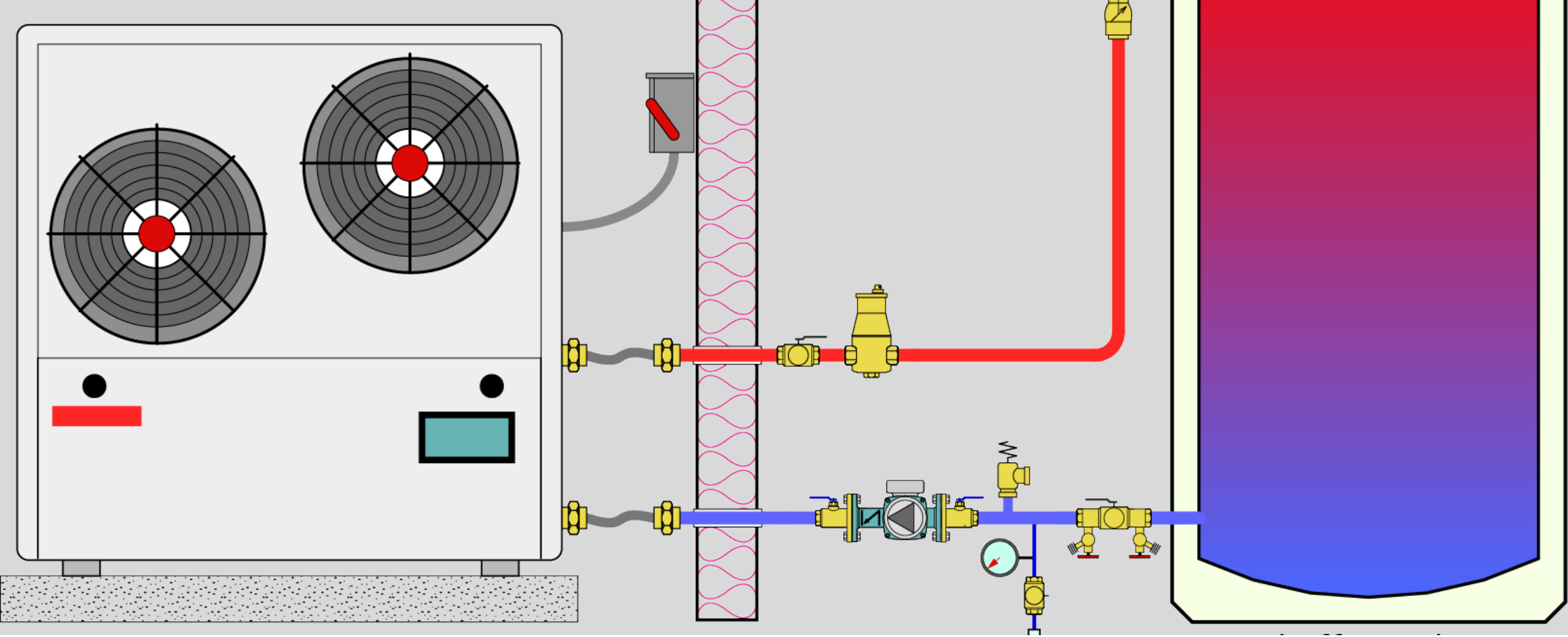


Certification Training

Solstice Air-to-Water Heat Pump & Hydronic Products

SPACE PAK®

FAQs

I'm having problems with the audio, what should I do?

- If you joined this webinar using **Computer/Internet Mode**, you should **dial in by phone** with the number and access code **provided in the invitation email**.
- Call Technical Support: (855) 352-9002

Will I receive the recording of this webinar?

- Yes, one hour after this webinar has ended you will receive an **email with a link** to the recorded video.

Can I receive a PDF copy of today's presentation?

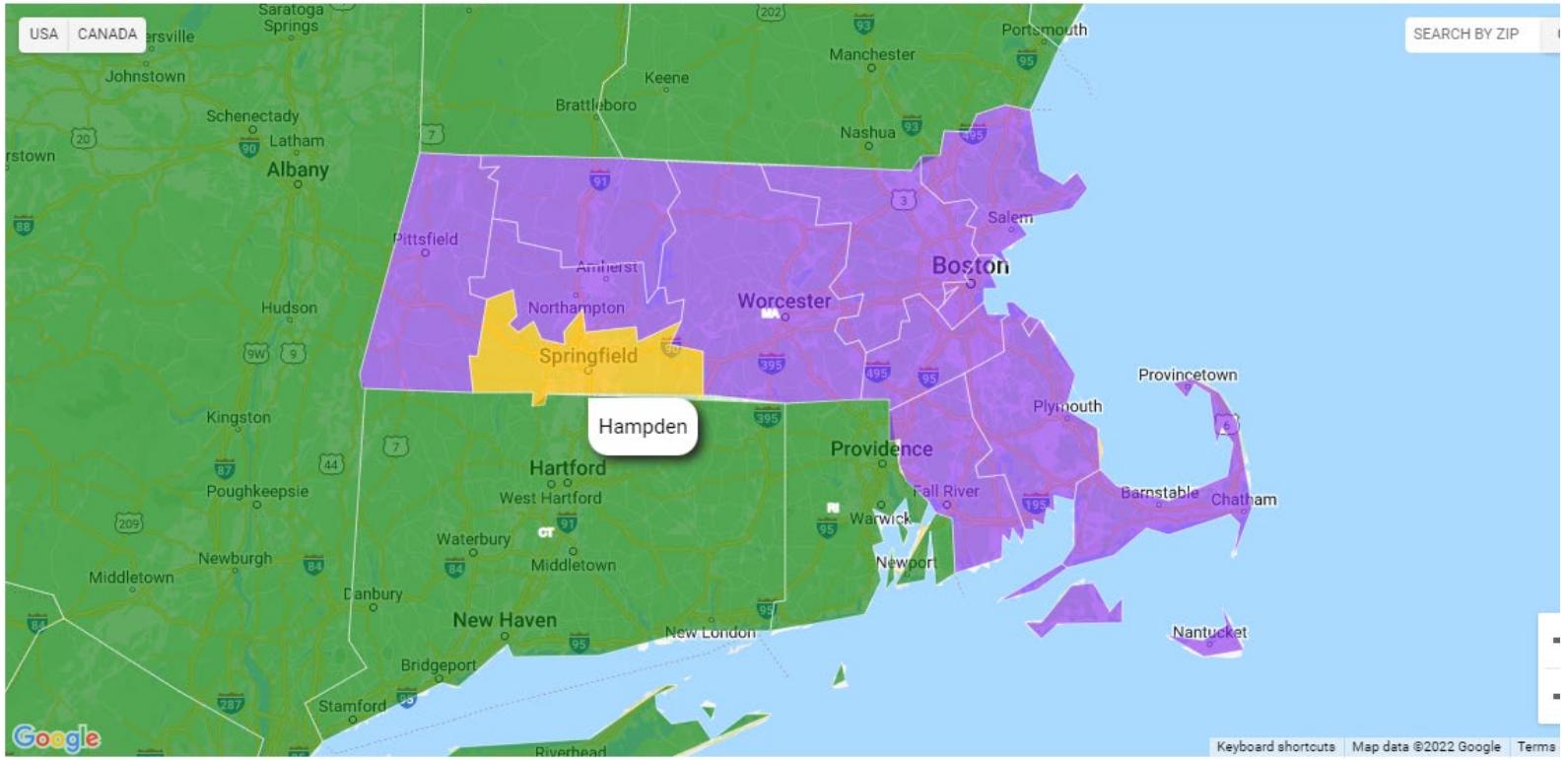
- Yes! Select **YES** in the **post-webinar survey**.

Will this recording be uploaded to YouTube?

- **Not currently.** Next month we will be hosting a more general overview webinar with unlimited seating, which we will upload to our YouTube page at that time.

FAQs

For all **pricing and availability questions**, please contact your local SpacePak Representative. For contact information visit: www.spacepak.com/RepLocator



General House Keeping

Please make sure your **audio is kept on MUTE** unless you have been called on to ask a question.

During Q&A sessions; please **raise your hand** and wait to be called on before you unmute and speak via mic.

Questions typed into the chat bar will be answered via written reply or by our trainer during the Q&A sessions, or throughout the presentation.

Handouts to Download

- All Products Brochure
- Project Design Form
- Tips & Tricks Book
- SpacePak High-Res Logos

SPACE PAK®

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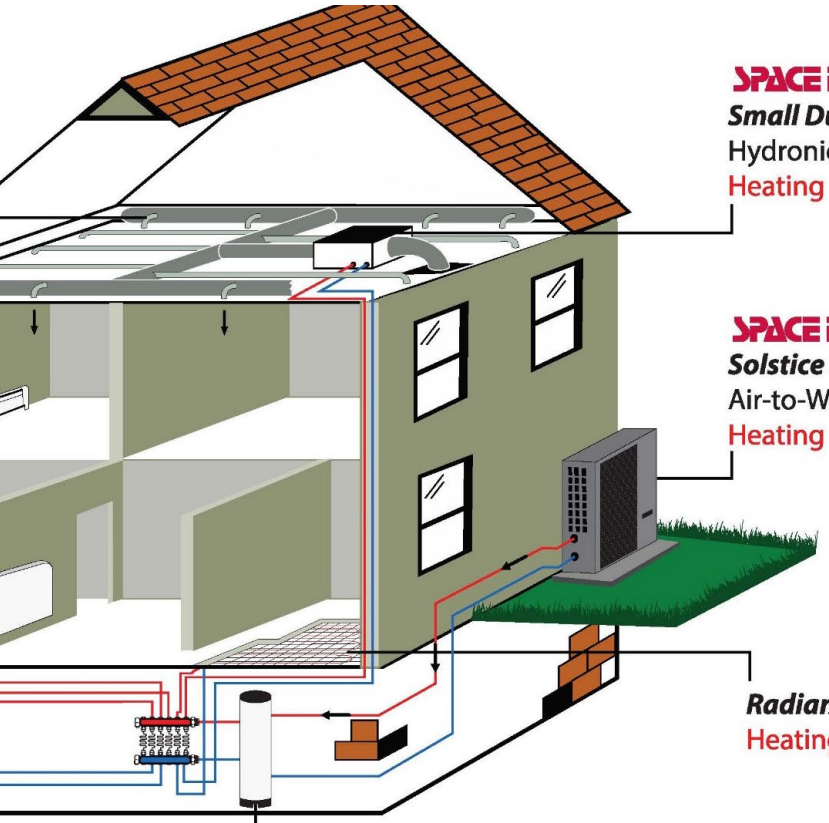
HEAT PUMPS

March 22nd, 2022



SPACE PAK
Small Duct High Velocity Air Handler
Hydronic Fan Coil
Heating & Cooling

SPACE PAK
Solstice Series
Air-to-Water Heat Pump
Heating & Cooling

Radiant Flooring
Heating & Cooling

SPACE PAK
Buffer Tank
Hydronic Storage

SPACE PAK
ThinWall
Hydronic Fan Coil
Heating & Cooling

MESTEK, INC.

HVAC Division

Beacon Morris

RBI® RELIABLE. BOLD. INNOVATIVE.

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AIRTHERM A Mestek Company

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AIRLINE™ LOUVERS

King

ARROW UNITED INDUSTRIES

DADANCO feel the difference™

TEMPRITE® INDUSTRIES

AZTEC

CESCO PRODUCTS

abi

Applied Air

Sierra FRESH AIR SYSTEMS

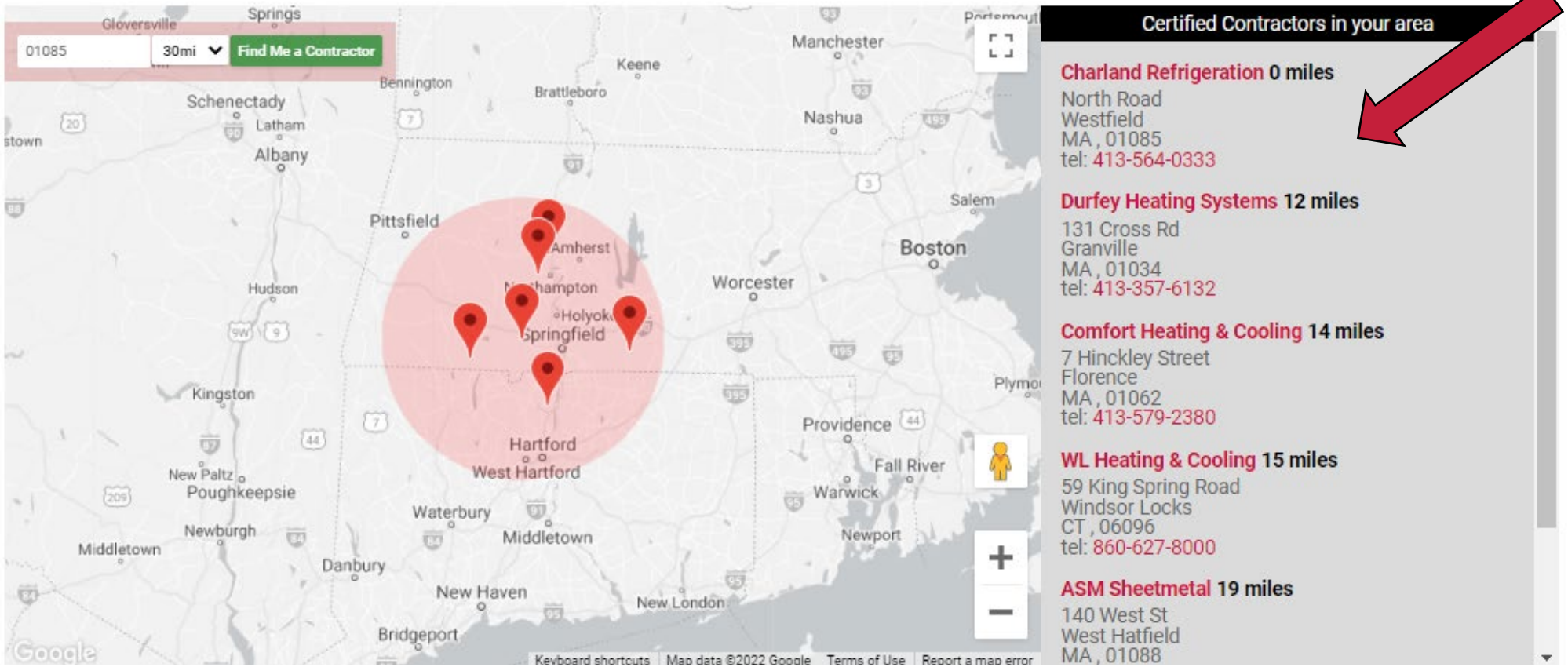
Hydronic Certified Contractor Benefits

- Local Leads via Lead Generation System
- Listed on SpacePak Website Contractor Map
- Pre-Sale Application Support, Load Calculations, Priority Tech Support
- Marketing Support
- Extended Warranty *with Product Registration*

Contractor Locator Map Lead Generation

NOTICE

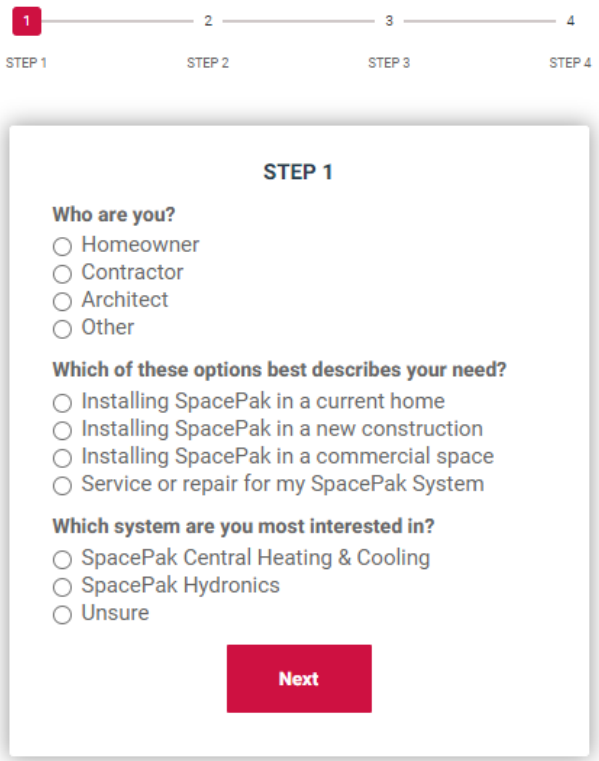
Your Company Here



Homeowner Jobs Emailed Directly to YOU as a Lead

Find a Certified Contractor

Are you interested in installing a SpacePak system in your home? Get the process started by requesting a free, no-commitment consultation. Once you've submitted your request, you'll receive contact information for local SpacePak certified contractors.



NOTICE

Extensive form guarantees only serious inquiries.

Warranty & Product Registration

To be eligible for extended warranties:

- Must be a SpacePak Certified Contractor
- Project/equipment must be registered at https://www.spacepak.com/warranty

SpacePak Air-to-Water (inverter series only)

- A NON-CERTIFIED contractor will receive a two (2) year parts and five (5) year compressor warranty
- A CERTIFIED contractor will receive a five (5) year parts and a ten (10) year compressor warranty

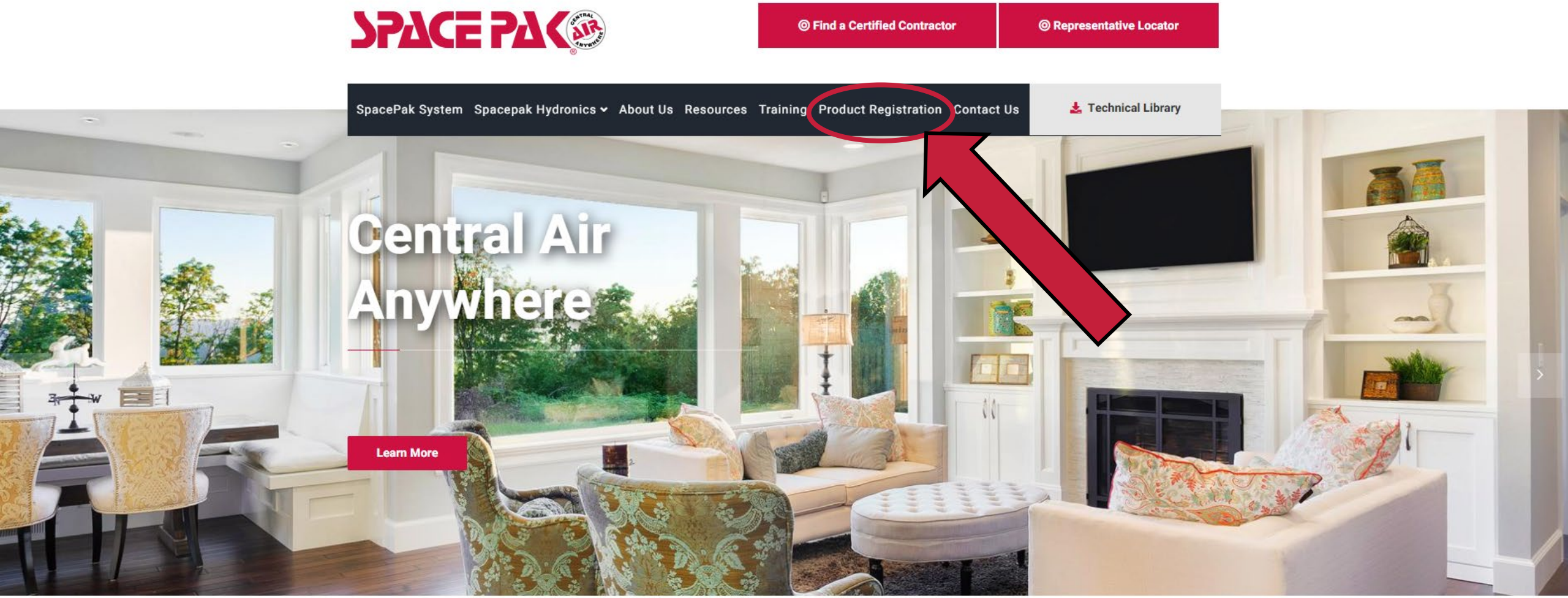
SpacePak SDHV, hydronic fan coils and associated equipment

- A NON-CERTIFIED contractor will receive a one (1) year parts warranty
- A CERTIFIED contractor will receive a five (5) year parts warranty

SpacePak Buffer Tanks

- A standard ten (10) year warranty will be issued on all buffer tanks

Must Register Equipment for Extended Warranty



◎ Find a Certified Contractor

◎ Representative Locator

SpacePak System | Spacepak Hydronics | About Us | Resources | Training | Product Registration | Contact Us | Technical Library

Warranty Registration

1 Who are you? — 2 Contractor Info — 3 End-User Info — 4 Equipment Registration

Who are you?

- ○ Homeowner/End-user
- ○ Installing Contractor

Next

FOR INSTALLING CONTRACTORS

If your company is an installing contractor seeking:

- Factory-authorized certification status
- Extended warranty
- Added to Contractor Locator Map on Website
- Local Leads form Homeowners

The please select YES in the post-webinar survey and we will email you the registration form.

SpacePak Team Provides Pre-Sale Support

PreSaleSupport@SpacePak.com

Pre-Sale Support is a team of application engineers who provide optimal turnaround in answering your questions regarding system design and layout as well as assistance in equipment selection and job quoting.

- Available to Representatives, Wholesalers and Contractors
- Any questions regarding equipment already shipped should be directed to: (413) 564-5530
- TechnicalService@SpacePak.com: (413) 564 - 5530

The Big Air to Water Question:

Is it a Heat Pump or is it a Chiller?

Are they the same or are they different?

SpacePak units are both a Heat Pump and a Chiller. They can be called either, as they perform both operations. The deciding factor is your geographic location and the units primary use (Heating or Cooling).

There Are 2 Basic Types of ATWHPs

Monobloc Design

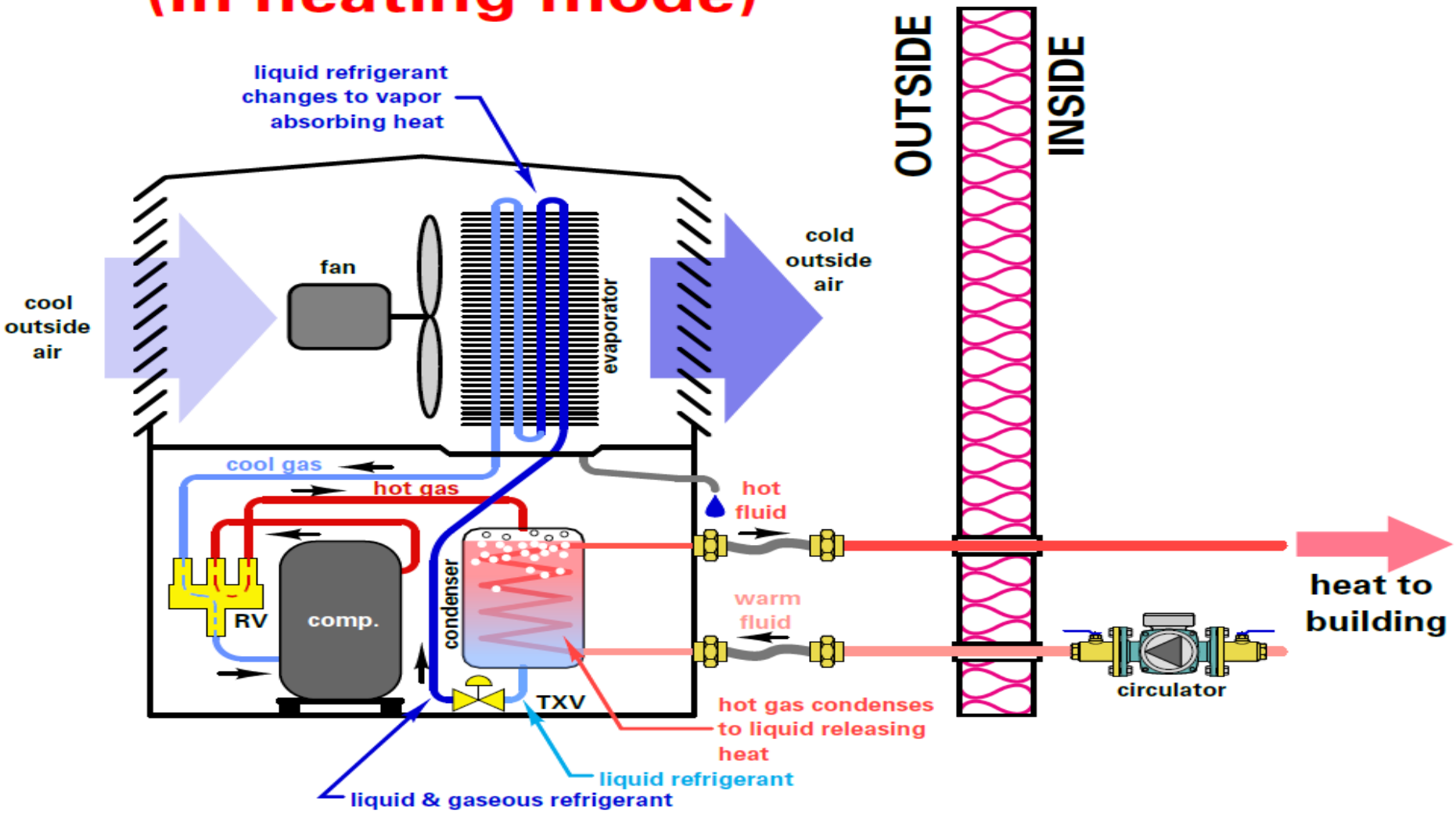
This design arrives pre-charged and is installed outside. It is then piped to the buffer tank inside and then on to the system.
This unit requires no on-site refrigerant work.

Split System Design

This design leaves the compressor outside with the refrigerant to water exchanger inside. These units are connected with a Standard line set (included). Refrigerant knowledge and certification is Required for this type of installation.

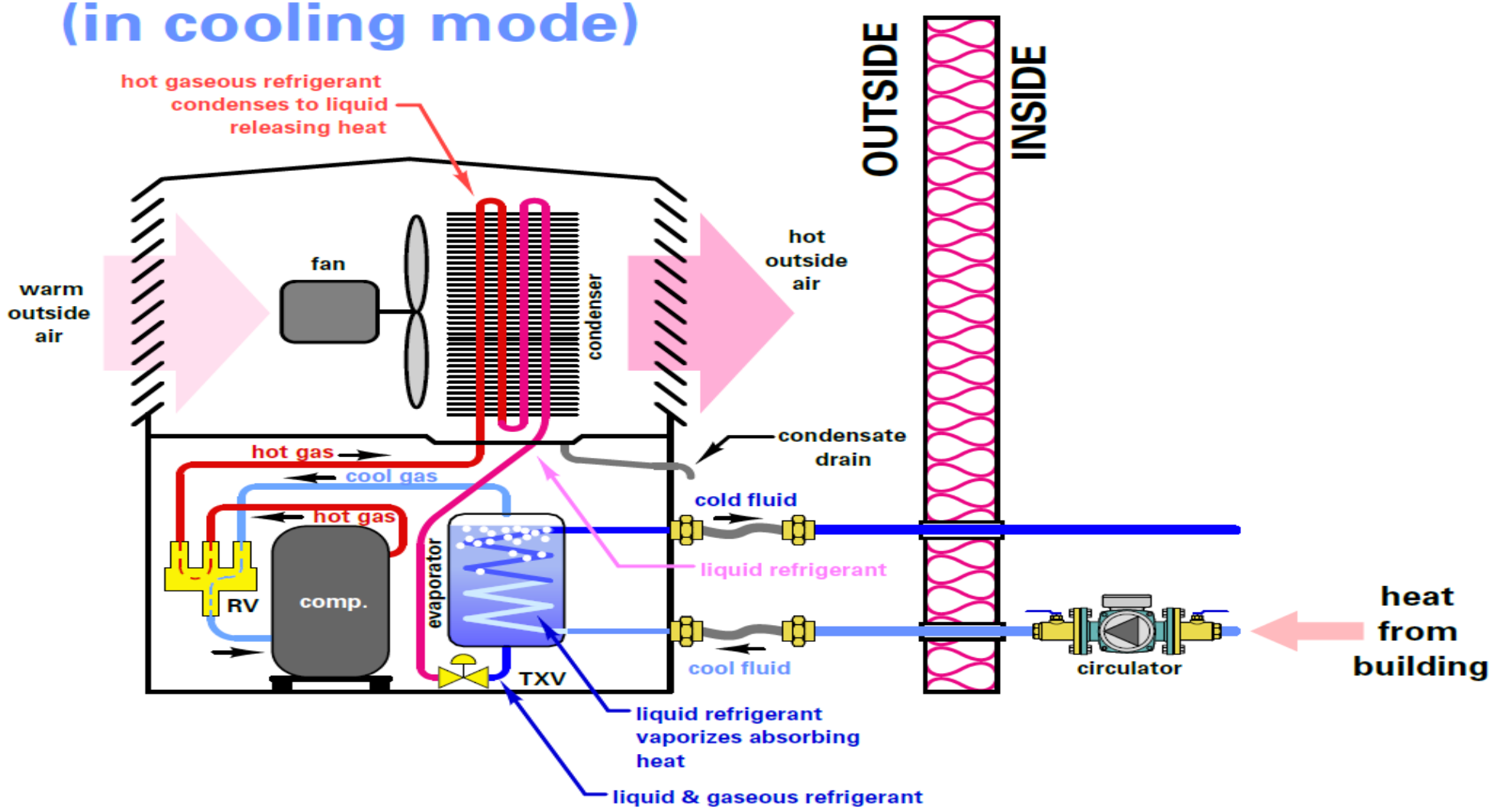
How they work (monobloc design)

(in heating mode)



How they work (monobloc design)

(in cooling mode)



The Heat Pump Solution- WHY?

