

ENGINEERING DATA



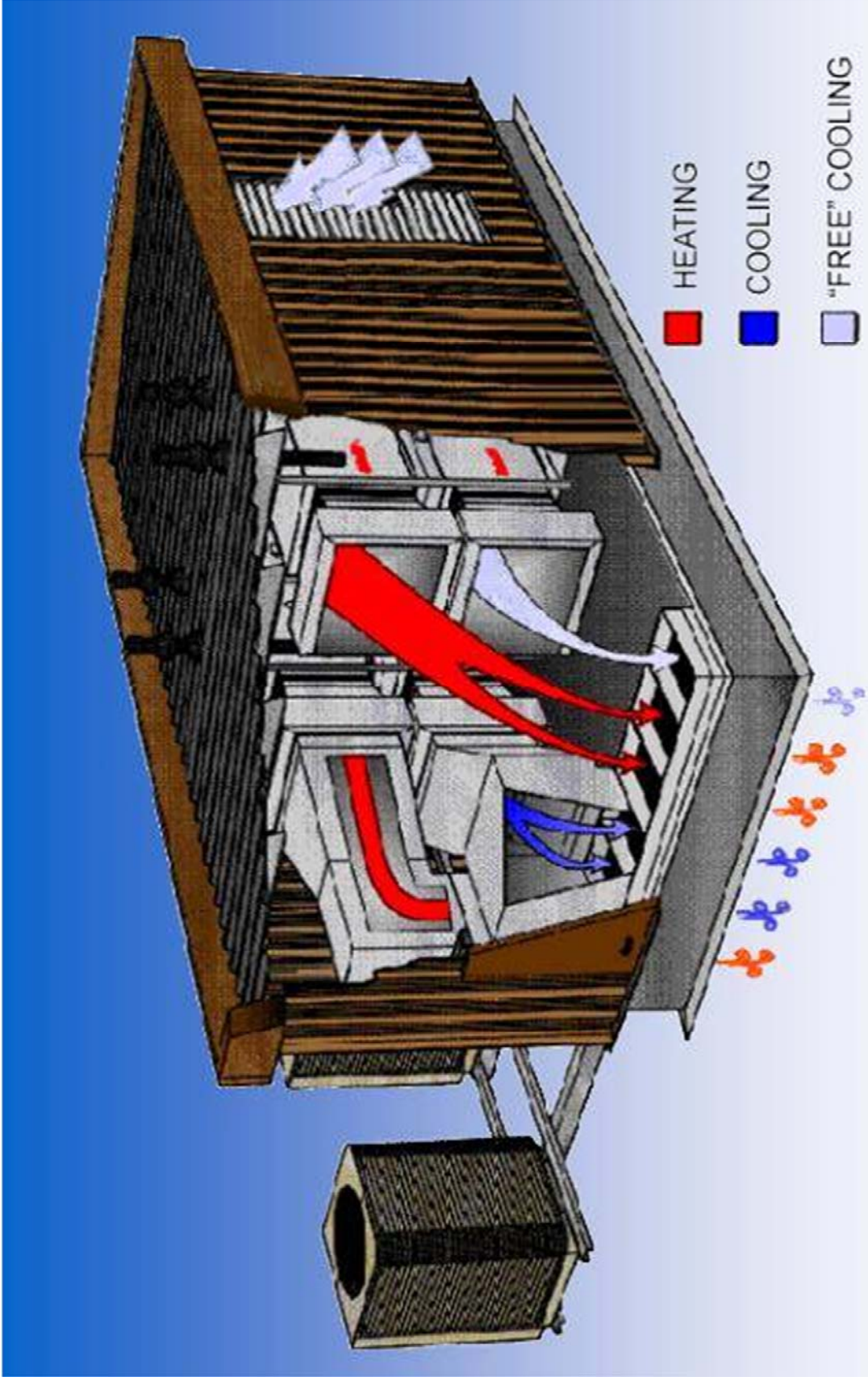
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2101 HALL BLVD
PONCA CITY, OK 74601

WWW.CMEMULTIZONE.COM



Individual Zone Control

PENTHOUSE MULTIZONE OVERVIEW

PRODUCT NAME: Penthouse MultiZone (PMZ3)

MANUFACTURER: **Custom Mechanical Equipment**

2101 Hall Blvd
Ponca City, OK 74601
Toll Free: (866) 687-9803
Phone: (580) 762-4114
Fax: (580) 762-4117



WARRANTY AGENT: **Custom Mechanical Equipment**, Inc.

2101 Hall Blvd
Ponca City, OK 74601
Phone: (866) 687-9803

PRODUCTION HISTORY: First unit produced in 1989.

PRODUCT DESCRIPTION: Application: Heating Ventilation and Air Conditioning Appliance
Type: Year-round Rooftop MultiZone Unit
Electrical: 208-230/3/60, 460/3/60, 575/3/60
Capabilities: PMZ3 3-48 tons cooling

DISCLAIMER: D/T CME's ongoing commitment to quality - subject to change without notice and without incurring liability.

APPROVALS: All electrical components.



Gas heating section.



**ENERGY STAR®
Labeled**

All refrigeration components.



**ENERGY STAR®
Labeled**

Entire appliance



Configuration

Every Penthouse MultiZone is individually designed and built to match each applicant's specific demands. Each penthouse contains multiple split systems designed for highly efficient, reliable performance in commercial buildings. Multiple economizers, fans, cooling coils and heating sections condition independent zones without the complexity, lack of redundancy and energy waste found in other zoning systems. The result is exceptional occupant comfort, low operation costs and the most energy efficient multizone available.

PMZ3 General Options

Heating Sources

- Natural Gas
- Electric
- Hot Water
- Heat Pump
- Dual Fuel
- Steam

Cooling Sources

- Direct Expansion
- Chilled Water
- Future Coil Only

Economizer Control

- Enthalpy
- Dry Bulb

Ventilation Control

- Individual economizer ventilation (std)
- Dual minimum position settings per AHU
- CO2 Demand Ventilation
- Space Occupancy Sensors
- Dedicated outdoor air unit

Direct Digital Control

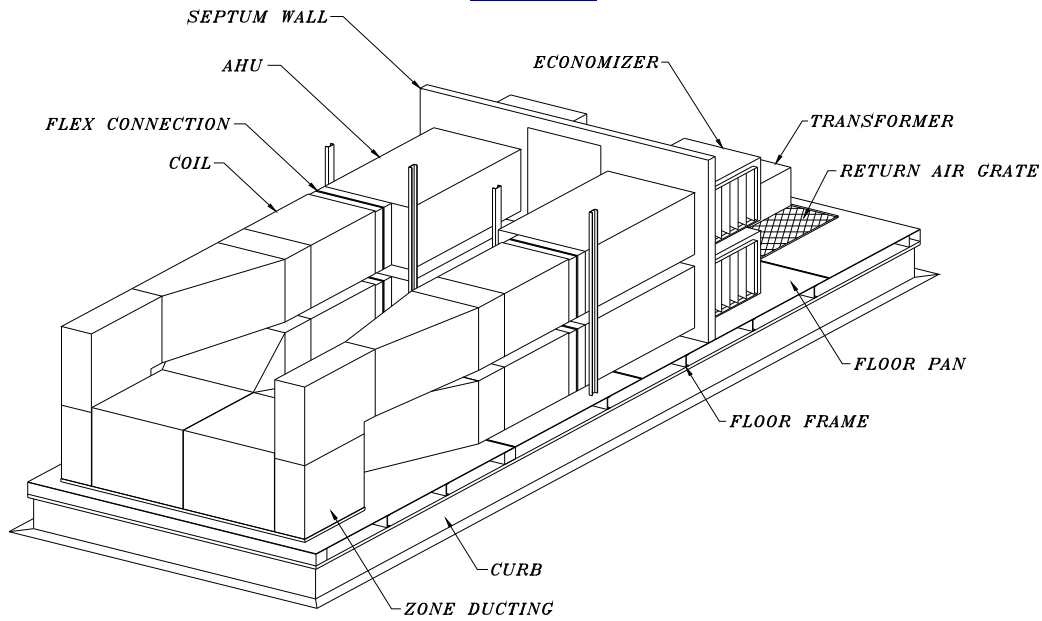
- Factory installed open protocol EMS system

Dehumidification

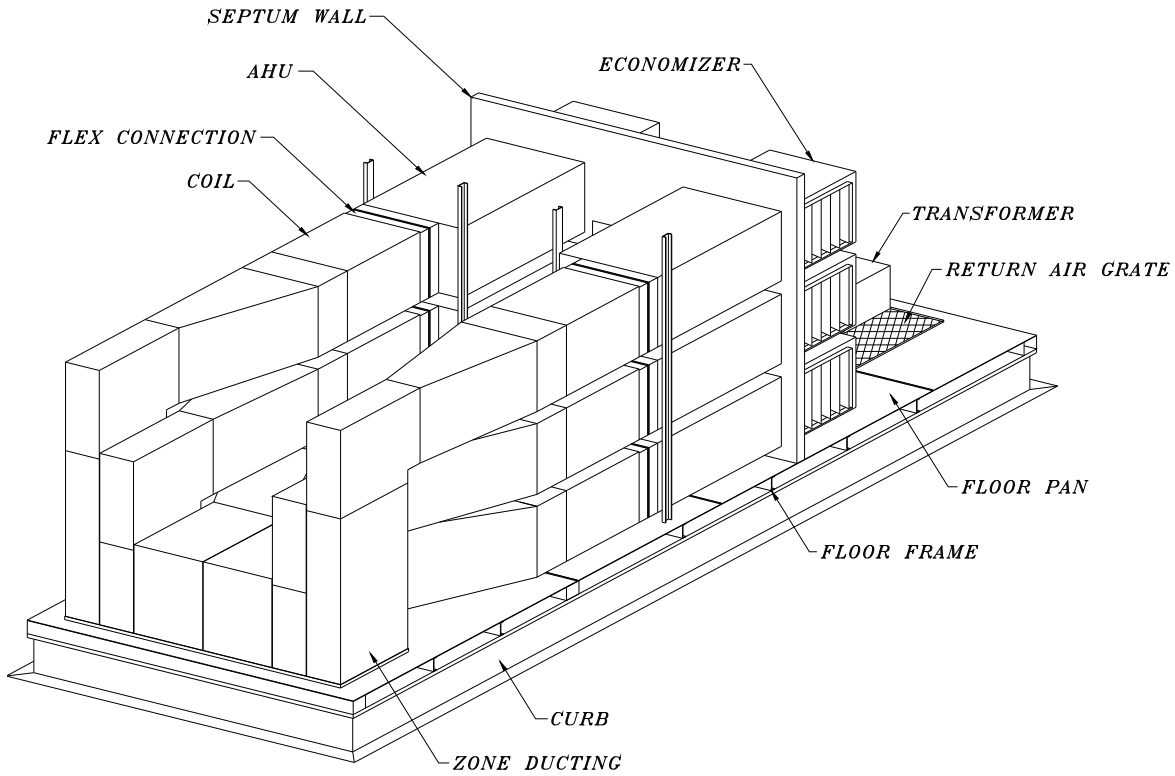
- Humidity control with fan speed control
- Return plenum dehumidification system

