

HEAT PUMP OUTDOOR UNITS



ML14XP1

MERIT® Series

R-410A

PRODUCT SPECIFICATIONS

Bulletin No. 210761
January 2019



MERIT® SERIES



LENNOX
QUANTUM
COIL



SEER up to 16.00

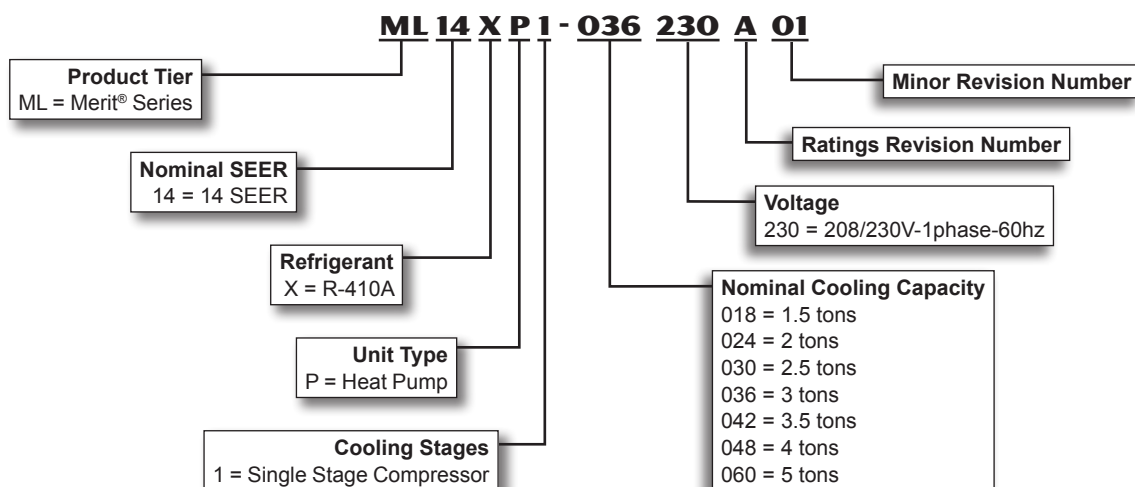
HSPF up to 9.00

1.5 to 5 Tons

Cooling Capacity - 18,000 to 58,500 Btuh

Heating Capacity - 16,600 to 60,000 Btuh

MODEL NUMBER IDENTIFICATION



FEATURES

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NOTE!

For the latest AHRI System Matches please see the **Residential Matchup Tool** at www.LennoxPROs.com or see the separate document **AHRI Heat Pump Matches** that contains all outdoor unit matches.

WARRANTY

Compressor - Limited warranty for **five years** in residential installations and five years in non-residential installations.

All other covered components - Five years in residential installations and one year in non-residential installations.

Refer to Lennox Equipment Limited Warranty certificate included with unit for specific details.

APPROVALS

AHRI Certified to AHRI Standard 210/240.

Sound rated in Lennox reverberant sound test room in Accordance with test conditions included in AHRI Standard 270-2008.

Tested in the Lennox Research Laboratory environmental test room.

Rated According to U.S. Department of Energy (DOE) test procedures.

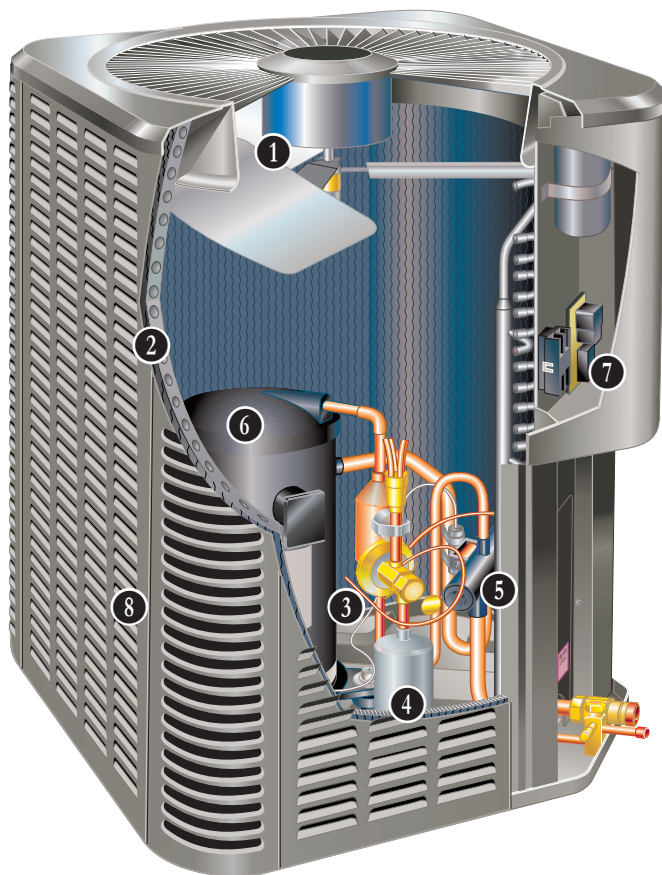
Units and components within bonded for grounding to meet safety standards for servicing required by UL, NEC and CEC.

