Description

ASHRAE 90.1 COMPLIANT

ZS units are convertible single packages with a common footprint cabinet and common roof curb for all 6.5 through 12.5 ton models. All units have two compressors with independent refrigeration circuits to provide 2 stages of cooling. The units were designed for light commercial applications and can be easily installed on a roof curb, slab, or frame.

All ZS units are self-contained and assembled on rigid full perimeter base rails allowing for 3-way forklift access and overhead rigging. Every unit is completely charged, wired, piped, and tested at the factory to provide a quick and easy field installation.

ZS units in all tonnage sizes are convertible between side airflow and down airflow, with corresponding economizer if economizer option is desired.

ZS units are available in the following configurations: cooling only, cooling with electric heat, and cooling with gas heat. Electric heaters are available as factory-installed options or field-installed accessories.

All units provide constant supply air volume. A variable air volume (VAV) option, which features a variable frequency drive (VFD), is available on 6.5 through 12.5 ton models.

 Tested in accordance with:

- R-410A
- ZS SERIES
- 6.5 - 12.5 TON
- 60 Hertz
Component Location

Cooling With Gas Heat

- Roof curbs in eight- and fourteen-inch heights. Roof curbs for transitioning from DHB/DUC/HC/DVS footprint to the ZS Series footprints are also available (field-installed accessory)
- Base rails with forklift slots (three sides) and lifting holes
- Second model nameplate inside hinged access panel
- Compressor #2 access (high-efficiency compressor w/crankcase heater)
- Dual stage cooling for maximum comfort
- Terminal block for hi-voltage connection
- Disconnect location (optional disconnect switch)
- Filter drier (solid core)
- Slide-out drain pan with 3/4" NPT, female connection
- Toolless door latch
- Side entry power and control wiring knockouts
- Compressor #1 access (high-efficiency compressor w/crankcase heater)
- ZS Series Utilize Micro-Channel Aluminum Tube / Aluminum Fin Condenser
- Slide-out motor and blower assembly for easy adjustment and service
- Belt-drive blower motor
- VFD Location (Optional)
- Power ventor motor
- 20-gauge aluminized steel tubular heat exchanger for long life (stainless steel option)
- Two-stage gas heating to maintain warm, comfortable temperature
- Intelligent control board for safe and efficient operation
- Simplicity® SE control board w/screw connector for T-stat wiring and network connections
- Filter Access (2" or 4" filter options)
Nomenclature

6.5-12.5 Ton Single Package Model Number Nomenclature

- **Product Category**
  - Z = A/C, Single Pkg., R-410A

- **Product Identifier**
  - S = 11.2 + EER A/C

- **Nominal Cooling Capacity**
  - -06 = 6.5 Ton
  - -07 = 7.5 Ton
  - -09 = 8.5 Ton
  - -10 = 10.0 Ton
  - -12 = 12.5 Ton

- **Gas Heat Options**
  - -07 = 7.5 Ton
  - -08 = 8.5 Ton
  - -10 = 10.0 Ton
  - -12 = 12.5 Ton

- **Electric Heat Options**
  - E09 = 9 KW
  - E18 = 18 KW
  - E24 = 24 KW
  - E36 = 36 KW
  - E54 = 54 KW

- **Heat Type and Nominal Heat Capacity**
  - C00 = Cooling Only. No heat installed
  - N12 = 120 MBH Input Aluminized Steel
  - N18 = 180 MBH Input Aluminized Steel
  - N24 = 240 MBH Input Aluminized Steel
  - S12 = 120 MBH Input Stainless Steel
  - S18 = 180 MBH Input Stainless Steel
  - S24 = 240 MBH Input Stainless Steel

- **Airflow**
  - A = Std Motor
  - D = Std Motor/Motorized Damper (Downflow Only)
  - H = Std Motor/Low Leak Econ/Barometric Relief (Downflow & Horizontal End Return Only)
  - J = Std Motor/Low Leak Econ/Power Exhaust (Downflow & Horizontal End Return Only)
  - N = Hi Static
  - R = Hi Static/Motorized Damper (Downflow Only)
  - V = Hi Static Mtr/Low Leak Econ/Barometric Relief (Downflow & Horizontal End Return Only)
  - W = Hi Static Mtr/Low Leak Econ/Power Exhaust (Downflow & Horizontal End Return Only)

- **Voltage**
  - T = 208/230-3-60
  - W = 460-3-60
  - X = 575-3-60

- **Options**
  - 1 = Disconnect
  - 2 = Non-Pwr’d Conv. Outlet
  - 3 = Smoke Detector S.A.
  - 4 = Smoke Detector R.A.
  - 5 = Pwr’d Conv. Outlet

- **Configuration Options (not required for all units)**
  - These four digits will not be assigned until a quote is requested, or an order placed.
  - SS Drain Pan
  - CPC Controller, DFS, APS
  - Novar Controller, DFS, APS
  - Simplify2/Smart Equipment w/Comm Card (BACnet, N2, Mod-Bus)
  - BAS Ready Economizer (2-10 V.D.C. Actuator without a Controller)
  - Any Combination of Additional Options that Don’t Have an Option Code Pre-assigned

- **Additional Options**
  - TA = Technicoat Condenser Coil
  - TJ = Technicoat Evaporator Coil
  - TS = Technicoat Evaporator & Condenser Coils
  - EA = E-Coat Condenser Coil
  - EJ = E-Coat Evaporator Coil
  - ES = E-Coat Cond & Evap Coils

**6.5-12.5 Ton Single Package Model Number Nomenclature**

- **Product Generation**
  - 7 = Seventh Generation

- **Product Style**
  - A = Style A
  - B = Style B

- **Installation Options**
  - A = No Options Installed
  - B = Option 1
  - C = Option 2
  - D = Options 1 & 2
  - E = Option 3
  - F = Option 4
  - G = Options 1 & 3
  - H = Options 1 & 4
  - J = Options 1, 2 & 3
  - K = Options 1, 2, & 4
  - L = Options 1, 3, & 4
  - M = Options 1, 2, 3 & 4
  - N = Options 2 & 3
  - P = Options 2 & 4
  - Q = Options 2, 3, & 4
  - R = Options 3 & 4
  - S = Option 5
  - T = Options 1 & 5
  - U = Options 1, 3, & 5
  - V = Options 1, 4, & 5
  - W = Options 1, 3, 4, & 5
  - X = Options 3 & 5
  - Y = Options 4 & 5
  - Z = Options 3, 4 & 5

