

# HSA14\*\*S1



## LE Series

### Approvals

- AHRI Standard 210-240-2023 certified
- AHRI Certified system match-ups and expanded ratings
- Sound rated to AHRI Standard 270-2008 test conditions
- Rated According to U.S. Department of Energy (DOE) test procedures
- Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
- ETL certified (U.S. and Canada)
- ISO 9001 Registered Manufacturing Quality System

### Application

- 1.5 through 5 tons
  - Single phase power supply
  - Sound levels low as 74 dBA
  - Vertical air discharge
  - Applicable to indoor air handlers or gas furnaces with indoor add-on coils
  - Shipped completely factory assembled, piped and wired
- NOTE: *When heat pumps are used with gas furnaces, a dual-fuel compatible thermostat or zone control system with dual-fuel capabilities must be used (order separately).*
- NOTE: *Installer must set outdoor unit, connect refrigerant lines and make electrical connections to complete job.*

### Outdoor Coil Fan

- Direct drive PSC fan
- Vertical air discharge
- Louvered steel top fan guard
- Totally enclosed fan motor
- Ball bearings
- Inherently protected

### Refrigeration System

#### R-454B Refrigerant

- Low GWP (Global Warming Potential)
- Zero ODP (Ozone Depletion Potential)
- Low Toxicity/Lower Flammability - A2L
- Unit is factory pre-charged

NOTE: *Total system refrigerant charge is dependent on outdoor unit size, indoor unit size and refrigerant line length.*

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

## SPLIT SYSTEM HEAT PUMP

### 14 SEER2 Minimum Efficiency



For the latest AHRI system matches, please visit [www.marsdeliversratings.com](http://www.marsdeliversratings.com) or [AHRIdirectory.org](http://AHRIdirectory.org)

[www.comfort-aire.com](http://www.comfort-aire.com)

## **Refrigeration System (Continued)**

### *Coil*

- Enhanced aluminum alloy tube/enhanced fin coil
- Superior corrosion resistance
- Ripple-edged aluminum fins
- Aluminum tube construction
- Lanced fins for maximum fin surface exposure
- Fin collars grip tubing for maximum contact area
- Flared shoulder tubing connections
- Factory tested under high pressure
- Entire coil is accessible for cleaning

### *Expansion Valve - Outdoor Unit*

- Designed and sized for heat pump systems
- Sensing bulb senses suction temperature during heating cycle

### *High Pressure Switch*

- Protects the system from high pressure conditions
- Automatic reset

### *Low Pressure Switch*

- Shuts off unit if suction pressure falls below setting
- Loss of charge and freeze-up protection
- Automatic reset

### *High Capacity Liquid Line Drier*

- Factory installed in the liquid line
- Drier traps moisture or dirt that could contaminate the system
- 100% molecular-sieve, bead type, bi-flow drier

### *Four-Way Reversing Valve*

- Rapid changeover of refrigerant flow direction from cooling to heating and vice versa
- Operates on pressure differential between outdoor unit and indoor coil

## **Optional Accessories**

### *Check/Expansion Valve Kits*

- Field installed on indoor units (if required)
- See TXV Usage table
- Chatleff-style fitting

### *Loss of Charge Switch Kit*

- Protects compressor from damage from low refrigerant charge conditions
- SPST, normally-closed
- Automatic reset

### *Freezestat*

- Senses suction line temperature
- Cycles compressor off when suction line temperature falls below freezestat setpoint
- Opens at 29°F and closes at 58°F
- Installs on or near the discharge line of the evaporator or on the suction line

## **Indoor Refrigerant Detection System (RDS)**

- Complies with UL 60335-2-40 approved standard
- Required for all systems using R-454B refrigerant
- Factory or field installed on all indoor units

## **Indoor Refrigerant Detection System (RDS) (Continued)**

- Consists of a RDS refrigerant detection sensor and a mitigation control in the indoor unit
- Ensures safe operation for systems equipped with R-454B refrigerant
- Indoor sensor will detect any R-454B refrigerant
- If R-454B refrigerant is detected, the refrigerant detection system will stop compressor operation and operate the blower to reduce concentrations in the conditioned space
- Once safe levels are reached the HVAC system will resume normal operation

