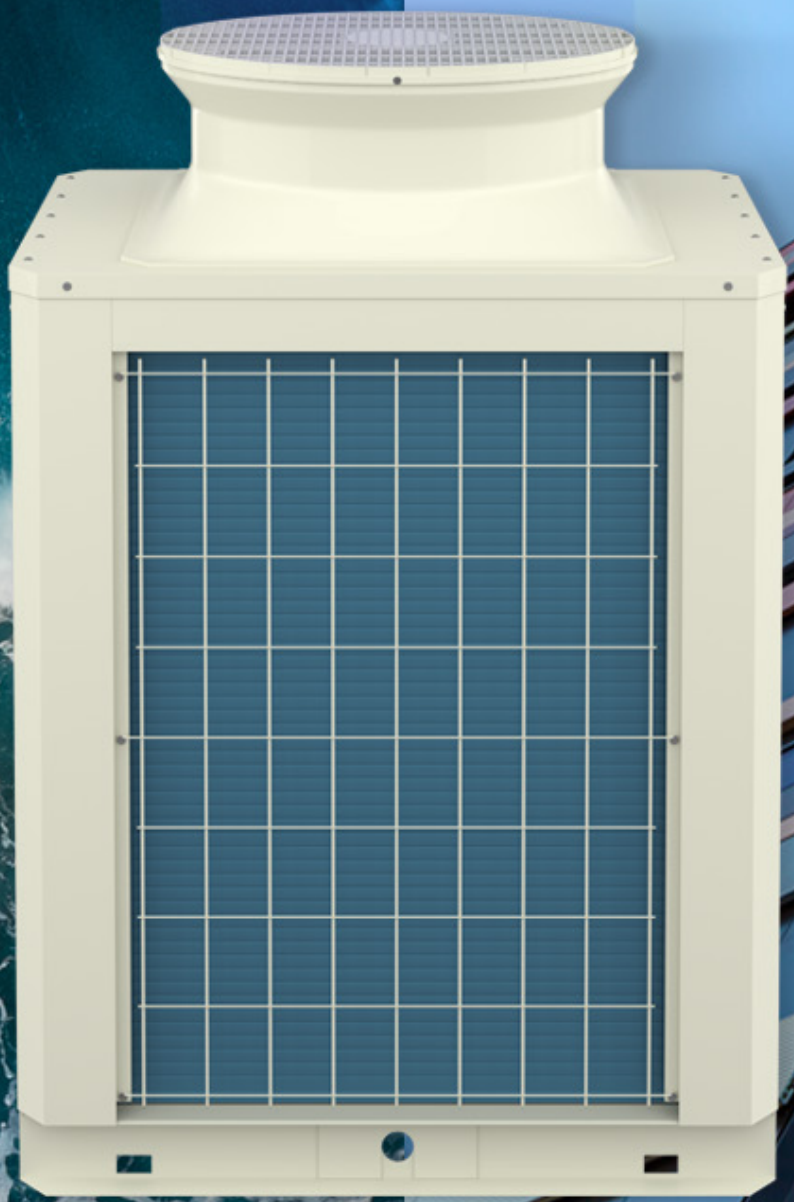
MITSUBISHI ELECTRIC
HEATING & AIR CONDITIONING

HEAT2O®

The future of commercial hot water

$Heat_2O$® hot water heat pump

Contents



Designed for life,

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MitsubishiComfort.com

Introducing Heat$_2$O®

Domestic hot water accounts for roughly 25% of annual energy usage in typical multifamily buildings[1] and 25% in both passive house[2] and new, multifamily construction[3]. This energy expenditure is costly for building owners and comes at a significant environmental impact in the form of greenhouse gas emissions and climate change.

Until recently, the building industry lacked an energy-efficient solution for providing high volume domestic hot water (DHW) to commercial spaces. In response to this need, we're pleased to introduce the Heat$_2$O® Hot Water Heat Pump, a revolution in sustainable water heating.

Heat$_2$O is an all-electric heat pump water heater designed to produce high volume DHW for commercial facilities in any climate. Energy-efficient and environmentally friendly, Heat$_2$O uses a natural CO_2 refrigerant with a global warming potential (GWP) of one and an ozone depletion potential (ODP) of zero.

As an engineered solution with manufacturer-level technical support, Heat$_2$O is fully customizable to best meet the design considerations and priorities of a broad array of applications. This technology can help multifamily buildings, offices, gyms, educational institutions, and other large-scale and commercial facilities qualify for sustainability certifications or achieve zero-energy and passive house status. The system's environmentally conscious engineering also translates to energy savings for building owners, who can experience reduced operating costs while their tenants and occupants enjoy reliable hot water.

These benefits can be realized regardless of location. Climate zone is not a limiting factor for this innovation, as Heat$_2$O's high-performance design allows the system to operate at high capacity even in cold climates. Buildings from the hot American Southwest to snowy New England can experience high performance and energy savings with Heat$_2$O, all while minimizing their carbon footprint.

1 U.S. Energy Informational Administration
2 Passive House Institute US
3 Bonneville Power Administration

$Heat_2O$® and heat pump basics

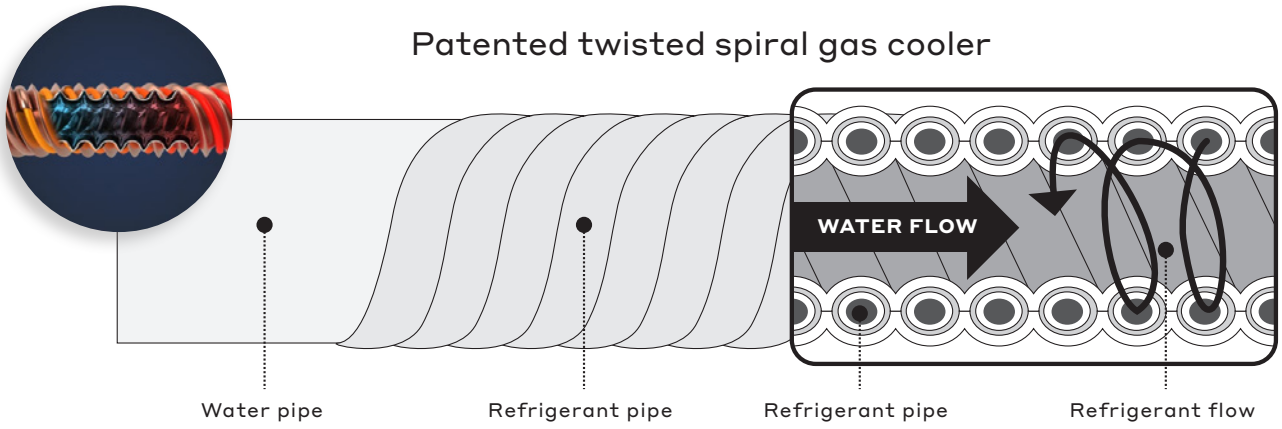
DHW heat pump water heaters transfer ambient thermal energy from outdoor air to potable water by cycling refrigerant. Natural CO_2 refrigerant enables $Heat_2O$® to supply hot water up to 160° F even in low ambient conditions, depending on application. The heat pump's fan pulls outdoor air across an evaporator coil where liquid refrigerant absorbs heat as it changes to a low-pressure gas. The heat pump's compressor pressurizes the gas, raising the temperature, and transfers the refrigerant to a gas cooler. The gas cooler then transfers heat from the superheated refrigerant gas to the incoming city water. This is accomplished without the use of fossil fuels, reducing the carbon footprint associated with water heating.