- **Options**
  - 1 = Disconnect
  - 2 = Non-Pwr’d Conv. Outlet
  - 3 = Smoke Detector S.A.
  - 4 = Smoke Detector R.A.
  - 5 = Pwr’d Conv. Outlet
Features and Benefits

Standard Features

• **High Efficiency** – High efficiency units reach as high as 11.2 EER. Gas/electric units have electronic spark ignition and power vented combustion with steady state efficiencies of 80%. These efficiencies exceed all legislated minimum levels and provide low operating costs.

• **Service Friendly** - The ZS units incorporates a number of key features for ease of serviceability. Service time is reduced through the use of hinged, toolless panels. Such panels provide access to frequently inspected components and areas, including the control box, compressors, filters, indoor motor & blower, and the heating section. The panels are screwed in place at the factory to prevent access by children or other unauthorized persons. It is recommended that the panels be secured with screws once service is complete.

Service windows have been placed in both condenser section walls. Rotation of the cover allows easy access to the condenser coils for cleaning or inspection. The Simplicity® SE control board provides alarm messages to help quickly identify any faults. All units use the same standard filter size. This standardization removes any confusion on which filter sizes are needed for replacement.

The non-corrosive drain pan slides out of the unit to permit easy cleaning. The drain pan is accessed by removing the drain pan cover plate on the rear of the unit. Once the plate is removed, the drain pan slides out through the rear of the unit. All ZS units have a second model nameplate located inside the control access door. This is to prevent deterioration of the nameplate through weathering.

• **Coil Technology** – ZS condensers utilize Micro-Channel “all aluminum” condensers which provide improved heat transfer capabilities and reduced charge volumes.

• **Environmentally Aware** - For improved Indoor Air Quality, a combination of aluminum foil faced and elastometric rubber insulations are used exclusively throughout the units.

• **Balanced Heating** – The ZS offers “Ultimate Heating Comfort” with a balance between 1st and 2nd stage gas heating. The first stage of a gas heat ZS unit provides 60% of the heating capacity. Balanced heating allows the unit to better maintain desired temperatures.

• **Convertible Airflow Design** – The side duct openings are covered when they leave the factory. If a side supply/return is desired, the installer simply removes the two side duct covers from the outside of the unit and installs them over the down shot openings. No panel cutting is required. Convertible airflow design allows maximum field flexibility and minimum inventory.

• **System Protection** - Suction line freezestats are supplied on all units to protect against loss of charge and coil frosting when the economizer operates at low outdoor air temperatures while the compressors are running. Every unit has solid-core liquid line filter-driers and high and low-pressure switches. Internal compressor protection is standard on all compressors. Crankcase heaters are standard on reciprocating compressors. Scroll compressors do not require crankcase heaters. Phase Monitors are standard on units with scroll compressors. This accessory monitors the incoming power to the unit and protects the unit from phase loss and reversed phase rotation.

• **Advanced Controls** - S simplicity® SE control boards have standardized a number of features previously available only as options or by utilizing additional controls.

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**CAUTION**

The S simplicity® SE control board used in this product will effectively operate the cooling system down to 0°F when this product is applied in a comfort cooling application for people. An economizer is typically included in this type of application. When applying this product for process cooling applications (computer rooms, switchgear, etc.), please reference applications bulletin AE-011-07 or call the applications department for Unitary Products @ 1-877-UPG-SERV for guidance. Additional accessories may be needed for stable operation at temperatures below 30°F.
• **Reduce field installed complexity** - Each unit will come equipped with factory installed supply air, return air, and outdoor air temperature sensors providing key temperature readings thus reduce field installed complexity.

• **On-board USB Port** - The new control comes with a long list of features including data logging, current and previous system faults and software update capabilities using the on-board USB port and common flash drive. Energy use monitoring capabilities allow custom tailoring to allow a system to work more efficiently at all times and occupancy levels. Self test and start-up reports also available from the board via the USB port.

• **Embedded LCD Display** - The board has a easy to read, built-in LCD display and easy to use navigation joystick and buttons allowing the user to quickly navigate the menus displaying unit status, options, current function, supply, return and outdoor temperatures, fault codes and other information.

• **Safety Monitoring** - The control monitors the outdoor, supply, and return air temperatures and the high and low pressure switch status on the independent refrigerant circuits. On units with heating the gas valve and high temperature limit switches are monitored on gas and electric heating units. The control also monitors the voltage supplied to the unit and will protect the unit if low voltage due to a brown out, or other electrical issue occurs.

• **Low Ambient** - An integrated low-ambient control allows units to operate in the cooling mode down to 0°F outdoor ambient without additional components or intervention. Optionally, the control board can be programmed to lockout the compressors when the outdoor air temperature is low or when free cooling is available.

• **Anti-Short Cycle Protection** - To aid compressor life, an anti-short cycle delay is incorporated into the standard control. Compressor reliability is further ensured by programmable minimum run times. For testing, the anti-short cycle delay can be temporarily overridden with the push of a button.

• **Fan Delays** - Fan on and fan off delays are fully programmable. Furthermore, the heating and cooling fan delay times are independent of one another. All units are programmed with default values based upon their configuration of cooling and/or heating capacity.

• **Nuisance Trip Protection and Three Strikes** - To prevent nuisance calls, the control board uses a three times, you’re out philosophy. The high, low-pressure switch, anti-freeze protection, low voltage or heating high limit must trip three times within two hours before the unit control board will lock out the associated compressor. An alarm message will be displayed on the LCD screen.

• **Lead-Lag** - An integrated Lead-Lag option allows equal run time hours on all compressors, thereby extending the life of all compressors. This option is selectable on the unit control board.

