THERMAL™ RADAR

Visionary Thermal Detection

Introduction

This guide is intended to serve as a quick reference for installing and configuring Thermal Radar™ and/or Hydra™ systems.

A successful configuration will allow the viewing of the following video feeds within a Video Management System (VMS): a thermal-based stream from Thermal Radar™ and an optical-based stream from a pan-tilt-zoom (PTZ) camera (for Hydra™ installations).

For more detailed instructions, please refer to the **Thermal Radar™ Settings Manual** by clicking one of the question marks contained on each page of the Thermal Radar™ Graphical User Interface (GUI).

If you have any additional questions, please contact our support team using the information below:

support@thermalradar.com | (+1) 385.535.8670 | thermalradar.com

Installation and Configuration Steps

The following 16 steps serve as a quick reference for installing and configuring Thermal Radar™ and Hydra™ systems. For detailed instructions, refer to the **Thermal Radar™ Installation Guide.**

System Architecture & Data Flow

The following is a diagram representative of the flow of data within a configured Thermal Radar™ system. Refer to Step 2 (Page 6) for a complete wiring diagram.
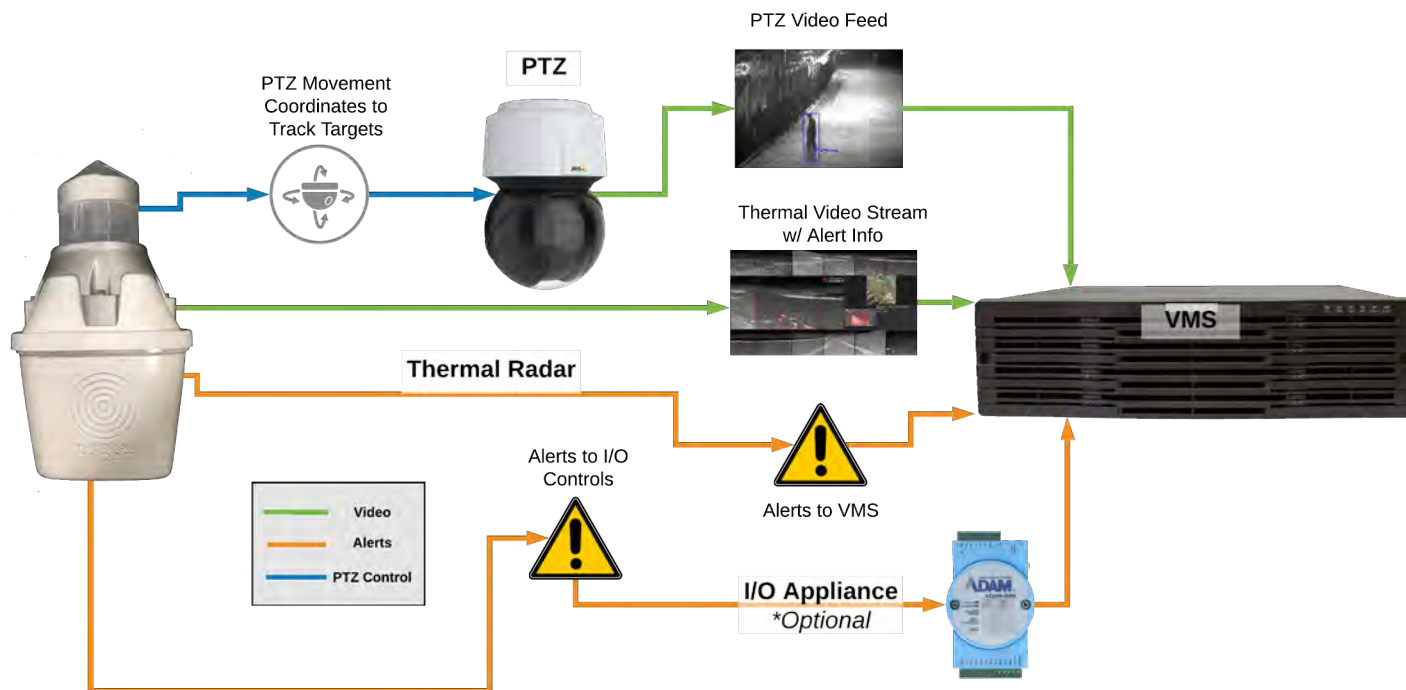
Components of a Thermal Radar™ System

