

VideoXpert Event Monitor Service

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Overview

The VideoXpert Event Monitor Service is capable of being configured to poll for alarms from various devices, taking the alarm data it gathers and performing various actions when an alarm state change occurs.

Installation

PREREQUISITES

Prior to installation, the following should be installed:

- .NET Framework 4.61 or later
- Microsoft Visual C++ 2015 Redistributables (x86)

VERSIONING AND LICENSING INFORMATION

Version 3.x and above of the service requires VideoXpert version 3.1.x and higher in order to communicate to the VideoXpert system.

As of VideoXpert version 3.1.x, licensing is required to operate the service. The part number for the Event Monitor Service is "VX-EVENT-MON".

PROCEDURE

Note: see **Installation > Prerequisites** for a list of requirements prior to installation. If any of the prerequisites are missing, the service will be unable to run and the installation will fail.

To install the VxEventMonitorService, run the provided setup.msi file and follow the on-screen prompts.

The service will install as the local system user. Once installed, you need to complete the configuration (described in **VideoXpert Event Monitor Configuration**), and then either restart the system or manually start the service. On subsequent restarts of the system the service will automatically start.

Default XML Files

In the directory C:\Program Files (x86)\Pelco\VxEventMonitorService\ there will be several default XML files with the text "default" preceding the file name. These files are examples of XML configuration files required by the service and should be renamed without "default" in the filename once the file has been modified for use. Each configuration file is described below.

VideoXpert Event Monitor Configuration

The VideoXpert Event Monitor Service requires the configuration information contained in the defaultVxEventMonitorServiceSettings.xml file to be defined and, as with other files beginning with "default", to be renamed VxEventMonitorServiceSettings.xml once the file has been altered for use.

The VxEventMonitorServiceSettings.xml file contains the following XML elements:

```
<VideoXpertUsername></VideoXpertUsername>
<VideoXpertPassword></VideoXpertPassword>
```

</ VxEventMonitorServiceSettings >

Where:

- DebugLevel is either 0 for off, 1 for normal debug, 2 will output verbose debug messages. Output may be seen by turning off the service and starting the service from the command line or Windows Explorer.
- VideoXpertCoreAddress is a string representing the IPV4 Ethernet address of the core. Example: 192.168.1.100.
- VideoXpertCorePort is the port of the Core the Event Monitor service will be communicating with. Default 443.
- VideoXpertUserName is a base64 encoded string. Example: "admin" is encoded as YWRtaW4=
- VideoXpertPassword is a base64 encoded string.

Camera Configuration

As of VideoXpert version 1.12, camera numbers may be assigned using the VideoXpert Ops Center.

Monitor Configuration

As of VideoXpert version 1.12, monitor numbers may be assigned using the VideoXpert Ops Center.

Supported Alarm Devices

There are currently three alarm devices that are supported by the Event Monitor Service – the Moxa ioLogik E1212 version v2.5 Build16091211, the Sorhea Maxibus GFence, Hub version V2.5.5 04/01/19 and the IPVideo Corporation Halo Version 1.53. Other variations or versions of these devices may work but have not been tested or verified as supported.

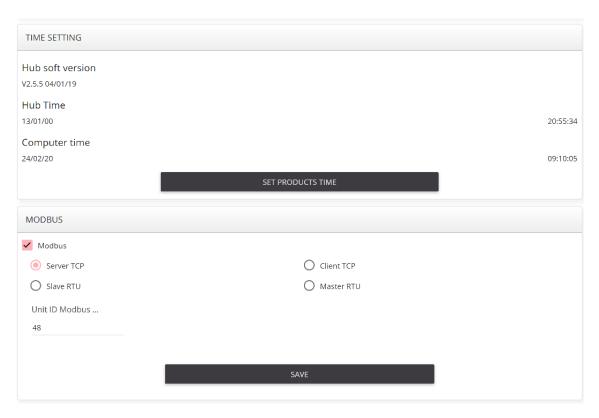
Moxa ioLogik E1212

The Event Monitor Service can poll alarms from and set relays on the Moxa ioLogik E1212 through its Modbus Ethernet interface. Setup of the Moxa ioLogik E1212 must include enabling the Modbus interface by checking the checkbox "Enable Modbus/TCP Slave Protocol" on the User-defined Modbus Addressing Digital inputs/Outputs screen of the Moxa web interface. Address values should be left default.

