LOAD TECH DEVICES

SS05 Seismic Switch
Operating Manual

Load Tech Devices LLC
SS05 Seismic Switch

The development of Solid-State accelerometers has made possible a more robust and stable seismic switch, specifically designed for the protection and control of elevators.

The **SS05 Seismic Switch conforms to ASME STD A17.5 Certified to CSA STD C22.2# B44.1**, ensuring reliable performance and adherence to safety requirements.

Model: SS05

- **LCD Touch Display**
- **Built-in Test and Reset Buttons**
- **Built-in Indicator LEDs**
- **Battery Backup Connector Included**
- **No Periodic Calibration Required**
- **Fail-Safe Operation**

Theory of Operation

The **SS05 Seismic Switch** incorporates a three-axis accelerometer, designed to detect movement in both the vertical axis and horizontal plane. This sensor is a monolithic integrated circuit, which includes a polysilicon surface-micromachined sensor and signal conditioning circuitry, ensuring precise seismic event detection.

The sensor's output is processed by an on-board microprocessor, where the signals are filtered and recorded. When a seismic event is detected, the switch generates an output signal.

Self-Test Feature

The self-test feature is integrated and does not require any physical movement of the sensor. When the Test button is pressed, an electrostatic force is applied to the accelerometer beam. This causes a 10% deflection of the beam, which is enough to trigger an output and verify the sensor's functionality. The test can be performed without dismounting or physically moving the switch.

Model SS05

Specifications

- Triggers at 0.145 g in vertical axis or horizontal plane
- Operates on elevator 24 VDC power (12-32 VDC)
- Operating Current: 80 mA
- Relay Contact Rating: 1.0 A at 30 VDC, 0.5 A at 125 VAC
- Bandwidth: < 1 hz to 25 hz

Installation

Mounting the SS05 Seismic Switch

1. **Positioning**: The SS05 should be mounted flat on the machine room floor using the provided ¼" anchors.

2. **Drilling Instructions**:
   Important: Do not drill holes while the SS05 is in place. First, mark the locations for the holes, then remove the SS05 before drilling.

Electrical Connections

All electrical connections should be made at the terminal strip on the board. The following terminals should be connected:

- **P**: V+ (12-32 VDC)
- **G**: VC (Ground)
- **NO**: Normally Open Contact (for audible or visual notification)
- **C**: Relay Common
- **NC**: Normally Closed Contact (Seismic Input on the Elevator Controller)

Additional Installation Notes

1. **Power Supply**:
   The SS05 requires a 12-32 Volt DC supply. If the elevator controller does not have this voltage, a separate power supply must be used (1/4 Amp at 24 Volts or 6 Watts).
   In multi-elevator systems, use group power to supply the SS05. This ensures that turning off individual controllers won't trigger seismic operation in other controllers.

2. **Fail-Safe Operation**:
   The SS05 operates in Fail-Safe mode. When powered up and not tripped, the NO and NC contacts are in their standard positions. If the switch loses power or receives a trip signal, the NO contact will close, and the NC contact will open.
   - **Maintaining Fail-Safe Capability**: Connect the NC contact to the Seismic Input on the elevator controller. If the elevator controller's Seismic Input logic is reversed, it must be inverted to work with the NC contact on the SS05. Contact the elevator controller's manufacturer for the correct procedure to invert the Seismic Input.

3. **Non-Volatile Mode Setup**:
   If the elevator controller cannot store its seismic state, the SS05 can be set to Non-Volatile Mode, using the buttons on the SS05's PCB (not on the LCD touchscreen).
   - **Setting to Non-Volatile Mode**:
     With the power off, press and hold the TEST button while powering on the SS05. Continue holding the TEST button for five seconds until the TRIP LED lights up. The SS05 will now operate in Non-Volatile Mode.
   - **Reverting to Volatile Mode**:
     To switch back to Volatile Mode, use the same process but hold the TEST button for three seconds, release it, and then immediately press the RESET button for two seconds. The SS05 will now be in its default Volatile Mode.

