



**THERMAL™
RADAR**

Visionary Thermal Detection

QUICK START CONFIGURATION GUIDE

FIRMWARE 4.0.0

More Information :



801-762-6800



www.thermalradar.com



1450 West 105 North Orem, UT 84057

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.

support@thermalradar.com

| **1 (801) 762-6800**

| **thermalradar.com**

Installation and Configuration Steps

The following 18 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** and the **Thermal Radar™ Settings Guide**.

TABLE OF CONTENTS

- Components of a Thermal Radar™ System..... Page 3
- System Architecture and Data Flow..... Page 4
- Installation..... Page 5 - 6
- Configuration..... Page 7 - 26
- Troubleshooting..... Page 27 - 31



Components of a Thermal Radar™ System



Required Thermal Radar™

Continuously rotates a best-in-class thermal sensor and uses custom-written edge analytics for human, vehicle, and fire detection.

Optional PTZ (Various Manufacturer Options)

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



Optional NVR / VMS Server

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



Optional Relay/Digital Output Module

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

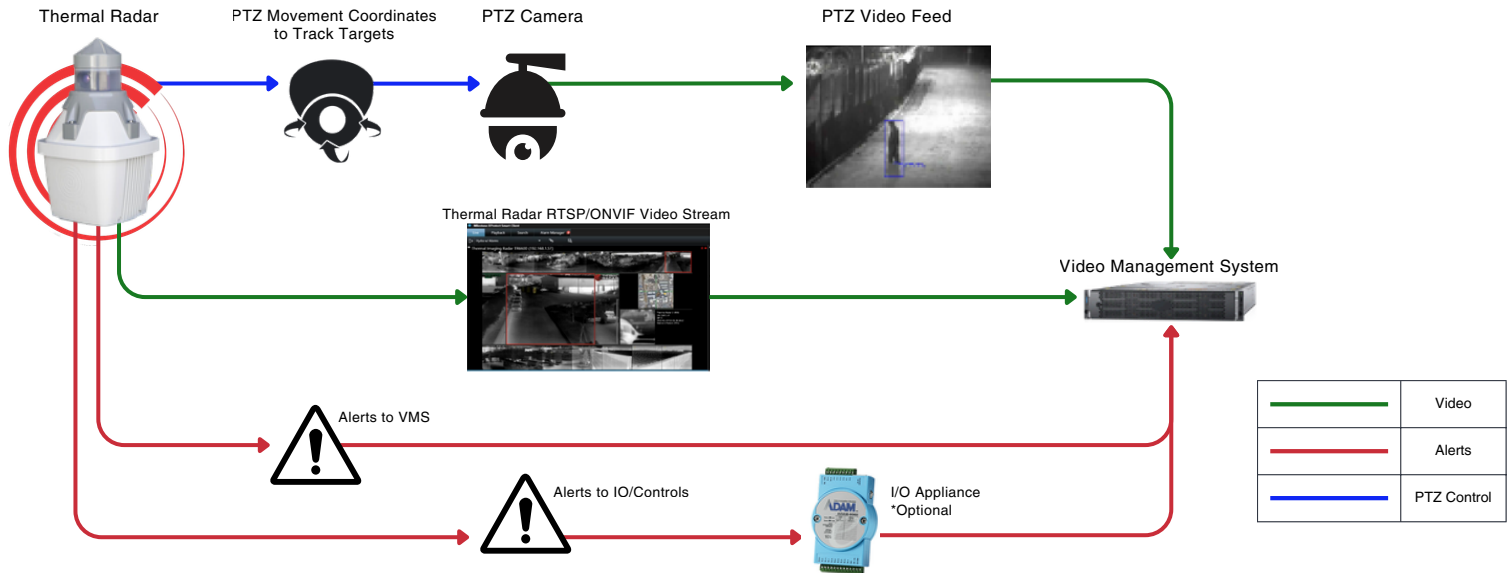




Thermal Radar Support
 Thermal Radar Support

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.





