



TWO-STAGE HEAT PUMPS

Features

- New composite base pan – dampens sound, eliminates corrosion and reduces number of fasteners needed
- Improved tubing design – reduces vibration and stress, making unit quieter and reducing opportunity for leaks
- Optimized defrost characteristics – decrease defrosting and provide better home comfort
- Powder coat paint finish – for a long lasting professional finish
- Optimized reversing valve sizing – improves shifting performance for quieter unit operation and increased life of the system
- Enhanced mufflers – help to dissipate vibration energy for quieter unit operation
- Copeland scroll compressor – a sound abating feature added to the compressor significantly reduces noise when system transitions in and out of defrost mode
- Modern cabinet aesthetics – increased curb appeal with visually appealing design
- Vertical louver panels – provide coil protection, enhance cabinet strength, and increased cabinet rigidity
- Optimized fan orifice – optimizes airflow and reduces unit sound
- Rust resistant screws – confirmed through 1500-hour salt spray testing
- 3" between valves, 4" below valves, 5" above valves – provides a minimum working area of 27-square inches for easier access
- Integrated heat pump lift receptacle – allows standard CPVC stands to be inserted into the base
- 15" wide, industry leading corner service access – makes repairs easier and faster.
- External gauge port access – allows easy connection of "low-loss" gauge ports
- Single-row condenser coil – makes unit lighter and allows thorough coil cleaning to maintain "out of the box" performance
- Fewer cabinet fasteners – allow for faster access to internal components and hassle-free panel removal
- Service trays – hold fasteners or caps during service calls
- QR code – provides technical information on demand for faster service calls
- Fan motor harness with extra-long wires – allows unit top to be removed without disconnecting fan wire

TZPLD-16 SERIES

Efficiencies: up to 16 SEER/up to 13 EER

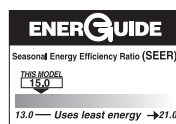
Nominal Sizes 2, 3, 4 & 5 Ton

[7.03, 10.6, 14.06 and 17.6 kW]

Cooling Capacities 17.3 to 60.5 kBTU

[5.7 to 17.7 kW]

Manufactured for
Thermal Zone®
Philadelphia, PA



"Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet Energy Star. Ask your Contractor for details or visit www.energystar.gov."

TABLE OF CONTENTS

Model Number Identification	3
Available SKUs	3
Physical Data	4
Electrical Data	4
Accessories	5
Weighted Sound Power	5
Unit Dimensions.....	6
Clearances.....	7
Wiring Diagrams	8
Application Guidelines	8
Refrigerant Line Size Information	9-10
Performance Data	11
Guide Specifications	12
Limited Warranty	13

Model Number Identification

<u>TZ</u>	<u>P</u>	<u>L</u>	<u>D</u>	<u>16</u>	<u>18</u>	<u>2</u>	<u>A</u>	<u>A</u>
Brand	Product	Refrigerant	Motor	SEER	Capacity	Voltage	Region	Minor Series
Thermal Zone	P = Heat Pump	L = R410A	D = Dual Stage	16 = 16 SEER	24 = 24,000 BTU 36 = 36,000 BTU 48 = 48,000 BTU 60 = 60,000 BTU	2 = 1ph 208-230/60	A = All Regions	A = First Design Series

