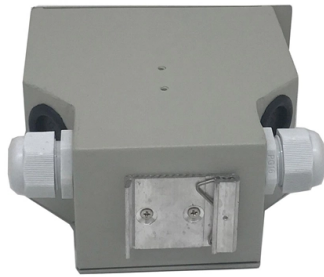


The values of the fiber optic sensor are very small



Article Overview

A small fiber optic sensor value usually indicates weak light modulation, misalignment, or signal loss in the fiber or sensor system.

Common Causes of Low Sensor Values

1. **Misalignment or Positioning Issues** Fiber optic sensors rely on precise alignment between the light source, fiber, and detector. If the fiber tip is not properly positioned relative to the target or reflective surface, the amount of light reaching the detector decreases, resulting in a low sensor value .
2. **Fiber Attenuation or Damage** Optical fibers can experience signal loss due to bending, micro-cracks, or contamination on the fiber surface. Excessive bending or poor-quality fiber can reduce light intensity, lowering the sensor output .
3. **Weak Light Source or Detector Sensitivity** The sensor's light source may be too weak, or the detector may not be sensitive enough for the application. Over time, LEDs or laser diodes can degrade, reducing the signal strength .
4. **Environmental Factors** Dust, dirt, or moisture on the fiber or target can scatter or absorb light. High temperatures or vibrations may also affect the fiber's optical properties, especially in intrinsic sensors where the fiber itself is the sensing element .
5. **Sensor Type and Configuration** Intrinsic sensors measure changes directly in the fiber, while extrinsic sensors rely on external modulation. If the sensor is not properly configured for the measured parameter (e.g., strain, temperature, or pressure), the output may appear too small .

Solutions and Recommendations...

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