Step 1: Mount Thermal Radar™ or Hydra™

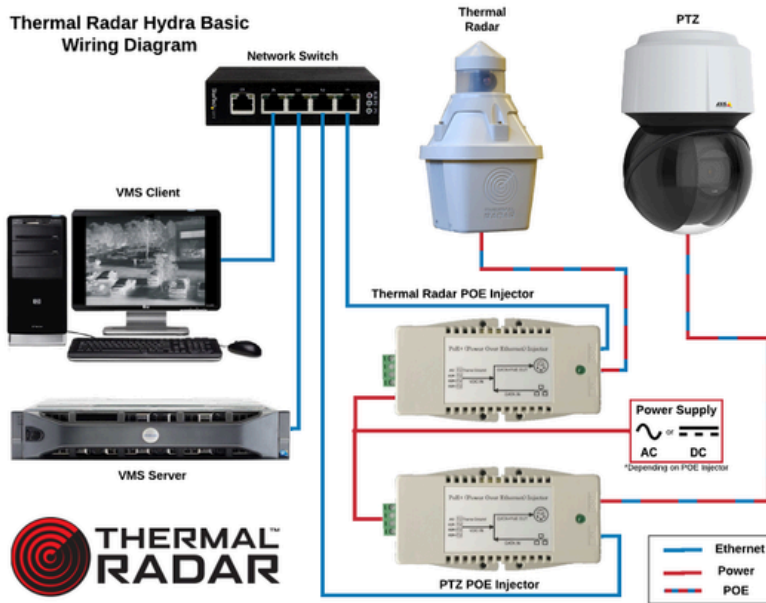
- Assemble the Hydra™ Standard Arm or Gooseneck Mounting Bracket at the mounting location.
- Run two (2) ethernet cables (minimum Cat 5e) through the mounting arm / Gooseneck bracket and terminate each cable at both ends.
- Insert one of the network cables into the Thermal Radar™ and mount the camera to the top of the upper Box.
- Insert the other network cable into the PTZ and mount the camera on the bottom of the upper box.
- 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.





Step 2: Wire and Connect the System to a Network



- 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.
- 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.
- Connect the VMS Server to the network switch via an ethernet cable.



Step 3: Power Up the System

- Connect the power cables from the following devices to the primary power source: Thermal Radar™ PoE, PTZ PoE, Network Switch, and VMSPC.
- Ensure all devices power up correctly.
 - The Thermal Radar™ sensor may be dormant for several minutes before rotating.
 - On initial startup, the Thermal Radar™ will complete two rotations, stopping four times on each cycle. This is an indication adequate power is supplied.
 - The PTZ will spin once it begins its start-up protocol and diagnostic tests.

Step 4: Connect a PC or Laptop to the System

- Set the Internet Protocol (IP) address of the computer to the **192.168.1.xxx range (e.g., 192.168.1.150)**.
- 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.*

A screenshot of a web browser window showing the Thermal Radar login page. The page features a large background logo and the text "THERMAL RADAR Visionary Thermal Detection". There are two login forms: one smaller one on the page and a larger, detailed one shown in a callout box on the right. The callout box shows "Username:" and "Password:" labels, input fields, and a red "Log In" button.

Thermal Radar™ Defaults:

Username	admin
Password	Admin1234



Step 6: Enter Physical Set Up Information

- Select "System" from the Top Menu of the web-based Graphical User Interface (GUI).



Dashboard



System



Network



Site Map



Distances



Scheduling



Hydra/PTZ



Intrusion



Fire Analytics



Alert Receivers



Alert Rules



Display



Maintenance



User Mgmt

Thermal Radar Setup

192.168.1.110:8080/pgDashboard.jsp

THERMAL RADAR

Serial Number: TR6600+ FLIR Boson 22640A024-6PAAX/428791

Firmware Version: 3.0.0 fa7e701f 202604091113

Status: OK

Hydra PTZ: Axis @ 192.168.1.112

Thermal Radar Device: 18.0 mm 15 stops 18.43 rpm

CPU Temp 80.0°C

Suspend PTZ Control LIVE



Step 6: Enter Physical Set Up Information

- Enter a device/display name for the site-specific Thermal Radar™ installation.
- Enter the Mounting height in meters for the approximate distance between the bottom of the pole, and the top of the Thermal Radar™ .
- 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.

