Inspextor Pro

Shade Automation Control Narrative

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System Overview

The Shade Control System is designed to automate window shades based on environmental conditions to maintain optimal indoor lighting levels, minimize heat gain, and improve energy efficiency. The system integrates multiple sensors, including daylight sensors, a temperature sensor, and an occupancy sensor. A wall-mounted switch is provided for manual override, allowing users to control the shades directly.

Components

1. **Daylight Sensor (Indoor):** Measures the light levels inside the room.

2. **Window Daylight Sensor:** Measures the light levels between the window and the shade.

3. **Temperature Sensor:** Measures the ambient temperature within the room.

4. **Occupancy Sensor:** Detects the presence of occupants in the room.

5. **Wall Switch:** Allows manual control of shades.

6. **Shade Motor Controller:** Controls the movement of the shades (up/down).

7**. Central Control Unit:** Processes sensor data and executes control logic.

Operational Modes

Automatic Mode: Operates based on sensor data to maintain specified environmental conditions.

Manual Override Mode: Allows users to manually adjust shades using the wall switch.

Sequence of Operations

1. Initialization

- System initializes upon startup, calibrating all sensors and establishing default settings.
- Default settings include a target foot-candle level of 50 and a temperature threshold of 25°C.

2. Automatic Mode Operation

Occupancy Detection:
- If the occupancy sensor detects no presence for 15 minutes, shades are set to a default position (e.g., fully open).
- When occupancy is detected, the system engages in active monitoring and control.

Light Level Control:
- The indoor daylight sensor continuously measures light levels.
- If the indoor light level is below the target foot-candle level, and the window daylight sensor indicates sufficient daylight, shades are raised incrementally to allow more light.
- If the indoor light level exceeds the target, shades are lowered incrementally to reduce excess light.

Temperature Control:
- The temperature sensor continuously measures room temperature.
- If the room temperature exceeds 25°C and the window daylight sensor detects high light levels, shades are lowered to reduce heat gain.
- If the room temperature is below 25°C, shades are adjusted to optimize light and thermal comfort.

3. Manual Override Mode

Wall Switch Control:
- The wall switch allows users to manually control shade positions, with options for up, down, and stop.
- Activating the wall switch disables automatic adjustments temporarily, giving users priority control.
- The system resumes automatic mode after a specified duration of inactivity (e.g., 30 minutes) to ensure continued energy efficiency.

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Further Reading

The MHTi-Appliance is now operational in its application and is now ready for the Installers/Commissioning Agents to document and commission this instance of MHT's PoE Solution. If the reader is looking for further understanding, please see the links below for further information of about the Inspextor system.

Technical Articles:
https://mhtlightinghelp.zendesk.com/hc/en-us

MHT Technologies:
https://mht-technologies.com/

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