

MODEL 950-ASH

Arson Scanner Hydrocarbons and Accelerants Detector

OPERATION AND MAINTENANCE



**MADE IN
USA**

GRACE
INDUSTRIES, INC.
Solutions for Life Safety

MODEL 950-ASH FEATURES



- 1. Sensor and LED Arrays
- 2. Sensor Guard
- 3. Coiled Extension Cord
- 4. Telescoping Sensor Probe
- 5. Locking Clips
- 6. Quick Start Guide
- 7. Audio Indicator
- 8. Analog Meter Display
- 9. Meter Backlight
- 10. Hydrocarbon/Accelerant Detection Indicators
- 11. Power Indicator
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- 17. Charging Indicator
- 18. Light / UV Indicator
- 19. Light / UV Switch
- 20. Purge Indicator
- 21. Purge Switch
- 22. USB Charging Jack
- 23. Rubber Grip

MODEL 950-ASH FEATURES

- 1. Sensor and LED Arrays:** Sensor detects the presence of hydrocarbon or accelerant vapor. Sensor is replaceable. White and UV LED arrays encircle the Sensor.
- 2. Sensor Guard:** Provides a protective enclosure for the Sensor and LED arrays.
- 3. Coiled Extension Cord:** Allows Sensor Probe to be extended.
- 4. Telescoping Sensor Probe:** Extends for ease of investigation. Retracted: 19.5". Fully extended: 45".
- 5. Locking Clips:** Lock the Sensor Probe at desired length. Open both clips to extend or shorten.
- 6. Quick Start Guide:** Allows user to operate Model 950-ASH with minimal instruction.
- 7. Audio Indicator:** Produces audible tones when hydrocarbons or accelerants are detected.
- 8. Analog Meter Display:** Indicates possible presence of hydrocarbons or accelerants. The degree and speed of needle deflection is determined by the concentration and type of hydrocarbon/accelerant detected.
- 9. Meter Backlight:** Illuminates the meter display in low visibility conditions.
- 10. Hydrocarbon/Accelerant Detection Indicators:** When hydrocarbons or accelerants are detected, the analog meter display flashes red. The higher the concentration, the faster the flash rate becomes.
- 11. Power Indicator:** Blue LED. Flashes until the Sensor has achieved operating temperature. When operating temperature has been reached, the blue LED will glow.
- 12. Mute Indicator:** LED glows red when Mute is on.
- 13. Mute Switch:** Silences audio.
- 14. Range Switch:** When set in HIGH position, the detection range control allows detection of trace levels of hydrocarbons/accelerants. LOW position reduces the detection sensitivity so higher concentrations or sources of hydrocarbons or accelerants are easier to locate.
- 15. Power On and Detection Range Control:** Turns Model 950-ASH on and adjusts Analog Meter to be responsive to the presence of hydrocarbons or accelerants.
- 16. Low Battery Indicator:** Red LED glows when battery is low or has been depleted. Model 950-ASH with low battery has less than 60 minutes of operating time remaining and should be taken out of service and recharged immediately.
- 17. Charging Indicator:** Glows red when Model 950-ASH is charging. Glows green when charging is complete.
- 18. Light/ UV Indicator:** Glows blue when ultraviolet LED array is on. Glows red when white LED array is on.
- 19. Light/ UV Switch:** Turns on the ultraviolet or white LED array and meter backlight.
- 20. Purge Indicator:** Flashes red while the Purge function is active. Glows red when Purge is complete.
- 21. Purge Switch:** Turns Purge function on or off. Purging clears the Sensor of any absorbed contaminants.
- 22. USB Charging Jack:** Remove the protective cap and plug into a USB charger.
- 23. Rubber Grip** for ease of handling and operation.

SPECIFICATIONS

Dimensions: 3-1/4" wide by 3-1/4" deep by 19-1/2" long. When fully extended, the 950-ASH is 45" long.

Weight: 2 lbs 2oz (960 grams).