$Heat_2O$ uses a Twisted Spiral Gas Cooler unique to Mitsubishi Electric. This patented technology achieves highly efficient heat exchange with three refrigerant lines wrapped around a twisted water pipe. The refrigerant flows in the opposite direction of the water. Running the refrigerant lines along the pipe's grooves increases the heat conductive area while the spiral helps create a vortex in the pipe, accelerating the turbulence effect of water and reducing pressure loss in the heat exchanger. The addition of the spiraled copper pipes also results in efficient double-wall construction.

An inverter scroll compressor further increases $Heat_2O$'s energy efficiency by enabling the system to modulate the refrigerant flow and heating capacity to match loads. Variable capacity gives the system greater control over energy use than fixed-capacity hot water heat pumps.

$Heat_2O$ offers a coefficient of performance (COP) of up to 4.52, meaning it can provide more than four times more energy as heat than it consumes in electricity. Compared to electric-resistance water heaters, $Heat_2O$ offers energy savings of 60 to 70% for building owners and tenants. Combined with incentives from utilities, energy savings can ultimately offset initial costs.

Patented twisted spiral gas cooler



The $Heat_2O$ integral refrigerant-to-hot-water heat exchanger is not potable NSF rated. A required and provided glycol-to-potable-water double wall NSF rated heat exchanger is used to separate $Heat_2O$ from the potable water.

Cold-climate performance and scalability

Flash injection circuit

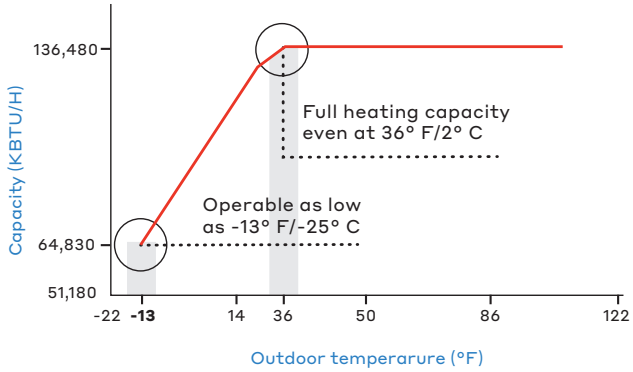
Heat$_2$O® continues to deliver 100% heating capacity at ambient temperatures of 36° F and can supply 160° F hot water at temperatures as low as -13° F. This performance is achieved through flash-injection technology. In extreme cold, Heat$_2$O's compressor operates at speeds much higher than usual to maintain discharge pressure and keep the evaporator's refrigerant cool enough to capture ambient heat. The injection circuit supplies a small amount of mixed-phase refrigerant to the compressor through a specially designed port, ensuring stable operation at high speeds. With Heat$_2$O, even building owners in cold climate zones 5 and 6 can increase sustainability while reducing energy costs for high-volume DHW.

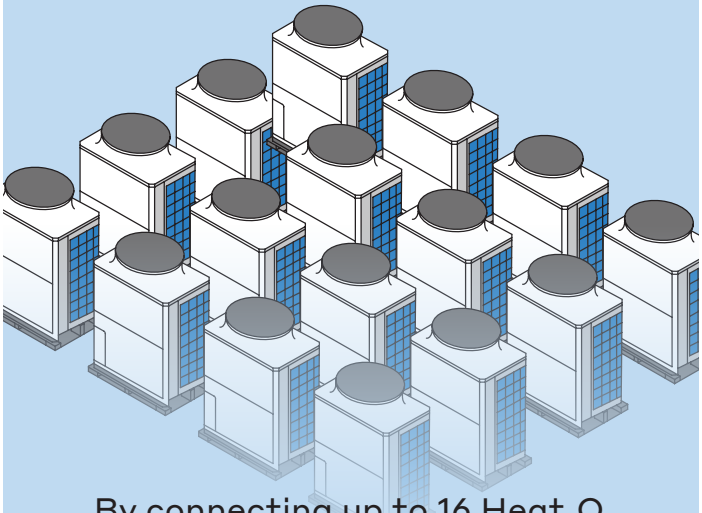
Flexible and scalable

Heat$_2$O can provide highly efficient DHW for most commercial buildings, including large-scale facilities. The system can be scaled connecting up to 16 Heat$_2$O units together. While nominal system capacity is 40 kW (136,484 BTU/H), the pre-configured controls offering allows all units to communicate with the main QAHV controller, enabling cascade operation and a combined total capacity of 2,183,770 BTU/H (640 kW). Units run at the same compressor frequency to achieve a stable leaving water temperature set point. This level of performance is ideal for applications requiring high volumes of hot water on demand, including universities, hotels, and other large facilities.

Performance:

- 100% water heating capacity of 40 kW at ambient temperature as low as 36° F
- 50% water heating capacity at ambient temperature as low as -13° F (160° F water temperature depending on application)





By connecting up to 16 Heat$_2$O units together, the system can scale up to 640 kW.

System design

Optimal performance and cost benefits for all-electric heat pumps require proper design, installation, and commissioning. This starts with cooperation and information exchange among project team members, including the developer or building owner who will decide whether the facility will participate in utility demand-response programs. Designers must understand the building's demand profile, inclusive of the gallons per hour, duration, and timing associated with peak loads and off-peak loads. The system's storage capacity is based on how often the system will run. Additionally, designers account for climate and may make provisions for snow, rain, wind, and marine salt.

The Heat$_2$O® project team typically includes plumbing engineers, electrical engineers, and control engineers. Each trade and discipline should be involved in the earliest stages of the project. The team will also include Mitsubishi Electric employees responsible for the startup and commissioning of each Heat$_2$O system.