• **Low Limit Control (LLC)** - To prevent the supply air from dropping below a specified set point, when there is a demand for cooling during cold outside conditions. (Programmable Set point)

• **Reliable** - From the beginning - All units undergo computer automated testing before they leave the factory. Units are tested for refrigerant charge and pressure, unit amperage, and 100% functionality. For the long term - All units are painted with a long lasting, powder paint that stands up over the life of the unit. The paint used has been proven by a 1000 hour salt spray test.

• **Full Perimeter Base Rails** - The permanently attached base rails provide a solid foundation for the entire unit and protect the unit during shipment. The rails offer rigging holes so that an overhead crane can be used to place the units on a roof.

• **Easy Installation** - Gas and electric utility knockouts are supplied in the unit underside as well as the side of the unit. Utility connections can be made quickly and with a minimum amount of field labor. All units are shipped with 2" throw-away filters installed.

• **Wide Range of Indoor Airflows** - All supply air blowers are equipped with a belt drive that can be adjusted to meet the exact requirements of the job. A high static drive option is available for applications with a higher CFM and/or static pressure requirement.

• **Warranty** - All models include a 1-year limited warranty on the complete unit. Compressors and electric heater elements each carry a 5-year warranty. Aluminum steel (10 yr.) and stainless steel tubular heat exchangers carry a 15-year warranty.

**Factory Installed Options**

UP offers several equipment options factory installed, for the ZS line.

• **Optional Factory Installed Economizers** - ZS units offer a variety of optional factory installed economizers with low leak dampers. The outdoor air dry bulb sensor enables economizer operation if the outdoor air temperature is less than the set point of the economizer logic module. See economizer options section to determine the correct economizer for your application.

• **Down flow / End Return Economizers (with barometric relief and fresh air hood)** - All units offer a variety of optional factory installed down flow economizers that are shipped, installed and wired with low leak dampers designed to meet ASHRAE 90.1-2010, AMCA 511 Class 1A damper, and the International Energy Conservation Code (IECC) certification requirements by achieving leakage rates of 3 cfm/sq. ft. at 1” of static pressure. Each economizer goes through a rigorous 60,000 cycle test. Dry bulb, single enthalpy, and dual enthalpy (with field installed kit) can be selected. The economizer has spring return, fully modulating damper actuators and is capable of introducing up to 100% outdoor air. As the outdoor air intake dampers open, the return air dampers close. The changeover from mechanical refrigeration to economizer operation is regulated by the outdoor dry bulb temperature or the outdoor air enthalpy input. The optional (field installed) single or dual enthalpy kits provide additional inputs to monitor outdoor air/ or return air humidity and temperature for true enthalpy control. The
installer needs only to assemble the outdoor air hood, attach the enthalpy control the hood and mount the hood to the unit (Hood and control are provided).

- **Power Exhaust** - This factory option allows down flow or horizontal end return economizer operation. The power exhaust must be removed from the unit and mounted in the horizontal end return duct work when applying the product in the horizontal, end return configuration.

- **Motorized Outdoor Air Damper** - The motorized outdoor air damper includes a slide-in/plug-in damper assembly with an outdoor air hood and filters. The outdoor air dampers open to the preset position when the indoor fan motor is energized. The damper has a range of 0% to 100% outdoor air entry.

- **Alternate Indoor Blower Motor** - For applications with high static restrictions, units are offered with optional indoor motors that provide higher static output and/or higher airflow, depending upon the installer’s needs.

- **Variable Air Volume (VAV; 6.5 through 12.5 ton, only)** - A factory-installed variable frequency drive (VFD), mounted in the Blower Access compartment, is used to control the speed of the indoor blower motor in order to maintain a constant static pressure in the supply duct. A duct pressure transducer is provided with the unit. The drive comes completely wired and pre-programmed from the factory.

An optional, factory-installed manual bypass switch available with factory-installed VFD can be found in the Blower Motor Access compartment. The switch can be used to either route power to the VFD for modulating control of the blower motor, to bypass the drive and operate the motor at full speed, or to power the drive (and not the motor) for diagnostic purposes. VAV is not available with the factory-installed 3rd. party BAS controllers. VAV is only factory installed with the Simplicity SE Controller.

A ‘VFD-ready’ option provides the provisions for a customer-installed drive. The unit comes with a mounting bracket installed in the Blower Access compartment which may accommodate other vendor’s drives depending on their size. In order to utilize the unit’s mounting bracket, the maximum recommended drive dimensions are limited to approximately 9” H x 5” W x 7.5” D.

If the drive will not fit in the allotted space, then it will have to be mounted elsewhere; either within the building on a perpendicular wall which is not subjected to excessive temperature, vibration, humidity, dust, corrosive gas, explosive gas, etc., or within an appropriate enclosure rated for outside installation to safeguard against moisture, dust and excessive heat. A terminal block located in the control box is provided for field connection of the VFD controls.

- **IntelliSpeed™ Supply Fan Control Option (ASHRAE 90.1 compliant, section 6.4.3.10)** - Units configured with the **IntelliSpeed™** Supply Fan Option will contain a VFD for multi-speed supply fan operation. This option allows the supply fan RPM to vary based on the number of compressors or heating stages energized. The economizer's minimum position will also be configurable to vary based on the supply fan VFD frequency output.

- **Aluminized Steel Gas Heat Exchanger** - For applications in non-corrosive environments.

- **Stainless Steel Gas Heat Exchanger** - For applications in corrosive environments, this option provides a full stainless steel heat exchanger assembly.

- **Stainless Steel Drain Pan** - An optional rust-proof stainless steel drain pan is available to provide years of trouble-free operation in corrosive environments.

- **Electric Heaters** - The electric heaters range from 9kW to 54kW and are available in all the voltage options of the base units. All heaters are dual staged. All heaters are intended for single point power supply.

- **Disconnect Switch** - For gas heat units and cooling units with electric heat, a HACR breaker sized to the unit is provided. For cooling only units, a switch sized to the largest electric heat available for the particular unit is provided. Factory installed option only.

