HUBBELL
a **nudyne** company

OMNI SERIES

HHP

A Complete Heat Pump Water Heating Solution

The Omni HHP is an engineered solution available in multiple configurations to meet most water heating requirements. This uniquely tailored heat pump system expertly combines a heat pump, storage tank and alternate heat source with a system level controller.

Hubbell's expertise comes together in a complete water heating solution:

1. Sizing: we help you size the system utilizing Hubbell's proprietary sizing tool to ensure everything is configured specifically to your application.

2. Heat pump: we give you three heat pump options: air source, water source and modular water source, each available in various sizes.

3. Storage: included in the system is a long lasting HydraStone® cement lined tank made to work in the Omni HHP system, a variety of sizes are available.

4. Alternate heat source: for times when conditions aren't right for the heat pump, the Hubbell Process V water heater can be sized to handle only the recirculation losses, or as a full backup.

5. System level controller: a fully customizable PLC that monitors and controls every part of our Omni HHP water heating system.



Applications

Multi-family, dormitories, hotels, hospitals, office buildings, athletic complexes and more.

NOTE: Manufactured in an ISO 9001:2015 facility. ASME option available upon request. BABA & BAA compliance is available upon request.

hubbellheaters.com **sales@hubbellheaters.com** **203.378.2650**

An energy efficient, long lasting, water heating solution

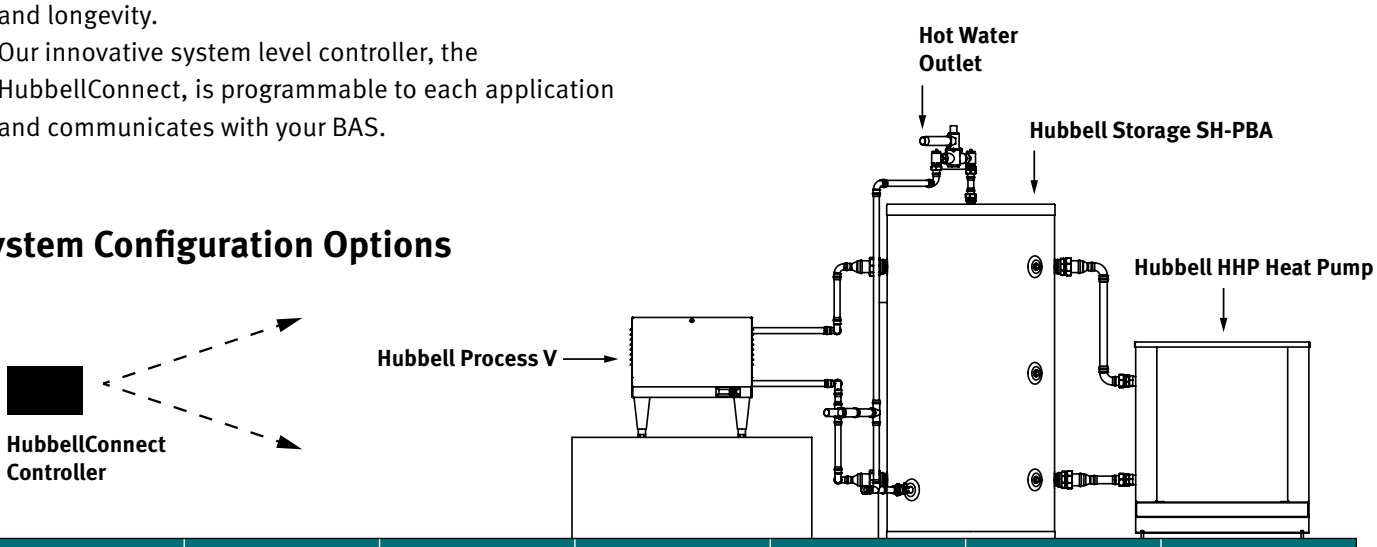
Heat pumps offer energy-efficient water heating. The Hubbell Omni HHP offers much more. It is an integrated heat pump system expertly packaged and engineered.