PENTHOUSE MULTIZONE

PMZ3-20

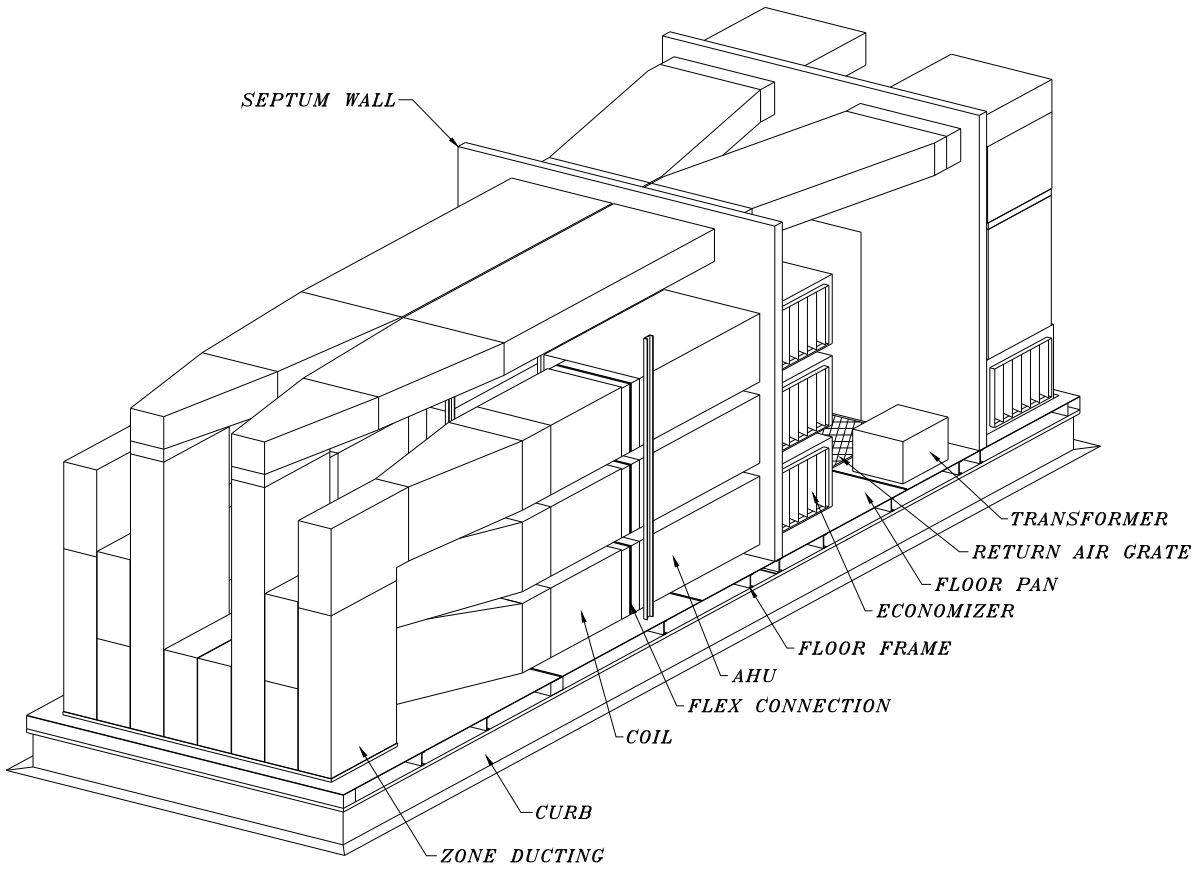


PMZ3-30



PENTHOUSE MULTIZONE

PMZ3-40



Independent, Highly Efficient Systems

- 95.0% AFUE Gas Heating (Two Stage)
- 11.3 - 12.0 EER Condensing Units
- 13.0 - 17.0 SEER
- Multiple speed DC inverted fan motors
- Modulating Economizers
- Individual Zone Control
- Energy Management Options

Simple Maintenance

- Two-Stage Heating
- Direct Expansion Cooling
- Readily Available Components
- Walk-in Unit Housing
- True Zone Independence



PMZ3-20



PMZ3-30

Superior Warranties

Heat Exchanger	10 years
Compressor	5 years
Furnace Motor	1 year
Ignition Control	1 year

Ventilation Codes

Meets ANSI/ASHRAE 62.1-2004 ventilation requirements with proper application. Several options are available for individual zone ventilation control.

Flexibility

Each unit is custom built to meet design requirements with 1 to 18 control zones, 9 to 45 tons of cooling and 165 to 792 MBH of heating output. Unit base and duct connections are built to match existing or new roof curbs. Heating is available in natural gas, electric, hot water, heat pump and dual fuel. Cooling is available in direct expansion and chilled water.

EXISTING PROBLEMS

High Energy Costs

Cooling and heating efficiencies have increased significantly over the past 20 years. Traditional multizones and VAV systems cool and heat simultaneously, resulting in significant energy waste. Many of today's manufacturers continue to lag behind the advances of the past 20 years.

Drafts, Hot/Cold Spots, Stale Air

Most buildings are plagued with a variety of comfort complaints and most HVAC systems lack the flexibility to meet today's diverse heating, cooling and ventilation requirements. With traditional systems, a single component failure can disable a large portion of your facility.

High Maintenance Costs

Today's commercial HVAC market focuses too much on "engineering economics" and too little on the end user. The drive for the lowest initial cost has produced excessive long-term operating costs. Complicated system controls require continual maintenance, limit the field of qualified service technicians and often rely too heavily on individual components with little or no redundancy.

Long Lead Times

Most manufacturers need 2 to 4 months to deliver their equipment after the submittal process. This delays the job several months after funding is obtained.

Installation Difficulties

Most retrofit units need adapter curbs and many need extensive duct modifications. Most equipment is shipped via common freight, leaving the contractor responsible for tracking delivery. During this process, getting competent assistance is virtually impossible.

PMZ3 SOLUTIONS

Highly Efficient Equipment

The PMZ3 slashes energy costs with proven, highly efficient equipment not available in today's commonly used systems. With independent cooling, heating and ventilation, we avoid the inherent complexity and inefficiencies of other multi-zone and central station systems.

Occupant Comfort

With independent heating and cooling systems, the PMZ3 distributes hot and cold air where needed. With multiple economizers, the PMZ3 directs ventilation air to each zone without "reheat". The independent supply fans automatically adjust with system pressure changes and minimize drafts by reducing airflow when possible. Achieving comfort has never been this simple.

Simple Maintenance

The PMZ3 is simple to maintain. Scroll compressors and standard operating controls allow for fewer parts to maintain and thus, fewer parts to fail. The conditioned penthouse protects the equipment and helps technicians complete their work quickly and thoroughly. If a component fails, a small fraction of your facility is affected while repairs are completed quickly and inexpensively with standard components.

Short Lead Times

Standard lead-time for a PMZ3 is approximately four to six weeks. An emergency replacement unit can normally be built, delivered and operational in less than two weeks.

Easy Installation

The PMZ is easy to install. In retrofits, each unit is built to match existing conditions. All accessory materials are transported with units and shipping is closely monitored to assure on-time delivery. A factory-employed project manager provides on-site expertise and start up supervision to ease your concern.

PMZ3 STANDARD FEATURES

Two-Stage Heating

Integrated control board contains all controls for reliable, trouble free performance. The limited lifetime warranty coverage on heat exchanger is ten (10) years in all non-residential application.

Variable Speed Blower

A commercial, variable speed blower provides soft-start capability and programmable airflow settings. Statically and dynamically balanced. Selected airflow is maintained throughout the static pressure range. Adaptive blower control technology, optimizes dehumidification sequence and simplifies unit air balancing. Simple user adjustment to dial in air flow. No dip switch settings. The blower is mounted on a slide-out frame for easy service.

High Efficiency DX Cooling

Nominal condensing unit capacities range from 3 to 5 tons. All units include Copeland Compliant Scroll compressors for reliability with an EER's ranging from 11.3 to 12.0.

Economizers

Factory-wired enthalpy, dry bulb, or CO2 based economizers with low-leak dampers and common pressure relief dampers provide "free" cooling.

Insulated Penthouse Structure

The entire penthouse is a welded aluminum structure covered with foil-backed, R-9 insulation and Kynar coated steel siding.

Custom Fabrication

Each unit is custom designed to match existing or new roof curb, ducting and zone control requirements.

Smoke Detector

A smoke detector is factory installed and wired in the return air section. Contacts are provided for remote interface.

Integrated Unit Control

Contains all necessary controls and relays to operate unit. Optimized through ongoing research, testing and end-user input. Integrated unit control system maintains unit at leading edge of equipment performance regardless of means of interface. Options: Stand alone, Third Party Integration (BacNet, Johnson N2, LonWorks or ModBus) and Thermostat Control (Hardwire).

CME Warranties

A standard one-year limited warranty covers the entire unit. Extended warranties are included to cover the heat exchanger (ten years), refrigerant compressor (five years), ignition control (one year) and blower motor (one year).

Installation Ease

Internal wiring and piping are factory installed with single-point gas, electrical and condensate connections. ACCU electrical, refrigerant and control connections are extended to the penthouse exterior for easy hook-up.

Factory Authorized Supervision

Factory authorized on-site installation supervision, start-up assistance and training are provided with each installation.

Coordinated Freight

All shipments are scheduled and controlled to ensure on-time arrival.

Primary Disconnect Switch

External disconnect is factory-mounted and ready to receive incoming power wiring.

Service Lights/Outlet

Service Lights are provided in both the furnace and return sections. A GFCI service outlet is located in the return section.

Zone Control and Capacity

Blower capacity can range from 700 cfm to greater than 17,000 cfm per zone. Each zone may be independently heated and cooled without the use of reheat function.

PMZ3 OPTIONS

Heating Options

Factory modifications for use with gas, electric, hot water heating, and dual fuel.

Zone Thermostats

A DDC zone thermostat is provided for simple and reliable temperature control.

Roof Mounting Frame

Steel curb mounting frame with nailing strip.

Enthalpy Economizers-not standard

Economizers are available with dry-bulb change over in lieu of enthalpy sensing.

Curb Riser

A curb riser and zonehead extension can be provided to elevate the PMZ3 off the roof.

Supply Air Smoke Detectors

A smoke detector can be factory installed and wired in each supply air stream.

ACCU Piping Package

Factory piping package extends refrigerant piping to ACCU's in standard locations. Eliminates the guesswork and saves time.

Automatic Ventilation Control

A CO2 sensor can be factory installed in the return air section or motion detectors can be provided for field installation in each zone.

Humidity Control

A humidity control automatically reduces the blower speeds to increase humidity removal.

Chilled Water Cooling

Internal piping, control valves and balance valves are factory-installed for chilled water or glycol cooling.

Heating-only Unit

Unit is available with or without future cooling coils, piping and wiring.

Horizontal Duct Connections

Factory installed duct connections are available for horizontal discharge units.

High Altitude Kits

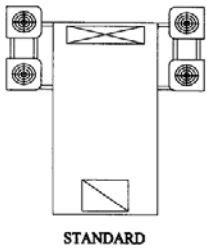
Pressure switch required for equipment installed from 4501 ft to 7,500 ft. For installations from 7501 ft to 10,000 ft furnace requires orifice kit and pressure switch.

Winter Condensate Removal

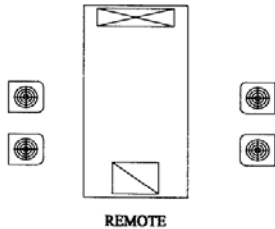
Each Dimension heating section can produce approximately one gallon of condensate per hour. In areas where outdoor temperature reaches freezing conditions, **all condensate piping must terminate to an indoor drain to prevent ice formation.** A single, heating and cooling condensate drain connection is provided in the base of the unit for field extension. Side discharge condensate is available for regions where condensate will not freeze. **DO NOT PIPE THE FLOOR DRAIN OUT THE SIDE OF THE ROOF CURB.** This will likely produce a path for rainwater to enter the building.

Unit Configuration

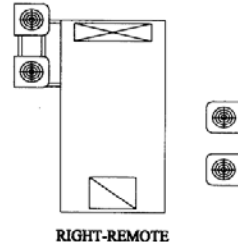
Various rooftop obstructions may not allow for standard location of the ACCU's. The following configurations are regularly used for PMZ3-20.



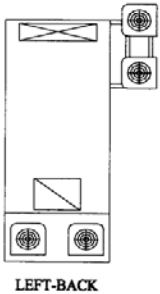
STANDARD



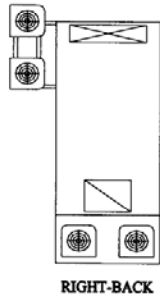
REMOTE



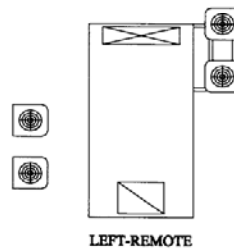
RIGHT-REMOTE



LEFT-BACK



RIGHT-BACK



LEFT-REMOTE

G61MPV-091 and G61MPV-111-SPECIFICATIONS

Model No.	G61MPV-91	G61MPV-111
Input - Btuh (High Fire)	88,000 Low Fire 60,000	110,000 Low Fire 75,000
Output - Btuh	84,000 Low Fire 58,000	103,000 Low Fire 72,000
*A.F.U.E.	95.0%	95.0%
Maximum External Static Pressure - in w.g. (Pa)	0.8	0.8
California Seasonal Efficiency	90.2	90.2
Temperature rise range - °F (°C)	40-70 (4.5-21)	50-80 (10-27)
Blower Wheel Nominal Diameter x Width - in. (mm)	11½ x 10 (292 x 229)	11½ x 10 (292 x 229)
Blower Motor Output - hp (W)	1 (746)	1 (746)
Filter Size (1 per system) - in. (mm)	20 x 25 x 2 (508 x 635 x 51)	20 x 25 x 2 (508 x 635 x 51)
Electrical Characteristics	120 volts - 60 hertz 1 phase	120 volts - 60 hertz 1 phase

* Annual Fuel Utilization Efficiency based on D.O.E. test procedures and according to F.T.C. labeling requirements. Isolated combustion system rating for non-weatherized furnaces.

