

AxxonSoft and HALO integration: New Opportunities for Industry Solutions

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HALO Smart Sensor vape detectors are able to detect vaping, measure the content of air for harmful chemicals components (such as THS oils), and intentional vape masking behavior by using aerosols to cover it up. Besides, HALO has 38 different types of sensors (temperature, humidity, CO, gunshot, etc.) that cover a comprehensive set of indicators for health and safety monitoring and vaping detection.

Axxon One intelligent video management software (VMS) can alert the school or university management of when and where students vape on school grounds and trigger recording to get video evidence, or warn of elevated level of hazardous components, detected by the HALO, in the air on the industrial sites. The current sensor readings can be superimposed on the video from cameras located nearby the sensors, which is handy for both real-time monitoring and investigation of various incidents.

The relevance and urgency of the joint solution are confirmed, particularly, by the increasingly frequent cases of students vaping inside the educational premises. Teaming up to resolve such

a pressing issue has allowed us to contribute to making campuses safer and overall better places.

Multi-Function Sensor Technology

Health Sensor Readings

Carbon Monoxide

Most people are already aware of the devastating consequences of exposure to excessive levels of this colorless, odorless gas. Low-level exposure from fuel-burning appliances can potentially have negative effects, such as disorientation and memory loss.

Carbon Dioxide

While it was long believed that the effects of high CO₂ levels were benign, research has shown that even concentrations as low as 1,000 ppm can have an impact on a person's ability to think clearly and make decisions.

People themselves are the main producer of indoor CO₂, as it is a consequence of our respiratory process. In many businesses, this often results in excessive CO₂ levels because of insufficient ventilation.

Nitrogen Dioxide

The ambient trace gas nitrogen dioxide (NO₂) is a byproduct of both natural and human-made processes. Numerous serious health issues like hypertension, diabetes, heart and circulatory disorders, as well as death, may result from prolonged exposure to NO₂.

Temperature and Humidity

Mold and mildew growth are driven by high temperatures and high humidity levels. These could harm the structural integrity of your workplace and give sensitive people symptoms similar to allergies. Monitoring these levels might alert you to potential causes including structural flaws and leaks as well as facility and health issues.

VOC (Volatile Organic Compounds)

Volatile organic compounds are gases that are released from a number of substances and can have both immediate and long-term negative effects on health. Numerous VOC concentrations can be up to ten times higher indoors than they are outdoors.

Many household products, including cleaners, antiseptics, paints, and varnishes, are sources of VOCs. VOCs are also created when fuels like wood and natural gas are burned.

Short-term exposure to low concentrations of VOCs can result in minor complaints like fatigue, nausea, and throat discomfort. Long-term exposure to high VOC concentrations has been

associated with liver and kidney damage as well as more severe respiratory irritation. Even when a product isn't being actively utilized, it still has the potential to release VOCs into the air.

Particulate Matter

Particulate matter (PM) is a mix of particles and droplets in the air. For those who are otherwise healthy, exposure to PM in sufficient amounts can irritate their eyes, nose, throat, and lungs, causing allergy-like symptoms and shortness of breath. Additionally, it may worsen pre-existing medical conditions like asthma and heart disease. PM 2.5 is regarded as the single greatest environmental health risk across the globe.

Outdoor sources like car exhaust, wildfires, and power plant emissions can have an impact on indoor PM levels. However, numerous indoors activities also release PM; among these are smoking, cooking, and using fireplaces.

Safety Sensor Readings

Help (Spoken Keyword)

Five spoken keyword phrases are pre-loaded on each HALO device. Anyone can use these words when they are under pressure or in need. This is especially useful for teachers and students who need assistance, schools where bullying is an issue, nurses and hospital patients and hotel staff. HALO will notify those who have been selected to receive these alerts whenever the keyword is said aloud.

Gunshot

Using frequency sound pattern and percussion, two-factor authentication can be applied to recognize gunshots and their location.

Aggression

HALO learns the characteristic of unusual noise in an area using machine learning. When a threshold above normal is identified for a predetermined amount of time, HALO warns when it exceeds what is considered normal.

Light Level

HALO can determine the amount of light in a specific area and express that information in Lux. This can be advantageous for occupancy detection, enhancing the effectiveness of emergencies, and combining with other sensors to detect intrusions.

Tamper

By detecting vibrations caused by striking the HALO, throwing objects at it, or even moving the ceiling tile it is set in, the tamper sensor on HALO helps to prevent vandalism and the disabling of the device.

