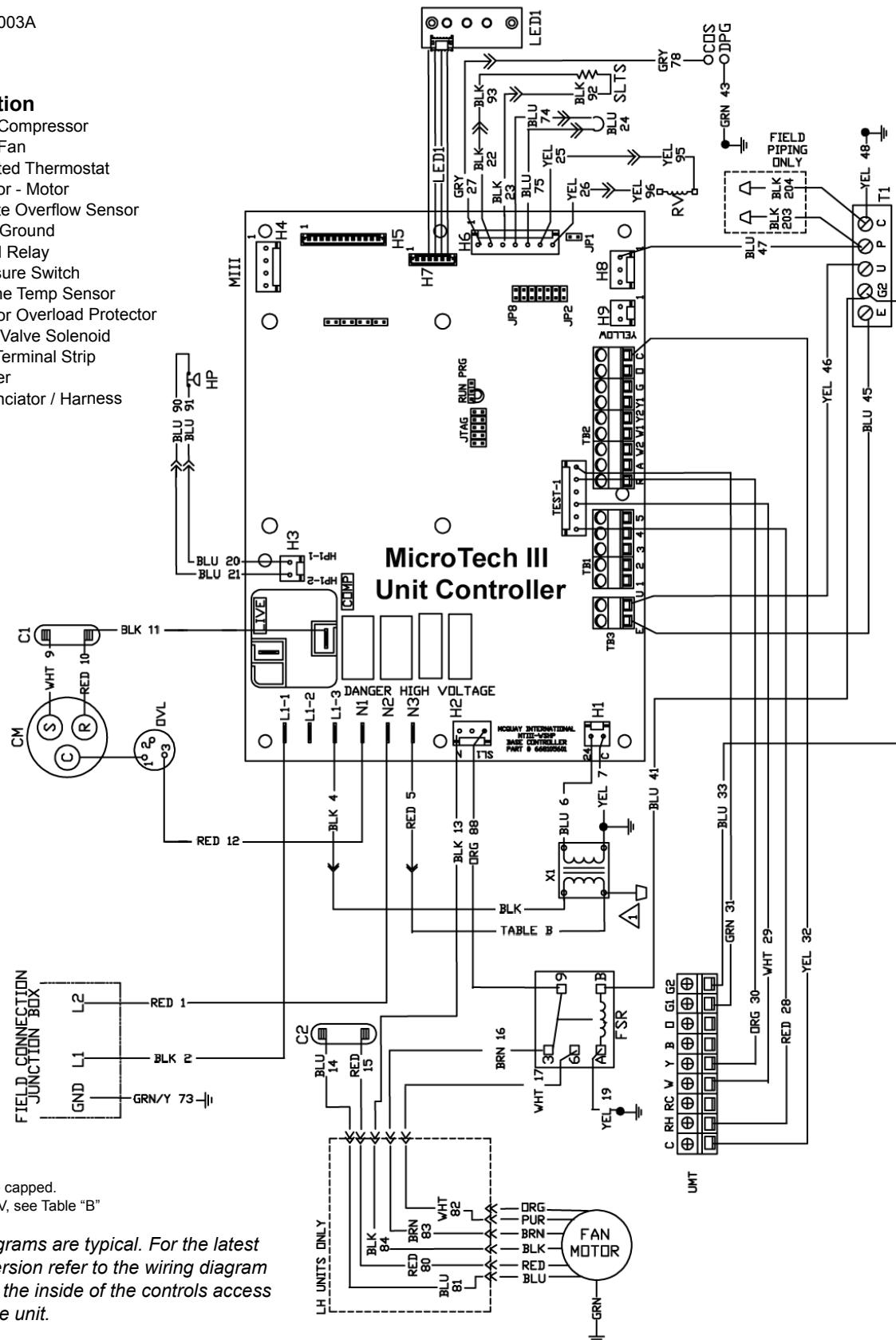
## Typical MicroTech III unit controller for sizes 007-015 – 208/230/60Hz/1-phase