Units are ETL certified for the U.S. and Canada.

ISO 9001 Registered Manufacturing Quality System.

For expanded ratings, see www.LennoxPROs.com.

ENERGY STAR® certified units are designed to use less energy, help save money on utility bills, and help protect the environment. Many Lennox home comfort systems meet ENERGY STAR requirements when used with matching components.



APPLICATIONS

1.5 through 5 tons.

Sound levels as low as 76 dB.

Single phase power supply.

Vertical air discharge allows concealment behind shrubs at grade level or out of sight on a roof.

Designed for applications with remotely located indoor air handler units or gas furnaces with indoor add-on coils.

When heat pumps are used with gas furnaces, a dual-fuel compatible thermostat or a zone control system with dual-fuel capabilities must be used (order separately).

See Indoor Coils and Air Handlers sections for indoor unit data.

Units shipped completely factory assembled, piped and wired. Each unit is test operated at the factory insuring proper operation.

Installer must set outdoor unit, connect refrigerant lines and make electrical connections to complete job.

FEATURES

REFRIGERATION SYSTEM

R-410A Refrigerant

Non-chlorine, ozone friendly, R-410A.

Unit is factory pre-charged with refrigerant.



Total system refrigerant charge is dependant on outdoor unit size, indoor unit size and refrigerant line length.

Refer to the unit-mounted charging sticker to determine correct amount of charge required.

1 Outdoor Coil Fan

Direct drive fan moves large air volumes uniformly through entire outdoor coil for high refrigerant cooling and heating capacity.

Vertical air discharge minimizes operating sounds and eliminates damage to lawn and shrubs.

Fan motor has ball bearings and is inherently protected.

Motor totally enclosed for maximum protection from weather, dust and corrosion.

Louvered steel top fan guard furnished as standard.

Fan service access accomplished by removal of top panel.

2 Quantum™ Coil

Enhanced aluminum alloy tube/enhanced fin coil for superior corrosion resistance.

Lennox designed and fabricated coil.

Ripple-edged aluminum fins.

Aluminum tube construction.

Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.

Fin collars grip tubing for maximum contact area.

Flared shoulder tubing connections.

Coil is factory tested under high pressure to insure leakproof construction.

Entire coil is accessible for cleaning.

3 Expansion Valve - Outdoor Unit

Designed and sized specifically for use in heat pump system.

Sensing bulb is located on the suction line between the reversing valve and the compressor to sense evaporator suction temperature in the heat cycle.

High Pressure Switch

Protects the system from high pressure conditions that can be a result of fan failure or a blocked/dirty coil.

Automatic reset.

Low Pressure Switch

Shuts off unit if suction pressure falls below setting.

Provides loss of charge and freeze-up protection.

Automatic reset.

4 High Capacity Liquid Line Drier

Factory installed in the liquid line, the drier traps moisture or dirt that could contaminate the refrigerant system.

100% molecular-sieve, bead type bi-flow drier.

5 Reversing Valve

4-way interchange reversing valve effects a rapid change in direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa.

Valve operates on pressure differential between outdoor unit and indoor unit of the system.

Factory installed.

Optional Accessories

Check/Expansion Valve Kits

Must be ordered extra and field installed on certain indoor units. See TXV Usage table.

Chatleff-style fitting.

Loss of Charge Kit

Helps protect the compressor from damage due low refrigerant charge conditions.

SPST, normally-closed switch, automatic reset switch.

Refrigerant Line Kits

Refrigerant lines (suction & liquid) are shipped refrigeration clean.