- **Convenience Outlet** - (Non-Powered/Powered) - This option locates a 120V single-phase GFCI outlet with cover, on the corner of the unit housing adjacent to the compressors. The “Non-powered” option requires the installer to provide the 120V single-phase power source and wiring. The “Powered” option is powered by a stepdown transformer in the unit. Factory installed option only.

- **Smoke Detectors** - The smoke detectors stop operation of the unit and provide a fault message to the control board. Smoke detectors are available for both the supply and/or return air configurations.

- **Filters** – 2” Pleated MERV 7 or 4” Pleated MERV 13 are available to meet LEED requirements. A 2” Throwaway is shipped as standard.

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**WARNING**

Factory-installed smoke detectors may be subjected to extreme temperatures during "off" times due to outside air infiltration. These smoke detectors have an operational range of -4 °F to 158°F. Smoke detectors installed in areas that could be outside this range will have to be relocated to prevent false alarms.

- **Phase Monitors** - Designed to prevent unit damage. The phase monitor will shut the unit down in an out-of-phase condition. *(Standard on units with Scroll Compressors.)*

- **Coil Guard** - Customers can purchase a coil guard kit to protect the condenser coil from damage. Additionally, this kit stops animals and foreign objects from entering the space between the inner condenser coil and the main cabinet. This is not a hail guard kit.

- **Dirty Filter Switch** - This kit includes a differential pressure switch that energizes the fault light on the unit thermostat, indicating that there is an abnormally high pressure drop across the filters. Factory installed option or field installed accessory.
• Technicoat Condenser Coils - The condenser coils are coated with a phenolic coating for protection against corrosion due to harsh environments.

• Technicoat Evaporator Coil - The evaporator coils are coated with a phenolic coating for protection against corrosion due to harsh environments.

• E-coat Condenser Coils - The condenser coils are coated with an epoxy polymer coating to protect against corrosion.

• E-coat Evaporator Coils - The evaporator coils are coated with an epoxy polymer coating to protect against corrosion.

• Hot Gas Bypass - Allows operation during low load conditions while avoiding coil frosting and damage to compressor. When suction pressure falls below valve setpoint, the valve modulates hot gas to the inlet of the evaporator. HGBP is standard on all units with VAV, and optional with constant-volume units.

Control Options

• Simplicity® SE with Communication Option Control - The Unitary Products Simplicity® SE with Communication Option Control is factory installed. It includes all the features of the Simplicity® SE control with an additional gateway to BACnet MS/TP (programmable to Modbus or N2 protocols).

• Novar® BAS Control - The Novar® building automation system controller is factory installed. Includes supply air sensor, return air sensor, dirty filter indicator switch, and air proving switch.

• CPC BAS Control - The Computer Process Controls Model 810-3060 ARTC Advanced Rooftop building automation system controller is factory installed. Includes supply air sensor, return air sensor, with optional dirty filter indicator switch and air proving switch.

• Honeywell BAS Control - The Honeywell W7750C building automation system controller is factory installed. Includes air supply sensor, return air sensor, with optional dirty filter indicator switch, and air proving switch.

Field Installed Accessories

UP offers several equipment accessories for field installation, for the ZS line.

• Down flow and End Return Economizers (with fresh air hood and barometric relief) - All units offer a variety of optional factory installed down flow economizers that are shipped, installed and wired with low leak dampers designed to meet ASHRAE 90.1-2010, AMCA 511 Class 1A damper, and the International Energy Conservation Code (IECC) certification requirements by achieving leakage rates of 3 cfm/sq. ft. at 1" of static pressure. Each economizer goes through a rigorous 60,000 cycle test. Dry bulb, single enthalpy, and dual enthalpy (with field installed kit) can be selected. The economizer has spring return, fully modulating damper actuators and is capable of introducing up to 100% outdoor air. As the outdoor air intake dampers open, the return air dampers close. The changeover from mechanical refrigeration to economizer operation is regulated by the outdoor air dry bulb temperature or the outdoor air enthalpy input. The dual enthalpy kit provides a second input used to monitor the return air (field installed). The installer needs only to assemble the outdoor air hood, attach the enthalpy control the hood and mount the hood to the unit (Hood and control are provided).

• Single or Dual Enthalpy Control, Accessories - These kits contain the required components to convert a dry bulb economizer to a single enthalpy and/or dual enthalpy economizer.

• Barometric Relief Damper - Zero to 100% capacity barometric relief dampers for use with horizontal flow, or field installed economizers.

• Power Exhaust - This accessory installs in the unit with a down flow or horizontal end return economizer. Power exhaust plugs into the connector in the unit bulkhead. User must purchase the 1EH0408 barometric relief and hood kit when applying the product in a horizontal flow application. The power exhaust must be mounted in the horizontal end return ductwork.

• Manual Outdoor Air Damper - Like the motorized outdoor air damper, each manual outdoor air damper includes a slide-in damper assembly with an outdoor air hood and filters. Customers have a choice of dampers with ranges of 0% to 100% or 0% to 35% outdoor air entry.

• Motorized Outdoor Air Damper - The motorized outdoor air damper includes a slide-in/plug-in damper assembly with an outdoor air hood and filters. The outdoor air dampers open to the preset position when the indoor fan motor is energized. The damper has a range of 0% to 100% outdoor air entry. Factory installed option or field installed accessory.

• Smoke Detectors - The smoke detectors stop operation of the unit by interrupting power to the control board if smoke is detected within the air compartment.

• CO₂ Sensor - Senses CO₂ levels and automatically overrides the economizer when levels rise above the preset limits.

• Dirty Filter Switch - This kit includes a differential pressure switch that energizes the fault light on the unit thermostat, indicating that there is an abnormally high pressure drop across the filters.

• Coil Guard - Field installed decorative wire coil guard.

• Flue Exhaust Extension Kit - In locations with wind or weather conditions which may interfere with proper exhausting of furnace combustion products, this kit can be installed to prevent the flue exhaust from entering nearby fresh air intakes.