Battery: rechargeable Lithium-ion.

Battery Run Time: up to 7-8 hours of continuous operation.

Battery Charging: +5V USB adapter powered from 120VAC wall plug charger.

Battery Charging Time: approximately 24 hours to fully charge from Low Battery Indication.

Sensor: Solid State Metal Oxide Semiconductor.

White LED: 8 solid state white LEDs arrayed around Sensor.

Ultraviolet (UV) LED: 8 long-wave ultraviolet (395nm) LEDs arrayed around the Sensor.

Arson Scanner Hydrocarbons and Accelerant Detector

MODEL 950-ASH

The Model 950-ASH Arson Scanner Hydrocarbon and Accelerant Detector is a precision instrument designed specifically for detecting trace levels of hydrocarbons and accelerants.

Model 950-ASH is optimized for detecting hydrocarbons or accelerants that may be present at suspect arson fires. Model 950-ASH functions as an excellent general purpose discovery instrument for field survey such as: searching landfills for methane outgassing, the detection of leaking underground storage tanks, or simply as a general purpose gas leak detector.

Additionally, Model 950-ASH employs an array of illuminating ultraviolet and white LEDs which further assist the investigator in locating accelerants or other evidence in situations where detection in low visibility environments become difficult. Other beneficial features include a Mute function to silence the audible tones for discreet investigation and a Purge feature for rapid Sensor recovery.

PRINCIPLE of OPERATION

Model 950-ASH Sensor is a solid-state semiconductor type whose resistance changes in the presence of hydrocarbon or accelerant vapors. This change in resistance is sensed by the signal processing electronics and is displayed as an audio and visual rate signal that is proportional to the relative concentrations of hydrocarbons/accelerants present. The Sensor is heated while the detector is in use to provide stable, consistent operation. The sensing element is housed in a thimble-like structure of a double layer of very fine stainless steel assuring complete operating safety as well as providing mechanical protection.

OPERATION

POWER ON: Power the Model 950-ASH ON by rotating the Detection Range Control clockwise until a click sound is heard. The blue Power Indicator LED will begin to flash, indicating the 950-ASH is in the warmup and Sensor stabilization cycle. After approximately 3 minutes, the blue POWER Indicator LED will stop flashing and will glow blue to indicate the Sensor has reached operating temperature and the instrument is ready for use. During the warmup cycle, you may observe a deflection of the needle and rapid flashing of red LEDs on the Analog Meter scale. This action is

normal and will cease as the detector gradually attains operating temperature. NOTE: The Sensor may not detect the presence of hydrocarbons or accelerants while in the warmup cycle.

The ultraviolet and white LED Arrays can be turned ON and will function during the warmup cycle.

SETTING the SENSITIVITY

SETTING the SENSITIVITY: Now that the 950-ASH has gone through the warmup cycle and is in the READY mode, it is time to set the sensitivity and detection threshold.

Switch the Range setting to HIGH. When set in the HIGH position, the detection range control allows detection of trace levels of hydrocarbons or accelerants. Using LOW Range reduces the detection sensitivity, so higher concentrations or sources of hydrocarbons/accelerants are more easily located.

Rotate the Detection Range Control clockwise until the needle on the Analog Meter Display dial deflects clockwise and the red Hydrocarbon/Accelerant Detection LEDs begin to flash. If the Mute switch is OFF, you will observe audio tones in synchronism with the red LEDs. To silence the unit, switch the Mute control to ON. Next, slowly rotate the Detection Range Control slightly counter clockwise until you no longer observe the red flashing LEDs and the audible tones cease and the needle on the Analog Meter Display falls to the 0, 1, or 2 region on the meter scale.

The Model 950-ASH is now ready to scan for hydrocarbons/accelerants.