Lines are cleaned, dried, pressurized and sealed at factory.

Suction line fully insulated.

Lines are stubbed at both ends.

FEATURES

COMPRESSOR

6 Scroll Compressor

Compressor features high efficiency with uniform suction flow, constant discharge flow, high volumetric efficiency and quiet operation.

Compressor consists of two involute spiral scrolls matched together to generate a series of crescent shaped gas pockets between them.

During compression, one scroll remains stationary while the other scroll orbits around it.

Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates.

As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced.

When the pocket reaches the center, gas is now at high pressure and is forced out of a port located in the center of the fixed scrolls.

During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle.

Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency.

Scroll compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged.

Low gas pulses during compression reduces operational sound levels.

Compressor motor is internally protected from excessive current and temperature.

Muffler in discharge line reduces operating sound levels.

Compressor is installed in the unit on resilient rubber mounts for vibration free operation.

Compressor Crankcase Heater (Factory installed on -036-042-048-060 models)

Protects against refrigerant migration that can occur during low ambient operation.

Optional Accessories

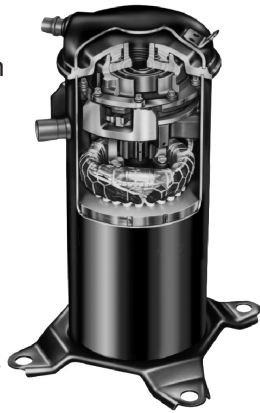
Compressor Crankcase Heater (Optional for -018-024-030 models)

Protects against refrigerant migration that can occur during low ambient operation.

Compressor Sound Cover

A reinforced vinyl compressor cover containing a 1-1/2 inch thick batt of fiberglass insulation.

All open edges are sealed with a one-inch wide hook and loop fastening tape.



CONTROLS

7 Defrost Control

Time/temperature defrost control is furnished as standard equipment.

Control initiates a defrost cycle every 30, 60 or 90 minutes of compressor "on" time at outdoor coil temperatures below 42°F. Factory setting is 90 minutes.

Anti-short cycle, timed-off control (5 minutes).

Compressor delay (30 seconds, field selectable) for cycling the compressor in and out of the defrost mode.

High and low pressure switch monitoring with five-trip lockout.

Two diagnostic LEDs furnished as an aid in troubleshooting.

Conveniently located in control box.

Optional Accessories

Compressor Low Ambient Cut-Off

Non-adjustable switch (low ambient cut-out) prevents compressor operation in cooling mode, when outdoor temperature is below 35°F.

Freezestat Installs on or near the vapor line of the indoor coil or on the suction line.

Senses suction line temperature and cycles the compressor off when suction line temperature falls below it's setpoint.

Opens at 29°F and closes at 58°F.

Compressor Hard Start Kit

Single-phase units are equipped with a PSC compressor motor. This type of motor normally doesn't need a potential relay and start capacitor.

In conditions such as low voltage, this kit may be required to increase the compressor starting torque.

Indoor Blower Off Delay Relay Kit

Delays the indoor blower-off time during the cooling cycle.

Low Ambient Kit

Heat pump units will operate satisfactorily in the cooling mode down to 45°F outdoor air temperature without any additional controls.

Kit can be added in the field enabling unit to operate properly down to 30°F in the cooling mode.

Crankcase heater and freezestat should be installed on compressors equipped with a low ambient kit.

A compressor lock-out thermostat should be added to terminate compressor operation below recommended operation conditions.

FEATURES

CONTROLS (continued)

Optional Accessories

Mild Weather Kit

Heat pump units operate satisfactorily in the heating mode at outdoor air temperatures up to 75°F.

Mild Weather Kit can be field installed, allowing heating operation above 75°F.

Monitor Kit - Service Light

Contains ambient compensating thermistor and service light thermostat.

For use with thermostats requiring input for indicator lights.

Outdoor Thermostat Kit

An outdoor thermostat can be used to lock out some of the electric heating elements on indoor units where two stage control is applicable.

Outdoor thermostat maintains the heating load on the low power input as long as possible before allowing the full power load to come on the line.

Thermostat kit and mounting box must be ordered separately.

Thermostat

Thermostat not furnished with unit.

See Thermostat bulletins in Controls Section and Lennox Price Book.

8 CABINET

Heavy gauge steel cabinet with five station metal wash process.