[] Designates Metric Conversions

Available SKUs

Models Available
TZPLD16242AA
TZPLD16362AA
TZPLD16482AA
TZPLD16602AA

Physical Data				
Model No. #	TZPLD16242AA	TZPLD16362AA	TZPLD16482AA	TZPLD16602AA
Nominal Tonnage	2.0	3.0	4.0	5.0
Valve Connections				
Liquid Line O.D. – in.	3/8	3/8	3/8	3/8
Suction Line O.D. – in.	3/4	3/4	7/8	7/8
Refrigerant (R410A) furnished oz.¹	136.8	155.7	196	256
Compressor Type	Two Stage Scroll			
Outdoor Coil				
Net face area – Outer Coil ft ²	17.3	19.8	28.3	28.3
Net face area – Inner Coil	-	-	-	-
Tube diameter – in.	3/8	3/8	3/8	3/8
Number of rows	1	1	1	1
Fins per inch	20	20	20	20
Outdoor Fan				
Diameter – in.	24	24	26	26
Number of blades	3	3	3	3
Motor hp	1/3	1/3	1/4	1/4
CFM	3100	3435	4600	3654
RPM	654	849	850	850
watts	90	262	255	230
Shipping weight – lbs.	198	206	264	264
Operating weight – lbs.	191	199	257	257

Electrical Data				
Line Voltage Data (Volts-Phase-Hz)	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
Maximum overcurrent protection (amps)²	30	40	50	60
Minimum overcurrent protection (amps)²	20	30	40	45
Minimum circuit ampacity³	20	25	31	38
Compressor				
Rated load amps	13	17	23.6	28.8
Locked rotor amps	58.3	83	104	152.9
Condenser Fan Motor				
Full load amps	2.8	2.8	1.4	1.4
Locked rotor amps	—	—	2.6	2.6

¹Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the installation instructions for information about set length and additional refrigerant charge required.

²HACR type circuit breaker or fuse.

³Refer to National Electrical Code manual to determine wire, fuse and disconnect size requirements.

Accessories

Model No.		TZPLD16242AA	TZPLD16362AA	TZPLD16482AA	TZPLD16602AA
Compressor crankcase heater		44-17402-44	44-17402-44	Factory Standard	Factory Standard
Low ambient control		RXAD-A08	RXAD-A08	RXAD-A08	RXAD-A08
Compressor sound cover		68-23427-26	68-23427-26	68-23427-25	68-23427-25
Compressor hard start kit		SK-A1	SK-A1	SK-A1	SK-A1
Low pressure control*		Factory Standard	Factory Standard	Factory Standard	Factory Standard
High pressure control*		Factory Standard	Factory Standard	Factory Standard	Factory Standard
Liquid Line Solenoid (24 VAC, 50/60 Hz)	Solenoid Valve	200RD2T3TVLC	200RD2T3TVLC	200RD3T3TVLC	200RD3T3TVLC
	Solenoid Coil	61-AMG24V	61-AMG24V	61-AMG24V	61-AMG24V
	Bi-flow kit*	KS30387	KS30387	KS30387	KS30387
Liquid Line Solenoid (120/240 VAC, 50/60 Hz)	Solenoid Valve	200RD2T3TVLC	200RD2T3TVLC	200RD3T3TVLC	200RD3T3TVLC
	Solenoid Coil	61-AMG120/240V	61-AMG120/240V	61-AMG120/240V	61-AMG120/240V
	Bi-flow kit*	KS30387	KS30387	KS30387	KS30387
Classic Top Cap w/Label		91-101123-21	91-101123-21	91-101123-21	91-101123-21
Heat Pump Riser – 6 inch		686020	686020	686020	686020

*Bi-flow kits are required when installing a liquid line solenoid on a heat pump.

