



# HALO™ SMART SENSOR

**SOUND DETECTION  
AIR QUALITY MONITORING  
CHEMICAL DETECTION**

Initially intended for schools to combat the vaping and school shooting epidemics, HALO Smart Sensor has now expanded across industries. The HALO detects environmental changes that occur in privacy concern areas. As a device on the network, it will send alerts to security personnel.

With StaffAlerter integration, SA-VAPE 1 detectors communicate to the StaffAlerter System and allow you to manage the messaging based on conditions detected. Staff will be alerted when environmental changes occur in typically unsupervised areas. HALO can detect flammables, hazardous chemicals, air quality changes such as vaping and smoking and changes in temperature and humidity. HALO can also detect noise level fluctuations and can send alerts when unusual activity occurs. HALO will also analyze room occupancy through light detection. Control other systems from StaffAlerter as well.

With HALO, added to StaffAlerter, security staff can now monitor areas where cameras are not allowed. StaffAlerter can send text, email or phone calls to Personnel to warn of these conditions or activate additional devices if needed.



SA-VAPE 1

- Air Quality Monitoring**
- Detection of vaping and smoking
  - Detection of dangerous chemicals
  - Temperature and humidity
- Room Occupancy**
- Light detection
- Sound Frequency Monitoring**
- Detection of aggressive behavior
  - Detection of gunshots

- Chemical Detection**
- Whippets (Nitrous Oxide)
  - Ethanol, Propanol and Hydrogen levels
  - Ammonia
  - Total volatile organic compounds (glue solvents)
  - Carbon Dioxide
- Alerting**
- Email or SMS text alerts
  - Digital alerts in Video Management

- Other Features**
- Flush mounting to ceilings
  - Input/Output for connection to external devices
  - Unit is 5 3/4" round by 3" deep
  - PoE connectivity