- Flexibility
- Ease of zoning (limited only by one's ability to size systems)
- Water carries more BTUs (per physical pipe size)
- Integrates with existing hydronic, solar, geothermal
- Partial load capabilities (vary water temperatures and flows)
- Simpler maintenance - Water vs DX.. No reclaiming
- Not restricted in length and lift of line set (monobloc)
- Better dehumidification

Coefficient of Performance (COP=the measure of efficiency)

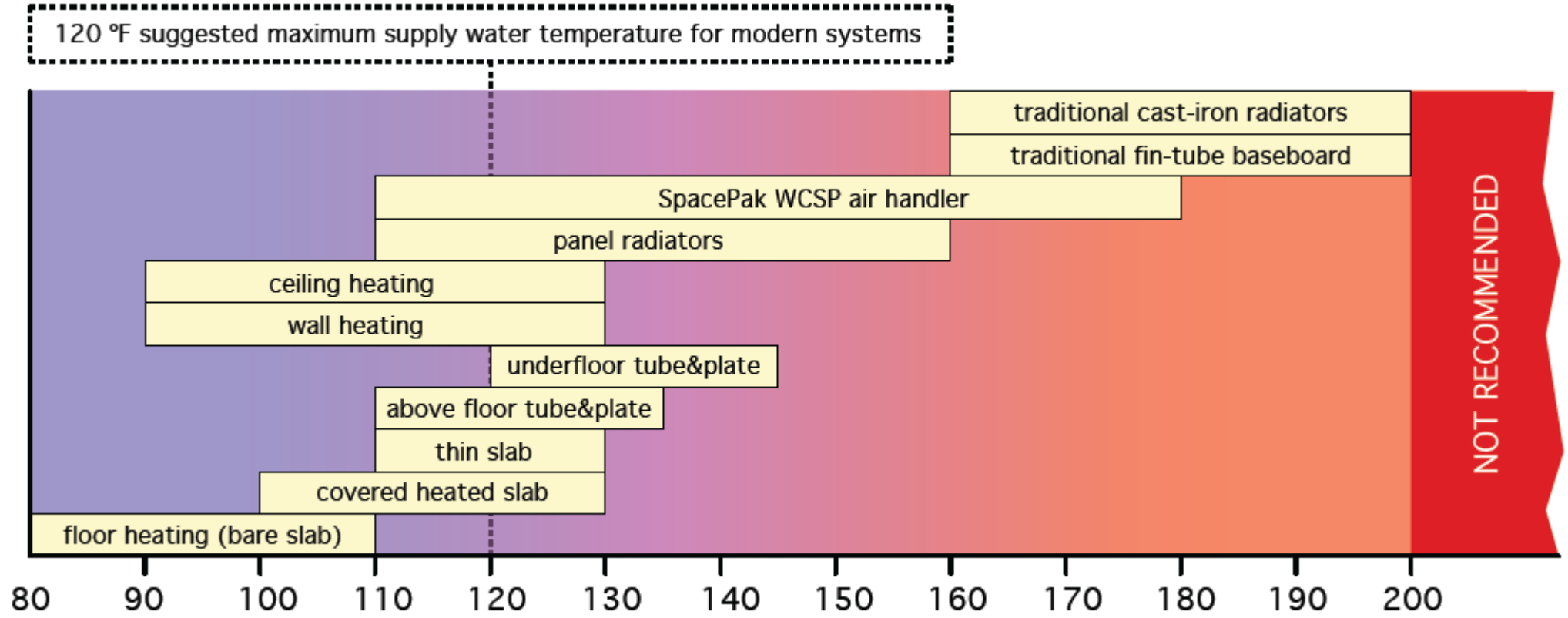
"COP" can be thought of as a "Dollar"

For example, if the unit is running at the COP of 1, that would mean with 1 Dollar worth of Energy input you would receive 1 dollar worth of energy back (100% efficient)

In a higher operational COP of 3, it would show that with 1 Dollar worth of energy input you would receive 3 dollars worth of energy output in return - resulting in a much higher efficiency.

Note: This is the general unit of measure for efficiency for air-to-water heat pumps

Preferred Water Temperatures (WE DELIVER)



Note: **These required temperatures make our Heat Pumps a perfect fit for these applications**

GREEN BY NATURE (Monobloc Design)

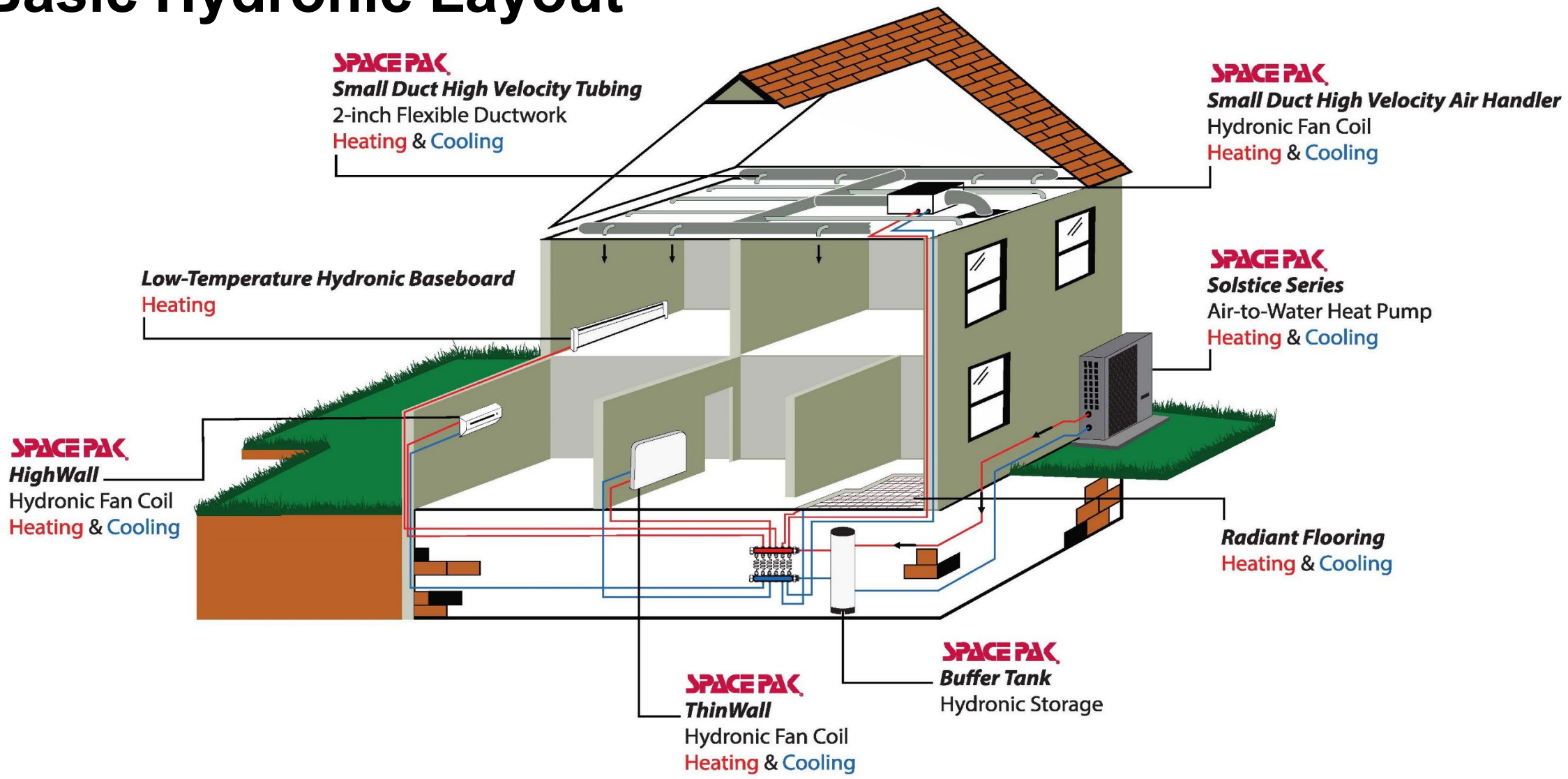
An ultra safe and environmentally friendly design keeps all refrigerant sealed in its powder coated galvanized steel cabinet and outside the occupied space. Heat pump high efficiency compressors operate on R-410A but use only a fraction of the refrigerant needed by other systems, while providing superior performance and high COP and EER.

Solstice heat pumps run quieter than traditional systems with their dual fan, horizontal discharge configuration and soft start activation.

solstice®
HEAT PUMPS

Are there any Questions?

Basic Hydronic Layout



Why Does Water Work?

- Flexibility
- Ease of zoning (limited only by one's ability to size systems)
- Water carries more BTUs (per physical pipe size)
- Integrate with existing hydronic, solar, geothermal
- Partial load capabilities (vary water temperatures and flows)
- Simpler maintenance - Water vs DX.. No reclaiming
- Not restricted in length and lift of line set
- Better dehumidification

Our Monobloc Heat Pumps Can be Installed in Remote Locations

Note: Distances are only limited by the ability to size the pump and piping in accordance with required flow requirements and pressure drop, this creates opportunity for unlimited applications!

Solstice Inverter Monobloc (SIM)

Features & Benefits

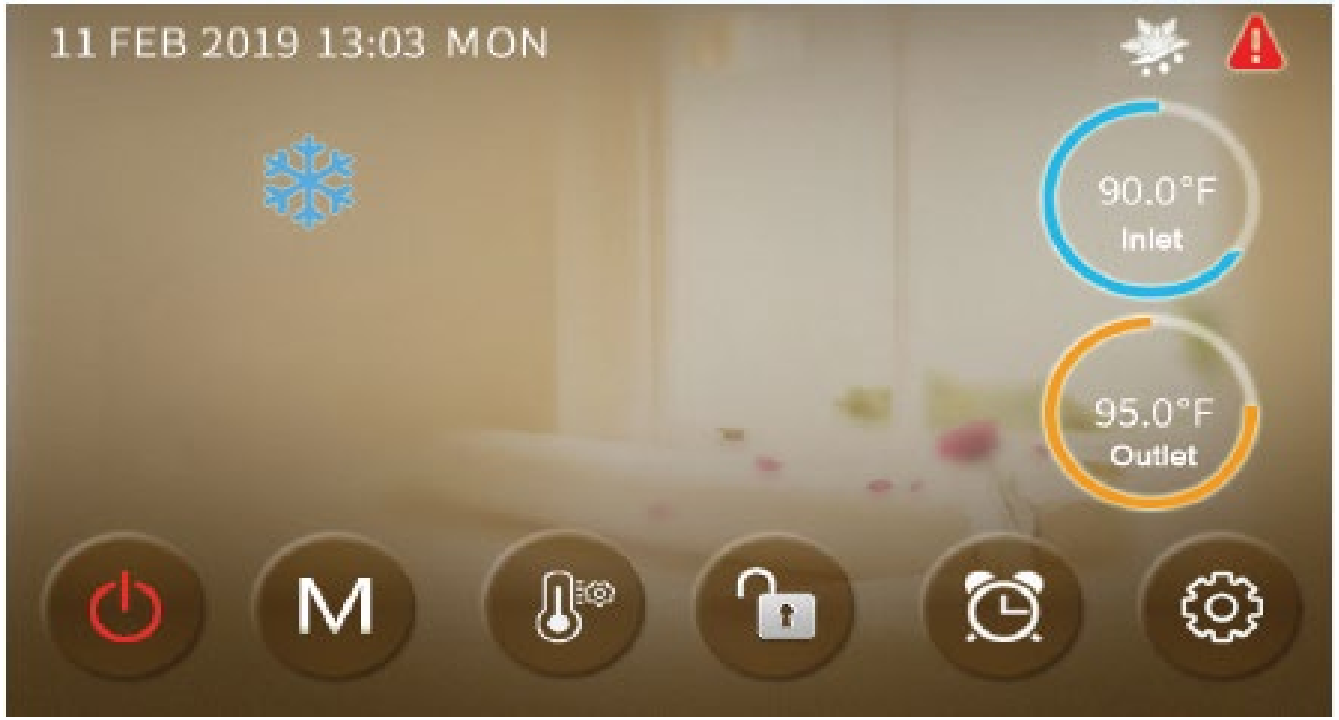
- Industry Proven Solstice Technology
- Supplies Low Temperature Water for Heating & Chilled Water For Cooling
- 42-130°F Output Temperature Ranges
- Controls on Return Water Temperature
- Reliable Mitsubishi Inverter Compressor
- Low Ambient Cooling Capabilities
- Available in 3- and 5-ton Models
- Domestic Hot Water Offset
- Monobloc Design (No On-Site Refrigerant Charging)
- Keeps all Refrigerant Outside the Occupied Space
- Freeze Protection
- Low Amp Draw with Ultra Quiet Operation
- User Friendly Touch Screen Control (24ga shielded 5 wire. Can be remote mounted up to 600ft)
- Precision Temperature Control Platform
- DC Driven Fan Motors
- Eligible for Rebates

Industry Leading 10-Year Compressor Warranty & 5-Year Parts Warranty for Certified Contractors

SIM-036

SIM-060

SIM Touch Screen Control



User friendly touch screen control allows for control outside by the unit or inside in the mechanical room.

Solstice Inverter Monobloc SIM-036

Max Heating Capacity* (90hz)	BTU/h	38,755
Min Heating Capacity* (30hz)	BTU/h	13,191
Max Cooling Capacity** (90hz)	BTU/h	34,423
Min Cooling Capacity** (30hz)	BTU/h	12,704
Heating COP*		Up to 5.01
Cooling EER**		Up to 12.97
Maximum Running Current	A	18
Compressor Rating Load	A	9.7
Locked Rotor Current	A	35
Fan Motor Rating Current	A	0.8
Minimum Circuit Ampacity	A	20
Max Fuse/Circuit Breaker/Overload Device	A	30
Power Supply		230/1ph/60hz
Compressor Quantity		1
Compressor Type		Rotary
Fan Quantity		1
Fan Power Input	W	200
Max Fan Speed	RPM	750
Sound Power Level	dB(A)	54
Water Pressure Drop at rated flow	PSI	6
Water Connection	inch	1
Rated Water Flow	GPM	7
Unit Net Dimensions (L/W/H)	inch	38.6 x 18.3 x 35.4
Unit Shipping Dimensions (L/W/H)	inch	40.9 x 19.3 x 36.2
Net Weight	lb.	242.5
Shipping Weight	lb.	271

Test Condition (AHRI 550/590)
**Cooling :
Ambient Temperature, DB: 95°F
Entering/Return Water Temperature: 59°F
*Heating:
Ambient Temperature:(DB/WB): 45°F/43°F
Entering/Return Water Temperature: 86°F

Solstice Inverter Monobloc SIM-060

Max Heating Capacity* (90hz)	BTU/h	70,666
Min Heating Capacity* (30hz)	BTU/h	25,413
Max Cooling Capacity** (90hz)	BTU/h	59,523
Min Cooling Capacity** (30hz)	BTU/h	17,884
Heating COP*		Up to 4.67
Cooling EER**		Up to 11.60
Maximum Running Current	A	21
Compressor Rating Load	A	19
Locked Rotor Current	A	50
Fan Motor Rating Current	A	2×0.8
Minimum Circuit Ampacity	A	26
Max Fuse/Circuit Breaker/Overload Device	A	40
Power Supply		230/1ph/60hz
Compressor Quantity		1
Compressor Type		Rotary
Fan Quantity		2
Fan Power Input	W	200×2
Max Fan Speed	RPM	750
Sound Power Level	dB(A)	58
Water Pressure Drop at rated flow	PSI	10
Water Connection	inch	1 1/4
Rated Water Flow	GPM	13
Unit Net Dimensions (L/W/H)	inch	39 x 13 x 52
Unit Shipping Dimensions (L/W/H)	inch	42 x 18 x 53
Net Weight	lb.	326
Shipping Weight	lb.	368

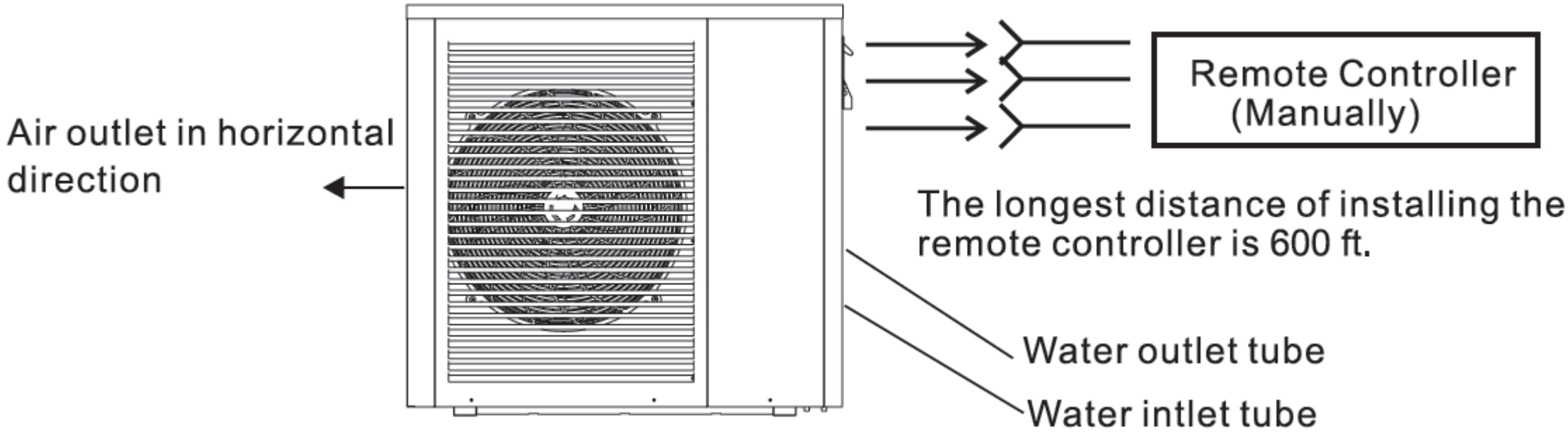
Test Condition (AHRI 550/590)
**Cooling :
Ambient Temperature, DB: 95°F
Entering/Return Water Temperature: 59°F
*Heating:
Ambient Temperature:(DB/WB): 45°F/43°F
Entering/Return Water Temperature: 86°F

Glycol-Water System (Monobloc)

Figure 1 SIM Glycol Concentrations (10% Minimum, 50% Maximum)

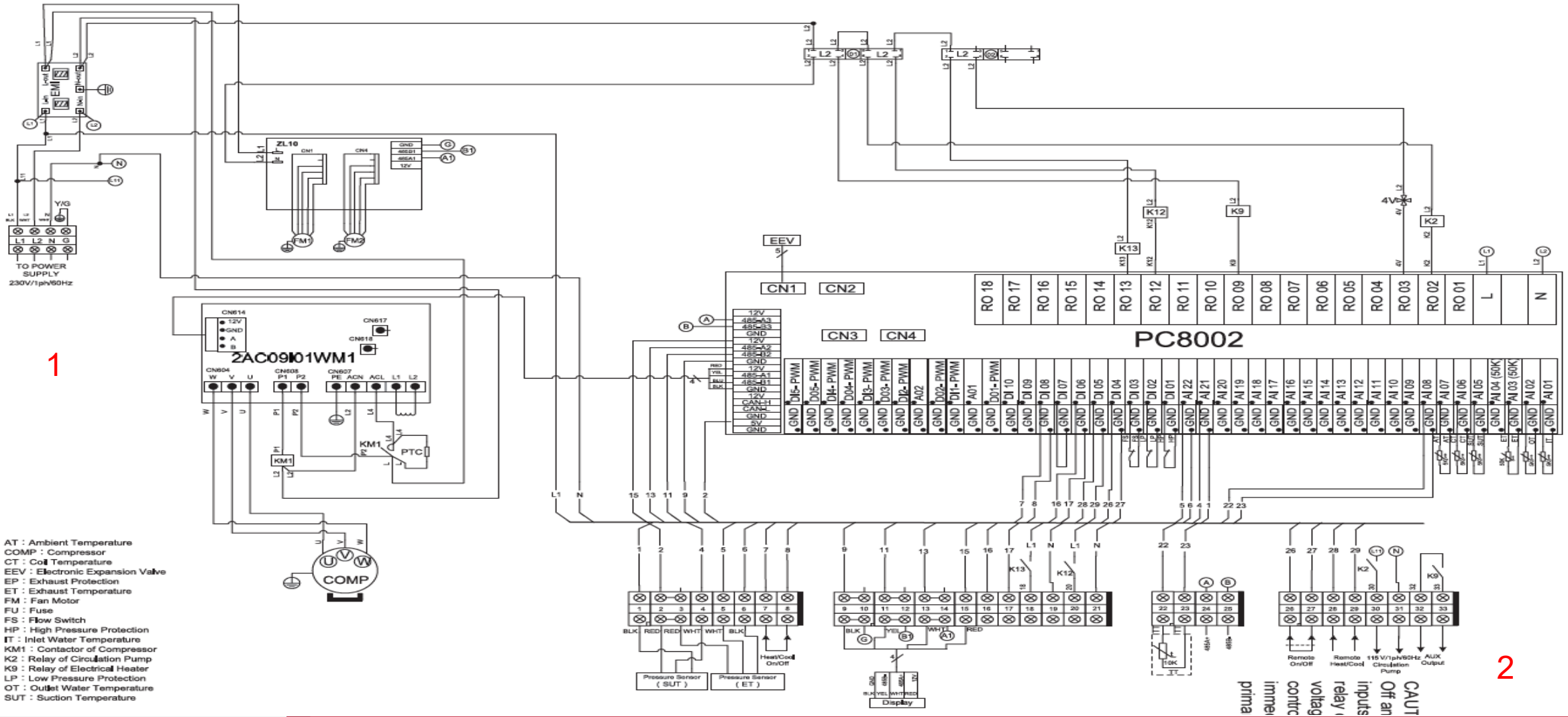
Ethylene Glycol %	10	20	30	40	50
Min. Ambient Temp for Operation	23°F/-5°C	14°F/-10°C	2°F/-17°C	-13°F/-25°C	-36°F/-38°C
SpacePak Capacity Multiplier	0.98	0.96	0.93	0.91	0.89
Pressure Drop Multiplier (Cooling)	1.06	1.12	1.16	1.25	1.36
Pressure Drop Multiplier (Heating)	1.06	1.12	1.16	1.22	1.28
Minimum Expansion Volume / System Volume					
Heating and Cooling (Gallons)	1 gallon expansion per 15 gallons system volume				
Heating only, HP only (Gallons)	1 gallon expansion per 20 gallons system volume				
Heating Only, with Boiler (Gallons)	1 gallon expansion per 15 gallons system volume				
Propylene Glycol %	10	20	30	40	50
Min. Ambient Temp for Operation	26°F/-3°C	18°F/-8°C	8°F/-13°C	-7°F/-22°C	-29°F/-34°C
SpacePak Capacity Multiplier	0.99	0.98	0.96	0.93	0.88
Pressure Drop Multiplier (Cooling)	1.10	1.20	1.34	1.5	1.65
Pressure Drop Multiplier (Heating)	1.10	1.20	1.34	1.46	1.5
Minimum Expansion Volume / System Volume					
Heating and Cooling	1 gallon expansion per 15 gallons system volume				
Heating only, HP only	1 gallon expansion per 20 gallons system volume				
Heating only, with Boiler	1 gallon expansion per 15 gallons system volume				

SIM-036/060 Touch Screen Display Wiring Layout



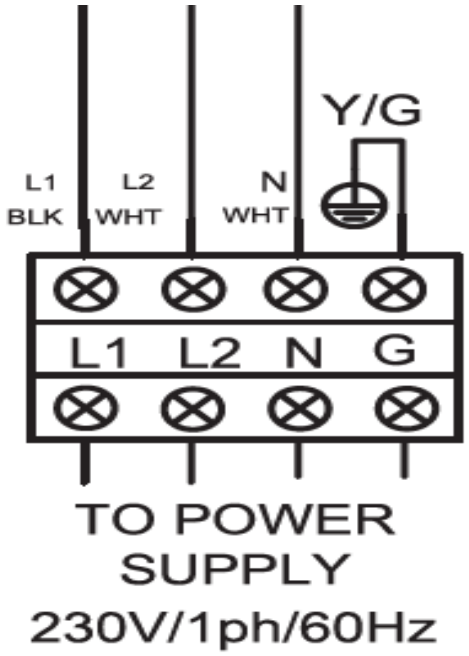
NOTE: A 65-foot 5 conductor shielded wire is supplied with the unit. In cases of longer runs field supplied shielded wire can be used however the factory supplied Molex connectors will have to be attached at either end for proper installation.

SIM-036/060 Wiring Overview

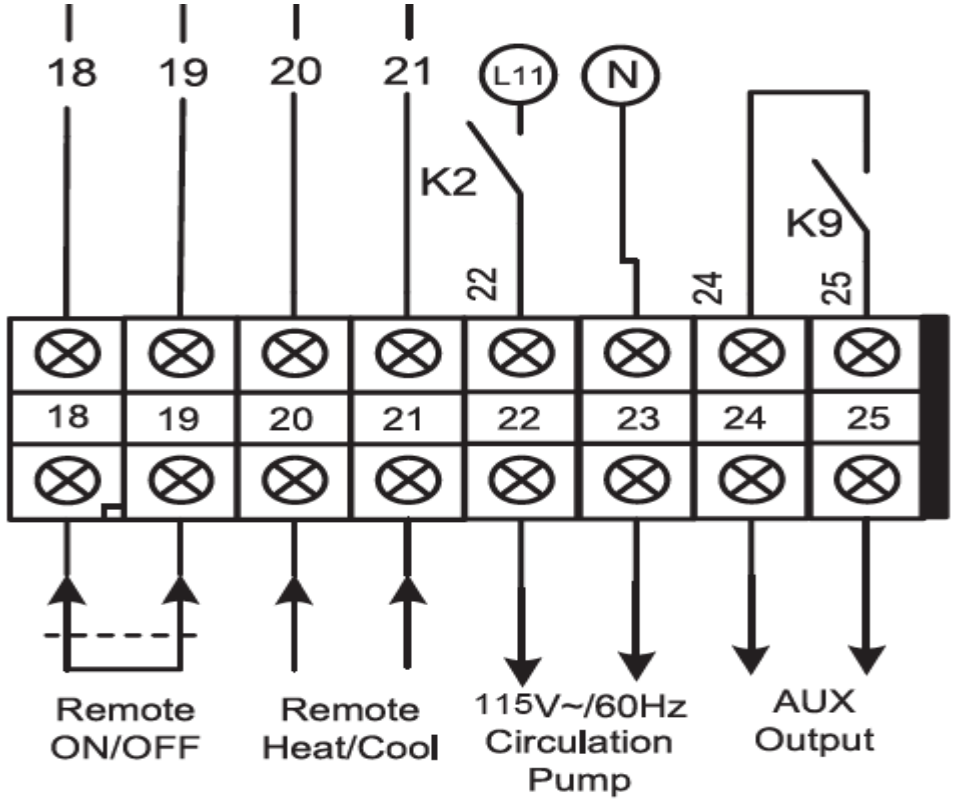


AT : Ambient Temperature
COMP : Compressor
CT : Coil Temperature
EEV : Electronic Expansion Valve
EP : Exhaust Protection
ET : Exhaust Temperature
FM : Fan Motor
FU : Fuse
FS : Flow Switch
HP : High Pressure Protection
IT : Inlet Water Temperature
KM1 : Contactor of Compressor
K2 : Relay of Circulation Pump
K9 : Relay of Electrical Heater
LP : Low Pressure Protection
OT : Outlet Water Temperature
SUT : Suction Temperature

