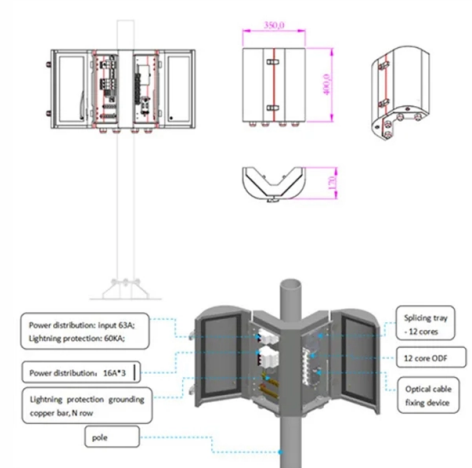


How to use fiber optic sensors and amplifiers



Overview

Fiber Optic Amplifiers Tri-Tronics fiber optic amplifiers deliver precision, reliability, and flexibility for demanding sensing applications.

Key Takeaways

A fiber optic sensor amplifier detects objects by transmitting light through a fiber and amplifying the received signal, with setup involving proper fiber insertion, alignment, and threshold adjustment.

- **Installation and Fiber Connection**
- **Mount the Amplifier:** Secure the amplifier unit in a stable location. Push it forward carefully and avoid forcing the rear hook to prevent damage .
- **Insert Fiber Cables:**
- Insert single-core fiber into the beam-emitting inlet.
- Insert multi-core fiber into the beam-receiving inlet.
- Ensure fibers are fully seated until the lock lever stops; improper insertion reduces sensing range .
- Avoid bending flexible fibers inside the amplifier during insertion.

- **Optional Cascading:** Up to five or more amplifiers can be connected in cascade if needed, using compatible quick-connection cables .

Power and Signal Setup

- **Power On:** When the amplifier is powered, light emission timing is automatically set to prevent interference .

- **Digital Display:** Most amplifiers feature a digital LED display showing incident light intensity and threshold values .

- **Full-Auto Teaching:**

- Place the fiber within the sensing range.

- Press the MODE key to activate the TEACH function.

- Use the Jog switch for at least 0.5 seconds while the object moves through the sensing area.

- The amplifier samples the incident light intensity and sets the threshold at the midpoint between object-present and object-absent conditions .

- **Fine Adjustment:** Adjust the threshold manually using the Jog switch when the ADJ indicator lights up. Turning the switch to '+' increases the threshold (reduces sensitivity), and pressing confirms the setting .

Operational Tips

- **Alignment:** Ensure the fiber is properly aligned with the target object for accurate detection. Misalignment can reduce sensing accuracy .

- **Non-contact Sensing:** Fiber sensors detect objects without physical contact, making them suitable for delicate or moving items .

- **Environmental Considerations:** Fiber sensors are resistant to temperature, vibration, shock, water, and electrical noise, but always verify installation conditions for optimal performance .

- **Maintenance:** Keep fibers clean and avoid sharp bends to maintain signal integrity. Check the digital display periodically to ensure stable sensing.

Applications

Fiber optic sensor amplifiers are widely used for object detection, counting, and position control in compact spaces or harsh environments. They are ideal for detecting a variety of materials, including glass, plastic, wood, and liquids, due to their optical sensing principle . By following proper installation, fiber insertion, and threshold adjustment procedures, a fiber optic sensor amplifier can provide high-accuracy, fast-response, and reliable detection in industrial and automation applications .

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