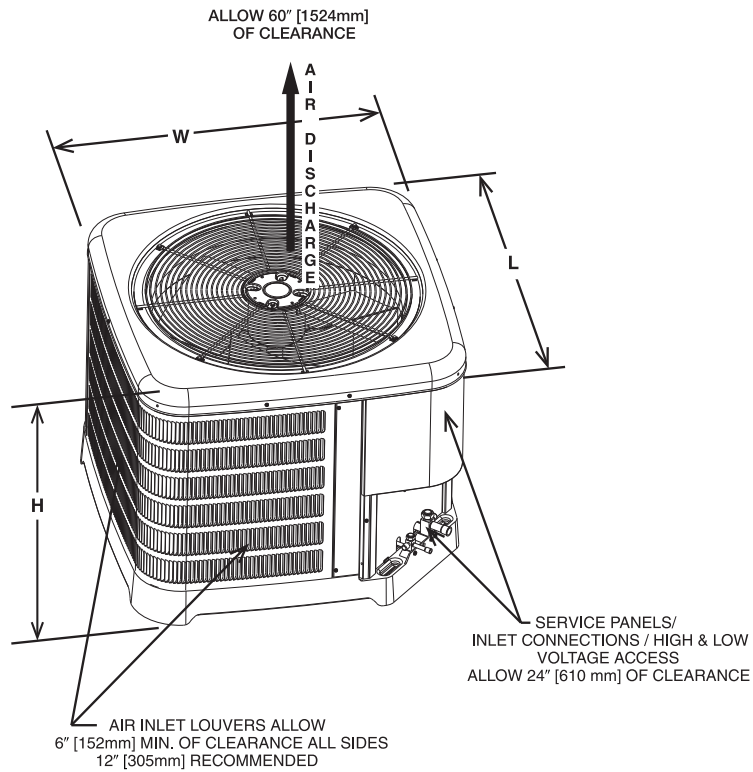
Weighted Sound Power Level (dBA)

Unit Size – Voltage, Series	Stage	Standard Rating (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
			125	250	500	1000	2000	4000	8000
TZPLD16242AA	High	71	45.1	53.6	58.9	61.7	58.9	54.1	51.1
TZPLD16362AA	High	76	53.2	54	66.2	66.9	59.3	57.8	51.8
TZPLD16482AA	High	74	52	55	64.6	63.5	59.1	56.9	54.8
TZPLD16602AA	High	75	52.6	55.4	63	64	60.5	62.3	59.7

NOTE: Tested in accordance with AHRI Standard 270-08 (not listed in AHRI)

