CLIMATE CONTROL SOLUTIONS

General Specifications:
Bard Wall – Mount ™ CxxH-Series 15.5 IPLV "Quiet-Climate Flex" 36-42 dbA Heat Pumps, With Dry Bulb Economizer, R454B White Rodgers 1F95-1277 Thermostat

FURNISH and INSTALL

A one-piece wall-mounted, factory-assembled, precharged, prewired, tested and ready-to-operate, multi capacity two stage heat pump unit. The unit shall be approved and listed by Intertek ETL Listed (ETL US/C) for installation on combustible surfaces for zero clearance between the unit and wall. The first three feet of the supply duct must be approved for ¼" clearance to combustible material. Unit performance shall be certified in accordance with Air Conditioning, Heating and Refrigeration Institute, (AHRI). The Bard manufactured model No.C48HF-A05YP4NXJ heat pump with the integral Dry Bulb Jade Economizer operated by a properly programmed White Rodgers 1F95-1277 thermostat and installed correctly to meet the Section 120.1 ventilation requirements of California Title 24 Code. See specification sheet S3660 (current version) for complete unit specifications. For adaptation or to meet district sound specs, CxxH, Quiet Climate, may require the use of one of four sound/isolation curbs: CCURBT4860, CCURBF4860, CFCT53, or CFCF53 based on varied site applications and specifications.

The HVAC unit shall have outside air make-up for ventilation mixed with return air, filtered through the same filter, prior to passing through the indoor coil, and shall have a factory or field installable, integral dry bulb economizer (ECON-DB5A) capable of providing and exhausting 15 cfm per the anticipated 32 occupants, (480cfm) via a separate ventilation only mode. Outside ventilation air shall not bypass the indoor coil or the filter. The economizer options below shall have both a fixed position minimum position ventilation damper, a modulating ventilation damper controlled by a separate CO2 sensor or a 2-10vdc damper actuator and meet ANSI/ASHRAE 62.1 ventilation standards.

VENTILATION OPTIONS – Select One (Some vent devices may require additional building exhaust)

CLASSROOM ROOM VENTILATOR (CRV-V5A)- OPTIONAL

The built-in commercial room ventilator is internally mounted and allows outside ventilation air, up to 50% of the total air flow rating of the unit, to be introduced through the air inlet openings. It includes a built-in pressure relief exhaust air damper. The CRV can be controlled by indoor blower operation or field controlled based on room occupancy using CO2 controller. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality.

ECONOMIZER – DRY BULB Z (ECON-DB5A) – REQUIRED BY CALIF TITLE 24 (OR ENTHALPY TYPE)

The Economizer is internally mounted and allows outside air to be used for free-cooling when temperature outside conditions are favorable. The amount of exhaust air varies in response to the system controls and settings defined by the user. It includes a built-in pressure relief exhaust air damper. The economizer is designed to provide free-cooling when outside conditions are cool enough to satisfy cooling requirements without operating the compressor, providing lower operating costs while extending the life of the compressor.

ECONOMIZER – ENTHALPY Y (ECON-WD5A) – REQUIRED BY CALIF TITLE 24 (OR DRY BULB TYPE)

The Economizer is internally mounted and allows outside air to be used for free-cooling when temperature and humidity conditions are favorable. The amount of exhaust air varies in response to the system controls and settings defined by the user. It includes a built-in pressure relief exhaust air damper. The economizer is designed to provide free-cooling when outside conditions are cool and dry enough to satisfy cooling requirements without operating the compressor, providing lower operating costs while extending the life of the compressor.

ECONOMIZER – ENTHALPY D (ECON-NC5A) – REQUIRED BY CALIF TITLE 24 (OR ENTHALPY TYPE)

The Economizer is internally mounted and allows outside air to be used for free-cooling when temperature and humidity conditions are favorable. This is a 2-10vdc actuator damper with econ sensor and controls by others. The amount of exhaust air varies in response to the system controls and settings defined by the user. It includes a built-in pressure relief exhaust air damper. The economizer is designed to provide free-cooling when outside conditions are cool and dry enough to satisfy cooling requirements without operating the compressor, providing lower operating costs while extending the life of the compressor.

ENERGY RECOVERY VENTILATOR (CHERV) - OPTIONAL

The Energy Recovery Ventilator (ERV) shall consist of rotary wheels in an insulated cassette, frame with seals, drive motor and belt. The ERV assembly shall also include intake and exhaust blowers. The ERV thermal performance shall be certified by the 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. The ERV can be controlled by indoor blower operation or field controlled based on room occupancy using CO2 controller. Unit complies with ANSI/ASHRAE Standard 62.1 Ventilation for Acceptable Air Quality. ERV off load ventilation energy before passing through coil for conditioning, saving 20-25% operational cost.

PERFORMANCE

The HVAC system will have an indoor operating sound level that will not exceed 42 dbA measured 5 feet directly in front of the return air grille at 5' above the floor when a sound/isolation curb CCURBT4860 is used. Other optional accessories are available to approach 35 dbA.

