

HVAC concepts and definitions

Heat pumps and air conditioners

A heat pump (HP) is a high-performance air conditioner (AC) that also provides heat by using a valve to reverse the refrigeration cycle. HPs are usually unable to reach the heating or cooling extremes of dedicated ACs and furnaces, and are generally used in moderate climates. However, certain HPs can achieve the efficiencies of dedicated AC systems and are growing in popularity, encouraged in some areas by local subsidies and rebates aimed at reducing fossil fuel usage. Your contractor can help you decide what system is right for you.

Tonnage

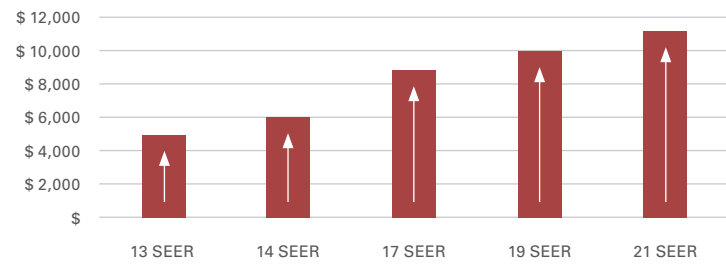
Tonnage is the measure of the cooling capacity, or the size, of an outdoor HVAC unit. Your contractor can recommend the appropriate tonnage based on the size and cooling needs of your home. Having the right size unit is critical to optimal comfort and performance.

Energy ratings and operational efficiencies

SEER
Seasonal Energy Efficiency Ratio (SEER) measures an HVAC unit's rate of cooling output for a typical cooling season against the electrical power consumed during that time period. The highest SEER ratings are given to the most energy-efficient cooling units.

AFUE
Annual Fuel Utilization Efficiency (AFUE) measures how efficiently a furnace converts gas to heat. This efficiency is expressed as a percentage. The closer this number is to 100 percent, the more efficient the furnace.

20-year average household savings by efficiency level



* Assumptions: 20-year average lifespan, three-ton unit, \$0.14/kWh. National average of unit operation is 2,100 hours.

Efficiency

Efficiency measures the input needed to achieve a certain output. Input is the amount of electrical power a HVAC system consumes to achieve its output. The output is the heating or cooling required.

Extremely efficient HVAC units usually cost more upfront than conventional units, but they generally achieve greater reductions in lifetime operating costs from reduced energy. Operating costs are directly affected by local utility rates. To understand when you'll start seeing the savings from a higher efficiency unit, we recommend buyers investigate a payback analysis based on their specific location.

To encourage energy conservation, many localities offer rebates on the purchase of higher efficiency equipment that may help defer the upfront cost and improve the payback. Check with your local utility provider as rebates vary across the country.

Features impacting comfort, efficiency, and performance in residential HVAC systems

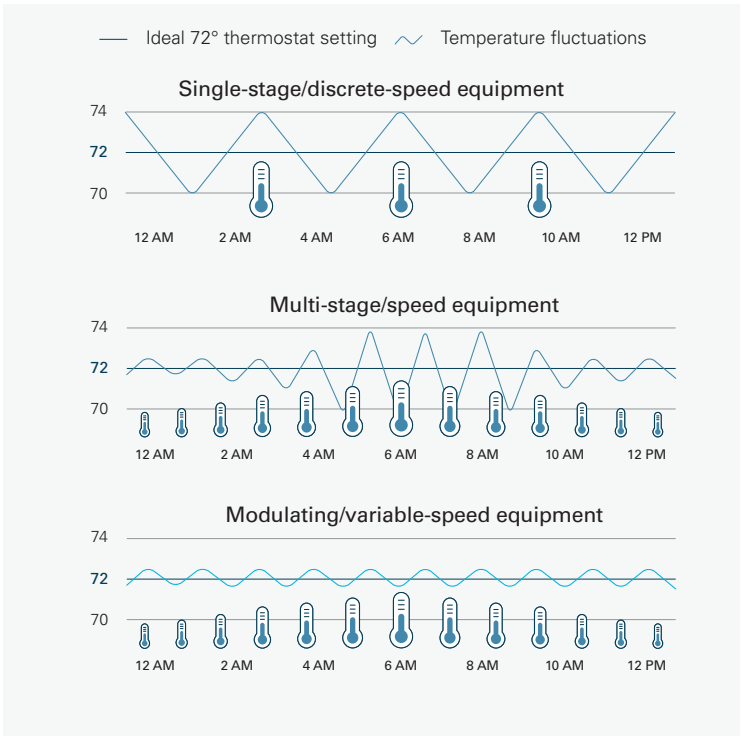
Staged vs. variable capacity or modulating cooling and heating

Single-stage operation means simply "on/off." Two-stage operation can be thought of as "low/high/off." Fully modulating or variable capacity means the unit can ramp up or down across the entire heating or cooling capacity range just like your foot on the gas pedal of a car so the unit operates at the exact point and power level needed. As shown in the illustration to the right, each incremental increase in number of stages allows for improved comfort and performance by minimizing temperature swings and the energy that must be used to overcome them. This contributes to better efficiency, the reduction of annual energy costs, and a more comfortable home.

