12 1/2 -25 Ton Packaged Unitary Gas/Elec Rooftop - CTO

Job Information			
Name	**Coleman Equipment Lee's Summit MO**	Tag	**RTU-1**
Address		Quantity	**1**
Sales Team	**Kansas City Main Office**	Model Number	**YZD150F4RHC--D6B1A10000A0000000000000000**
Comments			

General			
Unit function	**Gas/Electric**	Unit controls	**Reliatel**
Design Airflow	**5000 cfm**	Fresh air selection	**Econ-Dry Bulb 0-100% w/ bar ref**
Tonnage	**12.5 Ton**	Cooling Entering Dry Bulb	**75.02 F**
Cooling Entering Wet Bulb	**58.65 F**	Ent Air Rel Humidity	**36.70 %**
Ambient Temp	**105.00 F**	Heating capacity	**Gas Heat - High**
Heating EAT	**63.67 F**	Supply fan/drive/type/motor	**Single zone VAV standard motor**
Voltage	**460/60/3**	Design ESP	**0.750 in H2O**
Evaporator Rows	**4**	Evaporator Face Area	**31.42 sq ft**
Evaporator Fin Spacing	**180 Per Foot**	Evaporator Face Velocity	**159 ft/min**
Min. Unit Operating Weight	**2111.0 lb**	Max Unit Operating Weight	**2550.0 lb**
Rated capacity (AHRI)	**148.00 MBh**	ASHRAE 90.1	**Yes**

Main Cooling			
Evap Coil Leav Air Temp (DB)	**51.88 F**	Evap Coil Leav Air Temp (WB)	**48.76 F**
Cooling Leaving Unit DB	**53.59 F**	Cooling Leaving Unit WB	**49.53 F**
Gross Total Capacity	**129.55 MBh**	Gross Sensible Capacity	**124.98 MBh**
Gross Latent Capacity	**4.57 MBh**	Net Total Capacity	**123.42 MBh**
Net Sensible Capacity	**118.85 MBh**	Net Sensible Heat Ratio	**0.96 Number**
Fan Motor Heat	**6.13 MBh**	Dew Point Temp	**46.05 F**
Refrig charge (HFC-410A) - ckt 1	**14.0 lb**	Refrig charge (HFC-410A) - ckt 2	**9.0 lb**
Saturated Discharge Temp Circuit 1	**124.89 F**	Saturated Suction Temp Circuit 1	**45.36 F**
Saturated Discharge Temp Circuit 2	**121.56 F**	Saturated Suction Temp Circuit 2	**49.84 F**

Main Heating			
Output Htg Capacity	**200.00 MBh**	Output Htg Capacity w/Fan	**206.13 MBh**
Heating LAT	**100.54 F**	Heating Temp Rise	**36.87 F**

Motor/Electrical			
Field Supplied Drive Kit Required	**High Static Drive Kit**	Component SP Add	**0.190 in H2O**
Total Static Pressure	**0.940 in H2O**	Indoor Mtr. Operating Power	**1.95 bhp**
Indoor RPM	**640 rpm**	Indoor Motor Power	**1.45 kW**
Outdoor Motor Power	**0.76 kW**	Compressor Power	**11.56 kW**
System Power	**13.76 kW**	EER @ AHRI Conditions	**12.4 EER**
MCA	**36.00 A**	MOP	**45.00 A**
Compressor 1 RLA	**6.50 A**	Compressor 2 RLA	**6.50 A**
Condenser Fan FLA	**2.50 A**	Evaprator Fan FLA	**4.80 A**
Exhaust fan power	**0.56 kW**	IEER Rating	**19.60**

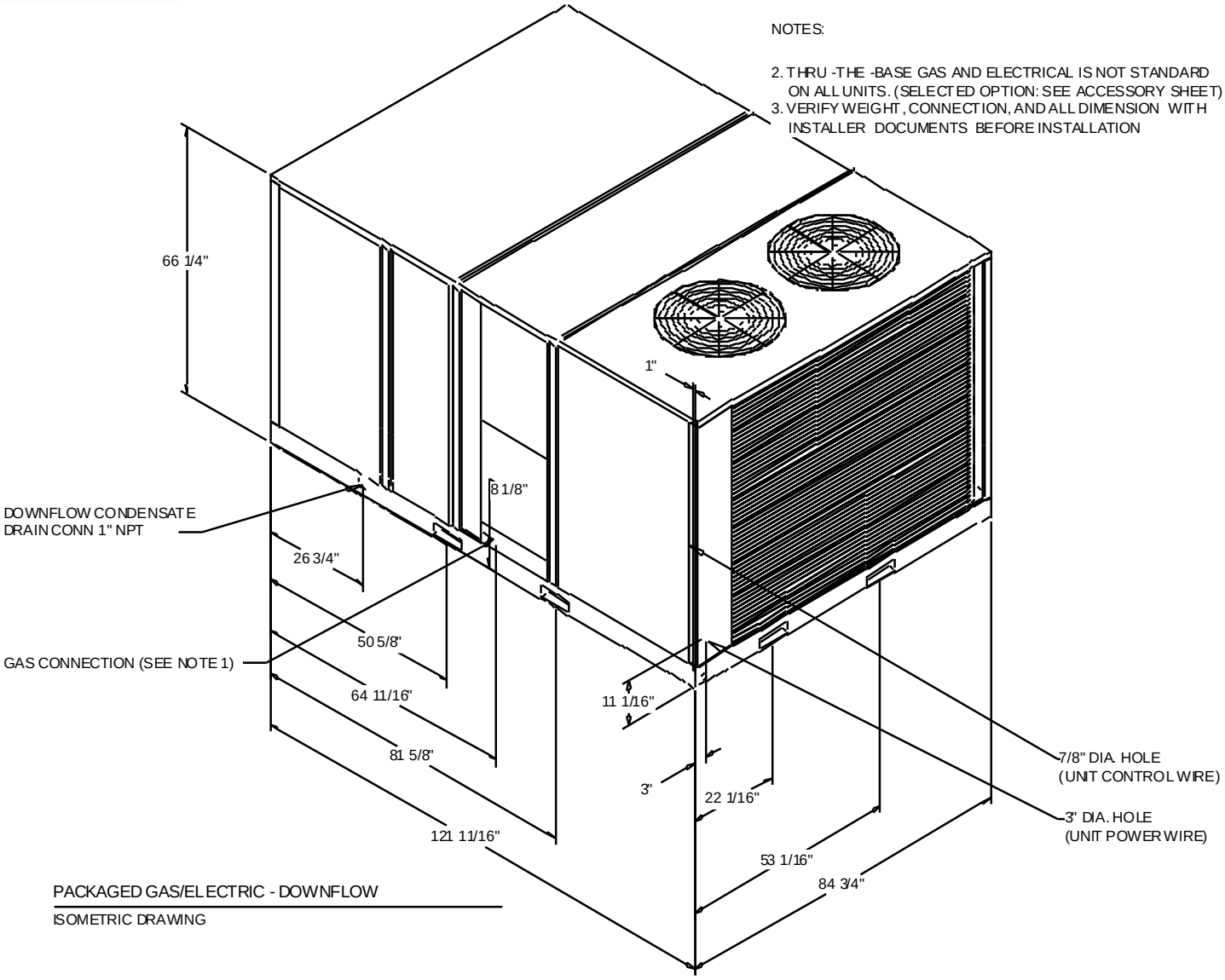
DX cooling			
Condenser coil protection	**Std cond coil w/hail guard**	Through the base provisions	**Through the base electric**
Disconnect sw/circuit breaker	**Unit mounted non-fused disconnect**	Smoke detector	**Return air smoke detector**