CBX40MV-65 SPECIFICATIONS

Model No.	CBX40MV-65
Blower Wheel Nominal Diameter x Width - in. (mm)	12 x 9 (305 x 229)
Blower Motor Output - hp (W)	1 (746)
Filter Size (1 per system) - in. (mm)	20 x 25 x 2 (508 x 635 x 51)
Electrical Characteristics	208 volts - 60 hertz 3 phase

BLOWER PERFORMANCE (Measured in CFM)													
Jumper Setting	Static Press. (in. w.c.)	Low Speed				High Speed				Heat Speed			
(All in CFM)		1	2	3	4	1	2	3	4	1	2	3	4
Norm	0.1	1012	1076	1225	1337	1431	1536	1744	1949	1341	1509	1716	1870
	0.5	989	1062	1193	1361	1467	1584	1758	1976	1371	1558	1742	1897
	1	933	993	1148	1326	1467	1577	1758	1970	1374	1561	1723	1896
	1.2	908	979	1140	1315	1455	1564	1748	1946	1365	1545	1708	1877
+	0.1	1113	1184	1348	1471	1574	1690	1918	2144	1487	1670	1884	2086
	0.5	1088	1168	1312	1497	1617	1733	1949	2181	1531	1718	1895	2112
	1	1026	1092	1263	1459	1619	1714	1935	2132	1521	1704	1895	2087
	1.2	999	1077	1254	1447	1608	1693	1917	2088	1510	1685	1884	2063

Jumper Setting	Static Press. (in. w.c.)	Low Speed				High Speed				Heat Speed			
(All in Watts)		1	2	3	4	1	2	3	4	1	2	3	4
NORM	0.1	101	117	160	198	214	263	361	497	184	254	348	444
	0.5	212	238	282	347	356	409	528	662	310	404	503	615
	1	287	326	388	471	511	573	711	873	459	566	676	807
	1.2	343	377	445	535	562	642	763	934	517	633	732	875
+	0.1	111	129	176	218	235	289	397	547	246	332	456	592
	0.5	233	261	310	381	437	499	645	852	384	491	604	778
	1	316	359	426	518	606	671	835	1032	551	655	797	978
	1.2	377	415	490	589	667	733	913	1088	615	715	860	1041

ACCU SPECIFICATIONS

Model No.		SSB036S4	SSB048S4	SSB060S4	
Condenser Coil	Net face area sq. Ft(m ²)	Outer	16 (1.94)	18.3 (1.70)	21.8 (2.03)
		Inner	13.3 (1.24)	13.3 (1.24)	21.1 (1.96)
	Tube diameter-in. (mm)	5/16 (.52)	5/16 (.52)	5/16 (.52)	
	No. Of rows	1.83	1.73	2	
	Fins per inch (m)	22 (866)	22 (866)	22 (866)	
Condenser Fan	Dia.-in. (mm) - # of blades	3	3	3	
	Motor hp (W)	1/6 (124)	1/4 (187)	1/4 (187)	
	Cfm (L/s)	3160 (1485)	3900 (1840)	4200 (1980)	
	Rpm	825	820	820	
	Watts	200	270	300	
R-410a charge furnace		8 lbs. 5 oz. (3.77 kg)	8 lbs. 13 oz. (4.00 kg)	11 lbs. 7 oz. (5.19 kg)	
Liquid line o.d. - in.(mm) sweat		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	
Suction line o.d. - in.(mm) sweat		7/8 (22.2)	7/8 (22.2)	1-1/8 (28.5)	
Condensor weight-lbs (kg) 1 package		233	252	303	

ELECTRICAL DATA

Model No.		SSB036S4			SSB036S4			SSB036S4		
Line voltage data-60 hz 3ph		208v	460v	575v	208v	460v	575v	208v	460v	575v
Compressor	Rated load amps	11.2	4.5	N/A	13.5	6.4	N/A	17.6	9	N/A
	Power factor	0.98	0.98	N/A	0.99	0.99	N/A	0.99	0.99	N/A
	Locked rotor amps	58	29	N/A	88	41	N/A	123	62	N/A
Condenser Fan Motor	Full load amps	1.1	1.1	N/A	1.7	1.1	N/A	1.7	1.1	N/A
	Locked rotor amps	2	2	N/A	3.1	2	N/A	3.1	2	N/A
Rec. Max.fuse or circuit breaker (amps)		25	15	N/A	30	15	N/A	40	20	N/A
*Minimum circuit ampacity		15.1	6.8	N/A	18.6	9.2	N/A	23.7	12.4	N/A

ACCU SPECIFICATIONS

Model No.			TSA036S4			TSA042S4			TSA048S4			TSA060S4		
Condenser Coil	Net face area sq. Ft(m ²)	Outer	13.22 (1.23)			15.11 (1.40)			24.50 (2.28)			24.50 (2.28)		
		Inner	12.60 (1.17)			14.40 (1.34)			23.56 (2.19)			23.56 (2.19)		
	Tube diameter-in. (mm)		5/16 (8)			5/16 (8)			5/16 (8)			5/16 (8)		
	No. Of rows		2			2			2			2		
	Fins per inch (m)		22 (866)			23 (866)			24 (866)			25 (866)		
Condenser Fan	Dia.-in. (mm) - # of blades		4			4			4			4		
	Motor hp (W)		1/5 (149)			1/3 (249)			1/4 (186)			1/4 (186)		
	Cfm (L/s)		2450			2930			3830			3830		
	Rpm		1100			1100			825			825		
	Watts		200			310			330			330		
R-22 charge furnace			6 lbs. 15 oz. (3.15 kg)			6 lbs. 15 oz. (3.15 kg)			12 lbs. 12 oz. (5.78 kg)			13 lbs. 6 oz. (6.07 kg)		
Liquid line o.d. - in.(mm) sweat			3/8 (9.5)			3/8 (9.5)			3/8 (9.5)			3/8 (9.5)		
Suction line o.d. - in.(mm) sweat			7/8 (22.2)			7/8 (22.2)			7/8 (22.2)			1-1/8 (28.6)		
Condensor weight-lbs (kg) 1 package			140			167			223			226		

ELECTRICAL DATA

Model No.		TSA036S4			TSA042S4			TSA048S4			TSA060S4		
Line voltage data-60 hz 3ph		208v	460v	575v	208v	460v	575v	208v	460v	575v	208v	460v	575v
Compressor	Rated load amps	9.6	5.7	N/A	12.1	5.7	N/A	12.1	5.7	N/A	15.3	7	N/A
	Power factor	0.96	0.88	N/A	0.98	0.87	N/A	0.94	0.87	N/A	0.96	0.87	N/A
	Locked rotor amps	75	35	N/A	88	44	N/A	88	44	N/A	104	52	N/A
Condenser Fan Motor	Full load amps	1.1	0.55	N/A	1.7	0.82	N/A	1.7	1	N/A	1.7	1	N/A
	Locked rotor amps	1.9	1.1	N/A	4.1	2.2	N/A	3.1	2.3	N/A	3.1	2.3	N/A
Rec. Max.fuse or circuit breaker (amps)		20	10	N/A	25	10	N/A	25	10	N/A	35	15	N/A
*Minimum circuit ampacity		13.1	7.6	N/A	16.8	7.9	N/A	16.8	8.1	N/A	20.8	9.7	N/A

ACCU SPECIFICATIONS

Model No.			SPA036S4			SPA048S4			SPA060S4		
Condenser Coil	Net face area sq. Ft(m ²)	Outer	16.04 (1.49)			24.06 (2.24)			24.06 (2.24)		
		Inner	15.56 (1.45)			23.33 (2.17)			23.33 (2.17)		
	Tube diameter-in. (mm)		5/16 (.52)			5/16 (.52)			5/16 (.52)		
	No. Of rows		2			2			2		
	Fins per inch (m)		22 (866)			22 (866)			22 (866)		
Condenser Fan	Dia.-in. (mm) - # of blades		3			4			4		
	Motor hp (W)		1/10 (74.8)			1/4 (187)			1/4 (187)		
	Cfm (L/s)		3159 (1485)			3900 (1840)			4200 (1980)		
	Rpm		825			820			820		
	Watts		170			300			350		
R-410a charge furnace			11 lbs. 0 oz. (5.00 kg)			12 lbs. 14 oz. (5.84 kg)			14 lbs. 6 oz. (6.52 kg)		
Liquid line o.d. - in.(mm) sweat			3/8 (9.5)			3/8 (9.5)			3/8 (9.5)		
Suction line o.d. - in.(mm) sweat			7/8 (22.2)			7/8 (22.2)			1-1/8 (28.5)		
Condensor weight-lbs (kg) 1 package			252			308			330		

ELECTRICAL DATA

Model No.		SPA036S4			SPA048S4			SPA060S4		
Line voltage data-60 hz 3ph		208v	460v	575v	208v	460v	575v	208v	460v	575v
Compressor	Rated load amps	11.2	N/A	N/A	13.5	N/A	N/A	17.6	N/A	N/A
	Power factor	0.98	N/A	N/A	0.99	N/A	N/A	0.99	N/A	N/A
	Locked rotor amps	58	N/A	N/A	88	N/A	N/A	123	N/A	N/A
Condenser Fan Motor	Full load amps	0.7	N/A	N/A	1.7	N/A	N/A	1.7	N/A	N/A
	Locked rotor amps	2	N/A	N/A	3.1	N/A	N/A	3.1	N/A	N/A
Rec. Max.fuse or circuit breaker (amps)		25	N/A	N/A	30	N/A	N/A	40	N/A	N/A
*Minimum circuit ampacity		14.7	N/A	N/A	18.6	N/A	N/A	23.7	N/A	N/A