Drawing No. 669539003A

### Legend

Item	Description
C1	Capacitor-Compressor
C2	Capacitor-Fan
UMT	Unit-Mounted Thermostat
CM	Compressor - Motor
COS	Condensate Overflow Sensor
DPG	Drain Pan Ground
FSR	Fan Speed Relay
HP	High Pressure Switch
SLTS	Suction Line Temp Sensor
OVL	Compressor Overload Protector
RV	Reversing Valve Solenoid
T1	EG2UPC Terminal Strip
X1	Transformer
LED1	LED Annunciator / Harness

Table B	
208V	RED
230V	ORG



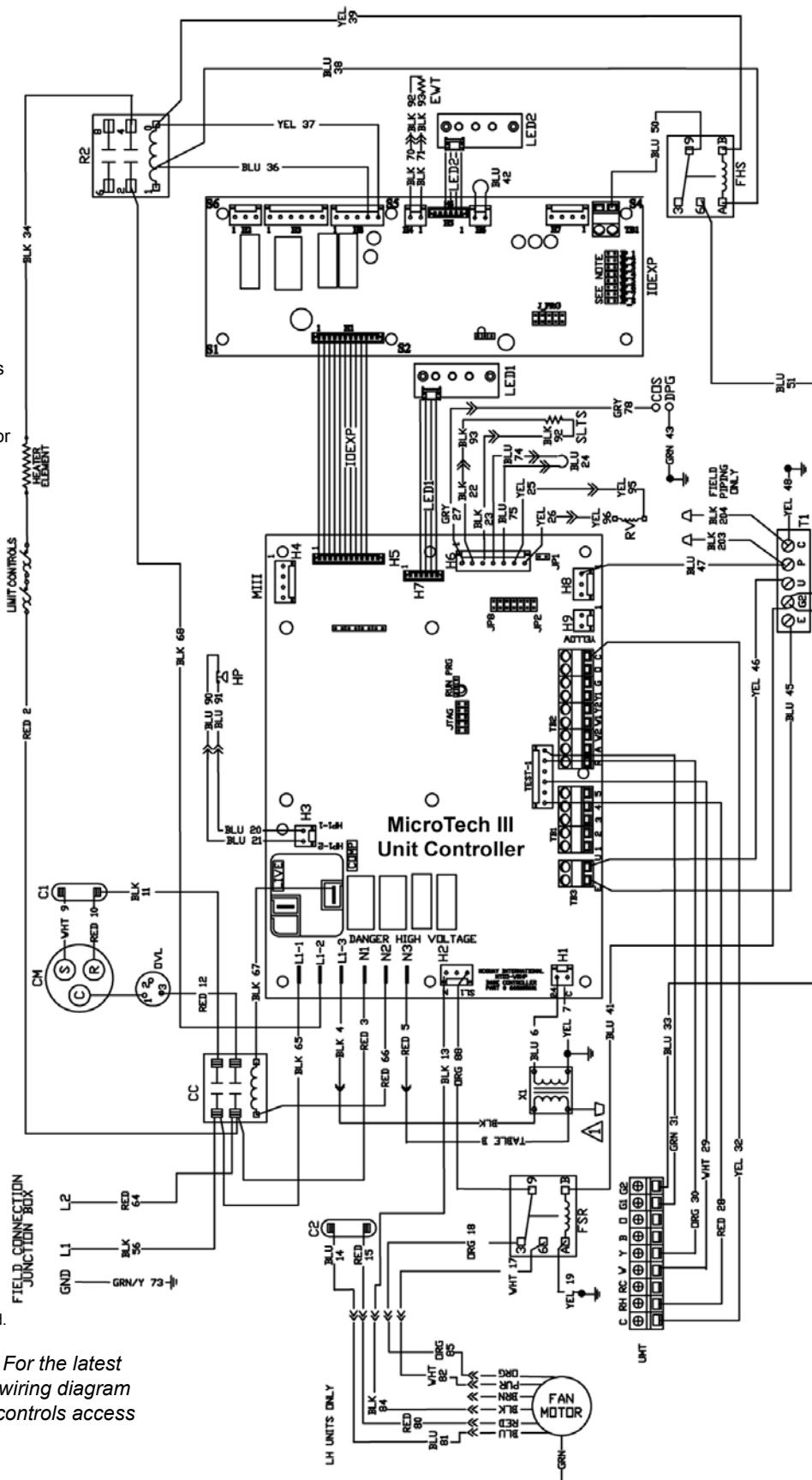
# Typical MicroTech III unit controller with electric heat for size 018 208/230/60Hz/1-phase