Unit Dimensions

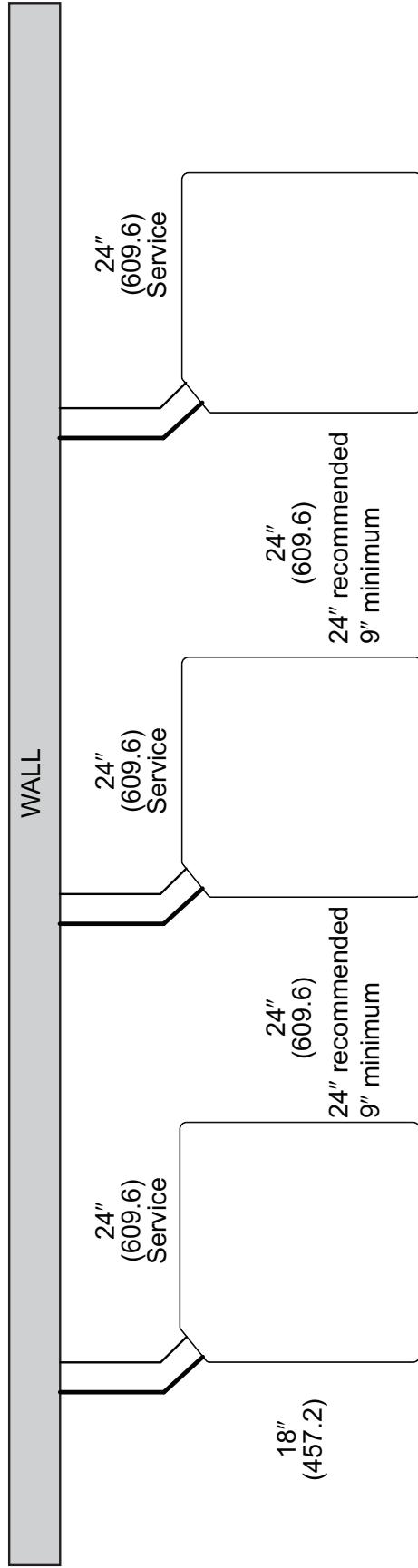
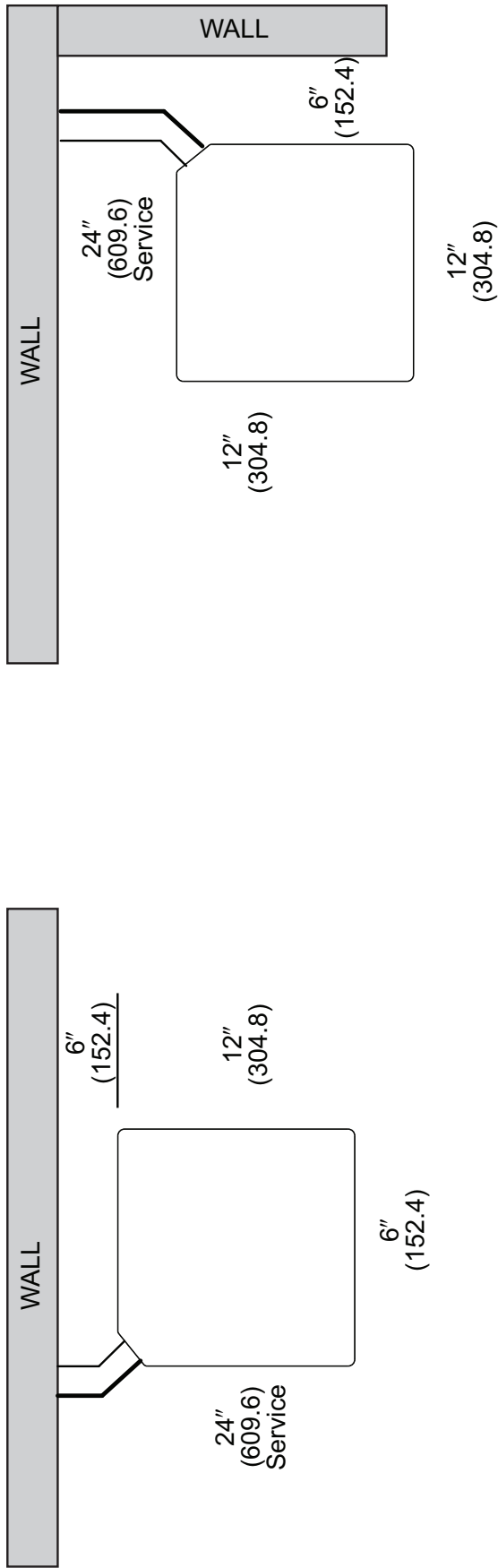
MODEL NUMBER	OPERATING						SHIPPING					
	H (Height)		L (Length)		W (Width)		H (Height)		L (Length)		W (Width)	
	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm	INCHES	mm
TZPLD16242AA	31	787	33.75	857	33.75	857	33.32	846	37.64	956	37.56	954
TZPLD16362AA	35	889	33.75	857	33.75	857	38.35	974	37.64	956	37.56	954
TZPLD16482AA	45	1143	35.75	908	35.75	908	48.18	1223	39.37	999	39.64	1006
TZPLD16602AA	45	1143	35.75	908	35.75	908	48.18	1223	39.37	999	39.64	1006



