APPLICATION NOTE

Sensata Technologies

SENSATA SOLUTIONS FOR CHILLER & BOILER HVAC SYSTEMS

Background

HVAC is the Heating, Ventilating and Air Conditioning method for conditioning the indoor environment of a building, usually with the intent of keeping the occupant comfortable. A hydronic HVAC system utilizes water as the primary fluid to transfer energy throughout the building. Water has outstanding heat transfer characteristics, along with other benefits (i.e. – plentiful, non-toxic, "green," inexpensive) that make it ideal for this purpose.

To deliver heat, the system must have a heat source, such as a boiler, and to provide cooling, the system must have a cooling source, such as a chiller or cooling tower. The heated or cooled water is pumped throughout the building to air handling units or terminal units (or other similar), where it transfers energy with air from the ventilation system before it recirculates to the heating or cooling source. The conditioned air is then delivered to the room.

Our solutions range from the sensors that allow users to monitor their system to circuit breakers which protect the application

Solution

Sensata provides many solutions to monitor this process and make it as efficient as possible. Our solutions range from the sensors that allow users to monitor their system to circuit breakers which protect the application.

Pressure Sensors & Switches are vital to monitoring of HVAC systems. Sensata's pressure sensors provide solutions for sensing pressure of refrigerants as well as other liquid medias as they are carried throughout the system.

Temperature Sensors & Switches are equally as important to HVAC systems as they are used to monitor the temperature of liquid medias. Sensata' s temperature sensors allow for precise, accurate temperature control.

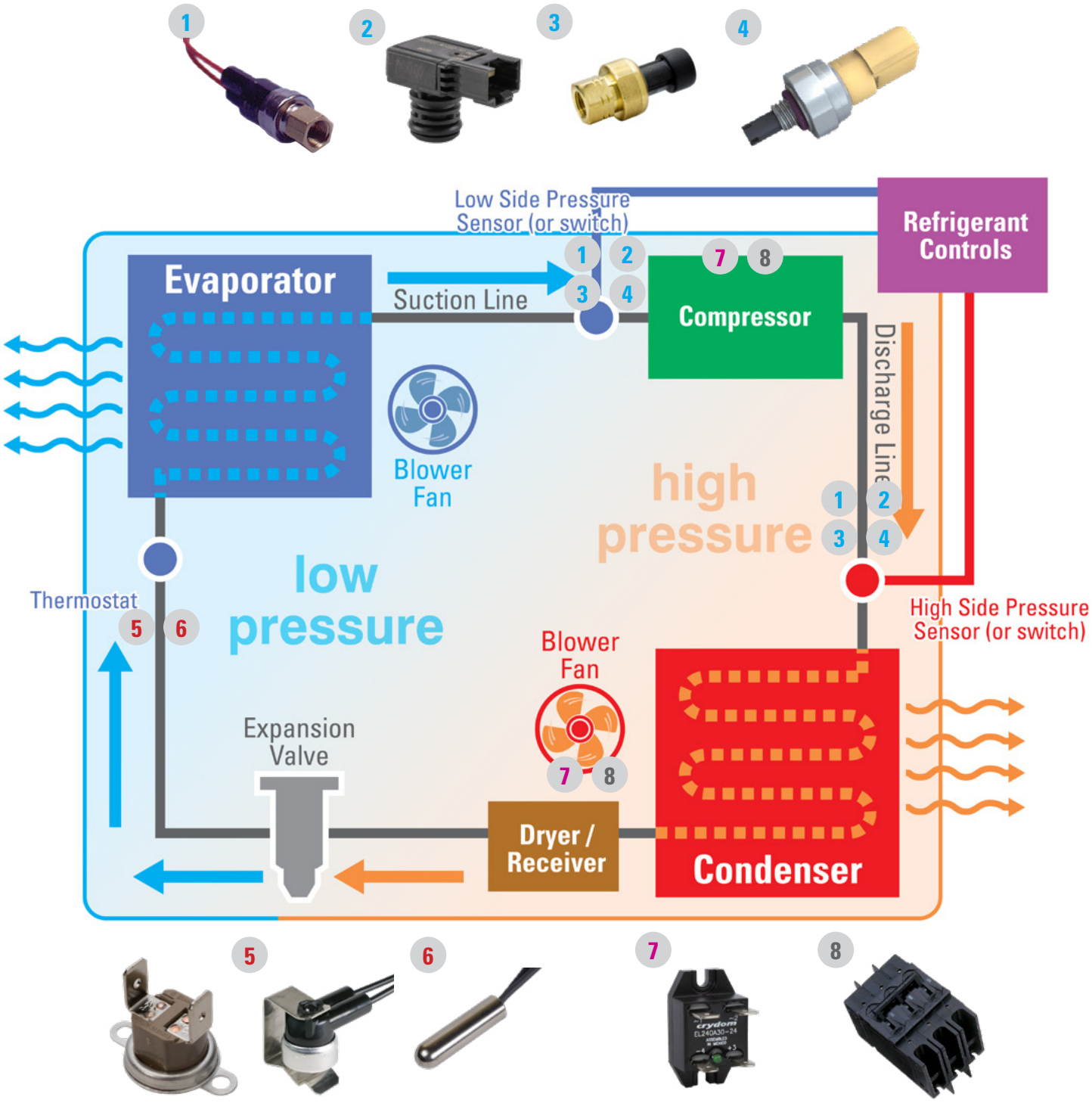
Switches & Relays are used to turn various parts of the HVAC system on an off during operation. Our relays allow long lasting, silent operation that reduce the need for maintenance and increase the comfort of end users.