Drawing No. 669539006A

**Legend**

Item	Description
C1	Capacitor-Compressor
C2	Capacitor-Fan
CC	Compressor Contactor
CM	Compressor - Motor
COS	Condensate Overflow Sensor
DPG	Drain Pan Ground
FSR	Fan Speed Relay
HP	High Pressure Switch
R2	Relay - Electric Heat
IOEXP	I/O Expansion Board / Harness
LED2	LED Annunciator / Harness
SLTS	Suction Line Temp Sensor
OVL	Compressor Overload Protector
RV	Reversing Valve Solenoid
T1	EG2UCP Terminal Strip
X1	Transformer
LED1	LED Annunciator / Harness
FHS	Fan High Speed Relay
UMT	Unit-Mounted Thermostat
EWT	Entering Water Temp Sensor

Table B	
208V	RED
230V	ORG



- Transformer:  
 1. Unused wire to be capped.  
 2. Unit wired for 208V, see Table "B"  
 3. I/O Expansion board jumper JP4 shorted.

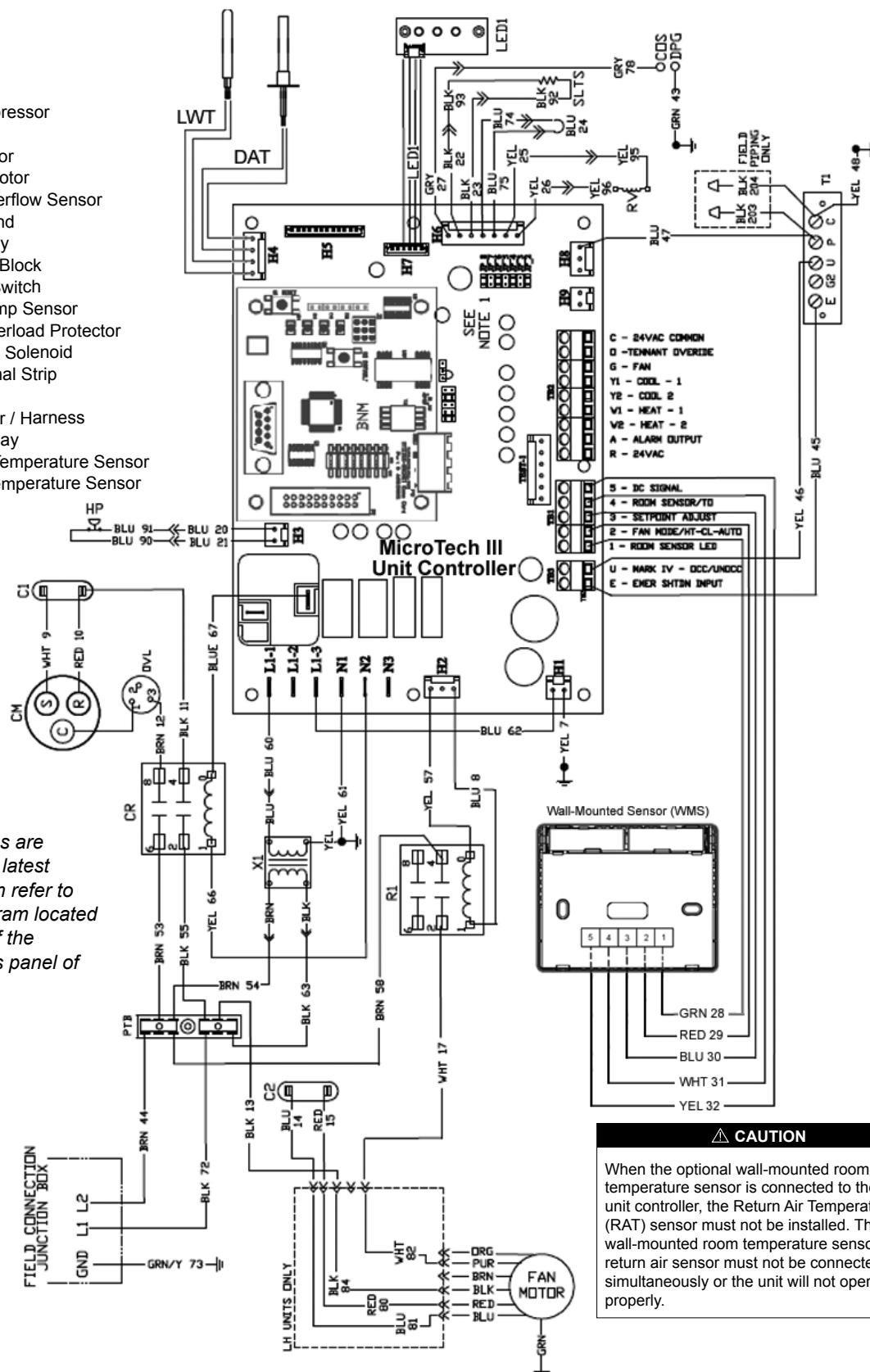
**Note:** Wiring diagrams are typical. For the latest drawing version refer to the wiring diagram located on the inside of the controls access panel of the unit.

