

AS-12 / AS-16 / AS-18 Seismic Switch

Features

- Two Seismic Switch Setpoints (0.002 g to Full Scale) with Independent Relay Output (NO or NC) and Equipment fault alarm
- Internal Triaxial Accelerometers and Digital Circuitry for Accurate Setpoints
- Battery Backup for 48 h if 90-260 VAC Charging Power is Lost
- Rugged Enclosure
- Automatic Self-Checking Provides LED Indicators for AC (Power Status), Run (Normal Operation), Error (Maintenance Needed)
- Easy Installation and Maintenance



Outline

GeoSIG's model **AS-12/16/18 Seismic Switch** provides a **complete earthquake monitoring system** including accelerometer sensor, digital threshold detection circuitry for two independent switch levels, output relays, and backup battery powered AC charger. The AS-12/16 is housed in a rugged, industrial rated enclosure with connections for AC power and seismic switch relay contacts.

The AS-12/16/18 is ideally suited for accurate monitoring of earthquake shaking with **relay contact closure at two different acceleration levels for warning and/or alarm functions**. Factory "Pre-set" Alarm Low/High set-points include 0.15 g / 0.30 g and 40 gal / 100 gal. The AS-12/16/18 also provides user **programmable set-points over a 0.002 g to 2.0 g range** of acceleration.

Key features of the AS-12/16/18 include simple installation and low maintenance operation. Compensation for non-level mounting (within $\pm 5^\circ$) is provided by the AS-12/16/18's sophisticated digital electronics therefore special levelling is not required.

Automatic system self-checks are performed every 30 days (or at users selected times) and a service warning indicator is illuminated if unscheduled maintenance is needed. A service warning relay output is also available as an option.

The AS-12/16/18's internal rechargeable battery provides **48 hours of backup power** if the 90-260 volt AC power is lost. An AC indicator is provided to check that AC charging power is present. The AS-12/16/18 enclosure provides for sealed cable entry or conduit fittings.

The **AS-12/16/18 Service Port** provides **complete in-field testing** using GeoSIG's supplied GeoDAS Software including battery levels, analog and digital circuit checks and switch/relay tests.



Specifications AS-12 / AS-16 / AS-18 Seismic Switch

General Operation

The AS-12/16/18 senses earthquake acceleration (vibrations) in three orthogonal axes (vertical and horizontal). Relay contacts change state (open or close) when earthquake motion exceeds selected levels of acceleration.

Equipment Type: Seismic Switch

Accelerometer Sensor

Type: Triaxial Force Balance
 Full Scale Range: ± 2 g Std. (± 4 , ± 1 , ± 0.5 g optional)
 Frequency Response: DC - 100 Hz
 Damping Ratio: 0.7
 Shock resistance: 3000g, 0.5 ms; 10'000, 0.1 ms

DIGITIZER

A/D Converter: 12 Bit / 16 Bit / 18 Bit
 Digital Resolution: Better than 0.001g

On-Board Memory Card

Type: Compact Flash
 Recording time: 29 minutes per 2 MByte
 (@ 3 channels, 200 SPS)
 Size: 128 Mbyte, 2 GByte

Switch Operation

Threshold Detection: Digital Value

Frequency Range: 0.1 Hz to 12 Hz (standard)
 0.1 Hz to 50 Hz (selectable)

High Pass Filter: 20 dB/decade
 Low Pass Filter: 40 dB/decade
 Digital Threshold Stability: $\pm 0.1\%$
 System Threshold Stability: $\pm 3\%$

Switch Threshold Range: 0.002g to 2.0g for Low and High Alarm Levels. Each channel is individually selectable.

Switch Setpoints

Quantity: Two

Setpoint Memory: Non-volatile EEPROM, retains setting if main power and battery power is lost

Factory Pre-sets: 1) Low Alarm: 0.15 g
 High alarm: 0.3 g
 2) Low Alarm: 40g al
 High Alarm: 100 gal

User Selectable Setpoints: Low Alarm: 0.002 g to 2 g
 High Alarm: 0.002 g to 2 g
 (Selected using GeoDAS software with PC computer connected to Service Port)

RELAYS

Quantity: Three (one per alarm level plus equipment fault on error/warning)

Contacts: 5A at 250 VAC
 5 ms Operating Time

De-energised Condition: Normally Open or Normally Closed (specify with order)

Relay Hold-On: 1 to 60 seconds (user selectable)

Power Supply

Type: Switched power supply
 Internal Battery: Rechargeable 12 volt, 6.5Ah Sealed Lead Acid Battery
 Battery Reserve: 48 hours from full charge
 AC voltage: 230 VAC (115 VAC optional)
 Internal charger: 230 VAC (115 VAC optional)
 Power Consumption: 0.9W @ 12 VDC typical

Indicators

AC: AC Power On (Green LED)
 Run: System Operating (Flashing LED)
 Error: Warning/Error Detected, Service Unit (Red LED)

LCD-display: User selectable display of key arameters including Battery Voltage, Number of Triggers, Peak Values for each channel (g, mg or gal) of last trigger.

Service Port

Type: Computer Serial Port (RS-232C)
 Requires standard IBM® compatible computer and GeoDAS software.

Baud rates: 1200, 2400, 4800, 9600, 38400, 115200

GeoDAS: Select Setpoints and unit of measure (g, mg, gal), Test Systems, ViewErrors/Warnings Log, Test Alarms, Check Battery Voltages.

Option: Relay, Warning/Errors, Event Recording

Self Test

Continuously active, self monitoring and user selectable. System test includes comprehensive sensor, memory, filter, real time clock, battery level and hardware tests.

Environment/Housing

Operational Temp.: - 20° C to + 70° C
 Storage Temp.: - 40° C to + 85° C
 Humidity: 0 % to 100 %
 (non condensing)
 Housing Type: Cast Aluminium

Size: 280 x 180 x 100 mm

Weight: 6.9 kg
 (including 6.5 Ah battery)

Protection: NEMA 12 (IP65)
 NEMA 4 (optional)