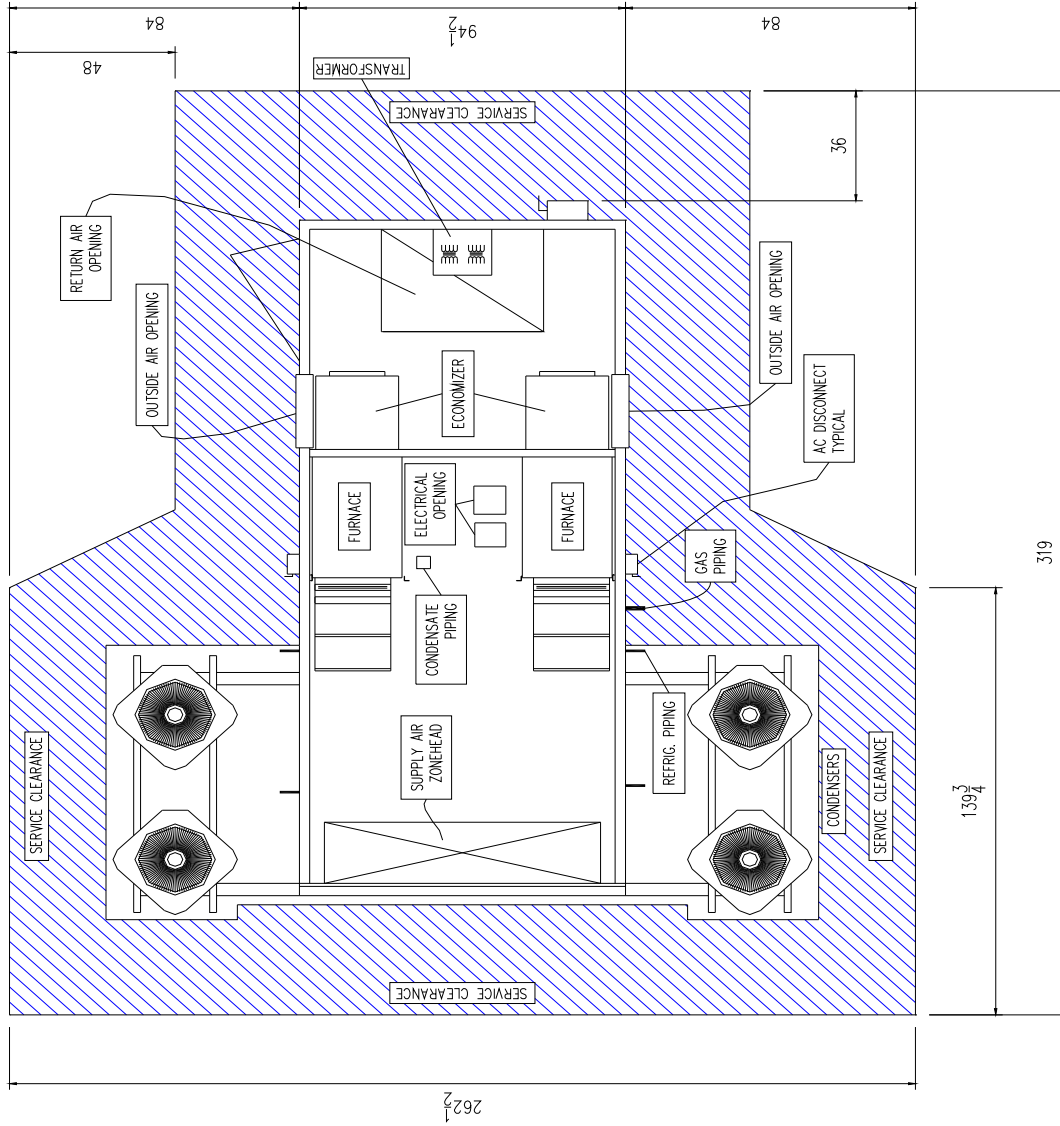
ACCU SPECIFICATIONS

Model No.			TPA036S4			TPA048S4			TPA060S4		
Condenser Coil	Net face area sq. Ft(m ²)	Outer	15.21 (1.41)			24.50 (2.28)			24.50 (2.28)		
		Inner	14.50 (1.35)			23.56 (2.19)			23.56 (2.19)		
	Tube diameter-in. (mm)		5/16 (8)			5/16 (8)			5/16 (8)		
	No. Of rows		2			2			2		
	Fins per inch (m)		22 (866)			22 (866)			22 (866)		
Condenser Fan	Dia.-in. (mm) - # of blades		4			4			4		
	Motor hp (W)		1/5 (149)			1/4 (186)			1/4 (186)		
	Cfm (L/s)		2450 (1155)			3830 (1805)			3831 (1805)		
	Rpm		1100			825			825		
	Watts		190			330			330		
R-22 charge furnace			8 lbs. 10 oz. (3.91 kg)			11 lbs. 12 oz. (5.33 kg)			16 lbs. 4 oz. (7.37 kg)		
Liquid line o.d. - in.(mm) sweat			3/8 (9.5)			3/8 (9.5)			3/8 (9.5)		
Suction line o.d. - in.(mm) sweat			7/8 (22.2)			7/8 (22.2)			1-1/8 (28.6)		
Condensor weight-lbs (kg) 1 package			168			238			288		

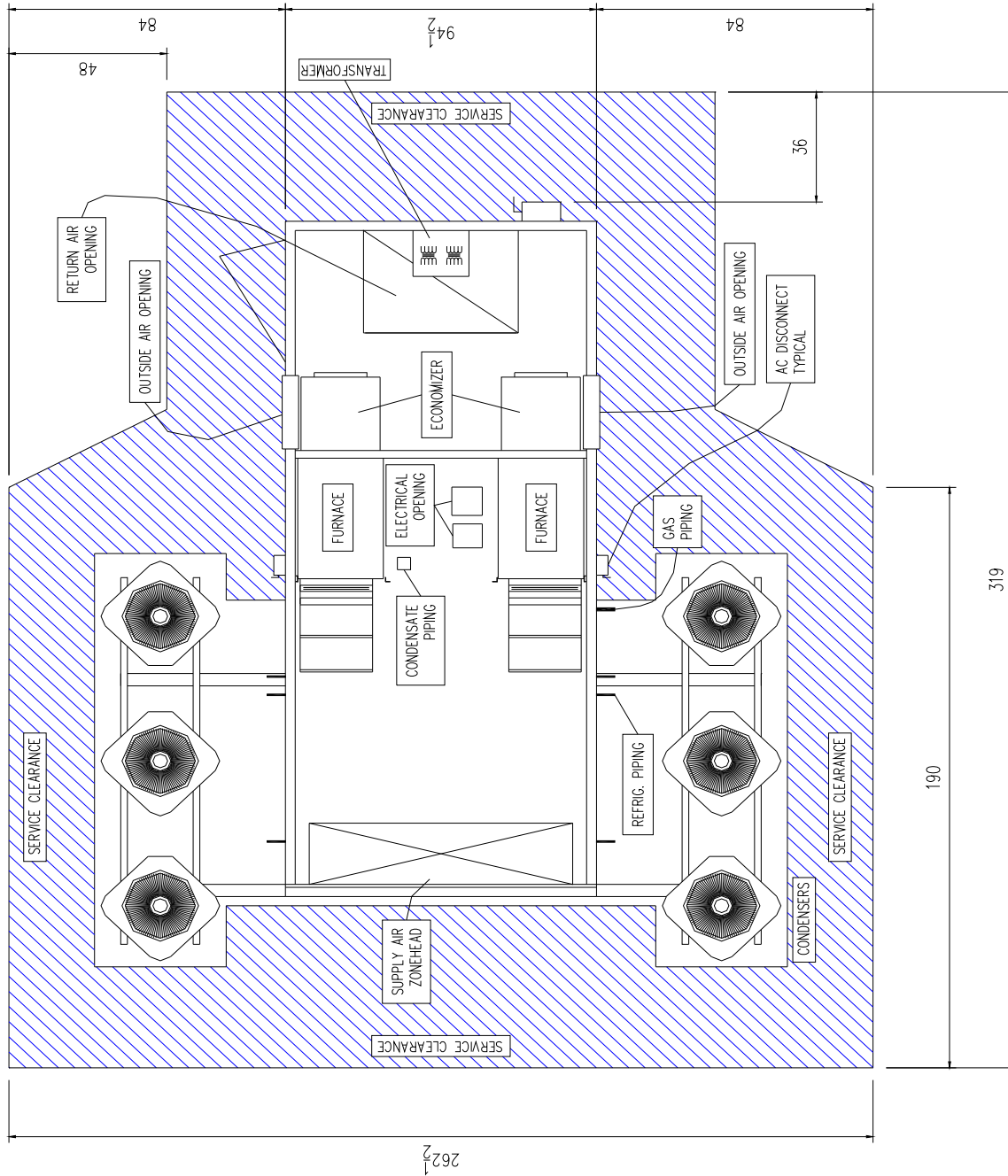
ELECTRICAL DATA

Model No.		TPA036S4			TPA048S4			TPA060S4		
Line voltage data-60 hz 3ph		208v	460v	575v	208v	460v	575v	208v	460v	575v
Compressor	Rated load amps	9.6	4.8	N/A	14.7	7	N/A	17.3	6.7	N/A
	Power factor	0.96	0.88	N/A	0.96	0.87	N/A	0.96	0.88	N/A
	Locked rotor amps	77	35	N/A	91	50	N/A	123	49.5	N/A
Condenser Fan Motor	Full load amps	1.1	0.55	N/A	1.7	0.82	N/A	1.8	0.9	N/A
	Locked rotor amps	1.9	1.1	N/A	4.1	2.2	N/A	2.9	2.3	N/A
Rec. Max.fuse or circuit breaker (amps)		20	10	N/A	30	15	N/A	40	15	N/A
*Minimum circuit ampacity		13.1	6.5	N/A	20	9.5	N/A	23.4	9.2	N/A