## Typical MicroTech III unit controller with communication module and wall-mounted room temperature sensor – 265/277/60Hz/1-phase

Drawing No. 669542001

### Legend

Item	Description
C1	Capacitor-Compressor
C2	Capacitor-Fan
R1	Relay - Fan Motor
CM	Compressor - Motor
COS	Condensate Overflow Sensor
DPG	Drain Pan Ground
FSR	Fan Speed Relay
PTB	Power Terminal Block
HP	High Pressure Switch
SLTS	Suction Line Temp Sensor
OVL	Compressor Overload Protector
RV	Reversing Valve Solenoid
T1	EG2UCP Terminal Strip
X1	Transformer
LED1	LED Annunciator / Harness
CR	Compressor Relay
LWT	Leaving Water Temperature Sensor
DAT	Discharge Air Temperature Sensor



**Note:** Wiring diagrams are typical. For the latest drawing version refer to the wiring diagram located on the inside of the controls access panel of the unit.

## General

Contractor shall furnish and install Water Source Heat Pump units as indicated on plans. Each unit shall be listed in the ARI directory of certified products, ISO rated and CETL or CE listed. Each unit shall be fully run tested at the factory. Each unit shall ship in its own corrugated box. The unit shall consist of a subbase for floor mounting, a cabinet front, a left and right end corner panel and a slide-out chassis for attachment to the back wall and floor mounting on the subbase. The chassis shall include the refrigeration system, fan assembly and all controls.

The unit shall be capable of being shipped as a, (choose one):

- Complete unit including subbase, cabinet front, left and right end corner panels and chassis.
- Chassis only for spare unit or future installation.