## **Compressor**

### *Single-Stage Scroll Compressor*

- High efficiency with uniform suction flow
- Constant discharge flow, high volumetric efficiency and quiet operation
- 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

### *Scroll Compressor Operation*

- Two involute spiral scrolls matched together 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
- 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

### *Compressor Crankcase Heater*

#### *(Factory installed on -036-042-048-060 models)*

- Prevents migration of liquid refrigerant into compressor and ensures proper compressor lubrication

### *Compressor Sound Cover*

- Reinforced vinyl compressor cover
- 1-1/2 inch thick batt of fiberglass insulation
- Hook and loop fastening tape on all open edges

## **Controls**

### *Defrost Control*

- Time/temperature defrost control
- Defrost cycle every 30, 60 or 90 minutes of compressor “on” time at outdoor coil temperatures below 42°F
- Factory setting - 90 minutes
- Anti-short cycle, timed-off control - 5 minutes
- Compressor delay - 30 seconds (field selectable) cycles the compressor in and out of defrost mode
- High and low pressure switch monitoring (five-trip lockout)
- Two diagnostic LEDs furnished for troubleshooting
- Conveniently located in control box

## **Optional Accessories**

### *Compressor Crankcase Heater*

*(Optional for -018- 024-030 models)*

- Prevents migration of liquid refrigerant into compressor and ensures proper compressor lubrication

### *Remote Outdoor Temperature Sensor*

- Outdoor sensor allows thermostat to display outdoor temperature

NOTE: *Sensor is required for high and low balance points option.*

### *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

### *Compressor Hard Start Kit*

- Single-phase units are equipped with a PSC compressor motor
- This type of motor normally does not need a potential relay and start capacitor
- For conditions such as low voltage, 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 can operate in the cooling mode down to 45°F outdoor air temperature without additional controls
- Allows unit to operate properly down to 30°F in the cooling mode

NOTE: Crankcase heater and freeze-stat should be installed on compressors equipped with a low ambient kit.

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

### *Mild Weather Kit*

- Units can operate in the heating mode at outdoor air temperatures up to 75°F
- Field installed kit allows heating operation above 75°F
- Monitor Kit - Service Light
- Ambient compensating thermistor
- Service light thermostat
- For thermostats requiring indicator light inputs
- Outdoor Thermostat Kit
- Outdoor thermostat locks out some of the electric heating elements on indoor units where two-stage control is applicable
- Outdoor thermostat maintains the heating load on 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

## **Cabinet**

- Heavy gauge steel cabinet
- Pre-painted cabinet finish
- Louvered heavy gauge steel panels
- Control box conveniently located with all controls factory wired
- Corner patch plate allows compressor access
- Drainage holes provided in base section

### *Zinc-Coated Steel Unit Base*

- Resists rust and corrosion

### *Refrigerant Line Connections, Electrical Inlets, Service Valves*

- Sweat connection vapor and liquid lines
- Located on corner of unit cabinet
- Fully serviceable brass service valves
- 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

### *Braze-Free/Press Fitting Flexibility*

- Units can accommodate braze-free or press fittings for installation versatility

## MODEL NUMBER GUIDE

<b>H</b>	<b>S</b>	<b>A</b>	<b>14</b>	<b>24</b>	<b>S</b>	<b>1</b>
Heat Pump	Residential Split	R454B	Min. SEER2	Capacity (BTUH x 1000)	Single Stage	Power 1 = 208/230-1-60

