BARD MANUFACTURING COMPANY, INC.
Variable Capacity Environmental Control Unit (ECU)
Extended Range High Performance Air Conditioner
Engineering Specification Guide

1.0 GENERAL

Furnish and install a self-contained, vertical, exterior wall mount, through-the-wall air conditioner to be manufactured by Bard Manufacturing Company, Inc. The unit shall be approved and listed by Intertek ETL to Standard for Safety Heating and Cooling Equipment ANSI/UL 1995/CSA 22.2 No. 236-05, Latest Edition. Unit capacity and efficiency shall be certified with AHRI to ARI Standard 390-2003. Unit shall be factory assembled, pre-charged, pre-wired, tested and ready to operate.

Dual Frequency
All models shall be rated and able to operate on either 60 or 50 HZ within specified operating voltage range. Please refer to product information S3426 for specific voltage range for each voltage and HZ.

Ambient Temperature Operating Range
System shall self regulate suction and discharge pressures to maintain acceptable operating parameters. Unit shall be capable of starting and operating in the following range of outdoor and indoor conditions:
Outdoor: -40F to 131F (-40C to 55C).
Indoor: 35F to 131F (2C to 55C).
Normal Indoor Operating Range for Cooling: 60F to 100F (16C to 43C)

2.0 CONSTRUCTION FEATURES

2.1 CABINET

Construction shall be a single, enclosed, weatherproof casing constructed of 20-gauge galvanized steel. Unit base is constructed of 16-gauge galvanized steel. Each exterior casing panel to be bonderized and finished with baked-on exterior polyester enamel paint prior to assembly. The baked-on cured paint finish shall pass the industry rub test with a minimum of 72 rubs MEK (Methyl Ethyl Ketone) or standard rub test of a minimum of 100 rubs using Tolulene. Cooling section shall be fully insulated with 1-inch fiberglass to prevent sweating and to muffle sounds. Openings shall be provided for power connections. Access openings appropriate for outside structure to all fan motors and compressor for making repairs and for removing internal components without removing unit from its permanent installation. Fresh air intake and outdoor coil

shall be protected from intrusions by a sturdy metal grating with less than 1/4 inch openings.
Separate filter service door shall provide easy access for filter change, by removing 2 screws on filter access door. No large access covers will need to be removed.

Aluminum and Stainless Steel cabinets optional for severe conditions.

2.2 DRAIN PAN

Drain pan shall be constructed of 20-gauge galvanized steel, bonderized and finished with baked-on exterior polyester enamel paint.

2.3 INSULATION

Insulation shall be foil faced for ease of cleaning.

2.4 MOUNTING BRACKETS

Full-length side mounting brackets shall be an integral part of the cabinet.

2.5 REFRIGERATION SYSTEM

All models shall use a modulating digital scroll compressor. Compressor shall modulate from 100% to 20% capacity. Crankcase heater is standard. The refrigeration circuit shall be equipped with factory installed high and low pressure controls and liquid line filter dryer. Thermal expansion valve (TXV) shall be used for refrigerant metering to provide for wide range of operating conditions. Modulating low ambient control shall be standard. High and low pressure switched with auto reset shall be standard. Accumulator shall be provided for additional refrigerant management. Compressor shall be mounted on rubber grommets. Unit shall be provided with R-410A (HFC) non-ozone depleting refrigerant.

2.6 CONDENSER FAN MOTOR

Condenser fan motor shall be totally enclosed ECM motor, variable speed design, capable of maintaining performance and air delivery under all conditions. The condenser fan, motor and shroud shall be of slide out configuration for easy access. Modulating low ambient control shall be standard to maintain acceptable parameters under low outdoor ambient conditions.

2.7 INDOOR BLOWER MOTOR

The indoor blower motor shall be high efficiency ECM motor programmed to maintain performance and air delivery under a wide range of operating conditions. Motor will modulate airflow from 50 to 100% based on compressor unloading. Control option included to provide 100% of airflow during all operation.

2.8 ELECTRICAL COMPONENTS

Electrical components are easily accessible for routine inspection and maintenance through a lockable control panel cover. Circuit breaker is standard on all 208/230-volt models and rotary disconnect standard on all 460-volt models.

Phase rotation protection and phase failure protection shall be standard factory installed features on all equipment with three-phase power. If unit is wired incorrectly phase monitor will lock out compressor operation and red warning light shall energize. Once power wiring is corrected at field power wiring location, a green light will energize on phase monitor. If a phase of power is lost, the phase monitor will also lock out.

2.9 CONTROL CIRCUIT

The internal control circuit shall consist of a current limiting 24VAC type 65VA transformer with 4A circuit breaker. Compressor Control Module is standard and includes: Built-in-off-delay timer, adjustable from 30 seconds to 5 minutes; 2 minute on delay- if power is interrupted; 120 second low-pressure bypass; and manual lockouts for high and low pressure controls; alarm output for alarm relay.

3.0 HEAT OPTIONS (Select One)

3.1 None

3.2 Electric Heat

The unit shall have a factory installed electric resistance heater available that is designed specifically for application in the ECU unit. Heater shall include automatic limit safety controls.

4.0 VENTILATION PACKAGE

ECU units include barometric fresh air damper for up to 25% fresh air. No exhaust provide with ECU unit. Amount of fresh air intake is dependent on exhaust path and independent exhaust means mat be required to provide specific amount of outside air up to 25%.

Optional blank-off plate for no outside air can be provided.

5.0 FILTER OPTIONS - (Select One)

5.1 1” Fiberglass- MERV 2
5.2 2” Fiberglass - Pleated - MERV 8
5.3 1” Washable

6.0 EVAPORATOR and CONDENSER COILS

6.1 Evaporator and condenser coils shall be constructed of aluminum fins permanently bonded to copper tubes. Optional phenolic coating available for either coil or both coils for severe or corrosive

conditions.

6.2 Technicoat phenolic coating shall be 4 step coating process:
(1) a multi-step cleaning process
(2) chemical etch primer,
(3) epoxy-modified phenolic,
(4) phenolic sealer.
Coating shall provide a hi-density thin-film coating, smooth and free of micro-porosity, to provide exceptional sheeting action.

7.0 OPERATING CONTROLLER

ECU unit requires dedicated thermostat/controller to provide proper control interface to modulating compressor, modulating indoor and outdoor fan motors. ECU units shall include Bard thermostat controller as standard. Controller includes proprietary programming to interface with specific Bard components.

13-conductor 18 gauge control cable shall be used for interface from unit to controller.

8.0 INSTALLATION

8.1 Installation shall be done in strict adherence to Bard's Installation Instructions.

10.0 WARRANTY

10.1 For equipment installed and used within the United States, Canada and Mexico:
The Bard product specified shall be free from defects in materials and workmanship for a period of 5-years for compressor and for a period of 1-year for all other parts. Warranty period shall start from date of installation as stated on warranty card; or from date of shipment if no warranty card is returned to Bard. Equipment must be used under normal conditions and warranty is subject to Bard Manufacturing's standard limited warranty statement.

For equipment installed and used outside the United States, Canada and Mexico:

No warranty is offered.