

SICSAW916 Seismic Sensor

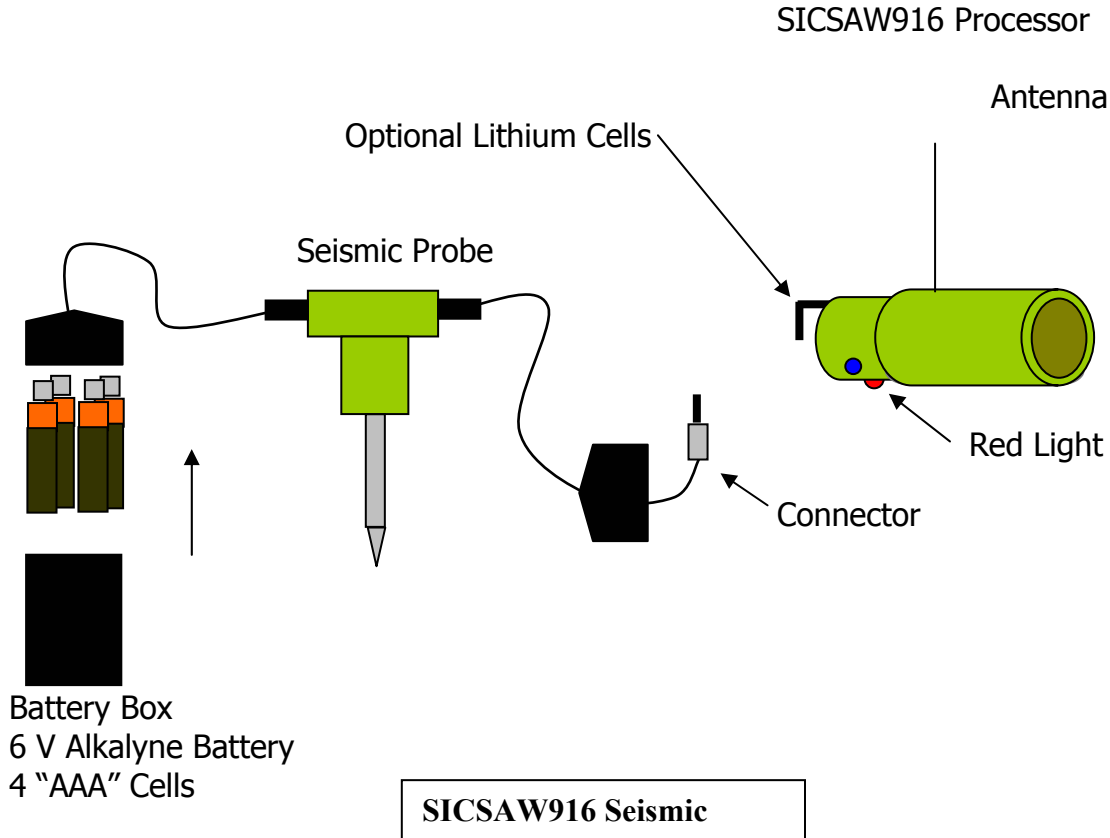
2.0 CONTROLS AND INDICATORS

2.1 Power

The SICSAW916's uses a 6V alkalyne battery which will power the unit for 3 to 6 months, depending on how many alarms are transmitted. The battery is contained in a film canister that attaches to the seismic probe. After replacing the battery, plug the SICSAW916 Processor into the probe. The unit is ready to go. When you are ready to turn off the SICSAW916, just unplug the Seismic Probe, or you can put the SICSAW916 to sleep (low power mode) with the Program/Reset **Button** (see 5.2 Sensor Extended Programming).

2.2 Program/Reset Button

The SICSAW916 uses a button for programming and control over various modes of operation, such as RangeTest and WalkTest. (see 5.0 Sensor Programming).