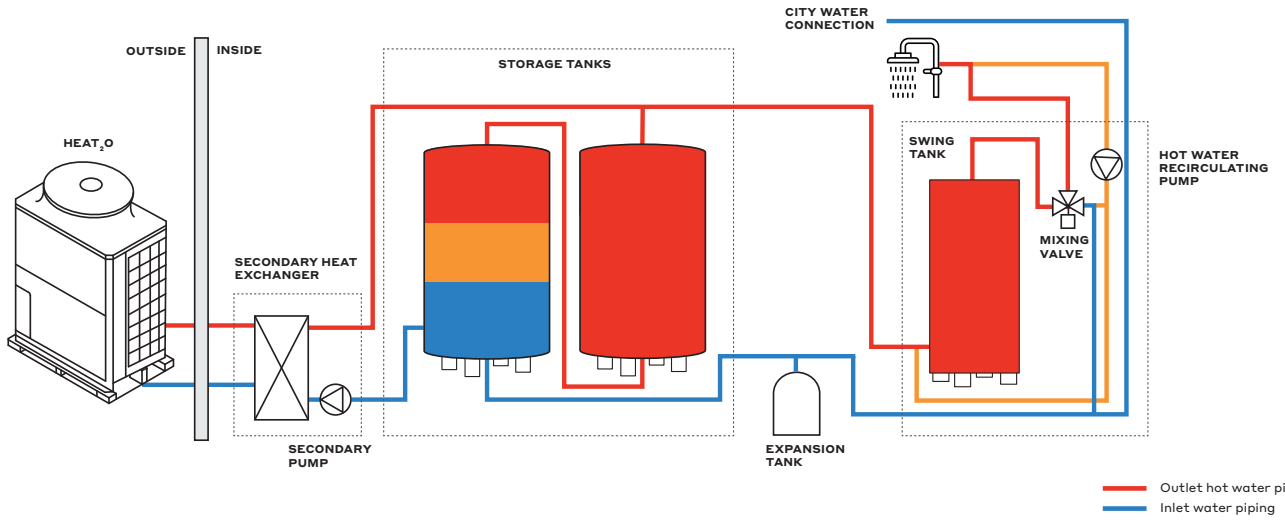
Design for hot water recirculation

Heat$_2$O designs account for hot water recirculation by separating DHW loads. The heat pump water heater handles the difference between the inlet city water temperature and the leaving temperature. The recommended inlet temperature range to the heat pump during the main hot water storage tank(s) recovery is in the 45° F to 75° F,

The building's recirculated water is warmer than inlet city water and is often outside the optimal temperature range recommended for the heat pump. To avoid derating and ensure the availability of hot water, Heat$_2$O designs include a primary storage tank and a swing tank. Heat$_2$O conditions the cool incoming city water at the bottom of the primary storage tank while the hot water moves to the top, maintaining temperature stratification. During hot water production, the system can feed high-temperature water to the swing tank, which also mixes with warm recirculation water.

Water in the swing tank is maintained within a specified temperature range, for example 140° F to 150° F. The energy used by the swing tank can be minimized to between 15 and 20% of the total building recirculation load by setting a lower target temperature than the main storage tank. Heat$_2$O can help replenish the storage tank with DHW, minimizing the use of the swing tank.

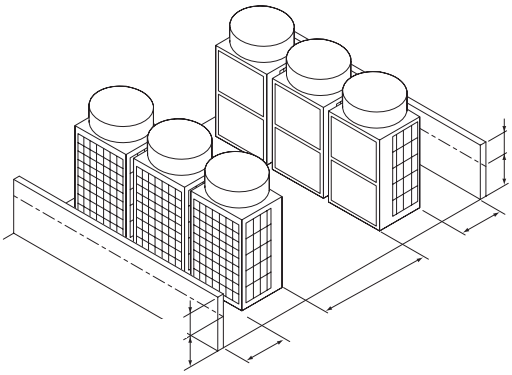
Typical system design



Installation requirements and maintenance

Installation

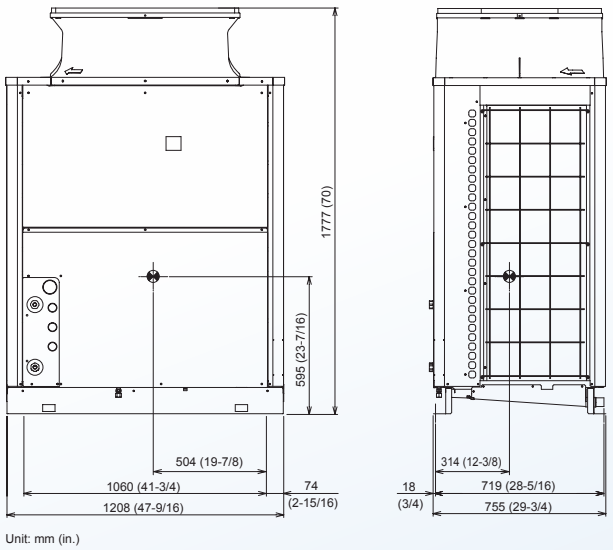
Heat$_2$O® is typically installed outdoors with considerations for airflow, space, structural support, acoustics, and service access common to heat pumps. Each Heat$_2$O unit must be individually wired to its own dedicated power supply and have one-foot minimum clearance for air intakes. Installation of cold-water inlet and hot-water outlet piping is straightforward. In cold climates, the unit support structure should elevate the Heat$_2$O units a bove the snowfall height. Available snow hoods and hail guards should also be used.



Maintenance

Maintenance primarily consists of supporting cleanliness. Install a strainer near the Heat$_2$O unit to keep foreign materials from entering the water-side heat exchanger. Clean the external heat exchanger, clean strainers periodically, and ensure the internal heat exchanger and secondary heat exchanger are free of scaling and debris.

Heat$_2$O at a glance



Unit: mm (in.)

Height: 70"

Width: 47.5625"

Depth: 29.75"

Weight: 882 lbs.

