General Information: Single Packaged Vertical Wall-Mount Air Source Inverter Heat Pump

1. Submittals

a. Provide submittals in accordance with Division 01 and Section 15.

b. Submittals for Single Packaged Wall Mount heat pump shall include equipment performance, dimensions, required clearances, and electrical requirements and connections. Variable capacity equipment shall include the following performance data: CFM, EER, COP, IPLV, Total, Sensible, and Latent capacities at standard AHRI conditions and for all stages of operation. Submittals shall also include performance at design conditions per the schedule.

c. Factory tested sound data per ANSI S12.60. Data shall include dBA levels at all operating conditions and ERV speeds, including exterior sound level.

d. Factory Warranty documentation verifying 5-year compressor and 5-year parts warranty.

e. Control submittal if the equipment manufacturer provides the controller.

f. Equipment shall be provided by Bard Manufacturing or approved equal.

2. Quality Assurance

a. Design, construction, testing and installation shall comply with the following standards as applicable:

1) UL or ETL classified in accordance with ANSI/UL STD 60335-1 & ANSI/ UL STD 60335-2-40/CSA STD C22.2 No. 60335-1 & CSA STD C22.2 No. 60335-2-40 Fourth Edition.

2) Certificate of performance by AHRI or another independent third-party testing agency. AHRI or third-party testing will be in accordance with the Air Conditioning Heating and Refrigeration Institute (AHRI) Standard 390-2021 for Single Package Vertical Units (SPVU). Self-test data provided “in accordance with AHRI 390-2021” will not be accepted or considered as an alternate. Consideration of exceptions will require testing by a third-party agency preapproved by the specifier and an accompanying statement of indemnification from the Manufacturer.

b. An ISO 9001:2015 Certified Manufacturer shall successfully manufacture SPVU equipment continuously for at least five years.

3. Operating Characteristics

a. Unit shall have a variable capacity mode of operation for sensible load matching and provide longer run time capability for humidity reduction.

b. Unit shall be capable of simultaneous compressor heating and defrost cycle operation when using accessory electric strip heat. The unit's electric nameplate shall display the required electric circuit. Factory-installed adjustable controls to allow low amp draw operation by preventing simultaneous compressor operation and strip heat during heating or defrost operation shall not be permitted unless accurate electrical values are provided on the unit nameplate. Standard heat pumps with concurrent electric heat operation or dedicated low ampacity units manufactured and shipped with correct nameplate data shall be accepted.

c. Supply airflow shall automatically adjust to maintain constant cfm at rated airflow independent of external static pressure up to .5" WC.

4. Warranty

a. The unit shall include a full 5-year parts warranty covering the compressor, sealed refrigeration system, heat exchange coils, and ventilation packages, as defined by the terms and conditions of the Bard Limited Warranty agreement. Labor is excluded from the Bard standard warranty. Any non-equivalent 5-year compressor and 1-year parts warranty shall not be accepted. All parts warranty documentation shall be included in the submittal data. Any exceptions to a manufacturer's standard warranty must be acknowledged in writing by the Manufacturer's senior manager.

5. Training, Commissioning, and Technical Support

a. Optional on-site, remote, and video training available. See www.bardhvac.com for additional information.

b. Optional on-site commissioning available. See www.bardhvac.com for additional information.

c. Standard technical services from Bard using trained, experienced technical staff. Both phone and video support services are available. See www.bardhvac.com for additional information.

d. Installation manuals, service manuals, application guides, replacement parts manuals, and wiring diagrams ship with the product and are available at www.bardhvac.com.

e. Installation shall be in full accordance with the manufacturer's instructions, generally accepted practices, and all applicable codes.

