HALO Smart Sensor Integration White Paper

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1. Introduction

This document indicates the features/abilities of the HALO smart sensor solution when integrated with CathexisVision. Functionally, this integration will include the triggering of standard CathexisVision system events, based on information received from the device.

For instructions on installation or configuration of the integration, please consult the ***HALO Smart Sensor Integration App-note***, available on the Cathexis website.

1.1 Integration Purpose

HALO Smart Sensor is a key component in the solution to providing a low-risk environment by monitoring Carbon Dioxide (CO2), Particulate concentrations, Humidity, Volatile Organic Compounds (VOC), and Nitrogen Dioxide (NO2) in the air. This multi-sensor is capable of vape detection, smoke detection, THC detection, and detecting sound abnormalities like gunshots and shouting in areas where a camera cannot be placed. HALO delivers safe, healthy, and comfortable environments that keep all personnel safe while saving money by efficiently running the HVAC system.

1.2 Requirements

1.2.1 General Requirements

- CathexisVision 2023.2 or later
- Cathexis NVR 64-bit version
- Windows 10 Pro
- Ubuntu 16.04 LTS and 20.04 LTS

Note: For information regarding the regular operation of HALO, please consult the relevant HALO manufacturer's documentation.

1.2.2 License Requirements

License	Name	Description
CHLO-1000	HALO Smart Sensor	These licenses apply to the smart sensor. The **CHLO-1000** will license a single sensor and may be added on a sensor-by- sensor basis.
CHLO-2000	HALO Smart Sensor Device	This license is the "base" license to integrate with the smart sensor system. It is applied to the server to which the HALO Smart Sensor is connected. This licence will allow for the connection of a single integration device.
CHLO-3000	HALO Smart Sensor bundle	This license includes one **CHLO-2000** smart sensor device license, and provides support for unlimited **CHLO-1001** HALO Smart Sensor licenses.

Note: In this integration, individual devices will require a license for each device.

1.3 Specifications

This integration was tested on three different HALO sensors:

Tested Sensor 1:

Hardware name	HALO Smart Sensor 3C
Hardware model number	HALO-3C
Firmware as tested	2.6.2 build 7.218-3

Tested Sensor 2:

Hardware name	HALO Smart Sensor V2.50
Hardware model number	HALO-V2.50
Firmware as tested	2.6 build 14.173

Tested Sensor 3:

Hardware name	HALO Smart Sensor 2C
Hardware model number	HALO-2C
Firmware as tested	2.6.2 build 7.218-3

Note: Cathexis makes a best attempt to ensure that the equipment and license requirements of third-party equipment are adequately specified. However, it is possible that the requirements of third-party equipment may change over time, including the interface hardware/firmware and licensing. The user is advised to clarify the latest requirements directly with the third-party equipment supplier.

1.4 Integration Components

All CathexisVision integrations have two component levels: **Device** and **Object**.

Device	The device is CathexisVision software's interface, which handles all the interaction between CathexisVision and the integrated hardware. When an integration is added to the CathexisVision system, a device is added. The messages received from the device are called Device Events.
Objects	Objects are the individual pieces of hardware that comprise the integration. There may be multiple "object types" under the objects group. For example, the main controller and door nodes of an access control system are both objects. They are different types of objects.

2. Features and Abilities

This section indicates the features/abilities of HALO Smart Sensor when integrated with CathexisVision.

2.1 General Device Features

CathexisVision receives event messages from HALO which can be used to trigger a CathexisVision system event.

2.2 Device Objects

Object Type		Abilities
General		• This integration has **Sensor** and **Communication channel** objects. • Device objects can be commanded as an action of a CathexisVision system event. • All Device objects support overlays with a configurable timeout. • Events on the software can be used to trigger CathexisVision system and map events. • Objects may be linked to cameras to associate device events with video footage.
Sensor	**Object Properties**	• Name • IP • Firmware • Connected • Triggered • Temperature • Humidity • Pressure • Light level • Health index • AQI • TVOC • CO_2Cal • NO_2 • PM2.5 • PM10 • Sound
Communication Channel	**Object Properties**	• Type • ID • Name

2.3 Device Events

The CathexisVision HALO integration generates Device events (logs), which are triggered on the device and reflected in CathexisVision.

Event Element	Features/Abilities
General	• Event messages generated by each sensor will generate event messages in CathexisVision. • Device event notifications populate both on the map and CathexisVision when an action/event triggers from a sensor. • A device can be associated with a camera in order to view live/recorded video with event overlays. • An overlay is generated, with a configurable timeout, when an event occurs.
Device Event Types: There are many different events that can be triggered from the Actions tab of each sensor (Gunshot, Vape, Humidity, etc.)	A device event notification is sent to CathexisVision when an event triggers from the sensor with the following properties: • Time (includes date) • Device Location • Device IP • Event identifier • Detected (set/reset)
CathexisVision Event Actions	There is a system list of different events that can be triggered from the Actions tab of each sensor (Gunshot, Vape, Humidity, etc.)

2.4 Metadatabase

A unique metadatabase is created on the CathexisVision server for this integration. It is fully searchable, with configurable filters based on device event information (as above), and time stamping. The filtered event/s, and the associated video, will then be available for review in a new window from which an archive can be created and exported.

Database Element	Features/Abilities
General	• All device events are databased. • Database entries include the footage from cameras linked to device objects. • Multiple cameras may be linked to multiple objects. • Device event metadata is displayed where applicable. • Databased device events may be viewed in the embedded video player, which includes the usual CathexisVision video review tools. • There's only one view option for device events and they can only be sorted by time from the metadatabase.
View Options	• Standard
Sort Options	• Time
Easy Search	• Time • Location

	• IP • Event • Event detected • Detected
Filter	• Time • Location • IP • Event • Detected Sub-stat F Stat • Sub-stat on/off • Log ID internal.
Export	Database entries may be exported in CSV and PDF format.

2.5 Maps

The CathexisVision GUI provides for configurable site maps that feature multi-layered, hierarchical, interactive interfaces providing representation and control of a site and its resources.

Map Element	Features/Abilities
General	Device objects can be embedded in a site map, which offers multiple action options when messages are received from the device, the device triggers an event, and/or the user manually initiates a map action.
Map Action Triggers	• All device objects may be set to trigger a map action if the user left-clicks on map. • Some device objects may be set to trigger a map action if an event *message* is received from the device. • All device objects may be set to perform a map action if *any* event occurs on the device. • Device objects, which can be configured to trigger CathexisVision events, may also be set to perform a map action when specific CathexisVision events are triggered.
Map Actions Options	When triggered (see above), objects may perform the following map actions (where applicable): • Connect to a site. • Perform an animation. • Go to a camera preset. • Load a map. • Set a PTZ relay output. • Show a popup menu. • Set a relay output. • Show an HTML block. • Show a block of text. • Show a device popup menu.

3. Conclusion

This document was designed to deal specifically with this integration. For further information about the CathexisVision software, consult the ***CathexisVision Setup Manual*** (https://cathexisvideo.com/).

For support, email support@cathexisvideo.com.

USEFUL LINKS

*To view **tutorial videos** on CathexisVision setup, visit https://cathexisvideo.com/resources/videos*

*Find answers to Cathexis **Frequently Asked Questions**: https://cathexis.crisp.help/en/?1557129162258*