## PHYSICAL

Model	HSA1418S1	HSA1424S1	HSA1430S1	HSA1436S1	HSA1442S1	HSA1448S1	HSA1460S1	
Nominal Tonnage	1.5	2	2.5	3	3.5	4	5	
Sound Rating Number	74	74	74	75	78	79	79	
Connections (Sweat)	Liquid line (OD) - in.	3/8	3/8	3/8	3/8	3/8	3/8	
	Vapor line (OD) - in.	3/4	3/4	3/4	7/8	7/8	1-1/8	
Refrigerant	<sup>1</sup> R-454B charge furnished							
	4 lbs. 7 oz.	5 lbs. 3 oz.	6 lbs. 7 oz.	7 lbs. 2 oz.	8 lbs. 5 oz.	8 lbs. 6 oz.	9 lbs. 6 oz.	
Indoor Unit Expansion Valve (TXV)	26Z70	26Z70	26Z70	26Z70	26Z71	26Z71	26Z72	
Outdoor Coil	Net face area - ft. <sup>2</sup> - Outer coil	24.5	24.5	24.5	21.0	24.93	24.93	29.09
	- Inner coil	N/A	N/A	N/A	20.3	24.13	24.13	28.16
	Tube diameter - in.	5/16	5/16	5/16	5/16	5/16	5/16	5/16
	Rows	1	1	1	2	2	2	2
	Fins - in.	22	22	22	22	22	22	22
Outdoor Fan	HP	1/6	1/6	1/6	1/6	1/3	1/3	1/3
	Diameter - in.	22	22	22	22	22	22	22
	Blades	3	3	3	3	4	4	4
	Cfm	2670	2670	2890	2870	4347	4347	4500
	Rpm	867	867	847	839	843	843	830
Watts	160	160	200	205	299	299	307	
Shipping Data - lbs.	213	213	213	229	272	273	295	

## ELECTRICAL

Model	HSA1418S1	HSA1424S1	HSA1430S1	HSA1436S1	HSA1442S1	HSA1448S1	HSA1460S1
Line voltage date (Volts-Phase-Hz)	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60	208/230-1-60
<sup>2</sup> Maximum overcurrent protection (MOCP) amps (unit) <sup>2</sup>	15	20	20	35	35	50	50
<sup>3</sup> Minimum circuit ampacity (MCA) (unit) <sup>3</sup>	9.7	13.6	13.7	22.2	21.6	30.6	32.2
Compressor	Rated Load Amps	7.2	10.3	10.1	16.7	15.2	23.7
	Locked Rotor Amps	47	60.2	67	93.5	96	157
Fan Motor	Full Load Amps	0.7	0.7	1.0	1.4	2.6	2.6

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

1. 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.

2. HACR type circuit breaker or fuse.

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

### NOTE:

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[www.marsdeliversratings.com](http://www.marsdeliversratings.com) or [www.AHRIdirectory.org](http://www.AHRIdirectory.org)

## SOUND RATINGS

Model	Octave Band Sound Power Levels dBA, re 10 <sup>-12</sup> Watts Center Frequency - HZ							¹Sound Rating Number (dBA)	²Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
HSA1418S1		61	68.0	71.5	66.0	57.0	50	74	67	62	56	53	42
HSA1424S1	56.0	62	66.5	71	66	60	55.0	74	67	62	56	53	42
HSA1430S1	56.0	64	69.5	70.0	65	59	52.5	74	67	62	56	53	42
HSA1436S1	59	68	71.5	68.5	66	61	54	75	68	63	57	54	43
HSA1442S1	62	71.0	74.5	72.5	70	63	55.5	78	71	66	60	57	45
HSA1448S1	61	70.5	75.5	73.0	70	64	56.0	79	72	67	61	58	47
HSA1460S1	61.5	70.0	73.0	71	71	68	63	79	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.

## ACCESSORIES

DESCRIPTION	WHERE USED	KIT NUMBER
Compressor Crankcase Heater	18, 24, 30 (36k only - factory installed)	93M04
Compressor Hard Start Kit	<i>Copeland</i>	24, 42, 48
	LG	18, 30, 36, 60
Compressor Sound Cover	All Models	18J42
Compressor Low Ambient Cut-Off	All Models	45F08
Freezestat	<i>3/8 in.</i>	All Models
Indoor Blower Off Delay Relay	All Models	58M81
Loss of Charge Kit	All Models	84M23
⁴Low Ambient Kit	All Models	54M89
Mild Weather Kit	All Models	11B97
Monitor Kit - Service Light	All Models	76F53
Outdoor Thermostat Kit	All Models	10Z23
Thermostat Mounting Box	All Models	31461
Unit Stand-Off Kit	All Models	94J45

NOTE: Crankcase Heater and Freezestat are recommended with Low Ambient Kit.



The logo for Comfort-Cire, featuring the brand name in a stylized, cursive blue font with a registered trademark symbol (®) at the end.