ST-A1226-23-00

[] Designates Metric Conversions

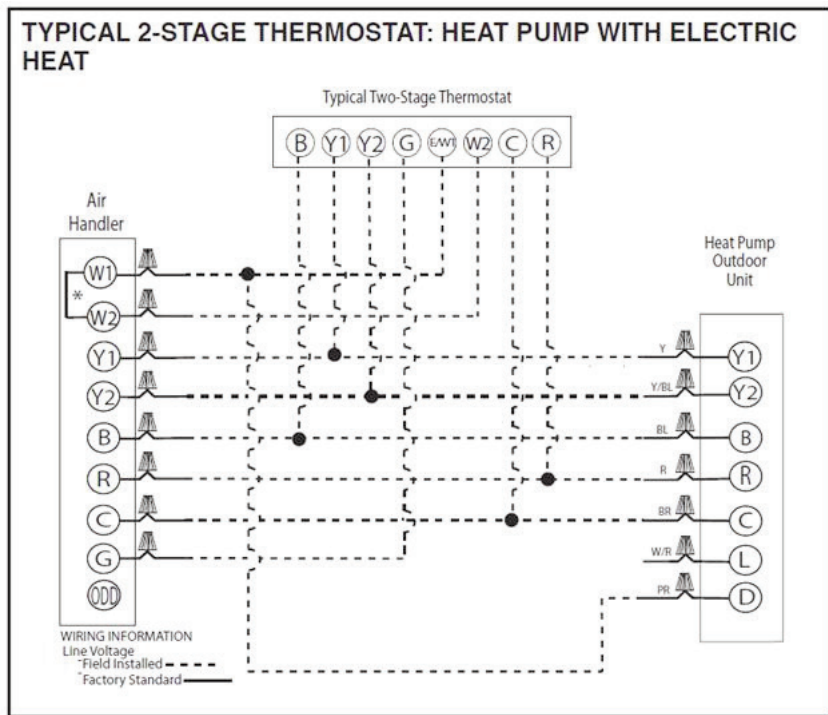
CLEARANCES



NOTE: NUMBERS IN () = mm

IMPORTANT: When installing multiple units in an alcove, roof well or partially enclosed area, ensure there is adequate ventilation to prevent re-circulation of discharge air.

Control Wiring



Application Guidelines

1. Intended for outdoor installation with free air inlet and outlet. Outdoor fan external static pressure available is less than 0.01 -in. wc.
2. Minimum outdoor operation air temperature for cooling mode without low-ambient operation accessory is 55°F (12.8°C).
3. Maximum outdoor operating air temperature is 125°F (51.7°C).
4. For reliable operation, unit should be level in all horizontal planes.
5. For interconnecting refrigerant tube lengths greater than 150 ft. (45.72m) and/or 120 ft. (36.58m) vertical separation, consult Residential Piping and Long line guide.
6. If any refrigerant tubing is buried, provide a 8 in. (203.2mm) vertical rise to the valve connections at the unit. Refrigerant tubing lengths up to 8 ft. (2.44m) may be buried without further consideration. Do not bury refrigerant lines longer than * in (* mm)
7. Use only copper wire for electric connections at unit. Aluminum and clad aluminum are not acceptable for the type of connector provided.
8. Do not apply capillary tube indoor coils to these units.
9. Factory-supplied filter drier must be installed.

Table 2A: Refrigerant Line Sizing Chart (English Units)