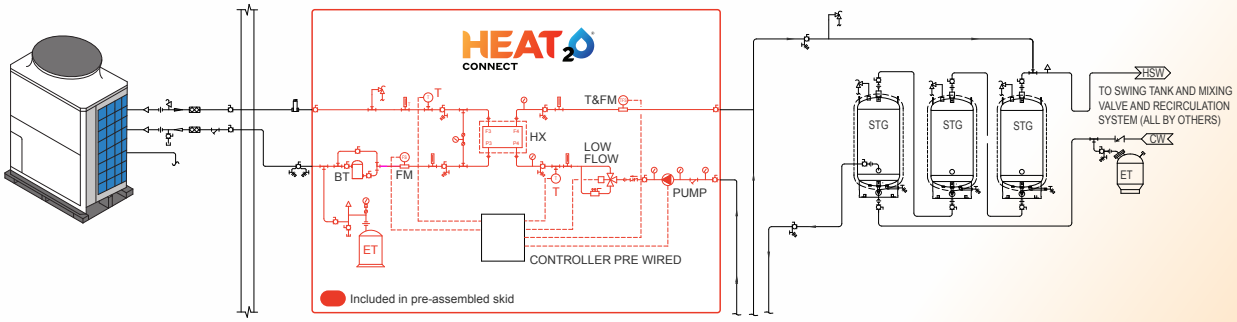
Electrical: 208/230/460V

Sound: 60 dB(A), no louder than a conversation

Design flexibility: Heat$_2$O® Core, Kit, and Connect

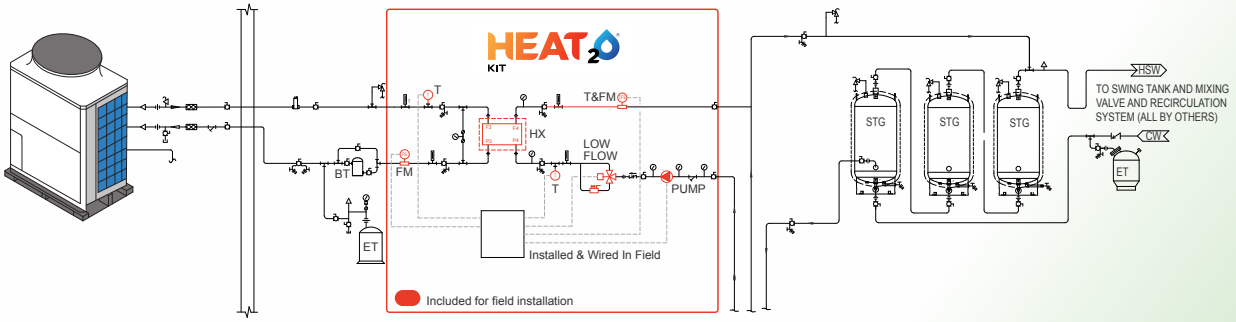
Heat$_2$O offers three configuration tiers that provide maximum flexibility for designers and owners to balance cost and performance. Most of these options center around the pump/HX interface portion of the system which separates the HEAT$_2$O closed loop hydronic side from the potable water side. Specifics of each tier are shown below.

Connect



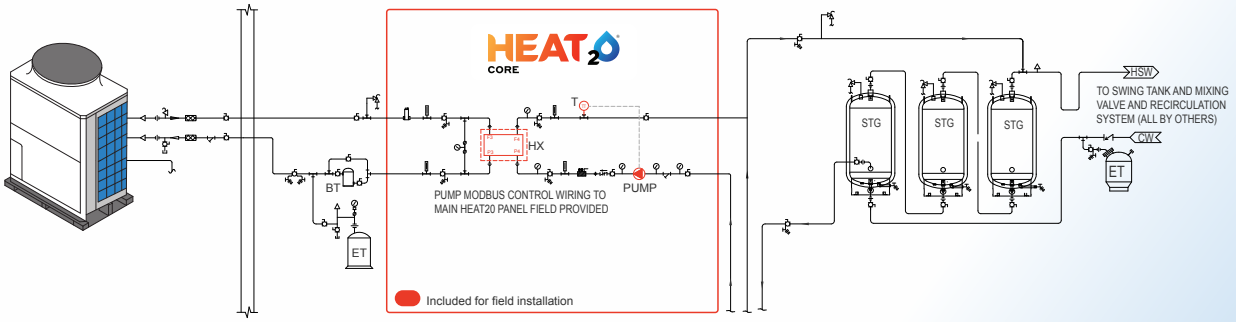
Heat2O Connect provides everything in the designated boundary on this diagram in a pre-assembled skid package, all pre-wired with advanced flow tracking controls and ultra-low flow turn down.

Kit



Heat2O Kit provides the same advanced controls funtionality of the CONNECT, including ultra low flow turn down with flow tracking but in a lower-cost, field-installed Kit. This does NOT include the expansion tank and buffer tank.

Core



The Heat2O CORE solution is the lowest cost with more basic controls with all items shipped loose for field installation. This does NOT include the expansion tank and buffer tank.

	HEAT2O CONNECT	HEAT2O KIT	HEAT2O CORE
How it ships	**Pre-assembled skid**	**Bundled in crate, field installed**	**All loose parts, field installed**
Controls	Advanced/flow tracking	Advanced/flow tracking	Basic controls
Equipment cost	Highest	Higher	**Lowest**
Installation time and cost	Lowest	Highest	Moderate
New double wall HX (up to 30% PP Glyc)	Yes	Yes	Yes
Ultra low flow turndown	Yes	**Yes**	No
Low ambient maintained DWT[1]	-13°F	**-13°F**	0°F
Flow tracking for optimal efficiency	Yes	**Yes**	No
Staging with lead/lag functions	Yes	Yes	No
Individual controllers per HX/pump	Yes	Yes	**No**
Additional io controller option	**Yes**	**Yes**	Custom
Installer wiring expertise level	Moderate	Advanced	Moderate/low
Control panel quantity (w/o added IO)	1 Per QAHV + Sup	1 Per QAHV + Sup	1
Max number of QAHV supported	16	16	16
Energy calculation	**Yes**	**Yes**	Custom
Onsite programming required	No	No	Minor-pump

Easier installation with quality components

As a custom solution, Heat$_2$O® includes a complement of parts designed and selected to ensure optimal performance of the heat pump. Using pre-approved parts helps to control the quality of installations and streamlines the work with pre-assembled and pre-plumbed components.[2]

Primary storage tank: Includes multiple thermistor locations for more precise measurement of water temperatures compared to most storage tanks, which typically have one thermistor. Storage tanks are custom designed with sparge fittings to maximize stratification and performance with the Heat$_2$O system.

- Sizes: 175 gallons, 285 gallons, 500 gallons
- Both steel glass lined, and duplex stainless tank options are available with either R16 or R20 top-coat insulation available

Secondary heat exchanger: Creates a closed loop to protect Heat$_2$O from scaling and corrosion from city water, reducing maintenance requirements, and providing NSF372 compliance for low lead and the Safe Water Drinking Act. Heat Exchanger is double wall construction, eliminating contamination concerns of potable water.

Variable-speed secondary circuit pumps: Varies pump speed to maintain leaving water temperature target to storage tanks as Heat$_2$O heat pump capacity varies. With the Connect & Kit solution advanced flow tracking between primary and secondary for pump control enhances stability and improves efficiency. The Connect and Kit also utilize a low flow valve to achieve ultra-low flow turndown.

1 Ambient temperatures listed are general guidelines. Other factors may affect actual low ambient maintained leaving water temperature.
2 Swing tanks must be provided by your contractor.