2.3 Red Light

The Red Light is used for programming and as an alarm indicator. It only illuminates when an alarm occurs during the RangeTest/WalkTest period (4 minutes) and automatically turns off thereafter for covert reasons.

2.4 Antenna

The flexible antenna allows for UHF propagation of the RF signal. The antenna must be oriented in a vertical direction for best RF propagation. Best transmission range will be achieved if the SICSAW916 Processor is attached to a small bush about 1 meter off the ground.

2.5 Seismic Probe

The Seismic Probe detects minute vibrations in the 10 HZ range, which makes it particularly sensitive to footsteps. It should be buried in solid ground, below the top soil, and covered with dirt to prevent rain from disturbing it. Sensitivity will vary considerably with soil conditions. The sensor will work better if it is buried away from trees, streams and other man-made sources of noise (such as power lines, heat pumps, etc.), although the SICSAW916 is programmed with Chameleon™ Technology Software, which allows the device to adapt to background noise without continually falsing. This also makes it possible to use the unit near a highway or in a rainstorm.

3.0 **SENSOR RANGE TESTING**

1. Attach the RX900 Receiver to the Walktest Module. Press the Receiver Program/Reset (Black button) momentarily, which should be visible under the Receiver silicon boot. The Red Light should come on followed by a clicking noise in the beeper. This is the Log-On sequence, which needs to be done every time the Receiver is plugged into something (Camera, Programmer, or Walktest Module). If the clicking noise isn't heard, then press the Receiver White Button, which will reset the computer (erasing memory) prior to performing a Log-On. The Receiver is now ready for RangeTest.

2. Attach the SICSAW916 Processor to the Seismic Probe and place the probe in the ground, about 6-8 inches deep, below the top soil. Best sensing range is achieved when the probe is in contact with hard, packed soil. The battery box and SICSAW916 Processor can be buried along with the probe, or left out of the ground for access. If you bury the SICSAW916 Processor, leave

the small antenna protruding out of the soil. Best RF Range is achieved when the SICSAW916 Processor is placed several feet off the ground (attached to a small bush) and within line-of-sight of the RX900 Receiver/Processor. The SICSAW916 will be activated (indicated by Red Light coming on) as soon as it is plugged into the probe (assuming that you have good batteries in the battery box). The device is now ready for Range Test, which can be initiated by tripping the Sensor (walking near it).

3. When the SICSAW916 trips, it will start transmitting at 1 second intervals with the Red Light flashing. Walk away from the SICSAW916 with the Receiver/Walktest Module in your hand. The maximum range will be found when the beeps stop or become erratic. You should cut this distance in half for a more reliable setup, however, operation at UHF frequencies cannot be predicted with any great certainty due to absorption and reflections from nearby objects. The RangeTest should involve your hanging the Sensor and Receiver in a suitable bush or tree, with appropriate camouflage, and standing back from it. If the beeps become erratic then you know that the distance/setup is marginal. Generally, if distances are kept below 100 feet, there should be little problem with the setup. Factors that degrade the RF performance will be thick vegetation, buildings or metal objects.

4. RangeTest will normally last for about 2 minutes. It can be aborted at any time by briefly pressing the SICSAW916's Program/Reset Button.

4.0 **SENSOR WALKTEST**

1. Follow steps 1 and 2 of RangeTest.
2. When the Sensor trips (indicated by flashing Red Light), abort the RangeTest Mode by briefly pushing the Program/Reset Button on the SICSAW916.
3. The light should stop flashing. The SICSAW916 is now in its Default Mode with Sensor ID=2 and Sensitivity= MidRange (value 3) and is ready for the WalkTest. (Alternately, you can program the Sensor ID and Sensitivity prior to WalkTest. See Sensor Programming).

Activate the external sensor by walking (5 footsteps minimum are required for an alarm). Either walking near the probe or in front of the SICSAW's lens will activate an alarm. The SICSAW916's Red Light will flash and an alarm will be transmitted to the Receiver when the SICSAW916's alarms.