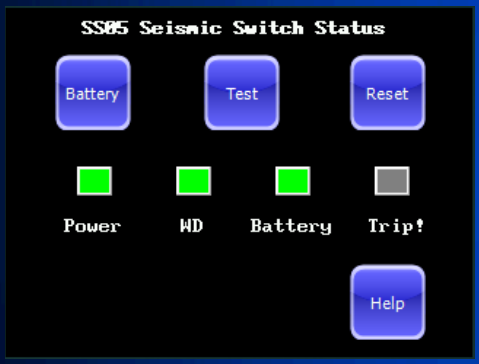
4. **Battery Backup**:
   To use an optional battery backup, connect a 9-volt non-rechargeable lithium battery to the battery connector provided. Alternatively, a 9-volt alkaline battery can be used.
   Note: Check the battery quarterly for optimal performance.

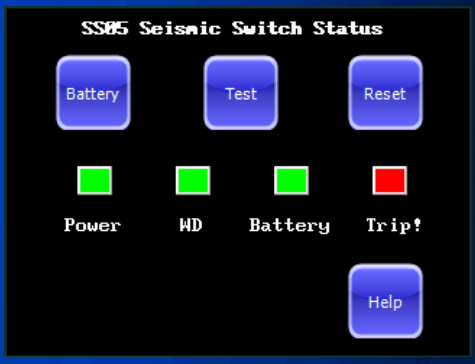
Testing

On the Touchscreen

1. **Accessing the Status Screen**:
    - If the touchscreen is blank, touch the center of the screen to bring up the **Status Screen**.
    - If the **Battery** or **Help Screen** is displayed, touch the **Status Button** to return to the **Status Screen**.

2. **Testing Procedure**:
    - In the **Status Screen**, verify that the **Trip Box** is not red.
    - **Test**: Briefly touch the **Test Button**. The **Trip Box** should turn red, and the relay will drop.
    - **Reset**: Briefly touch the **Reset Button**. The **Trip Box** should no longer be red, and the relay will pick.





On the SS05 Board

1. **Indicator LEDs**:
    - Ensure that the **Green Power LED** and the **Green Watchdog LED** are both lit.
    - The **Trip LED** should not be lit under normal operation.

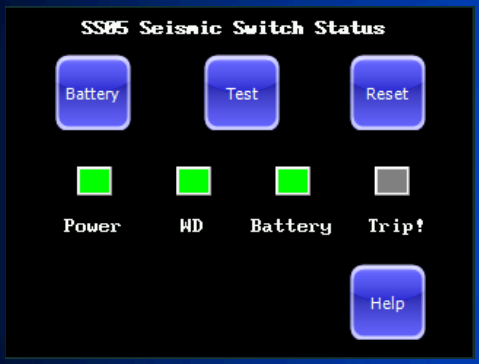
2. **Testing Procedure**:
    - **Test**: Briefly press the **TEST Button** on the SS05 board. The **TRIP LED** should light up, and the relay will drop.
    - **Reset**: Briefly press the **RESET Button**. The **TRIP LED** should turn off, and the relay will pick.

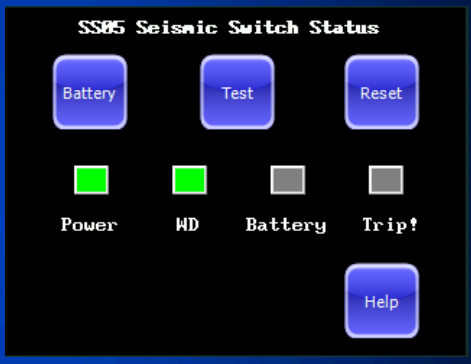
Battery Health

Checking the Battery Voltage

1. **Accessing Battery Information**:
    - In the **Status Screen**, touch the **Battery Button** to display the battery voltage.

2. **Battery Status Indicators**:
    - If the voltage is above 6 volts, the **Battery Status** will display "**Normal**," and the **Battery Box** on the **Status Screen** will appear green.
    - If the voltage is below 6 volts, the **Battery Status** will display "**Replace**," and the **Battery Box** on the **Status Screen** will no longer be green.





Troubleshooting

Touch the **Help Button** on the **Status Screen** for troubleshooting or to learn more.

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