Eagle Eye Application Note - AN006

Use Camera I/O to Control and Trigger Devices and Actions

2024-12-27   Revision 2.0

Target Audience

This Application Note is intended for administrators of the Eagle Eye Cloud VMS that have a need to utilize camera I/O functionality and are looking to understand connection details and the configuration of inputs and outputs within the Cloud VMS.

Overview

The Eagle Eye VMS provides Input/Output (I/O) functionality with supported cameras which have I/O capabilities. This allows for the connection of an Input to the camera for triggering events and for the connection of an output relay within the camera for triggering actions.

- Camera inputs & outputs are an essential tool for businesses that monitor their own security operations
- Connect horns and lights to cameras and remotely deter detected intruders
- Trigger the burglar alarm, with its certified connection to the monitoring center
- Press a panic button and trigger a camera to start recording and send alert notifications
- Easily integrated with alarm panels, PIRs, strobe lights, horns, and more
- Configured and managed using the Eagle Eye Cloud VMS browser application

Theory of Operation

The Camera I/O feature is used to generate alerts and activate triggers to assist in property protection, security management, and other business applications. Alerts and Actions may be interfaced in real time from the Eagle Eye VMS and are written to the video history timeline.

Key considerations:

1. Camera Input - Utilizing a supported and capable camera, users may connect a circuit to the camera's physical Input connection and trigger events to the VMS. This trigger may be used to activate a visual alarm icon within the Preview and Live Views of the VMS.
2. Camera Output - Utilizing a supported and capable camera, users may connect an Output circuit to a camera's physical output relay and trigger actions which are initiated by the VMS via a control Icon within the Preview and Live View windows.
3. Functionality is currently limited to user interface actions to Initiate Outputs and user interface alarms initiated by Camera Inputs.
4. Camera Inputs can be used to initiate event recording and will write to the History Browser Timeline.
5. Camera Outputs can be used to initiate actions to a peripheral device such as a strobe or siren. Output actions will write to the History Browser Timeline.
6. Only select Eagle Eye Cameras and some 3rd Party Cameras are supported at present. Note that support requests for compatible cameras may have special requirements that need to be considered.

Functional Application

Camera inputs and outputs detect or provide very low amounts of current to receive or send digital signals. Sending voltage from a device or sensor to a camera input triggers an input event; for example, an Alert Notification. User Events from the camera stream send voltage to an output triggering an output event, for example, providing power to a siren.

In the example diagram below, a system administrator would like for a traditional, powered Motion Detector to send an Input Signal to the camera whenever motion is detected. Then, the user would like to have the option to Signal the Output relay to provide power to a Speaker/Siren to audibly signal to anyone nearby that there is an Alarm.

Camera I/O - Example Diagram
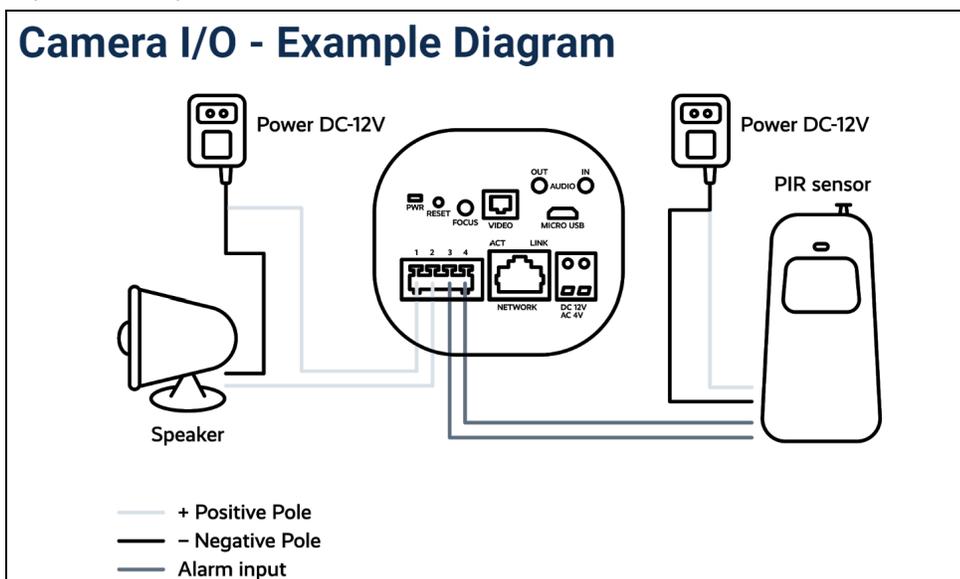
Configuration and User Experience

Inside the Camera Settings of the compatible model, there will be an "IO" tab. The IO settings have two additional tabs for configuration, "Input" & "Output." Each of those tabs have these available options shown below.