Power Control components are used to protect HVAC systems from power surges. Senata's circuit breakers provide the high pulse tolerance and long time trip delay required to protect HVAC systems.

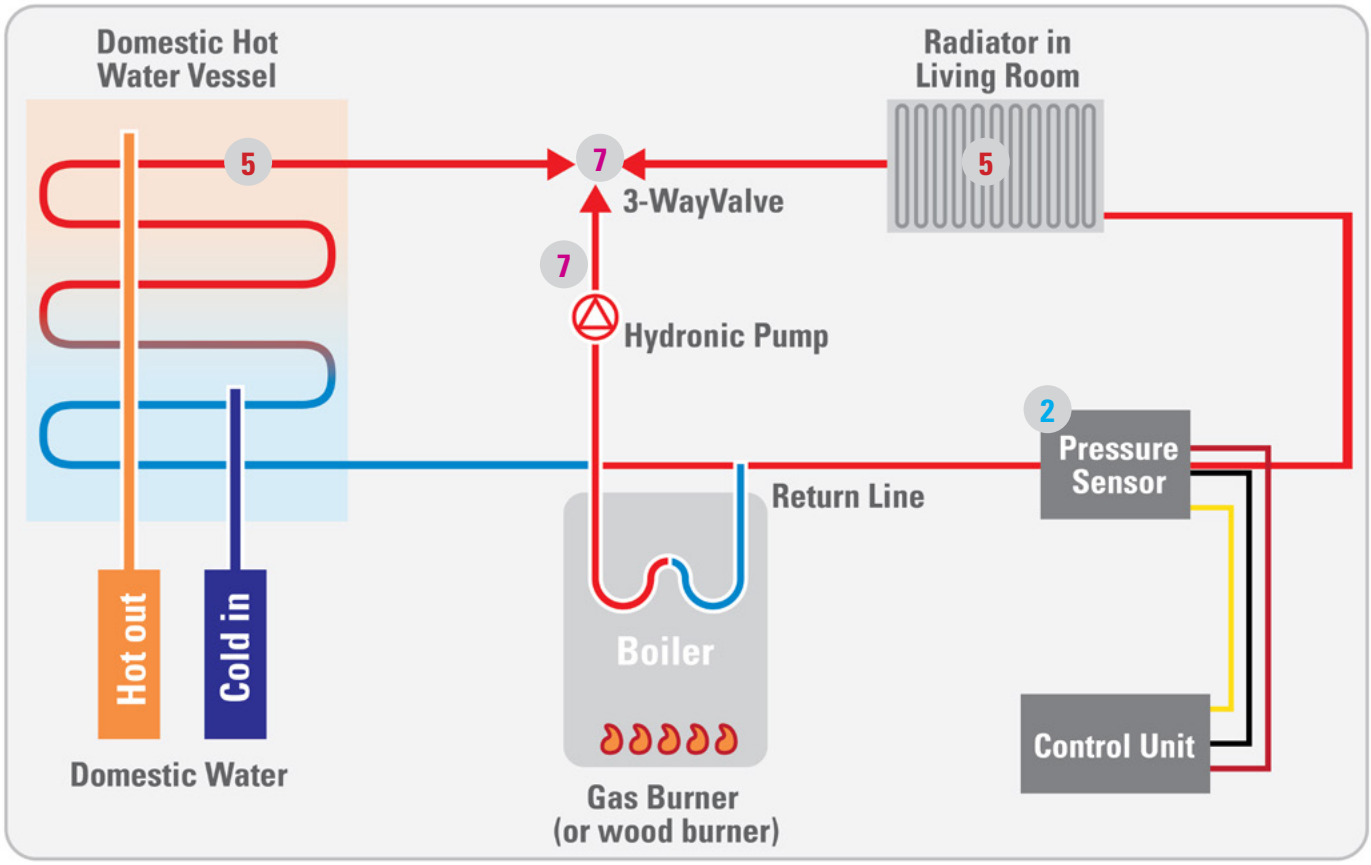
RECOMMENDED PRODUCTS

Reference on Diagram	Product	Function	Features	Brand
Pressure Sensors & Switches				
1	PS80 SERIES	The PS80 series is a pressure switch that can be used for monitoring the refrigerant line pressure on chiller and cold water generator applications. Its robust build allows use with a variety of refrigerants.	• High reliability • Enviormentally sealed leads • Fixed set points	Klixon
2	116CP SERIES	The 116CP series is a pressure sensor that specializes in sensing pressure with liquid media. In boiler applications it can be an inexpensive option for monitoring safe levels of hot water pressure due to its plastic housing.	• High accuracy +/-1.5%FS • REACH/RoHS compliant • 0-4 to 0-16 bar	Sensata Technologies
3	2CP5 SERIES	The 2CP5 series can monitor pressure between the pump and return water inlet allowing for more precise information to board controls.	• UL recognized • Overvoltage and short circuit protected • Accurate performance over wide temperatures	Sensata Technologies
4	112CP SERIES	The 112CP series is a combination of a pressure sensor and temperature sensor in one package. It reduces the need for multiple sensors in compact HVAC applications.	• 0 to 150 to 0 to 650 psi • -40°C to 135°C Temperature Rating • Precise superheat measurement	Sensata Technologies
Temperature				