General Equipment Requirements

6. Capacity and efficiency

a. Capacities of Heat Pumps as indicated on drawing and schedules are net capacities required.

b. Efficiencies shall be at AHRI conditions, and submitted performance shall be at specified conditions per the schedule.

c. Furnish and install a self-contained, vertical wall-mount heat pump to be manufactured by Bard Manufacturing Company.

d. Units shall be self-contained vertical packaged (SPVU) heat pumps. Cooling performance shall be tested and certified by AHRI per Standard 390-2021 and listed in the AHRI database. AHRI certificate shall be included in the submittal data. If AHRI documentation is unavailable, third-party performance certification by an agency preapproved by the specifier may be considered. Third-party submittals of capacity and efficiency in heating and cooling shall be provided 10 days before the bid and include a statement of performance indemnification from the Manufacturer.

7. OPTIONAL: Hot Gas Reheat Dehumidification

a. Hot gas reheat dehumidification control removes moisture from the indoor airstream without overcooling the indoor space.

b. The dehumidification circuit incorporates an independent heat exchanger coil in the supply air stream in addition to the standard evaporator coil. This coil reheats the supply air after it passes over the cooling coil and is sized to nominally match the sensible cooling capacity of the evaporator coil. Extended run times in dehumidification mode can be

achieved using waste heat from the refrigeration cycle to accomplish the reheat process. At the same time, large amounts of moisture can be extracted from the passing air stream.

c. The dehumidification cycle shall be energized by a rise in relative humidity above set point. The unit shall energize in the cooling mode, and a two-position valve will energize, allowing hot refrigerant gas to pass through the reheat coil and reheat the cold air leaving the evaporator coil.

d. An electronic expansion valve (EEV) will be utilized to help maintain a very low sensible capacity and consistent latent capacity. The dehumidification cycle shall have on/off capability.

e. If the controller calls for cooling or heating during the dehumidification cycle, the unit shall drop out of dehumidification to satisfy the call from the thermostat.

8. Field Supplied Electrical and Voltage Requirements (Select one)

a. Unit shall be available in 208/230VAC, single phase 60hz nominal voltage. The same unit shall also be able to operate at 200/220VAC, single phase 50hz nominal voltage.

b. Unit shall be available in 208/230VAC, three-phase 60hz nominal voltage. The same unit shall also be able to operate at 200/220VAC, three-phase 50hz nominal voltage.

c. Unit shall be available in 460VAC, three-phase 60hz nominal voltage. The same unit shall also be able to operate at 415VAC, three-phase 50hz nominal voltage.

9. Cabinet and Component Construction

a. Constructed of 20-gauge pre-painted steel consisting of galvanized steel in accordance with ASTM A653, modified acrylic primer .25 MIL., topcoat paint shall be .75 MIL. The cabinet shall be tested to withstand a 1000-hour salt spray test per ASTM B117-03.

b. Exterior panels shall include a filter service door for easy access for filter changes.

c. Fresh air intake shall use slotted or louvered panels for opening protection.

d. Insulation: The cooling section shall be fully insulated with non-fiberglass insulation. A foil facing shall be provided on cabinet panels for easy cleaning if necessary and protection against insulation damage. Insulation must meet flame/smoke rating requirements of 25/50 per UL723. Exterior cabinet panel insulation shall be a minimum of ¾" thick with an R2.9 value or greater. Insulation shall be adhered to cabinet panels using a hot melt gluing process or equivalent.

e. Color options (select one): Beige, White, Gray, desert Brown, Dark Bronze, Stainless Steel, or Aluminum.

f. Low voltage electrical entrance into cabinet shall be Ø.875 for easy conduit connection. High voltage electrical entrances shall be triple knockouts with Ø1.75, Ø1.375, Ø1.063 connection sizes.

g. Built-in side flanges shall be used to mount the unit to the exterior wall surface during installation. Side mounting holes for unit installation shall be Ø.375" for wall fasteners. Florida wind code information regarding installation and code compliance shall be supplied upon request.

h. Unit shall include a sloped top for water drainage. Pitch of sloped top is 4° angle.