DETECTING HYDROCARBONS or ACCELERANTS

To detect the presence of hydrocarbons/accelerants, scan the suspect material or area of concern at an angle of approximately 45° while holding the Sensor end of the Telescoping Sensor Probe approximately ½" to 1" from the area to be surveyed. Scan very slowly to provide sufficient time for the vapor to penetrate the Sensor. **NOTE:** The time required for a hydrocarbon/accelerant to change from liquid to vapor and diffuse into the Sensor is dependent upon environmental factors such as temperature, humidity, and wind velocity and the type of hydrocarbon/accelerant. It is important to take your time and be patient.

NOTE: to silence the 950-ASH for discreet investigation, put the Mute control in the ON position.

When the Sensor is exposed to a hydrocarbon or

accelerant, the Analog Meter Display needle will deflect clockwise, followed by flashing red LEDs and repeating audio tones. This response indicates the possible presence of hydrocarbons/accelerants. If high concentrations of a detected hydrocarbon/accelerant are sensed, it may be necessary to clear the Sensor using the Purge function (see Purge instructions below) and scan the area of concern again. Another positive reaction indicates the presence of a suspect material. Collect a sample of debris for analysis.

For investigations where the Sensor responds to higher levels of hydrocarbon/accelerant vapor, the needle on the Analog Meter may fully deflect to the highest level on the scale. Model 950-ASH can be normalized for these conditions by rotating the Detection Range Control counterclockwise until the flashing Detection Indicator LEDs and audio tones just stop. Upon further investigation, when the audio tones and Detection Indicator LEDs begin again, you are closer to higher concentrations of hydrocarbon/accelerant vapor and may desire to collect a sample.

PURGE

The Purge function is used to clear the Sensor after exposure to high levels of hydrocarbon or accelerant vapor. Remove the Model 950-ASH detector from the contaminated vicinity and set the Purge control to the ON position. The red Purge Indicator LED will flash. While the Purge feature is in use, audible tones and red Analog Meter LEDs will be observed. Allow the Purge to remain ON until the red Purge indicator LED stops flashing and begins to glow red (this may take approximately 20 seconds). Return the Purge switch to the OFF position and reset the sensitivity and detection threshold. Your 950-ASH is now ready to detect another sample.

Note: While the Purge feature is in use, the Sensor will not detect the presence of hydrocarbons or accelerants.

The Mute feature may be used during the Purge cycle to silence the audio tones.

PRINCIPLE of OPERATION for ULTRAVIOLET and WHITE LED ARRAYS

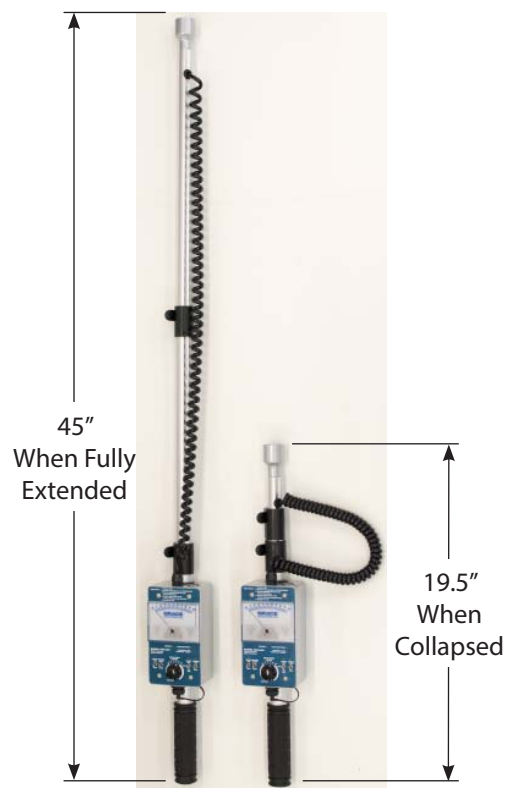
The LED features of your Model 950-ASH consist of an array of eight long-wave ultraviolet (395 nm) LEDs and an array of eight white LEDs. Each LED array is controlled by a 3-position toggle switch located on the Control Panel. Both LED arrays function independently of each other and cannot be used simultaneously.