Required:

Thermal Radar™
Continuously rotates a FLIR® thermal sensor and uses custom-written edge analytics for human, vehicle, and fire detection.

Optional:

PTZ (Various Manufacturers)
An optical pan-tilt-zoom camera that receives directional input from Thermal Radar™ for targeted surveillance of detected objects.

NVR / VMS PC
Equipment that receives and manages video and alarm information from Thermal Radar™ and an attached PTZ; allows for review and recording of video. It can be a Network Video Recorder (NVR) or a Personal Computer (PC).

Relay/Digital Output Module
A digital relay device used to trigger VMS alerts (e.g., lights, sirens, 3rd-party devices).

Step 1: Mount Thermal Radar™ or Hydra™

A. Assemble the Hydra™ Standard Arm or Gooseneck Mounting Bracket at the mounting location.

B. Run two (2) ethernet cables (minimum Cat 5e) through the mounting arm / Gooseneck bracket and terminate each on both ends.

C. Insert one of the network cables into the Thermal Radar™ and mount the camera to the top of the upper J-Box.

D. Insert the other network cable into the PTZ and mount the camera on the bottom of the upper J-Box.

E. Ensure the J-Box is level when mounted, to ensure Thermal Radar™ detection accuracy.

Note: Always use the provided weathertight RJ45 adapter with Thermal Radar; failure to do so will void the warranty.

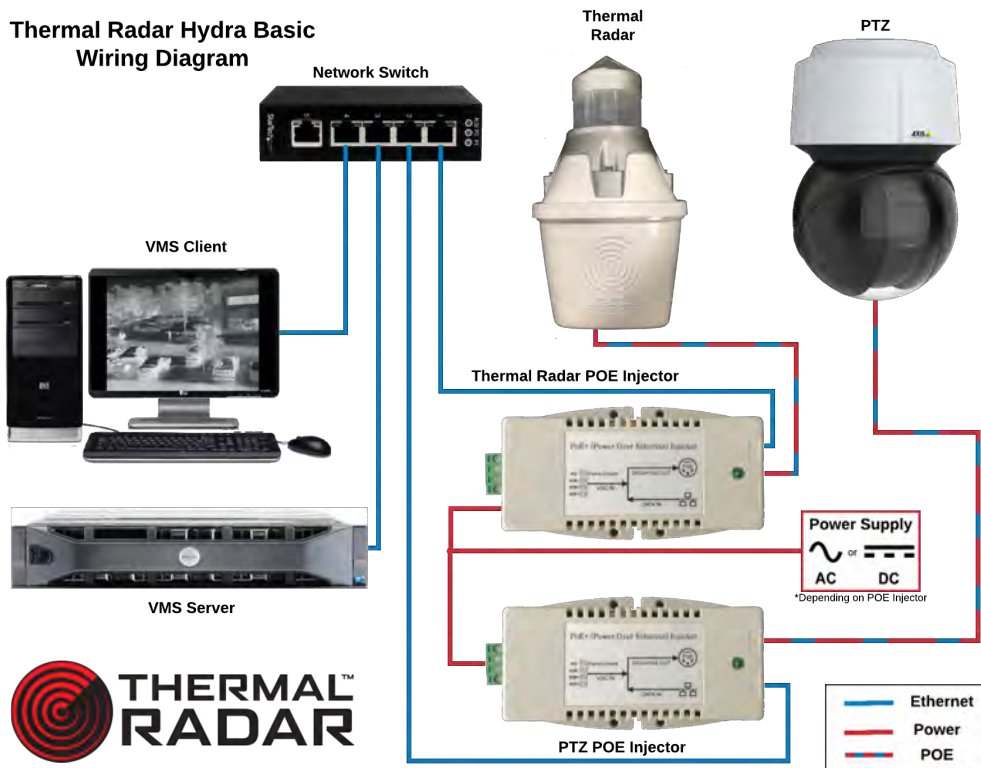**Standard Arm:**

Gooseneck Arm:

Step 2: Wire and Connect the System to a Network

A. Connect the ethernet cable from the Thermal Radar™ to the PoE-Out port of its injector. Next, connect the PoE-In port of the injector to the network switch.

B. Connect the ethernet cable from the PTZ to the PoE-Out port of its injector. Next, connect the PoE-In port of the injector to the network switch.

C. Connect the VMS PC to the network switch via an ethernet cable.

Thermal Radar Hydra Basic Wiring Diagram

Network Switch

Thermal Radar

PTZ

VMS Client

Thermal Radar POE Injector

VMS Server

Power Supply

AC   DC

*Depending on POE Injector

PTZ POE Injector

Ethernet
Power
POE

Step 3: Power Up the System

A. Connect the power cables from the following devices to the primary power source: Thermal Radar™ PoE, PTZ PoE, Network Switch, and VMS PC.

B. Ensure all devices power up correctly.

    a. The Thermal Radar™ sensor may be dormant for several minutes before rotating.

    b. On initial startup, Thermal Radar will complete two rotations, stopping four times on each cycle. This is an indication adequate power is supplied.

    c. The PTZ will spin once it begins its start-up protocol and diagnostic tests.

Step 4: Connect a PC or Laptop to the System
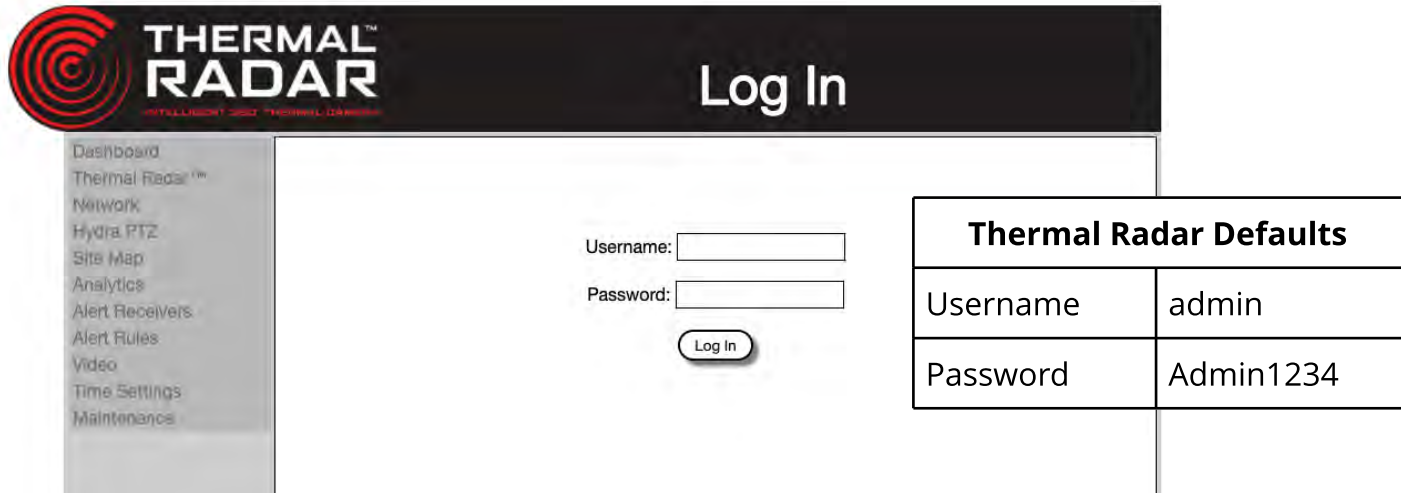
A. Set the Internet Protocol (IP) address of the configuration computer to the 192.168.1.xxx range (e.g., 192.168.1.150).