16 SEER 2-Stage Heat Pumps									
Unit Size	Allowable Liquid Line Size	Allowable Vapor Line Size	Use Long Line Guidelines for Linear Line Lengths Greater Than Shown Below (Feet)	Outdoor Unit ABOVE or BELOW Indoor Unit Equivalent Length (Feet)					
				< 25	26-50	51-75	76-100	101-125	126-150
				Maximum Vertical Separation / Capacity Multiplier					
2.0 Ton *SEE NOTE 3	1/4"	5/8"	67	25 / 1.00	50 / 0.99	33 / 0.98	6 / 0.97	N/R	N/R
	5/16"	5/8"	50	25 / 1.00	50 / 0.99	50 / 0.98	50 / 0.97	50 / 0.96	50 / 0.95
	3/8"	5/8"	33	25 / 1.00	50 / 0.99	50 / 0.98	50 / 0.97	50 / 0.96	50 / 0.95
	1/4"	3/4**	67	25 / 1.00	50 / 1.00	33 / 0.99	6 / 0.99	N/R	N/R
	5/16"	3/4**	50	25 / 1.00	50 / 1.00	50 / 0.99	50 / 0.99	50 / 0.99	50 / 0.98
3 Ton	5/16"	5/8"	0	25 / 0.99	50 / 0.97	50 / 0.95	50 / 0.93	36 / 0.91	N/R
	3/8"	5/8"	0	25 / 0.99	50 / 0.97	50 / 0.95	50 / 0.93	50 / 0.91	N/R
	5/16"	3/4"	0	25 / 1.00	50 / 0.99	50 / 0.99	50 / 0.98	36 / 0.97	20 / 0.96
	3/8"	3/4"	0	25 / 1.00	50 / 0.99	50 / 0.99	50 / 0.98	50 / 0.97	50 / 0.96
	1/2"	3/4"	0	25 / 1.00	50 / 0.99	50 / 0.99	50 / 0.98	50 / 0.97	50 / 0.96
4 Ton	3/8"	3/4"	0	25 / 0.99	50 / 0.98	50 / 0.96	50 / 0.95	50 / 0.93	50 / 0.92
	1/2"	3/4"	0	25 / 0.99	50 / 0.98	50 / 0.96	50 / 0.95	50 / 0.93	50 / 0.92
	3/8"	7/8"	0	25 / 1.00	50 / 0.99	50 / 0.99	50 / 0.98	50 / 0.98	50 / 0.97
	1/2"	7/8"	0	25 / 1.00	50 / 0.99	50 / 0.99	50 / 0.98	50 / 0.98	50 / 0.97
5 Ton	3/8"	3/4"	0	25 / 0.99	50 / 0.97	50 / 0.95	50 / 0.93	50 / 0.91	N/R
	1/2"	3/4"	0	25 / 0.99	50 / 0.97	50 / 0.95	50 / 0.93	50 / 0.91	N/R
	3/8"	7/8"	0	25 / 1.00	50 / 0.99	50 / 0.98	50 / 0.98	50 / 0.97	38 / 0.96
	1/2"	7/8"	0	25 / 1.00	50 / 0.99	50 / 0.98	50 / 0.98	50 / 0.97	50 / 0.96

NOTES:

1. Do not exceed 150 ft linear line length.
2. Do not exceed 50 ft vertical separation between indoor and outdoor units.
3. *3/4" vapor line should only be used for 2 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
4. Always use the smallest liquid line allowable to minimize refrigerant charge.
5. Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
6. Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

Table 2B: Refrigerant Line Sizing Chart (Metric Units)