SIM-036/060 Field Wiring



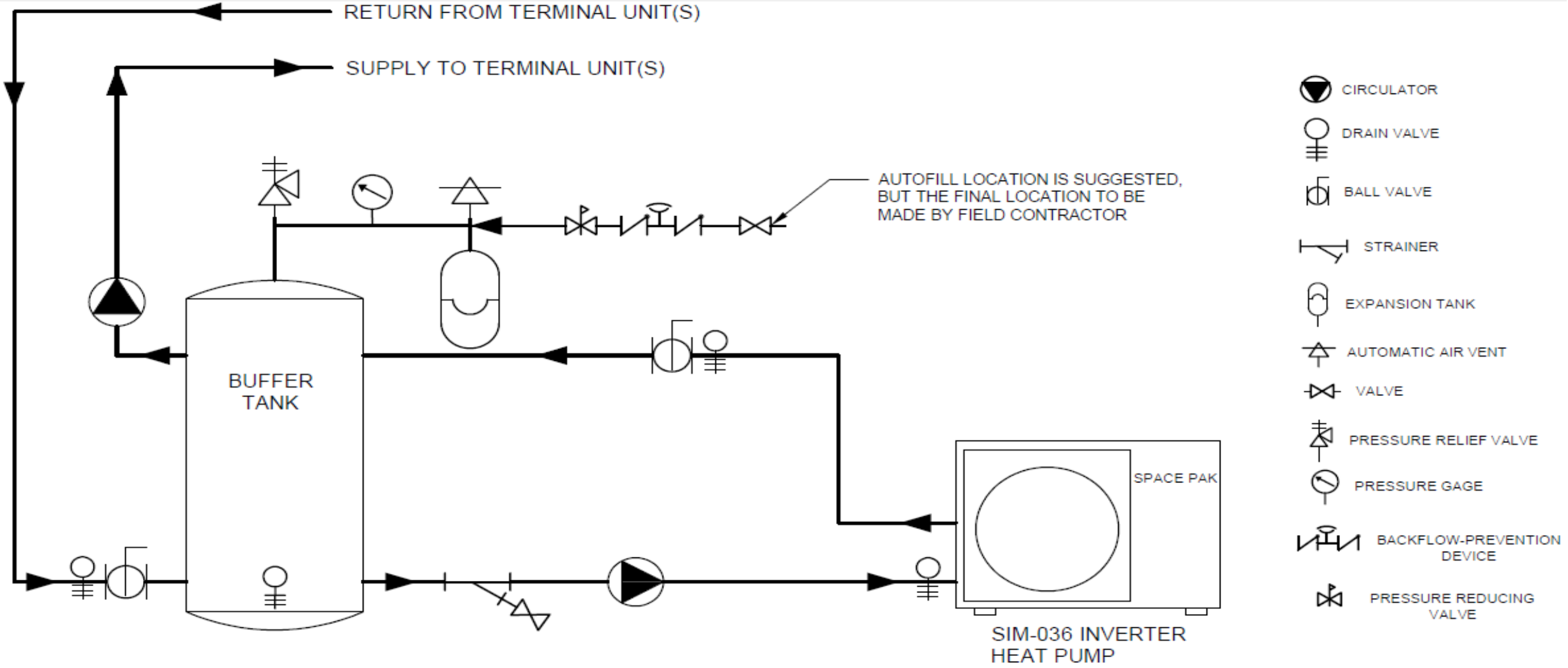
1-Line Voltage



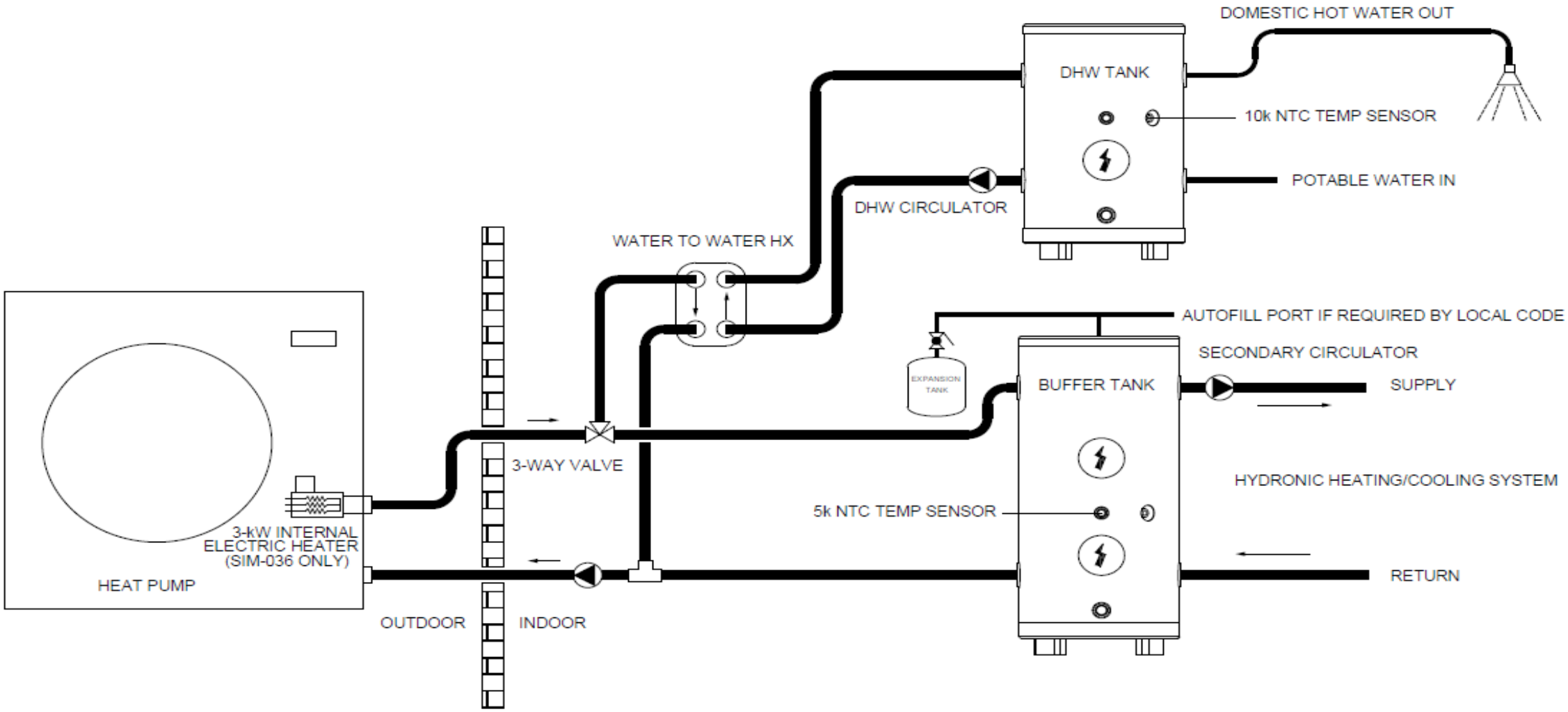
2- Control and Pump

Note: Depending on the control strategy chosen there may be the need to run additional low voltage signal wires from the mechanical room to the outside unit. (in addition to the touch screen control wiring)

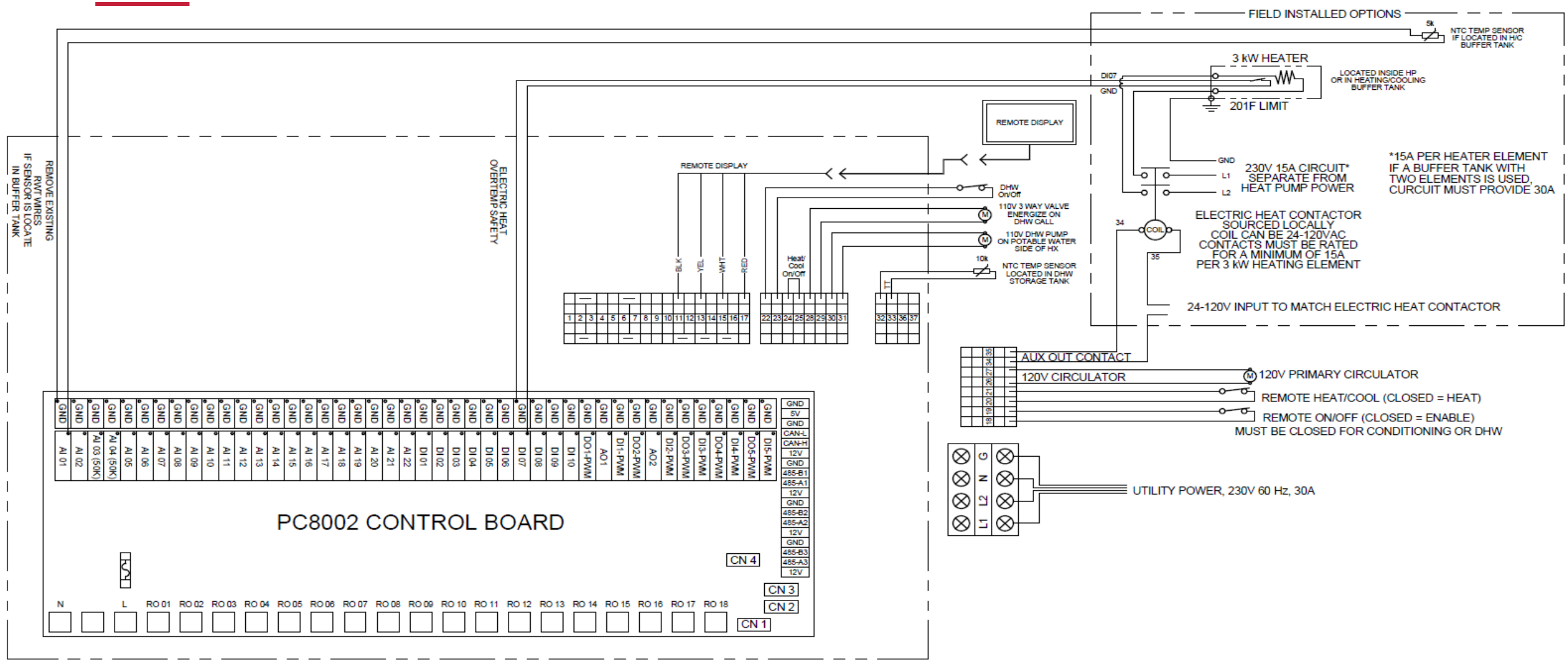
SIM-036/060 Piping (Basic)



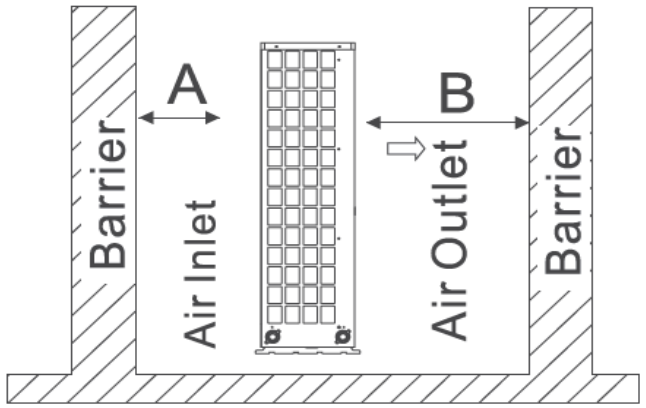
SIM-036/060 Basic Heat and DHW Offset Piping

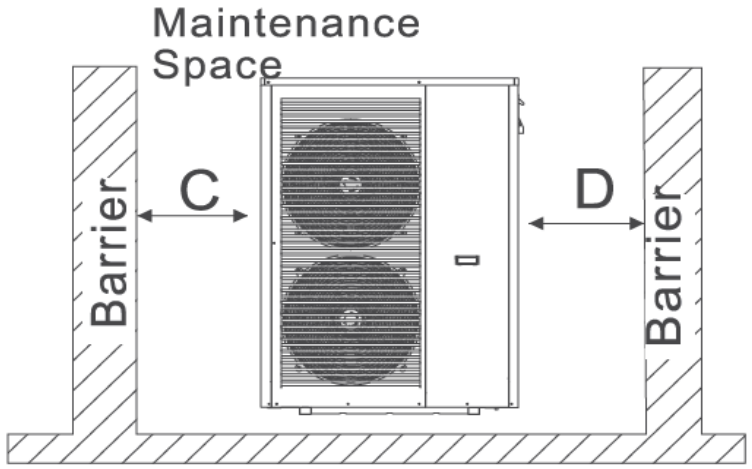


SIM-036/060 with Optional Electric Heat and Hot Water Functions



SIM Installation Clearances (Allow for Defrost)





The picture shows the location of horizontal air outlet unit.

Attention

Requirements
A>20inch ; B>59inch ;
C>20inch ; D>40inch;

SIM Installations

Hudson, NY

Old Chatham, NY

California

Lincoln, NE

San Francisco, CA

Attleboro, MA

Are there any Questions?

Solstice Inverter Split (SIS) Low Ambient Split System Heat Pump

Features & Benefits

- Industry Proven Solstice Technology
- Supplies Low Temperature Water for Heating & Chilled Water For Cooling
- Reliable Panasonic EVI Inverter Compressor
- Extreme Low Ambient Heating Performance Down to -20°F
- Temperature Range 42-131°F Delivered
- Controls on Supply Water Temperature
- Available in 5-ton Model
- Split Design Provides the Flexibility to Reduce the Use of Glycol in the Hydronic Loop
- SIS System Includes both Indoor and Outdoor Units, Refrigerant Line Set (35'), and Control Wire (50')
- Simple Indoor Piping Similar to Wall Hung Boilers
- Freeze Protection
- Low Amp Draw with Ultra Quiet Operation
- User Friendly Touch Screen Control
- Precision Temperature Control Platform
- DC Driven Fan Motors & EC Modulating Fans
- Eligible for Rebates

Industry Leading 10-Year Compressor Warranty & 5-Year Parts Warranty for Certified Contractors

SIS-060

Indoor Unit

Outdoor Unit

	Units	Outdoor	Indoor
Heating Capacity Range*	Btu/Hr	20,473-71,574	
Heating Efficiency*	COP	Up To 3.09	
Heating Capacity Range**	Btu/Hr	14,777-47,315	
Heating Efficiency**	COP	Up to 2.15	
Cooling Capacity Range***	Tons	2.5-5.2	
Cooling Efficiency***	EER	12.5	
Cooling Efficiency****	IPLV	17.14	
Water Temp Range (reads on supply)	Deg F	41-140	
Compressor Frequency	Hz	30-90	
Power Supply	V/Ph/Hz	230/1/60	
MCA	Amps	40	15
MOPD	Amps	50	15
Refrigerant		R410A	
Refrigeration Connection		3/8 & 5/8 Flare	
Compressor		Panasonic Inverter-Drive EVI Scroll	N/A
Water Connection	N.P.T.	N/A	1"
Pressure drop (12 G.P.M)	P.S.I/ft W.C.	N/A	10.7/24.7
Fan Motor (Modulating)		EC Controlled	N/A
Noise Level (@3meters)	dbA	50	38
Net Weight	Lbs	293	132
Shipping Weight	Lbs	337	158
Net Dimensions (L/W/H)	Inches	35x15x55	17x14x30
Shipping Dimension (L/W/H)	Inches	37x17x55	33x21x17
Operating Ambient Temp	Deg F	-20-110	

*Water out- 120°F, Ambient- 47°F, G.P.M-12
**Water out- 120°F, Ambient- 17°F, G.P.M-12
***Water out- 45°F, Ambient (DB/WB)@- 95°F/86°F, G.P.M-12

****IPLV is the recognized measurement of efficiency for Integrated Part Load Values in accordance with AHRI 550/590. Ambient temp = 95°F. Delivered Water = 44°F (8.5GPM)

SIS- Compressor and Fan Motors (both inverter)

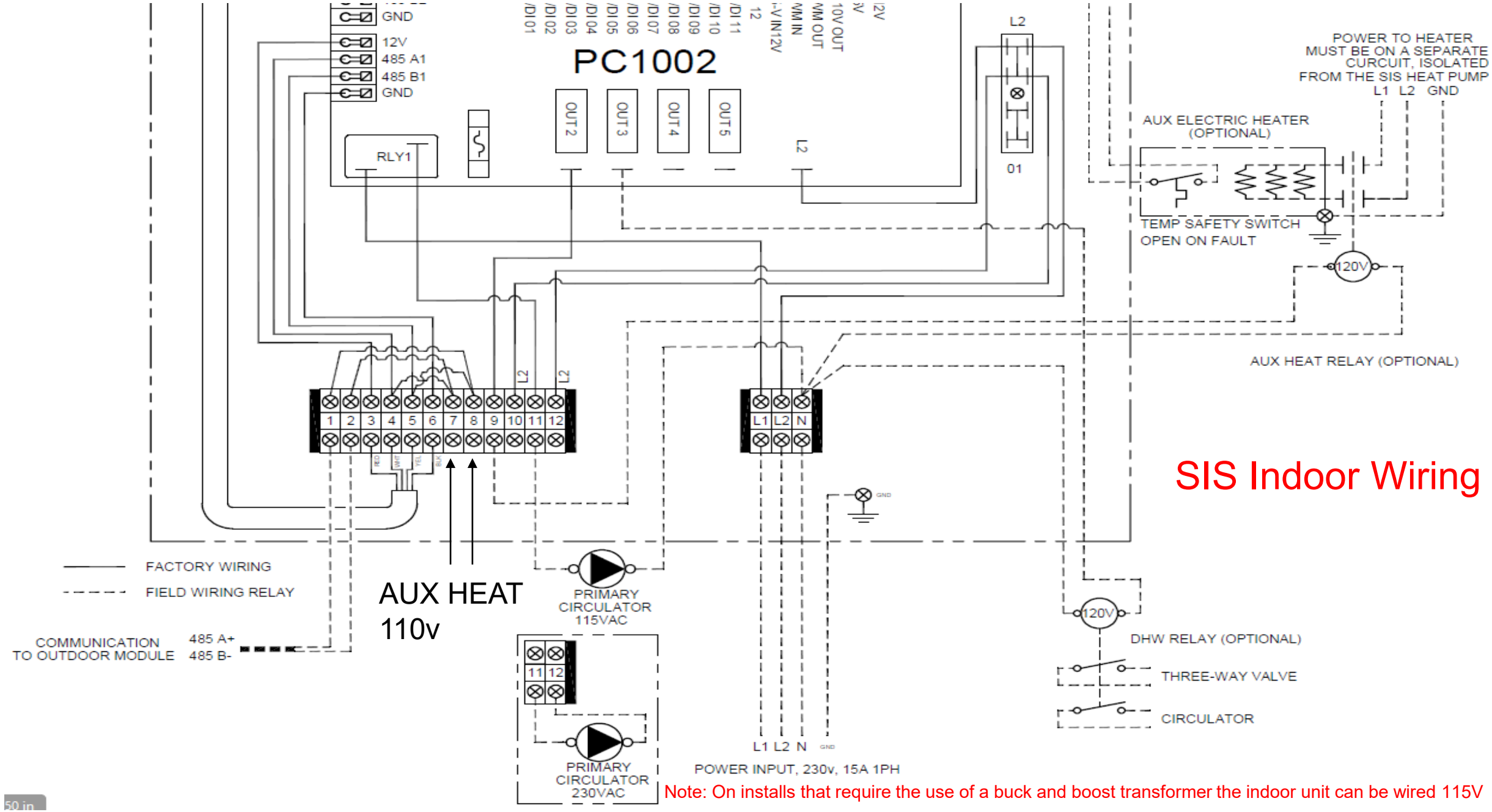
Units use inverter driven compressors with EVI technology for superior performance efficiency at temperatures as low as -22°F.

EC controlled modulating fan motors combined with high efficiency blade profile ensure quiet end efficient operation while exchanging energy with the outdoor air.

Glycol Considerations (Split System)

Table 1 SIS Glycol Concentrations (10% Minimum, 35% Maximum)

Propylene Glycol (concentration by volume)	10%	20%	25%	30%	35%
Min. temp of burst protection	22°F/-5.6°C	11°F/-11.7°C	-1°F/-18.3°C	-18°F/-27.8°C	-46°F/-43.3°C
Capacity Multiplier	0.99	0.98	0.97	0.96	0.94
Pressure Drop Multiplier (Cooling)	1.1	1.2	1.27	1.34	1.42
Pressure Drop Multiplier (Heating)	1.1	1.2	1.27	1.34	1.4
Minimum Expansion Volume/System Volume					
Heating and Cooling	1 gallon expansion per 15 gallons system volume				
Heating only, HP Only	1 gallon expansion per 20 gallons system volume				
Heating Only, with Boiler	1 gallon expansion per 15 gallons system volume				

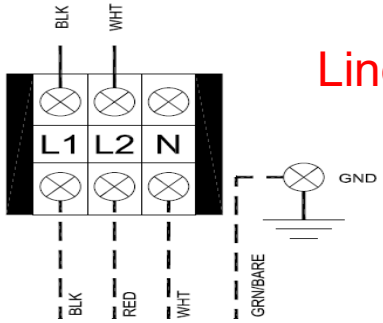


SIS Indoor Wiring

Note: On installs that require the use of a buck and boost transformer the indoor unit can be wired 115V

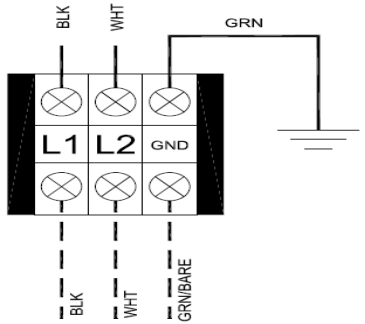
SIS Specifications/ Basic wiring

INDOOR MODULE



Line Voltage

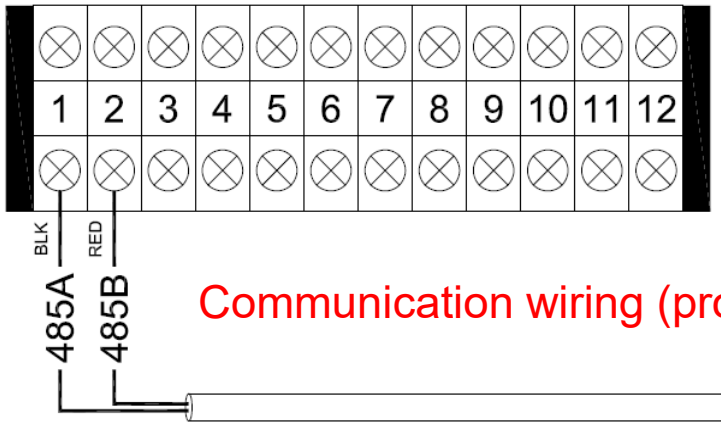
OUTDOOR MODULE



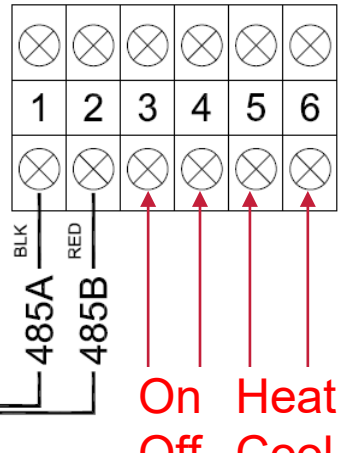
MIN CIRCUIT AMPACITY 15A
MAX FUSE/BREAKER 15A

MIN CIRCUIT AMPACITY 40A
MAX FUSE/BREAKER 50A

INDOOR MODULE



OUTDOOR MODULE



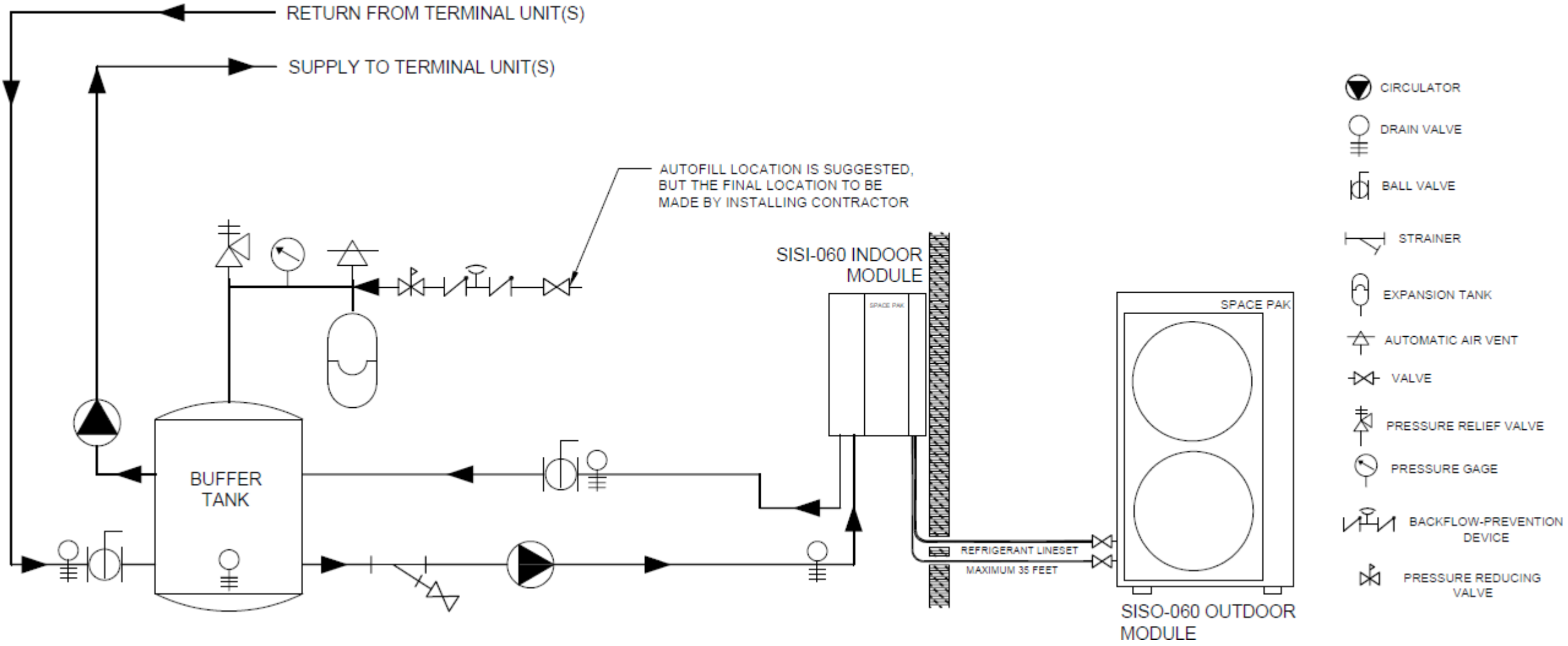
Communication wiring (provided)

		Outdoor	Indoor
Heating Capacity Range*	Btu/hr	20,473-71,574	
Heating Efficiency*	COP	Up To 3.09	
Heating Capacity Range**	Btu/hr	14,777-47,315	
Heating Efficiency**	COP	Up to 2.15	
Cooling Capacity Range***	Tons	2.5-5.2	
Cooling Efficiency***	EER	12.5	
Cooling Efficiency****	IPLV	17.14	
Water Temp Range	Deg F	40-130	
Compressor Frequency	Hz	30-90	
Power Supply	V/Ph/Hz	230/1/60	
MCA	Amps	40	15
MOPD	Amps	50	15
Refrigerant		R410A	
Refrigeration Connection		3/8 & 5/8 Flare	
Compressor		Panasonic Inverter-Drive EVI Scroll	N/A
Water Connection	N.P.T.	N/A	1"
Pressure drop (12 G.P.M)	P.S.I/ft W.C.	N/A	10.7/24.7
Fan Motor (Modulating)		EC Controlled	N/A
Noise Level (@3meters)	DBA	50	38
Net Weight	lbs	293	132
Shipping Weight	lbs	337	158
Net Dimensions (L/W/H)	Inches	35x15x55	17x14x30
Shipping Dimension (L/W/H)	Inches	37x17x55	33x21x17
Operating Ambient Temp	Deg F	-20-127	

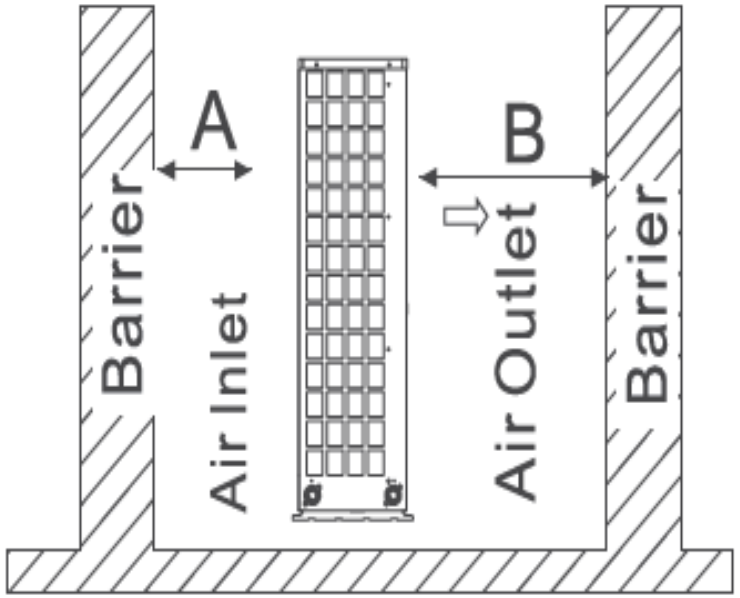
*Water out- 120°F, Ambient- 47°F, G.P.M-12
**Water out- 120°F, Ambient- 17°F, G.P.M-12
***Water out- 45°F, Ambient (DB/WB) @- 95°F/86°F, G.P.M-12
****IPLV is the recognized measurement of efficiency for Integrated Part Load Values in accordance with AHRI 550/590. Ambient temp = 95°F. Delivered Water = 44°F (8.5GPM)

All data based on pure water

SIS Piping Diagram (Basic)