B. Connect the computer to the network to configure the system.

Step 5: Access the Thermal Radar Web Config Page

Open a web browser and type the following web address into the URL text box:

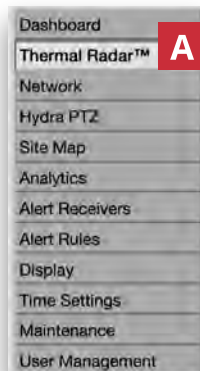**http://192.168.1.110:8080**

Note: Internet Explorer is not supported.

Thermal Radar Defaults	
Username	admin
Password	Admin1234

Step 6: Enter Physical Setup Information

A. Select "Thermal Radar" from the Left Menu of the web-based Graphical User Interface (GUI).

B. Enter a name for the site-specific Thermal Radar™ installation.

C. Measure the height from the ground to the center of the Thermal Radar IR window, then indicate the height in meters or feet.

D. The Thermal Radar™ sensor is preconfigured for complete coverage before delivery; however, some "station overlap" might be desired in some situations. If required, adjust the "Coverage Gap" until the desired horizontal FoV station overlap is achieved.

E. Select "Apply Changes" to finalize the Physical Setup configuration.

Step 6 Continued:

Dashboard
A Thermal Radar™
Network
Hydra PTZ
Site Map
Analytics
Alert Receivers
Alert Rules
Display
Time Settings
Maintenance
User Management

Physical Setup

B Name: Thermal Radar

Rotation Stops: 11   Mounting Height*: 8   Meters **C**

D Rotation Speed: 1.9 s (32 rpm)   Coverage: 352° (0.7° gap)

E Apply Changes

Step 7: Change the IP on the Thermal Radar™

A. Select Network from the Left Menu of the web-based GUI.

B. Select Static or DHCP for Mode.

C. If "Static" is selected, enter the desired network settings for the Thermal Radar™ within the "System IP Address" section.

D. Press "Apply Changes" to save the new network settings.

Step 8: Change the IP of the PTZ Camera

A. Open a web browser and navigate to the web interface of the PTZ. Refer to the manufacturer's guide for configuration instructions.

B. In the PTZ's web configuration page, change the network settings to the desired new settings.

C. If desired, change the PTZ User Name and Password.

Note: For detailed instructions, refer to the Integration Guide for the specific PTZ model.

Step 9: Change the IP on the PC or Laptop

If required, based on network changes, adjust the IP for the configuration computer or laptop to the new IP Address Range.

Step 10: Open the Thermal Radar™ Web Config Page

Open a web browser and navigate to the new IP address for the Thermal Radar, as changed in Step 7 (e.g., **http://192.168.1.110:8080).**

Step 11: Pair the PTZ with the Thermal Radar™

A. Select "Hydra PTZ" from the Left Menu of the web-based Graphical User Interface (GUI).

B. Select the PTZ Brand to be paired with Thermal Radar™**.**

C. Enter the IP address of the paired PTZ.

D. Enter the User Name and the Password for the PTZ.

E. Press "Apply Changes" to save the settings.

Step 11 Continued:

Step 12: Align PTZ with the Thermal Radar™

A. Select the "Open PTZ" in the web browser and log in to the PTZ to view the video stream.

B. Select "Suspend" to prevent the PTZ from moving during the alignment process.

C. Select "Test Pan Alignment" to center the PTZ on its current alignment position.

D. Estimate how many degrees clockwise the PTZ will need to pan, such that it is centered on the left edge of Station 0. Enter that number into the Pan Offset Alignment section.