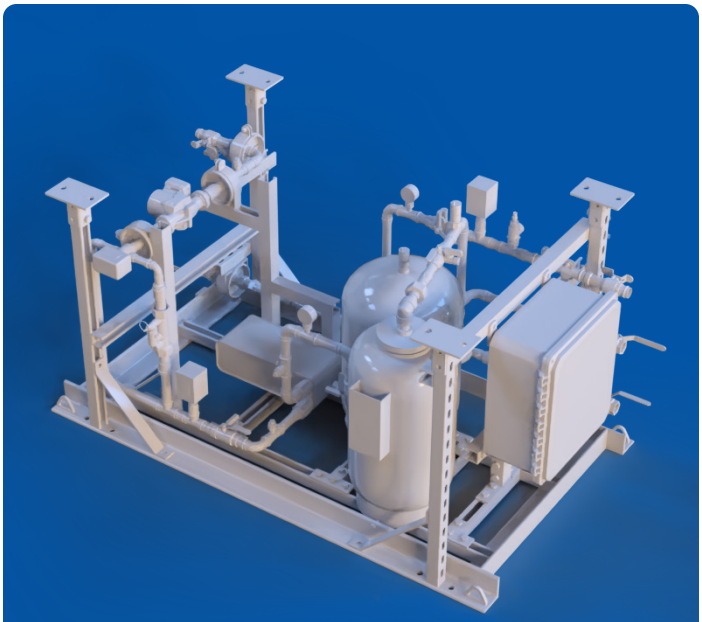
Streamlined installation with Heat$_2$O® Connect

Heat$_2$O Connect offers an advanced solution for buildings requiring dependable, energy-efficient hot water. Engineered to fit into compact mechanical rooms, this system streamlines installation and hot water delivery for a wide variety of commercial applications.

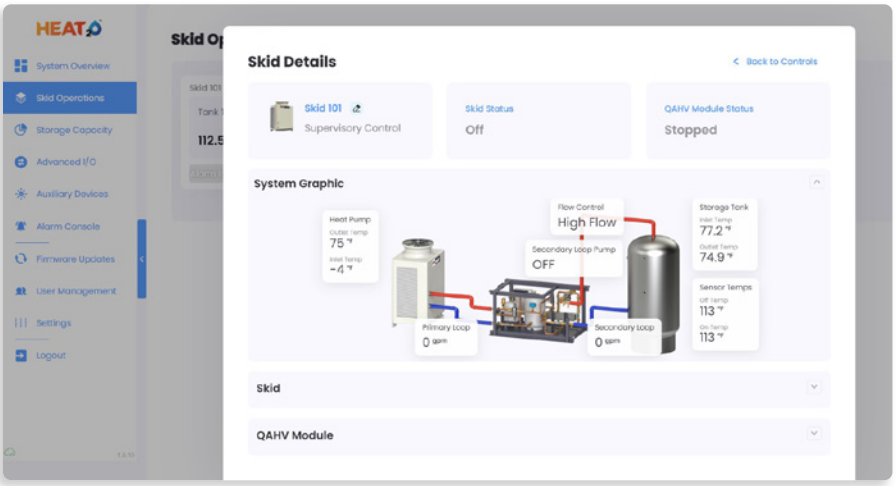
The flexible, space-saving design features control panels, pumps, and heat exchangers pre-mounted on skids that pass through standard doorways, eliminating the need for costly building modifications. Stacking capabilities maximize both floor space and vertical clearance, while pre-fabricated, ready-to-connect piping reduces installation time.

Setup is guided by an intuitive mobile app, supporting straightforward commissioning and precise system configuration suited to any facility. Once settings are selected, Heat$_2$O Connect will automatically maintain the optimal hot water supply.

Features such as advanced flow optimization and system balancing ensure the equipment runs smoothly and efficiently, reducing the need for hands-on management and minimizing maintenance requirements by balancing heat pump loads. Continuous monitoring of water temperature and flow guarantees a consistent supply of hot water across all fixtures.



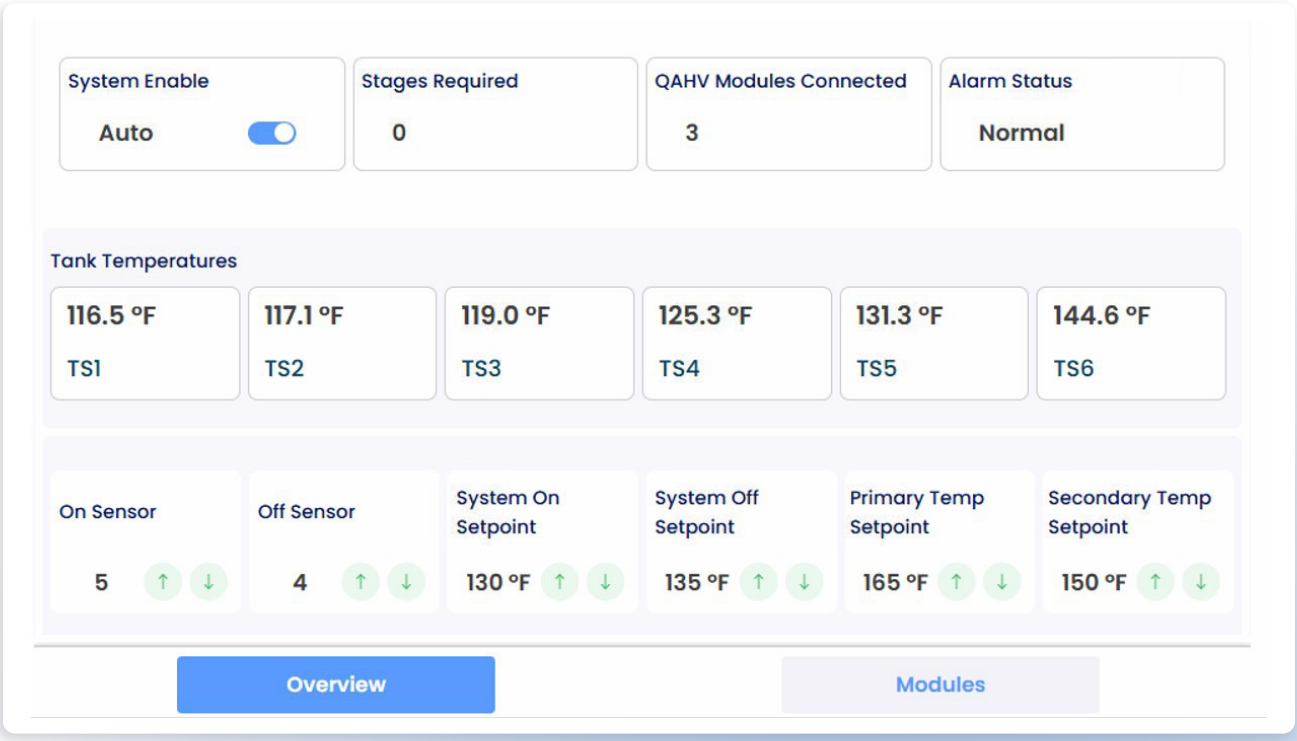
Heat$_2$O Connect's flexible, space-saving design features control panels, pumps, and heat exchangers pre-mounted on a skid.