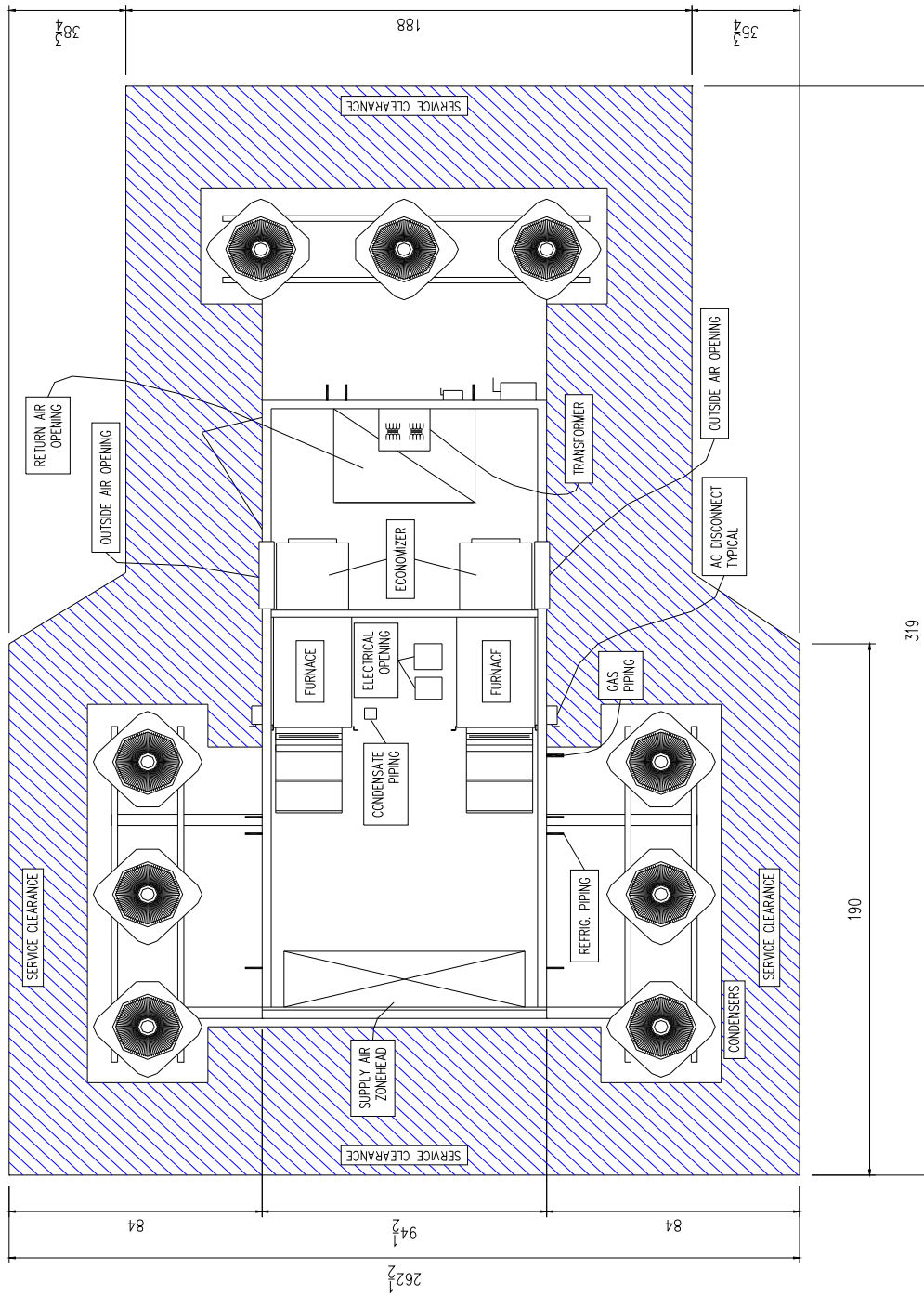
PMZ3-20 T-CLASS SERVICE CLEARANCE



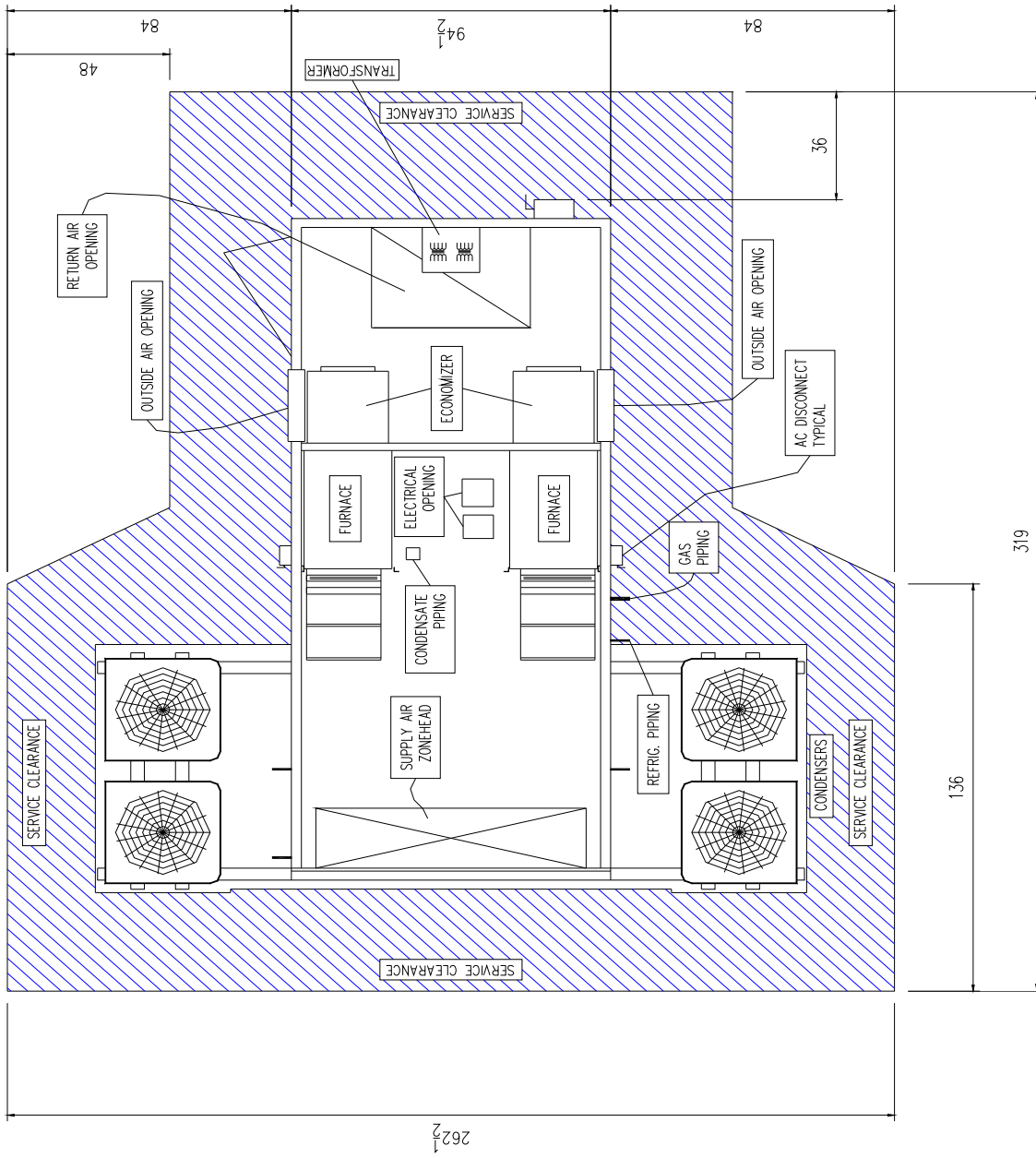
PMZ3-30 T-CLASS SERVICE CLEARANCE



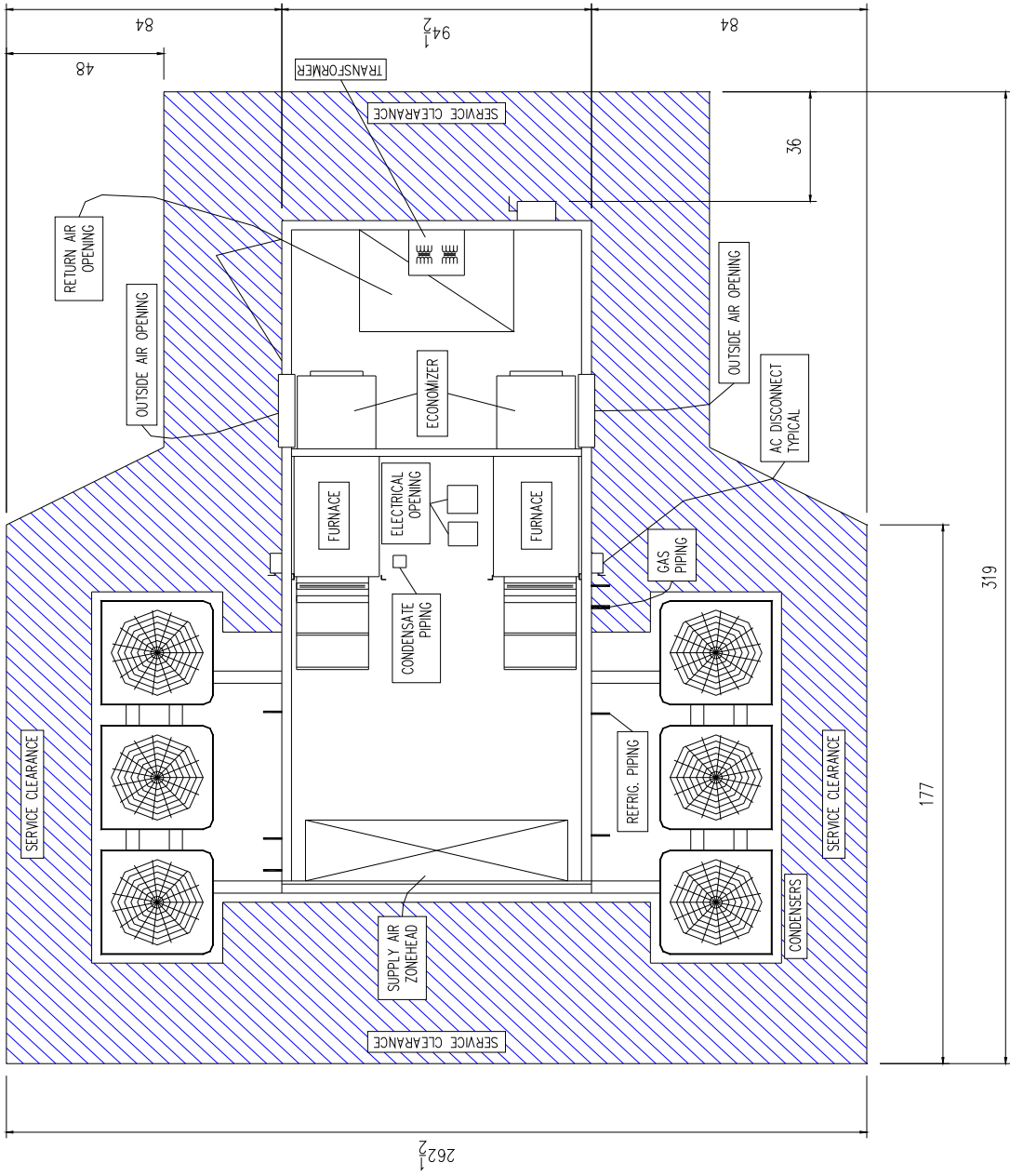
PMZ3-40 T-CLASS SERVICE CLEARANCE



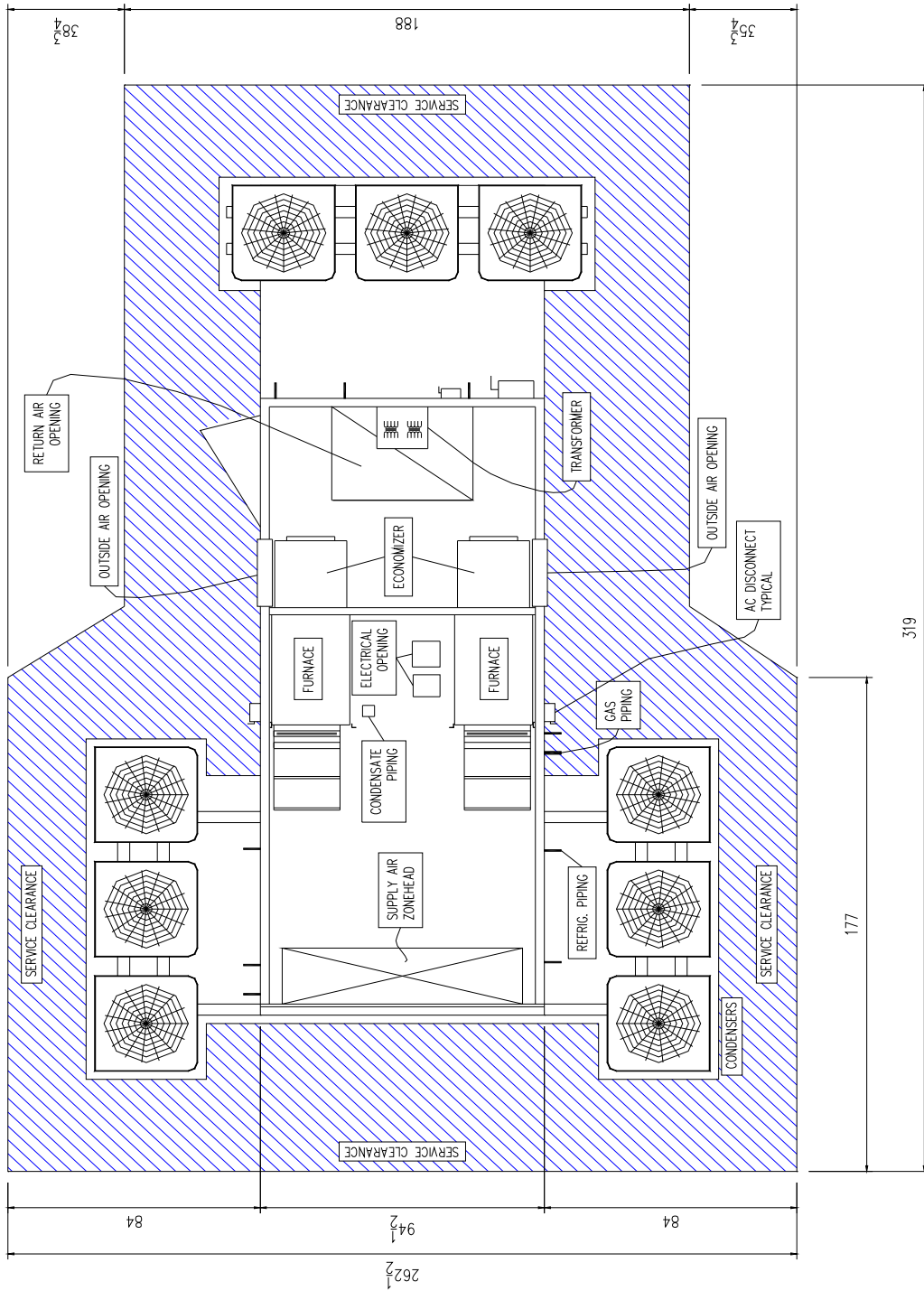
PMZ3-20 S-CLASS SERVICE CLEARANCE



PMZ3-30 S-CLASS SERVICE CLEARANCE



PMZ3-40 S-CLASS SERVICE CLEARANCE



PMZ3 SERIES - STRUCTURE AND INSTALLED COMPONENTS: NATURAL GAS HEATING AND DX COOLING

- A. Structure: Penthouse is constructed of high ribbed steel with 1/2" foil backed R-9 insulation and color fast steel siding and trim. A variety of standard colors are available.
- B. Heating: Shall be high efficiency Dimension two stage condensing type furnaces utilizing outside air for combustion. Units shall be certified by AGA laboratories and the ratings certified by GAMA and tested according to DOE test procedures and FTC labeling regulations. Units are available for use with LPG/propane as an option. Units may be Lennox G61-MPV-111 with 110,000 Btu Input/ 103,000 Btu output on high fire & 75,000 Btu Input/ 72,000 Btu output on low fire, with A.F.U.E. of 95.0% or G61-MPV-091 with 88,000 Btu Input/ 84,000 Btu output on high fire & 60,000 Btu Input/ 58,000 Btu output on low fire, with AFUE of 95.0%. Gas line with single point outside 1 1/4" connection.
- C. Furnace Blowers: Shall have variable speed drive high static motors. The multiple speed motor shall maintain a specified air volume throughout the static pressure range. Change in blower speeds shall be accomplished by a simple adjustment through user interface controller.
- D. The multiple split system penthouse units will be PMZ3 factory assembled one piece design. Coils to be complete with factory insulated cabinets, corrosion resistant drain pan and expansion valve kits.
- E. Condensing Units: Condensing units to be, T-Class single stage or S-Class 2 stage R410A refrigerant, air cooled type with scroll compressors and resilient mounts. Coils shall be copper-aluminum construction, pressure tested at 450 to 500 psig. A timed off control shall prevent the compressor from short cycling. Refrigeration piping to outside of penthouse - 1 1/8 suction and 3/8 liquid line.
- F. Economizer Sections: Economizers shall be provided for each Lennox Dimension furnace consisting of gasketed low leakage return and outside air dampers in a steel housing with 2" pleated filters. Damper position shall be controlled by an air sensor and solid state outside air enthalpy sensor. A minimum position potentiometer shall adjust outside air damper to minimum position when blower is running.
- G. Duct System: Unit shall have factory installed internal duct system. Individual zone heads shall be sized and located for connection to the existing zone systems. The return air opening shall be sized for ducted or common return and include a protective grate.
- H. Low Voltage: A low voltage control center shall be factory installed in the unit to allow connections of the low voltage thermostat wires.
- I. Electrical: Unit is available in 208v, 230v, 460v, and 575v, three phase with main over current protection device and branch circuit breakers will be provided in each unit. Condensing unit fused disconnect switches are mounted on the exterior of the penthouse adjacent to the respective condensing units.