E. Repeat Steps D and E until the middle of the PTZ view is centered on the left edge of Station 0.

F. Select "Resume" to allow the PTZ to move based on commands from Thermal Radar™.

G. Press "Apply" to save settings.

Step 12 Continued:

Hydra PTZ Alignment

Pan Offset Alignment: [103.7] **E** Degrees Clockwise

D Test Pan Alignment   **A** Open PTZ in Browser

H Apply Changes

C Hydra PTZ Alignment

Commands to PTZ: (Pause) LIVE ▾

G Hydra PTZ Alignment

Commands to PTZ: (Resume) 03:59 ▾

PTZ View Centered on left edge of station 0

Step 13: Configure Site Map

A. Select "Site Map" from the Left Menu.

B. Enter the Global Positioning System (GPS) coordinates for Thermal Radar™.

Note: This feature uses Google Maps and requires an active Internet connection.

C. Use "Auto Resize" or the Up and Down arrows on the "Map Scale" section to adjust the Map Scale circle diameter.

D. Use a compass to identify North for the location at which Thermal Radar™ is located, or reference the top portion of the satellite map. Once identified, use the right and left arrows to scroll through the stations until the thermal image depicts the area in which North is located.

E. Adjust the "North Offset" until the vertical red line appears in the thermal station and is aligned with the North.

F. Press "Apply Changes" to save settings.

Step 13 Continued:

18
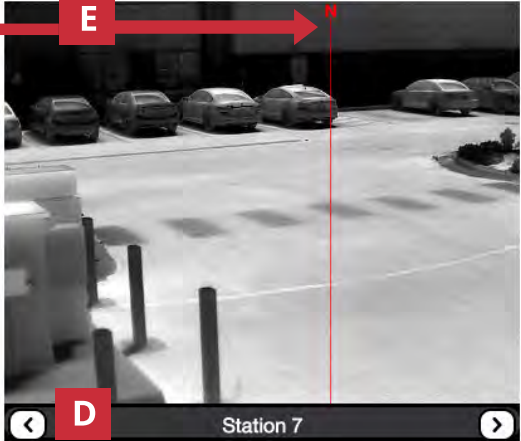
Step 14: Create Areas of Interest (AOIs)

