APPLICATION NOTE

Sensata Technologies

PRESSURE SENSORS IN CO_2 (R744) HVAC/R APPLICATIONS

Background

Heating, ventilation, air conditioning and refrigeration (HVAC/R) systems use refrigerants to capture heat and then release it to another location by using phase changes, in which the refrigerant transitions from fluid to gas and vice versa. The ideal refrigerant would have acceptable thermodynamic properties, be low in toxicity and flammability, have low global warming potential (GWP) and be non-corrosive to the system components.

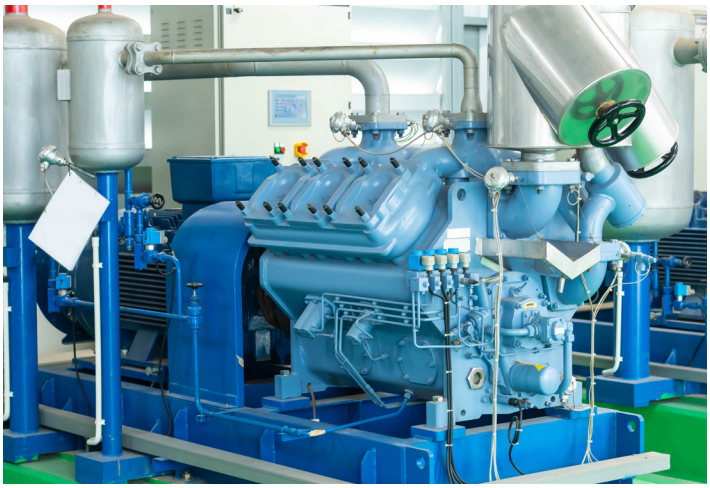
Many common refrigerants used today in HVAC/R systems are chlorofluorocarbons and hydrochlorofluorocarbons. Despite having many positive attributes for use in HVAC/R systems, they have a high global warming potential (GWP), which is affecting the environment through ozone depletion. CO_2, also known as R744, is a promising alternative, which is environmentally friendly with a GWP of 1 and is also non-toxic and non-flammable. One of the challenges HVAC/R companies face with implementation of CO_2 (R744) is that it has a working pressure much higher than the prior refrigerants.

Using a high-quality pressure sensor that is cost effective can help to increase energy efficiencies in the HVAC/R system.

Solution

Applying pressure sensors that can withstand high pressures, are accurate, environmentally sealed and reliable with long cycle life are desired to help control HVAC/R systems. Using a high-quality pressure sensor that is cost effective can help to increase energy efficiencies in the HVAC/R system.

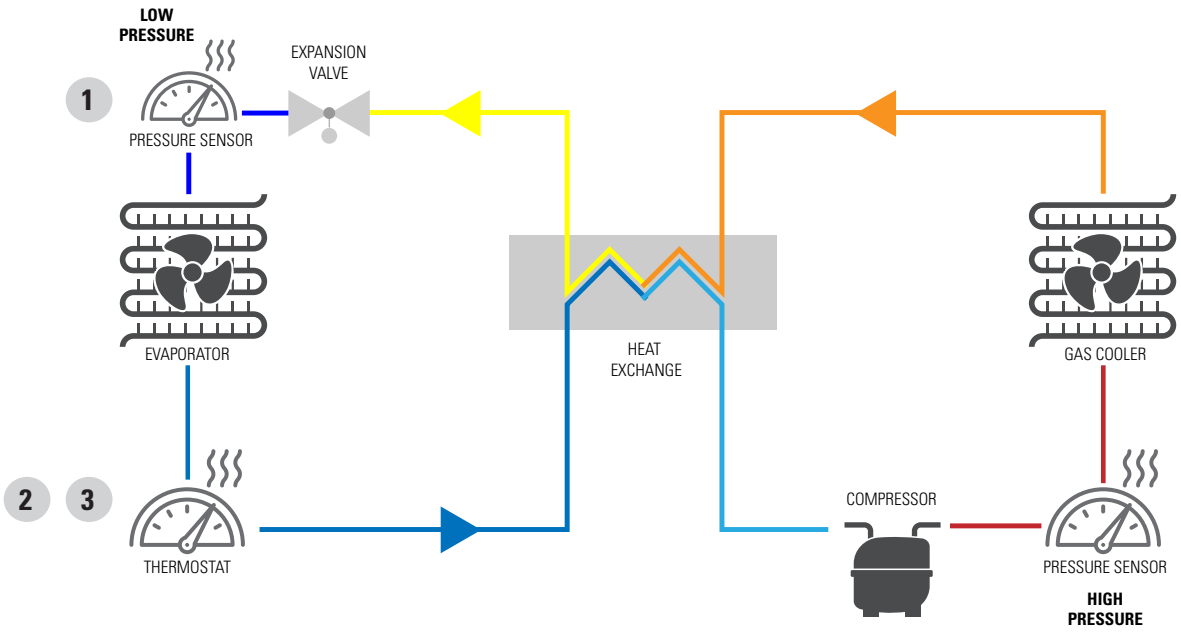
Sensata Technologies, a world leader in pressure sensors, has developed the PTE7100 offering for use in high pressure applications including CO_2 HVAC/R equipment. The PTE7100 features a hermetic pressure port design with multiple connectors and process port options, ±0.25% BFSL accuracy and operating media temperatures of -40°C to 125°C. The PTE7100 also features excellent thermal shock performance and cycle life of >10M cycles.



RECOMMENDED PRODUCTS

Reference on Diagram	Product	Features	Function	Brand
1	 PTE7100	• Operating pressure range: 0-50 bar to 0-600 bar (0-725psi to 0-8700 psi) • ±0.25% BFSL accuracy • IP65 – IP67 (depending on connector) • Multiple connector and port options • >10M cycle life	Monitor refrigerant pressure	Sensata Technologies
2	 1NT	• Wide range of standard configurations • Global agency approvals • Internal design for long life	Temperature limit switch	Sensata Technologies
3	 3NT	• Small and easy to mount • Fast thermal response • Innovative dry seal design • Reliable 100K cycle life	Temperature limit switch	Sensata Technologies

HVAC SYSTEM



Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

Rev:09/01/2020

CONTACT US

Americas
+1 (800) 350 2727
sensors@sensata.com
switches@sensata.com
Europe, Middle East & Africa
+359 (2) 809 1826
pressure-info.eu@sensata.com
Asia Pacific
sales.isasia@list.sensata.com
China +86 (21) 2306 1500
Japan +81 (45) 277 7117
Korea +82 (31) 601 2004
India +91 (80) 67920890
Rest of Asia +886 (2) 27602006 ext 2808