

TECH NOTE

TN-108 – Thermal Expansion

Engineering thermoplastics have significantly higher coefficients of thermal expansion than metals. In applications where ERECTA SWITCH components are installed in metal structures or alongside metal hardware, differential thermal expansion must be considered.

Polypropylene expands approximately 4–5 times more per degree of temperature change than steel. For sensor stems passing through metal bulkheads or covers, this differential expansion can create mechanical stress at the mounting interface if the assembly is rigidly clamped.

To accommodate thermal expansion in installations subject to wide temperature swings, avoid rigid clamping of plastic stems against metal structures. The ERECTA SWITCH flange nut and O-ring mounting system inherently accommodates minor axial movement. Do not over-tighten jam nuts or clamps in high-thermal-cycle applications.

Sensor leadwires should also have sufficient slack to accommodate movement of the switch assembly relative to fixed conduit or junction boxes. A drip loop in the leadwire at the point of entry to the switch housing is good practice.

Design Consideration

For installations with temperature excursions greater than 50°C, consult Compac Engineering regarding stem length changes and mounting interface design. High-temperature cycling can cause loosening of threaded joints in dissimilar-material assemblies.