REFRIGERANT PIPING:

- A. Type "L" hard drawn refrigerant grade copper tubing with forged fittings shall be used. Line sizes and installation shall be as required by the manufacture of the equipment furnished. Extreme care should be taken to keep the entire system clean and dry during installation. All systems shall be placed under a 24-hour vacuum and charged with refrigerant.

LENNOX PARTS ONLY WARRANTIES:

- A. PMZ heat exchangers have a ten-year limited warranty.
- B. PMZ solid state ignition modules have a one-year limited warranty.
- C. All other covered components are a one-year limited warranty.
- D. The compressors have a five-year limited warranty.

PMZ3 SEQUENCE OF OPERATION

The Integrated unit controller contains all necessary controls and relays to operate all PMZ3 functions. The system changes blower speeds, enables heating and cooling, provides minimum ventilation and disables equipment for night setback operation and emergency shutdown. Independent zone temperature control is regulated by individual thermistors.

VENTILATION MODE

When power is supplied to the unit, each blower is enabled at its manually adjustable ventilation blower speed. Each economizer is driven to its manually adjustable minimum position.

HEATING MODE

Upon a zone heating call, the corresponding heating section is enabled. The corresponding blower is ramped to its manually adjustable high speed. When the zone heating demand is met, the blower returns to the ventilation.

COOLING MODE

Upon a zone cooling call, the corresponding blower is ramped to its manually adjustable high speed. The outdoor air sensor for that zone is enabled (enthalpy or dry bulb). If outdoor conditions permit, the mixed air temperature control modulates economizer dampers to maintain a fixed mixed air temperature. Otherwise, the corresponding condensing unit provides mechanical cooling. When the zone cooling demand is met, the blower returns to the ventilation mode.

NIGHT SETBACK

During occupied periods, the PMZ3 operates as described above. During unoccupied periods, the unit is idle with all outdoor air dampers closed. During a call for heating or cooling, the PMZ3 is enabled as described above except all outdoor air dampers remain closed. When the demand is met the unit returns to idle mode.

BLOWER CONTROL

Variable speed direct drive blower. Statically and dynamically balanced. Adaptive blower control technology, optimizes dehumidification sequence and simplifies unit air balancing. Simple user adjustment to dial in air flow. No dip switch settings.

CONTROL INTEGRATION

PMZ3 unit will operate after start-up in a stand alone mode, and is factory pre-programmed for integration.

CO2 CONTROL

Upon space/return CO2 reading reaching setpoint economizer opens to increase outdoor fresh air. Unit is programmed with three staging setpoints, if co2 continues to rise successive stages increase outdoor air. CO2 setpoint is adjusted from key pad display.

DEHUMIDIFICATION

Upon space/return humidity reading reaching setpoint blower speed is reduced to achieve 50 deg F discharge setpoint. Dehumidification percentage is adjusted from key pad display.

EXHAUST FANS

Exhaust fans are staged based on unit total percentage of outside air. Staging percentages are adjusted from key pad display.
20 tons are single stage. Each stage is 3059 CFM
30 tons are two stage. Each stage is 3059 CFM
40 tons are three stage. Each stage is 3059 CFM

UNIT CONTROL – DDC CONTROLLER SPECIFICATION

The controller used shall be 32-bit microprocessor based and graphically programmable to control each unit with 96 input/output (I/O) points

- Up to 48 universal inputs (individually jumper-selectable to select either a dry contact, thermistor, 0-20mA, 0-5 VDC, 0-10 VDC, or RTD... with 12-bit resolution on all analog inputs)
- Up to 24 digital outputs (relayed outputs with individual LED indication and individual HOA switches)
- Up to 24 analog outputs (0-10 VDC or 0-20 mA)

Capacity requirements greater than 96 I/O's can be added as an option. The maximum number of inputs and outputs the controller can accept is 192 (92 universal inputs, 48 digital outputs and 48 analog outputs).

The controller must be capable of sensing CO2 levels by zone and modulating the fresh air by zone to established levels.

There will be no limits on the number of control loops that the controller can handle nor any programming limitations imposed. The controller will have an on-board, jumper-selectable EIA-232 or EIA-485 open protocol port that supports the following communication protocols: BACnet (modes supported: IP, MS/TP, PTP, and ARCnet), Modbus (modes supported: RTU and ASCII), N2 Bus, and Lon Works.

PMZ MULTIZONE LOCATIONS

McALPINE COMMUNITY CENTER BIRMINGHAM, ALABAMA	HERITAGE SCHOOL LODI, CALIFORNIA	BONITA DISTRICT OFFICE SAN DIMAS, CALIFORNIA
SPRAGINS HALL HUNTSVILLE, ALABAMA	TOKAY HIGH SCHOOL LODI, CALIFORNIA	CAL FED BANK SAN FRANCISCO, CALIFORNIA
MOUNTAIN BROOK HIGH SCHOOL MOUNTAIN BROOK, ALABAMA	CAL-FED BANK LOS ALTOS, CALIFORNIA	CUESTA COLLEGE SAN LUIS OBISPO, CALIFORNIA
SOUTH CENTRAL COUNSELING CENTER ANCHORAGE, ALASKA	MILLBRAE SCHOOL MILLBRAE, CALIFORNIA	ELK'S LODGE SANTA BARBARA, CALIFORNIA
COUNTY BUILDING KINGMON, ARIZONA	DIAMOND WALNUT MODESTO, CALIFORNIA	SANTA MARIA POLICE DEPT. SANTA MARIA, CALIFORNIA
CRIMSON ELEMENTARY SCHOOL MESA, ARIZONA	HILLSDALE ELEMENTARY N. HIGHLANDS, CALIFORNIA	EXCHANGE BANK SANTA ROSA, CALIFORNIA
HALE ELEMENTARY MESA, ARIZONA	AIRPORT BUSINESS PARK OAKLAND, CALIFORNIA	MONTEREY HILLS ELEMENTARY S. PASADENA, CALIFORNIA
LEHI ELEMENTARY SCHOOL MESA, ARIZONA	CHAFFEY HIGH SCHOOL ONTARIO, CALIFORNIA	FUDELITY FEDERAL BANK STANTON, CALIFORNIA
KELLER ELEMENTARY SCHOOL MESA, ARIZONA	PACGRAD COLLEGE PALO ALTO, CALIFORNIA	MARTIN LUTHER KING ELEM. STOCKTON, CALIFORNIA
USPS RINCON STATION TUCSON, ARIZONA	J G BOSWELL COMPANY PASADENA, CALIFORNIA	McKINLEY ELEMENTARY STOCKTON, CALIFORNIA
DEWITT HIGH SCHOOL DEWITT, ARKANSAS	PLEASANT VALLEY SCHOOL PENN VALLEY, CALIFORNIA	WALTON DEVELOPMENT CTR. STOCKTON, CALIFORNIA
EDISON ELEMENTARY ALTADENA, CALIFORNIA	DIABLO VALLEY COLLEGE PLEASANT HILL, CALIFORNIA	TULARE UNION HIGH SCHOOL TULARE, CALIFORNIA
ATWATER CIVIC CENTER ATWATER, CALIFORNIA	SHASTA HIGH SCHOOL REDDING, CALIFORNIA	UPLAND ELEMENTARY UPLAND, CALIFORNIA
ACTIS JUNIOR HIGH SCHOOL BAKERSFIELD, CALIFORNIA	RICHMOND HIGH SCHOOL RICHMOND, CALIFORNIA	VICXTOR SCHOOL VICTORM CALIFORNIA
SANDRINI ELEMENTARY BAKERSFIELD, CALIFORNIA	DRUMMOND MEDICAL CLINIC RIDGECREST, CALIFORNIA	CITY OF WOODLAND LIBRARY WOODLAND, CALIFORNIA
STOCKDALE ELEMENTARY BAKERSFIELD, CALIFORNIA	FRONTIER ELEMENTARY RIO LINDA, CALIFORNIA	ZENITH INSURANCE COMPANY WOODLAND HILLS, CALIFORNIA
CARUTHERS HIGH SCHOOL CARUTHERS, CALIFORNIA	SHERMAN INDIAN SCHOOLS RIVERSIDE, CALIFORNIA	WAVERLY SCHOOL ALAMOSA, COLORADO
VICTRESS BOWERS CORONA, CALIFORNIA	FIRST BANK ROSEVILLE, CALIFORNIA	BANK ONE BOULDER, COLORADO
KIMBER ONE FREMONT, CALIFORNIA	SAN FRAN THEOLOGICAL SEMINARY SAN ANSELMO, CALIFORNIA	DAKOTA MEDICAL CENTER BOULDER, COLORADO
GEYSERVILLE HIGH SCHOOL GEYSERVILLE, CALIFORNIA	ROOSEVELT SCHOOL SAN BERNARDINO, CALIFORNIA	MALLEY SENIOR CENTER ENGLEWOOD, COLORADO
GLENDALE AREA CREDIT UNION GLENDALE, CALIFORNIA	WELLS FARGO BANK SAN CLEMENTE, CALIFORNIA	TELEDYNE WATER PIK FORT COLLINS, COLORADO
SPRING GROVE SCHOOL HOLLISTER, CALIFORNIA	GENERAL ATOMICS BLDG SAN DIEGO, CALIFORNIA	COORS BREWING COMPANY GOLDEN COLORADO