Louvered heavy gauge steel panels surround unit on all four sides to prevent damage to the coil.

Powder paint finish provides superior rust and corrosion protection.

Control box is conveniently located with all controls factory wired.

Corner patch plate allows access to compressor components.

Drainage holes are provided in base section for moisture removal.

PermaGuard™ Unit Base

Durable zinc-coated base section resists rust and corrosion.

Refrigerant Line Connections, Electrical Inlets, Service Valves

Sweat connection vapor and liquid lines are located on corner of unit cabinet.

Fully serviceable brass service valves prevent corrosion and provide access to refrigerant system.

Vapor valve can be fully shut off, while liquid valve may be front seated to manage refrigerant charge while servicing system.

Refrigerant line connections and field wiring inlets are located in one central area of cabinet for easy access.

See dimension drawing.

Optional Accessories

Unit Stand-Off Kit

Black high density polyethylene feet are available to raise unit off of mounting surface away from damaging moisture.

Four feet are furnished per order number.

SPECIFICATIONS

General Data		Model No.	ML14XP1-018	ML14XP1-024	ML14XP1-030	ML14XP1-036
Nominal Tonnage			1.5	2	2.5	3
¹ Sound Rating Number			76	76	76	76
Connections (sweat)	Liquid line o.d. - in.		3/8	3/8	3/8	3/8
	Vapor line o.d. - in.		3/4	3/4	3/4	7/8
² Refrigerant		R-410A charge furnished	7 lbs. 0 oz.	7 lbs. 2 oz.	7 lbs. 3 oz.	8 lbs. 10 oz.
Outdoor Coil	Net face area - sq. ft.	Outer coil	24.5	24.5	24.5	21.0
		Inner coil	---	---	---	20.3
	Tube diameter - in.		5/16	5/16	5/16	5/16
	No. of rows		1	1	1	2
	Fins per inch		22	22	22	22
Outdoor Fan	Diameter - in.		22	22	22	22
	No. of Blades		3	3	3	3
	Motor hp		1/6	1/6	1/6	1/6
	Cfm		2670	2670	2890	2870
	Rpm		867	867	847	839
	Watts		160	160	200	205
Shipping Data - lbs. 1 package			213	213	213	229

ELECTRICAL DATA

Line voltage data - 60 hz - 1ph			208/230V	208/230V	208/230V	208/230V
³ Maximum overcurrent protection (amps)			20	20	25	30
⁴ Minimum circuit ampacity			12.2	13.6	17.0	18.6
Compressor	Rated Load Amps		9.0	10.1	12.8	14.1
	Locked Rotor Amps		48	52	67.8	72.2
	Power Factor		0.98	0.98	0.96	0.99
Outdoor Fan Motor	Full Load Amps		1.0	1.0	1.0	1.0
	Locked Rotor Amps		1.9	1.9	1.9	1.9

OPTIONAL ACCESSORIES - ORDER SEPARATELY

Compressor Crankcase Heater	93M04		•	•	•	
	Factory					•
Compressor Hard Start Kit	Copeland	10J42				•
	LG	88M91	•	•	•	
Compressor Sound Cover	27W55		•	•	•	•
Compressor Low Ambient Cut-Off	45F08		•	•	•	•
Freezestat	3/8 in. tubing	93G35	•	•	•	•
	5/8 in. tubing	50A93	•	•	•	•
Indoor Blower Off Delay Relay	58M81		•	•	•	•
Loss of Charge Kit	84M23		•	•	•	•
⁵ Low Ambient Kit	54M89		•	•	•	•
Mild Weather Kit	11B97		•	•	•	•
Monitor Kit - Service Light	76F53		•	•	•	•
Outdoor Thermostat Kit	Thermostat	10Z23	•			•
	Mounting Box	31461	•			•
Refrigerant Line Sets	L15-41-20	L15-41-40	•	•	•	
	L15-41-30	L15-41-50				
	L15-65-30	L15-65-40 L15-65-50				•
Unit Stand-Off Kit	94J45		•	•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

¹ Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

² Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the Installation Instructions for information about line set length and additional refrigerant charge required.

³ HACR type circuit breaker or fuse.

⁴ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

⁵ Crankcase Heater and Freezestat are recommended with Low Ambient Kit.