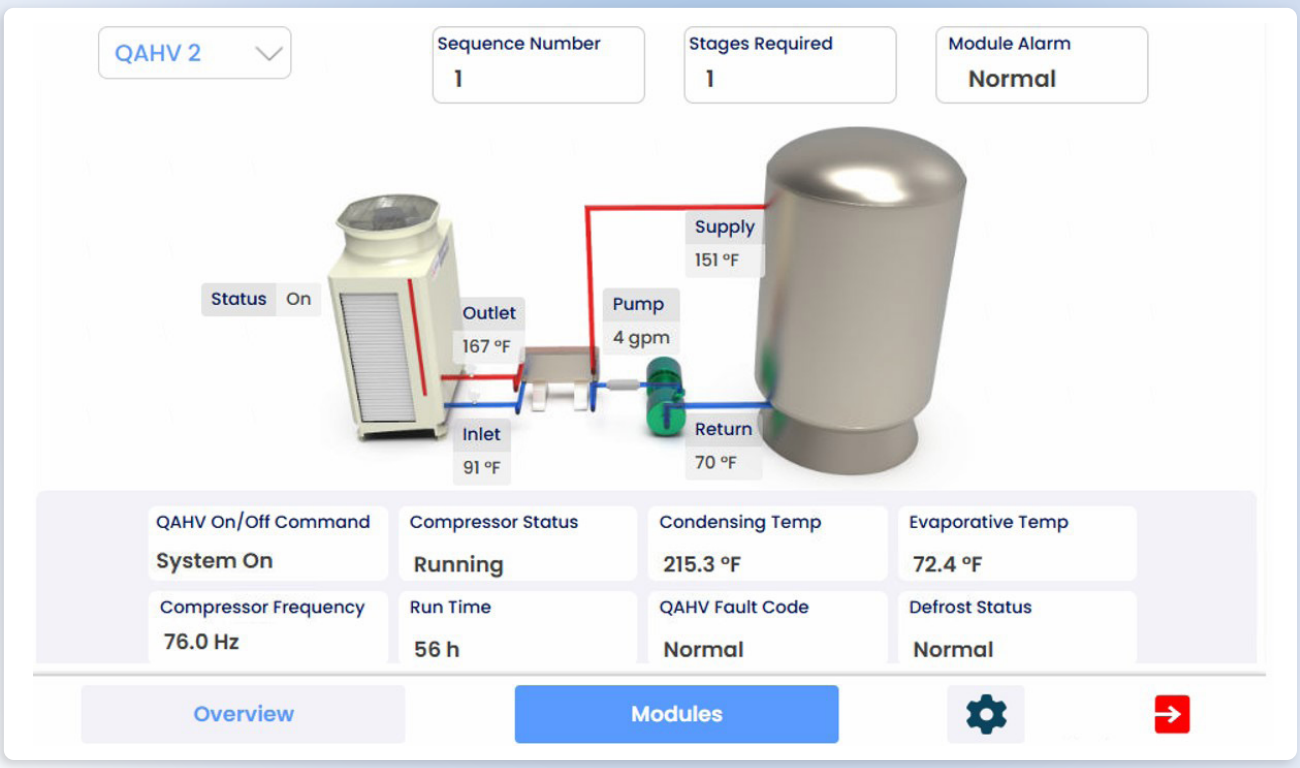


Setup is guided by an intuitive mobile app, supporting straightforward commissioning and precise system configuration suited to any facility.

Comprehensive control for efficient operation

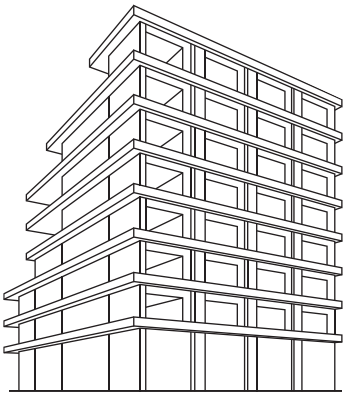
A pre-engineered controls package is available to further enhance Heat$_2$O®'s operation and efficiency. This package seamlessly integrates the heat pumps, tanks, pumps, valves, and sensors to monitor and control the system. No additional programming or licenses are required to add the controls to the hardware. An interactive setup guide makes the startup and commissioning process intuitive and easy to follow. Local users can monitor and control operation, modes, set points, and tank capacities with the touch screen display through the site local area network or through BACnet® integration to a building management system (BMS). The optional Energy Monitoring Capabilities and Demand Response Rebate Program (CTA-2045) enable Heat$_2$O to react to demand-response signals from grid operators.