It is desirable to use the ultraviolet LED array in as little ambient light at the investigation scene as possible. The ultraviolet LED array allows the investigator to search for a fluorescence or glow of suspect material, potentially indicating the presence of residual or trace amounts of hydrocarbons, accelerants, or other questionable material. Hold the ultraviolet LED array at an angle of approximately 45° and approximately ½" inch away to examine the suspect material. During an investigation, if fluorescence of the suspected debris is discovered, it should be gathered and sent to a lab for analysis.

The white LED array feature is desirable for use as a flashlight in dimly lit or low visibility environments. When using this feature, a backlight will illuminate the Analog Meter Display.

RECOMMENDED INVESTIGATION TECHNIQUES

When attempting to detect trace amounts of hydrocarbons or accelerants, hold the Sensor approximately ½" to 1" away from the suspect material and scan the area very slowly. For ease of investigation, adjust the Telescoping Sensor Probe length by unlocking the Clips, extending to the desired length and then closing the Locking Clips.



It is important to scan the area very slowly because a hydrocarbon or accelerant must vaporize before it can be detected by the Sensor. The time required for hydro-

carbons/accelerants to vaporize and become airborne particles may vary from one investigation to another. Environmental factors such as temperature, humidity, wind velocity, and the type of hydrocarbon/accelerant all affect the instrument's ability to detect.

Be patient and observant when using the instrument.

Keep in mind good investigative practices. Survey the area thoroughly and imagine where you would take a sample if you did not have the 950-ASH. Take your time. Check the top layer of debris first before digging to obtain suspect material. Positive samples may be obtained from a suspect area many hours or even days after a fire has occurred.

STORAGE and MAINTENANCE

At the end of each use, clean with a soft cloth. **DO NOT use cleaning solvents.**

After each use, inspect the instrument for signs of physical damage. Remove from service if physical damage is observed.

To prevent damage between use, collapse the Telescoping Sensor Probe to its shortest length, lock the clips and store the 950-ASH, wall charger, and mini-USB cable in the protective case provided with the instrument.

Store in a dry, well ventilated area. Recommended storage conditions are: 50° to 77°F (10° to 25°C) at no more than 65% relative humidity. Do not leave your 950-ASH exposed to elevated temperatures such as being left under the blazing sun (or in a vehicle heated by sunshine).

The Sensor may be removed for cleaning or replacement by gently pulling it from the Sensor Socket. Cleaning is usually not required, however, if the Sensor should become contaminated with ashes or other debris, carefully loosen and unplug it from the Sensor Socket. Gently tap it over a white piece of paper and observe if any material is dislodged.

If the Sensor should accidentally become submerged in liquid, remove it from the Sensor Socket and allow the Sensor to dry for 24 hours. **Permanent damage to the Sensor is highly likely to occur if submerged in any liquid.** Replacement may be necessary. Sensors are available from Grace Industries, Inc.

CHARGING the 950-ASH

Model 950-ASH has a mini-USB Charging Jack at the bottom of the main housing. The battery can be charged using the mini-USB cable and wall plug charger provided with the instrument. A computer USB port may also be used to charge the instrument.

The Charging Indicator will glow red while the Model 950-ASH is charging. When the Charging Indicator changes to green, the battery is fully charged.

Complete charge time is up to 24 hours.

NOTE: charging via computer USB port may take longer.



USB Charging Wall Plug Power Cube and Mini-USB Cord

TROUBLESHOOTING

- **When turned ON, the needle on the Analog Meter fully deflects:**

The Sensor may be contaminated or the atmosphere may be contaminated. The 950-ASH is an extremely sensitive instrument and care must be taken to ensure no hydrocarbon or accelerant residue remains in or located near the Sensor.