- A properly sized system not only heats water but can also provide ongoing cooling and dehumidifying benefits. To determine the proper size for your application, we have developed the Hubbell Heat Pump Sizing Tool.
- The heat pumps included in the HHP system are either air or water source with an option for modular water source.
- Our HydraStone® cement lined, ASME, SH-PBA insulated storage tanks provide industry leading longevity and minimal heat loss.
- If for some reason the environmental conditions aren't right for the heat pump, we have included a dependable alternate heating source. The all electric Process V has a stainless steel ASME Section VIII stamped pressure vessel providing maximum quality and longevity.
- Our innovative system level controller, the HubbellConnect, is programmable to each application and communicates with your BAS.

System facts:

- Heats water up to 160° F (72° C) (multipass only)
- Use as a preheater for higher temperature systems
- Heating capacity up to 270 MBH for a single unit, modular units provide heating capacity up to 1,620 MBH
- Cooling capacities exceeding 210 MBH
- Combined COP up to 6.4
- Recovery rates up to 340 gallons per hour or more depending on the nominal source temperature
- Absorbs heat from air and water sources, including process and groundwater
- Uses environmentally friendly refrigerant
- Double-wall condenser for potable water heating
- BACnet compatible logic controller optional
- Source temperature ranges from 10° F to 110° F dependent on model configuration
- Integrated potable water approved pump

System Configuration Options



System Type	Heat Pump	Storage Tank	Recirculation Loop Process V	Combination Recirculation Loop/backup Process V	Storage Heater	HubbellConnect Controller (HCC)
Makeup-Type	X	X	X			X
Backup-Type	X	X		X		X
Swing Tank	X	X			X	X
Multi-Unit	X	X				X
Single Unit	X	X				
Heat pump only	X					

1. It starts with sizing and design

We're here to help

Retrofitting an older building with limited space? No problem. Expecting extra high demand at peak times? No problem. Hubbell engineers have created a powerful and intuitive tool for sizing the Omni HHP system to meet your exact needs. Using installation inputs and ASHRAE data the Hubbell Heat Pump Sizing Tool creates supply and demand curves to help size and select the optimal system. Our sizing tool, along with the expertise of our engineers, will design the right HHP water heating solution for any application.

Storage Temp	140°F
Cold Water Supply Temp	40°F
Building Type	Apartments
# of Apartments	175
Recirculation Loop Temp (Supply)	120°F
Loop ▲T	10°F
Recirculation Loop Flow Rate	3 GPM
Source Temp	40°F
Source Type	Water
Min # of Heat Pumps	2
Alternate Heat Source Voltage	T4
Alternate Heat Source	Makeup
Max Storage Capacity (Default 900 Gal)	1000
Peak Demand	**717.5 GPH**
Gallons per Day	**9,555 Gal**
Avg Energy Demand	**634,4520**