• -60°F Gas Heat Kit - For installations which require gas heat units to perform in low ambient temperatures, a gas section heating kit is available. This kit provides electric heat in the gas heat controls section to ensure the gas valve and controls will continue to function properly at extremely low temperatures.
• **Gas Heat High Altitude Kit** - This kit converts a gas heat unit to operate at high altitudes, 2,000 to 6,000 feet. Conversion kits are available for natural gas and propane.

• **Gas Heat Propane Conversion Kit** - This kit converts a gas-fired heater from natural gas to propane. It contains the main burner orifices and gas valve replacement springs.

• **Gas Piping Kit** - Contains pipe nipples, fittings and gas cock required for gas supply connection with external shut off.

• **Electric Heaters** - The electric heaters range from 9 kW to 54kW and are available in all the voltage options of the base units. The 54kW/208-240 volt, Field-installed heater kit is not available with VAV units due to a lack of space to accommodate the heater’s fuse block accessory.

Cooling units include an adapter panel for easy installation of the electric heaters. Necessary hardware and connectors are included with the heaters. All heaters are intended for single point power supply.

• **Metal Frame Filter Kit** - Metal frame with polyester filter medium.

• **Permanent Filters** - Permanent filters are available.

• **Roof Curbs** - The roof curbs have insulated decks and are shipped disassembled. The roof curbs are available in 8” and 14” heights. For applications with security concerns, burglar bars are available for the duct openings of the roof curbs.

• **Roof Curb Transition** - Single Piece Adapter (10” High) - Roof curbs for transitioning from DHB/DUC/DHC/DUS units to ZS units. Fits 7.5 to 12.5 Ton roof curbs only.

• **Burglar Bars** - Mount in the supply and return openings to prevent entry into the duct work.

• **Thermostat** - The units are designed to operate with 24-volt electronic and electro-mechanical thermostats. All units (with or without an economizer) operate with two-stage heat/two-stage cool or two-stage cooling only thermostats, depending upon unit configuration.
## Field Installed Accessories - Non-Electrical

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
<th>WHERE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1BD0408</td>
<td>All</td>
<td>Burglar Bars, Downflow</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1CG0419</td>
<td>All</td>
<td>Coil Guard (Electric / Electric Models), 50&quot; Tall Standard Cabinets</td>
<td></td>
</tr>
<tr>
<td>1CG0420</td>
<td>All</td>
<td>Coil Guard (Gas / Electric Models), 50&quot; Tall Standard Cabinets</td>
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<tr>
<td>1CG0427</td>
<td>All</td>
<td>Coil Guard (Electric / Electric Models), 42&quot; Tall Cabinets</td>
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<tr>
<td>1CG0428</td>
<td>All</td>
<td>Coil Guard (Gas / Electric Models), 42&quot; Tall Cabinets</td>
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<tr>
<td>1HG0411</td>
<td>All</td>
<td>Hail Guard Kit</td>
<td>All Tall (50&quot;) Standard Cabinets, (Excludes 12.5T &quot;V&quot; cabinets)</td>
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<tr>
<td>1HG0415</td>
<td>All</td>
<td>Hail Guard Kit</td>
<td>All Short (42&quot;) Standard Cabinets</td>
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<td>1FE0411</td>
<td>All</td>
<td>Flue Exhaust Extension Kit</td>
<td>All Cabinets</td>
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<tr>
<td>1FF0414</td>
<td>All</td>
<td>2&quot; only Metal Filter Frame Kit</td>
<td>All Tall 50&quot; Cabinets</td>
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<tr>
<td>1FF0415</td>
<td>All</td>
<td>2&quot; only Metal Filter Frame Kit</td>
<td>All Tall 42&quot; Cabinets</td>
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<tr>
<td>1FL0420</td>
<td>All</td>
<td>Permanent 2&quot; only Filter Kit Includes (4) Four Filters</td>
<td>All Tall 50&quot; Cabinets</td>
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<tr>
<td>1FL0423</td>
<td>All</td>
<td>Permanent 2&quot; only Filter Kit (Includes (4) four Filters)</td>
<td>All Tall 42&quot; Cabinets</td>
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<td>1GP0405</td>
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<td>Gas Piping Kit</td>
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<td>1RC0470</td>
<td>All</td>
<td>Roof Curb, 8&quot; Height</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1RC0471</td>
<td>All</td>
<td>Roof Curb, 14&quot; Height</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1RC0472</td>
<td>All</td>
<td>Roof Curb, Transition (7.5 T thru 12.5 Ton units to ZS 3-12T)</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1WC0412</td>
<td>All</td>
<td>Wooden Crate for extra protection during shipping and handling</td>
<td>Standard Cabinets Only (not applicable to units 119&quot; in length)</td>
</tr>
</tbody>
</table>

## Field Installed Accessories - Electric Heat

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
<th>WHERE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TP04520925</td>
<td>230</td>
<td>9kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04520946</td>
<td>460</td>
<td>9kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04520958</td>
<td>575</td>
<td>9kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04531825</td>
<td>230</td>
<td>18kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04531846</td>
<td>460</td>
<td>18kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04521858</td>
<td>575</td>
<td>18kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04532425</td>
<td>230</td>
<td>24kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04532446</td>
<td>460</td>
<td>24kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04532458</td>
<td>575</td>
<td>24kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04533625</td>
<td>230</td>
<td>36kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04533646</td>
<td>460</td>
<td>36kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04523658</td>
<td>575</td>
<td>36kW Electric Heat</td>
<td>All 50&quot; Cabinet 6.5, 8.5, 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04525425</td>
<td>230</td>
<td>54kW Electric Heat</td>
<td>All 50&quot; 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04525446</td>
<td>460</td>
<td>54kW Electric Heat</td>
<td>All 50&quot; 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04525458</td>
<td>575</td>
<td>54kW Electric Heat</td>
<td>All 50&quot; 10 and 12.5 Ton Models</td>
</tr>
<tr>
<td>2TP04540925</td>
<td>230</td>
<td>9kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04540946</td>
<td>460</td>
<td>9kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04540958</td>
<td>575</td>
<td>9kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04541825</td>
<td>230</td>
<td>18kW Electric Heat</td>
<td>All 42&quot; 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04541846</td>
<td>460</td>
<td>18kW Electric Heat</td>
<td>All 42&quot; 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04541858</td>
<td>575</td>
<td>18kW Electric Heat</td>
<td>All 42&quot; 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04542425</td>
<td>230</td>
<td>24kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04542446</td>
<td>460</td>
<td>24kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04542458</td>
<td>575</td>
<td>24kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04543625</td>
<td>230</td>
<td>36kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04543646</td>
<td>460</td>
<td>36kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
<tr>
<td>2TP04543658</td>
<td>575</td>
<td>36kW Electric Heat</td>
<td>All 42&quot; Cabinet 6.5, 7.5 and 8.5 Ton Models</td>
</tr>
</tbody>
</table>
Guide Specifications