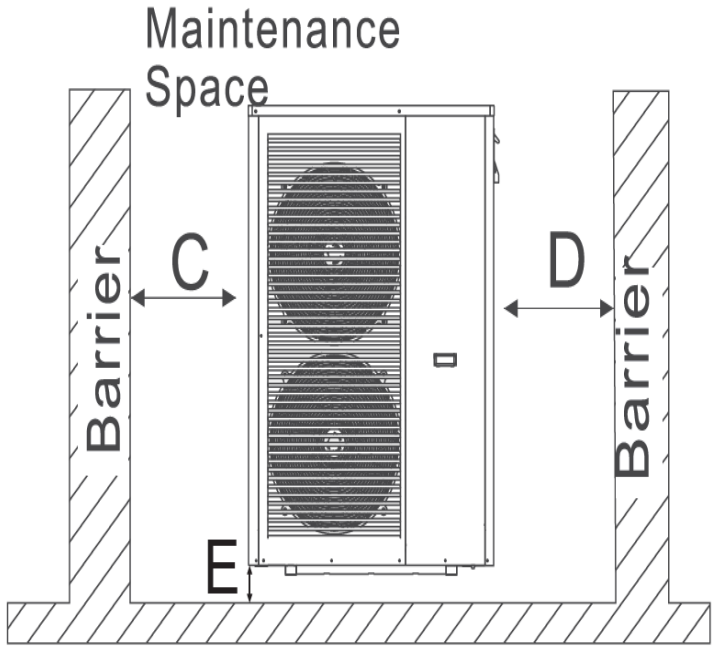


SIS- Outdoor Clearances

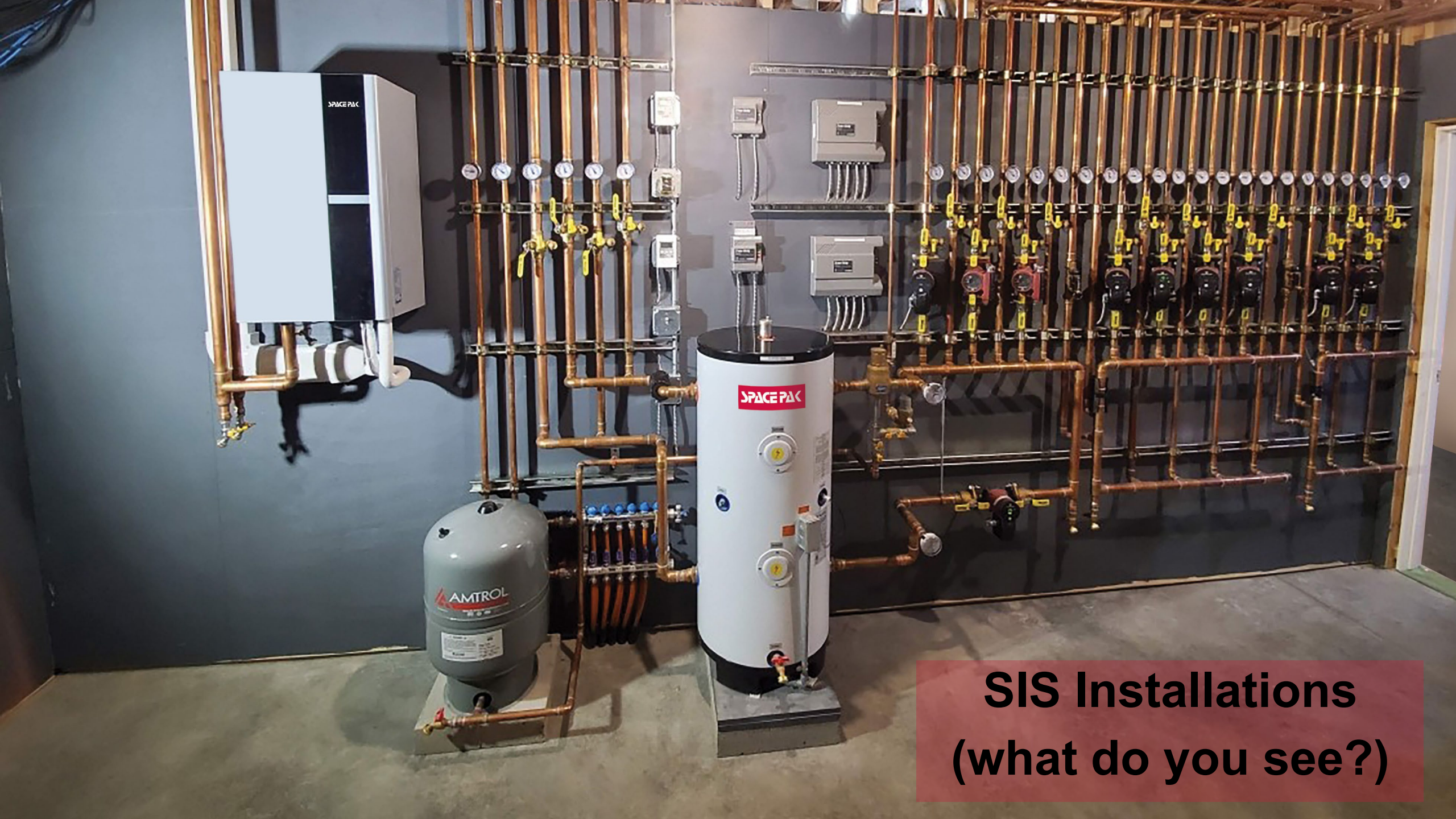


Attention

Requirements
A>20inch ; B>72inch ;
C>20inch ; D>40inch;
E=see note 1

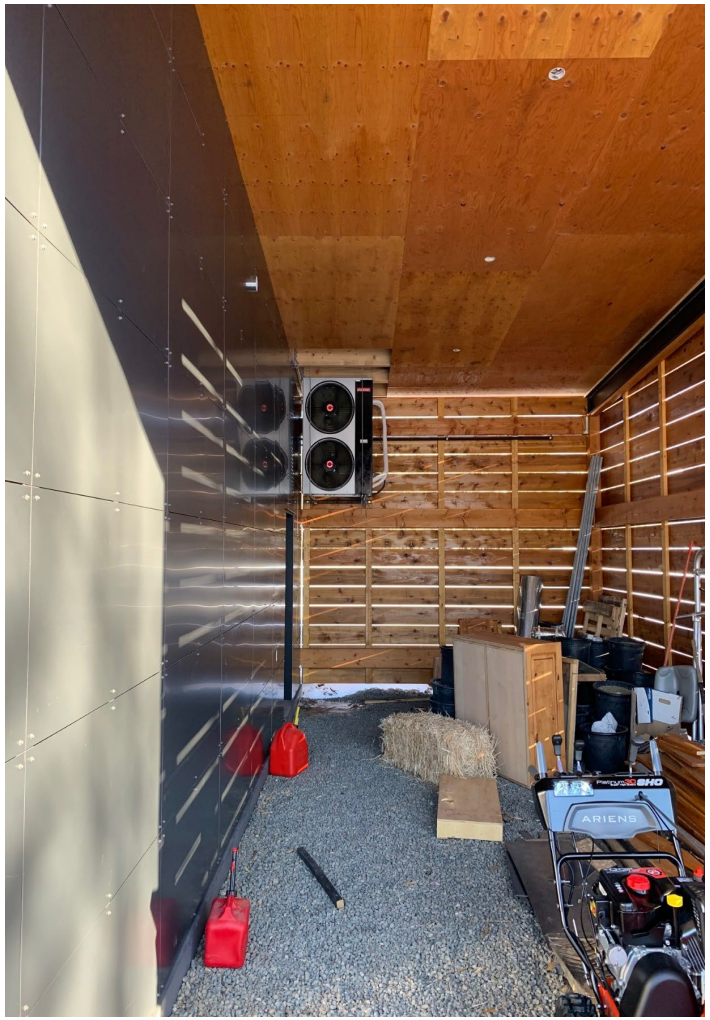


Note 1: The base of the unit should be located above winter snow level to allow proper drainage of condensate. The condensate should be provided a path to drain before refreezing in an area that could create an obstruction or hazardous conditions such as on a walkway.



SIS Installations (what do you see?)

SIS Install 10k ft. Elevation Colorado (Beta Project)



Upstate NY

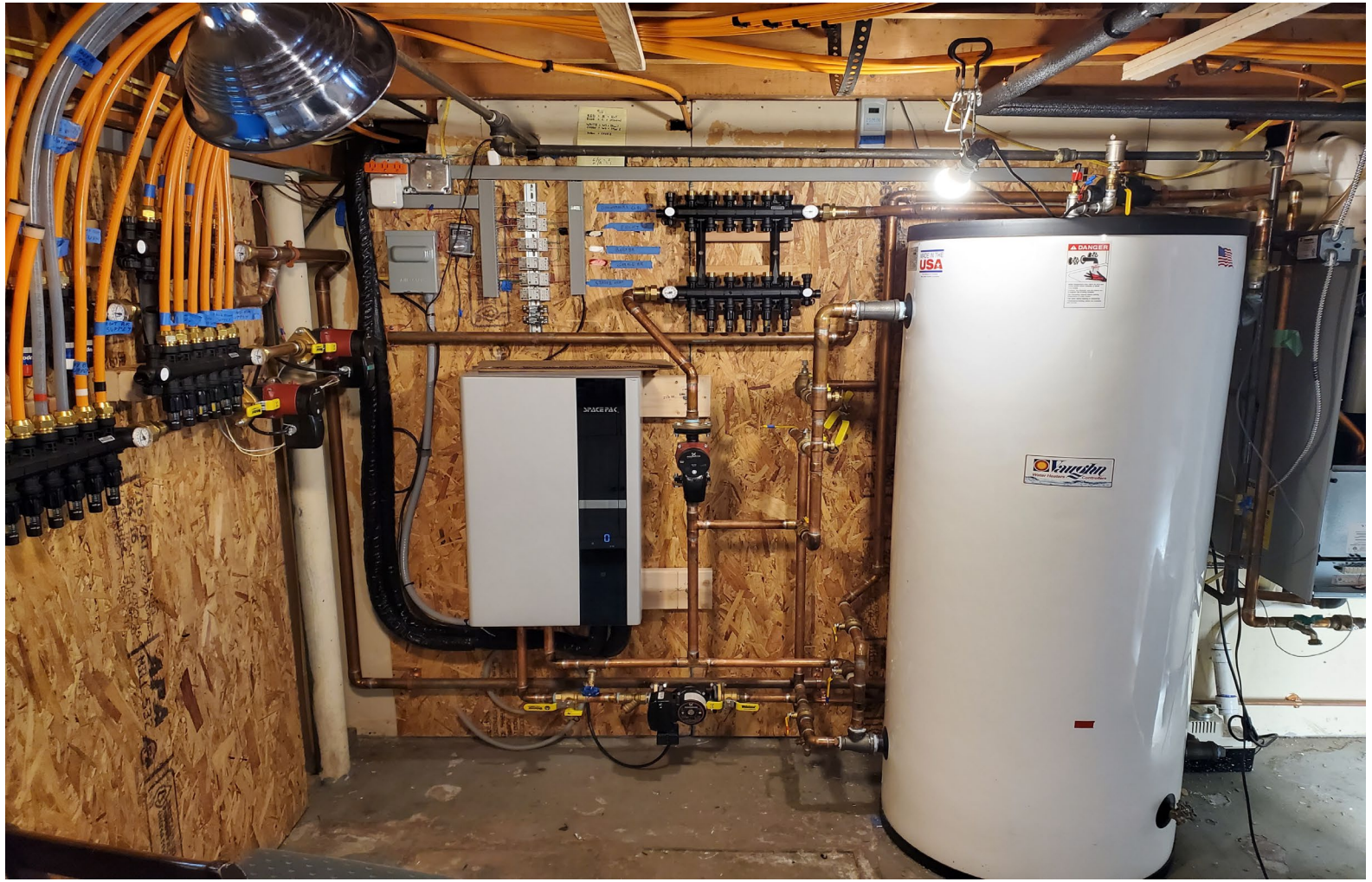
Killington, VT

Vermont

Humboldt, CA

Killington, VT

SIS Install in Vermont (Beta Project)



Are there any Questions?

Solstice Inverter Extreme (ILAHP) Low Ambient Monobloc Heat Pump

Features & Benefits

- Industry Proven Solstice Technology
- Supplies Low Temperature Water for Heating & Chilled Water For Cooling
- Reliable Toshiba EVI Inverter Compressor
- Extreme Low Ambient Heating Performance to -20°F
- Water Temperatures 42-131°F Delivered
- Controls on Return Water Temperature
- Available in 4-ton model
- Domestic Hot Water Offset Capabilities
- Monobloc Design (No On-Site Refrigerant Charging)
- Keeps All Refrigerant Outside the Occupied Space
- Freeze Protection
- Low Amp Draw with Ultra Quiet Operation
- User Friendly Touch Screen Control
- Precision Temperature Control Platform
- Inverter Driven Fan Motors
- Eligible for Rebates

Industry Leading 10-Year Compressor Warranty and 5-Year Parts Warranty for Certified Contractors

Solstice Inverter Extreme (ILAHP) Low Ambient Monobloc Heat Pump

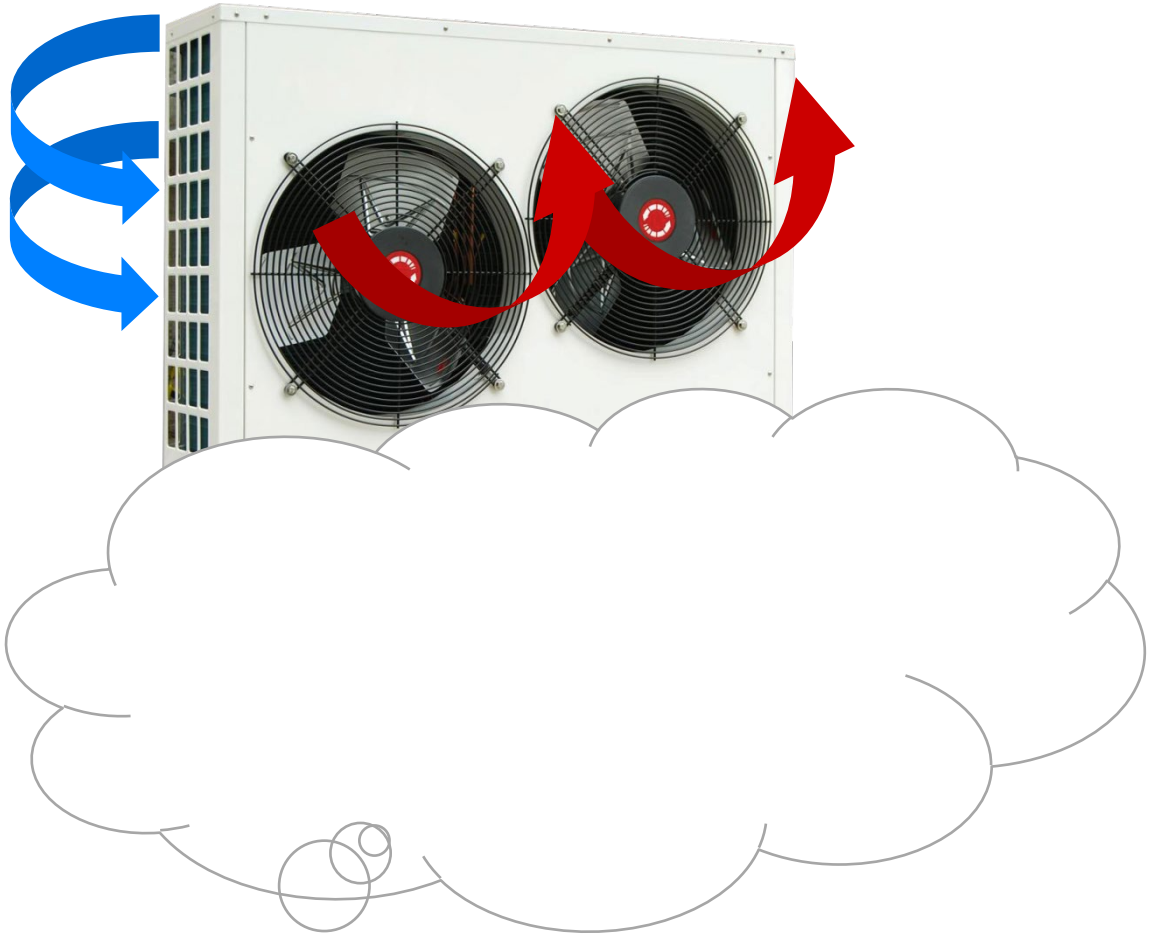
Coming Soon!

INVERTER EVI LAHP	
Power Supply	220v/ 30-90hz
Heating Capacity (Btu/h)*	62156
Heating Capacity(Btu/h)**	42690
Heating Capacity(Btu/h)***	34834
Cooling Capacity(@ 95°F/WT 45°F, Btu/h)	51230
Heating Power Input* (kW)	5.20
Heating Power Input** (kW)	5.10
Heating Power Input*** (kW)	5.10
Cooling Power Input (kW)	5.36
Heating Current* (A) @ 230V	22.61
Heating Current** (A) @ 230V	22.18
Heating Current*** (A) @ 230V	22.17
Cooling Current (A) @230V	23.29
COP*	3.5
COP**	2.45
COP***	2
EER	2.8
Max.Power Input (kW)	7
Max. Current (A)	31.8
Max. Water Temp.(°F)	140
Compressor Quantity	1
Compressor Type	Rotary
Fan Motor	2
DC Fan Motor Power Input (W)	135×2
1 m Noise （dB(A))	54
Water Pipe Connection	DN25
Water Flow Rate (GPM)	11.5
Water Head (ft of head)	15
Net Dimension （in)	40 x 15.5 x 52
Net Weight （lb)	350
Heating Ambient Range （°F)	-31-110
Cooling Ambient Range （°F)	70-125

*45°F Amb /WT 113°F
**10°F Amb/WT 106°F
***-4°F Amb/WT 106°F

Are there any Questions?

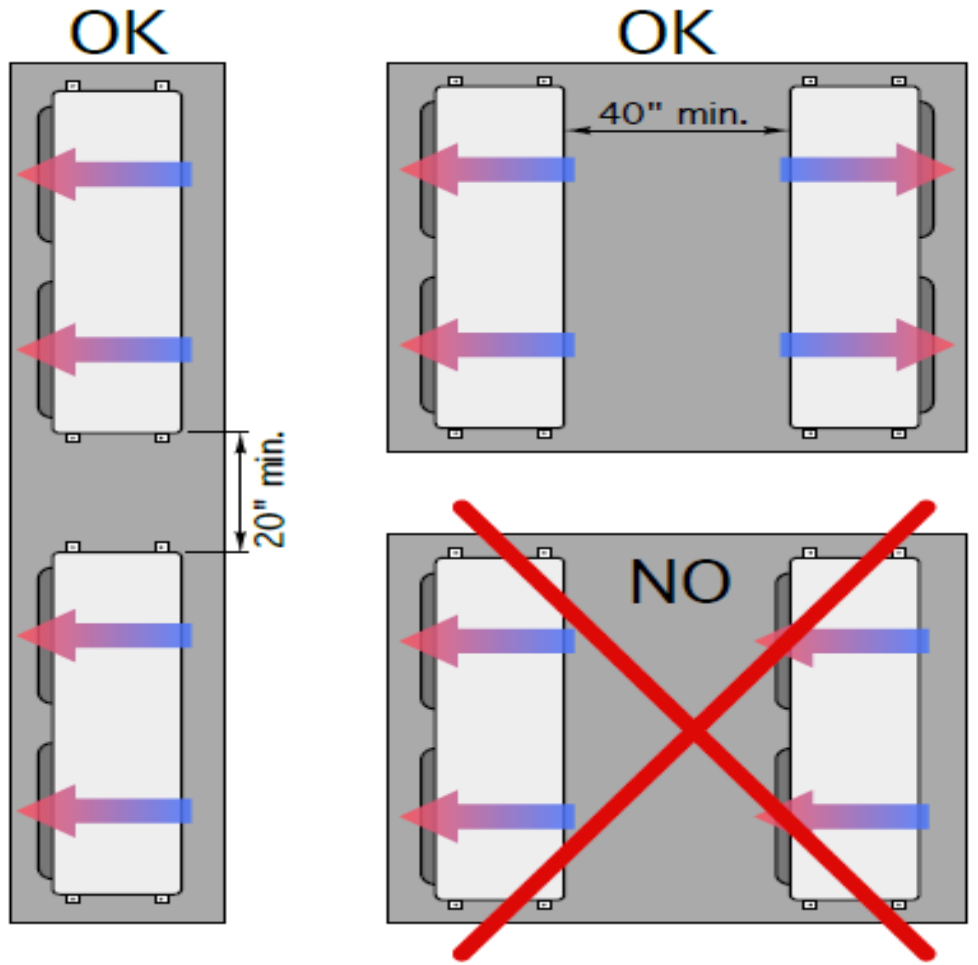
Horizontal Discharge on all Heat Pump Models



Horizontal Discharge allows install under decks & other remote installation options

When Installing Be Mindful of Air Flow and DEFROST RUNOFF!

- Airflow is crucial for system performance
- Assure foliage used to disguise does not cause any restrictions
- Be sure to locate away from any form of combustion exhaust



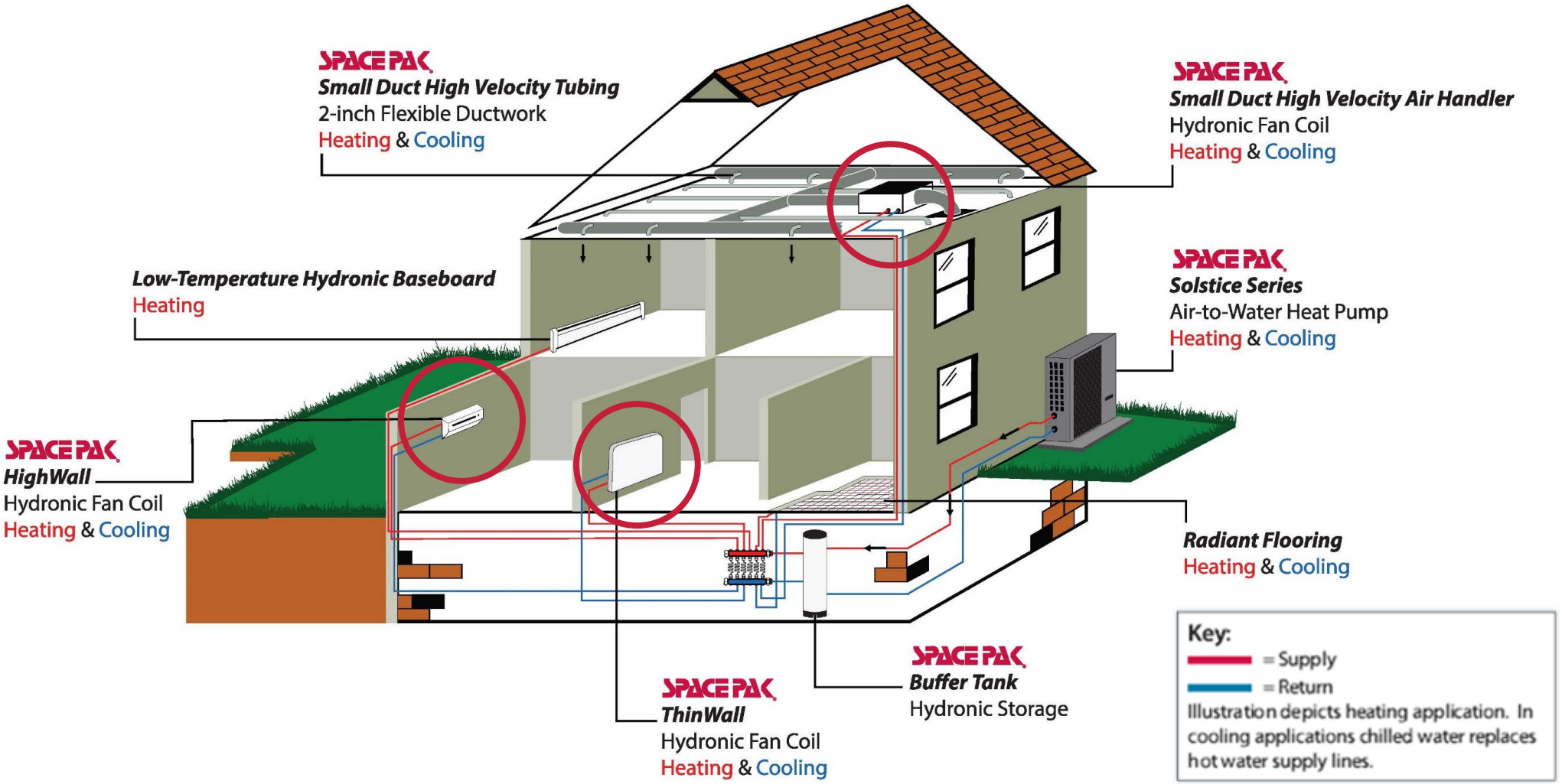
Chiller Install Allowing for Design & Air Flow and Defrost

Chiller Install with Potential for Air Flow Complications

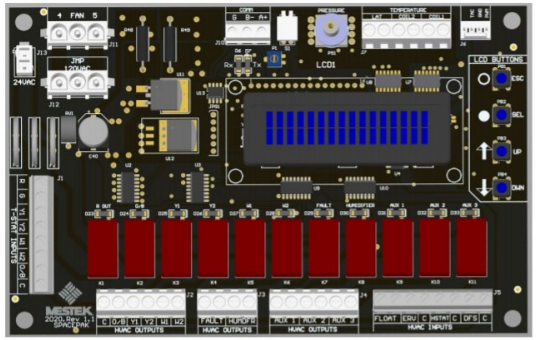
Multi-Unit Installations

Are there any Questions?

SpacePak - Air Handlers & Hydronic Low Temperature Fan Coil Units



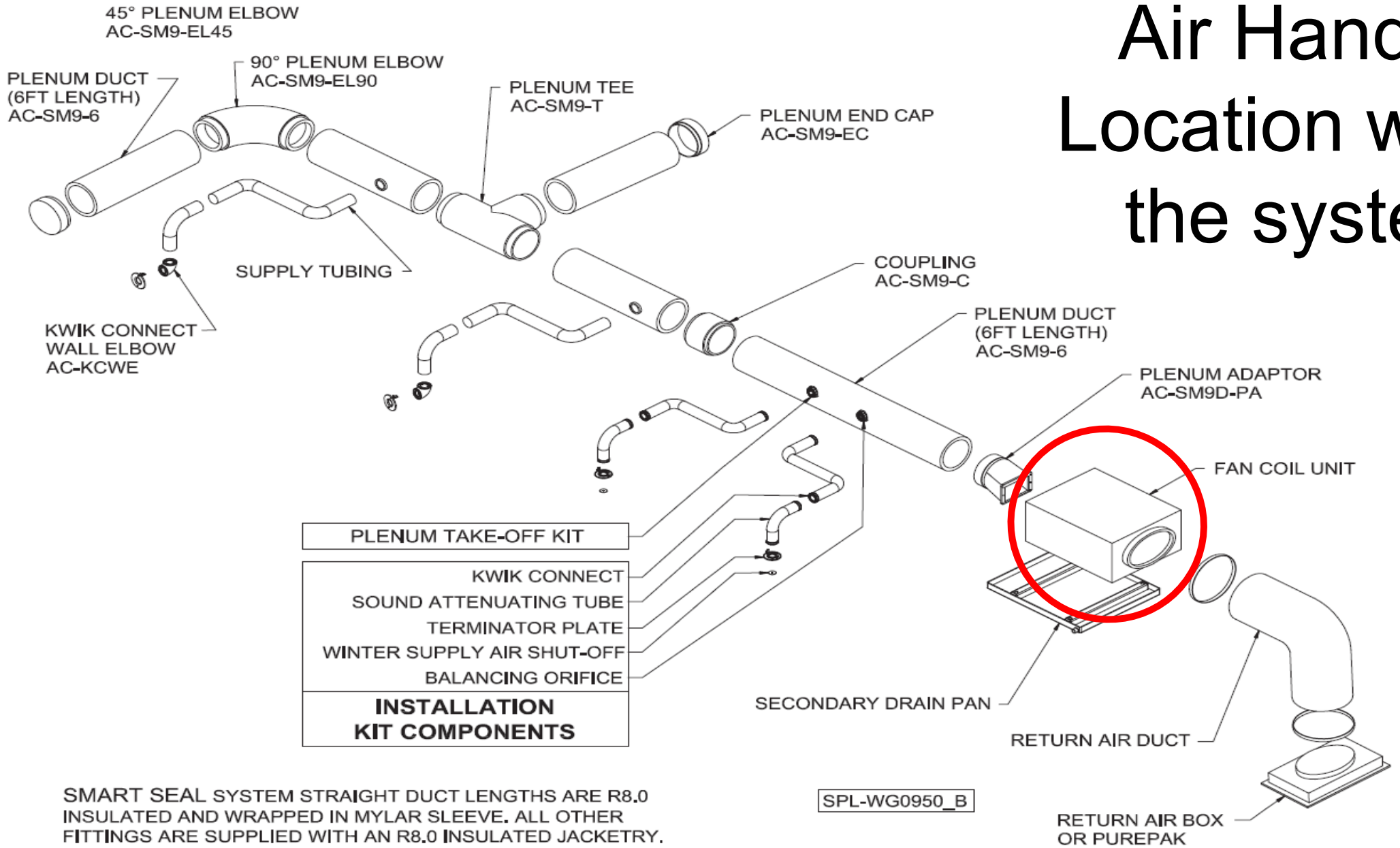
J Series Hydronic Air Handler (WCSP)



Heating & Cooling

- J+ Advanced Control with digital display
- High Efficiency EC Integrated Motor/Blower Assembly
- 230V Standard Configuration Optional 115V Conversion
- 6-Row Copper/Aluminum Evaporator Coil
- Industry Leading Corrosion Resistant Cabinet
- Primary Drain Pan w/Integrated Float Switch
- Anti-Vibration Foam Strips
- Condensate Trap
- Slide out Blower
- 24 V 50/60hz Transformer
- Sweat-Type Connections

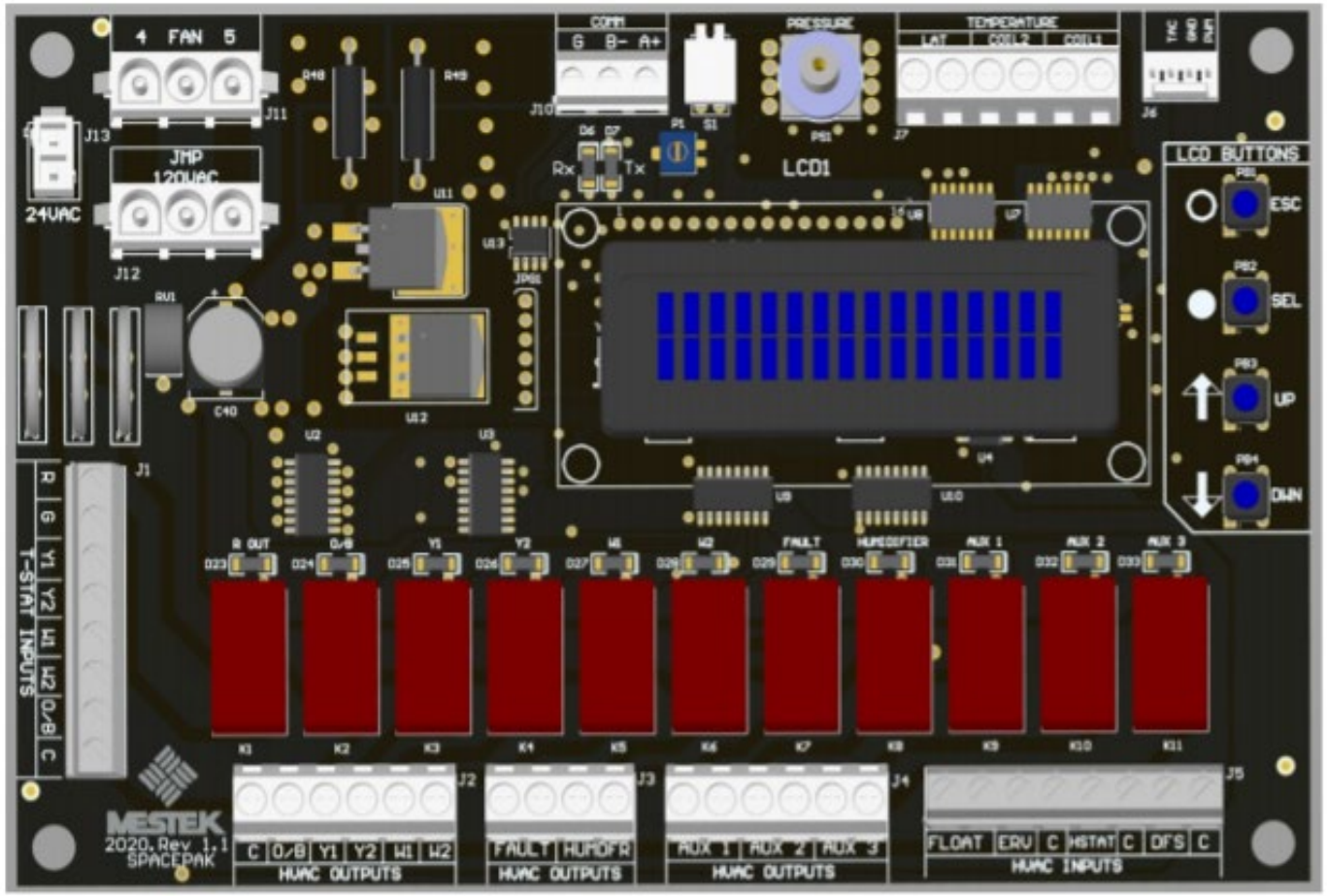
Air Handler Location within the system



SMART SEAL SYSTEM STRAIGHT DUCT LENGTHS ARE R8.0 INSULATED AND WRAPPED IN MYLAR SLEEVE. ALL OTHER FITTINGS ARE SUPPLIED WITH AN R8.0 INSULATED JACKETRY. DUCT COMPONENTS SHOWN WITHOUT FACTORY SUPPLIED R8.0 INSULATED JACKETRY.