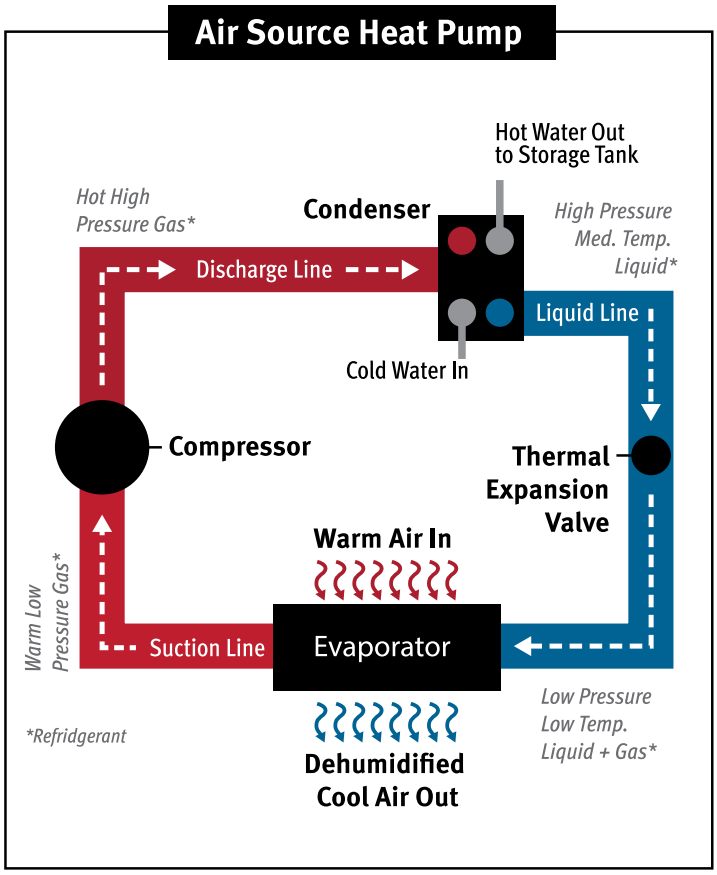


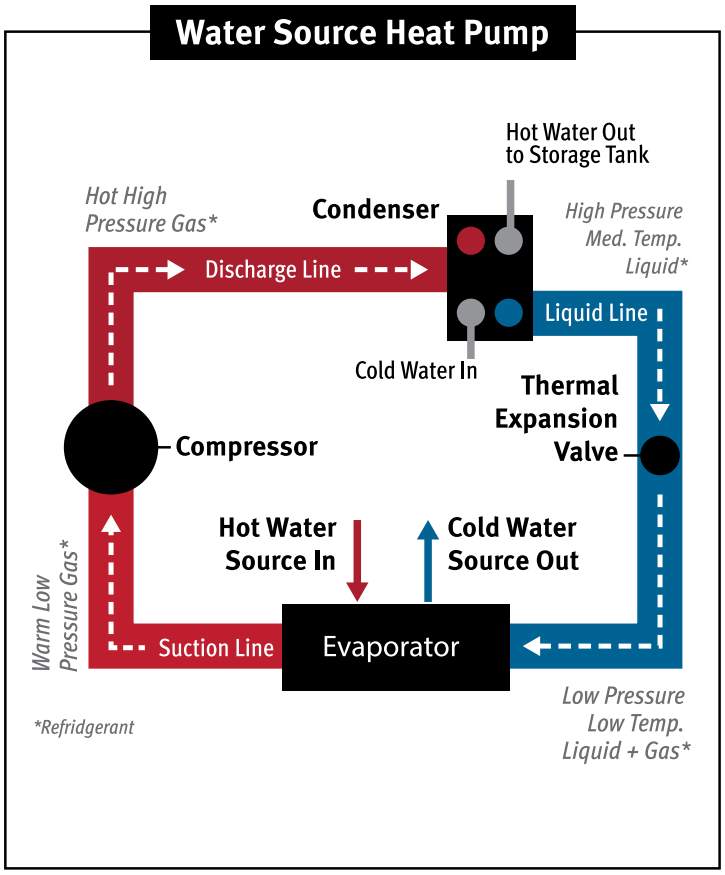
2. Heat pump: How it works

The image below illustrates a basic refrigeration cycle that is used in our heat pump water heaters. Every system is tailored to a specific application, so some systems may be slightly different, but the basic principles apply.

Air is drawn through the evaporator coil where heat energy is captured and transferred to the refrigerant flowing through the evaporator. The refrigerant, now a gas, passes through the compressor and becomes a superheated hot gas. This superheated gas now enters the condenser where it transfers its heat energy, using a double wall heat exchanger, to the domestic hot water. The superheated gas condenses back to a liquid and the process repeats.

During this process, a circulator pump is continuously moving water from the storage tank, through the condenser, raising the temperature of the water. Temperature rise and water flow rates vary per configuration and conditions.





Heat pump technology is a great water heating solution for green buildings because it takes stored energy in the air or water and turns it into energy that heats potable water.