Alarms polling is initiated every 300 milliseconds.

Sorhea Maxibus GFence

The Event Monitor Service can poll alarms from the Sorhea Maxibus GFence through its Modbus holding registers when Maxibus is set as "Server TCP" as shown below.



Several settings have been added to support Maxibus, including UnitId and StartHolding. A GFence product attached to COM1 of the Maxibus Hub would require the StartHolding address to be set to 0x9066, which is the address of the first alarm. Since Maxibus alarms each have 6 holding registers, the next alarm will be at 0x906c. See the Maxibus documentation for address setup information on other configurations. Note that the Register Address of each alarm can also be individually set using the <RegisterAddress> element. So, in the scenario above, if it was desired to read the data for the second alarm from the address 0x906d, instead of 0x906c, this can be specified as <RegisterAddress>0x906d</RegisterAddress>.

The Event Monitor Service defaults to a bitmask of 0x80 which is looking at the B7 Intrusion bit in the First status word to determine whether or not an alarm condition exists, however, the bitmask may be set using the <code><BitMask></code> element for each alarm individually in order to support other alarm conditions reported through bits other than B7. If bits B7 and B6 must be set simultaneously for an alarm condition, this may be specified by <code><BitMask>0xC0</BitMask></code> or <code><BitMask>192</BitMask></code>.

Polling of Holding registers occurs roughly every 300 milliseconds.

IPVideo Corporation Halo Device

Halo devices must be programmed to send events to the HaloListenIp and HaloListenPort.

Notifications should be set to where the HaloListenIp and HaloListenPort match the address and port from the Notifications tab of the Halo Web UI.

When setting up XML for alarms in the AlarmConfiguration.XML for a Halo device, the Alarm Name must match the string coming from the Halo device's %EID%. For example

Note that values sent from a Halo device must be delimited with the '|' character. Spaces cannot be used as they may appear in values, such as the %EID%".

These strings can be copied and pasted directly into the Notifications settings as shown below.

- set|%IP%|%EID%|%THR%|%VAL%
- reset|%IP%|%EID%|%THR%|%VAL%
- heartbeat|%IP%

Note: only TCP is supported.

VMS Settings

Set string	set %IP% %EID% %THR% %VAL%	● On ○ Off	
Reset String	reset %IP% %EID% %THR% %VAL%	● On ○ Off	③
Address	0.0.0.0		
Port	1234		
Save Save Save Save Save	e, you can use: ME% - device name - ip address % - event id MRCE% - data source % - event threshold % - sensor value :E% - local time of event E% - local time of event		

Heart Beat

Message	heartbeat %IP%	③
Interval Seconds	60	
Address	0.0.0.0	
Port	1234	
Protocol	● TCP ○ UDP	
Save %NAI %IP% %MA %EVE %DAT	e, you can use: ME% - device name 5 - ip address C% - mac address SNTS% - list of event states IE% - local date IE% - local time	set 10.221.77.40 Room Temp 80 85

The Halo device is capable of sending both the Threshold and Value of the event trigger. Note that these values can be inserted into the situation injected into VideoXpert by defining the Key/Value pairs with empty values in the Alarm Configuration. This would appear in the AlarmConfiguration.xml as follows (See Alarm Configuration section below for more details).

<Situation>

Alarm Configuration

The AlarmConfiguration.xml file is used to define alarm devices and what to do when an alarm state change is found on the alarm device. A file named defaultAlarmConfiguration.xml is provided as an example of what the AlarmConfiguration.xml contents should be.

