

## Freezer Temperature Monitoring Assembly

### Application

Research and development departments of pharmaceutical companies produce various types of samples that require long-term storage in a deep freezer at temperature of  $-80^{\circ}\text{C}$  to maintain their viability. The existing control system supplied by freezer manufacturers have a temperature control window of that may be too large to ensure the safety of the samples. If there is no temperature record to prove the temperature stability, and no warning system to alert staff in the event of an equipment or procedural failure resulting in higher or lower than acceptable temperatures in the freezers, the viability of the product may be called into question. Many companies have several freezers to monitor and require an automated solution.

### Challenge

Develop a freezer monitoring system that is accurate to within  $0.2^{\circ}\text{C}$ , is easy to install, and can deliver the required data to the facilities control system for monitoring. The sensor must be able to withstand ultra-cold temperatures down to  $-80^{\circ}\text{C}$ , the sensor must be waterproof, and be able to withstand repeated freeze thaw cycles.



**Freezer Temperature Monitor 23611**

### Solution

The engineers at Burns Engineering chose a simple yet robust and highly accurate design in the 23611. The engineers started by selecting the A02 RTD Temperature sensor. Designed for temperatures to  $-196^{\circ}\text{C}$  and specially designed for ultra-cold temperatures with a special sealing method, the A02 was a logical choice. The A02 is also one of the smaller sensors available making it easy to position and install. For the transmitter, the T55 transmitter was chosen to provide HART Communications capabilities and is “matched” to the sensor to improve accuracy. The 23611 can be installed by slipping the wire through the door seal or by drilling a hole through the freezer and inserting the sensor. The transmitter is housed in a waterproof junction box that can be attached with four screws to the exterior of the freezer.

More information is available about the 23611 on our website in the cryogenic sensor section.