Field installed accessories			
Roof curb	**Roof curb**	Zone sensors	**Programmable zone sensor**

Extended warranties-North America Region	
Labor whole unit (first year)	**1st year Labor warranty**

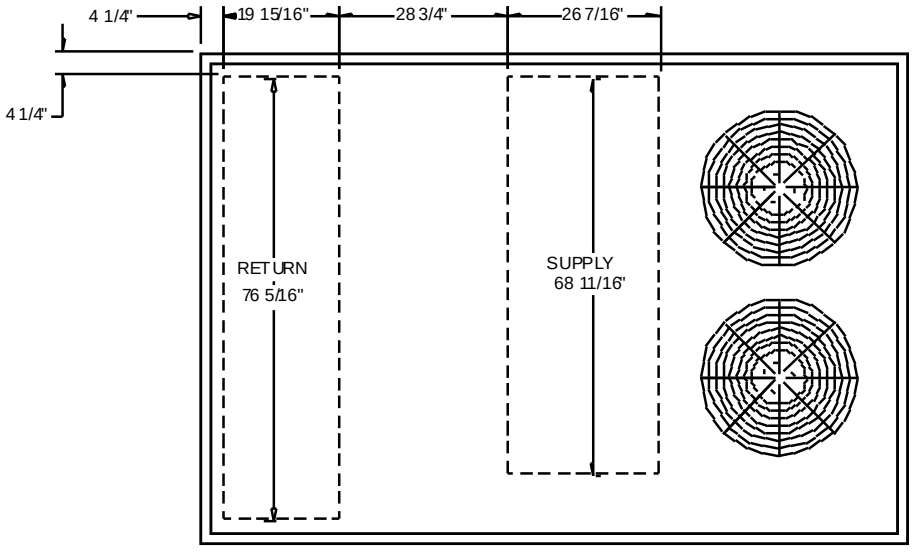
NOTES:

2. THRU -THE -BASE GAS AND ELECTRICAL IS NOT STANDARD ON ALL UNITS. (SELECTED OPTION: SEE ACCESSORY SHEET)
3. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



PACKAGED GAS/ELECTRIC - DOWNFLOW

ISOMETRIC DRAWING



PACKAGED GAS/ELECTRIC - DOWNFLOW

PLAN VIEW DRAWING

ELECTRICAL / GENERAL DATA

GENERAL PERFORMANCE

Model (Ton):	YZD150F
Unit Operating Voltage Range:	414-506
Unit Primary Voltage:	460
Unit Secondary Voltage:	-
Unit Hertz:	60
Unit Phase:	3
EER: (5)	12.4

Standard Motor (1) (3)

Minimum Circuit Ampacity:	36.0
Maximum Fuse Size:	45.0
Maximum (HACR) Circuit Breaker:	45.0

Standard Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

Accessory Oversized Motor (1) (4)

Minimum Circuit Ampacity:	
Maximum Fuse Size:	
Maximum (HACR) Circuit Breaker:	

GAS HEATING

Heating Models:	High Heat
Heating and 1 Stage Input (Btu/h)	250000/175000
Heating and 1 Stage Output (Btu/h):	203000/142000
Min./Max. Gas Input -	
Pressure Natural or LP (in w.c):	2.5/14.0
Gas Connection Pipe Size:	1/2"

COMPRESSOR

	Circuit(s)
Number:	3
Horsepower:	3.7
Phase:	3
Rated Load Amps:	6.5/6.5
Locked Rotor Amps:	55.0/55.0
VFD Input Amps:	10.0

INDOOR MOTOR

Standard Motor

Number: (3)	1
Horsepower:	5.0
Motor Speed (RPM):	3450
Phase:	3
Full Load Amps:	4.8
Locked Rotor Amps:	40.5

Standard Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

Accessory Oversized Motor (4)

Number:	
Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

OUTDOOR MOTOR

Number:	2
Horsepower:	0.5
Motor speed (RPM):	1140
Phase:	1
Full Load Amps:	2.5
Locked Rotor Amps:	-

POWER EXHAUST

(Field Installed Power Exhaust)

Horsepower:	
Motor Speed (RPM):	
Phase:	
Full Load Amps:	
Locked Rotor Amps:	

COMBUSTION BLOWER MOTOR

(Gas-Fired Heating only)