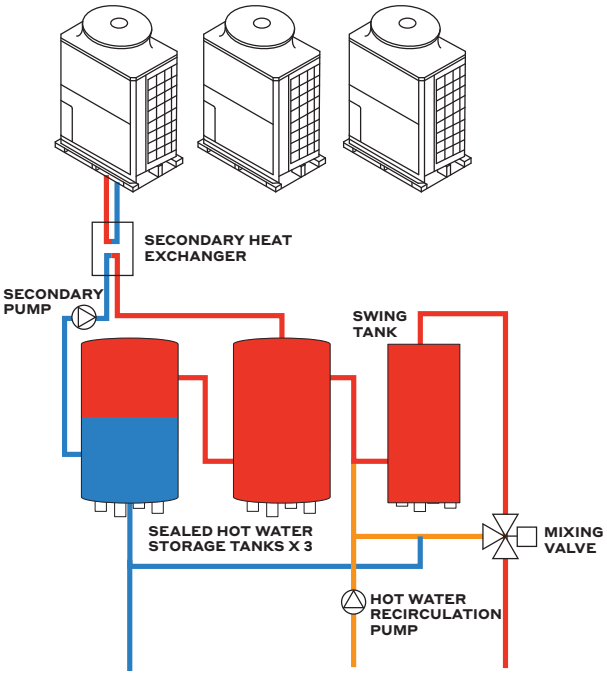




Application examples

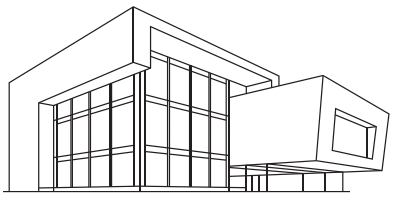
Multifamily

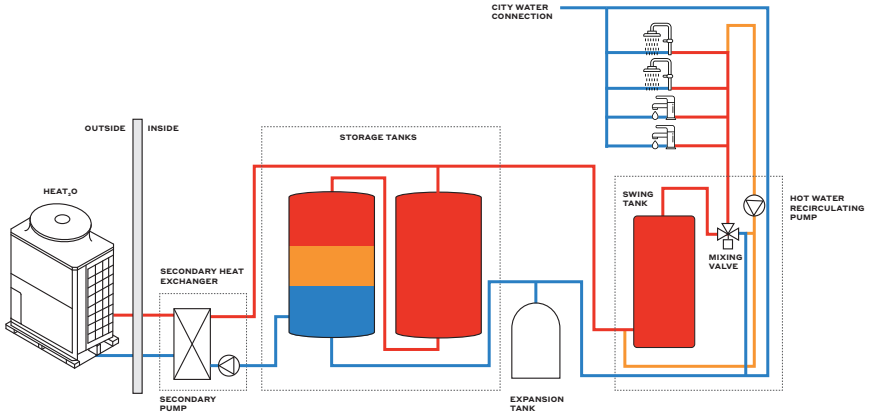




Outlet hot water piping
Inlet water piping

Fitness center





Outlet hot water piping
Inlet water piping

Success Story: Hotel Marcel

Hotel Marcel in New Haven, Connecticut, sets a new bar for sustainable hospitality. The 165-room boutique hotel is the first Passive-house certified, zero-emission hotel in the United States and one of a dozen LEED Platinum properties. The adaptive reuse of Marcel Breuer's former Pirelli Building pairs a super-insulated envelope and deep-set shading with an all-electric design and a 1,000+ panel solar array. The result preserves an icon while eliminating on-site combustion and cutting projected energy use intensity by about 80% versus the U.S. hotel median.

The mechanical backbone comes from Mitsubishi Electric Trane HVAC US. CITY MULTI® VRF with heat recovery and energy recovery ventilation delivers quiet, zoned comfort and simultaneous heating and cooling across guestrooms and amenities. Heat$_2$O® uses natural CO_2 refrigerant to produce domestic hot water up to 160° F even at outdoor temperatures as low as -13° F. Diamond Controls™ integrates HVAC and hot water on a single cloud platform for monitoring, demand-response preloading, and rapid adjustments that preserve guest comfort.

Read the full case study here

Specifications: 208V

Specification			System
Unit Type			**QAHV-N136TAU-HPB (-BS)**
Power Source			3-phase 3-wire 208-230 V 60 Hz
Minimum Circuit Ampacity (MCA)		A	67
Maximum Overcurrent Protection (MOP)		A	110
Capacity *1		BTU/h	136,480
		kW	40
	Power input	kW	9.73
	Current input	A	30.0-27.2
	COP	kW/kW	4.11
Capacity *2		BTU/h	136,480
		kW	40
	Power input	kW	10.44
	Current input	A	32.2–29.1
	COP	kW/kW	3.83
Allowable external pump head		ftAq (kPa)	22.75 (68)
Temperature range *3	Inlet water temperature	°F (°C)	41–145 (5–63)
	Outlet water temperature - Secondary		Up to 160°F on Secondary Side (Note 7)
	Outdoor temperature	D.B.	-13–109°F (-25–43°C)
Sound pressure level (measured 1m below the unit in an anechoic room) *1 *4		dB (A)	56
Water pipe diameter and type	Inlet	in. (mm)	Rc 3/4 (19.05), screw pipe *5
	Outlet	in. (mm)	Rc 3/4 (19.05), screw pipe *5
External finish			Acrylic painted steel plate <MUNSELL 5Y 8/1 or similar>
External dimensions H x W x D		in. (mm)	70 × 48-1/16 × 29-15/16 (1,777 × 1,220 × 760)
Net weight		lbs (kg)	895 (406)
Design pressure	R744	psi (MPa)	2,030 (14)
	Water	psi (MPa)	72.5 (0.5)
Heat exchanger	Water-side		Copper tube coil
	Air-side		Plate fins and copper tubes
Compressor	Type		Inverter scroll hermetic compressor
	Manufacturer		MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter
	Motor output	kW	11.0
	Case heater	kW	0.045
	Lubricant		PAG
Specification			**System**
Unit Type			**QAHV-N136TAU-HPB (-BS)**
Fan	Air flow rate	cfm	7,768
		m3/min	220
		L/s	3,666
	Type and quantity		Propeller fan × 1
	Control and driving mechanism		Inverter control, direct driven by motor
	Motor output	kW	0.75
HIC (Heat inter-changer) circuit			Copper pipe
Protection devices	High pressure		High-pressure sensor and switch set at 2,030 psi (14 MPa)
	Inverter circuit		Overheat and overcurrent protection
	Compressor		Overheat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (Hot gas)
Refrigerant	Type and factory charge	lbs (kg)	CO2 (R744) 14.3 lbs (6.5 kg)
	Flow and temperature control		LEV
Unit Drainage Protection Required (Condensate) *6			Integral drain pan, field-provided heat trace required (pan and drain Line).
Unit Water Piping Freeze Prevention			30% (MAX) Polypropylene Glycol Allowed w/ Separation HX Indoors (required), field-provided heat trace in cold climates.

*1. Under normal heating conditions at the outdoor temperature of 80.6ºFDB/71.2ºFWB (27.0ºCDB/21.8ºCWB), the outlet water temperature of 120ºF (49ºC), and the inlet water temperature of 70ºF (21ºC) This condition is based on 10 CFR.
*2. Under normal heating conditions at the outdoor temperature of 80.6ºFDB/71.2ºFWB (27.0ºCDB/21.8ºCWB), the outlet water temperature of 149ºF (65ºC), and the inlet water temperature of 70ºF (21ºC) This condition is based on 10 CFR except for outlet water temperature.
(Outlet water temperature is based on typical operating temperatures.)
*3. The temperature difference between inlet water and outlet water must be kept above the following values.
Energy saving operation 1 mode ··· ΔT=50°F (28ºC) Energy saving operation 2 mode ··· ΔT=50°F (28ºC) Max capacity operation ··· ΔT=67°F (37ºC)
If the unit is operated with the inlet-outlet water temperature difference at or below the ΔT listed above, the flow rate will reach its maximum, which can adversely affect the normal operation of the unit and shorten product life.
Note that, regardless of the inlet-outlet water temperature difference (even during operation within the range with the minimum water inlet-outlet temperature difference), the higher the inlet temperature, the lower the COP.
Keep the inlet water temperature as low as possible to ensure efficient operation.
*4. The sound pressure level is a value measured in an anechoic room in accordance with the conventional method in JRA4060.
*5. PT-NPT reducers are included as accessories.
*6. In cold climates, field provide heat trace in unit drain pan (320W minimum, 12watt/ft cable at 3" O.C. serpentine pattern). Heat trace and insulate (field provided) drain line to point of termination. Reference install manual.
*Due to continuing improvements, specifications may be subject to change without notice.
*Do not use steel pipes as water pipes.
*Keep the water circulated at all times. Blow the water out of the pipes if the unit will not be used for an extended period of time.
*Do not use ground water or well water.
*Do not install the unit in an environment where the wet bulb temperature exceeds 90ºF (32°C).
*The water circuit must be a closed circuit.
*There is a possibility that the unit may abnormally stop when it operates outside its operating range. Provide backup (ex.boiler start with error display output signal (blue CN511 1-3)) for abnormal stop.
*In a system in which the ascent rate of inlet water temperature becomes 5 K/min (9ºF/min) or above instantly or 1 K/min (1.8ºF/min) or above continuously, this model of units cannot be used.
*7. Secondary side supply temperature achieved depends on total QAHV derated capacity and balanced low flow (min pump speed) on secondary potable side. Consult with Mitsubishi representative during design stage.