Discrete-speed vs. variable-speed motors

Discrete-speed and variable-speed fan motors and their ability to control airflow can be thought of in a similar way to staged and modulating heating and cooling. Discrete-speed motors operate in an "on/off" or "low/med/high" fashion. Variable-speed motors, on the other hand, have the ability to dial in their operation to the exact speed needed, can consume less energy over time, and contribute to reduced noise levels. This provides for a more comfortable space and more efficient unit operation.

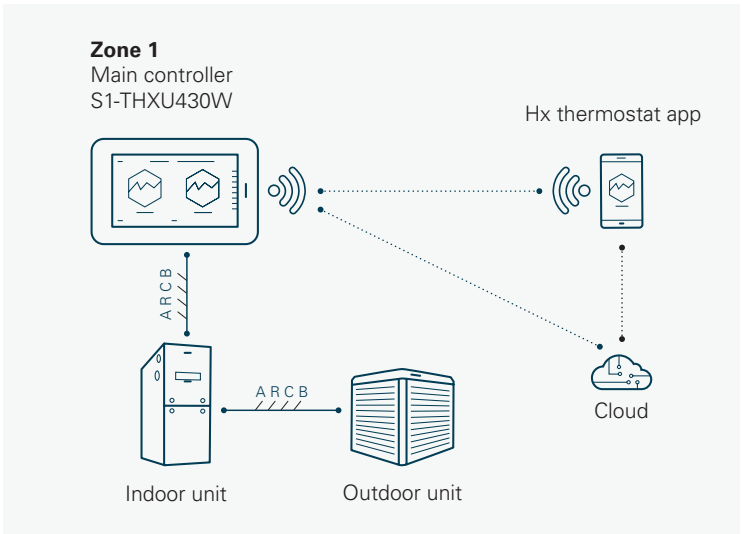
Equipment performance at 72-degree indoor setpoint



Communications and HVAC systems

Conventional, non-communicating systems operate with basic thermostats and staged/discrete-speed equipment. Though they have some limitations compared to communicating systems, they can adequately meet the comfort needs of a more upfront purchase cost-sensitive application.

Using communicating thermostats and room monitoring devices is the only way to take full advantage of the benefits of premium modulating/variable-speed HVAC equipment both in terms of comfort and higher efficiency that reduce your long-term operating costs. They also enable higher-level control capabilities such as zoning for improved comfort, convenient smart device control, and remote monitoring.



For more information visit colemanc.com

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*All warranties require online registration within 90 days of installation. Otherwise, warranties revert as follows:
Lifetime Compressor Limited Warranty – 10-year Compressor Limited Warranty; Lifetime Heat Exchanger Limited Warranty – 20-year Heat Exchanger Limited Warranty; 10-year Parts Limited Warranty – 5-year Parts Limited Warranty; 10-year Compressor Limited Warranty – 5-year Compressor Limited Warranty. Three-phase models have 5-year Compressor and 1-year Parts Limited Warranties. Three-phase models do not qualify for the 10-year Parts Limited Warranty.



Coleman® Residential Split Systems Homeowner buying guide

This guide helps you understand the basic differences across our systems and the value they bring for you so you can make a more informed purchase decision.



Outdoor products

You can mix and match indoor and outdoor equipment across tiers. For optimal performance, we recommend you pair outdoor and indoor equipment that have equivalent communication abilities.