GENERAL
Units shall be manufactured by Unitary Products in an ISO 9001 certified facility. ZS units are convertible single packages with a common footprint cabinet and common roof curb for all 6.5 through 12.5 ton models. All units have two compressors with independent R-410A refrigeration circuits to provide 2 stages of cooling. The units were designed for light commercial applications and can be easily installed on a roof curb, slab, or frame. All ZS units are self-contained and assembled on rigid full perimeter base rails allowing for 3-way forklift access and overhead rigging. Every unit is completely charged with R-410A, wired, piped, and tested at the factory to provide a quick and easy field installation. All units are convertible between side and down airflow. Independent economizer designs are used on side and down discharge applications, as well as all tonnage sizes. ZS units are available in the following configurations: cooling only, cooling with electric heat, cooling with gas heat, heat pump, and heat pump with electric heat. Electric heaters are available as factory-installed options or field-installed accessories.

DESCRIPTION
Units shall be factory assembled, single package, (Elec/Elec, Gas/Elec), designed for outdoor installation. They shall have built-in field convertible duct connections for down discharge supply/return or horizontal discharge supply/return and be available with factory installed options or field installed accessories. The units shall be factory wired, piped and charged with R-410A refrigerant and factory tested prior to shipment. All unit wiring shall be both numbered and color coded. The cooling performance shall be rated in accordance with DOE and AHRI test procedures. Units

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
<th>WHERE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1FA0413</td>
<td>All</td>
<td>Manual Outside Damper 0-35%, Downflow</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1FA0414</td>
<td>All</td>
<td>Manual Outside Damper 0-100%, Downflow</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>1EH0408</td>
<td>All</td>
<td>Barometric Relief Kit for Power Exhaust, Horizontal Application</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2EC0401</td>
<td>All</td>
<td>Single Enthalpy Control</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2EC0402</td>
<td>All</td>
<td>Dual Enthalpy Control (Includes 2 Sensors)</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2EE04707624</td>
<td>All</td>
<td>Economizer for Downflow, End Return Horizontal, or ERV Applications. Includes FA Hood, Exhaust Hood w/ Baro Relief</td>
<td>All 50” Cabinets</td>
</tr>
<tr>
<td>2EE04707424</td>
<td>All</td>
<td>Economizer for Downflow, End Return Horizontal, or ERV Applications. Includes FA Hood, Exhaust Hood w/ Baro Relief</td>
<td>All 42” Cabinets</td>
</tr>
<tr>
<td>2EE04706924</td>
<td>All</td>
<td>Horizontal Economizer without Barometric Relief</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2MD04703824</td>
<td>All</td>
<td>Motorized Damper, Downflow without Barometric Relief</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2MD04703924</td>
<td>All</td>
<td>Motorized Damper, Horizontal without Barometric Relief</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2PE04704706*</td>
<td>230</td>
<td>Power Exhaust 230V Downflow or Horizontal</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2PE04704746*</td>
<td>460</td>
<td>Power Exhaust 460V Downflow or Horizontal</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2PE04704758*</td>
<td>575</td>
<td>Power Exhaust 575V Downflow or Horizontal</td>
<td>All Cabinets</td>
</tr>
</tbody>
</table>

Field Installed Accessories - Fresh Air

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
<th>WHERE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2AP0401</td>
<td>All</td>
<td>Air Proving Switch</td>
<td>All Units</td>
</tr>
<tr>
<td>2AQ04700324</td>
<td>All</td>
<td>CO2 Space Accessory</td>
<td>All Units</td>
</tr>
<tr>
<td>2AQ04700424</td>
<td>All</td>
<td>CO2 Unit Accessory</td>
<td>All Units</td>
</tr>
<tr>
<td>2DF0402</td>
<td>All</td>
<td>Dirty Air Switch</td>
<td>All Units</td>
</tr>
<tr>
<td>2SH0401</td>
<td>All</td>
<td>Wall Mounted humidity sensor-For use with MagnaDry Reheat or space humidity input to Simplicity SE board.</td>
<td>All Cabinets</td>
</tr>
<tr>
<td>2SD04700824</td>
<td>All</td>
<td>Smoke Detector for Supply</td>
<td>All Gen 5 and greater units with 2” &amp; 4” Filters</td>
</tr>
<tr>
<td>2SD04700924</td>
<td>All</td>
<td>Smoke Detector for Return</td>
<td>All Gen 5 and greater units with 2” &amp; 4” Filters</td>
</tr>
<tr>
<td>2SD04701024</td>
<td>All</td>
<td>Smoke Detector for Supply and Return</td>
<td>All Gen 5 and greater units with 2” &amp; 4” Filters</td>
</tr>
<tr>
<td>S1-YK-MAP1810-0P</td>
<td>All</td>
<td>MAP (Mobile Access Portal) Gateway- For use with Simplicity SE Control.</td>
<td>All Units</td>
</tr>
<tr>
<td>S1-MP-PRTKIT-0P</td>
<td>All</td>
<td>MAP (Mobile Access Portal) Gateway Kit- Replacement MAP gateway protective case, lanyard and communication cable. Use only to replace worn or damaged components.</td>
<td>All Units</td>
</tr>
</tbody>
</table>

Field Installed Accessories - Electrical

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTAGE</th>
<th>DESCRIPTION</th>
<th>WHERE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>2BC04700106</td>
<td>230</td>
<td>Gas heat kit, -60°F</td>
<td>All Units</td>
</tr>
<tr>
<td>2BC04700151</td>
<td>460</td>
<td>Gas heat kit, -60°F</td>
<td>All Units</td>
</tr>
<tr>
<td>2BC04700154</td>
<td>575</td>
<td>Gas heat kit, -60°F</td>
<td>All Units</td>
</tr>
<tr>
<td>2LA04704632</td>
<td>All</td>
<td>Low Ambient Kit</td>
<td>All 3 - 10T units (excludes 12.5T “V” cabinets)</td>
</tr>
</tbody>
</table>
shall be CSA certified to ANSI Z21.47 and UL 1995/CAN/CSA No.
236-M90 standards.