Vape Sensor Readings

Marijuana (THC)

THC is the chemical component found in marijuana. The HALO Smart Sensor is the only sensor that can detect THC oil released by vape pens as well as other conventional smoking methods.

Vape

In order to automatically learn the environment and alarm when vaping is detected, HALO uses a Dynamic Vape Detection algorithm. HALO is the only product that can alert and differentiate between vaping, vaping with THC, and intentionally masking vaping behavior by using aerosols to cover up vaping.

Masking

In order to mask the distinctive scent of marijuana or other vaping smells, people who are seeking to conceal their vaping behavior may sometimes spray cologne or other aerosols.

Integrated Functionality

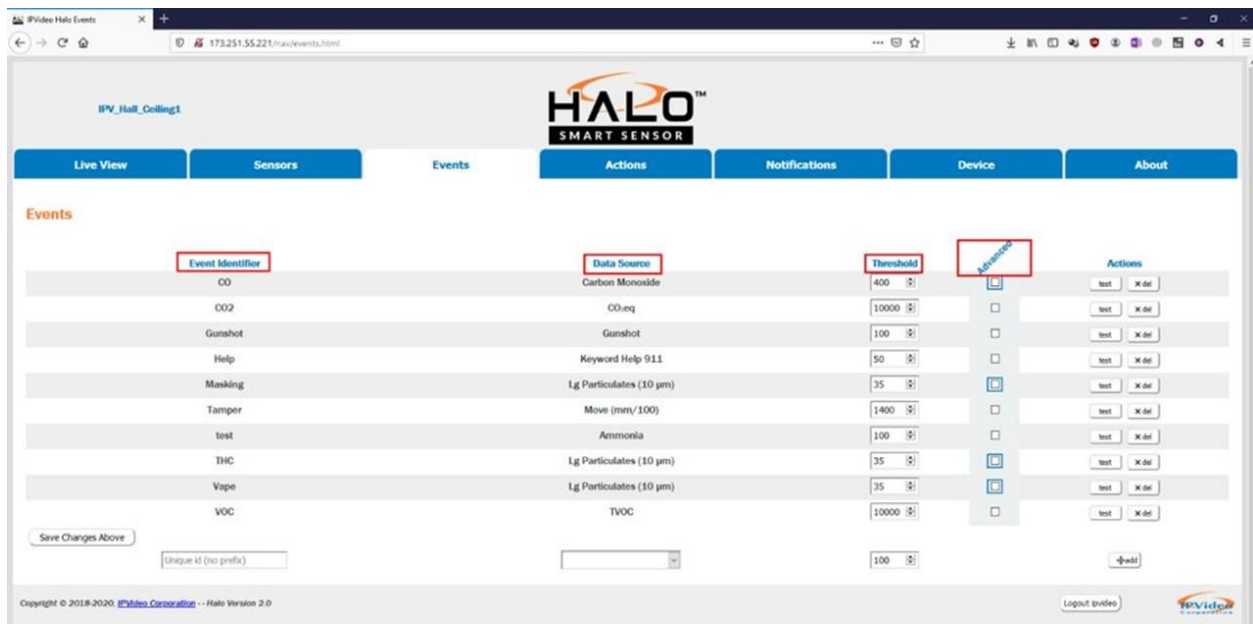
HALO IOT Smart Sensor is integrated as an IP device that enables you to trigger alarms upon reaching the pre-configured sensor thresholds and display the current values of the parameters detected by these sensors on the live and recorded video stream.