i. The top fill piece used to seal the top of the unit to the wall shall be factory-supplied. The top fill shall be caulked so as not to allow water between the unit and the wall. A drip edge must be field-supplied and installed if a top fill piece is not factory-supplied or used. Side mounting flanges shall be built into the unit cabinet.

j. The evaporator coil drain pan shall be made from primed and painted steel for corrosion resistance. The primary drain connection shall be a non-corrosive material. The drain line shall be a flexible Vinyl or PVC tubing material of .750 I.D. and 1" O.D. An emergency pan overflow location notch is provided in case of an obstructed drain line. This drain pan

notch is located away from the electrical parts in the unit. Caulk or other sealants used must be 100% silicone rubber with a design temperature from -76°F to 350°F (-60°C to 177°C) for durability and seal the pan for the life of the product.

k. A 2" supply air and return air duct flange shall be provided for ducted connections and short stub ducts through wall cavities. A foam seal shall be provided around the supply and return openings for reduced air infiltration into the room or area being conditioned.

l. OPTIONAL: A bottom installation support bracket shall be supplied for optional use. If used during installation, the bottom support bracket provides unit support while fasteners are inserted into the side flange mounting holes.

m. OPTIONAL: Stainless steel cabinet construction with 316-grade exterior panels shall be available. This includes the upper unit front, service panels, condenser grilles, sides, fan shroud, base, exterior brackets, and unit back. Fasteners and the outdoor fan motor mount shall be constructed of stainless steel. Serviceable panel fasteners shall have clips, threaded riv-nuts, or extruded holes to resist thread stripping during panel removal.

n. OPTIONAL: Cabinet coating shall be available for harsh environments where additional cabinet protection is required. Complete disassembly is required to apply the coating to all unit areas. Piping and component casings are also coated. Labels are masked for easy reference after the coating process. Surfaces are cleaned with solvent or a steam cleaner. The interior bare surfaces are etched with GalvaPrep or equal, then rinsed. Painted surfaces are scuffed and then cleaned to be free of dust, dirt, and debris. An epoxy primer is then applied at 50 to 75 microns thickness. An epoxy shell is then applied at 100 to 200 microns thickness. After a 12-hour dry time, a high gloss urethane coating is applied at 50 to 75 microns thickness.

o. OPTIONAL: All non-dehumidification units above the 3-ton capacity range shall have a notched or recessed top option to allow the unit to be installed in overhanging rooflines during legacy equipment replacement.

Mechanical Cooling, Heating, and Electric Heat

10. Refrigeration System and Coil Construction

a. The evaporator coil shall have a standard hydrophilic protective fin coating (green fin). Exposed aluminum fins are not acceptable. Equivalent approved sprayed or dipped protective coatings are acceptable. The fin coating is green and applied to the fin surface before constructing the coil. The fin coating shall resist the following corrosive agents: Ammonia, Sodium Hydroxide, Sodium Chloride, Acidic solutions, and solvents. Salt spray corrosion testing per ASTM B177 shall have no effect after 500 hours. Acidic Brine Immersion testing per HTM0039 shall have no effect after 120 hours.

b. The refrigeration system shall be pressure tested to a minimum of 450psi after all braze joints are completed. After pressure testing, a trace gas shall be used to leak-test the refrigerant system. The refrigeration system shall then be put under a vacuum of 50 microns or less before adding refrigerant. Once the refrigerant is added, another leak test shall be performed on the final sealed system. The refrigerant used shall be R-410A.

c. OPTIONAL: The condenser coil and/or evaporator shall have a Technicoat AA option for advanced corrosion protection or equivalent. Technicoat AA has the following properties:

1) Pass 10,000 hours of salt spray testing per ASTM B 117.
2) Pass 3,000 hours of acetic salt spray testing per ASTM G85.
3) Pass 40 cycles DIN 50018 Kesternich Sulphuric testing.
4) 25 micron or one mil coating thickness.
5) The application process shall coat the fin pack core, header, and hairpin tubes.
6) Contains 18 grams or less of VOC per liter of coating material.

d. Access for condenser coil cleaning shall be provided for routine maintenance.

e.