Available Heat Pump Sizes and Dimensions

Standard and Optional Features

Included standard:

- Single pass (multipass optional)
- 208-230v or 460v power modular units are available in 575V
- Integral Circulator
- 160° F maximum service water temperature
- Typical operating envelope is 35-100°F source (10-100°F on 360). Active defrost (standard on 90A & 185A, optional on 250A) provides protection against freezing conditions
- Blower connection for a ducted or ductless use (standard on a 90A and 185A. Optional on a 360A. Not available on 250A)

Standard Unit Construction

- Double wall stainless steel brazed plate heat exchanger, for potable water side (NSF 61 approved)
- Integrated pump on heated side of system (NSF 61 approved)
- Aluminum enclosed cabinet
- Gray macropoxy (epoxy) paint, 6,500-hour salt fog resistance rating
- Coated evaporator coil (air units only)
- Single wall stainless steel brazed plate heat exchanger, for source water side
- R513a refrigerant
- PLC is included on all models

Optional:

- **BMS Gateway:** Single heat pump communication gateway to building management systems
- **Stacking Frame:** Frame to allow a second heat pump to mount directly above another
- **International Crating:** Required for cross-border shipments
- **5 Year Compressor Warranty:** Extends standard one year warranty to 5 years
- **Cold Weather Package:** If the design temperature is below 40° F, cold weather package is required. (This includes most of the Northeast.)



Air Source

Air source heat pump water heaters draw energy from ambient air. The cool dehumidified air exhausted from the unit can be used to cool the immediate area or another desired location by ducting the air, which can help offset air conditioning costs.

Model Number	Single Pass Recovery @ 90°F (50-140) ΔT (GPH)	Capacity at 70°F Source					Dimensions (L x W x H)
		Water Heating 50°F – 140°F		Cooling		Combined COP	
		BTUH	COP	BTUH	COP		
HHP90A	178	80,057	2.5	48,667	1.5	4.1	79" L x 33-3/4" W x 43-3/4" H
HHP185A	307	157,700	2.6	95,943	1.6	4.1	72-3/4" L x 47-5/8" W x 45-7/8" H
HHP250A	333	169,083	2.8	108,691	1.8	4.6	54" L x 84-5/8" W x 75-5/8" H
HHP360A	384	287,000	3.4	211,000	3.0	6.4	40" L x 72" W x 101/4" H

All information is subject to change without notice. Consult factory for submittal drawings.



Water Source

Water source heat pump water heaters transfer heat from source water. The chilled source water can then be used for air conditioning systems or process water for equipment.

Model Number	Source Water Flow (GPM)	Single Pass Recovery @90°F ΔT (GPH)	Capacity at 70°F Source					Dimensions (L x W x H)
			Water Heating 50°F – 150°F		Cooling		Combined COP	
			BTUH	COP	BTUH	COP		
HHP125W	23	138	114,400	3.2	78,574	2.2	5.4	52" L x 31" W x 40" H
HHP185W	33	203	168,900	3.0	112,261	2.0	5.0	52" L x 31" W x 40" H



Modular water source

A modular water source heat pump water heater works well when a highly efficient system is required for larger capacities. These units heat potable water by absorbing heat from source water.

Model Number*	Source Water Flow (GPM)	Single Pass Recovery @ 90°F ΔT (GPH)	Capacity at 70°F Source					Dimensions (L x W x H)
			Water Heating 50°F – 150°F		Cooling		Combined COP	
			BTUH	COP	BTUH	COP		
HHP270M	48	270	238,300	3.1	168,354	2.1	5.2	32-1/2" L x 39" W x 66-1/4" H
HHP540M	96	546	476,600	3.1	336,708	2.1	5.2	77-3/4" L x 39" W x 74-1/4" H
HHP810M	144	822	714,900	3.1	505,062	2.1	5.2	110-1/8" L x 39-1/4" W x 74-1/4" H
HHP1080M	192	1092	953,200	3.1	673,416	2.1	5.2	142-1/2" L x 39-1/4" W x 74-1/4" H*
HHP1350M	240	1368	1,191,500	3.1	841,770	2.1	5.2	174-3/4" L x 39" W x 74-1/8" H*

Dimensions are based on inline configuration.
*Larger capacities available, consult factory.

All information is subject to change without notice. Consult factory for submittal drawings.