A. Select "Analytics" from the Left Menu.

B. Select "Quick Setup" to open the AOI Quick Setup window.

C. Select "Single Layer" or "Multi Layer," as required.

D. Adjust Sensitivity and Confidence, as required.

E. Adjust the "Blur – No Blur" slider, as necessary.

F. Select individual AOI stations, or "All," as required.

G. Press "Apply Changes" to save and apply the AOIs.
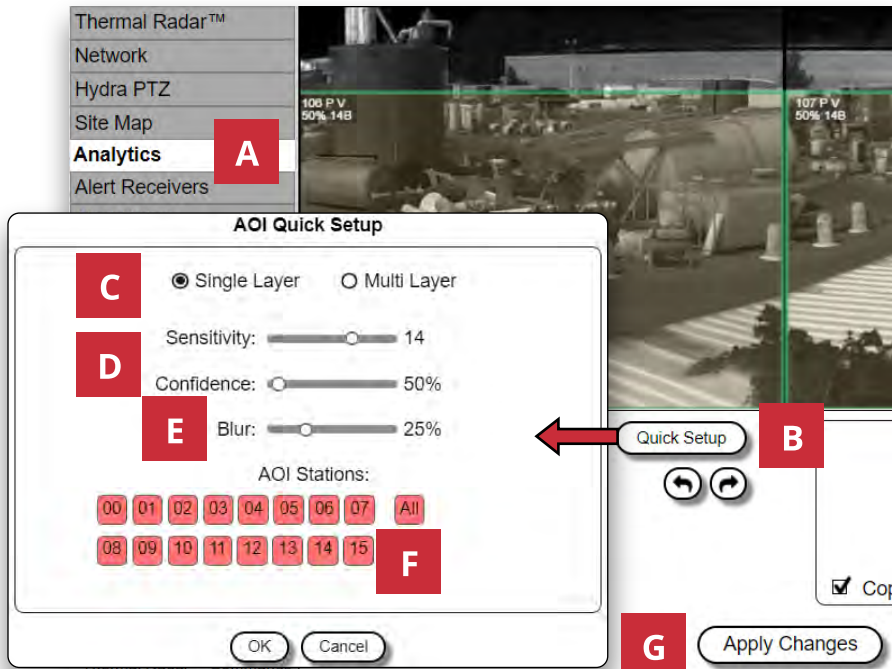
Step 15: User Management

To Add a User:

A. Select "User Management" from the Side Bar.

B. Enter a unique name in the "User Name" field.

C. Select the desired access level for the new user from the "User Access" drop-down list.

D. Enter a unique password in the "New Password" and "Verify Password" fields.

E. Select "Add User" to add the new profile to the system.

To Edit a Password:

F. Select "User Management" from the Side Bar.

G. Select the User Name to change from the "Existing Users" section.

H. Select "Edit User."

I. Enter a new unique password in the "New Password" and "Verify Password" fields.

J. Select "Update User" to complete the password change.

Step 16: Adding the Thermal Radar™ and PTZ to a VMS

A. Start a network scan within the VMS for ONVIF cameras to identify the Thermal Radar™ and PTZ devices.

B. Enter the User Name and Password for each device.

C. Once identified, add each device to the VMS camera list.

D. Open the Thermal Radar™ and PTZ video feeds in the VMS to confirm functionality.
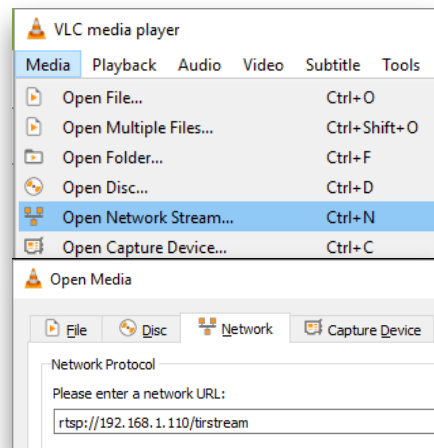
For viewing when a VMS is not available:

    a. The Thermal Radar™ RTSP Video Stream can be viewed via a VLC Player.

    b. Select "Media," "Open Network Stream," and enter the RTSP URL.

Thermal Radar™ONVIF Info:

User Name:	admin
Password:	admin
Onvif Scan Port	80

RTSP Video Feed:
e.g. rtsp://192.168.1.110/tirstream

End of Installation and Configuration Section

Upon completion of Steps 1 – 16, two separate video streams will be viewable in a VMS:
1) a live 360-degree Thermal Radar™ video and 2) a live video from the PTZ.

The PTZ camera will move based on slew-to-cue detection alerts received from Thermal Radar™.

The location of each alert will be displayed in the Thermal Radar™ video, as a dot on the Google Earth satellite image.

To create alerts with the VMS, refer to the VMS Integration Guide.