## Cabinet and chassis

The cabinet shall be fabricated from 18 or 20-gauge steel and include multiple holes/slots for attachment to the wall and floor. The cabinet sections shall be finished in Antique Ivory, Cupola White, Off White, Putty Beige, or Soft Grey baked enamel. The subbase shall be finished in Oxford Brown or to match the cabinet color. The cabinet shall be insulated. The chassis shall house the refrigeration system, water piping, fan assembly and all controls. Panels shall provide access to the fan compartment and the compressor/control box compartment. The filter shall be a 1/2" (25mm) throwaway type with front removal from the subbase.

The chassis shall be fully insulated and incorporate a non-corrosive condensate pan. The drain hose shall have a formed condensate trap.

The cabinet shall be 10 $\frac{3}{4}$ " (273mm) maximum depth and shall (choose one):

- Have a 22° slope top angle and an opening in the subbase for return air with a maximum height of 25" (635mm).
- Have a flat top and an opening in the subbase for return air with a maximum height of 25" (635mm).
- Have an optional 2", 4", or 6" rear cabinet extension (high sill units only) fabricated from 18 or 20-gauge steel, and shall be insulated along the outdoor air channel. The rear cabinet extension shall be finished to match the cabinet color.

(Choose one:)

- The slope top cabinet shall incorporate an optional, adjustable discharge grille and thermostat cover with flush mounting to the front and sides of the cabinet. The discharge grille shall direct the air at an 11° angle from the vertical and be field reversible for a 33° discharge angle. The grille shall be constructed of painted steel or optional, fire retardant ABS polycar-

bonate or anodized aluminum bar grille. The left and right cabinet corners shall be Antique Ivory or Cupola White and be constructed of polycarbonate to match the discharge grilles and control door.

The flat top unit shall (choose one):

- Incorporate a one-piece stamped, painted steel grille. The grille shall be painted Oxford Brown or match the cabinet color.
- Incorporate no cabinet and a duct collar on the chassis for installation into a field supplied custom cabinet enclosure.

## Refrigerant circuit

Each unit shall have a sealed refrigerant circuit including a compressor, capillary expansion tube(s), finned tube heat exchanger, reversing valve, water-to-refrigerant coaxial heat exchanger, high and low side access valves, and safety controls.

Compressor shall be rotary type with external vibration mounts and thermal overload protection. The finned tube coil shall be constructed of aluminum fins bonded to copper tubes. The coaxial heat exchanger shall be constructed of a copper inner tube and a steel outer tube and be U.L. listed. The heat exchanger shall be rated for 400 psig (2759 kPa) on the water side and 450 psig (3104 kPa) on the refrigerant side.

Safety controls shall include a low suction temperature (freezestat) switch and a high refrigerant pressure switch to lock out compressor operation. Unit shall be capable of being reset only by interrupting the power supply to the unit. Manual reset of the safety switch at the unit shall not be allowed. Unit shall be capable of starting at entering air of 40°F (5°C) and entering water at 70°F (21°C) with both air and water flow rates at the ARI rating conditions.

## Electrical

A control box with removable top cover shall be located on the right or left side of the chassis and shall contain controls for compressor, reversing valve and fan motor operation and a 50 VA transformer. The chassis shall have a 2" x 4" (51mm x mm) junction box mounted on the side to facilitate main power wiring and be capable of being located on the left or right side of the chassis. Unit shall be nameplated to accept time delay fuses or HACR circuit breaker for branch overcurrent protection of the power source.

## Fan and motor assembly

Unit shall have a direct-drive tangential fan wheel. The fan housing shall be insulated with closed-cell insulation to help attenuate noise. The motor shall be thermally protected, two-speed, PSC type and be connected to the chassis. The motor shall have a plug connection and be connected to the chassis with three screws for easy removal and service.

## Piping

The supply and return lines shall be 5/8" O.D. copper tubing and terminate away from the side of the chassis. The internally trapped condensate shall be a 3/4" (19mm) I.D. clear flexible vinyl tube protruding 14" (356mm) out of the chassis for connection at the floor or at the back wall. The supply, return and condensate tubing shall be capable of terminating at the left or right side of the chassis.