Inputs	
Step 1 - Enable the Input Step 2 - Name the Input Step 3 - Select the default circuit state Step 4 - Select Advanced Settings Icon Step 5 - Enable Advanced Options Step 6 - Enable and Select Alert Icon Step 7 - Configure Alert Notifications Step 8 - Save Changes	

Outputs	
Step 1 - Enable the Output Step 2 - Name the Output Step 3 - Select the default relay state Step 4 - Select Advanced Settings Icon Step 5 - Enable Advanced Options Step 6 - Enable and Select Alert Icon Step 7 - Test Output Operation Step 8 - Save Changes	
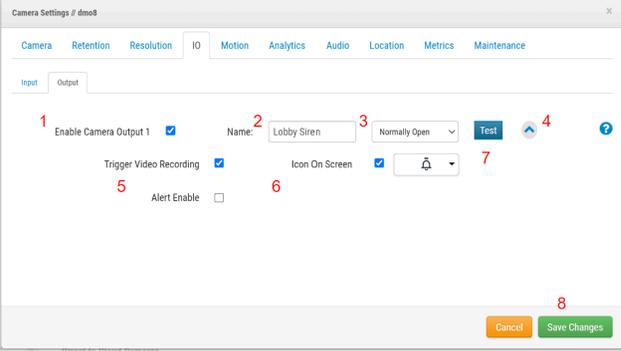
Input Icon on Screen options	Output Icon on Screen Options

Options Guide:

Enable Camera Input/Output #: Click this check box to enable the source. (See Appendix for special internal camera settings that may need to be enabled before the function operates.)

Name: Provide a name for this specific Input.

Relay Circuit State: Options are "Normally Open" or "Normally Closed".

Normally Open: means input is normally off (has no voltage) and alarm triggers turn it on (has voltage).
Normally Closed: means input is normally on (has voltage) and alarm triggers it off (has no voltage).
https://en.wikipedia.org/wiki/Electrical_contact

Trigger Video Recording: Enables video recording when an I/O is active. This will also appear as a violet line in the history browser, to indicate IO triggered recording.

Visual Alert: Enables a visual icon that appears in camera view when an input is triggered. There are several icon types for you to choose from.

Live Alerts and the Output Activation Icon are found in the right corner of the Camera View. An Active Input/Output is indicated by the Violet Color, and an Inactive Input/Output will be uncolored.

- The Input icon is only visual and does not affect Input relay in any way. It only provides a visual indication of the current status.
- The Output Icon is how the Output relay is triggered, either from the Preview Frame or Live Video window.

Alert Enable: Click this check box to send an alert. See the list of definitions below to help you determine how to best utilize camera I/O functionality.

When: Alerts can have a specified period of time when they are active. For example, you could have alerts only when the office is closed, or at night.

Re-Arm: The amount of time to wait before sending additional alerts can be set per alert. If set to Immediate, alerts will be sent each time an alert is triggered. This can produce an unlimited number of alerts. The amount of time to wait before sending additional alerts can be set to wait a specific time in minutes, or to wait until the alert is not triggered for a specific time. For example, if an alert is set to Re-Arm After quiet for 5 minutes, then alerts will be sent only when no previous alerts have been triggered for 5 minutes.

Max Per Hour: The amount of alerts can be set to a maximum number allowed within an hour period. For example, if the Re-Arm is set to immediate, and the Max Per Hour is set to 10, then once 10 alerts are sent, no further alerts will occur for an hour.

Alert Who: This indicates the users of the system that should receive the alert for this region.

Alert Mode: The Cloud VMS has an alert mode. The mode is specified in the Account Settings. The Alerts will only be created when the corresponding Alert Mode is active. This is generally used for applications where you would like one set of alerts normally, but another set of alerts at a different time. For example, you might want certain alerts active during normal business days and have a different set of alerts for holidays.

Alert Level: The level of the alert can be specified here. An alert has a level. The users can specify that they only want to receive alerts that are HIGH, LOW or both. This allows users of the system to limit the alerts that they receive.