→	Display Name:	<input type="text" value="Thermal Radar"/>		
→	Mounting Height (meters):	<input type="text" value="10.0"/> (33 feet)	Tilt Angle:	<input type="text" value="-5.0°"/>
→	Number of Stations:	<input type="text" value="15"/> Advanced...	Field of View:	<input type="text" value="24.3° H 19.5° V"/>
	Rotation Speed:	<input type="text" value="3.3 secs (18.3 rpm)"/>	Coverage:	<input type="text" value="Full 360° (0.3° overlap)"/>

Warning: Modifying the number of stops will reset all Areas of Interest and reset Distance Markers to defaults.



Step 7: Change the IP on the Thermal Radar™

- Select Network from the Menu of the web-based GUI.
- Select Static or DHCP for Mode.
- If “Static” is selected, enter the desired network settings for the Thermal Radar™ within the “System IP Address” section.
- Input NTP and Time Zone information.
- Press “Apply Changes” to save the new network settings.



2	Mode:	Static
3	System IP Address:	192.168.1.110
	Host Name:	TIR-DEV-1
	Subnet Mask:	255.255.255.0
	Default Gateway:	192.168.1.1
	Preferred DNS:	192.168.1.1
Time Settings		
4	Time Zone:	Mountain Standard Time (GMT-7:00)
	NTP Server:	
Device Info		
	MAC Address:	a4:1c:b4:0c:be:61

Note: The connection will be temporarily lost while the unit reboots. The unit will restart with its new IP address.

5

Apply Changes



Step 8: Change the IP of the PTZ Camera

- Open a web browser and navigate to the web interface of the PTZ. Refer to the manufacturer's guide for configuration instructions.
- In the PTZ's web configuration page, change the network settings to the desired new settings.
- 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: Configure Site Map

- Select “Site Map” from the Menu.
- Enter the Global Positioning System (GPS) coordinates for Thermal Radar™.
- **Note:** *This feature uses Google Maps and requires an active Internet connection.*
- Use the scroll wheel to adjust the map zoom level.
- Use a map to identify an object North of the location at which Thermal Radar™ is located to use as a frame of reference. 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.
- Adjust the “North Offset” until the vertical red line appears in the thermal station and is aligned with North.



Step 11: Configure Site Map Visuals

1



Drag/arrows to position **3** Wheel/+ to zoom

2 Latitude: Longitude:

Load Custom Map...

Remove Custom Map

4



North Offset:

5

Apply Changes



Step 12: Set Up Distances

- Select the “Distances” icon from the Menu.
- Click and drag on the displayed image to use the yellow perspective tool. Verify that the yellow figure appears as approximately the same height as a person would in the image.
- The defaults should show the person at an appropriate size. However if not, click and drag the distance marker lines to accurately reflect the surrounding area. Keep in mind that the unit will not detect above the top line (red area).
- **Note:** *It is highly recommended to use a minimum of three markers.*
- Verify the "Distance to Base" parameter is close to the distance from the mounting location of the Thermal Radar™, to the bottom edge of the thermal radar 's field-of-view (FoV). Adjust accordingly.
- Repeat for all stations requiring adjustment. Keep in mind that you may use the copy and paste functions to similar stations.
- Click “Apply Changes” to save settings.



Thermal Radar Support



Step 12: Set Up Distances Visuals

1



Stop 0

Distance to Base: (92 feet)

Add Marker **Remove Marker**

Copy Settings **Paste Settings**

Copy To Stops...

Reset to Defaults

Selected Marker: 800m

Marker Distance: (2625 feet)

Control Points: 1 **-** **+**

6 **Apply Changes**



Step 13: Align PTZ with the Thermal Radar™

1. Select "Suspend" to prevent the PTZ from moving during the alignment process.
2. Select PTZ Brand, enter IP address, & user credentials into appropriate fields, & apply settings.
3. Click on an object in the panorama to use as a frame of reference.
4. Click Test PTZ Alignment.
5. Estimate how many degrees clockwise the PTZ will need to pan, center the PTZ image on the object selected in step 3, and then input that estimated value into the "Pan Adjustment" field.
6. Do the same for "Tilt Adjustment". *Repeat Steps 3, 4, and 5 until the middle of the PTZ view is centered on the selected reference object.*
7. Use the "Maximum Zoom Level" field to adjust how close or how wide the PTZ zooms on targets.
8. If needed, select a schedule to apply to the PTZ control (Coming up in Step 14).
9. Click the "Apply Changes" button to save changes