UNIT CABINET

Unit cabinet shall be constructed of galvanized steel with
exterior surfaces coated with a non-chalking, powder paint
finish, certified at 1000 hour salt spray test per ASTM-B117
standards. Indoor blower sections shall be insulated with up to
1” thick insulation coated on the airside. Either aluminum foil
faced or elastometric rubber insulation shall be used in the
unit’s compartments and be fastened to prevent insulation from
entering the air stream. Cabinet doors shall be hinged with
toolless access for easy servicing and maintenance. Full
perimeter base rails shall be provided to assure reliable transit
of equipment, overhead rigging, fork truck access and proper
sealing on roof curb applications. Disposable 2” filters shall be
furnished as standard and be accessible through hinged access
door. Fan performance measuring ports shall be provided on
the outside of the cabinet to allow accurate air measurements
of evaporator fan performance without removing panels or
creating bypass of the coils. Condensate pan shall be slide out
design, constructed of a non corrosive material, internally
sloped and conforming to ASHRAE 62-B9 standards.
Condensate connection shall be a minimum of ¾” I.D. female
and be rigid mount connection.

INDOOR (EVAPORATOR) FAN ASSEMBLY

Fan shall be a belt drive assembly and include an adjustable
pitch motor pulley. Job site selected brake horsepower shall not
exceed the motors nameplate horsepower rating plus the ser-
vice factor. Units shall be designed to operate within the service
factor. Fan wheel shall be double inlet type with forward curve
blades, dynamically balanced to operate smoothly throughout
the entire range of operation. Airflow design shall be constant
volume. Bearings shall be sealed and permanently lubricated
for longer life and no maintenance. Entire blower assembly
and motor shall be slide out design.

OUTDOOR (CONDENSER) FAN ASSEMBLY

The outdoor fans shall be of the direct drive type, discharge air
vertically, have aluminum blades riveted to corrosion resistant
steel spider brackets and shall be dynamically balanced for
smooth operation. The outdoor fan motors shall have permanently
lubricated bearings internally protected against overload
conditions and staged independently. A cleaning window shall be
provided on two sides of the units for coil cleaning.

REFRIGERANT COMPONENTS

Compressors:

a. Shall be fully hermetic type, direct drive, internally
protected with internal high-pressure relief and over
temperature protection. The hermetic motors shall be
suction gas cooled and have a voltage range of + or –
10% of the unit nameplate voltage.

b. Shall have internal spring isolation and sound muffling to
minimize vibration and noise, and be externally isolated
on a dedicated, independent mounting.

Coils:

a. Evaporator coils shall have aluminum plate fins
mechanically bonded to seamless internally enhanced
copper tubes with all joints brazed. Special Phenolic
coating shall be available as a factory option.

b. Evaporator coils shall be of the direct expansion, draw-
thru design.

c. Condenser coils shall have Mirco-Channel aluminum
tube, aluminum fins.

d. Condenser coils shall be of the direct expansion, draw-
thru design.

Refrigerant Circuit and Refrigerant Safety Components shall
include:

a. Independent fixed-orifice or thermally operated
expansion devices.

b. Solid core filter drier/strainer to eliminate any moisture or
foreign matter.

c. Accessible service gage connections on both suction
and discharge lines to charge, evacuate, and measure
refrigerant pressure during any necessary servicing or
troubleshooting, without losing charge.

d. The unit shall have two independent refrigerant circuits,
equally split in 50% capacity increments.

Unit Controls:

a. Unit shall be complete with self-contained low-voltage
control circuit protected by a resettable circuit breaker on
the 24-volt transformer side.

b. Unit shall incorporate a lockout circuit which provides
reset capability at the space thermostat or base unit,
should any of the following standard safety devices trip
and shut off compressor.

1. Loss-of-charge/Low-pressure switch.

2. High-pressure switch.

3. Freeze condition sensor on evaporator coil. If any of
these safety devices trip, the LCD screen will display
the alarm message.

c. Unit shall incorporate "AUTO RESET" compressor over
temperature, over current protection.

d. Unit shall operate with conventional thermostat designs
and have a low voltage terminal strip for easy hook-up.

e. Unit control board shall have on-board diagnostics and
fault message display.

f. Standard controls shall include anti-short cycle and low
voltage protection, and permit cooling operation down to
a selectable value as low as 0 °F.

g. Control board shall monitor each refrigerant safety switch
independently.

GAS HEATING SECTION (IF EQUIPPED)

Heat exchanger and exhaust system shall be constructed of
aluminized steel and shall be designed with induced draft com-
bustion with post purge logic, energy saving direct spark igni-
tion, and redundant main gas valve. The heat exchanger shall
be of the tubular type, constructed of T1-40 aluminized steel for
corrosion resistance and allowing minimum mixed air entering
temperature of 40 °F. Burners shall be of the in-shot type, con-
structed of aluminum-coated steel. All gas piping shall enter the
unit cabinet at a single location, through either the side or bot-
tom, without any field modifications. An integrated control board
shall provide timed control of evaporator fan functioning and
burner ignition. Heating section shall be provided with the fol-
lowing minimum protection:

a. Primary and auxiliary high-temperature limit switches.
b. Induced draft pressure sensor.
c. Flame roll out switch (manual reset).
d. Flame proving controls.
e. All two stage units shall have two independent stages of
capacity (60% 1st stage, 100% 2nd stage).