The New J+ Control Board

- **More features and benefits for the contractor**
- **Digital display screen**
- **Screen displays (**operating mode, cfm, %speed, S.P.**)**
- **Speed is controlled by a static pressure tap on the blower**
- **Simpler wiring with less components**
- **Infinite speed variation**
- **Easy load matching**
- **Temperature sensors allow for delayed fan operation**
- **IAQ FRIENDLY!!!!!**

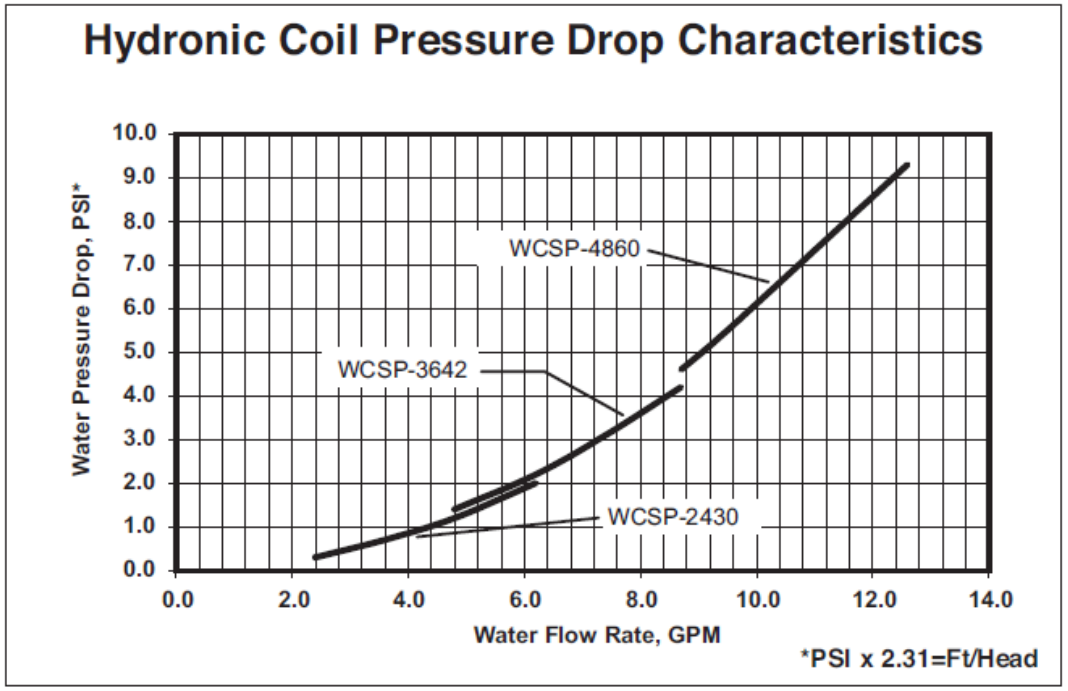


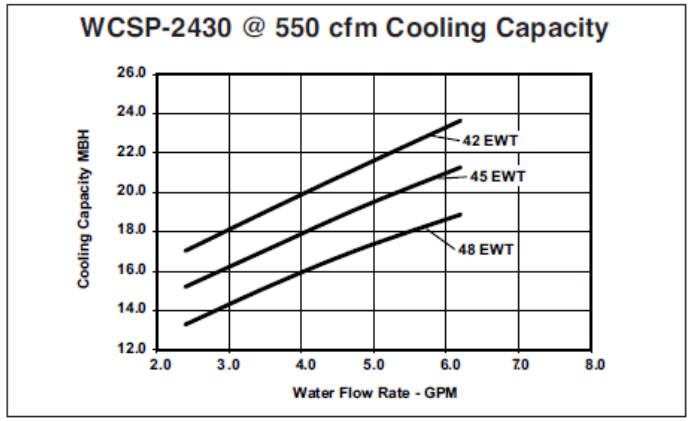
WCSP Specifications

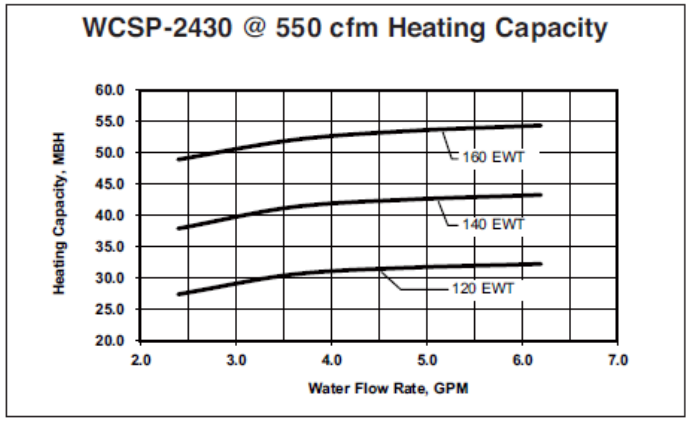
Model	Nominal System Capacity		Std. CFM @ 1.5" W.C.	Motor HP	F.L. Amps (115V/230V)	Connections	
	Nom. Tons	Cool MBH*				Water In Line	Water Out Line
WCSP-2430J/V	2	24	440	3/4	5.6/2.8	7/8"	7/8"
	2-1/2	30	550	3/4		7/8"	7/8"
WCSP-3642J/V	3	36	660	3/4	7.6/4	7/8"	7/8"
	3-1/2	42	850	3/4		7/8"	7/8"
WCSP-4860J/V	4	48	880	3/4	10.6/5.4	7/8"	7/8"
	5	60	1150	3/4		7/8"	7/8"

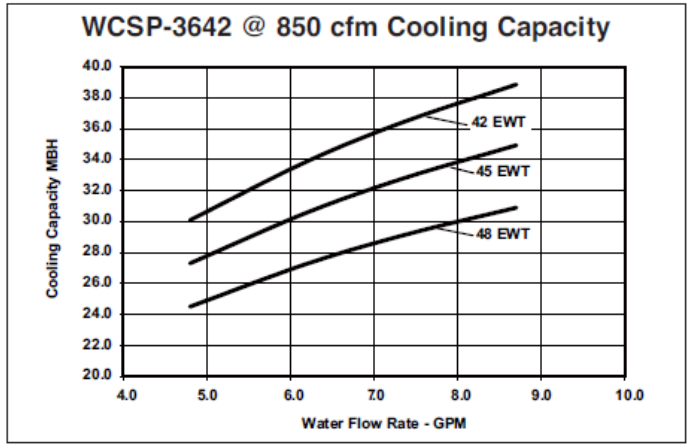
* Capacities based on 42°F entering water temperature at 5 G.P.M.

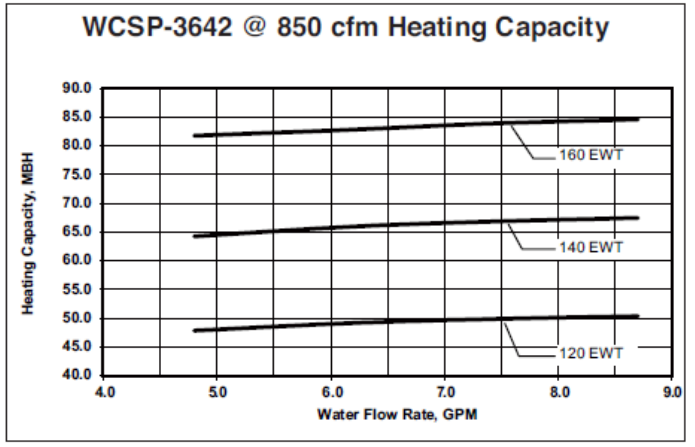
Capacity/Pressure Drop

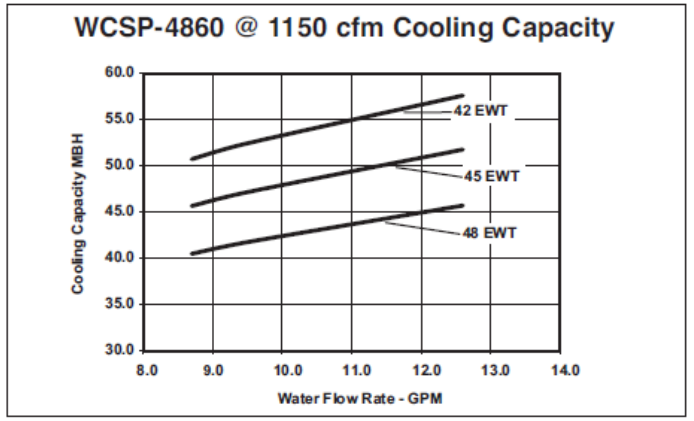


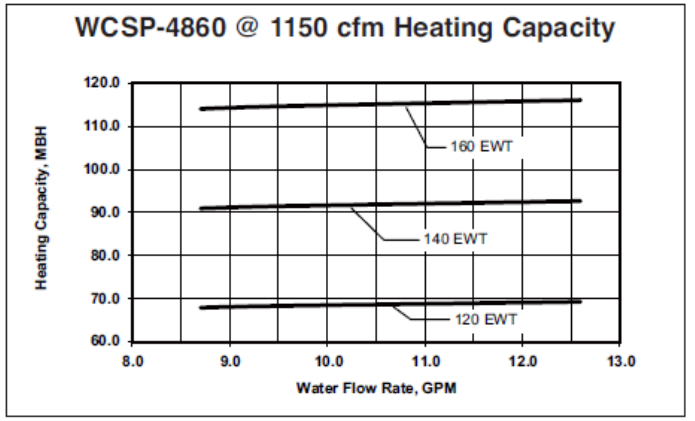












HighWall Low Temperature Fan Coil (HW)

Heating & Cooling

- Hydronic Based - No Refrigerant
- High Efficiency EC Motor with Step-Less Speed Modulation
- Auto-Swing Damper for Uniform Air Distribution
- Whisper Quiet Operation (33-58 dB)
- Stainless Steel Flexible Hose Connections
- LED Display / Remote Control
- Equipped with Condensate Drip Pans for Use in Chilled-Water Cooling Applications
- Can Operate with Water Temperatures as Low as 120ºF for Heating and as High as 50ºF for Cooling
- 8,100 - 25,700 BTU/h Heating Capacity
- 7,300 - 13,100 BTU/h Cooling Capacity

5-Year Warranty for Certified Contractors

HighWall Low Temperature Fan Coil (HW)

Specifications

Model	Output (BTU/hr)						Dimensional Data			Ship Wt. (lbs)
	Heating			Cooling						
	Entering Water Temperature									
	120°F	140°F	160°F*	45°F	47°F	50°F	Length	Width	Height	
HW-06-ECM	8123	11331	14266	7300	6416	5085	34-7/16"	8-2/3"	11-13/16"	28
HW-15-ECM	11843	16553	20853	10614	9420	7475				30
HW-18-ECM	14641	20444	25734	13106	11638	9249				32

* 160°F is max water temp. Applying higher can cause damage to unit.

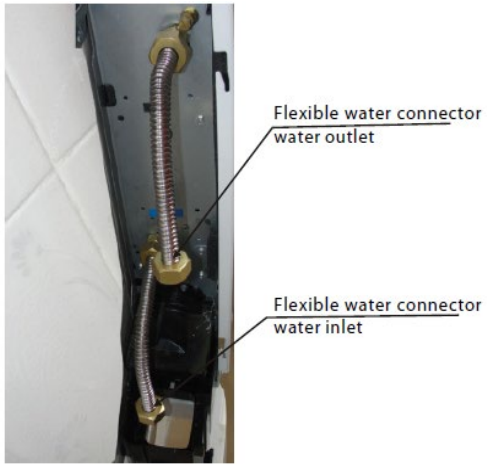
ThinWall Low Temperature Fan Coil (HTW)

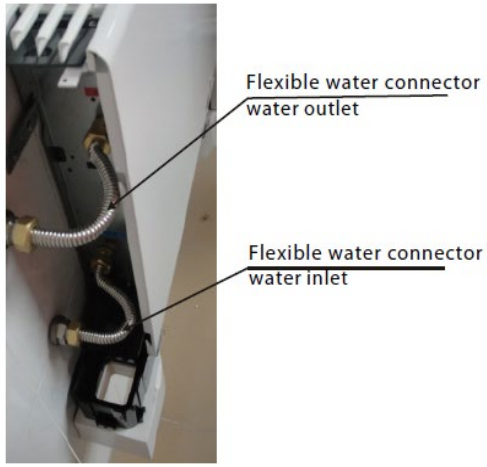
Heating & Cooling

- Hydronic Based - No Refrigerant
- Tempered Glass Front with Touch Screen Display
- Whisper Quiet, Modern Space-Saving Design
- Cross-Flow Blower Configuration with Integrated Air Guiding Technology
- ECM Blower
- Remote Control
- Equipped with Condensate Drip Pans for Use in Chilled-Water Cooling Applications
- Can Operate with Water Temperatures as Low as 120ºF for Heating and as High as 50ºF for Cooling
- 8,700 - 32,000 BTU/h Heating Capacity
- 3,400 - 14,800 BTU/h Cooling Capacity

5-Year Warranty for Certified Contractors

ThinWall Low Temperature Fan Coil (HTW)





Specifications

Model	Output (BTU/hr)						Dimensional Data			Ship Wt. (lbs)
	Heating			Cooling						
	Entering Water Temperature									
	120°F	140°F	160°F*	45°F	48°F	50°F	Length	Width	Height	
HTW-87	4600	6936	8700	3400	2846	2505	28"	5-1/4"	24-1/4"	41
HTW-135	8500	10710	13500	6500	5442	4789	35.25"			52
HTW-196	11400	15606	19600	8500	7116	6262	43"			60
HTW-246	14600	20114	24600	11900	9963	8767	51"			69
HTW-320	17800	26010	32000	14800	12391	10904	59"			79

* 160°F is max water temp. Applying higher can cause damage to unit.

SpacePak Buffer Tanks

- For Hot and Chilled Water
- Encouraged for Most Systems Using SpacePak Solstice Heat Pumps
- Offered in 13-, 26-, 40-, and 80-Gallon Capacities
- Inner Tank 304 Stainless, Outer Galvanized Steel Jacket
- Polyurethane Resin Foam with R12 Insulation Valve
- Four-Port Open Tank Design
- Electric Elements Standard

Standard 10-Year Warranty

Specifications

Model		BT13-H	BT26-H	BT40-H	BT80-H
Height	Inches	29-1/6	45	60	64-1/8
Diameter	Inches	18-1/2	18-1/2	18-1/2	23-5/8
Capacity	US Gal.	13	26	40	80
Max Water Flow	GPM	36	36	36	48
Ship Weight	lbs.	40	84	104	130
Empty Weight	lbs.	38	77	97	125
Full Weight	lbs.	148	304	446	805
Min Circuit Ampacity	Amps	15	30	30	30

Note: 13 Gallon buffer has 1-3kw element

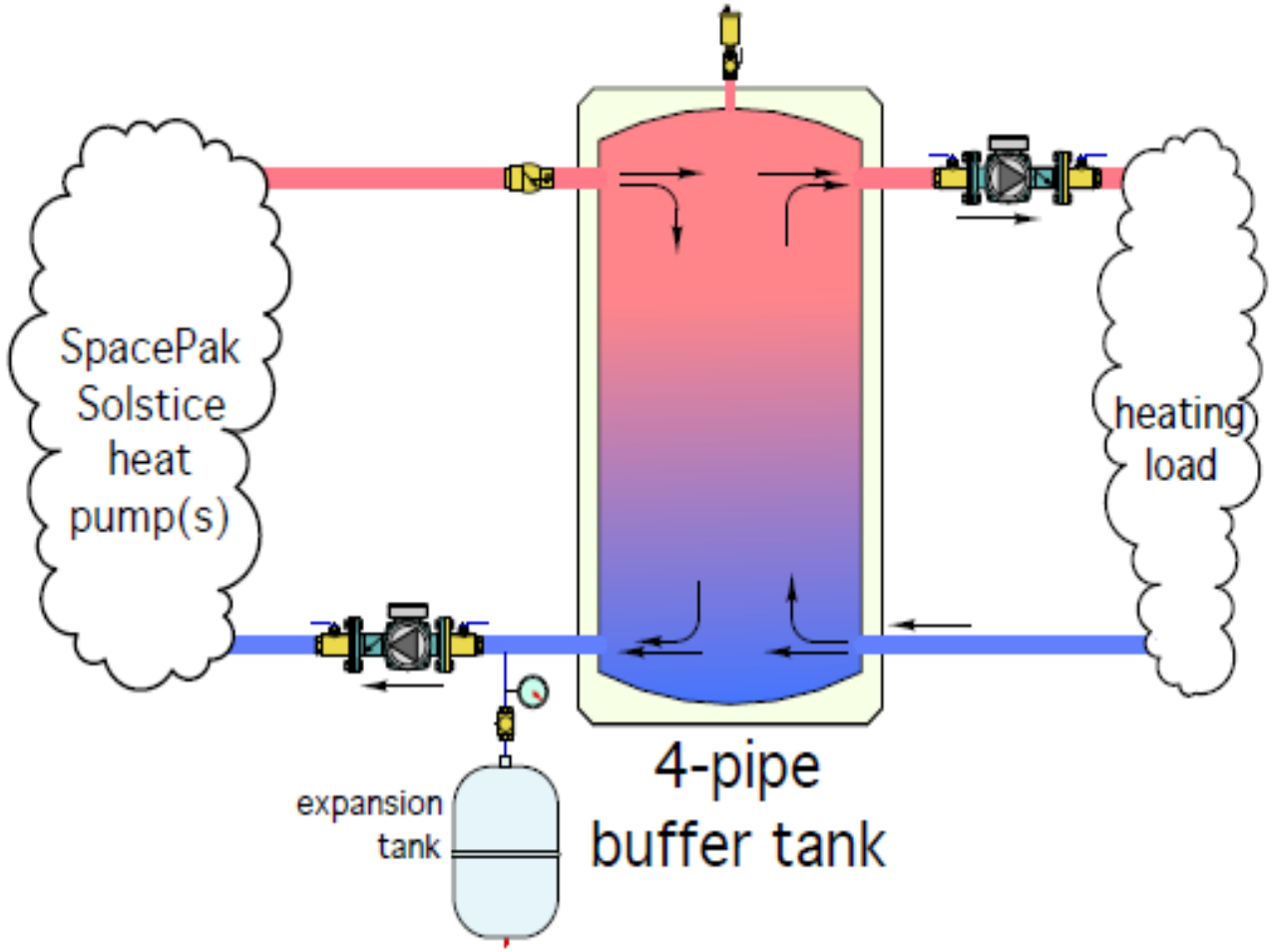
Buffer Tank Sizing (Keep it Simple)

Buffer/System Volume must be equal to or greater then 7.5 gallons per nominal ton of unit's capacity at its lowest turndown (Heating or Cooling whichever is larger)

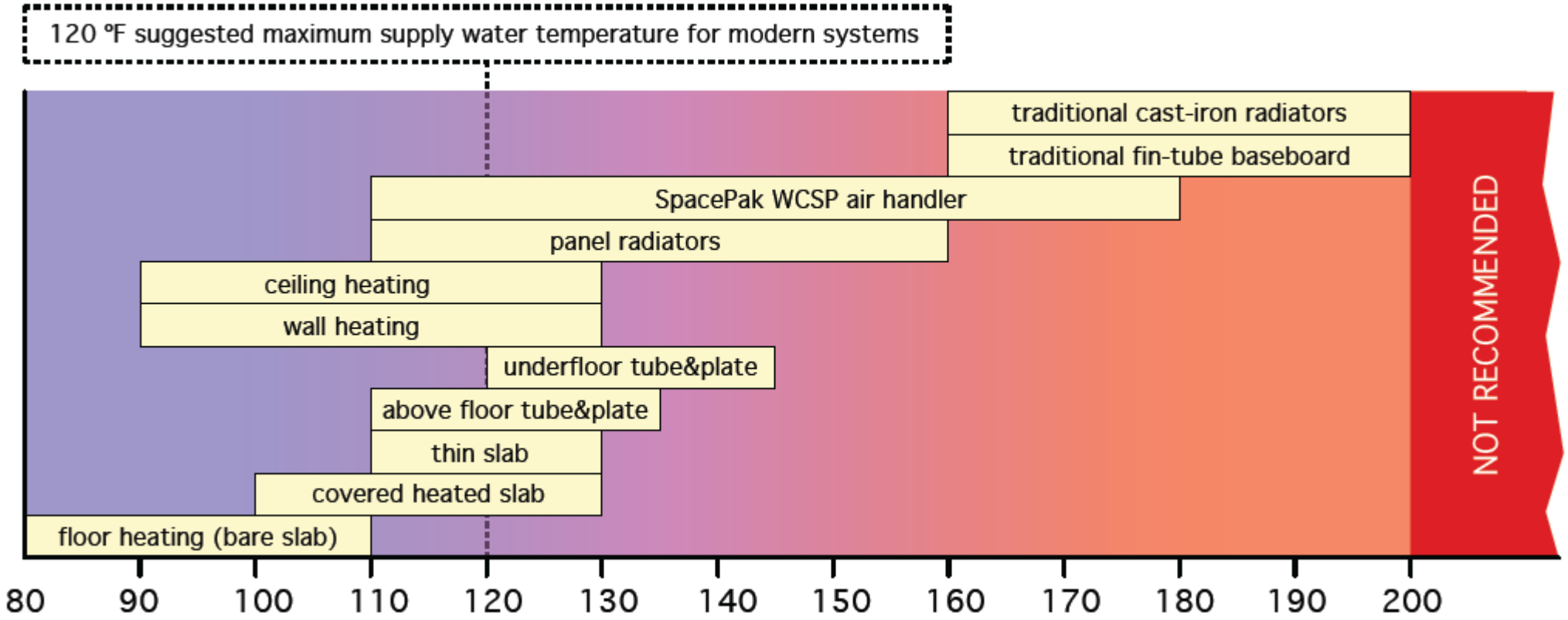
Example: If the unit's minimum turndown is 20k btu then the smallest buffer tank suggested would be our new 13 Gallon 4 pipe Buffer Tank (BT13-H)

Note: Remember to consider the "systems" capacity. In a situation where there is a large volume (Cast Iron Radiators) you may want a larger buffer to accommodate a larger inrush of "load" and to prevent temperature swings.

Buffer Tanks



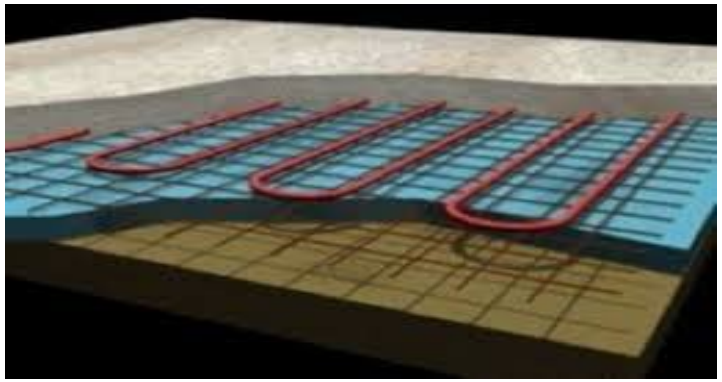
ATW Heat Pumps efficiently provide the low water temperatures needed for space heating



Note: **These required temperatures make our Heat Pumps a perfect fit for these applications**

The perfect match for low temperature space heating in almost any climate

Coming Soon!



Are there any Questions?