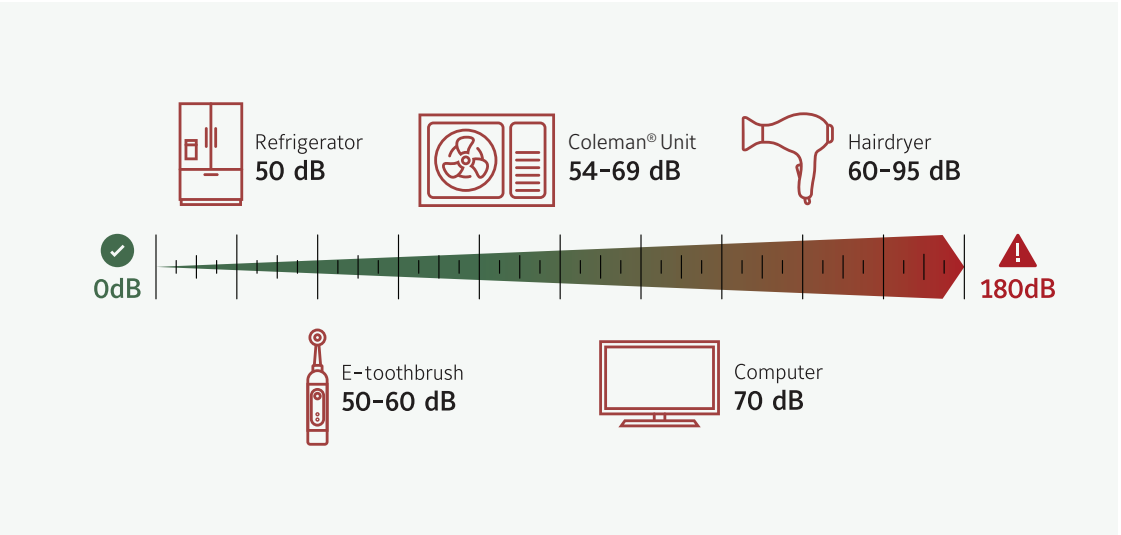
Air conditioners and heat pumps

Upfront Unit Cost	\$				\$\$\$\$
Platform	LX Series Standard efficiency	LX Series Improved efficiency	LX Series Higher efficiency	Echelon Series High-efficiency, two-stage units	Echelon Series High-efficiency, variable-capacity units
Efficiency*	AC = 14 SEER	17 SEER	17 SEER	Up to 19 SEER	Up to 21 SEER
	HP = 14 SEER 8.2 HSPF	Up to 16 SEER Up to 10 HSPF	Up to 18 SEER 16 SEER Up to 10.5 HSPF 10 HSPF	Up to 19 SEER Up to 10 HSPF	Up to 20 SEER Up to 11 HSPF
Cooling Stages	Single-stage	Single-stage	Two-stage (AC) Modulating (HP)	Two-stage	Variable capacity
Controls/ Communication	Conventional thermostat	Conventional thermostat	Conventional thermostat	Conventional, or communicating thermostat/sensors	Communicating thermostat/sensors
Comfort Technology**	Demand defrost (HP)	Demand defrost (HP)	Demand defrost (HP)	EcoTrak demand defrost (HP)	EcoTrak, Climate Set, demand defrost (HP)
Sound***	66dBA	Reduces noise levels to as low as 69dB	As low as 54dB	68dB WhisperDrive sound reduction	69dB WhisperDrive sound reduction
Warranties	Coleman® products have some of the strongest warranties in the industry. Our extended warranties can include coverage up to full unit replacement. Contact your contractor to discuss how an extended warranty can improve your peace of mind for a minimal upfront cost.				
Model Numbers for Installer Reference	AC = TW4, TC4, TC3, TF4, TF3	CC7	CC17	AC19	AC21
	HP = TE4, TH4	CH6	HMH7	HC19	HC20

* Minimum efficiency ratings available in your area may vary as dictated by regional standards.
** Refer to individual model literature for further explanation on the value of these features.
*** Values for high-stage cooling.






Sound levels in HVAC systems

Sound is generated by the HVAC equipment itself or the airflow reverberating through the ductwork of each system. However, the majority of obtrusive noise occurs when HVAC units are switched on and off. Modulating or variable-speed component units can reduce noise with their ramping ability instead of hard stops and starts and control the system with lower speeds to also reduce unwanted sound from the airflow.



Indoor products

Furnaces

Upfront Unit Cost	\$				\$\$\$\$			
Platform	LX	LX	Echelon	Echelon	LX	LX	Echelon	Echelon
Blower Motor	Standard-efficiency ECM, discrete multi-speed motor	Standard-efficiency ECM, discrete multi-speed motor	High-efficiency ECM, constant CFM, variable-speed motor	High-efficiency ECM, constant CFM, variable-speed motor	Standard-efficiency ECM, discrete multi-speed motor	Standard-efficiency ECM, discrete multi-speed motor	High-efficiency ECM, constant CFM, variable-speed motor	High-efficiency ECM, constant CFM, variable-speed motor
Heating Stages	1-stage	2-stage	2-stage	Fully modulating	1-stage	2-stage	2-stage	Fully modulating
Available Heating Sizes	40-130 MBH (60-100MBH ULNOx)	40-120MBH (60-100MBH ULNOx)	60-120MBH	60-120MBH	26-120 MBH (TM9E)	40-120MBH	40-120MBH	60-120MBH
Controls/Communication	Conventional thermostat		Conventional or communicating		Conventional thermostat		Conventional or communicating	
Gas Burner Efficiency*	80% AFUE	80% AFUE	80% AFUE	80% AFUE	Up to 95% AFUE 	Up to 96% AFUE 	Up to 96% AFUE 	Up to 98% AFUE  
Heat Exchanger	Non-condensing				Condensing			
Comfort Technology**			EcoTrak blower fine-tuning	EcoTrak blower fine-tuning			EcoTrak blower fine-tuning	EcoTrak blower fine-tuning
Sound	Good	Good	Better	Better	Good	Good	Better	Best
Warranties	Coleman® products have some of the strongest warranties in the industry. Our extended warranties can include coverage up to full unit replacement. Contact your contractor to discuss how an extended warranty can improve your peace of mind for a minimal upfront cost.							
Model Numbers	TM8E (Ultra-Low NOx TL8E)	TM8Y (Ultra-Low NOx TL9E)	TM8V	CPLC	TM9E	TM9Y	TM9V	CP9C