ELECTRIC HEATING SECTION (IF EQUIPPED)

An electric heating section, with nickel chromium elements,
shall be provided in a range of 9 thru 54 KW, offering two states
of capacity all sizes. The heating section shall have a primary
limit control(s) (automatic reset) to prevent the heating element
system from operating at an excessive temperature. The Heat-
ning Section assembly shall slide out of the unit for easy mainte-
nance and service. Units with Electric Heating Sections shall be
wired for a single point power supply with branch circuit fusing
(where required).

UNIT OPERATING CHARACTERISTICS

Unit shall be capable of starting and running at 125 °F outdoor
temperature, exceeding maximum load criteria of AHRI Stan-
dard 340/360. The compressor, with standard controls, shall be
capable of operation down to 0 °F outdoor temperature. Unit
shall be provided with fan time delay to prevent cold air delivery
before heat exchanger warms up. (Gas heat only)

ELECTRICAL REQUIREMENTS - All unit power wiring shall
enter unit cabinet at a single factory provided location and be
capable of side or bottom entry to minimize roof penetrations
and avoid unit field modifications. Separate side and bottom
openings shall be provided for the control wiring.

STANDARD LIMITED WARRANTIES - Compressor – 5 Years,
Heat Exchanger – 10 Years, Elect. Heat Elem. – 5 Years,
Parts – 1 Year

FACTORY INSTALLED OPTIONAL OUTDOOR AIR (Shall be
made available by either/or):

- DRY BULB AUTOMATIC ECONOMIZER - Outdoor and
return air dampers that are interlocked and positioned by
a fully-modulating, spring-return damper actuator. The
maximum leakage rate for the outdoor air intake dampers
shall be designed to meet ASHRAE 90.1-2010, AMCA
511 Class 1A damper, and the International Energy
Conservation Code (IECC) certification requirements by
achieving leakage rates of 3 cfm/sq. ft. at 1" of static
pressure. Changeover from compressor to economizer
operation shall be provided by an integral electronic
enthalpy control that feeds input into the basic module.
The outdoor intake opening shall be covered with a rain
hood that matches the exterior of the unit. Water
eliminator/filters shall be provided.

Simultaneous economizer/compressor operation is also
possible. Dampers shall fully close on power loss.
Available with barometric relief and power exhaust.

- MOTORIZED OUTDOOR AIR DAMPERS - Outdoor and
return air dampers that are interlocked and positioned by
a 2- position, spring-return damper actuator. A unit-
mounted potentiometer shall be provided to adjust the
outside air damper assembly to take in the design CFM of outdoor air to meet the ventilation
requirements of the conditioned space during normal
operation. Whenever the indoor fan motor is energized,
the dampers open up to one of two pre-selected positions
- regardless of the outdoor air enthalpy. Dampers return to
the fully closed position when the indoor fan motor is de-
energized. Dampers shall fully close on power loss.

ADDITIONAL FACTORY INSTALLED OPTIONS

- ALTERNATE INDOOR BLOWER MOTOR – For
applications with high restrictions, units are available with
optional indoor blower motors that provide higher static
output and/or higher airflow.

- VAV (Variable Air Volume) – The VAV option using a
vARIABLE frequency drive (VFD) shall be available on 6.5
through 12.5 ton, models for applications requiring a
constant supply-duct static pressure. Units equipped for
VAV shall be controlled by a duct pressure transducer
with a 0 - 5" WC pressure range. The pressure transducer
shall provide a 0 - 5 VDC output signal to a VAV control
board which, in turn shall provide a 2 - 10 VDC speed
reference signal to the VFD. The VAV control board shall
operate using factory-installed Supply Air, Return Air and
Outside Air Temperature Sensors with a nominal
resistance of 10,000 Ohms. Units equipped with VFD’s
shall have factory-installed manual bypass as an option.

- CONVENIENCE OUTLET (POWERED/NON-POWERED–
Unit can be provided with an optional 120VAC GFCI outlet
with cover on the corner of the unit housing the compressors.

- ELECTRIC HEAT - Electric Heaters range from 9 kW to
54 kW and are available in all the voltage options of the
base unit.

- PHASE MONITOR - Designed to prevent damage in out-
of-phase condition.

- COIL MONITOR - Designed to detect condenser coil
damage.

- BAS CONTROLS HARDWARE - Include supply air
sensor, return air sensor, dirty filter indicator and air
proving switch.

- DIRTY FILTER SWITCH – This kit includes a differential
pressure switch that energizes the fault light on the unit
thermostat, indicating that there is an abnormally high-
pressure drop across the filters.
• **BREAKER** – An HACR breaker can be factory installed on gas heat units or cooling units with electric heat.

• **DISCONNECT SWITCH** - A disconnect can be factory installed on a cooling only units sized for the largest electric heat available.

• **STAINLESS STEEL HEAT EXCHANGER** – For applications in a corrosive environment, this option provides a full stainless steel heat exchanger assembly.

• **SMOKE DETECTOR** – A smoke detector can be factory mounted and wired in the supply and/or return air compartments.

**OTHER PRE-ENGINEERED ACCESSORIES AVAILABLE**

• **ROOF CURB** - 14” and 8” high, full perimeter knockdown curb, with hinged design for quick assembly.

• **BAROMETRIC RELIEF DAMPER** – (Unit mounted – Downflow, Duct Mounted – Horizontal) – Contains a rain hood, air inlet screen, exhaust damper and mounting hardware. Used to relieve internal air pressure through the unit during economizer operation.

• **PROPANE CONVERSION KIT** – Contains new orifices and gas valve springs to convert from natural to L.P. gas.

• **60°F GAS HEAT KIT** – Provides an electric heat kit for the gas compartment for use in extreme low ambient conditions.

• **ECONOMIZER** (Downflow and Horizontal flow)

• **POWER EXHAUST** – (Unit mount – Downflow, Duct mount – Horizontal flow)

• **DUAL ENTHALPY KIT** - Provides a second input to economizer to monitor return air.