Walk Test

After installing and configuring a Thermal Radar™ / Hydra™ system, conduct a Walk Test to validate the accuracy of detections and PTZ tracking. It is recommended to have one individual walk through the various AOIs, and a second individual monitor and verify the accuracy of detections and tracking.
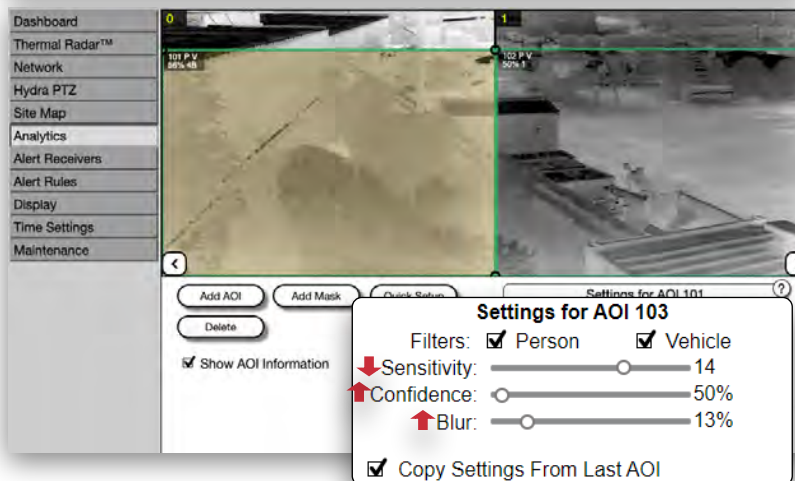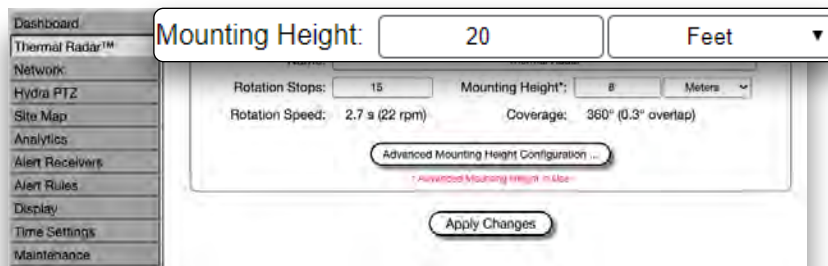
Troubleshooting

1. If Thermal Radar™ is Not Detecting:

A. Ensure the Thermal Radar™ Height is entered correctly.

B. Ensure the Thermal Radar™ Tilt Angle is entered correctly.

C. Ensure at least one AOI has been created.

2. If Thermal Radar™ is Providing Excessive False Alerts:

A. Decrease AOI Sensitivity, as required.

B. Increase AOI Confidence, as required.

C. Increase AOI Blur, as required.

Troubleshooting

3. If PTZ Detections are not Centered:

    A. Access the "Hydra PTZ" tab within the web-based GUI.

    B. For Pan Adjustments:

        a. If the target is Right of Center in the PTZ feed, increase the Pan Offset Alignment.

        b. If the target is Left of Center in the PTZ feed, decrease the Pan Offset Alignment.

    C. For Tilt Adjustments:

        a. If the target is above the center in the PTZ feed, increase the Tilt Adjustment.

        b. If the target is below the center in the PTZ feed, decrease the Tilt Adjustment.

Troubleshooting

4. If the PTZ Moves to Often:

    A. Adjust the "PTZ Movement Rules" by increasing the "Move After - Consecutive Detections in an AOI," as required.

    B. Select the "After Move, Disarm AOI for Rotations Without Detections" box, and insert/increase a rotation value (e.g., 1, 2, 3), as required.

5. If the PTZ Does Not Move Often Enough:

    A. Adjust the "PTZ Movement Rules" by decreasing the "Move After - Consecutive Detections in an AOI," as required.

    B. Select the "After Move, Disarm AOI for Rotations Without Detections" box, and decrease the rotation value (e.g., 3, 2, 1,0), or deselect the box, as required.

    C. Adjust the respective AOI sensitivity, as required.

Troubleshooting

6. If Detections do not Display Correctly in the Google Earth Map:

A. If the detections are too close to the center of the map,
Decrease the "Map Scale" value.

B. If the detections are too far away from the center of the map,
Increase the "Map Scale" value.

7. If Detections are Not Aligned with North:

A. If the detections need to rotate clockwise, decrease the "North Offset."

B. If the detections need to rotate counterclockwise, increase the "North Offset."

8. If VMS Alerts are Not Being Sent/Received:

A. Verify the logic is programmed correctly within the system receiving the alerts.

B. Access the "Alert Rules" tab within the web-based GUI and press the "Test" button.

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