Alarm Triggering by Events

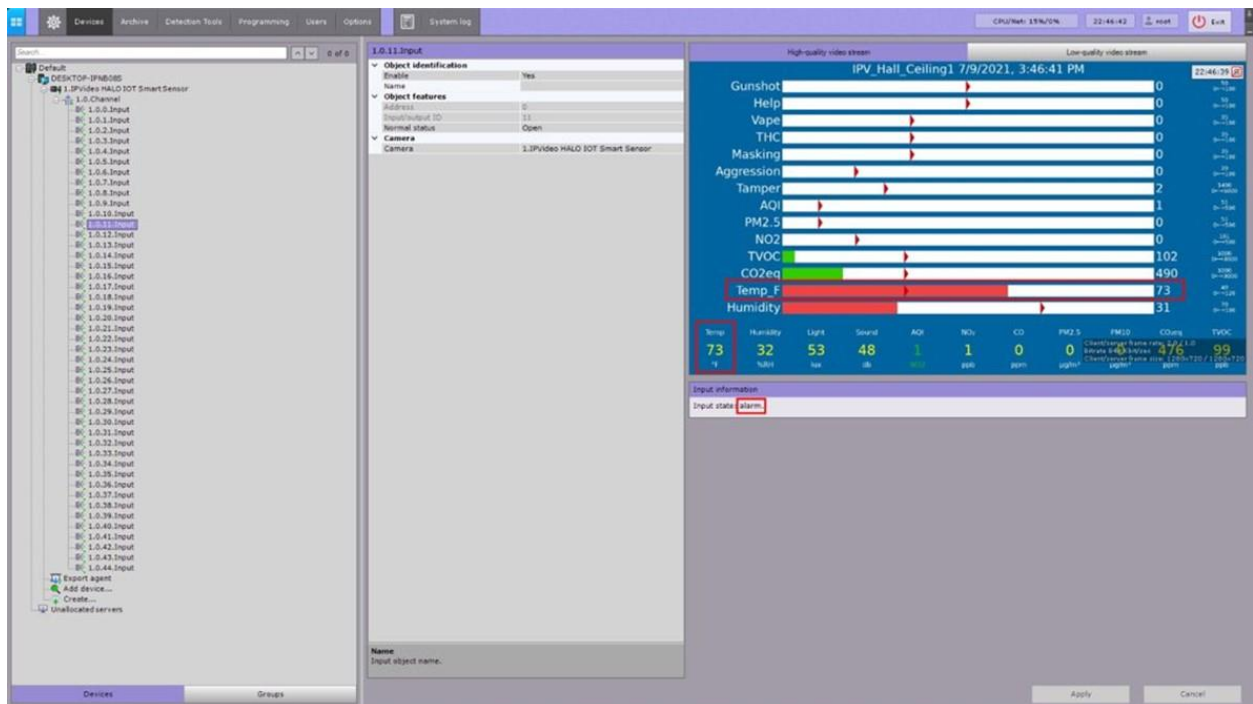
The device has 38 different types of sensors. This allows for creating an unlimited number of events on the web, classified by the set of parameters:

- *Event Identifier* (specified when an event is created in the device web interface; associated with a specific VMS sensor)
- *Data Source* (sensor type)
- *Threshold* (alarm triggering level)
- *Advanced* (trigger rule)

Different events can use the same Data Source at the same time.



After the event is created, you can receive alarm triggers of sensors in VMS.



When an event is created in the device web interface, a unique event identifier is specified, with which a particular VMS sensor is subsequently associated. In the integration, each sensor number is tied to a specific event ID, therefore, it is necessary to set the event ID on the device to those registered in the integration. The device web interface can be used for that.

Here are the correspondence tables for VMS Sensor No., Event Identifier and Data Source:

Table 1. Factory preinstalled event list (10 events)

Sensor № (in VMS)	Event identifier	Data Source
0	Aggression	Noise Level
1	CO	Carbon Monoxide
2	CO2	CO ₂ eq
3	Gunshot	Gunshot
4	Help	Keyword Help 911
5	Masking	Lg Particulates (10 µm)
6	Tamper	Move (mm/100)
7	THC	Lg Particulates (10 µm)
8	Vape	Lg Particulates (10 µm)
9	VOC	TVOC

The device has 10 factory preinstalled default event IDs. The first 10 integrators match them.

Table 2-1. Other available events list (28 events)

Sensor № (in VMS)	Event identifier	Data Source
10	Temp_C	Temperature (C)
11	Temp_F	Temperature (F)
12	Humidity	Relative Humidity
13	Visible_Light	Visible_Light
14	Light_Lux	Light_Lux
15	TVOC_Filtered	TVOC (Filtered)
16	CO2eq_Filtered	CO2eq (Filtered)
17	Sm	Sm Particulates (1 um)
18	Md	Md Particulates (2.5 um)
19	Sm_RoC	Sm Particulates (RoC)

Each of the remaining 28 sensors (Data Source) corresponds to one event identifier. When adding an event corresponding to a certain sensor on device web interface, it is necessary to set the Event Identifier in accordance with these tables.