Specifications: 460V

Specification			System
Unit Type			QAHV-N136YAU-HPB (-BS)
Power Source			3-phase 3-wire 460 V 60 Hz
Minimum Circuit Ampacity (MCA)		A	39
Maximum Overcurrent Protection (MOP)		A	40
Capacity *1		BTU/h	136,480
		kW	40
	Power input	kW	9.73
	Current input	A	13.6
	COP	kW/kW	4.11
Capacity *2		BTU/h	136,480
		kW	40
	Power input	kW	10.44
	Current input	A	14.6
	COP	kW/kW	3.83
Allowable external pump head		ftAq (kPa)	22.75 (68)
Temperature range *3	Inlet water temperature	°F (°C)	41–145 (5–63)
	Outlet water temperature - Secondary		Up to 160°F on Secondary Side (Note 7)
	Outdoor temperature	D.B.	-13–109°F (-25–43°C)
Sound pressure level (measured 1m below the unit in an anechoic room) *1 *4		dB (A)	56
Water pipe diameter and type	Inlet	in. (mm)	Rc 3/4 (19.05), screw pipe *5
	Outlet	in. (mm)	Rc 3/4 (19.05), screw pipe *5
External finish			Acrylic painted steel plate <MUNSELL 5Y 8/1 or similar>
External dimensions H x W x D		in. (mm)	70 × 48-1/16 × 29-15/16 (1,777 × 1,220 × 760)
Net weight		lbs (kg)	934 (424)
Design pressure	R744	psi (MPa)	2,030 (14)
	Water	psi (MPa)	72.5 (0.5)
Heat exchanger	Water-side		Copper tube coil
	Air-side		Plate fins and copper tubes
Compressor	Type		Inverter scroll hermetic compressor
	Manufacturer		MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter
	Motor output	kW	11.0
	Case heater	kW	0.045
	Lubricant		PAG

Specification			System
Unit Type			QAHV-N136YAU-HPB (-BS)
Fan	Air flow rate	cfm	7,768
		m3/min	220
		L/s	3,666
	Type and quantity		Propeller fan × 1
	Control and driving mechanism		Inverter control, direct driven by motor
	Motor output	kW	0.92
HIC (Heat inter-changer) circuit			Copper pipe
Protection devices	High pressure		High-pressure sensor and switch set at 2,030 psi (14 MPa)
	Inverter circuit		Overheat and overcurrent protection
	Compressor		Overheat protection
	Fan motor		Thermal switch
Defrosting method			Auto-defrost mode (Hot gas)
Refrigerant	Type and factory charge	lbs (kg)	CO2 (R744) 14.3 lbs (6.5 kg)
	Flow and temperature control		LEV
Unit Drainage Protection Required (Condensate) *6			Integral drain pan, field-provided heat trace required (pan and drain Line).
Unit Water Piping Freeze Prevention			30% (MAX) Polypropylene Glycol Allowed w/ Separation HX Indoors (required), field-provided heat trace in cold climates.

*1. Under normal heating conditions at the outdoor temperature of 80.6ºFDB/71.2ºFWB (27.0ºCDB/21.8ºCWB), the outlet water temperature of 120ºF (49ºC), and the inlet water temperature of 70ºF (21ºC) This condition is based on 10 CFR.
*2. Under normal heating conditions at the outdoor temperature of 80.6ºFDB/71.2ºFWB (27.0ºCDB/21.8ºCWB), the outlet water temperature of 149ºF (65ºC), and the inlet water temperature of 70ºF (21ºC) This condition is based on 10 CFR except for outlet water temperature.
(Outlet water temperature is based on typical operating temperatures.)
*3. The temperature difference between inlet water and outlet water must be kept above the following values.
Energy saving operation 1 mode ··· ΔT=50°F (28ºC) Energy saving operation 2 mode ··· ΔT=50°F (28ºC) Max capacity operation ··· ΔT=67°F (37ºC)
If the unit is operated with the inlet-outlet water temperature difference at or below the ΔT listed above, the flow rate will reach its maximum, which can adversely affect the normal operation of the unit and shorten product life.
Note that, regardless of the inlet-outlet water temperature difference (even during operation within the range with the minimum water inlet-outlet temperature difference), the higher the inlet temperature, the lower the COP.
Keep the inlet water temperature as low as possible to ensure efficient operation.
*4. The sound pressure level is a value measured in an anechoic room in accordance with the conventional method in JRA4060.
*5. PT-NPT reducers are included as accessories.
*6. In cold climates, field provide heat trace in unit drain pan (320W minimum, 12watt/ft cable at 3” O.C. serpentine pattern). Heat trace and insulate (field provided) drain line to point of termination. Reference install manual.
*Due to continuing improvements, specifications may be subject to change without notice.
*Do not use steel pipes as water pipes.
*Keep the water circulated at all times. Blow the water out of the pipes if the unit will not be used for an extended period of time.
*Do not use ground water or well water.
*Do not install the unit in an environment where the wet bulb temperature exceeds 90ºF (32°C).
*The water circuit must be a closed circuit.
*There is a possibility that the unit may abnormally stop when it operates outside its operating range. Provide backup (ex.boiler start with error display output signal (blue CN511 1-3)) for abnormal stop.
*In a system in which the ascent rate of inlet water temperature becomes 5 K/min (9ºF/min) or above instantly or 1 K/min (1.8ºF/min) or above continuously, this model of units cannot be used.
*7. Secondary side supply temperature achieved depends on total QAHV derated capacity and balanced low flow (min pump speed) on secondary potable side. Consult with Mitsubishi representative during design stage.

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HEATING & AIR CONDITIONING

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