Installation and Layout

Piping Options / Considerations

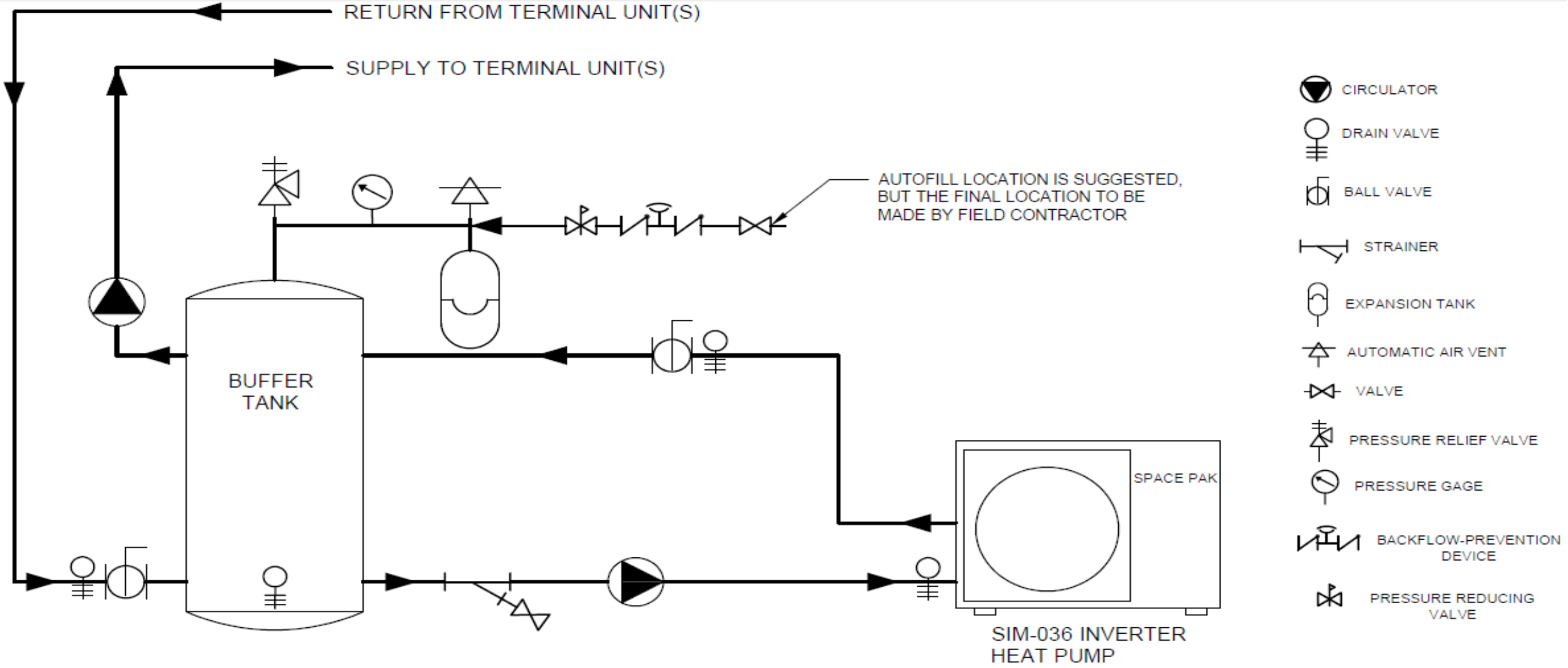
Take everything into account when sizing piping system

Piping Pressure Losses*

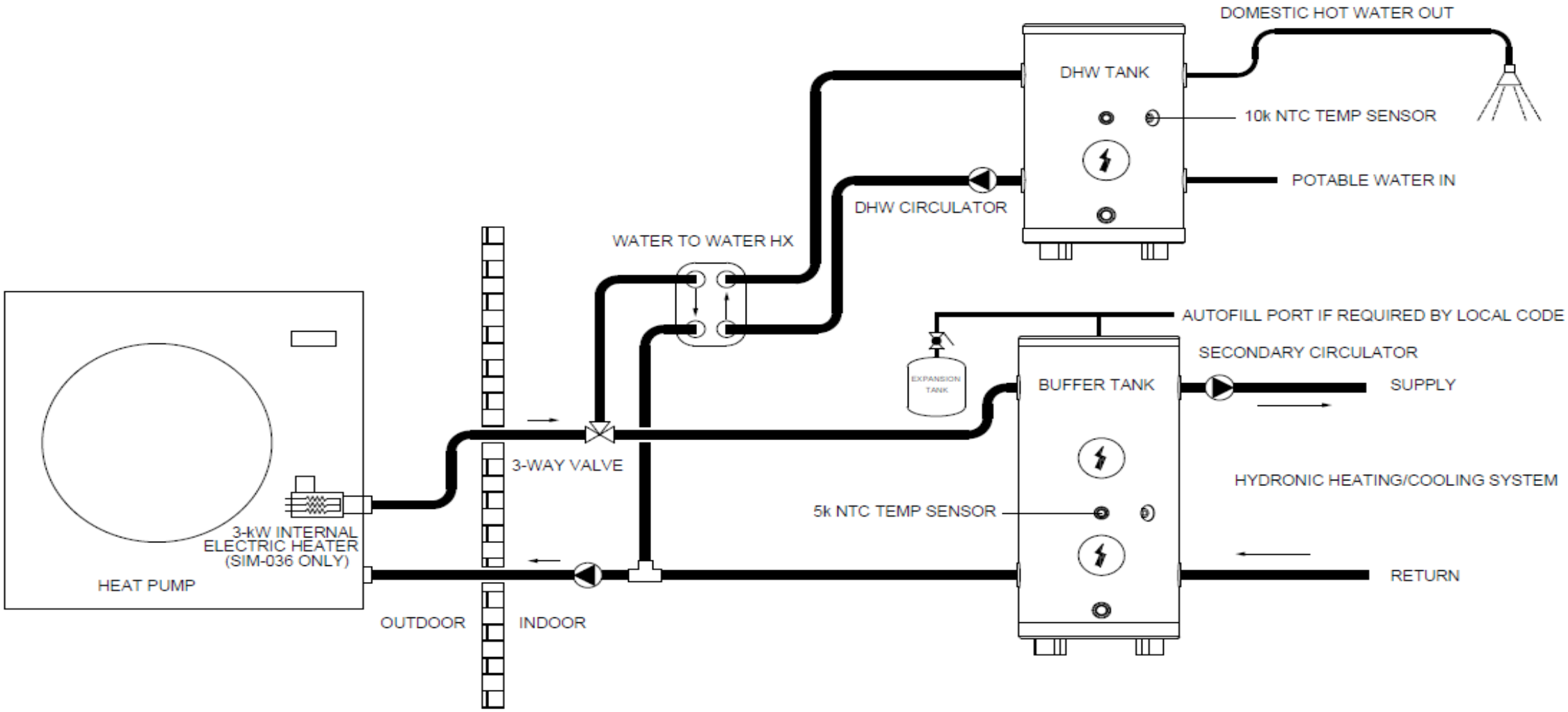
	Pressure Drop, Ft water/100Ft			
Flow rate GPM	**1"**	**1-1/4"**	**1-1/2"**	**2"**
Pex Pipe				
10	13.4	5.2	2.4	0.6
11	15.9	6.2	2.8	0.7
12	18.5	7.2	3.2	0.9
14	24.4	9.4	4.2	1.2
Copper Pipe (Type L)				
10	7.1	2.6	1.1	0.3
11	8.4	3.1	1.3	0.3
12	9.9	3.6	1.5	0.4
14	13.2	4.8	2	0.5

*Remember to check the CV rating of your fittings and valves to make sure your getting the correct flow through the equipment.

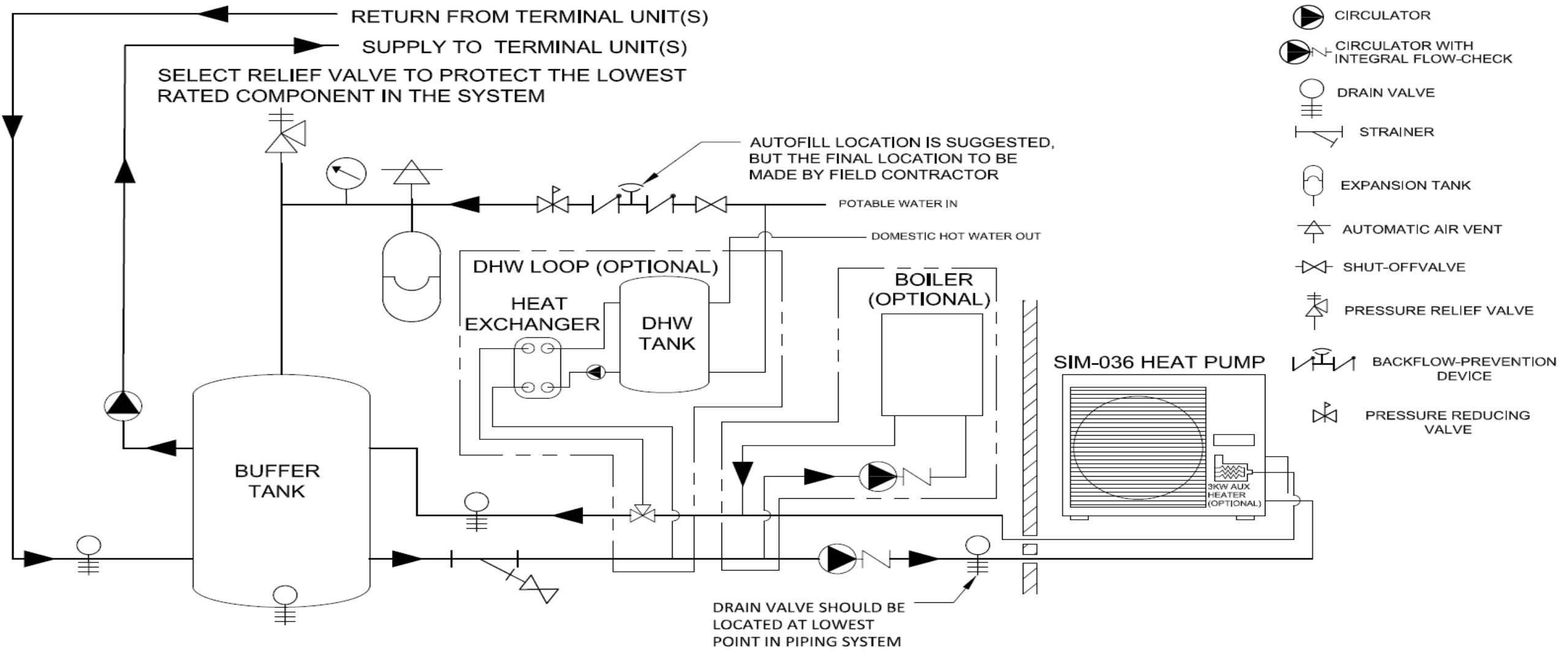
SIM and ILAHP Basic Piping (Basic)



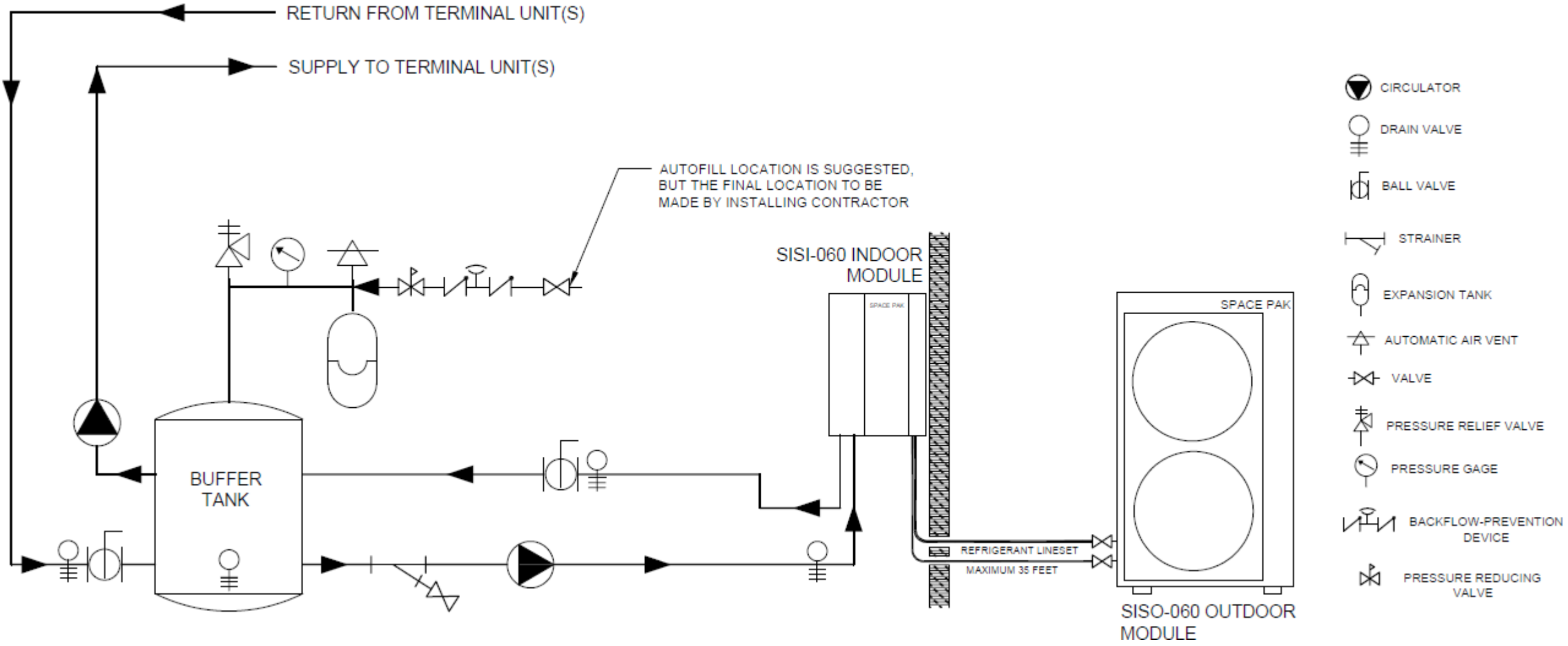
SIM and ILAHP Basic Heat and DHW Offset Piping



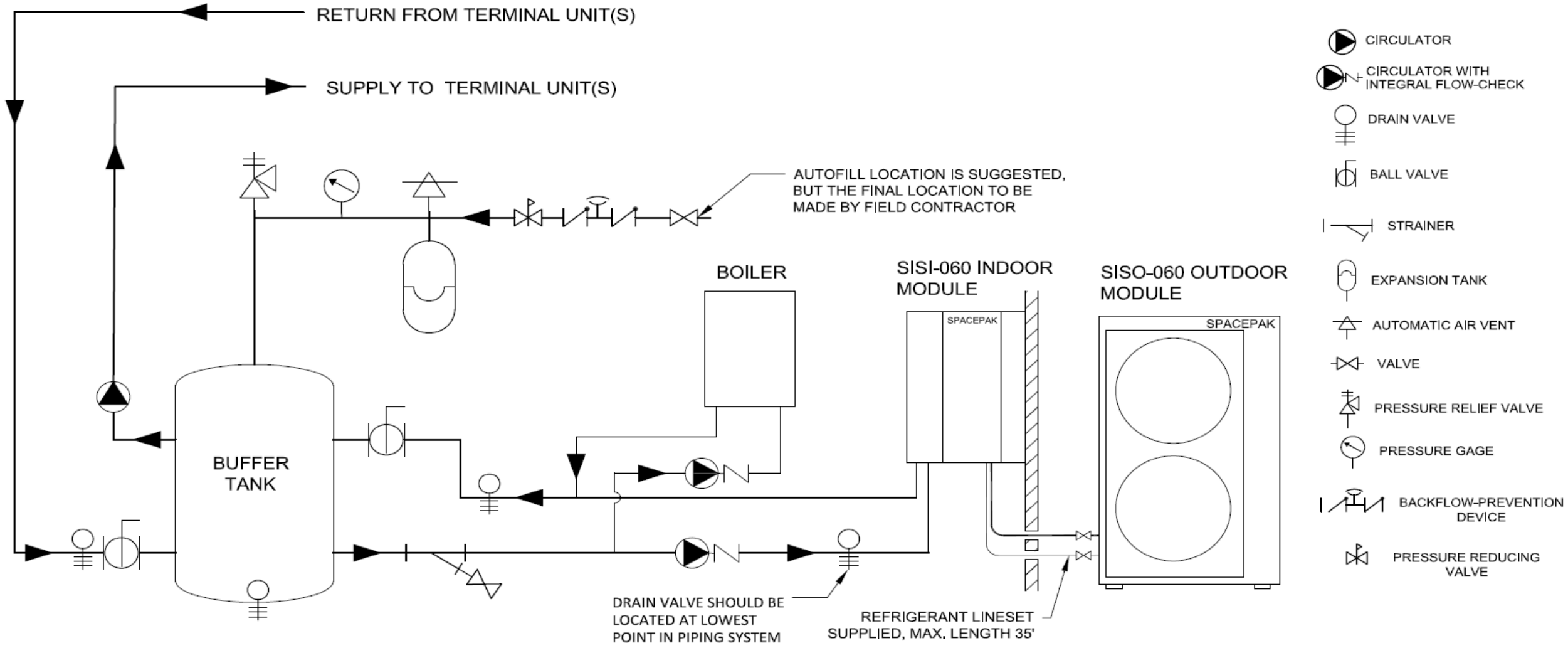
SIM and ILAHP with Boiler and DHW Offset Piping



SIS Piping Diagram (Basic)



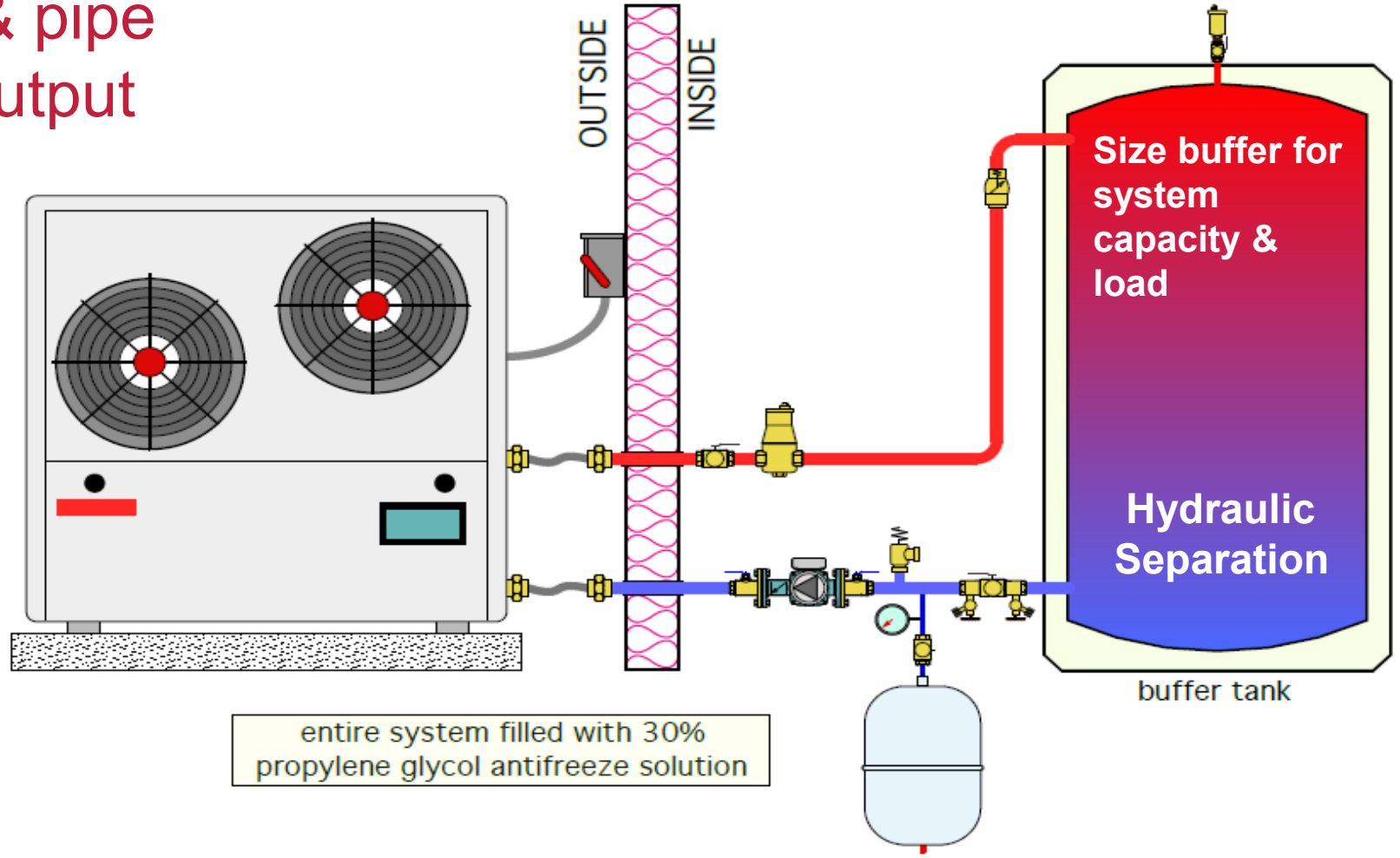
SIS Piping with Boiler Backup



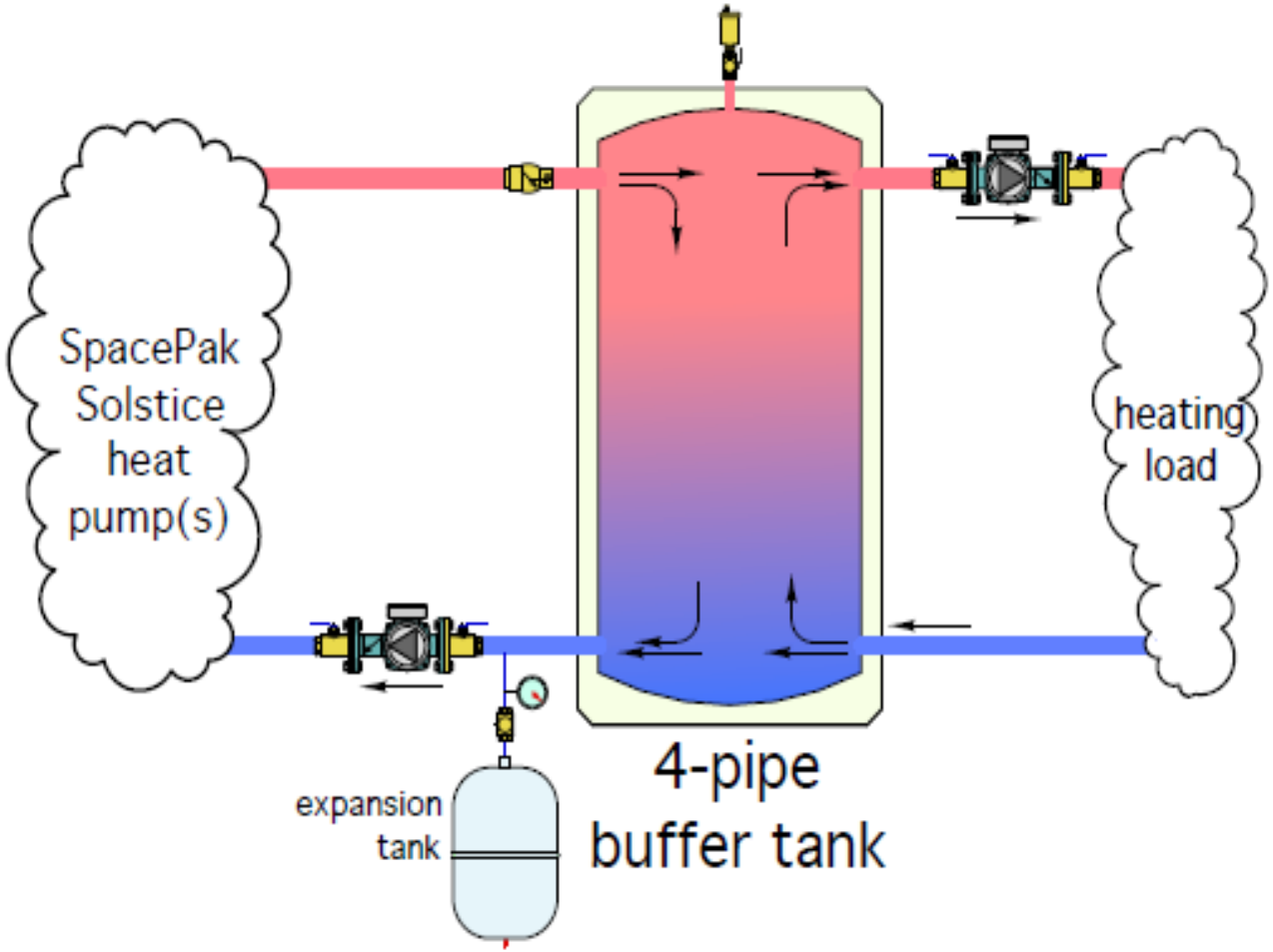
The Basic System (the first step)

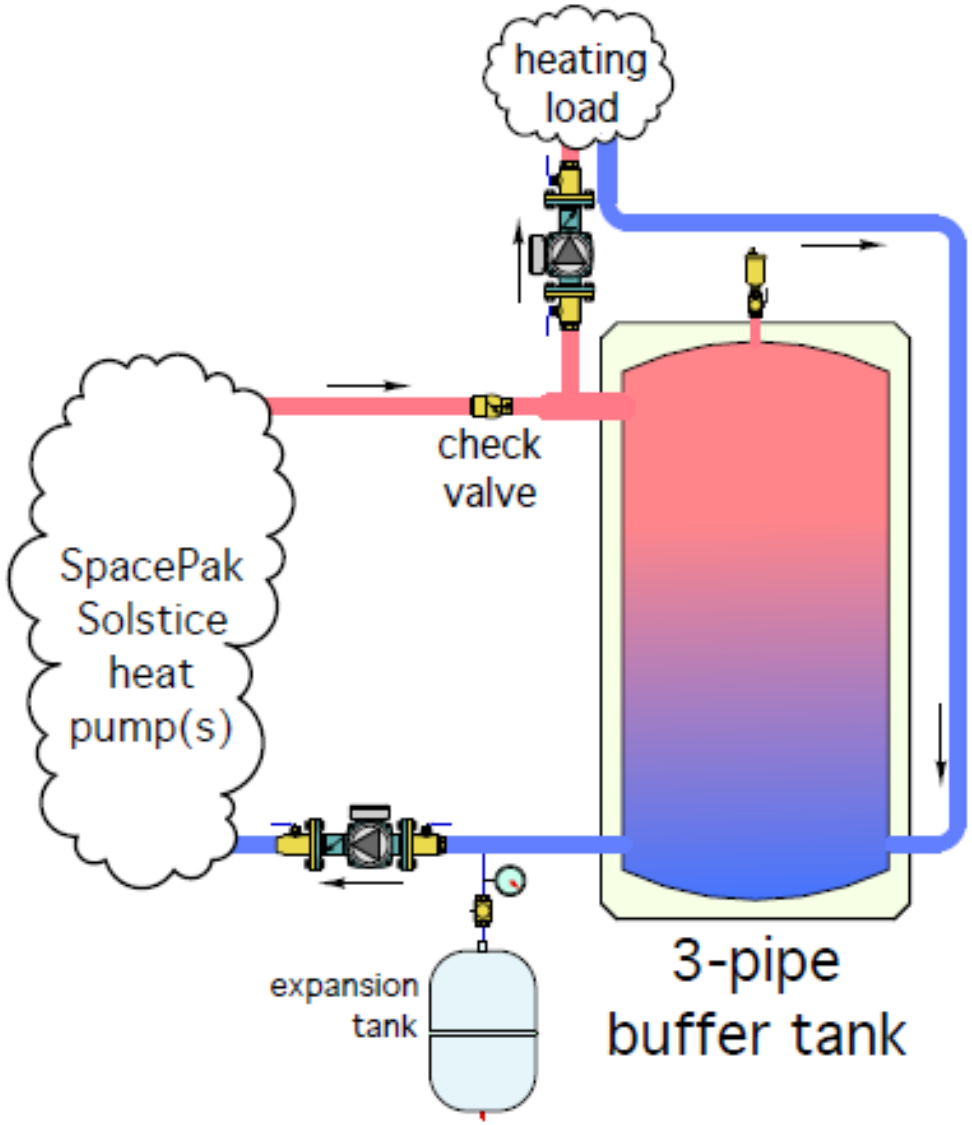
Be sure to size pump & pipe for required flow and output

NOTE: Buffer tanks provide the location for hydraulic separation, the system can operate 12 GPM flow on heat pump side and 1 GPM on the system side