5	1NT & 3NT SERIES	The 1NT & 3NT thermostats offer runaway thermal protection at any junction critical in HVAC applications. Due to the 3NT's mounting clip it is especially useful on in-room thermal units or on copper tubing where safety is required.	• -40°C to 240°C Temperature Rating • Multiple switch actions available • ISO9001: 2000 certification	Sensata Technologies
6	3000 SERIES	The 3000 series is a probe style temperature sensor that can deliver precise, accurate temperatures of liquid medias to board level controllers for optimal temperature control and efficiencies. Ideal for smart or green HVAC applications.	• Available as a RTD or Thermistor • -40°C to 125°C Temperature Rating • Stainless steel probe assembly	Sensata Technologies
Switches & Relays				
7	EL SERIES	The EL series is a solid state relay that offers the end-user silent operation of blowers or fans on the thermal units. Ideal for medical or hotel HVAC applications where silent operation can be critical.	• 21mm wide package • 10A & 30A @ 24 to 280 VAC • UL & cUL Recognized, CE & RoHS Compliant, TUV certified	Crydom
Power Controls				
8	209 SERIES	The 209 series circuit breaker is capable of meeting the unique trip point and trip time challenges of HVAC applications. A reduced trip point allows compliance to UL and NEC requirements while also preventing nuisance trips during motor start.	• UL489 Listed or UL 508 Recognized • 115% trip point capable for UL and NEC requirements • High pulse tolerance and long time delay	Airpax

HVAC SYSTEM


1
2
3
4
Low Side Pressure Sensor (or switch)
Refrigerant Controls
Evaporator
Suction Line
Compressor
Discharge Line
Blower Fan
high pressure
low pressure
Thermostat
5
6
High Side Pressure Sensor (or switch)
Blower Fan
Expansion Valve
7
8
Dryer / Receiver
Condenser

BOILERS SYSTEM



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