The Receiver's Red Light will flash simultaneous to it beeping when it receives the sensor's alarm. (The Red Light from the SICSAW916 and Receiver will glow only for the first 4 minutes. After 4 minutes, it no longer comes on, for

covert reasons. To reactivate the Red Light on both devices, simply press the Program/Reset Button momentarily if your WalkTest takes longer than 4 minutes.)

5.0 **SENSOR PROGRAMMING**

The SICSAW916 Seismic Sensor can be programmed with a Sensor ID and a Sensitivity Level, or it can be used in the Default Mode, where the Sensor ID = 1 and the Sensitivity is set to MidRange (3). The Default Mode is the simplest to use, requires no programming input, and comes up automatically after power is applied and the RangeTest is completed.

If programming is desired, enter the Sensor ID followed by the Sensitivity. The Sensor ID tells the RX900 Receiver which Sensor went into alarm. It also determines whether the device will filter targets (ie. select only vehicles or footsteps) when the ID is programmed for values 11-15.

5.1 SICSAW916 Programming

1. Press the SICSAW916 Program/Reset button and hold it down until the Red Light comes on.

2. After the Red Light comes on, immediately release the button and enter the Sensor ID number. The Red Light flashes each time the button is pushed. After the Sensor ID is entered, the SICSAW916 will "play back" the number you entered so that it may be verified as being correct (Refer to the Sensor ID Table). If no entry is made for Sensor ID, the SICSAW916 enters the RangeTest Mode (see RangeTest).

3. Following playback of Sensor ID, the Red Light will stop flashing and go steady to prompt you for the 2nd variable, Sensitivity.

4. Enter the Sensitivity the same way that the Sensor ID was programmed. If no value is entered (default) the Sensitivity will be set to Mid-Range (value 3). The Red Light flashes each time the button is pushed. After the Sensitivity is entered, the SICSAW916 will "play back" the number you entered so that it may be verified as being correct (Refer to the Sensitivity Table). After the Sensitivity is programmed, the unit is ready to WalkTest.

The larger the Sensitivity, the more sensitive it will be and the further away it will detect targets. You should always try to place the sensor as close to the target as possible so that you can keep the Sensitivity level low (below 3), otherwise you may get unwanted false alarms from nearby highways, rain, wind,

and other environmental disturbances. The SICSAW916 utilizes Chameleon™ Technology Software, proprietary to Sensor iCam, which allows the sensor to adapt to the environment and reduce unwanted false alarms, however, you will get better results if you place the sensor away from large trees, roadways, and other sources of false alarms.

Sensor ID Table

<u>Press Button Value</u>	<u>Sensor ID</u>	<u>Description</u>
0		No entry=Default Mode. The Sensor enters the RangeTest Mode. After RangeTest, Sensor ID=2 and Sensitivity=3.
1	ID1	Normal Mode. Sensor ID set to value 1. Walktest will beep once. Sensor alarms on both vehicle and footsteps.
2	ID2	Normal Mode. Sensor ID set to value 2. Walktest will beep twice. Sensor alarms on both vehicle and footsteps.
3	ID3	Normal Mode. Sensor ID set to value 3. Walktest will beep three times. Sensor alarms on both vehicle and footsteps.
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9	ID9	Normal Mode. Sensor ID set to value 9. Walktest will beep nine times. Sensor alarms on both vehicle and footsteps.

Note: Confidence Levels correlate to the timing of a person's stride. Level 2 requires 2 matches, level 1 requires 1 match, and level 0 requires no matches.