* Minimum efficiency ratings available in your area may vary as dictated by regional standards.
** Refer to individual model literature for further explanation on the value of these features.

Air handling units (modular blowers)

Upfront Unit Cost	\$			\$\$\$\$
Platform	LX Series		LX Series	Echelon Series
Efficiency	Air handlers partner with AC or HP outdoor units and, because of this, they do not have an independent efficiency rating. Speak to your contractor about pairing air handlers with ACs or heat pumps for optimal system efficiency.			
Blower Motor	Standard-efficiency, discrete multi-speed motor		High-efficiency, discrete multi-speed motor	High-efficiency, variable-speed motor
Controls/ Communications	Conventional thermostat		Conventional thermostat	Conventional or communicating thermostat/sensors
Comfort Technology	EcoTrak for the Echelon model only.			
Warranties	Coleman® products have some of the strongest warranties in the industry. Our extended warranties can include coverage up to full unit replacement. Contact your contractor to discuss how an extended warranty can improve your peace of mind for a minimal upfront cost.			
Model Numbers for Installer Reference	AP, MP		AE, ME	AVV, AVC, MVC

Thermostats and controls

Upfront Unit Cost	\$				\$\$\$\$
Platform	THE or LX series thermostats (any standard 24V)	Smart device accessibility (through Universal Adapter)	Hx™ 3 Touchscreen Thermostat	HX™ 3 Communicating Zoning System	
Primary Positioning	Optimized functionality to control temperature on your HVAC equipment.	Wider range of choice on control device with any 24V standard thermostat (or smart control device).	Complete control wherever you are. Works with most systems. Easy-access home and away modes. Intuitive, touch-based control. Exceptional energy savings. Always up to date.	By combining our award-winning variable capacity premium efficiency units with WhisperDrive technology and our Hx 3 communicating thermostats and sensors, you have the ability to minimize temperature swings in those rooms farther away from the primary thermostat, as well as set and consistently maintain different conditions in different rooms in your home.	



Indoor Air Quality (IAQ) products

Beyond just temperature, factors such as proper humidity levels and the minimization of allergens can affect the health of the air in your home. The Coleman® product portfolio provides a complete range of humidifiers, dehumidifiers, air filters, and ultraviolet air purifiers to enhance your HVAC system. All IAQ products come with a five-year limited warranty on parts.

Whole home air cleaners		Whole home humidifiers	
Media air cleaner	Media air cleaners fit virtually every need. Available in up to MERV 16, media air cleaners are an excellent choice for keeping high-efficiency furnaces and air handlers operating at peak performance. Media air cleaners effectively remove dust, pollen, fungi, mold and pet dander.	Bypass humidifier	Designed for small and large homes, this unit uses the HVAC system blower to move air through the humidifier. Recommended for homes up to 4,000 square feet.
Hybrid electronic air cleaner	Hybrid electronic air cleaners are available in MERV 16 and are highly effective at removing up to 99 percent of mold spores, viruses and bacteria. Hybrid air cleaners are easy to install, offering all the benefits of a media air cleaner and more.	Fan power humidifier	Uses an internal fan to move warm air from the furnace through the humidifier. Uses water more efficiently and is ideal for larger spaces. Recommended for homes up to 4,000 square feet.
Ultraviolet (UV) lights		Steam humidifier	For applications with milder winter climates and best for spaces where the units are in attics, crawl spaces and closets. Recommended for homes up to 5,000 square feet.
Whole home dehumidifiers		Energy recovery ventilators	
Our dehumidifiers support the removal of excess moisture from the air throughout your home.		Energy recovery ventilators improve indoor air quality by removing contaminants and off-gassing by taking stale indoor air and replacing it with fresh, conditioned and filtered outdoor air.	