16 SEER Variable Speed Heat Pumps									
Unit Size	Allowable Liquid Line Size mm [in.]	Allowable Vapor Line Size mm [in.]	Use Long Line Guidelines for Linear Line Lengths Greater Than Shown Below (Meters)	Outdoor Unit ABOVE or BELOW Indoor Unit Equivalent Length (Meters)					
				< 8	8-15	16-23	24-30	31-38	39-46
				Maximum Vertical Separation / Capacity Multiplier					
7.0 kW [2.0 Ton] *SEE NOTE 3	6.35 [1/4]	15.88 [5/8]	20	8 / 1.00	15 / 0.99	10 / 0.98	2 / 0.97	N/R	N/R
	7.94 [5/16]	15.88 [5/8]	15	8 / 1.00	15 / 0.99	15 / 0.98	15 / 0.97	15 / 0.96	15 / 0.95
	9.53 [3/8]	15.88 [5/8]	10	8 / 1.00	15 / 0.99	15 / 0.98	15 / 0.97	15 / 0.96	15 / 0.95
	6.35 [1/4]	19.05 [3/4]*	20	8 / 1.00	15 / 0.99	10 / 0.99	2 / 0.99	N/R	N/R
	7.94 [5/16]	19.05 [3/4]*	15	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.99	15 / 0.99	15 / 0.98
	9.53 [3/8]	19.05 [3/4]*	10	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.99	15 / 0.99	15 / 0.98
10.6 kW [3 Ton]	7.94 [5/16]	15.88 [5/8]	0	8 / 0.99	15 / 0.97	15 / 0.95	15 / 0.93	11 / 0.91	N/R
	9.53 [3/8]	15.88 [5/8]	0	8 / 0.99	15 / 0.97	15 / 0.95	15 / 0.93	15 / 0.91	N/R
	7.94 [5/16]	19.05 [3/4]	0	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.98	11 / 0.97	6 / 0.96
	9.53 [3/8]	19.05 [3/4]	0	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.98	15 / 0.97	15 / 0.96
	12.70 [1/2]	19.05 [3/4]	0	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.98	15 / 0.97	15 / 0.96
14.1 kW [4 Ton]	9.53 [3/8]	19.05 [3/4]	0	8 / 0.99	15 / 0.98	15 / 0.96	15 / 0.95	15 / 0.93	15 / 0.92
	12.70 [1/2]	19.05 [3/4]	0	8 / 0.99	15 / 0.98	15 / 0.96	15 / 0.95	15 / 0.93	15 / 0.92
	9.53 [3/8]	22.23 [7/8]	0	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.98	15 / 0.98	15 / 0.97
	12.70 [1/2]	22.23 [7/8]	0	8 / 1.00	15 / 0.99	15 / 0.99	15 / 0.98	15 / 0.98	15 / 0.97
17.6 kW [5 Ton]	9.53 [3/8]	19.05 [3/4]	0	8 / 0.99	15 / 0.97	15 / 0.95	15 / 0.93	14 / 0.91	N/R
	12.70 [1/2]	19.05 [3/4]	0	8 / 0.99	15 / 0.97	15 / 0.95	15 / 0.93	15 / 0.91	N/R
	9.53 [3/8]	22.23 [7/8]	0	8 / 1.00	15 / 0.99	15 / 0.98	15 / 0.98	15 / 0.97	12 / 0.96
	12.70 [1/2]	22.23 [7/8]	0	8 / 1.00	15 / 0.99	15 / 0.98	15 / 0.98	15 / 0.97	15 / 0.96

NOTES:

1. Do not exceed 46 meters linear line length.
2. Do not exceed 15 meters vertical separation between indoor and outdoor units.
3. *19.05 mm [3/4 in.] vapor line should only be used for 2 ton systems if outdoor unit is below or at same level as indoor unit to assure proper oil return.
4. Always use the smallest liquid line allowable to minimize refrigerant charge.
5. Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
6. Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

[] Designates English Conversions

Performance Data @ AHRI Standard Conditions – Heat Pump

Designated Tested Combination (DTC)												
Outdoor Unit	Air Handler	Total Capacity BTU/H [kW]	Net Sensible BTU/H [kW]	Net Latent BTU/H [kW]	SEER	EER	Indoor CFM [L/s]	47 Degree Heating Capacity BTU/H [kW]	47 Degree COP	17 Degree Heating Capacity BTU/H [kW]	17 Degree COP	Region IV HSPF
TZPLD16242	TZHDLVMT2421	24000 [7.0]	17600 [5.2]	6400 [1.9]	16.00	13.00	825 [389.4]	22600 [6.6]	3.94	14500 [4.2]	2.70	9.0
TZPLD16362	TZHDLVMT3621	36000 [10.6]	26400 [7.7]	9600 [2.8]	16.00	13.00	1225 [578.1]	34200 [10.0]	3.70	21600 [6.3]	2.54	9.0
TZPLD16482	TZHDLVMT4821	47000 [13.8]	36800 [10.8]	11200 [3.3]	16.00	12.50	1650 [778.7]	45000 [13.2]	3.74	29800 [8.7]	2.70	9.0
TZPLD16602	TZHDLVST6024	57000 [16.7]	41700 [12.2]	16300 [4.8]	16.00	12.50	1725 [814.1]	55000 [16.1]	3.80	35600 [10.4]	2.74	9.0

Note: Additional ratings and system match ups and downloadable ratings certificates can be accessed from the AHRI website: www.ahridirectory.org

[] Designates Metric Conversions

GUIDE SPECIFICATIONS

General

System Description

Outdoor-mounted, air-cooled, split-system heat pump unit suitable for ground or rooftop installation. Unit consists of a hermetic compressor, composite basepan, an air-cooled coil, propeller-type condenser fan, suction and liquid line service valve, and a control box. Unit will discharge supply air upward as shown on contract drawings. Unit will be used in a refrigeration circuit to match up to a coil unit.