The AlarmConfiguration.xml file contains the following XML elements:

```
<AlarmConfiguration>
       <!-- IP Address to listen on for Halo Events, if left blank the first
       active NIC found will be used -->
       <HaloListenIp></HaloListenIp>
       <!-- Port to list on for Halo Events -->
       <HaloListenPort></HaloListenPort>
       <AlarmDevice>
               <DeviceIP>192.168.1.1
               <DeviceType>ioLogik/DeviceType>
               <NumberInputs>8</NumberInputs>
               <NumberOutputs>8</NumberOutputs>
               <StartInputs></StartInputs>
               <StartOutputs></StartOutputs>
               <StartHolding></StartHolding>
               <UnitId></UnitId>
               <OffLineAlarm>...same elements as Alarm...</OffLineAlarm>
               <Alarm>
                      <Name>Alarm 1</Name>
                      <Number></Number>
                      <RegisterAddress></RegisterAddress>
                      <BitMask></BitMask>
                      <SourceDeviceId>USE INTEGRATION ID</SourceDeviceId>
                      <Situation>
                              <AlarmState>1</AlarmState>
                              <Type>external/EventMonitor/Alarm_active</Type>
                              <ValidTimeFilter>
                                     <DaysOfWeek>Monday,Tuesday/DaysOfWeek>
                                      <DaysOfMonth>1,15
                                     <StartTime>8:30</StartTime>
                                     <EndTime>17:00</EndTime>
                              </ValidTimeFilter>
                              <Property>
                                      <Key>alarm name</Key>
                                     <Value>Alarm 1</Value>
                              </Property>
                              <Command>
                                     <Name>SaveMonitorState</Name>
                                     <Monitor>1</Monitor>
                              </Command>
                              <Command>
                                     <Name>SetLayout</Name>
                                      <Monitor>1</Monitor>
                                     <Layout>2x2</Layout>
                              </Command>
                              <Command>
                                     <Name>DisplayCamera</Name>
                                     <Monitor>1</Monitor>
                                     <Cell>1</Cell>
```

```
<Camera>1</Camera>
                                      <Pre><PreviousSeconds>0</PreviousSeconds>
                               </Command>
                               <Command>
                                       <Name>GoToPreset</Name>
                                       <Monitor>1</Monitor>
                                      <Camera>1</Camera>
                                       <Pre><Preset>PRESET1</Preset>
                               </Command>
                               <Command>
                                      <Name>SetRelayState</Name>
                                       <Relay>1</Relay>
                                      <State>1</State>
                                      <DeviceIP>192.168.1.1/DeviceIP>
                               </Command>
                               <Command>
                                      <Name>BookMark</Name>
                                      <Camera>1</Camera>
                                      <Description>Script 1 Bookmark
                               </Command>
                       </Situation>
                       <Situation>
                               <AlarmState>0</AlarmState>
                               <Type>external/EventMonitor/Alarm inactive</Type>
                               <Property>
                                      <Key>alarm name</Key>
                                      <Value>Alarm 1</Value>
                               </Property>
                               <Command>
                                       <Name>RestoreMonitorState</Name>
                                       <Monitor>1</Monitor>
                               </Command>
                               <Command>
                                      <Name>DisconnectCamera</Name>
                                       <Monitor>1</Monitor>
                                       <Cell>1</Cell>
                               </Command>
                       </Situation>
               </Alarm>
       </AlarmDevice>
</AlarmConfiguration>
```

Where:

- HaloListenIp sets the IP Address of the integration on which to receive Halo events. If left blank the integration will use the first IP Address found on the integration machine.
- HostListenPort set the Port on which to receive Halo events.
- AlarmDevice defines a device to poll. This element may be repeated as many times as desired.
- DeviceIP is the address of the AlarmDevice.
- DeviceType is the type of the AlarmDevice. Currently this must be set to either ioLogik, Maxibus or Halo. Defaults to ioLogik.
- OffLineAlarm is a special alarm definition for what to do when the Alarm device itself is not communicating. This element is not required and may be removed if unused. When the device is offline the AlarmState is 1, when online the AlarmState is 0. The OffLineAlarm is otherwise identical to the Alarm element and contains all of the same elements.
- Alarm defines an alarm on the AlarmDevice. This element must be repeated for each alarm. If an alarm device has
 more alarms than Alarm elements, the undefined alarms will be ignored. Note that Alarms are defined in order, so
 the first Alarm on the Alarm Device should appear first in the XML. If it is desired to skip an Alarm, an empty
 <Alarm/> element should be placed in the XML in place of the alarm to skip.
- NumberInputs is the number of alarms the device is able to support or is configured to support. Defaults to 8.
- NumberOutputs is the number of relay outputs the device is able to support or is configured to support. Defaults to 8.
- StartInputs is the starting address of digital inputs. Defaults to 1.
- StartOutputs is the starting address of digital outputs. Defaults to 17.
- startHolding is the starting address of holding registers. Defaults to 36966.
- UnitId is the Modbus unit identifier of the device. Defaults to 48.
- Name is the friendly name of the alarm.
- Number is the number to associate with the alarm.

