

TEMPERATURE SENSORS IN HEAT PUMP APPLICATIONS

Background

Heat pumps continue to be a trend for efficient heating and cooling of air and liquid. In a heating application, heat pumps work by extracting heat from the surrounding air, ground or water and transferring it to a refrigerant coolant. The coolant is then compressed, which significantly increases its temperature, and transferred to the location designated for heat. Heat is extracted by either running air or water over the hot coolant. In the past, heat pumps were primarily used in air conditioners and freezers, but they are now increasingly being used for residential and commercial heating and to heat domestic hot water.

“Applying temperature sensors that are accurate, environmentally sealed, and reliable is desired to help control heat pump systems”

Heat pumps are more efficient than traditional electric heating because they use electricity to operate the compressor, pump and fans rather than a resistive heat source. Contributing to CO₂ emission reduction, heat pumps are more environmentally friendly than other sources of heat, such as furnaces or boilers.

For heat pumps to operate properly, their program logic controller (PLC) needs temperature inputs from multiple locations throughout the system. Depending on the heat pump's purpose, these could include temperature readings of outdoor air, indoor air and refrigerant at multiple locations.

Solution



Applying temperature sensors that are accurate, environmentally sealed and reliable is desired to help control heat pump systems.

Sensata Technologies, a world leader in sensors, has developed the 4000 offering for use in HVAC/R and heat pump applications. The 4000 features a highly accurate Class AA PT1000 RTD, IP69K rated sealing and a 100 nF capacitor for electrical noise reduction.



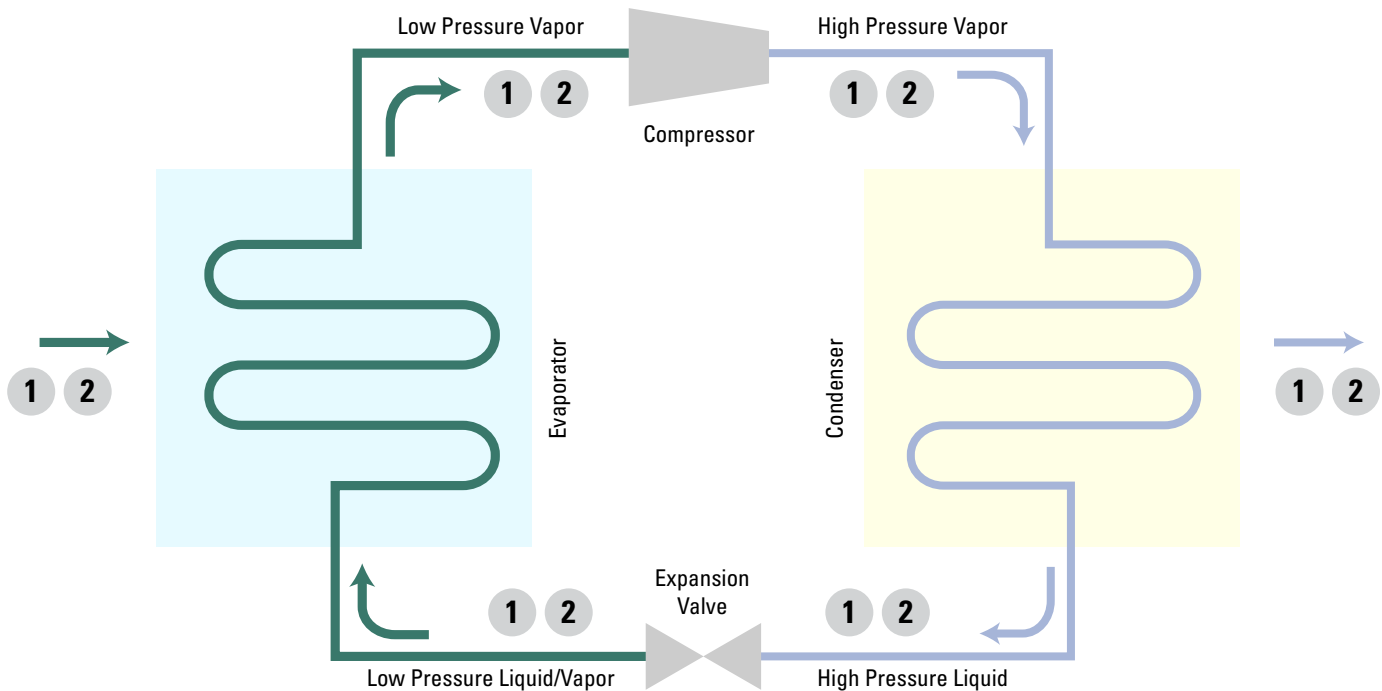


RECOMMENDED PRODUCTS

Reference on Diagram	Product	Features	Function	Brand
1	 3000 Series	<ul style="list-style-type: none"> Stainless steel probe housing Thermistor or RTD sensing technologies Optional threads available 	Monitor refrigerant and ambient temperatures	Sensata Technologies
2	 4000 Series	<ul style="list-style-type: none"> Highly accurate PT1000 RTD (Class AA) 5.9mm diameter brass probe IP69K -40 to 85°C operating temperature range 100nF Capacitor for electrical noise reduction 	Monitor refrigerant and ambient temperatures	Sensata Technologies



REFRIGERATION CYCLE FOR RESIDENTIAL AND COMMERCIAL AIR CONDITIONING AND REFRIGERATION SYSTEMS



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