3. The Storage Tank



120–900 gallons, plus

Hubbell Storage SH-PBA HydraStone® lined tanks are specifically designed for the heat pump system. The SH-PBA is ASME stamped and available in standard sizes of 120–900 gallon capacities and non-standard sizes of up to 5,000 gallons.

Depending on the requirements of your application, multiple storage tanks can be used, further expanding the possibilities of the Omni HHP system.

For more information regarding the storage tank, refer to the Hubbell Storage SH-PBA brochure.

Signature SH-PBA Storage Tank Dimensions: Standard Sizes

Actual storage capacity	300	400	500	600	750	900
Diameter (inches)	42	48	54	54	54	54
Height without legs (inches)	83	80	77	90	108	127
Weight Empty (lbs)	2,180	2,700	3,225	3,600	4,300	4,600

Note: All dimensions are approximate and subject to change. Please reference the submittal drawing for actual dimensions. The tank selections above are standard. A full selection of storage capacities is available, consult factory.



All information is subject to change without notice. Consult factory for submittal drawings.

4. Alternate Heat Source

Hubbell Process V, available in all voltages, single or three phase up to 88 kW

In an Omni HHP *Make Up Type System* Configuration:

- The makeup Process V will be sized to recover the temperature losses suffered by the recirculation loop to ensure water re-entering the storage tank is at set point, preventing short cycling of the heat pumps
- Units are generally sized for the flow rate of the building recirculation loop and the ▲T between the tank setpoint and returning recirculation loop water

In an Omni HHP *Back Up Type System* Configuration:

The backup Process V will be sized to the full recovery of the system (the total recovery provided by all heat pumps combined) to provide redundancy in the event of Heat Pump fault, alarm, or other conditions where it would be inoperable. Secondary purpose is to provide Makeup Heater functionality. Multiple units may be necessary to meet required recovery. Units will be sized to meet the greater of the following:

- Recirculation loop losses
- Heat pump output at worse-case source temperature

The Hubbell Process V has a stainless steel ASME stamped pressure vessel that resists the corrosive effects of hot water and provides maximum longevity. We use high quality materials and components to ensure reliable operation in even the most demanding application. The Process V is ready for immediate installation, all electrical operating controls are factory selected, sized, and wired.

Refer to the Hubbell Process V brochure for more information, dimensions, and kW details.



5. System Level Controller



The HubbellConnect Controller

At the heart of the Hubbell Omni HHP system is the HubbellConnect Controller (HCC). The HHC is offered in various software and hardware configurations in order to best utilize the Omni HHP System selected. It is programmed to your needs and the needs of the system providing information on the heat pump's temperatures, pressures, hot water flow rate, run status, countdown timers, tank temperatures, alarms and compressor run hours.

The HHC communicates to the other parts of the system through BACnet and ethernet, can be located anywhere with the the appropriate ethernet standards and requires a 120V power supply. Note that a BACnet connection for BMS is standard with all Omni HHPs.

Omni HHP Model Number Designation

1 Choose configuration

- ☐ Makeup-Type System (heat pump(s), storage tank(s), HCC-M Controller, recirculation loop)
- ☐ Backup-Type System (heat pump(s), storage tank(s), HCC-B Controller, combination recirculation loop / backup)
- ☐ Swing Tank System (Heat Pump(s), storage tank(s), storage heater, HCC-S Controller)
- ☐ Storage Heater System (heat pump(s), storage heater, HCC-T Controller
- ☐ Multi-Unit System (heat pumps, storage tank(s), HCC-H Controller, no alternate heat source)
- ☐ Single Unit System (heat pump, storage tank(s)) no HCC, no alternate heat source
- ☐ Heat pump only
- ☐ Other

2 Designate Heat Pump Number

HUBBELL HEAT PUMP	NOMINAL CAPACITY (MBH)	VOLTAGE (VAC)	PHASE	Hz	SOURCE TYPE
H	090 (A Only)	230	1	60	(**A**)ir
	125 (W Only)	460	3		(**W**)ater
	185	575 (Only available in models 270M - 1350M)			(**M**)odular
	250 (A Only)				
	270 (M Only)				
	540*				
	810*				
	1080				
	1350				

H		—			60	

* Modular units that consist of multiple heat pump modules, treated as “multi-unit system”.