Pan Adjustment:	<input type="text" value="195.6"/>	degrees right
Tilt Adjustment:	<input type="text" value="-1"/>	degrees up
Maximum Zoom Level:	<input type="text" value="35"/>	percent
Reach Max Zoom at:	<input type="text" value="500"/>	meters (1640 feet)
Schedule:	<input type="text" value="No Schedule"/>	



Step 13: Align PTZ with the Thermal Radar™ Visuals

PTZ Brand: **2**
 IP Address:
 User Name:
 Password:

Pan Adjustment: **5** degrees right
 Tilt Adjustment: **6** degrees up
 Maximum Zoom Level: **7** percent
 Reach Max Zoom at: meters (1640 feet)
 Schedule: **8**

Locate a recognizable landmark and click to highlight it. Press **Test PTZ Alignment** to send the PTZ there.
4 Test PTZ Alignment **1** Suspend PTZ Control LIVE

Move After Consecutive Detections in an AOI
 After Move, Disarm PTZ for Seconds
9 Apply Changes



Red Dot for Frame of Reference Selection



PTZ View Centered on Selected Object

⚠ Note: For more detailed instructions, see the *Thermal Radar™ Settings Guide*.



Step 14: Create a Schedule

Note: If the Thermal Radar™ will be armed 24/7, scheduling is not needed.

1. Select "Add Blank Schedule" to create a schedule. Once a blank schedule has been added, the scheduling table will populate.
2. Add a green time bar or arming period into the schedule by clicking anywhere on the timeline. The amount of time the system is armed (green), is chosen by dragging the schedule bars left or right. The schedule bars on both the Weekly Schedule and Schedule Exceptions can be dragged around to move them, stretched from either end to expand them, and dragged into one another to combine them.
3. If needed, uncheck the "Combine Weekdays" & "Combine Weekends" check boxes to allow more control over daily schedules.
4. If an exception is needed in the schedule, click the button to create a schedule exception. Input a date for the exception and select the desired Prefill option. Add/adjust the red arming period as desired. Repeat steps 1 - 4 to add additional schedules.
5. Click the "Apply Changes" button to save changes.



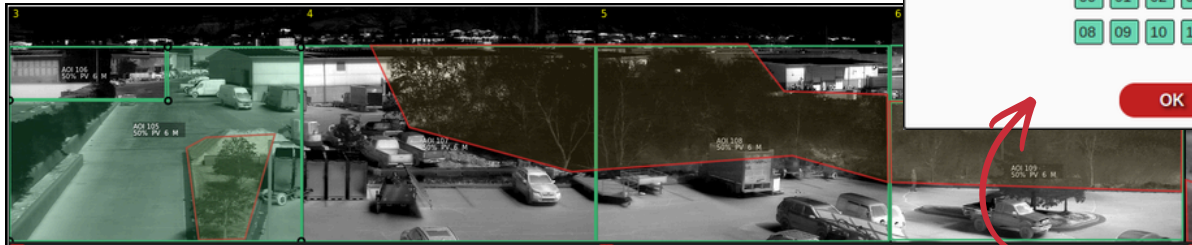
Step 15: Set Up Intrusion Analytics

An Area of Interest (AOI) is a polygonal detection zone. Users can perform a quick setup of AOIs over the entire 360° coverage area by selecting “Quick Set-Up” or AOIs can be created and configured manually one at a time by clicking “Add New AOI”. AOI's created can be configured to detect people, vehicles, or both.

1. Select “Intrusion Analytics” from the Top Menu.
2. Select “Quick Setup” to open the AOI Quick Setup window.
3. Select “Single Layer” or “Multi-Layer” as required.
4. Adjust Sensitivity and Confidence, as required.
5. Select The Blur amount from the dropdown.
6. Select individual AOI stations, or “All” as required.
7. Assign a Group, Priority, and Schedule to the AOI as needed.
8. Press “Apply Changes”.