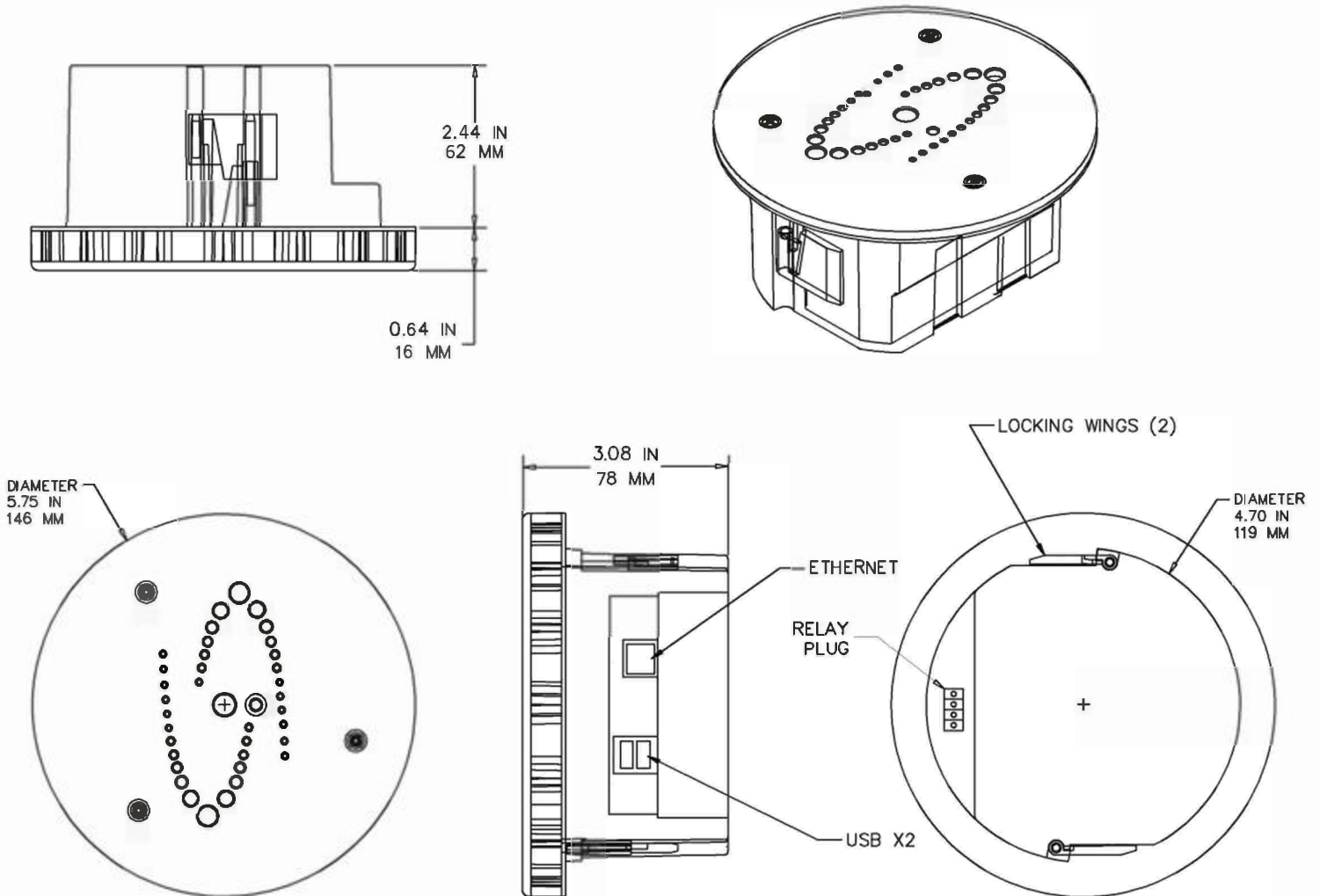


Learn more: [www.pmpowerproducts.com](http://www.pmpowerproducts.com)



## General Specifications

Operating Temperature	32°F - 122°F (0°C - 50°C)
Operating Humidity	0 to 90% Relative Humidity (non-condensing)
Power Supply	PoE (IEEE 802.3af Class 3 Compliance) 80 mA (TBD)
Dimensions	5.75" x 3.08" (146mm x 78mm)
Weight	0.8 lbs (0.365 kgs)
Mounting Options	Ceiling Flush Mount, Surface Mount (optional)



## Interface Specifications

Live Image Resolution	1024x 768
Frame Rate	1FPS
Video Compression	MJPEG
Audio	MEMS Microphones (2)
Relays Outputs	2, Normally Open or Closed, 48VDC at 1 amp
VMS Integrations	Milestone, Panasonic, Axonsoft
Status Light	Alarm Condition (optional), Error, Sensor Life

## Network Specifications

Ethernet	RJ-45 (10/100 Base-T)
Alarm Triggers	Particulates, Carbon Dioxide Equivalents, Total Volatile Organic Compounds, Carbon Monoxide, Oxidizing Agents, Ethanol, Ammonia, Temperature/Humidity, Light Level, Sound Levels
Protocols	TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, FRP, UPnP, RTP, RTSP, DHCP, ARP, Bonjour
Maximum Users Connections	Live MJPEG Stream, 8 Users

## How does HALO interface with the StaffAlerter system?

SA-VAPE 1, powered by the HALO IoT Smart Sensor, interfaces with a StaffAlerter™ in two possible ways. HALO can connect to a StaffAlerter™ via its event management system through direct application (API) and the Dashboard. This allows real time levels to be viewed and reported and allow notifications through StaffAlerter’s multi-channel communication’s platform. The Dashboard allows central management of all devices instead of single point management for alerts.

HALO can also be managed independently but connected to the StaffAlerter™ via inputs on a Contact Notifier or the StaffAlerter™ base from the HALO’s output relay. The activation of the HALO detector would create an event on StaffAlerter™.