3 Choose options for the Heat Pump

FAN TYPE	CONTROLS	PUMP SPEED	LOW AMBIENT OPTIONS	UNIT CONFIG	COATING	ANYBUS GATEWAY	CRATING
(**A**)xial	(**P**)LC	(**F**)ixed	(**N**)o cold weather options	(**S**)ingle pass	(**I**)ndoor	(**Y**)es	(**D**)omestic
(**B**)lower			(**C**)old weather package	(**M**)ultipass	(**O**)utdoor	(**N**)o	(**I**)nternational
(**N**)one							

	P	F					

Example: part number H250–460360A–BPFCSIYD

Would be a heat pump with 250MBH nominal capacity, 460VAC, 3Ø, 60 Hz, air source, blower fan, PLC controls, Fixed Speed Pump, cold weather package, single pass config, indoor coating, anybus gateway, and domestic crating

All information is subject to change without notice. Consult factory for submittal drawings.

(continued on next page)

4 Determine model number for the Storage Vessel

SERIES	STORAGE CAPACITY (GAL)*	TANK
SH	300	**SL** = HydraStone® cement lined tank
	400	**BL** = Unlined carbon steel
	500	**SS** = 316L Stainless steel
	600	**CN** = Solid Copper-Nickel
	750	
	900	

SH			-PBA

*Other sizes available (120-5,000 gallons), consult factory.

See the Storage PBA brochure for detailed information including dimensions and kW and amperage availability.

5-A Designate Process V model number – back up/make up heat source

MODEL	kW Rating	VOLTAGE / PHASE		Optional Equipment
V6 **V16**	1–88 (V6 only available up to 58.5 kW)	**A** = 120/1 **RS** = 208/1 **S** = 240/1 **W** = 277/1 **T4S** = 480/1	**R** = 208/3 **T** = 240/3 **T3** = 380/3 **T7** = 415/3 **T5** = 440/3 **T4** = 480/3 **T6** = 600/3	Write/type optional equipment code in the gray box below in alphabetical order. For multiple options separate codes with a dash (–) **Vessel** **V44** V6 recirculation package Includes 1-1/4" inlet/ outlet as standard and SSR controls and BACnet communication"

			–	V44

See the Process V brochure for detailed information including dimensions and kW / amperage availability.

5-B Alternate Heat Source (If not Process V model)

All information is subject to change without notice. Consult factory for submittal drawings.

Optional Equipment

Optional equipment must be called out in the written specifications, use the codes below.

Controller

- **C67** BMS Gateway
- **C68** H250A Active Defrost Package
- **C69** Discharge Air Cowl (available on the H360A only)
- **C70** Unified Power Package (available for the H360A only)

Vessel

- **V17** Additional 3" FNPT Tappings

Available Accessories

Available on vessel

- **10-Year non Pro-Rated Tank Warranty:** specify part number "VESSEL WARRANTY"

Available on all heat pump units

- **Tank Sensor:** specify part number “312-00009-00”
- **Remote Outdoor Sensor:** specify part number “312-00010-00”
- **5-Year Extended Compressor Warranty:** specify part number “900-00033-00”

Available on heat pump units specified”

- **HHP90A Stacking Frame R513a:** specify part number “900-00012-00”
- **HHP125W Small Water Stacking Frame:** specify part number “900-00017-00”
- **HHP125W Flowmeter Retrofit Kit 1.5-2″:** specify part number “900-00019-00”
- **HHP185A Stacking Frame:** specify part number “900-00013-00”
- **HHP185W Small Water Stacking Frame:** specify part number “900-00017-00”
- **HHP185W Flowmeter Retrofit Kit 1.5-2″:** specify part number “900-00019-00”
- **HHP270WM Flowmeter Retrofit Kit 1.5-2″:** specify part number “900-00019-00”
- **HHP270WM High Current Retrofit Kit:** specify part number “900-00020-00”

Please consult the Hubbell sales team or your rep for sizing, help with the pre-sale form and pricing.