- RegisterAddress specifies a Modbus address at which the alarm resides. Alarms are normally linear in the address space starting from either the StartInputs or StartHolding address. Currently this value is used only by the Maxibus driver to specify an exact address for the alarm in the Holding registers.
- Bitmask is a bitmask to be applied to the values read from the Holding registers to indicate alarm. All bits in the bitmask must be 1 for an alarm to be considered Active. Currently this value is used only by the Maxibus driver.
- SourceDeviceId is the Id of the device associated to the alarm. For a pre-defined Situation this would likely be the
 deviceId of a camera that you would like to associate with the alarm when injecting an event into VideoXpert. For
 an external situation type, this should be "USE_INTEGRATION_ID" to have the service automatically use the
 integrationId that has been assigned by core to fill in the SourceDeviceId when an event is injected into
 VideoXpert.
- Situation defines a situation to inject into VideoXpert and a set of commands for a given alarm state. For each Alarm there should be two situations, one for what to do when the AlarmState is 1 and one for what to do when the AlarmState is 0.
- AlarmState is either 1 or 0 for ON/OFF respectively.
- Type is the Situation Type. See the VideoXpert documentation for pre-defined types and parameters. External Situations must be defined in the CustomSituations.xml file which is described later in this document.
- ValidTimeFilter is the time at which the alarm is valid. This element may be removed to indicate the alarm is always valid. If any of the values under ValidTimeFilter are defined, the time of the alarm event will be checked against the current local time and only those alarms occurring within the ValidTimeFilter will trigger.
- DaysOfWeek may be defined and should be one or more of the following separated by commas: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and/or Saturday.
- DaysOfMonth may be defined and should consist of integer values ranging from 1 to 31 delimited by commas.

 Note that while it is allowed to define both DaysOfWeek and DaysOfMonth simulataneously, this combination of filter will likely result in unexpected results as both will be applied if defined.
- StartTime and EndTime define daily start and end times for the match to occur. These values consist of an hour 0 23 and minute 0 59 separated by a colon. For example, 13:30 would indicate 1:30 PM.
- A list of properties may be included, which are key/value pairs. Property keys for pre-defined Situation types are predefined and must not be changed. External situations allow for adding any user-defined properties that are desired.
- A list of Commands may be included, which are actions that will take place when the alarm changes to the defined AlarmState. A Command must contain the Name element and may contains the elements Monitor, Camera, Cell, Layout, PreviousSeconds, Preset, Pattern, Relay, State, DeviceIP or Description depending upon the Command.
- Name is the command name and may contain one of the following values: SetLayout, DisplayCamera, DisconnectCamera, GoToPreset, RunPattern, SetRelayState, SaveMonitorState, RestoreMonitorState or BookMark.
- Monitor is the number of the Monitor that the command should target.
- Layout is the layout value to use in the command. Valid values are: "1x1", "1x2", "2x1", "2x2", "2x3", "3x2", "3x3", "4x3", "4x4", "5x5", "1+12", "2+8", "3+4", "1+5", "1+7", "12+1", "8+2", "1+1+4", "1+4 (tall)", "1+4 (wide)"
- Cell is the number of the cell of the Monitor that the command should target. The cell number is 1 to X where X is the number of cells in the layout. For example, in the 4x4 layout, the cell may be 1 to 16.
- Camera is the number of the Camera to be used in the command.
- PreviousSeconds is a number of seconds before current time to seek the camera to. If 0 or the element is not present, the camera will be displayed live. To display the camera 5 minutes in the past, set PreviousSeconds to 300.
- Preset is the preset value to use in the command. An example of a commonly used preset value is "PRESET1".
- Pattern is the pattern value to use in the command. An example of a commonly used preset value is "PATTERN1".
- Relay is the relay number to use in the command.
- State is the state to use in the command. Valid values are 1 or 0.
- DeviceIP is the IP address of the device.
- Description is a description for a BookMark. If this field is empty, the description of the BookMark will be "EventMonitor situation: ", followed by the situation type being injected (if any).

In the Alarm configuration above, when Alarm 1 transitions to an AlarmState of 1, the external/EventMonitor/Alarm_active situation will be injected into VideoXpert. Then the layout on Monitor 1 will be changed to 2x2, Camera 1 will be displayed in Cell 1 of Monitor 1 and will be moved to Preset 1. The relay state on the alarm device at 192.168.1.1 will also be set to 1.