Step 15: Set Up Intrusion Analytics Visuals



AOI Quick Setup

Single Layer **3** Multi Layer

Filter: Person Vehicle

4 Sensitivity: 6

Confidence: 50%

5 Blur:

6 AOI Stations:

00 01 02 03 04 05 06 07
08 09 10 11 12 13 14 ALL

Settings for AOI 105

Filter: Person Vehicle

Sensitivity: 6

Confidence: 50%

Blur:

8

Settings for Group 1

ID: AI105 (Group: G1100)

Assigned Group:

Group Priority:

Group Schedule:

Group Enabled

7



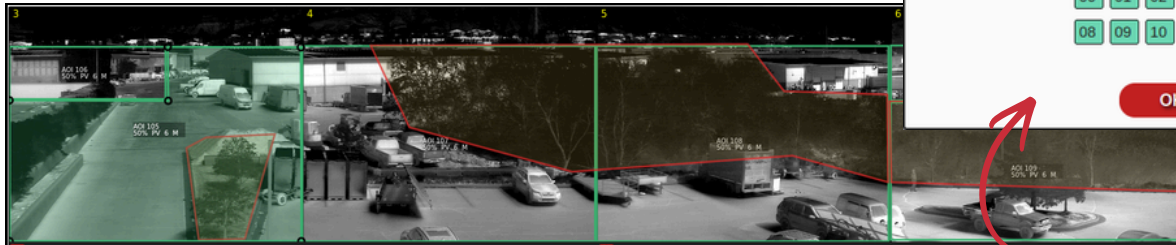
Step 16: Set Up Fire Analytics

An Area of Interest (AOI) is a polygonal detection zone. Users can perform a quick setup of AOIs over the entire 360° coverage area by selecting “Quick Set-Up” or AOIs can be created and configured manually one at a time by clicking “Add New AOI”. AOI's created are configured to detect fires.

1. Select “Fire Analytics” from the Top Menu.
2. Select “Quick Setup” to open the AOI Quick Setup window.
3. Select “Single Layer” or “Multi-Layer” as required.
4. Adjust Confidence, as required.
5. If needed, select the amount of blur from the dropdown.
6. Select individual AOI stations, or “All” as required.
7. Use the Fire Threshold Slider to adjust the levels at which the Thermal Radar™ detects fires.
8. Assign a Group, Priority, and Schedule to the AOI as needed.
9. Press “Apply Changes” to save AOIs.



Step 16: Set Up Fire Analytics Visuals



AOI Quick Setup

Single Layer **3** Multi Layer

Filter: Person Vehicle

Sensitivity: 6

4 Confidence: 50%

5 Blur:

6 AOI Stations:

00 01 02 03 04 05 06 07
08 09 10 11 12 13 14 ALL

OK Cancel

Settings for AOI 105

Filter: Person Vehicle

Sensitivity: 6

Confidence: 50%

Blur:

9 Apply Changes

Settings for Group 1

ID: AI105 (Group: G1100)

Assigned Group:

Group Priority:

Group Schedule:

Group Enabled

8

Analytics Settings

Show AOI Information

Show Distances

Copy Settings From Last AOI

Fire Threshold:

OK



Step 17: User Management

To Add a User :

- Select “User Management” from the Menu Bar.
- Enter a unique name in the “User Name” field.
- Select the desired access level for the new user from the “User Access” drop-down list.
- Enter a unique password in the “New Password” and “Verify Password” fields.
- Select “Add User” to add the new profile to the system.

To Edit a Password:

- Select “User Management” from the menu.
- Select the User Name to change from the “Existing Users” section.
- Select “Edit User”.
- Enter a new unique password in the “New Password” and “Verify Password” fields.
- Select “Update User” to complete the password change.



Step 18: Adding the Thermal Radar™ and PTZ to VMS

- Start a network scan within the VMS for ONVIF cameras to identify the Thermal Radar™ and PTZ devices.
- Enter the User Name and Password for each device.
- Once identified, add each device to the VMS camera list.
- Open the Thermal Radar™ and PTZ video feeds in the VMS to confirm functionality.

