5. Temperature Characteristics

5.1. Compensated Temperature Range

Compensated temperature range is the temperature range within which the rated output and the zero balance are compensated to meet load cell specifications.

5.2. Safe Temperature Range

Safe temperature range is the temperature range within which a load cell can be used without permanent damage

5.3. Temperature Effect On Zero Balance

$$\text{Temperature Effect On Zero Balance} = \frac{\frac{\theta_{oa} - \theta_{ob}}{T_a - T_b}}{\text{Rated Output}} \times 100$$

(θ_{oa}, θ_{ob} : Output at each temperature when there is no load)

(T_a, T_b : Testing temperatures)

5.4. Temperature Effect On Rated Output

$$\text{Temperature Effect On Rated Output} = \frac{\frac{\theta_{fa} - \theta_{fb}}{T_a - T_b}}{\text{Rated Output}} \times 100$$

(θ_{fa}, θ_{fb} : Output at each temperature when there is a load of rated capacity)

(T_a, T_b : Testing temperatures)

Both the temperature effect on zero balance and the temperature effect on rated output

indicate errors in load cell characteristics caused by temperature changes. Although there are no OIML regulations governing the effect of temperature on the rated output, the effect has to be within the error range shown in Figure 3.5 between –10 °C and +40 °C.