Note that all the commands are shown in the xml above to outline the required elements of each command except for RunPattern. This command requires the following elements:

Saving and Restoring Monitor State

Monitor state may be saved and restored using the Commands SaveMonitorState and RestoreMonitorState defined above. When a monitor state is saved, it is saved until restored. No other saves for that monitor will be accepted until the monitor is restored. This means that if multiple alarms occur which have the SaveMonitorState command associated with the same monitor, only the first alarm will save state. Once the monitor's state has been restored, the software will again allow the state to be saved for restoration.

Monitoring VideoXpert Situations

The EventMonitorService is capable of being configured to listen for specific VideoXpert events and reacting to the occurrence of these events by executing associated commands. Situations to listen for are configured in the file C:\Program Files (x86)\Pelco\VxEventMonitorService\Subscriptions.xml. An example of the XML configuration can be found in the defaultSubscriptions.xml file in the same directory.

The Subscriptions.xml file contains the following XML elements:

```
<Subscriptions>
       <Situation>
               <AckState></AckState>
               <Type>system/stream loss </Type>
               <SourceDeviceId></SourceDeviceId>
               <ValidTimeFilter>
                      <DaysOfWeek>Monday,Tuesday/DaysOfWeek>
                      <DaysOfMonth>1,15
                      <StartTime>8:30</StartTime>
                      <EndTime>17:30</EndTime>
               </ValidTimeFilter>
               <Property>
                      <Key>data source id</Key>
                      <Value>uuid:69d5a953-81da-4a04-90c8-6cfcec7f6c65</Value>
               </Property>
               <Command>
                      <Name>BookMark</Name>
                      <Camera>1</Camera>
                      <Description>Device Offline BookMark/Description>
               </Command>
       </Situation>
</Subscriptions>
```

Where:

- Situation defines a VideoXpert situation to listen for. All events of the corresponding Type will be subscribed to by the service. You may define more than one Situation to listen for. You may also add an entry with the same Situation Type but different properties if you wish to execute different commands based on the properties. For example, if you wish to execute a particular command if a particular device fails.
- AckState defines the Acknowledgement state of the event. Leave this blank or undefined if you wish to match on
 the default setting ("AckNeeded" or "NoAckNeeded"). If you wish to match a particular AckState of the event, you
 may have one of the following values in AckState: "AckNeeded", "Acked", "AutoAcked", "NoAckNeeded",
 or "Silenced".
- SourceDeviceId provides a means to match events coming from a particular source device. Not to be confused with the data_source_id property which may or may not be the same value for some situations,

- SourceDeviceId is present in all events where the data_source_id property is not. This field is useful for situations where the data_source_id property is not present such as the "system/device_offline" situation.
- A ValidTimeFilter may be imposed to define a valid time for the match to occur. Left blank or removed, indicates that any time the situation occurs it will be processed. If any of the values under ValidTimeFilter are defined, the time of the event will be checked against the current local time and only those events matching the values in ValidTimeFilter will trigger.
- DaysOfWeek may be defined and should be one or more of the following separated by commas: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday and/or Saturday.
- DaysOfMonth may be defined and should consist of integer values ranging from 1 to 31 delimited by commas.

 Note that while it is allowed to define both DaysOfWeek and DaysOfMonth simulataneously, this combination of filter will likely result in unexpected results as both will be applied if defined.
- StartTime and EndTime define daily start and end times for the match to occur. These values consist of an hour 0 23 and minute 0 59 separated by a colon. For example, 13:30 would indicate 1:30 PM.
- The Property element may be repeated for each property you desire to match. Each Situation event from VideoXpert will have a set of properties that can be matched. The string in the Key element must match exactly where the string in the Value element is considered matching if contained within the Situation received from VideoXpert. In the example above, this would allow you to enter a partial uuid for the device that experience stream loss in order for a match to occur. Care should be taken to ensure that enough of the uuid is entered to distinguish the device from other devices on the system.
- The Command element defines actions to take when the Situation occurs. The list of acceptable commands is identical to that defined in the AlarmConfiguration section. The Command element may be repeated as many times as desired.

Note that for each event Situation received from VideoXpert, you may define multiple Situations that match. Each matching Situation will have the corresponding Commands executed.

Custom (External) Situations

It is possible to define custom situations, referred to as external situations, and place the created external situation type into the Alarm <situationType> of an entry in the AlarmConfiguration.xml.