For viewing when a VMS is not available:

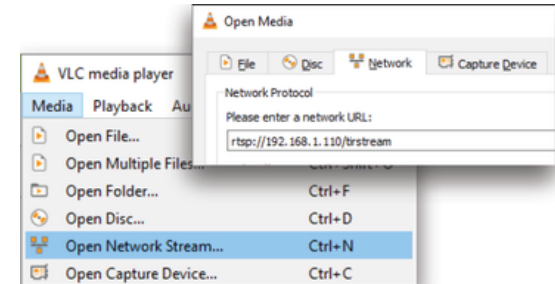
- The Thermal Radar™ RTSP Video Stream can be viewed via a VLC Player.
- Select “Media”, “Open Network Stream” and enter the RTSP URL.

RTSP Video Feed:

e.g. `rtsp://192.168.1.110/tirstream`

Thermal Radar™ ONVIF Info:

Username	admin
Password	Admin1234 (will follow admin password)
ONVIF Scan Port	80





End of Installation and Configuration Section

Upon completion of Steps 1 - 16, two separate video streams will be viewable in a VMS:

- a live 360-degree Thermal Radar™ video
- 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 to monitor and verify the accuracy of detections and tracking.



Troubleshooting

If Thermal Radar™ is Not Detecting:

- Verify top distance line isn't set too low.
- Verify distances are set correctly.
- Ensure at least one AOI has been created.

If Thermal Radar™ is Providing Excessive False Alerts:

- Decrease AOI Sensitivity, as required.
- Increase AOI Confidence, as required.
- Increase AOI Blur, as required.





Troubleshooting

If PTZ Detections are not Centered:

- Access the “Hydra PTZ” tab within the web-based GUI.
- For Pan Adjustments:
 - If the target is Right of Center in the PTZ feed, increase the Pan Offset Alignment.
 - If the target is Left of Center in the PTZ feed, decrease the Pan Offset Alignment.
- For Tilt Adjustments:
 - If the target is above the center in the PTZ feed, increase the Tilt Adjustment.
 - 2. If the target is below the center in the PTZ feed, decrease the Tilt Adjustment.

Pan Adjustment:	<input type="text" value="195.6"/>	degrees right
Tilt Adjustment:	<input type="text" value="-1"/>	degrees up
Maximum Zoom Level:	<input type="text" value="35"/>	percent
Reach Max Zoom at	<input type="text" value="500"/>	meters (1640 feet)
Schedule:	<input type="text" value="No Schedule"/>	



Troubleshooting

If the PTZ Moves Too Often:

- Adjust the PTZ Movement Rules by increasing the “Move After - Consecutive Detections in an AOI” as required.
- Select the “After Move, Disarm PTZ for X Seconds” box, and increase the shunt value (e.g., 1, 2, 3), as required.

Move After Consecutive Detections in an AOI
 After Move, Disarm PTZ for Seconds

If the PTZ Does Not Move Often Enough:

- Adjust the “PTZ Movement Rules” by decreasing the “Move After - Consecutive Detections in an AOI” as required.
- Select the “After Move, Disarm PTZ for X Seconds” box, and decrease the shunt value (e.g., 3, 2, 1,0), or deselect the box, as required.
- Adjust the respective AOI sensitivity, as required.



Troubleshooting

If Detections Do Not Display Correctly in the Google Earth Map:

- If the detections are too close to the center of the map, scroll in on the map.
- If the detections are too far away from the center of the map, scroll out on the map.

If Detections are Not Aligned with North:

- If the detections need to rotate clockwise, decrease the “North Offset”.
- If the detections need to rotate counterclockwise, increase the “North Offset”.



If VMS Alerts are Not Being Sent /Received:

- Verify the logic is programmed correctly within the system receiving the alerts.
- Access the “Alert Rules” tab within the web-based GUI and press the “Test” button.



THERMALTM RADAR

Visionary Thermal Detection

More Information :

-  801-762-6800
-  www.thermalradar.com
-  1450 West 105 North Orem, UT 84057