Horsepower:	0.05
Motor Speed (RPM):	3500/2800
Phase:	1
Full Load Amps:	0.5
Locked Rotor Amps:	0.78

FILTER

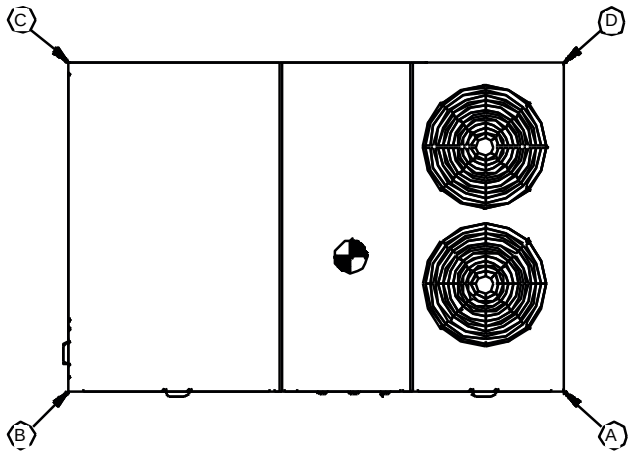
Type:	Throwaway
Furnished:	Yes
Number:	8/4
Recommended Size:	20"x20"x2" 20"x16"x2"

REFRIGERANT (2)

	Circuit #1 / 2
Type:	R410A
Factory Charge	
Circuit #1 / 2:	14.0 lb/9.0 lb

NOTES:

1. Maximum (HACR) Circuit Breaker sizing is for installations in the United States only.
2. Refrigerant charge is an approximate value. For a more precise value, see unit nameplate and service instructions.
3. Value include Standard Motor.
4. Value include Oversized Motor
5. EER is rated at AHRI conditions and in accordance with DOE test procedures.



CORNER WEIGHT

Base Unit and Corner Weights only

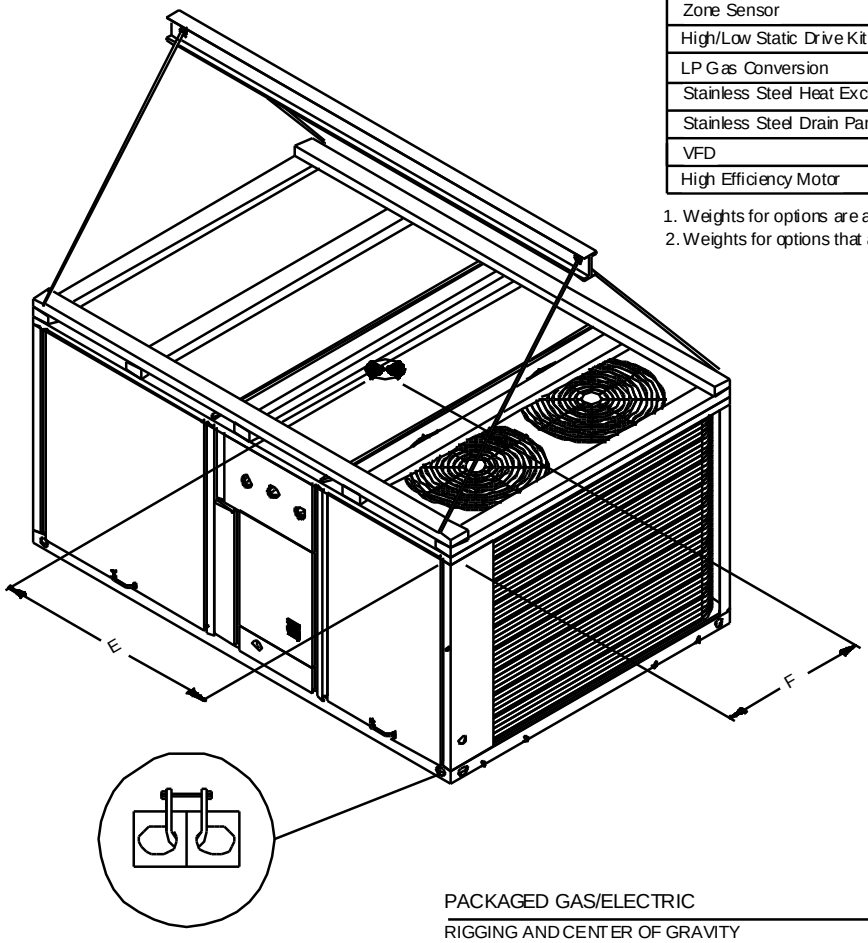
Base unit weights		Corner Weights				Center of Gravity	
SHIPPING	NET	(A)	(B)	(C)	(D)	E	F
2680.0 lb	2237.0 lb	708.0 lb	612.0 lb	420.0 lb	497.0 lb	56"	35"

1. All weights are approximate.
2. The actual weight are listed on the unit nameplate.
3. Refer to unit nameplate and installation guide for weights before scheduling transportation and installation of unit.
4. The weight shown represents the typical unit operating weight for the configuration selected. Estimated at +/- 10 % of the nameplate weight. .
5. Verify weight, connection, and all dimension with installer documents before installation.
6. Corner weights are given for information only.
7. Net/Shipping weight of optional accessories should be added to unit weight when ordering factory or field installed accessories.