PMZ Multizone Locations

COORS CONSTRUCTION SHOP GOLDEN, COLORADO	FARNSWORTH & WYLIE BLOOMINGTON, ILLINOIS	MT. OLIVE SCHOOL MT. OLIVE, ILLINOIS
HUGO SCHOOL HUGO, COLORADO	CITY OF CANTON CANTON, ILLINOIS	COMPREHENSION SERVICES MT. VERNON, ILLINOIS
BANK ONE LOVELAND LOVELAND, COLORADO	RIDGEVIEW SCHOOL COLEFAX, ILLINOIS	MT. VERNON CITY SCHOOLS MT. VERNON, ILLINOIS
FIRST UNITED METHODIST CHURCH LOVELAND, COLORADO	DALLAS CITY ELEMENTARY DALLAS CITY, ILLINOIS	MT. ZION SCHOOL MT. ZION, ILLINOIS
HEALTH TECH BUILDING LOVELAND, COLORADO	SOY BANK DECATUR, ILLINOIS	FUNERAL HOME NAPERVILLE, ILLINOIS
COLORADO HOSPITAL MONTROSE, COLORADO	HWI OFFICE & WAREHOUSE DIXON, ILLINOIS	PACKER ENGINEERING NAPERVILLE, ILLINOIS
WELLS FARGO RIFLE, COLORADO	EFFINGHAM STATE BANK EFFINGHAM, ILLINOIS	J.E. HINCHCLIFF SR. ELEM O'FALLON, ILLINOIS
NORTHEASTERN JR COLLEGE STERLING, COLORADO	QUEBCOR WORLD BLDG EFFINGHAM, ILLINOIS	KAMPMEYER SCHOOL O'FALLON, ILLINOIS
YUMA HOSPITAL YUMA, COLORADO	FIRST NATIONAL BANK EVERGREEN PARK, ILLINOIS	LAVERNA EVANS ELEM SCHOOL O'FALLON, ILLINOIS
DENTIST OFFICE DANBURY, CONNECTICUT	FAIRFIELD NATIONAL BANK FAIRFIELD, ILLINOIS	CHRIST CHURCH OAKBROOK, ILLINOIS
HENRY BARNARD SCHOOL ENFIELD, CONNECTICUT	GENESEO ELEMENTARY GENESEO, ILLINOIS	ORANGEVILLE HIGH SCHOOL ORANGEVILLE, ILLINOIS
DANIEL HAND HIGH MADISON, CONNECTICUT	GREENVILLE JR HIGH GREENVILLE, ILLINOIS	NEIGHBORHOOD HOUSE PEORIA, ILLINOIS
CHILDRENS PLACE MANCHESTER, CONNECTICUT	HARTSBURG EMDEN HS HARTSBURG, ILLINOIS	PONTIAC HIGH SCHOOL PONTIAC, ILLINOIS
281 FARMINGTON AVE NEW BRITAIN, CONNECTICUT	LATZER LIBRARY HIGHLAND, ILLINOIS	RANSOM SCHOOL RANSOM, ILLINOIS
SPENCER TURBINE WINDSOR, CONNECTICUT	HILLSBORO MEDICAL CLINIC HILLSBORO, ILLINOIS	ROCKFORD HARLEM VOC ED ROCKFORD, ILLINOIS
UNIVERSITY OF GEORGIA BRUNSWICK, GEORGIA	JERSEYVILLE JERSEYVILLE, ILLINOIS	SCALES MOUND SCHOOL SCALES MOUND, ILLINOIS
PICKINGS TECH JASPER, GEORGIA	HARRIS BANK JOILET, ILLINOIS	EPA BUILDING SPRINGFIELD, ILLINOIS
TYHEE ELEMENTARY SCHOOL CHUBBUCK, IDAHO	PERLEMAN ROCQUE LEMONT, ILLINOIS	BALL SEED COMPANY WEST CHICAGO, ILLINOIS
OWYHEE COUNTY COURTHOUSE MURPHY, IDAHO	CHESTER E LINCOLN SCHOOL LINCOLN, ILLINOIS	BANK ONE WILMETTE, ILLINOIS
ASHLEY ELEMENTARY SCHOOL ASHLEY, ILLINOIS	NORTH CLAY SCHOOL LOUISVILLE, ILLINOIS	WOOD RIVER SCHOOL WOOD RIVER, ILLINOIS
BANK ONE BERWYN, ILLINOIS	BANK OF CHICAGO MARENGO, ILLINOIS	PAUL HARDING SCHOOL FORT WAYNE, INDIANA
BETHALTO ADMINISTRATION BETHALTO, ILLINOIS	MEADOWBROOK MEADOWBROOK, ILLINOIS	BIERIGER SCHOOL GRIFFITH, INDIANA

PMZ Multizone Locations

MISHAWAKA SCHOOL MISHAWAKA, INDIANA	LIBERTY SAVINGS FT. SCOTT, KANSAS	RILEY ELEMENTARY RILEY, KANSAS
ADAMS CENTRAL MONROE, INDIANA	AMERICAN LEGION HAYS, KANSAS	SMITH CENTER HIGH SCHOOL SMITH CENTER, KANSAS
SYSCO FOODS ANKENY, IOWA	BOND CITY JAIL KANSAS CITY, KANSAS	TONGANOXIE HIGH SCHOOL TONGANOXIE, KANSAS
AMES MIDDLE SCHOOL AMES, IOWA	ADM ARKADY BUILDING OLATHE, KANSAS	WELLSVILLE SCHOOL WELLSVILLE, KANSAS
SCOTT COMMUNITY COLLEGE BETTENDORF, IOWA	ELEMENTARY SCHOOL OLATHE, KANSAS	LAKEVIEW FUNERAL HOME WICHITA, KANSAS
FIDDLER PRINTING DAVENPORT, IOWA	HERITAGE ELEMENTARY SCHOOL OLATHE, KANSAS	JU KEVIL MEMORIAL MAYFIELD, KENTUCKY
KASPER CORPORATION DES MOINES, IOWA	INDIAN TRAILS ELEMENTARY OLATHE, KANSAS	DAVIESS COUNTY MEDICAL OWENSBORO, KENTUCKY
SEVENTH DAY ADVENTISTS DES MOINES, IOWA	NORTHVIEW ELEMENTARY OLATHE, KANSAS	VERNON BANK LEESVILLE, LOUISIANA
MERCANTILE BANK HUMBOLDT, IOWA	OLATHE ELEM SCHOOL OLATHE, KANSAS	APG CREDIT UNION ELKRIDGE, MARYLAND
DOBRIAN BUILDING IOWA CITY, IOWA	OLATHE ELEM SCHOOL #28 OLATHE, KANSAS	MASSAMOUNT DEERFIELD, MASSACHUSETTS
ELLSWORTH COLLEGE IOWA FALLS, IOWA	OLATHE ELEM SCHOOL #30 OLATHE, KANSAS	HOWARD PROPERTIES FRAMINGHAM, MASSACHUSETTS
LeMARS COMMUNITY SCHOOL DIST LeMARS, IOWA	OLATHE ELEM SCHOOL #31 OLATHE, KANSAS	WESTERN N.E. COLLEGE SPRINGFIELD, MASSACHUSETTS
AEA PLEASANT HILL MARSHALLTOWN, IOWA	OLATHE NORTH HIGH OLATHE, KANSAS	CAPE COD BANK YARMOUTH, MASSACHUSETTS
MARSHALLTOWN MED MARSHALLTOWN, IOWA	OREGON TRAILS OLATHE, KANSAS	PIZZERIA UNO CORP. W. ROXBURY, MASSACHUSETTS
NORWALK SCHOOLS NORWALK, IOWA	OVERLAND ELEMENTARY OLATHE, KANSAS	ADP ANN ARBOR, MICHIGAN
WINGS PARK ELEMENTARY SCHOOL OELWEIN, IOWA	PIONEER TRAIL OLATHE, KANSAS	BANK ONE ANN ARBOR, MICHIGAN
ROLAND STORY STORY CITY, IOWA	PRAIRIE CENTER ELEMENTARY OLATHE, KANSAS	DR. THOMAS VESTEIVICH BLOOMFIELD HILLS, MICHIGAN
ATCHISON FIRE STATION ATCHISON, KANSAS	SCARBOROUGH ELEM SCHOOL OLATHE, KANSAS	CITIZENS BANK COLUMBIA, MICHIGAN
SANTA FE TRAIL HIGH SCHOOL CARBONDALE, KANSAS	WALNUT GROVE SCHOOL OLATHE, KANSAS	VFW HALL LANSING, MICHIGAN
1ST BANK & TRUST CLEARWATER, KANSAS	SPRINT OVERLAND PARK, KANSAS	BANK ONE MILAN, MICHIGAN
FORT DODGE STATE HOSPITAL FORT DODGE, KANSAS	PERRY HIGH SCHOOL PERRY, KANSAS	KERR CORPORATION ROMULUS, MICHIGAN

PMZ Multizone Locations

BUFFALO COVENANT CHURCH BUFFALO, MINNESOTA	BOONE ELEMENTARY KANSAS CITY, MISSOURI	MEDICINE VALLEY SCHOOL CURTIS, NEBRASKA
EDEN WEST BUILDING EDEN PRAIRIE, MINNESOTA	GRACEMOOR ELEMENTARY KANSAS CITY, MISSOURI	SANDY CREEK SCHOOLS FAIRFIELD, NEBRASKA
HAYFIELD ELEMENTARY HAYFIELD, MINNESOTA	MIDCONTINENT LIBRARY KANSAS CITY, MISSOURI	HARDINGTON SCHOOL HARDINGTON, NEBRASKA
LeSUEUR CITY COURT HOUSE LeSUEUR, MINNESOTA	NEWMARK SCHOOL KANSAS CITY, MISSOURI	WATSON SCHOOL HASTINGS, NEBRASKA
JAKES STADIUM PIZZA MANKATO, MINNESOTA	THE ROCK OF KANSAS CITY KANSAS CITY, MISSOURI	CHRISTIAN HOMES HOLDREGE, NEBRASKA
MAGGIE'S CAFÉ & SALOON MANKATO, MINNESOTA	KEARNEY HIGH SCHOOL KEARNEY, MISSOURI	HWS CONSULTING LINCOLN, NEBRASKA
COMMUNITY BANK FOREST, MISSISSIPPI	ENGINEERED SALES MARYLAND HEIGHTS, MISSOURI	NORTHBEND HIGH NORTHBEND, NEBRASKA
GENTRY COUNTRY MEMORIAL ALBANY, MISSOURI	EUGENE FIELDS ELEMENTARY MARYVILLE, MISSOURI	GLP BEEF PROCESSING OMAHA, NEBRASKA
YEOKUM MIDDLE SCHOOL BELTON, MISSOURI	MARYVILLE JR HIGH MARYVILLE, MISSOURI	WILDEWOOD ELEMENTARY RALSTON, NEBRASKA
BETHANY HIGH SCHOOL BETHANY, MISSOURI	MARYVILLE VO-TECH MARYVILLE, MISSOURI	CHURCHILL COUNTY SCHOOLS FALLON, NEVADA
NEW HAMPTON ELECTRIC BETHANY, MISSOURI	MOBERLY MEDICAL OFFICE BLDG MOBERLY, MISSOURI	CHURCHILL COUNTY LAW FALLON, NEVADA
SOUTH HARRISON VO TEC SCHOOL BETHANY, MISSOURI	CLARDY ELEMENTARY SCHOOL N. KANSAS CITY, MISSOURI	CHURCHILL COUNTY LIBRARY FALLON, NEVADA
CAPE GIRARDEAU POLICE DEPT. CAPE GIRARDEAU, MO	NASHUA SCHOOLS N. KANSAS CITY, MISSOURI	CHURCHILL HIGH SCHOOL FALLON, NEVADA
FIRST NATIONAL BANK COLUMBIA, MISSOURI	TOPPING ELEMENTARY N. KANSAS CITY, MISSOURI	FALLON HIGH SCHOOL FALLON, NEVADA
KOMU TV CHANNEL 8 COLUMBIA, MISSOURI	RAY PEC SHULL ELEMENTARY PECULIAR, MISSOURI	NAVAL AIR STATION FALLON, NEVADA
CUBA MO PROJECT CUBA, MISSOURI	OAK GROVE HIGH SCHOOL OAK GROVE, MISSOURI	TAYLOR SCHOOL HENDERSON, NEVADA
FULTON HIGH SCHOOL FULTON, MISSOURI	SAC FEDERAL CREDIT UNION BELLEVUE, NEBRASKA	BANK OF AMERICA LAS VEGAS, NEVADA
CON WEST ELEMENTARY GRANDVIEW, MISSOURI	BLAIR HIGH SCHOOL BLAIR, NEBRASKA	CASHMAN SCHOOL LAS VEGAS, NEVADA
GRANDVIEW ADMIN. BLDG GRANDVIEW, MISSOURI	CLAY CENTER PUBLIC SCHOOL CLAY CENTER, NEBRASKA	LEWIS E ROWE ELEMENTARY LAS VEGAS, NEVADA
GREENWOOD ELEMENTARY GREENWOOD, MISSOURI	FIRST NATIONAL BANK COZAD, NEBRASKA	RENO SALVAGE RENO, NEVADA