Quality Assurance

- Unit will be rated in accordance with the latest edition of AHRI Standard 210.
- Unit will be certified for capacity and efficiency, and listed in the latest AHRI directory.
- Unit construction will comply with latest edition of ANSI/ASHRAE and with NEC.
- Unit will be constructed in accordance with UL standards and will carry the UL label of approval. Unit will have c-UL-us approval.
- Unit cabinet will be capable of withstanding ASTM B117 1000-hr salt spray test.
- Air-cooled condenser coils will be leak tested at 150 psig and pressure tested at 550 psig.
- Unit constructed in ISO9001 approved facility.

Delivery, Storage, and Handling

- Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer) — U.S. and Canada only.

Products

Equipment

Factory assembled, single piece, air-cooled heat pump unit. Contained within the unit enclosure is all factory wiring, piping, controls, compressor, refrigerant charge R-410A, and special features required prior to field start-up.

Unit Cabinet

- Unit cabinet will be constructed of galvanized steel, bonderized, and coated with a powder coat paint.
- All units constructed with louver coil protection and corner post. Louver can be removed by removing one fastener per louver panel.

AIR-COOLED, SPLIT-SYSTEM HEAT PUMP

TZPLD16

2 TO 5 NOMINAL TONS

Fans

- Condenser fan will be direct-drive propeller type, discharging air upward.
- Condenser fan motors will be totally enclosed, 1-phase type with class B insulation and permanently lubricated bearings. Shafts will be corrosion resistant.
- Fan blades will be statically and dynamically balanced.
- Condenser fan openings will be equipped with coated steel wire safety guards.

Compressor

- Compressor will be hermetically sealed.
- Compressor will be mounted on rubber vibration isolators.

Condenser Coil

- Condenser coil will be air cooled.
- Coil will be constructed of aluminum fins mechanically bonded to copper tubes.

Refrigeration Components

- Refrigeration circuit components will include liquid-line shutoff valve with sweat connections, vapor-line shutoff valve with sweat connections, system charge of R-410A refrigerant, and compressor oil.
- Unit will be equipped with filter drier for R-410A refrigerant for field installation.

Operating Characteristics

- The capacity of the unit will meet or exceed _____ Btuh at a suction temperature of _____ °F/°C. The power consumption at full load will not exceed _____ kW.
- Combination of the unit and the evaporator or fan coil unit will have a total net cooling capacity of _____ Btuh or greater at conditions of _____ CFM entering air temperature at the evaporator at _____ °F/°C wet bulb and _____ °F/°C dry bulb, and air entering the unit at _____ °F/°C.
- The system will have a SEER of _____ Btuh/watt or greater at DOE conditions.

Electrical Requirements

- Nominal unit electrical characteristics will be _____ v, single phase, 60 hz. The unit will be capable of satisfactory operation within voltage limits of _____ v to _____ v.
- Nominal unit electrical characteristics will be _____ v, three phase, 60 hz. The unit will be capable of satisfactory operation within voltage limits of _____ v to _____ v.
- Unit electrical power will be single point connection.
- Control circuit will be 24v.

Special Features

- Refer to section of this literature identifying accessories and descriptions for specific features and available enhancements.

GENERAL TERMS OF LIMITED WARRANTY*

Thermal Zone will furnish a replacement for any part of this product which fails in normal use and service within the applicable period stated, in accordance with the terms of the limited warranty.

***For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

Conditional Parts
(Registration Required)Ten (10) Years

Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.

"In keeping with its policy of continuous progress and product improvement, the right is reserved to make changes without notice."