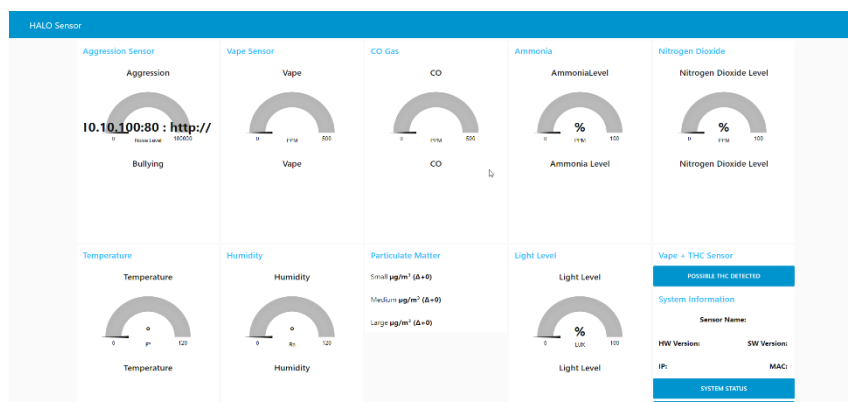
## Installation & Set Up Detectors with StaffAlerter

Install detectors using a PoE network connection. Assign static IP address to the detector, and name unit.

Set desired thresholds for each event and create any additional events desired.

Configure VMS and Alarm Server for StaffAlerter Dashboard IP address

**StaffAlerter will now receive all level information by sensor and can initiate alerts as desired centrally. Dashboard shown below.**



## Installation & Set Up Standalone Detectors

### Who can install the HALO vape detectors?

The HALO IoT Smart Sensor is very easy to install. It mounts in ceiling with a 5-inch circular opening and a single CAT5/6 cable with POE. We recommend you use an experienced systems integrator to perform the installation to insure it is properly connected to your network and is installed in the proper location.

[Read more about installing a HALO unit.](#)

### Will HALO work right out of the box?

HALO does work right out of the box since firmware version 1.32. However, we recommend that you:

1. Set up notifications (SMTP Settings)
2. Sync your HALO to an NTP server

Minimal changes need to be made as the default events were made to fit majority of environments. You can turn on/off certain events and actions based on your preferences.

### Do we need a camera license to install these devices?

HALO should not require a camera license in most cases if it is used only to send event messages to the VMS. If the end user wishes to record HALO'S MJPEG sensor screen, then a camera license would be required.

### Does the system have required updates?

We are continuing to improve the performance and add new features to HALO. We recommend users keep HALO up to date with the latest firmware releases. The HALO device comes with a Utility Tool which allows updates to be pushed to one or more HALO devices. The end user will

be notified when a new firmware version is available or can check on the PM Power Products, LLC website.

## Detection

### What can HALO detect?

HALO has a host of sensors to perform multiple detections. 12 sensors to be exact. The hundreds of combinations it detects expands its capabilities to be able to differentiate between substances as well. For instance, HALO can distinguish between a person vaping and a person vaping with a substance laced with THC.

Some of the things HALO can detect are:

- Particulate matter
- Humidity that produces mold and other Fungi
- VOCs
  - Formaldehyde
  - Trichloroethylene
  - Xylene
- Benzene
- Ammonia
- Carbon Monoxide
- Carbon Dioxide
- Vape
- THC
- Smoke
- Light
- Vibration
- Pressure
- Temperature
- Sound Abnormalities

Learn more about HALO's sensors and what it can detect [here](#).

### **How is the AI for the audio detection going?**

HALO has two audio sensors. It currently acts on abnormal noise levels in the room. The roadmap for future releases includes analyzing frequency, gunshot detection with double/triple authentication and keyword detection.

### **What is the detection range?**

HALO can typically cover 144 square feet with normal ceiling heights(8ft) for vape sensor however other sensors work effectively up to 1000 square feet. Its coverage area will also vary by the ventilation in the room, the ceiling height will also be a contributing factor. A pendant mount option is available to keep HALO at a recommend height of 8 feet.

### **What is the ppm threshold that it would need to trigger the devices?**

The PPM thresholds are programmable and thus can be varied by room to match the conditions in that room.

### **If vape is blown into a person's jacket, will HALO detect this?**

HALO was purposely designed to look like a smoke detector in order to mask its function as a vape detection tool. HALO is an effective tool to detect vape but will have obvious limitations if a person uses some physical methods to obscure their vaping. Filtering through clothing, opening of windows, etc. can lower the levels of chemicals reaching its sensors.

### **Does HALO record video or audio?**

**NO.**

HALO does NOT record video. There is NO camera on HALO.

