

# HVAC/R SOLUTIONS



## FEATURES

- One piece stainless steel construction - no internal seals or gaskets.
- High cyclical life (>100 million full cycles)
- Excellent long-term stability
- Compound ranges with linear output thru zero (i.e.: -14.7 to 100PSI, -14.7 to 500PSI)
- High level of EMI/RFI protection
- UL/cUL listed
- Hazardous area approvals for equipment installed in classified locations
- Pressure ports available: 1/8" NPT, 1/4" NPT, SAE4 male and female

## APPLICATIONS

- Refrigeration pump controls
- Chillers
- Freon and Ammonia cooling systems
- High Pressure Wells
- Boiler controller
- Environmental testing

**Situation:** Ammonia offers refrigeration pump and compressor manufacturers an improved efficiency over Freon based systems. However, the thermodynamic behavior of ammonia is very different from Freon. When the refrigeration pump turns on, the ammonia temperature rapidly changes from 100°F to -70°F or below. This accelerated change, along with the type of sensor diaphragm material affects the pressure transducer performance and ultimately the control system.

**Other Pressure Sensing Technologies:** O-ring sealed pressure sensors cannot withstand rapid thermal changes and over time the internal O-ring will fail. Fluid filled sensors suffer from freezing effects. This causes a rupture of the thin diaphragm membrane, which is welded in place to hold in the silicone oil-fill. Thin film sensors [based on 15-5 and 17-4PH stainless steels] that have their diaphragm welded to a pressure port, will undergo thermal stresses that will eventually crack the steel.

**The AST Solution: *Thermal Flash Protection***<sup>™</sup> is the technology applied by AST to reduce the effects of thermal flash transients when the media is Ammonia. First, AST utilizes its one-piece stainless steel sensing element with 316LSS wetted materials. This element is free of welds, oil-fill and internal O-rings. Next, a special non-clogging port design is used in order to minimize the effects of extreme temperature change. The sensor will recognize a uniform temperature as to maintain system stability. To conclude, *Thermal Flash Protection*<sup>™</sup> is the pressure sensing technology for ammonia refrigeration applications.



### AST SENSORS WITH DEPRESSOR PINS

AST offers sensors for the refrigeration market by utilizing an SAE4 (7/16-20 UNF) female pressure port that contains an internal

Schraeder depressor pin. This port allows the sensor to be easily removed or installed in service, additionally eliminating the need for adaptors.