## Thermostat / space sensor options

The thermostat shall be (choose one):

- Unit-mounted non-programmable w/LCD display
- Unit-mounted 7-day programmable w/LCD display
- Wall-mounted sensor
- Wall-mounted sensor w/setpoint adjustment
- Wall-mounted non-programmable
- Wall-mounted 7-day programmable
- Wireless non-programmable
- Wireless 7-day programmable

## Solid-state control system

MicroTech III Control System - Unit shall have a microprocessor-based control system. The unit control logic shall provide heating and cooling operation as required by the wall thermostat set point. The control system shall provide the following for stand-alone operation:

1. The use of standard non-programmable or programmable wall thermostats.
2. Fan operation simultaneous with the compressor (fan interlock) regardless of thermostat logic.
3. Time delay compressor operation.
4. Compressor short cycle protection of a minimum between 300 to 360 seconds before restart is possible.
5. Random unit start-up after coming off on unoccupied mode or after initial start up.
6. Single grounded wire connection for activation of the unoccupied or unit shutdown modes.
7. Night setback temperature setpoint input signal from the wall thermostat.
8. Override signal from wall thermostat to override unoccupied mode for 2 hours.
9. Brownout protection to suspend unit operation if the supply voltage drops below 80% of normal.
10. Condensate overflow protection to suspend cooling or dehumid operation in an event of a full drain pan.
11. Suspended compressor operation upon activation of the refrigerant pressure switch(es).

12. Cooling operation activated for 60 seconds upon activation of the low suction temperature - defrost cycle.
13. Method of defeating compressor, reversing valve and fan time delays for fast service diagnostics.
14. Remote reset - Provides means to remotely reset automatic lock-outs generated by high/low pressure faults and/or low temperature faults.
15. Fault Retry clears faults the 1st two times they occur within a 24-hour period and triggers automatic lock-out on 3rd fault.

**MicroTech™ III control with LonWorks communication module** – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a LONMARK communications network. The unit controller is factory programmed [LONMARK® 3.4 certified Application Code the current standard for new applications] and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a LONMARK communications network. Units with the MicroTech III and LonWorks communication module include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room sensor.

**Microtech III control w/ BACnet communication module** – Unit shall have a microprocessor-based control system. The unit control logic shall communicate over a BACnet communications network. The BACnet communication module shall incorporate an Atmel ARM7 Thum series MCU and be capable of supporting a full MSTP BACnet implementation. The microprocessor shall also support SPI compatible communications with the MCU of the Microtech III controller. The physical interface to a BACnet BAS network shall be through an industry standard RS-485 transceiver capable of existing on an RS-485 network of up to 64 nodes. The unit controller is factory programmed and tested with all the logic required to monitor and control heating and cooling operation. The controller sets the unit mode of operation, monitors water and air temperatures, and can communicate fault conditions via a BACnet communications network. Units outfitted with Microtech III and BACnet Communication modules include return air, discharge air and leaving water temperature sensors. Space temperature sensor options include a set-point adjustment, tenant override button, and the capability of substituting the return air sensor with a wall-mounted room temperature sensor.

Each communicating unit controller performs the following unit operations:

- Enable heating and cooling to maintain space temperature set point at the room sensor
- Enable fan and compressor operation
- Monitor all safety controls
- Monitor discharge and return air temperature
- Monitor leaving water temperature
- Relay status of all vital unit functions

Unit mounted LED annunciators aid in diagnosing unit operation by indicating the water source heat pump operating mode and alarm conditions. If there are no current alarm conditions, the annunciator board will indicate normal unit operating mode. If an alarm condition exists, the Microtech III unit controller will send the fault condition to the LED annunciator, which will assist in troubleshooting the unit. Heat pumps with the MicroTech III Unit Controller with a LONWORKS Communication Module is designed to be linked with a centralized Building Automation System (BAS) through a LonMARK communications network for centralized scheduling and management of multiple heat pumps.