HALO does NOT record audio. HALO only captures decibel level readings, it does NOT record any conversations.

## Uses

### **Are these recommended for school bathrooms?**

HALO IOT Smart Sensor is a security device which is designed to maintain privacy. Bathrooms and locker rooms are two such places HALO is installed. They are also perfect for dorm rooms, hospital rooms and hotel rooms to provide security while maintaining privacy.

### **Are these currently being used by any schools in the country, and if so, what successes have they reported?**

HALO is currently in use in schools throughout the US and they have uncovered many instances of both vaping and THC use. We highlight some of these districts on our site.

### **Would HALO work in college settings?**

Yes, HALO is suitable for use in Colleges and Universities, Hospitality Centers, Commercial buildings, Malls, etc. Any location where VAPING needs to be controlled and there is a security system or security service to monitor its ALERTS/EVENTS. HALO is perfect for dorm rooms if colleges are concerned about students smoking various substances in rooms, breaking noise ordinances or for dorm and campus safety.

### **How can the system be used in industrial complexes?**

HALO is a SMART sensor with the ability to expand its capabilities in the future. HALO is suitable for use in any industrial complex where environments need to be monitored and controlled. HALO detects chemicals such as CO<sub>2</sub>, CO and NH<sub>4</sub> and ties to the security system or security service to monitor its alerts/events.

## Life Span

### **What is the lifespan of the sensor?**

We expect the lifespan to be 3+ years, like standard smoke detectors.



## Does HALO have any warranties?

HALO comes with a 1-year warranty. Multi-year extended warranties are sold separately.

## Air Quality Terms

### Particulate Matter

Particulate matter, or PM, is a mix of particles and droplets in the air. PM varies in shape and size, but those of 10 micrometers in diameter or smaller can adversely affect your health because they can be inhaled. PM 2.5 refers to fine particulate matter—that with a diameter of two-and-one-half microns or less.

Sufficient exposure to PM can irritate the eyes, nose, throat, and lungs, leading to allergy-like symptoms and shortness of breath in otherwise healthy people. It can also exacerbate existing medical problems, such as asthma and heart disease. PM 2.5 is considered the world's single biggest environmental health risk.

Indoor PM levels can be influenced by outdoor sources like vehicle exhaust, wildfires, and power plant emissions. But many indoor activities produce PM as well: cooking, burning fireplaces, and smoking are just a few common sources.

### VOC (Volatile Organic Compounds)

The acronym stands for *volatile organic compounds*, gases emitted from a variety of materials that can have short- and long-term health effects. Concentrations of many VOCs can be up to 10 times higher indoors than outdoors.

Sources of VOCs include many common products, including cleaning fluids, disinfectants, paints, and varnishes. Burning fuels like wood and natural gas also produce VOCs.

Formaldehyde is one of the most common VOCs and can be found in many building materials, including plywood, glues, and insulation.

Short-term exposure to low levels of VOCs can cause throat irritation, nausea, fatigue, and other minor complaints. Long-term exposure to high concentrations of VOCs has been linked to



more severe respiratory irritation as well as liver and kidney damage. Products can emit VOCs even when they're in storage, though to a lesser extent than when they're actively being used.

### **Carbon Monoxide**

By now, most people are aware of the deadly effects of high concentrations of this odorless, colorless gas. Exposure to lower levels sometimes given off by fuel-burning appliances can also cause adverse reactions, including confusion and memory loss.

### **Carbon Dioxide**

While the effects of high levels of CO<sub>2</sub> were long thought to be benign, research has found that concentrations as low as 1,000 ppm can affect people's cognitive function and decision-making performance.

The greatest source of indoor CO<sub>2</sub> is people themselves, as it's a byproduct of our respiratory function. Coupled with poor ventilation, this commonly leads to high levels of CO<sub>2</sub> in many workplaces.

### **Temperature and Humidity**

These levels can affect more than your comfort. High temperatures and excessive humidity promote mold and mildew growth. These can cause structural damage to your workplace and cause allergy-like symptoms in those with sensitivities. Monitoring these levels can help you prevent facility and health problems and tip you off to potential sources like structural weaknesses and leaks.

For more information:

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