Installed Options Net Weight Data

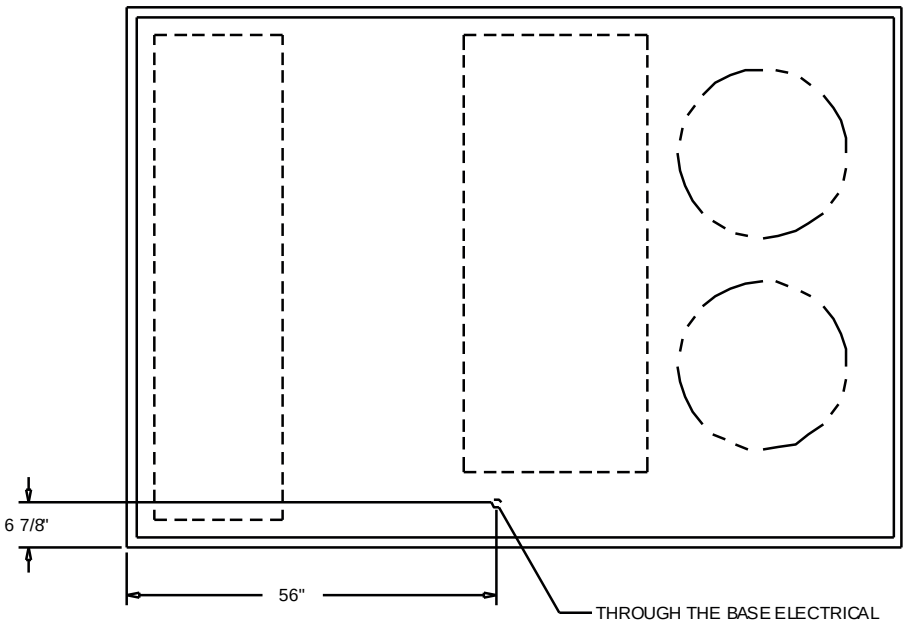
Accessory	Weight
Economizer, Manual and Motorized Outside Air Damper	80.0 lb
Power Exhaust	
Roof Curb	235.0 lb
Oversized Motor	
Hail Guard	43.0 lb
Hinged Access Doors	
Power Conv. Outlet	
Through the Base Electrical	23.0 lb
Circuit Breaker	
Disconnect	10.0 lb
Smoke Detector	5.0 lb
Novar	
Zone Sensor	1.0 lb
High/Low Static Drive Kit	
LP Gas Conversion	
Stainless Steel Heat Exchanger	
Stainless Steel Drain Pan	
VFD	
High Efficiency Motor	

1. Weights for options are approximate.
2. Weights for options that are not list refer to Installation guide.



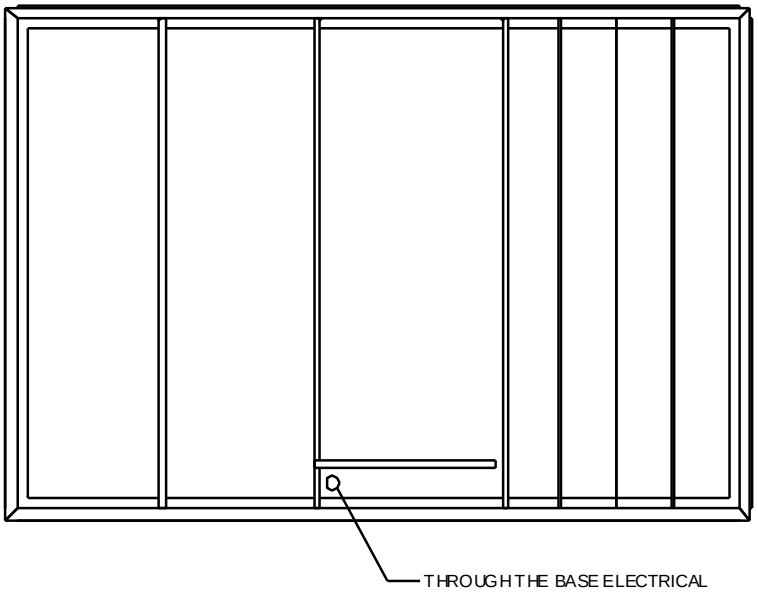
PACKAGED GAS/ELECTRIC

RIGGING AND CENTER OF GRAVITY



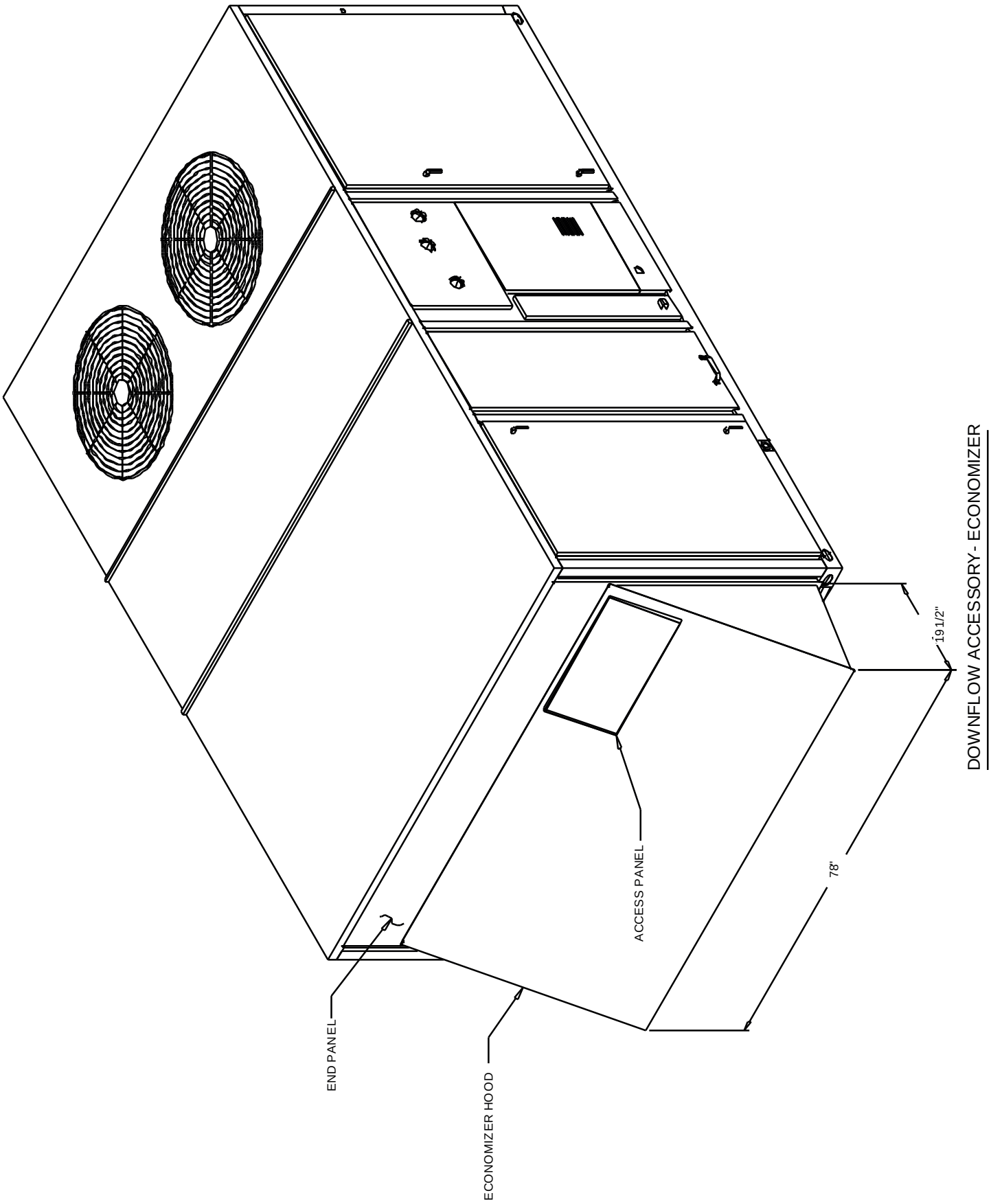
THROUGH THE BASE ELECTRICAL

ACCESSORY-PLAN VIEW

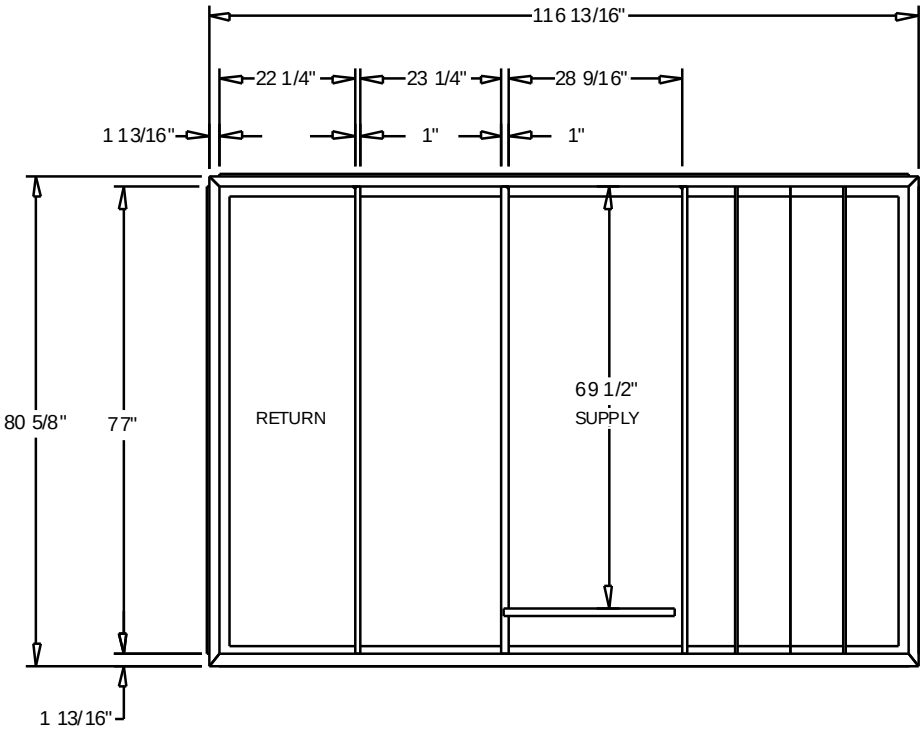


THROUGH THE BASE ELECTRICAL ROOF CURB

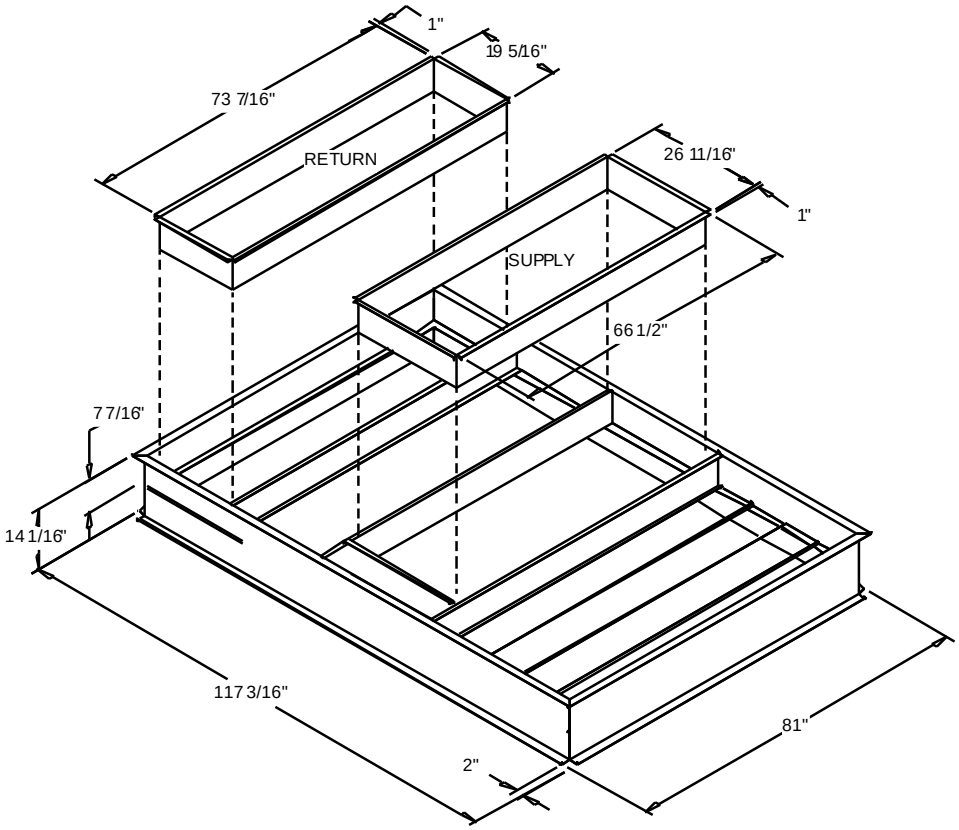
ACCESSORY-PLAN VIEW



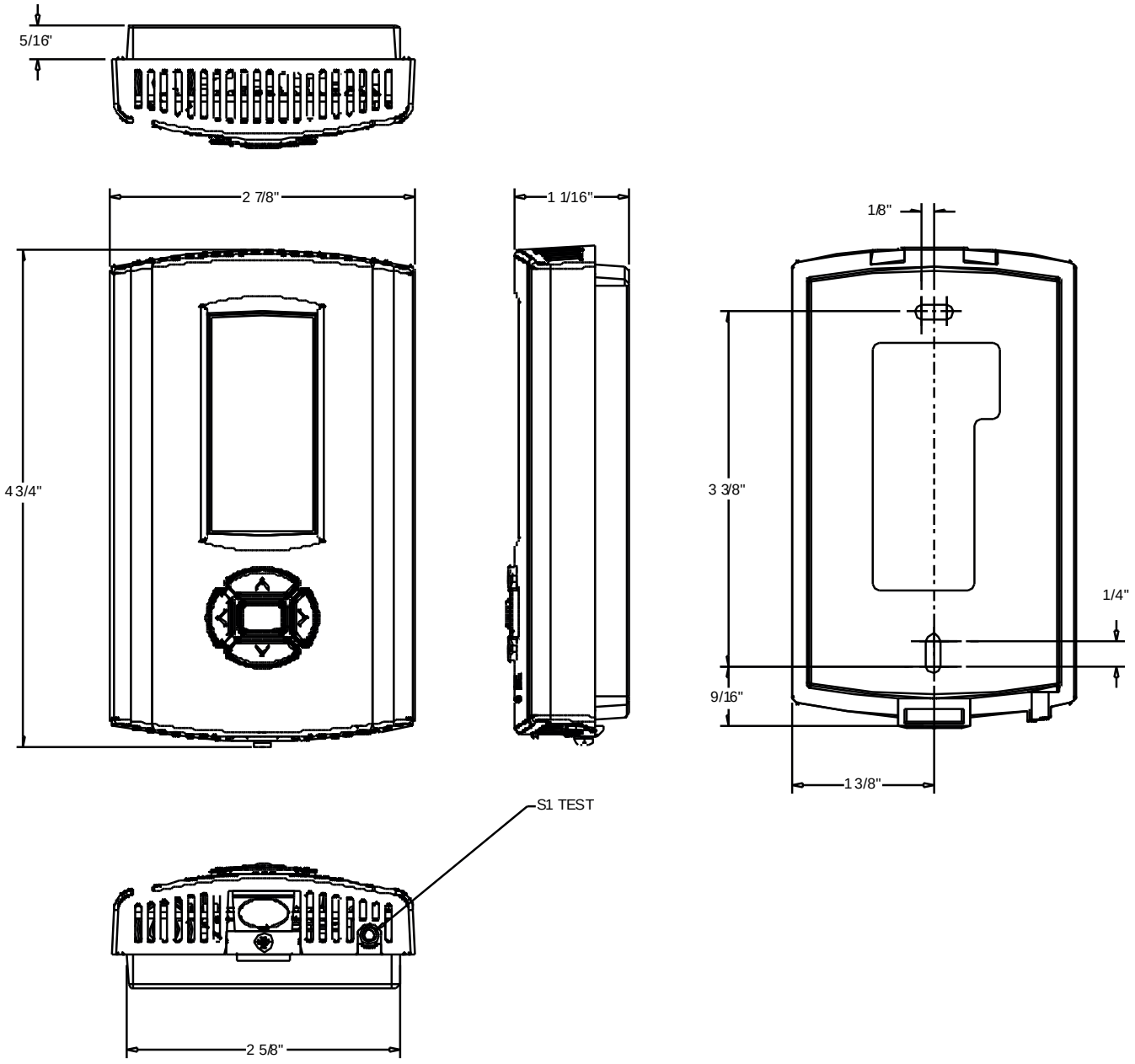
DOWNFLOW ACCESSORY- ECONOMIZER



ACCESSORY-ROOF CURB



ACCESSORY-DOWNFLOW DUCT CONNECTIONS



BAYSENS119 - ZONE SENSOR
PROGRAMMABLE SENSOR

Single Zone VAV - One Zone Variable Air Volume Mode
Single zone VAV is designed for use in single zone applications like gymnasiums, auditoriums, manufacturing facilities, retail box stores, and any large open spaces, where there is a lot of diversity in the load profile. Single Zone VAV (SZ VAV) is an ideal replacement to yesterdays constant volume (CV) systems, by reducing operating costs while improving occupant comfort. SZ VAV systems combine Trane application, control and system integration knowledge to exactly match fan speed with cooling and heating loads, regardless of the operating condition. Trane algorithms meet/exceed ASHRAE 90.1- 2010, SZ VAV energy-saving recommendations, and those of CA Title 24. The result is an optimized balance between zone temperature control and system energy savings. Depending on your specific application, energy savings can be as much as 20+%.

Note:
Building system modeling in energy simulation software like TRACE is recommended to evaluate performance improvements for your application.

SZ VAV is fully integrated into the ReliaTel Control system and is available today. It provides the simplest and fastest commissioning in the industry through proven factory-installed, wired, and tested system controllers. All control modules, logic and sensors are factory installed, and tested to assure the highest quality and most reliable system available. This means no special programming of algorithms, or hunting at the jobsite for sensors, boards, etc. that need to be installed in the field. Single zone VAV is a quick and simple solution for many applications and is available from your most trusted rooftop VAV system solution provider- Trane.