## TXV SUBSTITUTION - R-454B

Outdoor Unit		Outdoor Unit		Indoor TXV Furnished	Outdoor TXV Furnished
Model	Tons	Size	Tons		
18	1.5	42	3.5	26Z71	26Z70
		48	4	26Z71	26Z70
		49	4	26Z71	26Z70
		50/60	4/5	26Z71	26Z70
		51/61	4/5	26Z71	26Z70
		60	5	26Z72	26Z70
24	2	42	3.5	26Z71	26Z70
		48	4	26Z71	26Z70
		49	4	26Z71	26Z70
		50/60	4/5	26Z71	26Z70
		51/61	4/5	26Z71	26Z70
		60	5	26Z72	26Z70
30	2.5	42	3.5	26Z71	26Z70
		48	4	26Z71	26Z70
		49	4	26Z71	26Z70
		50/60	4/5	26Z71	26Z70
		51/61	4/5	26Z71	26Z70
		60	5	26Z72	26Z70
36	3	42	3.5	26Z71	26Z70
		48	4	26Z71	26Z70
		49	4	26Z71	26Z70
		50/60	4/5	26Z71	26Z70
		51/61	4/5	26Z71	26Z70
		60	5	26Z72	26Z70
42	3.5	24	2	26Z70	26Z71
		30	2.5	26Z70	26Z71
		30/36	2.5/3	26Z70	26Z71
		36	3	26Z70	26Z71
		60	5	26Z72	26Z71
48	4	30/36	2.5/3	26Z70	26Z71
		36	3	26Z70	26Z71
		60	5	26Z72	26Z71
60	5	50/60	4/5	56.5	26Z72
		51/61	4/5	56.5	26Z72

**TXV Ranges:**

26Z70 - 1.5 to 3 ton systems - Use on 3 ton (036) and lower systems.

26Z71 - 3.5-4 ton systems - Use on 4 ton (048) and down to 3.5 ton (042) systems.

26Z72 - 5 ton systems - Use on 5 ton (060) systems only.

## TXV USAGE

Size	Order Number
HSA1418S1	26Z70
HSA1424S1	26Z70
HSA1430S1	26Z70
HSA1436S1	26Z70
HSA1442S1	26Z71
HSA1448S1	26Z71
HSA1460S1	26Z72

*Note: All LE Series coils and air handlers are shipped with a factory installed TXV. In most cases, no substitution is needed.*

*If a different size TXV is required, it will be listed in the "TXV SUBSTITUTION" table by size. The correct TXV must be ordered separately and field installed.*

### AHRI STANDARD 210-240-2023:

Cooling or heating capacities are net values, including the effects of blower motor heat, and do not include supplementary heat.

