

SENSING DEVICES LTD

# Traceability of SDL Detectors to National Standards



At all stages of SDL's manufacture of ceramic wire wound platinum resistance detectors:

1. Approval of platinum alpha coil wire
2. Adjustment of Pt coil to the required value
3. Final selection of detectors to their required tolerance

detectors are checked against standards that have been calibrated in SDL's own, on-site, UKAS accredited laboratory, UKAS Laboratory No. 0171,

## PROCEDURES

### Approval of platinum alpha coil wire

For the approval of the platinum alpha coil wire, the incoming wire is quarantined until the wire has been approved. The approval procedure involves the production of a defined number of parts finished and completely finished detectors of a variety of sizes representative of the SDL detector range.

These samples are then calibrated at 0 & 100°C and their alpha ( $\alpha$ ) value calculated to decide if the wire conforms to SDL's purchasing requirement, which is considerably tighter than required by IEC60751;2008, for example.

### Adjustment & final selection of detectors in production

At both these stages, the detectors are checked, at room temperature, in a bridge circuit against standard detectors whose  $R_0$  &  $\alpha$  values have been determined in the UKAS laboratory, in baths, by comparison to a Standard Platinum Resistance Thermometer (SPRT).

Additionally, detectors to tolerance Class W0.15, or better, are checked at 115°C to verify their conformity to the required tolerance class.

The SPRT is calibrated every 2 months in a water Triple Point Cell (0.010°C) and its resistance at this temperature is redefined. The water Triple Point Cell itself has direct traceability to National Standards.

The detector standards used for both these controls are recalibrated periodically to ensure their value remains stable. All standards are systematically re-calibrated after 6 months, but frequently used standards are re-calibrated more frequently. Additionally, a cross-check of the standards being used is made on a daily basis, and any deviating standards are immediately re-calibrated and replaced if necessary.

**For more information, please contact our technical team on +44 (0) 1704 546161.**