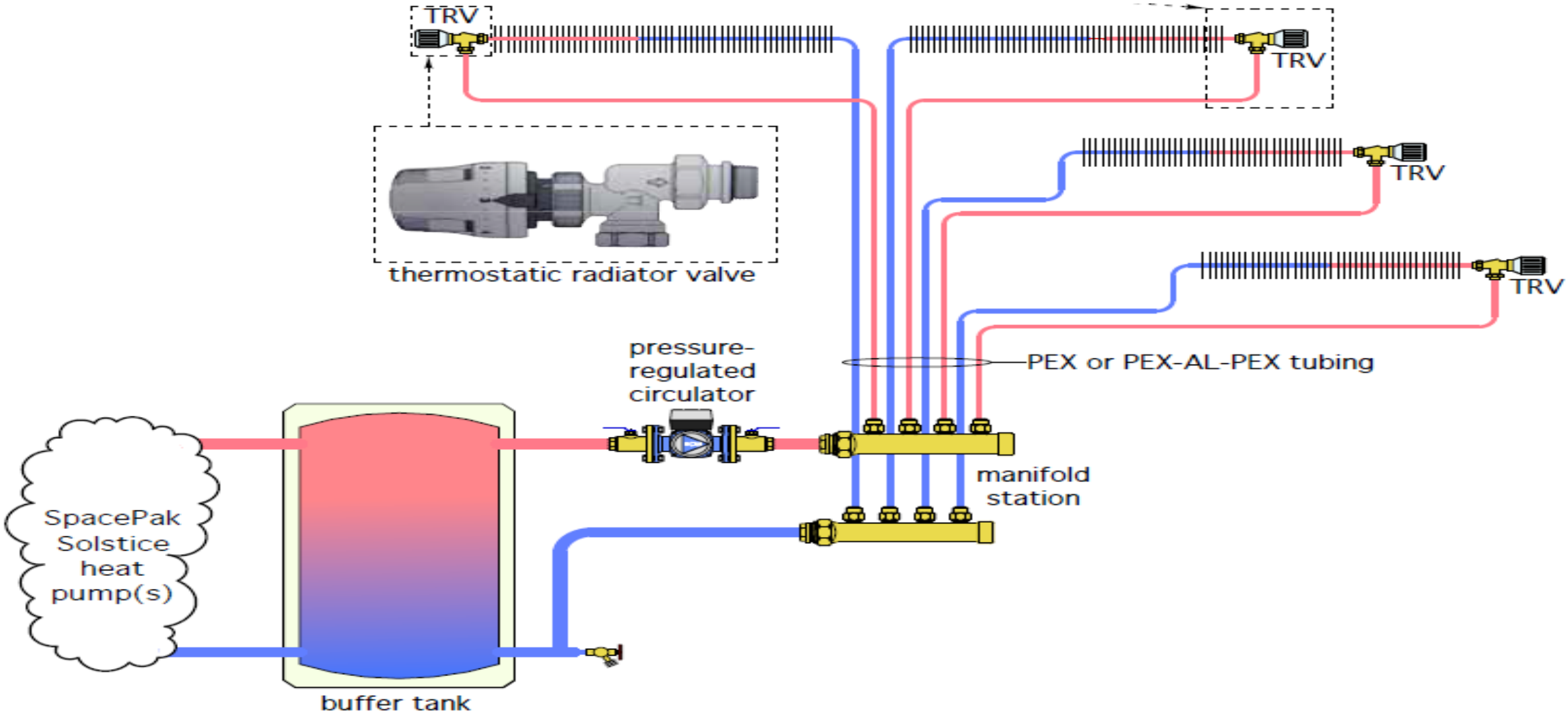


Basic Plumbing Options

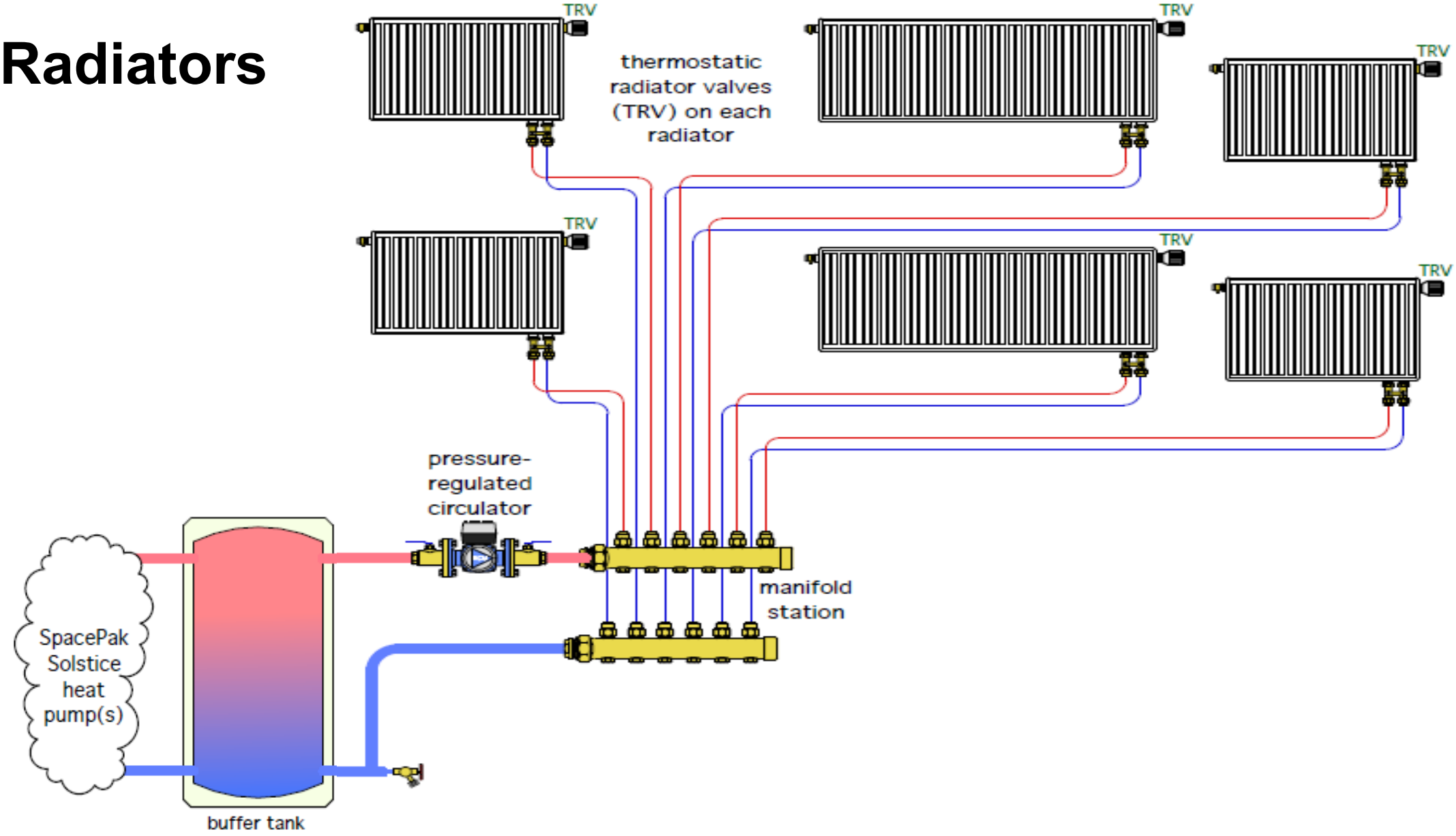




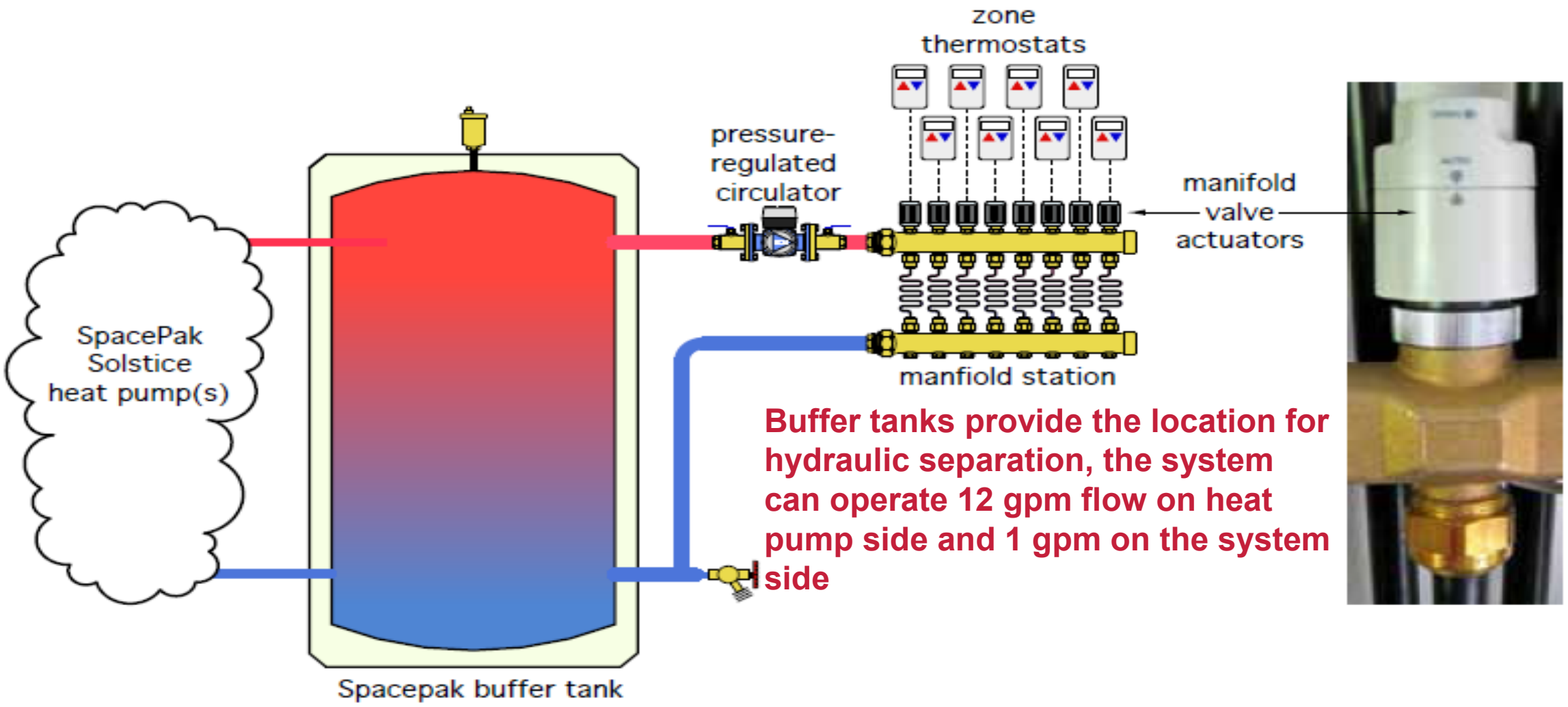
Heat Pump with Thermostatic Valve Application



Panel Radiators

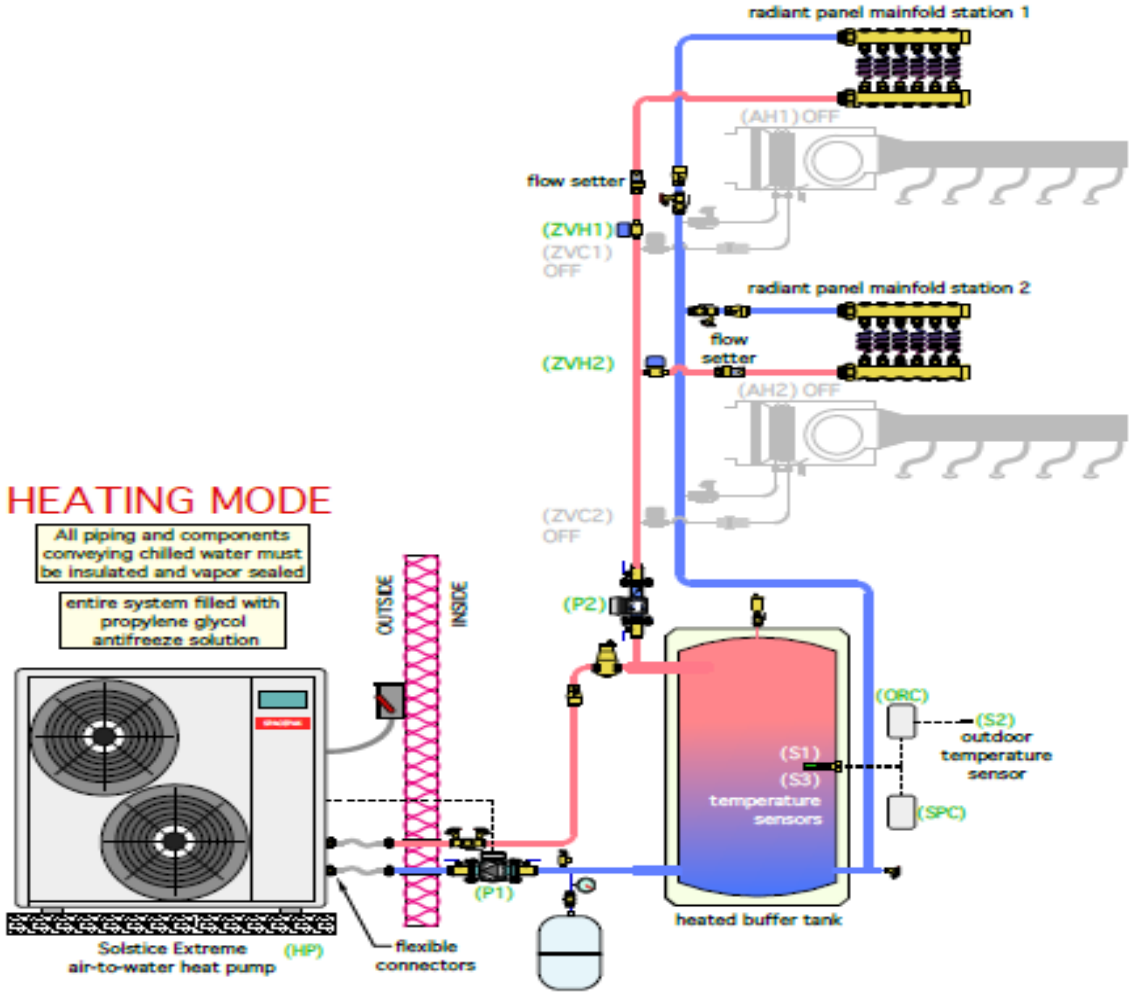


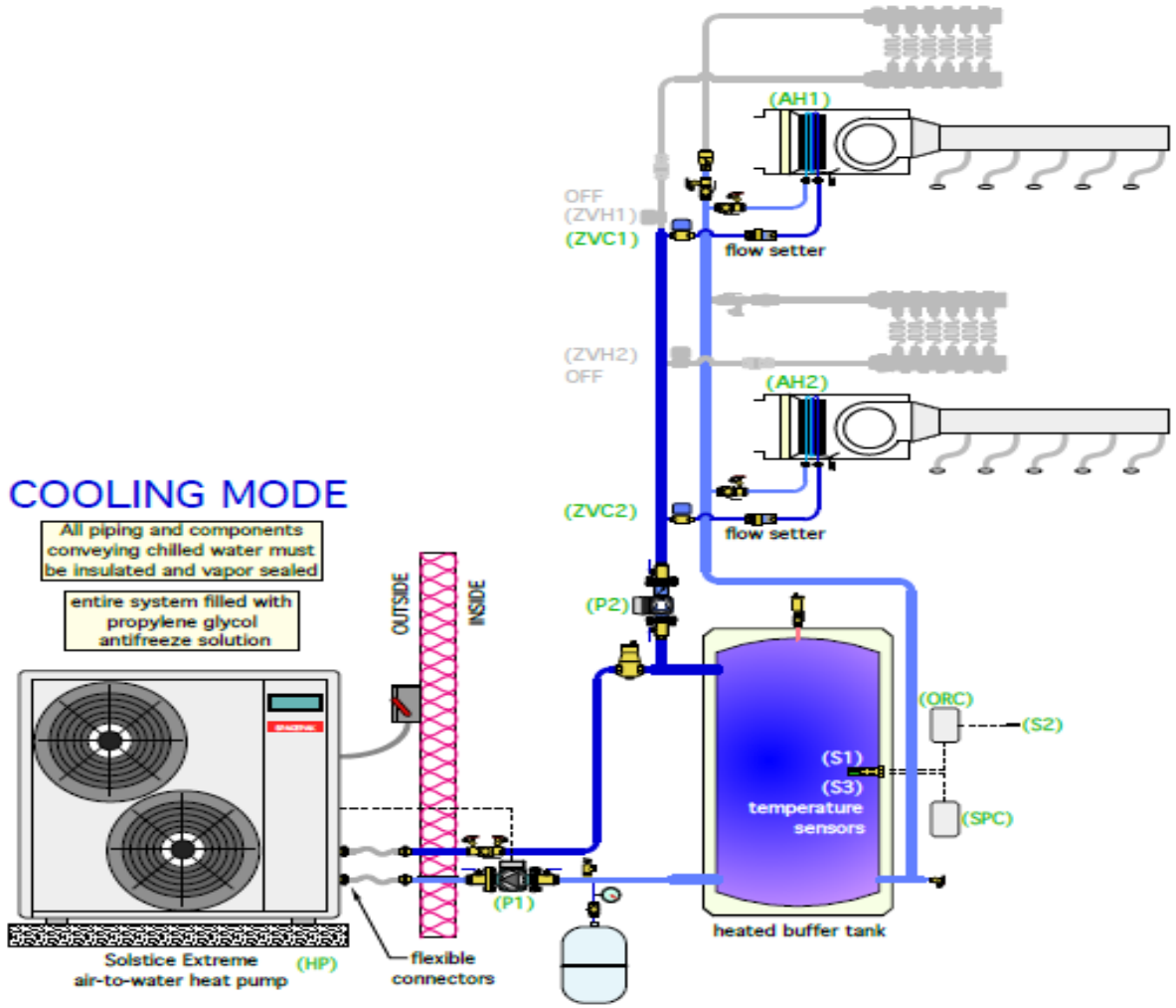
Zoned Radiant Applications



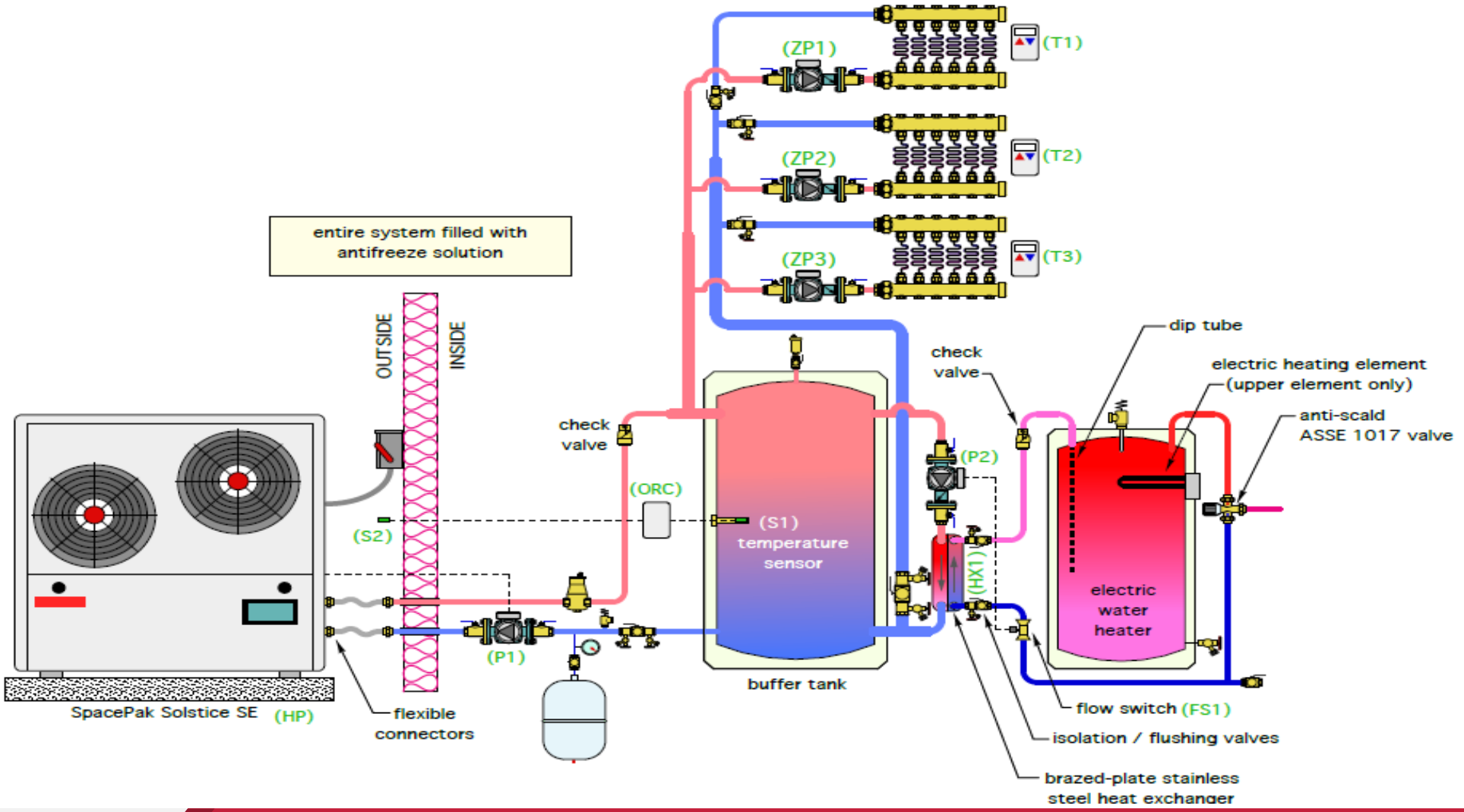
Buffer tanks provide the location for hydraulic separation, the system can operate 12 gpm flow on heat pump side and 1 gpm on the system side

Basic Heat / Cool Systems

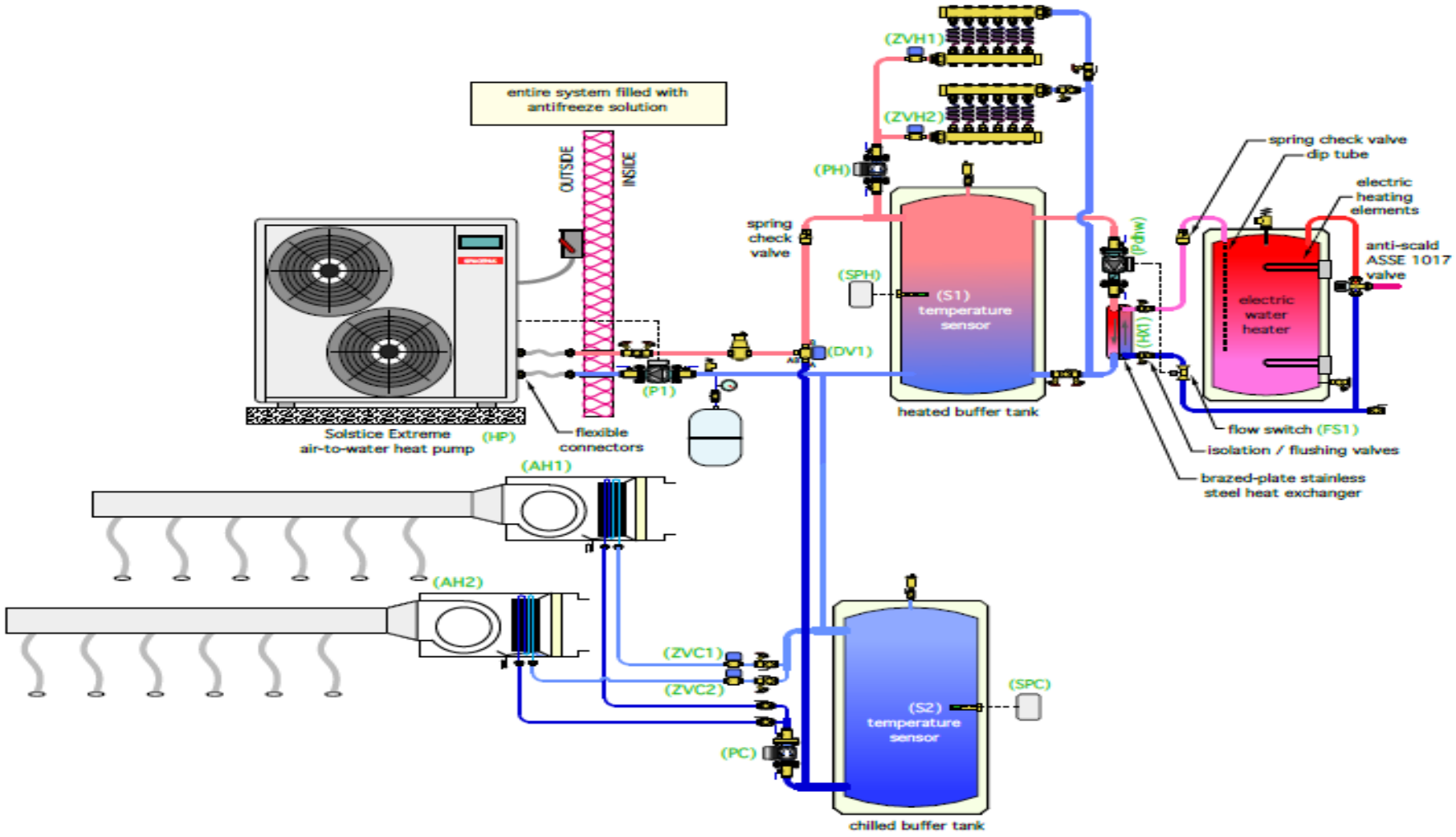




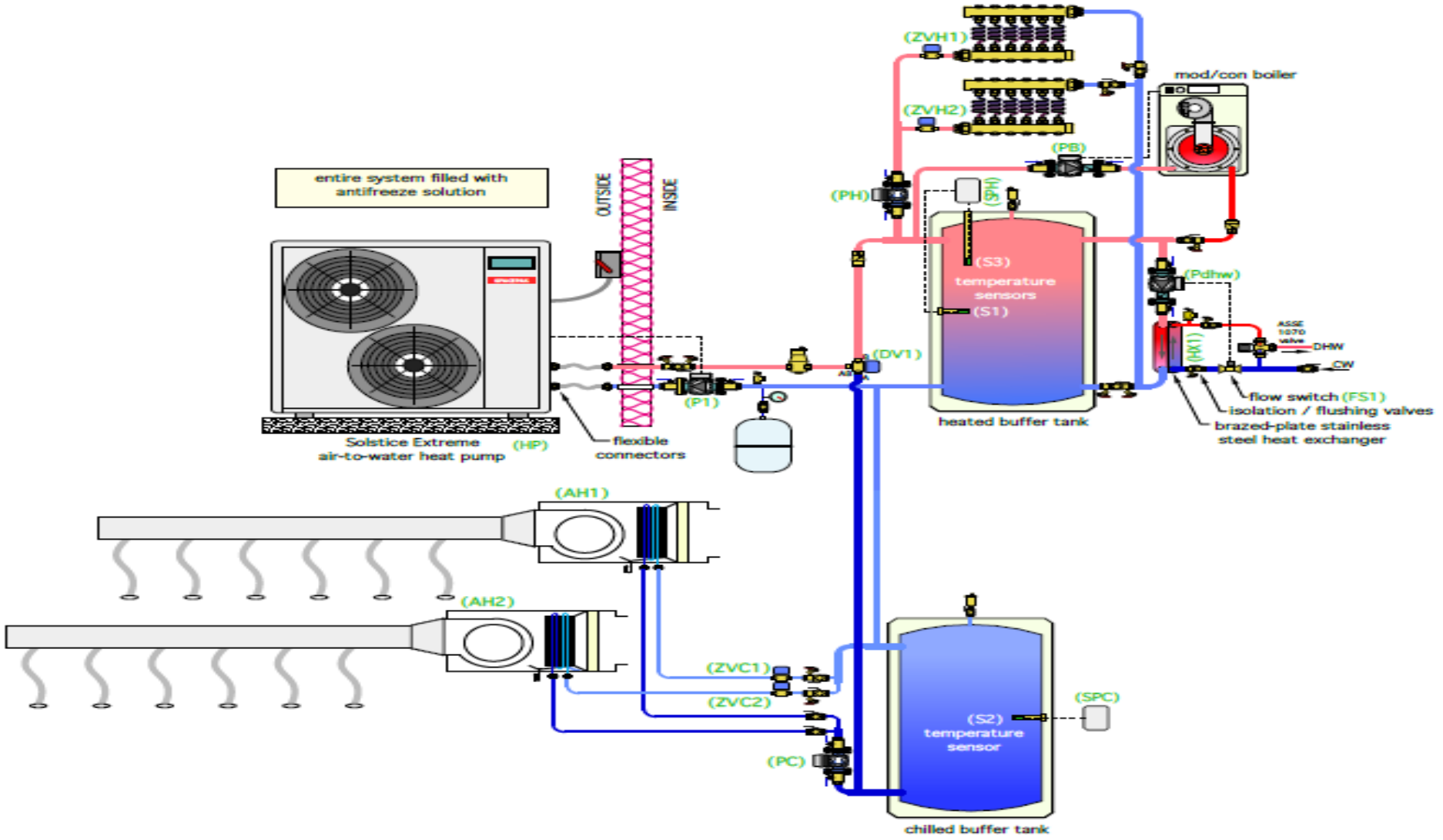
Radiant Heating with HW Preheat



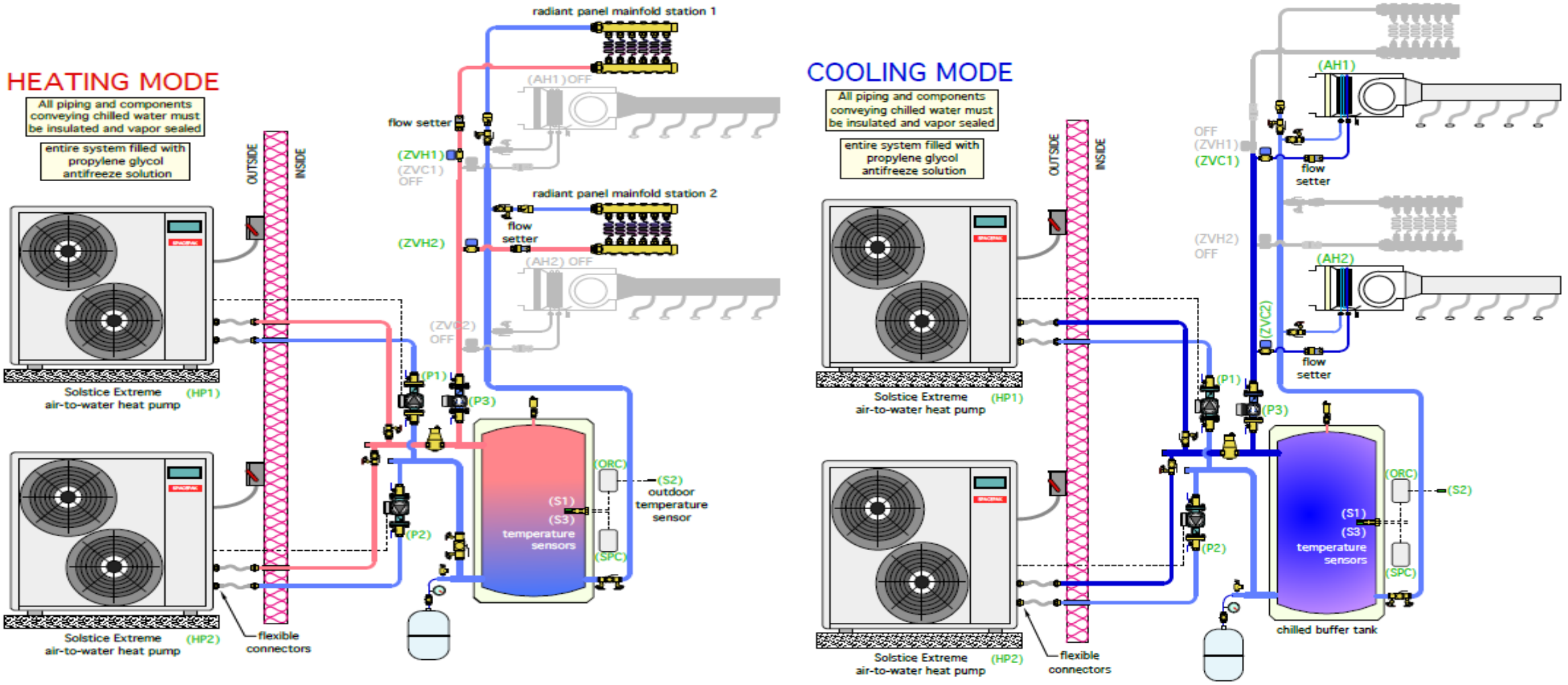
Heating and Cooling with HW Preheat with 2 Buffer Tanks



Heating-Cooling-Boiler and HW Preheat



Multiple Heat Pumps Heating and Cooling

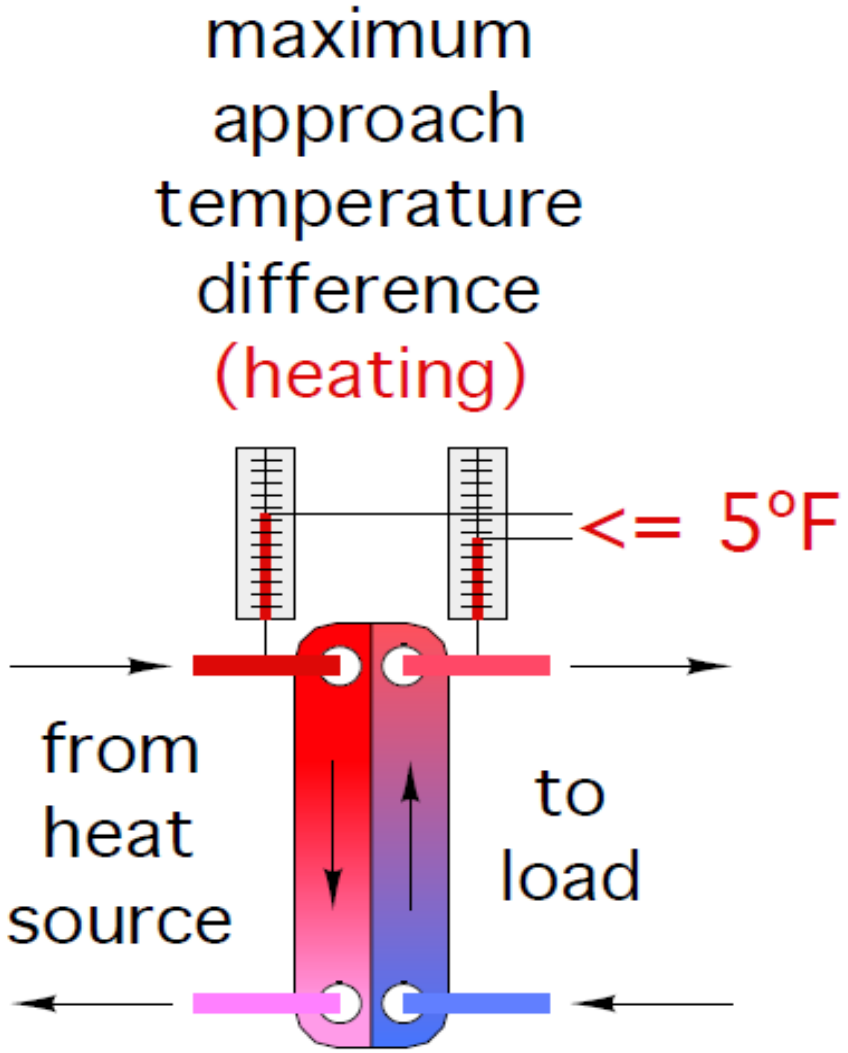


PLEASE DON'T…….