SPECIFICATIONS					
General Data		Model No.	ML14XP1-042	ML14XP1-048	ML14XP1-060
	Nominal Tonnage		3.5	4	5
¹	Sound Rating Number		79	80	80
Connections (sweat)	Liquid line o.d. - in.		3/8	3/8	3/8
	Vapor line o.d. - in.		7/8	7/8	1-1/8
²	Refrigerant	R-410A charge furnished	11 lbs. 14 oz.	10 lbs. 7 oz.	12 lbs. 11 oz.
Outdoor Coil	Net face area - sq. ft.	Outer coil	24.93	24.93	29.09
		Inner coil	24.13	24.13	28.16
	Tube diameter - in.		5/16	5/16	5/16
	No. of rows		2	2	2
	Fins per inch		22	22	22
Outdoor Fan	Diameter - in.		22	22	22
	No. of Blades		4	4	4
	Motor hp		1/3	1/3	1/3
	Cfm		4347	4347	4500
	Rpm		843	843	830
	Watts		299	299	307
	Shipping Data - lbs. 1 package			272	273
ELECTRICAL DATA					
Line voltage data - 60 hz - 1ph			208/230V	208/230V	208/230V
³ Maximum overcurrent protection (amps)			40	50	50
⁴ Minimum circuit ampacity			24.2	29.0	29.4
Compressor	Rated Load Amps		17.92	21.76	22.10
	Locked Rotor Amps		112	117	125
	Power Factor		0.99	0.99	0.99
Outdoor Fan Motor	Full Load Amps		1.8	1.8	1.8
	Locked Rotor Amps		2.9	2.9	2.9
OPTIONAL ACCESSORIES - ORDER SEPARATELY					
Compressor Hard Start Kit	Copeland	10J42	•	•	
	LG	88M91			•
Compressor Low Ambient Cut-Off			•	•	•
Compressor Sound Cover			•	•	•
Freezestat	3/8 in. tubing	93G35	•	•	•
	5/8 in. tubing	50A93	•	•	•
Indoor Blower Off Delay Relay			•	•	•
Loss of Charge Kit			•	•	•
⁵ Low Ambient Kit			•	•	•
Mild Weather Kit			•	•	•
Monitor Kit - Service Light			•	•	•
Outdoor Thermostat Kit	Thermostat	10Z23	•	•	•
	Mounting Box	31461	•	•	•
Refrigerant Line Sets	L15-65-30	L15-65-40	•	•	•
		L15-65-50			•
Unit Stand-Off Kit			•	•	•

NOTE - Extremes of operating range are plus 10% and minus 5% of line voltage.