The HVAC system shall be designed to maintain a minimum indoor temperature of 72 Deg F. in the heating season and a maximum of 78 Deg. F. in the cooling season. HVAC unit shall be sized to provide a maximum total air in circulation not to exceed 11 air changes per hour (every 5.44 minutes) during 2nd stage heating and/or cooling cycles, and not more than 8.0 air changes per hour, (every 7.41 minutes) during 1st stage heating and/or cooling cycles, and not more than 6.25 air changes per hour, (every 9.60 minutes), during the ventilation only cycle. Minimum outside air (480 cfm/occupant) must remain constant and not less than the equivalent of 3.5 air changes per hour or once every 17 minutes.

Energy efficiency rating of the C48H shall be minimum 15.5 IPLV (Integrated Part Load Value) – 3.3 COP (coefficient of performance) certified by AHRI as meeting Standard 390–2021 for single package vertical units (SPVU).

BLOWERS and FANS

To provide a quiet comfortable environment, the twin indoor blowers shall have a centrifugal forward curved direct drive blower. Indoor blowers shall discharge horizontally into a ducted supply with a maximum internal velocity of 1000 fpm. Maximum air velocity at the supply registers is not to exceed 500 fpm. The ECM indoor blower motor shall be variable speed providing super-high efficiency, low sound levels, and soft-start capabilities. The indoor blower motor shall be self adjusting to provide the proper airflow rate for the 3 stage airflow operation without user adjustment or wiring changes.

Propeller type outdoor fan shall be a draw through coil and discharge horizontally along the plane of the building and be direct driven by a 1-speed motor, separate from the indoor blower motor. The outdoor motor and shroud shall slide out for easy access and maintenance.

STANDARD FEATURES

Plug in CO2 sensor ready ventilation control.
Two-inch pleated filter (MERV 13 Minimum) MERV 16 Capable
Copeland step capacity (2 stage) scroll compressor. Environmentally Safe R454B refrigerant.
Circuit breaker or toggle disconnect.
All three (3) phase units to have a built-in phase monitor to prevent reverse rotation of scroll compressor motor.
High and Low pressure controls plus 24 volt transformer with built-in circuit breaker.
Bi-Flow Filter Drier.
A separate Filter Service Door for easy 1" or 2" filter replacement.
Optional outdoor coil winter condensate drain pan.
Coremark Full Flow Service ports.

CONTROLS

Ventilation and temperature control shall consist of a wall-mounted 5/1/1-day, 3 stage heat, 2 stage cool programmable thermostat White Rodgers 1F95-1277. The thermostat shall be equipped with key-pad lockout, ventilation control programming, and a standard locking thermostat guard. Thermostat to be pre-programmed to bring on continuous ventilation one hour prior to and during anticipated occupancy as per the California Title 24, Section 120.1-(c) ventilation requirements.

BARD 8403-096 CO2 Sensor (Optional)

Furnish and install a Bard 8403-096 CO2 Sensor to control the amount of fresh outdoor air supplied to maintain acceptable levels of CO2 in the space according to Section 120 California Title 24 ventilation standards. The CO2 sensor shall have non dispersion-infrared (NDIR) technology used to measure carbon dioxide gas, provide voltage or current output based on CO2 levels, provide SPST relay output, and an Automatic Background Calibration (ABC) algorithm. The CO2 Sensor shall wire easily to the CxxH ventilation board, and provide modulating classroom ventilator (CRV) damper control of outside air between 700 – 1500 ppm CO2.

Filtration

Furnish and install Pure Aire Technologies 2" MERV 13 filters to capture >80% of 1 micron particles @ .23 esp.
Furnish and install Pure Aire Technologies 2" MERV 16 filters to capture >95% of .003 micron particles @ .35 esp.

UV Purification – Select One

Furnish and install APCO UV purification options with a UVBARDKIT to provide proper installation in the Bard unit for air purification and coil cleaning. 18,000 hour bulb life, and lifetime power pack warranty. Door shut off safety switch required.

Choose one:

1. Good: 1 bulb 24v one pass 39% Corona Virus kill rate, 6 pass 95% Corona Virus kill rate.
2. Better: 2 bulb 24v one pass 56% Corona Virus kill rate, 6 pass 99% Corona Virus kill rate.
3. Best: 1 bulb 110-277v one pass 99% Corona Virus kill rate, 6 pass 99% Corona Virus kill rate.

Acoustical Accessories (For operating sound levels below 42dbA)

1. For approximate 4–6 dbA sound reduction furnish and install Vibration Isolation Curb, Bard model CCURBT4860. (Grey)
2. For approximate 4-7 dbA sound reduction furnish and install Return Air Acoustical Plenum, Bard model WAPR11A-X (Beige)
3. For approximate 1-2 dbA sound reduction furnish and install Supply Air Acoustical Plenum, Bard model WAPFB51-FF.

Note: All applications are different, actual sound reductions may vary from the values listed above. The C48H has been tested and documented as meeting the ANSI S12.60-2002 (35dbA) Acoustical Standard. Contact us if your specific application requires the HVAC system to operate at or near 35 dbA.

Additional Accessories

1. Outdoor Coil Grille Guards, "**Bard Gards**". Protects outdoor coil from damage. Excellent when unit is located near a playground. All units shall have a heavy duty BARD GARD outdoor coil guard. The BARD GARD shall have a 14 gauge frame and 13 gauge expanded metal mesh. The entire BARD GARD shall be powder coated the same color as the wall mount unit.
2. See Bard Specification Sheet S3660 for additional information.

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