Are there any Questions?

Plate Exchanger Considerations

- Be sure to size heat exchanger properly
- Cold water applications react differently than hot
- If not sized properly short cycling **WILL** occur
- Buffer tank target temperatures are subject to and limited by the exchanger and its capacity
- Cold water temperature differentials can be affected more than in heating applications



Heat Pump with Plate Heat Exchanger

Figure 7-3

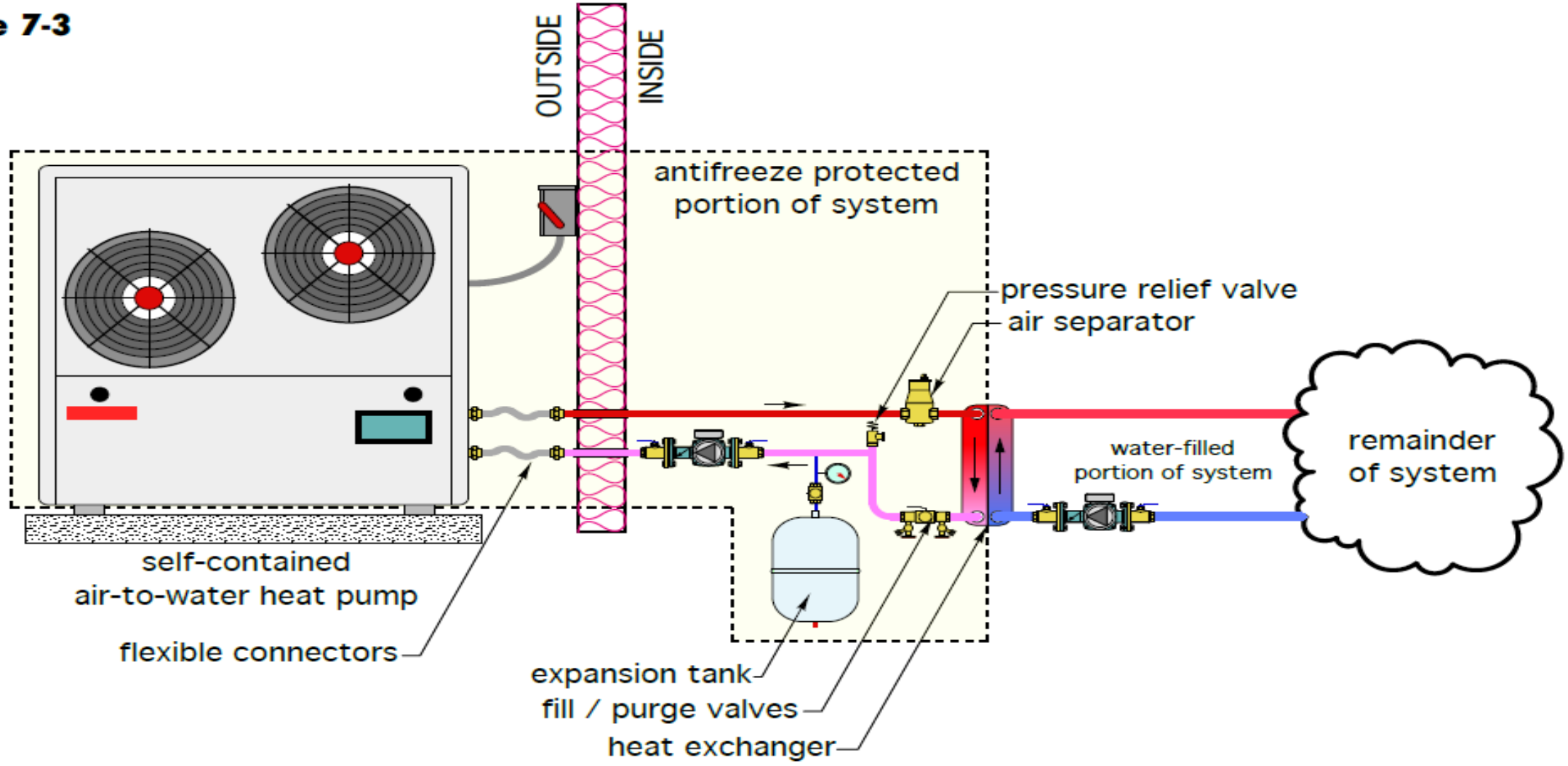
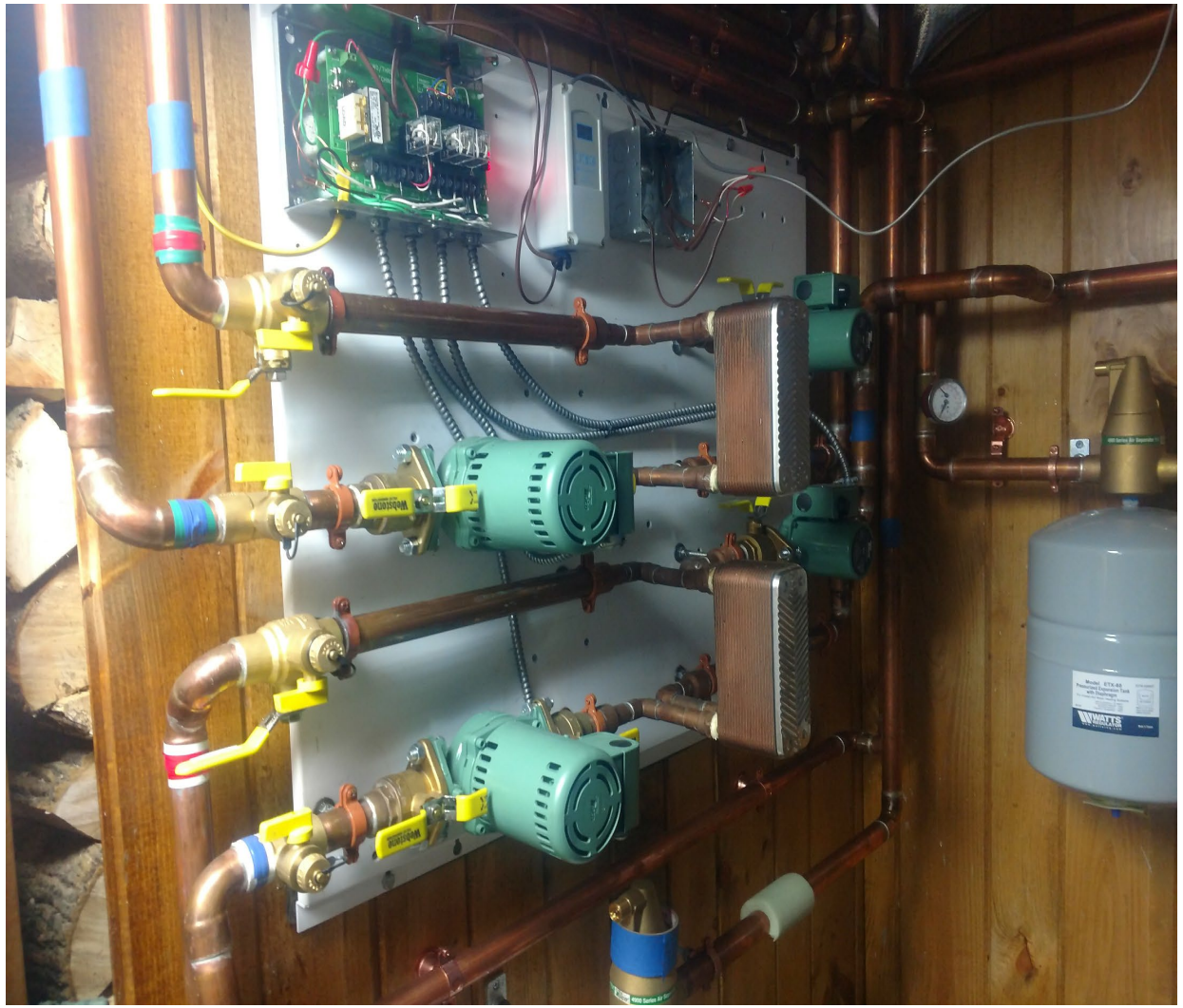


Plate Exchanger Application (900 gallons of storage)



Insulate-Insulate-Insulate (Chilled water WILL result in condensation)

SSIC (SpacePak System Interface Control)

The SpacePak SSIC System Interface Control takes inputs from up to five air handlers and outputs the system signals to the chiller, boiler and heat pump. Air Handlers receive their calls from their respective thermostats and outputs a heating or cooling call to the SSIC. Based on these demands, the SSIC determines how to operate the system.

Standard Features

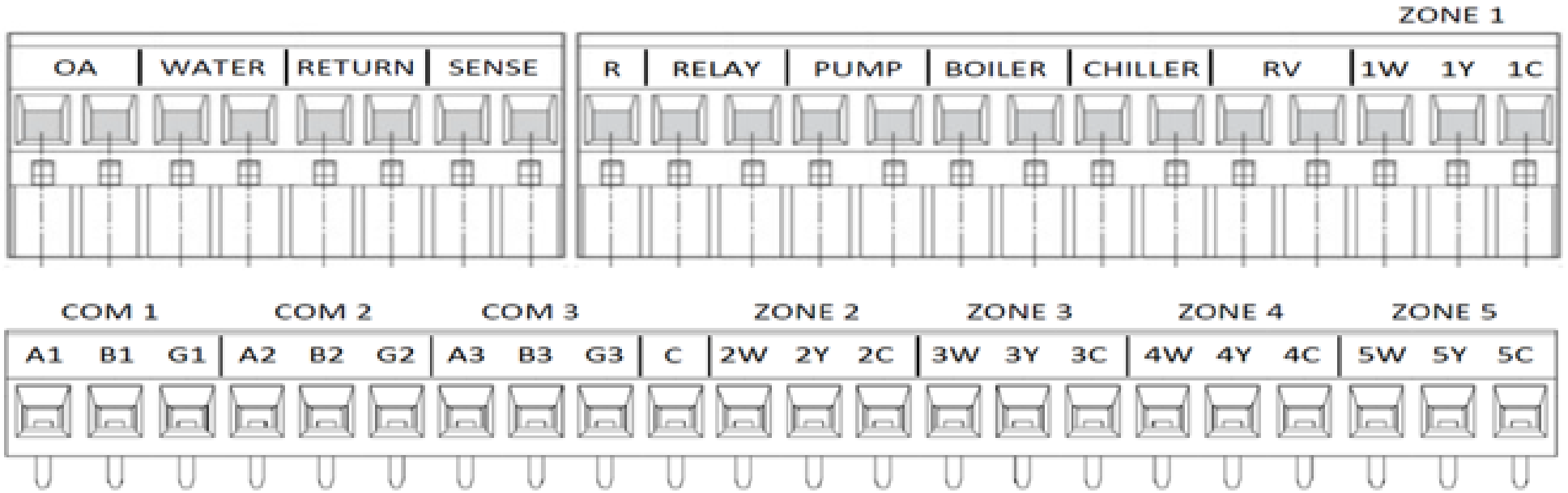
- Outdoor Air Temperature Sensor
- Water Temperature Sensor
- Buffer Tank Sensor

SSIC Standard Features Continued…….

- Basic Modes Include- Boiler Only, Chiller Only, Outdoor Temp Switch over, boiler help and staging and outdoor reset (coming soon)
- Normal Zone Controlled Mode- Used when there is not a need to maintain a buffer tank temperature
- Buffer Tank Priority- Maintain a constant heating our cooling setpoint within the buffer based on outside temperature
- Buffer Tank Setpoint Curve- Maintain a varied buffer setpoint based on outside air temperature

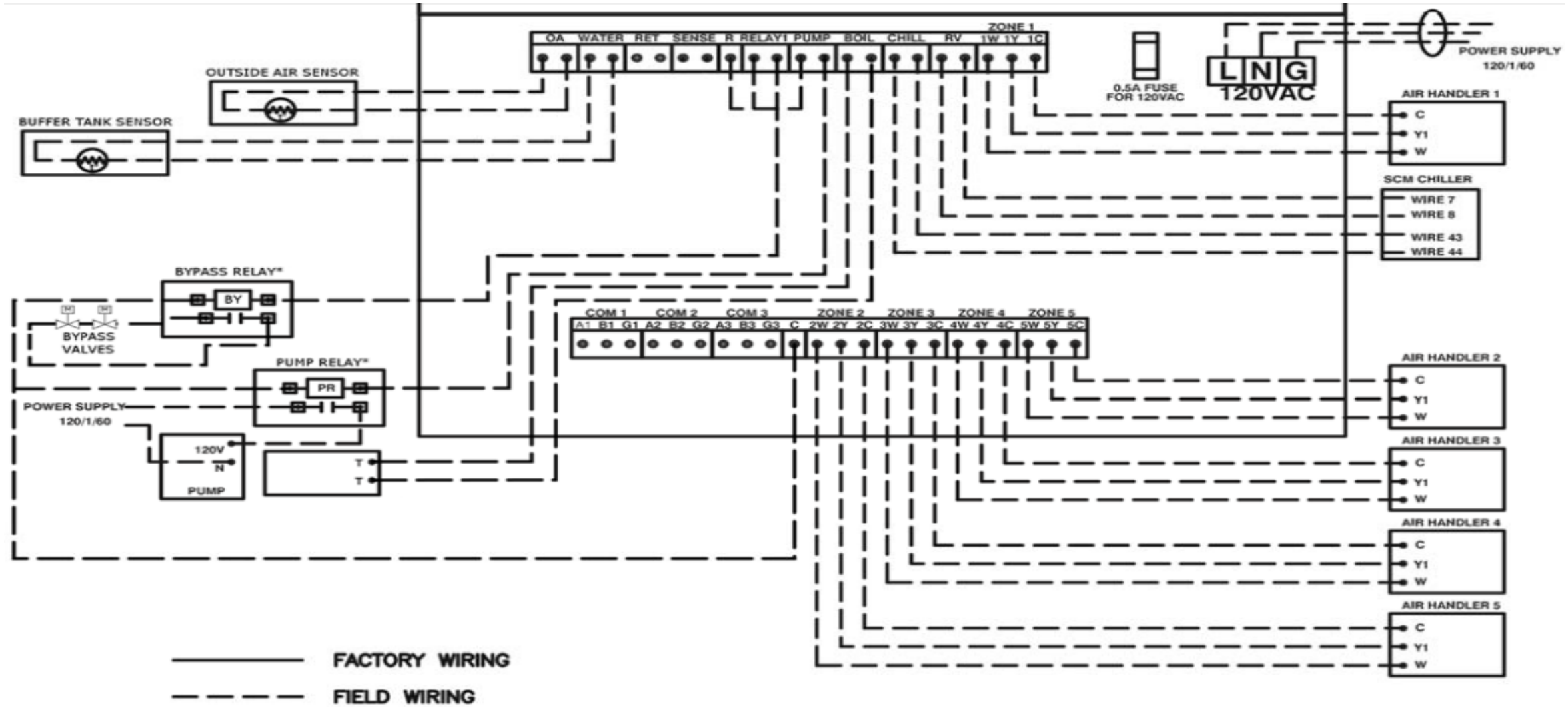
  (coming soon)
- Boiler Help Mode- Based on the buffer tank set point, OAT and differentials the boiler can be called on during a heating cycle to assist the Heat Pump in reaching buffer setpoint under above average loads.
- Accepts individual (24V) calls from Air handlers (or terminal units when properly equipped) for proper operation during times where outside temperatures do no require the buffer to maintain a specific temperature
- Auxiliary Pump relay – For use when a Primary system pump is needed ex. zone valve system
- Buffer tank Bypass function- for use when the oppositely maintained tank temperature is needed for a short amount of time
- Soon the SSIC will be capable of unit Staging among other improvements

SSIC Wiring Callouts

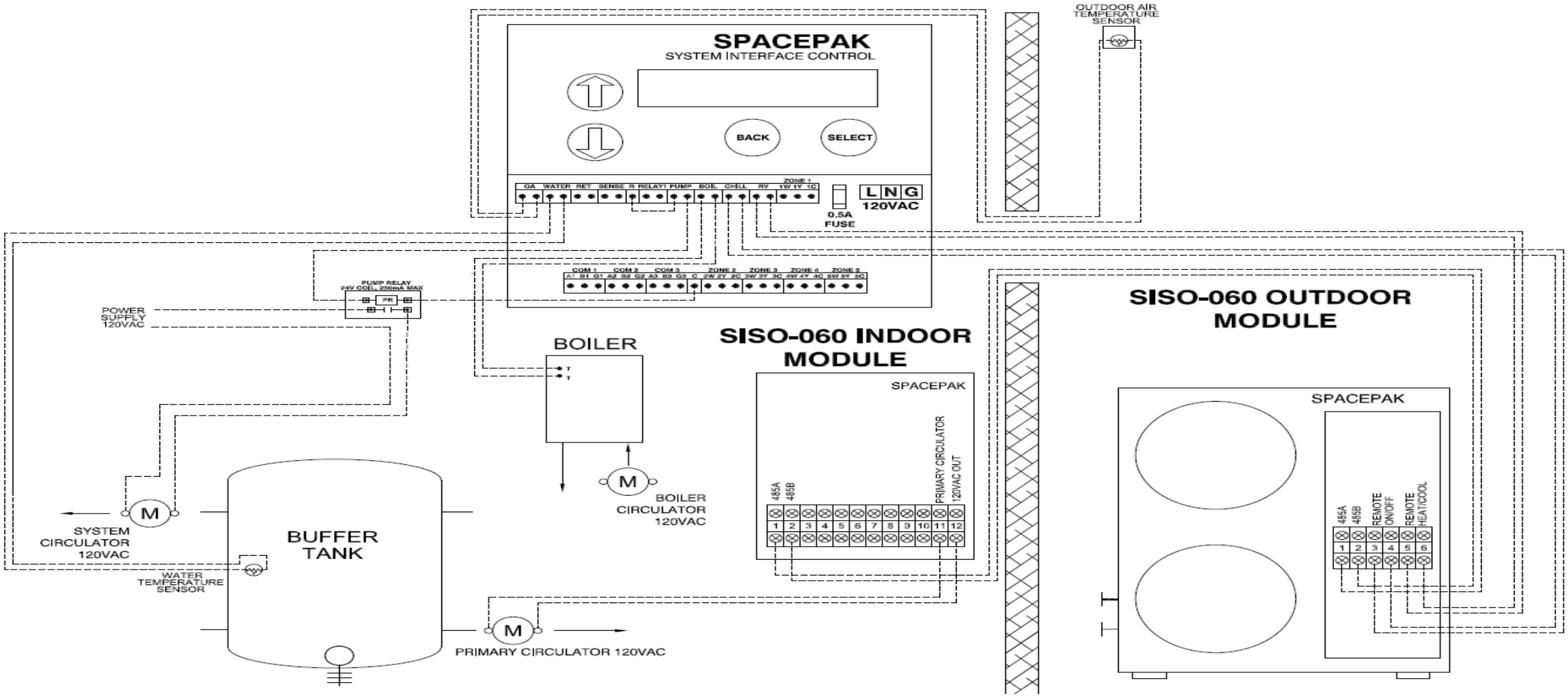


OA	Outdoor Air Temperature Sensor	ZONE X	Connection from Zone X (1-5) Air Handler
WATER	Water Temperature Sensor	XW	24VAC Heating Signal from Air Handler
RETURN	Return Temperature Sensor	XY	24VAC Cooling Signal from Air Handler
SENSE	Misc. Temperature Sensor (N/A*)	XC	Ground from Air Handler
R	24VAC	COM X	Connections for Future Models (N/A*)
RELAY	Misc. Relay for Future Models (N/A*)	C	24VAC Return
PUMP	Dry Contact Relay to activate the Pump		
BOILER	Dry Contact Relay to activate the Boiler		
CHILLER	Dry Contact Relay to activate the Chiller's enable		
RV	Dry Contact Relay to activate Chiller's Reversing Valve		

SSIC Wiring



SSIC System Layout with SIS and Boiler in “boiler help mode”



SpacePak Team Provides Pre-Sale Support

PreSaleSupport@SpacePak.com

Pre-Sale Support is a team of application engineers who provide optimal turnaround in answering your questions regarding system design and layout as well as assistance in equipment selection and job quoting.

- Available to Representatives, Wholesalers and Contractors
- Any questions regarding equipment already shipped should be directed to: (413) 564-5530
- TechnicalService@SpacePak.com: (413) 564 - 5530

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- Factory-authorized certification status
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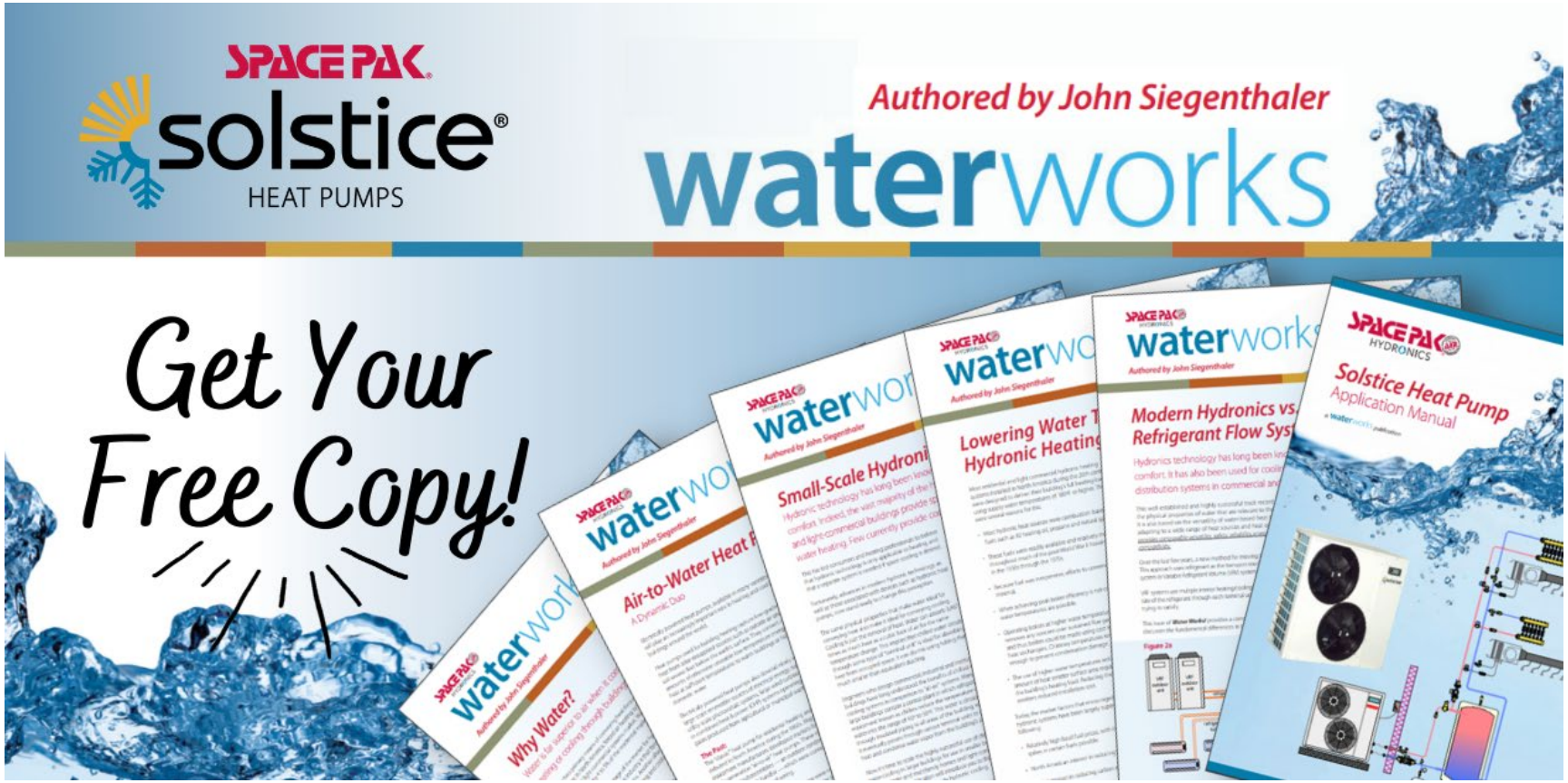
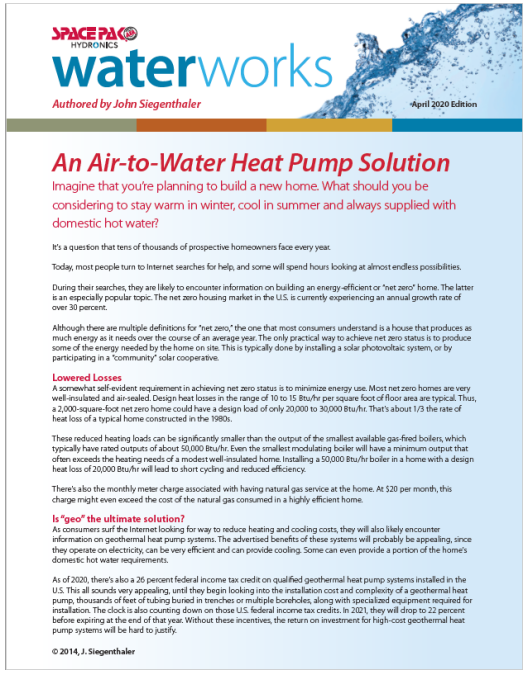
- Local Leads form Homeowners

Then please select YES in the post-webinar survey and we will email you the registration form.

Register for WaterWorks

Via www.spacepak.com/water-works





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