Configuration Appendix and Supported Cameras

The Input/Output settings for individual cameras may require additional configuration in the camera's administration page. This may differ between models so it is important to look inside the camera's internal settings to make sure that any additional configuration is completed to enable the IO settings from within the Eagle Eye Cloud VMS.

As an example, the Eagle Eye EN-CDUM-008b does not have an active camera input setting by default. A login to the camera administration page is required. Then, you activate the input as well as set up a schedule for when the camera input will accept input signals.

Log In To Camera > Configuration (3rd Tab) > Alarm (Left Hand Menu) > I/O Alarm Linkage:
The preconfigured settings are Alarm Input "OFF" and the Alarm Schedule is "UnArmed":

Before Configuration - EN-CDUM-08b	Example Configuration
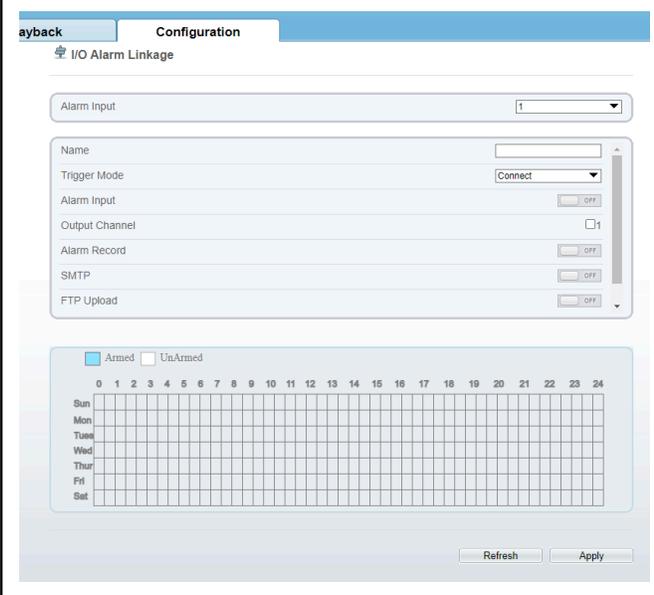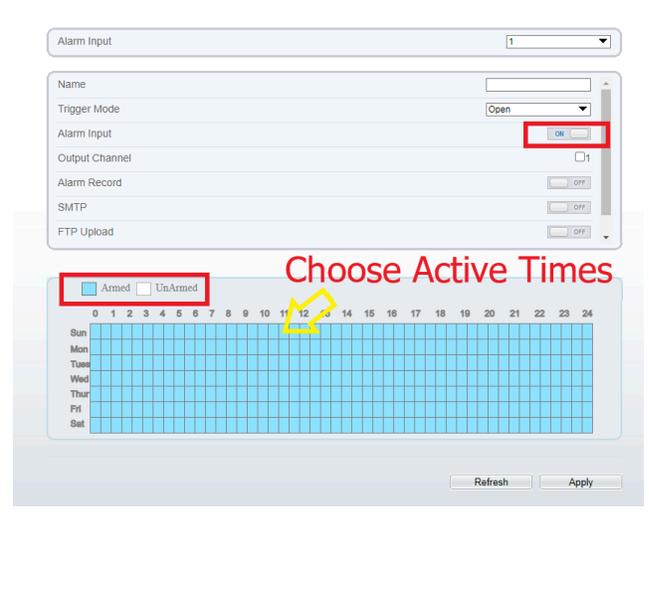
Eagle Eye Cameras that are currently supported with Camera I/O functionality:
*EN-CCUC-002a (Discontinued)
*EN-CDUD-005a (Discontinued)
EN-CDUD-009a
EN-CDUM-008b
EN-CDUF-003
EN-CDUZ-003
EN-CDUX-001

Support for third-party cameras: www.een.com/cameras (search for "Camera I/O").

*For unsupported third-party cameras, contact your sales representative and arrange to send a camera to Eagle Eye Networks Headquarters in Austin, TX for compatibility testing.

Camera I/O for Camera Direct Cameras

Camera I/O is supported for Camera Direct cameras. Eagle Eye Cameras which have I/O are supported by Camera Direct I/O. As a reference below are the models which support I/O in Camera Direct.

1. EN-CDUD-009a
2. EN-CDUM-008a/b
3. EN-CDUX-001

Configuring a Camera Direct camera for I/O: For Eagle Eye cameras supported, no configuration needed to be done for the camera to work with Camera Direct I/O. Connect the camera as Camera Direct and if the camera supports I/O a new I/O Tab will be visible after that you can follow Configuration and User Experience to configure and use the camera I/O.