Sensitivity Table

<u>Press Button Value</u>	<u>Maximum Sensitivity</u>	<u>Description</u>
0	SICSAW916 Auto Mode (0 to 10 feet)	The Sensitivity automatically varies from maximum range to minimum range depending on how stable the environment is acting. If the environment is quiet, such as in remote country, the Sensitivity will be Mid-Range (value 3). If the environment is noisy, such as during a thunderstorm, near a busy highway, or in an urban environment, the Sensitivity will be at its lowest (value 1).
1	Auto Mode (0 feet)	Sensor will not detect footsteps. It will detect a large truck that is in close proximity to the sensor.
2	Auto Mode (5 feet max.)	Sensor will detect a person along a trail, and trucks up to 30 feet away.
3	Auto Mode (10 feet max)	Sensor will detect a person within 10 feet and a car 30 feet away.
4	Auto Mode (30 feet max)	Sensor will detect a person within 30 feet and a car 50 feet away.
5	Auto Mode (100 feet max)	Sensor will detect a person within 100 feet and a car 200 feet away.

Note: The Table above correlates to an average size person (175 lb.) walking at a brisk pace (6 feet per second) under normal soil (dry) conditions. Distances will be less when the targets velocity is slow or the soil conditions are unfavorable (wet or sandy). Distances may also be less depending on the environmental noise (Auto Mode Threshold level), which kicks in after the Sensor WalkTest Mode.

5.2 SICSAW916 Extended Programming (SICSAW916e Version only)

In addition to Sensor ID and Sensitivity, the Sensor's extended ID can be programmed, but only after a special reset is performed. The extended ID consists of the Sensor Group ID, the Receiver ID, and the Receiver Group ID. These functions are not normally accessible because in most applications the Sensor ID alone is more than sufficient. When you are using multiple sensors and receivers

and don't want alarms from one system affecting the other, you may want to change the Sensor Group ID or Receiver ID/Group ID so that the systems don't interact. If you change the Sensor's Group ID, Receiver ID/Group ID, you must make corresponding changes to the RX900 Receiver/Processor (under menu ID) before the sensor and receiver will communicate. Programming the Sensor's extended ID may be done as follows:

1. Press the SICSAW916 Program/Reset button and hold it down until the Red Light comes on and goes out. When the Red Light goes out, release the button. The SICSAW916 enters an RF Test Mode for about 5 seconds. After the RF Test Mode, (10 seconds) the SICSAW916 enters a low power mode, where battery drain is minimal.

2. Press the SICSAW916 Program/Reset button to "wake" it up from the low power mode. When the Red Light comes on, immediately release the button and enter the Sensor ID number. Programming is done the same as in the section 5.1 above, however, you will be prompted for 5 variables (Sensor ID, Sensitivity, Sensor Group ID, Receiver ID, Receiver ID) instead of the normal 2 (Sensor ID and Sensitivity). You may enter any number between 1 and 15 for the extended ID's but be sure to match the numbers when programming the RX900 Receiver/Processor with the Palm Pilot (ID menu). If you don't enter anything when the SICSAW916 Red Light prompts, the default ID's are entered, which are: Sensor Group=1, Receiver ID=5, and Receiver Group ID=1.

3. After programming, the SICSAW916's extended data is retained as long as the battery is good. The SICSAW916 loses it's extended data if the power is removed, therefore, you can restore the factory default on the SICSAW916 by unplugging the device from the Seismic Probe and then plugging it back in.

6.0 FCC Compliance

FCC ID: RVLSICSAW916

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Cont.

When operating in an urban area, sources of interference can include 900 MHz cordless phones, spread spectrum phones, computers, and other data transmission devices. Interference caused by these sources is usually of limited range (100 ft.) due to the fact that the FCC restricts the power output at this frequency. The presence of interference is indicated by a flickering Red Light when the RX900 Receiver/Processor is first turned on (RangeTest/WalkTest Mode). Although the RX900 will reject most of this interference, it is best to locate the interfering source and remove it (if possible) prior to doing installation, or degraded reliability could result.

Warning: This device operates under Part 15 of the FCC Rules. Any modification not expressly approved by Sensor iCam, LLC may void the warranty and the users authority to operate this device.

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