Table 2-2. Other available events list (28 events)

Sensor № (in VMS)	Event identifier	Data Source
20	Md_RoC	Md Particulates (RoC)
21	Lg_RoC	Lg Particulates (RoC)
22	Ammonia	Ammonia
23	NO2	NO2
24	High_Gain	High Gain Mic (db)
25	Low_Gain	Low Gain Mic (db)
26	Audio_1	Audio 1
27	Audio_2	Audio 2
28	Audio_3	Audio 3
29	Audio_4	Audio 4
30	Keyword_2	Keyword 2
31	Keyword_3	Keyword 3
32	Keyword_4	Keyword 4

Sensor № (in VMS)	Event identifier	Data Source
33	X_orientation	X orientation (milli g)
34	Y_orientation	Y orientation (milli g)
35	Z_orientation	Z orientation (milli g)
36	Pressure_inHg	Pressure (inHg)
37	Pressure_mb	Pressure (mb)

There are also 7 additional Event Identifiers that can be connected to any sensor.

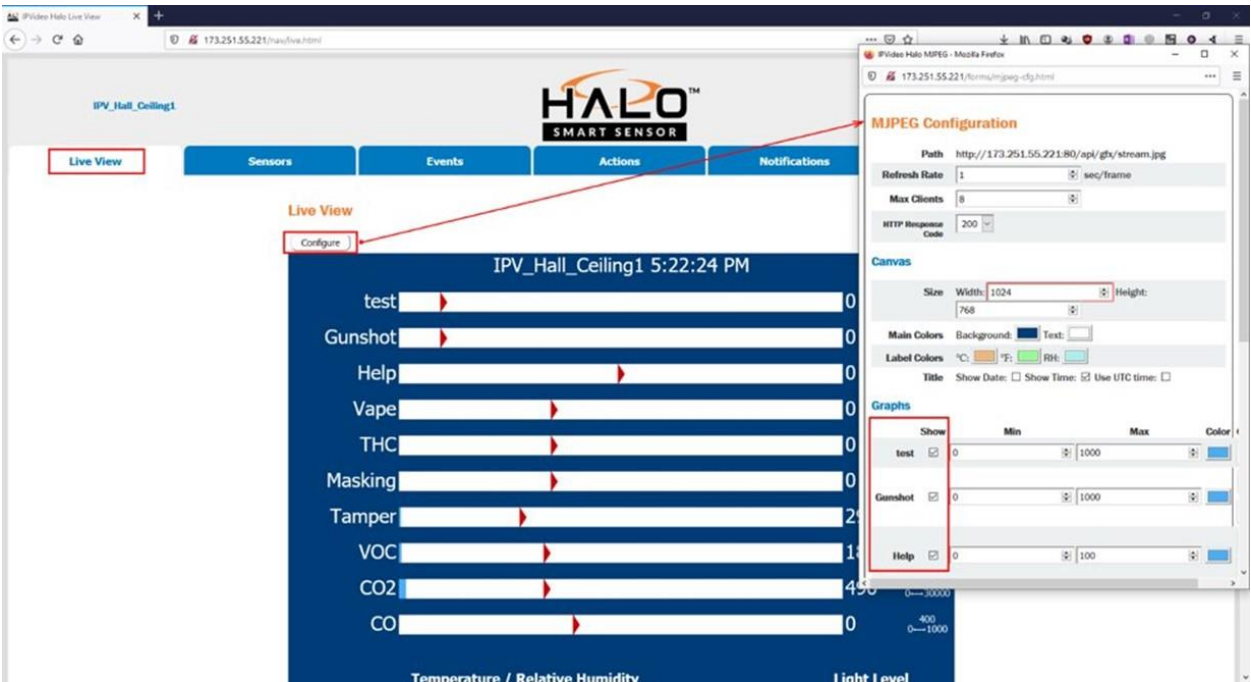
Table 3. Additional events list (7 events)

Sensor № (in VMS)	Event identifier	Data Source
38	Custom_1	Any
39	Custom_2	
40	Custom_3	
41	Custom_4	
42	Custom_5	
43	Custom_6	

Sensor № (in VMS)	Event identifier	Data Source
44	Custom_7	

Real Time Graph Monitoring

To display the sensor value on the created event on the video stream, you need to add the event on the device web interface to the graph using LiveView tab.



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About HALO



The HALO Smart Sensor by IPVideo Corporation is an IoT device that captures comprehensive health, safety, and vaping awareness. It is the #1 vape detector worldwide for vaping and vaping with THC detection. The market for devices such as the HALO Smart Sensor is helpful for a broad set of markets such as education, healthcare, hospitality, commercial buildings, apartment complexes, assisted living, and more.