Variable Frequency Drive
Variable Frequency Drives are factory installed and tested to provide supply fan motor speed
Modulation. VFDs on the supply fan, as compared to inlet guide vanes or discharge dampers, are quieter, more efficient, and are eligible for utility rebates. All VFDs are designed to allow bypass if required. Bypass control will simply provide full nominal airflow in the event of drive failure. Bypass mode is indicated in the unit wiring manual. Modulating gas heat models with SZVAV allow tighter space temperature control with less temperature swing.

Tool-less Hail Guards
Tool-less, hail protection quality coil guards are available for condenser coil protection.

Through the Base Electrical with Disconnect Switch
Three-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight RT-PRC028-EN 121 enclosure with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized.

Note:
The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.

Two-Inch Pleated Filters
Two inch pleated media filters shall be available on all models.

Supply and/or Return Air Smoke Detector
With this option installed, if smoke is detected, all unit operation will be shut down. Reset will be manual at the unit. Return Air Smoke Detectors require minimum allowable airflow when used with certain models. See the Installation, Operation, and Maintenance (IOM) manual for the models affected and the minimum allowable airflow required. This option is available on all downflow models.

Accessory - Roof Curb - Downflow
The roof curb shall be designed to mate with the downflow unit and provide support and a water tight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb design shall comply with NRCA requirements. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.

Accessory - BAYSENS119 Programmable Zone
The electronic programmable sensor is Auto or Manual changeover with seven day programming. Auto or Manual selection of Fan Auto, Fan On. Programmable sensor has System Off, Auto, Heat, Cool, and Service /LCD indicators as standard. Night setback sensor has up to four programs per day which can be individually configured to occupied or unoccupied.

Accessory - Digital Display Zone Sensor
The Digital LCD (Liquid Crystal Display) zone sensor has the look and functionality of standard zone sensors. This sensor includes a digital display of set point adjustment and space temperature in F (Fahrenheit) or C (Celsius). Includes FAN and SYSTEM buttons (supports the service functions of the standard sensor). E-squared memory stores last programmed set points. Requires 24 VAC (Volts AC). This sensor should be utilized with ReliaTel¿ controls.

General - Ultra High
The units shall be dedicated downflow or horizontal airflow. The operating range shall be between 125F and 0F in cooling as standard from the factory for all units. Cooling performance shall be rated in accordance with ARI testing procedures. All units shall be factory assembled, internally wired, fully charged with R-410A, and 100 percent run tested to check cooling operation, fan and blower rotation and control sequence, before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification. This product has been evaluated to Bi-National Standard CAN/CSA-C22.2 No. 236-05, UL 1995; and is eligible for CNL (Canadian National Standards Listed) and USL (United States Standards Listed).

Casing - Ultra High
Unit casing shall be constructed of zinc coated, heavy gauge, galvanized steel. Exterior surfaces shall be cleaned, phosphatized, and finished with a weather-resistant baked enamel finish. Unit's surface shall be tested 672 hours in a salt spray test in compliance with ASTM B117. Cabinet construction shall allow for all maintenance on one side of the unit. In order to ensure a water and air tight seal, service panels shall have lifting handles and no more than three screws to remove. All exposed vertical panels and top covers in the indoor air section shall be insulated with a 1/2-inch, 1-pound density foil-faced, fire-resistant, permanent, odorless, glass fiber material. The base of the downflow unit shall be insulated with 1/2-inch, 1-pound density foil-faced, closed-cell material. The downflow unit¿s base pan shall have no penetrations within the perimeter of the curb other than the raised 1 1/8-inch high supply/return openings to provide an added water integrity precaution, if the condensate drain backs up. The base of the unit shall have provisions for forklift and crane lifting.

Compressors - Ultra High
The Trane eFlex variable speed compressor shall be capable of speed modulation from 15Hz to a maximum of 75Hz. The minimum unit capacity shall be 25% of full load or less. The compressor motor shall be a permanent magnet type. Each variable speed compressor shall be matched with a specially designed, refrigerant-cooled, variable frequency drive which modulates the speed of the compressor motor and provides several compressor protection functions. Control of the variable speed compressor and inverter control, as well as tandem direct-drive, scroll type compressors, shall be integrated with the ReliaTel unit controller to ensure optimal equipment reliability and efficiency. Each ompressor shall have a crankcase heater installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

Controls - Ultra High
Unit shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring. Unit shall provide an external location for mounting a fused disconnect device. ReliaTel controls shall be provided for all 24-volt control functions. The resident control algorithms shall make all heating, cooling, and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperatures. The control algorithm maintains accurate temperature control, minimizes drift from set point, and provides better building comfort. A centralized control shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection.

Crankcase Heaters - Ultra High
These band heaters provide improved compressor reliability by warming the oil to prevent migration during off-cycles or low ambient conditions. These are standard on all Voyager models.

Discharge Line Thermostat - Ultra High
A bi-metal element discharge line thermostat is installed as a standard option on the discharge line of each system. This standard option provides extra protection to the compressors against high discharge temperatures in case of loss of charge, extremely high ambient and other conditions which could drive the discharge temperature higher. Discharge line thermostat is wired in series with high pressure control. When the discharge temperature rises above the protection limit, the bi-metal disc in the thermostat switches to the off position, opening the 24 Vac circuit. When the temperature on the discharge line cools down, the bi-metal disc closes the contactor circuit, providing power to the compressor. When the thermostat opens the fourth time, the ReliaTel control must be manually reset to resume operation on that stage.

Evaporator and Condenser Coils - Ultra High
Microchannel coils will be burst tested by the manufacturer. Internally finned, 5/16¿ copper tubes mechanically bonded to a configured aluminum plate fin shall be standard for evaporator coils. Microchannel condenser coils shall be standard on all units. Coils shall be leak tested to ensure the pressure integrity. The evaporator coil and condenser coil shall be leak tested to 225 psig and pressure tested to 450 psig. Sloped condensate drain pans are standard.