11. Inverter Compressors

a. Shall be an inverter-driven hermetically sealed scroll compressor with internal unloading providing fully modulating capacity control of heating and cooling operation.

b. The compressor shall contain a Brushless Permanent Magnet (BPM) motor for smooth, efficient operation.

c. Compressor shall contain a positive displacement oil pump for enhanced reliability.

d. The compressor shall be mounted on a double floating isolation mounting system and fitted with a factory-installed sound attenuation jacket.

e. The suction and discharge lines connected to the compressor shall contain braided stainless steel vibration absorbers to avoid vibration transferal into the copper line sets for sound reduction.

12. Refrigeration Metering and Control

a. The refrigeration circuit shall have factory-installed high- and low-pressure controls with a resettable lockout circuit. An internal overload shall protect the compressor against excessive motor temperatures and currents.

b. Short cycle protection shall be standard.

c. The refrigeration circuit will include an electronic expansion valve (EEV), liquid line filter dryer, refrigerant service ports, service port caps, and discharge muffler.

d. A charge compensator device shall be used on 5-ton models to provide additional refrigerant charge when the unit operates in heat pump mode.

13. Compressor Inverter Drives

a. Inverter Drive shall convert AC power to DC power for the compressor. The drive shall dynamically adjust speed and manage compressor operation through the DC power sent to the compressor BPM motor.

b. Controls used for compressor capacity control shall provide variable speed operation within the operating envelope provided by the manufacturer. Compressor operation will be fully variable based on a percentage requirement provided by the control logic. Multi-step compressor operation shall not be acceptable.

c. Drive control features include soft start for reduced starting amp loads (no locked rotor amps), overload/overcurrent fold-back protection technology, and under/over voltage protection.

d. Phase protection shall be built into the drive for 3-phase units along with active power factor correction for optimal power quality to the drive.

e. Drive shall provide stator heat for refrigerant oil migration reduction. This eliminates the need for a crankcase heater.

f. LED status display light and Modbus communication with the unit PLC control board provide real-time diagnostics for easy troubleshooting.

g. The drive shall contain an EMI filter and a choke and monitor discharge temperature for added system protection.

14. Optional Electric Heat

a. Unit models shall have optional factory or field-installed auxiliary electric heat. Electric heat.

b. Electric heat shall be of a resistance type with primary and secondary limits/thermal cutoffs.

Unit Indoor and Outdoor Airflow

15. Variable Speed Indoor Blower Motor

- **a.** The indoor blower motor shall be electronically commutated variable speed (ECM), factory programmed to produce rated airflow from 0” to .5” WC of external static pressure.
- **b.** The motor is to be self-adjusting to provide proper rated airflow at high static pressures without user adjustment or wiring changes by the user.
- **c.** The motor shall be pre-programmed for a 20-second ramp-up and a 60-second ramp-down for quiet, smooth starting and stopping.
- **d.** Anti-rust coating shall be applied to the motor shaft for ease of fan motor serviceability.
- **e.** EC motor control module shall be remotely mounted with a plug-in connection to the motor for easy maintenance and troubleshooting.
- **f.** PSC motor shall not be acceptable.

16. Variable Speed Enclosed Outdoor Condenser Motor

- **a.** The motor shall have an enclosed (no exposed windings) casing and use a long-life ball-bearing design.
- **b.** Factory-integrated low ambient control to control outdoor fan speed shall be standard. PLC control board monitoring system pressures shall control low ambient operation.
- **c.** Anti-rust coating shall be applied to the motor shaft for ease of fan motor serviceability.
- **d.** Electronically Commutated Motor (ECM) shall be used for quiet outdoor and indoor operation. Gradual ramp-up and slow-down shall be used to reduce outdoor fan sound levels using 0-10VDC signal from the unit PLC controls operation.

17. Outdoor Condenser Airflow (Select One)

- **a.** The standard blow-thru airflow design allows condenser air to be brought into the sides of the unit, pass through the condenser coil, and discharge through the front unit grille.
- **b.** An optional draw-thru airflow design shall allow condenser air to be brought into the front of the unit, pass through the condenser coil, and discharge through the left and right-side unit grilles.

Filtration and Indoor Air Quality

18. Filters (Select One)

- **a.** The unit shall be factory furnished with 1” or 2” pleated primary filters and have a Minimum Efficiency Reporting Value per ASHRAE standard 52.2. Filters available in the following ratings:
  - **1)** MERV 2, 1” disposable or washable.
  - **2)** MERV 8, 2” pleated.
  - **3)** MERV 11, 2” pleated.
  - **4)** MERV 13, 2” pleated.
- **b.** All filters shall be accessible through the filter access door. Filter sizes shall be readily available in commercial sizes.
- **c.** An optional pressure-regulated dirty filter switch indicator with adjustable sensitivity shall be available as a control option.

19. UVC-LED (Optional with MERV 13 Filter)

- **a.** Provides ultraviolet germicidal irradiation (UVGI) that disinfects the air through short wavelength ultraviolet light.
- **b.** UVC light system is rated for 7 to 10 years without required bulb maintenance.

c. UVC light will be factory or field installed.

20. Bipolar Ionization Device (Optional with MERV 13 Filter)

a. Needle Point Bipolar Ionization devices will be factory or field installed.

Electrical Components and Unit Controls

21. General Electrical Components

a. Electrical components shall be easily accessible for routine inspection and maintenance through front or side service panels.

b. Circuit breakers shall be standard on all 208/230-volt models and a disconnect standard on all 460-volt models.

c. Circuit breaker/disconnect access is through a lockable access panel. Lock and key are to be provided with each unit.

d. Unit shall have an entry for line voltage through the right and/or left side or back panel with optional single or dual circuit options depending on voltage and amperage requirements.

e. The internal low voltage control circuit shall consist of a current-limiting 24 VAC type 75 VA transformer with a resettable circuit breaker.

22. PLC Control Board

a. PLC board shall be standard for all models. The control board shall include a USB-C port for software updates and a CAT5 ethernet connection. DIN mount board with I/O connections through unit wiring shall include plugs for easy disconnection in case of need for replacement.

b. A communication cable shall connect a display interface (PLD Pro) to the PLC control board. The PLD Pro is located in the unit control panel and is easily accessed through the front of the unit. It provides a multi-line display and 6-button interface inside the wall mount unit and shall display superheat, discharge pressure and temperature, stored alarms, setup menus, sensor readings, and diagnostics.

c. the PLD Pro shall provide a self-test mode for commissioning and diagnostics.

d. Only 4 wires shall be needed to connect the unit PLC board and the BrightStat room controller. 24VAC hot, 24VAC common, positive BACnet RS-485, and negative BACnet RS-485 connections.

e. Ventilation control for energy recovery, demand ventilation, and economizer use shall use logic in PLC control board. Ventilation setup shall be completed using the BrightStat controller located in the indoor space.

f. Control logic for defrost shall be by temperature and time. After 30, 60, or 90 minutes (selectable), the heat pump control shall place the system in defrost mode. The defrost circuit shall consist of a solid-state electronic heat pump control. A 60-minute timer (factory default setting) shall initiate a defrost cycle if the outdoor coil temperature indicates the possibility of an iced condition. Both time and temperature are used for heat pump defrost logic.

g. An adjustable five-minute delay shall be programmed into the unit PLC to prevent rapid compressor short cycling. A low-pressure bypass shall be incorporated into the heat pump control board to prevent nuisance tripping during low-temperature start-up.

h. A **Quiet Mode** of operation shall be accessible through the BrightStat room controller. Quiet mode shall provide reduced compressor and indoor fan operation to lower indoor sound levels. Quiet mode is often used in libraries and areas where sound reduction is a high priority.

i. A **Boost Mode** of operation shall be accessible through the BrightStat room controller. Boost mode shall provide additional compressor capacity beyond rated capacities based on indoor room temperature. Boost mode is often used for short periods of increased capacity when outdoor conditions temporarily warrant increased heating or cooling.

j. PLC control board is password protected with 4-level security access.

Ventilation and Outdoor Air Intake (Select One)

23. None (Block Off Plates)

24. Standard Barometric Intake Damper without Exhaust Damper

a. An intake damper opens when the indoor fan is operational.

b. The damper can provide outdoor air intake of up to 25% rated airflow (the actual amount depends on room pressurization).

c. Pins shall allow for airflow amount adjustment.

d. A cleanable vinyl screen shall provide pre-filtration of entering air.

25. Standard Barometric Intake Damper with Exhaust Damper

a. An intake damper opens when the indoor fan is operational. The exhaust damper opens based on room pressurization.

b. The damper can provide outdoor air intake of up to 25% rated airflow (the actual amount depends on room pressurization).

c. Pins shall allow for airflow amount adjustment of the intake and exhaust air damper.

d. A cleanable vinyl screen shall provide pre-filtration of entering air.

26. Economizer/Commercial Ventilator with Temperature and/or Humidity Monitoring

a. The vent shall provide an outdoor air intake and room air exhaust path to reduce room pressurization.

b. The damper can provide outdoor air intake of up to 100% rated airflow (the actual amount depends on room pressurization).

c. The vent shall use the unit PLC control board for economizer control with the following features:

1) Monitor both outdoor temperature and/or humidity for economizing acceptability. Acceptable conditions are based on outdoor RH% or dewpoint.

2) Capable of modulating CO2 control using BrightStat CO2 expansion board.

3) Capable of a minimum blade position energized during occupancy.

4) Compressor lockout feature based on outdoor temperature.

5) Supply air sensor, mixed air sensor, and return sensor used.

6) Ability to disable economizer free cooling but still provide occupancy ventilation.

d. The damper blade and motor shall spring closed during power loss. The blade shall be closed within 30 seconds when power is removed from the damper.

e. Ultra-low leakage seals shall be provided to reduce air leakage through damper assembly. The damper meets 4cfm/ft2 blade leakage requirements per AMCA 500-D-2012 testing procedures.

f. A cleanable vinyl screen or coarse filter shall provide pre-filtration of entering air. Exhaust air shall have a cleanable media to avoid infiltration of debris during operation.

27. Energy Recovery Ventilator (ERV)

a. The Energy Recovery module shall consist of 2 rotary wheels in an insulated cassette frame complete with silica gel desiccant permanently bonded, seals, drive motor, belt, intake, and exhaust blowers.

b. The inherent design of the ERV shall be such as to promote self-cleaning in standard conditions.

c. Intake and exhaust blower motors shall be fractional horsepower PSC motors providing 3 selectable cfm levels. Intake and exhaust airflow shall be independently adjustable, providing for positive pressurization of the space.

d. The ERV thermal performance shall be certified by BOTH the ERV media manufacturer and the HVAC equipment manufacturer in accordance with ASHRAE Standard 84, Method of Testing Air-to-Air Heat Exchangers, and ARI Standard 1060, Rating for Air-to-Air Energy Recovery Ventilation Equipment Cassettes, and shall be listed in the ARI Certified Products. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

e. The energy transfer media shall include enthalpy transfer utilizing silica gel desiccant of other media with high latent transfer capability. All components of the ERV assembly shall be warranted (parts only) 5 years from the installation date. ERV performance at design conditions shall be furnished upon request.

f. A cleanable vinyl screen or coarse filter shall provide pre-filtration of entering air.

Optional Standard Accessories

28. Ductless Direct Supply Indoor Grille Register

a. Supply air grille sized to match unit supply discharge flange. The grille is designed to fit the supply duct in the wall cavity between the unit and the inner wall surface.

b. Silver finish.

c. 4-way deflectors provided for even air distribution in the room.

d. The grill Register shall have a standard 2” flange to provide coverage of the supply wall cavity and allow fasteners to attach the grille to the wall. A 1” flange supply grille option is available.

e. The grille register shall have an anodized aluminum or silver finish.

29. Ductless Direct Return Indoor Grille Register

a. The return air grille register is sized to match the unit return intake flange. The grille is designed to fit the return duct in the wall cavity between the unit and the inner wall surface.

b. Silver finish.

c. 45° angled deflectors provided for even air distribution in the room.

d. The grille register shall have a standard 2” flange to provide coverage of the return wall cavity and allow fasteners to attach the grille to the wall. A 1” flange supply grille option is available.

e. The grille register shall be an anodized aluminum or silver finish.

30. Optional Condenser Drain Pan Kit

a. Drain pan shall provide a means of draining defrost water from the condenser coil to avoid re-freezing on sidewalks and around the unit base.

b. A barbed plastic connector shall be provided in the pan for drain line connection. The field-supplied pan drain line shall be sized to match the factory-supplied evaporator condensate drain line.

31. Optional Shipping Crate

a. Shipping crates shall be provided for additional unit protection during transport. Unit shall ship on the standard wood skid, cardboard inner packaging, and an external wood crate.
b. Crate shall use OSB board construction with steel corners and supporting members.

Optional Curb and Sound Accessories

32. Optional Exterior Equipment Upgrade Wall Curbs

a. SPVU manufacturer shall furnish an appropriately sized wall curb manufactured of painted steel matching unit color. Spray paint of galvanized steel shall not be accepted.
b. The constructed 20-gauge pre-painted steel exterior consists of galvanized material in accordance with ASTM A653, modified acrylic primer .25 MIL., and topcoat paint shall be .75 MIL. The curb shall be tested to withstand a 1000-hour salt spray test per ASTM B117-03. Multiple colors and finishes are available to match the unit finish.
c. The wall curb is insulated with an anti-microbial flame/ smoke resistant non-fiberglass cotton material. Middle partitions are used in all curb designs that seal and separate the return and supply air paths.
d. The factory supplies the Fasteners required to attach the Bard Wall Mount unit to the curb. These include carriage bolts, washers, and Keps nuts that will be used to install the unit to the curb. A foam seal is provided between the unit flanges and the curb front surface. Fasteners required to attach the curb to the wall are field-supplied and are specific to wall construction. Installation and seismic requirements must follow all national, state, and local codes.
e. Curbs ship disassembled from the factory and are assembled in the field.

33. Optional Exterior Sound Reduction and Vibration Isolation Wall Curbs

a. SPVU manufacturer shall furnish an appropriately sized wall curb manufactured of painted steel matching unit color. Spray paint of galvanized steel shall not be accepted.
b. Constructed of 16 and 20-gauge painted steel exterior consisting of galvanized material in accordance with ASTM A653, modified acrylic primer .25 MIL., topcoat paint shall be .75 MIL. The curb shall be tested to withstand a 1000-hour salt spray test per ASTM B117-03. Multiple colors and finishes are available to match unit finish.
c. The wall curb is insulated with an anti-microbial flame/ smoke resistant non-fiberglass cotton material. Middle partitions are used in all curb designs that seal and separate the return and supply air paths.
d. Curb construction shall be comprised of an inner frame that attaches to the wall mount unit, and an outer frame that attaches to the wall surface. Industrial-grade rubber isolators separate the inner and outer frame, minimizing sound and vibration transferal. Pre-assembly is completed at the factory for ease of installation.
e. Back return opening panels are relocatable to allow for adjustment based on room construction.
f. Top or front (direct) supply air discharge versions available.
g. Fasteners required to attach the Bard Wall Mount unit to the curb are factory supplied. These include rev-bolts, washers, and nuts that will be used to install the unit to the curb. A foam seal is provided between the unit flanges and curb front surface. Fasteners required to attach the curb to the wall are field-supplied and are specific to wall construction. Installation and seismic requirements must follow all national, state, and local codes.

34. Optional Sound Isolation Interior Return Plenum

a. SPVU manufacturer shall furnish an appropriately sized indoor wall plenum of painted steel. White, Gray, and Beige colors are available. Spray paint of galvanized steel shall not be accepted.

b. Constructed of 16 and 20-gauge painted steel consisting of galvanized material in accordance with ASTM A653, modified acrylic primer .25 MIL., topcoat paint shall be .75 MIL. The Plenum shall be tested to withstand a 1000-hour salt spray test per ASTM B117-03.

c. The plenum is insulated with an anti-microbial flame/ smoke resistant non-fiberglass cotton material.

d. Plenum construction shall be comprised of perforated steel insulated sound baffles to absorb and reduce unit return air sound. Inner baffles shall have the ability to be arranged so the plenum can be installed vertically or horizontally on the indoor room wall.

35. Optional Sound Isolation Interior Supply Plenum

a. SPVU manufacturer shall furnish an appropriately sized indoor wall plenum of painted steel. White, Gray, and Beige colors are available. Spray paint of galvanized steel shall not be accepted.

b. Constructed of 16 and 20-gauge painted steel consisting of galvanized material in accordance with ASTM A653, modified acrylic primer .25 MIL., topcoat paint shall be .75 MIL. The Plenum shall be tested to withstand a 1000-hour salt spray test per ASTM B117-03.

c. The plenum is insulated with an anti-microbial flame/ smoke resistant non-fiberglass cotton material.

d. Plenum construction shall be comprised of perforated steel insulated sound baffles to absorb and reduce unit supply air sound. A 4-way deflection supply grille is supplied pre-installed in the plenum front.

Environmental Room Controls

36. Advanced Environmental Unit Controls – BrightStat is Required.

a. Variable capacity control based on room temperature. The BrightStat will maintain room conditions based on the heating and cooling setpoints. Adjustments are made to the compressor, indoor, and outdoor fan speeds based on .1° (one-tenth) temperature increment readings. Capacity control using this method is fully modulating and results in accurate temperature control without temperature differentials.

b. No battery-72-hour clock retention, non-volatile memory for all other settings

c. Automatic or manual changeover. Smart fan output for fan on during occupied times

d. Occupancy per schedule, on/off ventilation or modulating 0-10V output w/optional CO2 card.

e. Programmable (7-day, individual days) or non-programmable.

f. Selectable Maximum Heat and Minimum Cool Settings.

g. Built-in De-Humidistat, Range 30 to 95% RH, Span 5-10%.

h. Color Touchscreen display with multiple screen color and icon configurations.

i. Unit service alarm input, Configurable I/O with custom LUA programming options.

j. Modulating 0-10V heat option for indoor units with hot water plenum option.

k. User selectable 2nd stage emergency heat mode.

l. Configurable password 4 pin lock of configuration menu.

m. Adaptive learning predicts how long it takes to reach setpoint.

n. BACnet capable using 2-wire shielded twisted pair.

o. Optional 10k type 2 Outdoor remote sensor.

p. Optional 10k type 2 Indoor remote sensor.
q. Optional ZigBee wireless card for wireless sensor options.
r. Optional CO_2 card for 0-10V ventilation control.
s. Optional built-in motion sensor. Wide range occupancy sensor: up to 20 ft, 120° horizontal, 30° vertical.