

## 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:	±0.1%
System Threshold Stability:	±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)