There are several ways to view External Events in VideoXpert: Using VideoXpert Toolbox navigate to the "Events" tab or you can use the Event Viewer plugin within Ops Center.

Note that it is possible to modify External Situation properties within Toolbox, however, these settings will be overwritten by settings within the CustomSituations.xml file (below) each time the service restarts.

THE CUSTOMSITUATIONS.XML FILE

If the event is a custom event to VideoXpert, as configured above, the custom situation must be defined so that it can be sent through to the VideoXpert system. Custom Situations are defined in the file C:\Program Files (x86)\Pelco\VxEventMonitorService\CustomSituations.xml.

The CustomSituations.xml file contains the following XML elements:

```
<DisplayBanner>1</DisplayBanner>
      <ExpandBanner>0</ExpandBanner>
      <Audible>1</Audible>
      <AckNeeded>0</AckNeeded>
      <AutoAcknowledge>10</AutoAcknowledge>
      <SnoozeIntervals>60,300,600</SnoozeIntervals>
  </CustomSituation>
  <CustomSituation>
      <SituationType>external/EventMonitor/Alarm inactive</SituationType>
      <SourceDeviceId></SourceDeviceId>
      <Name>Alarm InActive</Name>
      <Severity>1</Severity>
      <Log>1</Log>
      <Notify>1</Notify>
      <DisplayBanner>1</DisplayBanner>
      <ExpandBanner>0</ExpandBanner>
      <Audible>1</Audible>
      <AckNeeded>0</AckNeeded>
      <AutoAcknowledge>10</AutoAcknowledge>
  </CustomSituation>
</CustomSituations>
```

Where:

- SituationType is a string defining the situation type. Must start with "external/" and should follow the rules defined in the VideoXpert protocol documentation.
- SourceDeviceId may be left blank or may be defined in order to act as an optional constraint on the source of events for this Situation. If specified, any events matching the Situation type MUST also match this SourceDeviceId in order for the Situation to apply. "USE_INTEGRATION_ID" may be used to have the service automatically use the integrationId that has been assigned by core to fill in the SourceDeviceId
- Name is a descriptive string of the situation.
- Severity is an integer from 1 10.
- Log is a Boolean (0 or 1), telling VideoXpert to Log the situation or not.
- Notify is a Boolean, telling VideoXpert to Notify users of the situation or not.
- DisplayBanner is a Boolean, telling VideoXpert to display a banner in Ops Center or not.
- ExpandBanner is a Boolean, telling VideoXpert to expand the banner in Ops Center or not.
- Audible is a Boolean, telling VideoXpert to have an audible indication of the event or not.
- AckNeeded is a Boolean, telling VideoXpert that an Ack is needed or not.
- AutoAcknowledge is an integer number of seconds to automatically acknowledge the alarm.
- SnoozeIntervals is an optional parameter. The default is (60, 300, 600). If you do not wish to change the SnoozeIntervals, leave it blank or remove the element completely.

Frequently Asked Questions

How do I view the logs?

You can get debug information by the doing the following: Set the DebugLevel > 0 in the configuration file and run dbgView.exe. This should be able to capture and log any output from the service. We simple write to standard debug and there are utilities that can capture and log standard debug.

How can I view the alarms in the VideoXpert Event Viewer?

Typically, events injected from this integration will have a type of "External". A user can input any type of situation they desire, though it should be "External" since it is coming from an integration. Users can filter the events by selecting the "External" event category in the filters area.

Can I install the Event Monitor Service on the VideoXpert Core server?

Installing and running on VideoXpert Core is not recommended. Users should use discretion to not impact the performance of their core system components. It is recommended that the Event Monitor Service be installed on another server. Please refer to the installation section of this document for more information.

Can I trigger a relay on devices other than the relays on the External I/O device?

In this version of the Event Monitor Service it is not possible to trigger relays on other devices within the VideoXpert system other than those on the external I/O device.

Pelco Troubleshooting Contact Information

If the instructions provided fail to solve your problem, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international) for assistance.

REVISION HISTORY

Manual Title	Date	Comments
Event Monitor Service	03/20	v3.7.2.0 updates.
Event Monitor Service	02/20	v3.7.1.0 updates.
Event Monitor Service	05/17	v2.0.2 updates.
Event Monitor Service	02/17	Original version.



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