PMZ Multizone Locations

FLEET BANK PORTSMOUTH, NEW HAMPSHIRE	HANOVER COMPANY BROKEN ARROW, OKLAHOMA	SANDBURG ELEMENTARY TULSA, OKLAHOMA
MORRIS BANK MORRISTOWN, NEW JERSEY	ROGERS STATE UNIVERSITY CLAREMORE, OKLAHOMA	VIRGIL GRISSOM TULSA, OKLAHOMA
1600 RANDOLPH ALBUQUERQUE, NEW MEXICO	ALLTRA CORPORATION DEWEY, OKLAHOMA	WALT DISNEY ELEMENTARY TULSA, OKLAHOMA
BANK EXEC. OFFICE ALBUQUERQUE, NEW MEXICO	GLENWOOD ELEMENTARY ENID, OKLAHOMA	SECURITY STATE BANK WEWOKA, OKLAHOMA
BAPTIST CONVENTION ALBUQUERQUE, NEW MEXICO	McKINLEY ELEMENTARY ENID, OKLAHOMA	CRESWELL HIGH SCHOOL CRESWELL, OREGON
UNM SCHOOL OF ARCHITECTURE ALBUQUERQUE, NEW MEXICO	NORTHERN OKLAHOMA STATE ENID, OKLAHOMA	BUSINESS ADMIN. BLDG. LaGRAND, OREGON
JFK JR HIGH GALLUP, NEW MEXICO	McALESTER SCHOOL McALESTER, OKLAHOMA	DENMARK VO SCHOOL DENMARK, SOUTH CAROLINA
KENNEDY MIDDLE SCHOOL GALLUP, NEW MEXICO	WARREN CLINIC McALESTER, OKLAHOMA	VO-TECH SCHOOL DENMARK, SOUTH CAROLINA
GREYHOUND ARENA PORTALES, NEW MEXICO	O.C.U.S.A. COLLEGE OKLAHOMA CITY, OKLAHOMA	YANKTON PUBLIC LIBRARY YANKTON, SOUTH DAKOTA
WESTERN NEW MEXICO COLLEGE SILVER CITY, NEW MEXICO	OKMULGEE HIGH SCHOOL OKMULGEE, OKLAHOMA	ANDERSON COUNTY HS ADDITION CLINTON, TENNESSEE
RIO RANCHO CITY HALL RIO RANCHO, NEW MEXICO	OKMULGEE MIDDLE SCHOOL OKMULGEE, OKLAHOMA	ANDERSON COUNTY VO TECH CLINTON, TENNESSEE
SILVERMAN REALTY GROUP HARTSDALE, NEW YORK	PIONEER TECHNOLOGY CENTER PONCA CITY, OKLAHOMA	McCONNELL ELEMENTARY CHATTANOOGA, TENNESSEE
STANLEY COUNTY LIBRARY ALBEMARLE, NORTH CAROLINA	FIRST UNITED BANK SAPULPA, OKLAHOMA	ARCADIA PRESBYTERIAN KINSPORT, TENNESSEE
LENNOX PROTOTYPE CHARLOTTE, NORTH CAROLINA	BRADEN MANUFACTURING TULSA, OKLAHOMA	McKENZIE METHODIST HOSPITAL McKENZIE, TENNESSEE
SURRY COUNTY HEALTH BLDG DOBSON, NORTH CAROLINA	COLUMBUS ELEMENTARY TULSA, OKLAHOMA	METHODIST HOSPITAL McKENZIE, TENNESSEE
HICKORY CITY HALL HICKORY, NORTH CAROLINA	GEORGE BEVERS ELEMENTARY TULSA, OKLAHOMA	BOBBY RAY SCHOOL McMINNVILLE, TENNESSEE
AMOS COTTAGE WINSTON SALEM, NORTH CAROLINA	GREELEY ELEMENTARY TULSA, OKLAHOMA	CORA HOWE ELEMENTARY NASHVILLE, TENNESSEE
4200 ROCK SIDE BUILDING CLEVELAND, OHIO	GROVE ELEMENTARY TULSA, OKLAHOMA	NOLENSVILLE SCHOOL NOLENSVILLE, TENNESSEE
GRACE CATHEDRAL CHURCH CUYAHOGA FALLS, OHIO	JACKSON ELEMENTARY TULSA, OKLAHOMA	INGERSOLL RAND WHITE HOUSE WHITE HOUSE, TENNESSEE
ROCKSIDE OFFICE BUILDING INDEPENDENCE, OHIO	LEWIS & CLARK SCHOOL TULSA, OKLAHOMA	AMERICAN STATE BANK ABILENE, TEXAS

PMZ Multizone Locations

TAYLOR COUNTY JUV. CTR. ABILENE, TEXAS	DEEPWOOD ELEMENTARY ROUND ROCK, TEXAS	RACINE THEATER GUILD RACINE, WISCONSIN
ANDERSON MILL SCHOOL AUSTIN, TEXAS	VOIGT ELEMENTARY SCHOOL ROUND ROCK, TEXAS	TCF BANK RACINE, WISCONSIN
CATHOLIC FAMILY FRATERNAL AUSTIN, TEXAS	SAN ANGELO D.O.T. SAN ANGELO, TEXAS	ST. JOSEPH'S CHURCH RHINELANDER, WISCONSIN
FOREST NORTH ELEM SCHOOL AUSTIN, TEXAS	SAN ANTONIO STATE HOSPITAL SAN ANTONIO, TEXAS	SENECA ELEMENTARY SENECA, WISCONSIN
REUNION AUSTIN, TEXAS	STATE MENTAL HOSPITAL SAN ANTONIO, TEXAS	CEDAR GROVE SCHOOL WISCONSIN RAPIDS, WISCONSIN
SPICEWOOD ELEMENTARY AUSTIN, TEXAS	HINKLE ELEMENTARY SPRINGTOWN, TEXAS	COMMUNITY FIRST BANK CHEYENNE, WYOMING
CANYON JUNIOR HIGH SCHOOL CANYON, TEXAS	TEXAS STATE TECHNICAL COLLEGE SWEETWATER, TEXAS	DOWNTOWN WEST OFFICE BLDG. CHEYENNE, WYOMING
RATHEON EL PASO, TEXAS	TEXLINE SCHOOL TEXLINE, TEXAS	MAGIC CITY ENTERPRISES BLDG CHEYENNE, WYOMING
FORT STOCKTON HIGH SCHOOL FORT STOCKTON, TEXAS	McNEIL SCHOOL WICHITA FALLS, TEXAS	CARNEGIE LIBRARY ROCK SPRINGS, WYOMING
FORT STOCKTON INTERMEDIATE FORT STOCKTON, TEXAS	ATK SPACE SYSTEMS CLEARFIELD, UTAH	PINNACLE BANK TORRINGTON, WYOMING
FORT STOCKTON ISD FORT STOCKTON, TEXAS	DUCHESNE DISTRICT SCHOOL DUCHESNE, UTAH	ST. BERNARD SCHOOL AMHERSTBURG, ONTARIO
FORT STOCKTON MIDDLE FORT STOCKTON, TEXAS	FAMILY HEALTH MIDVAIL, UTAH	JAMES BOLTON SCHOOL BOLTON, ONTARIO
FIRST STATE BANK GAINSVILLE, TEXAS	KEY BANK PRICE, UTAH	DARCEL SCHOOL BRAMPTON, ONTARIO
NATIONS BANK HENDERSON, TEXAS	HORIZON BANK BELLINGHAM, WASHINGTON	LAURIER SCHOOL BRAMPTON, ONTARIO
PINE TREE ISD LONGVIEW, TEXAS	CASCADE BLOOD CENTER TACOMA, WASHINGTON	MADOC DRIVE PS BRAMPTON, ONTARIO
TEXAS TECH TICKET OFFICE LUBBOCK, TEXAS	PROSPECT POINT SCHOOL WALLA WALLA, WASHINGTON	WILLIAM G. DAVIS BRAMPTON, ONTARIO
FOREST OIL MIDLAND, TEXAS	AIR NATIONAL GUARD MARTINSBURG, WEST VIRGINIA	CIBC CAMBRIDGE, ONTARIO
MOUNT PLEASANT HIGH MT. PLEASANT, TEXAS	PARKERSBURG HS LIBRARY PARKERSBURG, WEST VIRGINIA	GRIMSBY MUNICIPAL BUILDING GRIMSBY, ONTARIO
DEPT. OF TRANSPORTATION ODESSA, TEXAS	ROBINWOOD SCHOOL FRANKLIN, WISCONSIN	CAMILLA SCHOOL MISSISSAUGA, ONTARIO
PITTSBURG SCHOOL PITTSBURG, TEXAS	CHURCH BUILDING GREEN BAY, WISCONSIN	DARCEL SR. PUBLIC SCHOOL MISSISSAUGA, ONTARIO
HALE COUNTY STATE BANK PLAINVIEW, TEXAS	NEOSHO SCHOOL NEOSHO, WISCONSIN	DOLPHIN SCHOOL MISSISSAUGA, ONTARIO
AREA VOCATIONAL SCHOOL ROUND ROCK, TEXAS	OOSTBURG HIGH SCHOOL OOSTBURG, WISCONSIN	MUNDEN PARK SCHOOL MISSISSAUGA, ONTARIO
		W. J. LANGLOIS WINDSOR, ONTARIO

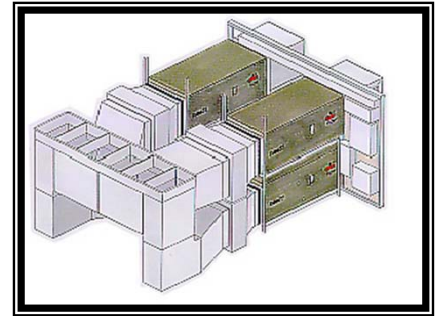
COMMERCIAL PRODUCTS

High efficiency condensing combustion is now available for commercial applications in multizone units (indoor and outdoor), single zone units and unit ventilators. All models offer 95.0% AFUE two stage heating, DX cooling, factory installed economizer, 10 year heat exchanger warranty and variable speed, high static pressure supply fans for low energy costs and simple maintenance.



The PMZ3 (Rooftop Multizone) was initially developed to replace thousands of LENNOX DMS units installed between 1965 and 1985. The PMZ3 can be factory modified to fit existing roof curbs of Mammoth, Nesbitt, Trane, Carrier and other multizone units. The PMZ3 is custom built with potential capacities of 990 MBH heating, 45 tons of cooling and 18 control zones. No one can offer comparable value.

The PMZ2 (Indoor Multizone) fits through a standard doorway to replace indoor multizone units. Each PMZ2 is custom designed to meet system capacities and other requirements. The PMZ2 replaces complicated HVAC systems with simple, high efficiency equipment while eliminating chillers, boilers, pumps, multizone air handlers and pneumatic controls.



The PUV (Unit Ventilator) is designed for installation in a classroom where standard equipment cannot adequately ventilate the space. The PUV is offered with potential capacities of 110 MBH heating and 5 tons cooling. Other applications include office buildings with minimal ceiling space or a desire for custom cabinetry. The PUV has an attractive Formica laminate counter, which is available in decorator colors for individual room décor.



COMMERCIAL ADVANTAGES

Superior Warranties

Heat Exchanger	10 years
Compressor	5 years
Ignition Control	1 year

Energy Management Feature

All Equipment is easily interfaced with existing or new energy management systems.

Cost Effectiveness

The simplicity and efficiency of PMZ3 produces the lowest long-term ownership costs in most applications

Occupant Comfort

Lower circulation rates in the ventilation mode minimizes drafty conditions and increases comfort while effectively ventilating the space.

Simple Maintenance

State of the art technology combined with direct expansion cooling and standard operating controls. All equipment is fully accessible and easily maintained.

Highly Efficient

Furnaces - 95.0% AFUE
Condensing Units - 11.5 EER (Average)
Economizer for "Free Cooling"
Low-Leak Dampers

Ventilation Effectiveness

Meets ANSI/ASHRAE 62.1-2004 ventilation requirements for building code compliance and litigation risk reduction with proper application.

Easy Installation

Standard features, custom fabrication, value added services and factory installed options simplify installation. Each unit is custom built to meet design requirements. Equipment delivery is custom coordinated with the installer.

Flexibility

Each unit is built to meet individual job requirements covering a wide range of applications.

Quick Delivery

Standard lead times range from four to six weeks. In an emergency, a unit can normally be installed and operational within two weeks.

Start-up Assistance

Factory authorized start-up assistance and customer training is a standard service provided with each order.

Design Assistance

Personal design and application assistance is readily available.

Note: Due to our ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability.