



DSD-060 EARTHQUAKE SHUTDOWN UNIT



DESCRIPTION

DATAKOM DSD-060 Earthquake Shutdown Device is a high-tech unit which detects seismic acceleration occurred during an earthquake and generates control signals to shut down any critical devices such as generators, elevators, valves and industrial equipment. In this way it is possible to minimize the probable damage that occurs after an earthquake.

DSD-060 is a very cost effective device for shutdown applications. The device is based on very sensitive silicon micromachined acceleration sensors. It is lightweight, small, maintenance free and capable of performing self-test. The seismic properties of the device are conformal to ANSI Z.21-70 (1981) and ASCE 25-97 standards. The unit is tested and approved by the Turkish Standards Institute and the Bosphorus University-Earthquake Engineering Department.

The unit is powered with 12 or 24 V-DC.

INPUTS AND OUTPUTS

DC SUPPLY: The positive (+) and negative (-) terminals of the DC Supply shall be connected to these terminals. Be careful for the polarization, in case of polarity error the unit will not operate.

S1 and S4: The unit closes this contact in weak motions. The contact opens when the unit is reset. Normally open free contact is provided. Relay contact rating is 0.5A/28V-DC. Overcurrent protection is provided.

K1 and K4: The unit closes this contact in strong motions. The contact opens when the unit is reset. Normally open free contact is provided. Relay contact rating is 0.5A/28V-DC. Overcurrent protection is provided.

CONTROLS AND ADJUSTMENTS

RESET: This switch sets the unit to the initial position, opens the relay contacts and starts the self-test procedure.

SENSITIVITY ADJUSTMENT: It defines the seismic detection sensitivity. The adjustment range is between 0.10g and 0.25g. It is not allowed to make any adjustment by the user.

SEISMIC SENSOR SPECIFICATIONS

The DSD-060 integrates dual axis, high sensitivity acceleration sensors. The unit is maintenance free and capable of making self-test.

STRONG MOTION DETECTOR:

This detector conforms to ANSI Z21.80 (1981) and ASCE 25-97 specifications.

Detection specifications:

1. The device **actuates** when subjected to a sinusoidal oscillation having a peak acceleration of 0.30g (2.94m/s^2) and a period of 0.4 second.
2. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.08g (0.78m/s^2) and a period of 1.0 second.
3. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.08g (0.78m/s^2) and a period of 0.4 second.
4. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.40g (3.92m/s^2) and a period of 0.1 second.

The unit actuates in 1 second after the acceleration is applied.

The detection limits apply to any acceleration direction situated on the plane defined by the two sensitivity axis. The device is insensitive to the third axis.

When this detector actuates:

- STRONG MOTION led is on during detection,
- Red alarm led turns on,
- K1-K4 contact closes.

WEAK MOTION DETECTOR:

Detection specifications:

1. The device **actuates** when subjected to a sinusoidal oscillation having a peak acceleration of 0.10g (0.98m/s^2) and a period of 0.4 second.
2. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.03g (0.29m/s^2) and a period of 1.0 second.
3. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.03g (0.29m/s^2) and a period of 0.4 second.
4. The device **does not actuate** when subjected to a sinusoidal oscillation having a peak acceleration of 0.14g (1.37m/s^2) and a period of 0.1 second.

The unit actuates in 1 second after the acceleration is applied.

The detection limits apply to any acceleration direction situated on the plane defined by the two sensitivity axis. The device is insensitive to the third axis.

When this detector actuates:

- WEAK MOTION led is on during detection,
- Yellow alarm led turns on,
- S1-S4 contact closes.

DISPLAYS

The unit makes a self-test at power-on or reset.

If the self test fails, OPERATIONAL, WEAK MOTION and STRONG MOTION leds will flash, YELLOW ALARM and RED ALARM leds turn on, relay outputs close.

OPERATIONAL: It lights on continuously for 15 seconds after power-up or reset. It flashes while the unit is operational.

WEAK MOTION: It lights on when the unit detects a weak motion. It turns off when the motion is over.

STRONG MOTION: It lights on when the system detects a strong motion. It turns off when the motion is over.

YELLOW ALARM: It lights on when the system detects a weak motion. It turns off after manual reset. This indicator also shows the position of the relay output.

RED ALARM: It lights on when the system detects a strong motion. It turns off after manual reset. This indicator also shows the position of the relay output.

DECLARATION OF CONFORMITY

The unit conforms to the EU directives
-2006/95/EC (low voltage)
-2004/108/EC (electro-magnetic compatibility)

Norms of reference:

EN 61010 (safety requirements)
EN 61326 (EMC requirements)

The CE mark indicates that this product complies with the European requirements for safety, health environmental and customer protection.

TECHNICAL SPECIFICATIONS

Sensor: Dual axis micro-machined polysilicon accelerometers

Operation limits: +/- 2g.

Withstanding limit: >50g.

Acceleration Threshold:

Strong motion: user adjustable from 0.1g to 0.25g.

Weak motion: user adjustable from 0.03g to 0.1g

Detection delay: 1 second maximum.

Frequency reply: 0.5 Hz to 10 Hz. Non-Earthquake signals are filtered

Diagnostics: Self-diagnostics at power-on and reset. If the self test fails, OPERATIONAL, WEAK MOTION and STRONG MOTION leds will flash, YELLOW ALARM and RED ALARM leds turn on, relay outputs close.

Supply Voltage: 10 to 30V-DC (12 & 24V systems)

Power Consumption: 30mA. Additional 40mA for each energized relay

Switching: 2 low power relays for strong and weak motions

Operating temperature: 0 to 70 °C

Weight: 500 grams (approx.)

Dimensions: 115x157x40 mm (HxWxD)

Conformity:

ANSI Z21.70 (1981)

ASCE 25-97

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