Wall-mounted room sensors are available to control the heating and cooling operation of each MicroTech III Water Source Heat Pump.

Available room sensors include:

- Room Sensor with timed override button and LED;
- Room temperature sensor with timed-override button and set point adjustment (55 to 95 deg F);
- Room sensor with timed-override button and set point adjustment (-5 to +5 deg F);
- Room sensor (no options, sensor only).

The control system type shall have an option of,

**(choose one):**

- Unit-mounted non-programmable w/LCD display, Hi-Lo-auto fan speed control
- Unit-mounted 7-day programmable w/LCD display, Hi-Lo-auto fan speed control
- Wall-mounted non-programmable w/LCD display, Hi-Lo-auto fan speed control
- Wall-mounted 7-day programmable w/LCD display, Hi-Lo-auto fan speed control
- Wall-mounted space temperature sensor/setpoint adjustment (55° F to 95°F), auto- On fan speed control

- Wall-mounted space temperature sensor/setpoint adjustment (-5° F to +5°F), auto- On fan speed control
- Wall-mounted sensor, no setpoint adjustment
- Wall-mounted sensor, night setback override button and LED status light
- Wireless thermostat and receiver, non-programmable, Hi-Lo-auto fan speed control
- Wireless thermostat and receiver, 7-day programmable, Hi-Lo-auto fan speed control

## Optional boilerless system electric heat

Unit shall have a factory mounted electric heater and control system. A unit-mounted entering water temperature thermostat shall lock out compressor heating operation at 58°F (15°C). On a call for heating, the electric heater shall be activated. When the entering water temperature rises, the unit shall resume normal compressor heating operation. An emergency heat switch shall provide heating only from the electric heater in the event of a compressor failure.

## Optional outside air damper kit

The damper is located in the back of the subbase for outside air intake and shall be operated manually from the subbase. Damper can be configured for manual adjustment or motorized control.

## Optional plug cord kit

The chassis shall incorporate a plug cord for connection to a unit-mounted receptacle/fused disconnect switch box in the subbase under the chassis. The plug cord shall electrically mate to the receptacle.

## Optional receptacle/fused disconnect kit

The permanent portion of the cabinet shall have a receptacle and fused disconnect switch to facilitate main power electrical connection permitting chassis removal without disconnecting main power wiring.

## Optional motorized valve package

The return water line shall have a motorized water valve. The valve shall operate in conjunction with compressor operation; valve opens before compressor is turned on. The valve shall have a maximum rating of 300 psig (2068 kPa).

## Field-installed accessories

### Optional flexible hoses

Each unit can be supplied with two steel fire-rated hoses for connection to unit and field piping. Hose assembly shall be rated at 500 psig (3494 kPa).

### Optional ball valves

Each unit can be supplied with two combination balancing and shutoff valves with adjustable memory stop.

### Optional filter kits

12-pk. filter kits available from selection software.

### Warranty

An optional 4-year extended compressor warranty covers the compressor for 5 years from the date at which the unit ships from the factory.

An optional 4-year extended refrigeration circuit warranty covers the entire refrigeration circuit and related components for 5 years.



### ***Daikin Applied Training and Development***

Now that you have made an investment in modern, efficient Daikin equipment, its care should be a high priority. For training information on all Daikin HVAC products, please visit us at [www.DaikinApplied.com](http://www.DaikinApplied.com) and click on Training, or call 540-248-9646 and ask for the Training Department.

### ***Warranty***

All Daikin equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local Daikin Applied representative for warranty details. Refer to Form 933-430285Y. To find your local Daikin Applied representative, go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

### ***Aftermarket Services***

To find your local parts office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-37PARTS (800-377-2787). To find your local service office, visit [www.DaikinApplied.com](http://www.DaikinApplied.com) or call 800-432-1342.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to [www.DaikinApplied.com](http://www.DaikinApplied.com).

Products manufactured in an ISO Certified Facility.