- When initially turning the detector ON, be sure the Detection Range Control is rotated completely counterclockwise without turning OFF.
 - Turn the Purge feature ON to clear the Sensor and allow any absorbed contaminant or residue to be burned off.
 - Allow the detector to remain ON for several minutes in a clean, draft-free environment.
- **Sensor will not respond to hydrocarbons or accelerants:**
 - Some hydrocarbons and accelerants have odor additives that can be mistaken for hydrocarbon or accelerant vapor. You may be noticing this odor, after all of the hydrocarbon/accelerant vapor has completely volatilized away and only the odorizer remains.
 - The hydrocarbon or accelerant might not be vaporizing due to many factors including temperature and type of hydrocarbon or accelerant.
 - Insufficient time allowed for a true reading. It may be necessary to allow several minutes for accumulation of airborne vapor to allow detection.
 - **Inconsistent readings:**

Sensor has absorbed hydrocarbons or accelerants that cause an erratic response. This could be caused by periods of storage or a contaminated atmosphere. Remember to clear the Sensor by moving to an area known to be free of contaminants and use the Purge feature to clear the Sensor.

HYDROCARBON, ACCELERANTS and GASES DETECTED by the MODEL 950

The common list of hydrocarbons and accelerants that can be detected by the Model 950-ASH includes, but is not limited to:

Fuels: Kerosene • Gasoline • Diesel Fuel

Hydrocarbons and their derivatives: Methane • Ethane • Propane • Butane • Pentane • Hexane • Heptane • Octane • Propylene • Benzene • Toluene • Xylene • Ethylene Oxide. **Halogenated Hydrocarbons:** Methyl Chloride • Methylene Chloride • Ethyl Chloride • Ethylene Chloride • Ethylidene Chloride • Trichloroethane • Vinylidene Chloride • Trichloroethylene • Methyl Bromide • Vinyl Chloride. **Alcohols:** Methanol/Ethanol • n-Propanol • Isopropanol • n-Butanol • Isobutanol. **Ethers:** Methyl Ether • Ethyl Ether

Ketones: Acetone • Methyl Ethyl Ketone. **Esters:** Methyl Acetate • Ethyl Acetate • n-Propyl Acetate • Isobutyl Acetate. **Nitrogen Compounds:** Nitro Methane • Mono Methyl Amine • Dimethylamine • Trimethylamine • Mono Ethyl Amine • Diethyl Amine. **Inorganic Gases:** Ammonia • Carbon Monoxide • Hydrogen • Hydrogen Cyanide.

WARRANTY INFORMATION

Grace Industries, Inc. warrants Grace Products to be free from defects in workmanship and materials for a period of one year from the date of purchase. This warranty is valid only when the returned products are accompanied by a sales slip or other proof of purchase that states the date and location of purchase. Grace Industries, Inc. will not repair or replace any merchandise under warranty which has been damaged because of accident, misuse or abuse of the products while in possession or control of the consumer. This warranty is void if any attempt to repair or replace parts was made or attempted by other than qualified Grace Industry's Inc. personnel. This warranty is void if any of the sealed compartments are opened or tampered with. Before sending product to Grace for repair, call for Return Authorization or RA#. Please reference RA# in shipping documents for tracking purposes. Send all repair products, prepaid and accompanied by proof of purchase to: Grace Industries, Inc., Repair Division, 305 Bend Hill Road, Fredonia, PA 16124. Grace Industries, Inc. shall not be liable for any direct, incidental or other consequential loss or damage arising out of the failure of the device to operate. End-user or customer is responsible for return shipping/freight charges.

The sole and exclusive remedy under all guarantees or warranties, expressed or implied, is strictly limited to repair or replacement as herein provided. All implied warranties, including but not limited to, warranties of fitness and merchantability, are hereby limited in duration to a period ending one (1) year from the date of purchase. The warranty and liability set forth in the prior paragraphs are in lieu of all other warranties, expressed or implied, in law or in fact, including implied warranties of merchantability and fitness for a particular purpose. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Technical assistance is available by contacting Grace Industries, Inc. at 724-962-9231. Product issues may be reported at any time to Grace Industries, Inc. at 724-962-9231



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