¹ Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

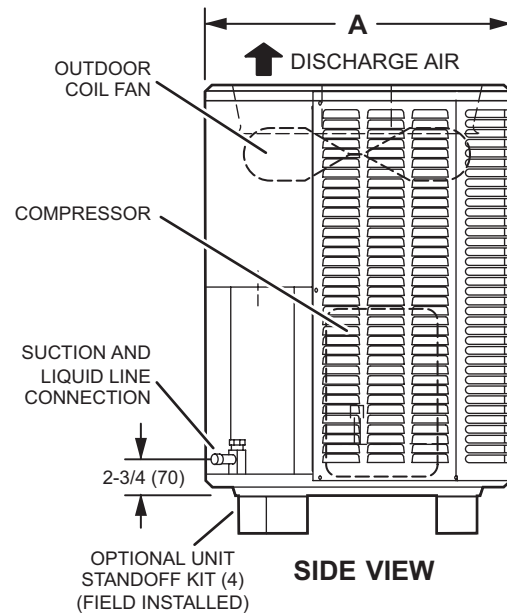
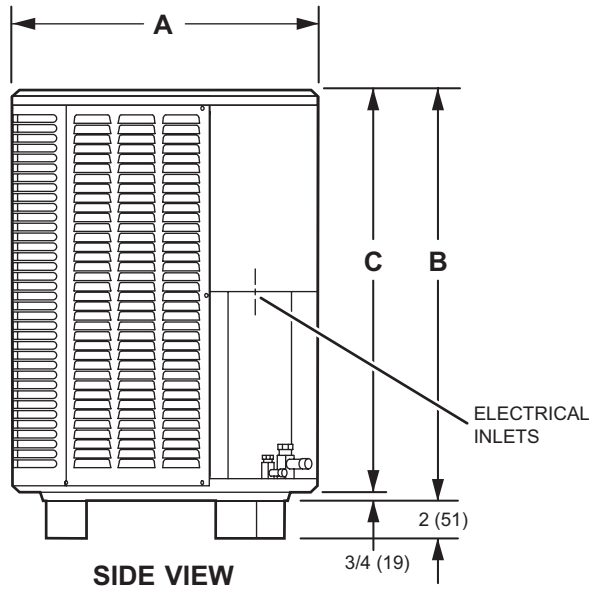
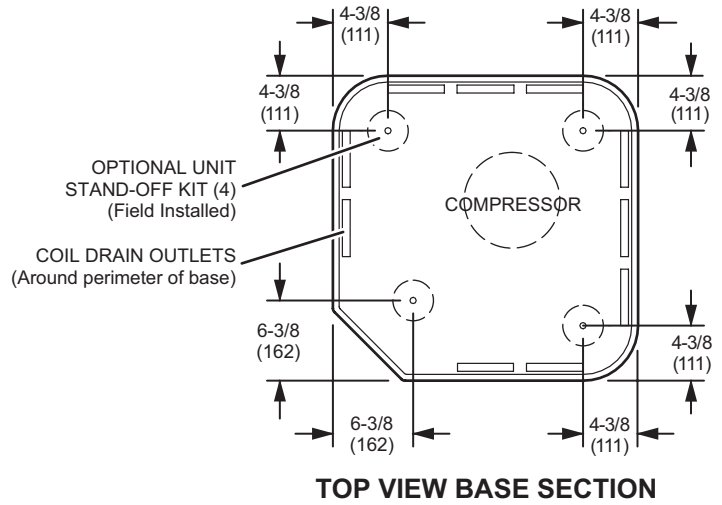
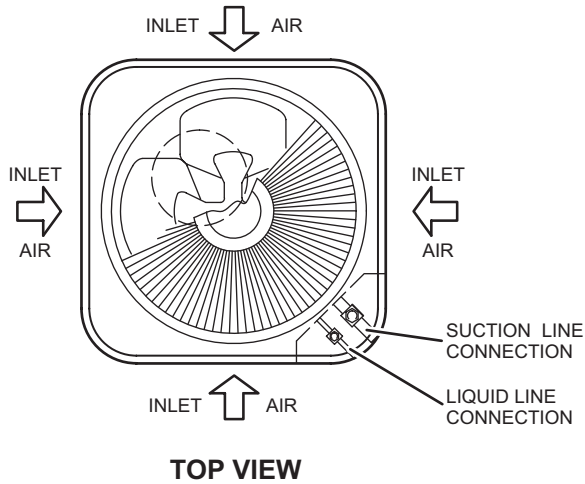
² Refrigerant charge sufficient for 15 ft. length of refrigerant lines.

³ HACR type circuit breaker or fuse.

⁴ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

⁵ Crankcase Heater and Freezestat are recommended with Low Ambient Kit.

DIMENSIONS - INCHES (MM)



Model No.	A		B		C	
	inches	mm	inches	mm	inches	mm
ML14XP1-018	28-1/4	718	43-1/4	1099	42-1/2	1080
ML14XP1-024	28-1/4	718	43-1/4	1099	42-1/2	1080
ML14XP1-030	28-1/4	718	43-1/4	1099	42-1/2	1080
ML14XP1-036	28-1/4	718	37-1/4	946	36-1/2	927
ML14XP1-042	32-1/4	819	37-1/4	946	36-1/2	927
ML14XP1-048	32-1/4	819	37-1/4	946	36-1/2	927
ML14XP1-060	32-1/4	819	43-1/4	1099	42-1/2	1080