Filters - Ultra High
Two inch standard filters shall be factory supplied on all units. Optional MERV 8 or MERV 13 filters with filter removal tool shall be available.

Gas Heating Section - Ultra High
The heating section shall have a drum and tube heat exchanger design using corrosion resistant steel components. A forced combustion blower shall supply premixed fuel to a single burner ignited by a pilotless hot surface ignition system. In order to provide reliable operation, a negative pressure gas valve shall be used on standard furnaces and a pressure switch on furnaces with modulating heat that requires blower operation to initiate gas flow . On an initial call for heat, the combustion blower shall purge the heat exchanger 45 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat. Units shall be suitable for use with natural gas or propane (field installed kit) and shall also comply with California requirements for low NOx emissions. The 12½- 17½ tons shall have two stage heating (Gas/Electric only).

Indoor Fan - Ultra High

Units above shall have belt driven, FC centrifugal fans with adjustable motor sheaves. Units with standard motors shall have an adjustable idler-arm assembly for quick-adjustment of fan belts and motor sheaves. All motors shall be thermally protected. Oversized motors shall be available for high static application. All indoor fan motors meet the U.S. Energy Policy Act of 1992 (EPACT).

Outdoor Fans - Ultra High
The outdoor fan shall be direct-drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motor(s) shall be permanently lubricated and shall have bulletining thermal overload protection.

Phase Monitor - Ultra High
The Phase Monitor is a three-phase line monitor module that protects against phase loss, phase reversal and phase unbalance. It is intended to protect compressors from reverse rotation. It has an operating input voltage range of 190-600 Vac, and LED indicators for ON and FAULT. There are no field adjustments and the module will automatically reset from a fault condition.

Refrigerant Circuits - Ultra High
Each refrigerant circuit shall have thermostatic expansion devices, service pressure ports, and refrigerant line filter driers factory installed as standard. An area shall be provided for replacement suction line driers.

Single Zone VAV - Ultra High
SZVAV systems combine Trane application, control and system integration knowledge to exactly match fan speed with cooling and heating loads, regardless of the operating condition.

Note:
Zone sensors are required for units configured for Single Zone VAV indoor fan and eFlex compressor system control to enable Single Zone VAV and eFlex modulation functionality.

Variable Frequency Drive - Ultra High
Variable Frequency Drives are factory installed and tested to provide supply fan motor speed modulation, as well as modulating gas heat. VFDs on the supply fan, as compared to inlet guide vanes or discharge dampers, are quieter, more efficient, and are eligible for utility rebates. All VFDs are designed to allow bypass if required. Bypass control will simply provide full nominal airflow in the event of drive failure. Modulating gas heat models with VFD's allow tighter space temperature control with less temperature swing.

CO2 Sensor Wiring - Ultra High
The unit wiring for field installed C02 sensors. Factory-installed C02 sensor wiring saves time and ensures proper unit connections for the field installed C02 sensor kits.

High Short Circuit Current Rating - Ultra High
Unit shall be provided with electrical subsystem that will with stand fault currents up to 65kA (208/230, 460 VAC) compliant with UL 1995 and NEC 440.4 (B). Each compressor circuit and the indoor fan shall have dedicated overcurrent protection. Three phase motors shall be protected by Class J time delay fuses. Single phase motors shall be protected by Class CC time delay fuses. All transformers shall also be protected with Class CC time delay fuses. Contactors shall be din rail mounted.

Horizontal Side Access with Disconnect Switch - Ultra High

Three-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized.

Note:
The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.

Supply, Return and Plenum Air Smoke Detector - Ultra High
With this option installed, if smoke is detected, all unit operation will be shut down. Reset will be manual at the unit. Return Air Smoke Detectors require minimum allowable airflow when used with certain models. See the Installation, Operation, and Maintenance (IOM) manual for the models affected and the minimum allowable airflow required. This option is available on all downflow models. Supply and/or Return Detectors may not be used with the Plenum Smoke Detector.

Through the Base Electrical with Disconnect Switch - Ultra High
Three-pole, molded case, disconnect switch with provisions for through the base electrical connections are available. The disconnect switch will be installed in the unit in a water tight enclosure with access through a swinging door. Factory wiring will be provided from the switch to the unit high voltage terminal block. The switch will be UL/CSA agency recognized.

Note:
The disconnect switch will be sized per NEC and UL guidelines but will not be used in place of unit overcurrent protection.

Two-Inch Pleated Filters - Ultra High
Two-inch MERV 8 and MERV 13 media filters with filter removal tool shall be available on all models.

Barometric Relief - Ultra High
Designed to be used on downflow units, barometric relief is an unpowered means of relieving excess building pressure.

Economizer-Downflow - Ultra High
The assembly includes fully modulating 0-100% motor and dampers, barometric relief, minimum position setting, preset linkage, wiring harness with plug, fixed dry bulb and spring return actuator. The barometric relief damper shall be standard with the downflow economizer and shall provide a pressure operated damper that shall be gravity closing and shall prohibit entrance of outside air during the equipment ¿off¿ cycle. Solid state enthalpy and differential enthalpy control shall be field-installed.

Tool-less Hail Guards - Ultra High
Tool-less, hail protection quality coil guards are available for condenser coil protection.

Roof Curb-Downflow - Ultra High
The roof curb shall be designed to mate with the downflow unit and provide support and a water tight installation when installed properly. The roof curb design shall allow field-fabricated rectangular supply/return ductwork to be connected directly to the curb. Curb shall be shipped knocked down for field assembly and shall include wood nailer strips.

Zone Sensors - Ultra High
This option shall be provided to interface with ReliaTel and shall be available in either manual, automatic, programmable with night setback, with system malfunction lights or remote sensor options.

Note :
Zone sensors are required for units configured for Single Zone VAV indoor fan system control in order to enable Single Zone VAV functionality