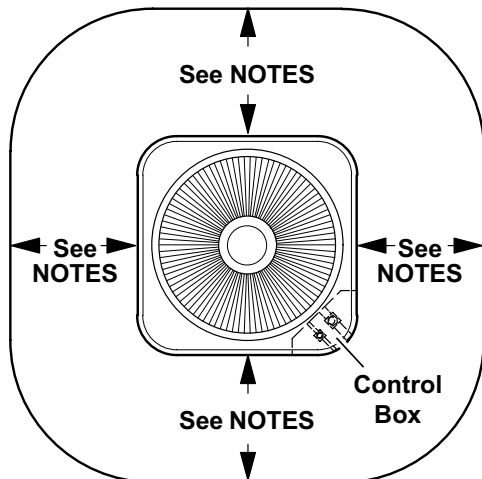
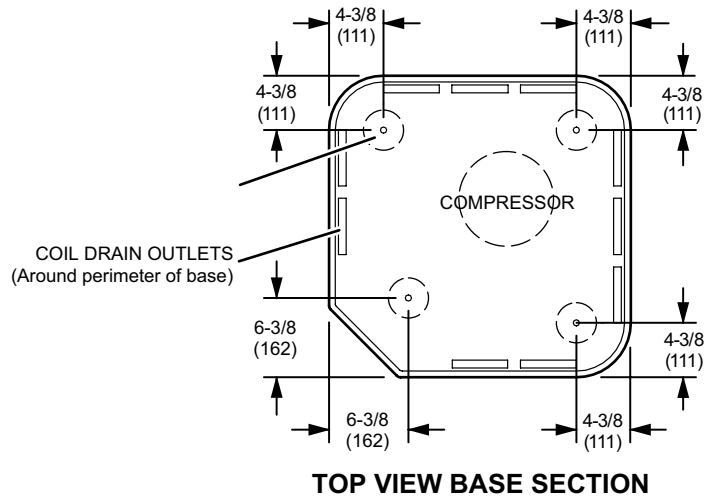
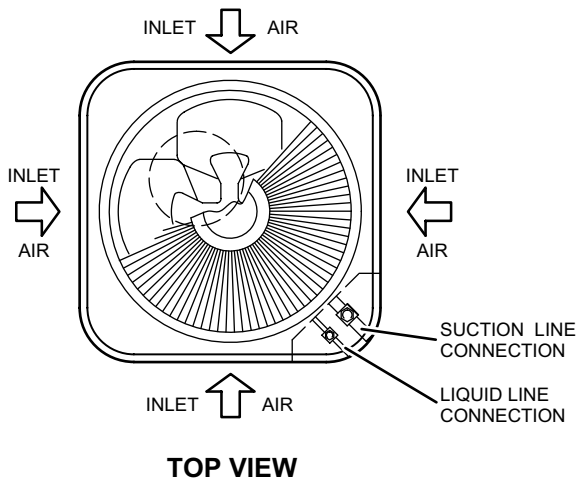
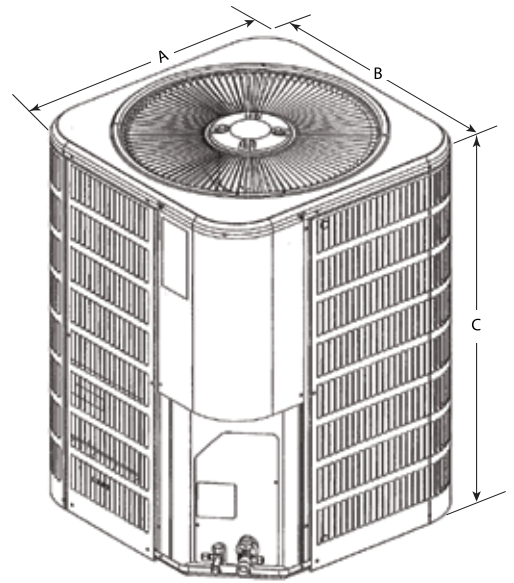
Power input is the total power input to the compressor(s) and fan(s), plus any controls and other items required as part of the system for normal operation.

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.

# DIMENSIONS

Model No.	Dimensions (inch)					
	A - Width (in.)	A - Width (mm.)	B - Depth (in.)	B - Depth (mm.)	C - Height (in.)	C - Height (mm.)
HSA1418S1	28-1/4	718	28-1/4	718	43-1/4	1099
HSA1424S1	28-1/4	718	28-1/4	718	43-1/4	1099
HSA1430S1	28-1/4	718	28-1/4	718	33-1/4	845
HSA1436S1	32-1/4	819	32-1/4	819	33-1/4	845
HSA1442S1	32-1/4	819	32-1/4	819	38-1/4	946
HSA1448S1	32-1/4	819	32-1/4	819	38-1/4	946
HSA1460S1	32-1/4	819	32-1/4	819	43-1/4	1099



## NOTES:

- Service Clearance – 30 in. (762 mm) on one of the sides adjacent to the Control Box.
- One of other three sides must be 36 in. (914 mm).
- One of the two remaining sides may be 12 in. (305 mm).
- The remaining side may be 6 in. (152 mm).
- 48 in. (1219 mm) clearance required on top of unit
- 24 in. (610 mm) required between two units



# HSA14\*\*S1

The logo for Comfort-Aire, featuring the brand name in a white, cursive script font with a registered trademark symbol.

"This product complies with all California product labeling laws including, but not limited to, the Safe Drinking Water and Toxic Enforcement Act of 1986, more commonly known as Proposition 65."

*Due to ongoing product improvements, specifications and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.*

*Third party incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.*