SOUND DATA

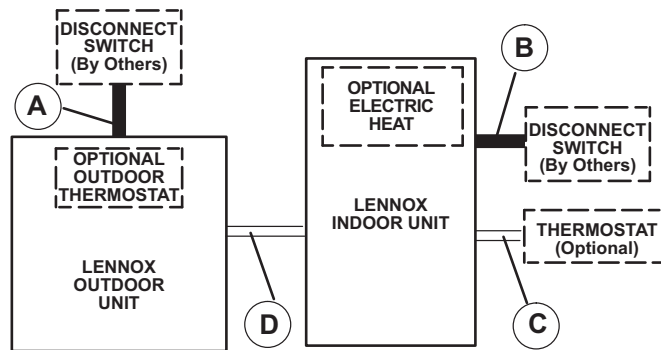
1 Unit Model	Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts Center Frequency - HZ							1 Sound Rating Number (dB)	2 Estimated Sound Pressure Level at Distance From Unit (dB at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
018	59.5	65	71	70.5	67	63	58.5	76	69	64	58	55	44
024	55	65	73.5	70	66.5	63	57	76	69	64	58	55	44
030	55.5	64.5	71	69.5	66.5	63	56.5	76	69	64	58	55	44
036	55.5	66	70.5	70.5	66.5	61.5	56	76	69	64	58	55	44
042	63	70.5	74.5	73	70	64	56	79	72	67	61	58	47
048	64	72.5	75.5	73	69.5	63.5	56	80	73	68	62	59	48
060	61.5	69	73.5	73.5	70.5	67	62	80	73	68	62	59	48

NOTE - the octave sound power data does not include tonal correction.

¹ Tested according to AHRI Standard 270-2008 test conditions.

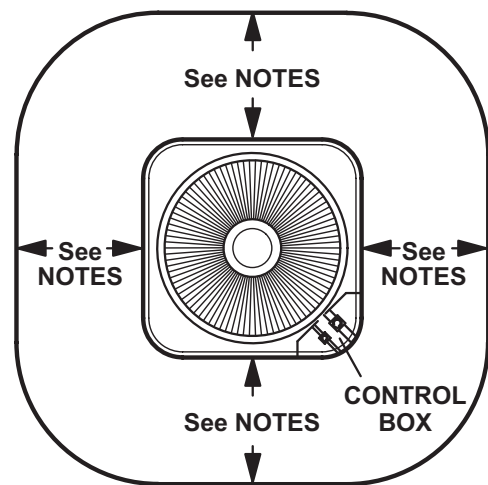
² Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.

FIELD WIRING



- A - Two Wire Power (see Electrical Data)
 - B - Two or Three Wire Power (size to heater capacity)
 - C - Twelve Wire Low Voltage 18 ga. minimum
Fourteen Wire Low Voltage with Optional Outdoor Thermostat
 - D - Eight Wire Low Voltage 18 ga. minimum
Ten Wire Low Voltage with Optional Outdoor Thermostat
- NOTE - Field Wiring Not Furnished*
All wiring must conform to NEC or CEC and local electrical codes.

INSTALLATION CLEARANCES - IN. (MM)



- NOTES:**
- Service clearance of 30 in. (762 mm) must be maintained on one of the sides adjacent to the control box.
 - Clearance to one of the other three sides must be 36 in. (914 mm)
 - Clearance to one of the remaining two sides may be 12 in. (305 mm) and the final side may be 6 in. (152 mm).
 - A clearance of 24 in. must be maintained between two units.
 - 48 in. (1219 mm) clearance required on top of unit.

TXV USAGE

Use this table for C35, CH23, CH33, CH35 and CR33 Field Installed TXV Match-Ups (if a valid match).

Model No.	Order No.
ML14XP1-018	12J18
ML14XP1-024	12J18
ML14XP1-030	12J18
ML14XP1-036	12J19
ML14XP1-042	12J20
ML14XP1-048	12J20
ML14XP1-060	12J20

CX35, CX38 and CHX35 coils and all Lennox air handlers are shipped with a factory installed TXV.

C35 and CH33 coils - Replace the factory installed orifice with the expansion valve listed.

CR33 and CH23 - Use the expansion valve listed.

MOST POPULAR MATCHES

Outdoor Unit Model No.	Indoor Unit Model No
ML14XP1-018	CBA25UH-018
ML14XP1-024	CBA25UH-024
ML14XP1-030	CBA25UH-030
ML14XP1-036	CBA25UH-036
ML14XP1-042	CBA25UH-042
ML14XP1-048	CBA25UH-048
ML14XP1-060	CBA25UH-060

AHRI STANDARD 210/240

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat. Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

Units which do not have an indoor air-circulating blower furnished as part of the model, i.e., split system with indoor coil only, is established by subtracting from the total cooling capacity 1250 Btu/h per 1,000 cfm, and by adding the same amount to the heating capacity. Total power input for both heating and cooling is increased by 365 W per 1,000 cfm of indoor air circulated.

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Visit us at www.lennox.com

For the latest technical information, www.LennoxPROs.com

Contact us at 1-800-4-LENNOX

NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

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